ARTEZEN
DOUGH HANDLING

VOLUMETRIC DOUGH DIVIDER

CALYBRA

CALYBRA L

USAGE AND MAINTENANCE MANUAL

TRANSLATION OF THE ORIGINAL INSTRUCTION

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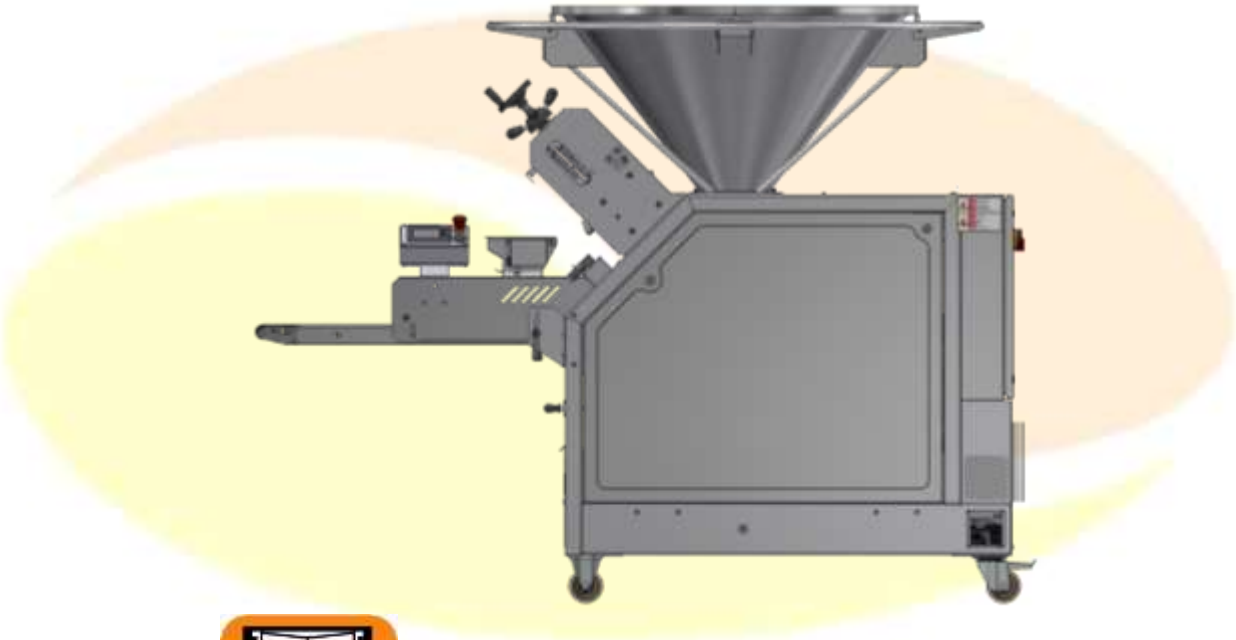

Read this instruction manual carefully before installing and using the machine

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CE DECLARATION OF CONFORMITY

With this document, **ARTEZEN S.R.L.** Via Lago di Tovel,14 36015 Schio - (VICENZA) – Italy (VAT no. IT 03967970249) by its Legal Representative, Mr. Dino Gasparotto,

DECLARES

that the **VOLUMETRIC DOUGH DIVIDER** Serial n. **……**

Model ☐ **CALYBRA** ☐ **CALYBRA L**

☐ **0.2** ☐ **1.0** ☐ **1.5** ☐ **2.5**

in the **version** including the selected components listed below

Structure, electrical box ☐ Stainless steel ☐ Painted steel

Control panel ☐ Electro-mechanical ☐ Touch screen ☐ Memory Pack

Piece output with ☐ Single belt ☐ Double belt ☐ V-belts

and complete with the following optionals:

Hopper: ☐ 80 kg ☐ 135 kg ☐ 160 kg ☐ 200 kg ☐ 280 kg ☐ Special

☐ with sensor ring ☐ with interlocking cover

☐ Roller Unit
☐ High Capacity Pack
☐ Machine height reduction kit
☐ Oil for the hydraulic circuit according to NSF H1 standard
☐ Centering partitions
☐ Long loaf pre-moulders
☐ Piece detachment roller
☐ Flour duster
☐ Rounding system

the function of which is exclusively to create portions of dough, previously produced with machines for mixing ingredients typical of this sector (flour, water, yeast, salt, etc.), destined to be processed with other machinery to obtain finished bread and/or pastry products,

complies with the provisions imposed by:

- Directive 2006/42/EC of the European Parliament and Council dated 17 May 2006 relative to machinery and modifies directive 95/16/EC
- Directive 2014/30/EU of the European Parliament and Council dated 26 February 2016 concerning the harmonisation of Member State Legislation relative to electromagnetic compatibility.
- Regulation (EC) N. 1935/2004 of the European Parliament and Council dated 27 October 2004 concerning the materials and objects destined to come into contact with food products and repealing Directives 80/590/EEC and 89/109/EEC

The technical dossier of the machine was drafted by Mr. Francesco Tagliapietra, in his capacity of Mechanical Engineer, an employee of the company making this declaration.

Dino Gasparotto (Legal Representative)

Schio, ……

1 INTRODUCTION

1.1 PREAMBLE

This instruction manual is intended to be consulted by anyone in any position 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 be able to use it as a valid support in fulfilling a part of the obligations that current laws and regulations in force impose on them concerning safety and health 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 preparation 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 installation

This part, which covers the first paragraphs of Chapter 3, is intended for the personnel responsible for handling, transport, and installation, and carrying out the commissioning of the machine for the purpose of providing all the important notions, excluding those that must already be considered part of the cultural baggage of an expert and/or professionally prepared and/or specialised technician in order to carry out the said operations.

Instructions for routine use and maintenance under safe conditions

This section, dealt with in Chapter 2 and part of Chapters 3, 4 and 5, is intended for the employer of operators using the machine, managers, and supervisors of the company using the machine and the operators themselves.

In addition to the instructions for ongoing use of the machine, it includes indications for maintenance, cleaning, and monitoring operations that, due to their simplicity and low-risk involved, do not require particular experience or professionalism and can be carried out by the machine operator for production purposes.

Instructions for extraordinary maintenance

This section of the manual, dealt with in the remaining part of Chapters 4 and 5, is intended for the employer of the machine operators, managers, and supervisors of the company using the machine, to the operators themselves, and to specialised personnel responsible for carrying out maintenance, routine and/or extraordinary, of the machine. This section includes some indications, especially important for safety purposes, to follow during maintenance, regulating, and monitoring operations that, whether for their complexity and/or risk involved, require the intervention of specialised personnel, experts, or trained professionals with the technical-regulatory knowledge for carrying out such work safely and according to code.

Given the specific experience that the personnel responsible for this type of intervention must have, the information, instructions, etc. of a technical nature that are not important for safe operation of the machine and/or the professional maintenance technician is required to know, are omitted.

Instructions for decommissioning and/or dismantling

This section is dealt with in Chapter 6.

References made to specific chapters or paragraphs must also be understood as inclusive of all the relative sub-paragraphs; where, for example, paragraph 5.3 is cited, the reference must be considered as being extended to all the paragraphs from 5.3 to 5.3.9.

Before carrying out any operation on/with the machine (installation, regulation, use, repair, etc.) **carefully read** the general and specific instructions in this manual and understand their purposes and meanings in relation to the correct functioning 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 attached publications in a safe place, where machine operators and/or maintenance technicians can find it easily. Keep it in a dry place and protected from atmospheric agents that over time could 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 immediately for a copy from Artezen s.r.l., clearly specifying all the identification data of the machine (year of construction, model, serial number, etc.).

This manual reflects the current state-of-the-art at the time the machine was put on the market or 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 of the machine 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, the first thing to do after having removed the packaging (see par. 3.2), is to check that it is equipped with all the devices, especially the safety devices, described in this manual and that it is in conformity with the indications made in the purchase order and/or order confirmation.

This manual is an integral part of the machine and must accompany it in case of transfer or sale of the same for any reason whatsoever, even free of charge.

In par. 2.1 the intended use of the machine is indicated with details on the uses allowed and not allowed.

1.2 INSTRUCTIONS AND GENERAL WARNINGS

Artezen s.r.l. declines any and all responsibility for injury to people or animals or damage to property caused by failing 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 provided with the machine;
- **Do not remove** the guards and **do not deactivate** the safety devices provided with the machine, if not for real and unavoidable need; in this case the machine must be stopped and the electrical power supply must be disconnected until all the guards and safety devices are correctly reassembled/reactivated, and subject to the adoption of measures aimed at reducing insofar as possible all potential risk;
- **Reassemble** the guards and **reactivate** the safety devices as soon as the issues making their temporary removal/deactivation necessary have been resolved;
- **Do not use** the machine for uses and/or loads and/or purposes other than those indicated by the manufacturer;
- **Carry out** daily checks of the safety devices, including technological fluid levels (oil) and the overall condition of the machine ;
- **Carry out** a scrupulous daily cleaning of the machine and its parts;
- **Adopt the necessary provisions and caution** in performing the daily work routine including the regulation, cleaning, maintenance, etc. because the machine or its parts are not activated by others, not even accidentally;
- **Observe** the European Directives and Italian laws in relation to where the machine is used; in particular (but not only) those relative to safety warning signs, food hygiene, safety, and health in the workplace, personal protection equipment, and environmental protection;
- **Respect the limits of the climatic conditions and uses allowed**: maximum relative ambient humidity 90%, ambient temperature min. 15 °C maximum 40 °C, altitude above sea level 1000 m maximum. The oil of the hydraulic block must be at a temperature of no less than + 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 wear only fitted clothing**, with no loose parts and never wear jackets, open shirts, etc. or jewellery (rings, bracelets, necklaces, etc.); any long hair must be kept up (for example, under a cap); work clothing must be adequate for maintaining the hygienic conditions of the foods 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 combinations must analyse and evaluate every further or greater risk deriving from such an operation, take adequate measures to eliminate them or reduce them as much as possible, comply with the requirements established by Laws, Directives, Standards, Regulations, etc., that may be pertinent (surely including Directive 2006/42/EC) and declare the conformity of the system/unit with the provisions of the same
- If it should be necessary to replace parts of the machine, **use only original replacement parts** by requesting them to Artezen s.r.l.; the latter, in case of use of non-original replacement parts, 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, **exempts the manufacturer from any and all liability to potential injury to persons or 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 lack of 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;
- **installation not in conformity** with the indications provided 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 indications in this manual;
- **not following all or part of the instructions** provided in this manual;
- **arbitrary modifications** of the original characteristics and components of the machine without having obtained prior formal authorisation from the manufacturer;
- **combining/incorporating** with/into the machine of parts and/or equipment, applied or not to the same, **not provided, not envisioned, or not 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, if such an operation should result in giving rise to new or greater risks compared to the machine in itself 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 depending on Artezens.r.l.

1.4 TERMINOLOGY

To improve comprehension of the manual, below are the definitions of some terms and expressions used herein:

OPERATOR: person responsible for using the machine or its parts.
DOUGH 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 the various parts of this manual, the term must be interpreted according to the context of the topic being presented (ex.: production, maintenance, cleaning, etc.).
CLIENT: the physical person or company that has purchased the machine from Artezen s.r.l.
USER: physical person or company that actually uses the machine, especially for production purposes
ARTEZEN, MANUFACTURER, CONSTRUCTOR, MANUFACTURING COMPANY of the machine:
Artezen s.r.l. Via Lago di Tovel,14 36015 Schio (VICENZA) - Italy
PPE: personal protection equipment (for example: gloves, shoes, glasses, 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: an open trunk and cone-shaped container located at the top of the machine destined to contain the dough and connected with the vacuum chamber of the machine. Special hopper: Hopper designed on specifications or particular needs of the buyer.
VACUUM CHAMBER: a compartment where the dough is sucked from the hopper, to which it is connected.
WEIGHT CHAMBER: a compartment where part of the sucked dough is pushed until the chamber is filled; the volume of the chamber can be changed manually or in a motorised way, depending on the version of the machine.
PIECES: portion of the dough made with the machine, the volume of which is determined by the weight chamber.
ROUTINE MAINTENANCE: operations to keep the machine running efficiently and in good condition, that do not require particular preparation or specific professional skills and that can be carried out by non-specialised personnel, provided that the instructions in the manual are followed.
SPECIAL/EXTRAORDINARY MAINTENANCE: operations to keep the machine running efficiency and in good condition that 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 personnel and (where allowed by laws in force) professionally trained, in possession of technical notions and laws for carrying out state-of-the-art works in safety.
DANGER ZONE, any area inside and/or near the machine where the presence of an exposed person constitutes a risk for the safety and health of that person.
EXPOSED PERSON, any person who find him/herself entirely or partially within a danger zone.
ATTENTION: communications of primary importance for personal health and safety; in some cases the importance is more strongly highlighted with 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 with the presence of the symbol.

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

In this manual, all references and/or indications concerning the:
- CE marking,
- CE Declaration of Conformity
- declaration/s of incorporation of any machine,
- directives and regulations issued by institutional bodies of the European Union (Parliament, Council, Commission, etc.) and relative transposing acts of the EU Member States.

• harmonised European laws (EN),

are to be considered valid exclusively for the machines destined to be issued 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 CHARACTERISTICS OF THE MACHINE

2.1 DESCRIPTION AND INTENDED USE

The CALYBRA and CALYBRA L "Volumetric Dough Divider" machines are intended to be used to obtain portions of set volumes, within a range that varies according to the version of the machine, from what are usually considerable amounts of dough. These smaller portions are then processed with other devices to obtain finished products typical of bread and/or pastry bakeries**.**

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 prior adoption of suitable provisions to protect the people present from any risk.

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 service hook-ups for the system in the installation site have not been carried out according to the indications in this manual.

It is prohibited to use the machine in spaces characterised by:

- risk of fire and/or explosion or, in any case, serious incidents, and in proximity to open flames
- high humidity and/or wet
- excess of water vapour
- excess of oil vapour
- excess of dusts
- presence of corrosive substances and/or gas
- adverse climatic conditions

It is prohibited to use the machine under vibrating conditions (not caused by the machine) or abnormal impacts

It is prohibited to use the machine in maritime environments (on board ships, off-shore platforms, etc.).

For reasons of safety, health, and warranties, **it is prohibited to use the machine for products and/or materials and/or in ways other than** those described in this manual **or, in any case, for operations not pertinent to its intended use. Any use other** than those declared **is to be considered incorrect, non-compliant, and not intended by the manufacturer, and therefore potentially dangerous for the safety and health of the people exposed, as well as for animals and/or property.**

The basic components of the machine are (see Figure 1):

ref. 1 support structure (base)

ref. 2 hopper to contain the dough to be divided; the hopper may be equipped with:
- a safety sensor ring ref. 10 and spacer ring ref. 11 or, otherwise
- an interlocking guard (cover) to close the upper opening (see par. 2.2, Figure 3) in both cases in conformity with the provisions of EN 12042:2014

ref. 3 vacuum and dividing unit; vacuum transfers into a chamber (vacuum chamber) a quantity of dough in excess of the piece to be produced, then rotates to separate the mass sucked from the remaining mass in the hopper, detaching the piece expelled by the unit's weight chamber ref. 4, which is refilled immediately.

ref. 4 unit to measure the volume of dough of the piece to be produced; the volume of the inner chamber (weight chamber) can be regulated either manually or in a motorised manner, depending on the version of the machine; when the vacuum unit returns to its starting position, the volume of dough is expelled from a piston system, hence detached and dropped onto the underlying belt by the vacuum unit, which in the meantime carries out another cycle**.**

The combination of ref. 3 and ref. 4 forms the so-called "dividing unit head"

ref. 5 piece output belt; can be frontal (Calybra),like in the example of Figure 1, or to the right or left (Calybra L); the frontal output belt (mod. Calybra) can be either single or double (see also par. 2.2)

ref. 6 control panel

ref. 7 hydraulic pumping unit (central) for the creation of hydraulic energy necessary to move the various parts of the machine.

ref. 8 flour distributing device (flour duster); this is not part of the basic machine (optional)

ref. 9 box containing the electrical panel.

Figure 1 – Main parts of the machine

2.2 MODELS, VERSIONS AND CHARACTERISTICS OF THE MACHINE

Model		Productivity (*)	Pieces min ÷ max	n° rows	Installed power (400V-50Hz) (see Note)	Mass (with wooden cage)
		pz/h	gr.	-	kW	kg
	Calybra 0.2	1300	25 ÷ 230	1	2.6	535 (635)
	Calybra 1.0	1300	50 ÷ 1000	1	2.6	535 (635)
	Calybra 1.5	1300	100 ÷ 1500	1	2.6	535 (635)
		2600	50 ÷ 680	2		
	Calybra 2.5	1300	200 ÷ 2800	1	2.6	535 (635)
		2600	100 ÷ 1200	2		
	Calybra 0.2 L (Lh-Rh)	1300	25 ÷ 230	1	3	588 (708)
	Calybra 1.0 L (Lh-Rh)	1300	50 ÷ 1000	1	3	588 (708)
	Calybra 1.5 L (Lh-Rh)	1300	100 ÷ 1500	1	3	588 (708)
		2600	50 ÷ 680	2		
	Calybra 2.5 L (Lh-Rh)	1300	200 ÷ 2800	1	3	588 (708)
		2600	100 ÷ 1200	2		
(*)with the “High capacity pack” optional, productivity increases up to1550 for one row and 3100 pcs/h for two rows						

Table 1

LEGEND
Output belt side: Rh = right-hand (as in Figure Table 1) Lh = left-hand (side opposite in relation to Figure Table 1)
Note: The power values indicated in Table 1 are to be considered merely indicative; for detailed information, consult the wiring diagram attached, which is the only document to be referred to for data and information on the electrical system. More information can be found in Table 4, reiterating what was just indicated above concerning the wiring diagram.

Any of the following hoppers (optional) may be assembled on the hoppers listed above:

Conical hopper with sensor ring	Load capacity	"A1"	"A2"	"B1"	"B2"
	kg	cm			
	80	59	113	53	174
	135	82	126	53	174
	160	82	126	61	182
	200	102	146	54	175
	280	102	146	72	193

Table 2

For the meaning of A1 – A2 – B1 – B2 see Figure 2

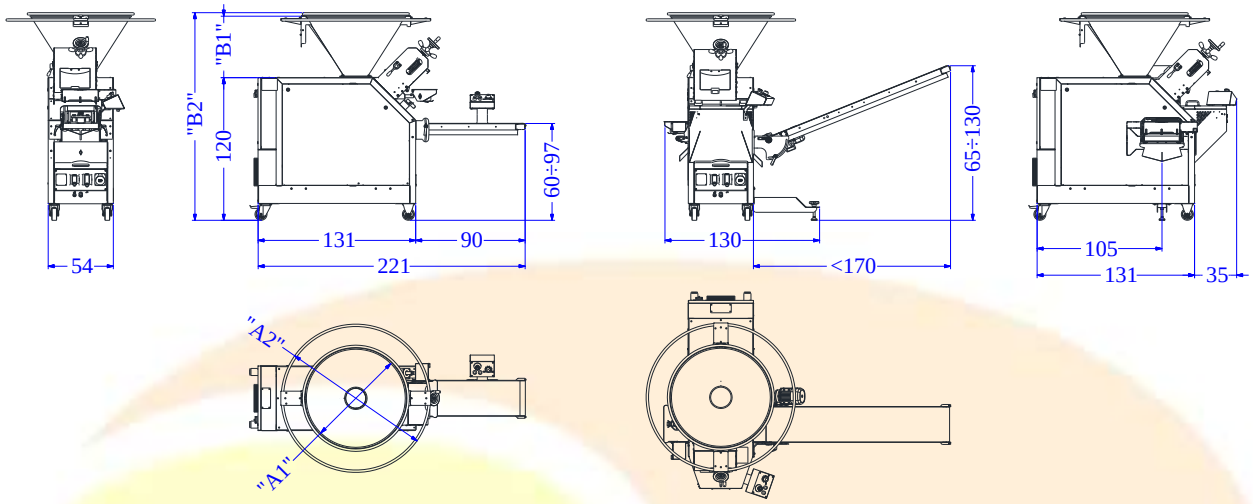


Figure 2 - Overall dimensions of the machine with hopper equipped with sensor ring and spacer ring (*)

Conical hopper with interlocked cover	Load capacity	A3	A4	B3	B4	B5	B6
	kg	cm					
	80	59	59	58	177	173	240
	-	-	-	-	-	-	-
	-	-	-	-	-	-	-
	-	-	-	-	-	-	-
	-	-	-	-	-	-	-

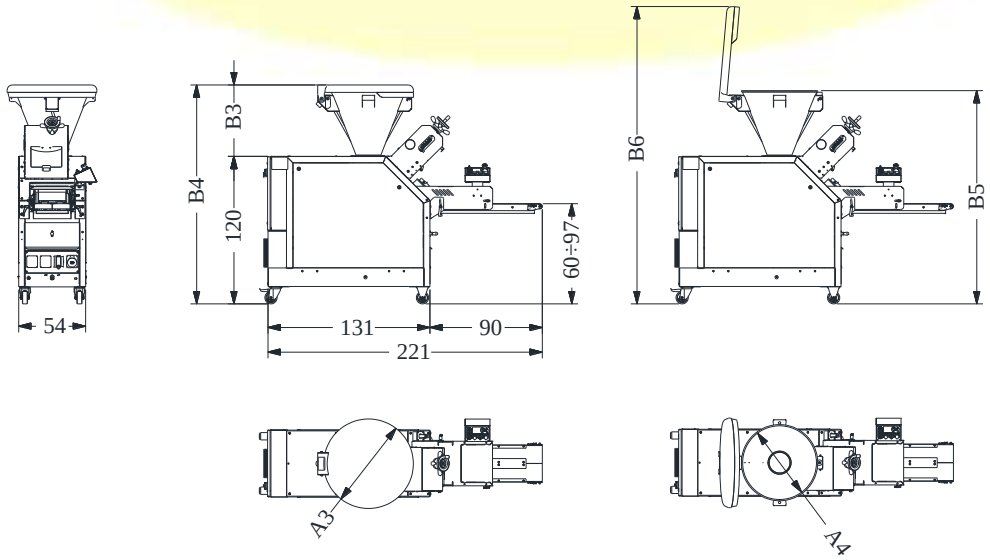


Figure 3 – Overall dimensions of the machine with hopper equipped with interlocked cover (*)

(*)The encumbrance measures covered of the hopper or that include the hopper may vary in case of supply of special hopper (see layout and confirmation of a customer order).

The configuration of the machine is given by the combination of the version and the optional, as indicated in

Table 3.

VERSIONS	CALYBRA	CALYBRA L
0.2	✓	✓
1.0	✓	✓
1.5	✓	✓
2.5	✓	✓
Painted structure (n.4 swivelling wheels, of which 2 with brake)	✓	✓
Stainless steel structure (n.4 swivelling wheels, all with brake)	✓	✓
Memory Pack (motorised weight chamber)	✓	✓
Touch screen (manual weight chamber)	✓	✓
Electro-mechanical (manual weight chamber)	✓	✓
Hopper with safety sensor ring and spacer ring	✓	✓
Hopper with interlocked cover	✓	✓
Double output belt	✓	×
Single output belt	✓	✓
Internal V-belt	✓	✓
Internal horizontal belt	×	✓
OPTIONALS		
Long-loaf pre-moulders	✓	✓
Roller Unit	×	✓
Flour duster	✓	✓
Piece detachment roller	✓	✓
Removable scraper	✓	✓
Machine height reduction kit	✓	✓
Rounding system	✓	✓
Centering partitions	✓	✓
NSF H1 oil	✓	✓

Table 3

LEGEND

✓ potential version of the machine, but alternative to others in the categories of the same colour; if this is possible for only some machine sizes, this is specified in the paragraph where this topic is explained.

× this version of the machine is not available

Electrical power supply and motor power information		CALYBRA	CALYBRA L
Base hydraulic block motor	kW	1.5	1.5
"High Capacity Pack" hydraulic block motor	kW	2.2	2.2
Motor of single output belt	kW	0.37	0.37
Motor of double output belt	kW	0.74	-
Motor of internal V-belt	kW	-	0.14
Motor of internal horizontal belt	kW	-	0.37
Motor of piece detachment roller	kW	0.025	0.025
Motor of flour duster	kW	0.015	0.015
Motor of Memory Pack (motorised weight chamber)	kW	0.03	0.03
Dividing rollers unit motor	kW	-	0.09
Long loaf pre-moulders motor	kW	0.92	0.92
Total installed power	kW	See **Note**	See **Note**
Electrical power supply	V	400	
Electrical power frequency	Hz	50	
Number of power supply electrical phases	-	L1 + L2 + L3 + N + PE	

Table 4

Note: The values of power in Table 4 refer to three-phase 400 V, 50 Hz and could undergo variations over time. For information and electrical data, refer only to the wiring diagram (which can be found in the inner pocket of the electrical panel of the brand new machine). The total installed power (sum of motor powers) is indicated on the machine plate (see par. 2.5).

Other data of the hydraulic block			Base	High Capacity Pack
Maximum operating pressure		bar	72	52
Tank capacity		litres	14	50
Oil	standard		ANTARES SYNT	PARATER S46
	upon request		NSF H1 (NILS)	

Table 5

2.3 MAIN SWITCH

Each machine is equipped with a main switch as illustrated in Figure 4 ; this can be blocked with a lock in the O – OFF position.

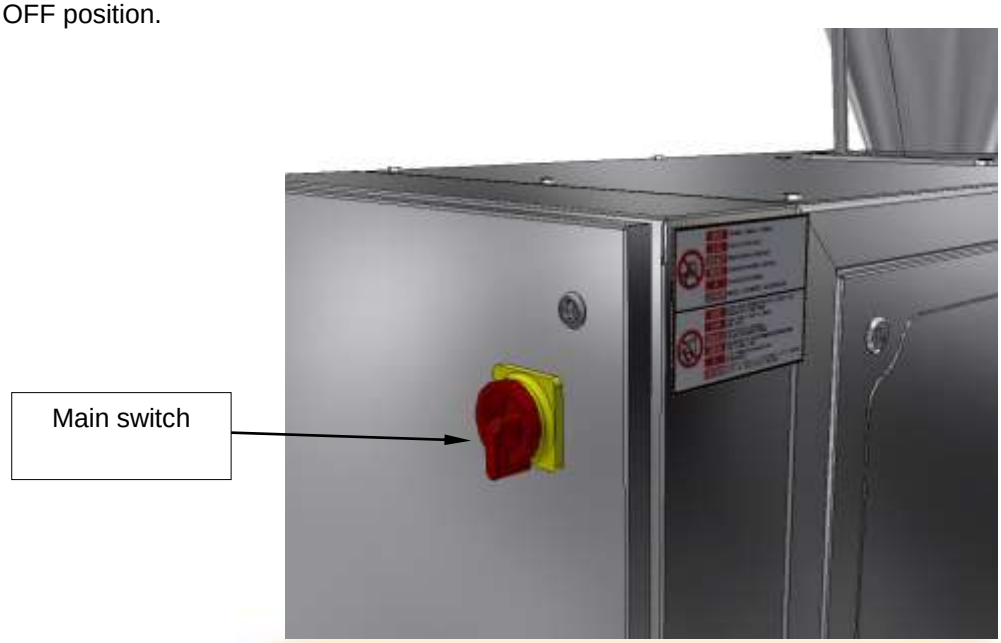


Figure 4 – Main switch

2.4 CONTROL PANEL

The machine can be equipped with one of the following control panels:

1) Electro-mechanical (see par. 2.4.1)
2) Touch Screen (see par. 2.4.2)
3) Memory pack (see par. 2.4.3)

IMPORTANT!
The machine may also have a supplementary shut-down control panel; this panel has only the "STOP" and "EMERGENCY STOP" buttons.

2.4.1 ELECTRO-MECHANICAL CONTROL PANEL

The electro-mechanical control panel comprises the following devices (see Figure 5)

ref. **1** **START** button (white): the start command is given only if the machine is enabled to function (already reset with ref. 3 button)

ref. **2** **STOP** button (grey: pressing this button shuts down the portioner at the end of the current dividing cycle and the stop of the output belt after a certain time to allow the products that have already been divided to exit

ref. **3** (blue) **RESET** button, to reset the standard operating conditions of the machine (for example, after having turned the machine ON or removed the cause of the stop, after an emergency stop due to the intervention of a safety device or of the emergency button ref. 4);

ref. **4** **EMERGENCY STOP** button (red mushroom button on a bright yellow background ref. 4.1; depending on the type of alarm, this varies the frequency of the blinking light (see par. 0); press it to shut down every ongoing procedure and stop all machine moving parts; in this way the electrical and hydraulic power supplies are disconnected and every dangerous parts of the machine are stopped, in particular the actuators; in order to use the start command, solve the problem that determined the button triggering, then reset the button (turning the head in the direction indicated on the button itself), and restore the normal operating conditions by pressing the RESET button ref. 3;

ref. **5** potentiometer for regulating the operating speed of the machine (productivity)

ref. **6** (only CALYBRA, in the "Double output belt" version) Potentiometer for regulating the speed of the two belts in case of production at 2 pieces/cycle; depending on the position of the production selection lever at 1 or 2 pieces/cycle (this is lever ref. 1 Figure 21), the following conditions can be obtained:

- lever positioned on 1 piece; both belts move at the same speed:
- lever positioned on 2 pieces: turn the potentiometer to vary the left belt speed (left in relation to product output) and hence the distance between the two pieces at the end of the output belts;

ref. **7** (optional) device for counting the pieces produced (piece counter) and for automatically shutting down the machine once the set number of pieces has been reached; in turn, this includes:

ref. **8** a 4-digit digital display: showing the number of pieces produced (upon reaching the number set ref. 9, the machine shuts down automatically)
ref. **9** a 4-digit digital display: shows the number of pieces set. Once this number is reached, the machine shuts down
ref. **10** buttons to set the number of pieces after which the machine will shut down; using the ▲ (up) and ▼ (down) keys increases and reduces the corresponding number ref. 9 to be set.
ref. **11** RESET button; press here to reset the counter back to “0000”
ref. **12** LOCK button; press to block the counter at the number set; to unlock the counter, press the same button again

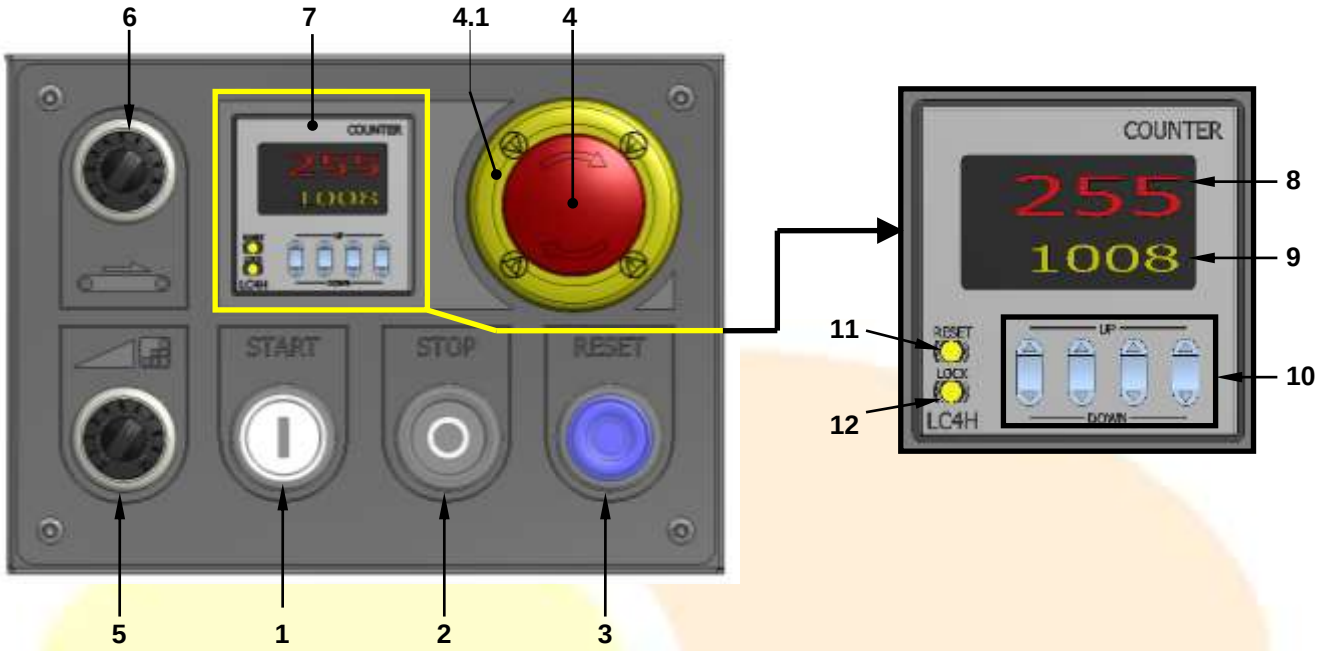


Figure 5 - Electro-mechanical control panel

2.4.2 “TOUCH SCREEN” CONTROL PANEL

The “Touch Screen” control panel comprises the following devices (See Figure 6):
ref. **1** touch screen
ref. **3** (blue) **RESET** button for resetting the normal conditions of the machine (for example, after having turned on the machine or removed the cause of the shutdown, after a shutdown due to the intervention of a safety device or of the the emergency button ref. 4)
ref. **4 EMERGENCY STOP** button (red mushroom button sliding on a yellow rod); press it to shut down every ongoing procedure and stop all machine moving parts; in this way the electrical and hydraulic power supplies are disconnected and every dangerous parts of the machine are stopped, in particular the actuators; in order to use the start command, solve the problem that determined the button triggering, then reset the button (turning the head in the direction indicated on the button itself), and restore the normal operating conditions by pressing the RESET button ref. 3

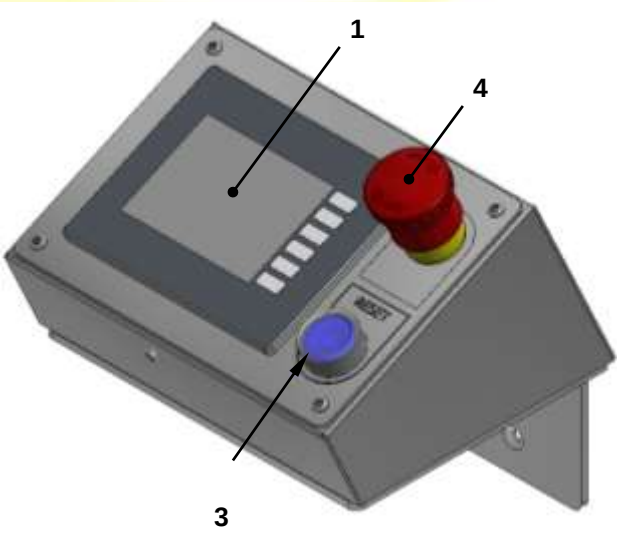


Figure 6 - “Touch Screen” Control Panel

The Touch Screen (ref. 1 Figure 6) displays the following fields (see Figure 7)
ref. **1** START field; by touching it, the machine is started and the icon transforms into STOP ref. 2
ref. **2** field STOP; by touching it, the machine stops operating and the icon transforms into START ref. 1
ref. **3** field that displays the counting of the pieces: the output belt is equipped with a sensor to detect the pieces exiting the machine (the icon appears only if the “piece counter” function is activated through the field ref. 7)

ref. **4** “cleaning” field: stops the weight chamber pistons in the upper position so as to facilitate the removal of residues

ref. **5** (only CALYBRA, version with “Double output belt”) field for the regulation of the speed of both belts in case of productions of 2 pieces/cycle; depending on the position of the production selection lever on 1 or 2 pieces/cycle (the lever ref. 1 Figure 21), the following conditions are obtained:
1 Piece: the pos.5 icon disappears because both belts move at the same speed:
2 pieces: the pos.4 icon appears and allows the variation of the left belt speed (looking from the product output side) and so of the distance between the two pieces at the end of the output belt;

ref. **6** “productivity” field: enables the variation of production speed (number of pieces/hour) of the machine;

ref. **7** “enabling piece counter” field; by touching this field the ref. 3 and ref. 8 icons of the piece counter appear;

ref. **8** “piece counter” field; shows the number of pieces set; the machine will stop after this number of pieces has been reached.

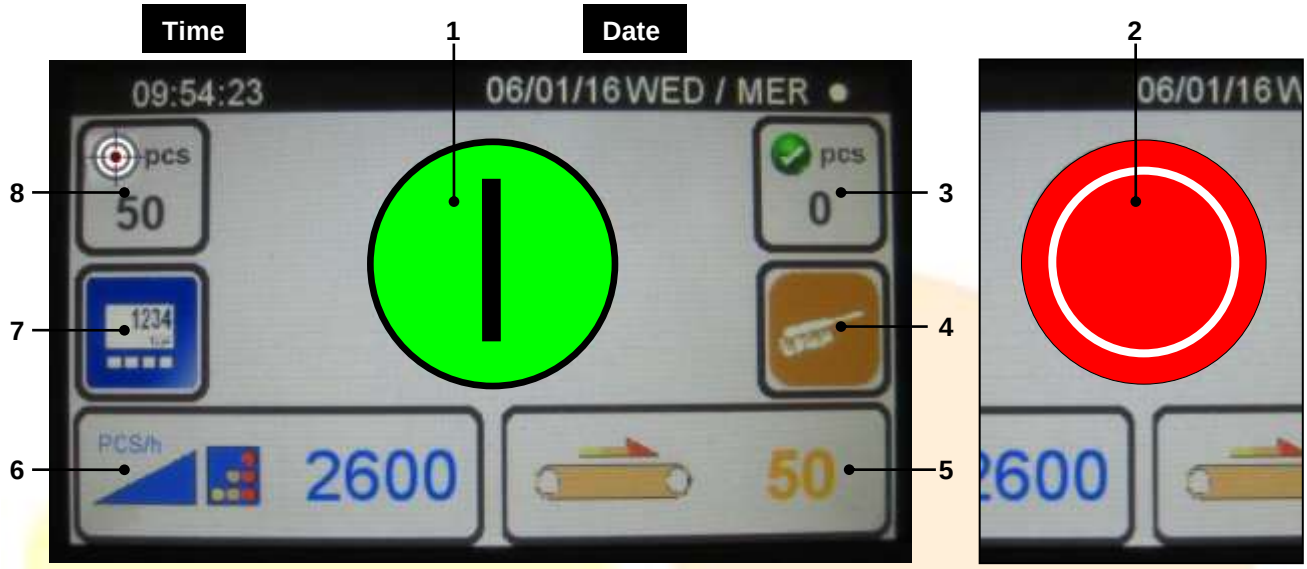


Figure 7 - “Touch Screen” Control Panel

2.4.3 “MEMORY PACK” CONTROL PANEL

For the instructions on how to use the “Memory Pack” control panel, shown in Figure 8/A, consult the attached “Appendix Memory Pack” manual. In this version, the weight chamber appears as in detail B, where for greater clarity the casing is represented as being transparent; obviously the manual adjustment flywheel is missing (ref. 1 Figure 24) since the adjustment is done using a dedicated motor.
The functions of ref. 3 and ref. 4 devices are the same as the devices shown Figure 5 and Figure 6

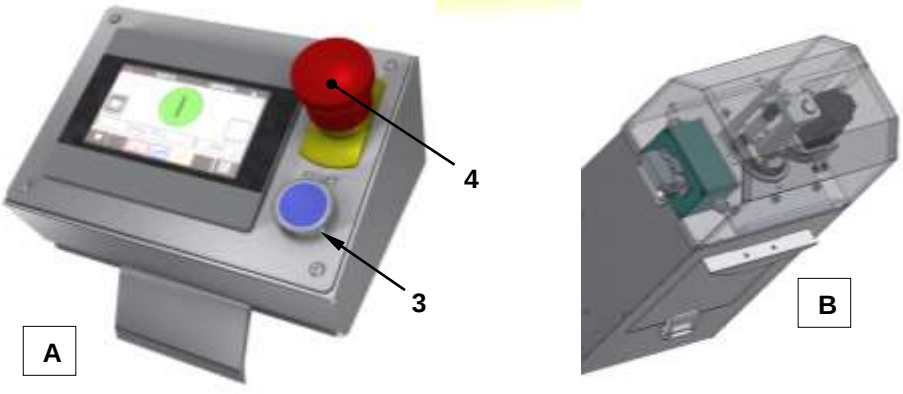


Figure 8 - “Memory Pack” Control Panel

2.4.4 «V» BELT RELATIVE SPEED CONTROL DEVICE

In the configuration with “V-belts”, the control panel is equipped with a potentiometer on the side, as shown in Figure 9,) that makes it possible to vary the speed of one of the two belts and, therefore, the relative speed between the belts. By moving at different speeds, the belts tend to roll on themselves the pieces of dough moving towards exit, giving them a partial rounding effect (pre-rounding); this can be very useful for some types of dough before sending the pieces into the next phase of production.

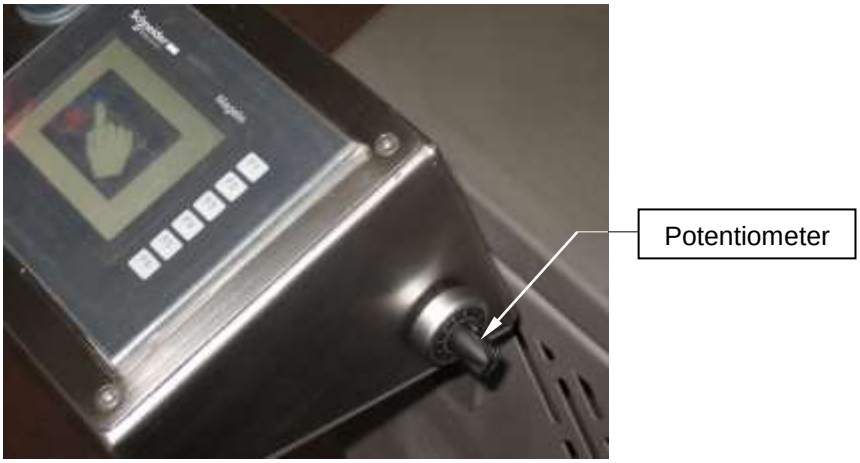


Figure 9 - «V»-belt relative speed potentiometer

2.5 IDENTIFICATION PLATE

The plate shown in Figure 10, which bears the indelible EC 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 point shown in the same figure.

Figure 10 – Identification plate and its position

3 INSTALLATION AND USE

3.1 INSTALLATION SITE REQUIREMENTS

The place where the machine will be kept and/or used must conform with current laws in force and ensure adequate protection from impacts, damage, deterioration and atmospheric agents. The access must have the dimensions and characteristics to enable easy and safe passage of the machine without people or the machine itself being put at risk. Flooring, support structures, and walls must be in conformity with current building codes and laws in force, also in consideration of the total load to bear and relative safety coefficient; they must be easy to clean, disinfect, and disinfest. The floor must be level, not sloping, compact, and with no holes or unevenness. The electrical system and the earth of the site must conform to current building codes and laws in force, as well as constructed, maintained and, if required by law, controlled by authorised and professionally qualified technicians capable of issuing relative declarations of conformity. The upstream power supply panel must have suitable protection devices against overloads and 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 maritime transport) 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 its movement during transport; the load must also be tied from 2/3 of the total height of the wood and above to points on the means of transport that are sufficiently resistant to prevent overturning.
For handling the load packaged in the wooden crate, use a forklift truck with a capacity adequate for the mass (see par. 2.2, Table 1); insert the lift arms inside the wood crossbars of the lower ends and as close as possible to them, so as to prevent unwanted movement to the side; **the arms of the forklift must protrude at least 200 mm from the other side**.
Remove the walls of the wooden crate (it is sufficient to remove the nails from the boards, taking care with the protruding nails) and free the machine from its wrapping (plastic strip or barrier bag). Separate materials by type (plastic, wood, etc.) and bring them to the appropriate places accessible only to authorised persons, while awaiting for disposal by specialised companies, as these materials must be disposed of in conformity with any pertinent laws in force (even the wooden base must be treated in the same way, once the machine has been removed from on top of it).
In Italy and many other States, in particular the European Union, the disposal of waste according to precise regulations and with respect for the environment are obligations unequivocally established by laws in force.
Check that the machine and all its parts are in good condition; in case of doubt, contact the manufacturer. With reference to Figure 11, to release the machine from the wooden base where it is fixed:

- **wear protective gloves, helmet, steel-capped safety shoes with anti-perforation soles**
- use pliers to hold the threaded rod firmly ref. 1 and then use a wrench to loosen the nut ref. 2; do the same on the other side; at this point the machine is free from the wooden base ref. 3
- pull the threaded rod ref.1 upward and save the nut and washer ref. 2
- holding the crossbar ref. 5 with one hand, remove both the screws from both sides ref. 4; finally, remove the crossbar ref.5. It is now possible to move the machine from the wooden base ref. 3 as indicated below.

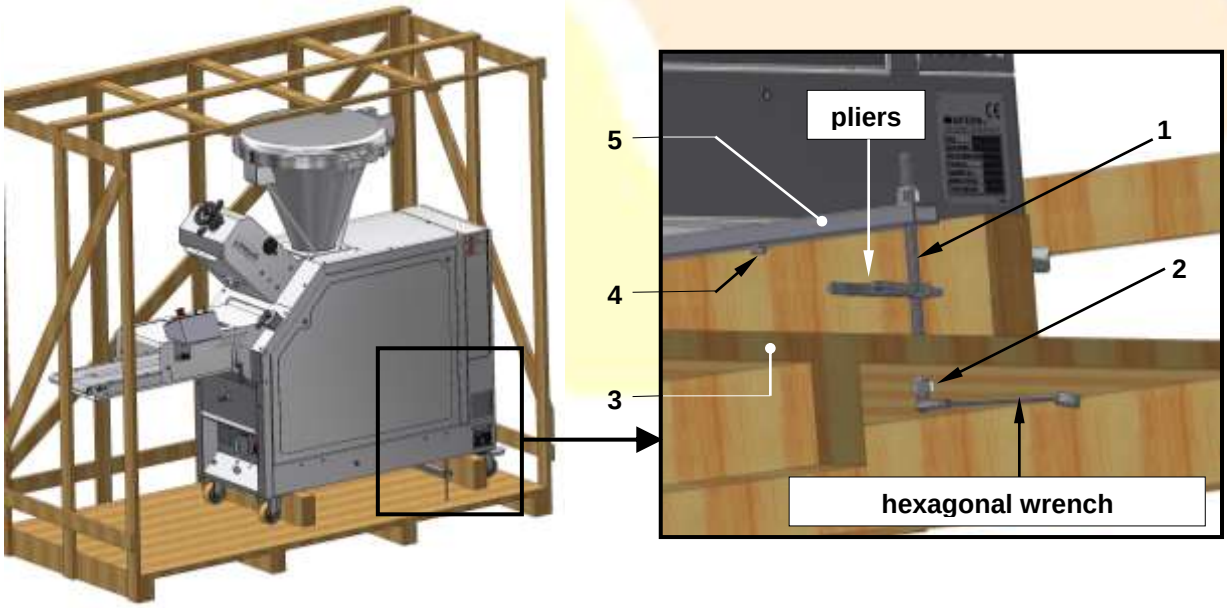
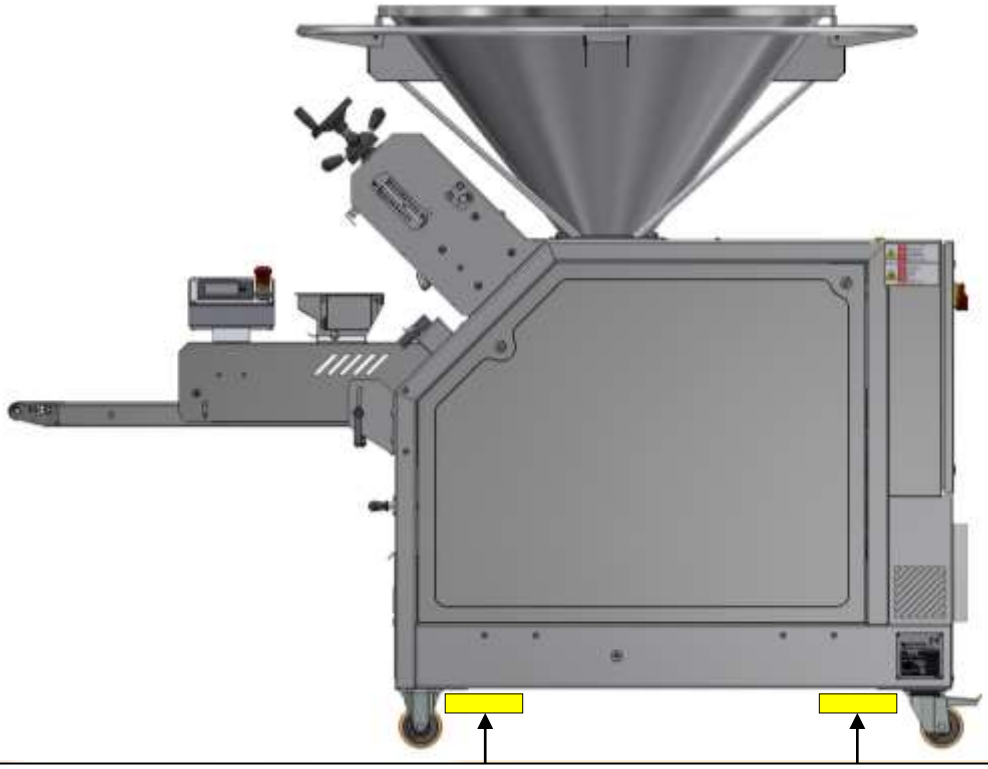


Figure 11 – How to release the machine from the wooden base of the packaging

To move the machine (for example, to place it on the ground after having released it from the base of the crate), insert the arms of the forklift truck under a side of the machine (in correspondence to the side opposite the lateral output belt if it is a mod. Calybra L) inside the resting points (wheels) and as close as possible to the same, as illustrated in Figure 12. **The arms of the forklift must protrude at least 200 mm from the other side.**



Points of insertion of the forklift arms; they must protrude at least 200 mm on the other side.

Figure 12 – Lifting and handling the machine with the forklift

ATTENTION
Never use lifting systems and/or devices other than those described herein.
When moving 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 ASSEMBLING/DISSASEMBLING THE SPACER RING

This paragraph does not apply to machines equipped with a hopper with interlocking cover, but only to those with a hopper with a sensor ring.
For packaging reasons, the machine is shipped with the spacer ring disassembled.
It is absolutely prohibited to connect the machine to any power supply without first having assembled the spacer ring and controlled that it has been fixed correctly with the frequency indicated here (see par. 5.2.3, point 4)**; this condition is absolutely necessary for ensuring an adequate level of safety when using the machine and containing risks related to the safety of exposed persons within acceptable limits** (as required by harmonised standard EN 12042:2014)**.**
The operation must be carried out with the power supply disconnected (always leave the plug in a highly visible location) by specialised technicians expert in mechanical assembly.
For assembling the spacer ring, the contemporary intervention of a team of two operators is necessary; the operators must wear **steel-capped safety shoes and anti-abrasion protective gloves**.

The tools necessary for this operation are easily found on the market, as listed below:

- Nr.1 Allen wrench 2.5.
- Nr.1 Allen wrench 4.
- Nr.1 Wrench 10.

With reference to Figure 13, inside the packaging there are:
- nr. 1 spacer ring ref.1
- nr. 1 set of bolts and nuts ref.2 contained in a bag hanging from the main switch of the machine.

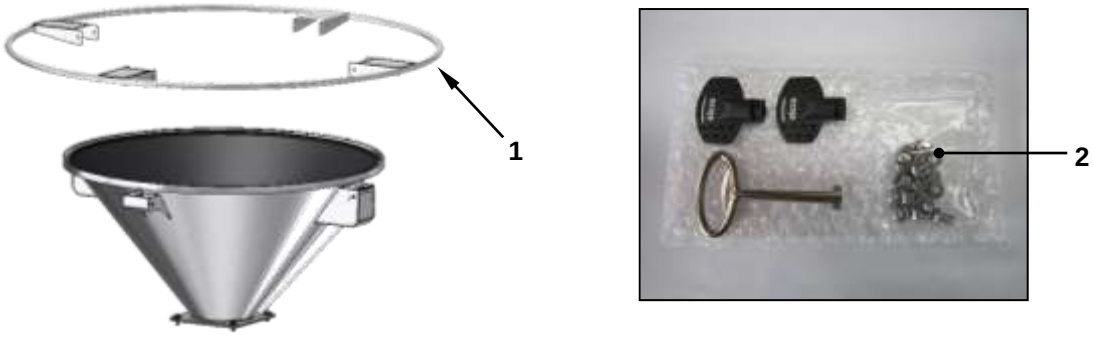
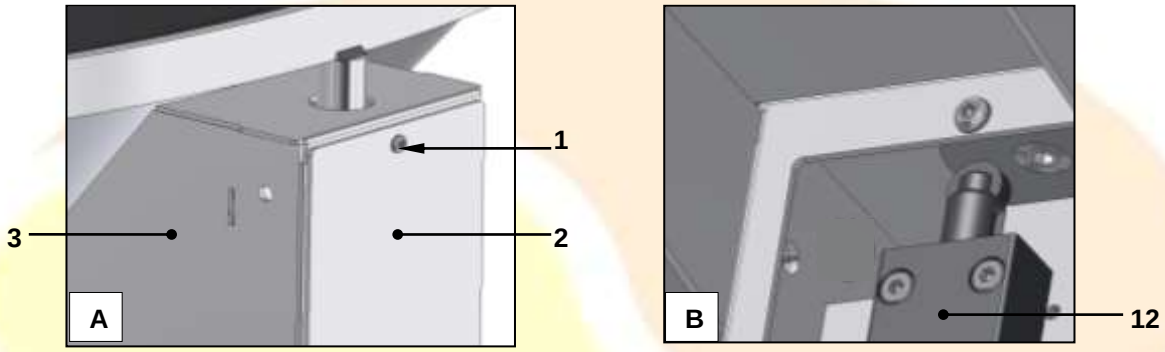


Figure 13 – Spacer ring assembly kit

With reference to Figure 14, for the assembly of the ring, proceed as follows:

1) Remove the screw ref. 1 and remove the cover ref. 2 of each of the two boxes ref. 3 inside of which there are the micro-switches ref. 12 associated with the safety sensor ring ref. 5 (Figure A - B)



Beginning Figure 14 –

2) Slip the spacer ring ref. 6 from the top down, tipping and shifting it (arrow ❶) to avoid the boxes ref. 3 and the supports ref. 4 protruding from the hopper and the sensor ring ref. 5 (Figure C); take care not to damage the parts.
3) Once the ring is in place, turn it until the brackets ref. 7 are aligned with the boxes ref. 3 and the supports ref. 4 (arrows ❷); then lift it (arrows ❸) so that the brackets ref. 7 fit onto the sides of the boxes ref. 3 and the supports ref. 4 (Figure D)
4) Align the holes ref. 8 of the brackets ref. 7 with the holes ref. 9 of the boxes ref. 3 and the supports ref. 4; insert the screws in the aligned holes ref. 10, screw the nuts to the opposite sides ref. 11 with the relative washers (Figure D - E); block everything with the wrench indicated at the beginning of the paragraph. Check thoroughly and several times that the screws and corresponding nuts have been tightened correctly.
5) Reposition the n. 2 covers ref. 2 on the boxes ref. 3 and fix them with the screws ref. 1 (Figure F).
6) Finally, check that the ring is firmly in place and fixed to the hopper; when attempting to move it, there should be no anomalous slack or shifting.

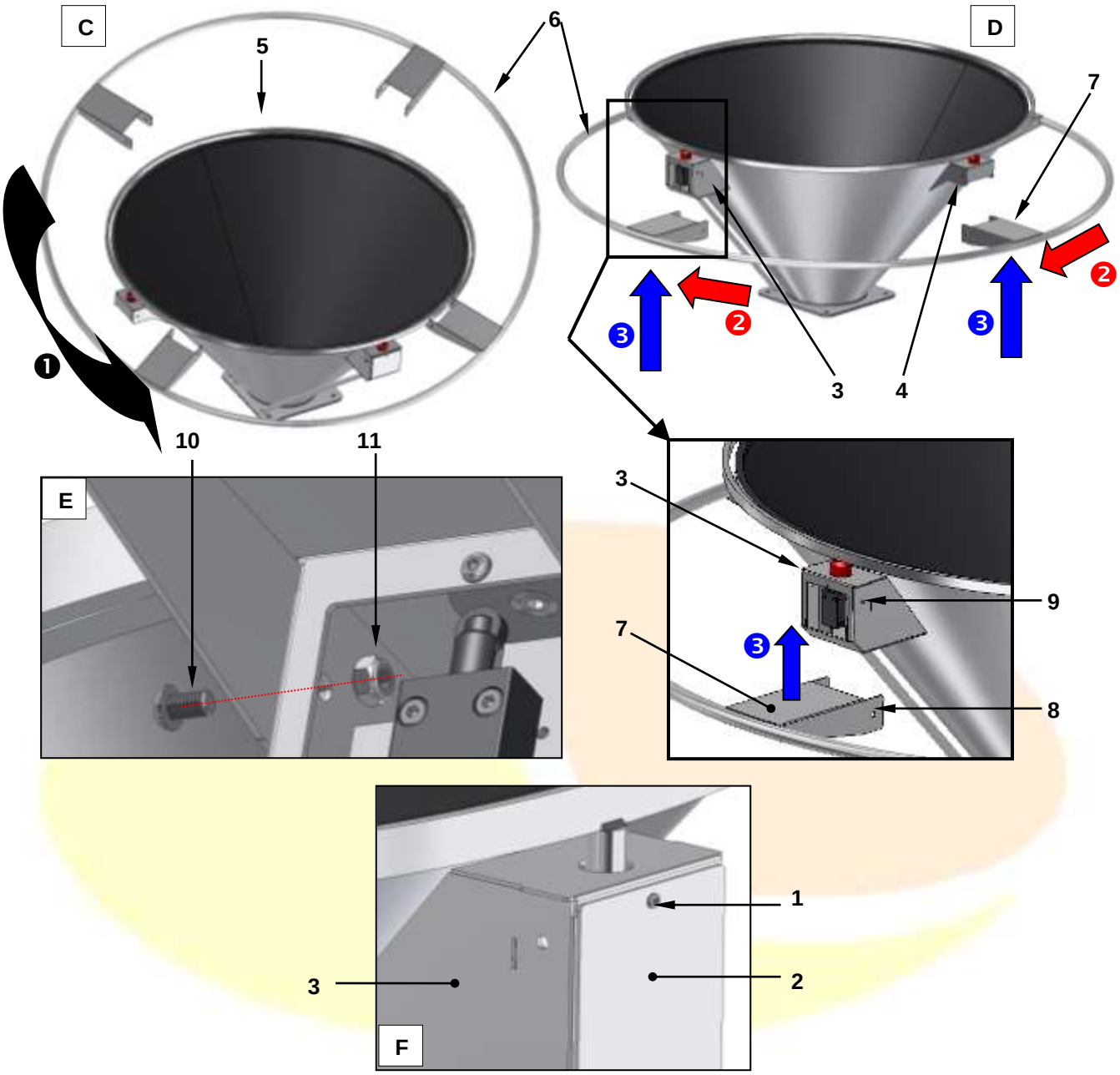
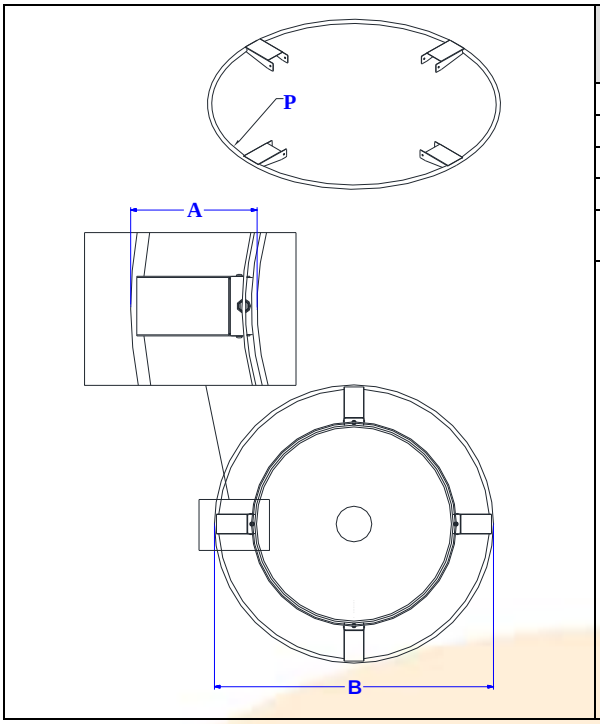


Figure 14 – Spacer ring assembly sequence

In Table 6 there are the measurements to be controlled when verifying the correct assembly of the ring.
If the measurements taken should not correspond exactly to those indicated in the table, contact the manufacturer immediately.
ATTENTION: It is obligatory to install the spacer ring in order to comply with current safety laws and regulations. The omission of this device may compromise the safety of the machine users.



HOPPER	Weight P N (kg)	A cm	B cm
80 Kg	26 (2.6)	26	113
135 Kg	65 (6.5)	22	126
160 Kg	65 (6.5)	22	126
200 kg	70 (7)	22	146
280 kg	70 (7)	22	146

Table 6

3.4 ASSEMBLY/DISASSEMBLY OF THE FLOUR DUSTER

Before beginning these operations:
- wear steel-capped shoes, thick (on the back) or padded anti-abrasion gloves, and a dust mask
- turn the main switch in Figure 4 to O-OFF and disconnect the electric power supply plug.

The mass of the flour duster is approximately 8 kg, mostly concentrated on the side of the motor ref. 11 Figure 15.
With reference to Figure 15, which illustrates a CALYBRA model:
to assemble the flour duster ref. 1
- insert the four corners ref. 2 at the bottom of the flour duster into the slots at 90° ref. 3 present on the upper corners of the metal guard ref. 4 above the output belt (figures A - B - C);
- insert the multipolar plug ref. 5 into the outlet ref. 6 and block it with the lever ref. 7 (figure D).

Figure E illustrates the flour duster assembled correctly.
IMPORTANT: the flour duster is equipped with its own START / STOP command (ref.8); the operator must therefore turn it on or off as needed.
The flour will fall onto the product through the slots ref. 9; these slots also prevent access to dangerous parts of the machine when the flour duster is removed.
to disassemble the flour duster ref. 1
- remove the multi-polar plug ref.5 from the outlet ref. 6, after having released the lever ref. 7
- Lift the flour duster ref. 1 and extract it from the slots ref. 3, then remove it entirely and put it in a safe place.

ATTENTION! The flour duster may become "stuck", or be difficult to remove (especially if it has not been disassembled and reassembled for some time) **and then free itself suddenly with the operator risking hitting his hands against the walls ref. 10 and bruising and/or scraping them; for this reason, protective gloves must be sufficiently thick or padded on top while the fingers must also offer sufficient sensitivity and considerable freedom of movement.**
For the CALYBRA L model, the procedure is exactly the same.

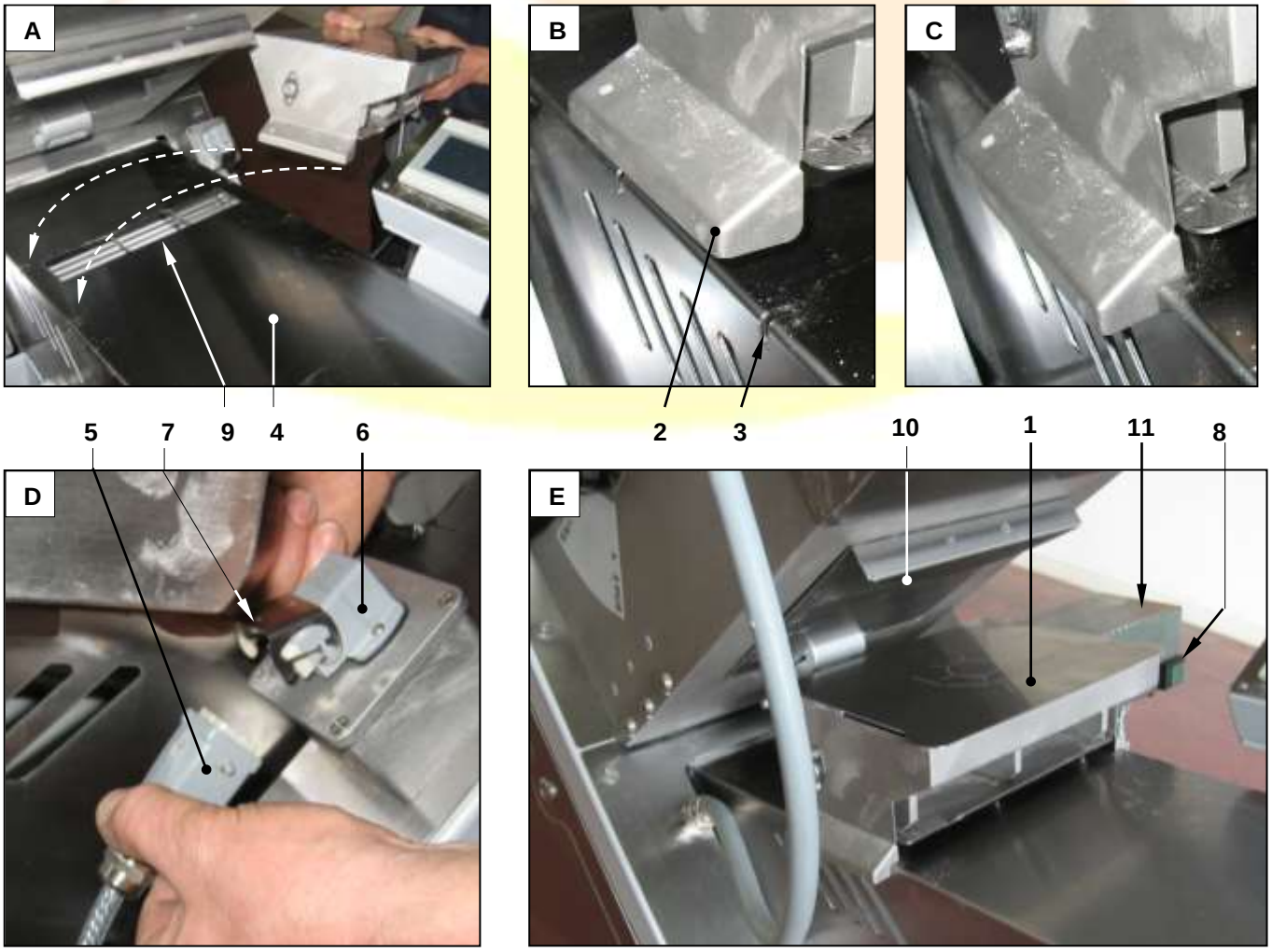


Figure 15 – Assembling/Disassembling the flour duster

3.5 ASSEMBLY/DISASSEMBLY OF THE V-BELTS (CALYBRA L - VERSION "INTERNAL V-BELT")

The operations described in this paragraph must be carried out only when the **machine is disconnected from the power supply** (plug disconnected from the outlet and kept clearly in sight to ensure the operator that there is no electrical current reaching the machine). To facilitate the operation, instructions on how to disassemble and assemble one of the two belts is provided; for the other, the procedure is the same. The mass of each belt is 15 kg. **Wear protective gloves, helmet, steel-capped safety shoes with non-slip soles.**

The system consists of two independently motorised belts installed at an angle from each other so that they are sloping slightly downward for the products exiting the machine.

With reference to Figure 16, for disassembling the belts ref. 1:

1. If present (optional) turn the handle ref. 2 (Figure B) that moves the dividing rollers all the way back.
2. Disassemble the side casing ref. 3 on the side opposite the product output, after having opened the locks with the special keys (par. 4.4.4)
3. Disconnect both connectors ref. 4 (completely unscrew the locknut that fixes them and remove them)
4. Grab the handle ref. 5, push the structure ref. 6 of the belt a bit forward to free the pin ref. 7 from the housing ref. 8, then, always leaving it resting downward, turn it slightly toward the inside of the «V» until it is in a vertical position.
5. Always gripping the handle ref. 5, pull out the belt, supporting it underneath with your other hand.

Put it down in a safe place and safe position, so that it cannot be damaged and does not risk falling **ATTENTON! Don't start up the machine under these conditions; without the casing ref. 3: the dangerous components of the machine would be accessible with consequential risks for personal safety.**

To separate the belt from the structure, see the instructions in par. 4.4.3.

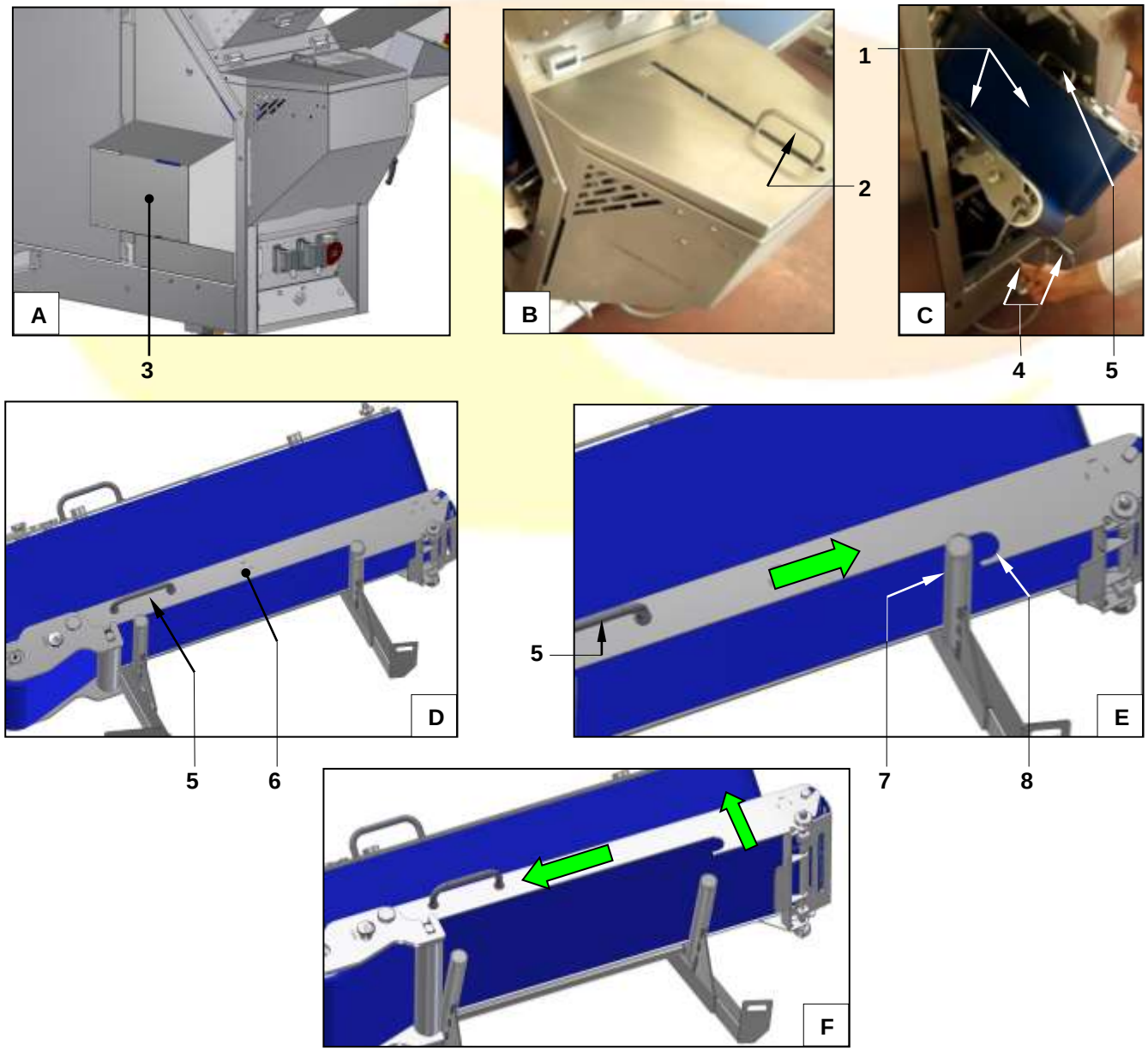


Figure 16 – Disassembling the «V» belts

With reference to Figure 17, to **assemble** the belts ref. 1:

1. If present (optional), turn the handle ref. 2 (Figure B) that moves the dividing rollers all the way back.
2. Disassemble the side casing ref. 3 on the side opposite the product output, after having removed the screws that hold it locked into place.
3. Grab the handle ref. 5 and, supporting it from underneath with your other hand, insert the belt ref. 1 so that the structure ref. 6 remains inside (considering the «V» configuration) of the pins ref. 7 and 9, taking care that the housing ref. 8 remains beyond the pin ref. 7 (Figure C).
4. Letting it rest downward, turn the structure slightly towards the outside of the «V» (Figure D) until it is resting against the pins ref. 7 and ref. 9.
5. Pull the structure of the belt backward ref. 6 so that the pin ref. 7 enters the housing completely ref. 8 (Figure E); the weight of the belt itself will hold it in position.
6. Connect both connectors ref.4: fit them together and block them by screwing the locknuts as tightly as possible (Figure F)
7. Reassemble the casing ref. 3 and tighten all the screws (Figure A).

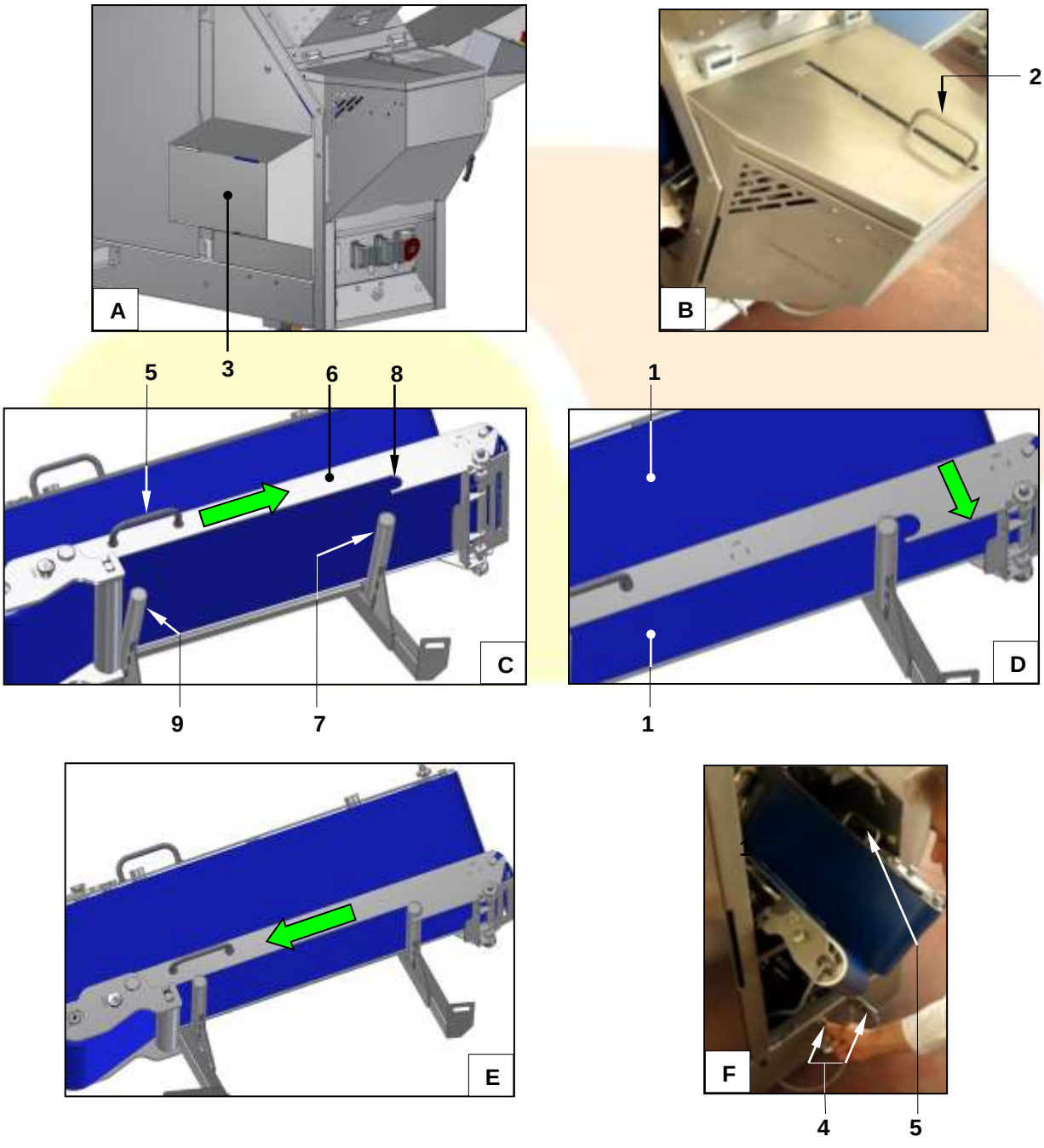


Figure 17 – Assembling the «V» belts

3.6 ELECTRICAL HOOK-UP

Any electrical operation concerning the machine and/or the workplace must be carried out by specialised and expert technicians who have the technical and regulatory qualifications to complete the tasks at hand professionally and safely, in conformity with current laws and codes in force; they must issue the declarations of conformity required by law.

Upon the delivery of the machine and, in any case, before proceeding with the electrical hook-up, **verify that the power supply voltage is the same as the one declared by the manufacturer** on the plate (par. 2.5) and in the wiring diagram.

The machine is equipped with an electrical cable with a five-pin plug 16 A at the end (L1+L2+L3+N+PE). The electrical system where the machine is to be used must have characteristics suitable for the maximum absorption of the load. The user must arrange for the hook-up, including an outlet that conforms to legal and regulatory provisions and supplied with power by conductors of an adequate diameter based on the information provided in this manual and in the wiring diagram.

Make use of the special earth, the efficiency of which must be checked periodically; do not connect to gas or water pipes or other metallic parts in general. Keep the power supply cable far from hot and/or moving parts; it must not obstruct the passage of persons, animals or things. The plug must be easily accessible and in plain sight from any position the operator might find himself, even if only for a short time.

3.7 (HOUSING FOR) AUXILIARY CONNECTION DEVICES

The lower front part of the machine is equipped and/or configured for the following auxiliary outlets (Figure 18):

ref. 1 outlet 400 V five-pin (three-phase + neutral + earth) or 230 V three-pin (one phase + earth) for potential power supplies of other machines, devices, etc. downstream; the power load must not exceed 2 kW and the absorbed current must not exceed 5 A; The power supply of the outlet is subordinate to the **position I - ON** of the mains switch of Figure 4; the device being powered must also be equipped with **all the safety devices necessary to eliminate or minimise all risks** typical of the device itself (the outlet in question is only a source of auxiliary electrical power and no start or stop command, even in case of an emergency, can be transmitted between the two devices via this outlet). For combining, incorporating, etc. of/with/in other machines, systems, etc., see the information provided in par. 1.3, points 8 and 9.

ref. 2 point of connection of the control panel cable as explained in par. 2.4

ref. 3 place reserved for connection cable of an optional “Weight System” mod. Lybra (constructed by Artezen s.r.l.)

ref. 4 available for other applications

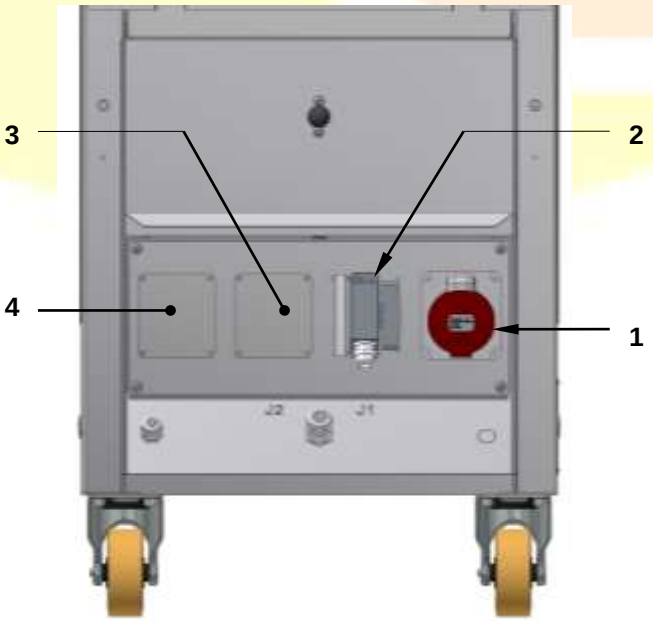


Figure 18 - (Housing for) Electrical connection auxiliary devices

3.8 FIRST START-UP AND CONTROL OF CORRECT MOTOR ROTATION DIRECTION

For the first start-up of a new machine with a three-phase electrical power supply, it is necessary to verify that the motors are rotating in the right direction.
Connect the plug in the electrical outlet, turn the main switch to **O - ON** and, being ready to give the normal stop command or emergency stop with the relative devices ref. 2 and ref. 4 of the figures in par. 2.4, press the start button indicated with ref. 1 in the same figures; the upper part of the output belt must move towards the exterior of the machine, as illustrated in Figure 19 for a “CALYBRA”. If this does not happen, it is necessary to switch the two phase conductors inside the plug at the end of the power supply cable provided with the machine; this operation must be carried out by a **specialised and expert electrical technician** (special/extraordinary maintenance).
With reference to Figure 19, separate the cap from the terminal block, disconnect the two phase conductors and switch the connection terminals. Finally, join and close the cap and the terminal block.

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

Figure 19 – Correct operating direction

3.9 OPERATION AND USE

The use of the machine must be allowed only to authorised personnel, who are expert in using the machine for making bread and/or pastry doughs and, in any case, **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 information on how to further eliminate or reduce them** (to this view, see par. 5.3)**.**
The machine is intended to be used exclusively by professionals and by expert operators. The machine must be used by only one operator at a time.
The instructions in this manual are sufficient and adequate; however, upon request and provided that an agreement has been reached, the manufacturer may provide, on his own premises or the client's/user’s premises, the information, education 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 them, instruct them, and train them.

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

In compliance with current laws in force concerning safety and health in the workplace, the employer must implement adequate activities to **inform, instruct, and train authorised personnel to use the machine and implement suitable operating procedures** to minimise the exposure of persons to the residual risks typical of this 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 failing to comply with the indications in this manual.

3.9.1 GENERAL INFORMATION OF NORMAL USE

Before beginning standard production, remember the following important notions:

1. **At the beginning of every day and/or shift,** check that the guards, whether fixed (blocked with screws, wrenches, etc.) or interlocked and removable (associated with safety devices) are whole, properly fixed (fixed guards) and that the safety devices are working correctly, following the instructions at par. 5.2.3.
2. To load the flour into the flour duster (optional), **do not pour it quickly inside, but** a little at a time, **slowly and carefully** seeking to generate as little dust as possible and therefore limit, in case of inhalation, health risks to people who may be in the vicinity (tearing, asthma, rhinitis, etc.). For the same reasons, avoid spreading flour carelessly by hand on the pieces on the output belt.
3. If the dough is loaded into the hopper manually, introduce it in small quantities at a time, in order to **limit the risk of muscular-skeletal lesions (ergonomic risks)**.
   Insofar as possible, avoid making anomalous movements and hold your bust erect.
4. **If a bowl lift/turner is used** to load the dough into the hopper, **the employer must confirm that the combination of the same with the divider does not give rise to new or greater risks and**, if so, **must take suitable measures to eliminate or reduce them as much as possible.**
   Remember that to eliminate or minimise the risk of crushing body parts, (the employer must decide which parts of the body based on the existing system and the assessment of risks in the workplace), the distance between the fixed parts of the divider (in particular the hopper and the parts connected to it) and the moving parts of the lift/turner, including the dough container, must comply with EN 349:2008.
   IMPORTANT! No part of the device to load the dough in the hopper must touch the safety sensor ring of the hopper (and obviously the spacer ring), **to avoid unwanted shut downs of the divider and**, in the worst case scenario, **damaging of the safety devices**.
   It is unlikely (although not impossible) for a user to implement a lift-turner if the machine is equipped with the interlocking hopper cover; if, however, this should occur, **collisions between the lift- turner and hopper with its cover must be avoided; furthermore, in this case the operator must open the cover manually each time, thereby finding himself exposed to a risk of crushing, impact, and contusion** due to moving parts of the lift-turner, and above all the dough container to be emptied. Obviously, all these potential risks must be assessed and eliminated or minimised by the employer.
5. For routine use of the machine (normal production), no particular PPE is required unless the health and safety risk assessment carried out by the employer should demonstrate otherwise. If, for example, despite the indications in point 2, flour should be spread carelessly over the dough, a cloud of flour may be created with the above-mentioned consequential risks of inhalation; in this case, in spite of the prohibition of similar behaviours, **the operator will have to wear at least a mask to protect his 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).
6. For cleaning operations, always wear the PPE indicated in par. 4.4.
7. **IMPORTANT! Check often that the cooling fan ref. 3 Figure 26 is rotating regularly while the machine is operating; the fan is visible from the outside and does not require the disassembly of any guards.**
8. **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.
9. To execute a standard shut down, use the **STOP** command indicated with ref. 2 in the figures of par2.4.
10. Pressing the emergency button stops the machine in a very short time (a fraction of a second) and resets the electrical power supply at the actuators. To restart the machine, you must reset the emergency button and then press the RESET button. **The emergency button must be used only if absolutely necessary**. The same result can be obtained by activating a safety device (interlocked guard, sensor ring, ecc.).
11. **To shut down the machine** normally, **do not use the emergency button or safety devices,** but simply use the **STOP** command indicated with ref. 2 in the figures of par. 2.4, to ensure the longest possible efficiency of the safety systems.
12. **At the end of the work day, clean the machine carefully,** following the instructions in par. 4.4.
    If for some reason this is not done (this must never become routine!), at the beginning of the next work 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 **to clean the heat exchanger** using the methods and the frequency indicated in par. 4.4.4.
13. The adjustment devices must be accessed only by trained persons; the employer is responsible for designating them and informing the other workers that they are obliged to contact them if needed.

3.9.2 STARTING UP THE MACHINE

To turn on the machine:

- connect the power supply cable to an adequate electrical outlet

- turn the main switch to **I – ON** as in Figure 4
- in the machine with an electro-mechanical control panel, if the yellow ring is lit ref. 4.1 Figure 5, it indicates an absence of alarms; to enable the start-up of the machine, press the RESET button ref. 3 Figure 5; once the "RESET" button has been pressed, the START button ref. 1 Figure 5 will light up
- in the machine with a "touch screen", if the screen does not display alarm messages, it is already enabled and ready for the "START"

3.9.3 HOW TO USE THE MACHINE

The instructions in this paragraph are pertinent to the machine with the electro-mechanical control panel (par. 2.4.1) or "Touch Screen" (par. 2.4.2).
For the "Memory Pack" control panel, consult the specific manual MASV5_it_t attached.

1. With reference to Figure 20, if the machine is equipped with a flour duster ref. 1 (see par. 3.4) and if the product requires dusting with flour, life the cover ref. 2 and use a scoop to put the flour gradually into the small hopper ref. 3 without making sudden movements to prevent spreading the dust into the surrounding environment and minimise the risk of inhalation, as already indicated in par. 3.9.1, point 2.
   When starting the dough divider, the flour duster is not started automatically, as it has its own start-stop command ref. 4; when the operator needs to use it, it must be started deliberately with its own start.
   The quantity of flour released can be adjusted by pushing in or by pulling out by hand the part highlighted in ref. 5.

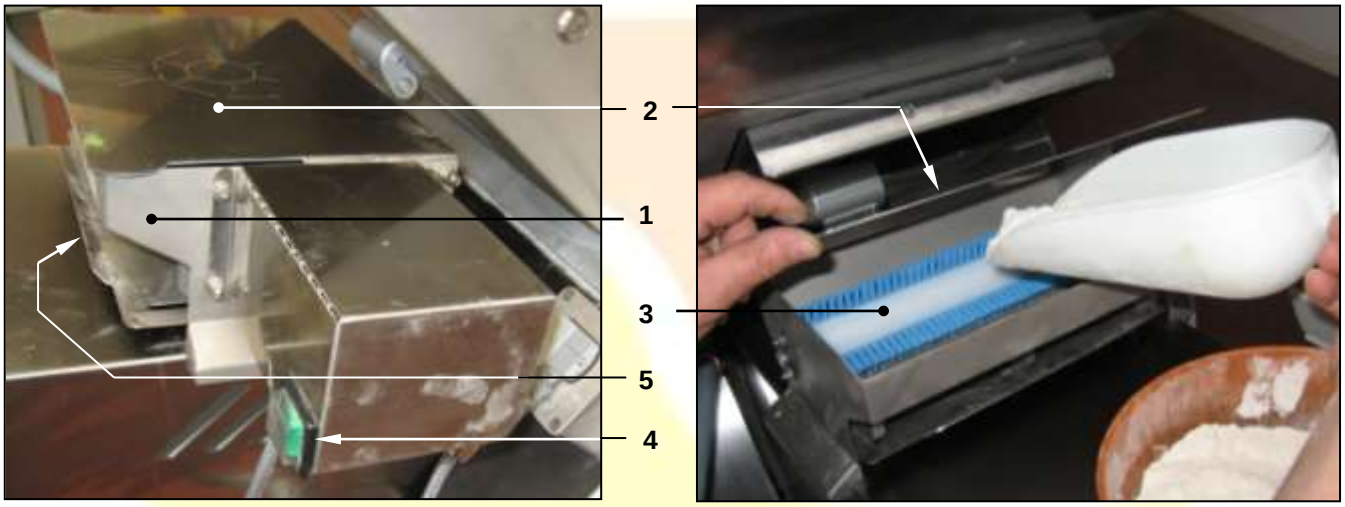


Figure 20 - Feeding flour into the flour duster and regulating the quantity of flour released

2. Use the lever ref. 1 Figure 21 to select the number of rows: the production of one or two rows of pieces (this is not applicable for the models Calybra 0.2, Calybra 1.0 and Calybra 1.0 L, which can only produce pieces in a single row); the lever is located on the side of the weight chamber. The two positions of the lever and their relative meanings are clearly indicated on the machine. **IMPORTANT! Do not move the lever while the machine is being operated as this can cause serious mechanical damage.**

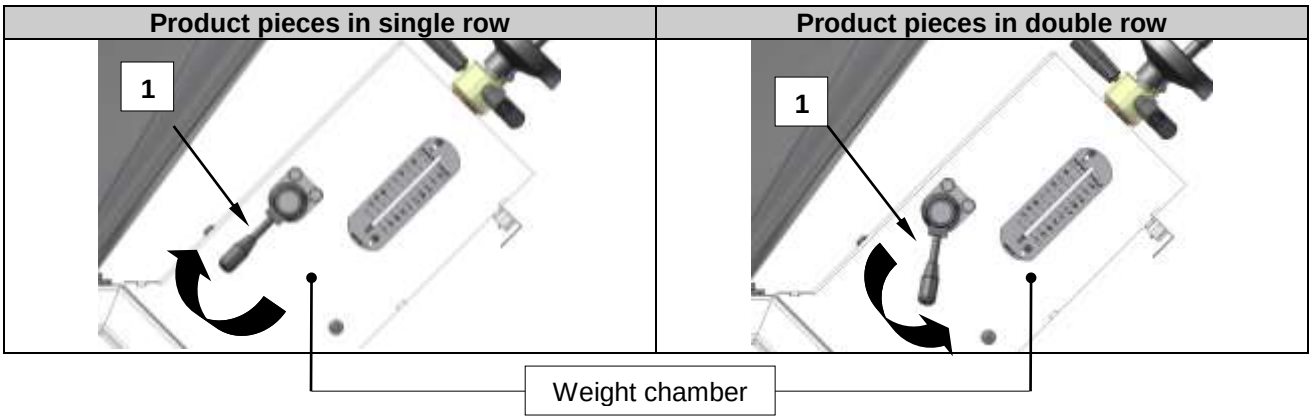


Figure 21 – Selection of product pieces into one or two rows

The selection of the single or double division can also be made in function of the range of division of the machine in relation to the weight to be obtained. Avoid selecting one row of pieces with a low weight, opting

instead for the double division so as to obtain pieces of a thickness adequate to undergo the downstream processes (for example and only for illustrative purposes, a piece of dough that it too thin will be difficult to round and/or shape into a loaf and will inevitably create problems in the finished product). If instead, it is necessary to produces pieces of considerable weight, opt for single row production; in this way it is easier to optimise the filling of the weight chamber and the precision will be improved.

3. **Calybra 1.5 - 2.5 with double output belt.**
   With reference to Figure 22, move the divider ref. 1 up and down by pulling out and pushing in the rod with the hand as far as the end run (where there is mechanical stopping device) ref. 2; the divider prevents the two pieces of dough produced in the same cycle from sticking to each other in case of double row piecing. Withdraw the divider to select the single division option.

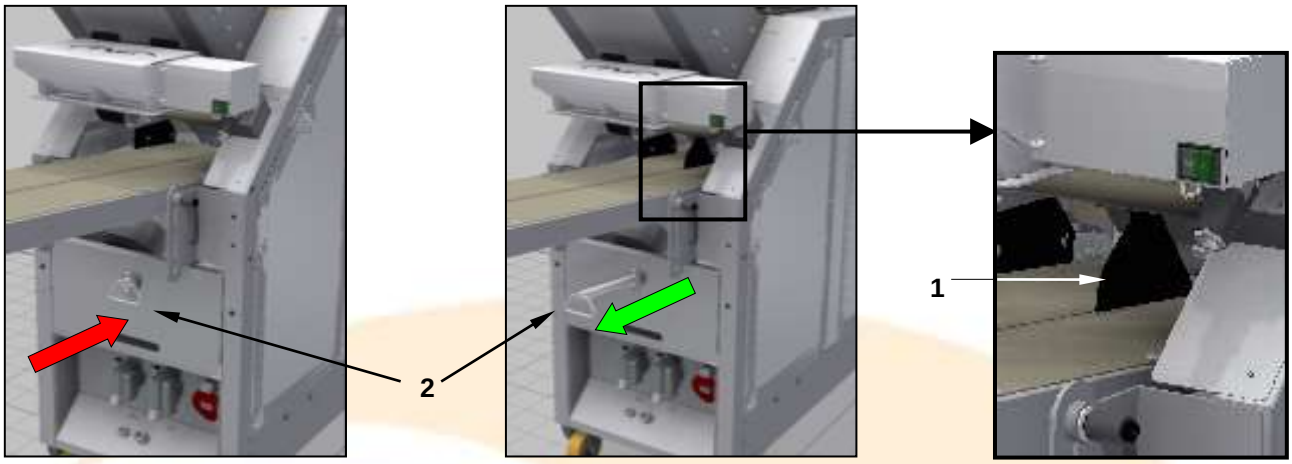


Figure 22 - Divider for two rows (Calybra 1.5 - 2.5)

Calybra 0.2 L - 1.5 L e 2.5 L
Withdraw (1 row) or raise (2 rows) the dividing rollers (optional) to separate the two rows of pieces by moving the sliding handle as indicated in Figure 23.

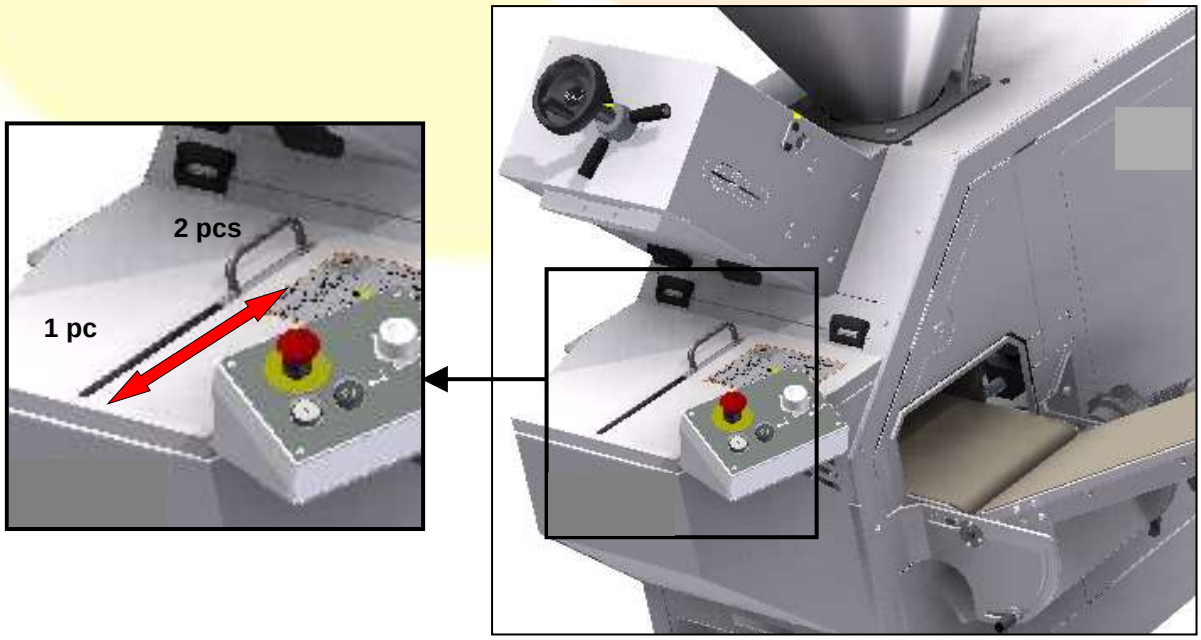


Figure 23 - Insertion/exclusion of dividing rollers (Calibra 0.2 L - 1.5 L - 2.5 L)

4. Introduce a sufficient quantity of dough into the hopper.
   If the dough is loaded manually, it is recommended that the operator use a step ladder with a railing, a platform, and guardrail to prevent any risk of falling outward and comply with pertinent laws in force (even if the risk of falling down the flight of stairs will remain); this provision will **greatly reduce ergonomic types of risks** due to the manual handling of the dough, but will not eliminate them; subdivide the dough into portions

of 6 ÷ 7 kg (not more) and placing them one at a time into the hopper, taking care to avoid the formation of significant air bubbles, which may give rise to a noticeable discrepancy in weight among the pieces produced.
If the operator decides to carry out this operation from the ground, the ergonomic risk would increase in proportion to the weight of the dough being handled, so it would be necessary to reduce the portions of dough to be loaded into the hopper to no more than 2 ÷ 3 kg each; in this case the risk of falling down the stairs would be eliminated.
Insofar as possible, avoid making anomalous, forced and repetitive movements so as to further reduce the risk of muscular-skeletal lesions, as already indicated in par. 3.9.1.
The best way to effectively reduce ergonomic risks, as well as eliminate the risk of falling down the stairs, is to use a motorised dough loading system (conveyor belt, bowl lift/turner, etc.).
If the inside of the hopper is not coated with Teflon, coat it evenly with refined and filtered cooking oil, with no sludge and sediments, before loading the dough so as to facilitate its descent towards the vacuum and dividing unit ref. 3 Figure 1.

When the machine is connected to the power supply (even if shut-down), it is absolutely prohibited to push the dough down into the hopper by hand; this can inevitably result in exposure to a serious risk of amputating a part of the body (hand, fingers).

5. With reference to Figure 24,, after having loosened the locknut ref. 2, set/adjust the desired weight of the pieces (theoretical) by turning the flywheel ref. 1 (rotation **+** = weight increase, rotation **-** = weight decrease): the graduated scale ref. 3 on the sides of the proportioning chamber gives an indication of the weight selected in grams, but does not ensure correspondence with the final product to be obtained.
IMPORTANT! The regulation of the weight must be carried out while the machine is shut down
By way of example, one turn of the flywheel ref. 1 corresponds to a variation of weight equal to:

Model	Single division	Double division
Calybra 0.2	-	7
Calybra 1.0 -1.0 L	30 grams	-
Calybra 1.5 - 1.5 L	40 grams	20 grams
Calybra 2.5 - 2.5 L	80 grams	35 grams

Once the regulation is concluded and before producing pieces of dough, lock the lock nut ref. 2 by turning it clockwise. It is advisable to weigh the pieces produced with the first 4 ÷ 5 dividing cycles and compare the result with the theoretical weight selected; if necessary, make further adjustments as described above.

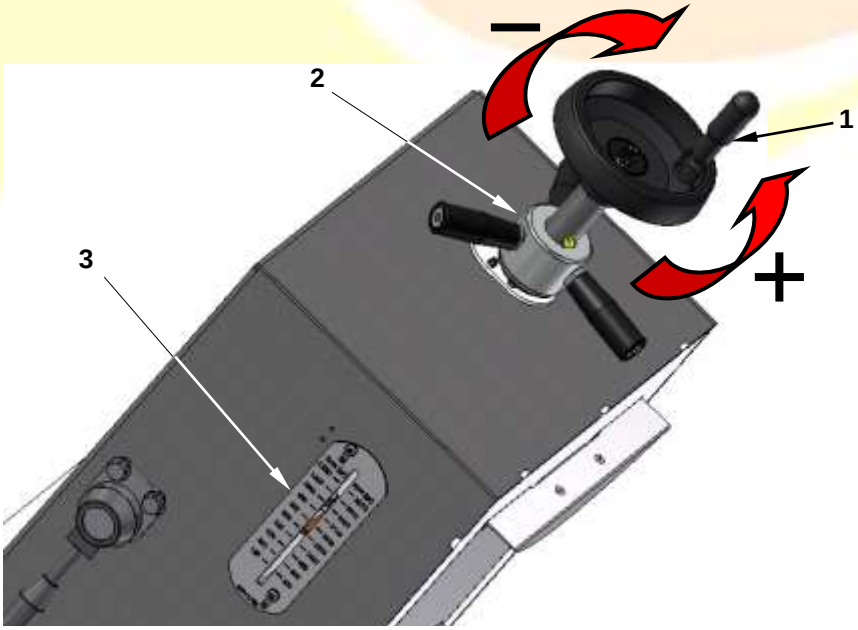
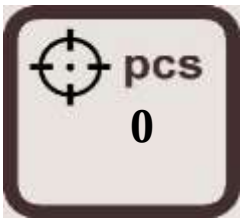


Figure 24 – Setting of weight (theoretical) of the pieces of dough produced

6. If necessary, set the piece counting device (if present).

For the machine with the **electro-mechanical control panel**, set the number of pieces to be counted in the device ref. 7 Figure 5, that for convenience is also illustrated here to the side.

For the machine with the "**touch screen" control panel**, set the number of pieces to be counted, using the specific icon, that for convenience is also illustrated here to the side.



7. Start the dough dividing cycle with the START button indicated with ref. 1 in the figures in par. 2.4.
   In order to guarantee the best possible precision and homogeneity in the weight of the pieces, the work cycle must be started before the dough begins to rise, or as soon as the mixing phase has been completed; this prevents the dough in the pieces produced from being subjected to excessive stress and will enable correct development during the rising phase with better results in the finished product.
8. Make any necessary adjustments/settings (double belt speed, piece counter, weight).
9. To stop the machine normally, even only momentarily (for example, to replace the tray or to move the tray carriage, to prepare new dough, etc.), use the STOP command indicated with ref. 2 in the figures of par. 2.4; the machine will not stop immediately but , for the division phase, only at the end of the ongoing cycle, while the output belt will continue to function for a few seconds to allow the unloading of the remaining pieces. Once stopped, the machine goes into stand-by and waits for a new START command to undertake production from where it was left off (the work program remains loaded).

3.9.4 EMPTYING THE MACHINE

Emptying the machine is necessary in the following cases:

- before beginning the division of a product other than the previous one;
- at the end of the work day.

To empty the machine, let it continue operating until the loading hopper is completely empty (to check that it is empty, use a rod with a mirror on the end or climb a step ladder with the characteristics described in point 4 of par. 3.9.3). Then shut down the machine using the "STOP" command indicated with ref. 2 in the figures of par. 2.4, and wait for the dividing cycle to stop, followed by each product output belt.

3.9.5 POSSIBLE METHODS OF STOPPING AND RESTARTING THE MACHINE

The machine may be shut down in the following ways or due to one of the following factors.

1) **Manual normal stopping:** STOP command indicated with ref. 2 in the figures of par. 2.4
2) **Automatic normal stopping:** upon reaching the number of pieces set on the piece counter
3) **Manual emergency stopping:** press the emergency button indicated with ref. 4 in the figures of par. 2.4
4) **Automatic emergency stopping:** upon the intervention of the hopper sensor ring, upon opening of an interlocked guard (example: hopper cover, access door to the portioning chamber)

In the cases listed above, to restart the machine:

1. Use the START command indicated with ref. 1 in the figures of par. 2.4
2. Use the START command indicated with ref. 1 in the figures of par. 2.4
3. In sequence: reset the emergency button, press the RESET command indicated with ref. 3 in the figures of par. 2.4, use the START command indicated with ref. 1 in the figures of par. 2.4
4. In sequence: eliminate the cause of the shut-down (returning the sensor ring to its original position, closing the hopper cover, closing the door to the portioning chamber), press the RESET button indicated with ref. 3 in the figures of par. 2.4, use the START command indicated with ref. 1 in the figures of par. 2.4

3.10 REGULATING THE INCLINATION OF THE PRODUCT OUTPUT BELT

It is possible to adjust the inclination of the product output belt to bring the ends to the desired height (obviously within the limits of its length and the maximum inclination possible), for example to unload products into/onto other machines (rounders, conveyor belts, etc.); remember that, if the machine is combined with other devices, machines, objects, etc., it is the task and responsibility of the employer to identify potential dangers that may arise, assess correlated risks and, if necessary, take necessary measures to eliminate or minimise them as much as possible.

With reference to Figure 25, to adjust the inclination of the output belt ref. 1:

- holding the belt with one hand so that it doesn't fall, use the other hand to loosen the other two fixing levers on the sides ref. 2
- bring the belt ref. 1 to the desired angle, then lock the levers ref. 2.

To enable the widest possibility of adjustment options, the belt can be blocked in any point, but the blocking force is given exclusively by the friction between the fixed shoulder support ref. 3 and the side of the belt structure ref. 4.

ATTENTION!

It is very important to tighten the levers ref. 2 as much as possible; otherwise, there may be a risk of the belt falling (for example, due to the loosening of the levers caused by even slight vibration during operation); verify that the levers are tightened correctly and check that they are tightened firmly during the day.

IMPORTANT!

The output belt of the volumetric dough divider must never be in contact with anything; otherwise, once running, useless friction may occur, resulting in the anomalous wear of the belt and a drastically reduced live span.

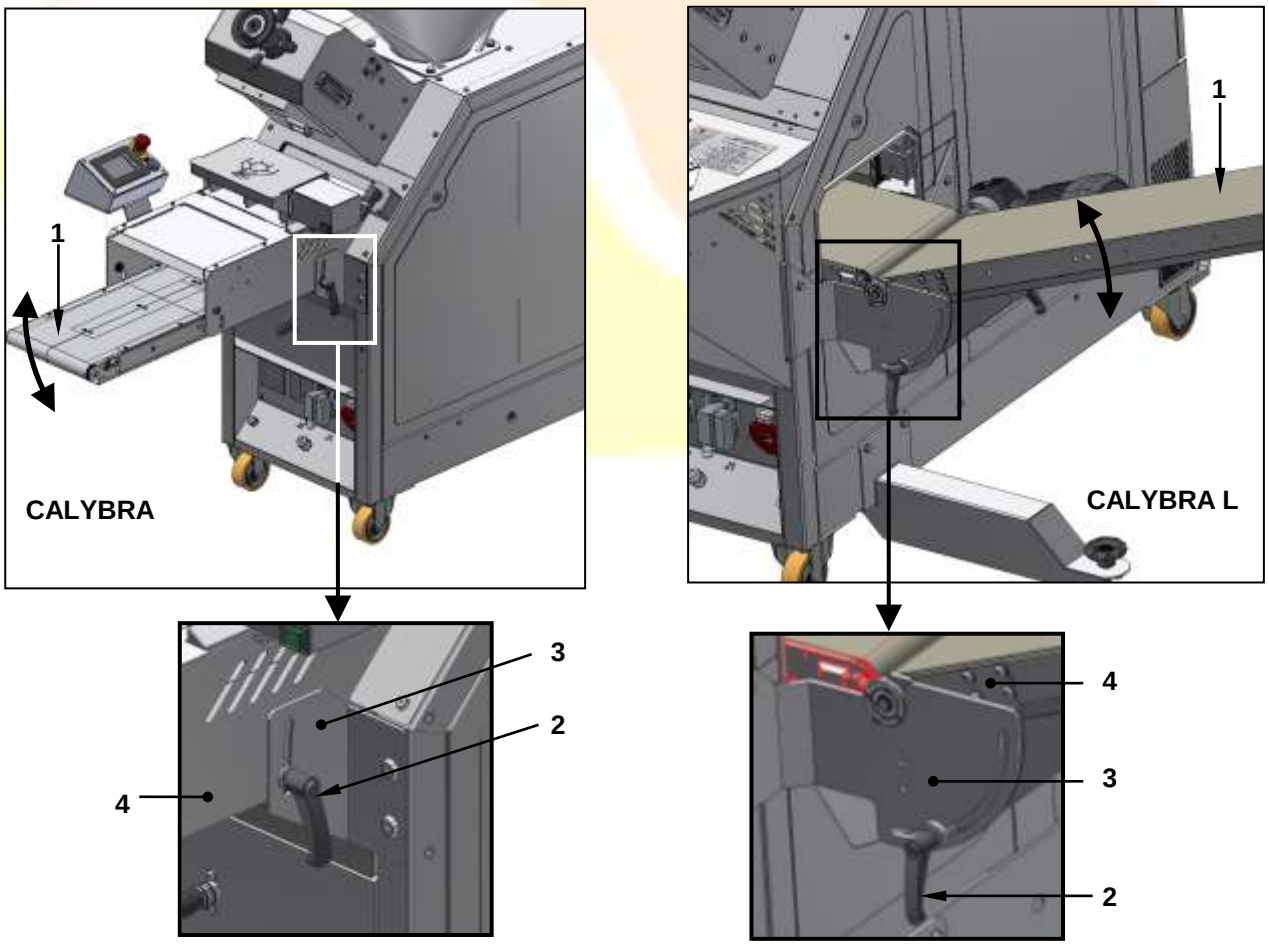


Figure 25 – Regulating the inclination of the product output belts

3.11 INSTRUCTION AND TRAINING OF THE MACHINE OPERATORS

As has been reiterated several times in this manual, the employer must provide the employees with adequate information and instruction, as well as 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 for learning

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

training: Transfer of news, 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 typical of the machine and relative risks.	X			5.2.1
Safety equipment on the machine			X	5.2.2
Methods of checking the efficiency and integrity of the safety equipment			X	5.2.3
Limits and intended use of the machine Uses allowed and uses prohibited	X			1.5-2.1-3.9
Handling the machine	X		X	3.2
Assembly and installation	X		X	3
Use of the controls		X	X	2.4-3.9
How to stop and restart the machine	X	X		3.9.5
Potential problems and relative solutions	X			4.11
Diagnostic signals - Alarms	X			0
How to load the dough into the hopper			X	3.9.1-3.9.3
Maintenance operations	X	X	X	4
Cleaning the machine		X	X	4.4
Use of PPE		X	X	3-4-5.3-5.4
Residual risks and measures to adopt to limit them	X	X		From 5.3.1 to 5.3.9-5.4
Noise level of the machine	X			5.3.9
Risks linked to ergonomic factors	X			3.9.1-3.9.3-5.3.5
Risks related to flour dust	X			3.9.1-3.9.3-5.3.3
Risks linked to a lack of hygiene	X			5.3.4
Safety signals	X	X		5.4

4 MAINTENANCE

4.1 INTRODUCTION

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:**

- **put on the PPE** specified from time to time in the paragraphs of this chapter.
- **pressed the emergency stop button** ref. 4 in the figures of par. 2.4
- **turned the main switch to O - OFF**(see par. 2.3); blocked it with a lock in the O – OFF position.
- **disconnected the plug to the electrical power supply** (the disconnected plug must remain visible so that anyone can verify the absence of electrical power supply) to prevent the machine or any of its parts being started up by others and,
- (for machines with inverters) after having waited the time required for residual voltage in the inverters to discharge, to prevent the risk of 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 into place and secured with all the necessary fixtures and every safety device must be reactivated as soon as the reason for their temporary removal/deactivation no longer exists.

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 AND PROGRAMMED MAINTENANCE

Before undertaking maintenance, activate the safety measures indicated in par. 4.1

- At the end of the day or shift, carefully **clean the machine** (par. 4.4)
- At the beginning of every work day or shift, **check that all the guards and safety devices are in good condition and working properly** by carrying out the controls described in par. 5.2.3.

4.3 HYDRAULIC CIRCUIT

4.3.1 FILLING AND/OR REPLACING OIL IN THE HYDRAULIC BLOCK

Before beginning, activate the safety measures indicated in par. 4.1, and read the technical safety specifications of the oil and follow the instructions precisely.

Wear waterproof, anti-oil gloves, steel-capped shoes with non-slip soles, face mask with eye protection or a visor, helmet, and any other PPE indicated in the technical specifications of the oil.

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

Check the oil level only when the machine is disconnected from the electrical power supply; the detached plug must remain clearly visible. Remove the two side guards held in place with key closures (see par. 4.4.4); the hydraulic block is in the lower rear part of the machine; there may be two different versions (according to the client's request): STANDARD and HIGH CAPACITY PACK, both shown in Figure 26.

The central “HIGH CAPACITY PACK” version has a level indicator ref. 4, which makes it possible to check the oil level directly from the outside. For the STANDARD version instead, remove the cap ref. 1, insert the rod with millimetre markings (it must be clean) until it touches the bottom of the tank, holding it vertically; the level of oil is correct if between 30 and 40 mm from the upper rim 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, with a filter if necessary (it is important that impurities, dirt, and other materials never enter the tank); when finished, replace and tighten the cap ref.1. The oil to be used is the following (it is also possible to use other brand names of oil, provided they have the same specifications as those indicated below):

	HIGH CAPACITY PACK	STANDARD
Manufacturer	BERGOIL ITALIANA S.r.l.	NILS
Product	PARATER S 46	ANTARES SYNT 46
Use	High-viscosity hydraulic oil (serie LI-HIV 46)	High-viscosity hydraulic oil
Density at 15° C	0.875	0.850
Viscosity cSt 100 °C / 40 °C	7.2 / 47	10 / 47
ISO reference	ISO 3498 Type HM 46 - DIN 51524 2nd part category HLP 46	Class ISO VG 46

IMPORTANT! If the tank must be topped off frequently, check that there are no leaks; in case of a leak, contact Artezen or the nearest authorised assistance centre immediately.

The oil in the tank must be replaced completely after the first 1000 hours or the first six months of work and subsequently every 2000 hours of work or at least once a year.

To empty the oil tank, position a container with a capacity of at least 70 litres and no more than 140 mm tall (for example: 710 mm x 710 mm x 140 mm) under the valve (tap) ref. 6.

Remove the cap ref.1 and then open the valve ref. 6 and let all the oil drain out.

Close the valve ref. 6 and add oil to the tank until it reaches the correct level (see above).

IMPORTANT! The used oil must not be disposed of in the environment; it must be disposed of in conformity with current environmental protection laws in force.

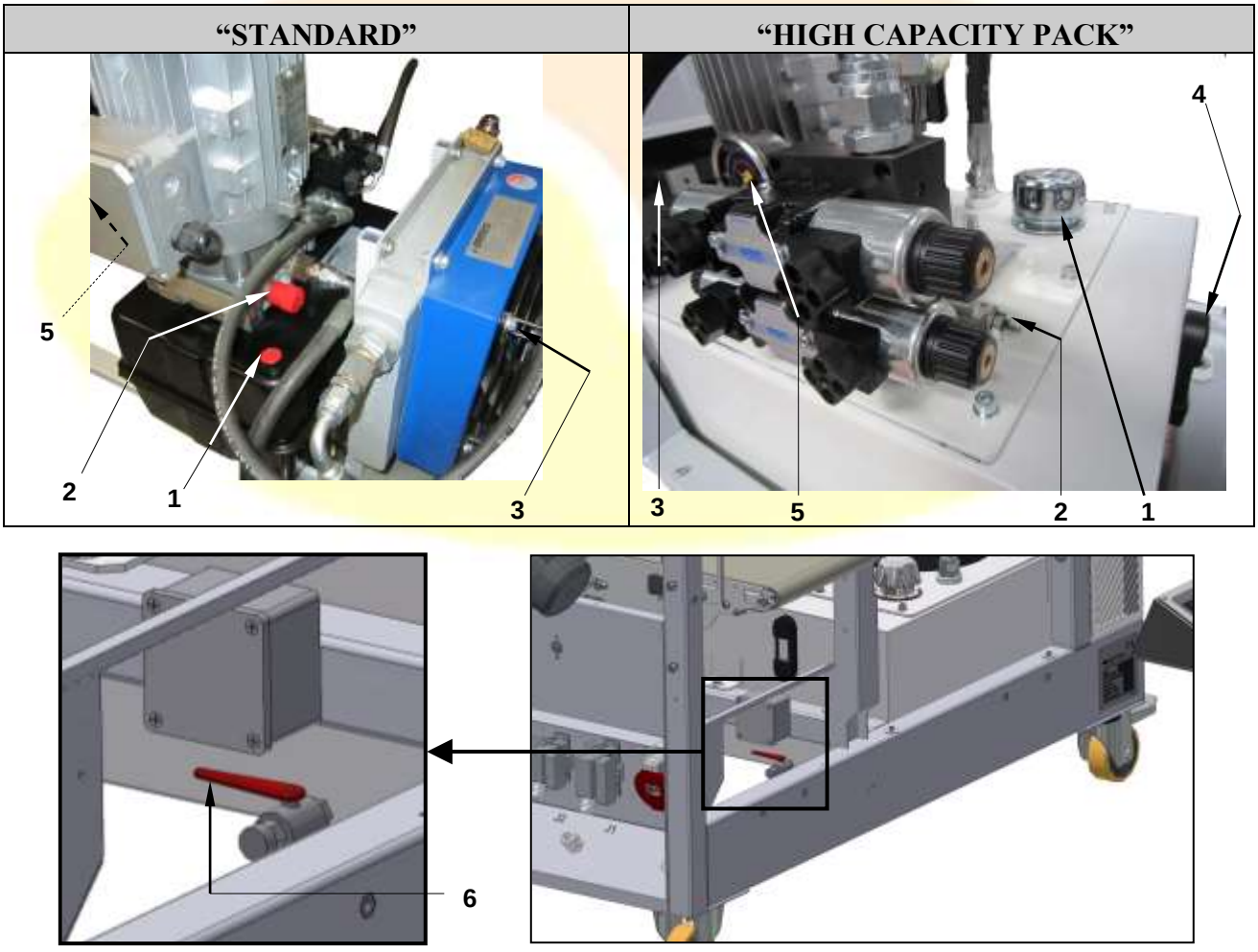


Figure 26 – Hydraulic block

4.3.2 OIL TEMPERATURE CONTROL SENSOR

To guarantee the reliability and the protection of the hydraulic block, the machine has a system that controls the oil temperature continuously. A sensor continually monitors the oil temperature; if the temperature surpasses the calibrated value, for example due to insufficient cooling of the heat exchanger (excess dust and/or deposit build-up, blocked or malfunctioning fan, temperature sensor ref.1 Figure 27 broken or disconnected, etc.),the fact is immediately signalled by the system.

If the temperature of the oil surpasses 80°C, this fact is signalled on the electro-mechanical control panel by the quick blinking of the yellow ring ref. 4.1 Figure 5 and, in the case of the "touch screen" and memory pack models, by a special icon; the machine does not shut down, but reduced productivity in order to enable the oil to cool down. When the temperature goes below 65°C, the blinking stops or the icon disappears and the machine begins working at normal speed once again.

As soon as possible, control the condition of the heat exchanger to verify potential malfunctions, but only after having enacted the safety measures indicated in par. 4.1

Figure 27 – Temperature sensor

4.3.3 REPLACING HOSES (extraordinary/routine maintenance)

Before beginning, activate the safety measures indicated in par. 4.1, and read the technical safety specifications of the oil used in the hydraulic circuit and follow the instructions carefully.

Wear waterproof, anti-oil gloves, steel-capped shoes with non-slip soles, face mask with eye protection or a visor, helmet, and any other PPE indicated in the technical specifications of the oil.

Given the delicacy of this operation, both in terms of personal safety and the functionality of the machine, the replace of hoses must be carried out only and exclusively by a **technician expert in mechanical assembly and hydraulic system** on board machines.

All the hoses must be replaced with identical new hoses **at least every 3 years**, unless a visual inspection indicates that they should be changed more quickly (for example, due to the presence of marked abrasions on the outside of the hoses).

The machine comes equipped with two types of hoses:

- tube 3/8'' EN853 SAE100R1AT, 180 bar, 18 MPa, 2610 psi
- tube 3/4'' EN853 SAE100R1AT, 105 bar, 10.5 MPa, 1520 psi.

To order replacement hoses, complete with couplers at the ends, see the attached replacement parts list with the relative illustrations; the hoses are supplied with specific and detailed instructions for their assembly and installation.

4.4 ROUTINE CLEANING OF THE MACHINE

If not otherwise indicated, cleaning operations can be carried out by the operator who uses the machine routinely (normal production activity) provided he has been previously informed on the risk involved and who may be exposed to such risks, as well as being 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 hygienic conditions of the machine are perfect: clean it carefully at the end of every day and/or every shift or, even, if the product requires it, after every change in production.

Before undertaking any operation, activate the safety measures indicated in par. 4.1

A complete and accurate cleaning must be done every time a longer shut down of the machine for more than eight hours is planned, to prevent the occurrence of biological risks due to moulds, bacteria, etc.

Before undertaking the cleaning of the machine, it is necessary to empty it completely of the dough, as described in par. 3.9.4 and par. 4.4.1.

Wear a protective mask against the inhalation of dusts (the filtering capacity must be in keeping with the granulometry of the flour dust) **and mask-type eye protection**; **ventilate the room during and for at least 15 minutes after the end of the operations**. Check that no one is in the vicinity.

Use a vacuum with a thin tube to remove every part of the flour dust deposits and potential remains, lumps, etc. of dough; if necessary, try to remove more stubborn residues with a plastic spatula and/or a brush with medium-

consistency synthetic bristles. Before using the vacuum and only if absolutely necessary, use brief blasts of compressed air to loosen residues from the more difficult parts of reach. With a clean rag wet with drinking water, but not dripping, pass over 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 be deposited; eliminate potential spots with a cloth slightly dampened with drinking water. **Never use high-pressure sprays and/or jets, or water, steam or anything else.**

Do not use aggressive products, detergents, or other products to avoid risking damage to the surfaces (in particular to the Teflon coating of the inner surfaces of the hopper), but only and exclusively clean cloths dampened with drinking water.

Clean the machine completely at the end of every work day and before any prolonged shut-down (longer than eight hours); at every change in production, if the new product so requires, clean at least the weight chamber (see par. 4.4.1.)

4.4.1 CLEANING THE WEIGHT CHAMBER

Before undertaking any operation, activate the safety measures indicated in par. 4.1

Wear anti-oil protective gloves, steel-capped safety shoes with non-slip soles, integral protective eyeglasses or a visor.

With reference to Figure 28, to clean the weight chamber ref. 3, proceed as follows:

a) turn the weight adjustment flywheel counter-clockwise ref. 1 until the end of its stroke upwards (maximum weight), then tighten the locknut ref. 2

b) Introduce about 2 kg of dough into the hopper, even if not fresh (3 kg if the machine is a Calybra 2.5 model);

c) <u>For electro-mechanical control panels</u>
Start up the machine by pressing the START button ref. 1 Figure 5 and then immediately hold down the STOP button ref. 3 Figure 5 for a few seconds until the machine comes to a complete stop.
<u>For the “touch screen” control panel</u>
Start the machine by pressing the “START” button ref. 1 Figure 7 and click on the “CLEAN” icon ref. 4

d) Open the interlocked door ref. 5 under the weight chamber and remove the residual dough;

Using an ampoule with a spout (in Figure 28 there is an illustration with ref. 6) and/or a brush, spread the sunflower seed oil on the inner surfaces of the weight chamber; use the brush to distribute the oil evenly

ATTENTION! Before closing the door ref. 5, check that there are no objects remaining in the weight chamber (rags, brushes, etc.); **if objects are left in the weight chamber, they could cause serious damage to the machine the next time it is started up.**

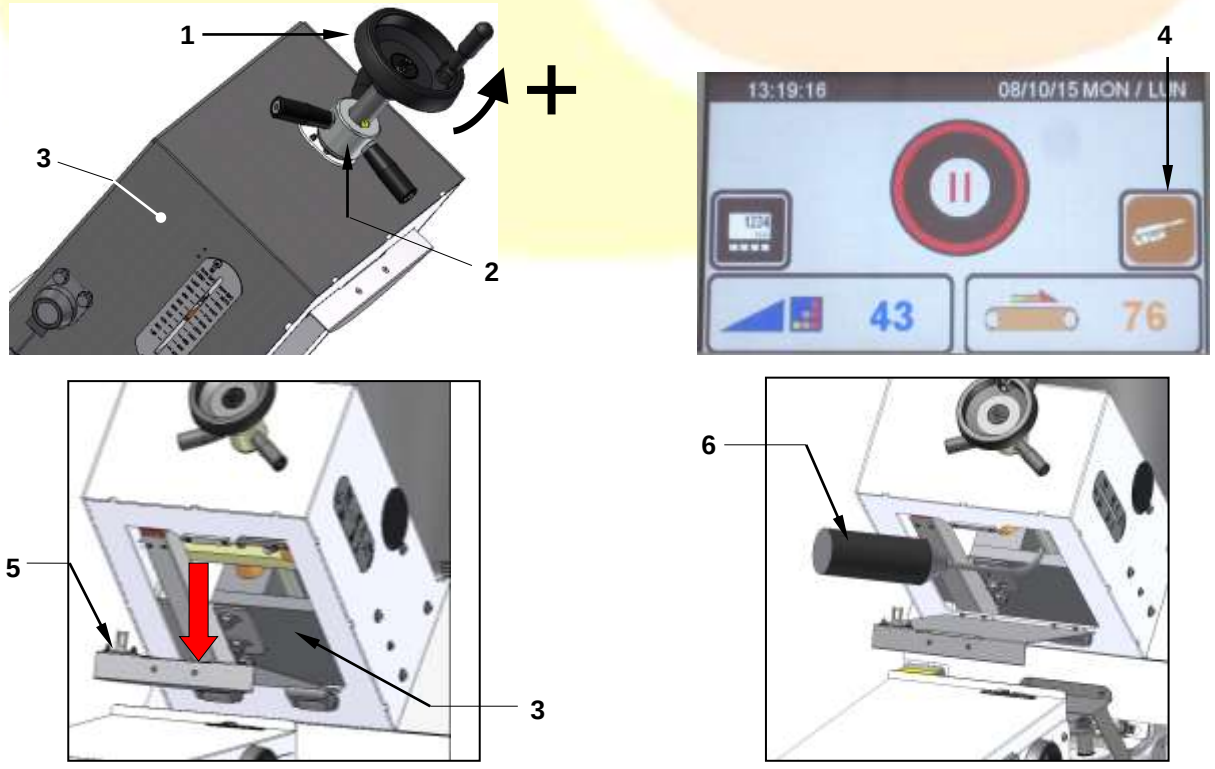


Figure 28 – Cleaning the weight chamber

4.4.2 CLEANING THE HOPPER

Before undertaking any operation, activate the safety measures indicated in par. 4.1.

Wear anti-abrasion gloves, steel-capped shoes with non-slip soles, safety glasses. Use an inclined ladder that is stable and equipped with independent supports, a handrail and a platform with a guardrail, to be used to avoid any possibility of falling outward; the upper limit of the guardrail, the height of which must not be less than 1000 mm above the platform, must reach 250÷300 mm above the upper rim of the hopper (when positioning the ladder next to the machine, be careful not to collide with it); to clean the hopper, the operator must be equipped with simple but adequate tools, like brushes with long handles, scrapers, cloths, etc., that will allow him to easily reach all the zones of the hopper while standing on the raised platform without having to lean over the guardrail or weigh on the safety devices (sensor ring, spacer ring); these tools must be made of materials that are sufficiently hard and stiff to remove residues and build-up, but not so hard as to cause streaking, scratches, etc. on the surfaces (special care must be taken in the case of Teflon-coated hoppers); use a sponge dampened with drinking water to pre-clean any residue that is dried and/or difficult to remove.

It is, in any case, absolutely prohibited to lean on the spacer ring and/or sensor ring, or to lean on the interlocked cover of the open hopper (for the machines equipped with one) to prevent the risk of damaging the safety systems and compromising their correct functioning with potential high risk of operator injury (In case of damage, do not use the machine at all, disconnect the electrical power supply plug and contact Artezen or the supplier for replacement parts and the necessary interventions). The sensor ring and the spacer ring must always be free and unencumbered; do not rest or hang anything on them. Do not place anything between the spacer ring ref. 1 and the sensor ring ref. 2, between the sensor ring ref. 2 and the rim under the hopper, and between the sensor ring ref. 2 and the support brackets ref. 3.

While the machine is running, it is prohibited to introduce objects/materials other than dough to be divided into the hopper.

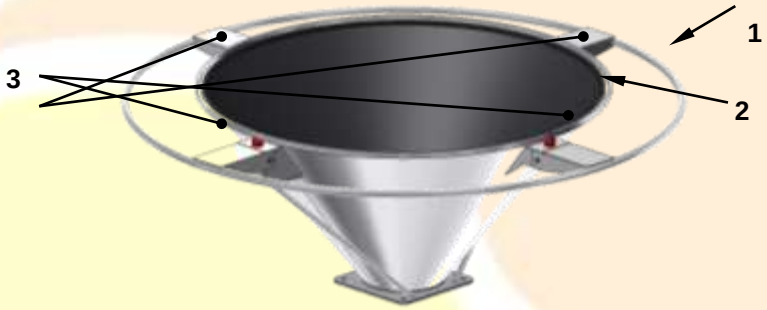


Figure 29 – Sensor ring and spacer ring of the hopper

4.4.3 CLEANING THE BELTS

Before undertaking any operation, activate the safety measures indicated in par. 4.1. Wear anti-abrasion protective gloves, steel-capped shoes, dust mask, and protective eyewear.

Start up the machine while empty (maximum 10 minutes) and pass the belts with a brush with bristles of medium hardness. **IMPORTANT! For cleaning the belts, never use:**

- **knives, scrapers, etc.;** they could seriously damage the belts.
- **abrasive metallic pads;** they could release metallic fragments onto the belts with potential (and probable!) contamination of the product to be deposited there.
- **chemical products** (detergents, soaps, etc.).

With reference to Figure 30, to facilitate the cleaning of the belt under the protective tunnel ref. 3, remove the screws ref. 2 and the panel ref. 1; once the operation is completed, reassemble the panel ref. 1 blocking it into place with all the screws removed previously ref. 2. 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.

With the exception of the V-belts (see more below), specific experience and knowledge is required to replace the belts, so entrust the job to Artezen technicians or those authorized by Artezen.

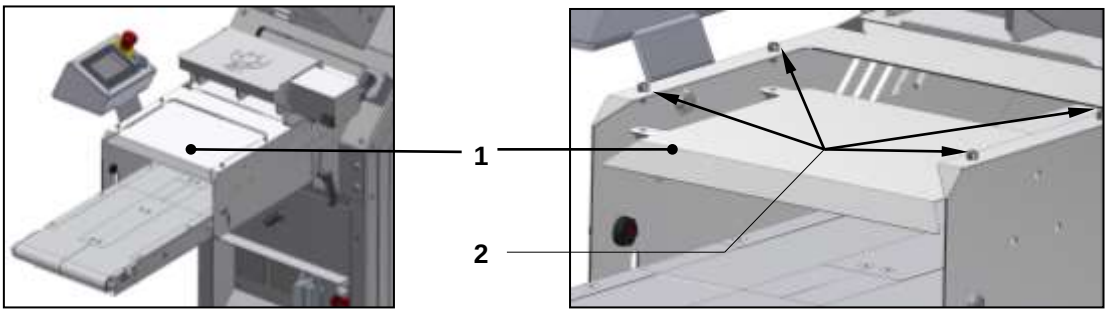


Figure 30 – Fixed panel with removable screws for cleaning the belts

Only for V-belts, there are the instructions to separate the actual belt from its relative support unit; in all other cases, to disassemble the belt, as mentioned before, Artezen must be contacted.
In reference to Figure 31:

- disassemble the belts with the relative supports, following the instructions in par. 3.5.
- pull the pawl ref. 1 (Figure A)
- rotate the support of the motorised pulley ref. 2 (Figure B); the belt will loosen and can be removed from the side.

To assemble the belt, follow this sequence in reverse, checking that the pawl ref. 1 is inserted correctly. To disassemble and assemble the optional scraper, follow the instructions given in par. 4.4.6.

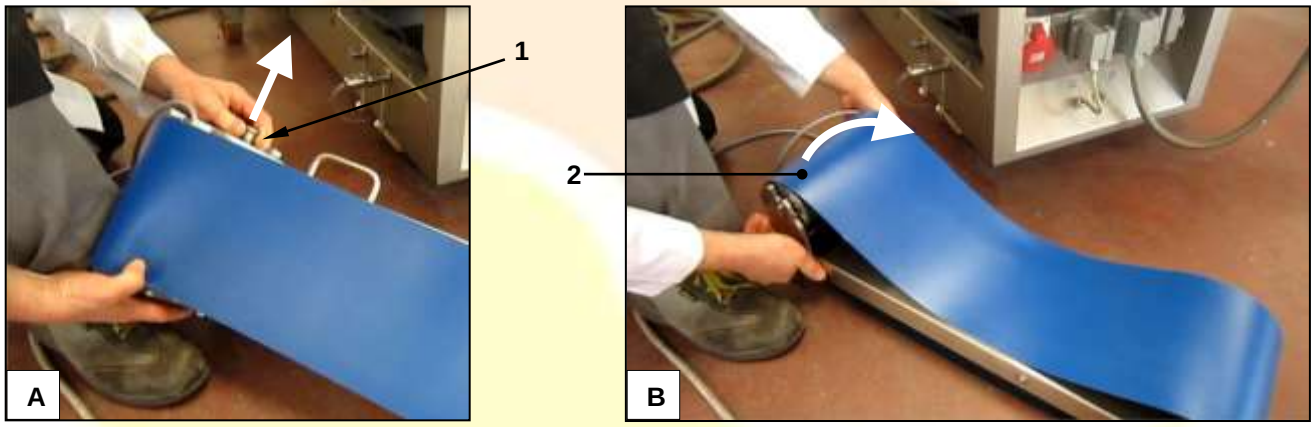


Figure 31 - V-belts: separating the belt from the corresponding support and handling units

4.4.4 CLEANING THE HYDRAULIC BLOCK AND THE HEAT EXCHANGER

Before beginning, activate the safety measures indicated in par. 4.1.
Wear anti-oil protective gloves, steel-capped safety shoes with non-slip soles, integral protective eyeglasses or a visor.

In the rear of the machine, under the electrical panel box, the fan is visible from the outside. The fan circulates air through the heat exchanger to maintain the oil temperature within its limits to preserve its characteristics as long as possible, thereby increasing the life span of the components of the hydraulic block. Once a week, check that the fan is rotating regularly and at a visibly constant speed when the machine is running. With reference to Figure 32, open the two side casings ref. 1, using the special key ref. 2, and use a vacuum with a narrow fitting to remove the dust and residues from the block ref. 3, and especially from the heat exchanger ref. 4; loosen any difficult residues with brief blasts of compressed air (after having put on a suitable mask to protect your respiratory system airways).

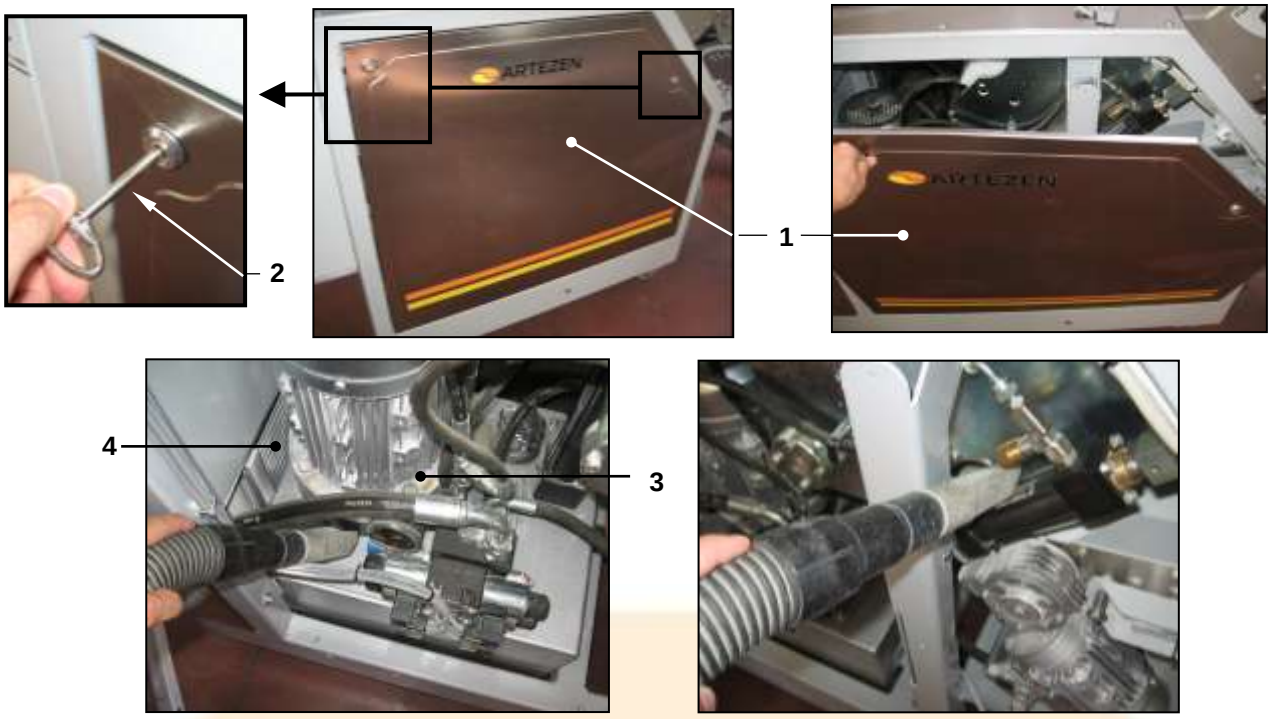


Figure 32 – Cleaning of the hydraulic block and heat exchanger

4.4.5 CLEANING THE DUST AND RESIDUE COLLECTION DRAWERS

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

Wear anti-abrasion protective gloves, steel-capped shoes, dust mask.

With reference to Figure 33, at the end of every work day:

- remove the concave drawer ref.1 located under the output belt (Figure A) and clean it well.
- remove, empty, and clean the inner drawer ref. 2 (Figure B).

Both these drawers can be washed with lukewarm drinking water; before reassembling them, check that they are perfectly dry. Do not start the machine without first having completely inserted the drawers ref. 1 and ref. 2.

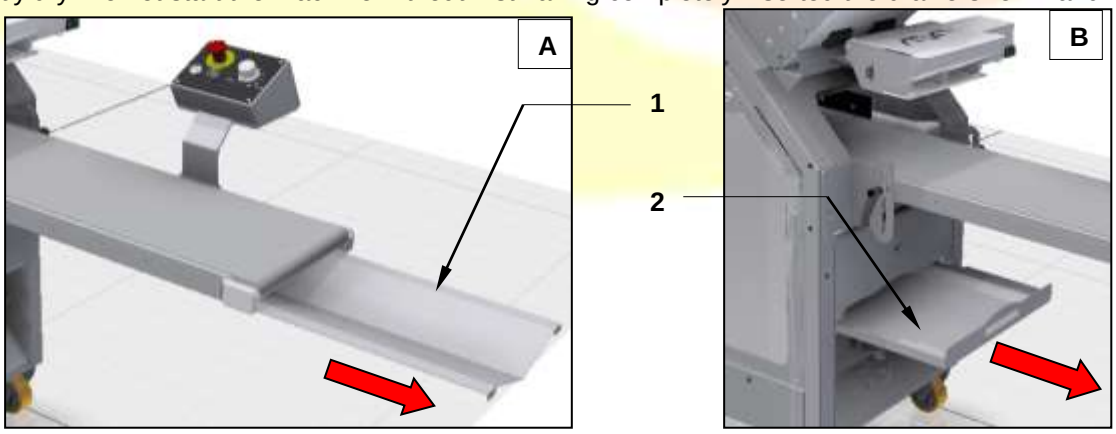


Figure 33 – Dust and residue collection drawers

4.4.6 CLEANING THE BELT SCRAPER (OPTIONAL)

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

Wear anti-abrasion protective gloves, steel-capped shoes, dust mask.

In reference to Figure 34:

- unhook the scraper ref. 1 by pulling the tap downward ref. 2 (Figures A - B)
- use a plastic spatula to clean the surfaces of the scraper; it is allowed to immerse the scraper in clean water (for example, to soften any build-up), provided that it is perfectly dried when reassembled (if necessary, dry it with a clean, soft, dry cloth).

To assemble the scraper, align the pins ref. 2 and ref. 4 with the seatings ref. 5 and ref. 6 in the shoulders ref. 7 (Figures C - D). **The alignment of the pins and seatings must be correct on both sides of the scraper**, after which it should suffice to press slightly with both hands until it clicks into place (Figure E).

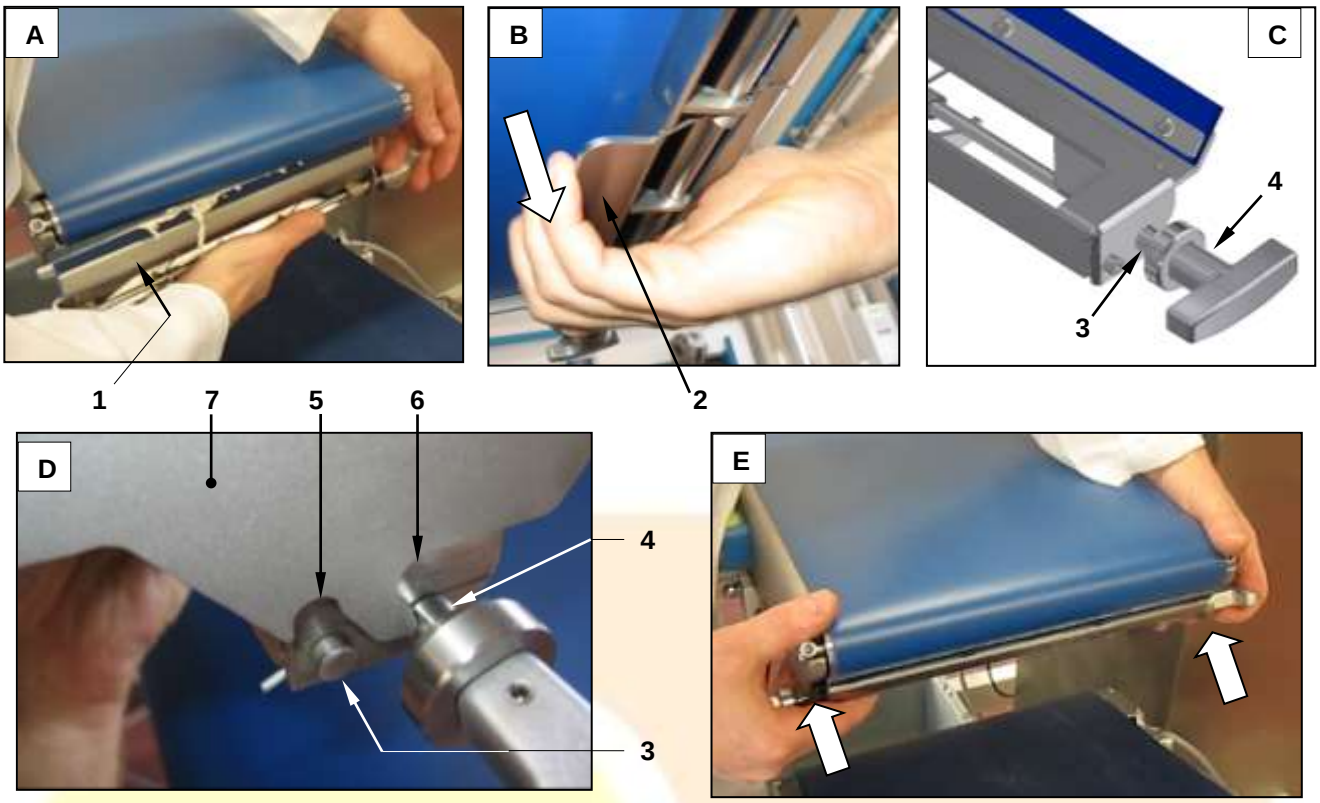


Figure 34 – Disassembly/assembly of the belt scraper

4.4.7 CLEANING THE FLOUR DUSTER

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

Wear anti-abrasion protective gloves, steel-capped shoes, dust mask, and protective eyewear. The flour duster must be emptied if the flour is damp or if the device is not used for a prolonged period; the methods for disassembly/assembly can be found in par. 3.4.

IMPORTANT! Never leave foreign objects inside the flour duster; the next time the machine is started, such objects may cause serious damage to the machine.

4.5 ELECTRICAL MAINTENANCE

Considering the high risk and serious damage possible in case of an accident, **every operation,** even if simple (ex. replacing a fuse), that directly or indirectly involves the electrical equipment of the machine, **must be carried out only by specialised technicians** (**special/extraordinary maintenance**) **expressly hired** with both technical know-how and deep knowledge of the standards to carry out such tasks in safety and to the highest levels; they must first read and fully understand the contents of this manual.

The same can be said for the replacement of the safety micro-switches described in detail in par. 4.6, 4.7 and 4.8, an operation that requires skills and knowledge of a mechanical nature for the necessary controls and potential adjustments to be made.

WARNING FOR MACHINES WITH INVERTERS

After having isolated and reset the electrical power supply of the inverter, residual electrical voltage remains that could be very dangerous for personal safety in case of contact with live components; at par. 5.3.7 there are more details on this topic and information on the precautions to be taken in order to avoid being exposed to the correlated electrical risk.

4.6 REPLACING THE MICRO-SWITCHES ASSOCIATED WITH THE HOPPER SENSOR RING

Having understood the information in par. 4.5, **before beginning, follow the indications in par. 4.1**
Wear anti-abrasion protective gloves, steel-capped shoes, helmet.
The tools necessary to replace either one of the two micro-switches associated with the sensor ring are:

- medium threadlocker (ex: AREXONS SYSTEM 52A43, code Arexons 4705) ref. 1 Figure 35
- Allen wrench 3mm ref. 2 Figure 35
- Allen wrench 2.5 mm ref. 3 Figure 35
- Torx wrench T7 ref. 4 Figure 35

Figure 35 – Equipment for disassembly/assembly of micro switches associated with the sensor ring

With reference to Figure 36, to replace the micro-switches ref. 1 associated with the sensor ring:

1. Use the 2.5 Allen wrench to loosen the screw ref. 2 and remove the cover ref. 3 of the compartment where the micro-switch is housed ref. 1 (Figure A)
2. Use the 3.0 Allen wrench to loosen the screws ref. 4 that fix the micro-switch ref.1 in place (Figure B)
3. Use the T7 Torx wrench to loosen the screw ref. 5 and separate the connector ref. 6 from the body ref. 7 (Figure C)
4. Insert the connector ref. 6 into the body ref. 7 of the new micro-switch and fix it in place with the screw ref. 5 (Figure D)
5. Distribute the threadlocker on the shank of the screws ref. 4 (Figure E)
6. Position the limit stop so as to align the holes with the corresponding threaded holes present on the support sheet metal ref. 8, then lock it into position with the screws ref. 4 (Figure F); tighten well, but without using excessive force not to damage the micro-switch.
7. Assemble the cover ref. 3 (the lower side must fit inside the lip ref. 9) and block it in place with the screw ref. 2 (Fig. A)
8. Before starting up the machine, complete the check list in par. 5.2.3, point 1.

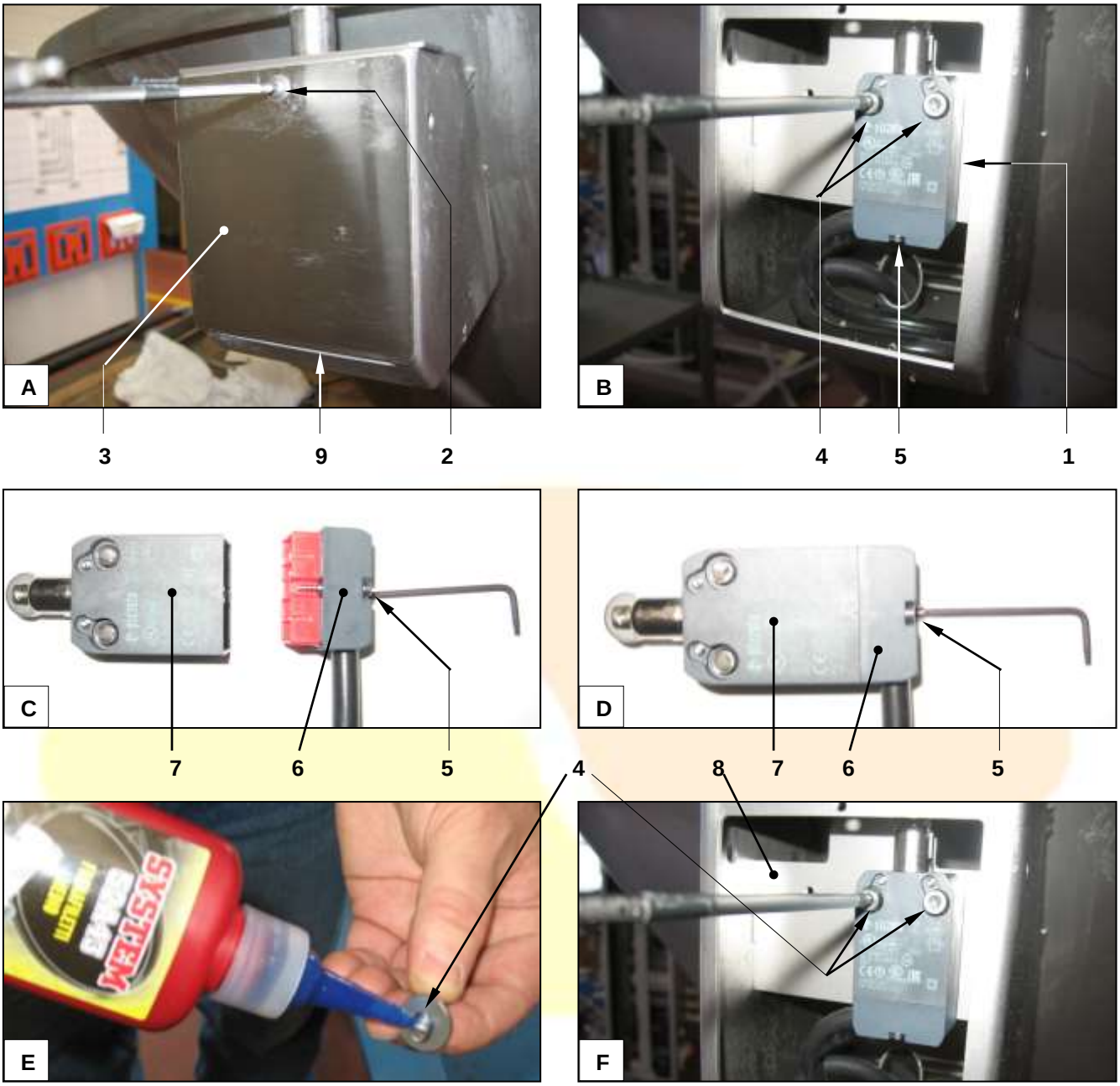


Figure 36 - Replacing the micro-switches associated with the sensor ring

4.7 REPLACING THE MICRO-SWITCHES ASSOCIATED WITH THE HOPPER COVER

In keeping with what was said in par. 4.5, **before beginning, follow the indications in par. 4.1**
Wear anti-abrasion protective gloves, steel-capped shoes, helmet.
To climb high enough to carry out the job, use a step ladder with four autonomous legs or a platform (for example, a table) about 80-90 cm tall (no higher). The tools necessary to replace the micro-switch are the same as those indicated in par. 4.6, with the addition of a 10 mm wrench.
With reference to Figure 37, to replace the micro-switch ref. 1:

1. Unscrew the nut ref. 2 (Figure B) and remove the relative stay rod on the opposite side
2. Remove the entire cover ref. 3 of the hopper (Figure C) and place it on the work bench (it weights approximately 9.2 kg). Take care to not fall when climbing down the ladder or off the table.
3. Pass through the hole ref. 4 with the wrench to loosen the first screw ref. 6 of the micro-switch ref.1 (Figures D - E)
4. Pass through the hole ref. 5 with the wrench to loosen the second screw ref. 7 of the micro-switch ref. 1 (figures D - F)
5. Remove the micro-switch and replace it, following the instructions in par. 4.6, points 3 and4 (it is the same

component)

6. Position the micro-switch, aligning the holes with the corresponding threaded holes on the wall ref. 8 of the squared support, then block it in position with the screws ref. 6 and ref. 7, after having applied the threadlocker onto the shank; tighten well, but without using excessive force not to damage the micro-switch.
7. **IMPORTANT! Position the cover of the hopper so that the tongue ref. 9 is inserted inside the sheet metal ref. 10 of the hopper support,** as illustrated in Figures G - H.
8. Insert the stay rod into the holes ref. 11 and screw the nut onto the end ref. 2 with its relative washer.
9. Before starting up the machine, complete the check list in par. 5.2.3, point 2.

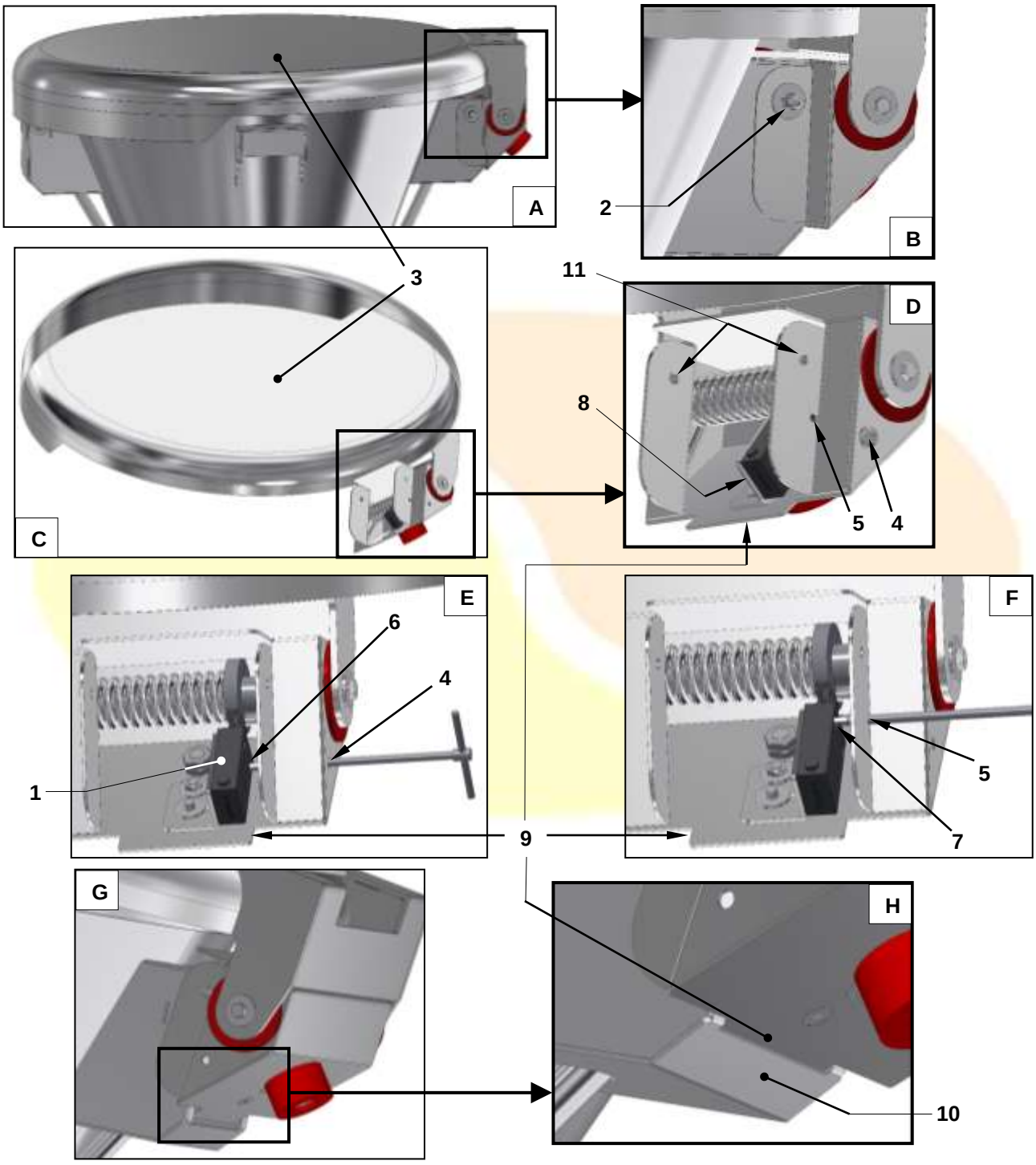


Figure 37 – Replacing the micro-switch associated with the hopper cover

4.8 REPLACING THE MICRO-SWITCHES ASSOCIATED WITH THE WEIGHT CHAMBER DOOR

In keeping with what was said in par. 4.5, **before beginning, follow the indications in par 4.1**
Wear anti-oil protective gloves, steel-capped shoes, helmet.
The tools necessary for disassembling/assembling the micro-switch associated with the door of the weight

chamber are:
- medium threadlocker ref. 1 Figure 38 (ex. AREXONS SYSTEM 52A43, code Arexons 4705)
- Allen wrench 5 mm ref. 2 Figure 38
- scissors with insulated grip ref. 3 Figure 38
- tube wrench 7 mm ref. 4 Figure 38
- screwdriver ref. 5 Figure 38
- 190 x 2,5 cable tie ref. 6 Figure 38

Figure 38 – Equipment for replacing the micro-switch associated with the weight chamber door

With reference to Figure 39, to replace the micro-switch ref. 1:
1. Use the 5 Allen wrench to loosen the screws ref. 2 and that hold the casing ref. 3 of the weight chamber in place (Figure A)
2. Open the door ref. 4 (Figure B), then slip off the casing ref. 3 (Figure C)
3. Use scissors to cut and remove the cable tie ref. 5 (Figure D)
4. Use the size 7 tube wrench to loosen the nuts ref. 6 that fix the micro-switch ref.1 in place (Figure E)
5. Remove the micro-switch ref. 1 from its seating C ref. 7, using the screwdriver to loosen the screw ref. 8, then remove the cover ref. 9 (Figure F)
6. Take note of the wiring position, then disconnect the cables from terminals ref. 10 of the micro-switch (Figure G)
7. Loosen the cable gland ref. 11, pull out the cables, then insert them into the new micro-switch and fix them to the terminals ref. 10 as they were before (Figures H - G); the micro-switch must normally be closed, or in other words its contacts must be closed when the bayonet ref. 12 is connected and only under these conditions will the machine work, while they must open upon the disconnection of the bayonet and command the shut-down of the machine (this must be controlled before restarting production with the machine).
8. Assemble the cover ref. 9 and fix it with the screw ref. 8 (Figure F)
9. Insert the micro-switch into its seating ref. 7, inserting the threaded rods ref. 13 into the holes ref. 14 (Figure I)
10. Apply a small amount of threadlocker onto the protruding part of the threaded rods ref. 14 (Figure I), then tighten the nuts ref. 6 (Figure E); tighten them well without using excessive force.
11. Pass a cable tie ref. 5 through the dedicated holes ref. 15 on the side of the seating ref. 7 and use it to block the micro-switch cable against the side of the seating itself (Figure D)
12. Insert the casing ref. 3 and tighten all the screws ref. 2 (Figures C - A)
13. If necessary, replace the bayonet coupling ref. 12 (for example because it is deformed or ruined); in this case use the threadlocker to block the fasteners ref. 16 (Figures J - K)
14. Carefully close the door ref. 4 and check that the bayonet coupling ref. 12 fits easily in to the micro-switch ref. 1.
15. Before starting up the machine, complete the check list in par. 5.2.3, point 3.

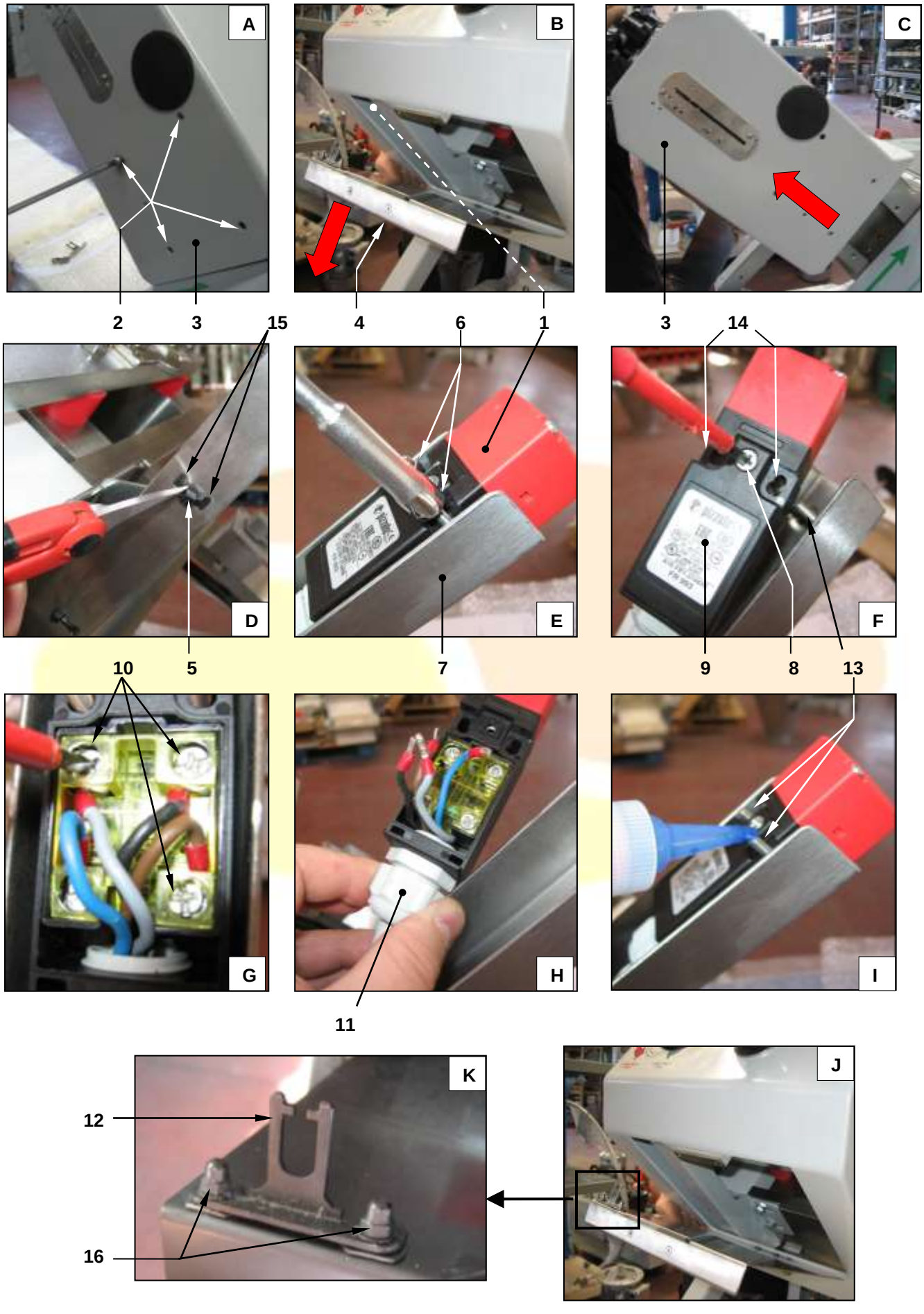


Figure 39 – Replacing the micro-switch associated with the weight chamber door

4.9 REPLACEMENT PARTS

To order replacement parts, contact the retailer where the machine was purchased, providing a brief description of the piece and/or its use; moreover, always cite the serial number of the machine.

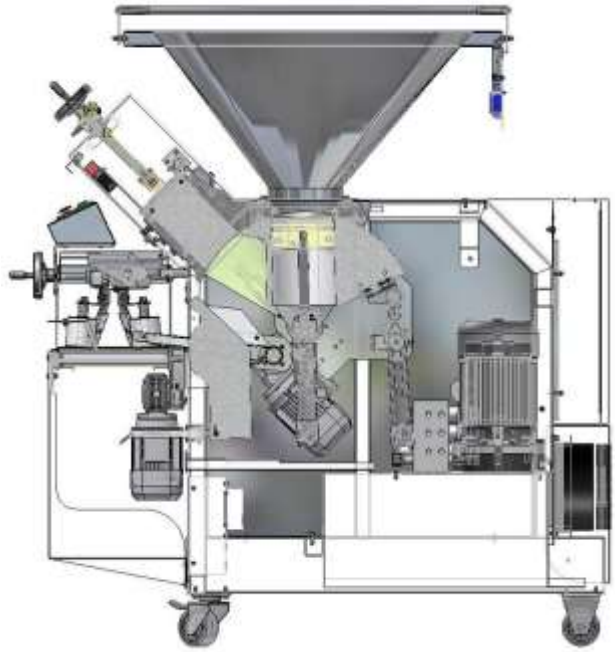
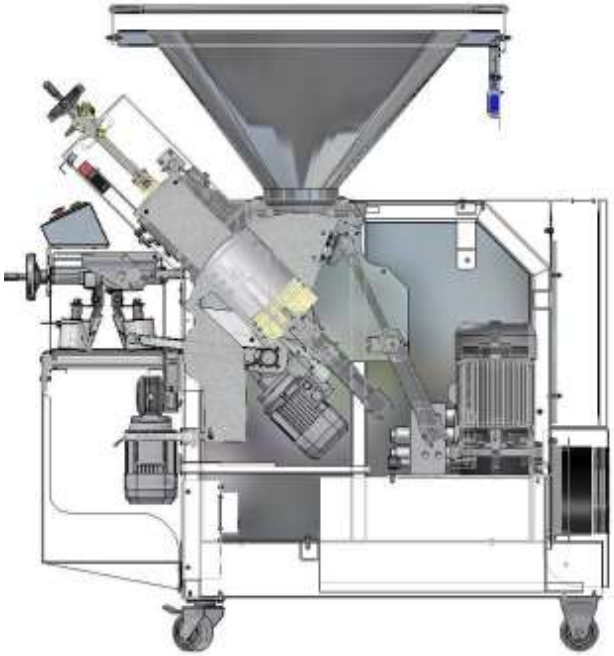
4.10 PROLONGED SHUT-DOWN OR EXCLUSION FROM SERVICE

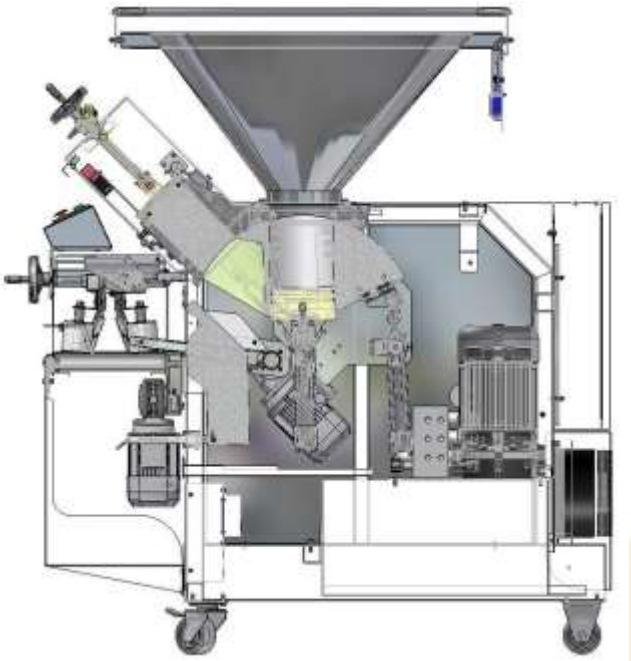
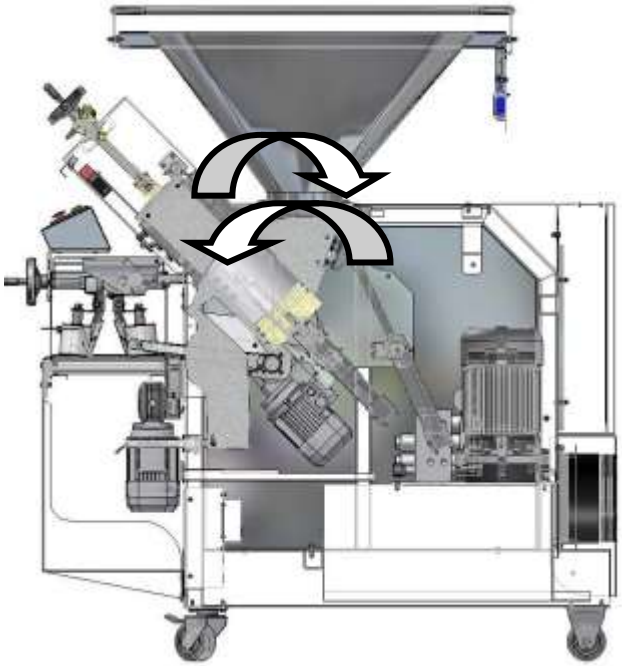
In case of extended shut-down or exclusion from service, disconnect the machine from the electrical power supply. Carefully clean every part of the machine and the cover it with waterproof tarpaulins to protect it from atmospheric agents, dust, insects, rodents, etc. and to prevent the machine from being subjected to impact, tampering, damage, etc.
When recommissioned, it is necessary to carry out a careful inspection to control the integrity and completeness of the machine as if it were the first time it was being started up.

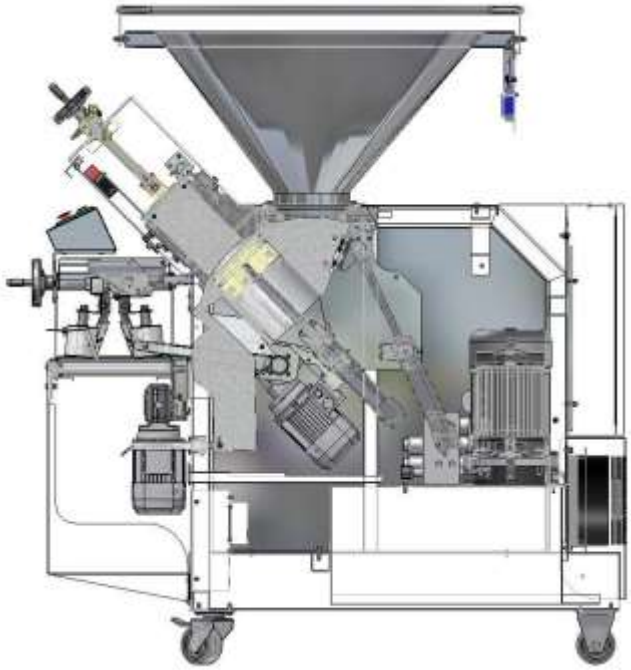
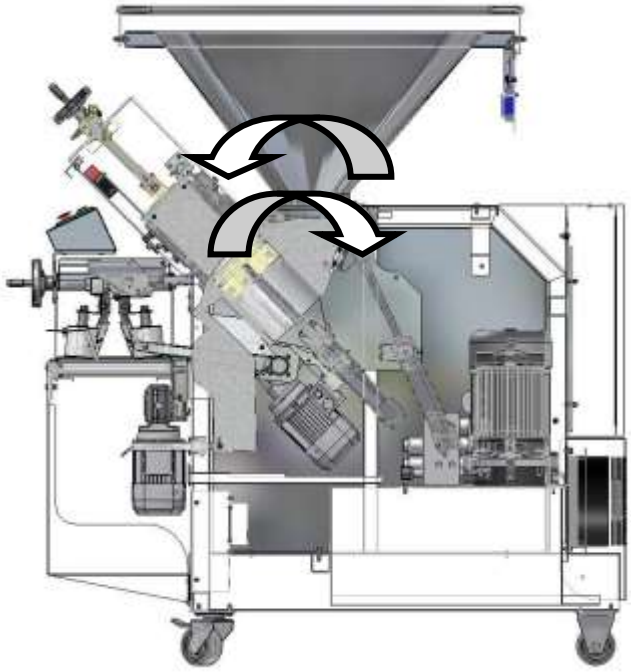
4.11 POTENTIAL BREAKDOWNS AND/OR ANOMALIES

Here is a list of some potential malfunctions and/or anomalies. Eventual interventions must be carried out in conformity with the instructions, where they exist and, in any case, **only after having activated all the safety provisions listed in par. 4.1.**

Problem	Possible cause	Remedy
The machine does not start.	The luminous yellow ring blinks quickly (only in the “Calybra L” version)	Shifting forward or backward the roller unit (only in the “Calybra L”)
	The luminous yellow ring does not light up The touch screen panel is turned off	• The electrical hook-up plug of the machine is not connected to the corresponding power supply outlet; • The electrical hook-up cable of the machine is damaged or cut: disconnect the plug from the electrical panel immediately! • The main switch of the machine is off; • “F1” fuses is interrupted: replace them • “GB” protection “FGB” fuse is interrupted; • “GB” electrical power supply is interrupted: replace it; • Electrical current does not reach the outlet: o Fuses on the electrical panel interrupted (replace them); o no electrical current to the system; o Check the plug and outlet connection. If the main switch or the electrical outlet of the machine is disconnected, restore the correct supply of electrical energy; The main switch on the wall is OFF;

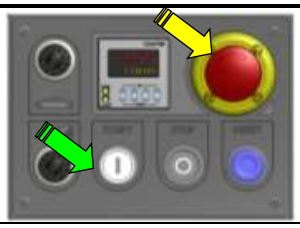
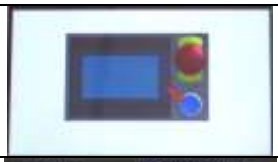
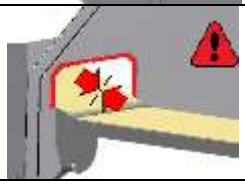
The machine stops as indicated in the image: **Piston at the top in a vertical position** with pump motor “M1” started. 	Reading of the “S2” sensor is irregular.	• Replace sensor “S2”; • Sensor “S2” disconnected from its connector; • Reading cam on sensor “S2” too distant or unscrewed or positioned incorrectly.
The machine stops as indicated in the image: **Piston completely lowered and aligned with the weight chamber** with pump motor “M1” started. 	Reading of the “S1” sensor is irregular.	• Replace sensor “S1”; • Sensor “S1” disconnected from its connector; • Reading cam on sensor “S1” too distant or unscrewed or positioned incorrectly;

The machine stops as indicated in the image: **Piston completely lowered in a vertical position** with pump motor “M1” started. 	The Y1A solenoid valve does not work	• Replace the Y1A solenoid valve; • Check the connection of the solenoid valves on the terminal board inside the electrical panel; • Check their connections and connectors; • Check the functioning of the solenoid valve. It is possible to try mechanical activation by intervening with a punch directly on the solenoid valve work axis (see the image following the table for manually forcing solenoid valves); • Check that the auxiliary relay “KA1” is working correctly;
The machine carries out the dividing movements without pressing anything in the weight chamber. **Compression/vacuum piston completely lowered as in the image below** and pump motor “M1” started up. 	The Y3P solenoid valve does not work	• Replace the Y3P solenoid valve; • Check the connection of the solenoid valves on the terminal board inside the electrical panel; • Check their connections and connectors; • Check the functioning of the solenoid valve. It is possible to try mechanical activation by intervening with a punch directly on the solenoid valve work axis (see the image following the table for manually forcing solenoid valves);

The machine stops as indicated in the image: **Piston completely raised and aligned with the chamber** with pump motor “M1” started up. 	The solenoid valve Y2I does not work	• Check the connection of the solenoid valves on the terminal board inside the electrical panel; • Check their connections and connectors; • Check the functioning of the solenoid valve. Often it must be replaced. It is possible to try mechanical activation by intervening with a punch directly on the solenoid valve work axis.
The machine makes dividing movement without vacuum the dough from the hopper a few times: **Compression/vacuum piston completely lifted as in the image below** and with pump motor “M1” started up. 	The solenoid valve Y4A does not work	• Replace the Y4A solenoid valve; • Check the connection of the solenoid valves on the terminal board inside the electrical panel; • Check their connections and connectors; • Check the functioning of the solenoid valve. It is possible to try mechanical activation by intervening with a punch directly on the solenoid valve work axis (see the image following the table for manually forcing solenoid valves);

4.12 DIAGNOSTIC SIGNALS - ALARMS

Comparative table of electro-mechanical/touch-screen/memory pack alarms.

			**SEGNALAZIONE ALLARMI** ***ALARMS***
Luce gialla spenta ***Yellow light "OFF"***		**Control panel OFF**	**Mancanza alimentazione** ***Lack of power connection***
Luce gialla accesa ***Yellow light "ON"***			**Macchina pronta per "RESET"** ***Machine ready for "RESET"***
Luce verde accesa ***Green light "ON"***			**Macchina pronta per "START"** ***Machine ready for "START"***
Anello giallo lampeggiante ***Yellow ring light BLINKING***	**2 Lampeggi** ***2 Blinks***		**Pulsante a fungo rosso "ARRESTO D'EMERGENZA" premuto** ***"EMERGENCY STOP" button in emergency position***
	3 Lampeggi ***3 Blinks***		**Intervento interruttori termici** ***Circuit breaker tripping***
	4 Lampeggi ***4 Blinks***		**Tramoggia aperta e/o barra di sicurezza premuta** ***Hopper is open and/or safety guard have been pressed***
	5 Lampeggi ***5 Blinks***		**Porta acceso cassetto di peso aperta** ***Weight chamber front door is open***
	6 Lampeggi ***6 Blinks***		**Coperchio vano rullini aperto** ***Rollers casing cover is open***
	7 Lampeggi ***7 Blinks***		**Barra di sicurezza tappeto di uscita premuta** ***Downloading belt safety guard have been pressed***
	Lampeggi continui giallo ***Continuous yellow blinks***		**Rullini in posizione non corretta** ***No correct rollers position***
	Lampeggi continui verde ***Continuous green blinks***		**Sovratemperatura olio centralina idraulica** ***High temperature oil hydraulic unit***

The machines with the electro-mechanical control panel have an adhesive to the side of the adjustment flywheel of the weight chamber. The adhesive shown in Figure 40 explains the meanings of the various luminous signals.

		**SEGNALAZIONE** **ALLARMI – ANELLO GIALLO** ***ALARMS – YELLOW RING LAMP***
Luce gialla spenta ***Yellow light "OFF"***		**Mancanza alimentazione (Paragrafo 6.3.3)** ***Lack of power connection (Paragraph 6.3.3)***
Luce gialla accesa ***Yellow light "ON"***		**Macchina pronta per "RESET"** ***Machine ready for "RESET"***
Luce verde accesa ***Green light "ON"***		**Macchina pronta per "START"** ***Machine ready for "START"***
Anello giallo lampeggiante ***Yellow ring light BLINKING***	**2 Lampeggi** ***2 Blinks***	**Pulsante a fungo rosso "ARRESTO D'EMERGENZA" premuto (Paragrafo 4.1.1 Pos. 2)** ***"EMERGENCY STOP" button in emergency position (Paragraph 4.1.1 Pos. 2)***
	3 Lampeggi ***3 Blinks***	**Intervento interruttori termici (Paragrafo 6.3.4)** ***Circuit breaker tripping (Paragrapf 6.3.4)***
	4 Lampeggi ***4 Blinks***	**Tramoggia aperta e/o barra di sicurezza premuta (Paragrafo 3.8.2 Pos. 2)** ***Hopper is open and/or safety guard have been pressed (Paragraph 3.8.2 Pos. 2)***
	5 Lampeggi ***5 Blinks***	**Porta acceso cassetto di peso aperta (Paragrafo 3.8.2 Pos. 1)** ***Weight chamber front door is open (Paragraph 3.8.2 Pos. 1)***
	6 Lampeggi ***6 Blinks***	**Coperchio vano rullini aperto (Paragrafo 3.8.2 Pos. 4)** ***Rollers casing cover is open (Paragraph 3.8.2 Pos. 4)***
	7 Lampeggi ***7 Blinks***	**Barra di sicurezza tappeto di uscita premuta (Paragrafo 3.8.2 Pos. 3)** ***Downloading belt safety guard have been pressed (Paragraph 3.8.2 Pos. 3)***
	Lampeggi continui giallo ***Continuous yellow blinks***	**Rullini in posizione non corretta (Paragrafo 4.2.2)** ***No correct rollers position (Paragraph 4.2.2)***
	Lampeggi continui verde ***Continuous green blinks***	**Sovratemperatura olio centralina idraulica (Paragrafo 6.3.4)** ***High temperature oil hydraulic unit (Paragraph 6.3.4)***

Figure 40 - Machines with electro-mechanical panel: adhesive with legend of alarm signal lights

5 SAFETY

5.1 INTRODUCTION

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

- the conditions and the intended use of the machine, planned 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 concerning the existing risks in the workplace in fulfilment of current laws in force, among other things.
- access to the work environment is not allowed to unauthorized persons, visitors, and minors.

5.2 DANGERS, SAFETY DEVICES AND RESIDUAL RISKS

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

5.2.1 DANGERS TYPICAL OF THIS MACHINE

With reference to Figure 41, the machine is characterized by the following dangers

of a mechanical nature:

A. Risk of shearing, crushing, cutting: between dough dividing components while passing through the hopper

B Catching and entangling, crushing, impact, contusion: between moving components (access to the dividing mechanism) passing through the product output opening

C Catching and dragging: output belts, zones where belts and cylinders merge

D Crushing, shearing, catching and dragging, impact, serious contusions: moving component transmission and other internal moving parts

E Catching and entangling: volume inside the flour duster

Figure 41 - Zones characterized by mechanical risks

The machine is also characterized by the following dangers:

of an electrical nature:

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

due to hydraulic pressure

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

due to dust inhalation

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

linked to hygiene

I. damage to the health of people due to contact with moulds and mildews, perishable substances, etc. penetration of insects, rodents, etc.

J. alterations of the food product (for example, contamination by the development of micro-organisms and foreign materials)

linked to non-compliance with ergonomic principles

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

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

5.2.2 SAFETY EQUIPMENT OF THIS MACHINE

1. **Sensor ring and spacer ring** on top of the hopper (in alternative to the protection referred to in point 2). The sensor ring is a metallic ring supported by springs along the upper rim of the hopper and attached to it (see Figure 42). It is associated with two safety micro-switches which, if the ring is lowered by more than 8 mm (for example, because someone or something puts pressure on it, triggers the emergency shut-down of the machine, which occurs almost immediately (a fraction of a second). In order to restart the machine, first it is necessary to free the sensor ring so that it returns to its original position, then press the RESET button indicated with ref. 3 in the figures of par. 2.4. The spacer ring (in stainless steel) is fixed with screws to the hopper; its purpose is to increase the distance between the operator and the danger zone in the hopper, in compliance with the criteria of standard EN 12042:2014.

2. **Removable guard associated with the safety micro-switch** (an alternative to the device referred to in point 1). This is an interlocking cover which can be opened upward by rotating on a horizontal axis, intended to protect the inside of the hopper and, in particular, the zone involved in the moving parts used to portion the dough. It is made of heavy-duty transparent plastic material with a stainless steel perimeter. If, while the machine is running, the guard is lifted, the safety system triggers the emergency stop of the machine within the limits described in par. 5.2.3, point 2 and Figure 43; the stopping of each part takes place very quickly (a fraction of a second). In order to restart the moving parts, first it is necessary to close the cover completely so that it rests on the bottom, then press the RESET button indicated with ref. 3 in the Figures of par. 2.4.

3. **Removable guard** (door) **associated with the safety micro-switch** to access the weight chamber. This is an interlocking door that can open downward by rotating on a horizontal axis, intended to protect the inside of the weight chamber where parts are moving to limit the volume of the pieces to be produced and later expel them. It is made in stainless steel sheet metal. If, while the machine is functioning, the door is opened for more than 2 mm, the safety system will trigger the emergency shut-down of the machine, which occurs almost immediately (a fraction of a second).
   In order to restart the moving parts, first it is necessary to close the door completely, then press the RESET button indicated with ref. 3 in the Figures of par. 2.4

4. **Fixed guards:** These are guards held in place by elements that cannot be removed or opened, unless a tool is used (screwdriver, keys, wrenches, etc.); they make most of the moving parts and the transmission of the machine inaccessible. Essentially, the internal parts of the machine are isolated by fixed guards, obviously in association with interlocked removable guards and/or the safety devices described in previous points. The fixed guards also include the tunnel guard installed over the output belt with the panel ref. 1 Figure 30 and the electrical panel.

5. **EMERGENCY STOP button;** it is indicated with ref. 4 in the Figures of par 2.4.; press this to shut down every moving part as well as the power supply to the parts of the machine, which may otherwise be dangerous. Once pressed, it remains mechanically blocked and must be deliberately reset.
   To restart the machine, it is necessary to first reset the emergency button, then restore the normal working conditions of the machine by pressing the RESET button indicated with ref. 3 in the Figures in par 2.4.

ATTENTION!

It is prohibited to remove the guards and/or deactivate safety devices, if not for real and unavoidable reasons, provided that measures aimed at eliminating or minimizing correlated risks have been adopted, and that express authorization of the employer, manager, supervisor, etc. has been obtained. **Replace the guards and fix them** with all the devices intended and **reactivate the safety devices** as soon as the reasons why they were removed/deactivated no longer exist.
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 CONTROLLING THE EFFICIENCY OF THE SAFETY EQUIPMENT

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

1. **Check the efficiency of the micro-switches associated with the sensor ring and the condition of the spacer ring.** In order to carry out this test, the operator will need a normal dynamometer, digital if possible (easily found on the market), with a lower limit no higher than 100 N (10 kg approximately). Carry out the test with no dough in the hopper. With reference to Figure 42, hang the dynamometer on any point of the sensor ring ref. 1. Start the machine and as soon as it starts moving, use the dynamometer to exert a force F downward on the ring. The safety system must trigger the shut-down of the machine when a force F is exerted that, subtracting the weight of the dynamometer, must result no higher than 50 N (5 kg approximately) and, when the ring ref. 1 is subject to downward pressure **Y,** no greater than 8 mm (check with a ruler or using a tape with a millimetric scale). Carry out the test in at least 4 equidistant points as in the example of Figure 42.

When the safety system shuts down the machine, the arrest of every dangerous part must take place very quickly (no more than 0.35 seconds). Remove all force applied to the ring and start the machine: the machine does not start. Press the RESET command indicated with ref. 3 in the figures of par. 2.4 and give the start command: now the machine begins working.
In this way, the efficiency of the RESET command and the capacity of the springs on which the sensor ring rests to restore normal working conditions, as well as reactivate the associated micro-switches, is also tested.
The spacer ring ref. 2 must be in good condition, fixed firmly, and have no deformations whatsoever.
If any of these checks should have negative results, do not use the machine and ask for the intervention of a specialised technician expert in on-board electrical systems.

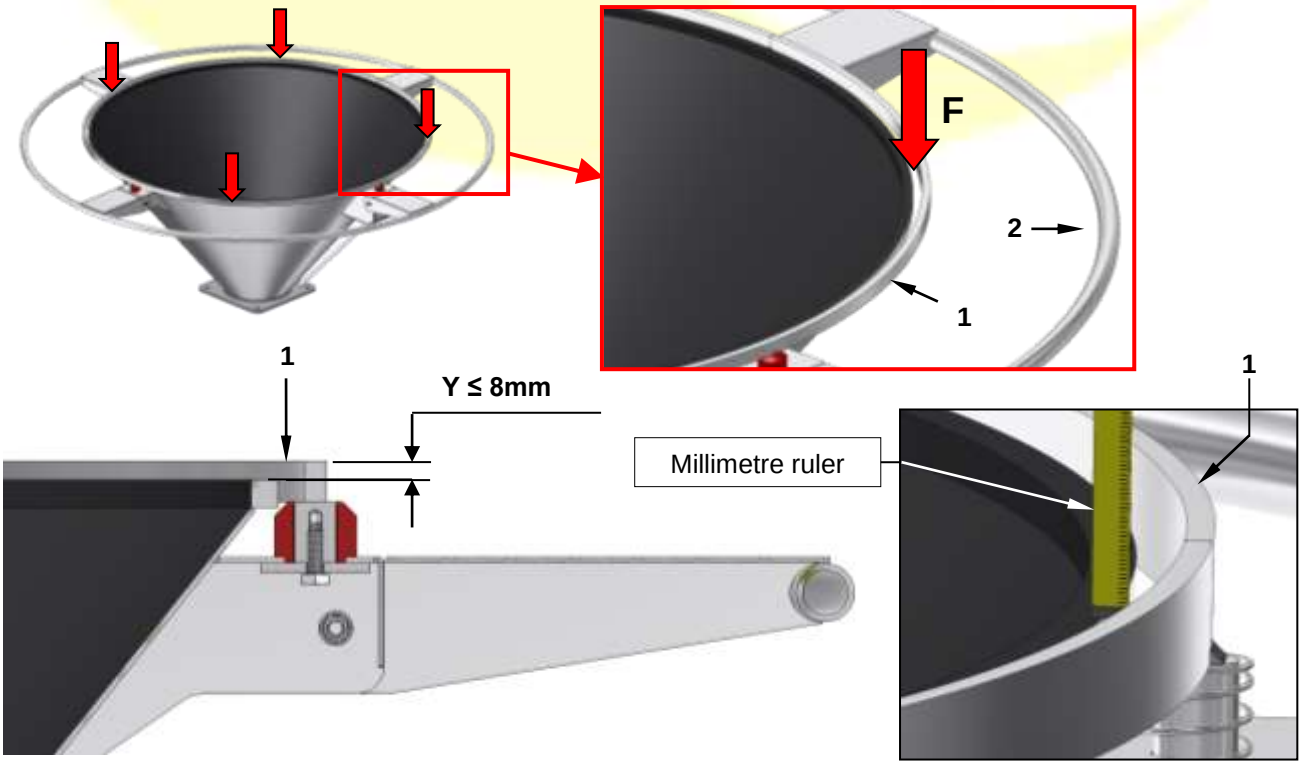


Figure 42 – Check the efficiency of the sensor ring

2. **Check the efficiency of the micro-switch associated with the interlocked cover of the hopper**

Carry out this test with no dough in the hopper. If, while the machine is functioning, the guard is lifted, the safety system triggers the emergency shut-down of every part, which would otherwise be dangerous when the distance between the lower edge of the guard and the level of radial protuberance diametrically opposite the rotation pin of the cover does not exceed 42 mm (see Figure 43/A); check with a millimeter ruler or a caliper or with a metal block of a thickness between 42.05 mm and 42.1 mm.
Also check that at the time the safety system intervenes there is no vertical space between the cover and the rim of the hopper (Figure 43/A). Also check that at the time the safety system intervenes in every point, in particular in the point shown in Figure 43/B, the space between the upper rim of the hopper and the cover is no greater than 20 mm.
In this way, the physical integrity of the hopper + cover as a unit is tested. When the safety system shuts down the machine, the arrest of every dangerous part must take place very quickly (no more than 0.35 seconds).
Close the cover and press the start button: the machine does not start.
Press the RESET command indicated with ref. 3 in the figures of par. 2.4 and give the start command: now the machine begins working. In this way the efficiency of the RESET command is also checked.

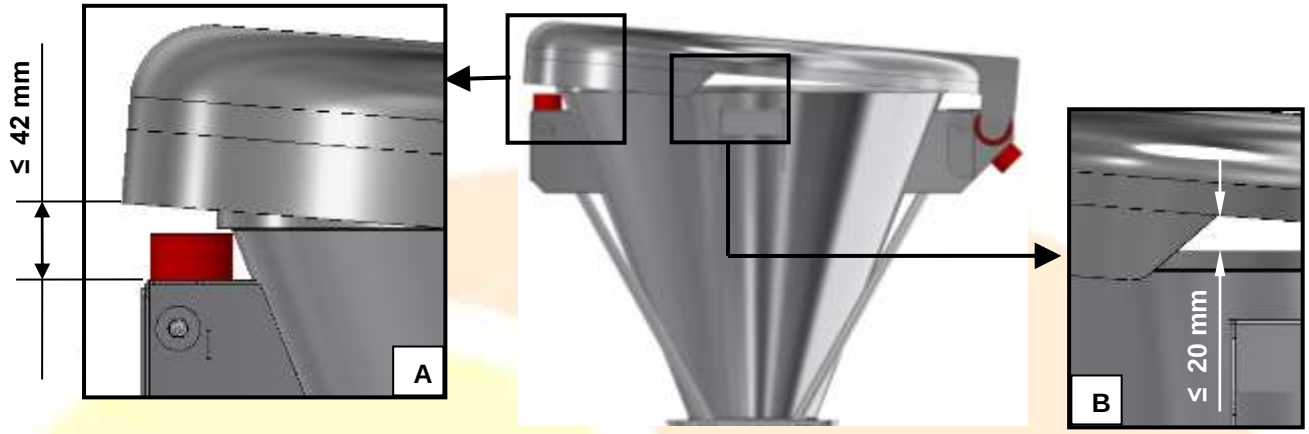


Figure 43 – Checking the efficiency of the micro-switch associated with the hopper cover

3. **Checking the efficiency of the micro-switch associated with the weight chamber door**

Carry out the test with no dough in the hopper. With reference to Figure 44, start up the machine and while the parts are moving, open the door very slowly: the safety system must trigger the shut down of the machine when the door is opened at no more than 2 mm; check with a caliper or with a metal spacer just over 2 mm thick. When the safety system shuts down the machine, the arrest of every dangerous part must take place very quickly (no more than 0.35 seconds) .

Close the door and press the start button: the machine does not start. Press the RESET command indicated with ref. 3 in the figures of par. 2.4 and give the start command: now the machine begins working.
In this way the efficiency of the RESET command is also checked.

If any of these checks should have negative results, do not use the machine and ask for the intervention of a specialised technician expert in on-board electrical systems.

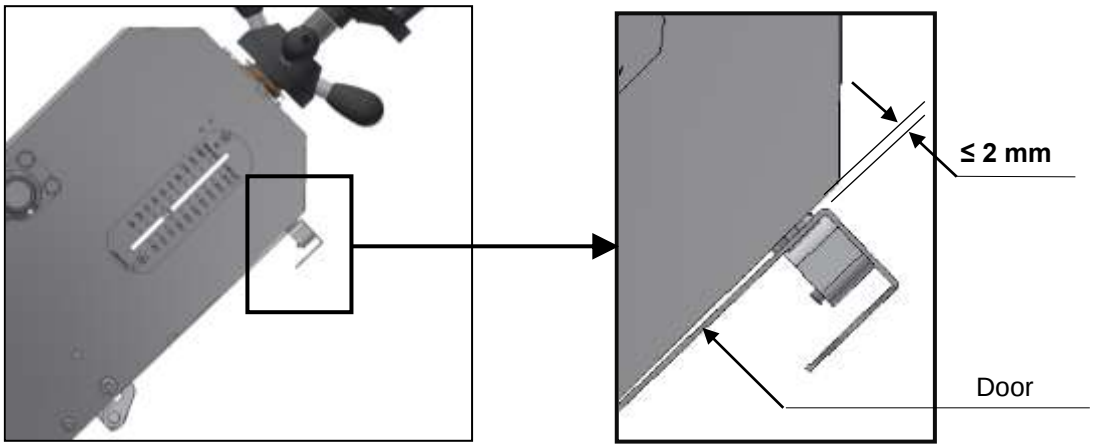


Figure 44 - Checking the efficiency of the micro-switch associated with the weight chamber door

4. **Fixed guards and spacer ring (if present) of the hopper** .

Visually inspect that they are all in position, in good condition (no breakage, big dents, etc.) and blocked with all

the required fasteners (screws, keys, etc.).
The fixing components of the hopper spacer ring are described in par. 3.3. **If this inspection should have negative results, do not use the machine and ask for the intervention of a specialised mechanical technician expert in machine assembly**; if necessary, contact the manufacturer.

5. Checking the emergency stop button

Carry out the test with no dough in the hopper. Start up the machine and, while the parts are moving, press the emergency button: the shut-down of the machine must occur very quickly (no more than 0.35 seconds) and the button must remain mechanically in the pressed position.
Reset the button and press start: no part must move.
Press the RESET command indicated with ref. 3 in the figures of par. 2.4 and give the start command: now the machine begins working. In this way the efficiency of the RESET command is also checked.
If this check should have negative results, do not use the machine and ask for the intervention of a specialised technician expert in on-board electrical systems.

5.3 RESIDUAL RISKS

To minimise as much as possible the residual risks described in the following sub-paragraphs, the importance of information, specific instruction, and training of the operators is 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 the instruction and training of its safe use, on the precautions to be taken and the behaviours to be avoided.

5.3.1 MECHANICAL RESIDUAL RISKS

Risk of shearing, crushing, cuts: between dough dividing components while passing through the hopper.
The hopper with the sensor ring and spacer ring or with the interlocked cover meets the requirements established by the pertinent harmonized standard EN 12042:2014; however, there remains a residual risk for the safety of the persons exposed, in particular in the case of the hopper with the sensor ring and spacer ring; this is because the top of the hopper is in any case completely open and there is, no matter how low, a possibility of accessing dangerous components passing across it. The residual risk exists essentially only during the loading of the dough into the hopper and the cleaning of the inside of the same. Only the user can further reduce this risk or even eliminate it by complying rigidly to the recommendations found in this manual, that are summarized here in order of priority:

1) when loading dough into the hopper, use loading systems that reduce or eliminate the need for the person to climb up or even lean into the hopper (bowl lifts/turners, transport and hopper loading systems, etc.).
2) in case of manual loading of the dough into the hopper, do so while standing on the ground, without climbing onto ladders or platforms, and introduce small portions of dough at a time to minimize ergonomic risks as much as possible
3) if it is decided to climb onto raised levels of lifting platforms to load the dough manually into the hopper (the least safe choice), use systems that are in conformity with the requirements of pertinent laws and standards and that enable the operator to reach the correct height safely (a lifting platform equipped with adequate guardrails, an inclined ladder with four legs and with handrails on both sides and a stopping platform with adequate guardrails and height in relation to the hopper so as to allow the operator to carry out the necessary operations without leaning over the guardrails).

For machines equipped with hoppers with interlocking cover, the risk is minimum or almost null.

Catching and entangling, crushing, impact, contusion in case of attempting to reach the internal parts of the machine via the outlet opening or after having disassembled fixed guards. If the operator complies with the recommendations in this manual, in particular the prohibition to remove the guards, with the exception of absolute necessity, and the mandatory obligation to reassemble them and fix them with 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 output belt, meet the requirements of EN ISO13857:2008.

5.3.2 RESIDUAL RISKS DUE TO HYDRAULIC PRESSURE

The 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, that if present instead are capable of withstanding the impact of pieces and fluids and, above all, if the instructions found 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 specialized technician expert in on-board hydraulic systems as soon as possible. Particular 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. 4.3.3).

5.3.3 RESIDUAL RISKS DUE TO DUST INHALATION

If the machine has a flour duster (optional), it is necessary to use such device to distribute the flour onto the

products rather than do it by hand; in this way, in fact, the development of dust in the ambient air is reduced considerably, making it almost irrelevant.
To load the flour into the flour duster (optional), **do not pour it quickly inside**, but a little at a time, **slowly and carefully**, seeking to generate as little dust as possible and therefore limit, in case of inhalation, health risks to people who may be in the vicinity (tearing, asthma, rhinitis, etc.).
If flour is spread on the products by hand, avoid making abrupt movements for the same reasons mentioned above.

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. 4.4 and the relative sub-paragraphs.
The less efficient the cleaning, the higher the risk will be.
If it is necessary to replace parts of the machine destined to enter into contract with the food product, it is absolutely necessary to procure them from the manufacturer Artezen s.r.l. or from a retailer authorized 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 currently 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. 3.9.1, that are briefly summarized here in order of priority:
1) when loading dough into the hopper, use loading systems that reduce or eliminate the intervention of the person (bowl lifts/turners, transport and hopper loading systems, etc.).
2) in case of manual loading of the dough into the hopper, do so while standing on the ground, without climbing onto ladders or platforms, and introduce small portions of dough (the smaller the portions, the fewer ergonomic risks).

5.3.6 RESIDUAL HEALTH RISKS DUE TO CONTACT WITH OIL

Risks could eventually exist only in the case of contact of the oil with the skin (reddening, irritations, eczema, etc) or during topping up.
To minimise this risk, before opening the product container, **carefully read the relative safety specifications and follow the directions and warnings, in particular concerning the PPE to be worn (at least waterproof, anti-oil gloves and safety glasses or a visor)**.
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 that product.

5.3.7 ELECTRICAL RESIDUAL RISKS

On the panel that closes the electrical cabinet and any other casing containing parts subject to voltage ≥ 24 V there is a special danger warning sign (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 obligatory to open the main switch**, turning it to O - OFF, and **disconnect the plug from the electric power supply outlet 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 FOR MACHINES WITH INVERTERS

After having isolated and reset the electrical power supply inside the inverter, residual electrical voltage remains that could be very dangerous for personal safety in case of contact with live components. The display and the LED present on the inverter remain on until the DC BUS voltage (hence the relative condensers) do not fall 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 isolated and reset, before touching (and 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 display and the inverter LED have turned off
- use suitable instruments to check that there is no electrical current in the clamps of the motor served by the inverter.
It is worth repeating that **all the interventions of an electrical nature must be carry out exclusively by expert and professionally qualified personnel**, capable of carrying out the work to the highest standards and with technical and legal knowledge to carry out such tasks correctly and safely.

5.3.8 RISK OF POLLUTING THE ENVIRONMENT (GROUND)

This risk is very remote and could only occur in the presence of a significant oil lead on the floor. To reduce this risk it is fundamental to control that there are no oil leaks in the hydraulic circuit and, if there are, to eliminate them by replacing the component/s involved; in the meantime, drain all the oil from the hydraulic block (par. 4.3.1) and do not use the machine.

Potential 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 current environmental protection laws in force.

5.3.9 INFORMATION ON THE NOISE LEVEL OF THE MACHINE

Figure 45 illustrates the location of the points where the phonometric testing took place while, in Table 7 there are the values of LAeq (A-weighted Equivalent Sound Level) measured for a machine mod. CALYBRA 1.0 (output belt L=900 mm, hydraulic block HIGH CAPACITY PACK).

The measurements were taken with a Class 1 integrating sound level meter. The maximum error of measurement can be evaluated in the order of 2 dB[A].

Conditions of measurement (in compliance with the provisions of harmonized standard EN 12042:2014, Annex A):

- machine functioning while empty at 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 surface of the measurement box of the machine:
  1000 mm for points 1 - 2 - 3 - 4
  300 mm for points 5 - 6
- presence of background noise characterized by LAeq = 33,1 dB[A]
- duration of each measurement: > 30 seconds (about 60 seconds)

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

Point of measure	LAeq (dBA)
1	**65,4**
2	**63,4**
3	**65,1**
4	**63,9**
5	**66,9**
6	**67,7**

Table 7

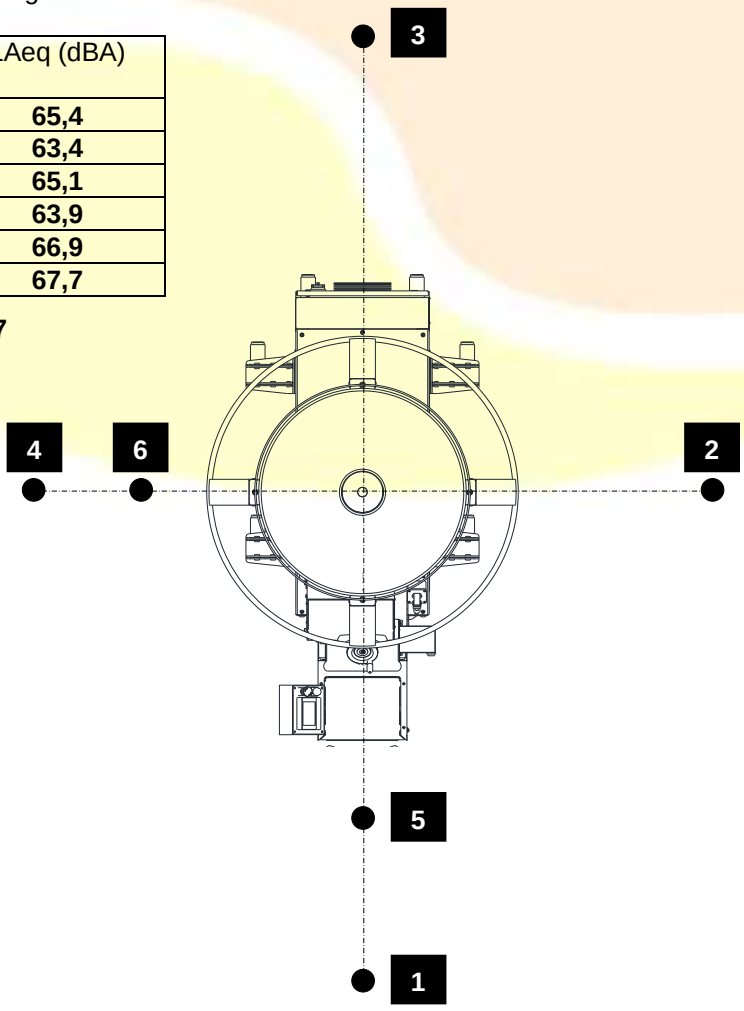


Figure 45 – Points of phonometric detection

5.4 SAFETY WARNING SIGNS

On the machine there are the following safety signs:

	Danger of electrocution; *Outside of every enclosure with live electrical parts inside at > 24 V*
	ATTENTION! Danger of catching, dragging, crushing of hand inside; *on the interlocking door of the weight chamber, on fixed side guards, on the panel screwed to the upper part of the output belt guard*
	ATTENTION! Danger of amputation of hands inside: *on the outside of the hopper on both opposite sides of the same*
	ATTENTION! Moving parts inside. Danger of entanglement, dragging, crushing, and abrasion; *on fixed side guards, on the panel screwed to the upper part of the output belt guard*
	It is prohibited to remove the guards and/or deactivate the safety devices; *on the interlocking door of the weight chamber, on fixed side guards, on the panel screwed to the upper part of the output belt guard*
	It is prohibited to clean, lubricate, etc. parts of the machine while machine is running; *on the interlocking door of the weight chamber, on fixed side guards, on the panel screwed to the upper part of the output belt guard*

Check that the images and colours of the signs are in perfect condition; at the minimum sign of deterioration, replace them immediately.

6 DISMANTLING

If the owner should decide to proceed with the dismantling of the machine, separate the various components by type of material and see that they are disposed of in conformity with current laws and regulations in force; below there are indications concerning materials that constitute the most relevant parts of the machine.

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

Painted steel: support framework and electrical box (if requested by the client)

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

Plastic, rubber: belts, divider, and pistons in the dividing unit, dough expulsion blocks, flexible hose.

Miscellaneous material: motors (copper coils), electrical components, electronics, hydraulics

Drain oil from the hydraulic block tank; it must be disposed of separately in conformity with current environmental protection laws in force.

For the disposal of various materials, it is best to contact companies specialized in waste disposal, who must provide their services in conformity with current laws in force.