INSTRUCTION MANUAL

Spiral mixer mod.

SPRINT V2 90-130-160-200

Version: ENGLISH - Arc. 116
Code 3529.0325.01
Revision: A dated 28/09/2017

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1. Introduction

1.1 Identification

Fig. 1 is an illustration of the nameplate, and **Fig. 2** shows the position where it is riveted or screwed onto the machine; the plate is aluminium with indelible punched and printed data.

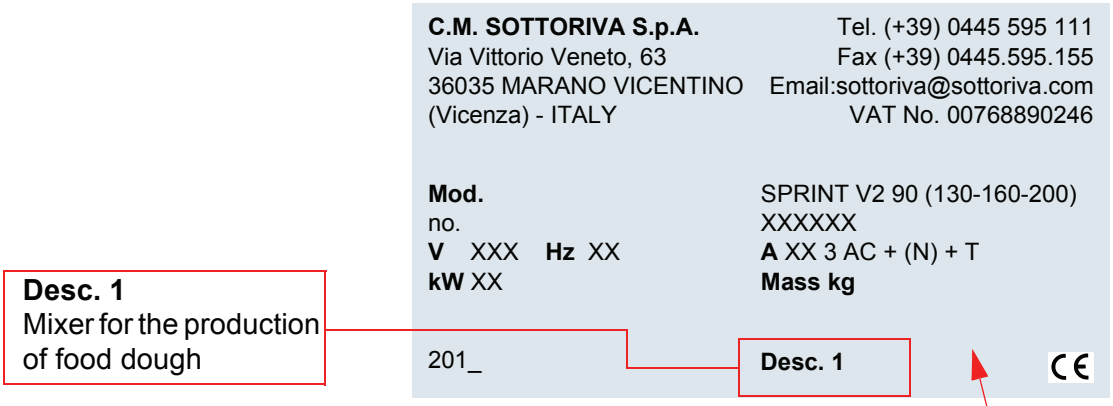


Fig. 1 Nameplate

Fig. 2 Location of nameplate

1.2 Introduction and purpose of manual

Thank you for choosing Costruzioni Meccaniche Sottoriva S.p.A., hereinafter called the Manufacturer; we are happy to have you as a customer and are sure that you will be satisfied with our product.

The present User and Maintenance Manual is an integral part of the consignment and is written for use by anyone working on or operating the machine.

The Manual has the purpose of providing all information required to:

- quickly identify the machine's component parts;
- correctly prepare the machine for use, operate it and service it;
- ensure the health and safety of all users and exposed persons;
- guarantee hygiene as regards the food processed in the machine.

The Manual also includes a **Spare Parts** section, should any part of the machine need to be replaced as a consequence of failure or expiry.

All the information, drawings, diagrams, tables and other contents of the Manual are reserved, and may not be reproduced in part or whole nor divulged to third parties, without the permission of the Manufacturer, who is the sole proprietor thereof.

1.2.1 Using the Manual

Carefully read the Manual before handling, installing, or operating the machine or working on it in any way.

The term "Manufacturer" refers always and only to Costruzioni Meccaniche Sottoriva S.p.A., while the generic term "Supplier" refers to other manufacturers of special parts of the machine.

The Manual must be kept with care for the service life of the machine, and must be consigned with the machine to any other future user or owner.

The Manual must be kept in the vicinity of the machine for consultation by its users.

Take care not to damage the Manual, remove pages, replace or delete information or modify its contents.

Furthermore, the Manual should be kept, preferably in an envelope, away from heat, direct light, humidity and corrosive agents.

The Manufacturer reserves the right to make available at any time any further information he deems necessary to improving the operation and safety of the machine. All such information (modifications and addenda) must be considered an integral part of the Manual.
The Manufacturer also reserves the right to make any modifications to the machine itself that may be deemed suitable for any reason, without updating the Manual, unless the said modifications affect the operation of the machine.

1.3 Warranty conditions

The warranty conditions are stated in the contract of sale and as such have been accepted by the Customer on confirmation of the order.

1.4 Graphic conventions

Text in **boldface** is used to indicate important information.

Reference to figures and tables are made using a boldface number indicating the figure or table itself (e.g. **Fig. 1** or **Table 1**) and, where required, a letter or number, preceded by the abbreviation **ref.**, which identify - within the figure - the component described (e.g. **ref. A - Fig. 1** or **ref. 1 - Fig 1**).

In order to direct the attention of the user in the correct and safe use of the machine, the Manual also uses the following symbols:

Indicates an especially important note, instruction or precaution.

Indicates an operation or situation which constitutes a hazard for the machine.

Indicates an operation or situation which constitutes a hazard for the health and safety of the user.

Prohibited!

Indicates that the operation in question is prohibited.

The Manual also employs the following symbols to represent the ISE (Individual Safety Equipment) to be used when operating the machine.

The use of any given one of these symbols indicates that the article in question must be used during the operation.

	Indicates that **safety glasses** must be worn during the operation in question.
	Indicates that **gloves** must be worn during the operation in question.
	Indicates that a **face mask** must be worn during the operation in question.
	Indicates that **protective clothing** must be worn during the operation in question.
	Indicates that **ear defenders** must be worn during the operation in question.
	Indicates that a **helmet** must be worn during the operation in question.
	Indicates that **safety footwear** must be worn during the operation in question.

1.5 Staff qualifications

The following professional qualifications are defined.

Supervisor

A member of the customer's staff charged with ensuring the observance of the instructions given in this Manual, with the purpose of ensuring not only the correct operation of the machine, but also full compliance with established safety regulations during operation.

Qualified Technician

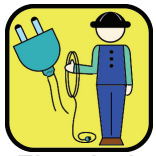
A specialised technician, provided by the Customer or Manufacturer, authorised according to the circumstances to assemble, disassemble, install, adjust, commission, service and repair the machine.

Operator

A member of the customer's staff responsible for routine tasks needed to run the machine: actuation of controls, loading objects, monitoring production, cleaning surfaces and clearing blockages.

Maintenance Technician

A trained member of the customer's staff charged with scheduled maintenance and registers all such activities.



Electrical Technician

A trained member of the customer's staff charged with the adjustment, maintenance and repair of the machine's electrical equipment; also able to work on live equipment on the control switchboard and junction boxes.

Manufacturer's Technician

A specialised technician, provided by the Manufacturer, authorised according to the circumstances to assemble, disassemble, install, test, adjust, commission, service and repair the machine.

1.6 General warnings

All safety regulations given below must be rigorously observed by the machine's users.

At the customer's request, special training can be provided regarding the instructions in this manual, generally by the manufacturer's technical personnel when the machine is started up for the first time; the customer is responsible for selecting which individuals should take part in this training and checking afterwards if they have acquired sufficient knowledge to proceed with the tasks assigned to them.

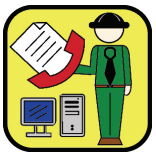
The diagrams annexed to this Manual are for use exclusively for reactive maintenance and inspections.

Prohibited!

It is prohibited to use the said diagrams to modify the machine in any way. Any proposed modifications must be approved directly by the Manufacturer, with a full technical specification of the machine and the reasons for the proposal; if the modification is approved, it must be made by the manufacturer or authorised personnel only.

Danger

Unauthorised tampering with or replacement of any part of the machine, and the use of any accessories, tools or consumables other than those recommended by the Manufacturer, may constitute a hazard and as such void the Manufacturer's liability, whether criminal or civil.



Supervisor

The Customer must ensure that all users have fully understood the contents of this Manual and the meanings of the symbols located on the machine itself.

1.6.1 Customer's responsibility

Unless otherwise specifically indicated in the contract, the Customer shall:

- provide the logistical support for the positioning and operation of the machine;
- provide appropriate lifting equipment;
- provide all power connections (electrical, hydraulic, pneumatic);
- provide all tools and consumables;
- provide all lubricants.

1.6.2 Technical service

For technical assistance, please contact the Manufacturer's Technical Service Department.

The Manufacturer's telephone number is given at the foot of each page of this Manual; the fax number and website are indicated on the front cover.

1.6.3 Spare parts

The Customer must always and only use the original spare parts supplied by the Manufacturer.
When requesting materials from the Manufacturer, always specify the machine's model and serial number.
The Manufacturer is not liable for damage, injury or any other costs consequent on the use of non-original spare parts.

The drawings, references, descriptions and serial numbers of all mechanical parts are given in **"12. List of components and spare parts" on page 59**.

For electrical, electronic and pneumatic equipment, refer to **"9. Attached documentation" on page 55**.

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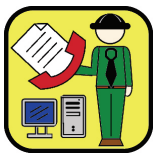
2. Safety information

2.1 General precautions - Training

- Anyone charged with operating or servicing the machine should read the Manual through before doing so.
- Failure to fully observe the safety regulations in operating or servicing the machine may result in accidents for which the Manufacturer declines all liability.
- Note that, as given in established legislation:


Note

Any employee must observe the dispositions and instructions imparted by his employer.


Supervisor

The User must ensure that the instructions given in this Manual have been read and understood by all operators and that they are employed as standard practice in the operation and servicing of the machine.

2.2 General precautions – Skills and checks

- Installation, commissioning and maintenance of the machine are to be performed solely by qualified and authorised technicians.
- The machine described in the Manual must be considered safe when monitored during operation.
- The users of the machine must notify their supervisors if they change the settings of the machine.
- Scrupulously observe at all times the signals and notices posted on the machine.
- Always use the ISE prescribed for each specific operation.
- The workplace must be adequately illuminated for the tasks in hand. Insufficient or excessive lighting is hazardous.
- Check that the power supply is of the specified type and is fully functional.
- While the machine is operating, make sure that no unauthorised persons approach the machine or its controls.
- When operating the machine, adopt all measures and precautions required to ensure that the machine and its component parts are not actuated unintentionally.
- If third parties (unauthorised persons or colleagues) are in the vicinity of the machine, the operator must monitor their safety and warn them of any hazards.

- After operation or during pauses, do not leave the machine powered up or un-monitored, even if it is not operative. Failure to do so may result in accidents.
- Before working on the machine, make sure that all power sources are physically disconnected.
- Keep the working and surrounding area clean and tidy; there must be no grease, oil, water and objects or materials which could cause an obstruction or hazard.
- Install a circuit breaker equipped with a magnetothermic switch upstream of the electrical power line to protect the cabling from shorts and overloads. For the specification of the circuit breaker, refer to the wiring diagrams provided by the Manufacturer along with this Manual.
- Provide adequate fire equipment in the working area, as specified by the Fire Service.
- Check the wear of all electrical cabling.
- Replace any damaged cables.
- Use adequately dimensioned cables as specified. For the specification of the cables, refer to the wiring diagrams provided by the Manufacturer along with this Manual.
- Check that all protections, guards and safety equipment are in place and fully operational.
- Restore and re-arm all protections and safety equipment immediately after the reason for their temporary removal has been resolved.
- Notify your supervisor in case of irregularity.

Note that, as given in established legislation:

The worker is responsible for using the machinery, equipment and ISE correctly.

2.3 General precautions - Prohibitions

The following actions are **absolutely prohibited**.

- **Do not use the machine for purposes and with loads other than those specified and for which it has been constructed.**
- **Do not physically access the interior of the machine during operation or where it is prohibited.**
- **Do not remove or tamper with the protections and safety equipment under any circumstances other than those specifically indicated in this Manual.**
- **Do not attempt to repair, adjust, clean, lubricate or service any parts in motion.**
- **Do not wear clothes with loose sleeves, ties, scarves, rings, watches, bracelets or chains or any similar clothes or objects which may be entrained in the moving parts, resulting in serious injury.**
- **Do not modify the machine in any way.**
- **Do not store flammable materials, such as solvents, gas canisters, etc., in the vicinity of the machine.**
- **Do not work on the machine in any way while it is operating.**
- **Do not allow unauthorised persons into the working area, especially into the vicinity of machinery (even if the latter is not operating at the time).**

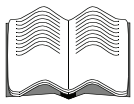
2.4 General precautions - Workplace

The following standards apply in the workplace:

- Legislative decree of 9/4/2008, no. 81 – Consolidated Act on health and safety in workplaces; Legislative decree of 3/8/2009, n. 106 – Additional and corrective regulations of legislative decree of 9/4/2008, no. 81 on health and safety in workplaces.
- European directive on safety and health on workplaces 89/391/EEC, 89/654/EEC, 89/655/EEC, 89/656/EEC, 90/269/EEC, 90/270/EEC, 90/394/EEC, 90/679/EEC, 93/88/EEC, 95/63/EC, 97/42/EC, 98/24/EC, 99/38/EC, 99/92/EC, 2001/45/EC, 2003/10/EC, 2003/18/EC and 2004/40/EC.
- Directive 2004/40/EC of 29/4/2004 on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (electromagnetic fields); Directive 2002/44/EC on the minimum health and safety requirements regarding the exposure of workers to the risks arising from mechanical vibrations; Directive 2006/25/EC of 5/4/2006 on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (artificial optical radiation).
- Directive 91/156/EEC of 18/3/1991amending directive 75/442/EEC on waste; Directive 91/689/EEC of 12/12/1991 on hazardous waste; Directive 94/62/EC on packaging and packaging waste; Directive no. 96 of 2002 on waste electrical and electronic equipment (WEEE); Directive 2008/98/EC of 19/11/2008 on waste.

2.5 Emergency fire regulations

In case of fire, use only **CO_2** or powder extinguishers on electrical equipment. Do not direct jets of water towards the machine as it could cause a shortcircuit. If the fire is not extinguished immediately, take precautions against the dispersion of heated air, water, oil and other fluids. If the machine is equipped with pressurised tanks and hoses/pipes, they may explode if exposed to the flames for an extended period of time: make sure none of these fluids splash you.


Warning!

Provide CO_2 and powder extinguishers in the workplace.
To prevent fire, keep the machine clean and clear of oil, solvents, rags, etc.
The use of powder extinguishers seriously damages the machine; use them only as a last resort.

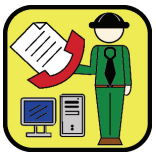

Danger

Fire fighting staff must wear personal respirators when using CO_2 extinguishers.


Note

The use of extinguishers must be governed by a label.

2.6 Hygiene regulations for the use of lubricants


Supervisor

The User must ensure that all operators are aware of the hygiene rules governing the use of lubricants.


Danger

Refer to the safety sheets of the lubricants in use as regards the use of ISE.
Indicate any problems due to incompatibility between the lubricants and other materials.

Refer to the safety sheets of the lubricants in use as regards their hygienic use.
Keep the lubricants out of the reach of persons unauthorised to handle or use them.

Do not store lubricants in open or unlabelled containers.

2.7 First aid regulations for the use of lubricants

For first aid regulations, refer to the safety sheets of the lubricants in use.

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3. Handling and installation area

3.1 Shipping, handling and positioning

3.1.1 Precautions on receipt of the product

The machine is supplied by the Manufacturer ex-works. Before delivery to the shipping agent, the consignment is carefully inspected by the Manufacturer. The Manufacturer is not liable for damage or removal of parts incurred after delivery to the shipping agent.


Note

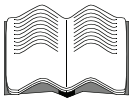
Machine components are normally packaged: any unpackaged parts must be shipped under cover.
All component parts which may shift during shipping must be secured.

On reception of the consignment, the Customer must:


Note

Check that the consignment corresponds to the specification of supply.
Check that the machine has not suffered damage during shipping and that the packaging has not been tampered with and parts removed. If the consignment has been damage or parts are missing, immediately notify the shipping agent and Manufacturer; document all such damage photographically.

3.1.2 Handling


Warning!

Before handling the machine, check that the area is adequately illuminated and the floor is clear of obstacles, flat and even (no holes or depressions).


Danger

Use ropes at least 3 m long for lifting the machine.
Before lifting the machine make sure that the ropes and lifting equipment are rated for the load in question, as well as being suited for the arrangement of the ropes themselves. In any case, the lifting apparatus must conform to current laws and regulations. For information on the weight of the machine, refer to Table 2 on page 25.

The machine must be handled by staff trained in the use of lifting and handling equipment.
Handle the machine with the greatest care, avoiding collisions or impacts of any kind which may damage the machine or affect its operation.
In lifting or lowering the machine with the ropes, act slowly and gradually to

prevent hazardous jerking movements as well as excessive momentum, which can be difficult to brake.

Danger

The entire area concerned in lifting is to be considered a danger zone, by which is meant an area inside or around the machine in which the presence of a person constitutes a hazard for the safety and health of the person in question.
Make sure that there are no exposed persons in the danger zone.

To move the machine, proceed as follows:

1) pass a rope suited to lifting weights under the head at the point at which it meets the column, as in **Fig. 3** on page 20;
2) attach the rope as shown in **Fig. 3** to a lifting device (crane, bridge crane, hoist);
3) fit felt pads between the rope and the machine to prevent the ropes damaging the paint and the machine itself;
4) fit a wooden spacer (70-80 mm) between the side of the head and the rope, to prevent damage to the paint or the machine itself;
5) slowly lift the machine without jerking it.

Danger

The machine can be moved using a fork lift truck; in this case, check that the machine is firmly secured to the pallet with straps.

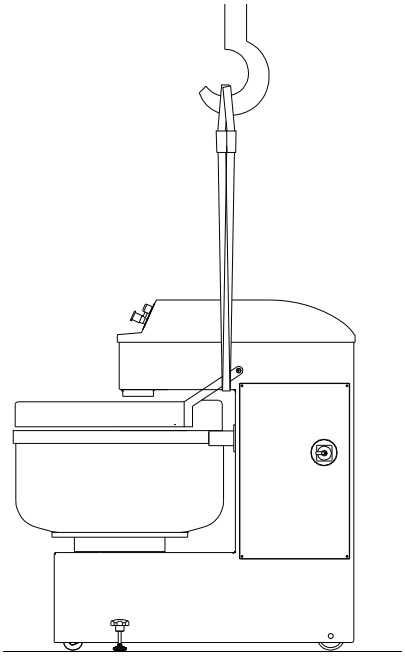


Fig. 3 Handling

3.1.3 Positioning

Before positioning the machine, check that:

- the floor on which the machine is to be positioned is even and flat;
- the distance between the machine and the power supply point is as short as possible to prevent the cable becoming a hazardous obstacle to free movement;
- the area in which the machine is to be operated is adequately illuminated.

The machine must be positioned on the floor at the point specified for its installation, as shown in **"3.1.2 Handling" on page 19**.

The machine must be lowered onto the floor as slowly as possible to prevent damage to either the machine or the floor itself.
With the exception of the front of the machine which is used by the operator and requires greater clearance, leave a space of at least 50 cm around the sides of the machine for access during maintenance and cleaning, thus ensuring the level of hygiene required.
Once the machine has been placed in its operating position, adjust its stabiliser feet **(ref. 9 - Fig. 4** on page 23**)** with the handwheels **(ref. 7- Fig. 4)** in order to minimise the motion of the machine while operating and to level the machine relative to the floor.

3.1.4 Subsequent handling

If the machine is to be moved at a later date, proceed as follows:

1) slacken off the stabiliser feet **(ref. 9 - Fig. 4)** with the handwheels **(ref. 7 - Fig. 4)**;
2) move the machine by pushing it on its wheels.

Given the considerable mass of the machine, make sure before pushing it that no-one is standing in the area through and into which it is to be moved.

3.2 Unpacking and disposal of packaging materials

The machine is shipped with a variety of packaging materials. The Customer is obliged to dispose of them in accordance with established local legislation. The following packaging materials are used:

- cardboard
- tape
- extensible film
- bubble wrap
- wood
- steel nails and bolts
- PE barrier bags
- OPP straps marked Sottoriva
- PU foam

3.3 Installation area

The area in which the machine is to be installed, given that it is designed for the production and cooking of bakery products, must:

- permit access for the passage of the largest parts of the machine;
- be constructed in accordance with established legislation;
- have a flat, even floor capable of supporting the weight of the machine;
- be adequately illuminated inasmuch as insufficient or excessive lighting is hazardous;
- allow for an adequate circulation of fresh air;
- be equipped with an electrical plant which complies with established legislation, especially as regards the ground plant and electrical cabinet with its short circuit and overload equipment.

The nominal installed power of the machine is indicated on its nameplate, which is located as shown in **Fig. 2** on page 5.

Qualified Technician

The electrical plant must be installed, serviced and regularly inspected by a qualified electrician.

4. Product specification

4.1 General description

Fig. 4 Overview

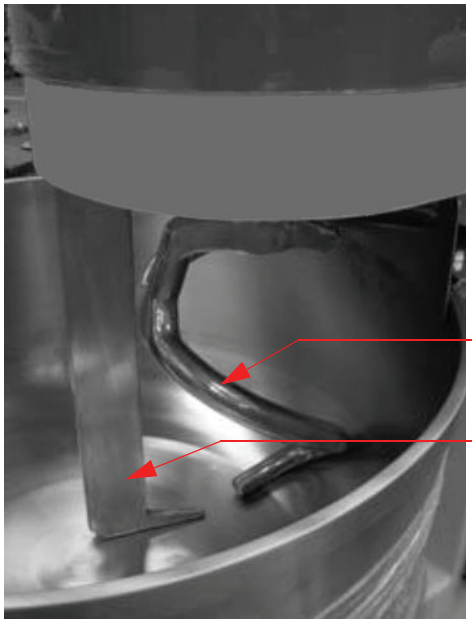


Fig. 5 View of tub interior

The **SPRINT V2 90-130-160-200 (Fig. 4** and **Fig. 5** on page 23**)** spiral dough mixer is a machine for mixing ingredients, generally water, flour, yeast and salt with other secondary ingredients, and amalgamating them so as to obtain a homogeneous dough for further processing and cooking.

4.2 Operational principles

The machine's operation is divided into cycles of variable length as follows:

1) loading the machine with the ingredients;
2) mixing them;
3) unloading the dough;
4) cleaning the machine.

4.3 Main components

See **Fig. 4** and **Fig. 5**.

The machine is composed of:

- a fixed frame **(ref. 1)** containing the transmission components for the kneading tool, the tub and the electrical cabinet **(ref. 2)**;
- a rotating tub **(ref. 3)** which contains the ingredients to be amalgamated;
- a kneading tool **(ref. 4)** in the shape of an elongated spiral mounted on a vertical axis, for mixing and amalgamating the ingredients.

The kneading tool rotates clockwise, while the tub can rotate in both directions; during the first few minutes of processing, the tub should rotate in the opposite direction to the kneading tool, as this facilitates amalgamation of the ingredients.
The kneading tool is driven by a two-speed motor via a belt transmission; the tub is driven by a different motor with its own drive belt.
To facilitate unloading the dough, the tool can be driven at low speed, at which time the tub can be moved with the mobile guard open using a hold-to-run control.

4.4 Other components

With reference to **Fig. 4** and **Fig. 5**, the machine is also composed of:

- a fixed top guard **(ref. 5)**;
- a control panel **(ref. 6)**;
- two handwheels **(ref. 7)** for regulating the machine’s stabiliser feet;
- a main on/off switch **(ref. 8)**;
- two feet **(ref. 9)** which stabilise the machine;
- an interlocked mobile guard **(ref. 10)** to prevent access to the tub while it is moving;
- a metal column **(ref. 11)**, mounted in parallel to the kneading tool, which breaks up the dough, thus aiding the amalgamation process;
- two guide rollers **(ref. 12)** on which the tub runs.

4.5 Technical specifications

With reference to **Fig. 6**, **Table 1** shows the overall dimensions of the machine, while **Table 2** lists the power ratings of the motors and some other technical data.
(*) The dough making capacity given in **Table 2** refers to a water/flour ratio of 55/100 for flour of W=200 and P/L = 0.3.

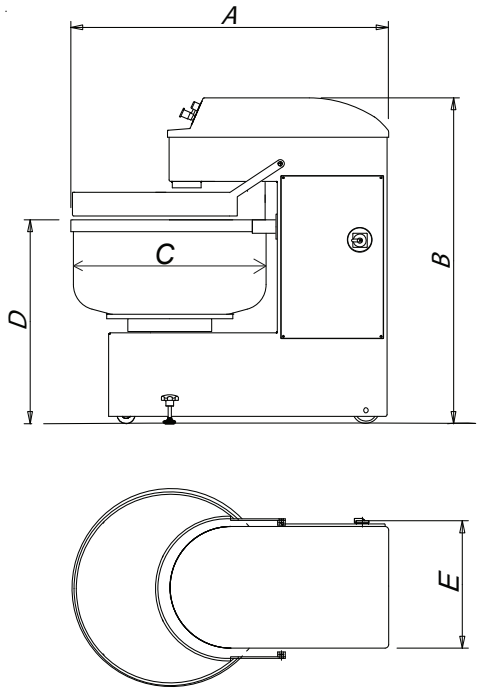


Fig. 6 Overall dimensions

MACHINE	A	B	C	D	E
SPRINT V2 90	1274	1359	710	820	556
SPRINT V2 130	1271	1359	805	865	556
SPRINT V2 160	1392	1457	900	940	614
SPRINT V2 200	1450	1588	900	987	614

Table 1 Overall dimensions

MACHINE	Machine weight	Bowl power kW		Power of kneading tool kW		Dough making capacity kg (*)	
	kg	1 speed	2 speed	1 speed	2 speed	Min.	Max.
SPRINT V2 90	405	0.66	1.1	2.06	3.7	8	90
SPRINT V2 130	430	0.66	1.1	2.06	4.7	10	130
SPRINT V2 160	585	0.75	1.5	3.7	5.9	10	160
SPRINT V2 200	700	0.75	1.5	3.7	5.9	12	200

Table 2 Technical Data

4.6 Power consumption

Refer to the wiring diagrams attached to this Manual.

4.7 Noise level

When running under no load, the machine emits a continuous equivalent acoustic pressure level of less than 70 dB(A); this measurement was made in the zone normally occupied by the operator as described in **"6.2 Safety precautions" on page 35**, at 1.6 m above the floor and at 1 m distance from the machine, in the direction of maximum emission.
The measurement was made with a HD 9019 K1 instrument (serial number 2809946804) composed of:

- integrator phonometer mod. HD 9016
- sensor HD 9019 S1

the specifications of which fall within the standards indicated below, as declared by the Supplier of the instrument with certificate of conformity regularly renewed on re-calibration of the instrument itself:

- IEC 651 CLASS 1
- IEC 804 CLASS 1
- IEC 225 FILTERS 1/3 OCTAVE
- IEC 537 FILTER WEIGHTING D
- BS 6402 DOSE

4.8 Other emissions

EMISSION OF FLOUR DUST
For machines with mobile guard (ref. 10 - Fig. 4 on page 23) of the integral type, there are no significant risks, inasmuch as the residual apertures do not permit an appreciable emission of flour dust.
For machines with mobile guard (ref. 10 - Fig. 4) equipped with uniform apertures in steel dowel (optional for extra CE Country), the operator must always start and run the machine at low speed for at least 2 minutes to minimise the emission of flour dust, which would be considerably greater at higher speeds.

4.9 Production and elimination of waste material

The entire mass of dough produced by the machine is used in further processing. Any waste consisting of dough not further processed, must be collected and stocked in suitable containers for disposal by a specialised contractor.

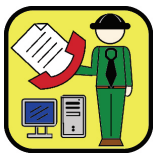
Do not dispose of auxiliary materials used for cleaning (e.g. rags) in the sewers (via sinks, tubs, etc.) or dump them into the environment (into streams or onto the ground).
Such materials must be collected and stocked in suitable containers for disposal by a specialised contractor.

4.10 Operating conditions

Unless otherwise specified in the contract of supply, the ambient operating temperature is in the range 0 °C to 50 °C; ambient humidity must be between 0% and 90% with no condensation.

The operating conditions must also be such as to ensure that the food products processed by the machine are not affected in any way during their exposure to the open air due to the action of factors such as drafts, dust or leaking fluids, condensation or aerosols.

4.11 Storage conditions



Supervisor

Up to the time of installation, the machine must be stored indoors, in a dry place, protected from the weather and in particular from dust, at a temperature in the range 0 °C to 50 °C, away from sources of heat and potential explosion. Refer to **Table 2** on page 25 for the weight of the machine, and check that the surface on which the machine is placed is designed and constructed to support it.

4.12 IP protection rating

The covers of electrical equipment exposed to external agents are rated IP 54.

4.13 Residual risks and special guards

In compliance with European Directive EN 453, we list below the residual risks and measures adopted to guard against them.

4.13.1 Mechanical hazards

The following significant mechanical hazards are present:

- trapping hazard;
- entrainment hazard;
- crushing hazard;
- abrasion hazard.

DANGER ZONE 1: area between the kneading tool (ref. 4 - Fig. 5 on page 23) and the rotating tub (ref. 3 - Fig. 4 on page 23) and between the kneading tool and the column (ref. 11 - Fig. 5).
NATURE OF RISK: risk of trapping, entrainment and crushing of upper extremities.

Protective measures:

- The entire area of the tub shown on the layout is protected by a mobile guard in impact resistant material which prevents the arms and hands from coming into contact with the kneading tool.
- The kneading tool may only be started up if the mobile guard is fully lowered.
- The guard is connected to an NC (normally closed) microswitch, which forces the opening of the microswitch's contacts when it is opened; opening the microswitch's contacts cuts off power to the motors and stops the machine at once.

The safety microswitch must trip whenever any point of the mobile guard's perimeter is more than 75 mm distant from the edge of the tub. An aperture at the part of the guard furthest away from the kneading tool allows the machine operator to test the dough manually; this opening may never be used by the operator to access the tool with his hands for any reason.

DANGER ZONE 2: area between the frame (ref. 1 - Fig. 4) and the tub (ref. 3 - Fig. 4).
NATURE OF RISK: entrainment and abrasion of the upper extremities.

Protective measures:

- The risk has been prevented by providing adequate clearance between the tub and the frame, as per the state of the art of the technology in question.
- When cleaning the area in question, or beneath the tub, refer to **"7.3 Periodic cleaning" on page 43**.

Danger

DANGER ZONE 3: area covered by the mechanism responsible for the forward travel of the tub (ref. 3 - Fig. 4 on page 23).
NATURE OF RISK: entrainment of the upper extremities.

Protective measures:

- Not applicable to the machine, inasmuch as the tub forward travel mechanism is protected by a fixed guard, which moves with the tub and prevents the upper extremities from accessing its moving parts.

Danger

DANGER ZONE 4: area covered by the mechanism responsible for the forward travel, positioning and adjustment of the kneading tool holder. NATURE OF RISK: shearing, entrainment, impact and crushing of upper extremities.

- Not applicable to the machine inasmuch as the kneading tool holder is fixed.

Danger

DANGER ZONE 5: area between the guide rollers (ref. 12 - Fig. 4) and the tub (ref. 3 - Fig. 4).
NATURE OF RISK: entrainment and trapping of upper extremities.

- Not applicable to the machine inasmuch as the area in question is protected with fixed guards.

Danger

DANGER ZONE 6: area between the rotating tub (ref. 3 - Fig. 4) and the mobile guard (ref. 10 - Fig. 4).
NATURE OF RISK: crushing of the upper extremities.

Protective measures:

- The risk has been prevented by implementing adequate clearances between the upper edge of the tub and the edge of the mobile guard when it is closed (max 25 mm).

All other moving parts, such as drive mechanisms, belts, chains, etc. have been rendered inaccessible by means of fixed guards.
These guards may only be removed under circumstances expressly specified and by the qualified technicians indicated in each case in this Manual.

4.13.2 Electrical hazards

All electrical equipment, including the control and signalling equipment, has been designed and constructed in compliance with the safety regulations and technical specifications of EN 60204-1.

5. Preparation for use

5.1 Assembly: Not applicable to the machine.

5.2 Subsequent disassembly: Not applicable to the machine.

5.3 Mounting: Not applicable to the machine.

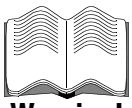
5.4 Installation

5.4.1 Hooking up to the line: Not applicable to the machine.

5.4.2 Connection to the mains power supply

Qualified Technician

The operations described below must only be carried out by a qualified technician.



Warning!

Make sure that the mains voltage is as required for the machine and clearly indicated on the machine nameplate.

The machine must be connected to the mains power supply in compliance with established regulations, and with reference to the data given in this Manual.
For the connection, the machine is provided with a CEI 20-22 cable and EEC plug with the number of poles indicated on the nameplate.
Connect the machine to the ground system and not to the gas or water pipes or any other non-specific metal structures.
The power supply cable must be kept away from hot and moving parts. It must not be an obstacle to the free movement of staff or materials in the working area.

5.4.3 Connection to the hydraulic circuit: Not applicable to the machine.

5.4.4 Connection to the pneumatic circuit: Not applicable to the machine.

5.4.5 Consumables: Not applicable to the machine.

5.5 Commissioning

5.5.1 Greasing: Not applicable to the machine.

5.5.2 Adjustments: Not applicable to the machine.

5.5.3 Testing

Manufacturer's Technician

The machine is factory tested by the Manufacturer before shipping.

5.6 First start-up

Qualified Technician

The operations described below must only be carried out by a qualified technician.

After positioning the machine, proceed as follows in the specified order, with reference to **"6.7 Machine controls" on page 38**:

1) Make sure that the machine voltage displayed on the nameplate corresponds to the line voltage of the installation site; if it does not, stop the electrical installation procedure and contact the distributor or Manufacturer immediately.
2) Connect the plug to the power socket.
3) Make sure the machine rotates in the right direction; to do this, proceed as follows:
4) turn the main switch **(ref. 1 Fig. 9** on page 38**)** to 1;
5) set a minimum time on the timer **(ref. 9 - Fig. 10** on page 39**)**;
6) press the 1st speed start button **(ref. 3 - Fig. 10)**;
7) stand in front of the machine as shown in **(Fig. 8** on page 36**)**, and check that the spiral kneading tool **(ref. 4 - Fig. 5** on page 23**)** is turning clockwise.
8) Press the button **(ref. 5 - Fig. 10)** to stop the machine.
9) Turn the main switch **(ref. 1 - Fig. 9)** from 1 to 0.
10) Disconnect the plug from the power socket.
11) If the kneading tool is turning clockwise, the first start-up procedure is concluded. If not, in other words if the kneading tool turns anticlockwise, proceed as follows:
12) Undo the screws shown in **Fig. 7** on page 33.
13) Open the power plug.
14) Swap the brown and black wires.

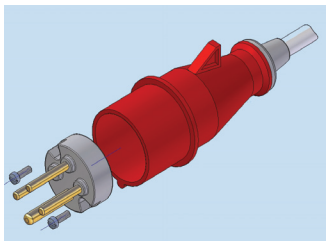


Fig. 7 Mains plug

Note

In case of three-phase + neutral + ground power connection, there are two black wires. In this case it does not matter which of the black wires is swapped with the brown wire; if the cable is three-phase + ground there is only one black wire; swap it with the brown wire.

Warning!

Never disconnect the yellow-green (ground) or blue wires or change their positions.

15) Close the plug using the screws as shown in **Fig. 7** on page 33.
16) Reconnect the plug to the power socket.
17) Check the rotation direction of the kneading tool again, as indicated in point 3).

5.7 Running in

Qualified Technician

After **50 hours of operation** from first start up, check and adjust, if necessary, the tension of all belts, with reference to **"7.4.1 Tension of belts" on page 44**.

5.8 Inactivity and restart

Operator

If the machine must be put out of service for any reason, proceed as follows:

1) disconnect the plug from the mains power socket;
2) clean the machine with reference to **"7.3 Periodic cleaning" on page 43**;
3) cover the machine to protect it against dust;
4) post an "Out of service" notice on the machine.

Note

Before restarting the machine after such a period of inactivity, check that the machine is clean as required for food hygiene.

Qualified Technician

The machine must then be started up by a qualified technician, with reference to **"5.6 First start-up" on page 32**.

6. Use

6.1 Quick reference guide

- **If a hazardous situation arises**, press the mushroom-head button **(ref. 8 Fig. 10** on page 39**)** to trigger the emergency stop.
- **To restart the machine**:

1) solve the problem;
2) reset the mushroom-head button **(ref. 8 Fig. 10)**;
3) press the start button **(ref. 3 Fig. 10)** for low speed operation;
4) wait for two minutes;
5) press the start button **(ref. 4 Fig. 10)** for high speed operation.

- **To stop the machine**, press the stop button **(ref. 5 Fig. 10)**.
- **To switch off the machine**:

1) press the machine stop button **(ref. 5 Fig. 10)**;
2) turn the main switch anticlockwise **(ref. 1 Fig. 9** on page 38**)**;
3) disconnect the plug from the mains power socket.

6.2 Safety precautions

Supervisor

The supervisor must:

1) **inform and train** all operators regarding the correct, safe use of the machine;
2) **ensure** that all the instructions given in this Manual are scrupulously observed by all operators;
3) **supply** all prescribed ISE to all operators;
4) **ensure** that the ISE is used effectively and correctly.

Danger

In order to reduce powder emissions to a minimum:
1) handle the packaged products with care, pouring them into the tub at the lowest possible height above its base;
2) open the packages with care inside the tub, so as to minimise the amount of time that flour dust is emitted.

The working position normally occupied by the operator for short periods of time is shown in **Fig. 8** on page 36.

Fig. 8 Operator position

When loading flour into the tub, the operator must wear a **dust mask**.

If the running noise of the machine increases above the value declared by the Manufacturer in **"4.7 Noise level" on page 26** due to wear of its parts, the operator must wear **ear defenders**. The supervisor must have worn components replaced with original spare parts, as per the instructions given in this Manual.

6.3 Checks before start-up

Operator

Before starting the machine, proceed as follows:

1) make sure all fixed guards are in place;
2) make sure the mobile guard is in place **(ref. 10 Fig. 4** on page 23**)** on the tub;
3) make sure that all safety equipment is in place and operational: mobile guard interlock **(ref. 5 Fig. 16** on page 61**)** and mushroom-head button **(ref. 8 Fig. 10** on page 39**)** to trigger the emergency stop;
4) make sure that all hold-to-run controls are in place and operational **(ref. 11 Fig. 10)**;
5) make sure that the main switch **(ref. 1 Fig. 9** on page 38**)** and power socket are in place and operational.

6.4 Correct use of the machine

The machine in this Manual should be considered as compliant with all regulations relating to suitability for food processing in force at the moment it is shipped by the Manufacturer; this suitability depends over time on careful cleaning, at least daily, and on regular service and inspection, including immediate replacement of any parts in contact with foodstuffs (dough, flour, water, etc.) which may be damaged, worn or no longer suited to the hygienic treatment of foodstuffs.

The kneading process must start slowly for at least 2 minutes, to prevent flour which is not sufficiently bound with the water being ejected in powder form from the tub, since inhalation of flour can be noxious over the long term.

6.5 Improper use

The following prohibitions do not cover all possible incorrect uses of the machine, but relate only to reasonably probable ones.

Do not load the machine beyond the kneading capacity shown in Table 2 on page 25.

Do not run the machine at any speed other than that set by the Manufacturer. Obtain the Manufacturer's permission before modifying the speed settings.

While the kneading tool head is rotating or lifting (where applicable), keep your hands away from all moving parts.

Do not use spatulas or scrapers to extract the dough from the machine.

6.6 Operational limits

The total weight of the ingredients should not exceed the nominal dough capacity given in **Table 2 on page 25**.

Since flour is much less dense than water, the nominal capacity of the tub is determined on the basis of a water/flour ratio of 0.55 and on the assumption that the flour is loaded into the tub before the water (thus wetting the flour and increasing its density, reducing its volume and reducing the amount of flour dust emissions).

6.7 Machine controls

Fig. 9 Main switch and control panel

The machine is controlled by:

- a main switch **(ref. 1 Fig. 9** on page 38**)** on the electrical cabinet's fixed guard;
- a control panel **(ref. 2 Fig. 9)**, located on the front panel of the kneading tool head.

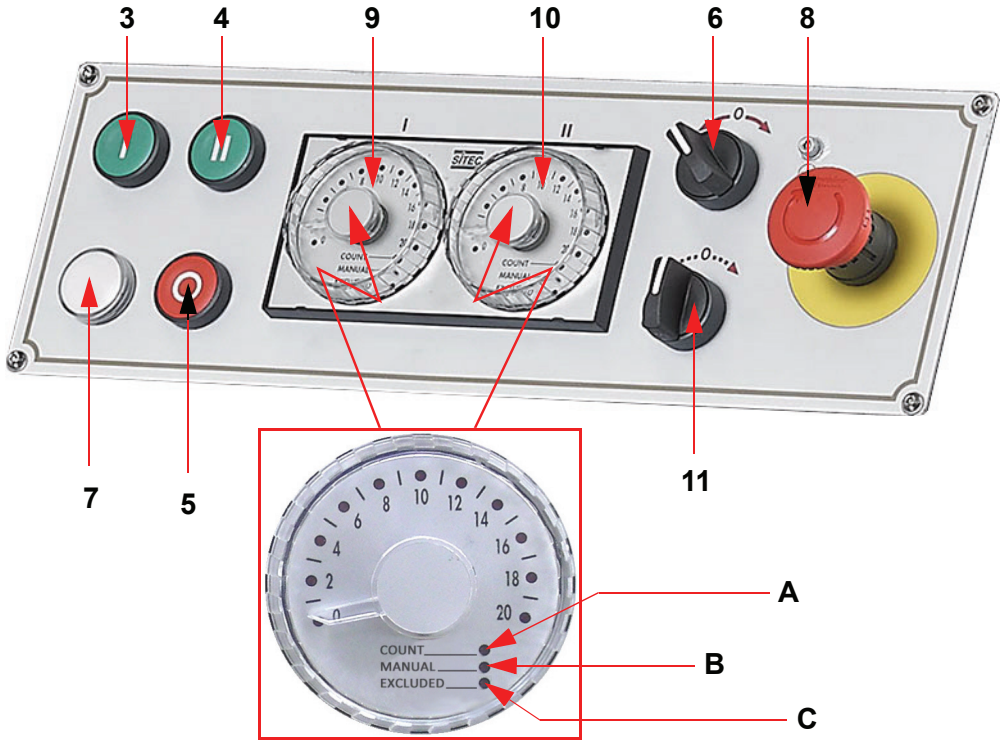


Fig. 10 Control panel

The control panel **(Fig. 10)** includes:

- a start button **(ref. 3)**, for low speed operation;
- a start button **(ref. 4)**, for high speed operation;
- a machine stop button **(ref. 5)**;
- a three-position switch **(ref. 6)** for running the tub in both directions of rotation;
- a white warning light **(ref. 7)** which indicates the presence of electrical current;
- a mushroom-head button **(ref. 8)** for emergency shut-down;
- a timer for manually setting the duration of the low speed cycle **(ref. 9)**;
- a timer for manually setting the duration of the high speed cycle **(ref. 10)**;
- a three-position switch **(ref. 11)** for jog operation of the tub when the mobile guard is raised.

Timer modes

Automatic "COUNT" mode

Turn the collars to set the durations of the low and high speed cycles. Press the start button to start the count, which is indicated by the flashing of the "COUNT" (LED **Ref. A Fig. 10 on page 39**) and the indicator LED bar or displays (where applicable).

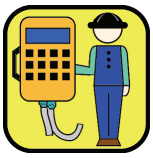
"MANUAL" mode

To operate the machine manually, turn the collar all the way anticlockwise. This mode is indicated by the **"**MANUAL" (LED **Ref. B Fig. 10**). To cut out the automatic low speed count, turn the LH collar to the "MANUAL" position; do the same with the RH collar to cut out the automatic high speed count. The machine is now controlled completely manually with the external start and stop controls.

"EXCLUDED" mode

When the collar is set to 0, the **"EXCLUDED"** (LED **Ref. C Fig. 10**) lights up. In this case the machine may not operate with the external start and stop controls. If, for example, the LH (low speed) timer collar is set to "EXCLUDED", the machine will run only at high speed.

6.8 Ordinary functions



Operator

The ordinary functions of the machine are controlled by the Customer's qualified operators.
The operator proceeds as follows:

1) Load into the tub **(ref. 3 Fig. 4** on page 23**)** the ingredients to be kneaded, while observing the instructions given in **"6.6 Operational limits" on page 37**.
2) Connect the plug to the power socket.
3) Turn the main switch **(ref. 1 Fig. 9** on page 38**)** to 1.
4) Check that the warning light **(ref. 7 Fig. 10** on page 39**)** is on.
5) Lower the mobile guard **(ref. 10 Fig. 4)** if it is raised; the machine will not start if the guard is not down.
6) Set on the timer **(ref. 9 Fig. 10)** the duration of the low speed cycle, as instructed in **"6.4 Correct use of the machine" on page 37** (at least 2 minutes).
7) Set on the timer **(ref. 10 Fig. 10)** the duration of the high speed cycle.
8) Turn the switch **(ref. 6 Fig. 10)** to the right-hand position to rotate the tank clockwise, or to the left-hand position to rotate the tank anticlockwise; the movement can be inverted or stopped (switch position 0) at any time.
9) Press the start button **(ref. 3 Fig. 10)** for low speed operation.

When the low speed cycle timer count has expired **(ref. 9 Fig. 10)**, the machine will automatically start the high speed cycle, which lasts for the duration set on the timer **(ref. 10 Fig. 10)**.

10) Raise the mobile guard **(ref. 10 Fig. 4)**;

Note

After at least 2 minutes of low speed operation, if the flour in the tub is well amalgamated with the water and no free powder is visible, you may run the machine manually at high speed by pressing the button (ref. 4 Fig. 10 on page 39).

11) Press the three-position switch 11 **(ref. 11 Fig. 10)** to run the tub in jog mode when the mobile guard is raised, so as to move all the dough towards the kneading tool.
12) Use a plastic spatula to apportion the dough into rough blocks.
13) Manually remove the blocks of dough from the tub one at a time.
14) Turn the main switch **(ref. 1 Fig. 9** on page 38**)** to 0.
15) Once again load into the tub **(ref. 3 Fig. 4)** the ingredients to be kneaded, while observing the instructions given in **"6.6 Operational limits" on page 37**.
16) Repeat the operating procedure indicated above from point 3) on.
17) At the end of the working day, turn the main switch **(ref. 1 Fig. 9)** to 0.
18) Disconnect the plug from the power socket.

6.9 Stop functions

The machine may be stopped:

- **automatically:** when the kneading cycles set on the timers **(ref. 9 and 10 Fig. 10)** have expired, the tool automatically shuts down;
- **manually:** press the machine stop button **(ref. 5 Fig. 10)** to stop the machine under normal circumstances;
- **in an emergency:** press the mushroom-head button **(ref. 8 Fig. 10)** or raise the mobile guard **(ref. 10 Fig. 4)** on the tub.

The emergency stop devices should only be used when a dangerous situation has arisen or can be prevented; on pressing an emergency button, all moving parts stop immediately.

Prohibited!

To prolong the lifetime of the electrical contacts on emergency equipment, never stop the machine as an emergency unless it is absolutely necessary.

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7. Maintenance instructions

7.1 Safety precautions

Qualified Technician

The machine shall be serviced and repaired only by qualified staff trained to work on the machine or, where expressly specified in this Manual, by persons employed or authorised by the Manufacturer.

Danger

All work must be carried out after making sure that the machine cannot be started up, even accidentally; as such the main switch (ref. 1 Fig. 9 on page 38) should be set to 0 and the plug removed from the mains power socket.

Wear **gloves** at all times.

Wear **safety footwear** at all times.

7.2 General warnings

Note

The Manufacturer declines all responsibility for damage caused by incorrect cleaning and/or maintenance of the machine and/or failure to carry out scheduled cleaning/maintenance operations.

7.3 Periodic cleaning

Danger

All cleaning operations must be carried out after making sure that the machine cannot be started up, even accidentally; as such the main switch (ref. 1 Fig. 9) should be set to 0 and the plug removed from the mains power socket.

Operator

Daily, at the end of each day of production, the machine must be kept perfectly clean and hygienic, above all as regards the following areas:

- parts in contact with food stuffs, such as the interior of the tub and the kneading tool;

- slots;
- gaps;
- corners;
- areas which are normally not accessible, after having removed the guards mounted with screws;
- the area beneath the machine, to access which it must be pushed aside, as indicated in **"3.1.4 Subsequent handling" on page 21**.

Proceed as follows to clean the machine:

1) remove any residue of dough/flour from all parts of the machine, using soft plastic scrapers or soft brushes;
2) remove all dirt with a vacuum cleaner;
3) clean off any stains with water at ambient temperature.


Prohibited!

- **Do not use metal tools to remove residue dough/flour, nor for any other cleaning operations.**
- **Do not use acid or basic solutions to get rid of marks; they are too chemically aggressive and may damage the surfaces of the machine.**
- **Do not direct jets of water at the machine to clean it.**

7.4 Routine maintenance

The routine maintenance operations described in this manual are to be **performed by the Customer**.

7.4.1 Tension of belts


Qualified Technician

Monthly check the tension and wear of the belts.

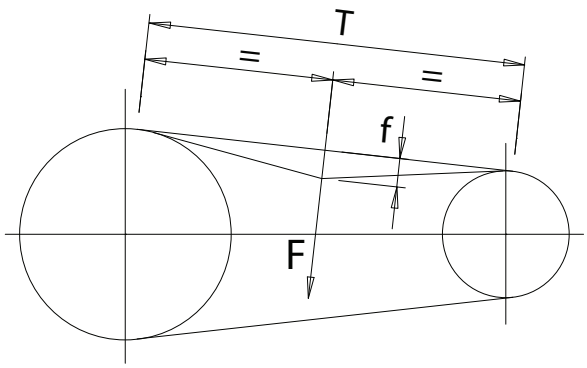


Fig. 11 Tension of belts

To check the tension of the belts, proceed as follows:

1) measure the free section **T (Fig. 11** on page 44**)**;
2) using a torque wrench, at the mid-point of **T** apply a perpendicular force **F** causing a deviation **f** of 1.5 mm for each mm of **T**;

Example: **T**=1300 mm **f**=1300:100x1.5 = 19.5 mm

3) the resulting force in Newtons will be in the range x1 N and x2 N (see **Table 3**, **Table 4**);
4) if **F** is less than X1 N increase the belt tension, if **F** is more than X2 N the belt is tighter than necessary and must be slackened off.

For tensioning and replacement instructions, see **"7.4.2 Replacing the kneading tool drive belts" on page 46** and **"7.4.3 Replacing the tub drive belts" on page 48**.

Kneading tool		Tub	
	Pulley motor belts	**Sprocket motor belts**	**Pulley sprocket belts**
x1	7	11	11
x2	10	13	13

Table 3 SPRINT V2 90-130: belt tension reference values

Kneading tool		Tub	
	Pulley motor belts	**Sprocket motor belts**	**Pulley sprocket belts**
x1	7	11	11
x2	10	13	13

Table 4 SPRINT V2 160-200: belt tension reference values

The tension of the belts can be checked empirically by pressing on the taut section of the belt and checking that the deviation is approximately the thickness of the belt itself.
We recommend using a torque wrench.

7.4.2 Replacing the kneading tool drive belts

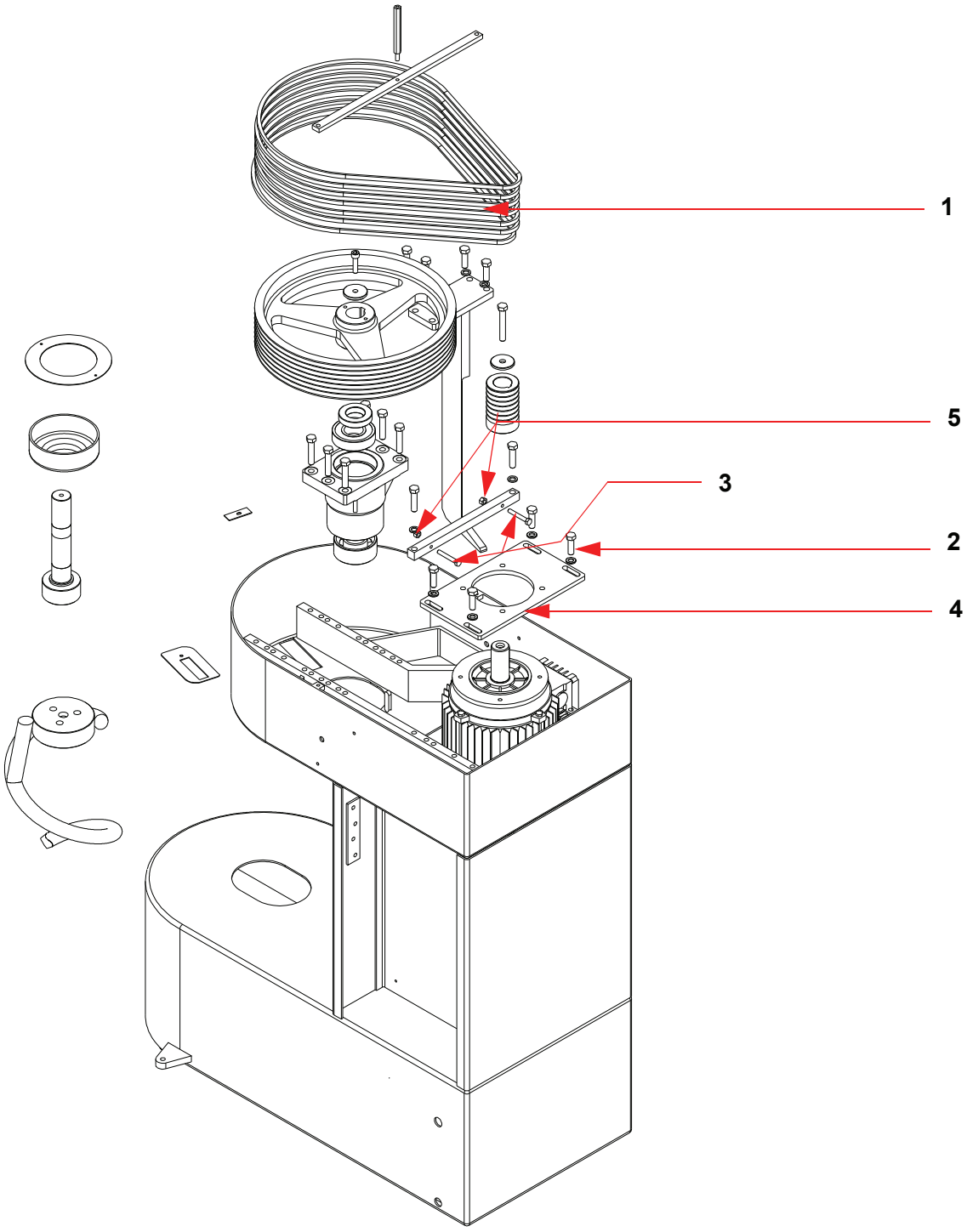


Fig. 12 Kneading tool drive

Warning!

For longer service life and better all-round operation, replace all the belts on a given drive section.

The belts must be replaced as soon as they show signs of wear or damage to the rubber of which they are made.

Proceed as follows:

1) Remove the fixed top guard **(ref. 5 Fig. 4** on page 23**)**.
2) Slacken off the 4 screws securing the motor base **(ref. 2 Fig. 12** on page 46**)**.
3) Turn the nut **(ref. 5 Fig. 12)** until the subsequent operation is possible.
4) Extract the worn belt/s **(ref. 1 Fig. 12)**.
5) Replace the belts with new ones.
6) Turn the nut **(ref. 5 Fig. 12)** in the opposite direction to that of point 3) until the belts are correctly tensioned, see **"7.4.1 Tension of belts" on page 44**.
7) Tighten the screws **(ref. 2 Fig. 12)**.
8) Refit the fixed top guard **(ref. 5 Fig. 4)**.

7.4.3 Replacing the tub drive belts

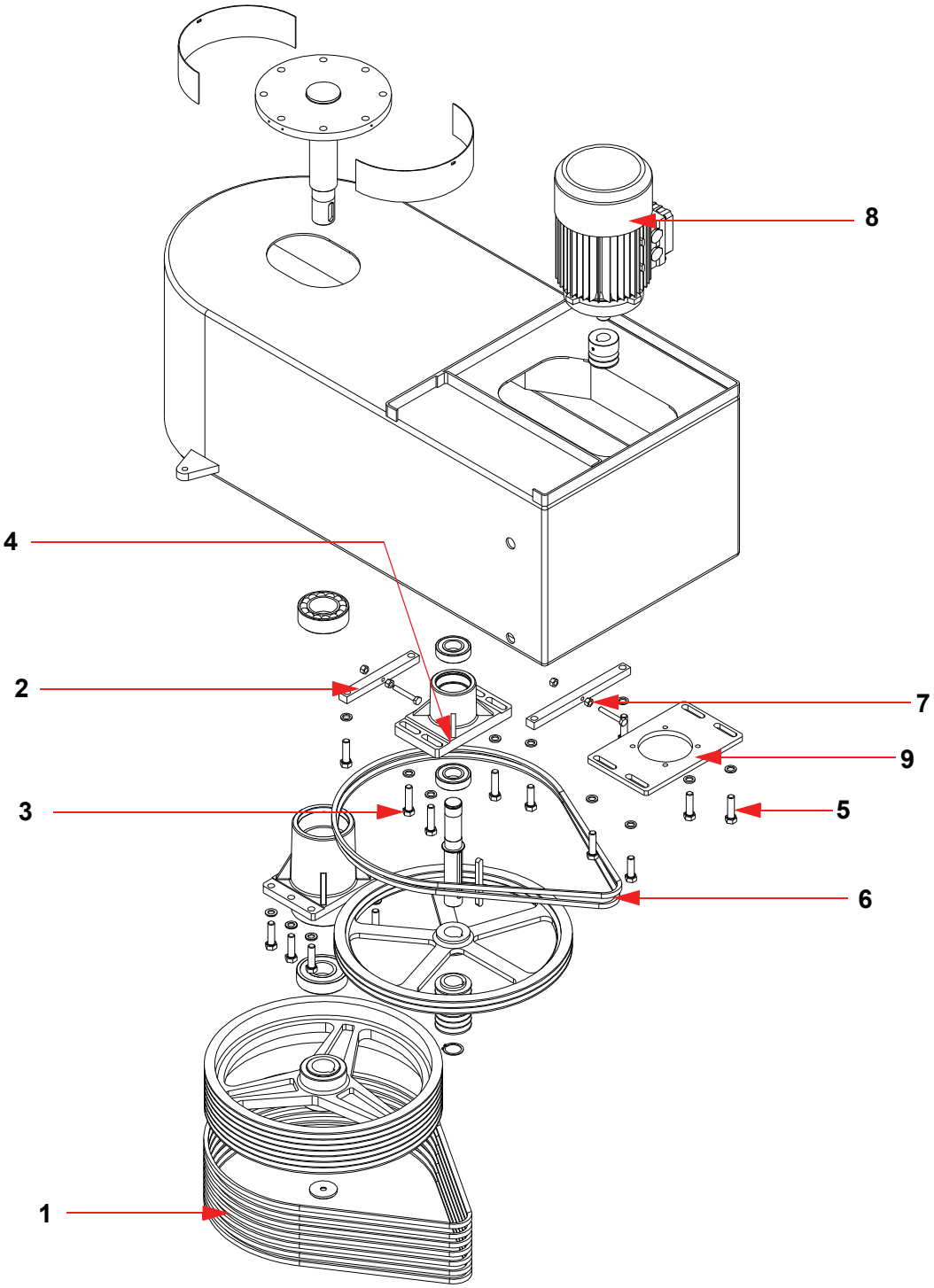


Fig. 13 Tub drive

Warning!

For longer service life and better all-round operation, replace all the belts on a given drive section.

The belts **(ref. 1 and ref. 6 Fig. 13** on page 48**)** must be replaced as soon as they show signs of wear or damage to the rubber of which they are made.

To replace the motor belts **(ref. 6 Fig. 13)**, proceed as follows:

1) Remove the lower side guards.
2) Store the mounting screws safely so as not to lose them.
3) Slack off the screws securing the plate **(ref. 5 Fig. 13)**.
4) Turn the nut **(ref. 7 Fig. 13)** until the subsequent operation is possible.
5) Extract the worn belt/s **(ref. 6 Fig. 13)**.
6) Replace the belts with new ones.
7) Turn the nut **(ref. 7 Fig. 13)** in the opposite direction to that of point 3) until the belts are correctly tensioned, see **"7.4.1 Tension of belts" on page 44**.
8) Tighten the screws **(ref. 5 Fig. 13)**.
9) Reinstall the lower side guards, using their mounting screws.

To replace the tub drive belts **(ref. 1 Fig. 13)**, proceed as follows:

1) Remove the lower side guards.
2) Store the mounting screws safely so as not to lose them.
3) Slacken off the screws securing the plate **(ref. 5 Fig. 13)**.
4) Turn the nut **(ref. 7 Fig. 13)** until the subsequent operation is possible.
5) Extract the motor belts **(ref. 6 Fig. 13)**.
6) Slacken off the 4 screws **(ref. 3 Fig. 13)**.
7) Turn the nut **(ref. 2 Fig. 13)** until the subsequent operation is possible.
8) Extract the worn belt/s **(ref. 1 Fig. 13)**.
9) Replace the belts with new ones.
10) Turn the nut **(ref. 2 Fig. 13)** in the opposite direction to that of point 7) until the belts are correctly tensioned, see **"7.4.1 Tension of belts" on page 44**.
11) Tighten down the screws **(ref. 3 Fig. 13)**.
12) Fit the motor belts **(ref. 6 Fig. 13)**.
13) Turn the nut **(ref. 7 Fig. 13)** in the opposite direction to that of point 7) until the belts are correctly tensioned, see **"7.4.1 Tension of belts" on page 44**.
14) Tighten down the screws securing the plate **(ref. 5 Fig. 13)**.
15) Reinstall the lower side guards, using their mounting screws.

7.4.4 Electrical maintenance

Electrical Technician

Maintenance of machine electrical equipment, including the motor, must be performed solely by qualified technical staff.

Operator

The operator may only perform the following electrical maintenance:
1) resetting a thermal cut-out;
2) replacing a fuse.

7.4.4.1 Resetting a thermal cut-out

To reset a thermal cut-out, perform the following steps in order:

1) turn the main switch **(ref. 1 Fig. 9** on page 38**)** to 0;
2) remove the fixed guard **(ref. 2 Fig. 4** on page 23**)**;
3) identify the thermal cut-out (normally marked QF).
4) lightly press the button marked **(I)** if it is sticking out further than the one marked **(O)**;
5) wait for 10 seconds;
6) if the thermal cut-out does not reset, repeat the operation described in step 5) above;
7) reinstall the fixed guard **(ref. 2 Fig. 4)**.

Note

In the case of a thermal relay, normally marked FR, wait for the device to reset itself automatically (this will vary from 10 seconds to a minute or so).
In the case of an inverter, switch off the machine and wait for at least 30 seconds for the device to reset.

Prohibited!

Do not tamper with the settings of thermal cut-outs.

7.4.4.2 Replacing a fuse

1) turn the main switch **(ref. 1 Fig. 9)** to 0;
2) remove the fixed guard **(ref. 2 Fig. 4)**;
3) locate the fuse holder;
4) unscrew its cap;
5) remove the fuse;
6) replace the fuse with one of the same Amps rating;
7) reinstall the fixed guard **(ref. 2 Fig. 4).**

7.5 Reactive maintenance

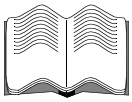
7.5.1 Replacing the kneading tool motor

Manufacturer's Technician

The operations described below must only be carried out by qualified technical staff employed or authorised by the Manufacturer.

To replace the kneading tool motor, proceed as follows:

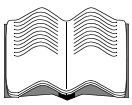
1) remove the belts **(ref. 1 Fig. 12** on page 46**)** as shown in **"7.4.2 Replacing the kneading tool drive belts" on page 46**;
2) remove the threaded tie-rod **(ref. 3 Fig. 12)** and the screws **(ref. 2 Fig. 12)**;
3) fit an eyebolt with the same threading into the M12 threaded hole on the motor shaft;
4) hook the eyebolt to a lifting device;
5) lift the motor, taking care not to prevent collisions with other fixed parts of the machine;
6) remove the cover of the motor terminal block;
7) disconnect the electrical wiring from the terminal block;



Warning!

Note down the order of connection of the wires (6 for a two-speed motor).

8) lower everything onto the floor;
9) remove the cover **(ref. 4 Fig. 12)**;
10) separate the pulley from the motor, by loosening its side screw;
11) fit the pulley to the shaft of the new motor and secure it with the side screw and mount removed in the previous step **(ref. 4 Fig. 12)**;
12) fit the eyebolt into the threaded boring in the new motor;
13) lift the assembly with the lifting device mentioned above and lower it through the upper section of the frame;
14) reconnect the electrical wires to the terminal block of the new motor;



Warning!

Make sure to observe the same order as that used for the old motor. In case of doubt, the electrical documentation attached to this Manual clearly shows the connections.

15) reinstall the cover of the motor terminal block;
16) lower the motor until it is supported by the frame;
17) repeat in reverse order all the operations of steps 13 to 1, until the initial configuration has been restored;
18) check that the motor runs in the correct direction (see point 3) in **"5.6 First start-up" on page 32**);
19) if it does not, swap two phases for each triple on the motor terminal block, see point 4) in **"5.6 First start-up" on page 32**;

20) remove the belts **(ref. 1 Fig. 12** on page 46**)**, see **"7.4.1 Tension of belts" on page 44**.

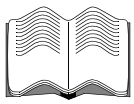
7.5.2 Replacing the tub motor

Manufacturer's Technician

The operations described below must only be carried out by qualified technical staff employed or authorised by the Manufacturer.

To replace the tub motor, proceed as follows:

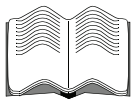
1) remove the belts **(ref. 6 Fig. 13** on page 48**)** see **"7.4.3 Replacing the tub drive belts" on page 48**;
2) slacken off the screws **(ref. 5 Fig. 13)** securing the motor **(ref. 8 Fig. 13)** to its mount **(ref. 9 Fig. 13)**;
3) extract the motor through the opening;
4) support the motor carefully, to prevent crushing, and lower it gently to the floor;
5) remove the cover of the motor terminal block;



Warning!

Note the exact order of electrical connections.

6) disconnect the electrical wiring from the terminal block;
7) reconnect the electrical wires to the terminal block of the new motor;



Warning!

Make sure to observe the same order as that used for the old motor. In case of doubt, the electrical documentation attached to this Manual clearly shows the connections.

8) refit the cover of the motor terminal block;
9) refit the motor through the opening;
10) gently lower the motor into position;
11) tighten down the screws **(ref. 5 Fig. 13)** securing the motor to its mount **(ref. 9 Fig. 13)**;
12) fit the drive belts **(ref. 6 Fig. 13)**;
13) repeat in reverse order all the operations of steps 12 to 1, until the initial configuration has been restored;
14) tension the belts **(ref. 6 Fig. 13)**, see **"7.4.1 Tension of belts" on page 44**.

7.5.3 Replacing the kneading tool

Manufacturer's Technician

The operations described below must only be carried out by qualified technical staff employed or authorised by the Manufacturer.

To replace the kneading tool **(ref. 4 Fig. 5** on page 23) proceed as follows:

1) remove the three screws securing the kneading tool to the drive shaft;
2) remove the kneading tool;
3) fit the kneading tool;
4) tighten down the three screws securing the kneading tool to the drive shaft.

7.6 Troubleshooting

Fault type	Probable cause	Possible remedy
The machine or one of its parts does not start.	● Thermal cut-out tripped.	● Reset. See **"7.4.4 Electrical maintenance" on page 50**
	● Fuse blown.	● Replace fuse. See **"7.4.4 Electrical maintenance" on page 50**
	● Short circuit or grounding of motor phase.	● Replace motor. See **"7.5.1 Replacing the kneading tool motor" on page 51** and **"7.5.2 Replacing the tub motor" on page 52**
	● Emergency shut-down (red mushroom-head button) ON.	● Reset by rotating clockwise.
	● Mobile tub guard raised.	● Lower the guard.
When running, the tank wobbles.	● Too much slack between guide rollers and tub.	● Adjust the roller mounts so that each roller contacts the tub at the point at which it is closest to the roller when turning. **Reactive maintenance**
	● Belt too loose.	● Tension belt. See **"7.4.1 Tension of belts" on page 44**
The tool tends to stick	● Mixture too dense or quantity too great.	● Add water or decrease the mass of ingredients.

Table 5 Troubleshooting

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8. Dismantling and scrapping

Qualified Technician

The machine must be dismantled and scrapped by qualified staff.
If not available, contact the Manufacturer.

1) Remove the machine plug from the mains power socket.
2) Separate parts according to their component materials:
- electrical parts in polymer should be sent for controlled disposal;
- transmission oil (if present) should be consigned to an authorised spent oil disposal consortium;
- plastic parts (if present) should be disposed of or recycled as such;
- the rest of the machine is made of ferrous materials which must be recycled as such.

Note

All materials must be disposed of as provided by established legislation in the country of use.

9. Attached documentation

The following documentation is attached to this Manual

- Declaration of conformity
- Power circuit wiring diagrams
- Control circuit wiring diagrams

10. Reference manuals for third party components

This Manual contains all instructions provided by other Manufacturers regarding the machine components they have supplied. The manuals for third party components are therefore not supplied separately.

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11. Safety signs installed on the machine

Fig. 14 Position of safety signs

The machine is equipped with stickers bearing danger and warning notices.

These stickers do not replace the safety instructions given in the Manual, nor may they be considered the sole precautions to be observed. They are to be considered as an aid to the machine's operators and inspectors, inasmuch as they indicate information and prescriptions regarding the safe use of the machine for the parts to which they are attached.

Prohibited!

Do not remove, damage or render illegible the machine's safety signs.

See **Fig. 14** on page 57 for the positions of the stickers on the machine. In particular:

Supervisor

The Supervisor must check the condition of the colours and texts of the safety signs posted on the machine.
At the first sign of damage to them, he must replace them with new ones supplied by the Manufacturer, as described in **“1.6.3 Spare parts” on page 11**.

Hazard of entrapment/entrainment of the hands (ref. 1).
Yellow background, black symbol and border.

Electrocution hazard (ref. 2).
Yellow background, black symbol and border.

Do not remove the guards (ref. 3).
White background, black symbol and red border.

SHUT OFF POWER TO THE MACHINE BEFORE REMOVING THE GUARDS. REPLACE AND SECURE ALL GUARDS BEFORE PLUGGING IN AND SWITCHING ON THE MACHINE.	**(ref. 4)**. Blue background, white text and border.

DO NOT CLEAN, OIL OR GREASE BY HAND ANY PARTS OR ASSEMBLIES WHILE THE MACHINE IS RUNNING.	**(ref. 5)**. Red background, white text and border.

DO NOT ACCESS THE AREA BETWEEN THE FRAME AND THE TUB WITH YOUR HANDS WHILE THE MACHINE IS RUNNING.	**(ref. 6)**. Yellow background, black text and border.

12. List of components and spare parts

For the list of spare parts, refer to the parts subject to wear indicated in negative in the following tables.

12.1 List 1

Ref.	Fig.	Description	SPRINT V2 90	SPRINT V2 130	SPRINT V2 160	SPRINT V2 200
1	**Fig. 15**	Base	-	-	-	-
2	**Fig. 15**	Panel	**32910545**	**32910545**	**32930601**	**32930601**
3	**Fig. 15**	Guard	-	-	-	-
4	**Fig. 15**	Pin	**30050597**	**30050597**	**30050599**	**30050599**
5	**Fig. 15**	Spacer	**30610002**	**30610002**	**30610002**	**30610002**
6	**Fig. 15**	**Wheel**	**24065023**	**24065023**	**24065023**	**24065023**
7	**Fig. 15**	**Handwheel**	**24060093**	**24060093**	**24060093**	**24060093**
8	**Fig. 15**	**Foot**	**24070077**	**24070077**	**24070077**	**24070077**
9	**Fig. 15**	Panel	**32900504**	**32900504**	**32910443**	**32910443**
10	**Fig. 15**	Panel	**32900505**	**32900505**	**32900505**	**32900505**
11	**Fig. 15**	**Rotary mount**	**24070004**	**24070004**	**24070004**	**24070035**
12	**Fig. 15**	Front guard	**32910474**	**32910474**	**32910444**	**32910444**
13	**Fig. 15**	Fixed guard	**33200253**	**33240254**	**33200227**	**33200256**
14	**Fig. 15**	Square plate	**32200669**	**32200669**	**32200669**	**32200669**
15	**Fig. 15**	Guard stop	**32200411**	**32200411**	**32200411**	**32200411**
16	**Fig. 15**	Plate	**30250218**	**30250218**	**30250219**	**30250219**
17	**Fig. 15**	Spacer	**26001470**	**26001470**	**26001470**	**26001470**
5	**Fig. 4**	Push-button panel guard	**32931041**	**32931041**	**32940738**	**32940739**

Tabella 7 Machine components: Fig. 15

12.2 List 2

Ref.	Fig.	Description	SPRINT V2 90	SPRINT V2 130	SPRINT V2 160	SPRINT V2 200
1	**Fig. 16**	Tub	**33830061**	**33840082**	**33840097**	**33840105**
2	**Fig. 16**	**Safety guard**	**33240222**	**33240223**	**33240224**	**33240225**
3	**Fig. 16**	Pin	**30050952**	**30050952**	**30061121**	**30061121**
4	**Fig. 16**	Safety guard mount	**32470255**	**32470255**	**32470256**	**32470258**
5	**Fig. 16**	**Limit switch**	**20061027**	**20061027**	**20061027**	**20061027**
6	**Fig. 16**	Bracket	**32220544**	**32220544**	**32220547**	**32220547**
7	**Fig. 16**	RH wheel mount	**32420759**	**32420759**	**32420943**	**32420943**
8	**Fig. 16**	LH wheel mount	**32420760**	**32420760**	**32420944**	**32420944**
9	**Fig. 16**	**Rollers**	**24065016**	**24065016**	**24065017**	
10	**Fig. 16**	Wheel axle	**30010526**	**30010526**	**30020570**	**30020570**
11	**Fig. 16**	Spacer	**30610593**	**30610593**	**30610593**	**30610593**

Tabella 8 Machine components: Fig. 16

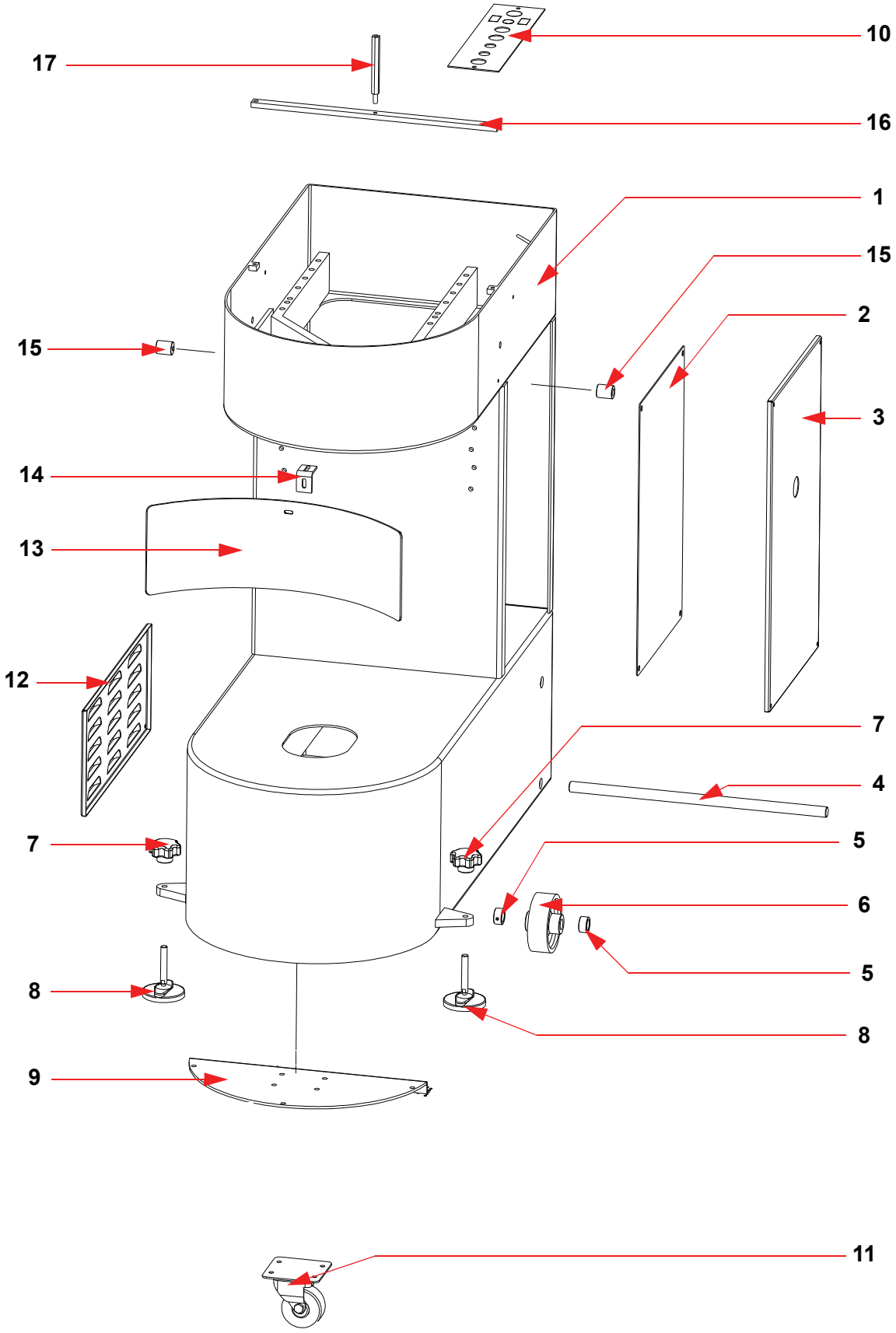

Fig. 15 Machine components: list 1

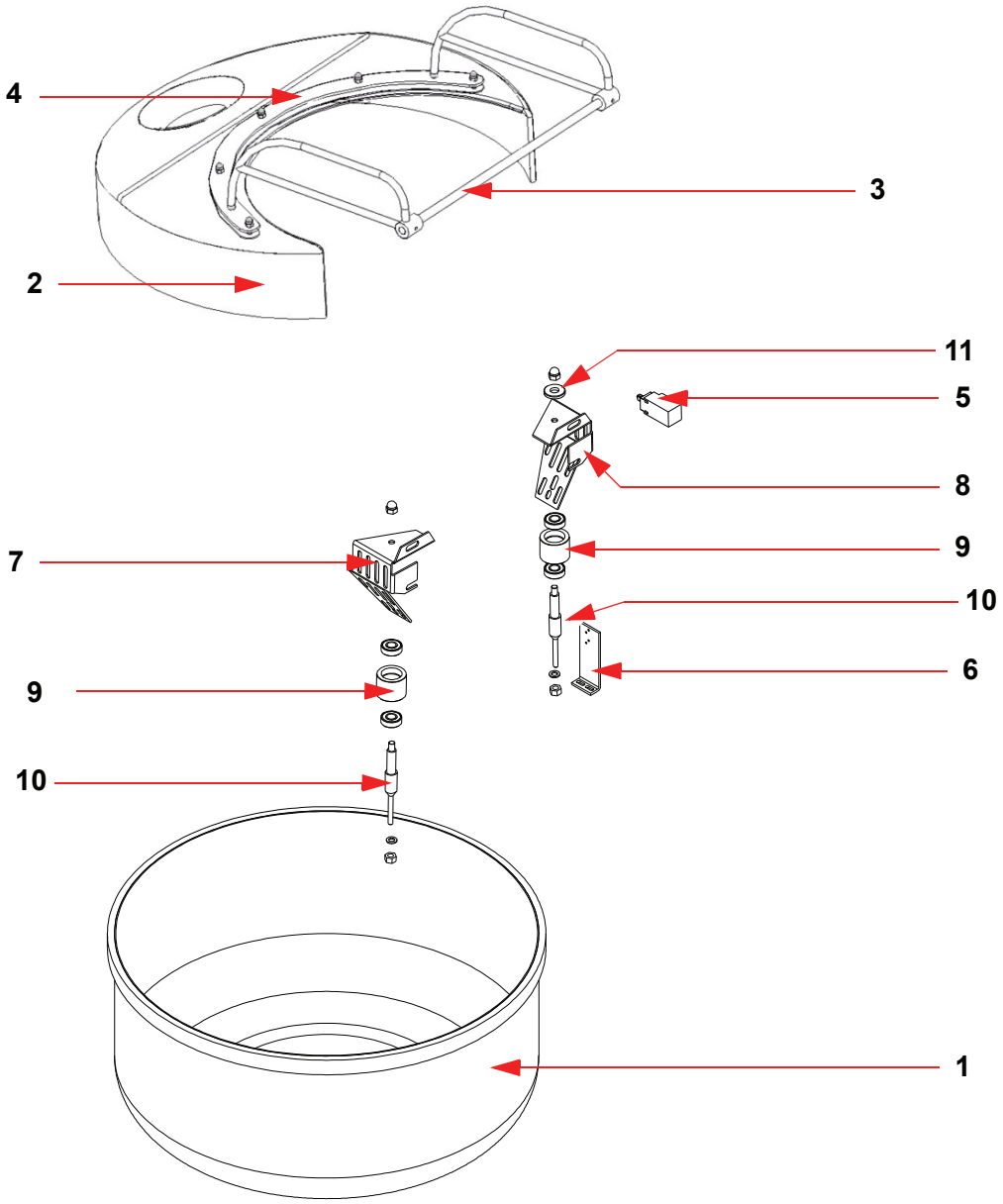

Fig. 16 Machine components: list 2

12.3 List 3

Ref.	Fig.	Description	SPRINT V2 90	SPRINT V2 130	SPRINT V2 160	SPRINT V2 200
1	Fig. 17	Kneading tool	33930120	33930122	33930098	33930099
2	Fig. 17	Column	34050014	34050014	34060009	34070004
3	Fig. 17	Shaft	30030407	30030409	30030383	30030383
4	Fig. 17	Support	32430620	32430620	32430532	32430532
5	Fig. 17	Bearing	24006065	24006065	24006336	24006068
6	Fig. 17	Bearing	24006182	21006182	21006337	24006184
7	Fig. 17	Spacer	30611069	30611069	30620407	30620404
8	Fig. 17	Pulley	31260022	31260022	31270015	31270015
9	Fig. 17	Washer	30610126	30610126	30620408	30620408
10	Fig. 17	Belt	24055124	24055347	24055145	24055188
11	Fig. 17	Washer	30610814	30610814	30620408	30620408
12	Fig. 17	Pulley	31210098	31210098	31220113	31220091
13	Fig. 17	Plate	30240147	30240147	30240147	30240147
14	Fig. 17	Motor support	32440312	32440312	32440312	32440310
15	Fig. 17	Panel	32900620	32900620	-	-
16	Fig. 17	Guard	33200250	31020191	33200255	33200255
17	Fig. 17	Panel	32900678	32900678	-	32900719
18	Fig. 17	Panel	32900679	32900679	-	32900718
19	Fig. 17	Motor	22000321	22000674	22000808	22000964
-	Fig. 17	Gasket (on ref. 4)	24024091	24024091	24024245	24024245

Tabella 9 Machine components: Fig. 17

12.4 List 4

Ref.	Fig.	Description	SPRINT V2 90	SPRINT V2 130	SPRINT V2 160	SPRINT V2 200
1	Fig. 18	Motor	22000741	22000741	22000744	
2	Fig. 18	Guard	33200265	33200265	33200265	33200265
3	Fig. 18	Shaft	30830075	30830075	30830113	30830113
4	Fig. 18	Pulley	32210099	31210099	31210001	31210001
5	Fig. 18	Support	32420937	32420937	32430547	32430547
6	Fig. 18	Plate	30230229	30230229	30230328	30230328
7	Fig. 18	Belt	24055123	24055288	24055125	24055125
8	Fig. 18	Pulley	31260040	31260040	31260046	31260046
9	Fig. 18	Pulley	31210216	31210216	31210231	31210231
10	Fig. 18	Shaft	30030408	30030408	30030418	30030418
11	Fig. 18	Bearing	24006148	24006148	24006340	24006340
12	Fig. 18	Support	32421445	32421445	32421439	32421439
13	Fig. 18	Bearing	24006148	24006148	24006331	24006331
14	Fig. 18	Plate	30220298	30220298	30230209	30230209
15	Fig. 18	Bearing	24006054	24006054	24006339	24006339
16	Fig. 18	Support	32430523	32430523	32430533	32430533
17	Fig. 18	Bearing	24006182	24006182	24006338	24006338
18	Fig. 18	Pulley	31260022	31260022	31260041	31260041
19	Fig. 18	Belt	24055123	24055151	24055125	24055125

Tabella 10 Machine components: Fig. 18

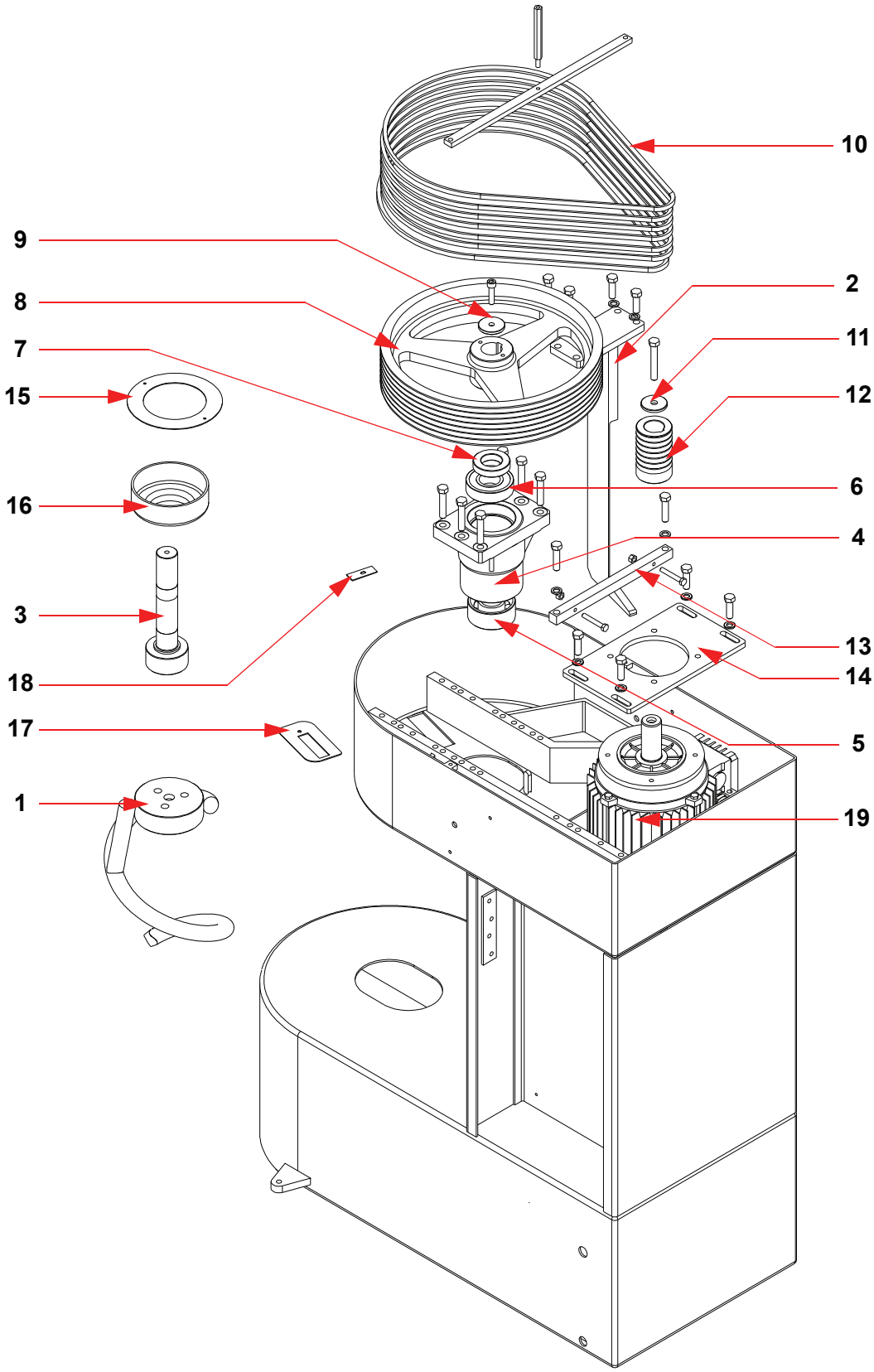

Fig. 17 Machine components: list 3

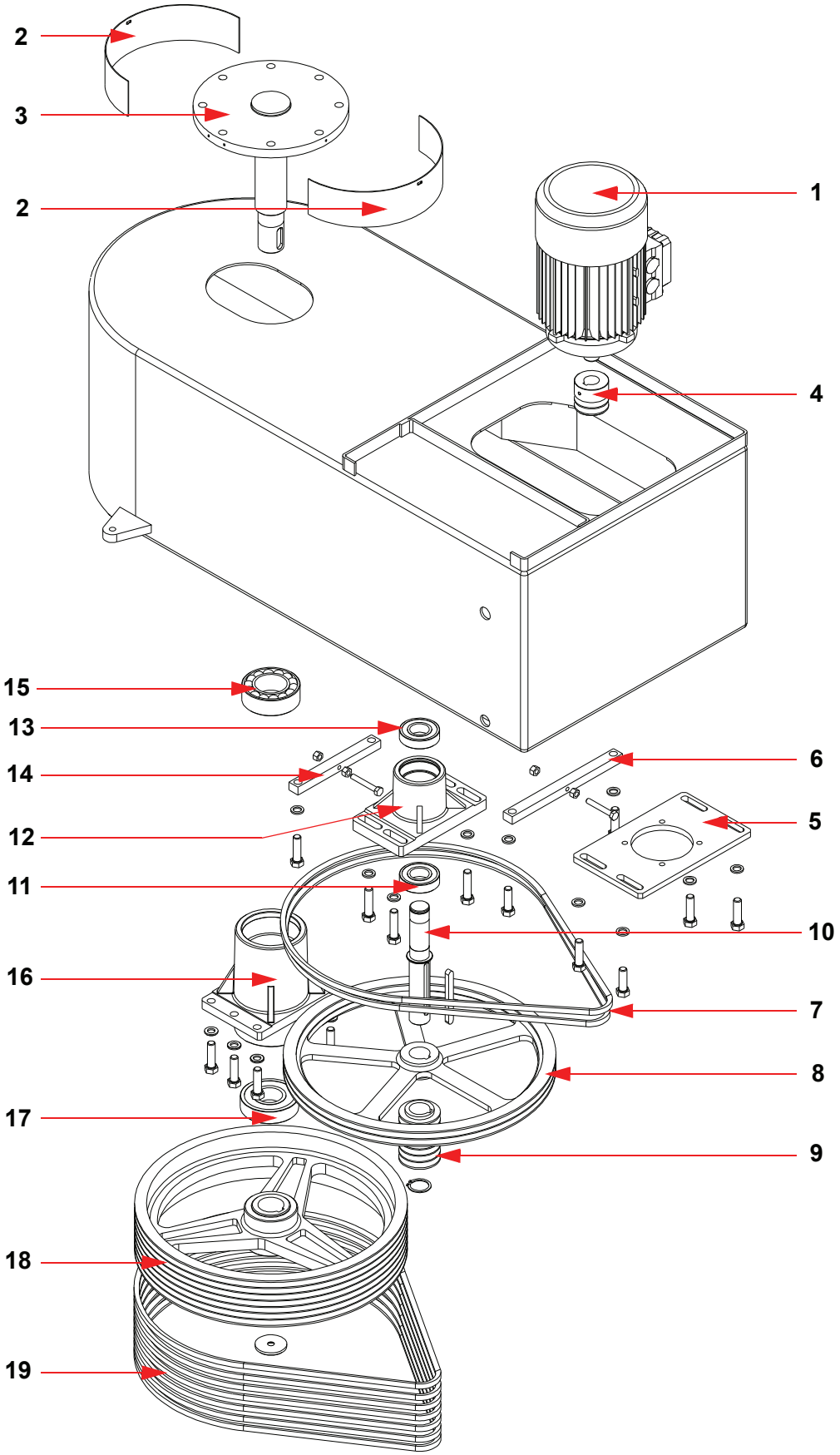

Fig. 18 Machine components: list 4

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