

CE

# Spiral mixer

## MX



MX SPIRAL KNEADING MACHINE

**1. GENERAL INFORMATION**

**Consultation guide**

*This user and instruction manual has been drawn up to ensure correct and safe use of the spiral mixer kneading machine MX model; the reading and consultation of the same is an essential requirement for the correct and safe use of the machine.*

**1.1 Warranty**

The company guarantees that the machines has undergone final testing and inspection to check all its functions and safety requisites. The machine warranty remains in force for 12 (twelve) months excluding the motors and electrical parts.

In addition, the warranty does not cover any damage arising from falls, failure to observe the maintenance instructions and negligent or incorrect use of the machine.

More specifically, any tampering with the safety devices void the WARRANTY and relieves the manufacturer from all and any liability. For interventions on machines under guarantee, contact the manufacturer only.

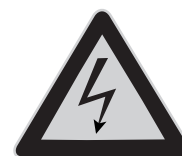
**1.2 Precautions to adopt to eliminate or constrain residual risks**

The spiral mixer kneading machine MX model is designed and manufactured in accordance with the electrical safety and hygiene requirements for the design and manufacturing of kneading machines provided for in EN Standard 453:2009, according to Machinery Directive 2006/42/EC. The machine is equipped with a stainless steel mobile interlocked guard which is sturdy enough to withstand reasonable external stress; the electrical system and motors are IP 54 protection rated. The following is recommended to eliminate or constrain residual risks during use:

- The fixed guards must remain in place in their original position;
- The accident prevention guard must never be neutralised for any reason;
- The machine must be disconnected from the mains before commencing all cleaning and maintenance operations and when the machine remains idle for a long period of time.

**1.3 Warning plates installed on the machine**

The following label is affixed to the plant system box (indicating that there are live parts inside).



The barred bin symbol on the equipment or its packaging indicates that the product, at the end of its useful life, must be disposed of separately from standard waste.



## 1. GENERAL INFORMATION

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### 1.4 Emergencies

If the safety of the operator is endangered by the drive system of the moving parts (tools and elements that provide the driving force), press and hold the STOP button immediately to stop the machine.

*If by misfortune an accident should occur, keep calm and proceed as indicated in the first aid regulations.*

### 1.5 Retention of the instruction manual

The instruction manual delivered with the machine must be stored in a suitable dry and protected place and readily available for consultation until the machine is decommissioned.

The list of replacement parts and the electrical drawings are also contained in this manual.

### 1.6 Machine transfer

If the machine is transferred, always accompanied by the user manual, the primary use shall report the address of the new user to the machine manufacturer, so it can be traced for any updates deemed indispensable.

## MX SPIRAL KNEADING MACHINE

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### 2. INTENDED USE OF THE MACHINE

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#### 2.1 Correct use and features

The **MX** spiral kneading machine mixes and kneads the ingredients required to make pizza, bread and pasta dough. The ingredients that can be placed in the bowl are basic elements such as flour, water, oil, lard, salt and sugar. It is suitable for soft doughs with 55-70% of water or medium-hard doughs with 50-55% of water and the final product must not exceed:

- A weight of 5 kg for the **MX5** version;
- A weight of 8 kg for the **MX10** version;
- A weight of 12 kg for the **MX15** version;
- A weight of 17 kg for the **MX20** version;
- A weight of 25 kg for the **MX30** version;
- A weight of 35 kg for the **MX40** version;
- A weight of 45 kg for the **MX50** version;
- A weight of 60 kg for the **MX70** version;

*The machine shall be used exclusively for kneading purposes in food laboratories and shops.*

#### 2.2 User characteristics requested

Users must be professionally trained and qualified, and over 14 years of age. They must be capable of operating the machine through the use of controls laid out on the right side or head of the machine. *No user training is foreseen for this machine.*

#### 2.3 Foreseen operating environment

The kneading machine must be installed in an environment that meets all applicable hygiene standards with the following characteristics:

- Ambient air temperature between +5° C and +40°C;
- Relative humidity between 30% to 95% (without condensation);
- No ionising and non-ionising radiation;

The machine is not fitted with natural or artificial lighting established for different work environments. It is strictly forbidden to use the machine in hazardous environments with explosion risks and fire risks due to the presence or development of gas, explosive or inflammable mixtures; or caused by the manufacturing, handling and storage of explosive materials.

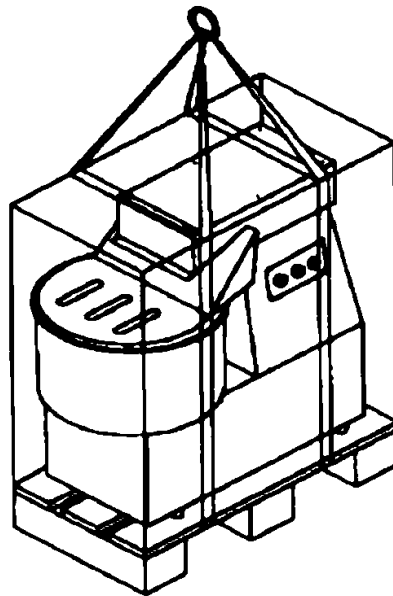
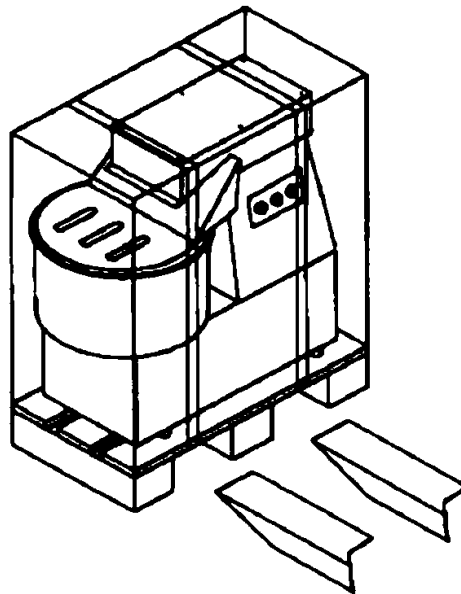
#### 2.4 Interchangeable tools, accessories and equipment

The kneading machine shall be used with the tool supplied by the manufacturer; not particular interchangeable accessories are foreseen.

### 3. TRANSPORT AND HANDLING OF THE MACHINE

#### 3.1 Machine packaging

The MX spiral kneading machine is shipped to the customer's facility packed with pluriball on pallets or cardboard; it can be hoisted using a forklift or hoisting straps. Please refer to the images below during hoisting operations.

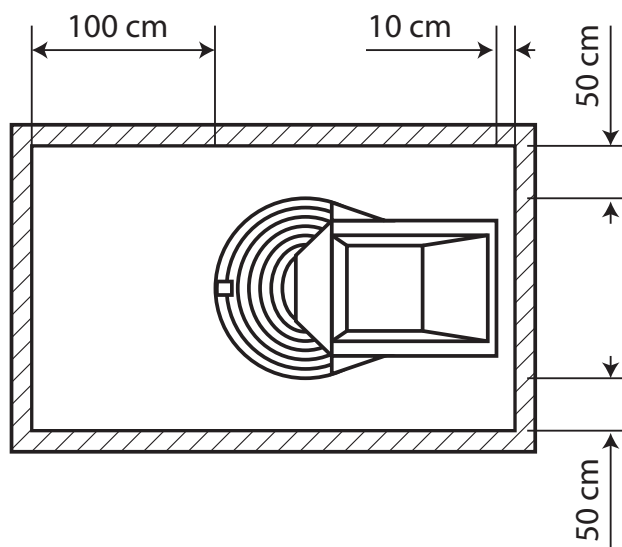


## 4. INSTALLATION AND START-UP OF THE MACHINE

### 4.1 Setting up the machine

Position the machine in a place suitable for its intended use which complies with all mandatory safety conditions. The area must be equipped with sufficient lighting and aeration.

Position the machine observing the minimum distances from walls, as illustrated in fig. 5, to ensure there is sufficient space for work, cleaning and routine maintenance operations. This will also allow operators to work in safe conditions, avoiding any crushing and/or being dragged between the bowl and the wall. When positioned as above, the machine is stable and does not require anchoring to the floor.



### 4.2 Electrical power supply

The machine is equipped with one single electrical connection with a power cord at the back of the machine; the system layout can be seen in the diagram supplied with the machine.

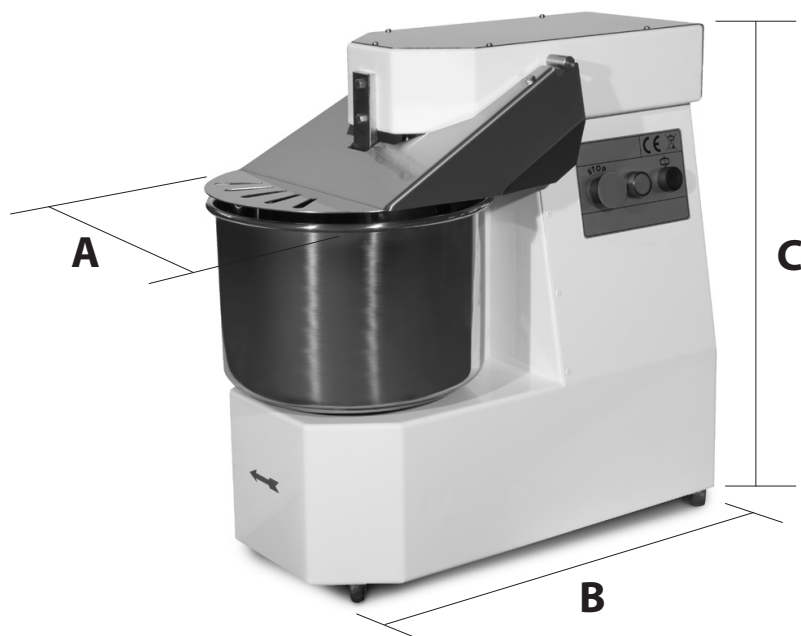
Check that the rated plate voltage corresponds to the main network voltage and the rated plate power is equal or lower than the network power.

The connection must foresee coupling to a manual voltage disconnection switch, to allow the separation of the electric machine parts from the mains network when necessary (e.g. during cleaning or maintenance). This device serves to transmit the correct rated current; the diameter of the main network connection and external protection (earthing) cables must be proportional and adequate for the rated current.

Attach a retention plug to the end of the machine power cord suitable for the disconnection switch installed and plug it into the socket.

Start the machine and check that the spiral mixer turns in the direction indicated by the arrow on the front of the structure below the bowl. If this is not the case, invert the position of the two phase wires in the plug. The machine does not require any other type of intervention and is now ready to use.

## 5. TECHNICAL DESCRIPTION OF THE MACHINE



### 5.1 Description of machine operating functions

The power needed to knead the ingredients placed in the bowl is absorbed from the mains network. The spiral mixer tool and bowl are driven by a single motor when the machine is started. The bowl and tool rotation motor is normally a single-phase asynchronous motor, a 1 speed three-phase motor or a 2 speed three-phase motor; the drive power is achieved as follows:

**motor —> chain transmission —> reduced speed chain transmission —> tool and bowl**

The tool rotates around a fixed vertical axis, the rotation of the bowl transfers the dough to the spiral mixer tool zone, the tool motion speed is synchronised with that of the bowl.

After being starting, the machine will perform the desired operation. The machine can be stopped by pressing the emergency button or lifting the accident prevention guard on the bowl.

To manually inspect the dough or add ingredients, it is recommended to use the dedicated opening on the mobile accident prevention guard.

When the processing is complete, for **MX/R** models, the bowl can be accessed by pulling the lever at the bottom of the head to release and tip it over.

For **MX/RE** models, after releasing and tipping the head, the bowl can be extracted by raising it applying a certain force. To use the machine again, insert the bowl.



## MX SPIRAL KNEADING MACHINE

### 5. TECHNICAL DESCRIPTION OF THE MACHINE

The following tables summarise the machine technical data:

	MX5	MX10	MX15	MX20	MX30	MX40	MX50	MX70
Bowl diameter (mm)	260	280	317	365	400	452	500	550
Bowl depth (mm)	140	195	210	245	260	260	340	350
Bowl capacity (lt.)	7	12	16	22	32	41	64	82
Bowl speed 1 (rpm)	-	13	13	12	12	12	12	12
Bowl speed 2 (rpm)	20	20	20	19	19	19	19	19
Spiral mixer speed 1 (rpm)	-	83	83	77	77	80	80	80
Spiral mixer speed 2 (rpm)	129	129	129	120	120	120	120	120

	Dough capacity (kg)	Flour capacity (Kg)	A (mm)	B (mm)	C (mm)	Machine weight (Kg)	Machine output (kW)		
							Single-phase/Three-phase	2 Speed	
<b>MX5</b>	5	3	280	480	420	36	0,25	-	
<b>MX10</b>	8	5	300	570	550	44	0,37	0,75/0,55	
<b>MX15</b>	12	8	340	580	550	48	0,55	0,75/0,55	
<b>MX20</b>	17	11	385	660	630	69	0,75	0,75/0,55	
<b>MX30</b>	25	17	420	710	630	73	1,1	1,1/0,75	
<b>MX40</b>	35	23	480	780	740	118	1,5	1,5/1,1	
<b>MX50</b>	45	30	525	850	860	148	2,2	1,85	1,8/1,1
<b>MX70</b>	60	40	580	910	900	158	2,2	1,85	1,8/1,1

#### 5.2 Mobile guard and flour guard

The machine is equipped with an interlocked mobile guard that covers the upper section of the bowl, preventing the operator from accessing the work zone of the moving spiral mixer tool, hence avoiding hazards such as entrapment, dragging, crushing, fractures, entanglement, impact and bruising.

This means that:

- The tool can not rotate until the guard is in its work position on top of the bowl;
- If the guard is lifted from the work position on top of the bowl while the tool is rotating, the machine will come to a halt;
- The closure of the guard allows the rotation of the tool and the bowl, but will not trigger a start command.

The guard also acts as a lid and hence reduces the generation of dust during the processing cycle. In addition, the machine column is equipped with a stainless steel 304 flour guard that prevents flour from escaping and avoids hazards such as entrapment, dragging, crushing, fractures, entanglement, impact and bruising.

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## 5. TECHNICAL DESCRIPTION OF THE MACHINE

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### 5.3 Top casing and rear casing

The top casing is a fixed guard that eliminates hazards such as dragging and crushing related to the moving parts of the spiral mixer tool drive system.

The rear casing has the same function related to the moving parts of the bowl drive system.

### 5.4 Electrical system

The electric panel is housed inside the machine structure, protected by the rear casing that can be removed by removing the 4 screws. In this way, in addition to guaranteeing the necessary protection against the influx of external solid bodies and water, it also protects the operator against the risk of direct contact with electrical parts, that can cause burns, serious and mortal injuries.

### 5.5 Noise

The acoustic pressure level was measured in accordance with the instructions provided by the UNI EN ISO 11201 Standard, the equivalent continuous acoustic pressure level A is 64.3 dB.

The level of noise emitted by the machine in outdoor environments is minimal, however it can be harmful if the surrounding environment is particularly quiet and/or at night; in such cases it will be necessary to carry out some interventions in the room in which the machine is installed to achieve the necessary acoustic insulation levels.

### 5.6 Vibration

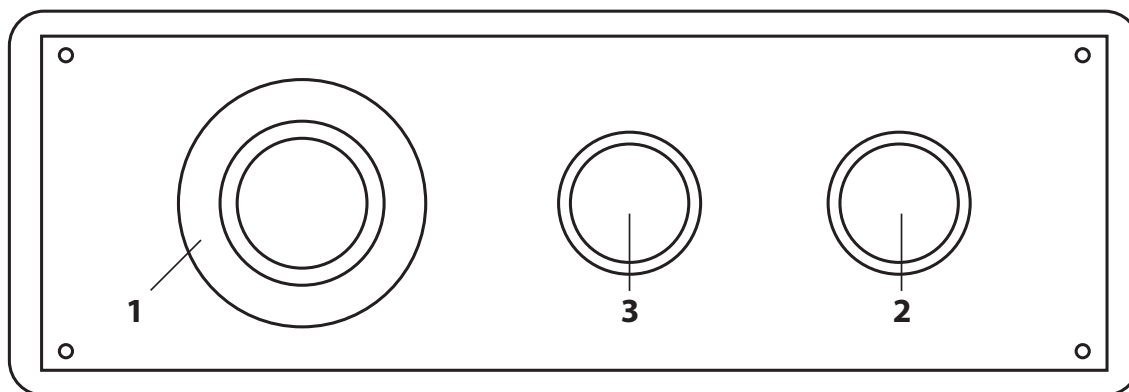
The machine transmits very low levels of vibration and, in any case, the level reached is well within the thresholds allowed by the law in force.

### 5.7 Parts in contact with the ingredients

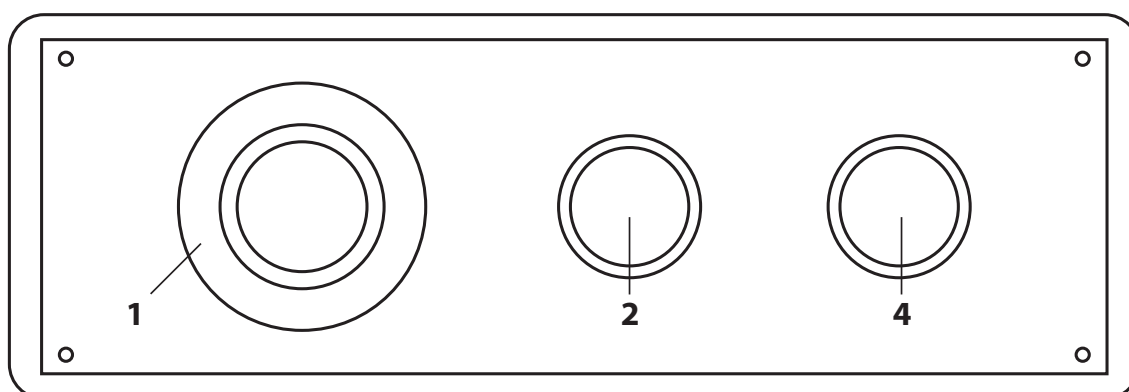
The parts of the machine in contact with food stuffs are suitable for the purpose, and are made from food-grade materials included on the regulatory list.

## 5. TECHNICAL DESCRIPTION OF THE MACHINE

### 5.8 Control panel



Control panel 1-speed - fig.1



Control panel 2-speed - fig.2

- 1) Emergency button: stops the rotation of the bowl and the spiral mixer at any moment in time and in a continuous manner, until reset of the same (fig.1 - ref. 1).
- 2) Start button: controls the start up of the machine operations when the guard is lowered and the emergency button is disengaged (fig.1/2 - ref. 2).
- 3) Network indicator light (fig.1 - ref. 3).
- 4) Upon request, the machine can be supplied with a 2-speed option; in this case, the two luminous start buttons for speed 1 and speed 2 will be installed on the control panel. (fig.2 - ref. 2 and 4).

## 6. INFORMATION ON HOW TO USE THE MACHINE

### 6.1 Introduction

Reference should be made to the contents of section 5.8 (Control Panel) relating to the correct use of the machine.

### 6.2 Preparing the machine to be used

To obtain the dough, follow the instructions below:

- lift the mobile guard as far as possible;
- add the recipe ingredients to the maximum quantity of the dough capacity indicated in the table in section 5.1 (Description of machine operating functions).

Abide by the maximum dough consistence limit, as indicated in section 2.1 (Correct use and features).

The flour should be added in a way that produces as little dust as possible, as inhalation of flour can be a health hazard and cause rhinitis, watery eyes and, in more serious cases, asthma.

- lower the mobile guard.

### 6.3 Processing

To start the machine, connect it to the mains, lower the guard - for the **MX/R** and **MX/RE** models the head must be fitted - disengage the emergency button and press the start button.

The machine will then perform the required processing operation; the machine will stop when the dough is ready. This operation can also be performed by pressing the emergency button or by lifting the bowl guard (even when the machine is running).

To manually inspect the dough or add ingredients, it is recommended to use the dedicated opening on the guard.

### 6.4 Removing the dough

The dough is removed from the bowl by hand, in portions, with or without the help of a knife.

For the **MX/R** models, once the processing is complete and the head has been tilted, pull the lever at the bottom to release it and access the bowl.

For **MX/RE** models, after releasing and tipping the head, the bowl can be extracted by raising it applying a certain force.

**IMPORTANT :** *To use the machine again, it is necessary to insert the bowl.*

### 6.5 Switching off the machine

The tool and bowl rotation motor can be interrupted at any moment in time by pressing the emergency button; the machine will also stop when the power is disconnected; when the start button is pressed again, the cycle will continue from the point in which it was interrupted, after the emergency button has been released.

## 7. MAINTENANCE AND CLEANING OF THE MACHINE

### 7.1 Purpose of the maintenance

The maintenance interventions aim to preserve the machine's technical and safety conditions over time. Due to its constructive characteristics, the machine only requires very few occasional maintenance interventions. Before carrying out any maintenance interventions, it is compulsory to remove the plug from the mains. On completing the intervention, check that any dismantled guards have been replaced and fastened in position.

### 7.2 Mechanical maintenance

If, whilst operating, the spiral mixer tool (or bowl) speed should decrease, this may mean that the belt tension is inadequate. The belt tension should be checked on a monthly basis. The belt tension is correct when, with one finger pressed on the free end of the belt, gives by an amount equal the width of the belt itself.

To tighten the trapezoidal belt, simply turn the nut clockwise found on the rear panel of the machine. The chains should be greased and the tension tested every six months.

To perform these operations, remove the guards fitted over the head of the machine and the rear part of the structure.

*If such tests reveal the need to replace any worn parts, contact your nearest dealer or the manufacturer.*

### 7.3 Electrical maintenance

Visual inspection of the power cord and plug should be performed weekly for damage caused by scraping, impact or being trodden on.

Check that the micro switch on the electric interlock on the accident prevention guard, and the head for the **MX/R** and **MX/RE** models, work correctly.

In the case of a short circuit and subsequent failure of the protection fuses, replace with fuses with identical specifications. To replace them, proceed as follows:

- After removing the plug from the socket, remove the rear guard to access the electric box;
- Identify the blown fuses and replace them;
- After replacing them, replace the guards and fasten in place.

For further repair work, refer to the diagram layout delivered with the machine.

## 7. MAINTENANCE AND CLEANING OF THE MACHINE

### 7.4 Importance of cleanliness

For hygiene reasons and correct functioning of the machine, the bowl, guard and spiral mixer must be cleaned every day removing all encrustations. In addition, the entire machine should be dusted to prevent flour and dirt from building up on the surfaces.

Such cleaning operations foresee the use of domestic detergent (biodegradable without phosphor or chlorides) followed by thorough rinsing with water; use a plastic scraper to remove any encrustation.

**Attention:** do not spray water directly on to the machine.

### 7.5 Cleaning instructions

For safety reasons, all cleaning operations must be performed when the machine is stationary and disconnected from the mains, following the indications provided below:

Parts to be cleaned	Frequency	What to do
Control Panel	Every day	Use a soft, damp cloth with detergent
Bowl and spiral mixer	Every day	Use a plastic scraper and a damp
Bowl guard and stand	Every day	Use a soft, damp cloth with detergent
Base and enclosure casing	Every day	Use a soft, damp cloth with detergent

### 7.6 Cleaning the internal parts

The internal parts of the machine must be cleaned at least once a month using a vacuum cleaner, after removing the rear casing.

Removing the casing allows access to the spiral mixer tool and bowl drive organs. For safety reasons, the removal of the casing for cleaning operations must only take place when the machine is stationary and disconnected from the mains.

When all the cleaning operations have been completed, fasten the casing in its original position.

## 8. DISPOSAL OF THE MACHINE

**Under art. 13 of Legislative Decree no. 151 of 25 July 2005 "Implementation of Directives 2002/96/EC and 2003/108/EC relating to the restriction of the use of hazardous substances in electrical and electronic equipment (EEE) and the disposal of relative waste".**



The barred bin symbol on the machine indicates that the product, at the end of its useful life, must be disposed of separately from standard waste.

Separate collection of waste relating to the disposal at life end of this machine shall be organised and managed by the manufacturer. On deciding to dismantle this equipment, the user shall contact the manufacturer and follow the instructions on the system adopted by the same to allow separate collection of the equipment that has reached the end of its working life.

If the dismantled equipment is collected correctly as separate waste, it can be recycled, treated and disposed of ecologically; this avoids a negative impact on both the environment and the health and contributes towards the re-use and/or recycling of the product's materials.

Unlawful disposal of the product by the user will be punished with the application of the administrative penalties foreseen by the laws in force.

## MX SPIRAL KNEADING MACHINE

### 9. TROUBLESHOOTING

#### 9.1 Introduction

For safety reasons, all interventions that involve accessing the electrical system and/or the removal of the casing must only take place when the machine is stationary and the plug disconnected from the mains.

#### 9.2 Solution to common problems

Type of problem	Possible cause	Solution
The machine does not work	Machine not powered up electrically  The mobile guard limit switch is adjusted incorrectly	Plug the machine into the power socket  Call the technical support centre for information on adjustments
The motor won't start	The thermal protection has been triggered  The motor is too hot	Allow the motor to cool down
Whistling at the end of the processing phase	Unsuitable drive belt tensioning	Tighten the belt

#### 9.3 Support Services

If a fault or malfunction occurs on the machine, the user can contact the manufacturer's technical support service for assistance.

It is also necessary to provide the machine's identification data:

- The model
- The serial number
- The year of manufacture
- The voltage
- The frequency

All this information is found on the machine rating plate.



## 10. REPLACEMENT PARTS

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### 10.1 How to place an order

To help facilitate warehouse retrieval and the shipping of replacement parts, we beg our Customers to follow the instructions below, and always indicate:

- Type of machine and serial number
- Motor voltage
- Reference number of the part described in the exploded drawing and relative name
- The number of parts required
- The exact address and company name of the recipient complete with any additional address for the delivery of the goods
- Means of transport required (if none are specified, the manufacturer reserves the right to use the means deemed most appropriate).

### 10.2 Use of faulty replacement parts

Should the user replace machine parts with similar but not identical parts to those recommended by the manufacturer, and should any incident occur caused by a faulty replacement part, the liability shall be determined, under the provisions of the Product Liability Directive 1999/34/EC related to the liability for damages caused by faulty products.

In this regard, the manufacturer shall only be held liable if the machine is proved faulty at origin; such liability shall be reduced or void if the user does not follow the instructions provided or uses replacement parts which carry no warranty.

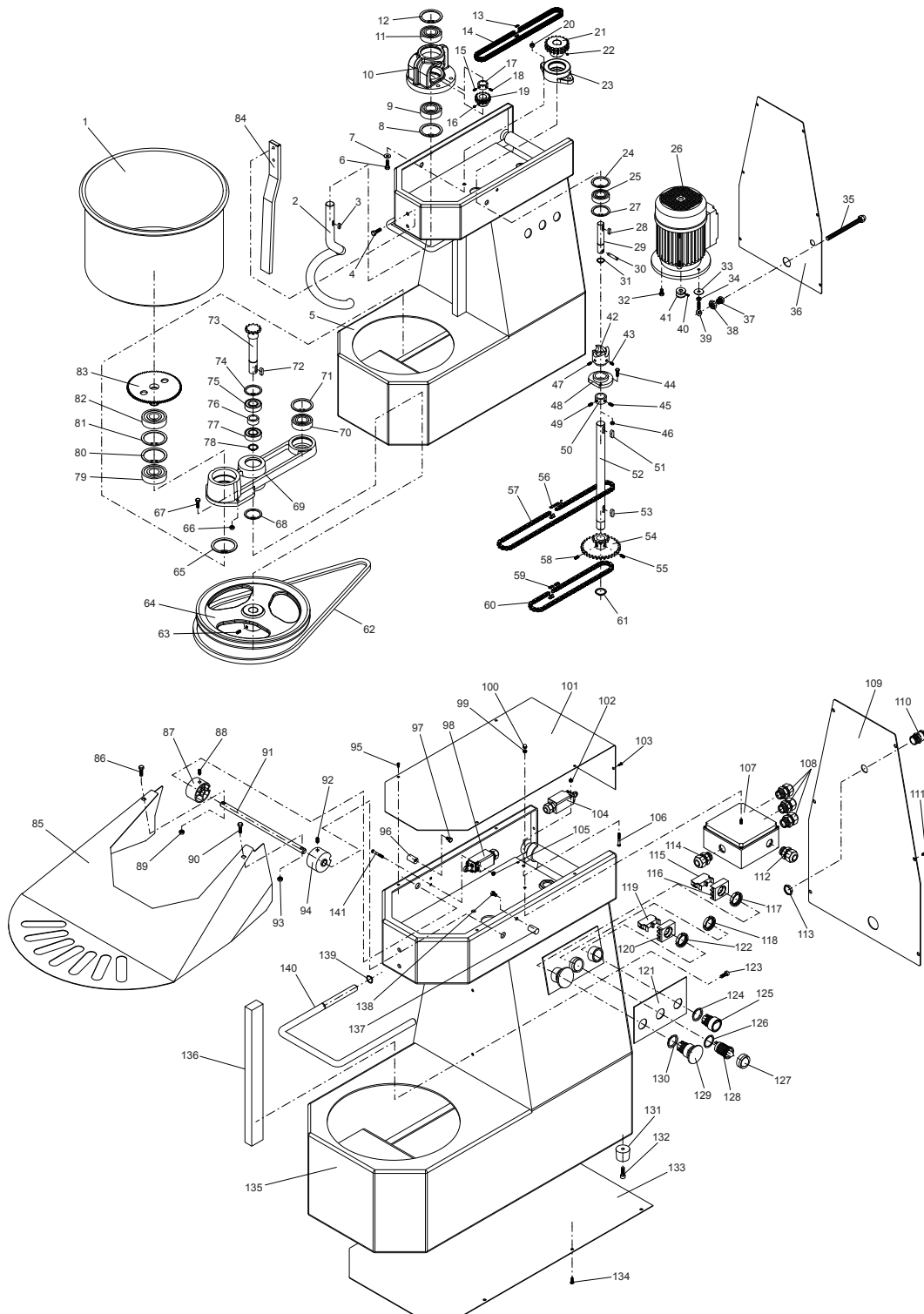
## MX SPIRAL KNEADING MACHINE

### 10. REPLACEMENT PARTS FOR TILTING MX 20/30/40 AND/OR EXTRAC. BOWL

1. BOWL	51. KEY	101. UPPER GUARD
2. SPIRAL	52. DRIVE SHAFT D.20	102. NUT
3. KEY	53. KEY	103. SELF-TAPPING SCREW
4. SCREWS	54. CROWN WITH PINION	104. LIMIT SWITCH
5. HOUSING	55. GRUB SCREW	105. NUT
6. SCREWS	56. CHAIN COUPLING	106. LIMIT SWITCH CONTROL SCREW
7. WASHER	57. BOWL CHAIN	107. ELECTRICAL SYSTEM
8. SNAP RING	58. GRUB SCREW	108. CABLE GLAND
9. BEARING	59. CHAIN COUPLING	109. REAR GUARD
10. SPIRAL SUPPORT	60. RETURN CHAIN	110. CABLE GLAND
11. BEARING	61. SNAP RING	111. SELF-TAPPING SCREW
12. SNAP RING	62. BELT	112. CABLE GLAND
13. CHAIN COUPLING	63. GRUB SCREW	113. NUT
14. SPIRAL CHAIN	64. PULLEY	114. CABLE GLAND
15. GRUB SCREW	65. SNAP RING	115. N/O CONTACT
16. GRUB SCREW	66. NUT	116. CONTACT HOLDER
17. AVP BUSH	67. SCREWS	117. RING NUT
18. GRUB SCREW	68. SNAP RING	118. RING NUT
19. PINION	69. LOWER SUPPORT	119. N/C CONTACT
20. NUT	70. BEARING	120. CONTACT HOLDER
21. PINION	71. SNAP RING	121. NAME PLATE
22. GRUB SCREW	72. KEY	122. RING NUT
23. REAR SUPPORT	73. RETURN SHAFT WITH PINION	123. SCREWS
24. SNAP RING	74. SNAP RING	124. BUTTON GASKET
25. BEARING	75. BEARING	125. START BUTTON
26. MOTOR	76. PLASTIC BUSH	126. BUTTON GASKET
27. SNAP RING	77. BEARING	127. PLASTIC COVER FOR PILOT INDICATOR LIGHT
28. KEY	78. SNAP RING	128. PILOT INDICATOR LIGHT
29. TOOTHED COUPLING PIN	79. BEARING	129. EMERGENCY BUTTON
30. PIN	80. SNAP RING	130. BUTTON GASKET
31. SNAP RING	81. SNAP RING	131. FOOT
32. SCREWS	82. BEARING	132. SCREWS
33. WASHER	83. EXTRACTABLE CROWN	133. LOWER GUARD
34. NUT	84. COLUMN	134. SELF-TAPPING SCREW
35. BELT TENSION PULLEY	85. BOWL GUARD	135. HOUSING
36. REAR GUARD	86. SCREWS	136. HAND GUARD
37. REDUCTION	87. BLACK CAM	137. ECCENTRIC PIN
38. NUT	88. GRUB SCREW	138. SCREWS
39. EYE-LET TYPE TIE-ROD	89. NUT	139. SNAP RING
40. GRUB SCREW	90. SCREWS	140. HEAD HANDLE
41. MOTOR PULLEY	91. BOWL GUARD PIN	141. LIMIT SWITCH CONTROL SCREW
42. TOOTHED COUPLING	92. GRUB SCREW	
43. GRUB SCREW	93. NUT	
44. SCREWS	94. BLACK CAM	
45. GRUB SCREW	95. SELF-TAPPING SCREW	
46. SELF-LOCKING NUT	96. ECCENTRIC PIN	
47. GRUB SCREW	97. SCREWS	
48. POLYZENE FLANGE	98. LIMIT SWITCH	
49. GRUB SCREW	99. NUT	
50. AVP BUSH	100. BOX NUT	

MX SPIRAL KNEADING MACHINE

10. REPLACEMENT PARTS FOR TILTING MX 20/30/40 AND/OR EXTRAC. BOWL



MADE IN ITALY

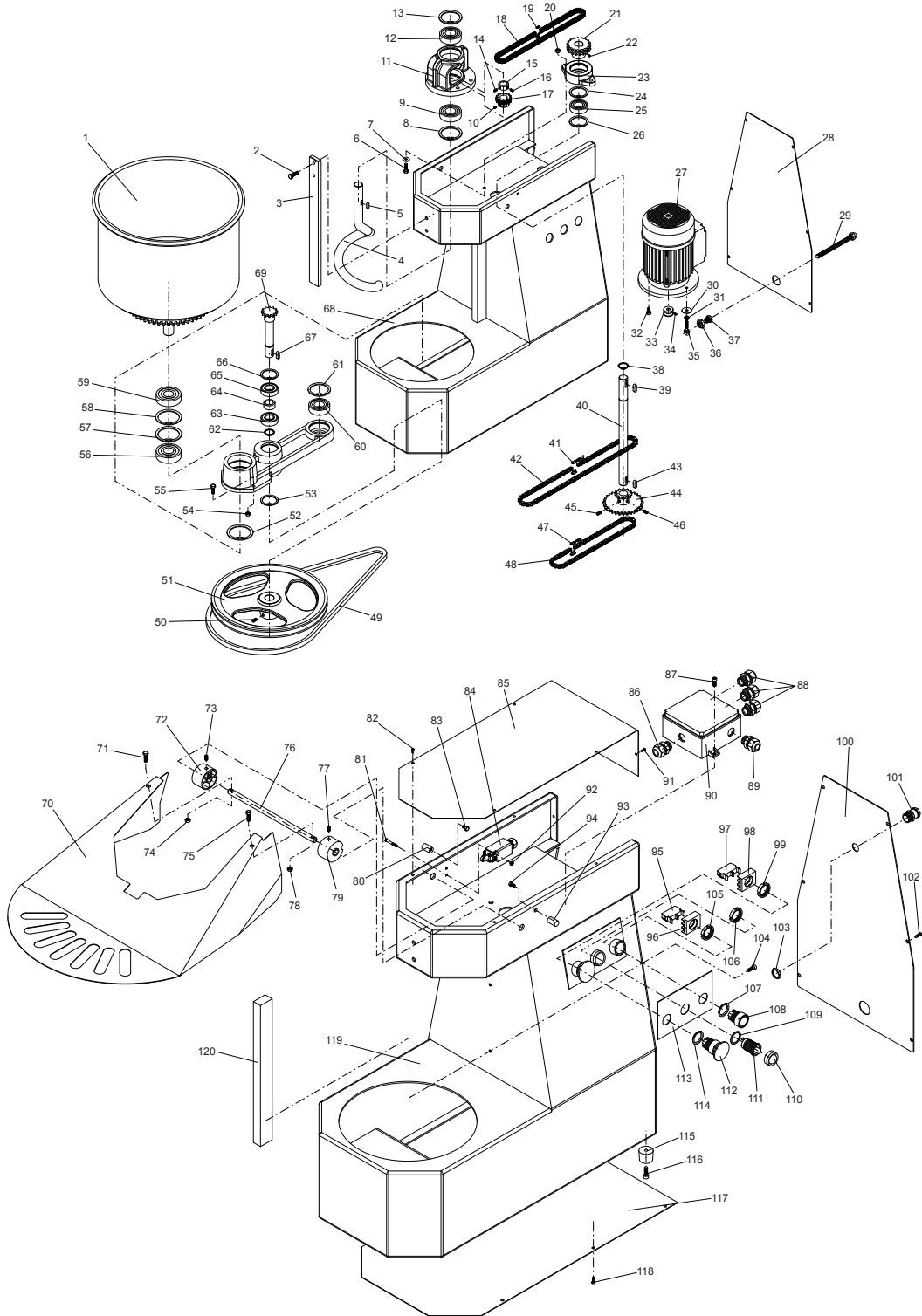
MX SPIRAL KNEADING MACHINE

**10. REPLACEMENT PARTS FOR MX 20/30/40/50/70 FIXED BOWL**

- |                          |                                |                            |
|--------------------------|--------------------------------|----------------------------|
| 1. BOWL                  | 51. PULLEY                     | 100. REAR GUARD            |
| 2. SCREWS                | 52. SNAP RING                  | 101. CABLE GLAND           |
| 3. COLUMN                | 53. SNAP RING                  | 102. SELF-TAPPING SCREW    |
| 4. SPIRAL                | 54. NUT                        | 103. CABLE GLAND NUT       |
| 5. KEY                   | 55. SCREWS                     | 104. SCREWS                |
| 6. SCREWS                | SUPPORT                        | 105. RING NUT              |
| 7. WASHER                | 56. BEARING                    | 106. RING NUT              |
| 8. SNAP RING             | 57. SNAP RING                  | 107. BUTTON GASKET         |
| 9. BEARING               | 58. SNAP RING                  | 108. START BUTTON          |
| 10. GRUB SCREW           | 59. BEARING                    | 109. BUTTON GASKET         |
| 11. SPIRAL SUPPORT       | 60. BEARING                    | 110. PLASTIC COVER FOR     |
| 12. BEARING              | 61. SNAP RING                  | PILOT INDICATOR LIGHT      |
| 13. SNAP RING            | 62. SNAP RING                  | 111. PILOT INDICATOR LIGHT |
| 14. GRUB SCREW           | 63. BEARING                    | 112. EMERGENCY BUTTON      |
| 15. AVP BUSH             | 64. PLASTIC BUSH               | 113. NAME PLATE            |
| 16. GRUB SCREW           | 65. BEARING                    | 114. BUTTON GASKET         |
| 17. PINION               | 66. SNAP RING                  | 115. FOOT                  |
| 18. SPIRAL CHAIN         | 67. KEY                        | 116. SCREWS                |
| 19. CHAIN COUPLING       | 68. HOUSING                    | 117. LOWER GUARD           |
| 20. NUT                  | 69. RETURN SHAFT               | 118. SELF-TAPPING SCREW    |
| 21. DOUBLE PIN           | 70. BOWL GUARD                 | 119. HOUSING               |
| 22. GRUB SCREW           | 71. SCREWS                     | 120. HAND GUARD            |
| 23. REAR SUPPORT         | 72. BLACK CAM                  |                            |
| 24. SNAP RING            | 73. GRUB SCREW                 |                            |
| 25. BEARING              | 74. NUT                        |                            |
| 26. SNAP RING            | 75. SCREWS                     |                            |
| 27. MOTOR                | 76. BOWL GUARD PIN             |                            |
| 28. REAR GUARD           | 77. GRUB SCREW                 |                            |
| 29. BELT TENSION PULLEY  | 78. NUT                        |                            |
| 30. WASHER               | 79. BLACK CAM                  |                            |
| 31. NUT                  | 80. ECCENTRIC PIN              |                            |
| 32. SCREWS               | 81. LIMIT SWITCH CONTROL SCREW |                            |
| 33. MOTOR PULLEY         | 82. SELF-TAPPING SCREW         |                            |
| 34. GRUB SCREW           | 83. SCREWS                     |                            |
| 35. EYE-LET TYPE TIE-ROD | 84. LIMIT SWITCH               |                            |
| 36. NUT                  | 85. UPPER GUARD                |                            |
| 37. REDUCTION SEAL       | 86. CABLE GLAND                |                            |
| 38. SNAP RING            | 87. SCREWS                     |                            |
| 39. KEY                  | 88. CABLE GLAND                |                            |
| 40. DRIVE SHAFT          | 89. CABLE GLAND                |                            |
| 41. CHAIN COUPLING       | 90. ELECTRICAL SYSTEM          |                            |
| 42. BOWL CHAIN           | 91. SELF-TAPPING SCREW         |                            |
| 43. KEY                  | 92. NUT                        |                            |
| 44. CROWN WITH PINION    | 93. ECCENTRIC PIN              |                            |
| 45. GRUB SCREW           | 94. SCREWS                     |                            |
| 46. GRUB SCREW           | 95. CONTACT                    |                            |
| 47. CHAIN COUPLING       | 96. CONTACT HOLDER             |                            |
| 48. RETURN CHAIN         | 97. CONTACT                    |                            |
| 49. BELT                 | 98. CONTACT HOLDER             |                            |
| 50. GRUB SCREW           | 99. RING NUT                   |                            |

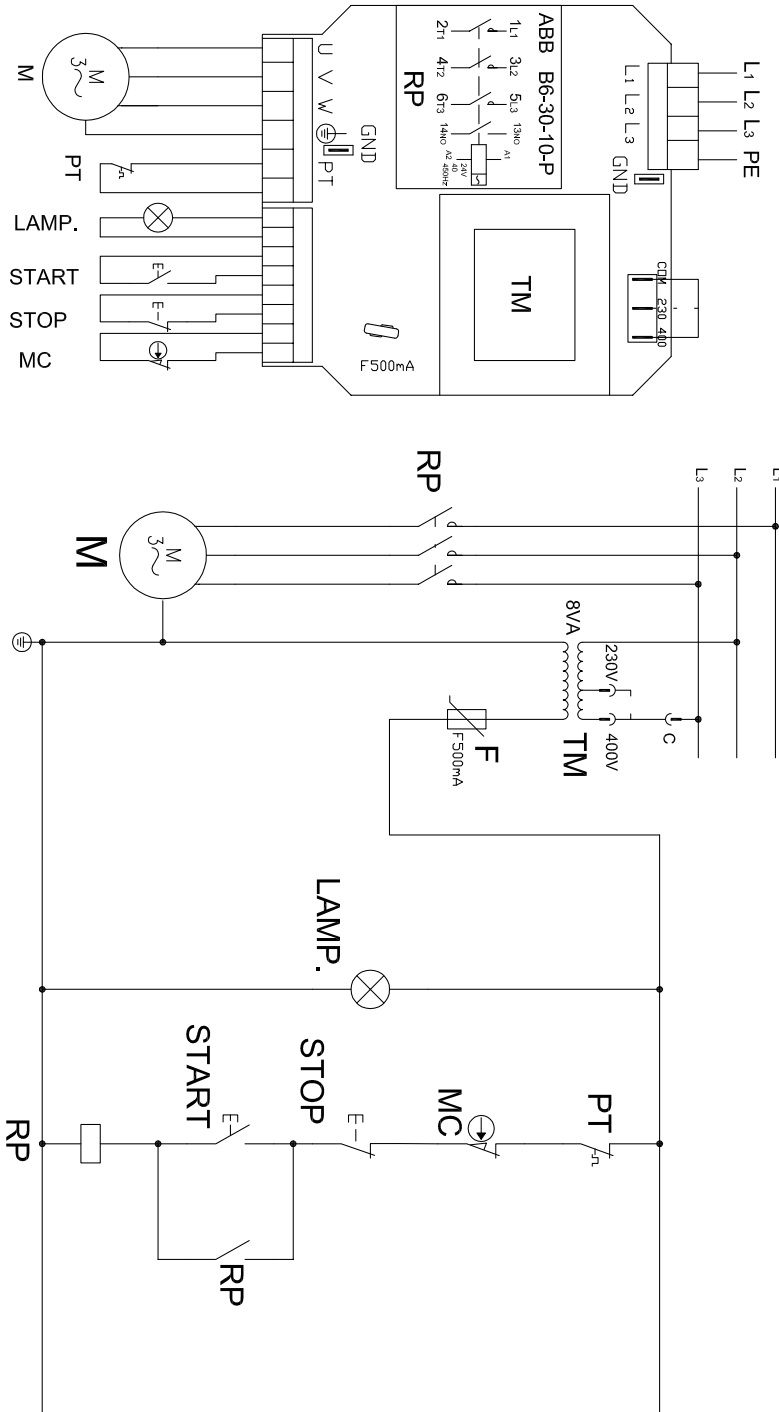
MX SPIRAL KNEADING MACHINE

10. REPLACEMENT PARTS FOR MX 20/30/40/50/70 FIXED BOWL

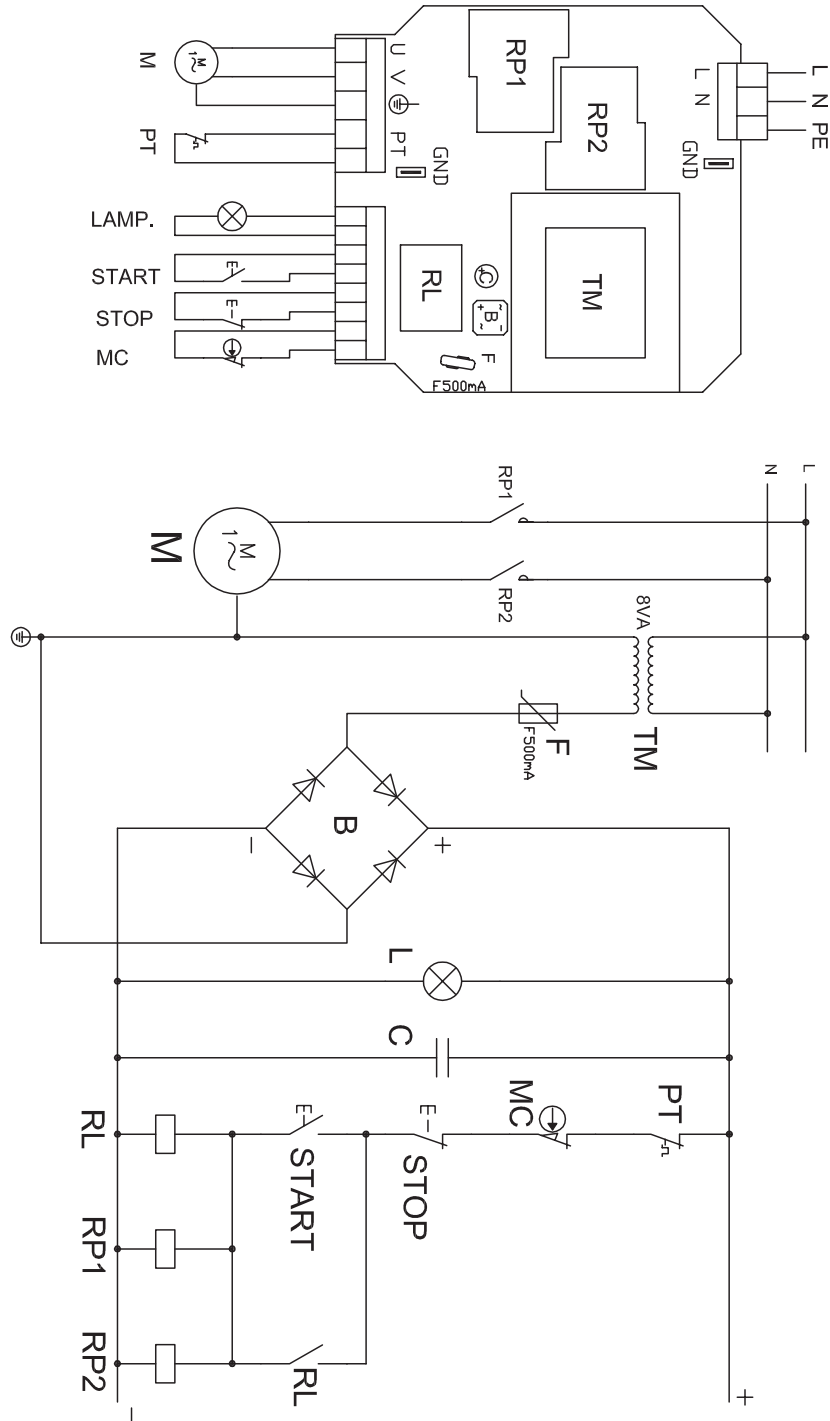


MX SPIRAL KNEADING MACHINE

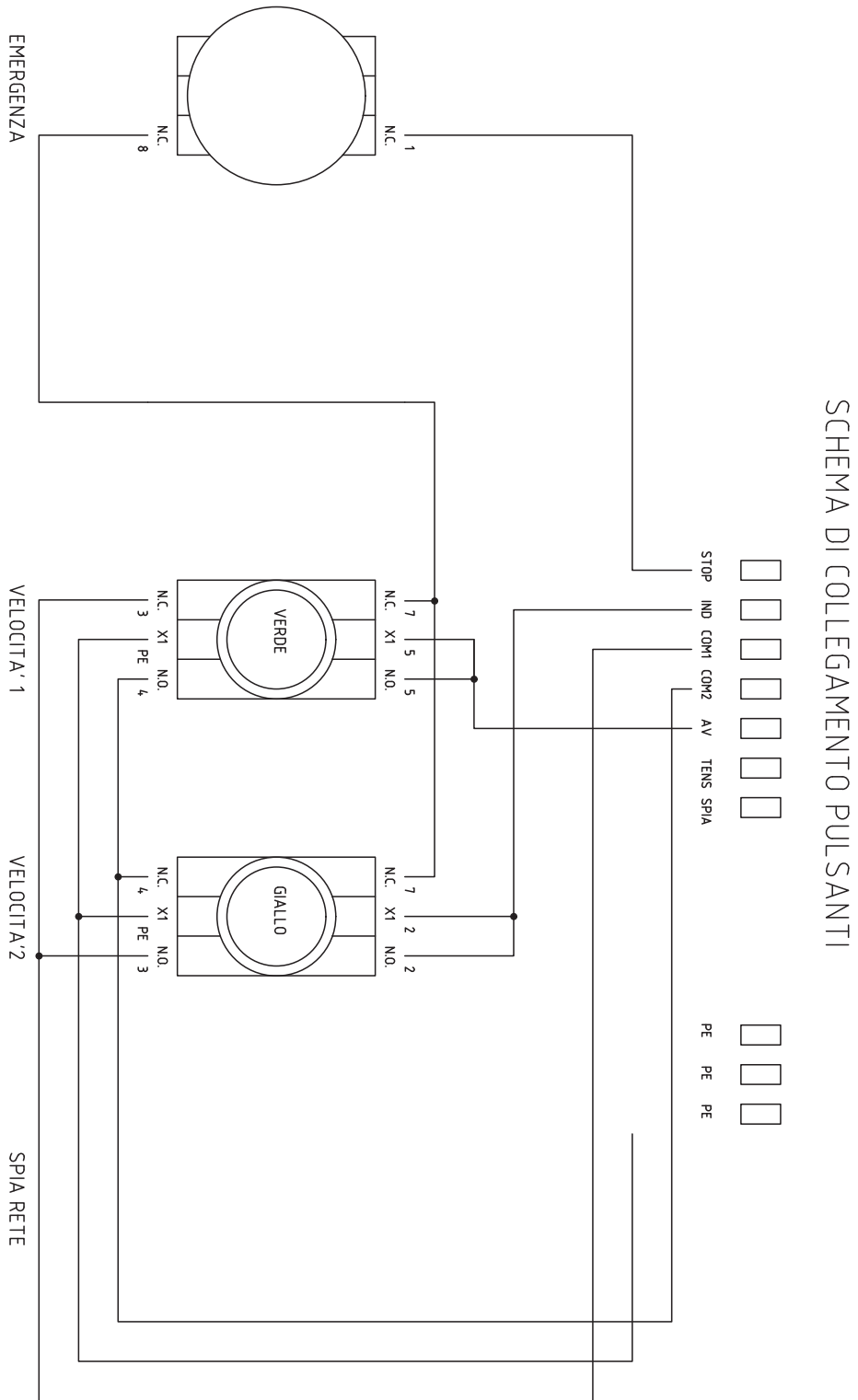
11. ELECTRICAL WIRING DIAGRAMS



11. ELECTRICAL WIRING DIAGRAMS

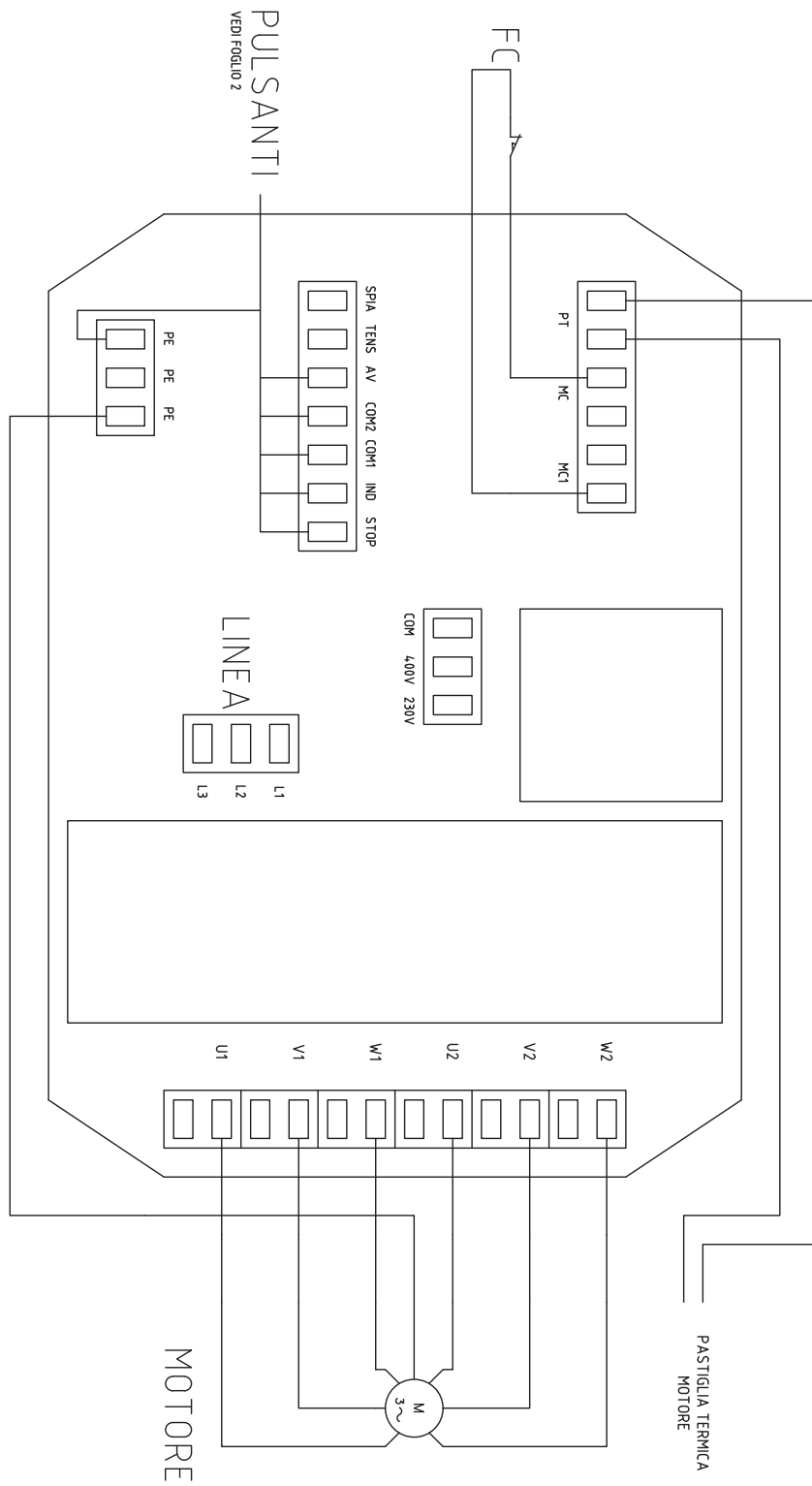


11. ELECTRICAL WIRING DIAGRAMS





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