07/2014

Mod: MPS18/1

Production code: P6

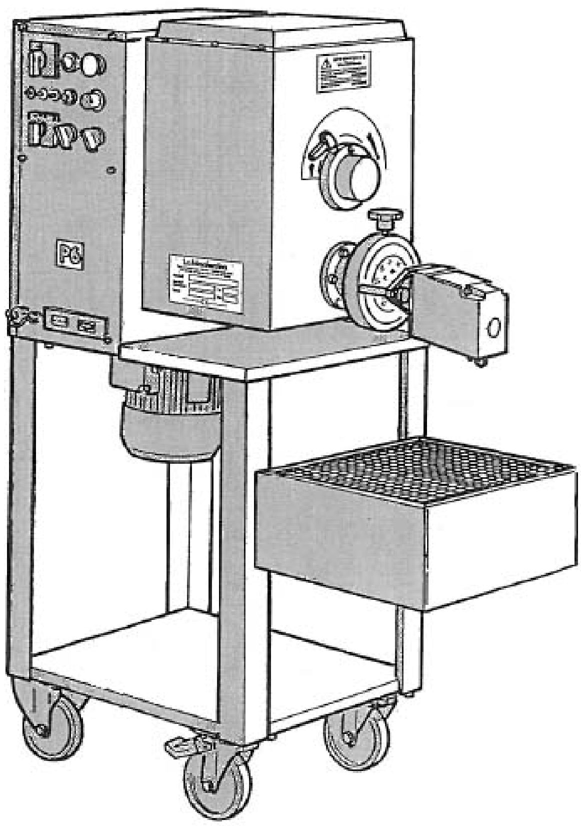
Diamond
catering equipment

P6

AUTOMATIC FRESH PASTA MACHINE

GB

User and maintenance manual



This handbook is an integral part of the machine.
Read this handbook and the attachments with attention.
Knowledge of the instructions contained is indispensable for machine use and to carry out maintenance in safety.

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Machine main components

The machine consists of the following units:

1 Stainless-steel shaft

2 Plexiglas safety cover

3 Mixer shaft clamp/release lever

4 Dough-cutter motor clamp/release knob

5 Plate support ring nut

6 Dough-cutter motor

7 Cooler blower

8 Stainless-steel feeder

9 Wheel block

10 Electric wire

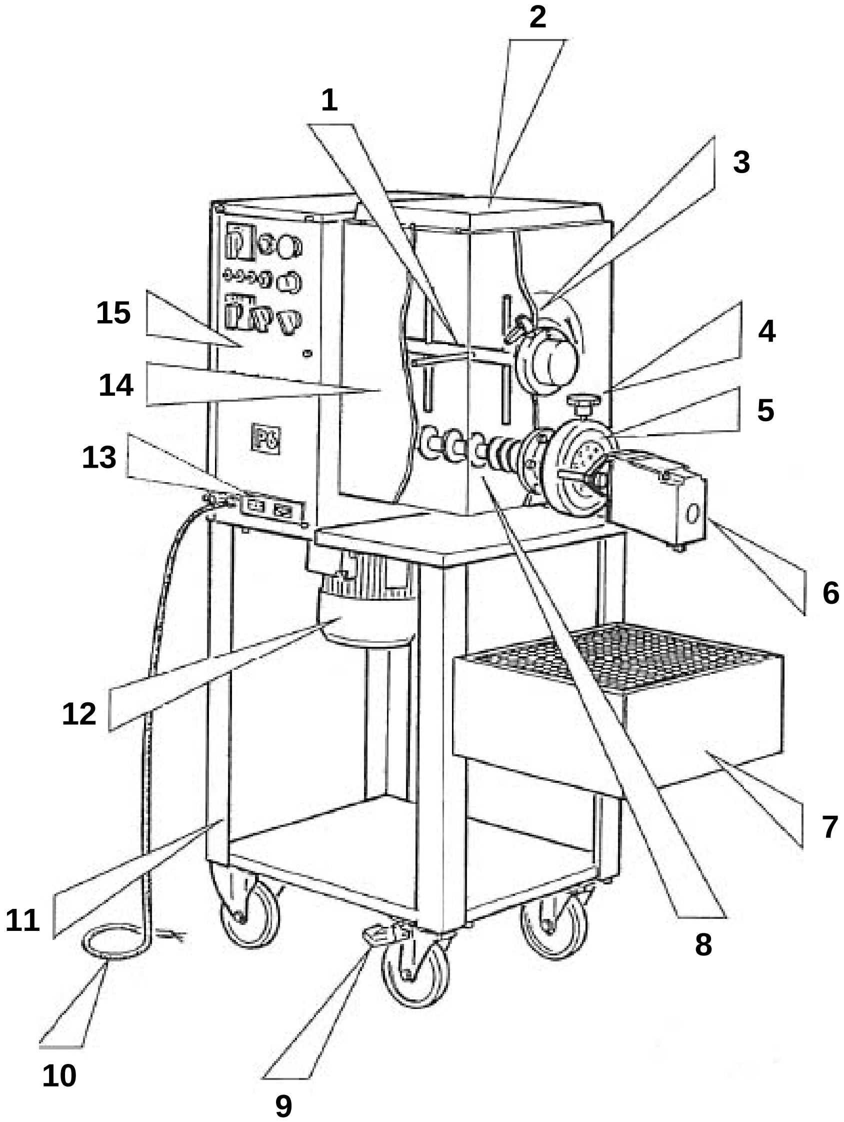
11 Trolley

12 Electric motor

13 Plugs for electrical link with the cooler blower and optional units

14 Tank

15 Control panel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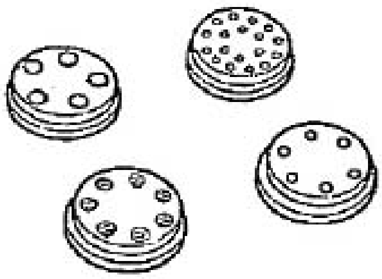
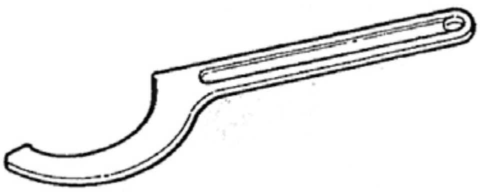
Accessories supplied

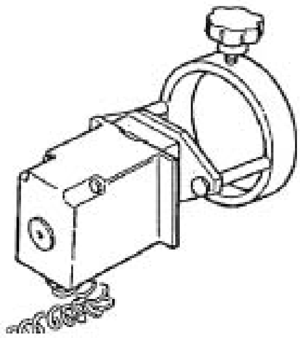
4 dough plates (the type of plate is chosen by the customer when the order is placed).



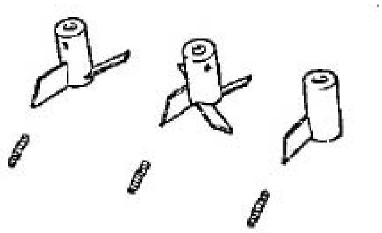
1 plate ring nut support tightening spanner.



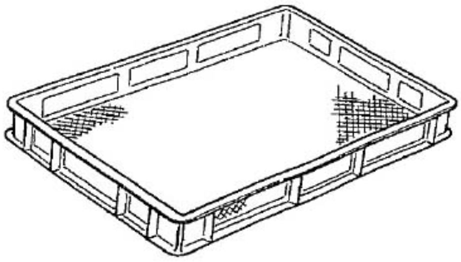
1 dough-cutter motor.



1 set of blades for the dough-cutter motor.

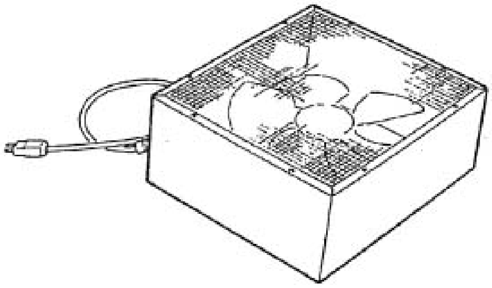


1 sieve.

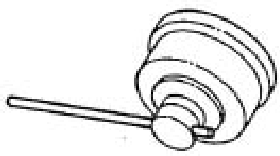


1 reducer breather plug.

1 cooler blower.



1 adjustment rod.



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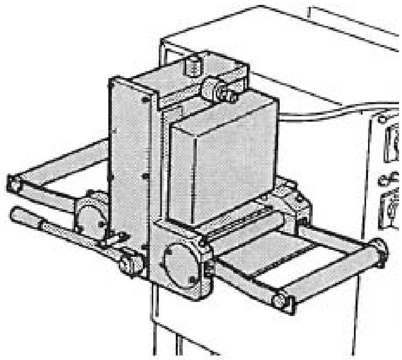
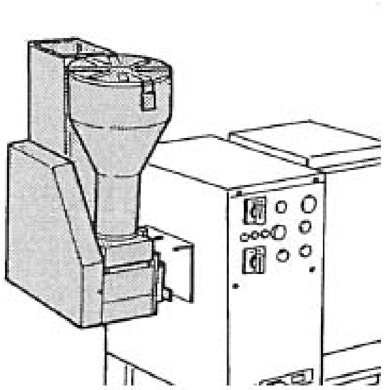
Optional accessories

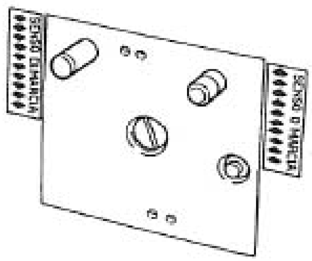
Ravioli unit.



Gnocchi unit.



Attachment point, for optional units, at the rear side of the machine.



Uses provided for

The automatic P6 machine has been designed, built and outfitted exclusively for the production of drawn pasta, obtained from raw materials such as durum wheat flour or bread wheat flour with the addition of water and/or eggs.

The pasta extruders, to obtain the different shapes, may be of two types, in bronze or in Teflon. The pasta obtained with bronze extruders has a rougher and more opaque surface.

With Teflon extruders, the pasta is smoother and with a more glossy surface. These extruders are more delicate than those in bronze and the hourly pasta production output is slightly higher.

The machine can be connected to a Ravioli and Gnocchi unit, that is optionally available.

The technical features of the product dealt with, dimensions, weight, cutting system etc. are only those indicated in the supply contract and indicated in this handbook in section “Technical data”.

A different use to that specified shall be considered **improper use**. In any case, the machine has been designed for professional industrial use.

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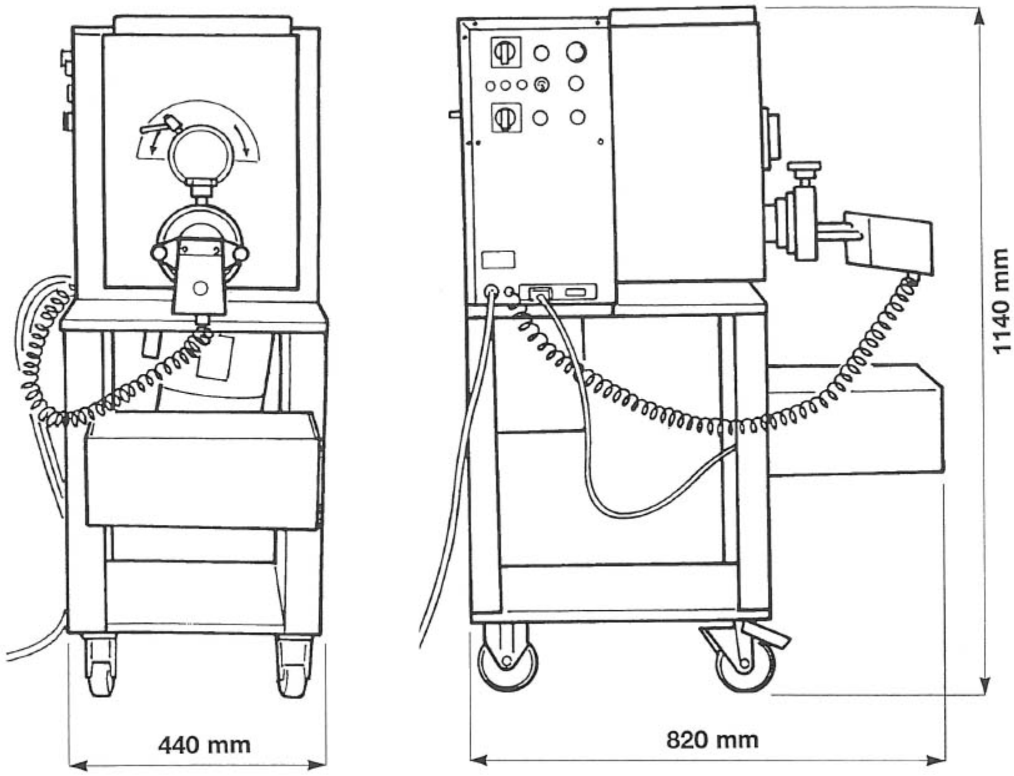
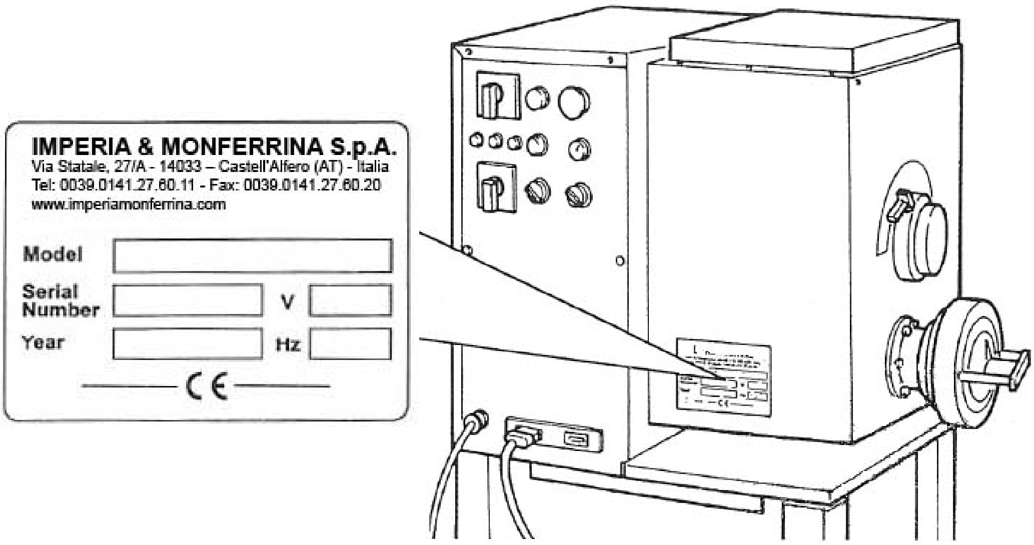
Technical specifications



Mixing tank capacity	Kg	6
Dough production	Kg/h	15 ÷ 18
Three-phase or single-phase motor	Hp	1,5
Weight	Kg	107

Machine identification plate / EC marking

In the case of all communication with the manufacturer, always quote the information on the machine’s ID plate.



Permitted environment conditions

To guarantee correct functioning, the machine is to be placed where it is protected against weather and with an environment temperature ranging between 20 °C and 30 °C and with relative humidity ranging between 40% and 50%.

The working environment is to be clean and well lit.

Noise level

The phonometric tests carried out on this specific machine model highlight an acoustic pressure of:

LEP,d < 70 dB (A)

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Overall dimensions

The overall dimensions are indicated in section “Technical data”.

Scrapping

Environment!

When scrapping, all the machine components are to be disposed of in the appropriate waste dumps in accordance with the laws in force.

The machine has a pure, unalterable stainless-steel structure and conforms to current safety regulations in Italy and abroad.

The main components of the machine are:

- Single-phase electrical motor 220 V or three-phase 380 V.
- Stainless-steel tank and feeder.
- Stainless steel shaft that can be removed to facilitate cleaning and maintenance.
- Plates for every type of dough.
- Automatic dough-cutter with speed variator and stainless-steel blades.
- Cooling blower for drying the product quickly.
- Stainless steel trolley on wheels.

The machine’s frame is made of steel (AC) and polycarbonate (PC).

The electric motor is made of aluminium (AL), steel (AC), copper (CU) and polyamide (PA). Recover the used reducer oil and dispose of it at specially – equipped collection centres.

Disconnect all power supplies before starting scrapping operations.

Guarantee

DIAMOND provides a warranty for 12 months from the date of purchase for all parts, excluding those subject to normal wear.

The warranty is annulled in the case of repairs on the machine carried out by unauthorised persons or if equipment or accessories not supplied by ***DIAMOND*** are used or that have not been recommended or approved by the same, or in the case of removal or alteration of the serial number during the warranty period.

The guarantee runs from the purchase date and the card, duly completed in full, must be sent within ten days.

The purchase date is the one shown on the carriage note/invoice at the time when the machine is delivered by the re-seller.

DIAMONDu nder takes to repair or replace parts which show manufacturing faults during the guarantee period, free of charge. The warranty does not cover any cleaning of operating components.

Defects that are not clearly due to materials or manufacturing shall be examined at our “Technical Assistance Centre” or our works.

If the claim proves to be unjustified, all repair and/or part replacement costs shall be borne by the customer.

The guarantee certificate and the carriage note/invoice must be shown to the technical personnel carrying out repairs or must accompany the machine sent for repair.

The guarantee is not extended following technical work performed on the machine. Repairs are carried out at our “Technical Assistance Centre” at our works and the part/s involved must arrive with carriage paid (carriage expenses borne by the customer unless agreed differently).

The guarantee does not however cover: accidental damage, in transport, through negligence or inappropriate treatment, incorrect use not conforming to notes shown in the instructions booklet and anyway caused by phenomena not depending on the regular functioning or use of the machine.

The ***DIAMOND*** company declines all responsibility for any harm to persons or damage to property arising from bad or imperfect use of the machine.

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Professional qualifications of persons enabled to operate on the machine

The machine is to be used only by authorised persons who have been instructed for the purpose; the same precaution is valid for the persons who shall carry out the maintenance. Do not permit unauthorised persons to approach the machine when running or during maintenance.

After receiving all the instructions necessary, only the following professional operators are permitted to work on the machine:

Safety officer

The safety officer is responsible for protection and prevention of risks in the company, as specified in the European Directive 89/391 EEC (Safety in the workplace), acknowledged in Italy by D.L. Executive Order of 12/11/1994.

The safety officer shall ascertain that all the persons operating on the machine have received all the relevant instructions contained in this handbook.

Operator (in charge of running the machine)

Trained operator qualified to run the machine (work cycle, any adjustments, etc.).

This operator shall only carry out the operations specifically assigned and described in this handbook.

It is most important to avoid that the machine is not used by unskilled persons.

Mechanical maintenance engineer

Qualified technician able to run the machine as OPERATOR and, furthermore, able to run it with protections disabled, to intervene on mechanical components, to carry out adjustments, maintenance and repairs.

This engineer shall not intervene on live electrical systems.

The mechanical maintenance engineer is to have generic mechanical experience and specific experience on this type of machine.

Electrical maintenance engineer

Qualified technician able to run the machine as OPERATOR and furthermore able to run it with protections disabled, to intervene on adjustments and electrical systems for maintenance and repairs.

Able to operate with live voltage in the electric panels, control equipment, etc.

The electrical maintenance engineer is to have generic experience on electric panels and specific experience on the panel and electrical components of this machine.

Manufacturer

For any other operation not specifically foreseen in this handbook or assigned to a professional technician other than those indicated above, contact ***DIAMOND***

Suggestions for pasta production

Any type of flour or durum flour or flour/durum flour mixture can be used for the dough.

The dough must be kneaded with eggs alone or an eggs/water mix.

The water can be replaced in part by finely-chopped spinach or vegetables to obtain green pastas or tomato puree to obtain red pastas or other ingredients: in these cases it is advisable to use hard grain durum flour.

For good dough, around 300 ÷ 350 gr. of liquid is required for every kilogram of flour.

This liquid may consist of eggs alone, just water or an egg/water mixture. Since the moistness of the flour varies according to type, climate and where it is stored, the amounts indicated must be adapted to the type of flour being worked by adding or decreasing the quantity of liquid slightly.

The dough is just right when, at the end of kneading, it is in the form of grains the size of coffee beans. If the dough coalesces into a even mass it means that too much liquid has been poured in. In this case, before extruding the dough, add a little more flour and let it mix for a bit longer.

If, however, the dough does not form little balls but remains very floury, add a little more liquid.

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Here below we give a few recipes for different types of dough.

Remember that ingredients can at all times be modified and quantities changed according to your experience and taste.

Preparation for pastry for ravioli:

Fine flour 70%

Hard grain durum flour 30%

5 eggs per Kg of dough + water

Knead for approximately 10 minutes

The moistness of the mixture between eggs and water must be around 32%.

Preparation of dough for tagliatelle:

Fine flour 70%

Hard grain durum flour 30%

5 eggs per Kg of dough + water

Or

Hard grain durum flour 100%

5 eggs per Kg of durum flour + water

Knead for around 15 minutes with around 33% moisture.

Preparation of durum flour pasta:

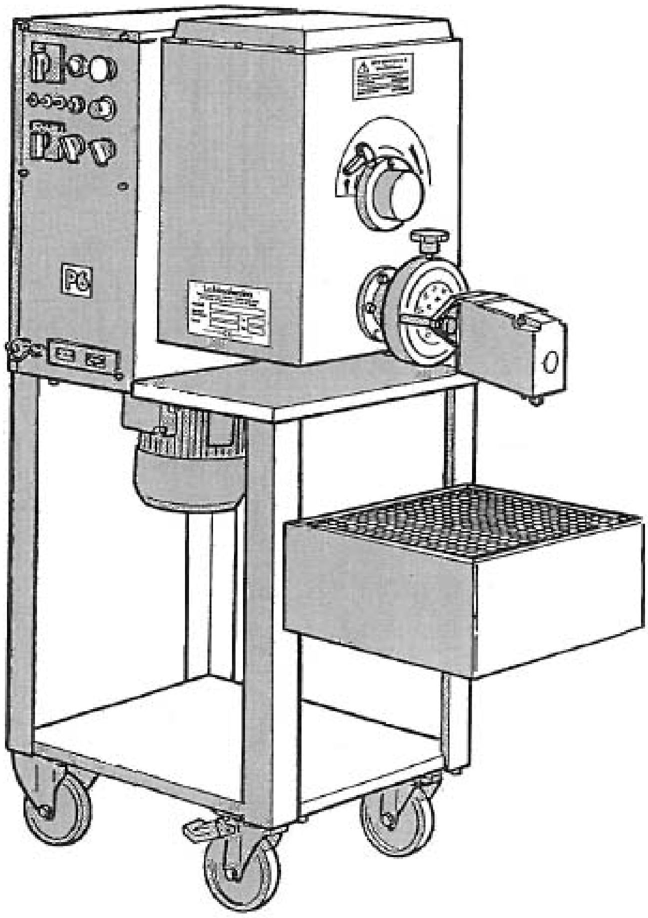
(e.g. rigatoni, fusilli, conchiglie, spaghetti, etc.).

For this type of pasta only hard-grain durum flour with 30 ÷ 33% water is used.

When different types of flour are used it is a good idea to mix them well before adding liquid.

To take account of the customer’s taste, salt in the rough measure of 2 gr. per Kg of flour can be added to the dough, taking care to dilute it well in water.

SAFETY



If in doubt do not proceed!

Telephone the *DIAMOND* After Sales Service immediately.

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Safety information

The safety officer shall inform the workers about the risks connected with the use of the machine.

Furthermore, the employer shall provide the information, instruction and training of the user as required by current legislation.

Failure to comply with basic safety regulations or precautions could cause accidents during machine operation, maintenance and repair. An accident can often be avoided by recognising potentially hazardous situations before they arise. The operator must be alert to potential hazards and be suitably trained, skilled and have the right tools for carrying out these tasks properly.

The improper use of the machine during operation or maintenance can be dangerous and cause serious accidents.

Do not run or carry out maintenance on the machine until the instructions have been read and understood.

DIAMOND shall not be held in any way liable for
accidents or damages caused if the machine is used by persons who have not been sufficiently instructed or who have used it improperly, or if the safety standards and/or operating procedures contained in this handbook have been partially or totally ignored.

Safety precautions and warnings are given in this manual and are indicated on the machine itself.

If the operator does not heed these danger warnings, he/she could have an accident with serious consequences for both himself/herself and others.

The safety messages are highlighted with the following symbols:

Caution!

Ignoring these messages could cause injuries to the operator.

Warning!

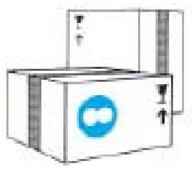
Ignoring these messages could cause damage to the machine.

ENVIRONMENT messages are displayed before procedures that, if not observed, could cause harm to the environment.

DIAMOND is not in a position to foresee all possible circumstances involving a potential hazards.

Therefore the warnings indicated in this document and on the product are not all-inclusive.

Where tools, procedures working methods or techniques not expressly recommended by the ***DIAMOND*** company are used, it will be necessary to make sure there is no risk of personal injury or injury to other people involved.



Use only original *DIAMOND.* spare parts.

DIAMOND declines all liability for the use of non-genuine spare parts.

Safety precautions

Caution!

The indications that follow cannot completely safeguard against all the hazards that could occur when operating on the machine; they are to be integrated with the common sense and experience of the operator, the only indispensable methods to avoid accidents.

In each section further safety rules are listed that are specific for the different operations.

Caution!

Unauthorised and/or unskilled persons are not to use the machine.

The operators who carry out the permitted activities on the machine are to receive appropriate instruction regarding the use of personal protection devices such as shoes, gloves, etc that protect them against risks deriving from the various activities.

Do not clean and do not lubricate moving parts.

Do not remove safety devices and/or protections.

GB

If an unforeseen process or operation is carried out, following a procedure different to that indicated ibook, before proceeding, contact ***DIAMOND***.

If the Customer installs equipment on the machine that has not been supplied by ***DIAMOND*** it is necessary to check that the safety conditions required by Directive 2006/42 EC are maintained, and in any case ***DIAMOND*** shall not assume the responsibility for any problems that arise due to the use of this equipment.

The machine is not to operate in corrosive or explosive environments.

Keep the machine clean and free of extraneous material such as debris, oil, equipment or other objects that could damage functioning and injure the operator.

An oily, wet or greasy floor could cause accidents.

Immediately dry and carefully clean any liquid or grease that forms on the floor during interventions on the machine.

Do not use inflammable or toxic solvents for cleaning.

Avoid prolonged contact with solvents and do not inhale the vapours.

Do not use near naked flames or sources of heat; make sure there is adequate ventilation.

Long overloads or failures could cause overheating of the electric motors and electrical equipment developing harmful fumes; cut off the power immediately and do not approach the machine until the fumes have been dispersed by adequate ventilation.

In the case of fire, never use water sprays on the machine. Use CO_2 extinguishers.

The operator, any assistant technician and the maintenance engineer are to use the appropriate personal protection devices when operating on the machine.

When necessary, use head sets if the noise in the working area exceeds 85 dB (A).

Wear appropriate working clothes.

Long hair is to be gathered into a net, to avoid risks of entanglement.

Handle the blades supplied for the dough-cutter motor with care.

The skills for the various activities, for the machine operation are to be clearly established as indicated in the chapter “Professional figures enabled to operate on the machine”.

The handbook is always to be on hand, so that it can be consulted to check the operating cycle any time doubts arise.

Should this handbook become lost or damaged, ask ***DIAMOND***

for a copy to replace it.

Structural damage, modifications, alterations or improper repairs can change the machine protection capacities, hence cancelling this certification.

Modification activities are only to be carried out by ***DIAMOND*** technicians.

During maintenance operations place on the machine, preferably on the control desk, a notice indicating "MACHINE BEING SERVICED – DO NOT POWER ON".

If a certain specialised technical operation for maintenance, inspection or repair is permitted, the persons carrying out the operations shall need to deactivate (completely or partially) safety devices, open or remove protective guards, and after the operations it shall be their precise duty to immediately restore the functioning of the safety components or the guards involved.

Do not touch electric wires, switches, pushbuttons, etc with wet hands.

During the operations to restore original work conditions, the relevant persons shall check at the end of the operating procedure that the normal safe machine working conditions are guaranteed especially the safety devices and protective guards involved in the operation.

The assigned persons shall also make sure that after the intervention no objects remain forgotten inside the machine, especially mechanical pieces, tools or devices used during the procedure that could cause damage to the machine or malfunctioning.

The persons assigned to maintenance, inspection and repairs, to safeguard themselves, before starting the activity shall cut out all the machine power supplies and take all the preventive safety measures, especially those which are to be carried out manually.

Do not replace, disengage or partially remove protections, safety devices and/or protection structures. This rule also applies to the warning indications provided on the machine.

The protections and safety devices are always to be kept in perfect efficiency; in the case of failure they are to be immediately repaired or replaced.

If, to be able to carry out a specific specialised technical operation on an electrical electronic device of the machine, it is necessary to work with the electric cabinets or control panels open and in exceptional cases with the main switch in ON position, be very careful and work with extreme caution. During these operations high voltages inside the electrical-electronic devices are a hazard for the life of the personnel.

Before restarting the process always pay maximum attention and make sure there are no operators still inside the machine operating area indicated by the danger signs.

Parts subject to wear due to the work they perform are to be checked and replaced as soon as they show significant signs of wear.

The manufacturer has designed and built the machine for a logical life, taking into account the normal use conditions of the Customer; however, it is necessary to periodically check all these components very carefully.

If “mechanical cracks” and/or permanent or cyclic structural deformations are found, contact the manufacturer or skilled technicians immediately, who will take the necessary action.

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Safety plates and symbols

There are a number of safety plates on the machine bearing symbols and/or safety messages.

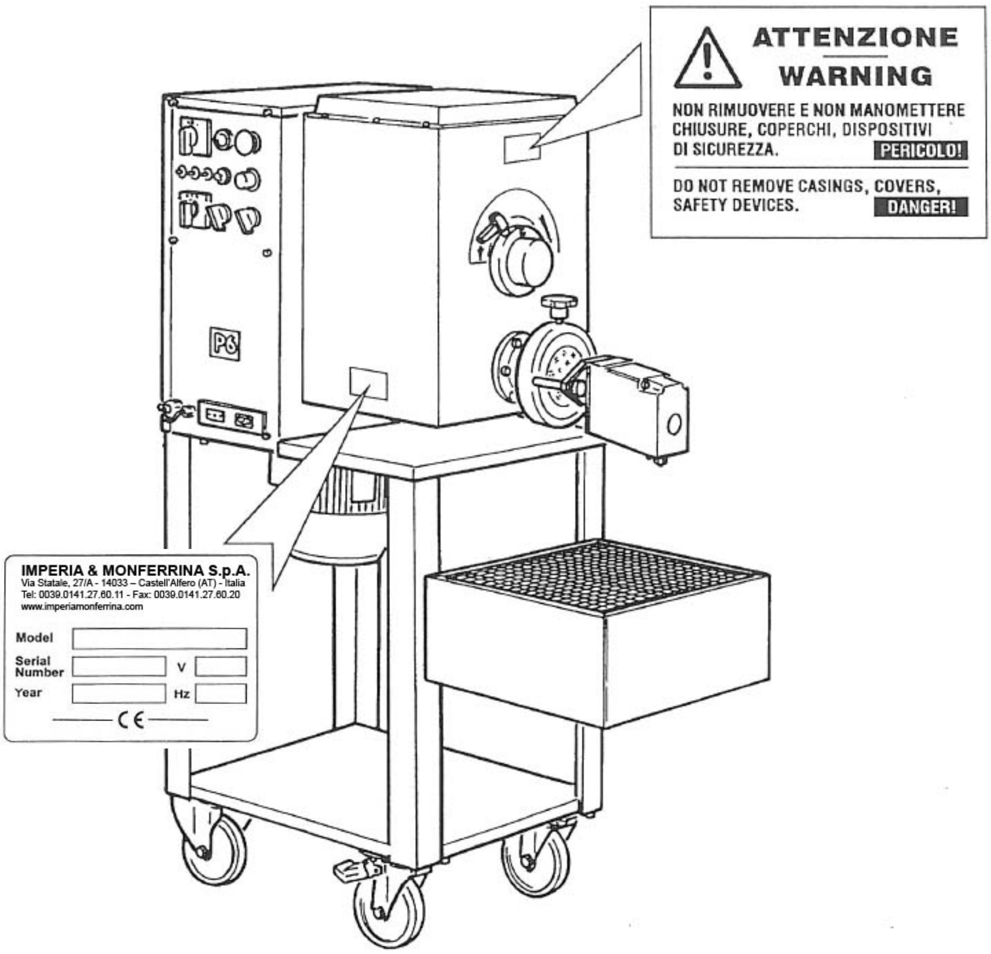
Caution!

Make sure that all the safety symbols can be clearly read.

Clean them with a cloth, soap and water. Do not use solvents, diesel or petrol.

Replace damaged, ad plates obtaining new ones from the DIAMOND. re-seller.

If a plate is on a part to be replaced, make sure the new piece has a new plate attached to it.



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Safety devices

The components indicated are particularly important for safety.

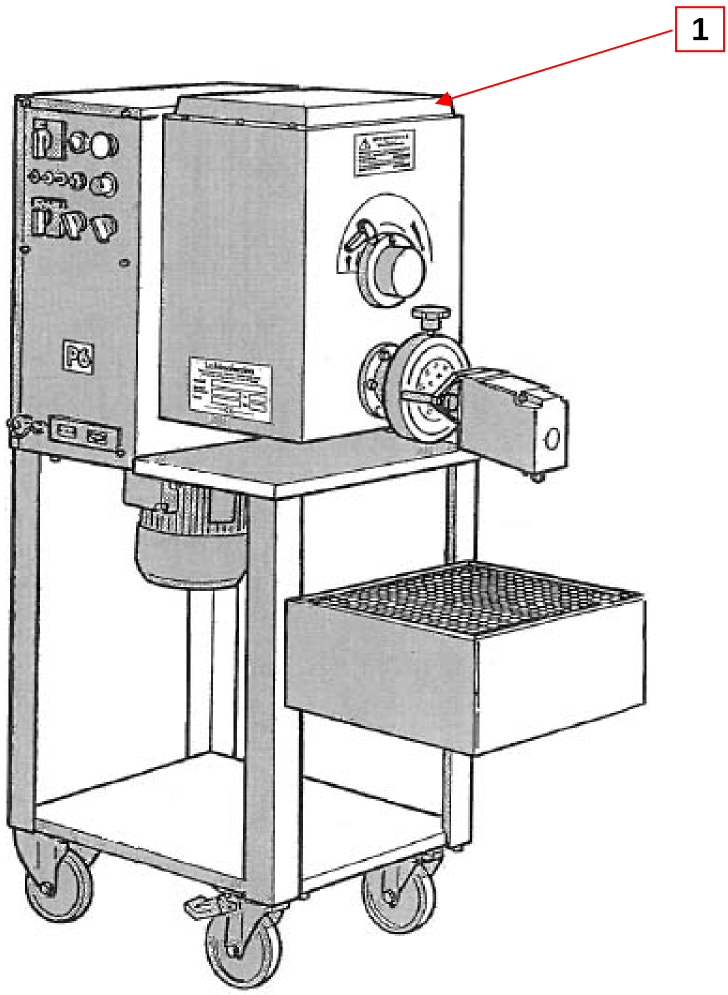
In the case of failure or wear, they are to be replaced with spare parts supplied or authorised by the manufacturer.

During machine use all the protections are to be correctly mounted.

Safety microswitch and limit switch

There is one protective Plexiglas cover (1) on the machine, equipped with microswitch and safety latch.

The microswitch stop processing when the cover is raised.



Residual risks

The accurate risks analysis carried out by the manufacturer and filed in the technical folder has eliminated most of the risks connected to the use of the machine.

The manufacturer recommends that the instructions, procedures and warnings contained in this handbook are scrupulously followed, as well as the safety standards in force, including the use of the foreseen protection devices, both those integrated in the machine and those for personal protection.

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Caution!

As a precautionary measure for safety the correct functioning of safety devices is to be periodically checked.

It is strictly forbidden to make any type of mechanical, electrical or pneumatic modification, to avoid creating additional hazards and risks that have not been foreseen.

After carefully studying all the possible risks related to the machine use, all the necessary solutions have been applied to eliminate the risks and limit the hazards for the exposed persons.

On board the machine, although fitted with these safety systems, the following residual risks remain, that can be eliminated or reduced by taking the relevant precautions:

Caution!

Before starting any maintenance activity, the operator is to carry out the following procedure.

Risk of impact, crushing, shearing following access to moving parts, after removal of fixed protections or bypassing safety devices.

Caution!

Exposure of persons to moving parts can create seriously hazardous situations. It is strictly forbidden to start the machine without the protections provided correctly installed. It is strictly forbidden to tamper with, by-pass or elude guard interlock devices.

Caution!

Only skilled and qualified persons are permitted access into the electric cabinet.

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Possible risks during maintenance operations are many.

During maintenance activities the operators are to carefully follow the indications of this handbook, to avoid human errors when operating on the machine during maintenance or when mounting components.

Caution!

Do not carry out maintenance operations in parallel. A wrong action on the part of one maintenance engineer could endanger the safety of the other.

Caution!

Errors in mounting of components can cause the machine to become insecure during normal use.

Directives applied

The following directives are applied to the machine described in this handbook:

- **2006/42/EC** Machines Directive
- **2004/108/EC** Electromagnetic compatibility Directive
- **2006/95/EC** Low voltage Directive

Harmonised technical standards

The machine has been designed and tested in conformity with the “essential health and safety requirements” of annex 1 of European directive 2006/42/EC.

The standards used as reference for the design, realisation and inspection of the machine are listed in the technical folder archived in ***DIAMOND***

INSTALLATION

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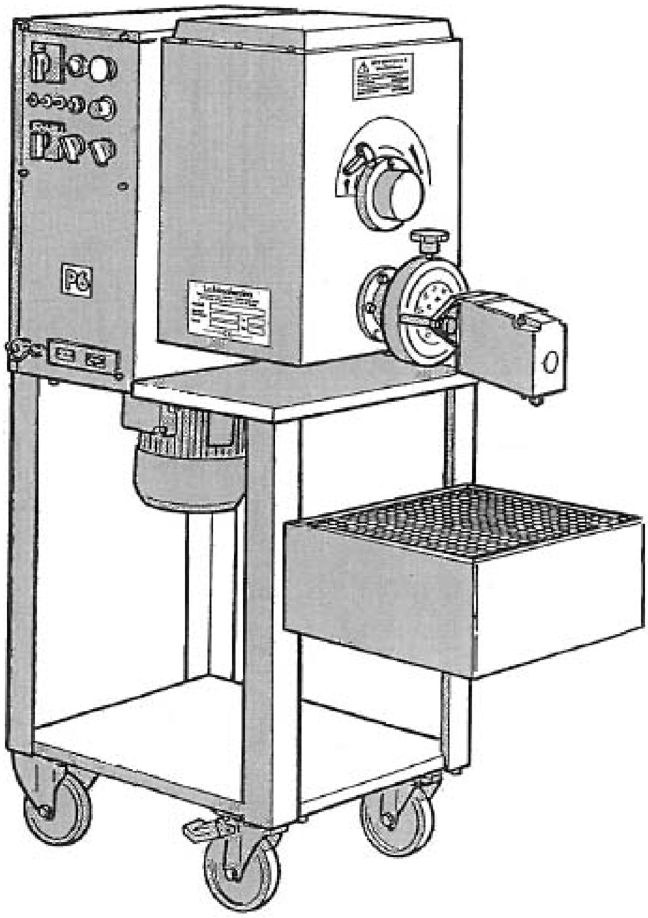


If in doubt do not proceed!

Telephone the *DIAMOND.* After Sales Service immediately.

Positioning

Warning!

Before starting the positioning, carefully visually inspect the machine to identify any damage caused during transport.

If one or more components are found to be damaged, do not proceed with the installation and notify the manufacturing company of the fault found, agreeing with same on the action to be taken.

The machine will be able to operate according to the foreseen technical parameters providing it is correctly arranged on the workshop floor so that it is stable during operation.

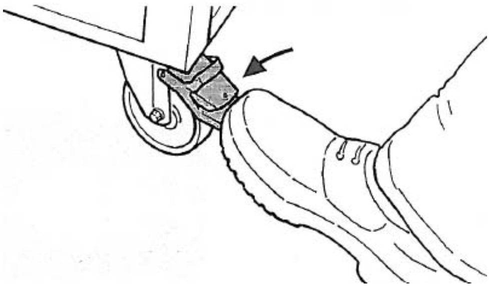
When cleaning, the persons assigned to these operations are to be equipped with the necessary personal protection devices.

Caution!

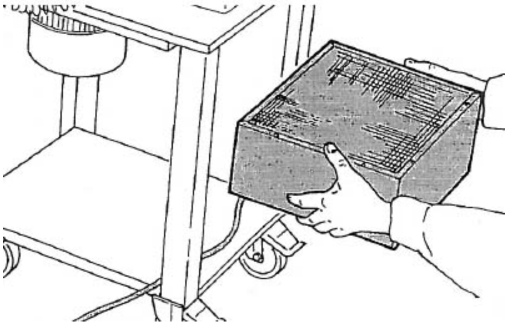
Electrical connections are to be carried out by skilled experts who have been appropriately trained.

Installation

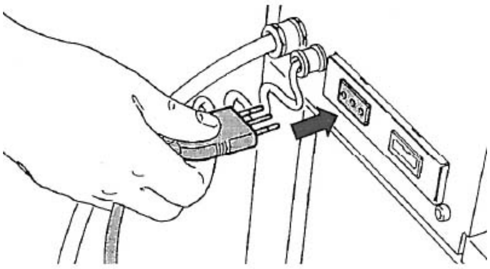
Position the machine on perfectly level ground and lock the wheels with the wheel locks provided.



Fit the cooling blower onto the trolley using the screws provided.



Plug the cooler blower into the socket under the control panel.



Warning!

The machine is not supplied with a plug for connection to the mains socket; an electrician must therefore fit a suitable plug.

Caution!

IMPERIA & MONFERRINA S.p.A. **declines all liability for incorrect connections or the use of a plug that is not suitable for the machine.**

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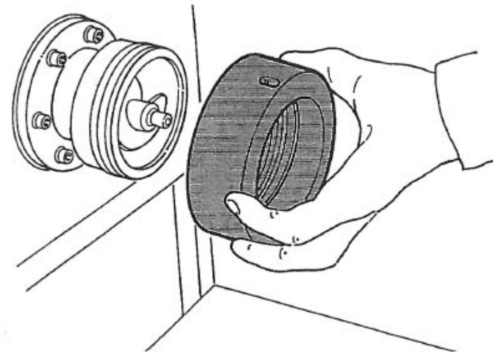
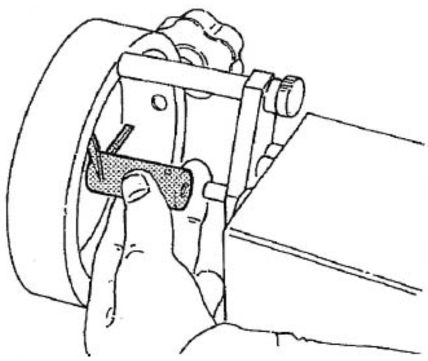
Unscrew the plate support ring nut.



Insert the plate required into the ring nut and screw the ring nut with plate into the machine again.

If you wish to produce short pasta, choose the suitable dough-cutting blade from the three supplied.

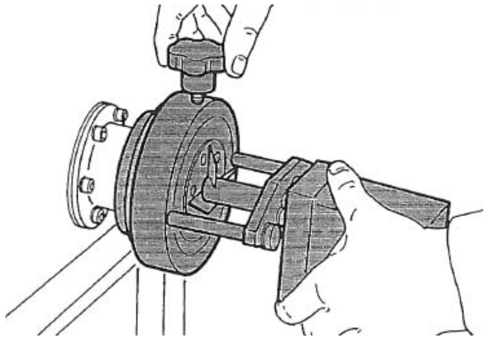
Insert the spring supplied into the blade and fit it onto the pin on the dough-cutter motor.



Caution!

Handle the dough-cutting blades carefully.

Fit the dough-cutter motor onto the machine by fixing it with the knob shown in the figure.



Electrical connection

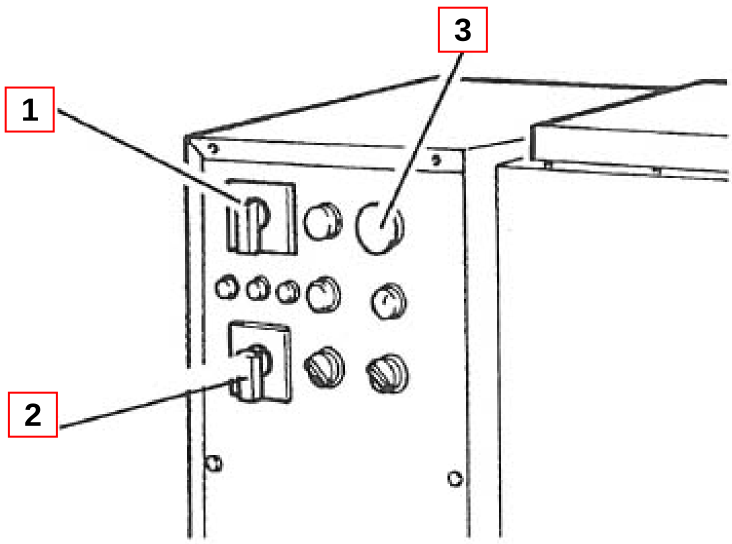
Caution!

Before starting the machine, make sure the voltage specified on the ID plate corresponds to the mains voltage.

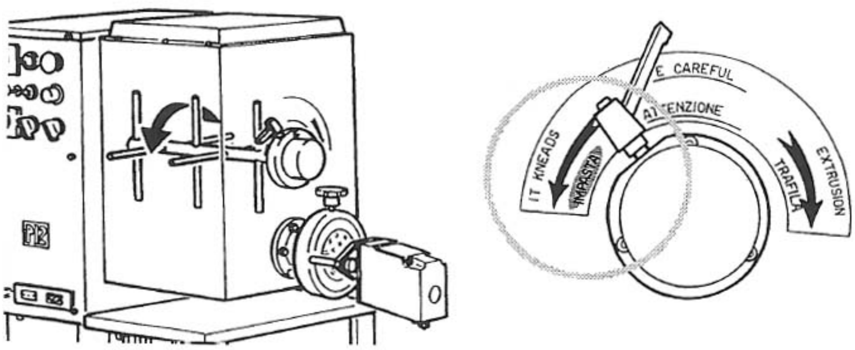
Supply phase check (380 V Three-phase)

Make sure that the master switch **1** and the “KNEAD/EXTRUDE” selector switch **2** are at ”0”.

Start-up the machine by turning the knob of the master switch **1** to the right (position 1) and turning the knob below to “KNEAD” **2** (to the left).



When “START” button **3** is pressed, the mixer shaft (that can be seen through the upper Plexiglas cover) must turn in an anticlockwise direction as shown in the figure.



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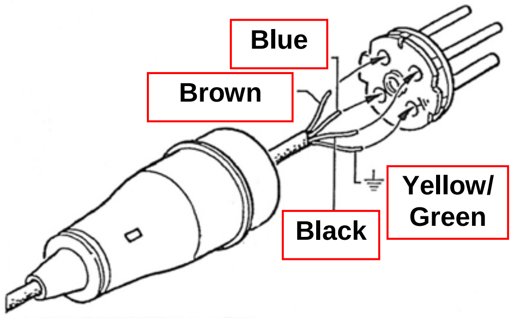
Caution!

If the mixer shaft is turning in the opposite direction, press the "STOP" button immediately thereby stopping the machine.

Remove the power supply plug from the socket and swap the position of the brown and black wires as shown in the figure.

The yellow-green ground wire must never be removed.

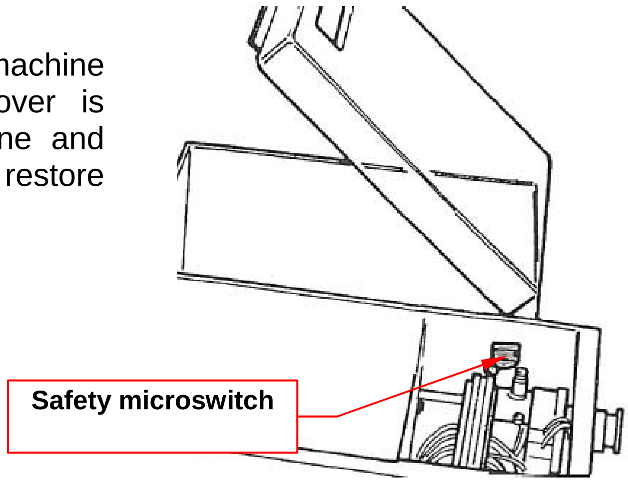


You are recommended to get an electrician to perform this operation.

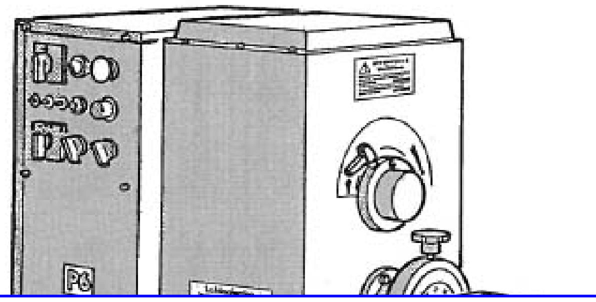
Safety microswitch check

Check regularly that the safety microswitch function properly. The microswitch should stop the machine if the tank Plexiglas cover raise.

If, when in operation, the machine does not stop when the cover is raised, stop using the machine and call in a qualified electrician to restore microswitch operation.

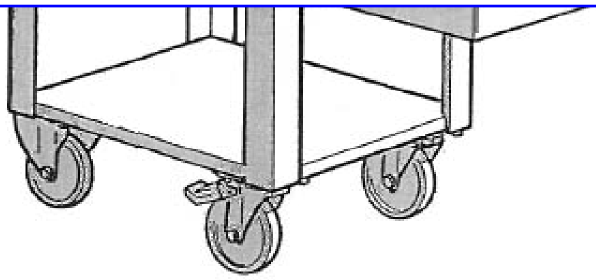


FUNCTIONING



Caution!

The use of the machine by unauthorised and/or untrained persons is strictly forbidden.
Operators who carry out the permitted activities on the machine are to receive adequate instruction concerning the use of personal protection devices such as shoes, gloves, etc. so that they can avoid all the risks that are connected with the various activities



If in doubt do not proceed!

Telephone the *DIAMOND* After Sales Service immediately.

Tel. 0039.0141.27.60.11

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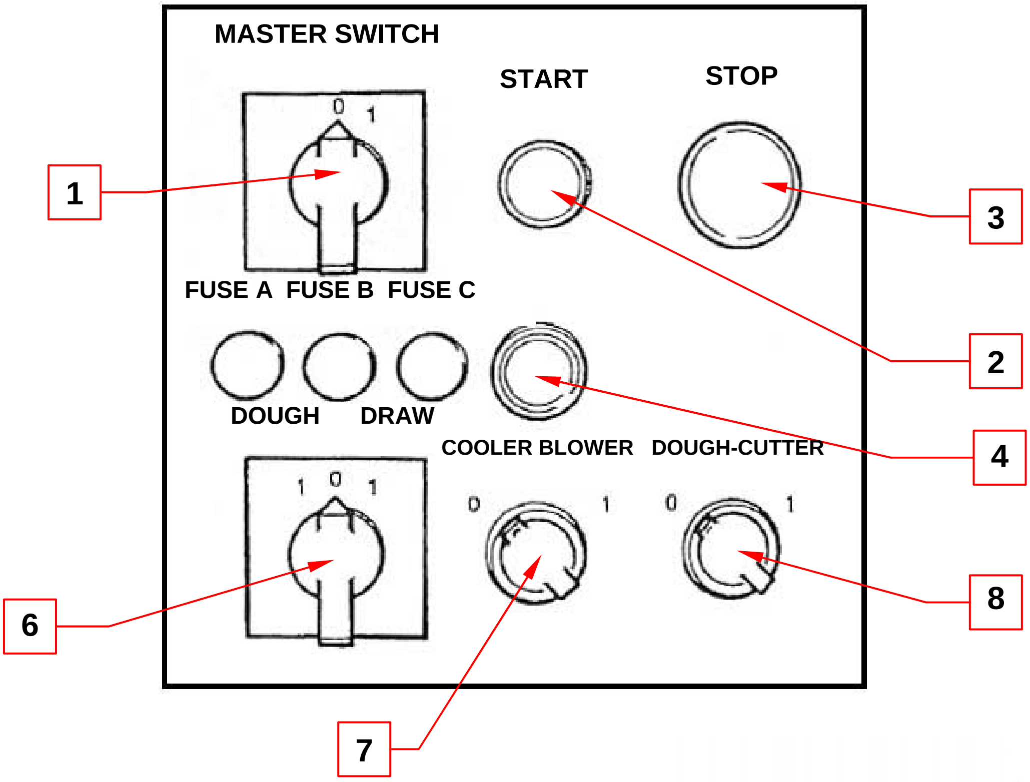
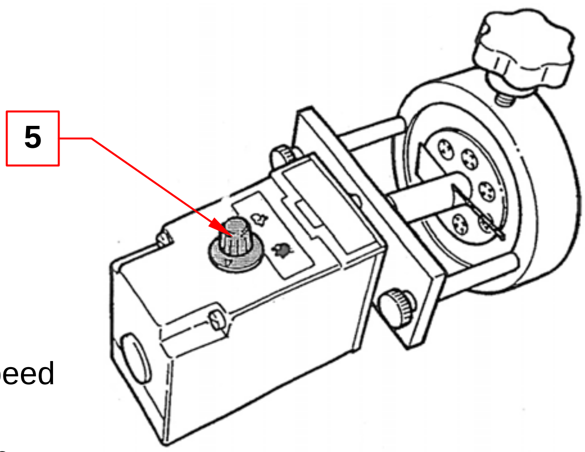
Description of the controls





1. Master switch
2. START button
3. STOP button
4. Cooler blower on indicator light
5. Dough-cutter motor speed regulation knob
6. DOUGH / DRAW selector switch
7. Cooler blower on / off knob
8. Dough-cutter on / off knob

Fuses	380 V Three-phase	220 V Single-phase
Fuse - **A**	**8 A**	**25 A**
Fuse - **B**	**8 A**	**2 A**
Fuse - **C**	**8 A**	**25 A**

Work cycle

Before the cycle

- Check the selector switches on the control panel are all at “0”.
- Make sure to have respected all precautions described in the Safety section.

Work cycle

- Open the cover and fill the mixing tank with the basic ingredients (flour and/or hard-grain durum flour), water and/or eggs.

  You are recommended always to weigh the flour and/or hard-grain durum flour poured into the tank to be able to determine the precise quantity of liquid (water and/or eggs) to be added).

  Break the eggs into a separate vessel thereby preventing any shell falling into the tank and clogging up the plate.

  You are also recommended to beat the eggs well so the yokes blend well with the whites.

Warning!

Read the advice concerning pasta production contained in the chapter “Machine description”.

- Close the transparent Plexiglas cover and secure it with the relevant safety catch.

Caution!

Under no circumstances, may you remove the transparent cover and/or tamper with the safety microswitches.

- Turn the master switch knob (**1**) to the right to position 1.
- Turn the selector knob **6** to the left and position it on “KNEAD”.
- Press the “START” button **2**.

Warning!

Under no circumstances let the machine run with the selector switch 6 turned to the “EXTRUDE” position before kneading the flour. This could cause serious mechanical damage.

- The friable dough broken up into granules will be ready to be extruded after around 15 minutes.

Caution!

Do not wear loose garments or protruding elements that could get caught up in the machine.

To produce long pasta (tagliatelle, spaghetti, etc.):

- Position the sieve supplied above the cooling blower.
- Turn the selector knob **6** to the right from the “KNEAD” position to the “EXTRUDE” position.
- Press the “START” button **2**.
- Begin to cut the dough manually with a spatula or blade.
- Turn the “COOLING BLOWER” knob **7** to the right and position it at 1. The cooling blower will come in to operation and partially dry the dough leaving the plate.

To produce short pasta:

- Position the sieve supplied above the cooling blower.
- Fit the dough-cutter motor, with a blade selected for the length of the cut, onto the plate and secure it by tightening the safety knob.
- Turn the “DOUGH-CUTTER” **8** to the right from position 1 and start up the dough-cutter motor.
- Turn the selector knob **6** to the right from the “KNEAD” position to the “EXTRUDE” position.
- Press the “START” button **2**.
- Turn the “COOLING BLOWER” knob **7** to the right and position it at 1. The cooling blower will come in to operation and partially dry the dough leaving the plate.

The rotation speed of the dough-cutter motor can be regulated by means of knob 5, thus modifying the length of the pasta cut.

If the machine stops during the working cycle:

- The thermal protection inside the machine could have tripped as the result of the motor overheating or excessive voltage fluctuation.
- After a few minutes, the thermal protection will be reset automatically and the machine will be ready to continue the working cycle.
- Start up the machine again.
- If the machine does not start again after a few minutes have elapsed and after a number of attempts, you should check that a fuse on the control panel has not blown.
- If necessary, change the fuse that has blown with one with the same amperage rating.
- If the machine does not start after the start-up operation has been performed again, call in Technical Assistance.

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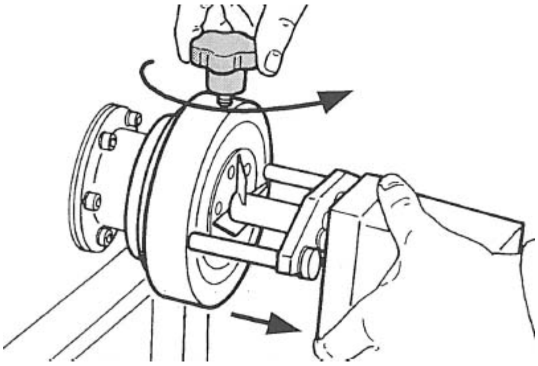
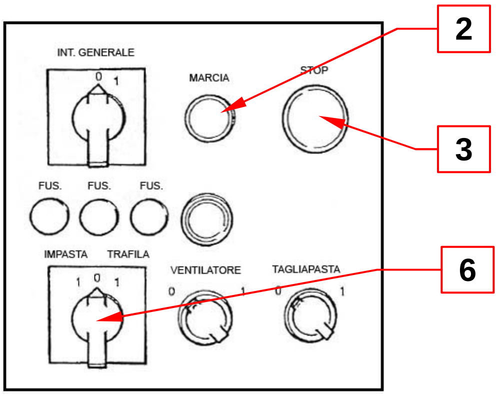
Changing the plate

To change the pasta type it is necessary to change the plate in the following way:

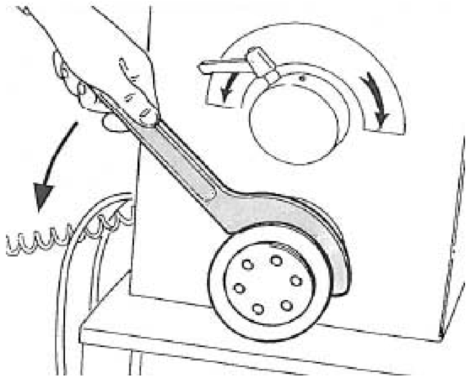
- Press the button **3** “STOP”.
- Bring the “COOLING BLOWER” **7** and “DOUGH-CUTTER” **8** back to zero “0”.
- Unscrew the knob and remove the dough-cutter motor.



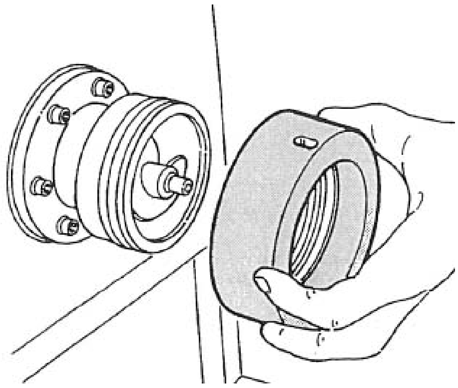
- Turn the selector switch **6** to the “KNEAD” position.
- Press the operation button **2** and let the machine run for some 10 seconds, reducing the pressure inside the plate.
- Stop the machine by pressing the button **3** “STOP”.



- Loosen the ring nut with the special spanner supplied.



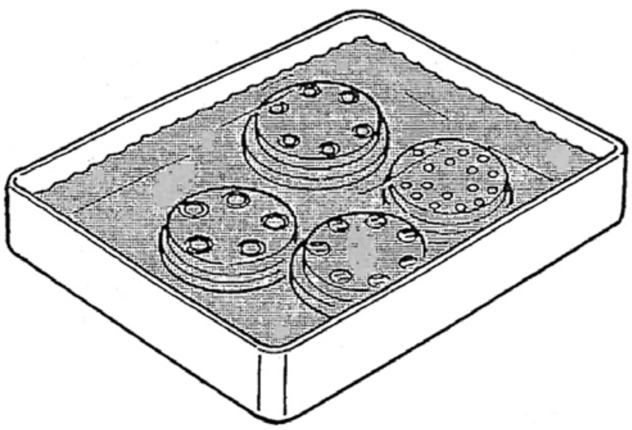
- Unscrew and remove the ring nut.



- Remove the plate and replace it with another.

Warning!

After use, the plates must always be immersed in a container full of water to prevent the dough from drying.



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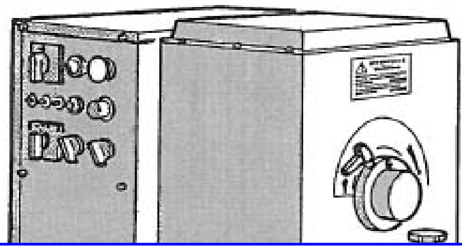
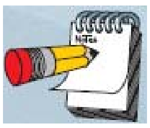
MAINTENANCE



Warning!

Special maintenance on the machine is only to be carried out by technicians of the manufacturer.

The manufacturer recommends that a servicing ticket is used to inspect the machine every two years and ensure the safety conditions.



Warning!
The maintenance engineer is to enter in the log book attached all operations carried out on the machine.

If in doubt do not proceed!

Telephone the *DIAMOND* After Sales Service immediately.

General information

This section describes the inspection and routine maintenance operations that are indispensable to ensure correct functioning of the machine.

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Any other intervention required to correct failures or operative anomalies are to be specifically authorised by the manufacturer.

In such cases always indicate the identification data (model, serial number, identification of electrical, pneumatic systems etc.).

For important repairs it is advised to contact the manufacturer who, by means of the specialised technicians with all the technological experience of the original construction in the plant, can always offer advice and promptly intervene.

For the maintenance or replacement of commercial components installed on the machine, follow the instructions supplied directly from the Manufacturers and contained in their specific handbooks or catalogues.

General safety rules

Maintenance work is to be carried out by skilled technicians who have been trained in the specific sectors that for this machine are:

- Mechanical maintenance
- Electrical systems maintenance

It is the specific task of the Safety Officer to ensure the professional qualifications and capability of these persons.

Before starting a maintenance operation, the safety officer shall::

- Free the area of materials and persons not involved in the work in the area.
- Make sure that the equipment required is available for the maintenance engineer and that it is in good condition.
- Check there is sufficient lighting and if necessary provide portable 24 Volt lamps.
- Make sure that the maintenance engineer is equipped with the relevant personal protection devices needed for the specific job (gloves, goggles, shoes, etc.).
- Make sure that the maintenance engineer has carefully read the instructions contained in this handbook and is familiar with the machine functioning.

Before starting the relevant job, the maintenance engineer shall:

- Cut-out all power supplies (electrical, hydraulic, pneumatic) and block the machine in safety condition.

Caution!

The main switch is to be set on “0” and fastened with a padlock to prevent accidental re-powering.

The key of the padlock is to be kept by the maintenance engineer..

Upon termination, and before putting back into service, the maintenance engineer is to check the complete work cycle, the functioning of the safety devices and that the protections are intact.

Work on motors or other electrical components is only to be carried out by the Maintenance Engineer who has been specifically trained and authorised by the Safety Officer.

Caution!

After every maintenance operation the Safety Officer shall check the machine safety conditions and protection devices.

During maintenance operations it is recommended to affix on the control panel a notice warning not to power-on or carry out movements

Maximum reliability and minimum maintenance costs of the machine are the result of a planned and scrupulously followed maintenance and inspection schedule to be observed during the entire life of the machine.

Always scrupulously observe the set maintenance time scales and arrange the operations according to the specific needs, taking into consideration the machine production cycle.

Always use equipment that is in perfect condition and specifically for the operation to be carried out. The use of inappropriate and/or inefficient equipment can cause serious damage.

Never intervene, unless specifically required to remove a failure, on regulations and positions of limit microswitches: tampering with them can cause serious damage to the machine.

Mark the separate parts when disassembling, to ensure correct reassembly.

Before fitting a group, always spread a thin film of oil on internal parts and matching surfaces. Replace all seals and gaskets with original spares before mounting the components.

Always make sure there is ground connection and that it is in compliance with current standards.

Before starting-up the machine always makes sure that the maintenance operators are at a safe distance and that no tools or material has been left near the machine.

Cleaning

Before starting inspection or maintenance operations, remove all dirt and grime from the machine by suction and with appropriate solvents. Do not use jets of compressed air that could accumulate the dirt and cause injury to persons in the cleaning area.

Clean persistent grime with soft dry cloths that do not fray or with a soft silk bristle brush.

Use personal protection devices.

Purchase only solvents that are for manual use.

Check the characteristics declared by the manufacturer.

Caution!

Use cleaning solvents away from naked flames and ensure that the environment is well ventilated.

Avoid prolonged exposure to solvent vapours.

Ignoring these rules could cause harm to the operators.

Maintenance on mechanical components

To remove and handle heavy elements (more than 30 Kg) use hoists, cranes or overhead travelling cranes.

If detailed drawings, break-downs, etc are not available, mark each element and make a note of its location so as to avoid errors at reassembly.

Always use wrenches of the appropriate size.

Immediately replace screws and bolts that show signs of wear on threads and seats for wrenches.

When loosening or tightening, do not apply pipes or extensions to the wrenches to increase the force. If torque wrenches and special tools are used, check that the calibration is appropriate for the component.

Pay particular attention when using pneumatic or hydraulic tools.

Caution!

Always wear personal protection devices such as gloves, safety shoes, etc.

Maintenance on electrical systems

Before working on electrical components, cut out the power supply upstream of the equipment (power supply line main switch).

Always carefully check insulating coverings, terminal boards and seal of enclosures.

These are always to conform with the protection class declared by the manufacturer.

Immediately replace damaged seals and sheaths.

Check and if necessary restore identification labels and straps of wires and components, following the indications on the diagrams.

Make sure that hazard warnings and information plates required by current standards are perfectly legible and well fastened. Do not use compressed air to clean. Use suction devices only.

For replacement of faulty control components always use items that conform with the specifications of Standard EN 60204-1 (colours, size, protections, etc.).

Electric wires, especially if exposed to heat, humidity and/or low temperatures lose their insulation properties over time.

With the aid of skilled technicians, check intactness.

All electrical components with mechanical parts in movement during the work cycle (pushbuttons, selector switches, relays, etc.) are guaranteed by the manufacturer for a certain number of cycles, high, but always limited.

Check the condition frequently and consult skilled technicians for periodical replacement within the guaranteed life time.

GB

Advice regarding maintenance

Operations to be carried out during maintenance work

When carrying out maintenance operations pay attention to all the signs that could preceded a failure:

- traces of wear;
- loose fittings or connections;
- oxidised contacts;

Cutting down dead time after a failure

It is to be borne in mind that maintenance operations carried out correctly can cut down the dead time to a minimum after a failure.

A repair made at the right time avoids further deterioration.

Wherever possible, use original spare parts and carry out the repair of the components with precision in your plant or send the part for repair to its manufacturer.

GB

Cleaning and maintenance

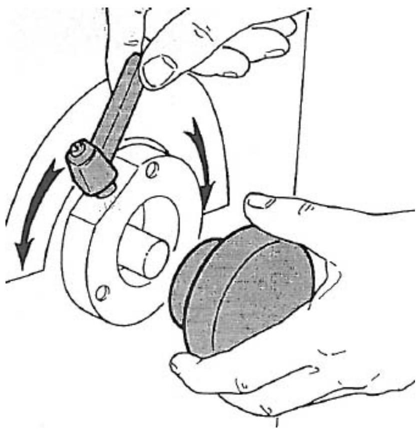
Caution!

Before starting any type of maintenance work, cut out and lock all energy sources and block the machine safeties. Place a warning signboard near the main switch. "MACHINE BEING SERVICED DO NOT POWER ON".

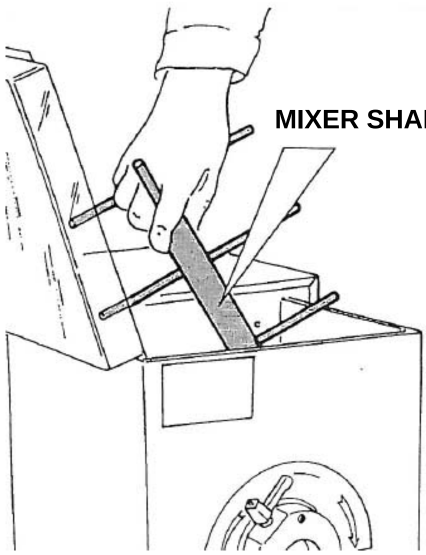
Before putting back into service, recheck the entire system according to the start-up procedures. Ignoring these precautions could cause serious injuries for the personnel!

To make it easier to clean inside the mixing tank, the shaft should be removed in the following way:

- Turn the locking lever upwards in an anticlockwise direction and remove the ring nut.



- Pull the mixer shaft out from above.
- Clean inside the tank and the shaft that has been removed, with a damp sponge.
- Refit the shaft with its ring nut and tighten the locking lever again.



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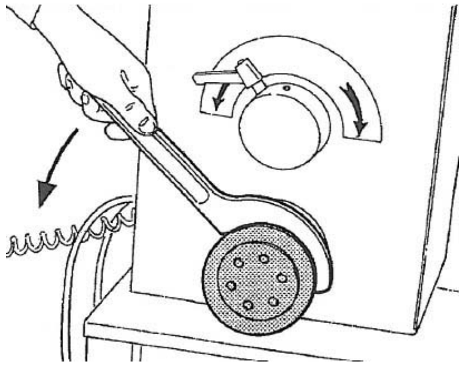
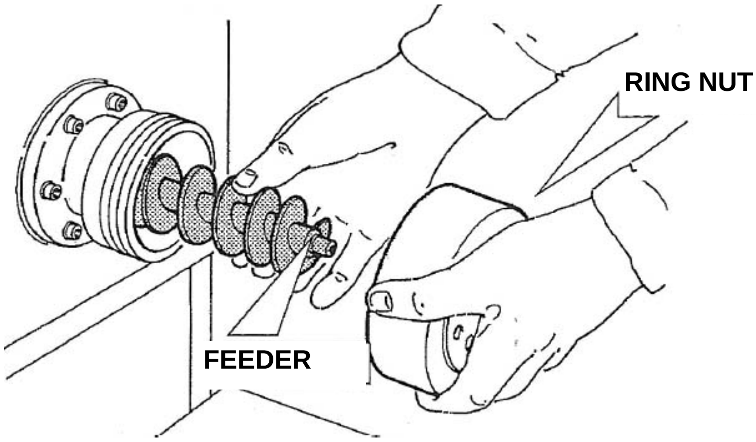
- Use the spanner supplied to loosen the plate support ring nut.





- Unscrew the ring nut and remove it. Remove the feeder and clean it with a damp sponge.
- Remove the plate from the ring nut and plunge it into a container full of water. The dough inside the plate holes must never be allowed to dry.
- Refit the feeder and the plate support ring nut.

Warning!

Do not use jets of water to clean the machine. Never fit a plate left out of the water.

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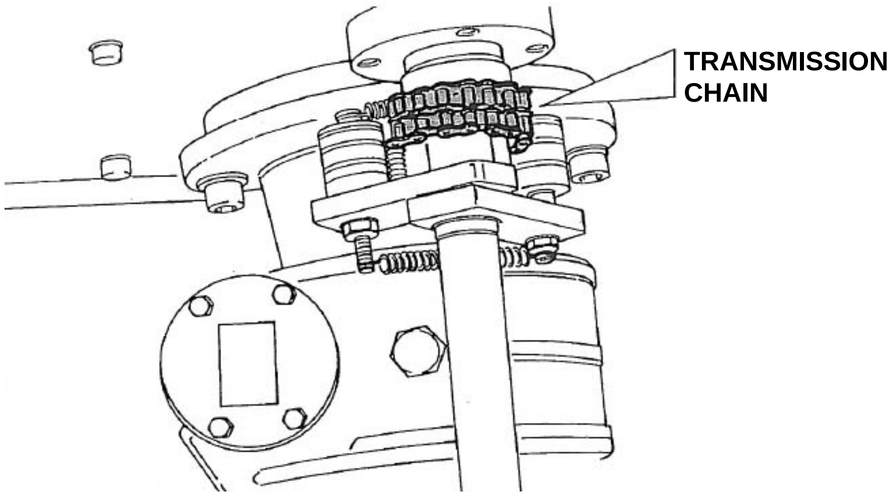
Caution!

Before starting maintenance operations, remove the plug from the mains.

Do not start up the machine during maintenance operation such as cleaning, greasing and lubrication.

Every six months remove the upper lid and grease the transmission chain.



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SPARE PARTS

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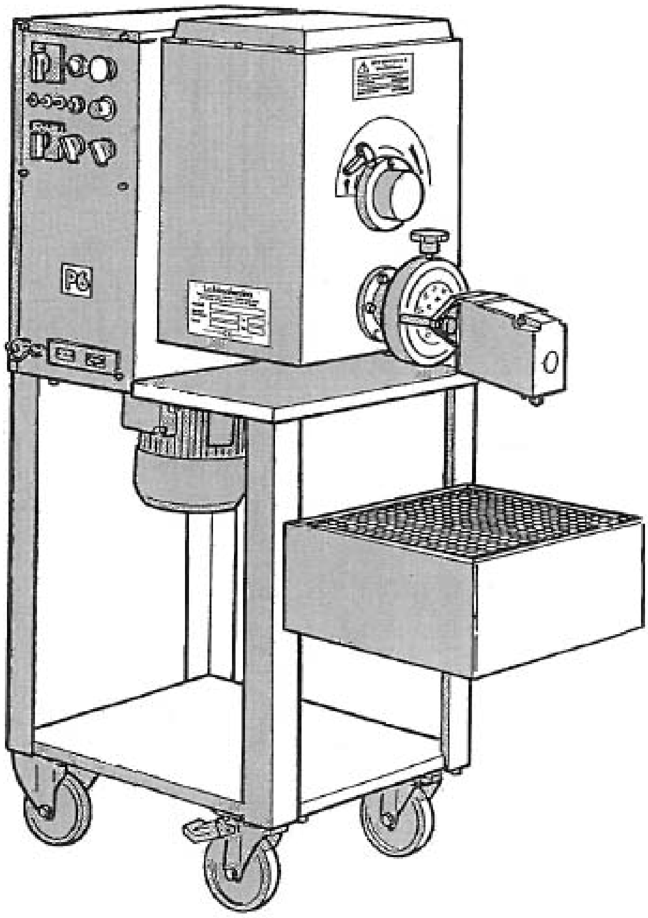


If in doubt do not proceed!

Telephone the *DIAMOND* After Sales Service immediately.

Components subject to wear and mechanical fatigue

Caution!

The components subject to wear caused by the relevant functioning are to be checked at regular intervals and replaced as soon as they show significant signs of wear.

The manufacturer has designed and built the machine for a rational life, taking into account the normal use conditions of the Customer; in any case all these components have to be meticulously checked periodically.

Should “mechanical cracking” or permanent or cyclic structural deformation be found, immediately contact the Manufacturer and expert technicians who will take the necessary action.

Electrical wires, especially if exposed to heat, humidity and/or low temperatures lose their insulating characteristics over time.

With the aid of skilled technicians, check the integrity.

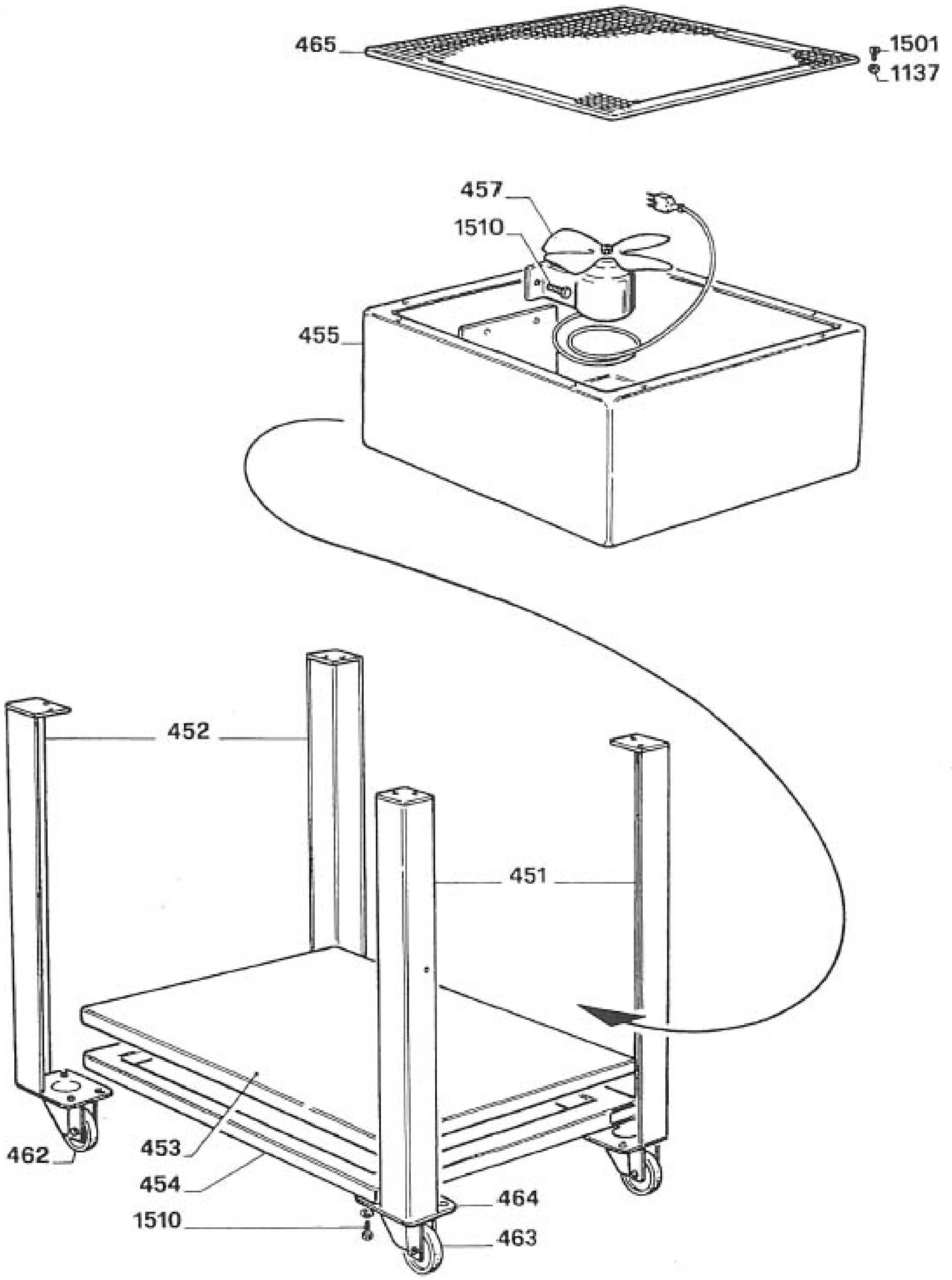
All electrical components with mechanical parts in motion during the work cycle (pushbuttons, selector switches, relays, etc.) are guaranteed by the manufacturer for a certain number of cycles, high, but still limited.

Check their condition frequently and contact skilled technicians for any periodical replacement within the guaranteed working life indicated.

Environment!

Removed parts that have been replaced are to be delivered to the specific collection centres for disposal.

Table 1



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Code	Description
451	Upright
452	Upright
454	Platform
454	Wheel frame
455	Cooling blower box
457	Cooling blower
462	Fixed wheel
463	Swivelling wheel
464	Wheel fixing plate
465	Cover
1137	Hexagonal nut
1501	TSTC screw
1510	TCE screw

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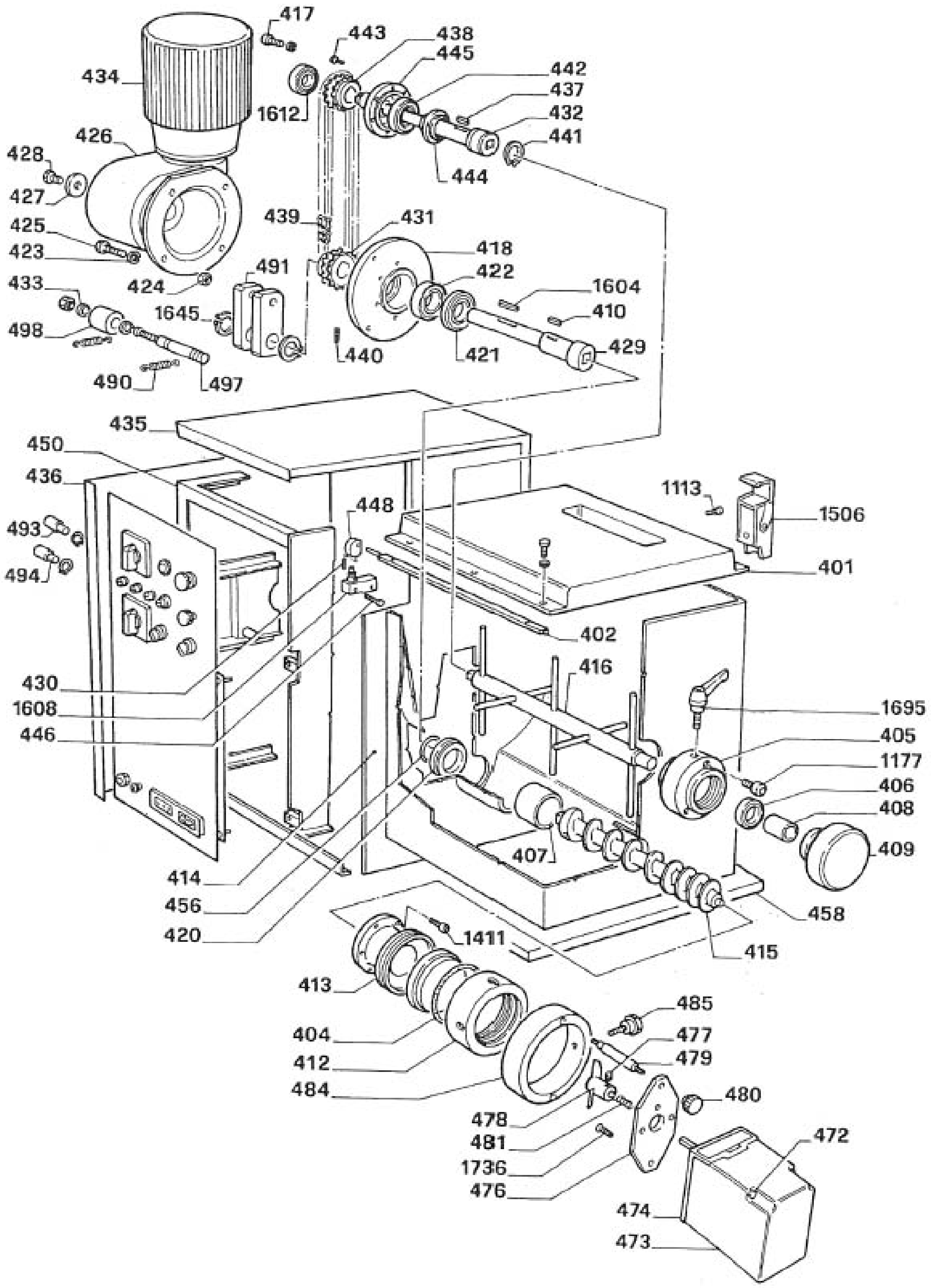
Table 2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Code	Description
401	Tank cover
402	Rod
404	Seal
405	Flange
406	Shaft seal
407	Tank bushing
408	Bushing
409	Knob
410	Tang
412	Ring nut
413	Plate holder
414	Tank
415	Feeder
416	Mixer shaft
417	TCE screw
418	Flange
420	OR ring
421	Shaft seal
422	Bearing
423	Plain washer
424	Hexagonal nut
425	TCE screw
426	Reducer
427	Washer
428	TCE screw
429	Reducer shaft
430	Dowel pin
431	Pinion
432	Driven shaft
433	Seeger ring

GB

Code	Description
434	Electric motor
435	Casing
436	Rear guard
437	Tang
438	Pinion
439	Double roller chain
440	P.P. dowel pin
441	Seeger ring
443	TCE screw
444	OR ring
445	Flange
446	TCE screw
448	Cam
450	Frame
456	OR seal
472	TCE screw
473	Casing
474	Motor
476	Cross-member
477	Dowel pin
478	Blade
479	Spacer dowel
480	Handweel
481	Spring
484	Ring
485	Knob
490	Chain tightener spring

GB

Code	Description
491	Chain tightener
493	Pin
494	Pin
497	Chain tightener pin
498	Chain tightener roller
1113	TCTC screw
1177	TCE screw
1411	TCE screw
1506	Quick fastener
1604	Tang
1608	Microswitch
1612	Bearing
1645	Seeger
1695	Snap handle
1736	Screw

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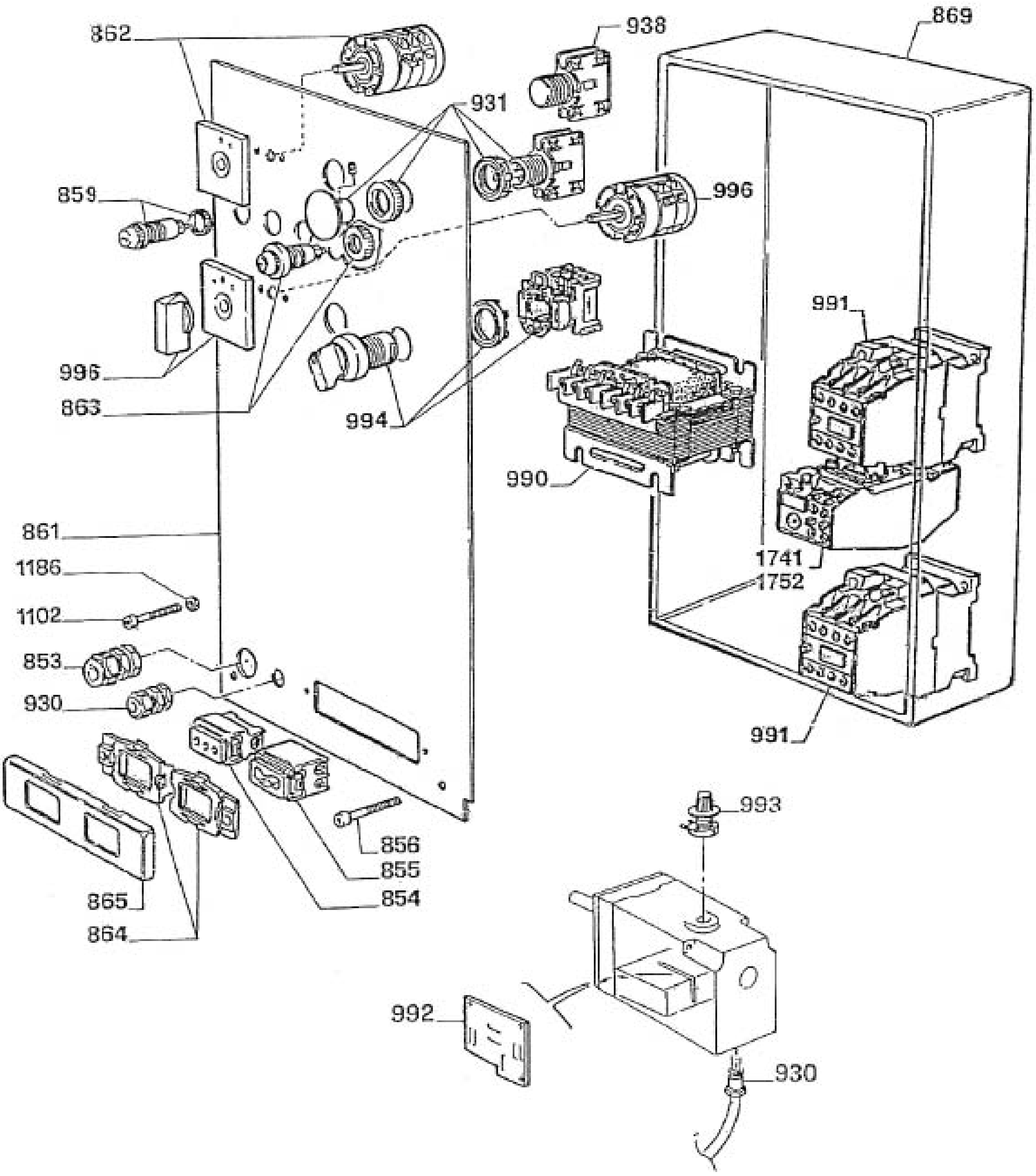
Table 3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Code	Description
852	Terminal block
853	Cable holder
854	Socket
855	Socket
856	Screw
859	Fuse box
861	Panel
862	Switch
863	Indicator light
864	Supports
865	Plate
869	Casing
870	Button A
930	Cable holder
938	Button M
990	Transformer
991	Contactor
992	Electrical card
993	Potentiometer
994	Selector
996	Reversing gear
1102	Screw
1186	Nut
1741	Thermal switch 220 V
1752	Thermal switch 380 V

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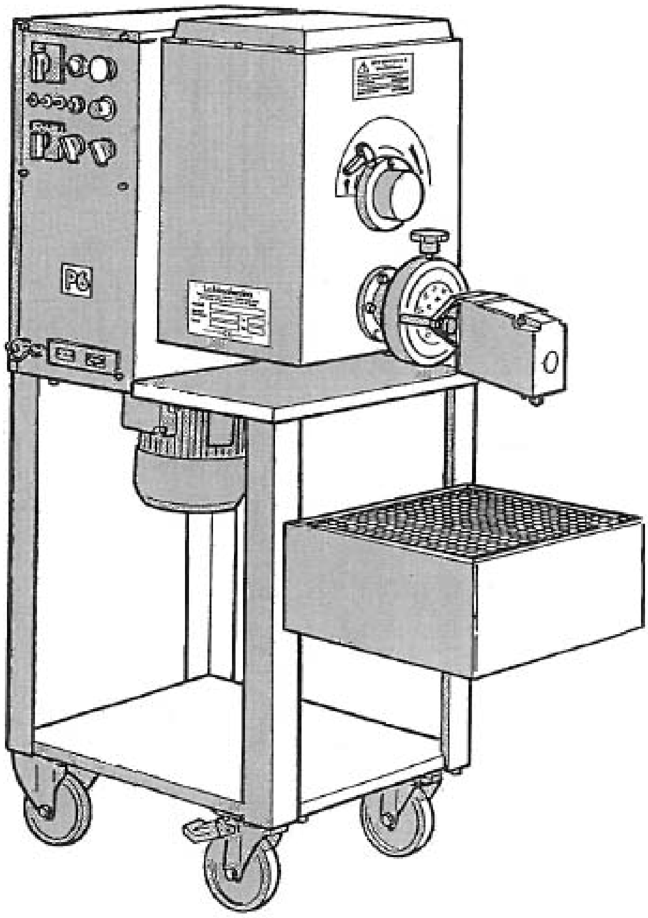
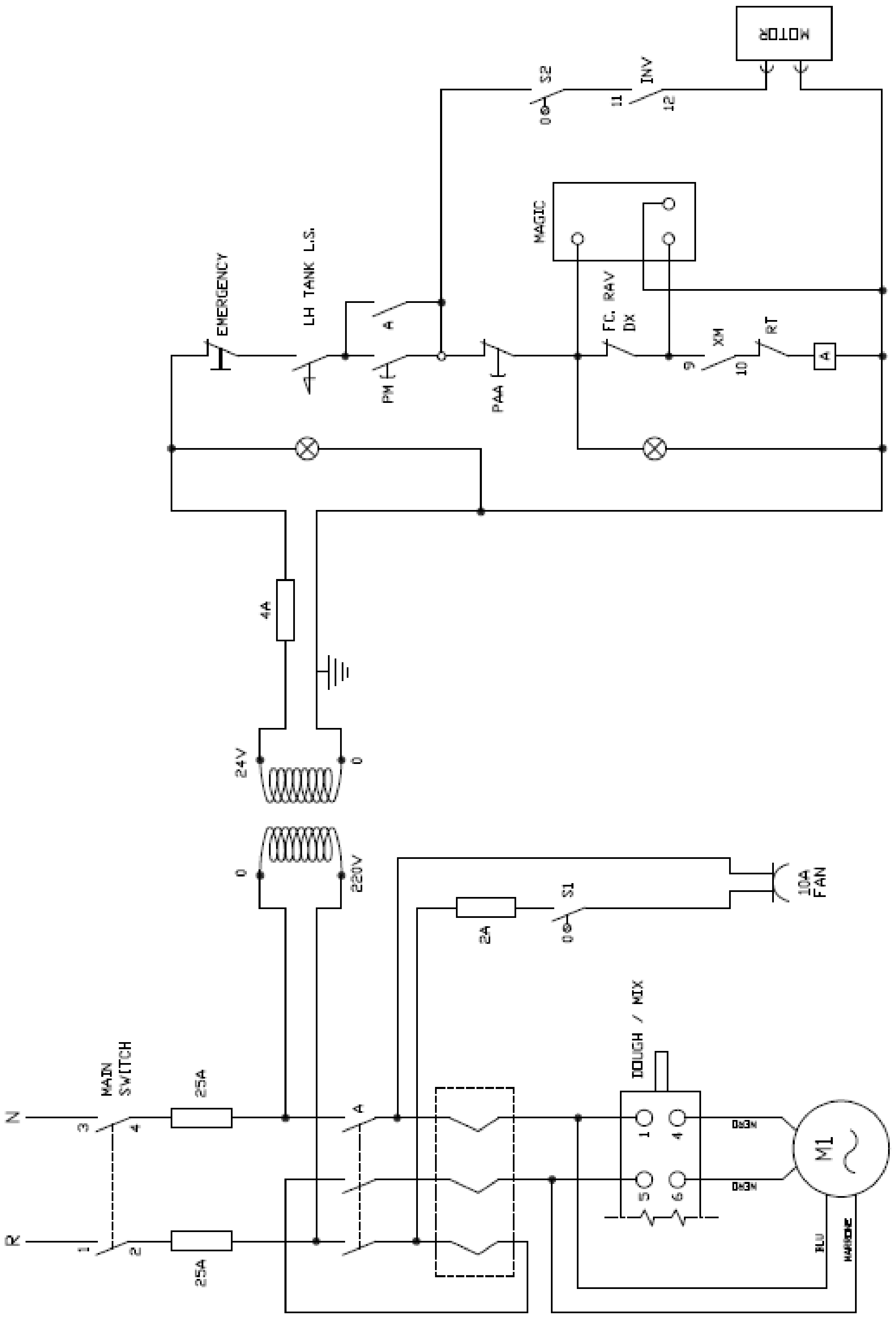
WIRING DIAGRAM



If in doubt do not proceed!

Telephone the *DIAMOND* After Sales Service immediately.

Wiring diagram - 220 V



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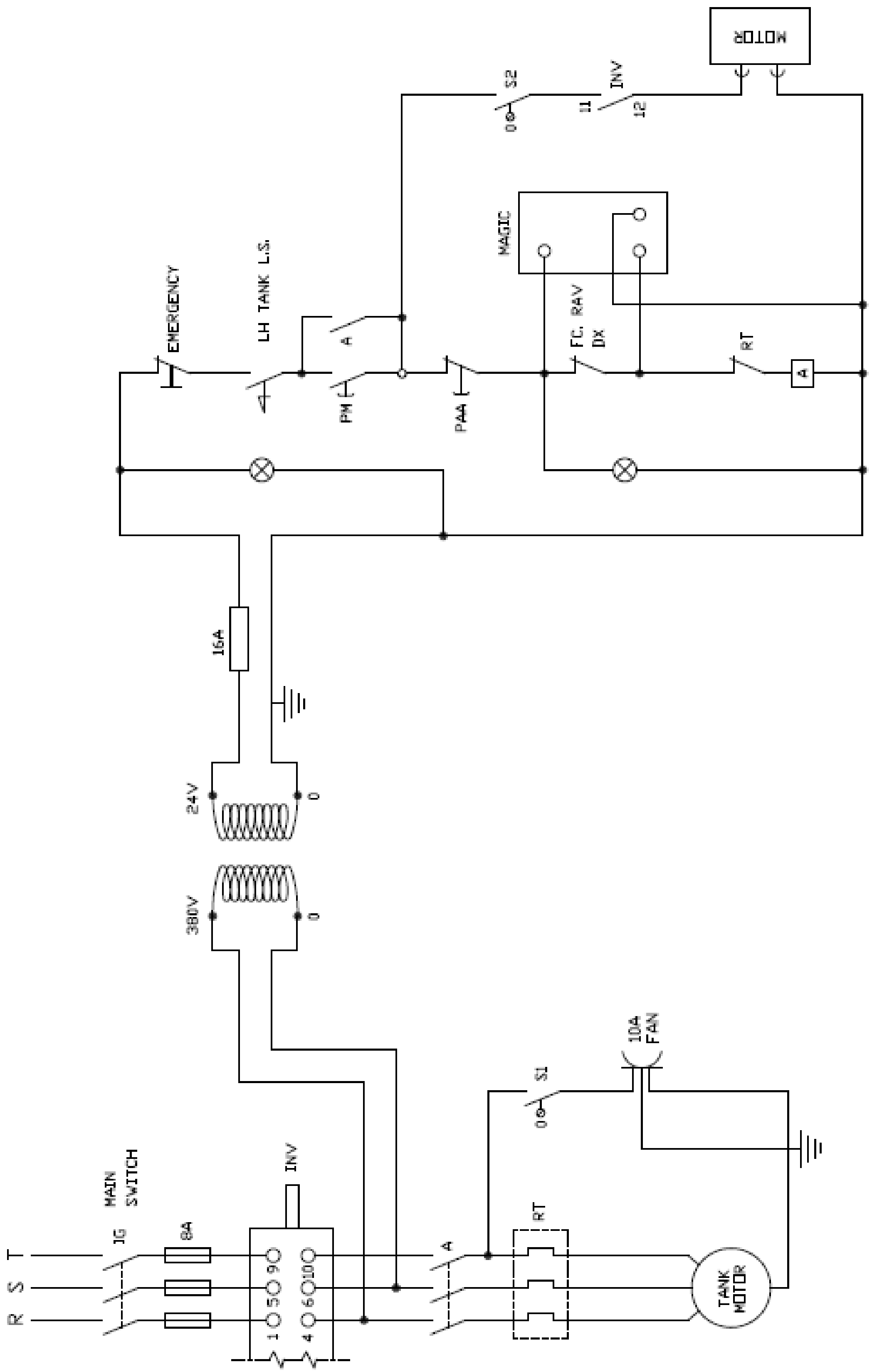
Wiring diagram 380 V



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