



MOD: DH80B/T2V

Production code : TS60D

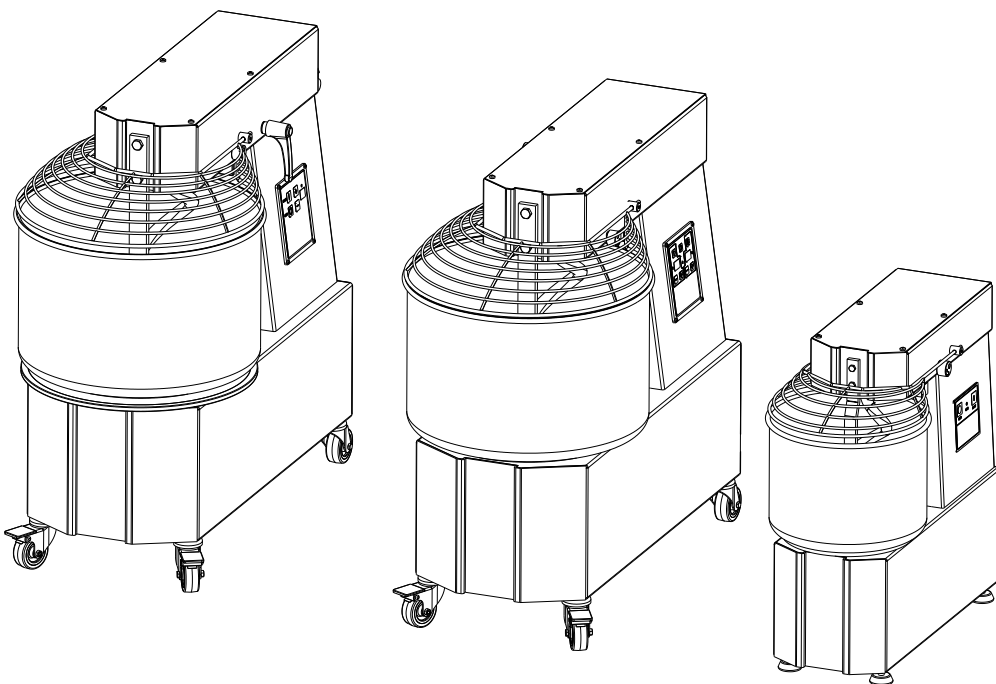
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EN

USER'S MANUAL

SPIRAL MIXER

REV. 02



TS5-60 / TSA12-60

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PREFACE

This manual is directed towards those who install, operate and maintain the machine so that they can take advantage of the characteristics of the product in the best way. It is important that this manual is kept and remains with the machine if it is moved or if ownership changes so that it can be consulted under all circumstances and therefore the necessary information is available to operate it within safe conditions.

The manufacturer does not take upon themselves the obligation to give notice of possible successive modifications of the product. Furthermore, under the terms of law, this document remains the property of the manufacturer, and tampering, reproduction or transmission to a third party are prohibited without their consent.

The following symbols are used to better stress some passages



ATTENTION: indicates hazards that might cause serious damages; attention is required

INFORMATIONS: indicate particularly important technical information

1 GENERAL INFORMATIONS

1.1 WARRANTY

The duration of the guarantee is for two years and runs from the date on the invoice or tax receipt was issued at the time of purchase. Within this period, components that have been unequivocally ascertained to be faulty due to manufacturing defects will be substituted or repaired freely by the manufacturer from their premises, except for electrical components and those subject to wear and tear. The guarantee excludes postage and labor costs.

The guarantee is forfeited in the case of the damage being caused by: transportation, wrong or insufficient maintenance, unskilled operators, tampering, repairs carried out by unauthorised personnel, or failure to comply with the instructions of the manual. Compensation from the manufacturer will not be given for direct or indirect damages arising during any time the machine is inoperative due to its breakdown, it being awaiting repairs, or in any way referable to the non-physical presence of the machine.

1.2 MACHINE SPECIFICATIONS

The machine has been built and designed for professional use in the bakery and pastry industry. The machine (Fig.1) consists of:

A robust, painted steel body powder coated with epoxy-powders for foodstuffs (reinforced with metal profiles where the mechanical stress is greater) which contains and supports the various machine components.

The bowl, the spiral, the central dough breaker and the protection grate are all in stainless steel.

Chain drive with oil bath gear motor.

The moving parts are on ball bearing.

Type feet (for models TS5 and TS 8), set of wheels (for models from TS 12 to TS 44),

Available with motor:

single-phase 1 speed

three-phase 1 speed

three-phase 2 speeds

Electric circuit fed by a cable to the network to which are connected at low tension (24V) the control devices to start, to stop, and of the safety devices. Among these internal blocking of the moving parts activated by the movement of the mobile protection of the pan.

The machine with raising top and removable bowl, is functionally identical to the machine with fixed top and bowl.

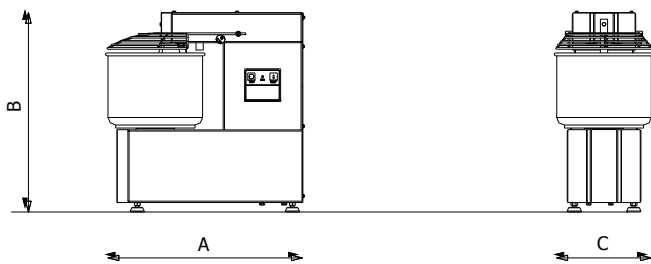
It differentiates from the other only for the following advantages, that it can offer at the end of each work cycle:

The facility in the collection of the dough.

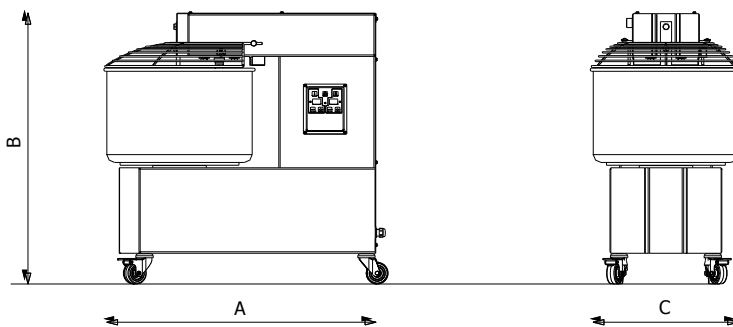
The facility in the cleaning phase.

FIG. 1

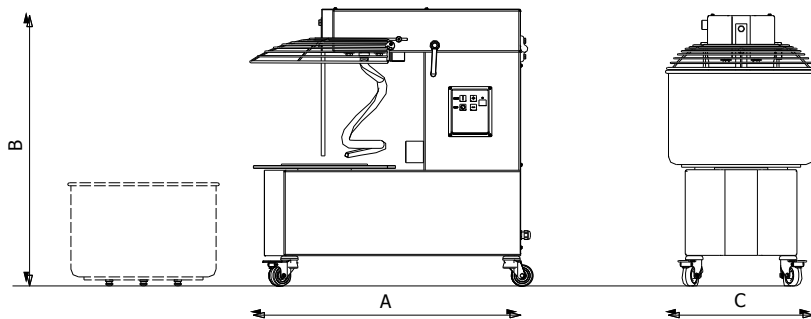
TS5; TS8



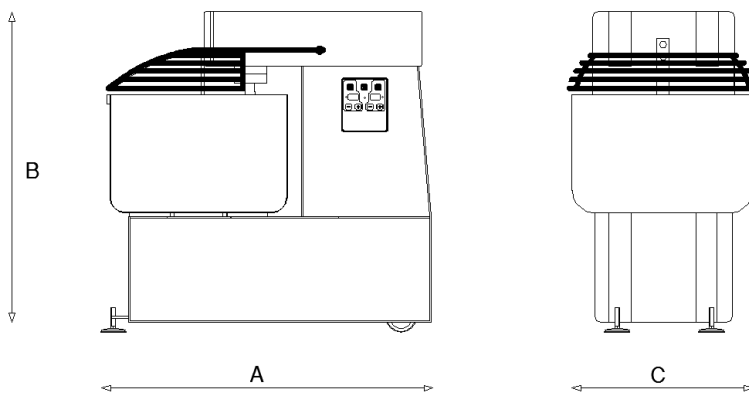
TS12 ; TS18 ; TS25 ; TS38 ; TS44 ;



TSA12 ; TSA18 ; TSA25 ; TSA38 ; TSA44 ;



TS60 ; TSA60



1.3 TECHNICAL SPECIFICATIONS

	Model	Kneading capacity kg	Flour capacity kg	Bowl volume lt	Bowl dim. mm	Motor Power kW	Volt	Dimensions mm A x C x B	Weight Kg
FIXED HEAD AND FIXED STEEL BOWL	TS5M	5	3	7	237X160	0.37	230/50/1	540X260X520	38
	TS5T	5	3	7	237X160	0.37	400/50/3	540X260X520	38
	TS5D	5	3	7	237X160	0.3/0.45	400/50/3	540X260X520	38
	TS8M	8	5	10	260X200	0.37	230/50/1	550X270X553	40
	TS8T	8	5	10	260X200	0.37	400/50/3	550X270X553	40
	TS8D	8	5	10	260X200	0.3/0.45	400/50/3	550X270X553	40
	TS12M	12	8	15	317X210	0.9	230/50/1	690X335X630	68
	TS12T	12	8	15	317X210	0.75	400/50/3	690X335X630	68
	TS12D	12	8	15	317X210	0.6/0.8	400/50/3	690X335X630	68
	TS18M	18	12	20	360X210	0.9	230/50/1	715X380X630	70
	TS18T	18	12	20	360X210	0.75	400/50/3	715X380X630	70
	TS18D	18	12	20	360X210	0.6/0.8	400/50/3	715X380X630	70
	TS25M	25	17	33	400X260	1.1	230/50/1	785X420X700	85
	TS25T	25	17	33	400X260	1.1	400/50/3	785X420X700	85
	TS25D	25	17	33	400X260	1/1.4	400/50/3	785X420X700	85
	TS38M	38	25	40	452X260	1.5	230/50/1	830X470X770	97
	TS38T	38	25	40	452X260	1.5	400/50/3	830X470X770	97
	TS38D	38	25	40	452X260	1.5/2.2	400/50/3	830X470X770	97
	TS44M	44	30	50	500X270	1.5	230/50/3	870X520X770	102
TS44T	44	30	50	500X270	1.5	400/50/3	870X520X770	102	
TS44D	44	30	50	500X270	1.5/2.2	400/50/3	870X520X770	102	
TS60M	60	40	75	550X370	2.2	230/50/1	1020X575X1010	230	
TS60D	60	40	75	550X370	2,5/3,3	400/50/3	1020X575X1010	230	

	Model	Kneading capacity kg	Flour capacity kg	Bowl volume lt	Bowl dim. mm	Motor Power kW	Volt	Dimensions mm A x C x B	Weight Kg
LIFTABLE HEAD AND EXTRACTIBLE STEEL	TS12A	12	8	15	317X210	0.9	230/50/1	690X335X630	79
	TS12A	12	8	15	317X210	0.75	400/50/3	690X335X630	79
	TS12A	12	8	15	317X210	0.6/0.8	400/50/3	690X335X630	79
	TS18A	18	12	20	360X210	0.9	230/50/1	715X380X630	82
	TS18A	18	12	20	360X210	0.75	400/50/3	715X380X630	82
	TS18A	18	12	20	360X210	0.6/0.8	400/50/3	715X380X630	82
	TS25A	25	17	33	400X260	1.1	230/50/1	785X420X700	98
	TS25A	25	17	33	400X260	1.1	400/50/3	785X420X700	98
	TS25A	25	17	33	400X260	1/1.4	400/50/3	785X420X700	98
	TS38A	38	25	40	452X260	1.5	230/50/1	830X470X770	112
	TS38A	38	25	40	452X260	1.5	400/50/3	830X470X770	112
	TS38A	38	25	40	452X260	1.5/2.2	400/50/3	830X470X770	112
	TS44A	44	30	50	500X270	1.5	230/50/3	870X520X770	116
	TS44A	44	30	50	500X270	1.5	400/50/3	870X520X770	116
	TS44A	44	30	50	500X270	1.5/2.2	400/50/3	870X520X770	116
TS60A*	60	40	75	550X370	2,5/3,3	400/50/3	1020X575X1010	250	

*: LIFTABLE HEAD , FIXED STEEL BOWL

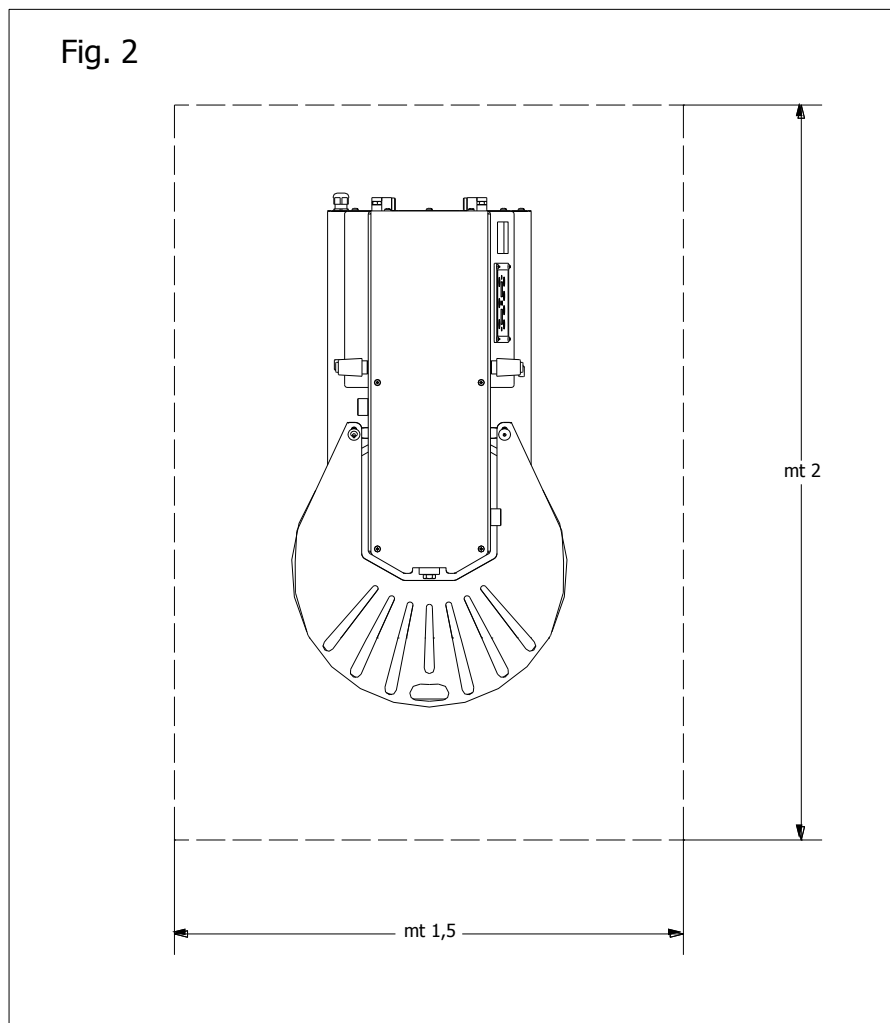
M= Single Phase Motor, D= Two speeds , T= Three-phase Motor.

1.4 WIRING DIAGRAMS

The wiring diagrams are reported in paragraphs 8.8-8.13

1.5 OPERATING AREA

In the normal working conditions and to have the best exploration of the potentiality of the machine, the operator needs the area represented in Fig. 2.



1.6 GENERAL SAFETY INSTRUCTIONS

Although the machine is built in conformity to the required security rules regarding electrical, mechanical and hygienic regulation it can be dangerous if:

Used in case and condition different to those described by the manufacturer.

Manumission of the protection and of the safety devices.

Inattention to the instruction of: Installation - Functioning - Use - Maintenance.

i INFORMATION

Installation and maintenance have to be done by qualified personnel authorized by the manufacturer who is not responsible for any mistaken installation or manomission.

1.7 SAFETY INSTRUCTIONS

i INFORMATION

Carefully read the instruction before using the machine.

⚠ WARNING

The avoid dangerous condition and/or possible injuries caused from: electric current, mechanical parts, fire or hygienical problems, you must follow the security indications step by step.

- A) Keep in order your working area. Disorder can cause dangerous accidents.
- B) Consider environmental conditions. Do not use the machine in humid, wet or nedly lit environments, close to inflamable liquids or gas.
- C) Keep away from children and non authorized personnel. Do not permit them to go near the machine or the working area.
- D) Only utilize the machine with the correct voltage. Normal usage gives better results.
- E) Dress in adequate way. Do not wear hanging clothes or any items which can be caught in the machine. Use non-slip shoes. For hygiene and safety keep your hair tied back and wear protective gloves.
- F) Protect the cable. Do not pull the cable to extract the plug. Do not leave the cable near high temperatures, sharp objects, water or solvents.
- G) Avoid insecure positions. Find the best surface to ensure the machine is balanced.
- H) Always pay maximum attention. Do not be distracted when using the machine.
- I) Take the plug out. When the machine is not in use, before cleaning, maintenance and moving it.
- L) Do not use further extensions.
- M) Check that the machine is not damaged. Before using the machine carefully check that all security devices are working. Check that: the mobile parts are not blocked, there are not any parts damaged, all the parts have been set up correctly and all the conditions that could influence the regular functioning of the machine are in working order.
- N) Repairing the machine by qualified personnel. The repairs can only be done by qualified people, using original spare parts. The non- compliance with these rules can represent danger for the user.

In particular:

- A) Do not use the machine in humid, wet or badly lit environments, close to inflammable liquids or gas.

- B) Keep away from children and non authorized personnel.**
- C) Only utilize the machine with the correct voltage. Normal usage gives better results.**
- D) Dress in adequate way. Do not wear hanging clothes or any items which can be caught in the machine. Use non-slip shoes. For hygiene and safety keep your hair tied back and wear protective gloves.**
- E) Protect the cable. Do not pull the cable to extract the plug. Do not leave the cable near high temperatures, sharp objects, water or solvents.**
- F) Take the plug out. When the machine is not in use, before cleaning, maintenance and moving it.**
- G) Check that the machine is not damaged. Before using the machine carefully check that all security devices are working. Check that: the mobile parts are not blocked, there are not any parts damaged, all the parts have been set up correctly and all the conditions that could influence the regular functioning of the machine are in working order.**
- H) Repairing the machine by qualified personnel. The repairs can only be done by qualified people, using original spare parts.**

1.7.1 POWDERS RISK

During the loading operations of the dry products in the bowl or during the normal working some hanged dusts can be determined (for example flour dust).

The ingredients and the packaged products must be handled with care, reducing at minimum the height over the bowl from which they are poured. The packages must be opened with care in the bowl inferior part to promote the flour dust release in the less possible time.

The risk of suspended dust during the use of the machine is almost irrelevant, since the openings of the bowl protection guard are so small that they do not allow appreciable emissions of flour dust.

2 INSTALLATION OF THE MACHINE

2.1 ENVIRONMENTAL CONDITIONS OF INSTALLATION SITE

The environmental conditions in which the machine must be installed must follow these characteristics:

Free of humidity

Water and heat sources at safe distance from the machine

Adequate ventilation and lighting corresponding to hygiene and security regulations following the existing laws

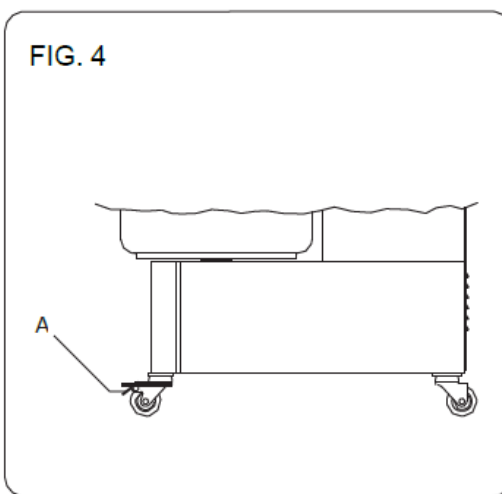
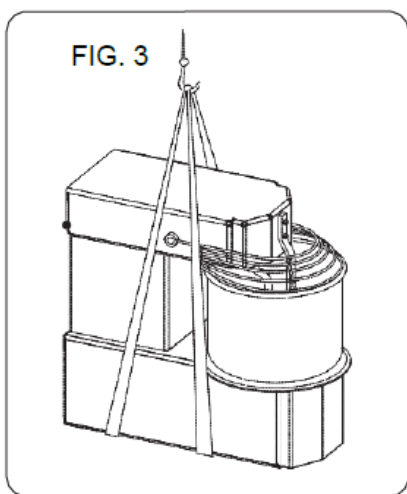
Well-dimensioned flat and stable surface for easier cleaning. For normal ventilation of the machine no objects should obstruct.

2.2 TRANSPORT AND HANDLING

The machine is supplied in a closed package and fixed with metal straps on wood. Inside the packaging with the machine you will find the instructions and the declaration of conformity according to the machines regulation. The machine must be unloaded and lifted out at the part indicated on the packaging by proper equipment. For the transportation of the machine to the place of installation, use a fork lift.

After cutting the metal straps take out of the packaging and the plastic cover, then with the help of a proper belt put under the machine (PICT. 3) and a fork lift (manual or motor) lift the machine and take away the bottom pallet, position the machine making sure you leave a space around it of 50 cm to make usage, cleaning and maintenance easier. If the machine is unstable put under the feet or wheels pieces of hard rubber. If the machine has wheels make sure they have been blocked by pushing the lever A downwards till it blocks (PICT. 4).

NOTE: Separate the different materials according to material type and recycle them in accordance with relevant legislations.



2.3 ELECTRICAL CONNECTIONS

The connection type Y of the machine with the electric network is made by means of an operation cable, which is provided with a plug only in the single-phase model. As far as the three-phase machines are concerned it is necessary to put together the cable and a normalized and polarized plug (the distinction between phase and neutral must be unequivocal), and verify that the rotation way of the bowl is the same indicated by the arrow on the bowl.

The electric net must be provided with an automatic differential switch and this has to be suitable to the machine



ATTENTION

Before proceeding to the electrical connection, ensure that voltage and frequency are the same declared by the Manufacturer and shown on the identification plate.



ATTENTION

Any electrical intervention involving the working site is to be carried out by qualified and skilled technicians. The manufacturer will not be liable for defects, breakdowns or malfunctioning arising from the non-compliance with the power supply values stated.

2.4 POSITIONING OF THE MACHINE

The plug must be easily accessible, must not require any kind of movement. The cable from the machine to the wall plug must not be pulled tightly, also do not rest the machine on the cable.

3 CONTROL AND SAFETY DEVICES

The machine is equipped with the following control and , safety devices:

3.1 CONTROL DEVICES

3.1.1 MACHINE TS5-8 -

<p align="center">FIG.5: Single-Phase Machine</p>	<p align="center">FIG. 5B: Two speeds Machine</p>

A – Green START button

B – Red STOP button

H - Speed commutator

3.1.2 MACHINE TS12-60 SINGLE-PHASE, THREE-PHASE AND 2 SPEEDS (FIG.6-7)

	<table border="1"> <thead> <tr> <th>Position</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>A/A1</td> <td>Start Button for 1st speed</td> </tr> <tr> <td>A2</td> <td>Start Button for 2nd speed</td> </tr> <tr> <td>B</td> <td>Red STOP button</td> </tr> <tr> <td>L1</td> <td>Led signalling the operation in 1nd speed</td> </tr> <tr> <td>L2</td> <td>Led signalling the operation in 2nd speed</td> </tr> <tr> <td>R</td> <td>Led signalling connection to the mains/Led status indicator</td> </tr> <tr> <td>S/S1</td> <td>Button to increase the time (+) / Button to decrease the time (-) 1nd SPEED</td> </tr> <tr> <td>S2</td> <td>Button to increase the time (+) / Button to decrease the time (-) 2nd SPEED</td> </tr> <tr> <td>T/T1</td> <td>Time display of working time in 1st speed</td> </tr> <tr> <td>T2</td> <td>Time display of working time in 2st speed</td> </tr> </tbody> </table>	Position	Description	A/A1	Start Button for 1 st speed	A2	Start Button for 2 nd speed	B	Red STOP button	L1	Led signalling the operation in 1 nd speed	L2	Led signalling the operation in 2 nd speed	R	Led signalling connection to the mains/Led status indicator	S/S1	Button to increase the time (+) / Button to decrease the time (-) 1 nd SPEED	S2	Button to increase the time (+) / Button to decrease the time (-) 2 nd SPEED	T/T1	Time display of working time in 1 st speed	T2	Time display of working time in 2 st speed
Position	Description																						
A/A1	Start Button for 1 st speed																						
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T/T1	Time display of working time in 1 st speed																						
T2	Time display of working time in 2 st speed																						

3.2 SAFETY DEVICES (FIG.8)

- I - Moving protection grate (FIG. 8)
- K - Microswitch acts by stopping the machine if the safety grill is lifted(on all models TS/TSA)
- L - Device proving that the top and the protection cover are up or down (only on tilting head mixers TSA)
- M,M1- Check pin of the top (down position) (TSA models)
- N - Device proving that the bowl is in or out (TSA models)
- O -Blocking disk of the bowl (TSA models)
- Device proving that the top and the protection cover are up or down (only on tilting head mixers TSA)

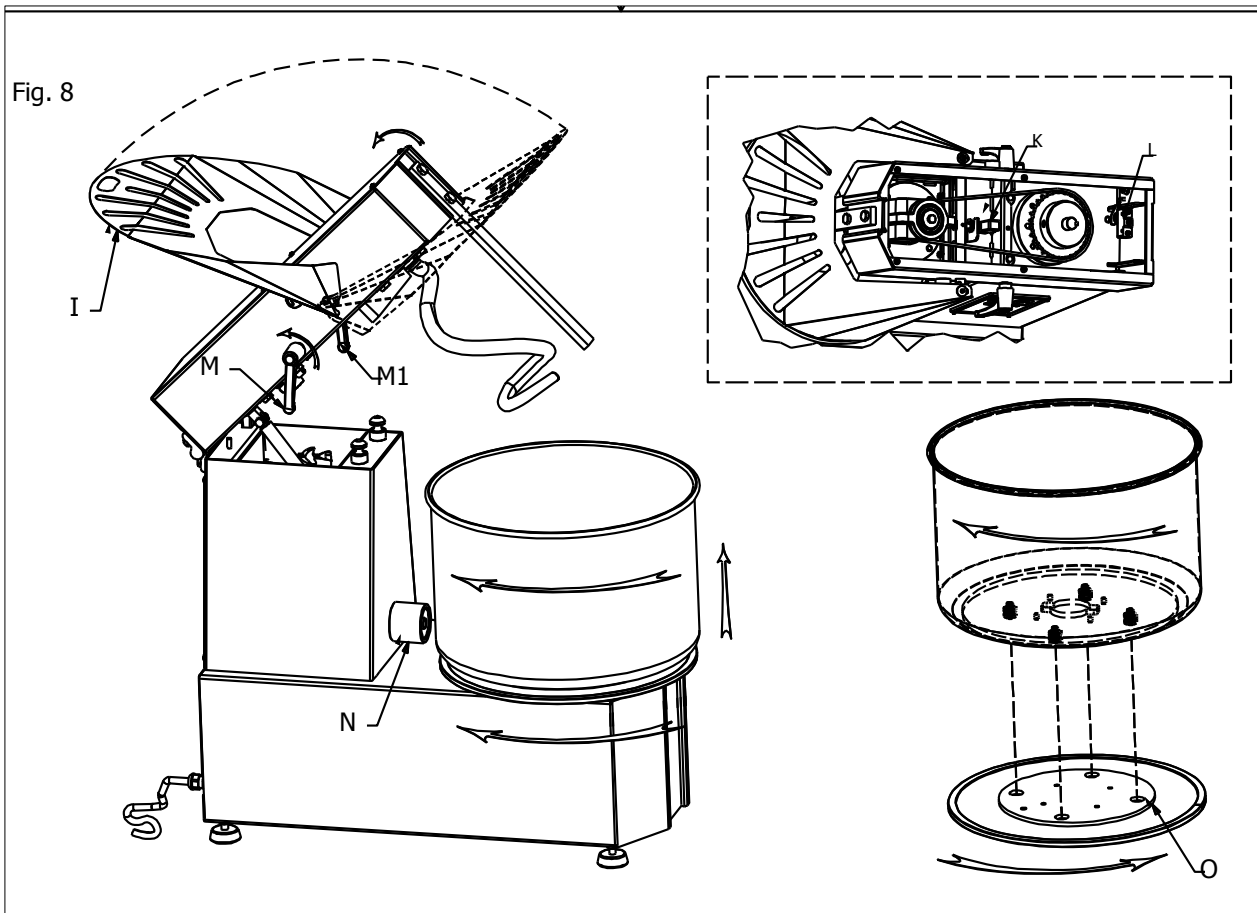
⚠ ATTENTION

The single safety device are efficient when:

On raising the protection I (FIG. 8) the machine stops.

On raising the top (by means of the check pin M and/or taking off bowl the machine does not start.

On softly pulling either the bowl or the top they do not move.



3.3 TESTING

3.3.1 TS5 E TS8 MODELS (FIG. 5-5B)

OPERATING: push the green button A to start the bowl and the spiral.

STOP: push the red button to stop the bowl and the spiral.

Note: In a machine fed electrically by three-phase, if the rotation of the bowl is opposite the way shown by the arrow it is necessary to follow these indications for the functioning and every time you change the electric plug:

- Stop the machine.
- Take the plug out.
- Reverse on the plug the position of two phases (example: L1 with L2 and vice versa).
- Restart the machine and verify if the bowl is rotating the right way.

Start the machine without using it, let it on for about one minute and verify that it is functioning perfectly.

3.3.2 TS12-60, TS12A-44A MODELS

Single-phase and three-phase machines (Fig.6):

Single-phase models TS12M-60M, TS12AM-44AM and three-phase models TS12T-44T, TS12AT-44AT allow the setting of time working with a timer. It is possible to exclude the functioning of the timer.

Operation without the timer

START: push the green button A to start the bowl and the spiral.

STOP: push the red button to stop the bowl and the spiral.

During operation, the R warning light indicated (Fig. 6) is green, while if the mobile protection I Fig.8-9 is raised, the warning light turns red, indicating the intervention of the safety system of the machine.

To resume processing, lower the mobile protection, letter I fig.8-9, and press start again (button A).

Operation with timer:

The timer manages the duration of the working cycle.

The working time is set using the \pm buttons indicated by the letter S in fig.6. The selected time is expressed in minutes and displayed on the display, indicated in fig.6 by the letter T.

After setting the time, press the start button A indicated in fig.6 and the led position R starts to flash.

During processing the time indicated by the display decreases. The machine stops automatically when the set time is reset. An instant after the reset, the timer re-shows the duration set in the job just completed.

3.3.3 THREE-PHASE 2 SPEEDS AUTOMATIC (FIG.7):

TS12D60D, TS12AD-60AD models allow the automatic control of working time in 1st and 2nd speed using the timers relating to 1st and 2nd speed. It is possible to exclude the functioning of the timer in 1st and 2nd speed.

Operation without the timer

START: push the A1 button to start the bowl and the spiral on 1st speed; to switch to the 2st speed, push the A2 button

STOP: push the B button to stop the bowl and the spiral.

If the mobile protection I Fig.8-9 is raised, the machine stops; to resume the working cycle, press again the start button A1 (1st speed)or A2 (2st speed).).

Operation in Automatic mode:

This operating mode is obtained by setting the processing times in 1st and 2nd speed through the selection buttons S1 for the first speed timer and S2 for the 2nd speed timer. Once set the times, press the A1 button to start the working cycle.

The switch to the 2nd speed starts automatically when the time set in 1st speed is completed and the cycle stops when the time set in 2nd speed is completed.

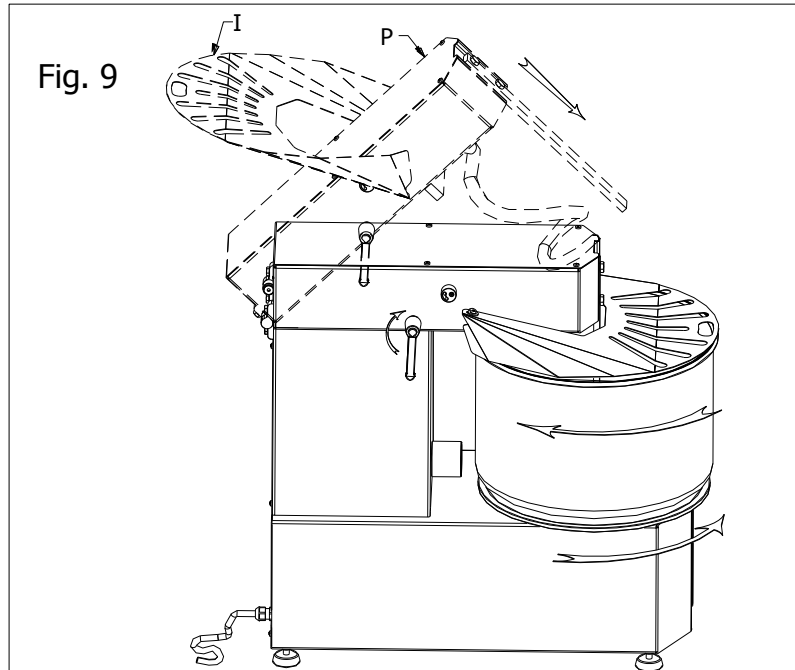
During the working cycle, the indicator light R flashes green; if the bowl protection is raised the color turns red and stops flashing.

The L1 light is on and L2 is off in 1st speed; vice versa for 2nd speed.

Note: In a machine fed electrically by three-phase, if the rotation of the bowl is opposite the way shown by the arrow it is necessary to follow these indications for the functioning and every time you change the electric plug:

- Stop the machine.
- Take the plug out.
- Reverse on the plug the position of two phases (example: L1 with L2 and vice versa).
- Restart the machine and verify if the bowl is rotating the right way.

Start the machine without using it, let it on for about one minute and verify that it is functioning perfectly.



4 USE OF THE MACHINE

Before starting work make sure that the machine is perfectly clean in particular, the surfaces of bowl, the spiral and of the central column that have contact with the food products. If necessary clean them following indications at 5.1.

4.1 USE OF THE MACHINE WITH FIXED TOP AND BOWL

After lifted up the protection I, pour in the bowl all the required ingredients, push down the protection, press the button to start A or D. The movement made by the spiral, which is sincronized with the rotation of the bowl, gives an amalgamation of, flour, water, salt, yeast and other eventual ingredients till you obtain a mixture of the consistence required. If necessary, in order to modify the characteristics and/or the consistence of the initial dough, pour the ingredients through the protection grate I. When work cycle is completed, leave machine on hold, lift up the mobile protection to maximum opening, take mixture out of the bowl, proceed with cleaning of the machine following the indications at 5.1.

4.2 USE OF THE MACHINE WITH RAISING TOP AND REMOVABLE BOWL

The machine with raising top and removable bowl, is functionally identical to the machine with fixed top and bowl.

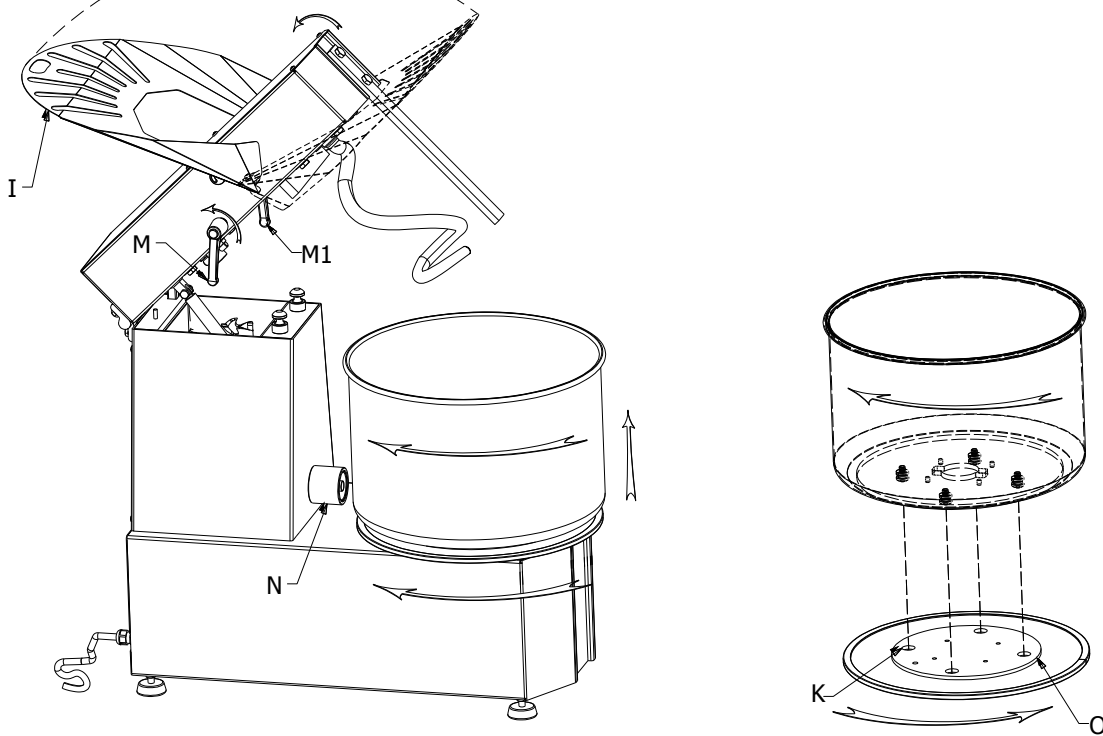
It differentiates from the other only for the following advatages, that it can offer at the end of each work cycle:

- The facility in the collection of the dough.
- The facility in the cleaning phase.

4.3 RAISING OF THE TOP AND TAKING OFF OF THE BOWL

In order to raise the top and to take off the bowl proceed as follows: stop the machine, unplug the machine, raise the protection I completely (FIG. 10), pull the pin M as far as the top is blocked, raise the top by means of the little piston underneath, rotate clockwise the disk O as far as the bowl is unlocked, raise the bowl and take it off, take off the dough.

Fig. 10-11



4.4 REPOSITIONING OF THE BOWL AND TOP

Once the cleaning is done, put the bowl back on, and make sure that the four pins underneath (PICT. 11) are correctly fixed in the four holes K of the machine; then block the bowl rotating clockwise the disk O. Put the top down pushing it downwards (PICT. 9) as far as it is blocked by the pin M,M1.

⚠ INFORMATION

Before taking off the dough beware of following the stop procedure of par 3.1 or 3.2.

5 MAINTENANCE

⚠ WARNING

Before effecting any kind of maintenance or cleaning you must take out the plug. In any case of malfunction or damage of the machine you must apply for authorized assistance from the manufacturer

⚠ WARNING

Qualified personnel only must perform maintenance.

5.1 CLEANING

The cleaning must be done every time the machine has been used following all the rules to prevent malfunctioning of the machine and for hygienic purposes. Using a wooden or plastic palate first clean the residue of dough, then with a soft sponge and warm water accurately clean the pan, the spiral the dough breaker and the mobile protection, dry with kitchen paper, then pass over the parts just mentioned then all the machine with a smooth and cleaned cloth with a specific cleaning product for food machines.

⚠ WARNING

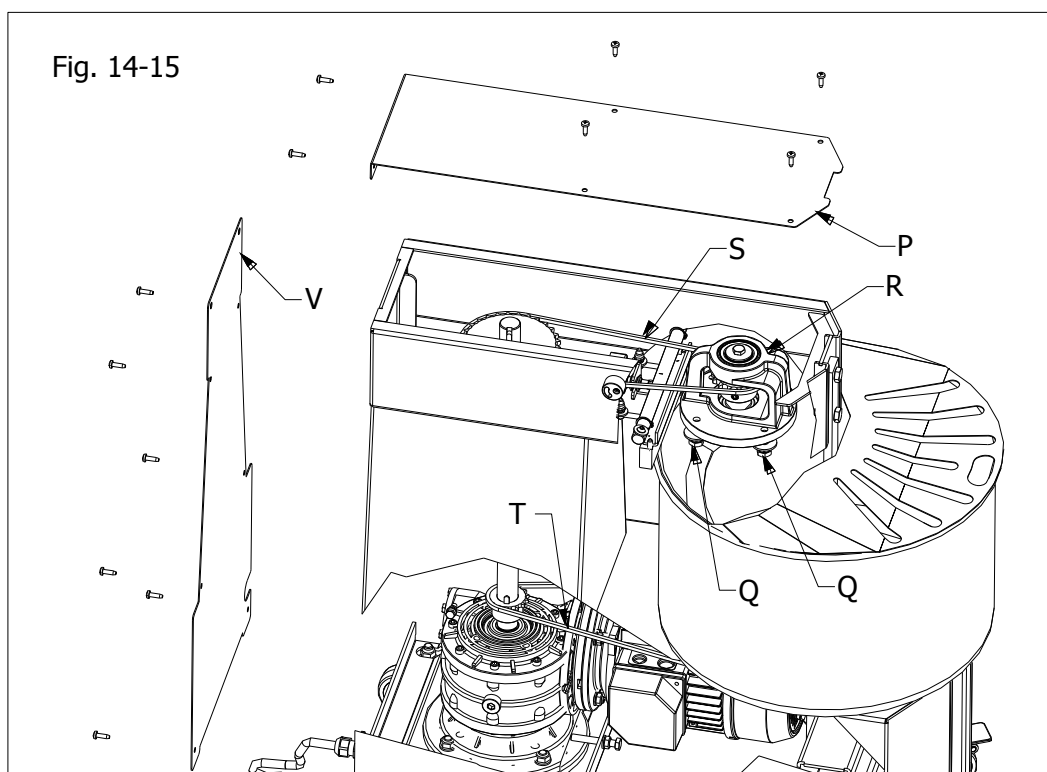
We recommend not to use any kind of chemical product abrasive or corrosive. Absolutely avoid using running water, different tools, rough or abrasive objects, metal wool, sponges etc. which can damage the surfaces and be dangerous from an hygienic point of view. To maintain the efficiency and security of the machine it is necessary to proceed with periodical maintenance (every 6 months) of the following indications:

5.2 TENSIONING OF THE UPPER CHAIN

⚠ WARNING

Qualified personnel only must perform tensioning of chain

The chain must be tensioned if, by checking it, it becomes loose or if the rotation of the spiral is not constant. Unscrew the panel P, (PICT. 14) loosen the screws O, pull the support of the spiral R as far as the tension of the chain is optimized, lock the support R with the screws O, put the panel P on once more and fix it.



5.3 GREASING OF CHAINS

WARNING

Qualified personnel only must perform greasing of chains

After unscrewing the fixing screws, take away the upper P and the back V panels, put on the chains S-T (PICT. 15-16) a reasonable amount of proper grease, sufficient to lubricate all the links of the chain. Once this is done, mount the two panels and secure again with screws.

5.4 POSSIBLE ANOMALIES

ANOMALY	CAUSE	SOLUTION
The machine does not start	Lack of energy in the power grid	Check the general switch, the plug, the tap and the feeding cable
	The Emergency stop button is blocked	Rotate the button following the direction of the arrow
	The protection grid and/or the top are up	Put down correctly both the grid and the top
	The knob of the general switch is in position O	Rotate the knob in position 1
	The knob of the speed selector is in position O	Rotate the knob in position 1 or 2
The spiral turns incostantly	The chain is loose	Stretch the chain following the instructions at par. 5.2
The machine stops while working	Stop of the fuse	Change the fuse with another on which has the same characteristics

6 DEMOLITION OF THE MACHINE

In case of dismantling and demolition of the machine, the pieces which the machine is made of, do not present any kind of danger that necessitates any particular caution. To facilitate the recycling process, you must separate the different parts according to material type and provide the scrapping in compliance with the existing laws and regulations.

7 SERVICE AND SPARE PARTS

For questions on service and spare parts please contact your local dealer and state the following information (see data plate):

- Type of machine
- Year of production
- Reference number of the required piece as indicated in the drawing enclosed).

Use only genuine spare parts.