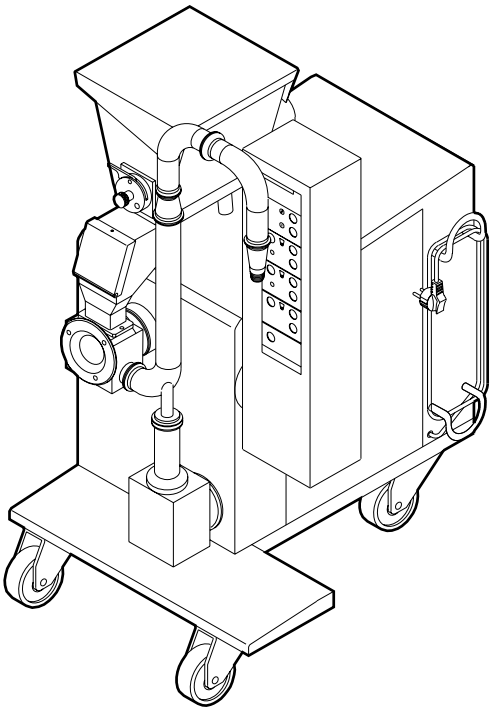
FF 1200
FRUIT FEEDER

OPERATION MANUAL AND SPARE PARTS CATALOGUE



We hope that the information contained in this manual will be of help to you. It is based on concrete data and is correct to the best of our current knowledge.
Read the contents of this manual carefully, including the warnings and recommendations. Also read the sales conditions, including those that govern the warranty.

CONTENTS

CHAPTER 1

MACHINE IDENTIFICATION DATA

1.1 INTRODUCTION

Thank you for choosing a machine manufactured by Tetra Pak S.p.A.
We recommend you read this manual carefully as it is indispensable for the installation, checking and maintenance operations required to keep your machine in perfect working order.
The machine contains tables, drawings and layouts which will help you familiarise yourself with all parts of the machine.
We will be pleased to receive your suggestions should you find that any explanation has been omitted or is not exhaustive. We will take them into the greatest consideration in an effort to improve the manual.

1.2 IDENTIFICATION PLATE

For maintenance and overhaul operations not covered by this manual and for all technical problems, our Service Department is at your complete disposal to provide information and to coordinate the necessary action.
When calling our Service Department, please quote the data shown on the identification plate affixed to the machine and shown in Fig. 1.1.

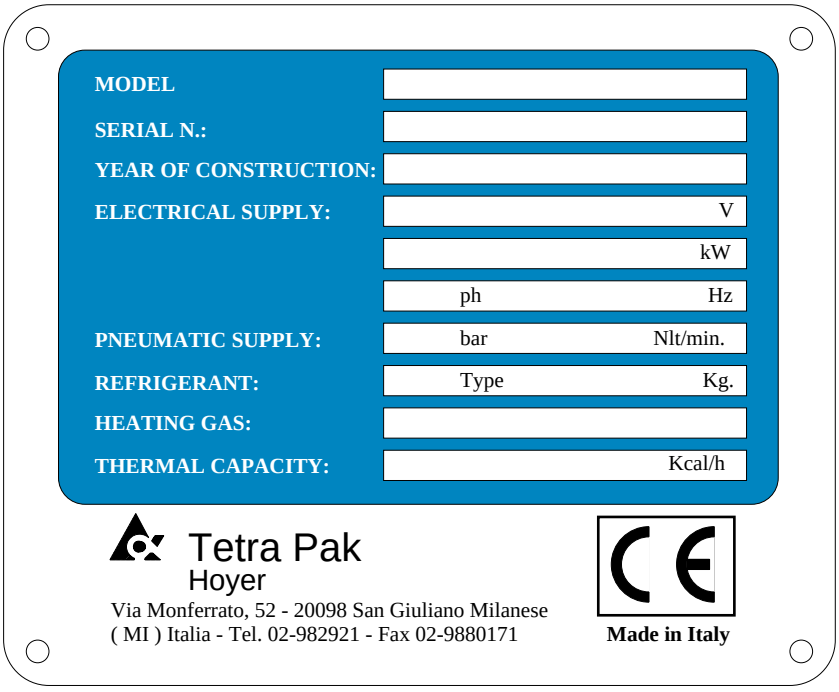


Fig. 1.1 - Identification Plate

1.3 SERVICE CENTRES

For any need or problem requiring our help, please contact one of the following centres authorised to carry out technical assistance under warranty or maintenance to machines manufactured by Tetra Pak S.p.A.

Tetra Pak Hoyer A/S
Søren Nymarks Vej 13
DK- 8270 Højbjerg /Århus
Denmark
Phone: +45 89 39 39 39
Fax: +45 86 29 22 00
Tlx: 6 87 70 alhoy dk

Danice Services A/S
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Tetra Pak Hoyer Inc.
US Packaging Division
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P.O. Box 31015
E- 28080 Madrid
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Tetra Pak Hoyer U.K.
Interchange Park
GB - Newport Pagnell
Buckshire MK16 9PS
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c/o Nihon Tetra Pak K.K.
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Ota-ku
Tokyo 144
Japan
Phone: + 81 3 3741 7641
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Beijing Representative Office
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P.R. China
Phone: +86 21 247 3812 or 1086
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Service Centre
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Makati, Metro Manila
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Phone: +63 2 810 1968
Fax: +63 2 815 6693

Tetra Pak Hoyer France
Z I le Chêne Sorcier
F - 78340 les Clayes-Sous-Bois
France
Phone: +33 1 30 81 81 81
Fax: +33 1 30 81 81 20

CHAPTER 2

GENERAL

2.1 DECLARATION OF CONFORMITY

This machine has been manufactured in accordance with international standards and hygiene and sanitary legislation applicable to food machinery. In particular Tetra Pak Hoyer certifies, through the Declaration of Conformity supplied together with the machine, that the machine is designed and manufactured in accordance with the provisions of Directive 89/392/EEC and with the above-mentioned standards applicable to this Directive.

2.1 PRELIMINARY OBSERVATIONS

- The illustrations and drawings of the machine are intended purely for general reference and are not necessarily accurate in every detail;
- the machine dimensions and specifications given in this manual are not binding and may be changed without advance warning;
- the drawings and all other documents provided with this machine remain the property of Tetra Pak Hoyer S.p.A. and may not be passed on to third parties without written authorisation from Tetra Pak Hoyer S.p.A.
- The manual includes instructions covering all accessories mounted on the standard machine.
- Please refer to the sections regarding the accessories you have purchased.
- **The machine is covered by warranty as specified in the purchase contract. During the warranty period, any repair work not authorised by Tetra Pak Hoyer will automatically invalidate the warranty.**

2.2 GENERAL SAFETY PRECAUTIONS

- THESE SAFETY PRECAUTIONS HAVE BEEN DRAWN UP IN YOUR INTERESTS. Follow the guidelines strictly in order to reduce the risk of accident both to you and to others.
- Do NOT attempt to move, install or operate the machine without having read and understood this manual. If in doubt, ask your superior;
- ensure that all guards and safety covers are in position BEFORE starting the machine;
- NEVER leave tools, mechanical parts or other extraneous material on or inside the machine;
- press the emergency button in the event of a product blockage.
  NEVER PUT YOUR HANDS INSIDE THE MACHINE WHILE IT IS RUNNING;
- take great care even when the main switch is in the "OFF" position, since the power supply cables are still live;
- turn off the air supply before disconnecting any pneumatic part of the machine;
- make sure that all guards and protective covers are correctly installed BEFORE restarting the production cycle after maintenance or repair operations;

- always work with the greatest care and remember that you are responsible for your own safety and for that of your colleagues;
- when moving or lifting the machine, ensure that relevant standards for these operations are followed.

2.3 WARNINGS AND SPECIAL NOTICES

- The personnel operating this machine must be aware of and observe strictly the general safety precautions. Failure to observe the precautions may result in injury to personnel or damage to machine components.
- Maintenance must be carried out with the machine turned off. The main switch must be in the "OFF" position, the air valve must be closed and a "work in progress" notice must be fixed to the machine.
- The user must ensure that all the instructions contained in the manual are followed strictly.
- High (Low) temperatures are reached inside the machine. After turning off the electric power supply, wait for the machine to cool (heat) to room temperature before carrying out work on it.
- Any tampering with the safety system for any reason is at the user's own risk and shall be his responsibility.
- Never attempt to turn off the safety switches or make them inoperative.
- The safety of machines used in conjunction with the machine described in this manual, if not supplied directly by Tetra Pak Hoyer S.p.A., is the customer's responsibility.
- The pressure, speed, temperature and voltage limits as well as all other indications given are indispensable for the correct running of the machine and must always be observed by the customer.
- For the pneumatic components, dehumidified compressed air must be used at the right pressure and in the prescribed quantities, without any trace of oil.
- The environmental conditions of the installation site must also be taken into consideration.
- The national laws which govern the use of these kinds of machine must also be respected.

2.4 ENVIRONMENTAL WORKING RESTRICTIONS

The machine is authorized to run within the following environmental restrictions:

- Temperature : from 4°C to 40°C
- Umidity : from 20% to 95%.

NOTE

Our company declines all responsibility for damage caused by failure to heed the above warnings.

CHAPTER 3

DESCRIPTION OF THE MACHINE AND TECHNICAL SPECIFICATIONS

3.1 DESCRIPTION OF THE MACHINE

This machine has been designed and constructed to provide reliability and safety when used for a wide range of applications.
The automatic machine **FF 1200** is capable of feeding continuously pieces of fresh fruit, candied fruit, granular products such as hazelnuts and nougat, chocolate and a wide range of products normally used for ice-cream production.
Designed as a stand-alone unit, it is normally installed on ice-cream production lines between a continuous freezer and a filler machine
To put into service, simply hook it up to the mains power supply and connect to the freezer and the filler machine.

The **FF 1200** consists of three main units:

1. A dosing unit, consisting essentially of a main hopper, a screw feeder and a secondary hopper.
The ingredients are fed manually by the operator into the main hopper and then move under gravity towards the bottom of the hopper, where a horizontal-axis screw feeder is situated. As they descend, the ingredients are mixed continually by a slow agitator, which ensures a constant flow of product to the screw feeder. The screw feeder feeds the ingredients into the secondary hopper from where, again under gravity, they are fed to the pump unit.

2. A pump unit, consisting of a vane pump which serves to feed the ingredients into the flow of ice-cream coming from the continuous freezer.
The vane pump consists of a rotor containing radial vanes which are guided by an eccentric guide machined inside the casing.
The pump also serves a function as a separating seal between the pressurised ice-cream line and the external environment so as to allow a one-way flow of ingredients from the secondary hopper to the ice-cream.

3. An in-line mixer, consisting of a shaft with angled blades positioned inside the section of pipe downstream of the pump unit. This unit serves to provide intensive mixing of the product with the ice-cream before it goes on to the filler machine.

The machine has been constructed to international standards and to health and sanitary regulations applicable to food machinery. In particular, Tetra Laval Food Hoyer S.p.A. certifies, through the Declaration of Conformity provided together with the machine, that the **Fruit Feeder FF 1200** has been designed and constructed in conformity with the Directive 89/392/EEC (Machinery Directive) and with the applicable above-mentioned standards.

The machine has an entirely stainless steel structure and is mounted on wheels. All parts directly in contact with the product are made entirely of stainless or aseptic material and are polished internally. In order to avoid accidental contact between parts of the operator's body and moving machine components, the machine is fitted with panels, guarding and covers fixed by means of screws and/or systems that in any case require the use of special tools and deliberate action on the part of the operator to be removed.
Only the lid of the main hopper can be raised without the use of special tools to allow the operator to feed in the ingredients. A safety grid prevents the operator from accidentally coming into contact with the slow agitator of the hopper.
Opening the grid activates a microswitch which causes the machine to stop immediately.

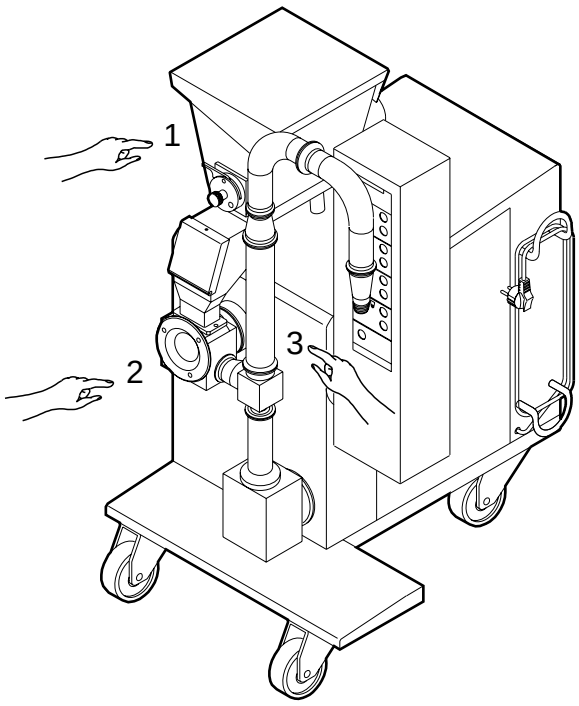


Fig.3.1

3.2 OPERATION

The ingredients are fed manually by the operator into the main hopper *(1)*. Access to the main hopper is gained by tilting back the lid *(2)*. The safety grid *(3)* must only be removed for maintenance work when the machine is turned off.
The ingredients are kept continually moving by the slow agitator located in the upper part of the main hopper; they are then fed into the secondary hopper by means of the screw feeder *(4)* located on the bottom of the hopper.
The screw feeder is made of aseptic material and is available in various versions according to the type of ingredients to be fed. The speed of the screw feeder and the slow agitator are variable and can be regulated by the potentiometer on the control panel. As a consequence, the flow rate of ingredients can also be continually varied.
From the secondary hopper the ingredients are fed under gravity towards the inlet port of the vane pump *(5)* located on the bottom of the secondary hopper.
They are then fed into the cavity created between two adjacent vanes as a result of the special profile of the eccentric guide.
During rotation the ingredients come into contact with the ice-cream through the discharge port located on the bottom of the casing. This way the ingredients are fed into the ice-cream flow.
The rotor is mounted on the reduction gear output shaft and its speed of rotation can be regulated from the potentiometer on the control panel by means of a frequency converter connected to the gearmotor.
The mix obtained is fed to the vertical mixer *(6)*, which serves to mix the ice-cream and the ingredients and hence obtain a uniform and well-mixed product.

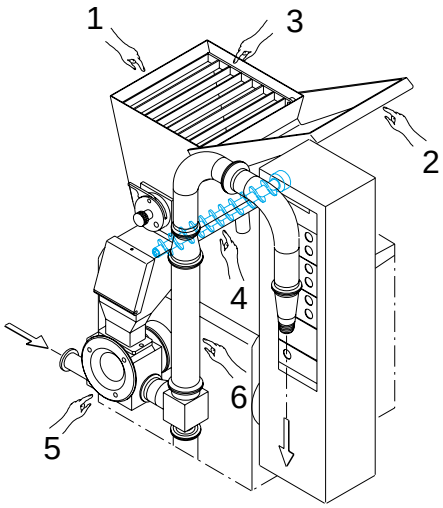


Fig.3.2

3.3 TECHNICAL SPECIFICATIONS

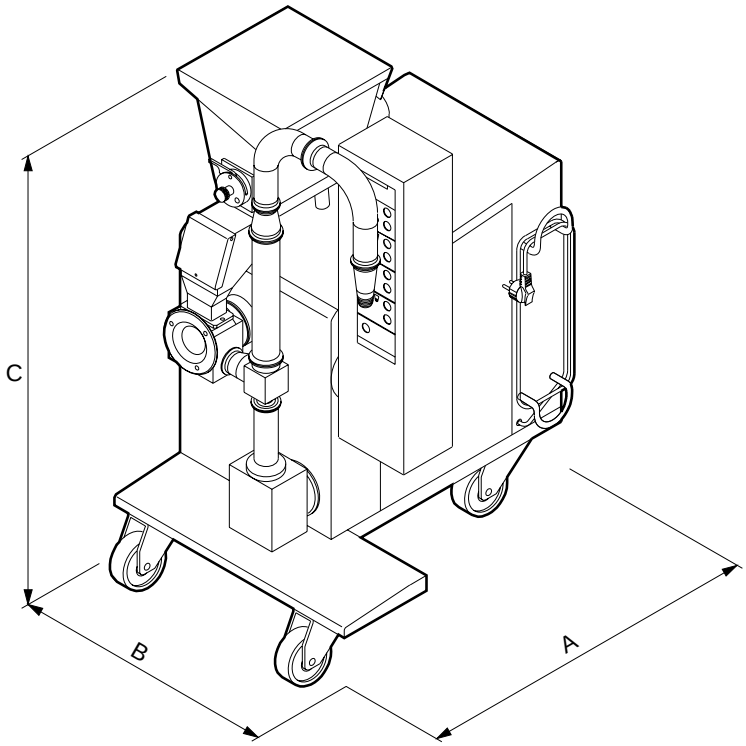


Fig.3.3

Power supply	standard	: 220 - 380 V / 3 PH / 50-60 Hz
	on request	: 415 V / 50-60 Hz
Installed power	screw feeder	: 0.75 kW
	mixer	: 0.75 kW
	pump	: 0.75 kW
	transformer	: 0.15 kW
Total installed power		: 2.4 kW
Net weight		: 190 kg
Pipe diameter	In clamp	: 1 1/2"
	Out clamp	: 2"
Capacity	the flow of ice cream with standard feeder is 300 - 1100 l/h (79 - 290 US Gals/h). For ingredient capacity see sez.4.4 and Sez.5.2.	
Dimensions	A (length)	= 932 mm
	B (width)	= 720 mm
	C (height)	=1291 mm
No. of operators		: 1

Equivalent A-Weighted Sound Pressure Level at 1 metre: 67.5 dBA
Max. Instantaneous C-Weighted Sound Pressure Level in the Workplace: less than 130 dB/20µPa.

3.4 CONTROL PANEL

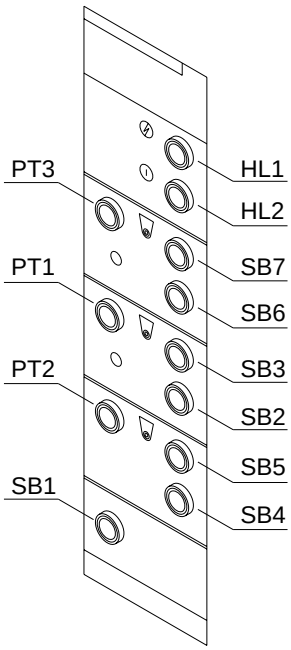


Fig.3.4

HL1 - Power on
HL2 - Safety device tripped
PT3 - Potentiometer to regulate speed of screw feeder unit
SB7 - Screw feeder and slow agitator start button
SB6 - Screw feeder and slow agitator stop button
PT1 - Potentiometer to regulate speed of vane pump
SB3 - Vane pump start button
SB2 - Vane pump stop button
PT2 - Potentiometer to regulate speed of in-line mixer
SB5 - In-line mixer start button
SB4 - In-line mixer stop button
SB1 - Emergency stop button

3.5 SPARE PARTS PROVIDED WITH THE MACHINE

The machine **FF 1200** is supplied with the following spare parts. In case of need, please contact one of our Service Centres, quoting the code no. and description of the required part.

POS.	CODE	DESCRIPTION	Q.TY
1	017085467	MY4-US 24/50/60 relay	1
2	018020578	2" clamp gasket	3
3	016070541	32x aseptic PVC hose	6
4	018060963	32-52 H=8 stainless steel clamp	4
5	017040915	BA9S 30V lamp	8
6	336069720	P7-20 MERKEL gasket	2
7	336071121	Corteco 1735/7	1
8	336069348	Corteco 2035/7	1
9	336067095	O-ring 147	2
10	336067136	O-ring 4262	1
11	336067183	O-ring 185	1
12	018020577	1 1/2" clamp gasket	4
13	336071174	Corteco 2447/7	1
14	336071215	Corteco 2852/7	1
15	336067134	O-ring 2100	1
16	336067031	O-ring 114	2
17	336067054	O-ring 3137	1
18	336067021	O-ring 3043	1
19	540501064	Extension to check the weight	1
20	540501063	Service cap	1
21	540501207	Screw feeder extraction tool	1

CHAPTER 4

INSTALLATION

4.1 UNPACKING AND DELIVERY CHECKS

The simplest way to handle the **FF 1200** crate is to use a pallet truck or a lift truck. The crate must be unloaded as close as possible to the place of installation.
When the crate has been positioned correctly, unpack as follows:

a. Unnail the upper lid *(1)* and remove it *(Fig.4.1)*. Do the same with the side panels. Pay particular attention to the wooden spacer blocks located between the sides of the crate.
b. Remove the spare parts box *(2)* and the other components.
c. Unnail the wooden blocks that hold the machine in place during transport and remove the cellophane sheet.
d. Check that the contents of the crate correspond to the description given in the shipping documents.
e. Check that all the covers and panels have been correctly fitted and that there are no loose parts.
f. Inspect visually all the electrical components to check that they are not damaged.
g. If any part/component is missing, stop unpacking and immediately notify Tetra Laval Food Hoyer S.p.A.
h. If the machine has been damaged during transport, notify the Insurance Company immediately. Do not proceed beyond unpacking until you are authorised to do so by the Insurance Company.

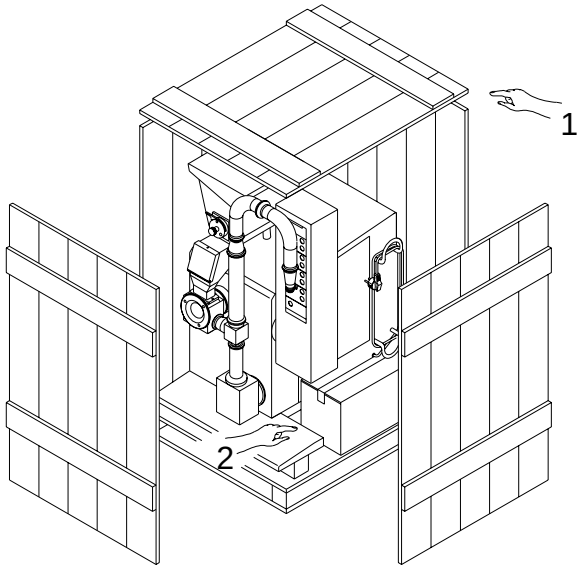


Fig.4.1

4.2 TRANSPORT AND INSTALLATION

As the machine is mounted on wheels *(1)*, it can be pushed directly by the operator, as shown in *Fig.4.2*.

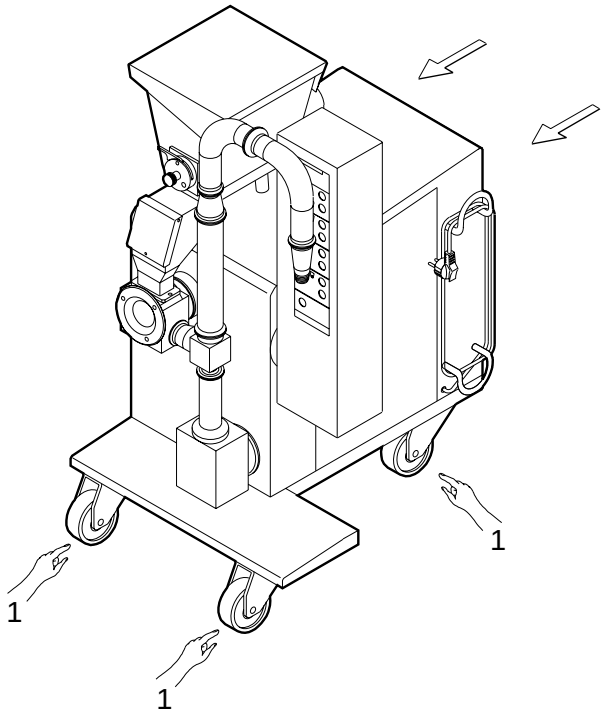


Fig.4.2

Alternatively the machine may be moved by means of a fork lift truck. Take care to position the forks under the adhesive arrows on the machine frame, as shown in *Fig.4.3*.

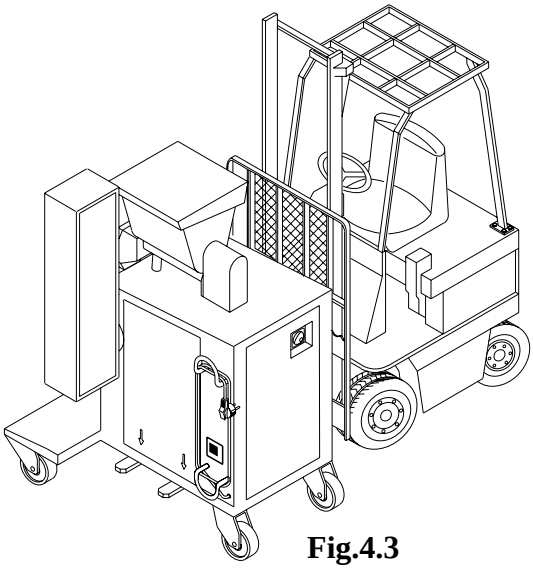


Fig.4.3

The **FF 1200** must be situated as close as possible to the filler machine for the following reasons:

a. The pressure of the ice-cream reaches its lowest value at this point.

b. The ingredients fed in tend to be deposited on the layer of ice-cream in contact with the pipe. Therefore a smaller distance between the mixer and the filler machine will give rise to a more uniform distribution of the ingredients in the ice-cream.

For the installation procedure, ensure that the following instructions are followed:

a. Position the machine at the place of production and check the nameplate data to ensure that the machine is compatible with the electrical power supply *(A, Fig.4.4)*.
b. Connect the ice-cream inlet and outlet pipes to the pump body *(B, Fig.4.4)*.
c. Connect the electrical cable (3 phases + earth) by means of a wall-mounted switch fitted with a fuse.

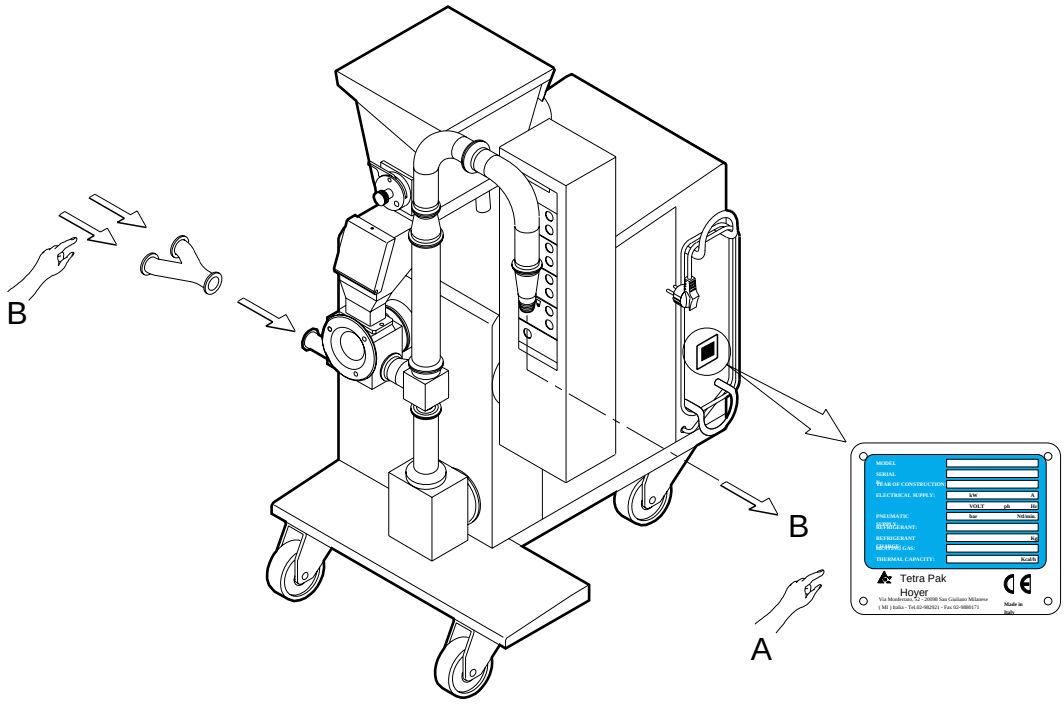


Fig.4.4

4.3 FUNCTIONAL CHECKS

Carry out the following checking procedure before starting the machine:

a. Check that the emergency stop button is released *(SB1 Fig.4.5)*.

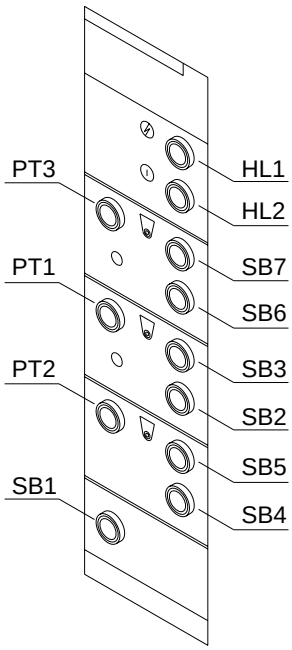


Fig.4.5

b. Turn on the main switch located on the rear panel of the machine *(A Fig.4.6)*.

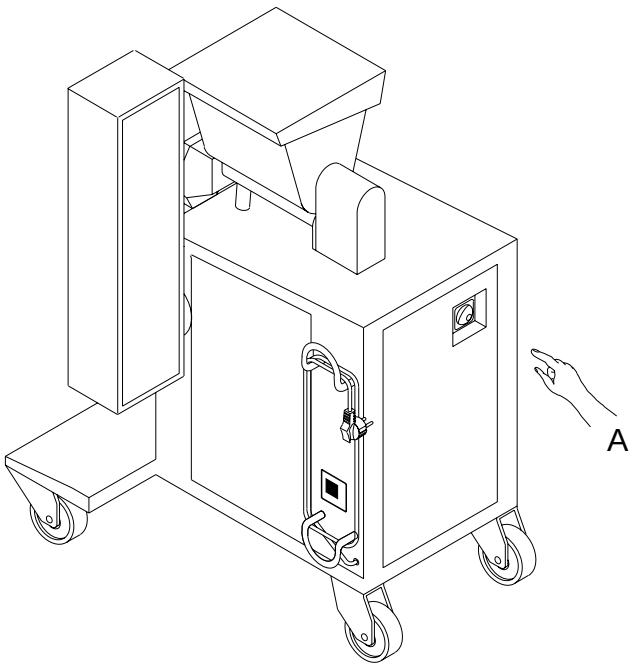


Fig.4.6

c. Check that the motors work correctly. In order to avoid damaging the machine, make sure that all the motors turn in the correct direction. If they do not, invert the phases. In particular:

1. Screw feeder motor
Press luminous button (SB7) to start the motor. Lift the main hopper lid *(1, Fig.4.7)* and check that the screw feeder turns clockwise *(2, Fig.4.7)*. Press the luminous button (SB6) to stop the motor.

2. Vane pump motor
Press luminous button (SB3) to start the motor. Lift the secondary hopper lid *(3, Fig.4.7)* and check that the vanes turn anticlockwise *(4, Fig.4.7)*. Press the luminous button (SB2) to stop the motor.
N.B.: Since the vane pump needs to be lubricated with ice-cream and/or water during operation, make sure that it does not run empty by introducing water directly into the secondary hopper during this check.

3. In-line mixer motor
Press the luminous button (SB5) to start the motor. Check, by viewing from above, that the in-line mixer turns anticlockwise *(5 Fig.4.7)*. To carry out this check, disconnect the 2" to 1 1/2" reducer. Be particularly careful not to crush parts of your body during rotation of the mixer blades. Press the luminous button (SB4) to stop the motor.
Lastly, with the motors running, check that the emergency stop button SB1 works correctly. In the case of a malfunction, contact one of our Service Centres immediately.

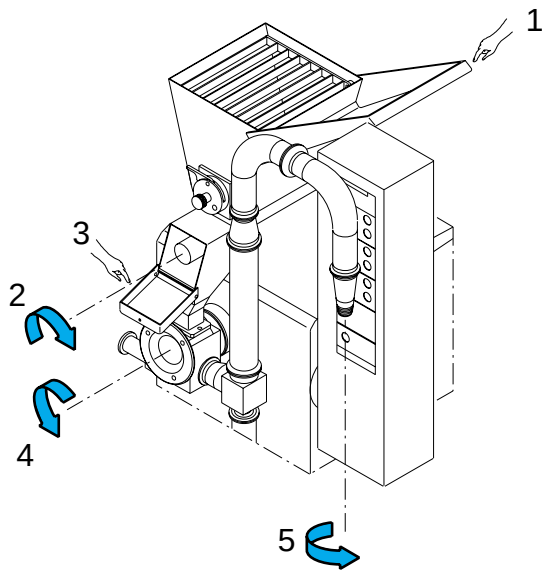


Fig.4.7

4.4 CHARACTERISTICS OF INGREDIENTS

Ingredients that are viscous, sensitive to humidity or tend to stick together to form lumps are not suitable for dosing.
Note: some ingredients like raisins must be washed and tripped before dosing.

The ingredients should have particles of maximum diameter 25 mm. This means for example that products such as whole strawberries can be fed into the ice-cream flow without being crushed.
The **FF 1200** is designed for any kind of solid and/or highly viscous product. Liquids or products with low viscosity (e.g. jam, fruit juice with whole pieces of fruit, etc.) should not be used in the machine. In these cases it is advisable to feed in the solid part using the **FF 1200** and the liquid part using a volumetric dosing device for liquids installed before the in-line mixer.
Table 4.1 gives a general guideline of the type of screw feeder and the way it should be used according to the type of ingredients to be fed.

NOTE

The values mentioned in table 4.1 are indicative, it can change depending on the product type used.

		Screw feeder Standard 540501205 Pitch 40 Diam. 20	Screw feeder Standard 540501202 Pitch 20 Diam. 20	Screw feeder Optional 540501203 Pitch 30 Diam. 20	Screw feeder Optional 540501204 Pitch 30 Diam. 24
DRY NUT g/min	Min	60	150	100	90
	Max	1400	660	1000	940
CHOCOLATE g/min RICE	Min	180	90	135	115
	Max	1700	700	1300	1000

Table 4.1

CHAPTER 5

ADJUSTMENT PROCEDURES

5.1 SET-UP AND ADJUSTMENTS

Before starting the machine and beginning the production cycle, make sure that the machine has been carefully washed and sterilised.
After washing and sterilising the machine, connect the ice-cream outlet pipe from the freezer to the pump unit connector *(1, Fig.5.1)*; then connect the filler machine ice-cream inlet pipe to the outlet connector on the in-line mixer *(2, Fig.5.1)*.
To connect two freezers at the same time, connect a Y fitting *(3, Fig.5.1)* to the pump unit inlet connector.

Fig.5.1

To set the speed of the screw feeder correctly, proceed as follows:

1. Connect the screw feeder outlet pipe to the rubber hose provided, leaving the secondary hopper lid open *(1, Fig.5.2)*. Place a container of suitable dimensions under the extension outlet to collect the ingredients.

2. Turn on the electrical power supply to the machine by turning the main switch to the "ON" position.

3. Check that the safety grid is lowered into its safety position.

4. Start the screw feeder by pressing button SB7.

5. Measure the flow rate over a reasonable period of time and check that it corresponds to the desired value. If not, turn the screw feeder speed adjustment knob (PT3) to increase or reduce the speed according to whether the measured flow rate is lower or higher than desired.
Repeat this operation until the desired flow rate is obtained.

6. Turn off the screw feeder motor by pressing luminous button (SB6) and turn off the power supply to the machine.

7. Disconnect the screw feeder outlet pipe extension.

8. If necessary, clean and sterilise the machine.

Fig.5.2

5.2 ICE CREAM SOLID INGREDIENTS

THE TABLE SHOWS SOLID INGREDIENT QUANTITIES (gr/min) FOR ICE CREAM

Note: The max. percentage of solid ingredients may depend on ingredient type.

	SOLID INGREDIENTS					
PRODUCTION l/h (Overrun 100%)	10%	12%	14%	16%	18%	20%
150	136	163	190	217	244	272
200	181	217	253	290	326	362
250	226	272	317	362	407	453
300	372	326	380	434	489	543
350	317	380	443	507	570	634
400	362	434	507	579	652	724
450	407	489	570	652	733	815
500	452	543	634	724	815	905
600	543	652	760	869	977	1086
700	634	760	887	1014	1140	1267
800	724	869	1014	1158	1303	1448
900	815	977	1140	1303	1466	1629
1000	905	1086	1267	1448	1629	
1100	996	1195	1394	1593		
1200	1086	1303	1520			

MULTIPLICATIVE COEFFICIENTS FOR OVERRUN VALUES

60%	70%	80%	90%	100%	110%	120%
1.25	1.18	1.11	1.05	1	0.95	0.9

EXAMPLE

If the required quantity of solid ingredients is 16% and the production output is 500 l/hr (100% overrun), approximately 724 gr/min of solid ingredients must be fed from the secondary hopper.
NOTE: with a 70% overrun, multiply 724 gr/min by the corresponding coefficient (in this case1.18), to obtain 854 gr/min.

CHAPTER 6

OPERATING PROCEDURES

To ensure perfect operation of the machine, the candied fruit and other ingredients to be fed into the ice-cream flow must be drained thoroughly to reduce stickiness. Good operation of the machine depends on the characteristics of the ingredients used.

PERSONAL INJURY 

a. The machine must be left disconnected until the ice-cream inlet and outlet pipes have been connected to the vane pump body.

b. The screw feeder, the slow agitator and the pump vanes are all dangerous. For this reason the main hopper grid and the secondary hopper lid must remain in their safety positions at all times when the machine is connected to the electrical power supply.

DAMAGE TO THE MACHINE 

a. If the ingredients stop the slow agitator and/or the screw feeder from turning, they must be removed using only the scraper provided with the machine.

b. Do not use metal or plastic objects etc., as these can cause serious damage to the machine.

c. The vane pump must **NEVER** be run whilst empty. It must always be lubricated with ice-cream or water during operation.

6.1 PRELIMINARY CHECKS

Before starting the machine, carry out the following checks:

a. Check that the machine has been thoroughly washed and cleaned.

b. Check that the ice-cream inlet and outlet pipes to/from the **FF 1200** have been connected to the freezer and the filler machine correctly.

c. Check that the power cable from the mains supply is connected correctly.

d. Check that all the guards are in their safety positions (main hopper grid, secondary hopper lid).

e. Check that all the machine panels are fixed securely to the frame.

6.2 START-UP

To start the machine, proceed as follows:

a. Switch on power to the machine by turning the main switch to the "ON" position.

b. Start the in-line mixer by pressing luminous button SB5.

c. Start feeding ice-cream from the freezer. To keep production losses down to a minimum, wait until the ice-cream leaving the extrusion pipe has reached the desired consistency before starting the other motors of the **FF 1200**.

d. Start the vane pump and screw feeder motors by pressing luminous buttons SB3 and SB7 respectively, in that order. *(See Fig.6.1)*

e. Introduce the ingredients into the main hopper, taking care not to lift the safety grid (which would cause the machine to stop immediately) or the secondary hopper lid.

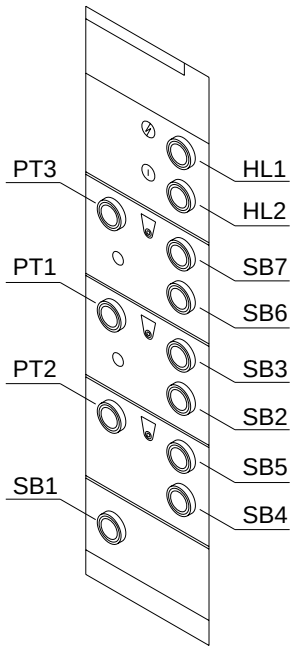


Fig.6.1

6.3 PRODUCTION CYCLE

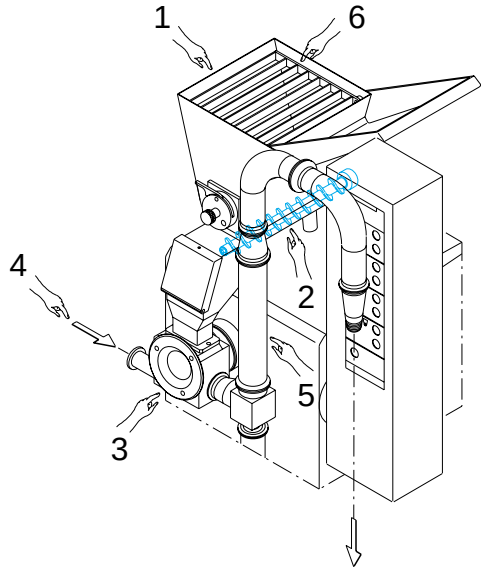


Fig.6.2

The fruit is placed in the main hopper *(1, Fig.6.2)*. The screw feeder *(2, Fig.6.2)* feeds the fruit into the vane pump *(3, Fig.6.2)*. The fruit mixed with the ice-cream coming from the freezer *(4, Fig.6.2)* is then sent via the mixer *(5, Fig.6.2)* to the filler machine.

The operator must perform the following operations:

- Feeding fruit into the main hopper.

WARNING

The screw feeder stops if the grid is lifted.

- Regulating the quantity of fruit introduced into the ice-cream.

The following can be used to regulate the quantity of fruit introduced into the ice-cream:
- Potentiometer PT1, to regulate the speed of the vane pump.
- Potentiometer PT3, to regulate the speed of the screw feeder.

The two controls work independently, so both must be used to obtain the correct settings.

There are two ways to increase the quantity of fruit in the ice-cream:
- Turn potentiometer PT1 clockwise to increase the speed of the main motor.
- Turn potentiometer PT3 clockwise to increase the speed of the screw feeder.

There are two ways to reduce the quantity of fruit in the ice-cream:
- Turn potentiometer PT1 anticlockwise to reduce the speed of the main motor.
- Turn potentiometer PT3 anticlockwise to reduce the speed of the screw feeder.

6.4 SHUTDOWN

- Turn off the screw feeder motor (SB6)
- Turn off the vane pump motor (SB2)
- Turn off the mixer motor (SB4)
- Press the emergency stop button (SB)
- Turn off the main switch (QS1)
- Remove fruit residues from the hopper
- Start cleaning (see cleaning section)

CHAPTER 7

CLEANING AND MAINTENANCE

7.1 CLEANING PRECAUTIONS AND INSTRUCTIONS

Make sure that the main switch is turned OFF before starting to clean the machine.

All parts of the machine except for the motors and electrical panel may be washed using water (max. 60°C) and/or appropriate washing solutions. The use of H_2O + 1% caustic soda solution is recommended.

7.2 ROUTINE MAINTENANCE

AFTER EXTENDED PERIOD OF DISUSE

- Wash the machine carefully;
  materials required : water - detergent - disinfectant
- Remove pump (see section 7.3), screw feeder, agitators and pipes; wash and disinfect thoroughly;
- Check the condition of the gaskets and replace if necessary;
- Lubricate the gaskets;
  materials required : vaseline
- Check the oil level in the reduction gears and fill up if necessary;
  material required : IP Mellana 320 oil
- Check that the emergency stop button works correctly;
- Carry out a general inspection;
- Check all moving parts and if necessary replace.

DAILY

- Rinse the machine thoroughly with water and/or washing solutions before starting production;

- Wash the machine at the end of the production shift, proceed in the following way:
  - disconnect the machine from the filling line;
  - connect the washing pipe to the pump inlet, proceed with the washing;
  - at the same time, to pour the washing solution **(by the small quantities)** inside of the primary hopper. In this way washes the agitator (4, Fig.7.2) and the screw feeder (3, Fig.7.1).
  material required : water - detergent - disinfectant

MONTHLY

- Check the oil level in the reduction gears;
  material required : IP Mellana 320 oil
- Check the screw feeder transmission chain tension.
- Wash the feeder and the ice-cream line carefully, proceed on the following way:

  FEEDER
  Remove the screw *(1, Fig.7.1)*, open the door *(2, Fig.7.1)* and pull out the screw feeder *(3, Fig.7.1)*.

Fig.7.1

Fig.7.2

Lift the hopper lid *(1, Fig.7.2)*, lift the safety grid *(2, Fig.7.2)*, move the rod *(3, Fig.7.2)* and pull out the agitator *(4, Fig.7.2)*.
Wash and disinfect the various components and the hoppers (main and secondary), then reassemble, lubricating the gaskets as required.

CLEANING THE ICE-CREAM LINE

Disconnect the machine from the filling line.
Take out the mixer *(6, Fig.7.3)*, disconnect the fixing clamps *(7, Fig.7.3)* and take off the connecting pipe *(8, Fig.7.3)*.
Connect the washing pipe to the pump inlet, proceed with the washing.
material required : water - detergent - disinfectant
Lubricate the gaskets; after drying the various components, lubricate them with neutral vaseline before reassembling.
material required : vaseline

Fig.7.3

BEFORE EXTENDED PERIOD OF DISUSE

Wash and dry the various components, lubricate them (especially the gaskets) with vaseline and reassemble them.
materials required : water - detergent - disinfectant
: vaseline

7.3 MECHANICAL MAINTENANCE

7.3.1 Slow agitator drive unit

- If the slow agitator runs noisily, lift the hopper lid *(1, Fig.7.4)*, lift the safety grid *(2, Fig.7.4)*, move the rod *(3, Fig.7.4)* and take out the slow agitator *(4, Fig.7.4)*. Take off the casing *(5, Fig.7.4)* and the transmission chain *(6, Fig.7.4)* and remove the pinion *(7, Fig.7.4)*.

Remove the circlips *(8-9, Fig.7.4)*, take out the shaft *(10, Fig.7.4)* and replace the bearings *(11, Fig.7.4)* and the gaskets *(12, Fig.7.4)*.

Reassemble carefully in the reverse order.

Check that the shaft and the bearings are not loose in their housings.

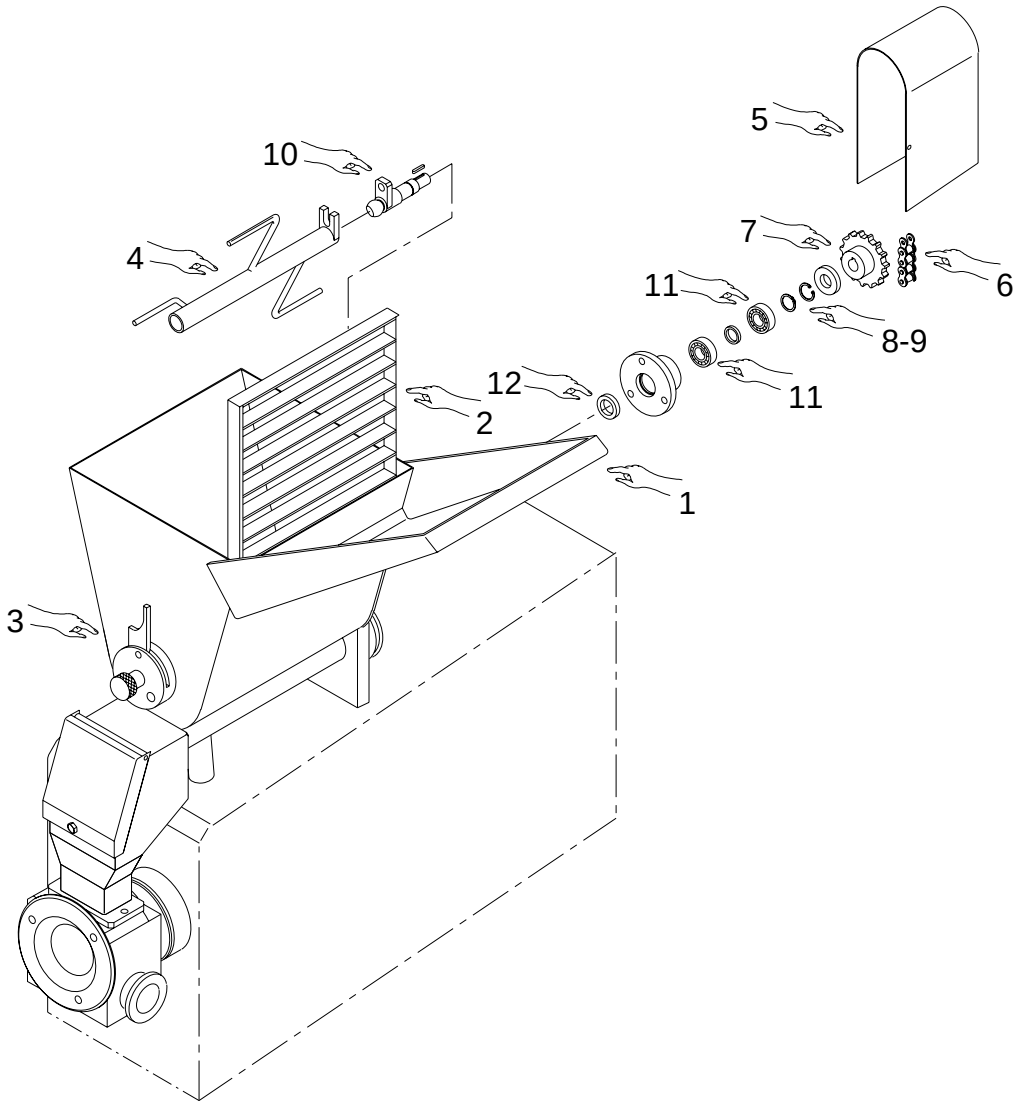


Fig.7.4

7.3.2 Screw feeder drive unit

- If the screw feeder runs noisily, take out the screw *(1, Fig.7.5)*, open the door *(2, Fig.7.5)* and remove the screw feeder *(3, Fig.7.5)*. Take off the casing *(4, Fig.7.4)* and the transmission chain *(5, Fig.7.5)* and take out the pinion *(6, Fig.7.5)*.

Take off the circlip *(7, Fig.7.5)*, remove the shaft *(8, Fig.7.5)* and replace the bearings *(9-10, Fig.7.5)* and the gaskets *(11, Fig.7.5)*.

Reassemble carefully in the reverse order.

Check that the shaft and the bearings are not loose in their housings.

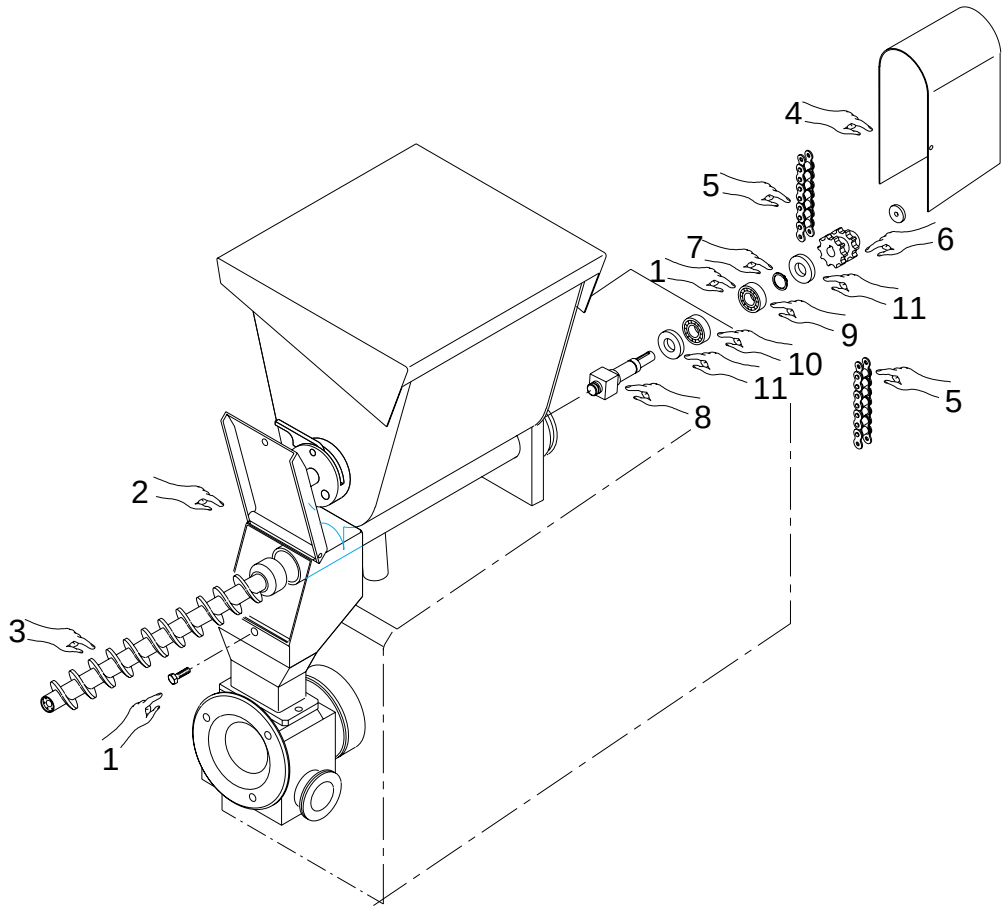


Fig.7.5

7.3.3 Mixer drive unit

- If the mixer runs noisily, remove the clamps *(1, Fig.7.6)*, dismantle the pipe *(2, Fig.7.6)* and pull out the mixer *(3, Fig.7.6)*. Take off the bushing *(4, Fig.7.6)* and remove the gaskets *(5, Fig.7.6)*. Check the condition of the bushing and the gaskets and if necessary replace.
Remove the casing *(6, Fig.7.6)* and the support *(7, Fig.7.6)*. Remove the shaft *(8, Fig.7.5)* and the circlip *(9, Fig.7.5)* and replace the bearing *(10, Fig.7.4)* and the gaskets *(11, Fig.7.4)*.
Reassemble carefully in the reverse order.
Check that the shaft and the bearings are not loose in their housings.

Fig.7.6

7.3.4 Vane pump

- If the pump is noisy or gets blocked during operation, Undo the screws *(1, Fig.7.3)* and the front pump cover *(2, Fig.7.3)*, then take out the vanes *(3-9-10, Fig.7.3)* and the rotor *(4, Fig.7.3)*. Check the condition of the vanes and if necessary replace.
Reassemble carefully in the reverse order.

To assemble proceed on the following way:
-first insert the vane (Fig. 7-3 ref. 3) marked with two notches,
-insert the vane N°9,
-insert the vane N°10,

Fig.7.3

7.4 MAINTENANCE OF ELECTRICAL SYSTEM

The electrical system is designed and built to provide the greatest possible protection for the components of the fruit feeder.
When a motor stops due to overloading, the general alarm lamp HL2 lights up to indicate that the overload cutout has tripped.
If the overload cutout trips again shortly after restarting, this means that the fault/short circuit still exists. Check the electrical circuit and ascertain whether any mechanical components have seized.

7.5 LUBRICANT OIL CHART FOR FF1200

Appliance	**Oil type**	**Density (at 15°C) (kg/m^3)**	**Viscosity (at 50°C) (°E)**	**Flash point (°C)**	**Freezing point (°C)**
Gearmotor	Mobil Gear 629	890	11.3	+228	-24
Chain	Suniso 3G	914	2.7	+176	-40

CHAPTER 8

TROUBLESHOOTING

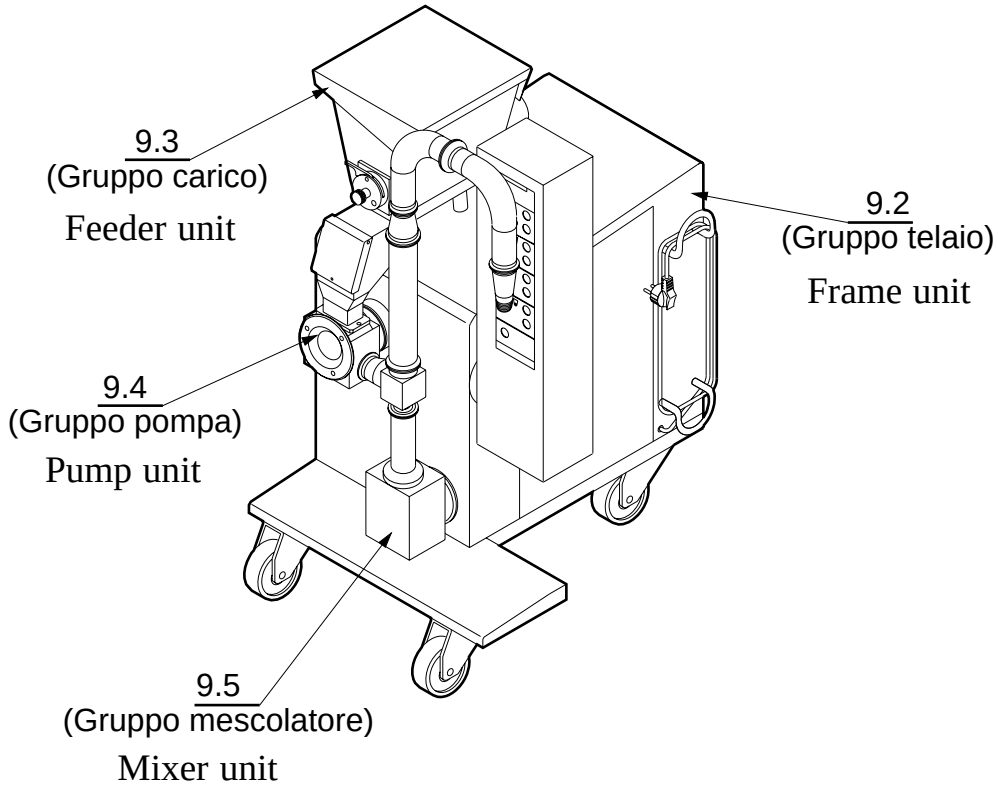
8.1 TROUBLESHOOTING

FAULT	CAUSE	REMEDY
• Power on lamp HL1 is off.	• Faulty main switch. • Main switch in "0" position. • Lamp HL1 burned out. • Automatic switch QF01-02 open. • Transformer (TC1) faulty. • Short circuit on auxiliary services.	• Replace. • Turn main switch to "1" position. • Replace. • Reset switch. • Check and if necessary replace. • Find fault and reset circuit.
• Machine does not start.	• Power off. • Emergency stop button broken. • Emergency stop button has not been released.	• Check electrical power supply. • Replace. • Reset.
• Overload lamp HL2 illuminated	• One or more automatic switches (QF 1-2-3) are open. • One or more automatic switches are broken.	• Reset. • Check and if necessary replace.
• Fruit feeder does not start.	• Emergency button has not been released. • Automatic switch open. • Microswitch broken. • Screw feeder pin not fixed properly. • Grid open. • Inverter card (Fig.9) broken or incorrectly adjusted. • Bearings seized.	• Reset. • Reset switch. • Replace. • Check locking of screw conveyor. • Close. • Check the various trimmers. • See mechanical maintenance.

FAULT	CAUSE	REMEDY
• Mixer does not start.	• Emergency stop button has not been released.	• Reset.
	• Automatic switch open.	• Reset switch.
	• Reduction gear broken.	• Replace.
	• Coupling between motor and reduction gear worn.	• Replace.
	• Bearings seized.	• See mechanical maintenance.
• Pump unit does not start.	• Emergency stop button has not been released.	• Reset.
	• Automatic switch open.	• Reset switch.
	• Vanes locked.	• See mechanical maintenance.

CHAPTER 9

SPARE PARTS CATALOGUE (550501002)



LAY-OUT TABLE

FRAME UNIT

POS.	CODE	DESCRIPTION	Q.TY
1	540501004	LH panel	1
2	540501001	Frame	1
3	336054067	Pivoting wheel DM 125	2
4	540501024	Cable bearing arm	2
5	336067137	O-ring 3500	2
6	540501037	Heat sink	1
7	540501036	Electrical panel box	1
8	540501039	Electrical control panel	1
9	540501038	Electrical control panel spacer	1
10	336066004	Sealing gasket	1
11	540501002	Electrical panel box	1
12	540501005	Rear panel	1
13	540501003	RH panel	1
14	540501006	Centring pin	6
15	018005004	Plate	1
16	336054068	Fixed wheel DM 125	2
17	540501067	Plate	1

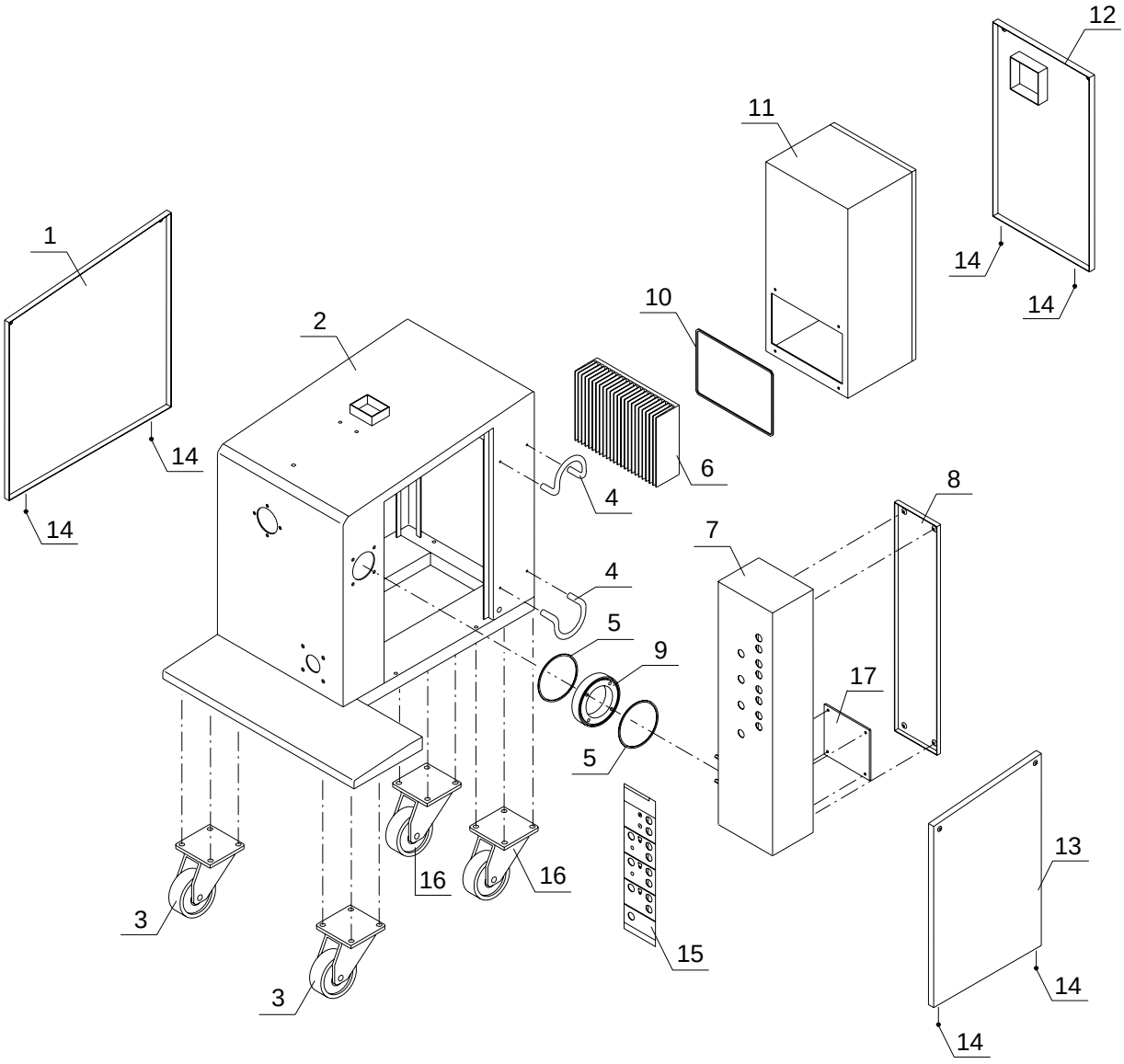
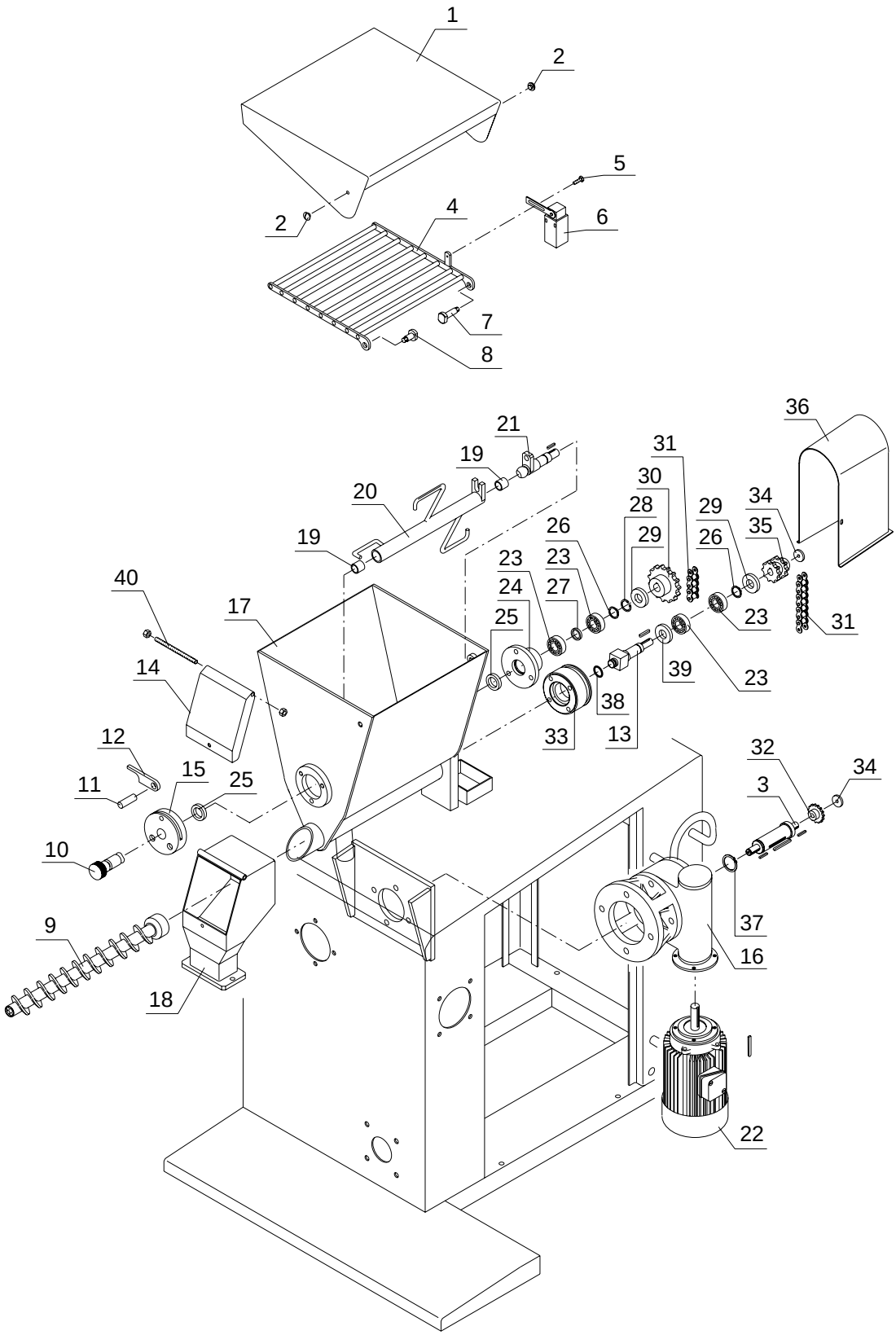


Fig.9.2 - FRAME UNIT

LAY-OUT TABLE

LOADING UNIT

POS.	CODE	DESCRIPTION	Q.TY
1	540501018	Main hopper lid	1
2	540501059	Hopper lid cap	2
3	540501034	Slow shaft	1
4	540501019	Grid	1
5	540501060	Screw for grid	1
6	017035902	Grid safety microswitch	1
7	540501020	RH hinge pin	1
8	540501021	LH hinge pin	1
9	540501205	Screw feeder	1
10	540500084	Mixer tailstock	1
11	540500081	Stop pin	2
12	540500082	Stop	1
13	540501029	Screw feeder control pin	1
14	540501023	Secondary hopper lid	1
15	540500093	Lever flange	1
16	336010075	Reduction gear MVF49/F RI/28 PAM 80B	1
17	540501017	Main hopper	1
18	540501022	Secondary hopper	1
19	540500056	Agitator bushing	2
20	540501026	Slow agitator	1
21	540501058	Mixer headstock	1
22	014040427	Motor ST80 4P 1Hp B14	1
23	336001520	Bearing 6003-2RS SKF	4
24	540500080	Agitator flange	1
25	336069720	Gasket P7-20 Merkel	2
26	326019017	Snap ring E17 7435	2
27	540500083	Flange spacer	1
28	326019135	Snap ring I35 7437	1
29	336071121	Corteco 1735/7	2
30	540501044	Agitator pinion	1
31	336017019	Chain 3/8" S	2
32	540501027	Reduction gear slow shaft pinion	1
33	540501031	Counterflange	1
34	540501033	Washer	2
35	540501032	Double pinion for screw feeder	1
36	540501028	Protective casing	1
37	326019025	Snap ring E25 7435	1
38	336067021	O-ring 3043	1
39	336069348	Corteco 2035/7	1
40	540501011	Rod for fixing secondary hopper lid	1



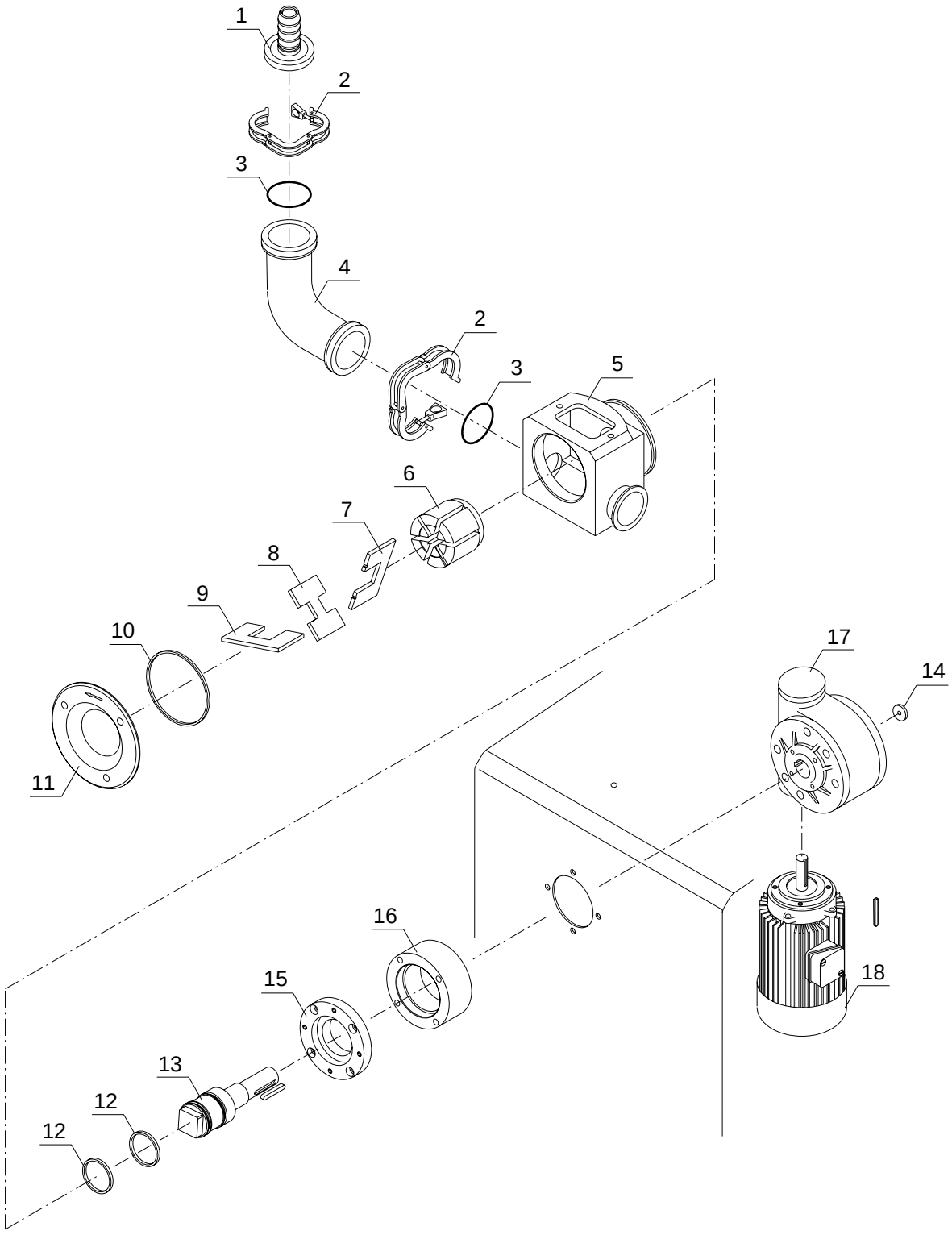
LAY-OUT LIST

Fig.9.3 - LOADING UNIT

LAY-OUT TABLE

PUMP UNIT

POS.	CODE	DESCRIPTION	Q.TY
1	016960009	A304 clamp hose adapter	1
2	016060218	A304 clamp	1
3	018020577	Clamp gasket	1
5	540501211	Pump Housing Vane	1
6	540501213	Rotor	1
7	540501210	Vane	1
8	540501208	Vane	1
9	540501209	Vane	1
10	336067183	O-ring 185	1
11	540501212	Vane pump lid	1
12	336067095	O-ring 147	2
13	540501040	Pump shaft	1
14	540501035	Fifth wheel for slow shaft	1
15	540501041	Motor coupling flange	1
16	540501043	Reduction gear spacer	1
17	336010074	Reduction gear MVF 49/P R1/24 PAM 80B POS.V5	1
18	014040428	Motor ST80 4p 1HP B14	1



LAY-OUT LIST

Fig.9.4 - PUMP UNIT

LAY-OUT TABLE

MIXER UNIT

POS.	CODE	DESCRIPTION	Q.TY
1	540501075	Reduction with hose adapter	1
2	016060220	A304 clamp 2"½	2
3	018020578	2” clamp gasket	4
4	540501072	DN 40 bend	2
5	016060998	Mixer reduction	1
6	016060219	A304 clamp 2"	5
7	018020579	2"½ clamp gasket	2
8	540501035	Shaft washer	1
9	336010076	Reduction gear MVF 49/A R1/7 PAM80 Flange B14 POS.B3	1
10	540501074	Mixer	1
11	336067031	O-ring 2050	4
12	014040428	Motor ST80 4p 1HP B14	1
13	336067043	O-ring 128	2
14	540501069	Agitator sleeve bushing	1
15	540501070	Shaft	1
16	540501010	Casing	1
17	336071160	Corteco 2047/7 type seal ring	1
18	326019142	Snap ring 42i 7437-75	1
19	336001423	Bearing 6004 2RS SKF	1
20	540501071	Sleeve	1
21	336071150	Corteco 2040/7 type seal ring	1
22	336067186	O-ring 4475	1
23	540501007	Support	1
24	336012156	Angular transmission	1
25	540501013	Universal coupling	1
26	540501066	Collector	1
27	540501042	Shaft for universal coupling	1
28	540501061	Spacer	1
29	540501073	Collector	1

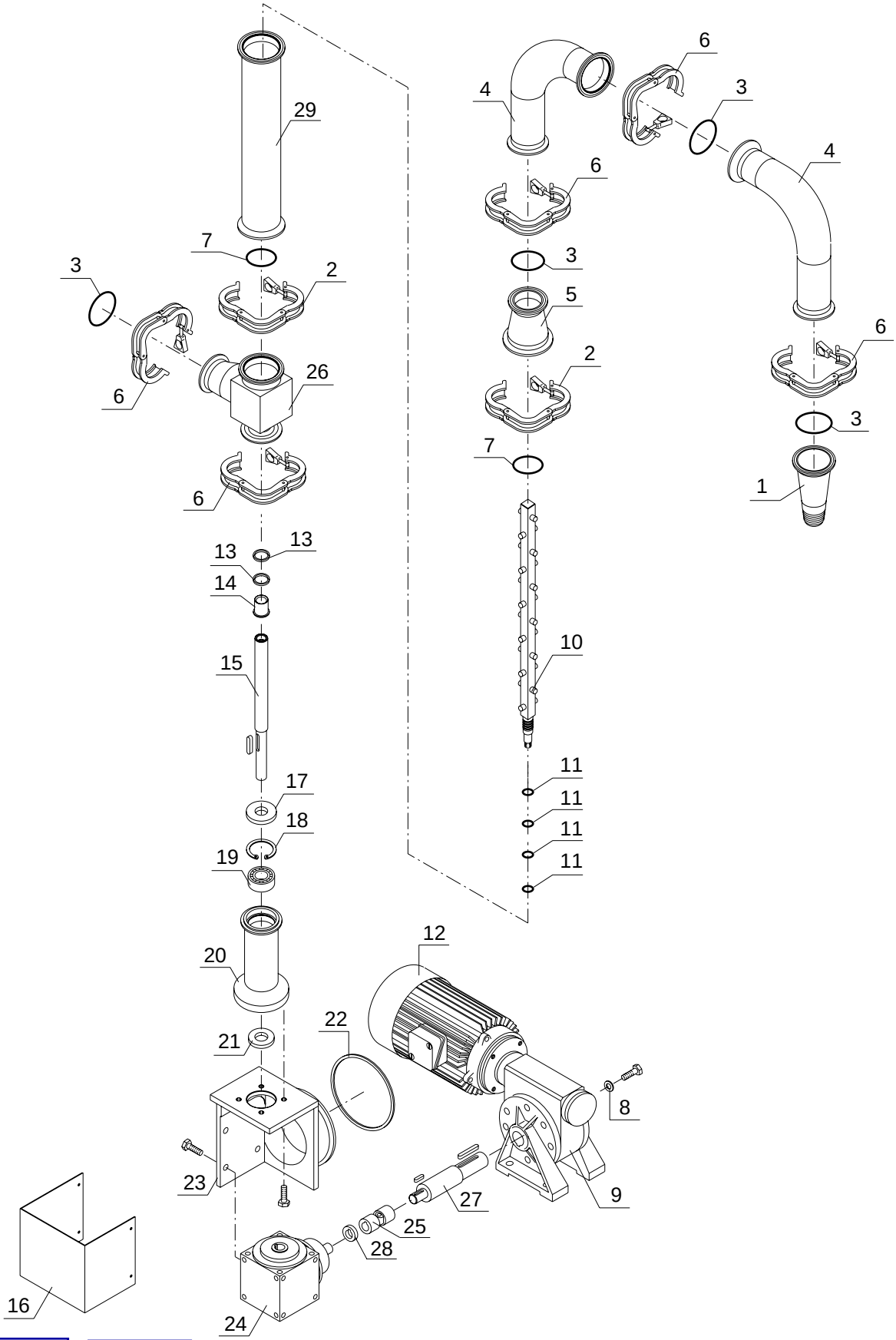


Fig.9.5 - MIXER UNIT

LAY-OUT
LIST