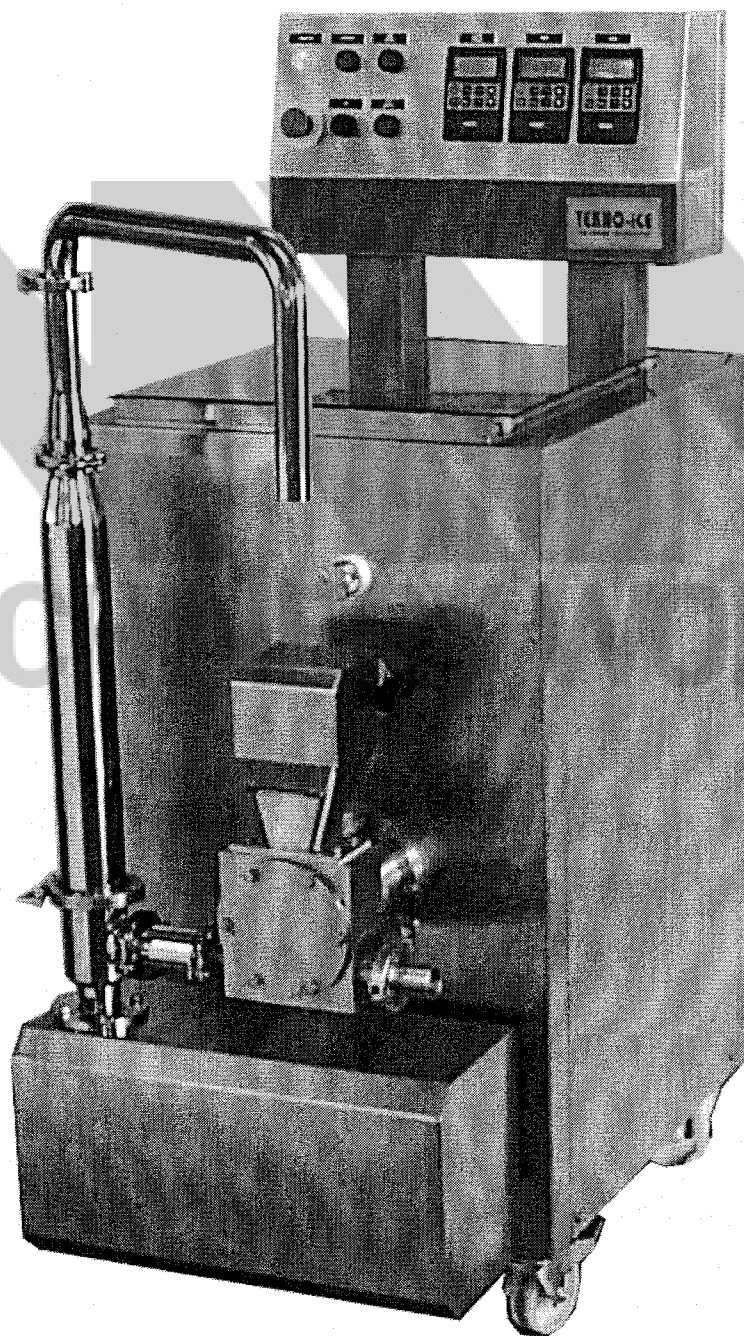


TEKNOFRUIT DF1200



INSTRUCTION MANUAL
to be kept in a safe place for future reference

TABLE OF CONTENTS

1	INTRODUCTION	page 04
1.1	Introduction	page 05
1.2	Compliance Declaration	page 06
1.3	Warranty	page 07
1.4	ID Plate	page 08
1.5	Notice form	page 09
1.6	Warnings	page 10
1.7	Technical characteristics	page 11
2	INSTALLATION	page 13
2.1	Packing and handling	page 14
2.2	Installation	page 16
2.3	Electric connection	page 17
2.4	Check points before initial operation	page 18
3	MACHINE DESCRIPTION	page 21
3.1	Machine description	page 22
3.2	Operation	page 25
3.3	Controls at operator's disposal	page 26
4	PRODUCTION	page 27
4.1	Preliminary Operations	page 28
4.2	Start up	page 29
4.3	Regulations during production	page 30
4.4	Production End	page 31
4.5	Emergency Stop	page 32
5	CLEANING	page 33
5.1	CIP Cleaning	page 34
5.2	Recommended Cleaning Program	page 35
6	MAINTENANCE	page 36
6.1	Mechanical Maintenance	page 37
6.2	Maintenance of Electric System	page 42
7	TROUBLE SHOOTING	page 44

8	SPARE PARTS	page 45
8.1	Standard Spare Parts	page 46
8.2	Dispensing unit	page 47
8.3	Pump unit	page 48
8.4	Mixer unit	page 49

1 - INTRODUCTION

1.1	Introduction	05
1.2	Compliance Declaration	06
1.3	Warranty	07
1.4	ID Plate	08
1.5	Notice Form	09
1.6	Warnings	10

1.1 Introduction

We thank you for choosing our product.

TEKNOFRUIT DF1200 is a machine designed to provide outstanding performances, built with first-class materials which are included in the EEC Technical Directives covering food processing machines. Its production capacity meets the requirements of artisanal/industrial ice-cream production.

TEKNO-ICE is committed to the continuous improvement of its products and to conform its production standards to EEC Machine's Directive no. 89/392, in order to meet the safety requirements of its equipment in any duty condition.

TEKNO-ICE wants to keep in close contact with the users of its machinery. Therefore all your questions or suggestion will be carefully examined and will not remain unanswered.

We are specially interested in the comments of your company's safety manager and of the representative of workers' safety.

TEKNO-ICE will convey the basic information to the operators, during machine's commissioning. TEKNO-ICE is also prepared to carry out training courses for the optimum use of its equipments in view of the European Safety Directives now in force in Italy under Law Decree no. 626/94.

Read attentively the instructions in this booklet before starting the machine.

In case of doubts in understanding these instructions, do not hesitate to contact our representative before proceeding in operating the equipment. In order to streamline and make the information procedure easier, we would advise you to use the fax form at page 8.

Your reference for any enquiry is:

TEKNO-ICE srl
via Lazio 37
20090 Buccinasco Milano - Italy

Tel. +39 - 02 - 4886761

Fax +39 - 02 - 4882153

WARNING

Compliance by the user with mentioned ice cream production, pressure, temperature, and voltage limits as well as with any other mentioned instruction is a mandatory and indispensable for the proper operation of the machine.

National laws governing the use of electric equipment must be complied with by the installer.

Our company declines any liability for all damages due to improper use of the machine or non-compliance with the following hazard notices.

NOTES:

- 1) The machine comes equipped with a kit of emergency spare parts.
- 2) The data mentioned in this manual may be changed by TEKNO-ICE without notice.
- 3) The manual includes the instructions covering all the devices fitted on the machine.

CE STATEMENT OF CONFORMITY

pursuant **Enclosure II,A** of **CEE Directive 89/392** and subsequent amendments

TEKNO-ICE S.r.l.,
Via Lazio, 37
20090 BUCCINASCO (MI)

herewith declares that

the **TEKNOFRUIT DF1200** machine serial number _____ subject of this statement is designed and built in compliance with **CEE directive 89/392** and subsequent amendments (**CEE directives 91/368, 93/44, 93/68**) and meets the essentials safety and health requirements of **ENCLOSURE I** of **CEE directive 89/392.(*)** Furthermore, the **TEKNOFRUIT DF1200** has been manufactured in accordance with the following rules :

CEE 60/204	machinery safety, machine's electrical equipment
CEE 89/109	materials expected to get in contact with foods
UNI EN 292-1-2	Safety of machinery-Basic concepts , general principles for design-Basic terminology, methodology
UNI EN 294	safety clearance to prevent the contact with dangerous areas
UNI EN 349	safety of machinery-Minimum gaps to avoid crushing of parts of the human body
D.M. 21/03/1973	ministerial decree for materials expected to get in contact with foods

DATE

SIGNATURE

(*)The regulation for the enforcement of above CEE directives is includes in the Decree of the President of the Republic. n.459 of 24th july 1996.

1.3 WARRANTY

TEKNO-ICE S.r.l. guarantees the machine:

model: **TEKNOFRUIT DF1200** Serial No _____

for a period of twelve months from shipment date of the machine, taking into account a 8 h/day shift.

TEKNO-ICE will replace or repair any part which proves defective during above-mentioned period.

The warranty is limited to the replacement or repair of the defective part, and does not include shipping nor labour costs.

The warranty for electric components is limited to 6 months from shipment date of the machine.

The warranty does not cover parts which are normally subject to wear and tear, such as bronze brushes, ball bearings or gaskets.

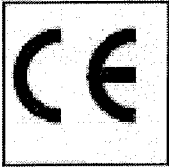
In case the fault or damage to the machine is due to misuse or tampering of same, or to the the intervention of unauthorized technicians or by the use of non original spare parts, the warranty will not apply.

TEKNO-ICE has no other obligations or liabilities with respect to the foregoing.

For all technical communication with **TEKNO-ICE** always utilize the notice form at para. 1.5

1.4 ID PLATE

The machine carries an ID plate indicating the basic technical data, such as model, serial number, voltage, total installed power, frequency, number of phases, type and charge quantity of refrigerant.

TEKNO-ICE srl				
TECNOLOGIA DEL GELATO				
MODEL		<input type="text"/>		
SERIAL		<input type="text"/>		
ELECTRICAL DATA				
VOLT	<input type="text"/>	ph	<input type="text"/>	Kw
REFRIGERANT		<input type="text"/>		
REFRIGERANT CHARGE		<input type="text"/>		Kg.

1.5 NOTICE FORM

note : fill in the upper section of this form and then the filled-in form will become an original to be duplicated and used for communicating with Tekno-ice.

Messrs. TEKNO-ICE via Lazio 37 - Buccinasco - ITALY FAX +39 - 02 - 4882153	
Model: TEKNOFRUIT DF1200	Date of _____
Seril N. _____	Order N. _____
Description of fault : _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	
Date of notice :	_____
Production hours accomplished :	_____
Signature :	_____

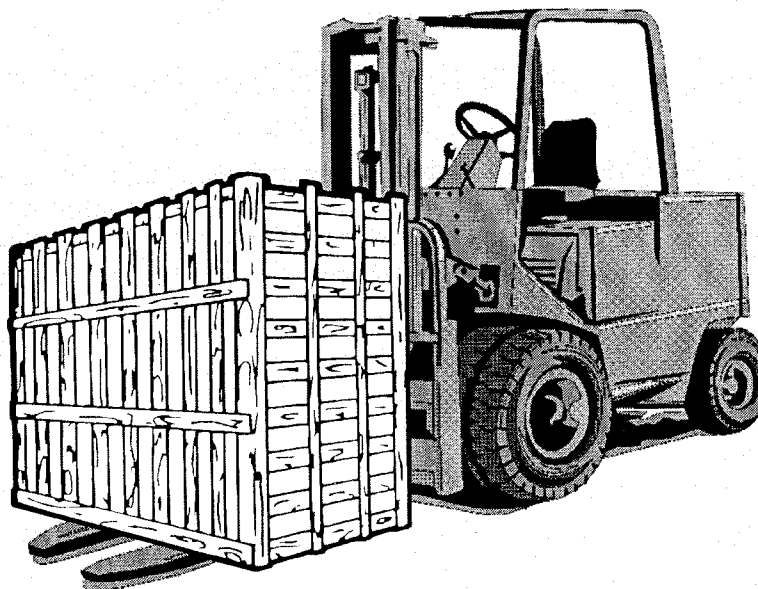
1.6 WARNINGS

- 1 The personnel operating with TEKNOFRUIT DF1200 should be aware of, and comply with the general safety rules.
- 2 Non compliance with said rules may result in injuries and damage to the personnel and the machine.
- 3 The user must comply with the speed, pressure, temperature limits, as well as with all the instructions supplied in this manual in order to keep the machine in proper operating condition.
- 4 When installing the machine, the national laws governing the use of machinery and the environmental conditions should be taken into account.
- 5 TEKNOFRUIT DF1200 is enabled to operate within the following extreme conditions
 - ambient temperature ranging from 5 °C to 40 °C
 - humidity ranging from 20% TO 90 %
- 6 The maintenance must be carried out in compliance with the instructions given in the relevant chapter of the manual, after disconnecting the machine disconnected from electric supply (general Switch no OFF) and from compressed air off (the shut-off valve of compressed air must be closed).
- 7 Any tampering with machine's safety system shall be at customer's risk and liability.
- 8 TEKNO-ICE declines any liability in case above directions are not complied with.

1.7 TECHNICAL CHARACTERISTICS

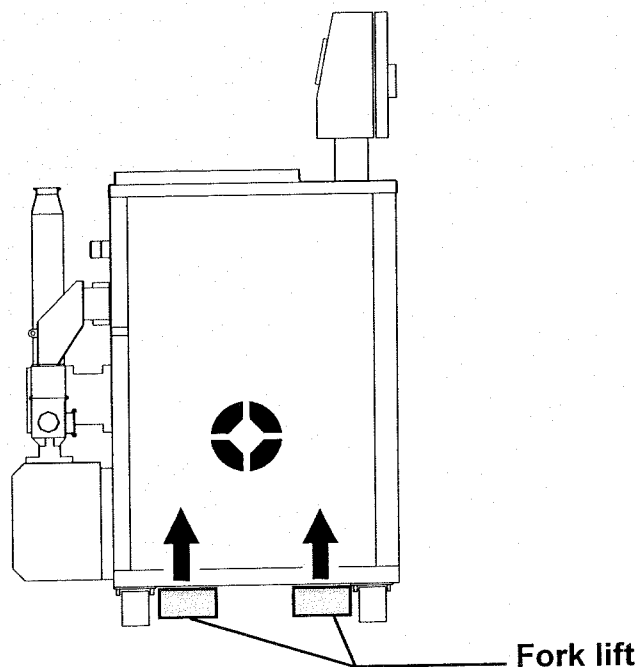
ICE CREAM PRODUCTION	
Minimum production	200lt/h
Maximum production	1200 lt/h
Inlet tubing	2"
Outlet tubing	2"
ELECTRIC SPECIFICATIONS	
Stirrer's Motor	0.12 kW
Motor of endless screw	0.25kW
Pump's motor	0,25 kW
Mixer's Motor	0.25 kW
Total Installed power	1.0 kW
Standard Voltage**	380 Volt
Standard Frequency	50 Hz
Phases	3
DIMENSIONS AND WEIGHT	
Width	600 mm
Length	920 mm
Height	1450 mm
Net Weight	230 kg
**Other voltages and frequency upon request	

Figure 2.3



The wooden box can be handled by means of a fork lift: make sure that forks are positioned as indicated in figure 2.4

Figure 2.4

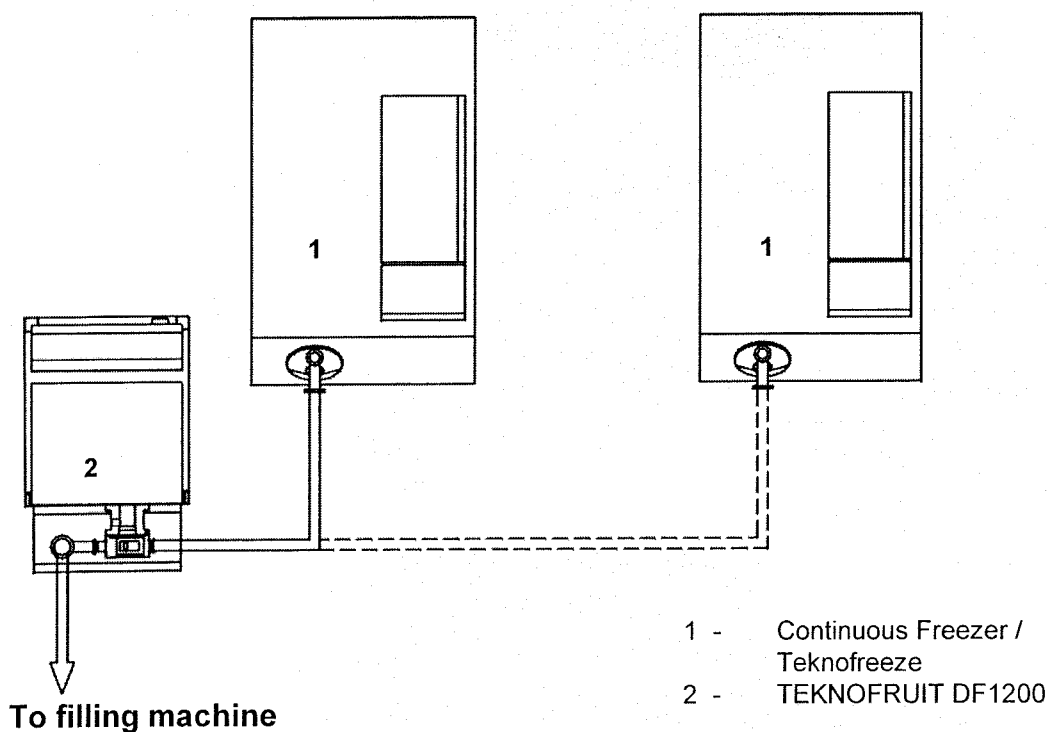


2.2 INSTALLATION

The TEKNOFRUIT DF1200 is ready for starting production after few simple operations.

Locate the TEKNOFRUIT DF1200 in the desired place, usually close to the continuous freezers that are expected to feed it. If the fruit-feeder is expected to feed a filling machine, locate it as near as possible to the latter and anyway at a distance not above 2 / 3 meters. Connect ice cream inlet tubing. Connect outlet tubing to the production line, in case the TEKNOFRUIT DF1200 feeds a filling machine.

Figure 2.5



2.3 ELECTRIC CONNECTION

WARNING : the electric connection must be carried out by and experienced electrician.

Check the data mentioned on the ID plate and make sure that machine's voltage and frequency are compatible with local electric supply.

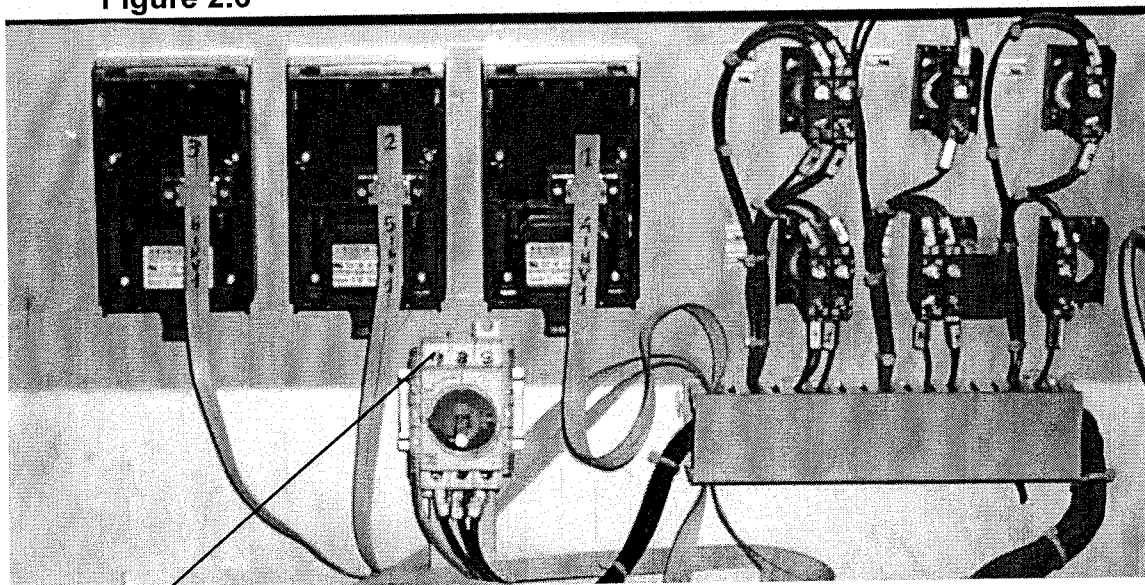
The TEKNOFRUIT DF1200 comes with a 5 meter (approx.) supply cable; in case the machine is located in a permanent place, connect the above cable to a safety switch installed in its close proximity, in compliance with the local rules.

Whilst, if the machine is located in the work place just for the production, it is advisable to connect a plug to the cable supplied with the machine and use a socket connected to a safety switch to get the machine connected to the electric supply.

In case the cable supplied has to be replaced with a longer one, make sure it has a cross-section not below 2,5 mm².

Warning : In case the electric supply to the machine comes from an anti-electrocution circuit breaker, this one must be an 'A' type in order to prevent unwanted interventions of the circuit breaker itself.

Figure 2.6



Connection to the electric mains line

2.4 CHECK POINTS BEFORE INITIAL OPERATION

Before starting the TEKNOFRUIT DF1200 it is necessary to carry out the following checks:

- 1) Make sure that all panels are duly mounted and that hopper's guard is closed
- 2) Release the emergency push-button located on the control panel cabinet, by turning it counter-clockwise.
- 3) Turn general switch, located on the back of control panel, to "ON"
- 4) Start the stirrer by means of the proper push button (Fig.2.7- part.2) and check the rotation direction to be the same as the one indicated by the arrow placed on the relevant motor. In any case the rotation should be clockwise when facing the machine from the front. Stop the stirrer with the relevant push button (Fig. 2.7 - part. 7). In case the rotation direction is not correct, invert two phases of the electric line.
- 5) The machine is factory-tested, therefore if the stirrer turns correctly, the other motors too should; anyway check again the rotation also for endless screw and pump, which should turn clockwise, when facing the front of the machine, and mixer, which should turn clockwise when facing it from above. (fig. 2.9 – 2.10 – 2.11)
- 6) Check all motors to turn freely and that their speed can be regulated from minimum to maximum value.

Warning:

- when hopper's guard is open, a micro-switch (fig. 2.8) will prevent stirrer from running.
- the pump can run without lubrication (ice cream / water) just for a few seconds.

Figure 2.7

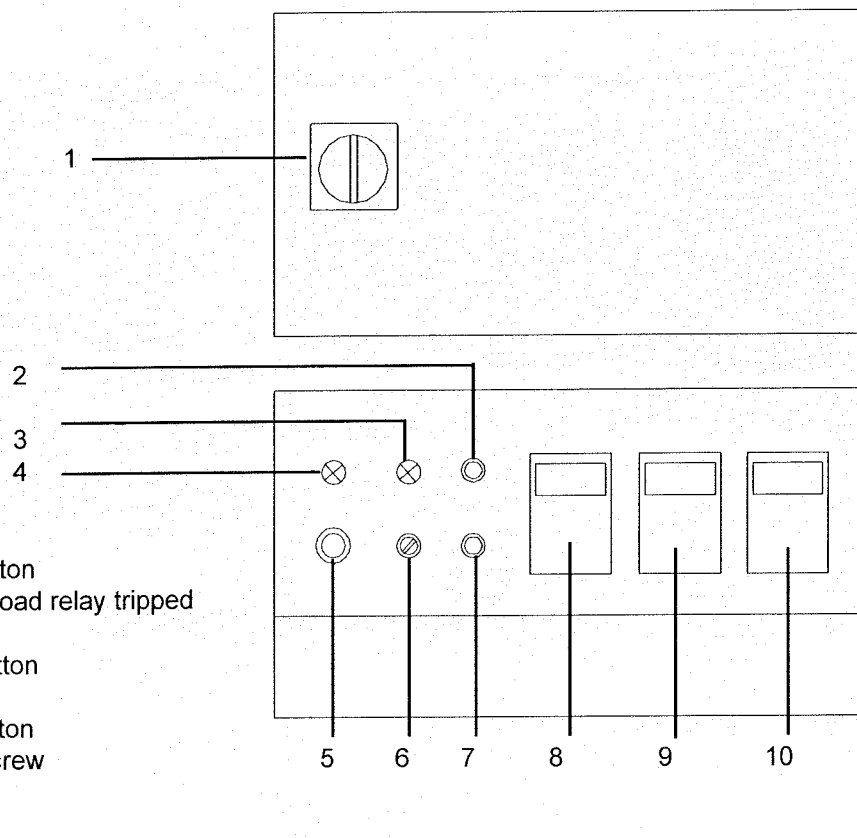


Figure 2.8 - Safety micro-switch

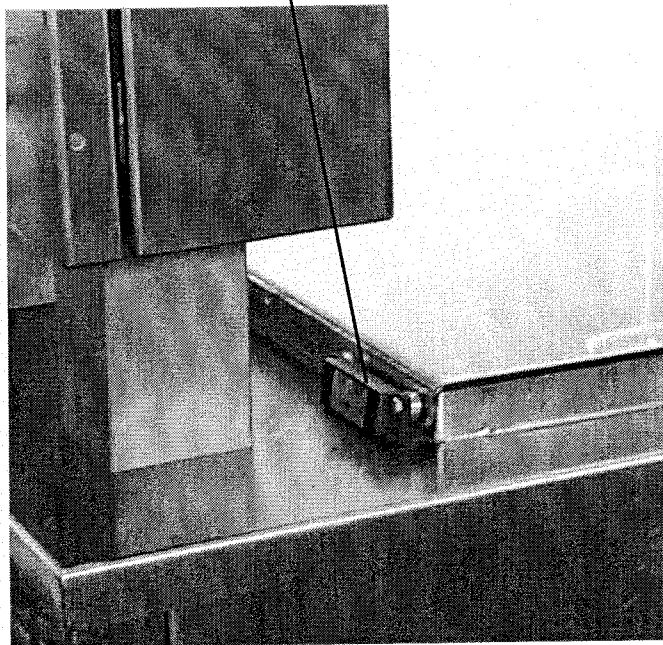


Figure 2.9 - Mixer

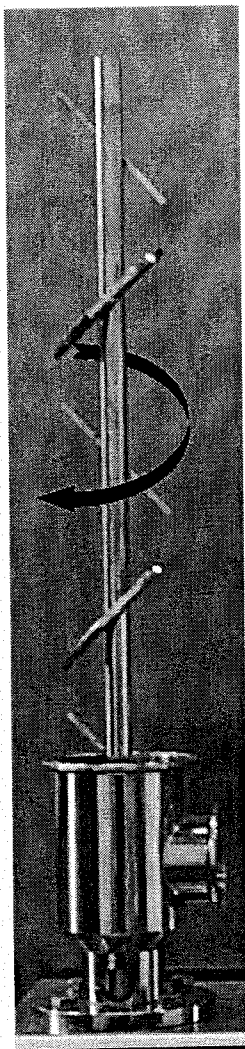


Figure 2.11 - Endless screw and pump

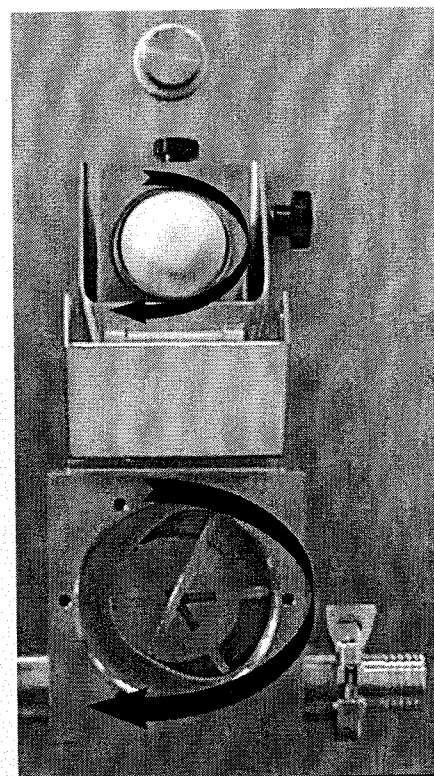
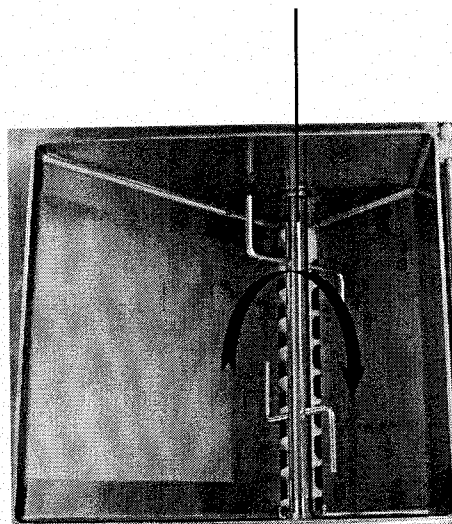


Figure 2.10 - Stirrer



3 - MACHINE DESCRIPTION

3.1 Machine description	22
3.2 Operation	25
3.3 Controls at operator's disposal	26

3.1 Machine Description

The TEKNOFRUIT DF1200 machine is entirely built in stainless steel. The inner parts can be easily dismantled for inspection or maintenance purposes.

The main parts of the machine are:

- **framework in stainless steel** - mounted on wheels
- **dispensing unit** - it consists of a main hopper with stirrer for the ingredients (Fig. 3.1), an endless screw (Fig. 3.1) for dispensing the same and a secondary hopper, located between the outlet of the primary hopper and the feeding of the blade pump. The main hopper has a transparent cover enabling to inspect the quantity of remaining fruit; in case the cover is opened, a safety device stops the stirrer.
- **pump unit** - it consists of a head with a rotor, inside which the blades slide in radial direction (Fig. 3.3). A cam housed inside the head guides the blades. The special design of the pump enables to separate the line of the ice cream under pressure, from the external environment. The main function of pump is to dispense continuously the ingredients into the ice cream flow.
- **mixer unit** - it consists of a shaft with tilted fins, rotating inside the ice cream outlet tubing, it improves the dispersal of ingredients into the ice cream.
- **electric system** - it consists of a power cabinet board and a control board, with general switch, emergency push-button, independent controls and regulation devices for all the functions.
- **set of sanitary tubing**, which can be dismantled without using tools

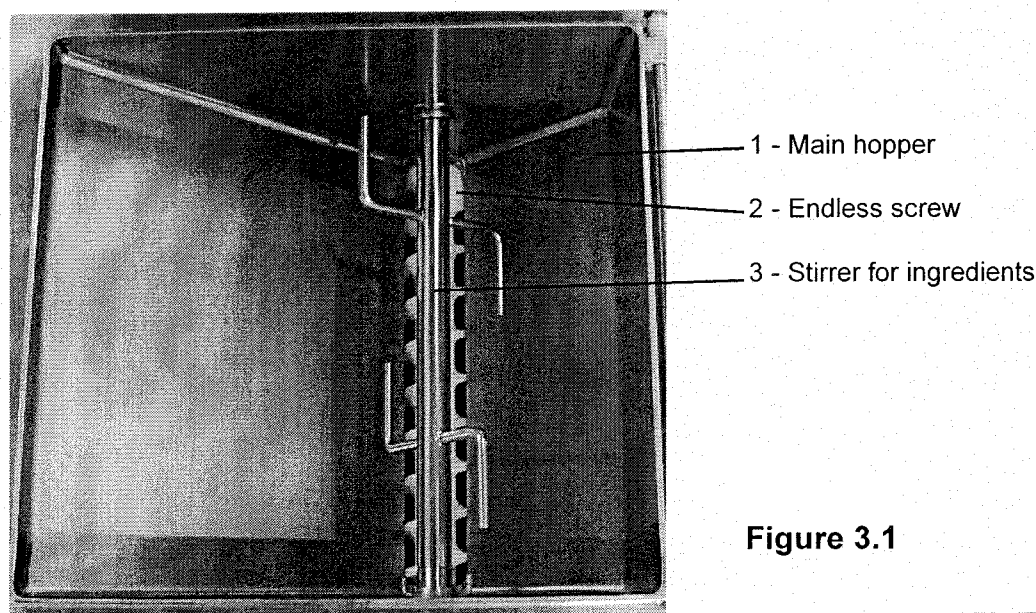
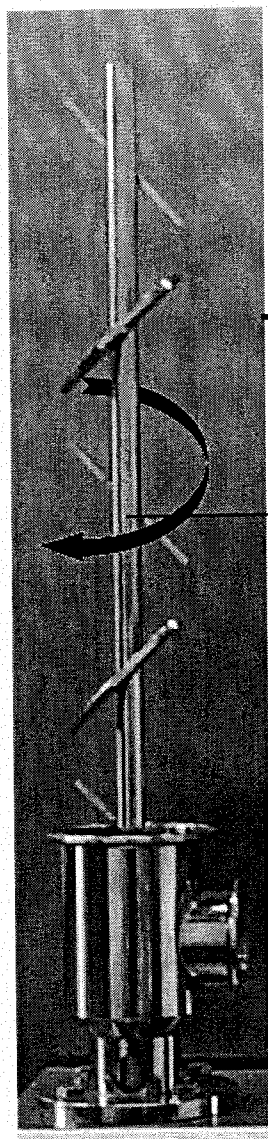


Figure 3.1

Figure 3.2



1 - Mixer shaft

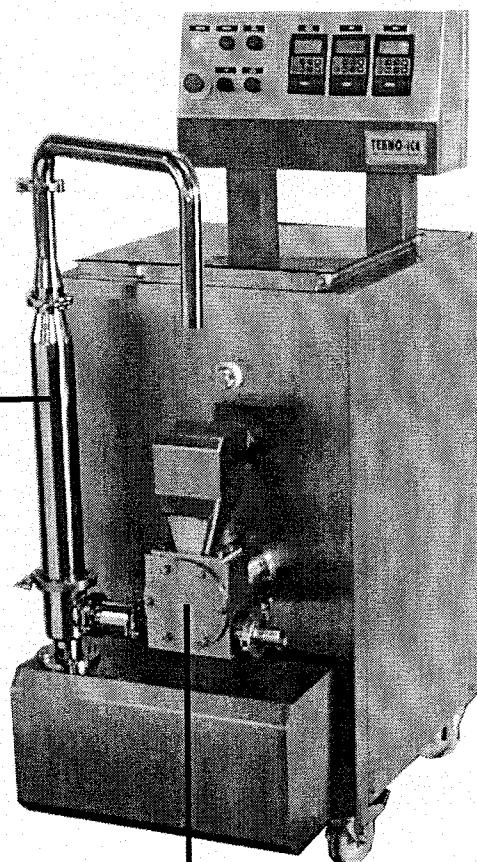


Figure 3.3

1 - Knob for locking stirrer

2 - Endless screw

3 - Secondary hopper

4 - Cover of secondary hopper

5 - Pump head

6 - Pump rotor

7 - Pump blades

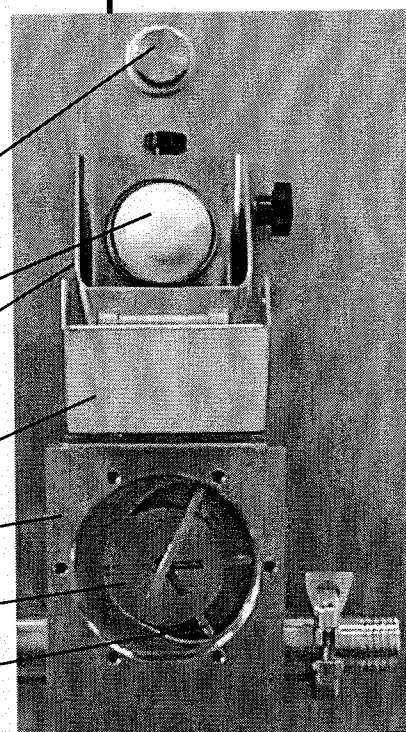
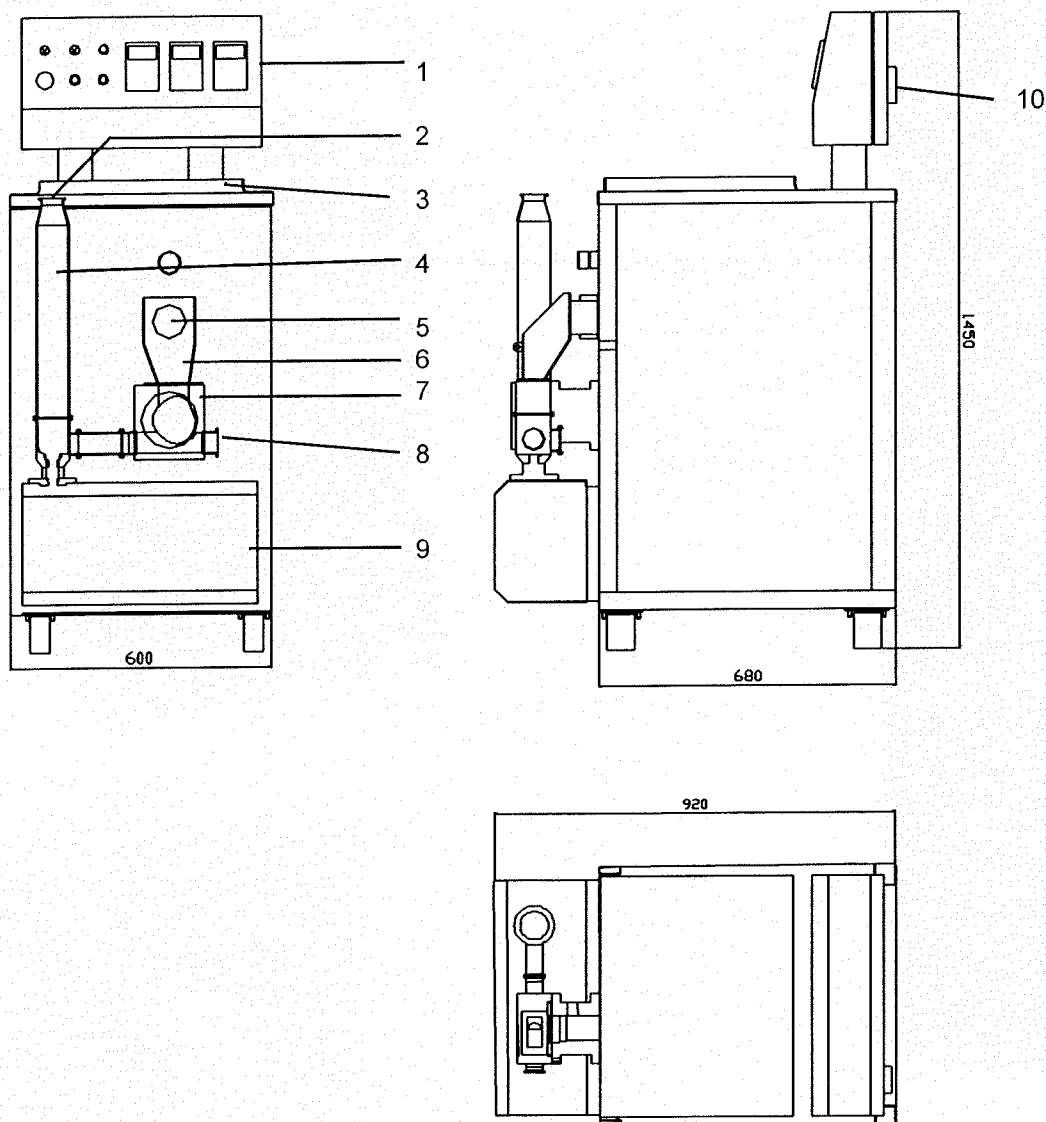


Figure 3.4



- 1 Control Board
- 2 Ice cream outlet tubing
- 3 Main hopper cover
- 4 Ice cream / ingredients mixing tubing
- 5 Ingredient dispensing endless screw
- 6 Secondary hopper
- 7 Pump unit
- 8 Ice cream inlet
- 9 Protection guard for mixer's motor-reducer
- 10 General switch

TEKNO-ICE srl via Lazio n.37 - 20090 Buccinasco Milano - Italy

Tel. +39-02-4886761 R.A. fax +39-02-4882153 P.IVA 10769090159 - E-mail teknoice@teknoice.com

COD. REVISIONE 00 novembre 2000

3.2 OPERATION

The components of the fruit-feeder, TEKNOFRUIT DF1200, are entirely built in stainless steel. The main function of TEKNOFRUIT DF1200 lies in adding and mixing into the ice cream, fresh or candied fruit, chocolate chips or other dry products, as usually used in the ice cream industry. The fruit-dispenser can be used in production lines between one or more continuous freezers and one filling machine, (if it is prearranged to meter ice cream with fruit), or to manually fill boxes with ice cream added with fruit.

The ingredients contained in the main hopper are continuously stirred up by the stirrer running at a constant speed, while the Endless 's screw located on the shaped bottom of the hopper itself, feeds the ingredients to the secondary hopper and then to the pump, in a variable quantity, according to the speed that has been set.

The endless 's screw is built in food-grade material and is available in different versions, according to the type and quantity of fruit you intend to insert into the ice cream.

The speed of endless 's screw can be easily regulated and is displayed by the relevant control dial on the electric panel.

The ingredients fed by endless 's screw fall directly into the feed opening of blade pump; the whole assembly is protected by the secondary hopper in order to prevent polluting ingredients and parts in contact with the ice cream, besides preventing incorrect and dangerous operations by the operator. The secondary hopper is provided with a cover for the visual inspection of its inside.

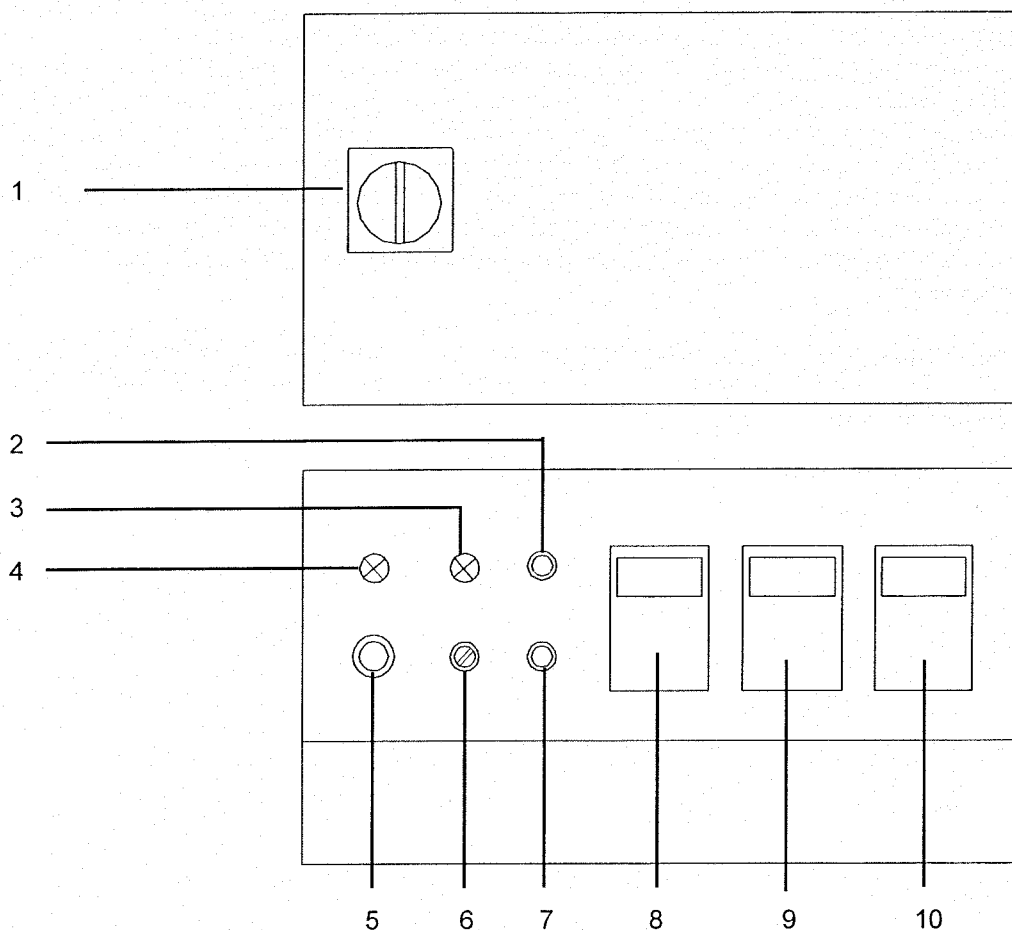
The ingredients are then continuously added to the ice cream flow by means of the blades fitted on pump rotor. It is possible to vary rotor's rotation speed to graduate the insertion of ingredients into the ice cream according to the hourly output of same. Pump's rotor speed can be easily regulated and is displayed by the relevant dial on electric control board. Immediately downstream of the pump the ice cream goes into the mixing tubing, where the shaft with tilted fins effects an optimum dispersal of ingredients. Mixer's speed can be regulated in order to enable the expected mixture of ice cream / ingredients. Mixer's speed can be easily regulated and is displayed by the corresponding dial on electric control board.

Warning: sticky, hygroscopic or liquid ingredients are not suitable for use with TEKNOFRUIT DF1200. Some ingredients, such as raisins should be washed and drained before use. The maximum dimension of solid ingredients is 15 mm.

3.3 CONTROLS AT OPERATOR'S DISPOSAL

- 1) General switch – located on the rear side of the electric control board, enables / disables all the functions
- 2) Stirrer start push button
- 3) Signal lamp for overload relay intervention - advises the intervention of an overload relay
- 4) Power signal lamp – advises that voltage is applied to the machine
- 5) Emergency push button – if pressed, it instantly disables all the functions
- 6) C.I.P. selector switch - it enables the cleaning sequence
- 7) Stirrer stop push button
- 8) Keyboard for endless 's screw - it enables to start and stop the endless 's screw, and also to regulate and display its speed.
- 9) Keyboard for pump – it enables to start and stop the pump, and also to regulate and display its speed.
- 10) Keyboard for Mixer - it enables to start and stop the mixer, and to regulate and display its speed.

Figure 3.5



4 - PRODUCTION

4.1 Preliminary operations	28
4.2 Start up	29
4.3 Adjustments during production	30
4.4 End of production	31
4.5 Emergency stop	32

4.1 PRELIMINARY OPERATIONS

Before starting ice cream production make sure that:

- 1) the general switch located on the rear side of the electric control board, is "ON"
- 2) the emergency push button (Fig. 4.1 – part 2) is released and the power signal lamp (Fig. 4.1 – part 1) is on.

- 3) you have thoroughly cleaned and sanitized the machine as described in the relevant chapter.

If required, drain all the water or the sanitizing solution from the machine.

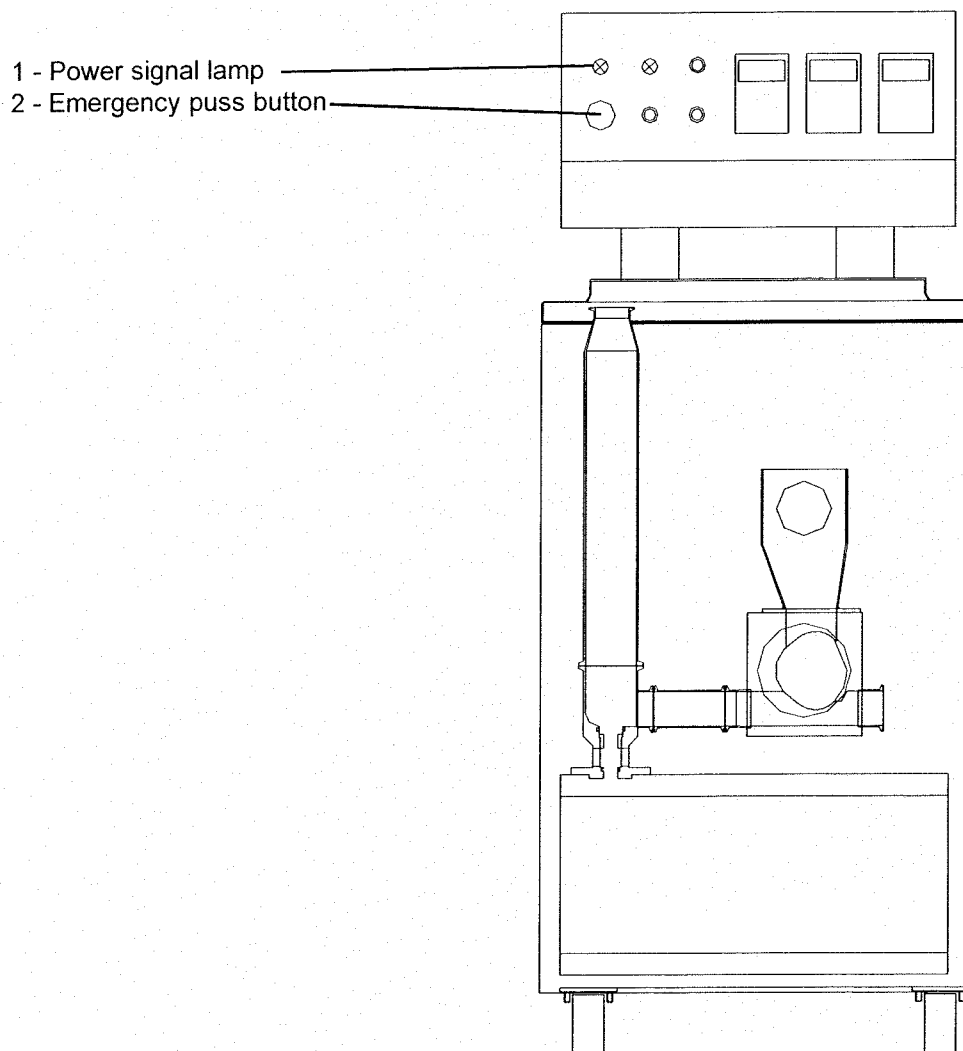
- 4) sanitary tubings are correctly assembled, with the clamp unions duly tightened.

- 5) the endless screw fitted on the machine is the most suitable for the expected production.

Warning: the machine comes equipped with the standard endless 's screw having a 25 mm pitch, which can be regularly used with all types of ingredients. For special requirements or products, other types of endless 's screws with a different pitch are available as optional devices.

- 6) all the panels are fitted and the hopper's cover is closed

Figure 4.1



4.2 START UP

- 1) Connect the ice cream tubing to the corresponding union (fig. 4.2 – part 1); if TEKNOFRUIT DF1200 is fed by two freezers, use the “Y” union (Fig. 4.3 – part 1) supplied with the spare parts kit.
- 2) prepare the ice cream outlet tubing (only in case the TEKNOFRUIT DF1200 feeds a filling machine)
- 3) fill the main hopper with the ingredients you intend to insert into the ice cream and start the stirrer.
- 4) start the continuous freezers to feed the TEKNOFRUIT DF1200
- 5) start the blade pump, only after the ice cream has reached it, and regulate pump speed to the minimum; warning: the first ice cream batch which is still liquid, might return up into the secondary hopper. Increase slightly pump speed to prevent it.
- 6) wait for the ice cream to flow out in a continuous way and at the required hardness, then start endless 's screw and mixer.
- 7) regulate the speed of endless 's screw according to the quantity of fruit you intend to insert into the ice cream.
- 8) regulate pump speed according to the ice cream output and to the distribution required for the fruit.
- 9) regulate mixer's speed to obtain the required dispersal of fruit into the ice cream.

1 - Inlet of ice-cream

Figure 4.2

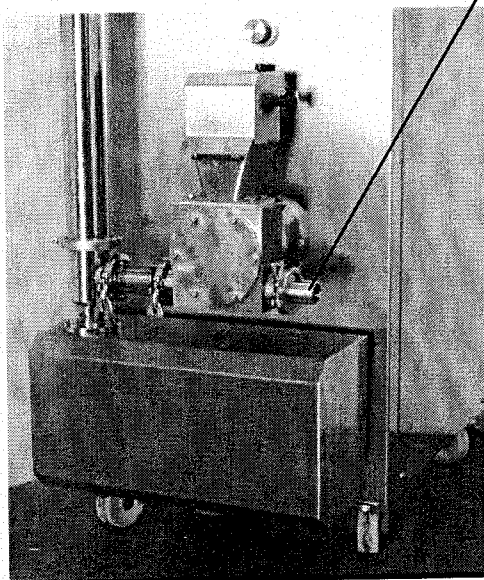
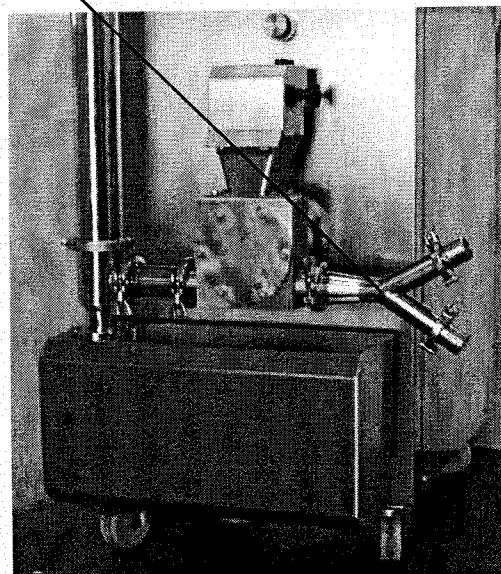


Figure 4.3



4.3 ADJUSTMENTS DURING PRODUCTION

No special adjustments are required during production, except those required for varying the quantity of the dispensed fruit, its distribution into the ice cream flow and the subsequent dispersal into it.

To vary the quantity of dispensed fruit, use the keyboard (Fig. 4.4) for Endless screw, by pressing "increase" or "decrease" arrow, thus increasing or decreasing rotation speed of Endless's screw and as a consequence you will increase or decrease also the quantity of fruit inserted into the ice cream.

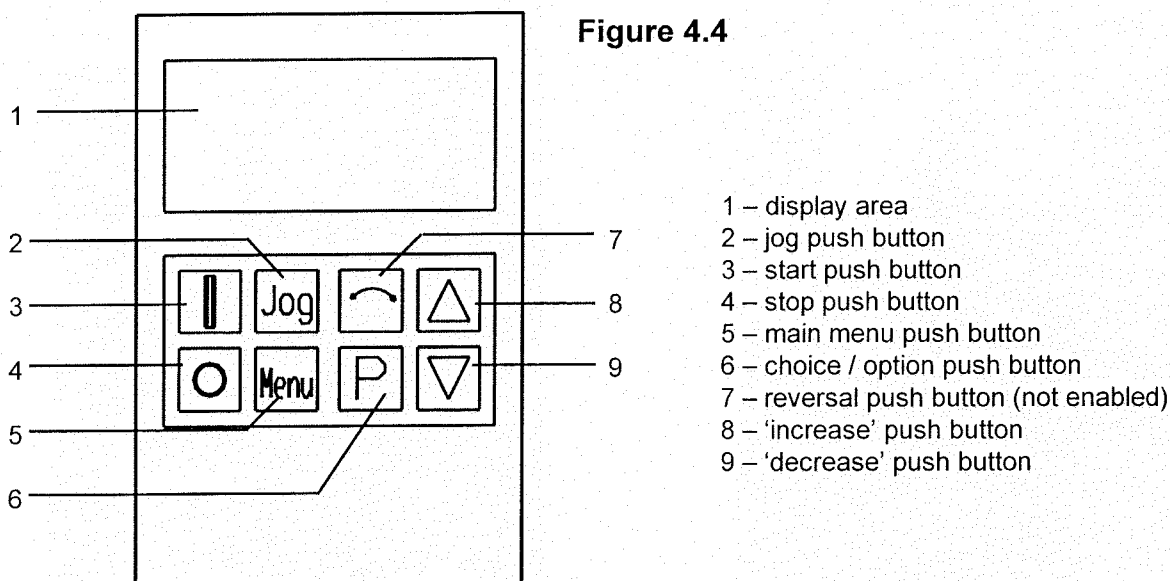
To vary the distribution of fruit into the ice cream flow, use the keyboard (Fig.4.4) for the pump, by pressing "increase" or "decrease" arrow, thus increasing or decreasing the rotation speed of pump, and as a consequence you will increase or decrease the concentration of the ingredients inserted into the ice cream flow.

To vary the dispersal of fruit into the ice cream flow, use the keyboard (Fig. 4.4) for the mixer, by pressing "increase" and "decrease" arrow, thus increasing and decreasing the rotation speed of mixer and as a consequence you will increase or decrease the dispersal of ingredients inserted in the ice cream flow.

Warning:

if pump speed is too low with respect to ice cream flow, this may return up into the secondary hopper; therefore increase pump speed until you don't notice any more ice cream in the secondary hopper. Pay attention not to increase excessively the speed, otherwise you might cause an unwanted air insertion into the ice cream.

- when using too sticky products, they might fall into the secondary hopper and remain there, thus clogging it; use a plastic spatule to move the ingredients onward, paying attention not to collide against the blade pump. Do not use the above-mentioned products, otherwise wash and drain them before use.



4.4 END OF PRODUCTION

To end the production run:

- 1) Stop the ice cream flow coming from the freezers and let clean water get into it instead of the ice cream.
- 2) Stop stirrer and endless 's screw, so as not to waste the product.
- 3) Reduce the rotation speed of pump and mixer down to the minimum.
- 4) Wait until clean water flows out of the machine, then stop also the pump and the mixer.
- 5) If a CIP plant is available, see chapter 5 "Cleaning" and follow the instructions. If a CIP plant is not available, comply with the following instructions:
- 6) Press the emergency push button and turn off the power supply to the machine, by turning the general switch to "OFF"
- 7) Disconnect the ice cream inlet tubing to drain the water left in the pump, in the mixing tube and in the tubings. Disassemble the outlet and the ice cream mixing tubing and the secondary hopper (Fig. 4.6). Remove the pump cover and draw out blades and rotor, using the special extractor supplied with the spare parts kit (Fig. 4.5)
- Warning: the components should be disassembled only by technical staff, paying attention not to damage the surface of blades, rotor and pump cover (all these pieces have limited mechanical tolerances) so that their operation is not impaired.
- 8) Turn anticlockwise and then remove the knob for locking the stirrer, disassemble the stirrer and draw out endless 's screw (Fig. 4.6)
- 9) Thoroughly wash the hopper and all the above-mentioned components, then rinse and properly reassemble them.
- 10) Now release the emergency push button and apply again voltage to the machine, by turning the general switch to "ON".
- 11) Circulate a disinfectant solution in the fruit feeder, feeding it by means of the continuous freezer; then drain the solution by removing the inlet tubing. Rinse with water the fruit feeder before starting a new ice cream production run.

Figure 4.5 - Drawing out of rotor

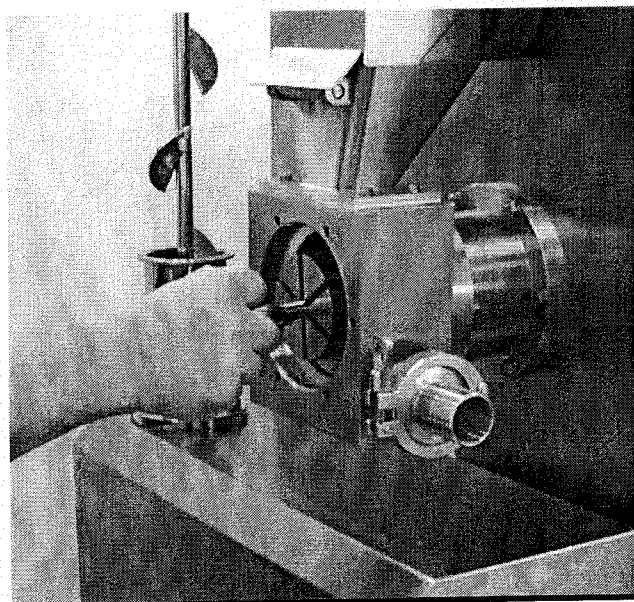
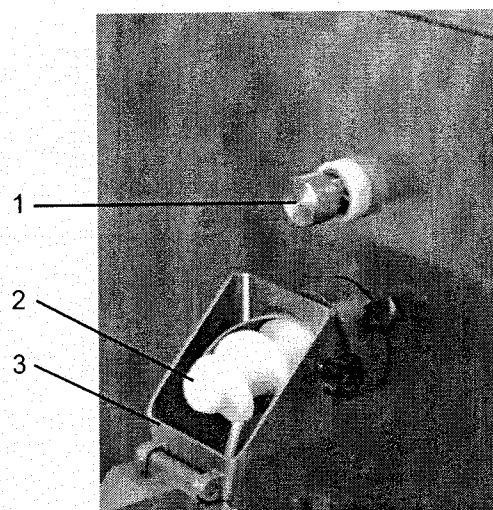


Figure 4.6

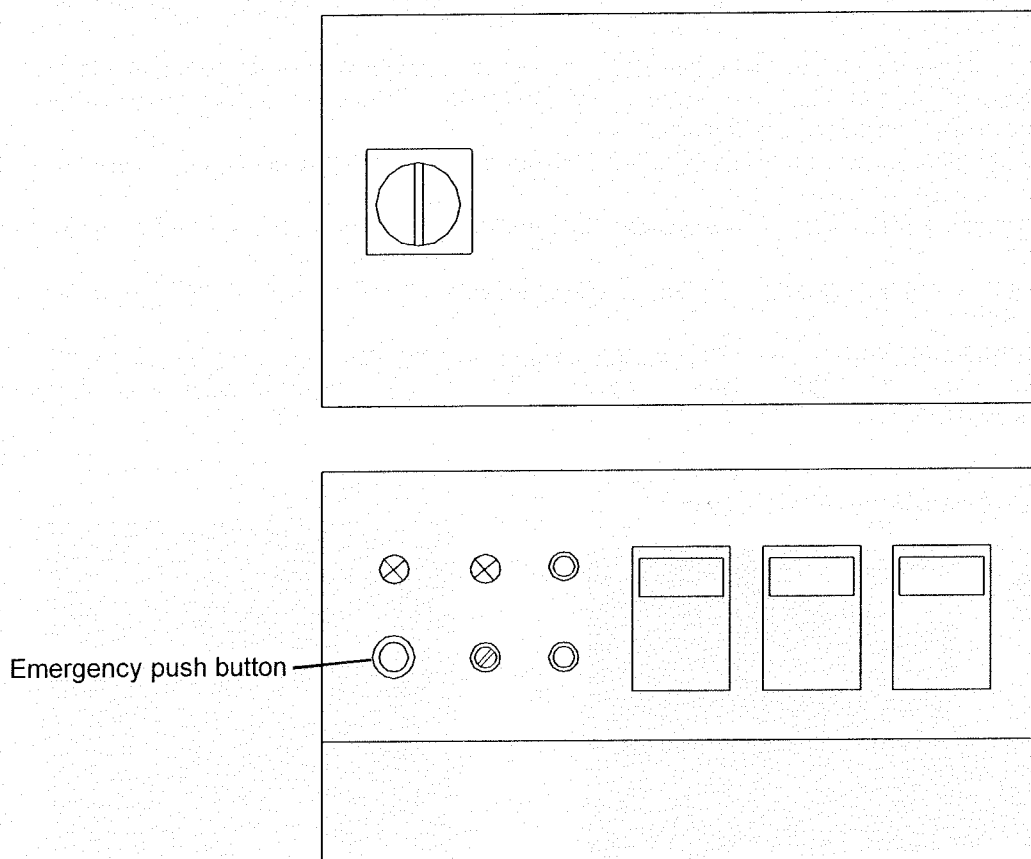


- 1 – Knob for locking stirrer
- 2 – Endless 's screw
- 3 – Secondary hopper

4.4 EMERGENCY STOP

In the event that, during production, it werw necessary to disable immediately all machine's functions, press the emrgency push button: all the functions will be disabled and it will not be possible to activate them again untill the push button is not released, by turning it anticlockwise.
To resume production, release the emergency push button and repeat the starting sequences as described in start up para.

Figure 4.7



5 - CLEANING

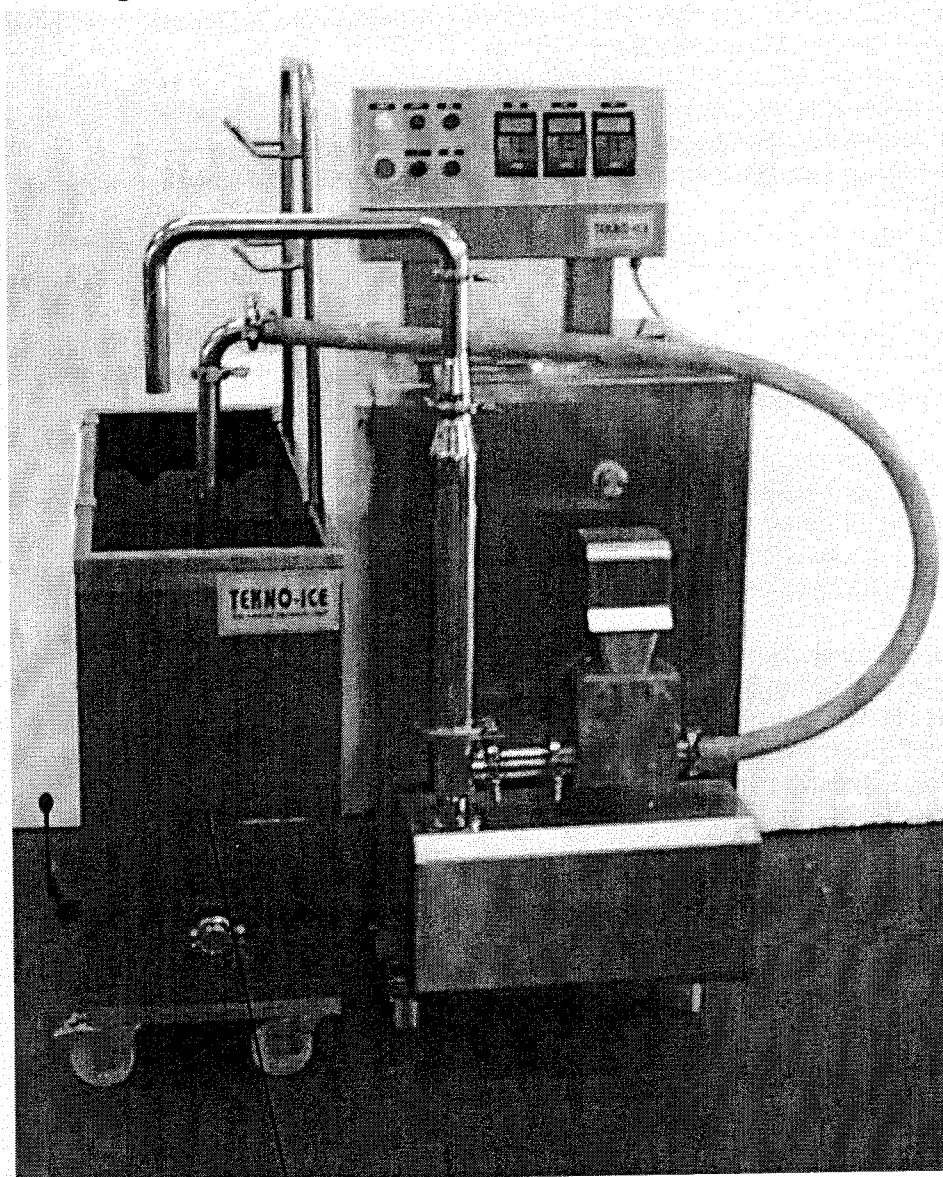
5.1 C.I.P Cleaning

34

5.2 Recommended Cleaning Program

35

Figure 5.1



Washing unit - C.I.P. (not supplied)

5.1 - C.I.P. Cleaning

At the end of the production run the TEKNOFRUIT DF1200 must be washed and sanitized. In this aim the machine is prearranged for CIP (Cleaning in Place) Cleaning without having to disassemble the main parts. For CIP Cleaning follow these instructions:

- 1) At the end of production run, stop the ice cream flow coming from the freezers and let clean water go to the fruit feeder instead of ice cream.
- 2) Stop stirrer and endless screw so as not to waste the product
- 3) Reduce rotation speed of pump and mixer down to the minimum
- 4) Wait until clean water flows out of the machine, then stop pump and mixer .
- 5) Turn anticlockwise and then remove the knob locking the stirrer, dismantle the stirrer and draw out endless screw.
- 6) Thoroughly wash hopper, stirrer and Endless screw, then rinse and properly reassemble them.
- 7) Connect delivery and return tubings of your CIP system respectively to pump's inlet and to ice cream's outlet.
- 8) Start you CIP system.
- 9) Turn selector switch to "CIP" and carry out the cleaning program (see table at the following page). It usually consists of a 5-step cycle:

- a) Rinsing with throw-away water
- b) Washing with recirculating detergent
- c) Rinsing with throw-away water
- d) Cleaning with a recirculating descaling solution
- e) Final rinsing with throw-away water

- 10) Turn selector switch to "0", then stop your CIP system.
- 11) Disconnect you CIP system
- 12) Let a disinfectant solution flow through the fruit-feeder by means of a continuous freezer or a centrifugal pump; then drain the solution by removing the inlet tubing. Rinse the fruit-feeder with water before starting a new ice cream production.

5.2 - Recommended cleaning program

Cleaning steps		Length	Temperature
1	Pre-cleaning with throw-away water	2 min.	15/20 °C
2	Detergent cleaning: 0.5 % caustic soda solution with poliphosphate additives. Recirculating the solution	10 min	65/70 °C
3	Rinsing with throw-away water	3 min.	15/20 °C
4 *	Descaling cleaning: solution with citric or acetic acid with Ph = 3.5 / 4.5. Recirculate the solution	5 min.	65/70 °C
5 *	Final rinsing with throw-away water	5 min.	15/20 °C
6 ***	Disinfecting solution	***	15/20 °C

* While the first three steps must be carried out each time a production is completed, the fourth and the fifth step can be carried out just once in a week.

*** At the end of the cleaning cycle, it is advisable to circulate a disinfecting solution in the machine. This must be drained and the system must be rinsed with clean water, before the subsequent production run takes place.

The above-mentioned times are approximate and the program is effective from the bacteriological point of view.

The waste water of the cleaning operations must be disposed of in compliance with the local rules in force.

Warning:

- Do not use acid or chlorine detergents with the exception of those recommended in the relevant table
- The chloridric acid attacks stainless steel and chrome, causing micro-porosities
- Do not utilise temperatures above 70°C
- Much attention should be paid in choosing detergents and disinfecting solutions; to concentrations, temperatures and to time periods they remain in contact with the materials the freezer is made of.
- Comply with the directions for use as recommended by the manufacturers of solutions.
- All the parts which come in contact with the product and with the washing solutions are manufactured in:

Stainless steel series AISI 304
Acetalic resin (Hostaform)
Buna Rubber
Delrin

All the mechanical parts in contact with the product
Bushings
Gaskets
Endless screw

6 - MAINTENANCE

6.1 Mechanical maintenance	37
6.2 Maintenance of the electric system	42

6.1 Mechanical maintenance

Warning: In order to avoid serious hazards both to persons and to the machine, we strongly recommend that maintenance be carried out by qualified personnel only. Before removing the side panels, press the emergency push buttons and cut off the voltage from the machine by means of the general switch.

Time	Operation	Reference	Part
2000 h	Replacement of endless screw	Fig. 6.4	2
2000 h	Replacement of pump gaskets	Fig. 6.3	2, 4
2000 h	Replacement of mixer gaskets	Fig. 6.1	9, 10
2000 h	Replacement of tubing gaskets	Fig. 6.1	2, 4, 7
4000 h	Replacement of stirrer bush	Fig. 6.6	2
6000 h	Replacement of rotor shaft gasket	Fig. 6.5	1
6000 h	Replacement of rotor ball-bearings	Fig. 6.5	2, 3

Figure 6.1

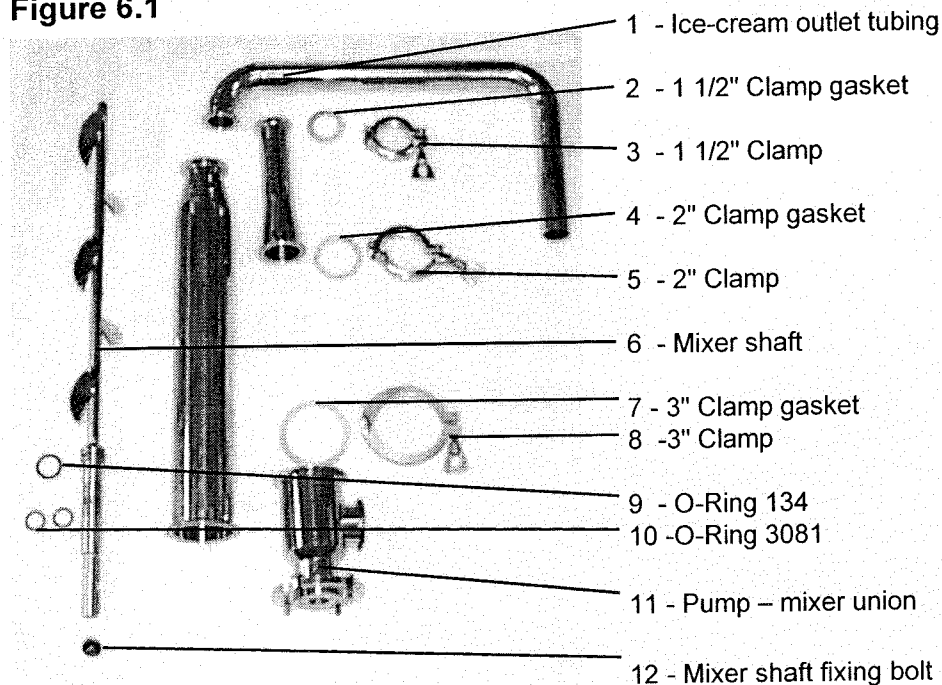
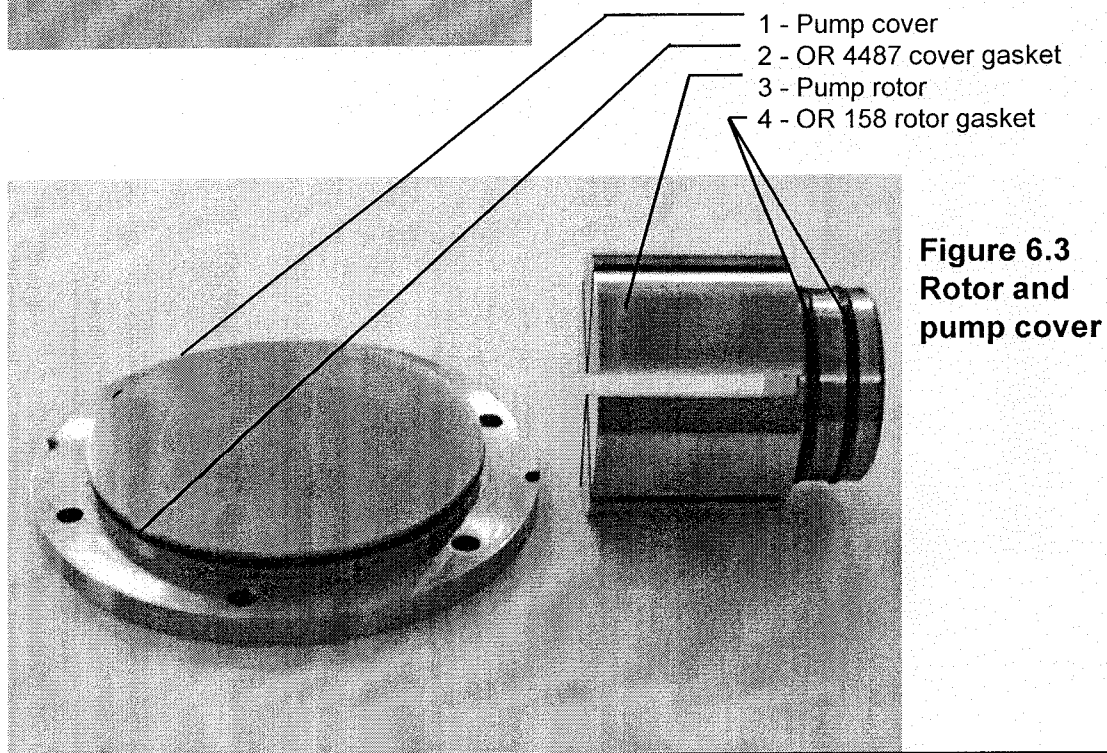
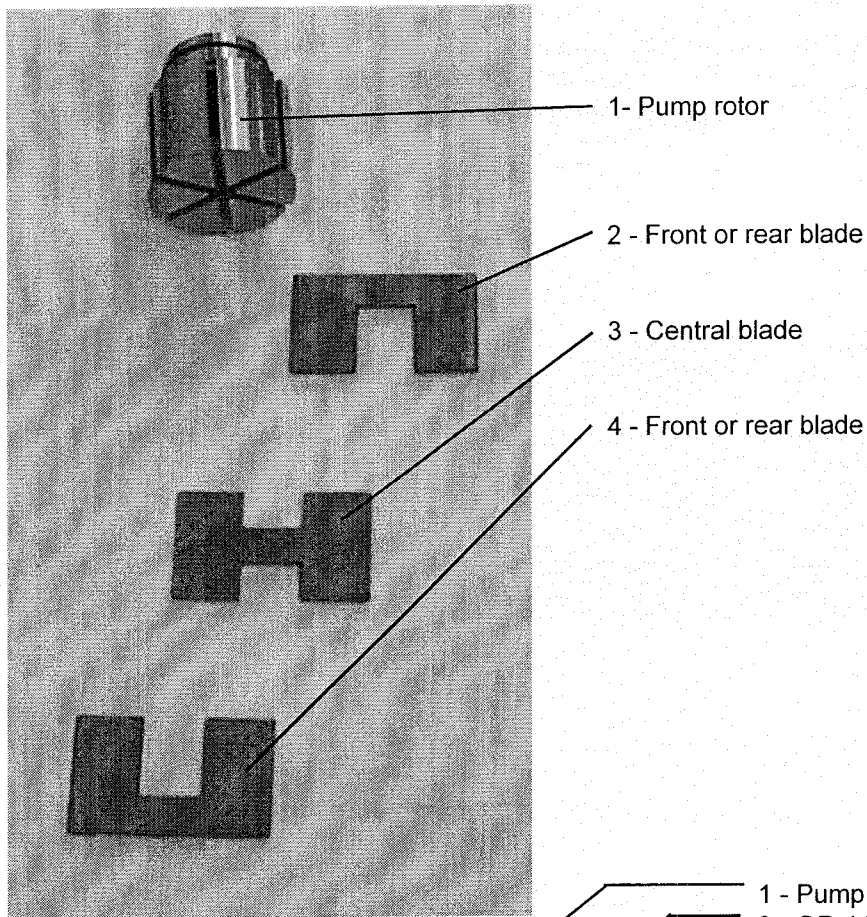


Figure 6.2 - Rotor and blade



**Figure 6.3
Rotor and
pump cover**

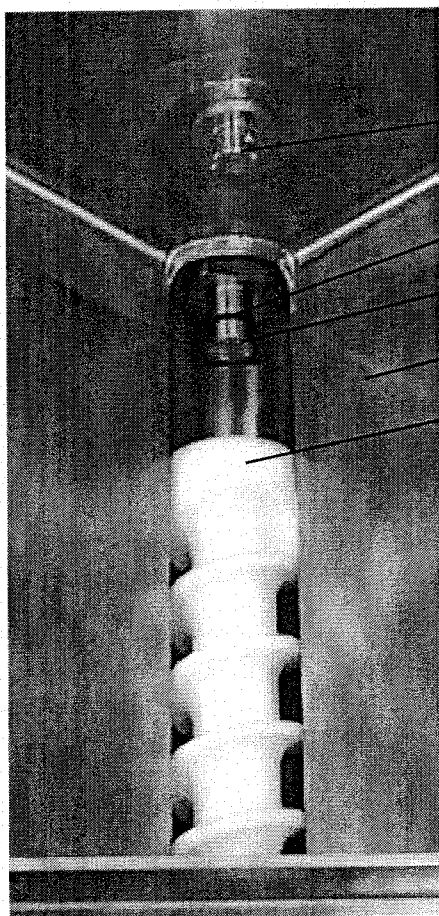


Figure 6.4 - Hopper's inside

- 1 - Stirrer pin
- 2 - OR 4067 Endless screw gasket
- 3 - Pin of Endless screw
- 4 - Hopper's inside
- 5 - Endless screw

Figure 6.5 - Pump unit

- 1 - AS 40/55/7 rotor shaft gasket
- 2 - SKF 6007 35/62/14 rotor shaft ball bearing
- 3 - SKF 6306 30/72/19 rotor shaft ball bearing

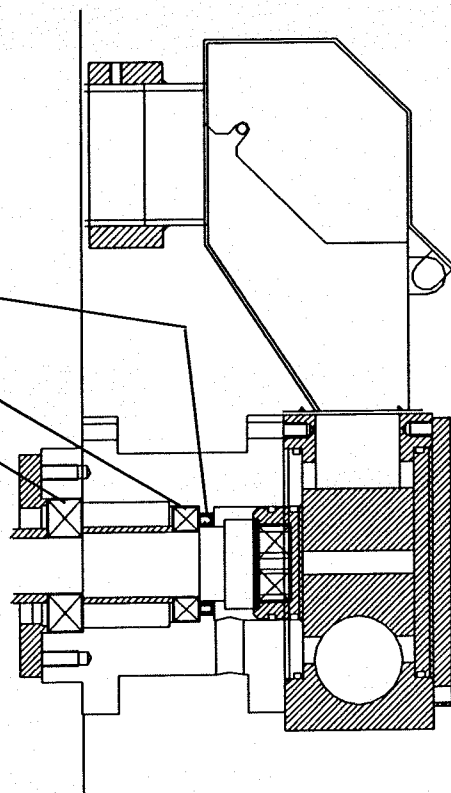


Figure 6.6

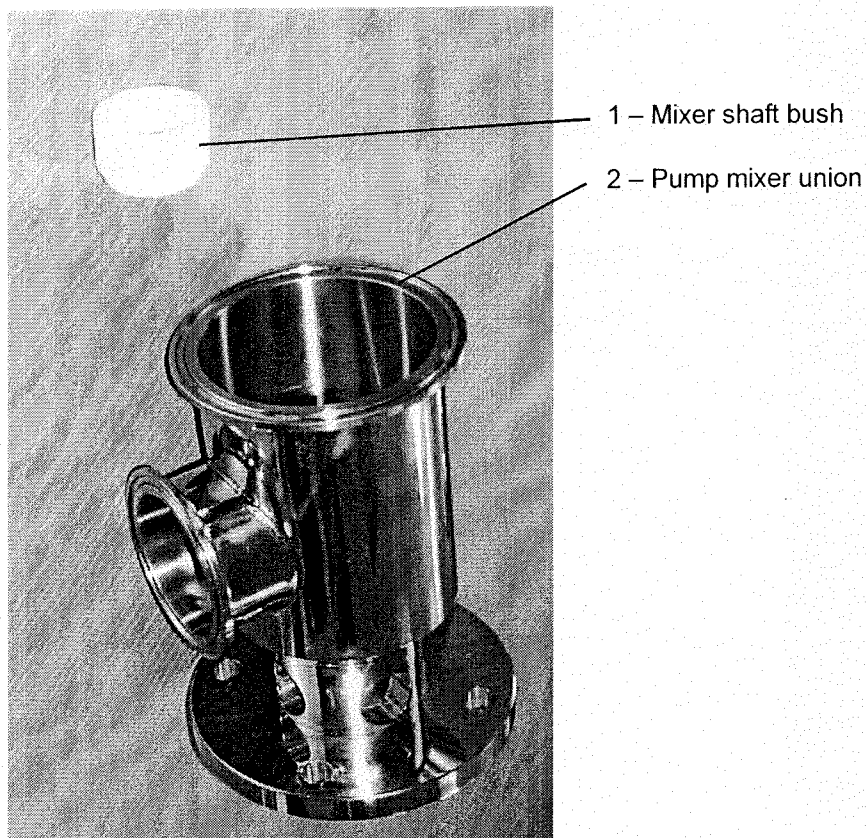


Figure 6.7

1 – Endless screw
Standard **



****Endless screw of different size are available on request for special products**



TEKNOFRUIT DF1200 - *instruction manual*

6.2 Maintenance of electric system

The electric system has been designed and built to ensure the maximum protection to machine's components.

Should a thermal overload trip, the corresponding function will be disabled and at the same time the signal lamp for overload tripped will light up (Fig. 6.9 – part. 3). Disable all the active functions, turn the general switch (Fig. 6.9 – part 1) to OFF and then open the door of the control panel to reset the tripped overload relay.

Should the overload relay trip again after the reset, this means that there is still something wrong and therefore it is absolutely necessary to check thoroughly the electric and mechanic system of the motor involved.

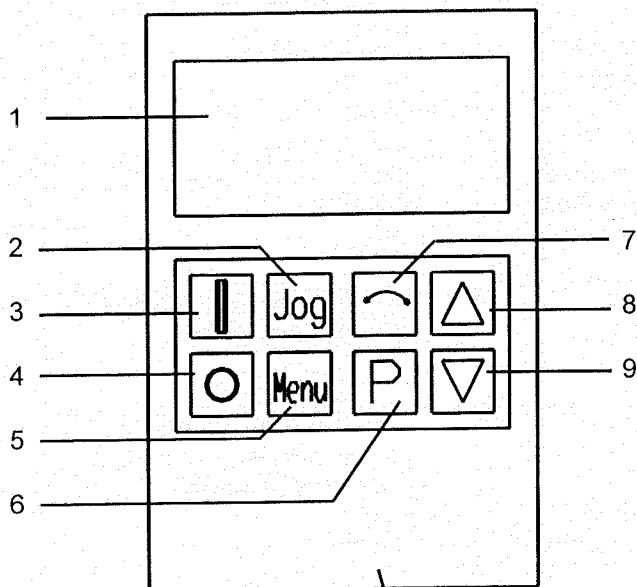
The control panel features an illuminated green push button (Fig. 6.9 part 2) to actuate the stirrer. When it is lit, it means that the stirrer is operating, and the red push button in the lower section (Fig. 6.9 part 7) serves to disable the stirrer.

Three small keyboards (Fig. 6.9 Part 8, 9 and 10) are installed on the electric panel to control the operation of endless screw, pump and mixer; besides communicating with the inverters and therefore controlling the operation of motors, they enable various functions:

- start and stop of relevant motors, by means of the proper push buttons (Fig. 6.8 – part 3 and 4)
- vary the speed rotation of the above motors, by means of 'increase / decrease' push buttons (Fig. 6.8 – part 8 and 9)
- keep the motors running for a short time (until the relevant push button is pressed), by means of the 'Jog' push button (Fig. 6.8 – part. 2)
- display the various parameters of motors, such as feed frequency, rotation speed, electric absorption; all these data are shown when starting them and after each speed variation for ten seconds. Afterwards the display area will show just one parameter (the feed frequency) in big characters.

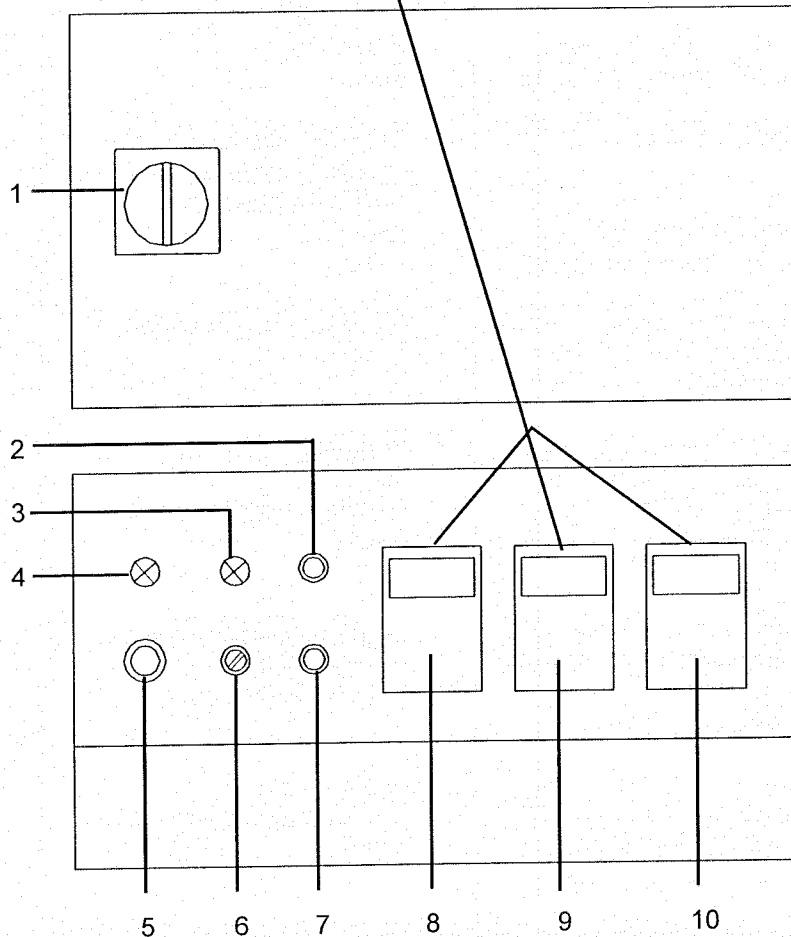
The illuminated selector switch (Fig. 6.9 – part 6), when turned clockwise, enables the CIP cleaning function; during all the cleaning time, which is shown by the intermittent lighting of the selector switch, pump and mixer motors are automatically actuated, without advice, for 20 seconds each 2 minutes.

Figure 6.8



- 1 – Display area
- 2 – Jog push button
- 3 – Start push button
- 4 – Stop push button
- 5 – Main menu push button
- 6 – Choice /option push button
- 7 – Reversal push button (not enabled)
- 8 – 'Increase' push button
- 9 – 'Decrease' push button

Figure 6.9



- 1 – General switch
- 2 – Stirrer start push button
- 3 – Tripped overload relay signal lamp
- 4 – Power signal lamp
- 5 – Emergency push button
- 6 – C.I.P. selector switch
- 7 – Stirrer stop push button
- 8 – Keyboard for endless screw
- 9 – Keyboard for pump
- 10 – Keyboard for mixer

7 – TROUBLE SHOOTING

Problem	Cause	Solution
Power signal lamp off	<ul style="list-style-type: none"> - Defective lamp - General switch In "OFF" - Emergency pressed - No power supply 	<ul style="list-style-type: none"> - Replace - Turn to "ON" - Release - Check
The stirrer does not start or stops	<ul style="list-style-type: none"> - Hopper's guard is open - Start push button defective - Overload relay tripped 	<ul style="list-style-type: none"> - Close - Replace - Reset
Start, adjustments or stop of Endless screw, Pump or Mixer is impossible	<ul style="list-style-type: none"> - Keyboard disabled 	<ul style="list-style-type: none"> - Replace keyboard battery / replace keyboard
Endless screw does not start or stops	<ul style="list-style-type: none"> - Inverter's failure - Overload relay tripped - Inverter protection tripped 	<ul style="list-style-type: none"> - Turn CIP selector, wait a couple of minutes, then turn it back to work position - Reset - Reset
Pump does not start or stops	<ul style="list-style-type: none"> - Inverter's failure - Overload relay tripped - Inverter protection tripped 	<ul style="list-style-type: none"> - Turn CIP selector, wait a couple of minutes, then turn it back to work position - Reset - Reset
Mixer does not start or stops	<ul style="list-style-type: none"> - Inverter's failure - Overload relay tripped - Inverter protection tripped 	<ul style="list-style-type: none"> - Turn CIP selector, wait a couple of minutes, then turn it back to work position - Reset - Reset
The ice cream goes up into the secondary hopper	<ul style="list-style-type: none"> - Rotation speed of pump too slow with respect to ice cream output 	<ul style="list-style-type: none"> - Regulate rotation speed of pump
The ingredients are not evenly distributed in the ice cream	<ul style="list-style-type: none"> - Rotation speed of pump too slow with respect to ice cream output - Rotation speed of mixer too slow 	<ul style="list-style-type: none"> - Regulate rotation speed of pump - Regulate rotation speed of mixer
Quantity of inserted ingredients is insufficient or excessive	<ul style="list-style-type: none"> - Rotation speed of endless screw is too slow or too high - Endless screw is not adequate 	<ul style="list-style-type: none"> - Regulate rotation speed of endless screw - Replace endless screw
The ingredients tend to stay in the secondary hopper, an to clog it	<ul style="list-style-type: none"> - Ingredients are too sticky - Rotation speed of pump is not adequate to rotation speed of endless screw 	<ul style="list-style-type: none"> - See para 4.3 - Regulate rotation speed of pump

TEKNO-ICE srl via Lazio n.37 - 20090 Buccinasco Milano - Italy

Tel. +39-02-4886761 R.A. fax +39-02-4882153 P.IVA 10769090159 - E-mail teknoice@teknoice.com

COD. REVISIONE 00 novembre 2000

8 – SPARE PARTS

8.1	Standard spare parts	46
8.2	Dispensing unit	47
8.3	Pump unit	48
8.4	Mixer unit	49

8.1 STANDARD SPARE PARTS

The machine comes with a standard spare parts kit.

They can be used either for the installation, such as tubings, hose clamps and hose-holders; for the regular operation of the plant, or to rapidly remedy minor problems that may occur during production.

8.2 Dispensing unit

Dispensing unit		
Component	Reference	Code
Motoreducer stirrer	Fig.8.2- item 1	C02571
O-ring 156	Fig.8.2- item 1.1	C02073
O-ring 4118	Fig.8.2- item 1.2	C01852
Pin stirrer	Fig.8.2- item 2	FF1058
Stirrer ingredient	Fig.8.2- item 3	FF1009
Stop pin stirrer	Fig.8.2- item 4	FF1010
Feeding ingredient adjustment	Fig.8.2- item 5	FF1059
Endless screw standard	Fig.8.2- item 6	FF1049
Pin auger	Fig.8.2- item 7	FF1058
O-ring 4067	Fig.8.2- item 7.1	C02338
Motoreducer endless screw	Fig.8.2- item 8	C02572
O-ring 4250	Fig.8.2- item 8.1	C02382
O-ring 144	Fig.8.2- item 8.2	C01736

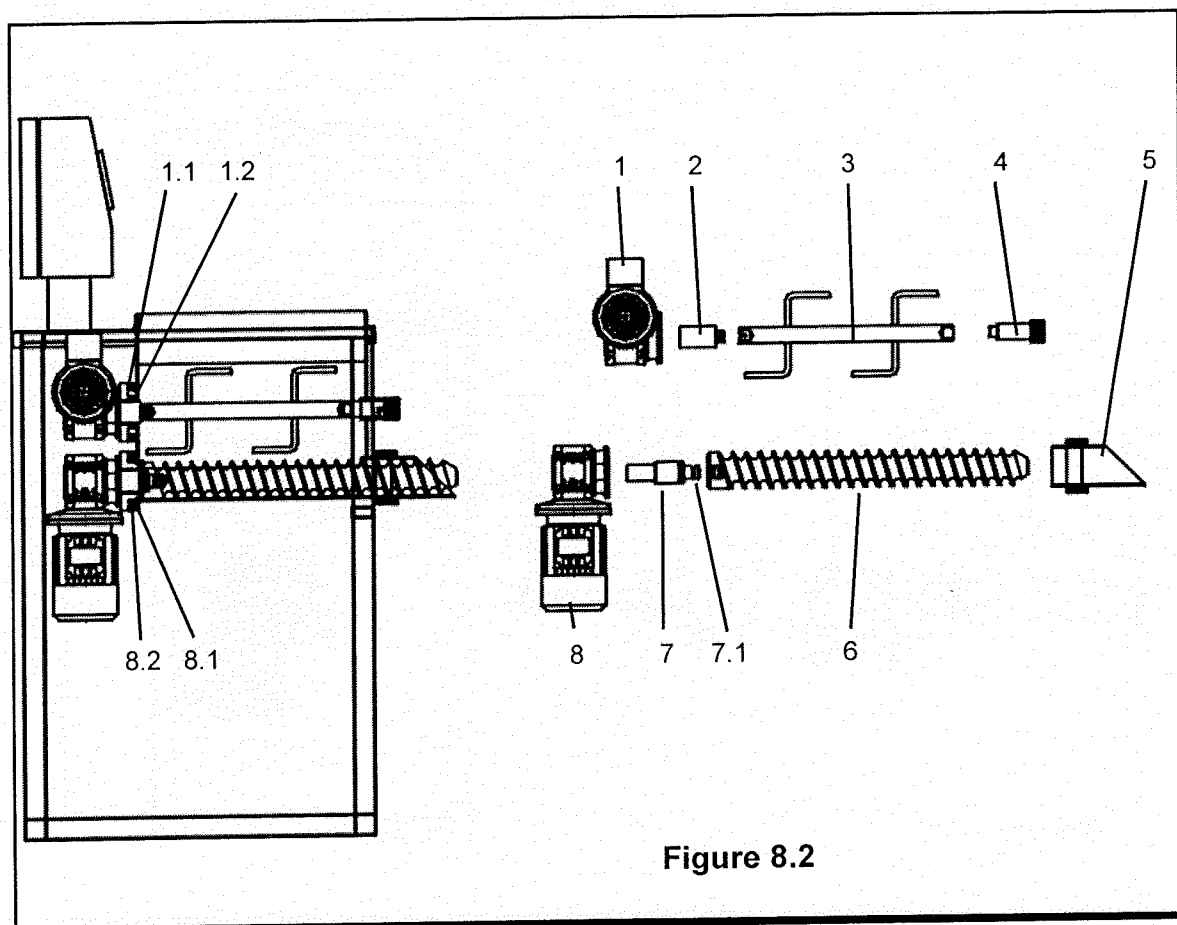


Figure 8.2

8.3 Pump unit

Pump unit		
Component	Reference	Code
Pump cover	Fig.8.3 – item 1	FF1027
O-ring 4487	Fig.8.3 – item 1.1	C02573
Front or rear blade	Fig.8.3 – item 2	FF1025A
Central blade	Fig.8.3 – item 3	FF1026A
Front or rear blade	Fig.8.3 – item 4	FF1025A
Rotor pump	Fig.8.3 – item 5	FF1023
O-ring 158	Fig.8.3 – item 5.1	C02074
Pump body	Fig.8.3 – item 6	FF1022A
Pump body support	Fig.8.3 – item 7	FF1021
AS 40/62/7 gasket	Fig.8.3 – item 7.1	C02384
SKF 6306 ball bearing	Fig.8.3 – item 7.2	C02386
SKF 6007 ball bearing	Fig.8.3 – item 7.2	C02385
AS 40/55/7 gasket	Fig.8.3 – item 7.3	C02383
Pin rotor	Fig.8.3 – item 7.4	FF1053
Motoreducer pump	Fig.8.3 – item 9	C02377

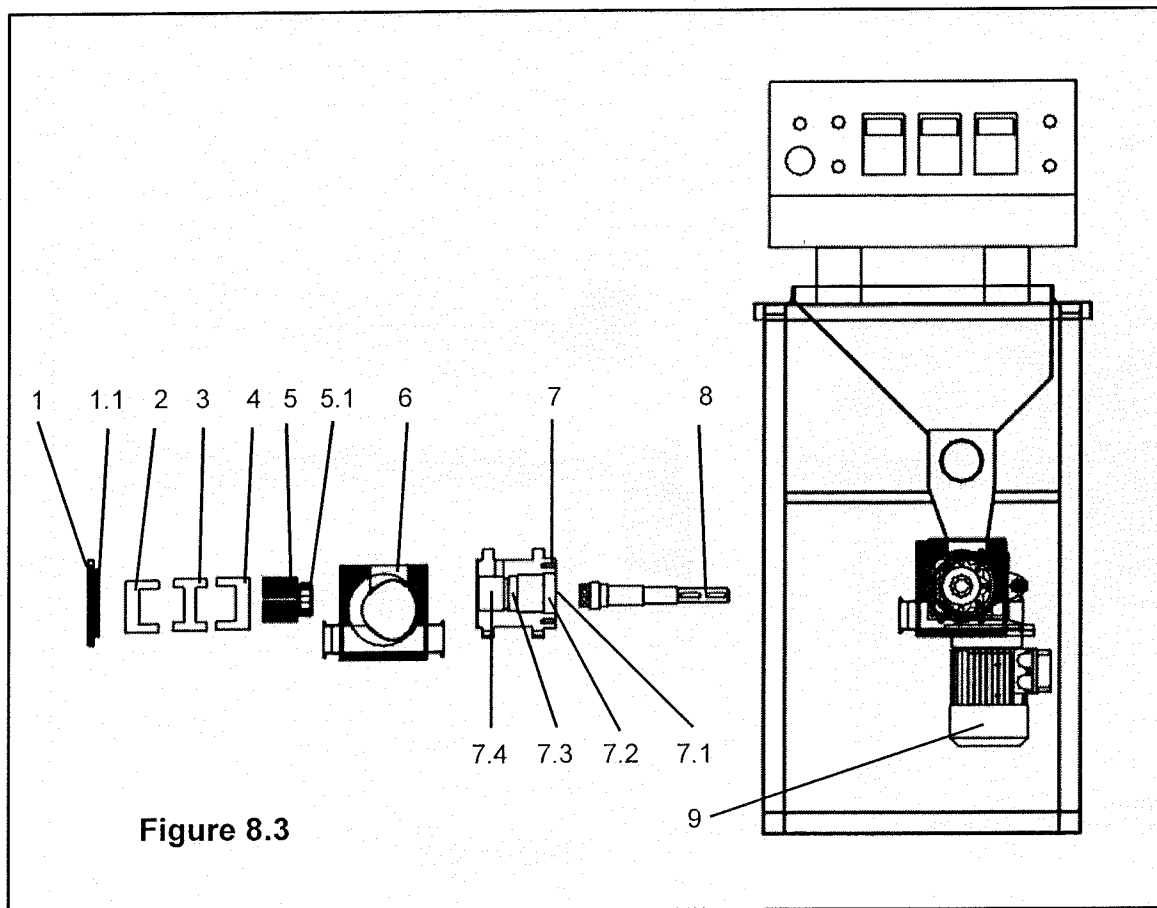


Figure 8.3

8.4 Mixer unit

Mixer unit		
Component	Reference	Code
Motoreducer mixer	Fig.8.4 – item 1	C02664
Pump –mixer union	Fig.8.4 – item 2	FF1067
Mixer shaft bushing	Fig.8.4 – item 2.1	FF1076
Mixer shaft	Fig.8.4 – item 3	FF1082
O-Ring 3081	Fig.8.4 – item 3.1	C00480
O-Ring 134	Fig.8.4 – item 3.2	C01735
Mixer tube	Fig.8.4 – item 4	FF1066
2" Clamp gasket	Fig.8.4 – item 4.1	C00107
3" Clamp gasket	Fig.8.4 – item 4.2	C00541

