TEM

Technical Manual

Hoyer Addus FF 2000 C

Z1481295

MACHINERY WORLD

TechPub_2614345_0103 - Z1481295-TEM-en_fro.fm

WARNING

Read and follow all safety precautions before working on or near this equipment.

Read all safety precautions throughout this manual and on safety signs attached to this equipment. Failure to follow all safety precautions could result in death or serious injury.

Tetra Pak

Doc. No. TEM-z1481295-01en.book

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The content of this manual is in accordance with the design and construction of the machine or equipment at the time of publishing. Tetra Pak reserves the right to introduce design modifications without prior notice.

This document was produced by:

Tetra Pak Hoyer A/S
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Denmark

Additional copies can be ordered from Tetra Pak Parts or the nearest Tetra Pak office. When ordering additional copies, always provide the document number. This can be found in the machine specification document. It is also printed on the front cover and in the footer on each page of the manual.

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Issue 2007-01

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This manual is valid for:

Series No./ Machine No. Sign.

TEM

Technical Manual

Hoyer Addus FF 2000 C
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A list of all optional equipment, optional kits, and rebuilding kits that this manual is valid for is found on the next page.

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Tetra Pak

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Update Log for Doc. No. TEM-z1481295-01en.book

This table shows all changes made to this manual, such as kits installed and pages added or removed.

Date	Installed Kit	Added Pages (Doc. No.)	Removed Pages	Signature

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Date	Installed Kit	Added Pages (Doc. No.)	Removed Pages	Signature

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i Introduction

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i.1 About the introduction chapter

Risk of serious personal injury. To ensure maximum safety, always read the chapter “Safety precautions” before operating or servicing the machine or equipment.

This chapter contains basic information about this manual and related Tetra Pak equipment.

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i.2 Document information

Tetra Pak recommends that delivered documentation should be studied carefully and always kept available to those who will operate the machine or equipment.

It is important to keep the manual for the life of the machine or equipment and pass the manual on to any subsequent holder or user.

Tetra Pak will not be held responsible for any damage to the machine or equipment caused by not following the instructions given in this manual.

i.2.1 Delivered documentation

The documents delivered with this machine or equipment include:

- Electrical Manual (EM)

  The purpose of this manual is to provide the service technicians and electricians with information required for service and maintenance
- Installation Manual (IM)

  The purpose of this manual is to provide installation personnel with the information required for installation
- Maintenance Manual (MM)

  The purpose of this manual is to provide the service technicians with information required for maintenance and service
- Operation Manual (OM)

  The purpose of this manual is to provide the operator with information on how to handle and operate the machine or equipment before, during, and after production
- Spare Parts Catalogue (SPC)

  The purpose of this manual is to provide necessary information for ordering spare parts from Tetra Pak
- Technical Manual (TEM)

  The purpose of this manual is to provide necessary information required for installation, service and maintenance

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i.3 Machine Introduction

i.3.1 Intended use of the machine or equipment

The intended use of this Tetra Pak machine or equipment is to inject fruit pieces, nuts, candies and other free flowing granulates into ice cream or similar products.

All other use is prohibited! Tetra Pak will not be held responsible for injury or damage if the machine or equipment is used for any other purpose.

i.3.2 Manufacturer

This Tetra Pak machine or equipment has been manufactured by:

Tetra Pak Hoyer Equipment A/S
Soeren Nymarksvej 13
DK-8270 Hoejbjerg
Denmark

i.3.3 Service

If problems are encountered when operating this machine or equipment, contact the nearest Tetra Pak centre or market company.

Contact this mail address, if you have any questions regarding the documentation:

ProductDocumentationBUIC@tetrapak.com

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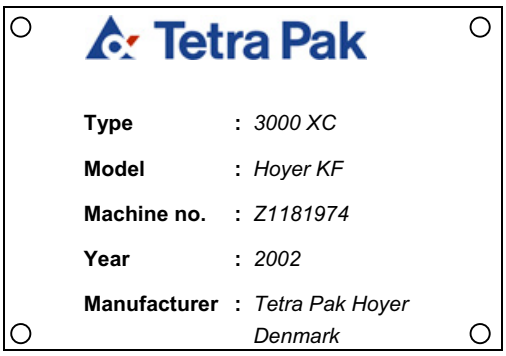
i.4 Identification

i.4.1 CE classification

This equipment complies with the basic health and safety regulations of the European Economic Area (EEA).

i.4.2 Machine plate

The below illustration shows an example of the machine plate and its location on the machine or equipment. The machine plate carries data needed when contacting Tetra Pak concerning this specific machine or equipment.



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i.5 Hygiene

Ice cream production, like other foodstuffs, requires high sanitary standards. That is why the strictest demands should be made on cleaning of devices and tools getting in touch with the ice cream, ingredients coating and packaging materials. In addition, the production area should be kept very clean.

Personal hygiene should also be considered as a part of the sanitary standards:

- Personal body hygiene
- Headgear
- Hygiene of work clothes
- Hygiene of footwear
- Hand hygiene

ALWAYS make sure that the detergents and disinfectants applied are approved by the local authorities.

NEVER use a detergent which chemical properties will damage the metals and alloys to be cleaned.

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ii Safety Precautions

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ii.1 Read the safety precautions

All persons operating, servicing, adjusting or otherwise working with or near this machine or equipment must carefully read and follow all safety instructions in this manual and warning signs on the machine or equipment itself. Failure to do so could result in death, serious injury, and damage to the machine or equipment.

Call for medical attention immediately in case of an accident.

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ii.2 Hazard information

This is the “safety alert” symbol. It is used to alert about potential personal injury hazards. Obey all safety messages that follow this symbol to avoid death or injury.

The following safety alert symbols and “signal words” are used in this manual and on the machine or equipment itself to inform the user of hazards.

DANGER

indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

CAUTION

(without the safety alert symbol) indicates a potentially hazardous situation which, if not avoided, may result in property damage.

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ii.3 Personnel requirements

Note! Personnel includes **all** persons performing work on or near the machine or equipment.

Only skilled or instructed persons are allowed to work with the machine or equipment.

ii.3.1 Skilled person

A skilled person must have relevant education and experience to enable him or her to identify hazards, analyze risks, and avoid hazards which electricity, mechanics, chemicals, and supply systems can create.

Skilled persons must meet local regulations, such as certifications and qualifications for working with electricity, mechanical systems, and so on.

ii.3.2 Instructed person

An instructed person must be adequately advised or supervised by a skilled person to enable him or her to identify hazards, analyze risks, and avoid hazards which electricity, mechanics, chemicals, and supply systems on the machine or equipment can create.

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ii.4 Safety signs

WARNING

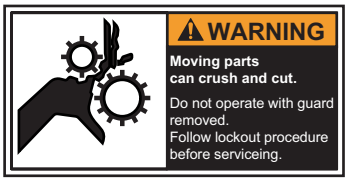
Hazards without safety signs drastically increase the risk of death or serious injury.

Replace all missing or damaged safety signs immediately.

There are two types of safety sign

- ISO signs are used in most markets
- ANSI signs are used in the US market only

The table below shows all safety signs that are located on this machine/ equipment.

ISO sign	ANSI sign
 Hazardous voltage. Will cause death or serious injury. Disconnect power before servicing. Lockout machine.	
 Moving parts can crush and cut. Do not operate with guard removed. Follow lockout procedure before servicing.	

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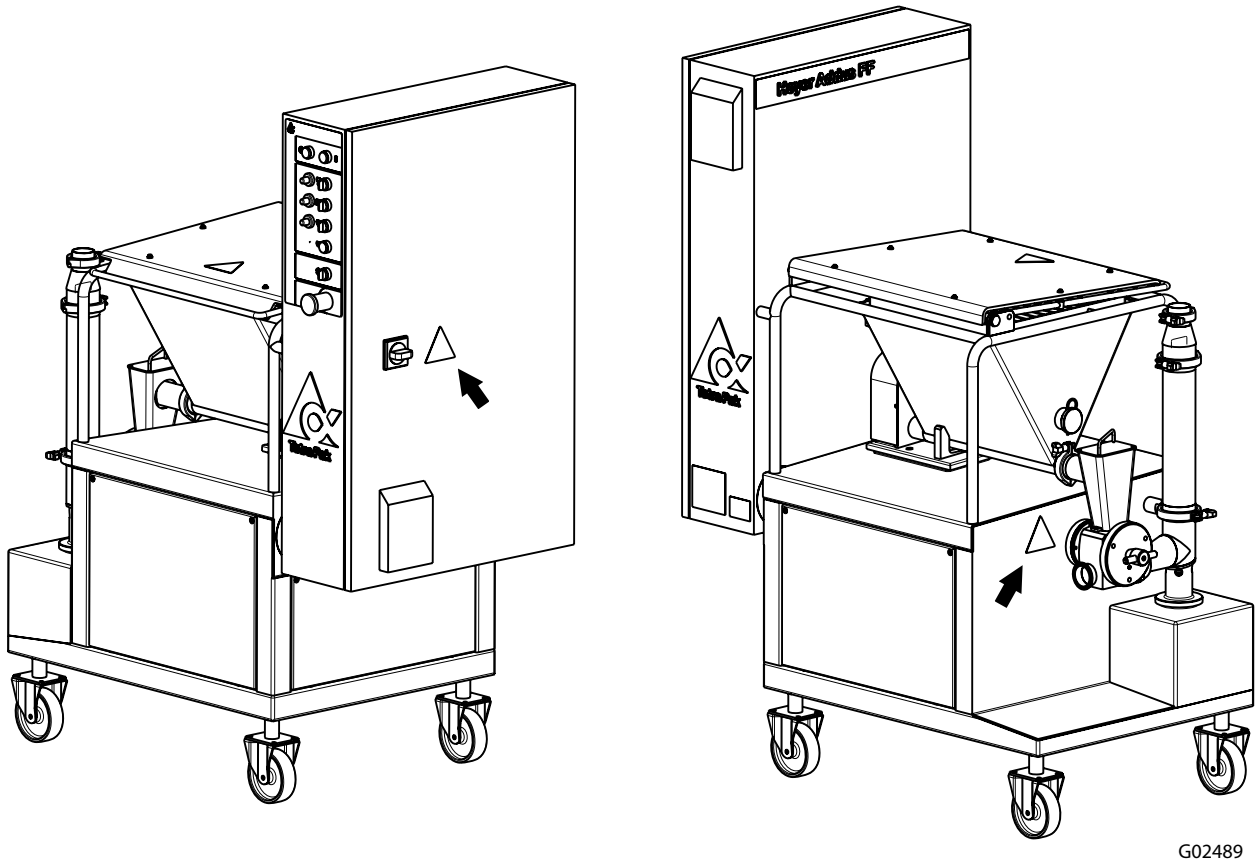
ii.5 Location of safety signs

Note! Always ensure that all safety signs on the machine or equipment are undamaged and in their correct position after installation and maintenance.

The illustration below indicates where the safety signs are located.



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ii.6 Safety devices

DANGER

Unshielded hazards. Never inch or run the machine or equipment if any component of the safety system is inoperative. All inoperative components of the safety system must be changed immediately.

Note! Activating a safety device, such as an EMERGENCY STOP, or opening an interlocked safeguard does not switch off the power supply to the machine or equipment.

ii.6.1 Emergency Stop

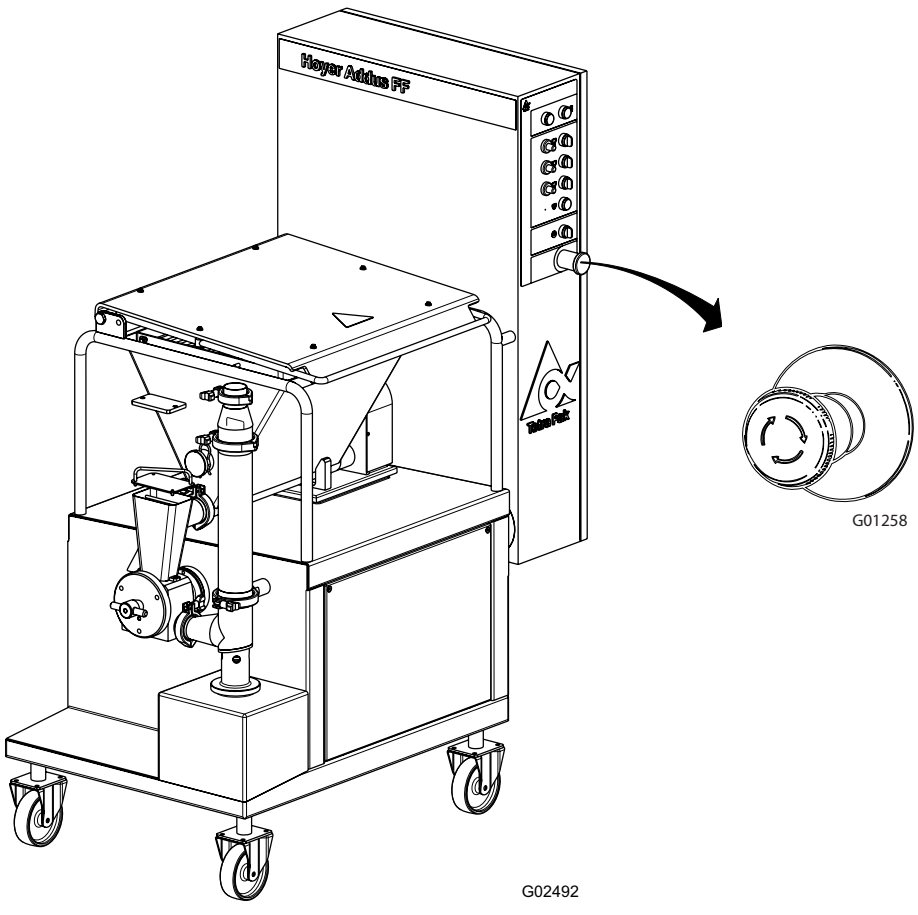
Learn the positions of the EMERGENCY STOP devices in order to stop the machine or equipment immediately in case of an emergency situation.

To stop production the normal way, see the *operation manual*.

ii.6.2 Emergency stop push buttons

Push one of the EMERGENCY STOP push buttons to stop the machine or equipment immediately.

The illustration below shows an emergency stop push button. Arrow(s) indicates where to find them on the machine or equipment.



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ii.7 Personal protection

Note! Personal protection required when handling hazardous materials is specified for each substance, see the section “Hazardous materials”.

ii.7.1 Hearing Protection

WARNING
Hazardous noise level. Risk of impaired hearing. Wear hearing protection.

CAUTION
Hazardous noise level. Risk of impaired hearing. Hearing protection is recommended.

ii.7.2 Jewellery

WARNING
Risk of entanglement. No jewellery such as rings, watches, bracelets, or necklaces may be worn when performing work on or near the machine or equipment.

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ii.8 Hazardous materials

WARNING

Contact with chemicals can cause injury and illnesses. Always follow the manufacturer's instructions when handling chemical products.

Always make sure that

- the showers work
- an eyewash device, movable or wall-mounted, is available and operational
- additional washing facilities are nearby

Note! Learn the positions of all washing facilities in order to act without delay in case of an accident.

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ii.9 Supply systems

ii.9.1 Electrical cabinet

DANGER

Hazardous voltage. Electric shock will cause death or serious injury.

The power supply disconnecting device must be turned OFF and secured with a lock before any service is carried out inside the electrical cabinet.

Note! The key to the lock must be removed by the service technician or the electrician, and retained in his/her possession until all work is completed.

Make sure that the electrical cabinet doors are locked after performing any work in the electrical cabinet.

An arrow in the illustration below indicates the location of an electrical cabinet.

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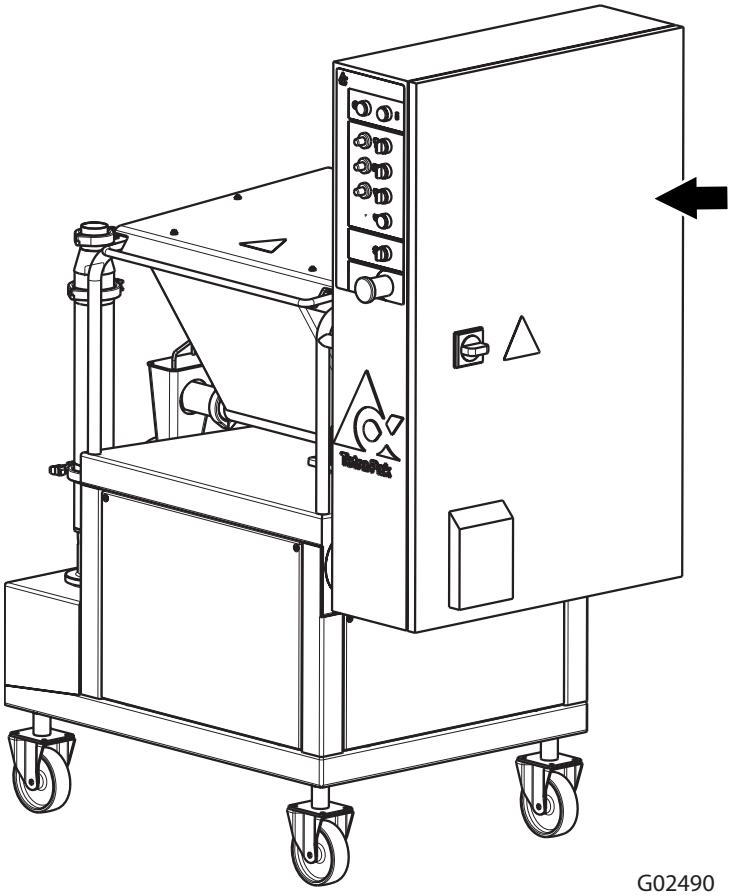

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ii.9.2 Power supply

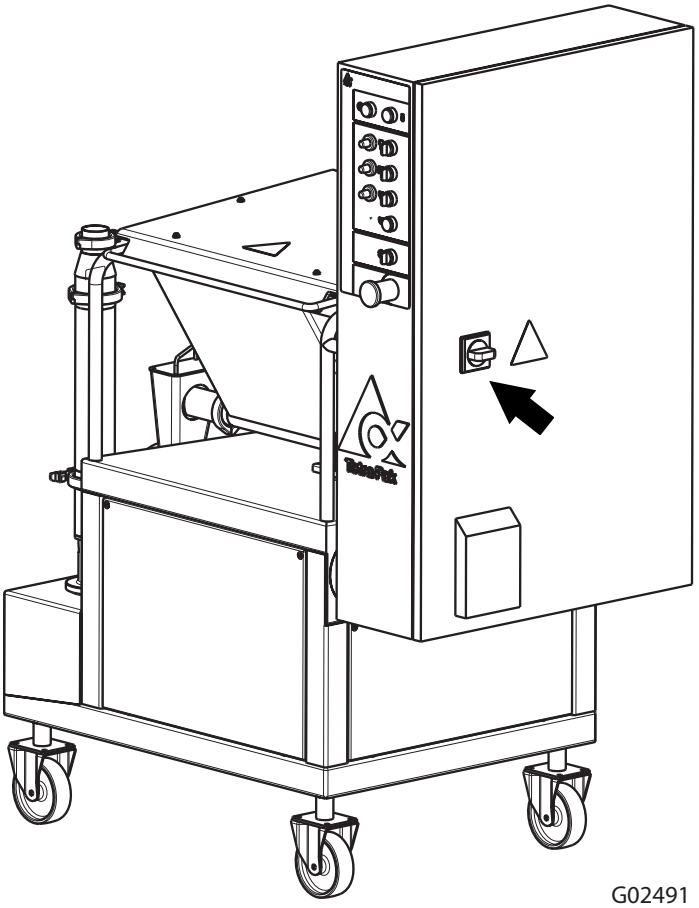
DANGER

Hazardous voltage and moving machinery. The power supply disconnecting device must be turned OFF and secured with a lock before any service is carried out.

Note! The key to the lock must be removed by the service technician or the electrician, and retained in his/her possession until all work is completed.

Certain maintenance procedures require supply systems to be turned on. These exceptions are clearly stated in the maintenance manual.

The illustration below shows the power supply disconnecting device and the arrow indicates its location.



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1 Installation

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1.1 Technical data

Net weight	310 kg
Gross weight	505 kg
Mains supply	Local voltage, 3-phase + earth
Geared motors	
Lamella feed pump	1.1 kW
Mixer	0.55 kW
Dosing screw	0.75 kW
Agitator (optional)	0.75 kW
Dimensions of ice cream inlet and outlet pipes (standard)	2” clamp connection
FF 2000 C base product capacity	100 - 2,000 litres/hour
FF 2000 C ingredient capacity	10 - 200 litres/hour
Volume - hopper	40 litres
The dosing screws are available in stainless steel or PE plastics and with different capacity ranges and with variable pitch.	

Note! Earth leakage circuit breaker. If the FF 2000 C is to be protected by an earth leakage circuit breaker, this must be of a type to compensate for DC fault currents, as the FF 2000 C is provided with frequency converters.

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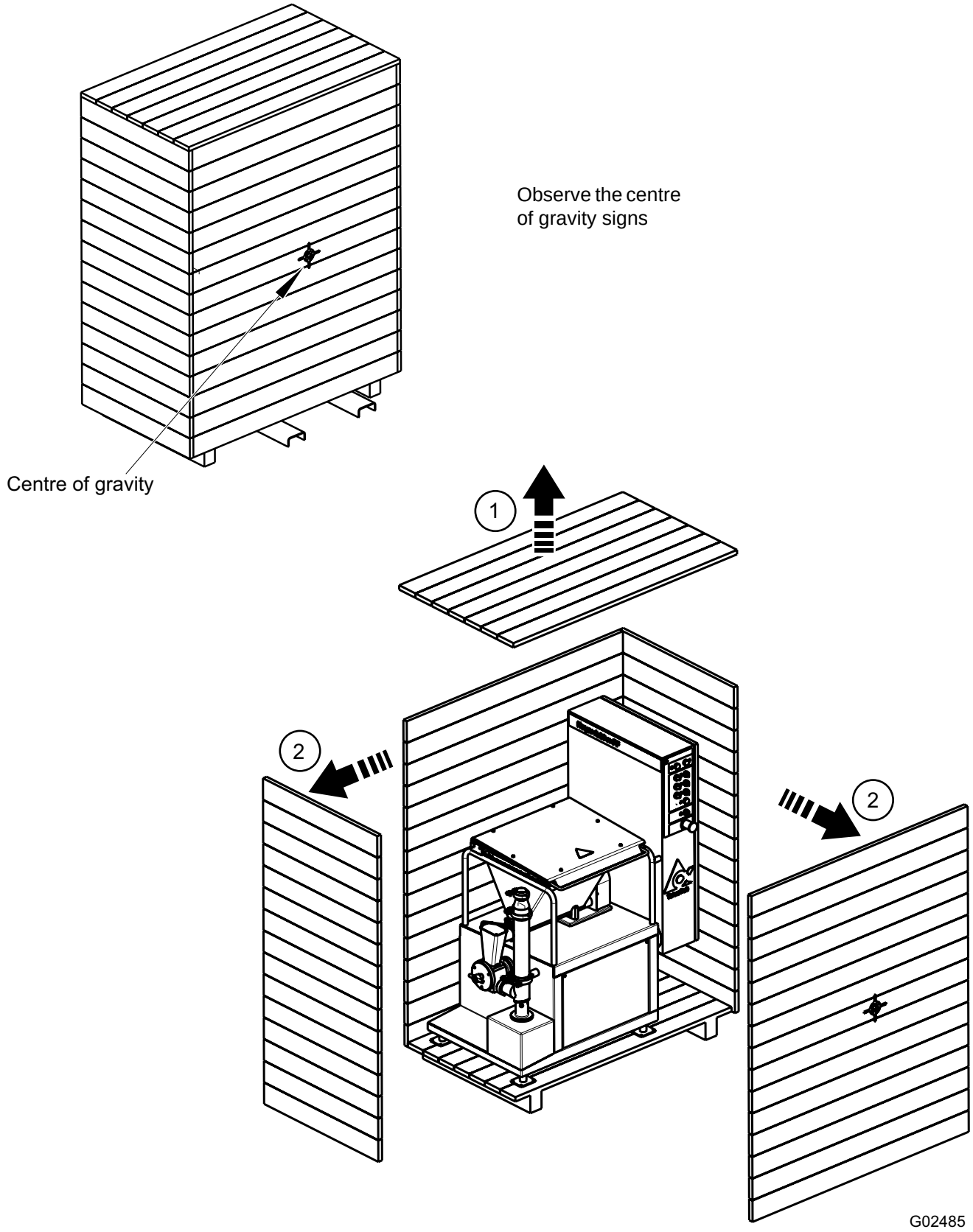
1.2 Moving and unpacking the equipment

If the ingredient feeder comes in a sealed wooden crate, the unpacking is done most easily by first removing the crate lid and then the side boards, one by one.



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If, during the unpacking operation, any transport damage is found on the machine and/or the equipment supplied with it, immediate steps must be taken to hold the hauler or the shipping agent responsible for any such damage, i.e. they must be informed of the damage and made aware that a claim for damages may be made.

At the same time, Tetra Pak Hoyer and possibly the insurance agent should be contacted.

Equally, Tetra Pak Hoyer must be informed immediately if the machine is found to be defective or any parts appear to be missing.

When all packaging material has been removed from the machine, the legs base plates can be released from the bottom plate, and the machine can be lifted free of the bottom plate by means of a forklift.

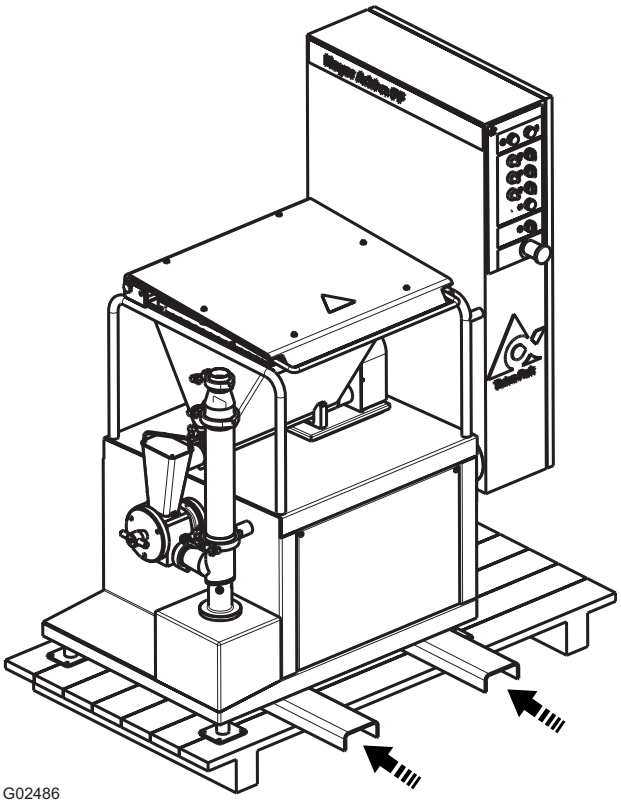
1.2.1 Lifting directions

See below figure before starting the lifting operation.

Insert the forks under the machine from one of the sides.

CAUTION

Place the forks always keeping in mind that the machine's centre of gravity is displaced in relation to the centre line towards the electrical cabinet. Do not lift the machine higher than absolutely necessary because of the risk that it may tip over.



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1.3 Positioning, assembly and connections

a) Mount the 4 wheels on the legs of the ingredient feeder while the machine is lifted.

b) Lower/place the ingredient feeder properly on the operation site and adjust the four screw legs until the machine is completely in level.

The ingredient feeder should be placed as closely as possible to the attached filling unit for the following reasons:

– This is where the ice cream pressure is at its lowest.

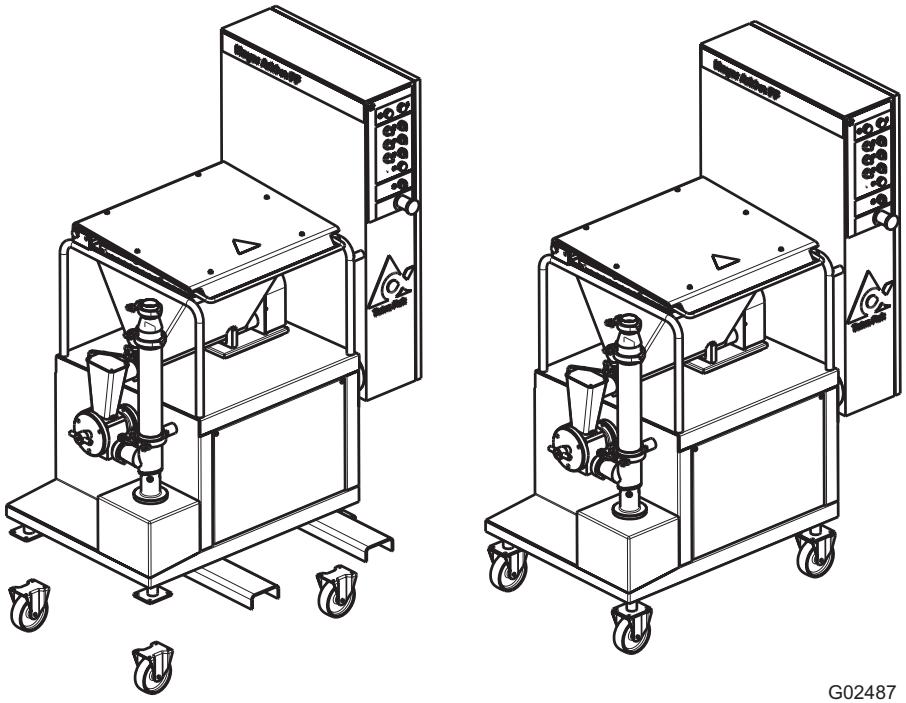
– A shorter flow way from the mixer to the filling machine will ensure a more even distribution of ingredients. (Certain ingredients tend to settle along the pipe wall).

Note! Use as few pipe bends as possible to obtain the lowest possible pressure drop through the pipe system.

c) Connect the ingredient feeder to power and to the ice cream line.

CAUTION

Check that voltage data on the machine plate are correct before connecting the ingredient feeder to power.



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1.4 Final installation check

Follow the below procedure in order to check the emergency stop circuit and the safety switch on the hopper grid.

a) Make sure that all covers and panels have been fitted correctly.

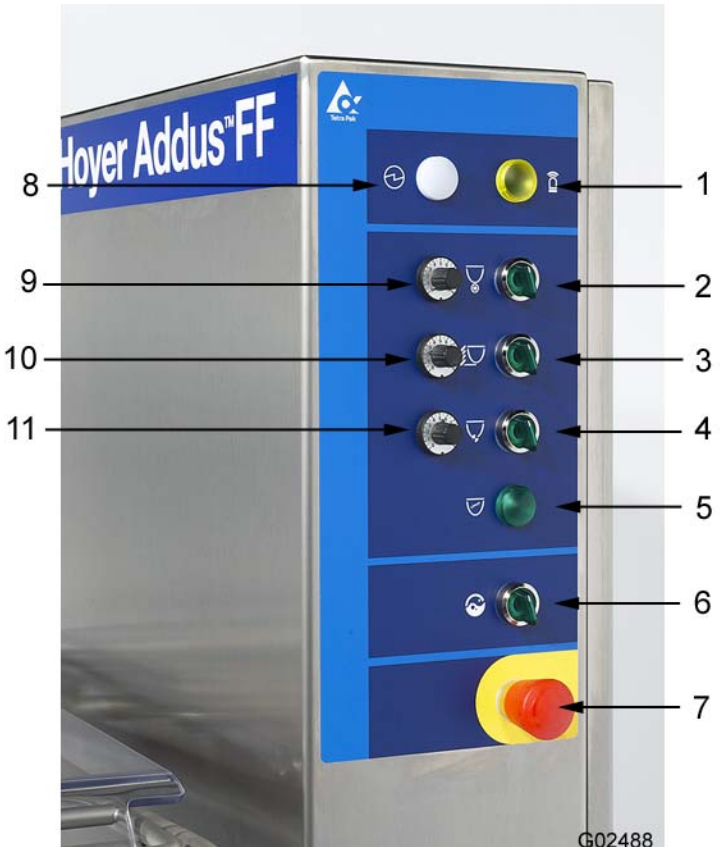
b) Check that the emergency stop is released.

c) Turn on the main switch.

d) Start the pump by turning the switch (2) on the panel.

CAUTION

The pump must not run dry. Use a can to add water into the inlet funnel.



1 Indicator lamp for alarm
2 Start/stop pump
3 Start/stop mixer
4 Start/stop dosing screw
5 Indicator lamp for agitator
6 Start/stop CIP
7 Emergency stop
8 Indicator lamp for power on
9 Potentiometer for pump speed
10 Potentiometer for mixer speed
11 Potentiometer for dosing screw speed

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e) Start the mixer by turning the switch (3).

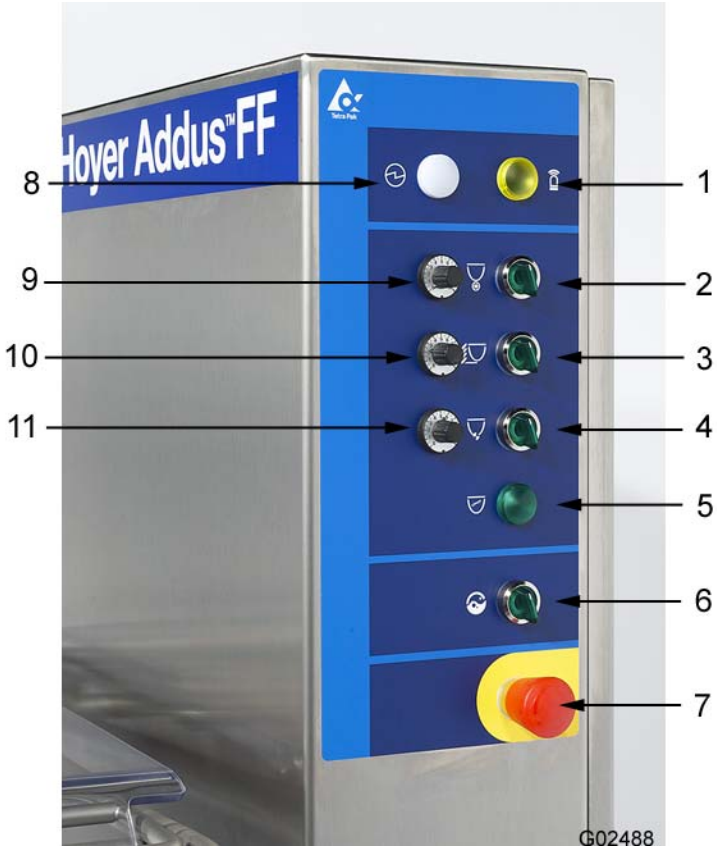
f) Start the dosing screw and the agitator by turning the switch (4).

g) Open the hopper grid. The agitator and the dosing screw should now stop. If not, contact a service center.

h) Close the hopper grid and restart the dosing screw and the agitator.

i) Press the emergency stop button. All functions should now stop. If not contact a service center.

j) Release the emergency stop button.



1 Indicator lamp for alarm
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6 Start/stop CIP
7 Emergency stop
8 Indicator lamp for power on
9 Potentiometer for pump speed
10 Potentiometer for mixer speed
11 Potentiometer for dosing screw speed

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1.5 Electrical diagrams

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2 Maintenance

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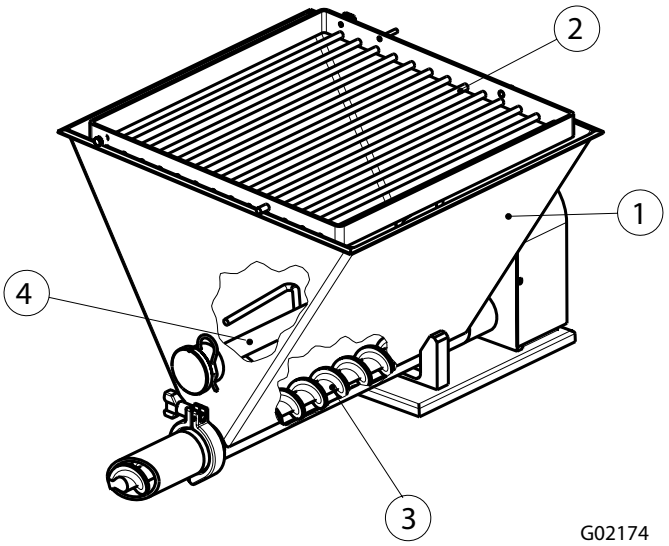
2.1 Dosing unit

2.1.1 Operating principle

The dosing unit consists of a ingredient hopper (1) with a protective grid screen (2), and a horizontal dosing screw (3) at the bottom. A removable agitator (4), is mounted in the middle of the hopper.

The ingredients loaded into the hopper are led through a horizontally placed pipe by the dosing screw, and sprinkle from the pipe's orifice through the inlet chute of the lamella feed pump placed below it.



1 Ingredient hopper
2 Protective grid screen
3 Horizontal dosing screw
4 Removable agitator

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2.1.2 Dismantling/mounting

WARNING

Always turn the main switch to position "0" and lock the switch by means of a padlock before inspection/service of the dosing unit.

Open the protective grid of the ingredient hopper to dismantle the dosing screw and the agitator.

For dismantling/mounting of the dosing unit, follow the procedure below.

2.1.2.1 Dismantling

a) Remove the clamp (1).
b) Remove the outlet pipe (2).
c) Remove the dosing screw (3).
d) Remove the split (4).
e) Remove the agitator bushing (5).
f) Pull out the agitator (6).
g) Remove the O-ring (7) from the agitator bushing.
h) Remove the protective cover (8).
i) Remove the chains (9).
j) Remove the tooth sprocket (10).
k) Remove the shaft seals (11).
l) Remove the lock rings (12).
m) Press out the agitator drive shaft (13) and the dosing screw drive shaft (14) from behind.
n) Remove the O-ring (18) from the drive shaft.
o) Remove the ball bearings (15) incl. the distance bushing (16).
p) Remove the gasket (17) inside the hopper.

2.1.2.2 Mounting

To mount the dosing unit repeat the above dismantling process in reverse order.

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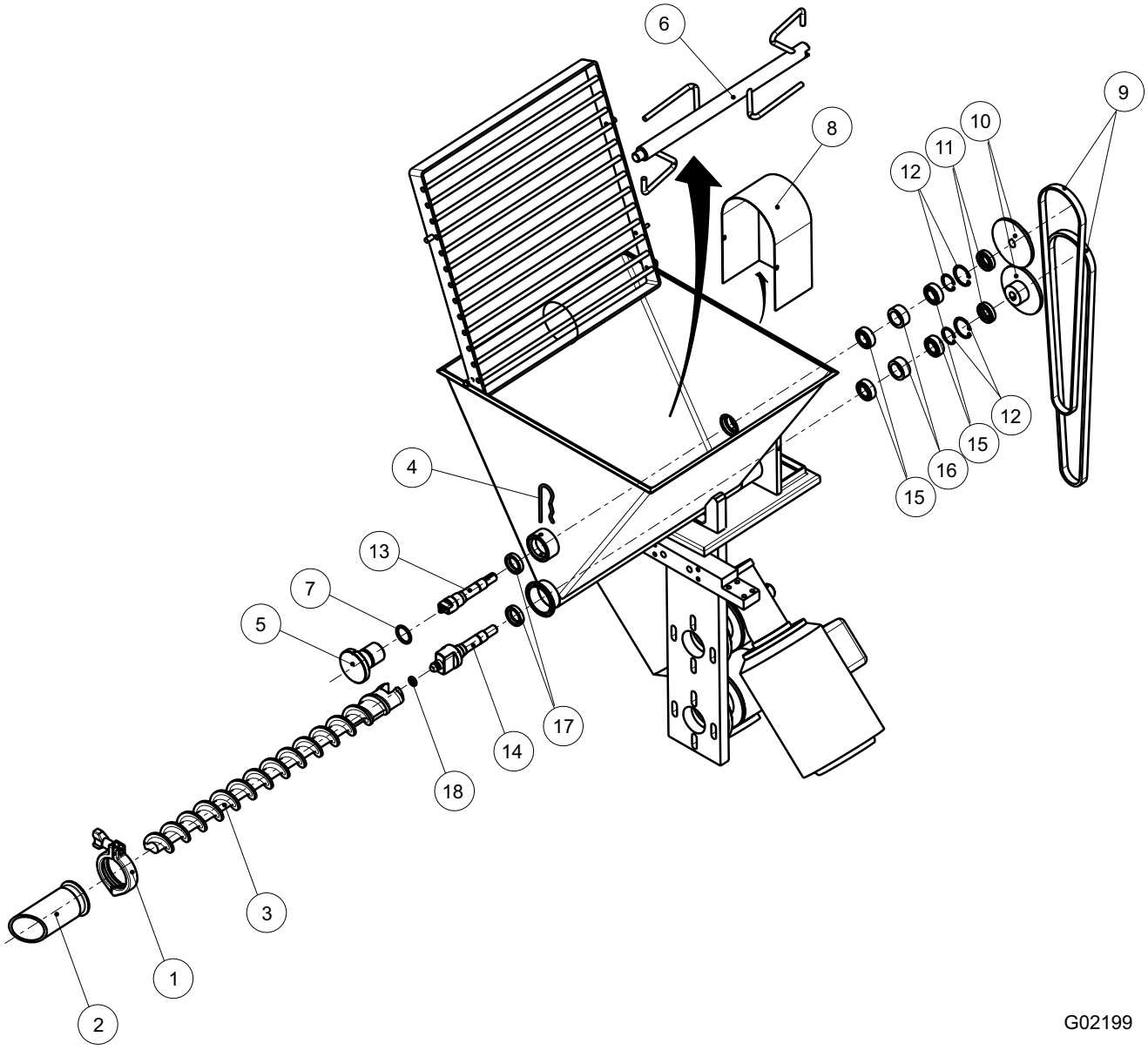

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1 Clamp
2 Outlet pipe
3 Dosing screw
4 Split
5 Agitator bushing
6 Agitator
7 O-ring
8 Protective cover
9 Chain
10 Tooth sprocket
11 Shaft seal
12 Lock ring
13 Agitator drive shaft
14 Dosing screw drive shaft
15 Ball bearing
16 Distance bushing
17 Gasket
18 O-ring

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2.2 Lamella feed pump

2.2.1 Operating principle

The lamella feed pump consists of a pump housing (1) with an eccentrically placed rotor (2) with 3 lamellas (3)(4)(5), a CIP front cover (6), an inlet funnel (7) and a CIP cap (8).

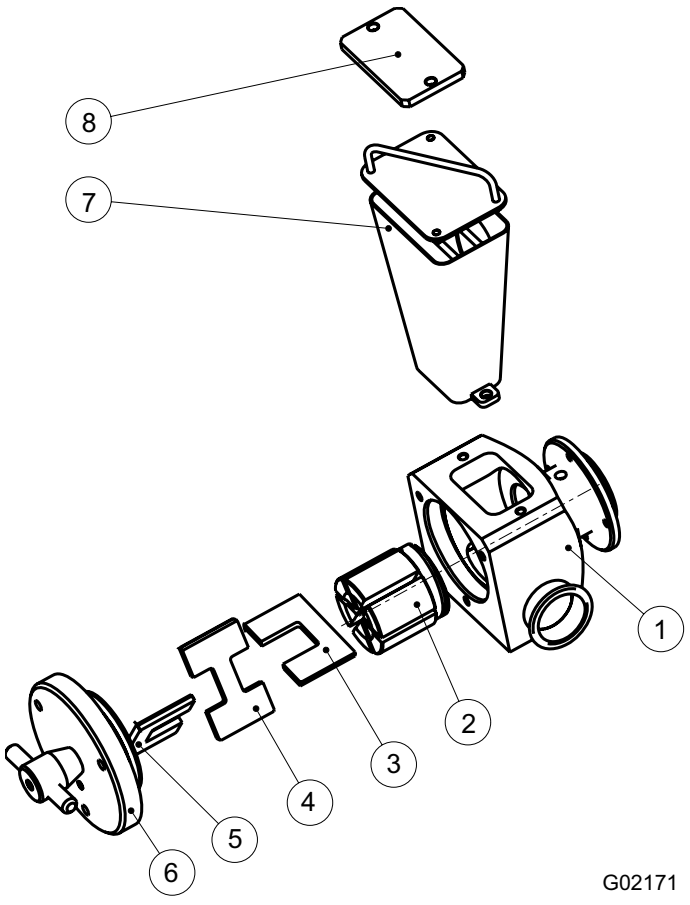
The pump housing consists of a horizontal inlet/outlet opening for ice cream and an opening in the top through which ingredients are fed.

The rotor's lamellas can be radially retracted and guided during rotation in the pump case, and so the ingredients will be taken along by the advanced lamellas and delivered into the ice cream passing under the rotor.

When the ingredients have been delivered, the lamellas will be retracted into the rotor.

The lamella feed pump is driven directly by a self-contained, geared motor whose rotating speed can be adjusted by means of a frequency converter.

CAUTION
Hard tools or items of plastic, metal, etc. may damage the lamella feed pump if dropped into or otherwise left in the pump.



1 Pump housing
2 Rotor
3 Lamella
4 Lamella
5 Lamella
6 CIP front cover
7 Inlet funnel
8 CIP cap (is placed on the pump housing instead of the inlet funnel in connection with CIP cleaning)

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2.2.2 Dismantling/mounting

WARNING

Always turn the main switch to position "0" and lock the switch by means of a padlock before inspection/service of the lamella feed pump.

If the front cover and inlet pipe for ice cream are dismantled, there is free access to the lamella feed pump rotor. Mains supply to the FF 2000 C ingredient feeder must therefore be disconnected so that there is no risk of inadvertent start of the pump that may cause personal injury.

From time to time the lamella feed pump should be dismantled to enable inspection for wear, damage, etc.

2.2.2.1 Dismantling

a) Remove the inlet funnel (7).

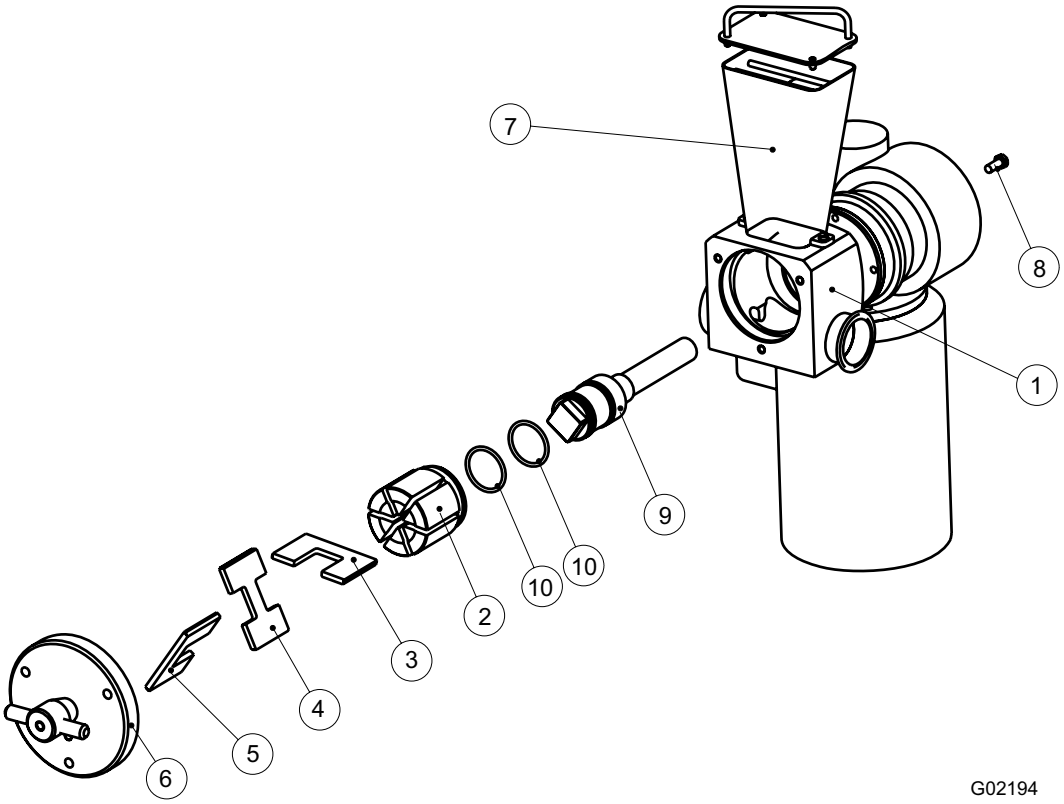
b) Remove the front cover (6).

c) Remove the lamellas (3)(4)(5).

d) Remove the rotor (2).

e) Loosen the screw (8) and press out the drive shaft (9) from behind.

f) Remove the O-rings (10).



1 Pump housing
2 Rotor
3 Lamella
4 Lamella
5 Lamella
6 CIP front cover
7 Inlet funnel
8 Screw
9 Drive shaft
10 O-rings

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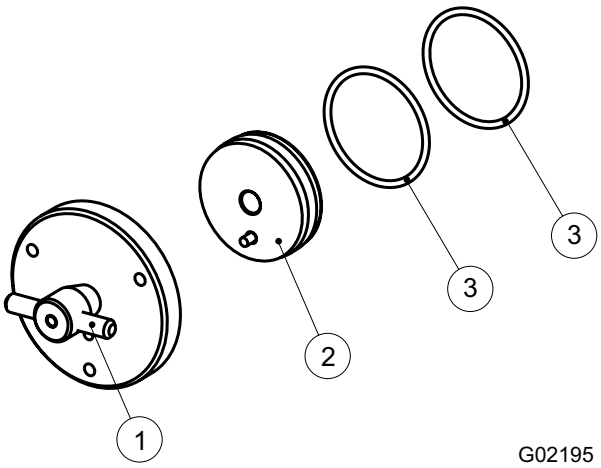
Dismantling of CIP front cover

a) Turn the handle (1) clockwise until the inner cover (2) falls off.

b) Remove the two O-rings (3).



1 Handle
2 Inner cover
3 O-rings

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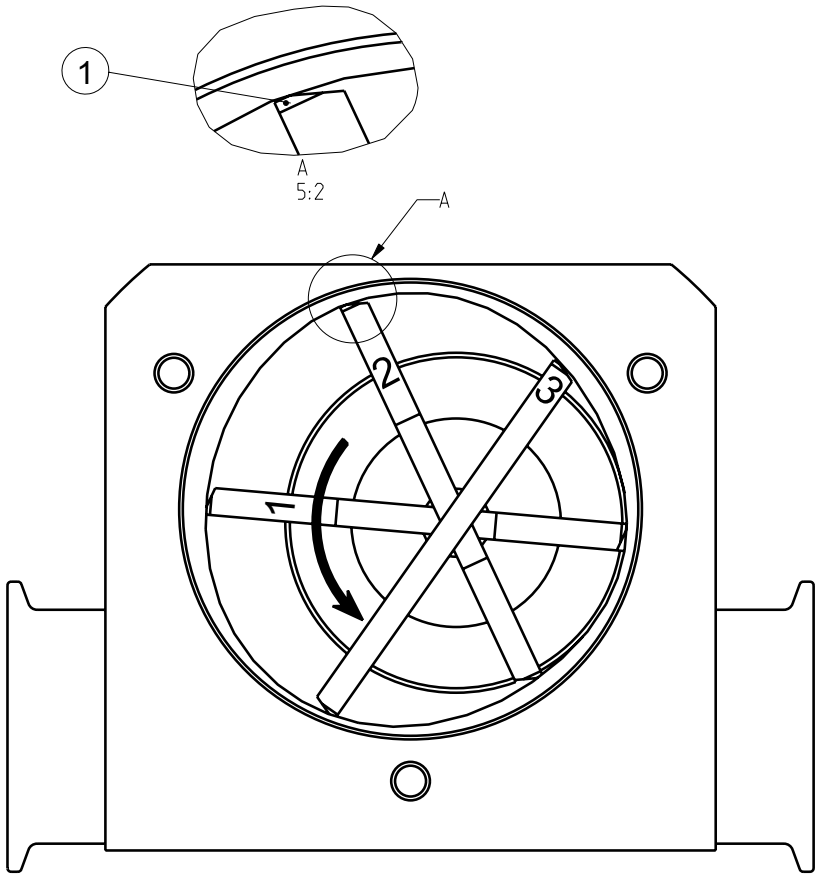
2.2.2.2 Mounting

To mount the lamella feed pump repeat the above dismantling process in reverse order.

2.2.2.3 Mounting of lamellas

Lamellas must be placed so that the scraping edge is the front edge when the rotor is turning (see detail A (1) on below figure). This is obtained by mounting the lamellas in correct order commencing by 1, then 2 and then 3.



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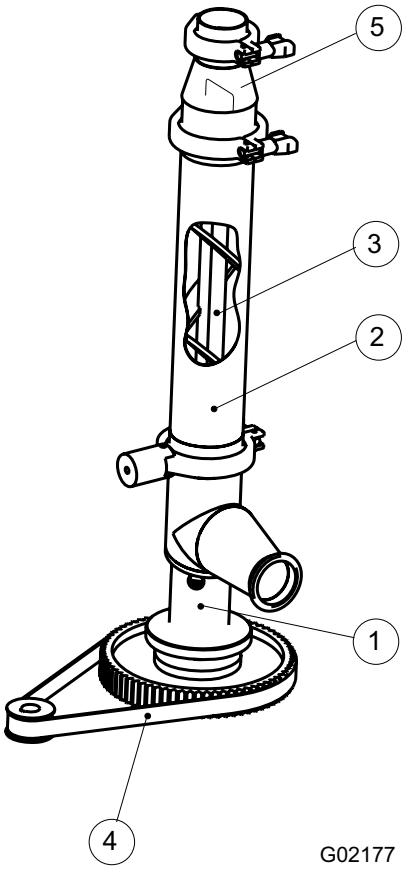
2.3 Mixer

2.3.1 Operating principle

The mixer is inserted between the lamella feed pump and the filling machine to optimize a uniform distribution of ingredients in the ice cream.

The mixer is driven by a timing belt drive (4), which is placed inside the main frame, because touching it may involve considerable risk of personal injury.

The mixer consists of a mixer bottom with drive shaft and seals (1), a mixer house (2), a paddle blender (3) and an outlet cone (5).



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1 Mixer bottom with drive shaft and seals
2 Mixer house
3 Paddle blender
4 Timing belt drive
5 Outlet cone

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2.3.2 Dismantling/mounting

WARNING

Always turn the main switch to position "0" and lock the switch by means of a padlock before inspection / service of the mixer. If the outlet pipe is dismantled, there will be free access to the mixer rotor.

2.3.2.1 Dismantling the mixer

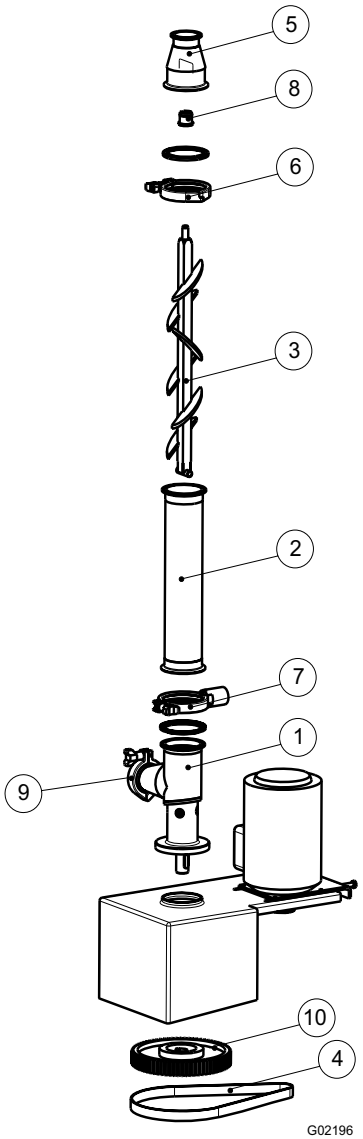
a) Dismantle the cone (5), by removing the clamp ring (6).

b) Remove the top bushing (8) from the outlet cone.

c) Pull out the blender (3) of the mixer housing (2) and dismantle the mixer housing by removing the clamp ring (7).

d) To remove the mixer bottom (1) unscrew the clamp ring connection (9) to pump.

e) Dismantle the timing belt pulley (10).



1 Mixer bottom with drive shaft and seals
2 Mixer house
3 Paddle blender
4 Timing belt drive
5 Outlet cone
6 Clamp ring
7 Clamp ring
8 Top bushing
9 Clamp ring connection
10 Timing belt pulley

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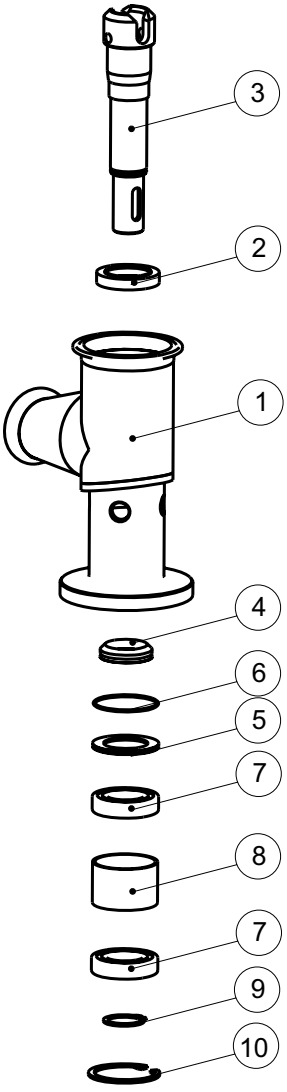
2.3.2.2 Dismantling the bottom end unit

a) Take away the snap rings (9)(10).

b) Press out the driving shaft (3). (Note: Lip sealing can be damaged).

c) Pull out the ball bearings (7) and the lower spacer (8).



1 Mixer bottom end
2 VR gasket
3 Driving shaft
4 V-ring
5 Upper spacer
6 O-ring for upper spacer
7 Ball bearings
8 Lower spacer
9 Snap rings
10 Snap rings

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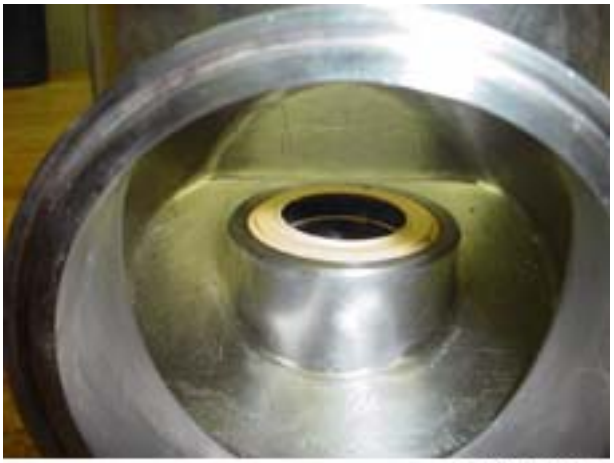
d) Remove the upper spacer (5) by tipping and sliding out as illustrated below.

G01366.jpg

e) Remove the VR gasket (2) as illustrated below.



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2.3.2.3 Mounting the bottom end unit

a) Refit the VR gasket (2) and press it in place as illustrated below.

Note! Lubricate the lips with silicone grease before assembly (lubricant Molycote III).

G01370.jpg

Note! VR gasket orientation - see below figure.

G01369.jpg

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b) Install the upper spacer (5) with the flat side down as illustrated below. Remember the O-ring (6) for the upper spacer.

G01368.jpg

c) Install the bearings (7) - remember lower spacer (8).

d) Insert the V-ring (4) as illustrated below.

G01371.jpg

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e) While pressing in the driving shaft (3) make sure the V-ring (4) does not get pinched between it and the upper spacer. See below figure.

G01373.jpg

f) When the driving shaft is in, the lips of the VR gasket should be curled up, where they contact the shaft. See below figure.

G01374.jpg

g) Refit the snap rings (9)(10).

h) Mount the remaining elements in the reverse order as described in the section "Dismantling the mixer".

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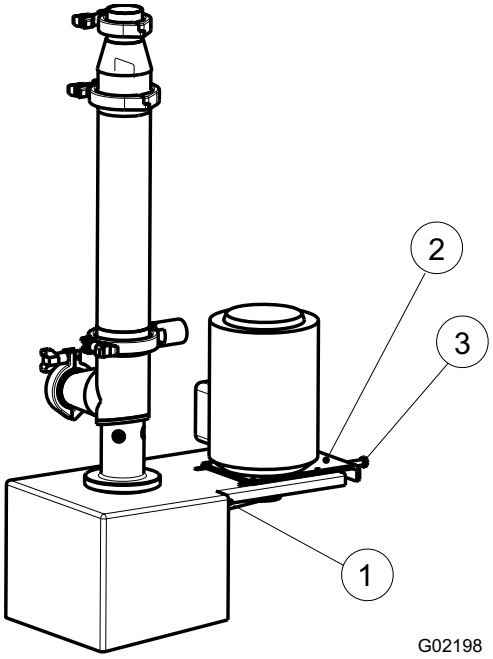
2.3.2.4 Adjustment of mixer drive

a) Check the tension of the toothed belt (1).

b) If tension is needed, loosen the 4 bolts that fix the motor plate (2) to the frame.

c) Tighten the belt by turning the bolt (3).

d) Retighten the motor plate (2) by tightening the 4 bolts.



1 Toothed belt
2 Motor plate
3 Bolt

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2.4 Preventive maintenance

Preventive maintenance according to the following requirements will ensure optimum performance of your FF 2000 C ingredient feeder and unnecessary wear of vital parts is avoided.

Check	250 hr	500 hr	750 hr	1000 hr
Check condition of O-rings and gaskets in pump, dosing unit and mixer	x	x	x	x
Check condition of lamellas in pump	x	x	x	x
Check condition of rotor in lamella pump		x		x
Check condition of inner cover of front cover		x		x
Check tension and condition of notched belt for mixer drive		x		x
Check tension and condition of chain drive for dosing unit		x		x

Replace	1000 hr	2000 hr	3000 hr	4000 hr	5000 hr	6000 hr
Replace O-rings, gaskets in pump, dosing unit and mixer	x	x	x	x	x	x
Replace plastic wear parts in mixer and dosing unit			x			x
Replace lamellas in pump			x			x
Replace notched belt for mixer drive			x			x
Replace chain for dosing unit drive			x			x
Replace rotor in lamella pump						x
Replace ball bearings in mixer and dosing unit						x
Replace inner cover of front cover						x

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3 Tetra Pak Maintenance System

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3.1 Introduction to TPMS

A modern industry for processing different types of products on a highly complex installation requires maintenance.

Professional maintenance makes it possible to keep up the high standards of reliability, hygiene and consistent quality, which is required when working with sensitive products. Minimal downtime and high equipment availability have an immediate, positive impact on the profitability of the plant.

By systematically applying maintenance routines, production downtime can be kept to a minimum. Through the Tetra Pak Maintenance System we can share all the experience we have acquired, and together with you achieve a common goal - a reliable production plant.

The core of Tetra Pak Maintenance System (TPMS) is a preventive maintenance model and evolves in a variety of technical services, well suited to a modern maintenance management.

The principle of TPMS is to ensure maximum performance of a production line and to minimise the number of unpredicted stops. This is achieved by providing carefully prepared maintenance recommendations from your Tetra Pak supplier.

Experiences gained from utilizing the recommendations and the system can feed back to the Tetra Pak supplier, where it will be used as input for further improvements. The functions, features and tools included in the TPMS system reflect your requirements and are continuously updated and supplemented to meet these expectations.

Task List is the displayed name of the Tetra Pak Maintenance System recommendations.

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3.2 Contents of the Task List

Example of a Task List

Tetra Pak Hoger Equipment **Frigus KF4000-F1, Preventive maintenance recommendations. ProductNo: Z1191105, IssueDate: 38411**

Pre maintenence checks

WARNING! Before starting any service work , read the safety precaution in the corresponding TeM (Technical Manual)
Daily/Weekly checks - Have they been carried out? If not carry them out before starting the service.

At any interval - Check - Leaks, Noise, Vibrations, Pressures and Temperatures

Label	Class	Article No.	Denomination	Type	Doc No Reference	Work time	Interval Normal	Action	Description	SparePart No.	Denomination	Qty	Action performed Date / Result
24		00960096	Pump Fp-3-b With Cip			5	1000	Change		00103678	Bearing Bush, Cart	1	
1		00960096	Pump Fp-3-b With Cip			5	1000	Check		00910331	Impeller	1	
1		00960096	Pump Fp-3-b With Cip			15	6000	Change		00910331	Impeller	1	
30		00960096	Pump Fp-3-b With Cip			3	500	Check		00920160	Feeler Gauge	1	
8002		00960096	Pump Fp-3-b With Cip			0	0	Drawing		00920181	Pump With Cip	0	
25		00960096	Pump Fp-3-b With Cip			5	1000	Change		51240054	O-ring	1	
35		00960096	Pump Fp-3-b With Cip			5	1000	Change		51245708	O-ring	1	
24		00960097	Fp-4 Cip Pump Clamp			5	1000	Change		00103678	Bearing Bush, Cart	1	
1		00960097	Fp-4 Cip Pump Clamp			5	1000	Check		00910331	Impeller	1	
1		00960097	Fp-4 Cip Pump Clamp			15	6000	Change		00910331	Impeller	1	
29		00960097	Fp-4 Cip Pump Clamp			10	1000	Check		00920051	Pump Housing Fp-	1	
30		00960097	Fp-4 Cip Pump Clamp			3	500	Check		00920160	Feeler Gauge	1	
8002		00960097	Fp-4 Cip Pump Clamp			0	0	Drawing		00920181	Pump With Cip	0	
25		00960097	Fp-4 Cip Pump Clamp			5	1000	Change		51240054	O-ring	1	
35		00960097	Fp-4 Cip Pump Clamp			5	1000	Change		51245708	O-ring	1	
8001		11061010	AIRSYSTEM KF-XC CUSTOMER			0	0	Drawing		10922649	CUSTOMER LIST	0	
829		11061010	AIRSYSTEM KF-XC CUSTOMER			30	24000	Change		53549060	Membrane	1	
871		11061010	AIRSYSTEM KF-XC CUSTOMER			10	1000	Check		53549145	FILTER ELEMENT	1	
871		11061010	AIRSYSTEM KF-XC CUSTOMER			15	3000	Change		53549145	FILTER ELEMENT	1	
870		11061010	AIRSYSTEM KF-XC CUSTOMER			10	1000	Check		53549147	PRE-FILTER ELEI	1	
870		11061010	AIRSYSTEM KF-XC CUSTOMER			15	3000	Change		53549147	PRE-FILTER ELEI	1	
831		11061010	AIRSYSTEM KF-XC CUSTOMER			5	1000	Check		54549067	Regulating Device	1	
831		11061010	AIRSYSTEM KF-XC CUSTOMER			30	6000	Change		54549067	Regulating Device	1	
1092		11081077	ASSEMBLY COOLINGSYSTEM XC DC			0	0	Drawing		10921013	Cooling System	0	
212		11081077	ASSEMBLY COOLINGSYSTEM XC DC			10	6000	Clean		11021030	Filter	1	

G02548

The Task List can be divided into three sections:

- Description of the spare part location on the machine
- Description of the recommended service work to be performed
- Description of the spare part in question

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3.2.1 Description of the spare part location

Label	Class	Article No.	Denomination	Type	Doc No Reference	Work time	Interval Normal	Action	Description	SparePart No.	Denomination	Qty

G02546

Pre maintenence checks

WARNING! Before starting any service work , read the safety precaution in the corresponding TeM (Technical Manua
Daily/Weekly checks - Have they been carried out? If not carry them out before starting the service.

At any interval - Check - Leaks, Noise, Vibrations, Pressures and Temperatures

Label	Class	Article No.	Denomination	Type
24		00960096	Pump Fp-3-b With Cip	
1		00960096	Pump Fp-3-b With Cip	

G02549

Label	In the spare parts catalogue (SPC) the label will be shown as the position of the spare part.
Class	Material main classes with its subordinate classes for internal Tetra Pak use.
Article No.	Displays the main article number, on which it is recommended that service is performed.The drawing of the item can be found in the spare parts catalogue.
Denomination and type	Description and functionality of the article number.

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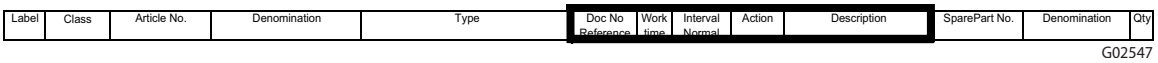
3.2.2 Description of the service work to be performed



G02547

Doc No Reference	Work time	Interval Normal	Action	Description
	5	1000	Change	
	5	1000	Check	

G02550

Doc No Reference	Displays the number of the spare part work instruction.
Work time	This is the estimated required working time for this action displayed in minutes.
Interval normal	The information displays the production hours for the service inspection. The interval must be seen as a guideline, as some might change due to the production of the equipment (None, Normal or Hard).
Action	An action describes the recommended actions to be taken on the spare part, e.g. Check.
Description	Describes the action, e.g. Function.

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3.2.3 Description of the spare part in question

Label	Class	Article No.	Denomination	Type	Doc No Reference	Work time	Interval Normal	Action	Description	SparePart No.	Denomination	Qty

G02553

SparePart No.	Denomination	Qty
00103678	Bearing Bush, Carbon	1
00910331	Impeller	1

G02551

Spare part number, denomination and quantity are displayed.

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3.3 How to read a Task List

Label	Class	Article No.	Denomination	Type	Doc No Reference	Work time	Interval Normal	Action	Description	SparePart No.	Denomination	Qty
24		00960096	Pump Fp-3-b With Cip			5	1000	Change		00103678	Bearing Bush, Carbo	1
1		00960096	Pump Fp-3-b With Cip			5	1000	Check		00910331	Impeller	1
1		00960096	Pump Fp-3-b With Cip			15	3000	Change		00910331	Impeller	1
30		00960096	Pump Fp-3-b With Cip			3	500	Check		00920160	Feeler Gauge	1
8002		00960096	Pump Fp-3-b With Cip			0	0	Drawing		00920181	Pump With Cip	0
25		00960096	Pump Fp-3-b With Cip			5	1000	Change		51240054	O-ring	1
35		00960096	Pump Fp-3-b With Cip			5	1000	Change		51245708	O-ring	1

G02552

The following is an example of how to read the above illustrated Task List, which is maintenance recommendations for the impeller on Pump Fp-3-b with CIP.

On the assembly drawing number 00920181 the item can be located on which the action is recommended to be taken. This drawing can be found in the spare parts catalogue.

It is recommended that the impeller, spare part number 00910331, with position number 1 on the drawing is checked every 1000 production hours and the estimated working time is 5 minutes.

It is recommended that the impeller is changed after 6000 production hours and the estimated working time for this job is 15 minutes.

Maintenance procedures can be found in the maintenance manual.

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3.4 Tetra PlantCare™Agreement

Tetra PlantCare is a maintenance service tool aiming at securing a high level of plant performance, food hygiene and safety.

Application

Pre-planed preventive maintenance of individual machines as well as complete production lines. The actual scope of delivery is tailor-made individually in close co-operation with you and Tetra Pak technical management.

Advantages

- Realistic maintenance costs on budget
- Comprehensive machine history (protocol)
- Less unexpected production stops
- The right spare parts in stock
- Improved overall equipment effectiveness
- Food safety
- Environmental performance
- Customer training

Scope of services

- Project management
- Logistics management
- Maintenance work and supervision on site
- Supply of parts
- I/O check and functional test
- Supervision of production start-up after service
- Service protocol

How to get started

Please contact your local Tetra Pak Hoyer representative for further information and detail conditions in your area.

www.tetrapak.com

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Task List

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Tetra Pak Hoyer A/S **, Preventive maintenance recommendations. ProductNo: Z1481295**

IssueDate: 2007-01-30

Pre maintenence checks

WARNING! Before starting any service work , read the safety precaution in the corresponding TeM (Technical Manual)
Daily/Weekly checks - Have they been carried out? If not carry them out before starting the service.

At any interval - Check - Leaks, Noise, Vibrations, Pressures and Temperatures

Label	Class	Article No.	Denomination	Type	Doc No Reference	Work time	Interval Normal	Action	Description	SparePart No.	Denomination	Qty	Action performed Date / Result
1		59401480023	Drive For Mixer			5	3000	Check		59401420083	Pulley Z18	1	
1		59401480023	Drive For Mixer			15	6000	Change		59401420083	Pulley Z18	1	
2		59401480023	Drive For Mixer			5	3000	Check		59401420084	Pulley Z80	1	
2		59401480023	Drive For Mixer			15	6000	Change		59401420084	Pulley Z80	1	
3		59401480023	Drive For Mixer			5	1000	Check		59855659216	Notched Belt	1	
3		59401480023	Drive For Mixer			10	3000	Change		59855659216	Notched Belt	1	
3		59401480018	Dry Materials Feeder			5	3000	Check		59212030076	Front Bearing	1	
3		59401480018	Dry Materials Feeder			5	6000	Change		59212030076	Front Bearing	1	
2		59401480018	Dry Materials Feeder			5	3000	Check		59401420067	Outlet Pipe	1	
2		59401480018	Dry Materials Feeder			5	6000	Change		59401420067	Outlet Pipe	1	
25		59401480018	Dry Materials Feeder			5	1000	Change		59851229078	Gasket	1	
28		59401480018	Dry Materials Feeder			5	1000	Change		59851245742	O-ring	1	
22		59401480018	Dry Materials Feeder			10	1000	Change		59851249138	O-ring	1	
18		59401480018	Dry Materials Feeder			10	1000	Change		59851279153	Simmer Ring	2	
20		59401480018	Dry Materials Feeder			10	1000	Change		59851279154	Simmer Ring	2	
17		59401480018	Dry Materials Feeder			10	3000	Check		59855010931	Ball Bearing	4	
17		59401480018	Dry Materials Feeder			5	6000	Change		59855010931	Ball Bearing	4	
8		59401480024	Lamella Pump			2	500	Check		59401321004	Inner lamella	1	
8		59401480024	Lamella Pump			2	3000	Change		59401321004	Inner lamella	1	
9		59401480024	Lamella Pump			2	500	Check		59401321005	Middle lamella	1	
9		59401480024	Lamella Pump			2	3000	Change		59401321005	Middle lamella	1	
10		59401480024	Lamella Pump			2	500	Check		59401321006	Outer lamella	1	
10		59401480024	Lamella Pump			2	3000	Change		59401321006	Outer lamella	1	
7		59401480024	Lamella Pump			5	500	Check		59401321104	Rotor	1	
7		59401480024	Lamella Pump			5	6000	Change		59401321104	Rotor	1	
19		59401480024	Lamella Pump			5	1000	Change		59851229078	Gasket	2	
1		59401480024	Lamella Pump			10	1000	Change		59851243403	O-ring	2	
3		59401480024	Lamella Pump			10	1000	Change		59851249207	O-ring	1	
17		59401480022	Mixer			10	3000	Change		59401321473	Bush For Mixer	1	
19		59401480022	Mixer			5	1000	Change		59851229002	Gasket	1	
14		59401480022	Mixer			5	1000	Change		59851229052	Gasket	2	
7		59401480022	Mixer			10	1000	Change		59851249151	O-ring	1	

Label	Class	Article No.	Denomination	Type	Doc No Reference	Work time	Interval Normal	Action	Description	SparePart No.	Denomination	Qty	Action performed Date / Result
5		59401480022	Mixer			10	1000	Change		59851250299	V-ring	1	
3		59401480022	Mixer			10	1000	Change		59851259042	Vr-gasket	1	
8		59401480022	Mixer			5	3000	Check		59855010851	Ball Bearing	2	
8		59401480022	Mixer			10	6000	Change		59855010851	Ball Bearing	2	

After maintenance checks

At any interval - Check - Leaks, Noise, Vibrations, Pressures, temperatures and flow according to start up protocol

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4 Spare Parts Catalogue

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4.0 Information about spare parts

4.0.1 General

During the lifetime of this Hoyer ice cream equipment the plant will require spare parts, service and maintenance in order to maintain its high performance.

Using genuine Hoyer spare parts from Tetra Pak guaranties the reliable, efficient and safe operation of the Hoyer ice cream equipment.

All generic parts are in stock ready for immediate delivery. Special parts not in stock will be manufactured in our own workshops based on original documentation and all parts are covered by a one-year guarantee. Genuine Hoyer spare parts from Tetra Pak save you money by increasing uptime and avoiding damage due to inferior quality of non-original parts.

Tetra Pak Technical Sales and Service is equipped to give the ultimate help and service to secure a correct and expedient handling of spare parts orders.

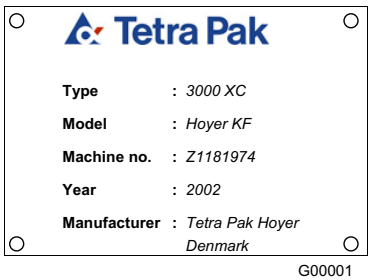
The global supply chain network secure fast and traceable handling of shipments throughout the world.

4.0.2 How to order spare parts

In order to deliver the correct parts there are 4 critical points of information, which enable the delivery of the right parts

- **Customer name and plant**
- **Machine type and number (Zxxx xxxx)**
- **Description of spare part**
- **Spare part number**

The type and serial number is always found on the machine identification plate.



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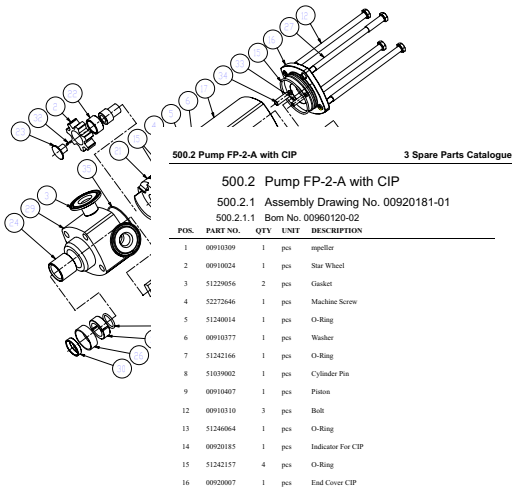

If you want to know more about Hoyer spare parts from Tetra Pak - or about any other service products - contact your nearest Tetra Pak Service representative.

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4.1 Frame

4.1.1 Assembly drawing no. 59401420125-01

4.1.1.1 Bom no. 59401480026-03

POS.	PART NO.	QTY	UNIT	DESCRIPTION
1	59401420056	1	pcs	Frame
3	59401420124	1	pcs	Electrical Cabinet
4	59851249112	4	pcs	O-ring
5	59855739050	2	pcs	Fixed Wheel
6	59855739046	2	pcs	Turning Wheel

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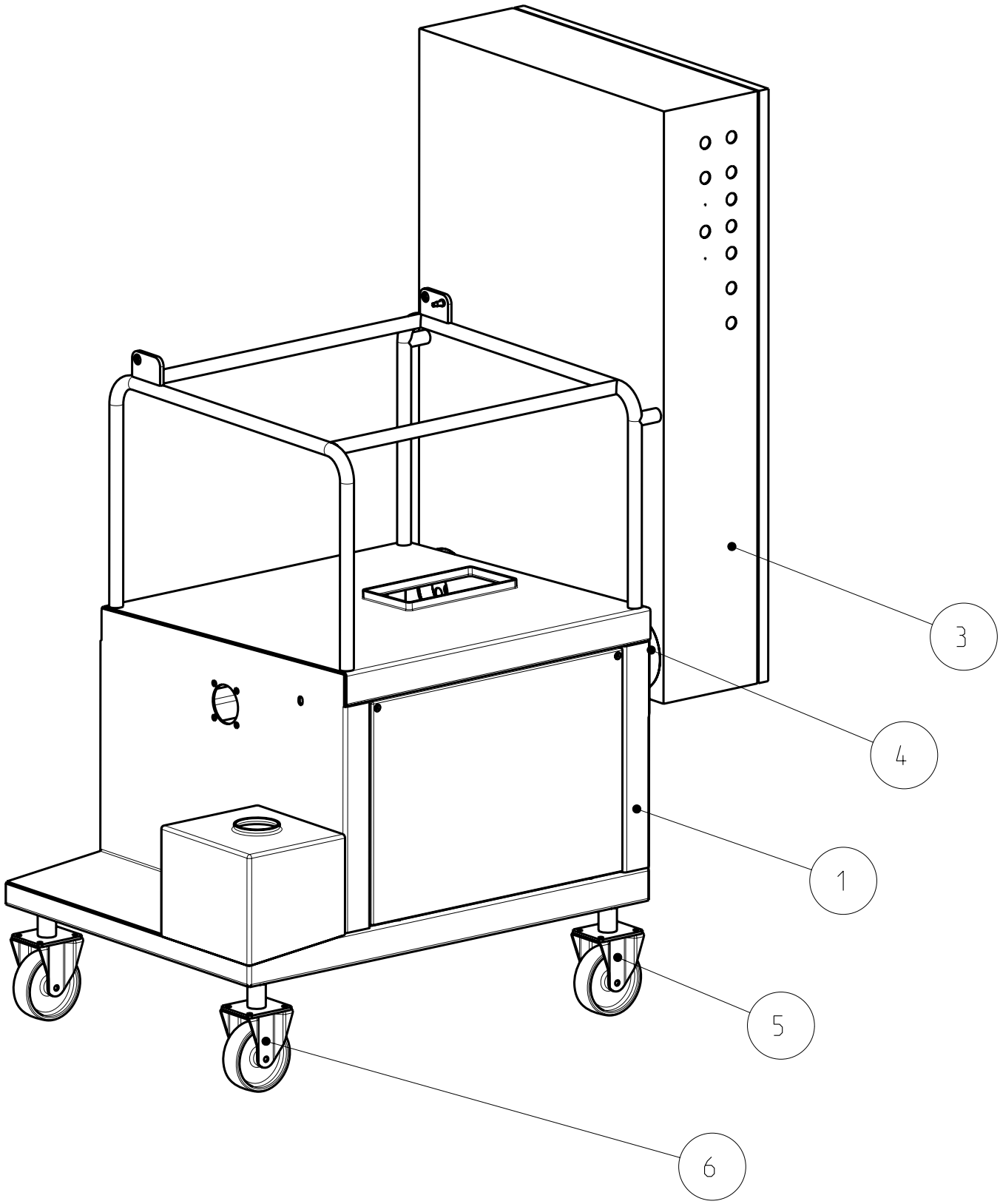

4.2 Gear & motor

4.2.1 Assembly drawing no. 59401420126-00

4.2.1.1 Bom no. 59401480027-03

POS.	PART NO.	QTY	UNIT	DESCRIPTION
2	59857349033	1	pcs	Safety Switch
3	59854529370	1	pcs	Worm Reduction Gear
4	59854529333	1	pcs	Worm Reduction Gear
5	59854519449	1	pcs	El-motor
6	59854519637	1	pcs	El-motor
7	59854519631	1	pcs	El-motor

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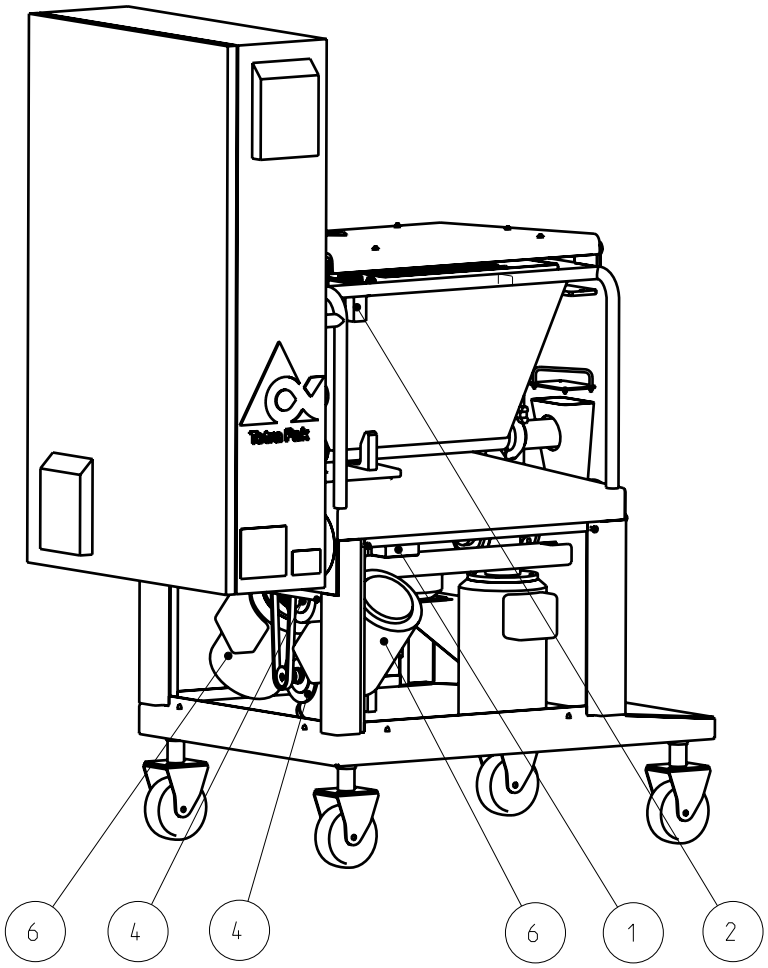

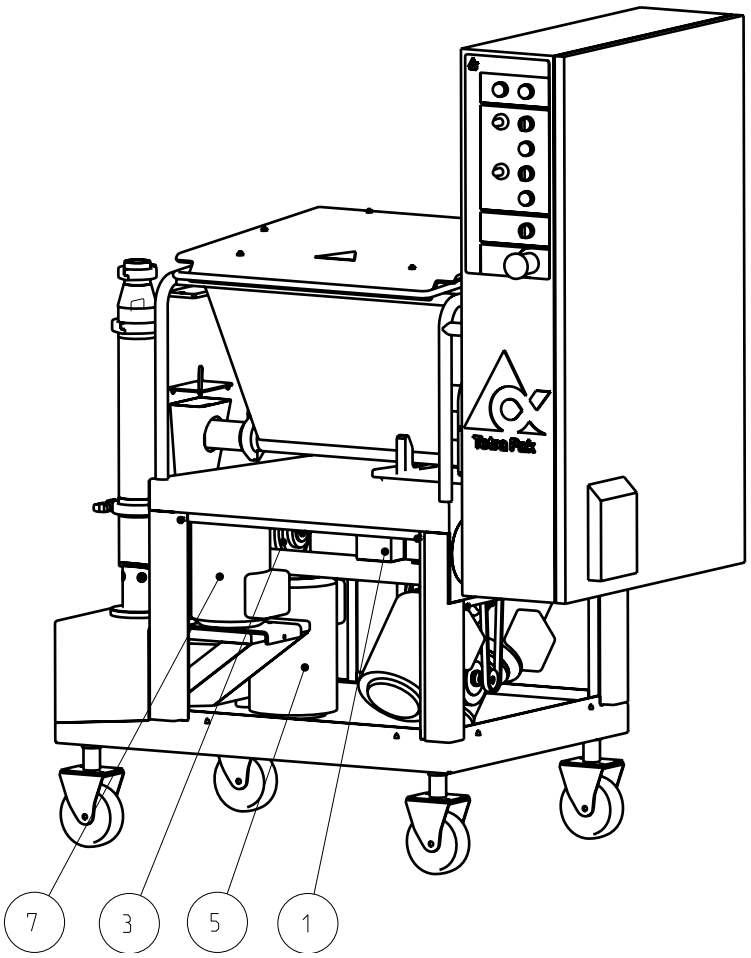

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4.3 Dust cover

4.3.1 Assembly drawing no. 59401420090-03

4.3.1.1 Bom No. 59401480021-01

POS.	PART NO.	QTY	UNIT	DESCRIPTION
1	59401420062	1	pcs	Frame For Dust Cover
2	59401320893	2	pcs	Suspension Pin
3	59401420063	1	pcs	Plate For Dust Cover
4	59855419002	2	pcs	Collar Bush
5	59852565378	2	pcs	Lock Nut
6	59851119005	6	pcs	Washer
7	59852212509	6	pcs	Screw
8	59855519016	2	pcs	Ball Joint
9	59854729131	1	pcs	Gas Spring
10	59852549010	4	pcs	Counter Nut
11	59853449125	12	pcs	Wall Lead-in

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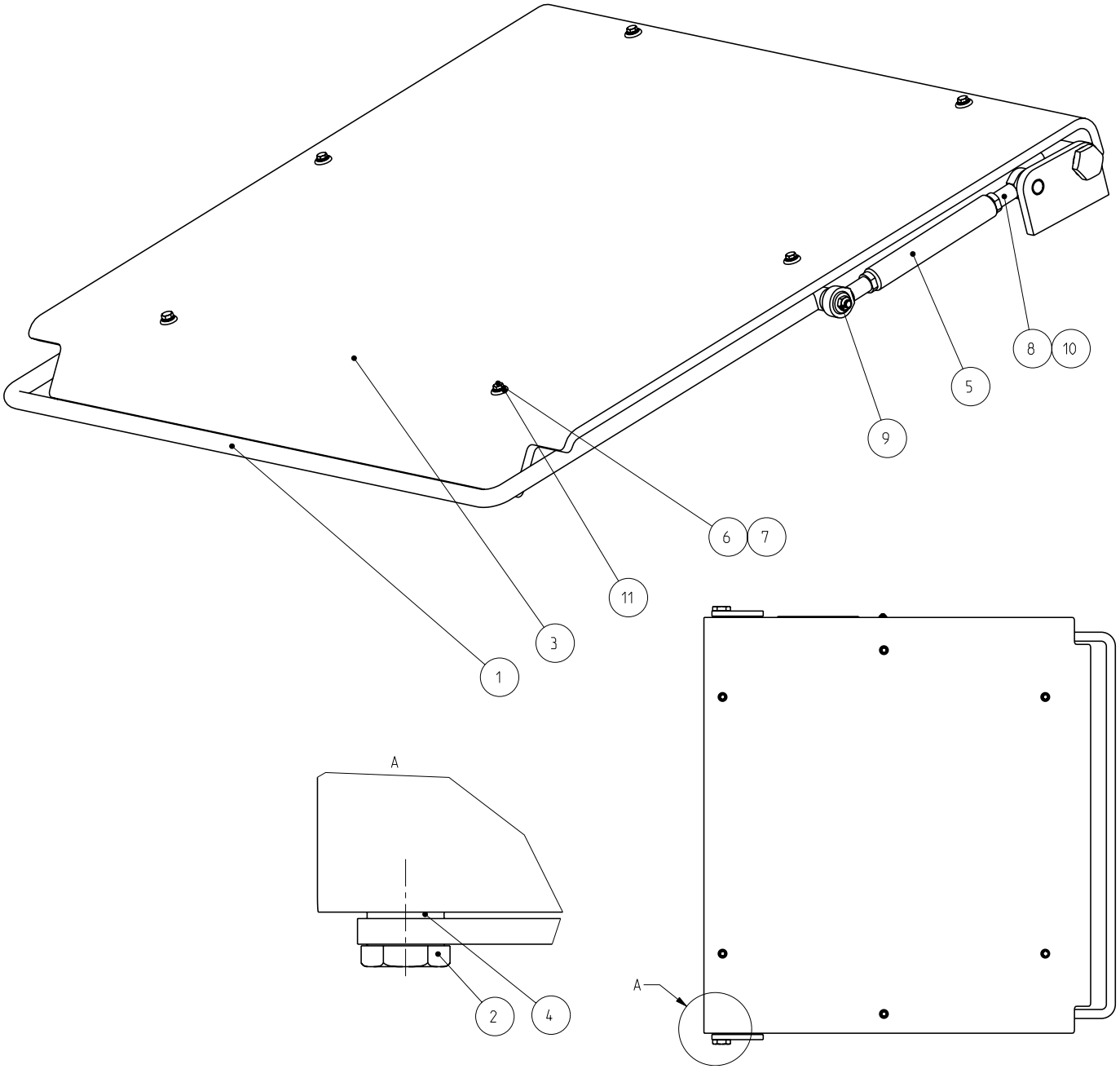

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4.4 Dry materials feeder

4.4.1 Assembly drawing no. 59401420101-03

4.4.1.1 Bom no. 59401480018-10

POS.	PART NO.	QTY	UNIT	DESCRIPTION
1	59401420066	1	pcs	Hopper
2	59401420067	1	pcs	Outlet Pipe
3	59412030076	1	pcs	Front Bearing
4	59412030084	1	pcs	Spring
5	59401420013	1	pcs	Pinion
6	59401420068	2	pcs	Distance Bush
7	59401420071	1	pcs	Drive Shaft
8	59401420070	1	pcs	Drive Shaft
9	59401420069	1	pcs	Agitator
10	59401420120	2	pcs	Pinion For Gear
11	59401420072	2	pcs	Shaft For Gear
12	59401420073	1	pcs	Grating For Hopper
13	59401420074	2	pcs	Bolt
14	59401420085	1	pcs	Cover For Hopper Drive
15	59851179022	2	pcs	Seeger Ring
16	59851459024	1	pcs	Clamp Ring
17	59855010931	4	pcs	Ball Bearing
18	59851279153	2	pcs	Simmer Ring
19	59401420064	1	pcs	Support For Load Cell
20	59851279154	2	pcs	Simmer Ring
21	59851169046	4	pcs	Parallel Key
22	59851249138	1	pcs	O-ring
23	59851179017	2	pcs	Seeger Ring

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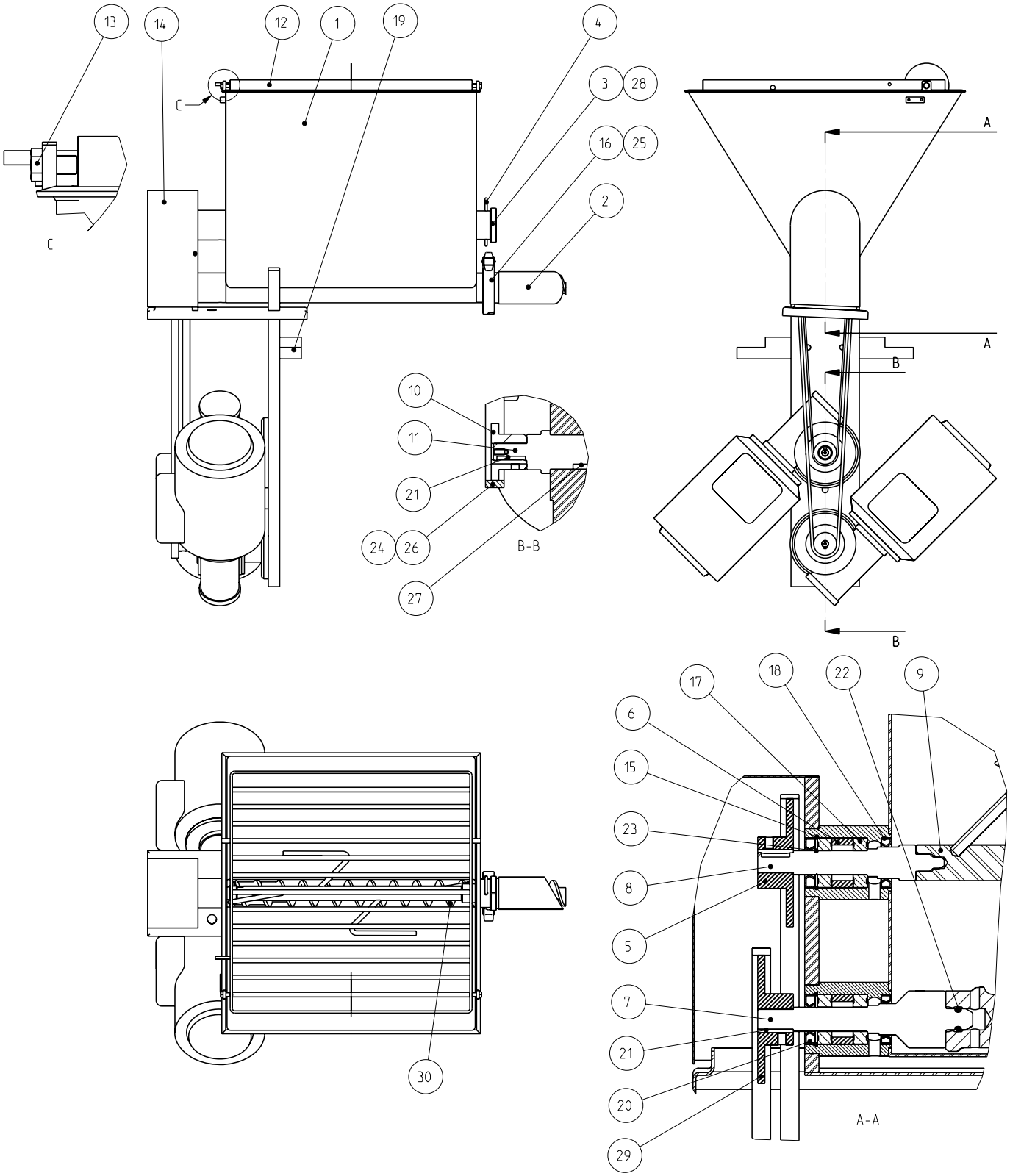

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POS.	PART NO.	QTY	UNIT	DESCRIPTION
24	59855664079	1,1	m	Chain
25	59851229078	1	pcs	Gasket
26	59855679033	2	pcs	Joint Link
27	59851169054	2	pcs	Parallel Key
28	59851245742	1	pcs	O-ring
29	59401420121	1	pcs	Pinion For Dosing Screw
30	59401420161	1	pcs	Auger 45/20-70 SS
30	59401420168	1	pcs	Auger 45/10-45-65

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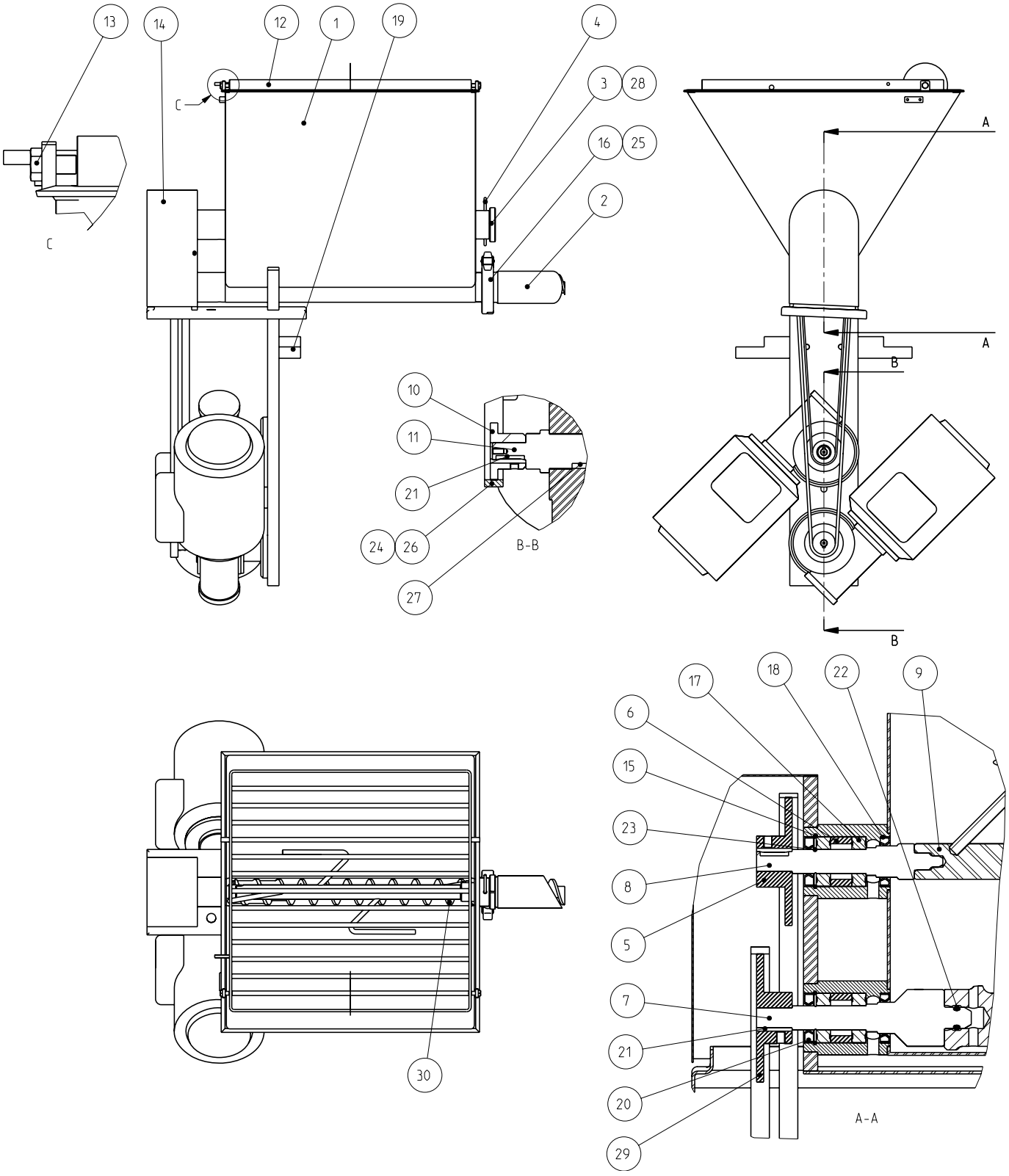

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4.5 Mixer

4.5.1 Assembly drawing no. 59401420080-02

4.5.1.1 Bom no. 59401480022-02

POS.	PART NO.	QTY	UNIT	DESCRIPTION
1	59401420034	1	pcs	Dasher
2	59401420078	1	pcs	Bottom Piece
3	59851259042	1	pcs	Vr-gasket
4	59401420079	1	pcs	Drive Shaft
5	59851250299	1	pcs	V-ring
6	59401321108	1	pcs	Intermediate Ring
7	59851249151	1	pcs	O-ring
8	59855010851	2	pcs	Ball Bearing
9	59401420020	1	pcs	Distance Pipe
10	59851165331	1	pcs	Parallel Key
11	59851179024	1	pcs	Seeger Ring
12	59851174083	1	pcs	Seeger Ring
13	59851459007	2	pcs	Clamp Ring
14	59851229052	2	pcs	Gasket
15	59401420065	1	pcs	Support For Mixer
16	59401420021	1	pcs	Housing For Mixer
17	59401321473	1	pcs	Bush For Mixer
18	59401321294	1	pcs	Cone
19	59851229002	1	pcs	Gasket
20	59851459024	1	pcs	Clamp Ring
21	59851459066	1	pcs	Branch

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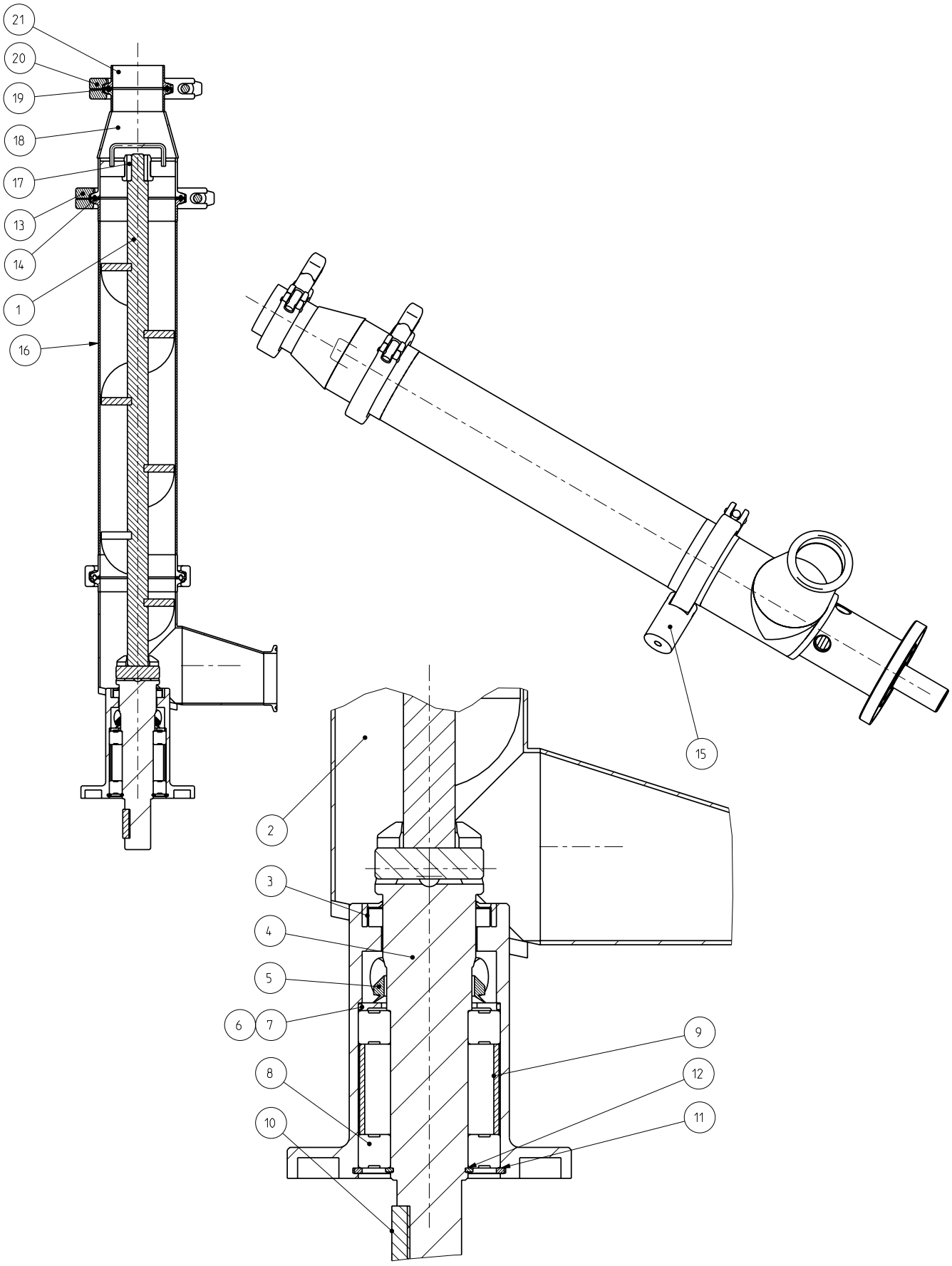

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4.6 Drive for mixer

4.6.1 Assembly drawing no. 59401420081-00

4.6.1.1 Bom No. 59401480023-00

POS.	PART NO.	QTY	UNIT	DESCRIPTION
1	59401420083	1	pcs	Pulley Z18
2	59401420084	1	pcs	Pulley Z80
3	59855659216	1	pcs	Notched Belt

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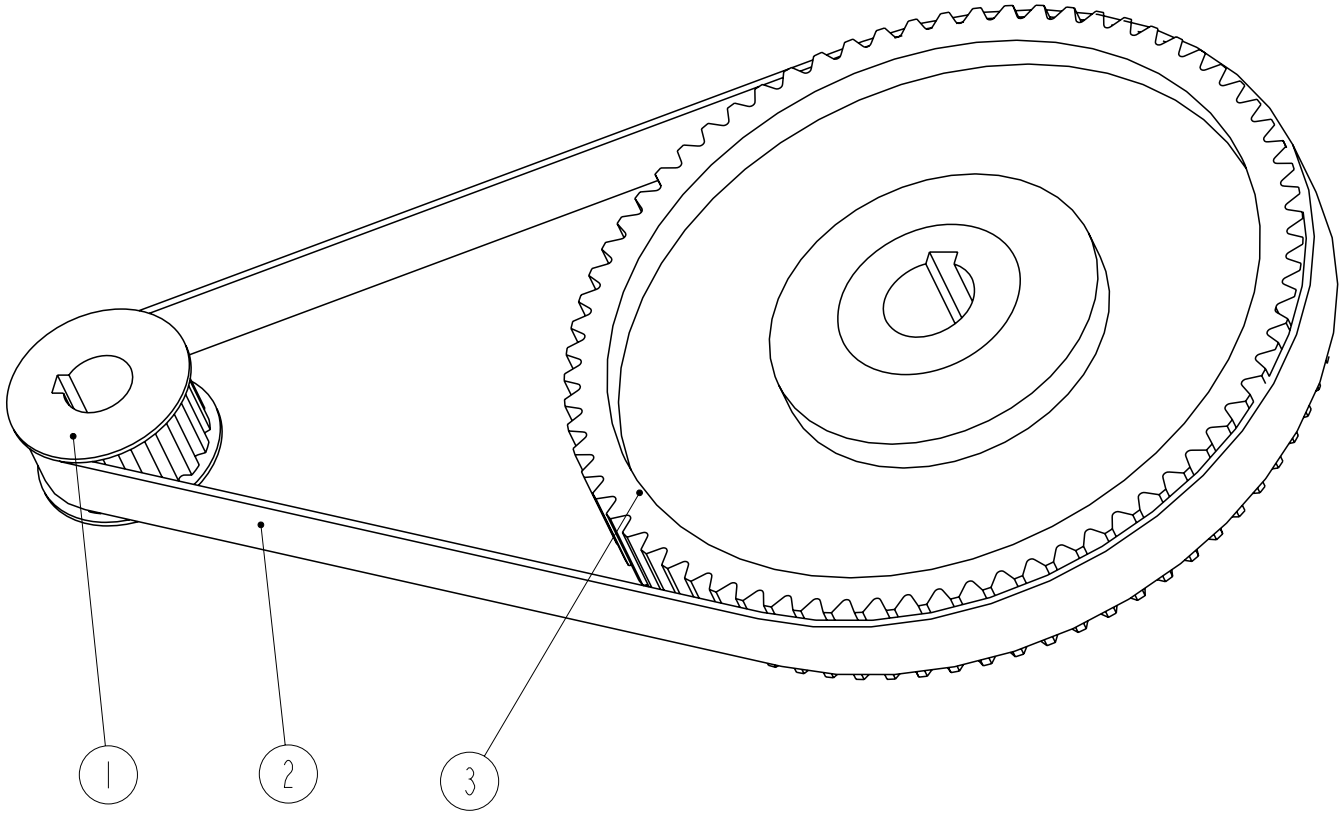

4.7 Lamella pump

4.7.1 Assembly drawing no. 59401420089-02

4.7.1.1 Bom no. 59401480024-02

POS.	PART NO.	QTY	UNIT	DESCRIPTION
1	59851243403	2	pcs	O-ring
2	59401420025	1	pcs	Pumphous
3	59851249207	1	pcs	O-ring
4	59401420033	1	pcs	Top Cover
5	59852212523	2	pcs	Screw
6	59851112486	2	pcs	Washer
7	59401321104	1	pcs	Rotor
8	59401321004	1	pcs	Inner Lamella
9	59401321005	1	pcs	Center Lamella
10	59401321006	1	pcs	Outer Lamella
12	59401420031	1	pcs	Front Cover
13	59852212516	4	pcs	Screw
14	59851112485	4	pcs	Washer
15	59401420045	1	pcs	Drive Shaft
16	59401420087	1	pcs	Inlet Funnel With Cover
17	59851459066	1	pcs	Branch
18	59851459024	2	pcs	Clamp Ring
19	59851229078	2	pcs	Gasket
20	59401420028	1	pcs	Flange

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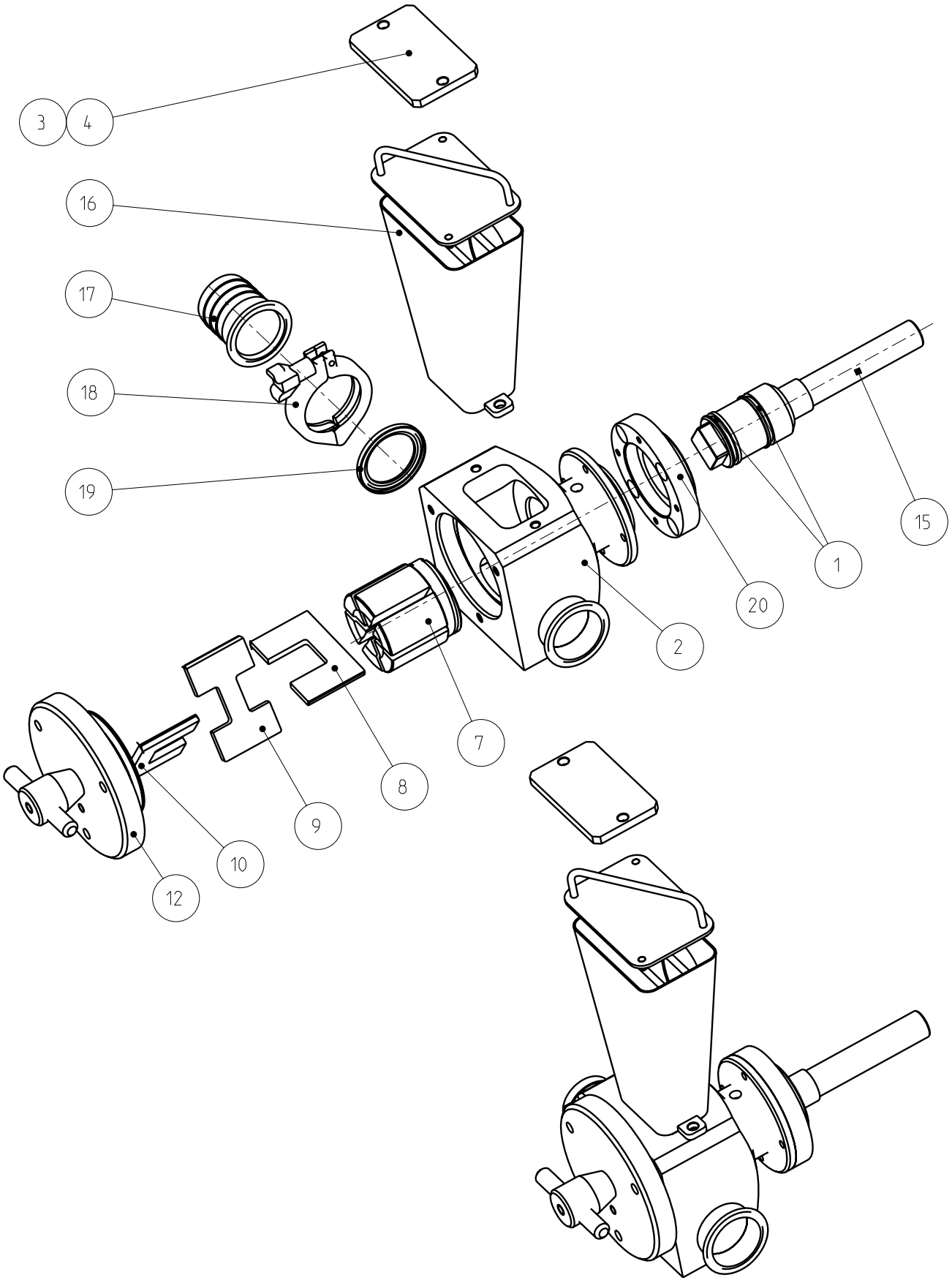

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4.8 Recommended spare parts

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Recommended SpareParts

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SparePart No.	Denomination	Qty		Is part of BOM-list
59401420067	Outlet Pipe	1	59401480018	Dry Materials Feeder
59851279153	Simmer Ring	2	59401480018	Dry Materials Feeder
59851279154	Simmer Ring	2	59401480018	Dry Materials Feeder
59401321473	Bush For Mixer	1	59401480022	Mixer
59851250299	V-ring	1	59401480022	Mixer
59851259042	Vr-gasket	1	59401480022	Mixer
59401420083	Pulley Z18	1	59401480023	Drive For Mixer
59401420084	Pulley Z80	1	59401480023	Drive For Mixer
59855659216	Notched Belt	1	59401480023	Drive For Mixer
59401321004	Inner lamella	1	59401480024	Lamella Pump
59401321005	Middle lamella	1	59401480024	Lamella Pump
59401321006	Outer lamella	1	59401480024	Lamella Pump
59401321104	Rotor	1	59401480024	Lamella Pump

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Tetra Pak