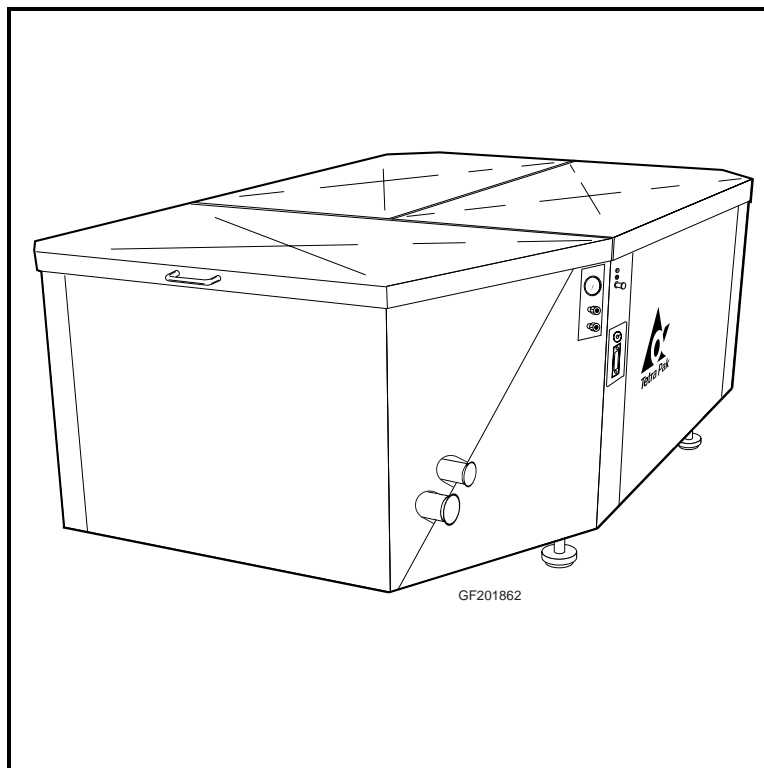


OM

Operation Manual

Tetra Alex[®] 25



2.244364-01.fro

MW
MACHINERY WORLD

 **Tetra Pak**
Doc No. OM-1244364-01

This document is valid for:

Series No/ Machine No

OM

Operation Manual

Tetra Alex[®] 25

2.244364-01.fro

Doc No. OM-1244364-01

Issue 2001-04

Tetra Pak
Tetra Pak Processing Components AB



Introduction	1
Equipment	1
Document	2
Safety precautions	3
Use of hazard information	3
General	4
Cleaning solution	5
Handling of cleaning solution	5
Emergency precautions	5
General description	7
Applications	7
Process description	7
Denominations	8
Main components	8
Control panel	8
Cooling water system	9
Operation	11
Preparations	11
Start	12
Sterilisation	12
Production	13
Check during production	13
Stop	13
Emergency stop	13
Cleaning	15
Lubrication	17
Recommended oil	17
Oil amount	18



This page intentionally left blank

2.24.4364-01.TOC



Introduction

This section contains basic information about this manual and the Tetra Pak equipment described.



WARNING!

To ensure maximum safety, always read the section **Safety precautions** before carrying out any work on the unit.

Equipment

Intended use of this Tetra Pak equipment

This unit is intended for use according to the specifications in **Technical data** (see **Technical Manual**) and related documents.

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

Service

If problems are encountered when operating the unit, contact the nearest Tetra Pak service station.

Manufacturer

This Tetra Pak equipment was produced by:

Tetra Pak Processing Components AB
Bryggaregatan
S-221 00 LUND
Sweden

Unit identification

All units carries a machine plate stating:

- unit identification
- data unique to the unit

Have this information available before contacting Tetra Pak concerning this particular unit.

Machine Type	<input type="text"/>
Drawing Spec.	<input type="text"/>
Machine No.	<input type="text"/>
Manufacturer	<input type="text"/>
	<input type="text"/>
Year of manufacture	<input type="text"/>



Document

Operation Manual (OM)

The purpose of this Operation Manual is to provide the operator with information on how to operate the machine.

Tetra Pak recommend that you study it carefully, and - above all - ensure its availability to those who will be operating the unit.

Furthermore, it is important that you:

- keep the manual for the life of the equipment
- pass the manual on to any subsequent owner or user of the equipment.

Tetra Pak will not be held responsible for any breakdown of the equipment caused by the owner's failure to follow the instructions given in this manual.

Design modifications

The information given in this document is in accordance with the design and construction of the machine at the time it was delivered by the Tetra Pak machine production facility.

Further copies

Additional copies can be ordered from the nearest Tetra Pak service station.

When ordering technical publications, always quote the **document number** printed on the front cover of the document concerned.

Document producer

This document was produced by:

Tetra Pak Processing Components AB
Bryggaregatan
S-221 00 LUND
Sweden

Number of pages

This document contains a total of 20 pages.

Copyright © 2001

Tetra Pak Processing Systems Division

All rights reserved. No part of this document may be reproduced or copied in any form or by any means without the written permission of Tetra Pak Processing Systems Division.



Safety precautions

To ensure maximum safety for the operator, always read this section carefully before carrying out any work on the equipment.

Use of hazard information

Hazard information in this documentation is defined as follows:



DANGER!

Failure to observe this information results in immediate danger to life.



WARNING!

Failure to observe this information can result in major personal injury or loss of life

Caution!

Failure to observe this information can result in minor personal injury or damage to the equipment.

General

Only trained personnel are allowed to operate the machine. The machine may only be used in accordance with the instructions given in the manuals delivered with the equipment.

If the **Safety precautions** are not followed, there is risk of personal injury.

The machine is normally started by an external signal, therefore:

- always keep all covers closed during operation, rotating wheels and moving pistons may cause severe injuries
- make sure the mains power is turned off and secured before the service covers are opened/removed
- regard all electrical equipment as live, make sure the doors for the starter panel are closed

During operation:

- stay outside the safety area (approximately 1m (3 feet) around the machine)
- regard all pipes including pulsation dampers as hot
- watch out for leakage/blasts from hot media at pipe connections and from pressurized parts of the machine
- always use hearing protection
- never throttle down the product flow to or from the machine



DANGER!

Risk of explosion - Immediate danger to life

Make sure that the product outlet pipes not are blocked in any way. Due to high pressure, this will make a high risk of exploded pipes and dampers.

Before carrying out maintenance and repair:

- read the Safety precautions in the **Technical Manual** and follow instructions given

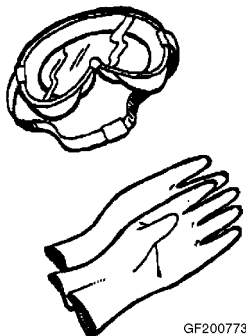
Cleaning solution

Handling of cleaning solution

Cleaning solutions normally contain caustic soda (NaOH) or nitric acid (HNO₃). These chemicals may cause burning to skin and eyes. Follow the instructions given by the supplier.

Whenever there is a risk of exposure to these chemicals, always wear:

- safety glasses
- protective gloves
- shoes made of PVC or PE plastic, or rubber
- apron.



In the case of an accident involving cleaning solution, the basic rule is to rinse the affected area as soon as possible with as much water as possible.

For this reason, always make sure that the showers work, that there are additional washing facilities, and that an eyewash device is available at or near each machine site.

Emergency precautions

If swallowed

If you happen to swallow cleaning solution:

- drink large amounts of lukewarm water (in order to dilute the cleaning solution); then seek medical attention immediately.

Contact with eyes

If cleaning solution is splashed into your eyes:

- wash the eyes thoroughly with lukewarm water for 15 minutes (keep eyelids widely apart); then seek medical attention immediately.



Contact with skin or clothes

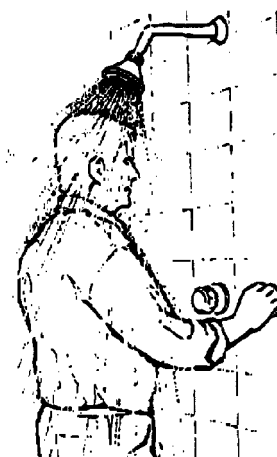
If cleaning solution comes into contact with skin or clothes:

- rinse immediately with plenty of water
- thoroughly wash the clothes before they are worn again. If skin burns appear, seek medical advice immediately.

If inhaled

If you experience irritation or pain due to having inhaled vaporized cleaning solution:

- leave the affected area to get fresh air. If the symptoms become worse, seek medical advice.





This page intentionally left blank

2.2 tf201472.en



General description

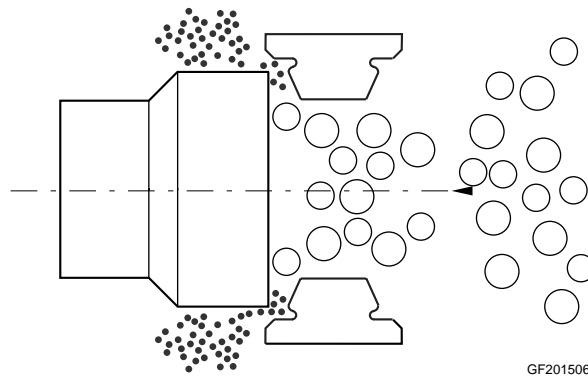
Applications

High pressure homogenisation of liquid food.

DAIRY	OTHER
Pasteurized milk	Beverages
UHT milk	Concentrates
Cream	Fruit juices
Yoghurt	Baby food
Condensed milk	Dressings
	Tomato juice and ketchup

Process description

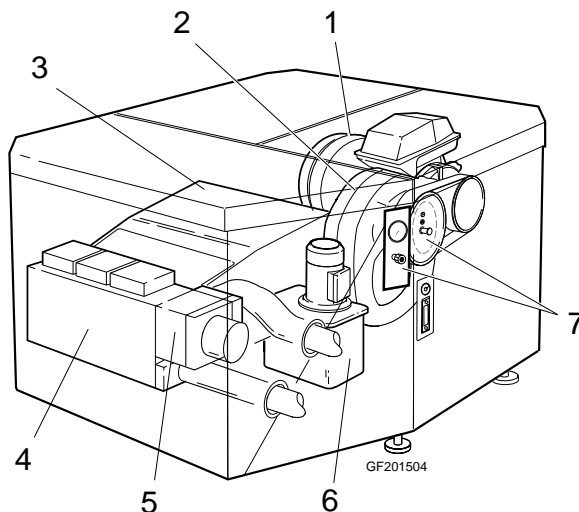
The high pressure homogeniser functions as a positive displacement pump. It forces the product through a narrow adjustable gap under high pressure. The resulting high velocity and turbulence in the gap effectively reduce the size of liquid droplets.



2.2 tf201339.en

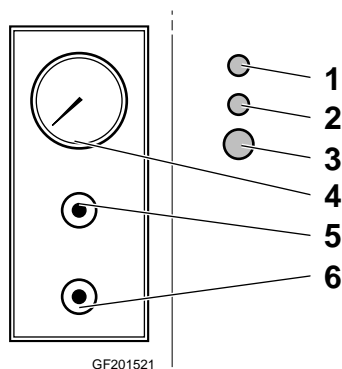
Denominations

Main components



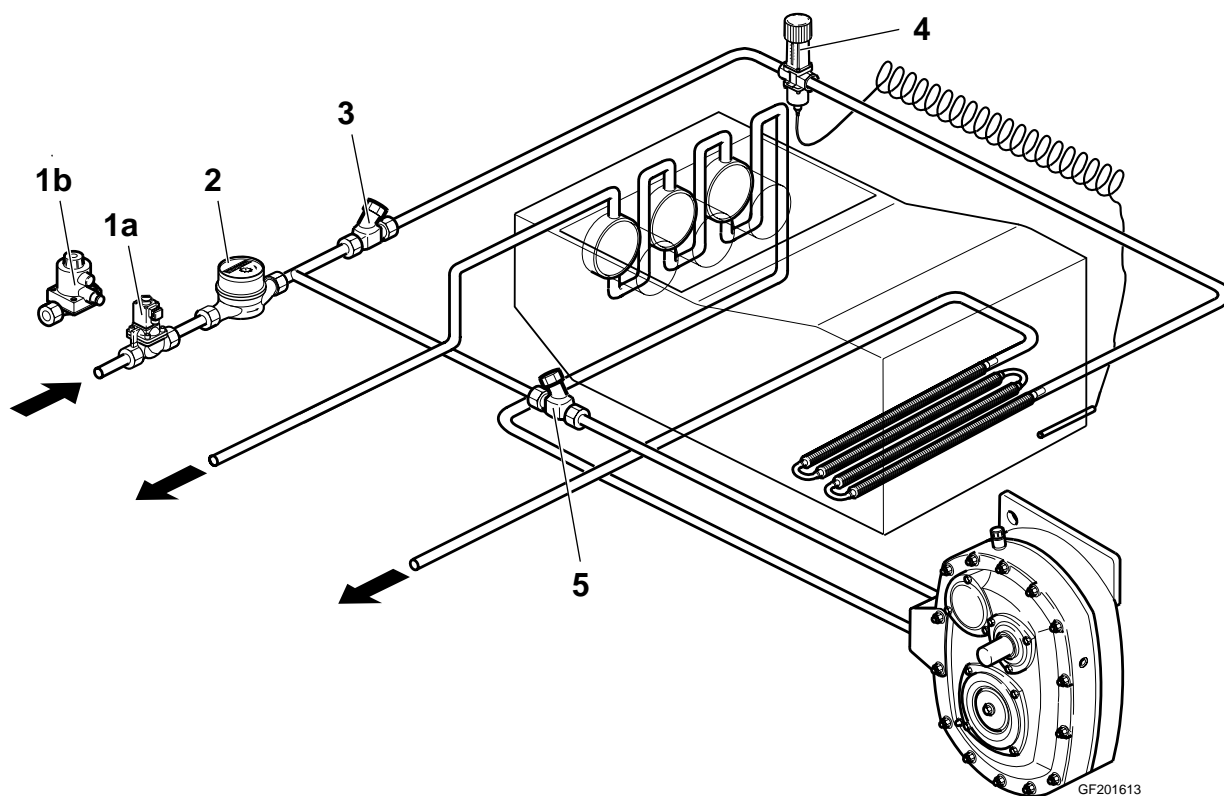
- 1 Drive motor
- 2 Reducing gearbox
- 3 Crankcase
- 4 Wetend
- 5 Homogenising head
- 6 Hydraulic unit
- 7 Control panel

Control panel



- 1 Start button
- 2 Stop button
- 3 Emergency stop button
- 4 Homogenisation pressure gauge
- 5 Pressure adjusting valve 1st stage (Remote control as option)
- 6 Pressure adjusting valve 2nd stage (Remote control as option)

Cooling water system



2.2 tf201372.en

	Description	Function
1a	Cooling water valve, solenoid (standard)	Shut of valve, controlled by electrical signal
1b	Cooling water valve, pneumatic (optional)	Shut of valve, controlled by compressed air
2	Cooling water flow meter (optional)	Indicates flow rate and accumulated value Flow rate, see Technical Data in the Technical Manual
3	Cooling water regulating valve	Regulation of crankcase oil temperature Max. 55 °C (131 °F)
4	Cooling water regulator (optional)	Automatic control of crankcase oil temperature
5	Cooling water regulating valve	Regulation of gearbox oil temperature



This page intentionally left blank

2.2 tf201372.en

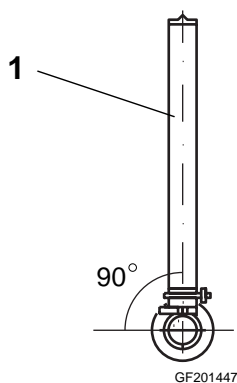
Operation

Preparations

- Check that the mains power switch is turned off
- Check oil levels and top up if required
 - Crank case
 - Reducing gear box
 - Hydraulic unit

Type of oil: see Lubricants

- Drain the dampers (1)
- Close all covers
- Open external cooling water valve
- Turn on the external mains power switch



DANGER!

Risk of explosion - Immediate danger to life

Make sure that the outlet pipes not are blocked in any way.
Due to high pressure, this will make a high risk of exploded pipes and dampers.



Start

- Start the product feed pump / Start by external signal
Check that the inlet pressure corresponds to the table below:

Recommended inlet pressures

Product	P1 bar (psi)
Low viscous products e.g. milk, juice	3 - 10 (45 - 150)
High viscous products e.g. sauces, ketchups	4 - 10 (60 - 150)

- Push the start button / Start by external signal
 - The drive motor starts
 - Cooling water valve opens
 - The hydraulic unit startsCheck for flow at cooling water outlet.

Sterilisation

Before production the machine must be sterilized.
This is done in line with the surrounding process systems.

Production

- Set the homogenising pressure
 - a) Adjust the 2nd stage pressure adjusting valve to desired value or 20% of the homogenisation pressure.
 - b) Adjust the 1st stage pressure valve to the decided value.

Check during production

- Homogenising pressure
Fine tune by help of the 1st stage pressure adjusting valve.
- Crankcase oil temperature, maximum 55 °C (131 °F)



WARNING!

Risk of jam.

Avoid getting in contact with the pistons

- Product inlet pressure
- If a fault occurs, see section Trouble shooting in the Technical Manual.

Stop

- Turn off the pressure adjusting valves for
 - a) 1st stage
 - b) 2nd stage
- Push the stop button / Stop by external signal

Emergency stop

- Push the emergency stop button only if there is a risk of damage to personnel or property.



WARNING!

Emergency stopped

The machine may contain hot liquid or cleaning solution.
Handle with outmost care to avoid exposure.

- Eliminate the cause for the emergency stop.
- Turn off the pressure adjusting valves for
 - a) 1st stage
 - b) 2nd stage
- Release the emergency stop button and perform a normal start according Start and Production.



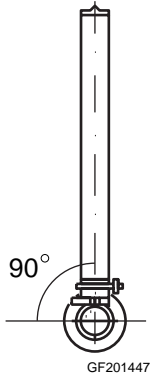
This page intentionally left blank

2.2 tf201322.en

Cleaning

The machine is cleaned in line with the surrounding systems.

Check cleaning of pulsation dampers at least once a week. Clean manually if required.





This page intentionally left blank

2.2 tf201633.en

Lubrication

Recommended oil

Crankcase		
Recommended oil: Transmission oil of mineral type, viscosity* 220		
TP No.: 90296-0073		
Producer	Type	Viscosity*
BP	Energol GR-XP 220	220
Mobil	Mobilgear 630	220
Shell	Omala 220	220

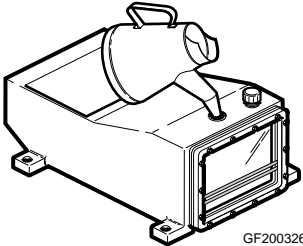
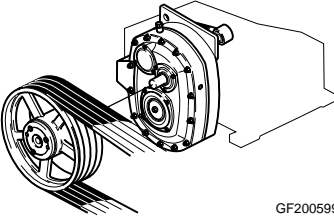
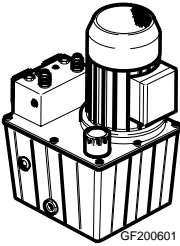
Gearbox		
Recommended oil:		
Transmission oil of mineral or synthetic type, viscosity* 320		
TP No.: 90296-0076 (Mineral)		
Producer	Type	Viscosity*
BP	Energol GR-XP 320 (Mineral)	320
Mobil	Mobilgear 632 (Mineral)	320
Shell	Omala 320 (Mineral)	320
BP	Energol HTX (Synthetic)	320

Hydraulic unit		
Recommended oil: Hydraulic oil, viscosity* 68		
TP No.: 90296-0081		
Producer	Type	Viscosity*
BP	Bartran 68	68
Mobil	Mobil Hydraulic Oil HP 68 N	68
Shell	Tellus S 68	68

Drive motor		
TP No.: 90296-0068		
Producer	Type	Viscosity*
BP	Energol LS EP 1	~115
Exxon	Unirex N3	~115
Statoil	Uni Way HTC3	~115
Shell	Alvania Grease R3	~115

* Viscosity in mm²/sec (c.st) at 40°C (104°F)

Oil amount

Crankcase	Gearbox	Hydraulic unit
Approx. 28 litres (7.4 U.S. gallons)	Approx. 6 litres (1.6 U.S. gallons)	Approx. 6 litres (1.6 U.S. gallons)
 <p style="text-align: right; font-size: small;">GF200326</p>	 <p style="text-align: right; font-size: small;">GF200599</p>	 <p style="text-align: right; font-size: small;">GF200601</p>

