



Tetra Alex[®] 400

Homogenizer or high-pressure pump
for liquid food applications



Application

High-pressure homogenization of emulsions and suspensions.
Available also as high-pressure pump.

Dairy. Pasteurised milk, UHT milk, cream, yoghurt, condensed milk, ice cream mix, etc.

Beverages. Fruit juices, concentrates, purées, tomato products, etc.

Prepared food. Dressings, ketchups, liquid egg, mayonnaises, sauces, gravies, etc.

Working principle

The product is pumped under high pressure into the homogenizing device. In the device the product is forced through a small annular gap where the pressure transforms into high velocity. Extreme turbulence and cavitation effectively reduce the size of liquid droplets and solid particles.

Design

Tetra Alex 400 is basically a horizontally mounted 5-piston positive displacement pump with built-in homogenizing device.

Drive system. Power transmission from the motor via V-belts and pulleys through external shaft mounted reduction gearbox.

Crank case. High-quality cast iron housing. Forced lubrication circuits for gearbox and crankhouse with separate filters and oil coolers.

High-pressure pump block. One piece forged stainless steel block with quick change piston seal cartridge system, fully replaceable suction- and discharge valve seats. Pistons of hardened stainless steel and piston seals for working temperatures up to 85°C. Mushroom valves. Closed cooling water system. The pump block is designed for aseptic processing. Pulsation dampers are included. Hygienic heavy duty clamp connections.

A warranty of 5 years on the block against cracking.

Tetra Alex 400

Homogenizing device

Homogenization with hydraulic pressure setting. The seat with impact ring and the forcer disc are reversible for double lifetime. The wear resistant parts are made of Cobalt carbide (stellite).

Control system

Hydraulic pressure actuation unit fitted within frame. Safety valves included. Hydraulic valves for pressure setting and analogue pressure indication on side panel. On/off push buttons and emergency switch. Terminal box. Cooling water valve (solenoid) actuated with drive motor. HL/LL transmitters for oil level in the crank case. High temperature transmitters for oil in crank case and gearbox. Low pressure transmitter for oil in the crank case. High-pressure transmitter for clogged oil filter for the crank case oil.

Housing

Stainless steel covers. Easy-to-open hood and side door for easy service access to product wetted parts. Back hood for inspection and service of drive end.

High-pressure pump

The machine is delivered with and automatically controlled and cleanable line pressure relief valve on the outlet.

Technical data

Capacity/pressure range

Pressure, bar (psi)	Max, capacity, l/h (gph)
400 (5 800)	19 600 (5180)
315 (4 600)	25 100 (6 630)
250 (3 600)	31 300 (8 270)
200 (2 900)	41 300 (10 900)
160 (2 300)	45 800 (12 100)

Service media

	Non aseptic	Aseptic
Cooling water (>300 kPa (40 psi), max 25°C (77°F), hardness < 10° dH)	400 l/h (105 gph)	1 100 l/h (290 gph)
Steam (>300 kPa (40 psi), dry and saturated)	-	50 kg/h (110 lbs/h)

Motor size

$$\frac{\text{Capacity l/h (gph)} \times \text{Pressure bar (psi)}}{30\,600 (87\,400)} = \text{kW (hp)}$$

Dimensions

Depth, mm: 2 075
 Width, mm: 1 950
 Height, mm: 2 050
 Service area, mm: 4 500 x 4 000
 Service height, mm: 3 000

Environment

Consumption data	Non aseptic	Aseptic
Energy consumption/1 000 l product (kWh)	4.6	8.2
Water consumption/1 000 l product (l/h)	12	54
Steam consumption/1 000 l product (kg/h)	N/A	2.4
Noise, dB(A)	79	79

Data based on

- Non aseptic design: pasteurised white milk, 75% of max capacity at 140 bar
- Aseptic design: UHT, white consumption milk, 75% of max capacity at 250 bar
- Noise acc. to ISO 11203, distance 2 meters

Optional equipment

- 2nd stage homogenizing device
- Cooling water valve, pneumatic
- Aseptic design
- Wear parts in other design and material adapted to the application
- Various remote control functions
- Automatic cooling water regulation
- Alarm panel
- Noise reduction
- Spare parts kit

Shipping Data

No motor	160 kW/210 hp	250 kW/330 hp
5 100 kg	5 950 kg	6 450 kg

Export packing add 800 kg. Shipping volume 15.5 m³.



Tetra Pak Processing Components AB

Technical Data for homogenizer

Model: Tetra Alex 400	Machine No.: T5845541205	Customer: U.S.A.
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General:

Capacity: 8516-17032 l/h	Working pressure: 227 bar	Inlet pressure: 3-10 bar	Noise reduction: <input type="checkbox"/>	Sound effect level (acc. to ISO 3746): B(A)
Altitude: <1000 m	Ambient temperature: <40 °C	Total mass: 6025 kg	Centre of gravity (a=): mm	Sound pressure level (distance=1m): dB(A)

Wetend design:

Valve design: Cone <input type="checkbox"/> Mushroom <input checked="" type="checkbox"/> Ball <input type="checkbox"/>	Piston diameter: 70 mm	Piston design: Stainless steel <input checked="" type="checkbox"/> Chromium plated <input type="checkbox"/> Ceramic coated <input type="checkbox"/> Ceramic solid <input type="checkbox"/>	Piston packing: Grooved <input checked="" type="checkbox"/> V-packing <input type="checkbox"/>	Remote ind. of product pressure: <input checked="" type="checkbox"/> Feed: 14-30 V DC Signal: 4-20 mA
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Homogenising device design:

Size of 1st stage: 80/89	Size of 2nd stage	Remote indication of hydraulic pressure: 1st stage <input type="checkbox"/> 2nd stage <input type="checkbox"/> Feed: V DC Signal: mA	Remote continuous setting: 1st stage <input checked="" type="checkbox"/> 2nd stage <input type="checkbox"/> Feed: 24 V DC Control signal: <2.5 Amp. 4-20 mA
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Drive Motor:

Manufacture: ABB	Model: M2BN505MB4	Revolution: 1787 rpm	Protection: IP55	Thermistor: <7.5 V DC
Power: 200 HP	Voltage: 460 V	Frequency: 60 Hz	Full load current: 230 Amp.	Starting current: 1702 Amp.

Hydraulic Unit:

Manufacture: Bosch	Model: 4722-5471-81
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Hydraulic Motor:

Manufacture: ABB	Model: M2AA71B 6	Revolution: 1100 rpm	Protection: IP55
Power: 0,30 kW	Voltage: 460 V	Frequency: 60 Hz	Rated current: 0.9 Amp.

Pressure Lubrication Motor:

Manufacture: ABB	Model: M2AA100LB 4	Revolution: 1720 rpm	Protection: IP55
Power: 3.50 kW	Voltage: 460 V	Frequency: 60 Hz	Rated current: 6.60 Amp.

Drive Unit:

V-belt type: SPC	Number of tracks: 5	Motor pulley diameter: 300 mm	Gearbox pulley diameter: 530 mm	V-belt length 2500 mm
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Reduction Gear:

Manufacture: Benzler	Model: TV201	Reduction: 11,010
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Valves:

Cooling water valve: Solenoid <input checked="" type="checkbox"/> Pneumatic <input type="checkbox"/> Voltage: 110 V AC Compressed air supply: bar	Steam valve: Solenoid <input type="checkbox"/> Pneumatic <input type="checkbox"/> Voltage: Compressed air supply: bar	Press. relief valve: 1st Stage <input type="checkbox"/> 2nd Stage <input type="checkbox"/> Voltage: V DC Amp. V DC Amp.
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Cooling water supply:

Pressure: 24 bar	Consumption: 400 l/h	Temperature: <25 °C	Hardness: <10 °dH
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Steam supply:

Pressure: bar	Consumption: kg/h	Temperature: °C
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Condensate:

Other:

Fluorescent tube: <input checked="" type="checkbox"/> Voltage: 110 V AC	Door safety lock: <input checked="" type="checkbox"/> Voltage: 110 V AC	Crankshaft speed sensor: <input type="checkbox"/> Feed: V DC mA
Date: 2001-12-04	Sign: TC	Revision: 1