



Tetra Alex® 300

Homogenizer / high-pressure pump



Highlights

- Efficient homogenization at low pressure
- Reduced operational costs
- Increased uptime thanks to easy access
- Turnable parts for low service cost
- Hygienic design – built for cleanability

Application

High-pressure homogenization of emulsions and suspensions, aseptic or non-aseptic, high- or low-viscous products, including pasteurized milk, UHT milk, cream, yoghurt, condensed milk, ice cream mix, fruit juices, concentrates, purées, tomato products, dressings, ketchups, liquid egg, mayonnaise, sauces, gravies, etc.

Also available as a high-pressure pump, e.g. for powders.

Working principle

The product enters the machine through the inlet pipe. The piston suction stroke opens up the inlet valves through which the product flows. The pressure stroke pressurizes the product at the homogenizing pressure, making it flow through the outlet valve. The high pressure pushes the product through the

small annular gap of the homogenizing device. The pressure is transformed into high velocity, generating extreme turbulence and cavitation, which reduces the size of the liquid droplets and solid particles in the product. The product then exits through the outlet pipe.

Basic module

Tetra Alex® 300 is a horizontally mounted 3-piston positive displacement pump with a built-in HD100 homogenizing device as standard. The seat with the impact ring and forcer disc are reversible for double the lifetime. The wear-resistant parts are made of cobalt carbide (stellite). The unit features a high-pressure pump block of one-piece forged stainless steel, designed for both aseptic and non-aseptic processing, with a quick-change piston-seal cartridge system, and fully replaceable suction- and discharge-valve seats. The pistons are made of hardened stainless steel as standard, and have seals for basic use. TD (turnable disc) valves and a closed cooling water system are also standard. The block is backed by a 5-year warranty against cracking.

Note! The basic version is for non-aseptic production.

Tetra Alex as a high-pressure pump is delivered with an automatic line pressure relief valve (LPRV), which is a hydraulically operated valve that protects the line after the homogenizer from too high pressures.

Standard components

For use as a homogenizer, Tetra Alex 300 comprises the following components as standard:

- HD100 homogenizing device with hydraulic pressure setting (not included when the unit is supplied as high-pressure pump only).
- Drive system with power transmission from the motor via V-belts and pulleys through an external shaft-mounted reduction gearbox.
- Crankcase with high-quality cast-iron housing. All bearings and crossheads are splash-lubricated.
- High-pressure pump block (see above) with TD valves, including pulsation dampers and hygienic, heavy-duty clamp connections.
- Stainless steel housing with easy-to-open hood, including large inspection window. Side and back doors for easy service access to product wet- and drive-end parts as well as hydraulic unit and crankcase.

Control system

The hydraulic pressure actuation unit is fitted within the frame. Safety valves are included. Hydraulic valves for pressure setting and analogue pressure indication are placed on the side panel as well as on/off push-buttons and emergency switch. A terminal box is included. The cooling water valve (solenoid) is actuated with the drive motor.

Options

- **2nd stage homogenizing device** – mounted after the first, to improve the homogenization effect.
- **Aseptic version** – piston seals and dampers adapted for aseptic use, aseptic condensers for steam production. An automated valve for changing from steam to water during CIP is standard for aseptic machines.
- **HD EnergyIQ** – advanced homogenizing device for improved homogenizing efficiency. Certain restrictions apply (consult your Tetra Pak® representative).
- **Pneumatic cooling water valve** – less temperature-sensitive than standard electrical valves. Recommended for use with Tetra Therm® Aseptic Flex and Tetra Therm Aseptic VTIS sterilizers.
- **Various remote control functions** – for controlling homogenizing pressure from remote locations.
- **Machine control equipment** – optimizing cooling water to crankcase, and monitoring inlet pressure and the oil level in the crankcase.
- **Noise reduction** – further reduction of up to 4 dB.
- **Spare parts kit** – with one set with the most common spares, e.g. seals and pistons.

Technical data

Capacity/pressure range

Pressure, bar (psi)	Max capacity L/h	Max capacity US gal/h (gph)
160 (2 300)	24 600	6 500
200 (3 000)	18 600	4 900
250 (3 600)	14 800	3 900
315 (4 600)	11 500	3 000
400 (5 800)	9 260	2 450
630 (9 100)	5 900	1 560

Service media

	Non-aseptic	Aseptic
Cooling water (>300 kPa [40 psi], max 25°C [77°F], hardness < 10° dH)	300 L/h (79 gph)	625 L/h (165 gph)
Steam (>300 kPa [40 psi], dry and saturated)	---	25 kg/h (55 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:	2 072
Width, mm:	1 737
Height, mm:	1 979
Service area, mm:	4 300 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)	16.3	56.3
Possible cooling water to recirculate (% of total)	72	100
Steam consumption/1 000 L product (kg/h)	N/A	1.7
Noise, dB (A)	78	78
Carbon footprint/1,000 L product (kg CO ₂)	2.3	5.1

Data based on

Non-aseptic design: pasteurized white milk, max. capacity at 140 bar.
Aseptic design: UHT, white consumption milk, max. capacity at 250 bar.
 Noise level as per ISO11203, distance 2 metres. CO₂ emissions are based on electricity production generating 0.5 kg CO₂/kWh (world average), and steam production from natural gas.

Shipping data

No motor	160 kW/210hp	132 kW/175 hp
4 025 kg	5 025 kg	4 950 kg

Export packaging: add 800 kg
 Shipping volume: 15.5 m³