Tetra Alex® 200

Homogenizer or high-pressure pump for liquid food applications

Application

The Tetra Alex homogenizers offer efficient homogenization of emulsions and suspensions and are also available as high-pressure pumps.

Dairy. Pasteurized milk, UHT milk, cream, yoghurt, condensed milk, ice cream mix.

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

Prepared food. Dressings, ketchups, infant formula, 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 200 is basically a horizontally mounted, 3-piston positive displacement pump with a 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. All bearings and cross-heads are splash lubricated. Fully immersed oil cooler.

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. Versatile turnable disc type valves for production of both low- and high- viscous products, fully replaceable suction and discharge valve seats. Closed cooling water system for minimized consumption. 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 200

Homogenizing device

Homogenization with hydraulic pressure setting. Wear resistant homogenizing device of cobalt carbide. Reversible seat & forcer disc for double lifetime and low service cost.

Control system

Hydraulic pressure actuation unit fitted within frame. Hydraulic valves for pressure setting on front panel. Safety valves included. Electrical emergency switch and on/off push buttons. Terminal box. Analogue pressure indication in front panel. Cooling water valve (solenoid).

Housing

Stainless steel covers with window in front hood for easy inspection during running. Easy-to-open hood for fast service access to product wetted parts.

High-pressure pump

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

Dimensions

Depth, mm: 1 535
Width, mm: 1 310
Height, mm: 1 680
Service area, mm: 3 200 x 2 900
Service height, mm: 2 200

Environment

Indicators	Non aseptic	Aseptic
Energy consumption /1 000 l product (kWh)	4.6	8.2
Water consumption /1 000 l product (l/h)	20	100
Possible cooling water to recirculate (% of total)	56	100
Steam consumption /1 000 l product (kg/h)	N/A	5.8
Noise, dB(A)	71	71
Carbon footprint /1,000 l product (kgCO2)	2.3	4.8

Data based on

- Non-aseptic design: pasteurized white milk at max capacity, 140 bar
- Aseptic design: UHT, white consumption milk at max capacity, 250 bar
- Noise in accordance with ISO 11203, distance 2 metres
- CO_2 emissions are based on electricity production generating 0.5 kg CO_2/kWh (world average), and steam production from natural gas.

Technical data

Capacity/pressure range

Pressure, bar (psi)	Max, capacity, l/h (gph)
400 (5 800)	2 600 (700)
315 (4 600)	3 400 (900)
250 (3 600)	4 300 (1 130)
200 (2 900)	5 500 (1 450)
160 (2 300)	6 800 (1 790)

Shipping data

No motor	22kW/30hp	37kW/50 hp
1070 kg	1215 kg	1280 kg

Export packing add 450 kg. Shipping volume 6.5 m³.

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
- Machine control equipment
- Noise reduction
- Spare parts kit

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English

Tetra Pak Processing Components AB

Technical Data for homogenizer

Machine No.:	Model:
5856890281	Tetra Alex 200

General:

Capacity:	Working pressure:	Total weight:
1200-2400 l/h	350 bar	1355 kg
Altitude:	**Ambient temperature:**	**Noise reduction:**
300 m	25 °C	22. [ ]

Wetend design:

Pump version:

Piston diameter:	Piston design:	Piston packing:	Valve design:	Valve seat:	
32 mm	[ ] Stainless steel	[ ] PSB1	[ ] Mushroom	[ ] Stainless steel	[ ] Pump
	2. [X] Chromium plated	[X] PSB2	34. [ ] Cone	35. [ ] Cobalt carbide	40. [ ] Pump with one stage
	3. [ ] Tungsten carbide	4. [ ] PSA1	39. [X] TD		41. [ ] Pump with two stages
	37. [ ] Solid Ceramic				

Homogenising device design:

Size of 1st stage:	Size of 2nd stage:	Wide gap:	Abrasive device design:	Split head:	Outlet flange for 20-50 bar:
12/14 ABR	12/14	33. [ ]	10. [X]	8. [ ]	9. [ ]

Drive motor:

Manufacture:	Model:	Revolution:	Protection:	Thermistor:
ABB	M3AA200MLA 4	1480 rpm	IP55	<7.5 V DC
Power:	**Voltage:**	**Frequency:**	**Full load current:**	**Starting current:**
30 kW	400 V	50 Hz	55,3 A	375 A

Hydraulic motor:

Manufacture:	Model:	Revolution:	Protection:
ABB	M2AA071A-4	1365 rpm	IP55
Power:	**Voltage:**	**Frequency:**	**Rated current:**
0,25 kW	400 V	50 Hz	0,72 A

Pressure lubrication motor:

Manufacture:	Model:	Revolution:	Protection:
		rpm	
Power:	**Voltage:**	**Frequency:**	**Rated current:**
kW	V	Hz	A

Drive unit:

V-belt type:	Number of tracks:	Motor pulley diameter:	Gearbox pulley diameter:	V-belt length:
SPB	3	180 mm	250 mm	1700 mm

Gearbox:

Manufacture:	Model:	Reduction:
Benzlers	BT-51	5,76

Oil:

Crankcase:	Viscosity:	Gearbox:	Viscosity:	Hydraulic unit:	Viscosity:
[X] Mineral type	220 cSt	[X] Mineral type	320 cSt	[X] Mineral type	68 cSt
[ ] Synthetic type		[ ] Synthetic type		[ ] Synthetic type	
[ ] Food Grade type		[ ] Food Grade type		[ ] Food Grade type	

Cooling water supply:

Pressure:	Consumption:	Temperature:	Hardness:
2-4 bar	130 l/h	<25 °C	<10 °dH

Steam supply:

Condensate:

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

Automation:

Cooling water valve pneumatic:	Remote on/off setting of hydraulic pressure:	Remote indication of product pressure:	
11. [ ]	18. [X]	14. [ ] 1st stage	38. [ ] 1st + 2nd stage
Machine control:	**Alarm panel:**	**Remote continuous setting of hydraulic pressure:**	**Remote indication of hydraulic pressure:**
28. [ ]	30. [ ]	20. [ ]	16. [ ]

Date:	Sign:	Revision:
2010-12-20	TP	1

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English

Tetra Pak Processing Components AB

Test Record for homogenizer

Machine No.:	Model:
5856890281	Tetra Alex 200

Performance data

Test liquid:	Test voltage:
Water 40-70°C	400 V

Test time	Homogenizing pressure	Capacity	Crankshaft revolution	Current consumption	Frequency	Stage 1		Stage 2		LPRV	
						Hydraulic pressure	Signal	Hydraulic pressure	Signal	Hydraulic pressure	Relief pressure
(h)	(bar)	(l/h)	(rpm)	(A)	(Hz)	(bar)	(mA)	(bar)	(mA)	(bar)	(bar)
1	70	2660	285	13	76,5			11,5			
	100	2650	285	16	76,5	25		11,5			
	200	2590	284	28	76,5	40		11,5			
	300	2530	282	40	76,5	59		11,5			
6	350	2510	282	47	76,5	69		11,5			
1	350	1210	136	22	36,7	73		11,5			

Manufacturing No.

Main motor:	Gearbox:	Starter panel:
3GV1010599470009	9912573.001,2010	
Pump block:	Crankcase:	Frequency inverter:
A4654		

Date:	Test performed by:
2010-12-20	Mikael Lindholm
Date:	Test approved by:
2010-12-20	Thomas Carlsson

Tetra Pak

Tetra Pak Processing Components AB

DECLARATION OF CONFORMITY

Tetra Pak Processing Components AB
Ruben Rausings gata
S-221 86 Lund
Sweden

declare that this machine/ equipment/ complex installation:

Homogenizer Tetra Alex 200
Machine No 5856890281

is in conformity with the following harmonized standards:

EN ISO 12100-1:2003+A1:2009
EN ISO 12100-2:2003+A1:2009
EN ISO 13857:2008
EN ISO 13850:2008
EN 61000-6-2:2005
EN 61000-6-4:2007
EN 60204-1:2006
EN 1672-2:2005

and is in conformity with the provisions of the Directive(s) - including amendments:

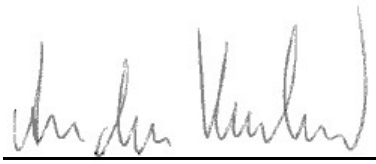
[X] 2006/42/EC Machinery Directive

[X] 2004/108/EC Electromagnetic compatibility Directive

[X] 2006/95/EC Low Voltage Directive

[X] 97/23/EC Pressure Equipment Directive, § 3.3

S-221 86 Lund 2010-09-30

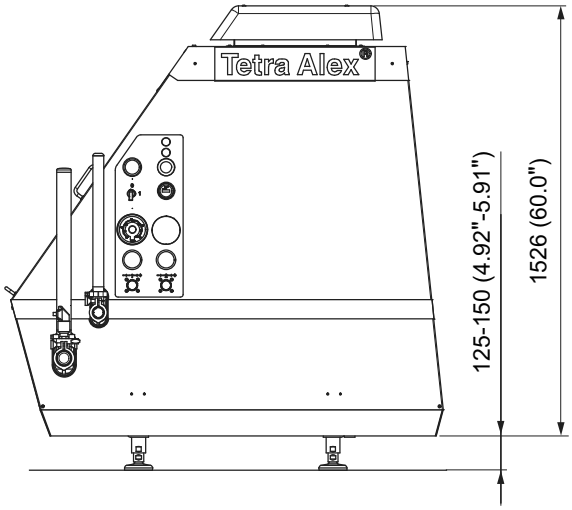


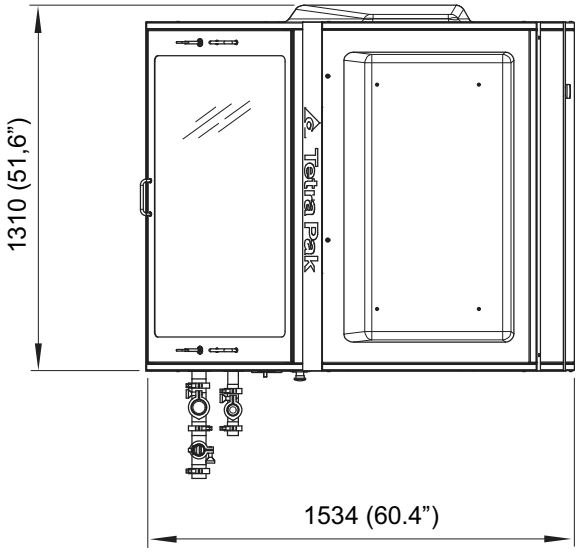
Anders Karlsson
Manager, Homogenization and High Pressure Pumping

Preparatory Work

General Dimensions

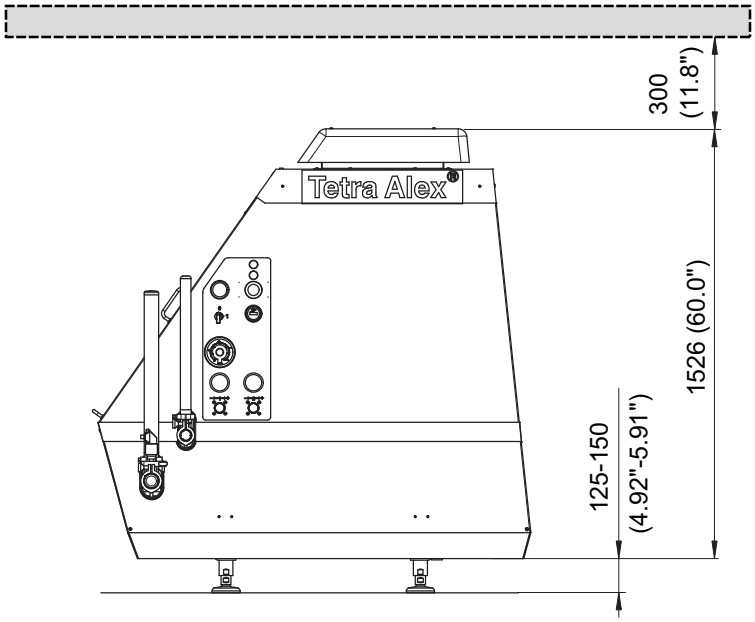
Measures: mm (inch)

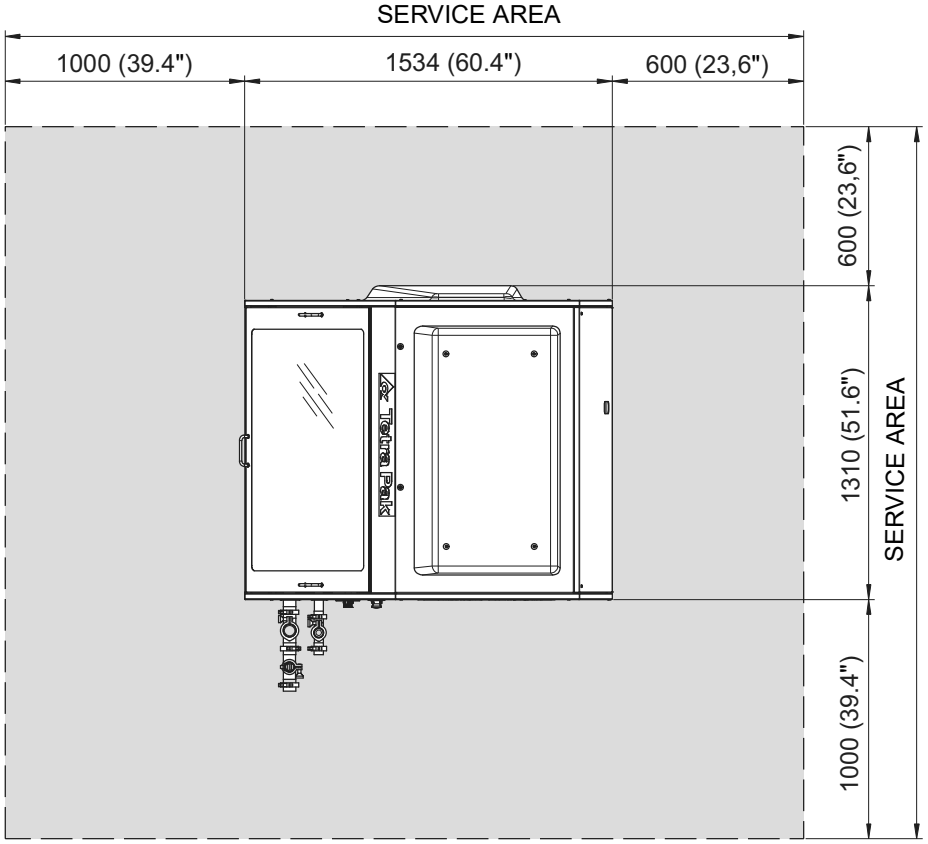




Service Area

Measures: mm (inch)

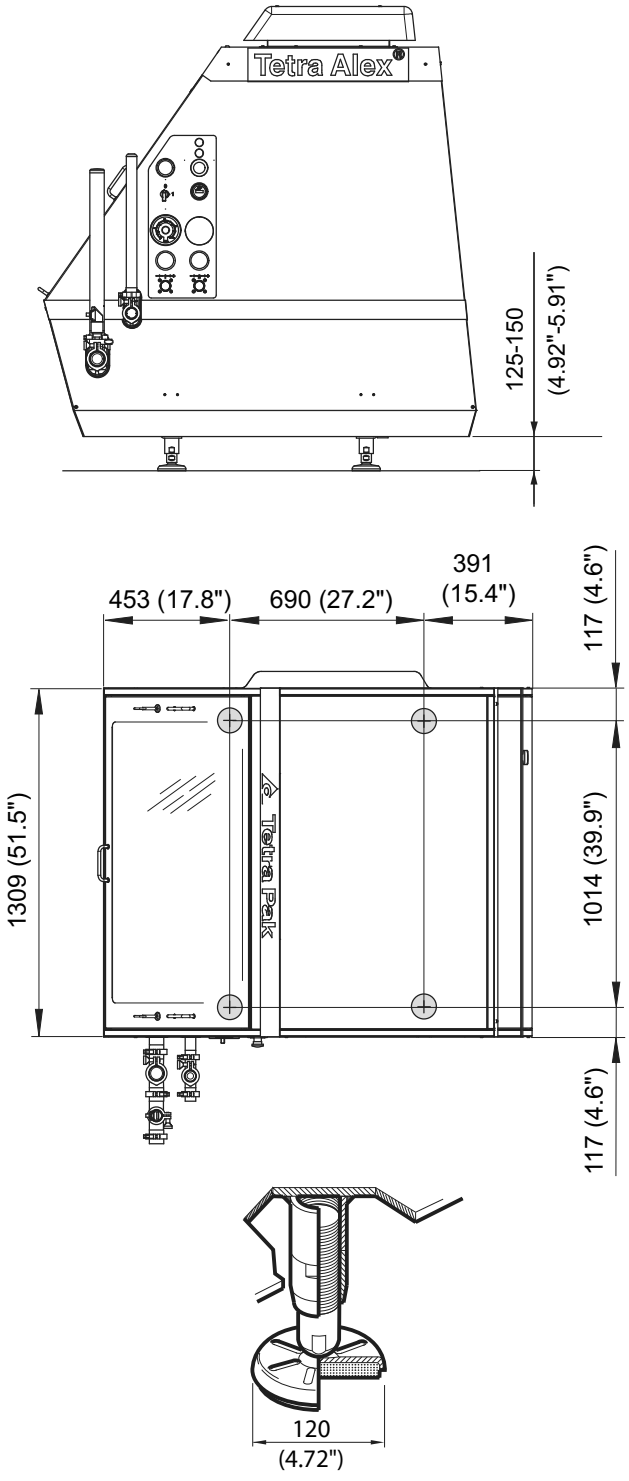




Floor

Weight of machine, see **Technical data**.

Measures: mm (inch)



Product Supply

The machine connections have to be welded to the product inlet- / outlet pipes.

The pipe line, inlet and outlet, shall contain as few elbows as possible.

Quality of piping and welding

Piping: Local regulations as to pressure vessel codes and material quality vs. product properties have to be met

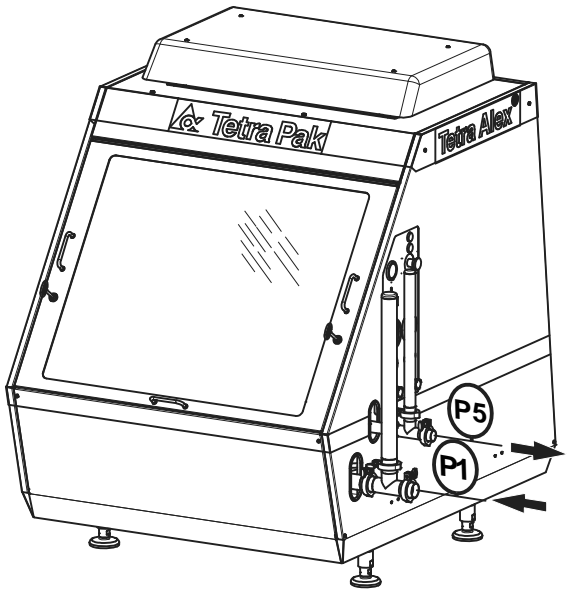
Welding: Methods according to standards that are acceptable for the transport of liquid food.

A “Testweld” should always be carried out and the sample piece examined by qualified persons and particularly to establish that there are no “pockets”, “cracks”, “pinholes” or “crevices” that could not be thoroughly cleaned under practical conditions.

Recommended inlet pressures

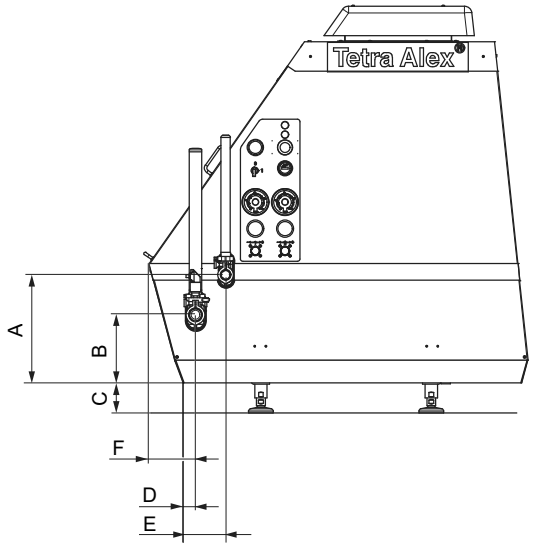
Product	P1 bar (psi)
Low viscous products e.g. milk, juice	3 - 10 (45 - 150)
High viscous products e.g. sauces, ketchups	4 - 10 (60 - 150)

Outlet pressure P5	3 - 20 bar (45 - 300 psi)



Product Inlet - Outlet

Position



See Technical data for piston diameter (Ø)

	(Ø)32-36		(Ø 40-50	
	mm	**inch**	**mm**	**inch**
A	438	17,2”	438	17,2”
B	276	10,9”	276	10,9”
C	125-150	4,9”-5,9”	125-150	4,9”-5,9”
D	50	2”	50	2”
E	172	6,8”	172	6,8”
F	188	7,4”	188	7,4”
G	212	8,3”	231	9,1”
H	173	6,8”	231”	9,1”