

Alfa Laval ALT

Agitators

Introduction

The Alfa Laval ALT is a top-mounted agitator with free-hanging shaft for hygienic mixing and blending in atmospheric and pressurized tanks. Its versatile, modular and hygienic design enables customization to meet the requirements of virtually any duty and ensures cost-effective, energy-efficient operation. Exceptional cleanability through Cleaning-in-Place makes the ALT agitator ideal for use in sterile and aseptic applications. An ATEX-certified version is available for use in potentially explosive environments.

Applications

The ALT top-mounted agitator is designed for a wide range of tank mixing and blending duties across the dairy, food, beverage, personal care, biotechnology and pharmaceutical industries.

Duties	Typical examples
Keeping media homogeneous	Milk storage tanks, cream tanks, mixed products tanks, UHT, and products storage tanks
Mixing and solutions	Fluid and fluid mixing, drinking yoghurt and fruit mix tanks, flavoured milk mix tanks, and syrup mix tanks
Dispersing	Powder protein and oil mix tanks, micro salt and milk product mix tanks
Suspension	Fluids with particles, juice tanks, crystallizing tanks, etc
Heat transmission	Circulation of media in tank with dimple jacket (cooling or heating)
Flocculation	Wastewater treatment tanks

Benefits

- Versatile, modular, hygienic design
- Can be configured for minimum energy consumption
- Gentle product treatment
- More uptime and higher yields due to low maintenance requirements
- Meets EU and US standards and regulations such as EHEDG, USDA, FDA and 3-A Sanitary Standards

Standard design

The Alfa Laval ALT top-mounted agitator consists of a drive unit with optional bearing frame, free-hanging shaft with special shaft seal, and one or multiple specially designed energy-saving impellers (EnSaFoil) with two or three blades. The Alfa Laval agitator range includes top-, bottom- and side-mounting models.



Working principle

The Alfa Laval ALT top-mounted agitator has an electrical drive motor that transmits the energy required for mixing and blending, either directly or via a gearbox, to the agitator shaft. The shaft rotates, turning the EnSaFoil impellers. The impeller movement creates a high flow with low shear due to the highly effective axial pumping effect on the liquid in the tank. This results in effective mixing and blending of the entire contents of the tank.

Options

- Welding flange
- Low level impeller
- Stainless steel cover for motor/gear motor
- Spare part kit
- ATEX version

Certification

Alfa Laval Q-doc and ATEX certifications available, depending on the individual configuration.



TECHNICAL DATA

Motor

Motor size and speed as required for duty.

As standard with IEC motor IP55, other types on request. As standard painted RAL5010

Voltage and frequency

As standard for 3x380 to 420V, 50Hz - 3x440V to 480V, 60Hz. All motor voltages and frequencies are available

Gears

Different gear types available according to configuration

As standard filled with food approved oil. As standard painted RAL5010

Product wetted surface finish

Industrial, shot peened: Ra < 3.2 µm

Hygienic, polished: Ra < 0.8 µm

Hygienic (UltraPure), polished or electro polished: Ra < 0.51 µm

ATEX - option

Agitators can be delivered approved for use in an ATEX environment with declaration of conformity

PHYSICAL DATA

Materials

Steel parts: AISI 316L (standard)
Other materials on request

Seal rubber parts (O-rings or bellows): EPDM
FPM
FPM/FEP (only for stationary O-rings)
Other materials on request.

Mechanical seal parts: Carbon
Carbon (FDA)
Silicon carbide

Material certificate - option

3.1 Material certificates/FDA conformity statement according to 21 CFR177 on steel/elastomer parts in contact with the media

Dimensions

Standard propeller diameter range: Ø125 mm to Ø1900 mm

Specific dimensions on the drive unit and propeller(s) will depend on the actual configuration selected

Advantageous and profitable design

Each configuration offers a number of advantages, which are shown in the examples below:

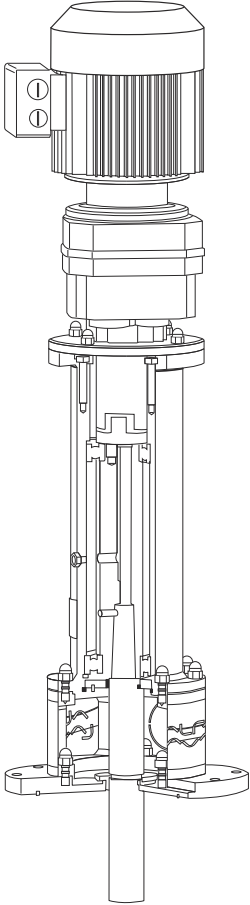
Operation features	Due to
Low energy consumption:	the wide range of high efficiency propellers and drive units makes it possible to design for low operational costs
Gentle product treatment:	the wide range of high efficiency propellers makes it possible to design for low shear operation
Hygienic features	Due to
Easy external cleaning:	stainless steel bearing frame design with seal O-rings (for wash down)
Connections inside the tank (risk zones) can be avoided:	bearing frame drives with drive shaft and special internal shaft connection without having a flange coupling inside the tank
Good drip off properties:	no plane surfaces or grooves on internal parts
Easy cleaning:	no interior shadow sides between the blades and smooth surfaces
Maintenance features	Due to
All service (replacement of wearing parts such as shaft seals, bearings etc.) can be done from outside the tank:	bearing frame drives with detachable shaft which can be dismantled from outside the tank
Easy dismantling:	use of spider type coupling and stainless steel parts (no corrosion)

Configurable design

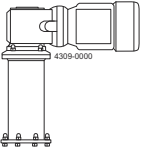
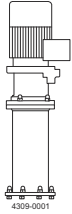
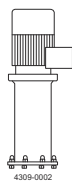
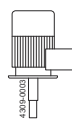
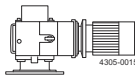
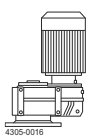

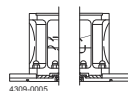
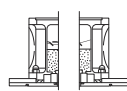
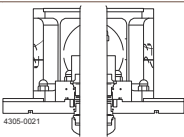




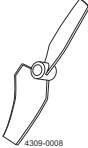
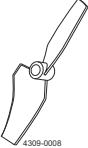
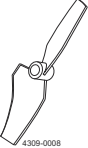
Type ALT agitator design is fully configurable divided in the following elements:

- Drives (drive + shaft support + shaft diameter)
- Seal arrangements (oil trap + shaft seal type)
- Shaft (length)
- Energy Saving Foils (propeller type + surface finish)
- Options

Each element has a broad range of different characteristics which make it possible to size the agitator for all applications and requirements.



Top mounted agitators

Type ALT	Configuration					
Drives Bearing frame size = xx Shaft diameter = yy (not used if xx = yy)						
Description (power, speed and shaft diameter depending on application)	-ME-GR-Bxx(yy) Stainless steel bearing frame and right angle gearbox (for low head room applications)	-ME-GC-Bxx(yy) Stainless steel bearing frame and coaxial gearbox	-ME-Bxx(yy) Stainless steel bearing frame and direct motor drive	-ME-yy Direct motor drive, shaft connected directly to motor	-ME-GR-yy -ME-GW-yy Right angle (GR) or worm (GW) gear drive, shaft mounted in hollow shaft of gearbox (for very low head room applications)	-ME-GP-yy Parallel shaft gearbox, shaft mounted in hollow shaft of gearbox
Seal arrangements						
Description (lower flange and seal material depending on application)	F-R- Seal flange with O-ring seal against tank flange, drain, oil trap (only geared versions) and shaft seal: radial seal for atmospheric tanks	LF-R- Lantern (spacer), seal flange with O-ring seal against tank flange, drain, oil trap and shaft seal: radial seal for atmospheric tanks	LF-S- Lantern (spacer), seal flange with O-ring seal against tank flange, drain, oil trap and shaft seal: single mechanical dry running seal for high/low pressure applications	LF-D- Lantern (spacer), seal flange with O-ring seal against tank flange, drain, oil trap and shaft seal: double mechanical seal for high pressure applications and aseptic use		
Shaft						
Length = llll Description (material depending on application)	-Sllll- SS shaft, length according to application					
Energy Saving Foils Number = n Diameter = vvv (125 mm to 1900 mm)						
Description (material depending on application)	-nPvvD3P 3 - bladed propeller, finish: polished Standard: Ra < 0.8 µm	-nPvvD3PE 3 - bladed propeller, finish: polished and electro polished Standard: Ra < 0.8 µm	-nPvvD3G 3 - bladed propeller, finish: shot peened	-nPvvD2P 2 - bladed propeller, finish: polished Standard: Ra < 0.8 µm	-nPvvD2PE 2 - bladed propeller, finish: polished and electro polished Standard: Ra < 0.8 µm	-nPvvD2G 2 - bladed propeller, finish: glass shot peened

Ordering

The following information is required to ensure correct sizing and configuration for ordering:

- Tank geometry
- Product properties
- Task of agitator
- Enquiry forms are available

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