Alfa Laval ALS

Agitators

Introduction

The Alfa Laval ALS is a side-mounted agitator 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 ALS agitator ideal for use in sterile and aseptic applications. An ATEX-certified version is available for use in potentially explosive environments.

Applications

The ALS side-mounted agitator is designed for a wide range of tank mixing and blending duties across the dairy, food, beverage, brewery, 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)

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, 3-A Sanitary Standards

Standard design

The Alfa Laval ALS side-mounted agitator consists of a drive unit with bearing frame, shaft with special shaft seal, and specially designed energy-saving impeller (EnSaFoil) with two or three blades. The complete Alfa Laval agitator range includes top-, bottom- and side-mounting models.

Working principle

The Alfa Laval ALS side-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 impeller. 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
- 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 420 V, 50 Hz - 3x440 V, 60 Hz. All motor voltages and frequencies are available.

Gears
Different gear types available according to configuration. As standard filled with normal synthetic or mineral oil, optional: 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

PHYSICAL DATA

Materials	
Steel parts:	AISI 316L (standard). Other materials on request
Seal rubber parts (O-rings or bellows):	FPM/FEP (only for stationary O-rings) EPDM or FPM Other materials on request
Mechanical seal parts:	Carbon Carbon (FDA) Silicon carbide

Configurable design

Type ALS 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 makes it possible to size the agitator for all applications and requirements.

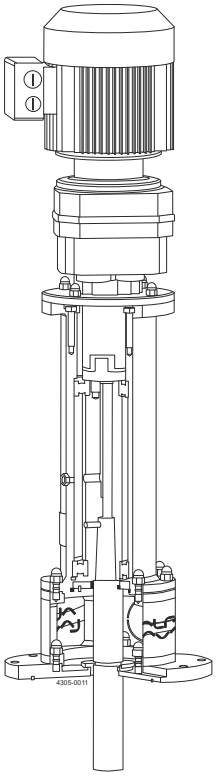
Advantageous and profitable design

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 O-ring seal (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 wear parts such as shaft seals, bearings etc.) can be done from outside of the tank	bearing frame drives with detachable shaft which can be dismounted from outside of the tank
Easy dismantling	use of spider type coupling and stainless steel parts (no corrosion)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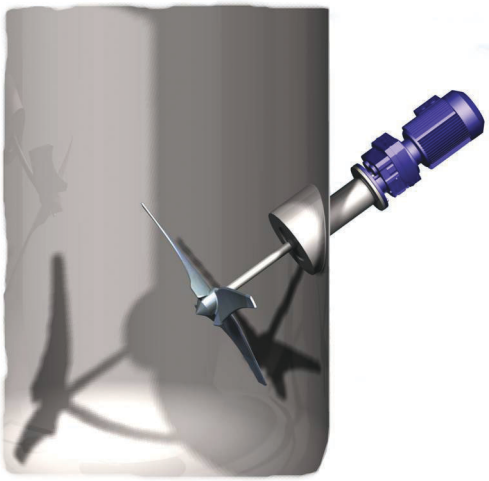
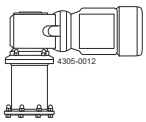
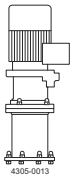
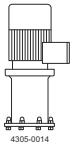
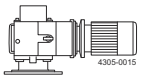
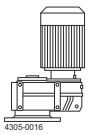
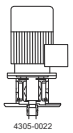
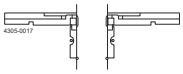
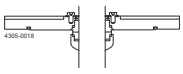
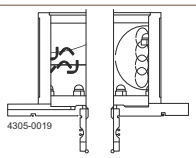
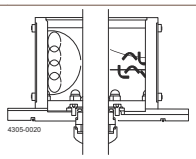
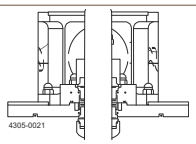


Side mounted agitators

Type ALS	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	**-ME-GC-Bxx(/yy)** Stainless steel bearing frame and coaxial gearbox	**-ME-Bxx(/yy)** Stainless steel bearing frame and direct motor drive	**-ME-GR-yy** Right angle gearbox, shaft mounted in hollow shaft of gearbox	**-ME-GP-yy** Parallel shaft gearbox, shaft mounted in hollow shaft of gearbox	**-ME-yyLF-S1-** Direct motor drive, shaft connected directly to motor, lantern (spacer), seal flange with O-ring seal against tank flange, drain and shaft seal: single mechanical bellow seal
Seal arrangements						
Description (lower flange and seal material depending on application)	**F-S1-** Seal flange with O-ring seal against tank flange, drain, oil trap (only geared versions) and shaft seal: single mechanical bellow seal	**F-S2-** Seal flange with O-ring seal against tank flange, drain, oil trap (only geared versions) and shaft seal: single mechanical non-bellow seal	**LF-S1-** Lantern (spacer), seal flange with O-ring seal against tank flange, drain, oil trap (only geared versions) and shaft seal: single mechanical bellow seal	**LF-S2-** Lantern (spacer), seal flange with O-ring seal against tank flange, drain, oil trap (only geared versions) and shaft seal: single mechanical non-bellow seal	**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)	**-SIIII-** SS shaft, length according to application					
Energy Saving Foils Diameter = vvv (125 mm to 1900 mm)						
Description (material depending on application)	**-PvvvD3P** 3 - bladed propeller, finish: polished Standard: Ra < 0.8 µm	**-PvvvD3PE** 3 - bladed propeller, finish: polished and electro polished Standard: Ra < 0.8 µm	**-PvvvD3G** 3 - bladed propeller, finish: shot peened			

Dimensions (mm)

Propeller standard diameter range: Ø125 mm to Ø1900 mm. Specific dimensions on the drive unit and propeller(s) will depend on the actual configuration selected.

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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How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com