



# Alfa Laval AlfaOliver 500

Olive oil extraction plant with self-cleaning separator



## Introduction

The AlfaOliver 500 is a compact olive oil extraction line for completely continuous operation comprising washing of the olives, preparation of olive paste, malaxing and separating the oil.

## Application

The AlfaOliver 500 is a complete olive oil extraction plant for inputs of up to 500 kg of olives per hour. This particularly compact unit is designed for completely continuous operation – providing industrial scale reliability and performance for production of relatively small volumes.

## Benefits

- Self-contained and skidmounted plant for rapid and easy installation.
- Self-cleaning vertical separator – no stopping for manual cleaning during operation.

- Flexibility in oil production – choosing different paste preparation methods makes it easy to produce oils with specific characteristics.
- With the optional inertization kit for the malaxer, volatile compounds remain in the paste.
- All of Alfa Laval's olive oil extraction technology concentrated in a small-capacity, easy-to-operate line that makes continuous operation possible.

## Design

The plant consists of three main sections:

- Washing
- Paste preparation
- Malaxing and separation

The washing and paste preparation sections are supplied in component form, while the malaxing and separation section is skid-mounted, pre-piped and pre-wired.

A complete AlfaOliver 500 plant requires no more than 35 m<sup>2</sup> and it is equipped with its own hot water production system.

**Cleaning and washing section:** The washing section is designed for efficient cleaning of the olives while safeguarding fruit integrity. It is manufactured completely in stainless steel and includes a reception hopper, washing system and olive transport together with an independent control panel.

**Paste preparation section:** The paste preparation section can be configured in three ways:

- Hammer crusher, which is the most typical and most robust crusher.
- Disc crusher kit, allowing conversion between a hammer crusher and a disc crusher. The disc crusher ensures minimal risk of paste overheating and production of green, spicy oil.
- Combined disc crusher and depitter, ensuring unbroken stones and the production of harmonic oil with high resistance to oxidation.

**Malaxing and 2-phase separation section:** The malaxer of the AlfaOliver 500 is one vessel, split internally into two compartments. Each half of the malaxer vessel has an independent jacket to enable the producer to control heating of the paste in each section.

**The malaxer can be configured in two ways:**

- Standard version with cover and grated inspection windows.
- Hermetic version with sealed cover and injection of inert gas (optional).



Compact cleaning and washing section

## Working principle

**Cleaning and washing section:** The olives enter the reception hopper and are transported upwards by a belt conveyor. At the top of the belt conveyor, an exhaust fan sucks away the leaves and light material, after which the olives drop into a hydraulic jet hopper. The olives are transported from the hopper by a jet of water to a vibrating screen mounted on top of the water reservoir of the washing machine. The vibrating screen separates the water and remaining leaves and also contains a fresh water shower that provides the olives with a final rinse. The olives then fall into an intermediate hopper.

**Paste preparation section:** Olives in the intermediate hopper after the washing section are fed to the chosen paste preparation system by means of a screw-type elevator.

In case of a hammer crusher, the olives are fed into the zone where rotating hammers equipped with wear-resistant plates crush the olives against a stationary grid, which determines the thickness of the paste.

In a disc crusher, the olives are fed between two toothed discs, one stationary and one rotating. These discs tear the olives apart.

In a combined disc crusher and depitter, the olives are fed into a chamber equipped with bores, where the pit is separated from the pulp.

In all cases, the pulp falls into a hopper below, from where it is pumped to the malaxer.

**Malaxing and 2-phase separation section:** The malaxing and separation section is made up of three steps:

- Malaxing to release the oil from the paste
- Separation in a horizontal decanter centrifuge to recover the oil from the paste
- Separation in a vertical centrifuge to clarify the oil.

The malaxing vessel is, in effect, two malaxers, thus allowing truly continuous operation. Paste is heated to the desired temperature under continuous agitation and held for the desired amount of time. Once the paste is ready, it is pumped to the horizontal decanter centrifuge.

In the decanter centrifuge the paste is separated into two phases by centrifugal force. The oil is recovered from one end

of the machine and the water and solids are recovered together from the opposite end. The recovered oil passes through a filtration screen before being pumped to the vertical centrifugal separator for final clarification.

The vertical centrifuge clarifies the oil by reducing the water and solids content in the oil still further. The unit used on the AlfaOliver 500 is a self-cleaning type. Instead of stopping the machine very frequently for manual cleaning, the operator can initiate a sequence to automatically discharge the solids from the bowl of the separator.

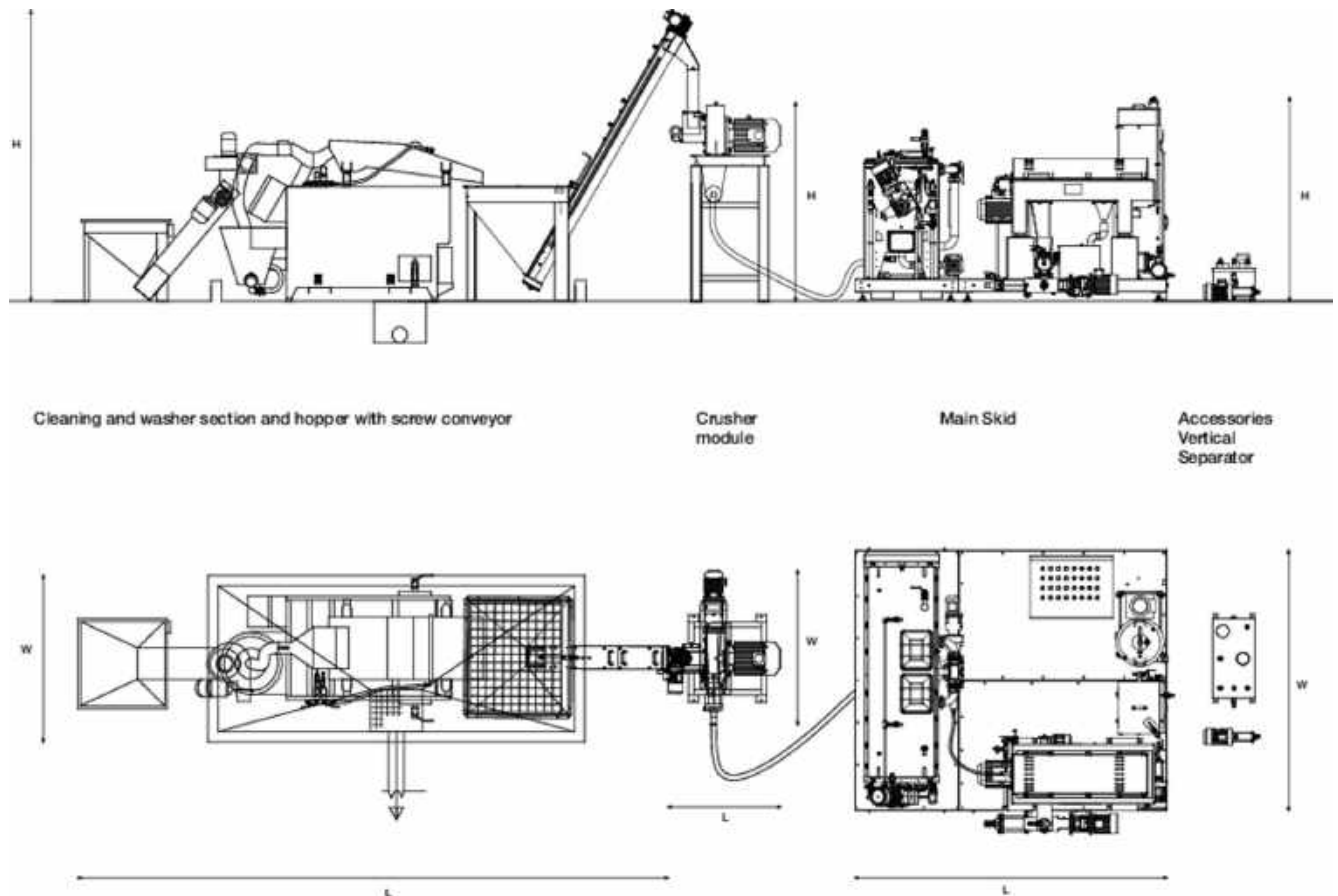


Self-cleaning separator

The olive oil producer can handle water and solids discharge as desired, or a small tank and pump can be supplied to discharge these flows to another location.

Two water tanks equipped with electrical heaters produce hot water for heating of paste in the malaxer and for process water. One is dedicated to heat the water in the malaxer, the other to heat the process water. The temperature of malaxing water and of process water is controlled individually.

## Dimensional drawing



## Technical data

	Nominal power	Dimensions <sup>1</sup>	Weight	Water consumption
	kW (Hp)	mm (inches) L x W x H	kg (lbs)	liter/h (gallons/h)
AlfaLaval 500 main skid with malaxer	24.5 (32.85)	3,000 x 2,693 x 1,930 (118.11 x 106.02 x 75.98)	3,670 (8,090)	170 (44.91)
Hammer or disc crusher with support and pump	7.5 (10.05)	1,073 x 1,502 x 1,919 (42.24 x 59.13 x 75.55)	250 (551)	-
Disc crusher and depitter with pump	7.5 (10.05)	600 x 1,858 x 500 (23.62 x 73.15 x 19.69)	500 (1,102)	-
Washing section with olive feed—, washed olives hopper and screw conveyor	3.26 (4.37)	5,933 x 1,600 x 2,775 (233.58 x 62.99 x 109.25)	800 (1,763)	67 (17.7) <sup>2</sup>

<sup>1</sup> Please note that main skid dimensions are fixed. The other items can be arranged in various ways as required.

<sup>2</sup> If one change of water tank per 24 hours

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