



Alfa Laval Astepo High Speed Low Acid filler

Aseptic bag-in-box filler for juices, beverages, purees, and dairy products



High speed low acid bag-in-box filler

Application

The Alfa Laval Astepo HS-LA aseptic filler is the latest update to complete our unique range of bag-in-box fillers. Designed to meet market demand for faster and better performing machines, the filler relies on a new concept of motion. Thanks to the implementation of brushless electric servo motor technology, it is possible to control and adjust all the movements inside and outside the aseptic area with an extremely high degree of accuracy.

The HS-LA is suitable for handling high ($\text{pH} < 4.5$) and low ($\text{pH} > 4.5$) acid products such as:

- Fruit juices, concentrates and beverages
- Dairy products, such as UHT milk, flavoured milk, soft ice mix and cheese sauce

- Sauces and condiments
- Syrups and post mix.

The bags are delivered pre-irradiated with gamma rays. Caps are of the flat rigid type, with high or low fitments, or other dispensing caps from major suppliers.

The HS-LA filler can be supplied as a stand-alone module, or integrated into an Alfa Laval food processing line, for example, a sterilizer and cartoning system.

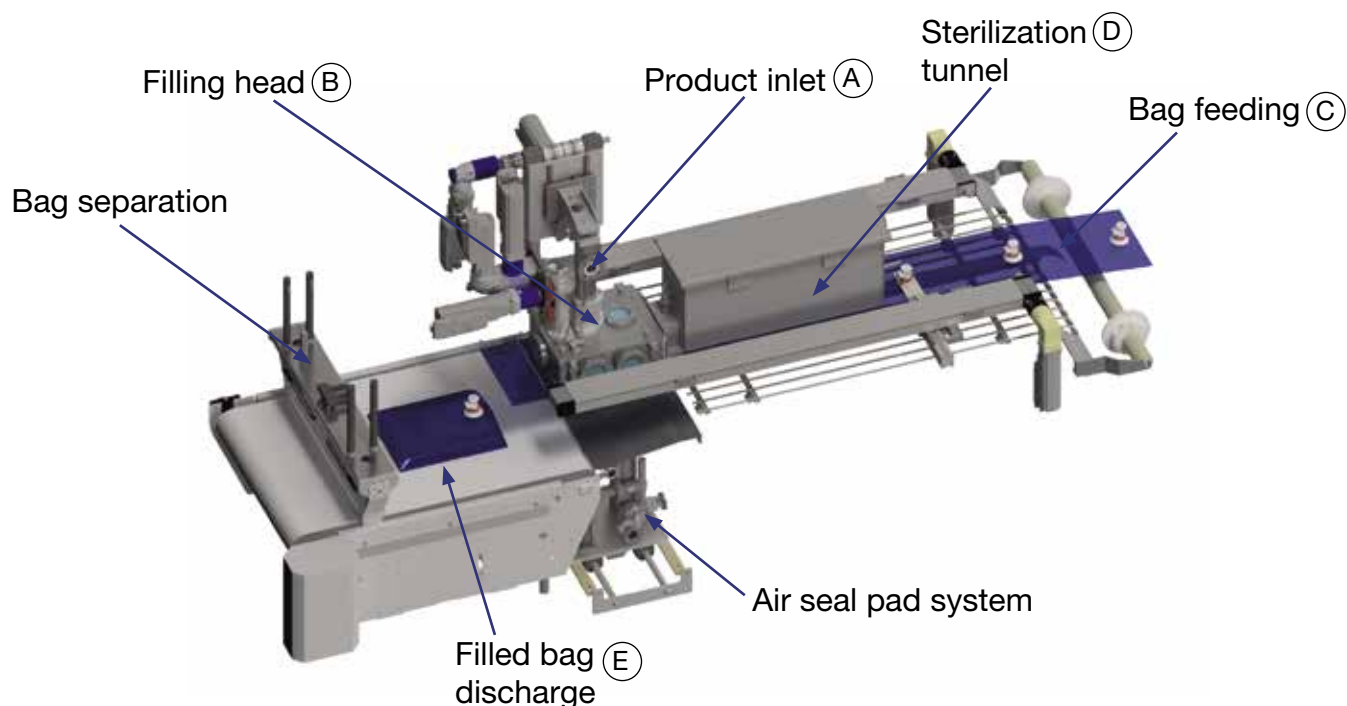


Fig. 1 HS-LA working principles. Please refer to drawings on p. 4.

Key features

- Compact design (limited footprint)
- Short filling cycles due to control by servo motors
- Faster and with less manual intervention (bag/fitment tooling change-over)
- Easy volume size change-over
- Sterile air group integrated in the machine skid
- Possibility to work with any commercial 1" spout type
- Continuous filling process
- Fully automatic, reliable operation
- Traceability
- Autodiagnosics
- CIP cleanable
- Food contact part in stainless steel AISI 316L
- Non-food contact part in stainless steel AISI 304
- Compliant with US FDA regulations
- Filling valve has EHDGE certification.
- Alfa Laval anti-dripping system

Sanitization

Before production starts, all food contact surfaces are automatically sanitized and sterilized. This procedure is fully automatic, consisting of a cleaning in place phase (CIP), followed by an in-line sterilization phase (SIP) both featuring cyclic action of valves in contact with the product, the circulation valves and jets of steam. During CIP and SIP, if any alarm is set off the time counter is automatically set to zero and does not restart until the condition that triggered the alarm has been reset.

Non-food contact surfaces such as the filling head and the tunnel will also be completely sterilized, using steam and vaporized hydrogen peroxide.

Moving

The operator only has to introduce the first bag, then the bag feeder will automatically feed the bags into the sterilization tunnel and the filling head. After this step the cap is re-inserted in the bag spout and an automatic cutter will separate the filled bag from the web. A motorized roller conveyor will move the bags out of the machine.

Filling

In the sterilization tunnel the caps are sterilized with a dosed and monitored jet of vaporized hydrogen peroxide. The spouts are then introduced inside the aseptic head where a positive sterile air flow is used to keep out any airborne contaminant. The temperature and the positive pressure inside the chamber are constantly monitored (critical factor).

The implementation of brushless electric servo motor technology also gives the capability to control and adjust the movements, speed and acceleration of the aseptic valve; this ensures highly accurate filling.

Cap removal is done by using pincers, and an air seal system closes the spout to prevent any contaminating agent from entering the bag.

Controls

The control cabinet is complete with a PLC to manage and check all the working phases and process condition.

Standard equipment

Standard equipment for the HS-LA filling system includes:

- Stainless steel supporting frame.
- ABF/a - Automatic bag feeder, completely integrated in the filling head, for the handling of web type bags.
- Sterilizing tunnel, made of stainless steel AISI 304 for the sterilization of caps/spouts.
- No. 1 filling head, controlled by servo motors made in stainless steel, comprises one aseptic chamber and one filling valve with cold aseptic bellow.
- Volumetric flow meter. Precision of batch refers to pasty homogenous products in 10 lt. bags: $\pm 0.5\%$.
- Motorized conveyor made of stainless steel for the expulsion of filled bags and to drive the cartoning operation.
- CIP and sterilization loop, to be connected to the existing product piping.
- 1 steam treatment and distribution group complete with gauges, pressure reduction and valves.
- Air-steam indirect heat exchanger and micro sterile filters for air treatment.
- The filler is managed by a PLC interfaced with a SCADA PC, Touch Screen type.

Optional equipment

- SteriTank; pressurized, hygienic tanks to prevent, for example, foaming and to achieve better accuracy.
- Mass flow meter for higher accuracy.
- Selected bag-in-box decapping tools for dispenser caps.
- Water/air flow for filled bag-in-box polishing, drying.
- Ink jet printer for filled bags traceability.
- Tailormade solutions to ensure that the bags fit smoothly into the cartons.
- Two or more machines can be aligned to provide large capacities, with synchronized filling processes and cartoning devices.

Integration with carton box system

The HS-LA filler can also be linked up to an automatic Combibox cartoning line (featuring carton sealing with hot-melt glue or adhesive strip) built and configured by Alfa Laval Astepo in accordance with specific customer requirements. A combined bag-in-box filling and cartoning process line offers the advantages of limited footprint and minimum size change-over time compared to traditional lines.

Technical specifications

Filling accuracy	$\pm 0.5\%$ on the filled value
Filling range	3-25 litres (0.5-6 gallon)
Power requirements	400V 50/60 Hz 3P + GND - Installed 15 Kw (CIP return pump incl.)
Air (dry/oil free)	8 bar, consumption 35 m ³ /h
Steam (food grade)	6-8 bar, consumption during filling 15 kg/h; consumption during sterilization 30 kg/h
Height	1,920 mm (760 inches)
Width	1,660 mm (650 inches)
Length	2,960 mm (1,170 inches)

Working capacity

Assuming a product input flow of 12,000 l/h and a viscosity like water, up to:

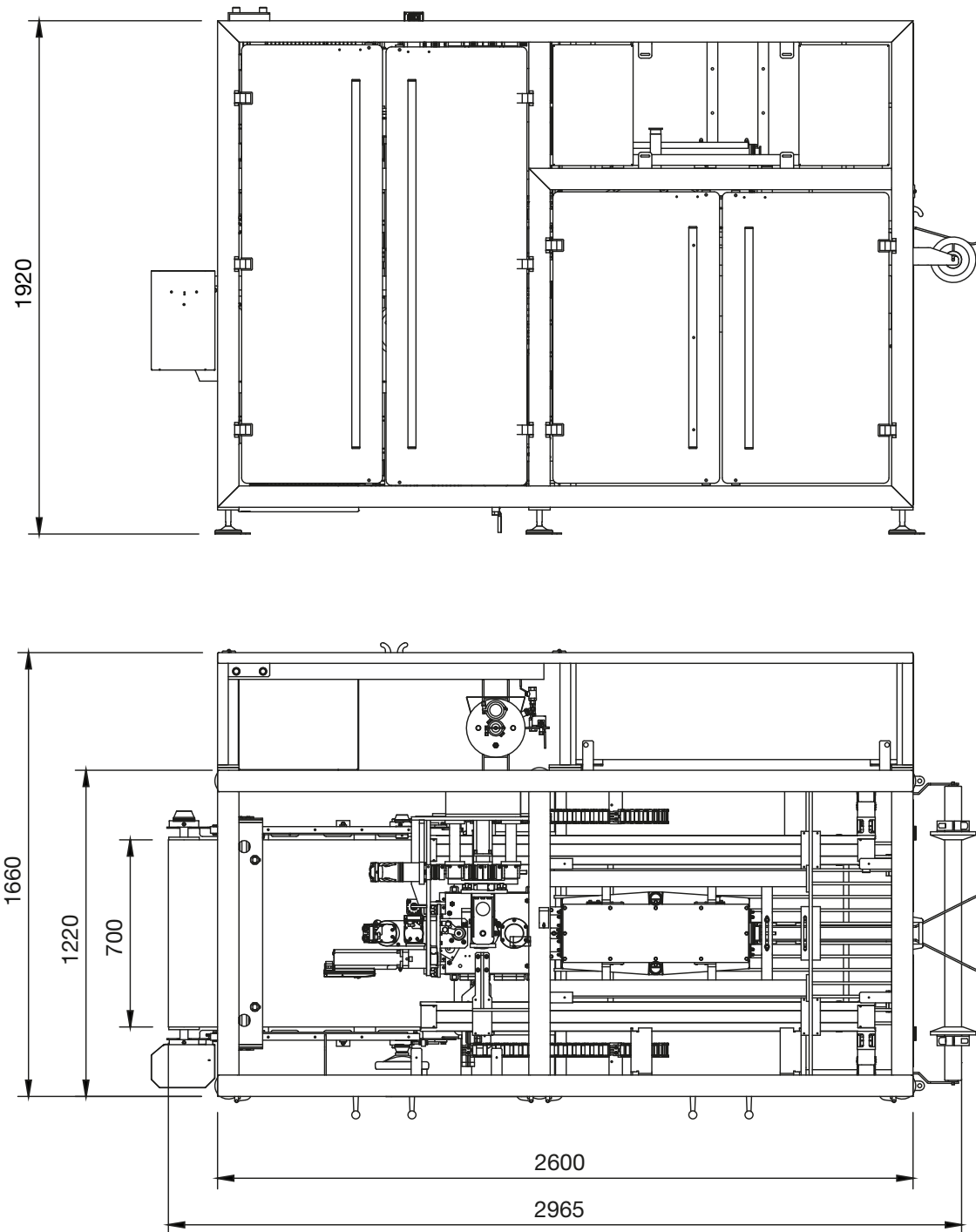
5 l	10-12 bags/minute
10 l	8-10 bag/minute
20 l	6-8 bag/minute

Documentation

The following documents are delivered with the machine:

- Electro-pneumatic diagrams
- Instructions for setting the flow meter or balance
- Filler service manual

Dimensional drawing mm (inch)



PFT00368EN 1610

Alfa Laval reserves the right to change specifications without prior notification.

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