Chamber machines

MULTIVAC
BETTER PACKAGING

MULTIVAC is a leading manufacturer of vacuum chamber machines. Our portfolio includes tabletop and free-standing chamber machines, as well as chamber belt machines. These machines dovetail seamlessly into your new or existing production environment, either as a stand-alone machine or as part of an automated packaging line. Reliability, durability and comprehensive service make MULTIVAC chamber machines a resilient link in your production chain.

Machine classes

What are your requirements for a chamber machine? A small footprint? Maximum cycle output? The secure sealing of special pouch materials?
MULTIVAC offers a uniquely wide range of machines to meet your ideal requirements.

	Tabletop machines	Free-standing chamber machines	
		Compact	Large
Models	C 70 C 100 C 200 C 250	C 300 C 350 C 370	C 400 C 800
Product size	★ ☆ ☆ ☆ ☆	★ ★ ☆ ☆ ☆	★ ★ ★ ★ ★
Production volumes	Small batches	Small to medium-sized batches	Small to medium-sized batches
Automation capability	★ ☆ ☆ ☆ ☆	★ ☆ ☆ ☆ ☆	★ ★ ★ ☆ ☆
Gas flushing	C 100, C 200, C 250	C 300, C 350, C 370	C 400, C 800

	Double chamber machines	Chamber belt machine	Vertical chamber machines	Special machines
	C 300 Twin C 450 C 500 C 550	B 210 B 310 B 510 B 610	AGV	C 200 TC C 300 TC C 400 TC C 700 TC AGV TC
	★★★☆☆	★★★★☆	★★★☆☆	★★★☆☆
	Large batches	Very large batches	Small to medium-sized batches	
	★★★☆☆	★★★★★	★★★☆☆	★★☆☆☆
	C 300 Twin, C 450, C 500, C 550	B 210	AGV	C 200 TC, C 300 TC, C 400 TC, C 700 TC, AGV TC

Tabletop chamber machines

MULTIVAC tabletop chamber machines can be used very flexibly due to their compact dimensions. This makes them an ideal packaging solution for butcher shops, restaurants, hotels, direct marketing companies and farm shops, as well as for a wide range of consumer goods.

Free-standing chamber machines

A variety of product types and sizes can be easily and efficiently packaged on MULTIVAC free-standing chamber machines. Thanks to their comprehensive range of equipment options, they can be individually configured and even automated for part of their functions.

Double chamber machines

MULTIVAC double chamber machines are equipped with two chambers and a swing lid. While products are being packed in the first chamber, the second chamber can be unloaded and loaded again. In this way, double chamber machines enable a particularly efficient packaging process.

Vertical chamber machine

The MULTIVAC AGV is designed for packing products, where the film pouch is standing vertically. The filled film pouch is placed or suspended in the chamber and it is first evacuated in this position and subsequently sealed. This ensures that no powdery or free-flowing products can fall out during the packaging procedure. It is also possible to pack with modified atmosphere with the AGV.

MC 06 machine control with precise vacuum measurement in the chamber

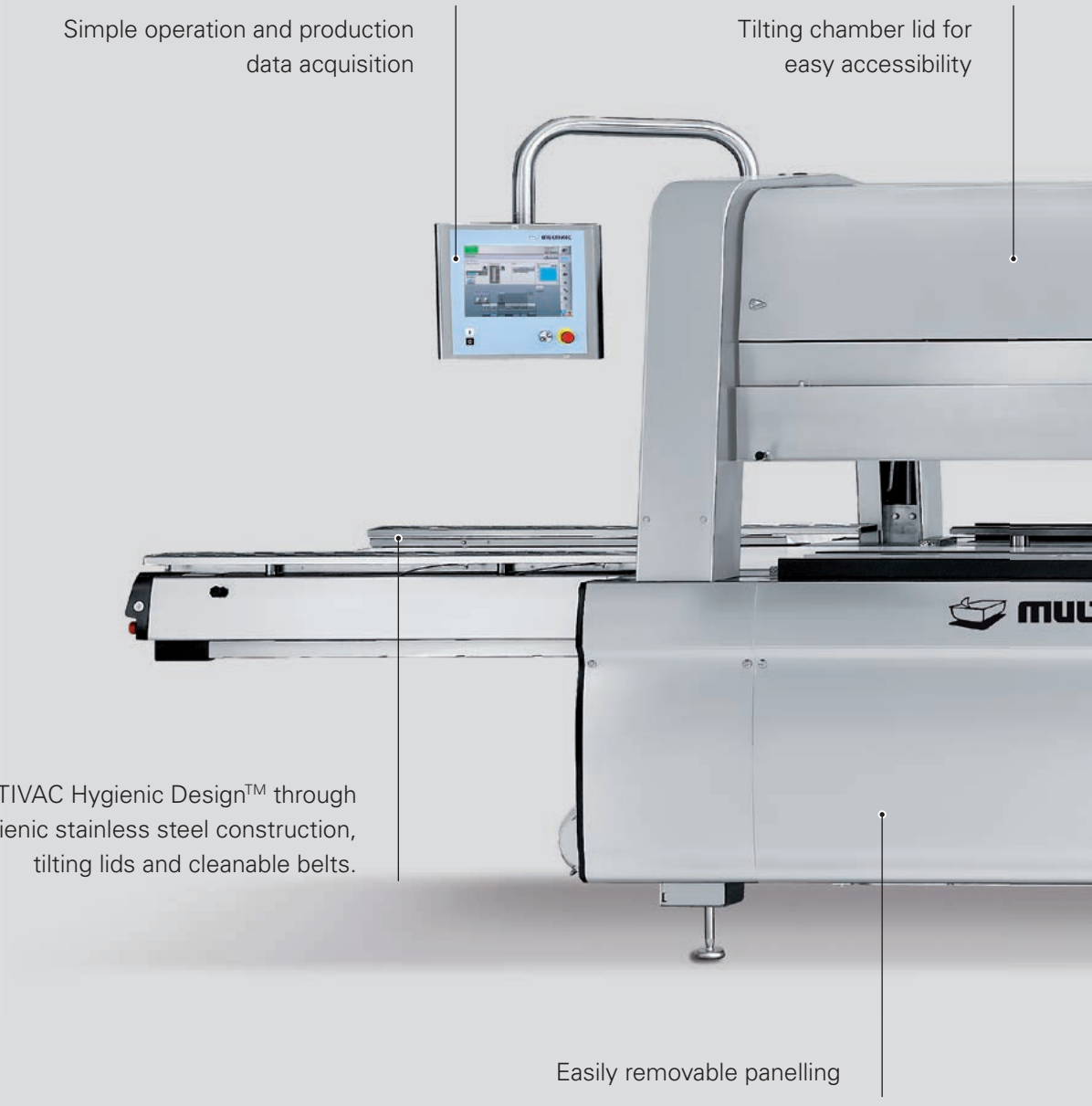
Automatic opening of the chamber

Roller conveyor for ergonomic introduction of the products

Height adjustable for upright products

Chamber belt machines

MULTIVAC chamber belt machines are available in various output categories. These machines can be individually configured thanks to their wide range of equipment options. By combining with shrinking and drying units, they can be extended to automated shrink packing lines.



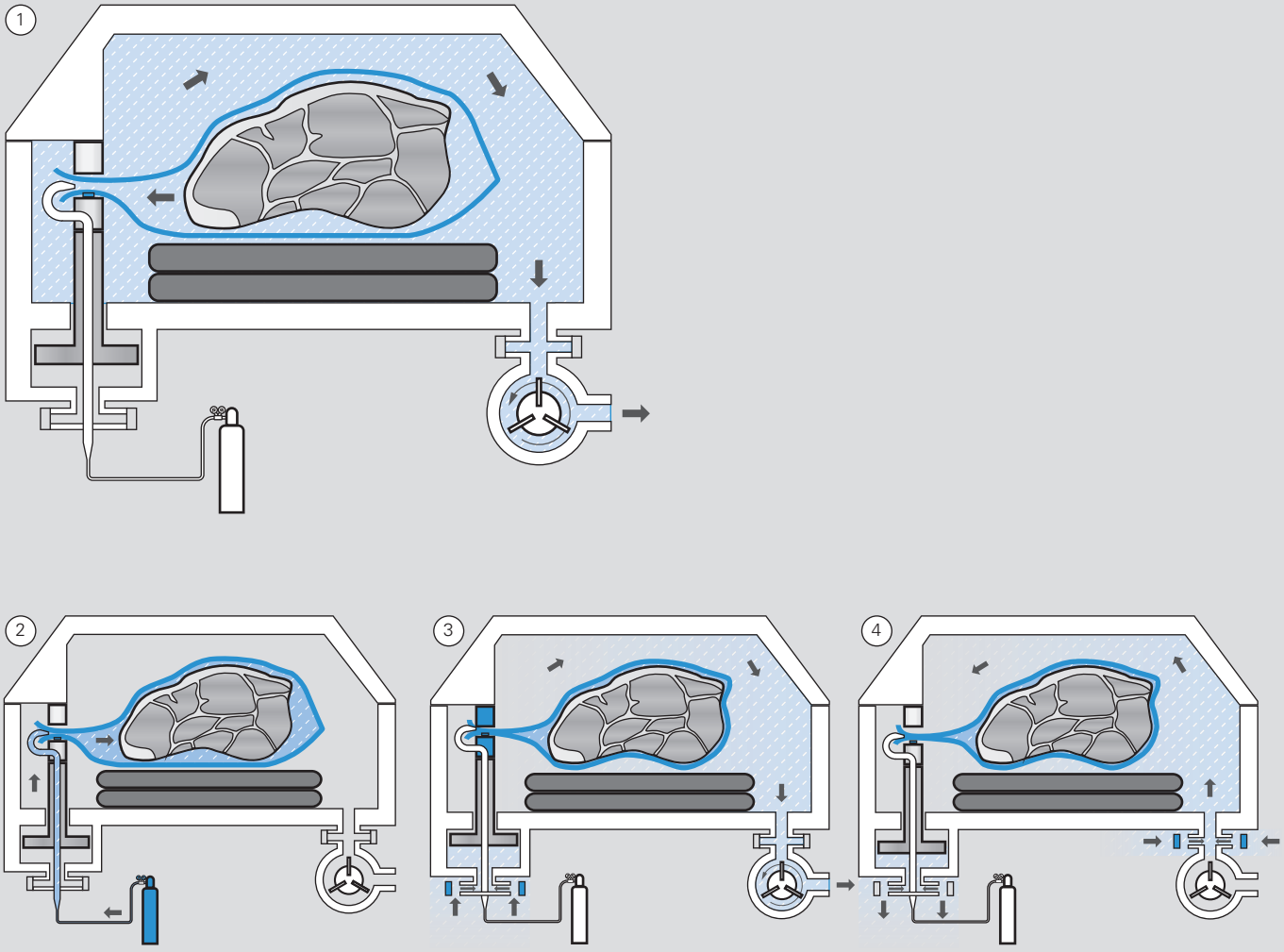
MULTIVAC benefits

- MULTIVAC Hygiene Design™
- High production output and pack quality
- Wide selection of equipment
- Maximum output
- Minimum space requirement
- Ground-breaking ergonomics and user-friendliness

Principle of operation for the vacuum chamber machine

MULTIVAC developed its first vacuum chamber machine in 1961. We provided a crucial contribution to the introduction of vacuum packing for the production and marketing of food.

Thanks to the particularly simple packaging procedure, pouch packing is still the most flexible and efficient solution for reliable packing of small batches.



The operating principle of chamber machines is explained below in detail, using the example of a tabletop chamber machine. The physical processes in the case of free-standing units and chamber belt machines are fundamentally identical.

① Evacuation

After the chamber lid has been closed, the vacuum chamber is a hermetically sealed space. A vacuum pump sucks out the available air until the vacuum value, which is defined in the machine control, has been reached. This process removes the atmosphere present in the vacuum chamber, the film pouch and the intermediate spaces within the product.

② Modified atmosphere packaging

If the vacuum chamber machine has a MAP* system, the pack can be provided with a modified atmosphere if required. The vacuum chamber and the film pouch are filled with an inert gas mixture until the pressure defined in the machine control has been reached.

③ Sealing

The side of the film pouch, which has been open until this point, is sealed through the effect of heat and pressure. For this, the sealing bar is pressed onto the counter-pressure bar. At the same time an electrical impulse heats the heating band, during which the sealable components of the film pouch melt together. The resulting seal seam closes the film pouch permanently and hermetically.

④ Ventilation

To open the chamber, pressure equalization through ventilation with ambient air is required. This initially flows into the chamber slowly and then faster and faster. This gentle method of ventilation, which is also optimised for time duration, prevents damage to the film pouch by sharp or pointed parts of the product.

*MAP (Modified Atmosphere Packaging)

Recipe for success with pouch packing

Pouch packing is explained below in detail using the example of a tabletop chamber machine. In the case of free-standing and chamber belt machines, the loading and unloading of the vacuum chamber in particular can be automated.

① **Filling the film pouches**
Pre-made film pouches, which can be made from a wide range of materials, serve as the packaging material. When filling the pouches, care should be taken to ensure that the seal area remains clean.

② **Inserting the film pouches**
The seal area of the film pouch is positioned on the sealing bar. In the case of packaging with modified atmosphere, the nozzles for the inert gas must extend into the pouch neck.

If the product has liquid constituents, the film pouch is positioned at an angle in the chamber by means of a sloping insert, preventing the liquid from running out.

③ **Aligning the seal area**
Place the open end of the film pouch over the sealing bar. The edge of the pouch must not be trapped in the chamber lid.

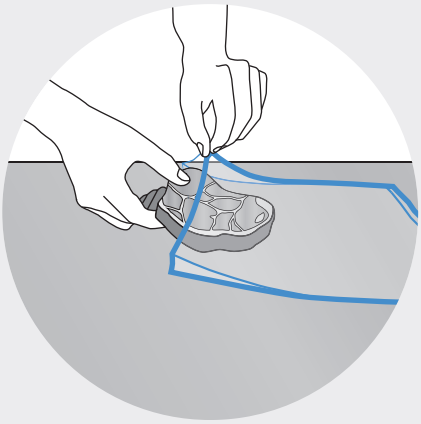
④ **Selecting the program**
Select one of the defined or stored programs, or enter the desired process parameters.

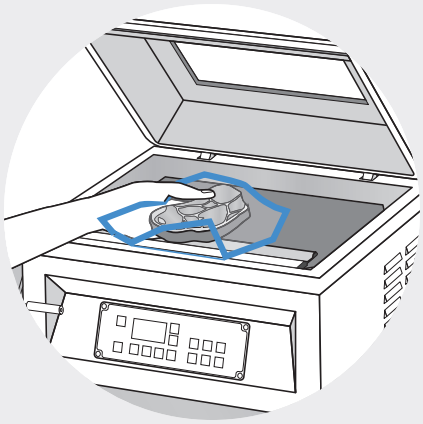
⑤ **Starting the packaging procedure**
The packaging procedure is started by closing the chamber lid or pressing the start key*. The evacuation, gas flushing and sealing of the film pouches takes place automatically according to the process parameters you have selected.

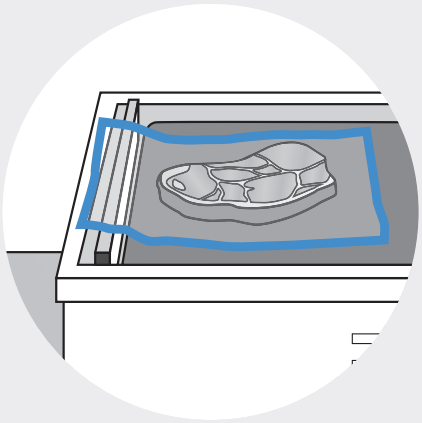
⑥ **Removing the packs**
The chamber lid opens by itself after the packaging procedure. The finished packs can then be removed.

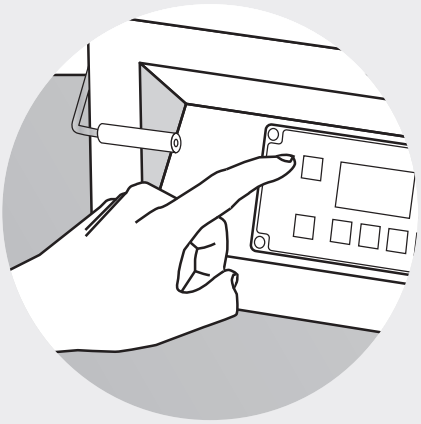
⑦ **Pulling off the excess pouch film****
Pull off the excess pouch film at the separation seam.

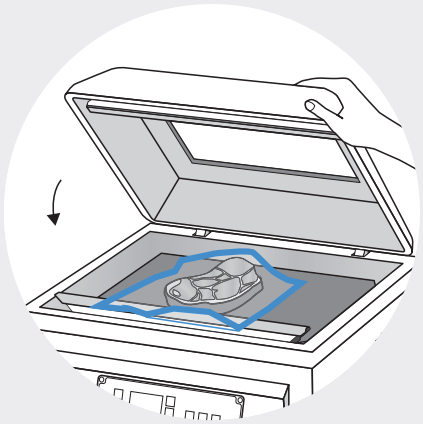
* with automated solutions
** with double seam separation sealing devices

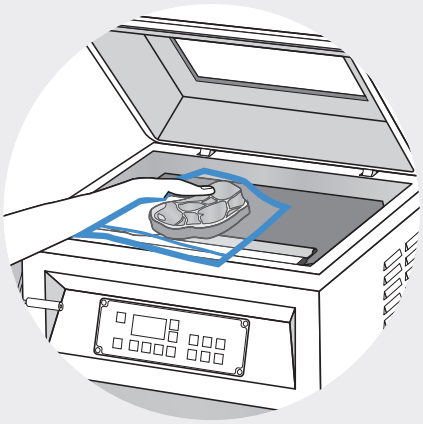


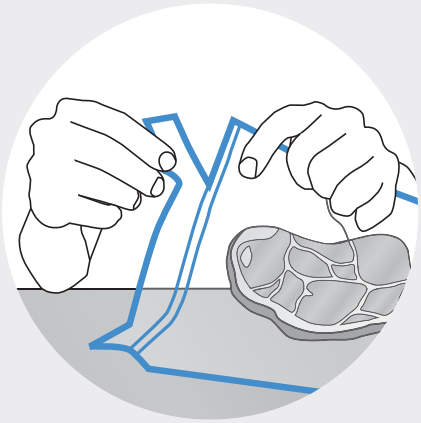












Large range of packs

A pouch pack can fulfil the widest range of requirements in the life cycle of a product. Its areas of application are equally diverse. Pouch packs protect against environmental influences, extend the shelf life of products and meet the wide-ranging needs of logistical chains.

Food

- Point of sale packs
  - Self-service packs for the end customer
  - Packaging of fresh products at the counter
  - Bulk packs for commercial customers
- Maturation bags for meat and cheese for controlled maturing and the reduction of maturation losses
- Storage packs for the hygienic and waste-free storage of products between process stages, which are separated by space or time (e.g. large diameter products for slicers)
- Transport packs for hygienic and waste-free transport

Industrial and consumer products (non-food)

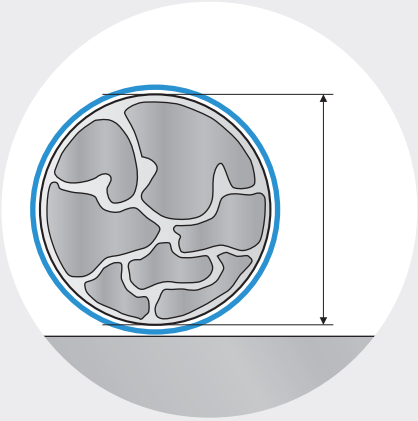
- Point of sale packs
  - Self-service packs for the end customer
  - Bulk packs for commercial customers
- Transport packs for the secure and efficient transport of products
- Process packs for the transport within companies of semi-manufactured products between process stages, which are separated by space or time

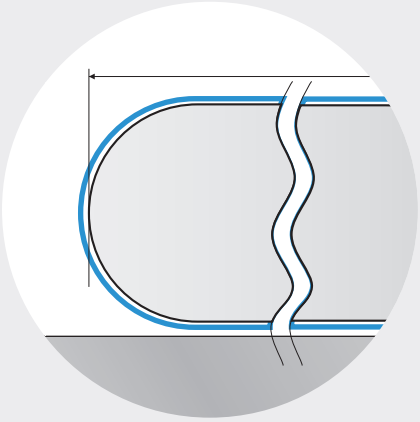
Film pouches

All the conventional film pouches made of plastic films, aluminium composites or other sealable mono and composite materials can be used in MULTIVAC chamber machines to produce secure and reliable packs.

- Edge seal pouch
- Tubular pouch
- Stand-up pouch
- Unprinted and printed film pouches
- Shrink pouch
- Maturation bag
- Cook-in pouch
- Multi-layer pouch (e.g. ESD)

Determining pouch dimensions*

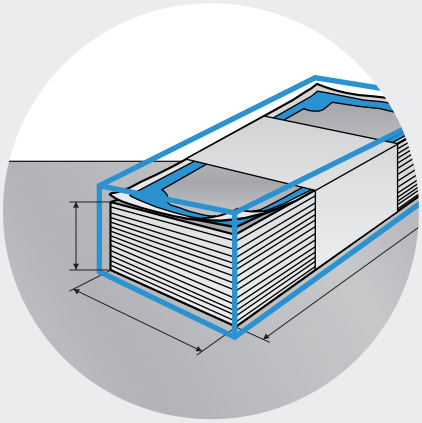




Cylindrical products
Pouch width = 1.6 x d + 2 cm
Pouch length = d + l + 6 to 10** cm

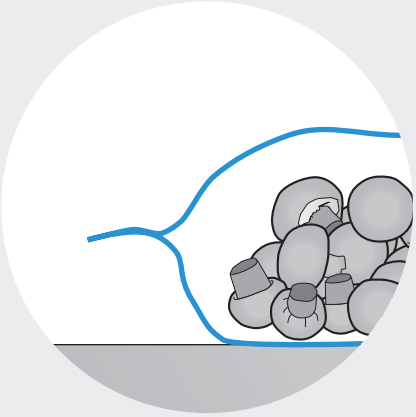
Rectangular products
Pouch width = w + h + 2 cm
Pouch length = l + h + 6 to 10** cm

Shrink bags for cylindrical and rectangular products
Pouch width = (w + h) x 1.2
Pouch length = l + h + 12 to 15 cm



* This information is based on MULTIVAC experience ** 10 cm for higher safety with chamber belt machines

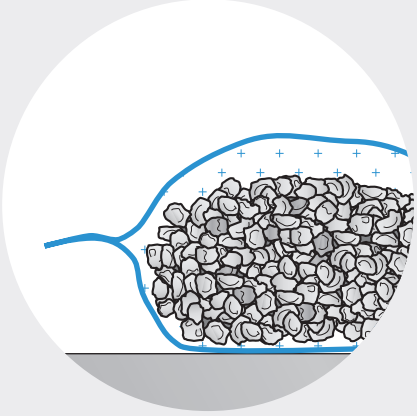
Modified atmosphere packaging



Natural atmosphere
The technically simplest solution is packing without modified atmosphere. These packs protect the product, but do not have any properties which extend shelf life.

Vacuum pack
Packaging under vacuum extends the shelf life of products, since the biochemical degradation of the product is slowed down by the removal of the atmosphere. As the products may be slightly compressed in the process, vacuum packs are only suitable for food which is not sensitive to pressure*.

Shrink packing
Special shrink bags are used for shrink packing. The sealed pouch pack goes through a shrinking unit. The shrink properties of the film are activated by the heat effect of the hot water, and the film then lies tightly around the product. As the products may be slightly compressed in the process, shrink packs are only suitable for food which is not sensitive to pressure*.



Modified atmosphere (MAP)
In the case of packs with modified atmosphere, the atmosphere in the pack is replaced with a gas mixture, which is matched to the product. This usually consists of carbon dioxide, nitrogen or oxygen.

* Vacuum and shrink packaging of pressure-sensitive products is possible with the MULTIVAC Soft Evacuation System (SES)

Maximum pack quality

MULTIVAC chamber machines are designed for maximum pack quality. Thanks to their wide range of equipment options, the machines can be perfectly adapted to the product and a broad spectrum of pouch materials.

Evacuation systems

MULTIVAC chamber machines can be equipped with various evacuation systems, allowing packs with products of different consistency to be evacuated reliably and gently.

① **Final pressure-controlled evacuation with the MULTIVAC AES mode**
The duration of the evacuation process is defined by the desired final pressure. This is entered in the machine control as a millibar value. If this value can not be achieved with the product being packed, the machine changes to the AES mode and automatically detects the optimum vacuum. This makes packing with MULTIVAC chamber machines particularly easy. The AES mode also prevents the undesirable formation of steam in the case of products with a high level of moisture or liquid.

② **MHP** (MULTIVAC Halted Processing)
Soft and paste-like products with air pockets, such as ready meals and ham logs, can be evacuated reliably with the MHP evacuation process. This evacuation process is divided into several evacuation and pause cycles, which follow on from each other until the desired final pressure is reached.

③ **MRP** (MULTIVAC Repeated Processing)
An extremely low residual oxygen content can be achieved with the MRP evacuation system. This evacuation process is divided into several evacuation and gas flushing cycles, which follow each other. The residual oxygen content is reduced further with each cycle.

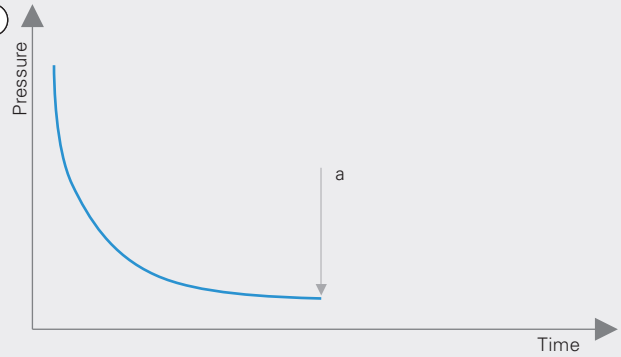
④ **MPP** (MULTIVAC Programmed Processing)
The evacuation and gas flushing process can be defined completely freely by the user. Even the most challenging products can be packed reliably and gently.

⑤ **MCV** (MULTIVAC Continuous Vacuum)
The integrity of MAP packs can be checked with the MCV evacuation process. The MAP packs are placed in the vacuum chamber. The maximum vacuum, which can be reached, is generated and held in the chamber. This enables the pack to be evaluated over a time period, which can be defined exactly.

⑥ **SES** (MULTIVAC Soft Evacuation System)*
In contrast to a standard evacuation process, the MULTIVAC SES evacuation system enables vacuum packing without exposing the products to a high pressure difference. This allows sensitive products (cheese with holes, meatloaf, pâté, etc.) to be packed safely and gently

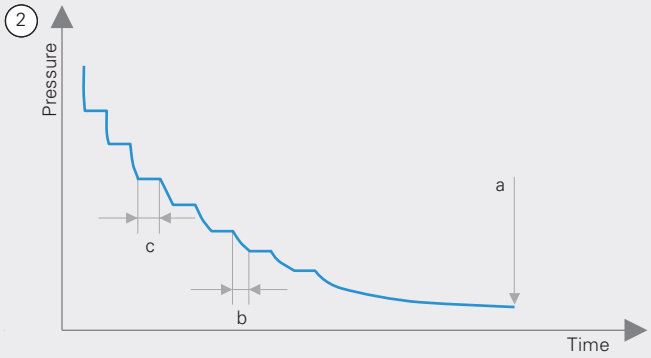
*available for the B 510 chamber belt machine

1



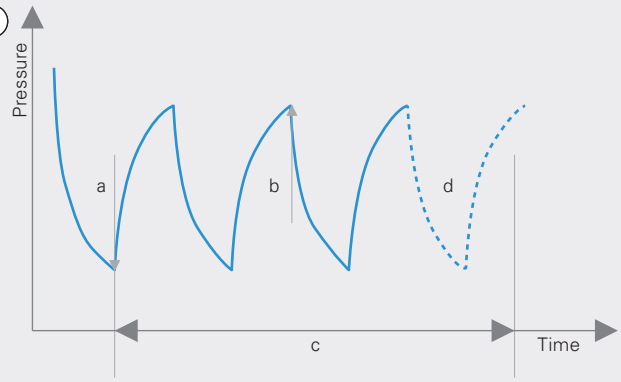
a = Final pressure

2



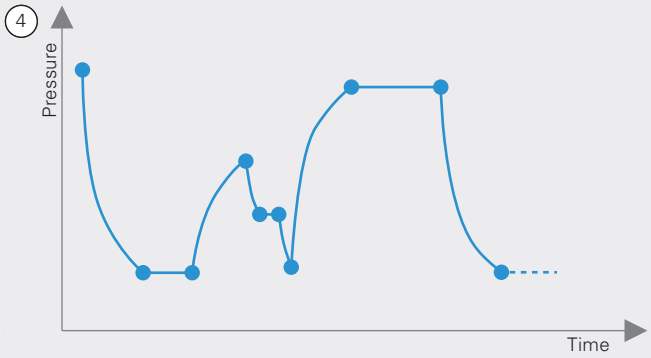
a = Final pressure
b = Evacuation time
c = Evacuation pause

3



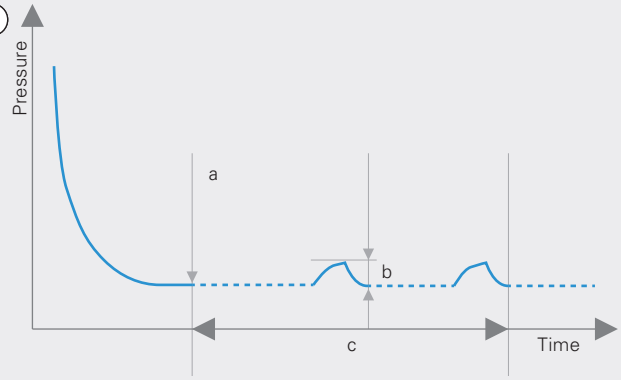
a = Final pressure
b = Gas pressure
c = Number
d = Cycle end

4



● = Can be set as required

5



a = Final pressure
b = Threshold
c = Holding time

6

a = Final pressure
b = Pressure difference

Sealing systems

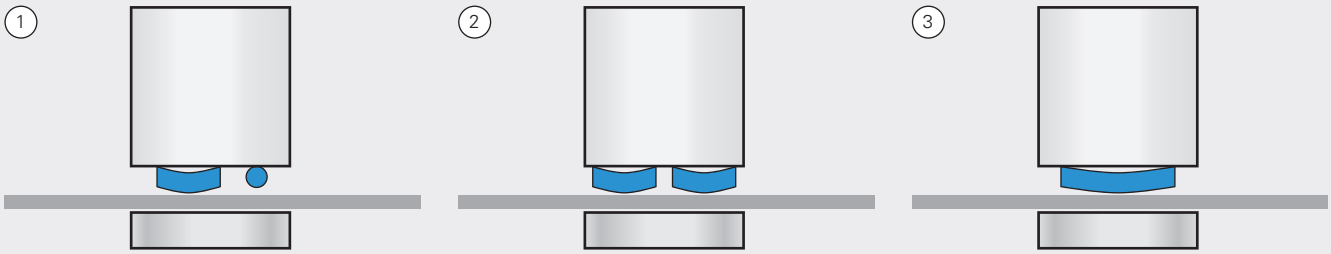
It is our claim that MULTIVAC packaging solutions meet the highest quality requirements. Our proven sealing systems ensure that film pouches are sealed with a permanent seal, and they contribute to achieving maximum pack security.

① **Double-seam separation sealing**
The sealing bar is equipped with a 3 mm wide heating band and a separate severing wire. This enables the excess length of the film pouch to be torn off easily after sealing. This results in a clean-looking and visually attractive pack.

② **Double-seam sealing**
Two seal seams, each 3 mm wide, offer additional security. This is particularly used when packing products with liquid, or if the sealing surfaces are easily contaminated.

③ **Single-seam sealing**
The film pouch is sealed securely and reliably with a 6 mm wide seal seam. It is possible to apply a seal seam engraving using special counter-pressure bars.

Sealing systems

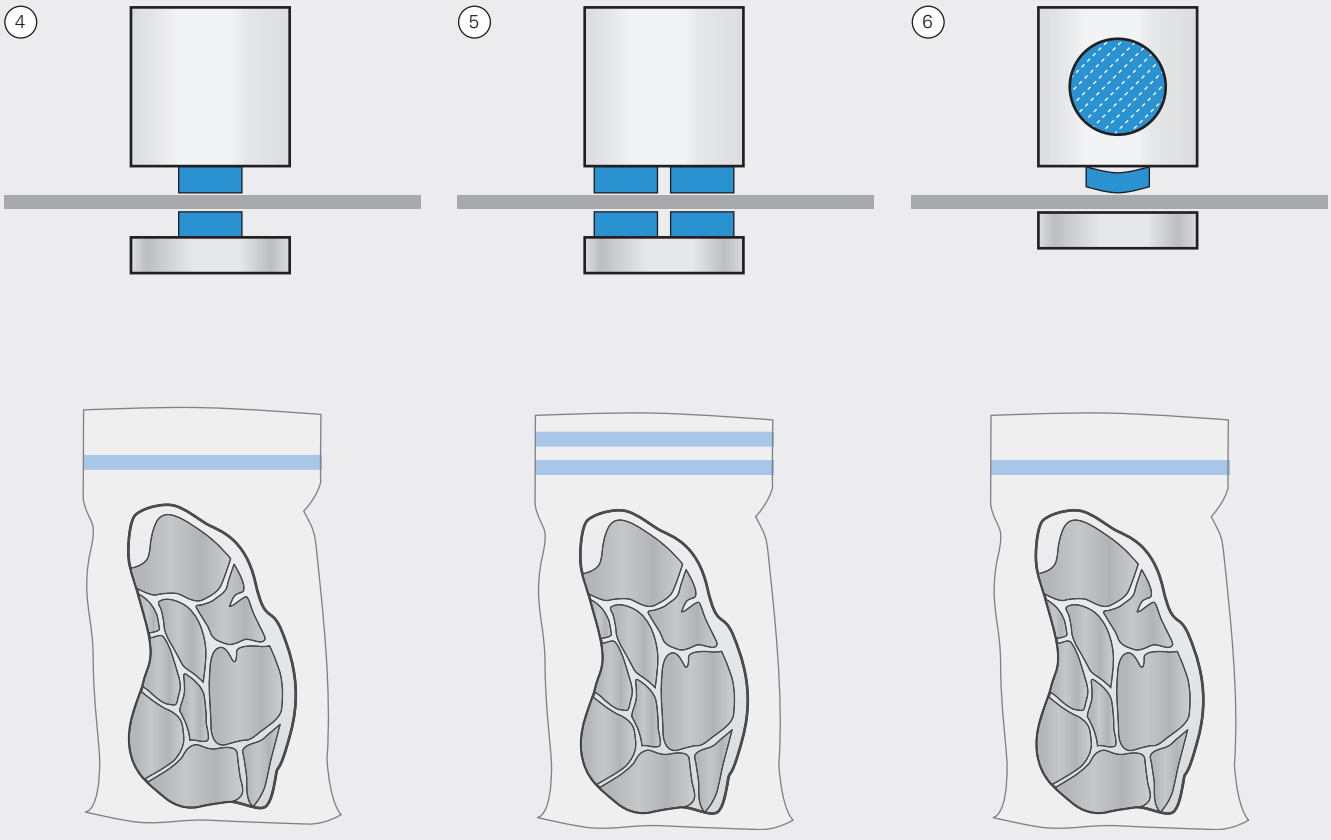


Sealing result

④ **Single-seam sealing on top and bottom**
The simultaneous heat effect from the top and bottom enables thick or multi-layer film pouches to be sealed with a permanent seal.

⑤ **Double-seam sealing on top and bottom**
Thanks to a second seal seam, this sealing system offers additional security when packing with thick, multi-layer aluminium pouches.

⑥ **Water-cooled sealing device**
The water-cooled sealing device ensures a high level of consistency in the sealing temperature under continuous operation. It is particularly recommended when using shrink bags.



Sealing method

Different sealing methods can be employed to ensure that the widest range of pouch materials can be used reliably.

Time-controlled impulse sealing
The heat for sealing the film pouch is generated by a brief electrical impulse in the heating band. The duration of the impulse can be set in the machine control and saved in the product recipe.

Time-controlled impulse sealing with water-cooled sealing bar.
Water-cooled sealing bars optimise the temperature consistency of time-controlled impulse sealing in non-stop operation.

Temperature controlled impulse sealing (TI)
In the case of temperature controlled impulse sealing, the temperature of the heating band is measured indirectly. This ensures a constant temperature in the sealing process and thus reproducible sealing. Readjustment of the sealing time is no longer necessary, even at high production volumes in non-stop operation. Even film pouches that are difficult to seal achieve optimum sealing results.

Constantly heated sealing (TC)
Constantly heated sealing (TC) achieves sealing results, which can be validated and calibrated. More information can be found in a separate brochure with packaging solutions for life science and healthcare products.

Gas flushing system

When packing with modified atmosphere packaging (MAP), the atmosphere in the pack is replaced after evacuation with an inert gas, which is matched to the product. This is usually carbon dioxide, nitrogen or a gas mixture.

MULTIVAC chamber machines can be equipped as an option with a gas flushing system, which enables pre-mixed inert gases to be used.

Pre-mixed inert gases for different applications can be obtained from gas manufacturers. This is really only sensible however, if only a few different mixtures are required.

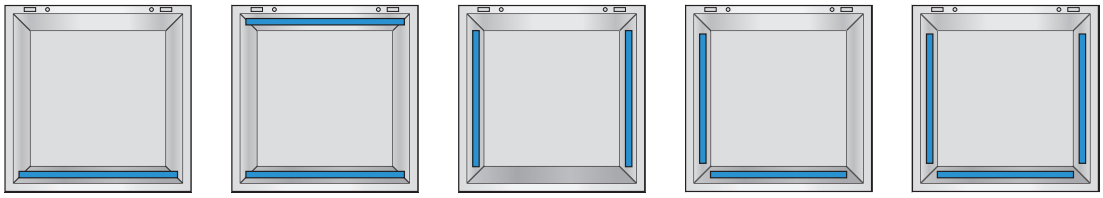
MULTIVAC chamber machines can be equipped as an option with gas mixers. The inert gas mixture is produced directly at the chamber machine. The individual gases are stored separately in tanks or gas bottles. This procedure offers an unlimited variety of gas mixtures and simplifies stockholding.

Maximum efficiency

MULTIVAC chamber machines are designed for an efficient packaging procedure.
We offer a wide range of equipment options for matching the machine perfectly to your production and packaging procedures, which means that the maximum output is ensured.

Sealing bar arrangement

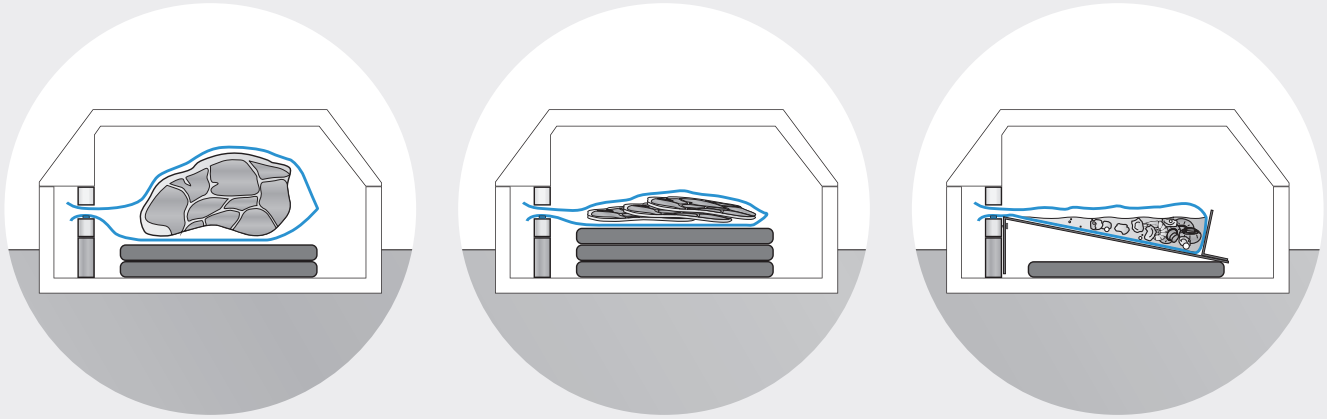
The number and position of the sealing bars can be defined individually in the case of some chamber machines. This means that you get a packaging solution, which is ideally matched to your requirements and offers you maximum flexibility and output.



Filling plates and sloping insert

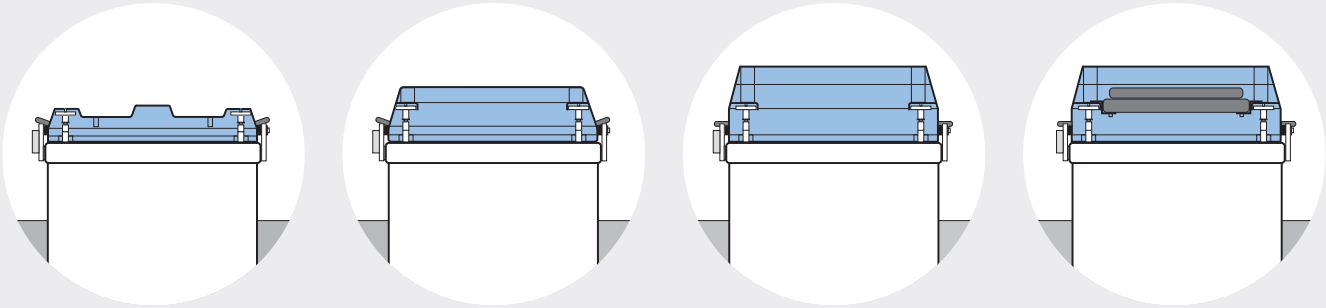
The filling plates available for chamber machines enable individual adjustment of the sealing height. In this way a visually attractive pack is achieved with products of different heights.

MULTIVAC also offers the facility with a stainless steel sloping insert to safely pack products containing liquids.



Chamber lid height

The height of the chamber determines the maximum height of the product to be packaged. The majority of MULTIVAC chamber machines can be optionally equipped with different chamber lid heights. Through filling plates in the chamber lid, the chamber volume can be adjusted, such as for packaging of flat products.



Automatic chamber lid mechanism

The large MULTIVAC single chamber machines can be equipped as an option with an automatic chamber lid mechanism, which is activated by a foot switch. This contributes to a machine operation, which is particularly ergonomic.

Roller conveyor

Roller conveyors in the chamber are available as an option for some models. These conveyors facilitate loading and unloading of the chamber, especially for heavy products.

Separate infeed and discharge roller conveyors are also available. They contribute to a continuous and effective packaging process.

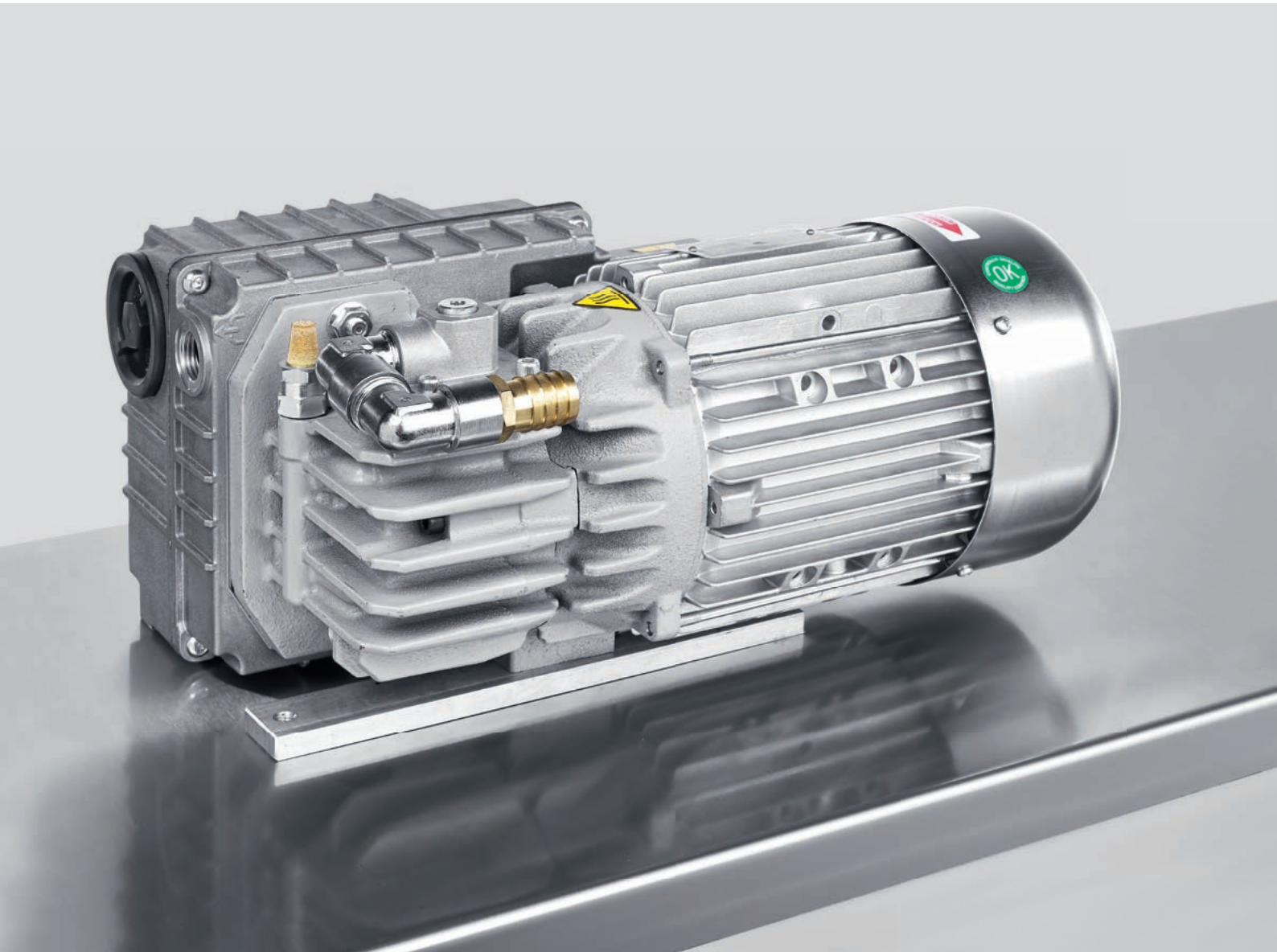
Vacuum pumps

MULTIVAC chamber machines can be equipped with integrated or external vacuum pumps. Another option is the supply through a central vacuum system.

The output capacity of the vacuum pump has an influence on the duration of the evacuation process, which in turn affects the cycle output of the chamber machine. Depending on the desired cycle output, the machine can be equipped accordingly with vacuum pumps of different capacities.

The reliable and durable MULTIVAC MRP vacuum pumps are available in different output categories, and they are characterised by their compact construction, reduced noise level and high degree of energy efficiency.

vMULTIVAC MRP 020 Vacuum pump



Accessories

In addition to shrinking units and drying units, other important accessories for your chamber machine are developed and built by MULTIVAC itself. In this way we can guarantee first-class quality for each component, while ensuring that the individual modules fit seamlessly into the overall system.

More ergonomics
So that your packaging procedures can be designed even more ergonomically, we offer a comprehensive range of accessories for your chamber machine.

- Meat forks
- Stainless steel mobile stand
- Pouch inflating device
- Roller conveyors
- Transport conveyors
- Rotary tables

v Pouch inflating device

v Meat fork Stainless steel

v Mobile stand

Turnkey packaging lines from one source

MULTIVAC develops and manufactures turnkey packaging lines, which include infeed and discharge equipment, shrinking and drying units, as well as labelling, marking and quality inspection systems.

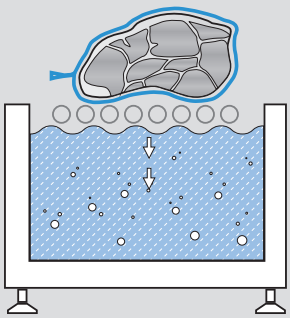
Shrinking and drying

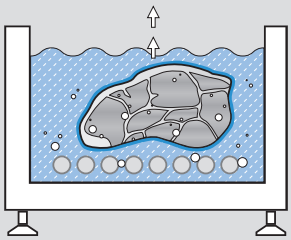
Attractive shrink packs

We offer shrinking and drying units with different levels of automation for the production of shrink packs.

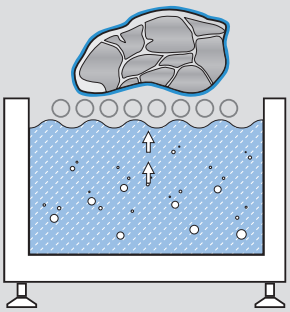
- Shrinking units as dip tanks
- Shrinking units as tunnels
- Drying units as tunnels
- Draining roller conveyors

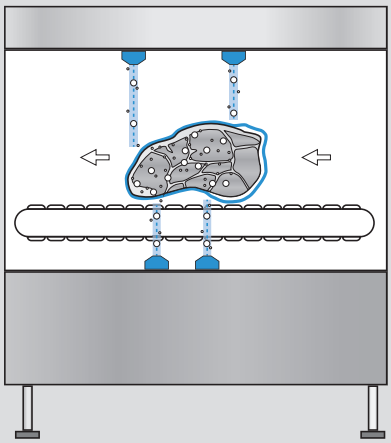
vShrinking unit as a dip tank
vDrying unit as a tunnel

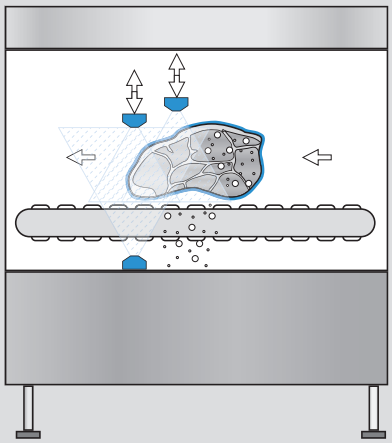




vShrinking unit as a tunnel







Marking

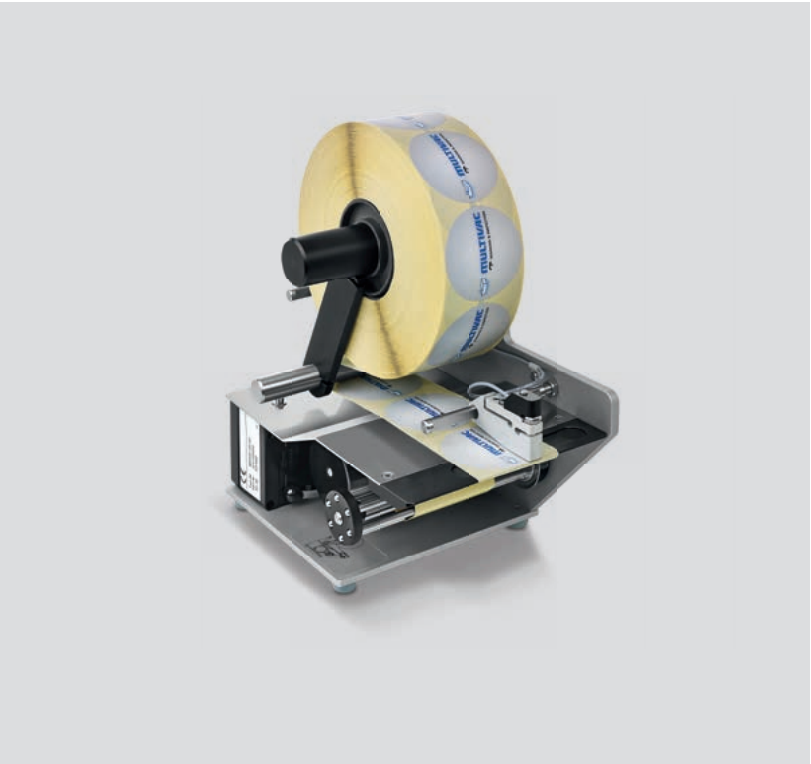
MULTIVAC Marking & Inspection, our Center of Excellence for labelling, marking and inspection, offers a large selection of labelling and printing systems for in-line and stand-alone applications. Our specialists work together with you to develop the ideal solution for your requirements.

Inspection

MULTIVAC Marking & Inspection also offers a comprehensive range of systems for the quality inspection of products and packs. These ensure that your products meet the highest quality and safety standards.

- Metal detectors
- Checkweighers
- X-ray inspection systems
- Visual inspection systems

v Label dispenser



v Checkweigher


MULTIVAC

MULTIVAC chamber machines

MULTIVAC chamber machines are easy to operate, clean and service. They offer the highest output on the smallest footprint, as well as giving a powerful performance over their entire machine life thanks to their production output and pack quality.

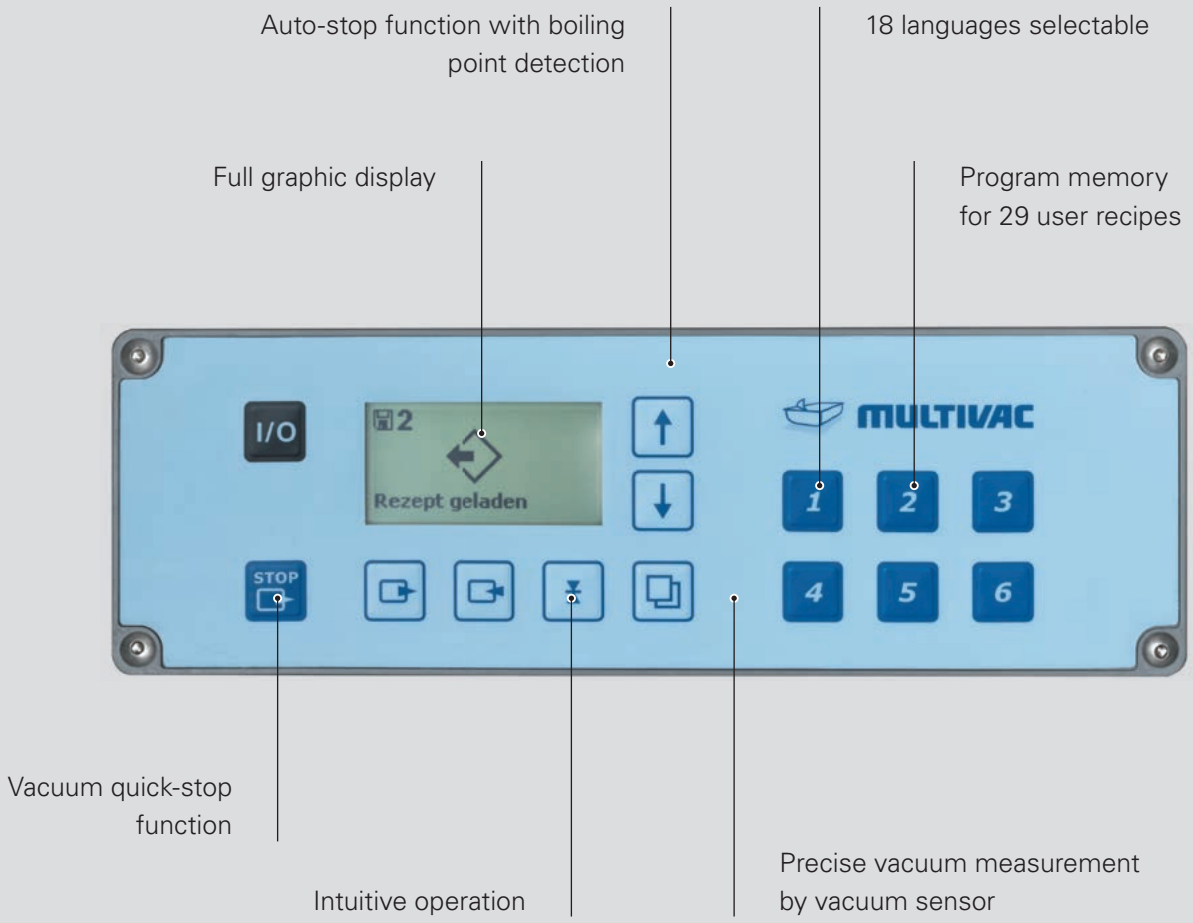
Simple operation

Machine control of the MC series
The digital MC electronic control is used in all chamber machines of the C series, in the B 210 and B 310 chamber belt machines, and in our shrinking and drying units.

It can be operated simply and intuitively. A membrane keyboard, which is easy to clean, is used together with a LCD display. All the process stages are clearly shown on the very easy-to-read display. Thanks to the 18 operating languages which can be set, MULTIVAC chamber machines can be operated reliably worldwide.

An automatic program enables even inexperienced operators to produce perfect packaging results. When the optimum vacuum has been achieved, the evacuation process is automatically ended and the next packaging stage is started. MULTIVAC uses a high-quality and very precise sensor for determining the values for vacuum and inert gas.

In the recipe memory, 29 different programs can be stored for a variety of products and called up at the press of a button. Six practical standard programs are preset in the factory. These can be changed as required.



∧ MC 06 machine control


MULTIVAC

Simple operation

IPC control with HMI 2.0 user interface
The B 510 and B 610 chamber belt machines are equipped with the MULTIVAC IPC 06 machine control. The graphically displayed HMI 2.0 user interface with a large 12" touchscreen enables the machine to be operated intuitively and reliably by workers with very little training.

There is a simple and comprehensible visualisation of the individual process stages during the packaging procedure. This enables the user to continually optimise the overall procedure.

Individual management of operating rights ensures that operators only have access to the parameters, which are relevant to them. This contributes to the reliability of the packaging procedure. All settings and important production data are automatically documented. Faults in the packaging procedure can therefore be traced back to their cause.

The IPC 06 machine control features
- A program memory for more than 200 user recipes
- Over 40 operating languages, with different character sets
- A wide variety of help functions with numerous graphics
- Password protected access to the various user levels
- Easy to keep clean

Logging on with chip card
Operators can logon and logoff quickly with this option. The registration takes place without contact. It is sufficient to hold one's personal RFID chip card briefly to the reader on the machine control.

< IPC 06 machine control with HMI 2.0 user interface

Easy cleaning

MULTIVAC chamber machines are designed for the hygiene requirements of the food industry. The high-quality stainless steel construction makes the machines particularly resilient, durable and suitable for continuous use by professionals.

Hygienic design and high-quality materials ensure reliable cleaning. The smooth, angled external surfaces without recesses, corners or edges are easy to clean.

Tabletop machines and compact free-standing chamber machines

- Sealing bars, filling plates and sloping inserts can be removed for cleaning without tools
- The vacuum chamber and chamber lid have a particularly smooth surface and can be cleaned easily

Large free-standing machines and double chamber machines

- The chamber floor is completely even and can be cleaned particularly easily
- Sealing bars and filling plates can be removed for cleaning without tools

Chamber belt machines

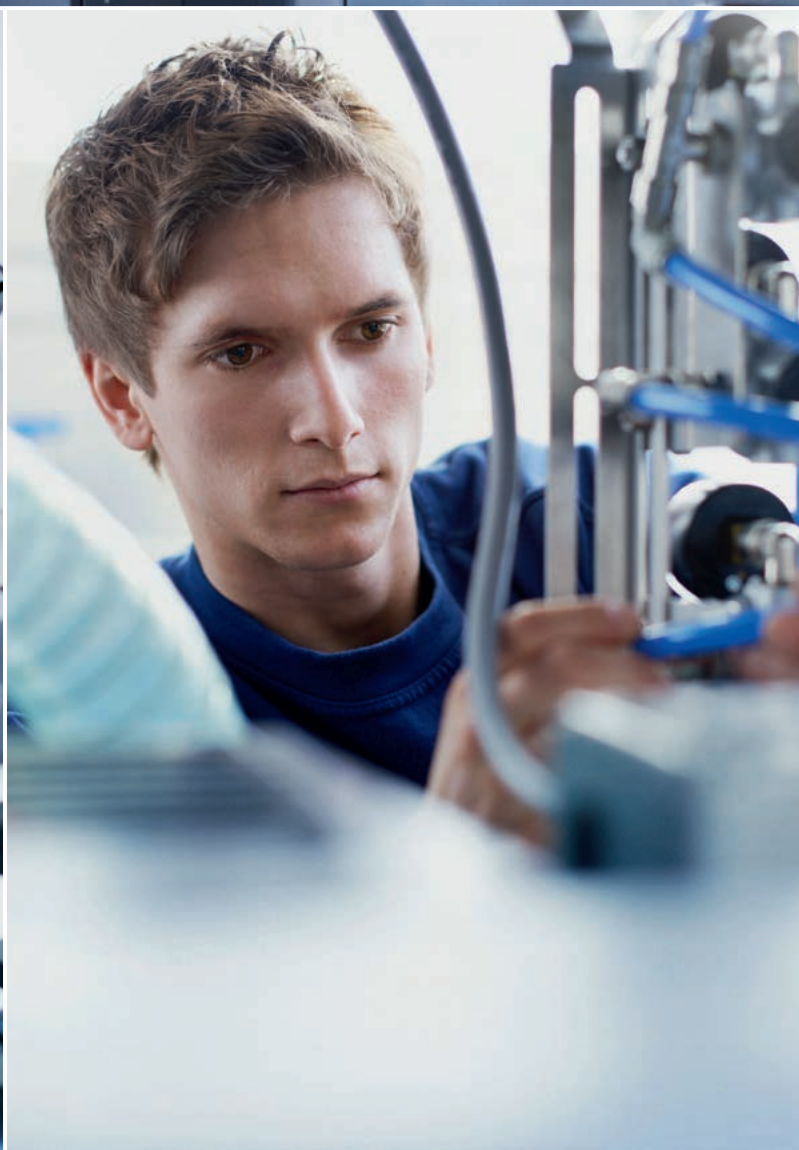
- The ergonomically designed tilting lid ensures the best accessibility as well as fast and easy cleaning
- The belts can easily be slackened for cleaning and service work

The MULTIVAC benefits

- Testing by the German Social Accident Insurance (Deutsche Gesetzliche Unfallversicherung/DGUV)
- All chamber machines carry the GS seal of approval
- Shorter cleaning and servicing times, therefore less downtime
- Economical use of water and cleansers


MULTIVAC
MULTIVAC B 310


MULTIVAC



More service

Service from MULTIVAC covers the entire life cycle of a packaging solution. Over 900 specialists worldwide support you with consultancy, training and technical service.

Professional consultancy and machine installation
The packaging specialists from MULTIVAC analyse existing packaging concepts and highlight potential for improvement. They develop new packaging and suitable machine concepts with you. They also ensure that your new packaging solution is put into service without a hitch and that it is integrated in your production process.

Tests of packaging solutions in the MULTIVAC Innovation Centers
We provide capacity in our Innovation Centers for you to perform packaging tests. Here you have the opportunity of testing new packaging concepts, as well as producing prototypes and small-scale series of packs. Shelf life tests and technical food analysis can also be performed.

Needs-based training courses
We offer user training courses worldwide for our customers' operators and service personnel. Training may be conducted on site at the customer locations, at the premises of our daughter companies or at the MULTIVAC Training & Innovation Center. We are flexible in matching the content of our training courses to each customer‘s specific requirements.

Machine maintenance
Thanks to the benefits of reliable machine technology, our technical service always ensures that the maximum availability of your equipment is maintained. The simple and quick supply of spare parts makes a significant contribution to this. The expertise of our specialists make this the perfect service.

BETTER PACKAGING

MULTIVAC offers integrated solutions for packaging. We serve customers worldwide with our wide range of machines and services. Our decentralized organisation is the basis for our individual customer care.

MULTIVAC supports the BLUECOMPETENCE Initiative of the Association of German Machinery and Plant Manufacturers, VDMA

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