

# USER MANUAL

## Vacuum Packing Machine

**Boxer**  
**Lynx**  
**Toucan**



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# INTRODUCTION

Henkelman BV is a supplier of ultra-modern vacuum packing machines.

Our machines are designed and manufactured to the highest standards. And that's clear. They combine a sleek built and functional design with ease of use and durability. Installation is just a matter of 'plug & pack' and the clever design ensures that the hygiene standards are maintained at all times.

This manual contains relevant information and instructions for installation, operation and maintenance of the machine.



- The machine is not suitable for the packaging of toxic, corrosive, irritant or hazardous materials
- All persons responsible for the operation must at least fully read and understand the chapters on operation and safety of these operating instructions
- All persons responsible for assembly, installation, maintenance and/or repair should read and understand all of these instructions
- The user is responsible for the interpretation and use of this manual in any circumstances. Please contact the owner or the manager in case of questions or doubts about the correct interpretation
- This manual should be kept near the machine and should be within reach for users
- All major maintenance, adjustments to the machine and observations should be recorded in a log, see Appendix 10.1
- Changes to the installation/machine are not permitted without prior written approval of the supplier
- Please contact the vendor for special servicing that is not included in this manual
- Comply at all times with the safety requirements, as specified in Chapter 3
- The proper functioning and safety of the system can only be guaranteed if the recommended maintenance is executed on time and correctly
- Illustrations may differ from your machine

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# EC DECLARATION OF CONFORMITY (COPY)

We,

Henkelman BV  
Titaniumlaan 10  
5221 CK, 's Hertogenbosch  
Nederland

declare under our sole responsibility that the product;

Machine type:           Boxer / Lynx / Toucan serie

fulfils all the relevant provisions of the directives

2006/42/EG	Machinery Directive
2004/108/EG	EMC-Directive

and is in conformity with the following standard(s) or other normative document(s);

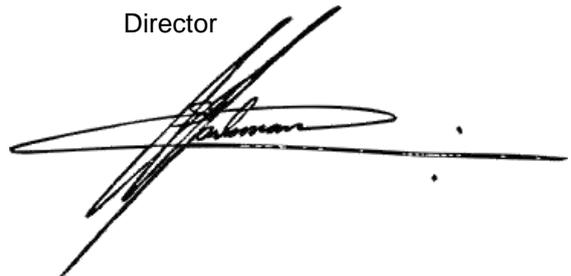
<b>NEN-EN-ISO 12100</b>	Safety of machinery - general principles for design – Risk assessment and risk reduction
<b>NEN-EN 13857</b>	Safety of machinery – Safety distances to prevent hazard zones being reached by upper and lower limbs
<b>NEN-EN 349</b>	Safety of machinery – Minimum gaps to avoid crushing of parts of the human body
<b>NEN-EN 953</b>	Safety of machinery – Guards - General requirements for the design and construction of fixed and movable guards
<b>NEN-EN 13849-1</b>	Safety of machinery – Safety-related parts of control systems - Part 1: General principles for design
<b>NEN-EN 60204-1</b>	Safety of machinery – Electrical equipment of machines - Part 1: General requirements

The undersigned is authorized to compile the technical file

Netherlands, 's-Hertogenbosch, 28 februari 2014

Stephan Harleman

Director



# LIST OF SYMBOLS

For all operations in which the safety of the operator and/or technician is at stake and where caution should be exercised, the following symbols are used.



**Caution!**



**Danger:**  
High Voltage!



**Tip:**  
Provides a quick overview or offers tips to make it easier to perform certain actions

# ICONS

Some icons and warnings are included on the machine among others to indicate the possible risks involved to the users.

ICON	DESCRIPTION	LOCATION
	Nameplate	At the rear of the machine
	Warning sign "HIGH VOLTAGE"	At the rear of the machine, on the cover of the electrical cabinet
	Warning sign "HEAT"	<ul style="list-style-type: none"> <li>• On the sealbar(s)</li> <li>• On the vacuum pump</li> </ul>
	Warning sign "GAS CONNECTION" (optional) Prohibited to connect oxygen	At the rear of the machine
	Warning sign "GAS CONNECTION" (optional) Maximum gas pressure at gas connection	At the rear of the machine
	Warning sign "SEAL PRESSURE CONNECTION" (optional) Maximum pressure at external seal pressure connection	At the rear of the machine
	<b>CAUTION!</b> Regularly check that the icons and markings are still clearly recognizable and legible. Replace them if this is no longer the case	

# 1. TECHNICAL INFORMATION

Boxer	35	42	42XL	42XL BA	52	
<b>General</b>						
Ambient temperature	5 tot 30	5 tot 30	5 tot 30	5 tot 30	5 tot 30	°C
Noise production	< 70	< 70	< 70	< 70	< 70	dB(A)
Maximum daily production	5	5	5	5	5	h/day
<b>Dimensions of the machine</b>						
Width	450	493	493	403	698	mm
Length	554	528	616	616	528	mm
Height	405	440	470	420	440	mm
Weight	49	62	67	67	66	kg
<b>Maximum product height</b>						
	150	180	180	120	185	mm
<b>Gas flush (optional)</b>						
Connection size	6	6	6	6	6	mm
Gas flow	60-100	60-100	60-100	60-100	60-100	l/min
Maximum pressure	1	1	1	1	1	bar
<b>Electrical connection</b>						
Tension	*	*	*	*	*	V
Power	*	*	*	*	*	kVA
<b>Vacuum pump</b>						
Capacity	16	21	21	21	21	m <sup>3</sup> /h-
Oil	0.3	0.5	0.5	0.5	0.5	liter
Oil type (Ambient temperature 5-40°C)	VM32	VM32	VM32	VM32	VM32	

\* See the nameplate

Lynx	32	42	
<b>General</b>			
Ambient temperature	5 tot 30	5 tot 30	°C
Noise production	< 70	< 70	dB(A)
Maximum daily production	5	5	h/day
<b>Dimensions of the machine</b>			
Width	534	534	mm
Length	400	491	mm
Height	385	396	mm
Weight	35	46	kg
<b>Maximum product height</b>			
	103	114	mm
<b>Gas flush (optional)</b>			
Connection size	6	6	mm
Gas flow	60-100	60-100	l/min
Maximum pressure	1	1	bar
<b>Electrical connection</b>			
Tension	*	*	V
Power	*	*	kVA
<b>Vacuum pump</b>			
Capacity	8	16	m <sup>3</sup> /h-
Oil	0.5	0.5	liter
Oil type (Ambient temperature 5-40°C)	VM32	VM32	

\* See the nameplate

Toucan	regular	square	
<b>General</b>			
Ambient temperature	5 tot 30	5 tot 30	°C
Noise production	< 70	< 70	dB(A)
Maximum daily production	5	5	h/day
<b>Dimensions of the machine</b>			
Width	480	480	mm
Length	581	581	mm
Height	795	795	mm
Weight			kg
<b>Maximum product height</b>	275	330	mm
<b>Gas flush (optional)</b>			
Connection size	6	6	mm
Gas flow	60-100	60-100	l/min
Maximum pressure	1	1	bar
<b>Electrical connection</b>			
Tension	*	*	V
Power	*	*	kVA
<b>Vacuum pump</b>			
Capacity	21	21	m <sup>3</sup> /h-
Oil	0.5	0.5	liter
Oil type (Ambient temperature 5-40°C)	VM32	VM32	

\* See the nameplate

## 2. DESCRIPTION OF THE MACHINE



### FUNCTION

- This chapter provides an overview of the main components and functions. If detailed information is available in this guide, you will be redirected to the specific sections.
- The performance of your machine may differ from the figure below.

The figure below shows the main components of the system:

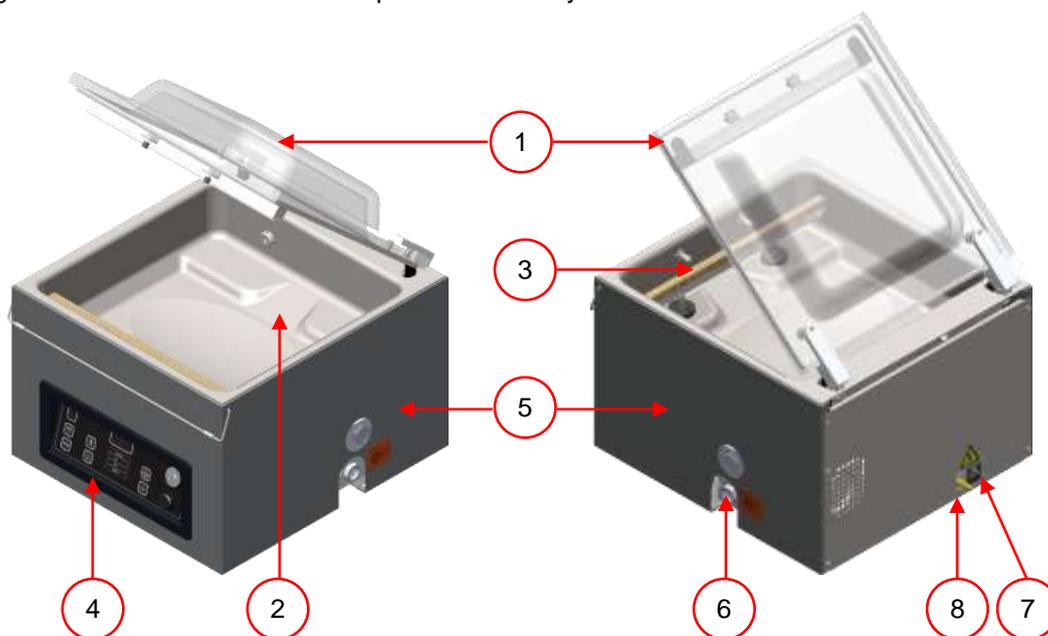


Figure 1: Overview of the main components

NO.	PART	DESCRIPTION	SECTION
1	Lid	<ul style="list-style-type: none"> <li>• The function of the lid is to close the chamber during the vacuum cycle</li> <li>• The lid has a lid gasket fitted, which makes sure the machine does not leak during the vacuum cycle</li> <li>• In the lid, silicone holder(s) are mounted as the opposite of the sealing bar(s)</li> </ul>	6.8 2.2, 6.7
2	Work plate / Chamber	<ul style="list-style-type: none"> <li>• The products to be packed will be placed on the worktable / in the chamber with the opening of the vacuum seal bag on the seal position</li> </ul>	
3	Seal bar	<ul style="list-style-type: none"> <li>• In the chamber, depending on the version, 1 or 2 seal bars are mounted. With this/these the vacuum bag is closed</li> </ul>	2.2, 6.6
4	Controlpanel	<ul style="list-style-type: none"> <li>• See section</li> </ul>	2.6, 2.7

NO.	PART	DESCRIPTION	SECTION
5	Machine housing	<ul style="list-style-type: none"> <li>The machine frame contains all necessary parts for the correct functioning of the machine</li> </ul>	
6	Vacuum pump	<ul style="list-style-type: none"> <li>See section</li> </ul>	2.3
7	Power connection	<ul style="list-style-type: none"> <li>See section</li> </ul>	2.5
8	Gas flush (optional)	<ul style="list-style-type: none"> <li>See section</li> </ul>	1, 2.4

## 2.1. Description of the packaging process / machine functions



### FUNTION

- This chapter provides an overview of the process and the available machine functions
- For the functions H2O (H2O+), Gas (Gas+) and Seal 1-2 Cut-off, specific components must be installed in your machine before they can be activated. Please contact your supplier for more details
- In chapter 5.5 you will find information on how to set the parameters to the correct values



### EXPLANATION (Only applicable to the Toucan series)

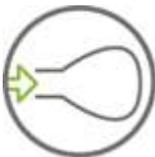
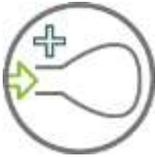
- The External Vacuum option does not apply
- On a Toucan Regular the vacuum bag is placed on the plateau in an upright position. The height of this plateau needs to be set in such a way that the seal is placed on the correct position of the vacuum bag
- A Toucan Square features a mold for block bags. In this mold only the specific size of the bags can be used, for which the mold is designed
- In a Toucan square you should first place the vacuum bag in the mold before filling it. Make sure the bag is filled sufficiently

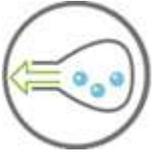
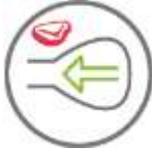
## 2.1.1. The packaging process / machine functions

The following steps are taken during the process. For the detailed procedure, see Chapter 5.

STEP	PROCESS PHASE	OPERATION
1	Preparations	<ul style="list-style-type: none"> <li>The operator puts the product in a vacuum bag and places it on the work top with the opening on the seal or contra bar</li> </ul>

2	Extracting vacuum	<ul style="list-style-type: none"> <li>The vacuum process is started by closing the lid</li> <li>Depending on the options you have chosen for your machine and the product you are packaging, the following functions are available</li> </ul>
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FUNCTION	ICON	
Vacuum		<ul style="list-style-type: none"> <li>During the cycle, the air will be removed from the chamber until the set time has been reached</li> <li>Extracting vacuum to a set value is only possible with a sensor control (optional for Digital Control (DC). This value can be set in %. The percentage indicates the depth of the vacuum. The pressure of the outside air hereby is 0%. In the Advanced Control System (ACS), the value(s) indicated in mbar, hPa or %</li> </ul>
Vacuum+		<ul style="list-style-type: none"> <li>Available if the vacuum percentage is set to maximum</li> <li>Vacuum+ is an option that adds additional time to the vacuum to create the possibility to let any air escape that is still within the product</li> <li>Vacuum+ is only possible in combination with sensor control</li> </ul>
Gas (optional)		<ul style="list-style-type: none"> <li>After extracting the vacuum, a gas is injected into the chamber and the vacuum bag. This is to create a modified atmosphere to protect the shape or to increase the shelf life of the product. The value of the gas function can, depending on the control type, be set in %, mbar or hPa</li> </ul>
Gas+ (optional)		<ul style="list-style-type: none"> <li>Gas+ is an option that adds additional time to the gassing to increase the amount of gas in the package (see 5.5.1.2)</li> </ul>

STEP	PROCESS PHASE	OPERATION	
	FUNCTION	ICON	
	Liquid Control (optional)		<ul style="list-style-type: none"> <li>• Available with the optional Liquid Control Sensor</li> <li>• The principle of the Liquid Control function is that it is a system that is controlled by a highly sensitive sensor. The sensor is able to detect the moment that liquids from the product or the product itself begin to vaporize (boil). At that time, the system will switch to the next step in the process. This will prevent the product from drying out, lose weight and/or splash out of the vacuum bag and thus contaminating the seal, the chamber and the oil in the pump (see 5.5.1.3)</li> </ul>
	Liquid Control+ (optional)		<ul style="list-style-type: none"> <li>• Available with the Liquid Control option</li> <li>• The Liquid Control+ function allows you to proceed with the vacuum process for a certain time, after the evaporation phase has been reached</li> </ul>
	Red Meat (optional)		<ul style="list-style-type: none"> <li>• This function is specifically designed for packaging of fresh meat. It is added to the normal vacuum function to prevent degasification of the product during the sealing phase. This degassing can cause bubbles and causes droplet formation in the package. (see 0)</li> </ul>
	Sequential vacuum (optional)		<ul style="list-style-type: none"> <li>• Sequential vacuum makes it possible to exchange the vacuum process with pauses, so that the trapped air in a product will have the opportunity to escape. In total, up to 5 steps can be programmed. This function is available in machines with Advanced Control System (ACS)</li> </ul>
	Multi-cycle vacuum (optional)		<ul style="list-style-type: none"> <li>• With multi-cycle it is possible to gradually extract vacuum and use gas. With this the oxygen content is reduced as well</li> <li>• This function is available in machines with Multi Program Digital Control (MPDC) (see 5.5.1.5)</li> </ul>

STEP	PROCESS PHASE	OPERATION
3	<b>Sealing</b>	<ul style="list-style-type: none"> <li>The seal bars are pressed against the contra bars, with the vacuum bag in between and melt the bag to be closed</li> </ul>
	<b>FUNCTION</b>	<b>ICON</b>
	Seal	 <ul style="list-style-type: none"> <li>During the sealing, the material of the vacuum bag is heated and compressed to form a hermetic sealing. The function is programmed in seconds</li> <li>As an option, a cutting wire is available. The purpose of this wire is to remove the remaining foil from the excess flap. Depending on the chosen model, the cutting wire is controlled simultaneously, or independent from the normal seal wire (Seal 1-2 cut-off)</li> </ul>
4	<b>Releasing vacuum</b>	<ul style="list-style-type: none"> <li>The vacuum is released, by letting air back into the chamber</li> </ul>
	<b>FUNCTION</b>	<b>ICON</b>
	Soft air (optional on Falcon)	 <ul style="list-style-type: none"> <li>This makes it possible to let air flow back into the chamber slowly, so that the vacuum bag slowly forms itself around the product. This prevents sharp edges on the product to damage the foil and possibly cause leaks</li> </ul>
5	<b>Open vacuum chamber</b>	<ul style="list-style-type: none"> <li>The lid opens</li> </ul>
6	<b>Remove the product</b>	<ul style="list-style-type: none"> <li>The operator can remove the packed product from the worktable</li> </ul>

## 2.1.2. General Functions

FUNCTION	ICON	OPERATION
Cleaning the pump		<ul style="list-style-type: none"> <li>The pump cleaning program allows for a proper flushing of the pump. During the program, the pump and the oil will reach the operating temperature, so that the oil and the fluid will be separated and that any contamination is filtered. The high temperature takes care of evaporation of moisture in the pump, which reduces the risk of corrosion</li> </ul>
Menu		<ul style="list-style-type: none"> <li>This feature is available on machines with Advanced Control System (ACS)</li> <li>Menu is used to change the machine settings, such as language and printing options</li> </ul>
Print		<ul style="list-style-type: none"> <li>This feature is available on machines with Advanced Control System (ACS)</li> <li>With this function one or more labels can be created per cycle which can be stuck on the bag</li> <li>The following information may be listed on the label: name of the manufacturer, product name, production date, shelf life, used gas, vacuum reached, the initials of the user and the recommended storage temperature</li> </ul>
External vacuum		<ul style="list-style-type: none"> <li>This feature is available as an option depending on the machine type</li> <li>With this function vacuum can be applied to special food packaging gastronorm containers outside the machine</li> <li>The possibilities for adjusting the vacuum value are equal to the standard vacuum (see 5.5.1.6 MPDC of 5.5.2.3 ACS control)</li> </ul>

## 2.2. The seal system



### FUNCTION

- The seal system closes the opening(s) of the bag(s) to maintain the vacuum and/or gas inside
- The remaining flap can optionally be cut off by the seal bar

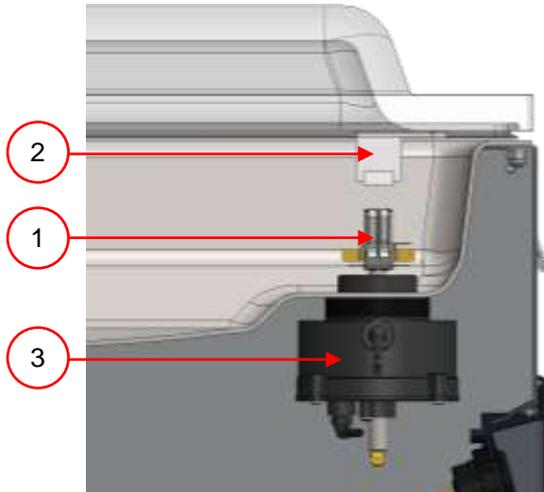


Figure 2: Overview of the seal system

NO.	PART	DESCRIPTION	SECTION
1	Seal bar	<ul style="list-style-type: none"> <li>• The seal bar consists of the following components <ul style="list-style-type: none"> <li>• Seal wires: the sealing wires are heated for a certain period of time so that the open side of the vacuum bag will melt together during the sealing</li> <li>• Cutting wire (optional): a cutting wire is heated in such a way that the foil of the bag partially melts so that the top flap of the vacuum bag can be torn off easily</li> <li>• Teflon-tape: sealing and cutting wires are coated with Teflon tape to prevent the bag to stick to the seal bar</li> </ul> </li> <li>• Refer to the indicated section for detailed information on maintenance</li> </ul>	6.6
2	Silicon holder	Opposite to each seal bar a silicone holder is mounted, which provides counter-pressure on the cylinders / seal bag	6.7
3	Seal mechanism	<ul style="list-style-type: none"> <li>• The seal bars are pressed on the vacuum bag by using cylinders or seal bags</li> <li>• By connecting the outside atmospheric pressure to the inlet of the seal bags / cylinders, they will press the seal bar on the bag</li> </ul>	2.2

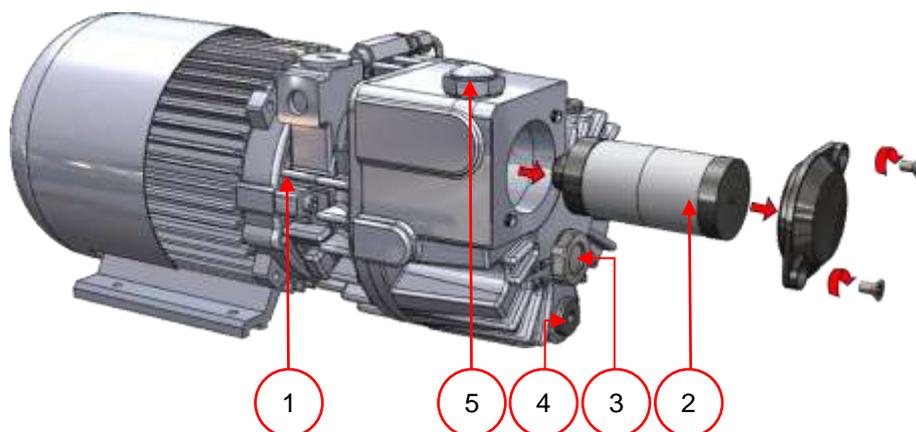
## 2.3. The vacuum pump



### FUNCTION

The vacuum pump creates a vacuum in the chamber

8 m<sup>3</sup>



16 m<sup>3</sup>

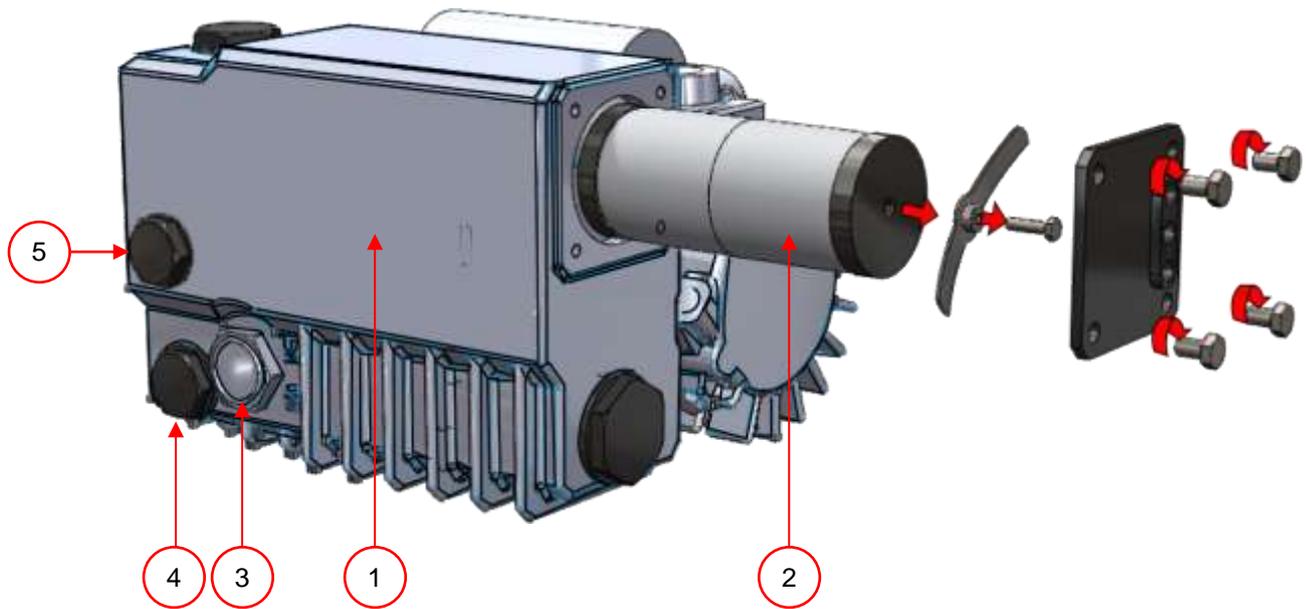


Figure 3: Overview of the pump (filter cover removed)

NO.	PART	DESCRIPTION	SECTION
1	Vacuum pump	<ul style="list-style-type: none"><li>Creates the vacuum during the process</li></ul>	6.1
2	Exhaust filter	<ul style="list-style-type: none"><li>Filters the exhaust air and absorbs oil vapors</li><li>Refer to the indicated section for detailed information with regards to maintenance</li></ul>	6.1
3	Oil sight glass	<ul style="list-style-type: none"><li>The oil sight glass indicates the maximum and minimum oil level in the vacuum pump</li><li>The oil sight glass is visible when the cover of the machine is in place</li></ul>	6.1
4	Oil drain plug	<ul style="list-style-type: none"><li>In order to drain the oil</li></ul>	
5	Oil filler plug	<ul style="list-style-type: none"><li>In order to fill the pump with oil</li></ul>	

## 2.4. Gas flushing (optional)



### FUNCTION

- For protection of the product it may be desirable to add a specific gas in the package after the air is removed. The machine can be provided with a gas connection optionally
- Installation details can be found in chapter 1



### ATTENTION!

- Never use a gas mixture containing over 20% of oxygen or other explosive gases. This can cause hazardous explosions
- By gas flushing, the seal pressure will decrease. There must be a minimum final pressure (after gas flushing) of 30% to properly seal the bag

## 2.5. Electrical installation



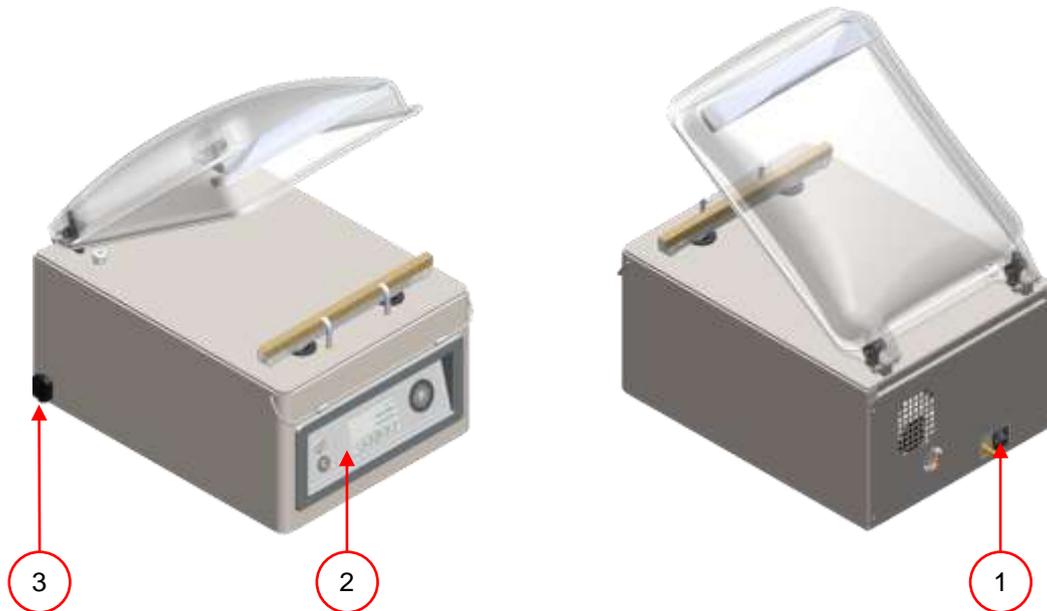
### FUNCTION

- The electrical installation provides power to the vacuum pump, sealing system and control unit
- See the electrical diagram for the further structure and operation of the electrical installation. For the electrical diagram, please contact your dealer



### ATTENTION!

- Work on the electrical installation may only be carried out by a technical expert



**Figure 4: Overview of the electrical installation**

**The machine consists of the following components**

NO.	PART	DESCRIPTION	SECTION/ LOCATION
1	Power cable	<ul style="list-style-type: none"> <li>To connect the power supply to the machine</li> </ul>	
2	Control panel	<ul style="list-style-type: none"> <li>The available control functions can be used</li> <li>Depending on your model, your machine may have one of the following control types: <ul style="list-style-type: none"> <li>Multi Program Digital Control (MPDC)</li> <li>Advanced Control System?(ACS)</li> </ul> </li> </ul>	2.6 2.7
3	USB connection (only with ACS)	<ul style="list-style-type: none"> <li>The USB connector is located on the side of the control box that is located behind the back panel. In order to reach the USB connection, the back panel first has to be removed</li> <li>The USB connector allows import and export of data</li> </ul>	

## 2.6. Multi Program Digital Control (MPDC)



### FUNCTION

- The machine can be operated
- The programs can be modified
- See chapter 5 for instructions on operation and programming

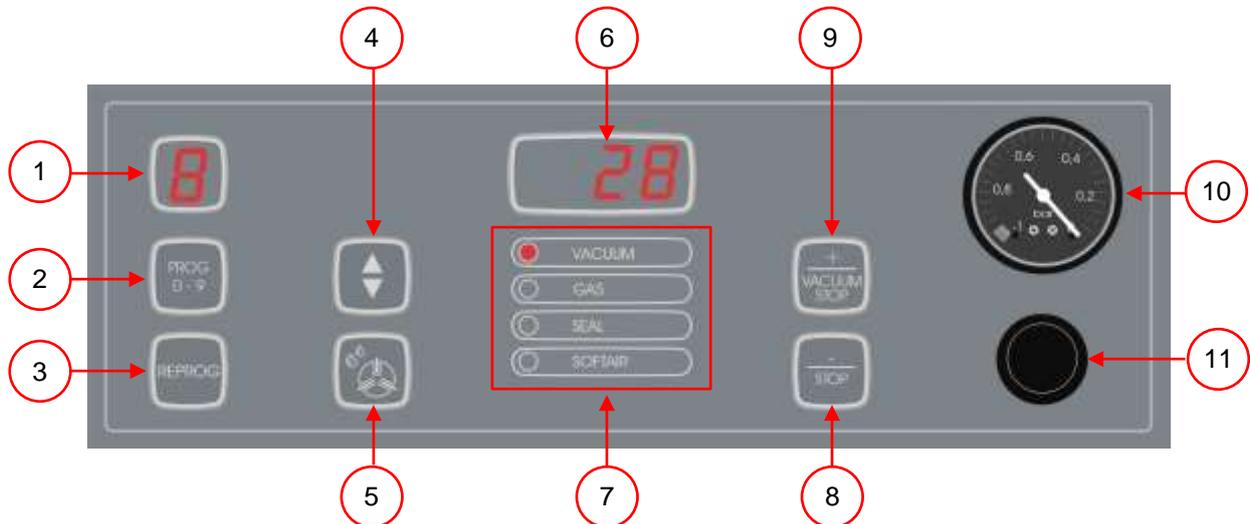


Figure 5: Control panel Digital Control (MPDC)

NO.	ELEMENT	EXPLANATION
1	Display	<ul style="list-style-type: none"> <li>• The display shows the selected program</li> </ul>
2	“prog 0-9” key	<ul style="list-style-type: none"> <li>• Operate the key to select the desired program</li> </ul>
3	“reprog” key	<ul style="list-style-type: none"> <li>• Operate the key to switch to the program mode. The parameters can be changed by pressing the 4, 8 and 9 keys</li> </ul>
4	Cursor key	<ul style="list-style-type: none"> <li>• Navigates you through the functions shown in the display 6/7</li> </ul>
5	“Oil cleaning program” key	<ul style="list-style-type: none"> <li>• Operate the key to activate the pump cleaning program. This removes moisture from the oil in the vacuum pump. Moisture can be absorbed by the oil when the pump is only running short cycles or when you pack products containing moisture</li> <li>• See 0 for instructions</li> </ul>
6	Display parameter	<ul style="list-style-type: none"> <li>• Displays the current value of the active function during the program cycle or the set value of the selected function when the machine is idle</li> <li>• A red dot lights up on the lower right when vacuum+ is activated</li> </ul>
7	Function display	<ul style="list-style-type: none"> <li>• The LED light for the function illuminates when the function is active during the program cycle or when the function is selected in the programming mode</li> </ul>

NO.	ELEMENT	EXPLANATION
8	“-/stop” key	<ul style="list-style-type: none"> <li>The 'stop' key can be used during a packing cycle to interrupt the full cycle. All functions are cancelled, and the cycle will be terminated</li> <li>In the programming mode this key decreases the value of the selected parameter</li> </ul>
9	“+/stop vacuum” key	<ul style="list-style-type: none"> <li>Stops the current function and continues with the next program step</li> <li>In the programming mode this key increases the value of the selected parameter</li> </ul>
10	Vacuum gauge	<ul style="list-style-type: none"> <li>Shows the pressure in the vacuum chamber</li> <li>A value of -1 bar corresponds to 99% vacuum</li> </ul>
11	On / Off button	<ul style="list-style-type: none"> <li>This button turns the machine on/off</li> </ul>

## 2.7. Advanced Control System (ACS)



### FUNCTION

- The machine can be operated
- Programs can be changed
- See chapter 5 for instructions on operation and programming

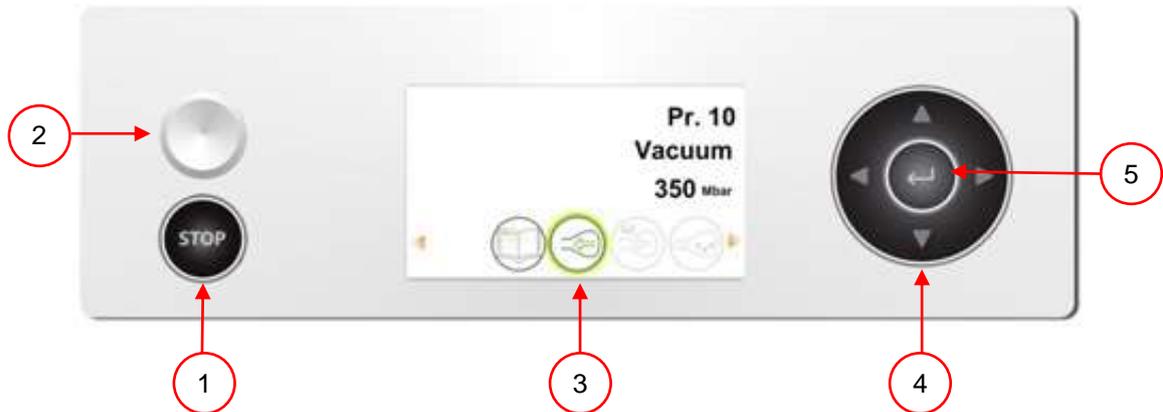


Figure 6: Control panel Advanced Control System (ACS)

NO.	ELEMENT	EXPLANATION
1	Stop button	<ul style="list-style-type: none"> <li>• The 'stop' button can be used during a packing cycle to interrupt the full cycle. All functions are cancelled, and the cycle will be terminated</li> </ul>
2	On / Off button	<ul style="list-style-type: none"> <li>• This button turns the machine on/off</li> </ul>
3	Display	<p>The display has four possible modes: See Figure 7</p> <ul style="list-style-type: none"> <li>• Startup mode: displays the current date and time when starting the machine. It also shows the installed software. The user cannot take action</li> <li>• Navigation mode: shows a program with its functions. The user can navigate through the various programs and view the current setting of each function</li> <li>• Setting mode: here the user can view and modify all settings</li> <li>• Cycle mode: when the machine has started a packing cycle, animations of functions are displayed along with the current value of the function</li> </ul>
4	Cursor keys	<ul style="list-style-type: none"> <li>• With these buttons you navigate through the functions</li> </ul>
5	Confirmation key	<ul style="list-style-type: none"> <li>• Activates / confirms the selected value</li> </ul>

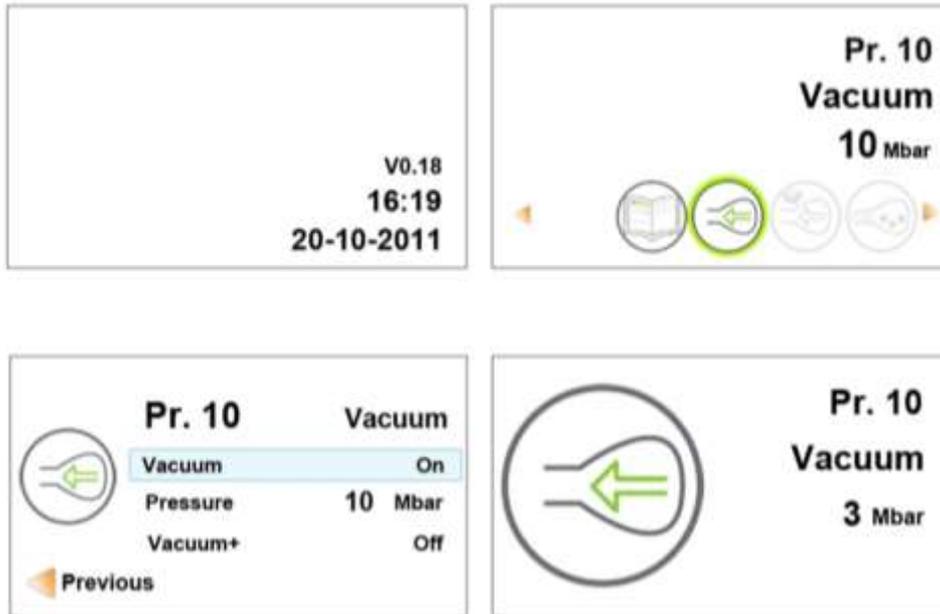


Figure 7: Four possible display modes

### 2.7.1. Settings ACS general



#### FUNCTION

- To prevent unauthorized change and adjustment of settings, there are different levels of authorization. With an authorization code, you can access the different levels
- Users have limited access to change the settings of the machine. They can only change the printer settings using the printer icon in the navigation mode
- The owner of the machine is authorized to change the machine settings and all function settings. An authorization code will be requested when the menu icon is selected in the navigation mode. When the code of the owner is entered, the machine setup menu opens. When logged in, the function settings can also be changed. To do this you need to go back to the navigation mode by pressing 'left' ◀

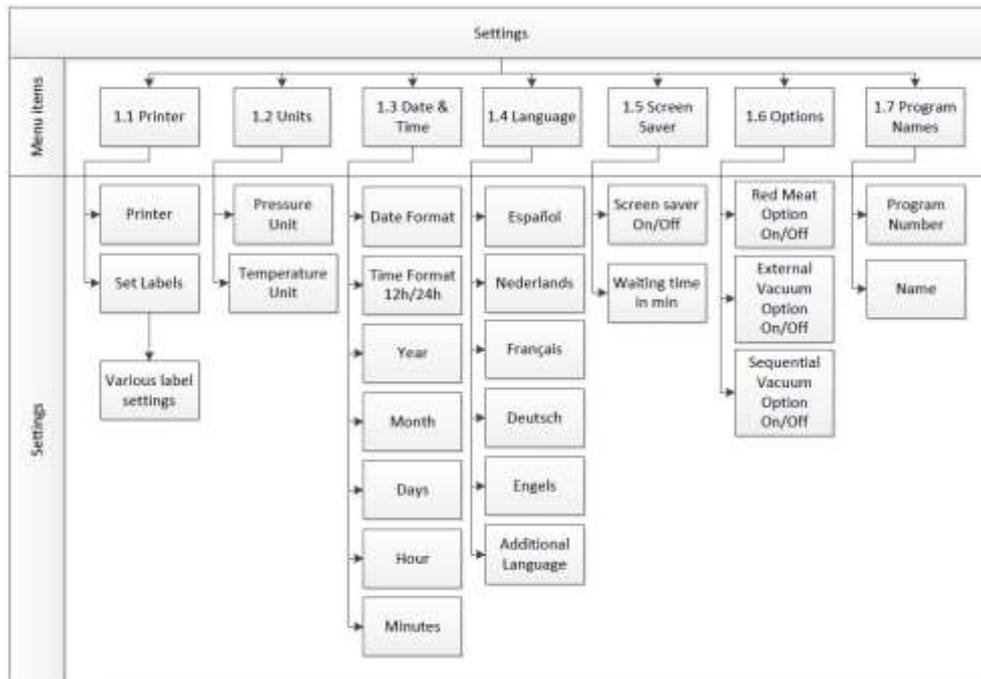


#### ATTENTION!

- The machine will remember the last used authorization code, even when the machine has been turned off. Therefore, it may be necessary that you need to manually change the authorization settings when you are done

With the basic functions below, you can adjust the machine and/or function settings.

NO.	WHAT TO DO	ACTION	RESULT
1	Select another setting	• Press 'up' ▲ or 'down' ▼	
2	Edit selected setting	• Press 'enter'	
3	Adjust the variable	• Use 'up' ▲ or 'down' ▼	
4	Confirm variable	• Press 'enter', when the desired value is found	
5	Back to navigation mode	• When all settings are set, press 'left' ◀ to return	



**Figure 8: Overview settings**

The site map shows all possible settings for all functions.

## 2.7.2. Import / Export data



### FUNCTION

- Data such as programs and labels can be imported and exported via the USB connection
- Exporting HACCP data is described in 2.7.3.2
- Please contact your dealer if you want to exchange other data with the controller via the USB connection

## 2.7.3. Hazard analysis and critical control points (HACCP)



### EXPLANATION

The controller is equipped with the ability to store production information. This conforms to the HACCP directives

The HACCP log is stored in entries. Each entry consists of:

Date,  
Time,  
User,  
Selected programs and settings,  
Selected label,  
Number of cycles.

A new entry is saved when:

Another user logs in,  
Program or program settings are changed,

The data log is saved as a .txt file,

The log data has to be exported to a USB stick (see 2.7.3.2)

### 2.7.3.1. Set up and use HACCP



### EXPLANATION

Default this feature is turned off

When logged in with the owners code, this feature can be enabled

5 users can be set:

Owner  
4 different users

NO.	WHAT TO DO	ACTION	RESULT
1	The owner logs in	<ul style="list-style-type: none"><li>• Log in with the owner code (1324)</li></ul>	Access to the relevant settings
2	Turn on HACCP	<ul style="list-style-type: none"><li>• Go to settings&lt;HACCP and select ON</li></ul>	From now on, the data is logged
3	Assign initials to user codes	<ul style="list-style-type: none"><li>• Select the desired user code for each user</li><li>• Enter the initials of the user at "Name"</li></ul>	The log file shows the initials of the user

**ATTENTION!**

The initials of the users should be entered. If this is not the case, tracing the machine operator is impossible

### 2.7.3.2. Export the HACCP data log

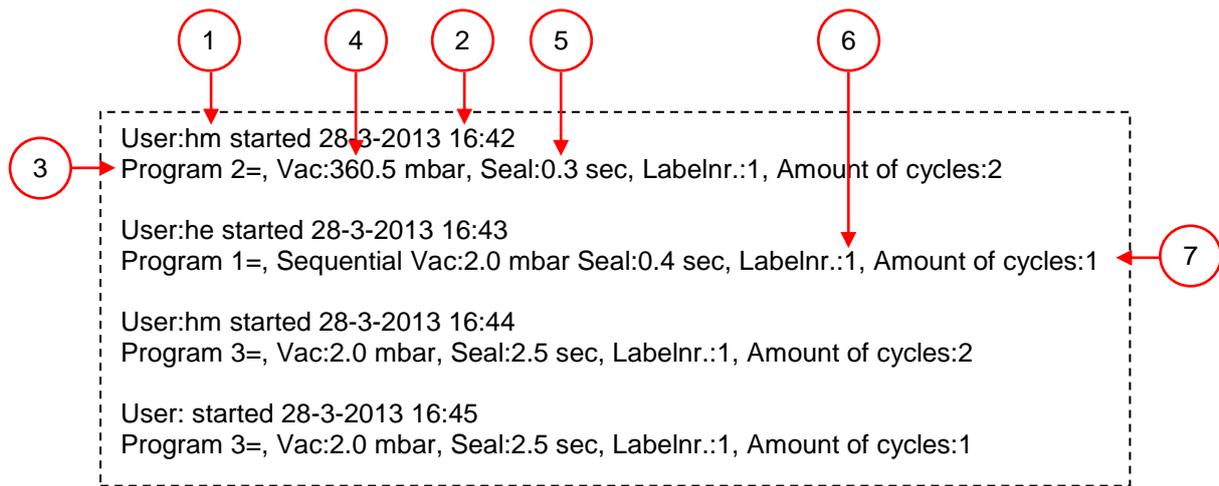
**ATTENTION!**

- The memory can hold up to 100 entries. If the memory is full, you will be notified
- The data log must then first be exported before you can continue
- You can export the data at any time
- Exporting can only be performed by the owner (owners authorization code). After exporting the data, the memory will automatically be cleared

**TIP**

Avoid unwanted delays during production by downloading the data log at scheduled times

NO.	WHAT TO DO	ACTION	RESULT
1	The owner logs in	<ul style="list-style-type: none"><li>• Log in with the owner code (1324)</li></ul>	Access to the relevant settings
2	Export	<ul style="list-style-type: none"><li>• In the menu, go to Import/Export and select "Export"</li></ul>	
3	Insert the USB stick	<ul style="list-style-type: none"><li>• Insert the USB stick in the USB connection (see electrical installation)</li></ul>	In the display, different options appear
4	Start exporting HACCP log	<ul style="list-style-type: none"><li>• Select "Export HACCP"</li></ul>	The log is transferred to the USB stick and the memory will be cleared



**Figure 9: Example of an exported log**

NO.	PART	DESCRIPTION
1	User initials	<ul style="list-style-type: none"> <li>The initials of the person who has logged in</li> <li>If no initials are entered in the settings, nothing is displayed here (see the bottom line of the data log)</li> </ul>
2	Start time	<ul style="list-style-type: none"> <li>Start time and date of the production</li> </ul>
3	Program	<ul style="list-style-type: none"> <li>The used program number</li> </ul>
4	Vacuum	<ul style="list-style-type: none"> <li>The maximum vacuum reached for the package</li> </ul>
5	Seal time	<ul style="list-style-type: none"> <li>The seal time used</li> </ul>
6	Label number	<ul style="list-style-type: none"> <li>The label that has been printed with this package</li> </ul>
7	Amount of cycles	<ul style="list-style-type: none"> <li>The total number of operating cycles from the start time</li> </ul>

## 3. SAFETY

### 3.1. General



#### ATTENTION!

- Never pack products that can be damaged by vacuum
- Never pack living animals
- Warranty and/or liability expires if any damage is caused by repairs and/or modifications that are not authorized by the supplier or any of its distributors
- In case of malfunction, contact the supplier
- High pressure cleaning is not allowed. This can cause damage to the electronics and other components
- Prevent water from entering the ventilation inlet of the chamber or through the vent of the pump. This causes irreversible damage to the pump
- The work space around the machine must be safe. The owner of the machine must take the necessary precautions to operate the machine safely
- It is forbidden to start the machine in an explosive environment
- The machine was designed in such a way that production is safe under normal ambient conditions
- The owner of the machine must check that the instructions in this manual are monitored effectively
- The securing devices must not be removed
- The correct operation and safety of the system can only be guaranteed when the maintenance is performed correctly and on time, as prescribed
- If work on the machine must be carried out, it must be disconnected and blocked from the power supply and, if applicable, from the air and gas supply



#### DANGER

- Only authorized persons, designated by the owner, may perform work on the electrical installation
- Ensure, by means of internal procedures and monitoring, that all relevant power supplies are disconnected
- The machine should not be used during cleaning, inspection, repair and maintenance and must be disconnected from the power supply using the plug and/or main switch
- Never perform welding work on the machine without disconnecting the cable connection to the electrical components first
- Never use the power supply of the control unit to connect to other machines
- All electrical connections must be connected to the terminal strip according to the wiring diagram

### 3.2. During normal operation



#### ATTENTION!

- Before starting, ensure that no work is done on the system and that it is ready to use the machine
- Unauthorized persons must not operate the machine. Checking this is the task of the machine operator(s)
- Please immediately contact the service technician of your technical department or dealer if there are any changes, such as a poorly fitting lid, unusual vibrations or unusual noise
- Components of the seal system can reach high temperatures. Contact with these parts could cause injury

### 3.3. Operational staff



#### ATTENTION!

- Operating personnel must be 18 years or older
- Only authorized persons will be allowed to perform work on or with the machine
- Only work for which one is trained should be performed. This applies to maintenance and normal use
- The machine may only be operated by trained personnel
- Operating personnel must be familiar with all situations, so that in case of an emergency quick and effective action can be taken
- If an operator notices errors or risks or disagrees with security, he/she should report that to the owner or manager
- Safety shoes are mandatory
- Appropriate clothing is required
- Everyone must follow the safety rules as one can pose a danger to themselves and others. Always follow the work instructions strictly

## 4. INSTALLATION



### EXPLANATION

Refer to chapter 1: Technical information for the correct specifications

### 4.1. Transport and placement



#### ATTENTION!

- The machine must be moved and transported upwards
- Place the machine on a flat, level surface. This is essential for trouble-free operation of the machine
- Machines with a plastic cover should not be placed near a heat source
- There must be enough space around the machine for proper ventilation. The space must be at least 15 centimeters
- Observe the instructions in Chapter 3 for all work to be performed. Failure to follow or ignore this may result in serious injury
- Make sure the machine housing is present and correctly fitted

### 4.2. Connecting the machine



#### ATTENTION!

- Make sure that the voltage indicated on the machine plate corresponds to the mains voltage
- Attach the appropriate plug on the cable in accordance with local laws and connection data (see Chapter 1)
- Always connect the machine correctly to a grounded outlet to avoid fire or electric shock (earth is green/yellow)
- The power cord must always be free and nothing should be placed on it
- Replace the power cord immediately if damaged
- Connect the gas supply (if applicable). Use a quick connector or lockable shut-off valve to easily disconnect in the event of, for example, maintenance

### 4.3. Start the machine for the first time



#### ATTENTION!

- Make sure there is enough oil in the pump (Figure 3:4). If this is not the case, then fill the oil
- Start and use the machine (Chapter 5)

## 5. OPERATION



### ATTENTION

Observe the instructions in chapter 3 for all work to be performed  
Failure to follow or ignore this may result in serious injury



### EXPLANATION

- The machine is equipped with sample programs with preset parameters
- It is possible to optimize a program for your products by changing the parameters of the program, see Chapter 5.5

### 5.1. Startup

NO.	WHAT TO DO	ACTION	RESULT
1	Turn on the power	<ul style="list-style-type: none"><li>• Place the plug in the socket</li></ul>	The control is ready for use
2	Connect the additional seal pressure (if applicable)	<ul style="list-style-type: none"><li>• Connect the compressed air supply to the connector</li></ul>	The additional seal pressure is ready for use
3	Connect the gas bottle (if applicable)	<ul style="list-style-type: none"><li>• Connect the gas supply to the connector</li></ul>	The gas flush is ready for use
4	Switch on the control	<ul style="list-style-type: none"><li>• Operate the on/off button</li></ul>	The machine is ready for use

### 5.2. Production

NO.	WHAT TO DO	ACTION	RESULT
1	Make sure the machine is powered on	<ul style="list-style-type: none"><li>• See chapter 5.1</li></ul>	
2	Select the program	<ul style="list-style-type: none"><li>• MPDC control: Press the program key (Figure 5:2) until the desired program appears on the display (Figure 5:1)</li><li>• ACS control: Use the control buttons 'up' ▲ or 'down' ▼ (Figure 6:6)</li></ul>	

NO.	WHAT TO DO	ACTION	RESULT
3	Place the 1 <sup>st</sup> product	<ul style="list-style-type: none"> <li>Put the products in the vacuum bag</li> <li>Place the bag on the work table. Ensure that the opening(s) are correctly placed on the sealing position(s)</li> </ul>	
4	Start the process	<ul style="list-style-type: none"> <li>On a Toucan Square first close the mold</li> <li>Close the lid</li> </ul>	The packing cycle starts

### 5.3. Continue to the next step of the cycle



#### EXPLANATION

For some products, it may be necessary to proceed to the next step of the packing cycle, before the vacuum time or the vacuum level is reached

NO.	WHAT TO DO	ACTION	RESULT
1	Go to the next step of the packing cycle	<ul style="list-style-type: none"> <li>Press “vacuum stop” (Figure 5:9) (MPDC)</li> <li>Press “<i>right button</i>” (▶)” (Figure 6:4) (ACS)</li> </ul>	The next step is started

### 5.4. Stop program



#### EXPLANATION

Programs such as the packing program, or the oil cleaning program can be stopped at any time

NO.	WHAT TO DO	ACTION	RESULT
1	Stop the program	<ul style="list-style-type: none"> <li>Press the “stop button” (Figure 5:8) (Figure 6:1)</li> </ul>	The program will be stopped and the vacuum chamber will be decompressed

## 5.5. Changing the program settings

### 5.5.1. Multi Program Digital Control (MPDC)



#### EXPLANATION

- 10 programs are available. Programs 1 to 9 can be adjusted by the user. Program 0 is only intended for service purposes
- This section describes how parameters can be modified and indicates the units and limits of the parameters

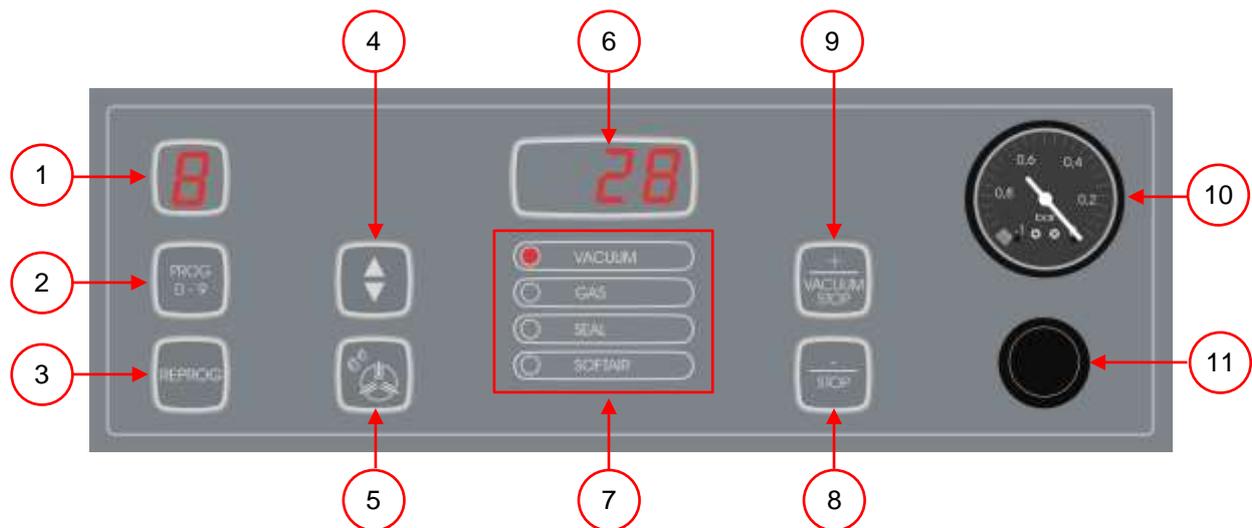


Figure 10: Changing parameters (MPDC)

NO.	WHAT TO DO	ACTION	RESULT
1	Select the program to be changed	<ul style="list-style-type: none"> <li>• Use the program ket (Figure 10:2) until the correct program number appears in the display (Figure 10:1)</li> </ul>	
2	Select the programming mode	<ul style="list-style-type: none"> <li>• Press the “reprog” key (Figure 10:3)</li> </ul>	The program display flashes
3	Select the parameter	<ul style="list-style-type: none"> <li>• Press the cursor key (Figure 10:4) to scroll through the parameters</li> <li>• The LED in the program mode display (Figure 10:7) shows at which mode you are</li> </ul>	
4	Change the parameter	<ul style="list-style-type: none"> <li>• Press “+” or “-” (Figure 10:9/8) to adjust the values</li> <li>• The value is saved when you press the cursor key</li> </ul>	

NO.	WHAT TO DO	ACTION	RESULT
5	Activate the new parameter	<ul style="list-style-type: none"> <li>Press the “reprog” key (Figure 10:3)</li> </ul>	The program display stops flashing

### 5.5.1.1. Vacuum+ option (MPDC)



#### EXPLANATION

- If there are a lot of air inclusions in the product, it may be desirable to extend the vacuum time, after the maximum vacuum is reached. This allows more air to escape
- The vacuum+ time is set in seconds
- If a vacuum+ time is set, a dot appears in the lower right corner in the parameter display

NO.	WHAT TO DO	ACTION	RESULT
1	Select the program on which you want to set vacuum+	<ul style="list-style-type: none"> <li>Use the program key (Figure 10:2) until the correct program number appears in the display (Figure 10:1)</li> </ul>	
2	Select the programming mode	<ul style="list-style-type: none"> <li>Press the “reprog” key (Figure 10:3)</li> </ul>	The program display flashes
3	Select the parameter “vacuum”	<ul style="list-style-type: none"> <li>Press the cursor key (Figure 10:4) to scroll through the parameters</li> <li>The LED in the program mode display (Figure 10:7) shows at which mode you are</li> </ul>	
4	Change the parameter vacuum to maximum (99%)	<ul style="list-style-type: none"> <li>Press “+” or “-” (Figure 10:9/8) to adjust the value</li> <li>The value is saved when you press the cursor key</li> </ul>	The display shows “99”
5	Select the parameter vacuum+	<ul style="list-style-type: none"> <li>Press the cursor key once</li> </ul>	The display shows “OFF:”. The LED in the function display will remain on vacuum
6	Change the parameter vacuum+ (seconds)	<ul style="list-style-type: none"> <li>Press “+” or “-” (Figure 10:9/8) to adjust the value</li> <li>The value is saved when you press the cursor key</li> </ul>	When setting a value a dot appears in the lower right corner in the parameter display
7	Activate the new parameter	<ul style="list-style-type: none"> <li>Press the “reprog” key (Figure 10:3)</li> </ul>	The program display stops flashing

### 5.5.1.2. Gas+ option (MPDC)



#### EXPLANATION

- This option is only applicable if the machine is equipped with the gas option
- With the Gas+ option, it is possible to provide the maximum amount of gas to a package. This allows to create a 'balloon-package'
- If Gas + is set, a dot will appear in the lower right corner in the program display
- If Gas+ is set, it applies to all programs where gas is set
- To set this function, you should contact your supplier

### 5.5.1.3. Liquid sensor control (MPDC)



#### EXPLANATION

- When the liquid sensor control is set, the machine will remove air, to the maximum vacuum (99%). If the product reaches the boiling point before reaching the maximum vacuum, the machine will continue to the next step of the cycle
- For each program, the liquid sensor control option can be switched on or off

NO.	WHAT TO DO	ACTION	RESULT
1	Select the program on which you want to set liquid control	<ul style="list-style-type: none"> <li>• Use the program button (Figure 10:2) until the correct program number appears in the display (Figure 10:1)</li> </ul>	
2	Select the programming mode	<ul style="list-style-type: none"> <li>• Press the “reprog” key (Figure 10:3)</li> </ul>	The program display flashes
3	Select the liquid control option	<ul style="list-style-type: none"> <li>• Press the program key (Figure 10:2) until H2O appears in the display (Figure 10:1)</li> </ul>	H2O appears in the parameter display
4	Activate the new parameter	<ul style="list-style-type: none"> <li>• Press the “reprog” key (Figure 10:3)</li> </ul>	The program display stops flashing

#### 5.5.1.4. Red Meat option (MPDC)



##### EXPLANATION

- This function is especially designed for packing fresh meat
- By degassing of the product during the process, bubble and droplet formation can occur inside the package. Degassing of the product during the sealing phase is prevented with this option
- This option can be set for each program separately
- If the Red Meat option is activated in a program, the soft-air feature is no longer available
- To set this option, you should contact your supplier
- With this option, a parameter appears to set the expansion reduction time. This is indicated by the flashing soft-air LED in the function display. It is recommended not to change this setting. Please contact your supplier for this

#### 5.5.1.5. Multi cycle option (MPDC)



##### EXPLANATION

- With multi-cycle the vacuum and gas flush process can be programmed in a maximum of 5 steps  
With this the oxygen content will be reduced additionally
- This function is only useful in very specific applications where very special requirements are set for the residual oxygen content. In the food industry, this option will cause no significant advantage
- To activate this option, contact your supplier

## Programming the multi cycle steps

NO.	WHAT TO DO	ACTION	RESULT
1	Select the program on which you want to set the multi cycle	<ul style="list-style-type: none"> <li>Use the program key (Figure 10:2) until the correct program number appears in the display (Figure 10:1)</li> </ul>	
2	Select the programming modus	<ul style="list-style-type: none"> <li>Press the "reprog" key (Figure 10:3)</li> </ul>	The program display flashes
3	Select the parameter vacuum	<ul style="list-style-type: none"> <li>Press the cursor key (Figure 10:4) to scroll through the parameters</li> <li>The LED in the program mode display (Figure 10:7) shows at which mode you are</li> </ul>	The right character of the parameter display shows that vacuum step you are programming (see Figure 10:5)
4	Change the parameter vacuum	<ul style="list-style-type: none"> <li>Press "+" or "-" (Figure 10:9/8) to adjust the value</li> <li>The value is saved when you press the cursor key</li> </ul>	
5	Select the parameter gas	<ul style="list-style-type: none"> <li>Press the cursor key (Figure 10:4) to scroll through the parameters</li> <li>The LED in the program mode display (Figure 10:7) shows at which mode you are</li> </ul>	
6	Change the parameter gas	<ul style="list-style-type: none"> <li>Press "+" or "-" (Figure 10:9/8) to adjust the value</li> <li>The value is saved when you press the cursor key</li> </ul>	
7	If an additional vacuum step is required go to number 3		
8	Activate the new parameter	<ul style="list-style-type: none"> <li>Press the "reprog" key (Figure 10:3)</li> </ul>	The program display stops flashing

### 5.5.1.6. External vacuum option (MPDC)



#### EXPLANATION

- With this function vacuum can be applied to special food packaging gastronorm containers outside the machine
- Depending on whether the machine has time or sensor control features, the vacuum value is set in seconds or %
- First check whether the container is resistant to a vacuum and can retain this

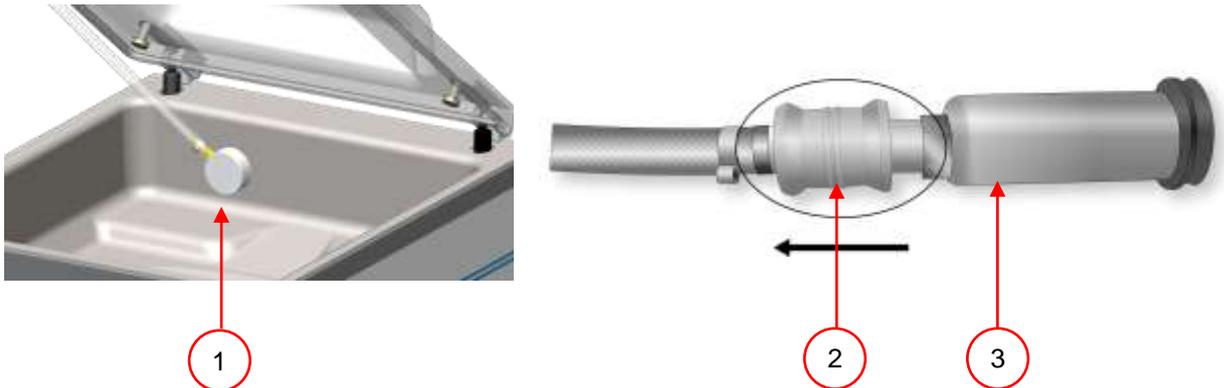


Figure 11: External vacuum adapter kit (MPDC)

NO.	WHAT TO DO	ACTION	RESULT
1	Select the external vacuum program	<ul style="list-style-type: none"> <li>• Press the oil cleaning program key (Figure 10:5)</li> <li>• Press the cursor key (Figure 10:4)</li> <li>• The external vacuum program can be programmed in the same way as any other program (see section 5.5.1)</li> </ul>	<p>“C” appears in the display</p> <p>“E” appears in the display</p>
2	Connect the external vacuum hose to the machine	<ul style="list-style-type: none"> <li>• Place the adapter over the suction hole in the vacuum chamber (Figure 11:1)</li> </ul>	
3	Connect the external vacuum hose to the container	<ul style="list-style-type: none"> <li>• Connect the vacuum hose adapter (Figure 11:3) on the valve of the container. And slide the valve (Figure 11:2) in the direction of the hose (closed position)</li> </ul>	
4	Start the process	<ul style="list-style-type: none"> <li>• Press the “+” key</li> </ul>	Vacuum will be applied until the programmed value is reached
5	Disconnect the external vacuum hose from the container	<ul style="list-style-type: none"> <li>• Slide the valve of the adapter in the direction of the package (open position) and remove the hose</li> </ul>	Hose will be disconnected from the container and can be removed

## 5.5.2. Advanced Control System (ADC)



### EXPLANATION

Users can see the machine programs and access the functions in the navigation mode. This is the mode that appears immediately after boot time. Figure 12 shows a screenshot of this mode

NO.	ELEMENT	EXPLANATION
1	Program number / name	<ul style="list-style-type: none"> <li>The program shows the currently selected, preset program. By switching to a different program, different functions will be active. The program choice depends on the product that will be packed</li> </ul>
2	View the functions	<ul style="list-style-type: none"> <li>These features are active or inactive. If a function is activated, it will be displayed with a blue tint. When a function is not active, it will be displayed in a soft gray tint</li> </ul>
3	Function active/inactive	<ul style="list-style-type: none"> <li>The selected function is marked with a green circle. The name and current value of this function is displayed on the screen</li> <li>If the Plus functions are activated, the + illustration will be shown in color. If these are not active, they are displayed in a soft gray tint</li> </ul>
4	Menu	<ul style="list-style-type: none"> <li>The machine settings can be adjusted via the menu icon on the left of the function list</li> </ul>

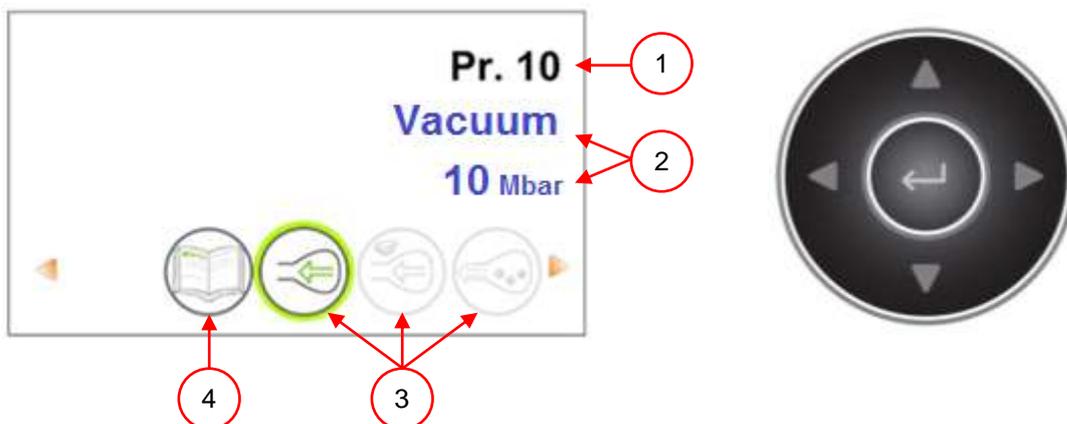


Figure 12: Program Display and controls ACS

NO.	WHAT TO DO	ACTION	RESULT
1	Select the desired program	<ul style="list-style-type: none"> <li>Use the control buttons 'up' ▲ or 'down' ▼</li> </ul>	
2	View the functions	<ul style="list-style-type: none"> <li>Use the control buttons 'left' ◀ or 'right' ▶</li> </ul>	
3	View/edit function settings	<ul style="list-style-type: none"> <li>Press 'enter' when the function is selected. Users can view the preset configuration and the owner can also edit. (see section 2.7)</li> </ul>	
4	Editing machine settings	<ul style="list-style-type: none"> <li>Press 'enter' when the menu is selected (only accessible to the owner) (see section 2.7, 5.6)</li> </ul>	

### 5.5.2.1. Programming the ACS control on your PC

#### Import files

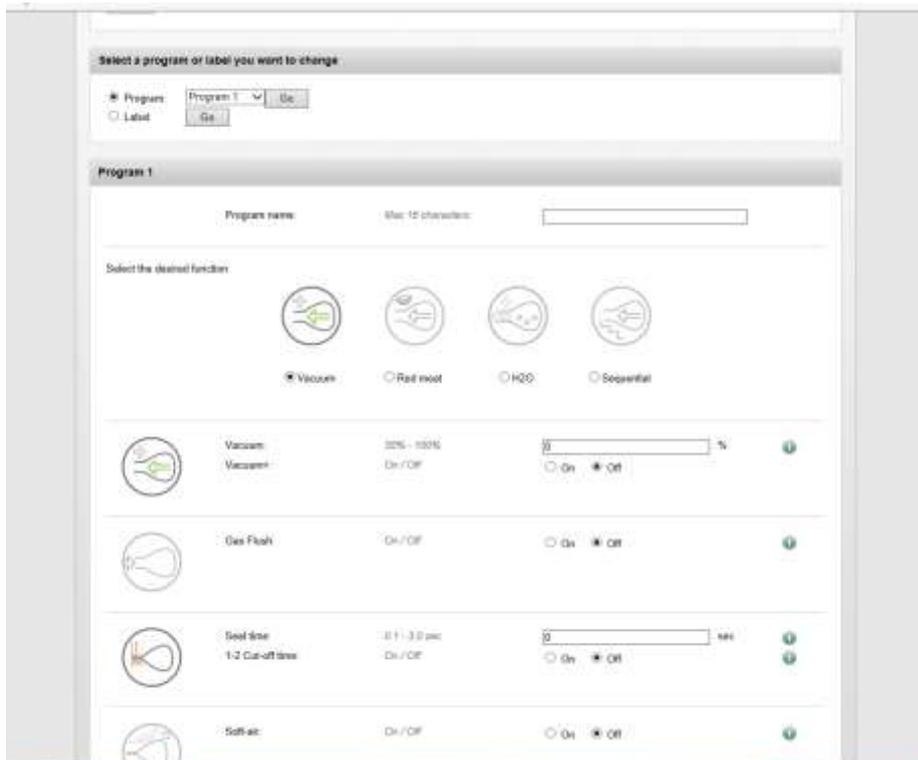
You can import labels and programs from a USB stick, by plugging it into the USB port of the machine. The imported data can be created using the online software for programming. You will find this software on our website on the 'Support' page: <http://www.henkelman.com/en/support/downloads> Or contact your supplier.

#### Creating a program or label and import them into the machine:

Click on the link of the LX Software, the following page will open:



- Start a new program by:
  - Select a program or label you want to change**
- You can also import existing programs and/or labels that you like to change in:
  - Select a file to import**
- Then select a program or a label and click on the 'GO' button



- Complete all data you want to use.
- Click 'Save' to save the program or the label. It is necessary to validate each label or program separately after changing the settings.
- When you have finished programming all programs and labels, you can save them by choosing a file on your computer and click 'Export'. When you select 'Programs', all programs will be saved. By selecting 'Labels' all labels will be saved.
- For the transmission on your machine, be sure to use an empty USB key to export files.
- To import the settings in the machine, plug the stick in the USB port of the machine, go to import / export in the menu and import the programmes and labels.

### 5.5.2.2. Options (ACS)



#### EXPLANATION

- The options that are built into the machine can be enabled or disabled at the settings menu by the owner (login as owner) (See section 2.7.1)
- Subsequently the options in the various programs can be programmed

### 5.5.2.3. Extern Vacuüm optie (ACS)



#### TOELICHTING

- With this function vacuum can be applied to special food packaging gastronorm containers outside the machine
- Vacuum will be applied to 99%
- First check whether the container is resistant to a vacuum and can retain this

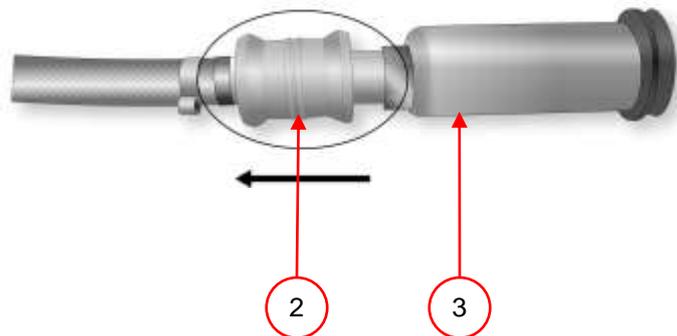
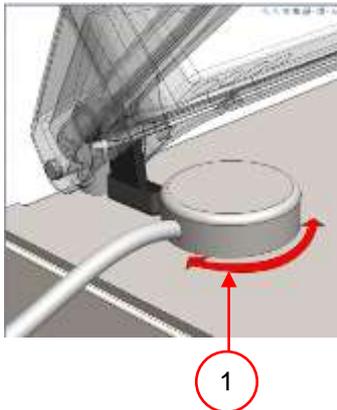


Figure 13: External vacuum adapter kit (ACS)

NO.	WHAT TO DO	ACTION	RESULT
1	Connect the external vacuum hose to the machine	<ul style="list-style-type: none"> <li>• Place the adapter over the suction hole in the vacuum chamber (Figure 13:1)</li> </ul>	
2	Connect the external vacuum hose to the container	<ul style="list-style-type: none"> <li>• Connect the vacuum hose adapter (Figure 13:3) on the valve of the container. And slide the valve (Figure 13:2) in the direction of the hose (closed position)</li> </ul>	
3	Start the process	<ul style="list-style-type: none"> <li>• With the controls, select the external vacuum program</li> </ul>	Vacuum is applied to the maximum level
4	Disconnect the external vacuum hose from the container	<ul style="list-style-type: none"> <li>• Slide the valve of the adapter in the direction of the package (open position) and remove the hose</li> </ul>	Hose will be disconnected from the container and can be removed

## 5.6. Directive for function values



### EXPLANATION

- For each function, values can be set if you are authorized as the owner. In order to understand the impact of the set value the table below explains the consequences of giving a low or high value for each function

FUNCTION	RANGE	CONDITIONS
Vacuum	2-700 mbar 30-99.8%	<ul style="list-style-type: none"> <li>• Rule of thumb: the higher the vacuum, the less oxygen remains in the package, so the product has a longer shelf life. There are exceptions to this rule</li> </ul>
Vacuum+	0-20 sec	<ul style="list-style-type: none"> <li>• This is the time that vacuum continues after the maximum vacuum is reached. This is to let the entrapped air escape from the product. Note: Vacuum should be set to the maximum</li> </ul>
Red Meat	2-700 mbar 30-99.8%	<ul style="list-style-type: none"> <li>• Rule of thumb: the higher the vacuum, the less oxygen in the package so that the product has a longer shelf life</li> </ul>
Liquid Control	2-700 mbar	<ul style="list-style-type: none"> <li>• When the pressure decreases, the boiling point of water is reduced. This physical law can cause the product to boil. In addition to contamination of the machine, this provides loss of weight and quality of the product to be packed. By enabling the Liquid Control feature this special sensor will detect the evaporation point and ensures that the program will continue with the next step in the packing process. The value to set is the maximum achievable vacuum level. Please note that this vacuum value is only feasible as long as the product does not boil</li> </ul>
Liquid Control+	0,1-5,0 sec	<ul style="list-style-type: none"> <li>• This is the time that vacuum continues after detection of the evaporation point. Due to the evaporation, a small shock wave may occur that will press all the remaining air out of the bag. The best way to determine the right time is by trial and error to determine the optimal value</li> </ul>
Sequential vacuum	2-700 mbar 30-99,8%	<ul style="list-style-type: none"> <li>• When the value for vacuum+ time is not effective enough to let the trapped air escape, the sequential vacuum function must be turned on. In a maximum of five steps vacuum will be alternated with a hold period. Each step provides a higher vacuum than the preceding step</li> </ul>
Seal time 1-2 cutting time	0,1-4,0 sec	<ul style="list-style-type: none"> <li>• This is the time in which the seal wire and/or cutting wire is heated. The longer the time, the more heat is being transferred to the bag</li> </ul>

FUNCTION	RANGE	CONDITIONS
Soft-air	1-20 sec	<ul style="list-style-type: none"> <li>The length of time in which air is introduced to the chamber after sealing. The best way to determine the correct time is by trial and learn by mistakes</li> </ul>
Cleaning of the pump	15 minuten	<ul style="list-style-type: none"> <li>There are no settings possible</li> </ul>



### ATTENTION!

The vacuum pressure in the chamber should be at least 30% at the time of sealing



### EXPLANATION

- When the pressure decreases, the boiling point of water is reduced (see Figure 14). This physical law can cause a product to boil. In addition to contamination of the machine, this provides for loss of weight and quality of the product to be packed
- When packing products that contain moisture such as soups and sauces, it is important to follow the vacuum process closely. At the moment that bubbles are formed or it starts to bubble, immediately proceed to the next step in the cycle (see section 5.3)
- By cooling the products as much as possible, before applying vacuum, a deeper vacuum can be achieved
- If a machine is equipped with a liquid sensor option, the control automatically goes to the next step when boiling occurs
- When packaging moisture containing products, it is important that the conditioning program is run at least 1 time per week. With daily vacuuming of moisture containing products, it is recommended to run the conditioning program at the end of the day

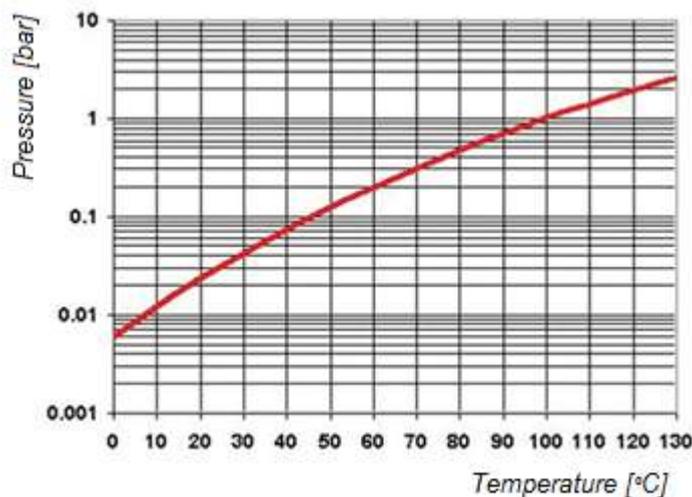


Figure 14: Water vapour line

## 6. MAINTENANCE



### ATTENTION!

- Always disconnect the power supply by unplugging the power cord
- Always disconnect the external pressure (if applicable)
- Test the machine after maintenance or repairs, so it is certain that the machine can be safely used
- Only trained personnel should perform the described maintenance work

### 6.1. Maintenance diagram

The diagram below shows the maintenance activities that must be performed.

ACTIVITY	LUBRICANT					SECTION
		Daily	Weekly	Every 6 months	Yearly Every 4 years	
<b>Cleaning</b>						
Cleaning the machine						6.2
<b>Lubrication</b>						
Replace the oil of the vacuum pump	See chapter 1 for oil type					1
<b>Inspections</b>						
Check the oil level						2.3
Execute the oil cleaning program						0
Inspect the seal bars						6.6
Inspect the silicone rubber of the silicone holders						6.7
Inspect the lid seal						6.8
Check the plastic lid for cracks						

ACTIVITY	LUBRICANT					SECTION
		Daily	Weekly	Every 6 months	Yearly Every 4 years	
<b>Replacements</b>						
Replace the sealing wires						6.6
Replace the silicone rubber of the silicone holders						6.7
Replace the lid seal						6.8
Replace the exhaust filter						6.5
Please contact your supplier for a professional service						
Replace the plastic lid						

## 6.2. Cleaning the machine



### EXPLANATION

- It is not allowed to clean with a high pressure cleaning machine
- Do not use harsh or toxic cleaning materials
- Do not use cleaning materials with solvents

NO.	WHAT TO DO	ACTION	RESULT
1	Clean the machine	<ul style="list-style-type: none"> <li>• You can clean the surfaces with a soft, damp cloth, or you can apply your cleaner to the machine and wipe it off with clean water</li> </ul>	

### 6.3. Oil cleaning program



#### EXPLANATION

- The oil cleaning program will let the vacuum pump run for 15 minutes. During the program, the pump and the oil will reach the operating temperature. The oil absorbs fluid in the pump. The high temperature ensures that the moisture evaporates in the pump and reduces the risk of corrosion
- If you pack moist products, such as soups or sauces, it is necessary to use the oil cleaning program more often than the prescribed interval of once a week

NO.	WHAT TO DO	ACTION	RESULT
1	Select the program	<ul style="list-style-type: none"> <li>• MPDC: Press the key for the oil cleaning program (Figure 5:5)</li> <li>• ACS: Use the control buttons "up" ▲ and "down" ▼ (Figure 6:4)</li> </ul>	
2	Start process	<ul style="list-style-type: none"> <li>• Close the lid</li> </ul>	The oil cleaning program will be executed for 15 minutes

### 6.4. Add oil / change oil



#### WARNING

- The oil in the vacuum pump can be hot. When replacing the oil contact with hot oil may be possible



#### EXPLANATION

If the machine will not be used for long periods of time, the oil should be removed from the pump. This is because any moisture and dirt in the oil can affect the pump, causing the pump to jam at the next use

## Add oil

NO.	WHAT TO DO	ACTION	RESULT
1	Add oil	<ul style="list-style-type: none"> <li>Remove the oil filler plug (Figure 3:5)</li> <li>Add oil until the oil level is between the "max" and "min" level (Figure 3:3)</li> <li>Place back the oil filler plug</li> </ul>	

## Replacing oil

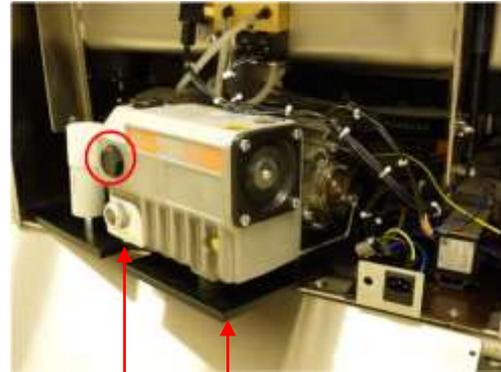
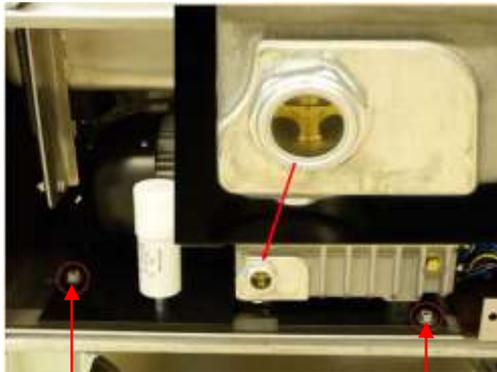


Figure 15: Mounting plate Boxer 52

NO.	WHAT TO DO	ACTION	RESULT
1	Place the drain plug outside the housing (only Boxer 52)	<ul style="list-style-type: none"> <li>Remove the bolts (Figure 15:1) from the mounting plate (Figure 15:3) and take them away</li> <li>Turn the mountingplate out, so a drip pan can be placed underneath the drain plug (Figure 15:2)</li> </ul>	
2	Change oil	<ul style="list-style-type: none"> <li>Place a drip pan under the oil drain plug (Figure 3:4)</li> <li>Remove the oil drain plug (Figure 3:4)</li> <li>Place back the oil drain plug</li> </ul>	The oil drains from the pump

NR.	WAT TE DOEN	ACTIE	RESULTAAT
3	Fill with new oil	<ul style="list-style-type: none"> <li>Remove the oil filler plug (Figure 3:5)</li> <li>Add oil until the oil level is between the "max" and "min" level (Figure 3:3)</li> <li>Place back the oil filler plug</li> </ul>	
4	Place back the vacuum pump in the housing (only Boxer 52)	<ul style="list-style-type: none"> <li>Turn the mounting plate with the vacuum pump back into the housing</li> <li>Place back the bolts (Figure 15:1) in the mounting plate (Figure 15:3) and tighten them</li> </ul>	

## 6.5. Replacing the exhaust filter (maintenance of vacuum pump)



### EXPLANATION

1. The exhaust filter prevents oil vapors to be emitted by the exhaust air from the vacuum pump
2. If the filter becomes saturated, it is no longer possible to reach maximum vacuum
3. Replace the filter in case of vacuum problems, or in accordance with the maintenance diagram of Chapter 6.1

16 m<sup>3</sup> pump

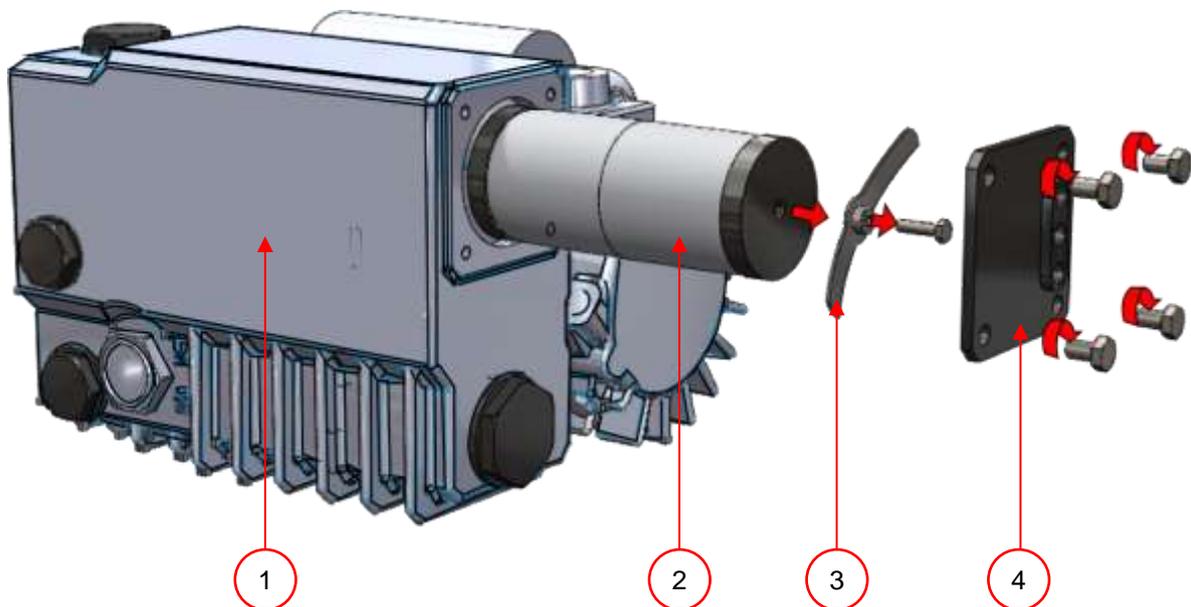


Figure 16: Replacing the exhaust filter

NO.	WHAT TO DO	ACTION	RESULT
1	Remove the exhaust filter	<ul style="list-style-type: none"> <li>Remove the filter cover (Figure 16: 4) from the vacuum pump (Figure 16: 1)</li> <li>Remove the leaf spring (Figure 16: 3)</li> <li>Remove the old filter (Figure 16: 2)</li> </ul>	
2	Install the new filter	<ul style="list-style-type: none"> <li>Place the new filter in the opening</li> <li>Make sure the O-ring is properly placed on the filter inlet</li> <li>Install the leaf spring</li> <li>Install the filter cover</li> </ul>	

## 6.6. Replacing the sealing wire



### EXPLANATION

- Depending on your machine specification you can have one of the following (combinations of) seal elements:
  - Double seal: Two sealing wires
  - Cut-off seal: One sealing wire and one cutting wire
  - Wide sealing: One wide sealing wire
  - Bi-active seal: One seal bar with wide sealing wire on both sides
- The process of replacing of the seal elements is the same for all types
- Make sure, for bi-active seal systems, that the upper and lower seal elements are precisely aligned during the sealing
- Replace the sealing wires if the wire and/or the Teflon tape is damaged, or in accordance with the maintenance diagram

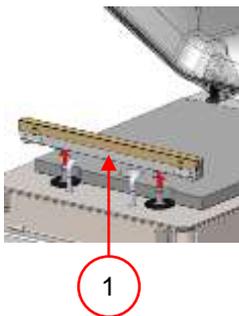
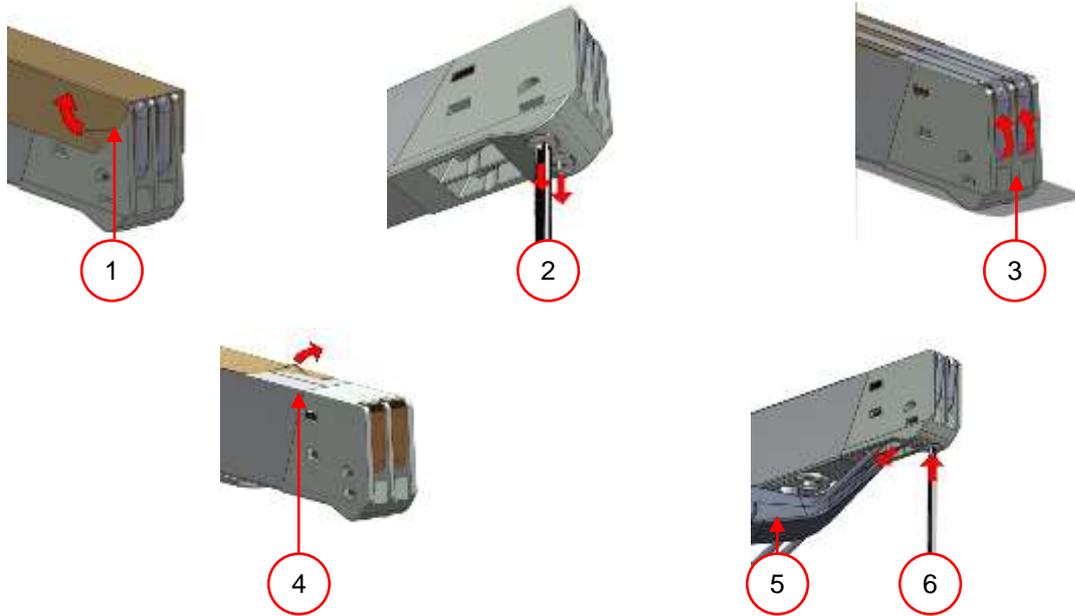


Figure 17: Removing the seal bar



**Figure 18: Replacing the sealing wire**

NO.	WHAT TO DO	ACTION	RESULT
1	Remove the seal bar from his holders	<ul style="list-style-type: none"> <li>Lift the sealing bar (Figure 17:1) from the cylinders</li> </ul>	
2	Remove the teflon tape	<ul style="list-style-type: none"> <li>Remove the teflon tape (Figure 18:1) that protects the sealing wires</li> </ul>	
3	Remove the old sealing wires	<ul style="list-style-type: none"> <li>Remove the screws (Figure 18:2) on the bottom side of the seal bar, and remove the sealing wires (Figure 18:3)</li> </ul>	
4	Replace the teflon tape on the sealing bar	<ul style="list-style-type: none"> <li>Pull the teflon tape from the top of the sealing bar (Figure 18:4)</li> <li>Clean the bar with a lint-free cloth</li> <li>Put a new piece of Teflon tape of the same length on the sealing bar</li> </ul>	
5	Replace the sealing wires	<ul style="list-style-type: none"> <li>Cut a new piece of sealing wire or cutting wire at the length of the seal bar plus about 15 cm (6 inches)</li> <li>First place the wire on one side of the seal bar by tightening the screws (Figure 18:2)</li> <li>Place the other end of the wire in a straight line and tighten with pliers. Then fasten it by tightening the screws</li> <li>Trim the ends of the wire on both sides</li> </ul>	

NO.	WHAT TO DO	ACTION	RESULT
6	Replace the teflon tape on the sealing wire	<ul style="list-style-type: none"> <li>• Cut a piece of teflon tape at the length of the seal bar plus about 5 cm (2 inches)</li> <li>• Stick the tape smoothly and without folds over the sealing wires on the sealing bar</li> </ul>	
7	Place seal bar	<ul style="list-style-type: none"> <li>• Place back the seal bar</li> </ul>	

## 6.7. Replacing the silicone rubber on the silicone holders



### EXPLANATION

- In order to obtain a seal of good quality, the rubber should not be damaged and the surface must be flat
- Damage may be caused by burning with the seal wire or mechanical contact
- Replace the silicone rubber if it is damaged, or in accordance with the maintenance diagram in chapter 6.1

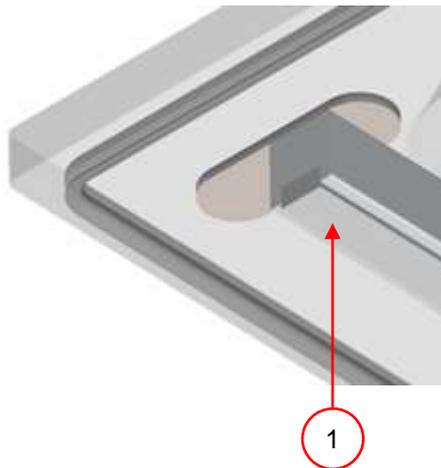


Figure 19: Replacing the silicone rubber of the silicone holders

NO.	WHAT TO DO	ACTION	RESULT
1	Remove the old silicone rubber	<ul style="list-style-type: none"> <li>You can pull the old silicone rubber (Figure 19:1) from the holder</li> </ul>	
2	Cut the new silicone rubber	<ul style="list-style-type: none"> <li>Cut a new piece of rubber. Make sure that it is just as long as the holder</li> <li>The size is very important, it will cause problems with the seal of the bag if the rubber is too short or too long</li> </ul>	
3	Place the new silicone rubber	<ul style="list-style-type: none"> <li>Place the new piece in the silicone holder by pushing it into the recess</li> <li>Ensure that the silicone rubber is fully and uniformly placed in the slot. It is also important that the surface of the silicone rubber is smooth after it is in place and that it shows no signs of stress</li> </ul>	

## 6.8. Replacing the lid gasket



### EXPLANATION

- The lid gasket ensures that the vacuum chamber is completely closed off during the machine cycle. This is essential for the achievement of a maximum vacuum level. The lid gasket will wear out due to extreme pressure differences and should be changed regularly
- Replace the lid gasket if it is damaged or in accordance with the maintenance schedule in section 6.1



Figure 20: Replacing the lid gasket

NO.	WHAT TO DO	ACTION	RESULT
1	Remove the old gasket	<ul style="list-style-type: none"> <li>You can pull the old lid gasket off</li> </ul>	
2	Cut a new piece of gasket	<ul style="list-style-type: none"> <li>Cut a new piece of gasket. Cut it preferably slightly longer than the old one</li> <li>The ends must be cut off straight</li> <li>When the lid gasket is too short or too long, it can cause problems when closing the cover or leakage may occur</li> </ul>	
3	Place the new rubber	<ul style="list-style-type: none"> <li>Place the new lid gasket by pressing it in the slot. The lip of the gasket must face downwards and outwards</li> <li>The gasket should be placed in the holder evenly and without tension. The ends must come tightly together to prevent leakage</li> </ul>	

## 7. TROUBLESHOOTING

The tables below show the possible interference with the corresponding cause and action to be taken

MALFUNCTION	ACTIVITY	SECTION
Control panel does not illuminate	<ul style="list-style-type: none"> <li>Connect the machine to the power supply</li> </ul>	2.5
The control panel is on but there is no activity after closing the lid	<ul style="list-style-type: none"> <li>Check / adjust the micro switch of the lid</li> </ul>	Please contact your supplier
Insufficient final vacuum	<ul style="list-style-type: none"> <li>Check the vacuum settings of the program and adjust them</li> </ul>	5.5
	<ul style="list-style-type: none"> <li>Make sure that the extraction opening is not covered</li> </ul>	
	<ul style="list-style-type: none"> <li>Check the oil level in the pump</li> </ul>	2.3
	<ul style="list-style-type: none"> <li>Check / replace the exhaust filter</li> </ul>	6.5
	<ul style="list-style-type: none"> <li>Check / replace the lid gasket</li> </ul>	6.8
Vacuum process is slow	<ul style="list-style-type: none"> <li>Make sure that the extraction opening is not covered</li> </ul>	
	<ul style="list-style-type: none"> <li>Check the oil level in the pump</li> </ul>	2.3
	<ul style="list-style-type: none"> <li>Check/ replace the exhaust filter</li> </ul>	6.5
Vacuum bag is not sealed correctly	<ul style="list-style-type: none"> <li>Check the seal program settings and adjust them</li> </ul>	5.5
	<ul style="list-style-type: none"> <li>Check / replace the Teflon tape and sealing wires</li> </ul>	6.6
	<ul style="list-style-type: none"> <li>Check / replace silicones in the silicon holders</li> </ul>	6.7
	<ul style="list-style-type: none"> <li>Check the inside of the vacuum for contamination and clean it</li> </ul>	
The lid does not open automatically	<ul style="list-style-type: none"> <li>Check the gas springs</li> </ul>	Please contact your supplier

## Error messages for MPDC

F1 in display	<ul style="list-style-type: none"><li>• Check / adjust the micro switch of the lid</li><li>• Make sure that the pump is running correctly</li></ul>	Please contact your supplier
F2 in display (MPDC with sensor control)	<ul style="list-style-type: none"><li>• Check if the cover is opened and restart the machine</li><li>• When message is repeated:</li></ul>	Please contact your supplier
--- in display	<ul style="list-style-type: none"><li>• Check if the lid is opened correctly</li></ul>	

## 8. WARRANTY CONDITIONS

- This manual has been compiled with care. However Henkelman BV accepts no liability for any errors in this manual and/or for the consequences of an erroneous interpretation of the instructions.
- Henkelman BV accepts no liability for damage and/or problems arising from the use of spare parts not supplied by Henkelman BV.
- Henkelman BV reserves the right to change specifications and/or spare parts without prior notice.

### 8.1. Liability

1. We disclaim any liability to the extent that it is not required by law.
2. Our liability is limited to the total monetary amount of the value of the related machine.
3. With the exception of the applicable statutory provisions on public policy and good faith we are not obliged to pay to the counterparty or to third parties, any damages of any nature whatsoever, direct or indirect, including loss of profit, damage to movable or other property or personal injury.
4. We are in no way responsible for damages resulting from or caused by the use of the product used, or the unsuitability thereof for the purpose for which the other party decided to purchase.

### 8.2. Warranty

The warranty is subject to the following limitations. The warranty period for products supplied by Henkelman is 3 years from the date of the purchase document. This warranty is limited to manufacturing and machine errors, and therefore does not cover malfunctions due to a component of the product that has been exposed to any type of wear. Normal wear and tear as expected with the use of this product is therefore hereby excluded..

1. The responsibility of Henkelman is limited to the replacement of defective parts, we recognize no claims for any other form of damages or costs.
2. The warranty expires automatically in case of arrears or poor maintenance.
3. If there are doubts about maintenance or if the machine is not working properly, contact should always be made with the supplier.
4. The warranty does not apply if the defect is the result of improper or negligent use, or maintenance that is carried out in breach of the instructions mentioned in this manual.
5. The warranty is void if repairs or modifications on the product are carried out by third parties.
6. Defects arising from damage or injury caused by external factors are excluded from the warranty.
7. If we replace parts in accordance with the requirements of this warranty, the replaced components become our property.

The provisions relating to warranty and liability are part of the general terms that can be sent on request.

## 9. DISPOSE AS WASTE

Do not dispose oil and components with the household waste. Ensure that at the replacement of parts or oil after the lifecycle, that all materials are collected and destroyed or recycled in a legal and environmentally friendly manner.





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