

USER MANUAL

Vacuum Packing Machine

Marlin
Falcon
Polar



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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: Marlin / Falcon / Polar Series

fulfils all the relevant provisions of the directives

2006/42/EG
2004/108/EG

Machinery Directive
EMC-Directive

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


NEN-EN-ISO 12100	Safety of machinery - general principles for design – Risk assessment and risk reduction
NEN-EN 13857	Safety of machinery – Safety distances to prevent hazard zones being reached by upper and lower limbs
NEN-EN 349	Safety of machinery – Minimum gaps to avoid crushing of parts of the human body
NEN-EN 953	Safety of machinery – Guards - General requirements for the design and construction of fixed and movable guards
NEN-EN 13849-1	Safety of machinery – Safety-related parts of control systems - Part 1: General principles for design
NEN-EN 60204-1	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"> On the sealbar(s) On the vacuum pump
	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
	CAUTION! 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

Marlin	46	52	90	
General				
Ambient temperature	5 to 30	5 to 30	5 to 30	°C
Noise production	< 70	< 70	< 70	dB(A)
Maximum daily production	8	8	8	h/day
Dimensions of the machine				
Width	775	695	1066	mm
Length	670	710	480	mm
Height	960	1025	970	mm
Weight	152	143	142	kg
Maximum product height				
	110	200	100	mm
Gas flush (optional)				
Connection size	6	6	6	mm
Gas flow	60-100	60-100	60-100	l/min
Maximum pressure	1	1	1	bar
Electrical connection				
Tension	*	*	*	V
Power	*	*	*	kVA
Vacuum pump				
Capacity	40	63	63	m ³ /h
Oil	1	1	1	liter
Oil type (Ambient temperature 5-40°C)	VM100	VM100	VM100	

* See the nameplate

Falcon	52	80	2-60	2-70	
General					
Ambient temperature	5 tot 30	5 tot 30	5 tot 30	5 tot 30	°C
Noise production	< 70	< 70	< 70	< 70	dB(A)
Maximum daily production	8	8	8	8	h/day
Dimensions of the machine					
Width	682	900	1060	1260	mm
Length	695	820	900	1020	mm
Height	1060	1050	1179	1185	mm
Weight	163	227	236	319	kg
Maximum product height					
	235	235	235	235	mm
Seal pressure (optional)					
Connection size	8	8	8	8	mm
Maximum pressure	1	1	1	1	bar
Maximum air usage	1	3	1	1	l/cycle
Gas flush (optional)					
Connection size	6	6	6	6	mm
Gas flow	60-100	60-100	60-100	60-100	l/min
Maximum pressure	1	1	1	1	bar
Electrical connection					
Tension	*	*	*	*	V
Power	*	*	*	*	kVA
Vacuum pump					
Capacity	63	100	63	100	m ³ /h
Oil	1	2	1	2	liter
Oil type (Ambient temperature 5-40°C)	VM100	VM100	VM100	VM100	

* See the nameplate

Polar	52	80	110	2-40	2-50	2-75	2-85	2-95	
General									
Ambient temperature	5 to 30	5 to 30	5 to 30	5 to 30	5 to 30	5 to 30	5 to 30	5 to 30	°C
Noise production	< 70	< 70	< 70	< 70	< 70	< 70	< 70	< 70	dB(A)
Maximum daily production	8	8	8	8	8	8	8	8	h/day
Dimensions of the machine									
Width	700	900	1200	1400	1400	1490	1900	2425	mm
Length	740	790	880	820	920	1220	1295	1240	mm
Height	1100	1100	1125	1325	1325	1344	1450	1607	mm
Weight	183	241	390	310	345	537	685	767	kg
Maximum product height									
	200	200	270	240	240	250	255/300 *	280	mm
Seal pressure (optional)									
Connection size	8	8	8	8	8	8	8	8	mm
Maximum pressure	1	1	1	1	1	1	1	1	bar
Maximum air usage	1	3	3	2.5	2.5	3	3	4.5	l/cycle
Gas flush (optional)									
Connection size	6	6	6	6	6	6	6	6	mm
Gas flow	60-100	60-100	60-100	60-100	60-100	60-100	60-100	60-100	l/min
Maximum pressure	1	1	1	1	1	1	1	1	bar
Electrical connection									
Tension	*	*	*	*	*	*	*	*	V
Power	*	*	*	*	*	*	*	*	kVA
Vacuum pump									
Capacity	63	100	100/160	63	100	160	300	300	m ³ /h
Oil	1	2	2 / 5	1	2	5	6.5	6.5	liter
Oil type (Ambient temperature 5-40°C)	VM100	VM100	VM100	VM100	VM100	VM100	VM100	VM100	

* 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:

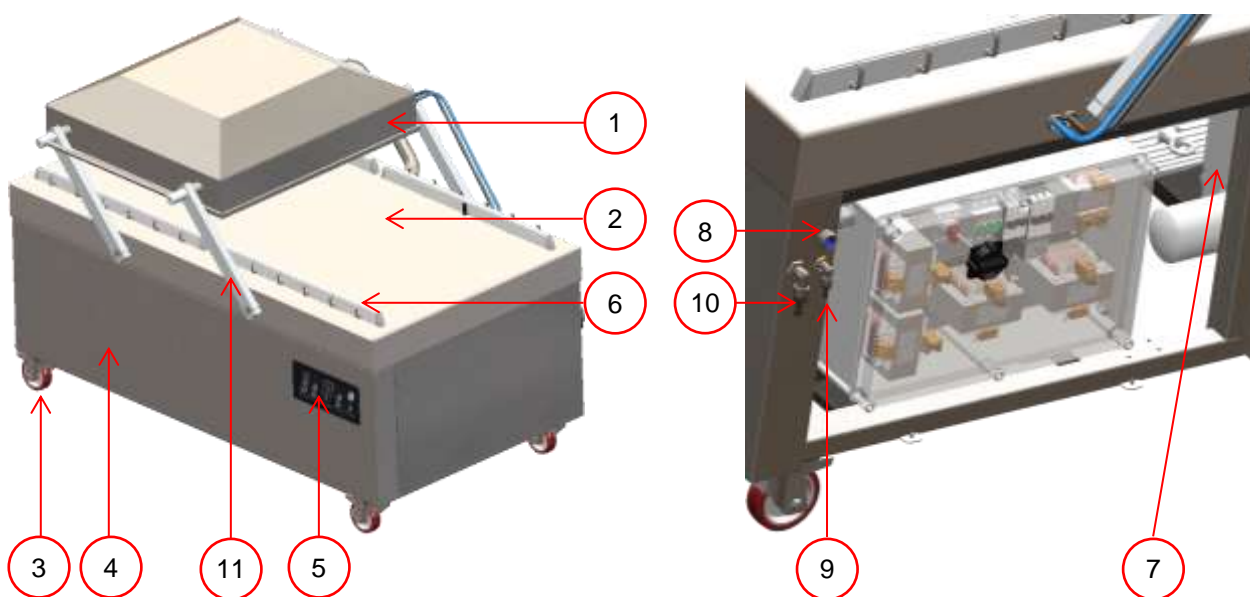


Figure 1: Overview of the main components

NO.	PART	DESCRIPTION	SECTION
1	Lid	<ul style="list-style-type: none"> • The function of the lid is to close the chamber during the vacuum cycle • The lid has a lid gasket fitted, which makes sure the machine does not leak during the vacuum cycle • On machines with two vacuum chambers the lid can be moved from position 1 to position 2 manually. In these machines, the following items are included in the lid <ul style="list-style-type: none"> • De seal bars • The air intake for the vacuum 	<p>6.7</p> <p>2.2, 6.6</p>

NO.	PART	DESCRIPTION	SECTION
2	Vacuum chamber	<ul style="list-style-type: none"> The products to be packed will be placed on the worktable with the opening of the vacuum seal bag on the seal position On machines with two vacuum chambers one can take the packed product away and place new products on the free worktable during the vacuum cycle on the other side 	
3	Castor with brake	<ul style="list-style-type: none"> The machines are equipped with 4 castors. This makes it possible to move the machine to another position real easy At the moment the machine is in place, the brakes should be put on (4 pieces) 	
4	Machine housing	<ul style="list-style-type: none"> The machine frame contains all necessary parts for the correct functioning of the machine 	
5	Control panel	<ul style="list-style-type: none"> See section 	2.6, 2.7
6	Seal system	<ul style="list-style-type: none"> In the chamber 1, 2 or 3 seal bars are mounted, depending on the model. With these bars, the vacuum bags are sealed 	2.2, 6.6, 6.7
7	Vacuum pump	<ul style="list-style-type: none"> See section 	2.3
8	Power connection	<ul style="list-style-type: none"> See section 	2.5
9	Seal pressure connection (optional)	<ul style="list-style-type: none"> Where the standard version uses atmospheric pressure to press the seal bar on the vacuum bag during the sealing, it is possible (optional) to connect an external source to obtain a higher sealing pressure 	4.2
10	Gas flush (optional)	<ul style="list-style-type: none"> See section 	1, 2.4
11	Parallel arm	<ul style="list-style-type: none"> The parallel arms move the lid from one position to the other The weight of the lid is compensated by springs, so the lid can be placed in any position For a smooth operation, the arms need to be lubricated regularly through the nipples at the rotating point 	6.1

2.1. Description of the packaging process / machine functions



FUNCTION



- 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



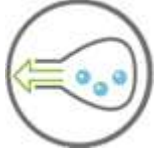



2.1.1. The packaging process / machine functions




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"> • 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




2	Extracting vacuum	<ul style="list-style-type: none"> • The vacuum process is started by closing the lid • Depending on the options you have chosen for your machine and the product you are packaging, the following functions are available
---	-------------------	--

FUNCTION	ICON	
Vacuum		<ul style="list-style-type: none"> • During the cycle, the air will be removed from the chamber until the set time has been reached • 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 %
Vacuum+		<ul style="list-style-type: none"> • Available if the vacuum percentage is set to maximum • 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 • Vacuum+ is only possible in combination with sensor control

STEP	PROCESS PHASE	OPERATION
	FUNCTION	ICON
	Gas (optional)	 <ul style="list-style-type: none"> 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
	Gas+ (optional)	 <ul style="list-style-type: none"> 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)
	Liquid Control (optional)	 <ul style="list-style-type: none"> Available with the optional Liquid Control Sensor 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)
	Liquid Control+ (optional)	 <ul style="list-style-type: none"> Available with the Liquid Control option The Liquid Control+ function allows you to proceed with the vacuum process for a certain time, after the evaporation phase has been reached
	Red Meat (optional)	 <ul style="list-style-type: none"> 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 5.5.1.4)
	Sequential vacuum (optional)	 <ul style="list-style-type: none"> 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)

STEP	PROCESS PHASE	OPERATION	
	FUNCTION	ICON	
	Multi-cycle vacuum (optional)		<ul style="list-style-type: none"> • With multi-cycle it is possible to gradually extract vacuum and use gas. With this the oxygen content is reduced as well • This function is available in machines with Multi Program Digital Control (MPDC) (see 5.5.1.5)
3	Sealing		<ul style="list-style-type: none"> • The seal bars are pressed against the contra bars, with the vacuum bag in between and melt the bag to be closed
	FUNCTION	ICON	
	Seal		<ul style="list-style-type: none"> • During the sealing, the material of the vacuum bag is heated and compressed to form a hermetic sealing. The function is programmed in seconds • 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)
4	Releasing vacuum		<ul style="list-style-type: none"> • The vacuum is released, by letting air back into the chamber
	FUNCTION	ICON	
	Soft air (optional on Falcon)		<ul style="list-style-type: none"> • 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
5	Open vacuum chamber		<ul style="list-style-type: none"> • The lid opens
6	Remove the product		<ul style="list-style-type: none"> • The operator can remove the packed product from the worktable

2.1.2. General Functions

FUNCTION	ICON	OPERATION
Cleaning the pump		<ul style="list-style-type: none"> 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
Menu		<ul style="list-style-type: none"> This feature is available on machines with Advanced Control System (ACS) Menu is used to change the machine settings, such as language and printing options
Print		<ul style="list-style-type: none"> This feature is available on machines with Advanced Control System (ACS) With this function one or more labels can be created per cycle which can be stuck on the bag 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
Sleeper function		<ul style="list-style-type: none"> The sleeper function turns the machine off after a certain time. The default setting is 10 minutes. In machines with ACS control, the user can change this setting himself. On machines with MPDC control, this setting can be changed by the dealer

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

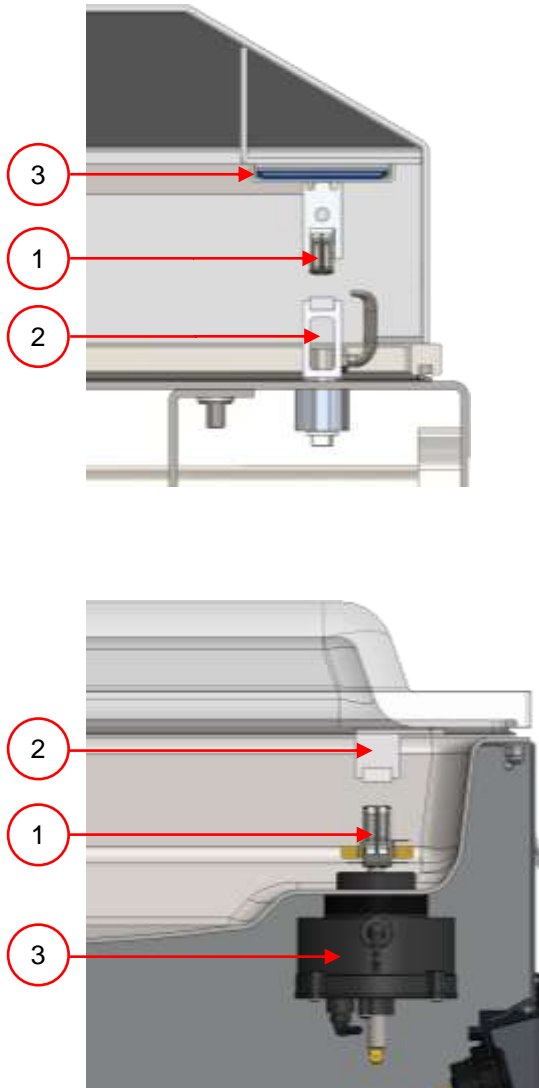


Figure 2: Overview of the seal system
(above with seal bag, under with seal cylinder)

NO.	PART	DESCRIPTION	SECTION
1	Seal bar	<ul style="list-style-type: none"> The seal bar consists of the following components <ul style="list-style-type: none"> 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 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 Teflon-tape: sealing and cutting wires are coated with Teflon tape to prevent the bag to stick to the seal bar Refer to the indicated section for detailed information on maintenance 	6.6
2	Silicon holder	<ul style="list-style-type: none"> 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"> The seal bars are pressed on the vacuum bag by using cylinders or seal bags By connecting the outside atmospheric pressure to the inlet of the seal bags / cylinders, they will press the seal bar on the bag Extra seal pressure (optional) can, depending on the model you have, be used if additional pressure is needed. Refer to the technical data and installation instructions for more information 	2.2 1, 4.2

2.3. The vacuum pump



FUNCTION

De vacuum pump creates a vacuum in the chamber

40-300 m³

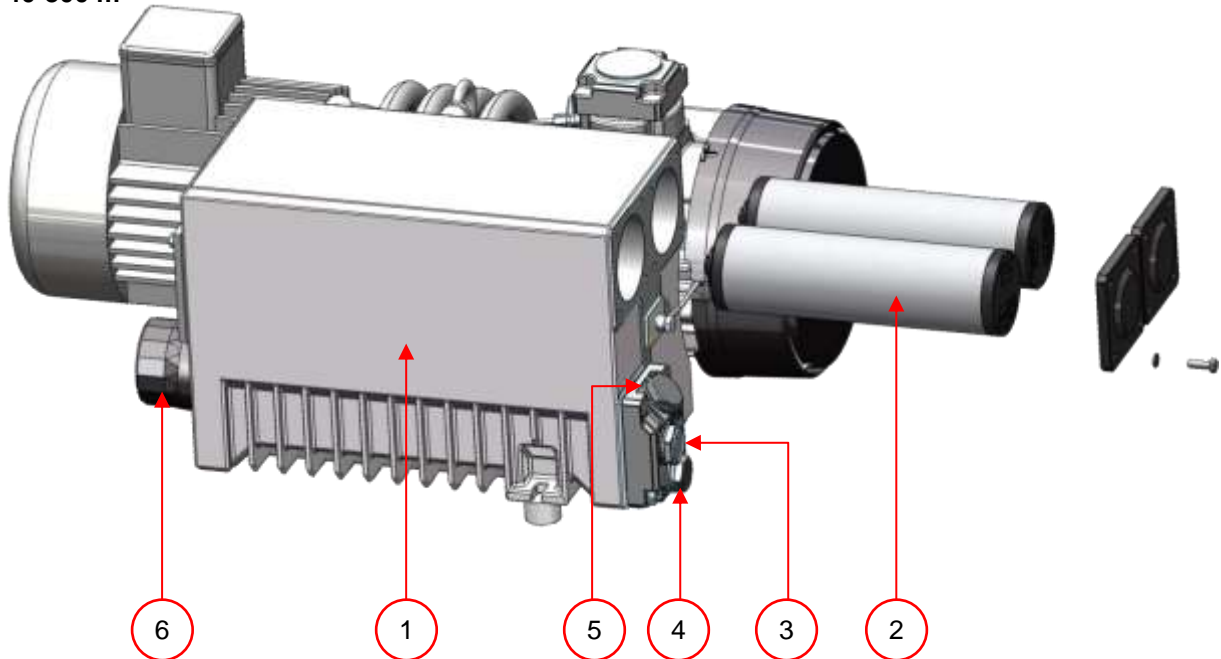


Figure 3: Overview of the pump (filter cover removed)

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

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

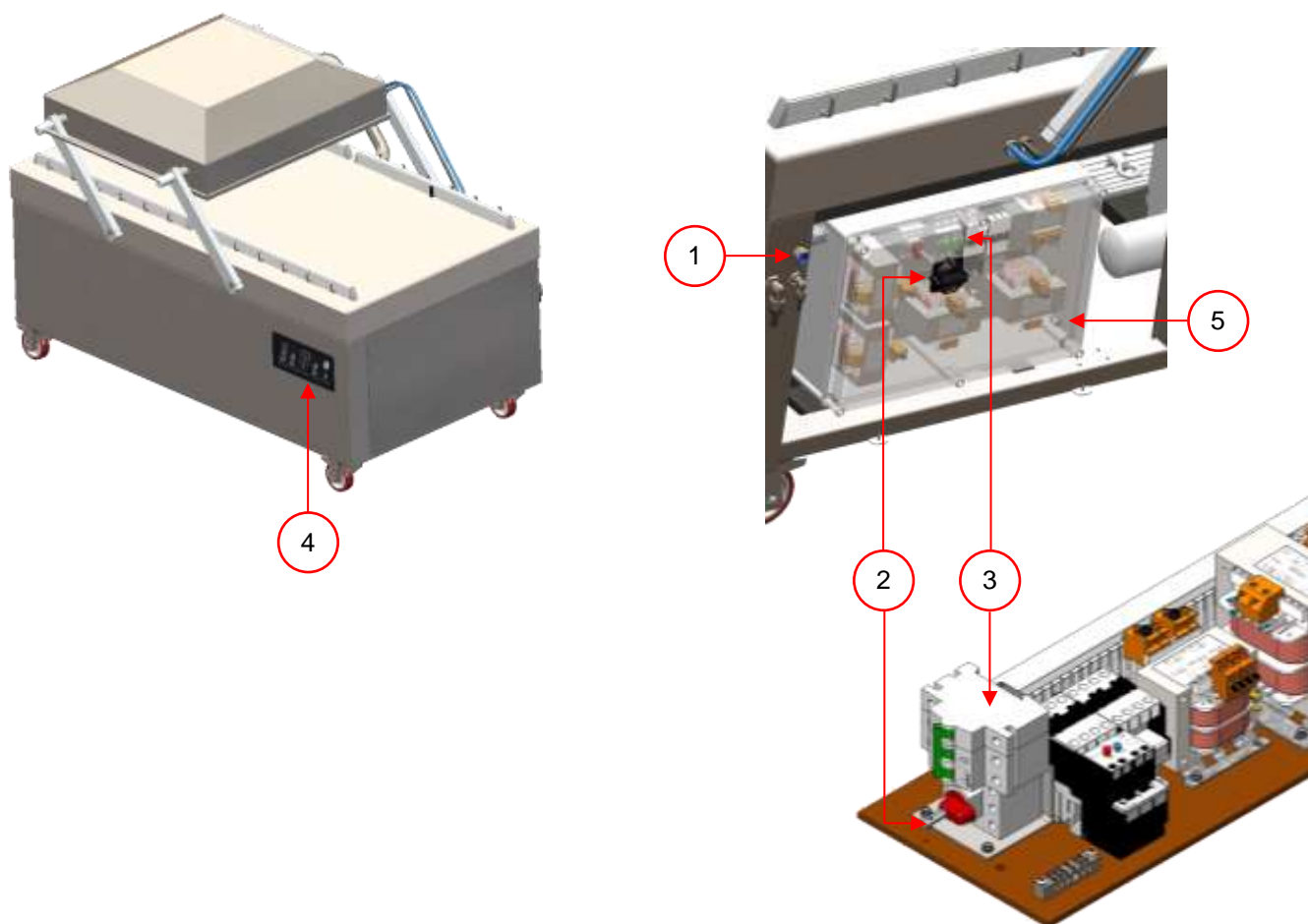


Figure 4: Overview of the electrical installation

The machine consists of the following components

NO.	PART	DESCRIPTION	SECTION/ LOCATION
1	Power cable	<ul style="list-style-type: none"> To connect the power supply to the machine 	
2	Main switch	<ul style="list-style-type: none"> Powers up the machine 	
3	Circuit breaker	<ul style="list-style-type: none"> Protection against overload or short circuit 	7
4	Control panel	<ul style="list-style-type: none"> The available control functions can be used Depending on your model, your machine may have one of the following control types: <ul style="list-style-type: none"> Multi Program Digital Control (MPDC) Advanced Control System?(ACS) 	2.6 2.7

NO.	PART	DESCRIPTION	SECTION/ LOCATION
5	USB connection (only with ACS)	<ul style="list-style-type: none"> 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 Note: after opening the cover of the USB connection, the machine is no longer waterproof (IP65) The USB connector allows import and export of data 	

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

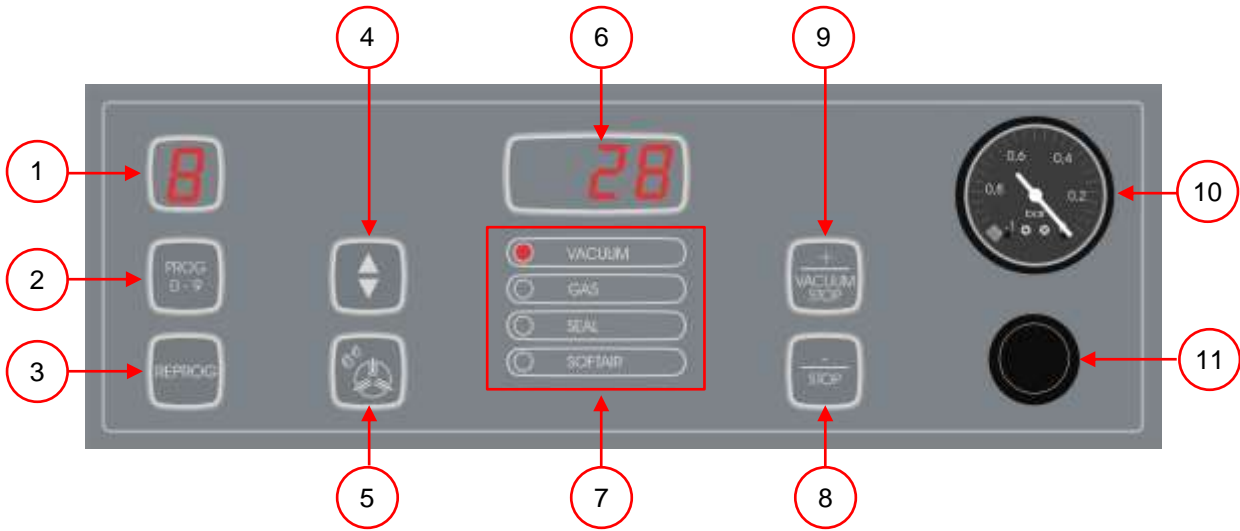


Figure 5: Control panel Digital Control (MPDC)

NO.	ELEMENT	EXPLANATION
1	Display	<ul style="list-style-type: none"> The display shows the selected program
2	“prog 0-9” key	<ul style="list-style-type: none"> Operate the key to select the desired program
3	“reprog” key	<ul style="list-style-type: none"> Operate the key to switch to the program mode. The parameters can be changed by pressing the 4, 8 and 9 keys
4	Cursor key	<ul style="list-style-type: none"> Navigates you through the functions shown in the display 6/7

NO.	ELEMENT	EXPLANATION
5	"Oil cleaning program" key	<ul style="list-style-type: none"> 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 See 6.3 for instructions
6	Display parameter	<ul style="list-style-type: none"> 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 A red dot lights up on the lower right when vacuum+ is activated
7	Function display	<ul style="list-style-type: none"> 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
8	"-/stop" key	<ul style="list-style-type: none"> 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 In the programming mode this key decreases the value of the selected parameter
9	"+/stop vacuum" key	<ul style="list-style-type: none"> Stops the current function and continues with the next program step In the programming mode this key increases the value of the selected parameter
10	Vacuum gauge	<ul style="list-style-type: none"> Shows the pressure in the vacuum chamber A value of -1 bar corresponds to 99% vacuum
11	On / Off button	<ul style="list-style-type: none"> This button turns the machine on/off

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

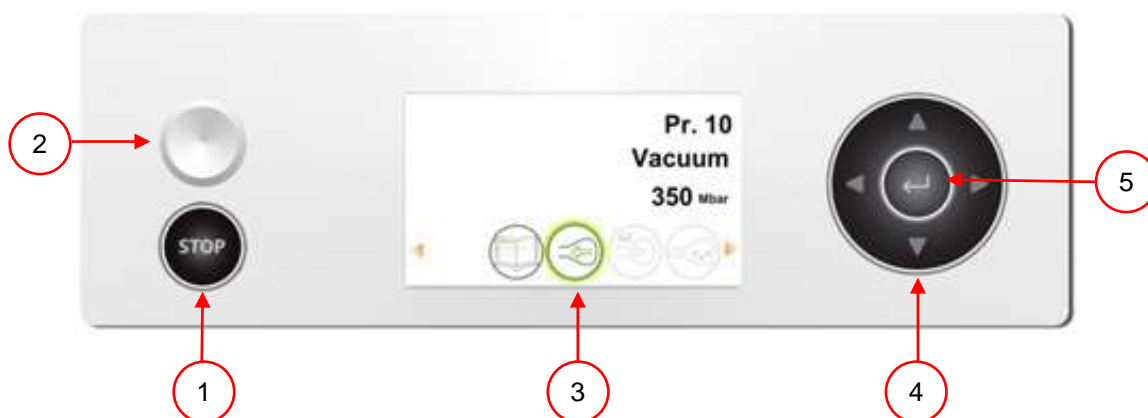


Figure 6: Control panel Advanced Control System (ACS)

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

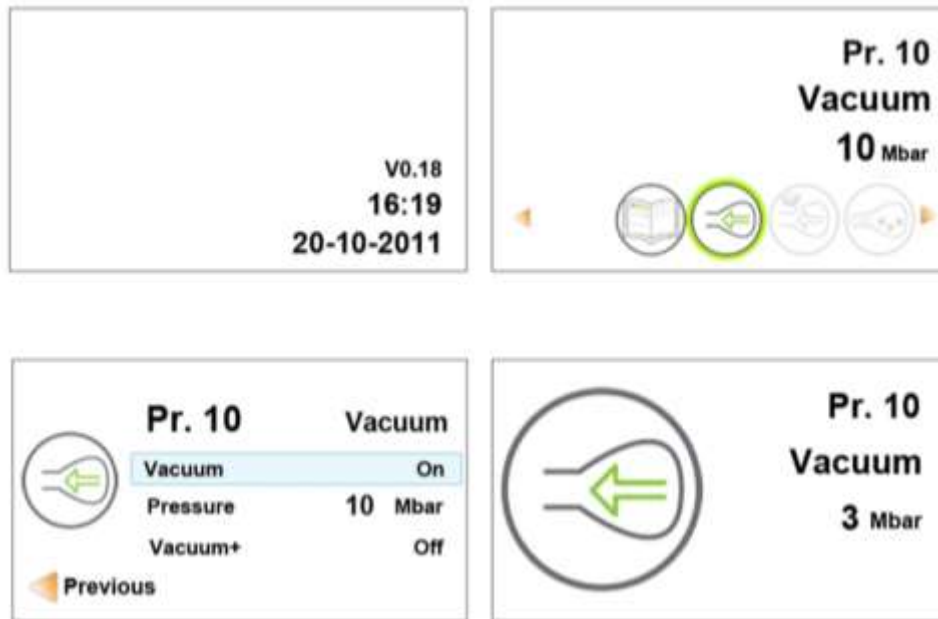


Figure 7: Four possible display modes

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	

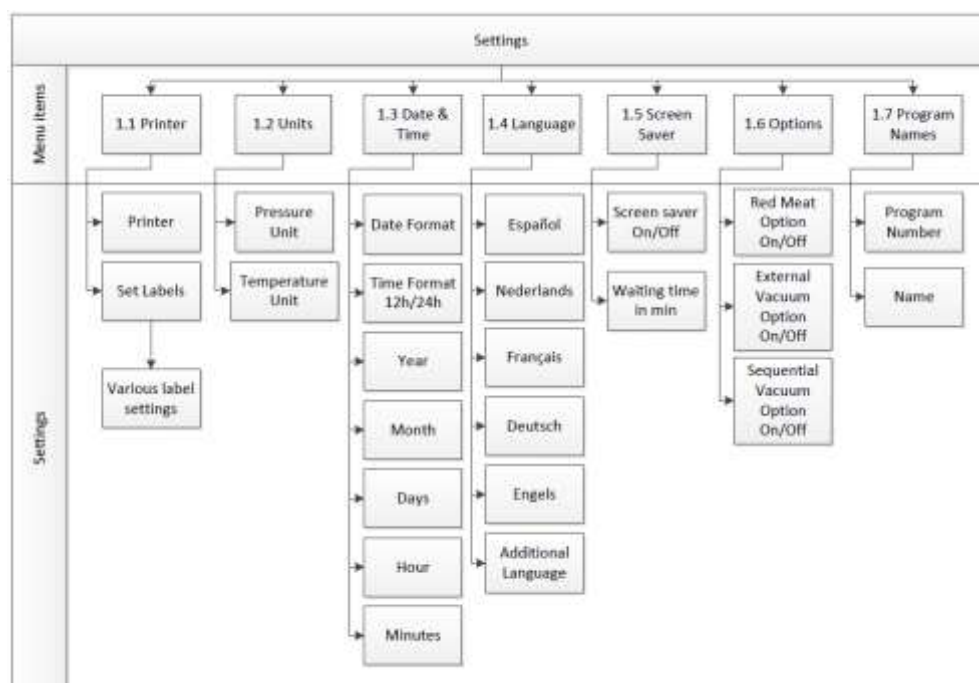


Figure 8: Overview settings

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">• Log in with the owner code (1324)	Access to the relevant settings
2	Turn on HACCP	<ul style="list-style-type: none">• Go to settings<HACCP and select ON	From now on, the data is logged
3	Assign initials to user codes	<ul style="list-style-type: none">• Select the desired user code for each user• Enter the initials of the user at "Name"	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">• Log in with the owner code (1324)	Access to the relevant settings
2	Export	<ul style="list-style-type: none">• In the menu, go to Import/Export and select "Export"	
3	Insert the USB stick	<ul style="list-style-type: none">• Insert the USB stick in the USB connection (see electrical installation)	In the display, different options appear
4	Start exporting HACCP log	<ul style="list-style-type: none">• Select "Export HACCP"	The log is transferred to the USB stick and the memory will be cleared

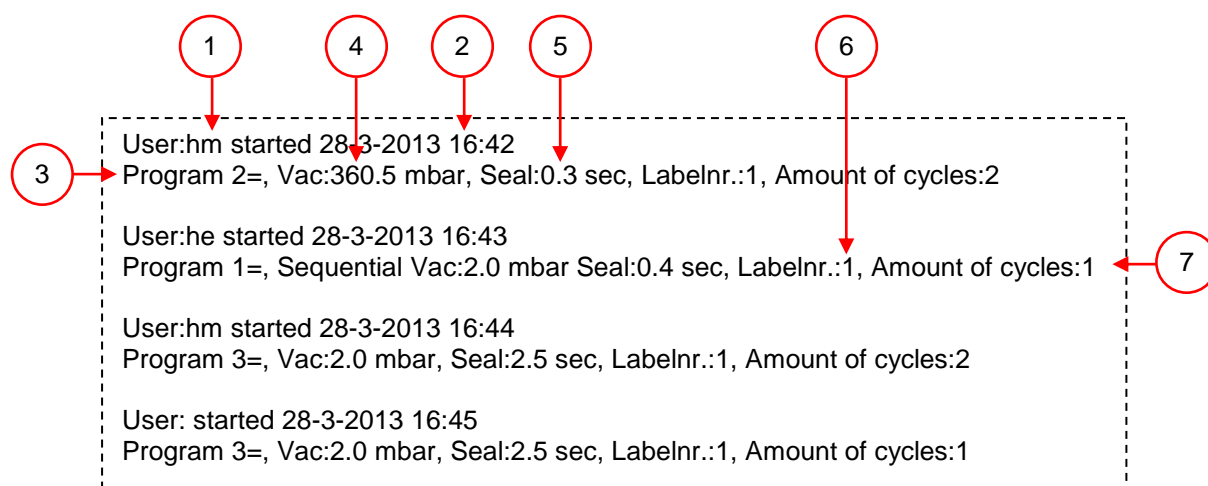


Figure 9: Example of an exported log

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

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
- Transportation of the machine with a crane is not possible
- Transportation of the machine with a forklift is possible as long as the machine is still on the pallet packaging
- 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
- Moving the machine on wheels on uneven surfaces can lead to loss of stability of the machine. Always move slowly and carefully
- There must be enough space around the machine for proper ventilation. The space must be at least 50 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 is on the brakes (4 pieces) before switching it on
- 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)
- Check the correct direction of rotation of the pump (Figure 10:). Operating the machine with an improper rotation direction will cause damage to the pump and a bad vacuum level. After you connect the machine to another 3- phase power supply, rotation direction should be checked again. If the direction is incorrect, 2 phases must be swapped in the plug. Only electricians may work on the electrical system
- 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
- Connect the air supply for extra seal pressure (if applicable). Use a quick connector or lockable shut-off valve to easily disconnect in the event of, for example, maintenance
- To provide continued protection against risk of electric shock, connect to properly grounded outlets only
- Not acting according instruction, can result in permanent injury

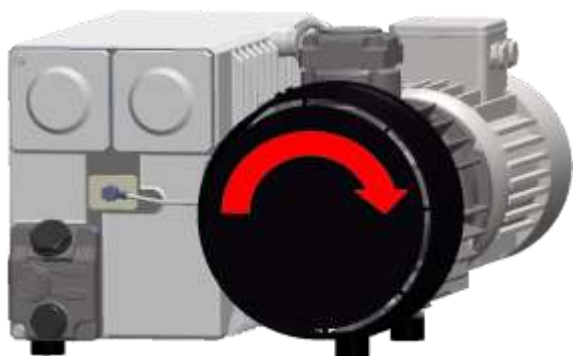


Figure 10: Rotation direction motor vacuum pump

4.3. Start the machine for the first time



ATTENTION

- Make sure there is enough oil in the pump (Figure 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">• Place the plug in the socket• Turn on the main switch of the main control box (Figure 4:2)	The control is ready for use
2	Connect the additional seal pressure (if applicable)	<ul style="list-style-type: none">• Connect the compressed air supply to the connector	The additional seal pressure is ready for use
3	Connect the gas bottle (if applicable)	<ul style="list-style-type: none">• Connect the gas supply to the connector	The gas flush is ready for use
4	Switch on the control	<ul style="list-style-type: none">• Operate the on/off button	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"> See chapter 5.1 	
2	Select the program	<ul style="list-style-type: none"> MPDC control: Press the program key (Figure 5:2) until the desired program appears on the display (Figure 5:1) ACS control: Use the control buttons 'up' ▲ or 'down' ▼ (Figure 6:6) 	
3	Place the 1 st product	<ul style="list-style-type: none"> Put the products in the vacuum bag Place the bag on the work table. Ensure that the opening(s) are correctly placed on the sealing position(s) 	
4	Start the process	<ul style="list-style-type: none"> Close the lid 	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"> Press "vacuum stop" (Figure 5:9) (MPDC) Press "<i>right button</i>" (►)" (Figure 6:4) (ACS) 	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">Press the “stop button” (Figure 5:8) (Figure 6:1)	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

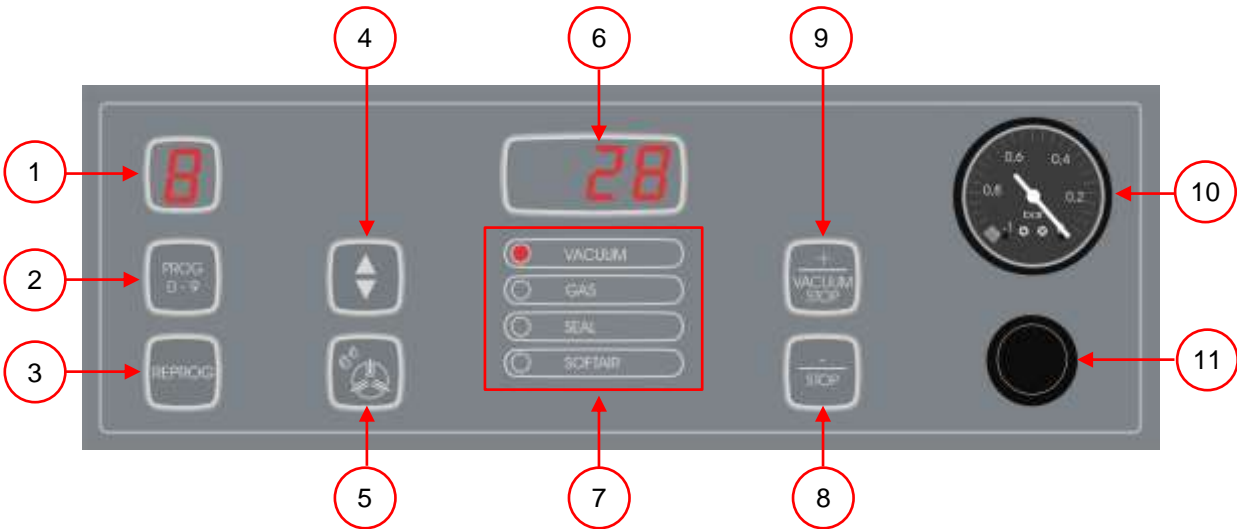


Figure 11: Changing parameters (MPDC)

NO.	WHAT TO DO	ACTION	RESULT
1	Select the program to be changed	<ul style="list-style-type: none"> Use the program ket (Figure 11:2) until the correct program number appears in the display (Figure 11:1) 	
2	Select the programming mode	<ul style="list-style-type: none"> Press the “reprog” key (Figure 11:3) 	The program display flashes
3	Select the parameter	<ul style="list-style-type: none"> Press the cursor key (Figure 11:4) to scroll thourgh the parameters The LED in the program mode display (Figure 11:7) shows at which mode you are 	
4	Change the parameter	<ul style="list-style-type: none"> Press “+” or “-“ (Figure 11:9/8) to adjust the values The value is saved when you press the cursor key 	
5	Activate the new parameter	<ul style="list-style-type: none"> Press the “reprog” key (Figure 11:3) 	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"> Use the program key (Figure 11:2) until the correct program number appears in the display (Figure 11:1) 	
2	Select the programming mode	<ul style="list-style-type: none"> Press the “reprog” key (Figure 11:3) 	The program display flashes
3	Select the parameter “vacuum”	<ul style="list-style-type: none"> Press the cursor key (Figure 11:4) to scroll through the parameters The LED in the program mode display (Figure 11:7) shows at which mode you are 	

NO.	WHAT TO DO	ACTION	RESULT
4	Change the parameter vacuum to maximum (99%)	<ul style="list-style-type: none"> Press "+" or "-" (Figure 11:9/8) to adjust the value The value is saved when you press the cursor key 	The display shows "99"
5	Select the parameter vacuum+	<ul style="list-style-type: none"> Press the cursor key once 	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"> Press "+" or "-" (Figure 11:9/8) to adjust the value The value is saved when you press the cursor key 	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"> Press the "reprog" key (Figure 11:3) 	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"> Use the program button (Figure 11:2) until the correct program number appears in the display (Figure 11:1) 	
2	Select the programming mode	<ul style="list-style-type: none"> Press the "reprog" key (Figure 11:3) 	The program display flashes
3	Select the liquid control option	<ul style="list-style-type: none"> Press the program key (Figure 11:2) until H2O appears in the display (Figure 11:1) 	H2O appears in the parameter display
4	Activate the new parameter	<ul style="list-style-type: none"> Press the "reprog" key (Figure 11:3) 	Het 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

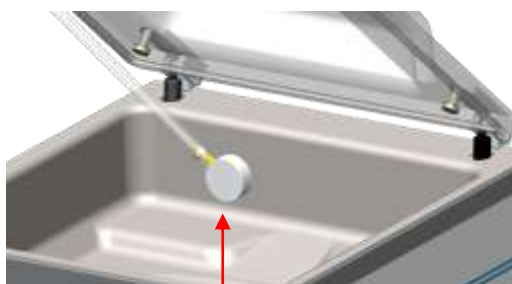
NO.	WHAT TO DO	ACTION	RESULT
1	Select the program on which you want to set the multi cycle	<ul style="list-style-type: none"> Use the program key (Figure 11:2) until the correct program number appears in the display (Figure 11:1) 	
2	Select the programming modus	<ul style="list-style-type: none"> Press the "reprog" key (Figure 11:3) 	The program display flashes
3	Select the parameter vacuum	<ul style="list-style-type: none"> Press the cursor key (Figure 11:4) to scroll through the parameters The LED in the program mode display (Figure 11:7) shows at which mode you are 	The right character of the parameter display shows that vacuum step you are programming (see Figure 11:5)
4	Change the parameter vacuum	<ul style="list-style-type: none"> Press "+" or "-" (Figure 11:9/8) to adjust the value The value is saved when you press the cursor key 	
5	Select the parameter gas	<ul style="list-style-type: none"> Press the cursor key (Figure 11:4) to scroll through the parameters The LED in the program mode display (Figure 11:7) shows at which mode you are 	
6	Change the parameter gas	<ul style="list-style-type: none"> Press "+" or "-" (Figure 11:9/8) to adjust the value The value is saved when you press the cursor key 	
7	If an additional vacuum step is required go to number 3		
8	Activate the new parameter	<ul style="list-style-type: none"> Press the "reprog" key (Figure 11:3) 	The program display stops flashing

5.5.1.6. External vacuum option (MPDC)

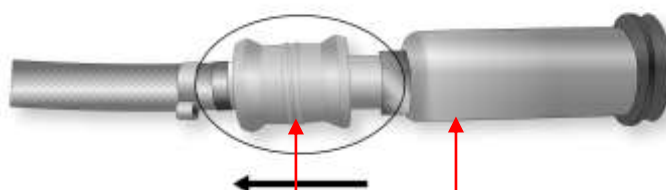


EXPLANATION

- Only available as an option on Marlin Series
- 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



1



2

3

Figure 12: External vacuum adapter kit (MPDC)

NO.	WHAT TO DO	ACTION	RESULT
1	Select the external vacuum program	<ul style="list-style-type: none"> • Press the oil cleaning program key (Figure 11:5) • Press the cursor key (Figure 11:4) • The external vacuum program can be programmed in the same way as any other program (see section 5.5.1) 	<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"> • Place the adapter over the suction hole in the vacuum chamber (Figure 12:1) 	
3	Connect the external vacuum hose to the container	<ul style="list-style-type: none"> • Connect the vacuum hose adapter (Figure 12:3) on the valve of the container. And slide the valve (Figure 12:2) in the direction of the hose (closed position) 	
4	Start the process	<ul style="list-style-type: none"> • Press the "+" key 	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"> • Slide the valve of the adapter in the direction of the package (open position) and remove the hose 	Hose will be disconnected from the container and can be removed

5.5.1.7. Sleeper time option (MPDC)



EXPLANATION

- After the set time, the pump automatically switches off when the machine is not used during this period
- The pump will automatically start when a new vacuum cycle is started
- The Sleeper time feature is set to 10 minutes by default
- If you want to change this time you should contact your supplier



ATTENTION!

The Sleeper time should be set to less than 1 minute

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 13 shows a screenshot of this mode

NO.	ELEMENT	EXPLANATION
1	Program number / name	<ul style="list-style-type: none">• 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
2	View the functions	<ul style="list-style-type: none">• 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
3	Function active/inactive	<ul style="list-style-type: none">• The selected function is marked with a green circle. The name and current value of this function is displayed on the screen• 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
4	Menu	<ul style="list-style-type: none">• The machine settings can be adjusted via the menu icon on the left of the function list

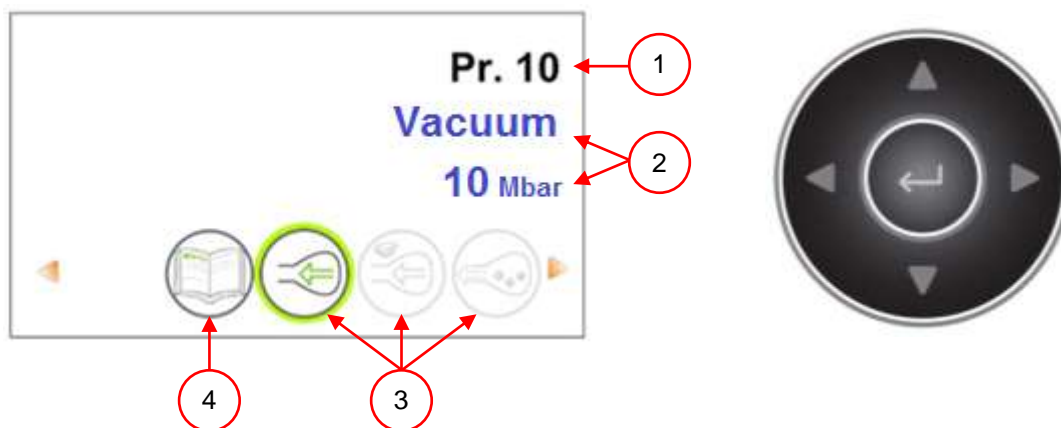


Figure 13: Program Display and controls ACS

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

5.5.2.1. Programming the ACS control on your PC

Import files

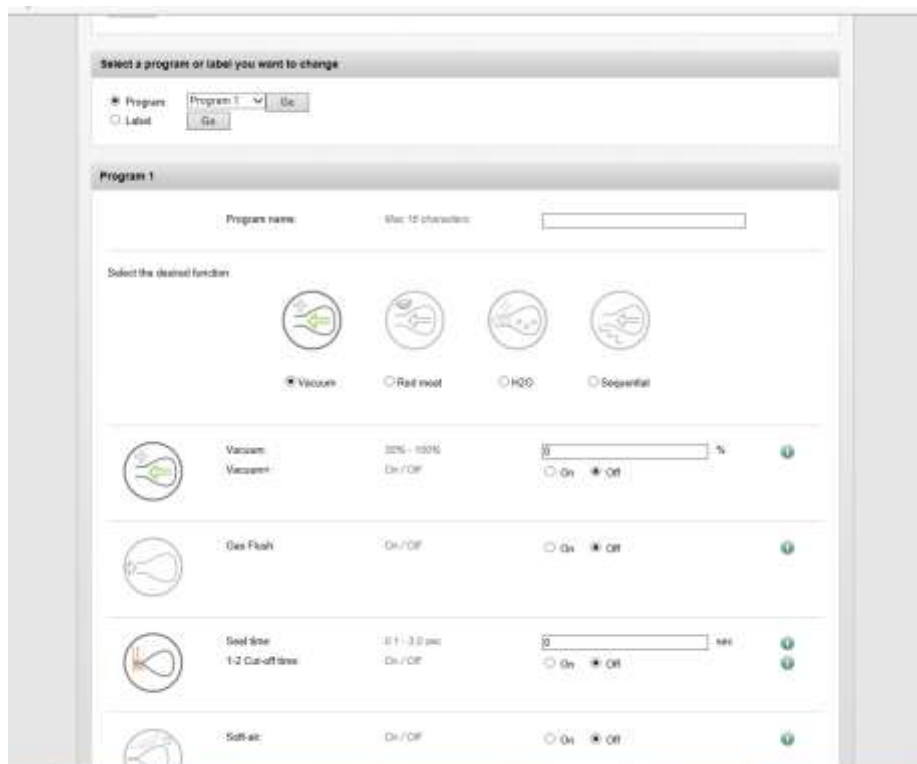
You can import labels and programs from a USB stick, by plugging it into the USB port of the machine. The imported data can be created using the online software for programming. You will find this software on our website on the 'Support' page: <http://www.henkelman.com/en/support/downloads> Or contact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

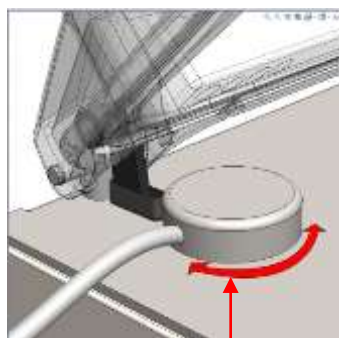
- The options that are built into the machine can be enabled or disabled at the settings menu by the owner (login as owner) (See section 2.7.1)
- Subsequently the options in the various programs can be programmed

5.5.2.3. External vacuum option (ACS)

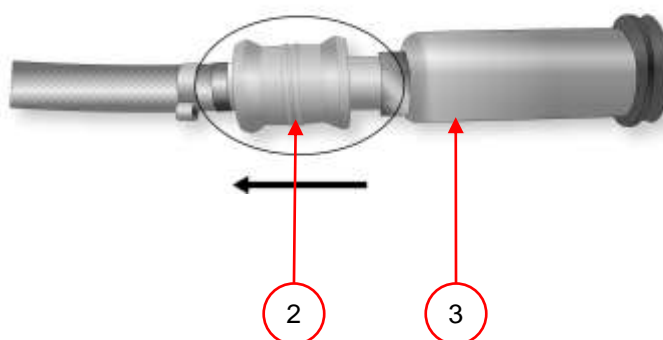


EXPLANATION

- Only available as an option on Marlin Series
- With this function vacuum can be applied to special food packaging gastronom containers outside the machine
- Vacuum will be applied to 99%
- First check whether the container is resistant to a vacuum and can retain this



1



2

3

Figure 14: 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"> • Place the adapter over the suction hole in the vacuum chamber (Figure 14:1) 	
2	Connect the external vacuum hose to the container	<ul style="list-style-type: none"> • Connect the vacuum hose adapter (Figure 14:3) on the valve of the container. And slide the valve (Figure 14:2) in the direction of the hose (closed position) 	
3	Start the process	<ul style="list-style-type: none"> • With the controls, select the external vacuum program 	Vacuum is applied to the maximum level

NO.	WHAT TO DO	ACTION	RESULT
4	Disconnect the external vacuum hose from the container	<ul style="list-style-type: none"> Slide the valve of the adapter in the direction of the package (open position) and remove the hose 	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"> 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
Vacuum+	0-20 sec	<ul style="list-style-type: none"> 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
Red Meat	2-700 mbar 30-99.8%	<ul style="list-style-type: none"> Rule of thumb: the higher the vacuum, the less oxygen in the package so that the product has a longer shelf life
Liquid Control	2-700 mbar	<ul style="list-style-type: none"> 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
Liquid Control+	0,1-5,0 sec	<ul style="list-style-type: none"> 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
Sequential vacuum	2-700 mbar 30-99,8%	<ul style="list-style-type: none"> 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

FUNCTION	RANGE	CONDITIONS
Seal time 1-2 cutting time	0,1-4,0 sec	<ul style="list-style-type: none"> 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
Soft air	1-20 sec	<ul style="list-style-type: none"> 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
Cleaning of the pump	15 minutes	<ul style="list-style-type: none"> There are no settings possible
Sleeper time	1-55 minutes (ACS) 6 sec.- 100 minutes (MPDC)	<ul style="list-style-type: none"> The time that the pump continues to rotate after a cycle. This is to keep the pump on the operating temperature and avoid unnecessary starts and stops that causes extra wear to the pump



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 15). 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

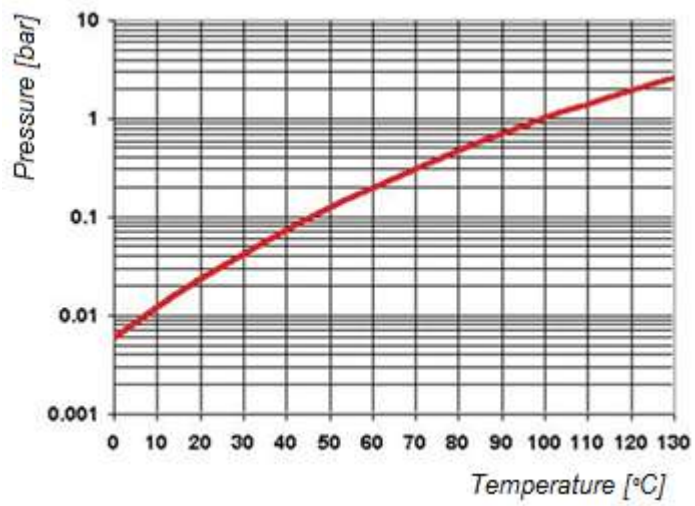


Figure 15: Water vapour line

6. MAINTENANCE



ATTENTION!

- Always disconnect the power supply by switching the main switch to "0" or 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	Daily	Weekly	Every 6 months	Yearly	Every 4 years	SECTION
Cleaning							
Cleaning the machine							6.2
Lubrication							
Lubricate the grease nipples of the parallel arms	Bearing grease						2
Replace the oil of the vacuum pump	See chapter 1 for oil type						1
Inspections							
Check the oil level							2.3
Execute the oil cleaning program							6.3
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 (If applicable)							
Inspect the lid springs. Pay special attention to the fixing and any damage							6.9

ACTIVITY	LUBRICANT	Daily	Weekly	Every 6 months	Yearly	Every 4 years	SECTION
Replacements							
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
Replace the oil filter							
Please contact your supplier for a professional service							
Replace the plastic lid (if applicable)							

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"> • 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 	

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">• MPDC: Press the key for the oil cleaning program (Figure 5:5)• ACS: Use the control buttons "up" ▲ and "down" ▼ (Figure 6:4)	
2	Start process	<ul style="list-style-type: none">• Close the lid	The oil cleaning program will be executed for 15 minutes

6.4. Add oil / change oil and oil filter



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">Remove the oil filler plug (Figure 3:5)Add oil until the oil level is between the "max" and "min" level (Figure 3:3)Replace the oil filler plug	

Replacing oil and oil filter

NO.	WHAT TO DO	ACTION	RESULT
1	Change oil	<ul style="list-style-type: none">Place a drip pan under the oil drain plug (Figure 3:4)Remove the oil drain plug (Figure 3:4)Replace the oil drain plug	The oil drains from the pump
2	Replace the oil filter	<ul style="list-style-type: none">Remove the old oil filter (Figure 3:6)Insert a new oil filter	
3	Fill with new oil	<ul style="list-style-type: none">Remove the oil filler plug (Figure 3:5)Add oil until the oil level is between the "max" and "min" level (Figure 3:3)Replace the oil filler plug	

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

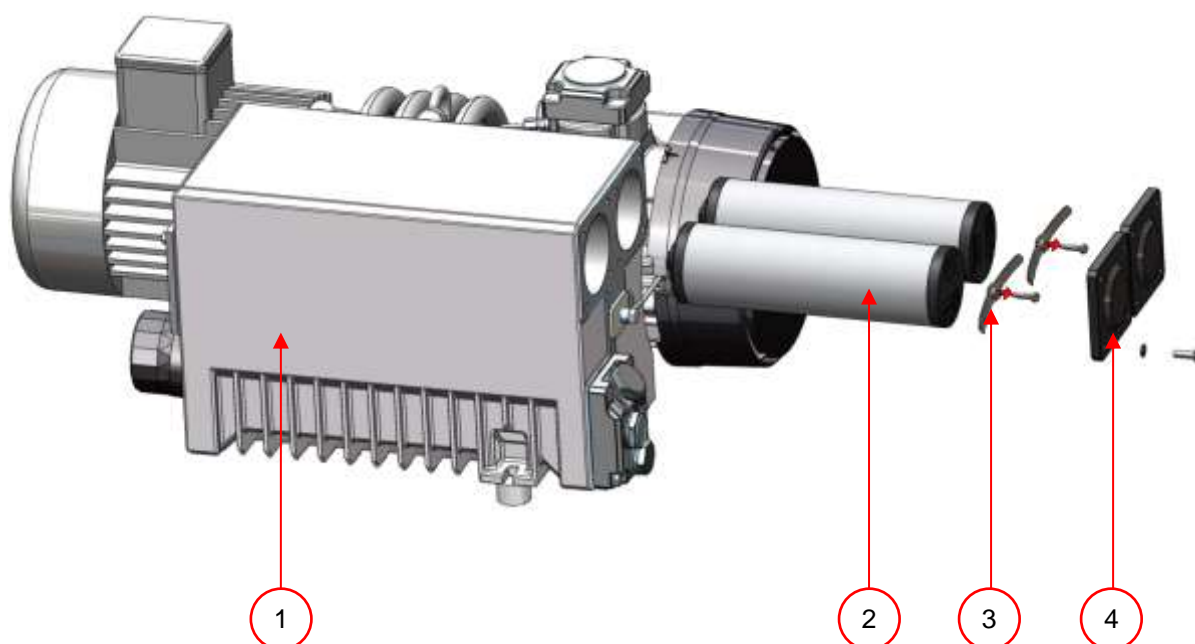


Figure 16: Replacing the exhaust filter

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

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
- On machines with a plastic lid, the sealing bars are mounted on cylinders (Figure 17:1). On machines with a metal cover, the seal bars are mounted in the lid (Figure 17:2 t/m 4)

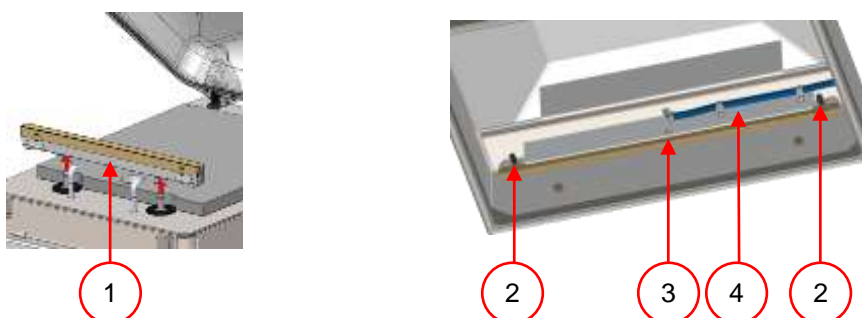


Figure 17: Removing the seal bar

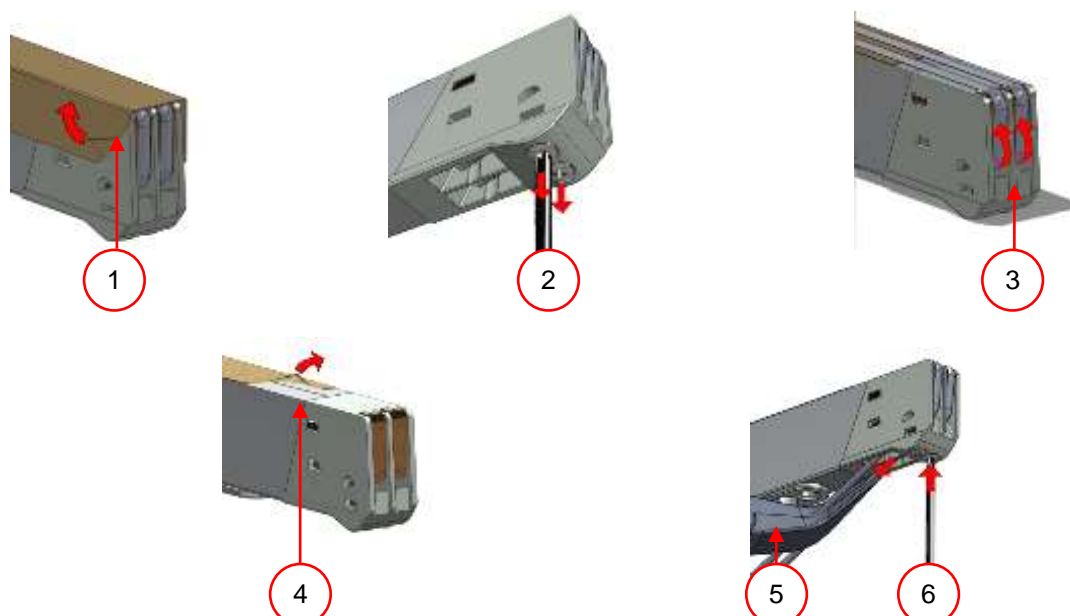


Figure 18: Replacing the sealing wire

NO.	WHAT TO DO	ACTION	RESULT
1	Remove the seal bar from the lid (for metal lid)	<ul style="list-style-type: none"> Remove the seal bar from the holders (Figure 18:4) by disconnecting the electrical connection plugs (Figure 18:2) (2x) and remove the M6 screws (Figure 17:3) 	
2	Remove the seal bar from his holders (for plastic lid)	<ul style="list-style-type: none"> Lift the sealing bar (Figure 17:1) from the cylinders 	
3	Remove the teflon tape	<ul style="list-style-type: none"> Remove the teflon tape (Figure 18:1) that protects the sealing wires 	
4	Remove the old sealing wires	<ul style="list-style-type: none"> Remove the screws (Figure 18:2) on the bottom side of the seal bar, and remove the sealing wires (Figure 18:3) 	
5	Replace the teflon tape on the sealing bar	<ul style="list-style-type: none"> Pull the teflon tape from the top of the sealing bar (Figure 18:4) Clean the bar with a lint-free cloth Put a new piece of Teflon tape of the same length on the sealing bar 	
6	Replace the sealing wires	<ul style="list-style-type: none"> Cut a new piece of sealing wire or cutting wire at the length of the seal bar plus about 15 cm (6 inches) First place the wire on one side of the seal bar by tightening the screws (Figure 18:2) Place the other end of the wire in a straight line and tighten with pliers. Then fasten it by tightening the screws Trim the ends of the wire on both sides 	
7	Replace the teflon tape on the sealing wire	<ul style="list-style-type: none"> Cut a piece of teflon tape at the length of the seal bar plus about 5 cm (2 inches) Stick the tape smoothly and without folds over the sealing wires on the sealing bar 	
8	Place seal bar	<ul style="list-style-type: none"> Replace the seal bar 	

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 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

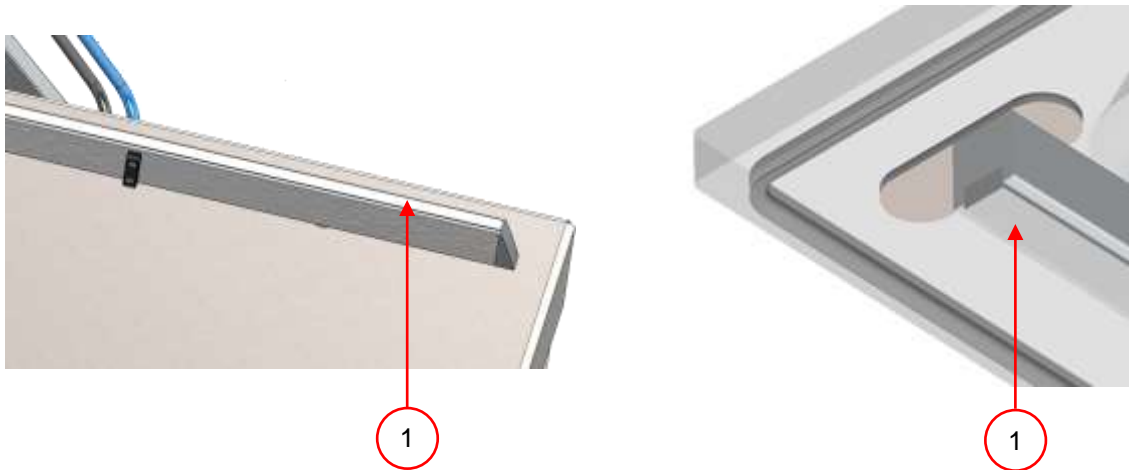


Figure 19: Replacing the silicone rubber of the silicone holders

NO.	WHAT TO DO	ACTION	RESULTS
1	Remove the old silicone rubber	<ul style="list-style-type: none"> You can pull the old silicone rubber (Figure 19:1) from the holder 	
2	Cut the new silicone rubber	<ul style="list-style-type: none"> Cut a new piece of rubber. Make sure that it is just as long as the holder The size is very important, it will cause problems with the seal of the bag if the rubber is too short or too long 	
3	Place the new silicone rubber	<ul style="list-style-type: none"> Place the new piece in the silicone holder by pushing it into the recess 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 	

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	RESULTS
1	Remove the old gasket	<ul style="list-style-type: none"> • You can pull the old lid gasket off 	
2	Cut a new piece of gasket	<ul style="list-style-type: none"> • Cut a new piece of gasket. Cut it preferably slightly longer than the old one • The ends must be cut off straight • When the lid gasket is too short or too long, it can cause problems when closing the cover or leakage may occur 	
3	Place the new rubber	<ul style="list-style-type: none"> • Place the new lid gasket by pressing it in the slot. The lip of the gasket must face downwards and outwards • The gasket should be placed in the holder evenly and without tension. The ends must come tightly together to prevent leakage 	

6.9. Inspecting the lid springs



EXPLANATION

- Check the fastenings of the lid springs for wear, corrosion and damage
- Check the lid springs for wear and damage
- In the case of irregularities, please contact your supplier

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

Error messages for MPDC

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

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.



10. APPENDIX

10.1.Log

This log should include among other things:

- Annual maintenance
- Big replacements and emergencies
- Modifications
- Tests of the emergency stop buttons and safety devices

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