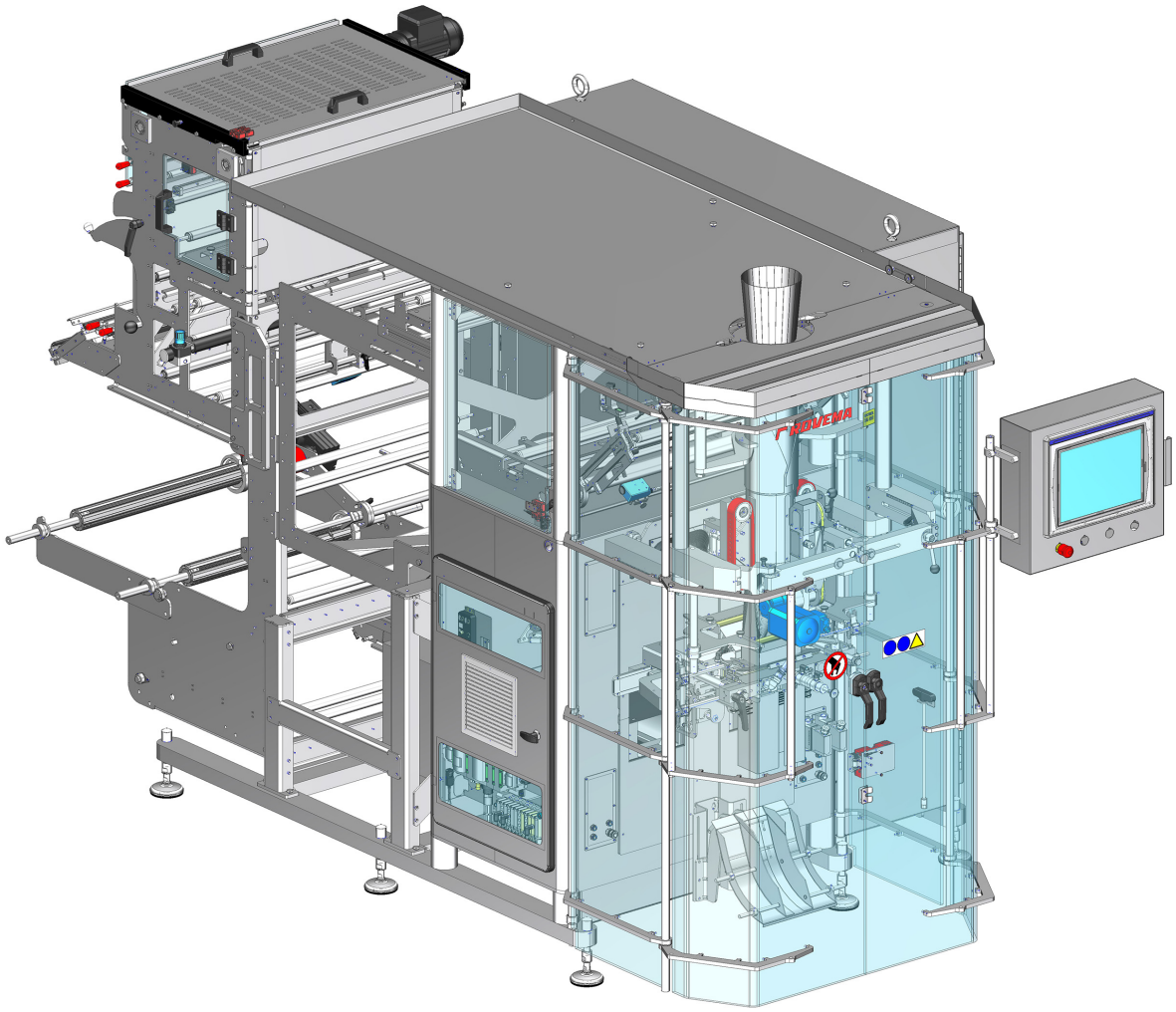
Form fill and seal machine BVC 260

Translation of the original operating manual



ROVEMA

Keep for future reference

Contact / Copyright

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Introduction 1

With the help of this manual, the operator should be able to

- Use the machine as intended
- Recognize hazards independently
- Repair malfunctions quickly
- Achieve optimal production results
- Maintain the machine's operational readiness

This introduction provides an overview of the machine functions.

It contains

- Machine views
- Safety regulations and instructions
- Information concerning protective devices
- A list of the most important technical data
- A brief functional description of the machine

and informs you about everything you must do before you can commission the machine.

⚠ WARNING!

Danger of injury!

In this machine, there are various dangers, e.g. danger of crushing at different stations or danger of electric shock!

▶ Anyone assigned to operate the machine must have read and understood the operation manual, particularly the safety instructions and rules, before starting the machine.

Rovema packaging machines are special machines that are customized in equipment and function to the special requirements of the owner.

For each machine, a special operating manual is put together based on a standard machine; this manual is then valid only for the one machine (or a series of similar machines).

If your machine is not equipped with all available units, their descriptions also do not appear in the operating manual.

The user (every person assigned to operate this machine) must have read and understood the operation manual, particularly the safety instructions and rules, before starting the machine.

A copy of this operating manual should always be near the machine so that the operator can look at it at any time.

This operating manual only relates to the Rovema packaging machine itself. Other components of a system will only be discussed to the extent this is necessary for operation of the machine. These components have their own documentation available.

This operating manual belongs to the following machine:

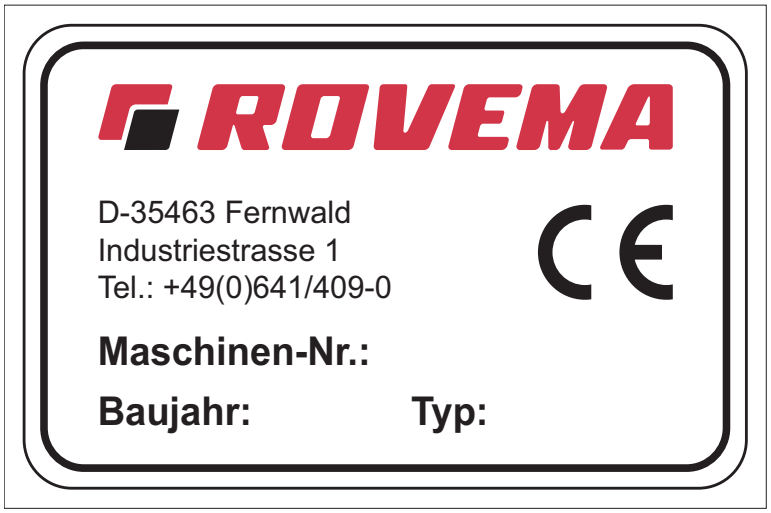


Fig. 1-1 Rating plate (sample)

Machine number

The information in this operating manual only applies to the machines whose machine number is indicated in the footer of the manual.

Rating plate

The rating plate with this machine number is attached to the machine housing. Please enter your machine's data in the depiction of the rating plate.

For all queries, it is important to have correct information about:

- Machine type
- Machine number

Only in this way does smooth, rapid processing become possible.

Retention

The operating manual is part of the product. Always keep a copy of this operating manual near the machine. It must be ensured that all persons who must perform work on the machine are able to view the operating manual at any time.

As a supplement to the operating manual, the operating instructions in accordance with the Work Safety Act and the work resource usage regulations should also be provided.

Guidelines for this manual 1.2

This manual is subdivided into subsections, which should make it easy for you to follow.

The table of contents helps you use this manual effectively. All section headings - and thus the most important terms - are recorded here.

The individual function descriptions in part 2 are organized by machine work sequence. They also permit finding information rapidly. It may often be necessary to look things up in one or more subsections to get all the needed information.

If there are faults the control unit display shows an error message and so lets you eliminate the malfunction. Part 5 offers help and/or refers to other parts and sections.

Symbols in this manual should let you recognize at a glance what the respective text offers.

Front view of the machine

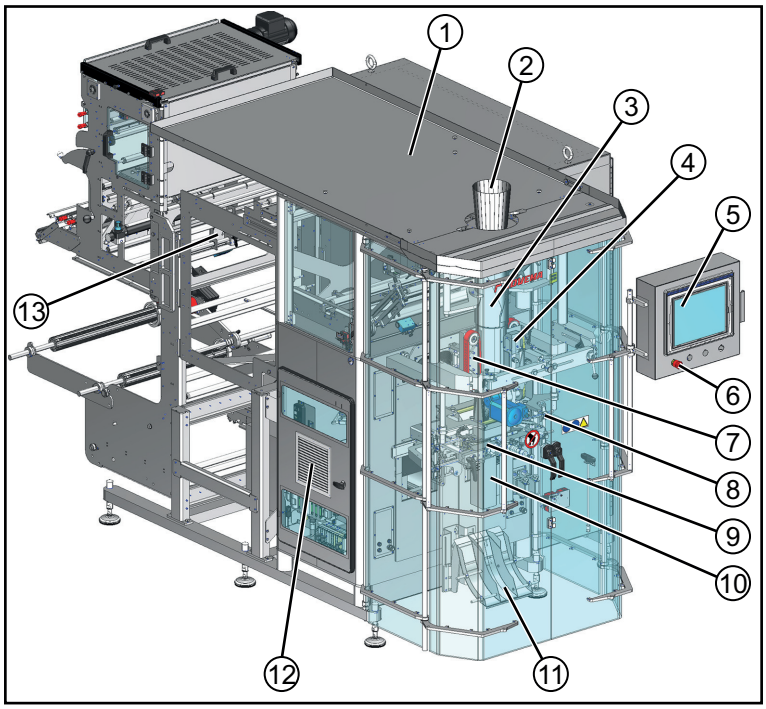


Fig. 1-2 Front view of the machine

1 Product catch basin (optional)
2 Transferring hopper (optional)
3 Forming set
4 Longitudinal sealing band
5 Control panel / Display with touch screen
6 Emergency stop button
7 Discharge equipment
8 Side folding device (optional)
9 Cross-sealing station
10 Bag-shaping device (optional)
11 Bag slide (optional)
12 Machine housing
13 Printer (optional)

Rear view of the machine

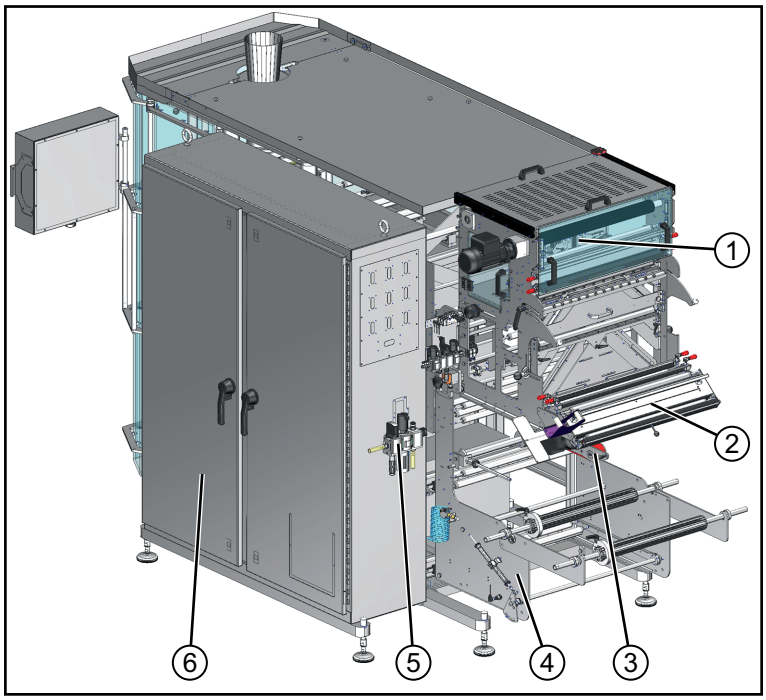


Fig. 1-3 Rear view of the machine

1 Stabilo Seal hot sealing device (optional)
2 Cut and splice device (optional)
3 Packaging material pre-unrolling on packaging material roller (optional)
4 Packaging material carrier
5 Maintenance unit
6 Electrical cabinet

The special design of the packaging machine may make it necessary to go inside the machine to perform cleaning, maintenance and adjustment work.

Although the machine housing is equipped with safety switches, before entering the machine you must:

- **SWITCH OFF THE MACHINE**
- **SECURE THE MACHINE TO PREVENT IT FROM BEING SWITCHED BACK ON UNINTENTIONALLY!**



⚠ DANGER!

Danger of injury!

There is a risk of severe bodily injury if the machine is started, thus triggering dangerous movements, while someone is still within the danger area of these movements inside the machine housing.

▶ Never perform cleaning, maintenance and adjustment work on the switched-on machine when a person is inside the machine.



⚠ DANGER!

Danger of injury!

There is a risk of severe bodily injury if the machine is started, thus triggering dangerous movements, while someone is still within the danger area of these movements inside the machine housing.

▶ Never perform a test run of the machine when someone is inside.

Safety devices

All technical devices - especially safety devices, must be checked

- before first commissioning
- after changes and
- after repair tasks

by trained or appropriately instructed specialists.

The machine or system may only be operated if all safety devices (protective hoods, protective doors, interlocks, couplings, etc.) are working.

Safety devices must not be bypassed or made ineffective.

Repair and maintenance tasks on safety devices and on the electrical system must only be performed by trained specialists.

Immediately replace defective technical equipment, especially safety devices (or have such equipment replaced).

The operator must check the functionality of the protective devices daily before the start of production.

The owner must make sure that a higher-level technician, such as a safety representative, performs a check of all protective equipment at regular intervals, but at least once a year!

Warning notices

The warning instructions help to ensure careful actions and thus avoid accidents and injury to people or damage to property.

In this operating manual, warning information is indicated by symbols and a special coloured background.

The warning information is introduced by signal words, which express the level of risk.

⚠ DANGER!

Immediate danger!

If this situation is not avoided, death or severe injury will result.

▶ Preventive measure.

⚠ WARNING!

Potentially dangerous situation!

If this situation is not avoided, death or severe injury can result.

▶ Preventive measure

⚠ CAUTION!

Potentially dangerous situation!

If this situation is not avoided, minor injury could result.

▶ Preventive measure

NOTE!

Possibly damaging situation.

If this situation is not avoided, the machine or something in its vicinity can be damaged.

▶ Preventive measure

Tips and recommendations

Tips and recommendations on fault-free operation of the machine are indicated by the Note symbol in the left-hand margin.



NOTE!

This symbol highlights useful information and tips, as well as information for efficient, fault-free operation.

Requirements for the operating personnel

Only properly trained personnel may operate the machine.

The minimum age for the personnel operating the machine is 14 years.

The owner is required to provide operating manuals to all operators and inform them of possible hazards from the machine. A copy of the operating manual should always be kept at the machine for this reason.

The operator (any person assigned to operate this machine) must have read and understood the operation manual, particularly the safety instructions and rules, before starting the machine.

The owner should confirm this in each case with a signature.

The operator must become familiar with the safety symbols and information attached to the machine and understand their significance. The symbols used and their meaning are described in section *1.5.1 - Warning signs and information signs on the machine, Page 26*.

Operating personnel must be informed about possible new dangers or operating modes after every change to the machine - such as changes in function or expansions of function.

Operating personnel must be instructed precisely about who can perform which tasks by the owner.

Personnel with suitable training (mechatronics specialists) must be used for mechanical repair and maintenance tasks.

Work in the control cabinet and on the electrical system must be performed by suitably trained personnel (electricians) using special safety precautions.

Personal protective equipment

The owner must provide operating personnel with the personal protective equipment necessary for danger-free operation of the machine.

Without this equipment, the operator may not perform tasks on areas of the machine that may be potential sources of hazard.

Such danger points are marked in the manual with a special notice. The required protective equipment is described.

If special personal protective equipment is needed for packaging materials that are hazardous to health, the corresponding regulations of the company and of the country in which this machine is used must be followed. The operator of the machine is responsible for compliance with these regulations.



NOTE!

Before starting work, ensure that the prescribed protective equipment is available at the workplace and is in perfect condition.

Wear personal protective equipment, if prescribed.

Sound level

Noise can arise depending on product, number of cycles and conditions in the set-up room. See the technical data for the sound level of your machine (see section *1.6 - Technical data, Page 31*).

Before switching the machine on

Before switching on the machine, the operator must be sure that no other people are in the danger area of the machine.

The operator must check the functionality of the protective devices daily before the start of production.

Behavior in case of emergency

When there is danger or when accidents occur, press an Emergency Stop button or the main switch immediately!

The function of all Emergency Stop buttons must be checked daily before the start of production! (See also section *2.1.4 - Emergency stop button, Page 51*).

Electrical and electronic equipment

Electrical and electronic equipment are important components of the machine's safety equipment.

Changes to and tampering with the electrical system and the electronic controller are not permitted, since they can compromise safety. Only have ROVEMA execute retrofitting and changes!

Spare parts

Use only original ROVEMA spare parts and accessories.

ROVEMA assumes no liability for damage arising from the use of other companies' products that have not been approved by ROVEMA.



NOTE!

All spare parts and wear parts can be re-ordered using the Spare Parts List.

Maintenance

Begin cleaning, maintenance and repair tasks only when the main switch has been switched off and secured against being switched on again.

Use only cleaning agents and/or disinfectants for which the possibility of damage to the mechanical and electrical machine equipment can be excluded (for information on cleaning agents and cleaning tasks, refer to the section *4.2 - Cleaning, Page 278*).

Use of chemical solvents

Chemical solvents should only be used when conditions so require. But, before use, ensure that they will not pose hazards for you or the machine.



DANGER!

Danger of fire through ignition!

- When working with solvents, ensure good ventilation, wear the required protective equipment and avoid open fire! Comply with the safety instructions provided by the solvent supplier in the data sheet!

Machines in the food processing industry

Machines used to package food may need to be treated with special cleaning or disinfection agents in compliance with the particular hygiene requirements of the country in which the machine is operated.

You can obtain additional information in this regard from your country's responsible government agencies.

Health impairments due to improper adjustment

Health-impairing dangers can result from improper adjustment of the machine.

This includes, in particular, incorrect temperature settings for sealing/bonding and gluing of packing materials.

Hot melt adhesives, for example, emit vapors even when the prescribed processing temperature is complied with. Unpleasant odors can result.

In addition, if the prescribed processing temperatures are exceeded significantly for a longer period of time, there is the danger that harmful decomposition products could occur.

In this case, measures must be taken to eliminate the vapors.

Always comply with the instructions of the adhesive manufacturer!

Auxiliary material, hoists, scaffolding, etc.

If lifting tools, scaffolding, cleaning platforms or climbing aids, etc. are not included in the scope of supply from ROVEMA, the owner must supply them. Comply with and follow the applicable safety instructions.

Access aids

Access aids for packaging machines can be necessary for cleaning, inspection and maintenance of dosage units. You can find information about this in EN ISO 14122 (Part 1–4).

Suitable access aids can be obtained from ROVEMA directly.

Ladder

A ladder is sufficient as a climbing aid if

- ascent is required occasionally, not daily
- objects that prevent a safe hold do not need to be transported (hands must be free!)
- No tasks that counteract safe stability of the ladder must be executed
- The ladder is safeguarded against unintended impact.

Fixed steps

Firm steps must be attached when

- a regular ascent, as described above, is required (regular means daily or after every product or format change)
- cleaning, inspection and maintenance tasks must be performed, for which a secure hold on ladders is not ensured.

Work platforms

Work platforms are required in addition to ladders or fixed steps when

- parts of the machine must be mounted, dismantled and/or set down and which, due to their weight or size, cannot be handled safely on ladders or steps
- Tasks on the ladder would be of unreasonably long duration.

There must be fixed steps to work platforms if objects which, due to their weight or circumference, cannot be transported without danger on ladders, must be transported to / from the work platform.

Additional transport aids

Additional transport aids must be provided when loads cannot be transported without danger on ladders or fixed steps.

This can be the case, for example, when placing packaging material and changing format parts of a heavy weight.

Suitable transport aids can be obtained from ROVEMA directly.

DANGER!

Risk of injury due to protective devices that have been rendered inoperable

Injuries due to accessible danger zones on the machine.

- ▶ The protective equipment of this machine protects the operator from any dangers that might arise.
- ▶ It must not be rendered inoperable or bypassed at any time.
- ▶ The machine may only be operated if all the safety devices are installed in accordance with regulations and are functional.

Devices that lock or separate, contactless and electrical devices can be used as protective devices:

- Locking separating protective equipment means a lock that cannot be opened while the machine is running, thus preventing access to the danger zone until the dangerous movement has come to a standstill.
- Fixed separating protective devices interrupt an electrical circuit, which stops the machine (e.g. circuit breaker on the protective doors).
- Contactless protective devices are, for example, light barriers with a beam of light that monitors a specific area of the machine.
- Electrical protective equipment comprises, for example, the emergency stop button and the power switch.

Emergency stop

An emergency stop button is located on the machine's control panel. Additional emergency stop buttons can be located on additional machine areas that are not in the immediate area of the machine panel. These emergency stop buttons can also be effective only in a limited part of the system. In this case, these emergency stop buttons are marked accordingly.

As soon as an emergency stop button is actuated, the machine or the corresponding system part stops; power is removed from all drives.

To restart the machine after an emergency stop situation, see section *2.1.4 - Emergency stop button, Page 51*.

Danger zones

Danger zones of the machine are covered with protective fixtures (e.g. protective doors, protective hoods, protective tunnels).

As soon as a protective fixture is opened, the safety chain is interrupted.

Opening the safety fixture stops and de-energizes all the drives. Comply with the warnings on the protective doors, if applicable!

In addition, areas can be covered by a protective tunnel designed to prevent reaching into dangerous areas of the machine.

ROVEMA can supply protective fixtures according to customer specification if they are designed in agreement with the applicable safety regulations of the country in which the machine is used.

Changes

A responsible expert must evaluate all changes made to safety devices for the compliance of these changes, before they are performed and document these changes afterward.

Changes (e.g. moving the safety switches) may only be performed when the owner ensures that all safety regulations of the country are still met after the change.

Cut-outs on protective doors

If the customer makes cut-outs on the safety guards, the areas must be covered by a protective tunnel designed to prevent someone from reaching into danger points of the machine. The necessary measures can be found in EN ISO 13857 Table 4. If necessary, the design must also take into account the specified safety clearances of the respective country (Europe: See EN 415-10).

Installation of accessories by the customer

If the customer installs additions (e.g. a conveyor) that can be removed without aids, special safety precautions must be taken:

- It must be ensured that all of the specified safety clearances for reaching into the machine are also maintained after the attached part is removed. The necessary measures can be found in EN ISO 13857 Table 4.
- If the safety clearances are no longer maintained after the attached part is removed, the attached part must be electrically interlocked with the drives of the machine so that all of the dangerous movements are terminated before the danger points can be reached. Please contact ROVEMA customer service for support.

Replacement of defective protective devices

Defective protective devices must be replaced by a corresponding original component. If this is not possible for certain reasons, the original must be replaced by a replacement part of at least the same quality with an identical function.

Testing the protective devices

The protective devices must be checked at least once monthly according to the following descriptions. The check must be based on the statutory regulations, directives or standards of the country in which the machine is installed and operated. In the following descriptions, the term **"statutory regulations"** is used throughout. **Obtain information about regulations from the responsible authorities in your country!**

Visual inspection when the machine is at a standstill

Mechanical parts

Check whether all the mechanical parts are securely fastened and all sharp edges have been removed.

Pneumatic systems

Check whether all the pneumatic components and pipelines meet the safety requirements of the statutory regulations and have been properly installed.

Electrical systems

Check whether all the electrical components and connections meet the safety requirements of the statutory regulations and have been properly installed.

Separating protective devices

Check whether all the separating protective devices are in their place and securely fastened. Verify that all locking devices have been installed and work properly.

Measurements with the machine at a standstill

Separating protective devices

Verify that the ratio between the size of all openings in the separating protective devices and the distance of these devices from the nearest danger point meets the requirements of the statutory regulations.

Electrical installation

Execution of checks in accordance with the statutory regulations.

Visual inspections when the machine is running

Separating protective devices

When the machine is running, check whether the separating protective devices meet the safety requirements.

Locking devices

The effectiveness of all emergency stop equipment and locking equipment must be checked. Also to be checked is whether there are any remaining dangers when the separating protective equipment is opened as a result of a machine shut-down through an emergency stop or locking mechanism.

Contactless protective devices

The effectiveness of all contactless protective devices must be checked. Also check whether any residual dangers remain in the machine if the machine area monitored by the contactless protective devices is opened as a result of a machine shut-down through the contactless protective devices.

1.5.1 Warning signs and information signs on the machine

The operating personnel must become familiar with the warning and information signs attached to the machine and understand their significance.



NOTE!

Ensure that the warning signs and information signs are easy to see at all times.

Damaged and illegible signs or signs that have come off must be replaced immediately with new signs that are in conformance with standards. Replacements for damaged signs are available from Rovema Spare Parts Service.

The following warning signs and information signs are attached at the points of the machine where you must work with particular caution:

Entry into the danger zone is prohibited!



Fig. 1-4 Rovema ID no. 07035440

Fastening location on the machine
Safety guard

Danger of eye injuries: Wear protective goggles!



Fig. 1-5 Rovema ID no. 07035441

Fastening location on the machine
Glue applicator

Wear protective gloves!



Fig. 1-6 Rovema ID no. 07035442

Fastening location on the machine
Safety guard

Fastening location on the machine
Vertical and cross sealing station
Glue applicator

Life-threatening danger due to high voltage!



Fig. 1-7 Rovema ID no. 07035443

Fastening location on the machine
Control cabinet

Danger of injury due to moving machine parts!



Fig. 1-8 Rovema ID no. 07035444

Fastening location on the machine
Infeed auger

Danger of burns due to hot surfaces!



Fig. 1-9 Rovema ID no. 07035447

Fastening location on the machine
Safety guard
Vertical and cross sealing station
Glue applicator

Warning – high voltage!

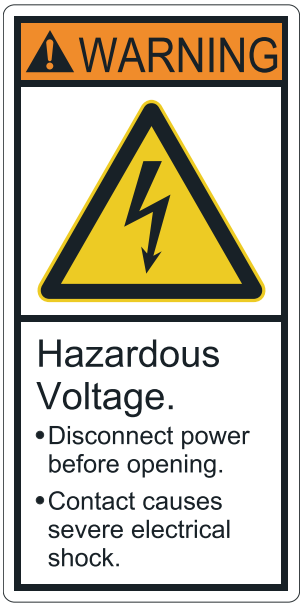


Fig. 1-10 Rovema ID no. 07035448

Fastening location on the machine
Control panel / touchscreen display

Warning – hand injuries!



Fig. 1-11 Rovema ID no. 07035449

Fastening location on the machine
Cut and splice device

Danger of injury due to protective devices that have been rendered inoperable



Fig. 1-12 Rovema ID no. 07035450

Fastening location on the machine
Safety guard

Reaching in is prohibited!



Fig. 1-13 Rovema ID no. 02179438

Fastening location on the machine
Safety guard
Safety cover

Technical data 1.6

Technical data	for Rovema form fill and seal machine
Type	BVC 260
Output (mech.)	up to 210 cycles/min
Roll width / diameter (max.)	680/450 mm (680/600 mm with power unwind)
Bag width (min. - max.)	60–260 mm (320 mm (gusseted bottom bag, gusseted bag))
Bag length (min. - max.)	40 - 450 (endless) mm
Filling volume (max.)	5000 cm^3 (6000 cm^3 (gusseted bottom bag, gusseted bag))
Seal force (max.)	6000 N
Dimensions (length x width x height)	approx. 2300 × 2045 × 2055 mm
Weight (standard design)	approx. 820 kg
Power supply	230/400 V
Power requirement (max. rated connected load)	10 kVA
Degree of protection	IP54
Compressed air connection	6 bar[a]
Air consumption at 6 bar without cooling	0.5 nl/cycle
Recipe memory	Standard: 100 (optional: 1000)
Machine color	RAL 9007L / gray-aluminum
Operating temperature (min. - max.)	+5 ... +35 °C
Storage temperature (min. - max.)	-20 ... +50 °C
Humidity	15 ... 95 %; no condensation
A-rated emission sound pressure level	78.3 dB (±1.5 dB)

a. Oil-free compressed air

Tab. 1-1 Technical data

Safety instructions for transport

To avoid damage to the machine or life-threatening injuries during transport, always comply with the following instructions:

Personnel must not stand under suspended loads.

During transport, personnel must exit the danger zone around the means of transport and the load.

Fork lifts or lift trucks must be approved for lifting and transporting the machine weight; pay attention to the gross weight of the machine!

NOTE!

During transport and loading, pay attention to the weight specifications on the shipment package.

The fork lift operator must be authorized to operate the fork lift.

Transport safeguards and transport aids must not be loosened before or during transport.

The fixing brackets fixing the machine on the pallet must not be loosened during transport.

The machine contains sensitive components and therefore it must be transported without jolts or vibration.

Unpacking the machine

- Remove wooden casing and / or foil.
- Remove the fixing brackets (1) on the machine and pallet.

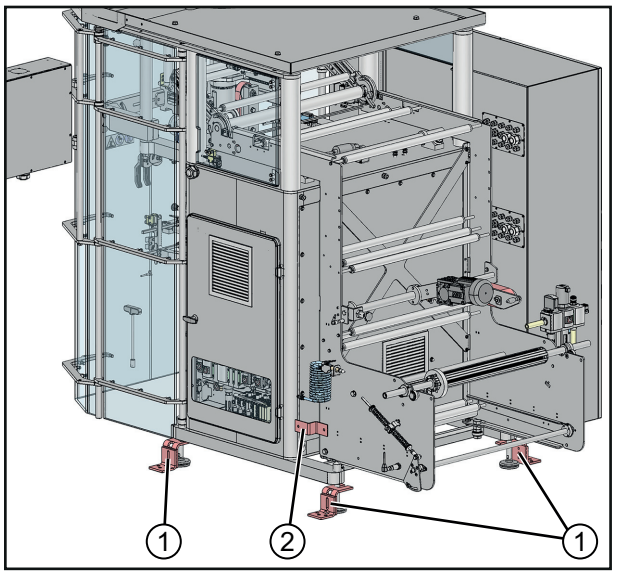


Fig. 1-14 Position of the fixing brackets

- Initially, leave the transport safeguard (2) mounted, it is used for fixing the packaging material carrier during transport.

Lifting the machine with a fork lift

The machine can be lifted using a fork lift and transported to its intended setup location.

- Mount the supplied transport aids (3) on the front and back of the machine frame. The fastening is done with lock nuts on the adjustable feet.
- Insert the forks under the installed transport aid.

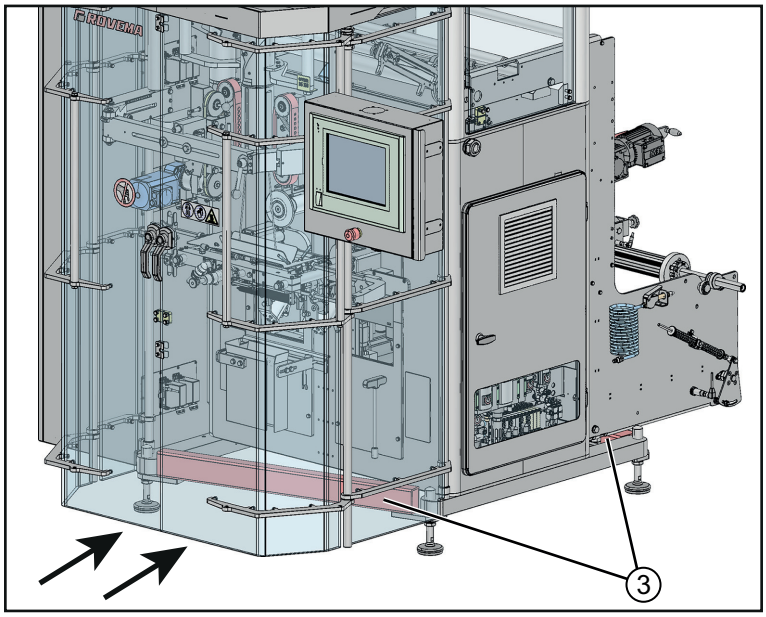


Fig. 1-15 Inserting the forks

NOTE!

The machine may not be lifted from the front without the installed transport aids. Therefore keep the transport aid on hand for later transports.

- Before lifting, ensure sure that the machine frame is grasped completely by the fork.
- Lift the machine carefully with the aid of the fork lift and transport it to the setup location.
- Verify during lifting and transport that the machine is not likely to tip over. If necessary, reposition the fork lift truck!



DANGER!

Risk of tipping over!

The machine is heavy and can tip over, causing serious injuries and material damage.

- ▶ Use suitable lifting devices!
- ▶ During transport and loading, pay attention to the weight specifications on the shipment package.
- ▶ Secure the machine against slipping or falling!
- ▶ Do not stand in the danger area of the lifting device!

Preparing and attaching the adjustable feet

Depending on the shipment type, the feet may already be screwed onto the machine frame or are packed separately.

- Check whether there is a lock nut on each of the supplied adjustable feet.
- If the adjustable feet are not yet screwed in, lift the machine and secure the lifting device so that it does not lower.
- Fasten the adjustable feet when the machine is lifted. Stay at the side of the machine when screwing in. Do not enter the area underneath the machine under any circumstances.
- When screwing in the adjustable feet, make sure that the screw-in depth is sufficient and uniform.

Setting up the machine

If you set up the machine yourself, use the information on the installation drawing for orientation.

Necessary connections

- Electrical connection with the required voltage
- Compressed air connection (oil-free air)

Requirements imposed on the installation location

Floor conditions:

- The floor must have sufficient load-bearing capacity.
- The set-up area must be level.

Room climate:

- The room temperature must be between 5 °C and 35 °C. The relative humidity must be between 15% and 95%.
- Provide suitable air-conditioning if necessary.

Spatial requirements:

The set-up area must be large enough to operate the machine without danger.

The set-up area comprises:

- The floor space of the machine. Please refer to the installation drawing for the floor space dimensions.
- A work area with at least 1.50 m clearance around the machine. This space is needed as work area for operating and maintenance personnel to carry out their tasks.

NOTE!

The work area must be kept free during operation of the machine so that unrestricted access is possible at any time.

Removing corrosion protection

If there are special moisture protection requirements (e.g. during shipment), machine parts with bare, untreated metallic surfaces are sprayed with the temperature-resistant special creepage oil Befesta Btec 115 - which is suitable for the food industry - before the machine is dispatched.

When the machine is used in the food industry, the corrosion protection agent must be fully removed from all the surfaces of the machine that come into contact with foods.

⚠ WARNING!

Danger of injury!

Explosion hazard due to solvent vapors.

▶ Remove the corrosion protection only in a well ventilated room.

Preparing for alignment

- Remove the transport safeguard of the packaging material carrier.
- Make the following tools available for machine alignment: Rectangular flat iron, sprit level and open-end wrench, AF 30.
- Open the protective doors on the front of the machine.

Depth alignment

- For depth alignment, place the spirit level on a pull rod of the cross sealing station (see arrows in illustration).

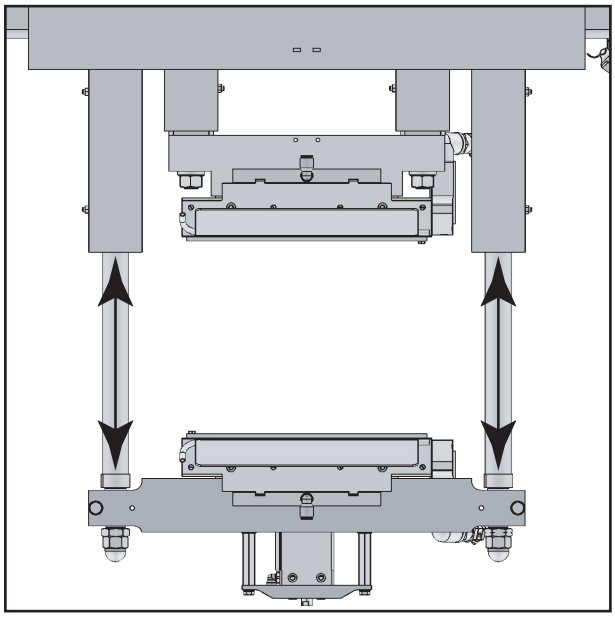


Fig. 1-16 Placement surface of the spirit level for vertical alignment

Horizontal alignment

- For horizontal alignment, place the flat iron and the spirit level on both pull rods of the cross sealing station at the front of the machine (see arrow in illustration).

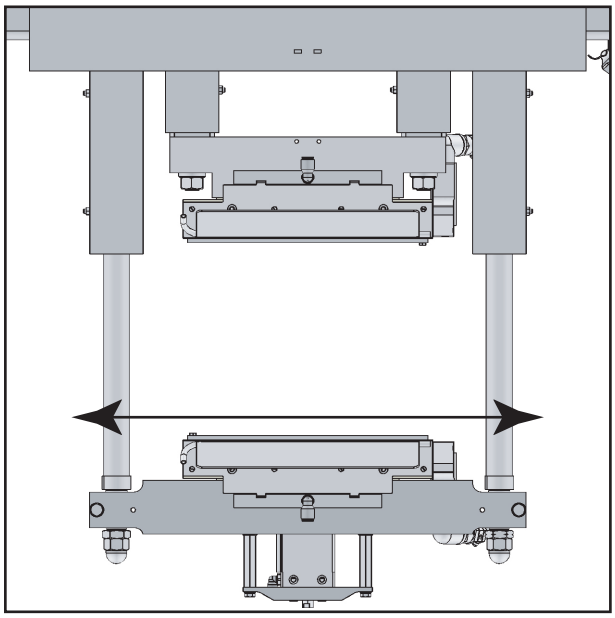


Fig. 1-17 Placement surface of the spirit level for horizontal alignment

Aligning the machine

- Align the machine using the adjustable feet (3).

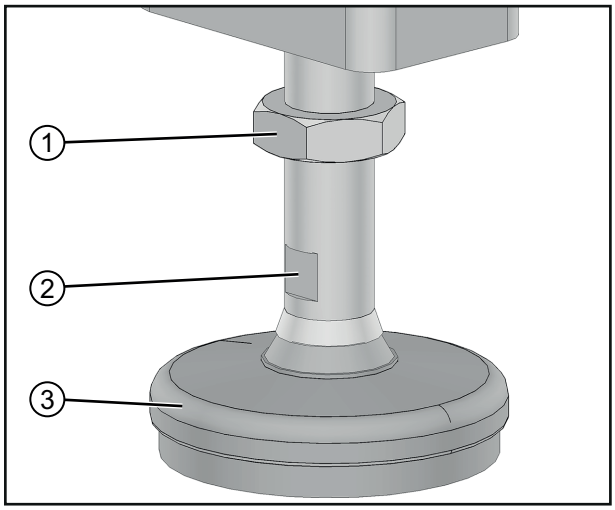


Fig. 1-18 Adjustable foot of the machine

- Unscrew the locknuts (1) on the adjustable feet.
- Place an open-end wrench on the flat area (2) of a foot and move the machine up or down by turning the hexagon. Observe the alignment in both horizontal directions.
- Repeat this setting with the other adjustable feet, until the machine is horizontal.
- After alignment, lock the adjustable feet in place with the nuts (1).

Connecting the machine

- Before connection tasks, turn the main switch to the OFF position!
- Connect the machine to the compressed air system (6 bar) (use ¾" compressed air hose; connection values must agree with the values specified in section ***1.6 - Technical data, Page 31***).
- Ensure that all hose connections are firmly seated and free of leaks.
- The connected electrical loads must agree with the power supply connection rating plate (see Fig below) on the control cabinet of the machine.

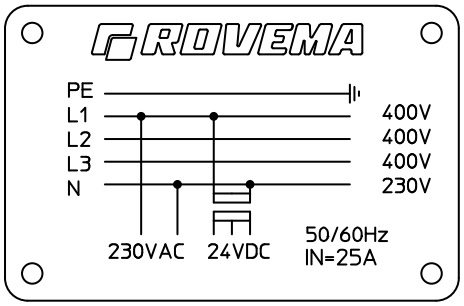


Fig. 1-19 Power supply rating plate (sample)

- See the electrical documentation of additional details (e.g. cable cross-sections, pre-fuses).

DANGER!

Danger of injury!

Life-threatening danger due to electric shock if tasks are executed improperly or if the connection is incorrect!

- ▶ Tasks on the electrical equipment of the machine must only be performed by specially trained specialized personnel!
- ▶ Do not make any changes to the electrical equipment that have not been previously approved by ROVEMA!

- Safeguard cable against damage.
- Connect the machine to the electrical network according to the rotating field.

NOTE!

Incorrect connection can result in malfunctions or damage!

Establishing the power supply

- Plug color-coded plugs into the prepared connection on the packaging machine control cabinet
- Plug in or remove plugs only when the machine is switched off, otherwise the frequency converter can be damaged.

1.8.1 Workflow

The path from flat packaging material to completely filled tubular bag

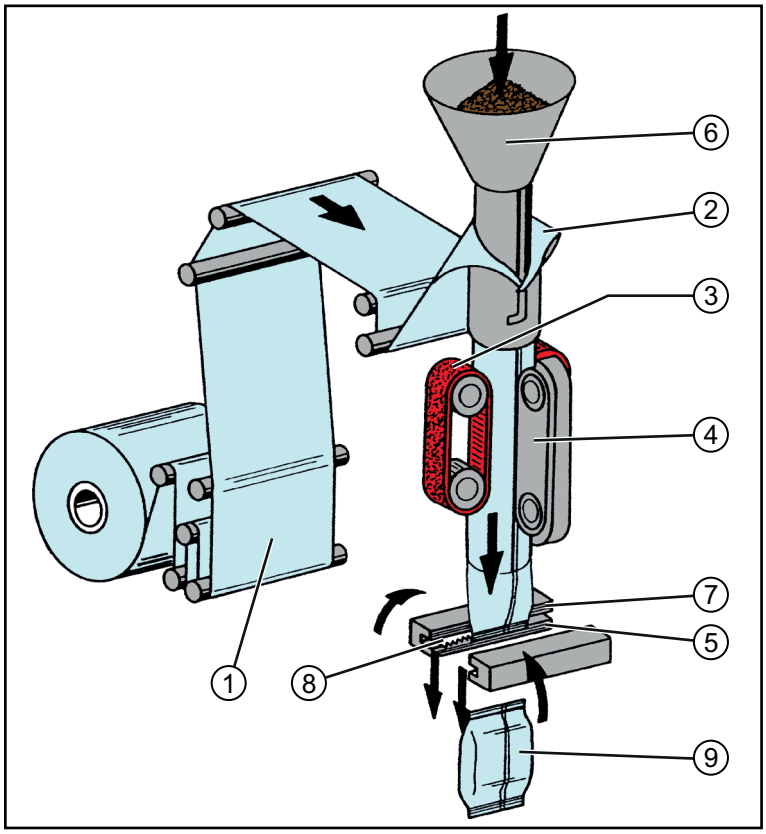


Fig. 1-20 Mode of operation of the form fill and seal machine

The packaging material web is guided to the forming collar via deflection and guide rollers (1).

The forming collar (2) forms the packaging material web into a tube.

The draw-down belts (3) draw the formed packaging material tube down on the filling tube.

The vertical sealing tool (4) seals the packaging material tube in the vertical direction.

The cross sealing tools (5) create the lower cross seal of the bag.

Product to be filled falls through the filling tube (6) into the bag.

The cross sealing tools (7) create the upper cross seal of the bag.

The cutting knife (8) cuts off the completed bags.

The finished bag (9) is transported away.

1.8.2 Intended use

The machine described in this operating manual is used to

- Produce tubular bags from a flat packaging material (film)
- Filling the bags with fill material that can be poured, that is flowable, lumpy or gaseous
- Sealing the bags by means of hot sealing or thermoplastic sealing.

This machine is technical equipment and must be used for industrial production only.

The machine is designed for operation by a single person.

The minimum age for the personnel operating the machine is 14 years.



⚠ WARNING!

Dangers due to improper use!

Every use in excess of the intended use and/or different use of the machine can lead to dangerous situations.

▶ Use the machine exclusively as intended.

▶ Refrain from any usage not according to the intended use.

Packaging of hazardous substances or substances that are hazardous to health, especially toxic, corrosive, slightly or highly flammable and explosive substances is not in accordance with the intended use, and is considered as non-intended use of the machine.

Operation of the machine in a potentially explosive area is not in accordance with the intended use, and is considered as non-intended use of the machine.

1.8.3 Definition of terms

Rovema largely follows the national and international standards in its use of technical terms in the technical documentation.

In addition, there are terms that are still in general usage and thus are not listed here.

This section explains terms that repeatedly occur in the various sections in this manual.

Packaging material Material (usually film) from which the packages (bags) are produced.

Packaged product The product filled into the packaging, which can be in the form of granulate, powder, pellets, high-viscosity liquids or low-viscosity liquids, and must be able to be poured.

Packaging Union of packaged product and packaging material.

Packaging types

With this vertical form fill and seal machine, various types of packaging can be created.

Pillow bags can be manufactured with the machine's base module.

With optional additional component other packaging types, such as gusseted bags, stand-up bags, and Stabilo Seal bags, can be produced.

Pillow bag

Pillow bags are sealed on the top seal and bottom sear. The most simple and most frequently produced packaging type.

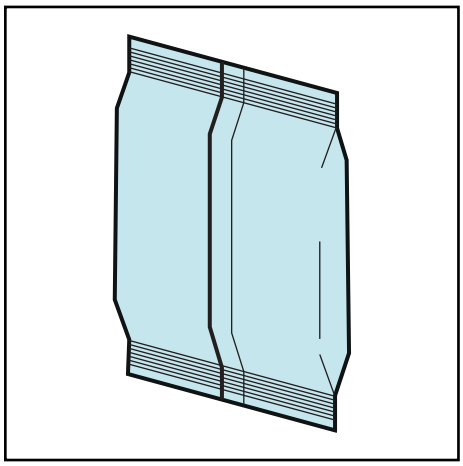


Fig. 1-21 Pillow bag

Gusseted bag

Gusseted bags are sealed at the top and bottom and the finished packaging is additionally formed using gusseting tools. Thanks to the gusset, the bag has a higher volume.

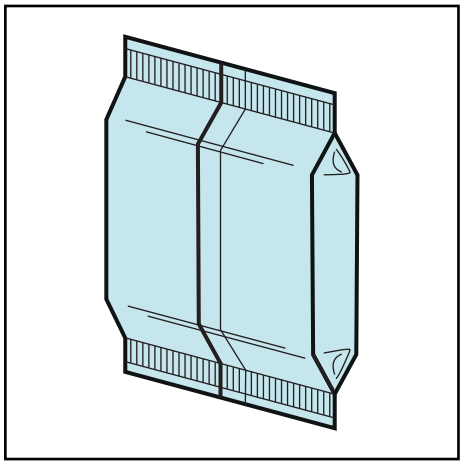


Fig. 1-22 Gusseted bag

Stand-up bag

Stand-up bags are sealed at the top and bottom. In addition, gussets are created and the bottom seal is shaped into a stand-up bottom using a bottom seal folder. The packaging is more stable and has large advertising surfaces.

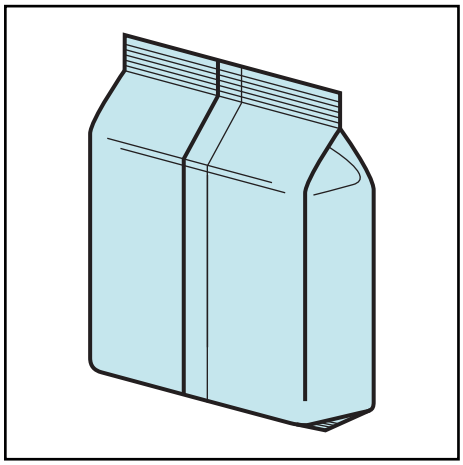


Fig. 1-23 Stand-up bag

Stabilo Seal bag

Stabilo Seal bags are sealed at the top and bottom. In addition, gussets are created and the bottom seal is shaped into a stand-up bottom. The gussets are additionally sealed to achieve a more stable form and an evenly shaped advertising surface. The Stabilo Seal bag was invented by ROVEMA GmbH.

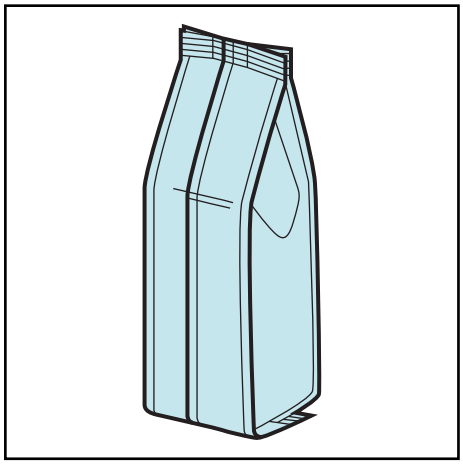


Fig. 1-24 Stabilo Seal bag

Filling

Conveying or dosing of the product into the packaging.

Forming

Creation of a package ready for filling, from a packaging material. Through the use of certain aids the packaging form (flat fold or side gusset) and the size (forming set) can be changed.

Hot sealing

Binding of coated packaging materials under the effect of a permanently heated jaw body with the parameters heat, pressure, and time. In this regard, the packaging material generally consists of a non-sealable carrier material (paper, aluminium or plastic) that is coated with a thermoplastic sealing medium.

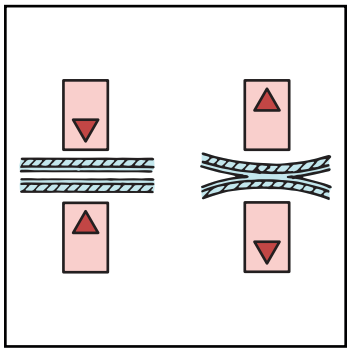


Fig. 1-25 Heat sealing process

Welding

Binding of mono-thermoplastic packaging materials under the effect of a pulse-heated (heat pulse welding) or permanently heated (permanently heated welding) jaw body with the parameters heat, pressure, time, and cooling. Here the packaging material consists of a carrier material-free monoplastic.

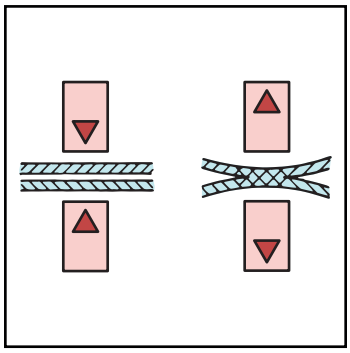


Fig. 1-26 Welding process

Machine area

A machine area is a part of an entire machine that fulfils a specific function (e.g. grouping, lidding unit, erection). Machine areas can contain separate drives, which are also controlled separately. Depending on the design, a machine area can also be a complete, functional individual machine within an entire machine.

1.8.4 Operating positions on the machine

Operating position

This is the operating position on the machine, where the operator normally is normally positioned to monitor the functions of the machine and ensure fault-free running.

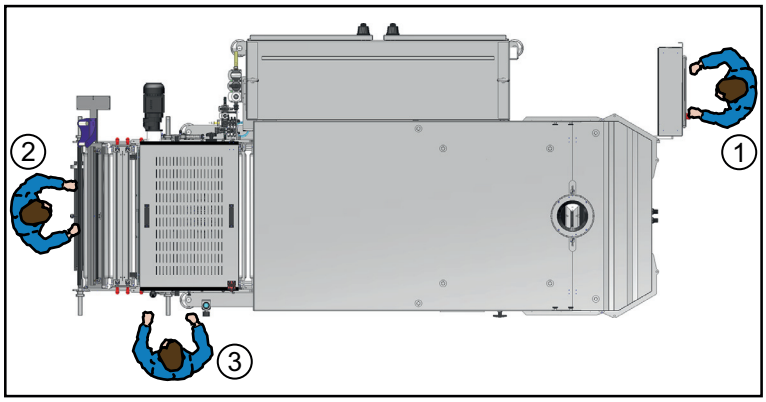


Fig. 1-27 Operating positions on the machine

In fault-free operation the operating positions are located at the following points on the machine:

- On the display (1) of the machine for monitoring the functions
- On the packaging material carriage (2) of the VP machine area for performing a reel change
- On the VP machine area's printer (3), to exchange consumables

In the event of a malfunction the operating position is at the point where the malfunction can be corrected without danger to the operator.

For maintenance and service tasks the operator can use the entire area around the machine.

Notes

Descriptions of individual functions 2

This part contains descriptions and depictions of individual machine functions.

Safety devices are used protect your personal safety and avoid health impairments! Therefore, knowledge of the following description is an absolute prerequisite for safe operation of the machine!

This section explains the location and mode of operation of the safety devices on the machine. If safety devices do not work as intended, you can perform a function check using this description.

Adjustments, repairs, and maintenance tasks on safety-related machine parts must only be performed by trained technicians. Have execution of such tasks confirmed in writing.

The precise number and location of safety devices depends on the respective design of the machine and the associated sources of danger.

2.1.1 Position of the safety devices

The following diagram shows the location of the safety devices.

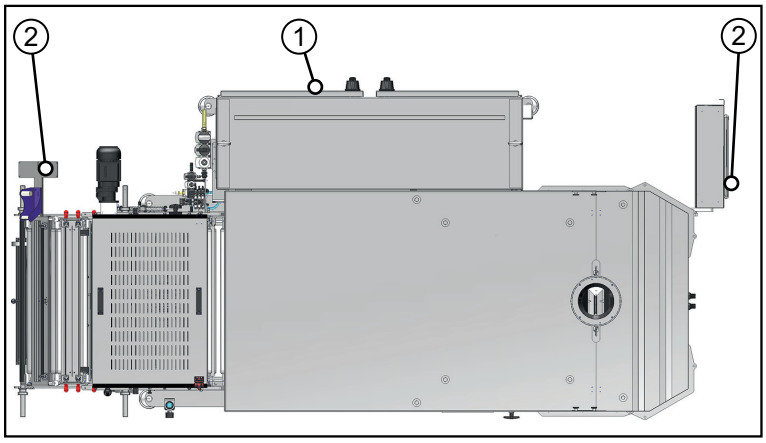


Fig. 2-1 Position of the safety devices

The main switch (1) is located on the control cabinet.

For information on the function of a main switch, please refer to the section ***2.1.5 - Main switch, Page 53***.

The Emergency Stop buttons (2) are located on the control panel under the display and on the packaging material carriage.

For information on the function of an EMERGENCY STOP switch, please refer to the section ***2.1.4 - Emergency stop button, Page 51***.

The front safety guards are secured with safety switches with a guard lock.

For information on the function of a safety switch, please refer to the section ***2.1.2 - Safety switch with "Allen Bradley" guard lock, Page 48***.

All other moveable safety devices of the machine are secured with safety switches.

For information on the function of a safety switch, please refer to the section ***2.1.3 - "Allen Bradley" safety switch, Page 49***.

2.1.2 Safety switch with "Allen Bradley" guard lock

Moveable safety devices on the machine, such as safety doors, safety hoods, etc., are secured by a safety switch with guard lock.

These safety switches reliably safeguard danger zones and with the aid of their safety guard locks, they ensure that protective devices cannot be opened when the machine is running, until the risk status has ended.

When the machine is ready for operation, the guard lock is locked. The protective device can no longer be opened. This lock will only be released when the safety controller releases the protective device.

A unit is formed from the safety switch and an actuator. The switch is attached either to the protective device or the machine frame; the actuator is attached to the protective device.

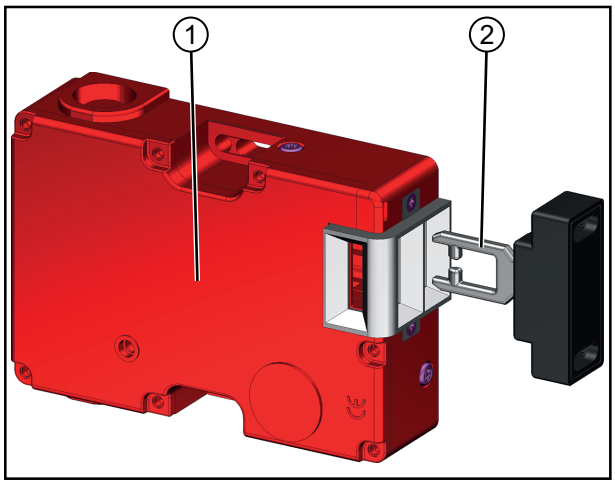


Fig. 2-2 Safety switch with guard lock "Allen Bradley"

1 Safety switch with guard lock
2 Actuator

As soon as both parts are securely interlocked, the secured area is notified to the safety control.

If a protective device is open, the machine is in a secure state.

NOTE!

All safety switches should be checked for proper functioning every day before starting production. For information about how to carry out a function check, see chapter ***2.1.2.1 - Function test of the safety switches, Page 49***.

Restart after a safety device has been activated

1. Remove residual product and packaging material from the machine.
2. Firstly, ensure that there are no people in the danger area of the machine.
3. Then, close all the safety guards of the machine.
4. Press the ***"Stand-by"*** button – the machine is switched to production readiness and the status display ***"Stand-by"*** appears.

5. Press the ***"Machine on"*** button - the drive axes of the machine then perform a reference movement; production then starts automatically and the status display ***"Machine running"*** appears.

2.1.2.1 Function test of the safety switches

Check the function of the safety switches **daily before start of production**.

Check for proper function as follows:

1. If the machine is still operating, switch the machine off by pressing the "Machine OFF" button in the display.
2. Open the protective device which has the safety switch you want to check.
3. Visually check the condition of the actuator, e.g. for bending or damage.

NOTE!

Damaged or bent actuators must be immediately replaced!

4. Close the protective device; when closing it, ensure that the actuator can slide into the safety contact on the switch with ease of movement.

NOTE!

Do not forcefully close or push shut the protective device with the attached actuator!

This can damage both the safety switch and the actuator.

5. If necessary, repeat the tasks described above to check other safety switches.
6. After closing all protective devices, press the "Standby" button; the guard locks on the safety switches will be locked.
7. Check whether a protective device can be opened:
   a) If no protective device can be opened, the safety control system is working properly.
   b) If a protective device can be opened, there is a fault in the corresponding safety switch. Check the switch for a possible defect. Replace defective parts immediately.

NOTE!

If a protective device can be opened after locking with the guard lock, there is a fault on the safety switch. In this case, the safety device must be checked!

The machine must not be operated again until all defects in the protective device have been rectified!

2.1.3 "Allen Bradley" safety switch

Moving safety devices on the machine, such as safety guards, safety hoods, etc., are secured by safety switches.

These switches consist of an actuator and a safety switch.

The safety switch and actuator work together so that the safety device is enabled only as long as the actuating element is within the trigger range of the switch.

If a safety device is opened, the machine is de-energized; the work cycle begun is interrupted.

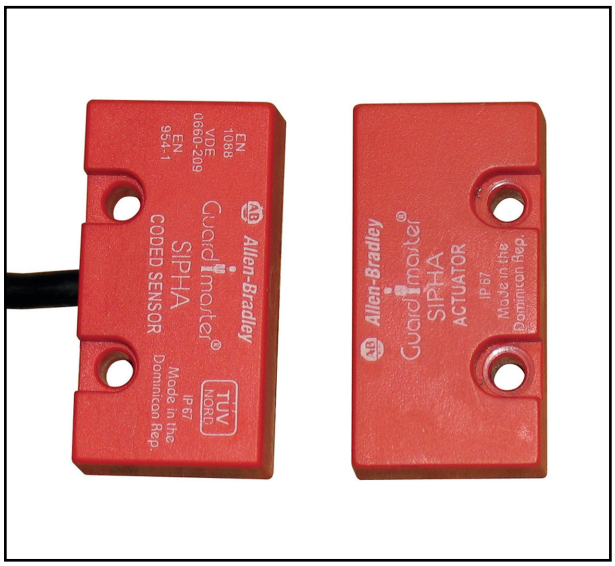


Fig. 2-3 Safety switch "Allen Bradley"

NOTE!

All safety switches should be checked for proper functioning every day before starting production. For information about how to carry out a function check, see chapter ***2.1.3.1 - Function test of the safety switches, Page 50***.

Restart after a safety device has been activated

1. Remove residual product and packaging material from the machine.
2. Firstly, ensure that there are no people in the danger area of the machine.
3. Then, close all the safety guards of the machine.
4. Press the ***"Stand-by"*** button – the machine is switched to production readiness and the status display ***"Stand-by"*** appears.
5. Press the ***"Machine on"*** button - the drive axes of the machine then perform a reference movement; production then starts automatically and the status display ***"Machine running"*** appears.

2.1.3.1 Function test of the safety switches

Check function of the safety switches **daily before start of production**.

Check for proper function as follows:

1. If the machine is not yet in operation, switch the machine on by pressing the "Machine ON" button in the display.
2. Open the safety fixture which has the safety switch you want to check:

a) If the machine switches off immediately after the safety fixture is opened, the safety control works properly.
b) If the machine does not shut down after the protective fixture is opened, there is a fault in the corresponding safety switch. Check the switch for a possible defect. Replace defective parts immediately!

NOTE!

If the machine does remain at a standstill when a safety device is opened, the safety device must be checked.

The machine must not be operated again until all defects in the protective device have been rectified!

2.1.4 Emergency stop button

In case of emergency, an emergency stop button is used to immediately terminate all dangerous movements.

Pressing the actuation element of the emergency stop button triggers an emergency stop.

The emergency stop button remains locked in the pressed position; it must be pulled out manually to unlock it before restarting. The emergency stop button may only be unlocked after the dangerous condition has been eliminated.

If necessary, also switch off the main switch to eliminate the danger!

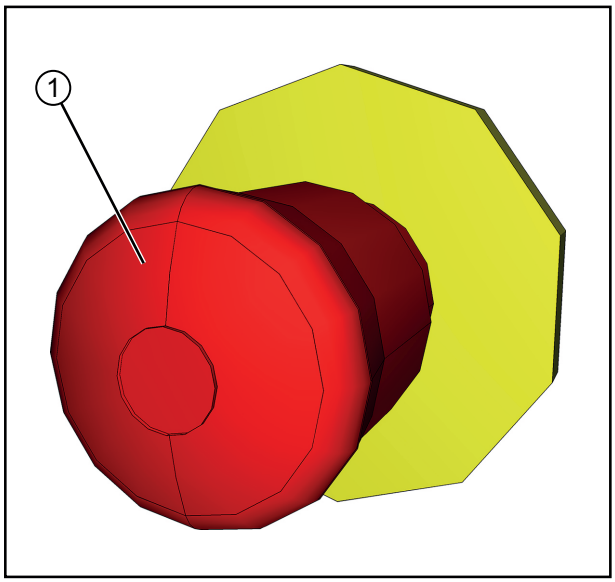


Fig. 2-4 Emergency stop button

1 Actuation element

NOTE!

All the emergency stop buttons should be checked for proper functioning every day before starting production. For information about how to carry out a function check, see chapter ***2.1.4.1 - Checking the function of the emergency stop buttons, Page 52***.

Lighting (optional)

A lamp is integrated into the centre of the activation element; this lamp clearly signals the position of the Emergency Stop button:

- Flashing light: Emergency stop button pressed.
- Steady light: Emergency stop button not pressed.

Restart after a safety device has been activated

1. Open the safety guards.
2. Remedy the emergency stop situation.



⚠ WARNING!

Danger of injury!

It may be that a dangerous situation caused the emergency stop to be triggered.

▶ Before switching the machine back on again after an emergency stop, ensure that the dangerous situation which caused the emergency stop to be triggered is eliminated.

3. Remove residual product and packaging material from the machine.
4. Firstly, ensure that there are no people in the danger area of the machine.
5. Then, close all the safety guards of the machine.
6. Unlock the emergency stop button.
7. Press the ***"Stand-by"*** button – the machine is switched to production readiness and the status display ***"Stand-by"*** appears.
8. Press the ***"Machine on"*** button - the drive axes of the machine then perform a reference movement; production then starts automatically and the status display ***"Machine running"*** appears.



NOTE!

Only use the emergency stop button in an emergency!

To save time and packaging material, switch the machine off with the ***"Machine OFF"*** button.

2.1.4.1 Checking the function of the emergency stop buttons

Check the function of the emergency stop buttons **daily before the start of production**.

Check for proper function as follows:

1. If the machine is not yet in operation, switch the machine on by pressing the "Machine ON" button in the display.
2. Press the emergency stop button for which you want to check the function:
   a) If the machine switches off immediately after the emergency stop button is pressed, the safety control works properly.

b) If the machine does not shut down after the emergency stop button is pressed, there is a fault in the respective emergency stop button. Check the button for a possible defect. Replace defective parts immediately!

NOTE!

If the machine does not come to a stop when an emergency stop button is pressed, the safety device must be checked.

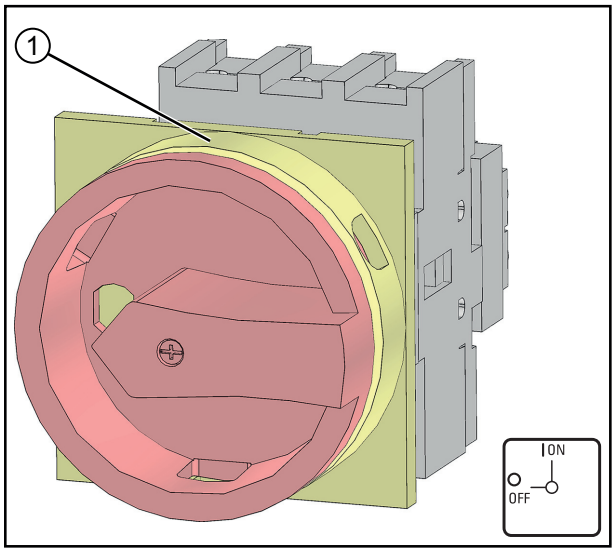
The machine must not be operated again until all defects in the protective device have been rectified!

2.1.5 Main switch

The main switch de-energizes all drives and units.

In this case, operating voltage then runs only to

- The covered main terminals
- The main switch terminals and also
- The connections marked with warning signs



1 Main switch

Move the switch to the "I" or ON position to supply electrical power to the machine.

Move the switch to the "O" or OFF position to de-energize the machine.

Safeguarding the main switch

The main switch can be secured with a padlock in the "O"/OFF position to protect against switch-on.

The high-performance software used by ROVEMA in this packaging machine is for control of the complex processes in a packaging process.

The screen forms the central operating unit and is used to display all the operating parameters and information for this packaging machine.

With this system, you operate the machine while the machine is running. The most important features of this system include:

- Display of machine conditions
- Production data input possibility
- Storage of recipes
- Movement of individual machine drives
- Switching individual machine functions on and off



NOTE!

To protect against incorrect operation, some operating areas are secured through passwords (password level).

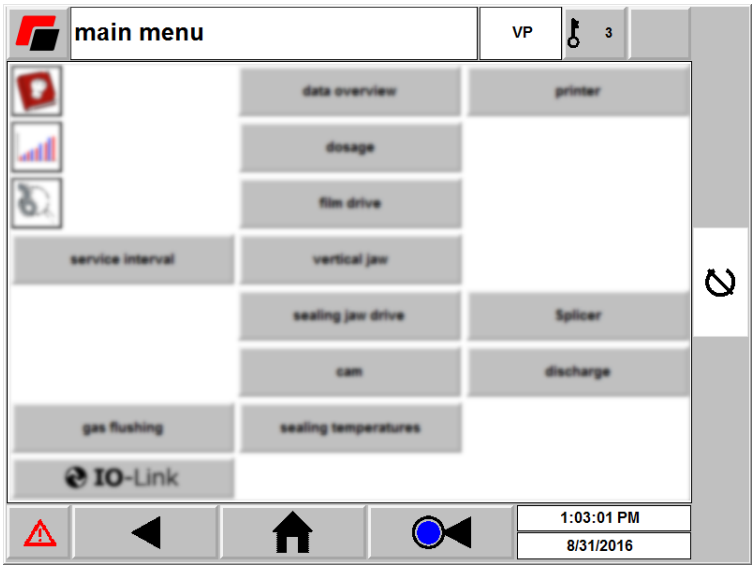
The following description contains the following information concerning:

- The areas of the screens
- The keyboards
- The password key
- The alarm memory
- The machine data/machine parameters
- The system settings

2.2.1 The user interface

2.2.1.1 Overview

The user interface is divided into two areas:



- The inner area contains display and operating elements that are typical for the respective selected menu.
- On the outer edge of the screen there are menu bars with displays and key fields that are the same in all screens. With these displays and keypads you can access the most important commands and menus at any time. In some cases displays and keys are combined.

2.2.1.2 The menu bars on the outer edge of the screen

2.2.1.2.1 The header

The **header** on the top edge of the screen contains the following elements:



Fig. 2-5 Elements in the header

- The Rovema logo  , behind which different system settings are located, e.g. an option for selecting the language(s) in which the display should be depicted (see Chapter *2.2.3 - The System menu, Page 60*).
- The name of the currently selected menu.
- The machine area display, if the machine consists of several areas that must be operated separately.

- the password key, which allows a user to go from any submenu to the ***PASSWORD*** menu (see Chapter *2.2.4 - The password key, Page 63*). The password level that is active at that time is also displayed here.

2.2.1.2.2 The control panel

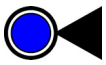
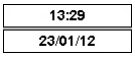
The **control panel** on the right edge of the screen contains the following elements:

	"Machine On" button: Production is started with the aid of this button.
	***"Stand-by"*** button with status display: This button establishes the standby status of the machine. If an error message has been displayed, after rectifying the error, this button must be pressed first. Activation acknowledges all malfunctions and puts the machine in stand-by if there are no other errors that can trigger a machine halt. At the same time, the current status of the machine is displayed through an appropriate symbol on the button. ***"No stand-by"*** status display: If the machine is not in standby (e.g. due to a queued fault), this is indicated by a crossed-out open circle.
	***"Stand-by"*** status display: Machine standby status present when an open circle is displayed. The machine can be started with the ***"Machine On"*** button only from this status.
	***"Machine running"*** status display: This symbol is displayed when the machine is running in fault operation.
	***"Please wait"*** status display: This symbol is displayed when various processes that do not permit data entry are running in the background.
	***"Machine off"*** button: This button is used to switch off production.

Tab. 2-1 Elements of the operator panel

2.2.1.2.3 The footer

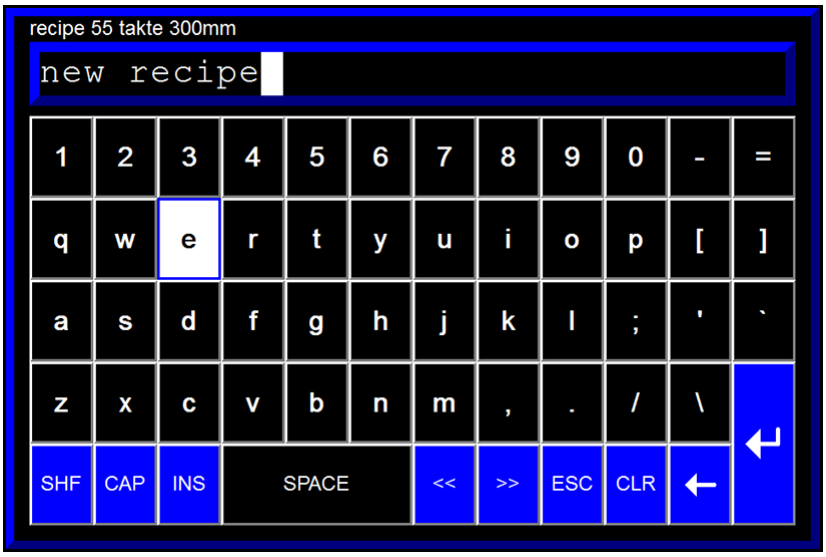
In the **lower** menu bar, you will find the following areas:

	Button ***"Go the alarm memory"***: The alarm memory is called up when this button is activated. This memory contains a list of the alarm messages that have most recently occurred (see Chapter ***2.2.9 - The alarm memory, Page 71***). Display ***"Alarm status"***: The colour of the "Attention" symbol shown on the button indicates whether there is another alarm message in the queue or not. A red symbol indicates a fault is present that has not yet been acknowledged. If no message is currently queued, the symbol is shown in black (see Chapter ***2.2.8 - The alarm messages, Page 69***).
	Button ***"One screen back"***: With this button you go to the last screen displayed.
	Button ***"Back to the main menu"***: With this button you go back to the main menu of the machine from any submenu.
	Button ***"Back to the Start screen switch"***: With this button you go to the switch menu of the Start screen (see Chapter ***2.2.5 - The Switch menu, Page 66***).
	Display of date and time.

Tab. 2-2 Elements in the footer

2.2.2 Value entry

2.2.2.1 The alphanumeric keyboard

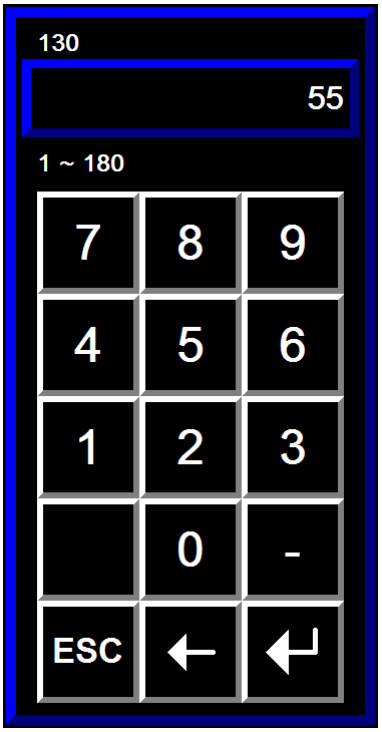


With the alphanumeric keyboard, you can enter letters, numbers and special characters when saving a recipe name. It appears automatically on the screen when needed by a menu for input.

The keyboard is used like a computer keyboard. It contains the following elements:

- Display of the current entry
- Keys for letters and numbers
- The ***shift key (SHF)*** which allows the user to write in capitals when it is held down.
- The ***Caps Lock key (CAP)*** which allows the user to write continuously in capitals when it is held down.
- The ***Insert key (INS)*** which allows users to change from overwrite mode to insert mode and vice versa when it is pressed. In this mode all characters inserted into the text do not overwrite the subsequent characters, but rather displace them.
- The ***Space key (SPACE)*** for entering a blank space
- The ***arrow keys*** to navigate the cursor in the display field
- The ***Cancel key (ESC)*** to exit the keyboard; the previously set values remain valid.
- The ***Delete key (CLR)*** to delete all characters entered; back to the previously shown screen display
- The ***Backspace key*** to delete the last character entered.
- The ***Enter key*** to exit the keyboard; the set value is applied and is immediately valid.

2.2.2.2 The numeric keyboard



With the numeric keyboard, you enter only numbers for parameterizing various machine functions. It appears automatically on the screen when a user action makes entry of a numeric value necessary (value entry, access authorization, etc.).

The keyboard contains the following elements:

- Display of the current entry
- Display of the maximum permissible value
- Display of the minimum permissible value
- Keys for entry of numbers
- the ***Cancel key (ESC)*** to return from the keyboard to the screen display, as depicted during entry in the numeric keypad; the previously set values are not changed and remain valid.
- The ***Backspace key*** to delete the last character entered.
- The ***Enter key*** to exit the keyboard; the set value is applied and is immediately valid.

NOTE!

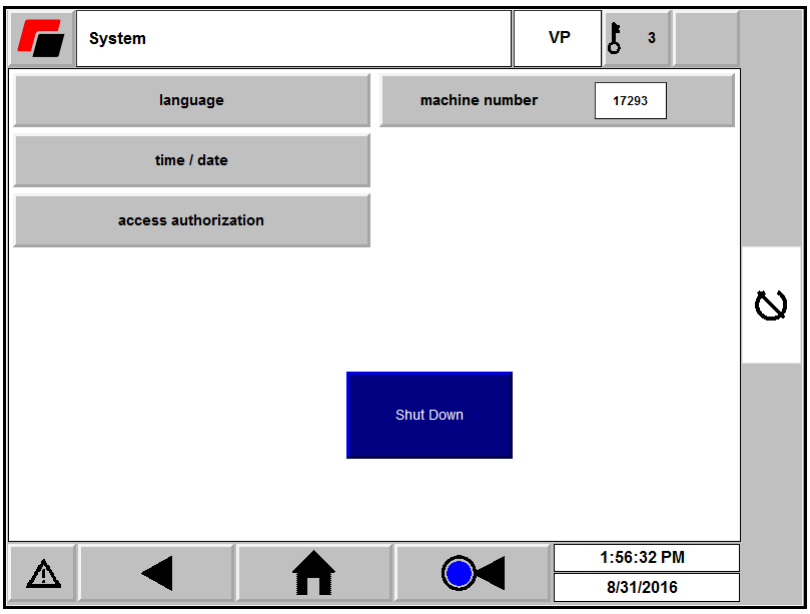
Please note that entries outside the displayed limits are not permitted and will not be accepted.

2.2.3 The System menu

General information

You will find important settings for the overall system under the ROVEMA logo on the upper menu bar.

Press the Rovema logo and the following system menu selection is displayed:



Change screen *LANGUAGE*

This takes you to the ***LANGUAGE*** screen. Use this menu to select the language in which the menu items are shown on the screen.

Change screen *TIME / DATE*

This takes you to the ***TIME / DATE*** screen. The system time and date can be set in this menu.

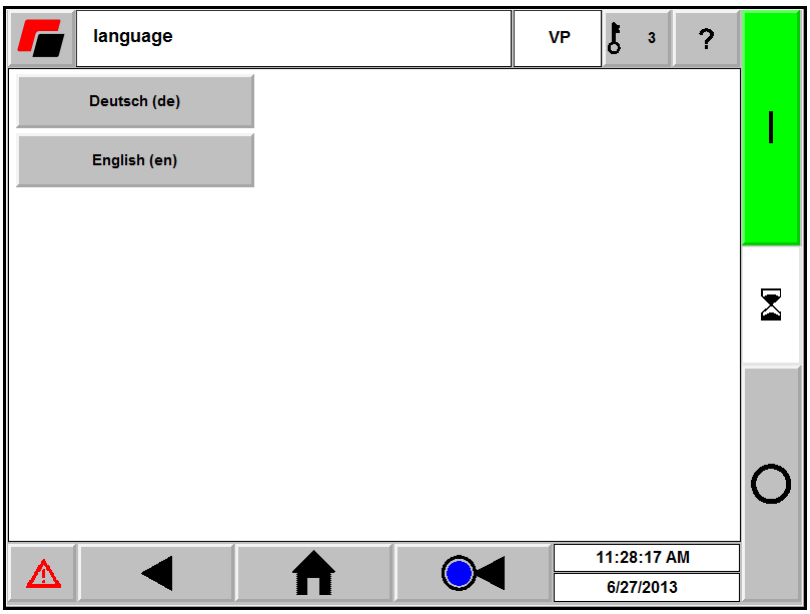
Change screen *ACCESS RIGHTS*

This takes you to the ***ACCESS RIGHTS*** screen. Setting and administration of access authorization (passwords) is performed in this menu.

Machine number

The ROVEMA machine number is displayed here.

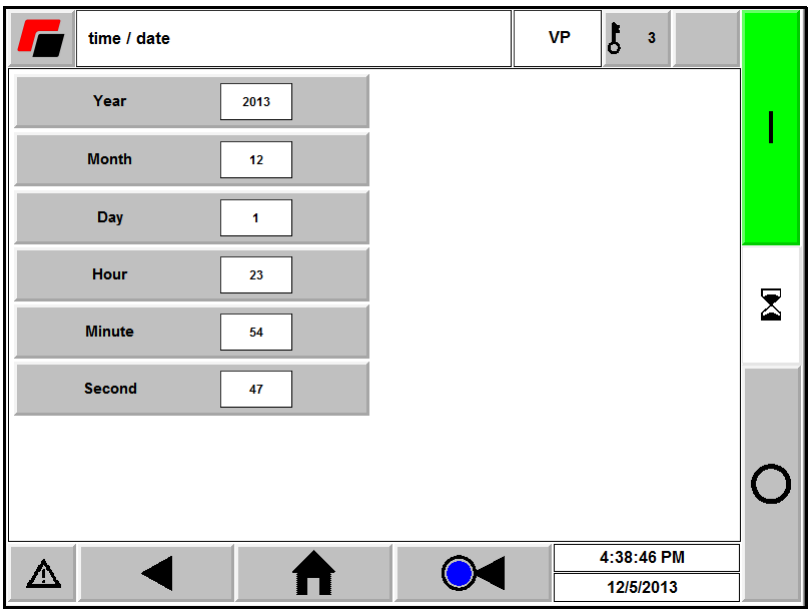
2.2.3.1 "Language" system menu



Selection switch "Screen language"

Use this switch to select the language in which the menu items are shown on the screen. The change takes place immediately after the selection switch is used.

2.2.3.2 "Time/Date" system menu



Year

Input of a 4-digit year number that will be applied in the current system date.

Month

Input of a calendar month that will be applied in the current system date. The month name is indicated numerically.

Day

Input of a calendar day that will be applied in the current system date. The calendar day is indicated numerically.

Hour

Hour setting as part of the system time.

Minute

Minute setting as part of the system time.

Second

Second setting as part of the system time.

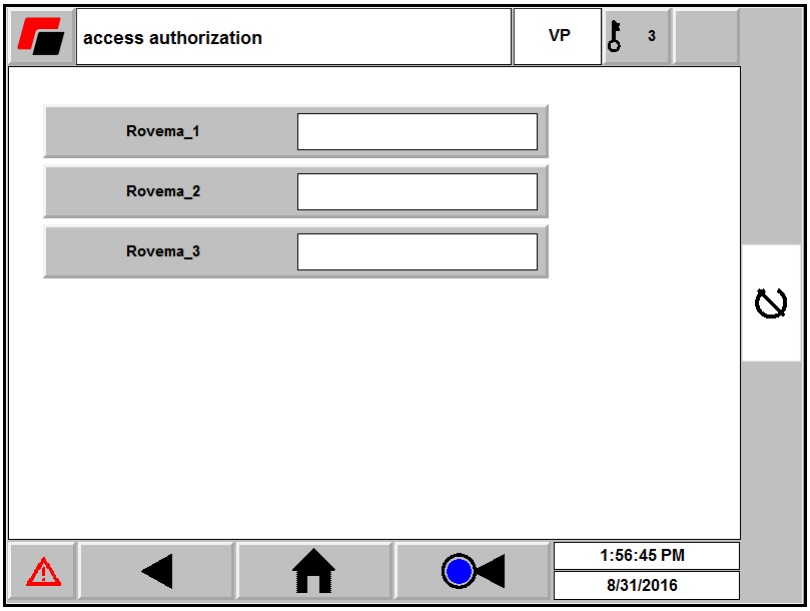
2.2.3.3 "Access rights" system menu

Access rights are administered in this menu.



NOTE!

To be able to open the screen the password for access level "3" is required, as the passwords themselves can be viewed and changed here.



Rovema_1

A password for access level 1 is defined here. The currently valid password is shown.

Rovema_2

A password for access level 2 is defined here. The currently valid password is shown.

Rovema_3

A password for access level 3 is defined here. The currently valid password is shown.

2.2.4 The password key

Password protection

Some items on the user interface are protected by a password from unauthorized access. The protection is scaled in different levels of access. Each level of access has been assigned a pre-determined section of the user interface with the relevant functions. In order to gain access to this content, the machine operator must obtain authorization in the **Password** menu by entering a password for the relevant level.

NOTE!

The passwords set by ROVEMA at the factory are shown on the last page of this user manual; after referring to this page, you should keep it separate from the manual to prevent access by unauthorized persons.

Access levels

There are four different access levels, three of which are granted only by entering the corresponding password. The higher access levels include the lower access levels.

Level "0", without password

Access to all operating and switch menus; reading of the settings; input of the basic parameters in the data overview; no password required.

Level "1" (operator), password-protected

Loading recipes, changing all setting parameters and switch settings in the operating, switch and jog menus.

Level "2" (setup person), password-protected

Loading, saving and deleting recipes; viewing the configuration data.

Level "3" (foreman), password-protected

Change the configuration data in the service menu.

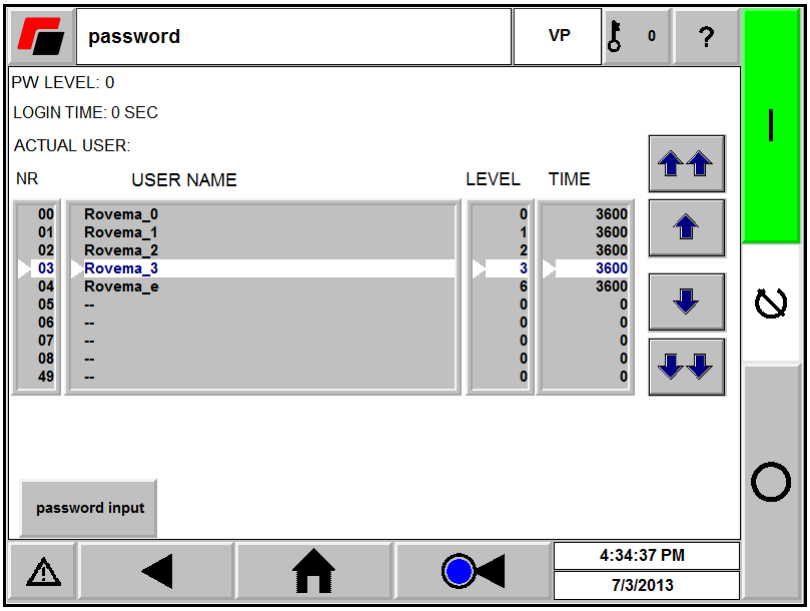
The access authorization

remains valid until

- it is deleted when the operator logs off.
- the period of validity of the password has expired (see: Password expiration).

Password entry

Press the key button in the upper menu bar of the display to switch to the ***PASSWORD*** menu:



The menu items and their meaning:

Display "PW Level“

Display the current access level.

Display "Login time"

Display the time remaining until access authorization for the currently valid access level is automatically reset. This period begins to time out as soon as someone has obtained authorization for an access level with a password.

Display "Actual User"

Displays the user who currently has access to the system.

Display "User name" / "level"

List of all the users who are authorized to access the system. The height of the access level is shown in the "Level" field.

Display "Time"

Display the total time that a password for an access level is valid. After this time expires, the currently valid access level is automatically set to "0". Additional entries requiring a higher access level can then only be made once a password has been entered again.

"Password Entry" button

Button used to enable an access level.

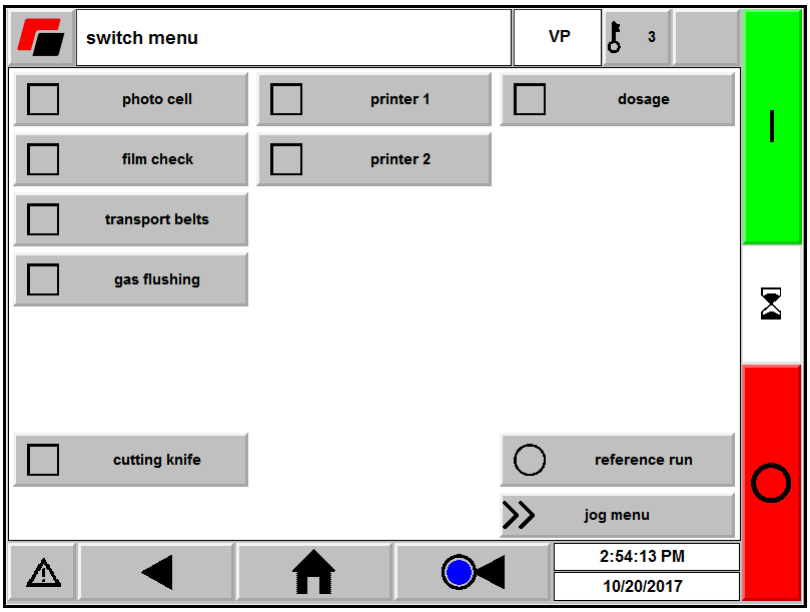
Enable an access level as follows:

- Select a user from the list of all available users.
- Press the button ***"Password Entry"*** An alphanumeric keyboard appears on the screen.
- Provide evidence of the access authorization by entering the password.
- Complete the entry by pressing the Enter button; the keyboard is closed and the access level enabled.

"Log off" button

Button used to reset the currently enabled access level.

2.2.5 The Switch menu



General information

Press the ***"Switch" button*** on the outer menu bar to go to the

- Switch menu of the machine (for individual machines).
- A switch menu overview that is organized according to machine areas (for machines with multiple areas). Selecting a machine area in this overview then takes you to the Switch menu of the area concerned.

Structure

The Switch menu contains:

- **Switch** for switching machine functions on and off.

The function is switched on and off by pressing the corresponding switch field (rectangular). After it is switched on, the button is color-coded.

NOTE!

If a machine function is switched on or off in the "Switch" menu, the switch also changes for this function in the corresponding entry menu!

- **Jog buttons** for triggering certain functions and movements of individual drives in the machine. The jog buttons are used, for example, when setting up the machine or checking settings.

The function or movement is triggered by pressing the corresponding touch field (round) on the touchscreen. Motor drives normally run throughout the entire time that the button is being pressed. Pneumatic functions are triggered once.

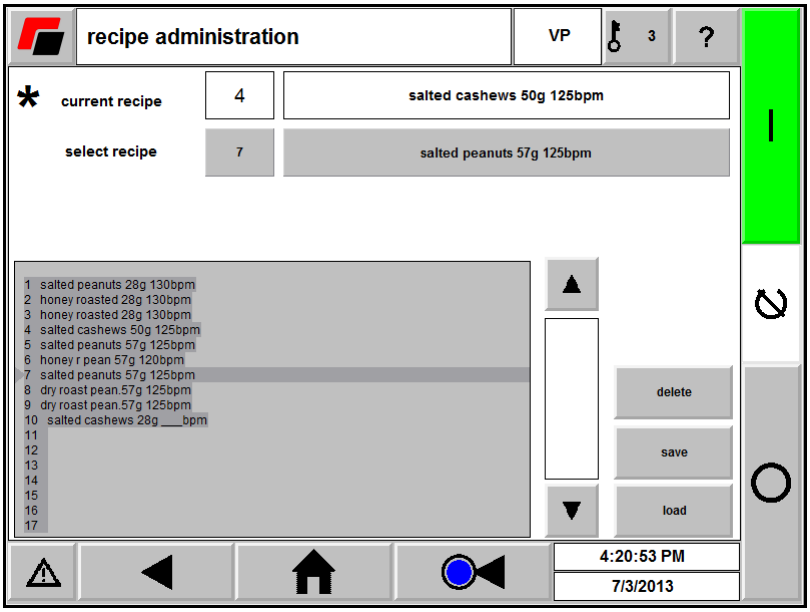
2.2.6 Recipe administration

This menu permits loading, saving and deleting of recipes.

The recipes each contain a complete machine data record, allowing product-specific machine data to be permanently saved and retrieved again at any time.

For easy identification, each recipe has a designation that the used can assign freely using the on-screen keyboard.

In the standard version, a maximum of 100 recipes can be saved.



Recipe administration contains the following elements:



The ***Up arrow button***, for scrolling upwards in the recipe list.

The ***Down arrow button***, for scrolling downwards in the recipe list.

The ***Delete button***, for deleting recipes.

The ***Save button***, for saving recipes.

The ***Load button***, for loading recipes.

NOTE!

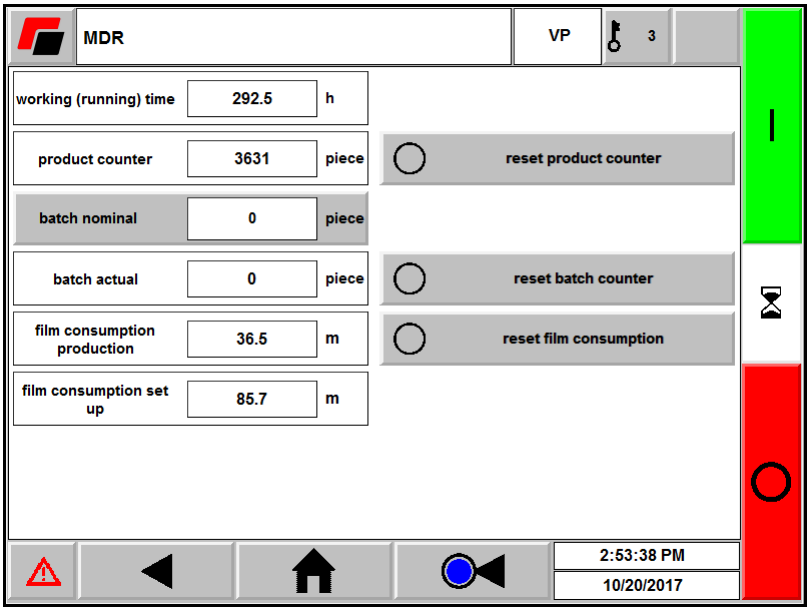
A flag preceding the current recipe shows whether the recipe has been changed since the last save (*) or if it is still the same ( ).

2.2.7 Machine data recording MDR

Activate the menu selection button  in the machine's main menu.

By doing so, you go the MDR - (**M**achine-**D**ata **R**ecording) menu.

The operator of the machine has the option of entering or reading off production-specific machine data using this menu.



operating hours

This menu item serves to display the operating time of the machine in hours.

product counter

This menu item displays the quantity of all of the filled packages produced with this machine so far.

Batch nominal/actual

These two menu items are directly linked with each other.

The menu item **"Batch nominal"** can be used to specify the quantity of product to be produced, e.g. during a product or format change.

The menu item **"Batch actual"** can be used to display the products still to be produced within this batch.

At the beginning of a batch, the value specified under "Batch nominal" is adopted first and the display counts down as production progresses. Once the desired quantity is reached, the message "Batch reached" appears on the display, and production is interrupted.

The charge counter is switched off by entering the value 0 under **"Batch nominal"**.

Film consumption during production (optional)

The quantity of packaging material consumed during a normal production run, i.e. when manufacturing filled bags, is displayed here (in meters).

Film consumption in setup mode (optional)

The quantity of packaging material consumed during the machine's setup or jog mode, i.e. when the machine is running without product, is displayed here (in meters).

"Reset" buttons

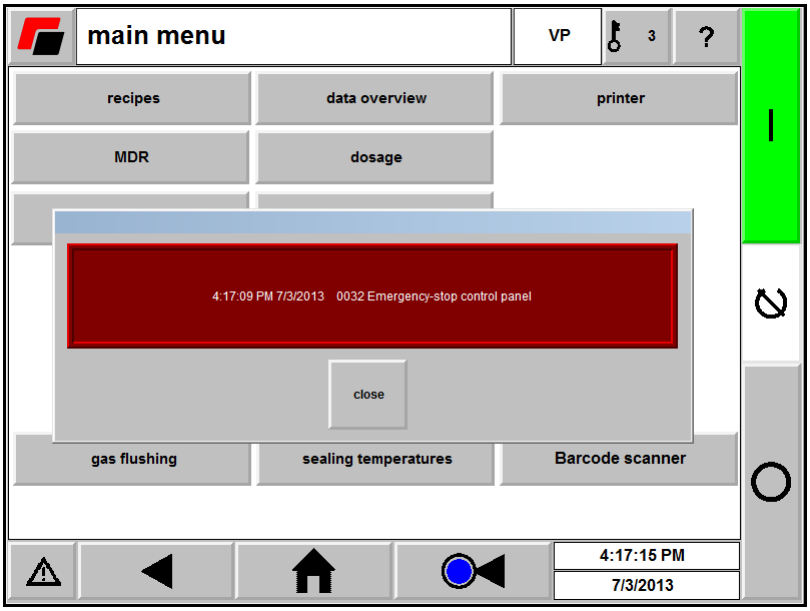
The individual counters are reset with these buttons

2.2.8 The alarm messages

The **errors** occurring during operation of the machine are displayed as a plain text **error message** on the touchscreen in a window.

Alarm banner

The display occurs immediately after an error occurs.



The structure of the alarm banner

Column Event Time: Start of error (date and time)

Column Message: Error message in plain text

Change of color of the key to go to the alarm memory

At the same time as the alarm banner appears, the button for changing to the alarm memory on the lower left menu bar signals that an error is in the queue. The button changes colour and starts flashing.



(Display colour "**black**":

There is no alarm message



(Display colour "**red**":

There is an alarm message

If an error has occurred,

proceed as follows:

- Rectify the error.
- Acknowledge the error with the ***"Standby"*** button if the alarm was not automatically acknowledged.
- Close the alarm banner with the ***"Close window"*** button.
- The alarm memory button changes its colour to normal mode (black)

2.2.9 The alarm memory

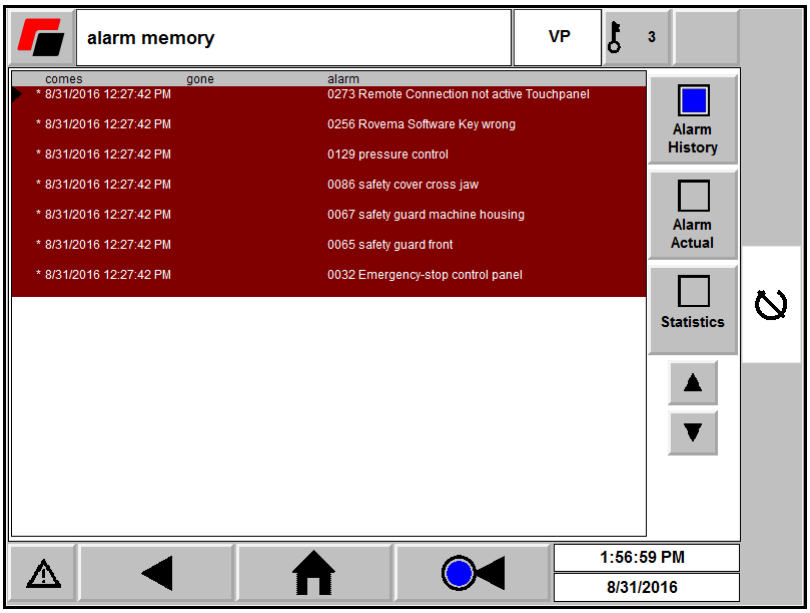
General information

All error messages displayed are stored in an alarm memory.

Go to the alarm memory be pressing the ***Alarm memory button*** Via the Alarm memory button, which takes the form of a "Caution" symbol on the outer menu bar at the bottom.

The contents of the alarm memory can be viewed but not deleted during operation. In certain cases, this makes it easier to trace an error following a machine fault.

Only when the machine has been switched off and then back on via the main switch can all error messages be deleted from the alarm memory.



Structure of the display

The structure of the error memory on the screen shown above:

Column **Incoming**: Start of the error (time)

Column **Outgoing**: End of the error (time)

Column **Alarm**: Error message in plain text

Use the **Up/Down arrow buttons** to scroll through the alarm memory in single steps.

NOTE!

A flag preceding the current recipe shows whether the error message has not yet been corrected (*) or has already been corrected ( ).

Selector switch "Alarm History"

Selector switch for filtering the displayed contents of this menu:

All errors that have occurred are displayed.

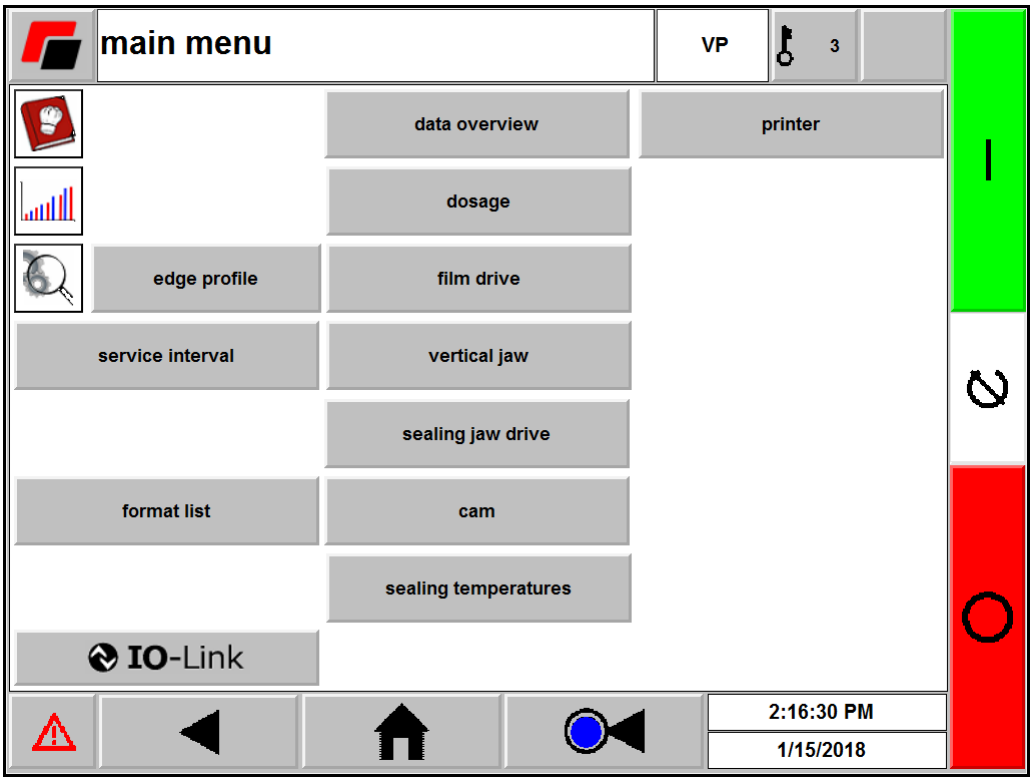
Selector switch "Alarm Current"

Selector switch for filtering the displayed contents of this menu:
The errors that are currently still active are displayed.

Selector switch "Statistics"

Selector switch for filtering the displayed contents of this menu:
All errors are displayed according to their frequency and duration.

2.2.10 VP main menu



In the VP machine subarea, you will find all the menus necessary for setting the functions of the form fill and seal machine.

Some menus branch to additional submenus. Additional settings may be necessary there.

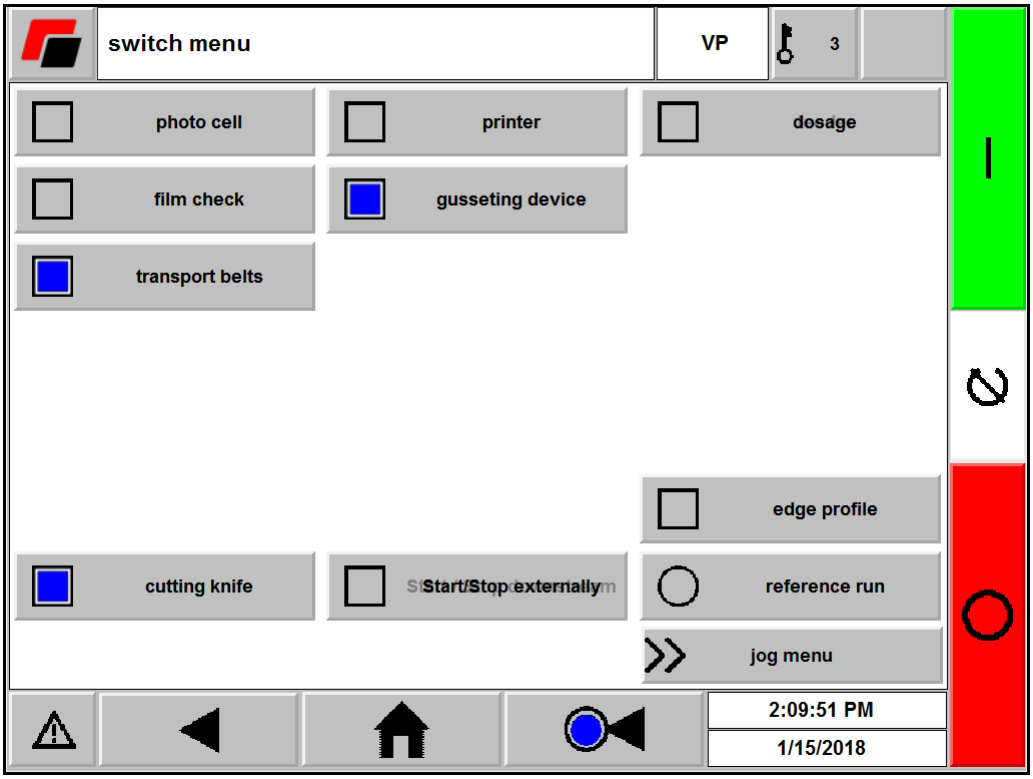
NOTE!

None of the on-screen settings and values shown in this operating manual are binding values. They are merely intended as explanatory aids. Binding values for production must be ascertained by the owner and entered.

Some menu items cannot be modified by you as they are for information purposes only.

The following always applies for all settings in these menus: Only trained personnel are allowed to make settings!

2.2.11 VP switch menu



“Photo cell” switch

This switch activates and deactivates the photo cell.

“film check” switch

This switch switches the packaging material edge control function on or off.

"transport belts" switch

This switch switches the film drive and the pneumatic drive on the draw-down device on or off.

The film drive turns the draw-down belts which pull the packaging material on the format tube downward. Using the pneumatic drive, the draw-down belts are placed on the filling tube or lift them away from the filling tube.



⚠ CAUTION!

Danger of crushing!

There is danger of crushing in the area between draw-down belts, draw-down device and filling tube when the draw-down belts are applied to the filling tube!

▶ Never reach into the crushing danger zone between draw-down belt and filling tube, as long as parts can move there.

“cutting knife” switch

This switch activates or deactivates the cutting knife.

⚠ WARNING!

Danger of cutting injuries from the pneumatically-actuated cutting knife in the cross sealing station!

There is a greater risk of injury from the sharp knife blade.

▶ Protect yourself from cutting injuries by wearing suitable safety gloves.

"Printer" switch

This switch switches the function of the printer on or off.

"Gusseting finger" switch

This switch activates and deactivates the function of the gusseting device.

"Start/Stop externally" switch

The starting and stopping of the machine by a signal from an upstream or downstream system (e.g. a final packaging plant) is switched on or off with this switch.

If the switch is on, then the machine will not start until the corresponding signal from the upstream or downstream system has been received. If the switch is on while the machine is already switched on and in operation, then the machine stops and needs to be switched back on.

If the switch is off, then the signal from the upstream or downstream system is ignored and the machine can be switched on independent of the upstream or downstream system. If the switch is off while the machine is already switched on and in operation, then the machine stops and needs to be switched back on.

“dosage” switch

This switch switches the function of the dosing unit on or off.

"single step dosage" button

Button for triggering a cycle of the dosing unit.

“Edge profile” switch

This switch switches the function of the Stabilo Seal hot sealing unit on or off.

"Reference run" button

Button to trigger a reference run of the film drive.

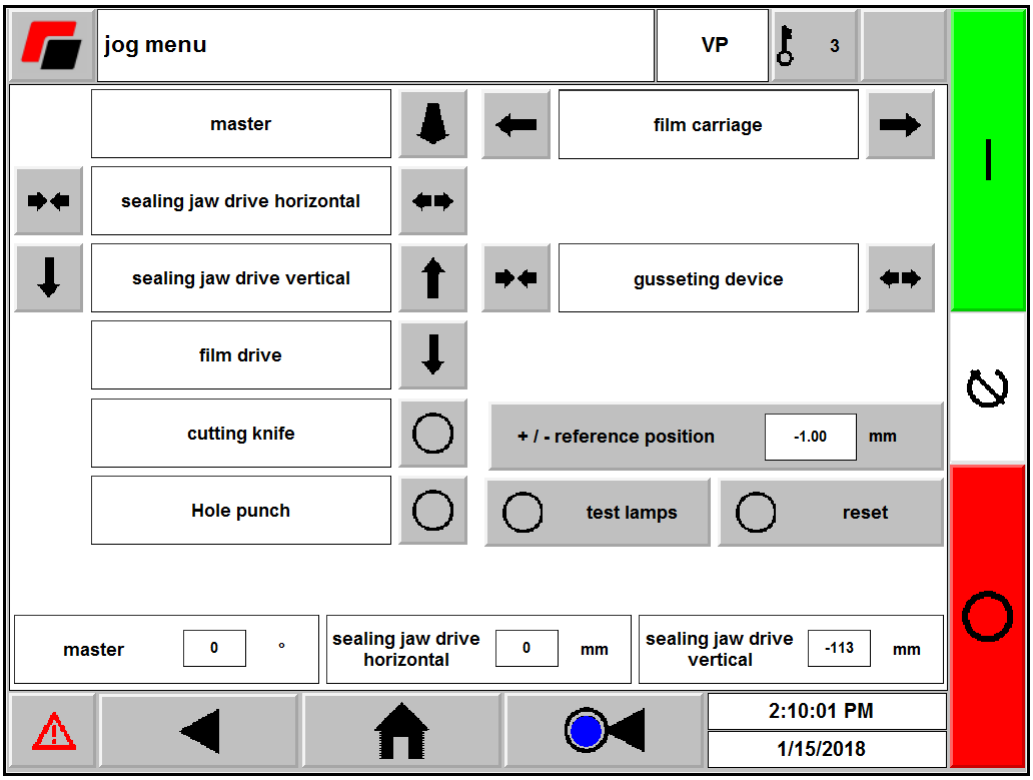
Change screen to *JOG MENU*

This causes a change-over to the Jog menu for this machine area.

2.2.11.1 VP jog menu

This menu contains all the machine functions of a part machine area that can be moved in jog mode.

Notes on how jog mode operates can be found in section ***3.5 - Jog mode, Page 271***.



"Master" button

Activating this button moves all the axes connected to the master axis.

"Sealing jaw drive horizontal" buttons

As long as button is depressed, the entire jaw assembly moves. Depending on the direction of movement selected for the material, the jaws will either open or close during this motion.

"Sealing jaw drive vertical" buttons

As long as a button is depressed, the entire jaw assembly moves up and down in the vertical direction.

“film drive” button

The film drive is activated. The draw-down belts draw down the packaging material via the filling tube.

This motion can only be carried out in the one direction (draw-down).

⚠ CAUTION!

Danger of injury!

There is danger of burns and abrasion on the skin due to the friction of the skin with the rotating draw-down belts of the draw-down device.

▶ Never touch the draw-down belts during operation.

“cutting knife” button

This function extends and retracts the cutting knife on the cross jaws.

⚠ WARNING!

Danger of cutting injuries from the pneumatically-actuated cutting knife in the cross sealing station!

If the protective doors are opened after extending the cutting knife, the cutting knife will be located outside the cross jaw. There is a greater risk of injury from the sharp knife blade.

▶ Protect yourself from cutting injuries by wearing suitable safety gloves.

"Edge profile" button

This button activates the sealing jaws of the Stabilo Seal hot sealing unit.



⚠ WARNING!

Danger of burns due to hot surfaces!

The Stabilo Seal hot sealing unit is operated with sealing jaws, whose surfaces are very hot under operating conditions. Touching these hot jaws can lead to serious burns.

▶ Maintain a sufficient distance from these hot surfaces of the station during machine operation.

▶ Switch off the corresponding heaters before working on the station and let the station cool down until it is possible to work safely.

▶ When working on the hot station, wear suitable safety gloves to protect against the heat.

"film carriage" buttons

The complete package material carriage is moved to the left or right with the aid of the package material carrier cross adjuster.

"Gusseting finger" buttons

The gusseting fingers on the gusseting device are moved together or apart.

"Test lamps" button

This button can be used to test lamps fitted on the machine (e.g. signal lights).

"reset VP" button

This pushbutton resets all the functions on the VP machine section, back to a defined state. This pushbutton should be pressed if the machine will not start or if it is no longer running properly.

All reset functions can only be executed when the safety circuit is open (EMERGENCY STOP, open safety guard).

"master" value display

The current position of the drive axis is read by a sensor system and displayed by the control as the actual position. This value can be used as an aid when determining setting values.

"Sealing jaw drive horizontal" value display

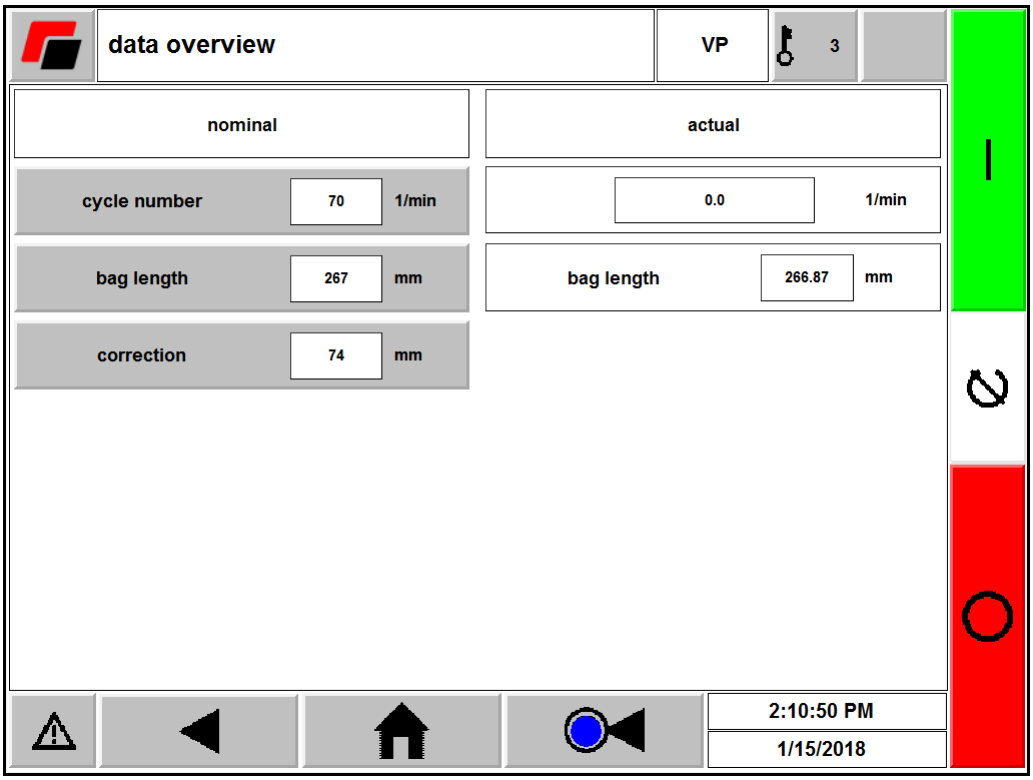
The current position of the drive axis is read by a sensor system and displayed by the control as the actual position. This value can be used as an aid when determining setting values.

"Sealing jaw drive vertical" value display

The current position of the drive axis is read by a sensor system and displayed by the control as the actual position. This value can be used as an aid when determining setting values.

2.2.12 "VP data overview" menu

The data overview menu provides the operator with important, frequently used input parameters.



Nominal cycle rate (rpm)

This is where the nominal machine cycle rate is entered.

NOTE!

When the cycle rate of the machine is modified, the travel parameters of all drive axes are calculated automatically.

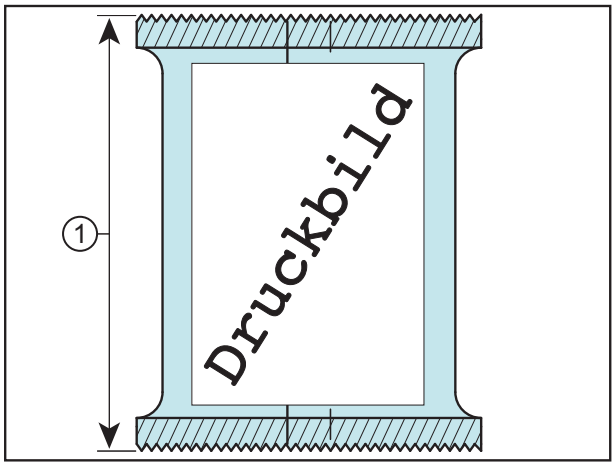
If one of the axes cannot carry out the desired cycle rate (e.g. because that exceeds the upper limit of its capacity), an error message to that effect is displayed and the old cycle rate is retained.

"actual cycle number" value display

Display of the machine's current output.

Target bag length

The value entered here defines the bag length (in millimeters).



1 bag length

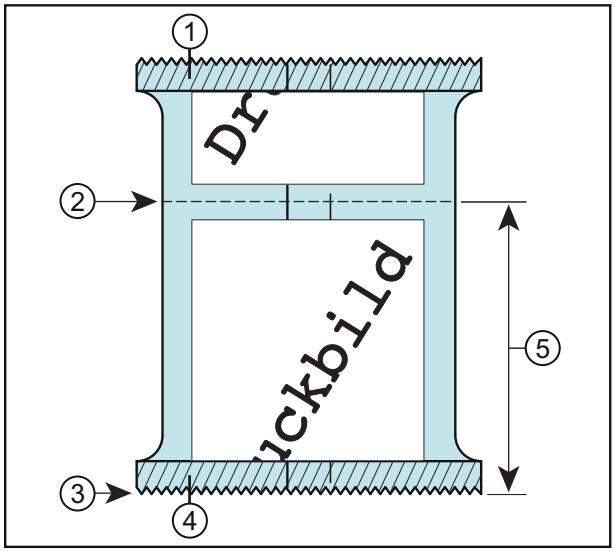
"actual bag length" value display

Display of the actual measured bag length (only for operation with photo cell).

Correction

Print image correction (in millimeters); effective only when printed packaging material and a photo cell are used.

This parameter is used to shift the film by the amount specified in order to correct the alignment of the print image on the film. Limit value calculation is not performed.



1 Top seal
2 Desired line of cut
3 Actual line of cut

4 Bottom seal
5 Correction

NOTE!

In order to prevent the print register mark from being too close to the photo cell in the event of a machine standstill, the following must be considered when entering the correction value:

The correction value must not be exactly as high as the bag length that has been entered, and it must be at least 20 mm longer or shorter.

If difficulties still arise, the packaging material path must be changed accordingly by adjusting the set-up swing or by moving a deflection roll on the packaging material carriage.

2.2.13 "VP cam" menu

Electronic calculation of cams

The motion of the cross jaws comprises the two individual motions of the drives for the x and z axis together. These individual motions collectively represent the motion sequence (the course curve) of the cross jaws.

The cams that the VP needs for controlling various functions must be calculated for the motion sequence of the cross jaws. Because it is not possible to create an unambiguous reference of a cam to one of the two drive axes by means of the two individual drives, a calculation module is used to convert the cams set by the operator for the cam control unit.

Cam setting is performed directly on the course curve that the cross jaws move over in the motion sequence. This course curve is calculated by the calculation module from the motions of the x and z axes. In the following illustrations, the course curve is depicted in a simplified manner as a cut-away ellipse.

Defining reference points

Two reference points are defined on the course curve of the jaws. The settings for the switching points of the cams always refer to one of these two points.

The following conspicuous points on the course curve are selected as reference points:

- Reference point 1: Closing of the cross jaws
- Reference point 2: Opening of the cross jaws

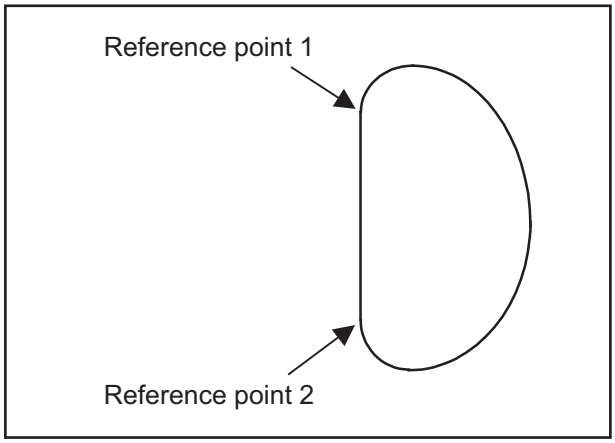


Fig. 2-6 Position of the reference points on the jaw course

The reference point can be selected for each individual switching position of a cam, i.e. the activation position of a cam can refer, for example, to reference point 1, while the deactivation position of the same cam may refer to reference point 2.

The switching position is entered in [mm].

Unlike the situations in machines with a mechanically defined course of the sealing jaws, in the VP, the jaw course can change every time an input parameter is changed. Thus, for example, an increase in the bag length also results in a longer distance in the Z direction and a longer seal distance.

Reference points are also necessary so that, in the case of parameter changes that result in re-calculation of the course curves, the positions of the switching points of the cams do not have to be corrected by the operator. Furthermore, definition of the reference points makes entering the cams easier for the operator, because conspicuous points on the course curve are used.

Sign of the switching positions depending on the reference point

If the switching position is located **after the reference point in the direction of motion of the jaws**, then it must be given a **positive sign**.

If the switching position is located **before the reference point in the direction of motion of the jaws**, then it must be given a **negative sign**.

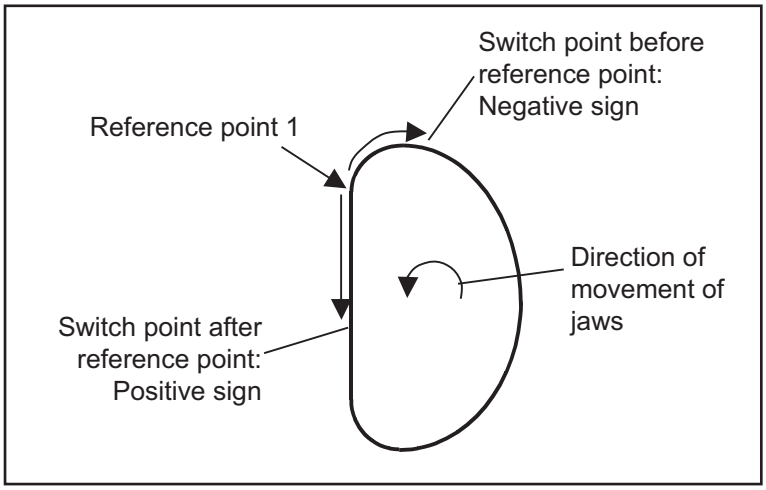


Fig. 2-7 Sign of the switching positions depending on the reference point

Limits values of the cam entry

The dynamic limits of the switching points of the cams result from the length of the current course curve. The maximum and minimum limits always correspond to the length of the course curve in millimeters, starting from the selected reference point.

However, when setting the cams, it should be noted that a switching point from the minimum to the maximum limit makes no sense. This would correspond to a cam over two cycles of the machine.

The limit calculation does not limit such an input; each operator is themselves responsible for entering reasonable switching points.

Examples for cam entry

Example 1: Position of the cam for the cutting knife

The cam of the cutting knife should always switch on at precisely the time at which the jaws just barely touch in the close movement and then switch off again in the sealing area after 30 mm of the sealing distance.

For this, the following settings are necessary:

- Activation position = 0 mm, reference point "Close jaws"
- Deactivation position = 30 mm, reference point "Close jaws"

The cam of the cutting knife is always activated for the distance of 30 mm after the reference point "Close jaws", independently of the seal length, the bag length, etc. (see illustration below).

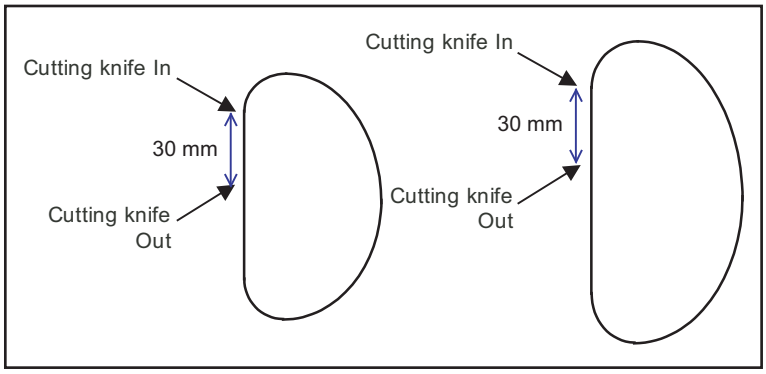


Fig. 2-8 Example 1: Position of the cam for the cutting knife

Example 2: Programming of a cam over the entire length of the sealing area

If a cam is to be activated over the entire length of the sealing area, i.e. from jaw contact during the closing motion (reference point 1) until opening of the jaws after the sealing area (reference point 2), then the following settings must be entered:

- Activation position = 0 mm, reference point "Close jaws"
- Deactivation position = 0 mm, reference point "Open jaws"

If the length of the seal length now changes, then the cam of the cutting knife always remains activated over the entire length of the seal length (see illustration below).

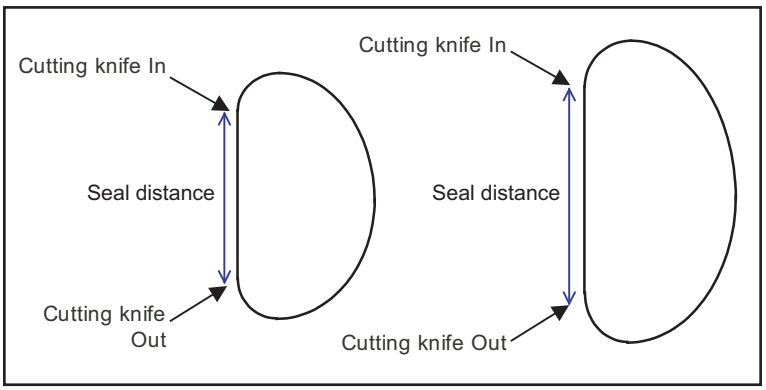


Fig. 2-9 Example 2: Cams over the entire length of the sealing area

Example 3: Programming of a cam over a complete cycle

If a cam is activated over a complete cycle of the machine, then the same reference point should be set for the activation and deactivation position. The following settings should be selected as switching points:

- Activation position = 0 mm, reference point "Close jaws"
- Deactivation position = -1 mm, reference point "Close jaws"

These settings lead to a cam that is activated at the position of jaw contact and is deactivated again one millimeter before the position of jaw contact. Thus, the cam is switched on practically over an entire cycle, independently of the length of the jaw course (see illustration below).

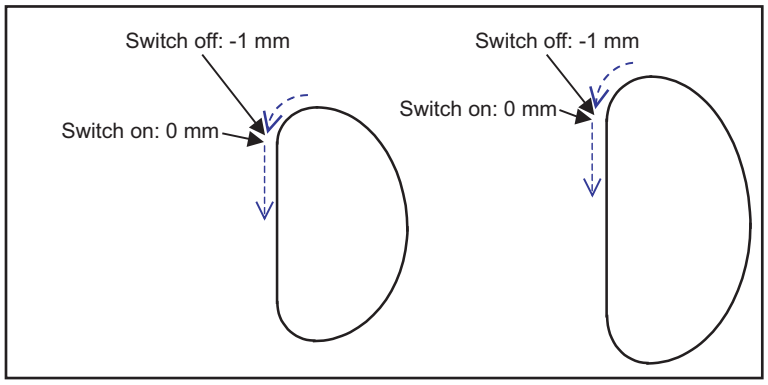


Fig. 2-10 Example 3: Cam over a complete cycle

A cam over a complete cycle can also be achieved with other settings, e.g. with activation position = 1 mm and deactivation position = 0 mm (with the same reference point).

These two options are non-problematical to implement and suitable for any possible course length.

The setting activation position = 0 mm and deactivation position = 0 mm (or generally activation position = deactivation position) does not lead to the desired result; it results in a cam that is deactivated over the entire cycle.

NOTE!

Danger of permanent machine damage due to incorrect settings!

Incorrect settings can result in malfunctions and damage to the machine

▶ This area of the control unit must only be operated by appropriately qualified personnel!

Setting the cams in the screens of the display

The cams are primarily set on two screens:

- Overview screen of the cam menu

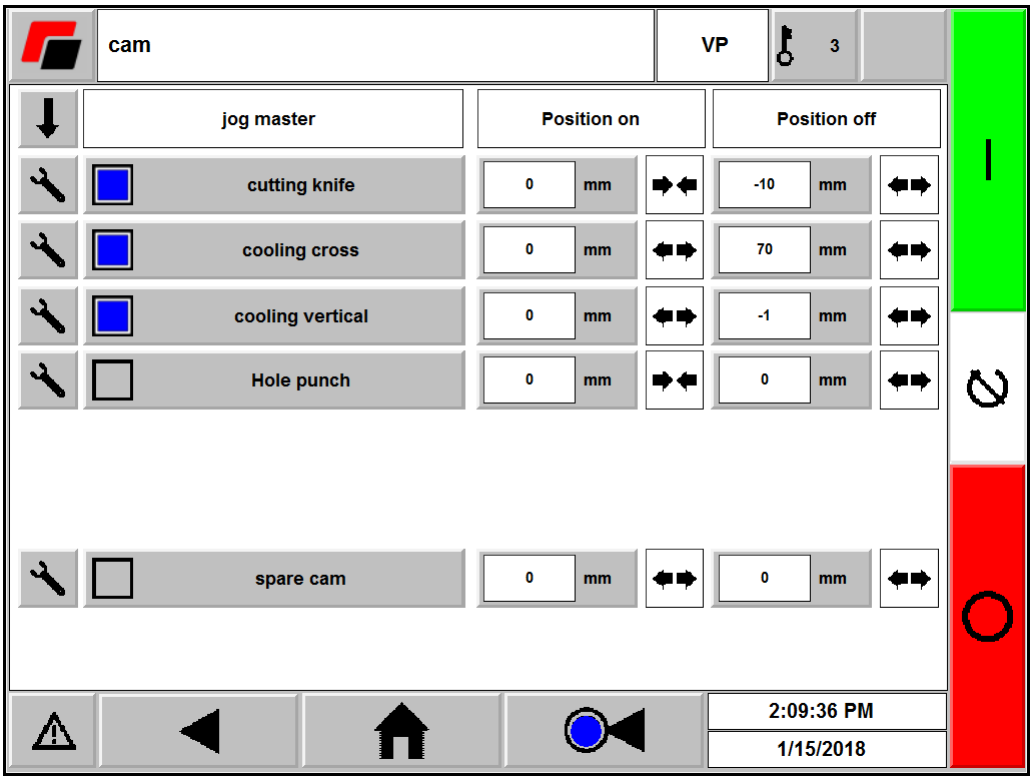
  Pressing the "Cam" button takes you to the overview screen of the cam menu. All of the cam functions of the machine are summarized here. Each cam function can be activated or deactivated using switches. The switching points of the cams can also be changed. The reference point is shown as a graphical symbol after the switching point in question.

- Configuration screen of a cam

  Pressing a button with a wrench symbol takes you to the configuration screen of the cam concerned. All of the parameters for a cam can be set here.

The number of programmable cams varies depending on which functions your machine is fitted with.

If the machine contains more cams than will fit in a screen, you can use the >>/<< buttons to toggle between the screens!



"Master" button

Activating this button moves all the axes connected to the master axis.

Wrench

Pressing this button takes you to the screen with the settings for the selected cam. All of the parameters for the cam can be set here.

"Cam On/Off" switch

This switch is used to switch the selected cam function on or off.

Position On/Off

These input fields are used for defining the start and end positions of the function.

"Reference point" symbol

The reference point is shown as a graphical symbol in the form of two arrows after the switching point in question:

- Two arrows whose points face towards each other symbolize the "Close jaws" reference point.
- Two arrows whose points face away from each other symbolize the "Open jaws" reference point.

"Actual position" value display

The current position of the drive axis is read by a sensor system and displayed by the control as the actual position. This value can be used as an aid when determining setting values.

Spare cam

Used for later programming of a machine function.

2.2.13.1 “Cam” configuration menu

Pressing a button with a wrench symbol on the "Cam" overview screen takes you to the configuration screen of the cam concerned. All of the parameters for a cam can be set here.

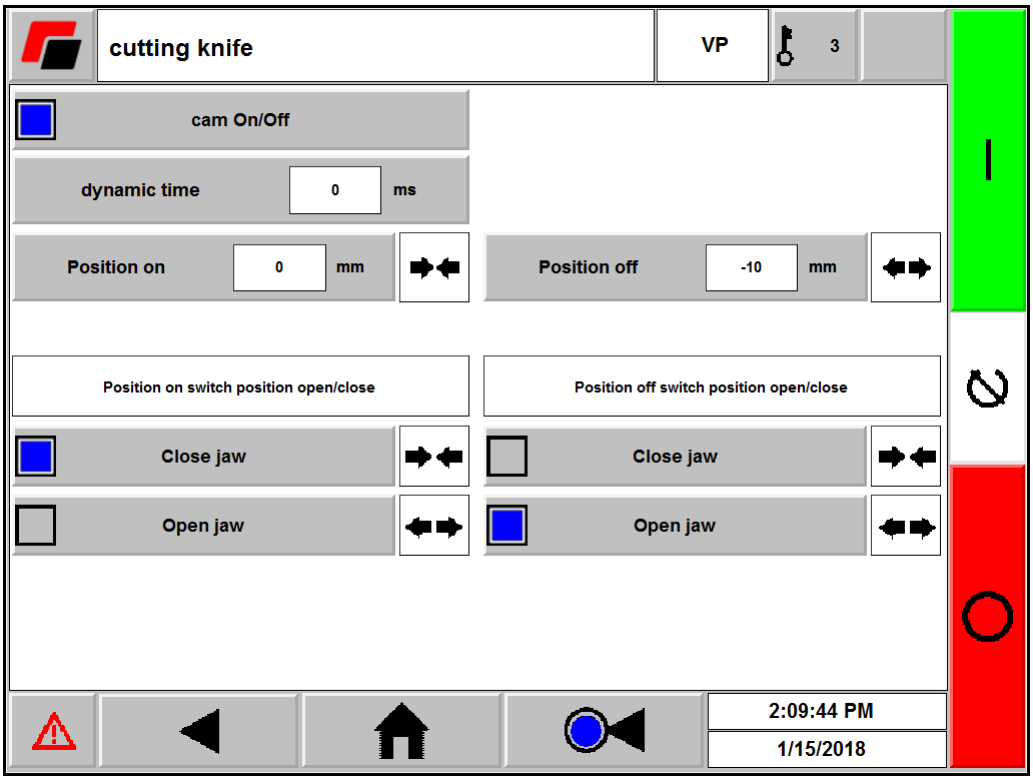
The separate configuration menus all have the same structure, therefore the depicted screen represents only one example.

NOTE!

Danger of permanent machine damage due to incorrect settings!

Incorrect settings can result in malfunctions and damage to the machine

▶ This area of the control unit must only be operated by appropriately qualified personnel!



"Cam On/Off" switch

This switch is used to switch the selected cam function on or off.

Dynamic time on / Dynamic time off

The dynamic time is used to take into account a response time which is needed, for example, to activate or deactivate a valve because the valve is not actuated immediately when the machine is working in the defined angle range.

NOTE!

For the dynamic time setting, it might be necessary to adapt the determined values over time because valves or other actuated functions are subject to natural aging, resulting in a changed reaction time.

Position On/Off

These input fields are used for defining the start and end positions of the function.

Reference point

These buttons can be used to select the reference point of a cam.

"Actual position" value display

The current position of the drive axis is read by a sensor system and displayed by the control as the actual position. This value can be used as an aid when determining setting values.

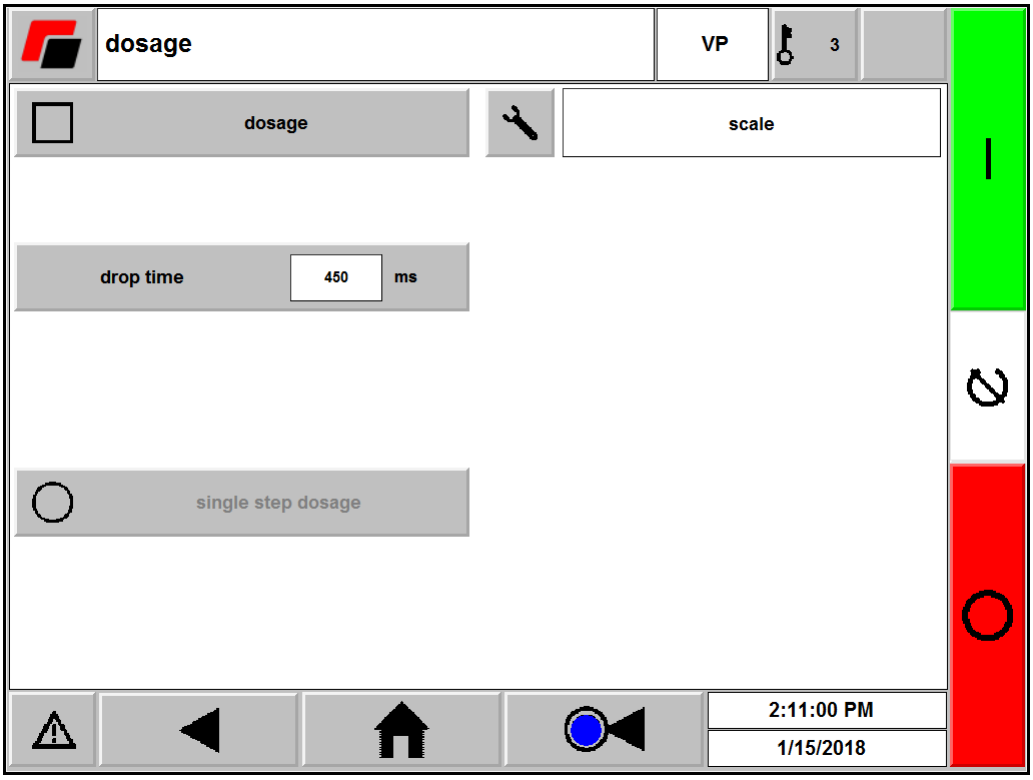
2.2.14 “dosage” menu

General information

The settings of all the menu items required for the operation of the dosing unit are made here. The menu parameters shown on the right half of the screen depend on which dosing unit is used.

NOTE!

Please refer to the separate manufacturer's technical description for additional information on the function and handling of the dosing unit used with this machine.



“dosage” switch

This switch switches the function of the dosing unit on or off.

Drop time

It is the time required for the product to go from the dosage unit after discharge to the cross sealing tools of the downstream packing machine.

Select the drop time so that all dumps from the dosage unit are inside the bag by the time the cross sealing tools on the form fill and seal machine are closed.

The required time is entered in milliseconds (ms).

For the exact procedure on how to select the correct drop time, see also the section *2.2.14.1 - Determination of the drop time, Page 90*.

"single step dosage" button

Button for triggering a cycle of the dosing unit.

Wrench to change screen *SCALE*

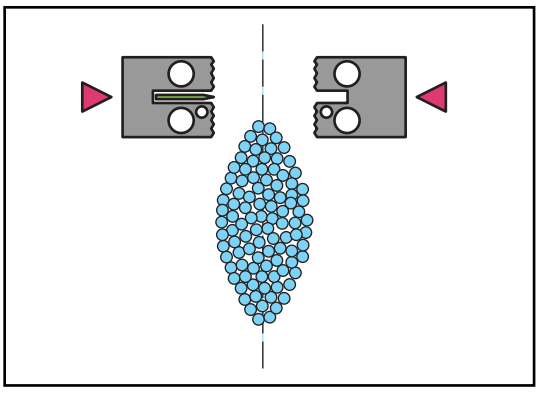
This takes you to the configuration screen for the scale.

2.2.14.1 Determination of the drop time

An example for setting the correct drop time: The correct setting should be 500 ms.

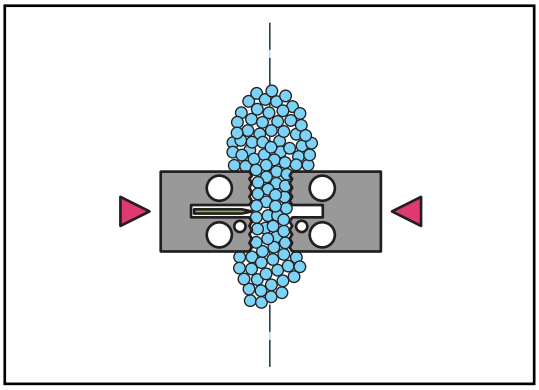
Drop time setting = 900 ms

The selected time is too long, the dump falls through the jaws while they are still open.



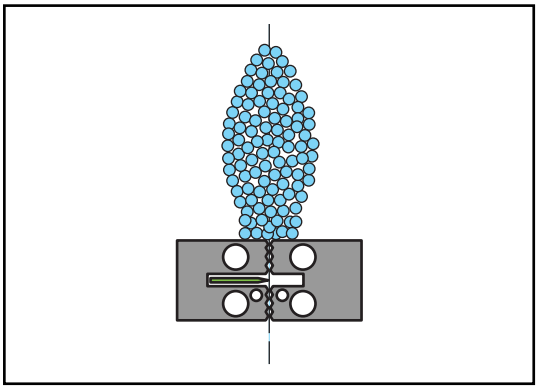
Drop time setting = 600 ms

The selected drop time still is too long, the dump comes between the open jaws.



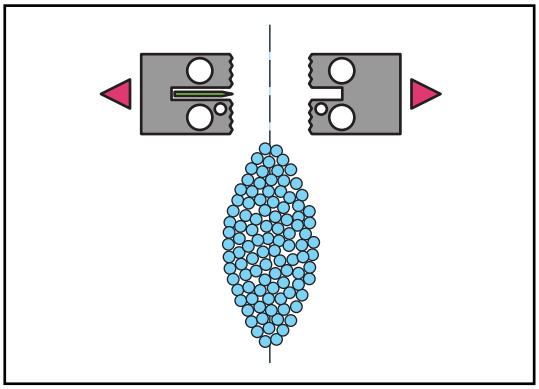
Drop time setting = 500 ms

The set drop time is correct, the dump falls onto the jaws while they are closed.



Drop time setting = 300 ms

The set drop time is too short; although the dump falls into the closed bag, the jaws are already open again. This can cause the cross seal of the bag to tear open when it is hit.



Recommendation

When determining the correct drop time, let the machine run at approx. 40 cycles/min. At this speed you can easily observe the arrival of the dump in the bag and the emptying of the cups, and can determine the time.

Enter the time on the display and save the determined value in a program if necessary. When this program is called up later, the control unit sets the machine to these values.

When the machine is started or stopped, the following situations can occur:

Situation 1:

When the machine is started:

The first bag to be sealed is empty. One or more dumps are made in this bag before the machine starts.

When the machine is stopped:

The last bags are empty.

Cause:

The set drop time is set several times greater than the machine cycle time. When the machine continues to run the subsequent bags are filled correctly.

Remedy:

Set the drop time correctly.

Situation 2:

When the machine is started:

Before the first bag is sealed, one or more dumps are already in the bag, and when the machine starts it produces one or more empty bags.

When the machine is stopped:

Dumps are still dropped after the machine is switched off.

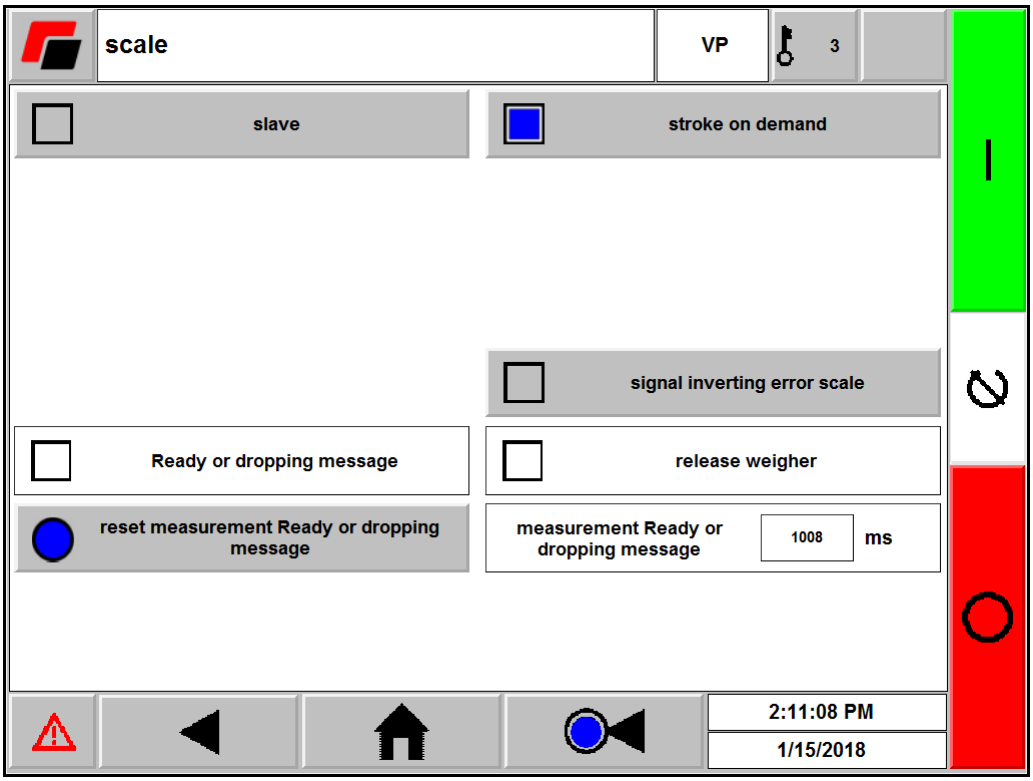
Cause:

The set drop time is set several times faster than the machine cycle time. When the machine continues to run the subsequent bags are filled correctly.

Remedy:

Set the drop time correctly.

2.2.14.2 "Scale" configuration menu



"Slave" switch

Switch for switching on and off the synchronization type ***SLAVE***.

The continuously running bag machine gives a trigger impulse to the scale in each cycle. This gives a discharge notification, when a product has been output. For this synchronization type, the scales must run faster than the bag machine.

"Stroke on demand" switch

Switch for switching on and off the synchronization type ***STROKE ON DEMAND***.

In this mode the bag machine stops after every cycle and waits for the ready notification from the scales. Then the bag machine starts and sends a discharge notification to the scale.

"Ready or dump message" value display

Here the readiness of the scale or an executed dumping of the scale is shown. The display takes place by the button switching to the colour blue.

"Reset measurement value ready or dump message" value display

Button to reset the display.

"Measurement value ready or dump message" value display

The measured time between the ***"Ready or dump message"*** and the dump signal of the form fill and seal machine is shown here.

"Scale activation" value display

Each executed dumping of the scale is displayed here. The display takes place by the button switching to the colour blue.

"Signal inversion" switch

Switch for switching the "Signal inversion" function on and off. Switching this switch on causes the input signal to be read out inverted.

2.3.1 Packaging material carriage (overview)

Function

The packaging material carriage serves as bracket and unwinding unit for the packaging material. It ensures a defined web tension and, at the same time, easy film transport via the deflection and guide rollers up to the forming shoulder.

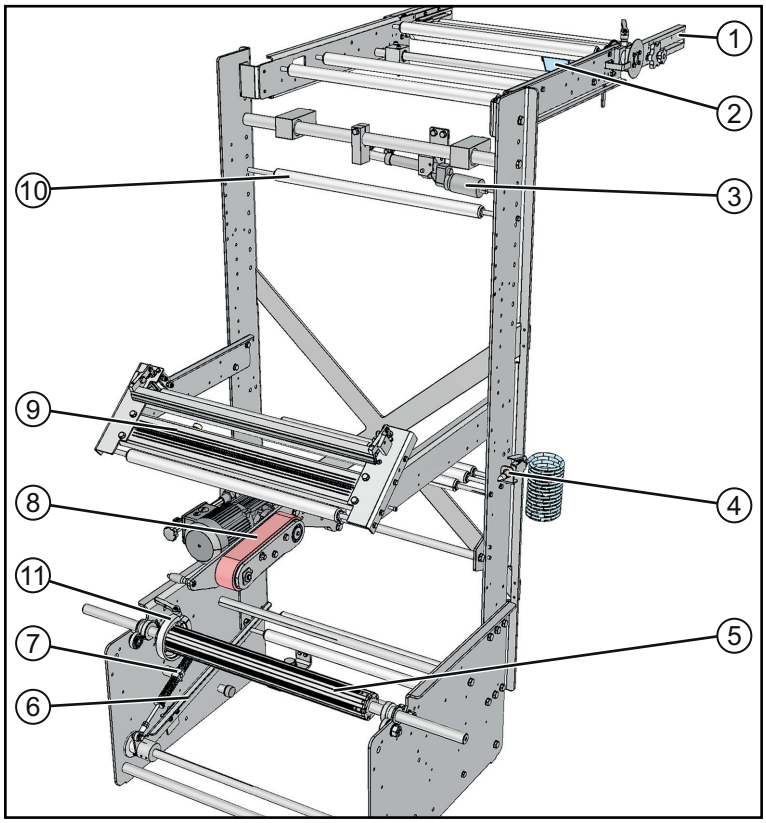


Fig. 2-11 Packaging material carriage overview

1 Infeed rocker
2 Photo cell (optional)
3 Packaging material carrier cross adjustment
4 Filling pistol for pneumatic clamping shaft
5 Pneumatic clamping shaft
6 Compensation rocker
7 Compression spring spindle
8 Packaging material power unwind on packaging material roller (optional)
9 Cutting and splicing device (optional)
10 Guide and deflection roller
11 Adjusting ring

Structure

The packaging material web is provided as a roll, which is placed on the packaging material carriage with the help of a clamping shaft (5), which is placed through the core of the roll.

The packaging roll is clamped onto the clamping shaft through pressurization of the pneumatic clamping shaft (5) using a filling gun (4). An adjusting ring is used to centrally align the roll on the clamping shaft (11).

The packaging material carriage is equipped with a cross adjuster (3) for rapid setting and correction of the packaging material run.

Using the compression spring spindle (7), a preset is made for the compensating rocker (6).

The infeed rocker (1) supports the optimal settings of the packaging material run to the forming shoulder.

The unit can be fitted with additional options for film handling (printer, labeler, zip or adhesive strip applicator, etc.).

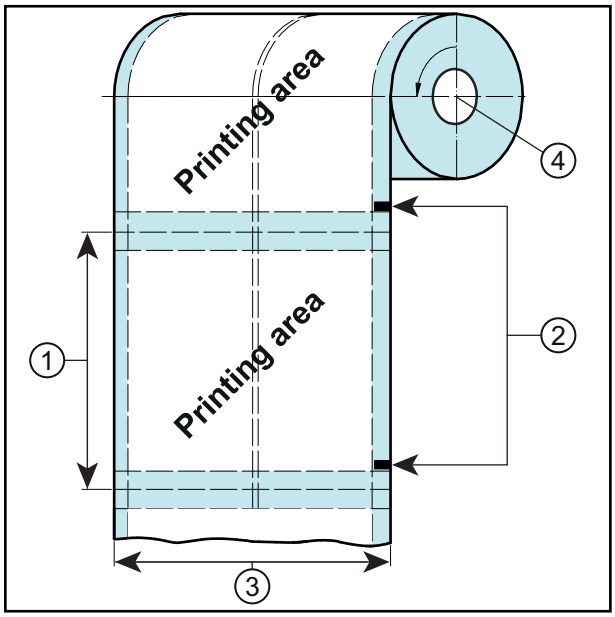
Pull off / unwind packaging material

When the packaging material is being drawn down by the draw-down device (see also *2.5 - Packaging material draw-down, Page 123*) the compensating rocker (6) is lifted. For this purpose, the motor of the packaging material power unwind (8) will be started; the packaging material will be unrolled or drawn down. When the draw-down device is stopped, the compensating rocker (6) falls back, and the motor of the packaging material power unwind (8) stops the packaging material roll, thus tensioning the packaging material web.

For precise information on how the packaging material power unwind works, see also section *2.9.4 - Packaging material unwinder on packaging material roll, Page 215*.

Before fitting a packaging material roll,

ensure you are familiar with the terminology for bag production explained below.



1 Bag section length
2 Control marks (photo signals for the photo cell)
3 Roll width = 2 x bag width + dimension for the lengthwise seam
4 Roll core

Direction of movement of the packaging material web

Check whether the bags can be produced as intended, maintaining the direction of movement. The illustration below shows the standard direction of movement for the packaging material web (example for print image direction of movement "Base forwards").

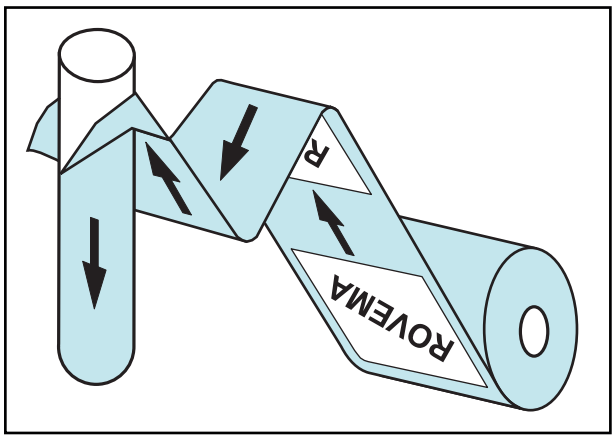


Fig. 2-12 Standard direction of movement

Packaging material movement plate

The packaging material movement plate on the machine housing shows you the exact path that the packaging material has to take over all of the deflection and guide rollers.

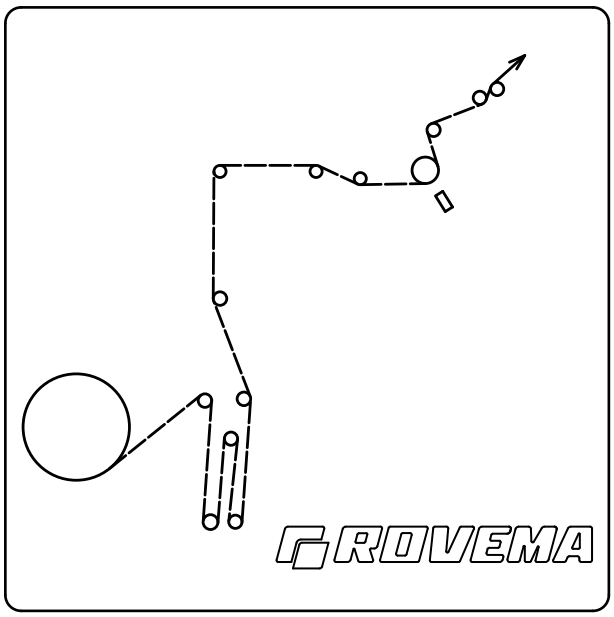


Fig. 2-13 Packaging material movement plate (sample)

The upper drawing is only an example. If units are subsequently added to your machine (e.g. printer), the direction of movement can be different to that shown here.

2.3.2 Guiding the packaging material to the draw-down device

NOTE!

In order to ensure malfunction-free operation of the machine, the packaging material intended for the production should be present at the production shop approx. 24 hours ahead of time. This allows the temperature and moisture content of the packaging material to adjust to the ambient conditions at the production location, for example.

Determining the packaging material roll

Guide value for the packaging material width (roll width):

- 2 x format size + 20 mm (for the vertical seam)

Note the specification in the packaging format drawing.

Format size is the name for the width of the pillow bag. The engraved numerals on the format bracket (see arrow in illustration) indicate this dimension in millimeters.

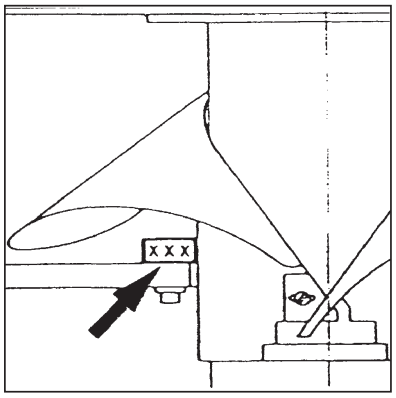


Fig. 2-14 Format size specification

NOTE!

Variations in dimension may be provided for certain format sizes and packaging material applications.

Observe the packaging format drawing and the specifications for the roll diameter!

Clamping the packaging material roll

Proceed as follows:

1. Before removing the empty packaging material roll from the clamping shaft, place the filling gun (7) slightly diagonally to the air valve (6) and empty the air chamber.

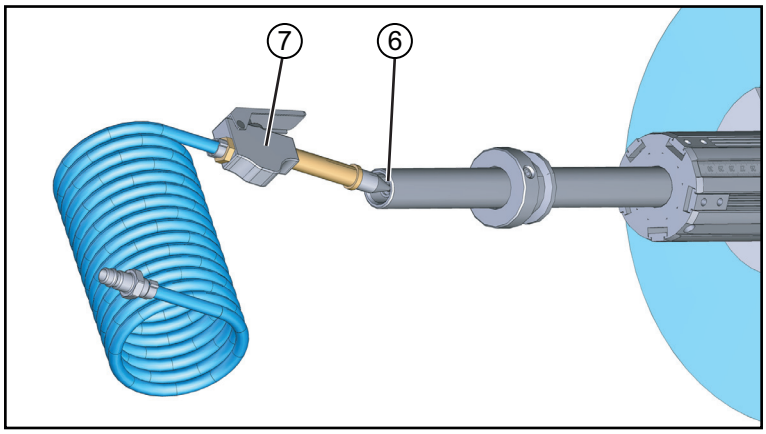


Fig. 2-15 Emptying air chamber on the clamping shaft

2. Remove the clamping shaft (1) from the packaging material carriage.

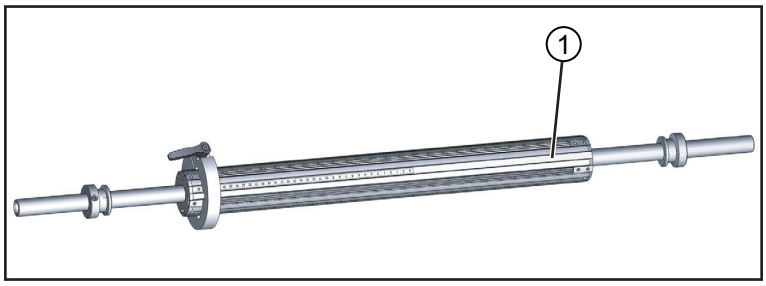


Fig. 2-16 Pneumatic clamping shaft

3. With printed packaging material: Before clamping the roll, check the direction of movement of the print image.

Procedure for changeover to a known bag format

1. Release the locking lever (2), set the adjustment ring (3) to the value specified in the format table on scale (4), fasten the locking lever again.

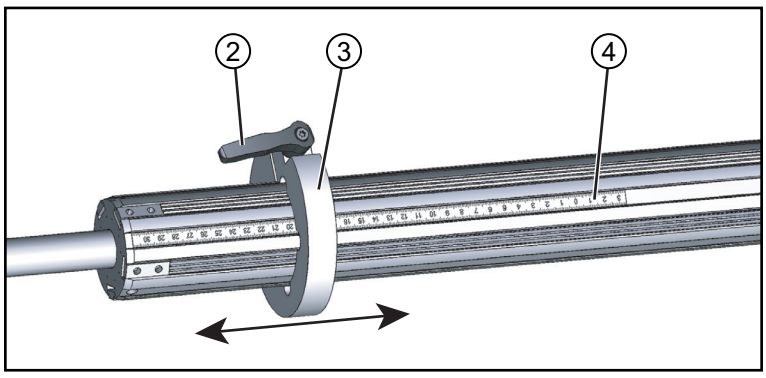


Fig. 2-17 Pneumatic clamping shaft with adjustment ring

2. Guide the clamping shaft (1) through the packaging material roll (5) until the adjustment ring (3) rests on the packaging material roll.

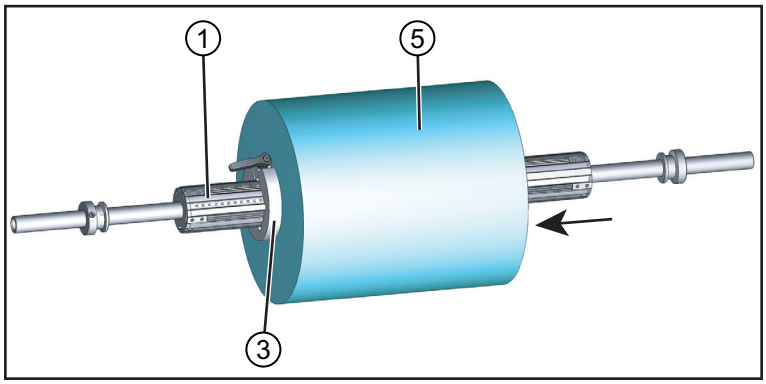


Fig. 2-18 Clamping the packaging material roll

3. Loosen the locking lever (2) again.

NOTE!

Incorrect settings may damage the machine!

The adjustment ring has grooves for the clamp bars of the clamping shaft. Incorrect positioning of the adjustment ring can cause damage to the machine and lead to disruptions in the machine sequence.

▶ Position the adjustment ring in such a manner that the clamp bars of the clamping shaft fit exactly into the grooves of the adjustment ring after pumping up the air chamber.

4. Place the filling gun (7) on the air valve (6) at the end of the clamping shaft and pump the air chamber up until the packaging material roll can no longer be moved.

⚠ WARNING!

Danger of crushing!

There is a danger of crushing between the packaging material roll and the clamping shaft.

▶ When pumping up the air chamber, keep body parts out of the area between the packaging material roll and the clamping shaft.

NOTE!

The air chamber of the clamping shaft may only be pumped up when a packaging material roll has been loaded!

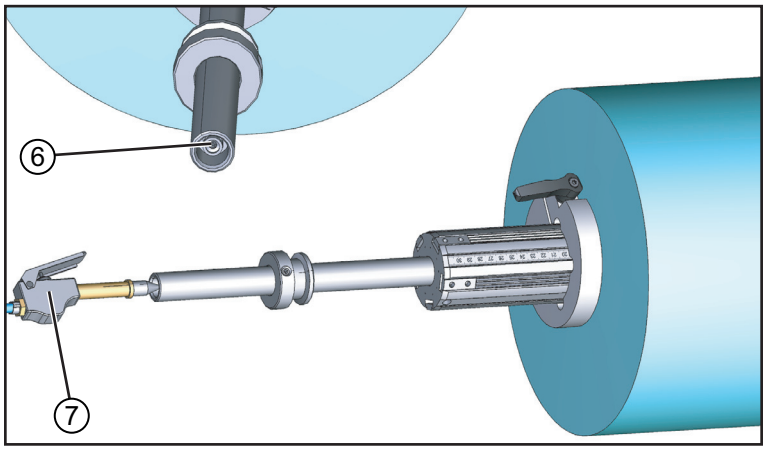


Fig. 2-19 Pumping up air chamber on the clamping shaft

5. Retighten the locking lever (2).

Procedure for changeover to a new bag format

1. Position the packaging material roll centrally on the clamping shaft.
2. There is a scale (4) on the clamping shaft. Transfer the scale value that is readable here into the format table as the new format value for this format. This means that when the packaging material is changed all that has to be done is to set the adjusting ring to this dimension as described above.

NOTE!

Clean the pneumatic clamping shaft with a cleaning cloth and clean water only. Do not use any cleaning and disinfecting agents or jet cleaners!

Putting on the packaging material roll

1. The clamping shaft (1) with the packaging material roll must rest on the carrier cheeks of the packaging material carriage in such a way that the hub (3) of the clamping shaft encloses the guide bearings (2) of the packaging material carriage.

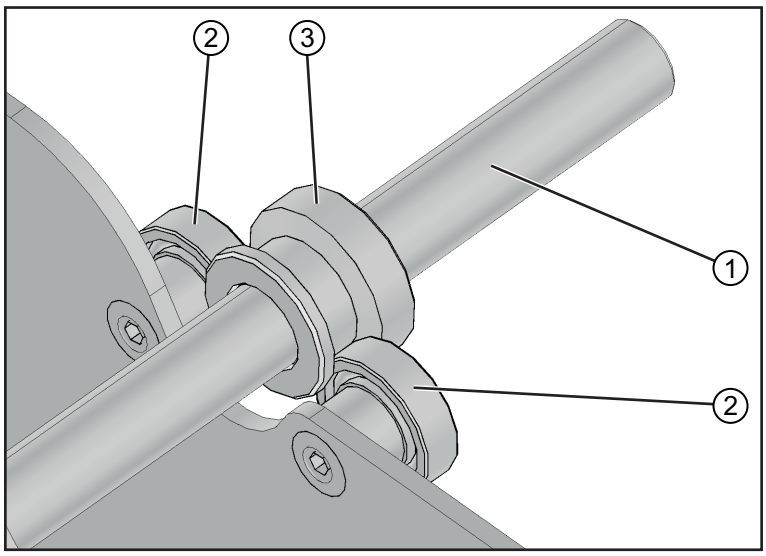


Fig. 2-20 Putting on the packaging material roll

⚠ WARNING!

Danger of crushing!

A packaging material roll can weigh up to 500 kg.

- ▶ When putting a heavy packaging material roll on to the packaging material carriage, use a lifting tool that is appropriate for the weight (e.g. fork lift, crane, lifting device).
- ▶ Suitable lifting tools can also be obtained directly from ROVEMA.

Cutting off the packaging material web

1. Using the film knife (e.g. Rovema no. 07024107), cut off the packaging material web at an approx. 45° angle.

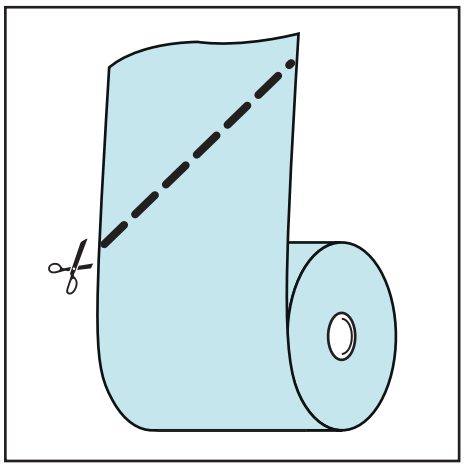


Fig. 2-21 Cutting off the packaging material web

Threading in the packaging material

1. Guide the point thus created in accordance with the packaging material movement plate via the guide and deflection rollers to the infeed swing.

   The packaging material movement plate is located on the side of the machine housing.

2. When threading in the packaging material, ensure that no folds are created.

Setting the infeed rocker

The last set of rollers (moveable adjustment rollers) can be adjusted. These rollers allow the angle of the packaging material web to be changed on the infeed side of the forming shoulder. If the angles of the packaging material web and the forming shoulder do not match, then there is the risk that the packaging material will get stuck on the collar line of the forming shoulders. This then leads to problems when reshaping the packaging material.

The infeed swing is adjusted using two format adjusters.

The following images depict the problems which can occur with this setting.

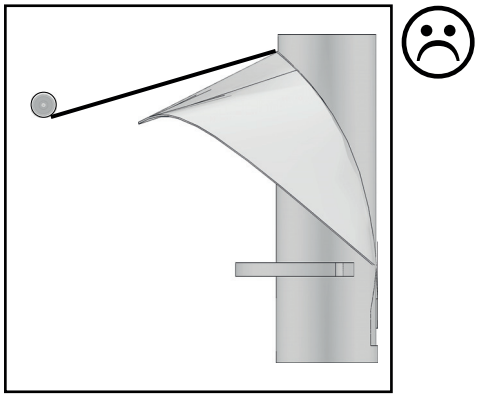


Fig. 2-22 Infeed rocker: Infeed angle of the packaging material web too steep

The moveable set of rollers is set too high to the format shoulder collar, meaning that, when it is drawn into the forming shoulders, the packaging material web cannot be run over the shoulder collar.

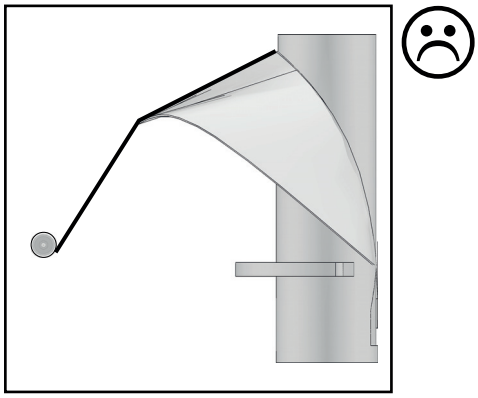


Fig. 2-23 Infeed rocker: Infeed angle of the packaging material web too flat

The moveable set of rollers is set too low to the forming shoulder collar. This leads to kink formation on the packaging material web in the area of the collar line on the forming shoulder.

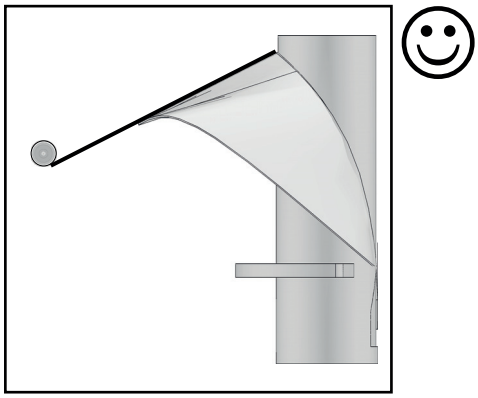


Fig. 2-24 Infeed rocker: Optimal infeed angle of the packaging material web

The moveable set of rollers is correctly set to the forming shoulder collar. The packaging material forms a straight line from the last moveable roller to the reshaping of the packaging material in the forming shoulder.

NOTE!

There are various scales on the side of the infeed swing. Once the adjustment has been made, the set position (in millimeters or in degrees) can be read here and entered in the appropriate format table.

Angle setting of the infeed swing:

1. Grip the infeed swing (2) with your hand and secure it against falling.
2. Release clamping lever (1).
3. By turning the infeed swing, set the angle of the packaging material relative to the forming shoulder.

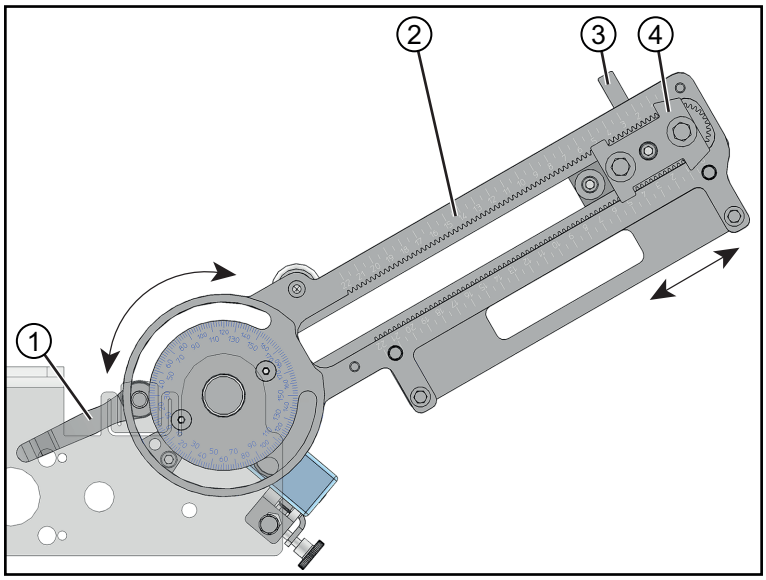


Fig. 2-25 Setting the infeed rocker

4. Retighten the clamping lever.

Height setting of the moveable set of rollers on the infeed swing:

1. Actuate the lever (3) and hold it in this position.
2. Adjust the distance of the movable set-up roller (2) to the forming shoulder by pushing the movable set-up roller (4).
3. Then, release the lever (3) again.
4. Guide the packaging material tip through the deflection rolls of the infeed swing to the forming shoulder.

Insert packaging material into the forming shoulder

1. Lift the draw-down belt of the draw-down device from the filling tube (switch ***"Film drive"***).
2. Swing the vertical sealing unit away from the filling tube.
3. Bend the packaging material tip (90°), guide the tip into the gap between the forming shoulder and the filling tube, and form the packaging material web into a tube by hand.

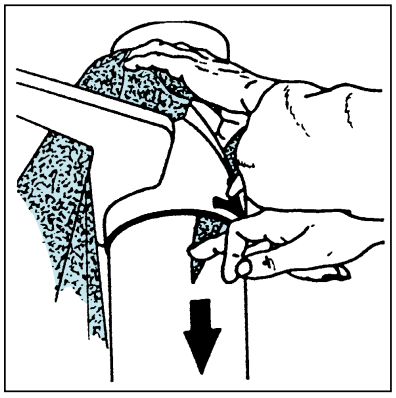


Fig. 2-26 Insert packaging material into the forming shoulder

4. Thread the packaging material (1) into the forming shoulder and pull down on to the filling tube until it can be caught and pulled off by the draw-down belts (2) of the draw-down device.

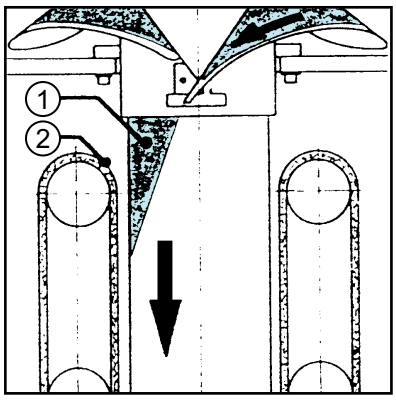


Fig. 2-27 Pull down packaging material on the filling tube

5. Lower the draw-down belt of the draw-down device on the filling tube (switch ***"Film drive"***).
6. Swing the vertical sealing unit back to the filling tube.

2.3.3 Correcting the tension of the packaging material web

2 knurled nuts (1) on the compression spring spindle (2) are used to adjust the tension of the packaging material web. Evenly turning the knurled nuts changes the spring force and thus also the packaging material web tension.

Increasing the packaging material web tension::

- Turn **both** knurled nuts (1) in **direction B**.

Reducing packaging material web tension:

- Turn **both** knurled nuts in **direction A**.

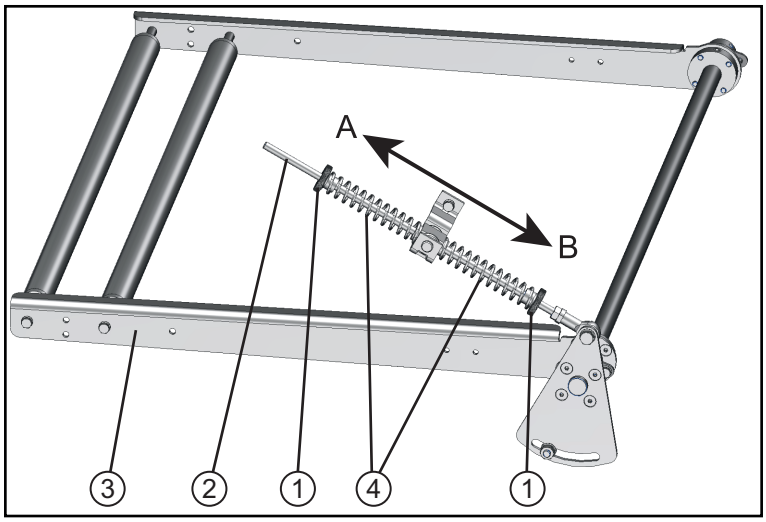


Fig. 2-28 Adjusting packaging material web tension

1 Knurled nut for spring force
2 Compression spring spindle
3 Compensating rocker
4 Compression spring

NOTE!

Always ensure that the tension on the packaging material web is uniform as far as the forming shoulder, and that the compensating rocker is in the horizontal position.

2.3.4 Packaging material carriage cross adjuster

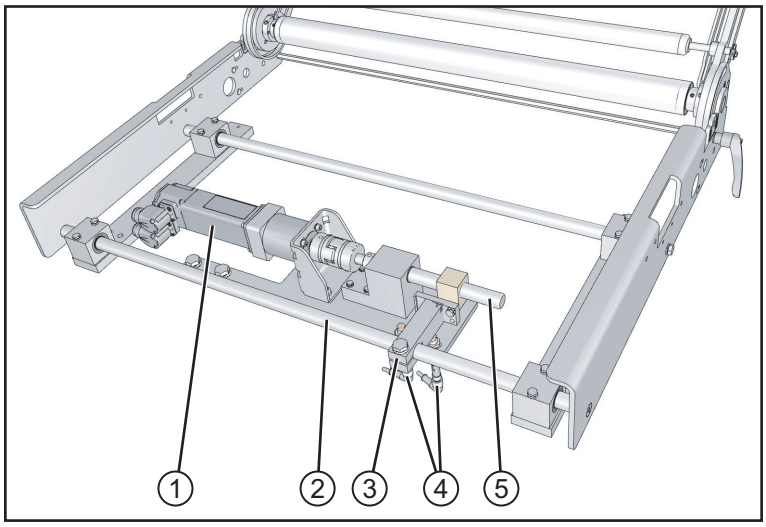


Fig. 2-29 Packaging material carriage cross adjuster

1 Servo motor
2 Packaging material carriage shaft
3 Locking bar
4 Proximity switch
5 Threaded spindle

Function

The packaging material carriage (as far as the last deflection roll in front of the forming shoulder) can be moved completely to the left and right. In this manner, the packaging material web can be aligned to achieve the correct vertical seal.

The packaging material carriage - and thus the packaging material web, is moved when

- the job buttons ***"Film carriage"*** (in the ***JOG MENU VP*** of the display) are activated, or
- the servo-motor receives a start signal from the packaging material edge control (optional).

The servomotor (1) is linked to a spindle (5) via a clutch, which transmits the drive to a locking bar (3). A shaft (2) of the packaging material carriage is clamped tight in the locking bar.

The traverse of the packaging material carriage is limited by the proximity switches (4).

NOTE!

This function does not replace the careful alignment of the packaging material roll and packaging material web!

2.3.5 Photo cell

Function

The photo cell performs an important function in producing the bags. In combination with the machine controller, it ensures a consistent print image position on the bags. For this purpose, the packaging material must be printed with a suitable marking. This can be a so-called print register mark, or a high-contrast location within the print image.

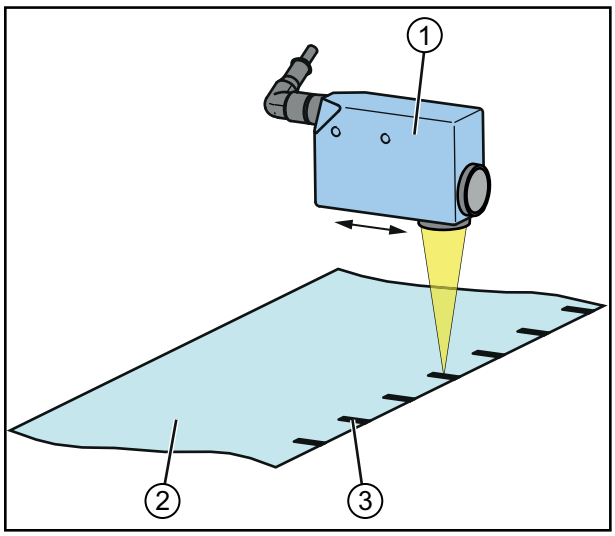


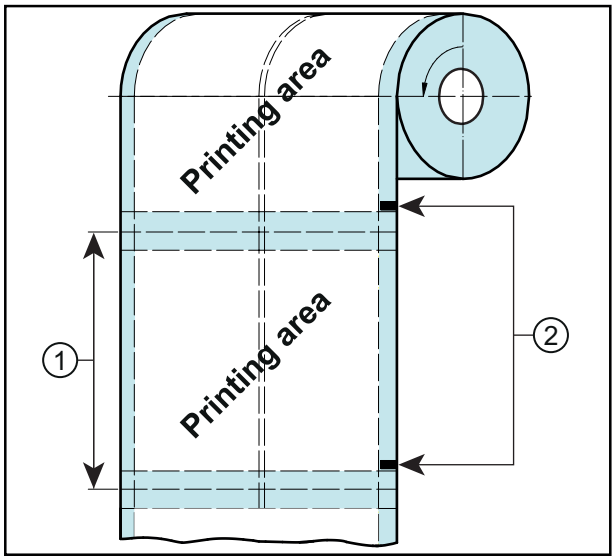
Fig. 2-30 Photo cell overview

1 Photo cell
2 Packaging material
3 Print register mark

NOTE!

For further details on the function and handling of the photo cell, please consult the separate technical description from the manufacturer.

The photo cell responds to brightness and color differences in the print image of the packaging material. Its sensitivity must be adjusted accordingly for each packaging material that is used (see also the operating instructions for the photo cell). It is installed so that it can be moved for easy alignment with the print register mark.



1 Bag strip width
2 Control marks (photo signals for the photo cell)

NOTE!

For further details regarding requirements for the packaging material, please consult the packaging format drawing.

2.3.5.1 Aligning the photo cell

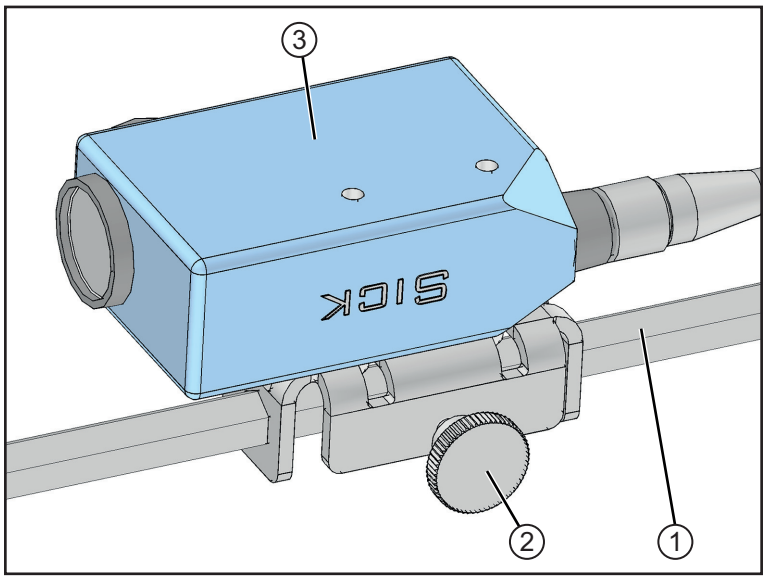


Fig. 2-31 Photo cell cross adjuster

1 Hexagonal guide
2 Knurled screw
3 Photo cell

Aligning the photo cell

Prerequisites:

- ✓ Determine the print register mark.
- ✓ Advance (unroll) the packaging material web by pressing the ***"Film drive"*** jog button or by hand until the light spot of the photo cell can be directed onto the print register mark.

Adjustment by hand:

1. Loosen the knurled screw (2).
2. Adjust the photo cell (4) to the position of the print register mark by sliding on the hexagonal guide (1).
3. Retighten the knurled screw.

Motor-driven adjustment (optional):

1. Move the photo cell (4) into position using the ***"Photo cell"*** jog buttons.



NOTE!

The photo cell must be switched off when processing packaging materials without a print image!

The repeat accuracy of the draw-down belts can only be checked when the photo cell is switched off. This must be done by switching off the ***"Photo cell"*** button!

2.3.5.2 "photo cell" menu

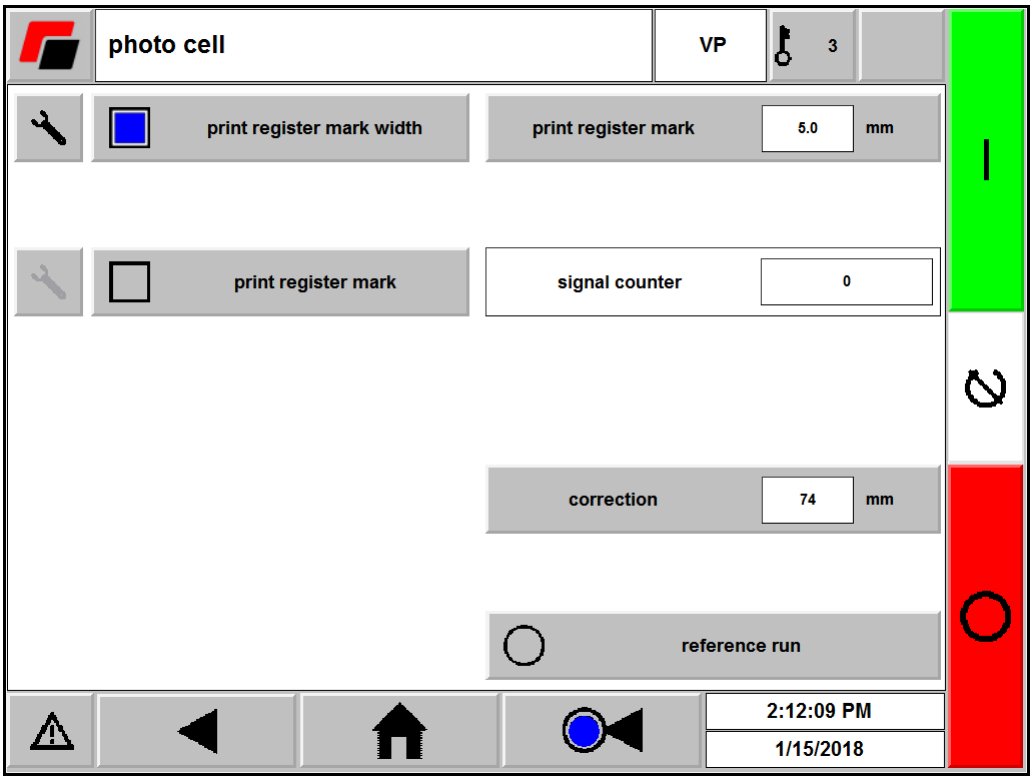
The photo cell can be used to detect areas designated as print register marks on packaging materials with various printed areas. These so-called print register marks are used to control the unrolling length.

In this menu you can select, depending on the type of printing on the packaging material, which method the photo cell uses to detect the print register mark.

Depending on the method selected, further settings have to be made in the associated submenus.

The left half of the screen displays switches for selecting the filter of the print register mark (method of the print register mark).

The menu parameters displayed in the right half of the screen depend on the method selected.



Wrench - change screen *PRINT REGISTER MARK WIDTH*

Access to the configuration menu ***FILTER PRINT REGISTER MARK WIDTH***.

"Print register mark width" switch

Switch for switching the "Print register width" function on and off.

This function is selected if several markings of different widths are present per unrolling length (e.g. in the form of printed bars and/or graphical elements on the packaging material).

In this case, a marking with a certain width must be selected as the print register mark. The print register mark in the selected width may only appear once per unrolling length, and there must be the same distance between the print register marks every time this print register mark appears.

After this detection method is selected, the additional menu parameter ***"Print register mark"*** appears on the right half of the screen. The width of the print register mark is entered here.

Wrench - change screen *PRINT REGISTER MARK*

Access to the configuration menu ***FILTER - PRINT REGISTER MARK***.

"Print register mark" switch

Switch for switching the "Print register mark" function on and off.

This function is selected if an unambiguous print register mark is present only once per unrolling length (e.g. in the form of a printed bar on the packaging material).

Because the print register mark is unambiguous, no further entry is required.

Print register mark [mm]

Enter the height of the print register mark.

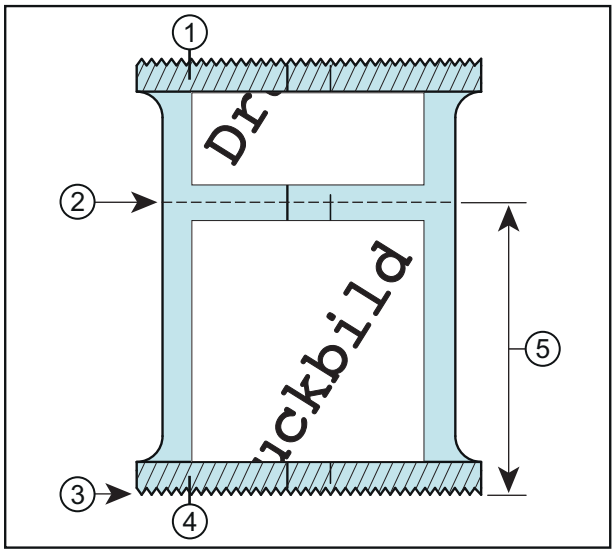
"Signal counter" value display

Number of detected print register mark signals.

Correction

Print image correction (in millimeters); effective only when printed packaging material and a photo cell are used.

This parameter is used to shift the film by the amount specified in order to correct the alignment of the print image on the film. Limit value calculation is not performed.



1 Top seal
2 Desired line of cut
3 Actual line of cut
4 Bottom seal
5 Correction

NOTE!

In order to prevent the print register mark from being too close to the photo cell in the event of a machine standstill, the following must be considered when entering the correction value:

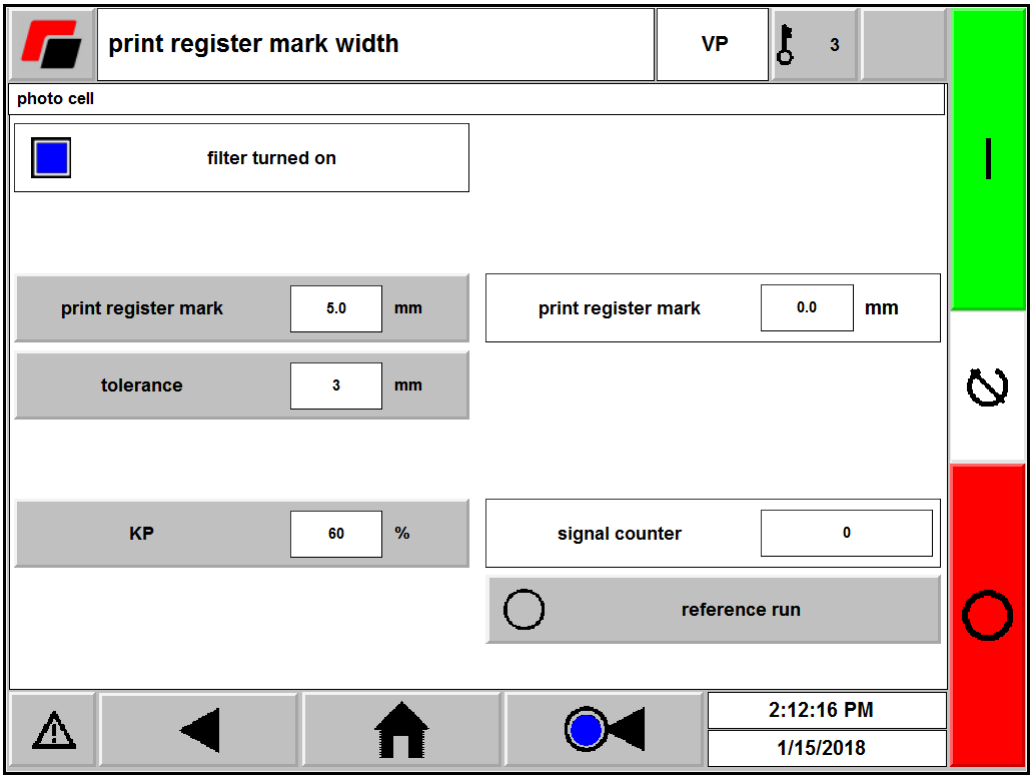
The correction value must not be exactly as high as the bag length that has been entered, and it must be at least 20 mm longer or shorter.

If difficulties still arise, the packaging material path must be changed accordingly by adjusting the set-up swing or by moving a deflection roll on the packaging material carriage.

"reference run " button

Button to trigger a reference run of all drive axes connected to the master axis of this machine area.

2.3.5.2.1 "Print register mark width filter" configuration menu



"Filter switched on" value display

This display indicates whether the filter is active or inactive.

Print register mark [mm]

Enter the height of the print register mark.

“Print register mark” value display

Display of the value currently being measured by the control system.

tolerance

This tolerance value is used in the print register mark detection to distinguish whether a print register mark is detected as valid or invalid. A value of 3 mm is generally sufficient. In case of larger print register mark fluctuations a larger value may be necessary.

KP [%]

is the proportional reinforcement value for the print image regulation. This value is preset by ROVEMA and should not be changed.

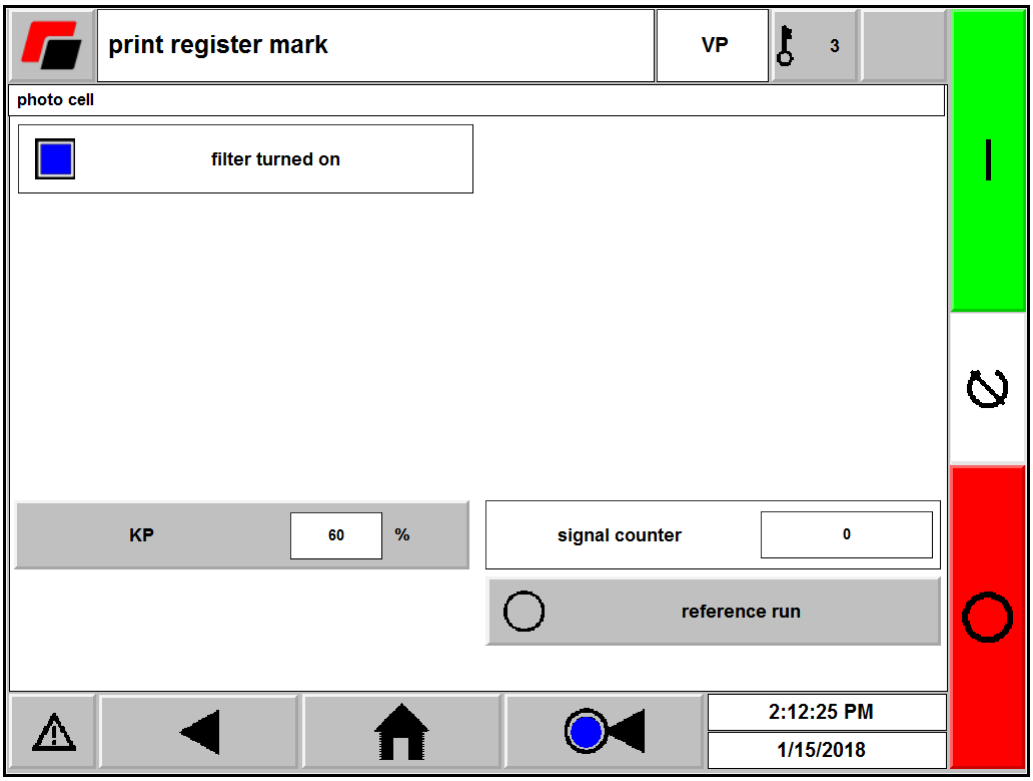
"Signal counter" value display

Number of detected print register mark signals.

"reference run " button

Button to trigger a reference run of all drive axes connected to the master axis of this machine area.

2.3.5.2.2 "Print mark filter" configuration menu



"Filter switched on" value display

This display indicates whether the filter is active or inactive.

KP [%]

is the proportional reinforcement value for the print image regulation. This value is preset by ROVEMA and should not be changed.

"Signal counter" value display

Number of detected print register mark signals.

"reference run " button

Button to trigger a reference run of all drive axes connected to the master axis of this machine area.

2.4.1 Format set (overview)

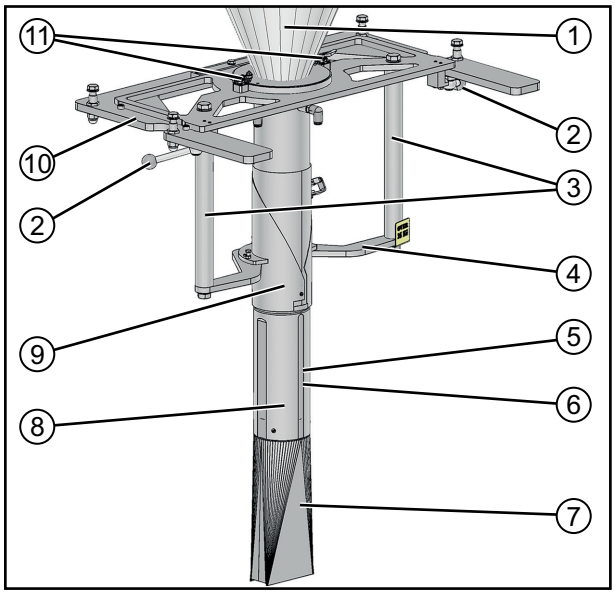


Fig. 2-32 Format set overview

1 Transfer funnel
2 Tensioning bolt
3 Support bracket
4 Flange
5 Silicone rubber strip
6 Teflon strip
7 Chute (optional)
8 Filling tube
9 Forming shoulder
10 Support bracket
11 Horizontal tensioner for transfer funnel

Function

The forming shoulder and filling tube comprise the format set (the interchangeable format set).

The flat packaging material web is formed into a tube by drawing it down over the forming shoulder (9) and around the filling tube (8).

A silicone rubber strip (5) is bonded to the sealing surface of the filling tube as an elastic backing layer for the vertical sealing unit. The silicone rubber strip is masked with Teflon tape (6). This structure is a prerequisite for reducing heat transfer to the filling tube and achieving an even vertical seal. The Teflon tape also reduces friction and prevents the packaging material sticking permanently on the filling tube.

Shaping parts, such as hoods or spreaders, are fastened at the bottom end of the filling tube.

Format size

The format size is equal to the pillow bag width in millimeters. Refer to the packaging format drawing when determining the packaging shape and size. Every bag size has its own complete format set assigned to it; the size is imprinted on the format set (see arrow on the top image).

When should the format set be changed?

It is necessary to switch the entire format set when:

- A different bag width or
- A different bag shape

is to be manufactured using the machine.

When switching to another bag shape with the same bag width, either the complete format set can be replaced or only the shaping parts at the bottom end of the filling tube.

2.4.2 Changing the format set



NOTE!

If a dosage unit is used, other parts may need to be removed before changing the format set. For more information, see the operating manual for the relevant dosage unit.



⚠ WARNING!

Danger of burns due to hot surfaces!

The vertical sealing station will be operated with very hot components. Touching these components can lead to very serious burns.

▶ Maintain a sufficient distance from these hot surfaces of the station during machine operation.

▶ Switch off the corresponding heater before working on the station and let the station cool down until it is possible to work safely.

▶ When working on the hot station, wear suitable safety gloves to protect against the heat.

Changing the format set

Prerequisites:

✓ The draw-down belts of the draw-down device are lifted off from the filling tube (switch ***"Film drive"***).

✓ The protective doors on the front of the machine are open.

✓ The new format parts have been selected according to the format list (see section ***3.4 - Format change of the machine, Page 268***) or the format table from the appendix of this operating menu, and are ready for installation.

✓ The sealing tools have cooled down completely in order to be able to work on them without risk.

✓ The vertical sealing unit is swung away from the filling tube.

✓ The front part of the product collection tray (optional machine equipment) has been removed.

Removal:

1. Cut the packaging material web slightly upstream of the forming shoulder and fully remove the packaging material from the area of the change part.
2. Unplug the connecting cables at the packaging material edge control (optional machine equipment).
3. Unplug the connection cable of the dust extraction from the connector at the filling tube (optional machine component).
4. Unplug the transport cable of the gassing system from the connector at the filling tube (optional machine component).
5. Remove the chute from the change part (optional machine equipment)
6. Undo the tensioning bolts (2).

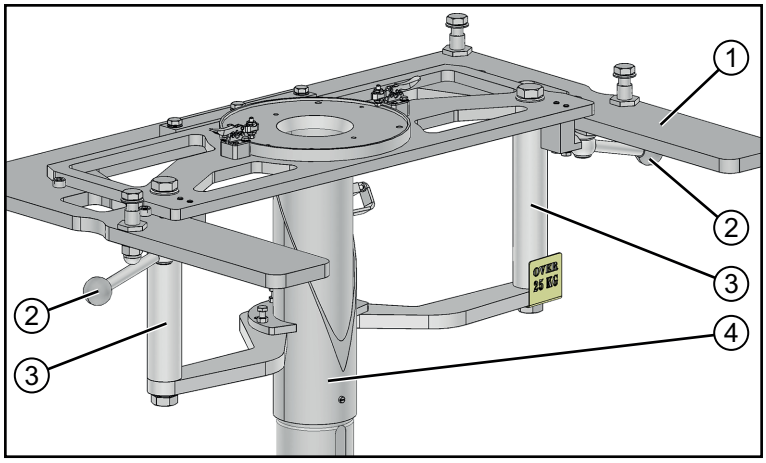


Fig. 2-33 Change part: Changing the change part

7. Grasp the old format set (4) with both hands on the support brackets (3), lift it down from the format retainer (1) and carefully set it down.

⚠ WARNING!

Danger of crushing!

The change part can weigh more than 25 kilograms.

▶ Use suitable hoisting gear to remove and install the change part.

▶ Ensure that there is no one in the danger zone during these tasks.

8. Fasten the chute to the change part again (optional machine equipment)
9. Clean the removed format parts and store them appropriately until next usage.

NOTE!

Danger of machine damage!

The format parts are precision parts.

▶ When setting down and transporting or storing the change part, make sure that no components of the change part are damaged.

Installation:

1. Remove the chute from the new change part (optional machine equipment)
2. Place the change part in the format retainer and push backward up to the stop.
3. Fix the format set in this position by using the tensioning bolts (2).
4. Plug the transport cable of the gassing system on the connector at the filling tube (optional machine component).
5. Plug the connection cable of the dust extraction on the connector at the filling tube (optional machine component).
6. Fasten the chute to the change part again (optional machine equipment)
7. Guide the packaging material web into the change part.
8. Lower the draw-down belt of the draw-down device on the filling tube (switch ***"Film drive"***).
9. Plug the connecting cables into the packaging material edge control (optional machine equipment).
10. Swing the vertical sealing unit back to the filling tube.

2.4.3 Setting up the format set

Filling tube

When carrying out a format change, alignment of the format set is generally not necessary. Do check, however, whether the center of the filling tube is even with the centre of the cross sealing station.

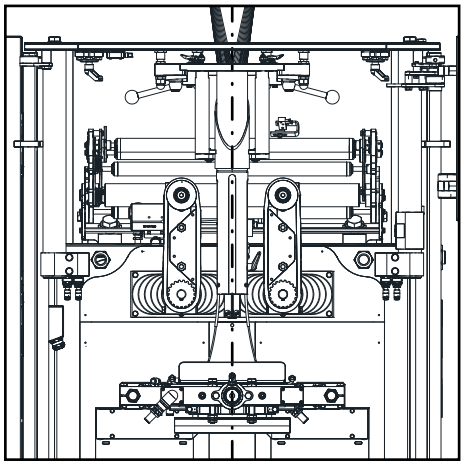


Fig. 2-34 Front view

Draw-down surfaces

The filling tube draw-down surfaces (2) must be arranged at an angle to the front plate (1). Thus the vertical sealing surface (3) must run automatically parallel to the front plate.

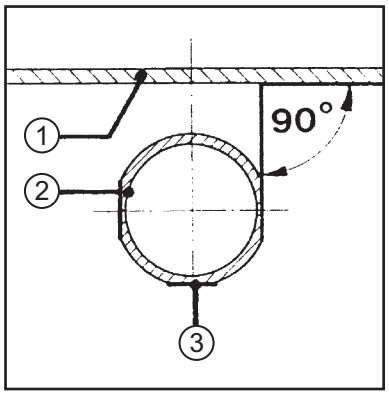


Fig. 2-35 Filling tube (top view)

1 Front plate
2 Draw-down surfaces
3 Vertical sealing surface

Annular gap

The space between the filling tube (1) and forming shoulder (2) is called the annular gap.

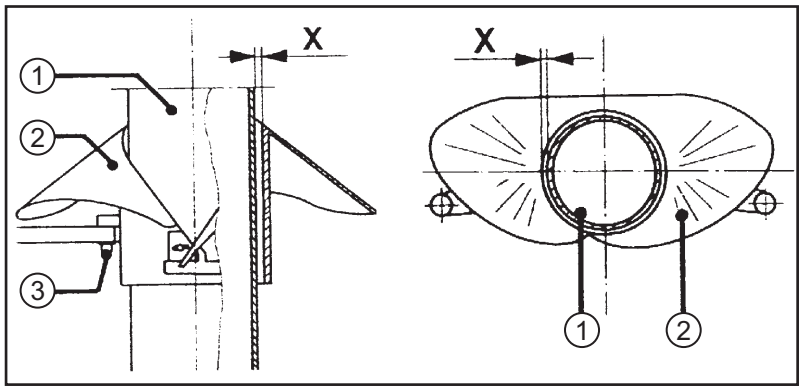


Fig. 2-36 format set (cut-away) and forming shoulder (top view)

1 Filling tube
2 Forming shoulder
3 Screws

The annular gap (x) between the filling tube and the forming shoulder must be uniform.

This can be checked easily:

- Insert a suitable packaging material cutting into the annular gap from above until it is visible below the forming shoulder.
- Now run the packaging material cutting along the gap around the filling tube. The packaging material must slide with uniform ease.

If the packaging material hits anything or if it is difficult to guide:

- Unscrew the screws (3).
- Change the position of the forming shoulder (2). The straight edge of the forming should must be aligned in parallel to the packaging material deflection roller. There are markings for use as measurement point on the collar of the shoulders.
- The retighten screws.

2.4.4 Chute and spreader

Function

The chute (3) must be attached to the end of the filling tube (1) to create side-fold packaging.

Installation

- Push the chute into the filling tube from below and then secure it with the screws (2).

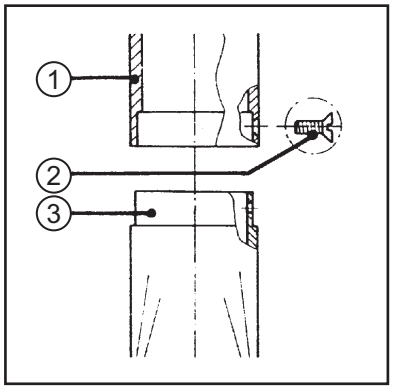


Fig. 2-37 Filling tube and chute (front view)

1 Filling tube
2 Screws
3 Chute

Removal

- Remove screws
- Pull the chute downwards and out of the filling tube

Alignment

The wire spreader (1) or the chute (2) must be aligned in the centre over the cross jaws (3).

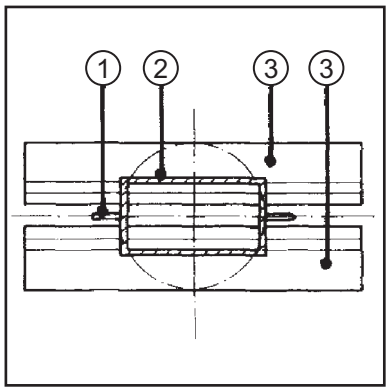


Fig. 2-38 Filling tube and chute or wire spreader (top view)

1 Wire spreader
2 Chute
3 Cross jaws

The first setting is carried out by **ROVEMA** but the user must check it and, if necessary, correct it when there are faults in bag production.

Extraction (optional)

The lower end of the suction tube must be located above the filling level of the bag **(see image below; dimension x = 10 - 30 mm)**.

The output and design of the extraction unit are, amongst other things, aligned to the product properties, such as dust development.

Effective suction is only possible when the air can circulate.

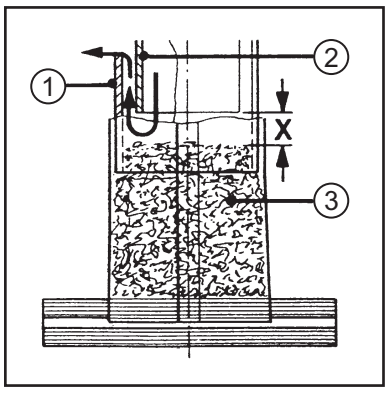


Fig. 2-39 Extraction

1 Filling tube
2 Suction tube
3 Bag

2.5.1 Draw down device (overview)

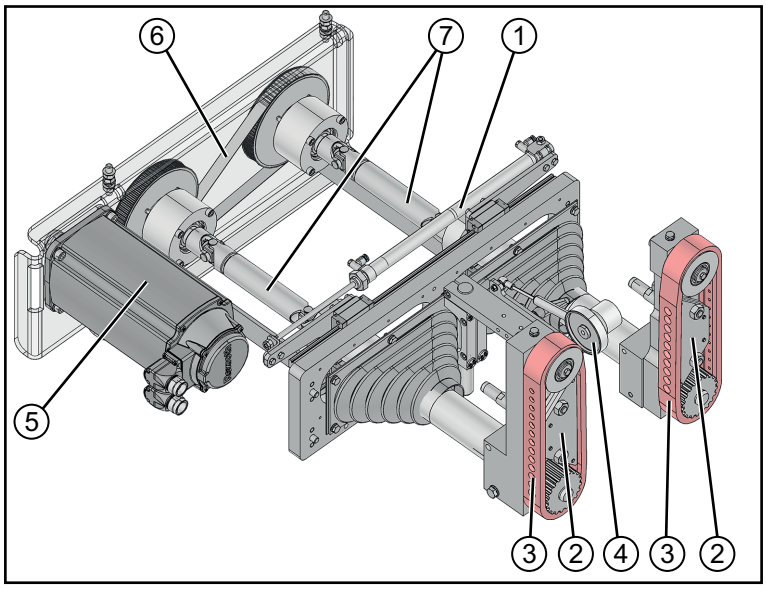


Fig. 2-40 Draw-down device overview

1 Pneumatic cylinder
2 Vacuum suction device
3 Draw-down belt
4 Bag length control device
5 Motor
6 Toothed belt
7 Universal shaft

Function

The packaging material is pulled off of the supply roll and transported via deflection and guide rollers to the cross-sealing station.

Draw-down belts (3) are applied at both sides of the filling tube. The pressure and motion of these belts serves to transport (draw-down) the packaging material.

The draw-down is supported by a vacuum system. In this, a vacuum suction device (2) sucks the packaging material onto the draw-down belts.

The draw-down device is driven by a motor (5). The power is transmitted via toothed belts (6) and universal shafts (7).

A pneumatic cylinder (1) enables movement for applying and lifting off the draw-down belts (3) on the filling tube.

The real draw-down length is measured with the bag length control device (4) and relayed to the control unit.

Operating elements for this assembly are:

- ***"Transport belt"*** switch in the ***VP SWITCH MENU*** of the display for lifting off / applying the draw-down belts
- ***"Film carriage"*** button in the ***VP JOG MENU*** of the display

- ***FILM DRIVE*** menu of the display
- Pressure reducer for the contact pressure of the draw-down belts (in the pneumatic switchgear cabinet)
- Vacuum pump in the machine housing for generating the vacuum

⚠ WARNING!

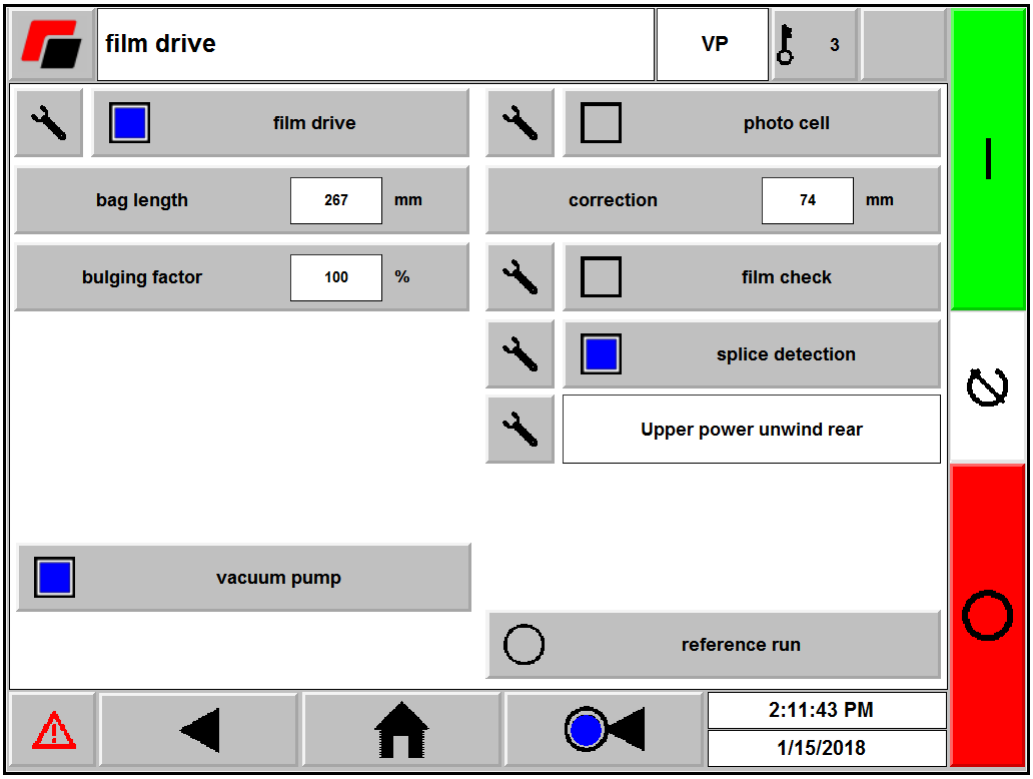
Danger of entanglement of body parts or clothing due to rotating parts!

There are rotating parts on the draw-down device, such as gear wheels or tension rollers. At these points, there is the risk of body parts or clothing being caught, wound up or drawn in.

▶ Prior to all tasks, switch the machine off at the main switch and secure the main switch against being switched back on unintentionally.

2.5.2 "Film drive" menu

All electronic settings for the draw-down unit function are made in this menu and additional sub-menus.



Wrench - change screen *FILM DRIVE*

This takes you to the function screen for the film drive.

“Film drive” switch

This switch switches the film drive and the pneumatic drive on the draw-down device on or off.

The film drive turns the draw-down belts which pull the packaging material on the format tube downward. Using the pneumatic drive, the draw-down belts are placed on the filling tube or lift them away from the filling tube.



⚠ CAUTION!

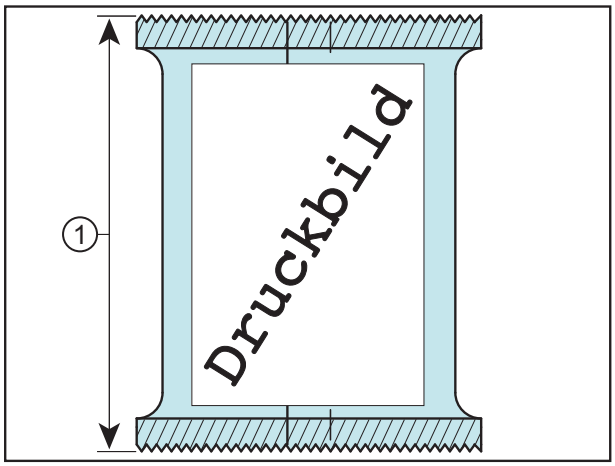
Danger of crushing!

There is danger of crushing in the area between draw-down belts, draw-down device and filling tube when the draw-down belts are applied to the filling tube!

▶ Never reach into the crushing danger zone between draw-down belt and filling tube, as long as parts can move there.

Target bag length

The value entered here defines the bag length (in millimeters).



1 bag length

Compression factor

is the ratio of the film speed (draw-down speed) to the jaw speed. By entering a value between 80 % and 120 %, you specify whether the bag will be stretched or compressed.

- 80 %: The film drive works 20 % slower than the cross-sealing tools, the film is stretched.
- 100 %: The film drive and cross-sealing station work at the same speed.
- 120 %: The film drive works 20 % faster than the cross-sealing tools, the film is compressed.

Wrench - change screen *PHOTO CELL*

This takes you to the settings of the photo cell.

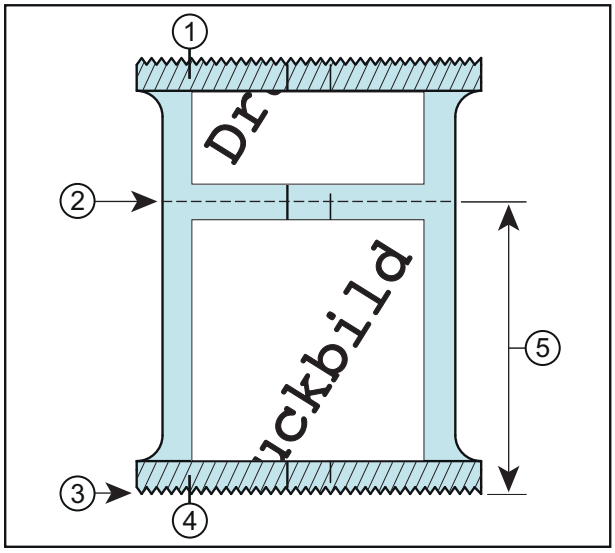
“Photo cell” switch

This switch activates and deactivates the photo cell.

Correction

Print image correction (in millimeters); effective only when printed packaging material and a photo cell are used.

This parameter is used to shift the film by the amount specified in order to correct the alignment of the print image on the film. Limit value calculation is not performed.



1 Top seal
2 Desired line of cut
3 Actual line of cut
4 Bottom seal
5 Correction

NOTE!

In order to prevent the print register mark from being too close to the photo cell in the event of a machine standstill, the following must be considered when entering the correction value:

The correction value must not be exactly as high as the bag length that has been entered, and it must be at least 20 mm longer or shorter.

If difficulties still arise, the packaging material path must be changed accordingly by adjusting the set-up swing or by moving a deflection roll on the packaging material carriage.

Wrench - change screen *FILM CHECK*

Access in the configuration menu ***FILM CHECK***.

“film check” switch

This switch switches the packaging material edge control function on or off.

Wrench - change screen *SPLICE DETECTION*

Access in the configuration menu ***SPLICE DETECTION***.

“Splice detection” switch

This switch switches the function for detecting a splice point on the bag on or off.

When a new packaging material roll is inserted in a form fill and seal machine, the start of the new film is spliced to the end of the old film with a strip of adhesive tape. Production can then resume using the remainder of the old film.

So that the adhesive strip does not continue to the production cycle, the splice detection system detects the bag with this adhesive strip using a scanner (e.g. ultrasonic scanner) at an adjustable position, before the bag is cut off.

The operator can then decide whether to stop the machine and remove the bag with the adhesive strip or continue and separate the bag out later.

If the choice is made to continue, the bag with the adhesive strip and the next bag are usually produced as a double bag (chain bag).

"Reference run" button

Button to trigger a reference run of the film drive.

Screen change wrench *REAR TOP POWER UNWIND*

This takes you to the configuration screen for this power unwind.

2.5.2.1 "film drive" function menu

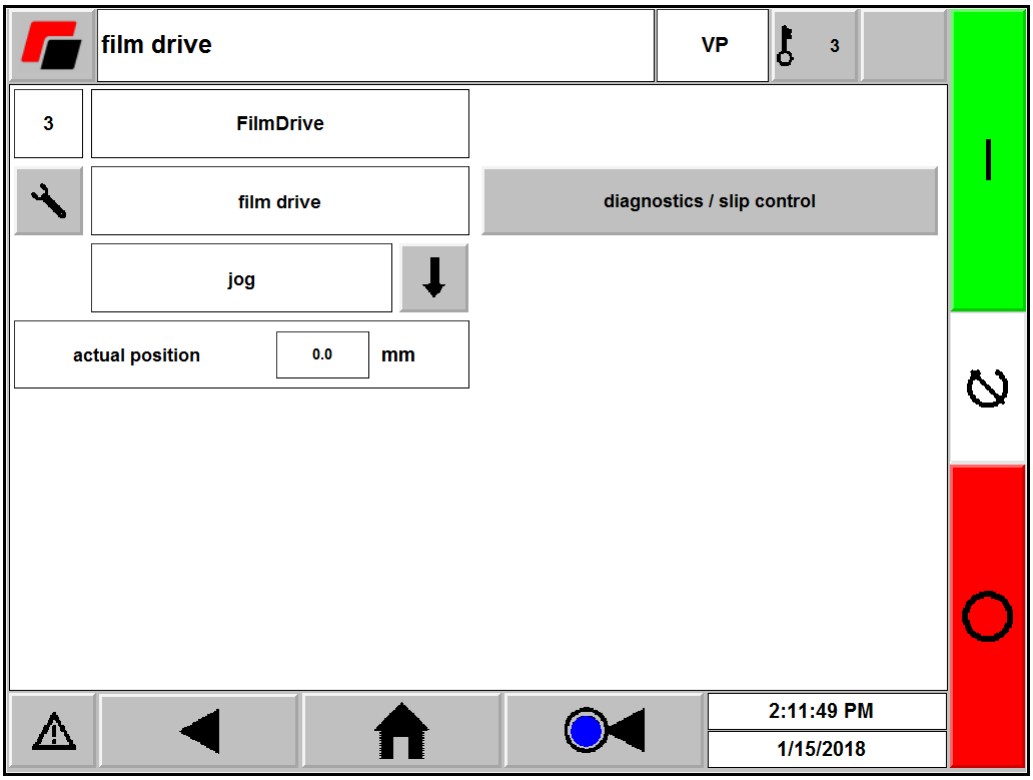
The drive axis of the draw-down device is programmed in this function screen.

NOTE!

Danger of permanent machine damage due to incorrect settings!

Incorrect settings can result in malfunctions and damage to the machine

▶ This area of the control unit must only be operated by appropriately qualified personnel!



Wrench - change screen

This takes you to the configuration screen for the axis.

The values accessed with the wrench were factory-set by ROVEMA. They cannot be changed by the operator, and are provided for information purposes only.

"Jog" buttons

These buttons can be used to jog the axes in the respective direction.

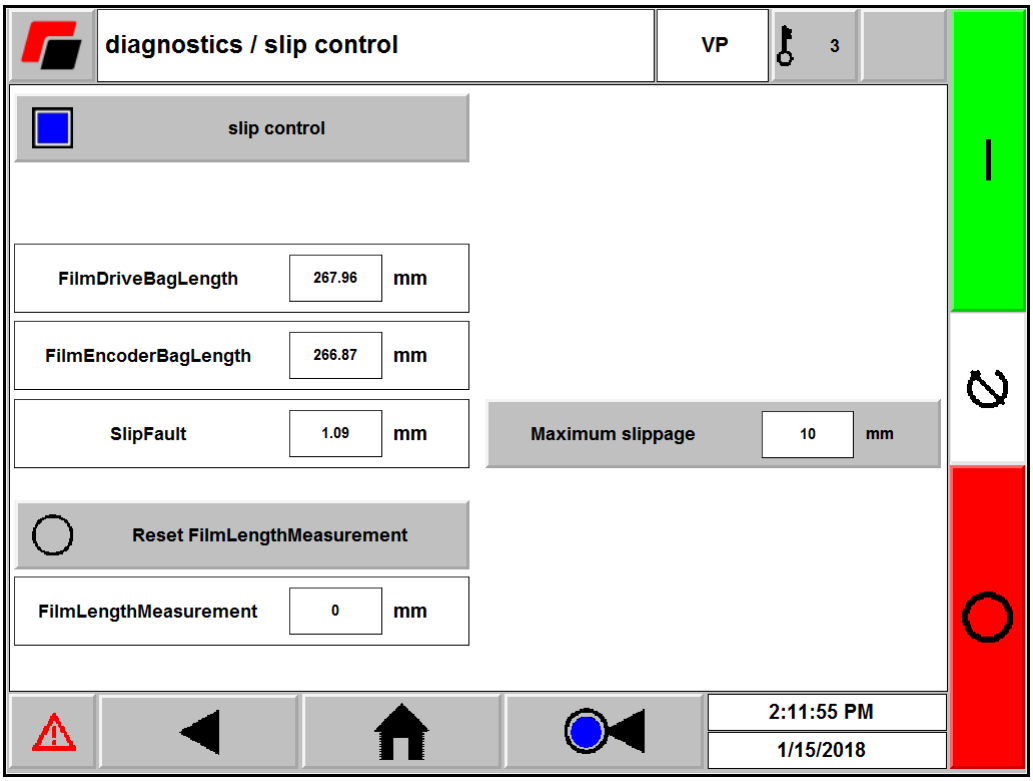
"Actual position" value display

The current position of the drive axis is read by a sensor system and displayed by the control as the actual position. This value can be used as an aid when determining setting values.

Screen change *DIAGNOSTICS / SLIP CONTROL*

This takes you to the diagnostics / slip control screen, where further settings can be made.

2.5.2.1.1 "Diagnostics / slip control" menu



"slip control" switch

Switch for activating and deactivating the slip control.

"FilmDriveBagLength" value display

This is where the display of the bag length, driven by the servo drive, occurs.

"FilmEncoderBagLength" value display

This is where the display of the actual bag length measured by the encoder (option) on the fill tube is shown.

"SlipFault" value display

This is where the display of the slip of the film drive with one bag is shown. The display value is the difference of the two values "FilmDriveBagLength" and "FilmEncoderBagLength".

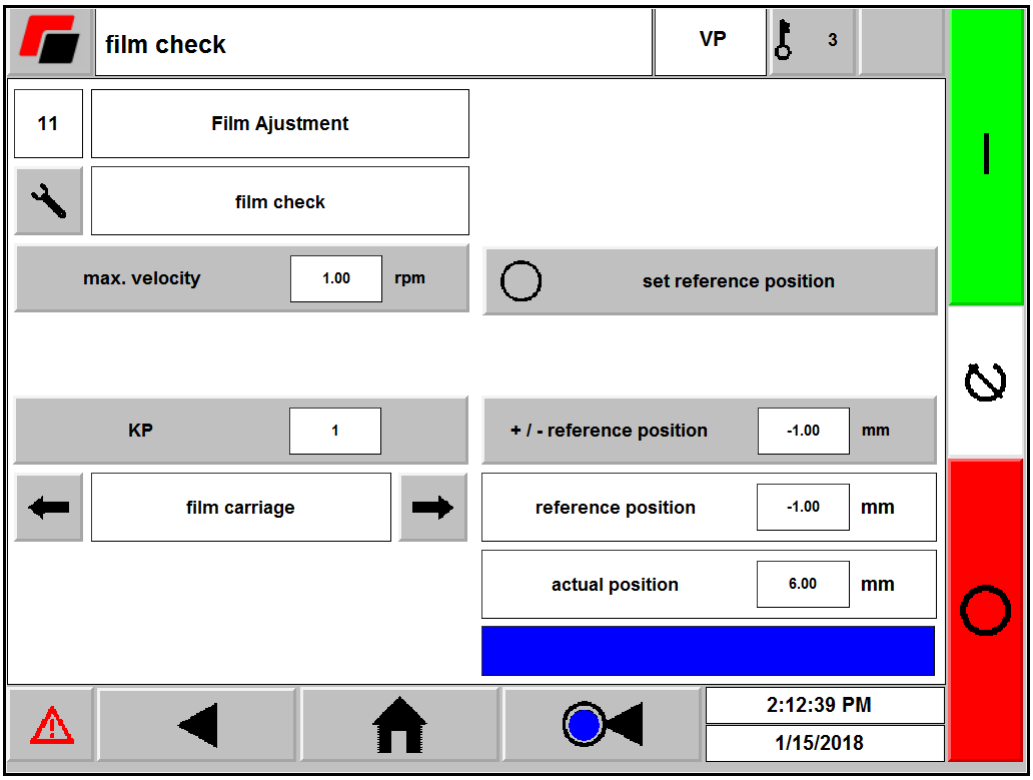
Maximum slip

The maximum value the slip should have is entered here.

If this maximum slip is reached, the machine is no longer able to compensate for it. The maximum then stops after a maximum of 10 cycles and an error message appears on the display.

2.5.2.2 "film check" configuration menu

In this menu, the configuration values for the packaging material control are set.



Wrench - change screen

This takes you to the configuration screen for the axis.

The values accessed with the wrench were factory-set by ROVEMA. They cannot be changed by the operator, and are provided for information purposes only.

Max. velocity

This setting defines the maximum velocity of the spindle drive of the film carriage adjuster.

NOTE!

This value is preset and should only be changed in consultation with Rovema.

KP

is the proportional reinforcement value for the packaging material edge control. By increasing this value the reference position is reached quicker, by lowering it it is reached slower.

NOTE!

This value is preset and should only be changed in consultation with Rovema.

"film carriage" buttons

The complete package material carriage is moved to the left or right with the aid of the package material carrier cross adjuster.

"Set reference position" button

Once the correct position of the travel of the packaging material has been established, this position must be saved as the new reference position by pressing this button. In automatic mode (***"Film check"*** switch is on) this position is then held.

+/- Reference position

At this position on the ultrasound edge sensor the film on the forming shoulder should be regulated during ongoing operation.

"Reference position" value display

shows at which position on the ultrasound edge sensor the film on the forming shoulder should be regulated during ongoing operation.

"Film carriage actual position" value display

Display for the current position of the film on the forming shoulder as determined by the ultrasound edge sensor.

During ongoing production operation, this position will change depending on which side the packaging material web is running along. If the packaging material web runs 1 mm to the right for example, the display will then show 1 mm because the film is one millimeter away from the 0 point. If the packaging material web runs to the left, the display is negative.

The current position is visualized using the display bar beneath the value display.

Set film check

1. Using the ***"Film carriage"*** typing keys, shift the packaging material carriage with the packaging material web until the edge of the packaging material web is located centrally in the sensor area of the ultrasound sensor.

   The display bar underneath the ***"Film carriage current position"*** value display helps with alignment.

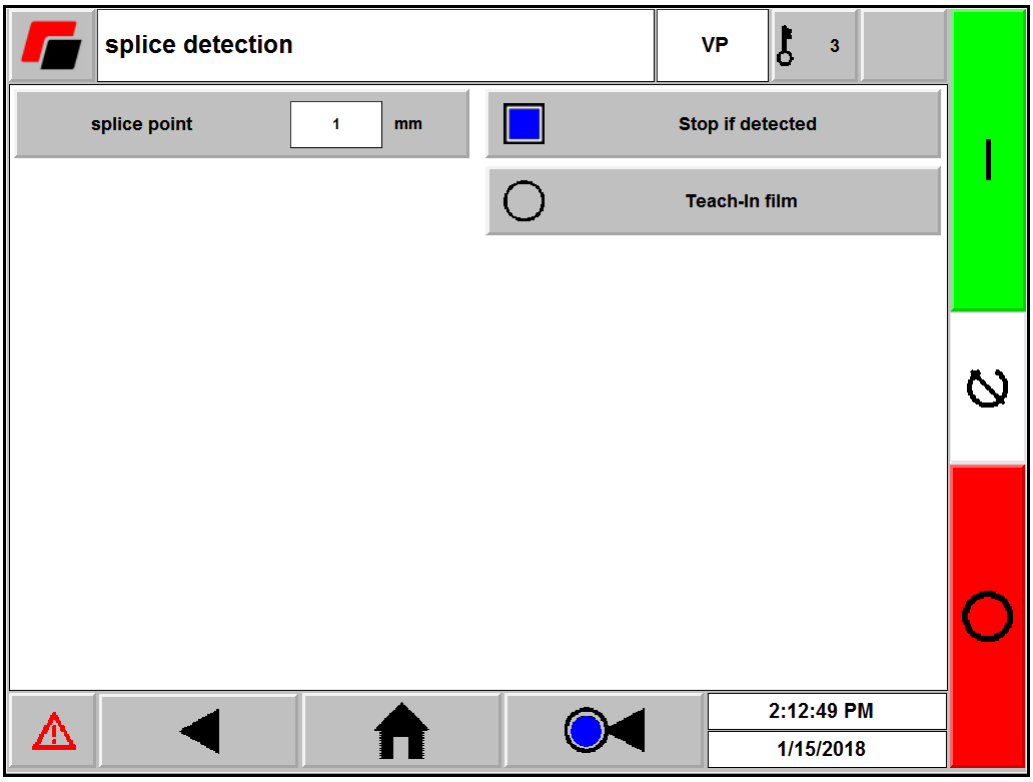
2. Press the ***"Set reference position"*** button.

3. The value of the parameter ***"Reference position"*** is set to "0".

Adjustment is thus completed. During running packaging material draw-down, the edge of the packaging material web is automatically regulated back towards the reference position.

2.5.2.3 Configuration menu "splice point detection"

In this menu, the configuration values for the "splice point detection" option are set.



Splice point

With this setting, the distance of the detection of the splice point (e.g. ultrasonic scan) to the desired position (usually to the cutting knife) is set.

Switch "stop at detection"

If the switch is switched on, then the machine comes to a standstill as soon as the set position of the splice point detection is reached.

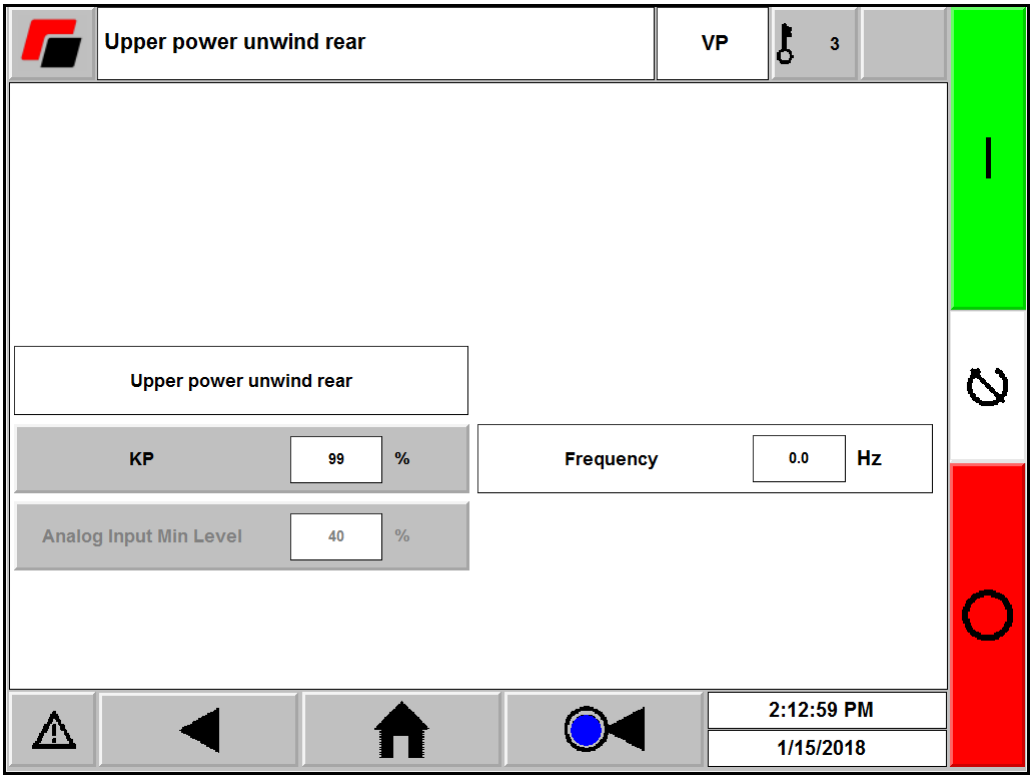
However, the machine does not remain precisely at this position, but executes its cycle to an end in order to remain at the Off position. The operator can now remove the bag with the adhesive strips.

When the switch is switched off, the machine continues running and the bag with the adhesive strips is subsequently separated out or removed.

"teach-in film" button

With this button, the thickness of the packaging material is determined for the ultrasonic scan By pressing this button the thickness of the packaging is determined automatically by the ultrasonic scan and stored internally as reference value. If now the adhesive strip, in addition to the packaging thickness runs by the scan, then this difference will be detected.

2.5.2.4 Configuration menu "Power unwind top rear"



Regular speed [%]

That is a proportional increase for the upper power unwind drive.

This factor influences the standard behavior:

If the value is increased, the target speed of the drive is reached more quickly, and if it is reduced, the target speed is reached more slowly.

NOTE!

A too-high increase can lead to an overshoot of the turret swing arm. A too-low increase can lead to the error message "Swing arm upper end position".

Value display "Frequency"

is the current speed of the power unwind drive in Hz.

Analog Input Min Level

If this value is undershot, the engine stops. the value relates to the analog sensor of the rocker arm. It is scaled to 0-10 volt.

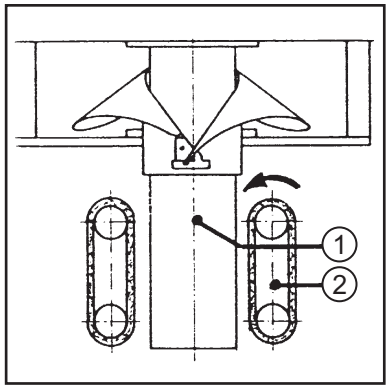
NOTE!

This value is preset and should only be changed in consultation with Rovema. The value can only be changed after the emergency stop safety chain has been broken!

2.5.3 Important prerequisites for an optimal packaging material draw-down

Center setting

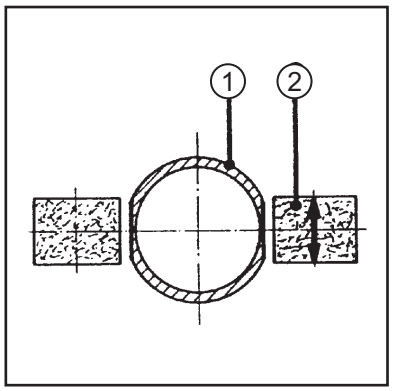
- The central axis of the filling tube (1) must match those of both draw-down holders (2).



1 Filling tube
2 Draw-down holder

Parallelity

- Ensure the axis distance of both draw-down holders (2) to the draw-down surfaces of the filling tube (1) is the same.
- The draw-down belts must run parallel to the draw-down surfaces.



1 Filling tube
2 Draw-down holder

Slip

Reference is made to slip when the draw-down belt slips on the packaging material without drawing down completely. This causes irregular draw-down lengths.

To avoid slip influences, the following settings should be checked:

- Vacuum on the draw-down belt; this includes checking the entire vacuum system (vacuum pump, vacuum connection, vacuum suction device in the draw-down unit, perforated toothed belt)

Before checking **slip influences** on the draw-down precision the **photo cell** must be switched off.

- Select the menu ***FILM DRIVE VP***.
- Switch the ***"Photo cell"*** electronic switch off.
- Check the film drive in jog mode.

Belt pressure

The belt pressure is crucial for the packaging material web to run evenly.

NOTE!

For the setting, please take note of the label of the pressure reducer on the machine housing!

A basic pressure setting is around 1 bar. The performance of the vacuum pump should be 0.6 - 0.8 bar. Settings for belt pressure will vary depending on film thickness and quality and must therefore be worked out separately by the operator for every film.

- If pressure is too low, so-called slip will occur, creating variations in the draw-down lengths.
- If the pressure is too high, the packaging material rubs against the filling tube. This may cause the drive to be overloaded and increased belt wear should be expected.

2.5.4 Replacing and adjusting draw-down belts



⚠ WARNING!

Danger of injury!

Incorrect execution of repair and maintenance tasks can result in risk of injury.

▶ Repair and maintenance tasks must only be performed by trained or appropriately instructed technicians.

Over time, wear causes the tensile force of the draw-down belt to deteriorate. In this case the belt must be replaced. The draw-down belts must only be replaced in pairs. The procedure for replacing a draw-down belt is described below.



⚠ CAUTION!

Danger of crushing!

There is danger of crushing in the area between draw-down belts, draw-down device and filling tube when the draw-down belts are applied to the filling tube.

▶ Prior to all tasks, switch the machine off at the main switch and secure the main switch against being switched back on unintentionally.

Replacing draw-down belt

Prerequisites:

✓ The draw-down belts of the draw-down device are lifted from the filling tube (switch ***"Film drive"***).

✓ The machine has been switched off at the main switch, and the main switch has then been secured against being switched back on unintentionally.

✓ The protective doors on the front of the machine are open.

✓ The vertical sealing unit is swung away from the filling tube.

✓ The necessary spare parts have been procured beforehand and are ready for the replacement.

Required tool:

- Wrench (AF10)
- Wrench (AF16)

Procedure:

1. Using the wrench (AF16), unscrew the lock nut (1) on the rear side of the draw-down holder (2).

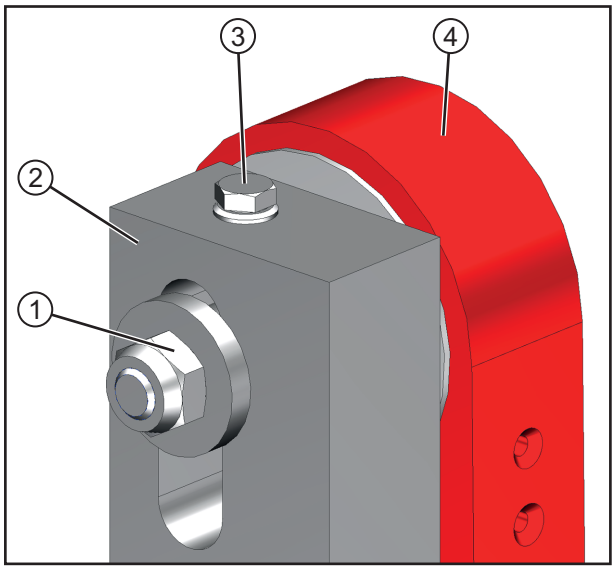


Fig. 2-41 Draw-down device: Replace and tension the draw-down belt

2. Using the wrench (AF10), turn the tensioning screw (3) counterclockwise, in order to release the draw-down belt (4).
3. Lift off the old draw-down belt.
4. Clean the complete device.
5. Put on the new draw-down belt.

NOTE!

When applying a new draw-down belt, make sure that the direction of movement corresponds to the arrow stamped on the belt (only for belt where the direction of movement is printed)!

6. Tension the draw-down belt as described below.
7. Retighten the lock nuts (1).
8. Start the function of the draw-down device when lifted off.

NOTE!

The new draw-down belts first have to run in, after installation. This running in avoids adverse effects to the draw-down due to so called "false air".

9. Let the draw-down belts run in for at least 10 minutes.

Tensioning the draw-down belts

Required tool:

- Wrench (AF10)
- Wrench (AF16)

Procedure:

1. Using the wrench (AF16), unscrew the lock nut (1) on the rear side of the draw-down holder (2).
2. Turn at the tensioning screw (2) using the wrench (AF10).
   a) Tensioning the belt further: Turn clockwise.
   b) De-tensioning the belt: Turn counterclockwise.
3. After correct adjustment, retighten the lock nut (1).

Checking the tension:

1. After tensioning, it should be possible to push the draw-down belt through on the outer face for approx. 5 mm.

NOTE!

To ensure the functioning of this assembly, use only original spare parts!

2.6.1 Vertical sealing belt (overview)

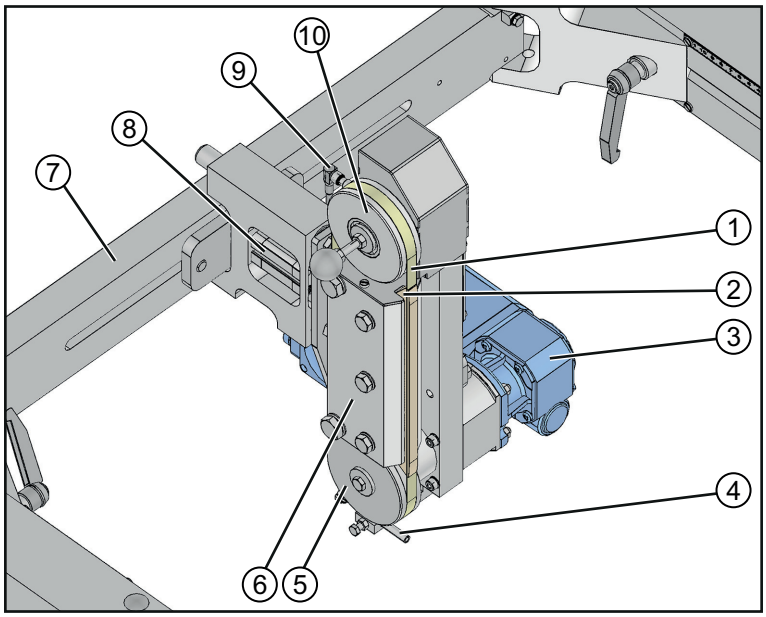


Fig. 2-42 Vertical sealing belt overview

1 Sealing belt (continuous steel belt)
2 Sealing insert
3 Motor
4 Vertical seam cooling (Option)
5 Drive roller
6 Vertical jaw
7 Retaining clamp
8 Pneumatic cylinder
9 Proximity switch "Defective vertical sealing belt"
10 Deflection roller

Function

The packaging material shaped by the shoulder into a tube will be sealed in the vertical direction using the vertical sealing belt.

A circulating, electrically heated steel belt seals the overlapping or folded packaging material edges from the top to the bottom. During the sealing process, the packaging material is pressed by the sealing belt onto the support surface of the filling tube.

Sealing pressure

A pneumatic cylinder exerts pressure on the sealing belt and lifts it away from the packaging material in the event of interruptions in production. The amount of pressure can be adjusted via the allotted pressure regulators in the pneumatic control cabinet. **The pressure should be 1 - 1.5 bar**.

Precision adjustment of the vertical sealing (optional)

The pressure of the sealing belt on the wrapping material can also be changed with the help of the precision adjustment mechanism.

The travel of the adjustment screw can be shortened and the pressure of the sealing belt on the packing material is reduced by turning the adjustment screw clockwise beyond the stop.

Drive source of the unit is a three-phase motor. The circulation speed of the sealing belt is adjusted to the draw-down speed.

Heat sources are heating cartridges inside the vertical jaw. Heat is transferred to the sealing belt by means of a sealing insert.

Regulating the temperature The temperature of the heating cartridges is controlled by a temperature controller. The desired parameters for the vertical jaw heating are entered on the display screen.

Proximity switch "Vertical sealing belt defective" The machine stops automatically when there is a torn sealing belt. This is triggered by a proximity switch which is then no longer covered by the belt.

Swivel the unit For cleaning and maintenance work, you can swing the vertical sealing belt away from the filling tube without changing the basic setting:

1. Undo the tensioning bolts (11).

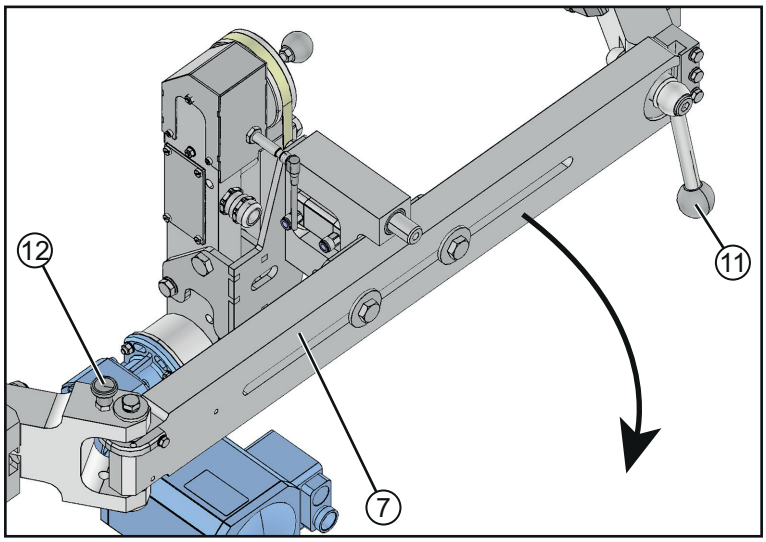


Fig. 2-43 Vertical sealing belt: swing unit away from the filling tube

2. Swing the mounting bracket (7) with the vertical sealing belt that is attached to it away from the filling tube until the lock bolt engages (12).
3. On completion of the work, push the lock bolt upwards and swing the vertical sealing belt back towards the filling tube, then push the lock bolt back down again and secure the unit in this position with the help of the tensioning bolt.

Vertical seam cooling (optional)

To allow the still warm vertical seam to bear loads immediately it is cooled with air by a cooling device. This device is in the form of a cooling tube, and is mounted below the vertical sealing belt.

The switch-on and switch-off time for the blowing operation of cooling unit can be defined in the menu ***CAMS/VERTICAL COOLING***. The amount of air is controlled via the pressure reducing valve (in the pneumatic control cabinet).

2.6.2 Conditions for a good vertical seal quality

Forms of vertical seal

Overlap seal

For packaging materials where the inner layer must be sealed to the outer layer, the packaging material tongue (1) must be moved in the direction of the arrow after the fastening (2) is released.

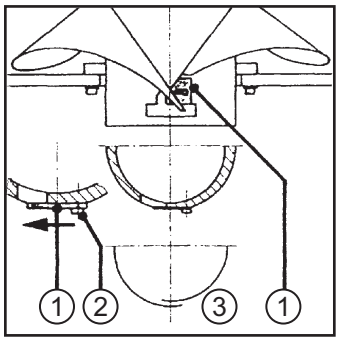


Fig. 2-44 Overlap seal

1 Packaging material tongue
2 Fastening screw
3 Overlap seal

Flange seal

For packaging materials where the inner layers are to be sealed onto each other, the packaging material tongue (1) must be moved in the direction of the arrow after the fastening (2) is unscrewed.

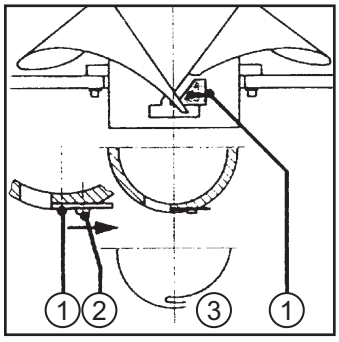


Fig. 2-45 Flange seal

1 Packaging material tongue
2 Fastening screw
3 Flange seal

Angled alignment of the vertical sealing unit

The filling tube (2) and the vertical sealing unit (3) must be situated parallel to the front plate (1). Their central axes must be aligned.

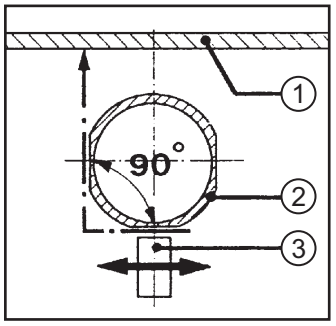


Fig. 2-46 Angled alignment of the vertical sealing unit

1 Front plate
2 Filling tube
3 Vertical sealing unit

Position of the sealing belt relative to the support surface on the filling tube

The sealing tape should run parallel to the support surface of the filling tube.

There must be a gap (Y) wide enough for the packaging material between the support surface and the sealing tape.

The basic setting is for a gap width (Y) of 10 mm.

For thin packaging materials diverging in the sealing area, the vertical sealing unit should be adjusted so that it is slightly sloping.

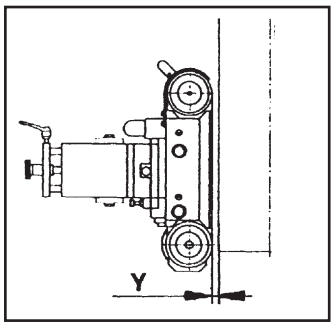


Fig. 2-47 Position of the sealing belt relative to the support surface on the filling tube

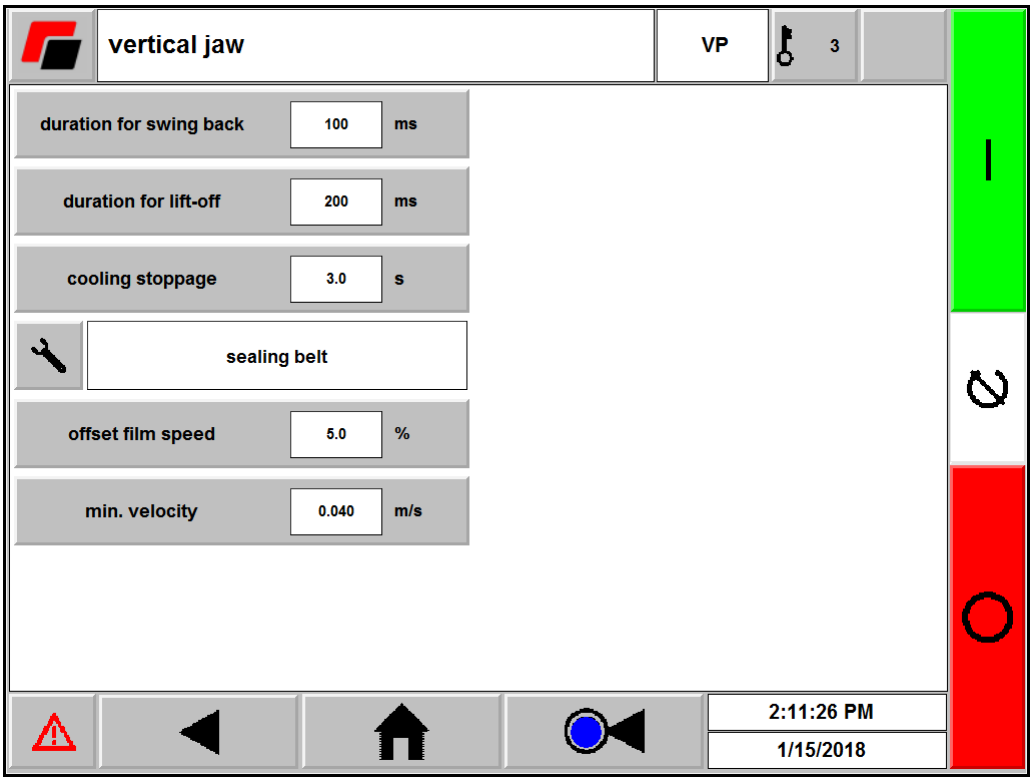
Heating element and sealing belt

The pneumatically activated heating element should no influence the course of the sealing belt between the belt rollers. On the other hand, it must be ensured that the insert of the heating elements touches the sealing tape; you can also correct the vertical and horizontal position of the heating element through adjustment screws.

2.6.3 "Vertical jaw" menu

Electronic settings for the vertical bag closure are made in this menu.

The display of the content in this menu is based on the vertical sealing unit that is currently mounted.



Pivot toward time

The input of this value (in milliseconds) defines a time span between the vertical sealing unit reconnecting with the packaging material and the restart of the machine.

If the vertical sealing unit is swung back at the same moment as the packaging material draw-down starts, the first produced bags will not be properly sealed.

To exclude this possibility, you must determine the right value for this menu item:

1. Switch off the dosing unit.
2. Set the ***"Swing-in time"*** value to "0".
3. Produce a few bags.
4. Check the produced bags.
5. If the vertical seal is open, increase the value for ***"Swing-in time"*** in 20-ms steps.
6. Start a new trial run and if necessary specify the new time.

NOTE!

The optimal setting is reached when the packaging material draw-down starts at the moment when the vertical sealing unit is properly swung into place.

Duration for lift-off

The input of this value (in milliseconds) defines a time span between when the machine stops and lift-off of the vertical sealing unit from the packaging material.

The sealing tape continues to be driven and heated after the vertical sealing unit swings away so that when bag production is resumed it immediately has the necessary sealing temperature.

To prevent the packaging material overheating, the hot air is switched off after pulling back the hot air sealing unit from the filling pipe.

Cooling standstill

If production is interrupted, the freshly created vertical seal will still be cooled for the time set here.

Wrench - change screen *SEALING BELT*

Access to the vertical sealing unit configuration menu.

Offset film speed

Increasing or reducing the value adapts the speed of the vertical sealing belt to the speed of the packaging material draw-down. If the value is reduced, the speed of the vertical sealing belt is reduced, if the value is increased the speed of the vertical sealing belt increases.

The vertical sealing belt must run about 5% faster than the draw-down belts of the packaging material draw-down.

This menu parameter will only be shown on the screen in conjunction with a vertical sealing belt.

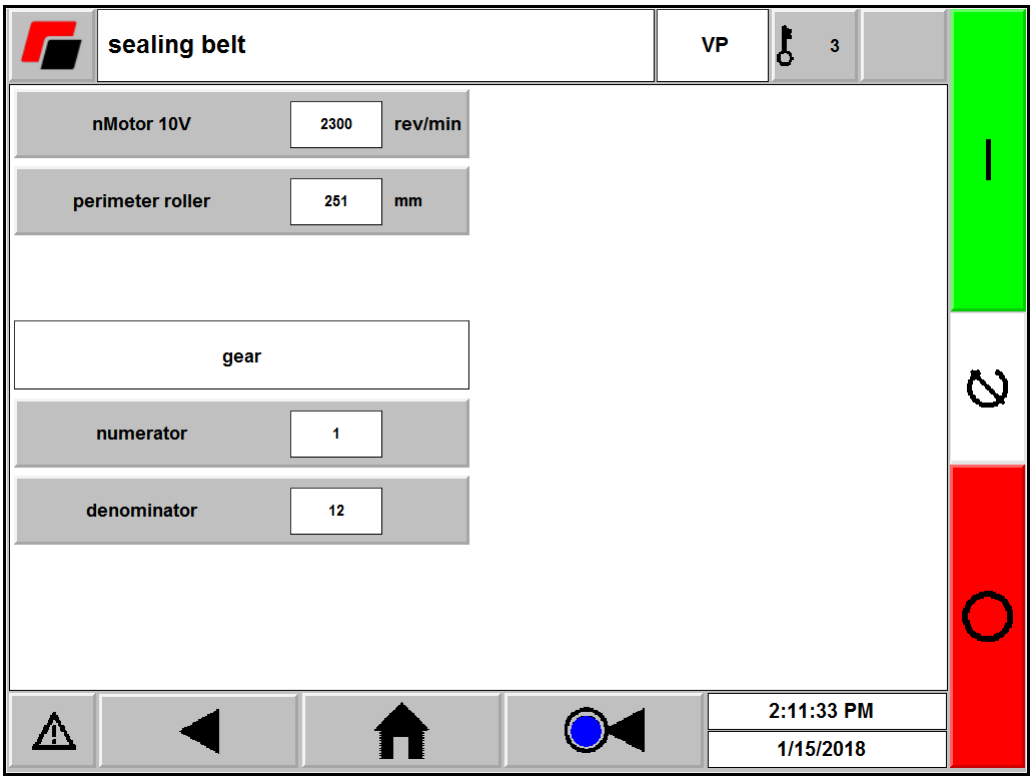
Min. speed

Speed of the revolving sealing belt during a machine stop.

This menu parameter will only be shown on the screen in conjunction with a vertical sealing belt.

2.6.3.1 "Sealing belt" configuration menu

Basic settings for the longitudinal sealing unit are entered in this configuration menu.



nMotor10V

Speed of the motor with maximum activation through frequency converter at 80Hz.

NOTE!

This value has been determined and factory-set by ROVEMA. It cannot be changed by the operator, and is provided for information purposes only.

Roller circumference

Circumference of the drive roller on which the vertical sealing belt runs.

NOTE!

This value has been determined and factory-set by ROVEMA. It cannot be changed by the operator, and is provided for information purposes only.

Gear unit: Numerator/denominator

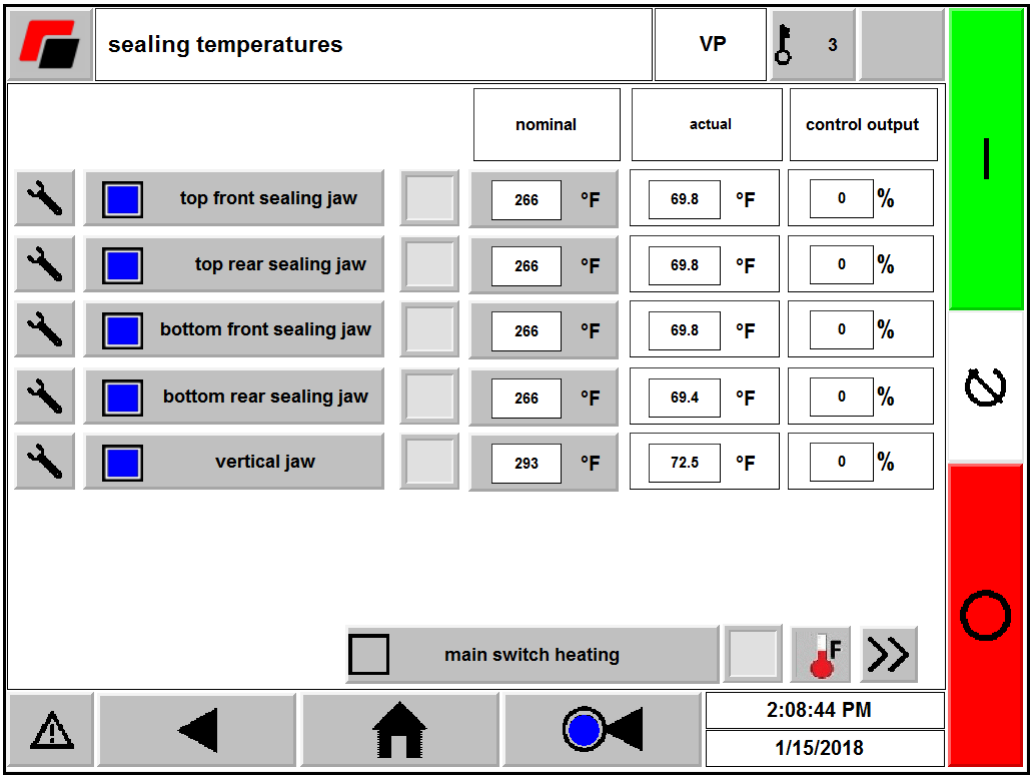
Gear ratio of motor to drive roller.

NOTE!

This value has been determined and factory-set by ROVEMA. It cannot be changed by the operator, and is provided for information purposes only.

2.6.4 “sealing temperatures” menu

In this menu, the temperatures are set for various heated machine functions. Every function listed in this menu has its own temperature control zone. When you make an entry in this menu, you are defining the temperature setpoint (in °Celsius) at which the function is to be carried out. Further settings for the control zone are entered in the corresponding configuration menu.



Wrench - change screen

Pressing this button takes you to the configuration menu for the appropriate heating function.

Switch for switching the temperature control zone on and off.

As soon as this switch is switched off, the heating for this function is deactivated. The values entered for the nominal temperature and the configuration data are retained. When switched on again, production is resumed with this data.

Nominal temperature

The nominal temperature is the setpoint at which the heating for that particular machine function should operate under normal circumstances. When the machine starts, the heating takes a certain amount of time to reach the nominal temperature set here. You cannot begin production during this time.

During the heat-up phase, observe the actual temperature display. This display should continually rise during the warm-up phase until the temperature setpoint is reached.

"Actual temperature" value display

This is the temperature currently reached by the heating function. This value is displayed as information for the operator. The display of the actual temperature does not need to remain constant, but rather can display fluctuating values throughout operation.

Value display "manipulated variable"

This value displays the output level at which the heating function is operating, as a percentage of its maximum output. The control output display can vary between 0 % and 100 %. 0 % means that no heating is occurring. 100 % means that the heating is working at maximum power.

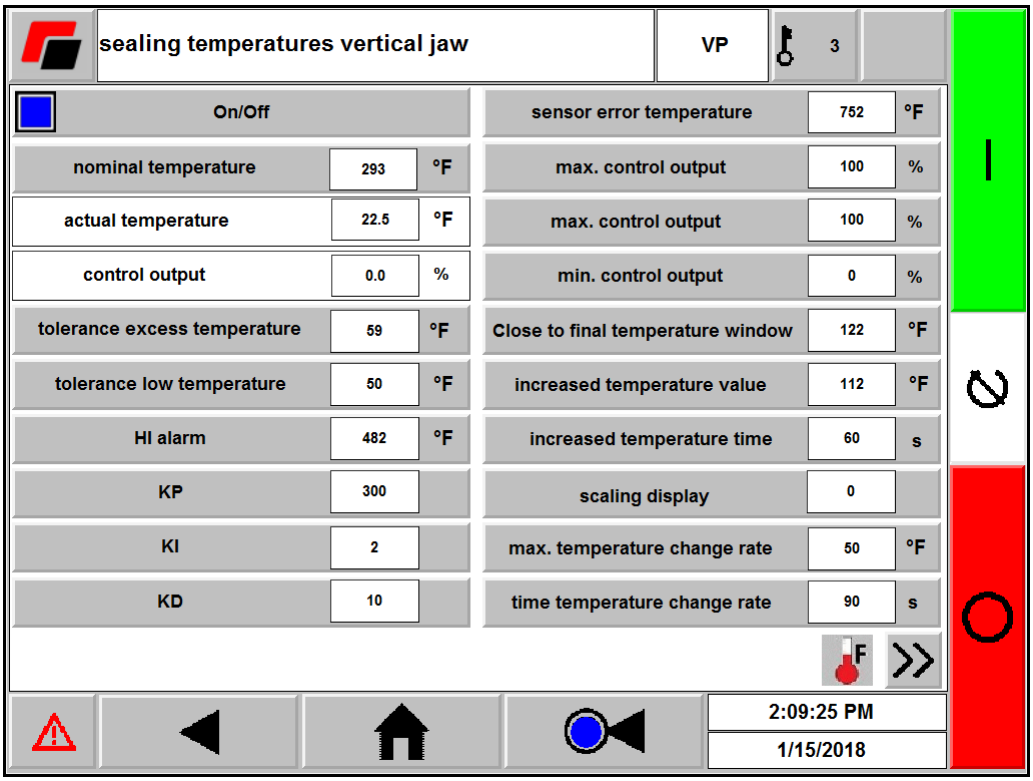
"Main switch for heating" switch

Switch for quickly switching all temperature control zones of the machine on and off.

Switch for switching the temperature display (thermometer)

This switch switches the temperature display unit between Celsius and Fahrenheit.

2.6.4.1 “Sealing temperatures” configuration menu



Switch for switching the temperature control zone on and off.

As soon as this switch is switched off, the heating for this function is deactivated. The values entered for the nominal temperature and the configuration data are retained. When switched on again, production is resumed with this data.

Nominal temperature

The nominal temperature is the setpoint at which the heating for that particular machine function should operate under normal circumstances. When the machine starts, the heating takes a certain amount of time to reach the nominal temperature set here. You cannot begin production during this time.

During the heat-up phase, observe the actual temperature display. This display should continually rise during the warm-up phase until the temperature setpoint is reached.

"Actual temperature" value display

This is the temperature currently reached by the heating function. This value is displayed as information for the operator. The display of the actual temperature does not need to remain constant, but rather can display fluctuating values throughout operation.

Value display "manipulated variable"

This value displays the output level at which the heating function is operating, as a percentage of its maximum output. The control output display can vary between 0 % and 100 %. 0 % means that no heating is occurring. 100 % means that the heating is working at maximum power.

Tolerance

Due to various factors in the production environment, the set nominal temperature cannot always be kept constant. To ensure smooth production operations, a tolerance limit can be set to allow the temperature to rise above or fall below the nominal temperature. This means that production will not be interrupted because of an error message which would otherwise be triggered by the temperature monitoring in the control zone.

The value is entered in °Celsius. The tolerance limit should be large enough to compensate for temperature fluctuations resulting from production processes. However the value must not be allowed to cause faulty production results. If the fluctuations cannot be compensated adequately by entering a tolerance limit, you might need to adjust other settings for the temperature zone.

If the temperature nevertheless rises above or falls below the nominal temperature by the set tolerance value, a malfunction message appears on the display.

HI alarm

Adjustable upper temperature limit. A fault results if the value set here is exceeded.

2.6.5 Format adjustment



⚠ WARNING!

Danger of burns due to hot surfaces!

The vertical sealing station is operated with a vertical sealing belt. The surface of this sealing belt as well as the sealing insert and the vertical jaw are very hot under operating conditions. Touching these hot machine parts can cause serious burns.

- ▶ Maintain a sufficient distance from these hot surfaces of the station during machine operation.
- ▶ Switch off the corresponding heater before working on the station and let the station cool down until it is possible to work safely.
- ▶ When working on the hot station, wear suitable safety gloves to protect against the heat.

After replacing the change part, it may be necessary to adapt the vertical sealing unit mechanically to the dimensions of the new change part.

NOTE!

Danger of machine damage!

Incorrect settings can lead to interruptions in production and damage to the machine!

- ▶ Perform the format change on the machine with the utmost care!
- ▶ Make sure that the specified dimensions are precisely complied with!
- ▶ If your machine is designed for only one format, no adjustment tasks are required.



⚠ CAUTION!

Danger of crushing!

There is a danger of crushing in the area between the sealing belt and the filling tube when the sealing belt is applied to the filling tube.

- ▶ Prior to all tasks, switch the machine off at the main switch and secure the main switch against being switched back on unintentionally.

Prerequisites:

- ✓ The basic adjustment of the vertical sealing unit was already carried out.
- ✓ The new change part has been attached.
- ✓ The vertical sealing unit has been swung to the filling tube.
- ✓ All the jaw heaters on the machine are switched off (switch ***"Heating main switch"***).
- ✓ The vertical jaw, the seal insert and the sealing belt have cooled down so safe work on the unit is possible.

Vertical sealing unit: side guide

1. Loosen the locking levers (3).

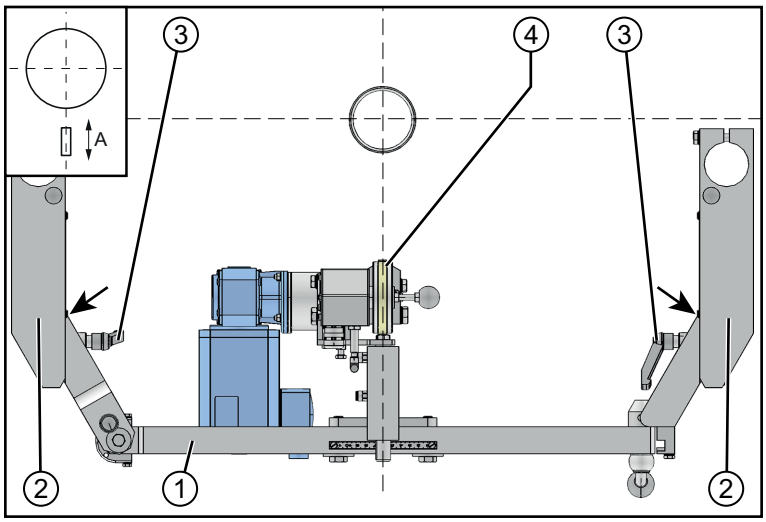


Fig. 2-48 Vertical sealing unit: side guide

2. Uniformly slide the support bracket (1) with the vertical sealing belt (4) in the elongated holes of the side guides (2) to the new format position, in accordance with the details of the format table.

NOTE!

Scales on the side guides (see arrows in illustration) serve as an orientation aid for the adjustment!

3. Retighten the clamping levers (3).

Vertical sealing unit: front guide

1. Loosen the fastening screws (2).

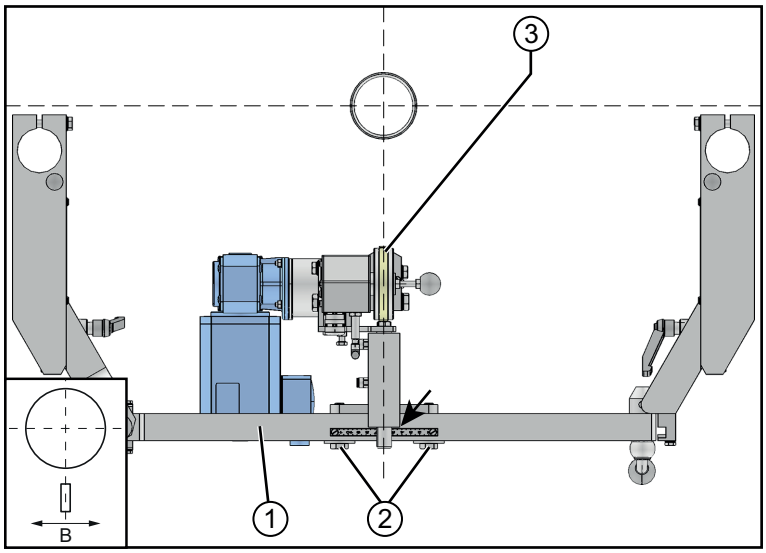


Fig. 2-49 Vertical sealing unit: front guide

2. Slide the vertical sealing belt (3) in the vertical slot of the support bracket (1) to the new format position, in accordance with the details of the format table.

NOTE!

A scale on the top side of the support bracket (see arrow in figure) serves as an orientation aid during adjustment!

3. Retighten the fastening screws (2).

Position of the sealing tape relative to the support surface

The sealing belt should run in the basic position parallel to the support surface of the filling tube.

If wrinkles are formed in the packaging material between the shoulder and the sealing belt, change the vertical position of the belt using the two adjusting screws in such a manner that the sealing belt is somewhat further away from the filling tube at the top than it is at the bottom.

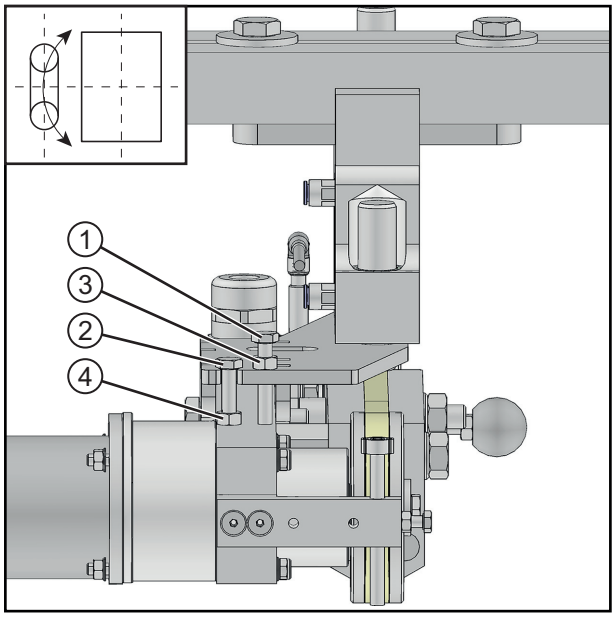


Fig. 2-50 Vertical sealing belt: Position of the sealing belt relative to the support surface

To correct the position, proceed as follows:

1. Unscrew the locknuts (2 and 4).
2. Rotate the top half of the sealing belt in the direction of the filling tube; to do this, unscrew adjusting screw (1) or tighten adjusting screw (2).
3. Rotate the bottom half of the sealing belt in the direction of the filling tube; to do this, screw the adjusting screw (2) or tighten the adjusting screw (1).
4. After making the adjustment, turn the locknuts again.

2.6.6 Changing sealing belt and/or sealing insert



⚠ WARNING!

Danger of injury!

Incorrect execution of repair and maintenance tasks can result in risk of injury.

▶ Repair and maintenance tasks must only be performed by trained or appropriately instructed technicians.



⚠ WARNING!

Danger of burns due to hot surfaces!

The vertical sealing station is operated with a vertical sealing belt. The surface of this sealing belt as well as the sealing insert and the vertical jaw are very hot under operating conditions. Touching these hot machine parts can cause serious burns.

- ▶ Maintain a sufficient distance from these hot surfaces of the station during machine operation.
- ▶ Switch off the corresponding heater before working on the station and let the station cool down until it is possible to work safely.
- ▶ When working on the hot station, wear suitable safety gloves to protect against the heat.

⚠ CAUTION!

Danger of cut injuries due to sharp edges on the sealing belt and sealing insert in the vertical sealing station!

Worn sealing belts and sealing inserts can have very sharp edges. Touching one of those sharp edges can result in cut injuries.

- ▶ Protect yourself from cutting injuries by wearing suitable safety gloves.

Condition:

- ✓ The machine has been switched off at the main switch and the main switch has then been secured against being switched back on unintentionally!
- ✓ The vertical sealing unit has completely cooled down in order to be able to work on it without risk.
- ✓ The protective doors on the front of the machine are open.
- ✓ The vertical sealing unit has been swung away from the filling tube.
- ✓ The necessary spare parts have been procured beforehand and are ready for the replacement.

Required tool:

- Wrench (AF13)
- Pliers

Changing the sealing belt:

1. Slacken the sealing belt (5); to do this, press the ball knob (1) downward.

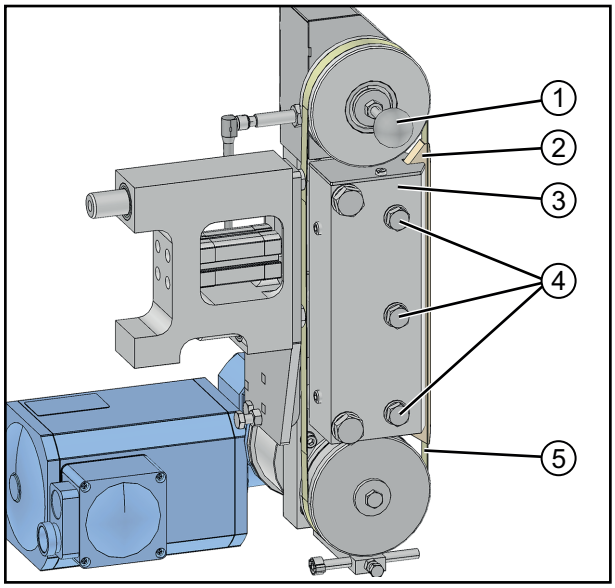


Fig. 2-51 Changing sealing belt and/or sealing insert

2. Lift off the faulty sealing belt from the drive unit.

Checking the surface condition of the sealing insert:

1. Perform the following visual checks on the sealing insert (2):
   a) Check whether feathering is visible at the edges (A) of the contact surface for the sealing belt. If yes, the burr has to be removed with a suitable tool.
   b) Check the contact surface (B) for the sealing belt for evenness and erosion; replace the sealing insert immediately if there is wear.

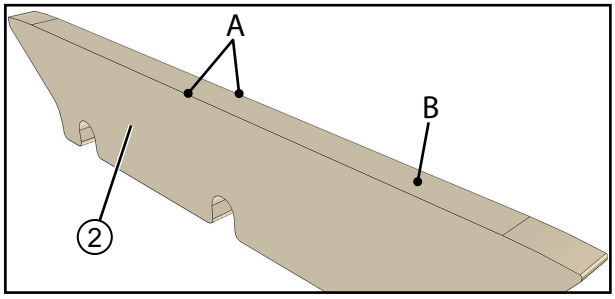


Fig. 2-52 Checking the surface condition of the sealing insert

Changing the sealing insert:

1. Unscrew the fastening screws (4).
2. Pull the sealing insert (2) out of the vertical jaw (3) with pliers.

Reassembly:

1. Place the sealing insert into the vertical jaws and fasten with screws; when re-inserting the sealing insert, ensure that it is installed correctly.
2. Fit the sealing belt back on to the drive unit.
3. Swing the vertical sealing unit back towards the filling tube.

4. Close the protective doors.
5. Switch on the machine again via the main switch.

NOTE!

To ensure the functioning of this assembly, use only original spare parts!

2.6.7 Replacing the heating cartridge and/or temperature sensor



⚠ WARNING!

Danger of injury!

Incorrect execution of repair and maintenance tasks can result in risk of injury.

- ▶ Repair and maintenance tasks must only be performed by trained or appropriately instructed technicians.



⚠ WARNING!

Danger of burns due to hot surfaces!

The vertical sealing station is operated with a vertical sealing belt. The surface of this sealing belt as well as the sealing insert and the vertical jaw are very hot under operating conditions. Touching these hot machine parts can cause serious burns.

- ▶ Maintain a sufficient distance from these hot surfaces of the station during machine operation.
- ▶ Switch off the corresponding heater before working on the station and let the station cool down until it is possible to work safely.
- ▶ When working on the hot station, wear suitable safety gloves to protect against the heat.

⚠ CAUTION!

Danger of cut injuries due to sharp edges on the sealing belt and sealing insert in the vertical sealing station!

Worn sealing belts and sealing inserts can have very sharp edges. Touching one of those sharp edges can result in cut injuries.

- ▶ Protect yourself from cutting injuries by wearing suitable safety gloves.

Prerequisites:

- ✓ The machine has been switched off at the main switch and the main switch has then been secured against being switched back on unintentionally!
- ✓ The vertical sealing unit has completely cooled down in order to be able to work on it without risk.
- ✓ The protective doors on the front of the machine are open.
- ✓ The vertical sealing unit has been swung away from the filling tube.
- ✓ The sealing belt has been removed (for information on the procedure, see the description in section ***2.6.6 - Changing sealing belt and/or sealing insert, Page 153***).
- ✓ The necessary spare parts have been procured beforehand and are ready for the replacement.

Required tool:

- Flat-head screwdriver
- Wrench (AF17)

Execution:

1. Unscrew the fastening screws (6).

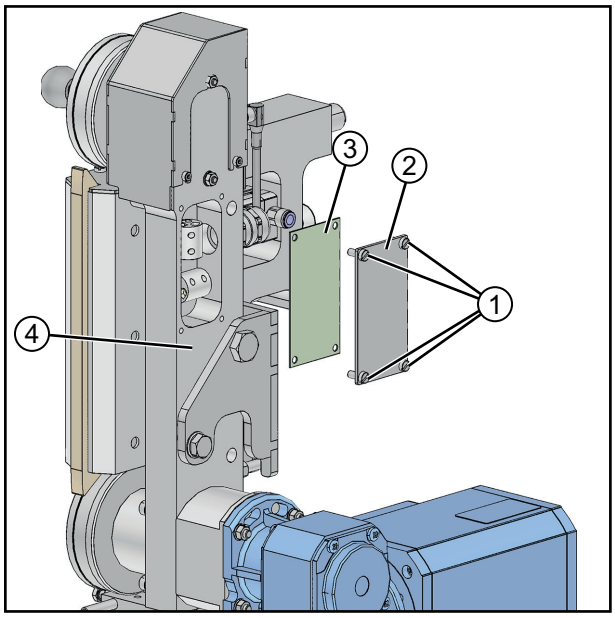


Fig. 2-53 Vertical sealing belt: Remove the housing cover

2. Remove the housing cover (2) and the seal (3) from the jaw carrier (4).
3. Disconnect the heating cartridge(s)/the temperature sensor.
4. Remove the fastening screws (5).

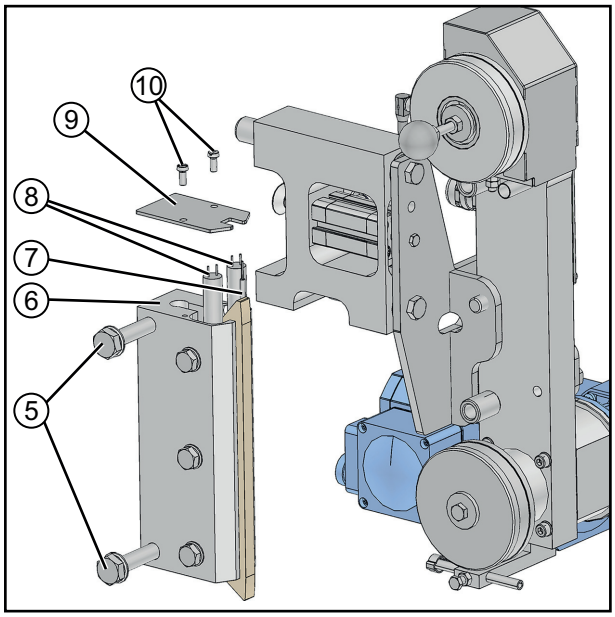


Fig. 2-54 Vertical sealing belt: Replace the heating cartridge(s) and/or temperature sensor

5. Remove the vertical jaw (6) from the jaw carrier.
6. Remove the fastening screws (10).
7. Lift off the cover (9).
8. Pull the heating cartridge(s) (8)/the temperature sensor (7) upwards out of the vertical jaws.
9. Clean the borehole(s).

NOTE!

Before installation, compare the specifications for the power supply on the heating cartridge with those in the electrical documentation.

10. Apply heat-conducting/anti-corrosive paste to the new heating cartridge(s).

Reassembly:

1. Place the heating cartridge(s) and the temperature sensor back into the vertical jaw; guide the connecting cable outside to the vertical jaw through the opening.
2. Fasten cover (9) on the vertical jaw.
3. Mount the vertical jaw on the jaw carrier.
4. Push the connecting cable through the opening on the jaw carrier and connect.
5. Fasten the cover (2) on the jaw carrier.
6. Fasten the sealing belt back on the drive unit.
7. Swing the vertical sealing unit back towards the filling tube.
8. Close the protective doors.

9. Switch on the machine again via the main switch.

NOTE!

After installation, the functions of the safety devices, such as the protective circuit and residual current circuit-breaker, must be checked in accordance with the applicable regulations!

NOTE!

To ensure the functioning of this assembly, use only original spare parts!

Horizontal bag closing 2.7

Overview

This section describes the application of the cross seals; in other words, the process by which a bag is formed from the packaging material tube.

First, individual components of this complex machine area are presented, followed by a general description of the process.

The overview below is intended as an orientation to the information on the following pages.

- General description
- Sealing tools
- Drive and drive transmission
- Operation using the menus of the display
- Checking the cross seal profile
- Adjusting the pressure distribution
- Installing and removing the sealing tools
- Replacing the heating cartridge(s) and/or temperature sensor
- Cutting knife

General description

The basic components of the cross sealing station are the rotating pair of jaws and the pneumatically-actuated cutting knife.

2.7.1 Definitions

Hot sealing is the joining of coated packaging materials under the effect of a permanently heated jaw member using the adjustable parameters of temperature, pressure and time.

Seal is the bonded area of the packaging material formed by sealing (in this case by hot sealing).

Seal profile The seal profile formed by hot sealing is marked by a grid, webs or toothed edging created by the sealing jaws on the packaging material in the area of the seal.

Sealing temperature, sealing pressure and sealing time are the essential variables in the formation of cross seals. If the sealing time is reduced, the sealing temperature and sealing pressure may need to be increased.

Conditions required for good cross seal quality

- Correct jaw setting (seal profile - check of the pressure distribution by means of the so-called carbon paper test)
- Adequate but not excessive pressure from the sealing jaws
- Optimum sealing temperature
- Adequate sealing time
- No product caught in the cross seal
- No wrinkling in the cross seal
- Packaging materials with sealing properties that meet the production requirements

2.7.2 Cross sealing station (overview)

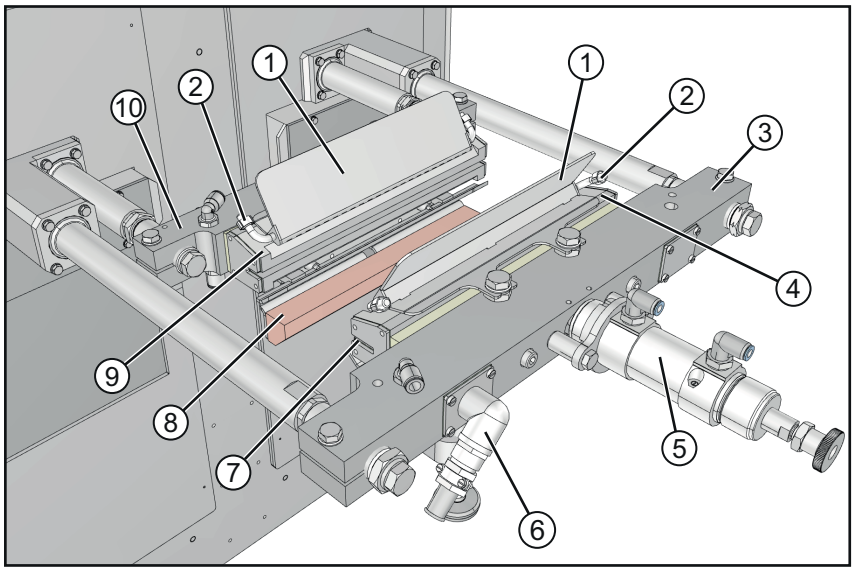


Fig. 2-55 Overview of cross sealing station

1 Collecting plate (optional)
2 Cross seal cooling (optional)
3 Jaw carrier, front
4 Cross-sealing jaw, front
5 Pneumatic cylinder for cutting knife
6 Electrical connection
7 Cutting knife
8 Bag clamping bar (optional)
9 Cross-sealing jaw, rear
10 Jaw carrier, rear

Task

The cross-sealing tools apply the cross seals to the bags by exerting pressure and heat on the packaging material.

The cutting knife cuts off the completed filled bags from the packaging material tube.

Functional sequence

The vertically sealed packaging material tube is pushed by the draw-down belt of the draw-down device (see also ***2.5 - Packaging material draw-down, Page 123***) between the opened cross-sealing tools, the heated cross-sealing tools are moved together by pressure and seal the top cross seal of the bottom bag and the bottom cross seal of the top bag.

Immediately after applying the cross seals, the cutting knife separates the finished bottom bag from the packaging material tube.

Structure

The cross-sealing tools mainly consist of the front (4) and rear cross-sealing jaws (9), which are mounted on jaw carriers (3 and 10).

Heat source

The heat required for sealing is generated using heating cartridges inside the cross-sealing jaw. A regulating system, controlled via temperature sensors, holds the set sealing temperature constant within programmable limits.

Seal pressure

The pressure required for sealing is generated by the motor drive of the cross sealing tools which move the front and rear cross jaws towards each other. The sealing pressure is adjusted in the ***SEALING JAW DRIVE*** menu in the menu item ***"Seal force"*** (see section *2.7.4 - "Sealing jaw drive" menu, Page 165*).

Cutting knife

The cutting knife is housed in the front jaw (7). The knife cuts off the completed bags from the packaging material tube. It is actuated by a pneumatic cylinder (5).

Bag clamping bar (optional)

Bag clamping bars (8) are attached underneath the cross-sealing tools. Their task is to hold the bag that has been drawn down below the cross jaws and already filled, and to take the offload its top seal during the sealing process.

Collecting plate (option)

Collecting plates (1) are attached above the cross-sealing tools. Using these should prevent the fragile product impacting the cross jaws directly and being damaged when arriving in the bag after being dropped by the dispensing device.

The design of the collecting plate is dependent on the shape of the bag to be produced.

Cross seal cooling (optional)

Cooling devices (2) to cool down the sealed cross seal are attached above the cross-sealing tools.

Excess heat energy is dissipated immediately after the sealing phase by precise blowing of a series of air bubbles onto the top section of the sealing tools. This increases the load-bearing capacity of the bottom seal that has just been produced.

2.7.3 Drive and drive transmission

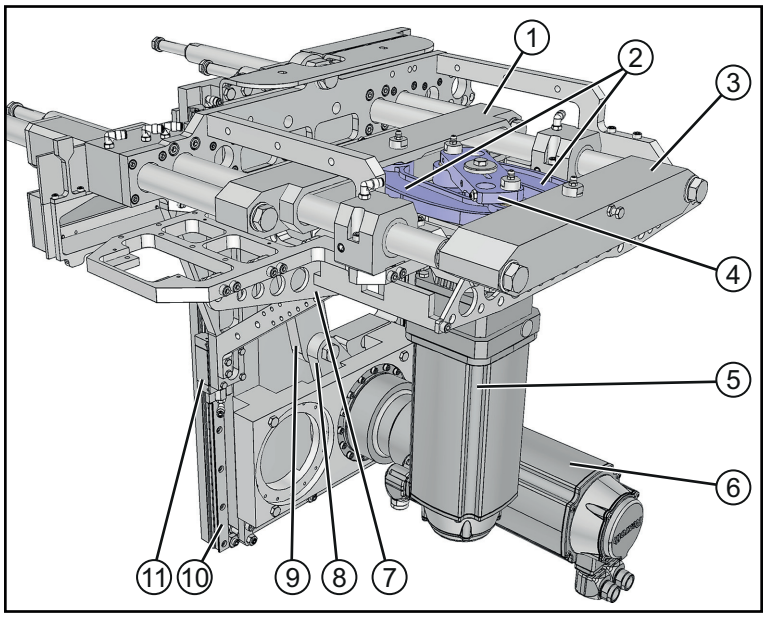


Fig. 2-56 Cross-sealing station: Cross jaws drive

1 Pull rod traverse
2 Piston rod
3 Push rod traverse
4 Swivel arm
5 Servo-motor (X axis)
6 Servo-motor (Z axis)
7 Bracket
8 Crank arm
9 Piston rod
10 Rails
11 Guide carriers

The cross-sealing station consists of 2 drive axes. The movement sequences of both drive axes are synchronized by the machine control system.

The opening and closing movements of the cross-sealing tools are executed with the help of the first drive axis (X axis). The drive source of this axis is the servomotor (5). A swivel arm (4) is used to reverse the rotary drive motion. The swivel arm uses the piston rods (2) to transmit the drive to the push and pull rods (1 and 3).

The vertical movement of the cross-sealing tools is executed with the help of the second drive axis (Z axis). The drive source of this axis is the servomotor (6). The other components of this axis are a crank arm (8), the piston rod (9), 2 rails (10), 4 guide carriers (11) and the bracket (7) for attaching the entire mechanism of the X axis.

NOTE!

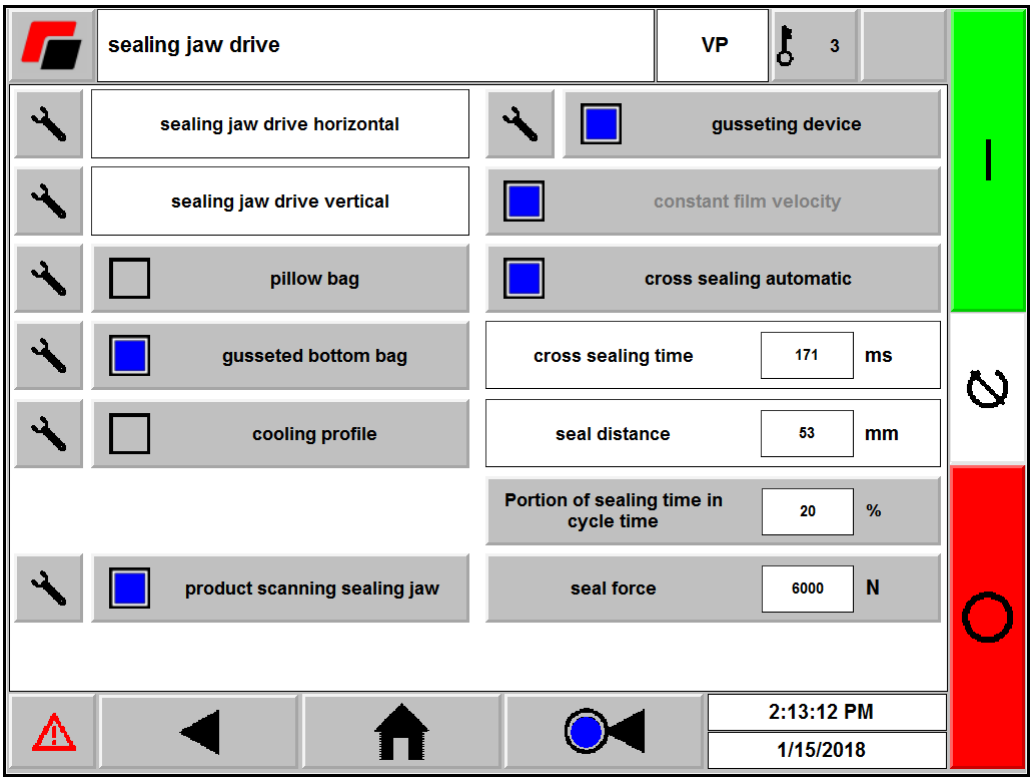
Danger of machine damage!

When creating additional drill holes in the machine housing, there is the risk that shavings could enter the cross sealing station and thus damage the drive.

▶ No additional boreholes may be made in the machine housing.

2.7.4 “Sealing jaw drive” menu

Electronic settings for the horizontal bag closure are made in this menu and in other sub-menus.



Wrench - change screen *SEALING JAW DRIVE HORIZONTAL*

This takes you to the function screen for the horizontal axis (X-axis) of the jaw drive.

This axis opens and closes the machine's cross jaws.

Wrench - change screen *SEALING JAW DRIVE VERTICAL*

This takes you to the function screen for the vertical axis (Z-axis) of the jaw drive.

With this axis the so-called "cross-sealing station" will be moved parallel to the packaging material.

Wrench - change screen *PILLOW BAG*

Access in the configuration menu ***PILLOW BAG***.

"Pillow bag" switch

If this switch is activated, the cross jaws move with a standard profile that is optimized for the production of pillow bags.

NOTE!

Its activation also renders the switch ***"gusseted bottom bag"*** inoperable.

Wrench - change screen *GUSSETED BOTTOM BAG*

Access in the configuration menu ***GUSSETED BOTTOM BAG***.

"Gusseted bottom bag" switch

If this switch is activated, the cross jaws move with a profile that is optimized for the production of gusseted bottom bags.

NOTE!

Its activation also renders the switch ***"Pillow bag"*** inoperable.

Wrench - change screen *JAW COOLING PROFILE*

Access in the configuration menu ***JAW COOLING PROFILE***.

"Jaw cooling profile" switch

Switches the "Jaw cooling profile" option on and off.

The "Jaw cooling profile" option provides the option of opening the jaws by a few millimeters after sealing, during which they continue to run parallel to the film at the same speed as the film. Cooling air can be blown onto the seal during this time.

If this switch is gray (i.e. cannot be operated), then the cooling function (i.e. opening the jaws for a certain distance for cooling of the cross seal) cannot be activated.

This can be the result of the following parameters:

- Seal time / seal distance / seal time factor: If the sealing time or the seal distance is too long, then it is no longer possible to append a cooling distance to the seal distance, because otherwise the maximum distance of the z axis would be exceeded.
- Cycle number
- the parameters of the cooling function itself (see description of the Jaw cooling profile) ***CONFIGURATION MENU.***).

NOTE!

The "Jaw cooling profile" function has nothing to do with the "Cross cooling" cam! The "Cross cooling" cam switches the compressed air for the cooling on and off; the option being described here, "Jaw cooling profile", causes the jaws to be opened for a certain distance, with subsequent parallel movement of the jaws together with the film.

Wrench - change screen *PRODUCT SCANNING, JAW*

Access in the configuration menu ***PRODUCT SCANNING, JAW***.

"Product scanning jaw" switch

Switches the product detection on and off.

If there is product between the sealing jaws during the closing motion, then this is detected and the jaws stop within an extremely short time.

Wrench - change screen *GUSSETING DEVICE*

Access to the Gusseting device configuration menu.

"Gusseting finger" switch

This switch activates and deactivates the function of the gusseting device.

"Constant film velocity" switch

This switch can only be operated if the "Cross-sealing automatic" switch is switched off.

This switch can be used to define what the film should do when the automatic cross-sealing is switched off (i.e. with "manual sealing time").

The following table shows all of the conceivable combinations of the two switches "Constant film velocity" and "Automatic cross-sealing".

Automatic	film velocity	Description
on	on	Sealing time and sealing distance are calculated based on the parameter "Portion of sealing time in cycle time".
on	off	This switch combination is not possible. When automatic cross-sealing is switched on, the switch "Constant film velocity" is always switched on.
off	on	If the cross-sealing time is changed, then the velocity of the film in the sealing area does not change, i.e. the film continues to move at constant velocity over the entire cycle. In this case, the change in the cross-sealing time affects the length of the seal distance.
off	off	A change in the cross-sealing time affects the velocity of the film. If, for example, the cross-sealing time is lengthened, then the velocity of the film in the sealing area is reduced. In addition, the sealing distance can now be adjusted by hand.

Tab. 2-3 Switch combinations "Constant film velocity" and "Automatic cross-sealing"

"Cross sealing automatic" switch

Switching between automatically calculated cross sealing time (cross sealing automatic) and cross sealing time that can be input by hand (manual sealing time). See also the description "Constant film velocity" above! If you switch off the cross sealing automatic, then the cross sealing time can be entered by hand.

Cross sealing time

The cross sealing time specifies how long the sealing jaws are closed. It can only be set when "Cross sealing automatic" is switched off (see above), and is otherwise calculated and displayed based on the parameter "Portion of sealing time in cycle time".

Seal distance

The seal distance is the distance that the z axis covers during the cross sealing time. The seal distance can only be entered by hand if the two switches "Cross sealing automatic" and "Constant film velocity" are switched off. Manual setting of the seal distance changes the velocity of the film in the sealing area.

Proportion of sealing time in cycle time

This parameter (also called "sealing factor" or "sealing time factor") makes it possible to influence the sealing time even when the "cross sealing automatic" is switched on.

As is indicated by the name of the parameter itself, the sealing time is set here as a percentage of the cycle time (i.e. the time for once cycle of the machine).

Limiting parameters are:

- Cycle number
- Jaw opening upon contact with film

Seal force

Adjustment of the seal force. The force set here is only achieved for a short time during the sealing phase. The force is built up after the jaws touch, and the maximum set force is reached after half of the sealing time. The seal force is dissipated again in the second half of the sealing time.

2.7.4.1 "Sealing jaw drive horizontal" function menu

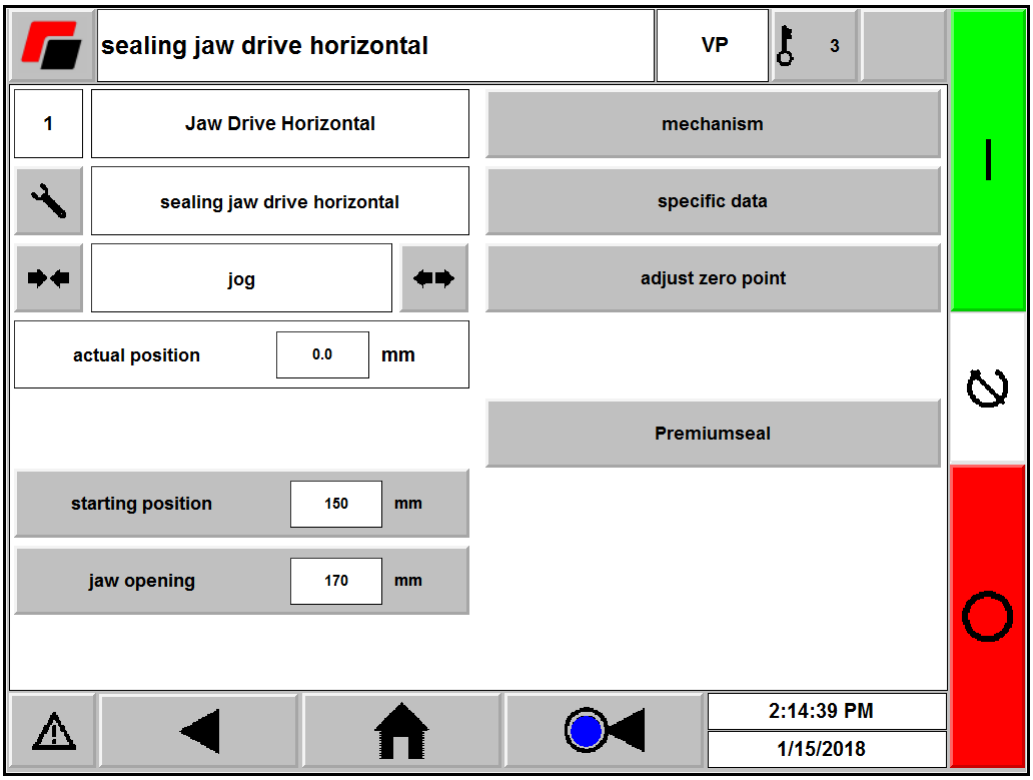
The drive axis (X axis) of the cross-sealing station is programmed in this function screen.

NOTE!

Danger of permanent machine damage due to incorrect settings!

Incorrect settings can result in malfunctions and damage to the machine

▶ This area of the control unit must only be operated by appropriately qualified personnel!



Wrench - change screen

This takes you to the configuration screen for the axis.

The values accessed with the wrench were factory-set by ROVEMA. They cannot be changed by the operator, and are provided for information purposes only.

"Jog" buttons

These buttons can be used to jog the axes in the respective direction.

"Actual position x-axis" value display

Displays the actual position of the x axis on the drive. This is not the current position (opening) of the jaws!

Maximum start position

The parameter specifies the jaw opening that must not be underranged when starting up the machine. This should prevent burning of the film.

This setting is particularly important if the machine has to wait during operation for the dump signal from a scale. The distance of the sealing jaws is then always at least the value set here.

Automatic limit value calculation is not performed.

Jaw opening

Maximum opening of the jaws during operation of the machine (stroke of the x axis). The minimum setting for the jaw opening is limited by the parameter ***"Maximum start position"***.

Change screen *SPECIFIC DATA*

This takes you to the ***SPECIFIC DATA*** screen, where additional settings can be made.

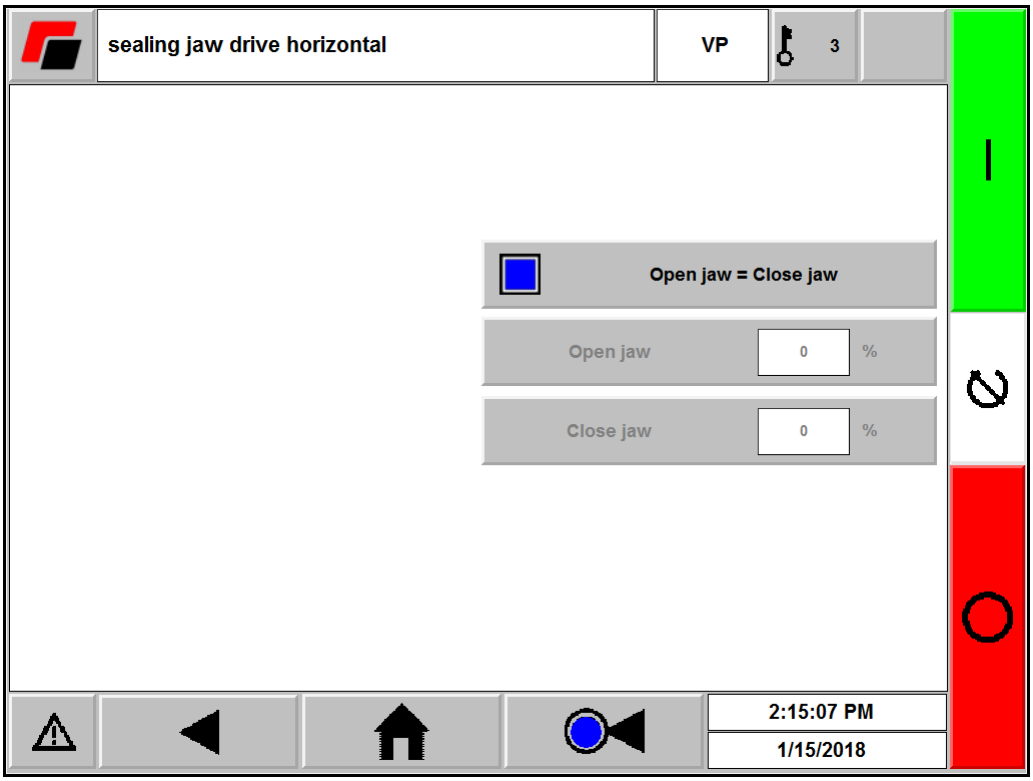
Change screen *ADJUST ZERO POINT*

In this menu area, the zero point of the drive axis is set.

Change screen *PREMIUMSEAL*

This takes you to the menu ***PREMIUMSEAL*** where the settings for the **"Premiumseal"** sealing procedure can be made.

2.7.4.1.1 "Sealing jaw drive horizontal" specific data



"Open jaws = Close jaws" switch

If this switch is switched on, then the same time is available for opening the jaws as for closing the jaws, i.e. the velocities for both of these motions are the same.

When this switch is switched off, the velocities for opening and closing the jaws can be influenced independently of each other.

Switching the switch on again resets the parameters ***"Open jaws"*** and ***"Close jaws"*** to zero.

Open jaws

This parameter can be used to influence the velocity of the jaws for the opening motion.

Setting a value smaller than zero increases the velocity for opening, setting a value larger than zero slows the velocity.

This parameter influences above all the maximum number of cycles that can be achieved. The velocity for opening the jaws can only be slowed if the velocity for closing the jaws is increased first.

This parameter can only be operated if the ***"Open jaws = Close jaws"*** switch is switched off.

Close jaws

This parameter can be used to influence the velocity of the jaws for the closing motion.

Setting a value smaller than zero increases the velocity for closing, setting a value larger than zero slows the velocity.

This parameter influences above all the maximum number of cycles that can be achieved. The velocity for closing the jaws can only be slowed if the velocity for opening the jaws is increased first.

This parameter can only be operated if the ***"Open jaws = Close jaws"*** switch is switched off.

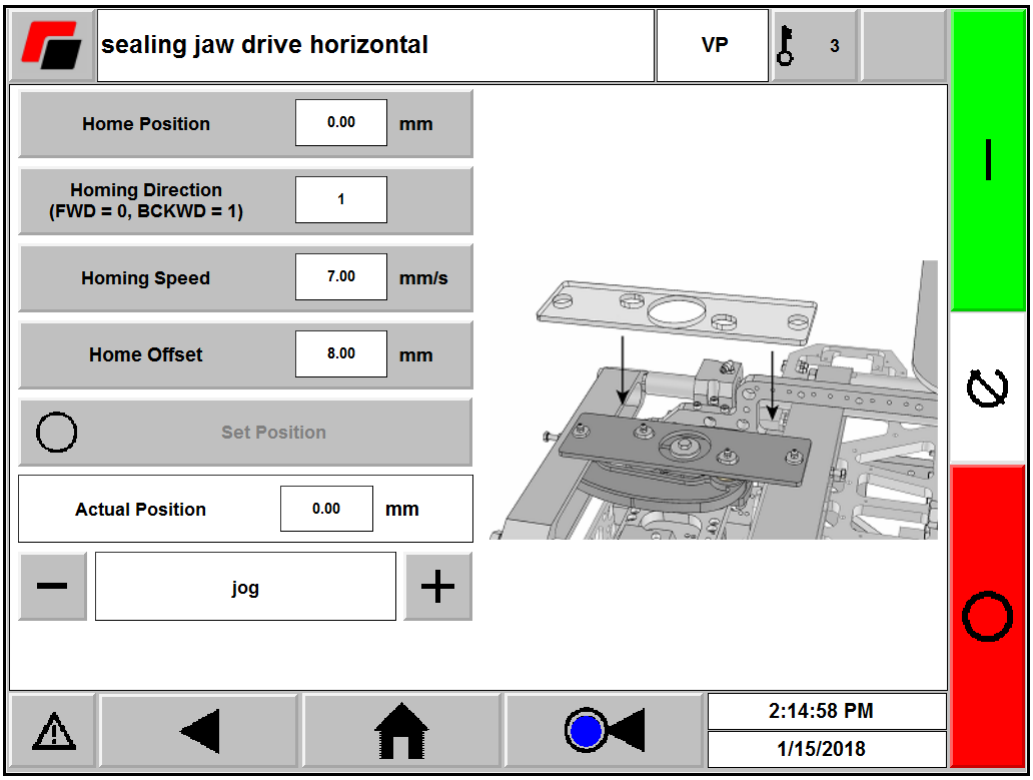
2.7.4.1.2 "Adjust zero point - sealing jaw drive horizontal" menu

NOTE!

Danger of permanent machine damage due to incorrect settings!

Incorrect settings can result in malfunctions and damage to the machine

▶ This area of the control unit must only be operated by appropriately qualified personnel!



"Actual position x-axis" value display

Displays the actual position of the x axis on the drive. This is not the current position (opening) of the jaws!

"Sealing jaw drive horizontal" buttons

As long as button is depressed, the entire jaw assembly moves. Depending on the direction of movement selected for the material, the jaws will either open or close during this motion.

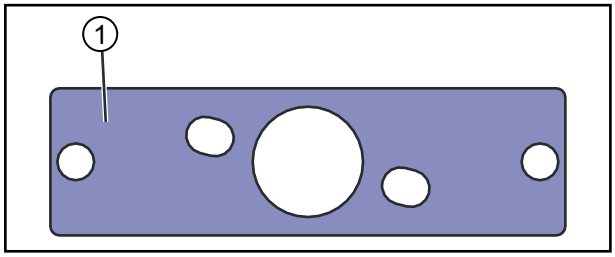
Zero point setting at the X axis of the cross jaw drive

The zero point setting means determining a reference point for controlling the axis motion.

A zero point setting must be executed,

- at initial commissioning of the machine.
- or if mechanical changes have been performed at the axis.

For the setting, the following tool is used:



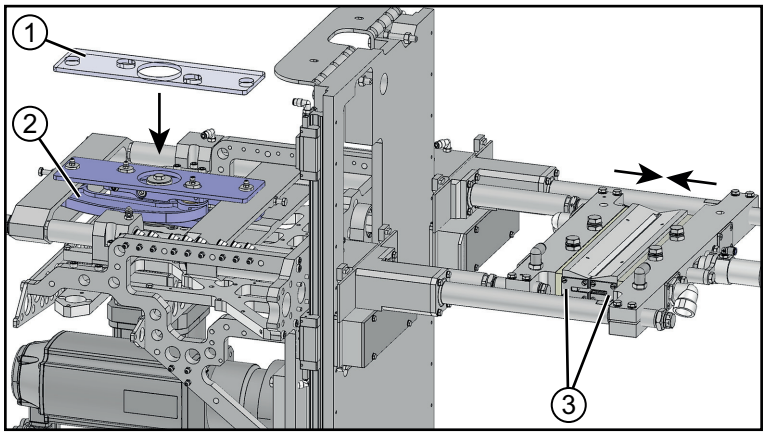
1 Zero point template (X axis)

The template is stored on a holder inside the machine housing.

NOTE!

The setting must only be performed on cold cross jaws!

1. The menu ***PASSWORD*** must be called up, and unlock access level "3" by means of entering the password.
2. Switch to the menu ***ZERO POINT SETTING - JAW CLAMP DRIVE HORIZONTAL*** .
3. Open the side door on the machine housing.
4. Take the zero point template out of the holder.
5. Open the guard doors on the front of the machine.
6. Remove the bag clamping bar (optional) from the cross jaws.
7. Bring the cross jaw drive into zero point position; to do so, push the cross jaws (3) together, until they touch.

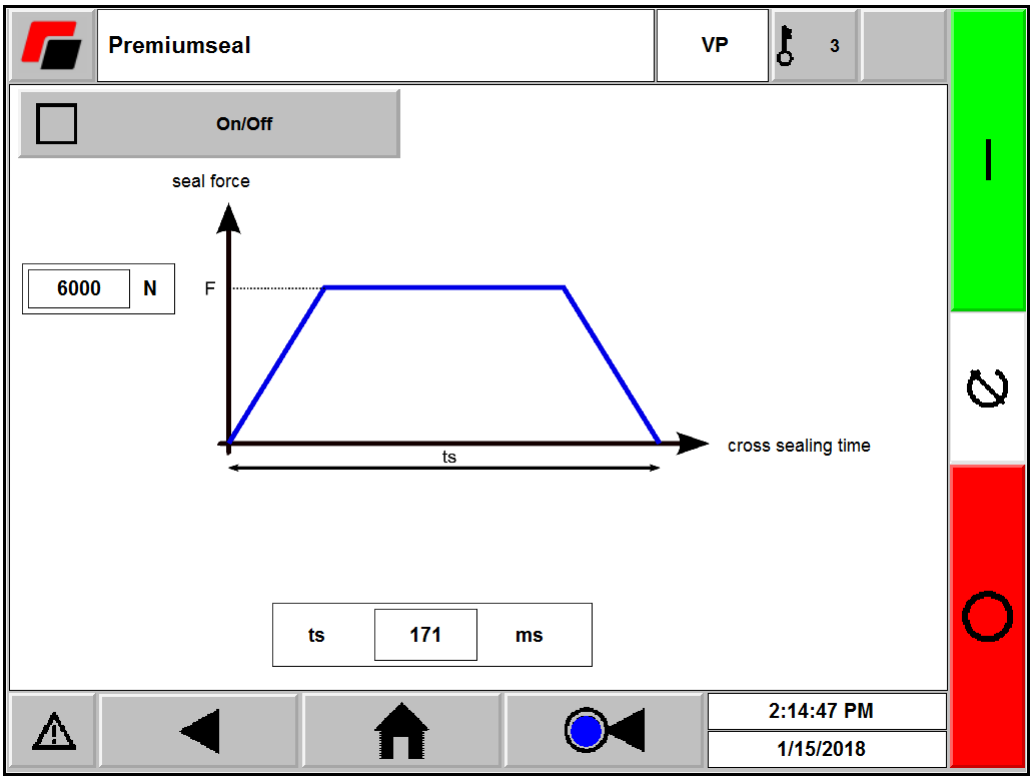


1 Zero point template (X axis)
2 Star handle
3 Cross jaws

8. Lay the zero point template (1) onto the star handle (2) of the cross jaw drive, as shown in the upper picture.
9. Close guard doors on the front side of the machine.
10. Close side door on the machine housing.
11. Press the “Standby” button.
12. Button ***"Apply position"*** must be activated; the correct actual position is immediately shown and the zero point setting is ended.
13. Open the side door on the machine housing again.
14. Remove the zero point template from the star handle of the cross jaw drive.
15. Insert the zero point template back into the holder in the machine housing.
16. Close the side door on the machine housing again.
17. Close the guard doors on the front of the machine again.
18. Press the “Standby” button.

2.7.4.1.3 "Premiumseal" menu

All the settings for the **"Premiumseal"** sealing operation are made in this menu.



"On/Off" switch

Switch for switching the ROVEMA **"Premiumseal"** sealing process on and off.

In the switch position **"Off"** the cross jaws run through the programmed standard movement sequence during the sealing procedure.

The menu parameters ***"Force reduction"***, ***"Amount of time with reduced force"*** and ***"Amount of time from reduced force level to maximum force"*** in this menu are not taken into account when calculating the movement sequence.

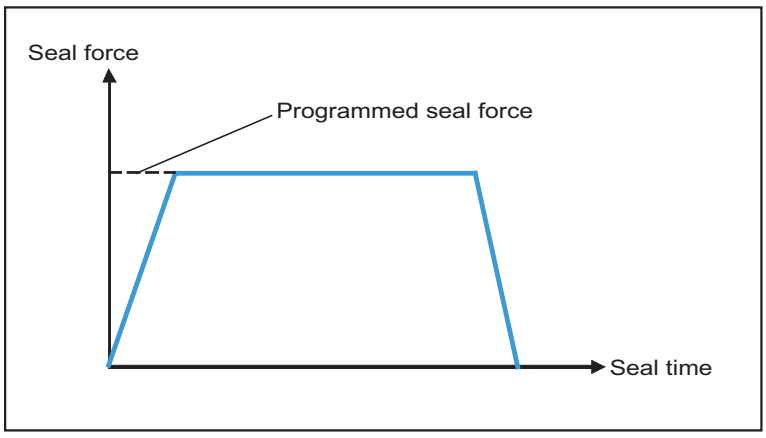


Fig. 2-57 Sealing force sequence/force profile without Premium seal

In the switch position **"On"** the movement profile of the cross jaw drive is switched to movement sequence optimized for the **"Premiumseal"** sealing process. Now, with the aid of the menu parameters ***"Force reduction"***, ***"Amount of time with reduced force"*** and ***"Amount of time from reduced force level to maximum force"*** the movement sequence can be directly influenced.

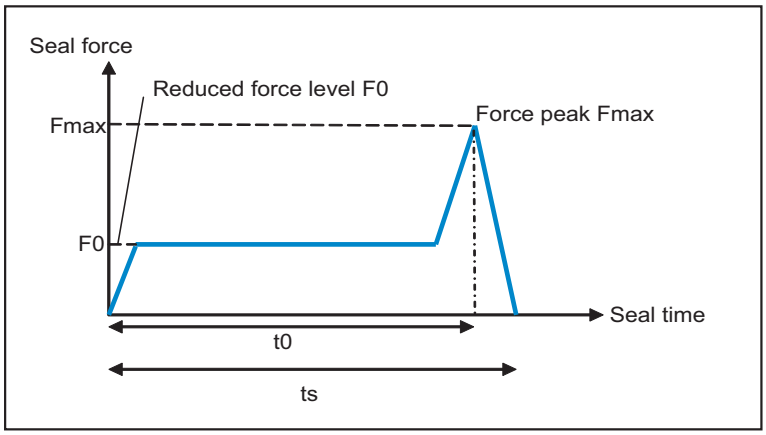


Fig. 2-58 Sealing force sequence/force profile with Premiumseal

Force reduction (in %)

The reduced force level F0 is set by a percentage value (0 to 100 %) relative to the force peak Fmax (sealing force).

"Amount of time with reduced force"

This value describes the time "t0" in the upper sequence diagram. After elapsed time "t0" in the sealing the force peak should be reached. This time "t0" is set as percentage (0 to 100 %) of the cross sealing time "ts" (main menu ***SEALING JAW DRIVE***). The larger "t0" is set, the less time remains for the drive to move the sealing jaws out of the coating by the end of the remaining sealing time. Thus the accelerations increase! The withdrawal movement from the coating begins at time "t0".

"Amount of time from reduced force level to maximum force"

Time for force increase "F0" to "Fmax".

The time in which the force increase should take place from the reduced level "F0" to the force peak can be set as a percentage relative to the cross seal time "ts":

Value = "0": Jump from "F0" to "Fmax".

Value > "0": Linear increase as shown in the upper sequence diagram.

2.7.4.2 "Sealing jaw drive vertical" function menu

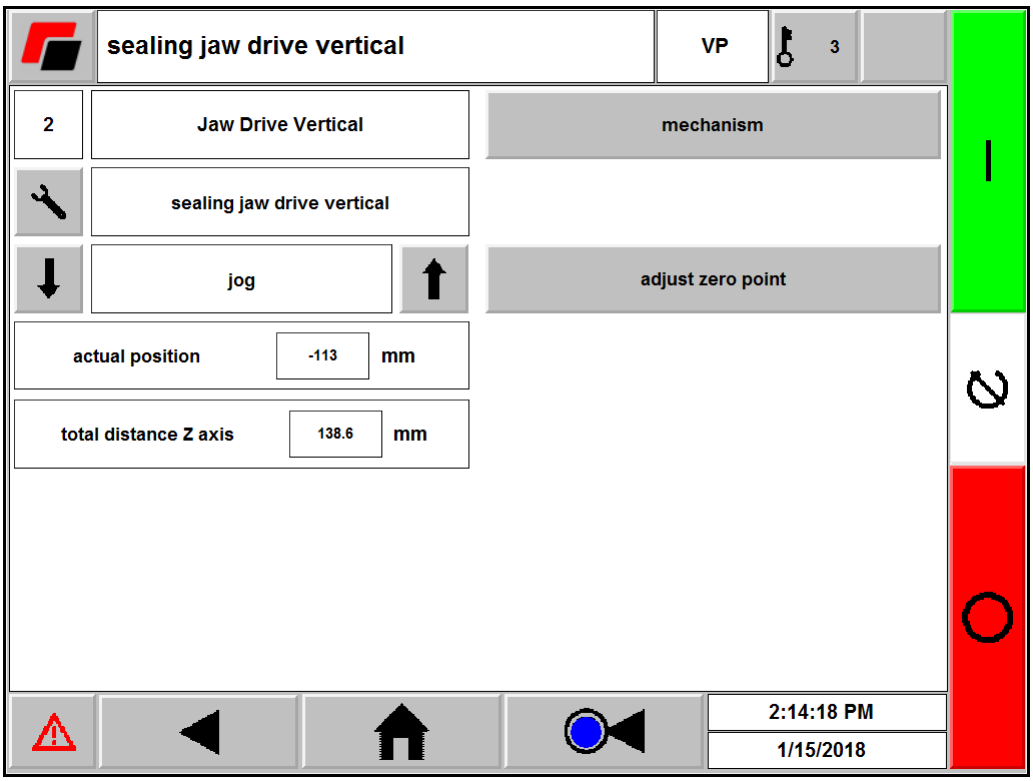
The drive axis (Z axis) of the cross-sealing station is programmed in this function screen.

NOTE!

Danger of permanent machine damage due to incorrect settings!

Incorrect settings can result in malfunctions and damage to the machine

▶ This area of the control unit must only be operated by appropriately qualified personnel!



Wrench - change screen

This takes you to the configuration screen for the axis.

The values accessed with the wrench were factory-set by ROVEMA. They cannot be changed by the operator, and are provided for information purposes only.

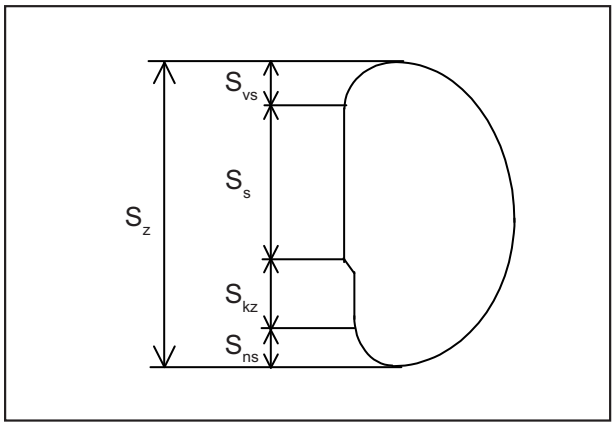
"Jog" buttons

These buttons can be used to jog the axes in the respective direction.

"Total distance z axis" value display

Displays the total path of the z axis.

The path sz of the axis comprises the seal distance (ss), the distance before and after sealing (svs + sns) and optionally the cooling distance (skz).



Change screen *ADJUST ZERO POINT*

In this menu area, the zero point of the drive axis is set.

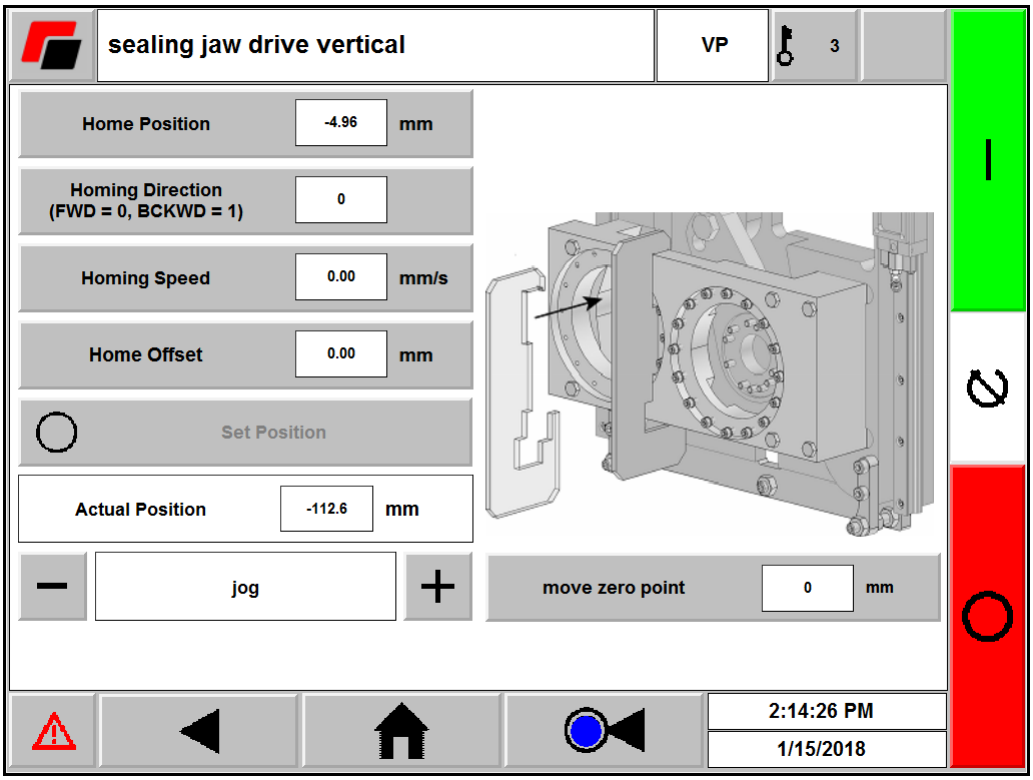
2.7.4.2.1 "Adjust zero point - sealing jaw drive vertical" menu

NOTE!

Danger of permanent machine damage due to incorrect settings!

Incorrect settings can result in malfunctions and damage to the machine

▶ This area of the control unit must only be operated by appropriately qualified personnel!



"Apply position" button

Pressing this button applies the current position of the drive as the zero point for the drive axis.

The button only becomes operational once the safety chain has been locked and the access level "3" has been unlocked.

NOTE!

This button must only be operated when the machine is stopped and after the zero point template has been inserted!

"Actual position z-axis" value display

Displays the current actual position of the z axis. Because there is no gear unit between the drive and the z axis, the position displayed here also corresponds to the actual position of the axis relative to the reference point.

Zero point offset

The reference offset defines the path from mechanical zero to the actual stop position of the axis. A positive value moves the position upwards, a negative value moves the position downwards.

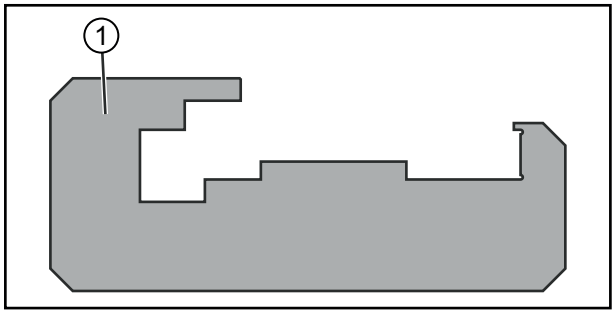
Zero point setting at the X axis of the cross jaw drive

The zero point setting means determining a reference point for controlling the axis motion.

A zero point setting must be executed,

- at initial commissioning of the machine.
- or if mechanical changes have been performed at the axis.

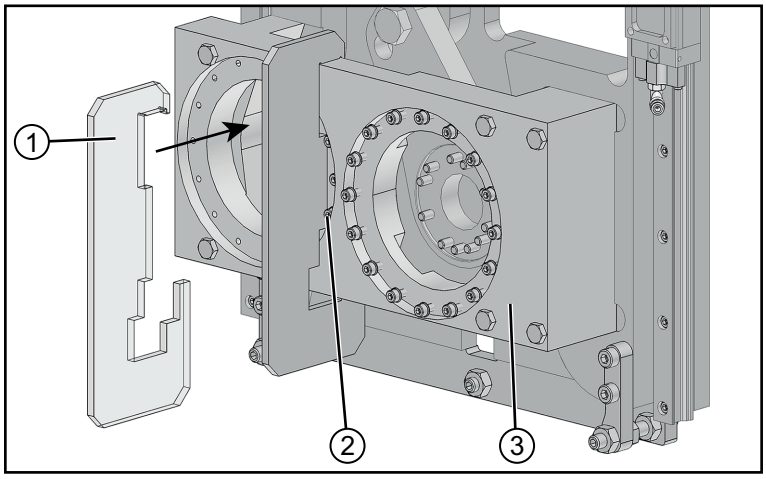
For the setting, the following tool is used:



1 Zero point template (Z axis)

The template is stored on a holder inside the machine housing.

1. The menu ***PASSWORD*** must be called up, and unlock access level "3" by means of entering the password.
2. Switch to the menu ***ZERO POINT SETTING - EXCHANGE JAW CLAMP DRIVE VERTICAL*** .
3. Move the cross jaw clamp drive into the uppermost position by means of the upward jog button in this menu.
4. Open the side door on the machine housing.
5. Take the zero point template out of the holder.
6. Hang the zero point template (1) onto the support for the drive motor (3), as shown in the lower picture, and push it against the stop screws (2).

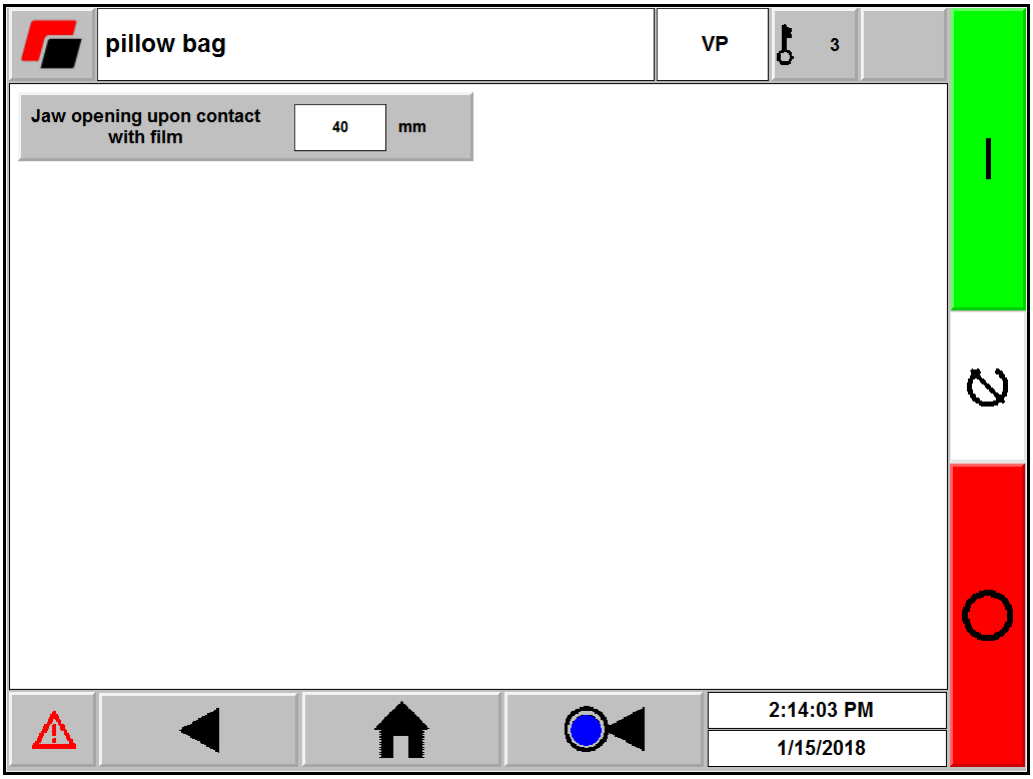


1 Zero point template (Z axis)
2 Stop screws
3 Support for drive motor

7. Close the side door again.
8. Press the “Standby” button
9. Bring the cross jaw clamp drive into the zero point position; move the cross jaw clamp drive downwards by means of the downward jog button until the connecting rod bumps against the zero point template.
10. Button ***"Apply position"*** must be activated; the correct actual position is immediately shown and the zero point setting is ended.
11. Move the cross jaw clamp drive by means of the upward jog button ***"Jaw drive vertical"*** back into the uppermost position.
12. Open the side door on the machine housing.
13. Remove the zero point template from the support.
14. Insert the zero point template back into the holder in the machine housing.
15. Close the side door again.
16. Press the “Standby” button.

2.7.4.3 Configuration menu "pillow bag"

The pillow bag production settings are made in this menu.



Jaw opening upon contact with film

The distance of the cross jaws from each other at which they barely touch the film is indicated here (see illustration, distance sbf).

During operation, after the cross jaws reach this opening they move together with and parallel to the film in order to prevent compressive deformation of the film on the cross jaws. However, the larger this value is, the longer the stroke of the z axis!

The maximum value that can be set essentially depends on the following parameters:

- Seal time
- Seal distance
- Sealing time factor

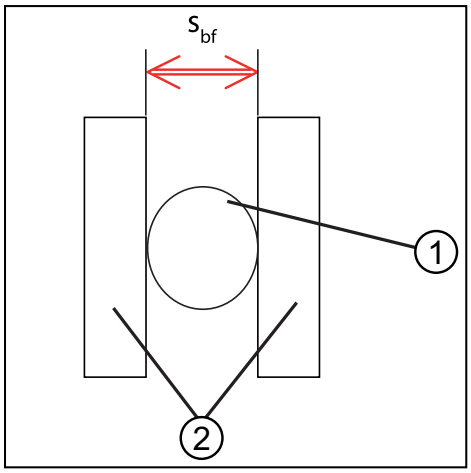


Fig. 2-59 Jaw opening upon contact with film

1 Packaging material
2 Cross jaws

2.7.4.4 configuration menu "block bottom bag"

The gusseted bottom bag production settings are made in this menu.



Jaw opening after sealing

Specifies the distance of the sealing jaws which corresponds to the depth of the bag. After sealing the sealing jaws have to move synchronously with the film until the opening of the jaws is the same as the depth of the bag, thus allowing the bag to pass between the jaws.

Here as well, the following applies: The larger the jaw opening, the longer the path of the z axis.

Jaw opening before sealing

Specifies the distance of the sealing jaws at which the gusseting fingers touch the film. When this jaw opening is reached before sealing the sealing jaws move to the film synchronously.

Values can be entered in two ways: The value can be entered directly or the current jaw opening by pressing the button ***"Apply position"*** in the parameters. However, in the second case it is necessary to move the sealing jaws to the appropriate position though jogging. Furthermore, a reference run must have been performed previously. The larger the opening of the jaws, the longer the path of the z axis.

Jaw opening for lowering the film speed

Indicates the jaw opening in front of the sealing area, from which the speed of the film drive should be lowered. This should prevent compressive deformation of the film during penetration of the gusset fingers.

Relative film speed

This parameter indicates how forcefully the film should be braked before the sealing area. The value is always based on the speed of the film in the sealing area.

Vertical offset

The entire course curve can be offset by this value in a vertical direction.

Positive values offset the course upwards in the Z direction, negative values downwards in the Z direction.

In conjunction with the parameter ***"Vertical distance turning point / sealing position"*** is used to offset the downward movement of the gusseting fingers in an optimal manner, as well as to make the course curve close to the chute 'steeper' in order to relieve the jaw drive.

This parameter is write-protected. The value can only be changed after the password for password level "E" has been entered on the screen.

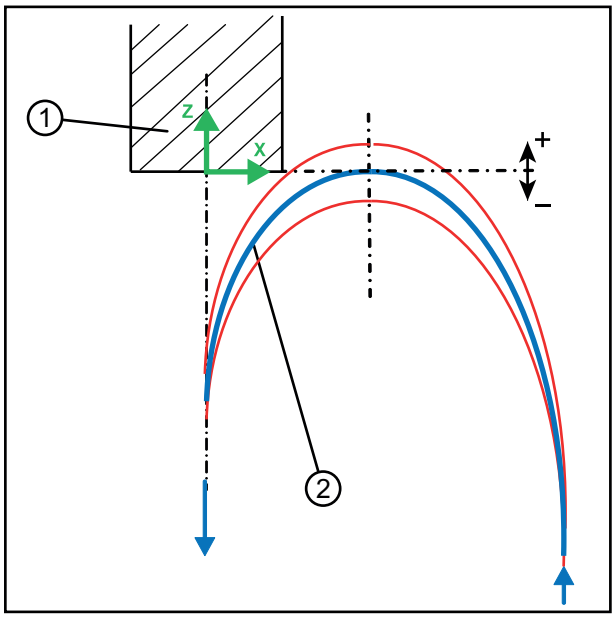


Fig. 2-60 Height adjustment of the course curve

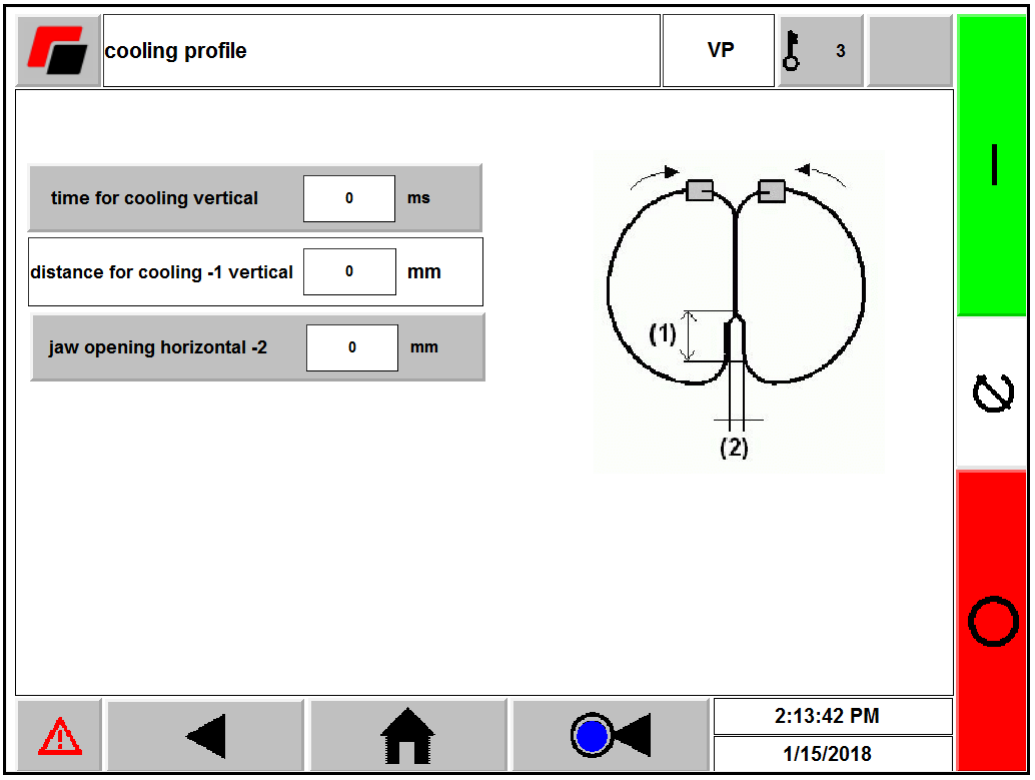
1 Chute
2 Course curve

NOTE!

If the settings are incorrect, there is a danger of collision with the chute!

2.7.4.5 "Jaw cooling profile" configuration menu

The "Jaw cooling profile" option provides the option of opening the jaws by a few millimeters after sealing, during which they continue to run parallel to the film at the same speed as the film. Cooling air can be blown onto the seal during this time. The cams must be set separately, however!



Time for cooling, vertical

This parameter is used to specify the time for the cooling process. The minimum time setting is based on how long the jaws require in order to reach the set opening width (horizontal jaw opening). The maximum time is dependent on the time for cooling, vertical, that is derived from it.

"Time for cooling, vertical (1)" value display

Displays the distance that the jaws cover in the z direction during the "Time for cooling, vertical".

Horizontal jaw opening (2)

Opening width of the jaws for cooling. The maximum value is dependent on the setting for the parameter "Time for cooling, vertical".

2.7.4.6 Product scanning

General information

The product scanning is a function that detects product that is trapped in the area of the bag seam. Depending on the type of product being packaged, this can damage the sealing jaws or the cutting knife during the sealing process.

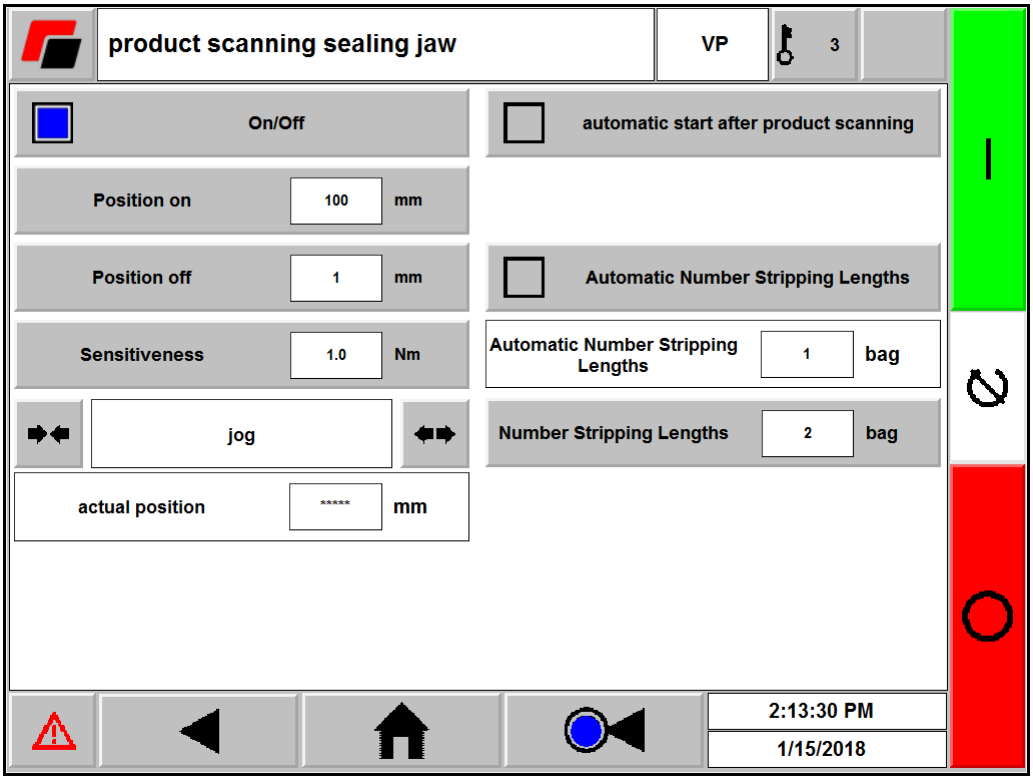
The presence of product is determined through the fact that high force has to be exerted by the drive motor of the sealing station in order to close the jaws compared to normal operation.

The product scanning is used to monitor a defined area for product inclusions before the sealing jaws close. If the product inclusions represent a measurable obstacle for the sealing jaws (increased force exertion), then the sealing jaws open immediately. This protects the profiles of the sealing jaws and the cutting knife effectively against damage.

NOTE!

Attention" Every time the switches or parameters described here are changed, the sealing jaws have to be jogged together completely once using the jog function.

During the first five cycles after the product detection is switched on, a teaching process takes place, during which no product should be allowed to come between the jaws!



"Product scanning" switch

Switch for switching the product scanning on and off.

Position On / Position Off

The range to be monitored is set using Position On / Position Off.

NOTE!

The product inquiry must be active before the lateral jaw clamps come into contact with each other.

Sensitivity

The sensitivity can be used to adapt the triggering characteristics, e.g. for various velocities.

"sealing jaw drive" buttons

As long as button is depressed, the entire jaw assembly moves. Depending on the direction of movement selected for the material, the jaws will either open or close during this motion.

"Actual position jaw opening" value display

This value indicates the actual position relative to the jaw opening. The display range extends from "0 mm" (=cross jaws closed) to the maximum jaw opening (value display "Maximum jaw opening").

"Automatic start after product scanning" switch

By means of this switch, the function ***"Automatic start after product scanning"*** can be switched on or off.

If the switch is on, when the product detection is triggered a double bag is generated and this double bag automatically ejected. Production then continues automatically.

If the switch is off, when the product detection is triggered a double bag is generated and the machine stops with the double bag between the jaws. The operator must remove this double bag manually and restart production.

"Automatic Draw-down Length Number" switch

By means of this switch, the function ***Automatic Draw-down Length Number*** can be switched on or off.

When the switch is in the On position, the necessary number of draw-down lengths is automatically calculated when a product inclusion is recognised.

When the switch is in the Off position, the number of draw-down lengths must be set with the parameter ***Draw-down Length Number*** .

"Automatic Draw-down Length" value indicator

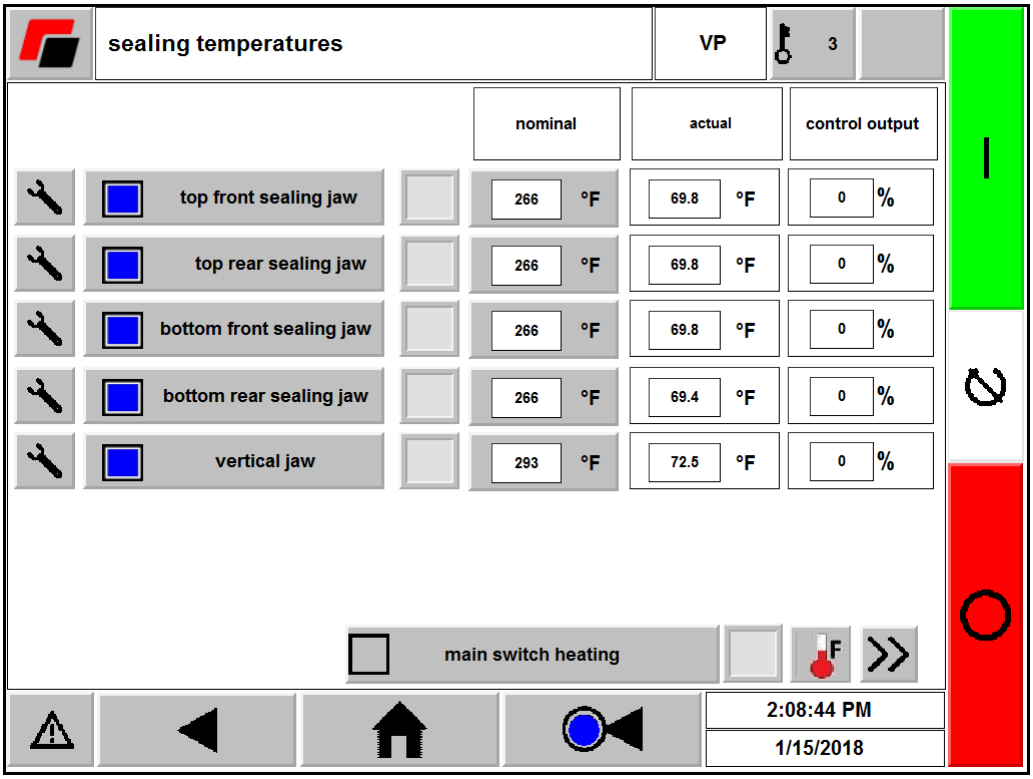
Here the number of the automatically calculated draw-down lengths is displayed.

Draw-down Length Number

This is where the number of draw-down lengths is entered when the automatic is switched off.

2.7.5 “sealing temperatures” menu

In this menu, the temperatures are set for various heated machine functions. Every function listed in this menu has its own temperature control zone. When you make an entry in this menu, you are defining the temperature setpoint (in °Celsius) at which the function is to be carried out. Further settings for the control zone are entered in the corresponding configuration menu.



Wrench - change screen

Pressing this button takes you to the configuration menu for the appropriate heating function.

Switch for switching the temperature control zone on and off.

As soon as this switch is switched off, the heating for this function is deactivated. The values entered for the nominal temperature and the configuration data are retained. When switched on again, production is resumed with this data.

Nominal temperature

The nominal temperature is the setpoint at which the heating for that particular machine function should operate under normal circumstances. When the machine starts, the heating takes a certain amount of time to reach the nominal temperature set here. You cannot begin production during this time.

During the heat-up phase, observe the actual temperature display. This display should continually rise during the warm-up phase until the temperature setpoint is reached.

"Actual temperature" value display

This is the temperature currently reached by the heating function. This value is displayed as information for the operator. The display of the actual temperature does not need to remain constant, but rather can display fluctuating values throughout operation.

Value display "manipulated variable"

This value displays the output level at which the heating function is operating, as a percentage of its maximum output. The control output display can vary between 0 % and 100 %. 0 % means that no heating is occurring. 100 % means that the heating is working at maximum power.

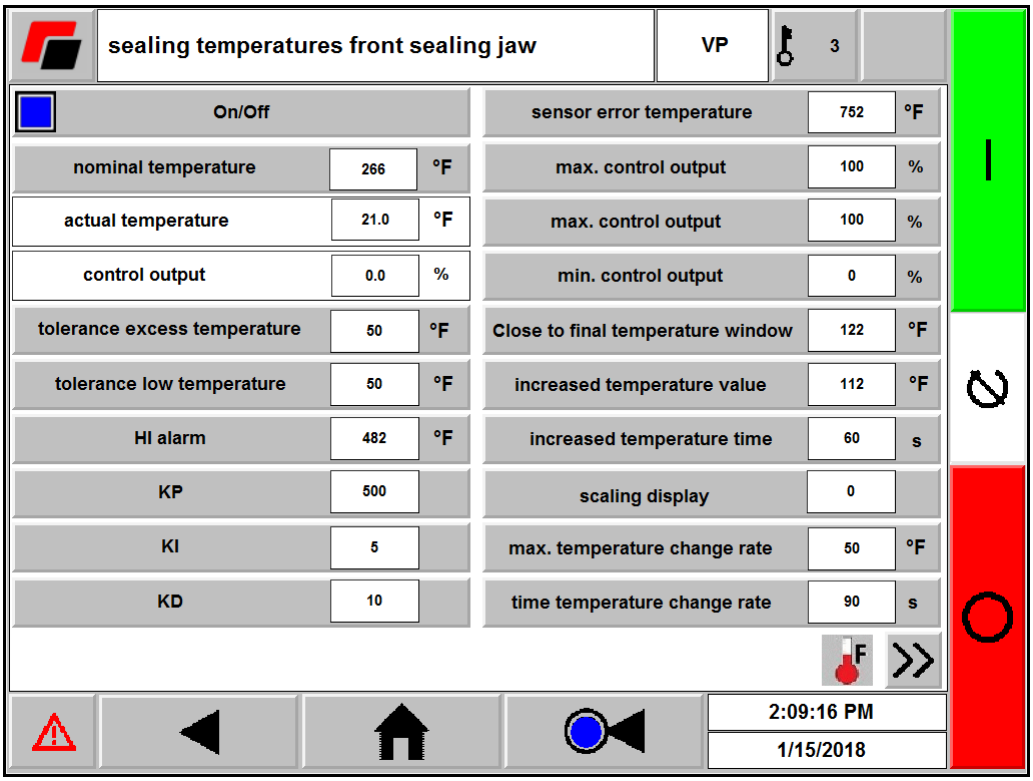
"Main switch for heating" switch

Switch for quickly switching all temperature control zones of the machine on and off.

Switch for switching the temperature display (thermometer)

This switch switches the temperature display unit between Celsius and Fahrenheit.

2.7.5.1 “Sealing temperatures” configuration menu



Switch for switching the temperature control zone on and off.

As soon as this switch is switched off, the heating for this function is deactivated. The values entered for the nominal temperature and the configuration data are retained. When switched on again, production is resumed with this data.

Nominal temperature

The nominal temperature is the setpoint at which the heating for that particular machine function should operate under normal circumstances. When the machine starts, the heating takes a certain amount of time to reach the nominal temperature set here. You cannot begin production during this time.

During the heat-up phase, observe the actual temperature display. This display should continually rise during the warm-up phase until the temperature setpoint is reached.

"Actual temperature" value display

This is the temperature currently reached by the heating function. This value is displayed as information for the operator. The display of the actual temperature does not need to remain constant, but rather can display fluctuating values throughout operation.

Value display "manipulated variable"

This value displays the output level at which the heating function is operating, as a percentage of its maximum output. The control output display can vary between 0 % and 100 %. 0 % means that no heating is occurring. 100 % means that the heating is working at maximum power.

Tolerance

Due to various factors in the production environment, the set nominal temperature cannot always be kept constant. To ensure smooth production operations, a tolerance limit can be set to allow the temperature to rise above or fall below the nominal temperature. This means that production will not be interrupted because of an error message which would otherwise be triggered by the temperature monitoring in the control zone.

The value is entered in °Celsius. The tolerance limit should be large enough to compensate for temperature fluctuations resulting from production processes. However the value must not be allowed to cause faulty production results. If the fluctuations cannot be compensated adequately by entering a tolerance limit, you might need to adjust other settings for the temperature zone.

If the temperature nevertheless rises above or falls below the nominal temperature by the set tolerance value, a malfunction message appears on the display.

HI alarm

Adjustable upper temperature limit. A fault results if the value set here is exceeded.

2.7.6 Check jaw alignment by testing with carbon paper



NOTE!

The carbon paper test must only be performed on cold cross jaws!

Prerequisites:

- ✓ The cross jaws were moved apart to the maximum distance in jog mode.
- ✓ The machine's jaw heaters are switched off (switch ***"Heating main switch"***).
- ✓ The surfaces of the cross jaws must have already cooled down completely in order to work on them without risk.
- ✓ White paper, carbon paper (blue carbon paper is also suitable) and adhesive tape have been provided for the test.

Execution:

1. Place the coated side of the carbon paper on the white paper and fold as shown in the illustration below.

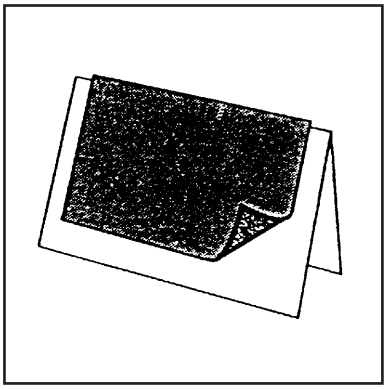


Fig. 2-61 Carbon paper test: Preparation of the paper sheet

2. Open the protective doors.
3. Hang the prepared paper sheet between the cross jaws and tape it to the rear jaw with a strip of adhesive tape.

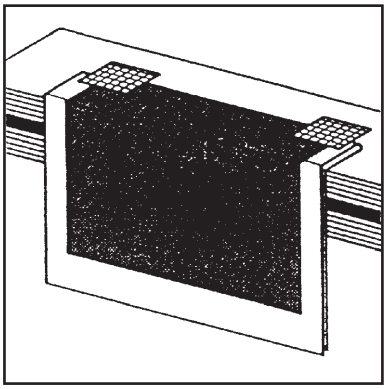


Fig. 2-62 Carbon paper test: Fastening of the paper sheet

4. Close the protective doors.
5. Switch to the machine's ***JOG MENU*** and move the cross jaws together in jog mode.

⚠ WARNING!

Danger of crushing!

There is danger of crushing between the cross jaws when they are moved together.

▶ Do not hold the paper sheets between the cross jaws by hand.

6. Separate the cross jaws, open the protective doors, lift off the carbon paper and check the marks on the paper.
7. In case of deviations from the ideal pattern (=complete impression of the seam profile on the paper, as in the illustration below), the jaw alignment must be repeated. Use a new sheet of paper for repetition of the test.

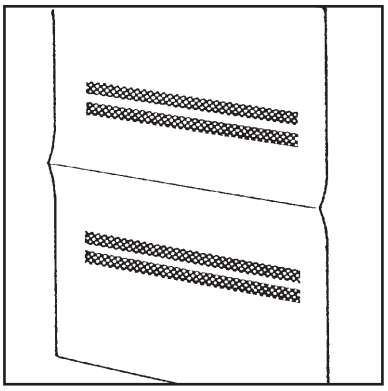


Fig. 2-63 Carbon paper test: Mark of the seam profile on the paper sheet

8. Remove the paper if the results are satisfactory, change the pressure distribution if a satisfactory setting cannot be found by aligning.

2.7.7 Adjusting the pressure distribution

⚠ DANGER!

Danger of cutting injuries from the pneumatically-actuated cutting knife in the cross sealing station!

There is a greater risk of injury from the sharp knife blade.

- ▶ Prior to performing work at the station, switch the machine off via the main switch and safeguard the main switch against being switched back on unintentionally
- ▶ Protect yourself from cutting injuries by wearing suitable safety gloves.



⚠ WARNING!

Danger of burns due to hot surfaces!

The cross sealing station is operated with cross jaws whose surfaces are very hot under operating conditions. Touching these hot jaws can lead to serious burns.

- ▶ Maintain a sufficient distance from these hot surfaces of the station during machine operation.
- ▶ Switch off the corresponding heaters before working on the station and let the station cool down until it is possible to work safely.
- ▶ When working on the hot station, wear suitable safety gloves to protect against the heat.

Preparatory tasks

- Switch all jaw heaters off (***"Main switch heater"*** switch in the ***SEALING TEMPERATURES*** overview screen of the display).
- Open the protective doors.

- Clean the still warm jaw tooth profiles with the brass brush while from the ROWEMA tool bag.
- Close the protective doors.
- Wait until the jaws cool down and carry out a test with carbon paper (on this point see section ***2.7.6 - Check jaw alignment by testing with carbon paper, Page 192***).
- Move the cross jaws together in jog mode until they touch.
- Open the protective doors.

Execution

- Undo the two fastening screws (1) in the rear jaw carrier (3); leave the setting of the front jaw carrier as it is!

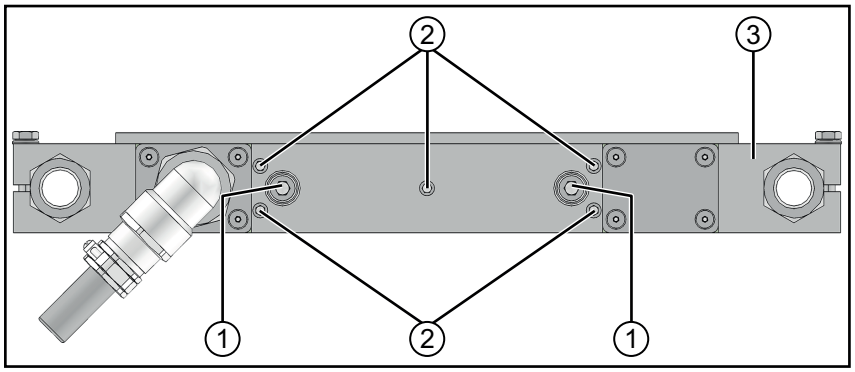


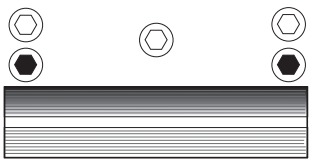
Fig. 2-64 Adjusting screws on the rear jaw support

1 Fastening screws
2 Adjusting screws
3 Rear jaw support

- To achieve even distribution of pressure, you must tighten or loosen the adjusting screws (2) as indicated by the results of the carbon paper test; use the following images as a guide.

The top part of the images show the view of the rear jaw from the rear. Beneath that, you can see the imprint of the carbon paper test.

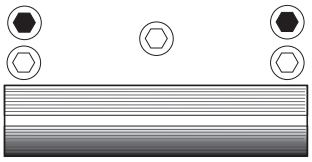
Shifting pressure towards the top seal (excessive pressure on the bottom seal)



Loosen two upper adjusting screws (2)

and/or tighten two lower adjusting screws

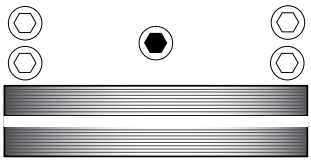
Shifting pressure towards the bottom seal (excessive pressure on the top seal)



Loosen two lower adjusting screws (2)

and/or tighten two upper adjusting screws

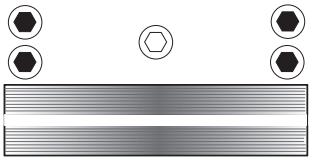
Shifting pressure towards the middle (increase pressure)



Tighten middle adjusting screw (2)

and/or loosen the two adjusting screws at right and left

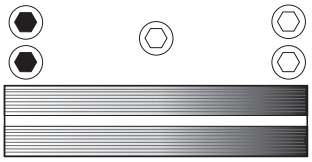
Shifting pressure away from the middle (reduce pressure)



Loosen middle adjusting screw (2)

and/or tighten the two adjusting screws at right and left

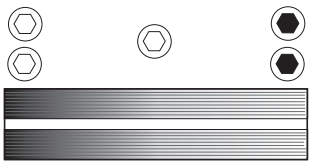
Shifting pressure to the left (excessive pressure on the right-hand side)



Loosen two right adjusting screws (2)

and/or tighten two left adjusting screws

Shifting pressure to the right (excessive pressure on the left -hand side)



Tighten two right adjusting screws (2)

and/or loosen left adjusting screws

- After adjusting, retighten the loosened fastening screws (1) to secure the new setting.
- Following another carbon paper test, you may need to repeat the above steps.

2.7.8 Installation and removal of the cross sealing tools

⚠ DANGER!

Danger of cutting injuries from the pneumatically-actuated cutting knife in the cross sealing station!

There is a greater risk of injury from the sharp knife blade.

- ▶ Prior to performing work at the station, switch the machine off via the main switch and safeguard the main switch against being switched back on unintentionally
- ▶ Protect yourself from cutting injuries by wearing suitable safety gloves.



⚠ WARNING!

Danger of burns due to hot surfaces!

The cross sealing station is operated with cross jaws whose surfaces are very hot under operating conditions. Touching these hot jaws can lead to serious burns.

- ▶ Maintain a sufficient distance from these hot surfaces of the station during machine operation.
- ▶ Switch off the corresponding heaters before working on the station and let the station cool down until it is possible to work safely.
- ▶ When working on the hot station, wear suitable safety gloves to protect against the heat.

The combination of jaw carriers and cross jaws is termed cross-sealing tools. In this, a set of tools that belongs together always consists of a front and rear sealing tool.

Removal or replacement of the cross-sealing tools may be required when

- During shape changing, there is to be a retooling to another sealing system (e.g. changeover from welding to hot sealing operation).
- Maintenance tasks, such as the replacement of a faulty heating cartridge or a temperature sensor, must be carried out on the cross jaws.

⚠ WARNING!

Caution: The weight of individual modules being removed can be more than 20 kg!

- ▶ Use suitable hoisting gear to remove and install the modules. This type of hoisting gear can be obtained from ROVEMA if required.
- ▶ It may be necessary to have a second person help with installation and removal.
- ▶ Ensure that there is no one in the danger zone during these tasks.

Prerequisites:

- ✓ The cross-sealing tools were moved apart to the maximum distance in jog mode.
- ✓ The machine has been switched off at the main switch and the main switch has then been secured against being switched back on unintentionally!
- ✓ The surfaces of the cross jaws must have already cooled down completely in order to work on them without risk.
- ✓ The protective doors on the front of the machine are open.

Required tool:

- Wrench (AF19)

Removal of the front cross-sealing tool:

1. Remove the cutting knife as described in chapter ***2.7.10 - Cutting knife, Page 202***.
2. Disconnect all related pneumatic hoses from the front plate (e.g. knife actuator, cross seam cooling, etc.).
3. Disconnect the associated electrical connections (the connecting boxes are located on the side of the electrical cabinet).
4. Remove fastening screws (7) and centering bushings (6) on both sides of the pull rods (5).

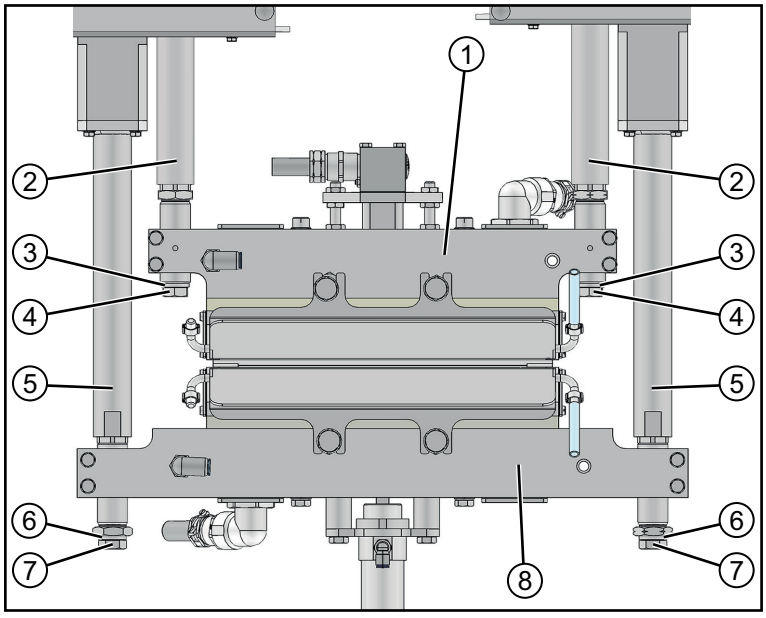


Fig. 2-65 Cross-sealing station: Remove the front cross-sealing tool

5. Take down front cross-sealing tool (8) from the pull rods and lay down carefully.

Removal of the rear cross-sealing tool:

1. Remove the spreader / hood (optional machine fitting) at the end of the filling tube.
2. Disconnect all related pneumatic hoses from the front plate (e.g. cross seam cooling, etc.).

3. Disconnect the associated electrical connections (the connecting boxes are located on the side of the electrical cabinet).
4. Remove fastening screws (4) and centering bushings (3) on both sides of the push rods (2).

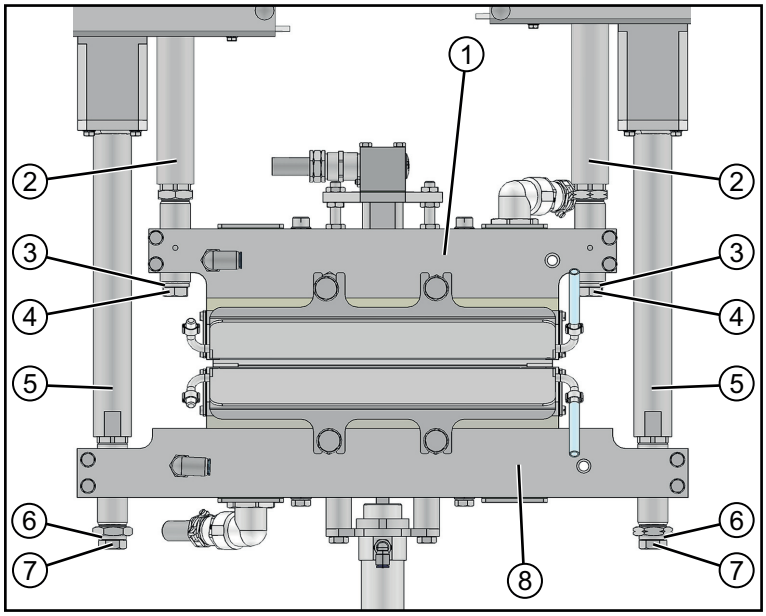


Fig. 2-66 Cross-sealing station: Remove the rear cross-sealing tool

5. Take down the rear cross-sealing tool (1) from the push rods and lay down carefully.

Reassembly:

1. Install the rear cross-sealing tool.
2. Plug the pneumatic and electrical connector plugs of the rear cross-sealing tool in again.
3. Install the front cross-sealing tool.
4. Plug the pneumatic and electrical connector plugs of the front cross-sealing tool in again.
5. Fasten the chute on the end of the filling tube (optional machine equipment)
6. Close the protective doors.
7. Switch on the machine again via the main switch.
8. After fitting, check that the pair of jaws is correctly adjusted using the so-called carbon paper test (see ***2.7.6 - Check jaw alignment by testing with carbon paper, Page 192***).

2.7.9 Replacing the heating cartridge and/or temperature sensor

⚠ DANGER!

Danger of cutting injuries from the pneumatically-actuated cutting knife in the cross sealing station!

There is a greater risk of injury from the sharp knife blade.

- ▶ Prior to performing work at the station, switch the machine off via the main switch and safeguard the main switch against being switched back on unintentionally
- ▶ Protect yourself from cutting injuries by wearing suitable safety gloves.



⚠ WARNING!

Danger of injury!

Incorrect execution of repair and maintenance tasks can result in risk of injury.

- ▶ Repair and maintenance tasks must only be performed by trained or appropriately instructed technicians.



⚠ WARNING!

Danger of burns due to hot surfaces!

The cross sealing station is operated with cross jaws whose surfaces are very hot under operating conditions. Touching these hot jaws can lead to serious burns.

- ▶ Maintain a sufficient distance from these hot surfaces of the station during machine operation.
- ▶ Switch off the corresponding heaters before working on the station and let the station cool down until it is possible to work safely.
- ▶ When working on the hot station, wear suitable safety gloves to protect against the heat.

Prerequisites:

- ✓ The cross-sealing tools have been removed, as described in section ***2.7.8 - Installation and removal of the cross sealing tools, Page 197***.
- ✓ The necessary spare parts have been procured beforehand and are ready for the replacement.

Required tool:

- Flat-head screwdriver
- Allen key (SW 2.5)

Replacing the heating cartridges / temperature sensors:

1. Unscrew the fastening screws (9).

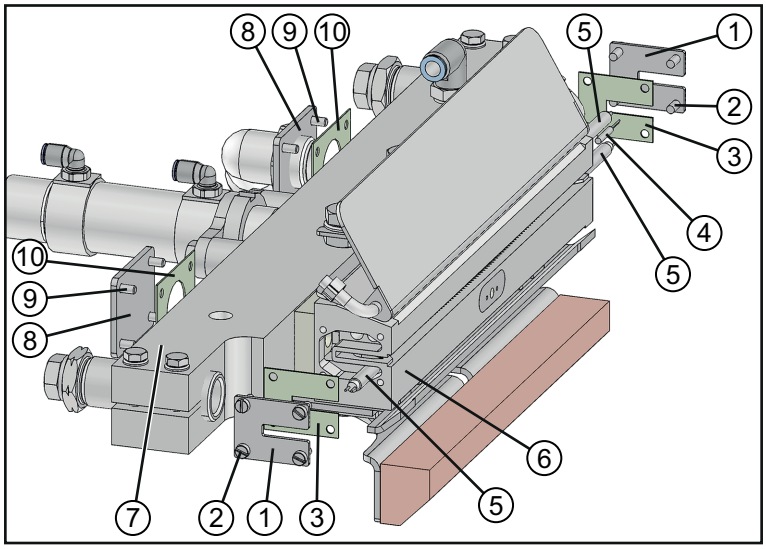


Fig. 2-67 Cross-sealing jaw with terminal housing

2. Remove seals (10) and cover plates (9) on the back of the jaw carrier (7).
3. Unscrew the fastening screws (2).
4. Remove seals (3) and cover plates (1) on both sides of the cross-jaw carrier (6).
5. Disconnect and pull out the heating cartridge(s) (5)/the temperature sensor (4).
6. Clean the borehole(s).

NOTE!

Before installation, compare the specifications for the power supply on the heating cartridge with those in the electrical documentation.

7. Apply heat-conducting/anti-corrosive paste to the new heating cartridge(s).

Reassembly:

1. Re-insert and connect the heating cartridge(s) and the temperature sensor into the cross-sealing jaw.
2. Re-attach cover plates to the jaw carrier and cross-sealing jaw.
3. Refit the cross-sealing tools, as described in section ***2.7.8 - Installation and removal of the cross sealing tools, Page 197***, to the push and pull rods of the cross-sealing station.

NOTE!

After installation, the functions of the safety devices, such as the protective circuit and residual current circuit-breaker, must be checked in accordance with the applicable regulations!

NOTE!

To ensure the functioning of this assembly, use only original spare parts!

2.7.10 Cutting knife

The front (outer) cross jaw contains the cutting knife, which separates the finished bags from the tube.

The cutting time is specified so that the pneumatically operated cut-off knife thrusts out from the cross jaw immediately after application of the seams.

Minor adjustment of the cutting knife activity is required when the number of cycles is changed.

In the ***CAM*** menu, using the ***"Cutting knife"*** cam, a cut timing correction can be carried out. You can also switch the cutting knife activity on and off there.

The cut-off knife is actuated with the aid of a pneumatic cylinder (4). The cutting knife (1) is inserted into the knife bar (3) on the pneumatic cylinder and fixed in placed with a clamp screw (2). This clamp screw can be accessed through the opening on the underside of the front cross jaw. **Note that the clamp screw is visible only when the cutting knife is extended!**

The cutting knife actuating unit is screwed onto a carrier plate (5). The carrier plate is fastened on the front cross jaw using the screws (6).

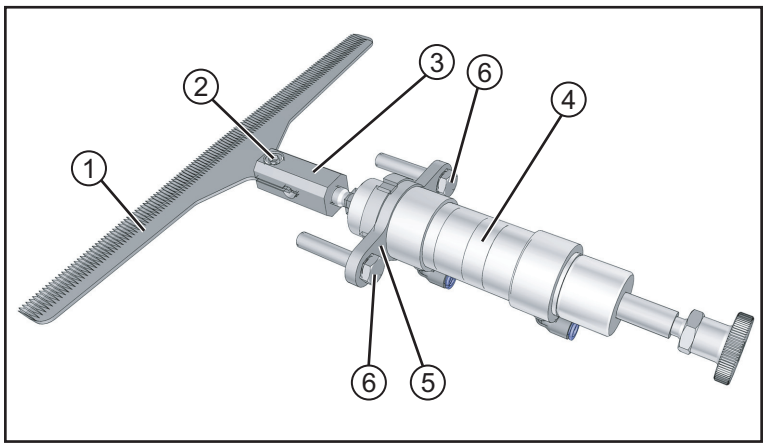


Fig. 2-68 Cutting knife and knife activation

1 Cutting knife
2 Clamping screw
3 Knife bar
4 Pneumatic cylinder
5 Carrier plate
6 Fastening screw

⚠ DANGER!

Danger of cutting injuries from the pneumatically-actuated cutting knife in the cross sealing station!

There is a greater risk of injury from the sharp knife blade.

- ▶ Prior to performing work at the station, switch the machine off via the main switch and safeguard the main switch against being switched back on unintentionally
- ▶ Protect yourself from cutting injuries by wearing suitable safety gloves.



⚠ WARNING!

Danger of burns due to hot surfaces!

The cross sealing station is operated with cross jaws whose surfaces are very hot under operating conditions. Touching these hot jaws can lead to serious burns.

- ▶ Maintain a sufficient distance from these hot surfaces of the station during machine operation.
- ▶ Switch off the corresponding heaters before working on the station and let the station cool down until it is possible to work safely.
- ▶ When working on the hot station, wear suitable safety gloves to protect against the heat.

Replace the cutting knife

Prerequisites:

- ✓ The cross-sealing tools were moved apart to the maximum distance in jog mode.
- ✓ The machine's jaw heaters are switched off (switch ***"Heating main switch"***).
- ✓ The surfaces of the cross jaws have already cooled down completely in order to be able to work on them without risk.
- ✓ The safety guards in the vicinity of the cross-sealing station are closed.
- ✓ The necessary spare parts have been procured beforehand and are ready for the replacement.

Required tool:

- Pliers
- Allen wrench (AF 5)

Procedure:

1. Open the ***JOG MENU*** on the display.
2. Use the ***"Cutting knife"*** button to extend the cutting knife.
3. Open the protective doors.
4. Loosen the locking screw (2) using the Allen key (SW 5).

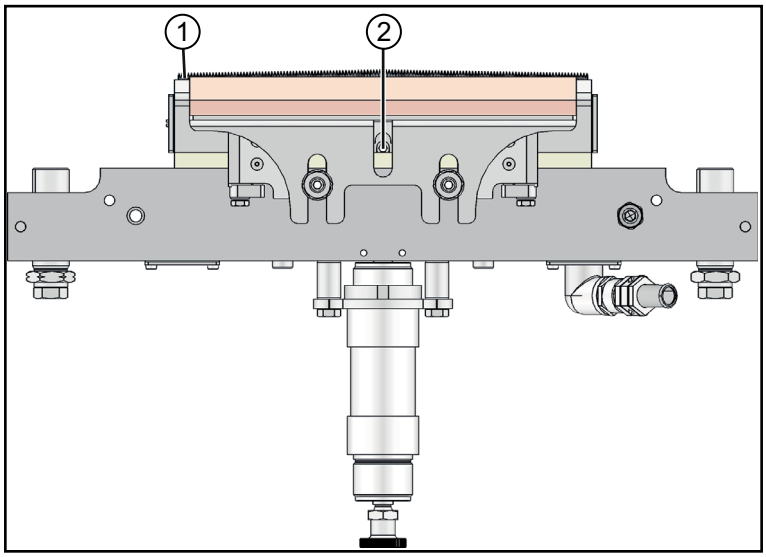


Fig. 2-69 Cross-sealing station: Replace the cutting knife

5. Pull the old cutting knife (1) forwards out of the jaw opening using pliers.
6. Clean the knife slot.
7. Push the new knife into the holder up to the knife bar, then secure with the locking screw.
8. Close the protective doors.
9. Retract and extend the cutting knife in jog mode. When the knife is retracted, the cutting edge must not protrude beyond the teeth of the jaw (the seal profile).

NOTE!

To ensure the functioning of this assembly, use only original spare parts!

2.8.1 Control panel

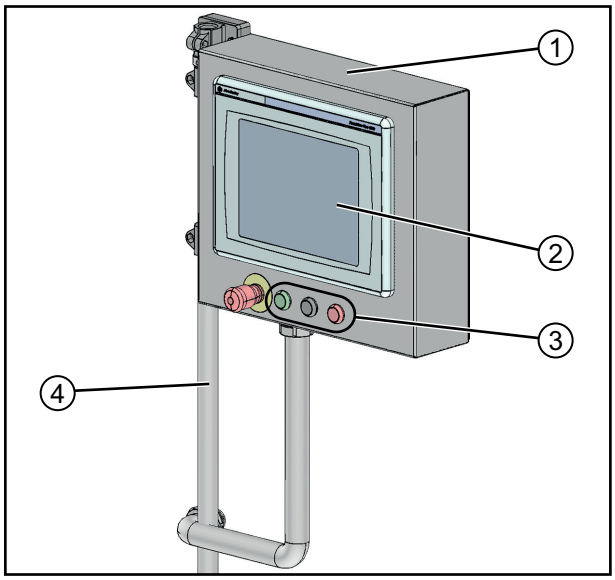


Fig. 2-70 Control panel / touchscreen display

1 Control panel
2 Display with touchscreen
3 Operating elements
4 Swivel arm

Control panel

The control panel is mounted on a swivel arm and can be swiveled to the optimal operating position. It serves as the holding fixture for the touchscreen display.

Display with touchscreen

The touchscreen display is used for the entry and display of all operating parameters of the controller. Activation occurs by lightly pressing the touchscreen. Pressure must only be exerted by your finger, which can be protected by a glove, or a blunt object.

The operation of the buttons and switches takes place by lightly pressing the screen where the corresponding button or switch is displayed. As soon as the pressure is detected, the display of the button changes, so that an optical reaction is recognizable.

NOTE!

Only touch one point on the touchscreen at a time; do not touch multiple points at the same time. Otherwise actions could be triggered inadvertently.

NOTE!

Danger of machine damage!

Through use of sharp objects, such as screwdrivers, etc., the surface of the touchscreen can be scratched or damaged.

▶ Only touch the surface with your fingers or a blunt object.

2.8.2 Operating elements on the control panel

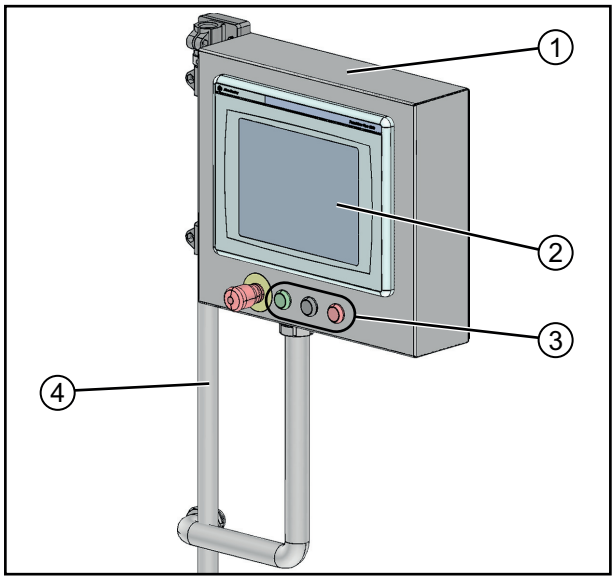


Fig. 2-71 Operating elements on the control panel

1 Control panel
2 Display with touchscreen
3 Operating elements
4 Swivel arm

On the control panel (1) there are three additional control buttons (3):

"standby" button/ This button is used to switch on standby.

If an error message was displayed, this button must only be pressed after the fault has been rectified. The ***"Standby"*** button acknowledges all faults after they have been rectified and puts the machine in standby if no faults are present that can trigger a machine halt.

"Machine On" button Production is started with this button.

"Machine Off" button Use this button to stop production.

2.8.3 Light signal lamp

The colored lights of the light signal lamp indicate machine conditions.



More detailed information about the current machine condition can also be shown on the machine display. A description of the causes of faults and how to eliminate them is provided following this section.

- Warning lights can light up together in certain combinations!
- For more detailed information, note the machine display and take action in accordance with the instructions shown there.
- When machine conditions change, so do the light signals!

NOTE!

The meanings of the individual colored signal lights are described below!

2.8.3.1 The colors of the light signal lamp



Blue light signal

Flashing light: The blue flashing light indicates that a malfunction is present in an upstream or downstream unit



Red light signal

Flashing light: The red flashing light indicates that a malfunction is present and the machine cannot be used for production.



Yellow light signal

Flashing light: The yellow flashing light indicates that the packaging material/product supply is running out and must be refilled.

If the packaging material/product supply drops below the minimum, the red flashing light also flashes.



Green light signal

Continuous light: The green continuous light indicates fault-free operation of the entire machine.

Flashing light: The green flashing light indicates an error in an internal module of the machine, without the machine stopping due to an error.

Optional equipment

This section contains individual descriptions of machine parts that are not part of the standard equipment of this machine.



NOTE!

The scope and content of this section is dependent on your machine's equipment.

2.9.1 Cut and splice device

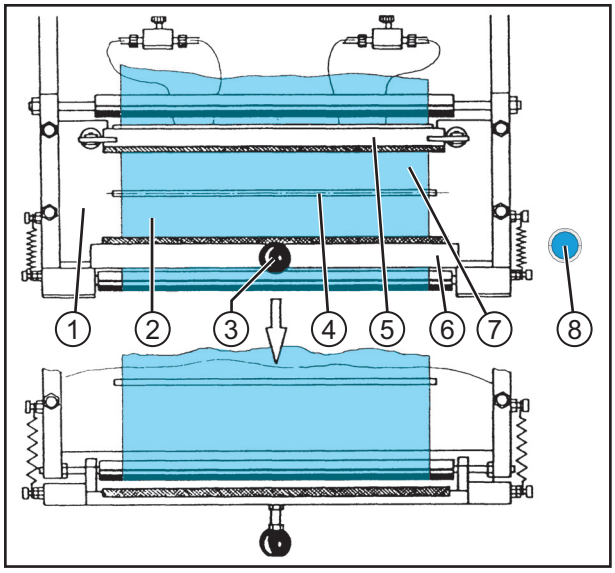


Fig. 2-72 Cut and splice device overview

1 Splice table
2 Packaging material web beginning (new packaging material roll)
3 Ball knob
4 Cutting edge
5 Locking bar (pneumatically-actuated)
6 Locking bar (mechanical)
7 Packaging material web (old packaging material roll)
8 "Unlock" button

Function

You can connect a new packaging material web to the end of the existing packaging material web using the cut and splice device. This means that there is no need to thread the new packaging material web up to the forming shoulder.

Procedure

1. The pneumatically-actuated locking bar (5) holds down the end of the empty packaging material web.



⚠ WARNING!

Danger of crushing!

There is the danger of crushing between the splice table and the locking bars.

▶ Do not reach into the unit when the machine is running.

2. With the aid of the film knife from the Rovema tool bag, cut the packaging material cleanly along the cutting edge (4)

3. Remove the used roll of packaging material from the packaging material support.
4. Fit on a new roll of packaging material and route the packaging material web (2) over the deflection rollers to the splice table (1).
5. Pull the beginning of the packaging material roll (2) over the end of the packaging material web (7), align to the end of the packaging material web, and press onto the splicing table.
6. Clamp the beginning of the packaging material roll (2) to the splicing table (1) using the locking bar (6).
7. Also cut off the new web cleanly along the cutting edge.
8. Connect both cut edges in the cutting direction, using a self-adhesive strip.

NOTE!

Only adhesive tape with good adhesive properties and a resistance to high temperatures may be used to splice old and new packaging material webs. The colour must be suitable for splice detection.

9. When fastening the adhesive strip, note the strip sticking position on the packaging material:
   a) For medium or large bag formats the adhesive tape must be applied to the cut edges from above and the adhesive edges that jut out are then cut off (Figure A).
   b) With smaller bag formats the adhesive strip is applied to the cut edge from below and then the adhesive edges are bent (Figure B).

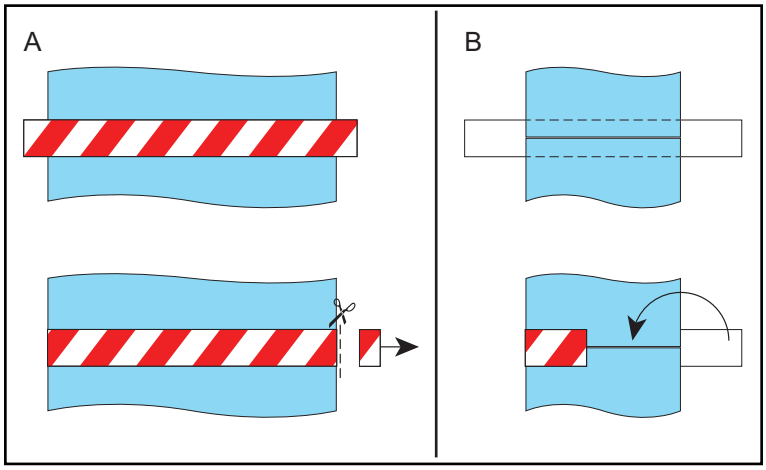


Fig. 2-73 Adhesive position of the adhesive strip on the packaging material

10. Release the locking bar (6).
11. Release the locking bar (5) by pressing the **"Unlock" button** (8) (on the rear side of the control cabinet).
12. Start bag production.
13. Out-sort the bag with the splice point.

2.9.2 Warning signal – packaging material end

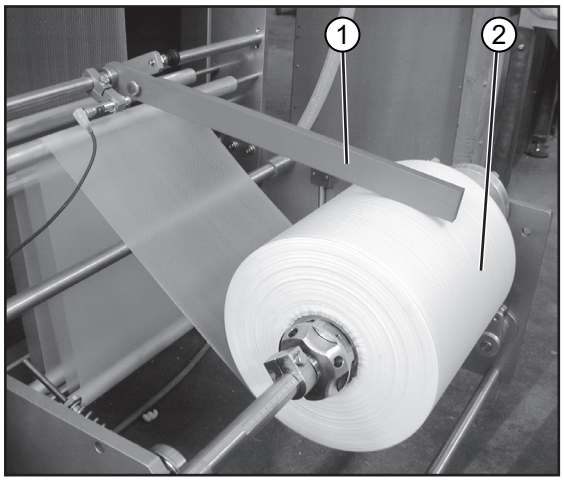


Fig. 2-74 Warning signal – packaging material end overview

1 Arm
2 Packaging material roll

Function

As the diameter of the packaging roll (2) decreases, the cam (5) turns against the proximity switch (4). If this is activated, a warning message appears on the display requesting a new packaging roll be put on or announces the switching off of the machine after 5 minutes.

Optional: If the machine is equipped with a traffic light signal, the yellow signal light flashes.

Swing the arm (1) up into its bracket before putting on a new roll.

Put it back on the roll after putting on the packaging material. Hold the arm, pull on the arrest knob (6) and guide the arm downwards until it rests on the packaging roll.

Mechanical adjustment

You can shift the switching time by moving the proximity switch, thus influencing the time of the warning message:

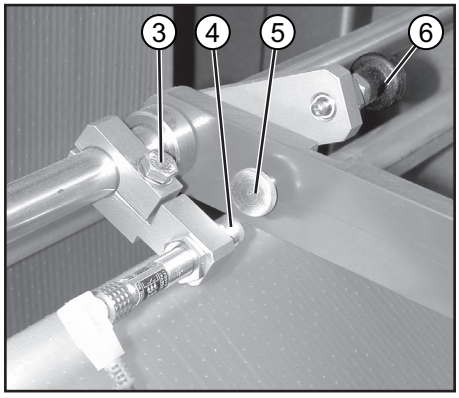


Fig. 2-75 Warning signal before end of packaging material: Proximity switch

3 Screw
4 Proximity switch
5 Cam
6 Locking knob

- Undo screw (3)
- Adjust proximity switch (4)
- Retighten screw

NOTE!

Note: If the machine is equipped with a packaging material draw-down (optional), there is no arm (1). In this case, the function of the arm is performed by the bracket of the packaging material draw-down unit.

2.9.3 Packaging material edge control

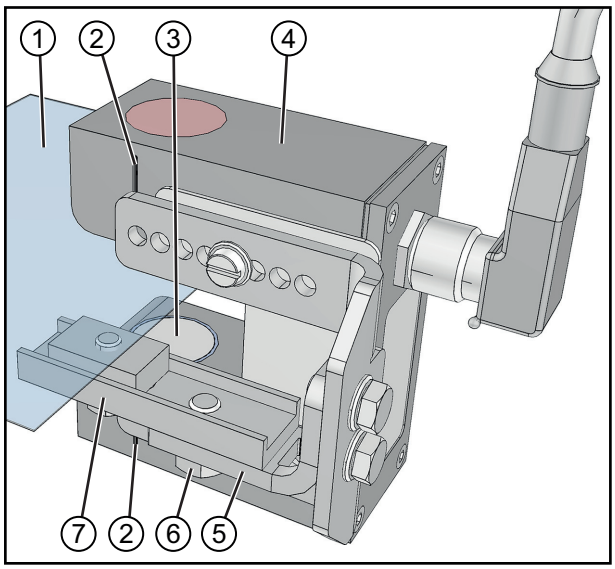


Fig. 2-76 Packaging material edge control overview

1 Packaging material web
2 Marking for fine adjustment
3 Ultrasonic edge sensor area
4 Ultrasonic edge sensor
5 Mounting bracket
6 Fastening screw
7 Fastening block on the change part

Function

The function of the packaging material edge control is linked with the packaging material carriage cross adjuster (see section *2.3.4 - Packaging material carriage cross adjuster, Page 107*).

An ultrasonic edge sensor checks and corrects the ideal run of the packaging material web.

When the edge of the packaging material web is running to the left or the right, the sensor area of the ultrasonic edge sensor is more or less covered.

If the sensor surface is interrupted by packaging material or if the sensor surface is free, the motor of the packaging material carriage cross adjuster automatically starts the correction to the left or right.

Incorrect run of the packaging material edge when unwinding can have different causes:

- Web offset after a roll change:

  After almost every roll change, old and new web meet at offset angles. This causes inaccuracies in the subsequent process.

- Incorrectly wound packaging material rolls.

  Inaccurately wound material rolls result in an incorrect infeed of the web into the production machine.

- Web run in the process

  In the process, mechanical processing, temperature, humidity or air currents can affect the web and can cause unwanted web run-off.

- Wobble error:

  Incorrectly adjusted material rolls tend to wobble and thus generate a periodic position error.

Mechanical adjustment

You can only set up the unit after the packaging material web has been manually aligned **so that it is centered**. Then realign the unit relative to the edge of the packaging web:

1. Loosen the fastening screw (6).
2. Readjust the unit by sliding the holding bracket (5) on the fastening block (7).
3. Then retighten the fastening screw.

There is a mark that can be used as a guide when determining the precise adjustment position.

Control

In the menu ***FILM DRIVE/FILM CHECK*** the packaging material edge control function can be programmed (see also section ***2.5.2.2 - "film check" configuration menu, Page 130***).

2.9.4 Packaging material unwinder on packaging material roll

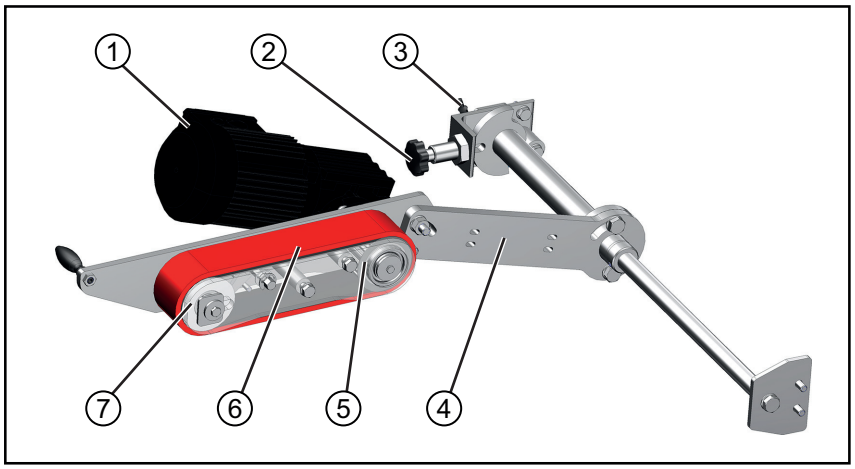


Fig. 2-77 Packaging material unwinder overview

1 Geared motor
2 Lock
3 Proximity switch "Scanning upper power unwind"
4 Bracket
5 Cog
6 Toothed belt
7 Deflection roller

Task

The task of the packaging material unwinder is to offload or support the packaging material draw-down.

Function

For operation, the unit is placed on the packaging material roll. A toothed belt (6) moves to unwind the packaging material from the roll.

A geared motor (1) is used as the drive source for the toothed belt.

The unit must be swiveled upwards to replace the packaging material roll. The arrest (2) keeps the unwinder in the top position.

Function monitoring with compensating rocker and proximity switch

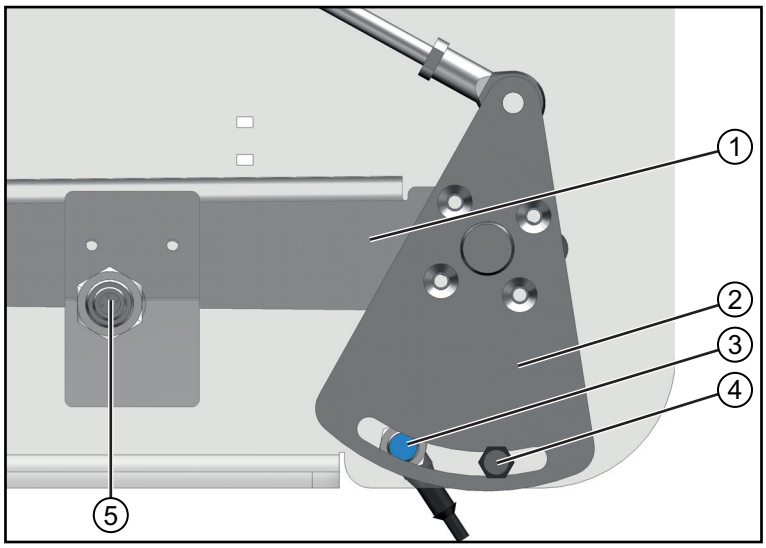


Fig. 2-78 Packaging material power unwind: Compensating rocker with proximity switch

1 Compensating rocker
2 Brake lever
3 Proximity switch
4 Screw
5 Analog sensor (detects the height of the compensating rocker)

The function of the unit is linked with the compensating rocker (1) on the packaging material carriage. If the compensating rocker is raised (or lowered), the unwinder runs faster (or slower). An analog sensor (5) detects the height of the compensating rocker.

The compensating rocker (1) should be moved to its center position before a machine start. This is done by turning the packaging material roll slightly.

If the height of the compensating rocker (1) changes, the brake lever (2) rotates. If the proximity switch (3) on the packaging material carriage is covered by the screw fastened on the brake lever (4), bag production stops. The screw fastened on the brake lever can be shifted to change the time of production interruption.

NOTE!

If the fault "Packaging material end" (=film end) appears frequently without the cited cause, the screw (4) must be adjusted so that the proximity switch (3) is actuated earlier, thus causing standstill of the unwinder to be caused sooner.

Mechanical tasks

Replacing the toothed belt

Prerequisites:

✓ The machine has been switched off at the main switch, and the main switch has then been secured against being switched back on unintentionally.

✓ The packaging unwinder is pivoted away from the packaging material and hooked into the holder.

✓ The necessary spare parts have been procured beforehand and are ready for the replacement.

Required tool:

- Ring wrench (AF8)
- Allen key (SW 4)

Procedure:

1. Loosen the fastening screws (1) on both sides of the deflection roller (2) using the Allen wrench (AF4).

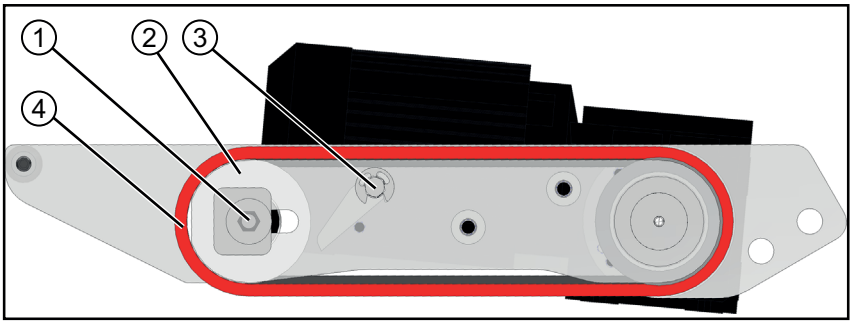


Fig. 2-79 Packaging material power unwind: Replace the toothed belt

2. Using the ring wrench (AF8), turn the adjusting screw (3) counterclockwise, in order to slacken the toothed belt (4).
3. Lift off old toothed belt.
4. Clean the complete device.
5. Place on the new toothed belt.

NOTE!

When installing a new belt make sure that the direction of movement corresponds to the arrow stamped on the belt.

6. Tension the toothed belt as described below.
7. Retighten fastening screws (1).

Tension toothed belt

Required tool:

- Ring wrench (AF8)
- Allen key (SW 4)

Procedure:

1. Loosen the fastening screws (1) on both sides of the deflection roller (2) using the Allen wrench (AF4).
2. Tension the toothed belt (4) by turning the adjusting screw (3).
   a) Using the ring wrench (AF8), turn the adjusting screw clockwise to increase the tension
   b) Using the ring wrench (AF8), turn the adjusting screw counterclockwise to decrease the tension
3. Retighten fastening screws (1).

See the illustrations below as orientation for the adjustment.

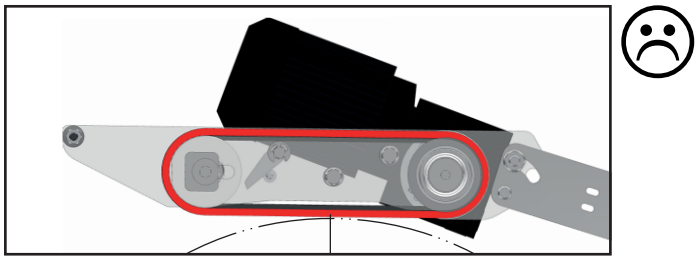


Fig. 2-80 Packaging material power unwind: Belt tension too high

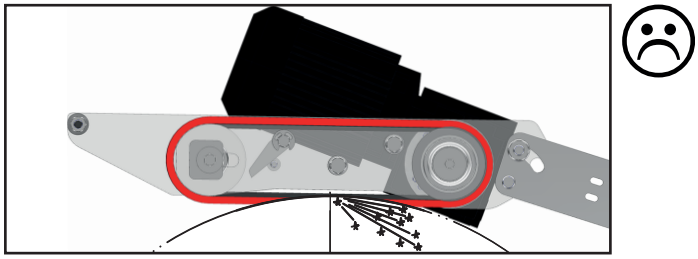


Fig. 2-81 Packaging material power unwind: Belt tension too low

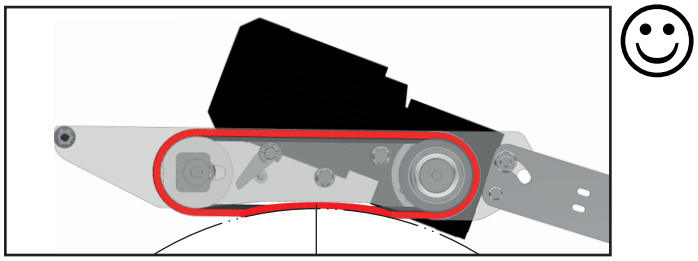


Fig. 2-82 Packaging material power unwind: Belt tension ideal

2.9.5 Instructions for operating a printer

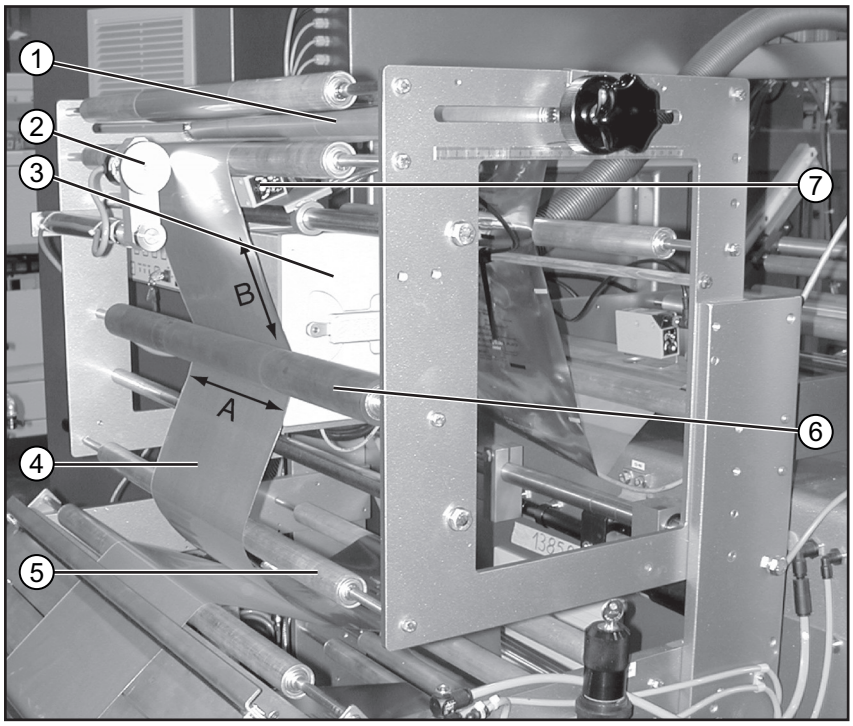


Fig. 2-83 Overview – carrier module for printer

1 Set-up roller
2 Sensor
3 Printer
4 Packaging material web
5 Deflection roller
6 Counterpressure roller, rubberized
7 Sensor

Function

A printer can be used to print use-by dates or product codes on the packaging material.

Structure

If the machine is equipped with a printer, a carrier module is attached to the packaging material carriage. This module carries the corresponding printer.

The module consists of the following functional components:

- Deflection rollers (5) to guide the packaging material web (4) in a different direction so that it is conveyed past the printer
- Set-up roller (1) to shift the printing position on the packaging material
- Sensor (2) as a pulse encoder for the printing process
- Printer (3) to apply an imprint to the packaging material
- Bracket for the print control device (not illustrated)
- Counterpressure roller (6) for a precise imprint on the packing material

- Sensor (6) to check whether an imprint was applied (optional)

Control

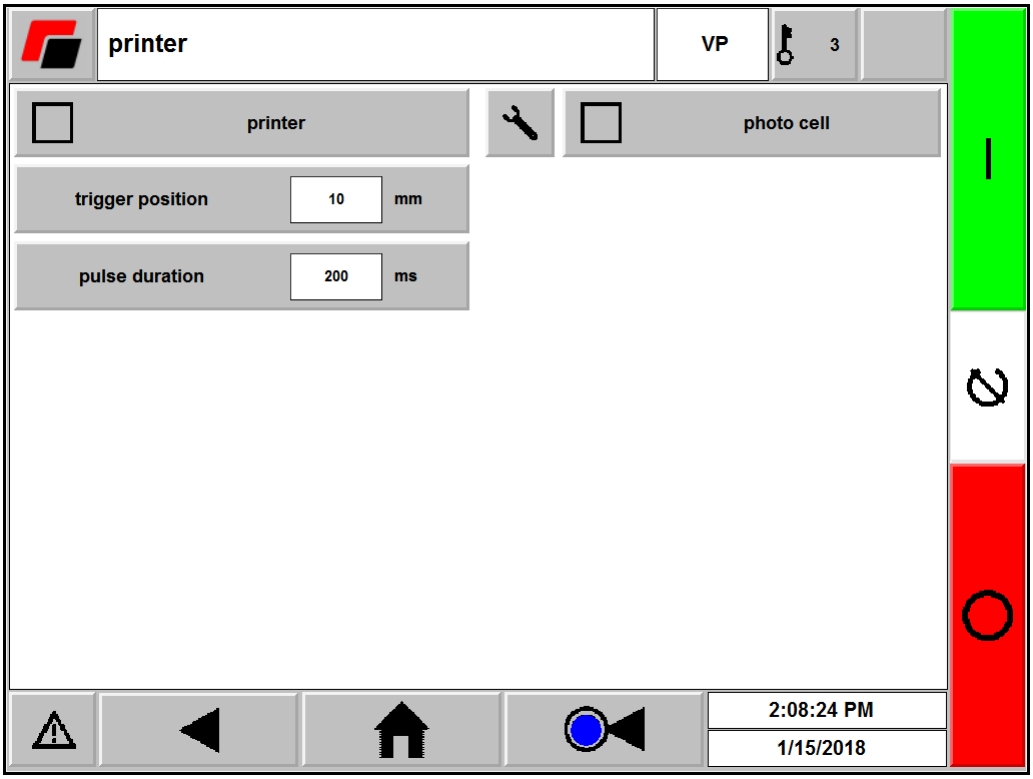
The trigger time and the duration of the trigger signal can be set in the ***PRINTER*** submenu.

Programming of additional parameters is done directly via the user interface of the printer.

NOTE!

For further details on the function and handling of the printer, consult the separate technical description of the manufacturer.

2.9.5.1 “printer” menu



"Printer" switch

This switch switches the function of the printer on or off.

trigger position

This parameter is used to correct the printing position. Increasing the input value shifts the imprint upwards (looking in the direction of production).

Pulse duration

The length of the trigger impulse on the printer is set here.

This setting is especially important for printers with heating (e.g. Seci Print) (see also operating manual for the printer). For printers from other manufacturers, values between 50 and 100 milliseconds should be set.

Wrench - change screen *PHOTO CELL PRINTER*

This takes you to the settings of the photo cell at the printer.

"Printer photo cell" switch

This switch activates and deactivates the function of the photo cell on the printer.

2.9.5.2 Settings

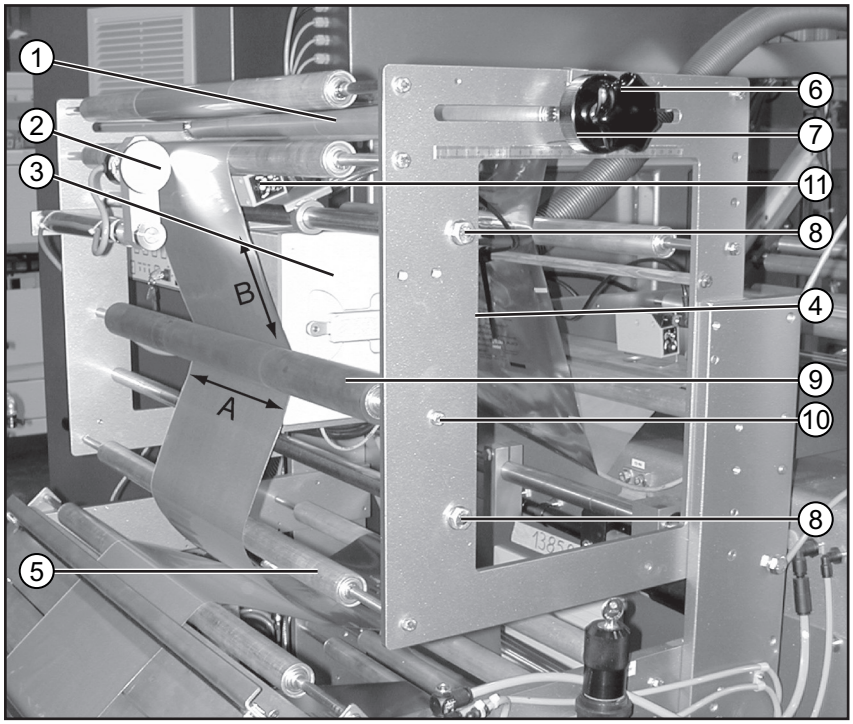


Fig. 2-84 Carrier module for printer: Settings

Setting up the printing position

Move the printing position in **direction A**:

1. Release clamp lever (4) on the printer bracket.
2. Shift printer (3) into position.

3. Retighten the clamp lever.

Move the printing position in **direction B**:

1. Release the clamp (7) of the set-up roller (1).
2. Shift the set-up roller into position by turning the knob (6).

NOTE!

A scale on the carrier module offers guidance during the shift.

3. Retighten the clamp.

Correcting the print image

If the imprint on the packaging material is uneven, the relative positions of the counterpressure roller and printer can be corrected:

1. Unscrew screws (10) on both sides of the carriage.
2. Adjust counterpressure roller (9).
3. Retighten screws.
4. Unscrew screws (8) on both sides of the printer.
5. Adjust printer (3).
6. Retighten screws.

Setting up the sensor

1. Loosen the clamp lever (11).

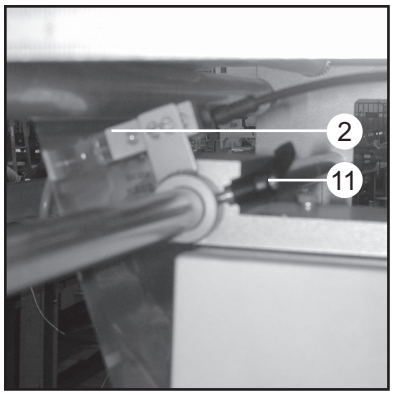


Fig. 2-85 Carrier module for printer: Set up the sensor

2. Align sensor (2) on the print register mark.
3. Retighten the clamp lever.

2.9.6 Stabilo Seal hot sealing unit

Task

Production of stable bag edges in the film carriage during packaging material infeed. Special bag shapes (Stabilo Seal bag, RoPack bag) can be produced by using 2, 3 or 4 sealing jaws.

Structure and function

The Stabilo Seal hot sealing unit is made up of the following subassemblies:

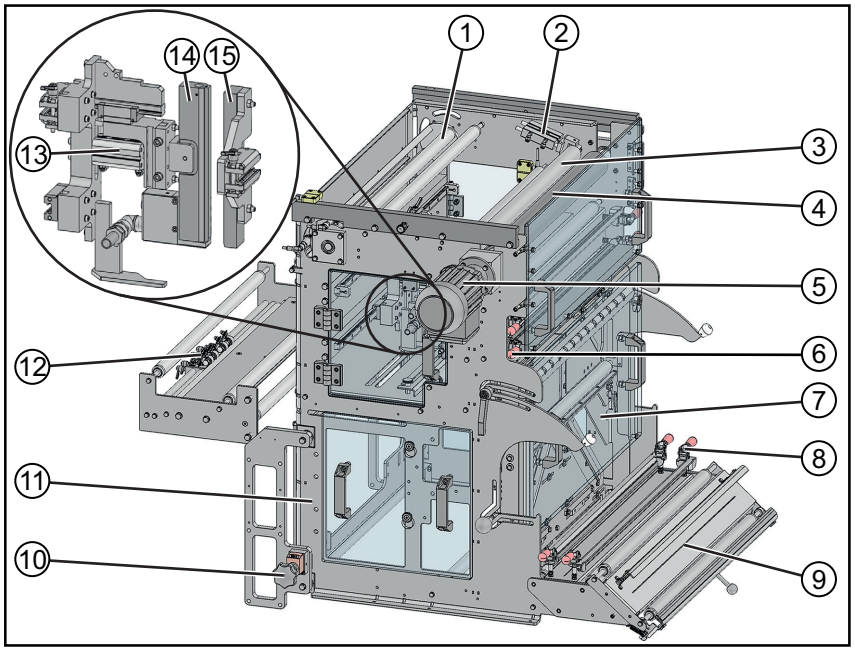


Fig. 2-86 Overview, Stabilo Seal hot sealing unit

1 Rocker
2 Pneumatic cylinder for pressure roller
3 Pressure roller
4 Deflection roller, packaging material power unwind
5 Geared motor, packaging material power unwind
6 Cut and splice device no. 2
7 Change part (edge forming)
8 Cut and splice device no. 1
9 Cut and splice device no. 3
10 Digital meter
11 Carrier module
12 Edge turning unit
13 Sealing jaw (=slider jaw)
14 Counter-pressure strip
15 Pneumatic cylinder for sealing jaw

The station is housed in its own carrier module (11) that is attached to the packaging material carrier. If this station is to be used, the travel of the packaging material web must be changed in such a way that the packaging material can pass through each of the individual sections of the station.

The packaging material web is first guided through a format set (7). With the help of this tool, the packaging material is placed by a special guide in such a way that the packaging material and the inner layer come in contact with several areas of the packaging material web.

The edges produced in this way can be sealed with the help of the sealing jaws (13).

When the machine starts, the sealing jaws are pushed against their stops by pneumatic cylinders (15). These stops are set in such way that a gap of 0.7 mm is left between a sealing jaw and the counter-pressure strip (14). The packaging material web with the folded edge is fed through this gap and this edge is sealed by the heated sealing jaw.

When the machine stops or when production ends, the sealing jaws are retracted to their initial position.

Heat source

A heating cartridge in each sealing jaw serves as a heat source.

Regulating the temperature

A regulating system, controlled via temperature controllers, holds the set sealing temperatures constant within programmed limits. The desired parameters can be entered via the display.

Format adjustments

The entire carrier module can be moved in a cross-wise direction to the packaging material web by means of a digital meter (10).

All the sealing jaws and counter-pressure strips as well as the pressure rollers of the edge turning unit can be shifted at an oblique angle to the packaging material web.

Format change

When there is a format change, the format set must always be replaced (for information on how to do this, see chapter *2.9.6.4 - Change format parts, Page 233*).

NOTE!

The basic setting of the format set was made by ROVEMA at the factory.

To guarantee trouble-free operation, no changes whatsoever may be made by the customer to these settings!

Packaging material power unwind

The use of the packaging material power unwind ensures that the tensile forces on the packaging material draw-down always remain the same for different shaping forces (through various packaging material qualities) of the edge forming.

The packaging material web runs between a rubberized deflection roller (4) and a pressure roller (3). The rubberized deflection roller is driven by a geared motor (5). To reduce the slippage, the packaging material is pressed on to the rubberized deflection roller using the pressure roller (3). The pressure roller is actuated by 2 pneumatic cylinders (2).

The drive speed of the rubberized deflection roller is regulated automatically using a rocker (1).

⚠ WARNING!

Danger of entanglement of body parts or clothing due to rotating parts!

There are rotating parts on the packaging material power unwind, for example the motor-driven deflection roller. At these points, there is the risk of body parts or clothing being caught, wound up or drawn in.

▶ Prior to all tasks, switch the machine off at the main switch and secure the main switch against being switched back on unintentionally.

Edge turning unit

The edge turning unit (12) reduces the internal stresses of the bag edges.

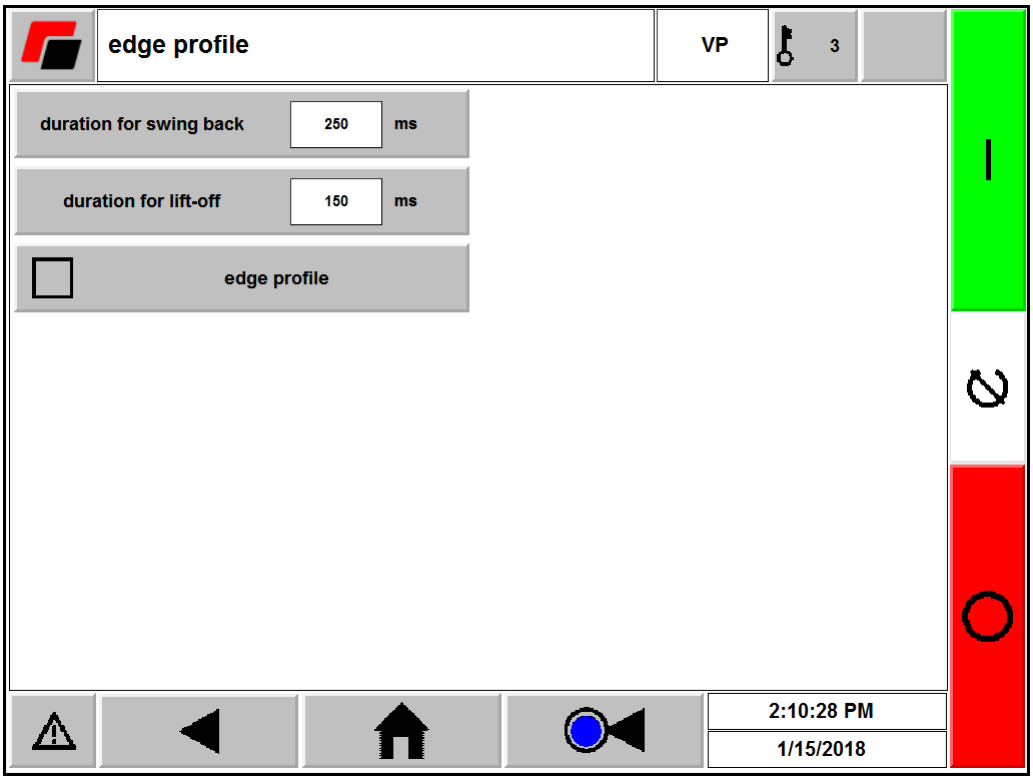
NOTE!

Perform the adjustments on this station extremely carefully!

Make sure that the specified dimensions are precisely complied with! Incorrect adjustments can lead to interruptions in production and damage to the machine!

2.9.6.1 “Edge profile” menu

Electronic settings for the Stabilo Seal hot sealing unit are made in this menu.



Swing-in time (film carriage sealing station)

The input of this value (in milliseconds) defines a time span between the sealing jaws of the Stabilo Seal hot sealing unit reconnecting and the restart of the machine.

Swing-out time (film carriage sealing station)

The input of this value (in milliseconds) defines a time span between when the machine stops and the lift-off of the sealing jaws of the Stabilo Seal hot sealing unit from the packaging material.

The sealing jaws continue to be heated after the vertical sealing unit swings away so that when bag production is resumed it immediately has the necessary sealing temperature.

“Edge profile” switch

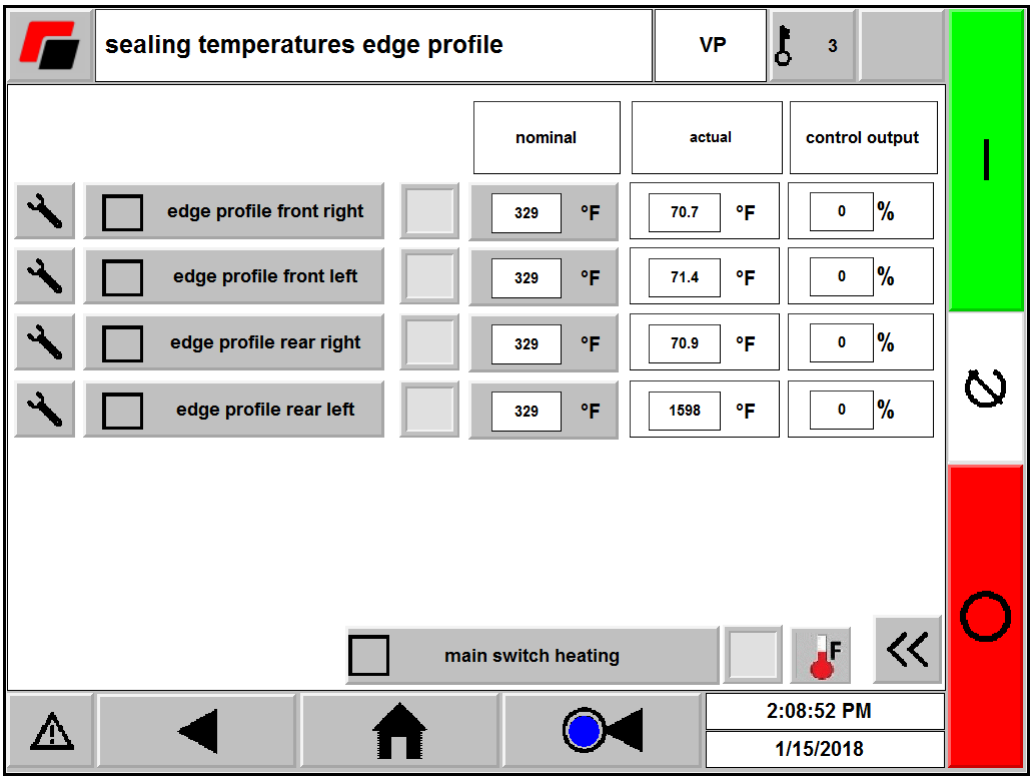
This switch switches the function of the Stabilo Seal hot sealing unit on or off.

“Edge profile cooling” switch (optional)

This switch switches the function of a cooling unit on the Stabilo Seal hot sealing unit on or off.

2.9.6.2 “Sealing temperatures 2” menu

In this menu, the temperatures are set for various heated machine functions. Every function listed in this menu has its own temperature control zone. When you make an entry in this menu, you are defining the temperature setpoint (in °Celsius) at which the function is to be carried out. Further settings for the control zone are entered in the corresponding configuration menu.



Wrench - change screen

Pressing this button takes you to the configuration menu for the appropriate heating function.

Switch for switching the temperature control zone on and off.

As soon as this switch is switched off, the heating for this function is deactivated. The values entered for the nominal temperature and the configuration data are retained. When switched on again, production is resumed with this data.

Nominal temperature

The nominal temperature is the setpoint at which the heating for that particular machine function should operate under normal circumstances. When the machine starts, the heating takes a certain amount of time to reach the nominal temperature set here. You cannot begin production during this time.

During the heat-up phase, observe the actual temperature display. This display should continually rise during the warm-up phase until the temperature setpoint is reached.

"Actual temperature" value display

This is the temperature currently reached by the heating function. This value is displayed as information for the operator. The display of the actual temperature does not need to remain constant, but rather can display fluctuating values throughout operation.

Value display "manipulated variable"

This value displays the output level at which the heating function is operating, as a percentage of its maximum output. The control output display can vary between 0 % and 100 %. 0 % means that no heating is occurring. 100 % means that the heating is working at maximum power.

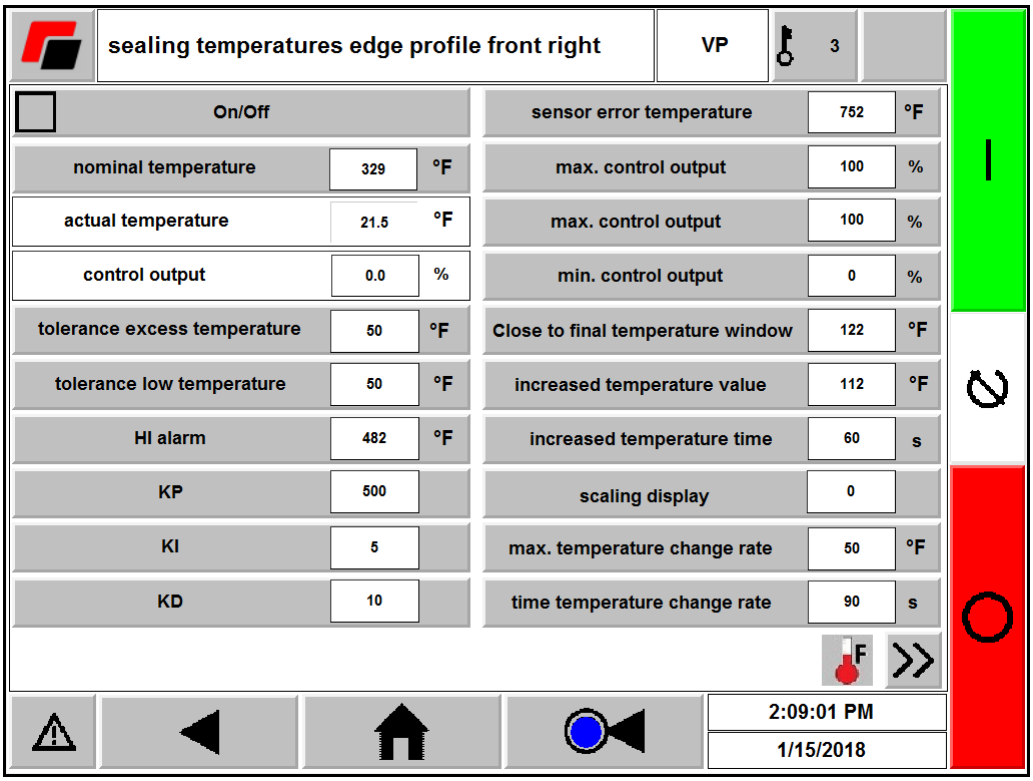
"Main switch for heating" switch

Switch for quickly switching all temperature control zones of the machine on and off.

Switch for switching the temperature display (thermometer)

This switch switches the temperature display unit between Celsius and Fahrenheit.

2.9.6.2.1 “Sealing temperatures” configuration menu



Switch for switching the temperature control zone on and off.

As soon as this switch is switched off, the heating for this function is deactivated. The values entered for the nominal temperature and the configuration data are retained. When switched on again, production is resumed with this data.

Nominal temperature

The nominal temperature is the setpoint at which the heating for that particular machine function should operate under normal circumstances. When the machine starts, the heating takes a certain amount of time to reach the nominal temperature set here. You cannot begin production during this time.

During the heat-up phase, observe the actual temperature display. This display should continually rise during the warm-up phase until the temperature setpoint is reached.

"Actual temperature" value display

This is the temperature currently reached by the heating function. This value is displayed as information for the operator. The display of the actual temperature does not need to remain constant, but rather can display fluctuating values throughout operation.

Value display "manipulated variable"

This value displays the output level at which the heating function is operating, as a percentage of its maximum output. The control output display can vary between 0 % and 100 %. 0 % means that no heating is occurring. 100 % means that the heating is working at maximum power.

Tolerance

Due to various factors in the production environment, the set nominal temperature cannot always be kept constant. To ensure smooth production operations, a tolerance limit can be set to allow the temperature to rise above or fall below the nominal temperature. This means that production will not be interrupted because of an error message which would otherwise be triggered by the temperature monitoring in the control zone.

The value is entered in °Celsius. The tolerance limit should be large enough to compensate for temperature fluctuations resulting from production processes. However the value must not be allowed to cause faulty production results. If the fluctuations cannot be compensated adequately by entering a tolerance limit, you might need to adjust other settings for the temperature zone.

If the temperature nevertheless rises above or falls below the nominal temperature by the set tolerance value, a malfunction message appears on the display.

HI alarm

Adjustable upper temperature limit. A fault results if the value set here is exceeded.

2.9.6.3 Replacing the heating cartridge and/or temperature sensor



⚠ WARNING!

Danger of burns due to hot surfaces!

The Stabilo Seal hot sealing unit is operated with sealing jaws, whose surfaces are very hot under operating conditions. Touching these hot jaws can lead to serious burns.

- ▶ Maintain a sufficient distance from these hot surfaces of the station during machine operation.
- ▶ Switch off the corresponding heaters before working on the station and let the station cool down until it is possible to work safely.
- ▶ When working on the hot station, wear suitable safety gloves to protect against the heat.



⚠ WARNING!

Danger of injury!

Incorrect execution of repair and maintenance tasks can result in risk of injury.

▶ Repair and maintenance tasks must only be performed by trained or appropriately instructed technicians.

Prerequisites:

✓ The machine has been switched off at the main switch and the main switch has then been secured against being switched back on unintentionally!

✓ The sealing jaws have cooled down completely in order to be able to work on them without risk.

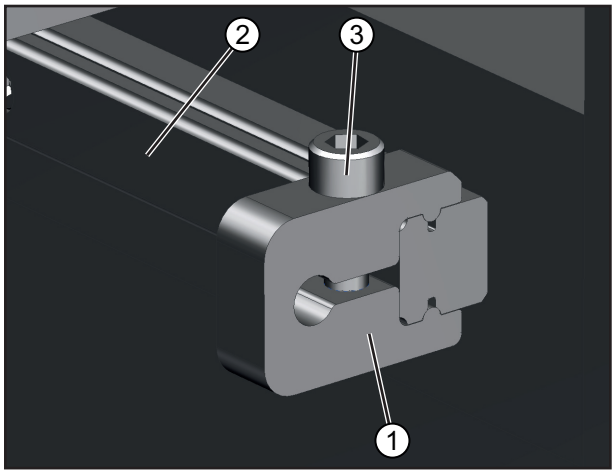
✓ The guard doors on the station are open.

✓ The protective covers on the station have been removed.

✓ The necessary spare parts have been procured beforehand and are ready for the replacement.

Execution:

1. Disconnect all associated pneumatic hoses.
2. Disconnect the associated electrical connections (the connecting boxes are located on the side of the electrical cabinet).
3. Loosen the fastening screw (3) and remove the clamp (1) from the rail.



4. Take down the sealing jaw(s) individually from the rail.
5. Loosen the fastening screws (6) and remove the protective plate (4).

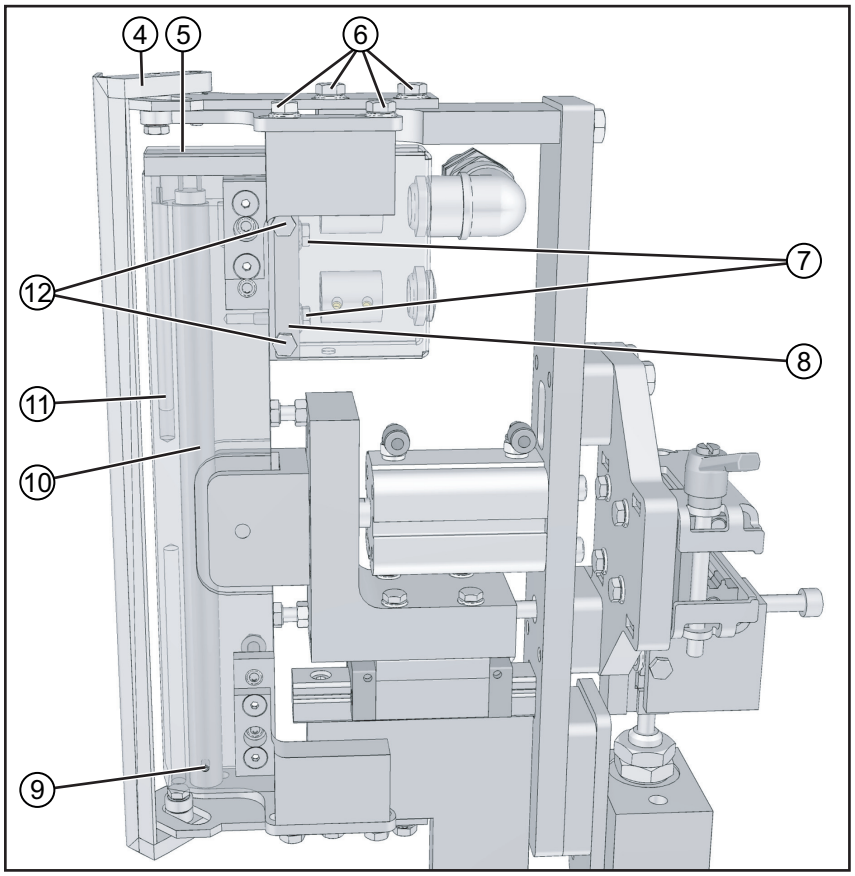


Fig. 2-87 Replace the heating cartridge(s) and/or temperature sensor

6. Unscrew the fastening screws (12) and remove the terminal housing (5).
7. Loosen the fastening screws (7) and remove the insulation piece (8).
8. Pull the temperature sensor (11) upwards and out.
9. Unscrew the clamp screw (9) at the lower end of the jaw.
10. Pull the heating cartridge (10) upwards out of the sealing jaw.
11. Unclamp the connections.
12. Clean the holes.

NOTE!

Before installation, compare the specifications for the power supply on the heating cartridge with those in the electrical documentation.

13. Apply heat conducting paste / anticorrosive cream to the new heating cartridge and re-install temperature sensor and/or the heating cartridge in the holes.
14. Then re-connect the temperature sensor and/or the heating cartridge.
15. Reassemble in reverse order.

NOTE!

After installation, the functions of the safety devices, such as the protective circuit and residual current circuit-breaker, must be checked in accordance with the applicable regulations!

2.9.6.4 Change format parts

Prerequisites:

- ✓ The machine has been switched off at the main switch and the main switch has then been secured against being switched back on unintentionally!
- ✓ The sealing jaws have cooled down completely in order to be able to work on them without risk.
- ✓ The guard doors on the station are open.
- ✓ The protective covers on the station have been removed.
- ✓ The new format parts have been selected according to the format list (see section *3.4 - Format change of the machine, Page 268*) or the format table from the appendix of this operating menu, and are ready for installation.

⚠ WARNING!

Danger of crushing!

The change part can weigh more than 30 kilograms.

- ▶ It may be necessary to call on another person to help with fitting and removing the change part in order to hold the change part in place during the activities described below.
- ▶ Ensure that there is no one in the danger zone during these tasks.

Adjusting device (sealing jaws)

1. Loosen the locking levers (3) on the jaw brackets (2).
2. Push the seal jaws (1) outwards along the adjustment rail.

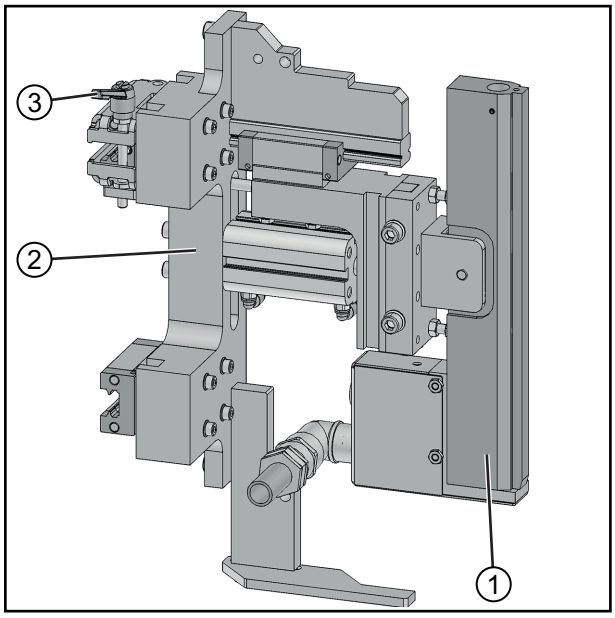


Fig. 2-88 Sealing jaw – Jaw bracket

3. Unscrew the knurled screws (4).

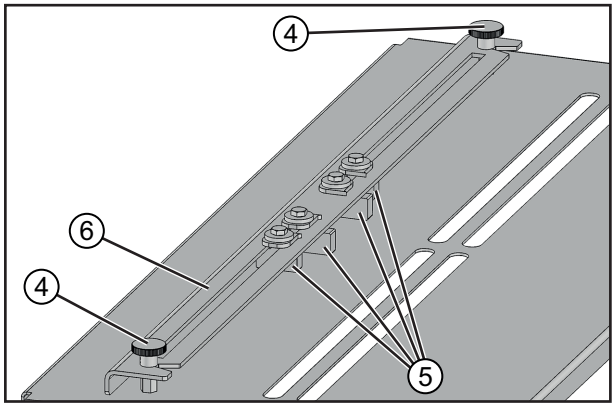


Fig. 2-89 Stop rail

4. Remove the old adjusting device (6) from the bracket.
5. Place the new adjustment device in the bracket.
6. Retighten the knurled screws.
7. Push back the seal jaws inwards along the adjustment rail until they come up against the limit stops (5) of the adjusting device.
8. Retighten the locking levers (3) on the jaw brackets.

Change part (edge forming)

1. Close clamps (2 and 3) on the "cut and splice device no. 2" (4).

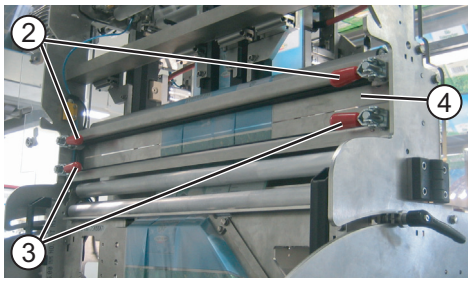


Fig. 2-90 Cut and splice device no. 2 - close clamps

2. Cut off the packaging material web with the help of a film knife along the cutting edge on the cutting table.



Fig. 2-91 Cut and splice device no. 2 - cut through the packaging material web

3. Close clamps (5 and 6) on the "cut and splice device no. 3" (7).

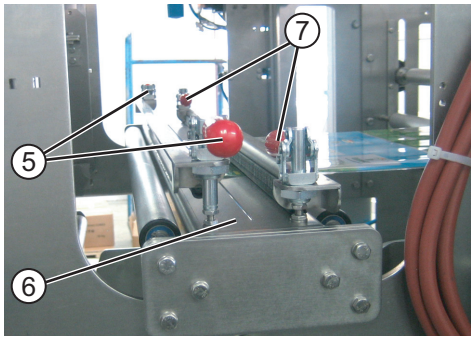


Fig. 2-92 Cut and splice device no. 3 - close clamps

4. Cut off the packaging material web with the help of a film knife along the cutting edge on the cutting table.

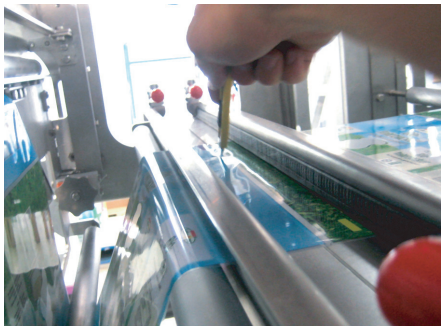


Fig. 2-93 Cut and splice device no. 3 - cut through the packaging material web

5. Loosen the clamp (3) again on the "cut and splice device no. 2" and the clamp (5) on the "cut and splice device no. 3".
6. Release the two clamping levers (8).

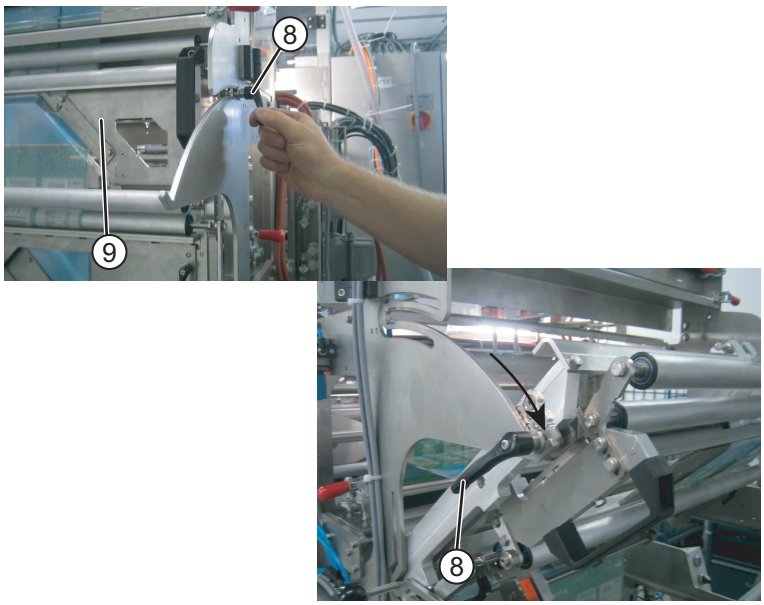


Fig. 2-94 Swing change part back into format change position

7. Swing the old change part (9) back into the format change position as far as the stop of the retainer.
8. Grip the change part with the help of the ball heads and handles, lift down from the retainer and set down carefully.

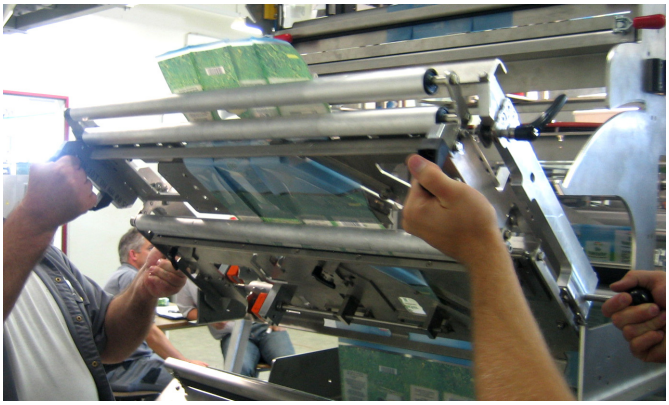


Fig. 2-95 Lift down change part

9. Pick up the new change part and place it in the retainer; then swing the change part forward into its working position, push up to the stop on both sides and secure with the locking lever.



Fig. 2-96 Insert change part and swing forward

10. Guide both packaging material ends up to the cut and splice equipment nos. 2 and 3 and guide them under the clamps (3 and 5).
11. Press the clamp (3) on the "cut and splice device no. 2" and the clamp (5) on the "cut and splice device no. 3".
12. Use adhesive tape to join both packaging material ends on the "cut and splice device no. 2". Then release the clamps.
13. Use adhesive tape to join both packaging material ends on the "cut and splice device no. 3". Then release the clamps.
14. Set the counter-pressure strips (13) of all the sealing jaws to the respective seam centre and clamp them with the locking levers (12).

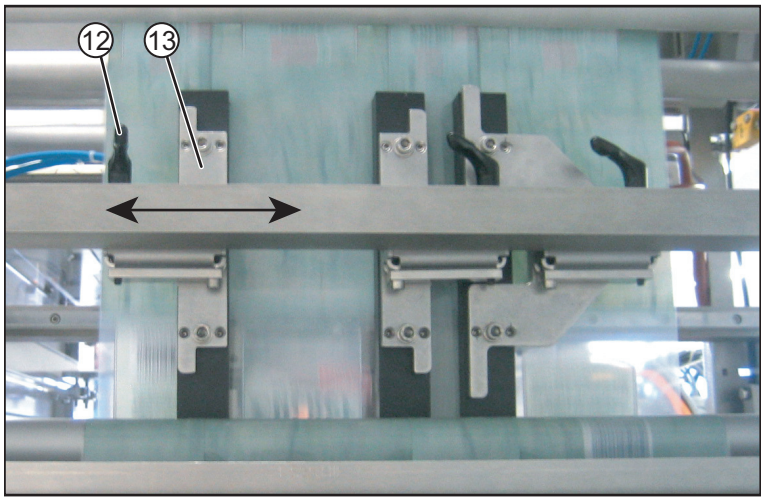


Fig. 2-97 Adjust counterpressure strips

2.9.7 Cross seal cooling

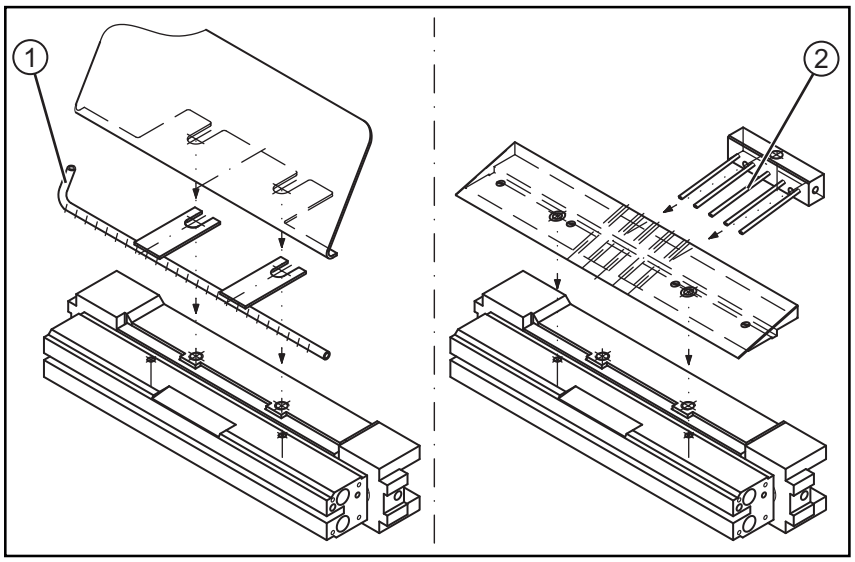


Fig. 2-98 Cross seal cooling overview

1 Air nozzle (pillow bag model)
2 Air nozzle (design for stand-up pouches)

Function

Excess heat energy is dissipated immediately after the sealing phase through precise blowing from a series of air nozzles (1) on the top section of the cross-sealing tools. This increases the load-bearing capacity of the bottom seal that has just been produced.

Basic settings

Basic settings are made by ROVEMA.

Changes may be required due to increased machine cycles and/or higher fill weight.

NOTE!

Increasing fill weight and higher cycle number require a greater amount of air.

Control

In the submenu ***CAMS/CROSS COOLING*** the switch-on and switch-off time for the blowing operation of the cooling unit can be defined.

The cooling time per work cycle is matched to the movement sequence of the cross-sealing tools and specified by a program in each case.

NOTE!

It is not practical to extend the cooling time, as switching on the cooling too early results in the cross-sealing tools cooling down, while switching off too late causes unnecessary consumption of compressed air. The amount of air should be controlled only via the pressure reducing valve (in the machine housing).

2.9.8 Gusseting device

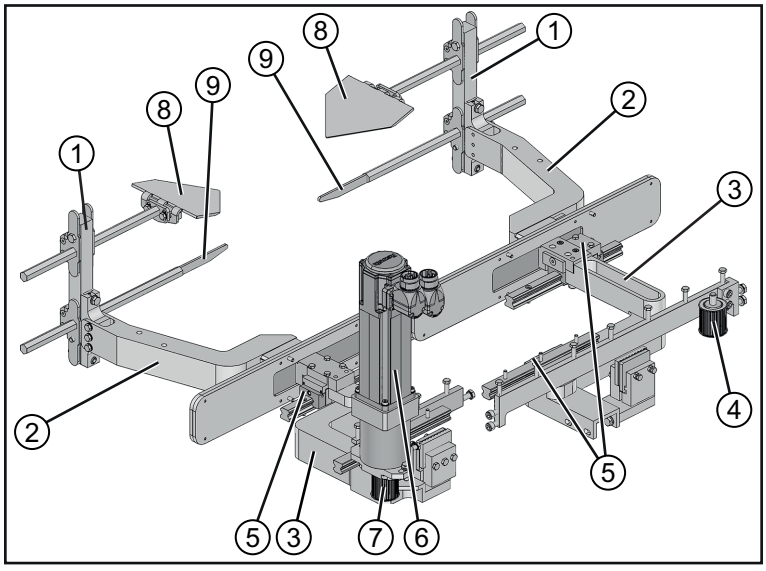


Fig. 2-99 Overview – gusseting device

1 Bracket
2 Support, outside
3 Support, inside
4 Deflection roller
5 Guide carriage
6 Servomotor
7 Drive wheel
8 Gusseting finger, top
9 Gusseting finger, bottom

Function

The gusseting device is used to create side folds (gussets) in the packaging material tube.

During the forming, filling and sealing of the tubular bag, the gussets are formed by means of corresponding forming tools, also called gusseting fingers. The movement sequence of these forming tools is synchronized with the movement sequence of the cross-sealing tools.

Depending on the design of the gusseting fingers, the format set and the packaging material used, simple gusseted bags or stand-up gusseted bottom bags can be produced.

Structure

The drive source is a servomotor (6). The drive slide, consisting of a drive wheel (7), the toothed belt (no image), the guide carriers (5) and a deflection roller (4), is driven with the help of this motor.

Supports (2 and 3) and brackets (1) for lifting up the gusseting fingers (8 and 9) are attached to the guide carriers.

The upper gusseting fingers (8) form the bottom fold, the lower gusseting fingers (9) the top fold of the bag.

To produce bags without gussets, the ***"Gusseting finger"*** switch has to be switched off (see chapter *2.7.4 - "Sealing jaw drive" menu, Page 165*).

The gusseting tools only have to be removed if a filling tube is used which causes the gusseting fingers to interfere with production (see also the section *2.9.8.4 - Removing the gusseting device, Page 246*).

2.9.8.1 "Gusseting device" configuration menu

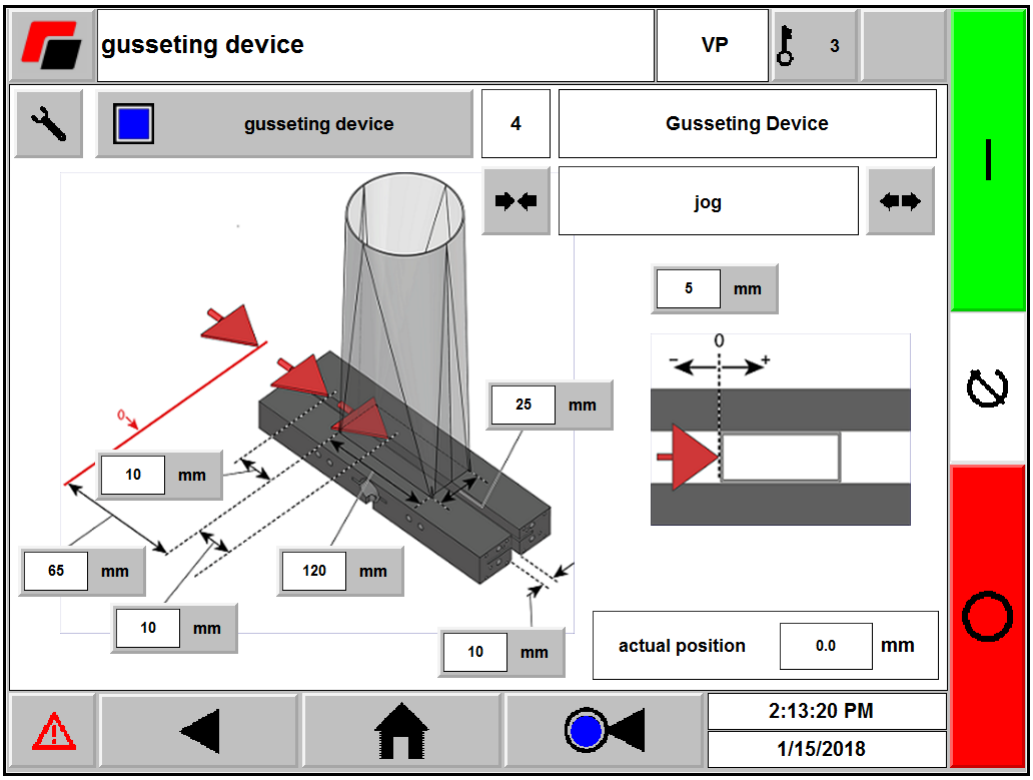
The drive axis of the gusseting device is programmed in this function screen.

NOTE!

Danger of permanent machine damage due to incorrect settings!

Incorrect settings can result in malfunctions and damage to the machine

▶ This area of the control unit must only be operated by appropriately qualified personnel!



Wrench - change screen

This takes you to the configuration screen for the axis.

The values accessed with the wrench were factory-set by ROVEMA. They cannot be changed by the operator, and are provided for information purposes only.

"Gusseting finger" switch

This switch activates and deactivates the function of the gusseting device.

"Jog" buttons

These buttons can be used to jog the axes in the respective direction.

Instructions for the input fields in this menu

Different values for the function are entered in this menu.

You can see an illustration of the module in the overview. There is an entry field at the places where you have to make an entry.

If you click on this field, a numeric keypad is opened and you can find the name of the function along its top edge. These functions are described below.

Minimum distance between waiting position and chute contact

This position corresponds to the gusseting finger's rest position. From this point it starts its feed movement into the chute. This position can be programmed as the distance from the chute.

Distance between zero point and chute contact

The zero position must be set far enough away from the chute.

Insertion depth

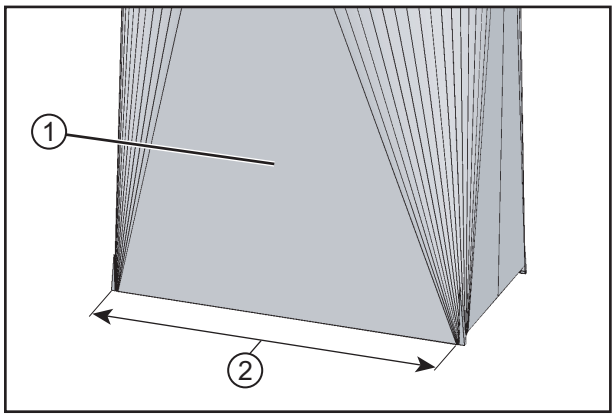
This is the path from the chute contact up to the sealing position.

NOTE!

The gusseting fingers must be moved no further than the middle of the chute width otherwise there is a danger of collision!

Chute width

Field for the manual input of the chute width (in millimeters).



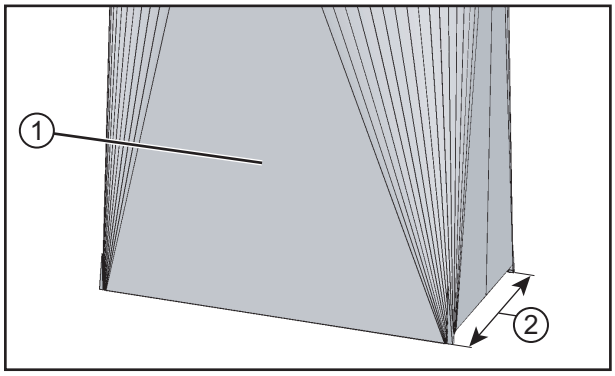
1 Chute
2 Chute width

Jaw opening at end of insertion process

When the jaw opens at the set time, the gusseting finger should have completed its feed movement and have covered the insertion distance. This means that the movement should have been completed by the start of sealing at the latest.

chute depth

Field for manual input of the chute depth (in millimeters).



1 Chute

2 chute depth

This value is required during the production of gusseted bottom bags to calculate the upstream and downstream sealing area (angle). It is the extension of the filling tube (and hence of the bag) in the direction of the jaw movement that must be entered.

If the value is too low, this may cause compressive bunching of the film on the jaws.

If it is too high, the machine will not achieve its possible output.

Offset to insertion time

Position of the gusseting fingers relative to the chute edge at the moment where the seal jaws are just touching the chute.

If the value is positive at this point the gusseting fingers have already moved into the chute by the offset; if the value is negative, they have not yet reached the chute.

"Actual position" value display

The current position of the drive axis is read by a sensor system and displayed by the control as the actual position. This value can be used as an aid when determining setting values.

2.9.8.2 Change format parts

This setting must be carried out on both the left and the right side of the gusseting unit.

Prerequisites:

- ✓ The surfaces of the cross jaws must have already cooled down completely in order to work on them without risk.
- ✓ The cross jaws were moved apart to the maximum distance in jog mode.
- ✓ The new format parts have been selected according to the format list (see section ***3.4 - Format change of the machine, Page 268***) or the format table from the appendix of this operating menu, and are ready for installation.
- ✓ The protective doors on the front of the machine are open.

Required tool:

- Wrench (AF10)

Replacement of the upper gusseting finger:

1. Unscrew the lock nuts (2).

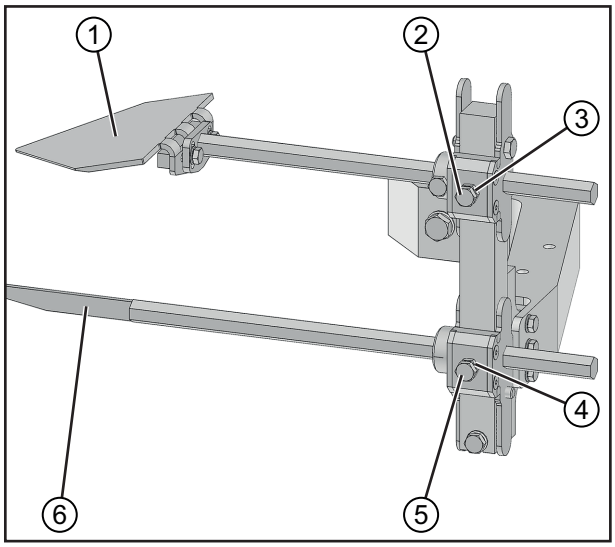


Fig. 2-100 Gusseting device: changing format change parts

2. Unscrew pressure screw (2).
3. Pull the old gusseting finger (1) out of the holder.
4. Slide the new gusseting finger (1) into the holder.
5. Perform format adjustment (see chapter ***2.9.8.3 - Format adjustment, Page 245***).
6. Tighten pressure screw (2).
7. Tighten the lock nuts (2).
8. Clean the removed format part and store appropriately until next usage.

Replacement of the lower gusseting finger:

1. Unscrew the lock nuts (4).
2. Unscrew pressure screw (5).
3. Pull the old gusseting finger (4) out of the holder.
4. Slide the new gusseting finger (4) into the holder.

5. Perform format adjustment (see chapter *2.9.8.3 - Format adjustment, Page 245*).
6. Tighten pressure screw (4).
7. Tighten the lock nuts (4).
8. Clean the removed format part and store appropriately until next usage.

2.9.8.3 Format adjustment

Procedure for changeover to a known bag format

This setting must be carried out on both the left and the right side of the gusseting unit.

Prerequisites:

- ✓ The new format parts have been selected and fitted according to the format list (see Chapter *3.4 - Format change of the machine, Page 268*) or the format table from the appendix of these operating instructions (see chapter *2.9.8.2 - Change format parts, Page 243*).
- ✓ The cross jaws were moved apart to the maximum distance in jog mode.
- ✓ The surfaces of the cross jaws must have already cooled down completely in order to work on them without risk.
- ✓ The protective doors on the front of the machine are open.

Required tool:

- Wrench (AF10)

Adjustment of the upper gusseting finger:

1. Unscrew the lock nuts (5).

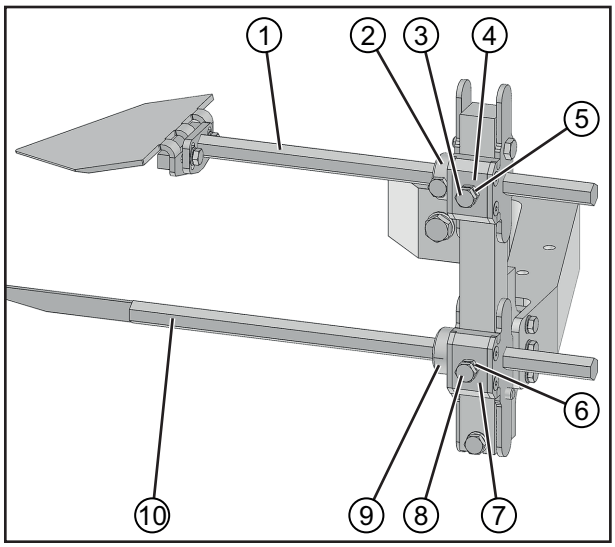


Fig. 2-101 Gusseting device: format adjustment

2. Unscrew pressure screw (3).

3. Push upper gusseting finger (1) into the holder (4) at the new format position according to the specifications from the format table. A scale on the upper gusseting finger serves as an orientation aid during the adjustment (1).

   For equipment with adjustment ring: push upper gusseting finger (1) into the holder (4), until the adjustment ring (2) impinges on the holder (4).

4. Tighten pressure screw (3).
5. Tighten the lock nuts (5).

Adjustment of the lower gusseting finger:

1. Unscrew the lock nuts (6).
2. Unscrew pressure screw (8).
3. Align lower gusseting finger (10) to upper gusseting finger (1) by pushing into the holder (7).

   For equipment with adjustment ring: push lower gusseting finger (10) into the holder (7), until the adjustment ring (9) impinges on the holder (7).

4. Tighten pressure screw (8).
5. Tighten the lock nuts (6).

2.9.8.4 Removing the gusseting device

The following steps must be taken on both sides of the gusseting device.

Removing the gusseting device

Prerequisites:

✓ The surfaces of the cross jaws must have already cooled down completely in order to work on them without risk.
✓ The cross jaws were moved apart to the maximum distance in jog mode.
✓ The protective doors on the front of the machine are open.

Required tool:

- Wrench (AF13)

Removal:

1. Unscrew the lock nuts (2) (accessible from below).

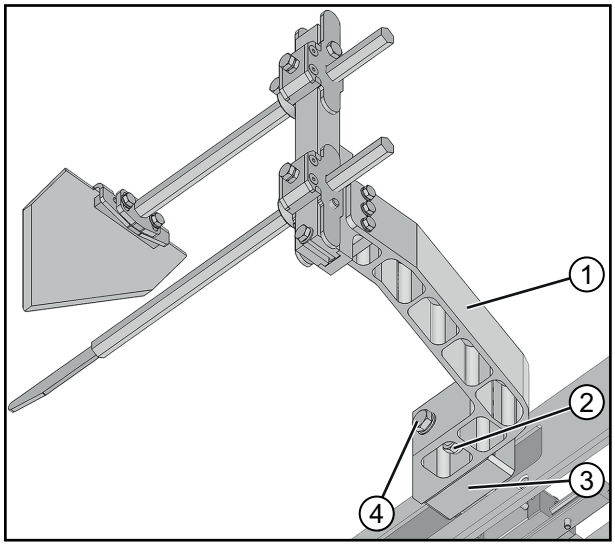


Fig. 2-102 Gusseting device: Removing the gusseting device

2. Grasp and hold carrier (1).
3. Undo screw (4).
4. Pull carrier (1) forward out of the guide slot of the bracket (3) and set it down carefully.

Installation:

1. Place carrier (1) in the guide slot on the bracket (3).
2. Tighten the screw (4).
3. Screw on lock nuts (2).

2.9.9 Swivel-mount jaw carrier for front cross jaw

The front jaw carrier with cross jaw can be swung out to carry out cleaning and maintenance tasks or for a format change.



⚠ WARNING!

Danger of burns due to hot surfaces!

The cross sealing station is operated with cross jaws whose surfaces are very hot under operating conditions. Touching these hot jaws can lead to serious burns.

- ▶ Maintain a sufficient distance from these hot surfaces of the station during machine operation.
- ▶ Switch off the corresponding heaters before working on the station and let the station cool down until it is possible to work safely.
- ▶ When working on the hot station, wear suitable safety gloves to protect against the heat.

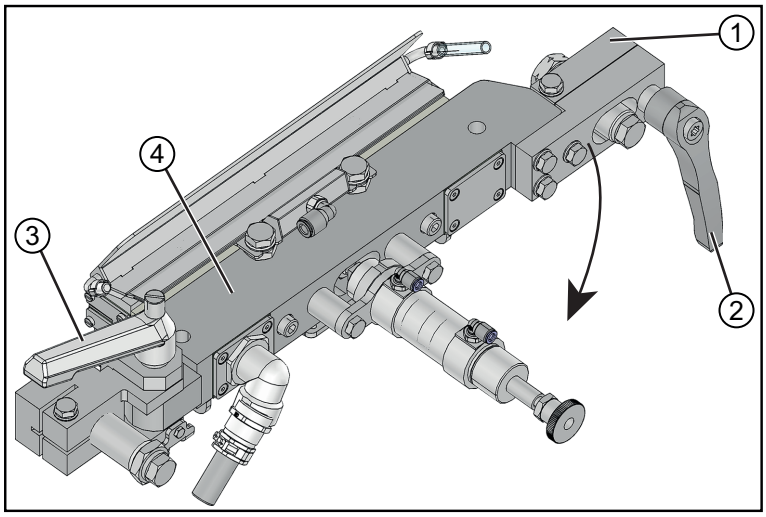


Fig. 2-103 Swivel-mount jaw carrier for front cross jaw

Swing out jaw carrier

1. Release clamping lever (3).
2. Unscrew the locking lever (2).
3. Loosen the jaw carrier (4) from the holder (1) and swing out to the limit stop.
4. Secure the jaw carrier against swinging back in an uncontrolled manner by tightening the locking lever (3).
5. Execute tasks.

Close jaw carrier

1. Release clamping lever (3).
2. Swing the jaw carrier (4) back into the holder (1).
3. Screw the locking lever (2) into the holder.
4. Tighten the locking lever (3).

2.9.10 Bag-forming device

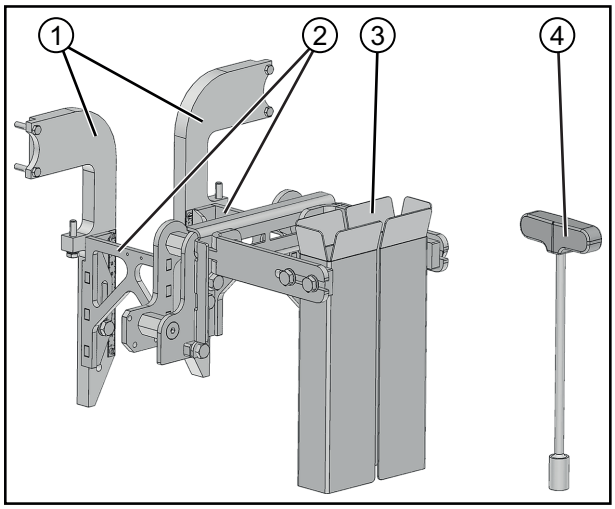


Fig. 2-104 Bag-forming device overview

1 Seat
2 Bracket
3 Shape and transfer shaft
4 Screwdriver (tool for shape changing)

Function

Before the top seal is applied, the filled bag is moulded into the desired bag form by the shape of the shaft. The shaft also performs a guiding function, ensuring that the bag is transferred securely to the downstream station.

The shaft (3) is linked directly with the cross-sealing station via the brackets (2) and fixtures (1), so that it runs synchronously with the cross jaws.

A screwdriver (4) serves as a tool for adjustments or during a format change.

Format change

The shape and transfer shaft is replaced for a format change (see *3.4 - Format change of the machine, Page 268*).

1. Slacken the two clamping screws (5) to the left and right of the bracket using the screwdriver (4).

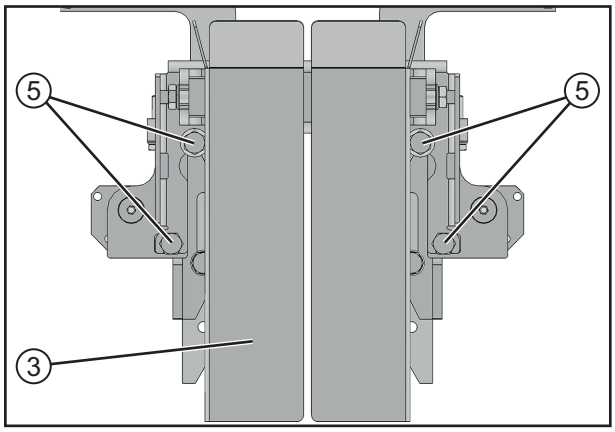


Fig. 2-105 Bag-forming device - format change

2. Unhook and remove the old shape and transfer shaft (3).
3. Hook-in a new form and transfer shaft.
4. Retighten the clamping screws (5).
5. Clean the removed format part and store appropriately until next usage.

Vertical adjustment

If needed, a vertical adjustment allows the distance between the upper shaft edge and the cross-sealing station to be corrected.

1. Loosen the fastening screws on both sides (6).

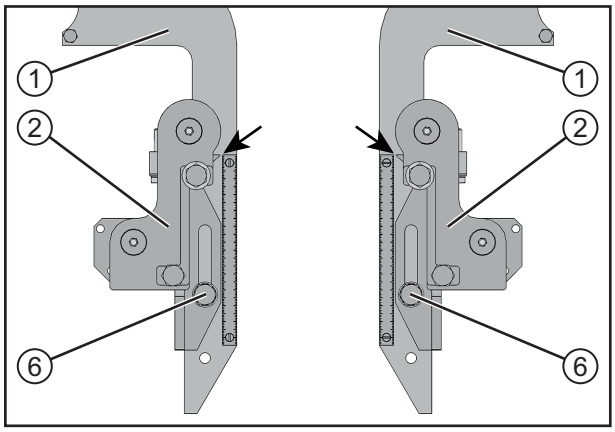


Fig. 2-106 Bag-forming device - vertical adjustment

2. Move the brackets (2) with the shape and transfer shaft on the fixtures (1) evenly up or down; scales on the fixtures offer guidance during the shift.
3. Retighten fastening screws (6).

Mechanical basic settings

The filled bags are transported from the cross sealing station down into the shape and transfer shaft (3). Therefore, align the shaft in the slots so that the bags from the cross-sealing station fall into the middle of the shaft (to prevent material jam).

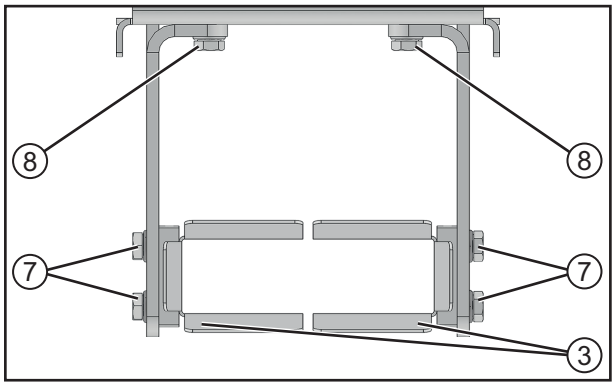


Fig. 2-107 Shape and transfer shaft - top view

Use the clamping screws (7 and 8) to make the adjustment. All parts must be refastened after the adjustment.

2.9.11 Bag chute

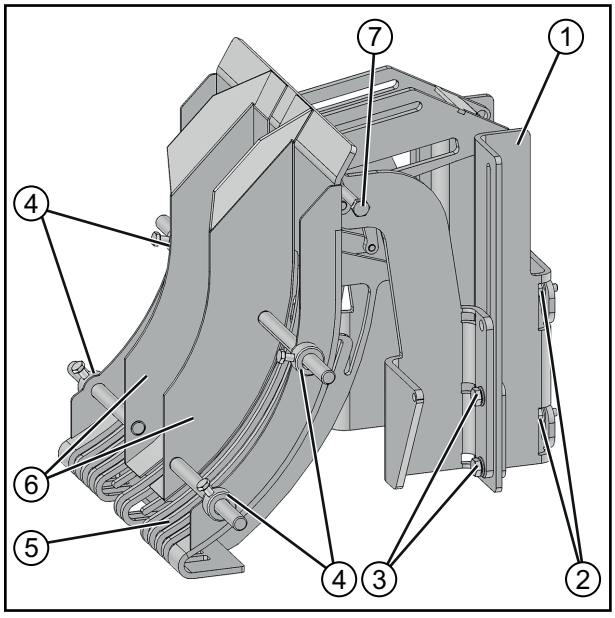


Fig. 2-108 Bag chute overview

1 Holder
2 Fastening screw
3 Fastening screw
4 Adjusting ring
5 Bag chute
6 Side wall
7 Clamp screw

Function

The finished bag is routed to a different transport system, a transport conveyor for example, via the bag chute.

Mechanical settings

The bag chute (5) can be adapted to different production conditions (bag formats):

- Vertical adjustment (height adjustment): Undo the fastening screws (3) and reset the height of the chute.
- Inclination: Undo the clamping screw (7) and reset the inclination of the chute to the bag.
- Distance between the side walls: Undo the clamping rings on the adjusting rings (4); adjust the space between the two side walls by evenly pushing the side walls (6) in relation to each other.

All parts must be refastened after the adjustment.

Removal

- Loosen the fastening screws (2) and remove the bag chute.

2.9.12 Format holding carriage

Task

The format holding carriage is used as a storage and retention location for all the parts of a machine that need to be replaced in the course of a format change.

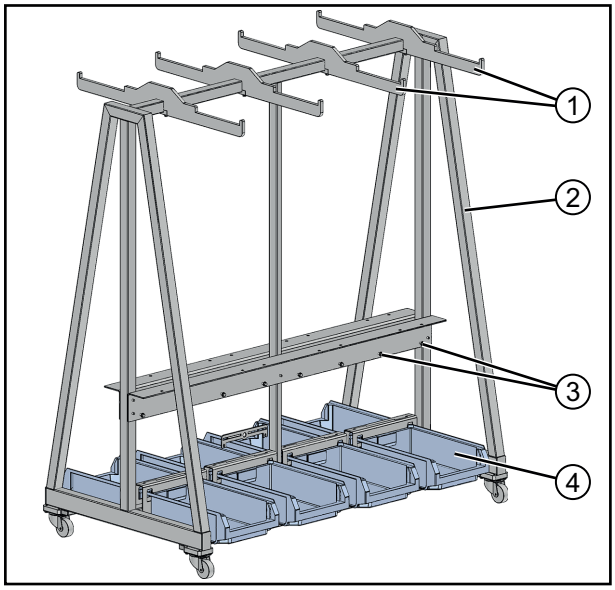


Fig. 2-109 Format holding carriage overview

1 Suspension device for change part
2 Transport carriage
3 Suspension device for vibration shaft
4 Storage box

Structure

The carriage offers place for a total of 4 format sets. After removal, the parts are stored in the carriage, sorted by format size.

The individual change parts or vibration shafts can be hung up on the suspension devices. Hanging up the parts also protects them from the damage that can occur when setting them down or storing them.

The storage boxes are used to hold all other parts, such as gusseting fingers, etc.

The transport carriage is fitted with wheels. In this way it can be moved quickly to the desired deployment location.

Notes

Start up 3

Prerequisites for start-up are

- Knowledge and understanding of all previous sections
- Completed set-up and connection tasks
- Strict compliance with safety regulations

This part contains instructions on

- First start-up
- Function test
- Set-up of the machine
- Starting of production
- Checks during production
- Interruption of production
- Ending of production

NOTE!

Prior to starting for the first time, the steps described in the *1.7 - Set-up and connection tasks, Page 32* section must be carried out.

Switch on the compressed air supply

1. Open the valve (2) at the maintenance unit (1).

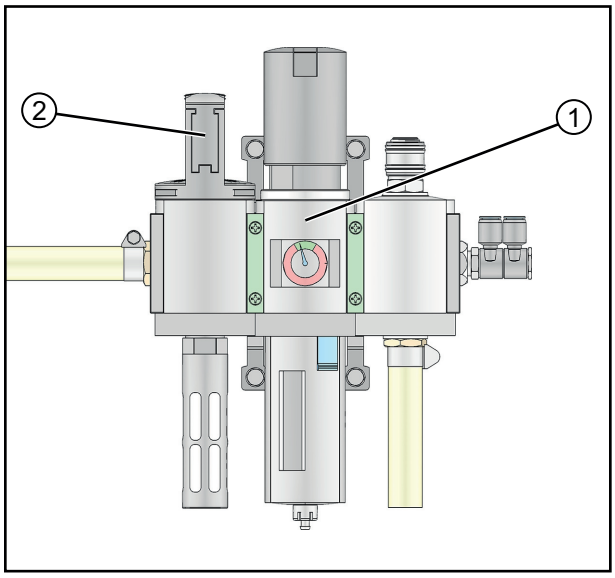


Fig. 3-1 Maintenance unit: Switch on the compressed air supply

Activate power supply

1. Switch on the machine at the main switch, wait and observe the display. Only continue when the machine's home screen is shown on the display.

Function check in jog mode

1. In jog mode, check whether all the functions of the machine are working correctly (for more information on this procedure, see chapter ***3.5 - Jog mode, Page 271***).

Load recipe

1. Select and load a recipe in the Recipe administration menu.

   A recipe is a group of all the setting values valid for a particular product and/or format. As a rule, the machine is delivered with at least one such recipe. Detailed instructions concerning the loading and saving of recipes can be found in chapter ***2.2.6 - Recipe administration, Page 67***.

Check format adjustments

1. Check whether the correct format is set and the corresponding format parts are fitted. For the remaining steps in a production change, also see the chapter ***3.4 - Format change of the machine, Page 268***.

NOTE!

Danger of machine damage!

Incorrect settings can lead to interruptions in production and damage to the machine!

- ▶ Perform the format change on the machine with the utmost care!
- ▶ Make sure that the specified dimensions are precisely complied with!
- ▶ If your machine is designed for only one format, no adjustment tasks are

required.

Safety check of the safety equipment

1. Check the function of all covers and protection devices.
2. Firstly, ensure that there are no people in the danger area of the machine.
3. Then, close all the safety guards of the machine.
4. Check the function of the safety devices (emergency stop button, safety switch on the protective doors and hoods, etc.) - for information on performing this task, see chapter ***2.1.4.1 - Checking the function of the emergency stop buttons, Page 52***.



NOTE!

Check the function of protective and safety equipment daily before starting production.

Switch off the jaw heaters

1. Switch the ***"Main switch for heating"*** switch off.
2. Wait until the sealing tools have cooled down completely.

Switch off dosing unit / product infeed

1. Switch ***"Dosage" switch*** off in the ***SWITCH MENU***.

3.2.1 Preparing for bag production

1. Lift the draw-down belt from the filling tube (***"Film drive"*** switch).
2. Swing the vertical sealing unit away from the filling tube.
3. Fit on a roll of packaging material and route the packaging material web over the deflection and guide rollers to the draw-down device.
4. Switch on the jaw heaters (switch ***"Heating main switch"***); pay attention to the nominal value entry and the temperature display; take the heat-up time into account.
5. Make a preliminary adjustment of the packaging material web - a fine adjustment or fine correction is only possible through motorized packaging material cross-adjustment when the machine is running (***"Film carriage"*** jog buttons).

NOTE!

Careful alignment of the packaging material web is an important prerequisite for production of a faultless vertical seam!

6. Lower the draw-down belt on the filling tube (switch ***"Film drive"***).
7. Pull off the packaging material until both draw-down belts have completely "grasped" the packaging material (***"Film drive"*** jog button).
8. Swing the vertical sealing unit back to the filling tube.
9. If necessary, enter bag length and machine cycles (in the menu ***DATA OVERVIEW***).
10. Align the photo cell to the print register mark and activate in the ***FILM DRIVE - PHOTO CELL*** menu (only for packaging material with print register marks).
11. Ensure that all units attached on the machine (printer, dust extraction, etc.) are ready for production.
12. Switch on all units by activating the appropriate switch.
13. Press the ***"Stand-by"*** button – the ***"Stand-by"*** status display will be shown.

3.2.2 Produce empty bags and check them

1. Button ***"Machine On" button*** should be activated - the drive axes of the machine then perform a reference movement; production then starts automatically.
2. The status display ***Machine running*** will be shown.
3. Produce a few empty bags until the print image is stable.
4. Button ***"Machine off"*** should be pressed to interrupt production.

NOTE!

Avoid loss of production and packaging material by always interrupting production with the "Machine Off" button, not the EMERGENCY STOP button!

5. Check empty bags:
   a) Measure bag length
   b) Check print image position
   c) Check the quality of the vertical and cross seams (appropriate test methods are described in the chapters *3.3.3.1 - Test packaging seal quality, Page 263* and *3.3.3.2 - Packaging leak test, Page 264*).
6. Perform corrections if necessary and repeat the process.

3.2.3 Produce filled bags

1. Set all parameters for the upstream dosing unit (in the ***DOSING*** menu); see also the separate dosing unit operating manual.
2. Switch dosing unit on (switch ***"Dosage" switch***).
3. Button ***"Machine On" button*** should be activated - now the machine produces filled bags.
4. Button ***"Machine off"*** should be pressed to interrupt production.

NOTE!

Avoid loss of production and packaging material by always interrupting production with the "Machine Off" button, not the EMERGENCY STOP button!

5. Check the filled bags - test methods are described in the chapters *3.3.3.1 - Test packaging seal quality, Page 263* and *3.3.3.2 - Packaging leak test, Page 264*).
6. If necessary, correct the settings on the display and repeat the process.
7. Save the newly ascertained/modified settings by saving the recipe.

3.3.1 Switching on the machine

Switch on the compressed air supply

1. Open the valve (2) at the maintenance unit (1).

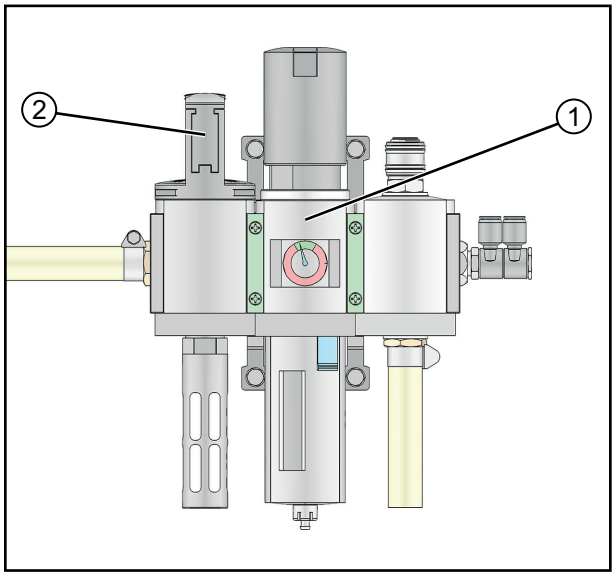


Fig. 3-2 Maintenance unit: Switch on the compressed air supply

Activate power supply

1. Switch on the machine at the main switch, wait and observe the display. Only continue when the machine's home screen is shown on the display.

Load recipe

1. Select and load a recipe in the Recipe administration menu.

   A recipe is a group of all the setting values valid for a particular product and/or format. As a rule, the machine is delivered with at least one such recipe. Detailed instructions concerning the loading and saving of recipes can be found in chapter ***2.2.6 - Recipe administration, Page 67***.

Check format adjustments

1. Check whether the correct format is set and the corresponding format parts are fitted. For the remaining steps in a production change, also see the chapter ***3.4 - Format change of the machine, Page 268***.

NOTE!

Danger of machine damage!

Incorrect settings can lead to interruptions in production and damage to the machine!

- ▶ Perform the format change on the machine with the utmost care!
- ▶ Make sure that the specified dimensions are precisely complied with!
- ▶ If your machine is designed for only one format, no adjustment tasks are required.

Safety check of the safety equipment

1. Check the function of all covers and protection devices.
2. Firstly, ensure that there are no people in the danger area of the machine.
3. Then, close all the safety guards of the machine.
4. Check the function of the safety devices (emergency stop button, safety switch on the protective doors and hoods, etc.) - for information on performing this task, see chapter *2.1.4.1 - Checking the function of the emergency stop buttons, Page 52*.



NOTE!

Check the function of protective and safety equipment daily before starting production.

Place the draw-down belts on the fill tube

1. Switch the ***"Film drive"*** switch on.

Activate dosing unit / product infeed

1. Switching on the ***"Dosage"*** switch.

3.3.2 Start the production

Production is started as follows:

1. Press the ***"Stand-by"*** button – the machine is switched to production readiness and the status display ***"Stand-by"*** appears.
2. Press the ***"Machine on"*** button - the drive axes of the machine then perform a reference movement; production then starts automatically and the status display ***"Machine running"*** appears.

3.3.3 Tasks during production

During production, carry out the following checks:

Dosing (e.g. auger feeder, volume dosage, scale):

- Monitor the dosing of the product by means of weight checks and correct if necessary the dosing setting (these procedures can be omitted if there is a downstream check weigher with tendency control). For additional information, see the operating manual of the dosing unit.
- Execute product checks. Pay attention to:
  - Pouring and flow characteristics of the product
  - Volume changes
  - Dust deposits, grease deposits, lumping, sticking of the product due to moisture

Form fill and seal machine:

- Observe the machine process:
  - Is the packaging material web drawn down exactly via the deflection and guide rollers?
  - Is the packaging material web shaped over the forming shoulder to the tube?
  - When using a printer (optional): Are the contents of the imprint correct? Was the imprint applied on the right part of the bag?
  - Are the lengthwise and cross seals of the bags applied correctly?
  - Are the bags separated from the packaging material tube by the cutting knife? Is the cut at the right position?
- Execute package checks. Take sample packages during production, checking
  - Bag length
  - Print image position
  - Packaging seam quality (see section *3.3.3.1 - Test packaging seal quality, Page 263*)
  - Packaging tightness (see section *3.3.3.2 - Packaging leak test, Page 264*)

NOTE!

The amount of inspection work depends on your machine's equipment.

3.3.3.1 Test packaging seal quality

Remove test packages

Test packages should be taken at the start of daily production, as well as several times per shift at specific time intervals, in order to monitor the seal image of the packaging and the seal station of the packaging machine. Reduced seal quality or seal leaks that always occur at the same place on the seal seam, are usually indications that the sealing tools have been set incorrectly.

Strength testing

In accordance with film industry testing procedures, sample strips 15 mm wide are taken from the entire packaging seam width.

To determine the tension/load limits, these sample strips are tensioned in a tensioning device and stretched till they tear.

The values determined here (Newton/per 15 mm) are transferred into a diagram that shows to what extent there is an even seam strength (seal) over the entire bag seam width. Optimizations may be made on the sealing station of the packaging machine depending on the strength values. This is done through changes in the seal pressure (+/-) or the seal temperature at a constant number of machine cycles (seal time).

Examples

- Sample strips peel apart without the seal coating of the film having an inner connection.
  - Sealing temperature and / or sealing pressure is insufficient here.
- Sample strip tears at low load in the seam transition.
  - The sealing pressure is too high or the sealing profile of the sealing tools is too sharp-edged.
- Sample strip delaminated at low load.
  - The seal temperature is too high or the film adhesion is unsuitable for this application.

Hot tack film

Hot tack is the name of the seal seam thermal resistance. These measurements can only be specified in a laboratory. The hot tack of the film is insufficient when the bottom seal seam slightly presses up or peels during the packaging process because of the packaging weight of the product, although the previously tested empty packages were perfectly sealed.

Note: The hot tack properties of a film may be insufficient. Bottom seal air cooling is missing, the time of the product discharge is incorrect, the machine power needs to be reduced for this application.

3.3.3.2 Packaging leak test

Leak test

The purpose of the leak test is to establish whether the seal seams or side gusset corners have problem points through which liquids, gases or organisms could penetrate. In this regard, we distinguish between the following methods:

- Leakage test with ink dye solution (tear test resource).
- Inflation of packages in a transparent vacuum chamber and searching for leaks through effervescence of gas bubbles under water.
- Pumping up packages and searching for leaks under water based on effervescing gas bubbles.
- Immersion of the package to a specific water depth and searching for leaks based on effervescing gas bubbles.

Method 1

Ink dye solution of low viscosity and low surface tension such as rhodamine (0.5% - solution in propyl alcohol) or "Foxcheck" is injected into an empty, clean package and allowed to take effect for 15 minutes. The ink dye solution penetrates into the finest capillaries of the seal seams and marks the leaks or breach points.

Advantage of this method

The test samples with ink dye solution can be left to dry and the capillary depths, sizes and positions can be easily defined with the peeling of the seal seams.

Disadvantage of this method

"Cold-welded" points cannot be verified with this procedure.

Method 2

Inflating packages in a transparent vacuum chamber and searching for leaks under water. This method is used to check packages for parts that are not sealed. The package is not damaged mechanically and, if the search for leaks under water does not damage the wrapping material, it can be re-used.

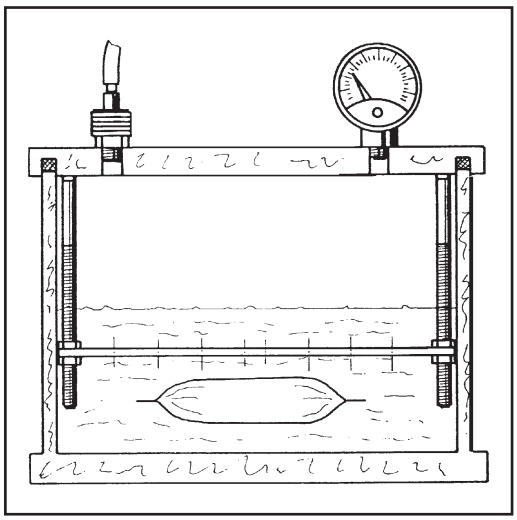


Fig. 3-3 Vacuum chamber

Auxiliary materials

Transparent vacuum chamber with pressure gauge, vacuum connection with hand valve and a vacuum pump.

Test procedure

The vacuum chamber is one-third filled with boiled (air-free) water and the package inserted. Then the chamber cover with the perforated plate on it is placed on, which presses the package under the water. The chamber is now evacuated through the vacuum connection in the cover. The negative pressure in the chamber can now be read on the pressure gauge and regulated with the hand valve.

The test pressure is based on the type and size of the packaging; it should be between 200 and 400 millibars. Ensure that the packages are not destroyed (burst) because of an excessively strong vacuum. The test is over as soon as leaks (gas bubbles regularly forming at the same seal seam points) have been reliably recognised, at the most after 5 minutes however.

Method 3

Pumping up the package and searching for leaks under water.

Auxiliary materials

Injection needle with rubber bellows or connection to reduced compressed air and a water-filled container.

Test procedure

The package is pierced with the injection needle and blown up to firmness with the rubber bellows. The needle penetration is pushed in with the thumbs and the package held under water by hand, the seal seams are checked for effervescing gas bubbles.

The test pressure is dependent on the shape and size of the packaging as well as the packaging material used. In any case this should be determined through prior tests.

Method 4

This test method is primarily used in the snack packaging industry. It is characterized by even immersion of the packaging in a specific water depth. In this respect, it is mostly films with a very thin seal layer (approx. 1 µm) that are used and thus they do not meet the conditions for absolutely tight seals. This method therefore only allows larger capillaries and leaks in the seal seams to be checked.

Test procedure

With an aid (perforated plate or grating) the packages are immersed in a water-filled container at least 3 cm below the water surface. Effervescing gas bubbles give information about leak points in the seal seams. By defining specific immersion depths, gradations of permitted and unpermitted seam tightnesses are established.

Supplier certificate

Rhodamine - item number 7599; company E. Merck, Darmstadt

Foxcheck; company Hahn und Kolb, Postfach 333, Stuttgart

3.3.4 Behavior if there are faults

1. Read error number and error text off the display
2. look for specified error source and repair or eliminate the cause of the malfunction (see section *5 - Faults, Page 315*)



NOTE!

Adjustment of the setting values to changed production conditions must normally be made when the machine is at a standstill!

3.3.5 Ending production

1. Press the ***"Machine off" button*** to interrupt production. The machine ends the work cycle and moves to the basic position. Machine stand-by remains.

After regular switch-off, production be continued at any time by pressing the ***"Machine On"*** button.



NOTE!

Avoid loss of production and packaging material by always interrupting production with the ***"Machine Off"*** button, not the emergency stop button!

3.3.6 Switch off machine

You should switch off the machine in this sequence:

1. Run dosing unit / product infeed empty and switch it off.
2. Interrupt production by pressing the ***"Machine Off"*** button in the display.
3. Lift off draw-down belts.
4. Switch off main switch and secure it against unauthorised restart.
5. Close compressed air infeed.
6. Remove product and packaging material residue from the individual processing stations.
7. Remove dust and other deposits.
8. Service machine for resumption of production or prepare it for subsequent production.



NOTE!

Avoid loss of production and packaging material by always interrupting production with the "Machine Off" button, not the emergency stop button!

A format change means that the machine must be adjusted for a new package size (bag, carton, etc.).

During a format change, please note that certain work steps have to be performed in a particular sequence.

For each format change, consult the appropriate tables, as all of the points and setting values are recorded there.

Optional: After loading the recipe appropriate for the format, open the menu ***FORMAT LIST*** on the display (to do so, see also the instructions in section *3.4.1 - format list 1, Page 268*).

Do not start production until you have made sure that the conversion has not created any risk of collision, due to the changed settings.

The conversion comprises the following items:

Adjustment via digital meters/scales/marking:

If fixed values are necessary for the adjustments, they are set at the corresponding adjustment points either via digital meters, scales, or at certain stop marks.

Some settings may have to be adapted directly to the dimensions of the packaging material or the product to be packaged.

Exchanging format parts:

If parts must be replaced during the format change, this will be indicated separately. The parts concerned are listed in the format table with their precise designation. For the procedure of exchanging a format part, please refer to the corresponding description of this assembly in the operating manual.

Selecting a recipe:

A recipe is a group of all the setting values valid for a particular product and/or format. As a rule, the machine is delivered with at least one such recipe. Detailed instructions concerning the loading and saving of recipes can be found in section *2.2.6 - Recipe administration, Page 67*.

NOTE!

Danger of machine damage!

Incorrect settings can lead to interruptions in production and damage to the machine!

- ▶ Perform the format change on the machine with the utmost care!
- ▶ Make sure that the specified dimensions are precisely complied with!
- ▶ If your machine is designed for only one format, no adjustment tasks are required.

3.4.1 format list 1

General information

Activate the menu selection button  in the main menu of the machine/machine area:

This takes you to the menu ***FORMAT LIST***.

The Format list contains:

- a list of all adjustment points on which adjustment work must be carried out when the machine is being converted to a new format.

  If fixed values are necessary for the adjustments, they are set at the corresponding adjustment points either via digital meters or scales.

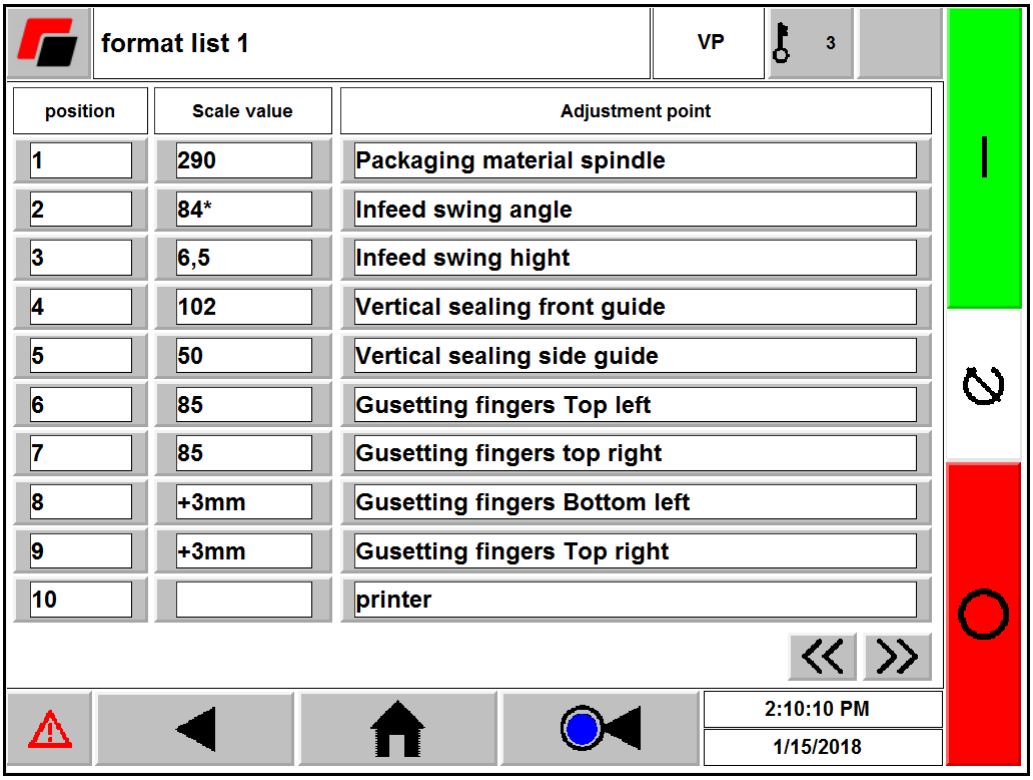
  The adjustment points are defined by ROVEMA prior to delivery and then marked on the machine with numbers. All of the format adjustment points provided with numbers in this list can be found again on the corresponding points on the machine.

- all format parts used for the format to be produced, which must be replaced, with their precise designation.

  If parts must be replaced during the format change, this will be indicated separately. The parts concerned are identified in the format list with their precise designation.

NOTE!

Saving all format list settings values takes place automatically via storing the currently loaded recipe! If a new recipe is loaded, the associated format list will be automatically shown on the display.



"Position" value display

The number of the adjustment point on the machine.

Scale value

The setting value read-off from the machine adjustment point will be entered in this field.

Adjustment point

The designation of the adjustment point on the machine. The designation text can be changed at any time by the operator.

Change screen >>

Takes you to the next screen.

Jog mode is intended for adjustment and inspection work.

Jog mode means:

Motorized drives are moved for as long as the button is pressed, and stop immediately as soon as it is released. The motion is performed with the acceleration and velocity that is set for this drive in the run menu of the respective run.

Pneumatic drives are triggered by pressing the button.

The machine can thus be moved precisely to any desired position through "jogging".



NOTE!

Jog mode is intended for adjustment and inspection work, not for maintenance and repair work!

For maintenance and repair tasks: Stop the machine, switch the main switch off and safeguard it against unauthorized or unintentional restart.

All machine functions that can be moved in jog mode are grouped in a ***JOG MENU***. Each machine function has certain buttons assigned to it. The symbols on the jog buttons indicate the direction that the drive moves the machine in:

Symbol	Direction of movement
	backwards
	forward
	upwards
	downwards
	to the left
	to the right
	moving together
	separating
	backwards
	forward
	trigger pneumatic function

Tab. 3-1 Meaning of the jog button icons

Starting and executing jog mode

1. Firstly, ensure that there are no people in the danger area of the machine.
2. Then, close all the safety guards of the machine.
3. Call up the ***JOG MENU*** of the machine.
4. Press the ***"Stand-by"*** button – the machine is switched to production readiness and the status display ***"Stand-by"*** appears.
5. Move the machine function in the desired direction by touching the corresponding jog button.

NOTE!

When a jog button is pressed, the machine is no longer "ready".

Ending jog mode

1. To end jog mode, press the ***"Standby"*** button again.

Notes

Maintenance 4

Operational readiness and service life of your machine are significantly influenced by proper maintenance.

For this purpose, all maintenance tasks must be performed carefully and on schedule.

The intervals specified here are based on 1-shift operation.

These maintenance intervals should be understood as guide values. They must be adapted to the requirements, depending on production time (1-, 2- or 3-shift operation).

The owner should determine who will perform which tasks and when. In order to avoid misunderstandings, it is necessary to charge clearly in writing different persons or person groups with their individual tasks.

Persons assigned to perform cleaning, setting, repair and maintenance work must be informed of the hazard warnings described below.



⚠ DANGER!

Life-threatening danger due to electric current!

When coming into contact with live parts, there is a direct life-threatening danger from an electric shock. Damage to the insulation or individual components can pose a danger to life.

- ▶ If there is damage to the insulation, switch off the power supply immediately and carry out repair work.
- ▶ Work on the electrical system may only allowed be performed by persons who are qualified for this by relevant training and who know the dangers of handling live components.
- ▶ Before any work on the electrical system and before maintenance, cleaning and repair work, deenergize the electrical system completely, secure it against switch-on and check that it is deenergized.

⚠ WARNING!

Danger of injury!

Incorrect execution of cleaning tasks can result in risk of injury!

- ▶ Cleaning tasks must always be performed only by appropriately trained personnel.

⚠ DANGER!

Danger of injury!

There is the risk of serious injury from machine movements!

- ▶ Never try to perform cleaning tasks on machine areas while the machine is in operation.
- ▶ Do not reach into freely accessible machine areas above or below the machine housing while the machine is in operation!
- ▶ Do not insert any cleaning devices into freely accessible machine areas above or below the machine housing while the machine is in operation!

⚠ WARNING!

Danger of injury!

Increase risk of accidents when performing maintenance tasks!

- ▶ Cleaning, repair and maintenance work may only be performed when the machine is switched off at the main switch and secured against unintentional restart!



⚠ WARNING!

Danger of injury!

Incorrect execution of repair and maintenance tasks can result in risk of injury.

- ▶ Repair and maintenance tasks must only be performed by trained or appropriately instructed technicians.



⚠ WARNING!

Danger due to electrical voltage when the main switch is off!

The lights of the electrical cabinets and their built-in maintenance sockets are live, even when the main switch is off. There is a danger of electric shock in the area of these live parts!

- ▶ Avoid any contact with the live parts.
- ▶ Repair and maintenance work at live parts of the machine is only allowed to be performed by persons who are qualified for this by relevant training and who know the dangers of handling live components.



NOTE!

All spare parts and wear parts can be re-ordered using the Spare Parts List.

4.2.1 Cleaning intervals

Among other things cleaning intervals are dependent on:

- The packaged product
- The frequency of product changeover

The owner must determine the cleaning intervals according to operational conditions.
The machine should always be cleaned once each day per production shift.

4.2.2 Cleaning and disinfecting agents

For the cleaning and disinfecting of machines used to package food, it may be necessary to comply with specific regulations due to special hygiene requirements of the country in which the machine is operated.

These regulations can apply for the cleaning agents to be used and may possibly also include guidelines for disinfection of the machine.

Inform yourself of these regulations!

⚠ WARNING!

Danger of injury!

There are various hazards due to chemical cleaning agents!

▶ If chemical cleaning agents are used for cleaning, pay attention to the manufacturer's instructions for handling the cleaning agents.

▶ In particular, comply with the hazard notices of the cleaning agent manufacturer.

⚠ WARNING!

Danger of injury!

There are various hazards due to chemical reactions with cleaning agents!

▶ If chemicals or other reaction-capable substances are packaged with the machine, care must be taken that the cleaning agents used do not cause chemical reactions with product residues.

4.2.3 General cleaning instructions

⚠ WARNING!

Danger of injury!

Incorrect execution of cleaning tasks can result in risk of injury!

▶ Cleaning tasks must always be performed only by appropriately trained personnel.

- Remove product and packaging residues from the machine at least once a day through sweeping, wiping dry, brushing or vacuuming.

NOTE!

Danger of machine damage!

Do not use compressed air to clean the machine.

▶ When compressed air is used, dirt can get inside the machine or into machine parts, which can lead to malfunctions there.



⚠ DANGER!

Danger of injury!

Life-threatening danger due to electric shock!

▶ Do not use high-pressure cleaners to clean the machine!

▶ Using a high-pressure cleaner can result in moisture penetrating the interior of electrical components. This can lead to an electrical shock when electrical components are touched.

⚠ DANGER!

Danger of injury!

There is the risk of serious injury from machine movements!

▶ Never try to perform cleaning tasks on machine areas while the machine is in operation.

▶ Do not reach into freely accessible machine areas above or below the machine housing while the machine is in operation!

▶ Do not insert any cleaning devices into freely accessible machine areas above or below the machine housing while the machine is in operation!

Product-contacting parts

All product-contacting parts are removed for cleaning.

The cleaned parts may only be reused when care is taken that no cleaning or disinfecting agents remain on them and the parts are dried off. Especially with threaded connections and connection couplings, make sure that these parts are reinstalled only in an absolutely dry condition.

Product-contacting parts of this machine are:

- Dosage unit (see separate dosage operating manual)
- Format set
  - Transfer funnel
  - Filling tube
  - Spreader
  - Chute

protective doors

To clean the plastic protective covers, we recommend an antistatic cleaning agent or a mild dish washing detergent.

NOTE!

Danger of machine damage!

The plastic protective covers can be scratched or become opaque.

▶ Do not, under any circumstances, use highly alkaline agents, sharp tools, gasoline or benzene, acetone or carbon tetrachloride for cleaning.

Housing

Common paint-cleaning and care agents can be used for cleaning painted machine housings. Also commercially available mild household cleansers may be applied using a moist cloth.

Display with touchscreen

For cleaning, a mild soap solution or a mild cleaning agent can be used.

- Switch off the machine at the mains; this will prevent the inadvertent triggering of functions when touching the screen.
- Dampen a clean sponge or a soft cleaning cloth.
- Spray the cleaning agent onto the sponge or the cloth and not directly onto the screen.
- Clean the surface of the screen with the sponge or cloth.
- Dry the surface of the screen with a leather cloth or a damp cellulose sponge to prevent watermarks.

NOTE!

Danger of machine damage!

The surface of the touchscreen can be damaged.

▶ Do not clean the device using abrasive solvents or abrasive cleansers, pressurized air or steam cleaners.

Pneumatic clamping shaft (optional)

The pneumatic clamping shaft must not be treated with cleaning and disinfecting agents or jet cleaners!

Before starting to clean the machine, remove the clamping shaft from the packaging material and clean it separately. Only use an off-the-shelf cleaning cloth and clean water to clean it.

This section lists all maintenance tasks that must be executed daily. The tasks to be executed are divided into individual machine areas.

4.3.1 General maintenance tasks

4.3.1.1 Pneumatics

Maintenance unit

Check

Several times a day:

- Check the sight glass (1) of the maintenance unit for accumulation of condensate; if necessary, drain any liquid that accumulated by removing the drain screw (2).

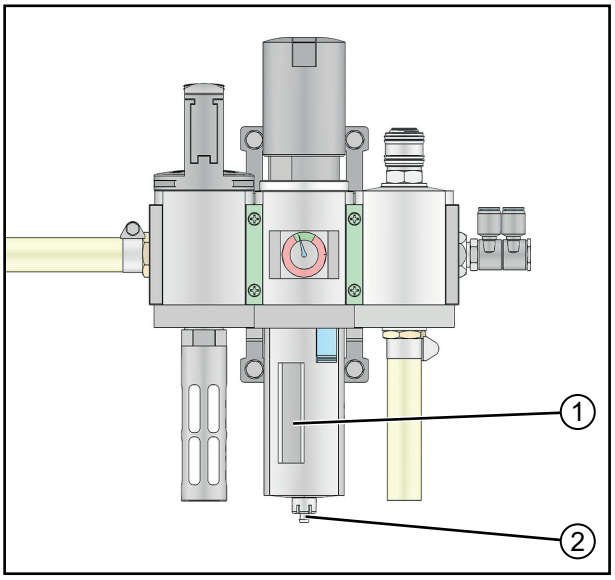


Fig. 4-1 Maintenance unit: Drain condensate

1 Sight glass
2 Drain screw

Drain condensate:

1. Place a collection container for the condensate underneath the maintenance unit.
2. Unscrew the drain screw.
3. Let the liquid drain.
4. Retighten the drain screw.
5. Remove and empty the collection container.

4.3.2 Machine area VP

4.3.2.1 Packaging material unwinder on packaging material roll

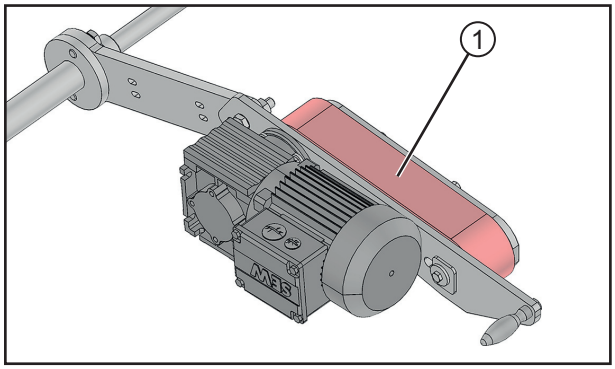


Fig. 4-2 Packaging material draw-down: Check toothed belt

1 Toothed belt

Check

Daily before the start of production:

- Check the toothed belt for correct tension, retension if necessary.
- Check the toothed belt for damage and wear; replace if necessary.

For the procedure for tensioning or replacing a belt, see the description in section *2.9.4 - Packaging material unwinder on packaging material roll, Page 215*.

NOTE!

When installing a new belt make sure that the direction of movement corresponds to the arrow stamped on the belt.

4.3.2.2 Stabilo Seal hot sealing unit

Change part (edge forming)

Clean

Packaging material dust can accumulate at the change part during edge forming. This packaging material dust must be removed at regular intervals.

If the dust is not removed, it can spread to the deflection rollers by being carried along the packaging material web and may eventually reach the Stabilo Seal hot sealing unit. There, it can cause problems when sealing the edges.

- Check the deflection rollers (2 and 6), forming strips (4) and forming edges (5) on the change part as well as all deflection rollers on the packaging material carrier in the area in front of the seal jaws of the Stabilo Seal hot sealing unit for dirt; clean dirty spots using a clean rag and alcohol.

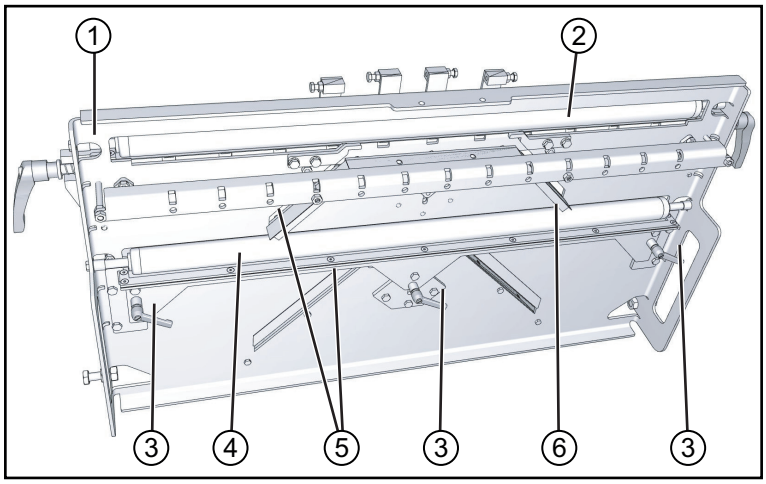


Fig. 4-3 Change part (edge forming): cleaning

1 Change part
2 Upper deflection roller
3 Clamping lever
4 Lower forming strip
5 Forming edge of the change part
6 Lower deflection roller

Both forming strips can be lowered in order to reach the spots on the change part to be cleaned more easily:

- Release the locking lever (3) and lower the bottom forming strip (4).
- Clean the deflection roller, forming strip and all forming edges of the change part in this area.
- Then push the forming strip back up against the stop and fix it in this position with the locking levers.
- Repeat the operation described above to lower the top forming strip.

4.3.2.3 Format set

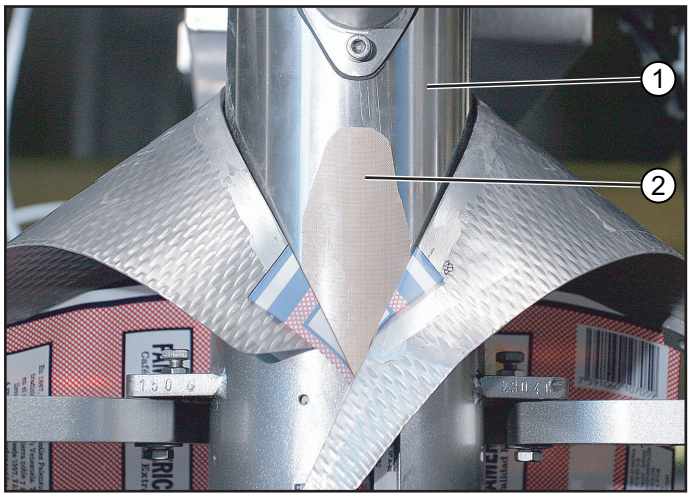


Fig. 4-4 Format set: Check Teflon tape

1 Filling tube
2 Teflon tape

Check

Several times a day:

- Check the Teflon tape on the fill pipe for damage and wear; replace if necessary.

If the Teflon tape is damaged, then there is danger that the effect of the heat can cause the packaging material to stick to the filling tube during the sealing operation.

Replace

- Prior to total wear (when the adhesive foil is reached), detach the old Teflon tape using a flat plastic spatula and bond on a new Teflon tape.

4.3.2.4 Draw-down device

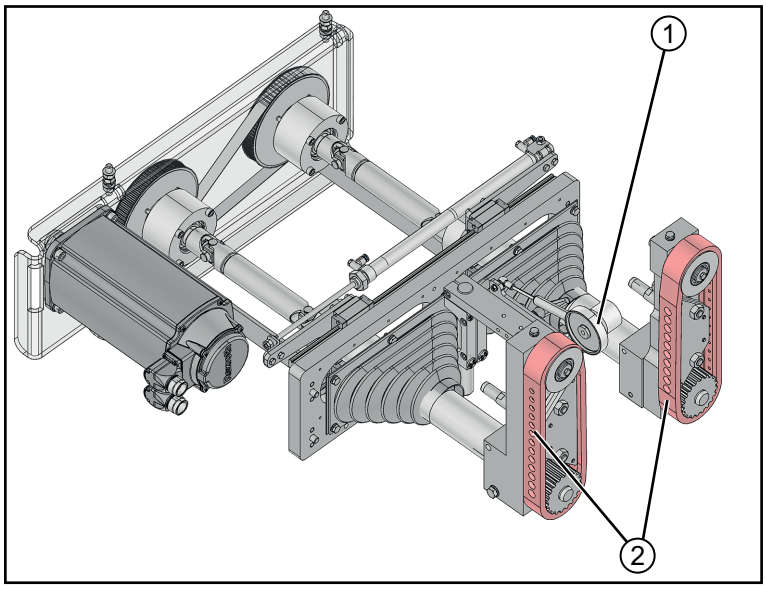


Fig. 4-5 Draw-down device: Check draw-down belts

1 Bag length control device
2 Draw-down belt

Check

Daily before the start of production:

- Check draw-down belt for correct tension, retension if necessary.
- Check the draw-down belt for damage and wear; replace if necessary.

Draw-down belts that have a significantly convex surface reduce the draw-down capacity due to deficient vacuum. Damaged toothing on the draw-down belt can result in the belt not being properly driven by the motor.

For the procedure for tensioning or replacing a belt, see the description in section ***2.5.4 - Replacing and adjusting draw-down belts, Page 136***.

NOTE!

When installing a new belt make sure that the direction of movement corresponds to the arrow stamped on the belt.

Bag length control device

Check

- Check the measuring wheel on the bag length control device for contamination.

Clean

- If necessary, wipe off contamination with a damp cloth.

4.3.2.5 Vertical sealing belt



⚠ WARNING!

Danger of burns due to hot surfaces!

The vertical sealing station is operated with a vertical sealing belt. The surface of this sealing belt as well as the sealing insert and the vertical jaw are very hot under operating conditions. Touching these hot machine parts can cause serious burns.

- ▶ Maintain a sufficient distance from these hot surfaces of the station during machine operation.
- ▶ Switch off the corresponding heater before working on the station and let the station cool down until it is possible to work safely.
- ▶ When working on the hot station, wear suitable safety gloves to protect against the heat.

⚠ CAUTION!

Danger of cut injuries due to sharp edges on the sealing belt and sealing insert in the vertical sealing station!

Worn sealing belts and sealing inserts can have very sharp edges. Touching one of those sharp edges can result in cut injuries.

- ▶ Protect yourself from cutting injuries by wearing suitable safety gloves.

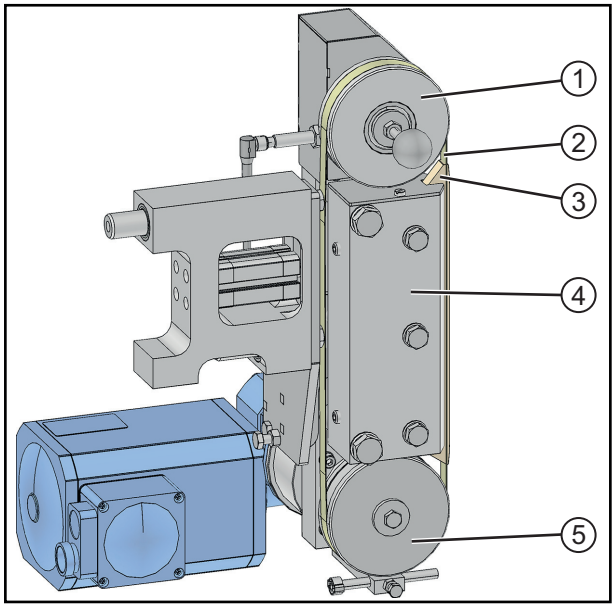


Fig. 4-6 Vertical sealing belt: Cleaning

1 Deflection roller
2 Sealing belt (continuous steel belt)
3 Seal insert
4 Vertical jaw
5 Drive roller

Clean

Daily immediately after switching off:

- Regular daily cleaning of the sealing insert, of the sealing belt, of the vertical jaw as well as the redirection and drive pulley by means of the included brass brush from the ROVEMA tool bag.

Check

- Check the sealing belt for adhering packaging material residues and remove the residues.
- Check the sealing insert and sealing belt for damage.

NOTE!

Replace the sealing insert and the sealing belt immediately in the event of wear!

See section *2.6.6 - Changing sealing belt and/or sealing insert, Page 153* for the procedure for replacing the sealing insert and sealing belt.

4.3.2.6 Cross sealing station

DANGER!

Danger of cutting injuries from the pneumatically-actuated cutting knife in the cross sealing station!

There is a greater risk of injury from the sharp knife blade.

- ▶ Prior to performing work at the station, switch the machine off via the main switch and safeguard the main switch against being switched back on unintentionally
- ▶ Protect yourself from cutting injuries by wearing suitable safety gloves.



WARNING!

Danger of burns due to hot surfaces!

The cross sealing station is operated with cross jaws whose surfaces are very hot under operating conditions. Touching these hot jaws can lead to serious burns.

- ▶ Maintain a sufficient distance from these hot surfaces of the station during machine operation.
- ▶ Switch off the corresponding heaters before working on the station and let the station cool down until it is possible to work safely.
- ▶ When working on the hot station, wear suitable safety gloves to protect against the heat.

Clean

Daily immediately after switching off:

- check the closing tools for dirt and clean if necessary; you can find the appropriate tools in the ROVEMA tool bag

The cleaning procedure depends on which closing system is fitted:

Closing tools for **hot sealing**:

Clean the closing tools with a brass brush.

Closing tools for **pulse welding**:

Clean the closing tools with a very soft brass brush which ensures that the Teflon tape above the pulse tapes is not damaged.

Closing tools for **permanently heated welding**:

Clean the closing tools with a plastic spatula.

Lubrication

Push and pull rods are not made of stainless material for technical reasons to do with production. To prevent rust building up/being deposited on the machine during the standstill period, checks must be carried out daily to ensure that there is an adequate protective film on the push and pull rods.

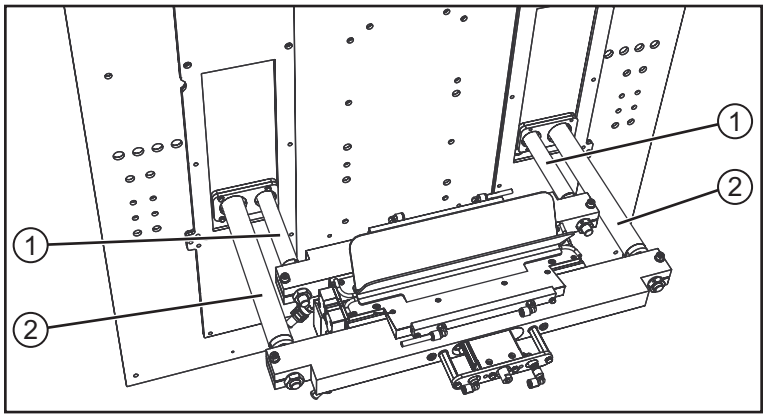


Fig. 4-7 Cross sealing station

1 Push rods
2 Pull rods

- Check daily to ensure that there is an adequate protective film on the surfaces of the push and pull rods.

  If there is not an adequate protective film, then replace it. After the machine has been cleaned, the push and pull rods must be dried and then re-oiled.

NOTE!

Instructions concerning the oils/lubricants that must be used are provided in the ROVEMA Table of Lubricants in the Appendix of this operating manual!

Check

- Check the quality of the teflon tapes on the welding inserts; if there is damage or wear, replace the Teflon tapes (only if the machine is equipped with closing tools for pulse welding)
- Check the plastic coating on the welding bars; if there is damage or wear the entire welding bar must be replaced (only if the machine is equipped with closing tools for permanently heated welding)

Clean

- Check the knife and knife slot of the closing tools for contamination and clean if necessary; blunt knives are to be replaced.

  As far as possible, remove and install the knife prior to production (cold closing tools!).

This section lists all maintenance tasks that must be executed weekly. The tasks to be executed are divided into individual machine areas.

4.4.1 General maintenance tasks

4.4.1.1 Safety devices

Warning signs and information signs on the machine

- Check whether all the warning and information signs attached to the machine are legible. If the text is difficult to read or the picture is difficult to recognize, then the appropriate warning sign must be cleaned or replaced.
- Clean the signs with a cloth, water and neutral cleaners. Do not use any organic solvent or gasoline.
- Damaged and illegible signs or signs that have come off must be replaced immediately with new signs that are in conformance with standards. Replacements for damaged warning notices are available from ROVEMA Spare Parts Service.

4.4.2 Machine area VP

4.4.2.1 Packaging material carriage

Deflection and guide rollers

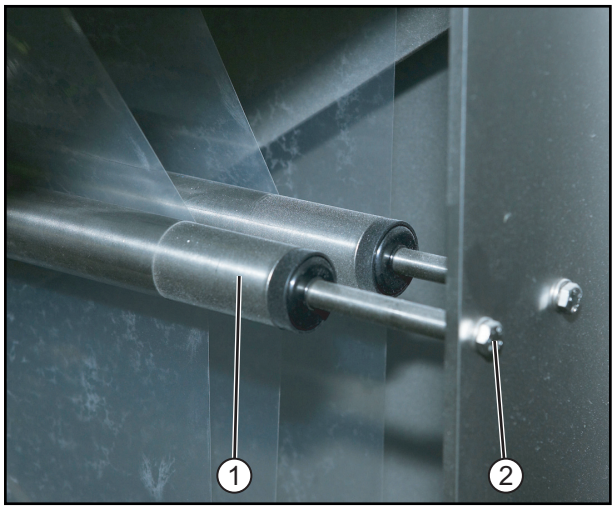


Fig. 4-8 Packaging material carrier: Check deflection and guide rollers

1 Deflection and guide roller
2 Fastening screw

Check

- Check all the deflection and guide rollers for ease of movement.
- Check the lateral play of the rollers.

Replace

- Defective rollers or rollers that are hard to move must be replaced.

Replacing a deflection and guide roller:

Required tool:

- Wrench (AF10)

1. Firmly grasp defective roller (1).
2. On both sides, unscrew the fastening screws (2) using the wrench (AF 10).
3. Remove the defective roller from the carrier.
4. Insert the spare roller in the carrier and fix it in place using the fastening screws (2).

4.4.2.2 Packaging material unwinder on packaging material roll

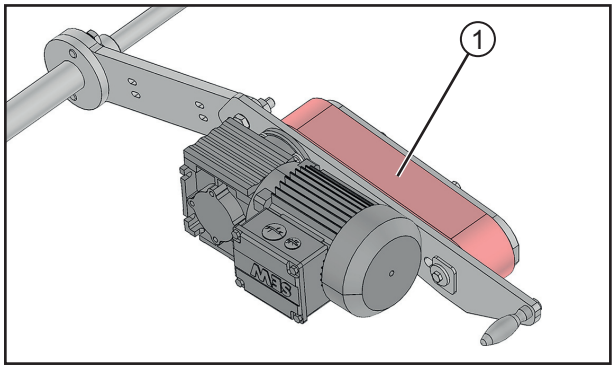


Fig. 4-9 Packaging material draw-down: Clean toothed belt

1 Toothed belt

Check

- Check the toothed belt for contamination.

A severely contaminated toothed belt can obstruct the unwinder and thus the packaging material transport!

Clean

- If necessary, remove contamination with a plastic brush and a dry cloth.

NOTE!

Do not use cleaning agents!

4.4.2.3 Stabilo Seal hot sealing unit



⚠ WARNING!

Danger of burns due to hot surfaces!

The Stabilo Seal hot sealing unit is operated with sealing jaws, whose surfaces are very hot under operating conditions. Touching these hot jaws can lead to serious burns.

- ▶ Maintain a sufficient distance from these hot surfaces of the station during machine operation.
- ▶ Switch off the corresponding heaters before working on the station and let the station cool down until it is possible to work safely.
- ▶ When working on the hot station, wear suitable safety gloves to protect against the heat.

Sealing jaw

The actuation of a seal jaw of the edge profile is performed with the help of a pneumatic cylinder. At the start of production, the sealing jaw is pushed forward and remains in this position during production. At the end of production or if production is interrupted, the sealing jaw is retracted into its initial position. During the forward and backward movement the seal jaw is guided on a sliding carrier in a linear guide.

To ensure ease of the mechanical movement, check the lubrication of individual components and assemblies. The mechanism should be relubricated if necessary.

Lubrication

- Regularly check the components and assemblies to be lubricated to ensure adequate lubrication.
- Relubricate, if necessary.

  When lubricating, the following instructions must be complied with:
  - Prior to relubricating, clean the lubricating point so that the lubricant can also get to the lubricating point.
  - The lubricant is introduced into the lubricating point with the aid of a grease gun.
  - Avoid over-greasing.
  - After lubrication, immediately remove any excess grease that has escaped.



NOTE!

Instructions concerning the oils/lubricants that must be used are provided in the ROVEMA Table of Lubricants in the Appendix of this operating manual!

The function to be lubricated and its lubricating point can be easily identified based on the following illustration and table.

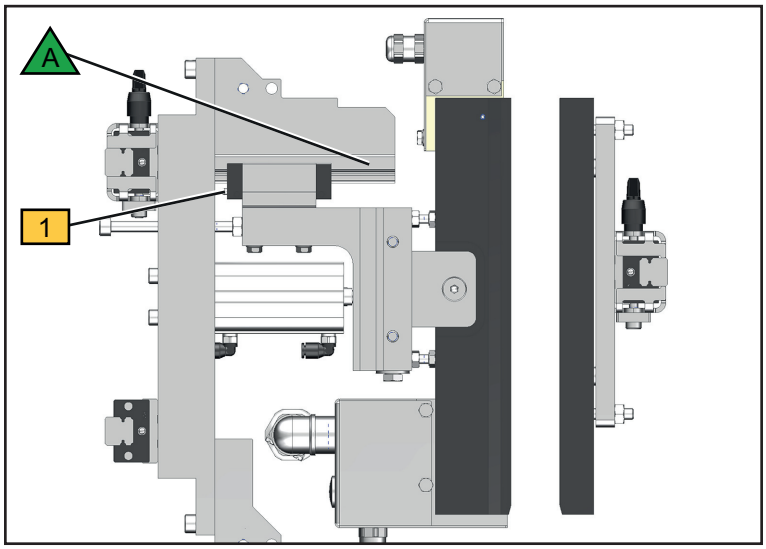


Fig. 4-10 Stabilo Seal hot sealing unit: lubrication points

Lubrication point		Assembly/component	
1	Lubricating nipple	A	Linear guide

Tab. 4-1 Stabilo Seal hot sealing unit: lubrication points

NOTE!

After the machine has been cleaned, the guide rails must be dried and then re-greased!

4.4.2.4 Draw-down device

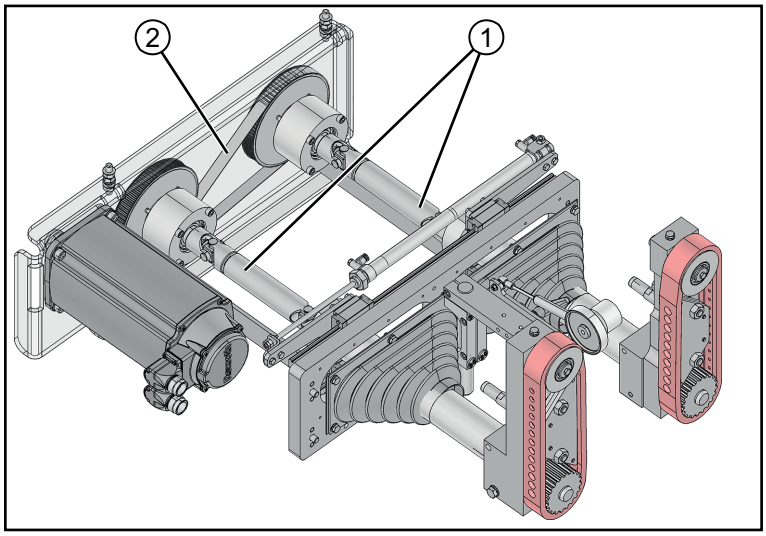


Fig. 4-11 Draw-down device: Cleaning

1 Universal shaft
2 Toothed belt

Check
- Check the universal shafts for contamination.

Clean
- If necessary, remove contamination with a plastic brush and a dry cloth.

Check
- Check the toothed belt for contamination.

Clean
- If necessary, remove contamination with a plastic brush and a dry cloth.



NOTE!

Do not use cleaning agents!

4.4.2.5 Vertical sealing belt



⚠ WARNING!

Danger of burns due to hot surfaces!

The vertical sealing station is operated with a vertical sealing belt. The surface of this sealing belt as well as the sealing insert and the vertical jaw are very hot under operating conditions. Touching these hot machine parts can cause serious burns.

- ▶ Maintain a sufficient distance from these hot surfaces of the station during machine operation.
- ▶ Switch off the corresponding heater before working on the station and let the station cool down until it is possible to work safely.
- ▶ When working on the hot station, wear suitable safety gloves to protect against the heat.

⚠ CAUTION!

Danger of cut injuries due to sharp edges on the sealing belt and sealing insert in the vertical sealing station!

Worn sealing belts and sealing inserts can have very sharp edges. Touching one of those sharp edges can result in cut injuries.

- ▶ Protect yourself from cutting injuries by wearing suitable safety gloves.

Incorrect settings of the vertical sealing unit can lead to more wear on the sealing insert during production. This wear can, at the same time, result in greater consumption of sealing belts.

For this reason, it is essential to check the vertical sealing unit carefully and comprehensively!!!

Check
- Weekly visual inspection of the sealing insert for flatness, angularity, wear abrasion (based on single-shift operation, depending on differing production cycles; in case of higher output or certain packaging characteristics,

the inspection interval should be shortened). For example, one sign of an incorrect setting can be a sealing insert that is worn on one side (see the illustration below).

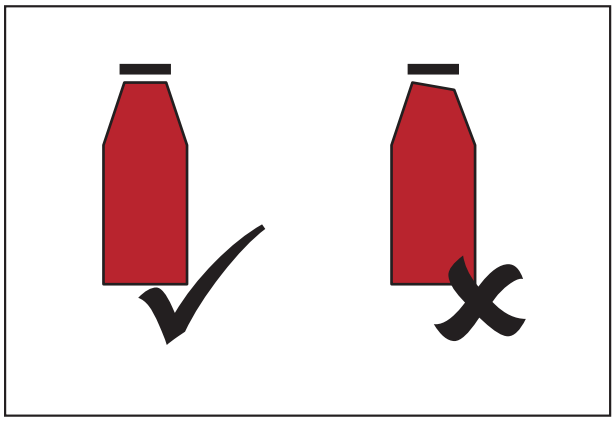


Fig. 4-12 Vertical sealing belt: Check the contact surface of the sealing insert

- Inspection of the horizontal and vertical alignment of the sealing belt relative to the filling tube.
- Inspection of the Teflon tape on the filling tube.
- Inspection of the silicone tape (if present).
- Inspection of the setting of the pneumatic sealing pressure on the relevant pressure gauge in the machine housing.
- Inspection of the setting for the speed of the sealing belt relative to the draw-down belt in the ***VERTICAL JAW*** menu.

NOTE!

Replace the sealing insert and the sealing belt immediately in the event of wear!

This section lists all maintenance tasks that must be executed monthly. The tasks to be executed are divided into individual machine areas.

4.5.1 General maintenance tasks

4.5.1.1 Control panel / touchscreen display



⚠ DANGER!

Life-threatening danger due to electric current!

When coming into contact with live parts, there is a direct life-threatening danger from an electric shock. Damage to the insulation or individual components can pose a danger to life.

- If there is damage to the insulation, switch off the power supply immediately and carry out repair work.
- Work on the electrical system may only allowed be performed by persons who are qualified for this by relevant training and who know the dangers of handling live components.
- Before any work on the electrical system and before maintenance, cleaning and repair work, deenergize the electrical system completely, secure it against switch-on and check that it is deenergized.

Housing ventilation

The touchscreen display (1) is built into a hinged control panel (2). To help prevent the control unit overheating, a housing fan is fitted to the bottom of the control panel. This acts as a heat exchanger. This ventilation system consists of the fan filter (4) and an outlet filter (3). Filter mats on the inside of the filter are used for filtering dust.

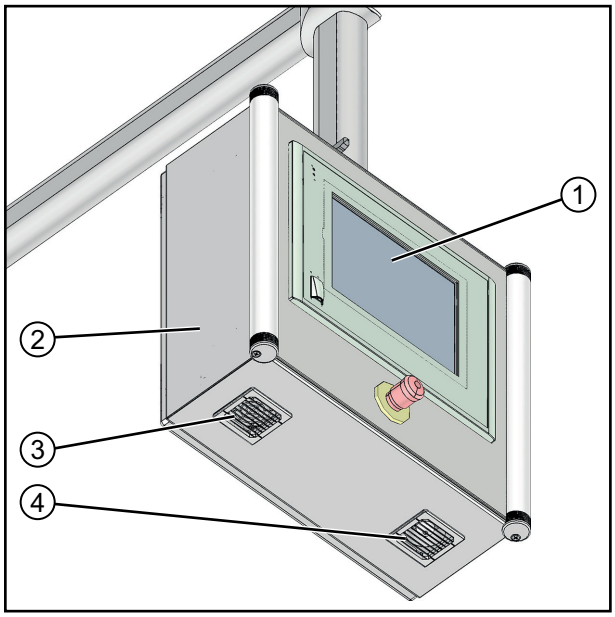


Fig. 4-13 Housing ventilation in the control panel

1 Display with touchscreen
2 Control panel
3 Outlet filter
4 Fan filter

Check

- Regularly check and clean the filter mats in the fan filter (4) and the outlet filter (3) according to the contamination of the surrounding air; if there is severe contamination, the filter mats must be replaced.

NOTE!

Danger of machine damage

A contaminated filter mat causes an increase in temperature inside the housing.

A temperature increase may result in faults in machine components or reduced service life of the components.

▶ Replace filters in good time!

Replacing and cleaning a filter mat:

1. Take off the covering grid and pull out the appropriate filter mat.
2. Rinse off the mat in water of up to 40°C, using typical commercial mild-action detergents, if necessary.
3. It is possible to vacuum or blow off the mat with compressed air.
4. For types of dust that contain grease: Rinse off with warm water and grease solvent additive.
5. Insert the filter mat and close the cover.

NOTE!

Avoid wringing out and strong water jets!

4.5.1.2 Machine housing

DANGER!

Life-threatening danger due to electric current!

When coming into contact with live parts, there is a direct life-threatening danger from an electric shock. Damage to the insulation or individual components can pose a danger to life.

- If there is damage to the insulation, switch off the power supply immediately and carry out repair work.
- Work on the electrical system may only allowed be performed by persons who are qualified for this by relevant training and who know the dangers of handling live components.
- Before any work on the electrical system and before maintenance, cleaning and repair work, deenergize the electrical system completely, secure it against switch-on and check that it is deenergized.

Housing ventilation

To help prevent overheating inside the machine housing (4), a housing fan was fitted to the side door in the housing (2). This acts as a heat exchanger. This ventilation system consists of the fan filter (3) and an outlet filter (1). Filter mats on the inside of the filter are used for filtering dust.

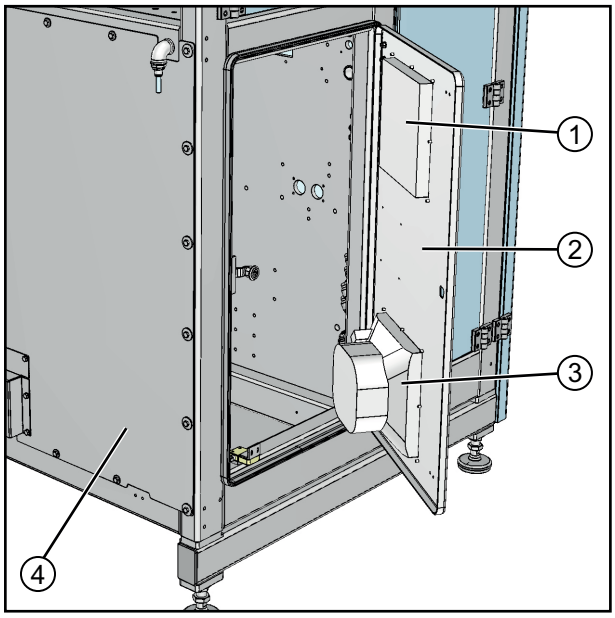


Fig. 4-14 Housing ventilation in the machine housing

1 Outlet filter
2 Housing door
3 Fan filter
4 Machine housing

Check

- Regularly check and clean the filter mats in the fan filter (3) and the outlet filter (1) according to the contamination of the surrounding air; if there is severe contamination, the filter mats must be replaced.

NOTE!

Danger of machine damage

A contaminated filter mat causes an increase in temperature inside the housing.

A temperature increase may result in faults in machine components or reduced service life of the components.

▶ Replace filters in good time!

Replacing and cleaning a filter mat:

1. Take off the covering grid and pull out the appropriate filter mat.
2. Rinse off the mat in water of up to 40°C, using typical commercial mild-action detergents, if necessary.
3. It is possible to vacuum or blow off the mat with compressed air.
4. For types of dust that contain grease: Rinse off with warm water and grease solvent additive.
5. Insert the filter mat and close the cover.

NOTE!

Avoid wringing out and strong water jets!

4.5.1.3 Control cabinet



DANGER!

Life-threatening danger due to electric current!

When coming into contact with live parts, there is a direct life-threatening danger from an electric shock. Damage to the insulation or individual components can pose a danger to life.

- If there is damage to the insulation, switch off the power supply immediately and carry out repair work.
- Work on the electrical system may only allowed be performed by persons who are qualified for this by relevant training and who know the dangers of handling live components.
- Before any work on the electrical system and before maintenance, cleaning and repair work, deenergize the electrical system completely, secure it against switch-on and check that it is deenergized.

Housing ventilation

To help prevent overheating inside the control cabinet (2), a housing ventilation system was fitted to the control cabinet doors. This acts as a heat exchanger. This ventilation system consists of the fan filter (3) and an outlet filter (1). Filter mats on the inside of the filter are used for filtering dust.

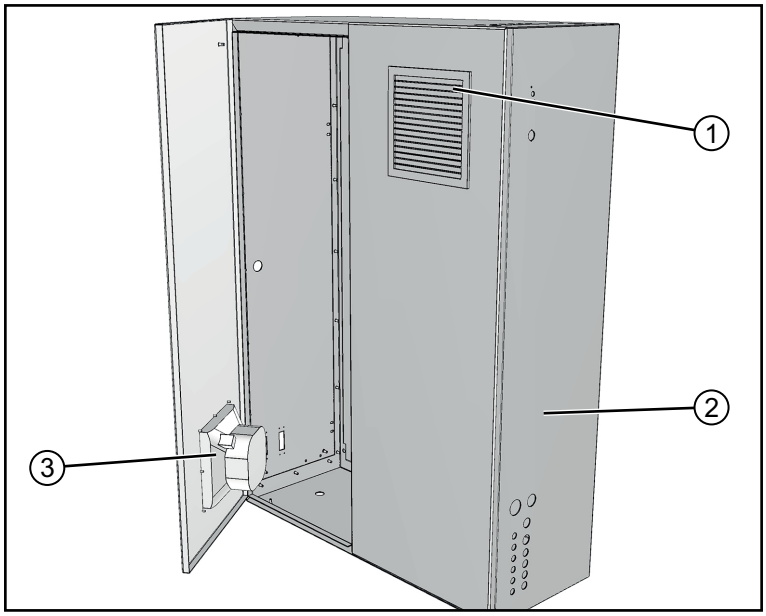


Fig. 4-15 Housing ventilation system in the control cabinet

1 Outlet filter
2 Control cabinet
3 Fan filter

Check

- Regularly check and clean the filter mats of the control cabinet ventilation system according to the contamination of the surrounding air; if severely contaminated, the filter mats must be replaced.

NOTE!

Danger of machine damage

A contaminated filter mat causes an increase in temperature inside the housing.

A temperature increase may result in faults in machine components or reduced service life of the components.

▶ Replace filters in good time!

Replacing and cleaning a filter mat:

1. Take off the covering grid and pull out the appropriate filter mat.
2. Rinse off the mat in water of up to 40°C, using typical commercial mild-action detergents, if necessary.
3. It is possible to vacuum or blow off the mat with compressed air.
4. For types of dust that contain grease: Rinse off with warm water and grease solvent additive.
5. Insert the filter mat and close the cover.



NOTE!

Avoid wringing out and strong water jets!

4.5.1.4 Pneumatics



⚠ WARNING!

Danger of injury through movements due to stored pneumatic energy!

Pneumatically powered components can move unexpectedly due to stored residual energy and cause injury.

▶ Only have repairs and maintenance tasks on the pneumatic systems performed by trained or appropriately instructed specialists.

▶ Prior to starting tasks, on the pneumatic system it must be completely depressurized. Completely depressurize pressure accumulators.

▶ Prior to recommissioning the machine, mount all covers, threaded fittings, and safety devices as prescribed.

Check

- Check pneumatic hoses for damage.
- Check hose connections for firm seat.
- Check entire pneumatic system for leaks.

4.5.1.5 Mechanical equipment

Check

- Check threaded fittings for firm seat.
- Check bearings, spherical bushings for ease of movement.
- Clean joint heads and check for wear.
- Clean guide rollers and check for wear.

4.5.1.6 Electrical system



⚠ DANGER!

Life-threatening danger due to electric current!

When coming into contact with live parts, there is a direct life-threatening danger from an electric shock. Damage to the insulation or individual components can pose a danger to life.

- ▶ If there is damage to the insulation, switch off the power supply immediately and carry out repair work.
- ▶ Work on the electrical system may only allowed be performed by persons who are qualified for this by relevant training and who know the dangers of handling live components.
- ▶ Before any work on the electrical system and before maintenance, cleaning and repair work, deenergize the electrical system completely, secure it against switch-on and check that it is deenergized.

Clean

- Clean light barriers/reflectors.

Check

- Check electrical threaded fittings.

4.5.1.7 Vacuum equipment

Prefilter

Clean

- Clean filter cartridge.

Prefilter closed:



Prefilter opened with filter cartridge:



NOTE!

Filter cartridges must be replaced if there is heavy contamination!

Vacuum pump

Clean

- Clean filter in the vacuum pump.

Use the documentation of the vacuum pump manufacturer for help with maintenance work on the vacuum pump.

4.5.2 Machine area VP

4.5.2.1 Stabilo Seal hot sealing unit



⚠ WARNING!

Danger of burns due to hot surfaces!

The Stabilo Seal hot sealing unit is operated with sealing jaws, whose surfaces are very hot under operating conditions. Touching these hot jaws can lead to serious burns.

- ▶ Maintain a sufficient distance from these hot surfaces of the station during machine operation.
- ▶ Switch off the corresponding heaters before working on the station and let the station cool down until it is possible to work safely.
- ▶ When working on the hot station, wear suitable safety gloves to protect against the heat.

Format adjustment

To ensure ease of the mechanical movement, check the lubrication of individual components and assemblies. The mechanism should be relubricated if necessary.

Lubrication

- Regularly check the components and assemblies to be lubricated to ensure adequate lubrication.
- Relubricate, if necessary.

  When lubricating, the following instructions must be complied with:
  - Prior to relubricating, clean the lubricating point so that the lubricant can also get to the lubricating point.
  - The lubricant is introduced into the lubricating point with the aid of a grease gun.
  - Avoid over-greasing.
  - After lubrication, immediately remove any excess grease that has escaped.



NOTE!

Instructions concerning the oils/lubricants that must be used are provided in the ROVEMA Table of Lubricants in the Appendix of this operating manual!

The function to be lubricated and its lubricating point can be easily identified based on the following illustration and table.

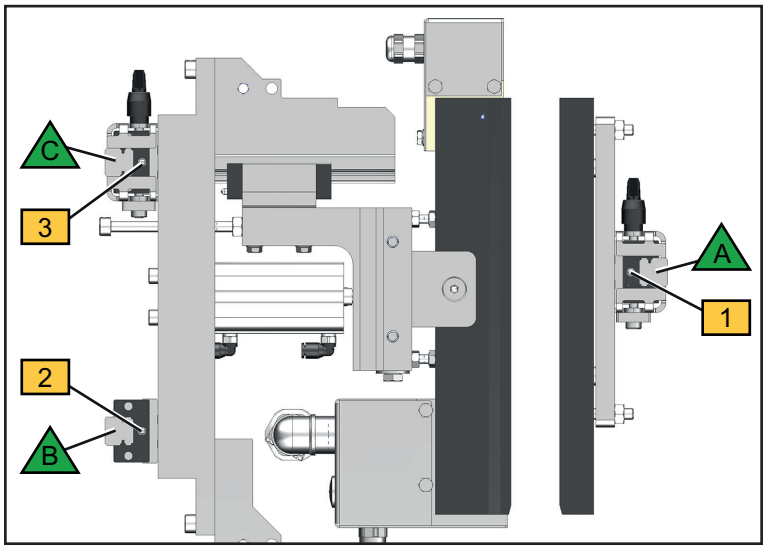


Fig. 4-16 Stabilo Seal hot sealing unit: lubrication points

Lubrication point		Assembly/component	
1	Lubricating nipple	A	Linear guide
2	Lubricating nipple	B	Linear guide
3	Lubricating nipple	C	Linear guide

Tab. 4-2 Stabilo Seal hot sealing unit: lubrication points

NOTE!

After the machine has been cleaned, the guide rails must be dried and then re-greased!

4.5.2.2 Gusseting device

To ensure ease of the mechanical movement, check the lubrication of individual components and assemblies. The mechanism should be relubricated if necessary.

Lubrication

- Regularly check the components and assemblies to be lubricated to ensure adequate lubrication.
- Relubricate, if necessary.

  When lubricating, the following instructions must be complied with:
  - Prior to relubricating, clean the lubricating point so that the lubricant can also get to the lubricating point.
  - The lubricant is introduced into the lubricating point with the aid of a grease gun.
  - Avoid over-greasing.
  - After lubrication, immediately remove any excess grease that has escaped.

NOTE!

Instructions concerning the oils/lubricants that must be used are provided in the ROVEMA Table of Lubricants in the Appendix of this operating manual!

The function to be lubricated and its lubricating point can be easily identified based on the following illustration and table.

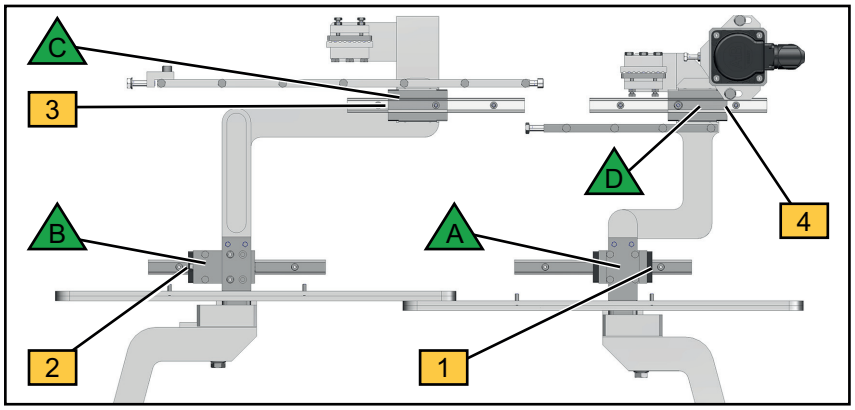


Fig. 4-17 Gusseting device: lubricating points

Lubrication point		Assembly/component	
1	Lubricating nipple	A	Linear guide, right, front
2	Lubricating nipple	B	Linear guide, left front
3	Lubricating nipple	C	Linear guide, left rear
4	Lubricating nipple	D	Linear guide, right rear

Tab. 4-3 Gusseting device: lubricating points

NOTE!

After the machine has been cleaned, the guide rails must be dried and then re-greased!

4.5.2.3 Cross sealing station

DANGER!

Danger of cutting injuries from the pneumatically-actuated cutting knife in the cross sealing station!

There is a greater risk of injury from the sharp knife blade.

- ▶ Prior to performing work at the station, switch the machine off via the main switch and safeguard the main switch against being switched back on unintentionally
- ▶ Protect yourself from cutting injuries by wearing suitable safety gloves.



⚠ WARNING!

Danger of burns due to hot surfaces!

The cross sealing station is operated with cross jaws whose surfaces are very hot under operating conditions. Touching these hot jaws can lead to serious burns.

- ▶ Maintain a sufficient distance from these hot surfaces of the station during machine operation.
- ▶ Switch off the corresponding heaters before working on the station and let the station cool down until it is possible to work safely.
- ▶ When working on the hot station, wear suitable safety gloves to protect against the heat.

Cross jaw drive

The mechanism of the cross sealing drive is lubricated via lubricating nipples which the lubricant is pressed into with a grease gun.

The easily accessible lubrication points "M-P" are lubricated directly via the lubricating nipple on the drive components to be lubricated.

The more difficult to access lubrication points "A-L" can be easily lubricated later with a lubricating strip. Lubricating nipples are mounted on this lubricating strip, and they are connected to the appropriate lubricating point via transport lines.

The appropriate lubricating point with its lubricating connection can be easily identified using the following illustrations and tables.

Cross jaws drive (LH model)

In the LH model the lubricating strip is on the left side of the drive (seen from the front).

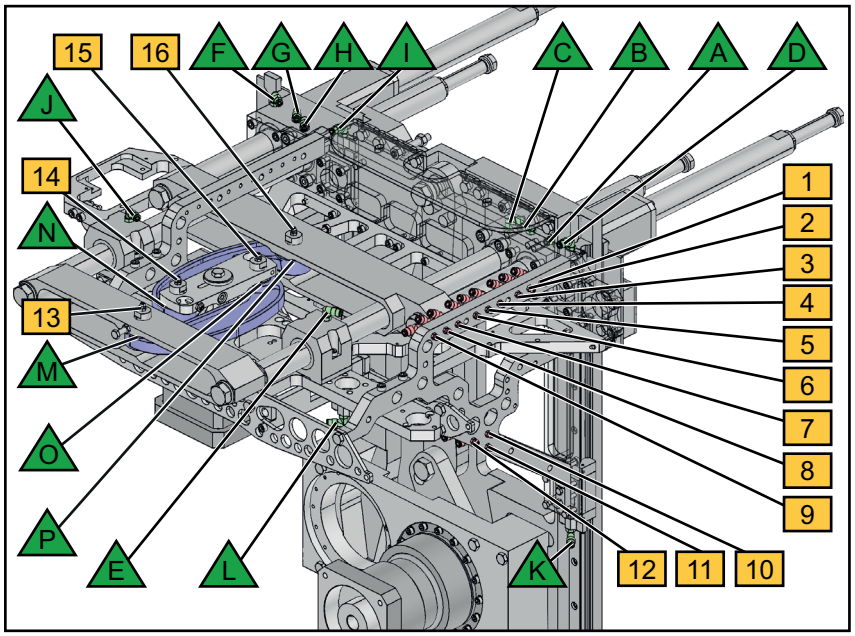


Fig. 4-18 BVC-LH cross jaws drive: Lubrication points

Lubrication point		Assembly/component	
1	Lubricating nipple	A	Left pull rod
2	Lubricating nipple	B	Left pull rod
3	Lubricating nipple	C	Front left push rod
4	Lubricating nipple	D	Linear guide z-stroke, top left
5	Lubricating nipple	E	Rear left push rod
6	Lubricating nipple	F	Right pull rod
7	Lubricating nipple	G	Right pull rod
8	Lubricating nipple	H	Right, front push rod
9	Lubricating nipple	I	Linear guide, z-stroke top right
10	Lubricating nipple	J	Right, rear push rod
11	Lubricating nipple	K	Linear guide, z-stroke, bottom left
12	Lubricating nipple	L	Linear guide z-stroke bottom right
13	Lubricating nipple	M	Needle bearing, push rod traverse
14	Lubricating nipple	N	Needle bearing, swivel arm - piston rod, front
15	Lubricating nipple	O	Needle bearing, swivel arm - piston rod, rear
16	Lubricating nipple	P	Needle bearing, pull rod traverse

Tab. 4-4 BVC-LH cross jaws drive: Lubrication points

Cross jaws drive (RH model)

In the RH model the lubricating strip is on the right side of the drive (seen from the front).

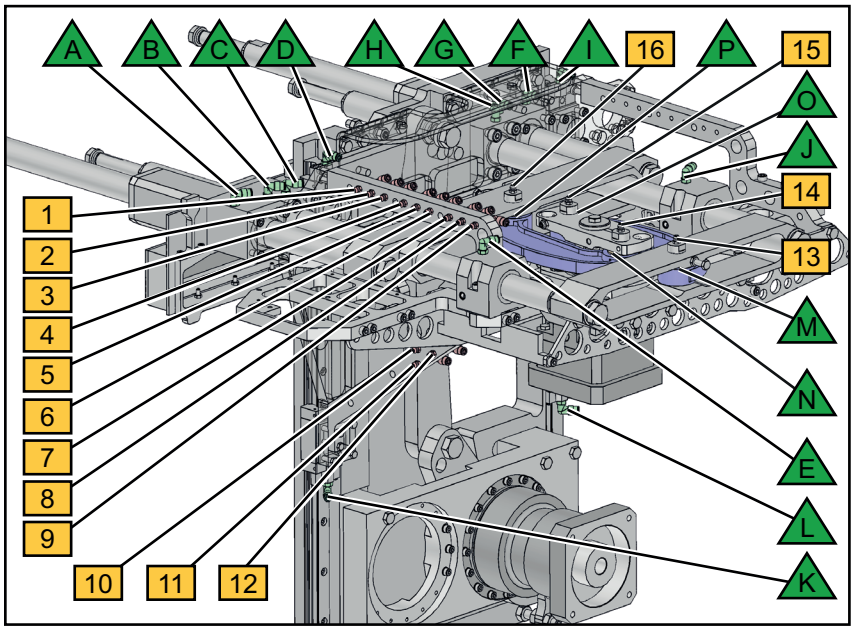


Fig. 4-19 BVC-RH cross jaws drive: Lubrication points

Lubrication point		Assembly/component	
1	Lubricating nipple	A	Right pull rod
2	Lubricating nipple	B	Right pull rod
3	Lubricating nipple	C	Right, front push rod
4	Lubricating nipple	D	Linear guide, z-stroke top right
5	Lubricating nipple	E	Right, rear push rod
6	Lubricating nipple	F	Left pull rod
7	Lubricating nipple	G	Left pull rod
8	Lubricating nipple	H	Front left push rod
9	Lubricating nipple	I	Linear guide z-stroke, top left
10	Lubricating nipple	J	Rear left push rod
11	Lubricating nipple	K	Linear guide z-stroke bottom right
12	Lubricating nipple	L	Linear guide, z-stroke, bottom left
13	Lubricating nipple	M	Needle bearing, push rod traverse
14	Lubricating nipple	N	Needle bearing, swivel arm - piston rod, front
15	Lubricating nipple	O	Needle bearing, swivel arm - piston rod, rear
16	Lubricating nipple	P	Needle bearing, pull rod traverse

Tab. 4-5 BVC-RH cross jaws drive: Lubrication points

NOTE!

Only the food-safe lubricant "Berulub FG-H 2 SL" (Rovema order number 07035354) may be used as a lubricant.

See also the technical data sheet of the manufacturer in the appendix of this operating manual.

Lubrication

- Regularly check all components and assemblies to be lubricated to ensure adequate lubrication.
- Relubricate, if necessary, outside of the lubrication intervals.

In addition, after lubricating the linear guides on the vertical drive axis (Z-axis):

- By pressing the button, ***"Reset"*** In the ***SERVICE INTERVAL - SEALING JAW DRIVE VERTICAL*** menu; confirm execution of the lubrication.

Check

- Check lubricant lines for damage; defective lines must be replaced.
- Check lubricant lines for firm seat.

NOTE!

Danger of machine damage!

When creating additional drill holes in the machine housing, there is the risk that shavings could enter the cross sealing station and thus damage the drive.

▶ No additional boreholes may be made in the machine housing.

4.5.2.3.1 "Service interval - sealing jaw drive vertical" menu

General information

Activate the menu selection button  In the main menu of the form fill and seal machine:

This takes you to the menu ***SERVICE INTERVAL***.

This menu contains information about when important maintenance work has to be performed on the vertical drive axis (Z-axis) of the cross jaws drive.

The following maintenance work must be performed on this drive axis:

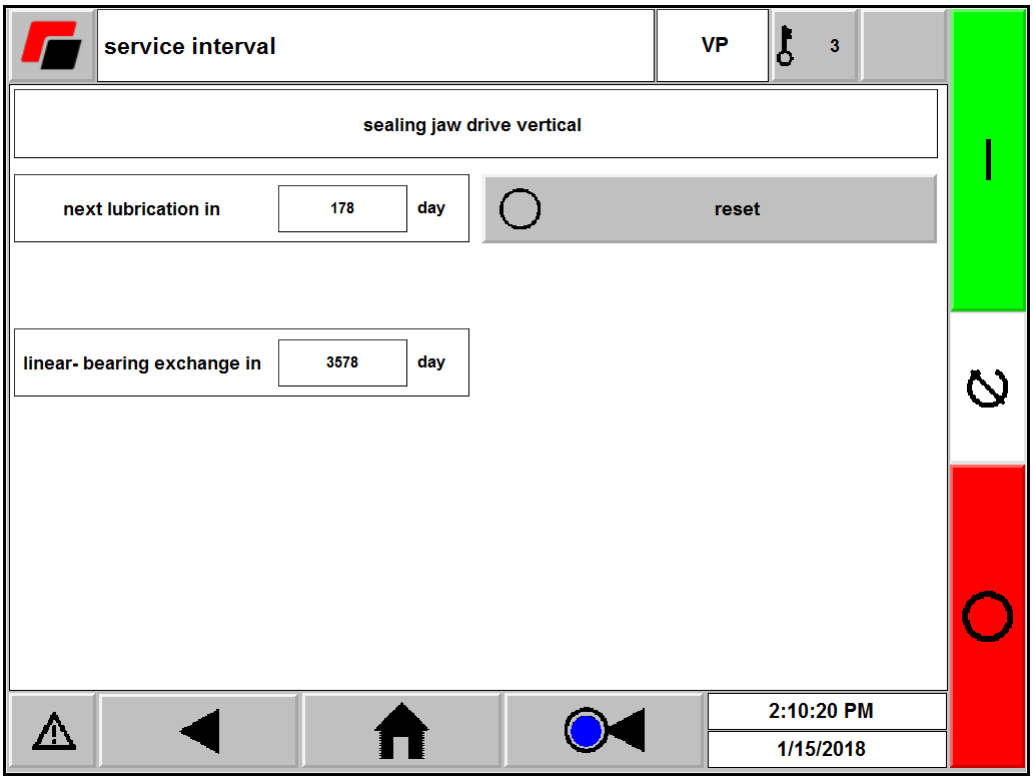
- Lubrication of the linear guides.
- Linear bearing replacement.

⚠ WARNING!

Danger of injury!

Incorrect execution of repair and maintenance tasks can result in risk of injury!

▶ Repair and maintenance tasks must only be performed by trained or appropriately instructed technicians.



"Next lubrication in" value display

Displays the days remaining until the linear guides must be lubricated again.

"Reset" button

Button for resetting the display after lubrication is performed.

"Linear bearing exchange in" value display

Displays the days remaining until the linear bearings of the corresponding linear axis have to be exchanged.

Change screen *LOGLIST*

Access to the menu ***LOGLIST***. This log file provides information about the times at which the lubrication and/or replacement intervals should be performed.

A new entry will be generated in the log file as soon as the corresponding Reset button is pressed. The following information will then be saved: Date and time, the axis distance covered and the status of the counter.

In this way, it can be understood easily when the interval counter is reset.

This section lists all maintenance tasks that must be executed semi-annually. The tasks to be executed are divided into individual machine areas.

4.6.1 Machine area VP

4.6.1.1 Electrical system

Equipment of the closing tools with 230 Volt-type heating cartridges

Check

- Have the function of the following protective devices checked regularly, at least every 6 months, by a trained electrical specialist in accordance with the valid regulations:
  - The function of the residual current circuit breaker (in control cabinet)
  - The protective conductor system for hot sealing for damage, break, etc.



⚠ DANGER!

Life-threatening danger due to electric current!

When coming into contact with live parts, there is a direct life-threatening danger from an electric shock. Damage to the insulation or individual components can pose a danger to life.

- ▶ If there is damage to the insulation, switch off the power supply immediately and carry out repair work.
- ▶ Work on the electrical system may only allowed be performed by persons who are qualified for this by relevant training and who know the dangers of handling live components.
- ▶ Before any work on the electrical system and before maintenance, cleaning and repair work, deenergize the electrical system completely, secure it against switch-on and check that it is deenergized.

4.6.1.2 Draw-down device

To ensure ease of the mechanical movement, check the lubrication of individual components and assemblies. The mechanism should be relubricated if necessary.

Lubrication

- Regularly check the components and assemblies to be lubricated to ensure adequate lubrication.
- Relubricate, if necessary.

  When lubricating, the following instructions must be complied with:
  - Prior to relubricating, clean the lubricating point so that the lubricant can also get to the lubricating point.
  - The lubricant is introduced into the lubricating point with the aid of a grease gun.

- Avoid over-greasing.
- After lubrication, immediately remove any excess grease that has escaped.

NOTE!

Instructions concerning the oils/lubricants that must be used are provided in the ROVEMA Table of Lubricants in the Appendix of this operating manual!

The function to be lubricated and its lubricating point can be easily identified based on the following illustration and table.

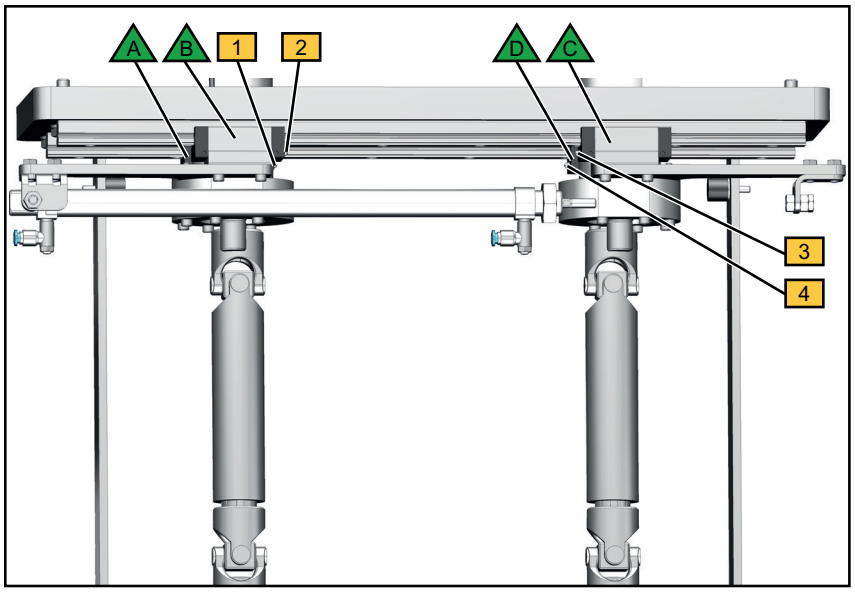


Fig. 4-20 Draw-down device: Lubrication points

Lubrication point		Assembly/component	
1	Lubricating nipple	A	Linear guide, bottom right
2	Lubricating nipple	B	Linear guide, top right
3	Lubricating nipple	C	Linear guide, top left
4	Lubricating nipple	D	Linear guide, bottom left

Tab. 4-6 Draw-down device: Lubrication points

NOTE!

After the machine has been cleaned, the guide rails must be dried and then re-greased!

Notes

Faults

Machine operating faults - depending on the cause - trigger either a so-called machine stop or a so-called machine halt. A machine stop is when the machine stops immediately; a machine halt is when the machine is brought to a standstill in a controlled manner, which means that the drives complete their current cycle (work cycle) and come to a standstill in their defined halt position.

Fault messages

Fault messages appear immediately when faults begin, regardless of the machine's current operating state, in a separate alarm window; at the same time, the **Alarm memory button** on the lower menu bar changes colour.



NOTE!

Additional information is provided in section *2.2.8 - The alarm messages, Page 69* and *2.2.9 - The alarm memory, Page 71*.

Event time

This is the time at which the fault occurred (date and time).

Message

This is the plain text description of the fault that has occurred.

You can acknowledge a fault message only after the fault has been rectified, by pressing the "Standby" button. If the error was not yet remedied at the time of the reset, the ERROR indicator stays lit and the error message reappears after a few seconds.

Not all machine operating faults are detected by the control unit and shown on the display. At the end of this section, you will find explanations of those faults that are not shown on the display.



⚠ WARNING!

Risk of injury due to safety devices that have been rendered inoperable!

Injuries due to accessible danger zones on the machine.

- ▶ Do not bypass safety devices.
- ▶ Do not render safety devices inoperable.

The following section contains a description of the error messages that are shown on the display and the actions you can take to eliminate the errors.

The structure of the descriptions contain the following information for each error:

- Error number
- Error text shown on the display
- Error source(s) that have caused the error to occur
- Corrective measure(s) to eliminate the error

When eliminating errors, please note the following:

If an error occurs repeatedly or at brief intervals, the following points should also be checked:

- Have the mechanical settings for the machine been made correctly?
  - Check values according to the format table!
- Are the values set in the menus of the program correct?
  - Check values for plausibility!
- Are the correct format parts installed?
  - Check the installed format parts according to format table!
- Have the characteristics of the packaging material changed?
  - Check packaging materials against the specification, e.g. dimensions, moisture content, printing, etc.
- Have the maintenance tasks been executed properly?
  - Check maintenance tasks (e.g. cleaning of the sensors)

0032 **Emergency stop control panel**

One (or more) emergency stop buttons have been activated.

- Unlock the emergency stop button. If this error still occurs, check the emergency stop circuit and the emergency stop button.

0033 **External emergency stop**

One (or more) emergency stop buttons have been activated.

- Unlock the emergency stop button. If this error still occurs, check the emergency stop circuit and the emergency stop button.

0034 **Emergency stop - film carriage**

One (or more) emergency stop buttons have been activated.

- Unlock the emergency stop button. If this error still occurs, check the emergency stop circuit and the emergency stop button.

0035 **Emergency stop reserve**

One (or more) emergency stop buttons have been activated.

- Unlock the emergency stop button. If this error still occurs, check the emergency stop circuit and the emergency stop button.

0047 **Control cabinet safety switch, left**

A control cabinet door is open far enough that the safety switch is not closed.

- Close all control cabinet doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the control cabinet door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0048 **Control cabinet safety switch, right**

A control cabinet door is open far enough that the safety switch is not closed.

- Close all control cabinet doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the control cabinet door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0047 **Control cabinet safety switch, machine**

A control cabinet door is open far enough that the safety switch is not closed.

- Close all control cabinet doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the control cabinet door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0063 **Safety chain open emergency stop**

The safety chain of the machine is interrupted at one location or the safety relay, main contactor or relay for triggering the safety relay is defective.

- The safety chain of the machine is broken; the LED on the safety relay does not light up:
  check the safety chain
  The safety chain of the machine is not broken; the LED on the safety relay lights up.
  The relay used to control the safety relay is defective
  The contacts on the main contactor are jammed
  The monitoring contact is open

0065 **Safety guard, front**

One of the protective doors at the location indicated is so far open that the safety switch is not closed.

- Close all protective doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the safety door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0066 **Safety guard, side front**

One of the protective doors at the location indicated is so far open that the safety switch is not closed.

- Close all protective doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the safety door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0067 **Safety guard, machine housing**

One of the protective doors at the location indicated is so far open that the safety switch is not closed.

- Close all protective doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the safety door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0068 **Safety guard, side rear**

One of the protective doors at the location indicated is so far open that the safety switch is not closed.

- Close all protective doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the safety door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0069 **Safety guard, side top**

One of the protective doors at the location indicated is so far open that the safety switch is not closed.

- Close all protective doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the safety door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0070 **Safety flap**

A safety flap is open.

- Close the safety flap and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the safety door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0071 **Funnel open, dosing auger**

The safety switch on the funnel has tripped.

- Check whether the funnel is closed correctly.
- If the error occurs again when the funnel is closed, check the function of the safety switch.

0072 **Infeed closure**

The safety switch of the tube closure on the infeed auger has tripped.

- Check the causes and eliminate the errors.

0073 **Discharge conveyor is not in position**

For production, the discharge belt is moved into a recess at the protection doors, so it can receive the finished bags and remove them. During production start, safety switches at discharge belt and protection doors query whether the belt is in position. If this is not the case, there will be no production release, and this message is shown on the display. This ensures that during production, no one can reach into the work area of the machine via the recess at the protection doors.

- Position the discharge belt correctly in the recess at the protective doors and ensure that transmitter and receiver are properly connected.
- If the error message appears repeatedly, check the safety switch and the cabling. A defective safety switch must be replaced immediately!

0074 **safety switch infeed auger**

The safety switch of the tube closure on the infeed auger has tripped.

- Check the causes and eliminate the errors.

0075 **Safety switch auger tube**

The safety switch on the auger tube of the auger feeder has responded.

- Check the causes and eliminate the errors.

0076 **Drop pipe safety switch**

The safety switch on the drop pipe has tripped.

- Check the causes and eliminate the errors.

0077 **Safety switch – control cabinet**

A control cabinet door is open far enough that the safety switch is not closed.

- Close all control cabinet doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the control cabinet door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0078 **Protective tunnel – discharge conveyor 1**

The safety switch on the protective tunnel signals that the protective tunnel is not closed.

- Make sure that the protective tunnel is closed. If the protective tunnel is properly sealed, check the function of the safety switch and the cabling.

0079 **Protective tunnel – discharge conveyor 2**

The safety switch on the protective tunnel signals that the protective tunnel is not closed.

- Make sure that the protective tunnel is closed. If the protective tunnel is properly sealed, check the function of the safety switch and the cabling.

0080 **Protective door side bottom**

One of the protective doors at the location indicated is so far open that the safety switch is not closed.

- Close all protective doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the safety door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0081 **Safety switch perforation**

One of the protective doors at the location indicated is so far open that the safety switch is not closed.

- Close all protective doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the safety door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0083 **Safety guard left**

One of the protective doors at the location indicated is so far open that the safety switch is not closed.

- Close all protective doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the safety door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0084 **Safety guard right**

One of the protective doors at the location indicated is so far open that the safety switch is not closed.

- Close all protective doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the safety door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0085 **Safety guard rear**

One of the protective doors at the location indicated is so far open that the safety switch is not closed.

- Close all protective doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the safety door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0086 **Safety cover transverse jaws**

A safety cover is open.

- Close the safety cover and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
  If this error message appears again despite the safety cover being correctly closed, check the safety switch and the cabling.
  A defective safety switch must be replaced immediately!

0087 **Roller support safety door**

One of the protective doors at the location indicated is so far open that the safety switch is not closed.

- Close all protective doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the safety door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0088 **Safety door, laser printer**

One of the protective doors at the location indicated is so far open that the safety switch is not closed.

- Close all protective doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the safety door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0089 **Safety door, reserve 1**

One of the protective doors at the location indicated is so far open that the safety switch is not closed.

- Close all protective doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the safety door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0090 **Safety door, reserve 2**

One of the protective doors at the location indicated is so far open that the safety switch is not closed.

- Close all protective doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the safety door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0091 **Roller support safety door, left**

One of the protective doors at the location indicated is so far open that the safety switch is not closed.

- Close all protective doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the safety door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0092 **Roller support safety door, right**

One of the protective doors at the location indicated is so far open that the safety switch is not closed.

- Close all protective doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the safety door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0093 **Roller support safety door, rear**

One of the protective doors at the location indicated is so far open that the safety switch is not closed.

- Close all protective doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the safety door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0094 **Roller support safety door, top**

One of the protective doors at the location indicated is so far open that the safety switch is not closed.

- Close all protective doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the safety door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0095 **Safety chain open, protective doors**

The safety chain of the machine is interrupted at one location or the safety relay, main contactor or relay for triggering the safety relay is defective.

- The safety chain of the machine is broken; the LED on the safety relay does not light up:
  check the safety chain
  The safety chain of the machine is not broken; the LED on the safety relay lights up.
  The relay used to control the safety relay is defective
  The contacts on the main contactor are jammed
  The monitoring contact is open

0096 **Machine housing safety door, left**

One of the protective doors at the location indicated is so far open that the safety switch is not closed.

- Close all protective doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the safety door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0097 **Machine housing safety door, right**

One of the protective doors at the location indicated is so far open that the safety switch is not closed.

- Close all protective doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the safety door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0098 **Safety door side top left**

One of the protective doors at the location indicated is so far open that the safety switch is not closed.

- Close all protective doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the safety door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0099 **Safety door side top right**

One of the protective doors at the location indicated is so far open that the safety switch is not closed.

- Close all protective doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the safety door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0129 **Pressure monitor**

The compressed air supply is not sufficient or interrupted.

- Switch on compressed air supply.
  Check air connections.

0130 **Fault - forced venting**

Forced venting is a device to allow the compressed air in the machine to escape. The unit monitoring this forced venting (a pressure monitor) has determined that there is still pressure in the pneumatic system.

- Check the valve and the forced ventilation manometer, replace the faulty parts immediately.

0131 **Pressure monitor 2**

The compressed air supply is not sufficient or interrupted.

- Switch on compressed air supply.
  Check air connections.

0132 **Fault - forced venting 2**

Forced venting is a device to allow the compressed air in the machine to escape. The unit monitoring this forced venting (a pressure monitor) has determined that there is still pressure in the pneumatic system.

- Check the valve and the forced ventilation manometer, replace the faulty parts immediately.

0256 **Rovema software key incorrect**

The software key is inconsistent with the serial number of the CPU.

- When the CPU is replaced, a new software key must be generated with the new serial number. To correct this error, please contact Rovema.

0260 **Batch number reached**

Production was interrupted because the number set in the MDR menu for the ongoing batch (batch number) has been reached.

- Enter a new value for a new batch and restart the production.

0263 **Infeed fault**

There is a fault in the process at the displayed location.

- Check the cause of the fault and eliminate the fault.

0264 **Checkweigher fault**

There is a fault in the process at the displayed location.

- Check the cause of the fault and eliminate the fault.

0263 **Scale fault**

There is a fault in the process at the displayed location.

- Check the cause of the fault and eliminate the fault.

0268 **Drop time setting is too high**

You have tried to activate too high a value for the drop time.

- Reduce the value for the drop time.

0269 **Unable to determine external cycle number**

Unable to determine cycle number of the designated machine. Possibly no constant number of cycles was reached from which to calculate a value.

- To determine the external cycle number this machine must reach a constant number of cycles over a certain period of time. Ensure that no interfering factors that prevent this are present during this time.

0270 **External synchronous pulses not present**

The CMK issues pulses at the right time for the synchro between VP and CMK. Each pulse is one cycle VP. In this case the pulses are missing, even though the machine is ready and switched on. The cause can be incorrect wiring or a software error

- Check the wiring of the machine. If the wiring is OK, the software has to be checked.

0271 **Transport belts lifted off**

The draw-down belts of the draw-down device are lifted from the filling tube (not in the working position).

- Switch on "Transport belts" switch in the switch menu.

0272 **Gas flushing monitor**

The compressed air supply is not sufficient or interrupted.

- Switch on compressed air supply.
  Check air connections.

0273 **Remote connection not active touch panel**

The connection from the touch panel to the ControlLogix is interrupted

- Check the connecting cable.

0274 **Pre-fuse heating**

The pre-fuse (= electrical protective device) of the heater has tripped.

- Unlock fuse in the control cabinet.
- If it occurs again, check the heater.

0275 **Overtemperature – control cabinet**

The temperature in the control cabinet is too high.

- Check whether the aeration of the control cabinet is working.
  The control cabinet temperature should not exceed 45°C! Note that the filter mats of the control cabinet ventilation hinder air circulation if they are very contaminated and must be replaced!

0276 **Attention, main switch heating off!**

The main switch of the heater for the sealing tools is switched off. Without heating, no sealing is possible.

- Switch on the heating for the sealing tools in the menu!

0277 **Gas flushing fault**

There is a fault in the process at the displayed location.

- Check the cause of the fault and eliminate the fault.

0288 **Barcode scanner error**

An unknown fault has occurred in the indicated function.

- Check the function and eliminate the fault. To eliminate the fault, if necessary consult the documentation for the additional units.

0289 **Wrong barcode**

The machine has detected a wrong barcode. A wrong barcode is present if it differs from the barcode previously saved via the Teach mode.

- Check the barcode!
  Is the correct barcode printed?
  When production is reconfigured, the new barcode must be entered in the barcode scanner before production is resumed! (For handling of the barcode scanner, see separate manual).

0291 **Timed out - barcode not read**

No barcode was detected 5 times in a row. The barcode scanner may be incorrectly positioned.

- Check the alignment of the barcode scanner with the barcode being read.

0292 **Barcode scanner not ready**

This is a collective message indicating a fault on the machine component cited above.

- Check the cause. Read the relevant documentation from the manufacturer if necessary.

0352 **Sealing jaw drive horizontal motor thermal overload**

Thermal overload of the motor. Factory-set limit value exceeded.

The motor thermal model has exceeded its factory set thermal capacity limit of 110%.

- Reduce the speed or extend the time in the command profile.

Thermal overload of the motor. User limit value exceeded.

The motor thermal model has exceeded the thermal capacity limit of the limit value specified by the user for the thermal overload of the motor.

- Edit the command profile.
- Increase the attribute value for the thermal overload of the motor.

0353 **Sealing jaw drive horizontal drive thermal overload**

Thermal overload of the inverter. Factory-set limit value exceeded.

The thermal model for the power transistors indicates that the temperature has exceeded the factory set thermal capacity value of 110%.

- Reduce the speed or extend the time in the command profile.

Thermal overload of the inverter. User limit value exceeded.

The thermal model for the power transistors indicates that the temperature has exceeded the user-defined limit value for the thermal overload of the inverter.

- Reduce the speed or extend the time in the command profile.
- Increase the inverter thermal overload attribute value.

Thermal overload of the inverter. Factory-set limit value exceeded.

The converter thermal model indicates that the temperature has exceeded the factory set thermal capacity value of 110%.

- Reduce the start-up times of all drives that share the DC bus.
- Reduce number of shared DC follower drives.
- Reduce duty-cycle of the command axis control.

Thermal overload of the inverter. User limit value exceeded.

The converter thermal model indicates that the temperature has exceeded the user-defined limit value for the thermal overload.

- Reduce the start-up times of all drives that share the DC bus.
- Reduce number of shared DC follower drives.
- Reduce duty-cycle of the command axis control.
- Increase the inverter thermal overload attribute value.

Thermal overload of the bus regulator. Factory-set limit value exceeded.

The thermal brake model has exceeded its factory set thermal capacity limit.

- Modify the duty cycle of the application.
- Add an external brake for additional capacity.
- Add a capacitor module if needed.

Thermal overload of the bus regulator. User limit value exceeded.

The thermal brake model has exceeded the thermal capacity limit of the user-defined limit value for the thermal overload of the bus regulator.

- Modify the duty cycle of the application.
- Add an external brake for additional capacity.
- Increase the attribute value of the user-defined limit value for the thermal overload.
- Add a capacitor module if needed.

0354 **Sealing jaw drive horizontal converter AC phase short flt**

Currently not used.

0355 **Sealing jaw drive horizontal converter pre-charge flt**

Precharge error. The pre-charge circuit monitoring algorithm detected that after charging over a specific period of time the DC bus did not reach a factory set voltage level.

- Check AC input voltage of all phases.
- Check input power wiring.
- Replace drive if the fault persists.

0356 **Sealing jaw drive horizontal motor fback flt**

Loss of the motor feedback data factory-set limit value exceeded.

The number of consecutive skipped or corrupted serial data packets from the intelligent feedback device has exceeded a factory set limit.

- Check motor feedback cable and connection.
- Check whether the shielding of motor power cable and feedback cable is secured correctly.
- Check whether the motor frame is grounded correctly.

0357 **Sealing jaw drive horizontal motor fback noise**

Currently not used.

0358 **Sealing jaw drive horizontal module/config flt**

Currently not used.

0359 **Sealing jaw drive horizontal module/controller sync flt**

Currently not used.

0360 **Sealing jaw drive horizontal bus regulator flt**

Bus regulator failure. The brake drive integrated circuit has detected that the brake resistor is shorted.

- Check the brake connection for short circuits.
- Disconnect the brake connection and measure the brake resistance.
- Replace drive if brake resistor is shorted.

0361 **Sealing jaw drive horizontal bus power fuse blown**

Currently not used.

0362 **Sealing jaw drive horizontal enable input deactivated**

Currently not used.

0363 **Sealing jaw drive horizontal external input flt**

Currently not used.

0364 **Sealing jaw drive horizontal physical axis flt**

Error in the axis programming.

- The precise error cause can only be read out by using a special diagnostic program.
- Please contact Rovema to remedy the error.

0365 **Sealing jaw drive horizontal grnd short flt**

Ground current. Factory-set limit value exceeded.

The sensing circuitry in the power stage has detected excessive ground current.

- Check the motor power wiring. Check power cable for short circuits.
- Replace motor if the fault persists.

0366 **Sealing jaw drive horizontal CPU watchdog flt**

Processor watchdog fault. The processor on the power board or control board failed to update in a certain period of time. The nn sub-codes 00 to 06 are internal and result in the same possible solution.

- Switch off the control voltage and switch it back on again.
- Update the drive firmware.
- Return drive for repair if the fault persists.

0367 **Sealing jaw drive horizontal overspeed flt**

Motor overspeed. Factory-set limit value exceeded.

Motor speed has exceeded 125% of the maximum speed.

- Check control loop tuning.

Motor overspeed. User limit value exceeded.

Motor speed has exceeded motor overspeed user limit.

- Check control loop tuning.
- Increase the Motor Overspeed UL attribute value.

0368 **Sealing jaw drive horizontal module hardware flt**

Hardware fault. Communication with the power board could not be established.

- Switch off the control voltage and switch it back on again.
- Update the drive firmware.
- Return drive for repair if the fault persists.

0369 **Sealing jaw drive horizontal drive overtemp**

Inverter overtemperature. Factory-set limit value exceeded.

The measured inverter temperature has exceeded the factory set temperature limit.

- Reduce the speed or extend the time in the command profile.
- Reduce drive ambient temperature.
- Ensure that that the air circulation in the drive is not obstructed.

Inverter overtemperature. Factory-set limit value exceeded.

The measured inverter temperature has exceeded the factory set temperature limit.

- Reduce the start-up times of all drives that share the DC bus.
- Reduce number of shared DC follower drives.
- Reduce the speed or extend the time in the command profile.
- Reduce drive ambient temperature.
- Ensure that that the air circulation in the drive is not obstructed.

0370 **Sealing jaw drive horizontal motor overtemp**

Motor overtemperature. Factory-set limit value exceeded.

Calculations based on the motor thermistor indicate that the factory-specified limit value for the motor temperature has been exceeded.

- Operate motor within the continuous torque rating.
- Reduce the ambient temperature of the motor.
- Ensure better cooling of the motor.
- Available only for Kinetix VP motors. Not supported for asynchronous motors.

0371 **Sealing jaw drive horizontal duplicate address flt**

Duplicate IP address. Several consecutive updates from the controller have been lost.

- Select an IP address not already in use in the network.

0372 **Sealing jaw drive horizontal motion instruction error**

Error in the axis programming.

- The precise error cause can only be read out by using a special diagnostic program.
- Please contact Rovema to remedy the error.

0373 **Sealing jaw drive horizontal feedback flt**

Failure of the feedback device. The feedback device has detected an internal error. The nn sub-code is defined as follows:

1: ACCELERATION OVERFLOW

4: TRACKING FILTER ERROR

5: VECTOR LENGTH ERROR

6: COUNTER ERROR

7: SYNCHRONIZATION ERROR

16: SINGLE TURN ERROR

17: MULTI TURN AMPLITUDE ERROR

18: MULTI TURN SYNC ERROR

19: MULTI TURN VECTOR LENGTH ERROR

35: STANDARD PARAMETER ERROR

36: INTERNAL COMMUNICATION ERROR1

37: INTERNAL COMMUNICATION ERROR2

38: INTERNAL SYSTEM ERROR

48: CRITICAL TEMPERATURE

49: CRITICAL LED CURRENT

50: CRITICAL SUPPLY VOLTAGE

51: CRITICAL SPEED

52: CRITICAL ACCELERATION

53: COUNTER OVERFLOW

54: INTERNAL MONITORING ERROR

66: INTERNAL RESOURCE ACCESS ERROR

- Check motor feedback cable and connector.
- Switch off the control voltage and switch it back on again.
- Replace motor if the fault persists.
- Check feedback shield connection.
- Reduce shock and vibration to motor.

0374 **Sealing jaw drive horizontal commutation flt**

Currently not used.

0375 **Sealing jaw drive horizontal overcurrent flt**

Inverter overcurrent fault. Inverter current has exceeded the instantaneous current limit (determined by hardware).

- Check motor power cable for shorts.
- Verify motor windings are not shorted.
- Verify motor power wire gauge.
- Operate within the continuous power rating.
- Reduce acceleration times.

0376 **Sealing jaw drive horizontal overvoltage flt**

Bus overvoltage. Factory-set limit value exceeded.

DC bus voltage level is above the factory set limit as determined by the configured input voltage.

- Change the deceleration or motion profile of all drives connected on the DC bus.
- Disconnect the brake connection and measure the brake resistance.
- Replace drive if brake resistor is open.

0377 **Sealing jaw drive horizontal undervoltage flt**

Bus undervoltage. Factory-set limit value exceeded.

DC bus voltage level is below the factory set limit as determined by the configured input voltage.

- Verify voltage level of the input AC.
- Monitor AC power source for faults or line fluctuations.
- Install UPS on the AC input.

Bus undervoltage. User limit value exceeded.

DC bus voltage level is below the user-defined limit value for the bus undervoltoge.

- Verify voltage level of the input AC.
- Monitor AC power source for faults or line fluctuations.
- Install UPS on the AC input.
- Increase bus undervoltage UL attribute value for the bus undervoltage.

0378 **Sealing jaw drive horizontal phase loss**

AC single phase loss fault. A single AC input phase dropped out at activation of the drive.

- Check AC input voltage of all phases.

0379 **Sealing jaw drive horizontal position error**

Error due to over-elevated position. The position error of the position control loop has exceeded the position error tolerance value for the duration of the position error tolerance time.

- Check position loop tuning.
- Increase the feedforward gain.
- Check the dimensioning of the drive and motor.
- Check motor power wiring.
- Increase position error tolerance and/or position error tolerance Time attribute values.

0380 **Sealing jaw drive horizontal excessive velocity flt**

Excessive velocity error fault. The velocity error of the velocity control loop has exceeded the value given by velocity error tolerance for a time period given by velocity error tolerance time.

- Check velocity loop tuning.
- Reduce acceleration.
- Check the dimensioning of the drive and motor.
- Check motor power wiring.
- Increase velocity error tolerance and/or velocity error tolerance time attribute values.

0381 **Sealing jaw drive horizontal overtorque limit flt**

Overtorque limit fault. Motor torque has exceeded the user defined maximum torque level of the overtorque limit value for the duration of the overtorque limit time.

- Check the torque adjustment value.
- Check the motion profile.
- Check the dimensioning of the drive and motor.
- Increase overtorque limit and/or overtorque limit time attribute values.

0382 **Sealing jaw drive horizontal undertorque limit flt**

Undertorque limit fault. Motor torque has dropped below user defined minimum torque level given by undertorque limit for the duration of the undertorque limit time.

- Check the motion profile.
- Check the dimensioning of the drive and motor.
- Decrease undertorque limit and/or undertorque limit time attribute values.

0383 **Sealing jaw drive horizontal other flt, call service**

A fault that cannot be more precisely defined has occurred.

- If this error is displayed, restart the machine using the main switch.
- If the error still continues to appear, contact Rovema.

0384 **Sealing jaw drive vertical motor thermal overload**

Thermal overload of the motor. Factory-set limit value exceeded.

The motor thermal model has exceeded its factory set thermal capacity limit of 110%.

- Reduce the speed or extend the time in the command profile.

Thermal overload of the motor. User limit value exceeded.

The motor thermal model has exceeded the thermal capacity limit of the limit value specified by the user for the thermal overload of the motor.

- Edit the command profile.
- Increase the attribute value for the thermal overload of the motor.

0385 **Sealing jaw drive vertical drive thermal overload**

Thermal overload of the inverter. Factory-set limit value exceeded.

The thermal model for the power transistors indicates that the temperature has exceeded the factory set thermal capacity value of 110%.

- Reduce the speed or extend the time in the command profile.

Thermal overload of the inverter. User limit value exceeded.

The thermal model for the power transistors indicates that the temperature has exceeded the user-defined limit value for the thermal overload of the inverter.

- Reduce the speed or extend the time in the command profile.
- Increase the inverter thermal overload attribute value.

Thermal overload of the inverter. Factory-set limit value exceeded.

The converter thermal model indicates that the temperature has exceeded the factory set thermal capacity value of 110%.

- Reduce the start-up times of all drives that share the DC bus.
- Reduce number of shared DC follower drives.
- Reduce duty-cycle of the command axis control.

Thermal overload of the inverter. User limit value exceeded.

The converter thermal model indicates that the temperature has exceeded the user-defined limit value for the thermal overload.

- Reduce the start-up times of all drives that share the DC bus.
- Reduce number of shared DC follower drives.
- Reduce duty-cycle of the command axis control.
- Increase the inverter thermal overload attribute value.

Thermal overload of the bus regulator. Factory-set limit value exceeded.

The thermal brake model has exceeded its factory set thermal capacity limit.

- Modify the duty cycle of the application.
- Add an external brake for additional capacity.
- Add a capacitor module if needed.

Thermal overload of the bus regulator. User limit value exceeded.

The thermal brake model has exceeded the thermal capacity limit of the user-defined limit value for the thermal overload of the bus regulator.

- Modify the duty cycle of the application.
- Add an external brake for additional capacity.
- Increase the attribute value of the user-defined limit value for the thermal overload.
- Add a capacitor module if needed.

0386 **Sealing jaw drive vertical converter AC phase short flt**

Currently not used.

0387 **Sealing jaw drive vertical converter pre charge flt**

Precharge error. The pre-charge circuit monitoring algorithm detected that after charging over a specific period of time the DC bus did not reach a factory set voltage level.

- Check AC input voltage of all phases.
- Check input power wiring.
- Replace drive if the fault persists.

0388 **Sealing jaw drive vertical motor fback flt**

Loss of the motor feedback data factory-set limit value exceeded.

The number of consecutive skipped or corrupted serial data packets from the intelligent feedback device has exceeded a factory set limit.

- Check motor feedback cable and connection.
- Check whether the shielding of motor power cable and feedback cable is secured correctly.
- Check whether the motor frame is grounded correctly.

0389 **Sealing jaw drive vertical motor fback noise**

Currently not used.

0390 **Sealing jaw drive vertical module/config flt**

Currently not used.

0391 **Sealing jaw drive vertical module/controller sync flt**

Currently not used.

0392 **Sealing jaw drive vertical bus regulator flt**

Bus regulator failure. The brake drive integrated circuit has detected that the brake resistor is shorted.

- Check the brake connection for short circuits.
- Disconnect the brake connection and measure the brake resistance.
- Replace drive if brake resistor is shorted.

0393 **Sealing jaw drive vertical bus power fuse blown**

Currently not used.

0394 **Sealing jaw drive vertical enable input deactivated**

Currently not used.

0395 **Sealing jaw drive vertical external input flt**

Currently not used.

0396 **Sealing jaw drive vertical physical axis flt**

Error in the axis programming.

- The precise error cause can only be read out by using a special diagnostic program.
- Please contact Rovema to remedy the error.

0397 **Sealing jaw drive vertical grnd short flt**

Ground current. Factory-set limit value exceeded.

The sensing circuitry in the power stage has detected excessive ground current.

- Check the motor power wiring. Check power cable for short circuits.
- Replace motor if the fault persists.

0398 **Sealing jaw drive vertical CPU watchdog flt**

Processor watchdog fault. The processor on the power board or control board failed to update in a certain period of time. The nn sub-codes 00 to 06 are internal and result in the same possible solution.

- Switch off the control voltage and switch it back on again.
- Update the drive firmware.
- Return drive for repair if the fault persists.

0399 **Sealing jaw drive vertical overspeed flt**

Motor overspeed. Factory-set limit value exceeded.

Motor speed has exceeded 125% of the maximum speed.

- Check control loop tuning.

Motor overspeed. User limit value exceeded.

Motor speed has exceeded motor overspeed user limit.

- Check control loop tuning.
- Increase the Motor Overspeed UL attribute value.

0400 **Sealing jaw drive vertical module hardware flt**

Hardware fault. Communication with the power board could not be established.

- Switch off the control voltage and switch it back on again.
- Update the drive firmware.
- Return drive for repair if the fault persists.

0401 **Sealing jaw drive vertical drive overtemp**

Inverter overtemperature. Factory-set limit value exceeded.

The measured inverter temperature has exceeded the factory set temperature limit.

- Reduce the speed or extend the time in the command profile.
- Reduce drive ambient temperature.
- Ensure that that the air circulation in the drive is not obstructed.

Inverter overtemperature. Factory-set limit value exceeded.

The measured inverter temperature has exceeded the factory set temperature limit.

- Reduce the start-up times of all drives that share the DC bus.
- Reduce number of shared DC follower drives.
- Reduce the speed or extend the time in the command profile.
- Reduce drive ambient temperature.
- Ensure that that the air circulation in the drive is not obstructed.

0402 **Sealing jaw drive vertical motor overtemp**

Motor overtemperature. Factory-set limit value exceeded.

Calculations based on the motor thermistor indicate that the factory-specified limit value for the motor temperature has been exceeded.

- Operate motor within the continuous torque rating.
- Reduce the ambient temperature of the motor.
- Ensure better cooling of the motor.
- Available only for Kinetix VP motors. Not supported for asynchronous motors.

0403 **Sealing jaw drive vertical duplicate address flt**

Duplicate IP address. Several consecutive updates from the controller have been lost.

- Select an IP address not already in use in the network.

0404 **Sealing jaw drive vertical motion instruction error**

Error in the axis programming.

- The precise error cause can only be read out by using a special diagnostic program.
- Please contact Rovema to remedy the error.

0405 **Sealing jaw drive vertical feedback flt**

Failure of the feedback device. The feedback device has detected an internal error. The nn sub-code is defined as follows:

1: ACCELERATION OVERFLOW

4: TRACKING FILTER ERROR

5: VECTOR LENGTH ERROR

6: COUNTER ERROR

7: SYNCHRONIZATION ERROR

16: SINGLE TURN ERROR

17: MULTI TURN AMPLITUDE ERROR

18: MULTI TURN SYNC ERROR

19: MULTI TURN VECTOR LENGTH ERROR

35: STANDARD PARAMETER ERROR

36: INTERNAL COMMUNICATION ERROR1

37: INTERNAL COMMUNICATION ERROR2

38: INTERNAL SYSTEM ERROR

48: CRITICAL TEMPERATURE

49: CRITICAL LED CURRENT

50: CRITICAL SUPPLY VOLTAGE

51: CRITICAL SPEED

52: CRITICAL ACCELERATION

53: COUNTER OVERFLOW

54: INTERNAL MONITORING ERROR

66: INTERNAL RESOURCE ACCESS ERROR

- Check motor feedback cable and connector.
- Switch off the control voltage and switch it back on again.
- Replace motor if the fault persists.
- Check feedback shield connection.
- Reduce shock and vibration to motor.

0406 **Sealing jaw drive vertical commutation flt**

Currently not used.

0407 **Sealing jaw drive vertical overcurrent flt**

Inverter overcurrent fault. Inverter current has exceeded the instantaneous current limit (determined by hardware).

- Check motor power cable for shorts.
- Verify motor windings are not shorted.
- Verify motor power wire gauge.
- Operate within the continuous power rating.
- Reduce acceleration times.

0408 **Sealing jaw drive vertical overvoltage flt**

Bus overvoltage. Factory-set limit value exceeded.

DC bus voltage level is above the factory set limit as determined by the configured input voltage.

- Change the deceleration or motion profile of all drives connected on the DC bus.
- Disconnect the brake connection and measure the brake resistance.
- Replace drive if brake resistor is open.

0409 **Sealing jaw drive vertical undervoltage flt**

Bus undervoltage. Factory-set limit value exceeded.

DC bus voltage level is below the factory set limit as determined by the configured input voltage.

- Verify voltage level of the input AC.
- Monitor AC power source for faults or line fluctuations.
- Install UPS on the AC input.

Bus undervoltage. User limit value exceeded.

DC bus voltage level is below the user-defined limit value for the bus undervoltoge.

- Verify voltage level of the input AC.
- Monitor AC power source for faults or line fluctuations.
- Install UPS on the AC input.
- Increase bus undervoltage UL attribute value for the bus undervoltage.

0410 **Sealing jaw drive vertical phase loss**

AC single phase loss fault. A single AC input phase dropped out at activation of the drive.

- Check AC input voltage of all phases.

0411 **Sealing jaw drive vertical position error**

Error due to over-elevated position. The position error of the position control loop has exceeded the position error tolerance value for the duration of the position error tolerance time.

- Check position loop tuning.
- Increase the feedforward gain.
- Check the dimensioning of the drive and motor.
- Check motor power wiring.
- Increase position error tolerance and/or position error tolerance Time attribute values.

0412 **Sealing jaw drive vertical excessive velocity flt**

Excessive velocity error fault. The velocity error of the velocity control loop has exceeded the value given by velocity error tolerance for a time period given by velocity error tolerance time.

- Check velocity loop tuning.
- Reduce acceleration.
- Check the dimensioning of the drive and motor.
- Check motor power wiring.
- Increase velocity error tolerance and/or velocity error tolerance time attribute values.

0413 **Sealing jaw drive vertical overtorque limit flt**

Overtorque limit fault. Motor torque has exceeded the user defined maximum torque level of the overtorque limit value for the duration of the overtorque limit time.

- Check the torque adjustment value.
- Check the motion profile.
- Check the dimensioning of the drive and motor.
- Increase overtorque limit and/or overtorque limit time attribute values.

0414 **Sealing jaw drive vertical undertorque limit flt**

Undertorque limit fault. Motor torque has dropped below user defined minimum torque level given by undertorque limit for the duration of the undertorque limit time.

- Check the motion profile.
- Check the dimensioning of the drive and motor.
- Decrease undertorque limit and/or undertorque limit time attribute values.

0415 **Sealing jaw drive vertical other flt, call service**

A fault that cannot be more precisely defined has occurred.

- If this error is displayed, restart the machine using the main switch.
- If the error still continues to appear, contact Rovema.

0416 **Film drive motor thermal overload**

Thermal overload of the motor. Factory-set limit value exceeded.

The motor thermal model has exceeded its factory set thermal capacity limit of 110%.

- Reduce the speed or extend the time in the command profile.

Thermal overload of the motor. User limit value exceeded.

The motor thermal model has exceeded the thermal capacity limit of the limit value specified by the user for the thermal overload of the motor.

- Edit the command profile.
- Increase the attribute value for the thermal overload of the motor.

0417 **Film drive thermal overload**

Thermal overload of the inverter. Factory-set limit value exceeded.

The thermal model for the power transistors indicates that the temperature has exceeded the factory set thermal capacity value of 110%.

- Reduce the speed or extend the time in the command profile.

Thermal overload of the inverter. User limit value exceeded.

The thermal model for the power transistors indicates that the temperature has exceeded the user-defined limit value for the thermal overload of the inverter.

- Reduce the speed or extend the time in the command profile.
- Increase the inverter thermal overload attribute value.

Thermal overload of the inverter. Factory-set limit value exceeded.

The converter thermal model indicates that the temperature has exceeded the factory set thermal capacity value of 110%.

- Reduce the start-up times of all drives that share the DC bus.
- Reduce number of shared DC follower drives.
- Reduce duty-cycle of the command axis control.

Thermal overload of the inverter. User limit value exceeded.

The converter thermal model indicates that the temperature has exceeded the user-defined limit value for the thermal overload.

- Reduce the start-up times of all drives that share the DC bus.
- Reduce number of shared DC follower drives.
- Reduce duty-cycle of the command axis control.
- Increase the inverter thermal overload attribute value.

Thermal overload of the bus regulator. Factory-set limit value exceeded.

The thermal brake model has exceeded its factory set thermal capacity limit.

- Modify the duty cycle of the application.
- Add an external brake for additional capacity.
- Add a capacitor module if needed.

Thermal overload of the bus regulator. User limit value exceeded.

The thermal brake model has exceeded the thermal capacity limit of the user-defined limit value for the thermal overload of the bus regulator.

- Modify the duty cycle of the application.
- Add an external brake for additional capacity.
- Increase the attribute value of the user-defined limit value for the thermal overload.
- Add a capacitor module if needed.

0418 **Film drive converter ac phase short flt**

Currently not used.

0419 **Film drive converter pre charge flt**

Precharge error. The pre-charge circuit monitoring algorithm detected that after charging over a specific period of time the DC bus did not reach a factory set voltage level.

- Check AC input voltage of all phases.
- Check input power wiring.
- Replace drive if the fault persists.

0420 **Film drive motor fback flt**

Loss of the motor feedback data factory-set limit value exceeded.

The number of consecutive skipped or corrupted serial data packets from the intelligent feedback device has exceeded a factory set limit.

- Check motor feedback cable and connection.
- Check whether the shielding of motor power cable and feedback cable is secured correctly.
- Check whether the motor frame is grounded correctly.

0421 **Film drive motor fback noise**

Currently not used.

0422 **Film drive module/config flt**

Currently not used.

0423 **Film drive module/controller sync flt**

Currently not used.

0424 **Film drive bus regulator flt**

Bus regulator failure. The brake drive integrated circuit has detected that the brake resistor is shorted.

- Check the brake connection for short circuits.
- Disconnect the brake connection and measure the brake resistance.
- Replace drive if brake resistor is shorted.

0425 **Film drive bus power fuse blown**

Currently not used.

0426 **Film drive enable input deactivated**

Currently not used.

0427 **Film drive external input flt**

Currently not used.

0428 **Film drive physical axis flt**

Error in the axis programming.

- The precise error cause can only be read out by using a special diagnostic program.
- Please contact Rovema to remedy the error.

0429 **Film drive grnd short flt**

Ground current. Factory-set limit value exceeded.

The sensing circuitry in the power stage has detected excessive ground current.

- Check the motor power wiring. Check power cable for short circuits.
- Replace motor if the fault persists.

0430 **Film drive cpu watchdog flt**

Processor watchdog fault. The processor on the power board or control board failed to update in a certain period of time. The nn sub-codes 00 to 06 are internal and result in the same possible solution.

- Switch off the control voltage and switch it back on again.
- Update the drive firmware.
- Return drive for repair if the fault persists.

0431 **Film drive overspeed flt**

Motor overspeed. Factory-set limit value exceeded.

Motor speed has exceeded 125% of the maximum speed.

- Check control loop tuning.

Motor overspeed. User limit value exceeded.

Motor speed has exceeded motor overspeed user limit.

- Check control loop tuning.
- Increase the Motor Overspeed UL attribute value.

0432 **Film drive module hardware flt**

Hardware fault. Communication with the power board could not be established.

- Switch off the control voltage and switch it back on again.
- Update the drive firmware.
- Return drive for repair if the fault persists.

0433 **Film drive overtemp**

Inverter overtemperature. Factory-set limit value exceeded.

The measured inverter temperature has exceeded the factory set temperature limit.

- Reduce the speed or extend the time in the command profile.
- Reduce drive ambient temperature.
- Ensure that that the air circulation in the drive is not obstructed.

Inverter overtemperature. Factory-set limit value exceeded.

The measured inverter temperature has exceeded the factory set temperature limit.

- Reduce the start-up times of all drives that share the DC bus.
- Reduce number of shared DC follower drives.
- Reduce the speed or extend the time in the command profile.
- Reduce drive ambient temperature.
- Ensure that that the air circulation in the drive is not obstructed.

0434 **Film drive motor overtemp**

Motor overtemperature. Factory-set limit value exceeded.

Calculations based on the motor thermistor indicate that the factory-specified limit value for the motor temperature has been exceeded.

- Operate motor within the continuous torque rating.
- Reduce the ambient temperature of the motor.
- Ensure better cooling of the motor.
- Available only for Kinetix VP motors. Not supported for asynchronous motors.

0435 **Film drive duplicate address flt**

Duplicate IP address. Several consecutive updates from the controller have been lost.

- Select an IP address not already in use in the network.

0436 **Film drive motion instruction error**

Error in the axis programming.

- The precise error cause can only be read out by using a special diagnostic program.
- Please contact Rovema to remedy the error.

0437 **Film drive feedback flt**

Failure of the feedback device. The feedback device has detected an internal error. The nn sub-code is defined as follows:

1: ACCELERATION OVERFLOW

4: TRACKING FILTER ERROR

5: VECTOR LENGTH ERROR

6: COUNTER ERROR

7: SYNCHRONIZATION ERROR

16: SINGLE TURN ERROR

17: MULTI TURN AMPLITUDE ERROR

18: MULTI TURN SYNC ERROR

19: MULTI TURN VECTOR LENGTH ERROR

35: STANDARD PARAMETER ERROR

36: INTERNAL COMMUNICATION ERROR1

37: INTERNAL COMMUNICATION ERROR2

38: INTERNAL SYSTEM ERROR

48: CRITICAL TEMPERATURE

49: CRITICAL LED CURRENT

50: CRITICAL SUPPLY VOLTAGE

51: CRITICAL SPEED

52: CRITICAL ACCELERATION

53: COUNTER OVERFLOW

54: INTERNAL MONITORING ERROR

66: INTERNAL RESOURCE ACCESS ERROR

- Check motor feedback cable and connector.
- Switch off the control voltage and switch it back on again.
- Replace motor if the fault persists.
- Check feedback shield connection.
- Reduce shock and vibration to motor.

0438 **Film drive commutation flt**

Currently not used.

0439 **Film drive overcurrent flt**

Inverter overcurrent fault. Inverter current has exceeded the instantaneous current limit (determined by hardware).

- Check motor power cable for shorts.
- Verify motor windings are not shorted.
- Verify motor power wire gauge.
- Operate within the continuous power rating.
- Reduce acceleration times.

0440 **Film drive overvoltage flt**

Bus overvoltage. Factory-set limit value exceeded.

DC bus voltage level is above the factory set limit as determined by the configured input voltage.

- Change the deceleration or motion profile of all drives connected on the DC bus.
- Disconnect the brake connection and measure the brake resistance.
- Replace drive if brake resistor is open.

0441 **Film drive undervoltage flt**

Bus undervoltage. Factory-set limit value exceeded.

DC bus voltage level is below the factory set limit as determined by the configured input voltage.

- Verify voltage level of the input AC.
- Monitor AC power source for faults or line fluctuations.
- Install UPS on the AC input.

Bus undervoltage. User limit value exceeded.

DC bus voltage level is below the user-defined limit value for the bus undervoltoge.

- Verify voltage level of the input AC.
- Monitor AC power source for faults or line fluctuations.
- Install UPS on the AC input.
- Increase bus undervoltage UL attribute value for the bus undervoltage.

0442 **Film drive phase loss**

AC single phase loss fault. A single AC input phase dropped out at activation of the drive.

- Check AC input voltage of all phases.

0443 **Film drive position error**

Error due to over-elevated position. The position error of the position control loop has exceeded the position error tolerance value for the duration of the position error tolerance time.

- Check position loop tuning.
- Increase the feedforward gain.
- Check the dimensioning of the drive and motor.
- Check motor power wiring.
- Increase position error tolerance and/or position error tolerance Time attribute values.

0444 **Film drive excessive velocity flt**

Excessive velocity error fault. The velocity error of the velocity control loop has exceeded the value given by velocity error tolerance for a time period given by velocity error tolerance time.

- Check velocity loop tuning.
- Reduce acceleration.
- Check the dimensioning of the drive and motor.
- Check motor power wiring.
- Increase velocity error tolerance and/or velocity error tolerance time attribute values.

0445 **Film drive overtorque limit flt**

Overtorque limit fault. Motor torque has exceeded the user defined maximum torque level of the overtorque limit value for the duration of the overtorque limit time.

- Check the torque adjustment value.
- Check the motion profile.
- Check the dimensioning of the drive and motor.
- Increase overtorque limit and/or overtorque limit time attribute values.

0446 **Film drive undertorque limit flt**

Undertorque limit fault. Motor torque has dropped below user defined minimum torque level given by undertorque limit for the duration of the undertorque limit time.

- Check the motion profile.
- Check the dimensioning of the drive and motor.
- Decrease undertorque limit and/or undertorque limit time attribute values.

0447 **Film drive other flt, call service**

A fault that cannot be more precisely defined has occurred.

- If this error is displayed, restart the machine using the main switch.
- If the error still continues to appear, contact Rovema.

0448 **Gusseting device motor thermal overload**

Thermal overload of the motor. Factory-set limit value exceeded.

The motor thermal model has exceeded its factory set thermal capacity limit of 110%.

- Reduce the speed or extend the time in the command profile.

Thermal overload of the motor. User limit value exceeded.

The motor thermal model has exceeded the thermal capacity limit of the limit value specified by the user for the thermal overload of the motor.

- Edit the command profile.
- Increase the attribute value for the thermal overload of the motor.

0449 **Gusseting device thermal overload**

Thermal overload of the inverter. Factory-set limit value exceeded.

The thermal model for the power transistors indicates that the temperature has exceeded the factory set thermal capacity value of 110%.

- Reduce the speed or extend the time in the command profile.

Thermal overload of the inverter. User limit value exceeded.

The thermal model for the power transistors indicates that the temperature has exceeded the user-defined limit value for the thermal overload of the inverter.

- Reduce the speed or extend the time in the command profile.
- Increase the inverter thermal overload attribute value.

Thermal overload of the inverter. Factory-set limit value exceeded.

The converter thermal model indicates that the temperature has exceeded the factory set thermal capacity value of 110%.

- Reduce the start-up times of all drives that share the DC bus.
- Reduce number of shared DC follower drives.
- Reduce duty-cycle of the command axis control.

Thermal overload of the inverter. User limit value exceeded.

The converter thermal model indicates that the temperature has exceeded the user-defined limit value for the thermal overload.

- Reduce the start-up times of all drives that share the DC bus.
- Reduce number of shared DC follower drives.
- Reduce duty-cycle of the command axis control.
- Increase the inverter thermal overload attribute value.

Thermal overload of the bus regulator. Factory-set limit value exceeded.

The thermal brake model has exceeded its factory set thermal capacity limit.

- Modify the duty cycle of the application.
- Add an external brake for additional capacity.
- Add a capacitor module if needed.

Thermal overload of the bus regulator. User limit value exceeded.

The thermal brake model has exceeded the thermal capacity limit of the user-defined limit value for the thermal overload of the bus regulator.

- Modify the duty cycle of the application.
- Add an external brake for additional capacity.
- Increase the attribute value of the user-defined limit value for the thermal overload.
- Add a capacitor module if needed.

0450 **Gusseting device converter AC Phase Short Fault**

Currently not used.

0451 **Gusseting device converter pre-charge fault**

Precharge error. The pre-charge circuit monitoring algorithm detected that after charging over a specific period of time the DC bus did not reach a factory set voltage level.

- Check AC input voltage of all phases.
- Check input power wiring.
- Replace drive if the fault persists.

0452 **Gusseting device motor fback flt**

Loss of the motor feedback data factory-set limit value exceeded.

The number of consecutive skipped or corrupted serial data packets from the intelligent feedback device has exceeded a factory set limit.

- Check motor feedback cable and connection.
- Check whether the shielding of motor power cable and feedback cable is secured correctly.
- Check whether the motor frame is grounded correctly.

0453 **Gusseting device motor fback noise**

Currently not used.

0454 **Gusseting device module/config flt**

Currently not used.

0455 **Gusseting device module/controller sync flt**

Currently not used.

0456 **Gusseting device bus regulator flt**

Bus regulator failure. The brake drive integrated circuit has detected that the brake resistor is shorted.

- Check the brake connection for short circuits.
- Disconnect the brake connection and measure the brake resistance.
- Replace drive if brake resistor is shorted.

0457 **Gusseting device bus power fuse blown**

Currently not used.

0458 **Gusseting device enable input deactivated**

Currently not used.

0459 **Gusseting device external input flt**

Currently not used.

0460 **Gusseting device physical axis flt**

Error in the axis programming.

- The precise error cause can only be read out by using a special diagnostic program.
- Please contact Rovema to remedy the error.

0461 **Gusseting device grnd short flt**

Ground current. Factory-set limit value exceeded.

The sensing circuitry in the power stage has detected excessive ground current.

- Check the motor power wiring. Check power cable for short circuits.
- Replace motor if the fault persists.

0462 **Gusseting device cpu watchdog flt**

Processor watchdog fault. The processor on the power board or control board failed to update in a certain period of time. The nn sub-codes 00 to 06 are internal and result in the same possible solution.

- Switch off the control voltage and switch it back on again.
- Update the drive firmware.
- Return drive for repair if the fault persists.

0463 **Gusseting device overspeed flt**

Motor overspeed. Factory-set limit value exceeded.

Motor speed has exceeded 125% of the maximum speed.

- Check control loop tuning.

Motor overspeed. User limit value exceeded.

Motor speed has exceeded motor overspeed user limit.

- Check control loop tuning.
- Increase the Motor Overspeed UL attribute value.

0464 **Gusseting device module hardware flt**

Hardware fault. Communication with the power board could not be established.

- Switch off the control voltage and switch it back on again.
- Update the drive firmware.
- Return drive for repair if the fault persists.

0465 **Gusseting device drive overtemp**

Inverter overtemperature. Factory-set limit value exceeded.

The measured inverter temperature has exceeded the factory set temperature limit.

- Reduce the speed or extend the time in the command profile.
- Reduce drive ambient temperature.
- Ensure that that the air circulation in the drive is not obstructed.

Inverter overtemperature. Factory-set limit value exceeded.

The measured inverter temperature has exceeded the factory set temperature limit.

- Reduce the start-up times of all drives that share the DC bus.
- Reduce number of shared DC follower drives.
- Reduce the speed or extend the time in the command profile.
- Reduce drive ambient temperature.
- Ensure that that the air circulation in the drive is not obstructed.

0466 **Gusseting device motor overtemp**

Motor overtemperature. Factory-set limit value exceeded.

Calculations based on the motor thermistor indicate that the factory-specified limit value for the motor temperature has been exceeded.

- Operate motor within the continuous torque rating.
- Reduce the ambient temperature of the motor.
- Ensure better cooling of the motor.
- Available only for Kinetix VP motors. Not supported for asynchronous motors.

0467 **Gusseting device duplicate adress flt**

Duplicate IP address. Several consecutive updates from the controller have been lost.

- Select an IP address not already in use in the network.

0468 **Gusseting device motion instruction error**

Error in the axis programming.

- The precise error cause can only be read out by using a special diagnostic program.
- Please contact Rovema to remedy the error.

0469 **Gusseting device feedback flt**

Failure of the feedback device. The feedback device has detected an internal error. The nn sub-code is defined as follows:

1: ACCELERATION OVERFLOW

4: TRACKING FILTER ERROR

5: VECTOR LENGTH ERROR

6: COUNTER ERROR

7: SYNCHRONIZATION ERROR

16: SINGLE TURN ERROR

17: MULTI TURN AMPLITUDE ERROR

18: MULTI TURN SYNC ERROR

19: MULTI TURN VECTOR LENGTH ERROR

35: STANDARD PARAMETER ERROR

36: INTERNAL COMMUNICATION ERROR1

37: INTERNAL COMMUNICATION ERROR2

38: INTERNAL SYSTEM ERROR

48: CRITICAL TEMPERATURE

49: CRITICAL LED CURRENT

50: CRITICAL SUPPLY VOLTAGE

51: CRITICAL SPEED

52: CRITICAL ACCELERATION

53: COUNTER OVERFLOW

54: INTERNAL MONITORING ERROR

66: INTERNAL RESOURCE ACCESS ERROR

- Check motor feedback cable and connector.
- Switch off the control voltage and switch it back on again.
- Replace motor if the fault persists.
- Check feedback shield connection.
- Reduce shock and vibration to motor.

0470 **Gusseting device commutation flt**

Currently not used.

0471 **Gusseting device overcurrent flt**

Inverter overcurrent fault. Inverter current has exceeded the instantaneous current limit (determined by hardware).

- Check motor power cable for shorts.
- Verify motor windings are not shorted.
- Verify motor power wire gauge.
- Operate within the continuous power rating.
- Reduce acceleration times.

0472 **Gusseting device overvoltage flt**

Bus overvoltage. Factory-set limit value exceeded.

DC bus voltage level is above the factory set limit as determined by the configured input voltage.

- Change the deceleration or motion profile of all drives connected on the DC bus.
- Disconnect the brake connection and measure the brake resistance.
- Replace drive if brake resistor is open.

0473 **Gusseting device undervoltage flt**

Bus undervoltage. Factory-set limit value exceeded.

DC bus voltage level is below the factory set limit as determined by the configured input voltage.

- Verify voltage level of the input AC.
- Monitor AC power source for faults or line fluctuations.
- Install UPS on the AC input.

Bus undervoltage. User limit value exceeded.

DC bus voltage level is below the user-defined limit value for the bus undervoltoge.

- Verify voltage level of the input AC.
- Monitor AC power source for faults or line fluctuations.
- Install UPS on the AC input.
- Increase bus undervoltage UL attribute value for the bus undervoltage.

0474 **Gusseting device phase loss**

AC single phase loss fault. A single AC input phase dropped out at activation of the drive.

- Check AC input voltage of all phases.

0475 **Gusseting device position error**

Error due to over-elevated position. The position error of the position control loop has exceeded the position error tolerance value for the duration of the position error tolerance time.

- Check position loop tuning.
- Increase the feedforward gain.
- Check the dimensioning of the drive and motor.
- Check motor power wiring.
- Increase position error tolerance and/or position error tolerance Time attribute values.

0476 **Gusseting device excessive velocity flt**

Excessive velocity error fault. The velocity error of the velocity control loop has exceeded the value given by velocity error tolerance for a time period given by velocity error tolerance time.

- Check velocity loop tuning.
- Reduce acceleration.
- Check the dimensioning of the drive and motor.
- Check motor power wiring.
- Increase velocity error tolerance and/or velocity error tolerance time attribute values.

0477 **Gusseting device overtorque limit flt**

Overtorque limit fault. Motor torque has exceeded the user defined maximum torque level of the overtorque limit value for the duration of the overtorque limit time.

- Check the torque adjustment value.
- Check the motion profile.
- Check the dimensioning of the drive and motor.
- Increase overtorque limit and/or overtorque limit time attribute values.

0478 **Gusseting device undertorque limit flt**

Undertorque limit fault. Motor torque has dropped below user defined minimum torque level given by undertorque limit for the duration of the undertorque limit time.

- Check the motion profile.
- Check the dimensioning of the drive and motor.
- Decrease undertorque limit and/or undertorque limit time attribute values.

0479 **Gusseting device other flt, call service**

A fault that cannot be more precisely defined has occurred.

- If this error is displayed, restart the machine using the main switch.
- If the error still continues to appear, contact Rovema.

0480 **Auger feeder motor thermal overload**

Thermal overload of the motor. Factory-set limit value exceeded.

The motor thermal model has exceeded its factory set thermal capacity limit of 110%.

- Reduce the speed or extend the time in the command profile.

Thermal overload of the motor. User limit value exceeded.

The motor thermal model has exceeded the thermal capacity limit of the limit value specified by the user for the thermal overload of the motor.

- Edit the command profile.
- Increase the attribute value for the thermal overload of the motor.

0481 **Auger feeder drive thermal overload**

Thermal overload of the inverter. Factory-set limit value exceeded.

The thermal model for the power transistors indicates that the temperature has exceeded the factory set thermal capacity value of 110%.

- Reduce the speed or extend the time in the command profile.

Thermal overload of the inverter. User limit value exceeded.

The thermal model for the power transistors indicates that the temperature has exceeded the user-defined limit value for the thermal overload of the inverter.

- Reduce the speed or extend the time in the command profile.
- Increase the inverter thermal overload attribute value.

Thermal overload of the inverter. Factory-set limit value exceeded.

The converter thermal model indicates that the temperature has exceeded the factory set thermal capacity value of 110%.

- Reduce the start-up times of all drives that share the DC bus.
- Reduce number of shared DC follower drives.
- Reduce duty-cycle of the command axis control.

Thermal overload of the inverter. User limit value exceeded.

The converter thermal model indicates that the temperature has exceeded the user-defined limit value for the thermal overload.

- Reduce the start-up times of all drives that share the DC bus.
- Reduce number of shared DC follower drives.
- Reduce duty-cycle of the command axis control.
- Increase the inverter thermal overload attribute value.

Thermal overload of the bus regulator. Factory-set limit value exceeded.

The thermal brake model has exceeded its factory set thermal capacity limit.

- Modify the duty cycle of the application.
- Add an external brake for additional capacity.
- Add a capacitor module if needed.

Thermal overload of the bus regulator. User limit value exceeded.

The thermal brake model has exceeded the thermal capacity limit of the user-defined limit value for the thermal overload of the bus regulator.

- Modify the duty cycle of the application.
- Add an external brake for additional capacity.
- Increase the attribute value of the user-defined limit value for the thermal overload.
- Add a capacitor module if needed.

0482 **Auger feeder converter ac phase short flt**

Currently not used.

0483 **Auger feeder converter pre charge flt**

Precharge error. The pre-charge circuit monitoring algorithm detected that after charging over a specific period of time the DC bus did not reach a factory set voltage level.

- Check AC input voltage of all phases.
- Check input power wiring.
- Replace drive if the fault persists.

0484 **Auger feeder motor fback flt**

Loss of the motor feedback data factory-set limit value exceeded.

The number of consecutive skipped or corrupted serial data packets from the intelligent feedback device has exceeded a factory set limit.

- Check motor feedback cable and connection.
- Check whether the shielding of motor power cable and feedback cable is secured correctly.
- Check whether the motor frame is grounded correctly.

0485 **Auger feeder motor fback noise**

Currently not used.

0486 **Auger feeder module/config flt**

Currently not used.

0487 **Auger feeder module/controller sync flt**

Currently not used.

0488 **Auger feeder bus regulator flt**

Bus regulator failure. The brake drive integrated circuit has detected that the brake resistor is shorted.

- Check the brake connection for short circuits.
- Disconnect the brake connection and measure the brake resistance.
- Replace drive if brake resistor is shorted.

0489 **Auger feeder bus power fuse blown**

Currently not used.

0490 **Auger feeder enable input deactivated**

Currently not used.

0491 **Auger feeder external input flt**

This is a collective message indicating a fault on the machine component cited above.

- Check the cause. Read the relevant documentation from the manufacturer if necessary.

0492 **Auger feeder physical axis flt**

Error in the axis programming.

- The precise error cause can only be read out by using a special diagnostic program.
- Please contact Rovema to remedy the error.

0493 **Auger feeder grnd short flt**

Ground current. Factory-set limit value exceeded.

The sensing circuitry in the power stage has detected excessive ground current.

0494 **Auger feeder cpu watchdog flt**

Processor watchdog fault. The processor on the power board or control board failed to update in a certain period of time. The nn sub-codes 00 to 06 are internal and result in the same possible solution.

- Switch off the control voltage and switch it back on again.
- Update the drive firmware.
- Return drive for repair if the fault persists.

0495 **Auger feeder overspeed flt**

Motor overspeed. Factory-set limit value exceeded.

Motor speed has exceeded 125% of the maximum speed.

- Check control loop tuning.

Motor overspeed. User limit value exceeded.

Motor speed has exceeded motor overspeed user limit.

- Check control loop tuning.
- Increase the Motor Overspeed UL attribute value.

0496 **Auger feeder module hardware flt**

Hardware fault. Communication with the power board could not be established.

- Switch off the control voltage and switch it back on again.
- Update the drive firmware.
- Return drive for repair if the fault persists.

0497 **Auger feeder drive overtemp**

Inverter overtemperature. Factory-set limit value exceeded.

The measured inverter temperature has exceeded the factory set temperature limit.

- Reduce the speed or extend the time in the command profile.
- Reduce drive ambient temperature.
- Ensure that that the air circulation in the drive is not obstructed.

Inverter overtemperature. Factory-set limit value exceeded.

The measured inverter temperature has exceeded the factory set temperature limit.

- Reduce the start-up times of all drives that share the DC bus.
- Reduce number of shared DC follower drives.
- Reduce the speed or extend the time in the command profile.
- Reduce drive ambient temperature.
- Ensure that that the air circulation in the drive is not obstructed.

0498 **Auger feeder motor overtemp**

Motor overtemperature. Factory-set limit value exceeded.

Calculations based on the motor thermistor indicate that the factory-specified limit value for the motor temperature has been exceeded.

- Operate motor within the continuous torque rating.
- Reduce the ambient temperature of the motor.
- Ensure better cooling of the motor.
- Available only for Kinetix VP motors. Not supported for asynchronous motors.

0499 **Auger feeder duplicate adress flt**

Duplicate IP address. Several consecutive updates from the controller have been lost.

- Select an IP address not already in use in the network.

0500 **Auger feeder motion instruction error**

Error in the axis programming.

- The precise error cause can only be read out by using a special diagnostic program.
- Please contact Rovema to remedy the error.

0501 **Auger feeder feedback flt**

Failure of the feedback device. The feedback device has detected an internal error. The nn sub-code is defined as follows:

1: ACCELERATION OVERFLOW

4: TRACKING FILTER ERROR

5: VECTOR LENGTH ERROR

6: COUNTER ERROR

7: SYNCHRONIZATION ERROR

16: SINGLE TURN ERROR

17: MULTI TURN AMPLITUDE ERROR

18: MULTI TURN SYNC ERROR

19: MULTI TURN VECTOR LENGTH ERROR

35: STANDARD PARAMETER ERROR

36: INTERNAL COMMUNICATION ERROR1

37: INTERNAL COMMUNICATION ERROR2

38: INTERNAL SYSTEM ERROR

48: CRITICAL TEMPERATURE

49: CRITICAL LED CURRENT

50: CRITICAL SUPPLY VOLTAGE

51: CRITICAL SPEED

52: CRITICAL ACCELERATION

53: COUNTER OVERFLOW

54: INTERNAL MONITORING ERROR

66: INTERNAL RESOURCE ACCESS ERROR

- Check motor feedback cable and connector.
- Switch off the control voltage and switch it back on again.
- Replace motor if the fault persists.
- Check feedback shield connection.
- Reduce shock and vibration to motor.

0502 **Auger feeder commutation flt**

Currently not used.

0503 **Auger feeder overcurrent flt**

Inverter overcurrent fault. Inverter current has exceeded the instantaneous current limit (determined by hardware).

- Check motor power cable for shorts.
- Verify motor windings are not shorted.
- Verify motor power wire gauge.
- Operate within the continuous power rating.
- Reduce acceleration times.

0504 **Auger feeder overvoltage flt**

Bus overvoltage. Factory-set limit value exceeded.

DC bus voltage level is above the factory set limit as determined by the configured input voltage.

- Change the deceleration or motion profile of all drives connected on the DC bus.
- Disconnect the brake connection and measure the brake resistance.
- Replace drive if brake resistor is open.

0505 **Auger feeder undervoltage flt**

Bus undervoltage. Factory-set limit value exceeded.

DC bus voltage level is below the factory set limit as determined by the configured input voltage.

- Verify voltage level of the input AC.
- Monitor AC power source for faults or line fluctuations.
- Install UPS on the AC input.

Bus undervoltage. User limit value exceeded.

DC bus voltage level is below the user-defined limit value for the bus undervoltoge.

- Verify voltage level of the input AC.
- Monitor AC power source for faults or line fluctuations.
- Install UPS on the AC input.
- Increase bus undervoltage UL attribute value for the bus undervoltage.

0506 **Auger feeder phase loss**

AC single phase loss fault. A single AC input phase dropped out at activation of the drive.

- Check AC input voltage of all phases.

0507 **Auger feeder position error**

Error due to over-elevated position. The position error of the position control loop has exceeded the position error tolerance value for the duration of the position error tolerance time.

- Check position loop tuning.
- Increase the feedforward gain.
- Check the dimensioning of the drive and motor.
- Check motor power wiring.
- Increase position error tolerance and/or position error tolerance Time attribute values.

0508 **Auger feeder excessive velocity flt**

Excessive velocity error fault. The velocity error of the velocity control loop has exceeded the value given by velocity error tolerance for a time period given by velocity error tolerance time.

- Check velocity loop tuning.
- Reduce acceleration.
- Check the dimensioning of the drive and motor.
- Check motor power wiring.
- Increase velocity error tolerance and/or velocity error tolerance time attribute values.

0509 **Auger feeder overtorque limit flt**

Overtorque limit fault. Motor torque has exceeded the user defined maximum torque level of the overtorque limit value for the duration of the overtorque limit time.

- Check the torque adjustment value.
- Check the motion profile.
- Check the dimensioning of the drive and motor.
- Increase overtorque limit and/or overtorque limit time attribute values.

0510 **Auger feeder undertorque limit flt**

Undertorque limit fault. Motor torque has dropped below user defined minimum torque level given by undertorque limit for the duration of the undertorque limit time.

- Check the motion profile.
- Check the dimensioning of the drive and motor.
- Decrease undertorque limit and/or undertorque limit time attribute values.

0511 **Auger feeder other flt, call service**

A fault that cannot be more precisely defined has occurred.

- If this error is displayed, restart the machine using the main switch.
- If the error still continues to appear, contact Rovema.

0512 **No axis reference jaw drive horizontal**

The axis does not find its reference position after a time that can be set.

- Check input signal of the initiator; red LED on the input module for the axis
  Replace defective initiator
  Replace defective incremental encoder

0513 **No axis reference jaw drive vertical**

The axis does not find its reference position after a time that can be set.

- Check input signal of the initiator; red LED on the input module for the axis
  Replace defective initiator
  Replace defective incremental encoder

0514 **No axis reference gusseting device**

The axis does not find its reference position after a time that can be set.

- Check input signal of the initiator; red LED on the input module for the axis
  Replace defective initiator
  Replace defective incremental encoder

0544 **HI Alarm vertical jaw left**

The temperature has exceeded the upper limit value of 400°C.

a) The temperature has increased above the set reference value.

b) There is a defect in the temperature sensor for the reported zone.

- Replace the temperature controller.
- Change the control parameters in the configuration menu of the reported zone.

0545 **Sensor fault left vertical jaw**

The temperature sensor cannot measure the temperature.

- Check wiring, check temperature sensor, replace if necessary. Also refer to the relevant documentation from the manufacture to eliminate the error.

0546 **No change in temperature on left vertical jaw**

The heating cartridge has been actuated, but cannot heat up.

- Check wiring, check heating cartridge, replace if necessary. Also refer to the relevant documentation from the manufacture to eliminate the error.

0547 **Temperature too low left vertical jaw**

The tolerance range of the reported zone was underranged.

a) The machine was switched on recently and the temperature zone is currently being heated up.

a) The setpoint temperature was raised and the temperature is currently being heated up.

c) The temperature tolerance of the reported zone was set too low.

d) The temperature has dropped below the tolerance range when the machine stopped.

- Wait for a moment and check the actual temperature display of the reported zone.
- Increase the temperature tolerance in the temperature menu of the reported zone.
- Change the control parameters in the configuration menu of the reported zone.

0548 **Overtemperature left vertical jaw**

The tolerance range of the reported zone was exceeded.

a) The setpoint temperature was lowered.

c) The temperature tolerance of the reported zone was set too low.

c) The temperature rose above the tolerance range when the machine started.

- Wait for a moment and check the actual temperature display of the reported zone.
- Increase the temperature tolerance in the temperature menu of the reported zone.
- Change the control parameters in the configuration menu of the reported zone.

0549 **HI Alarm vertical jaw right**

The temperature has exceeded the upper limit value of 400°C.

a) The temperature has increased above the set reference value.

b) There is a defect in the temperature sensor for the reported zone.

- Replace the temperature controller.
- Change the control parameters in the configuration menu of the reported zone.

0550 **Sensor fault vertical jaw right**

The temperature sensor cannot measure the temperature.

- Check wiring, check temperature sensor, replace if necessary. Also refer to the relevant documentation from the manufacture to eliminate the error.

0551 **No change in temperature on right vertical jaw**

The heating cartridge has been actuated, but cannot heat up.

- Check wiring, check heating cartridge, replace if necessary. Also refer to the relevant documentation from the manufacture to eliminate the error.

0552 **Temperature too low right vertical jaw**

The tolerance range of the reported zone was underranged.

a) The machine was switched on recently and the temperature zone is currently being heated up.

a) The setpoint temperature was raised and the temperature is currently being heated up.

c) The temperature tolerance of the reported zone was set too low.

d) The temperature has dropped below the tolerance range when the machine stopped.

- Wait for a moment and check the actual temperature display of the reported zone.
- Increase the temperature tolerance in the temperature menu of the reported zone.
- Change the control parameters in the configuration menu of the reported zone.

0553 **Overtemperature right vertical jaw**

The tolerance range of the reported zone was exceeded.

a) The setpoint temperature was lowered.

c) The temperature tolerance of the reported zone was set too low.

c) The temperature rose above the tolerance range when the machine started.

- Wait for a moment and check the actual temperature display of the reported zone.
- Increase the temperature tolerance in the temperature menu of the reported zone.
- Change the control parameters in the configuration menu of the reported zone.

0576 **HI Alarm front jaw**

The temperature has exceeded the upper limit value of 400°C.

a) The temperature has increased above the set reference value.

b) There is a defect in the temperature sensor for the reported zone.

- Replace the temperature controller.
- Change the control parameters in the configuration menu of the reported zone.

0577 **Sensor fault front jaw**

The temperature sensor cannot measure the temperature.

- Check wiring, check temperature sensor, replace if necessary. Also refer to the relevant documentation from the manufacture to eliminate the error.

0578 **No change in temperature on front jaw**

The heating cartridge has been actuated, but cannot heat up.

- Check wiring, check heating cartridge, replace if necessary. Also refer to the relevant documentation from the manufacture to eliminate the error.

0579 **HI Alarm rear jaw**

The temperature has exceeded the upper limit value of 400°C.

a) The temperature has increased above the set reference value.

b) There is a defect in the temperature sensor for the reported zone.

- Replace the temperature controller.
- Change the control parameters in the configuration menu of the reported zone.

0580 **Sensor fault rear jaw**

The temperature sensor cannot measure the temperature.

- Check wiring, check temperature sensor, replace if necessary. Also refer to the relevant documentation from the manufacture to eliminate the error.

0581 **No change in temperature on rear jaw**

The heating cartridge has been actuated, but cannot heat up.

- Check wiring, check heating cartridge, replace if necessary. Also refer to the relevant documentation from the manufacture to eliminate the error.

0582 **HI Alarm vertical jaw**

The temperature has exceeded the upper limit value of 400°C.

a) The temperature has increased above the set reference value.

b) There is a defect in the temperature sensor for the reported zone.

- Replace the temperature controller.
- Change the control parameters in the configuration menu of the reported zone.

0583 **Sensor fault vertical jaw**

The temperature sensor cannot measure the temperature.

- Check wiring, check temperature sensor, replace if necessary. Also refer to the relevant documentation from the manufacture to eliminate the error.

0584 **No change in temperature on vertical jaw**

The heating cartridge has been actuated, but cannot heat up.

- Check wiring, check heating cartridge, replace if necessary. Also refer to the relevant documentation from the manufacture to eliminate the error.

0585 **Temperature too low, front jaw**

The tolerance range of the reported zone was underranged.

a) The machine was switched on recently and the temperature zone is currently being heated up.

a) The setpoint temperature was raised and the temperature is currently being heated up.

c) The temperature tolerance of the reported zone was set too low.

d) The temperature has dropped below the tolerance range when the machine stopped.

- Wait for a moment and check the actual temperature display of the reported zone.
- Increase the temperature tolerance in the temperature menu of the reported zone.
- Change the control parameters in the configuration menu of the reported zone.

0586 **Temperature too high, front jaw**

The tolerance range of the reported zone was exceeded.

a) The setpoint temperature was lowered.

c) The temperature tolerance of the reported zone was set too low.

c) The temperature rose above the tolerance range when the machine started.

- Wait for a moment and check the actual temperature display of the reported zone.
- Increase the temperature tolerance in the temperature menu of the reported zone.
- Change the control parameters in the configuration menu of the reported zone.

0587 **Temperature too low, rear jaw**

The tolerance range of the reported zone was underranged.

a) The machine was switched on recently and the temperature zone is currently being heated up.

a) The setpoint temperature was raised and the temperature is currently being heated up.

c) The temperature tolerance of the reported zone was set too low.

d) The temperature has dropped below the tolerance range when the machine stopped.

- Wait for a moment and check the actual temperature display of the reported zone.
- Increase the temperature tolerance in the temperature menu of the reported zone.
- Change the control parameters in the configuration menu of the reported zone.

0588 **Temperature too high, rear jaw**

The tolerance range of the reported zone was exceeded.

a) The setpoint temperature was lowered.

c) The temperature tolerance of the reported zone was set too low.

c) The temperature rose above the tolerance range when the machine started.

- Wait for a moment and check the actual temperature display of the reported zone.
- Increase the temperature tolerance in the temperature menu of the reported zone.
- Change the control parameters in the configuration menu of the reported zone.

0589 **Temperature too low vertical jaw**

The tolerance range of the reported zone was underranged.

a) The machine was switched on recently and the temperature zone is currently being heated up.

a) The setpoint temperature was raised and the temperature is currently being heated up.

c) The temperature tolerance of the reported zone was set too low.

d) The temperature has dropped below the tolerance range when the machine stopped.

- Wait for a moment and check the actual temperature display of the reported zone.
- Increase the temperature tolerance in the temperature menu of the reported zone.
- Change the control parameters in the configuration menu of the reported zone.

0590 **Overtemperature vertical jaw**

The tolerance range of the reported zone was exceeded.

a) The setpoint temperature was lowered.

c) The temperature tolerance of the reported zone was set too low.

c) The temperature rose above the tolerance range when the machine started.

- Wait for a moment and check the actual temperature display of the reported zone.
- Increase the temperature tolerance in the temperature menu of the reported zone.
- Change the control parameters in the configuration menu of the reported zone.

0591 **Calculation error - negative path limit X-axis**

This module cannot be operated with the current parameter settings.

- Check the parameter settings in the relevant menus on the display and correct the set values.

0592 **Calculation error - positive path limit X-axis**

This module cannot be operated with the current parameter settings.

- Check the parameter settings in the relevant menus on the display and correct the set values.

0593 **Calculation error - speed limit X-axis**

This module cannot be operated with the current parameter settings.

- Check the parameter settings in the relevant menus on the display and correct the set values.

0594 **Calculation error - acceleration limit X-axis**

This module cannot be operated with the current parameter settings.

- Check the parameter settings in the relevant menus on the display and correct the set values.

0595 **Calculation error - negative path limit Z-axis**

This module cannot be operated with the current parameter settings.

- Check the parameter settings in the relevant menus on the display and correct the set values.

0596 **Calculation error - positive path limit Z-axis**

This module cannot be operated with the current parameter settings.

- Check the parameter settings in the relevant menus on the display and correct the set values.

0597 **Calculation error - speed limit Z-axis**

This module cannot be operated with the current parameter settings.

- Check the parameter settings in the relevant menus on the display and correct the set values.

0598 **Calculation error - acceleration limit Z-axis**

This module cannot be operated with the current parameter settings.
- Check the parameter settings in the relevant menus on the display and correct the set values.

0599 **Calculation error - negative path limit gusseting device**

This module cannot be operated with the current parameter settings.
- Check the parameter settings in the relevant menus on the display and correct the set values.

0600 **Calculation error - positive path limit gusseting device**

This module cannot be operated with the current parameter settings.
- Check the parameter settings in the relevant menus on the display and correct the set values.

0601 **Calculation error - speed limit side folding unit**

This module cannot be operated with the current parameter settings.
- Check the parameter settings in the relevant menus on the display and correct the set values.

0602 **Calculation error - acceleration limit side folding unit**

This module cannot be operated with the current parameter settings.
- Check the parameter settings in the relevant menus on the display and correct the set values.

0603 **Product between jaws**

The product detection system signals product trapped in the area of the transverse seam.
- The operator must remove the affected bags manually and then restart production.

0605 **Fault on frequency converter discharge conveyor**

The displayed converter is malfunctioning, various causes are possible.
- Check the error display of the converter in the control cabinet. Consult the information on correcting malfunctions in the electrical documentation for the frequency converter.

0606 **Overtemperature discharge conveyor**

The permissible temperature has been exceeded. 1 overload due to sluggish mechanical elements (e.g. due to contamination).

2 overload due to unfavorable display settings.
- Clean the workstation.
- Check drive (motor, drive belt, frequency converter, clutch, connections, cabling, etc.) for proper function.
- Remove product / foreign objects.

0607 **Jam at discharge conveyor outlet**

There is a jam at the discharge.
- Wait until the jam has been worked out. After that the machine will be started again automatically.
- If product has become jammed you will have to remove it.

0640 **Film carriage limit left**

The stop of the film carriage has been approached.
- Check the film run. If it reoccurs, also check the switch position.

0641 **Film carriage limit right**

The stop of the film carriage has been approached.
- Check the film run. If it reoccurs, also check the switch position.

0642 **Fault on frequency converter vertical sealing belt**

The displayed converter is malfunctioning, various causes are possible.
- Check the error display of the converter in the control cabinet. Consult the information on correcting malfunctions in the electrical documentation for the frequency converter.

0643 **Overtemp. vertical sealing belt drive**

The permissible temperature has been exceeded. 1 overload due to sluggish mechanical elements (e.g. due to contamination).

2 overload due to unfavorable display settings.
- Clean the workstation.
- Check drive (motor, drive belt, frequency converter, clutch, connections, cabling, etc.) for proper function.
- Remove product / foreign objects.

0644 **Fault on frequency converter unwinder**

The displayed converter is malfunctioning, various causes are possible.
- Check the error display of the converter in the control cabinet. Consult the information on correcting malfunctions in the electrical documentation for the frequency converter.

0645 **Overtemp unwinder**

The permissible temperature has been exceeded. 1 overload due to sluggish mechanical elements (e.g. due to contamination).

2 overload due to unfavorable display settings.
- Clean the workstation.
- Check drive (motor, drive belt, frequency converter, clutch, connections, cabling, etc.) for proper function.
- Remove product / foreign objects.

0646 **Motor protection vacuum pump**

The protective switch on the drive motor for this function has tripped.

- Check the motor for overload due to sluggish mechanical elements, the cabling for grounding or short circuit, examine the motor.

0647 **Overtemp. vacuum pump**

The permissible temperature has been exceeded. 1 overload due to sluggish mechanical elements (e.g. due to contamination).

2 overload due to unfavorable display settings.

- Clean the workstation.
- Check drive (motor, drive belt, frequency converter, clutch, connections, cabling, etc.) for proper function.
- Remove product / foreign objects.

0648 **End of film**

The film roll is used up.

- Put on a new roll and pull the packaging material web in again.
- If the error reoccurs without there being an error in the film, check the position of the proximity switch for "packaging material end signal".

0649 **Rear unwinder not in position**

The packaging material unwinder is lifted off the packaging material roll (not in work position).

- Swing the packaging material unwinder aid back to the packaging material roll

0650 **Vertical sealing belt faulty**

The proximity switch on the vertical sealing unit has tripped. The vertical sealing belt is torn or the position of the proximity switch is shifted.

- Replace the vertical sealing belt and/or check the switch position

0651 **Fault on printer**

This is a collective message indicating a fault on the machine component cited above.

- Check the cause. Read the relevant documentation from the manufacturer if necessary.

0652 **Splice point position**

The machine halts automatically after a splice point on the bag previously identified by the splice detection has come into the vicinity of the cross jaws.

- The bag with the splice point must be removed manually.

0653 **Cut and splice device closed**

The cut and splice device is closed.

- Open the cut and splice device. To do this, undo the locking lever of the cut and splice device and press the "Release" button on the back of the machine

0654 **No valid photo cell signal detected**

If the photo cell regulator does not detect a photo cell signal for three consecutive cycles, the message is triggered and the machine stops.

- Check the mechanical settings for the photo cell and the print register mark detector.

0655 **Too much slippage on film drive**

The bag length measured between two photo cell marks deviates from the set bag length by more than the tolerance (settable in the display).
The cause of this could be: wrongly set bag length (bag length does not fit the repeat length) o

- Adjust the bag length correctly.
  Correct the setting of the draw-down belts on the filling tube.

0660 **Calculation error - speed limit film drive**

An error occurred when calculating an axis.

- Check the parameter settings in the relevant menus on the display and correct the set values.

0661 **Calculation error - acceleration limit film drive**

An error occurred when calculating an axis.

- Check the parameter settings in the relevant menus on the display and correct the set values.

0672 **Auger not in position**

The dosing auger has not been correctly placed and fastened in the auger retainer.

- Check auger fastening

0704 **Auger feeder calculation error**

An error occurred when calculating an axis.

- Check the parameter settings in the relevant menus on the display and correct the set values.

0705 **Tendency limit reached**

This error occurs when tendency regulation is engaged, if, after a tendency signal, the newly calculated thickness is smaller than the minimum thickness value.

- Try to place the dosage unit so precisely that the tendency limits are not exceeded.

0706 **Vacuum monitoring vacuum closure**

The vacuum is insufficient for the function shown.

- Check the function of the vacuum system. This also includes, for example, the vacuum lines, screws, the vacuum pump.
  If vacuum cups are applied to the function shown, check whether the cups are undamaged and clean.

0708 **Closure not open auger feeder**

The closure of the feeder is not open.

- Check the cause and eliminate the error.

0714 **Fault on frequency converter mixer**

The displayed converter is malfunctioning, various causes are possible.

- Check the error display of the converter in the control cabinet.
  Consult the information on correcting malfunctions in the electrical documentation for the frequency converter.

0715 **Overtemperature mixer**

The permissible temperature has been exceeded. 1 overload due to sluggish mechanical elements (e.g. due to contamination).

2 overload due to unfavorable display settings.

- Clean the workstation.
- Check drive (motor, drive belt, frequency converter, clutch, connections, cabling, etc.) for proper function.
- Remove product / foreign objects.

0716 **Fault on frequency converter infeed**

The displayed converter is malfunctioning, various causes are possible.

- Check the error display of the converter in the control cabinet.
  Consult the information on correcting malfunctions in the electrical documentation for the frequency converter.

0717 **Overtemperature motor infeed**

The permissible temperature has been exceeded. 1 overload due to sluggish mechanical elements (e.g. due to contamination).

2 overload due to unfavorable display settings.

- Clean the workstation.
- Check drive (motor, drive belt, frequency converter, clutch, connections, cabling, etc.) for proper function.
- Remove product / foreign objects.

0718 **Product defect infeed**

The machine has been stopped because product is missing.

- Check the product infeed to the machine

0736 **No reference axis volume dosage**

The axis does not find its reference position after a time that can be set.

- Check input signal of the initiator; red LED on the input module for the axis
- Replace defective initiator
- Replace defective incremental encoder

0768 **Volume dosage calculation error**

An error occurred when calculating an axis.

- Check the parameter settings in the relevant menus on the display and correct the set values.

0769 **Safety switch volume dosage unit**

One of the protective doors at the location indicated is so far open that the safety switch is not closed.

- Close all protective doors and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
- If this error message appears again despite the safety door being closed, check the safety switch and the cabling.
- A defective safety switch must be replaced immediately!

0770 **Product jam in funnel**

Product jam in transfer funnel dosage to VP

- Remove the product jam.

0771 **Remove product filling tube**

After main switch on or infeed reset all axes make a reference and format drive. During these movements, the sliders are still open and the product still present in the cycle chain falls through the format tube. There may also be product present in the filling tube after a reference and format movement of the cycle chain.

- Press the Machine Standby pushbutton to acknowledge the error. Before starting the machine, the operator should check for any product present in the filling tube of the VP, as otherwise additional errors will occur (product between the jaws, wrongly filled bag, etc.).

0772 **Volume dosage unit safety cover**

A safety cover is open.

- Close the safety cover and make sure that the safety switches latch. Then activate the "Standby" button and restart the machine. It is possible that a reference run is started. During this time, the display "Operating system is working - please wait" appears. When the reference run is finished, start the machine again with the "Machine ON" button.
  If this error message appears again despite the safety cover being correctly closed, check the safety switch and the cabling.
  A defective safety switch must be replaced immediately!

0773 **Product defect infeed**

The machine has been stopped because product is missing.

- Check the product infeed to the machine

0774 **Safety switch funnel volume dosage unit**

The safety switch on the funnel has tripped.

- Check whether the funnel is seated correctly in the bracket.

- If the error occurs again when the funnel is closed, check the function of the safety switch.

0775 **Volume dosage unit stop position**

The drop position is obstructed.

- Check proximity switch and if necessary readjust drop position

0784 **Volume maximum volume adjustment**

The volume adjustment has a minimum and a maximum position which is monitored by a sensor. As soon as one of these positions is approached, this information message appears as the minimum or maximum volume range has been reached.

- Check the settings of the sensors.
- Check the size of the dosing cup installed.

0785 **Volume minimum volume adjustment**

The volume adjustment has a minimum and a maximum position which is monitored by a sensor. As soon as one of these positions is approached, this information message appears as the minimum or maximum volume range has been reached.

- Check the settings of the sensors.
- Check the size of the dosing cup installed.

0786 **Overtemp. volume adjustment**

The permissible temperature has been exceeded. 1 overload due to sluggish mechanical elements (e.g. due to contamination).

2 overload due to unfavorable display settings.

- Clean the workstation.
- Check drive (motor, drive belt, frequency converter, clutch, connections, cabling, etc.) for proper function.
- Remove product / foreign objects.

0787 **Fault on frequency converter volume adjustment**

The displayed converter is malfunctioning, various causes are possible.

- Check the error display of the converter in the control cabinet. Consult the information on correcting malfunctions in the electrical documentation for the frequency converter.

0788 **Volume adjustment encoder error**

The incremental encoder monitor recognizes a malfunction in the incremental encoder circuit.

- Check the function of the incremental encoder.

0789 **Volume adjustment overload**

The drive is overloaded.

- Check what causes have led to the overloading of this drive. Also pay attention to contamination that can cause mechanical blockage of the drive.

0800 **Volume dosing motor thermal overload**

Thermal overload of the motor. Factory-set limit value exceeded.

The motor thermal model has exceeded its factory set thermal capacity limit of 110%.

- Reduce the speed or extend the time in the command profile.

Thermal overload of the motor. User limit value exceeded.

The motor thermal model has exceeded the thermal capacity limit of the limit value specified by the user for the thermal overload of the motor.

- Edit the command profile.
- Increase the attribute value for the thermal overload of the motor.

0801 **Volume dosing drive thermal overload**

Thermal overload of the inverter. Factory-set limit value exceeded.

The thermal model for the power transistors indicates that the temperature has exceeded the factory set thermal capacity value of 110%.

- Reduce the speed or extend the time in the command profile.

Thermal overload of the inverter. User limit value exceeded.

The thermal model for the power transistors indicates that the temperature has exceeded the user-defined limit value for the thermal overload of the inverter.

- Reduce the speed or extend the time in the command profile.
- Increase the inverter thermal overload attribute value.

Thermal overload of the inverter. Factory-set limit value exceeded.

The converter thermal model indicates that the temperature has exceeded the factory set thermal capacity value of 110%.

- Reduce the start-up times of all drives that share the DC bus.
- Reduce number of shared DC follower drives.
- Reduce duty-cycle of the command axis control.

Thermal overload of the inverter. User limit value exceeded.

The converter thermal model indicates that the temperature has exceeded the user-defined limit value for the thermal overload.

- Reduce the start-up times of all drives that share the DC bus.
- Reduce number of shared DC follower drives.
- Reduce duty-cycle of the command axis control.
- Increase the inverter thermal overload attribute value.

Thermal overload of the bus regulator. Factory-set limit value exceeded.

The thermal brake model has exceeded its factory set thermal capacity limit.

- Modify the duty cycle of the application.
- Add an external brake for additional capacity.
- Add a capacitor module if needed.

Thermal overload of the bus regulator. User limit value exceeded.

The thermal brake model has exceeded the thermal capacity limit of the user-defined limit value for the thermal overload of the bus regulator.

- Modify the duty cycle of the application.
- Add an external brake for additional capacity.
- Increase the attribute value of the user-defined limit value for the thermal overload.
- Add a capacitor module if needed.

0802 **Volume dosing converter AC phase short flt**

Currently not used.

0803 **Volume dosing converter pre-charge flt**

Precharge error. The pre-charge circuit monitoring algorithm detected that after charging over a specific period of time the DC bus did not reach a factory set voltage level.

- Check AC input voltage of all phases.
- Check input power wiring.
- Replace drive if the fault persists.

0804 **Volume dosing motor fback flt**

Loss of the motor feedback data factory-set limit value exceeded.

The number of consecutive skipped or corrupted serial data packets from the intelligent feedback device has exceeded a factory set limit.

- Check motor feedback cable and connection.
- Check whether the shielding of motor power cable and feedback cable is secured correctly.
- Check whether the motor frame is grounded correctly.

0805 **Volume dosing motor fback noise**

Currently not used.

0806 **Volume dosing module/config flt**

Currently not used.

0807 **Volume dosing module/controller sync flt**

Currently not used.

0808 **Volume dosing bus regulator flt**

Bus regulator failure. The brake drive integrated circuit has detected that the brake resistor is shorted.

- Check the brake connection for short circuits.
- Disconnect the brake connection and measure the brake resistance.
- Replace drive if brake resistor is shorted.

0809 **Volume dosing bus power fuse blown**

Currently not used.

0810 **Volume dosing enable input deactivated**

Currently not used.

0811 **Volume dosing external input flt**

Currently not used.

0812 **Volume dosing physical axis flt**

Error in the axis programming.

- The precise error cause can only be read out by using a special diagnostic program.
- Please contact Rovema to remedy the error.

0813 **Volume dosing grnd short flt**

Ground current. Factory-set limit value exceeded.

The sensing circuitry in the power stage has detected excessive ground current.

- Check the motor power wiring. Check power cable for short circuits.
- Replace motor if the fault persists.

0814 **Volume dosing CPU watchdog flt**

Processor watchdog fault. The processor on the power board or control board failed to update in a certain period of time. The nn sub-codes 00 to 06 are internal and result in the same possible solution.

- Switch off the control voltage and switch it back on again.
- Update the drive firmware.
- Return drive for repair if the fault persists.

0815 **Volume dosing overspeed flt**

Motor overspeed. Factory-set limit value exceeded.

Motor speed has exceeded 125% of the maximum speed.

- Check control loop tuning.

Motor overspeed. User limit value exceeded.

Motor speed has exceeded motor overspeed user limit.

- Check control loop tuning.
- Increase the Motor Overspeed UL attribute value.

0816 **Volume dosing module/hardware flt**

Hardware fault. Communication with the power board could not be established.

- Switch off the control voltage and switch it back on again.
- Update the drive firmware.
- Return drive for repair if the fault persists.

0817 **Volume dosing drive overtemp**

Inverter overtemperature. Factory-set limit value exceeded.

The measured inverter temperature has exceeded the factory set temperature limit.

- Reduce the speed or extend the time in the command profile.
- Reduce drive ambient temperature.
- Ensure that that the air circulation in the drive is not obstructed.

Inverter overtemperature. Factory-set limit value exceeded.

The measured inverter temperature has exceeded the factory set temperature limit.

- Reduce the start-up times of all drives that share the DC bus.
- Reduce number of shared DC follower drives.
- Reduce the speed or extend the time in the command profile.
- Reduce drive ambient temperature.
- Ensure that that the air circulation in the drive is not obstructed.

0818 **Volume dosing motor overtemp**

Motor overtemperature. Factory-set limit value exceeded.

Calculations based on the motor thermistor indicate that the factory-specified limit value for the motor temperature has been exceeded.

- Operate motor within the continuous torque rating.
- Reduce the ambient temperature of the motor.
- Ensure better cooling of the motor.
- Available only for Kinetix VP motors. Not supported for asynchronous motors.

0819 **Volume dosing duplicate address flt**

Duplicate IP address. Several consecutive updates from the controller have been lost.

- Select an IP address not already in use in the network.

0820 **Volume dosing motion instruction error**

Error in the axis programming.

- The precise error cause can only be read out by using a special diagnostic program.
- Please contact Rovema to remedy the error.

0821 **Volume dosing feedback flt**

Failure of the feedback device. The feedback device has detected an internal error. The nn sub-code is defined as follows:

1: ACCELERATION OVERFLOW

4: TRACKING FILTER ERROR

5: VECTOR LENGTH ERROR

6: COUNTER ERROR

7: SYNCHRONIZATION ERROR

16: SINGLE TURN ERROR

17: MULTI TURN AMPLITUDE ERROR

18: MULTI TURN SYNC ERROR

19: MULTI TURN VECTOR LENGTH ERROR

35: STANDARD PARAMETER ERROR

36: INTERNAL COMMUNICATION ERROR1

37: INTERNAL COMMUNICATION ERROR2

38: INTERNAL SYSTEM ERROR

48: CRITICAL TEMPERATURE

49: CRITICAL LED CURRENT

50: CRITICAL SUPPLY VOLTAGE

51: CRITICAL SPEED

52: CRITICAL ACCELERATION

53: COUNTER OVERFLOW

54: INTERNAL MONITORING ERROR

66: INTERNAL RESOURCE ACCESS ERROR

- Check motor feedback cable and connector.
- Switch off the control voltage and switch it back on again.
- Replace motor if the fault persists.
- Check feedback shield connection.
- Reduce shock and vibration to motor.

0822 **Volume dosing commutation flt**

Currently not used.

0823 **Volume dosing overcurrent flt**

Inverter overcurrent fault. Inverter current has exceeded the instantaneous current limit (determined by hardware).

- Check motor power cable for shorts.
- Verify motor windings are not shorted.
- Verify motor power wire gauge.
- Operate within the continuous power rating.
- Reduce acceleration times.

0824 **Volume dosing overvoltage flt**

Bus overvoltage. Factory-set limit value exceeded.

DC bus voltage level is above the factory set limit as determined by the configured input voltage.

- Change the deceleration or motion profile of all drives connected on the DC bus.
- Disconnect the brake connection and measure the brake resistance.
- Replace drive if brake resistor is open.

0825 **Volume dosing undervoltage flt**

Bus undervoltage. Factory-set limit value exceeded.

DC bus voltage level is below the factory set limit as determined by the configured input voltage.

- Verify voltage level of the input AC.
- Monitor AC power source for faults or line fluctuations.
- Install UPS on the AC input.

Bus undervoltage. User limit value exceeded.

DC bus voltage level is below the user-defined limit value for the bus undervoltoge.

- Verify voltage level of the input AC.
- Monitor AC power source for faults or line fluctuations.
- Install UPS on the AC input.
- Increase bus undervoltage UL attribute value for the bus undervoltage.

0826 **Volume dosing phase loss**

AC single phase loss fault. A single AC input phase dropped out at activation of the drive.

- Check AC input voltage of all phases.

0827 **Volume dosing position error**

Error due to over-elevated position. The position error of the position control loop has exceeded the position error tolerance value for the duration of the position error tolerance time.

- Check position loop tuning.
- Increase the feedforward gain.
- Check the dimensioning of the drive and motor.
- Check motor power wiring.
- Increase position error tolerance and/or position error tolerance Time attribute values.

0828 **Volume dosing excessive velocity flt**

Excessive velocity error fault. The velocity error of the velocity control loop has exceeded the value given by velocity error tolerance for a time period given by velocity error tolerance time.

- Check velocity loop tuning.
- Reduce acceleration.
- Check the dimensioning of the drive and motor.
- Check motor power wiring.
- Increase velocity error tolerance and/or velocity error tolerance time attribute values.

0829 **Volume dosing overtorque limit flt**

Overtorque limit fault. Motor torque has exceeded the user defined maximum torque level of the overtorque limit value for the duration of the overtorque limit time.

- Check the torque adjustment value.
- Check the motion profile.
- Check the dimensioning of the drive and motor.
- Increase overtorque limit and/or overtorque limit time attribute values.

0830 **Volume dosing undertorque limit flt**

Undertorque limit fault. Motor torque has dropped below user defined minimum torque level given by undertorque limit for the duration of the undertorque limit time.

- Check the motion profile.
- Check the dimensioning of the drive and motor.
- Decrease undertorque limit and/or undertorque limit time attribute values.

0831 **Volume dosing other flt, call service**

A fault that cannot be more precisely defined has occurred.

- If this error is displayed, restart the machine using the main switch.
- If the error still continues to appear, contact Rovema.

-0040 **Start/Stop externally**

The machine is ready for production, but there is a fault in the downstream machine.

- Check function of the downstream machine.
  Determine the cause of the fault (for elimination information, refer to the technical documentation of the appropriate machine).
  This machine remains in the ready state. When the fault has been corrected this machine receives the start signal from the downstream machine and starts automatically.

-0042 **Wait for dosing unit**

The dosing unit is still not ready for production.

- Check which error is present, and eliminate it. After correcting the error in the dosing unit, the machine receives a start signal and starts automatically

-0043 **Start/Stop externally**

The machine is ready for production, but there is a fault in the downstream machine.

- Check function of the downstream machine.
  Determine the cause of the fault (for elimination information, refer to the technical documentation of the appropriate machine).
  This machine remains in the ready state. When the fault has been corrected this machine receives the start signal from the downstream machine and starts automatically.

-0044 **Machine is waiting for gas flushing**

The gas flushing is not ready.

- Check the cause and eliminate any errors. This message is also displayed if the set time for the gas flushing has not elapsed yet.

-0045 **Product defect infeed**

The upper proximity switch on the infeed funnel is not covered, the product is running short.

- Check the product infeed to the machine Top up product.

-0096 **Battery Control Logix**

The battery of a hardware component of the control system is dead.

- To correct this error, please contact Rovema.

-0097 **Check temperature of control cabinet, please.**

The temperature in the control cabinet is rising.

- Check whether the aeration of the control cabinet is working.
  The control cabinet temperature should not exceed 45°C! Note that the filter mats of the control cabinet ventilation hinder air circulation if they are very contaminated and must be replaced!

-0098 **Ram memory overload - restart panel**

The panel has a memory problem.

- This is a very rare system error. If this error is displayed, restart the machine using the main switch. If the error still continues to appear, contact Rovema.

-0099 **Printer pre-alert**

This is a pre-alert from the printer before the machine stops due to an error. The material used in this module is running short.

- To shorten the time the machine spends at a standstill, prepare the material in advance for the replacement. Please see the operating terminal on the printer or consult the printer documentation on how to proceed with the replacement.

-0100 **Printer is switched off!**

The printer is switched off! Production with the printer is not possible!

- For production with the printer, switch the printer on now or deactivate the printer function in the switch menu of the display.

-0101 **Barcode scanner is switched off**

The barcode scanner is switched off! Production with the barcode scanner is not possible!

- For production with the barcode scanner, switch it on now in the switch menu of the display.

-0120 **"Service interval - sealing jaw drive vertical"**

After a specific period of operation important maintenance tasks on the cross jaw clamp drive must be executed!

- The Service menu of the machine informs you of the maintenance tasks that must be executed. In addition, in the chapter "Maintenance" of the operating manual read how these tasks must be executed.

-0226 **Product between jaws**

The product detection system signals product trapped in the area of the transverse seam.

- The bags affected are automatically rejected and production then continues.

-0227 **Teach phase product recognition active**

Info message shown during the learning phase of the product recognition. This teaching process takes place during the first five cycles after product recognition is switched on. Product scanning is then active again.

- This info message disappears automatically.

-0230 **Temperature too low, front jaw**

The tolerance range of the reported zone was underranged.

a) The machine was switched on recently and the temperature zone is currently being heated up.

a) The setpoint temperature was raised and the temperature is currently being heated up.

c) The temperature tolerance of the reported zone was set too low.

d) The temperature has dropped below the tolerance range when the machine stopped.

- Wait for a moment and check the actual temperature display of the reported zone.
- Increase the temperature tolerance in the temperature menu of the reported zone.
- Change the control parameters in the configuration menu of the reported zone.

-0231 **Temperature too high, front jaw**

The tolerance range of the reported zone was exceeded.

a) The setpoint temperature was lowered.

c) The temperature tolerance of the reported zone was set too low.

c) The temperature rose above the tolerance range when the machine started.

- Wait for a moment and check the actual temperature display of the reported zone.
- Increase the temperature tolerance in the temperature menu of the reported zone.
- Change the control parameters in the configuration menu of the reported zone.

-0233 **Temperature too low, rear jaw**

The tolerance range of the reported zone was underranged.

a) The machine was switched on recently and the temperature zone is currently being heated up.

a) The setpoint temperature was raised and the temperature is currently being heated up.

c) The temperature tolerance of the reported zone was set too low.

d) The temperature has dropped below the tolerance range when the machine stopped.

- Wait for a moment and check the actual temperature display of the reported zone.
- Increase the temperature tolerance in the temperature menu of the reported zone.
- Change the control parameters in the configuration menu of the reported zone.

-0234 **Temperature too high, rear jaw**

The tolerance range of the reported zone was exceeded.

a) The setpoint temperature was lowered.

c) The temperature tolerance of the reported zone was set too low.

c) The temperature rose above the tolerance range when the machine started.

- Wait for a moment and check the actual temperature display of the reported zone.
- Increase the temperature tolerance in the temperature menu of the reported zone.
- Change the control parameters in the configuration menu of the reported zone.

-0236 **Temperature too low vertical jaw**

The tolerance range of the reported zone was underranged.

a) The machine was switched on recently and the temperature zone is currently being heated up.

a) The setpoint temperature was raised and the temperature is currently being heated up.

c) The temperature tolerance of the reported zone was set too low.

d) The temperature has dropped below the tolerance range when the machine stopped.

- Wait for a moment and check the actual temperature display of the reported zone.
- Increase the temperature tolerance in the temperature menu of the reported zone.
- Change the control parameters in the configuration menu of the reported zone.

-0237 **Overtemperature vertical jaw**

The tolerance range of the reported zone was exceeded.

a) The setpoint temperature was lowered.

c) The temperature tolerance of the reported zone was set too low.

c) The temperature rose above the tolerance range when the machine started.

- Wait for a moment and check the actual temperature display of the reported zone.
- Increase the temperature tolerance in the temperature menu of the reported zone.
- Change the control parameters in the configuration menu of the reported zone.

-0239 **Temperature too low left vertical jaw**

The tolerance range of the reported zone was underranged.

a) The machine was switched on recently and the temperature zone is currently being heated up.

a) The setpoint temperature was raised and the temperature is currently being heated up.

c) The temperature tolerance of the reported zone was set too low.

d) The temperature has dropped below the tolerance range when the machine stopped.

- Wait for a moment and check the actual temperature display of the reported zone.
- Increase the temperature tolerance in the temperature menu of the reported zone.
- Change the control parameters in the configuration menu of the reported zone.

-0240 **Overtemperature left vertical jaw**

The tolerance range of the reported zone was exceeded.

a) The setpoint temperature was lowered.

c) The temperature tolerance of the reported zone was set too low.

c) The temperature rose above the tolerance range when the machine started.

- Wait for a moment and check the actual temperature display of the reported zone.
- Increase the temperature tolerance in the temperature menu of the reported zone.
- Change the control parameters in the configuration menu of the reported zone.

-0242 **Temperature too low right vertical jaw**

The tolerance range of the reported zone was underranged.

a) The machine was switched on recently and the temperature zone is currently being heated up.

a) The setpoint temperature was raised and the temperature is currently being heated up.

c) The temperature tolerance of the reported zone was set too low.

d) The temperature has dropped below the tolerance range when the machine stopped.

- Wait for a moment and check the actual temperature display of the reported zone.
- Increase the temperature tolerance in the temperature menu of the reported zone.
- Change the control parameters in the configuration menu of the reported zone.

-0243 **Overtemperature right vertical jaw**

The tolerance range of the reported zone was exceeded.

a) The setpoint temperature was lowered.

c) The temperature tolerance of the reported zone was set too low.

c) The temperature rose above the tolerance range when the machine started.

- Wait for a moment and check the actual temperature display of the reported zone.
- Increase the temperature tolerance in the temperature menu of the reported zone.
- Change the control parameters in the configuration menu of the reported zone.

-0355 **splice detection**

This message appears on the display if the adhesive tape is detected by the splice detection.

- This info message disappears automatically after 3 seconds.

-0356 **Splice point position**

Info message displayed when the set position of the adhesive tape has been reached.

- If the "Stop on detection" switch is off, this message is displayed for 3 seconds and then disappears automatically.
  If the "Stop on detection" switch is on, the message remains until it is acknowledged with the standby button.

-0357 **Pre-alert film end**

This is a pre-alert before the machine stops due to an error. The packaging material roll is used up or the packaging material web is broken.

- Replace the packaging material roll.

-0362 **Film carriage limit left**

The left stop of the film carriage has been moved to.

- Check the film run. If it reoccurs, also check the switch position.

-0363 **Film carriage limit right**

The right stop of the film carriage has been approached.

- Check the film run. If it reoccurs, also check the switch position.

-0371 **Barcode not read**

The barcode scanner did not detect a barcode during current machine operation.

- This is an info message; the message is reset automatically.

-0417 **Emptying active**

This is a message shown on the display during the "Empty dosing unit" function.

- Wait until the procedure has been concluded. The message vanishes on its own.

-0426 **Counter-blowing vacuum closure**

The "counter-blowing" function is currently active.

- Wait a moment until the function has ended.

-0496 **Volume maximum volume adjustment**

The volume adjustment has a minimum and a maximum position which is monitored by a sensor. As soon as one of these positions is approached, this information message appears as the minimum or maximum volume range has been reached.

- Check the settings of the sensors.
- Check the size of the dosing cup installed.

-0497 **Volume minimum volume adjustment**

The volume adjustment has a minimum and a maximum position which is monitored by a sensor. As soon as one of these positions is approached, this information message appears as the minimum or maximum volume range has been reached.

- Check the settings of the sensors.
- Check the size of the dosing cup installed.

This section describes faults that do not appear on the display, but may still occur.

Fault

Possible cause(s) and remedy.

The machine stops without any error messages after the production of 2-3 bags

The photo cell is incorrectly adjusted. Example: Dark print register mark on the packaging material, but the photo cell is set for a light print register mark.

- Readjust the photo cell

The machine regularly switches off with the "end of film" error message, even when there is a sufficient supply of packaging material

The proximity switch for the end of the packaging material is activated before the rocker reaches its lower limit.

- Adjust the proximity switch so that it is still activated, even when the rocker is at the bottom.

The proximity switch for rocker monitoring on the left inner side of the packaging material support is set too far down or is defective.

- Correct the limit switch-off of the unwinder: Adjust the proximity switch for the packaging material unwinder, so that there is a path of approx. 30 mm for the rocker, when it activates the proximity switch during its downward movement.

Potentiometer is defective.

- With standby switched on, raise and lower the packaging material unwinder manually. The belt speed increases on raising and is slower on lowering.



NOTE!

Faults are always an indicator that the machine is not functioning properly.

If an error occurs more frequently, please check whether this can be avoided through a different machine setting.

In addition, regular maintenance and cleaning of the machine contributes decisively to avoidance of improper functioning!



⚠ WARNING!

Risk of injury due to safety devices that have been rendered inoperable!

Injuries due to accessible danger zones on the machine.

- ▶ Do not bypass safety devices.
- ▶ Do not render safety devices inoperable.

Faults of the packaging material infeed 5.3

This section describes faults that do not appear on the display, but may still occur.

NOTE!

Faults are always an indicator that the machine is not functioning properly.

If an error occurs more frequently, please check whether this can be avoided through a different machine setting.

In addition, regular maintenance and cleaning of the machine contributes decisively to avoidance of improper functioning!

Fault

Possible cause(s) and remedy.

Draw-off belts slip, irregular packaging material transport

- Check belt pressure and parallelity
- Check the parallelity of the filling tube setting and the draw-off belt support surface
- Check the draw-off belt and forming shoulder for residues of the packaging material powder
- Compare the sliding properties of the outer side of the packaging material with those of the inner side - can the packaging material be drawn off easily by hand?
- Can printing ink residues be seen on the forming shoulder or on the draw-off belt?

Packaging material runs to the forming shoulder on one side

- Check the alignment of the packaging material roll on the support shaft
- Check the parallelity and smooth running of the packaging material steering rollers
- Check the packaging material web tension
- Check the function of the compensation rocker
- Check the packaging material roller for an uneven winding tension
- Check the packaging material infeed angle
- Check the forming shoulder adjustment
- Check the draw-off belt settings
- Change the contact pressure of the draw-off belts
- Check the draw-off vacuum (only for systems with vacuum draw-off)
- Check the packaging material draw-off without vertical seals/welding

- If the packaging material runs to the left on one side, move the packaging material support to the right
- If the packaging material runs to the right on one side, move the packaging material support to the left

The packaging material support cannot be adjusted, lock is switched on

- Check the packaging material support limiter on the left / right
- Check the PTC resistance



NOTE!

Caution! If the packaging material support limiter is defective or adjusted incorrectly, then this can destroy the adjusting mechanics.



⚠ WARNING!

Risk of injury due to safety devices that have been rendered inoperable!

Injuries due to accessible danger zones on the machine.

▶ Do not bypass safety devices.

▶ Do not render safety devices inoperable.

This section describes faults that do not appear on the display, but may still occur.

Fault

Possible cause(s) and remedy.

Vertical seal is not in the centre of the bag

- Check the position of the forming shoulder (and turning lug of the forming shoulder) relative to the vertical sealing surface of the filling tube and adjust as necessary
- Check the centered effect of the vertical sealing unit
- Check the packaging material, turning or overlap zone according to the format drawing
- Is the packaging material sufficiently wide? - With very elastic and very thin packaging materials or a tendency for the packaging material to roll, the planned overlap width may vanish. A roller, which is 5 mm wider, would be necessary here

Vertical seal is bowed

Air, expelled during the filling operation, can burst the vertical seal.

- An internal air suction pipe is required here.

Vertical seal moves in the vertical seal area or forms wrinkles

- Check the adjustment of the vertical sealing unit (parallelity to filling tube)

Vertical seal shrinks

- Reduce the temperature of the vertical sealing unit (for hot sealing and hot air welding)
- Reduce the pulse duration/strength for vertical sealing (for pulse welding)
- Check the holding time (= pivot time of the vertical sealing unit toward the packaging material) (for hot air welding)

Some of the vertical seal is not closed exactly

Packaging material is excessively temperature-sensitive.

- Reduce the power
- Compare the target and actual values of the vertical seal and hot air welding temperature

- Check the pulse duration/strength for vertical welding

Vertical seal or hot air welding temperature is too low

- Increase the temperature

Pulse duration/strength for vertical welding is too low

- Increase the pulse duration/strength

Holding time is too short

- Check the holding time (= pivot time of the vertical sealing unit toward the packaging material) (for hot air welding)



NOTE!

Faults are always an indicator that the machine is not functioning properly.

If an error occurs more frequently, please check whether this can be avoided through a different machine setting.

In addition, regular maintenance and cleaning of the machine contributes decisively to avoidance of improper functioning!



⚠ WARNING!

Risk of injury due to safety devices that have been rendered inoperable!

Injuries due to accessible danger zones on the machine.

▶ Do not bypass safety devices.

▶ Do not render safety devices inoperable.

This section describes faults that do not appear on the display, but may still occur.

Fault

Possible cause(s) and remedy.

Seam profile has differing strengths (only for hot sealing)

- Check the cross seam adjustment
- Increasing the sealing pressure
- Are the sealing temperatures of the cross jaws uniform? - Unsuitable cross jaw profile for this packaging material thickness - If necessary, use a different packaging material or use suitable cross jaws.

Unsatisfactory bag seam resistance

- Set the sealing temperature and pressure setting according to the jaw pressure measurement results (for hot sealing)
- Set the pulse duration/strength and welding pressure according to the jaw pressure measurement results (for pulse welding)

The cross seams are fully closed on empty bags, but open on filled ones

Product caught in the cross seal.

- Check the dosing time - select the ideal time for the product to arrive in the bags after the jaws close and the dosing operation to have been completed before the jaws end. Otherwise gravity may affect the still plastic bottom seal

Packaging material with insufficient hot tack

- Cross seam air cooling (optional) required
- Check the cross seams for any product residues

Compressed air may press on the bottom seam when the cross jaws close.

- Apply an air expeller

The product shrinks or sticks to the cross seals

- The chosen sealing temperature is too high (for hot sealing)
- The chosen pulse duration/strength is too high (for pulse welding)
- Chosen sealing/welding pressure is too high
- Packaging material outer coating is unsuitable

The top and bottom are sealed / welded differently

- Check the parallelity of the cross jaws (carbon paper test)
- Check the sealing temperature deviation of both jaws (for hot sealing)
- Check the pulse duration/strength deviation of both jaws (for pulse welding)
- Packaging material tears slightly in the seam transition, strong contusions occur
- The resistance of the packaging material is insufficient for the quantity of product
- Sealing/welding pressure is too high.
- If these faults can only be detected on the bottom seal, then the product may be the cause - in such cases, the bag catching devices should be used with the cross jaws
- The piercing knife does not cut the packaging material cleanly
- Check the knife sharpness
- Check the knife pressure
- Check the knife stroke
- Correct the cutting time (the cutting time must be within the sealing phase or before the start of the welding operation - see "On position" and "Off position" in the Sealing Jaw Drive menu of the display)

Product parts in the bottom seal

- Select a later dosing time (dropping)

Product parts in the top seal

- Select an earlier dosing time

Product parts in both seals

The filling time is too long, relative to the machine output.

- Reduce machine output

Product contains suspended matter and dust.

- The internal suction pipe (option) must be used or the output reduced

Product dropping subject to electrostatic charging - product parts stick to it.

NOTE!

Faults are always an indicator that the machine is not functioning properly.

If an error occurs more frequently, please check whether this can be avoided through a different machine setting.

In addition, regular maintenance and cleaning of the machine contributes decisively to avoidance of improper functioning!

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This section describes faults that do not appear on the display, but may still occur.

Fault

Possible cause(s) and remedy.

Print image is unstable

- The photo cell is incorrectly adjusted

Bag length deviations

Slip influences

- Increase the contact pressure of the draw-off belts

Bag cut is slanting

- The format spreader must be at a vertical right angle to the centre of the jaw.

Bag shape is twisted

Check the packaging material hose creator and draw-off run

- Check the forming shoulder position (setting)
- Check the draw-off belt setting
- Check the vertical seal or weld

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Notes

Appendix 6

This concluding part offers information, which due to its extent, cannot be provided in the previous sections without completely changing the structure of this operating manual. For the most part this is supplier documentation.

Passwords 6.1

After you have looked at this page, you should keep it separate from this manual in a secure location.

Access level	Password
1	4091
2	409253
3	409386

Notes

Passion for packaging



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