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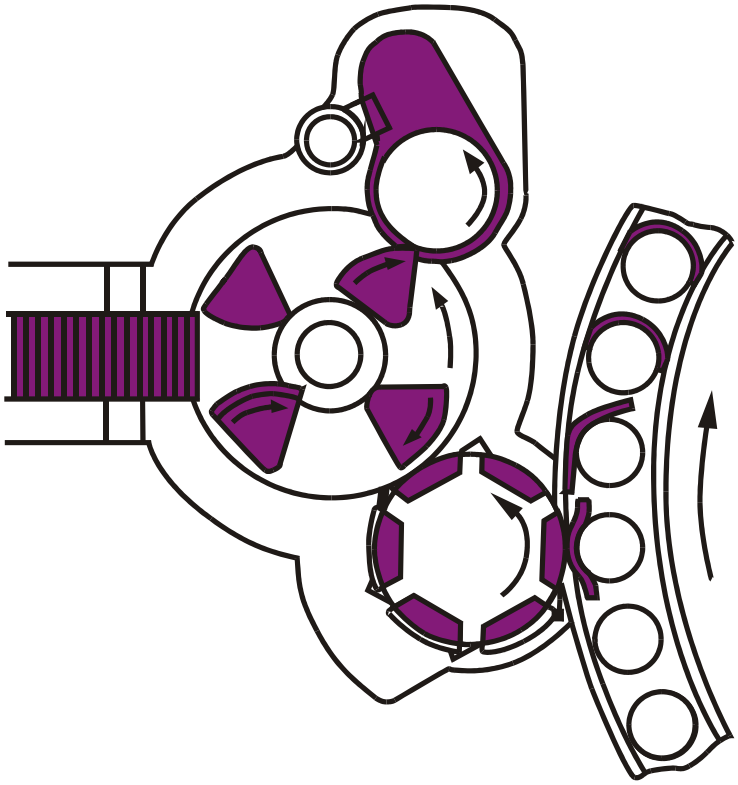

Operating Manual

Labeling Machine

HL 2040 / 120-30 AR HS

Machine n° : 1197

Unilever Covington

Covington, TN 38019 / USA

KHS

Filling and Packaging – Worldwide

KHS AG

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Version : W1/2007

Summary

Safety

Machine Description

Technical Data

Operating Instructions

Changeover

Trouble Shooting

Maintenance

Appendix

* * *

KHS

Filling and Packaging – Worldwide

Safety

Regulations for Filling and Packaging Plants in the Beverage Industry

General Safety

Preliminary Remarks

This pamphlet does not claim to be complete and may not be considered as replacing the rules on accident prevention or standards. Rather, this pamphlet gives general information on the safe use and handling of our products.

With respect to the content we have focused on our systems, machinery and apparatus that would otherwise be of interest for a limited group of readers only.

Regulations for Filling and Packaging Plants in the Beverage Industry

Address of central department

KHS AG

Central Department Customer Service

Juchostraße 20

D- 44143 Dortmund

Telephone 02 31 / 569-0

Telefax 02 31 / 569-1409

Date of publication

September 1998

The date of publication for each chapter appears at the lower side of each page.

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General Safety

Manufacturer´s and Conformity Declaration

Manufacturer´s declaration and conformity declaration

A manufacturer´s declaration is provided for all machines or machine parts delivered by KHS.

Before the first operation of their machinery, KHS declare the conformity of the supplied products with the valid, harmonized EC standards.

Finally, the products supplied by KHS are provided with the EC label giving details on the year of manufacture or of the first operation.

For example:

CE 95

About this chapter

This chapter addresses the employer and the operating and maintenance personnel.

This filling plant conforms with the **latest state of technology** in terms of performance, material, method of operation and operating safety. To ensure operating safety, however, knowledgeable and safety-conscious behaviour on the part of the employer and his operating and maintenance personnel is crucial. This chapter sets out the necessary guidelines.

For your own safety be sure to read this chapter thoroughly and follow all the rules and guidelines strictly.

By not doing so, you put yourself at risk. You may also cause damage to the plant.

All information in this chapter is of a general nature and is not specific to one particular machine.

Chapter on safety and ”Safety“ brochure

This chapter on safety is included in every newly issued operating manual for products from the KHS range. It is also available in the form of a brochure, as such providing the employer with advance information.

Plant-specific safety information is to be found in the relevant operating manual

Safety information relating to a specific machine or a specific operation is included in the relevant section of the operating manual for that particular machine. Key safety rules are also to be found directly on the machine.

The chapter ”General Safety“ supplements the operating manual

The "General Safety" chapter on no account replaces the various operating manuals for the filling plant. The machine operator must have access to the operating manual for each machine.

What the employer must ensure:

- The operator must have the necessary qualifications.
- The operator must have access at all times to the relevant operating manual.
- Safety rules must be available in a language that the operator can understand.
- The operator must have read and understood the operating manual before the machine is started up. He must be required to repeat this at least once a year.

General and plant-specific documents

Laws, Regulations, Guidelines, Orders, Standards

There exist a host of laws, regulations, guidelines, orders, and standards

The most important rules and regulations relating to a filling plant are listed in the appendix to this chapter.

The employer must issue operating instructions

The employer undertakes to observe, implement and control adherence to the required accident-prevention regulations. Unless there is strict and consistent adherence to these regulations and to the additional safety rules in this chapter and in the operating manuals, risks to personnel and damage to machinery will be inevitable.

Prohibitive and cautionary notices have to be displayed

The employer undertakes to display the required prohibitive and cautionary notices on the operating premises, at the entrances and on the machines. Furthermore, the employer must ensure that these cautions are strictly observed.

Notices on the machine

A permanent notice should be displayed at each starting and switching device on the machine, requiring every operator to read the relevant operating manual before starting up the machine for the first time.

Key operating data on the machine

Key data for machine operation should be displayed directly and conspicuously on the plant/machine. Locate signs setting out key data are to be hung where they can be seen by the operating personnel. These signs should not be damaged or made unreadable through soiling. Check the condition of the notices regularly. Replace where necessary.

See operating manual of the corresponding machine for further information on which information and data have to be displayed directly on a machine.

Obligations of the employer vis-a-vis the manufacturer

The employer undertakes to immediately report to the manufacturer any accident or damage to the machine which is presumed to have been caused by mechanical failure. If the employer plans modifications to the machine, these must be discussed with the manufacturer before implementation. The manufacturer can only meet his product-monitoring obligation in the interest of the user if the latter keeps him informed.

Symbols in the operating manual

KHS uses certain symbols in the operating manuals in order to emphasize areas of high risk or especially important points.

Familiarize yourself with these symbols so that you can immediately recognize the implications in the manual. The following symbols are used:

This symbol indicates an operation which can be hazardous (injury can be fatal).

This symbol indicates an operation which can involve damage to the machine(material damage).

This pictogram points out a danger which deserves your particular attention. This can be combined with a pictogram denoting damage to property or material.

This pictogram draws your attention to a danger through voltage which can entail injury to persons (danger to life and limb).

This pictogram draws your attention to a danger through contact with acids or their vapours which can entail injury to persons (danger to life and limbs).

This pictogram means that you must wear safety shoes in the specified areas.

This pictogram means that you must wear protective gloves in the specified areas.

This symbol indicates the need for servicing.

This symbol indicates operations which require you to use special tools.

Here you will find further information and tips for improved handling.

Specifications/limitations as prescribed by law

Noise emission

KHS applies the latest technology to keep the noise level of filling plants at a minimum.

Noise emissions from filling plants relate directly to certain factors :

- the more bottles per hour, the higher the noise level,
- the bigger the bottle, the higher the noise level.

If the filling plant is operating at full capacity, therefore, the highest noise level is to be expected.

Noise emissions which then occur are below the maximum permitted levels according to the

"Machine safety law, accident-prevention regulation VBG 121 .Noise" or ASI 8.11/91 low-noise bottle-filling plants".

KHS measures noise emission levels in accordance with DIN 45635. Exact figures on the level of the noise emissions that can occur are identified separately for each filling plant.

The overall concept of a low-noise filling plant however requires that the operating premises are designed in such a way that the carrying of noise is minimized. The brochure ASI 8.11/91 Low-noise bottle-filling plants sets out the relevant regulations relating to the reduction of noise levels in closed spaces. When planning a filling plant, both employer and manufacturer must consider and realize noise-reduction opportunities.

Emissions through chemical substances

Remember that you can put your health at risk with chemical substances (e.g., cleaning agents) and by applying them without due care. Ensure that chemicals such as cleaning agents (cooling water storage tank) are correctly stored.

Never mix chemicals

Never mix different chemical substances, as hazardous reactions may result.

Take care with hot water

Beware of scalding steam.

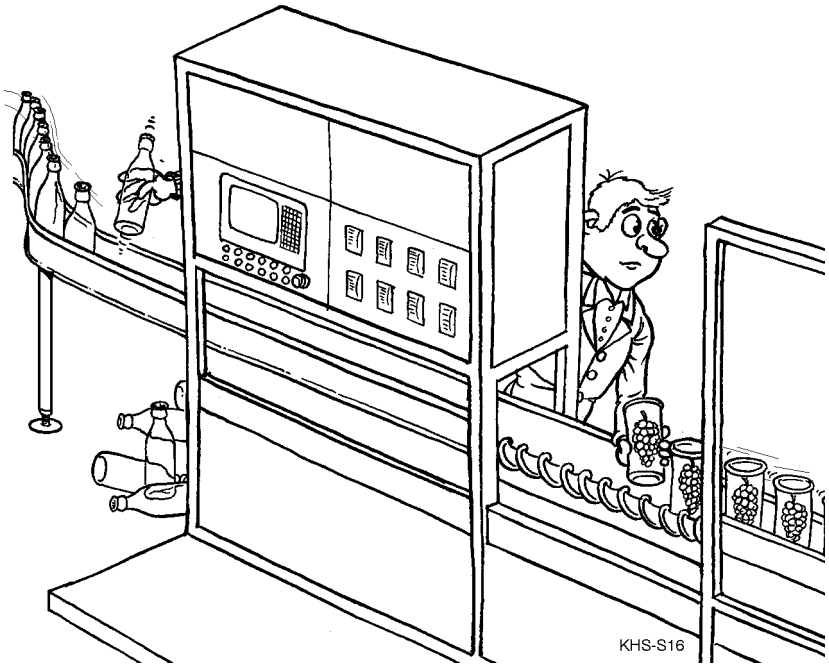
Remember that boiling steam can result when you rinse the machine with hot water. The feeder and return pipes through which the hot water passes can also be very hot.

Utilization of the filling plant for the intended purpose

All the operations which the plant is intended to perform are set out by KHS in the so-called technical specification.

Intended use is defined in contract

Every purchase contract between customer and KHS defines which beverages the plant is to fill into which containers (bottles, cans). If the user departs from this specification, risks can ensue for personnel and machine. If the user does not adhere to the terms of contract, KHS bears no liability whatsoever.



Possible misuse of the filling plant

It is conceivable that an employer may try to use the plant for beverages other than those agreed upon in the contract with KHS. This you must on no account do, as every liquid requires its own specific settings and guide elements. Moreover, the materials used are not designed to take every liquid: washers, valves and walls may be destroyed by some liquids, and personnel may in some circumstances be put at risk.

Contractual filling

If you take on contractual filling and wish to fill beverages other than the beverages/containers defined in the contract, you must always discuss this with the responsible members of KHS beforehand.

Operating/maintenance personnel must have the necessary qualifications

Personnel qualification and training

The personnel responsible for operating, maintenance, servicing and assembly must have the qualifications required for the work involved **(training and qualifications must be up to the KHS standard)**. The employer must clearly define areas of responsibility and reporting relationships and ensure close supervision of personnel. If personnel do not have the required qualifications, they must be given the necessary training and instruction. This can, if necessary, be provided by the manufacturer on behalf of the employer. Training should be repeated once a year.

Read and understand manuals

The employer must ensure that personnel **has read and fully understood the operating manual**.

Additional training

In the event of technical modifications to the plant or to machine parts, the employer must make the following provisions: With regard to technical modifications, personnel must be provided with the necessary additional training.

Take care with temporary staff

Take care with temporary staff; they too must be trained for the job they are to do.

Document training programs

In order to ensure that personnel have the right qualifications, it is advisable to document the content of training programmes. KHS presents each successful participant with a certificate.

General safety rules

Below we describe the possible general dangers

- which can derive from the filling plant,
- which are caused by errors on the part of personnel.

Rules to be observed by operating and maintenance personnel

Define accountability

Only trained and qualified personnel may operate, adjust or alter switches, valves, light barriers, and all switching and control elements.

Watch for irregularities

If the plant operator notices irregularities during the filling process, he must report these directly to his superior or his superior's deputy, and if need be switch off the plant.

Do not take intoxicants

The rule for operating and maintenance personnel carrying out work on or around the plant is :

- The consumption of alcohol or other intoxicating substances can entail danger to yourself and others.
- For this reason you may not perform any work on the system under the influence of alcohol or any other intoxicating substances.

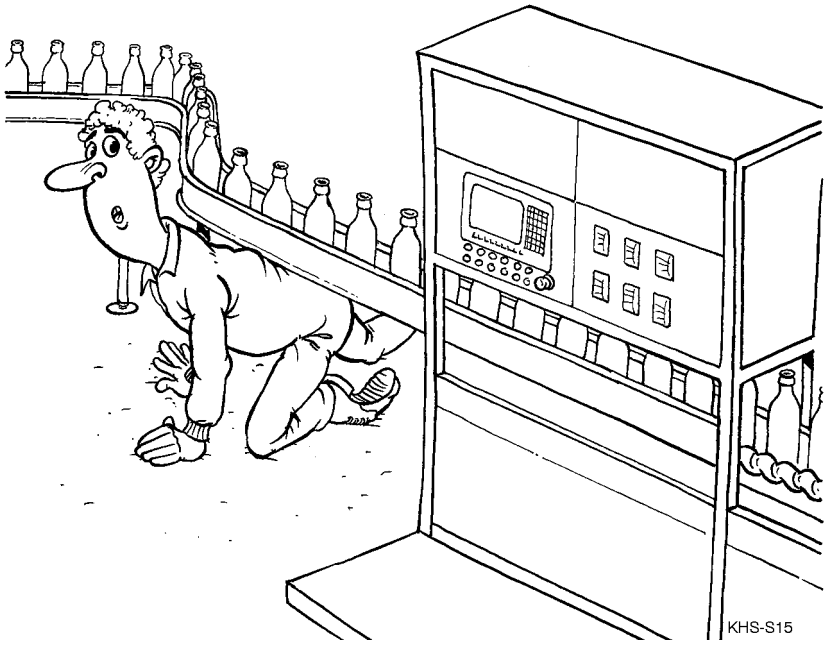
One operator supervises the biggest part of production

Always observe the safety regulations for employees working on their own in accordance with VBG 1 §36 sec. 3.

One operator supervises production

The inching operation is particularly hazardous, because here most safety devices are not effective. If you have to work with the inching operation of the machine during maintenance or adjustment, you should always do so under supervision.

Only use specified pathways



Always use the specified and secured pathways.

Never walk beneath or above the conveyors, because these lead into hazardous, unsecured areas of the plant.

Points to be aware of in the food industry

Hygiene

Hygiene is the number one rule in the food industry.

Remember that contaminated food can be a health hazard. When working in the food industry it is therefore important to keep operating premises, machines and containers especially clean.

Health certificate

We therefore recommend that all persons working on this plant should have a valid health certificate. We also recommend occupation-specific medical checkups (noise pollution).

Points to be aware of when selecting production materials

Bottle quality

The quality of bottles, cans and containers must conform to the capacity of the filling plant. This means that when the plant is operating with a high hourly output, the material used is subject to considerable stress and strain.

Technical safety devices are for your own protection

KHS uses the most up-to-date mechanical and electrical safety devices to provide maximum protection to all persons working in the danger area of the filling plant.

A description of these safety devices is to be found in the operating manual of the corresponding machine and in the general filling plant description.

Emergency-off switch

Pay attention to the after-running of the machine

The plant is equipped with several emergency-off switches.

When an emergency-off switch is operated, this does not mean that the machine stops immediately; every machine continues to run for a certain amount of time (after-running).

After-running means that after pressing the emergency-off switch, it takes a moment or two for all moving parts of a machine to come to a standstill.

Pay attention to the after-running of the machine

The plant is equipped with several emergency-off switches.

When an emergency-off switch is operated, this does not mean that the machine stops immediately; every machine continues to run for a certain amount of time (after-running).

Inspection intervals are to be complied with

The optic and acoustic warning devices in your plant are to be checked regularly for proper function. Information about the required inspection intervals are to be found in the relevant operating manuals.

The machine stops automatically when

- it is overloaded
- protective glass covers, grids and doors etc. are opened.

Explain optical signals!

In case of machine malfunctions, there are two different light signals (optical displays).

Continuous light:

Continuous light means there is a breakdown and the plant/machine is standing still.

Flashing light:

Flashing light means that the fault is cleared and that the plant/machine can be restarted.

Do not remove seals

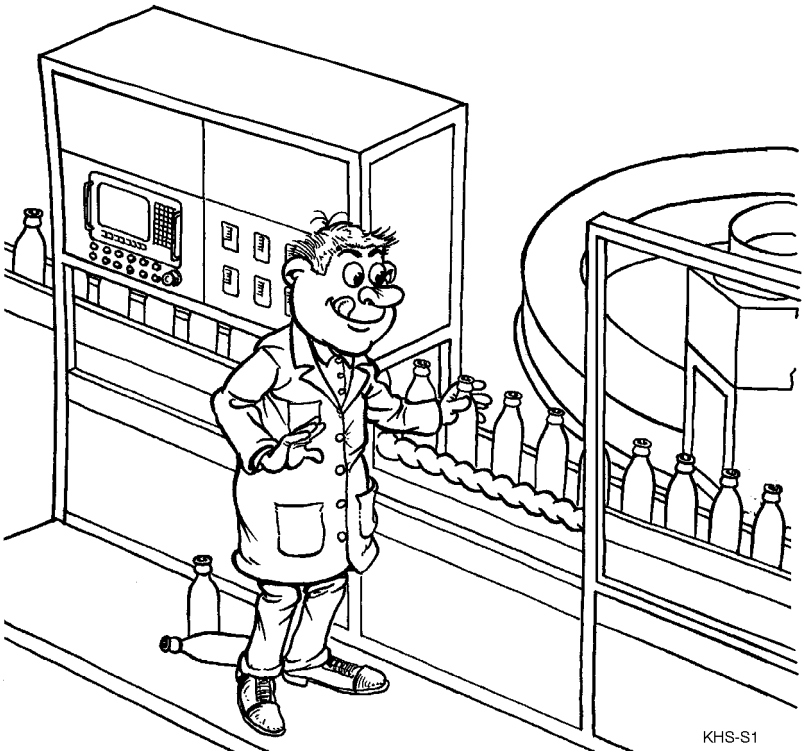
Every machine is equipped with safety valves. These valves are sealed. For your own safety, these seals must never be damaged or removed. If a seal is faulty, you must have the valve checked immediately and resealed.

Never bypasssafety devices

The additional safety devices which KHS has provided, such as protective doors, grids, glass covers, light barriers, control devices, load-limited devices, safety valves and emergency-off switches may never on any account be bypassed or put out of action. Their sole purpose is to protect both operating and maintenance personnel and plant/machine.

- The safety devices prevent unintended contact between human and machine.
- The safety devices switch off the machine automatically in the event of malfunction.

Never interfere with transportation channels of containers



You must never interfere with bottle transportation channels during the filling process. It is possible that the operator might during the filling process either take containers from or put containers onto the conveyor before or after the checkpoint. This would invalidate the checkpoints, and uncontrolled and thus contaminated or damaged containers could reach the retail outlets.

Wear the required protection in plant proximity

Persons working on and near the plant must wear the required protection.

The employer must ensure that operating and maintenance personnel wear the prescribed protection at all times. Protective clothing is an important factor in helping to avoid accidents and reducing the effects of accidents.

Wear eye protection or, better still, full facial protection

Operating and maintenance personnel should wear at least eye protection if there is no shield between themselves and the containers/beverage. Full facial protection is even more effective.

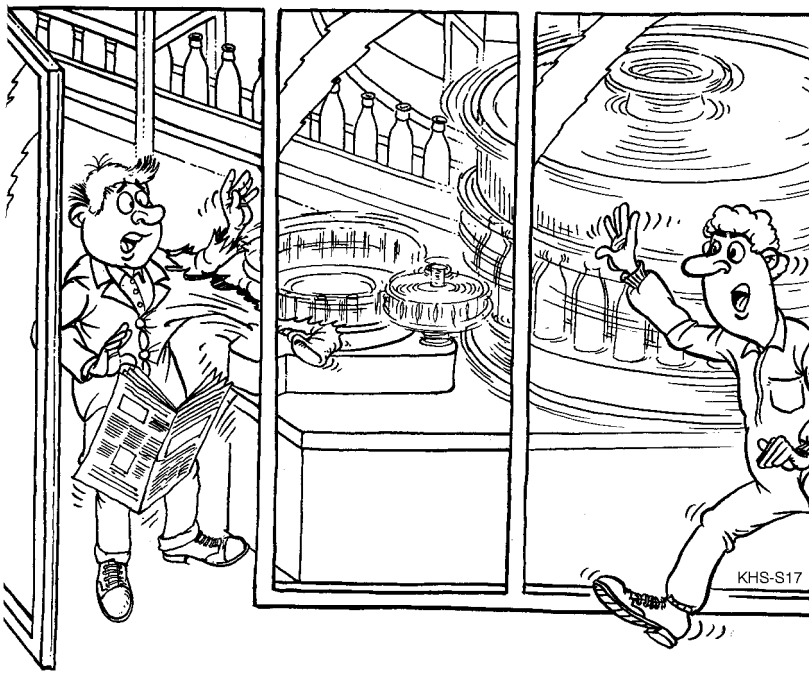
Accident report: The main cause of accidents is chipped, flying glass. Most minor injuries are attributable to this, but serious injuries also occur which have been fatal in cases.

Wear ear protection

KHS recommends the use of ear protection whenever the plant is in operation, as there is always a noise level of varying frequency in the vicinity of the machine. KHS products/ machines conform with the latest state of technology, i.e. the noise level is kept as low as possible. However, noise emission cannot be avoided altogther.

Wear protective clothing

Wear close-fitting protective clothing so as to avoid being caught by revolving or moving machine parts.



Accident report: Many serious injuries are caused by people getting nearer than permitted to moving parts and being caught by these. Known injuries range from cuts to the crushing and loss of finger ends, loss of fingers, hand or arm. These are injuries which in some cases have been fatal.

Injury statistics

Almost 70% of accidents which had to be reported were injuries to hands. Most serious accidents also involved injuries to hands and/or fingers.

Wear protective gloves

KHS designs the plant so that glass breakage is minimized and guarantees that glass breakage during production is no more than 0.03%. This is a very low percentage. However, where a plant is filling 45,000 bottles per hour, this can mean that a bottle bursts every four minutes. To remove fragments of glass, wear protective gloves.

Wearprotective footwear

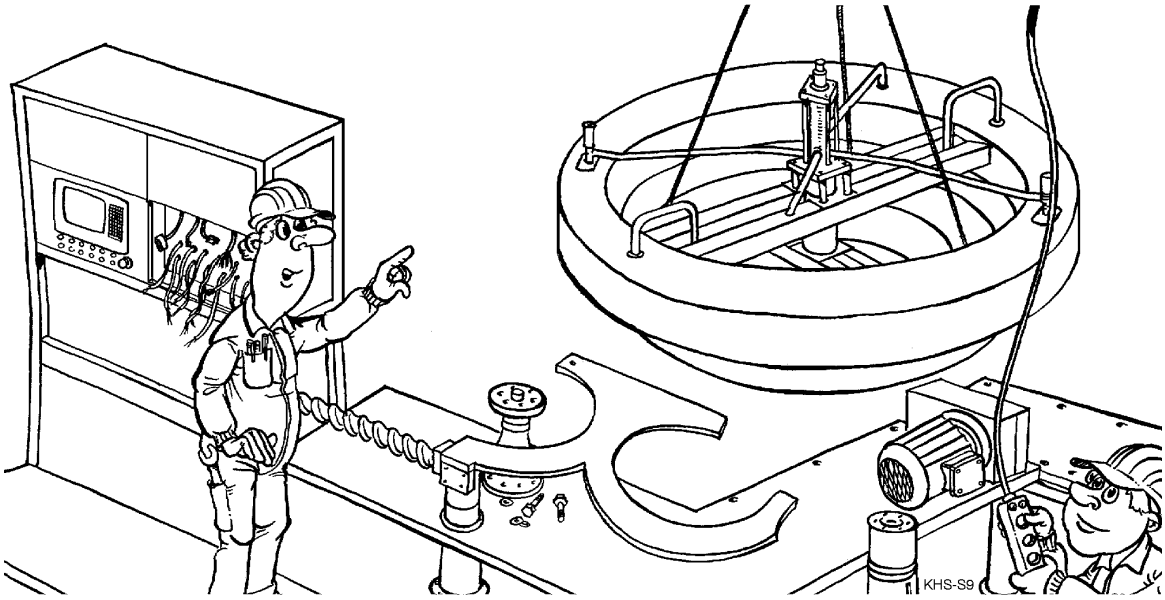
The floor area surrounding a filling plant is wet and therefore very slippery. Also, there can be a large amount of broken glass. Always wear protective footwear!

General safety rules relating to specific operations

Factors to consider in future planning

If the plant is used in combination with machines from a different manufacturer, operating safety and quality is no longer guaranteed. If you wish to combine the filling plant with other machines or machine parts, you must discuss the planned configuration with KHS specialists. Also, a contract should be drawn up defining who has the authority to give instructions for work on and around the plant.

Beware of machines from a different manufacturer



Rules to observe before starting up the plant

All assembly must be supervised by KHS specialists or be carried out by qualified personnel.

A plant may only be started up under the control of KHS specialists.

KHS specialists check that plant and measuring instruments are in working order and clear any faults.

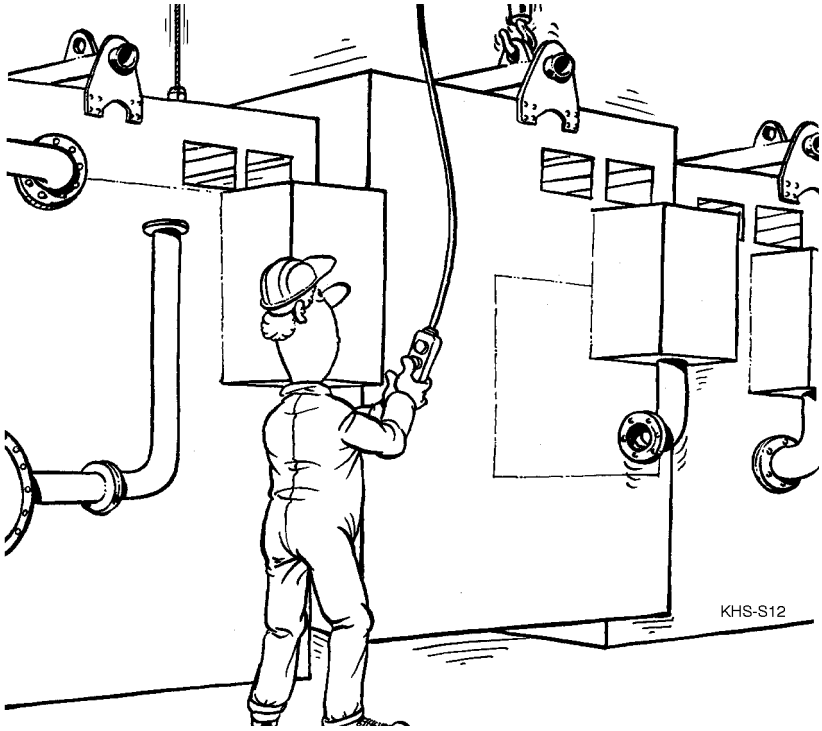
KHS specialists stipulate the necessary settings for the plant and adjust the plant accordingly. These settings are documented by the KHS specialist in accordance with DIN 8784.

Personnel to be substituted if necessary

If, before the plant goes into operation, the KHS specialist finds that operating personnel do not have the necessary qualifications, the employer must substitute them in accordance with DIN 8783. If necessary, KHS replaces them with members of its own organization.

The start-up process should be put down on record. This written record should include the following information :

- What target performance (set values) was expected ?
- What settings were stipulated ?
- What capacity (actual values) was achieved ?



Rules to observe when moving machines

If you wish to replace or add to the plant or parts of the plant, you must remember when moving the plant or parts thereof that for most components there are transportation locks and attachment or lifting regulations which you must always use and observe. For these, see the operating manual for the relevant machine.

Have regard todead weight

When lifting machine parts, remember that components can have a considerable dead weight. Therefore, use suitable lifting gear such as wire ropes, traverses, and other lifting devices. Also, when securing and transporting, have regard to the centre of gravity so that machine parts cannot slip or shift position.

Rules to observe when changing over machine parts

If you reset the plant to accommodate a different container type, you are interfering directly in an unsecured part of the machine. This means that re-tooling always involves an increased risk of accident.

Adjust setting values

Remember to reset and control the settings for each cleaning, filling and packaging process.

Change guide elements

Also, depending on the type of container some guide elements must be substituted. Some of these guide elements can have quite a considerable dead weight. If you have to lift or carry heavy weights, you should observe the following regulation:

- VBG 76 packaging and auxiliary packaging machines §19 sec.1.

Rules to observe during assembly/ maintenance

Use the right tools for assembly

Accident report: Minor injuries sustained during assembly are usually caused by slipping with a tool. Use only tools in perfect condition for assembly operations. The operating manual contains information about the special tools required.

Pretensioned machine components

Take care when assembling or dismantling parts which are under mechanical tension or under gas pressure, because here there is a risk of high **"potential energy"**. This potential energy can occur in various forms, e.g., spring pressure, gas pressure or vacuum. Such parts may only be assembled or dismantled by a specialist. Each operating manual contains information about such machine parts.

Spare parts

For safety reasons, use only original KHS spare parts.

Other rules to observe during operation

Settings must be constantly controlled and adhered to:

- so that human safety is ensured
- so that high quality is ensured
- so that machine safety is ensured

Rules to observe during cleaning and maintenance

Cleaning

Only water should be used to clean the outside of the machines. Never use substances which corrode the surfaces of the machines.

Remember that toxic emissions can occur as a result of chemicals, fumes and gases.

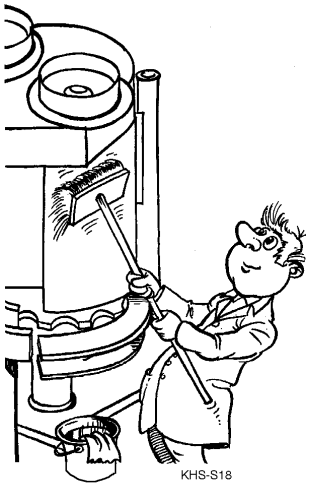
Additional information on cleaning agents and their usage is included in each operating manual.

Selection of cleaning agents

The user of the plant must select the cleaning agents carefully. They contain various chemical substances in different levels of concentration, which in some circumstances can cause damage both to humans and machine.

Dangerous Substances Act to be observed

Cleaning agents are available on the market which contain substances listed in the Dangerous Substances Act. These cleaning agents should be avoided wherever possible. If you apply cleaning agents which can put the operator at risk, you must inform him/her accordingly.



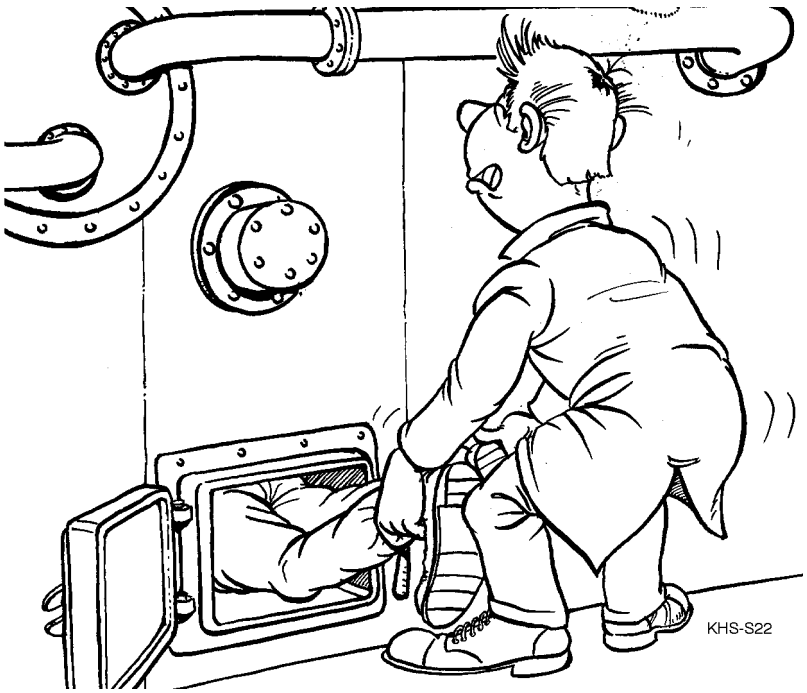
Where dirt has been allowed to accumulate, it may be necessary to use very aggressive chemical agents in order to clean the parts thoroughly. Such aggressive agents are acids and alkalis and a major hazard both to humans and machines.

Ensure that you never mix chemicals which are not intended to be put together. The result can be gases and fumes which irritate the skin or breathing.

If machines are equipped with handholes or manholes, these are to be used solely for the purpose of fitting spare parts and cleaning. Noone must ever enter the machine through a handhole or a manhole.

Beware: Risk of suffocation or poisoning !

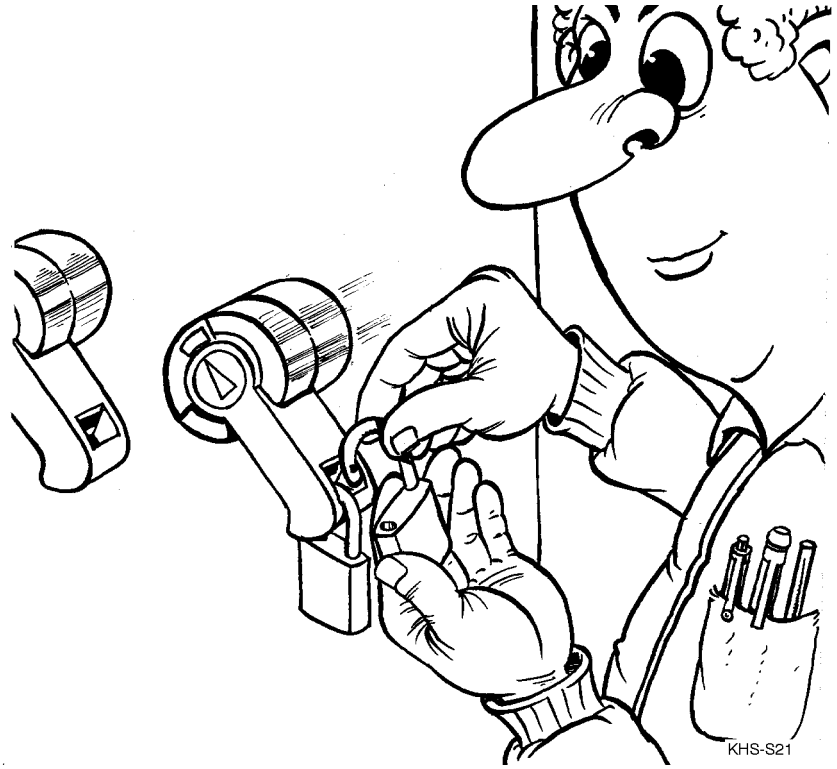
Manholes facilitate cleaning or the fitting of spare parts



Maintenance repairs

Prior to all maintenance, servicing and repairs the filling plant must be shut down. Switch off all necessary switches so as to avoid an unintentional start-up of the plant.

Secure main switch



Secure the main switch at the main control cabinet with a padlock.

Accident reports show that machines are suddenly started up even though maintenance personnel are still in or on the machine. Serious injuries have usually resulted. Known injuries range from the loss of finger ends to the loss of entire limbs, e.g., finger, hand or arm; injuries which in some cases were fatal.

Whenever two maintenance staff are working on a machine, each must secure the main switch at the main control cabinet with his own padlock to ensure that the machine is not started up unintentionally. Only when both employees have removed their padlocks can the machine be re-started.

Points to remember when using lubricants

Lubricants

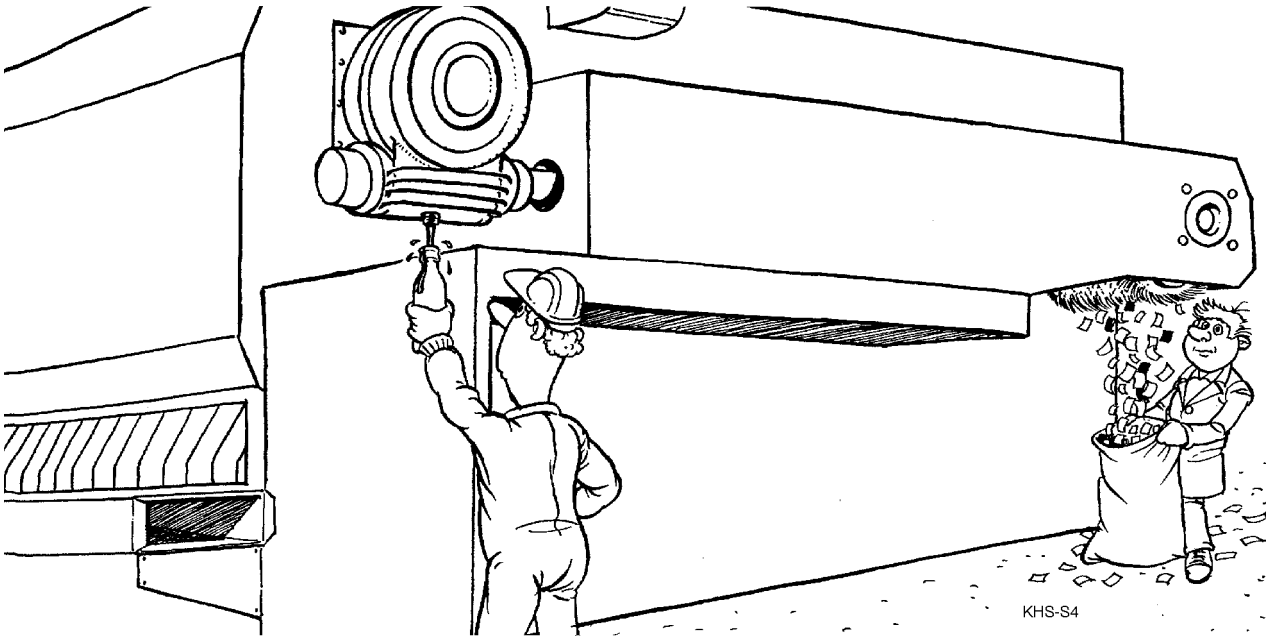
When lubricants come into contact with food, these lubricants have to be made of edible greases. Here, you must explain to operating and maintenance personnel that there is no recognizable difference between edible greases and mineral or synthetic greases.

Adhere totable of lubricants

Always adhere to the lubricant table which you will find in each operating manual.

Points to remember when disposing of waste

Waste disposal



When you have to dispose of all kinds of waste (e.g., fuels, residues, cleaning agents) observe the relevant laws, orders and regulations concerning waste-disposal measures and channels.

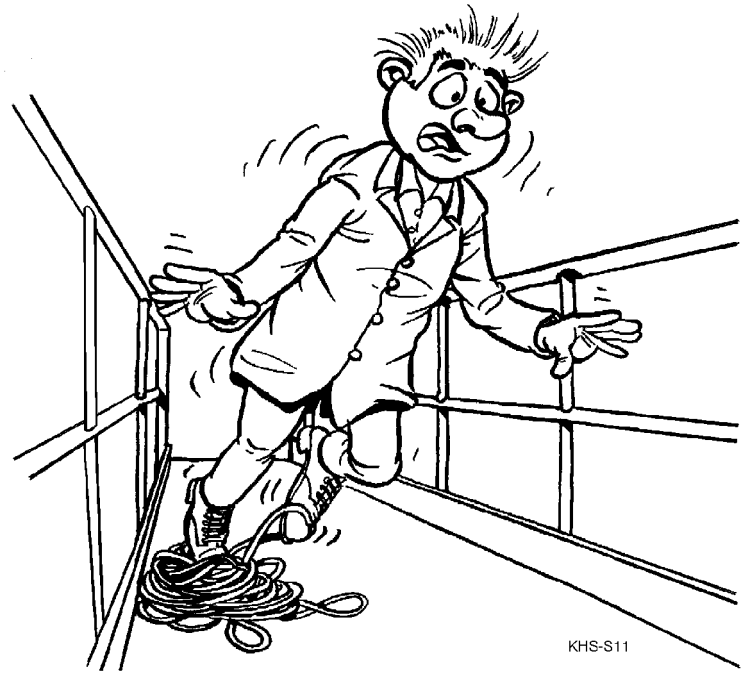
Each machine has its own subassembly-related operating manual. This manual contains information about possible waste materials. Guidelines are included for the correct disposal of scrap, packaging or auxiliary materials waste, and possible leakages. Factors to pay attention to include :

- protective equipment for staff;
- waste-disposal containers;
- absorbents, neutralizing agents, fire-extinguishing agents;
- cleaning methods;
- transportation regulations.

Operating and maintenance personnel must be kept regularly instructed and informed about the relevant laws/regulations so that they can take suitable action in the event of specific danger from harmful substances. Specifically, this involves immediate effective actions in a particular situation (switching off, securing, emergency devices) and clearly defined responsibilities.

Rules to observe when planning workplaces

The work area of the operator must give him sufficient space in which to move. If the operator has insufficient space to move in, he will quickly knock into machine parts or stumble over obstacles. This is the cause of many injuries.



The employer must ensure that the pathways that are required for machine operation and maintenance and for gaining access to the machine are kept free of obstacles.

Rules to observe when clearing faults

Only the specialist may clear major machine faults (not the operator).

Start the machine only when the fault has been cleared.

Emergency measures - what to do if the machine malfunctions

If an unforeseeable accident occurs :

1. apply the in-house first-aid rules.
2. report to the manufacturer so that any defects can be eliminated.

See next section for manufacturer´s address.

Address of manufacturer

Address of central department

KHS AG
Central Department Customer Service

Juchostraße 20
D- 44143 Dortmund
Telephone 02 31 / 569-0
Telefax 0231 / 569-1409
Internet http://www.khs.com

List of key documents

The filling plant and the various components thereof are so complex that a whole range of industries and their specific laws and regulations are relevant for such a plant/machine. To include them all would be to create confusion. Therefore, only the key documents and their sources are included here.

List of laws, standards and regulations which are of particular significance for the beverage industry.

Laws

Law on electromagnetic compatibility

Equipment safety law (GSG), 9th order to the equipment safety law

Product liability law

Product safety law

Guidelines

73/23/EEC	guideline on law voltage
80/778/EEC	guideline on the quality of drinking water
89/392/EEC	guideline on machines
89/686/EEC	guideline on protective clothing
92/59/EEC	guideline on product safety
89/336/EEC	guideline on electromagnetic compatibility
VDI 3741	Emissions of bottle filling plants
VDI 3638	Palletizers
VDI 4500	page 1 Technical documentation - user information
VDE 1000	general rules for the safe design of technical products (DIN 31000)

Standards

EN 292	Safety of machines, plant and equipment
EN 294	Safety distances precluding the emergence of hazardous sites with the upper members
EN 349	Minimum distances to prevent crushing of parts of the body
EN 415	Packaging machine safety, part 4: palletizers and depalletizers
EN 418	Emergency-off devices
provEN 482	Measured values for hazardous materials at workplaces
EN 563	Temperature limits for hot surfaces
EN 574	Machine safety; two-handed switch
EN 626	Health risks through dust, gas emissions
EN 775	Safety of industrial robots
EN 811	Safety distances, lower members
EN 953	Requirements for partitioning protective facilities
EN 1050	Safety of machinery, risk assessment
provEN 1070	Machine safety, terminology
EN 23 741	Acoustics, determination of audibility levels for broad band sources
EN 23 742	Acoustic, determination of auditibility levels for narrow band sources
EN 50 081-2	Electromagnetic devices, transmitted interference (industrial production)
EN 50 082-2	Electromagnetic devices, resistance to jamming (industrial production)
EN 50 100	Contactless protective facilities
EN 60204	Electrical equipment of industrial machines
EN 61310-2	Principles for displays, operating elements and marking
DIN 8782	Terms for filling plants
DIN 8783	Beverage filling technology (tests on filling plants)
DIN 8784	Beverage filling technology (minimum data specifications and order-specific specifications)
DIN V8418	User information; references for installation
DIN EN 1672	Safety and hygiene requirements
DIN EN 45635	Noise measurement on machines

Rules and regulations

VBG 1	General regulations
VBG 4	Electrical plant and production facilities
VBG 5	Energy-powered means of production
VBG 10	Continuous mechanical handling equipment
VBG 15	Lifting platforms
VBG 76	Packaging and auxiliary packaging machines
VBG 100	Occupational medical checkups
VBG 121	Noise
VBG 125	Safety marking at the workplace
ASI 8.11/91	Low-noise bottle filling plants

Acts and regulations

DruckBehV	Regulation on pressure vessels
GefStoffV	Dangerous substances act
VerpackV	Packaging act

Suppliers

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Mönckebergstraße 7
20095 Hamburg

Carl Heymanns-Verlag KG
Luxemburgerstr. 449
50939 Cologne

Bundesanzeiger Verlag
Postfach 100534
50445 Cologne

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* * *

Machine Description

Introduction

Dear Customer:

This information has been written with the intention of being read and understood and all items be adhered to by those persons responsible for the KHS machine described here.

All technical reference materials should always be kept in the immediate vicinity of the machine.

Particularly important details on machine handling will be pointed out in this Operating Manual.

Only with the knowledge of the information contained in this Operating Manual (**OM**), will it possible to avoid machine malfunctions and ensure trouble-free operation.

It is therefore essential that the persons responsible actually be familiar with the contents of this OM.

We recommend that the instructions contained in the OM be read carefully prior to starting the machine for the first time since we will assume no responsibility for damage and operation disruptions resulting from failure to comply with the instructions contained in this manual.

Contacting Customer Service or Spare Parts Dept.

Should problems develop nevertheless, contact our Customer Service or Spare Parts Dept. or one of our representatives who will be glad to provide assistance.

The illustrations and specifications contained in this Operating Manual are subject to any technical modification necessary for machine improvement.

Copyright

1. Our company is alone is entitled to the **COPYRIGHT** on the

- **OPERATING MANUAL**
- **DRAWINGS**
- **SPARE PARTS LISTS**

as well as stored

- **SOFTWARE**

documentation records supplied by KHS for operating the machine or device.

With regard to the software, the user has only a non-transferable right to use of the programs within the scope of their intended purpose. The sole purpose of the operating manual, drawings, and spare parts lists is to provide assistance in proper operation and servicing of the machine. Any other complete or partial use such as passing the above on to third parties, removal, and reproduction without our written consent is unlawful.

These materials in any form are to be treated as confidential trade secrets and are to be kept secret from third parties - the competition in particular.

2. We disclaim any liability for personal injury, damage to property, or financial loss due to use of modified or third-party programs without our consent; any unexpired warranty claims on the part of the user are also canceled.

Brief Description

The **INNOKET labeling machine** is a state-of-the-art hot melt labeler.

The Innoket labeling machine is designed to process individual labels with hot melt and apply them to the appropriate containers. This machine is capable of attaining very high container throughputs.

The use of high-quality materials makes high-precision label application, low-noise and low-maintenance operation possible coupled with low glue consumption. A wide range of container sizes can be processed by one machine by simply changing container-specific components and settings.

The main characteristics of the machine include clearly arranged design, ease of operation, and many built-in safety facilities.

The machine is operated by an electronic control system equipped with integrated operating functions and a clear text display for machine messages and parameters. As an option to the clear text display, the KHS operator terminal with TFT color monitor (touch screen) offers operator prompting with online help and machine data statistics.

The container guide parts can be quickly and easily changed. The guide parts are mounted manually.

Area of Application and Intended Purpose

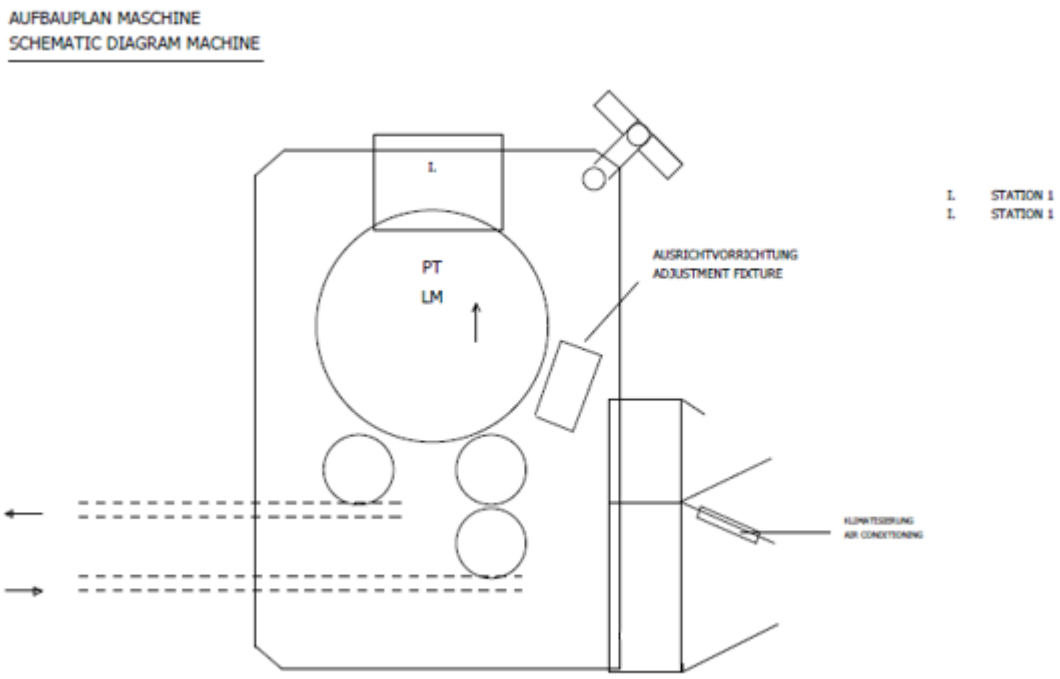
The sole intended purpose of this KHS labeling machine is to apply labels to containers with hot melt as defined in the **Technical Specifications** or in the order confirmation of the machine.

Alterations or modifications to the machine without the knowledge and consent of KHS as well as use beyond the intended purpose are considered not in accordance with the intended purpose.

The manufacturer will accept no liability for any damage resulting from non-compliance. The user is solely responsible. The machine is equipped according to the container materials and the customer's requirements.

Figure 1-1 : Machine Layout (Diagram)

Machine Design and Drive



The machine table is comprised of a solid metal sheet and table paneling made of stainless steel sheeting.

The bolted table base and the intermediate table plate supports are galvanized.

The completely enclosed machine is equipped with fold-up or lift-up doors.

The machine's control cabinet is integrated in the machine housing. All electrical components are located at the machine.

The frequency-controlled main drive powering the machine is located beneath the machine table.

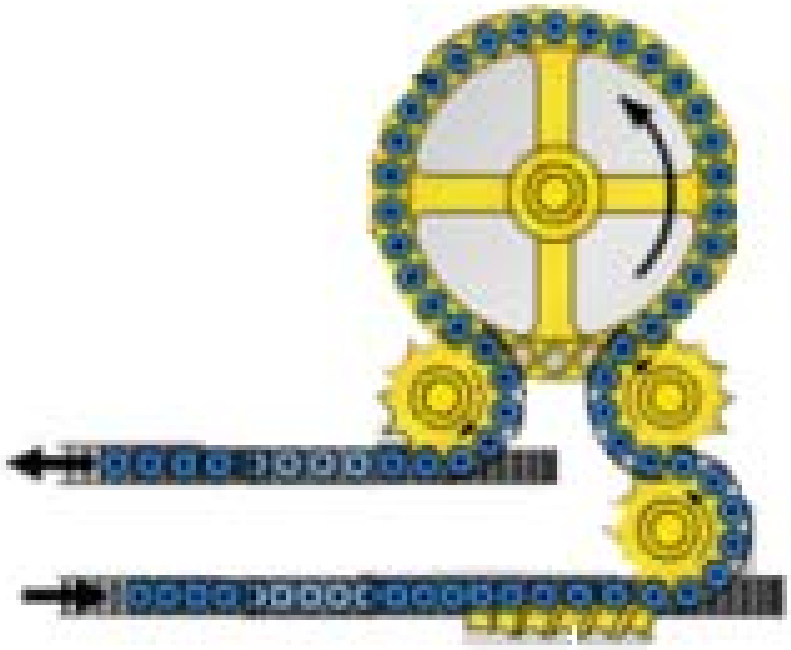
All gear wheel pairs are made of plastic and require no grease lubrication.

The labeler and the labeling stations can be cleaned by flushing them off with water.

Please bear in mind, however, that electrical components are installed in the machine itself and must be protected against water in all instances. Do no use high-pressure sprays for cleaning.

Drive Layout

Figure 1-2 :
Drive Diagram



A frequency-controlled gear motor is used as the main drive for the labeler.

A cog belt is used to drive the stations.

The feedscrew is driven by a cog belt.

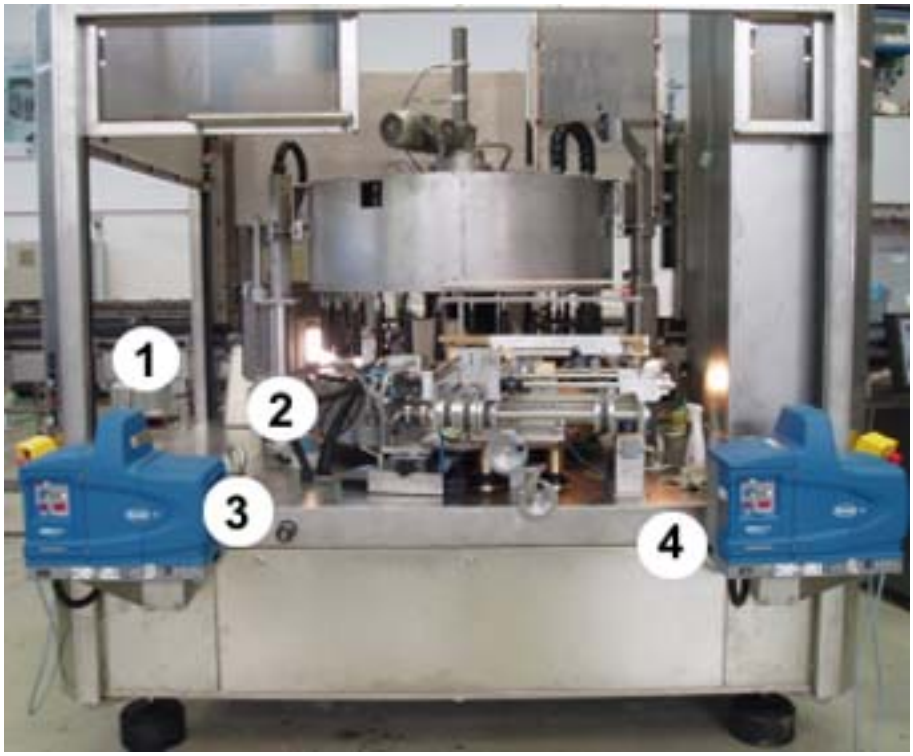
Separate conveyor belts at the infeed and outfeed ends enable different speed settings for infeed and outfeed.

The infeed conveyor is likewise driven by its own frequency-controlled gear motor.

It is thus possible to variably regulate the speed at the infeed end.

Labeling Machine – Components and Machine Overview

Machine Overview – Diagram



1 = Container infeed
2 = Camera-controlled container alignment
3 = Initial gluing
4 = Labeling station and final gluing

The containers must be aligned so that one corner of the container is the transfer point for the label.

This labeling machine is equipped with a container alignment system mounted on the machine table.

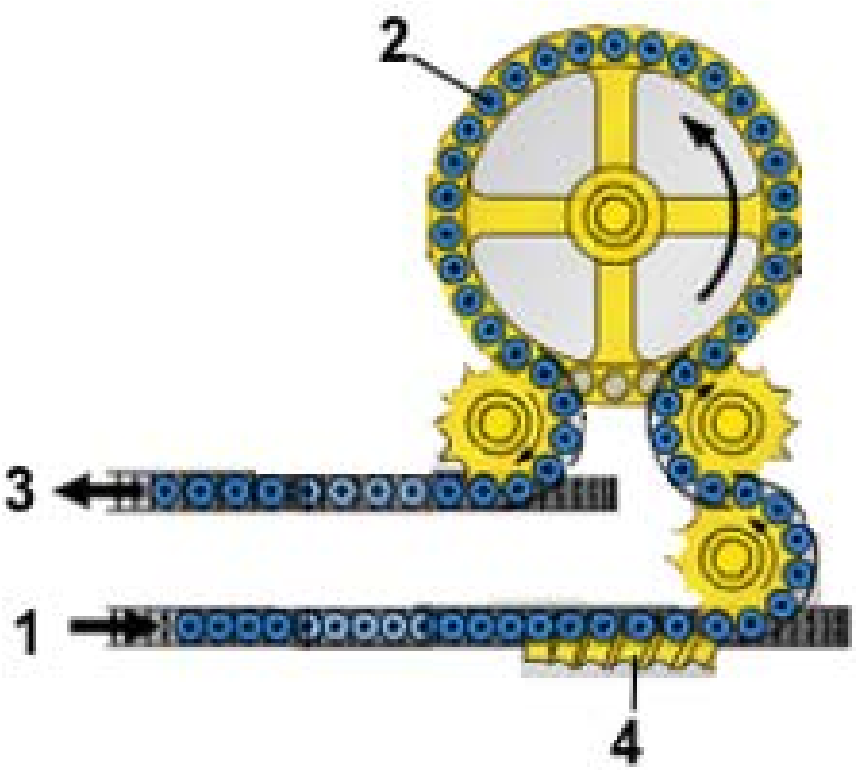
The Nordson hot melt unit sprays hot melt through two nozzles on the container for initial gluing.

This KHS labeling machine is equipped with a final gluing facility (Nordson hot melt unit) to glue the resulting overlapping ends of the labels.

Container Transport through the Labeler and Labeling

This description of the **Innoket** labeler's design and operation follows the containers as they pass through the labeling machine.

Figure 1-3 : Diagram of Container Conveying



1 Container infeed

2 Container turret with lower chuck

3 Container outfeed

4 Feedscrew(s) and bottle flowgate

Container infeed

The containers are transferred from the infeed conveyor to the labeling machine by the feedscrew **(4).** Backup switches are installed upstream to the labeler to regulate the flow of incoming bottles. The infeed conveyor belt is regulated by a separate frequency-controlled drive.

Backup switches (the number and positions depend on the machine equipment) are installed between the filler and the labeler to monitor the flow of containers being conveyed to the labeler. When the flow of containers is disrupted, the backup switches close the container flowgate and reduce the machine speed. A **"NO CONTAINERS"** error message is displayed on the operator console. When the container flowgate is closed, the incoming containers can now close up the gap to the backup switches, the container flowgate is opened, and the machine is readjusted to the set speed. A gap detector is installed upstream to the feedscrew.

The gap detector monitors the flow of containers and shuts off the machine and conveyors when it detects a gap in the container flow.

Once the cause of the malfunction has been eliminated, the machine can be restarted only by pressing the **"ACK ERROR"** button at the operator panel.

Feedscrew

The feedscrew spaces the incoming flow of containers to suit the machine (container pitch within the labeler) and simultaneously conveys them to the infeed star.

The feedscrew counter-guide, equipped with an integrated container flowgate, represents the outer limit of the container transport in the area of the feedscrew. It is a container-diameter-dependent part and needs to be adjusted accordingly when processing containers with other diameters.

Infeed star

The infeed star conducts the containers from the feedscrew through the transfer star to the container turret. It is important that the stars be correctly positioned in relation to the container turrets to ensure that they are properly centered vertically on the container turrets.

Electrical Control - Clocking and Signals

The machine timing is generated by a cam controller and encoder. The switching mechanism turns 360° once for each machine pitch (container). Ranges from 0° to 359° can be defined for this purpose in which the cam controller generates signals.

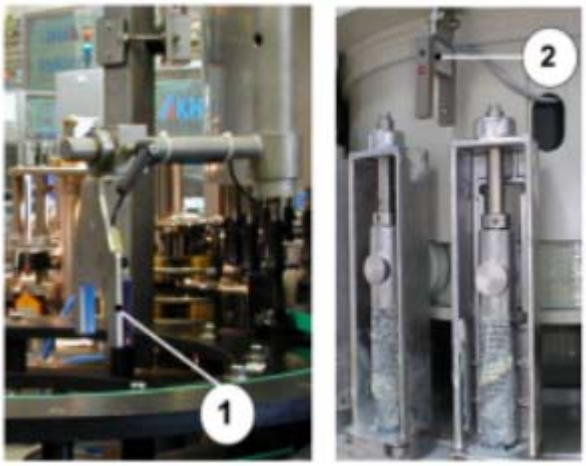
Signal 1: For machine clocking -> 0° to 50° in the cam controller

Signal 2: Station clocking for label hoppers -> between 50° and 359° in the cam controller

Signal 3: Enable signal for infed containers -> only if using a light scanner for signal 4. Is set to signal time point ± 40°.

Signal 4: A signal for an infed container is generated by a fork light barrier **(1)** that is located in the infeed area of the machine. The "window" of signal 3 ranges from 0° to 359° if this light barrier is used.

Signal 5: Centering bell sensor signal generated by a fork light barrier **(2)** located above the centering bell (the PLC of the machine checks with the help of this signal if a container that has been detected as "container resent" by signal 4 in the infeed has past through the machine intact).



Light barriers

NOTE!

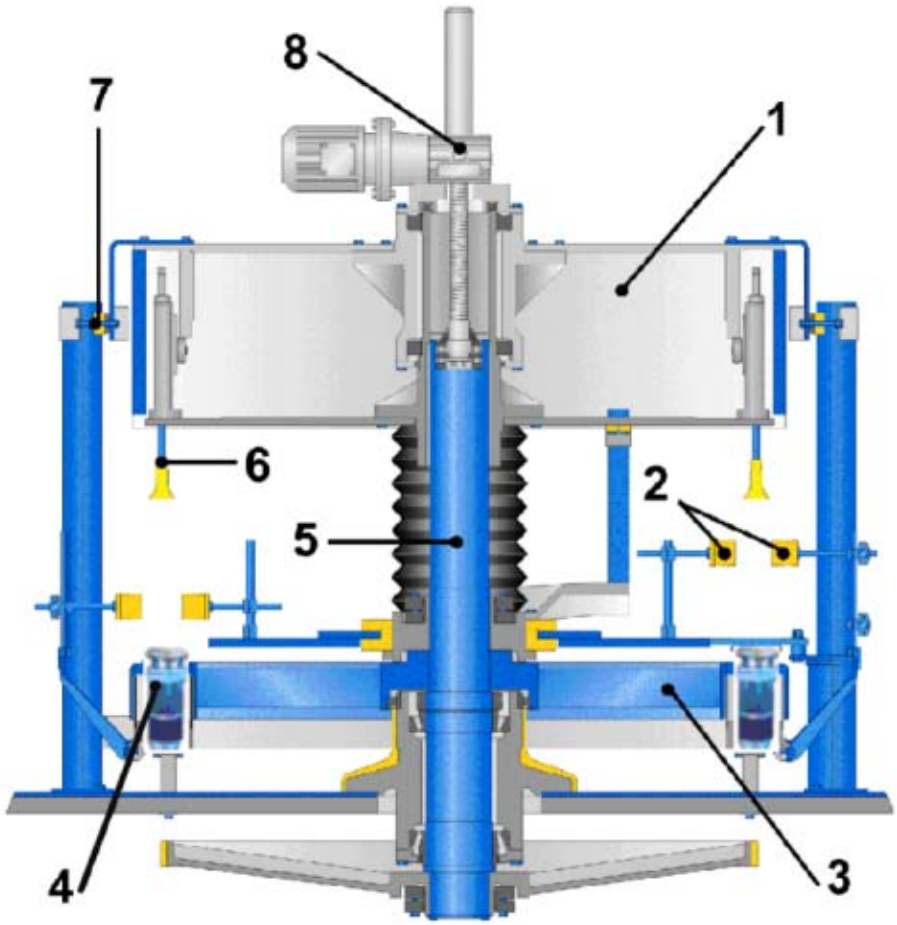
Please contact KHS service technicians when in doubt regarding adjusting the electrical control. Any incorrectly made adjustments can affect proper machine operation and could seriously damage the machine and its components. Only specially trained technicians may make adjustments. KHS will not be held liable for any damage resulting from failure to comply with these instructions.

Container control

The containers are guided through the infeed and discharge star areas by container guides located on either side. Container guide parts are suited to a particular container diameter and shape and are supplied separately for each container shape. As with all other format parts, one set of container guides for a particular container shape is coded by a combination of letters and numbers for easy identification. In special cases, color-coded or color-marked guide parts are also used (option).

Center Column with Central Star, Centering Hood, and Container Turret

Figure 1-4 : Center Column, Centering Hood, and Container Turret



The central star transports the containers coming from the infeed star past the labeling station, through the brush-on application channel to the outfeed star. The following components are installed in the area of the center column:

Centering hood (**1**), brush-on application channel (**2**), container turrets (**3**) with integrated VarioDrives and lower chucks (**4**), center column (**5**), centering heads (**6**), pneumatic centering hood clamping mechanism (**7**), and an electric motor for hood height adjustment (**8**).

The container turret is equipped with VarioDrive units (motor-driven lower chucks) to rotate the containers as required.

When containers enter container turret, they are monitored for breakage, which can trigger a machine stop if any breakage is detected.

Central Lubrication and Return of Lubricant to the Center Column

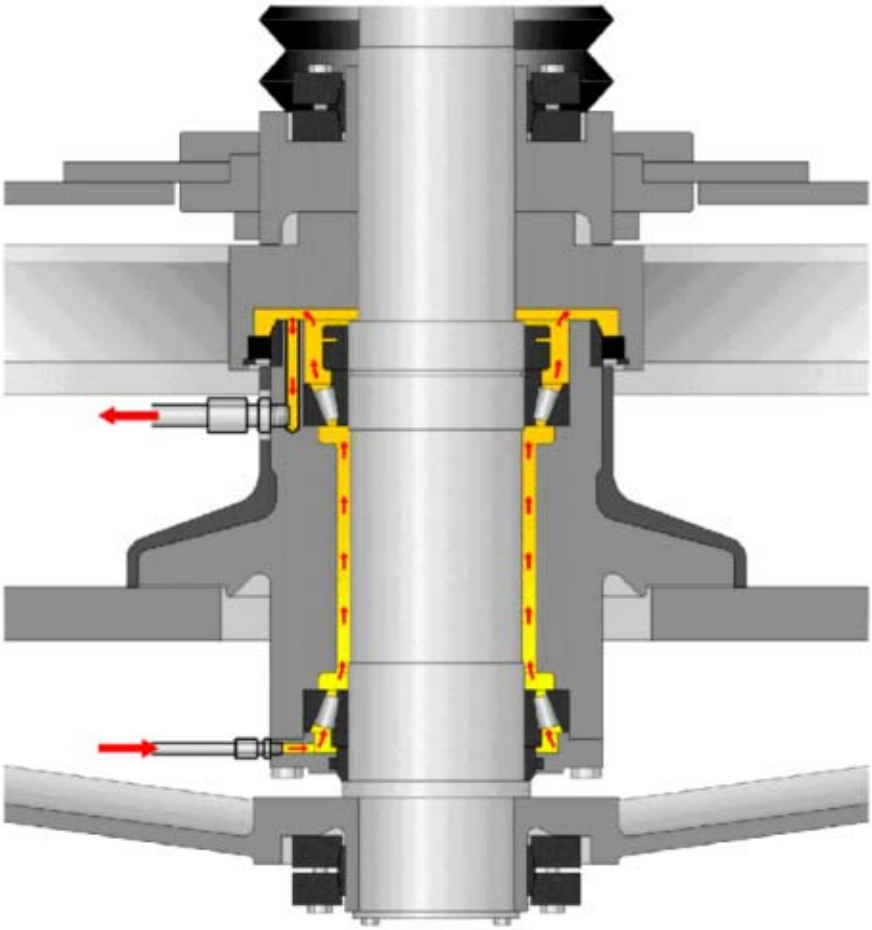


Figure 1-5 : Central Lubrication of the Center Column

The labeler's central grease lubrication system is a self-contained system equipped with defined grease return to a collection tank. The system operates with an electric grease pump and provides feedback to the machine control PLC on any lack of lubricant and interrupts in the supply of lubricant by the progressive distributor (monitoring).

Manual lubrication of the labeling machine can also be used depending on customer requirements.

Container Turret with VarioDrive Units and Lower Chucks

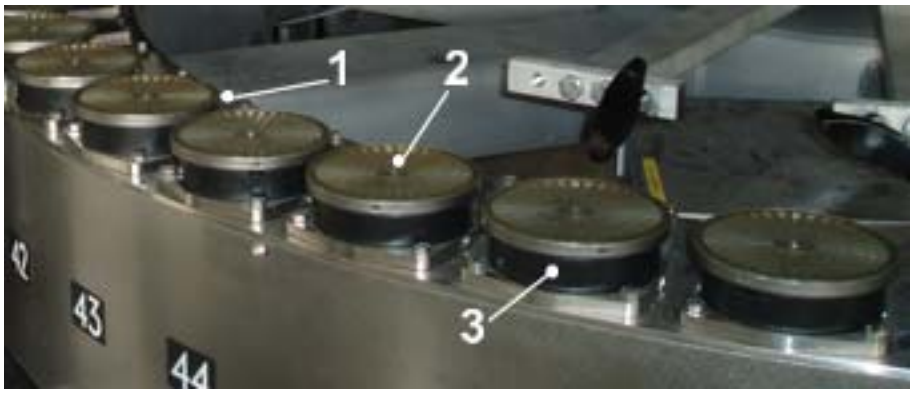


Figure 1-6 : Lower Chucks with VarioDrive Units

The container turret **(1)** receives the containers to be labeled from the infeed star.

The container turrets are equipped with sealed VarioDrive units **(3)** and special lower chucks **(2)** (container-shape dependent) to receive the containers.

Each VarioDrive unit is equipped with its own motor. Stainless steel is used in the upper section to facilitate cleaning of the lower chucks.

The VarioDrives are able to rotate the containers individually in order to adapt to different container formats and the corresponding label shapes.

The built-in VarioDrive units are insensitive to broken containers, broken glass, and other fouling.

All VarioDrive units are splash-protected.

The VarioDrives are to be cleaned according to the standard cleaning procedures (**see section Cleaning in Chapter 6**).

Do not use a high-pressure spray to clean the machine and the labeling stations that could damage or destroy seals/gaskets, bearings and other components.

Unit Installation and Assembly

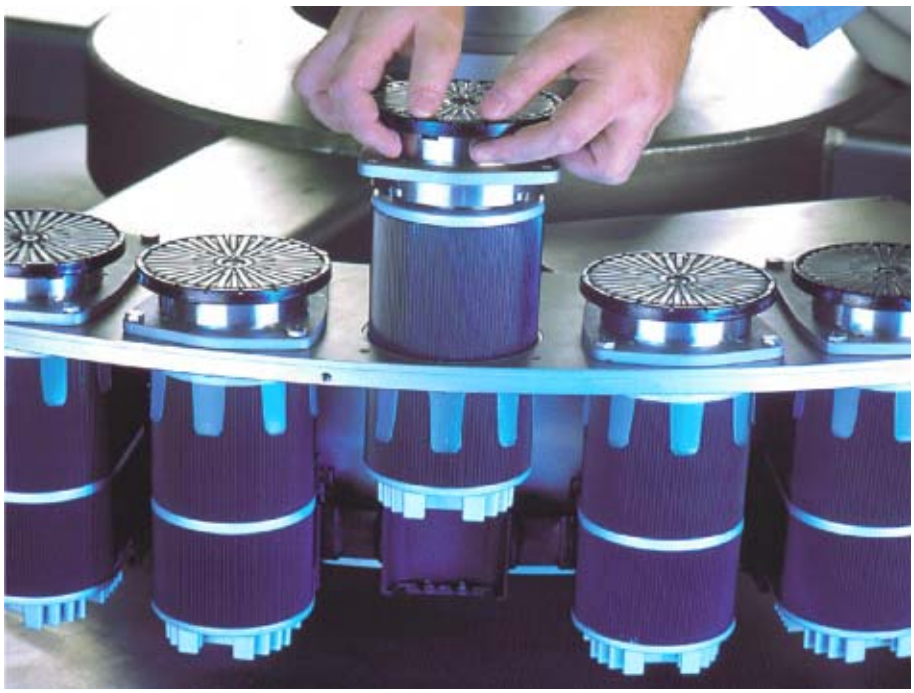


Figure 1-7 : Installation

The easily accessible screw joints make it possible to quickly change and replace the VarioDrive units.

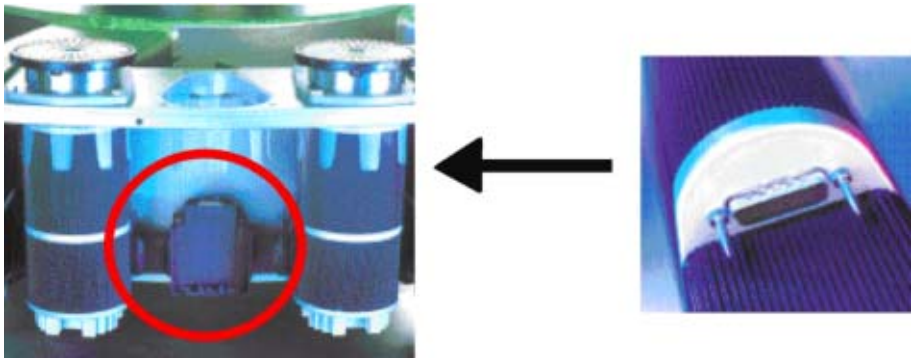


Figure 1-8 : Electrical Connections

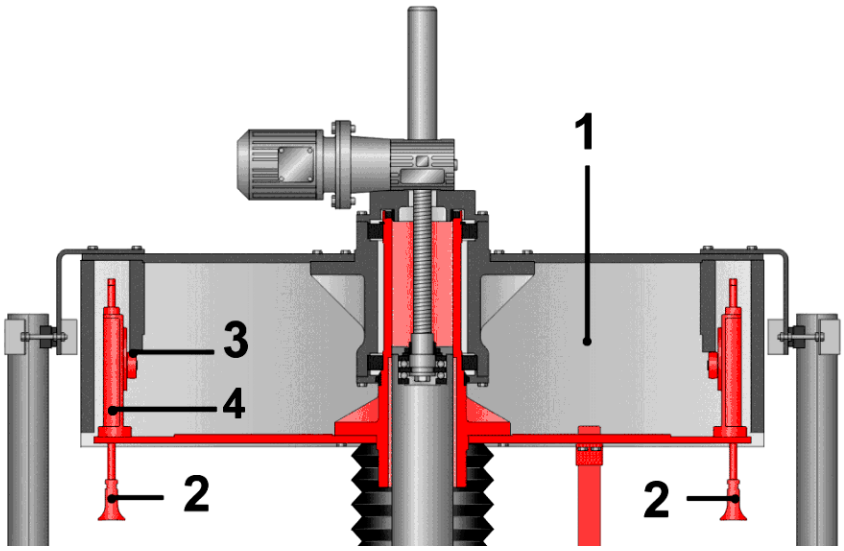
Plug-and-socket electrical connections are used to hook up the units.

Using VarioDrive units, offers users the following advantages:

- Container rotation flexibility
- Labeling of all container shapes and styles of dressing on one machine
- Variable adaptation to other container styles and dressings at a later date

Centering Hood

Figure 1-9 : Centering Heads in the Lifting Cam



The centering bells (**2**) run circularly in the centering hood (**1**) in a continuous lifting cam (**3**).

Centering bells attached to the centering elements (**4**) are lowered onto the container necks as the containers are transferred from the infeed star through the transfer star to the container turret.

The containers are held firmly in place between the centering bells and the lower chucks.

The pressure springs in the centering elements (**4**) compensate for any differences in container heights of a few millimeters.

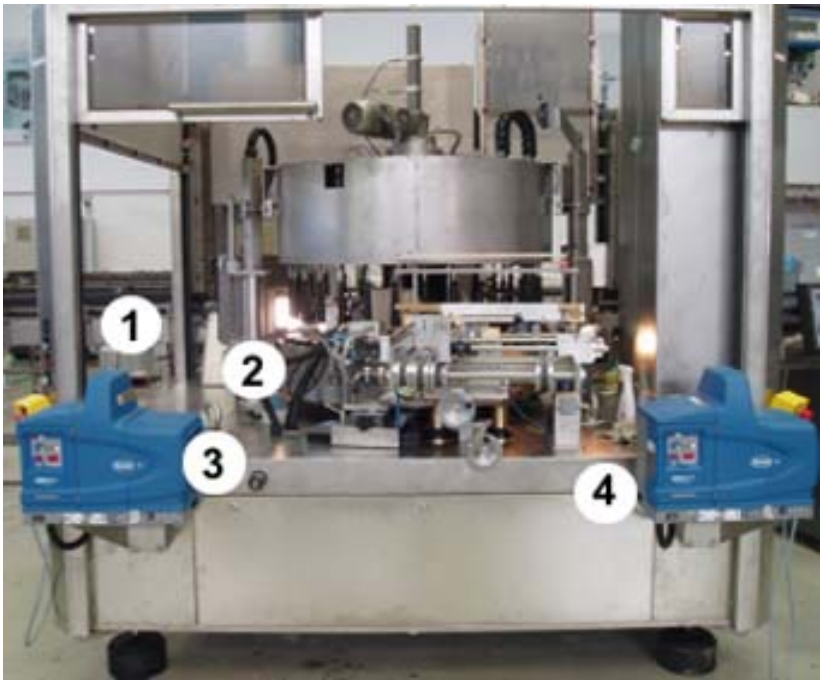
The centering bells are lifted to release the labeled containers for removal from the container turret by the outfeed star.

It will be necessary to adjust the height of the centering hood above the container turret with an electric motor to adapt the labeler to various container heights when processing several different label styles. Once a container type has been selected, the centering hood is moved automatically to the corresponding position.

Press and hold the operating button as long as the head is moving while the centering hood is being lowered!

A pneumatic clamp fixes the position of the centering hood.

Hot Melt Labeling and Labeling Station Design



Machine Overview – Diagram

1 = Container infeed **2** = Camera-controlled container alignment

3 = Initial gluing **4** = **Labeling station** and final gluing

Adjusting the labeling station

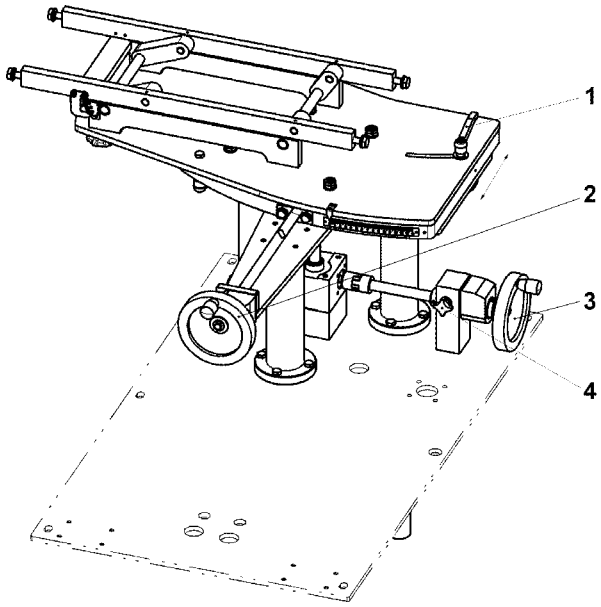
The label hopper is mounted on an adjustment facility. There are 4 options for positioning the label hopper:

- Pickup depth (container thrust depth for label pickup)
- Height adjustment
- Pitch
- Tangential line-up in relation to the container

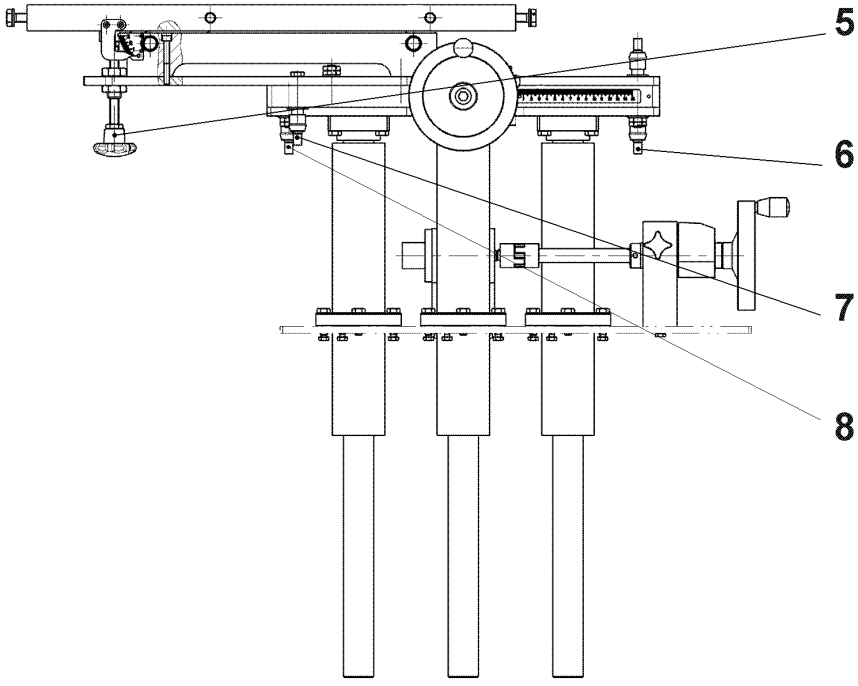
Handwheel **(2)** is used to adjust the pickup depth (first release the clamping levers (**6**) and **(8)**). Handwheel **(3)** is used to adjust the height of the label hopper (first release the star knob). Both handwheels are equipped with scales in order to reproduce settings. Adjustment wheel (**5**) is used to adjust the pitch (tilt) of the label hopper. The tangential position of the label hopper in relation to the container can be adjusted by releasing clamping levers **(1)** and **(7)**. Both setting are indicated on a scale (ruler).

After readjusting all positions, be sure to tighten the clamping levers / star knobs provided for this purpose.

Height and Thrust Depth Adjustment

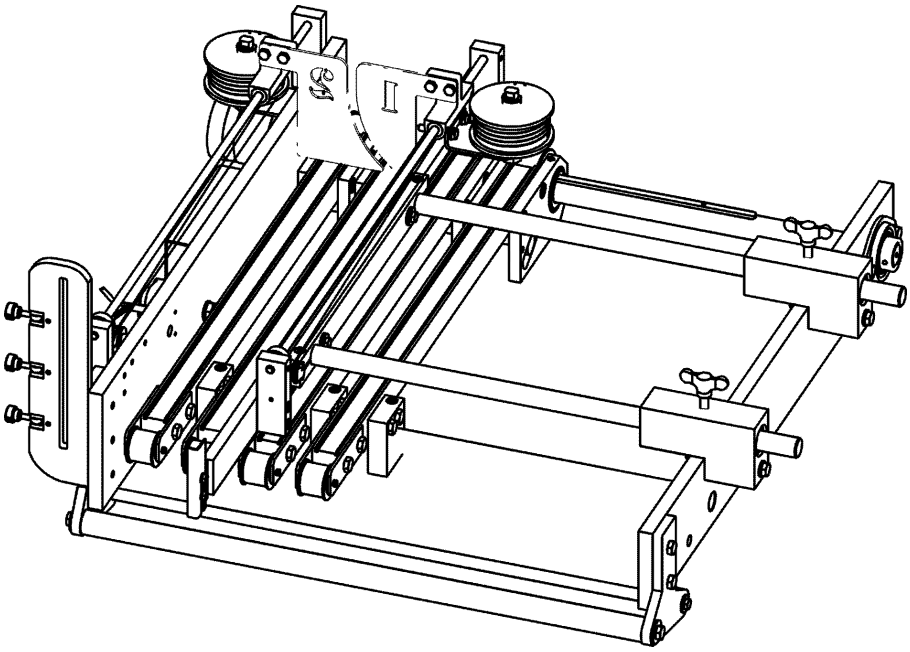


Pitch and Tangential Line-up Adjustment



Label Hopper

Label Hopper



The label hopper contains the labels.

A tensioning unit puts the labels under spring pressure. An air cylinder advances the label feed.

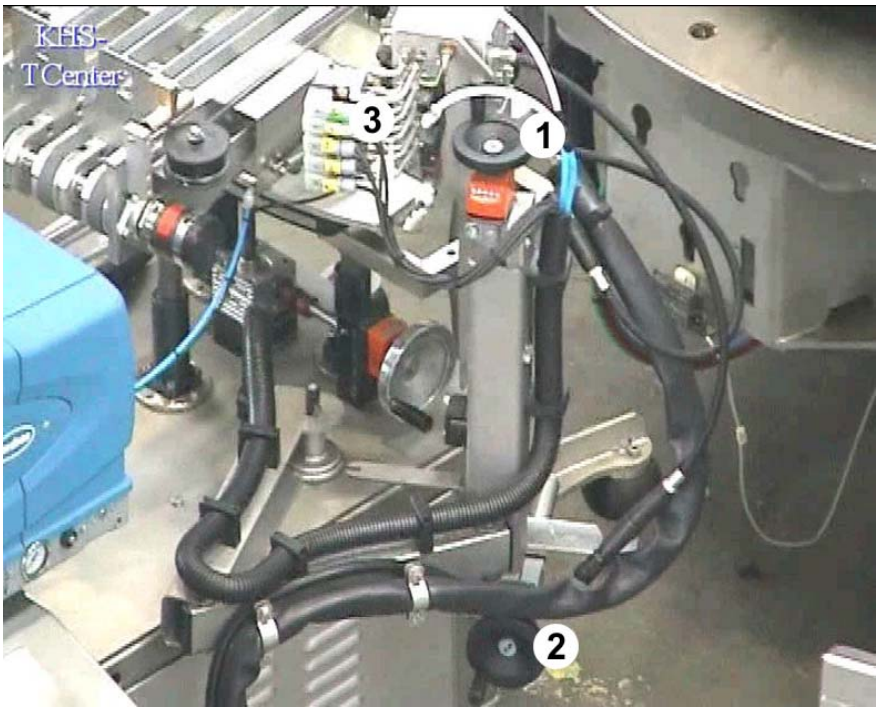
It controls a cam that advances the belt straps in cycles by means of a freewheel.

The label hopper can be easily changed over to another label format.

A sensor (light reflection sensor) is mounted on the side of the label hopper that sends a signal when the label hopper is empty. This signal appears on the monitor of the machine.

Initial Gluing

Initial Gluing
Application Head



This holder is equipped with two handwheels.

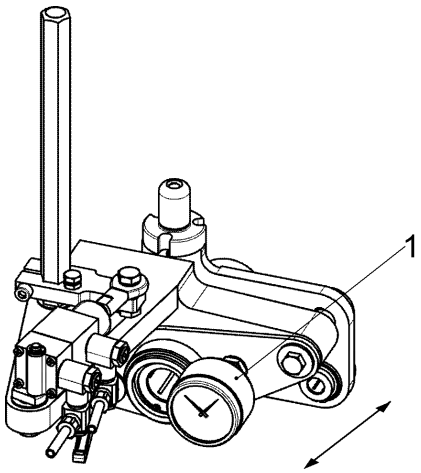
Handwheel **(1)** is used to adjust the height.

Handwheel **(2)** is used to adjust the depth.

Both handwheels are equipped with scales in order to reproduce settings.

The holder can be swung away to the side and locked in place with a clamping lever.

Final Gluing



Final Gluing Mount (Diagram)

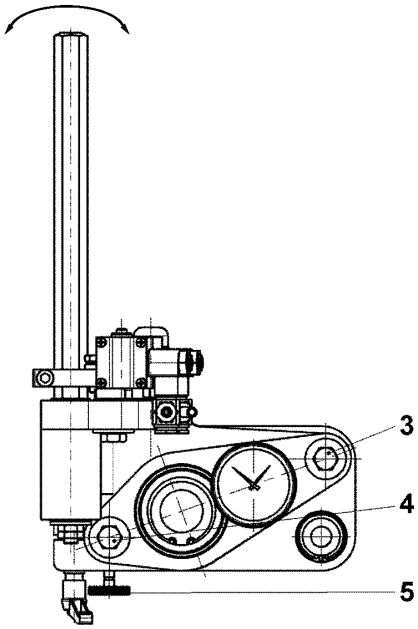
The final gluing mount serves as a holder for the gluing strip **(2)** of the final gluing unit.

Control knob **(1)** is used to adjust the width of the glue.

Final Gluing Strip

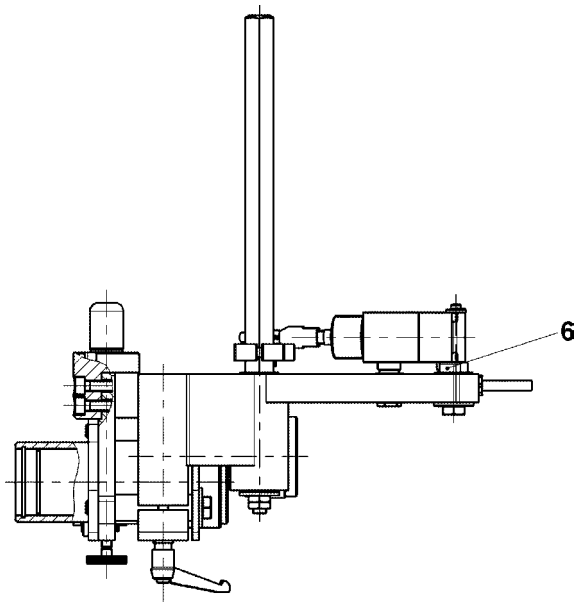
In the idle position, the gluing strip is pneumatically swung away to the side.

Final Gluing Pitch



The pitch of the gluing strip can be adjusted by releasing screws **(3)** and **(4)** and turning the knurled screw.

Final Gluing Thrust Depth



Cam **(6)** is used to adjust the pressure of the gluing strip on the label.

Principle of Hot Melt Labeling Operation

The machine is equipped with two hot melt tanks (one for initial gluing and one for final gluing).

The control system provided by the manufacturer of the hot melt unit controls the temperature of the hot melt and regulates the pump pressure (**also refer to the manufacturer operating manual for further information**).

Several dabs of glue are sprayed on the container as it rotates past the application head (initial gluing).

The number of dabs of glue depends on the size of the label.

After the glue is applied, the container is rotated 360° and is then positioned at the label hopper.

The container picks up a label from the label hopper by means of the dabs of glue as it rolls off the leading edge of the label.

As the container continues to roll, the label is then removed completely from the label hopper.

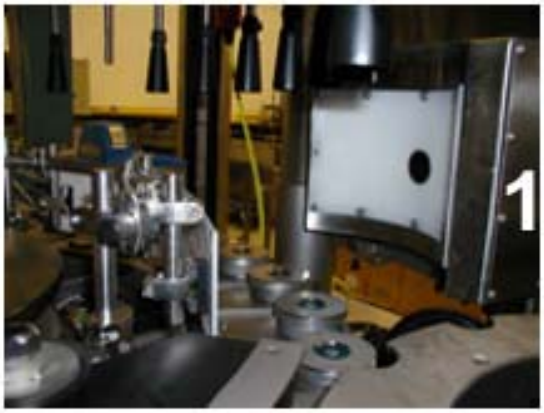
When the label is completely removed from the hopper, the end of the label is pulled off the adjacent final gluing unit from where is becomes the glue required for the label overlap.

The label is then smoothed onto the container by an internal brush application channel.

The container rotation profile required for these processes is controlled by the respective VarioDrive under the container turret.

Container Alignment System

Camera-controlled Alignment (Container Infeed View)



This KHS labeling machine is equipped with a container alignment system (**1**) mounted on the machine table.

The incoming containers are rotated once 360° and recorded by a camera system. The machine control then sends the image of the container shell surface to the signal evaluation computer.

A vertical recess in the container is used for alignment (container with alignment notch).

The alignment value is calculated based on this information and then sent to the lower chuck that then rotates the container accordingly.

By controlling and rotating the lower chuck by means of the VarioDrive system, the container is rotated to the exact position in the labeling station for label application.

Note regarding the container alignment system

Refer to the information regarding the container alignment and/or container detection system contained in the attachment to operating manual (NP Part Documentation).

Labeling Machine Safeguards

For your protection and safety, each labeler and labeling station is equipped with a safety housing comprised of movable protective glass screens.

These glass panels can be opened to allow machine operators easy access to the machine.

All glass panels are protected by appropriate switches in compliance with safety regulations that switch off the machine whenever the glass safety panels are opened.

The machine can be restarted after closing the safety panel and pressing the **"ACK ERROR"** button.

A separate Jog button unit equipped with an **EMERGENCY STOP** function is connected to the machine by a spiral cord: This button can be used to slowly jog the machine.

This Jog button is active only when the safeguard of the respective labeling station is opened. When the protective device of a labeling station is opened, all other Jog buttons as well as the machine activation buttons are disabled. This **does not** apply, however, to the **EMERGENCY STOP** switch!

Selector switches for automatic or jog mode and **OFF** are installed at the label hopper of each station.

The moveable safety panels are mounted between the machine's columns. Counterweights running inside the columns are connected to the safety panels.

Important note!

No modifications may be made to the columns such as mounting screws, pins, drilling holes, etc. since otherwise this will render the safeguards inoperable.

Format Parts

Format parts are all those parts of the **Innoket** labeling machine that are adapted to the container shape, label shape, or label position.

The following format parts must be changed according to the shape of the container and/or label.

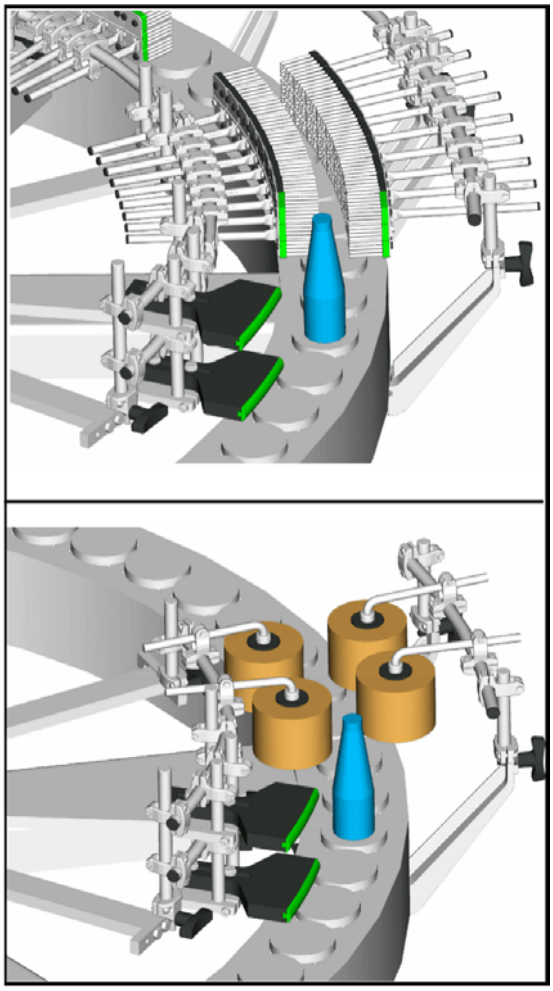
Container shape-dependent parts:

- Feedscrew(s)
- Infeed star(s)
- Outfeed star(s)
- Container guides
- Brush channels and rollers (depending on the machine model) and their mounting brackets.

Label shape-dependent parts:

- Label hoppers
- Gripper cylinders
- Brush channels and rollers (depending on the machine model) and their mounting brackets.

Label Roll-on and Brush-on



Brush-on / Roll-on

The label dressing applied to the container by the gripper cylinder must be subsequently pressed on and smoothed to ensure perfectly fitting, wrinkle-free labels. For this purpose, a brushing channel or a roll-on segment is installed within the rotary between or after the respective labeling stations. They are adapted to the container diameter, the container shape, the position, and the size of the label dressing.

Label dressings applied one above the other such as

- body labels and foils are **brushed on** simultaneously if applied by one labeling station

Complete inner and outer brushing channels or brush-on / roller-on combinations are provided for each container-dependent dressing that **must be changed** when changing over to a different container dressing.

Machine Control

The **container flowgate** and the **machine output** are controlled by backup switches located ahead and after the labeler. The machine will operate at the preselected output speed as long as there is a sufficient number of containers available.

A container accumulation table and a monitoring switch (proximity switch) are installed immediately after the labeler outfeed.

The proximity switch monitors the outfeeding flow of containers and shuts the conveyor off in the event of container backups on the container conveyor at this point.

The machine can be restarted by pressing the **"ACK ERROR"** button at the **operator panel** or at the **machine columns** only after the cause of the disruption has been eliminated.

Note:

The **"container gap"** error can be reset only by pressing the ACK button at the container infeed.

A backup switch (**backup switch 1**) is mounted in the container infeed area. This backup switch closes the container flowgate if the backup situation remains unresolved for an extended period. No more containers are allowed to enter the machine. Other proximity switches (**backup switch 2**) are installed between the labeler and a caser, for example, that monitor the flow of outfeeding containers and decrease the machine speed in the event of container backups at these points.

In most cases, the decreased machine output speed resolves the container backup and the backup switches installed between the labeler and the caser regulate the labeler output back to the preset speed.

The container flowgate at the infeed closes if a container backup situation remains over an extended period of time. No more containers are allowed to enter the machine.

If there are no more containers available at the container infeed or if containers backup at the outfeed, the labeler's **PLC** control decreases the output speed of the machine.

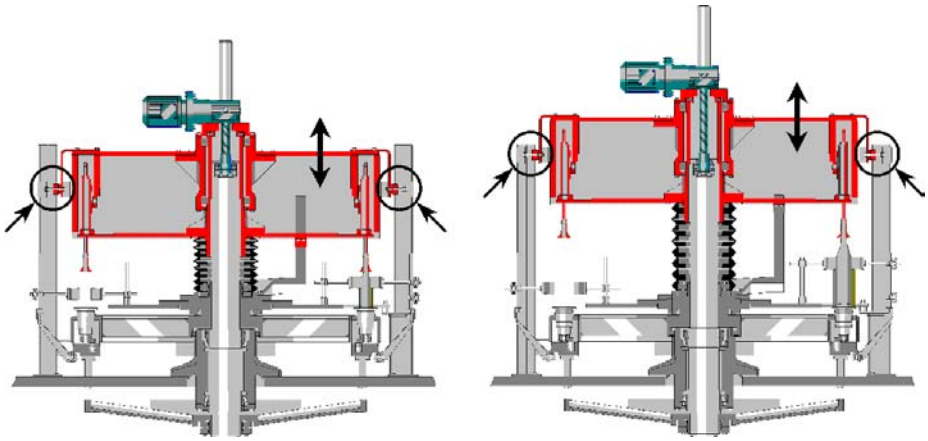
Height Adjustment

The height of the machine hood is adjusted **electrically** to the height of the containers to be processed.

The spindle for this height adjustment is driven by a separate gear with an electric motor installed at the central column of the machine.

A pneumatic clamping mechanism mounted on the columns of the labeler fix the position of the centering hood.

Figure 1-10 :
Height Adjustment



Activate the electric height adjustment by the pressing the function key to invoke the Service menu and then selecting **'Height Adjustment'** at the monitor.

The maximum range of height adjustment travel is restricted by limit switches.

Jog Button

Figure 1-11 : Jog Button (Hand Switch)

A separate hand switch equipped with **EMERGENCY STOP** and **Jog buttons** is connected to each labeling station by a spiral cord. The Jog button is active only when the safeguard of the respective labeling station is opened.

Important note!

Please note that laser unit (option) is active when running the machine in Jog mode. Therefore, exercise extreme caution when making adjustments to the machine.

Adhere exactly to the safety instructions provided by the manufacture of the laser unit.

The machine cannot be restarted after opening a safeguard until the **'ACK ERROR'** button has been pressed.

Safety Considerations

Only those persons who are explicitly **authorized to access** the basic machine control functions relevant to machine and operating personnel safety may modify these functions by operating key switches or entering passwords.

Label Packaging and Storage

To ensure trouble-free label handling, the following items regarding **packaging and storing labels** properly should be taken into account.

- Foil labels (laminated labels) should always be sealed against moisture in polyethylene film or packed in deep plastic trays with sealed covers.

- The **relative humidity** of **approx. 50 to 60%** when delivered, i.e. already packaged, must also be maintained in storage.

Incorrect storage and/or defective packaging will cause film labels lose their flatness to an even greater extent than paper labels and can no longer be properly processed.

In dry climates, the labels lose their moisture content until it equals the ambient humidity.

In such instances, the paper fibers, laminated labels (metal-coated paper) shrink against the fiber orientation causing them to curl towards the paper backing.

In most cases, paper labels are supplied with a relative humidity of approx. **50 to 60%** and they should be stored at this relative humidity.

Always stack paper labels with the **printed** side down. This helps to keep them flat.

Labeling Machine Adhesives

Trouble-free labeling, prerequisite for present-day high-performance labelers, requires the adhesives to have the following properties:

- Suitability for use in a labeling machine
- Uniform viscosity at constant temperatures
- Uniform glue application
- Short fiber parting
- Optimum setting properties
- Condensation resistant
- Good removal properties for when using refillable containers

The type of glue to be used depends on the quality of the dressing materials, e.g. labels, the labeler output, and the operating conditions (hot or cold filling). The adhesives have been developed for high-performance labelers and ensure trouble-free process as well as permanent label fit, provided the application recommendations from the machine and glue manufacturers are taken into account. Storage and glue temperatures are also essential for good label processing. Therefore, a glue temperature should be chosen that is within the range specified by the manufacturer.

Casein glues are prone to bacterial decomposition unlike many other types of glue that are protected by special manufacturing procedures and preservatives.

Other types of glue and their uses include:

- **Dextrin glues** for hot bottle container (for high container temperatures in excess of +35° C)
- **Synthetic-resin dispersion adhesives** for labeling plastic containers
- **Hot melts** for partial gluing of tax revenue stamps, tamper-evident seal labels, and wrap-around labels for cans and PET containers.

- KHS recommends **Innocoll HML 2114 adhesives** for optimum hot melt labeling results

We urgently recommend using Innocoll adhesives in order to achieve optimum labeling results in ongoing production operation.

Link to ReDiS

We provide our customers additional support by delivering **ReDiS – single** (**Re**mote **D**iagnostic **S**ervice) with the order.

All the customer needs to use **ReDiS-single** is an ISDN or xDSL connection. KHS supplies the appropriate hardware such as an ISDN / xDSL router to set up a communication link to the KHS ReDiS Center.

ReDiS Router

The advanced technology of the ReDiS-single system makes addition machine equipment unnecessary. This Ethernet-based technology makes it possible to diagnose all main components of KHS machines.

Using virtually no additional hardware, it is possible to hook up key KHS machine components such as the visualization and the PLC to the ReDiS system.

Software, parameters, and algorithms can be effortlessly checked and expanded by controlling the machine accordingly from KHS.

The main advantages of a link to ReDiS include:

- Fast and precise error diagnostics
- Modification of system parameters / software updates
- Short machine downtime
- Increased line availability

The ReDiS Service supports KHS service experts in carrying out machine diagnosis and remote maintenance.

* * *

Technical Data

General Safety Considerations

Before working with the machine for the first time, it is essential that you read and understand the important information regarding safety.

This pertains in particular to the safety brochure **"Safety Fundamentals for Filling Lines of the Beverage Industry"**.

It is absolutely essential that you read and adhere to the instructions contained in this brochure before assembling the machine, connecting power supply lines, and testing and starting up the machine.

This manual additionally contains further special safety instructions that must be adhered to.

The **safeguards** of the KHS system comply with Trade Association Directives, Equipment Safety Laws (GSG), and regulations as specified in current EU Machinery Directives. If properly operated and put into operation according to its intended purpose (refer to section, **Area of Application and Intended Purpose)** the level of risk of bodily injury and system damage is reduced to a quantity attainable according to the present state of science and engineering.

- **Locking and disconnecting safeguards** automatically switch off the system when doors and safeguards secured by limit or proximity switches are opened.

- **Permanently installed safety covers** have been placed over potentially hazardous areas if access to these areas is not required for proper normal operation and regular servicing. They are permanently installed in the machine and can be removed only with the help of special tools. Never remove covers of this kind during system operation and never start the system if these covers are not in place.

Do Not Remove Safety Covers

Additional Notes

We urgently recommend that the **Innoket** labeler be assembled only by KHS staff. KHS will accept no responsibility for any damage resulting from improper assembly work.

- Handle with **great care** when unloading and transporting the **Innoket** labeler.

- **Never** walk under suspended loads.

- **Ensure** that the loading gear is capable of handing the weight of the machine.

Press EMERGENCY STOP Button Only in Case of Emergency!

- Press the **EMERGENCY STOP buttons** at the operator panel and on the machine only in case of potential injury or machine damage.

Use the EMERGENCY STOP Switch Only for Its Intended Purpose!

Do not use the **EMERGENCY STOP** switches for normal machine power-off procedures.

EMERGENCY STOP switches automatically lock when pressed and must be unlocked before restarting the system.

Restart the machine only after eliminating all causes of potential injury or machine damage!

Temporary Storage

Should it become necessary to store the machine temporarily, the storage location must meet the following requirements in order to prevent damage to components sensitive to temperature, humidity, and corrosion:

- Protect the system and its components from dirt, dust, particles of paint, etc. Cover the system with plastic film or similar.
- Ensure that the room temperature is between -10° C and +50° C.
- Prevent the accumulation of moisture in and on the system. Provide adequate ventilation.
- Avoid exposing the machine to fumes from solvents, acids, alkaline substances, etc. stored in the immediate vicinity of the system.
- Ensure that the system is installed on a flat and even surface. Ensure that the machine is supported evenly by all foot spindles.

- During extended periods of temporary storage (4 to 5 months and more), check if the standby battery in the programmable logic controller (**PLC**) is still intact and that the program and all its components are still loaded. When in doubt, consult KHS technical staff or personnel authorized by KHS.
- Variable program components may be partially or even entirely lost during extended periods of temporary storage or if the capacity of the standby battery is insufficient. A floppy disk included in the electrical documentation contains the original control program so that the original version of the program can be restored at any time.

Installation

The **installation site** is specified in the special planning records. Always ensure, however, that sufficient space is available for maintenance and repair work, not only around the machine itself but also around the container conveyors. Ensure that the installation site is not located in a **high disturbance area**. Avoid placing the machine extremely dirty areas or high-noise areas and in the vicinity of water, falling containers or packs, broken glass, acids, caustics, etc..

Because of its own weight, it is not necessary to anchor or fasten the **Innoket** labeler to the floor. Under no circumstances should the machine to be placed directly on an asphalt surface since the load capacity of this surface can be affected by changing temperature and weather conditions.

The floor of the installation site requires sufficient firmness. The floor should be even, smooth, and just as easy to clean as the surrounding walls.

The machine is shipped completely assembled to a greatest possible extent. Certain parts must be reassembled in the machine in those instances in which it was necessary to partially disassemble the machine before shipment.

Please note the following during installation:

- Install the container infeed and outfeed according to the space requirements specified in the project plans. Do no rearrange the conveyor belt connections.
- Align the individual components of large machines. Adhere to the markings when connecting the machine segments.
- Place the machine with its **foot spindles** on the **footplates** (**1**) (included with the machine).
- Turn the foot spindles to adjust the machine to the required conveyor belt height.
- Use a level to align the machine so that it is exactly level by turning the foot spindles in the appropriate direction (**clockwise ⇒ higher** or **counter-clockwise ⇒ lower**).
- Then secure the lock nuts on the foot spindles.

Instructions for Aligning the Innoket Labeling Machine

The machine must be exactly aligned in order for it to work properly. The appropriate instructions (sealed in plastic) are included in the machine delivery.

We urgently recommend that the machine be aligned only by KHS staff or personnel authorized by KHS.

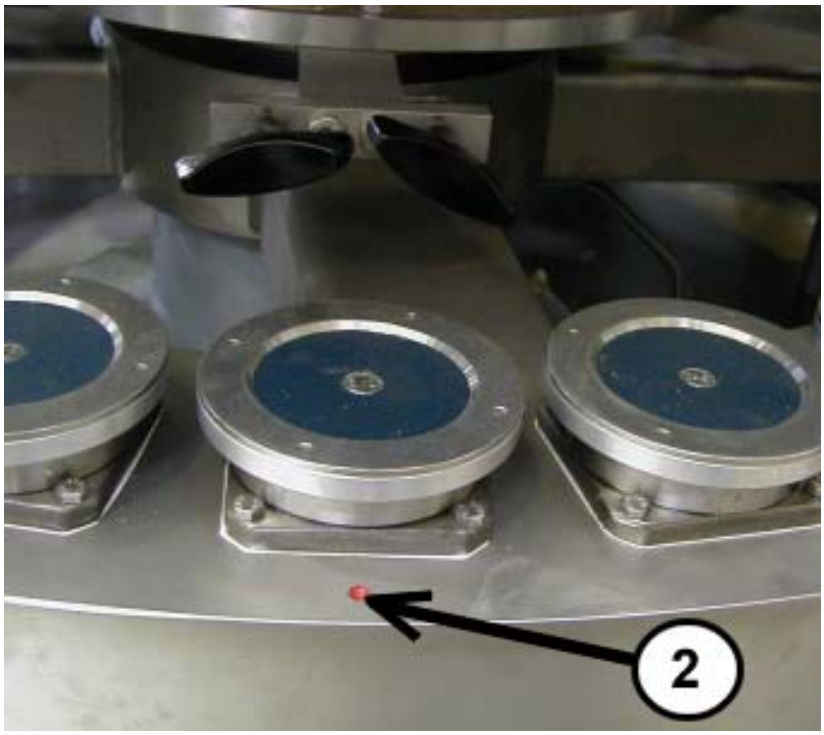
KHS will accept no responsibility for any damage resulting from improper alignment work.

Use the level gauges located underneath the machine table to align the machine table and exactly set and adjust the inside spherical caps.

Additional Notes on Alignment:

The reference lower chuck is marked (**2**) in order to find the exact alignment position when aligning the machine sometime later.

Lower Chuck Alignment Position



Replace the original lower chuck with the red alignment plate with a GFZ support plate and adjust the machine table (inside spherical caps) to **actual dimension** (see Adjustment Sheet).

Exact label positioning and trouble-free labeling is possible only if adjustments are correctly made.

Replace the alignment plate with the original lower chuck on completion of the alignment work.

Installation

We urgently recommend that the machine be assembled only by KHS staff or personnel authorized by KHS.

KHS will accept no responsibility for any damage resulting from improper assembly work.

Place and align the machine at the installation site according to the project plan and in the direction of the container and pack conveyor flow. Report any deviations from the project plans to KHS or a KHS representative.

Adjust the machines to the exact working level using the foot spindles. Ensure that the machine is exactly level.

Connect the power and air supply lines after completion of the assembly and alignment work. The piping connections are clearly marked. Assemble the piping according to the piping diagram. Ensure that the piping is not under stress.

The container and pack conveyors are to be connected to the machine in like manner.

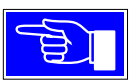
Important note!

Always ensure the correct direction of rotation when connecting the power supply lines.

A control cabinet integrated in the machine housing is delivered for the electrical control. The wiring for the separately packed switching and control devices such as limit switches, approach switches, light barriers, etc. has already been installed in the control cabinet, but the devices themselves be mounted according to the separately enclosed instructions.

Instructions Contained in the Electrical Reference Materials

The machine wiring diagram is located in the control cabinet.



Electrical Connections

All **Innoket** labelers are supplied with control cabinets integrated in the machine housing. The only other connection that must be made in addition to the main power supply is the connection between the control cabinet and the container conveyor (signal exchange).

This work may be completed only by **trained KHS personnel** or by a **qualified electrician**.

Compressed Air Supply

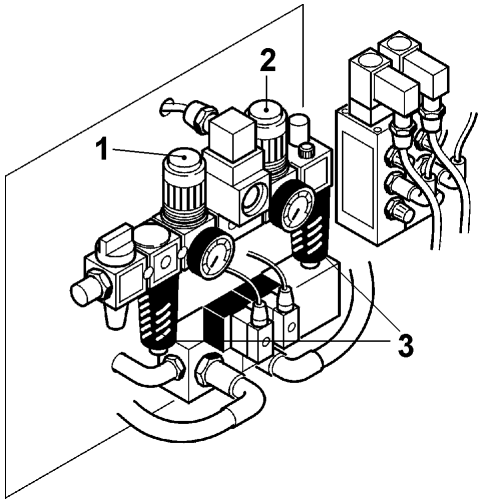


Figure 2-1 : FRL Panel with Compressed Air Supply

Connect the compressed air supply to the FRL unit (filter/regulator/lubricator unit) in the machine base frame using a **3/4-inch hose** or a **3/4-inch pipe**. The compressed air pressure should be **4 to 10 bar**. The air must additionally be practically free of water. The reduction valve and pressure gauge for the blowoff air **(1)** and the control air **(2)** and corresponding control valves are shown in the illustration. The machine is equipped with an automatically draining water trap **(3)**.

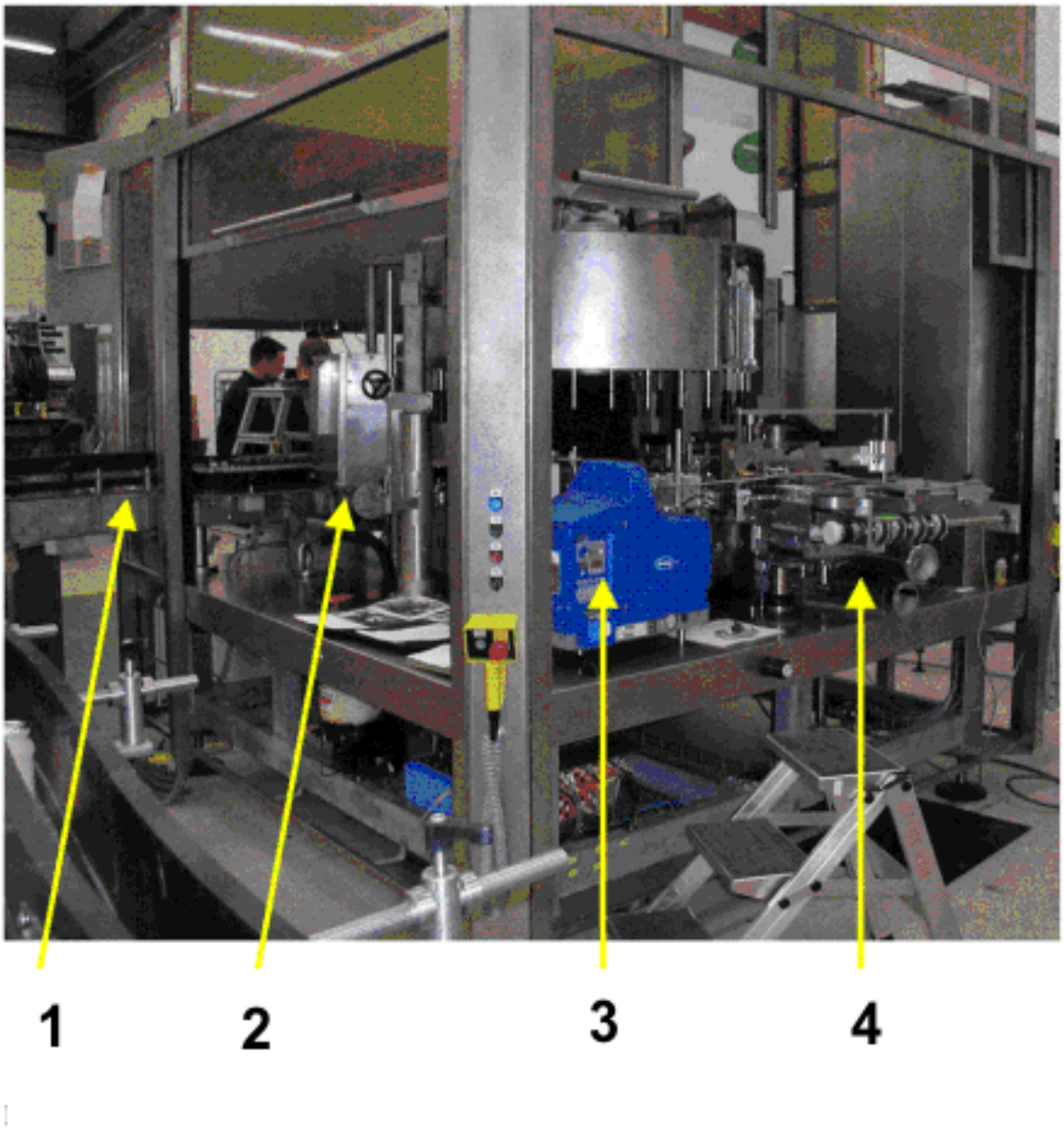
Water Supply (Option)

Connect the water supply to the service unit in the machine base using a **1/2-inch hose** or a **1/2-inch pipe**. Use drinking water quality water since using industrial water could cause machine malfunctions and corrosion.

Hook up the **hot water supply** for the integrated station cleaning system **(CIP)** to the machine base using a **3/4-inch hose** or a **3/4-inch pipe**.

Overview of Components

Figure 2-2 : Overview of Components - Diagram



1 = Container infeed
2 = Camera for container alignment
3 = Initial gluing
4 = Station with final gluing

(Subject to technical modifications)

Technical Specifications

Model	**Innoket HL 2040/120-30 AR HS**
Type of glue	**Hot melt**
Type	**120-30**
Machine output (min. - max.)	**6,000 to 36,000 containers/hr**
Nominal output	**36,000 containers/hr**
Diameter of container turret	1180 mm
Minimum container diameter	45 mm
Maximum container diameter	105 mm
Maximum ± tolerance in container diameter	2 mm
Container heights	110 to 380 mm
Maximum ± tolerance in container height	6.5 mm
Labeling area measured from container base	5 to 350 mm
Label width (max.)	135 mm
Number of lower chucks	30
Machine pitch	120 mm
Infeed and outfeed star pitch	12
Type of labeling station	**Hot melt**
Minimum conveyor belt height	1150 mm
Maximum conveyor belt height	1450 mm
Electrical power consumption	22 kW
Compressed air consumption (reference value)	100 Nm^3/h
Min. air pressure	4 barg
Max. air pressure	10 barg
Nominal width of the compressed air supply	R 3/4 inch
Hot water consumption for station cleaning program	Approx. 5 l/min.
Machine weight (net)	8,000 kg
Machine weight (gross, packed for export)	9,500 kg
Volume (packed for export)	42 cu m
Sound intensity level IAW ISO 3744	≤ 85 dB(A)

Operating Instructions

General Safety Considerations

- Only spare, accessory, and wearing parts procured from the manufacturer or specially approved parts can ensure trouble-free and reliable operation of the **Innoket** labeler.

- The use of third party or non-approved parts will lead to exclusion of manufacturer liability.

- Only trained KHS personnel may carry out technical modifications relevant to machine safety and/or operation. Otherwise, KHS will not be held liable for any resulting damage.

- Never operate or touch control components, control devices, etc. unless you are authorized to do so and have received instruction on their principles of operation.
- The machine has been designed to be operated by one machine operator. All other persons except the machine operator should remain at a safe distance from the machine.
- Use only containers that are in perfect condition.
- Never clean or repair the machine while it is running.
- Never reach into the machine while it is running.
- Keep at a safe distance from moving machine parts.
- Do not let the machine run without supervision.
- Never power on the machine if any instruments, indicator lamps, or controls are defective.
- Do not remain inside the enclosed safety zone.
- Only trained personnel are authorized to offload and transport the machine to its installation site.
- Use only the stairs or walkways to cross over conveyor segments used to convey containers, crates, pallets, etc. These facilities must be equipped with railings and properly secured.

- Wear suitable protective clothing, particularly for changeover, cleaning, servicing, and repair work. The protective clothing must be tight fitting and resistant to cleaning agents. Depending on the type of work to be performed, wear safety eyeglasses, safety earmuffs, a hard hat, safety shoes, and gloves.
- Remove all jewelry (rings, necklaces, etc.) that could be caught in the machine.
- Cover long hair with a hair net.
- Switch off the machine **immediately** if you notice a malfunction that could impair safe machine operation.
- **Never** override safety devices and facilities or render them inoperable.

Prior to Startup and During Machine Operation

- Check that all safeguards, the **EMERGENCY STOP** button in particular, are in proper working order.
- **Always check** the machine for possible defects.

Should you notice any malfunctions pertaining particularly to the safety regulations then

- **Always** report them to your supervisor.
- **Always** inform the operator taking over at the end of a shift.

Always check the following before switching on the machine:

- That all formats parts are properly installed and secured.
- Ensure that all foreign objects (rags, tools, etc.) have been removed from the machine.
- That there is no one in hazardous machine areas.

Getting Ready for Operation

It is absolutely **essential** that the machine operators carry out the following work to ensure that the labeler is started up properly:

Adjust Format Parts

- Set up the labeler with the format parts that correspond to the type of container, label, and film to be processed.

Ready Consumables

- Store all consumables needed for day-to-day work such as glue, labels, and foils in the immediate vicinity of the machine.

- Ensure that the labels and foils are **absolutely flat**.

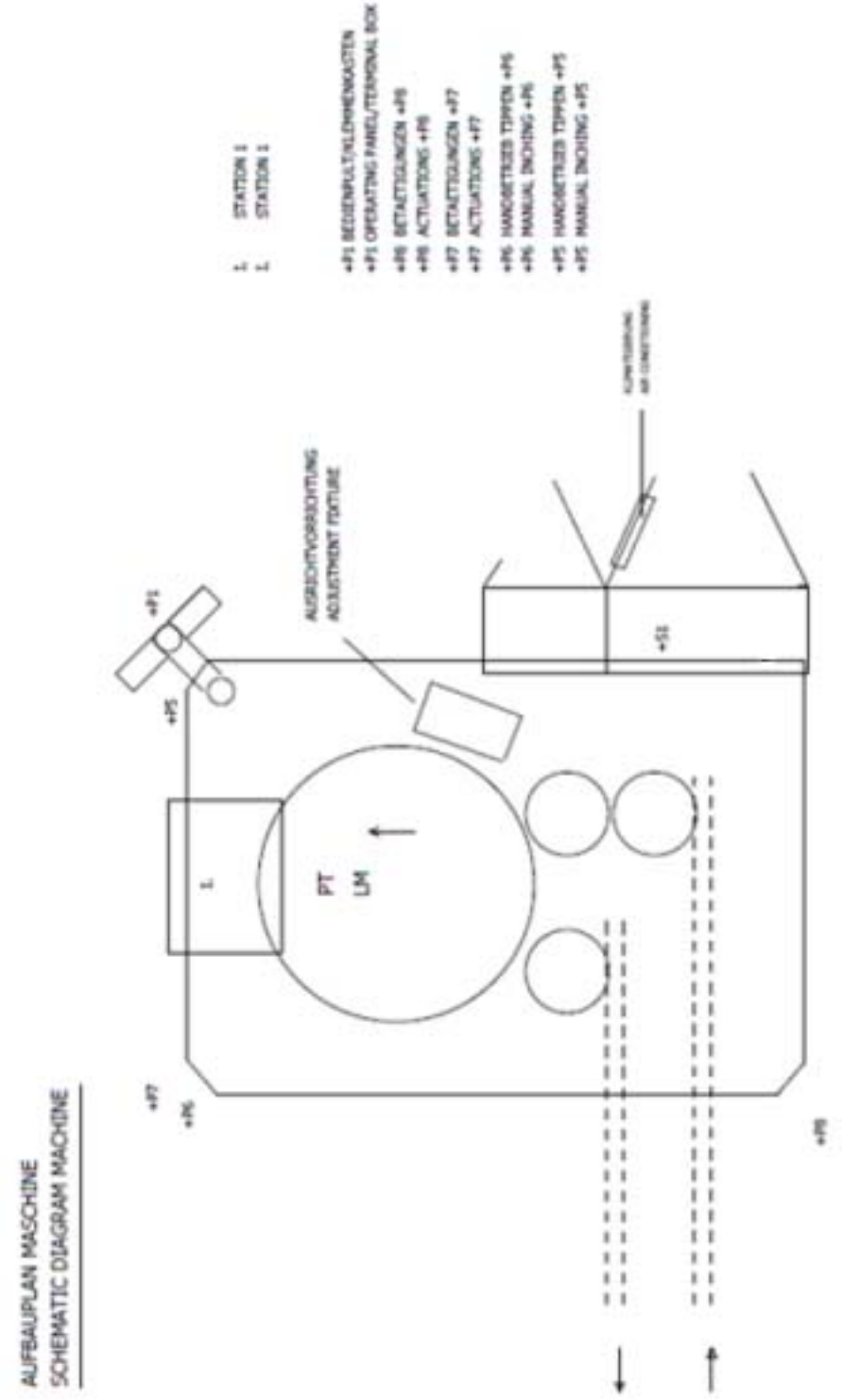
Readying the Labeler

- Fill the label hoppers with all the labels and foils that belong to the particular format.

- Ensure that the labels and foils are positioned and loaded correctly.

Machine Layout

Machine Layout



Controls at the Main Operator Panel of the Labeler

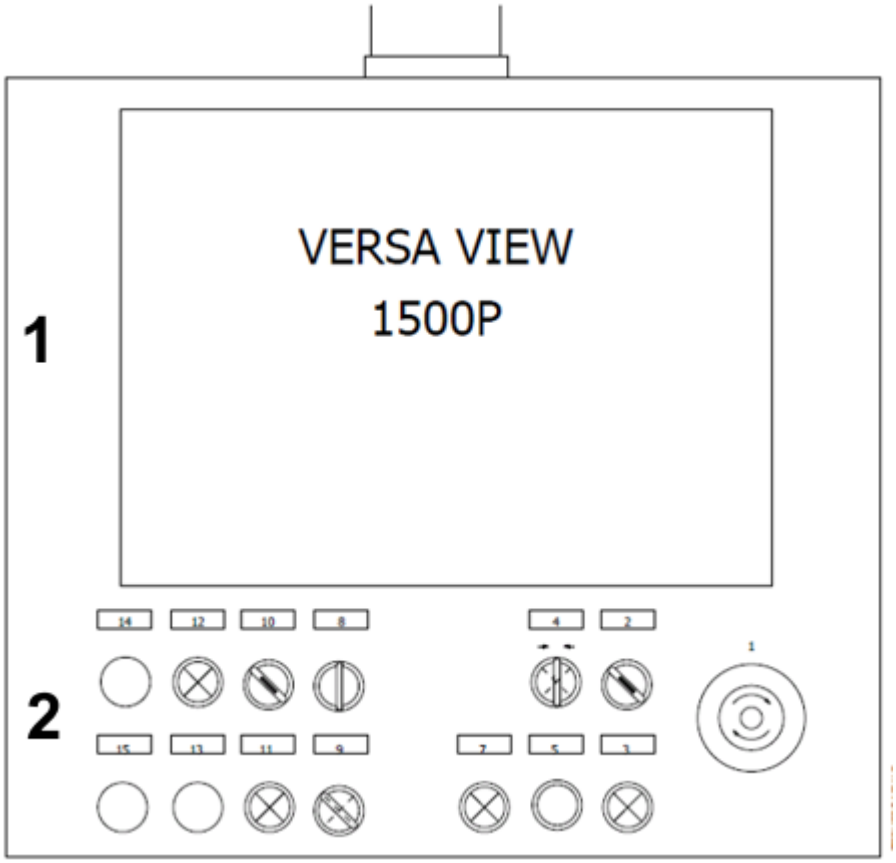


Figure 3-1 : Visualization Monitor (swivelable)

The electronic control (**PLC**) of the **Innoket** labeler is equipped with a permanently installed operator panel and an integrated VPC monitor equipped with pushbuttons and selector switches for selecting and activating all machine functions.

A **visualization PC** equipped with a display screen and keyboard **(1)** is located in the upper part of the control desk.

The controls for basic labeler functions are located below this control unit **(2)**.

Always **watch** for **messages displayed** on the operator console when activating functions and operating steps.

Overview of Controls and Displays for Basic Functions

PB = Pushbuttons

LB = Lighted buttons

KS = Key switch

S = Selector switch

SS = Selector switch with indicator lamp (locking in center position)

To avoid operating errors and disruptions, always **watch** for **messages displayed** on the monitor when activating functions.

No.	Type	Function	Description
1	PB	**EMERGENCY STOP**	**Switches off** the machine **immediately**
2	KS	**ENABLE CONTROL POWER**	Enables the control power (key switch)
3	LB	**ACK ERROR**	Resets a corrected problem
4	SS	**CONTROL POWER** **0 1**	Switches the control power on and **off (*)**.
5	PB	**STOP MACHINE**	Powers off the machine's main drive
6	-	**Reserved**	-
7	LB	**START MACHINE**	Powers on the machine's main drive
8	S	**FLOWGATE OPEN CLOSE AUTOMATIC**	Activates container flowgate operation
9	S	**JOG**	Activate Jog function
10	KS	**ENABLE REDIS**	Activate ReDiS operation
11	LB	**HEIGHT ADJUSTMENT**	Activate the motor-driven height adjustment
12	LB	**SERVO FUNCTION**	Activate servo drive

Other Labeler Controls

Additional operator panels are installed with the following (basic) functions in the area of the container infeed and container outfeed as well as the machine column between labeling stations I and II:

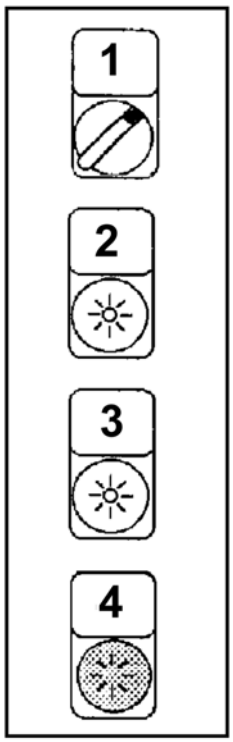


Figure 3-2 : Additional Operator Panel

No.	Type	Function	Description
1	S	**ACTIVATE JOG MODE**	Switches from Automatic to Jog mode
2	LB	**ACK ERROR**	Resets a corrected problem
3	LB	**START MACHINE**	Powers on the machine's main drive
4	PB	**STOP MACHINE**	Powers off the machine's main drive

To avoid operating errors and disruptions, always **watch** for **messages displayed** on the monitor when activating functions.

Fundamentals of Operating the Monitor

Notes

Always adhere to the guidelines contained in the following safety brochure when following the instructions described in "**Safety Fundamentals for Filling Systems of the Beverage Industry**".

The purpose of the descriptions contained in operator prompting is to explain how to handle the monitor and operate your machine.

Since the operating facilities of your machine are adapted to your requirements and local operating conditions, slight deviations from the instructions provided here cannot always be avoided.

NOTE!

This operator prompting is intended only for orientation purposes and to explain machine functions provided and is not to be used for machine commissioning.

In order to avoid machine malfunctions, the described actions must be performed only by personnel authorized by KHS.

The monitor provides an online Help function that you can use to access and view explanatory information at many points in the program.

Monitor

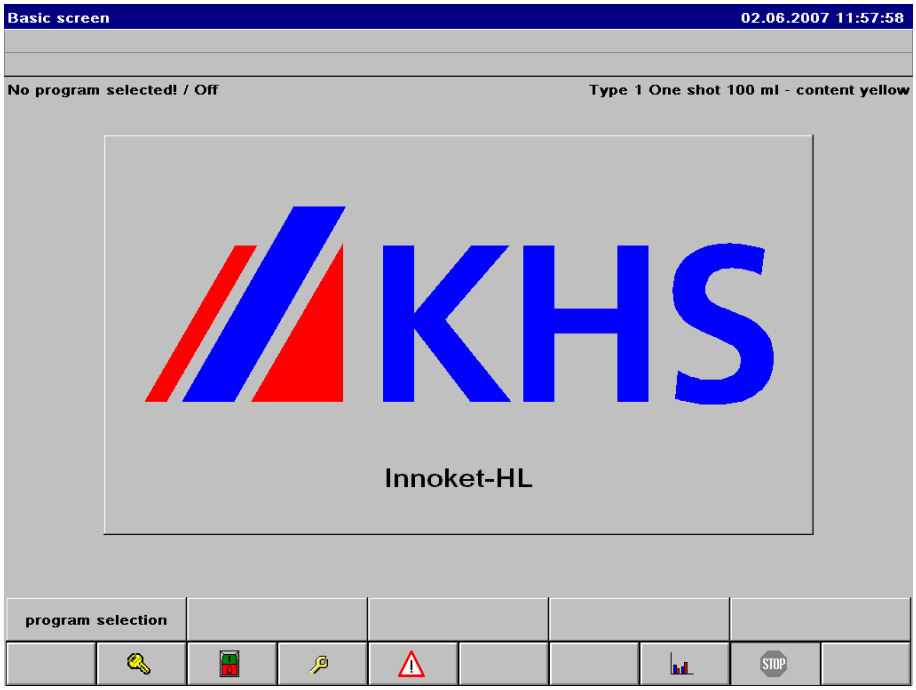


Figure 3-3 : Monitor

The KHS logo or the main machine menu will appear on the monitor when the **main power switch** is **turned on** at the switch cabinet and the **control power** is **not** yet **switched on**.

- The purpose of the monitor is to provide operator guidance and to provide information on the machine status.

- The surface of the touch screen monitor contains sensors capable of detecting contact and processing when the screen is touched by a finger or pencil.

- Monitor contact (similar to a mouse click) is interpreted as a command for controlling the functions within the machine program.

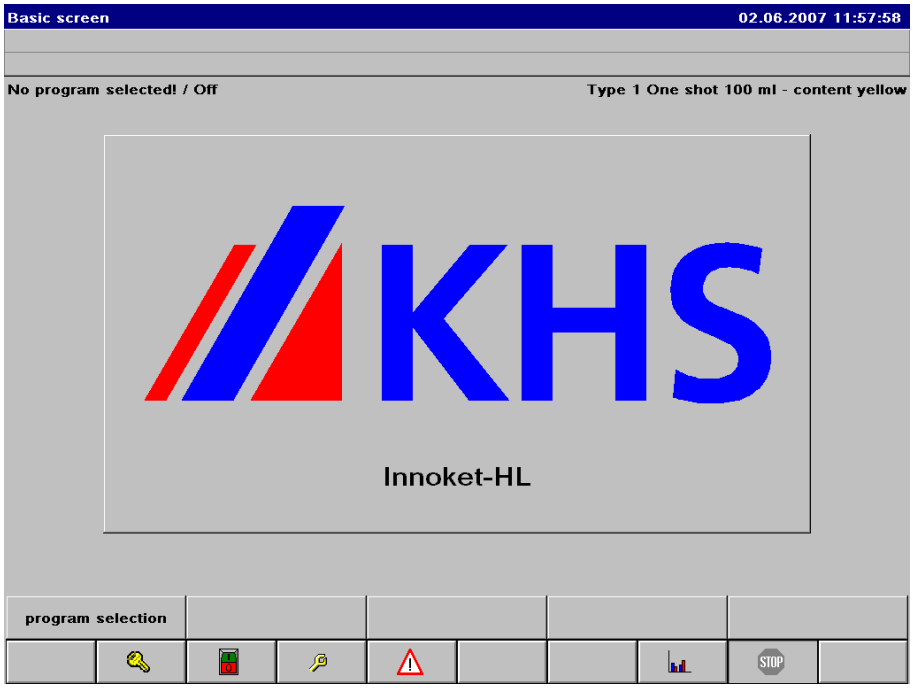
- Located on the left next to the monitor is a USB port that has been provided for connecting external storage media or USB sticks.

USB Port

Always keep the USB port covered when not in use!

Monitor Layout

Figure 3-4 :
Main Menu



Main Menu

This screen appears after restarting the visualization system and at the end of the program.

Three lines of text appear in the top edge of the screen.

The first line (**title bar**) of the GUI indicates the currently selected display page (**blue background**).

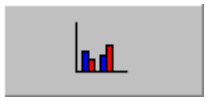
Messages and notes appear in the second line (red background).

Error messages are displayed in the third line (red background). These messages are displayed in sequence if more than one error message is pending.

Command buttons, images, and texts indicating program actions and functions appear in the center field.

Function Buttons

Located at the bottom of the monitor, are ten function buttons that have the same meaning for all screens. Enabled buttons are highlighted (color reversing).

Function	Descriptions	
Back	Use this button to scroll **back** to the previous screen in a menu.	
Help	When you press the **Help** button, explanatory text is displayed corresponding to the particular monitor pages.	
Switches / Function Enables	**Function enables** and/or **operation switches**. In this menu, you can switch the various machine components on and off, provided they are enabled by the machine control (**PLC**).	
Service / Special Functions	Invokes the **Service / Special Functions** menu. This is used to set the following special functions: Language selection, type selection, machine parameters, etc.	
Machine Errors	Invokes the **Machine Error** statistics screen. All errors that have occurred are listed in chronological order in this screen.	
System Off	**Powers off** the **system**.	
Statistics	This invokes the **Statistics** menu. The purpose of this menu is to report or view **statistic functions**.	
User Login	This invokes the **User Login** menu. It is used to enter user passwords.	
Fwd	This function button scrolls **forward** to the next screen in the menu.	

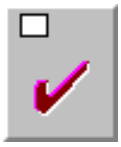
Command Buttons, Switches, Buttons for Input

Command Buttons

The monitor command buttons have specific functions for all machine operating personnel actions, which must be strictly observed and used with great care to ensure disruption-free machine operation. **Command buttons** can assume **ON, OFF**, or **DISABLED** states. Examples:

Command Buttons

A function has been activated and executed. This switch is turned on and enabled.



The switch **ON** function is disabled. This switch is turned on but not enabled.

The function has been deselected and executed. The switch is turned off and enabled.

The **OFF** function is disabled. The switch is turned off and disabled.

Activation and skip to the next screen without switching on.

Switches with LEDs

Switches with LEDs

A **switch** basically has the same appearance as a command button. However, the feedback from the machine control (**PLC**) is indicated (**LED**). Examples:

A function has been activated and executed. This switch is turned on and a feedback signal has been received from the PLC. The switch is enabled.

The function has been deselected and executed. This switch is turned off and a feedback signal has been received from the **PLC**. The switch is enabled.

Pushbutton

Pushbuttons are controls that only emit short pulses unlike switches that lock in place. Pushbuttons can be assigned an **ON** or **OFF** state (text with color reversing).

The function can be activated (enabled) in this state.

The function cannot be activated (disabled) when dimmed.

Touchpad Input Box

The displayed touchpad input box is used to enter any required numerical input.

Touchpad Input Box

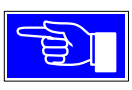
You can erase the character left of the cursor by pressing the **Back** button.

Clear the input box by pressing the **Clear** button.

Touch **Enter** to accept the new values.

You can cancel any input by pressing **Cancel**.

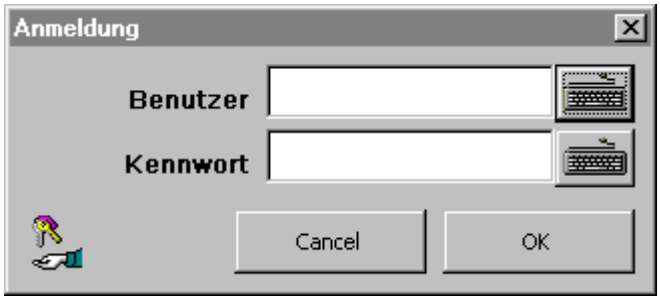
An error message will appear if the entries made are not within specified limits.



User Login – Entering Passwords

A password (passcode) is required to invoke some functions or enter input.

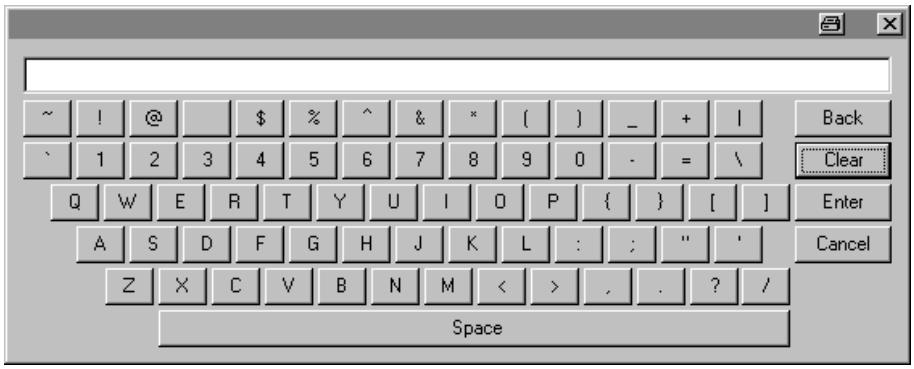
Press the **Password** function button on the monitor to invoke user access authorizations. The following dialog box will appear for login:



Enter an appropriate name in the **User** field.

Press the top command button next to the input field to invoke the keyboard.

The keyboard will appear on the monitor:



Key in your **user name** in the input box. Make the entry by **touching** the appropriate characters on the keyboard.

The entry will appear in clear text above the keyboard.

You can erase the character left of the cursor by pressing the **Back** button.

Clear the input box by pressing the **Clear** button.

Accept the new user name by pressing the **Enter** button.

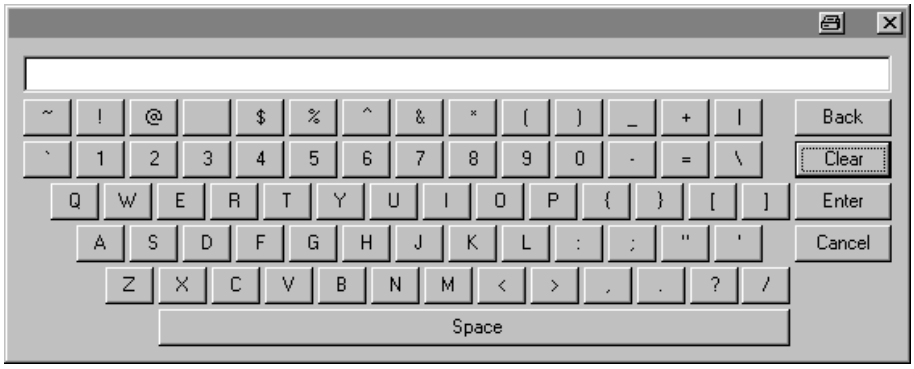
You can cancel any input by pressing **Cancel**.

Touch the **Enter** button to accept the user name in the dialog box.

Enter an appropriate **password** in the **Password** box.

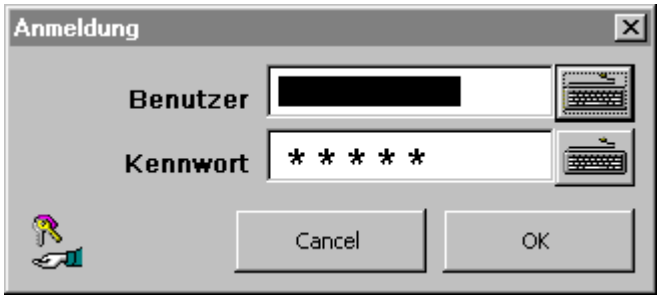
Press the bottom command button next to the input field to invoke the keyboard.

The keyboard will appear on the monitor:



Type your **password** in the input box.

Touch the **Enter** button to accept the password.

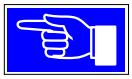


Reconfirm the entry by pressing the **OK** button.

You can cancel the process by touching the **Cancel** button.

Access to password-protected areas and functions is denied if the wrong password is entered.

Notify your supervisor or shift supervisor if you encounter difficulties entering your password or gaining access to certain machine areas or machine functions.



Further information can be found in **Online Help** of the **KHS machine program**.

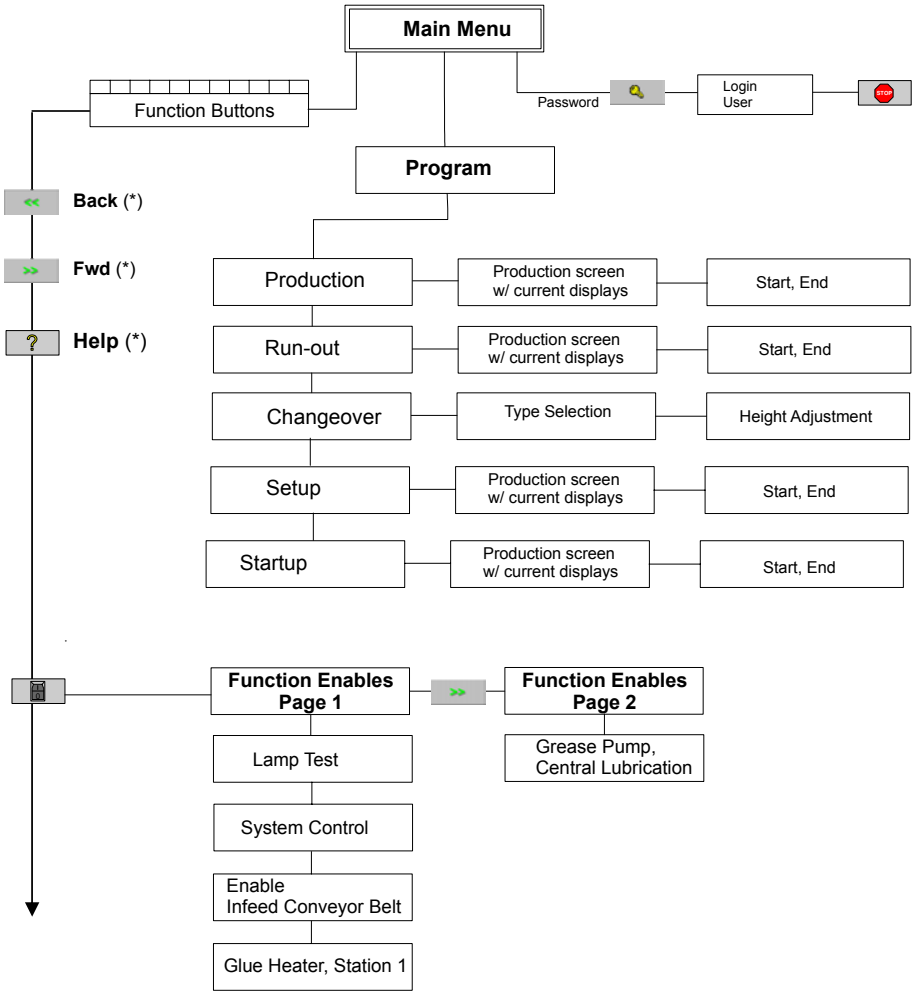
Program Structure - Example

The program structure illustrated (example) below provides an overview of the menus available to you and a guide to activating

Please note that the corresponding function keys and command buttons or switches must always be pressed in order to invoke a specific menu or a function.

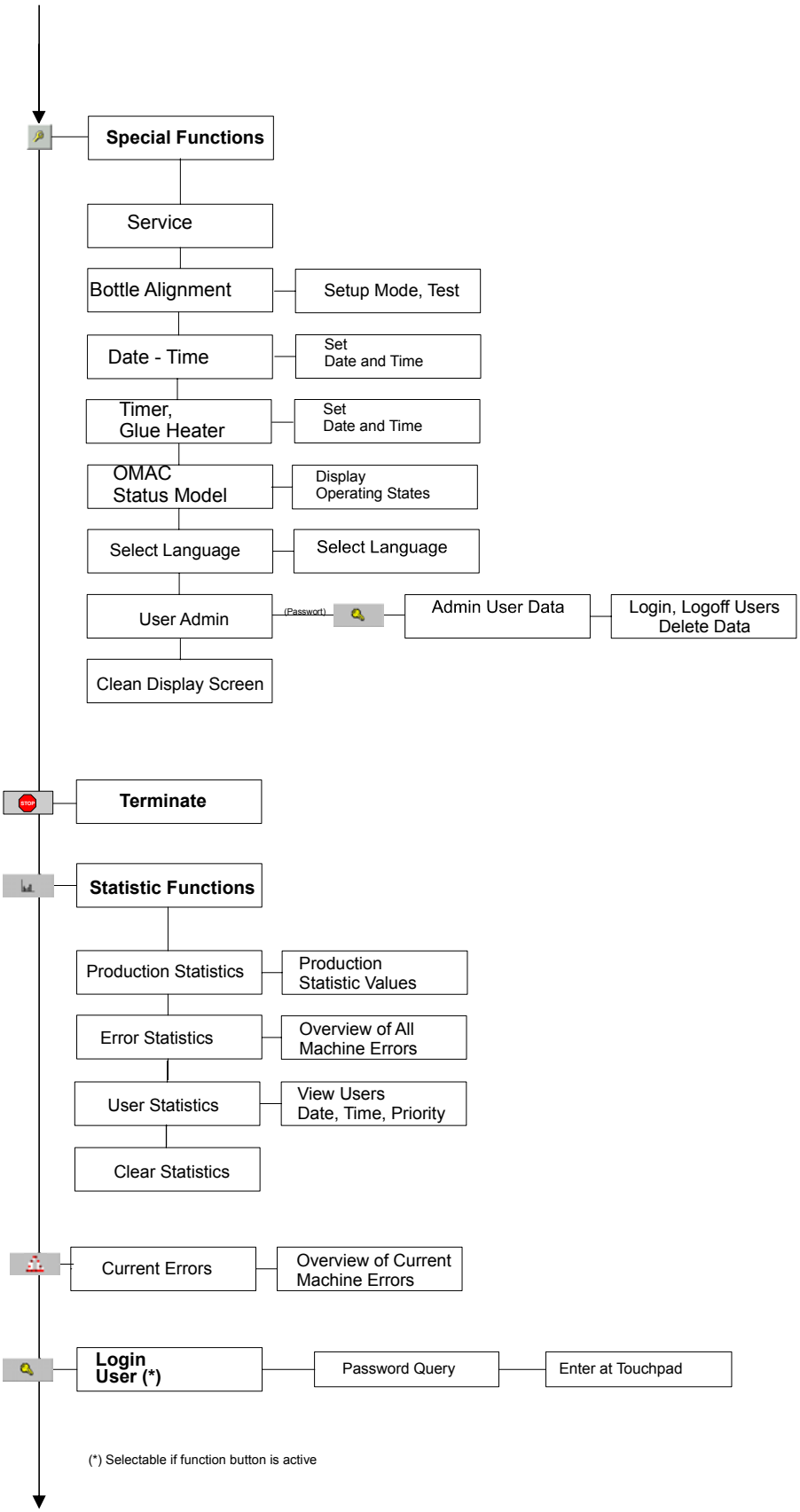
A security query (**"Password"**) will appear automatically with a corresponding prompt for program-related and control-related menus to allow access for authorized users only.

Program Structure Example (1/3)

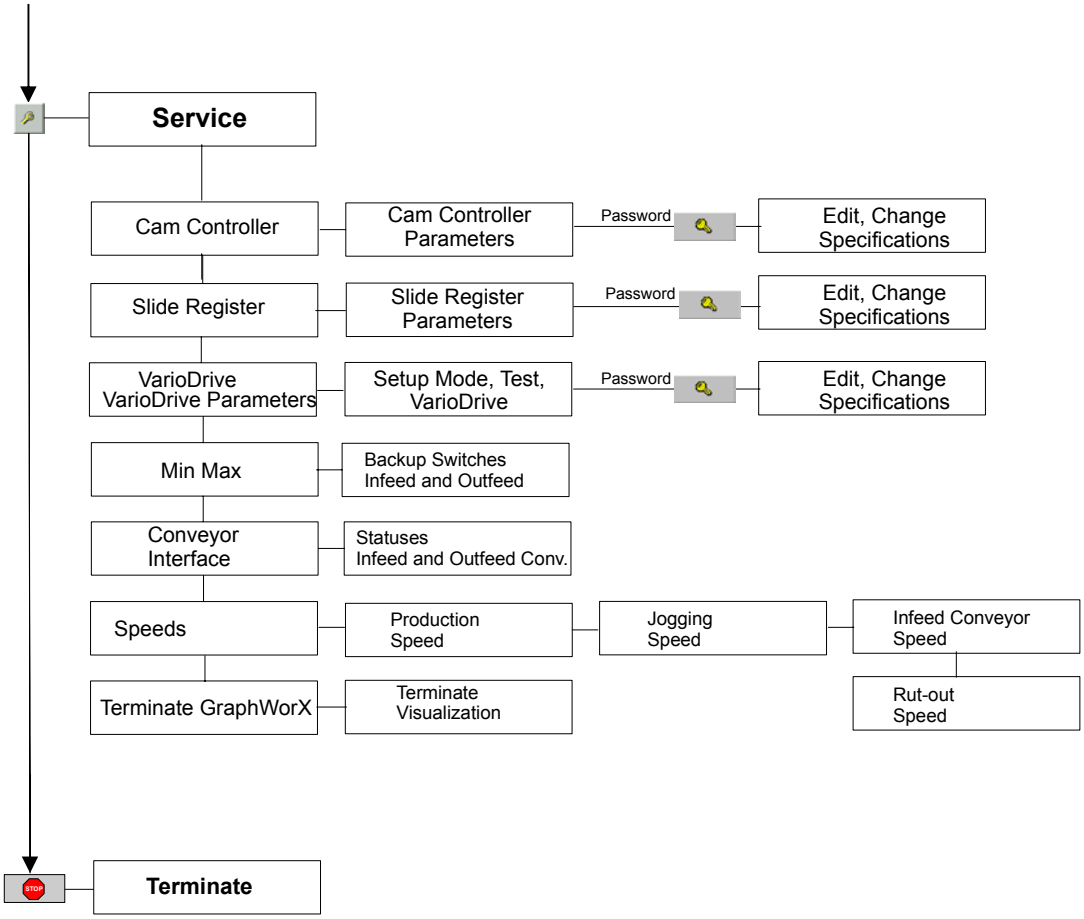


(*) Selectable if function button active

Program Structure
Example (2/3)



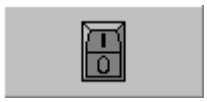
Program Structure
Example (3/3)



Memorize the Program Structures exactly. This will make it easier for you to operate the machine during the on-going production process and thus avoid machine downtime resulting from operating errors!

Powering On the Machine

- Turn on the power supply at the main switch (control cabinet).
- Switch on the compressed air supply to the labeler.
- Switch **"ON"** the **CONTROL POWER** using the key switch at the operator panel (basic functions).
- Test all of the machine's indicator lamps Perform the lamp test by pressing **"Lamp Test"** command button in the Function enables menu (Page 2).



Starting Production

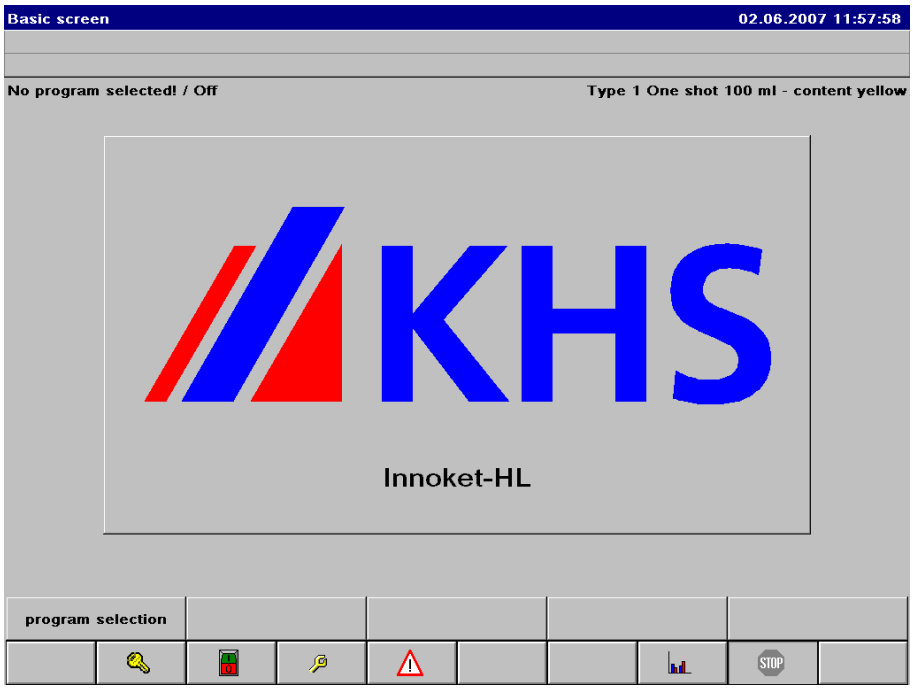
1. Check that all safety doors on the machine have been properly closed.
2. Check if containers are ready at the container infeed to the machine.

   Ensure that there are no obstructions blocking the conveyor belt.
3. For optimum labeling results, the glue must be heated to a certain temperature.

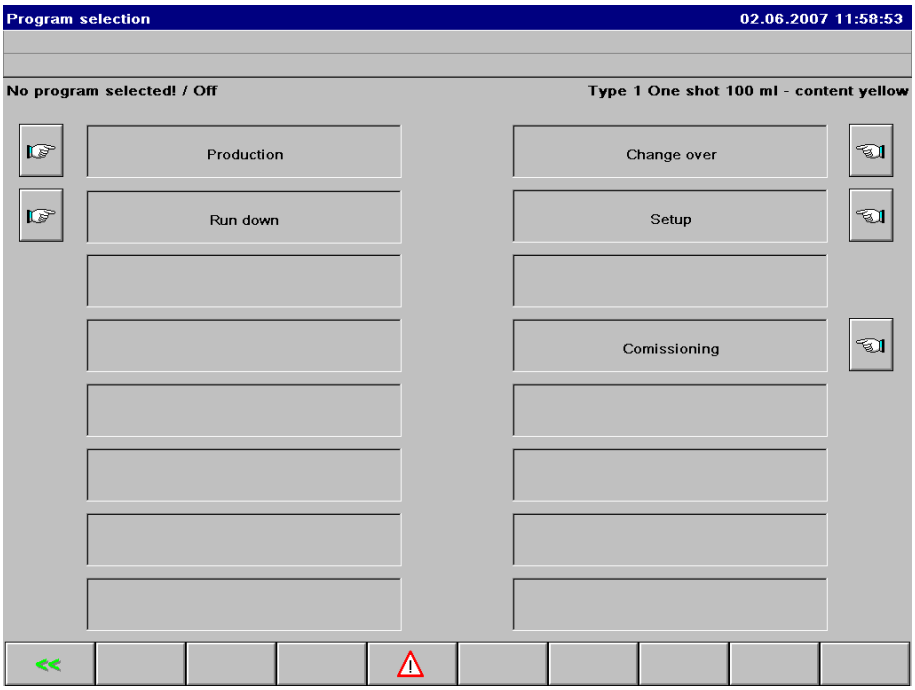
   Regulate the glue delivery rate of the glue pump to the desired rate.

   The grease pump of the central lubrication unit will be started automatically by the selected production program.
4. Select the appropriate production program in the Machine Main Menu.
5. Press the **"Program Selection"** command button in the Machine Main Menu.

Machine Main Menu



Program Selection



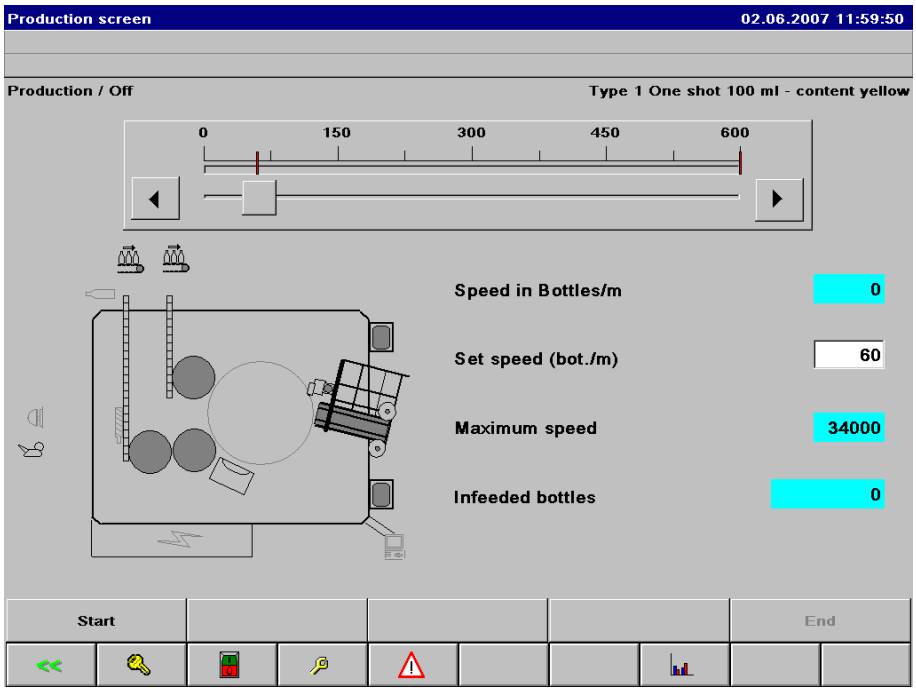
6. Select the appropriate program in the **"Program Selection"** menu (normally **"Production"**).

Touch or press this command button to activate the specific program.

You can activate the windows that follow by touching the **Forward** and **Back** function keys.

The machine production menu will now appear on the monitor showing all necessary information such as:

- Output per minute
- infed containers, etc.



Production Menu

7. Press the **Machine "ON"** button (basic functions) at the operator panel.

8. Set the flowgate selector switch to **"OPEN"** (basic functions). This will start the machine at minimum speed.

   The container flowgate can be opened and closed manually by setting the flowgate selector switch **"OPEN"** or **"CLOSE"**. When set to **"AUTO"**, accumulation and backup sensors control the container flowgate.

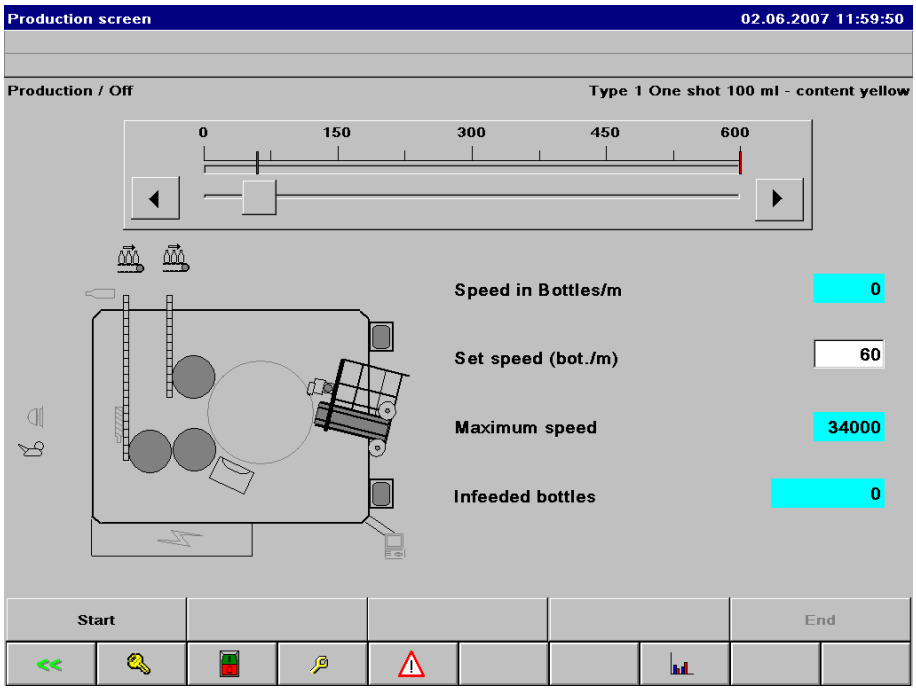
9. Once the machine is labeling properly, set the flowgate selector switch of the flowgate to **"AUTO"**. The machine will then operate at the speed specified by the PLC control.

10. Press the **"Start"** command button in the Production Menu to start production operation.

Changing the Machine Output

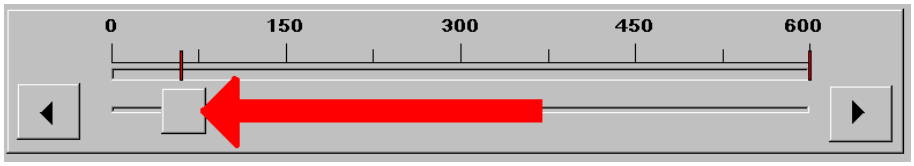
The machine output speed is shown in the Production Menu digitally and by a bar graph.

Production Menu



You can change the set machine output by moving the **slider control** to the desired machine output speed.

Output Speed Adjustment



Touchpad Input Box

- Touch the colored **Set Output (bph)** input box and enter the desired machine output speed using the **touchpad input box**.
- With the tip of your finger, move the **slider control** to the desired machine output speed.

The machine speed will change according to the monitor display (red bar graph and numerical setting in the diagram).

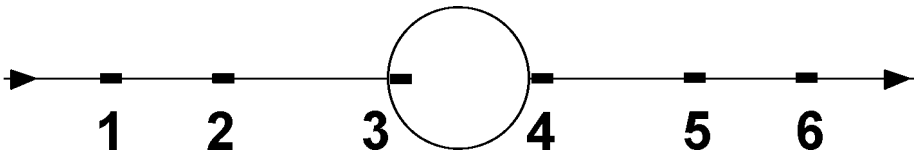
When running the machine in Automatic mode, the **PLC** will adjust the actual speed to the set speed.

Labeling

The container flowgate will open if there is a sufficient number of containers on the infeed belt to occupy the sensors.

After a short delay, the labeler will increase the speed until the set output speed is reached. It will now run in Automatic mode.

Function of the Monitoring Switches during Labeling



Backup Control (Diagram)

Infeed backup switch:

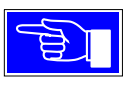
If the maximum infeed switch (**1**) is not occupied due to an interruption in the flow of containers, the machine will regulate the output to starvation speed. If the minimum infeed switch (**2**) is not occupied, the container flowgate will close and the machine will run at base speed. When both infeed switches are reoccupied, the container flowgate will open and the speed is increased to the nominal output.

Machine gap switch:

In the event of gaps in the container flow (no continuous flow of containers), a fast stop immediately stops the machine. It will be necessary for the machine operator to perform the following work steps to resume production operation if the gap switch (**3**) has been activated (machine has gone to a stop position).

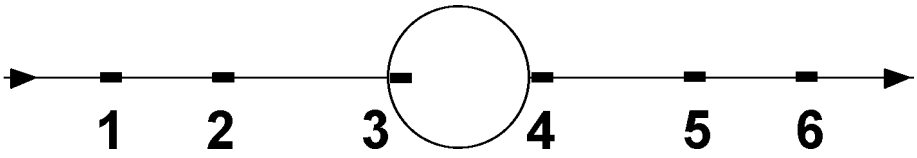
- Determine and correct the cause of the problem.
- Press the **ACK ERROR** button at the **container infeed**. This will disable the gap switch in order to override the gap in the container flow. This switch is also disabled when the container flowgate is closed.
- Set the **ACTIVATE JOG** selector switch to **JOG**.
- Let the machine run in Jog mode until an unbroken line of containers is behind the switch.
- Reset the **ACTIVATE JOG** selector switch.

The Fill-up function can optionally be activated in the Function Enables menu (option).



- Press the **START MACHINE** button and the labeler will return to Automatic mode.

Backup Control (Diagram)



Outfeed backup switch:

If the minimum outfeed switch (**6**) is occupied due to a backup of containers, the machine will regulate the output to backup speed. If the maximum outfeed switch (**5**) is occupied, the container flowgate will close and the machine will run at base speed. When both outfeed switches are not occupied again, the container flowgate will open and the speed is increased to the nominal output.

Bypass table backup switch (option):

The bypass backup switch (**4**) is located immediately after the machine outfeed belt.

In the event of a container backup behind the machine caused by jammed containers or broken glass, the backup switch prevents damage to machine components by stopping the machine immediately.

It will be necessary for the machine operator to perform the following work steps to resume production operation if the backup switch has been activated (machine is in a wait state).

- First, eliminate the cause of the backup (e.g. by removing jammed containers and broken glass) so that the backup switch mounted on the bypass table is no longer occupied.
- Press **ACK ERROR** button.
- Press the **START MACHINE** button and the labeler will return to Automatic mode.

Container monitoring:

This monitoring facility checks the presence of containers on the container turrets.

The machine is stopped immediately if containers burst or if faulty containers are on the container turrets.

It will be necessary for the machine operator to perform the following work steps to resume production operation if the container monitoring facility has triggered a machine stop.

- Remove any broken glass/container fragments.
- Press **ACK ERROR** button.
- Set the selector switch to **ACTIVATE JOG**.
- Let the machine run in jog mode until the container turrets are filled with containers. The switch is not active when the container flowgate is closed.

Powering Off the Machine

Production Interruptions (Pauses and Repairs)

- Set the **FLOWGATE** selector switch to **"CLOSE"**.

The machine will label the remaining containers at the base speed. Once the last container has left the machine, the glue scraper is advanced to scrape the film of glue to minimum thickness.

- Press the **"MACHINE OFF"** button.

The machine will overtravel briefly and then stop.

End of Production (End of Shift)

Since there is frequently not a sufficient supply of containers ahead of the machine at the end of a shift, the backup switches will set the labeler to its base speed and close the container flowgate. Manually open the flowgate set to AUTO to label any containers still remaining on the belt.

- Set the **FLOWGATE** selector switch from "AUTO" to **"OPEN"**.

The container flowgate will open and the machine will now label any remaining containers at its base speed. Once the last container has left the machine, the glue scraper is advanced to scrape the film of glue to minimum thickness.

- Press the **"MACHINE OFF"** button.

The machine will overtravel briefly and then stop.

Proceed as follows to finally switch off the machine:

- Press the **"CONTROL POWER OFF"** button.

The machine is now powered off.

Restarting after Production Interruptions

- Set the **FLOWGATE** selector switch to **"OPEN"**.
- Press the **"MACHINE ON"** button.

Production operation will be resumed.

Jog Mode

Buttons with the following functions are mounted on the machine columns:

- **ACTIVATE JOG MODE**
- **ACK ERROR**
- **START MACHINE**
- **STOP MACHINE**

A separate hand unit equipped with the following functions is connected to the labeler by a trailing cord:

- **EMERGENCY STOP**
- **JOG** (first, activate the jog function at the machine column).

This Jog button is active only when the safeguard of the respective labeling station is opened.

When a labeling station safeguard is opened, all other buttons as well as the machine activation button are no longer enabled.

This does **not** apply, however, to the **EMERGENCY STOP** function!

The machine can be restarted after opening a safeguard only by first pressing the **"ACK ERROR"** button.

Safety Information

Only those persons **authorized** by key switches or passwords to **access** those basic machine control functions relevant to machine and operating personnel safety may modify these functions.

Programs and Program Functions

Refer to section, **"Program Structure" in Chapter 3** of the Operating Manual for information on activating individual menus.

Program Selection

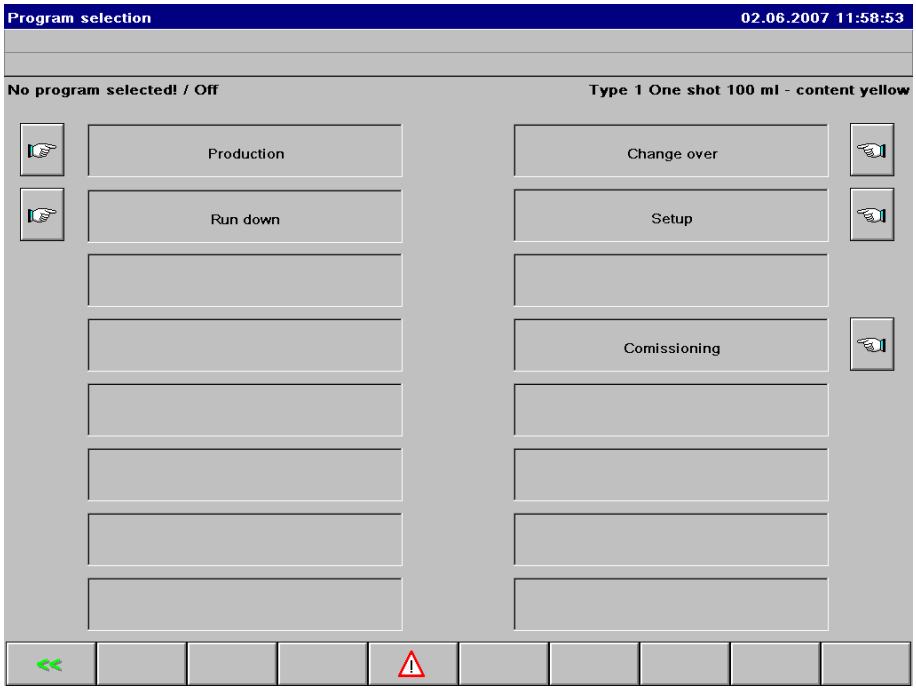


Figure 3-5 : Program Selection

Use this screen to activate machine programs (operation modes).

All required devices are automatically switched on and the entire process is monitored in **Production** mode.

Run empty runs infed containers out of the labeling machine.

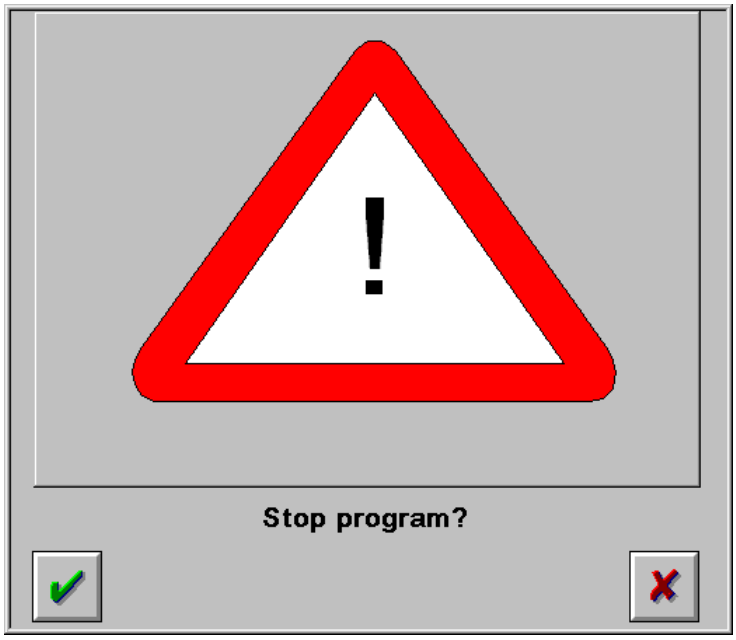
In the **Changeover, Setup, and Startup Program**, the required devices such as valve activation, glue heater, etc.. must be switched on manually, and the parameters must be set. Only activated devices are monitored.

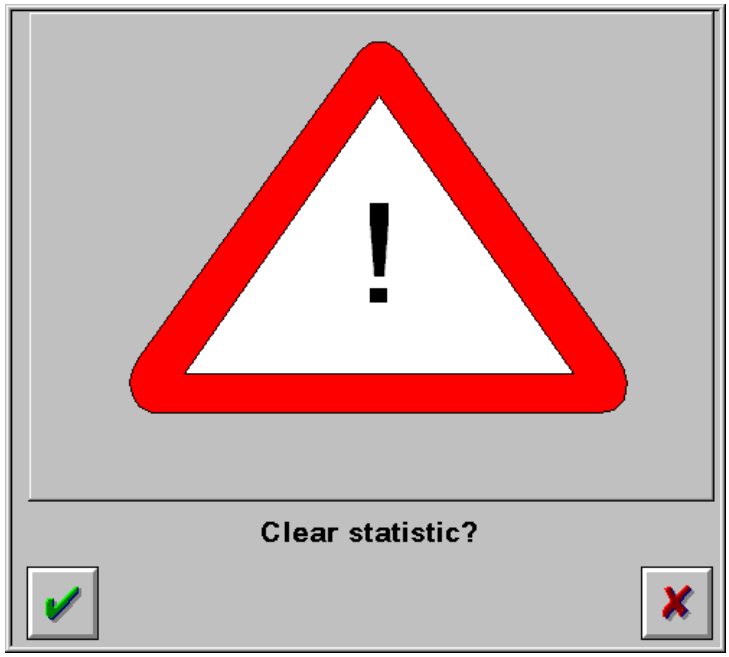
Touch or press this command button to activate the specific program.

Start a program to execute functions. The machine cannot execute any functions (main functions: main drive, lock) unless one of the programs listed above has been started.

Terminate Program? Clear Statistics?

Figure 3-6 : Terminate Program? Clear Statistics?





You will be asked to confirm or cancel the request in these screens.

"Confirm" command button: answer **"YES"** to the query to execute the function.

"Cancel" command button: answer **"NO"** to the query to return control to the previous program.

Function Enables

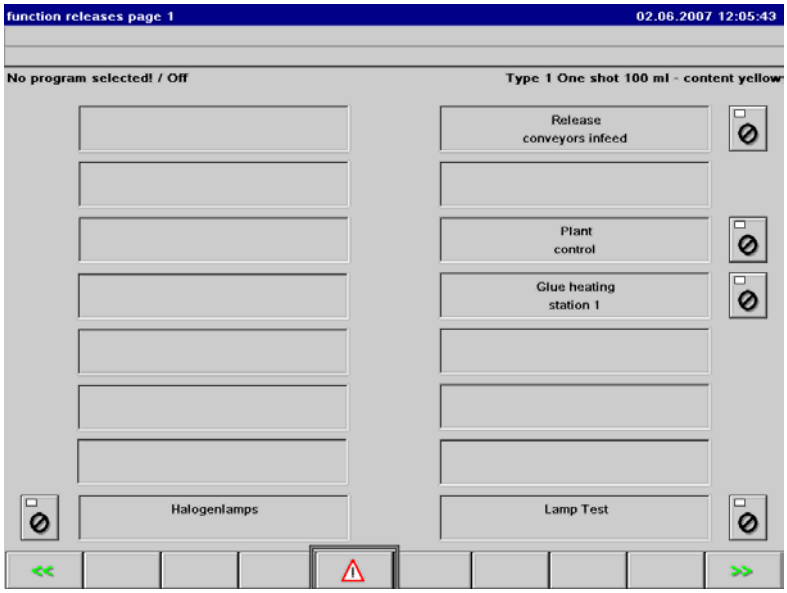


Figure 3-7 : Function Enables, Page 1

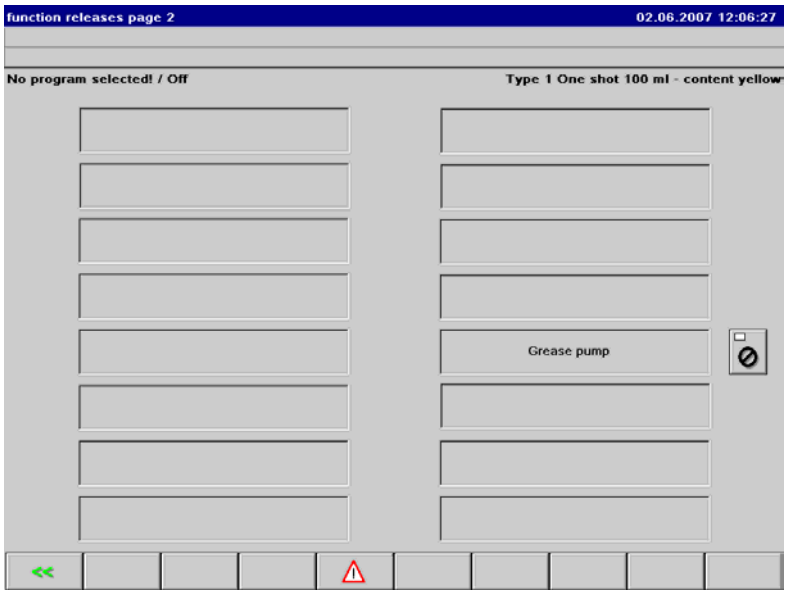


Figure 3-8 : Function Enables, Page 2

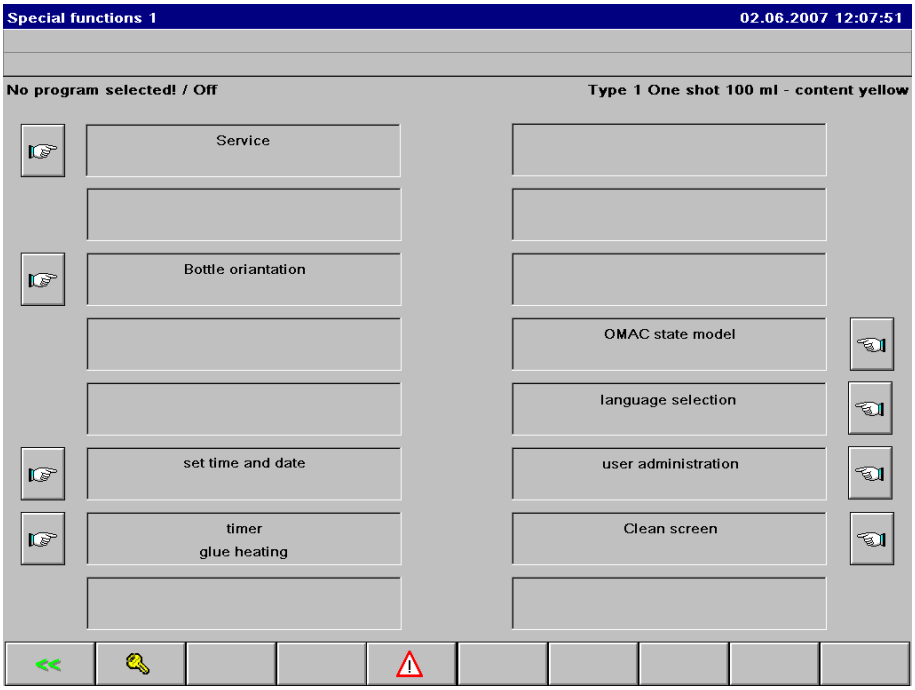
You can use the **Function enables** screens to switch the various machine components on and off when enabled by the **PLC** (**P**rogrammable **L**ogic **C**ontroller) machine control. The grease pump and circulated oil lubrication are activated automatically by the **PLC** when the Production program is started.

You can activate the following screens by touching the **Forward** and **Back** function buttons.

Only those boxes with text can be selected and deselected.

Special Functions

Figure 3-9 :
Special Functions



You can activate various special functions in this menu.

You will have to enter your password in order to gain access and activate certain functions. This security query will automatically appear on the monitor and access is granted to the selected function only after making the correct entry.

To activate a particular function, touch or tap this command button with your finger.

VarioDrive Submenu

---> Special Functions Menu ---> Service

The following screen will appear after pressing the **"Activate VarioDrive"** command button.

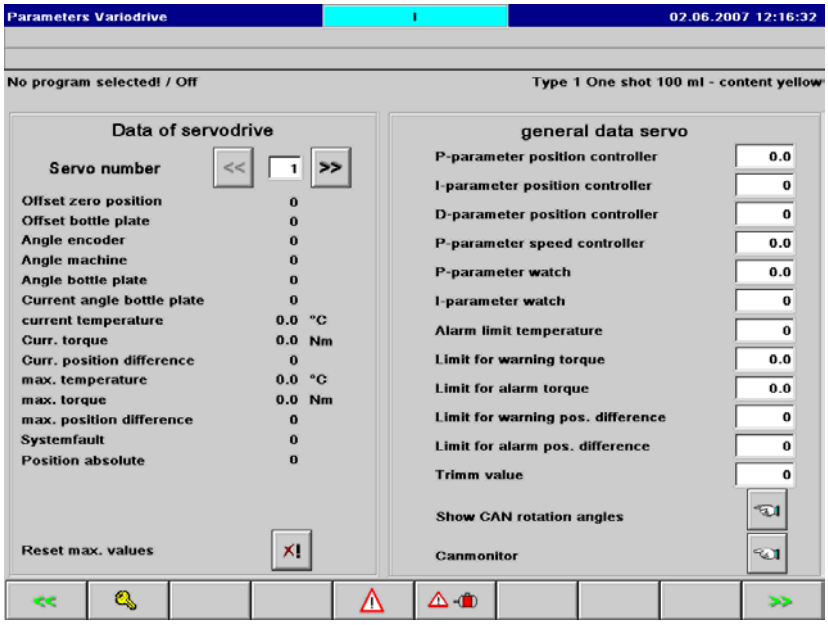


Figure 3-10 : VarioDrive Parameters

An overview of the respective VarioDrive is presented in this menu.

Safety Information

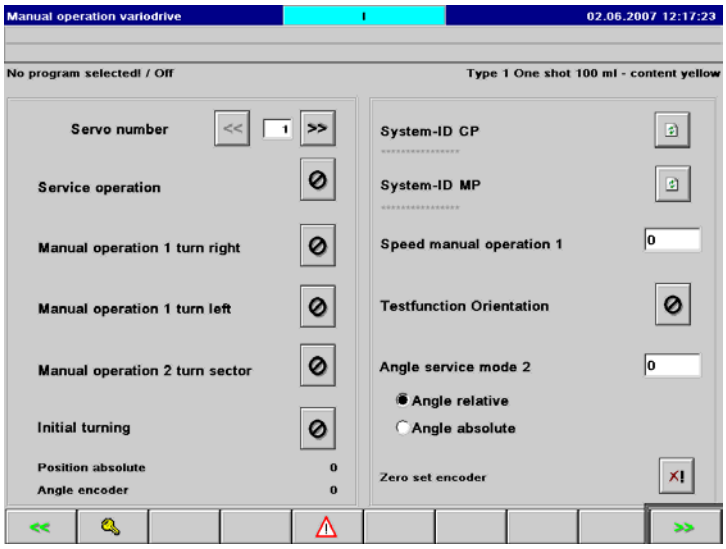
Only those persons authorized to access the basic machine control functions relevant to machine and operating personnel safety by entering passwords may modify these functions. In order to ensure trouble-free machine operation, it is absolutely essential that you contact the KHS Service Dept. before making and modifications to the VarioDrives or servo drives!

You can modify general servo drive data after you have entered your password.

You can run each servo drive individually in **Test Mode** after activating **"Setup Mode"**. In Test Mode, you can check and test the lower chuck drives.

In Test Mode, you can check, adjust, and set the lower chuck drives.

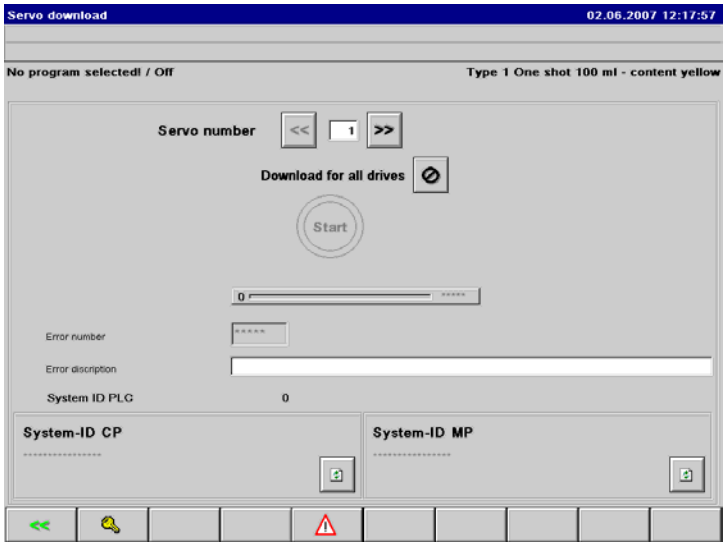
Figure 3-11 : VarioDrive Setup Mode



Servo Download

Note:

Always press the SERVO FUNCTION button at the main machine operator panel for Setup mode.



You can use this menu to download the VarioDrive firmware (compare the firmware version in the PLC control). This function is required only when KHS issues an updated version of the VarioDrive firmware or an older version needs to be updated for a replaced drive.

Note: The download will take several minutes and cannot be interrupted.

All setup and test procedures may be executed only by specially trained and authorized technicians to ensure that proper machine operation is not impaired.

Special Functions Menu ---> Service

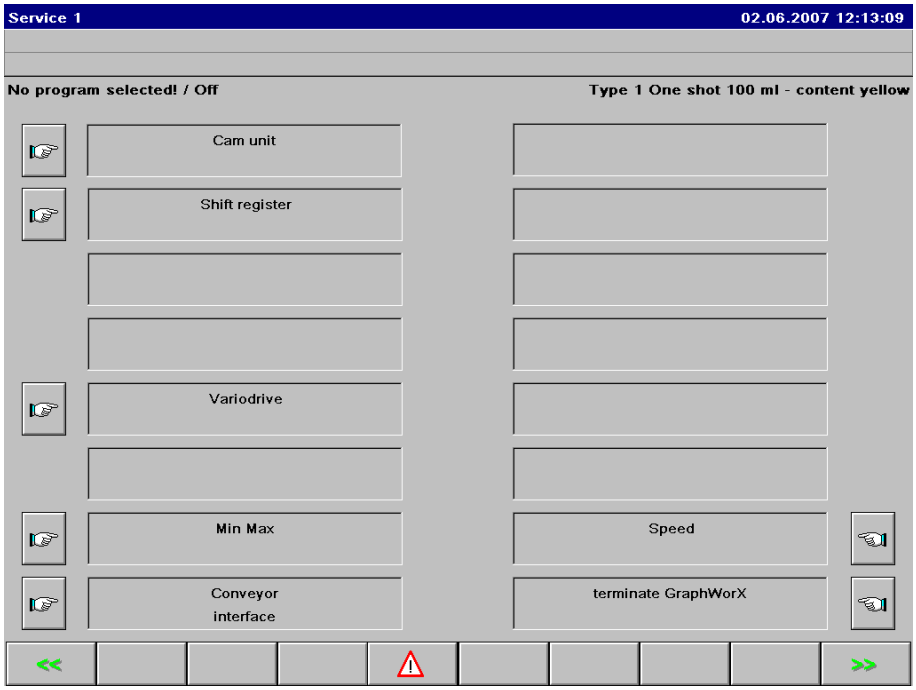


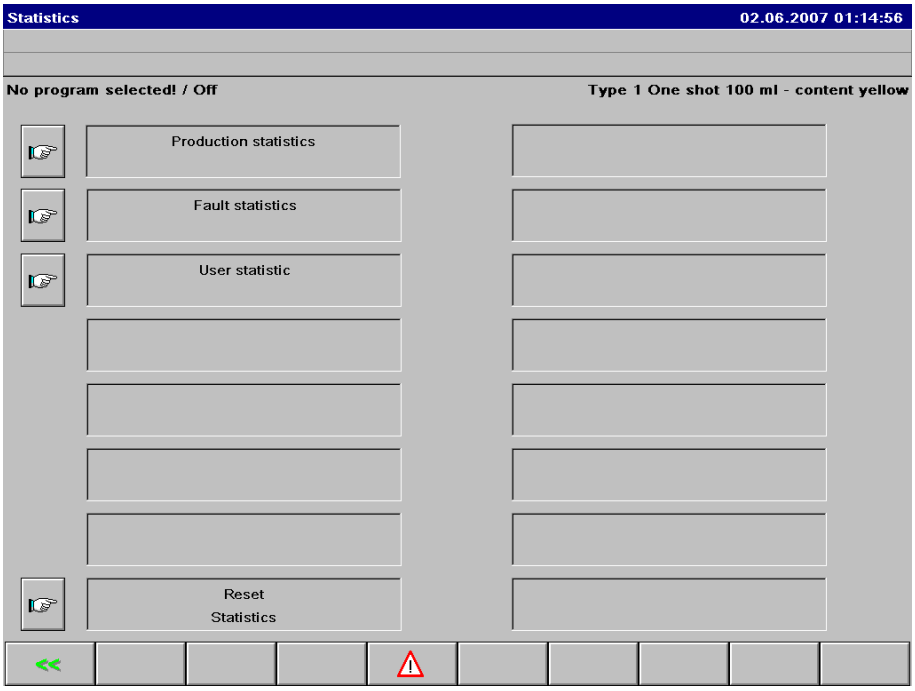
Figure 3-12 : Special Functions / Service

In the Special Functions / Service menu, you can readjust the machine's zero-point for example (cam controller - refer to **Chapter 5 of the Operating Instructions, section, Setting the Machine Zero-point** for further information). Other functions are in the **"Service"** menu are:

- **Cam controller** (edit, change parameters)
- Slide register (edit, change specifications)
- **VarioDrive** (edit, change parameters)
- **Min Max** (operate and set the gap switches)
- **Conveying interface** (conveying interface)
- **Speeds** (production, jogging, infeed conveyor, run-out)
- **Terminate GraphWorX** (terminate visualization)

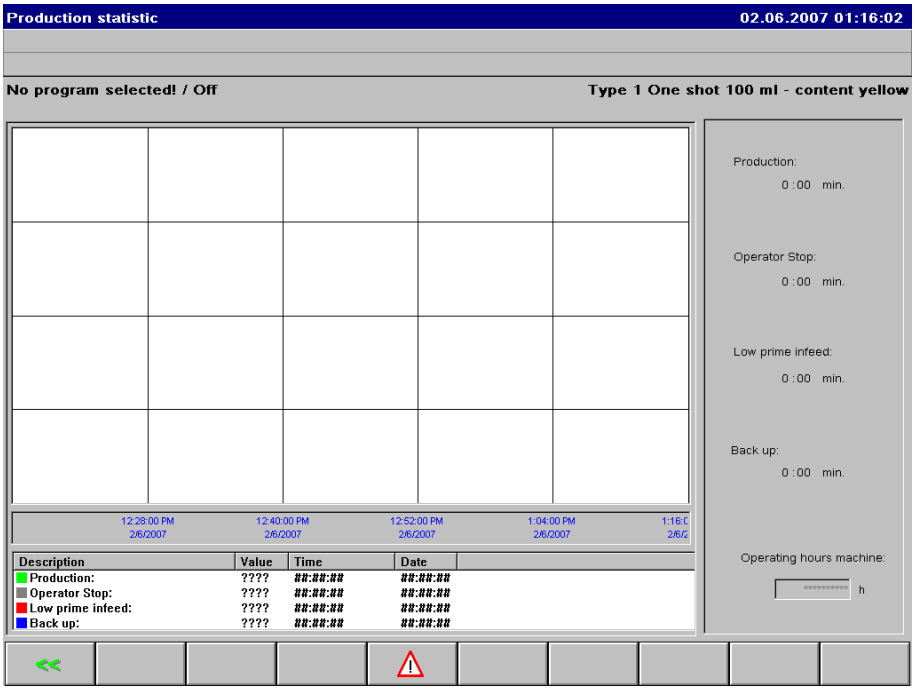
Statistical Data

Figure 3-13 : Statistics Selection



In this selection screen, you can retrieve production statistics.

Figure 3-14 : Production Statistics



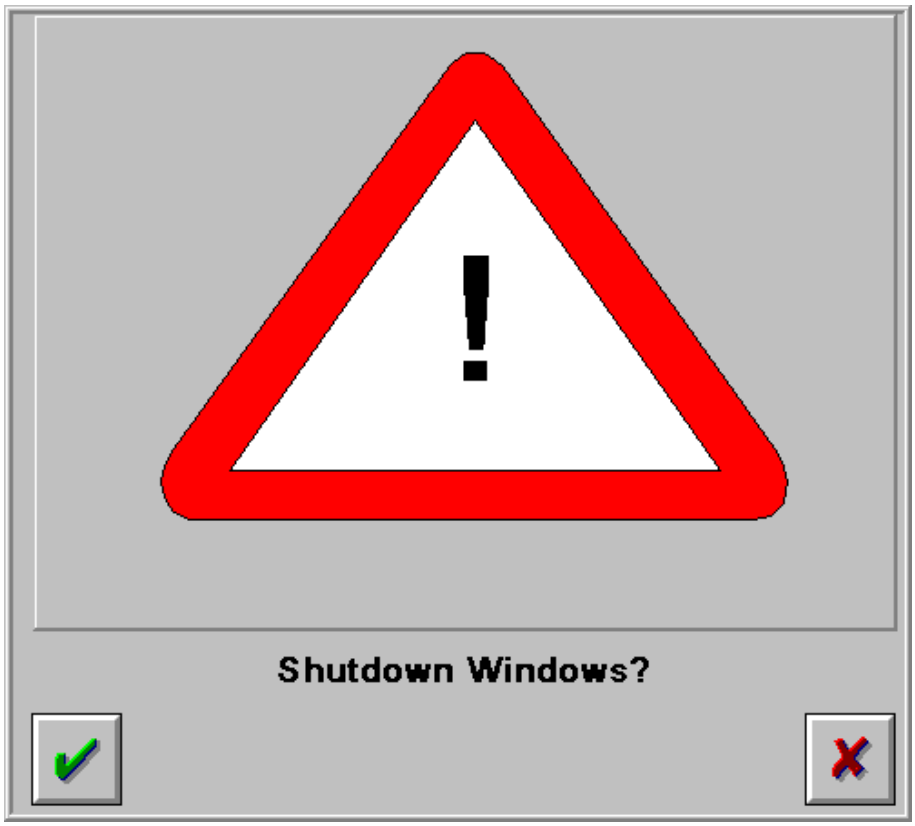
You can clear the statistics in the Statistics Data selection screen by touching the **"Clear Statistics"** command button.

Enter Password

Only authorized users may clear production statistics after entering a password.

Shutting Down Windows®

Press the **"STOP"** function button to shut down the **Windows® operating system**.



Shut Down Windows

You will now be asked to confirm or cancel the query. Use the following command button in order to do so.

Command button for **"Confirm"**.

The computer can be shut down by answering the query with **"YES"**. If you answer **"YES"** to the query, you can then exit the machine program by touching X in the upper right-hand corner of the same monitor screen.

Command button for **"Cancel"**.

The request is answered with **"NO"** and control is returned to the previous program.

Close the Windows Screen

Touch this button located in the upper right-hand corner of the monitor to close the Windows screen. Then switch the **Control Power** to **"OFF"** and the labeler will now be switched off completely.

Before switching off the main power switch of the machine, be sure to shut down the operator monitor by pressing the Stop button in the Main Menu.

Operation Modes

The operation mode provides information on the type and extent of operator intervention in the control facilities or through feedback from the system to be controlled (DIN 19 237).

Only **'exclusive OR'** operation modes occur; i.e. only one state can occur at a time.

Off Mode

The machine status indicates if the machine has been shut off.

The Off mode of this machine signals that no program is started and that the model is in a **"stopped"** state.

Manual Mode

Manual mode is always active when automatic program processing is interrupted by the machine operator. In this case, this could be activation of Jog mode or manual operation of the container flowgate. Jog mode is possible only in Manual mode.

Automatic Mode

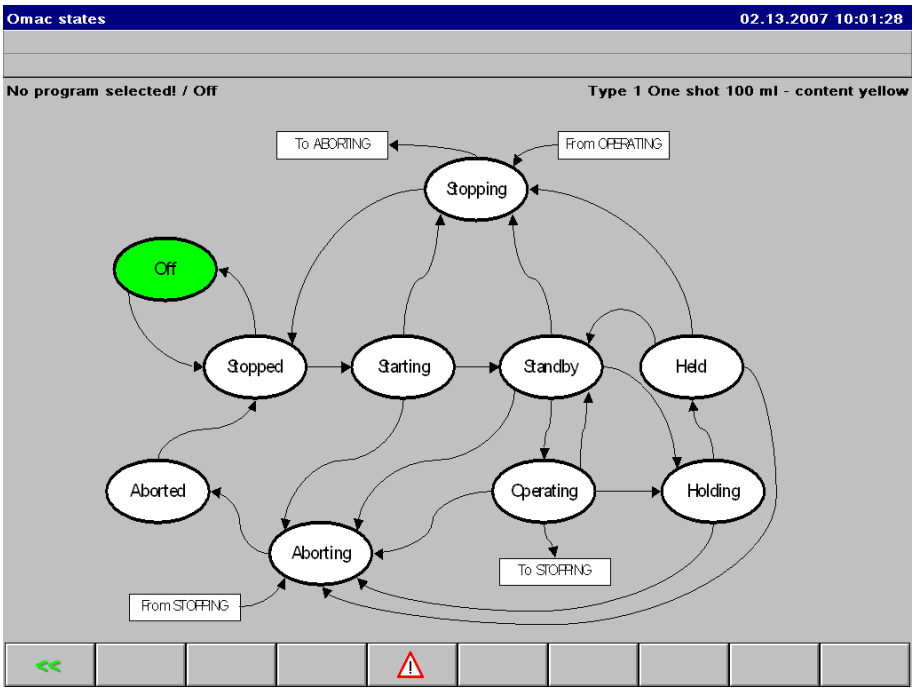
The machine is integrated in the control concept of the overall system and its set output is automatically controlled.

As a rule, this means that the machine receives setpoints from a higher-level system (e.g. conveying system or guidance system).

Machine Operating States

The operating states of the machine are shown in the following figure.

Operating States



The statuses and reactions shown here are the result of prespecified definitions and structures. The **WS/OMAC** status is chosen depending on the selected program, selected operation mode, event, or malfunction, which then influences the controlled devices.

Stopped

This is the initial state of all programs.

When switching operation modes, the current program code is not processed further. Instead control is past to another model with another stopped status module. This change of operation modes is possible only via this status. Otherwise, this module only queries if the Machine On button is pressed or if the Jog button is pressed in Manual mode. Control is then past to the next status.

Starting

This state can be reached only from the Stopped state.

The PLC program remains in this state for at least one cycle in order to register any incoming errors. The program branches to Aborting if errors are now pending without operator intervention. The program branches to Standby for errors caused by operator intervention or if no errors have occurred.

Standby

This state can be reached from the Starting state and the Operating state in the Production, Rundown, Setup, and Commissioning program.

The **drive** is switched on in all programs and operation modes. The **flowgate** remains closed in all programs.

The machine runs at base speed or jog speed depending on the OP mode selected (Automatic or Manual).

In order to reach the Operating state, the machine must have already exceeded the minimum speed of rotation, no errors pending (or Stopper Close error) and the flowgate controlled by the machine operator for Manual mode.

Operating

This state can be reached only through the Standby state.

In Manual mode, the flowgate is controlled by the machine operator (Flowgate button). The flowgate is controlled automatically in Automatic and Semi-automatic mode in which case the various drive speeds are additionally defined.

In case of errors, this state is exited to Aborting or Holding. A special feature in this case is that control is returned to Standby for Stopper Close errors or Starvation and Backup errors.

Holding

This state can be reached only through the Standby or Operating states.

The drive is stopped and the container flowgate is closed in the related PLC module.

The particular operating situation is taken into account.

In Jog mode, the drive is immediately switched off and the container flowgate is closed since the machine speed is restricted in Jog mode.

In Automatic or Semi-automatic mode, the speed must first be decreased. The speed is first decreased so far so that the container flowgate can be closed. The drive is run to stop position and stopped whenever possible.

Once the machine has stopped, this state is exited with a branch to Held.

Held

This state can be reached only through the Holding state.

The drive is stopped and the container flowgate is closed.

As a rule, the machine remains in this state until the error causing this state is acknowledged. An exception could be a change in the OP mode for example.

Aborting

This state can be reached only through the Starting, Standby, Operating, or Held states.

The particular operating situation is taken into account.

In Jog mode, the drive is immediately switched off and the container flowgate is closed because the machine speed is not very high in Jog mode.

In Automatic mode, the speed must first be decreased.

The speed is first decreased so far so that the container flowgate can be closed. The drive is possibly run to stop position and stopped.

Once the machine has stopped, this state is exited with a branch to Aborted.

Aborted

This state can be reached only through the Aborting state.

The drive is stopped and the container flowgate is closed.

As a rule, the machine remains in this state until the error causing this state is acknowledged or no more errors are active. An exception could be a change in the OP mode for example.

Stopping

This state becomes active only in Manual mode. It is not used in Automatic or Semi-automatic mode

This state can be reached in Manual mode only through Standby and Operating states.

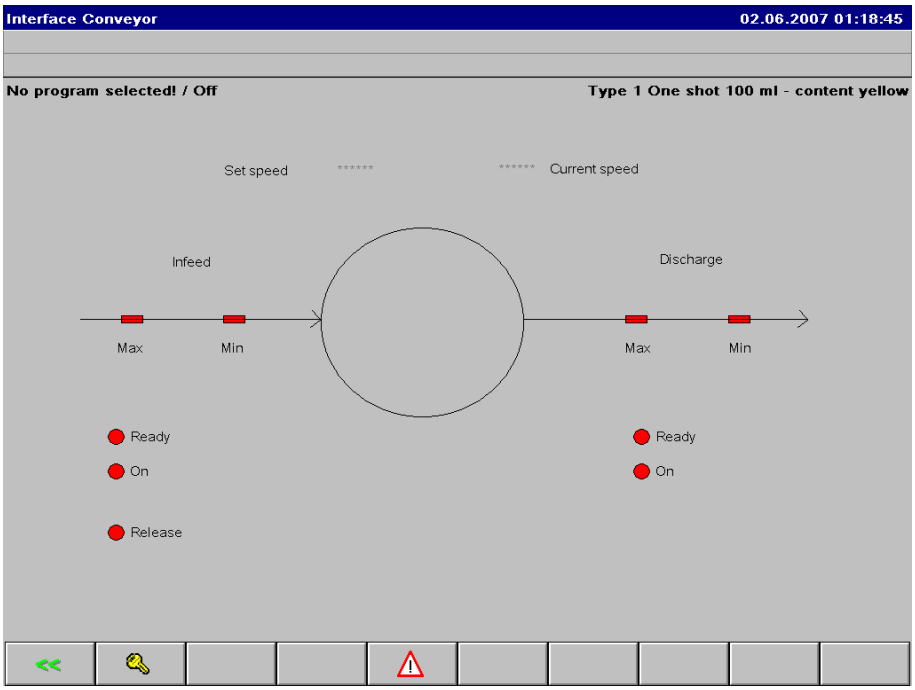
The drive is stopped and the container flowgate is closed in the related module.

The drive is immediately switched off because the machine speed is not very high in Manual mode.

Monitoring the Container Infeed and Outfeed

Exercise caution with regard to broken glass and burst containers since there is a risk of injury caused flying glass fragments! Always wear the protective clothing when removing broken glass! Never reach into the machine while it is running! Do not use any tools or cleaning utensils on the machine while it is running!

Conveying Interface



Constantly monitor the container infeed and outfeed to avoid possible disruptions caused, for example, by broken containers, foreign objects, etc.. Listen for unusual machine noises during production operation.

Determine the cause of unusual noises and repair any damage immediately.

Startup

Initial Operation

KHS service personnel are responsible for starting up the module for the first time.

The settings for the various label sizes are included in the accompanying machine folder.

Commissioning (Starting Production)

Adhere to the following sequence for commissioning:

1. Before powering on the hotmelt module, check all power supply and control lines for damage and ensure that they are properly seated.
2. Check the operability of all safeguards and that the safety panels are properly in place.

Never override the safeguards!

This could cause serious injury.

3. Check all the settings for the size of label to be used for production.
4. Visually inspect the label hopper for physical damage. Refill with labels as required.
5. Check the filling level in the hot melt tank. Refill hot melt as required.

Leave a sufficient amount of free space up to the edge of the hot melt tank. This will keep the hot melt from overflowing and sticking the hot melt tank cover.

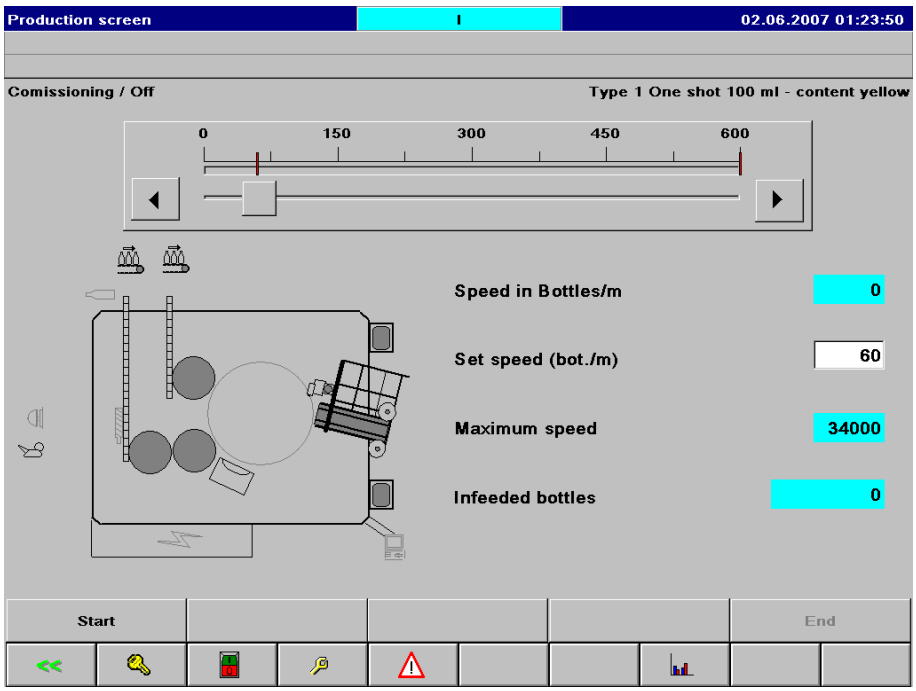
6. Power on the hot melt unit. Allow to heat up for approx. **30 minutes** or use the timer, which will power on the module at the preset time.
7. Once the hot melt has reached operating temperature, press the lighted **Start Machine** button.

Startup

The purpose of the Startup program is to test key machine functions during startup without running containers through the machine; e.g. speed balancing.

The **container flowgate** can be controlled in this program by the Flowgate button independent of the OP mode.

Startup



OP mode: Automatic

Automatic / Semi-automatic mode is active under the following conditions:

- The Setup program has been started and
- Jog mode has not been activated.

When the machine is started, the program will automatically control the machine functions. It will not be necessary for the machine operator to intervene in this program and operation mode in order for the machine to carry out its prespecified operation.

OP mode: Manual

Manual mode is active under the following conditions:

- The Startup program has been started and
- Jog mode has been activated.

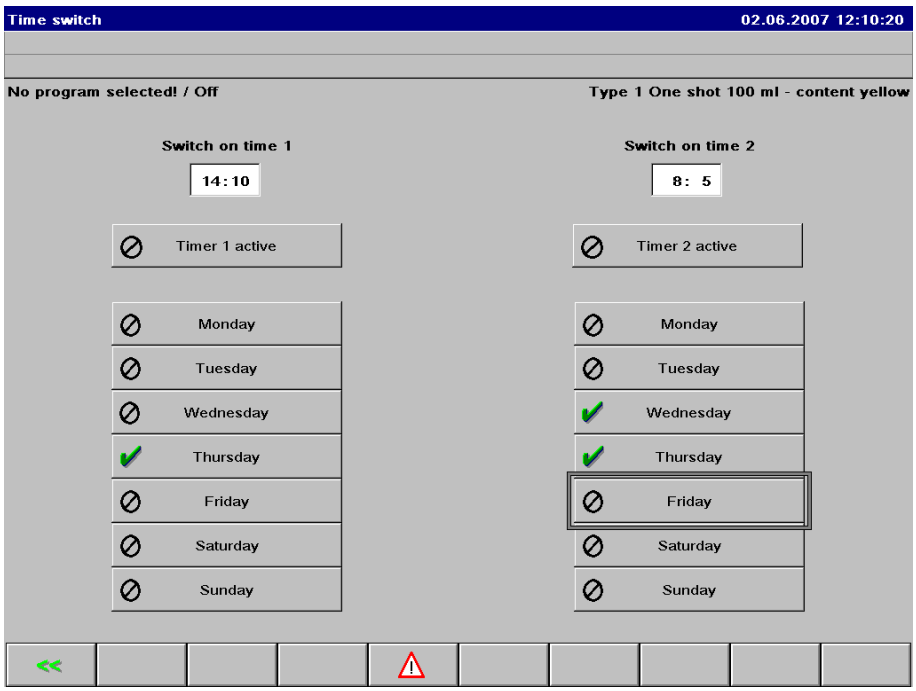
Manual mode can be run only when the machine is in Jog mode.

Automatic Glue Heater

You can define and switch on three daily start times for automatic activation of the glue heater in the Timer menu. Proceed as follows to do so:

Activate the Glue Heater command button in the Special Functions menu.

The Timer window will appear on the monitor.



Timer

Touch the appropriate input boxes for hour and minute.

Use the touchpad to enter the desired settings.

Touch the command buttons on the next to the input boxes to activate the desired switch-on times.

The glue heater must be turned off separately when switching the machine off.

Safety Considerations when Handling Hot Melt

Danger of skin burns!

Avoid skin contact with hot melt. Wear suitable gloves and safety goggles. Be careful that hot melt does not splash when refilling the tank.

Use only hot melt approved by the manufacturer of the hot melt unit (see the operating manual provided by the manufacturer of the hot melt unit).

Cool skin burns by immediately flushing the skin with water for several minutes.

Never attempt to remove hot melt from the skin! Seek medical attention immediately.

At excessively high temperatures, hotmelt can produce odors and vapors that could cause eye and respiratory tract irritations. Provide adequate ventilation of the work area.

Changeover

Safety Considerations

Exercise extreme caution when carrying out changeover, cleaning, servicing, and repair work.

All changeover, cleaning, servicing, and repair work is to be supervised by the person in charge.

Only authorized persons are allowed in the machine area while work is being carried out on the machine.

In cases of potential injury, begin the changeover, problem correction, and maintenance work only after the machine has been stopped, the power supply has been disconnected, and the machine is secured against inadvertent startup.

- Press the **"EMERGENCY STOP"** button.
- Set the main switch to **"OFF" (0)**.
- Secure the main switch against inadvertent startup.

For this purpose, each member of the servicing staff should lock the main switch with his/her own padlock and key.

The machine can then be restarted only after all padlocks have been removed from the switch.

If certain a type of work cannot be performed while the machine is stopped, then carry out this work in Jog or Manual mode at minimum machine speed:

- Ensure that no other persons are in the work area of the machine.
- Ensure that the machine cannot be damaged.
- Switch on the machine power supply but only as long as absolutely necessary.
- Give a signal that the machine is being started.
- Switch the machine to Jog Mode.
- Use the Jog switch to slowly jog the machine forward.
- Secure the machine against inadvertent startup as soon as you can.

Work may be performed on the machine while it is running only if absolutely **necessary** and there is no danger of injury.

Do not render the safeguards inoperable during servicing and repair work unless absolutely necessary. Safeguards may be rendered inoperable only by authorized personnel.

- You must make sure that no persons can be injured and that none of the machine components can be damaged.

Safeguards must **never** be overridden during normal machine operation.

Pneumatic and hydraulic machine parts may be repaired only after the pressure has been completely relieved. This means:

- Shut off the compressed air supply at the FRL (filter/regulator/lubricator) unit and disconnect the corresponding pressure supply hose from the quick-action coupling.

The remaining air can thus escape and the system will no longer be under pressure.

Disconnect the **power supply** to the machine when performing work on the machine's electrical system. Note the following in this regard:

- Disconnect the power supply to the system.
- Secure the system against inadvertent startup.
- Discharge the machine by grounding and shorting the machine to ground.
- Do not clean any electrical components with water or other liquids.
- Reduce the concentration level of high-concentration cleaning agents.
- Clean all hand knobs, steps, and platforms to remove oil, grease, and any other substances that could cause slipping.
- Have damaged controls such as locking levers replaced immediately.

Restarting the Machine

Resume machine operation after the completion of servicing and repair work only after obtaining permission from the supervisor. Make sure that:

- All work is completely finished
- The entire machine is secured for operation
- All persons have left hazardous machine areas and the signal for machine startup has been given before turning on the machine

Other Pertinent Regulations

Adhere to the safety regulations currently in effect for your specific installation site. This pertains in particular to regulations and guidelines regarding:

- Storage, use, and disposal of working materials
- All substances potentially harmful to human health and the environment
- Storage, use, and disposal of process materials
- Operation of electrical systems
- Regulations and guidelines applicable to your operation site.

Waste Disposal:

- Make sure that acids and alkaline substances are disposed of according to regulations currently in effect. Exercise extreme caution in the interest of your own safety. Caustics and acids must not be introduced to the sewage system without first being neutralized.

- Check if replaced parts or waste materials resulting from servicing or repair work require special treatment for disposal.
- If necessary, ensure proper waste disposal accordingly.

Disposal of the following materials and chemical substances is exceptionally critical:

- Oil, grease, and their containers (e.g. sprays, PERMA grease guns)
- Cleaning agents, solvents, and refrigerants
- Batteries, neon lamps, etc.
- Plastics

Machine Changeover

The format parts indicated below **must** be **changed** when changing over to other container styles or label shapes.

Container shape-dependent parts:

- Infeed star(s)
- Container guides
- Outfeed star(s)
- Feedscrew(s)
- The entire brush-application channel

Label shape-dependent parts:

- Label hoppers
- The entire brush-application channel

All format parts associated with a container type and their corresponding label dressings are identified by plastic markings of the same color.

The Format Part List (System Data Sheet) indicates the color markings associated with the style of container and dressing. This System Data Sheet is delivered with each machine (in the operator console). A copy of the Format Part List is also included in the associated Spare Parts List or technical reference materials of the machine.

Storing format parts in an orderly manner contributes greatly to fast and proper completion of format part changing procedures. Format part damage or loss resulting from improper storage can be avoided by using a format part cart available from KHS as an accessory.

The container turret must revolve for at least two rounds after power failures and product type changeover (with the container flowgate closed) to synchronize the VarioDrives.

Motor-driven Height Adjustment

Adjust the height of the centering hood above the container turret when changing over to other container height.

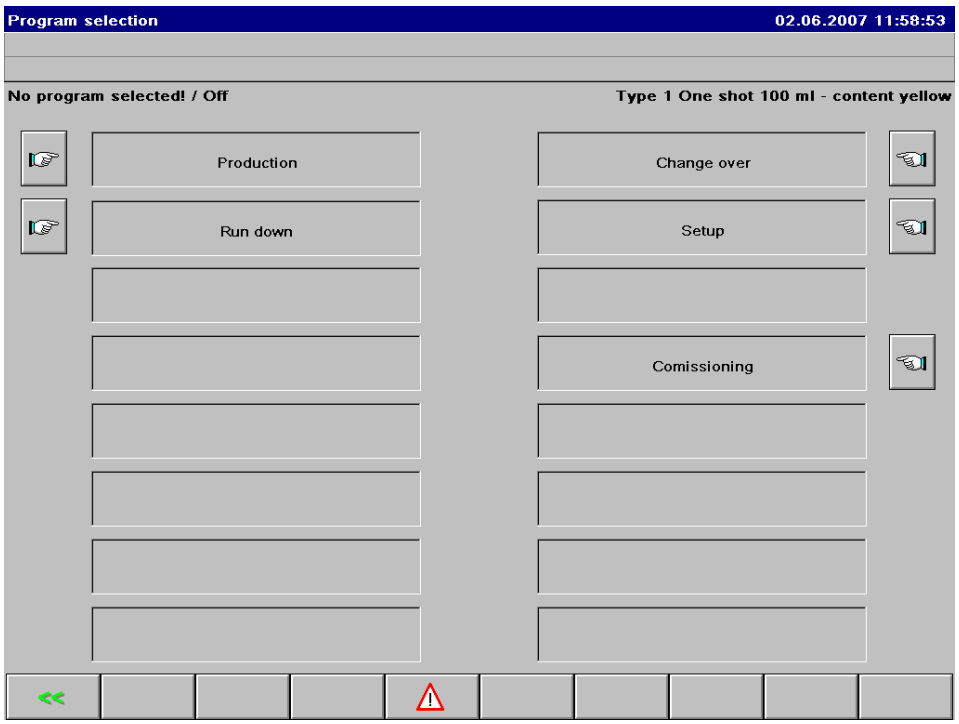
The maximum range of height adjustment travel of the centering hood is restricted by electric limit switches.

- First, press the **"Height Adjustment ON"** button located at the bottom of the operator panel (basic functions).
- A pneumatic clamping mechanism fixes the position of the centering hood to the selected container height.

Program Selection

Invoke the height adjustment menu by pressing the **"Program Selection"** command button at the monitor. The **"Program Selection"** menu screen will appear on the screen.

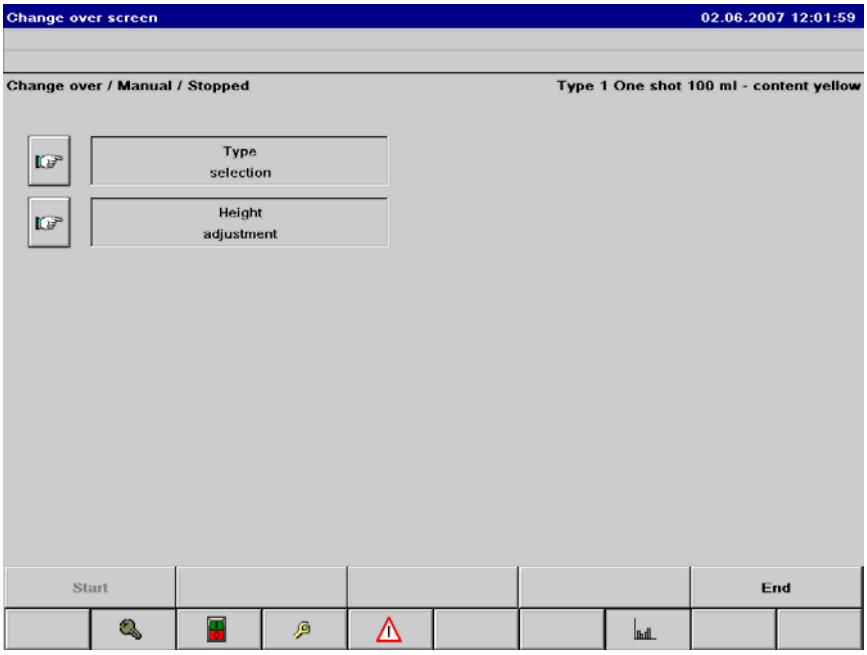
Program Selection



Press the command button for changeover.

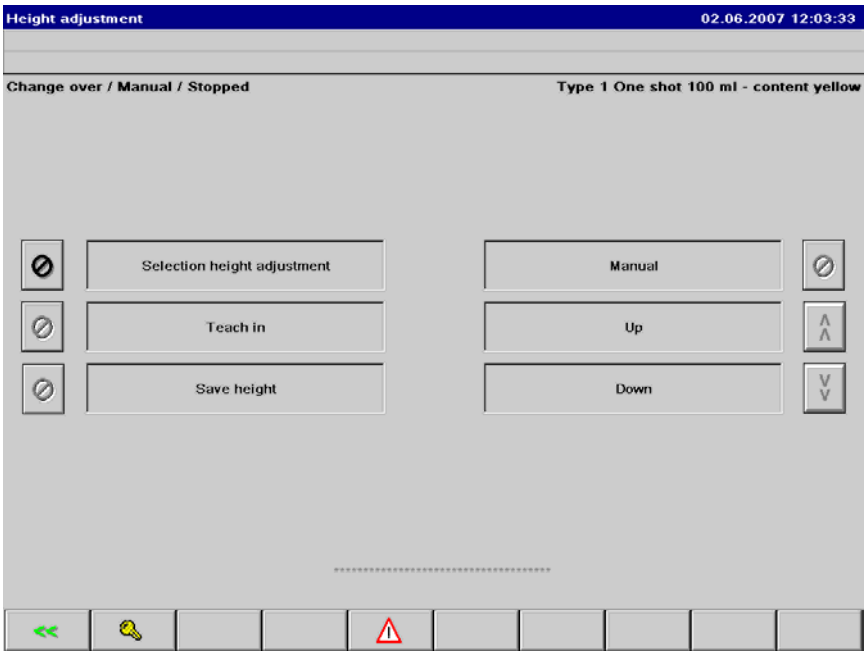
The "**Changeover"** menu will now appear on the screen.

Changeover



Press the **"Height Adjustment"** command button in the Changeover menu.

Height Adjustment



- Confirm the **"Activate Height Adjustment"** query by pressing the corresponding command button.

You can now adjust the height of the centering hood. Press the (⇧) button to raise the hood.

Press the (⇩) button to lower the hood.

- Pneumatic clamps fix the position of the centering hood at height of the selected container type.

The final step is to adjust the positions of the monitoring switches (backup and gap switches) to the new container height.

- Release the clamping lever on the switch and adjust the switch to the container height.

- Then retighten the clamping lever of the switch.

The task of changing over to another container height is now completed.

Changing Over to Other Label Sizes

In order to changeover to another label size, you will need the matching format insert, the matching final glue application strip, and possibly appropriate push-up plates.

The format parts for the particular label size are included in the scope of delivery.

Refer to the accompanying machine folder for information on the settings for positioning the label hopper and gluing unit. The manufacturer has determined the settings for the respective label sizes during commissioning.

Should for production-related reasons these settings deviate from the factory settings, keep a written record of the deviating settings. At the end of this chapter, you will find a Format Part Adjustment Table that you should use to record all changed settings in writing. The purpose is to ensure the reproducibility of your settings and aid the manufacturer's service personnel in solving possible problems.

Make copies of the empty table, enter your settings, and enclose the table in the accompanying machine folder.

Figure 4-1 : Examples of Format Part Adjustments

Formateinstellungen / Format settings		
Flasche / Bottle	CTN 544ml	
Etikett / Label	E1-HL2E	
Zeichen / Sign	E1	
Einstellungen Station HL / Settings Station HL		
1	Sprühkopfhöhe Zählwerk / gun height counter	509,9
2	Sprühkopfdistanz Tiefe Zählwerk / gun distance depth counter	525,5
3	Sprühkopfdistanz seitlich Skala / gun distance lateral range	35,4
4	Etikettenkastenhöhe Zählwerk / labelbox height counter	495,4
5	Etikettenkastendistanz Zählwerk / labelbox distance counter	53,1
6	Etikettenkasten Winkel / labelbox angel	3,0
7	Etikettenkasten Neigung / labelbox slope	-

Replacing Label Format Sets

1. Switch off the machine at the operator panel. Press the **Stop Machine** pushbutton.
2. Secure the hot melt module and the machine against inadvertent power-on.
3. Open the machine paneling.
4. Remove any remaining labels from the label hopper.

Danger of skin burns!

During production operation, the application head and the glue strip are heated to approx. 140°C. Be sure to wear suitable protective gloves when carrying out repairs, changeover, cleaning, and servicing work on the initial and final gluing units.

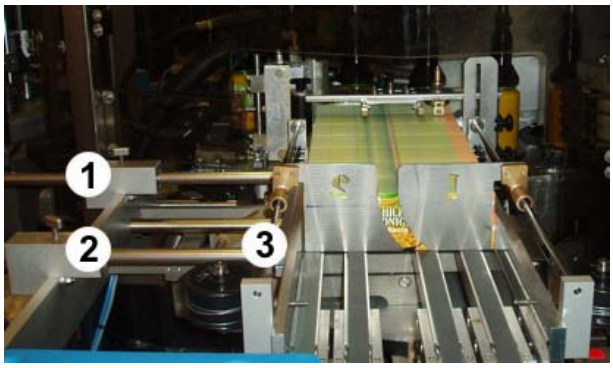


Figure 4-2 : Wing Bolts and Label Magazine Guide

5. Unscrew the wing bolts **(1)** and **(2)** and push the side guide **(3)** forward slightly.

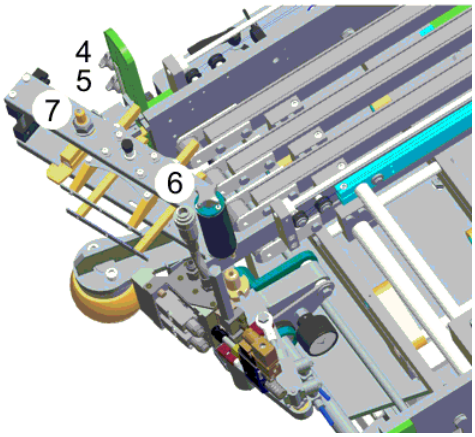


Figure 4-3 : Replacing Label Format Sets

6. Unscrew the screws **(4)** and **(5)** and the machine knob **(6)** and remove the label format insert **(7)**.

7. Replace the label format insert with the appropriate format insert for the new label size.
8. Retighten the screws **(4)** and **(5)** and the machine knob **(6)**.

Replacing the Gluing Strip (Final Gluing)

It will also be necessary to replace gluing strip (final gluing) when changing over to another label format. The height of glue application is dependent on the format of the label.

The final gluing nozzle is fastened by several hexagon socket screws.

Figure 4-4 :
Final Gluing Nozzle

1. Unscrew and remove the hexagon socket screws using a suitable wrench.

When removing the screws, be careful not to loose the O-ring seal rings on the back of the screws.

Danger of skin burns!

During production operation, the application head and the glue strip are heated to approx. 140°C.

Be sure to wear suitable protective gloves when carrying out repairs, changeover, cleaning, and servicing work on the initial and final gluing units.

2. Replace the nozzle and tighten the screws securely.

Figure 4-5 :
O-ring Seals

Ensure that the O-ring seals **(1)** are properly seated. Improperly seated seals will cause leakage and uneven final glue application.

Changing Over the Label Hopper

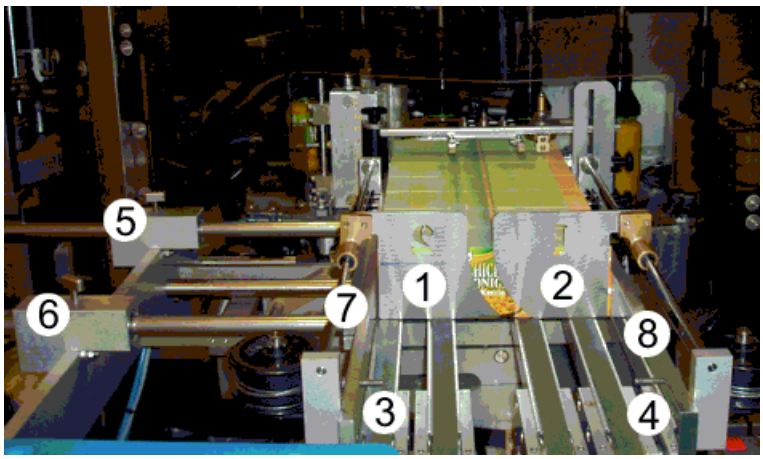


Figure 4-6 :
Changing Over the Label Hopper

1. Pull back the push-up plates **(1)** and **(2)**.
2. Turn them outward slightly and lock them in place behind bolts **(3)** and **(4)**.
3. Fan the stack of labels to be loaded (prevents the labels from sticking because of the label punching process).
4. Load the label hopper with the new labels (against the stationary side wall **(8)**).
5. Put the push-up plates **(1)** and **(2)** back in place.
6. Push the adjustable side wall **(7)** back against the label stack.

Make sure that there is approx. **1 mm** of play between the front area of the side wall and the label stack.

7. Retighten wing bolts **(5)** and **(6)**.

Changing Settings after Label Changeover

The following points must be readjusted after changing over to another label size. Consult the accompanying machine folder for information on the adjustments.

Release the clamping lever and the star knob before changing any settings. Ensure that they are tightened securely in place after changing the settings.

1. Height of spray head **(1)**
2. Distance of spray head, depth **(2)**

Figure 4-7 : Adjustment Points 4, 5, and 6

3. Distance of spray head **(3)** on circumference

Figure 4-8 : Adjustment Point 3

4. Height of label hopper **(4)**
5. Pickup depth (5) (advance to container circumference)
6. Angle of label hopper **(6)**

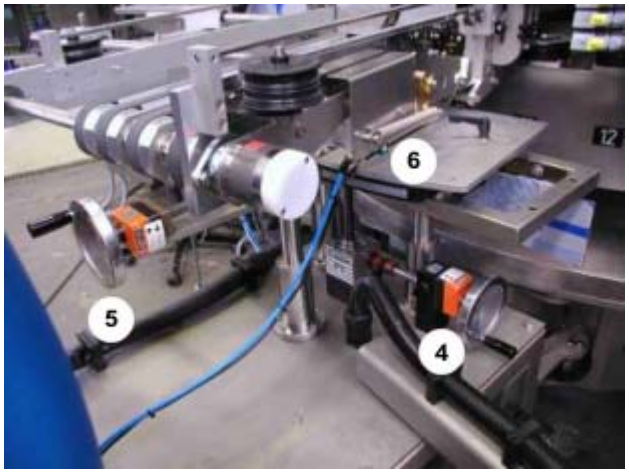


Figure 4-9 : Adjustment Points 4, 5, and 6

7. Label hopper pitch **(7)**

Figure 4-10 : Adjustment Point 7

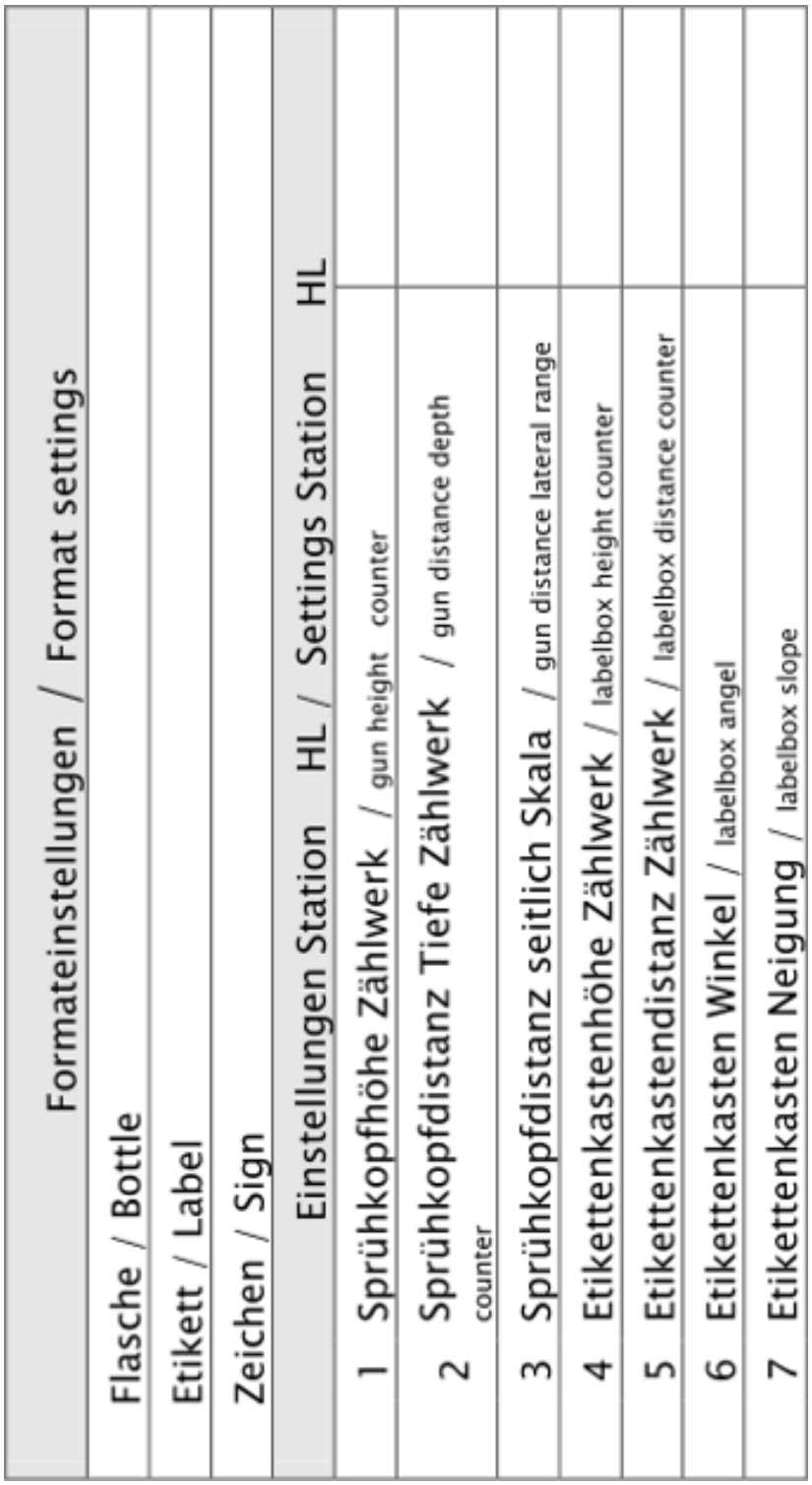
The gluing pressure can be changed by turning the pressure gauge.

The normal setting is between 1.5 and 2 bar.

Gluing Pressure

Settings Form

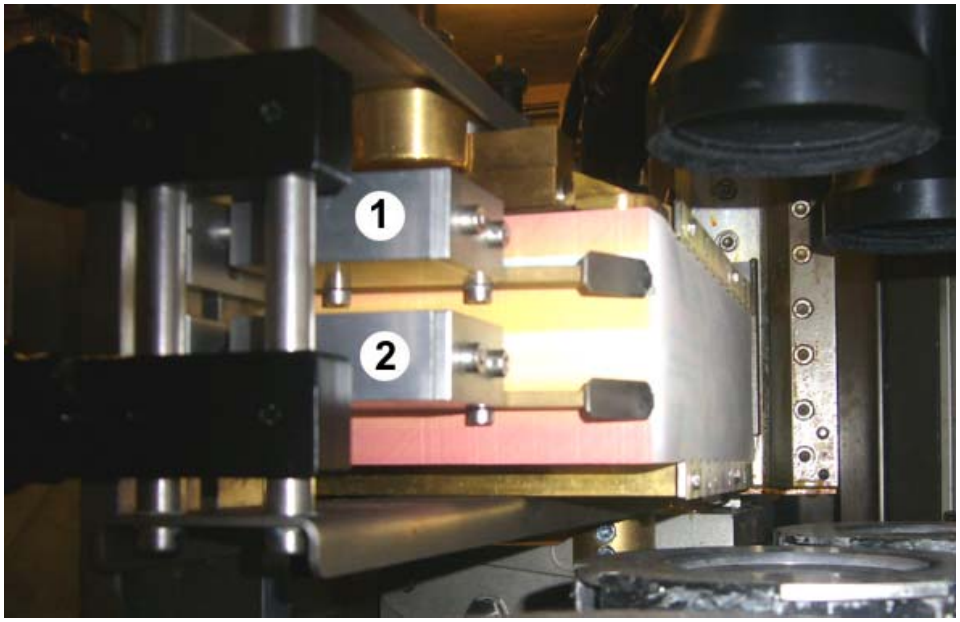
Form Sheet



Formateinstellungen / Format settings	
Flasche / Bottle	
Etikett / Label	
Zeichen / Sign	
Einstellungen Station HL / Settings Station HL	
1 Sprühkopfhöhe Zählwerk / gun height counter	
2 Sprühkopfdistanz Tiefe Zählwerk / gun distance depth counter	
3 Sprühkopfdistanz seitlich Skala / gun distance lateral range	
4 Etikettenkastenhöhe Zählwerk / labelbox height counter	
5 Etikettenkastendistanz Zählwerk / labelbox distance counter	
6 Etikettenkasten Winkel / labelbox angel	
7 Etikettenkasten Neigung / labelbox slope	

Positioning the Label Holder

Label Holder Position



The purpose of label holders **(1)** and **(2)** is to hold the labels.

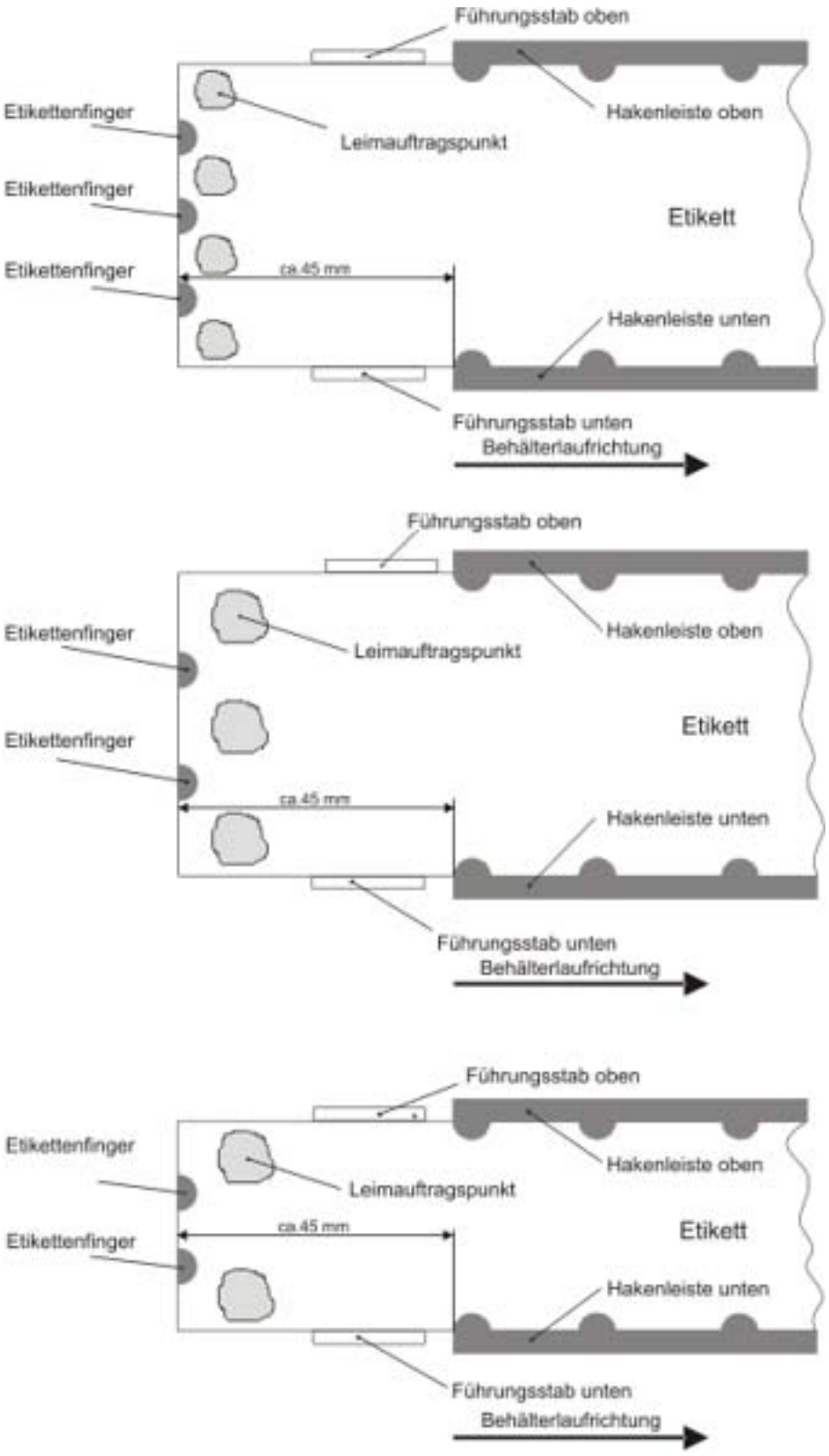
Several label holders can be used depending on the height of the label.

A scale is used for adjusting the height for the reproducibility of settings.

Position the label holder as far as possible between the gluing points of the initial gluing unit.

Examples of Positioning the Gluing Point

Positioning example



Trouble Shooting

Troubleshooting Aids (Problem Solutions)

The purpose of this chapter is to provide assistance for troubleshooting and correcting problems.

Possible malfunctions, causes, and problem corrections are listed in the following pages.

Serious machine malfunctions may be corrected only by a specialist (and not by the machine operator).

The purpose of the following symbols is to facilitate determining who is to perform the maintenance work.

Malfunctions that can be resolved by operating staff.

Malfunctions to be corrected by a specialist - electrician / electronics specialist.

Malfunctions to be repaired by a trained mechanic.

Always adhere to **"Safety - Fundamentals for Filling Lines in the Beverage Industry"** guidelines prior to correcting the cause of malfunctions.

Always wear the prescribed protective clothing.

Secure the machine against inadvertent startup.

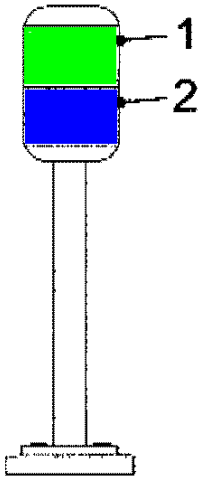
Switch off the machine drive.

Above all, secure the main power switch at the electrical control cabinet with your own padlock.

Once the cause of the problem has been corrected, the machine can be restarted only by pressing the **"ACK ERROR"** button.

Machine Operational Status Lamp

Operational Status Lamp



Layout of the operational status lamp

The operational status lamp has been mounted on the machine so that it can be easily seen.

(**1**) Green lamp

(**2**) Blue lamp

Function

Flashing green indicator lamp:

- Machine is in 'Manual' mode
- Machine signals container backup or shortage when running in 'Automatic' mode.

Steady green lamp

- Machine is in **'Automatic'** mode

Flashing blue lamp

- Machine is ready for switch-on

Steady blue lamp

- Machine signals a **malfunction**

Correct the cause of the problem indicated by the steady blue indicator lamp.

Acknowledge that the problem has been corrected and **switch** the machine **back on** thereafter.

Example of Problem and Remedy

The **Help system** integrated in the **operator console** provides convenient facilities for displaying error texts and assistance in correcting problems.

The machine is stopped when a machine malfunction occurs.

- The malfunction is displayed on the monitor in clear text, e.g.:

Error # 087: Infeed conveyor not running

Error text

- The **ACK button** (basic functions) will emit a steady red light.

The Production Menu and the corresponding error message will appear on the monitor.

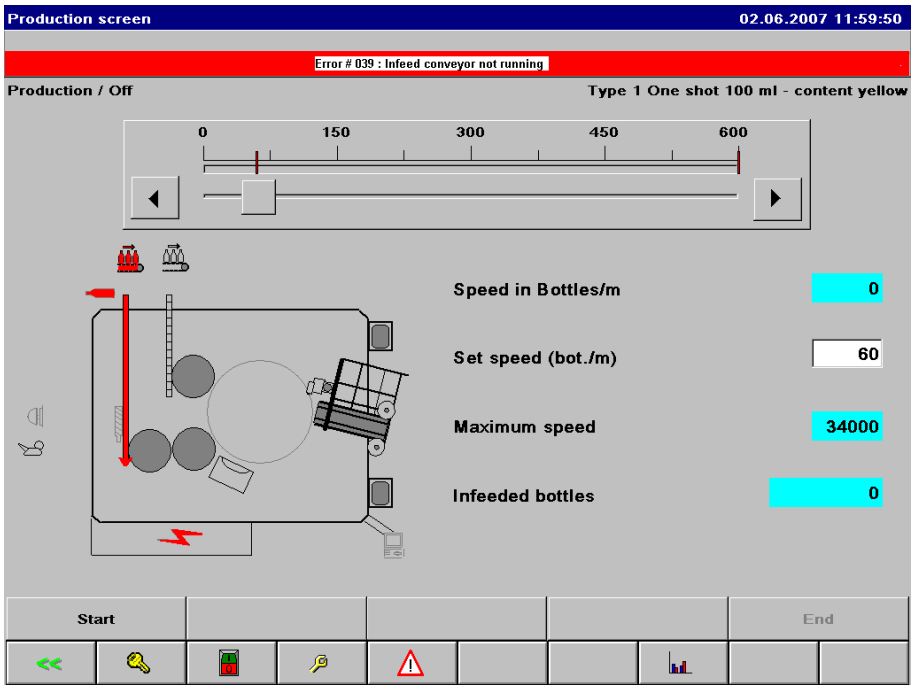


Figure 5-1 : Production Screen with Malfunctions

The current error is indicated as such by changing the color (see ⇩).

Press the **Help** command button to display the error number, the error message, and the cause and possible solutions for correcting malfunctions on the monitor.

Malfunction Help

Error # 087: Infeed conveyor not running

Causes:	Remedies:
Infeed conveyor is not ready.	Switch on the infeed conveyor belt.
Defective signal exchange with the bottle conveyor.	***Check the signal exchange.***

Each error and the cause together with an error number in the error message along with possible solutions are displayed on the monitor.

Always correct the cause of the particular problem!

The error message can be erased once the cause of the problem has been corrected.

Do so by pressing the **ACK button** (basic functions).

Deactivated functions can be restarted.

General Labeling Faults

The following tables show general faults that could occur during the labeling process that are **not** indicated visually/electronically.

They are intended to **assist** the operating and maintenance staff in recognizing and correcting problems.

Problem	General operating problems
Cause	Remedy
Type/pack changeover	Adjust the machine accordingly.
Heavy accumulation of condensation water due to fluctuations in temperature.	Improve the air circulation.
Fluctuation in the processing speed and the accumulation pressure.	Install a backup switch.
Paper and/or bottle neck foil and glue do not match.	Match wettability of paper/foil with glue type (viscosity)

Problem	Poor adhesiveness of the glue
Cause	Remedy
Adverse storage conditions (possibly frost damage)	Store according to manufacturer instructions.
Adverse processing temperature.	Process at temperature specified by the manufacturer.
Glue has lost adhesiveness.	Turn off the glue pump and use fresh glue.
Poor glue dosing.	Optimize dosing.
Insufficient setting speed / initial adhesion.	Have the type of glue checked.

Problem	Labeler operation error
Cause	Remedy
Inexact adjustment.	Readjust, in particular the label magazine.
Poor transfer to gripper cylinder.	Check and readjust.
Poor glue dosing.	Readjust the glue dosing.
Poor roll-on and/or brush-on label application.	Check, readjust, and replace brushes/rollers if necessary.
Dirty drums, brushes.	Service the labeler.
Conveyor belt, railing guides in poor working condition.	Check, optimally dose the chain lubricant, install a backup pressure switch.

Problem	Containers / bottles stick together at labels
Cause	Remedy
Excessive glue dosing.	Decrease glue dosing.
Condensation.	Improve the air circulation.
Poor glue absorption on the reverse side of labels or foils.	Match wettability of paper/foil with glue type.
Traces of glue on containers or bottles.	Have the label geometry checked.
Poor wet strength of the label surface.	Contact label printer.

Problem	Wet label smearing/rub-off
Cause	Remedy
Printing ink too fresh / storage time too short.	Increase the label storage time.
No lacquer coating on printed surface.	Consult the label printer about lacquer coating and/or adhesiveness of printer's ink.
Excessive scuffing on returnable bottles.	Improve bottle sorting.
Excessive accumulation pressure.	Have the labeler control checked.

Problem	Slipping labels
Cause	Remedy
Poorly matched bottle, paper, and glue.	Check the type of glue. Optimize dosing.
Poor bottle guidance.	Check, optimally dose the chain lubricant, install an accumulation pressure switch.
Bottles too hot or too cold.	Adapt and/or optimize the glue dosing and temperature.
Excessive accumulation pressure.	Have the labeler control checked.

Problem	Winkled labels
Cause	Remedy
Poorly matched paper and glue.	Match wettability of paper/foil with glue type (viscosity).
Wrong type of paper or paper too dry.	Check manufacturer product description / instructions and contact the label supplier.
Insufficient glue binding due to poor storage conditions.	Store and process according to manufacturer specifications.
Wrong glue processing temperature.	Set the correct glue temperature.
Wrong glue dosing.	Optimize dosing.

Problem	Gripper dents on labels
Cause	Remedy
- Process related.	Use smooth grippers and gripper strips.
- Glue related.	Store and process according to manufacturer specifications.
- Too much condensation.	Improve the air circulation.

Problem	Labels curl off after labeling
Cause	Remedy
Labels are too stiff.	Print related. Consult the label supplier about using another type of paper.
Labels too dry.	Use high-viscosity glue as an immediate action. Store at +18°C to +22°C; relative humidity: approx 60%. Adhere to manufacturer's instructions on storing labels.
Water absorption of the reverse side of the paper too high versus that of the front side.	Consult the label supplier.

Problem	Labels drop off
Cause	Remedy
Insufficient glue binding due to poor storage conditions and processing temperatures.	Check storage and processing according to manufacturer specifications.
Wrong processing temperature. Wrong glue dosing.	Set the correct glue temperature. Optimize dosing.
Product or cleaning agent residue.	Optimize bottle washing. Install container-rinsing facilities.
Paper, glue, and containers do not match.	Match wettability of paper/foil with glue type.
Too much condensation.	Improve the air circulation.

Possible Problems and Help Texts (Examples)

Short to ground detected

Display	Short to ground detected
Cause	Remedy
Short to ground in the electrical equipment.	Have an electrician repair the short to ground.
Defective ground leakage detector.	Check the operability of the ground leakage detector and replace if necessary.

24V power failure

Display	24V power failure
Cause	Remedy
Short circuit, short to ground.	Have an electrician repair the short circuit or short to ground.
DC power supply failure or overload.	Check the operability of the DC power supply.
Short circuit or short to ground in a 24V DC power supply circuit.	Have an electrician repair the short circuit or short to ground.
DC circuit overload.	Check the DC circuit.

Control power key switch

Display	Control power key switch
Cause	Remedy
Key switch not switched on.	Switch on the key switch.
Defective key switch.	Have an electrician check the key switch.

EMERGENCY STOP button, main operator panel

Display	EMERGENCY STOP button, main operator panel
Cause	Remedy
The EMERGENCY STOP button was pressed.	Unlock the EMERGENCY STOP switch.
Defective EMERGENCY STOP button.	Have an electrician check the EMERGENCY STOP button.

EMERGENCY STOP button, labeling station 1

Display	EMERGENCY STOP button, labeling station 1
Cause	Remedy
The EMERGENCY STOP button was pressed.	Unlock the EMERGENCY STOP switch.
Defective EMERGENCY STOP button.	Have an electrician check the EMERGENCY STOP button.

EMERGENCY STOP button, labeling station 2 (option)

Display	EMERGENCY STOP button, labeling station 2 (option)
Cause	Remedy
The EMERGENCY STOP button was pressed.	Unlock the EMERGENCY STOP switch.
Defective EMERGENCY STOP button.	Have an electrician check the EMERGENCY STOP button.

Laser malfunction (option)

Display	Laser malfunction (option)
Cause	Remedy
Laser dating error message.	Call for an electrician.

EMERGENCY STOP sequence feedback

Display	EMERGENCY STOP sequence feedback
Cause	Remedy
The control power is not switched on.	Switch on the control power
Defective EMERGENCY STOP monitoring device.	Have an electrician check the EMERGENCY STOP monitoring device.
Fusion welded control power contactor contacts.	Check and replace the control power contactor if necessary.

Hood adjustment motor protection (option)

Display	Hood adjustment motor protection (option)
Cause	Remedy
Motor protection switch or bi-relay cutout. Motor overloaded or blocked.	Eliminate the cause of the motor overload or blockage.
Short circuit in motor connection cable.	Have an electrician repair the short circuit.
Short circuit in motor winding.	Replace the motor
Motor switched on too many times within a short time period.	Avoid switching the motor on and off frequently.
Defective or worn motor protection switch.	Replace the motor protection switch or bi-relay.

Hood adjustment monitor (option)

Display	Hood adjustment monitor (option)
Cause	Remedy
Motor is blocked or overloaded.	Eliminate the cause of the motor overload or blockage and call for an electrician.

Machine OFF switch

Display	Machine OFF switch
Cause	Remedy
Defective machine OFF switch.	Check the operability of the machine OFF switch and replace if necessary.
Broken wire in the control circuit.	Have an electrician check the control circuit and repair the broken wire.

Main drive motor protection

Display	Main drive motor protection
Cause	Remedy
Motor protection switch or bi-relay cutout. Motor overloaded or blocked.	Eliminate the cause of the motor overload or blockage.
Short circuit in motor connection cable.	Have an electrician repair the short circuit.
Short circuit in motor winding.	Replace the motor
Motor switched on too many times within a short time period.	Avoid switching the motor on and off frequently.
Defective or worn motor protection switch.	Replace the motor protection switch or bi-relay.

Hood adjustment selector switch (option)

Display	Hood adjustment selector switch (option)
Cause	Remedy
The hood adjustment function key was activated and an attempt was made to start the drive.	Switch off the hood adjustment function key (Function Enables) and reset the error.

Main drive frequency controller not ready

Display	Main drive frequency controller not ready
Cause	Remedy
The frequency control device has shut off.	Read the menu display of the frequency control device and evaluate according to the table in the error description manual.
Motor is blocked or overloaded.	Eliminate the cause of the motor overload or blockage.
Short circuit in motor connection cable.	Have an electrician repair the short circuit.
Short circuit in motor winding.	Replace the motor
Defective frequency control device.	Check the frequency control device and replace if necessary.

Error, gap in container flow at infeed

Display	Error, gap in container flow at infeed
Cause	Remedy
Defective or jammed switch.	Check the switch and replace if necessary.
Broken wire in the circuit.	Check switching circuit.
Downed container at the infeed.	Remove the downed container.

Centering bell sensor

Display	Centering bell sensor
Cause	Remedy
Faulty container in the carousel.	Remove any faulty containers.

Emergency stop, bypass table

Display	Emergency stop, bypass table
Cause	Remedy
Container conveyor failure at outfeed.	Correct the cause of the container conveyor problem.
Jamming caused by downed container.	Eliminate the cause of the jam or backup.
Backup or jam at the rejecter.	Determine and eliminate the cause of the rejecter problem.
Defective or jammed switch.	Check the switch and replace if necessary.
Broken wire in the circuit.	Check switching circuit.

Outfeed conveyor not running

Display	Outfeed conveyor not running
Cause	Remedy
The outfeed conveyors are not switched on.	Switch on the outfeed conveyors.
Outfeed conveyor motor protection cutout.	Check for overloads.
Outfeed conveyor is blocked or overloaded.	Check the motors for blockage and replace if necessary.

Labeling fault

Display	Labeling fault
Cause	Remedy
Faulty container in the carousel.	Remove any faulty containers.

Lubrication pump motor protection (option)

Display	Lubrication pump motor protection
Cause	Remedy
Motor protection switch or bi-relay cutout. Motor overloaded or blocked.	Eliminate the cause of the motor overload or blockage.
Short circuit in motor connection cable.	Have an electrician repair the short circuit.
Short circuit in motor winding.	Replace the motor
Motor switched on too many times within a short time period.	Avoid switching the motor on and off frequently.
Defective or worn motor protection switch.	Replace the motor protection switch or bi-relay.

Empty label hopper, station 1

Display	Empty label hopper, station 1
Cause	Remedy
No more labels in the label hopper of station 1.	Refill with labels.

Empty label hopper, station 2 (option)

Display	Empty label hopper, station 2 (option)
Cause	Remedy
No more labels in the label hopper of station 2.	Refill with labels.

Error occurred reading output speed

Display	Error occurred reading output speed
Cause	Remedy
The PLC has detected an analog input card error reading the output speed.	Have an electrician check for possible sources of the error.
Possible error sources: - Defective card.	Test the card and replace if necessary.
- Broken wire.	Check the wiring.
- Defective transmitter.	Check the transmitter.

Invalid range error

Display	Invalid range error reading output speed
Cause	Remedy
The PLC has detected an analog input card error reading the output speed.	Have an electrician check for possible sources of the error.
Possible error sources: - Defective card.	Test the card and replace if necessary.
- Broken wire.	Check the wiring.
- Defective transmitter.	Check the transmitter.

Output speed write error

Display	Output speed write error
Cause	Remedy
The PLC has detected an analog output card error reading the output speed.	Have an electrician check for possible sources of the error.
Possible error sources: - Defective card.	Test the card and replace if necessary.
- Broken wire.	Check the wiring.
- Defective transmitter.	Check the transmitter.

Invalid range error writing output speed

Display	Invalid range error writing output speed
Cause	Remedy
The PLC has detected an analog output card error writing the output speed.	Have an electrician check for possible sources of the error.
Possible error sources: - Defective card.	Test the card and replace if necessary.
- Broken wire.	Check the wiring.
Incorrect parameters entered in the program.	Check parameters in the PLC program (PB45).

Error, safety door no.: 1...n

Display	Error, safety door no.: 1...n
Cause	Remedy
Safety door is open.	Close the safety door.
Switch not occupied.	Check the contact.
Defective switch.	Check the switch and replace if necessary.
Broken wire in the circuit.	Check switching circuit.

Note:

A clear text message indicating the number of the safety door causing the error or not properly closed is always displayed on the monitor!

Lubricant distributor fault (option)

Display	Lubricant distributor fault
Cause	Remedy
The lubricant distributor has not transmitted a signal / pulse within the programmed interval during lubrication.	Have an electrician check for possible sources of the error.
Possible error sources: - Defective switch.	Check the switch and replace if necessary.
- Defective switching circuit.	Check switching circuit.
- Malfunction in the central lubrication system.	Check the lubricant distributor and central lubrication system.

No grease

Display	No grease
Cause	Remedy
Grease reservoir is empty.	Refill the grease reservoir.
Defective switch.	Check the switch and replace if necessary.
Broken wire in the circuit.	Check switching circuit.

Lubrication pump monitor (option)

Display	Lubrication pump monitor
Cause	Remedy
The grease pump has been running for more than 6 minutes.	Have an electrician check the lubrication system.

Lubrication fault - machine stop

Display	Lubrication fault - machine stop
Cause	Remedy
Lubrication error has not been corrected within the programmed time interval.	Correct the lubrication malfunction.
Grease reservoir is empty.	Refill the grease reservoir.
Overpressure in a lubrication circuit caused by a defect in the grease distributor or a clogged grease line.	Check the grease distributor and all lubrication lines.
Error response from the grease distributor caused by a leak in the lubricating circuit.	Eliminate the cause of the leakage in the lubricating circuit.

System computer communications error

Display	System computer communications error
Cause	Remedy
Communications link to operator panel (system computer) is disrupted.	Use the user manual provided by the manufacturer of the computer to check the operator panel.
Possible error sources: - Defective operator console.	Check the operator console.
- Serial cable connection is possibly disrupted.	Check cable connections (including the shielding).

VarioDrive Problems

Torque exceeded, VarioDrive

Display	Torque exceeded, VarioDrive
Cause	Remedy
Mechanical overload.	Check the load.
Motion profile not in relation to machine output.	Check that the lower chuck can be easily moved; check the motion profile.
Incorrect control parameters.	Check the control parameters.

Position deviation, VarioDrive

Display	Position deviation, VarioDrive
Cause	Remedy
VarioDrive is unable to reach setpoint position.	Check the load. Check the movability of the lower chuck.
Mechanical overload.	Check the motion profile.
Motion profile not in relation to machine output.	Check the control parameters.
Incorrect control parameters.	Check the control parameters.

Communications error, VarioDrive

Display	Communications error, VarioDrive
Cause	Remedy
Profibus failure.	Check the Profibus.
Communication with drive failure.	Check the drive and replace if necessary.

Profibus error, VarioDrive

Display	Profibus error, VarioDrive
Cause	Remedy
Profibus failure.	Check the Profibus.
Communication with drive failure.	Check the drive and replace if necessary.
Defective rotation transmitter.	Check the rotation transmitter.

System Error, VarioDrive

Display	System Error, VarioDrive
Cause	Remedy
Internal VarioDrive error.	Contact the KHS Service Dept. if this error reoccurs frequently.

Overheat, VarioDrive

Display	Overheat, VarioDrive
Cause	Remedy
Constant drive overload.	Check the mechanical load.
Ambient temperature of the drive too high.	Check the movability of the lower chuck. Check that the drive has been properly installed.

Hot Melt Unit Error Messages

Displays on the machine monitor:

Error No.	Error message	Symbol	Remedy
No. 0019	Gluing drum converter, final gluing not ready		**Electrician**
No. 0020	Return flow converter, final gluing not ready		**Electrician**
No. 0177	Hot melt temperature alarm		Adjust temp **Operator / electrician**
No. 0178	Glue pumps not switched on		Switch on **Operator / electrician**
No. 0179	Glue pump return flow, final gluing stopped		Switch on **Operator / electrician**
No. 0182	System error at temperature controller		**Electrician**

Malfunctions that can be resolved by operating staff.

Serious machine malfunctions may be corrected only by a specialist and not by the machine operator.

Setting the Machine Zero-point (Encoder Adjustment)

NOTE!

Please contact KHS service technicians when in doubt regarding adjusting the zero-point. Any incorrectly made adjustments can affect proper machine operation and could seriously damage the machine and its components. Only specially trained technicians may make adjustments.

KHS will not be held liable for any damage resulting from failure to comply with these instructions.

The display/monitor will indicate any malfunction of the machine's encoder and an error message will appear in clear text.

Problem	**Encoder**
Cause	Remedy
Encoder malfunction. Defective encoder.	Reset the encoder by disconnecting the internal power supply. Readjust or replace the encoder. **Contact KHS Service Dept.**

Safety Information

Only those persons authorized to access the basic machine control functions relevant to machine and operating personnel safety by entering passwords may modify these functions.

Mechanical Base Setting (Zero-point Setting)

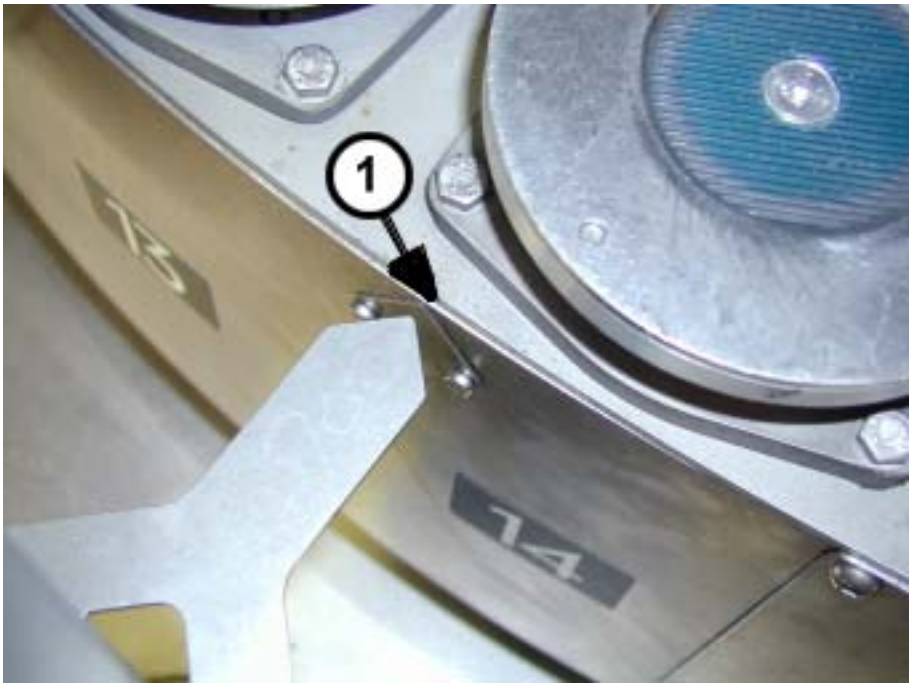
If the machine's zero point should become incorrectly adjusted because of a crash, reset the basic **mechanical** setting of the machine first before **adjusting the zero-point**.

Always adhere to **"Safety - Fundamentals for Filling Lines in the Beverage Industry"** when carrying out all servicing, inspection, and maintenance work.

First, remove all broken glass, label debris and glue residue from the machine and machine table.

Clean the machine according to the cleaning instructions (see section, Cleaning in **Chapter 6**).

Run the bottle turret in **Jog Mode** until the markings are aligned **(1)**.

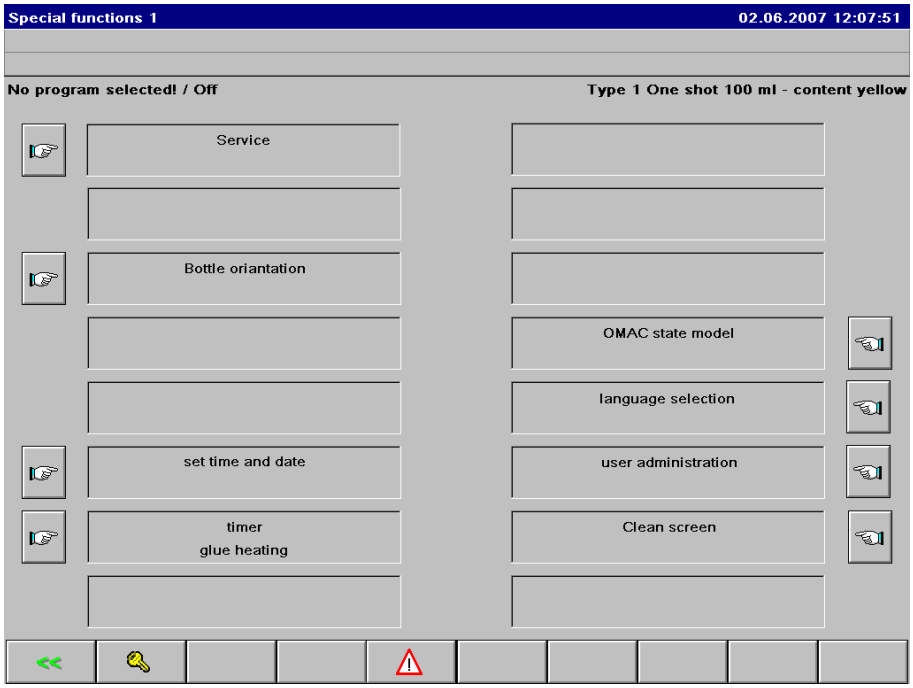


Zero-point Marking

The zero-point can now be set in the machine control (software).

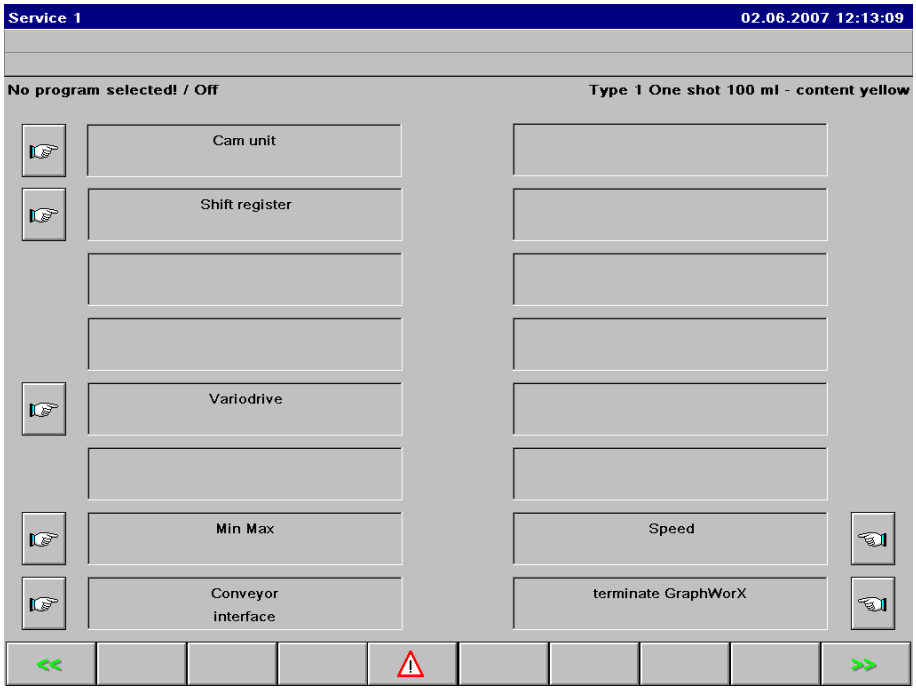
To set the machine's zero-point, invoke the **"Service - Functions"** menu in the production screen by touching the corresponding function button. The Special Functions menu screen will appear.

Figure 5-2 : Special Functions



Select the **"Service"** program and then the **"Cam Controller"** menu in the **Special Functions** menu. You can readjust the zero point of the machine (**encoder**) in this menu.

Figure 5-3 : Service



The **"Cam Controller"** menu will appear:

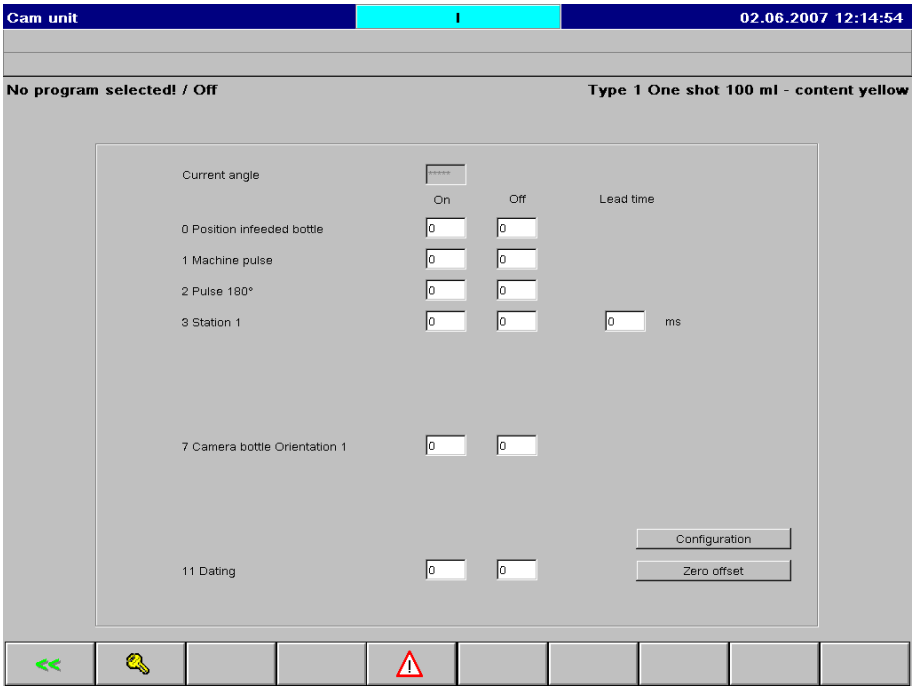


Figure 5-4 :
Cam Controller

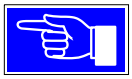
Press and **hold** the **"Zero Offset"** button for at least **3 seconds**.

Then press the **"ACK Error"** hardware button.

The display for "Current Angle" will indicate zero (0).

The zero point is now readjusted.

Repeat the process described above if the **zero (0)** is not displayed.



* * *

Maintenance

General Notes

Always adhere to **"Safety - Fundamentals for Filling Lines in the Beverage Industry"** when carrying out all servicing, inspection, and maintenance work.

Regular Servicing is Absolutely Essential

Operational disruptions resulting from insufficient or improper servicing can result in extremely high repair costs and lengthy periods of machine downtime. Regular servicing is therefore absolutely essential. Only a conscientiously maintained system can provide the lasting high performance expected.

The machine/system must be secured and deenergized prior to performing any servicing and maintenance work.

Secure Against Inadvertent Startup

Turn off all the switches required to prevent inadvertent machine start-up. Above all, secure the main power switch at the electrical switch cabinet with your own padlock. Accident reports indicate that machines are suddenly started up in spite of the presence of maintenance staff in or on the machine.

Lock the Main Power Switch

Particularly when two members of the maintenance staff work on one machine, each person should secure the machine against inadvertent start-up by locking the main power switch at the switch cabinet with his/her own padlock. The machine can then be started only after both padlocks have been removed.

Regular adherence to the servicing and maintenance work listed in the following is prerequisite for trouble-free machine operation and long machine service life.

Use only original KHS parts

Use only original KHS spare parts for part replacement. We explicitly point out that spare and accessory parts not supplied by us have not been tested and approved by us. The manufacturer will not be held liable for any damage resulting from the use of spare and accessory parts not supplied by KHS.

Adhere to Servicing Schedule

We urgently recommend that the machine be serviced, cleaned, and lubricated as specified in the servicing schedule provided by the manufacturer of the machine or system.

Other Pertinent Regulations

Adhere to Local Regulations

Adhere to the safety regulations currently in effect for your specific installation site. This pertains in particular to regulations and guidelines regarding:

- Storage, use, and disposal of working materials
- All substances potentially harmful to human health and the environment
- Regarding the storage, use, and disposal of process materials
- Operation of electrical systems
- Regulations and guidelines applicable to your operation site.

Waste Disposal:

- Make sure that acids and alkaline substances are disposed of according to regulations currently in effect. Caustics and acids must not be introduced to the sewage system without first being neutralized.
- Check if replaced parts or waste materials resulting from servicing or repair work require special treatment for disposal.
- If necessary, ensure proper waste disposal accordingly.

Proper Waste Disposal

Disposal of the following materials and chemical substances is exceptionally critical:

- Oil and grease and their containers (e.g. sprays, PERMA grease guns)
- Cleaning agents
- Batteries
- Neon lamps and
- All plastics

KHS Table of Lubricants for Machines of the Beverage Industry and Process Engineering Systems

Please note that special operating instructions are provided for KHS hydraulic systems.

Dear Customer:

Importance of Proper Lubrication

We would like to bring your attention to the importance of proper lubrication for your high quality machines in the following. The application of the most suitable lubricant is prerequisite for achieving highest possible machine performance and service life and to trouble-free operation.

In the following schedule, we provide you a selection of those lubricants, which, according to the lubricant manufacturer, should be well suited for lubricating your system. Therefore, please use only these or other equivalent lubricants of proven quality.

NOTE!

The lubricating effect of lubricants may be affected by contact with certain cleansers and disinfectants (get in touch with the manufacturer of the cleanser and disinfectant, if necessary).

Do not combine mineral-oil-based and synthetic lubricants.

Machine parts must be thoroughly cleaned before changing over from mineral oil-based to synthetic lubricants or from synthetic to mineral oil-based lubricants.

Mineral-oil-based and synthetic lubricants must be properly disposed of separately.

Proper disposal may be performed only in accordance with the applicable national legal regulations in effect.

KHS Standard Table of Lubricants 1/6 01.03.01

Type ⇨	**Hydraulic Oils DIN 51 542-2**						
Base ⇨	**Mineral oil**						
Nomenclature DIN 51502 ⇨ *Manufacturer* ⇩	**HLP 10** ⇩	**HLP 22** ⇩	**HLP 32** ⇩	**HLP 46** ⇩	**HLP 68** ⇩		
AGIP	OSO 10	OSO 22	OSO 32	OSO 46	OSO 68		
		Precis HLP 22	Precis HLP 32	Precis HLP 46	Precis HLP 68		
ARAL	VITAM F 10	VITAM F 22	VITAM GF 32	VITAM GF 46	VITAM GF 68		
AVIA	AVIA FLUID RSL	AVILUB RSL 22	AVILUB RSL 32	AVILUB RSL 46	AVILUB RSL 68		
BECHHEIM	STAROIL No. 10	STAROIL No. 22	STAROIL No. 32	STAROIL No. 46	STAROIL No. 68		
BP		ENERGOL HLP-HM 22	ENERGOL HLP-HM 32	ENERGOL HLP-HM 46	ENERGOL HLP-HM 68		
MOBIL	MOBIL DTE 21	MOBIL DTE 22	MOBIL DTE 24	MOBIL DTE 25	MOBIL DTE 26		
CASTROL	HYSPIN SP 10	HYSPIN SP 22	HYSPIN SP 32	HYSPIN SP 46	HYSPIN SP 68		
ELF		ELFOLNA 22	ELFOLNA 32	ELFOLNA 46	ELFOLNA 68		
ESSO	NUTO-H 10	NUTO-H 22	NUTO-H 32	NUTO-H 46	NUTO-H 68		
TOTAL	AZOLLA ZS 10	AZOLLA ZS 22	AZOLLA ZS 32	AZOLLA ZS 46	AZOLLA ZS 68		
		LUBRIPLATE FMO 85AW	LUBRIPLATE FMO 200AW	LUBRIPLATE FMO 350AW			
FINA		HYDRAN 22	HYDRAN 32	HYDRAN 46	HYDRAN 68		
FUCHS	RENOLIN B 3 VG 10	RENOLIN B 5 VG 22	RENOLIN B 10 VG 32	RENOLIN B 15 VG 46	RENOLIN B 20 VG 68		
			RENOLIN ZAF 32B	RENOLIN ZAF 46B	RENOLIN ZAF 68B		
KLÜBER			LAMORA HLP 32	LAMORA HLP 46	LAMORA HLP 68		
OPTIMOL	HYDO 10	HYDO 22	HYDO 32	HYDO 46	HYDO 68		
				HYDO E 46	HYDO E 68		
SHELL	TELLUS 10	TELLUS 22	TELLUS 32	TELLUS 46	TELLUS 68		
SRS	Wintershall WIOLAN HX15	Wintershall WIOLAN HX22	Wintershall WIOLAN HX32	Wintershall WIOLAN HX46			
TEXACO	RANDO HD 10	RANDO HD 22	RANDO HD 32	RANDO HD 46	RANDO HD 68		
TRIBOL		TRIBOL 943 AW 22	TRIBOL 943 AW 32	TRIBOL 943 AW 46	TRIBOL 943 AW 68		
OKS				OKS 3770			

Do not combine lubricants, even those within the same group!

KHS Standard Table of Lubricants 2/6							01.03.01
Type ⇨	Hydraulic Oils DIN 51 542-2 / DIN 517-3						
Base ⇨	Synthetic polyalphaolefin-based / recognized as physiologically safe						
Nomenclature DIN 51502 ⇨ *Manufacturer* ⇩	**HLP HC32** ⇩	**HLP HC68** ⇩	**HLP HC100** ⇩	**HLP HC220** ⇩	**HLP HC320** ⇩	**HLP HC460** ⇩	**HLP HC680** ⇩
AGIP							
ARAL	EURAL Hyd 32	EURAL Gear 68	EURAL Gear 68	EURAL Gear 220	EURAL Gear 220/460	EURAL Gear 460	
AVIA							
BECHHEIM	BERUSYNTH EURAL HYD 32	BERUSYNTH EURAL HYD 68		BERUSYNTH EURAL GEAR 220		BERUSYNTH EURAL GEAR 460	
BP							
MOBIL	DTE FM 32	DTE FM 68	DTE FM 100	DTE FM 220	DTE FM 320	DTE FM 460	
CASTROL							
ELF							
ESSO				SPARTAN SEP 220	SPARTAN SEP 320		
TOTAL	LUBRIPLATE SFGO-32	LUBRIPLATE SFGO-68	LUBRIPLATE SFGO-100	LUBRIPLATE SFGO-220	LUBRIPLATE SFGO-320	LUBRIPLATE SFGO-460	LUBRIPLATE SFGO-680
FINA							
FUCHS	HYD OIL 32	HYD OIL 68	GEAR OIL 80	GEAR OIL 220	GEAR OIL 320		WORM GEAR LUBE 680
KLÜBER	KLÜBER SUMMIT HySyn FG-32	KLÜBER SUMMIT HySyn FG-68	Klüberoil 4UH1-100	Klüberoil 4UH1-220		Klüberoil 4UH1-460	Klüberoil 4UH1-680
OPTIMOL	Obtileb HY 32	Obtileb HY 32	Obtileb GT 100	Obtileb GT 220	Obtileb GT 320	Obtileb GT 460	Obtileb GT 680
SHELL	Cassida HF32	Cassida HF68	Cassida HF100	Cassida GL220	Cassida GL320	Cassida GL460	Cassida GL680
SRS							
TEXACO							
TRIBOL							
OKS							
Do not combine lubricants, even those within the same group!							

KHS Standard Table of Lubricants 3/6 01.03.01

Type ⇨	Lubricating Oils / Gear Oils DIN 51 517-3						
Base ⇨	Mineral oil						
Nomenclature DIN 51502 ⇨ *Manufacturer* ⇩	CLP 32 ⇩	CLP 68 ⇩	CLP 100 ⇩	CLP 220 ⇩	CLP 320 ⇩	CLP 460 ⇩	CLP 680 ⇩
AGIP	Blasia 32	Blasia 68	Blasia 100	Blasia 220	Blasia 320	Blasia 460	Blasia 680
	Precis CLP32	Precis CLP68	Precis CLP100	Precis CLP220	Precis CLP3200	Precis CLP460	Precis CLP680
ARAL	DEGOL BG 32	DEGOL BG 68	DEGOL BG 100	DEGOL BG 220	DEGOL BG 320	DEGOL BG 460	DEGOL BG 680
AVIA		AVIA GEAR RSX 68	AVIA GEAR RSX 100	AVIA GEAR RSX 220	AVIA GEAR RSX 320	AVIA GEAR RSX 460	AVIA GEAR RSX 680
BECHHEIM	STAROIL G 32	STAROIL G 68	STAROIL G 100	STAROIL G 220	STAROIL G 320	STAROIL G 460	STAROIL G 680
BP		Energol GR-XP 68	Energol GR-XP 100	Energol GR-XP 220	Energol GR-XP 320	Energol GR-XP 460	Energol GR-XP 680
MOBIL		MOBILGEAR XMP 68	MOBILGEAR XMP 100	MOBILGEAR XMP 220	MOBILGEAR XMP 320	MOBILGEAR XMP 460	MOBILGEAR XMP 680
CASTROL		ALPHA SP 68	ALPHA SP 100	ALPHA SP 220	ALPHA SP 320	ALPHA SP 460	ALPHA SP 680
ELF		REDUKTELF SP 68	REDUKTELF SP 100	REDUKTELF SP 220	REDUKTELF SP 320	REDUKTELF SP 460	REDUKTELF SP 680
ESSO		SPARTAN EP 68	SPARTAN EP 100	SPARTAN EP 220	SPARTAN EP 320	SPARTAN EP 460	SPARTAN EP 680
TOTAL		CARTER EP 68	CARTER EP 100	CARTER EP 220	CARTER EP 320	CARTER EP 460	CARTER EP 680
		LUBRIPLATE FMO 350AW	LUBRIPLATE FMO 500AW	LUBRIPLATE FMO 1100AW	LUBRIPLATE FMO 1700AW	LUBRIPLATE FMO 2400AW	LUBRIPLATE FMO 3800AW
FINA		GIRAN L68	GIRAN L100	GIRAN L220	GIRAN L320	GIRAN L460	GIRAN L680
FUCHS	RENOLIN B10 VG 32	RENOLIN B10 VG 68	RENOLIN B10 VG 100	RENOLIN B10 VG 220	RENOLIN B10 VG 320	RENOLIN B10 VG 460	RENOLIN B10 VG 680
KLÜBER		Klüberoil GEM 1-68	Klüberoil GEM 1-100	Klüberoil GEM 1-220	Klüberoil GEM 1-320	Klüberoil GEM 1-460	Klüberoil GEM 1-680
OPTIMOL	ULTRA 32	ULTRA 68	ULTRA 100	ULTRA 220	ULTRA 320	ULTRA 460	ULTRA 680
	Optigear 32	Optigear 68	Optigear 100	Optigear 220	Optigear 320	Optigear BM 460	Optigear BM 680
SHELL	Tegula 32	Omala 68	Omala 100	Omala 220	Omala 320	Omala 460	Omala 680
SRS		Wintershall Ersolan 68	Wintershall Ersolan 100	Wintershall Ersolan 220	Wintershall Ersolan 320	Wintershall Ersolan 460	Wintershall Ersolan 680
TEXACO	RANDO EP ASHLESS	MEROPA 68	MEROPA 100	MEROPA 220	MEROPA 320	MEROPA 460	MEROPA 680
TRIBOL		TRIBOL 1100-68	TRIBOL 1100-100	TRIBOL 1100-220	TRIBOL 1100-320	TRIBOL 1100-460	TRIBOL 1100-680
OKS			OKS 3760	OKS 3720		OKS 3730	

Do not combine lubricants, even those within the same group!

KHS Standard Table of Lubricants 4/6 01.03.01

Type ⇨	**Lubricating Oils / Gear Oils DIN 51 517-3**						
Base ⇨	**Synthetic / Polyglycols**						
Nomenclature DIN 51502 ⇨ *Manufacturer* ⇩	**CLP PG150** ⇩	**CLP PG220** ⇩	**CLP PG320** ⇩	**CLP PG460** ⇩	**CLP PG680** ⇩	**CLP PG1000** ⇩	
AGIP	BLASIA S150	BLASIA S220	BLASIA S320	BLASIA S460	BLASIA S680	BLASIA S1000	
ARAL	DEGOL GS 150	DEGOL GS 220	DEGOL GS 320	DEGOL GS 460	DEGOL GS 680	DEGOL GS 1000	
AVIA	AVIA GEAR VSG 150	AVIA GEAR VSG 220	AVIA GEAR VSG 320	AVIA GEAR VSG 460	AVIA GEAR VSG 680	AVIA GEAR VSG 1000	
BECHHEIM	BERUSYNTH EP 150	BERUSYNTH EP 220	BERUSYNTH EP 320	BERUSYNTH EP 460	BERUSYNTH EP 680	BERUSYNTH EP 1000	
BP		ENERGOL SG-XP 220		ENERGOL SG-XP 460	ENERGOL SG-XP 680		
MOBIL	GLYGOYLE 22	GLYGOYLE 30	GLYGOYLE HE 320	GLYGOYLE HE 460	GLYGOYLE HE 680		
CASTROL	ALPHASYN PG 150	ALPHASYN PG 220	ALPHASYN PG 320	ALPHASYN PG 460	ALPHASYN PG 680	ALPHASYN PG 1000	
ELF	SYTHERMA P 150	SYTHERMA P 270		SYTHERMA P 460	SYTHERMA P 680		
ESSO		ESSO GLYCO LUBE 220		ESSO GLYCO LUBE 460			
TOTAL	CORTUSA SY 150	CORTUSA SY 220	CORTUSA SY 320	CORTUSA SY 460	CORTUSA SY 680	CORTUSA SY 1000	
FINA	GIRAN S 150	GIRAN S 220	GIRAN S 320	GIRAN S 460	GIRAN S 680	GIRAN S 1000	
FUCHS	RENOLIN PG 150	RENOLIN PG 220	RENOLIN PG 320	RENOLIN PG 460	RENOLIN PG 680	RENOLIN PG 1000	
KLÜBER	SYNTHESO D 150 EP	SYNTHESO D 220 EP	SYNTHESO D 320 EP	SYNTHESO D 460 EP	SYNTHESO D 680 EP	SYNTHESO D 1000 EP	
OPTIMOL	OPTIFLEX A 150	OPTIFLEX A 220	OPTIFLEX A 320	OPTIFLEX A 460	OPTIFLEX A 680	OPTIFLEX A 1000	
SHELL	Tivela WA	Tivela WB		Tivela SD			
SRS							
TEXACO	SYNLUBE 150	SYNLUBE 220	SYNLUBE 320	SYNLUBE 460	SYNLUBE 680	SYNLUBE 1000	
TRIBOL	TRIBOL 800/150	TRIBOL 800/220	TRIBOL 800/320	TRIBOL 800/460	TRIBOL 800/680	TRIBOL 800/1000	
OKS							

Do not combine lubricants, even those within the same group!

KHS Standard Table of Lubricants 5/6							01.03.01
Type ⇨	Lubricating Oils / Gear Oils DIN 51 517-3						
Base ⇨	Synthetic / Polyalphaolefin-based						
Nomenclature ⇨ *DIN 51502* *Manufacturer* ⇩		**CLP HC220** ⇩					
AGIP							
ARAL		DEGOL PAS 220					
AVIA		AVIA SYNTO GEAR EP 220					
BECHHEIM		BERUSYNTH GP 220					
BP		BP ENERSYN MTX 220					
MOBIL		MOBILGEAR SHC XMP 220					
CASTROL		ALPHASYN T 220					
ELF							
ESSO		SPARTAN SEP 220					
TOTAL		CARTER EP/HT 220					
FINA							
FUCHS		RENOLIN UNISYN CLP 220					
KLÜBER		Klübersynth EG 4-220					
OPTIMOL		OPTIGEAR Synthetic A 220					
SHELL		Omala HD 220					
SRS							
TEXACO		PINNACLE EP220					
TRIBOL		TRIBOL 1510/220					
OKS							
Do not combine lubricants, even those within the same group!							

KHS Standard Table of Lubricants 6/6 01.03.01

Type ⇨	Suitable for Central Lubrication				Gear Grease
Base ⇨	Mineral oil-based	Synthetic oil-based			
Nomenclature DIN 51502 ⇨ *Manufacturer* ⇩	 ⇩	 ⇩	 ⇩	 ⇩	 ⇩
			Physiologically safe **H1 USDA FDA**		
AGIP	GR MU/EP2				GR SLL
ARAL	ARALUB HLP2 ARALUB 4822		ARALUB SI 5000	Eural Grease EP2	ARALUB 4842
AVIA	AVIALITH 2 EP		AVILUB OKS 1110	AVILUB OKS 477	AVILUB 428
BECHHEIM	HIGH LUB 474	BERULUB FG 24/0	BERULUB SIHAF 2	BERULUB FB 34 (KPHC 1P-20)	BERULUB FG 8EP
BP	Energrease LS-EP 2				
MOBIL	Mobilgrease XHP 222			Mobilgrease FM 102	GLYGOYLE Grease 00
CASTROL	LZV-EP				GLS GREASE Spheerol EPL 1000
ELF	EPEXA 2			NEVASTANE 2 PLUS	POLY G00
ESSO	RONEX MP-D BEACON EP 2 GREASE LT2 EP ***Long-life grease***			CARUM 330 (KP1 K-30) BEACON 325 (KE2G-60)	***Low-viscosity grease*** s420 (GPPG-00N-50)
TOTAL	MULTIS EP 2 LUBRIPLATE SFL-2			LUBRIPLATE SFL-2	SPECIS SY00 LUBRIPLATE SFL-00
FINA	MARSON EPL 2				MARSON EPL 3
FUCHS	RENOLIT EP 2 RENOLIT CX-EP2	RENOLIT CX-EPO	***Silicone grease*** 410 ***medium***	BEL-RAY NO-TOX Synthetic AL Grease 2	RENOLIT LST 00
KLÜBER	POLYLUB GA 352P POLYLUB WH2	Klübersynth UH1 14-1600	PARALIQ-GTE 703	Klübersynth UH1 14-151 (KHC 1K-40)	Klübersynth GE 64-1200
OPTIMOL	OLISTA LONGTIME 2 OLIT CLS	LONGTIME PDO	Optisil LEB 2	Obeen UF2 Obeen TAP2	
SHELL	ALVANIA EP(LF)2 RETINAX EP2 ALBIDA EP2			CASSIDA EPS2	TIVELA COMPOUND A
SRS	Wintershall WIOLUB LFP2			Wintershall WIOLUB AFL2	
TEXACO	MULTIFAK EP2	MULTIFAK 6833 EP00		CYGNUSGREASE CA 1/2	
TRIBOL	TRIBOL 4020/220-2 TRIBOL 4747/220/2			Molub-Aloy FoodProf 8765 Molub-Aloy FoodProf F 823-2 FM	TRIBOL 302071000-00 (GP00K-40)
OKS	OKS 470		OKS 1100	OKS 479	OKS 428

Do not combine lubricants, even those within the same group!

Central Lubrication System

General

The term central lubrication system refers to a lubrication system that supplies a large number of lubrication points with the same lubricant from a central point.

Central lubrication systems are implemented in those instances where there are a large number of mechanical friction points within a relatively small area.

Unlike manual lubrication, the central lubrication system has the advantage of supplying each lubrication point the exact amount of lubricant required at exactly defined time intervals.

Further advantages include, for example, a reduced amount of time required for lubrication, less machine downtime, and lower repair costs.

No lubrication points are left out; something that frequently occurs when lubricating manually.

The central lubrication system used by KHS for their machines operates according to a progressive system, i.e. **"progressive distributors"** distribute the lubricant supplied them in progressively metered, small and exact amounts (continuously) in a certain sequence and at specific time intervals through the individual outlets at the connected lubrication points of the machine.

Design

A line is conducted from the motor-driven lubrication pump to the main lubricant distributor from where these lubricant lines are conducted to the lubricant distributors. The lubricant distributor then supplies lubricant to the sub-distributors. The sub-distributors in turn supply lubricant to the connected lubrication points of the machine.

The system is a **self-contained system** equipped with a **lubricant return line** leading to a **collection receptacle**.

Standard commercial screwed pipe connections **must not** be used to connect the lines of the central lubrication system.

Lubrication Process

The machine's **"Automatic Mode" must be activated** to start the automatic central lubrication system (set at the operator panel/monitor). The lubrication process is enabled by the **PLC** machine control only when the switch is set to this position. The central grease lubrication system is switched on after approx. **200,000 machine cycles => 200,000 containers**.

Prerequisites: The machine is in operation.
A sufficient amount of lubricant is available.

If there is no more lubricant or when the machine is stopped, the lubrication system can be operated manually by a test function that activates the lubrication pump for approximately 30 to 60 seconds.

Monitoring the Lubricant Distributor

A pin is moved at the first lubricant distributor (main distributor) to monitor the lubrication process. A relay-actuated switch signals movement of this pin to the PLC machine control.

Lubricant Distributor Malfunctions

The distributor pin must have completed its movement within an exact period of time defined in the **PLC** machine control. If this movement is not completed, then an error message appears in the clear text display of the operator panel or monitor. The grease pump is switched off, the flowgate is closed (i.e. the container infeed conveyor is switched off) and can be reopened only after the problem has been corrected and/or grease has been refilled.

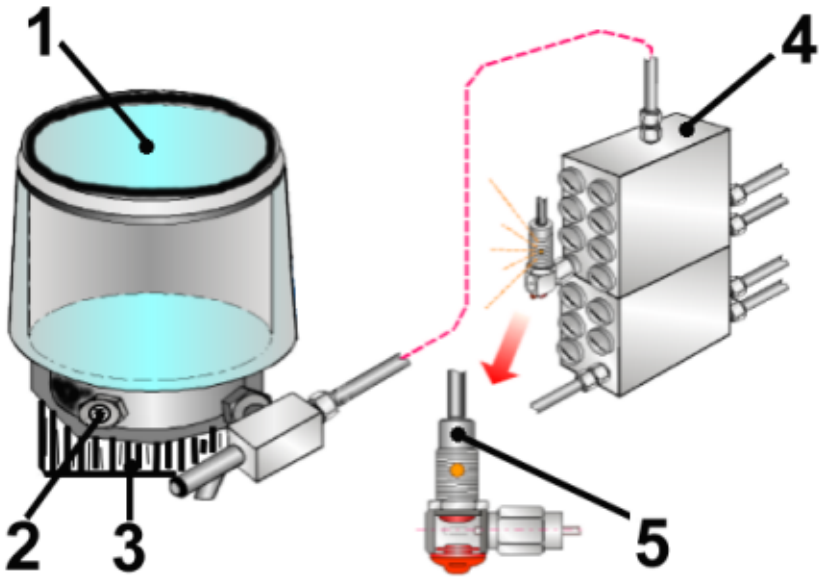
Monitoring the Lubricant Reservoir

The filling level of the lubricant reservoir is monitored according to the pressure (**no lubricant ⇒ no counterpressure**). Check the level of lubricant in the reservoir at regular intervals.

For lubrication, we recommend using one of the **KP 2K-20** group greases listed in the KHS Table of Lubricants.

Diagram of the Central Lubrication System

Diagram



One or more lubricant distributors are installed depending on the machine layout (customer-specific). Visually check the level of the lubricant in the reservoir (**1**) prior to starting the machine. The transparent plastic reservoir makes it easy to check the level of grease in the reservoir. Fill the reservoir (**1**) according to manufacturer recommendations through the filling nipple (**2**) to prevent the inclusion of air. Note the following in this regard:

1. The reservoir (**1**) must not be overfilled and not completely drained. The reservoir has a capacity for approximately 4 liters of lubricant.

2. Fill the grease without air (avoid bubbles) through the bleeder nipple **(2)**.

3. Check the central lubrication system and refill with grease as required **once a month** or after every **170 hours of operation**.

4. The lubricant must be clean and suitable for the central lubrication system. Use a **KP 2K-20**-group grease (refer to the KHS Table of Lubricants, Page 6/6).

The central lubrication pump (**3**), located below the grease reservoir (**1**) and driven by an integrated DC motor, supplies the individual lubricant distributors (**4**) with grease after approx. **200,000 machine cycles** (the time interval is defined in the PLC control of the machine).

Excess grease is collected in a lubricant collection vessel.

The filling level of the lubricant reservoir (**1**) is monitored according to the pressure.

If there is no more lubricant (⇒ **no counterpressure**), then an error message appears on the monitor or operator panel.

Pressure relief valves limit a build up pressure in the system and open, depending on the model of the safety valves, when there is overpressure in the system.

Lubricant escaping from a pressure relief valve indicates a malfunction.

Electrical proximity switches (**5**) are used for lubricant distributors (**4**) that supply lubricants to critical lubrication points (such as drive bearings).

These switches (**5**) send an electric output signal for each complete distributor cycle to the PLC machine control where the signals are counted. The pump (**3**) is switched off by the **PLC** machine control when the minimum number of control cycles is reached for all lubrication distributors (**4**) monitored. The minimum number of control cycles must be reached within the specified time period.

If the required number of control cycles is not reached within the specified time period, then the pump is stopped and an error message is issued to the machine's control panel (monitor). If the malfunction is not corrected within a certain time interval (200,000 machine cycles), the flowgate is activated or the infeed conveyor to the machine is switched off.

The machine will be run until empty and then stop.

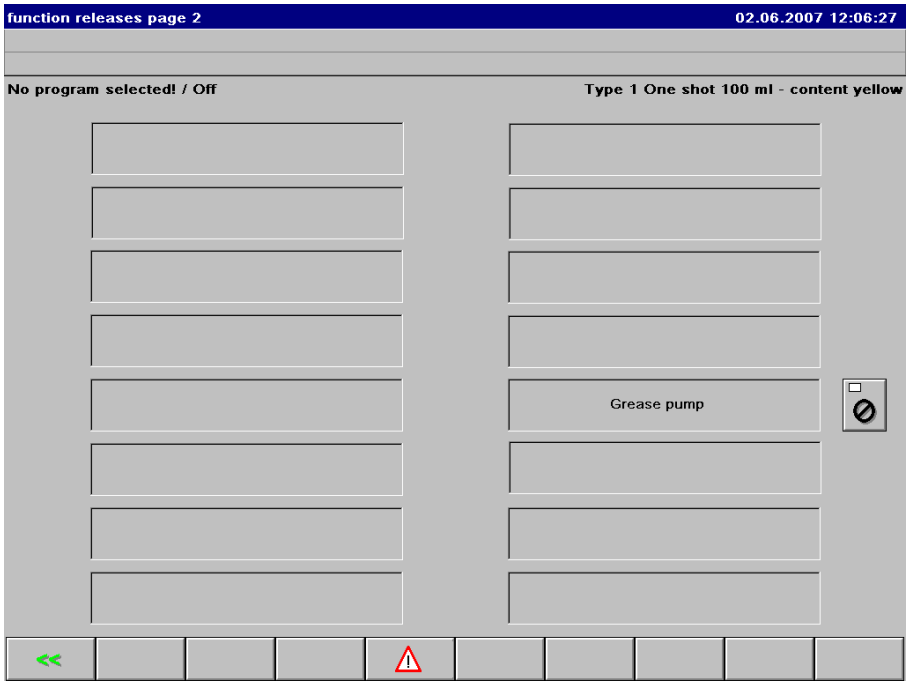
It is possible to restart the machine only after the cause of the problem has been corrected and the error reset.

Notes on Inspecting and Servicing the Central Lubrication System

You can check if the central lubrication system is in proper working order using the program in the **"Function Enables 2"** menu.

Do so by pressing the **"Grease Pump** (Central Lubrication)**"** button in the Test Functions menu.

Central Lubrication Grease Pump Test Function



The grease pump will run briefly and pump lubricant through the central lubrication system.

Lubricant Pump and Collection Tank

The grease pump (1) is working properly when lubricant is pumped into the lubricant collection tank (2) - check the output of grease.

Please note that the machine should be lubricated during machine operation since the bearings are able to take in lubricant only when they are in motion.

1. Check the operability of the central lubrication system thoroughly and at regular intervals (**after 170 hours of machine operation at the latest**).

Use the **"Test Functions"** menu described in the previous section.

2. The system is a self-contained system, i.e. any excess lubricant is collected in a collection vessel.

3. Pay particular attention to ensuring that lubricant actually emerges from all connected lubrication points and that excess lubricant is returned to the collection tank through the lubricant return line.

4. The lubricants refilled must be clean and the consistency must not change over time.

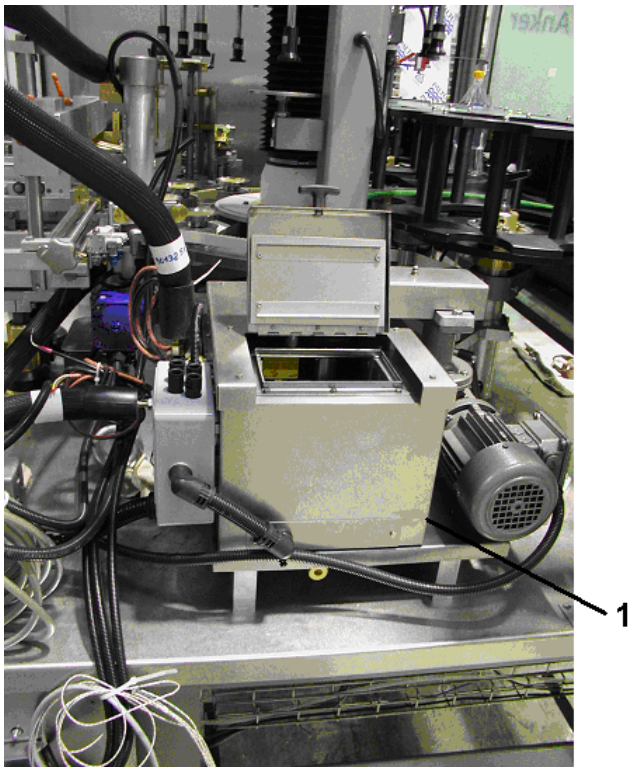
Always ensure clean conditions when working on the central lubrication system since dirt and impurities can cause system and thus machine malfunctions.

Adhere to the separately enclosed servicing instructions provided by the manufacturer of the particular system. **Adhere** exactly to these instructions as well as the instructions on servicing and machine care included with each device. **Adhere** to the specified servicing intervals conscientiously.

Only properly serviced equipment can contribute to ensuring the high quality of the filled product!

Servicing and Cleaning the Hot Melt Unit / Melting Unit

Hot Melt Unit (Diagram)



Cleaning

Since deposits of scorched glue in the melting unit can clog the pump, it is absolutely essential that the unit be cleaned regularly. Cleaning steps:

1. Heat up the melting unit
2. Open the drain plug and drain the glue into a collection receptacle.

3. **Wearing heat insulated gloves, clean the inside of the melting unit with a spatula.**

Then clean the melting unit with a cleaning agent such as **"Melt-O-Clean"** (recommended).

The components of the melting unit can be cleaned of hot melt only while the glue is hot (nearly production temperature) and thus liquid.

Remove label debris from the glue pan (under the gluing drum) regularly to keep the gluing pan filter from clogging.

Servicing and Cleaning

The hot melt unit is virtually maintenance-free.

Remove any spilled glue on the machine and hot melt unit using a suitable cleaning agent (e.g. **Melt-O-Clean**).

Remove all paper fragments and damaged labels from the label hopper at regular intervals. Clean glue residue off the hook strips, label fingers, and label guide parts after every 6 to 8 hours or **immediately** as required.

Follow the manufacturer servicing, safety, and instructions when cleaning the following components:

- Hot melt unit
- Hot melt tank
- Glue hoses
- Initial and final gluing units

Bear in mind that there are electrical components installed in the machine itself that should in no instance be sprayed with water. There is a danger of water entering the machine that could cause machine malfunctions! Do not use high-pressure sprays for cleaning!

Notes concerning stainless steel machine parts

Chrome nickel steel is not always resistant to all chemical substances used in practical operation. There is always a risk of "**pitting**" if:

- Chlorine, chlorides, halogens, and sulfates (combined with chlorides)

contained in detergents or disinfectants come in contact with machine surfaces. A possible reaction is intensified when combined with high application temperatures, high concentration levels, and low pH values.

Avoid corrosion by cleaning the effected machine parts thoroughly with fresh water once a day at the end of a shift.

Hot melt unit damage and malfunctions caused by improper cleaning, servicing, and use of cleaning agents not approved by the manufacturer will lead to exclusion of manufacturer liability.

Servicing and Lubricating

In addition to cleaning, **lubricate** the labeler to ensure that the machine operates reliably and the quality of labeling is maintained.

The table below shows the machine lubrication points and indicates the time intervals in hours of operation within which the machine must be lubricated.

Always adhere to the **instructions** provided for the **central lubrication system**.

Lubrication table:

Interval (hours run)	**Description of lube points**	**Work to be carried out**
Daily [8]	Lube points at the labeling station	Check and grease if necessary
Weekly [40]	Gripper fingers	Grease
Monthly [170]	Centering bells	Grease
Monthly	Feed screw	Check and grease if necessary
Monthly	Central lubrication system	Refill lubricant, clean the dirt trap
Twice a year [1000]	Oiling device for the cam race	Oil change(**CLP 220**), approx. 6-liter capacity; adhere to manufacturer instructions
Once a year [2000]	Gear of the main drive	Change oil according to special instructions (follow manufacturer instructions)

Servicing and Cleaning

Clean the machine **once a day** or after 8 hours of operation or at the end of a shift in the sequence indicated in the following:

Area to be cleaned	Work to be carried out
Glue pump Glue hoses Glue heater	**Note:** **Follow manufacturer instructions.** **Cleaning agents: "Melt-O-Clean"**
Label hopper	Remove the hopper first then place the label holder in a bucket with warm water and clean thoroughly with a soft brush.
Labeling station	Clean thoroughly with warm water
Container turrets brushing channel table plate	Remove all broken glass and glue residue and then clean thoroughly with a soft brush.

Bear in mind that there are electrical components (control cabinet, proximity switches, motors) installed in the machine itself that should in no instance be sprayed with water. In addition, water could enter the lubricant. Therefore, do no use high-pressure sprays for cleaning!

Labeler damage and malfunctions caused by improper cleaning, servicing, and using cleaning agents not approved by the manufacturer will lead to exclusion of manufacturer liability.

Notes on Servicing, Lubricating, and Cleaning Special Units and Non-Production Parts

Only properly serviced machine (equipment) can contribute to ensuring the quality of the filled product!

Adhere to the separately enclosed servicing instructions provided by the respective manufacturers and in the attached container alignment system and/or container detection operating manuals.

Also follow the special servicing, lubricating, and cleaning **instructions** provided by the respective manufacturer of the following components:

- Control gear
- Electric motors
- Compressed air filters
- Tensioning connections

The individual manufacturer operating instructions can be found in the **"Spare Parts List Supplements"** enclosed with the **Spare Parts List**.

Also refer to the information regarding the container alignment and/or container detection system contained in the attachment to operating manual.

Servicing and Inspections

Inspect the machine at the specified intervals. The required inspection work is listed in the following broken down according to time intervals.

We recommend that an exact record be kept of all servicing and inspection work and that this work be carried out according to the instructions.

Once a week or after every 40 hours of operation

Unit or parts	Work to be carried out
Star, feedscrews, container guides, wear strips, and transition points	Replace if worn and/or damaged.
Lower chuck	Replace if 2 to 3 mm of wear or damaged.
Brushes and rollers (depending on machine equipment)	Check that these parts exactly fit the label dressing. Replace if worn or damaged.
Electrical equipment	**Note:** Any work on the electrical equipment may be carried out only by trained technicians.
Lifting cams	Check for wear; oil.
Container detection/container alignment system	Follow the separately enclosed instructions / operating manual provided by the manufacturer.

Once a month or after every 170 hours of operation

Unit or parts	Work to be carried out
Centering bells	Replace if worn or damaged.
Cog belts	Replace if worn or damaged.
Glue pump	Check if pneumatic, electrical, and mechanical components are in proper working order.
Central machine lubrication system	Operability check (testing functions). Refill lubricant if required. Check the glue collection tank and empty/clean as required.
Container detection/container alignment system	Follow the instructions separately enclosed with the operating manual.

Mounting and Installing VarioDrive Units

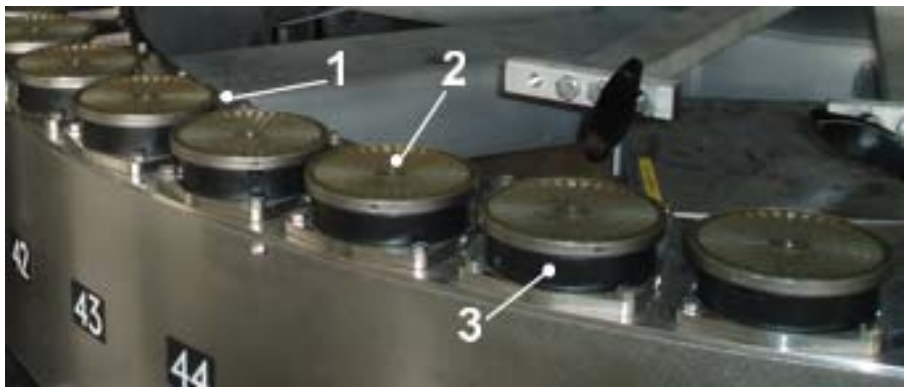
The easily accessible screw joints make it possible to quickly remove and install VarioDrive units.

Plug and socket connectors are used to connect the electrical power to the drive units.

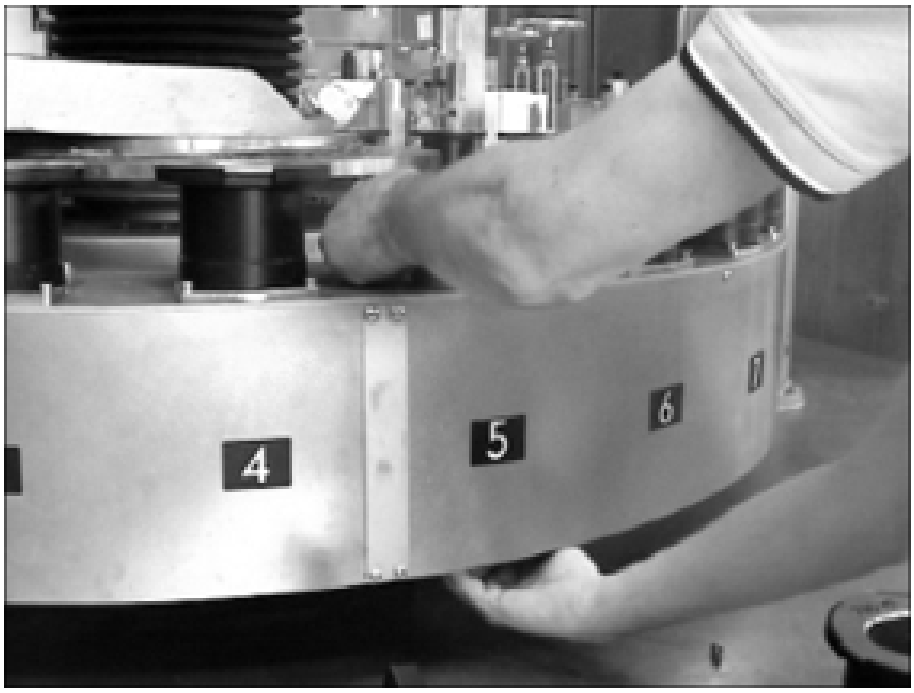
Using VarioDrives provides users the following advantages:

- **Flexible container rotation.**
- **Labeling of all container shapes and styles of dressing on one machine**
- **Variable adaptation to other container types and styles of dressing at a later date.**

Removing Container Drives (VarioDrive)



Removing Container Turret Drives



Pulling Out Container Turret Drives

Proceed as follows to remove the container turret derive **(steps 1 - 4)**:

1. Remove the container turret (**2**).

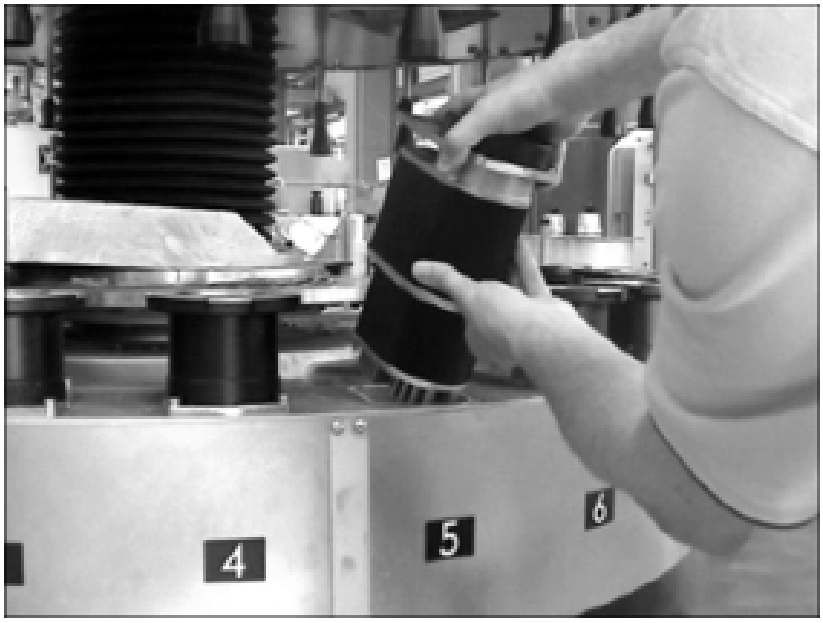
2. Do so by unscrewing and removing the screw (**2**).

3. Unscrew and remove the 4 screws of the VarioDrive (**3**) on the container turret (**1**).

4. Push the drive up from below and pull it out (see Fig. Taking Out the Container Turret Drive).

Installing Container Drives (VarioDrive)

Installing Container Turret Drives



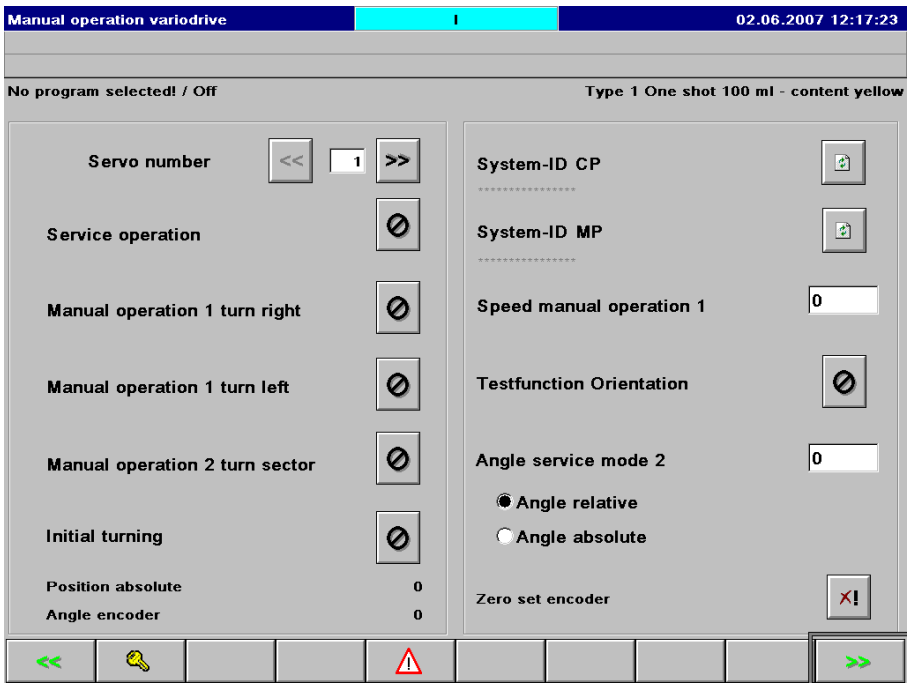
Proceed as follows to install the container turret derive (**steps 1 - 12**):

1. Insert the VarioDrive of the container turret (see Fig. Installing the Container Turret Drive).

2. Press the **RESET ERROR** function button.

3. Switch over **VarioDrive Manual Mode** to the display screen at the monitor.

See **Chapter 3**, Operating Manual for further information.



VarioDrive Setup Mode

4. Use the arrow keys to select the drive that has been replaced in box **Servo number**.

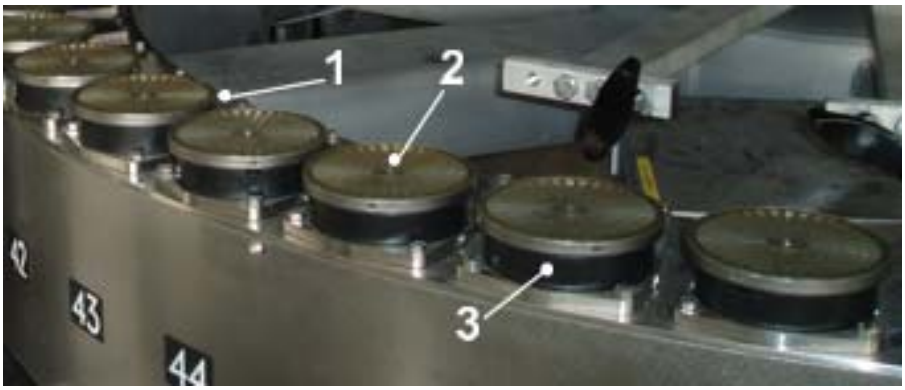
5. Enter Your **Password**. The **Initial turning** command button will be activated.

6. Touch the **Initial turning** command button and wait for a response from the PLC (a green checkmark will appear).

7. **Press and hold** the VarioDrive function button until the drive automatically **stops**.

If the button is pressed only briefly, the drive cannot be properly initialized and there is then a risk of machine damage.

Installed VarioDrives



8. Switch back to the Production menu.

9. Screw in the four screws **(1)** of the VarioDrive **(3)** of the container turret and tighten them (approx. 10 Nm).

10. Put the container turrets back on top of the drive and screw in and tighten the screw (**2**) (approx. 10 Nm).

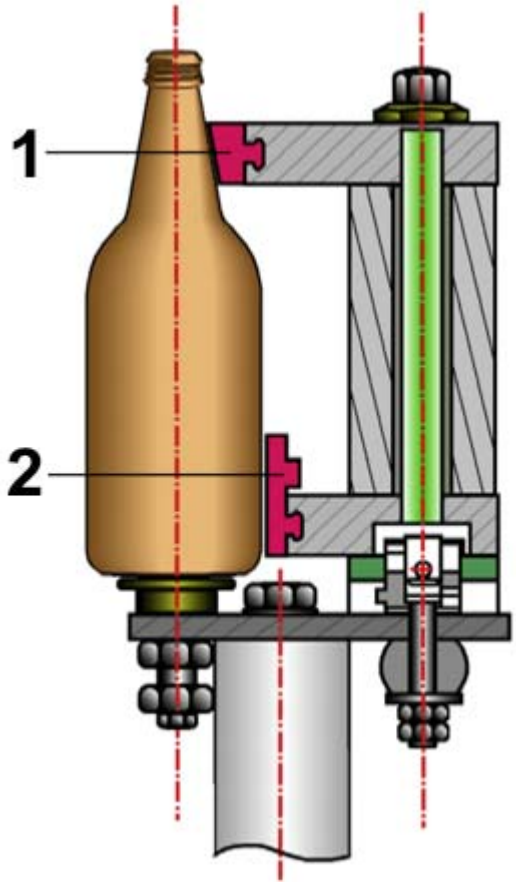
11. Press the **"START MACHINE"** basic function button.

12. After two revolutions of the labeler carousel, check the alignment of the VarioDrive of the container turret.

Installation of the container turret drive is now completed.

Replacing Wear Strips (depending on machine equipment)

Figure 6-1
Replacing Wear Strips



The container guide elements must be checked daily for damage or wear (visual check).

Replacing the wear strips (**1**) and (**2**) in time helps prevent many malfunctions.

The wear strips (**1**) and (**2**) can be pressed out only after the container guide elements have been removed and counter to the container flow.

Use a sliding agent (e.g. soap) to facilitate installation of the wear strips.

Servicing Electrical Equipment

Switching devices equipped with mechanical contacts are subject to wear. The service life of the devices and the expected number of switching cycles are specified in the lists provided by the manufacturer. Electronic equipment is virtually wear- and maintenance-free.

However, always ensure that these components are cooled sufficiently and that the surrounding air is dry (general conditions in accordance with VDE 0113, Part 1). Clean and, if necessary, replace the filter mats regularly (according to prevailing operating conditions).

With regard to three-phase motors, it is sufficient to keep the cooling passages clean and to inspect the roller bearings at regular intervals.

Electronic equipment is virtually wear- and maintenance-free. No servicing is required.

Before beginning production operation, check that the power and control cables are intact and properly seated. Replace damaged cables **immediately**.

Damaged control cables could disrupt communications with the **PLC machine control**.

Caution! Danger of electric shock!

Electric shock from damaged power supply cables could be fatal! Do not start up the machine and replace any defective cables immediately.

Light Barriers, Light Scanners

Clean the lenses and reflectors daily before beginning production operation and as required.

Always protect light barriers, light scanners, as well as electronic and optical devices **against splash water** when cleaning.

Servicing Pneumatic Equipment

Once a day or after every 8 hours of operation

Inspect the FRL (filter/regulator/lubricator) unit:

- Drain the water trap as required
- Refill the oil in the oil glass of the mist oiler as required and use the lubricants specified in the KHS Standard Table of Lubricants.

Once a week or after every 40 hours of operation

Inspect all hoses, hose joints, and connection fittings for leakage and damage. Replace any defective parts immediately.

Instructions for Vendor and NP Parts

Adhere to the separately enclosed servicing instructions provided by the manufacturer of the particular component.

Follow these instructions exactly as well as the instructions on servicing and machine care supplied with each device.

This pertains in particular to the **cooling and air conditioning units** where the water trap drains and air-conducting parts should be cleaned regularly according to manufacturer instructions.

Adhere to the specified servicing intervals conscientiously.

Only properly serviced equipment can contribute to ensuring the high quality of the filled product!

Supply of Spare Parts

Always order the required spare parts well in advance to ensure disruption-free system operation. The Spare Parts List enclosed in the machine delivery has proven to be of great assistance in determining the correct spare parts.

In order to correctly process requests for spare parts, KHS requires the following information when your order is placed:

- The model designation and machine number (name plate of the machine).
- The number of items, description, and the order number of the specific spare part, and any remarks indicated in the Spare Parts Lists.

Keep an adequate supply of seals and gaskets subject to excessive wear on hand at all times.

Always reorder spare parts **well in advance**.

Appendix

Figures