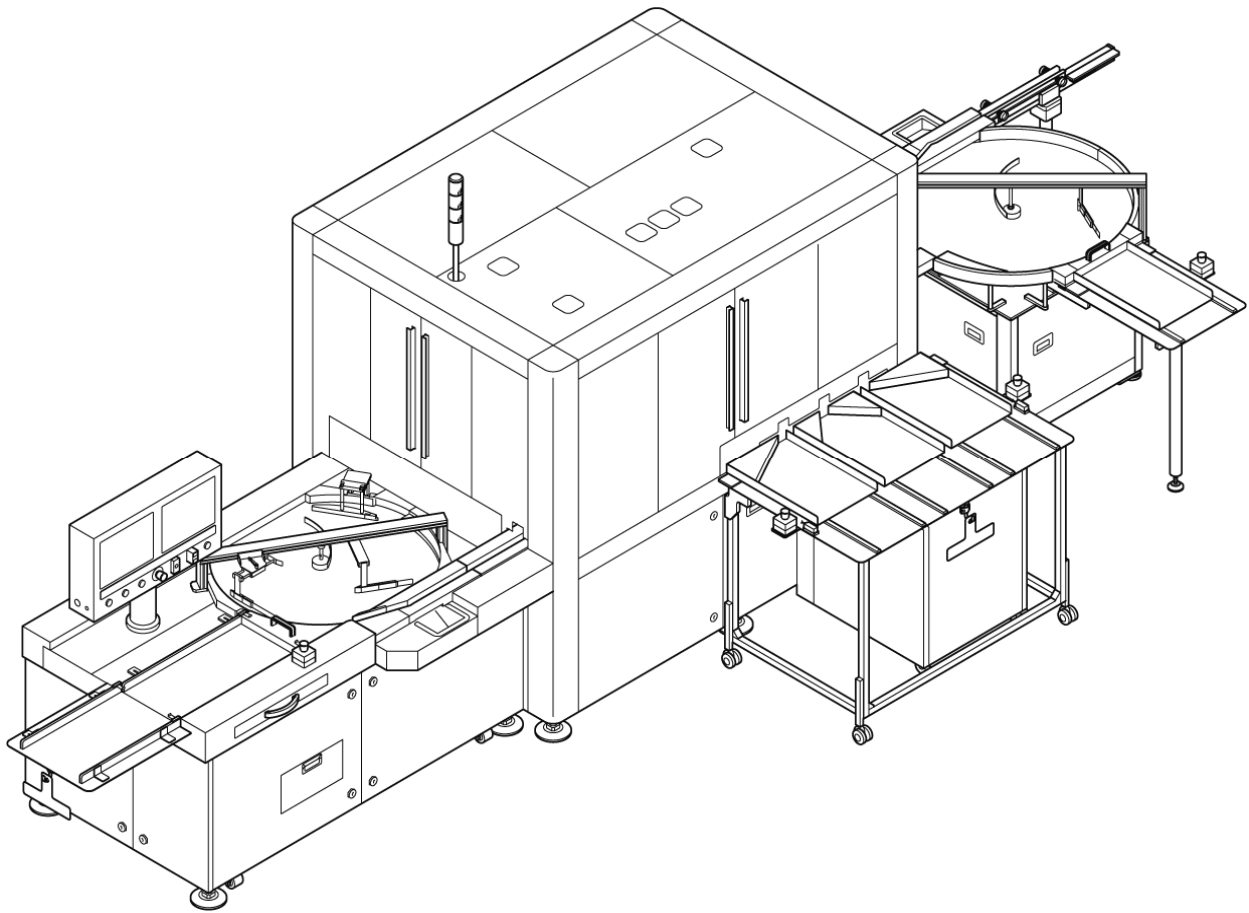


PA-I2P/Competence Center Japan and Vision Technology	
Title of Folder	Chapter Content
	<b>BD Basic Documentation</b>
<b>Instruction Manual</b>  BD1/2     BD2/2	1 Important information
	2 Basic safety information
	3 Transport, installation and connections
	4 Description of the machine
	5 Operation
	6 Trouble shooting
	7 Change of size / product
	8 Maintenance
	9 Operation and maintenance-relevant purchase parts (OEM)
	10 Appendix Appendix No. 1: Machine timing Appendix No. 2: Spare Part List Appendix No. 3: Wear Part List Appendix No. 4: Accessories Appendix No. 5: PLC Program(Provide on USB stick) Appendix No. 6: Material Safety Data Sheet)
	<b>TD Technical Documentation</b>
<b>Technical Documentation</b>  TD1/2   TD2/2   TD1/2   n.a.   TD1/2	1 Drawings 1.1 Machine Layout 1.2 Pneumatic drawing
	2 Components/Exploded Drawing
	3 SDS – Software Design Specification
	4 HDS – Hardware Design Specification
	5 n.a.
	6 FS Functional Specification
	7 Wiring Diagram 7.1 Wiring Diagram
	8 n.a.
	9 n.a.
	10 n.a.
	11 n.a.
	12 System Access 12.1 n.a. 12.2 Disaster Recovery Plan_PC Recovery Manual
	<b>MD Manufacturing Documentation</b>
<b>Manufacturing Documentation</b>	1 Manufactures Certificates 1.1 ISO9001 Certificate



110 Original Instruction Manual

Gilead Sciences, Inc.  
California / USA

# Automatic Inspection Machine AIM5021 / 742223(D962)

Year of construction: 2019  
Machine order number: 742223(D962)

**SYNTEGON**  
PROCESSING & PACKAGING

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en

Target group: this instruction manual is intended for trained skilled personnel.

## Chapter Overview

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**Chapter 1**

Important information

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**Chapter 2**

Basic safety information

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**Chapter 3**

Transport, installation and connections

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**Chapter 4**

Description of the machine

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**Chapter 5**

Operation

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**Chapter 6**

Troubleshooting

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**Chapter 7**

Change of size / product

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**Chapter 8**

Maintenance

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**Chapter 9**

Operation and maintenance-relevant purchase parts (OEM)

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**Chapter 10**

Appendix

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## 1 Key to symbols and notices

### Safety signs

















You will find these symbols next to all the safety notices in this instruction manual. They indicate special dangers for personnel, property or the environment.

Please pay attention to these notices and take particular care in these cases. Pass on all safety notice information to other users as well.

### Warning signs

The triangle symbol indicates a warning or an instruction to be careful. The definition of the instruction is shown underneath the symbol.

---

			
Danger zone	Danger of electricity or high voltage	Hazardous or irritating substances	Danger of fire
			
Danger of crushing	Hot surface	Hanging loads	Corrosive substances
			
Explosive substances	Explosive atmosphere	Danger of falling	Laser radiation
			
Keep hands clear	Keep fingers clear	Moving parts	Straight blades and knives

---

### Prohibited action signs/danger signs

The prohibition symbol means that the action shown must be avoided at all costs. The definition of the prohibition is shown underneath the symbol.



Do not reach in



No access



Do not climb on the machine



Do not reach over open guarding



Do not touch during operation



Avoid touching overheated surfaces



Do not touch

### Mandatory action signs

The mandatory symbol means that it is essential to carry out the action shown. The definition of the mandatory instruction is shown underneath the symbol.



Hair net required



Mechanical lifting devices



Lifting with two person



Proper clothing



Wear safety glasses




Safety shoes

### Key words in safety notices and their definition

Symbol	Application
DANGER	Direct hazard with a high risk, if not considered can cause death or serious physical injuries.
WARNING	Possible hazard with medium risk, if not considered can cause death or serious physical injuries.
CAUTION	Hazard with a minor risk, if not considered can cause moderate physical injuries or damage to property.

## Information symbols

Symbol	Application
	Provides you with information.
•	Prompts you to take actions.
○	Designates enumerations.
→	Refers you to additional information and refers you to other facts, causes or consequences.

## 2 Target group

This instruction manual is aimed at:

**Operating personnel:** this personnel group is instructed and trained on the machine and informed about any possible dangers in the event of improper behavior.

**Skilled personnel:** this personnel group has corresponding technical training and additional know-how and experience. They are in a position to be able to assess work assigned to them and to recognize possible dangers.

### Previous experience

Personnel who work on the machine must have regular training courses on the dangers involved in handling the machine every 6 months.

Before commencing work, the operating personnel and skilled personnel must have read and understood the instruction manual, in particular chapter 2, and the valid regulations.

The instruction manual and valid regulations have to be kept in a safe place so that they are accessible for the operating personnel and maintenance personnel.

### Operating personnel

Must be sufficiently familiarized with:

- The operating and control elements of the machine
- The equipment of the machine
- The operation of the machine
- The immediate surroundings of the machine
- The safety arrangements of the machine
- The emergency measures

### Skilled personnel

Carries the maintenance operations specified in the operating manual, such as setting, cleaning, lubrication, and servicing. These must be carried out in good time.

### **Following are the rules for training and have to be followed:**

- Do not access the machine without isolating first the relevant power supply and having ensured that those movable parts of the machine which can be accessed are at rest.
- Do not attempt to carry out any repairs, e.g. electrical or mechanical, unless properly authorized.
- Do not remove guards from the machine unless properly authorized.
- Do not interfere with the safety on the machine.
- Do not use unauthorized or improvised means of gaining access to parts of the machine, which are not normally accessible.
- For a responsible person to carry out regular inspections to verify that all guards and covers are secure and properly in position and that all safety devices are functioning correctly.



### 3 Revision control

Machine type	Automatic Inspection Machine AIM5021
Customer	Gilead Sciences, Inc., California / USA
Machine number	742223(D962)

Version	Description	Chapter	Pages	Date/ Author
1.0	Version 1.0 created	1 - 10	All	28. Nov. 2019 Shinichi Nakahashi
2.0	Updated Size change parts list and Accessories (Appendix No. 4).	7, 10	All	25.Mar.2020 Shota Inoue
3.0	Released for new customer	All	All	16.Sep.2020 Shinichi Nakahashi

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## Warranty and liability

The warranty and liability are governed by the contractually defined conditions.

### Software changes

In the event of any software changes without the knowledge and authorization of Syntegon Technology K.K., the liability and warranty rights shall lapse.

### Figures and drawings

Figures and drawings are for the purpose of general illustration.

Functional possibilities and representations can deviate from the machine that is delivered. The specified dimensions are without obligation.

### Industrial property rights

All rights in drawings, software and other documents as well as any power of disposal, such as copying and dissemination rights, are retained by Syntegon Technology K.K. This also includes property right applications.

### Storage

Syntegon Technology K.K. assumes no warranty whatsoever for any corrosion damage that occurs due to improper storage after the machine is delivered to the customer's site.

### Transportation

We draw attention to the fact that improper transportation after the machine is delivered to the customer's site does not provide any entitlement whatsoever to replacement or warranty rights. In case of doubt, consult Syntegon Technology K.K. prior to transportation of the machine/line.

If a Syntegon service technician is present, he can be asked for advice about transportation. However, he does not bear any responsibility for the transportation or any damage caused by it.

For contact information on Syntegon technical support, refer to Chapter 8 of this manual.

## Correct use

The machine must be used only for the correct use described here.

The **AIM5021 / 742223(D962)** is designed to perform particle and cosmetic inspections on sealed containers.

### Use that is not in compliance with the correct use

Any other use or any use exceeding the intended use, such as the processing of any other products than those intended for this machine, is considered as being not in compliance with the intended use.

Syntegon Technology K.K. is not liable for any damage resulting from this. The operating company alone bears the risk.

---

**DANGER****Danger due to improper use of machine!**

Physical injury and machinery damage in the event of non-permitted operation of the machine.

Operate the machine only in an explosion protected environment.

The processing of explosive substances, packaging and media is not permitted.

---

### Incorrect use of the machine

- With power sources, products, packaging materials, packaging etc. that are subject to a hazardous goods regulation or have effects in any way on the health of the operating personnel.
- With machinery devices that have been modified by the operating company.
- In an explosive atmosphere!

### Information about protective measures

- If any measures on the machine are necessary for the protection of the personnel against the dangers of the product, these have to be installed in the machine. Sufficient function must be proven.
- The operating company must take sufficient precautions to protect its personnel against the dangers of the product, in particular if tasks on the machine have to be performed outside of the scope of normal operation (for example, cleaning, waste disposal, repairs).
- The personnel of the operating company must be given training courses continually on the possible dangers emanating from the product.
- The user must be given training courses continually on the possible dangers related to the product.

## Information for the users

---

**Notice!**

All activities may be performed only by instructed and authorized personnel.

---

The machine is built in accordance with the legally valid regulations at the time of delivery and is the state-of-the-art in terms of safety.

The residual dangers are designated by safety notices and are described in the instruction manual.

All safety notices attached to the machine must be considered. They must be present in full and must be easily legible.

Operate the machine only if all safeguards are present, undamaged and attached to the machine correctly/safely.

Secure any danger points that occur between Syntegon machines and customer provided devices.

The statutorily prescribed test intervals for the facility must be complied with. The test results must be recorded on a test certificate and kept safe until the next test.

Have any safeguards, interlocks, emergency stop buttons, warning systems, locking devices and couplings to packaging machinery and auxiliary packaging machinery tested as to their safe condition daily by a skilled person. Record of this check shall be entered into the logbook.

Prior to commissioning, have any devices, by means of which health harming substances are extracted, tested by a skilled person as to their effectiveness.

### Tests in accordance with the accident prevention regulations

In the following cases the operating company must perform prior to commissioning a test in accordance with the valid accident prevention regulations and the rules of electrical engineering.

- When configuring machines, lines and operating media from various manufacturers/suppliers.
- After any modifications to the machine/line supplied by Syntegon with intervention into the electrical equipment.

## Danger/risks involved in operating the machine

### Machine in operation

After switching on, the machine is in operation and parts are in motion.

#### WARNING



#### Danger due to moving parts in the machine.

Serious personal injury due to moving parts that seize or draw in openly worn long hair, loose clothing, jewelry or similar.

Wear closely fitting clothing. Bind long hair together, for example, with a hair net.

Take off any jewelry.

Do not climb on the machine.

Do not reach over open guarding.

#### Danger



#### Do not climb on the machine

Personal injury.

Climb on the machine can cause serious injury or death.

#### Danger



#### Do not reach over open guarding

Personal injury.

Reach over open guarding can cause serious physical injury or death and damage of the machine or its parts.

### Test run

A test run is necessary after any work on the machine, size changeovers, restarting, maintenance work or malfunctions.

#### WARNING



#### Danger due to non-obvious movements of the machine.

Personal injury.

Keep well away from the machine during the test run.

### Hot surfaces

Parts of the machine are hot when in operation. For example, CIP/SIP devices, flame heated extractions, piping, heating device.

#### WARNING



#### Danger of suffering burns due to hot surfaces on heated machine components.

Serious personal injury.

Keep your distance.

Allow machine parts to cool down to a maximum of 40 °C before touching them.

## Lighting of the machine

An important prerequisite for operating personnel working on and reaching into the machine is a sufficiently lit working environment.

### CAUTION



#### **Danger due to an insufficiently lit workplace!**

Increased risk of injury.

Ensure that all lighting devices are intact.

Only work on the machine with sufficient lighting.

## Fundamental safety measures

### DANGER



#### **Connect to specified power source.**

The machine must not be connected to any power source which does not meet the specified data. If this is not adhered to, breakdowns may occur and there would be a danger of fire.

### GROUNDING



#### **Electrical grounding.**

Electrical grounding should be provided as independently as possible of that of other appliances. The electrical grounding cables should be as short as possible and have a sufficiently large cross-section (at least 2 mm<sup>2</sup>) electrical grounding protection class 3: grounding resistance max. 100Ω.

### DANGER



#### **Power supply cable.**

The power supply cables of the machine can be damaged by the following wrong actions, which must be avoided. Under no circumstances:

- Pull on cables or twist them.
- Allow cables to touch hot parts of the machine.
- Place heavy objects on the cables.

### DANGER



#### **Switching off the main switch.**

Switch off the main switch before carrying out inspection and maintenance operations on the machine!

Only start working after having checked that the required safety is ensured. If you do not follow these instructions, it may lead to injuries of the maintenance personnel.

### CAUTION



#### **Ensure safe conditions during operation.**

The machine must only be switched on after carefully checking that the operating conditions are safe. If abnormal conditions are found, the machine must be immediately stopped with an Emergency Stop switch or a Stop button.

### CAUTION



#### **Protective guards/covers.**

The machine must only be put into operation when the protective guards/covers are closed. If this is not observed, there is a danger of injury or the machine may be damaged.










### DANGER



#### **Touching containers during operation.**

Placing or removing containers during operation must be done with extreme caution. If this is not observed, there is a danger of injury.



<p><b>DANGER</b></p> 	<p><b>Handling halogen lamps.</b></p> <p>When a halogen lamp is lit, it is essential to avoid contact by hand or skin, since it gets very hot. This is already the case immediately after switching on. If this is not observed, burns will be the result.</p>
<p><b>DANGER</b></p> 	<p><b>Handling halogen lamps.</b></p> <p>Inexpert handling of halogen lamps can lead to burns or cause fires. Please ensure when replacing halogen lamps, the power supply is switched off and the lamp has cooled down already for a long period of time. If this is not observed, burns will result.</p>
<p><b>WARNING</b></p> 	<p><b>Touching containers during operation.</b></p> <p>Placing or removing containers during operation must be done with extreme caution. If this is not observed, there is a danger of injury.</p>
<p><b>WARNING</b></p> 	<p><b>Handling halogen lamps.</b></p> <p>Only the specified lamp type must be used. The use of other types may result in fires or operational breakdowns.</p>
<p><b>CAUTION</b></p> 	<p><b>Readability of warning signs.</b></p> <p>Warning signs must always be easily legible. Please ensure that they are not dirty or peeling off.</p>
<p><b>CAUTION</b></p> 	<p><b>Glass fracture.</b></p> <p>In the case of container breakages, check the following (non-observance may lead to injuries or machine damage):</p> <ul style="list-style-type: none"> <li>○ Check whether parts of the machine have become detached.</li> <li>○ Check whether transport or handling parts of the machine have been damaged or bent.</li> </ul>
<p><b>CAUTION</b></p> 	<p><b>Cleaning after glass fracture.</b></p> <p>In case of container breakages occurs, remove the parts concerned (starwheels, guides etc.) and carefully wipe off chemicals. Thoroughly wipe up any residues with a moist cloth. If cleaning is not carried out sufficiently, there is a danger of renewed glass fracture. Do not blow off broken glass fragments but suck them up with a vacuum cleaner. Glass particles cause injuries or damage if they enter the machine.</p>
<p><b>CAUTION</b></p> 	<p><b>Installation of container seats.(Base attachments)</b></p> <p>The container seats must be pushed down carefully up to the stop. If they are too loose or misaligned, they may collide with the transport guidance system and cause machine damage.</p>
<p><b>CAUTION</b></p> 	<p><b>Lubrication.</b></p> <p>Only the lubricants specified by Syntegon Technology K.K. must be used for routine lubrication and for oil changes. Oil grades of insufficient quality may cause machine damage. The specified filling quantity must be exactly followed. Before checking the oil level with the machine at rest, wait long enough until the oil level has stabilized.</p>

**DANGER****Lubrication.**

Grease the spindles or the spindle bearing. The spindles will not move correctly if not properly greased. If the spindle movement are slow, it must be removed from the spindle bearing. The shaft bearing and the surface of the spindle must be cleaned and assembled again. Never allow the machine to run without oil, as it would not operate as expected.

Only use the specified grade for oil changes. The composition of oil from different manufacturers may vary. Any attempt to mix oil grades from different manufacturers is very inadvisable. When changing the brake fluid, do not allow the machine to run without oil in the automatic or manual mode, since air would otherwise enter the hydraulic system. This would lower the braking pressure and result in detection errors.

**WARNING****Lubrication.**

If dust or water enters the system during the lubrication operation, parts of the SD system may seize, reducing the accuracy. Wipe the edge of the oil filling branch first and then fill in clean oil.

**CAUTION****Replacement of electrical components.**

Before removing or fitting an electrical component, switch off the machine. Removing or fitting electrical components while the machine is switched on may lead to damage of the components.

**CAUTION****Non-repairable parts.**

Use only parts manufactured by Syntegon Technology K.K. Parts from other manufacturers may cause the machine to fail or operate wrongly. Before replacing non-repairable parts, switch off the main switch. Handle the parts carefully to avoid damaging them.

**CAUTION****Operating instructions.**

Keep this instruction manual carefully, so that it can be consulted when necessary.

## Safeguards on the machine

Safety devices are for the purpose of protecting the operator against dangers presented by the machine. Safety is ensured only if the safeguards are intact and present.

### WARNING



#### **Danger of accident due to missing or defective safeguards.**

Personal injury, if any unauthorized changes to the machine are made.

Prior to operation check the safeguards as to operability and replace any defective ones (see chapter 8).

Do not make any modifications, attachments or conversions to the machine.

Do not make any modifications to the safety devices or bypassing or any holes to access through the safety device.

Do not perform any welding work on load-bearing machinery parts.

Damaged/defective guard shall be immediately changed or recovered.

The machine is built according to the respective legal regulations and is intrinsically safe. Danger occurs if the machine is operated incorrectly or operated while not being in a sound and faultless state.

Danger points that cannot be excluded by the design have to be protected with safeguards and, where necessary, have to be marked by warning signs on the machine.

#### **The machine is equipped with the following safeguards:**

- o Warning signs at danger points on the machine.
- o Optical malfunction display.
- o Automatic control of the operation processes and automatic interruption by the operating company in the event of any malfunctions.
- o Movable safeguards: electrically locked or can be opened only with a special tool.
- o Impact key EMERGENCY STOP.
- o Machine switches off automatically when the safety doors are opened.
- o Metal covering of the drives and the moveable mechanical assemblies.
- o Metal covering of electrically loaded parts.
- o Safety notices (stickers), if there are any residual dangers on the machine.
- o Control cabinet with mechanically lockable main switch.
- o Lockable disconnecter/isolator for the machine pneumatic system.
- o Transparent shields for the observation of production.

## Safety labels

- Safety label has been placed on the inspection unit to provide with the necessary basic knowledge for safe, effective operation. Always follow the instructions the safety label contains to avoid serious accidents.
- Always keep the safety label clear of dirt and readable.
- Never remove the label from the unit. Should the label come off, fix it in position.
- Should the label become difficult to see because of being worn, faded or damaged, replace it.
- The instructions the safety label contains cover only the basic information, so read and fully understand the manual for installation, operation and maintenance. Comply with the warnings and cautions appearing in the manual at all times when handling the unit, in order to avoid a personal injury or equipment damage.

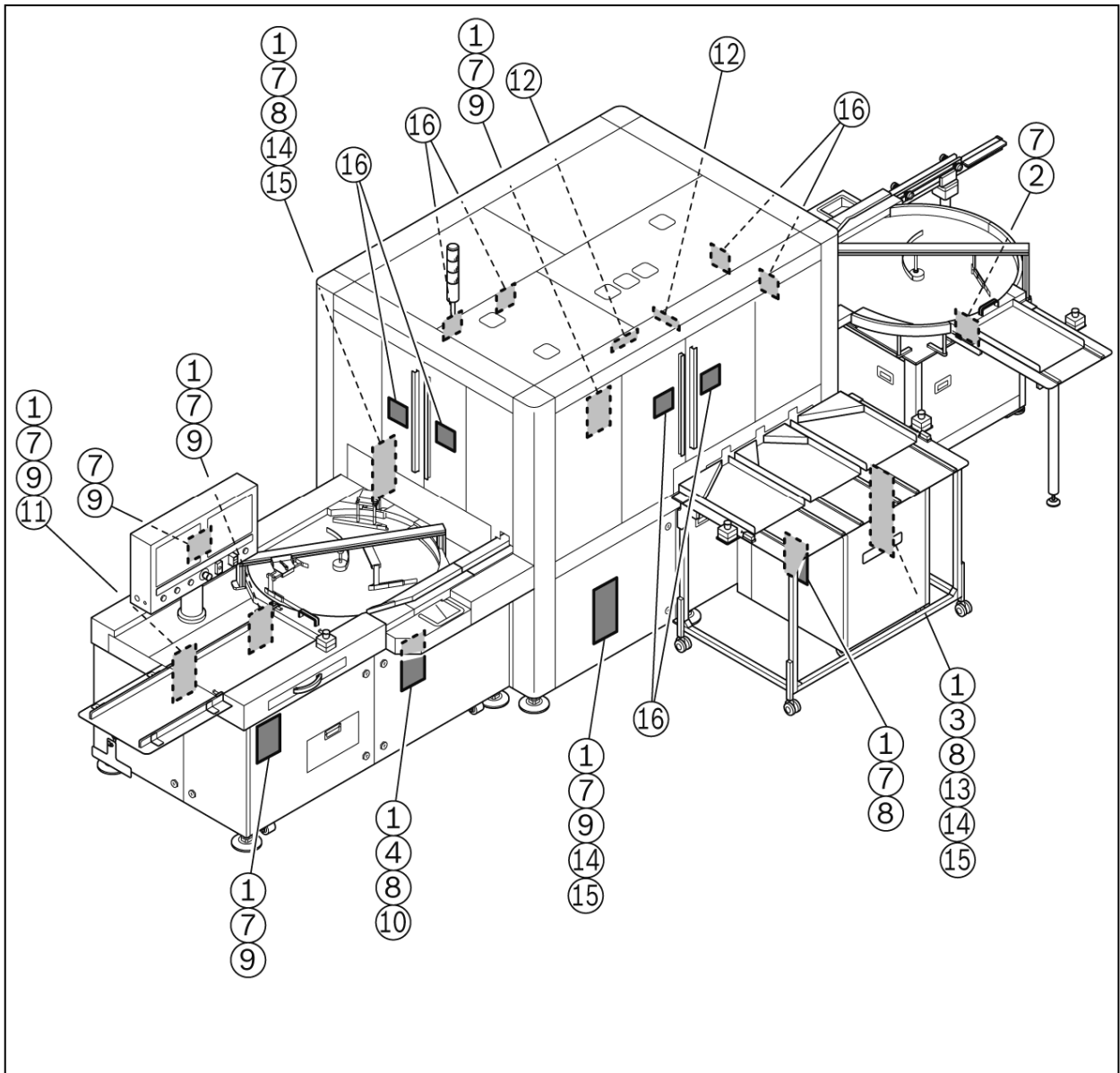
### **The machine can be equipped with the following optional safeguards:**

- Acoustic warning signs.
- Visual warning signal (light tower).
- Lockable safety doors that cannot be opened during production.
- Extraction device and fan. If the exhaust air is discharged into the working room, additionally by means of catalyzers.
- Safeguarding for danger-free opening of the safety devices.

### **Following devices are excluded from the safety devices:**

- Process locks.

**Location of Safety Labels:**



Refer to next page for label number.

①  **⚠ DANGER**  
Shock and arc flash explosion hazards. Follow all requirements in NFPA 70E for safe work practices and for personal protective equipment.

② **WARNING**  
- DISCONNECT POWER SUPPLY BEFORE SERVICING.  
- GROUNDING CIRCUIT CONTINUITY IS VITAL FOR SAFE OPERATION OF EQUIPMENT. NEVER OPERATE EQUIPMENT WITH GROUNDING CONDUCTOR DISCONNECTED.

③ **CAUTION**  
- FOR USE IN A CONTROLLED ENVIRONMENT. REFER TO MANUAL FOR DETAILS.

④ **WARNING**  
- THE SECONDARY SYSTEM(S) MUST BE CONNECTED TO A GROUND ELECTRODE IN COMPLIANCE WITH THE NEC CODE.

⑤ **CAUTION**  
- USE COPPER WIRES SUITABLE FOR AT LEAST 75°C

⑥ - MAIN CONTROL CABINET #2 ISOLATION SWITCH DISCONNECT/LOCKOUT UPSTREAM BEFORE ENTERING FOR SERVICE.

⑦ **CAUTION**  
- RISK OF ELECTRIC SHOCK - MORE THAN ONE DISCONNECT SWITCH MAY BE REQUIRED TO DE-ENERGIZE THE EQUIPMENT BEFORE SERVICING - SEE WIRING DIAGRAM.  
- FOR USE IN A CONTROLLED ENVIRONMENT - REFER TO MANUAL FOR ENVIRONMENTAL CONDITIONS.

⑧ **WARNING**  
- THIS UNIT HAS MORE THAN ONE POWER SUPPLY. DISCONNECT ALL SUPPLIES BEFORE SERVICING TO AVOID ELECTRIC SHOCK.  
- CAPACITOR CIRCUIT. WAIT 5 MIN AFTER OPENING, THEN SHORT CAPACITORS BEFORE HANDLING.  
- GROUNDING CIRCUIT CONTINUITY IS VITAL FOR SAFE OPERATION OF EQUIPMENT. NEVER OPERATE EQUIPMENT WITH GROUNDING CONDUCTOR DISCONNECTED.

⑨ **WARNING**  
- THIS UNIT HAS MORE THAN ONE POWER SUPPLY. DISCONNECT ALL SUPPLIES BEFORE SERVICING TO AVOID ELECTRIC SHOCK.  
- GROUNDING CIRCUIT CONTINUITY IS VITAL FOR SAFE OPERATION OF EQUIPMENT. NEVER OPERATE EQUIPMENT WITH GROUNDING CONDUCTOR DISCONNECTED.

⑩ **CAUTION**  
- DISCONNECT POWER SUPPLY BEFORE SERVICING - SEE WIRING DIAGRAM.  
- FOR USE IN A CONTROLLED ENVIRONMENT - REFER TO MANUAL FOR ENVIRONMENTAL CONDITIONS.

⑪ **FOR PROGRAMMING USE ONLY**  
**CAUTION**  
- MAXIMUM TOTAL LOAD: 12A

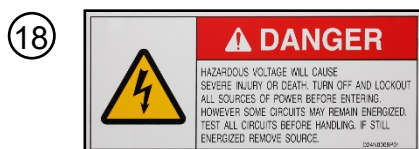
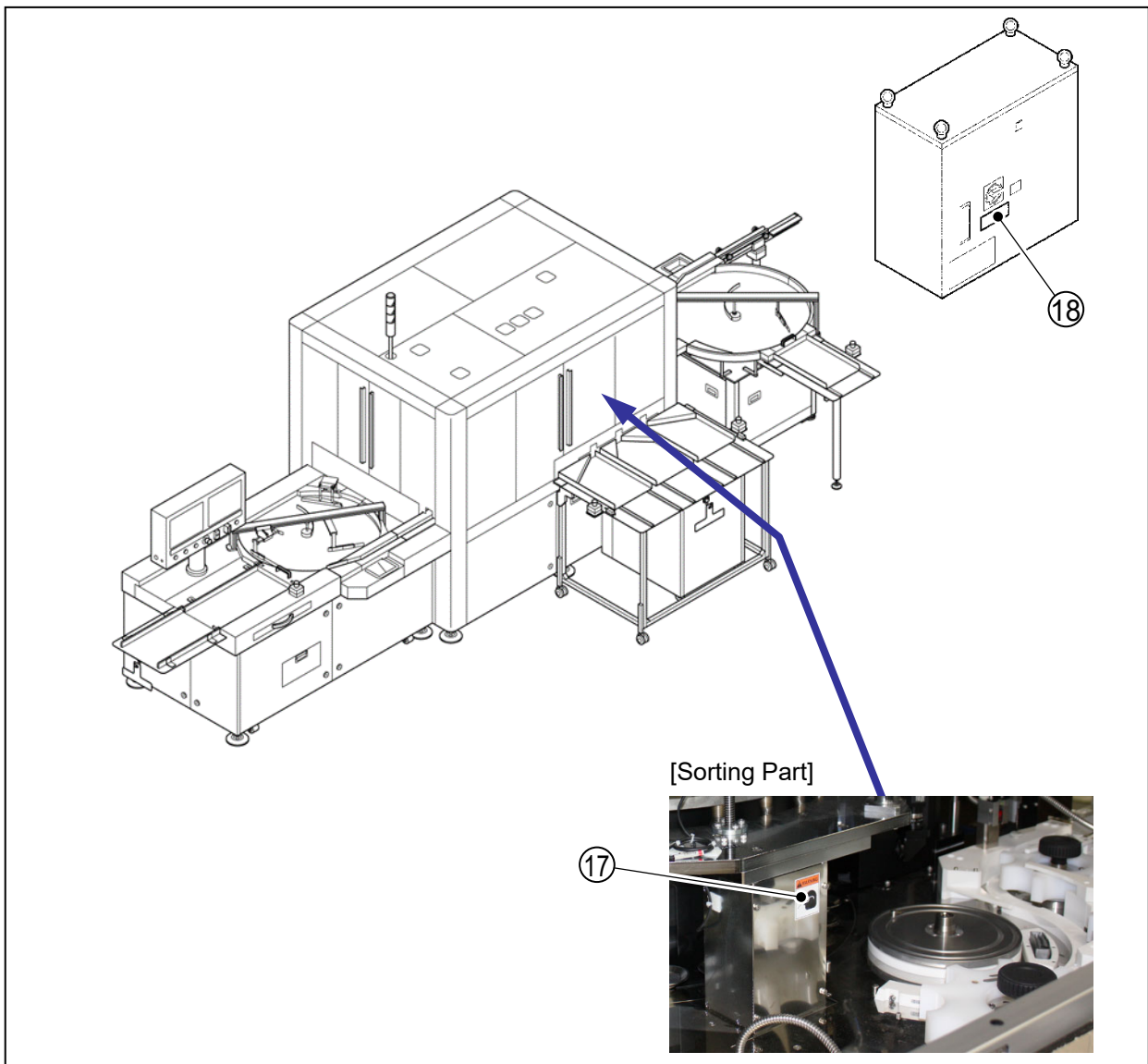
⑫ **CAUTION - HOT SURFACE**

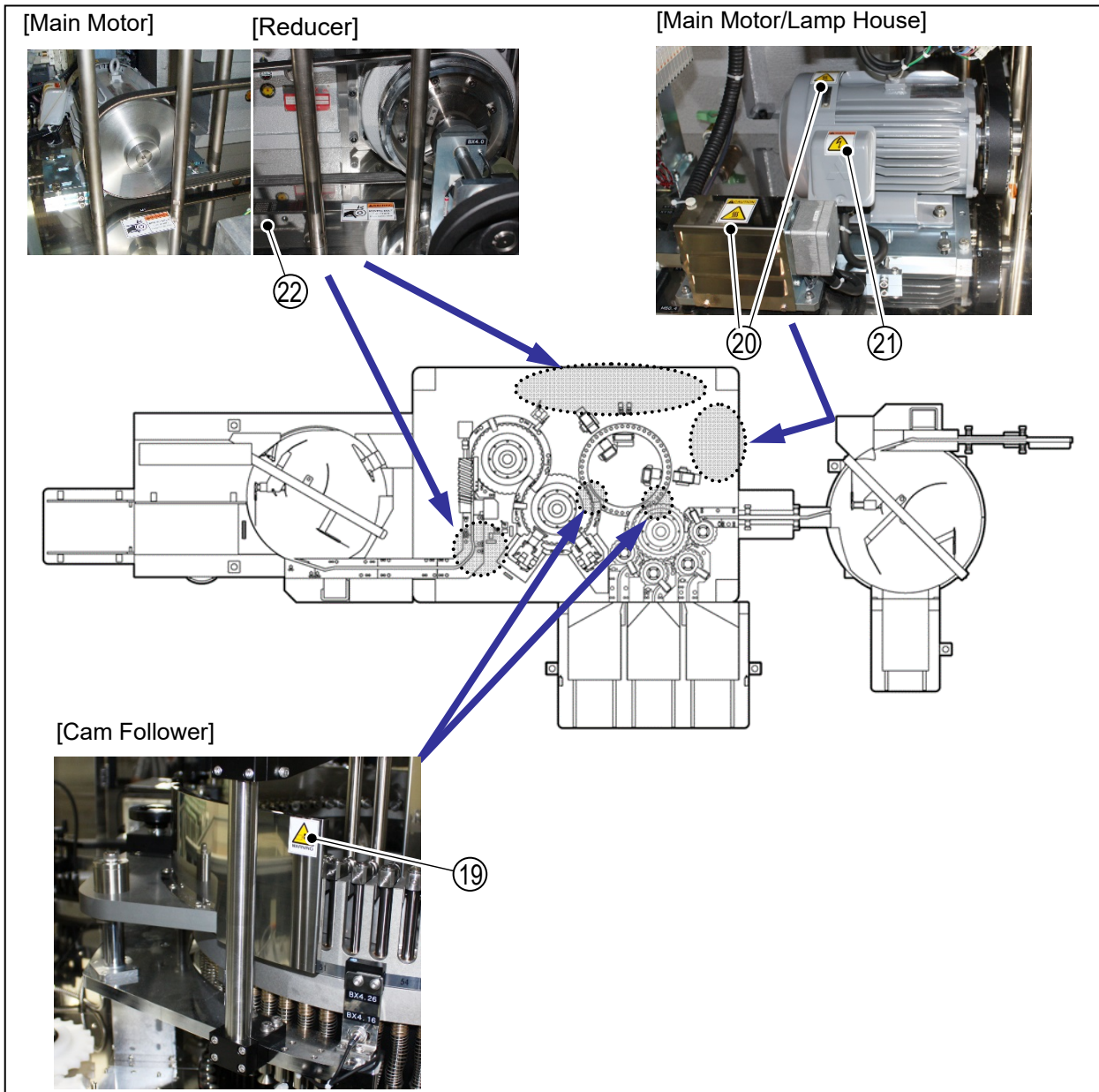
⑬ **CAUTION**  
- USE COPPER WIRES SUITABLE FOR AT LEAST 75°C

⑭  **⚠ WARNING**  
Read and fully understand operator's manual before using this machine. Failure to follow operating instructions could result in death or serious injury. 

⑮  **⚠ WARNING**  
**To avoid injury:** You MUST read and understand technical manual before servicing this machine. 

⑯  **WARNING**  
(ENTANGLEMENT HAZARD)





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20



21



22





## Handling acids and alkalis

The operating company must draw up operating instructions and display them on a notice board!

### The hazardous substances regulation has to be heeded!

- If national regulations apply, they must be complied with.
- Regularly practice the handling of an eye bath.
- If there is contact with the eyes, flush them immediately with plenty of water and seek medical assistance.
- Wear suitable protective clothing while working.
- After contact with skin and clothing immediately flush them with plenty of water.
- Change any contaminated clothing immediately.



### Nitric acid (HNO<sub>3</sub>) with a concentration greater than 70 %

Pure acid is colorless and has a sharp, pungent odor.

Concentrated nitric acid easily decomposes (particularly when subjected to light) and often has a yellowish or reddish tint on account of the nitrogen dioxide dissolved in it (NO<sub>2</sub>).

Pure nitric acid, which contains free nitrogen dioxide, contains over 90 % of HNO<sub>3</sub>, has an intensely oxidizing effect and can easily ignite some combustible substances.

---

**WARNING**

**Danger of ignition when nitric acid comes into contact with combustible substances.**

Danger of serious personal injury and burns.

Do not bring nitric acid into contact with combustible substances.

---

**WARNING**

**Danger of chemical burns due to contact with nitric acid.**

Airways or parts of the body can suffer chemical burns.

Never pour water into acid.

Please wear protective gloves, rubber apron, mouth and eye protection.

---

## Caustic soda (NaOH) with a concentration of between 1 and 5 % (General)

Caustic soda is the designation for solutions of sodium hydroxide (NaOH) in water. These are alkaline solutions.

In water the sodium hydroxide dissolves very well with intense heat production. An aqueous solution saturated at room temperature contains 1260g of sodium hydroxide per liter. Caustic soda is one of the most frequently used laboratory and industrial chemicals.

---

**WARNING****Danger of injury due to the irritating effect of caustic soda.**

The eyes and skin can be irritated.

Please wear protective gloves, rubber apron, mouth and eye protection.

---

## Maximum workplace concentration (MAK value)

### What is the MAK value?

It is the maximum permissible concentration at the place of work of a work substance in the form of a gas, vapor or matter suspended in the air that in general, however, subject to compliance with an average weekly working time of 40 hours, does not impair the health of the employees and does not burden them unreasonably in accordance with the present state of knowledge even when they are subjected to repeated and long-term exposure, i.e. as a rule 8 hours.

**Extract from: Technical Rules for Hazardous Substances (TRGS 900; Germany; status 12/2005)**

Substance	Formula	MAK	
		ml/m <sup>3</sup> (ppm)	mg/m <sup>3</sup>
Hydrogen peroxide	H <sub>2</sub> O <sub>2</sub>	1	1.4
Nitric acid	HNO <sub>3</sub>	2	5.2
Sodium hydroxide (caustic soda)	NaOH	-	Air limit value: 2 E* not a MAK value!
Carbon dioxide	CO <sub>2</sub>	5 000	9 100
Ozone	O <sub>3</sub>	0.1	0.2

\* E = inhalable (valid since 1996)



#### Notice!

For hazardous substances not listed here the statutory regulations have to be complied with. If other statutory regulations are valid in the country of the operating company, these must be complied with.

### Operating company's duty of protection from investigation of hazardous substances

Whether a health hazard exists at the workplace can be determined by measuring the concentration. For the purpose of assessment these measuring results must be compared with the MAK limit values.

If no MAK value is shown for a substance, this does not mean that the substance is not hazardous. It therefore has to be checked whether a different limit value exists for this substance.

### Frequency of the control measurements

In the case of a measured value of 1/4 of the MAK value:	every 64 weeks
In the case of a measured value of 1/2 of the MAK value:	every 32 weeks
In the case of a measured maximum permissible value:	every 16 weeks

## Working on electrical/electronic devices

---

**Notice!**

All electrical work may be performed only by instructed and authorized skilled electricians.

---

Syntegon machines are highly sensitive.

Modifications, attachments and conversions to the machines cause them to be no longer operable, which includes changes to the ex-factory settings.

---

**DANGER****Risk to life due to voltage.**

Serious personal injury or death due to electrical shock.

Disconnect the entire current supply (switch off the main switch and pull out the connector plug).

Secure the machine against being switched on (attach a padlock).

Reliably ascertain that it is free of any voltage using a testing instrument.

---

## Working on pneumatic devices

---

**Notice!**

All pneumatically work may be performed only by instructed and authorized skilled persons.

---

**WARNING****Danger due to pressurized machine components.**

Serious injuries or death.

Work on pneumatic equipment may be performed only by skilled personnel or by instructed persons under the supervision of a skilled person.

Before performing any maintenance work, switch the machine to depressurized and secure it against being unexpectedly switched back on again by a padlock.

---

## Servo drives

A servo drive can approach pre-specified positions at pre-specified points in time. To do so, the servo drive requires a fixed reference point (zero point). The servo drive approaches the pre-specified positions relatively to this zero point.

If the zero point is misadjusted (for example, after a timing belt has slipped), the servo drive approaches the pre-specified positions from an incorrect reference point. In this case, the position of the zero point has to be readjusted (zero point adjustment).



### Notice!

Work on servo drives is dangerous and requires a high degree of technical know-how. Before working on servo drives, consult Syntegon Technology K.K. to prevent personal injury and damage to property. The Information for the users always apply to all work on servo drives.

---

## Information on exchanging servo drives

### DANGER



### Danger of voltage!

Servo drives carry an electric voltage. An electrical shock causes life-threatening injuries.

Disconnect the machine from all power sources and secure it against being unexpectedly switched back on locked by a padlock.

Have any work on servo drives performed only by instructed skilled electricians in accordance with the rules of electronics.

---

### DANGER



### Danger due to the uncontrolled startup of servo drives!

Serious personal injury in the event of incorrectly connected/installed servo drives that start up uncontrolled.

Check all connections before switching on.

No personnel are allowed in the working area of the machine during the switching-on procedure.

---

**Standard procedures for changing the servo drives:**

Item no.	Measures
1	Switch off the machine in compliance with this instruction manual and secure it against being unexpectedly switched back on again locked by a padlock.
2	Cordon off a wide area around the danger zone and equip a warning sign, not to access the zone.
3	Inform the operating personnel and appoint a supervisor.
4	Change the servo drive.
5	Check for correct installation and connection by numbering of the wiring.
6	Switch on the machine in compliance with this instruction manual.
7	On the operating panel specify the electrical serial number of the new servo drive.
8	Perform a zero point adjustment (see next page).

## Information on readjusting of zero point (setting to zero point/homing)

### DANGER



#### Danger due to incorrect zero point adjustment!

Serious personal injury due to the unforeseeable approach of servo drives with an incorrectly executed zero point adjustment.

Have the zero point adjustment performed only by authorized skilled electricians in accordance with the rules of electronics.

Only skilled electricians are allowed in the working area.

### CAUTION



#### Danger to the machine due to incorrect zero point adjustment!

Serious damage to the machine in the event of incorrect operation and performance of the zero point adjustment.

Have the zero point adjustment performed only by authorized skilled electricians in accordance with the rules of electronics.

Before setting to zero, the servo drives must be at the zero point.

### Standard procedures for zero point adjustment:

Item No.	Measure
1	Cordon off a wide area around the danger zone and equip a warning sign, not to access the zone.
2	Inform the operating personnel and appoint a supervisor.
3	Release the servo drive brake (see Chapter 5 in case the machine uses the servo).
4	Turn the servo drive manually to zero point. → The zero point is marked or is attainable with the aid of the relevant adjustment gauge.
5	Apply the servo drive brake (see Chapter 5 in case the machine uses the servo).
6	Set the zero of the servo drive (see Chapter 5 in case the machine uses the servo).
7	Check the settings at a slow speed by means of the remote control (see Chapter 5 in case the machine uses the servo).



## Reasonable lifting and carrying forces

If the permissible values are exceeded during production work on machines, auxiliary devices must be available.



### Notice!

The respective national regulations have to be heeded.

Permissible Values	Reasonable Load (kg) / Frequency of Lifting and Carrying			
	Occasional		Frequent	
	Women <sup>1</sup>	Men <sup>1 2</sup>	Women <sup>1</sup>	Men <sup>2</sup>
15 - 18 years	15	25	10	20
19 - 45 years	15	25	10	25
older than 45 years	15	25	10	25

1) Limit values that must not be exceeded in normal cases without endangering health.

2) Values that are recommended from an ergonomic viewpoint.



### Notice!

For lifting of masses greater than 25 kg, two persons should execute the task.



### Notice!

Where the mass of the part is greater than 40kg, a suitable mechanical lifting device should be used.

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## Supply

### Scope of supply

Compare the scope of supply with the delivery papers (packing note).

### Report damage

Upon delivery make a note of any visible damage on the delivery papers and report it immediately to the insurer.

Report any hidden damage to the insurer immediately after discovery.

We recommend that you record transport damage with photos.

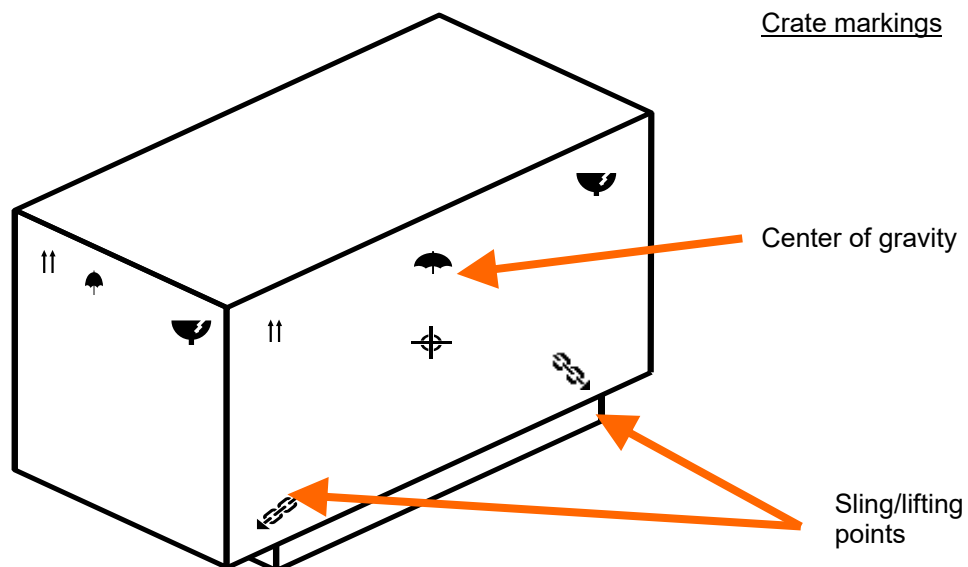
### Packing

#### Normal transport/Domestic country

The machine is delivered with plastic film.

#### Sea freight/Air freight

The machine is delivered in crate. Crates are made from wood with the indications of center of gravity and sling positions on the external wall. The details of the crate are in the "Packing Table". The machine is to be packed to JIS Z 0301 (Method of moisture-proof packaging) and JIS Z 1403 (Wooden framed boxes for packing) standards in a heat protective barrier sheet under partial vacuum.



## Transportation

### Machine weight

For the machine weight please refer to the transportation plan or type plate.

#### Transport instructions

---

**DANGER****Danger to life due to hanging loads.**

In the event of improper fastening or damage to the hoisting gear, personnel can be trapped by falling loads and seriously injured or killed.

Do not stand under or in front of moving loads!

Use prescribed and suitable lifting gear and fastening tackle.

If load is not centered on the lifting device, it can fall and therefore lead to the accident and to machine damage

---

**Notice!**

The packed machine should be stored in a room away from rain and with the temperature range -25°C to +55°C.

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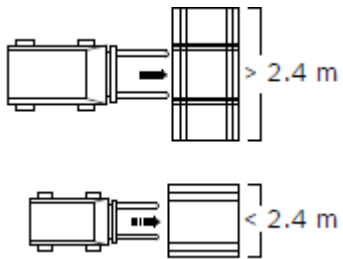
- o Transport the machine in accordance with the transportation plan (if available).
  - o Transport any machines that are delivered with transport supports only by means of these transport supports.
  - o The operator must be entitled to operate the lifting device.
  - o Prior to hoisting the machine all personnel must leave the working area of the hoisting gear.
  - o Cables and chains must not be damaged and must have the corresponding loadbearing capacity.
  - o Cables and chains must not be touching the machine during the hoisting. They may be connected only to the lugs provided for this purpose.
  - o If using transport rollers, set the transport unit down carefully and push it to the place of installation, for example using a forklift truck.
- 

**Notice!**

Insert forks at the lifting mark positions. While maneuvering great care should be taken not to jolt or shock the crate.

---

Transportation by means of a lifting device (e.g. forklift truck)



## Installation

### Preparations

As a rule the machine is installed by Syntegon service technicians in accordance with the general arrangement drawing.

Take notice of the safety instructions in the Chapter 2: Basic safety information, and the locally valid safety regulations!

The place of installation should be vibration-free and draft-free and must have a sufficient loadbearing capacity.

### Installation procedures

Install machine and connect relative units.

Primary wiring and connection. (See unit 6, Wiring and Reassembling.)

Test run and acceptance test.

### Transportation

When transporting the main unit, the infeed conveyor and/or control box, it is recommended that a forklift or a lift truck is used.

When the main unit is carried, the other units and the pendant must be removed beforehand.

### Location of the machine

#### Ambient conditions of the machine (including electrical equipment)

The machine is constructed in accordance with the European standard EN 60204 and is usable in the following ambient conditions:

- At a room temperature of between 15 and 30 °C
- At a relative air humidity of 40 % to 60%
- At an altitude of up to 1000 m (3300 ft) above sea level
- No vibration
- No corrosive gases
- Level surface

The **AIM5021 / 742223(D962)** should have a separate power source isolated from potential noise from other equipment connected to the same line.

The **AIM5021 / 742223(D962)** should not be installed near to any source emitting large amounts of noise.



#### Notice!

Machine is designed to be installed and used in a pharmaceutical production/packaging area.

---

**CAUTION****Follow operating company rules!**

Users have to always follow rules of operating company regarding:

- o Proper clothing (wearing hair net, etc.)
- o Use of protective accessories (safety glasses, safety shoes etc.)

**Notice!**

Location of machine placement should follow national/international rules with the respect to:

- o Distance of the machine to the wall
- o Escape corridors / Emergency corridors
- o Accessibility of Emergency/Safety devices

**Space requirements**

Mechanical and electrical maintenance is inevitable for the **AIM5021 / 742223(D962)** and should be considered when designing the area where the **AIM5021 / 742223(D962)** will be installed. In particular, space should be allocated to facilitate electrical maintenance behind the doors under the infeed conveyor.

**Foundation requirements**

The **AIM5021 / 742223(D962)** is a precision machine and therefore should not be installed on a weak floor or near sources of vibration. As a minimum guideline, the floor where the **AIM5021 / 742223(D962)** is mounted should be able to withstand at least 5,000N/m<sup>2</sup> of force.

**Light interference**

Lighting conditions are critical to the performance of the **AIM5021 / 742223(D962)**. Any direct or indirect sunlight can affect the optical devices and should be shielded as thoroughly as possible.

## Connection

---

**Notice!**

As a rule the machine is installed by employees of Syntegon Technology K.K. in accordance with the project plan.

- In any case the safety instructions in Chapter 2 and the locally valid safety regulations have to be heeded.
  - Prior to connection clean the entire machine (see Chapter 8).
  - Avoid complete degreasing. If necessary, all bright and moving machinery parts must be oiled lightly with FDA approved lubricant for the production area.
  - For additional information, refer to Chapter 8.
- 

### Information for electrical connection

Check that the available main voltage complies with the voltage shown on the type plate and in provided wiring diagram (in separated folder).

Check the direction of rotation (check that the direction of rotation corresponds with the arrow direction) or check the rotary field (using a rotary field measuring instrument).

### Quality of the operating and auxiliary materials

The required operating media and auxiliary materials (greases, oils, cleaning agents) are defined in the maintenance plan (Chapter 8: Maintenance-) and on the machine data sheet (current, air, water).

The grades and qualities defined in these have to be complied with.

The quality of the compressed air supplied must comply with ISO 8 573-1 Point 6.3 Class 1 in terms of the total content.

---

**Notice!**

The user is responsible for non-contamination of the product, preventing damages to pneumatic parts, and not causing fire.

---



## Dismantling, storage and waste disposal

### Dismantling

**DANGER****Danger to life due to electric current and other forms of energy.**

- o Serious personal injury or death due to electrical shock.
- o Before dismantling, disconnect the machine from all external energy supplies.
- o Prior to dismantling depressurize any pressurized devices.
- o Suitably pack any fragile components and drain off any liquids.

The machine must be dismantled only by trained and authorized skilled personnel.

- o Prior to dismantling, remove any residual oils and other water jeopardizing substances.
- o Dismantle the machine with suitable tools.

### Storage

In order to maintain the operability of the machine even over a long period of non-usage, the following points must be considered:

- o The storage room must be kept dry and clean.
- o Room temperature: +5 °C to +35 °C (41 °F to 60 °F).
- o Relative air humidity: 30 % to 70 %.
- o Place the machine on a level floor to prevent distortion.
- o Secure the machine against tipping and against being unintentionally set in motion.
- o Clean the machine and provide any bright metal parts with a film of acid-free oil as protection against corrosion.
- o Cover the machine completely so that no dirt or dust can penetrate.

### Waste disposal

- o Disassemble any dismantled assemblies into their individual parts.
- o Dispose of the components in an environmentally friendly and professional way, complying with all statutory and works regulations.

## Elimination of electrostatic charging

### Electrostatic charging as a cause of malfunctions

Many packaging materials are electrical non-conductors or isolators and have a tendency to cause electrostatic charging.

The following in particular are affected:

- o Bordering caps
- o Plastic closures
- o Plastic films
- o Dry paper
- o Laminates of these materials,
- o For example, including materials with conductive
- o Metal foils

Under unfavorable processing conditions, the charging can severely disturb the packaging process.

### Elimination of electrostatic charging

#### Discharge of the charge by grounding

Fundamentally, for each packaging machine on which packaging materials with good electrical insulation properties are processed, provision should be made for sufficient grounding of the machinery parts that come into contact with the packaging material.

However, as a rule this procedure is not sufficient as the only measure. Even conductive aids that trail on the packaging material web provide only conditional success.

#### Discharge of the charge via air that has been rendered conductive

Most effective and also most frequently used is discharge of the electrical charge via air that has been rendered conductive in the vicinity of the charged point.

#### Air humidification systems

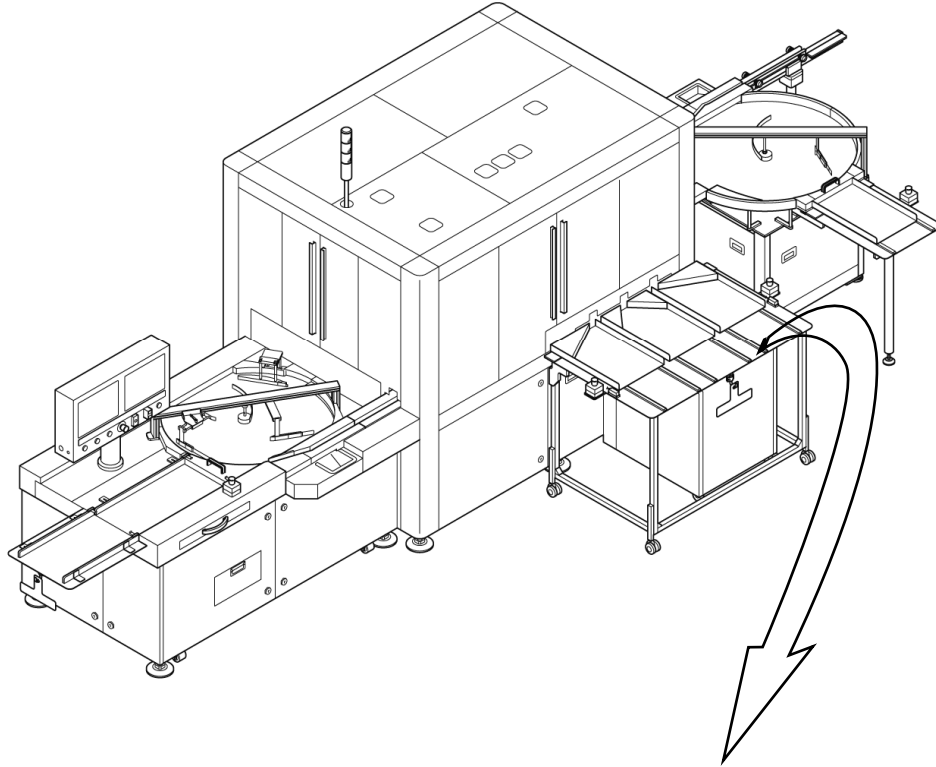
The effect increases with increasing air humidity, charging being prevented extensively at a relative humidity of over 65 %. The discharge of static electricity takes place by way of a very thin film of moisture on all surfaces.

Normal air humidifiers or air conditioners are used for the air humidification. In general the packaging room must be uniformly humidified. The discharge effect is good. Humid air (over 65 % relative humidity) can have a damaging effect on machinery parts that are susceptible to rust; it can also unfavorably influence the running properties of the packaging materials (roll tendency, friction and so on) and the product properties (caking of pulverized, hygroscopic products).

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## Designation plate and machine weight



# SYNTEGON

Syntegon Technology K.K.  
1464-4, Tsukinowa, Namegawa-machi,  
Hiki-gun, Saitama, 355-0813 Japan

Made in Japan

MACHINE TYPE	Automatic Inspection Machine
MACHINE MODEL	AIM5021
SERIAL-NO.	742223(D962)
MANUF. YEAR	September, 2020
MASS APPROX	4,600Kg
COMPRESSED AIR	0.5MPa or Greater Approx. 600NL/min
SUPPLY VOLTAGE	3phase, 480VAC, 7.5kVA, 60Hz
FULL LOAD	9A
AMP RATING OF LARGEST LOAD	6.6A
SHORT CIRCUIT INTERRUPTING RATING	30kA
SHORT CIRCUIT CURRENT RATING	5kA
ELECTRICAL DRAWINGS	8114465390
LAYOUT NO.	8100742223
CUSTOMER	Gilead Sciences, Inc.

## Permissible sizes and modes of operation

---

**DANGER****Danger due to improper use of machine!**

Physical injury and machinery damage in the event of non-permitted operation of the machine.

- o Operate the machine only in an explosion protected environment.
  - o The processing of explosive substances, packaging and media is not permitted.
- 

The machine is constructed, tested and supplied in accordance with the agreements set out in the contract and the sample materials listed below.

### Modes of operation

The machine is designed for inspection of:

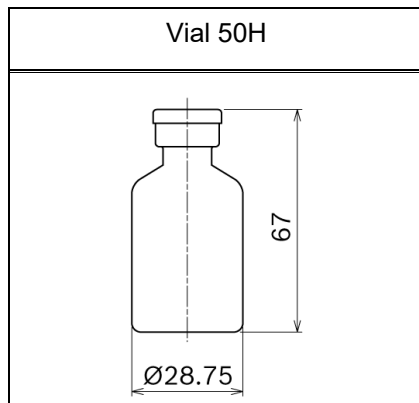
- o Vials

The **742223(D962)** has been designed to inspect for foreign particles, fill level as well as cosmetic defects of vials.

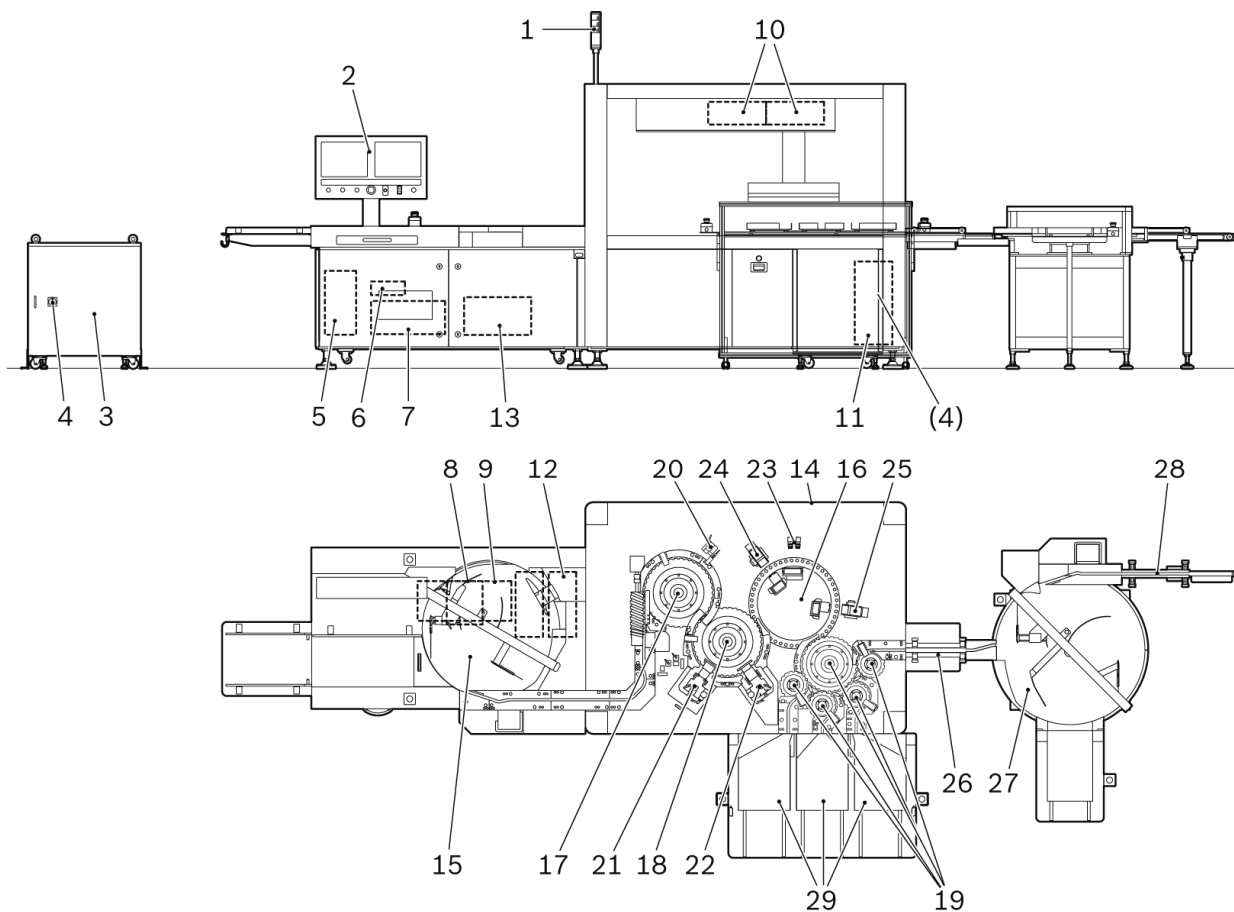
**Containers:**

→ Refer to the figures the next page

Item No.	Container	Body Diameter	Total Height	Machine Capacity
1	Vial 20ml	Ø 28.75	67	266 Vials /minute (16,000 Vials/hr.)



## Functional description of machine



Item No.	Assembly	Function
1	Signal tower	Shows the current operation status of the machine by color indicator lights.
2	Operation panel	An HMI box to operate the machine.
3	Transformer box	A power converter (= transformer) that transfers electrical energy from one circuit to another through inductively-coupled conductors.
4	Transformer Main switch	Switch of the main power line to the machine.
(4)	Main switch	Main switch of the machine.
5	UPS	Uninterrupted power supply that continuously supply the power to the machine.
6	Main-PC	Main computer on the machine that stores machine parameters and vision recipes.
7	Printer	A device that is connected to the Main-PC which allows a user to print out the information on paper.

Item No.	Assembly	Function
8	Hub	A device that allows multiple connected computers and control units to communicate.
9	KVM switch	A device that allows an operator to control multiple computers from one keyboard, monitor, and mouse. By pressing the Display button on the operation panel, screens on the vision display can be selected.
10	EPI-PC	Computers that process the particulate inspection data taken by the SD particle inspection system.
11	Air regulator	A device that regulates the compressed air in the machine.
12	Vision-PC	Computers that process the cosmetic/particulate inspection data taken by CCD cameras.
13	Noise cut transformer box	A device that eliminate electrical noise.
14	Handwheel	A device that moves the machine slowly by hand.
15	Turntable [1]	Vials are accumulated on the turntable.
16	Rotary table [a]	A particle inspection table that has the SD particle inspection system (SD1 Particle #1 and SD2 Particle #2.), and the C1 Heavy Particle inspection stations.
17	Starwheel [A0]	A component that transfers vials from Infeed conveyor to Starwheel [A].
18	Starwheel [A]	A component that transfers vials from Starwheel [A0] to Rotary Table [a].
19	Sorting starwheels [C], [D], [E], [F], [G]	Components that sort out inspected vials to accept and reject/eject routes.
20	C01 Cap Top	Inspects the cap top area.
21	C02 Crimp/Neck	Inspects the crimp and neck area.
22	C03 Cap Side	Inspects the cap side area.
23	C1 Heavy Particle (S)/(L)	Inspects the bottom area. Camera unit have to be replaced to suit vial size.
24	SD particle 1	1 <sup>st</sup> SD inspection station on the machine. It inspects particles in the liquid portion.
25	SD particle 2	2 <sup>nd</sup> SD inspection station on the machine. It inspects particles in the liquid portion as a mean of "double check."
26	Conveyor [3] (Accept discharge conveyor)	A component that transfers vials to accept rotary table.
27	Turntable [3] (Accept turntable)	An area to which good vials are discharged.
28	Conveyor [4] (Linking conveyor)	A component that transfers vials to downstream machine.
29	Eject tray station	An area to which rejected/ejected vials are discharged.



## General description

All measurement values are given in SI units or are derived from them.

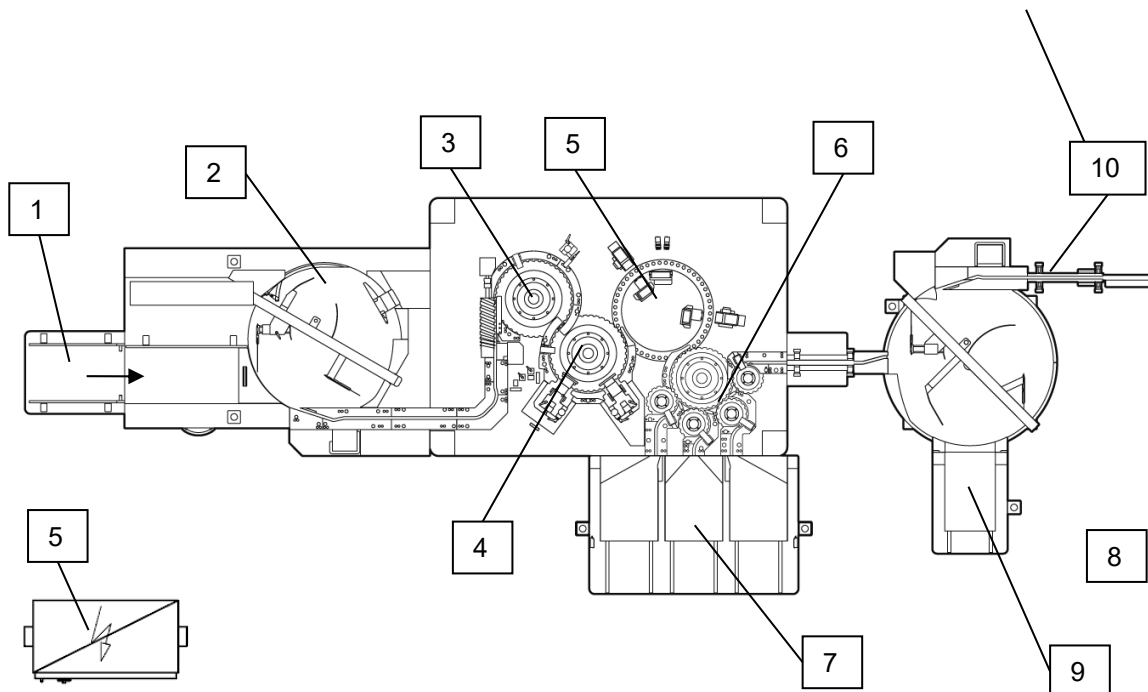
Tolerance (= deviation) means the difference between the actual or real value and the measured and/or displayed value. The tolerance calculated in the functional specification is the maximum possible tolerance of a measuring system at the final value of the measuring range.

## System Description

### Equipment

The **742223(D962)** has been designed to inspect the foreign particles as well as cosmetic defects of vials filled with solution products.

The numbers on the below layout drawing correspond to the diversions of the machine as listed below:



Step	Component	Processing Step
1.	Infeed tray	Container infeed accumulation tray
2.	Infeed turntable	Container accumulation and transport
3.	Starwheel	Container transport Container inspection for various defects
4.	Starwheel	Container transport Container inspection for various defects
5.	Rotary table	Container transport Container inspection for various defects
6.	Starwheels	Container transport and sorting according to inspection results

Step	Component	Processing Step
7.	Reject tray unit	Collection of rejected containers in the reject tray
8.	Accept turntable	Container accumulation and transport
9.	Accept tray unit	Collection of accepted containers in the accept tray
10.	Linking conveyer	Container transport

The work area on the main inspection unit is surrounded by acrylic safety covers. All covers can be opened manually. Mechanical switch is used for safety cover alarm and magnets are used for securing doors.

When different vials are to be handled and inspected, several components must be exchanged. The size-related components are marked with the vial size indications.

## Electrical Equipment

Several electric control compartment boxes are located within the infeed unit, and the main inspection unit. The Main-PC, Vision-PC(s), UPS and a printer are stored in the infeed unit.

The EPI-PCs, particulate detection processors, are stored in the compartment under the ceiling of the main inspection unit.

The wires, cables, and pneumatic tubes of the machines are tagged and corresponds to the wiring and/or pneumatic diagrams. Equipment tags in the electric control compartments and in the machines are alphanumeric.

## Intended Use

A fully-automated inspection machine **742223(D962)** is installed in a pharmaceutical production/inspection line in a pharmaceutical plant to inspect pharmaceutical products.

The machine is designed and built to inspect the 50H vial filled with liquid.

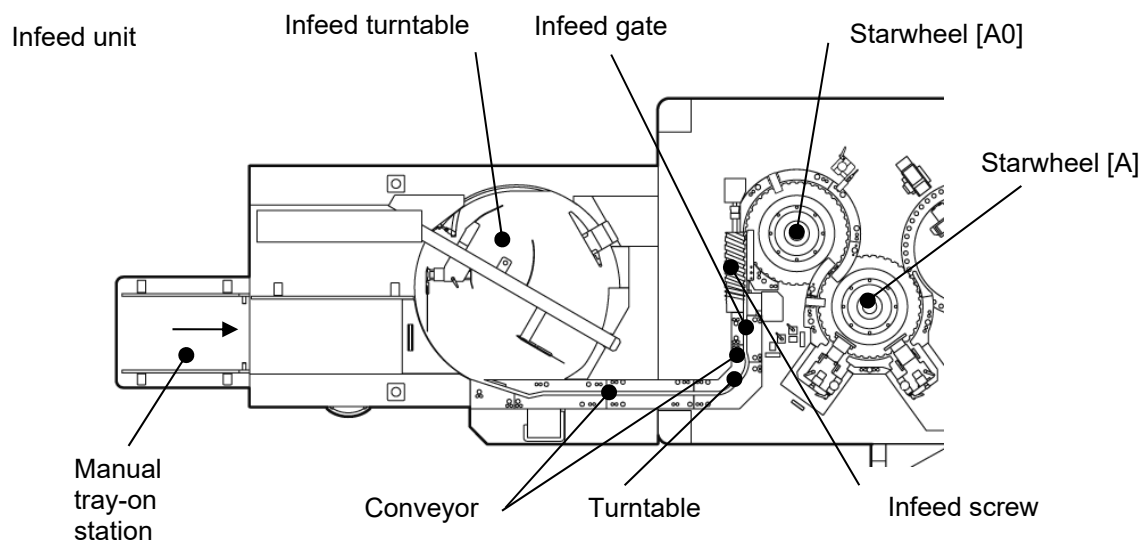
## Description of operation

### Vial transporting: Infeed

The vial tray is manually placed onto the tray-on station on the infeed unit, and then the vials are manually fed to the infeed turntable.

The infeed turntable can be used as a buffer zone for accumulation of the vials.

The vials are directly transported to the starwheel [A] on the main inspection unit via a conveyor, turntable, infeed screw and starwheel [A0].



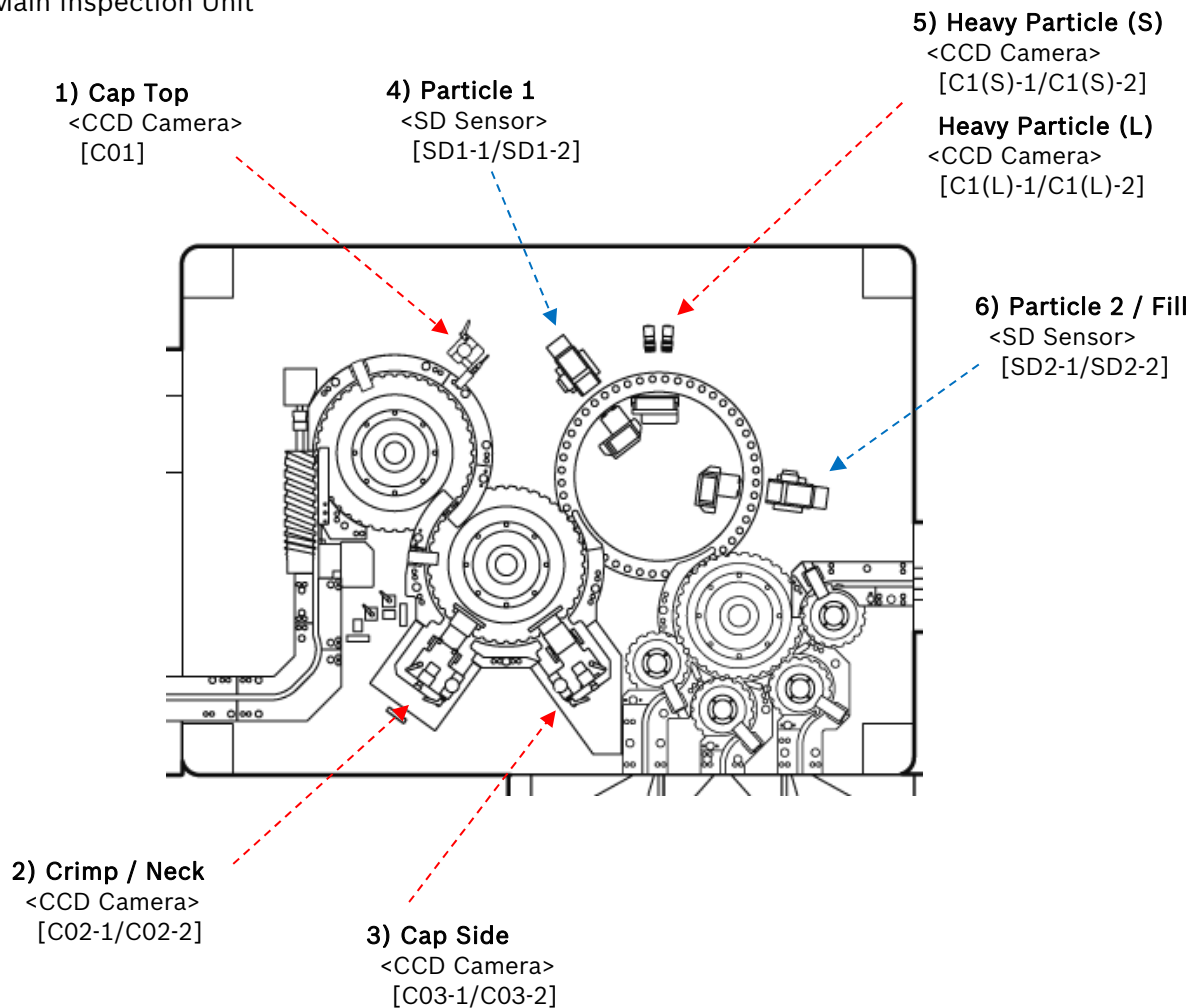
### Infeed, vial supply stopping

Infeed gate is arranged at the entrance of infeed screw. It start and stop feeding vials into the machine by infeed accumulation control or manual operation.

## Inspection

The **742223(D962)** main inspection unit is equipped with the following inspection stations which are designed to detect certain defects, and proposed locations of those stations are shown below:

### Main Inspection Unit



The **742223(D962)** main inspection unit consists of two (2) inspection starwheels (SW[A0] and SW[A]) and one (1) rotary table (RT[a]). Starwheels are arranged before and after the rotary table. The vials are continuously transported and inspected. On the Rotary Table [a], the vials are firmly held by the free-rotating base attachments and spin caps.

Two (2) spin stations (for Crimp / Neck and Cap Side inspection) are arranged on the SW[A].

Belt spin units (for Particle 1, Heavy Particle and Particle 2 inspection) are arranged on the RT[a].

Inspections are based on a combination of technologies that include CCD cameras, stable light sources, image processor modules, a specially developed image processing software program, and SD sensors.

Camera inspection utilizes black/white and color cameras with COGNEX image processor modules running image processing software optimized to match user requirement specifications.

Particulate inspection features Syntegon Technology's patented Static Division (SD) technology based on photo diode arrays used as light sensors.

Particle inspection takes place at the RT[a]. As vials rotate around the RT[a], they are spun, braked and inspected for particles twice, once at each SD inspection head.

Syntegon Technology's SD technology functions on the basis of making particulate matter move within solution which is then examined for moving objects. To do this, the vial is spun and then abruptly stopped leaving the solution swirling due to momentum. Light projected through the vial is received by an array of photo sensitive diodes that convert the amount of light to a voltage level. Any particulate matter in the solution will cast a shadow as it moves across the face of the diode thereby causing the voltage at that diode to fluctuate. This fluctuation makes the distinction between moving particulate matter within the solution and static images such as printing on the vial.

While Camera Cosmetic/Particle inspection C02 Crimp / Neck, C03 Cap Side and C1 Heavy Particle, the vial is rotated 360 degrees, different camera stations take multiple images from different angles to guarantee a complete inspection of the vial with minimizing uninspected areas.

Color sensor is used to inspect C01 Cap Top on the SW[A0].

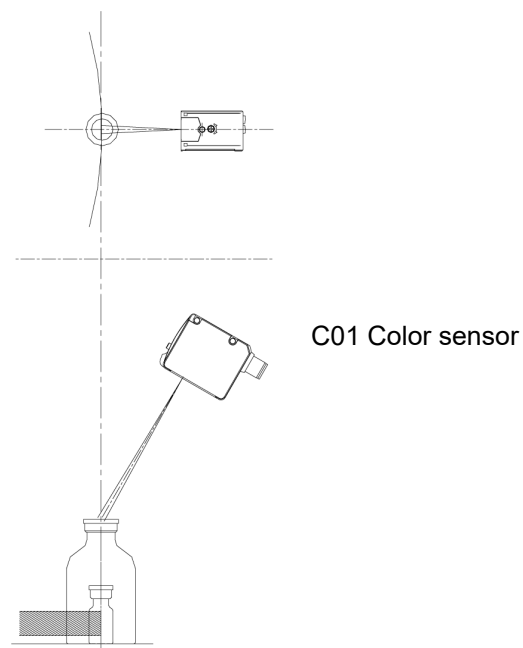
## Inspection, Cap Top

Cap Top Inspection Station with Color sensor (C01)

Tag No.	Hardware	Hardware description
E79-A001	Multi sensor controller	Controller for color sensor
E79-B001	Color sensor	C01, Color sensor

Container rotation: not rotating during inspection

Capturing: one time within an inspection gate, One sensor inspects one container in one cycle.



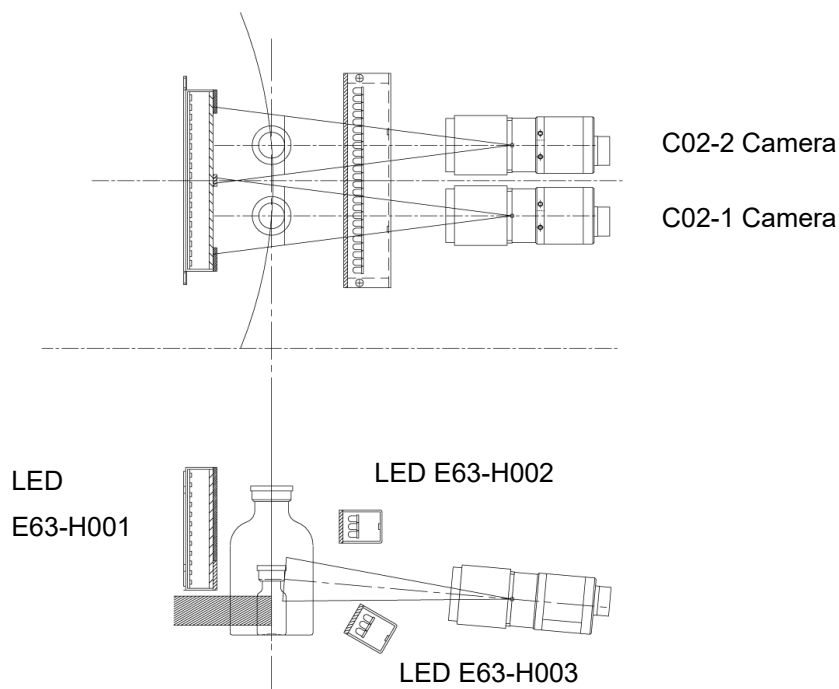
## Inspection, Crimp / Neck

Crimp / Neck Inspection Station with CCD Camera (C02-1/C02-2)

Tag No.	Hardware	Hardware description
E63-A001	Vision processing unit	Vision-PC
E63-B001	Camera	C02-1, CCD monochrome camera
E63-B002	Camera	C02-2, CCD monochrome camera
E63-H001	LED lamp	White, Strobe light
E63-H002	LED lamp	White, Strobe light
E63-H003	LED lamp	White, Strobe light

Container rotation: rotating during inspection

Capturing: multiple, One camera captures one container in one cycle.



Vision tools will be described in the appendix of this chapter.

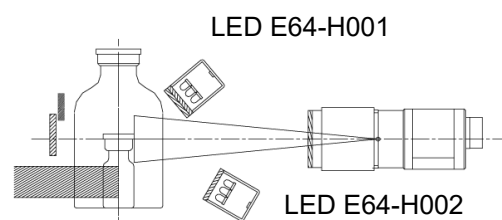
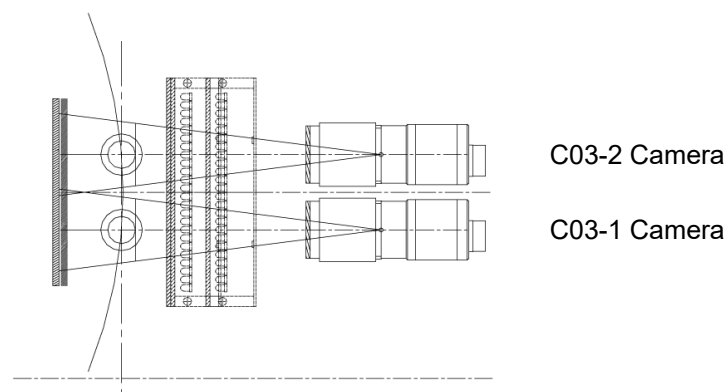
## Inspection, Cap Side

Cap Side Inspection Station with CCD Cameras (C03-1/C03-2)

Tag No.	Hardware	Hardware description
E64-A001	Vision processing unit	Vision-PC
E64-B001	Camera	C03-1, CCD monochrome camera
E64-B002	Camera	C03-2, CCD monochrome camera
E64-H001	LED lamp	White, Strobe light
E64-H002	LED lamp	White, Strobe light

Container rotation: rotating during inspection

Capturing: multiple, One camera captures one container in one cycle.



Vision tools will be described in the appendix of this chapter.



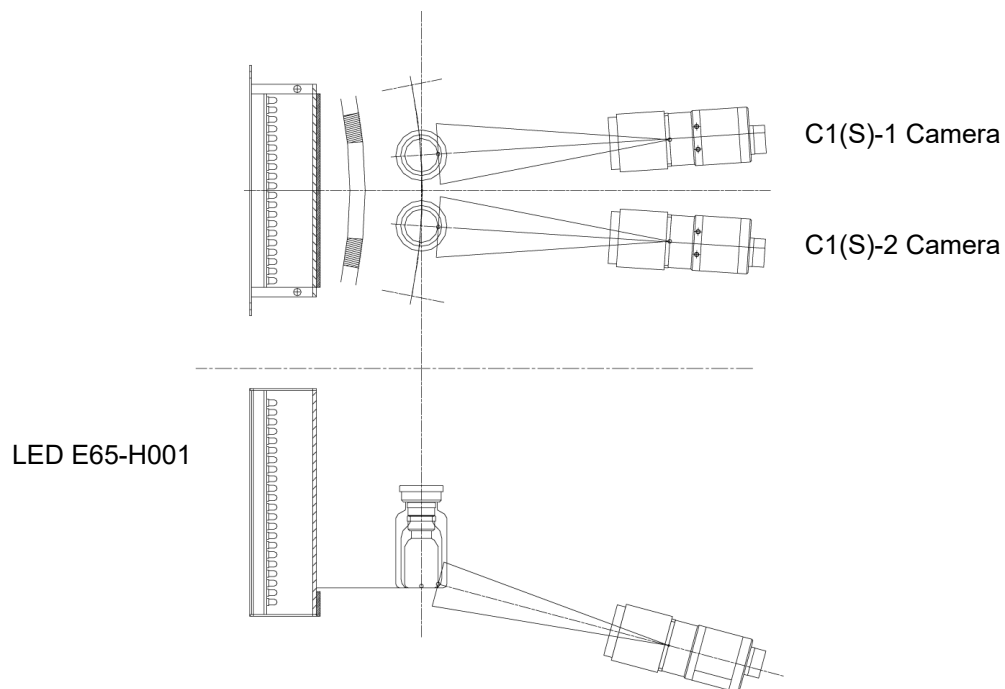
## Inspection, Heavy Particle (S)

Heavy Particle Inspection Station with CCD Camera (C1(S)-1/C1(S)-2) used for small vials.

Tag No.	Hardware	Hardware description
E65-A001	Vision processing unit	Vision-PC
E65-B001	Camera	C1(S)-1, CCD monochrome camera
E65-B002	Camera	C1(S)-2, CCD monochrome camera
E65-H001	LED lamp	White, Strobe light

Container rotation: rotating during inspection

Capturing: multiple, One camera captures one container in one cycle.



Vision tools will be described in the appendix of this chapter.

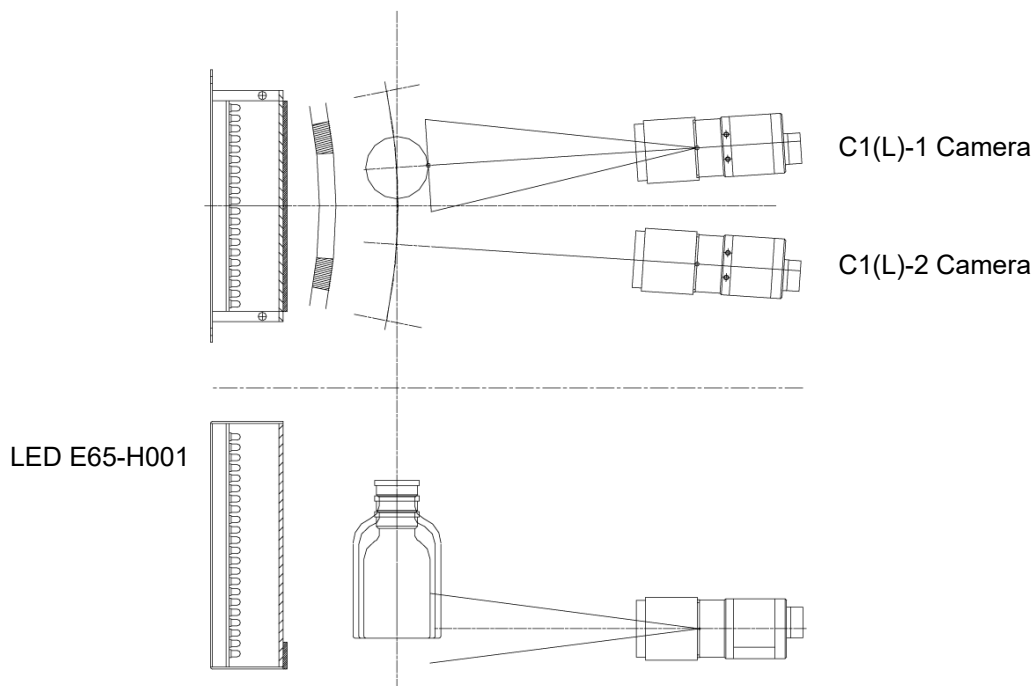
## Inspection, Heavy Particle (L)

Heavy Particle Inspection Station with CCD Camera (C1(L)-1/C1(L)-2) used for small vials.

Tag No.	Hardware	Hardware description
E65-A001	Vision processing unit	Vision-PC
E65-B003	Camera	C1(L)-1, CCD monochrome camera
E65-B004	Camera	C1(L)-2, CCD monochrome camera
E65-H001	LED lamp	White, Strobe light

Container rotation: rotating during inspection

Capturing: multiple, One camera captures one container in one cycle.



Vision tools will be described in the appendix of this chapter.

## Particle#1/ Particle#2

Moving particle Inspection Station with Static Division (SD) technology (SD1-1/SD1-2, SD2-1/SD2-2)

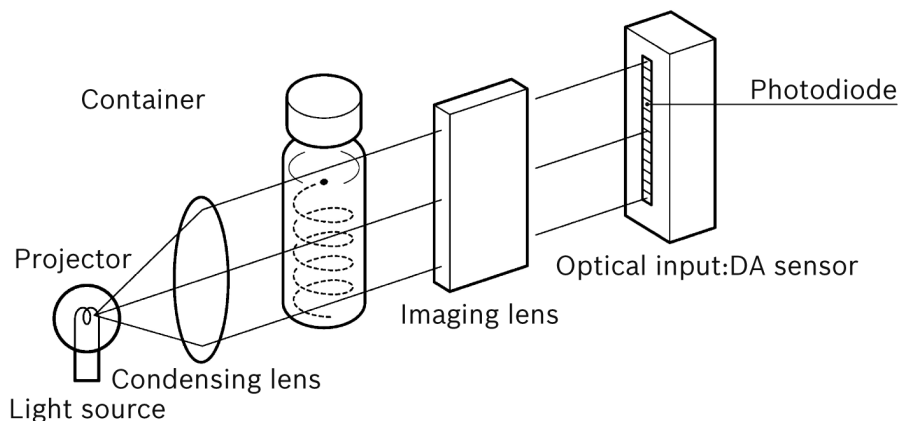
SD system inspects clear solution products.

Light source, target container, detector (DA sensor) are to be arranged in single line and DA sensor detects the shadow created by the foreign particles.

The halogen lamp is used as light source. The halogen lamp intensity is automatically adjusted by a feedback control system.

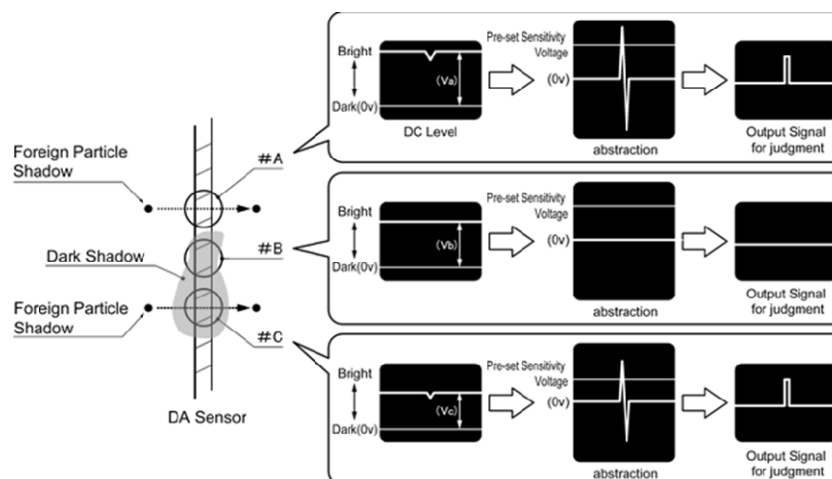
The light beam of the halogen lamp is guided to the inspection section through an optical fiber (light guide).

The DA sensor is an array of photo diodes piled in the vertical direction. Each individual photo diode has its own processing circuit. Thus, particle inspection view is programmed by the number of photo diodes adjusted to each product.



Prior to the inspection, high-speed spin rotation and proper timing of spin brake are applied to the container, so that contaminated particles move in the solution during inspection gate time.

Within the inspection gate time, only the solution in the container continues rotating by inertia and if foreign particles exist, the shadow is projected on DA sensor. When the shadow of the foreign particle goes across the DA sensor, the output signal from DA sensor changes. This change in output voltage from DA sensor is compared with sensitivity voltage. When the signal level exceeds the sensitivity, the corresponding container is judged as rejected. Based on this principle, the air bubbles, if they exist within the solution, cause the false rejection. So containers need to be provided to this machine without bubbles.



For example, the output signal from Bit #A creates  $V_a$  voltage, also Bit #B and Bit #C creates  $V_b$  and  $V_c$ . If dirt/scratch is on the container, it becomes cause of shadow on the Bit, so DC level of  $V_b$  and  $V_c$  are lower than  $V_a$ .

When the shadow of the foreign particle goes across the DA sensor, the output signal from DA sensor changes like  $V_a$  and  $V_c$ . SD system abstract this change and amplify the signal, then signal is compared with sensitivity voltage. When the signal level exceeds the sensitivity, the corresponding container is judged as rejected.

On the other hand,  $V_b$  is lower than  $V_a$  but not changed. In this case, SD system judged the container don't include particles.

A correct detection of the particles is not possible when:

- o The particles are not moving (e.g. sticking to the glass).
- o During the entire measurement period the particles are remaining at the top of the liquid (the top of the liquid is excluded from inspection, since it projects its own shadow onto the photodiodes).
- o The viscosity of the solutions is too high, so that the particles come to rest immediately after the vials are stopped.
- o Air bubbles in the solutions cause - just as the particles - different amounts of light to enter the photodiodes. These changes trigger fault signals during the measurement period, too. The vial is recognized as faulty. Therefore the vials should only be fed into the machine when their contents are free from air bubbles.
- o The transparency of vials and solutions affects the probability of detection. It may have to be compensated by changing the sensitivity to be set.
- o The detection probability is affected by the viscosity of the solutions as well as by the transparency of solutions and/or vials. The correct set values for speed of rotation, time of braking and sensitivity must therefore be set for each product.

## Fill inspection

The meniscus height is used to measure gross fill level variation. The shadow of the meniscus of a properly filled container is expected to fall within certain bits of DA sensor. A lower or over filled container creates the shadow of meniscus in the different bits of the DA sensor from properly filled ones.

Based on this, it is possible to inspect fill height by monitoring the height of the shadow of the meniscus. The containers with shadows of the meniscus located within the preset bits are judged as accepts for Fill Level inspection.

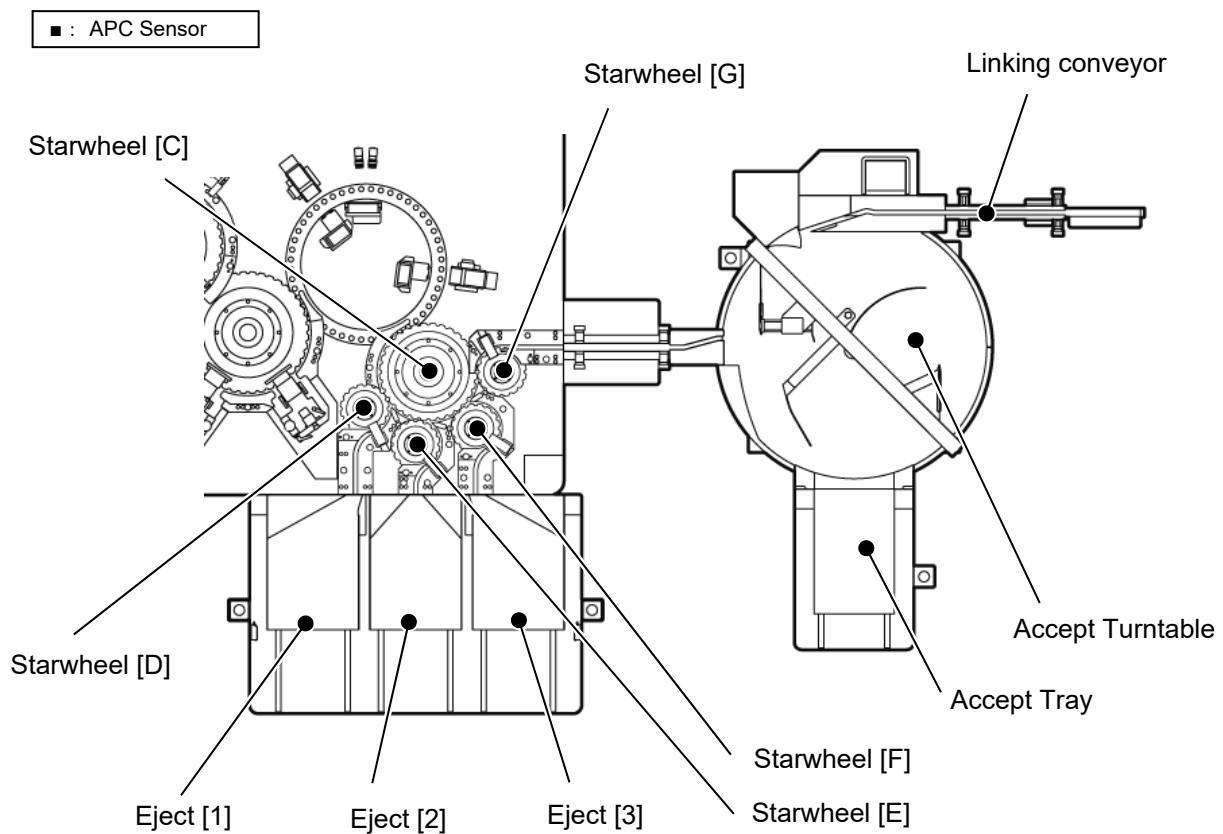
Fill inspection is done only at the second SD inspection station.

## Vial transporting: Discharge

After passing through all inspection stations on the **742223(D962)** main unit, the vials are discharged into either an accept route, which will be transported to and collected by an accept tray or transported to downstream machine, or one of three (3) eject stations.

Starwheels with compressed air system are used to sort the inspected vials into rejected and accepted discharge trays. Discharge sections consist of one (1) Discharge starwheel (Starwheel [C]), four (4) Sorting starwheels (Starwheel [D], Starwheel [E], Starwheel [F] and Starwheel [G]) and associated starwheel R-guides.

Vials are transferred from the Rotary table [a] to the Starwheel [C]. Based on the inspection result and designated eject station for the each inspection category, the vials are sorted to the Starwheel [D], the first sorting starwheel which sorts the container to Eject [1], or to the Starwheel [E] which sorts the container to Eject [2], or to the Starwheel [F] which sorts the container to Eject [3], or carried to the Starwheel [G] which sorts to the Accept tray.



## Handling of inspection results

This section explains how the control system handles the inspection results and the acceptable/defective vial assessment and discharge process.

The vials are tracked in the PLC via positive shift-register logic. Each inspection device has a shift register which contains numerical values "0" or "1". For inspections, a "1" indicates an acceptable vial, while a "0" indicates a defective vial. For presence detection of vials, a "1" indicates the existence of a vial, while a "0" indicates the absence of a vial.

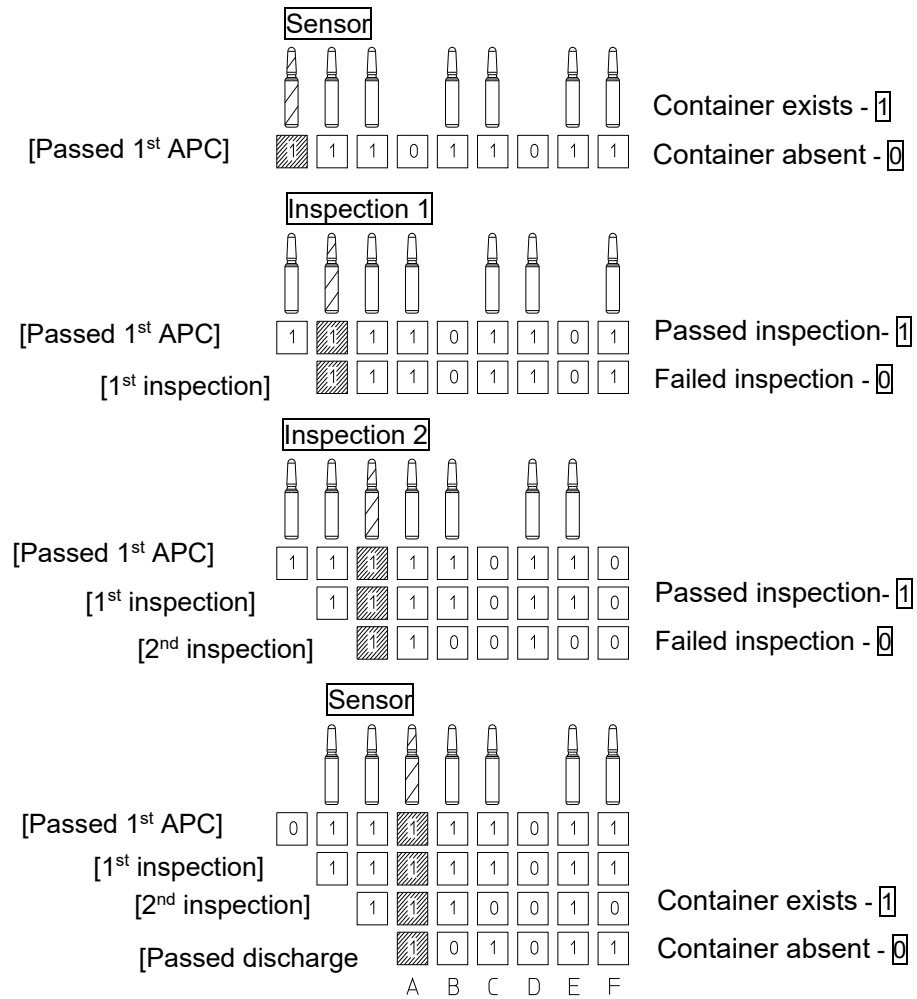
The chart on the following page shows an outline of the shift-register logic.

There is also a shift-register, which is used to track the position of vials, extending from the infeed point through to the discharge point. The vial presence-checking sensor (typically referred to as the "APC" sensor) registers the existence of vials.

Each time an inspection device detects an acceptable vial in front of it, the corresponding shift register is loaded with a "1". If the vial is defective, the shift register retains its default value of "0". These shift registers are designed to shift all the registered values together for each vial before entering the next process, as shown in the chart (when the infeed system delivers the next vial); the inspection results of the vials are transferred along with the flow of the vial. At the discharge point, the set of registered values, expressed as "1" and "0", determines whether the vial is acceptable or defective, and the vial is then discharged to the appropriate tray. If a vial fails a cosmetic inspection, then the shift register will contain a "0" value for that inspection, and the vial will be discharged to the cosmetic inspection rejects tray.

Under this logic system, a vial's shift register that holds only "1" values indicate that the vial is acceptable.

### Shift registers explanation (General)



- A: Acceptable container
- B: Container missing after 2<sup>nd</sup> inspection
- C: 2<sup>nd</sup> inspection reject
- D: No container input
- E: Acceptable container
- F: 2<sup>nd</sup> inspection reject
- 1: checked and accepted
- 0: checked and rejected

## Selective inspection items

Inspection items may be individually turned on or off for a given recipe. These selections may be saved to a recipe file if the user has the proper access clearance.

## Uninspected reject control

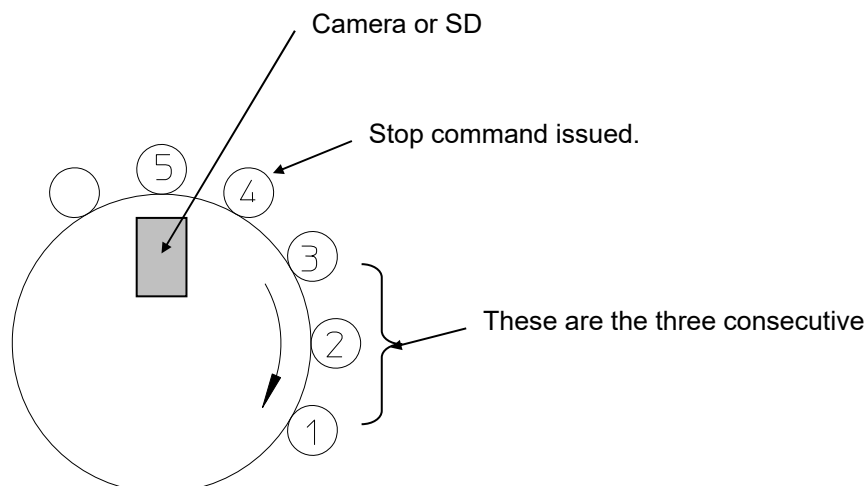
An uninspected product is any product that was inspected under uncertain conditions or not inspected at all. Such products usually occur during machine stops (controlled or unexpected) wherein the product in front of a camera or SD cannot receive the same inspection conditions consistently present during normal operation. To ensure the GMP compliance of this machine, vials in such areas where the inspection integrity is questionable will be delivered to the uninspected tray.

## The Interlock switch

The **742223(D962)** features a special override key switch that allows most of the mechanical features to be tested even if an alarm occurs. This switch is called the **INTERLOCK** switch.

## Consecutive defects

When a recipe parameter setting for consecutive defects is reached, the machine stops. Let us assume the consecutive defect limit is set to 3. As soon as three defective vials pass in front of the camera or the SD, the control system will register this occurrence as a consecutive defect. It is at this moment that the machine will be commanded to stop. Usually, the machine will stop within two (2) vial positions. Hence, the third consecutive defect will be two (2) positions beyond the position of the camera or the SD.



Stop position after 3 consecutive defects



## Ambient conditions

### Machine equipment

The equipment of the machine, structure of the machine and the description of the functions are in compliance with the text of the order confirmation.

### Ambient conditions of the machine

Automatic inspection machine is to be installed under following conditions.

- o Temperature condition: 15-35°C
- o Humidity condition: 20-80% (No condensation)
- o Less than 1,000m above sea level
- o No vibration in the room
- o No excessive dust in the room
- o No corrosive gas
- o There should be no other machines creating electrical interference connected to the same power source as AIM.
- o Floor shall be level.
- o Need enough space for operation and maintenance of the machine.

**Notice!**

Never introduce cold packaging material into the machine.

Before using it on the machine, allow the packaging material to adapt to the temperature of the processing room.

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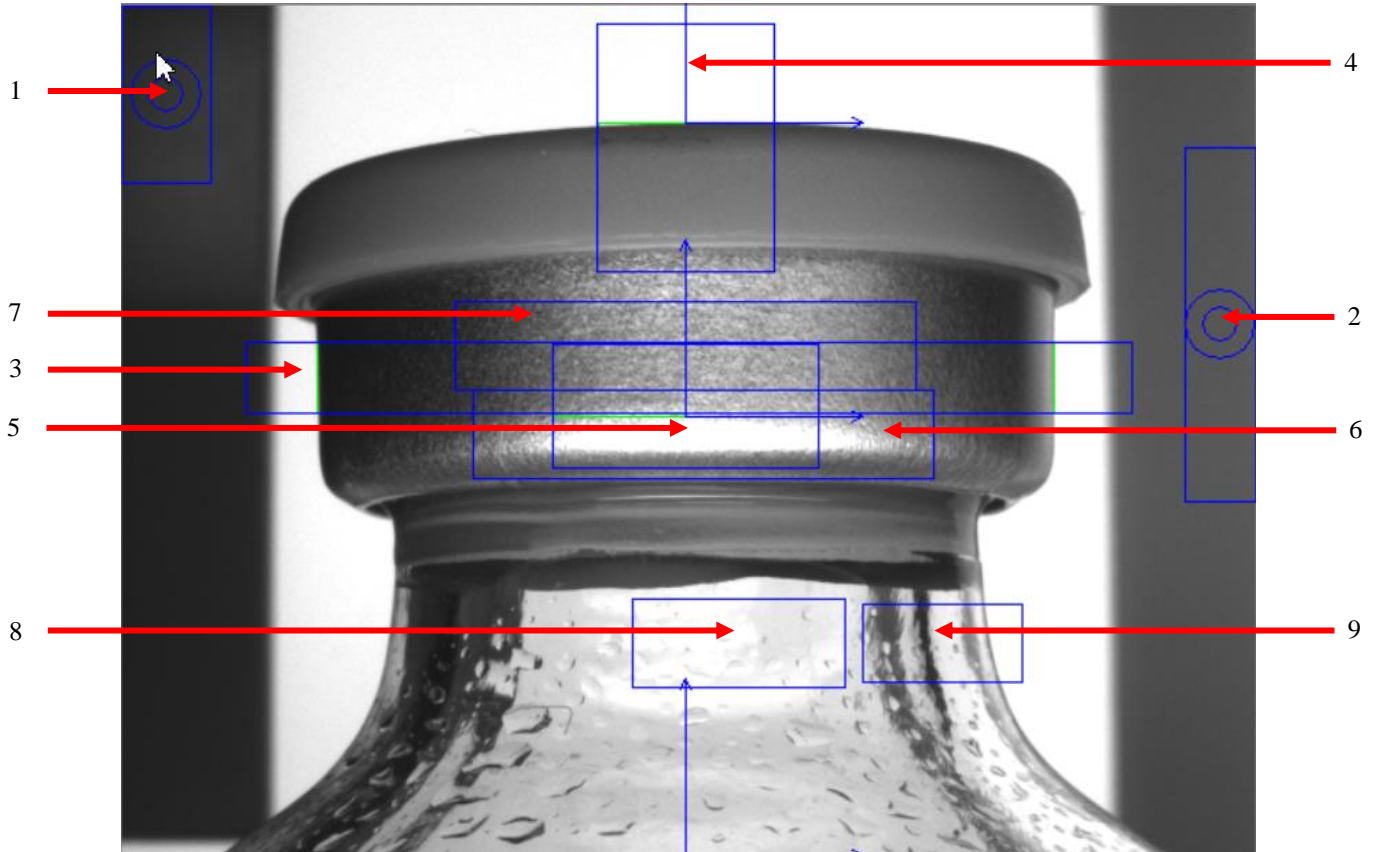
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## Inspection: C02 Crimp / Neck

Vision tool setting of each camera is described below.

- o This picture is 50H. (C02-1)

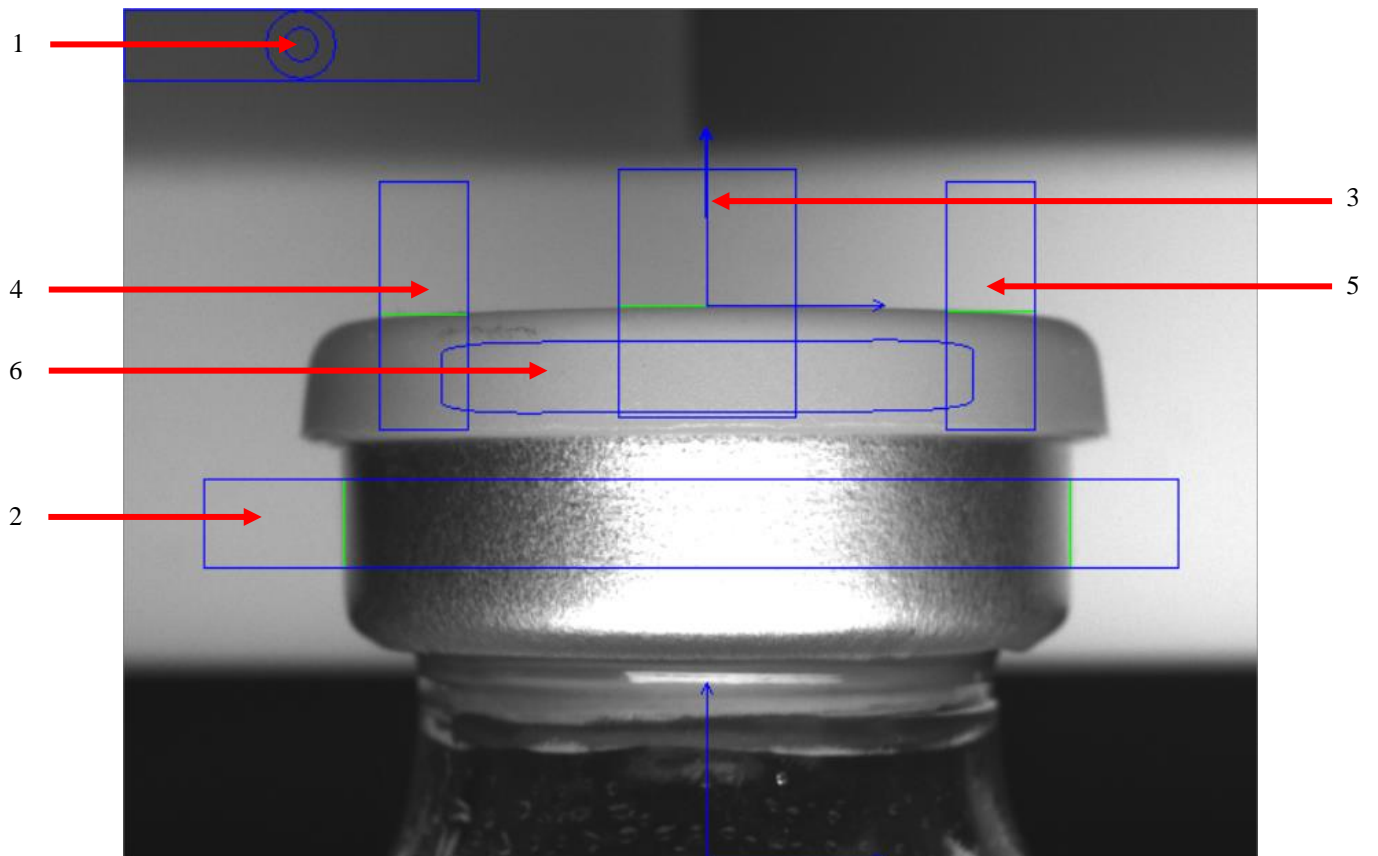


No.	Tool Name	Description	
1	LightMeter_B	Check the luminance of flat light. When luminance is out of preset range, light intensity alarm is activated. (When alarm is on, 'Fail TOL' is shown at Tool State.)	
2	LightMeter_F	Check the luminance of line light. When luminance is out of preset range, light intensity alarm is activated. (When alarm is on, 'Fail TOL' is shown at Tool State.)	
3	Edge_X	Tool for identifying the X-axis position of Inspection window. Inspection window position is fixed based on the edge position that is detected by this tool.	
4	Edge_Y1	Tool for identifying the Y-axis position of Inspection window. Inspection window position is fixed based on the edge position that is detected by this tool. Inspecting of the cap height.	
		Position	X-axis
		Y-axis	Fixed
5	Edge_Y2	Tool for identifying the Y-axis position of Inspection window. Inspection window position is fixed based on the edge position that is detected by this tool.	
		Position	X-axis
		Y-axis	Adjustable (Follows Edge_Y1:Y)
6	Crimp_1	Inspection of the Crimp defect detection.	
		Position	X-axis
		Y-axis	Adjustable (Follows Edge_Y2:Y)
7	Crimp_2	Inspection of the Crimp defect detection.	
		Position	X-axis
		Y-axis	Adjustable (Follows Edge_Y2:Y)
8	Neck_1	Inspection of the Neck defect detection.	
		Position	X-axis
		Y-axis	Fixed
9	Neck_2	Inspection of the Neck defect detection.	
		Position	X-axis
		Y-axis	Fixed

## Inspection: C03 Cap Side

Vision tool setting of each camera is described below.

o This picture is 50H. (C03-1)

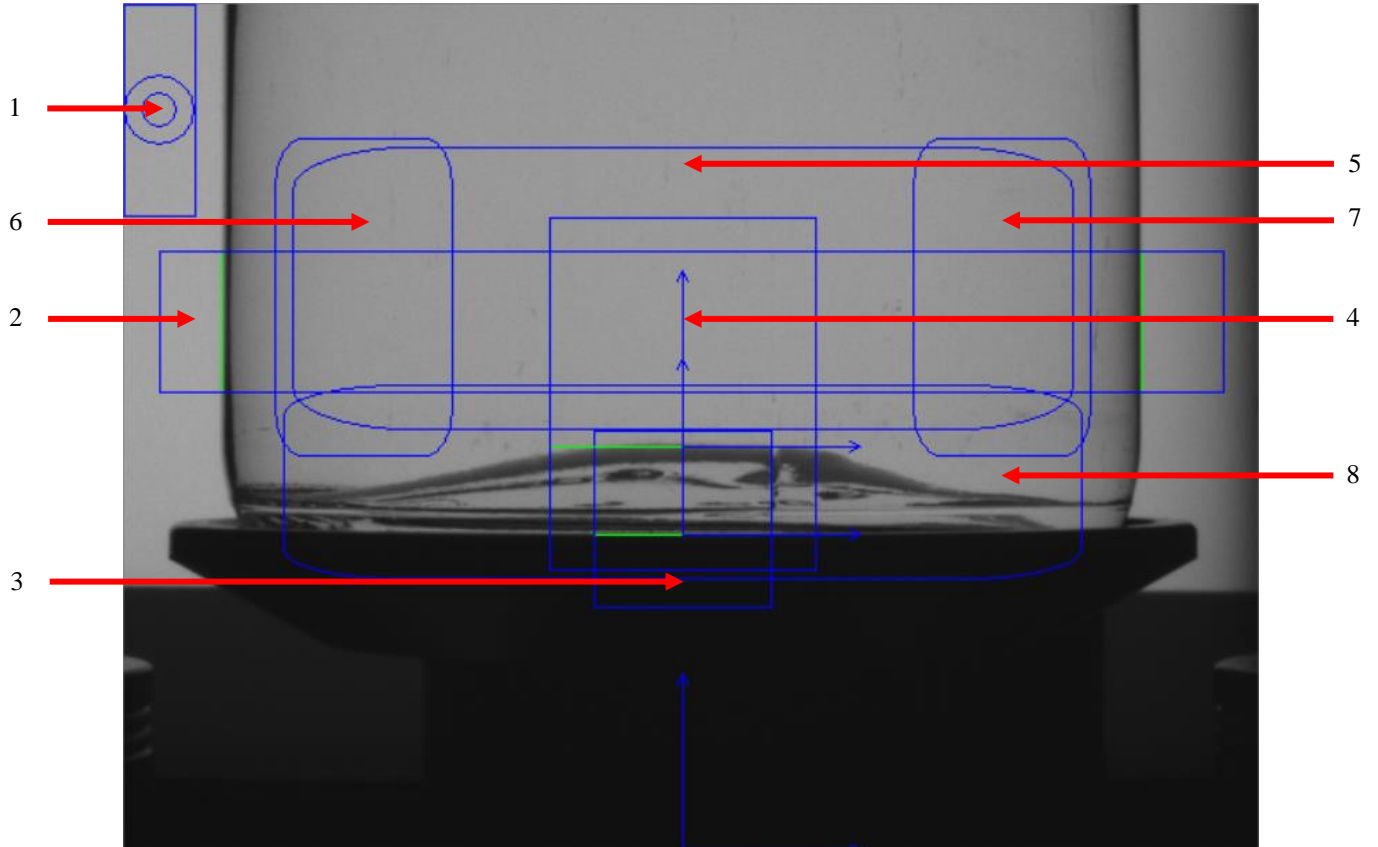


No.	Tool Name	Description		
1	LightMeter	Check the luminance of line light. When luminance is out of preset range, light intensity alarm is activated. (When alarm is on, 'Fail TOL' is shown at Tool State.)		
2	Edge_X	Tool for identifying the X-axis position of Inspection window. Inspection window position is fixed based on the edge position that is detected by this tool.		
3	Edge_YC	Tool for identifying the Y-axis position of Inspection window. Inspection window position is fixed based on the edge position that is detected by this tool. Inspecting of the cap height.		
		Position	X-axis	Adjustable (Follows Edge_X:X)
			Y-axis	Fixed
4	Edge_YL	Tool for identifying the angle of Inspection window. Inspection window position is fixed based on the angle calculated from the detected YL and YR edge positions.		
		Position	X-axis	Adjustable (Follows Edge_X:X)
			Y-axis	Adjustable (Follows Edge_YC:Y)
5	Edge_YR	Tool for identifying the angle of Inspection window. Inspection window position is fixed based on the edge position that is detected by this tool.		
		Position	X-axis	Adjustable (Follows Edge_X:X)
			Y-axis	Adjustable (Follows Edge_YC:Y)
6	CapSide_1	Inspection of the CapSide defect detection.		
		Position	X-axis	Adjustable (Follows Edge_X:X)
			Y-axis	Adjustable (Follows Edge_YC:Y)
			Angle	Adjustable (Follows Edge_Math Angle:Result)

## Inspection: C1 Heavy Particle

Vision tool setting of each camera is described below.

- o This picture is 50H. (C1-1)



No.	Tool Name	Description
1	LightMeter	Check the luminance of flat light. When luminance is out of preset range, light intensity alarm is activated. (When alarm is on, 'Fail TOL' is shown at Tool State.)
2	Edge_X	Tool for identifying the X-axis position of Inspection window. Inspection window position is fixed based on the edge position that is detected by this tool.
3	Edge_Y1	Tool for identifying the Y-axis position of Inspection window. Inspection window position is fixed based on the edge position that is detected by this tool.
		Position
4	Edge_Y2	Tool for identifying the Y-axis position of Inspection window. Inspection window position is fixed based on the edge position that is detected by this tool.
		Position
5	HeavyParticle_1	Inspection of the Particle defect detection.
		Position
6	HeavyParticle_2	Inspection of the Particle defect detection.
		Position
7	HeavyParticle_3	Inspection of the Particle defect detection.
		Position
8	HeavyParticle_4	Inspection of the Particle defect detection.
		Position



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## For your safety

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### Notice!

- You are responsible!
    - Take notice of the general safety information in Chapter 2 (Basic safety information).
- 

## Personal prerequisites

All activities may be performed only by instructed and authorized personnel.

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### DANGER



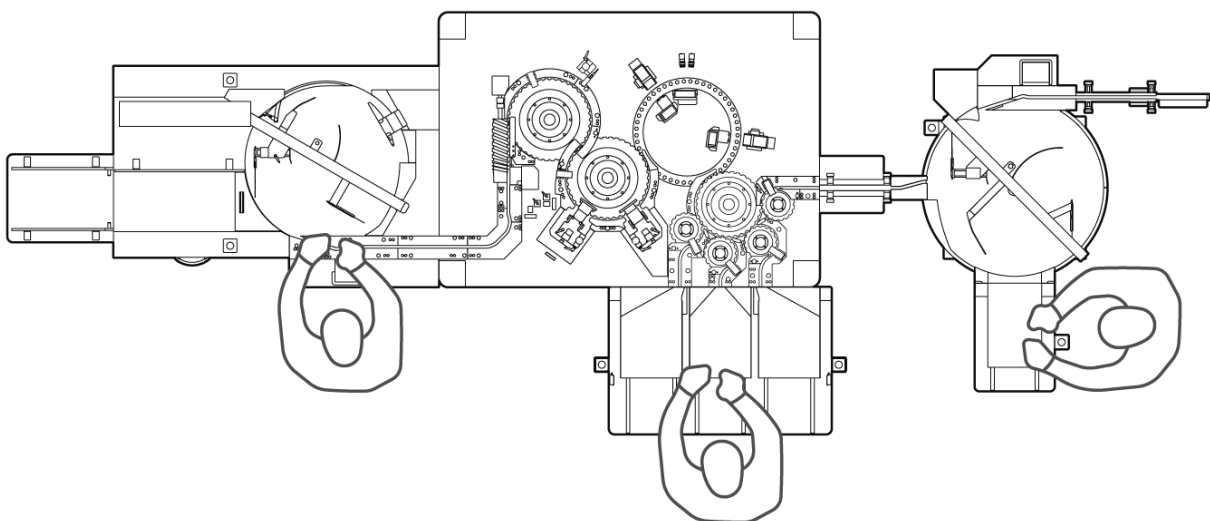
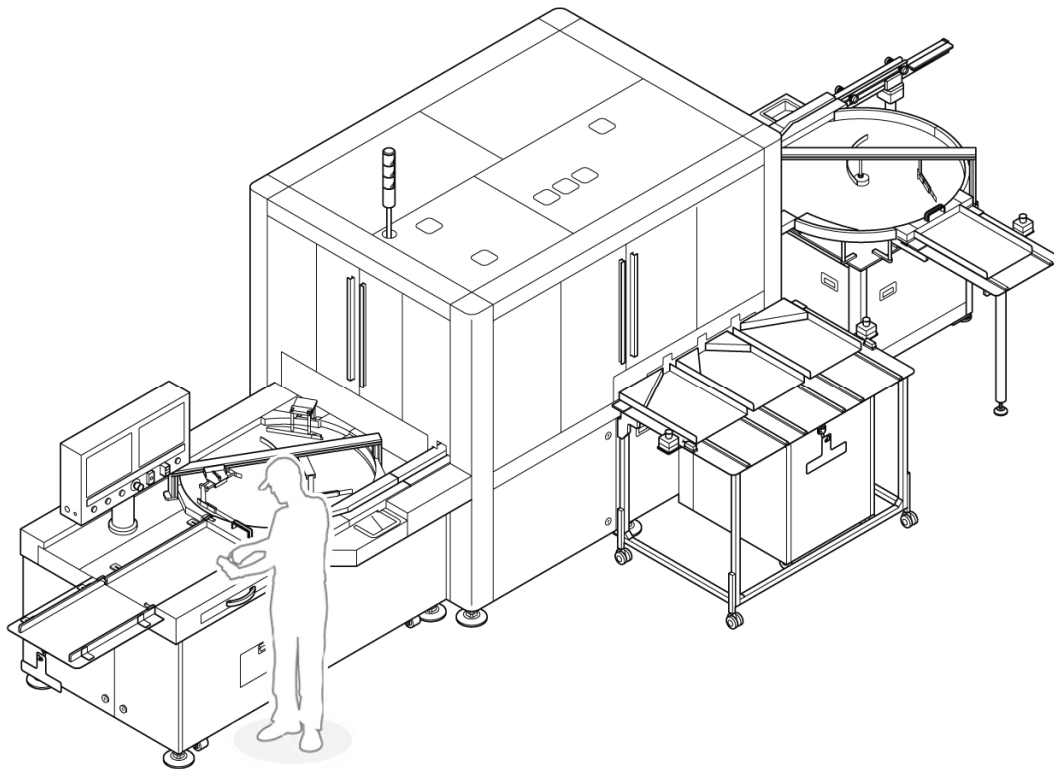
### Risk of injury due to improper operation.

- Personal injury or death due to danger sources.
  - Check the safeguards prior to commissioning.
  - Operate the machine in a proper condition.
  - Before switching on the machine, ensure that nobody can be endangered by the machine starting up.
-

## Operator position

**Notice!**

The actual standing positions of the operators change based on the actual flow of packaging materials in the room, production processes and operation mode of the machine. Only the general positions are identified.



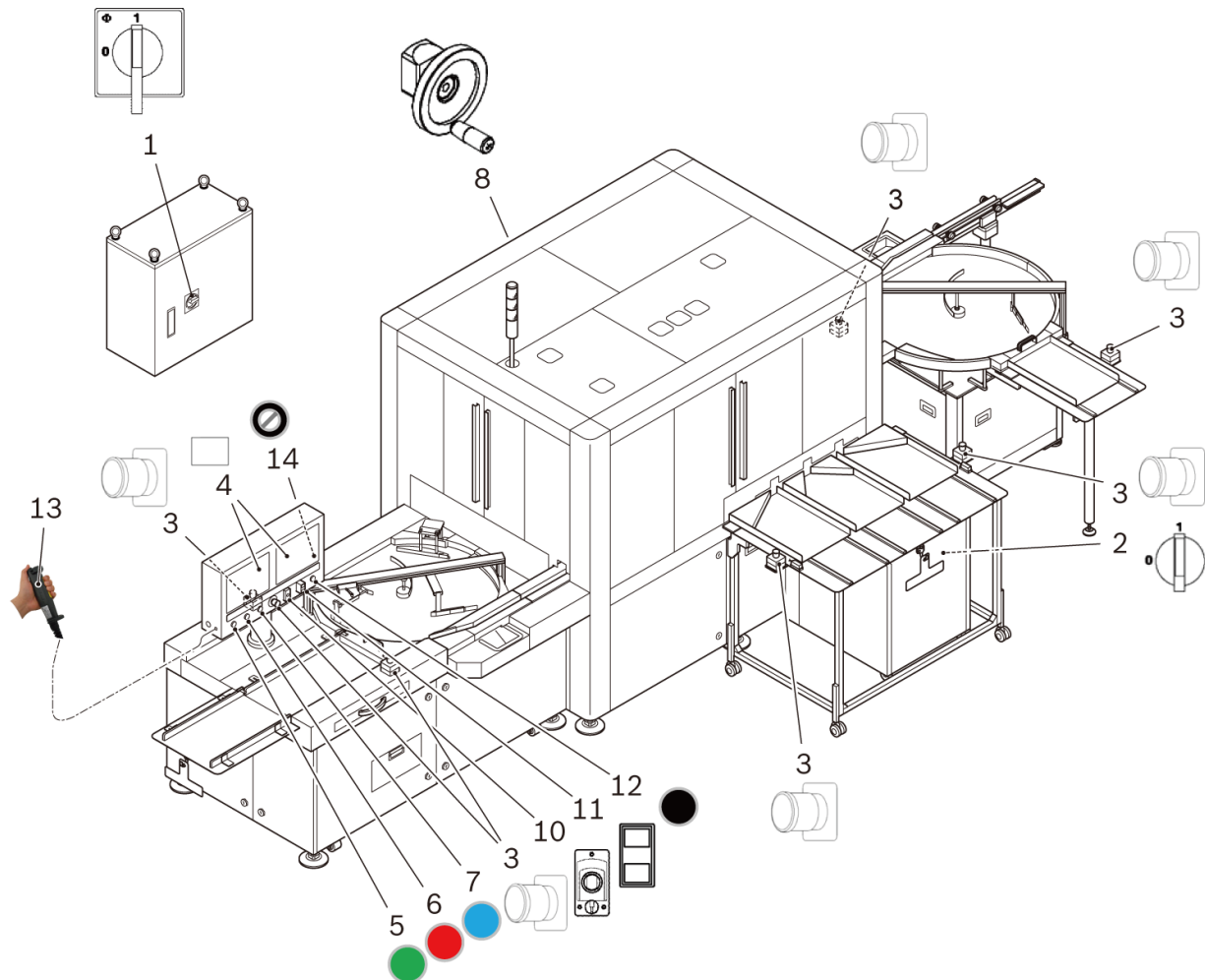
## Overview control and display elements

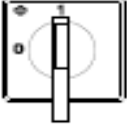
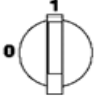
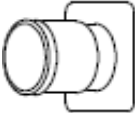







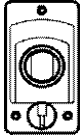



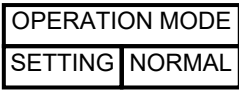

### Notice!

A graphic overview of all control and display elements is provided in this chapter.

In this instruction manual any references to the control and display elements are always made by specifying the relevant number.



Item No.	Designation	Illustration	Function
1	Main switch on the transformer		To supply power to the machine from the on-site power supply.  Position OFF: the power is not supplied to the machine.  Position ON: the power is supplied to the machine.
2	Main switch on the machine		To supply power to the machine from the transformer.  Position OFF: the power is not supplied to the machine.  Position ON: the power is supplied to the machine.
3	Impact key Emergency Stop		To switch machine/line off in case of danger.  Pressed key: entire machine/line stops immediately.
4	Operating panel Machine		To control machine.  Two operation panels are arranged Left screen: HMI touch panel screen Right screen: Vision screen
5	Start button		Button function: to start the machine.
6	Stop button		Button function: to stop the machine.
7	Reset button		Button function: to reset machine fault messages.
8	Handwheel		To manually move the machine.
9	n.a.	n.a.	n.a.

Item No.	Designation	Illustration	Function
10	Keyboard/Mouse Switch		Button function: to switch the left screen and the right screen as a set by using the keyboard and the mouse. (the left screen can also be operated by directly touching the screen)
11	DISPLAY Switch		<p>Button function: to switch of Vision-PCs (right screen) back and forth, press this button. By pressing the white button, vision screens changes from Screen 1 (Vision-PC 1), 2 (Vision-PC 2)... etc. If you need to go reverse, press the black button.</p> <p>Same function is available on the HMI touch panel screen. You can find a display icon with a number in it at the bottom of the screen.</p>
12	BUZZER STOP button		Button function: to terminate a buzzer sound, press this switch. However, please keep in mind that alarm(s) cannot be cleared only by pressing this switch.
13	Jog switch		Jog operation function: to operate jogging operation. It is necessary to make MODE SELECTION switch tuning TEACH to use it. Enable at Test mode or Maintenance mode.
14	MODE SELECTION switch (key switch)	 	<p>Jog operation function: to operate jogging operation. It is necessary to make OPERATION MODE switch turning SETTING to use it. Enable at Test mode or Maintenance mode.</p> <p><b>SETTING:</b> Deactivates safety covers. Insert the key to turn.</p> <p><b>NORMAL:</b> This switch should be NORMAL position in Production mode.</p>



## Shutdown in an emergency (EMERGENCY OFF)

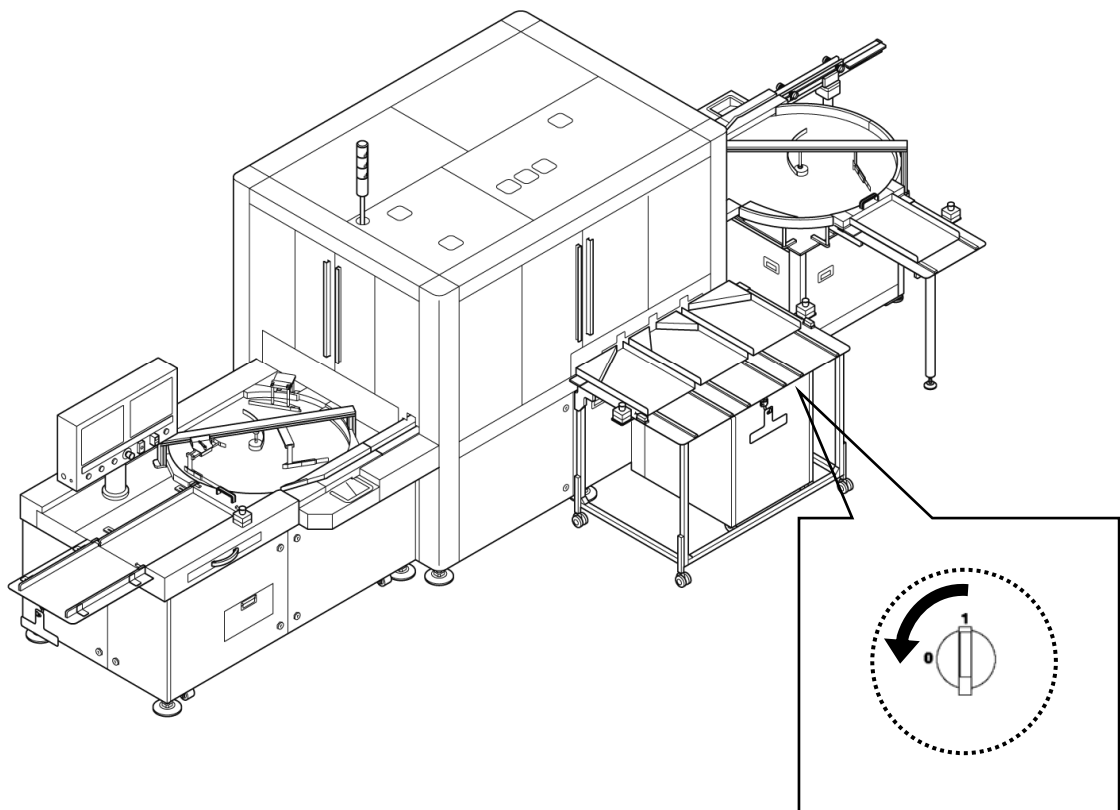


### Notice!

In the event of danger turn OFF the main switch. The machine will shut down immediately.

- o Consequential malfunctions to the machine or product can occur!
- o Parts of the machine can be damaged by overheating.

### Location of the EMERGENCY OFF device



## EMERGENCY STOP



### Notice!

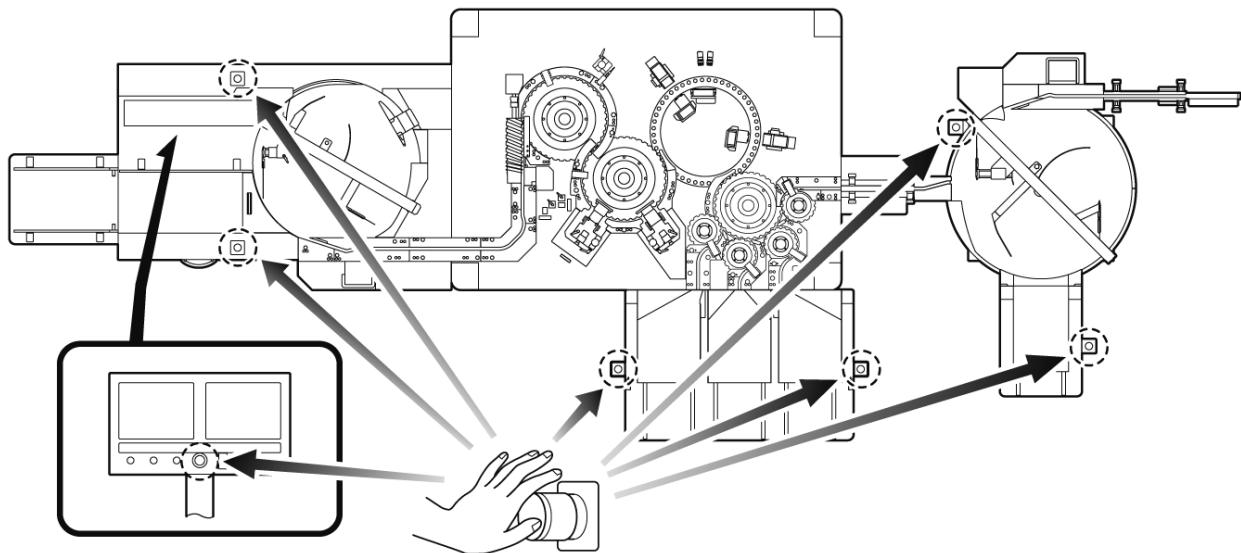
Push the EMERGENCY STOP impact key only in the event of danger! The machine will stop immediately.

- The EMERGENCY STOP impact key is not for the purpose of shutting down the machine in the course of normal operation.
- Measures to be taken after an EMERGENCY STOP: see next page.

When an emergency stop button is pressed, the machine stops. The emergency switches are monitored by safety circuit. If switch(es) are pressed while the machine is running, a safety circuit is immediately activated and then the machine stops.

Seven (7) emergency stop switches are equipped on the machine. One (1) at HMI panel, two (2) at infeed section and four (4) at discharge section. The locations of the switches are shown in machine layout drawing below.

### Location of the EMERGENCY STOP devices



One switch on the infeed section is used to control the infeed roller. Machine does not stop even if this switch is pressed.

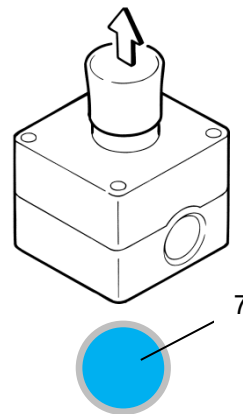
## Switch on the machine after an EMERGENCY STOP

**DANGER****Danger due to uncontrolled switching back on of the machine.**

- Personal injury, product damage or damage to the machine, if the machine is switched on again without eliminating the danger.
- Before switching on the machine again, ascertain the cause of the EMERGENCY STOP and eliminate an emergency situation.
- Pull out the EMERGENCY STOP impact key to unlock it.

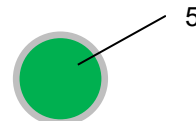
Eliminate the emergency situation.

- Recheck if emergency situation or dangerous conditions are eliminated.
- Reset the emergency stop switch by pulling up the impact key of the switch until it makes a clicking sound.
- Press the RESET (blue) button (7) on the operation panel.



- For information relating to fault messages, see Chapter 6.
- Prepare for restarting (consider containers, counter check, etc...)

- Press the START (green) button (5) on the operation panel.
- o The machine starts production.



## Safety covers



### Notice!

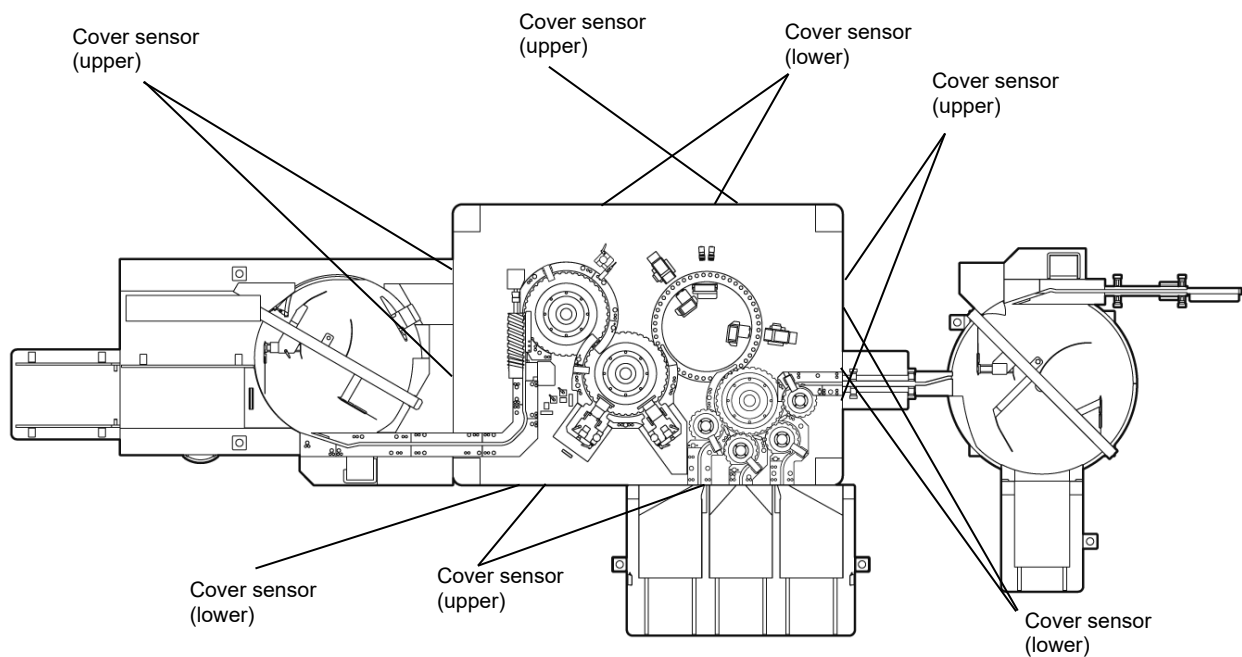
Machine covers (acrylic) have sensors to monitor cover opening. When an open cover is detected, the machine stops running and an alarm is released. The machine cannot restart with open covers.



### Danger!

- Do not modify the cover sensor's wiring to cancel the alarm circuit; it may cause physical harm to the operator.
- Do not modify PLC LD (ladder program) as it may cause physical harm to the operator.

When a machine cover is opened, the machine stops. The safety covers of the main inspection unit are monitored by safety circuit. If cover(s) are opened while the machine is running, an Interlock circuit is immediately activated and then the machine stops. The locations of the cover switches are shown as below.



## Jog operation function



**Notice!**

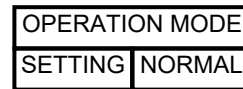
Enable at Test mode or Maintenance mode.

To use Jog switch, close the session in the production mode.

- Refer to page 101
- 'Production lot and session'.

- Insert the key in OPERATION MODE switch.

TEACH MODE: Enable at Test or Maintenance mode.

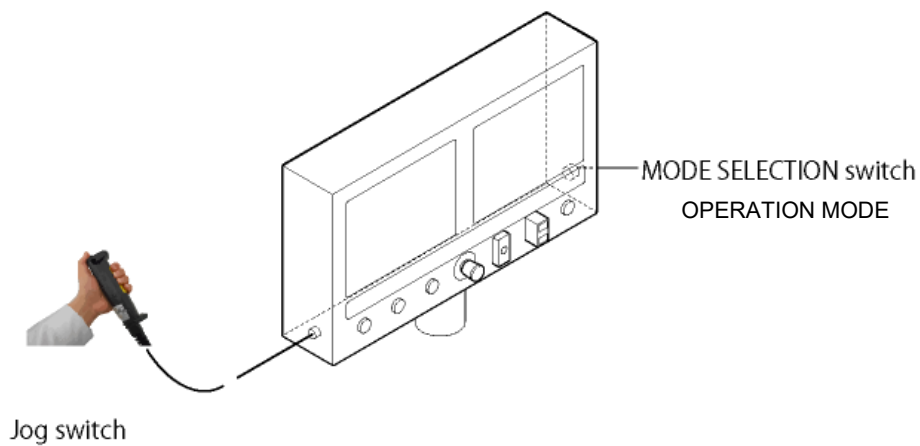


- Turn to SETTING position with the key.



Position	START switch	Jog switch	Safety cover	Emergency stop button
NORMAL	Enable	<b>Disable</b>	Activated	Enable
SETTING	<b>Disable</b>	Enable	<b>Deactivated</b>	Enable

- Connect the Jog switch to HMI operation panel.



- Grasp the yellow switch of the jog switch and keep it in the middle position. (This switch has the three function with the three position, OFF-ON-OFF.)



- Push the black button to operate.



## Self-monitoring circuit

The machine has a self-monitoring system for safety.

Emergency switch(es), safety door(s) and Jog switch are monitored by safety circuit.

Safety circuit has a self-monitoring circuit.



### Notice!

The machine has a self-monitoring system (alarm circuit). At alarm occurrence, the machine stops and shows an alarm message on the operation area (HMI touch panel).

The following procedures are required to restart production:

- Remove alarm source.
- Press the RESET (blue) button at the operation panel. The alarm indication is cleared if the alarm is properly removed.
- Prepare for restarting (consider containers, counter check, etc...).
- Press the START (green) button.



### Notice!

The Interlock switch on the HMI touch panel cannot be turned off from production screen in Production Mode; Interlock switch approval function is disabled. Interlock switch approval function to turn off the Interlock switch in the Production Mode. If it is selected, an approval process is required to turn off the Interlock switch in the Production Mode. The Interlock switch is disabled if this is not selected. Switching the Interlock to off cancels some alarm monitoring.

→ For more information refer to Chapter 6.

---

## Operating modes

### Menu bar overview

The human machine interface (HMI) consists of the control panel and software running on the control panel.

Touch panel has both display function and input function. Display function is used for the indication of counter values, inspection parameters etc. Input function is used for mode selection, numerical parameter input etc.

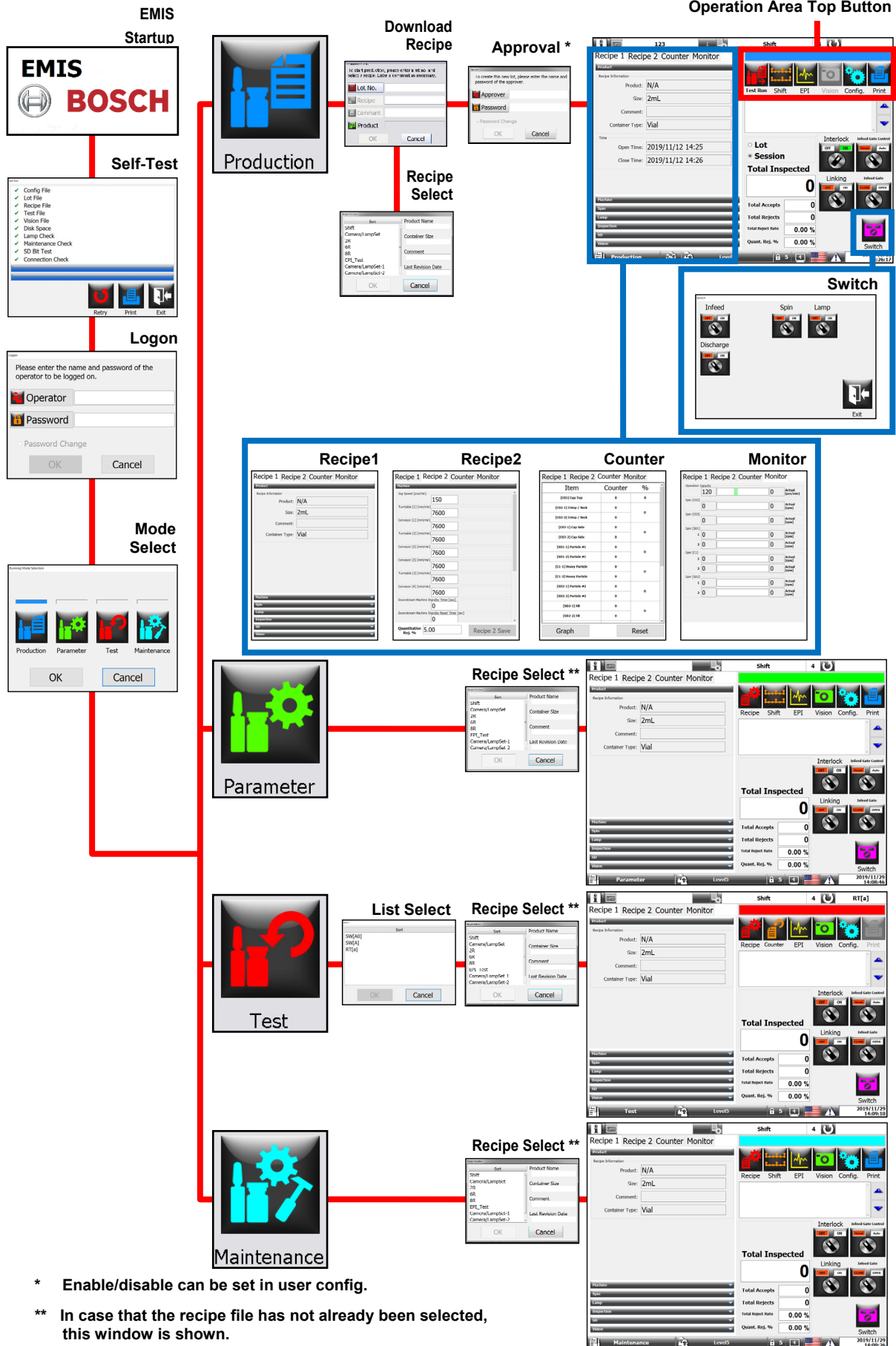
The HMI system in the touch panel is called EMIS.

Outline of EMIS is listed below.

- o Communication with PLC to send/receive data through Ethernet
- o Control of security features (e.g. logon/logoff of the operators)
- o Display alarms/alarm history
- o Monitors counter values, spin speed etc.
- o Control of machine parameters
- o Control of Vision inspection parameters
- o Control of Batch data
- o Control of Report print
- o Control of Data file, such as backup file(s)

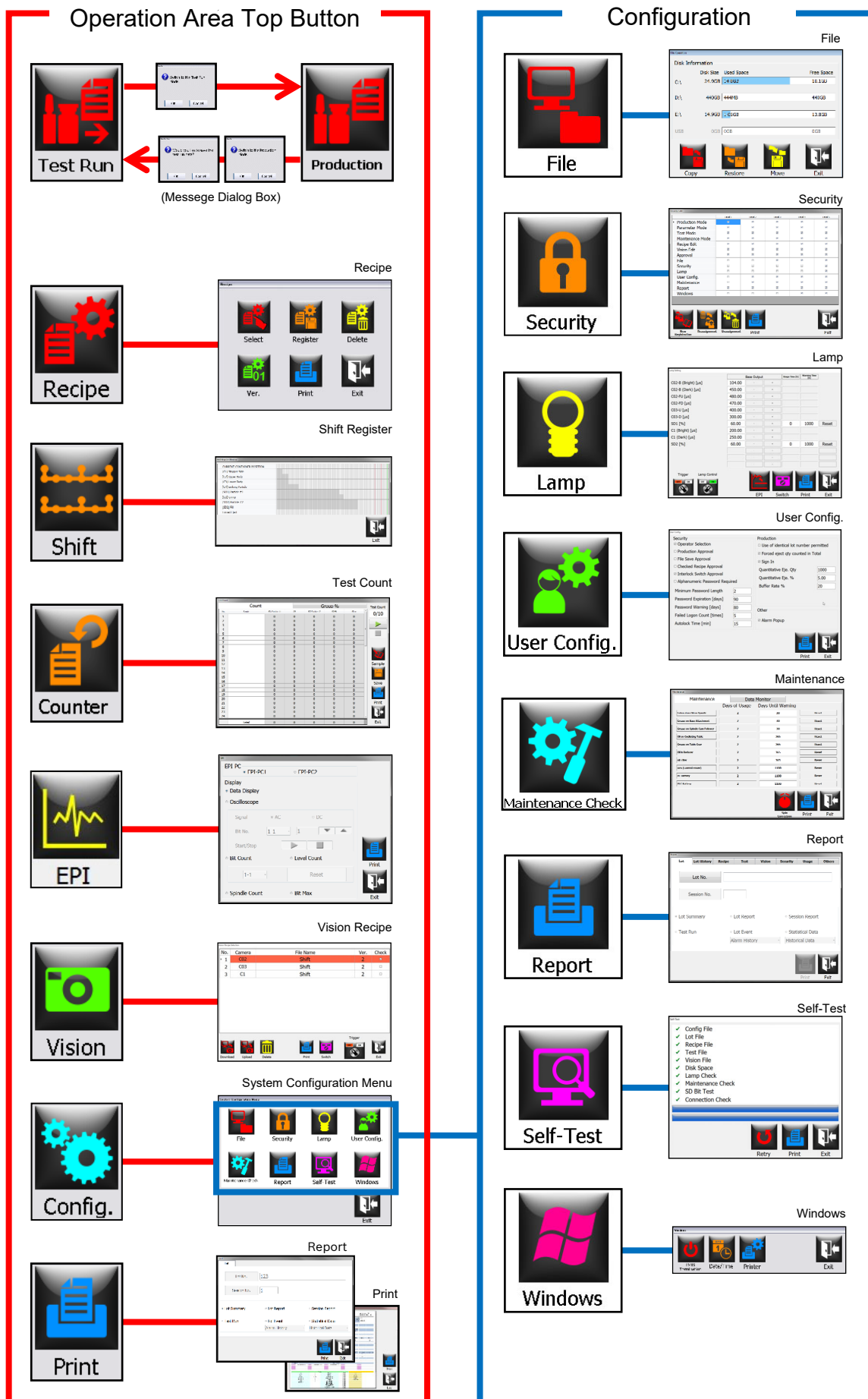
Screen structure is shown in the following page.





\* Enable/disable can be set in user config.

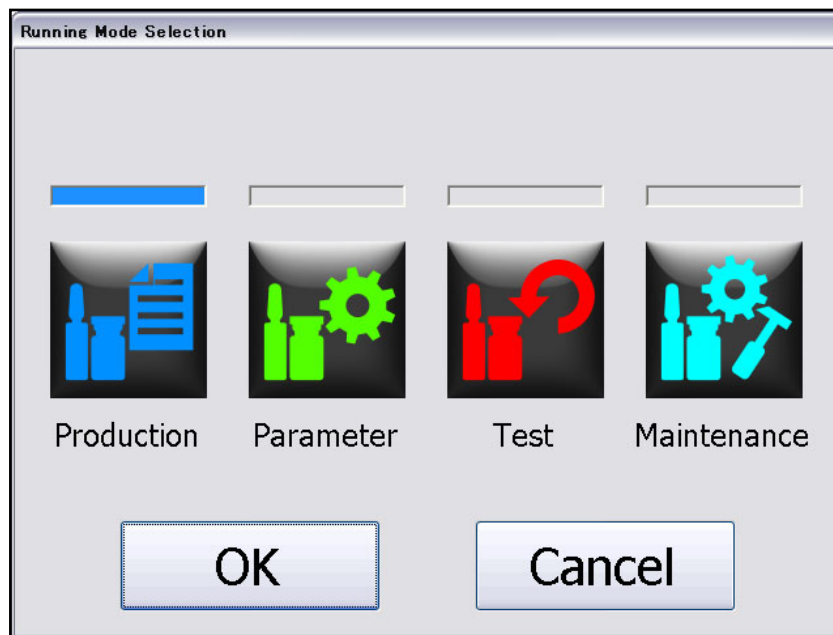
\*\* In case that the recipe file has not already been selected, this window is shown.



## Main menu

**Notice!**

This window is used for selecting the operation mode. The window appears after successful logon or by pressing the change mode button in the status bar. There are four modes available: Production, Parameter, Test and Maintenance. The user selects the mode required to operate the machine. Modes not accessible to the current user level are grayed out. User access levels may be configured by the customer.



## Production mode

The **Production mode** is the mode which enables/allows users with production mode privileges to operate the machine. When entering production mode the user has to enter a lot number and then select and download a recipe. Before downloading the recipe the lot number needs to be authorized by a second party (If production authorization feature is activated). After download has completed the user can switch between production and test run mode for checking the machines performance. There is an option to save the test run mode counters and also to print the test counters report. When moving from test run mode to Production mode all counters are reset. Test run mode is limited to maximum 10 runs in each session.

When the operator enters a lot number, these events occur:

- o EMIS checks if this lot number has already been used. If so, EMIS confirms if it is ok to continue using this lot number. If ok, EMIS will re-open the lot and create a new session.
- o EMIS creates a session (starting at session number 1) for the created lot. Sessions are limited to maximum 30 sessions.

## Lots/Sessions

During the course of operation, the following operational events will break the continuity of the lot into what EMIS refers to as a session:

- o Whenever the user re-enters an existing lot number after a power down or other interruption such as exiting to the mode menu.
- o Whenever the user chooses to change to the next session.

Graphically, the concept of lots and sessions is handled as shown in the following tables.

Inspection parameters, results, etc.

Lot number	Field 1	Field 2	Field <i>n</i>
Lot123	Product A	400 ppm	1000 accepts
Lot456	Product B	400 ppm	200 accepts

Lot number	Session	Field 1	Field 2	Field <i>n</i>
Lot123	1	Product A	400 ppm	100 accepts
Lot123	2	Product A	400 ppm	200 accepts
Lot123	3	Product A	400 ppm	700 accepts

The 1<sup>st</sup> session is always created when the lot is first registered and products are run through the machine.

This session may be the result of turning the machine off at the end of the day.

This session may be the result of the operator performing maintenance work.

## Parameter mode

The **Parameter mode** allows users with parameter mode privileges to set recipe parameters. Parameter mode allows parameters to be changed and new recipes to be created.

## Test mode

The **Test mode** allows users with test privileges to optimize inspection parameters while checking the accuracy of inspection items. Test mode is used to run test containers through each inspection station repeatedly for fine tuning or for configuring a new product.

Recipe settings modified in test mode can be saved. To retain these settings, you must have Recipe control privileges

## Maintenance mode

The **Maintenance mode** allows users with maintenance privileges to operate the machine for machine maintenance purposes only. Operation is the same as for the Parameter mode but saving parameters is not possible.

## General handling of the operating panel



### Notice!

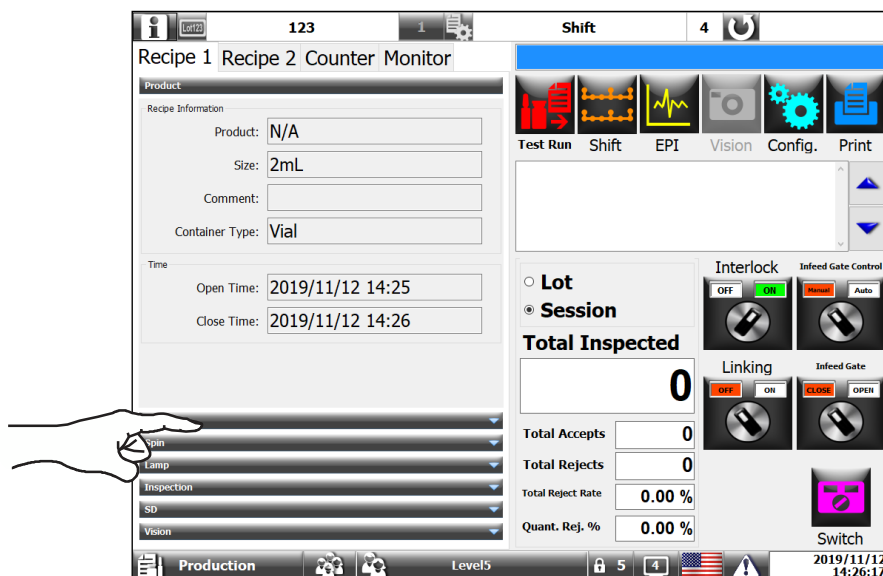
All activities may be performed only by instructed and authorized personnel.

## Common handling

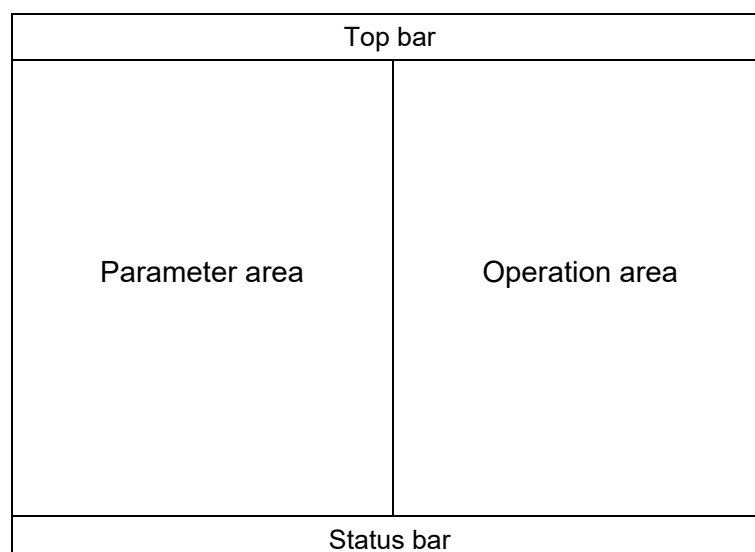


### Notice!

An operating panel is a touch panel and can be operated with a finger. A function is executed by pressing the relevant button. Grayed-out buttons have no function.



## General design



## Common displays and buttons







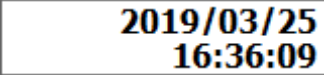


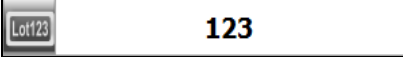



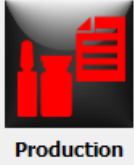
Illustration	Explanation
	Button for operator login/logout.
	Button for operator Sign in/Sign out.
	Indicating operator's security level
	Indicating which language is selected. Selectable language: English
	Button to display the alarm window.
	Button to change display (right screen: Vision/EPI screen).
	Indicating the current date and time.
	Indicating the operation mode currently in active.
	Button to display the currently EMIS software version.
	Data field where the current log number is displayed.
	Data field where the current lot session number is displayed.
	Data field where the current recipe name is displayed.
	Data field where the current recipe version is displayed.
	Button to go to the Production mode from the Test Run mode.



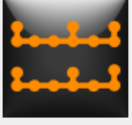




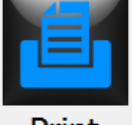

Illustration	Explanation
 <p data-bbox="185 427 316 461"><b>Test Run</b></p>	<p data-bbox="600 293 1409 327">Button to go to the Test Run mode from the Production mode.</p>
 <p data-bbox="185 618 316 651"><b>Recipe</b></p>	<p data-bbox="600 483 1038 517">Button to display the Recipe window.</p>
 <p data-bbox="185 808 316 842"><b>Shift</b></p>	<p data-bbox="600 674 1114 707">Button to display the Shift Register window.</p>
 <p data-bbox="185 999 316 1032"><b>Counter</b></p>	<p data-bbox="600 864 1027 898">Button to display the Counter menu.</p>
 <p data-bbox="185 1189 316 1223"><b>EPI</b></p>	<p data-bbox="600 1055 975 1088">Button to display the EPI menu.</p>
 <p data-bbox="185 1379 316 1413"><b>Vision</b></p>	<p data-bbox="600 1245 1007 1279">Button to display the Vision menu.</p>
 <p data-bbox="185 1570 316 1603"><b>Config.</b></p>	<p data-bbox="600 1435 1018 1469">Button to display the Config. menu.</p>
 <p data-bbox="185 1760 316 1794"><b>Print</b></p>	<p data-bbox="600 1626 1166 1659">Button to print out the reports or the information</p>
 <p data-bbox="185 1951 316 1984"><b>Interlock</b></p>	<p data-bbox="600 1816 1118 1850">Press to turn ON/OFF the interlock function.</p> <p data-bbox="600 1861 1409 1962">Some alarms are disabled by this switch. When the “Interlock Switch Approval” is activated in User Config., operator needs approval to change switch setting.</p>



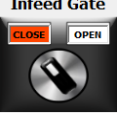
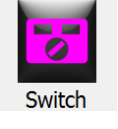




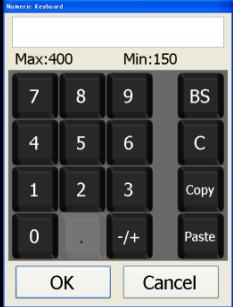
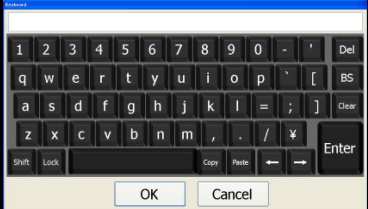
Illustration	Explanation
 <p>Infeed Gate Control</p>	<p>Button to change infeed gate control between manual and auto. Turn to Manual/Auto is enable when the machine is running.</p> <p>Shows when the recipe for vial is downloaded.</p>
 <p>Linking</p>	<p>Press to turn ON/OFF the linking function.</p>
 <p>Infeed Gate</p>	<p>Button to OPEN/CLOSE the infeed gate. Turn to CLOSE/OPEN is enable when the Infeed Gate Control switch is “Manual”.</p> <p>Shows when the recipe for vial is downloaded.</p>
 <p>Switch</p>	<p>Button to display the other switches.</p>
 <p>Infeed</p>	<p>Button to turn ON/OFF the infeed turntable/conveyor.</p>
 <p>Spin</p>	<p>Button to turn ON/OFF the spin function.</p>
 <p>Lamp</p>	<p>Press to turn ON/OFF the lamps for inspections.</p>
 <p>Discharge</p>	<p>Button to turn ON/OFF the discharge unit.</p>



Illustration	Explanation
<p data-bbox="212 302 528 347"><b>Total Inspected</b></p> <div data-bbox="209 353 555 465"><p data-bbox="507 376 555 443"><b>0</b></p></div> <p data-bbox="212 488 555 521"><b>Total Accepts</b> <input data-bbox="400 479 555 533" type="text" value="0"/></p> <p data-bbox="212 551 555 584"><b>Total Ejects</b> <input data-bbox="400 542 555 595" type="text" value="0"/></p> <p data-bbox="212 611 555 645"><b>Total Eject Rate %</b> <input data-bbox="400 602 555 656" type="text" value="0.00 %"/></p> <p data-bbox="212 674 555 707"><b>Quant. Eje. %</b> <input data-bbox="400 665 555 719" type="text" value="0.00 %"/></p>	<p data-bbox="600 302 1318 365">Area that displays the total, accepted, ejected, eject rate and quantitative eject % counters.</p>

## Enter text and numbers

Illustration	Explanation
	Keyboard for entering numerical values.
	Keyboard for entering alphanumeric characters.

## Parameter area



### Notice!

The parameter area consists of four tabs:

- Recipe 1 (Recipe parameters)
- Recipe 2 (Parameters of container transportation, timer etc.)
- Counter (Detailed counter)
- Monitor (Actual machine speed readings)

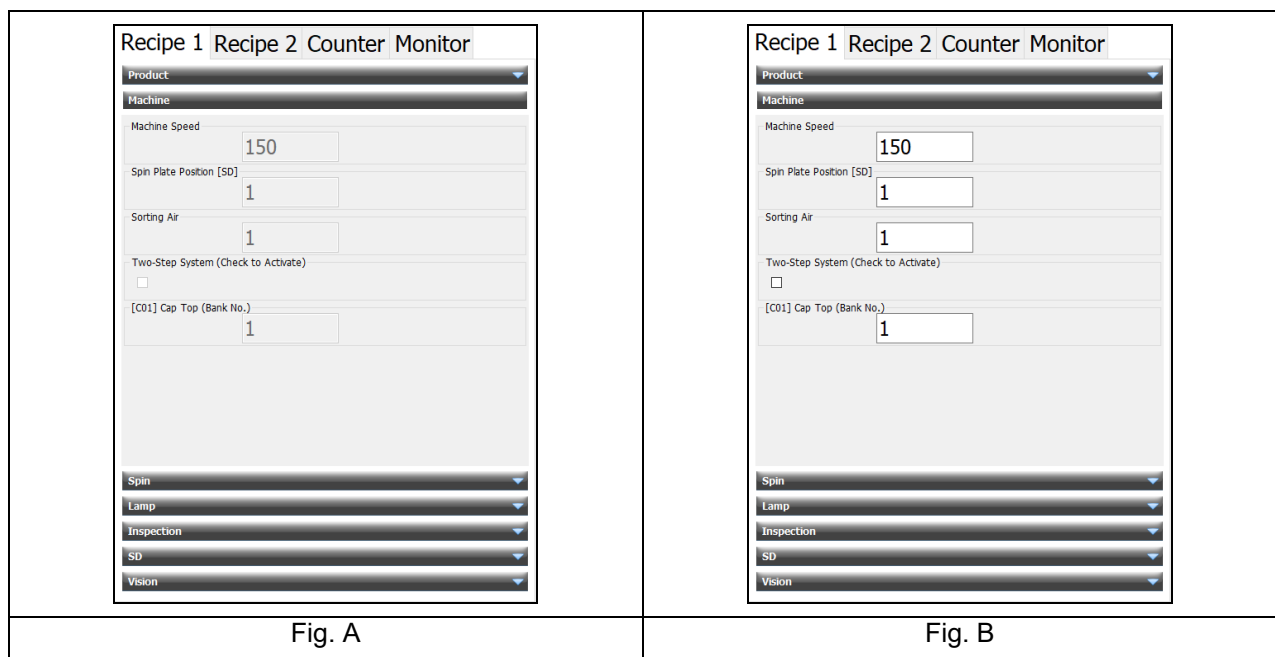
## Recipe 1



### Notice!

This screen is used for viewing/changing recipe parameters in a tree menu format.

The screen is shown in two figure types as shown below. Only in the Production mode, it is shown as Fig A because no settings can be changed. In other modes, it is shown as Fig B.



The tree menu consists of 7 categories: Product, Machine, Spin, Lamp, Inspection, SD and Vision. Configurable parameters in this tree menu are shown below:

Category	Explanation	Parameters	Range, Unit
Product	Display shows the recipe information including the product name, container size, container type and comment.	-	-
	Also, production start time and machine stop time are shown at Production mode.		
Machine	Machine's operating capacity speed	Machine Speed	150-300 pcs/min
	SD brake timing	Spin Plate position [SD]	1-7
	Sorting Air valve selection	Sorting Air	1-2
	Two step operation for large container	Two Step System (check to activate)	-
	Parameter setting to be used for cap color inspection	[C01] Cap Top (Bank No.)	1-16
Spin	Spin ON/OFF switch for each inspection station	Check box (check to activate)	-
	Spin speed setting at C02 station	Speed	105-945 rpm
	Spin speed setting at C03 station	Speed	105-945 rpm
	Spin speed setting at SD1 station	Speed (Hi/Lo)	500-4500 rpm
	Spin speed setting at C1 station	Speed	45-405 rpm
	Spin speed setting at SD2 station	Speed (Hi/Lo)	500-4500 rpm
Lamp	Lamp ON/OFF switch for each lamp of inspection stations	Check box (check to activate)	-
	Data entry field for C02-B (Bright) inspection lamp correction value	Correct (Time)	Base + Correction = ~800 $\mu$ S
	Data entry field for C02-B (Dark) inspection lamp correction value	Correct (Time)	Base + Correction = ~800 $\mu$ S
	Data entry field for C02-FU inspection lamp correction value	Correct (Time)	Base + Correction = ~800 $\mu$ S
	Data entry field for C02-FD inspection lamp correction value	Correct (Time)	Base + Correction = ~800 $\mu$ S
	Data entry field for C03-U inspection lamp correction value	Correct (Time)	Base + Correction = ~800 $\mu$ S
	Data entry field for C03-D inspection lamp correction value	Correct (Time)	Base + Correction = ~800 $\mu$ S
	Data entry field for SD1 inspection lamp correction value	Correct (Lamp intensity)	Base + Correction = ~100 %
	Data entry field for C1 (Bright) inspection lamp correction value	Correct (Time)	Base + Correction = ~800 $\mu$ S
	Data entry field for C1 (Dark) inspection lamp correction value	Correct (Time)	Base + Correction = ~800 $\mu$ S

Category	Explanation	Parameters	Range, Unit
	Data entry field for SD2 inspection lamp correction value	Correct (Lamp intensity)	Base + Correction = ~100 %
	Data display field showing the base output value of each lamp	-	-
Inspection	Inspection ON/OFF switch for each inspection station	Check box (check to activate)	-
	Tray assignment for inspection results	To Eject tray	1-3
	Consecutive defect limit per inspection to stop the machine.	Cons. Eject	0-9 pcs
	Forced eject discharge tray assignment	To Eject tray	1
SD	SD inspection view	View	1-64
	SD inspection sensitivity	Sensitivity	1-10000
	SD inspection filter	Filter	1-100
	SD inspection meniscus following bit * [View]max - [Inspection View] = [Meniscus Following Bit]max	Meniscus Following Bit	0-(*)
	SD inspection meniscus following gap	Meniscus Following Gap	0-1000
	Lamp check view	Lamp Check View	1-64
	Lamp check sensitivity	Lamp Check Sens.	1-10000
	Fill inspection view	Fill View	1-64
	Fill inspection sensitivity	Fill Sens	1-10000
	Fill inspection view to detect from upper side	Overfill View	1-64
Fill inspection sensitivity to detect from upper side	Overfill Sens	1-10000	
Vision	Inspection file	File name	Selectable from registered files
	Data display field showing the current version of the inspection file used	-	-

## Recipe 2



### Notice!

This screen is used for viewing/changing recipe parameters in a tree format. These recipe parameters are common to all recipes. The screen is shown in three figure types as shown below.

→ The Recipe 2 Save is used for saving recipe 2 parameters.

Recipe 1 Recipe 2 Counter Monitor	
Machine	
Jog Speed [pcs/min]	150
Turntable [1] [mm/min]	7600
Conveyor [1] [mm/min]	7600
Turntable [2] [mm/min]	7600
Conveyor [2] [mm/min]	7600
Conveyor [3] [mm/min]	7600
Turntable [3] [mm/min]	7600
Conveyor [4] [mm/min]	7600
Downstream Machine Standby Timer [sec]	0
Downstream Machine Standby Reset Timer [sec]	0
Quantitative Rej. %	5.00
Recipe 2 Save	

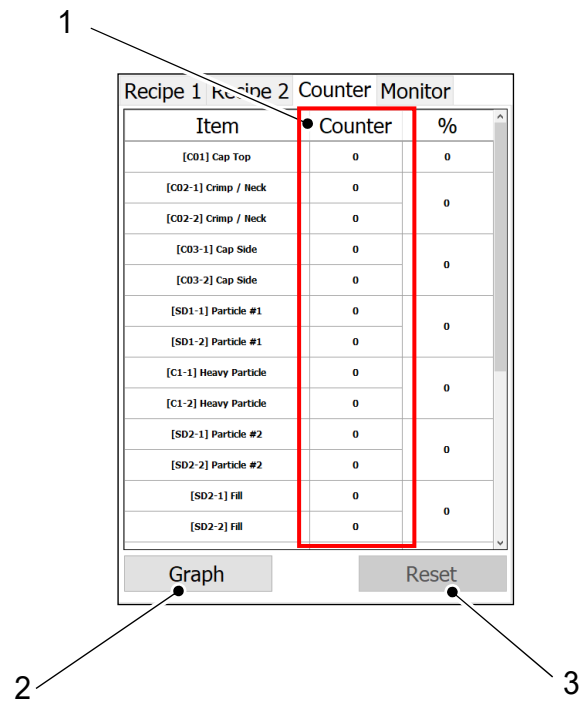
Recipe 1 Recipe 2 Counter Monitor	
Machine	
Turntable [3] [mm/min]	7600
Conveyor [4] [mm/min]	7600
Downstream Machine Standby Timer [sec]	0
Downstream Machine Standby Reset Timer [sec]	0
Low Accumulation Timer [sec]	2.0
Low Accumulation Reset Timer [sec]	3.0
Reject Tray Full Warning Timer [sec]	5
Reject Tray Full Alarm Timer [sec]	30
Accept Turntable Full Warning Timer [sec]	5
Accept Turntable Full Alarm Timer [sec]	30
Quantitative Rej. %	5.00
Recipe 2 Save	

Category	Explanation	Parameters	Value, Unit
Machine	Machine speed by jog switch	Jog speed	50-300 pcs/min
	Turntable [1] speed	Turntable [1]	1441-12971 mm/min
	Conveyor [1] speed	Conveyor [1]	1978-17804 mm/min
	Turntable [2] speed	Turntable [2]	2261-20347 mm/min
	Conveyor [2] speed	Conveyor [2]	1978-17804 mm/min
	Conveyor [3] speed	Conveyor [3]	1978-17804 mm/min
	Turntable [3] speed	Turntable [3]	1570-14130 mm/min
	Conveyor [4] speed	Conveyor [4]	1978-17804 mm/min
	Timer for after receiving standby signal from the downstream machine	Downstream Machine Standby Timer	0-60 sec
	Timer for after receiving standby reset signal from the downstream machine	Downstream Machine Standby Reset Timer	0-60 sec
	Timer to Open/Close control of the infeed gate	Low accumulation Timer	0-60 sec
	Timer to Open/Close control of the infeed gate	Low accumulation Reset Timer	0-60 sec
	Timer for after detecting tray full signal to warn	Reject Tray Full Warning Timer	0-60 sec
	Timer for after detecting tray full signal to stop machine	Reject Tray Full Alarm Timer	0-60 sec
Timer for after detecting accept turntable full signal to warn	Accept Turntable Full Warning Timer	0-60 sec	
Timer for after detecting accept turntable full signal to stop machine	Accept Turntable Full Alarm Timer	0-60 sec	

## Counter

This is the screen to monitor the detail of each inspection result.

- o Area 1 shows eject counts of each inspection item.
- o Press the Graph button (2) to show the graph window.
- o Press the Reset button (3) to reset all counters. This button is disabled in Production mode.

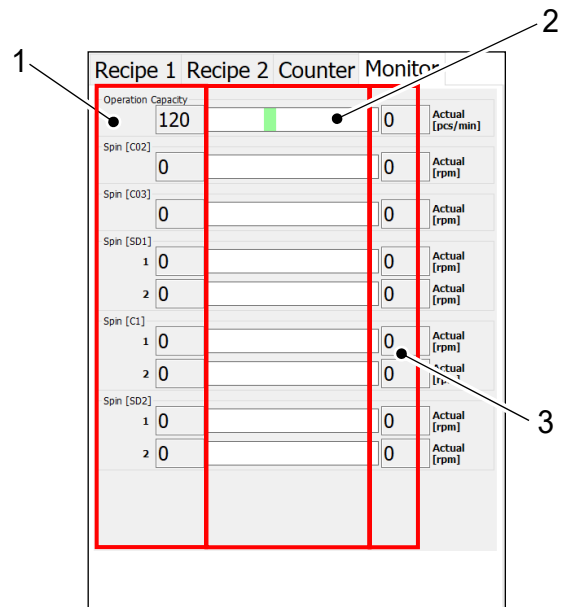




## Monitor

This screen is used for viewing the preset and actual revolution speeds.

- o Area 1 displays the preset speed.
- o Area 2 shows the monitors of the indicated speeds by bar.
- o Area 3 shows the indicated actual speed.



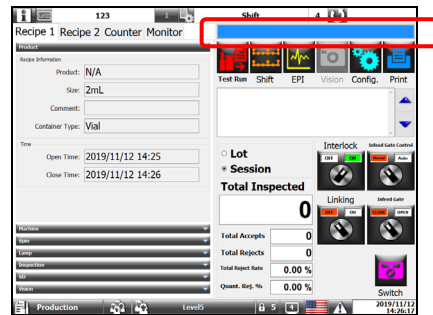
## Operation panel

### Mode indicator

The operation panel has a mode indicator to easily identify which operation mode the user is currently in.

Operation modes are represented by the following colors:

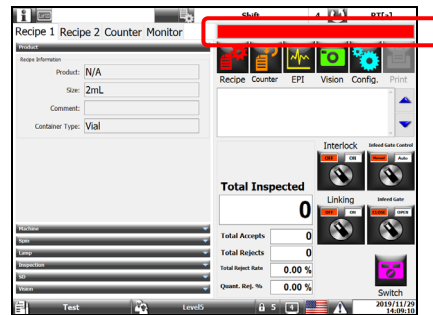
Production: Blue



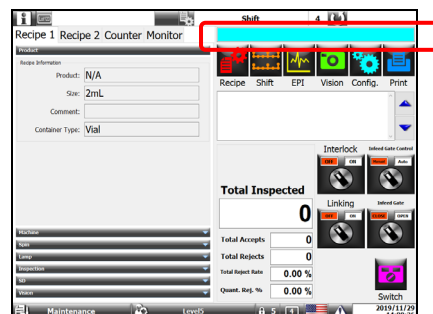
Parameter: Green



Test: Red



Maintenance: Light blue



## Switches















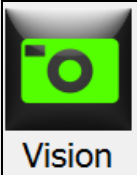


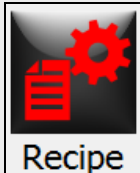







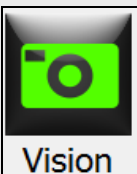


The operation panel contains switches for various machine operations. When the hardware start switch is pressed, the Spin, Conveyor and Lamp switches automatically turn ON.

## Function buttons

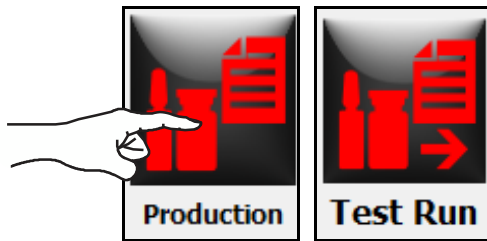


**Notice!**

- o The table below shows how the functionality button menu appears in each operating mode.
- o Every function button is introduced in details in the following pages.

Mode	Function Buttons
Production	Production Mode  <b>Test Run</b>   Shift  EPI  Config.  Print
	Test Run Mode  Production  Shift  EPI  Config.  Print
Parameter	 Recipe  Shift  EPI  Vision  Config.  Print
Test	 Recipe  Counter  EPI  Vision  Config.
Maintenance	 Recipe  Shift  EPI  Vision  Config.  Print

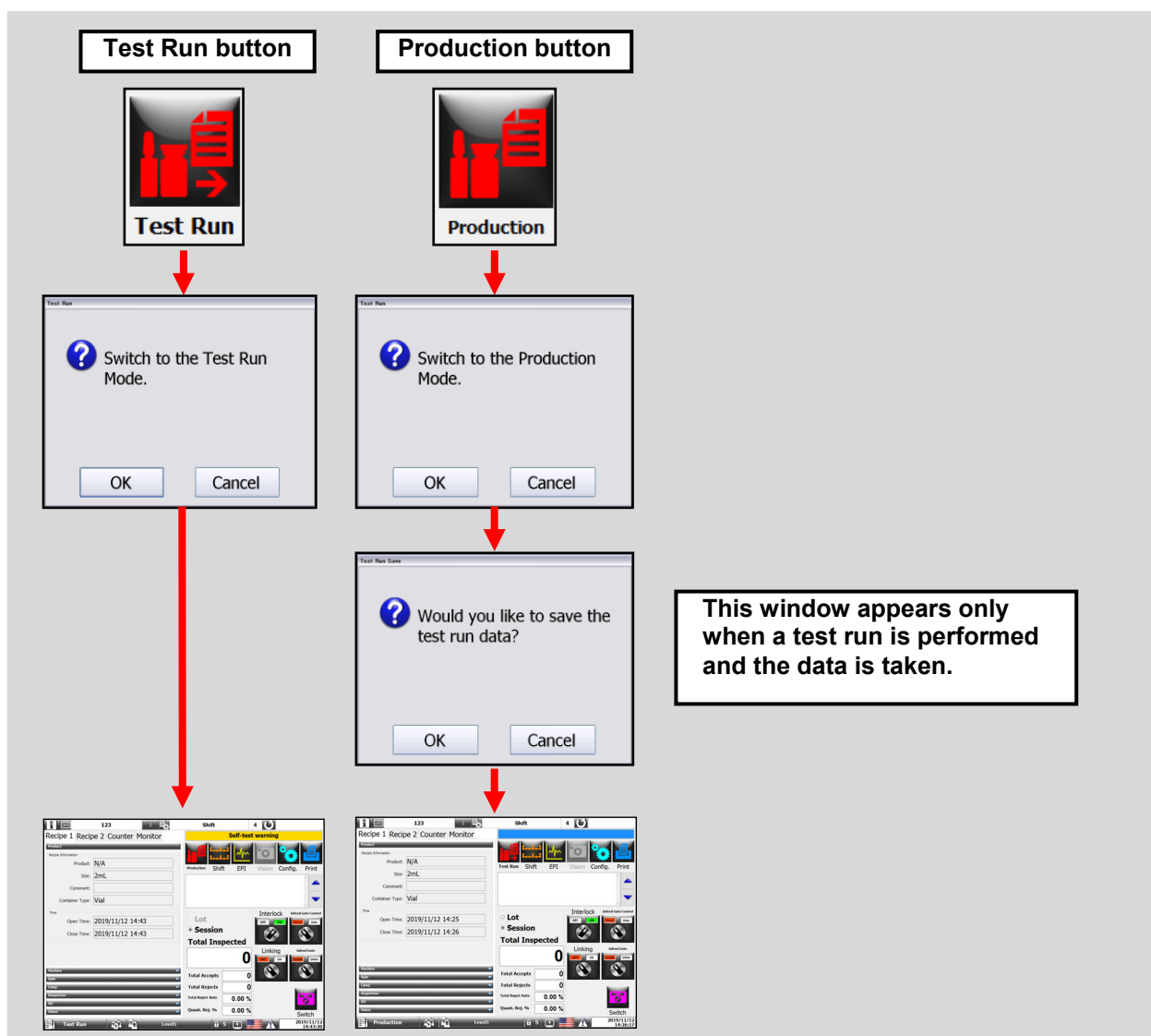
## Production/Test button



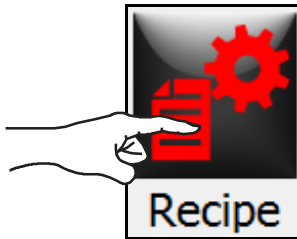
### Notice!

→ Production/Test Run buttons are only available in the Production mode (Refer to Chapter 5, page 36).

- The Production/Test Run buttons allow the user to switch between modes. When each button is pressed, a confirmation pop-up appears.
- When changing from Test Run to Production, the user has to choose whether to save the test run data.



## Recipe button



### CAUTION



#### Damage to the machine due to an incorrect recipe!

A recipe that does not match the installed size parts can seriously damage the machine

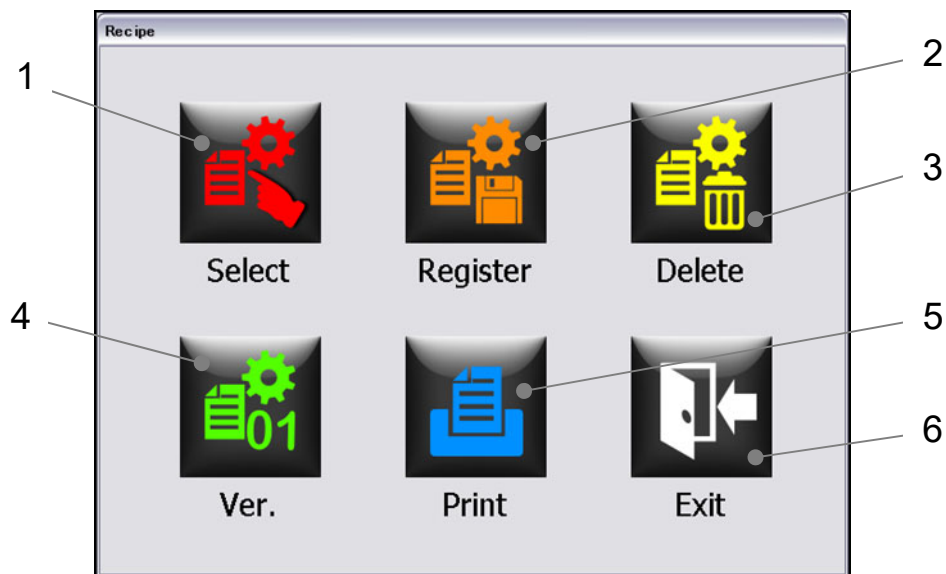
- o Activate only a format in the recipe that matches installed size parts.



#### Notice!

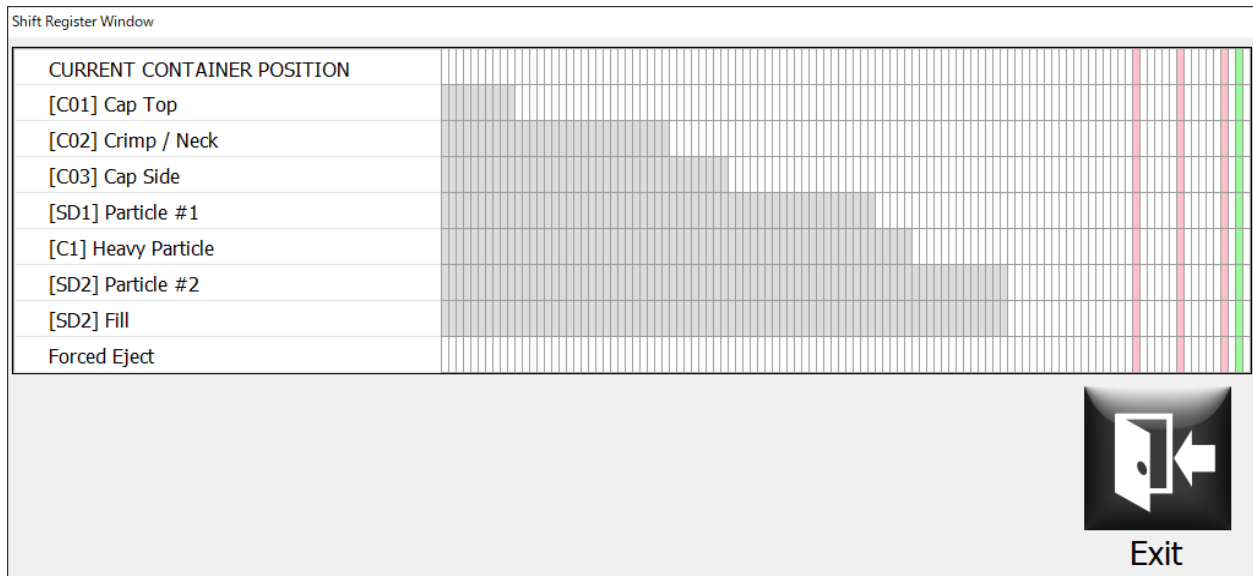
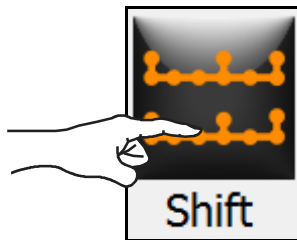
Recipe button is only available in Parameter, Test and Maintenance mode (Refer to Chapter 5, page 36) for users with recipe edit privileges.

When the Recipe button is pressed, the user accesses the recipe menu.



Item No.	Function
1	Press to select recipe to download.
2	Press to register a recipe.
3	Press to delete a recipe.
4	Press to select a recipe with different version to download.
5	Press to print out the recipe information.
6	Press to exit from this window.

## Shift button



### Notice!

Pressing the Shift button shows the Shift Register window.

## Shift register description

This screen indicates the current position of each container and which containers are judged as rejects at which inspection station by using the container presence signals and the reject container signals stored in the PLC. These signals are shown for each station of the machine that follows container locations through the machine to discharge section.

## Counter button

**Notice!**

Counter button is only available in the Test mode. When the Counter button is pressed, the Test Count window is displayed.



## Test Count window

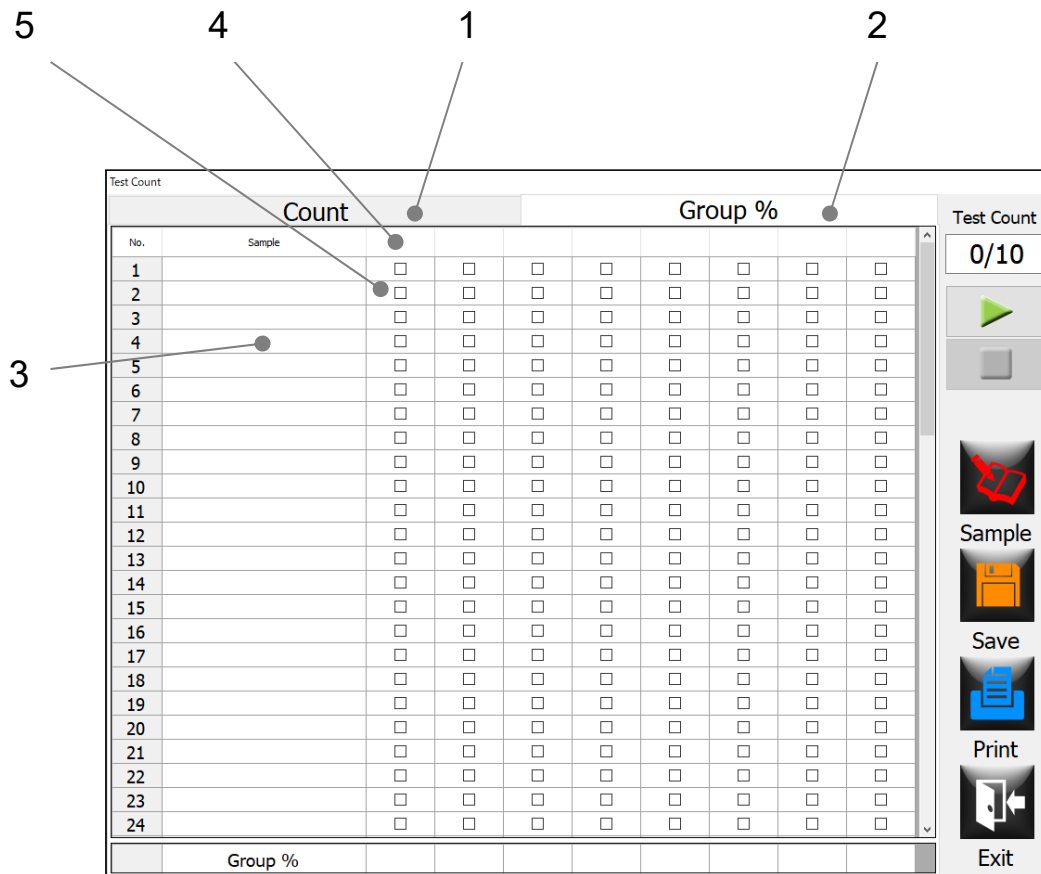
The following elements are shown in the Test Count window:

The screenshot shows the 'Test Count' window. At the top, there are two tabs: 'Count' (callout 1) and 'Group %' (callout 2). Below the tabs is a table with columns: No., Sample (callout 3), SD1 Particle #1, C1, SD2 Particle #2, SD2 Fill, SD or, and Particle or. The table contains 24 rows, with a 'Total' row at the bottom. To the right of the table is a vertical toolbar with the following elements: a 'Test Count' label with '0/10' (callout 4), a green play button (callout 5), a grey square button (callout 6), a red 'X' button (callout 7), a 'Sample' button (callout 8), a 'Save' button (callout 9), a 'Print' button (callout 10), and an 'Exit' button.

Item No.	Function
1	Press to display the Count table.
2	Press to display the Group% table.
3	Data entry fields for sample names. Press here to enter.
4	Press to enter the number of test runs to be performed.
5	Press to start a test run.
6	Press to stop a test run.
7	Press to display the Sample Information window.
8	Press to save the test data.
9	Press to print out the test data.
10	Press to exit from this window.

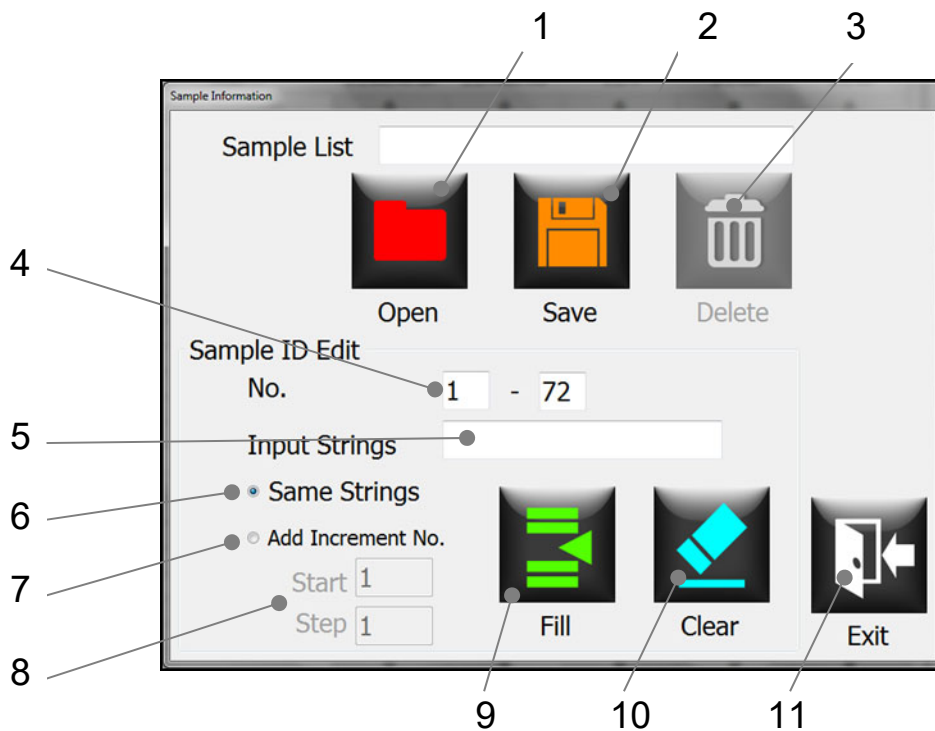
## Test Group% window

The following elements are shown in the Test Group% window:



Item No.	Function
1	Press to display the Count table.
2	Press to display the Group% table.
3	Data entry fields for sample names. Press here to enter.
4	Press to open the Select window to select the inspection station name(s) to be entered.
5	Select applicable check box(es) under each inspection station name to use the detection results of selected samples for the calculation of reject %.

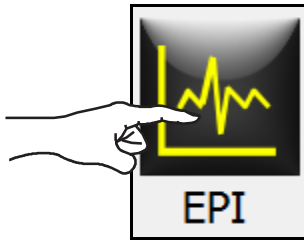
### Sample information window



Item No.	Function																	
1	Press to open a previously saved sample name list.																	
2	Press to save the current sample name list.																	
3	Press to delete the currently loaded sample list.																	
4	Press to edit the Sample fields that correspond to the range of the numbers entered in those field.																	
5	Press to enter the sample name or number to be used to continuously enter in the Sample fields that correspond to the range of the numbers entered in the fields under the above 4).																	
6	Select this to keep the same data information entered in the Input Strings field. For example, if "Sample" is entered in the Input Strings field, and the range of "1-48" is entered in the No. field, and then the Fill button is pressed, "Sample" will be entered in the Sample field from No. 1 thru 48.																	
7	Select this to enter the number information in addition to the data entered in the Input Strings field. By selecting it, the below data field (8) is activated.																	
8	<p>Press to enter the increment to increase the number for each position.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>e.g.</td> <td>Start <sup>1</sup></td> <td>1</td> <td>Sample <sup>1</sup></td> <td rowspan="4" style="text-align: center; vertical-align: middle;">                 ↻ +2                  ↻ +2                  ↻ +2             </td> </tr> <tr> <td></td> <td>Step <sup>2</sup></td> <td>2</td> <td>Sample 3</td> </tr> <tr> <td></td> <td></td> <td>3</td> <td>Sample 5</td> </tr> <tr> <td></td> <td></td> <td></td> <td>Sample 7</td> </tr> </table>	e.g.	Start <sup>1</sup>	1	Sample <sup>1</sup>	↻ +2 ↻ +2 ↻ +2		Step <sup>2</sup>	2	Sample 3			3	Sample 5				Sample 7
e.g.	Start <sup>1</sup>	1	Sample <sup>1</sup>	↻ +2 ↻ +2 ↻ +2														
	Step <sup>2</sup>	2	Sample 3															
		3	Sample 5															
			Sample 7															

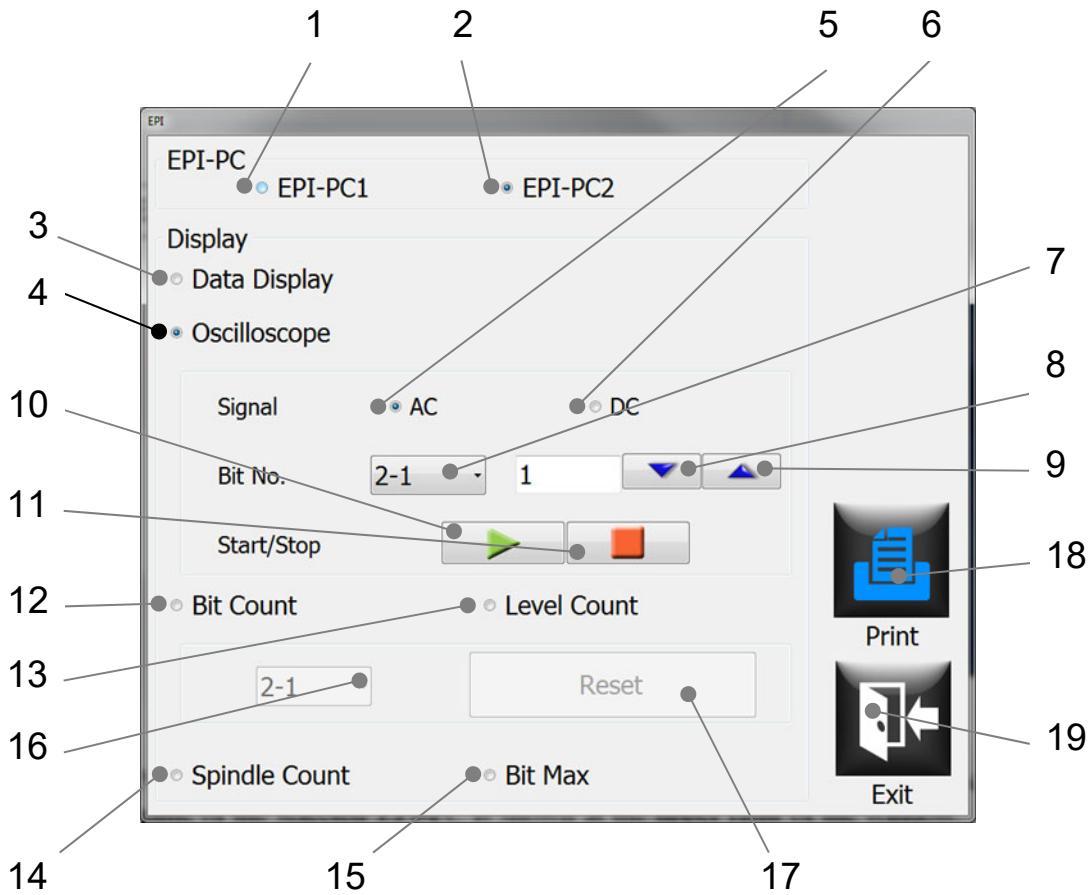
Item No.	Function
9	Press to fill in the sample names in the Sample fields that correspond to the range of the numbers entered in the No. field.
10	Press to clear all sample names in the Sample fields that correspond to the range of the numbers entered in the No. field.
11	Press to exit from this window.

### EPI button



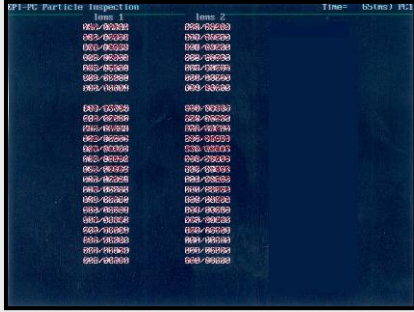
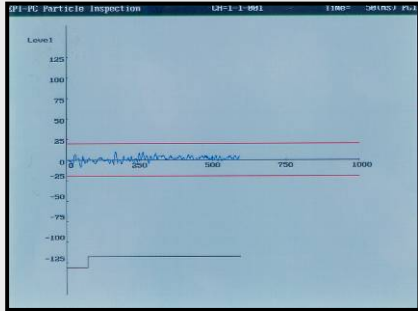
**Notice!**

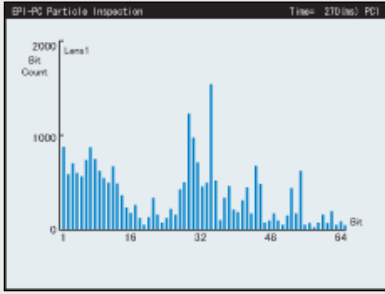
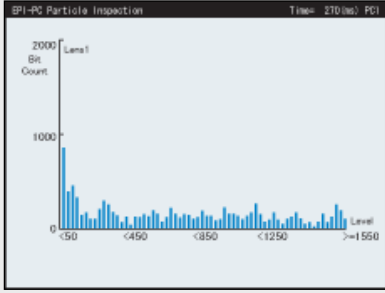
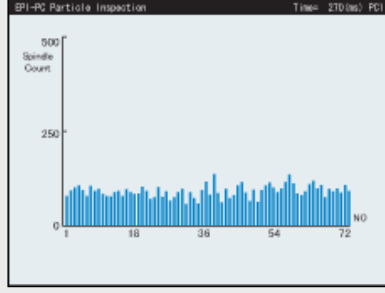
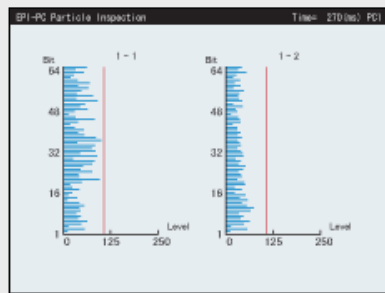
EPI button is available in the Production, Parameter, Test and Maintenance modes (Refer to Chapter 5, page 36) for users with EPI edit privileges. When the EPI button is pressed, the EPI data analysis screen is displayed.



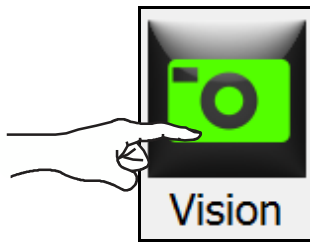
**Notice!**

Vision display shows EPI and inspection screens. The Display switch on the operation panel is the switch to change between EPI and inspection screens. The EPI data, graph, & oscilloscope screens cannot be saved.

Item No.	Function																																	
1	Press to switch to SD1 (= EPI-PC1) data analysis screen.																																	
2	Press to switch to SD2 (= EPI-PC2) data analysis screen.																																	
3	<p>Press to display the SD inspection data screen on vision display.</p> <p>Displayed SD inspection data is a collection of the max SD signal value and the bit position where the max SD signal is measured.</p>  <p><i>SD inspection station #</i></p> <table border="0" data-bbox="399 996 885 1294"> <tr> <td style="text-align: center;"> </td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;"> </td> <td></td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">Lens 1</td> <td style="text-align: center;">Lens 2</td> </tr> <tr> <td></td> <td style="text-align: center;">007/00010</td> <td style="text-align: center;">003/00005</td> </tr> <tr> <td></td> <td style="text-align: center;">002/00012</td> <td style="text-align: center;">002/00012</td> </tr> <tr> <td></td> <td style="text-align: center;">005/00008</td> <td style="text-align: center;">007/00009</td> </tr> <tr> <td></td> <td style="text-align: center;">003/00012</td> <td style="text-align: center;">005/00011</td> </tr> <tr> <td></td> <td style="text-align: center;">008/00009</td> <td style="text-align: center;">010/00008</td> </tr> <tr> <td></td> <td style="text-align: center;">012/00015</td> <td style="text-align: center;">002/00010</td> </tr> <tr> <td></td> <td></td> <td style="text-align: center;">- - - -</td> </tr> <tr> <td></td> <td></td> <td style="text-align: center;">- - - -</td> </tr> </table> <p>e.g.) 002/00012                      002 = the bit number where the maximum voltage is found.                      0.0012 = signal level at bit 2.</p> <p>Red indication means that a signal level at that bit position exceeds a preset sensitivity level.</p>								Lens 1	Lens 2		007/00010	003/00005		002/00012	002/00012		005/00008	007/00009		003/00012	005/00011		008/00009	010/00008		012/00015	002/00010			- - - -			- - - -
	Lens 1	Lens 2																																
	007/00010	003/00005																																
	002/00012	002/00012																																
	005/00008	007/00009																																
	003/00012	005/00011																																
	008/00009	010/00008																																
	012/00015	002/00010																																
		- - - -																																
		- - - -																																
4	<p>Press to display the oscilloscope screen on vision display.</p> 																																	
5	Press to display SD signal (= AC signal = DC signal – DC factor) on vision display.																																	
6	Press to display DC signal (= Output signal from DA sensor) on vision display.																																	

Item No.	Function
7	Select to display SD Inspection station (Head/Lens) on vision display.
8	Press to change the SD bit position to be displayed (move downdown).
9	Press to change the SD bit position to be displayed (move upup).
10	Press to start the creation of waveform continuously on vision display.
11	Press to stop the creation of waveform and holds the current waveform indication on vision display.
12	 <p>Press to display the Bit Count screen on vision display.</p> <p>It shows the number of rejections created by each bit of a DA sensor in a graphical form.</p> <p>The graph shows bit positions on the horizontal axis and the number of rejections on the vertical axis.</p>
13	 <p>Press to display the Level Count screen on vision display.</p> <p>It shows the number of rejections at each max SD signal level in a graphical form.</p> <p>The graph shows SD signal levels on the horizontal axis and the number of rejections on the vertical axis.</p>
14	 <p>Press to display the Spindle Count screen on vision display.</p> <p>It shows the number of rejections at each spindle position in a graphical form.</p> <p>The graph shows spindle positions on the horizontal axis and the number of rejections on the vertical axis.</p>
15	 <p>Press to display the Bit MAX count screen on vision display.</p> <p>It shows number of rejection created by each bit of DA sensor in graph. In graph, bit number is mapped at vertical axis and level is at horizontal axis.</p>
16	Press to select a position of the SD inspection station to be displayed on vision display
17	Press to clear the analysis data.
18	Press to print out the EPI inspection data.
19	Press to exit from this window.

## Vision button



### Notice!

Vision button is available in the Parameter, Test and Maintenance modes (Refer to Chapter 5, page 36) for users with vision edit privileges. When the Vision button is pressed, the Vision Recipe Selection window is displayed.

The screenshot shows the 'Vision Recipe Selection' window. It contains a table with the following data:

No.	Camera	File Name	Ver.	Check
1	C02	Shift	2	<input checked="" type="checkbox"/>
2	C03	Shift	2	<input type="checkbox"/>
3	C1	Shift	2	<input type="checkbox"/>

Below the table is a toolbar with the following icons and labels:

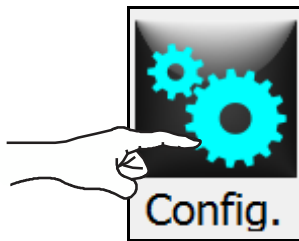
- 5: Download
- 6: Upload
- 7: Delete
- 8: Print
- 9: Switch
- 10: Trigger (with OFF/ON indicator)
- 11: Exit

Callouts 1, 2, 3, and 4 point to the Camera, File Name, Ver., and Check columns of the table, respectively.



Item No.	Function
1	Indication of the camera station.
2	Press to enter a new vision file name or select an existing one.
3	Press to change the vision file version.
4	Press to select the camera to be edited.
5	Press to download a vision file for a selected camera (#4 must be selected).
6	Press to upload a vision file for a selected camera (Only available in the Parameter and the Test modes).
7	Press to delete a selected vision file that is no longer used. (This button is not frequently used.)
8	Press to print out a vision file.
9	Press to display extra switches.
10	Press to turn ON/OFF the camera trigger.
11	Press to exit from this window.

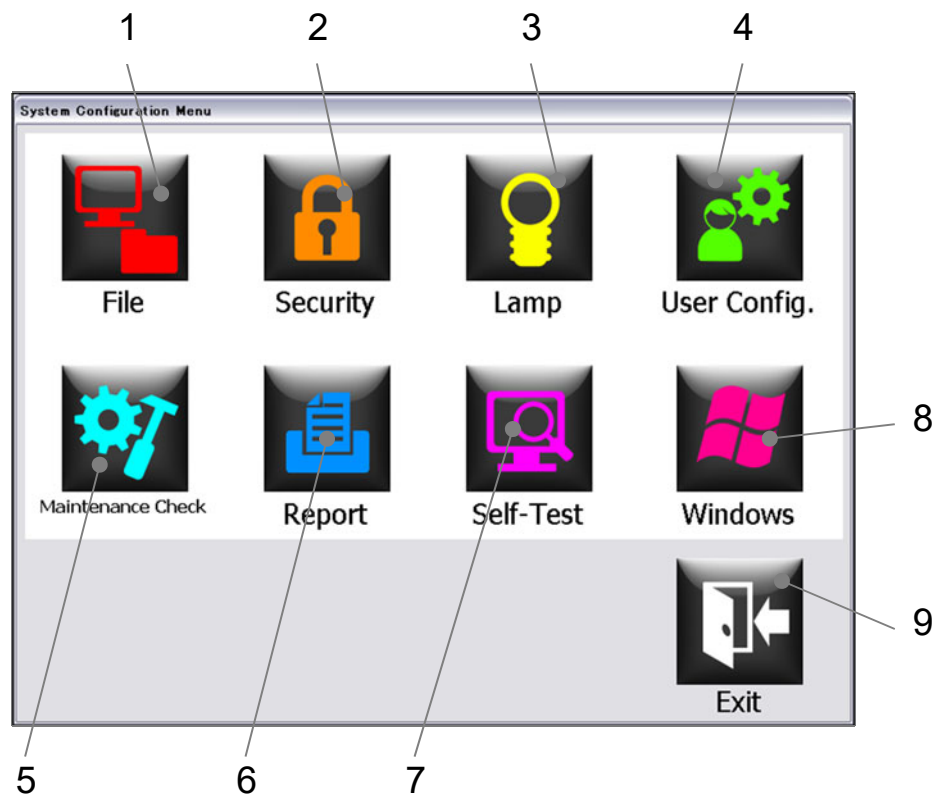
## Configuration button



### Notice!

Config. button is available in the Parameter, Test, and Maintenance modes. When the Config. button is pressed, the System Configuration Menu window is displayed.

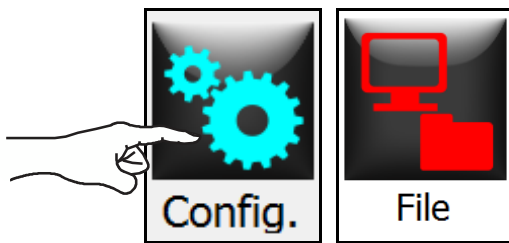
Detailed information about the Configuration window is described below:



Item No.	Function
1	Press to display the File Operation window.
2	Press to display the Security Table window.
3	Press to display the Lamp Setting window.
4	Press to display the User Configuration window.
5	Press to display the Maintenance window.
6	Press to display the Report window.

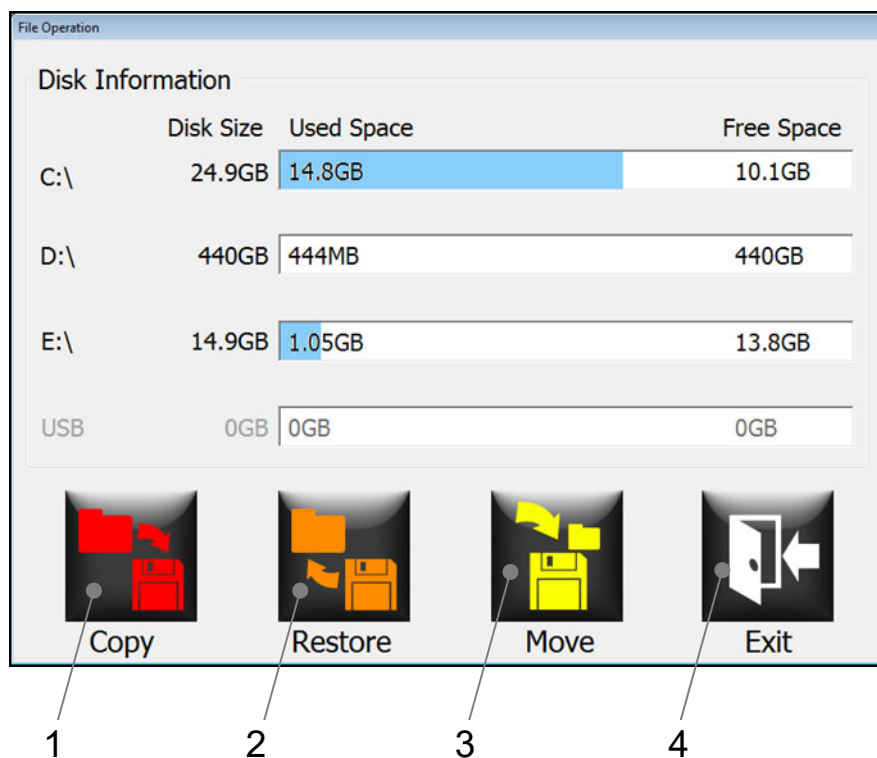
Item No.	Function
7	Press to execute the Self-Test process.
8	Press to display the Windows window.
9	Press to exit from this window.

## File



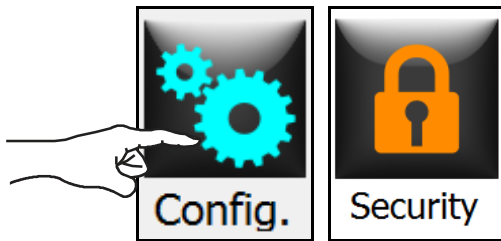
### Notice!

File Operation window is available for managing the EMIS data.



Item No.	Function
1	Press to copy the data.
2	Press to restore the data from the backup data.
3	Press to move the data.
4	Press to exit from this window.

## Security table








### Notice!

Security Table window is used to assign different access privileges to each user level. There are five user levels and the configurations of each user level can be configured to suit the customer's individual requirements.

Security Table	Level 1	Level 2	Level 3	Level 4	Level 5
Production Mode	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Parameter Mode	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Test Mode	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Maintenance Mode	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Recipe Edit	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Vision Edit	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Approval	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
File	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Security	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Lamp	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
User Config.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Maintenance	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Report	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Windows	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>








				
New Registration	Reassignment	Unassignment	Print	Exit







  

1	2	3	4	5
---	---	---	---	---

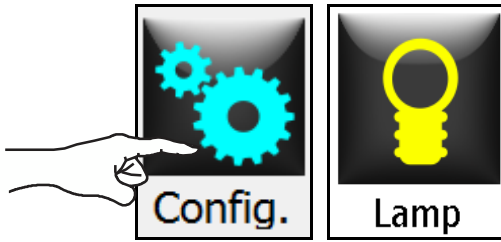
Item No.	Function
1	Press to register the new operator.
2	Press to reassign the operator who was already unassigned previously.
3	Press to unassign the operator who is currently registered
4	Press to print out the Security Table information.
5	Press to exit from this window.

The table below explains the rights assigned to each security access level. By selecting corresponding check boxes, specific functions can be assigned to each user level.

Access Level	Rights	
Production mode	Able to enter the Production mode from the main menu.	 Production
Parameter mode	Able to enter the Parameter mode from the main menu.	 Parameter
Test mode	Able to enter the Test mode from the main menu.	 Test
Maintenance mode	Able to enter the Maintenance mode from the main menu.	 Maintenance
Recipe Edit	Able to operate in the recipe window.	 Recipe
Vision Edit	Able to operate in the Vision menu function (optional).	 Vision
Approval	Able to approve the production, saving the files and changing the interlock switch status. Also unlock the HMI screen when the "Computer locked" message was shown after no operation is performed on the machine within a certain period of time after machine stops.	No image
File	Able to operate in the File operation window.	 File

Access Level	Rights	
Security	Able to access the Security Table.	 Security
Lamp	Able to operate the Lamp Settings in the Lamp window.	 Lamp
User Config.	Able to operate in the User Config. window.	 User Config.
Maintenance Check	Able to operate in the Maintenance window.	 Maintenance Check
Report	Able to print out from the Report window.	 Report
Windows	Able to operate in the Windows window.	 Windows

### Lamp



**Notice!**

Initial setting parameters for lamp intensity exist. Unintentional or accidental modification of such parameters will cause incorrect inspection results.

### <Maintenance mode>

	Base Output	Usage Time [h]	Warning Time [h]	
C02-B (Bright) [μs]	104.00	-	+	
C02-B (Dark) [μs]	450.00	-	+	
C02-FU [μs]	480.00	-	+	
C02-FD [μs]	470.00	-	+	
C03-U [μs]	400.00	-	+	
C03-D [μs]	300.00	-	+	
SD1 [%]	60.00	-	+	0 1000 Reset
C1 (Bright) [μs]	200.00	-	+	
C1 (Dark) [μs]	250.00	-	+	
SD2 [%]	60.00	-	+	0 1000 Reset
	-		+	
	-		+	
	-		+	

Trigger: OFF ON (6)  
 Lamp Control: OFF ON (7)  
 EPI (8)   Switch (9)   Print (10)   Exit (11)

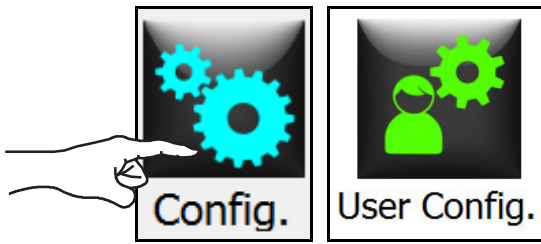
### <Production mode/ Parameter mode/ Test mode>

Trigger: OFF ON  
 Switch   Print   Exit



Item No.	Function
1	Current lamp base value is displayed. By pressing this area, a value can be manually entered.
2	Press to decrease the lamp base value.
3	Press to increase the lamp base value.
4	A column to enter a value for setting a warning time (hours).
5	Press to reset the consecutive usage time (hours).
6	Press to turn ON/OFF a trigger function. When the indicator is ON, image acquisition pulse signals are created continuously.
7	Press to activate/deactivate the lamp feedback function.
8	Press to access the EPI correction function.
9	Press to display extra switches.
10	Press to display a preview of the lamp maintenance report. Press the Print button on the preview screen to print it out.
11	Press to exit from this window.

### User Config.



**Notice!**

These are initial setting items for system operation.

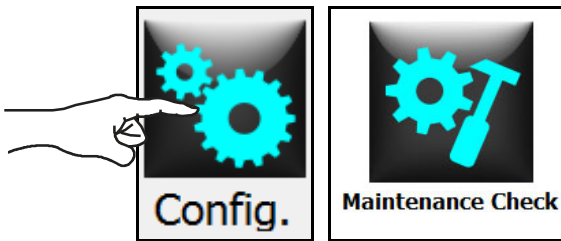
The screenshot shows the 'User Config.' interface with the following settings and controls:

- Security:**
  - 1:  Operator Selection
  - 2:  Production Approval
  - 3:  File Save Approval
  - 4:  Checked Recipe Approval
  - 5:  Interlock Switch Approval
  - 6:  Alphanumeric Password Required
  - 7: Minimum Password Length: 1
  - 8: Password Expiration [days]: 0
  - 9: Password Warning [days]: 0
  - 10: Failed Logon Count [times]: 0
  - 11: Autolock Time [min]: 0
- Production:**
  - 12:  Use of identical lot number permitted
  - 13:  Forced eject qty counted in Total
  - 14:  Sign In
  - 15: Quantitative Rej. Qty: 1000
  - 16: Quantitative Rej. %: 5.00
- Other:**
  - 17:  Alarm Popup
- Navigation:**
  - 18: Print button
  - 19: Exit button

Item No.	Function
1	Press to activate/deactivate the Operator Selection function.
2	Press to activate/deactivate the Production Approval function.
3	Press to activate/deactivate the File Save Approval function.
4	Press to activate/deactivate the Checked Recipe Approval function.
5	Press to activate/deactivate the Interlock Switch Approval function.

Item No.	Function
6	Press to activate/deactivate the Alphanumeric Password function.
7	Press to set a minimum number of password characters to be used.
8	Press to deactivate the password currently in use (= how many days needed to make it expire).
9	Press to set a timing (days) for warnthwarning thepassword expiration before the password actually expires.
10	Press to define a maximum limit of times that the user can retry a logon process.
11	Press to set a time length needed to activate an autolock function.
12	Press to activate/deactivate the function to permit the use of identical lot number.
13	Press to activate/deactivate the function to include the number of forced eject containers in the total count.
14	Press to activate/deactivate the Sign In function.
15	Press to set a maximum base number (= qty range) needed for the calculation of Quant. Eje. %.
16	Press to set the maximum limit % needed to alart a eject rate
17	Press to activate/deactivate the Alarm pop-up function (Alarm summary window).
18	Press to print out the User Config. information.
19	Press to exit from this window.

### Maintenance check



**Notice!**

The Maintenance window is used for setting the maintenance timers' limit and also for resetting the timers. If a maintenance timer has reached the limit, the "Maintenance Check" will show a fail result in the Self-Test. Production mode can be access although failed result is shown, but periodic maintenance is recommended.

### <Maintenance mode>

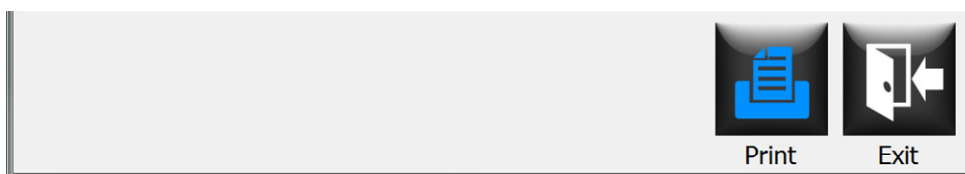
	Days of Usage	Days Until Warning	
Lubrication Oil on Spindle	45	30	Reset
Grease on Base Attachment	45	30	Reset
Grease on Spindle Cam Follower	45	30	Reset
Oil on Oscillating Table	45	365	Reset
Grease on Table Gear	45	365	Reset
Oil in Reducer	45	365	Reset
Air Filter	45	365	Reset
UPS	45	1100	Reset
PC Battery	45	1100	Reset

**Spin Control**

OFF ON

Spin Correction Print Exit

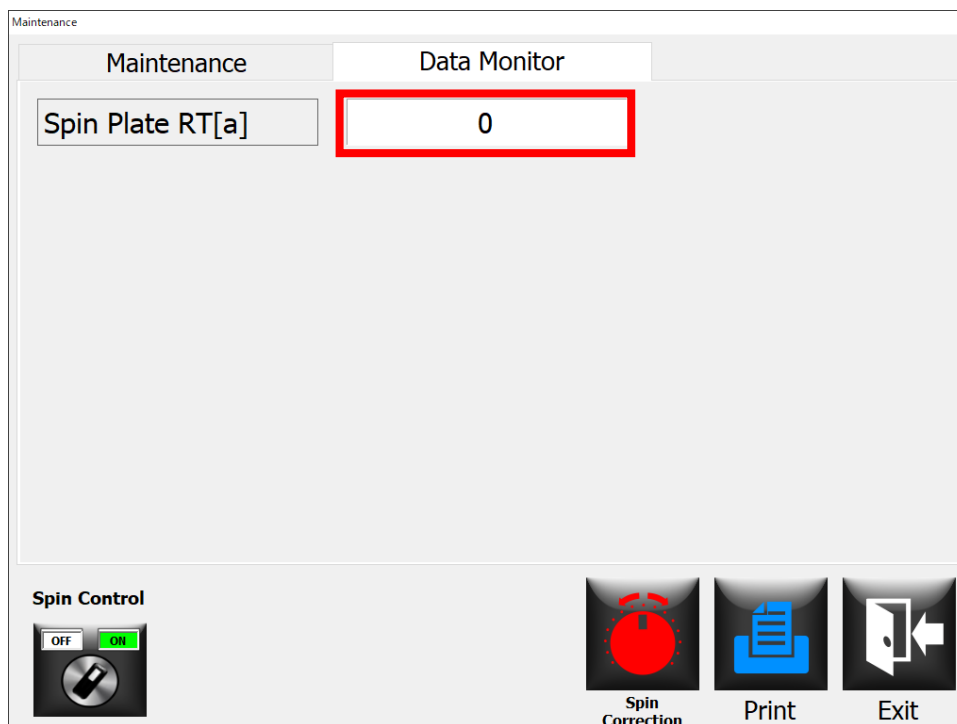
### <Production mode/ Parameter mode/ Test mode>



Item No.	Function
1	Press to display the usage screen.
2	Press to display the data monitor screen.
3	Press to set the warning time.
4	Press to reset the “Days of Usage” values.
5	Press to activate/deactivate the spin control function. The Spin Control switch is displayed in the Maintenance Mode. When this switch is turned OFF, a spin speed correction circuit (= an electrical circuit to adjust motor speed levels so that the spin speed matches standard value) is disabled. This switch is used to fix the calibration value. This switch is automatically turned ON when exiting from the Maintenance window.
6	Press to display the Spin Correction window to calibrate/correct spin settings and indications of the main motor/spin motors.
7	Press to print out the usege information.
8	Press to exit from this window.

#### Data Monitor window:

Displays current spin plate position by encoder value.



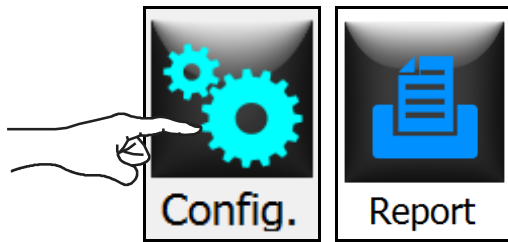
**Spin Correction window:**

The screenshot shows the 'Spin Correction' window. It features a table with columns for 'Motor' (Setting, Correction, Offset) and 'Monitor' (Actual, Correction, Offset). The table lists various equipment like Turntable, Conveyor, and Spin units with their respective values. On the right side, there are three buttons: 'Switch' (6), 'Print' (7), and 'Exit' (8). Callouts 1-5 point to the 'Setting', 'Correction', 'Offset', 'Actual', and 'Correction' columns of the table respectively.

	Motor			Monitor		
	Setting	Correction	Offset	Actual	Correction	Offset
Operation Capacity	120	0.95	0	0	1.00	0
Turntable [1]	0	1.00	0			
Conveyor [1]	0	1.00	0			
Turntable [2]	0	1.00	0			
Conveyor [2]	0	1.00	0			
Conveyor [3]	0	1.00	0			
Turntable [3]	0	1.00	0			
Conveyor [4]	0	1.00	0			
Spin [C02]	0	0.93	200	0	0.99	5
Spin [C03]	0	0.93	180	0	0.99	5
Spin [SD1-1]				0	1.01	5
Spin [SD1-2]	0	0.94	210	0	1.01	3
Spin [C1-1]				0	1.04	5
Spin [C1-2]	0	0.94	195	0	1.04	5
Spin [SD2-1]				0	1.01	5
Spin [SD2-2]	0	0.96	170	0	1.01	5

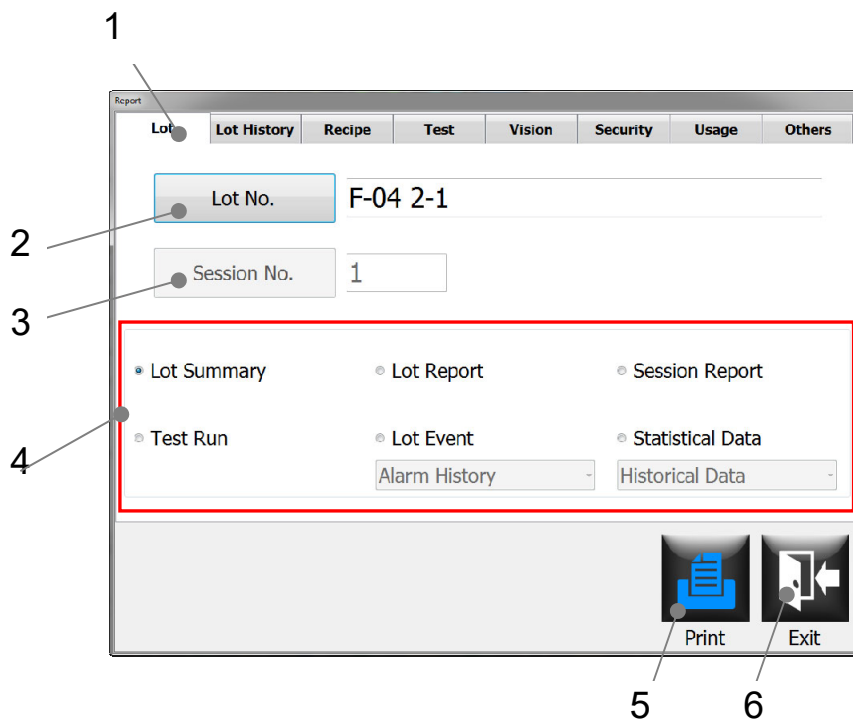
Item No.	Function
1	Press to set the motor speed.
2	Press to set the coefficient value of the motor speed.
3	Press to set the offset value of the motor speed.
4	Press to align the speed on HMI (= "Actual") to motor speed.
5	Press to align the speed on HMI (= "Actual") to motor speed.
6	Press to display the switch screen.
7	Press to print the spin correction value report
8	Press to exit from this window.

## Report



### Notice!

Report page is used for printing various different types of reports. Reports are separated into six groups selected by separate tabs. When the Report button is pressed, the Production report preview screen is displayed.

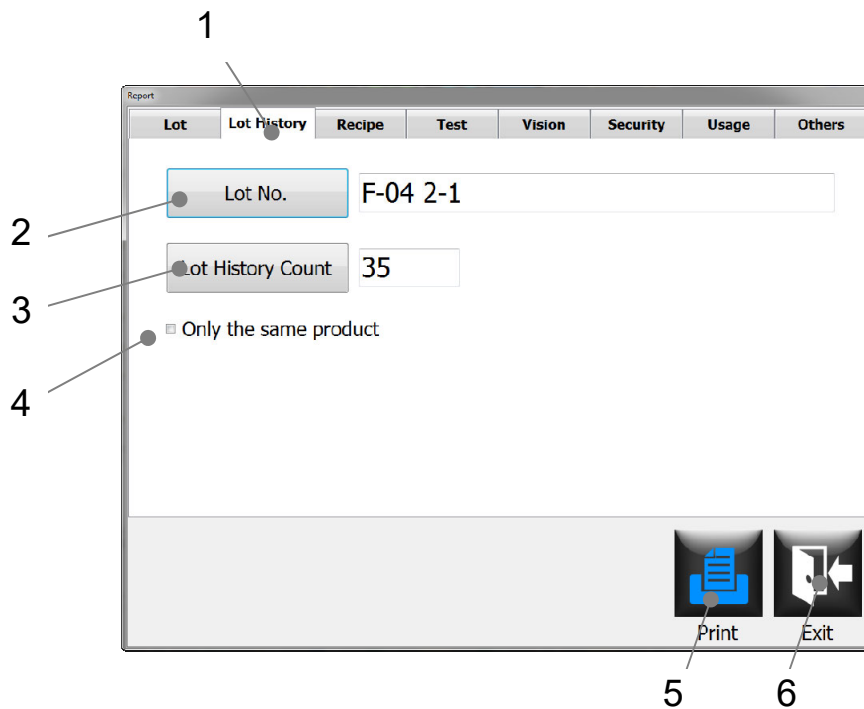


Item No.	Function
1	Press to switch to the Lot tab.
2	Press to select the lot number to be printed out.
3	Press to select the session number to be printed out.

Item No.	Function
4	<p>This area indicate what types of reports are available for print out.</p> <ol style="list-style-type: none"><li>1. Lot summary</li><li>2. Lot report</li><li>3. Session report</li><li>4. Test run</li><li>5. Lot event.</li></ol> <p>Select one of the following options from a pull-down menu.</p> <ol style="list-style-type: none"><li>I. Alarm History</li><li>II. Running History</li><li>III. Logon History</li><li>IV. Entire History</li></ol> <ol style="list-style-type: none"><li>6. Statistical data</li></ol> <p>Select one of the following options from a pull-down menu.</p> <ol style="list-style-type: none"><li>I. Historical Data</li><li>II. Historical Graph</li><li>III. Bit Count</li><li>IV. Level Count</li><li>V. Spindle Count</li></ol>
5	Press to print out the selected report.
6	Press to exit from this window.

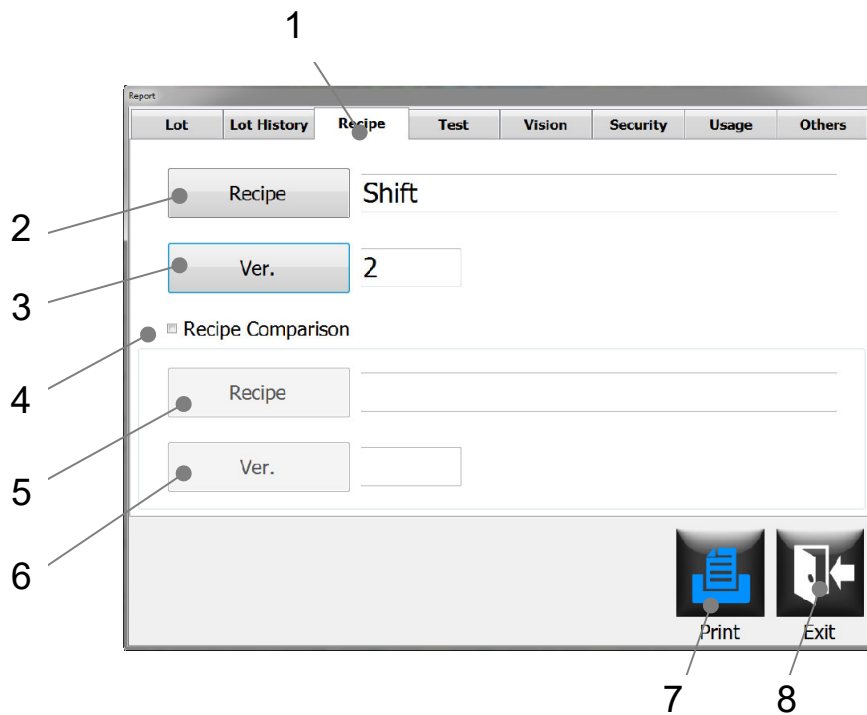


## Lot history



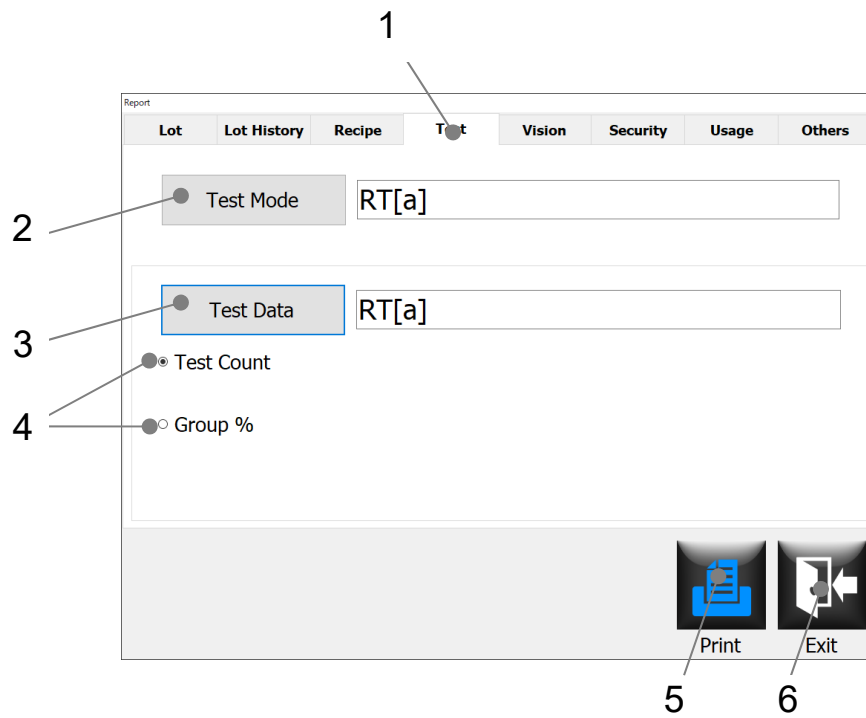
Item No.	Function
1	Press to switch to the Lot History tab.
2	Press to select the lot number to be printed out.
3	Press to select the lot history count to be printed out. The number can be set in the range of 1-100. When the "Only the same product" <input checked="" type="checkbox"/> is marked, only the same product can be selected.
4	Check to activate/deactivate the function to select only the same product.
5	Press to print out the lot history report.
6	Press to exit from this window.

## Recipe



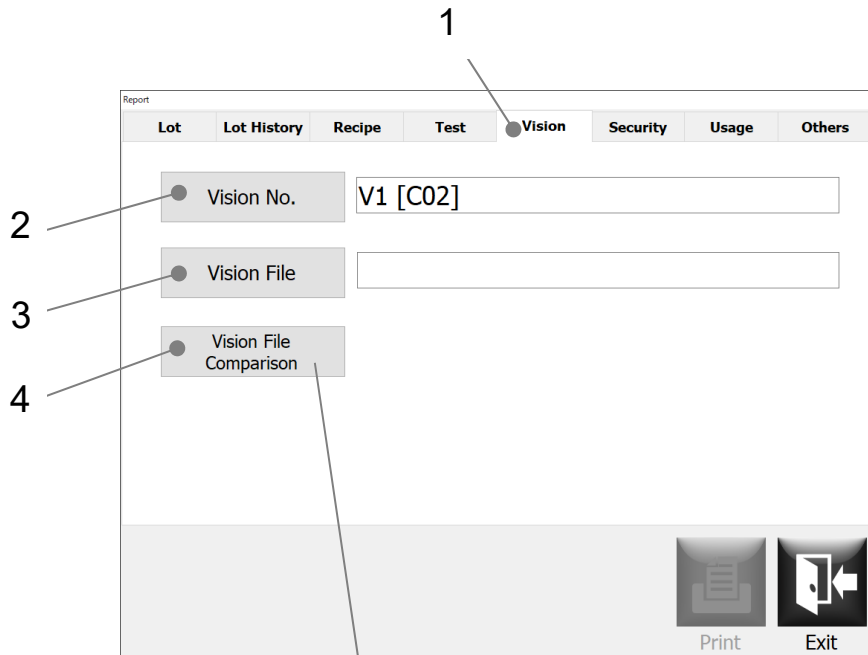
Item No.	Function
1	Press to switch to the Recipe tab.
2	Press to select the recipe you would like to use as a base recipe for print out/comparison.
3	Press to select the version number of the recipe you would like to use as a base recipe for print out/comparison.
4	Check to activate/deactivate the recipe comparison function.
5	Press to select the recipe that you would like to compare against the recipe already selected.
6	Press to select the version number of the recipe you would like to compare against the recipe already selected.
7	Press to print out the recipe selected as a base recipe or recipe comparison results.
8	Press to exit from this window.

## Test

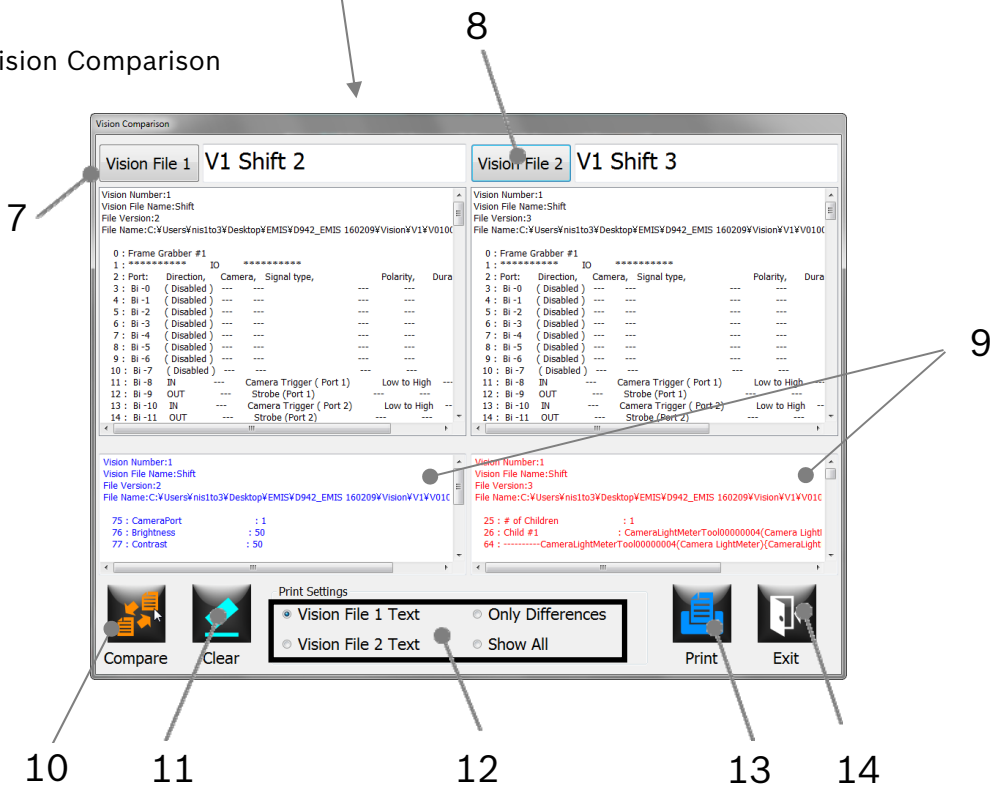


Item No.	Function
1	Press to switch to the Test tab.
2	Press to select the location where a test was performed.
3	Press to select the test data to be printed out.
4	Check to select a test result category: Test Count or Group %.
5	Press to print out the selected report.
6	Press to exit from this window.

# Vision

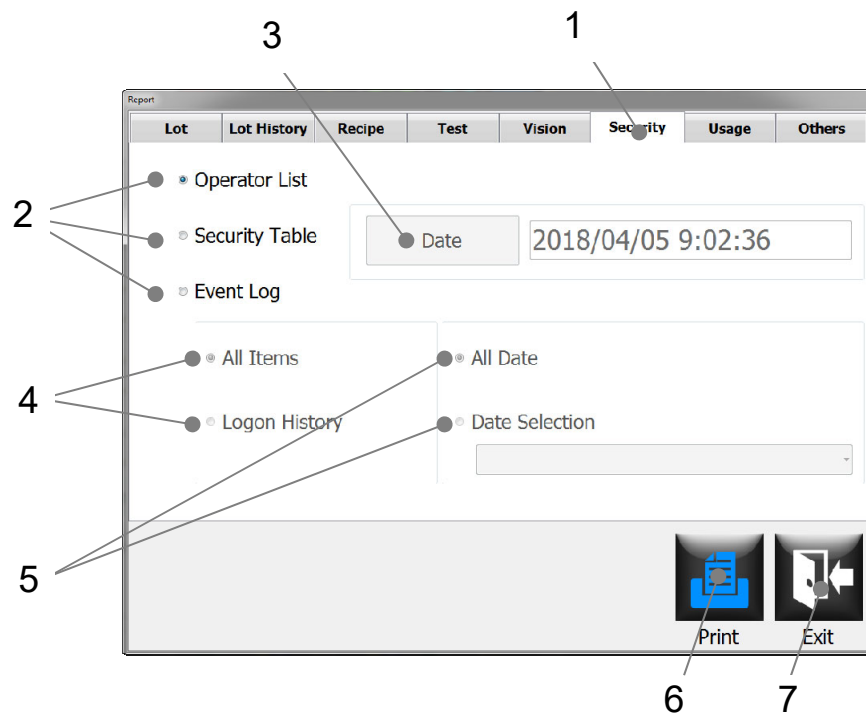


## Vision Comparison



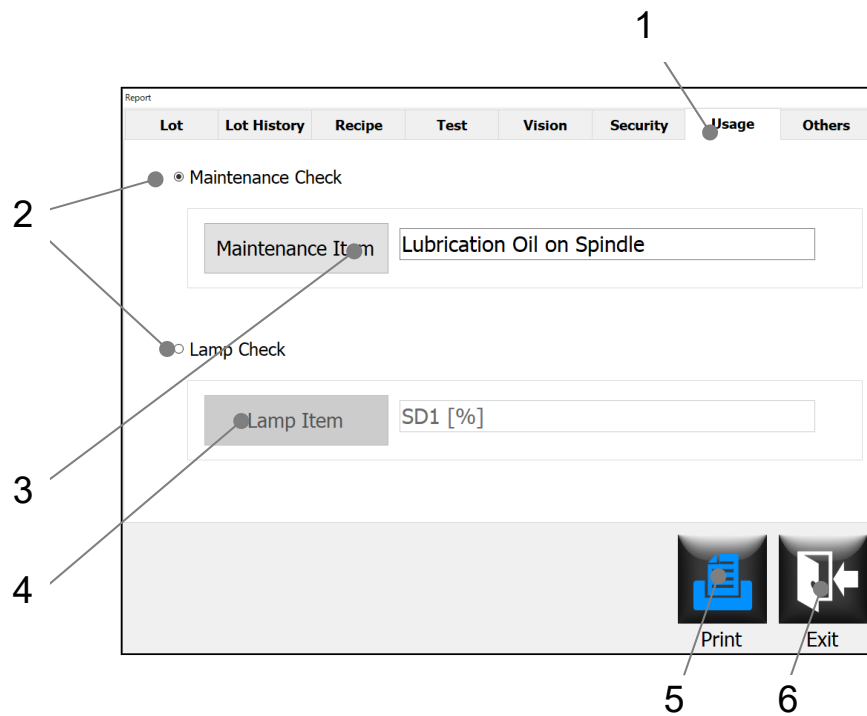
Item No.	Function
1	Press to switch to the Vision tab.
2	Press to select the vision processor (= inspection criteria) in which a selected vision file is used.
3	Press to select a vision file you would like to print out.
4	Press to open a vision comparison window.
5	Press to print out the vision history information. Each vision file has the revision history information. To print out a desired data, select a desired mode, and then select a file name from a file list that you would like to print out.
6	Press to exit from this window.
7	Select the Vision file.
8	Select the Vision file.
9	Show the texts' difference between the two Vision files.
10	Show the difference. (column above)
11	Clear the selected Vision files.
12	Select the printing item.
13	Press to print.
14	Press to exit from this window.

## Security



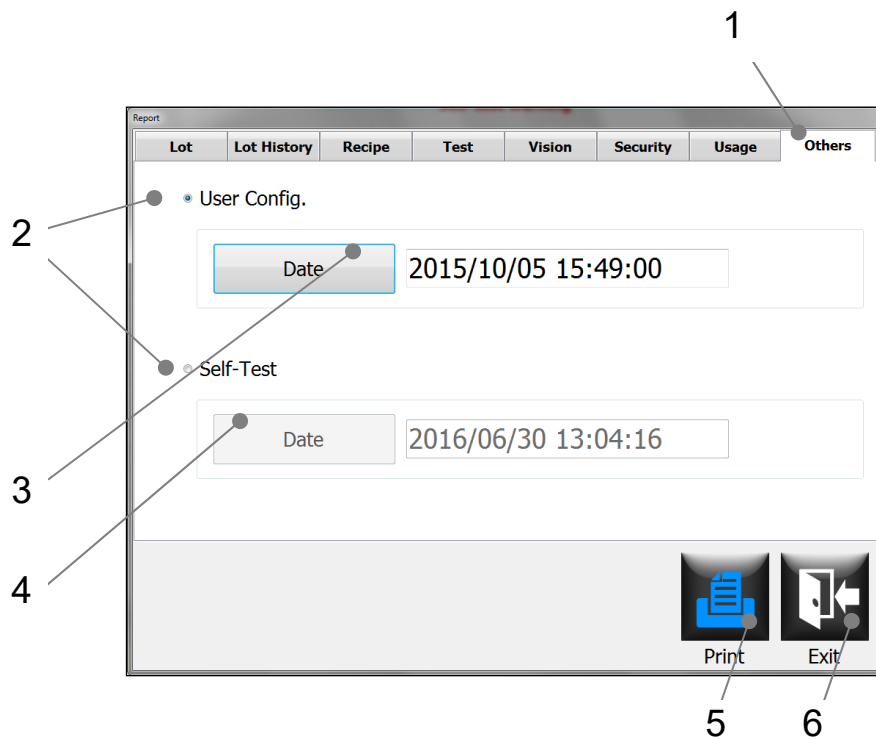
Item No.	Function
1	Press to switch to the Security tab.
2	Check to select the type of security report to be printed out. The following three types are available: <ul style="list-style-type: none"> <li>○ Operator List</li> <li>○ Security Table</li> <li>○ Event Log</li> </ul>
3	Press to select the date/time of the selected report you would like to print out.
4	Check to select the type of event log report to be printed out. The following two types are available: <ul style="list-style-type: none"> <li>○ All Items</li> <li>○ Logon history</li> </ul>
5	Check to select the type of event log report to be printed. The following two types are available: <ul style="list-style-type: none"> <li>○ All Date</li> <li>○ Date Selection</li> </ul> <p>If it is checked, you have to select the date that you would like to print out from the pull-down menu.</p>
6	Press to print out the selected report.
7	Press to exit from this window.

## Usage



Item No.	Function
1	Press to switch to the Usage tab.
2	Check to select the usage type to be printed out. The following two types are available: <ul style="list-style-type: none"> <li>○ Maintenance Check</li> <li>○ Lamp Check</li> </ul>
3	Press to select one of the available maintenance check items to be printed out.
4	Press to select one of the available lamp stations to be printed out.
5	Press to print out the selected report.
6	Press to exit from this window.

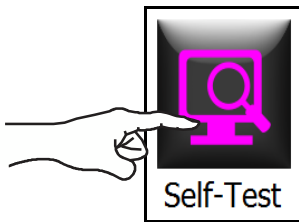
## Others



Item No.	Function
1	Press to switch to the Others tab.
2	Check to select which report type to be printed out. The following two types are available: <ul style="list-style-type: none"> <li>o User Config.</li> <li>o Self-Test</li> </ul>
3	Press to select the date/time of the User Config. report you would like to print out.
4	Press to select the date/time of the Self-Test report you would like to print out.
5	Press to print out the selected report.
6	Press to exit from this window.

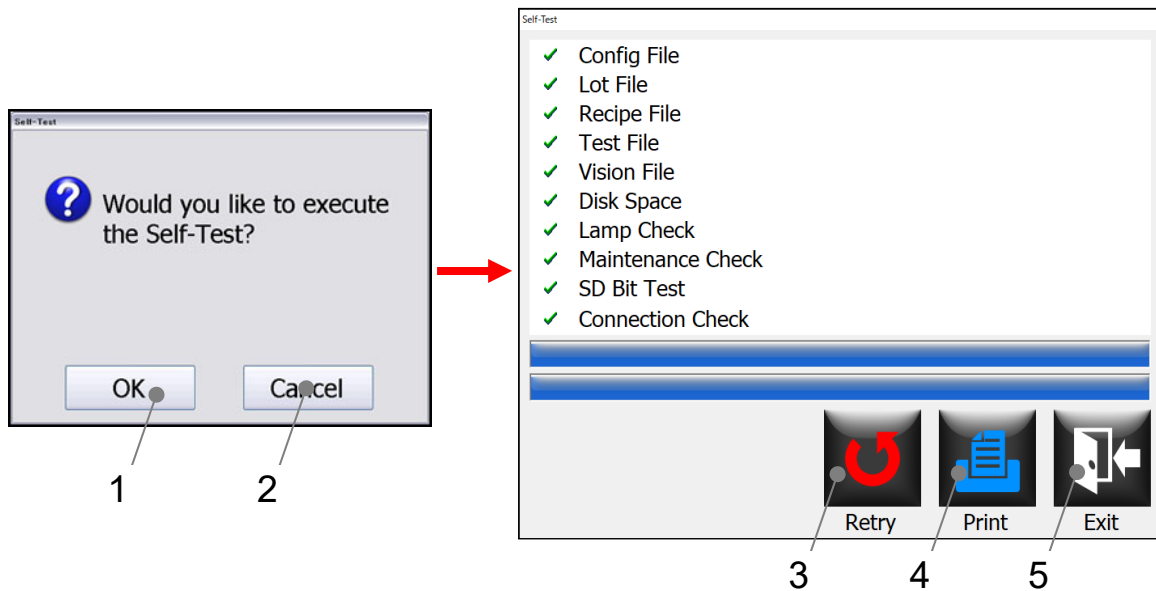


## Self-test



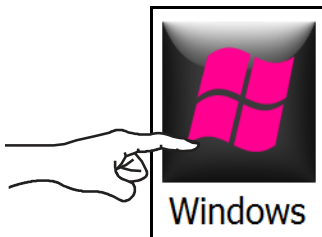
### Notice!

Self-Test is normally performed automatically when the EMIS program initially boots up. The Self-Test window allows an auto check to be performed at any time while the EMIS program is running in the Parameter or Maintenance mode.



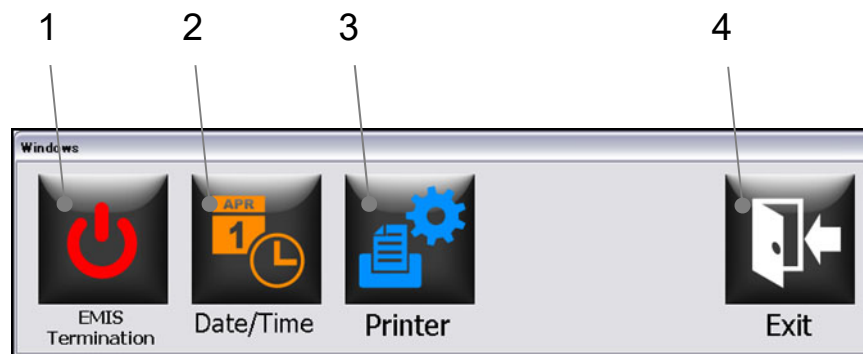
Item No.	Function
1	Press to execute the Self-Test.
2	Press to cancel the execution of the Self-Test before it actually starts.
3	Press to retry a Self-Test check process
4	Press to print out the Self-Test results report.
5	Press to exit from this window.

## Windows



### Notice!

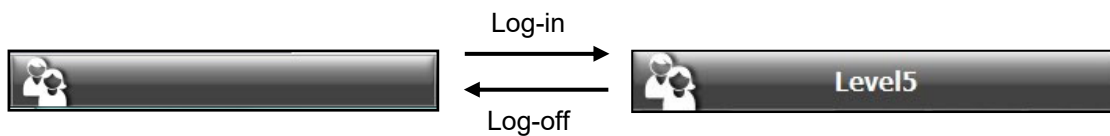
The Windows button enables the operator to terminate the EMIS program. But this button is only enabled for the users with the Windows access privileges (the Windows check box is selected in the Security Table window).



Item No.	Function
1	Press to terminate the EMIS program if needed (e.g., updating the HMI program).
2	Press to change the Date/Time information. This opens the “Date and Time” function that the Windows OS uses.
3	Press to open the “Devices and Printers” function that the Windows OS has.
4	Press to exit from this window.

## Basic operations

### Log-in



- This is the Operator button on the status bar.
- When nobody is logged in, the button does not show a user name.
- If a user is already logged on, the user's name appears here.
- Press this Operator button if nobody is logged in.
- Enter a user name with an on-screen keyboard or select a user name from a user name list.
- Press the Password button.
- Enter a password with an on-screen keyboard, and press the OK button.

[To use the Domain logon function]

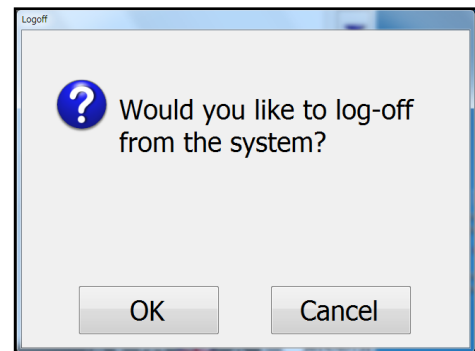
- Uncheck the 'Local User' button.
- Press the Operator button.
- Enter a user name with an on-screen keyboard.
- Press the Password button.
- Enter a password with the on-screen keyboard, and press the OK button.

[To use the Local logon function]

- Check the 'Local User' box.
- Enter a user name with an on-screen keyboard or select a user name from the user name list.
- Press the Password button.
- Enter a password with the on-screen keyboard, and press the OK button.
- On the Logon window, press the OK button.

## Log out

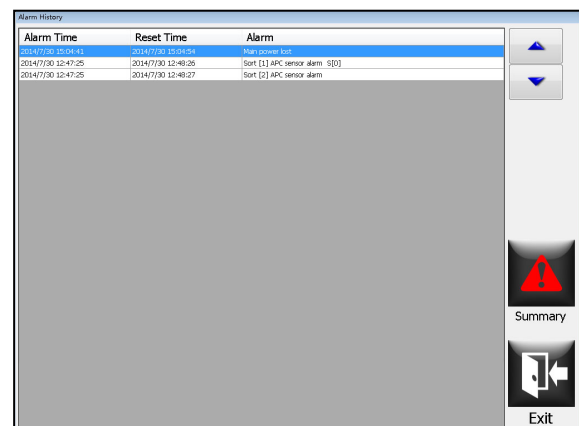
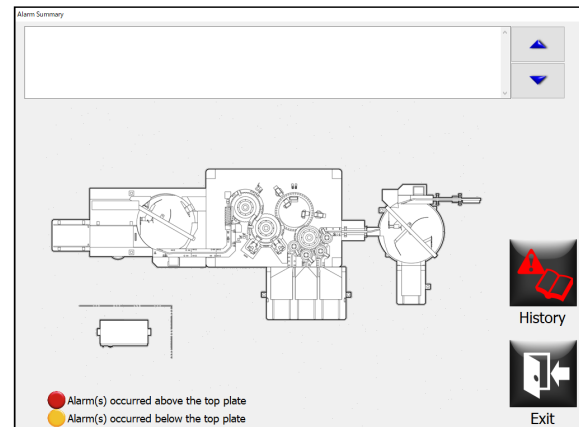
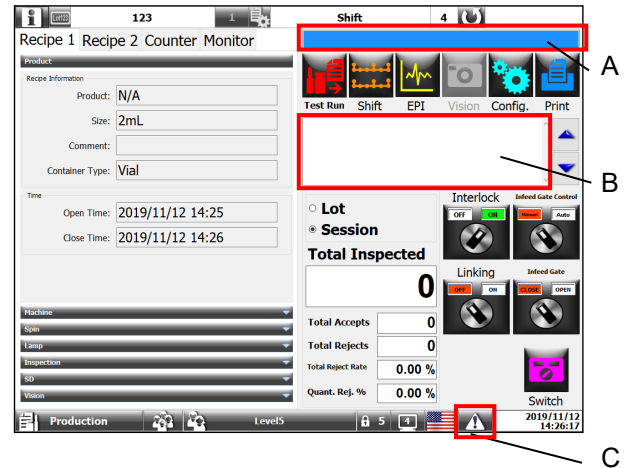
- Press the Operator button on the status bar to log off.
- If you would like to log off from the system, press the OK button. If not, press the Cancel button.



## How to read alarms/warnings

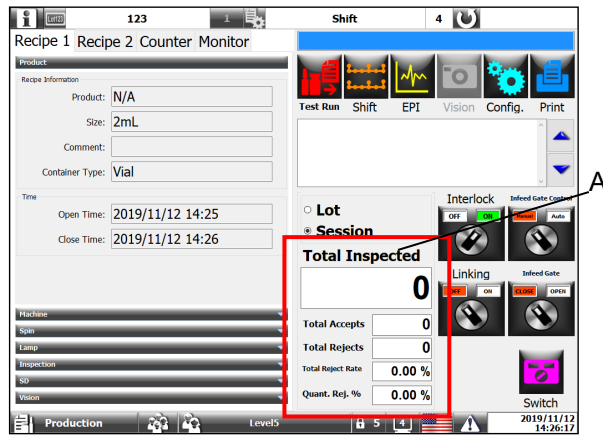
During the course of normal use, problems such as those described in Chapter 8 “Daily Maintenance” may occur. Problems that are monitored by the PLC will be displayed on the computer terminal using visual graphics.

- Warnings are displayed on the operation panel and in the warning message indication field (A).
- Alarms are displayed in the alarm message indication field (B).
- To display the alarm window, press the button (C) on the status bar.
- The Alarm Summary window appears.
- The Alarm Summary window shows a machine layout which indicates the location(s) of the alarm(s) by flashing indicator(s). Red or yellow indicator(s) show alarm(s) occurred above or below the base plate, respectively.
- Press the Exit button to exit from this window to the HMI screen.
- If you need to see a list of alarms occurred from the initial power up of the machine, press the History button on the Alarm Summary window to display the Alarm History window.
- When the Summary button is pressed on the Alarm History window, you will go back to the Alarm Summary window. If the Exit button is pressed on the Alarm History window, you will go back to the HMI screen.

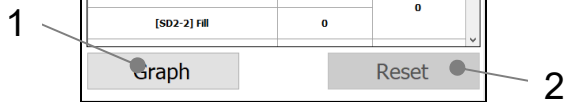


### How to view the counters

- o A summary display can be found on the operating panel screen in field (A).
- o To view a more detailed counter, press the Counter tab on the parameter area of the screen.



Item	Counter	%
[C01] Cap Top	0	0
[C02-1] Crimp / Neck	0	0
[C02-2] Crimp / Neck	0	0
[C03-1] Cap Side	0	0
[C03-2] Cap Side	0	0
[SD1-1] Particle #1	0	0
[SD1-2] Particle #1	0	0
[C1-1] Heavy Particle	0	0
[C1-2] Heavy Particle	0	0
[SD2-1] Particle #2	0	0
[SD2-2] Particle #2	0	0
[SD2-1] Fill	0	0
[SD2-2] Fill	0	0



Counter tab

**Total Inspected**

0

**Total Accepts** 0

**Total Ejects** 0

**Total Eject Rate %** 0.00 %

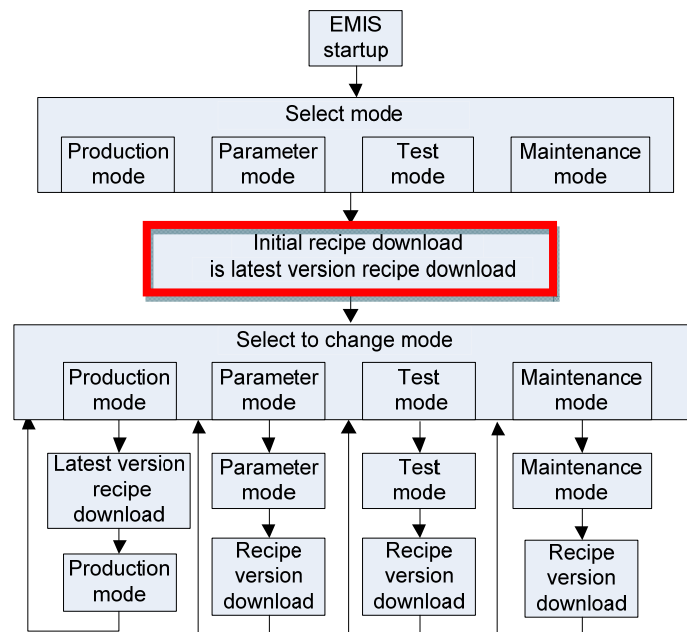
**Quant. Eje. %** 0.00 %

Summary counter

Item No.	Function
1	Press to show a trend of rejects at each inspection station in a graphical form
2	Press to reset all counters as well as rejection % figures
3	Counter for the total number of containers discharged from the machine
4	Counter for accepted containers
5	Counter for ejected containers
6	Counter that displays the ejection rate of the containers currently being inspected.
7	Counter that displays the quantity rejection rate within a certain range specified in the User Config. window.

## Recipe download

When the HMI is initially started up and one of 4 operation modes is selected, a recipe has to be downloaded to operate the machine. After the recipe is initially downloaded in the Parameter mode, Test mode or the Maintenance mode, it is not necessary to download it anymore. However, it is required to select and download the recipe again if switched to the Production mode. Downloading the same recipe file with a different version or a different recipe file is possible in the Parameter, the Maintenance, and the Test modes by users with recipe edit privileges.



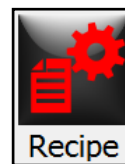
## Downloading the latest recipe version

In the Production only, only the latest version of the recipe can be downloaded.

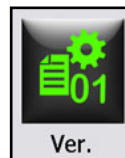
## Downloading the different recipe version

This can be done in the Parameter, Test and Maintenance mode. If you would like to use the recipe with a different version after the recipe is already selected and downloaded, please follow these steps.

- Press the Recipe button.



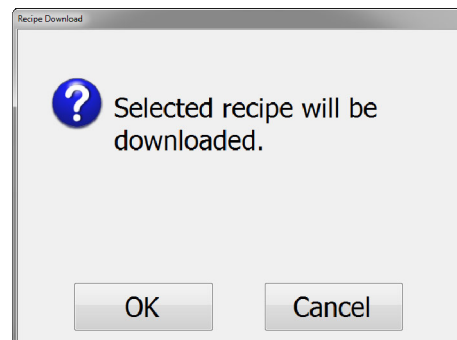
- Press the Ver. button.



- A numeric keypad appears. The keypad displays two values (Min and Max). They represent the range of available recipe versions.
- Enter the version number with a numeric keypad, and then press the OK button.



- You will see this message. Press the OK button to start downloading the recipe.





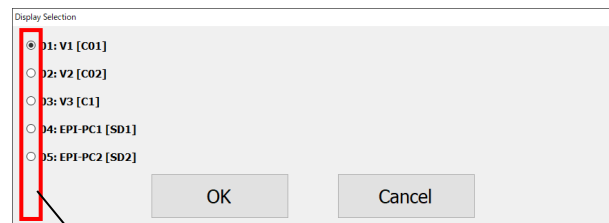
## How to change the right screen: Vision/EPI screen

This can be done in the Production, Parameter, Test and Maintenance mode. If you would like to change right screen, please follow these steps.

- Press the button.



- You will see this display selection.



- Select display No. in field (A), and then press the OK button.
- The right screen: Vision/EPI screen will change.



### Notice!

Same function can be done by Display button on operation panel.

## Reports

Reports can be printed out in all modes for users with report access privilege.

### Production report

#### Requirements:

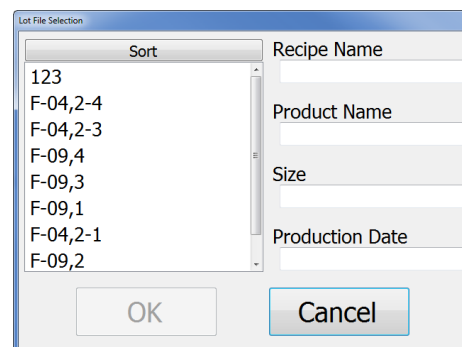
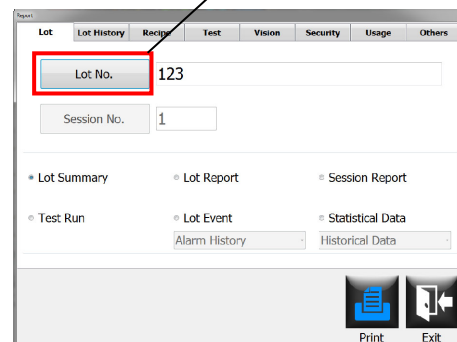
- o This procedure assumes the user is logged on at a user level with a report access privilege.

#### Procedure:

- Press the Config. button.
- System Configuration Menu window appears.
- Press the Report button.
- Select the Lot tab, and then press the Lot No. button (A).
- Select the Lot No. you would like to print out from a list, and then press the OK button.



A



A production report can be selected from the following four types:

- o Lot Summary
- o Lot Report
- o Session Report
- o Test Run
- o Lot Event

From the pull-down menu, the following options are available:

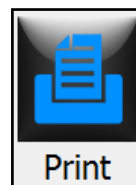
- I. Alarm History
- II. Running History
- III. Logon History
- IV. Entire History

- o Statistical Data

From the pull-down menu, the following options are available:

- I. Historical Data
- II. Historical Graph
- III. Bit Count
- IV. Level Count
- V. Spindle Count

- When the check box right next to “Lot Summary” or “Lot Report” is selected, the Session No. button is grayed out and not available. This button is enabled if other check box is selected. If you need to print out a different session under the same Lot. No, press the Session No. button to enter a session number you would like to print out.
- Press the Print button. A preview screen of the selected report is displayed. Press the Print button again to print it out.



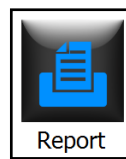
## Lot history report

### Requirements:

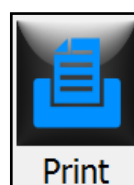
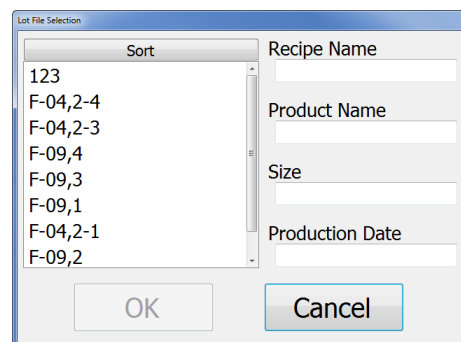
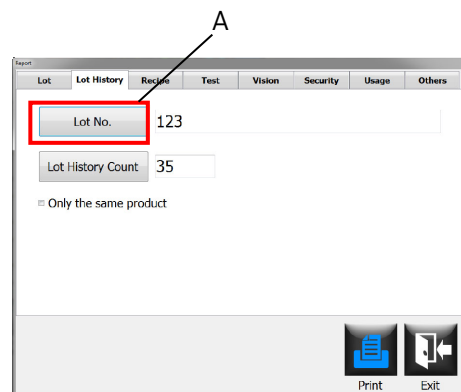
- This procedure assumes the user is logged on at a user level with a report access privilege.

### Procedure:

- Press the Config. button.
- System Configuration Menu window appears.
- Press the Report button.
- Select the Lot History tab, and then press the Lot No. button (A).



- Select the Lot No. you would like to print out from a list, and then press the OK button.
- If you need to select a different Lot History Count value, press Lot History Count button, and then manually enter a value you would like to print out. Press the OK button to go back to the Report window.
- Press the Print button. A preview screen of the selected report is displayed. Press the Print button again to print it out.



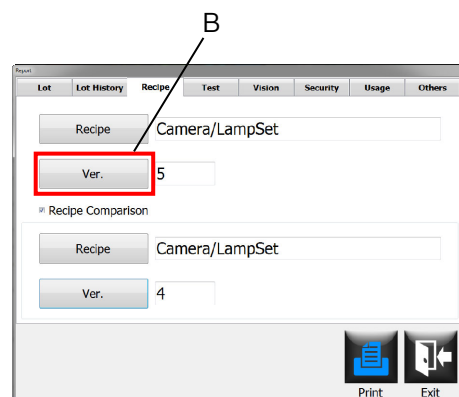
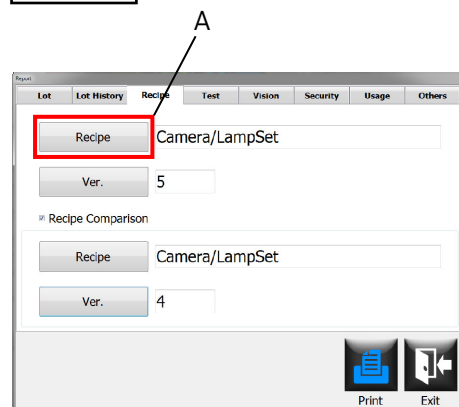
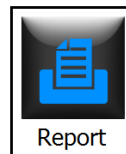
## Recipe report

### Requirements:

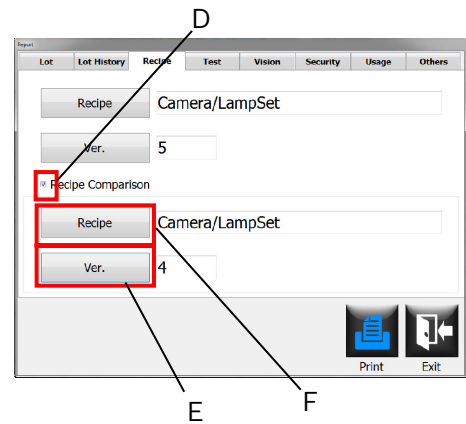
- o This procedure assumes the user is logged on at a user level with a report access privilege.

### Procedure:

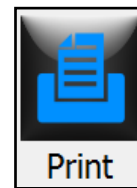
- Press the Config. button.
- System Configuration Menu window appears.
- Press the Report button.
- Select the Recipe tab, and then press the Recipe button (A).
- Select a desired version number of the selected recipe by pressing the Ver. button (B).



- If you need to make a comparison of the recipes, select the Recipe Comparison box (D), and then select a recipe file you would like to compare against the initially selected one by pressing the Recipe button (E). Also need to press the Ver. button (F) to select a different version number of the selected recipe.



- Press the Print button. A preview screen of the selected report is displayed. Press the Print button again to print it out.



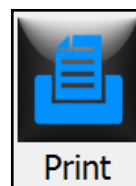
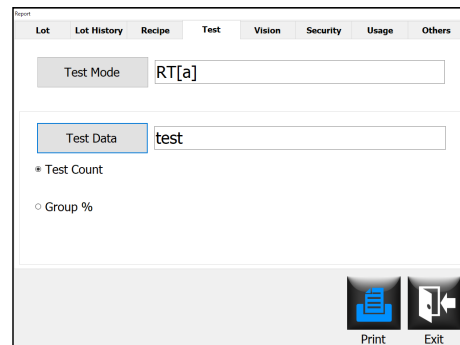
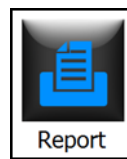
## Test report

### Requirements:

- o This procedure assumes the user is logged on at a user level with a report access privilege.

### Procedure:

- Press the Config. button.
- o System Configuration Menu window appears.
- Press the Report button.
- Select the Test tab, and then press the Test Mode button.
- Select one of the following locations where a test is performed.
- Press the Test Data button to select the test result data you would like to print out from a list, and then press the OK button.
- Select a check box right next to Test Count or Group %.
- Press the Print button. A preview screen of the selected report is displayed. Press the Print button again to print it out.



## Vision report

### Requirements:

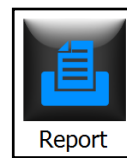
- o This procedure assumes the user is logged on at a user level with a report access privilege.

### Procedure:

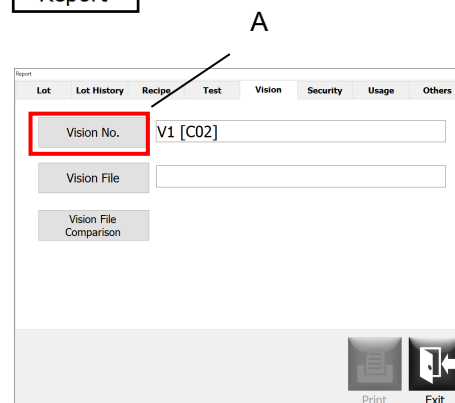
- Press the Config. button.  
System Configuration Menu window appears.



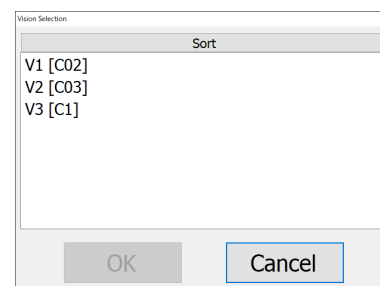
- Press the Report button.



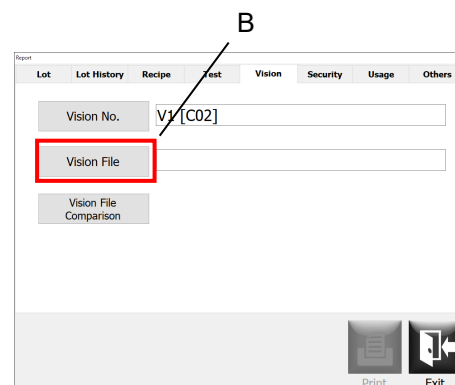
- Select the Vision tab, and then press the Vision No. button (A).



- Select the vision processor (= inspection criteria) in which a selected vision file is used.

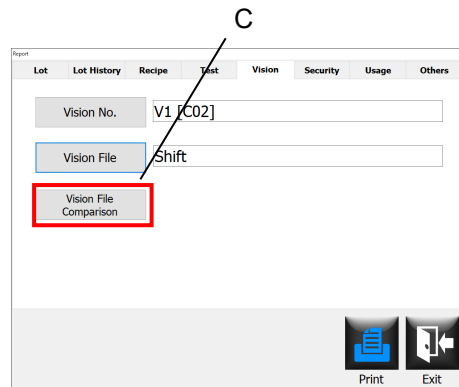


- Press the Vision File button (B), and then select a desired vision file you would like to print out from a list. Press the OK button to go back to the Report window.

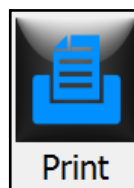




- If you need to make a print out of compared two vision files, press the Vision File Comparison button.



- Press the Print button. A preview screen of the selected report is displayed. Press the Print button again to print it out.



## Security report

### Requirements:

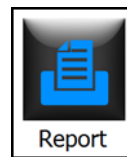
- o This procedure assumes the user is logged on at a user level with a report access privilege.

### Procedure:

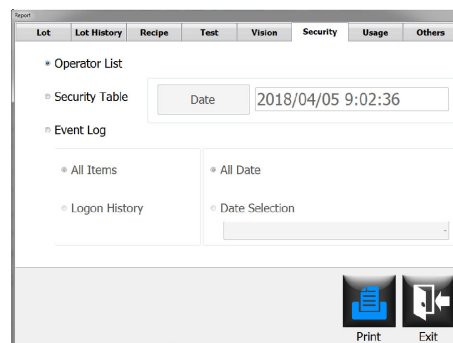
- Press the Config. button.
- o System Configuration Menu window appears.



- Press the Report button.

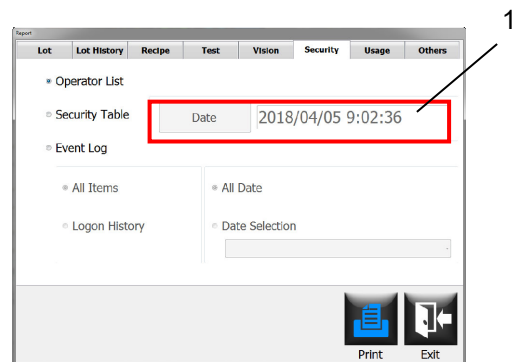


- Select the Security tab, and then select a check box right next to Operator List, Security Table or Event Log.

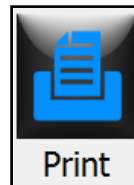


- o If Operator List is selected, simply press the Print button. A preview screen of the operator list is displayed. Press the Print button again to print it out.
- o If Security Table is selected, press the Date button, select a desired set of date & time from a list, press the OK button to go back to the Report window, and then press the Print button. A preview screen of the Security Table is displayed. Press the Print button again to print it out.
- o If Event Log is selected, the following options are enabled:
  - I. All Items
  - II. Logon History
  - III. All Date
  - IV. Date Selection

- Select a check box right next to one of the above options. If a check box right next to Date Selection is selected (Area 1), select a desired date from a pull-down list.



- Press the Print button. A preview screen of a selected report is displayed. Press the Print button again to print it out.



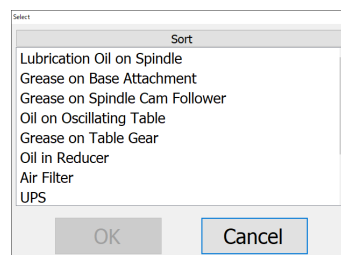
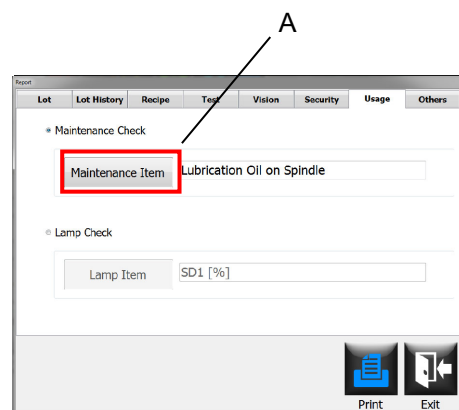
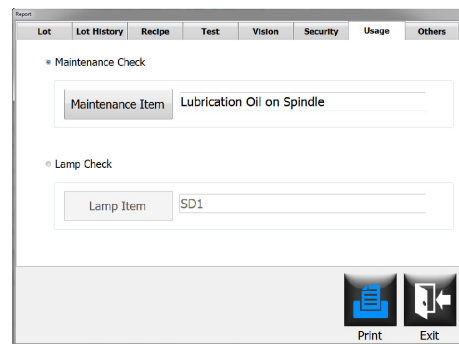
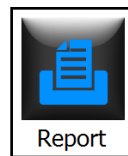
## Usage report

### Requirements:

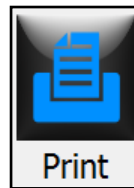
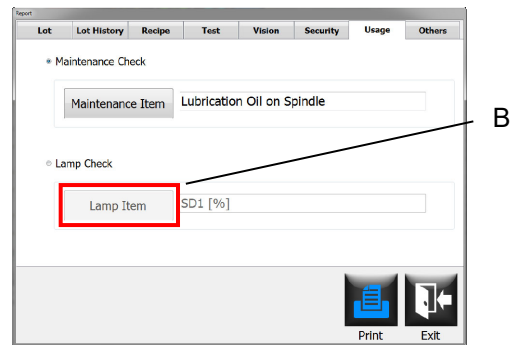
- o This procedure assumes the user is logged on at a user level with a report access privilege.

### Procedure:

- Press the Config. button.
- o System Configuration Menu window appears.
- Press the Report button.
- Select the Usage tab, and then select a check box right next to Maintenance Check or Lamp Check.
- If a check box right next to Maintenance Check is selected, the Maintenance Item button (A) is enabled. By pressing this button, you can select a desired maintenance item to be printed out. Press the OK button to go back to the Report window.



- If a check box right next to Lamp Check is selected, the Lamp Item button (B) is enabled. By pressing this button, you can select a desired lamp to be printed out. Press the OK button to go back to the Report window.
- Press the Print button. A preview screen of a selected report is displayed. Press the Print button again to print it out.



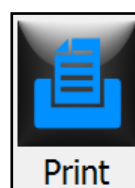
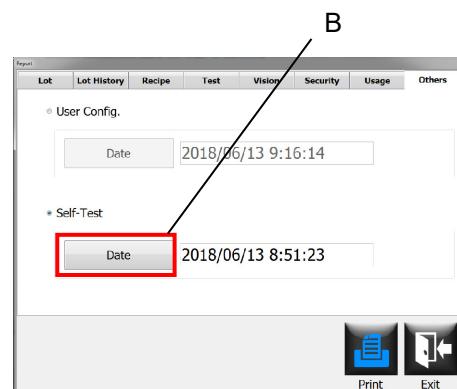
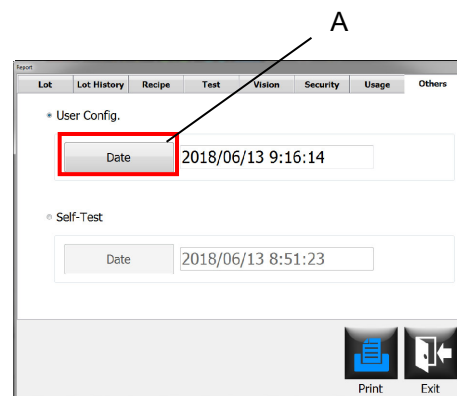
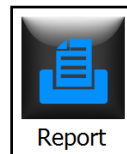
## Other reports

### Requirements:

- o This procedure assumes the user is logged on at a user level with a report access privilege.

### Procedure:

- Press the Config. button.
- o System Configuration Menu window appears.
- Press the Report button.
- Select the Others tab, and then select a check box right next to User Config. or Self-Test.
- If a check box right next to User Config. is selected, the Date button (A) is enabled. By pressing this button, you can select a desired date when the User Config. was changed to be printed out. Press the OK button to go back to the Report window.
- If a check box right next to Self-Test is selected, the Date button (B) is enabled. By pressing this button, you can select a desired date when the Self-Test was changed to be printed out. Press the OK button to go back to the Report window.
- Press the Print button. A preview screen of a selected report is displayed. Press the Print button again to print it out.



## Switch on machine (Initial system start up)

### Requirements:

- o The machine is installed and connected in accordance with Chapter 3 (Transport, installation and connections).
- o Make sure machine is clear from products or other physical objects.
- o The machine is adjusted in accordance with Chapter 7 to match the corresponding size.
- o All safety covers are closed and in place.

### WARNING

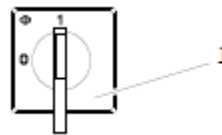


#### Increased risk of accident due to a non-supervised machine.

If the machine is not supervised when in operation, the accident risk increases. People can injure themselves and the machine can get damaged.

- o The machine operator must check all work on the machine.
- o Ensure that no personnel are in the working area of the machine when it is switched on.
- o Before switching on the machine, make sure that nobody can be endangered by the machine starting up.

- Turn the main power switch (1) to position 1 (ON).
- The entire inspection system, including the Main-PC, Vision-PCs and EPI-PCs start booting up.
- The STOP button on the operation panel lights up.
- The Reset button on the operation panel flashes.



### WARNING



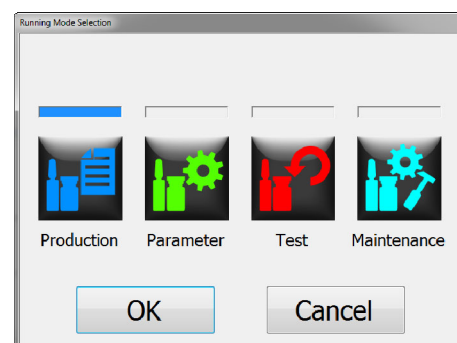
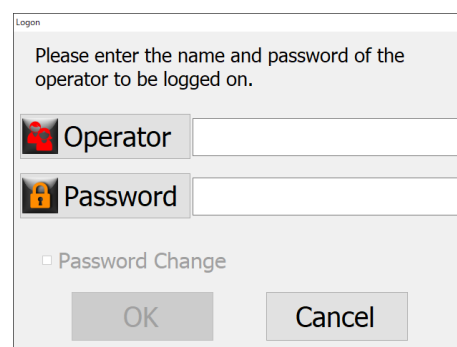
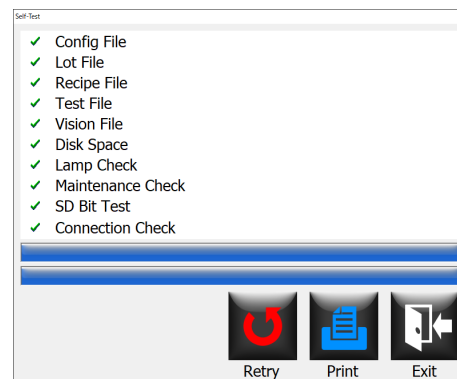
Wait for the Windows OS to load. Do not attempt to operate the keyboard or any other controls on the machine. Doing so can cause unexpected behavior.

- On the HMI screen, this screen appears.



- o On the vision screen, the Particle Inspection System logo appears.
- o During the initial boot up of the EMIS HMI program, the Self-Test process starts.

- A window appears during the Self-Test process to notify that the SD Bit Check will start. In order to proceed, set the machine stop position to the angles between 230-260 degrees, and lift the cap portion assemblies and their spindles those are located in front of the SD sensors. Rotate the cam follower units 180 degrees to place those of the lifted cap spindles on the upper inner side of the rotary head.
- After the SD Bit Check finishes, put the lifted cam follower units back to their original position.
- Press the Exit button when the Self-Test process completes.
  - The Logon window appears.
  - Enter a user name with an on-screen keyboard or select a user name from a user name list
  - Press the Password button
  - Enter a password with an on-screen keyboard, and press the OK button.
  - On the Logon window, press the OK button.
- The Running Mode Selection window appears. Select one of the available operation modes you would like to use.
  - If you would like to run the machine in the Production mode, press the Production button. You will be asked to enter the lot information. Please see the “Downloading the latest recipe version” section in this chapter.
  - If you would like to run the machine in the Test mode, press the Test button. You will be asked to select the recipe you would like to download. After the download process completes, you will be asked to select the section where a validation test is performed (e.g., RT[a], SW[B], etc.).
  - The machine is ready to operate if no warning or alarm message is displayed on the HMI screen.





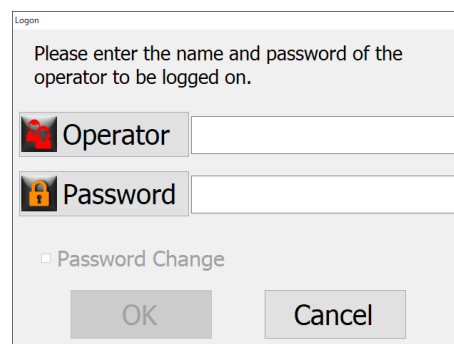
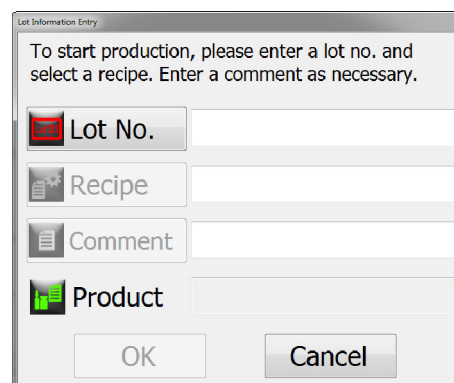
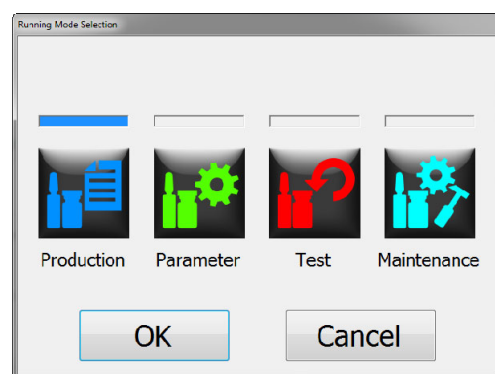
## Preparation for production

### Requirements:

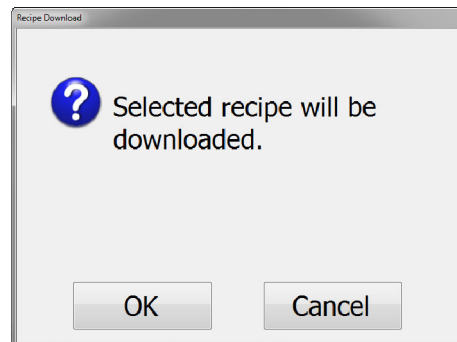
- o Make sure machine is clear from products or other physical objects.
- o The machine is adjusted in accordance with Chapter 7 to match the corresponding size.
- o The machine power is switched on.
- o All safety covers are closed and in place.
- o No warning and alarm messages are displayed on the HMI screen.

### To select Production Mode

- Press the Production button, and then press the OK button.
- Press the Lot No. button.
- Enter the Lot No. with an on-screen keyboard, and press the Enter key.
- Press the Recipe button.
- Select the recipe to be downloaded and press the OK button.
- Press the Comment button.
- Enter the comment, if needed.
- Press the OK button.
- Press the Approver button to select a user name from a user name list or enter an approver's user ID with an on-screen keyboard, and then press the OK button.
- Press the Password button. Use an on-screen keyboard to enter a password, and then press the OK button.



- You will see this message. Press the OK button to start downloading the recipe.



## Carry out TEST RUN

---

**Notice!**

- Syntegon recommend a confirmation of the inspection by inspection sample.
  - Syntegon recommend the confirmation at the time of a start of the production and the confirmation at the time of the production end. In carrying out this activity, you will confirm that inspection is effective during production.
-

## Start production

### Machine running

- Check the machine and its surroundings for safety.
- Turn the Infeed switch on the HMI screen to 'ON'. When pressing the START button, this switch turns on automatically.



- The turntable and conveyor belts start moving.
- Place a tray with the containers on the infeed unit, and then manually place them onto the infeed turntable with a scraper.
- Press the Start button on the operation panel and hold it for 3 seconds.
- The spin motors are activated first, and then 3 seconds later, the machine starts up.



#### Notice!

While the machine is running, check the following items:

- Check the quantity of containers in discharge station and collect them into tray as needed.
- Check if there are any fallen containers in the infeed conveyor.

### WARNING



#### **Danger of getting hurt, while working on machine in Standby mode.**

Under no circumstances perform any manual work, cleaning, operation or maintenance during Standby mode.

The machine may automatically restart at sudden when standby factors are cancelled.

## During production

### Production lot and session



#### Notice!

Inspection results in the Production mode are controlled as shown below. The below example is made under the assumption that the one production lot continued in three shifts for 3 consecutive days.

Production is started as usual in the 1<sup>st</sup> day.

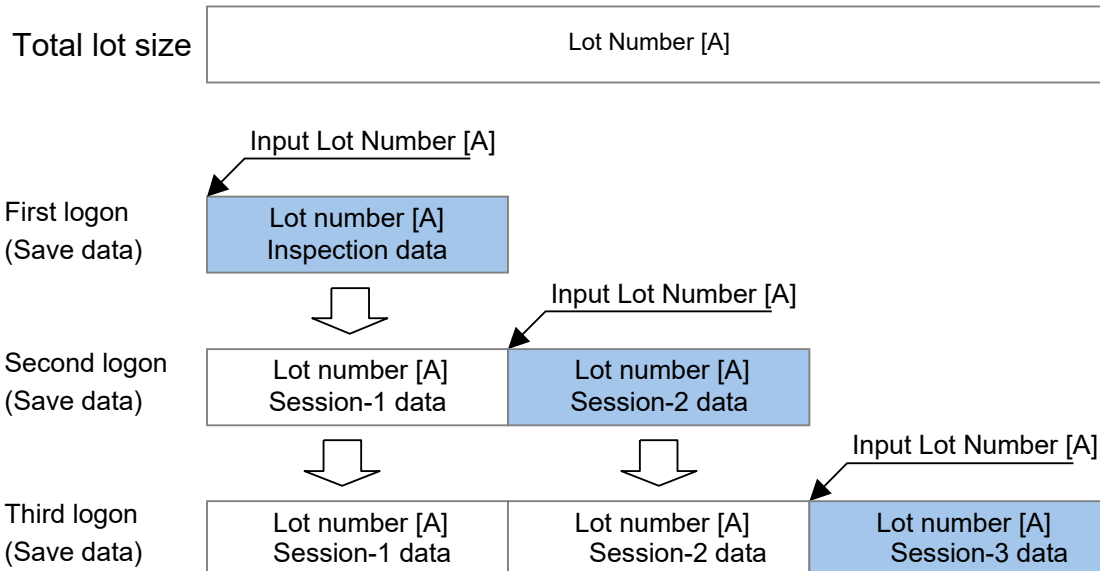
In the 2<sup>nd</sup> shift on the 2<sup>nd</sup> day of the production, the same lot number used on the 1<sup>st</sup> day must be entered as it is.

- You will see the message indicating that the same lot number already exists in the system.

Press the OK button. Inspection result data from the 1<sup>st</sup> day is collected as the Session-1 data, and then the new session (Session 2) is created to collect the results in the 2<sup>nd</sup> shift on the 2<sup>nd</sup> day.

In the 3<sup>rd</sup> shift on the 3<sup>rd</sup> day of the production, enter the same lot number used on the 1<sup>st</sup> day. Inspection results from the 2<sup>nd</sup> day is collected as the Session-2 data.

When terminating the production, inspection results from the 3<sup>rd</sup> day is collected as the Session-3 data.



On the HMI screen, counter values can be displayed for the total production lot (= total of 3 days) and the current session (= total of the latest session only) by selecting the “Lot” or the “Session” check box.

→ For more details of the counter, please refer to the “How to view the counters” section in this chapter.

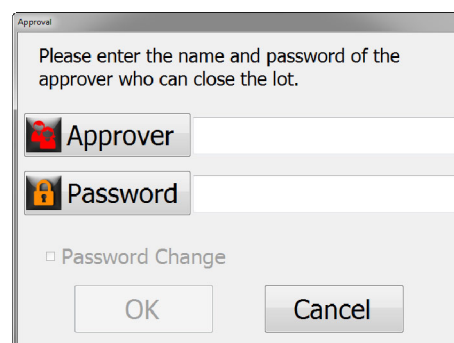
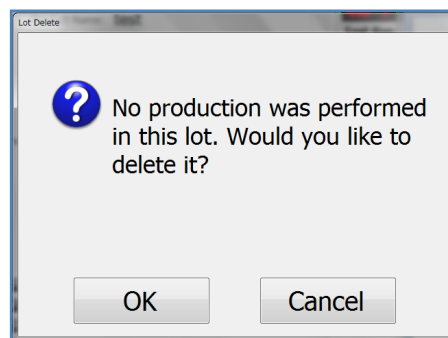
<input type="radio"/> Lot	
<input checked="" type="radio"/> Session	
<b>Total Inspected</b>	
	<b>0</b>
Total Accepts	0
Total Ejects	0
Total Eject Rate %	0.00 %
Quant. Eje. %	0.00 %

A print out of the production result can be made based on the total production lot or the total of each session.

→ For more details of the counter, please refer to the “Reports” section in this chapter.

## Exiting from the Production mode

- Press the Mode indication button on the status bar where the “Production” indication appears.
- You'll see a message confirming that you are about to terminate the production. If no production is performed in the lot, you'll see the message on the right.
- Press the OK button to close the lot.
- For a confirmation purpose, you'll be asked to get permission from an approver.
- Press the Approver button to select a user name from a user name list or enter an approver's user ID with an on-screen keyboard, and then press the OK button.
- Press the Password button. Use an on-screen keyboard to enter a password.
- Press the OK button to exit from the lot.



## Production signing in

Using the Sign In function, the operators who related to production lot (for example, not only operating the machine, but also carrying the products) can be recorded.

Sign in/out history is recorded in Audit trail.

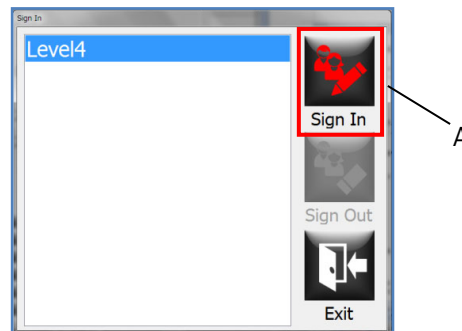
This function is only available if the “Sign In” check box is selected in the User Config. window.

- Press the Sign In/Out button on the status bar.



- The Sign In/Out window appears.

- Press the Sign In button (A).



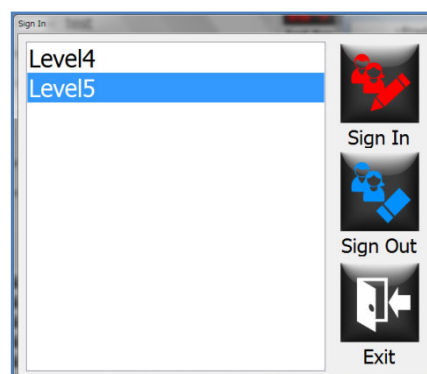
- Press the Operator button to select a user name from a user name list or enter an operator's user ID with an on-screen keyboard, and then press the OK button.

- Press the Password button. Use an on-screen keyboard to enter a password.

- Press the OK to sign in.

- You'll see the user name that has just signed in.

- Press the Exit button to exit from this window.



## Production signing out

This function is also only available if the “Sign In” check box is selected in the User Config. window.

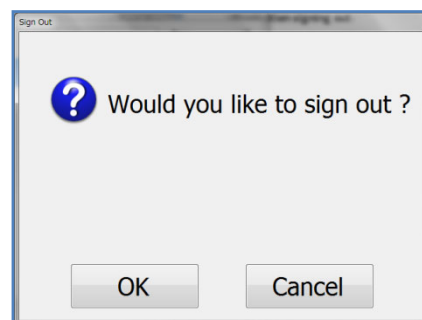
- Press the Sign In/Out button on the status bar.
- The Sign In/Out window appears.



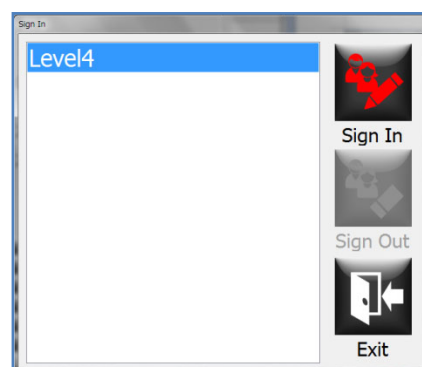
- Select the user that needs to be signed out.
- Press the Sign Out button (A).



- A confirmation window appears.
- Press the OK button to sign out.



- When the user is successfully signed out, press the Exit button to exit from this window.





## At the end of the production run

When the sensor detect a low accumulation at the infeed conveyor and some seconds (value is set in “Low Accumulation Timer” in Recipe 2) passed, infeed gate will be closed.

- Turn the Infeed Gate Control switch on the HMI screen to “Manual”.



- And press the Infeed Gate switch to turn “OPEN”. Then remained containers go into the infeed screw.



- Run the machine until all containers currently being inspected and transported on the machine are discharged completely. Whereabouts of the containers on the machine can be seen by pressing the Shift button on the HMI screen.
- After all containers are discharged, press the Stop switch on the operation panel to stop the machine operation immediately.
- However the machine stops, the conveyor belt keeps running. To stop the conveyor belt, press the Stop button on the operation panel again.

## Switch off the machine

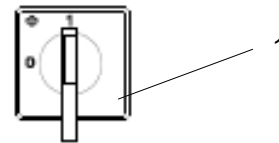
At the end of production, check the shift register screen to confirm there are no containers recognized within the machine and then stop the machine. The counter may show improper value when the machine is stopped, soon after the containers are discharged from the machine.

### Requirements:

- o Make sure machine is clear from products or other physical objects.

### Procedure:

- Turn the main power switch (1) to position 0 (OFF).



- o You will see the shutdown window indicating that the shutdown process is in progress with the timer counting down from 10 to 0.
- o If you turn the main power switch (1) back to position 1 (ON) before the timer gets to 2 or 1, you can terminate the shutdown process. You will see the “Shutdown Cancelled” window indication that the main power to the machine is restored back again and the shutdown process has been cancelled. Press the OK button to go back to the HMI screen. You will see several alarm messages such as “Main power lost” and “Power supply Alarm”. Press the Reset button to cancel those alarm messages in order to restart the machine.
- o If you turn the main power switch (1) back to position 1 (ON) when or after the timer gets to 0, you can no longer terminate the shutdown process. The system initiates the normal shutdown process, but the entire system keeps turning on. It is required to turn the machine power switch (1) to position 0 (OFF) first to completely cut the power supply to the machine before restarting the machine.
- The system initiate the normal shutdown process. You will see on the HMI screen that the Main-PC is going to shut down.
- After the system is safely shutting down, the power shuts off automatically.
- You need to turn the main power switch (1) to position 0 (OFF) in order to completely cut the power supply to the machine.

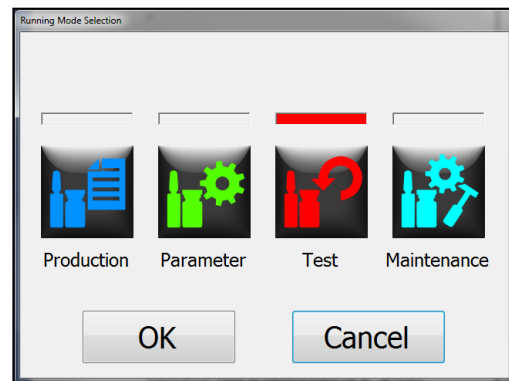
## Preparation for validation test runs

### Requirements:

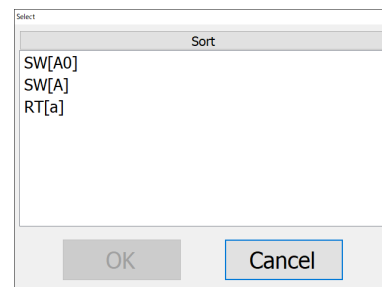
- o The user is already logged in with the privilege to be able to run the machine in the Test mode.

### Procedure:

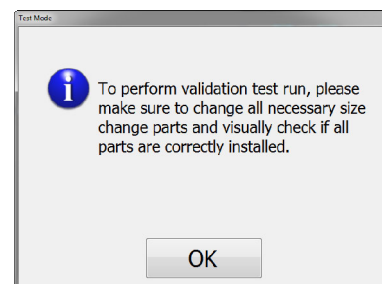
- The Running Mode Selection window appears. Press the Test button.
- o If no recipe has been downloaded yet, you will be asked to select the recipe you would like to download. Select the recipe name you would like to use for the test. If you are switching the operation mode to the Test mode, the recipe has already been downloaded, and no need to select it.



- After the download process completes, you will be asked to select the section where a validation test is performed.



- After the section where a validation test is performed is selected, a message appears notifying to change all necessary size parts and visually check whether all parts are correctly installed. Please visually check the machine and make sure that all parts are correctly installed, and no obstacles or containers exist on the machine.



- o The machine is ready to operate if no warning or alarm message is displayed on the HMI screen.
- Set the samples to be tested on the inspection table or the starwheel where a validation test is performed.
- Enter the sample names and select which samples are going to be inspected by which inspection stations.
  - For more details, please see the "Test Count window" and "Sample information window" sections in this chapter.
- After all necessary information is entered and concerned inspection stations are selected, press the Start button on the operation panel to start operating the machine.

- Press the Start button on the Test Count window to start a validation test.
- After the number of specified test runs is completed, the machine stops.
- Review the test results. Print out a test report as needed.

## Recipe file development

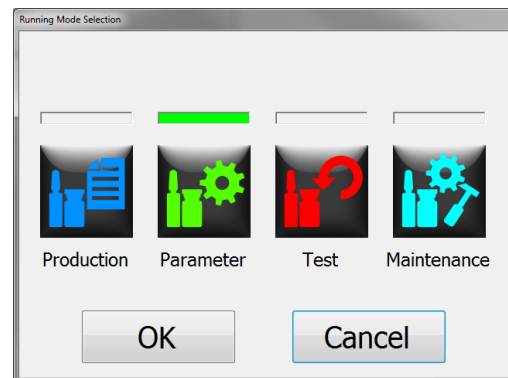
A new recipe file can be created by copying & modifying the existing recipe file. MAX 40,000 recipe files, which include active and inactive/deleted ones, can be stored in the system.

### Requirements:

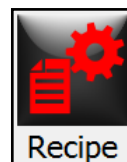
- o The user is already logged in with the privilege to be able to run the machine in the Test or in the Parameter mode.
- o The user has the privilege to be able to access to the report function.

### Procedure:

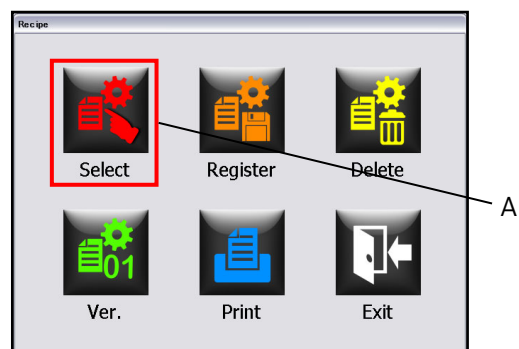
- From the Running Mode Selection window, press the Parameter button or the Test button.



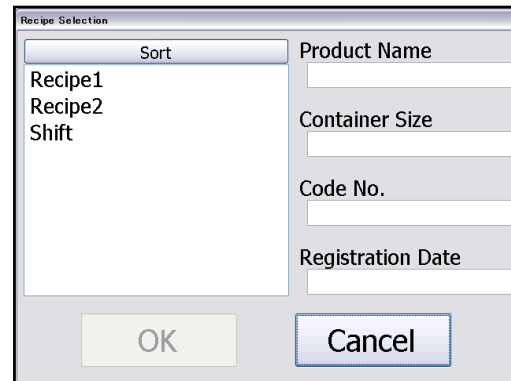
- Press the Recipe button on the HMI screen to open the Recipe window.



- Press the Select button (A) to open the Recipe Selection window.



- Select an existing recipe file you would like to use to create a new recipe file from the Recipe Selection window.
- Press the OK button to download the recipe file to be used as a base recipe file. After the recipe file is downloaded, all inspection systems are set up based on the parameters of the selected recipe file.



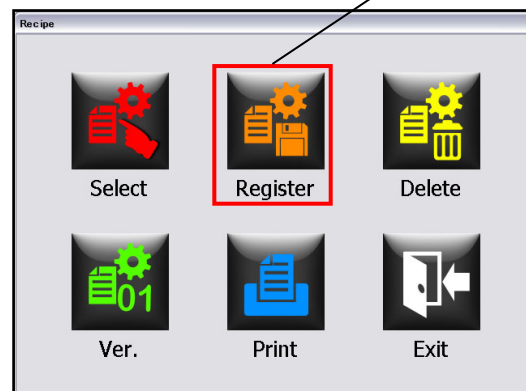
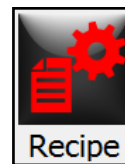
The 'Recipe Selection' dialog box features a list on the left with a 'Sort' button above it. The list contains 'Recipe1', 'Recipe2', and 'Shift'. To the right of the list are four input fields labeled 'Product Name', 'Container Size', 'Code No.', and 'Registration Date'. At the bottom, there are 'OK' and 'Cancel' buttons.



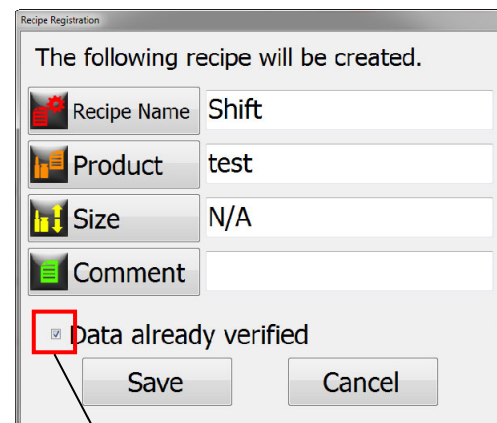
### Notice!

When download does not complete in specified time, "A download error has occurred" window appears. Press the OK button and retry the download process.

- Press the Recipe button on the HMI screen to open the Recipe window.
- Press the Register button (B) to open the Recipe Registration window.
- Change the recipe name, the product information, the size information and the comment as needed.



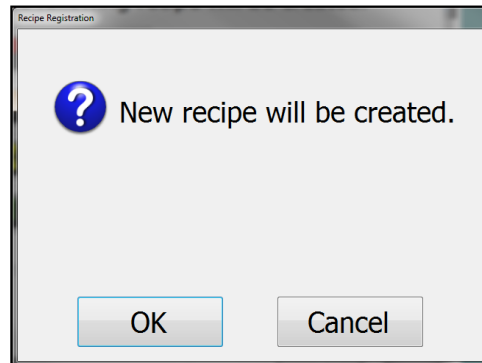
- The "Data already verified" check box (C) need to be checked only when you are sure that the selected base recipe file has already been verified and tested. By selecting it, the recipe file to be newly registered will appear in the Recipe Selection window in the Production mode.



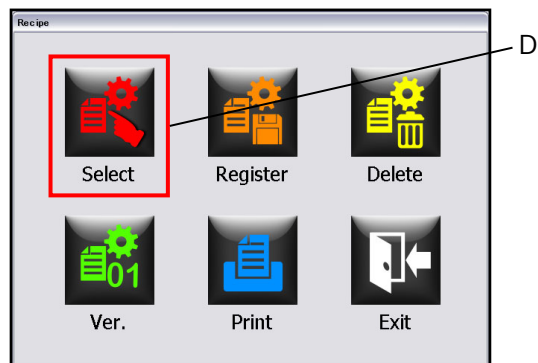
The 'Recipe Registration' dialog box displays the text 'The following recipe will be created.' followed by four input fields: 'Recipe Name' (Shift), 'Product' (test), 'Size' (N/A), and 'Comment'. At the bottom, there is a checked checkbox labeled 'Data already verified' (labeled 'C'), and 'Save' and 'Cancel' buttons.

Item	Specification
Recipe Name	Max 20 characters, including alphanumeric ones and codes, can be entered.
Product	Max 20 characters, including alphanumeric ones and codes, can be entered.
Size	Max 20 characters, including alphanumeric ones and codes, can be entered.
Comment	Max 30 characters, including alphanumeric ones and codes, can be entered.

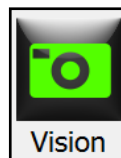
- Press the Save button to save the changes made. You will see a confirmation window. Press the OK button to register a new recipe file.



- Press the Select button (D) to open the Recipe Selection window.

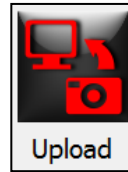


- Select the newly saved recipe file and press the OK button.
- Perform validation tests with the samples in the Test mode or running tests with the samples in the Parameter mode to figure out the best parameters, such as the machine speed, spin speeds and light intensity values, for the samples to be inspected.
- Press the Vision button on the HMI to open the Vision Recipe Selection window.



- Change the name of the vision parameter file to be downloaded onto each Vision-PC and then set the inspection tools as needed.

- After all settings are set up/modified, the changed vision file must be uploaded to the Main-PC to renew the recipe file. Press upload button.



- With the changed recipe file, perform validation test with the samples in the Test mode or running tests with the samples in the Parameter mode to check whether the changed recipe file is capable to meet the required detection level and works as expected.

**Notice!**

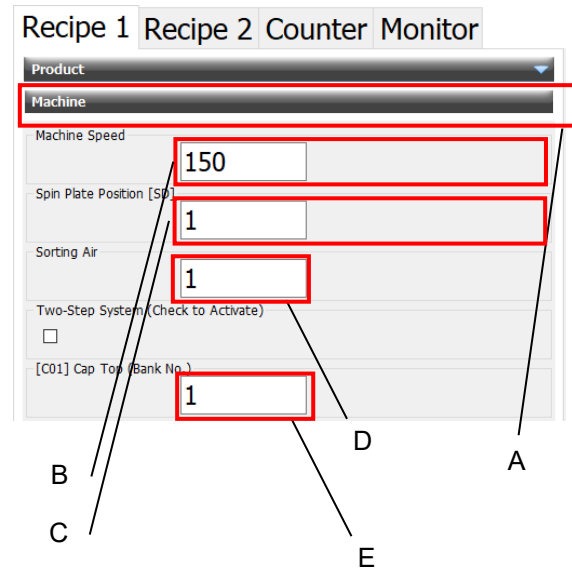
As long as the registered data in the newly registered recipe is not validated, it cannot be used in the Production mode. It does not appear in the Recipe Selection window in the Production mode.

---



## Sets machine setting

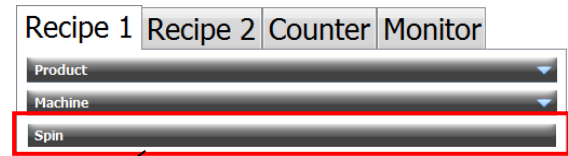
- Press Machine Tab (A).
- When set machine speed, press Button (B).
- When set brake timing for SD inspection, press Button (C).
- When set sorting air pressure, press Button (D).
- When set bank number for C01 inspection, press Button (E).



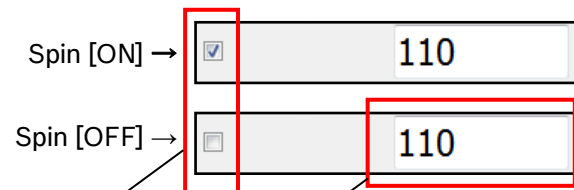
## Sets spin setting

- Displays ON/OFF setting and spin speed setting of the spin station arranged.

- Press Resipe 1 Tab (A).



- When set spin ON/OFF, press Button (B).



- When set spin speed, press Button (C).

## Sets Lamp setting

Displays lamp lighting condition.

### Base (us)

The data is shown when the intensity of LED lamp is adjusted to standard value. Standard value is set when lamp intensity gets low. Numerical value is strobe lighting duration.

### Correction (us)

The data is the correction value of strobe lighting duration for each product. Darker container/product requires larger value setting.

### Base (%)

The data is shown when the intensity of SD lamp(s)/LED lamp(s) is adjusted to standard value. Standard value is set when lamp intensity gets low. Numerical value is strobe lighting duration.

### Correction (%)

The data is the correction value of SD lamp(s)/LED lamp(s) lighting duration for each product. Darker container /product requires largest value setting.

## Sets Inspection setting

- Sets ON/OFF of the inspection item, sorting configuration, consecutive eject alarm setting.

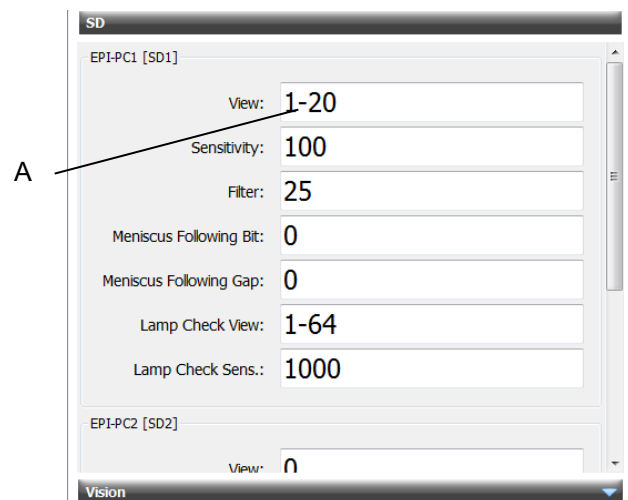
## Sets SD setting

- o Sets EPI-PC settings and EPI setting arranged. (EPI-PC1, EPI-PC2)

### Procedure:

### View

- Press field (A) button.



- o Inspection View windows appears.
- Press field (B) button. Red in the left graph means inspection area.



## Sensitivity

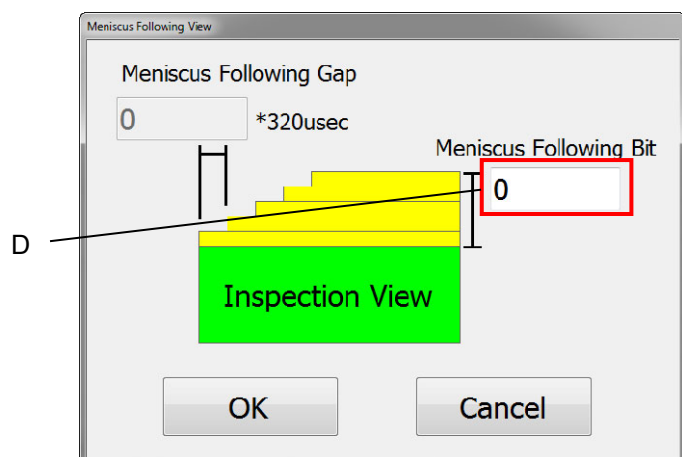
- o Inspection sensitivity setting can be set.

## Filter

- o Digital filter setting can be set.
- o In the original signal from DA sensor, you should set the smaller value than the current value: if not, set the larger value than the current value. Actually, when you want to lighten the effect of the vibration of the machine or lighten the effect of the mixture of liquid, you should arrange this value. Be careful to arrange this value because the smallest value makes the sensibility of the detection dull.

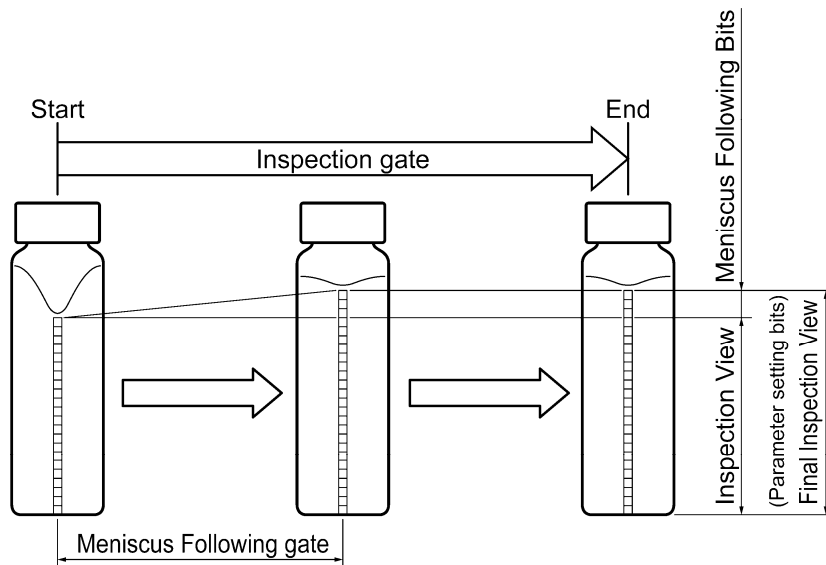
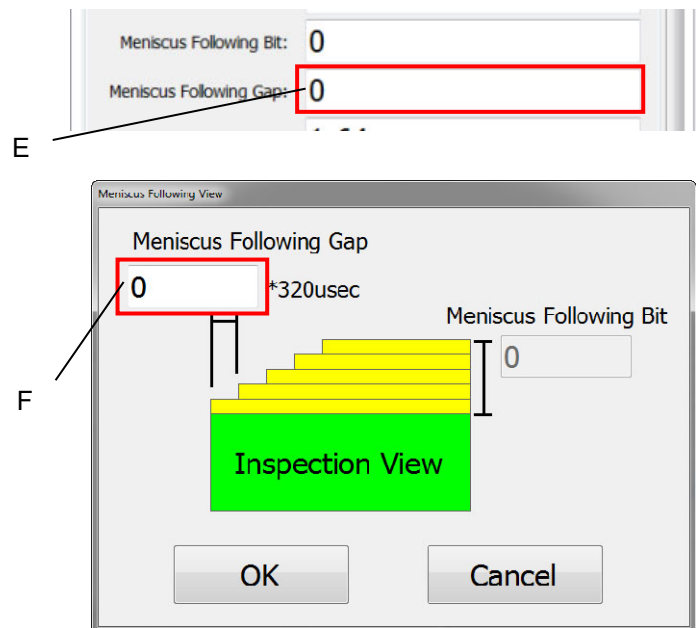
## Meniscus Following Bit

- o Set number of bits to be added as meniscus following inspection view.
- Press field (C) button.
- o Meniscus Following View window appears.
- Press field (D) button and set the value.



### Meniscus Following Gap

- Set delay time to add the following bits to inspection view.
- Press field (E) button.
- Meniscus Following View window appears.
- Press field (F) button and set the value.



### Lamp Check View

- Display the bit value of SD inspection lamp lighting. (EPI screen is displayed when it is touched). An alarm message appears when the digital set is for all the DC level (digital value) is lower than the lamp check sensitivity.

### Lamp Check Sensitivity

- Inspection sensitivity can be set or displayed.

### Fill View

- Fill level can be set or displayed.

**Fill Sensitivity**

- o Fill level sensitivity can be set or displayed.

**Overfill View**

- o Overfill level can be set or displayed.

**Overfill Sensitivity**

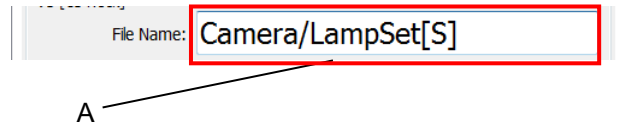
- o Inspection sensitivity can be set or displayed.



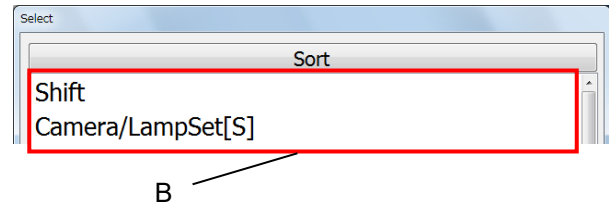
## Sets Vision setting

- Displays the file name set in current recipe file. Click the file name and vision selection window is shown to change the file.

- Press field (A) button.



- Click the file name field (B) and vision selection window is shown to change the file.



## Bosch Vision Inspection System Graphical User Interface

The attached document contains 128 pages.

[User's Guide]  
CKKVS-2018-001  
Revision 3.5.0.0  
April 2, 2018