TRANSTECH

Instruction Manual

Edition 2 • English • 2019.02.20

Pneumatic Express

Pad Printer

Program version 1.30.30

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Disclaimer

This documentation was compiled taking into account the valid standards and regulations, the current state of technology as well as our many years of experience and know-how.
All information corresponds to the state of development at the time of print. The actual scope of supply may differ from the explanations and illustrations provided here when dealing with special versions or optional extras or as a result of the latest technical developments.
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The manufacturer does not accept any liability for damage due to:

- Failure to observe the instruction manual
- Unintended use
- Deployment of unqualified personnel
- Unauthorized modifications
- Technical alterations
- Use of non-approved replacement parts

Warranty

The terms of warranty are enclosed as a separate document within the sales documents.

After Sales Service

Our After Sales Service department will be happy to help you with any technical information you require.
Information concerning the responsible contact partner can be obtained by phone, fax, e-mail or online.

Trusted Partner for Your Product Decorating Needs
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3 Important Information

3.1 About this document

- This documentation describes several models and options. For this reason, elements which are not available on the machine may be described.

- The documentation is an integral part of the product and must be kept in close proximity to the machine where it must be available to staff at all times. Incomplete or illegible documentation must be replaced immediately.

- If the machine is sold, the documentation must be handed over to the new owner. It is an important requirement for the safe operation of the machine.

3.2 Service

In order to allow an exact identification of the machine, the machine type, the build year and the machine number must be provided when making a service inquiry.
These details can be found on the machine's type plate.

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4 Contents

5 Safety instructions

This chapter gives you an overview of all the important safety aspects for optimum personal protection as well as for safe, fault-free operation. Failure to observe the handling and safety instructions contained in this instruction manual can result in significant dangers.

5.1 General instructions

The prerequisite for safe working is the observation of all safety instructions and handling instructions indicated in this instruction manual. In addition to the instruction manual, all statutory, generally valid and other binding regulations for accident prevention and environmental protection must be observed.
The instruction manual is an integral part of the product and must be kept in the direct vicinity of the machine where it must be available to staff at all times. An incomplete or illegible instruction manual must be replaced immediately.
Prior to commencing work on the machine, all operating staff must have carefully read and understood the instruction manual and all annexes.
The system may only be connected and set up by qualified and trained staff.

5.2 Intended use and disclaimer

The machine may only be used as intended for printing work as tailored to the application within the load limits as stated in the technical data.
Any use in excess of this is considered to be unintended use. The manufacturer assumes no liability for damage resulting from this. The risk is solely borne by the user. Intended use also includes compliance with the instructions and regulations described in this instruction manual.

5.3 Responsibility of the operating company

The machine is used in the commercial sector. Consequently, the operating company of the machine must observe the statutory obligations relating to occupational safety. In addition to the safety instructions contained in this instruction manual, the safety, accident prevention and environmental protection regulations valid for the field of application of the machine must be observed.
In particular, the following applies:

- The operating company must inform themselves regarding the valid occupational safety regulations and carry out a risk assessment to identify further risks that result from the particular working conditions at the location where the machine is used. The operating company must implement this in the form of operating instructions for the operation of the machine.
- Throughout the entire service life of the machine, the operating company must check whether the operating instructions that they have issued continue to comply with the current regulations and modify them if necessary.
- The operating company must clearly regulate and define the responsibilities for installation, operation, maintenance and cleaning.
- The operating company must ensure that all employees who deal with the machine have read and understood this instruction manual. Furthermore, the operating company must train the staff regularly and inform them with regard to risks.
- The operating company is responsible for ensuring the machine is always in a technically flawless condition.

5.4 Staff qualification

In this instruction manual, the following qualifications are stated for various areas of activity:

The machine may only be operated by trained persons.
Only those who can be expected to perform their work in a reliable manner are authorised to be operating staff. Persons whose responsiveness is affected, e.g. by drugs, alcohol or medication are not permitted.

Trained persons have been informed by employees of the manufacturer or by the operating company with regard to the tasks assigned to them as well as possible dangers arising from improper behaviour.

Specialist staff, thanks to their specialist training and experience as well as knowledge of the relevant standards and regulations, are able to perform the tasks allocated to them and to independently recognize and prevent possible dangers.

Specialist electricians, thanks to their specialist training and experience as well as knowledge of the relevant standards and regulations, are able to perform work on electrical facilities and to independently recognize and prevent possible dangers.

⚠ WARNING	
	**There is a risk of injury if the staff are insufficiently qualified.** Improper handling of machines and devices can lead to considerable injuries. • The special tasks described in this manual may only be performed by persons who possess sufficient qualification. • Consult specialists in case of doubt. • Careful and cautious working is the best method of accident prevention. • Each malfunction or source of danger that arises must be immediately reported to a supervisor.

5.5 Personal protective equipment

Personal protective equipment must be worn when working with the machine in order to minimise danger to health.

- The necessary protective equipment must always be worn when working with the machine.
- The personal protective equipment signs displayed in the work area must be observed.

⚠ WARNING	
	**Capture and gathering of clothes or jewellery by moving or rotating machine parts.** Captured or gathered clothes can pull body parts into the machine and lead to cutting, crushing or shearing injuries. • Wear close-fitting work clothes with low resistance to tearing, tight sleeves and no protruding parts. • No rings, necklaces or other jewellery may be worn.

⚠ WARNING	
	**Skin injuries caused by inks and solvents.** Skin contact with ink or thinner can lead to skin irritations, skin disorders or skin injuries. • Wear gloves when handling inks or thinners.

⚠ WARNING	
 	**Eye injuries caused by inks and solvents.** Ink or solvent splashes can lead to eye injuries when topping up or mixing ink. • Wear safety goggles when handling inks or thinners. • Ensure that an operational eye wash station is available. • It is extremely important to quickly rinse chemicals that have landed in the eye.

5.6 Signage

Depending upon the equipment, symbols and information signs may be located in the work space of the machine. They refer to the direct surroundings of the location where they are attached.

⚠ WARNING

Risk of injury due to missing or illegible signage.

Over time, stickers and symbols may become soiled or become illegible by other means. Missing or damaged signs can lead to sources of danger not being recognisable.

- Always keep all safety, warning and operation information located on the machine in a legible condition.
- Replace damaged signs or labels immediately.

⚠ WARNING

Risk of hand injuries.

Depending upon the machine equipment, various components will be moving at high speeds in some cases. There is a risk of injury when reaching in to the work space of a running machine.

- Particular attention and care must be exercised when working in the work space of the machine. This particularly applies for set-up mode or during maintenance work.
- Never reach into the work space of the running machine with hands or a tool.

⚠ WARNING

Risk of injuries due to hot surfaces.

Devices for the pretreatment of the surfaces or drying devices for ink application work at high temperatures. There is a risk of burning due to hot surfaces, hot air flow in the air outlet area of hot air blowers or heated workpieces.

- Do not touch hot surfaces.
- Do not reach into the hot air flow of dryers.
- Wait until all parts have cooled down before reaching into the work space.
- Allow heated workpieces to cool down.

⚠ WARNING

Risk of falling due to objects on the floor.

Objects lying on the floor, cables and tools or severe soiling may lead to tripping, slipping or falling.

- The work area must be kept clean and path blockages must be prevented.

DANGER	
	**Risk of fire due to highly flammable liquids or gases.** When working with inks, paints and thinners, there is a risk of fire due to flammable or explosive liquid or gaseous substances. • No fire or naked flames permitted in close proximity to inks and solvents. • No smoking or lighters/matches. • Keep all sources of ignition which form sparks away from welding/grinding work or electrostatic discharges.

5.7 Special dangers

The following section describes the residual risks that result from the hazard analysis. The safety and warning instructions must be observed in order to reduce risks to health as well as dangerous situations.

DANGER	
 	**Danger to life caused by electric current.** Touching live parts represents an immediate danger to life. Damage to components or the insulation of cables and electric lines may pose a danger to life. • The current supply must be switched off immediately and the damage must be repaired if the insulation is damaged. • Ensure that live parts are kept dry. • Work on electrical equipment may only be performed by specialist electricians according to the valid rules and regulations. • Ensure that the machine is disconnected from the current supply prior to commencing work on electrical components of the machine. • Ensure that the current supply is switched off and that the machine is not live prior to servicing, cleaning and repair work. • Ensure that the machine is secured against being switched back on. • Do not bridge fuses or take them out of operation. • When fuses are replaced, ensure that they are only replaced by fuses of the same type.

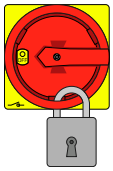
DANGER

Risk of injuries posed by uncontrolled and unexpected movements.

With pneumatic and/or hydraulic assemblies, uncontrolled movements and sudden discharges of media can lead to injuries.

- Work on pneumatic and/or hydraulic equipment may only be performed by specialist staff on unpressurised plants.
- The shut-off valves on the supply lines must be closed.
- These valves must be secured against unauthorised or accidental activation.

DANGER



Danger caused by unauthorised use of the machine.

Commissioning the machine without the required knowledge regarding the functions and characteristics of the machine can lead to dangerous situations and injuries.

- After the end of operation or during extended work breaks, the machine may not be switched on by unauthorised and unqualified persons.
- Ensure that suitable means are used in order to secure the machine against unauthorised use.
- Where possible, secure the deactivated main switch against unauthorised activation with a lock.

5.8 Behaviour in the event of danger and accidents

Safety instructions

Preventive measures

- Always be prepared for accidents or fire.
- Ensure that first-aid equipment (first-aid kit, blankets, etc.) and fire extinguishers are kept close at hand.
- Ensure that staff are familiar with first-aid, accident notification and rescue equipment.
- Ensure that access paths are kept clear for rescue services.

Correct actions in the event of an emergency:

- Use the EMERGENCY STOP button to stop the machine.
- Switch off the main switch.
- Remove people from the danger zone.
- Initiate first-aid measures.
- Inform the persons responsible at the workplace.
- Alert a doctor and/or the fire brigade.
- Clear access roads for rescue vehicles.

Note

- Keep calm!
- Stay in control!
- Do not forget your own safety!
- Never put yourself in danger!

The most important rescue signs

Emergency telephone

Escape route

First aid

Doctor

Eye wash station

Stretcher

6 Used Symbols

6.1 Safety instructions

These instructions contain particularly important information and instructions.
Non-observation of the information may lead to dangerous situations.
There is a danger to life and limb of the staff or significant damage could be caused to machines and devices as well as their surroundings.

DANGER	
	This instruction warns against dangerous situations. Not preventing dangerous situations will lead to severe injuries or death. The additional symbol can vary depending on the type of danger.

WARNING	
	This instruction warns against dangerous situations. Not preventing dangerous situations can lead to severe injuries or death. The additional symbol can vary depending on the type of danger.

CAUTION	
	This instruction warns against dangerous situations. Not preventing dangerous situations will lead to slight or medium injuries. The additional symbol can vary depending on the type of danger.

SAFETY INSTRUCTION	
	Safety instructions provide safety-relevant information or describe the required process.

6.2 Instructions

Instructions are not safety-relevant; they contain helpful information.

INSTRUCTION	
	There instructions contain information that enable an effective and economical use of the machine or the device. • Quality information. • Information regarding special processes. • Background information regarding the described processes.

6.3 Lists

Instructions and handling sequences are described in the form of lists.

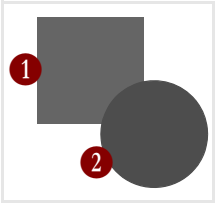
- Bullet point.
- List of handling instructions, information or characteristics.
- The sequence is determined by the list or can be as desired.

1. Numbered list.
2. List of handling instructions.
3. The sequence is determined by the numbering.

6.4 Identification of elements

Elements depicted in graphics are marked using numbers.

In the descriptive text, element 1 and element 2 can be clearly attributed.



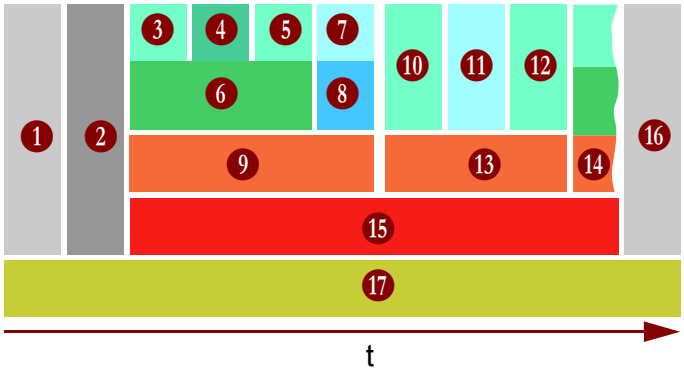
7 Terminology

Some modules and machine functions are specified in the menu levels of the operating terminal and in this documentation with special technical terms.
The following list provides an overview of the terminology used.

7.1 Functions on the machine

	Action	Meaning
1	Workpiece pretreatment	Pretreatment of the workpiece surface for better ink absorption and ink adhesion.
2	Position workpiece	Automatic transport of the workpiece to the printing position.
3	Open cliché	The ink cup is positioned so that the print image on the cliché is exposed.
4	Cliché stroke	Movement of the pad to the open cliché.
5	Close cliché	The ink cup is positioned so that it is above the print image on the cliché.
6	Ink absorption	Entire process of the ink absorption of the pad from the cliché.
7	Workpiece stroke	Movement of the pad to the workpiece.
8	Ink release	Movement of the pad with transfer of the ink to the workpiece.
9	Print cycle	Ink absorption and ink release. (The application of a single colour).
10	Assume cleaning position	The pad is positioned over the cleaning tape.
11	Cleaning stroke	Movement of the pad to the cleaning tape.
12	Leave cleaning position	The pad or the cleaning tape is moved to the home position again.
13	Cleaning cycle	Entire pad cleaning process.
14	Further printing and cleaning cycles	Printing and cleaning cycles can be carried out several times. (The ink can be applied several times.)
15	Print cycle	Entire workpiece printing procedure.
16	Workpiece after-treatment	After-treatment of the ink application for drying or hardening.
17	Work cycle	Entire process with all upstream and downstream workpiece processing steps.

The illustration shows all individual actions in their chronological context.



7.2 Elements and modules

Element	Explanation
Pad	Silicon pad to transfer the ink to the workpiece.
Cliché	Steel or plastic plate with recesses in the form of the print image.
Cliché holder	Bracket to accommodate the cliché.
Ink cup	Special ink container which moves on the cliché.
Ink cup holder	Bracket which positions the ink cup on the cliché.
Doctor ring	Ring-shaped insert on the underside of the ink cup which provides the connection between the ink cup and the cliché.
Blade edge	Sharp ground cutting edge on the underside of the ink cup or doctor ring. The blade edge is positioned on the cliché and seals the ink cup against the cliché. In addition the ink is spread from the blade edge into the print image on the cliché.
Print unit	Group of the elements required for the transfer of a single colour (pad, cliché, ink cup).
Pad cleaning	Pressing of the pad onto a cleaning tape (adhesive tape) to remove adhering ink residues.
Workpiece holding fixture	Seating or clamping fixture into which the workpiece is placed and fixed for the printing process.
Fixing	Clamping fixture or vacuum suction gripper, with which the workpiece is fixed in the workpiece holding fixture.

8 Technical Data

8.1 Connection values

Electrical connection	
Operating voltage:	120 - 230V AC - 50/60Hz
Power consumption:	approx. 0.1 kW
Control voltage:	24V DC

Pneumatics	
Operating pressure:	6 bar
Air volume:	Max. 6.5 standard liters/cycle
Air quality:	Clean, dry and oil free

8.2 Operating conditions

Ideal printing results are achieved under the following conditions:

Ambient conditions	
Temperature:	20°C 68°F
Humidity:	50% - 70%

8.3 Weight

The machines are available in several versions.
See also Chapter 8.4 "Versions" on page 24.
All versions are the same weight.

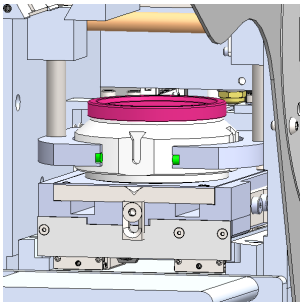
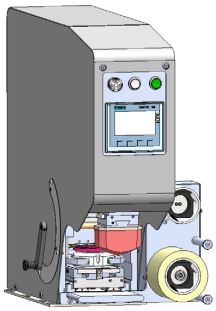
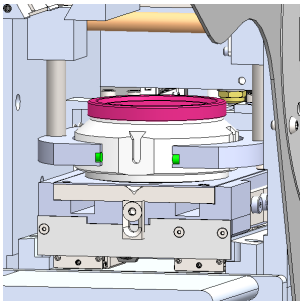
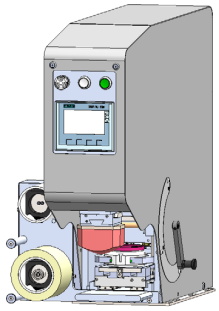
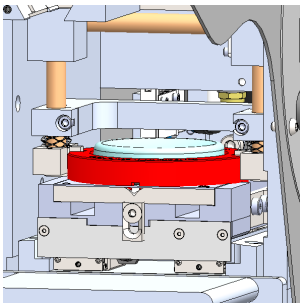
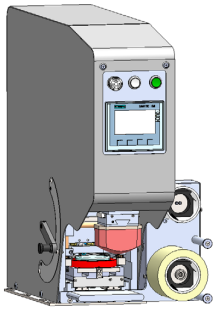
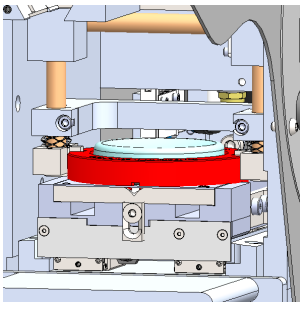
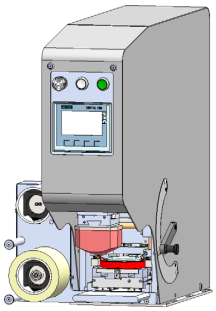
The machines can be optionally fitted with a pad cleaning system.
A pad cleaning system will increase the overall weight of the machine.

Equipment	Weight
Without pad cleaning	approx. 60 kg approx. 135 lbs
With pad cleaning	approx. 65 kg approx. 145 lbs

8.4 Versions

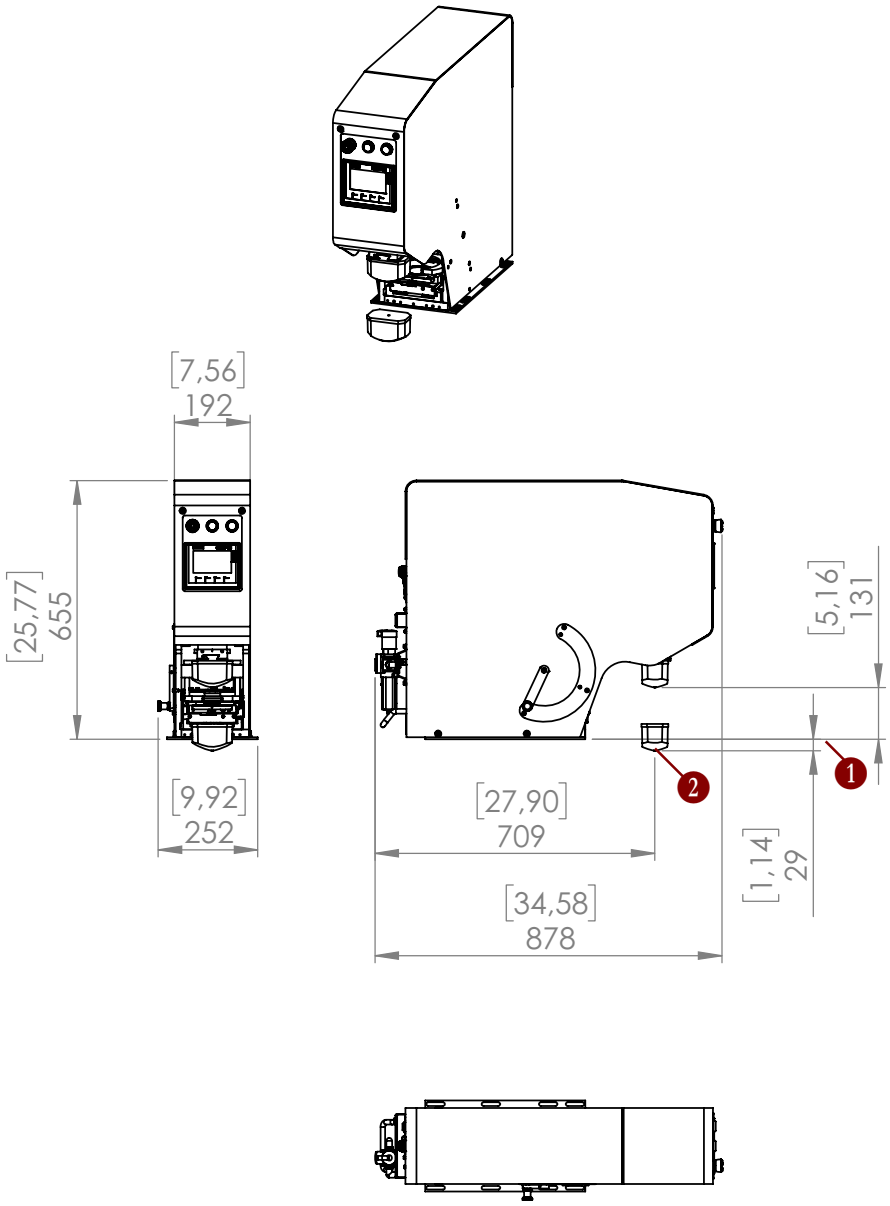
The following features of the machines are shown in the classification.

EU = ink cup holder for MCI-type ink cups
US = ink cup holder for Express Liner-type ink cups
L = ink cup fixing lever on left-hand side of machine.
R = ink cup fixing lever on right-hand side of machine.

Classification	Ink cup	Ink cup fixing lever
MPE 100.1 L-EU L	MCI 	Left 
MPE 100.1 L-EU R	MCI 	Right 
MPE 100.1 L-US L	Express Liner 	Left 
MPE 100.1 L-US R	Express Liner 	Right 

8.5 Dimensioned drawings

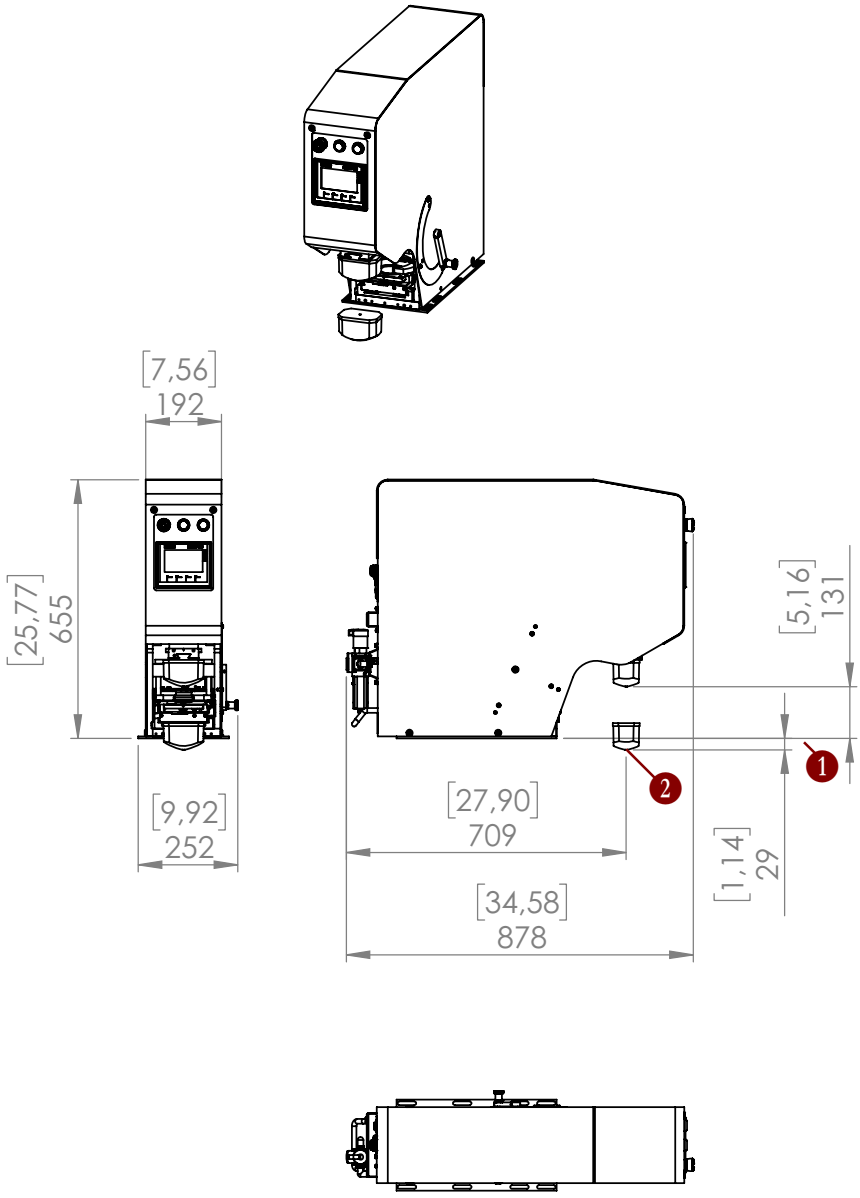
8.5.1 Version on left without pad cleaning



All dimensions without brackets = millimeters
All dimensions in brackets = [inches]

1 Machine level (bottom edge base plate)
2 Print level (workpiece surface) with maximum pad stroke

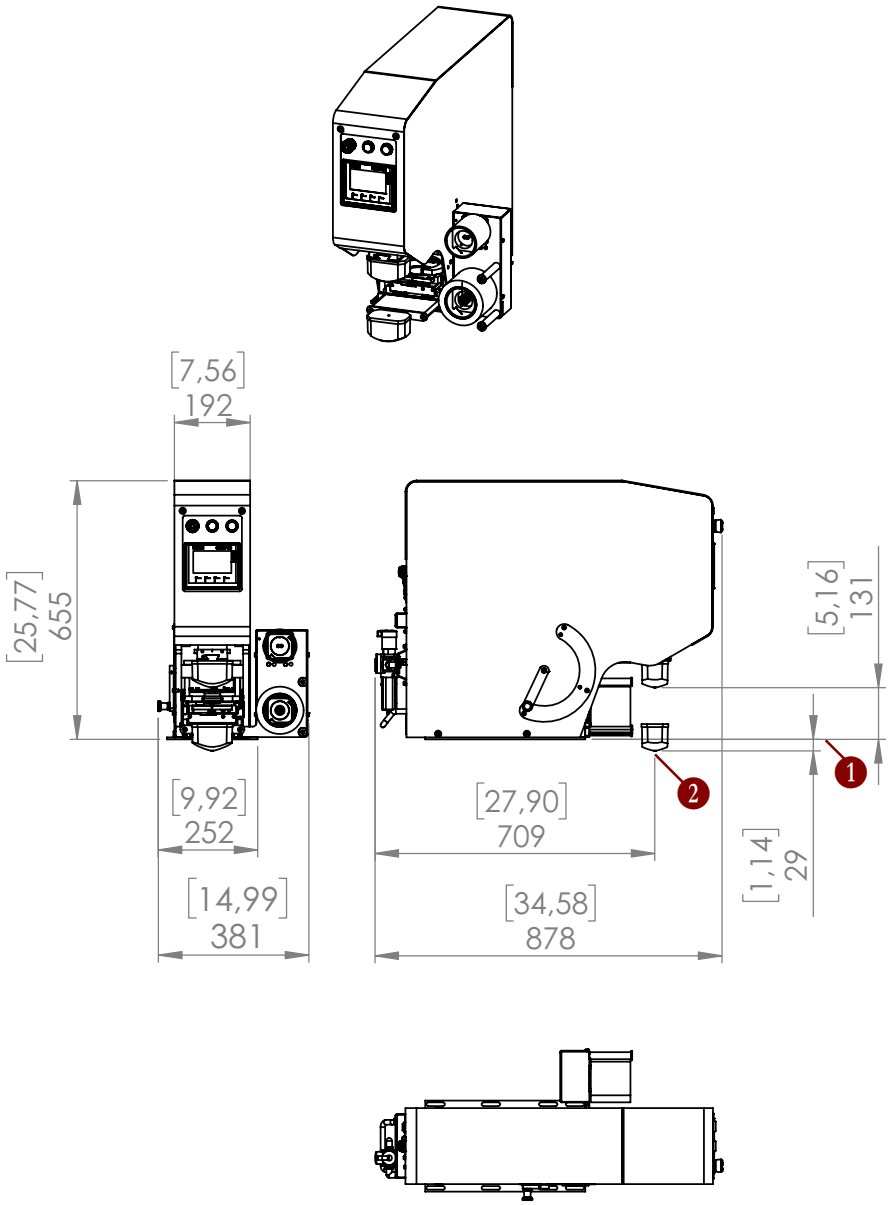
8.5.2 Version on right without pad cleaning



All dimensions without brackets = millimeters
All dimensions in brackets = [inches]

1 Machine level (bottom edge base plate)
2 Print level (workpiece surface) with maximum pad stroke

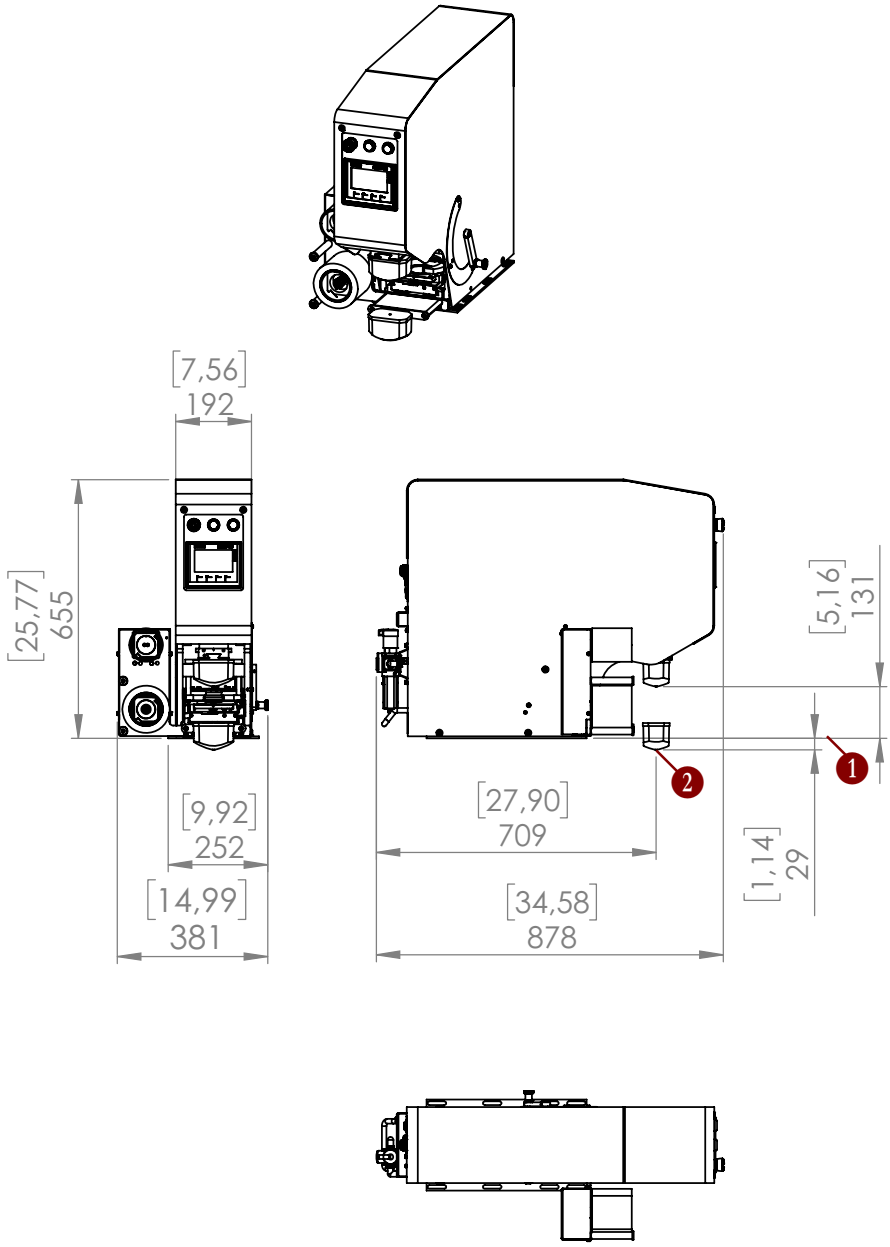
8.5.3 Version on left with pad cleaning



All dimensions without brackets = millimeters
All dimensions in brackets = [inches]

1 Machine level (bottom edge base plate)
2 Print level (workpiece surface) with maximum pad stroke

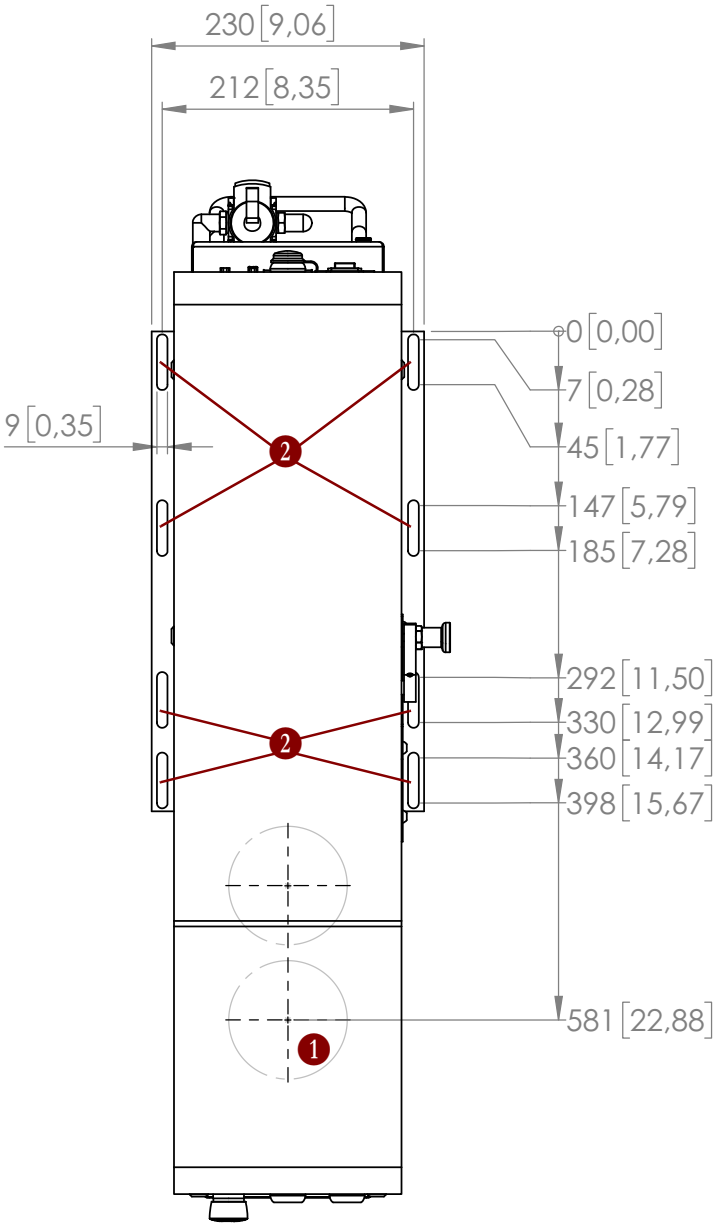
8.5.4 Version on right with pad cleaning



All dimensions without brackets = millimeters
All dimensions in brackets = [inches]

1 Machine level (bottom edge base plate)
2 Print level (workpiece surface) with maximum pad stroke

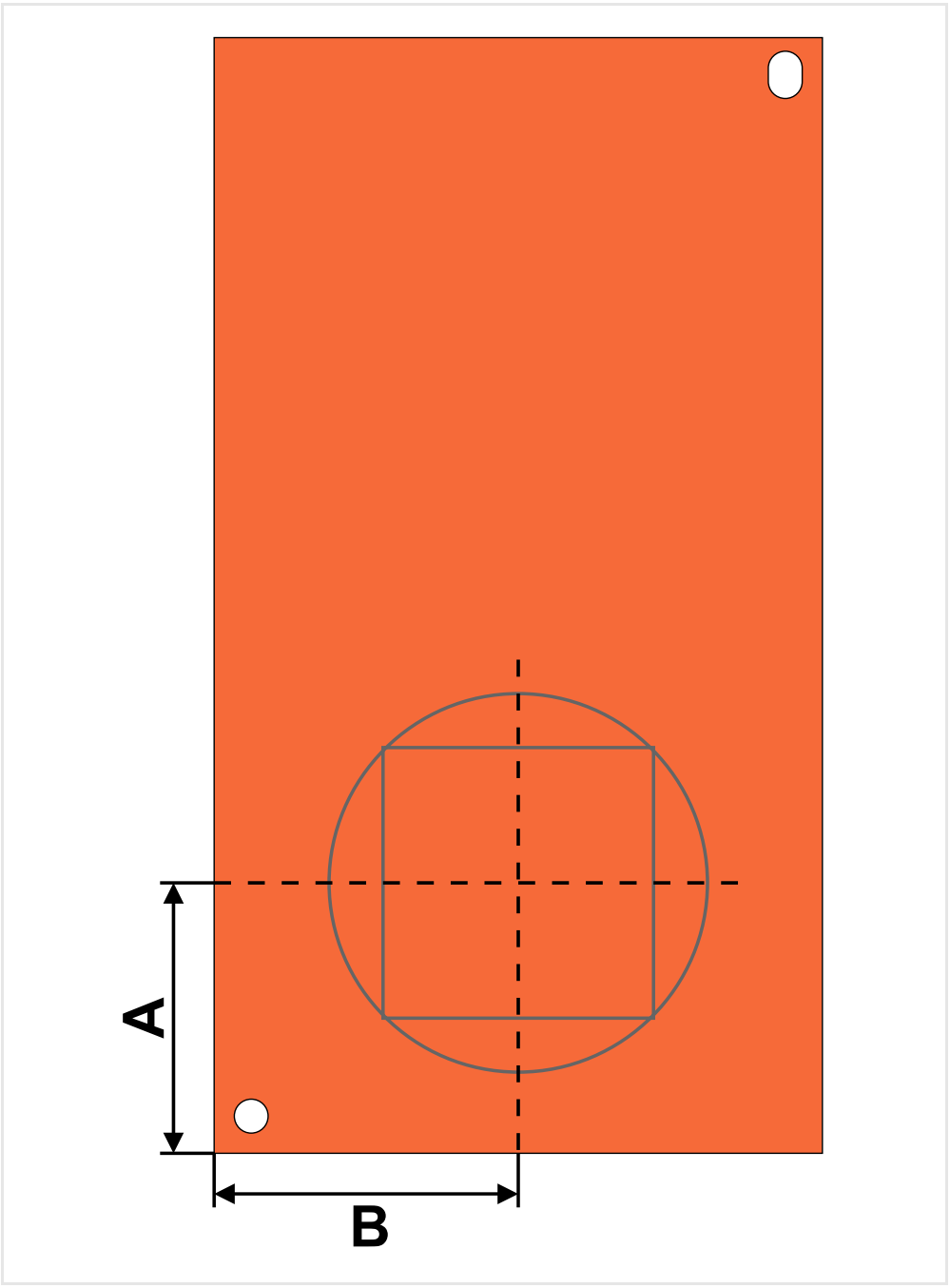
8.6 Mounting schematic



1 Pad position
2 Long holes in the base plate

To secure the machine on a machine table, an M8 screw must be used in each long hole.

8.7 Cliché layout



Cliché size	Print image position		Print image size
	A	B	
100 x 210	54	50	max. 80 mm Ø or max. 56 x 56 mm
Optional 100 x 215	54	50	max. 80 mm Ø or max. 56 x 56 mm

All dimensions in mm.

9 Transport and Installation

9.1 Incoming goods inspection

- The delivery must be checked immediately upon receipt in order to check for completeness and transport damage. A claim for any damage must be submitted as soon as it has been discovered.
- Compensation claims can only be lodged within the valid claim periods!

In the event of externally visible transport damage, the procedure is as follows:

- Refuse delivery or only accept with reservation.
- Make a note of the extent of the damage on the transport papers or on the certificate of receipt from the transport company and register a complaint.

9.2 Transport safety

⚠ DANGER

Unsuitable means of transport and lifting gear can result in machines toppling or falling.

Improper handling of machines and devices can lead to considerable injury or death.

- Work may only be carried out by instructed persons.
- The installation and initial commissioning of the machine may only be performed by employees of the manufacturer or specialist staff who have been authorized and trained by the manufacturer. However, operators or service staff working for the manufacturer may also be entrusted with the handling of packaging units during the transport and installation.
- Work in a careful manner and observe the symbols on the packaging when unloading packing units on delivery as well as during in-house transport.
- Only use recommended lifting gear.
- Do not remove the packaging until shortly before assembly.
- Look out for separate packages included in larger packages.

Lifting vehicle

- The lifting vehicle used must be suitable for the weight and dimensions of the machine.
- The load-bearing capacity of the lifting vehicle may not be exceeded and the lifting forks must be of sufficient length.
- Suitable, anti-slip underlays must be placed on the lifting forks in order to protect the machine.

Suspended loads

- Ensure that slow and cautious movements are made during transport, especially when lifting and lowering the machine.
- Do not step or reach beneath the machine during lifting, transport or lowering.

9.3 Installing the machine

9.3.1 Location

⚠ WARNING

Confined or unsuitable set-up areas or insufficiently large workspaces can lead to dangerous situations.

Safety equipment which is inaccessible or difficult to reach may mean that the machine cannot be switched off in sufficient time in the case of an emergency. Insufficiently large workspaces can lead injuries through crushing or impacts. The installation surface must be able to bear the weight of the machine without giving way.

- Check the load-bearing capacity of the floor. The machine's weight is provided in the "Technical Data" chapter.
- Install the machine in such a way that the EMERGENCY STOP buttons are accessible to all operators without obstruction.
- Machine openings must be freely accessible for operation, servicing and repair purposes.
- Moving machine parts must not create any crushing points with walls, pillars or installations.

SAFETY INSTRUCTION

Improper handling of machines and devices can lead to considerable damage to property.

Unsuitable means of transport and lifting gear can result in machines toppling or falling.

- Work may only be carried out by instructed persons.
- Suitable means of transport and lifting gear must be used.

9.3.2 Ambient conditions

IMPORTANT INFORMATION

A **level** and **horizontal** installation surface is a prerequisite for flawless machine operation.

- The subsurface must be **free of vibrations**. Otherwise a precise ink application cannot be achieved.
- The machine should be installed at a **light** and **dry** location. However, direct sunlight is unfavorable for the print operation. UV light, an increase in temperature or light reflexes in camera systems can lead to malfunctions.
- The surrounding area must be **clean** and largely **dust-free**. Dust and other transitory contamination impair the printing result.
- Avoid strong **movements of air** in the machine surroundings. Do not install the machine close to frequently opened doors, windows, gates or air outlets of ventilation or air conditioning systems.

9.4 Mounting the machine

The machine must be mounted on a stable base frame or machine table.
The “mounting plan” stipulated in the “Technical Data” chapter must be referred to.

10 Assembly Instructions

10.1 Scope of application

These assembly instructions must be observed when the machine has been delivered without a safety enclosure and safety equipment.

All of the following conditions must be met in order for the incomplete machine to be properly incorporated in the complete machine without compromising the safety and health of persons.

⚠ DANGER	
	**Risk of injury in the event of incomplete safety equipment.** Incomplete safety equipment can lead to a situation where no reliable deactivation of the machine movement can take place when reaching into the work area of the machine. This can lead to serious injuries or death. • Never operate the machine with incomplete safety equipment. • Commissioning is prohibited until all required safety equipment has been installed and the machine, including all additional components, corresponds to the provisions of the Machine Directive.

10.2 Installation

The assembly requirements and operating conditions stated in chapters “Technical Data” and “Transport and Installation” must be adhered to.

10.3 Safety enclosure

In order to prevent persons from reaching into the working area of the machine while in operation, the machine must be encased by a suitable safety enclosure.
The safety enclosure must be designed in such a way that injury resulting from mechanical machine movements or hot component surfaces can be reliably ruled out.

10.4 Safety doors

Doors or maintenance flaps included in the safety enclosure must be equipped with safety switches. When the safety doors are open, the machine must be powered off or, depending on the operating mode, its operation must be limited to a minimum.
The required interfaces with mechanical parts and the control unit of the machine must be discussed with the manufacturer.

10.5 EMERGENCY STOP

Additionally installed EMERGENCY STOP buttons and the control unit must be integrated in the control circuit of the machine.
The required interfaces with the control unit of the machine must be discussed with the manufacturer.

10.6 Equipotential bonding, protective earthing

Components installed on site must be equipped with equipotential bonding and integrated in the protective earthing circuit, if applicable.

10.7 Further safety measures

Additionally installed workpiece processing assemblies can cause health hazards for the operator as a result of gases, fumes or radiation (e.g. ozone gas or UV light).
In such cases, suitable measures must be taken in order to ensure that permissible emission limits are not exceeded.

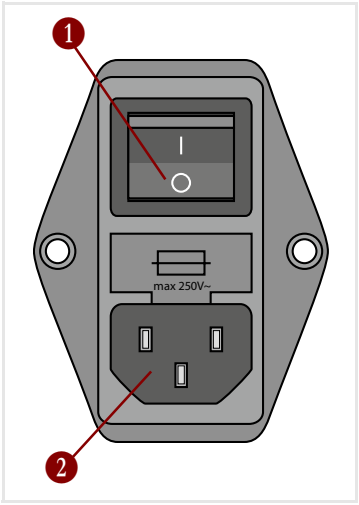
⚠ WARNING	
	**Improper handling of machines and devices can lead to serious injury.** A faulty electrical or pneumatic connection on the machine can result in the machine behaving uncontrollably and may lead to unexpected movements. This poses a risk of injury. • The installation and initial commissioning of the machine may only be performed by employees of the manufacturer or trained specialist personnel. • The manufacturer must also be consulted if the machine is relocated at a later date. • Unauthorized installations and relocations are not permitted. • Damaged cables and connectors may not be used. • The machine may only be connected to a socket with a protective earth conductor that complies with the local regulations.

11.1 Connecting the voltage supply

The machine may only be connected to an electricity network that complies with the specifications in the technical data and on the type plate.

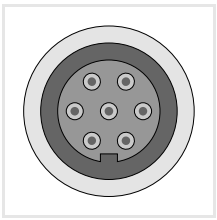
The mains is connected via the mains supply module located on the rear of the machine.

- Switch off the mains switch 1 (position 0).
- Plug the mains cable into the port 2.
- Connect the mains cable to a socket.



11.2 Connecting the pad cleaning (optional)

The optionally available pad cleaning is connected to a port at the back of the machine.
The port is seven-pole.

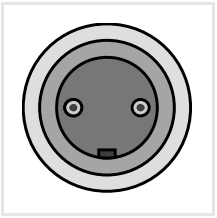


The function of the pad cleaning is only carried out if the necessary settings have been applied in the settings menu.
See Chapter 27.5 "Pad cleaning" on page 135.

11.3 Connecting the foot switch (optional)

⚠ WARNING	
	**Incomplete safety equipment may pose risk of injury.** Incomplete safety equipment may mean that machine movements are not safely shut off when the machine's work area is entered. This can lead to serious injury or death. • The use of a foot switch is only permitted on machines with a complete safety enclosure with a safety light curtain. • Machines without a protective enclosure or with two-hand operation must not be equipped with a foot switch.

The optionally available foot switch is connected to a port at the back of the machine.
Pressing the foot switch carries out the set function.
The port is two-pole, the contact in the foot switch must be a normally open (NO) contact.

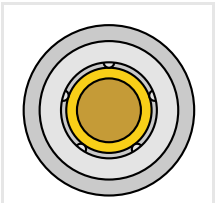


The signals from the foot switch will only be taken into consideration if the necessary settings have been applied in the settings menu.
See Chapter 27.9 "Foot switch" on page 145.

11.4 Pneumatic connection

Additional external pneumatic connections can be connected to a quick-release coupling on the back of the machine.

The compressed air is released when the machine control unit is switched on.



⚠ WARNING

Unsuitable connection elements can lead to compressed air leaving the system uncontrollably and flying parts.

Compressed air which leaves the system suddenly can catapult hoses, dirt and other objects through the air and lead to injuries.

- Work may only be carried out by instructed persons.
- The hoses and connecting elements used must withstand the operating pressure (see “Technical Data” chapter).
- The connecting elements must be suitable for the pneumatic system used on the machine as well as the local supply system and must be assembled in accordance with the directives. Suitable adapters must be used where necessary.

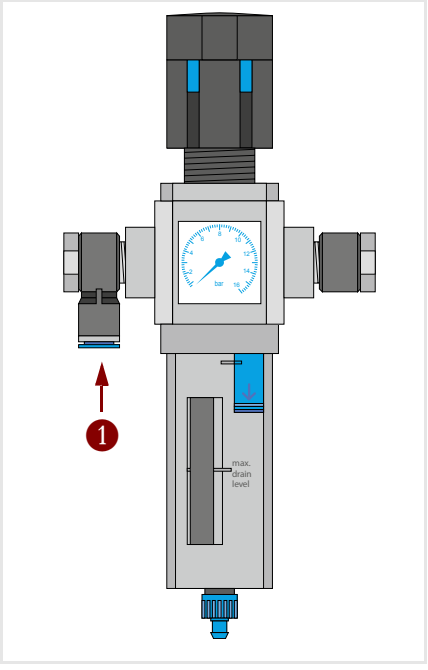
NOTE

Trouble-free function and durability of the machine can only be ensured if a suitable compressed air supply is used.

- The compressed air supply must provide a constant level of pressure.
- Only dry, oil-free and filtered air may be used.

12.1 Connection

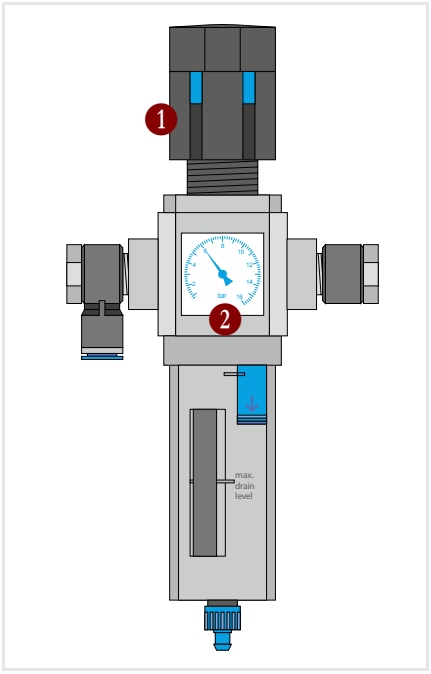
- The compressed air connection is located on the back of the machine.
- Different connection systems are used depending upon the design.
  The appropriate connection elements must be used.
- Connect pneumatic supply line to the hose connection 1 of the service unit.
- The supply line must be laid in such a manner that no tripping hazards are created.



12.2 Setting the operating pressure

⚠ CAUTION	
	**An incorrectly set operating pressure can lead to dangerous situations.** An insufficient operating pressure can limit the movement processes on the machine and lead to safety risks. An excessive operating pressure can lead to injuries caused by increased speeds and forces. • Work may only be carried out by instructed persons. • The operating pressure must be checked daily. • The operating pressure as specified in the “Technical Data” chapter must be set. The machine cannot operate correctly in the event of deviations above 0.5 bar and malfunctions may occur.

- Switch on the compressed air supply line.
- Set the operating pressure on the rotary knob ❶ of the pressure controller.
- The set operating pressure can be read off on manometer ❷.

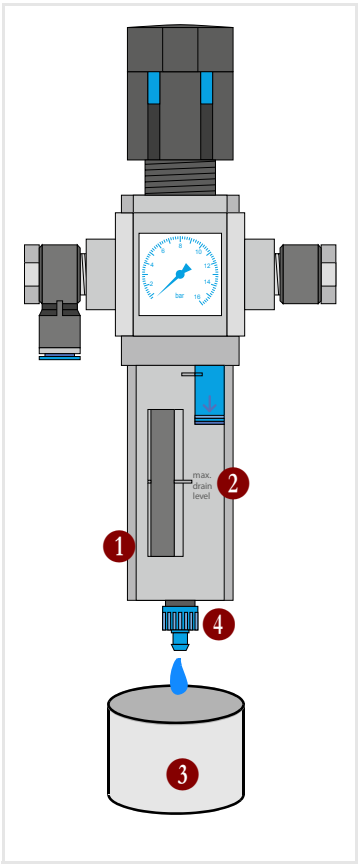


12.3 Draining condensate

⚠ WARNING	
	**Compressed air leaving the system uncontrollably can lead to flying parts.** Compressed air which leaves the system suddenly can catapult condensate, dirt and other objects through the air and lead to injuries. • Work may only be carried out by instructed persons. • Switch off the mains switch of the machine. • Switch off the compressed air supply. • The pneumatic system must be depressurized.

- Check the water level in the condensate separator (1) every week.
- If it reaches the mark "max. drain level" (2), the condensate must be drained off.

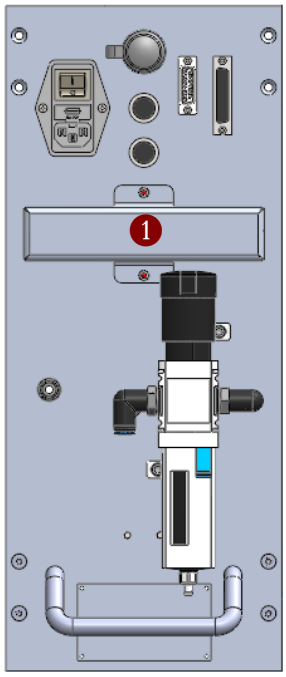
1. Place a suitable container under the condensate separator (3).
2. Open drain screw (4) counter-clockwise.
3. Allow all of the condensate to drain.
4. Screw in drain screw again clockwise.



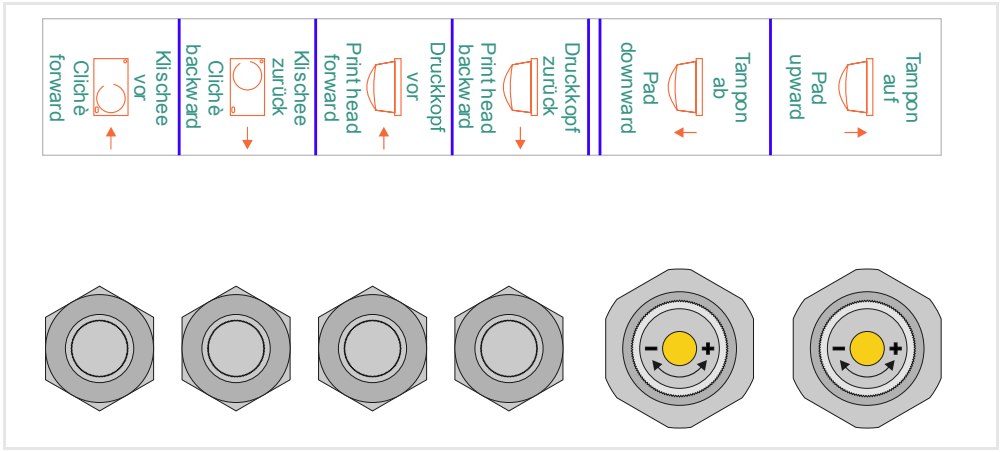
12.4 Setting speeds

The speed of the pneumatically-driven axes can be set via chokes.

The chokes can be accessed on the back of the machine after removing the cover 1.



The chokes are labelled with the directions of movement of the axes (see figure below).
The lock nuts located on the adjusting screws must be loosened in order to adjust the chokes.
Rotating the choke to the right slows the speed.
The lock nuts must be tightened again after the adjustments to the settings have been completed.



13.1 Overview

The machine can be optionally fitted with a pad cleaning system. This is available in two versions and can be set up on the left-hand side or right-hand side of the machine.
Pad cleaning enables the removal of contamination and ink residues from the surface of the pad. In this process the pad is pushed on to a cleaning tape coated with adhesive to which the dirt bonds.

The cleaning interval can be set on the operating terminal.

⚠ WARNING

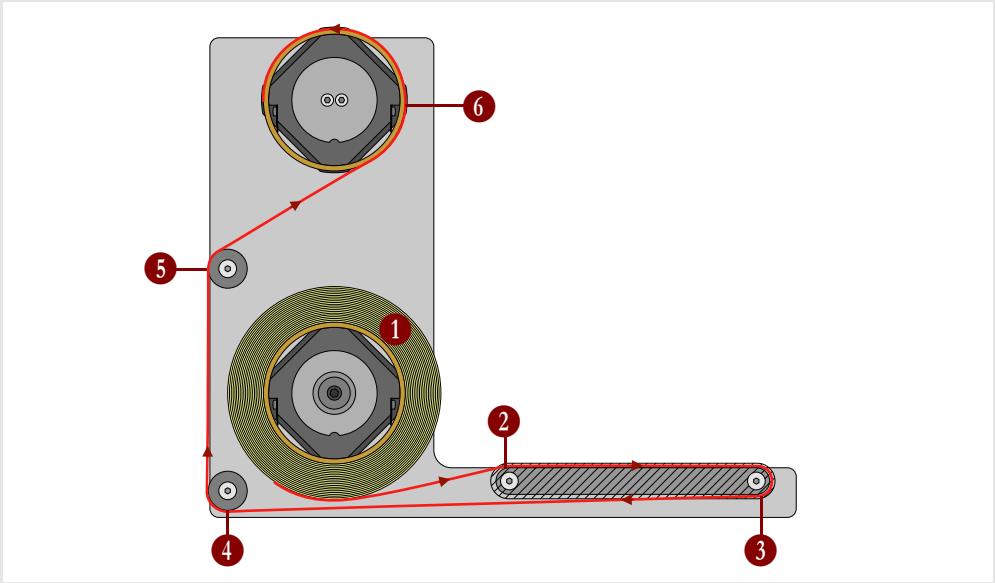
Assembly works carried out in the machine's working space may present a danger due to machine movements caused unintentionally or due to lack of care.

Machine movements caused by functions which are activated unintentionally or by a second person can lead to injury.

- Work may only be carried out by instructed persons.
- Turn off the main switch of the machine.

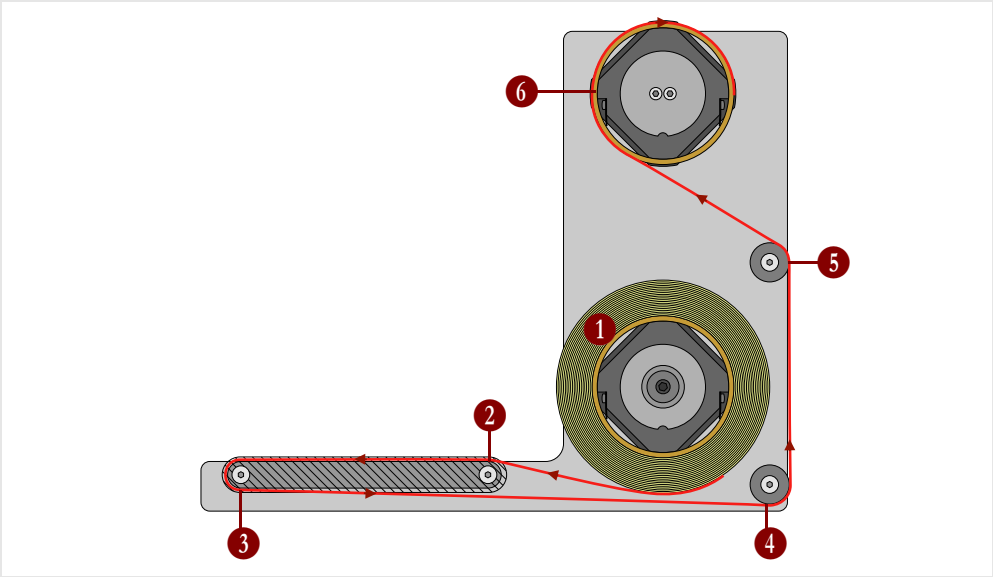
13.2 Inserting the cleaning tape

13.2.1 Pad cleaning – left-hand version



1. Mount a new roll of cleaning tape onto the lower roll holder. In doing so, pay attention to the unrolling direction.
2. Guide the cleaning tape to the right over the table surface.
3. Guide the cleaning tape down around the table surface.
4. Guide the cleaning tape to the left under the table surface, around the deflection roller and then upwards.
4. Guide the cleaning tape around the deflection roller and to the right.
6. Fit the empty roll core onto the upper roll holder and stick the cleaning tape on the roll core. The cleaning tape can be made taut by turning the lower roll of tape backwards.

13.2.2 Pad cleaning – right-hand version



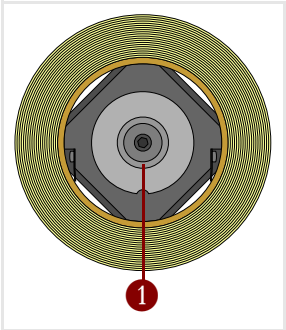
1. Mount a new roll of cleaning tape onto the lower roll holder. In doing so, pay attention to the unrolling direction.
2. Guide the cleaning tape to the left over the table surface.
3. Guide the cleaning tape down around the table surface.
4. Guide the cleaning tape to the right under the table surface, around the deflection roller and then upwards.
5. Guide the cleaning tape around the deflection roller and to the left.
6. Fit the empty roll core onto the upper roll holder and stick the cleaning tape on the roll core. The cleaning tape can be made taut by turning the lower roll of tape backwards.

13.3 Changing the cleaning tape

1. Pull used cleaning tape off the upper roll holder.
2. Pull the empty roll core off the lower roll holder and fit it on to the upper roll holder.
3. Fit a new roll of cleaning tape to the lower roll holder.
4. Insert the cleaning tape as described above. See Chapter 13.2 "Inserting the cleaning tape" on page 44.

13.4 Setting the tape tension

The unrolling brake can be adjusted by twisting the lock nut 1 on the lower roll holder.



- Clockwise turn = increase tape tension.
- Counter-clockwise turn= decrease tape tension.

⚠ WARNING	
	**Danger when performing assembly work in the working area of the machine caused by unintentionally or carelessly triggered machine movements.** Machine movements caused by unintentional machine functions or those triggered by a second person can lead to injuries. • Work may only be carried out by instructed persons. • Turn off the main switch of the machine. • Switch off the compressed air supply. • The pneumatic system must be unpressurised.

14.1 Overview

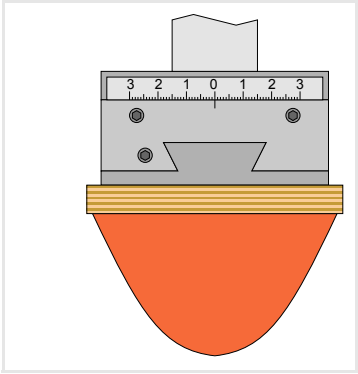
The pad printing machines can be equipped with pad sliding couplings and pads of different sizes and designs.
In the majority of cases, the principle structure of the pad sliding couplings is identical. Slight deviations from the illustrated images are possible.

14.2 Versions

14.2.1 Pad coupling without limit stop

The pad position is not fixed in a reproducible manner when the pad coupling is inserted.

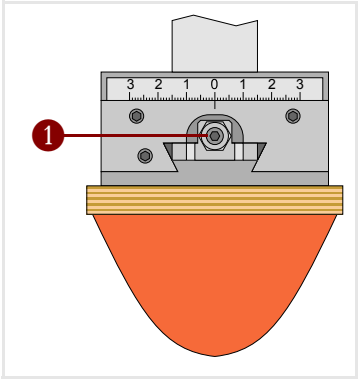
A manual adjustment of the pad position is required.



14.2.2 Pad coupling with limit stop

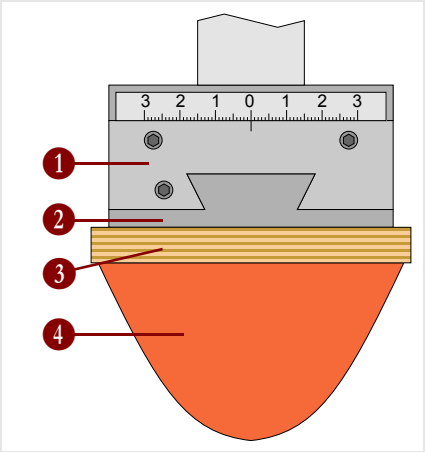
The set pad position can be fixed in a reproducible manner with the limit stop screw 1.

Once the limit stop screw has been correctly set, the pad coupling can be removed and, when inserting, can simply be pushed into the guide until the limit stop is reached.

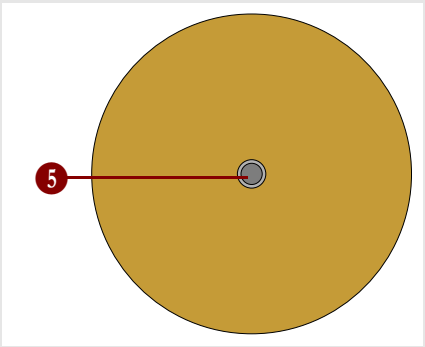


14.3 Pad coupling without limit stop

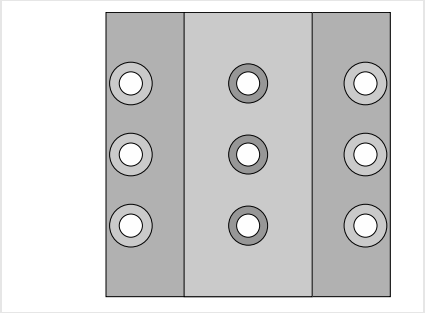
1. Pad sliding coupling
2. Pad coupling
3. Pad base plate
4. Pad



The pad base plate is equipped with an M6 insert nut 5.
The insert nut serves the purpose of fastening the pad on to the pad coupling.



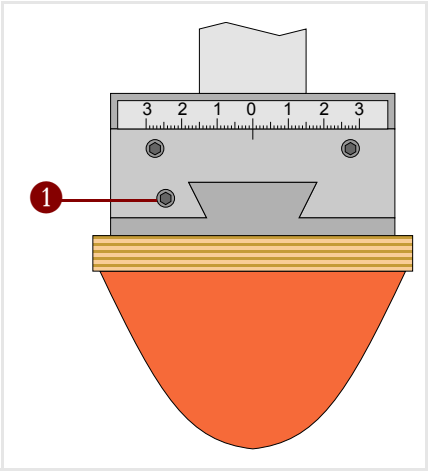
The pad coupling is equipped with various boreholes.
Pads can be directly fastened onto the pad coupling. Depending upon the machine design, a pad spacer (spacer block) can be assembled between the pad and the pad coupling.



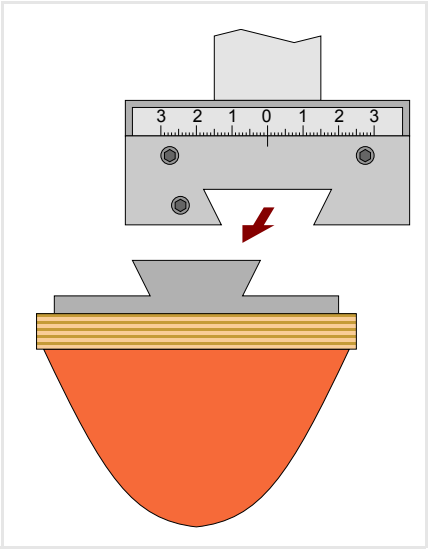
14.3.1 Pad removal

Unscrewing the pad coupling

Unscrew the clamping screw (1) belonging to the pad coupling.



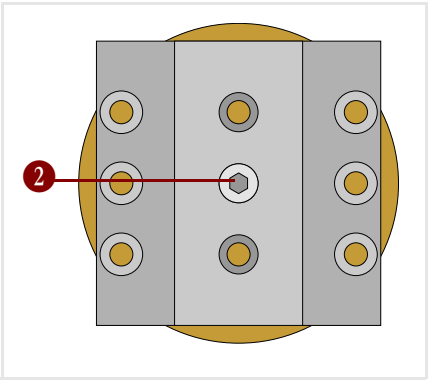
Pull out the pad coupling complete with the pad towards the front.



Unscrewing the pad

The pad is fastened to the pad coupling with a screw (2).

Loosen the screw and remove the pad.

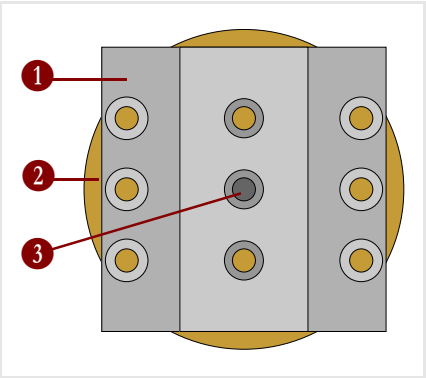


14.3.2 Pad installation

Pad sliding coupling

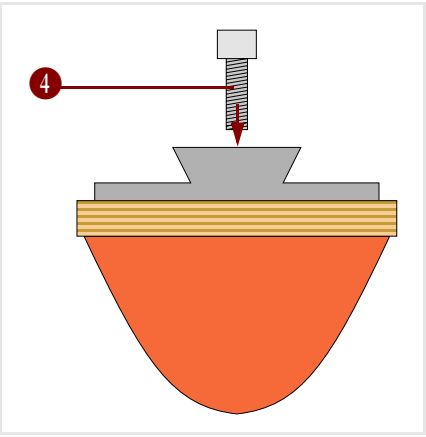
Position pad coupling 1 on to the pad base plate 2.

In the majority of cases, the fastening generally takes place via the centre borehole 3.

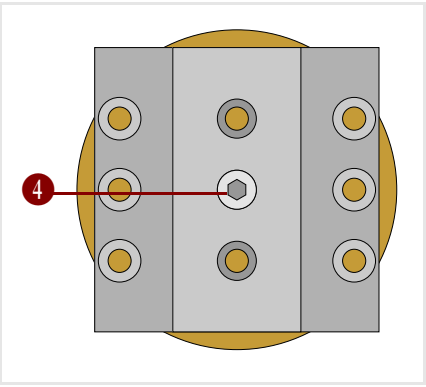


Screwing on the pad

Insert the fastening screw (M6) 4 into the bore-hole.

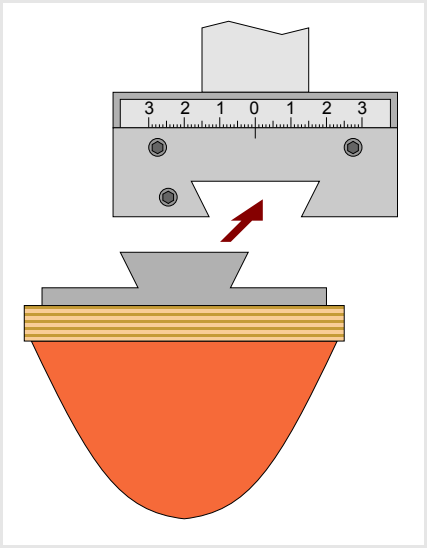


Tighten the fastening screw (M6) 4.



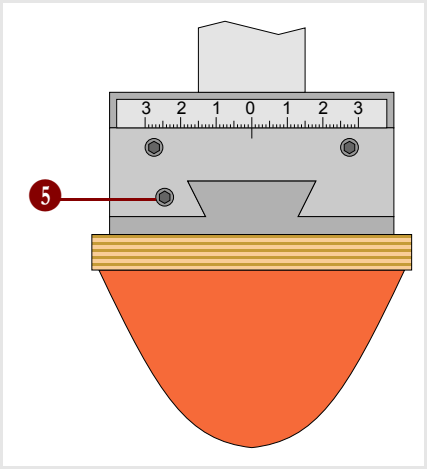
Inserting the pad coupling

Push the pad coupling together with the assembled pad into the guide.



Fixing the pad coupling

Tighten the clamping screw 5 on the pad coupling.



14.3.3 Pad position setting

The pad position can be set with the pad sliding coupling.

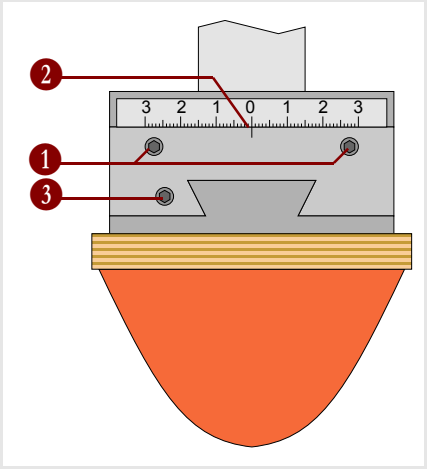
Left / right movement

Unscrew clamping screws 1.
The pad can be moved to the left or right.
The line marks 2 on the ruler indicate the position.

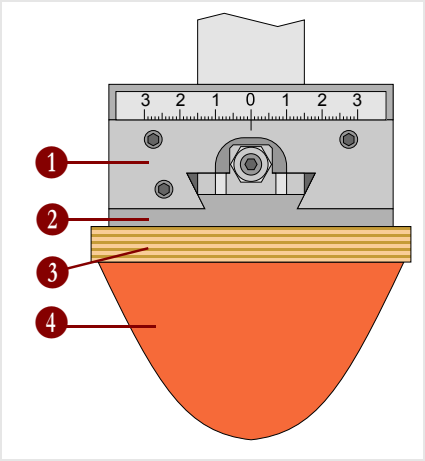
Forward / backward movement

Unscrew clamping screw 3.
The pad can be moved forwards or backwards.

All clamping screws must be retightened following the adjustment of the pad position.



14.4 Pad coupling with limit stop

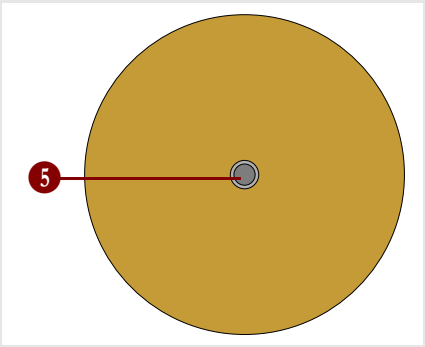


1 Pad sliding coupling

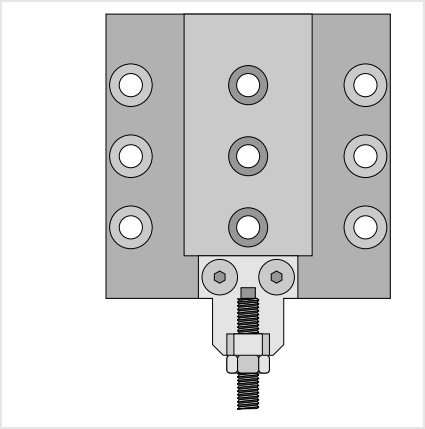
2 Pad coupling

3 Pad base plate

4 Pad



The pad base plate is equipped with an M6 insert nut 5.
The insert nut serves the purpose of fastening the pad on to the pad coupling.

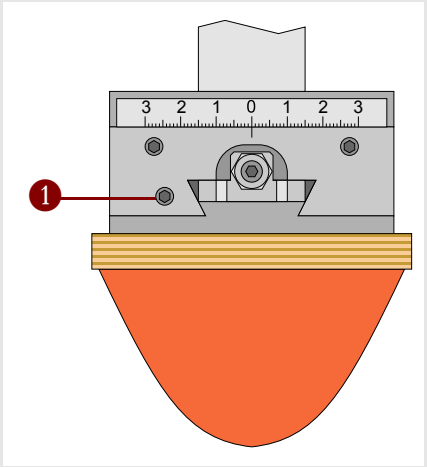


The pad coupling is equipped with various boreholes.
Pads can be directly fastened onto the pad coupling.
Depending upon the machine design, a pad spacer (spacer block) can be assembled between the pad and the pad coupling.

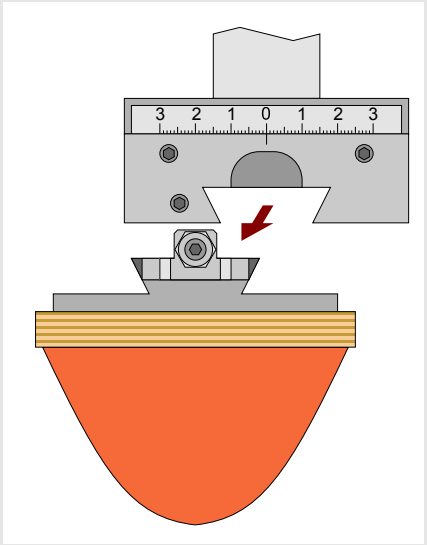
14.4.1 Pad removal

Unscrewing the pad coupling

Unscrew the clamping screw ❶ belonging to the pad coupling.



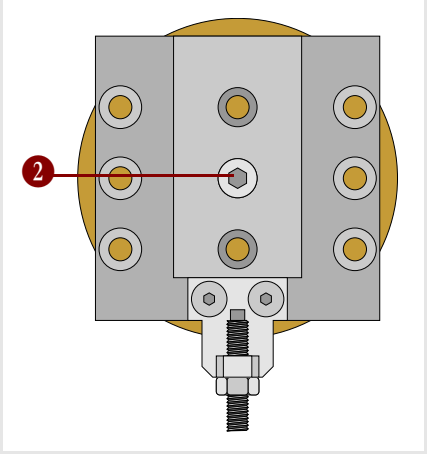
Pull out the pad coupling complete with the pad towards the front.



Unscrewing the pad

The pad is fastened to the pad coupling with a screw ❷.

Loosen the screw and remove the pad.

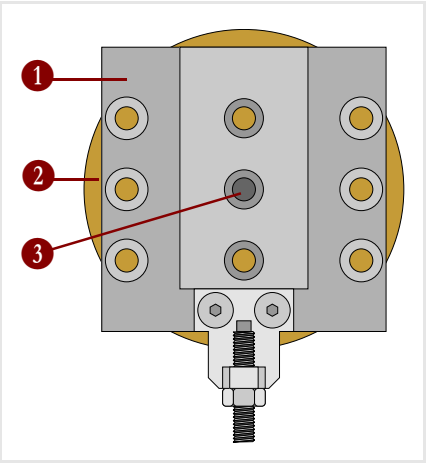


14.4.2 Pad installation

Pad sliding coupling

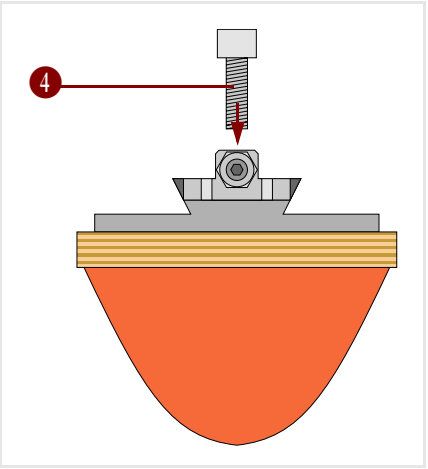
Position pad coupling 1 on to the pad base plate 2.

In the majority of cases, the fastening generally takes place via the centre borehole 3.

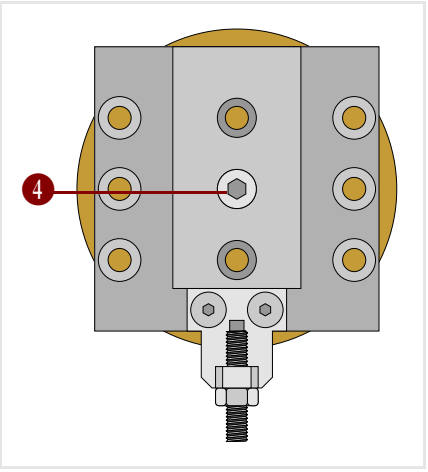


Screwing on the pad

Insert the fastening screw (M6) 4 into the bore-hole.

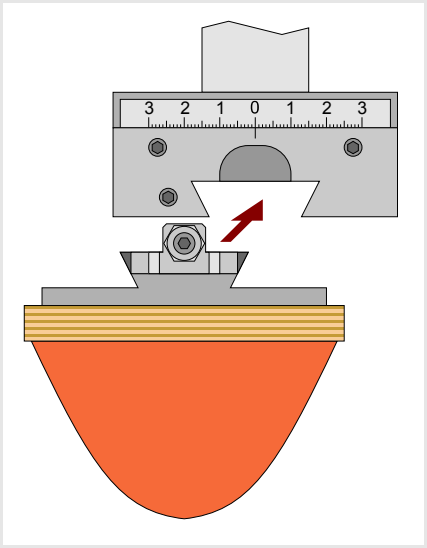


Tighten the fastening screw (M6) 4.



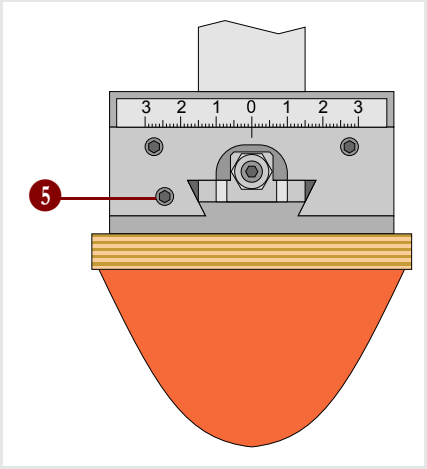
Inserting the pad coupling

Push the pad coupling together with the assembled pad into the guide until the limit stop is reached.



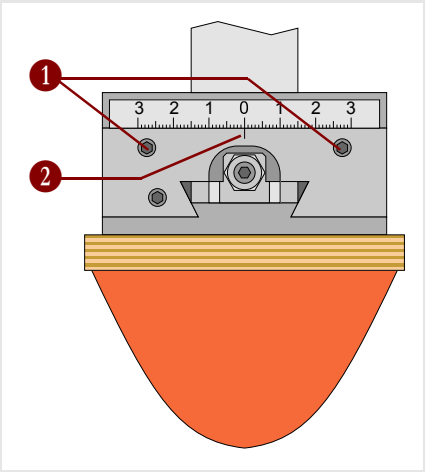
Fixing the pad coupling

Tighten the clamping screw 5 on the pad coupling.



14.4.3 Pad position setting

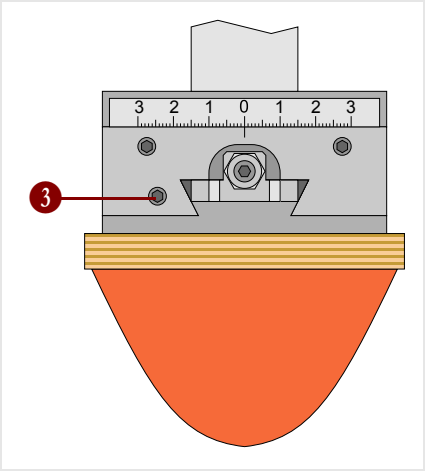
The pad position can be set with the pad sliding coupling.



Left / right movement

Unscrew clamping screws 1.
The pad can be moved to the left or right.

The line marks 2 on the ruler indicate the position.

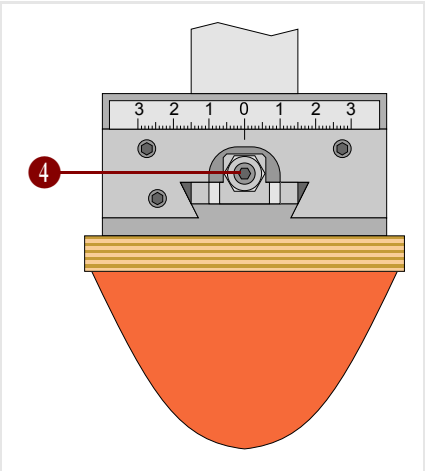


Forward / backward movement

Unscrew clamping screw 3.
The pad can be moved forwards or backwards.

All clamping screws must be retightened following the adjustment of the pad position.

Set the limit stop screw



The set pad position can be fixed in a reproducible manner with the limit stop screw 4.
In order to do so, undo the lock nut and set the screw in such a manner that its tip touches the pad sliding coupling. Then retighten the lock nut.

Once the limit stop screw has been correctly set, the pad coupling can be removed and, when inserting, can simply be pushed into the guide until the limit stop is reached.

⚠ WARNING

Assembly works carried out in the machine's working space may present a danger due to machine movements caused unintentionally or due to lack of care.

Machine movements caused by functions which are activated unintentionally or by a second person can lead to injury.

- Work may only be carried out by instructed persons.
- Turn off the main switch of the machine.
- Switch off the compressed air supply.
- The pneumatic system must be depressurized.

15.1 Safety instructions for handling magnets

⚠ WARNING

Crushing injuries may be caused by strong pulling forces.

Large magnets exhibit an extreme pull.
Careless handling can result in fingers or skin being trapped between magnets. This can lead to crushing injuries and bruising on the affected points.

- Handle magnets with great care.

⚠ WARNING

Failure or malfunctioning of implants.

Magnets can influence the functioning of pacemakers and implanted defibrillators.
Pacemakers can be switched into test mode and cause discomfort. Defibrillators may cease to function in certain circumstances.

- People wearing such devices must maintain a sufficient distance to magnets.
- Wearers of such devices must be warned about approaching magnets.

⚠ WARNING

Injuries may be caused by flying metal fragments.

Magnets are manufactured from brittle materials. If two magnets collide, they may shatter. Sharp-edged chips can be launched over a distance of several meters and cause eye injuries.

- Beware of collisions with magnets.
- Wear safety goggles when handling larger magnets.
- Ensure that bystanders are also given protection or maintain a distance.

SAFETY INSTRUCTION	
	**Malfunctions may be caused by magnetic fields.** Magnets generate a wide-reaching and strong magnetic field. Amongst other things, they can damage televisions, notebooks, computer hard drives, credit and debit cards, data carriers, mechanical clocks, hearing aids and speakers. • Keep magnets away from all devices and objects that can be damaged by strong magnetic fields.

15.2 Overview

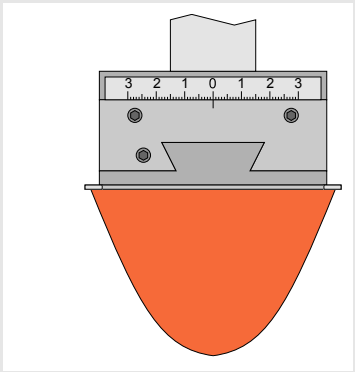
The pad printers can be equipped with pad sliding couplings and pads of different sizes and designs.
In the majority of cases, the principle structure of the pad sliding couplings is identical. Slight deviations from the illustrated images are possible.

15.3 Versions

15.3.1 Pad coupling without limit stop

When inserting the pad coupling, the pad position is not fixed in a reproducible manner.

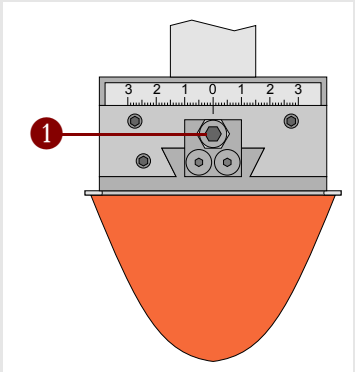
Manual setting of the pad position is required.



15.3.2 Pad coupling with limit stop

The set tampon position can be fixed in a reproducible manner with the limit stop screw 1.

Once the limit stop screw has been correctly set, the pad coupling can be removed and, when inserting, can simply be pushed into the guide until the limit stop is reached.



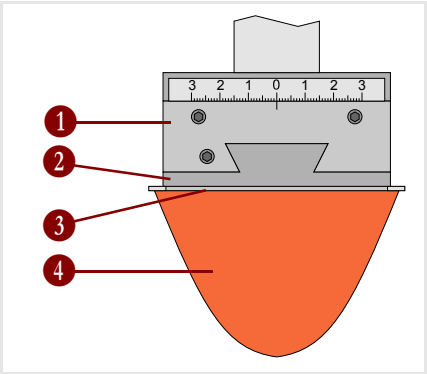
15.4 Pad coupling without limit stop

1 Pad sliding coupling

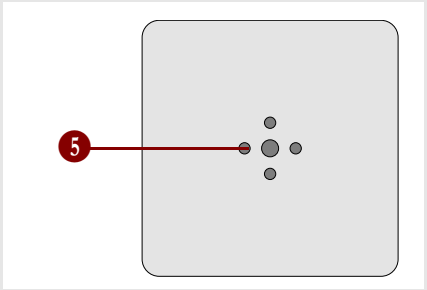
2 Pad coupling

3 Pad base plate

4 Pad

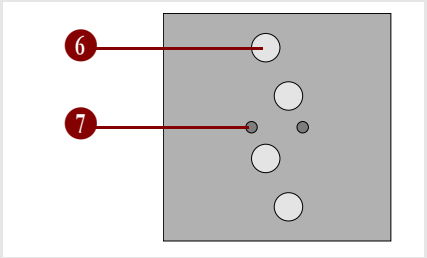


The pad base plate is manufactured from a magnetic sheet.
The holes 5 enable the precise positioning of the pad on the centering pins of the pad coupling.



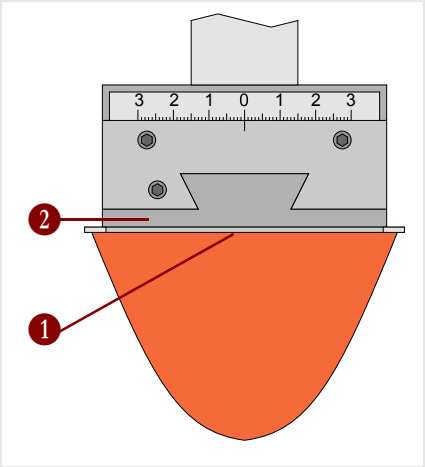
The pad coupling is fitted with several magnets 6.

There are two centering pins 7 on the underside of the pad coupling for the precise positioning of the tampons.

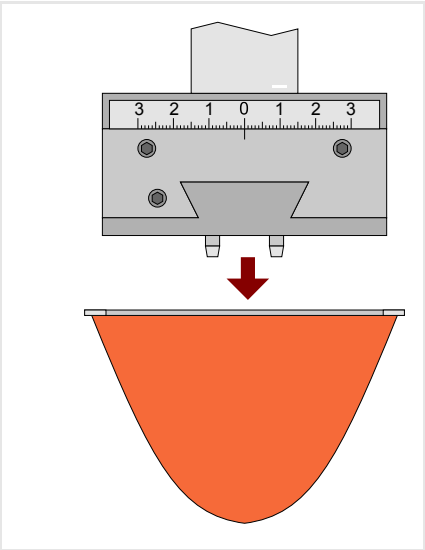


15.4.1 Pad removal

The pad base plate ❶ is held to the pad coupling ❷ through magnetic force.



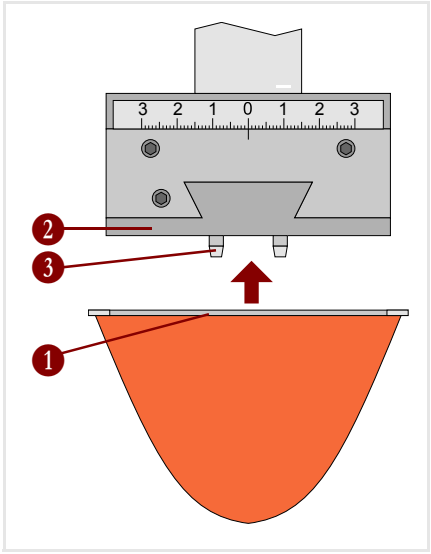
Pull the pad base plate and pad downwards from the pad coupling.



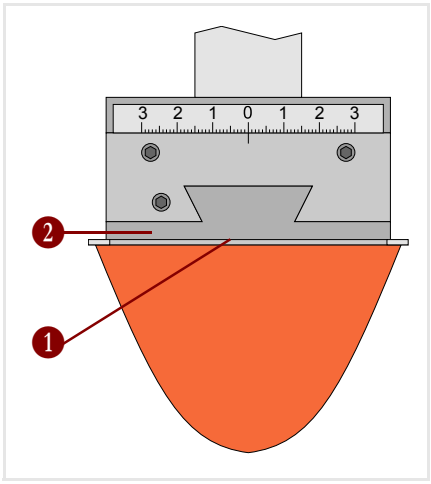
15.4.2 Pad installation

Attach the pad with the pad base plate 1 to the pad coupling 2 from below.

Ensure that the centering pins 3 insert into the holes on the pad base plate.



The pad base plate 1 is held to the pad coupling 2 through magnetic force.



15.4.3 Pad position setting

The pad position can be set with the pad sliding coupling.

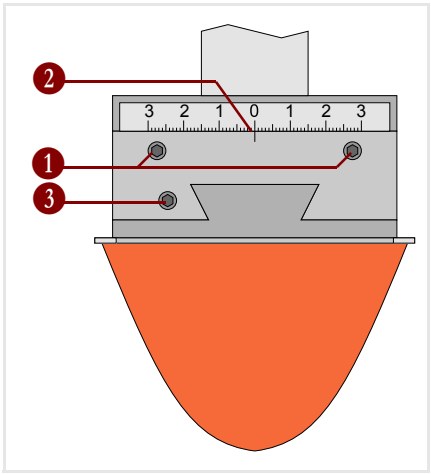
Left / right movement

Untighten clamping screws 1.
The pad can be moved to the left or right.
The line mark 2 on the ruler indicates the position.

Forward / backward movement

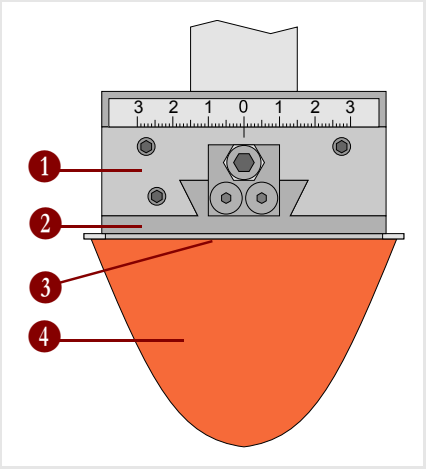
Untighten clamping screw 3.
The pad can be moved forwards or backwards.

All clamping screws must be retightened following the adjustment of the pad position.

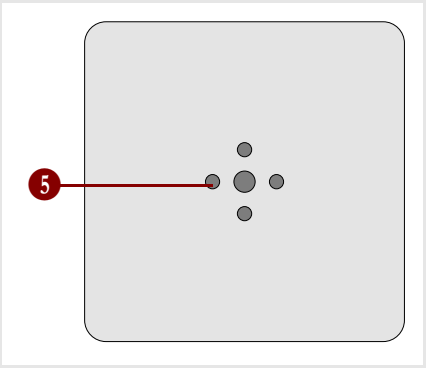


15.5 Pad coupling with limit stop

1. Pad sliding coupling
2. Pad coupling
3. Pad base plate
4. Pad

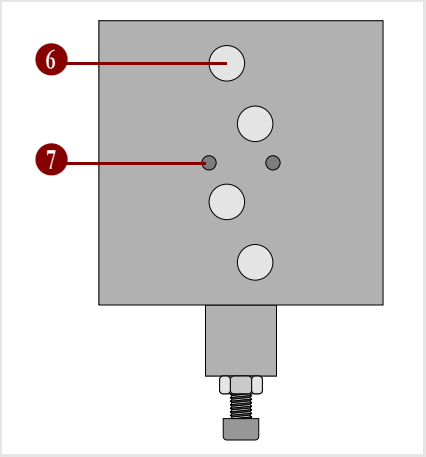


The pad base plate is manufactured from a magnetic sheet.
The holes 5 enable the precise positioning of the pad on the centering pins of the pad coupling.



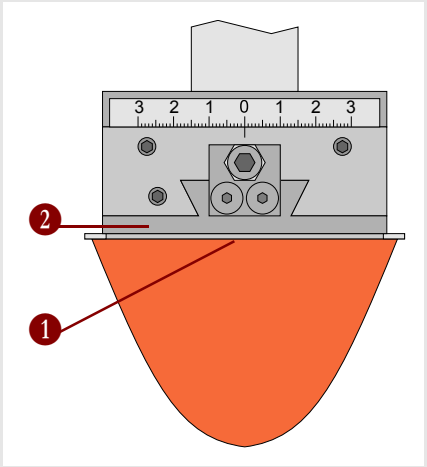
The pad coupling is fitted with several magnets 6.

There are two centering pins 7 on the underside of the pad coupling for the precise positioning of the tampons.

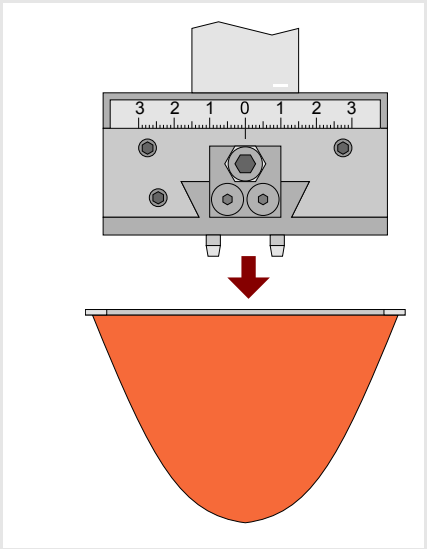


15.5.1 Pad removal

The pad base plate ❶ is held to the pad coupling ❷ through magnetic force.



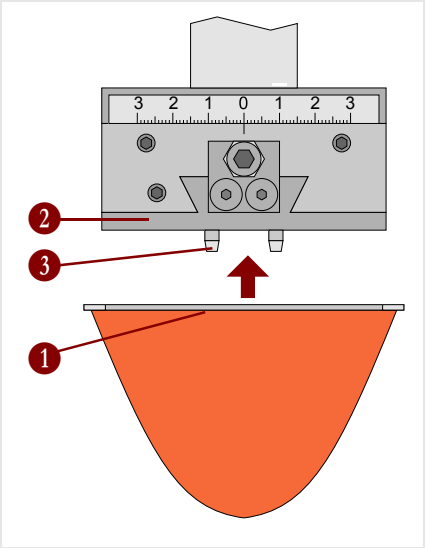
Pull the pad base plate and pad downwards from the pad coupling.



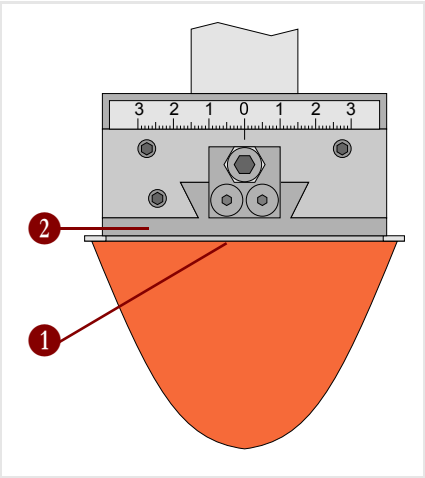
15.5.2 Pad installation

Attach the pad with the pad base plate 1 to the pad coupling 2 from below.

Ensure that the centering pins 3 insert into the holes on the pad base plate.

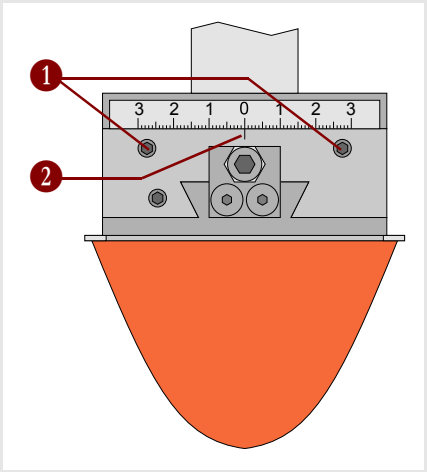


The pad base plate 1 is held to the pad coupling 2 through magnetic force.



15.5.3 Pad position setting

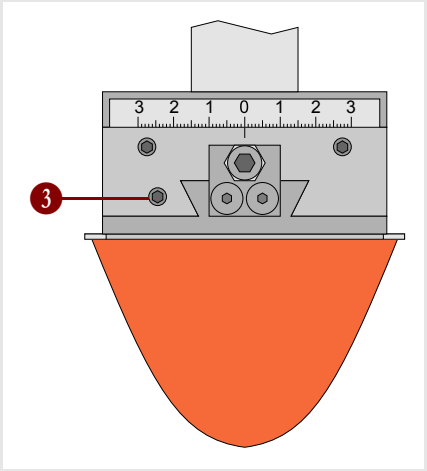
The pad position can be set with the pad sliding coupling.



Left / right movement

Untighten clamping screws 1.
The pad can be moved to the left or right.

The line mark 2 on the ruler indicates the position.

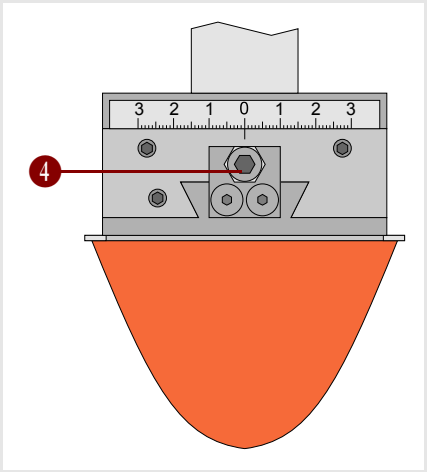


Forward / backward movement

Untighten clamping screw 3.
The pad can be moved forwards or backwards.

All clamping screws must be retightened following the adjustment of the pad position.

Set limit stop screw

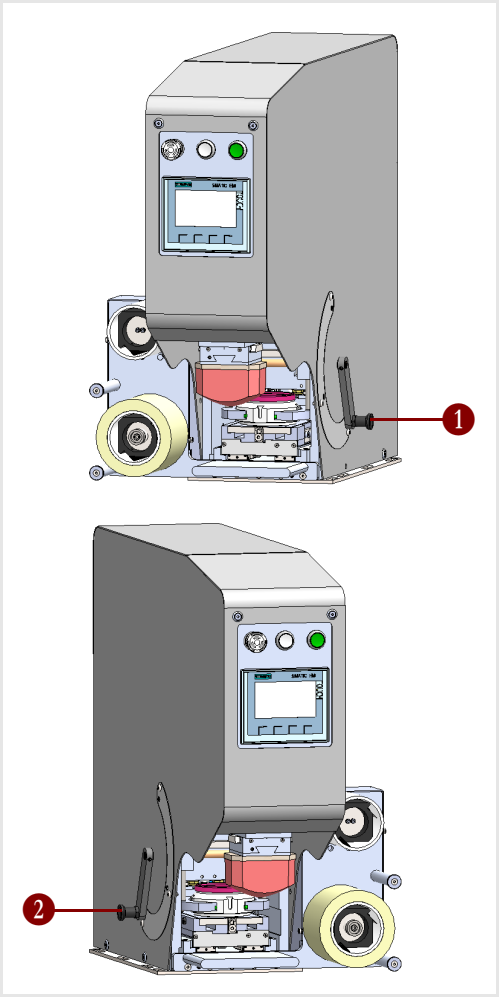


The set tampon position can be fixed in a reproducible manner with the limit stop screw 4.
To do this, undo the lock nut and set the screw in such a manner that its tip touches the pad sliding coupling. Then retighten the lock nut.

Once the limit stop screw has been correctly set, the pad coupling can be removed and, when inserting, can simply be pushed into the guide until the limit stop is reached.

⚠ WARNING	
⚠	**Assembly works carried out in the machine's working space may present a danger due to machine movements caused unintentionally or due to lack of care.** Machine movements caused by functions which are activated unintentionally or by a second person can lead to injury. • Work may only be carried out by instructed persons. • Turn off the main switch of the machine. • If there is a pneumatic system, the compressed air supply must be switched off. • The pneumatic system must be depressurized.

16.1 Machine versions



16.1.1 Right-hand version

In the right-hand version the ink cup fixing lever 1 is located on the right-hand side of the machine.

16.1.2 Left-hand version

In the left-hand version the ink cup fixing lever 2 is located on the left-hand side of the machine.

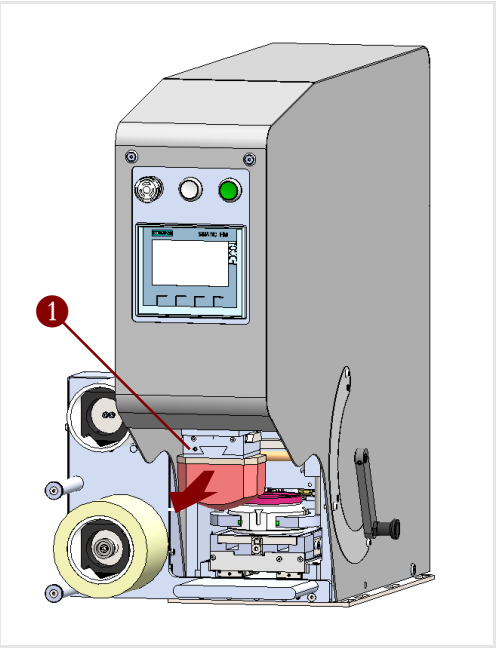
16.1.3 Assembly steps

The following assembly steps for the cliché feature the right-hand version of the machine. For the left-hand version, the assembly is done in the same way except that the ink cup fixing lever is operated on the other side of the machine.

16.2 Cliché removal

16.2.1 Remove pad

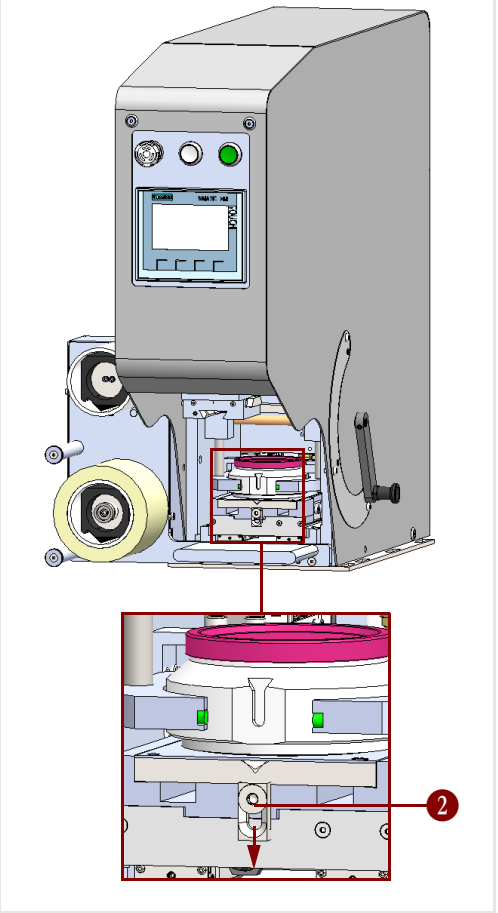
The pad should be removed in order to prevent damage and to ensure better accessibility.



Untighten the clamping screw 1 on the pad coupling.

Pull the pad forwards out of the pad coupling.

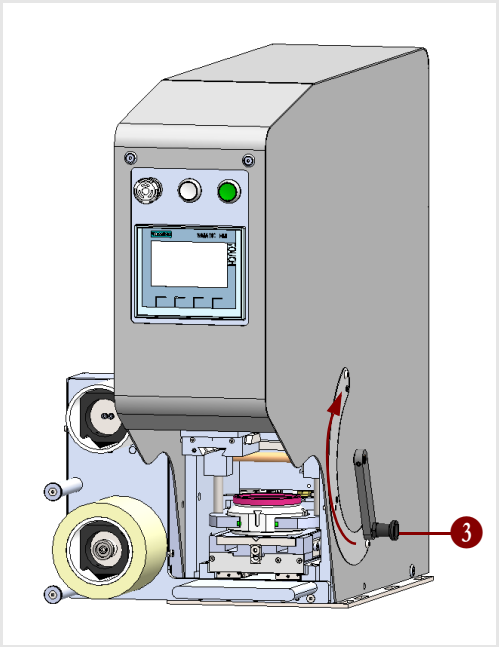
16.2.2 Unfasten cliché



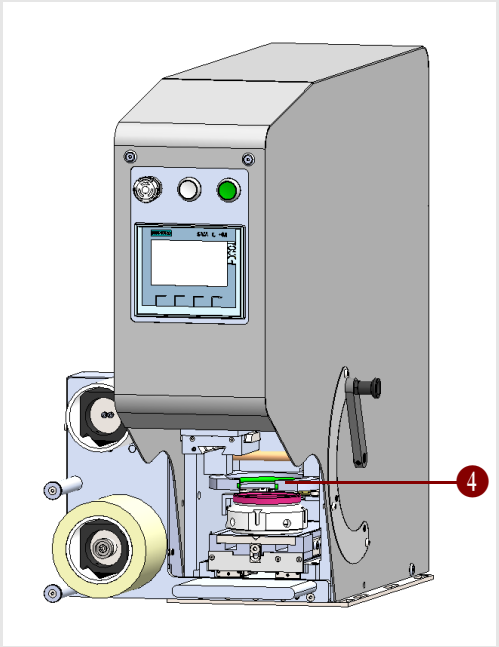
Untighten the clamping screw 2 and push the clamping block down.

16.2.3 Unfasten ink cup

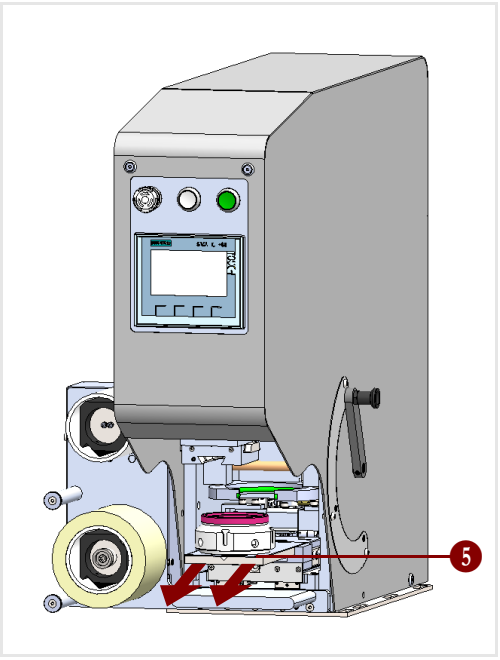
Pull out the lock pin 3 from the ink cup fixing and pull the lever up.
When you let go, stop the lock pin in the upper position.



The ink cup holder 4 raises and releases the ink cup.



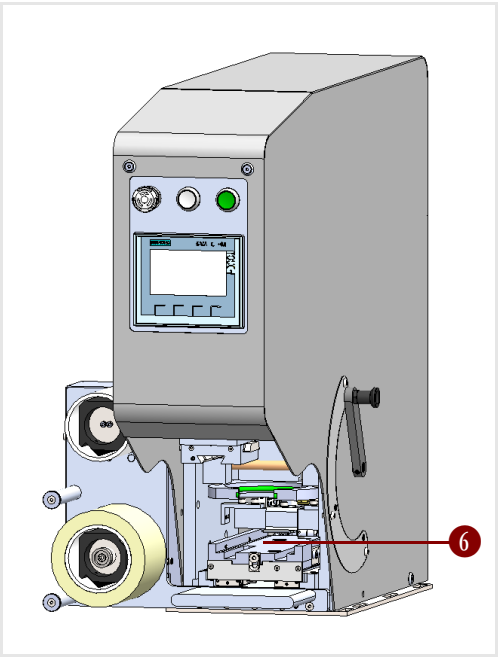
16.2.4 Remove cliché



Pull the cliché 5 together with the ink cup forwards and out of the cliché holder.

When dealing with plastic or thin steel clichés, the cliché is pulled out together with the base plate.

See Chapter 18.1 "Cliché types" on page 85.



The cliché holder 6 is empty.

16.3 Cliché installation

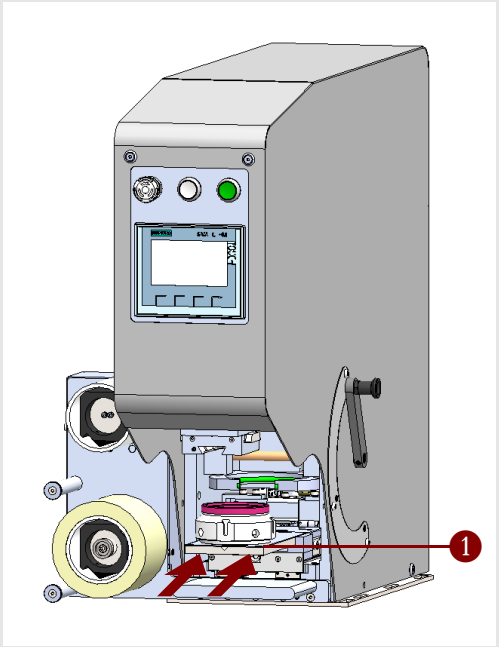
To allow the cliché to be assembled, the pad should not yet be installed in the machine.
See Chapter 16.2.1 "Remove pad" on page 68.

16.3.1 Insert cliché

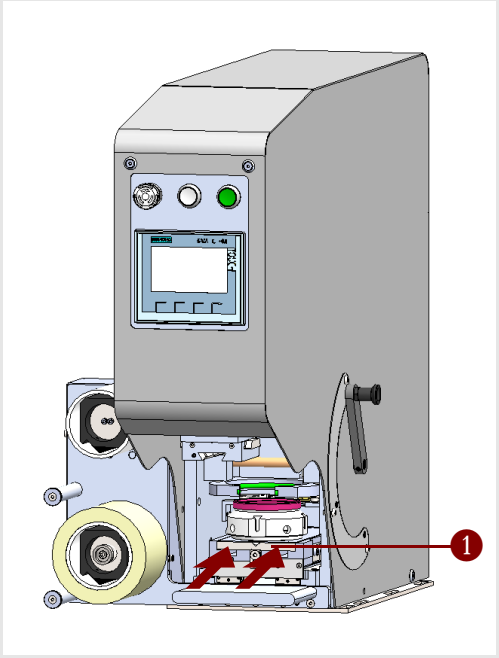
Insert the cliché ❶ together with the ink cup in the cliché holder and push it to the back.

When dealing with clichés made from plastic or thin steel, the cliché is inserted together with the support plate.

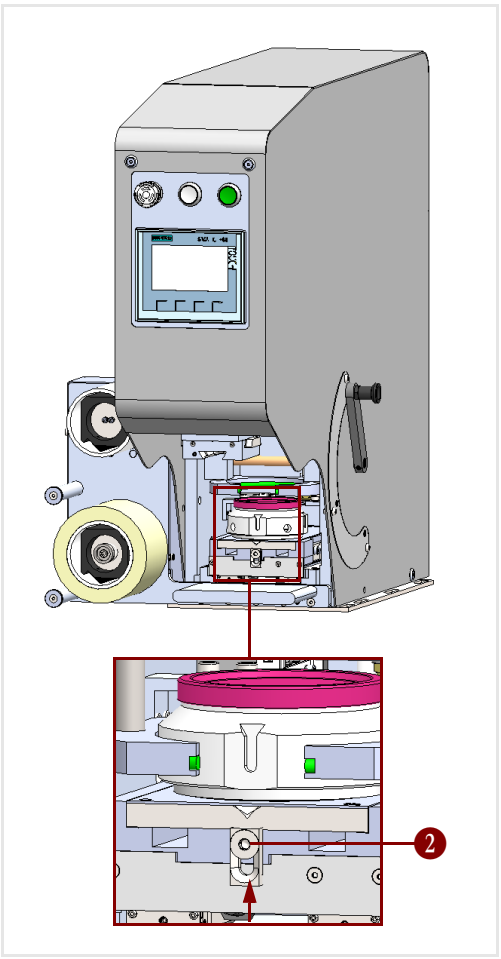
See Chapter 18.1 "Cliché types" on page 85.



Push the cliché ❶ back as far as the limit stop.



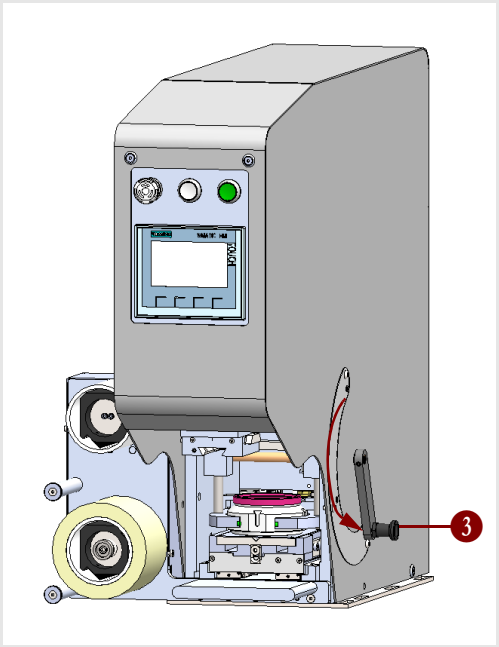
16.3.2 Clamp cliché



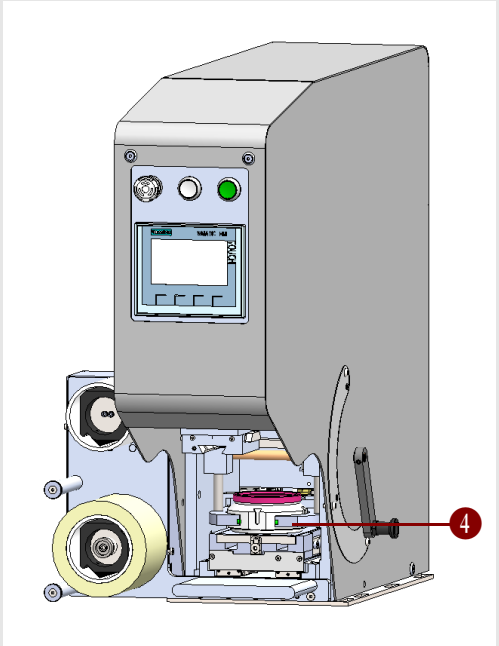
Push the clamping block up and tighten the clamping screw (2).

16.3.3 Secure ink cup

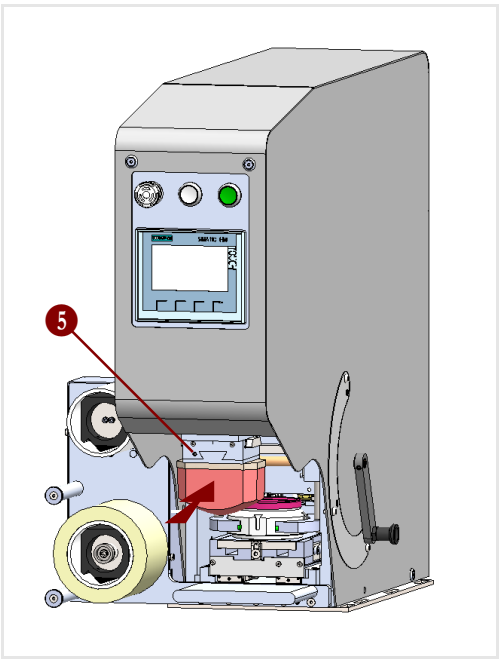
Pull out the lock pin 3 from the ink cup fixing and push the lever down.
When you let go, stop the lock pin in the lower position.



The ink cup holder 4 lowers and secures the ink cup.



16.3.4 Install pad



Push the pad into the pad coupling.

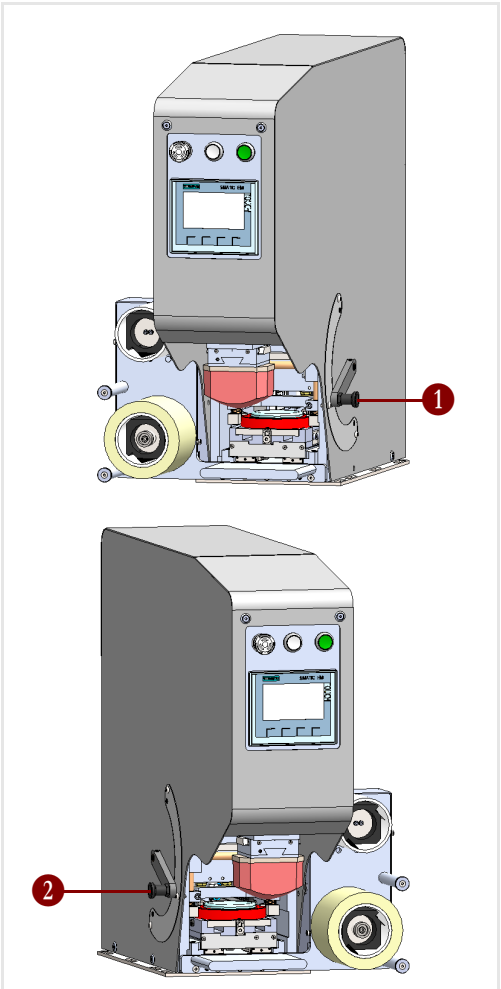
Tighten the clamping screw 5 on the pad coupling.

⚠ WARNING	
	**Assembly works carried out in the machine's working space may present a danger due to machine movements caused unintentionally or due to lack of care.** Machine movements caused by functions which are activated unintentionally or by a second person can lead to injury. • Work may only be carried out by instructed persons. • Turn off the main switch of the machine. • If there is a pneumatic system, the compressed air supply must be switched off. • The pneumatic system must be depressurized.

17.1 Machine versions

17.1.1 Right-hand version

In the right-hand version the ink cup fixing lever ❶ is located on the right-hand side of the machine.



17.1.2 Left-hand version

In the left-hand version the ink cup fixing lever ❷ is located on the left-hand side of the machine.

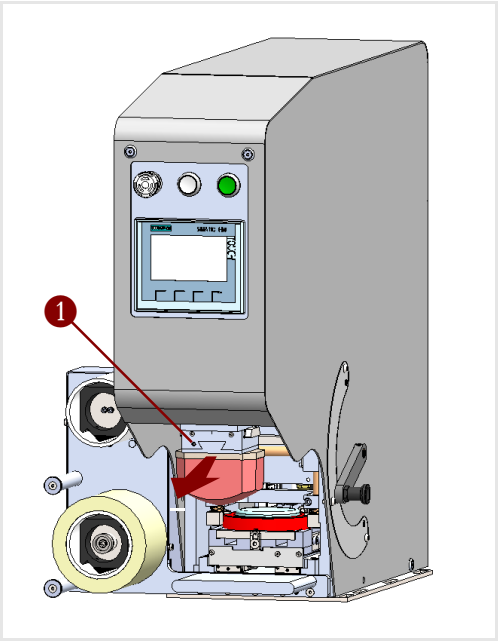
17.1.3 Assembly steps

The following assembly steps for the cliché feature the right-hand version of the machine. For the left-hand version, the assembly is done in the same way except that the ink cup fixing lever is operated on the other side of the machine.

17.2 Cliché removal

17.2.1 Remove pad

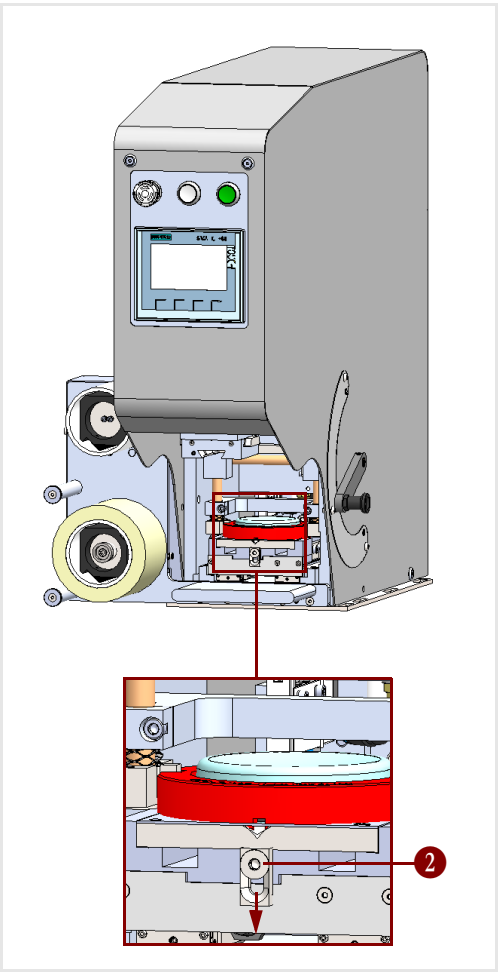
The pad should be removed in order to prevent damage and to ensure better accessibility.



Untighten the clamping screw 1 on the pad coupling.

Pull the pad forwards out of the pad coupling.

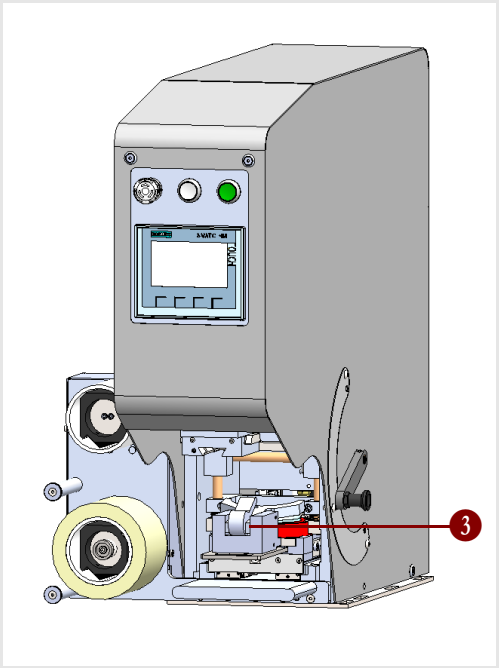
17.2.2 Unfasten cliché



Untighten the clamping screw 2 and push the clamping block down.

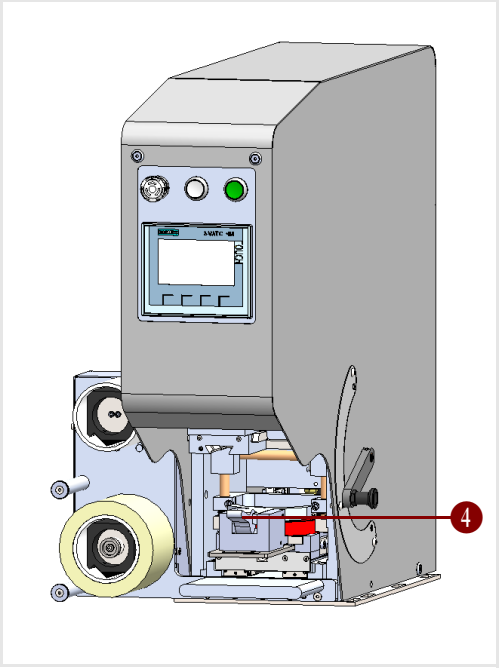
17.2.3 Attach setup tool

Push the setup tool 3 with the base plate into the notch under the cliché in an open position (clamping lever forwards).
Here, the clamping jack will push underneath the ink cup.



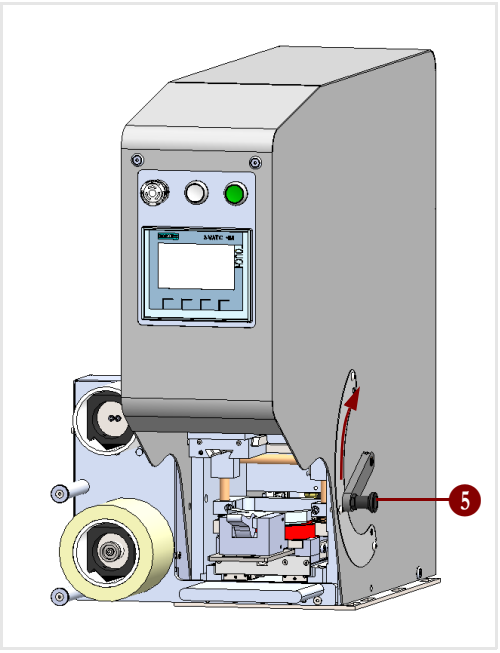
Pull the clamping lever 4 backwards.

The clamping jack will swivel downwards and fasten the ink cup to the cliché.

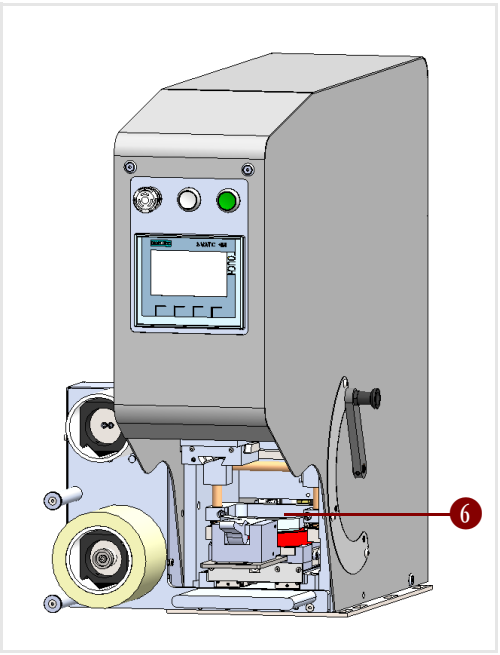


17.2.4 Unfasten ink cup

Pull out the lock pin 5 from the ink cup fixing and push the lever up.
When you let go, stop the lock pin in the upper position.



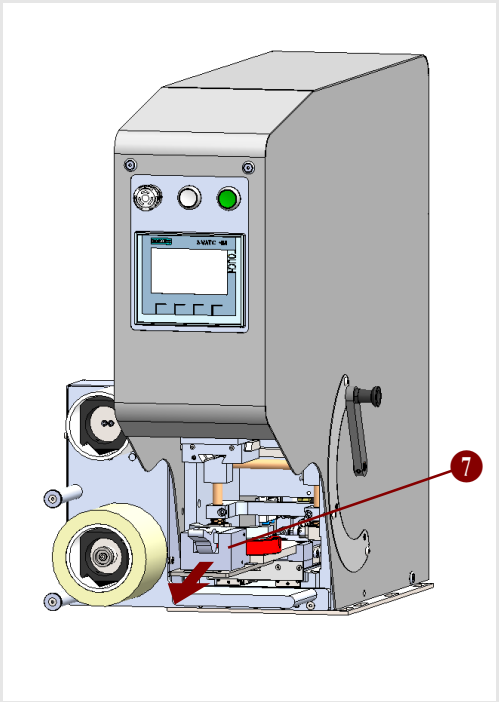
This raises the ink cup fixing 6 and releases the ink cup.



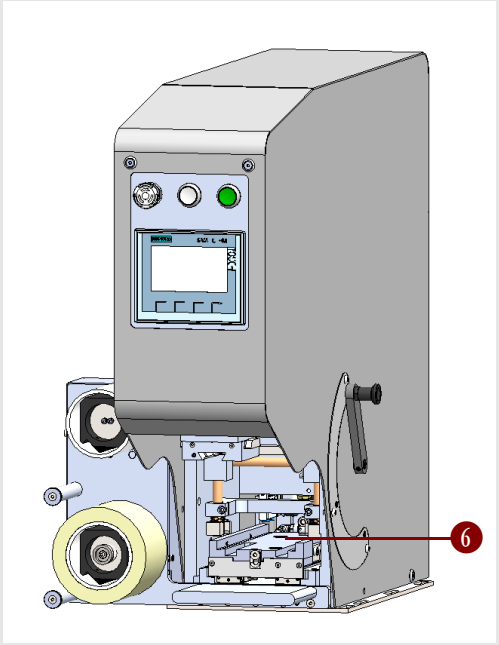
17.2.5 Remove cliché

Pull the setup tool 5 together with the ink cup and cliché forwards out of the cliché holder.

See Chapter 18.1 "Cliché types" on page 85.



The cliché holder 6 is empty.



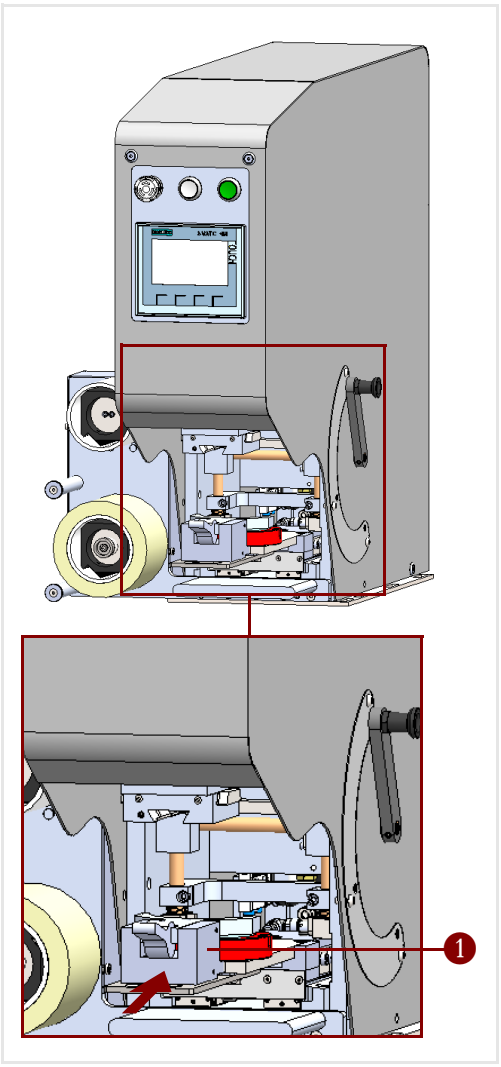
17.3 Cliché installation

To allow the cliché to be assembled, the pad should not yet be installed in the machine. See Chapter 17.2.1 "Remove pad" on page 76.

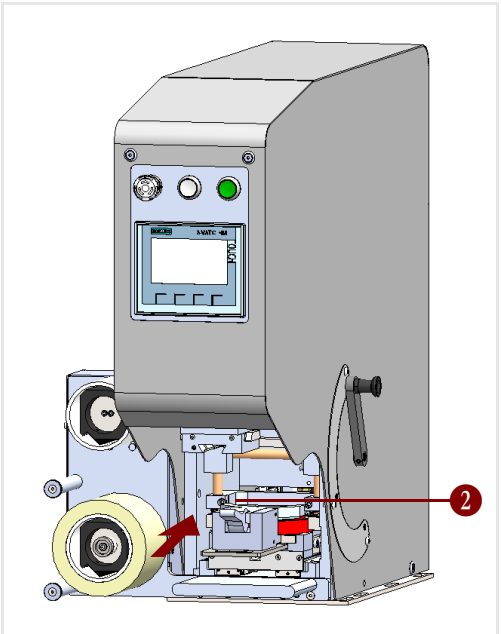
17.3.1 Insert cliché

Insert the setup tool 1 into the cliché holder together with the ink cup and the cliché and push it to the back.

See Chapter 18.1 "Cliché types" on page 85.

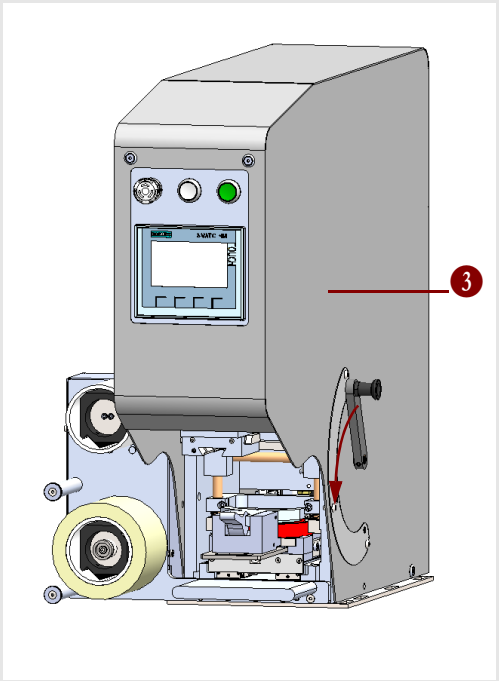


Push the cliché 2 back as far as the limit stop.



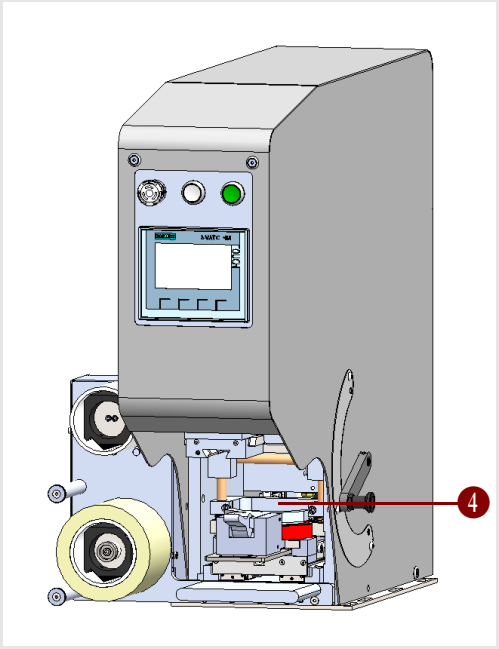
17.3.2 Secure ink cup

Pull out the lock pin 3 from the ink cup fixing and push the lever down.
When you let go, stop the lock pin in the lower position.



This lowers the ink cup fixing 4 and secures the ink cup.

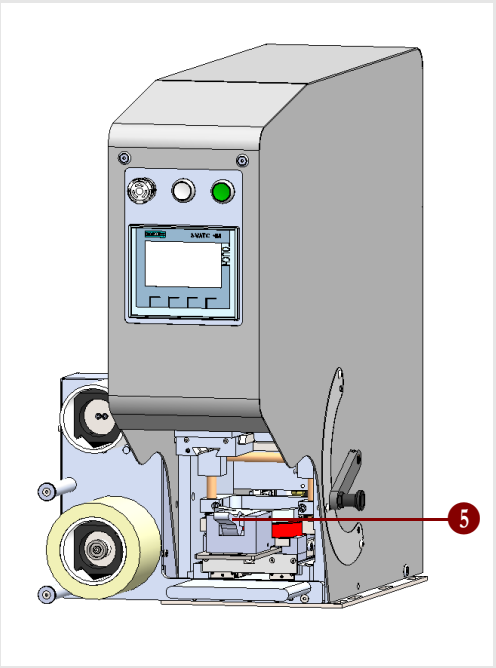
The fixings must precisely grip the notches in the ink cup.



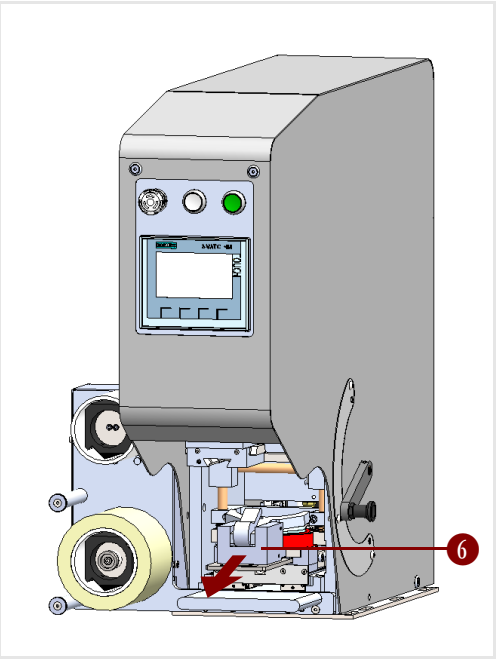
17.3.3 Remove setup tool

Push the clamping lever 5 forwards.

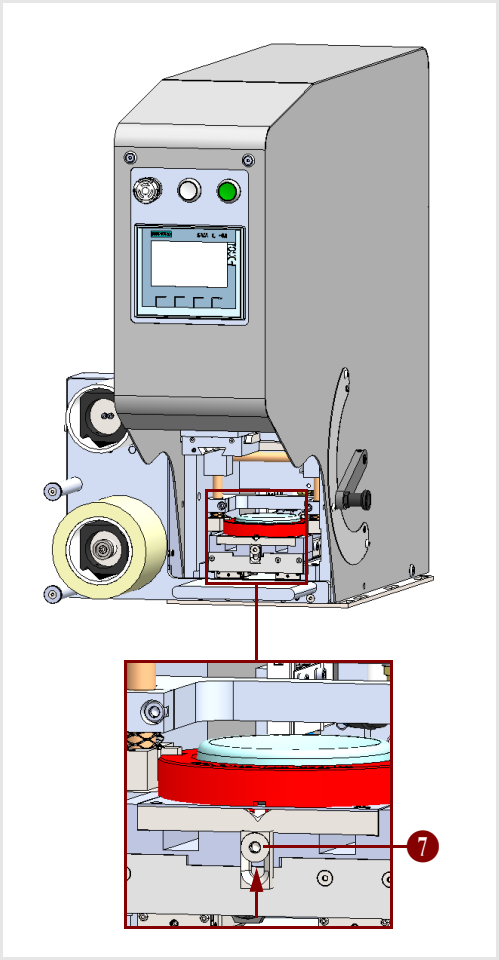
The clamping jack will swivel upwards and detach itself from the ink cup.



Pull the setup tool 6 from the machine in an open position (clamping lever forwards).

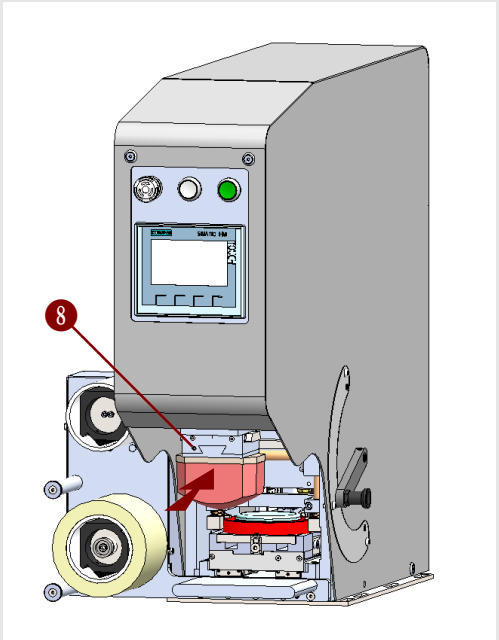


17.3.4 Clamp cliché



Push the clamping block up and tighten the clamping screw 7.

17.3.5 Install pad

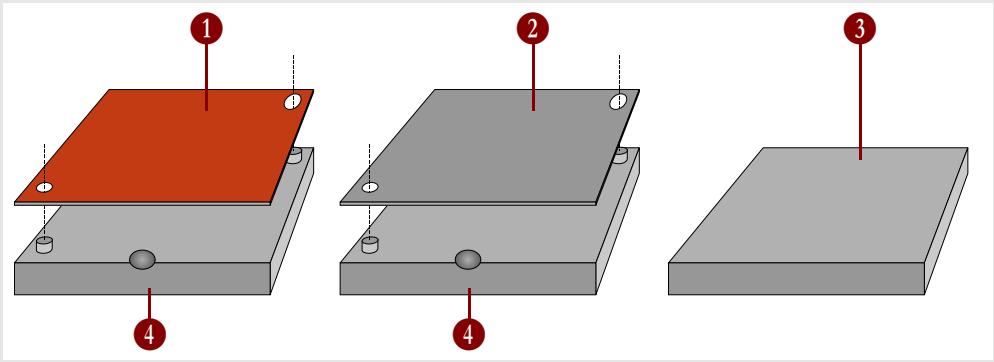


Push the pad into the pad coupling.

Tighten the clamping screw 8 on the pad coupling.

18.1 Cliché types

Three different cliché types can be used.



1 Polymer cliché (0.5 mm thick)

2 Thin steel cliché (0.5 mm thick)

3 Thick steel cliché (10 mm thick)

4 Support plate (carrier plate for polymer and thin steel cliché)
The support plate is equipped with two fixing pins upon which the clichés are held in place via their holes.

⚠ WARNING

Injury caused by sharp edges on the plastic and thin steel clichés.
Sharp sheet edges and the corners of plastic and thin steel clichés can lead to cut injuries and skin abrasions.

- Exercise care when touching the sheet edges and corners.
- Work with particular care when handling the clichés.

18.2 Replacing clichés

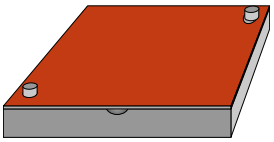
INSTRUCTION

When handling clichés, the surface of the clichés may not become scratched.
Damage leads to impure print images or ink leaking.

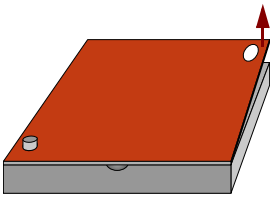
Thick steel clichés are completely replaced as a one-piece element.
Polymer and thin steel clichés are replaced on the support plate.

18.2.1 Removing the cliché

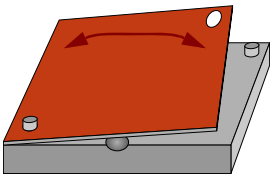
The cliché is removed from the machine together with the support plate.



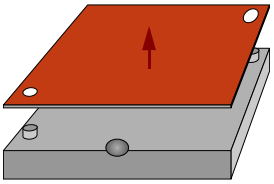
Using the long hole, first lift the cliché from the fixing pin.



Slightly lift the cliché whilst simultaneously swivelling it back and forth in order to detach the round hole from the other fixing pin.
Do not kink or bend the cliché by raising it in a forced manner.

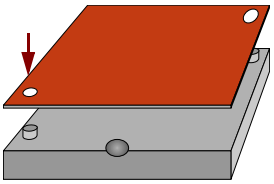


Lift the cliché from the support plate.

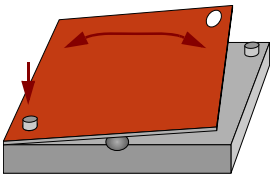


18.2.2 Positioning the cliché

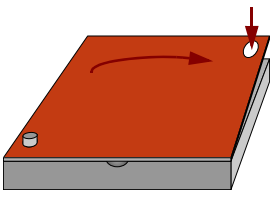
First place the cliché onto the fixing pin with the round hole.



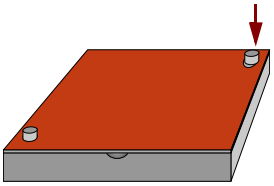
Slightly swivel the cliché back and forth and fully push it onto the fixing pin.



Swivel the cliché over the other fixing pin with the long hole.



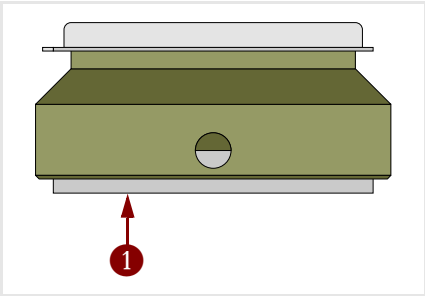
Press the long hole onto the fixing pin.



19.1 Safety instructions for handling ink cups

A sharp blade edge ❶ can be found on the lower side of the ink cup.

The blade edge is later positioned on the cliché and seals the ink cup towards the cliché.



⚠ WARNING

Injury caused by sharp edges.

The sharp blade edge poses a risk of injury.
Careless handling can lead to cut injuries or skin abrasions.

- Avoid contact with the blade edge.
- Work with particular care when inserting the magnets. The magnetic force pulls the magnets towards the ink cup and the blade edge.

⚠ WARNING

Injury caused by aggressive liquids or gases.

Improper handling of inks and solvent can lead to irritation and injuries to the skin, airways or the eyes.

- Observe the manufacturer's hazard information.
- Observe the safety instructions contained in this documentation.
- Ink cups that have already been used must be cleaned before being dismantled.

INSTRUCTION

Ink cups must be handled with extreme care and may not be distorted or fall. The hard material may fracture or become chipped if twisted or subjected to a severe impact.
The precisely ground blade edge may not exhibit any eruptions or notches. Damage to the blade edge leads to ink leakage.

19.2 Safety instructions for handling magnets

⚠ WARNING

Crushing caused by strong pulling forces.

Large magnets exhibit an extreme pull.
Careless handling can result in fingers or skin being trapped between magnets. This can lead to crushing injuries and bruising on the affected points.

- Handle magnets with great care.

⚠ WARNING

Implant failure or malfunction.

Magnets can influence the function of pacemakers and implanted defibrillators.
Pacemakers can be switched into test mode and cause discomfort. Defibrillators may cease to function in certain circumstances.

- People wearing such devices must maintain a sufficient distance to magnets.
- Wearers of such devices must be warned about approaching magnets.

⚠ WARNING

Injuries caused by flying metal chips.

Magnets are manufactured from brittle materials. If two magnets collide, they may shatter. Sharp-edges chips can be launched over a distance of several metres and cause eye injuries.

- Prevent collisions with magnets.
- Wear safety goggles when handling larger magnets.
- Ensure that bystanders are also given protection or maintain a distance.

SAFETY INSTRUCTION

Malfunctions caused by magnetic fields.

Magnets generate a wide-reaching and strong magnetic field. Amongst other things, they can damage televisions, notebooks, computer hard drives, credit and debit cards, data carriers, mechanical clocks, hearing aids and speakers.

- Keep magnets away from all devices and objects that can be damaged by strong magnetic fields.

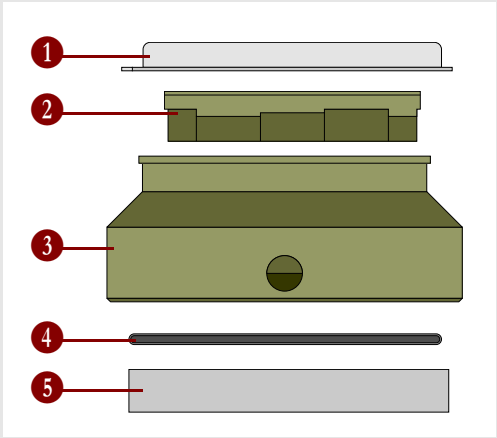
19.3 Overview

Pad printing machines can be equipped with ink cups of different sizes and designs.
In the majority of cases, the principle structure of the ink cups is identical. Slight deviations from the illustrated images are possible.

Assembly works are to be performed on a level and soft underlay (e.g. rubber mat) in order to ensure that the sensitive blade edge belonging to the doctor ring is not damaged.

19.4 Individual components

1. Cover
2. Magnetic ring
3. Ink cup
4. Seal
5. Doctor ring

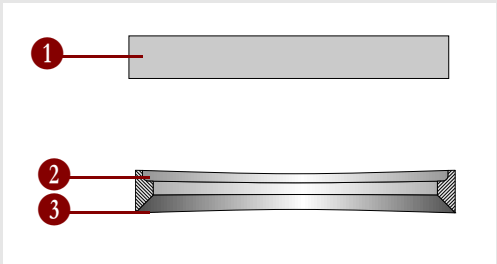


19.5 Doctor ring installation and removal

19.5.1 Handling instructions

Depending upon the design, the doctor ring 1 is manufactured from carbide metal or ceramics.

Cross-section
A recess 2 is present on the upper side for the seal.
The sharp ground blade edge 3 can be found on the lower side.



INSTRUCTION	
	Doctor rings must be handled with extreme care and may not be distorted or fall. • The hard material may fracture or become chipped if twisted or subjected to a severe impact. • The precisely ground blade edge may not exhibit any eruptions or notches. • Damage to the blade edge leads to ink leakage.

19.5.2 Seal insertion

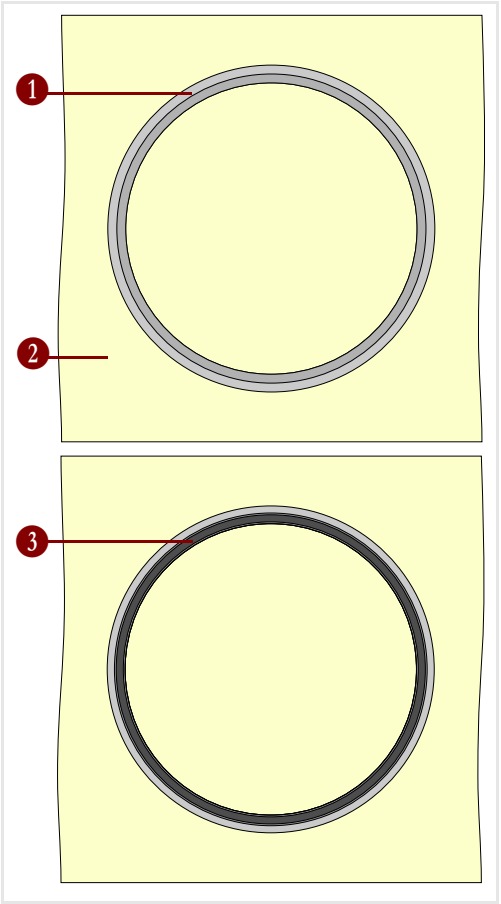
Move the doctor ring 1 complete with the doctor blade edge downwards and onto a level, clean and stable polymer plate 2.

Caution

Soiled or uneven underlays could damage the sensitive doctor blade edge.

Insert seal 3 into the recess of the doctor ring.

The seal is equipped with a resistant casing in order to protect against the chemical impacts caused by ink or thinner.
Do not kink the seal or press on it with sharp objects. The casing may not become damaged.

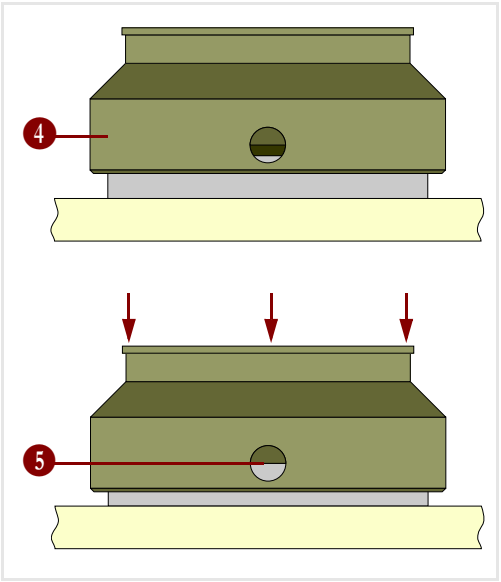


19.5.3 Doctor ring insertion

Carefully place the ink cup 4 with the radial groove onto the doctor ring with the inserted seal.
The ink cup sits on the seal. However, the doctor ring is not yet fully pushed in.

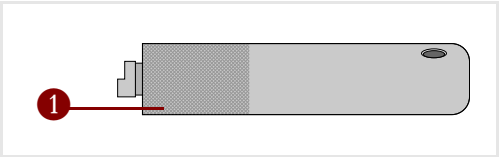
Push the ink cup downwards in an even manner without tilting until the doctor ring noticeably locks into place.

The correct seating of the doctor ring can be checked via the boreholes 5.



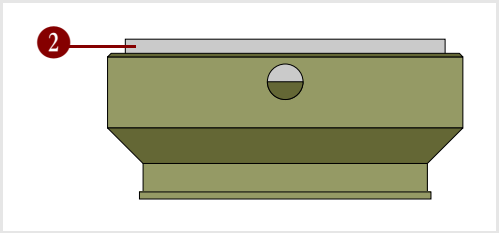
19.5.4 Doctor ring ejection

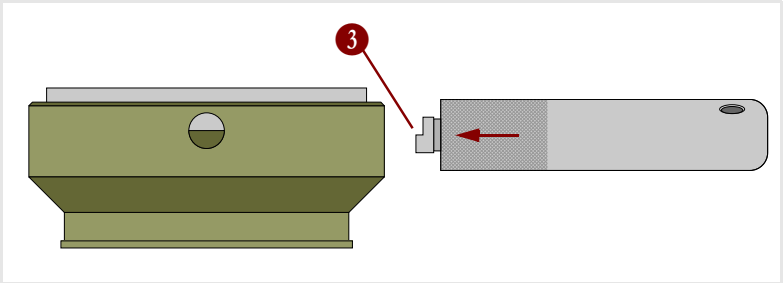
The designated tool must be used for the ejection of the doctor ring.



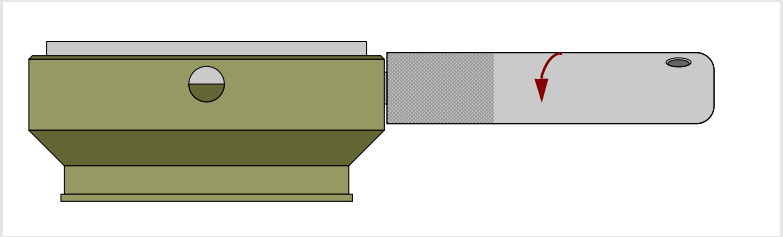
A suitable ejection tool 1 can be obtained from the machine manufacturer.
Other tools such as screwdrivers or sharp-edged mandrels can damage the doctor ring or the seal.

Position the ink cup with the bottom side facing upwards.
The doctor ring 2 is located on the top.





Insert the ejection tool into one of the side boreholes with the flattened side 3 pointing upwards.



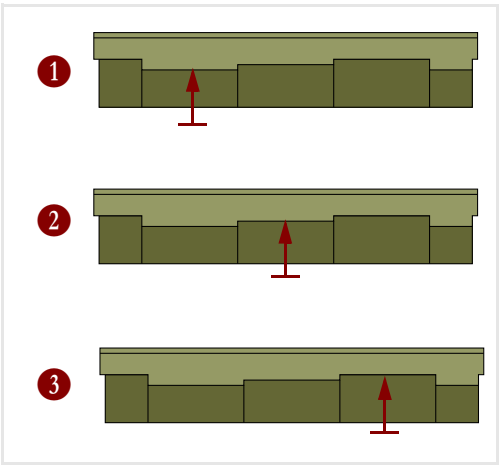
Rotate the ejection tool by 90° in order to push the doctor ring out.
Use the ejection tool on a different borehole if the doctor ring does not fully detach.
Hold on to the doctor ring tightly and secure it against falling.

19.6 Magnetic ring insertion

The ink cup is pulled onto the cliché via the pull of the magnetic ring.
The pull depends upon the distance between the magnetic ring and the cliché.
The magnetic ring can be installed in three positions at different distances to the cliché.

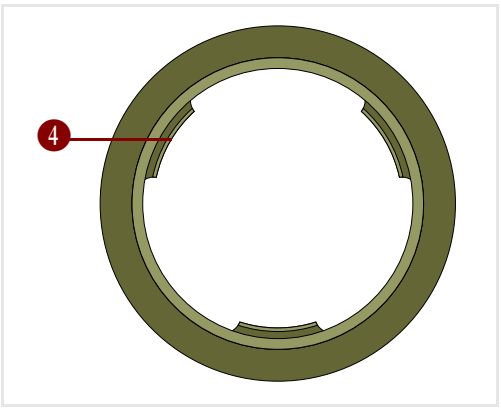
The magnetic ring is equipped with three-level supporting surfaces. The magnetic ring is supported by these supporting surfaces in the ink cup.

The magnetic ring sits higher or lower in the ink cup depending upon the selected level.



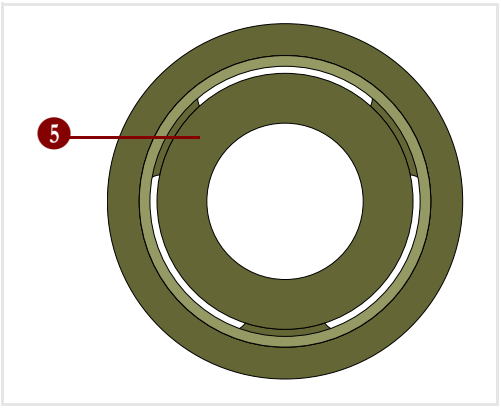
Supporting surface	Position in the ink cup	Pull
1	High	Weak
2	Medium	Medium
3	Low	Strong

The three support cams 4 in the ink cup hold the magnetic ring.



Insert magnetic ring 5 with the desired supporting surface level onto the support cams in the ink cup.

In order to set the pull of the magnetic ring, remove it, rotate to a different supporting surface level and re-insert.



The pull should be set in such a manner that the doctor ring cleanly scrapes the ink from the cliché. The result depends upon the scraping speed, ink characteristics, cliché type and etching depth of the print image.
An excessively high pull leads to unnecessary wear of the cliché and doctor ring.

19.7 Joining the ink cup and cliché

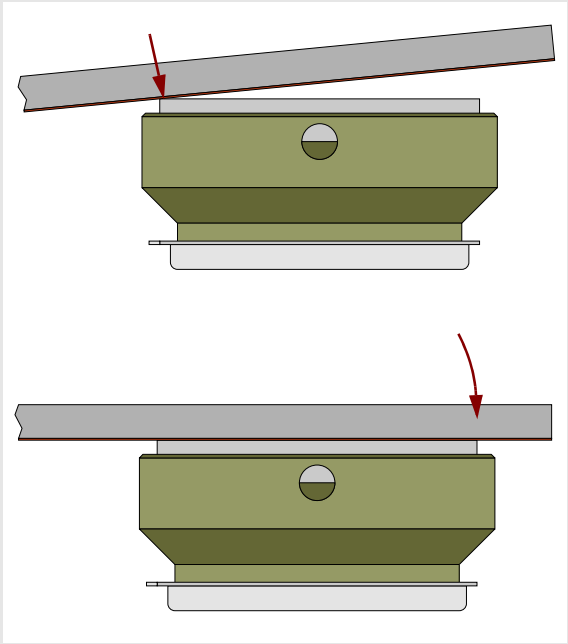
CAUTION
Crushing caused by strong pulling forces. The magnets in the ink cup causes a great pull of the cliché. Without implementing a careful joining process, the cliché and ink cup would collide with great force. Fingers or the skin could become trapped. • Always hold the ink cup and cliché securely • Do not reach between the doctor ring and the cliché. • The described procedure must be observed.

The plastic or thin steel clichés are positioned together with the support plate.

In order to position, turn the ink cup upside down and hold it tight.

Whilst holding the cliché at an angle, carefully position it onto the doctor ring on one side of the ink cup.

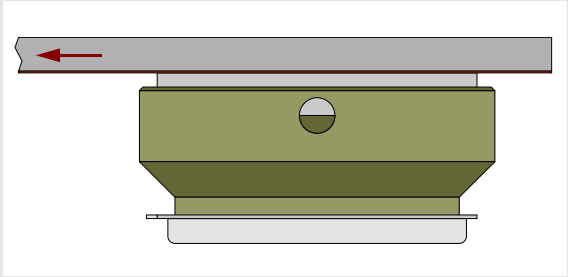
Slowly lower the cliché onto the doctor ring.



19.8 Separating the ink cup and cliché

Filled ink cups must be sealed with a cover.

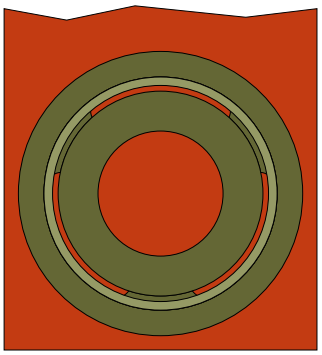
Turn the ink cup together with the cliché and hold the ink cup tight.
Horizontally remove the cliché from the ink cup.
When using polymer or thin steel clichés, it must be ensured that the fixing pins in the support plate do not strike the doctor ring.



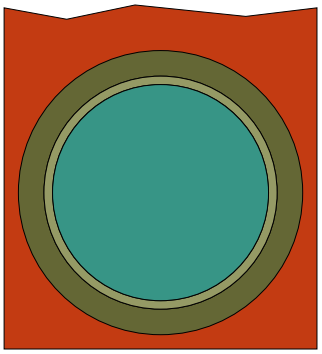
19.9 Adding ink

The ink cup and cliché must already be joined together.
See Chapter 19.7 "Joining the ink cup and cliché" on page 93

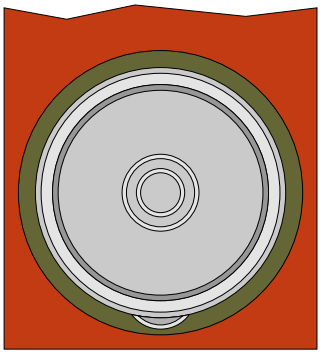
Open the ink cup cover.



Fill the ink cup with ink until the magnetic ring is covered with ink.



Close the ink cup with the cover.



19.10 Cleaning the ink cup

Ink cups must be cleaned with solvents prior to each use, during each ink change or after extended downtimes.

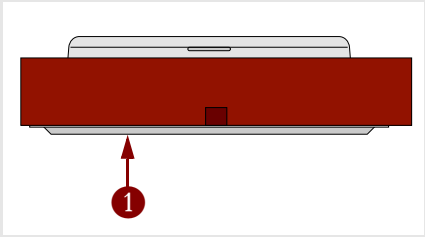
INSTRUCTION	
	If a washing station or ultrasound cleaner is used, the washing medium may not be warmer than 80°C. The installed magnets are damaged at higher temperatures.

20 Express Liner Ink Cup

20.1 Safety instructions for handling ink cups

A sharp ground blade edge ❶ can be found on the lower side of the ink cup.

The blade edge is later positioned on the cliché and seals the ink cup against the cliché.



⚠ WARNING

Risk of injury through sharp edges.

The sharp blade edge poses a risk of injury.
Careless handling can lead to cut injuries or skin abrasions.

- Avoid contact with the blade edge.

⚠ WARNING

Risk of injury through aggressive liquids or gases.

Improper handling of inks and solvents can lead to irritation and injuries to the skin, airways or the eyes.

- Observe the manufacturer's hazard warnings.
- Observe the safety instructions contained in this documentation.
- Ink cups that have already been used must be cleaned before being dismantled.

IMPORTANT INFORMATION

Ink cups must be handled with extreme care and must not be distorted or allowed to fall. The hard material may fracture or become chipped if twisted or subjected to a severe impact.
The precisely ground blade edge must not exhibit any ruptures or notches. Damage to the blade edge leads to ink leakage.

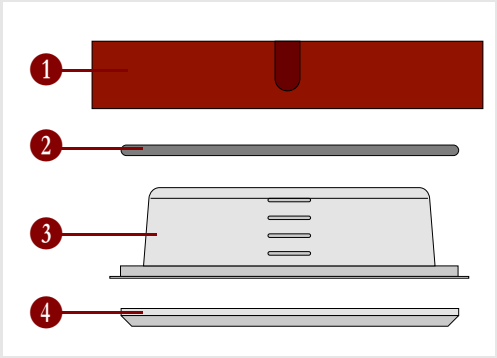
20.2 Overview

Pad printers can be fitted with ink cups of different sizes and designs.
In the majority of cases, the principle structure of the ink cups is identical. Slight deviations from the illustrated images are possible.

Assembly works are to be performed on a level and soft underlay (e.g. rubber mat) in order to ensure that the sensitive blade edge of the doctor ring is not damaged.

20.3 Ink cup individual components

1. Space frame
2. O-ring
3. Ink container
4. Doctor ring



20.4 Tools

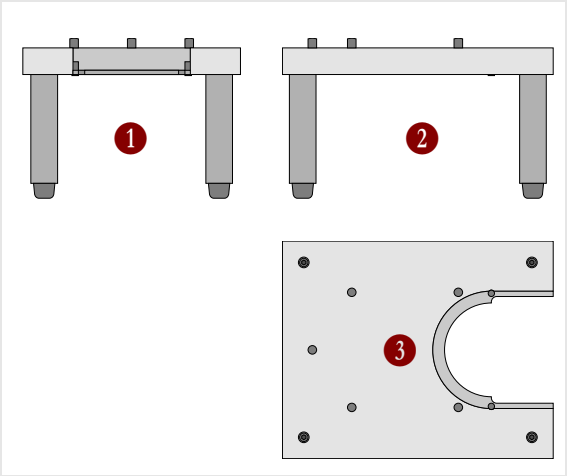
Special tools are required in order to connect the ink cup and the cliché in the correct position.

20.4.1 Setup table

The ink cup and the cliché are connected on the setup table.

Views:

1. from front
2. from side
3. from above

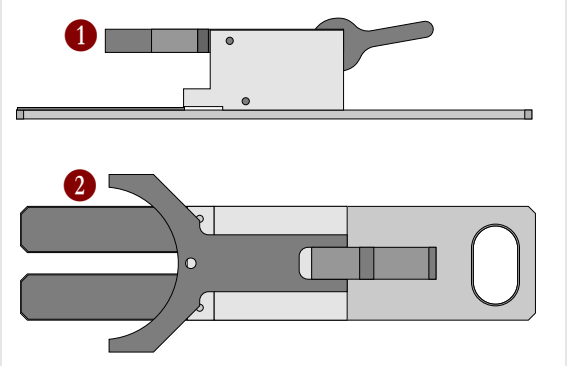


20.4.2 Setup tool

The setup tool is used to fix the ink cup and cliché into position and hold them together after assembly.

Views:

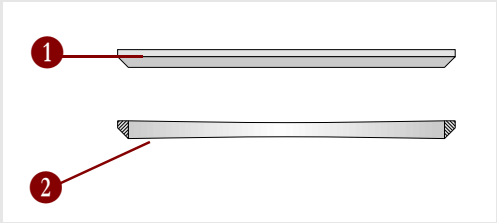
1. from side
2. from above



20.5 Doctor ring installation and removal

20.5.1 Handling instructions

Depending upon the design, the doctor ring (1) is manufactured from carbide metal or ceramic.



Cross-section

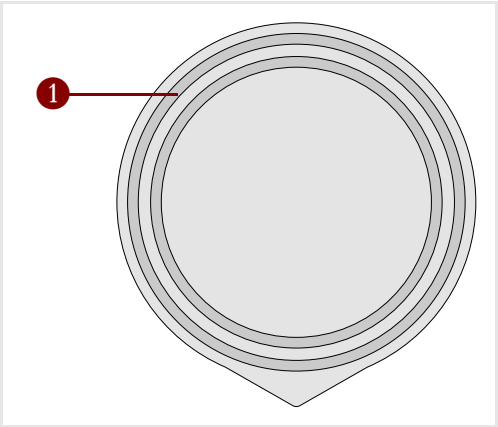
The sharp ground blade edge (2) can be found on the lower side.

IMPORTANT INFORMATION	
	Doctor rings must be handled with extreme care and may not be distorted or allowed to fall. • The hard material may fracture or become chipped if twisted or subjected to a severe impact. • The precisely ground blade edge must not exhibit any ruptures or notches. • Damage to the blade edge leads to ink leakage.

WARNING	
	Risk of injury through sharp edges. The sharp blade edge poses a risk of injury. Careless handling can lead to cut injuries or skin abrasions. • Avoid contact with the blade edge.

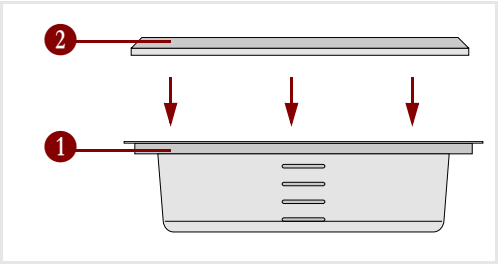
20.5.2 Inserting the doctor ring

Position the ink container with the opening facing upwards. There is a radial groove 1 located on the outer edge to accommodate the doctor ring.

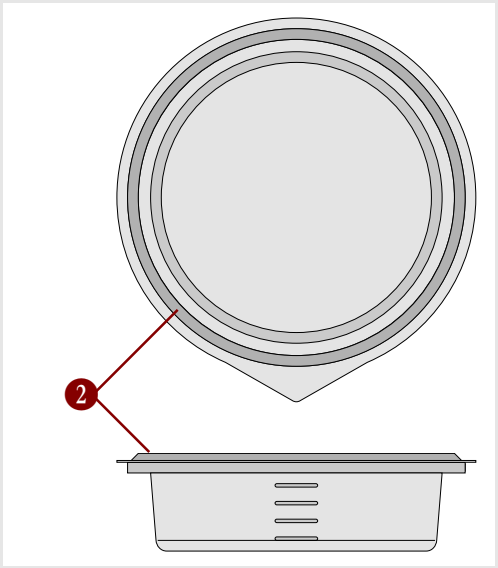


Place the doctor ring 2 into the radial groove 1 from above.
In this case, the sharp ground blade edge will be located on the top.

Carefully press the doctor ring into the radial groove.

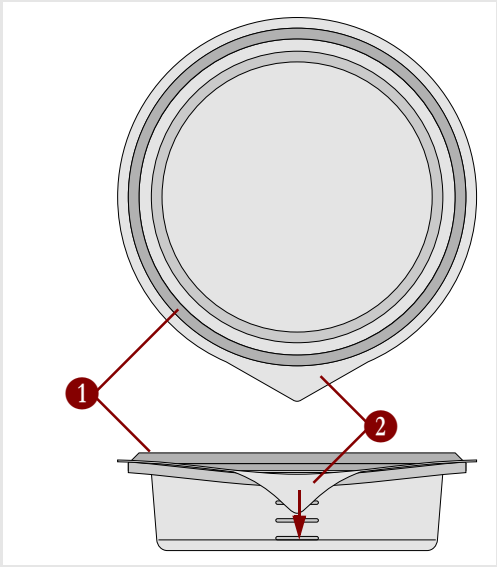


The illustration shows the ink container with doctor ring 2 inserted.



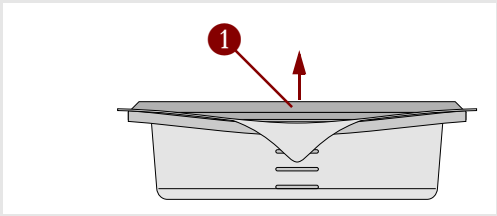
20.5.3 Removing the doctor ring

Position the ink container with the opening facing upwards.
The doctor ring ❶ is located on the top.



Pull the flap ❷ of the ink container downwards to release the ink container from the doctor ring.

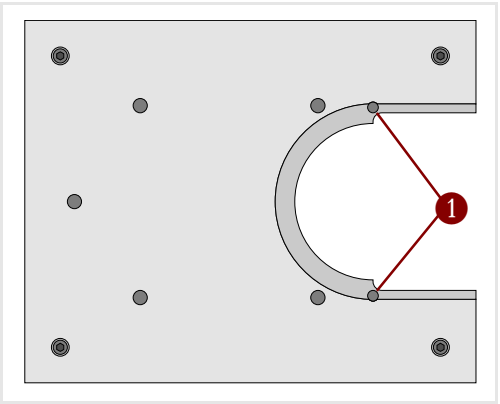
Hold the doctor ring ❶ near the flap and lift it out of the ink container's radial groove.



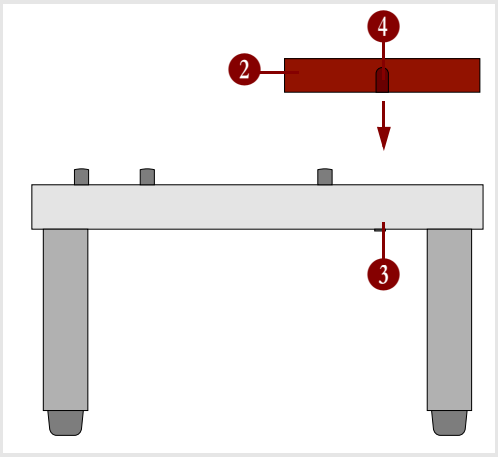
20.6 Ink cup assembly

The ink cup is assembled on the setup table.

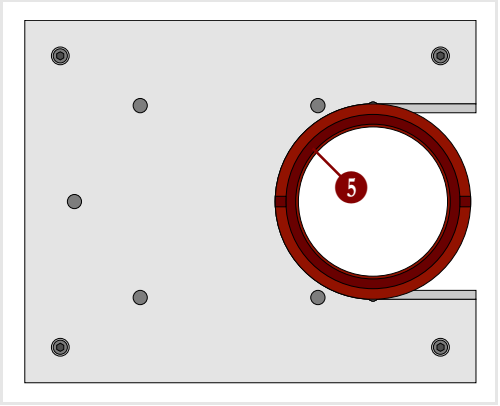
In order to correctly position the ink cup, the setup table is fitted with two pins 1. During assembly the pins grip the lateral grooves in the ink cup frame.



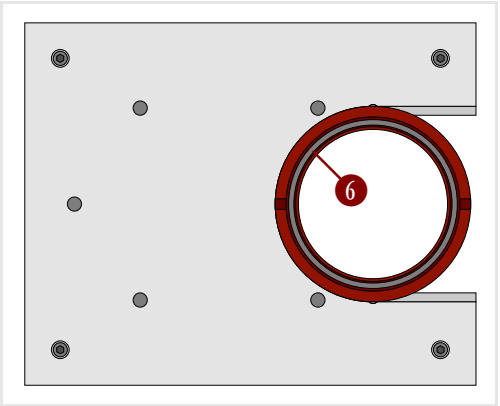
Insert the ink cup frame 2 in the notch of the setup table 3 in such a way that the pins insert into the lateral grooves 4.



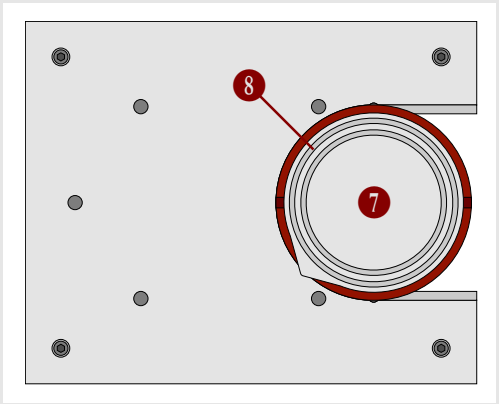
The radial groove 5 for the O-ring must be positioned on the top.



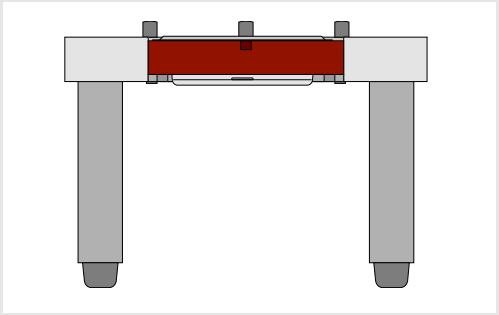
Insert the O-ring 6 into the frame's radial groove.



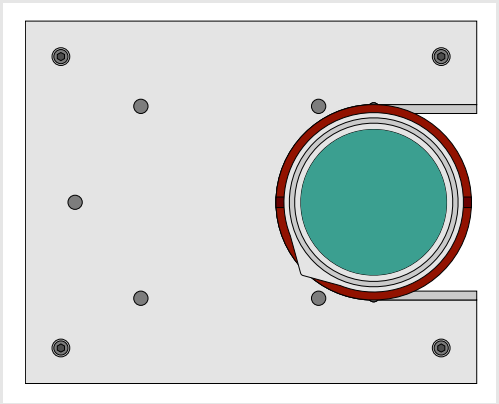
Place the ink container 7 with the inserted doctor ring 8 in the frame with the opening on the top.



The illustration shows the fully assembled ink cup in the setup table from the front.



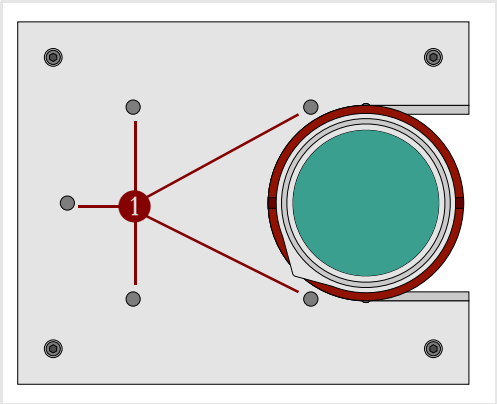
Fill the ink container with ink.



20.7 Joining the ink cup and cliché

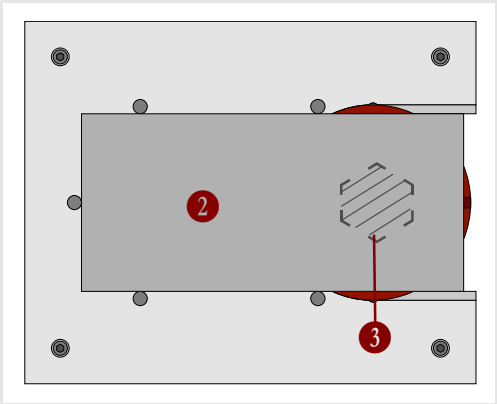
The plastic or thin steel clichés are positioned together with the support plate.

The setup table is fitted with several pins 1 to allow the cliché to be positioned correctly.



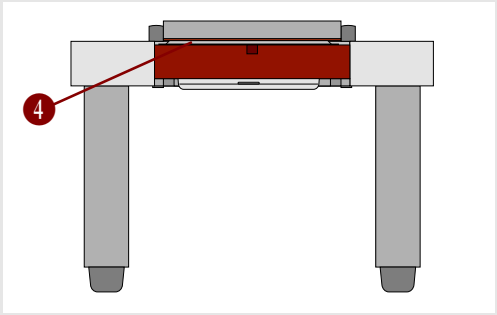
Place the cliché 2 between the pins on the setup table and push it to the left as far as the limit stop.

Here, the print image 3 in the cliché must be positioned on the underside, over the ink cup.



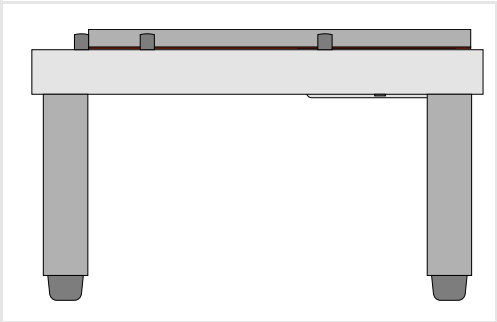
View from the front

The cliché is now resting on the blade edge 4 of the ink cup.

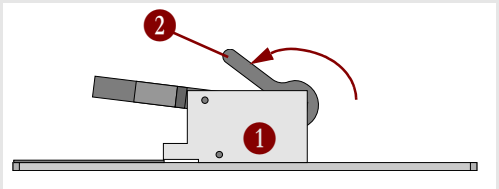


View from side

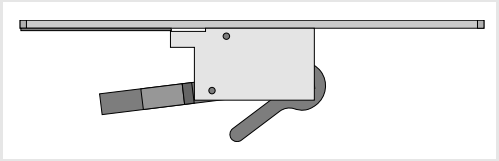
The positions of the ink cup and the cliché correspond exactly to the positions required to install them in the machine.



The setup tool ❶ is used to fix the cliché and ink cup in position for assembly.
Push the clamping lever ❷ of the setup tool forwards.



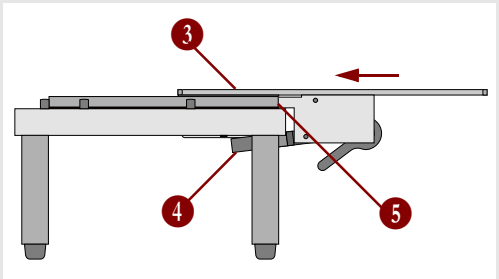
Flip over the setup tool (clamping lever on bottom).



Carefully place the setup tool on the cliché and ink cup from the front.

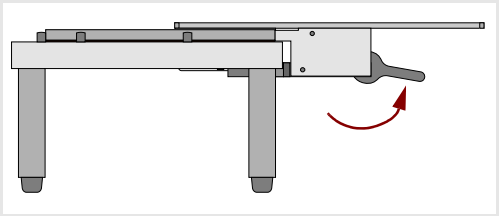
The baseplate ❸ of the setup tool is positioned on the cliché.

The clamping jack ❹ of the setup tool is positioned under the ink cup.



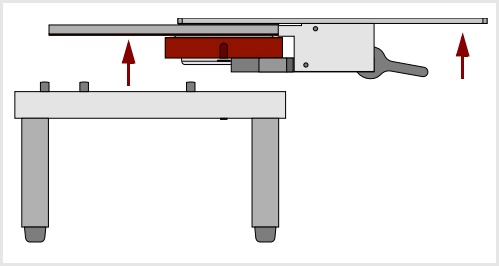
Align the setup tool in the middle of the cliché and push it as far as the limit stop ❺ on the cliché.

Pull back the clamping lever of the setup tool.
The ink cup is pressed onto the cliché from below with the clamping jack.

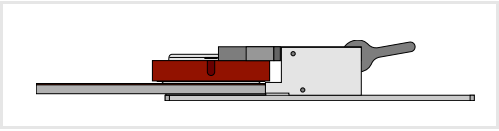


Lift the setup tool out of the setup table together with the ink cup and the cliché.

Handle the fixed parts with care.
A collapse could result in damage or ink leakage.



Flip over the setup tool along with the ink cup and the cliché (clamping lever on top).

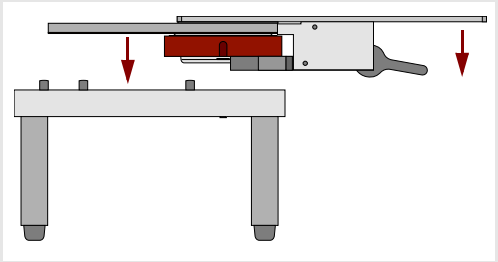


The cliché and ink cup can be installed in the machine in this fixed form.
See Chapter “Cliché assembly”.

20.8 Separating the ink cup and cliché

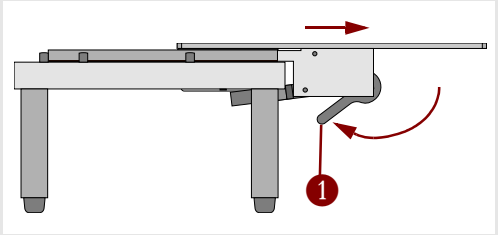
The ink cup and cliché are removed from the machine together using the setup tool. See Chapter “Cliché assembly”.

Insert the setup tool together with the ink cup and the cliché into the setup table from above.

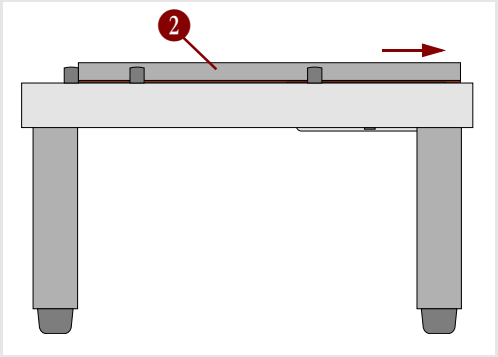


Push the clamping lever ❶ forwards.

Remove the setup tool sideways from the ink cup and cliché.



Push the cliché ❷ to the side and away from the ink cup in the setup table.



The ink container can now be removed from the ink cup frame.

20.9 Cleaning the ink cup

With careful work practices, the ink will only get on the ink container and the doctor ring.

To remove the doctor ring see Chapter 20.5.3 "Removing the doctor ring" on page 99.
Clean doctor ring with solvent.

The ink container is a single-use product and must be disposed of in accordance with the safety data sheets of the ink used, as well as local regulations on environmental and health protection.

21 Setting up the print image

21.1 Setting the pad

21.1.1 Horizontal pad position

See Chapter 14 "Tamponmontage Schraubbefestigung" on page 47 or 15 "Tamponmontage Magnethalter" on page 57.

21.1.2 Cliché pad stroke

For an optimum printing result, the pad should only deform on the cliché to such an extent that it can just absorb the print image.

The pad stroke is set in the menu on the operating panel.
See Chapter 27.3 "Printer" on page 134.

Control options

The pad stroke setting can be examined in various ways.

- Rub cliché with a thinner and carry out a pad stroke on the cliché (see Chapter 26.3.1 "Pad stroke" on page 128). The imprint of the pad is visible on the cliché. A check can be made to see whether the pad reaches the complete print image. The pad stroke must be carried out before the film of thinners on the cliché has evaporated.
- After ink absorption, the underside of the pad can be viewed with a mirror. A check can be made to see whether the ink of the complete print image has been absorbed from the cliché.

21.1.3 Workpiece pad stroke

For an optimum printing result, the pad should only deform on the workpiece to such an extent that it can just transfer the print image.

The pad stroke is set in the menu on the operating panel.
See Chapter 27.3 "Printer" on page 134.

Control options

The print image must fully appear on the workpiece.

21.1.4 Pad stroke cleaning

For an optimum printing result, the pad should only deform on the pad cleaning unit to such an extent that the surface used for printing is cleaned.

The pad stroke is set in the menu on the operating panel.
See Chapter 27.5 "Pad cleaning" on page 135.

Control options

After cleaning, the pad surface used for printing may no longer exhibit any contamination.

21.2 Setting the workpiece

The position of the print image on the workpiece is set by adjusting the workpiece position. For this reason, the machine can be equipped with various adjustment options depending on the version.

21.2.1 Workpiece height

The workpiece holding fixture can be mounted on a height-adjustable angle table.
The pad stroke on the workpiece is changed by adjusting the workpiece height. Where necessary, the pad stroke that is set in the menu must be adapted to the workpiece. See Chapter 27.3 "Printer" on page 134.

SAFETY INSTRUCTIONS

An excessively high workpiece position can damage the pad or other machine components.

- When carrying out a test print, start with a pad height that is too low.
- The workpiece height can then be raised slowly to the required position.

21.2.2 Horizontal workpiece position

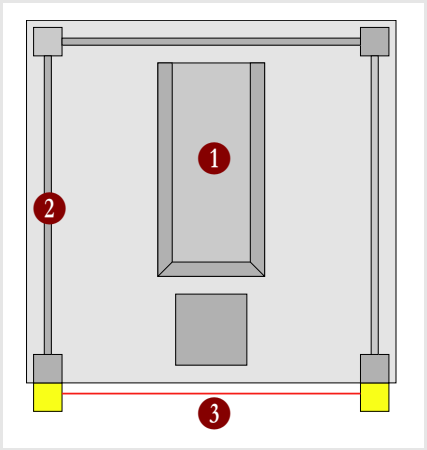
The horizontal workpiece position determines the position of the print image on the workpiece. The horizontal workpiece position can be set with a cross table or other adjustments.

22 Safety guard

The machine can be equipped with various safety guards.
Depending on the safety guard in place, the operation and functions of the machine will differ.

22.1 Safety guard – light barrier

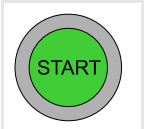
1. Machine
2. Safety guard
3. Light barrier



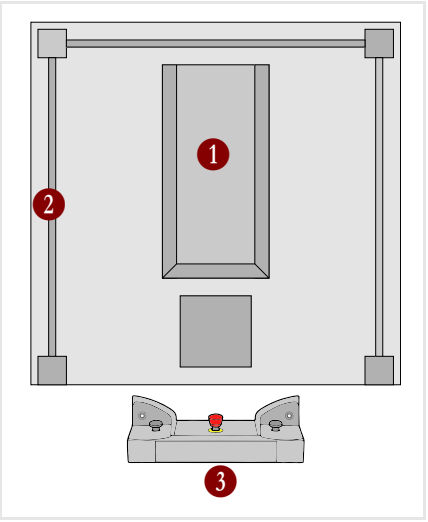
If there is a light barrier in place as a safety guard, the functions are triggered using the illuminated START button.

The green **START** symbol appears on the touchscreen of the operating panel when the machine is ready to start.

The START illuminated button lights up when the machine is ready to start.
Pressing the illuminated START button carries out the selected function.



22.2 Safety guard – two-hand operation

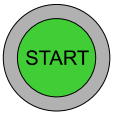


1. Machine
2. Safety guard
3. Two-hand operation

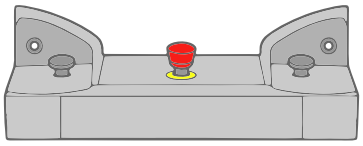
If two-hand operation is in place as a safety guard, the functions are triggered using two-hand operation.

The green **two-hand operation** symbol appears on the touchscreen of the operating panel when the machine is ready to start.

The START illuminated button lights up when the machine is ready to start. However, no functions can be carried out by pressing the illuminated START button.



The selected function is carried out by pressing two-hand operation.



22.3 Description of functions

22.3.1 Light barrier

The most commonly used safety guard is the **light barrier**.
For that reason the descriptions in this instruction manual refer to this safety guard.

- By keeping the illuminated START button pressed, certain functions are continually repeated.

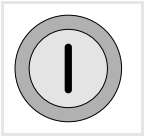
22.3.2 Two-hand operation

If the **two-hand operation** safety guard is in place, the functions are not carried out by pressing the illuminated START button, but rather by pressing two-hand operation.

- Both **two-hand operation** buttons must be pressed simultaneously to trigger a function.
- If one of the buttons is released while the machine is carrying out an automatic movement procedure, an EMERGENCY STOP will be triggered.
- Keeping **two-hand operation** pressed means that a function will not be repeated. After completion of the function the machine will stop. The function will only be repeated after **two-hand operation** has been pressed again.

22.3.3 Control unit ON with two-hand operation

The ON illuminated button has no function.



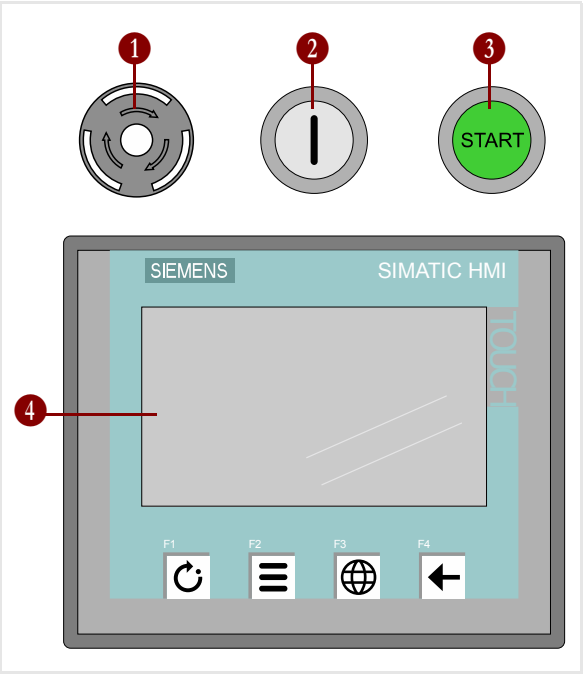
- Pressing the **two-Hand operation** turns on the control unit.
- After turning on, the machine can carry out a movement.
- If one of the buttons is released while the machine is carrying out an automatic movement procedure, an EMERGENCY STOP will be triggered.
- When the control unit is on, the ON illuminated button will light up.
- Afterwards, a function can be selected on the operating terminal.
- The selected function is carried out by pressing **two-hand operation**.

23 Operating Elements

23.1 Control Panel

On the front of the machine, three buttons and the operating terminal are built into the machine housing.

1 STOP button
2 ON illuminated button
3 START illuminated button

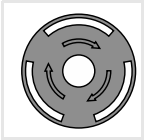


4 Operating terminal
The operating terminal features a touch screen and several function keys.

23.2 Button

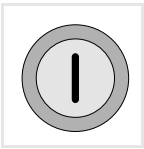
23.2.1 STOP button

Pressing the STOP button turns off the control unit.



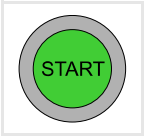
23.2.2 ON illuminated button

Pressing the ON illuminated button turns on the control unit.

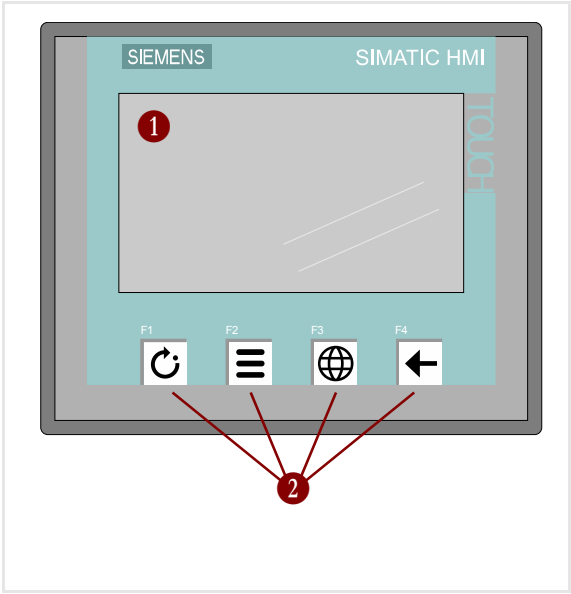


23.2.3 START illuminated button

The START illuminated button will light up when a starting procedure is possible.
Pressing the START illuminated button carries out the function pre-selected on the operating terminal.



23.3 Operating Terminal



1 = **Touch screen**

2 = **Function keys** F1 to F4

23.3.1 Touch screen

The touch screen shows the user interface of the different operation modes. The push buttons can be used to select functions, set operating parameters and view diagnostic functions.

23.3.2 Function keys F1 to F4

The function of the function keys is the same in every menu.

Exception

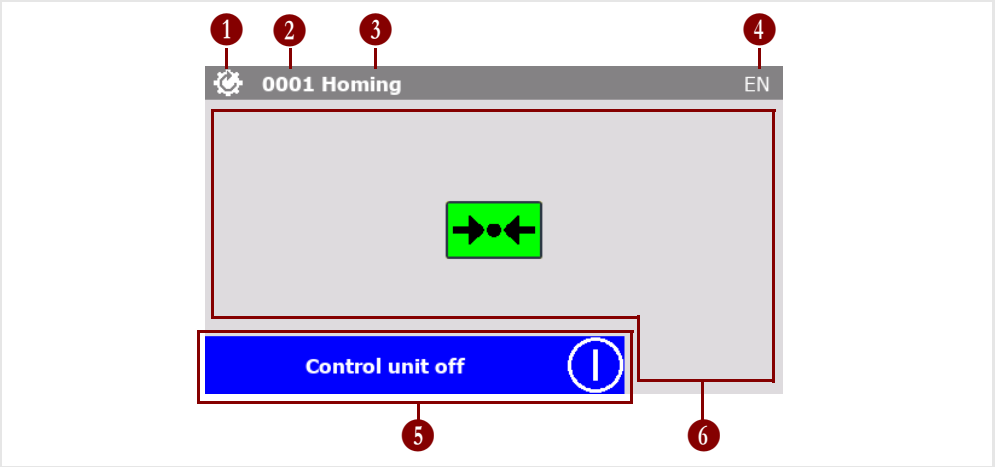
In the system start menu the F1, F2 and F4 keys do not have a function until homing has been successfully completed.

See Chapter 24.3 "Home position" on page 120.

Symbol	Meaning
	**F1 AUTOMATIC** View the automatic operation mode.
	**F2 MENU** View the “Operation mode” menu.
	**F3 LANGUAGE** Change the language of the user interface. Each push of the button will change the displayed language.
	**F4 BACK** View the previously displayed menu window.

23.4 Layout of a Menu Window

The layout of all menu windows follows the same structure.



1. Operation mode menu symbol.
2. Number of the menu window.
3. Name of the menu window.
4. Initials for current selected language of user interface.
5. Field for operating notifications and information. If no notification is displayed, the date and time will be shown.
6. Individual functions of the menu window.

23.5 Meaning of the Colors in the Menu

The colors of push buttons, notifications and symbols signify certain characteristics or conditions.

Color	Meaning
Blue	Blue fields display **current information**.
	Display of operating notifications.
	Display of menu information and status conditions.
Red	Red fields display **malfunctions and errors**.
	Locked functions due to malpositions or operating errors.
	Unsuccessful actions.
	Light curtain interrupted.
Green	Green fields display the **status of functions**.
	Function selected.
	Function activated.
Yellow	Yellow fields are **push buttons** and can be operated directly by touching the touch screen. The following functions are possible:
	Navigation in the menu windows.
	Selecting or activating a function.
	Entering a value.
Grey	Grey fields are **deactivated functions**.
	The function cannot be carried out because the machine's operating status does not allow this or the function has been blocked because of a menu setting.

23.6 Symbols

23.6.1 Operation modes

Symbol	Meaning
	**Homing** Carry out homing after switching on the machine or after an EMERGENCY STOP.
	**Automatic** Carry out entire print processes based on current settings.
	**Manual Mode** Move the machine axes and carry out individual functions in order to configure and test machine functions.
	**Settings** Set properties and values of machine functions. (Access with password only.)
	**Admin Settings** Set properties and values of machine functions. Configure the user interface. Activate and set additional options. (Access with administrator rights only.)
	**Diagnostics** Display current operating parameters and signal statuses for error diagnostics.
	**Service** Display manufacturer's service contacts. Administration of password functions.

23.6.2 Switch on and off

The function is switched on and off immediately when push buttons are pressed.

Symbol	Meaning
	**OFF** The function is switched off. When the yellow push button I is pressed, the function is switched on.
	**ON** The function is switched on. When the yellow push button 0 is pressed, the function is switched off.

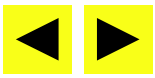
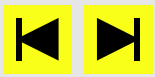
23.6.3 Activation / deactivation

Activation and deactivation is a pre-selection. The function is not carried out immediately but is taken into consideration in subsequent actions.

Symbol	Meaning
	**Activated** The function is activated. The function is deactivated when the push button is pressed.
	Deactivated The function is deactivated. The function is activated when the push button is pressed.

23.6.4 Selecting functions

The selected function is carried out when the START illuminated button is pressed.

Symbol	Meaning
	**START FORWARDS – BACKWARDS Jog Mode** Starts a movement or function. The movement or function is carried out as long as the START illuminated button is pressed.
	**START FORWARDS – BACKWARDS Sequence** Starts a movement or function. The movement or function is carried out in full, even if the START illuminated button is released beforehand.

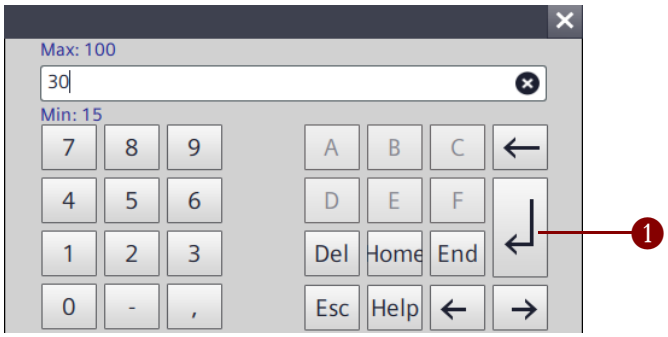
23.6.5 Status indicators

Symbol	Meaning
	**START** The selected function can be carried out with the START illuminated button. A START can also be activated by an external signal (via the automation interface).
	**Two-hand operation** The selected function can be carried out with two-hand operation.
	**Light curtain interrupted** The light curtain of the safety enclosure is interrupted. The machine cannot carry out any movements.
	**Ink cup lever unlocked!** The lever of the the ink cup fixing is open. The ink cup is not secured. The machine cannot carry out any movements.

23.6.6 Change settings

Settings with a yellow push button background can be changed.
Pressing the yellow push button opens the input dialog.

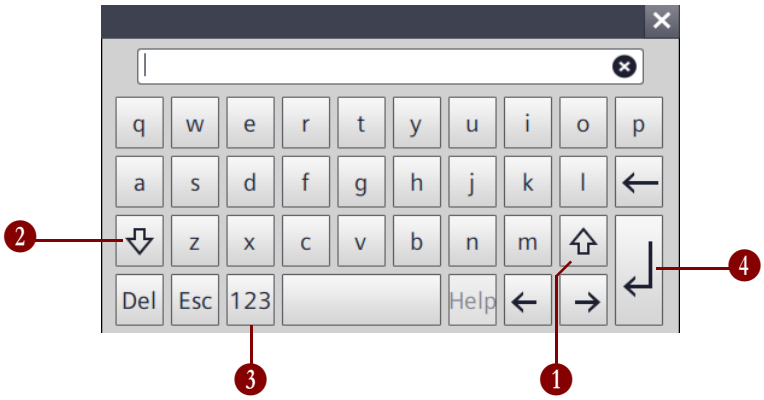
Input dialog for numerical values



The min and max permissible values for this setting are displayed above and below the input line.

- The value can be changed via the number pad.
- By pressing the ENTER key (1) the entered value is applied and the input dialog is closed.

Input dialog for alphanumerical values



- Pressing the SHIFT key (1) temporarily changes to upper case (for character input).
- Pressing the SHIFT LOCK key (2) enables permanent switching between lower and upper case.
- Pressing the 123 key (3) changes to the input of numbers and special characters.
- Pressing the ENTER key (4) applies the entered value and closes the input dialog.

23.7 Menu Structure

There are three sections in the menu where the performance of individual machine functions can be set and tested.
In the various sections the menu levels of a function always have the same designation.

Manual Mode

- The **Manual Mode** menu can be accessed without a password prompt.
- In **Manual Mode** individual functions can be viewed and carried out. This allows subfunctions of the machine to be tested and monitored.
- For adjustable functions, **Manual Mode** features a push button for skipping directly to the related **Settings** menu.

Settings

- The **Settings** menu can be protected with a password prompt. Access is then only possible if the valid password is entered. Access authorization can be set in the **Service** menu.
- The active access authorization for the **Settings** menu is displayed on the right of the menu window header by means of an additional symbol.

- The designation of the menu levels for the **Settings** is identical to the designation of the menu levels in **Manual Mode**.
- There is a **Settings** menu for all adjustable functions. The settings for the functions can be changed there.

Admin Settings

- The **Admin Settings** menu is protected with a password prompt.
- The active access authorization for the **Admin Settings** is displayed on the right of the menu window header by means of an additional symbol.

- The designation of the menu levels for **Admin Settings** is identical to the designation of the menu levels in **Manual Mode** and the **Settings** menu.
- In **Admin Settings,** access to functions in **Manual Mode** and in the **Settings** menu may be restricted. The menus of a function can be hidden or provided with write protection. See Chapter 23.8 "Menu Configuration" on page 118.
- To allow the hidden settings in the **Settings** menu to be changed, all adjustment options are also provided in **Admin Settings**.
- In addition, some menu levels feature extended settings and further menu levels in which top-level functions of the machine can be set.

23.8 Menu Configuration

Access to functions and settings can be individually configured. This allows access by unauthorized persons to be prevented.
In the **Admin Settings** menu, all of the machine's settings and all menu configuration options can be accessed. All machine functions and access rights are managed from there. For this reason the menu is protected with a password.

IMPORTANT INFORMATION	
	Passwords are referred to exclusively in Chapter 33 "Password" on page 183. This page can be removed from the instruction manual in order to limit the dissemination of passwords.

23.8.1 Module activation / deactivation

Some optional modules of the machine can be activated or deactivated. The symbol shows the currently selected feature.

Symbol	Meaning
	**ACTIVATED** The module (in this case pad cleaning) is available and is activated.
	**DEACTIVATED** The module (in this case pad cleaning) is not available and is deactivated.

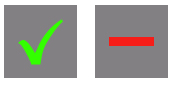
23.8.2 Write protection

This feature can be set by pressing the yellow "write protection" push button. The symbol shows the currently selected feature.

Symbol	Meaning
	**WRITE PROTECTION OFF** The settings for this function can be changed in the SETTINGS menu.
	**WRITE PROTECTION ON** The settings for this function cannot be changed in the SETTINGS menu.

23.8.3 Locked push buttons

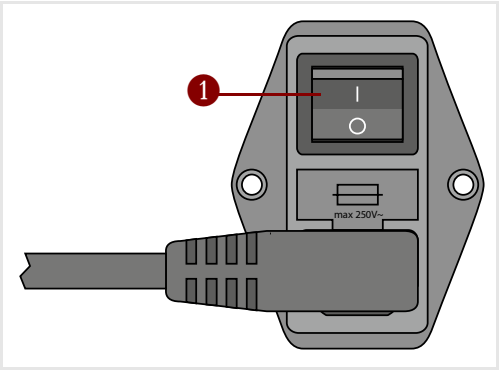
Locked push buttons are colored grey in the menu. The functions or chosen settings are displayed but cannot be activated or changed.

Symbol	Meaning
	**Locked push buttons** The settings are displayed. It is not possible to press the grey push buttons.

24 Switching on the machine

24.1 Mains switch ON

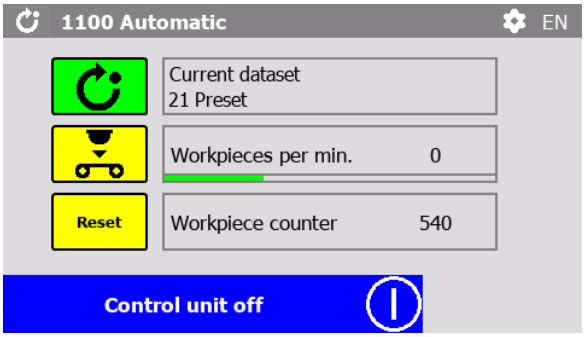
Switch on mains switch ❶ on the mains supply module on the rear of the machine (position 1).



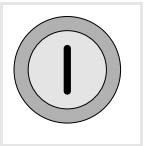
24.2 Control unit ON

The following conditions must be met in order to switch on the control unit.

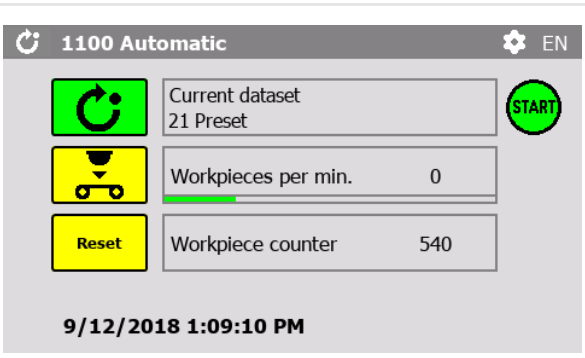
- The mains switch must be switched on.
- The STOP button must be unlocked.
- All external EMERGENCY STOP buttons (if present) must be unlocked.
- All external safety guards (if present) must be closed.



Pressing on the ON illuminated button turns on the control unit.
When the control unit is on, the ON illuminated button will light up.



See also Chapter 22.3.3 "Control unit ON with two-hand operation" on page 109



The control unit is on.

24.3 Home position

AUTOMATIC MODE and certain functions in MANUAL MODE require the machine to be in the home position. Otherwise these functions cannot be carried out. A notification displays the status.

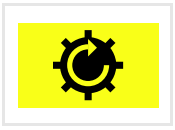
24.3.1 Automatic homing

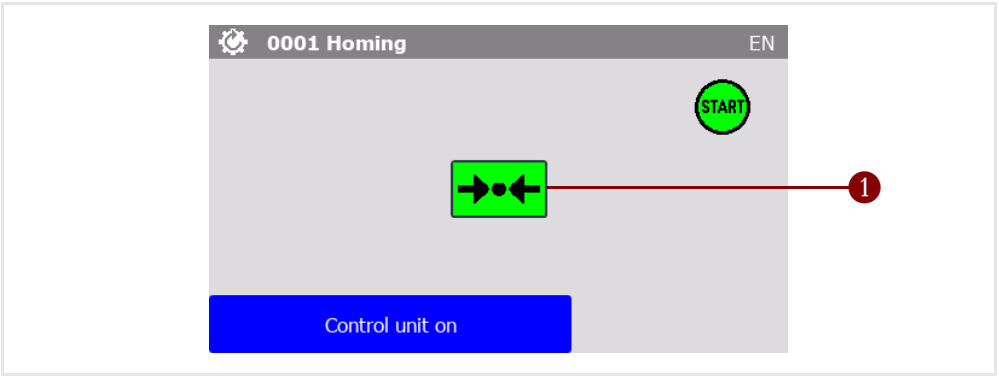
In MANUAL MODE, before certain functions are carried out a check is made to see whether the machine is in the home position. If this is not the case, the machine is first moved to the home position via the START signal before the function is carried out.

IN AUTOMATIC MODE, before a print cycle is carried out, a check is made to see whether the machine is in the home position. If this is not the case, the machine is first moved to the home position via the START signal before the print cycle is carried out.

24.3.2 Manual homing

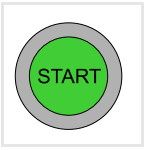
The **Homing** menu is called up with this push button.





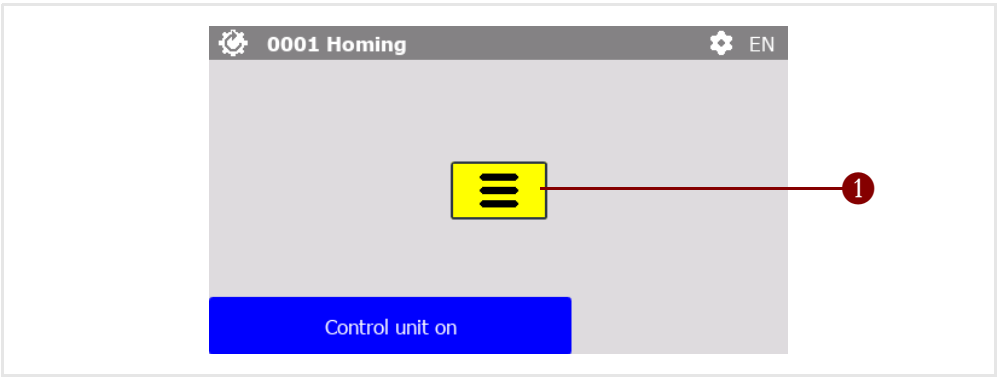
The **Homing** (1) push button is already selected.

Homing is carried out by pressing the START illuminated button.



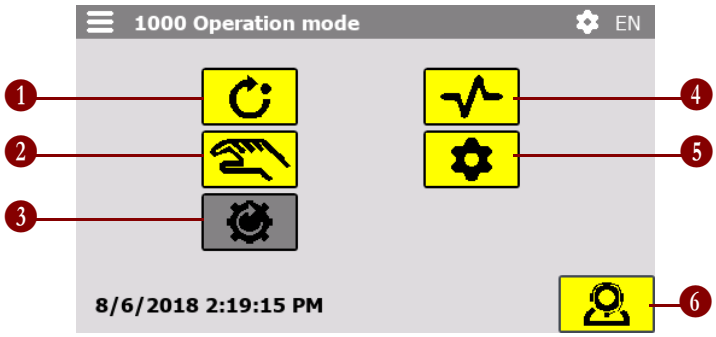
All machine axes move to their home position.

If the machine is already in the home position, no movement will take place.



Press the **Menu** (1) push button.

24.4 Operation mode



After homing has been completed, the operation mode menu is displayed.

1 push button to call up the AUTOMATIC operation mode. See Chapter 25 "Automatic" on page 123.

2 push button to call up the MANUAL MODE operation mode. See Chapter 26 "Manual Mode" on page 127.

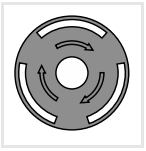
3 push button to call up the HOMING operation mode. See Chapter 24.3 "Home position" on page 120. If the machine is already in the home position, the push button will be displayed in grey.

4 Push button to call up the DIAGNOSIS operation mode. See Chapter 29 "Diagnostics" on page 159.

5 Push button to call up the SETTINGS operation mode. See Chapter 27 "Settings" on page 133.

6 Push button to call up the SERVICE operation mode. See Chapter 30 "Service" on page 163.

24.5 Control unit OFF



The control unit is switched off by pressing the STOP button.

When the control unit is switched off, the ON illuminated button will go out.

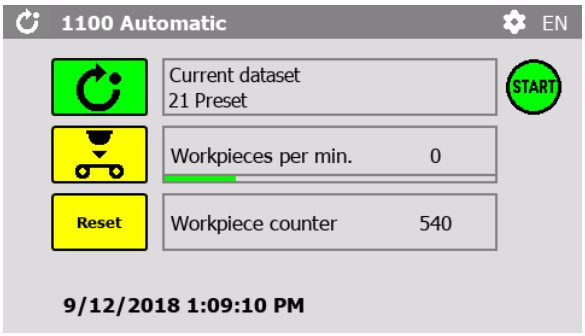
A notification displays the status.

After the STOP button has been unlocked, the last menu window that was viewed will be displayed again.

This operation mode is selected from the “Operation mode” menu or using the **F1 AUTOMATIC** function key.

In the **AUTOMATIC** operation mode, print cycles can be carried out with the chosen settings.

25.1 Displays



Current dataset

The name of the most recently loaded dataset is displayed.
See Chapter 27.8.2 "Load dataset" on page 143.

Workpiece per min.

Display of the number of workpieces printed per minute.
The display is updated once per minute and shows the number of workpieces printed in the last minute.
The green progress bar below the counter shows how much of the minute has elapsed.

Workpiece counter

Display of the overall number of printed workpieces.
The counting mode can be set.
See Chapter 27.4 "Workpiece" on page 135.

25.1.1 Resetting the workpiece counter

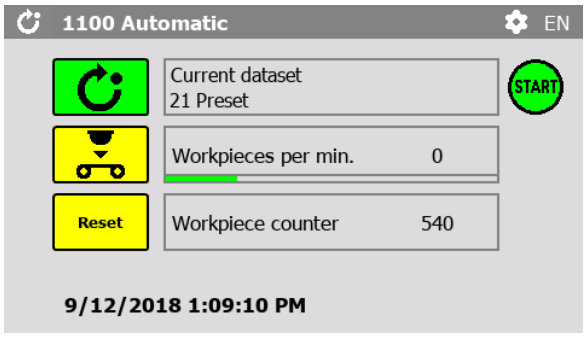
By pressing the **Reset** push button the workpiece counter is reset to zero.

25.2 Starting a print cycle

The machine can be equipped with various safety guards.
Depending on the safety guard in place, the operation and functions of the machine will differ.

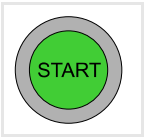
See also Chapter 22 "Safety guard" on page 107.

25.2.1 With light barrier safety guard



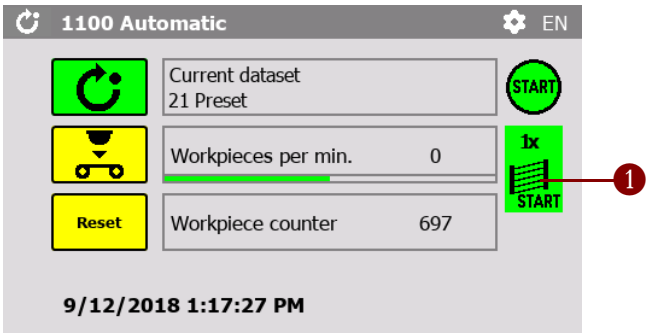
Press the **Automatic** push button.
The push button for the selected function is displayed in green.
The green **START** symbol is displayed when the machine is ready to start.

The START illuminated button lights up when the machine is ready to start.
Pressing the START illuminated button carries out a print cycle.



If the START illuminated button is continually pressed, successive print cycles will be carried out for as long as the button is pressed.

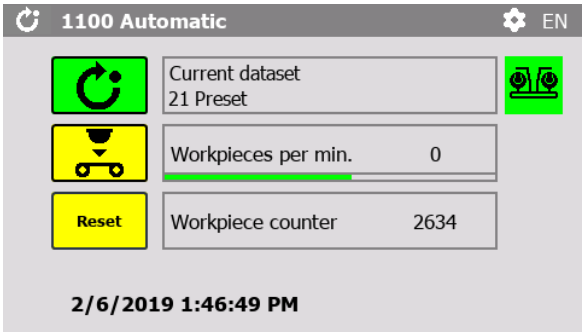
Depending on the setting, a pad cleaning will automatically be carried out between print cycles.



The machine can be set in such a way that the start pulse for a print cycle is activated by interrupting a light curtain and then ending contact with it again.
See Chapter 27.6 "Light curtain" on page 136.

- The first print cycle must always be activated using the START button.
- If the **START via light curtain** function is active, the symbol 1 will be displayed after the first print cycle. The symbol shows the number of interruptions that will activate a start pulse (1x or 2x).
- Further print cycles can now be activated by interrupting and then ending contact with the light curtain.
- If the light curtain is not interrupted for 30 seconds, the **START via light curtain** function will be deactivated. The symbol 1 will be hidden.
- If another print cycle is activated with the START illuminated button, the **START via light curtain** function will be activated again.

25.2.2 With two-hand operation safety guard

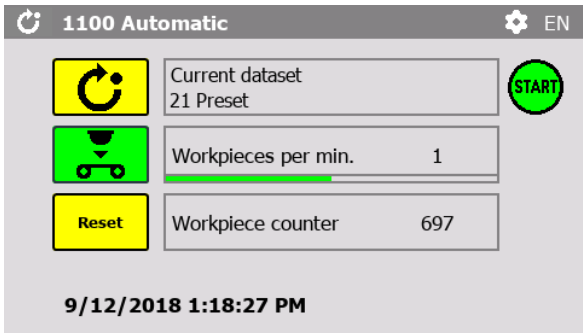


Press the **Automatic** push button.
The push button for the selected function is displayed in green.
The green **two-hand operation** symbol appears when the machine is ready to start.

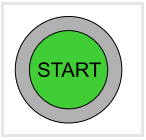
Pressing two-hand operation carries out a printing cycle.

Depending on the setting, a pad cleaning will automatically be carried out between print cycles.

25.3 Starting a pad cleaning



Press the **Pad cleaning** push button.
The push button for the selected function is displayed in green.
The green **START** symbol is displayed when the machine is ready to start.



The START illuminated button lights up when the machine is ready to start.
Pressing the START illuminated button carries out a pad cleaning.

If the START illuminated button is continually pressed, successive cleaning cycles will be carried out for as long as the button is pressed.

If the **two-hand operation** symbol appears, a pad cleaning can be carried out by pressing two-hand operation.

26.1 Overview

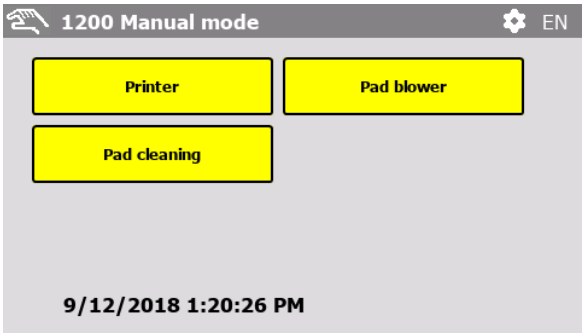
- This operation mode can be selected from the “Operation mode” menu.
- The **Manual Mode** menu can be accessed without a password prompt.
- In **Manual Mode** individual machine functions can be called up and carried out. This allows sub-functions of the machine to be tested and monitored.
- For adjustable functions, **Manual Mode** features a push button for skipping directly to the related **Settings** menu.

IMPORTANT INFORMATION	
	Depending on the configuration of the machine, individual menu levels can be hidden or provided with write protection. See Chapter 23.8 "Menu Configuration" on page 118. As the possible combinations are too varied, all functions will be described in full in this instruction manual. Should the display in some menus differ from the descriptions, individual adjustments have been made.

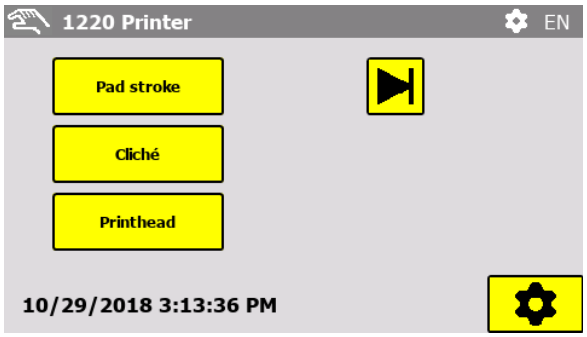
26.2 Manual mode selection

This menu provides access to functions that should be carried out in manual mode.

Each selectable function is described on the following pages.



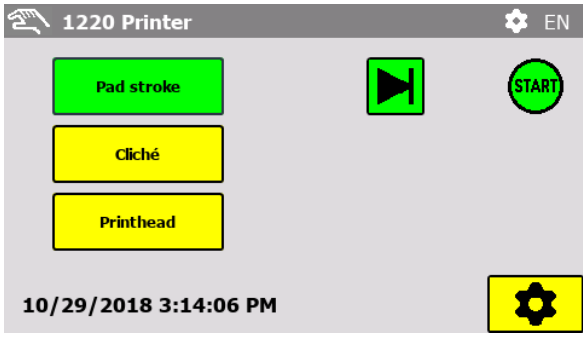
26.3 Printer



The desired function can be selected via the push buttons.
The push button for the selected function is displayed in green.

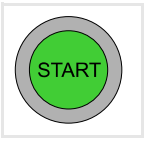
Settings push button
This calls up the settings for this function.
See Chapter 27.3 "Printer" on page 134.

26.3.1 Pad stroke



Press the **Pad stroke** push button.
Press the **START FORWARD** push button.
The push button for the selected function is displayed in green.

The green **START** symbol is displayed when the machine is ready to start.



The START illuminated button lights up when the machine is ready to start.
Pressing the START illuminated button carries out a pad stroke.

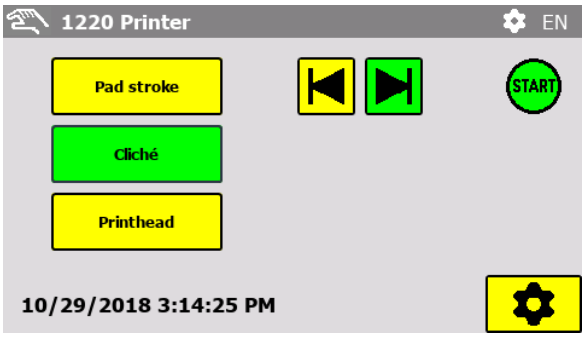
The machine automatically recognizes its current position and carries out a pad stroke for this position.
If the pad stroke should be carried out for other position, the cliché or the printhead have to be moved into the desired position.

- Pad above the cliché = cliché stroke
- Pad above the workpiece = workpiece stroke

For machines with pad cleaning:

- Pad over the pad cleaning = cleaning stroke

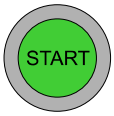
26.3.2 Cliché



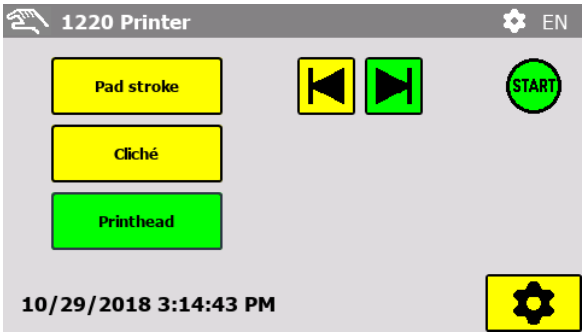
Press the **Cliché** push button.
Press one of the push buttons to select the direction.
The push button for the selected function is displayed in green.

The green **START** symbol is displayed when the machine is ready to start.

The START illuminated button lights up when the machine is ready to start.
Pressing the START button moves the cliché in the pre-selected direction.



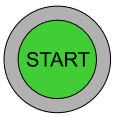
26.3.3 Printhead



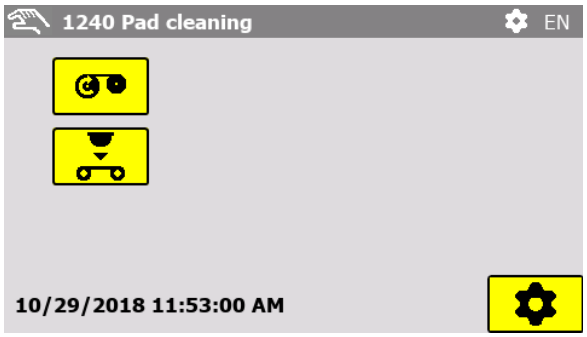
Press the **Printhead** push button.
Press one of the push buttons to select the direction.
The push button for the selected function is displayed in green.

The green **START** symbol is displayed when the machine is ready to start.

The START illuminated button lights up when the machine is ready to start.
Pressing the START button moves the printhead in the pre-selected direction.



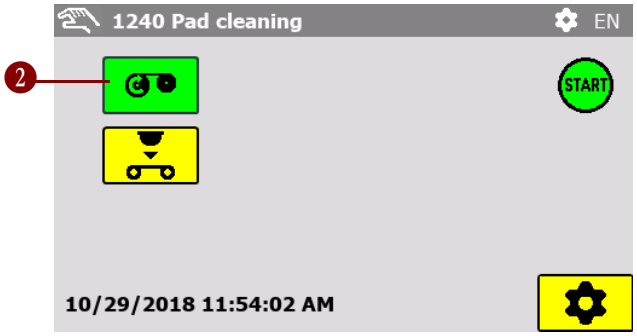
26.4 Pad cleaning



The desired function can be selected via the push buttons.
The push button for the selected function is displayed in green.

Settings push button
This calls up the settings for this function.
See Chapter 27.5 "Pad cleaning" on page 135.

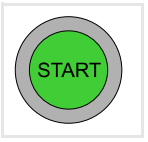
26.4.1 Tape feed



Press the **Tape feed** 2 push button.
The push button for the selected function is displayed in green.

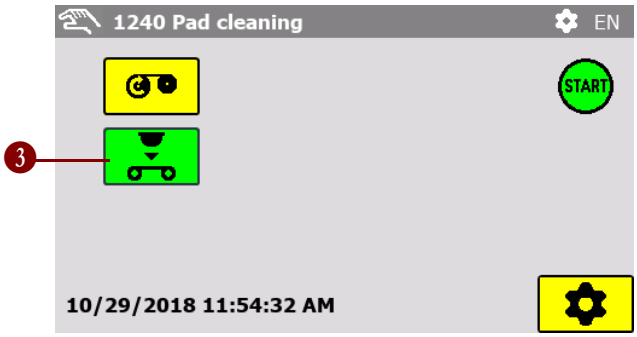
The green **START** symbol is displayed when the machine is ready to start.

The START illuminated button lights up when the machine is ready to start.
Pressing the START illuminated button activates a tape feed.



The feed duration can be adjusted in the settings.

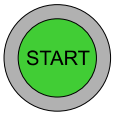
26.4.2 Cleaning cycle



Press the **Cleaning cycle** 3 push button.
The push button for the selected function is displayed in green.

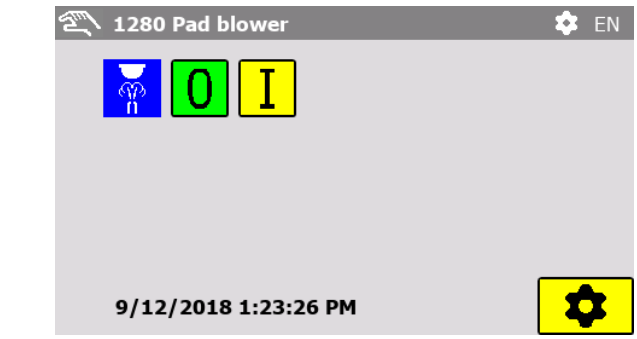
The green **START** symbol is displayed when the machine is ready to start.

The START illuminated button lights up when the machine is ready to start.
Pressing the START illuminated button activates a cleaning cycle.



If the printer is not in the home position, homing will automatically be carried out before the cleaning cycle.

26.5 Pad blower



Press push button **0** or **I**.

The pad blower is immediately turned on or off when the push buttons are pressed.

Settings push button

This calls up the settings for this function.
See Chapter 26.5 "Pad blower" on page 131.

27.1 Overview

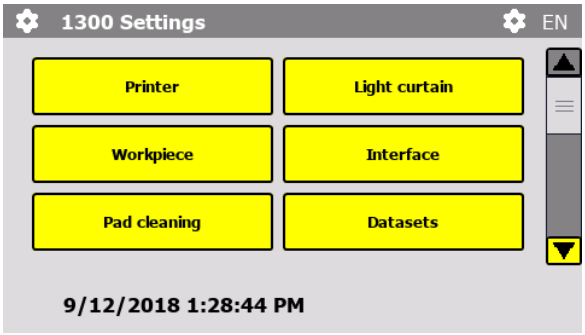
- This operation mode can be selected from the “Operation mode” menu.
- The **Settings** menu is protected with a password prompt.
- The designation of the menu levels for the **Settings** is identical to the designation of the menu levels in **Manual Mode**.
- In addition, some menu levels feature extended settings and further menu levels in which top-level functions of the machine can be set.
- There is a Settings menu for all adjustable functions. The settings for the functions can be changed there.

IMPORTANT INFORMATION	
	Depending on the configuration of the machine, individual menu levels can be hidden or provided with write protection. See Chapter 23.8 "Menu Configuration" on page 118. As the possible combinations are too varied, all functions will be described in full in this instruction manual. Should the display in some menus differ from the descriptions, individual adjustments have been made.

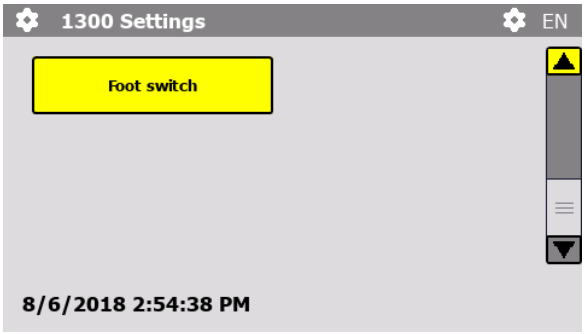
27.2 Settings selection

This menu provides access to functions whose settings need to be changed.

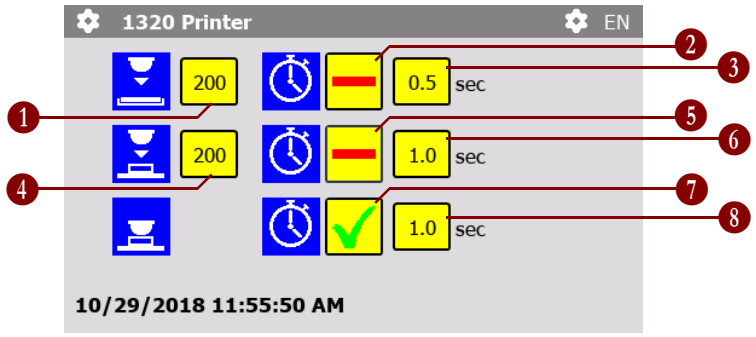
Each selectable function is described on the following pages.



The menu extends over several windows. The windows can be scrolled through using the scroll bar at the side.



27.3 Printer



Print speed

The speed of the pneumatically-driven axes can be set via chokes. See Chapter 12.4 "Setting speeds" on page 42.

Pad stroke on cliché

The value for the cliché stroke can be set in the input field 1.
The value relates to internal impulses of the measurement system (no positioning distance in mm).

Dwell time on the cliché

The function can be activated or deactivated via the push button 2.
The pad dwells on the cliché for the set time 3 during ink absorption.

Pad stroke on the workpiece

The value for the cliché stroke can be set in the input field 4.
The value relates to internal impulses of the measurement system (no positioning distance in mm).

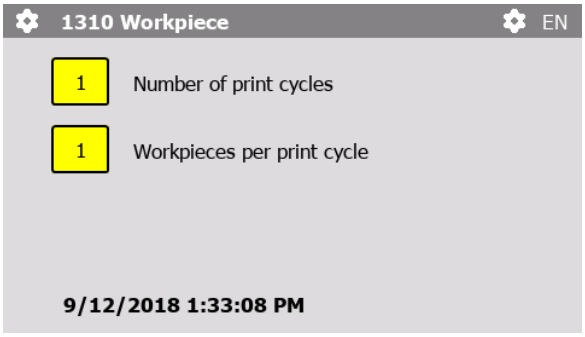
Dwell time over the workpiece

The function can be activated or deactivated via the push button 5.
The pad dwells over the workpiece for the set time 3 during ink release.

Dwell time on the workpiece

The function can be activated or deactivated via the push button 7.
The pad dwells on the workpiece for the set time 8 during ink release.

27.4 Workpiece



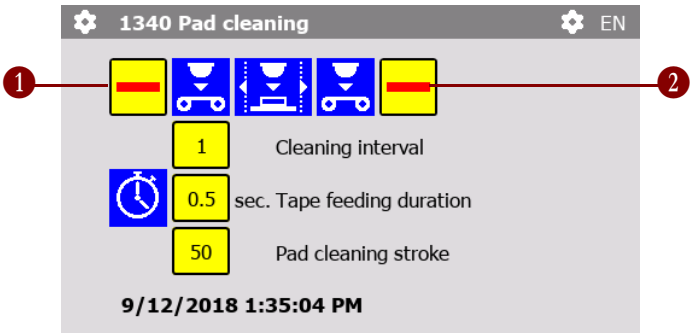
Number of print cycles

The number of print cycles for a workpiece can be set.
As a result, the print image is applied several times.

Workpieces per print cycle

The machine can process several workpieces per print cycle. The number of workpieces per print cycle can be set for the workpiece counter. After every print cycle the workpiece counter is increased by the set number.

27.5 Pad cleaning



Cleaning time

The push button ❶ activates or deactivates the pad cleaning before the print cycle.

The push button ❷ activates or deactivates the pad cleaning after the print cycle.

Only one of the two cleaning times can be activated.

Cleaning interval

After the set number of print cycles, a pad cleaning is performed.

Tape feeding duration

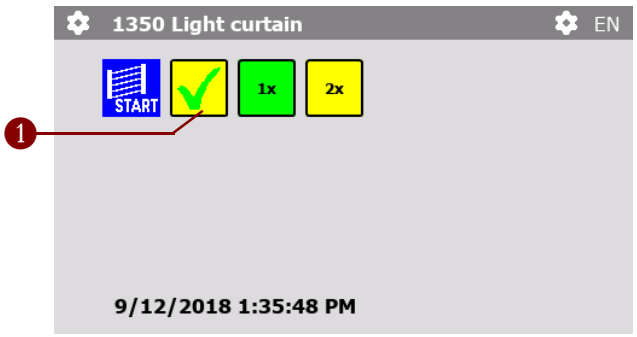
After the pad cleaning, the feed for the cleaning tape is switched on for the set time period.

Pad stroke cleaning

The pad stroke position on the cleaning tape of the pad cleaning.
The value relates to internal impulses of the measurement system (no positioning distance in mm).
For an optimum printing result, the pad should only deform on the pad cleaning unit to such an extent that the surface used for printing is cleaned.

27.6 Light curtain

This menu only appears when the **light barrier** function is activated.
Siehe Kapitel 28.12 "Safety guard" on page 157.



START via light curtain

If the machine is being operated in a safety enclosure with a light curtain, the start pulse for a print cycle can be activated in AUTOMATIC operation mode by interrupting the **light curtain insertion area** and then ending contact with it again.
See also Chapter 32.7 "Definition of safety zones" on page 179.

The function can be activated or deactivated via the push button 1.
Different settings can be selected depending upon the work process.

1x
If, when the light curtain is breached, the finished workpiece is removed and a new one is inserted at the same time, the light curtain will only be interrupted once for the start pulse.

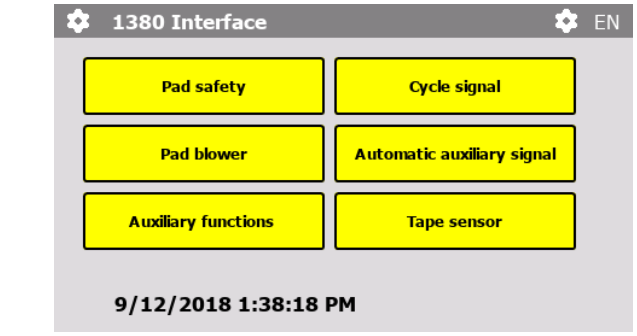
2x
If, when the light curtain is breached, the finished workpiece is removed and the light curtain is breached again to insert a new workpiece, the light curtain will be interrupted twice for the start pulse.

27.7 Interface

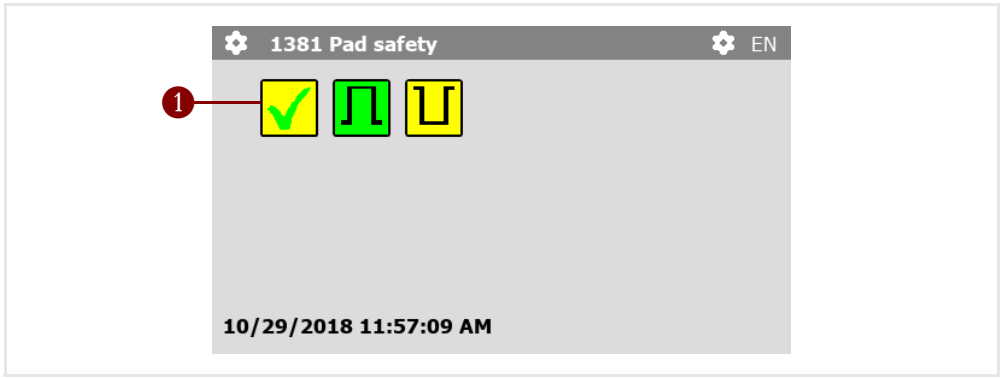
The **Interface** menu combines all settings which effect the automation interface. The menu is divided into several sub-menus.

This menu provides access to functions whose settings need to be changed.

Each selectable function is described on the following pages.



27.7.1 Pad safety



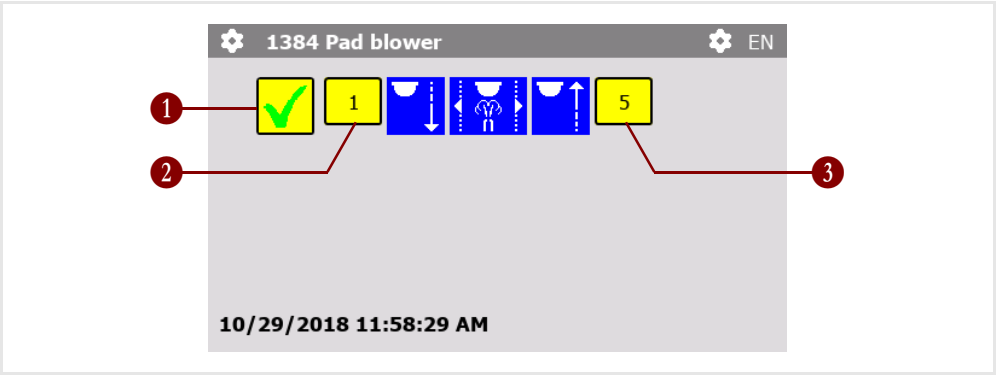
By pressing the push button ❶ the **Pad safety** signal can be activated or deactivated at an automation interface input.
The characteristics of the signal are described in Chapter 32 "Automation Interface" on page 169.

If the function is activated, the pad safety signal is analyzed.
If the function is deactivated, the pad safety signal is ignored.

The pad safety signal must be present before the pad moves towards the workpiece. Otherwise, the print process will be interrupted and will only continue when the signal is present.

Symbol	Function
⎍	HIGH A HIGH signal is expected for the pad safety.
⎎	LOW A LOW signal is expected for the pad safety.

27.7.2 Pad blower



By pressing the push button 1 the signal for the **Pad blower** can be activated or deactivated at an automation interface output.
The characteristics of the signal are described in Chapter 32 "Automation Interface" on page 169.

The numeric values can be used to set the positions, from which step 2 to which step 3 between which the signal should be emitted.

The printing cycle of the machine is divided into individual steps. The execution of some steps depends on the selected menu settings. The individual steps and their functions are described in the table below.

Step	Function
1	End of ink absorption. (Pad moves from the cliché to the top.)
2	Start of printhead movement. (The printing head moves from the position above the cliché into the position over the workpiece.)
3	Start of the dwell time over the workpiece. (Pad standing above the workpiece.)
4	Start of the pad stroke on the workpiece. (Pad moves down towards the workpiece.)
5	Start of the dwell time on the workpiece (Pad standing on the workpiece.)

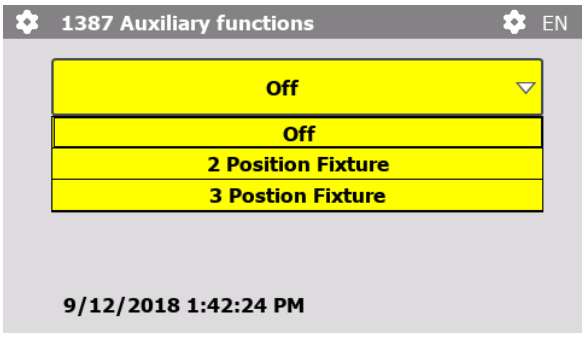
The pad air can be switched on with any step and off with any following step.
Steps that are not executed through a menu selection are also taken into account when switching the pad air on and off.

Example

Pad air turned on from step 1 to step 4.

- The pad air is switched on when the pad air leaves the cliché after ink absorption.
- The pad air is turned off when the pad moves down towards the workpiece.
- The power-on time of the pad air can be varied by setting a dwell time above the workpiece. See Chapter 27.3 "Printer" on page 134.

27.7.3 Auxiliary functions



Peripheral modules can be controlled via output signals to the automation interface. It is possible to move workpiece holding fixtures to different positions during the print cycle. The characteristics of the signal are described in Chapter 32 "Automation Interface" on page 169.

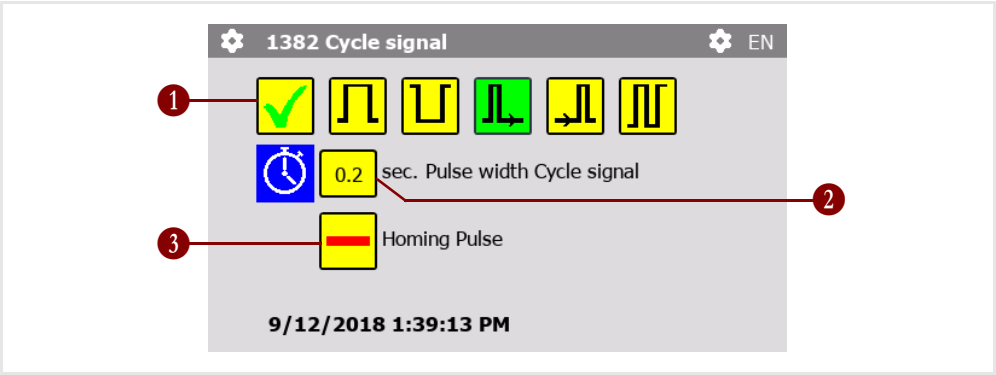
The dropdown menu allows three default settings to be chosen from.

Off
No signals are emitted for peripheral modules.

2 Position Fixture
Signals are emitted for a workpiece holding fixture with two positions.

3 Position Fixture
Signals are emitted for a workpiece holding fixture with three positions.

27.7.4 Cycle signal



By pressing the push button 1, the **Cycle signal** can be activated or deactivated at an automation interface output.
The characteristics of the signal are described in Chapter 32 "Automation Interface" on page 169.

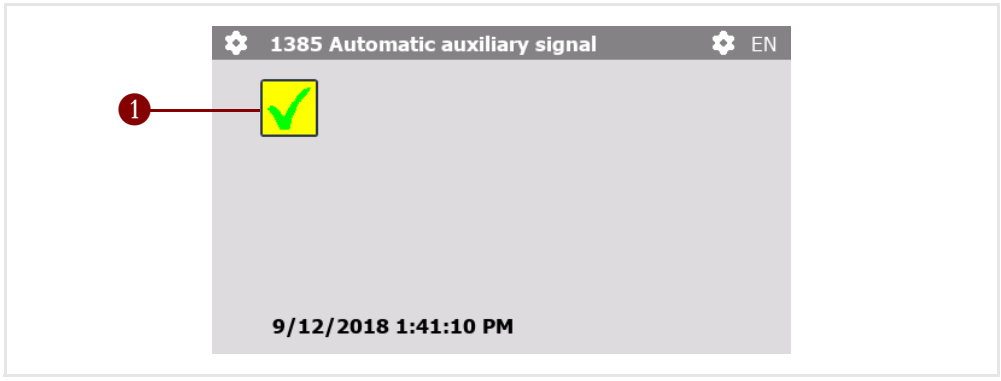
The cycle signal is emitted dependent on a print cycle. If several print pulses are performed in a print cycle, the output signal is based on the entire print cycle. A pad cleaning before or after the print cycle will not be taken into account.

Symbol	Function
	Permanent signal The signal switches to HIGH at the beginning of the print cycle and LOW at the end.
	Permanent signal inverted The signal switches to LOW at the beginning of the print cycle and HIGH at the end.
	Pulse at beginning The signal switches to HIGH at the beginning of the print cycle and to LOW after the pulse width cycle 2.
	Pulse at end The signal switches to HIGH at the end of the print cycle and to LOW after the pulse width cycle 2.
	Signal change for every print cycle. The signal changes state at the beginning of the print cycle. (Alternating HIGH and LOW.)

Homing pulse

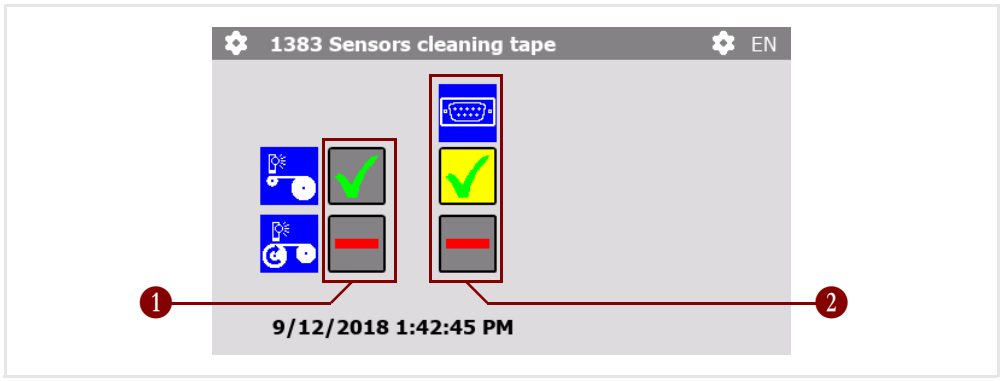
By pressing the push button 3 a homing pulse can also be activated or deactivated for the **Cycle signal** at an automation interface output.
The homing pulse is emitted once – after the control unit is switched on or when homing is carried out – in order to move an external module (e.g. a rotary table) to the home position.

27.7.5 Automatic auxiliary signal



By pressing the push button 1 the **Automatic auxiliary signal** can be activated or deactivated at an automation interface input.
The characteristics of the signal are described in Chapter 32 "Automation Interface" on page 169.

27.7.6 Sensors cleaning tape



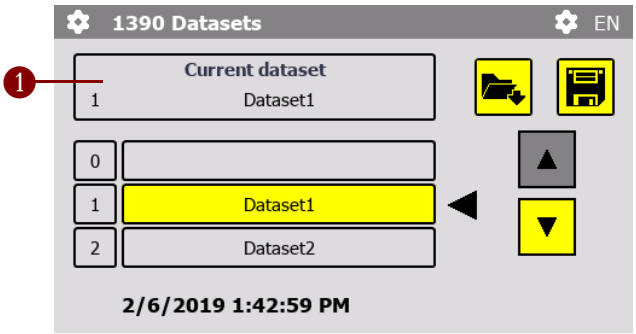
The signals of the cleaning tape sensors can be emitted at the **Cleaning tape notification** output of the automation interface.
The characteristics of the signal are described in Chapter 32 "Automation Interface" on page 169.

Column 1 indicates whether the sensors are available and whether they have been activated in Admin Settings. See Chapter 28.7.6 "Sensors cleaning tape" on page 153.

The push buttons in column 2 can be used to activate the signals of the available sensors for the automation interface output.

Symbol	Function
	Lack of tape HIGH signal when the pad cleaning tape is almost used up.
	End of tape / torn tape HIGH signal when the pad cleaning tape is completely used up or torn.

27.8 Datasets



The number and name of the most recently loaded dataset are displayed in field 1.

The menu settings can be saved for use at a later date. Here, all current settings and menu configurations are saved as a complete dataset is one disk space.
See Chapter 27.8.4 "Save dataset" on page 144.

Datasets which have already been saved can be loaded. Here, all current settings and menu configurations are overwritten by the loaded dataset.
See Chapter 27.8.2 "Load dataset" on page 143.

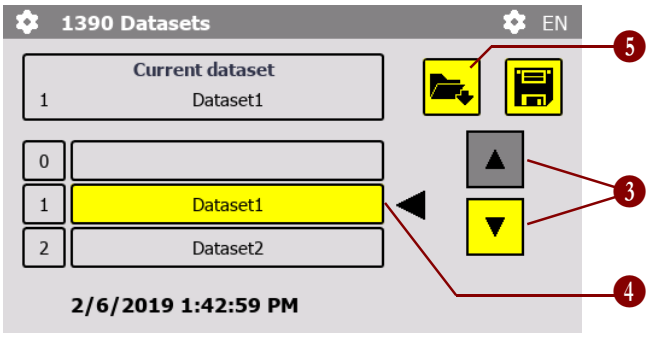
To ensure that current settings and menu configurations are not lost, they must be saved before another dataset is loaded.
See Chapter 27.8.4 "Save dataset" on page 144.

There are 20 disk spaces available for 20 datasets.

27.8.1 Push buttons

Symbol	Funktion
	Load dataset.
	Save dataset.
	Scroll down.
	Scroll down not possible. End of list.
	Scroll up.
	Scroll up not possible. End of list.

27.8.2 Load dataset

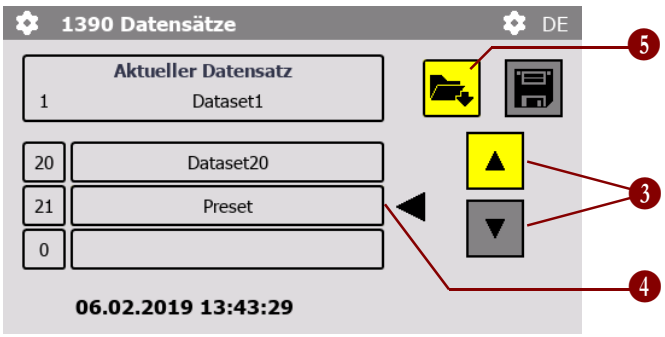


The list of datasets can be scrolled through using the push buttons scroll up / down 3.
21 disk spaces (1 to 21) can be chosen from.

The selected disk space is displayed in the row 4 marked with an arrow ◄ .

Pressing the push button **Load** 5 loads the selected dataset.

27.8.3 Load preset



All menu settings were saved in dataset 21 (preset) by the manufacturer before the machine was delivered. This dataset has been provided with write protection. It cannot be modified, renamed or overwritten by the saving of a dataset.
If dataset 21 is loaded, the presets will be reinstated.

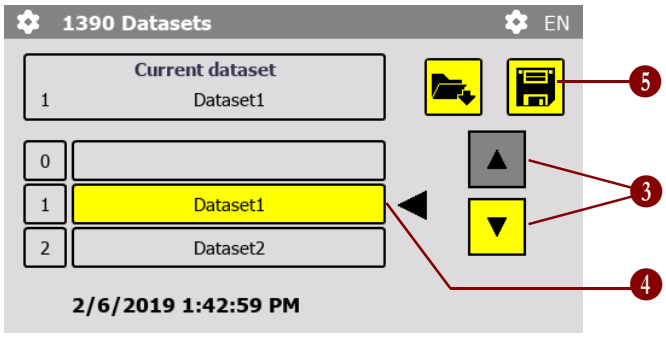
The list of datasets can be scrolled through using the push buttons scroll up / down 3.

Select dataset 21 (preset).

The selected dataset is displayed in the line 4 marked with an arrow ◄ .

Pressing the push button **Load** 5 loads the selected dataset.

27.8.4 Save dataset

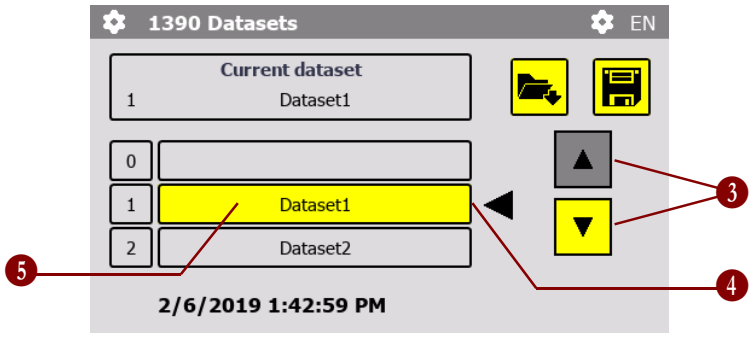


The list of datasets can be scrolled through using the push buttons scroll up / down 3. 20 disk spaces (1 to 20) can be chosen from.

The selected disk space is displayed in the row 4 marked with an arrow ◄ .

Pressing the **Save** 5 push button saves the dataset in the selected disk space.

27.8.5 Rename dataset



The list of datasets can be scrolled through using the push buttons scroll up / down 3. 20 disk spaces (1 to 20) can be chosen from.

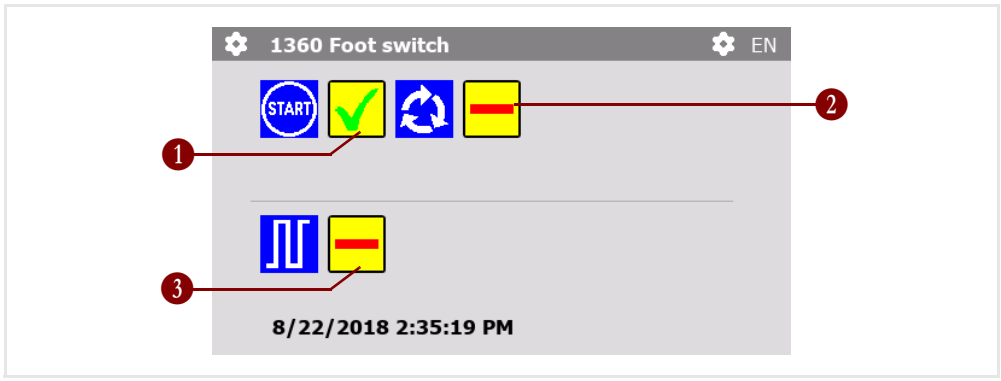
The selected disk space is displayed in the row 4 marked with an arrow ◄ .

Pressing the push button with the **Dataset name** 5 opens the input dialog. The name can be changed.

See also Chapter 23.6.6 "Change settings" on page 116.

27.9 Foot switch

This menu only appears when the **light barrier** function is activated.
See Chapter 28.12 "Safety guard" on page 157.



One of the displayed functions can be activated for the foot switch.
If no function is activated, the foot switch will do nothing when pressed.

1. Pressing the foot switch in AUTOMATIC operation mode activates a print cycle.

2. If the foot switch is pressed once in AUTOMATIC operation mode, print cycles will be carried out continuously. To end the print cycles the foot switch must be pressed once again.

3. The foot switch has the same function as the **Palm switch** input to the automation interface.
   See also Chapter 32.5 "Control procedure information" on page 172.

28 Admin Settings

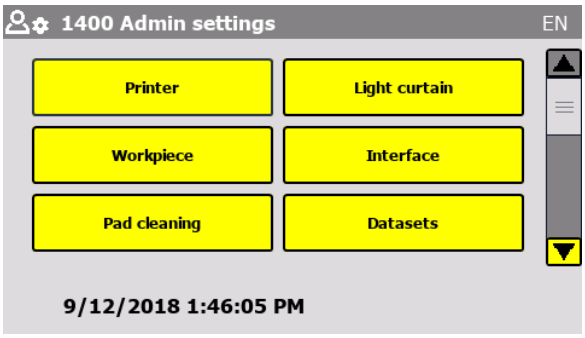
28.1 Overview

- This operation mode can be selected from the “Operation mode” menu.
- The **Admin Settings** menu is protected with a password prompt.
- The designation of the menu levels for **Admin Settings** is identical to the designation of the menu levels in **Manual Mode** and the **Settings** menu.
- In **Admin Settings**, access to functions in **Manual Mode** and in the **Settings** menu may be restricted. The menus of a function can be hidden or provided with write protection. See Chapter 23.8 "Menu Configuration" on page 118.
- To allow the hidden settings in the **Settings** menu to be changed, all adjustment options are also provided in **Admin Settings**.
- In addition, some menu levels feature extended settings and further menu levels in which top-level functions of the machine can be set.

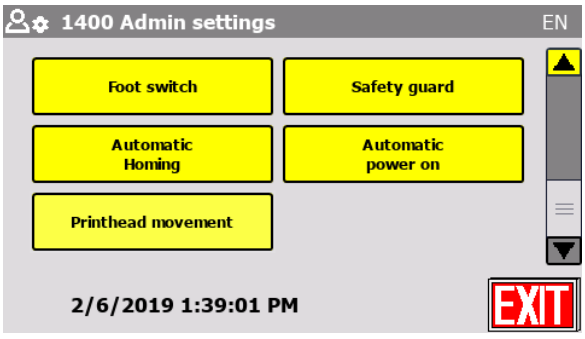
28.2 Admin Settings selection

This menu provides access to functions whose settings need to be changed.

Each selectable function is described on the following pages.

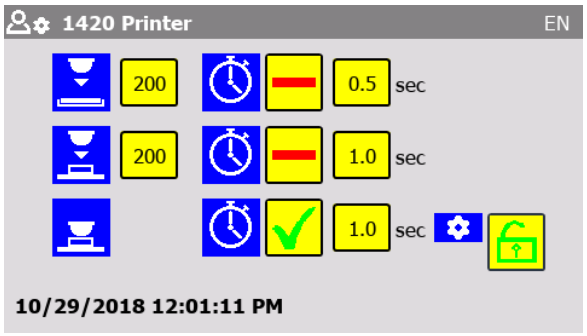


The menu extends over several windows. The windows can be scrolled through using the scroll bar at the side.



Pressing push button **EXIT** ❶ exits the menu interface and displays the operating terminal’s system menu.

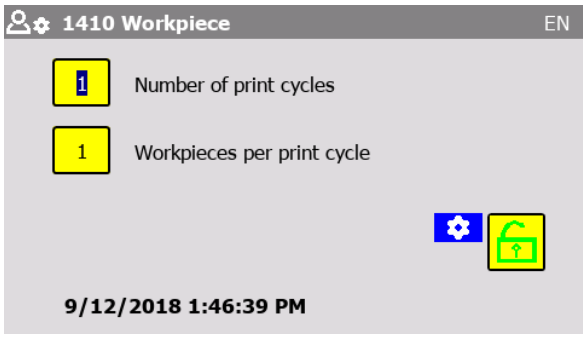
28.3 Printer



Adjustable settings see Chapter 27.3 "Printer" on page 134.

Write protection
See Chapter 23.8.2 "Write protection" on page 118.

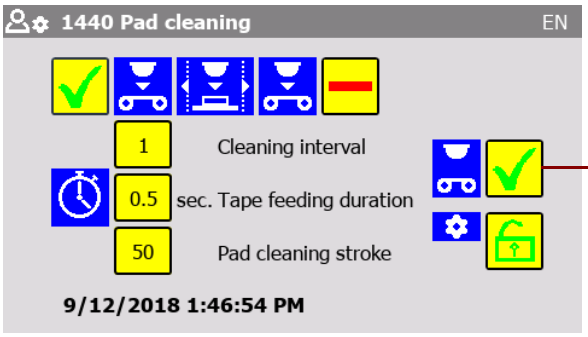
28.4 Workpiece



Adjustable settings see Chapter 27.4 "Workpiece" on page 135.

Write protection
See Chapter 23.8.2 "Write protection" on page 118.

28.5 Pad cleaning



Adjustable settings see Chapter 27.5 "Pad cleaning" on page 135.

Pad cleaning activation

The machine can be optionally fitted with a pad cleaning system.
By pressing the push button 1 pad cleaning can be activated or deactivated.

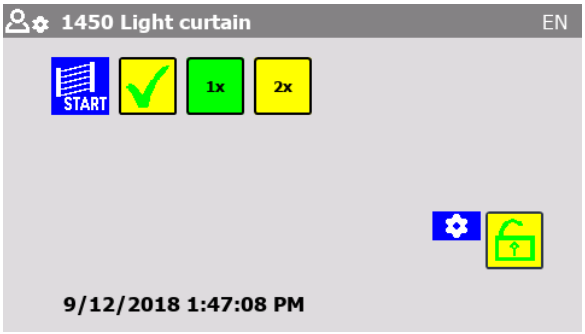
Symbol	Function
	**Activated** Pad cleaning is active and all set functions will be applied.
	Deactivated Pad cleaning is not active. The set functions will be ignored. “Pad cleaning” will be hidden in the MANUAL MODE and SETTINGS menus.

Write protection

See Chapter 23.8.2 "Write protection" on page 118.

28.6 Light curtain

This menu only appears when the **light barrier** function is activated.
See Chapter 28.12 "Safety guard" on page 157.



Adjustable settings see Chapter 27.6 "Light curtain" on page 136.

Write protection

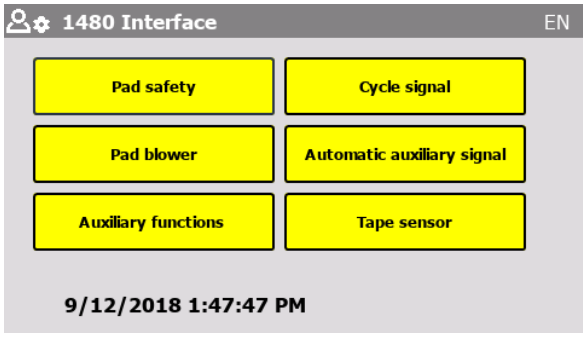
See Chapter 23.8.2 "Write protection" on page 118.

28.7 Interface

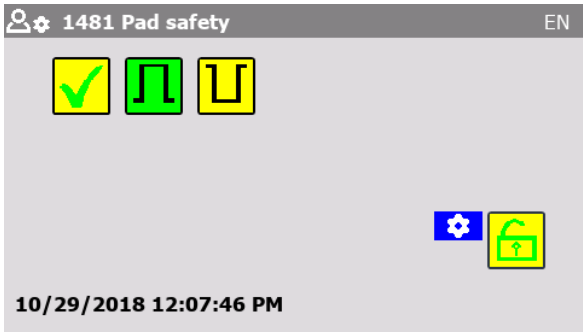
The **Interface** menu combines all settings which effect the automation interface. The menu is divided into several sub-menus.

This menu provides access to functions whose settings need to be changed.

Each selectable function is described on the following pages.



28.7.1 Print release

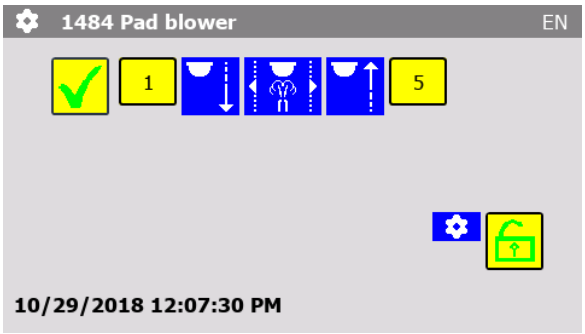


Adjustable settings see Chapter 27.7.1 "Pad safety" on page 137.

Write protection

See Chapter 23.8.2 "Write protection" on page 118.

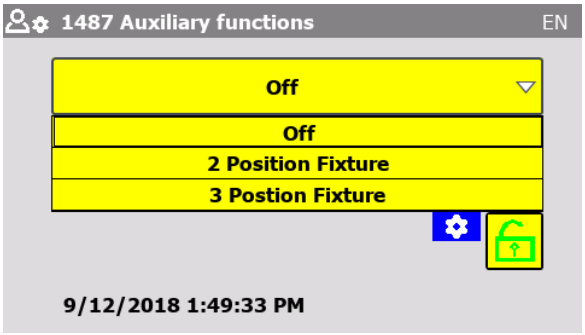
28.7.2 Pad blower



Adjustable settings see Chapter 27.7.2 "Pad blower" on page 138.

Write protection
See Chapter 23.8.2 "Write protection" on page 118.

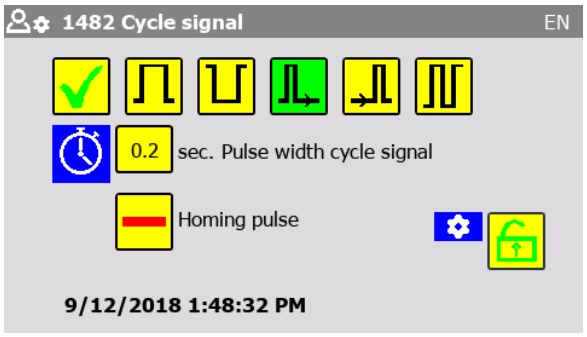
28.7.3 Auxiliary functions



Adjustable settings see Chapter 27.7.3 "Auxiliary functions" on page 139.

Write protection
See Chapter 23.8.2 "Write protection" on page 118.

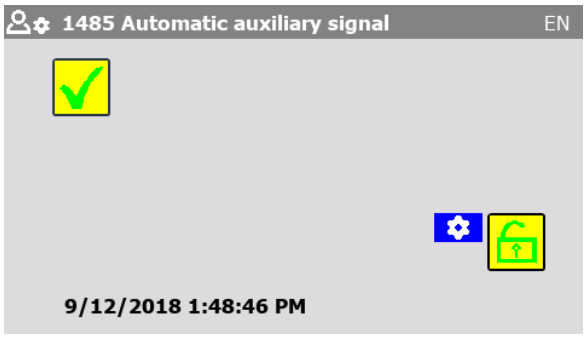
28.7.4 Cycle signal



Adjustable settings see Chapter 27.7.4 "Cycle signal" on page 140.

Write protection
See Chapter 23.8.2 "Write protection" on page 118.

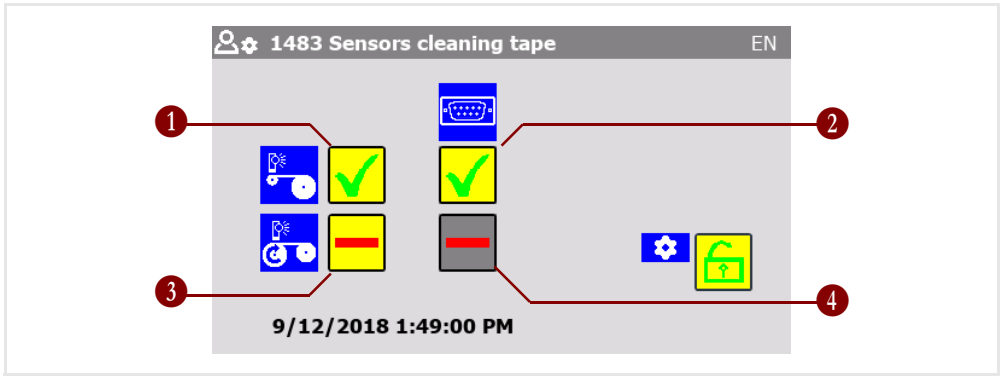
28.7.5 Automatic auxiliary signal



Adjustable settings see Chapter 27.7.5 "Automatic auxiliary signal" on page 141.

Write protection
See Chapter 23.8.2 "Write protection" on page 118.

28.7.6 Sensors cleaning tape



Adjustable settings (push buttons 2 and 4) see Chapter 27.7.6 "Sensors cleaning tape" on page 141.

Lack of tape

The function for lack of tape can be activated using push button 1. For this the sensor must be fitted and connected.
Push button 2 can only be activated if push button 1 has been activated.

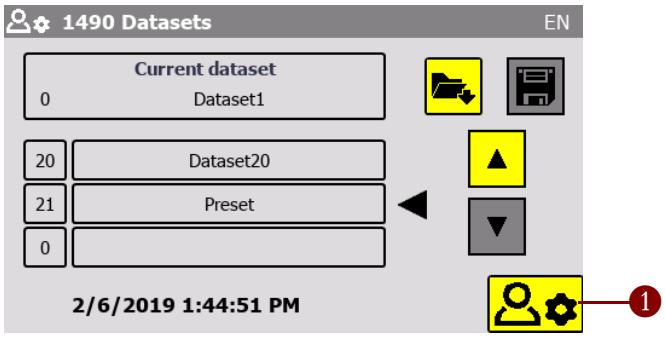
End of tape / torn tape

The function for end of tape / torn tape can be activated using push button 3. For this the sensor must be fitted and connected.
Push button 4 can only be activated if push button 3 has been activated.

Write protection

See Chapter 23.8.2 "Write protection" on page 118.

28.8 Datasets

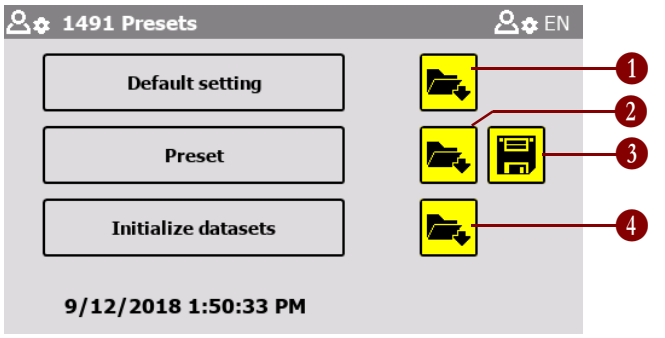


Functions see Chapter 27.8 "Datasets" on page 142.

The **Presets** menu can be viewed by pressing push button 1.

28.8.1 Presets

The **Presets** menu is protected with a password prompt and can only be accessed by employees of the manufacturer.
See Chapter 33 "Password" on page 183.



Pressing the push button **Load** 1 loads the **Default Settings**. These deal with the minute configuration of the machines' operations. They do not include application-specific settings.

Pressing the push button **Load** 2 loads the **Preset**. This refers to the dataset which was saved in the factory when the machine was delivered.

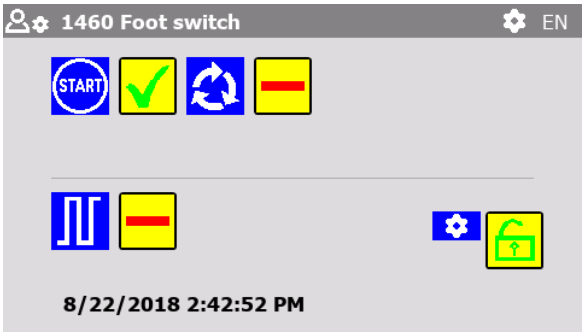
Pressing the push button **Save** 3 saves the current settings as a **Preset**. This overwrites the dataset which was originally saved in the factory.

Pressing the push button **Load** 4 copies the **Preset** to all datasets (from 1 to 20).

Default Settings	= Dataset 0:	Default
Preset	= Dataset 21:	Preset

28.9 Foot switch

This menu only appears when the **light barrier** function is activated.
See Chapter 28.12 "Safety guard" on page 157.

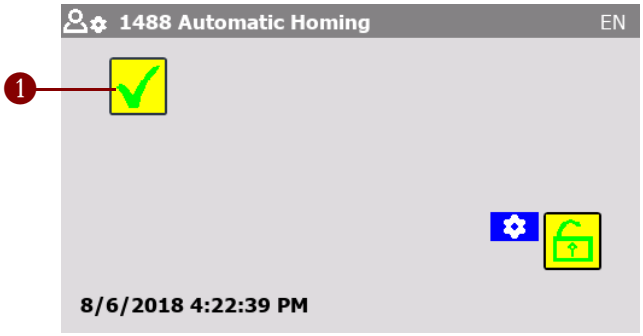


Adjustable settings see Chapter 27.9 "Foot switch" on page 145.

Write protection

See Chapter 23.8.2 "Write protection" on page 118.

28.10 Automatic homing



Automatic homing takes place in certain operational situations.
See Chapter 24.3.1 "Automatic homing" on page 120

By pressing the push button 1 the **Automatic homing** can be activated or deactivated.

Activated

If the machine is not in the home position, homing is initially carried out when a function is started and the function is then carried out after this.
START = home position + function

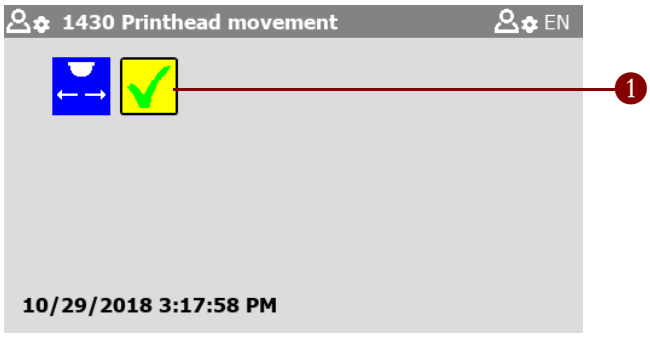
Deactivated

If the machine is not in the home position, homing is initially carried out when a function is started. The machine will then remain in the home position.
To carry out the function the start signal must be received once again.
START = home position
START = function

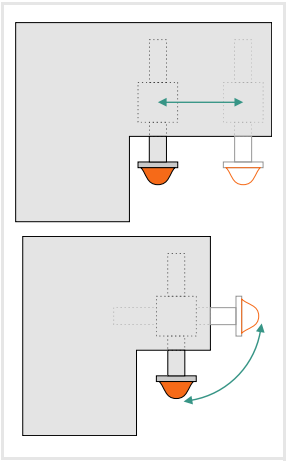
Write protection

See Chapter 23.8.2 "Write protection" on page 118.

28.11 Printhead movement

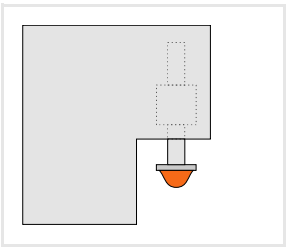


By pressing the push button 1, the **printhead movement** can be activated or deactivated.



If the function is activated, the printhead is moved into another position between ink absorption from the cliché and ink release onto the workpiece.

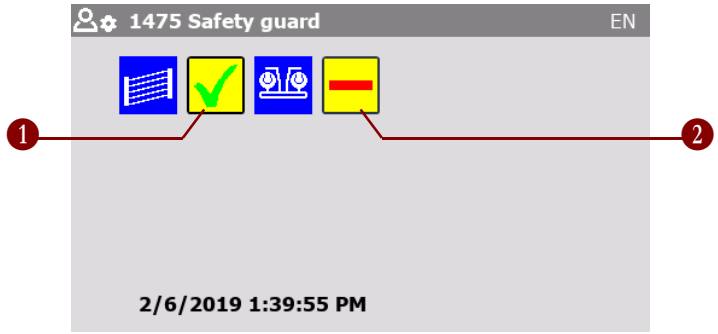
- The **printhead movement** has to be activated when the machine with the printhead is able to move horizontally or swivel.



- The **printhead movement** has to be deactivated when the machine does not have a movable printhead.

INSTRUCTION	
	When **printhead movement** is deactivated, the function for moving the printhead no longer is displayed in manual mode. Optional pad cleaning cannot be used for machines without **printhead movement**. The functions for pad cleaning are hidden in manual mode and in the settings.

28.12 Safety guard



The machine can be equipped with various safety guards.

The **light curtain** safety guard is activated using push button 1.

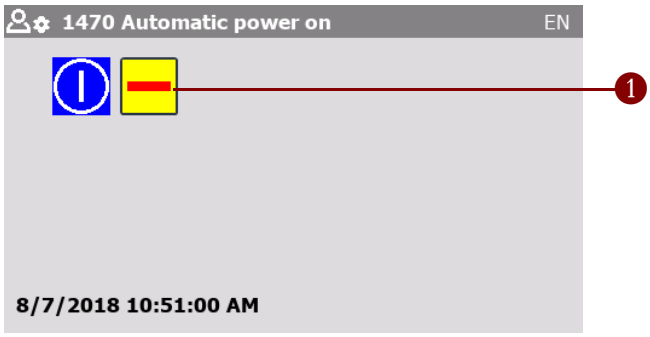
The **two-hand operation** safety guard is activated using push button 2.

Depending on the safety guard in place, the operation and functions of the machine will differ.
See Chapter 22 "Safety guard" on page 107.

The circuit of the automation interface must correspond to the selected safety guard.
See Chapter 32 "Automation Interface" on page 169.

⚠ DANGER	
⚠	**Risk of injury in the event of incomplete safety equipment.** Incomplete safety equipment can lead to a situation where no reliable deactivation of the machine movement can take place when reaching into the work area of the machine. This can lead to serious injuries or death. • Never operate the machine with incomplete safety equipment. • Commissioning is prohibited until all required safety equipment has been installed and the machine, including all additional components, corresponds to the provisions of the Machine Directive.

28.13 Automatic power on



By pressing the push button 1, **Automatic power on** can be activated or deactivated.

If the function is activated the machine's control unit will be switched on automatically.

Automatic power on takes place under the following conditions:

- Main switch ON (condition: STOP button unlocked and EMERGENCY STOP circuits to automation interface closed.)
- Unlock STOP button (condition: main switch ON and EMERGENCY STOP circuits to automation interface closed.)
- Close EMERGENCY STOP circuits to automation interface (condition: main switch ON and STOP button unlocked.)

29 Diagnostics

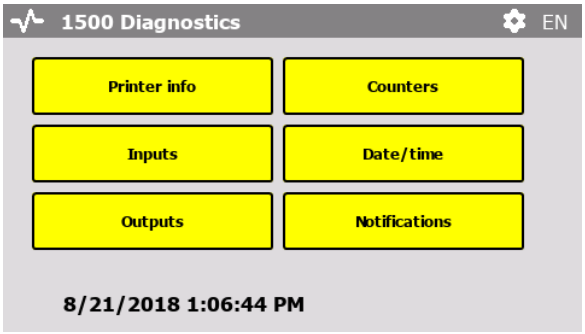
29.1 Overview

- This operation mode can be selected from the “Operation mode” menu.
- A diagnostics menu can be called up in order to determine current signal statuses. In the event of malfunctions, it may be possible to ascertain the cause or source of fault here.
- Specialist knowledge that cannot be described in detail here is required in order to analyze and evaluate the displayed diagnostics menus. Consequently, the menu levels are only illustrated in an overview.
- Please contact the machine manufacturer if functional malfunctions cannot be located.

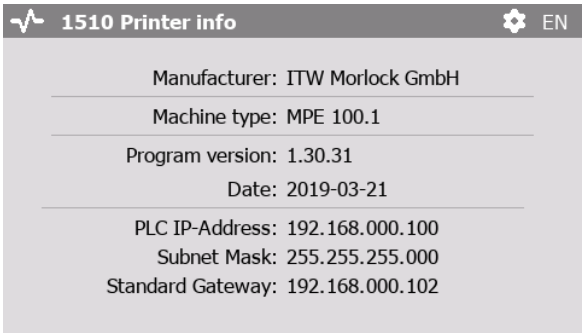
29.2 Diagnostics selection

This menu provides access to functions for which a diagnostics menu should be displayed.

Each selectable function is described on the following pages.

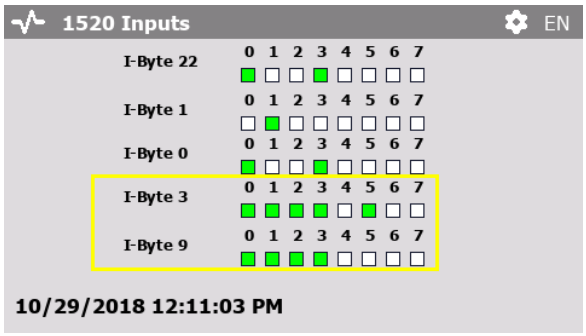


29.3 Printer info



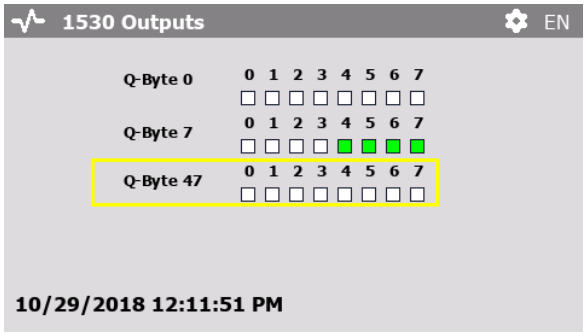
Display of the hardware and software characteristics of the machine.

29.4 Inputs



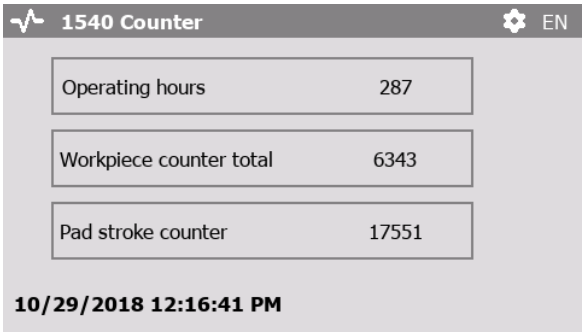
Display of the signal statuses of the digital inputs of the control unit.
The inputs in a yellow frame have safety functions.

29.5 Outputs



Display of the signal statuses of the digital outputs of the control unit.
The outputs in a yellow frame have safety functions.

29.6 Counter

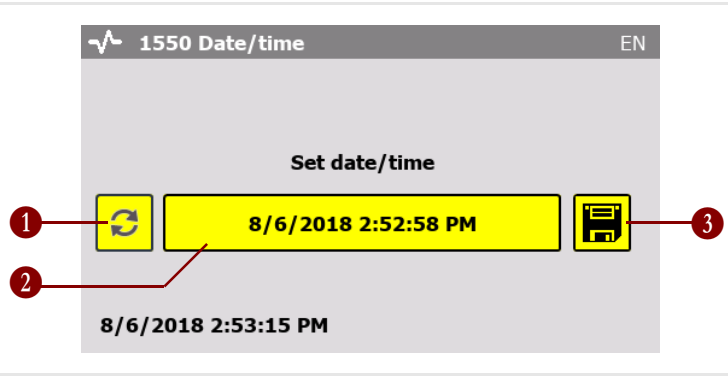


Operating hours
The number of hours for which the machine has operated with the control unit switched on.

Workpiece counter total
Total number of workpieces that have been printed by the machine.

Pad stroke counter
The number of pad strokes in print operation (print and cleaning cycles).

29.7 Date/time



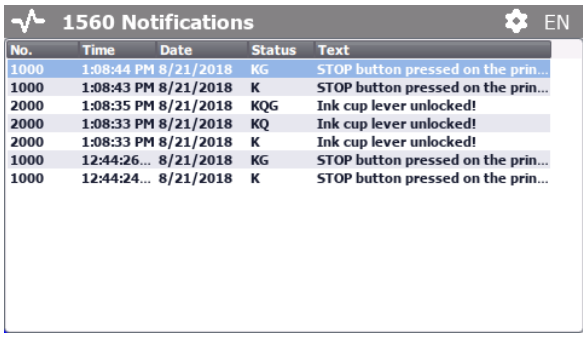
The date and time of the system clock can be set.

Pressing the **Update** 1 push button updates the system time in the **Editor field** 2.

In the **Editor field** 2 the current time and date can be entered.

By pressing the **Save** 3 push button the time and date from the **Editor field** 2 are applied as the system time.

29.8 Notifications

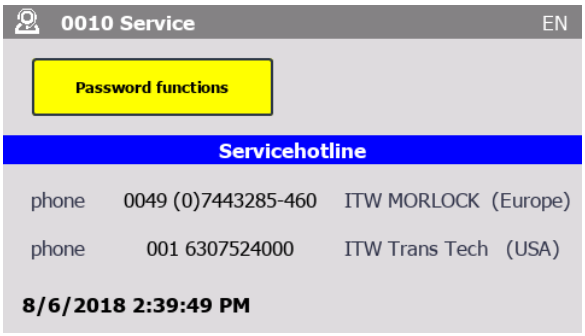


Display with a list of notifications which have occurred.
It can also be used to track previous incidents.

30.1 Overview

- This operation mode can be selected from the “Operation mode” menu.
- Service information is displayed.
- Password functions can be carried out.

30.2 Service menu

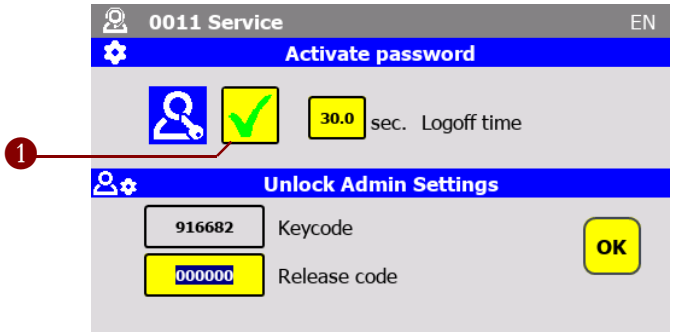


Service hotline

The telephone numbers of the service hotline for Europe and the USA are displayed.

The **Password functions** menu can be viewed by pressing push button 1.

30.3 Password functions

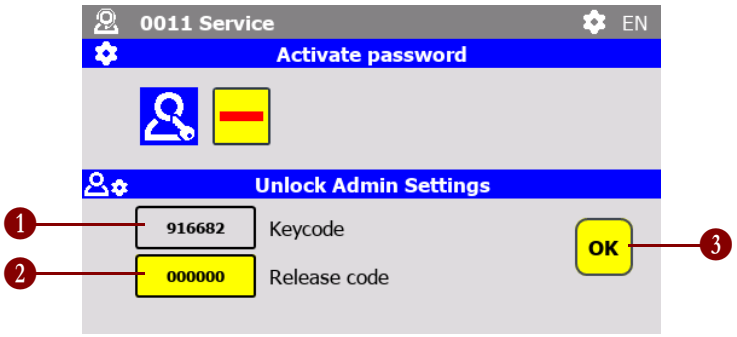


Activate password

By pressing push button 1 the password prompt for the **Settings** access area can be activated and deactivated.

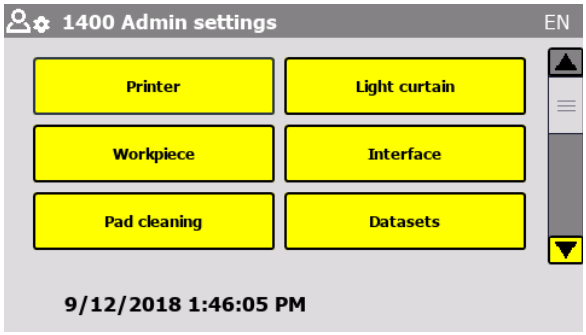
The password prompt can only be deactivated after the password has been entered.
See Chapter 33 "Password" on page 183.

When the function is activated, the **Settings** menu can only be accessed with a password. After exiting, the menu will remain accessible for the duration of the logoff time, even if the password is not entered again.
If the settings menu is not called up again, after the logoff time has expired it can only be accessed by re-entering the password.



The **Admin** access area can be unlocked once only.

- Contact the service department to generate a release code.
- Cite the keycode from field 1.
- The service department will then generate a release code which should be entered in field 2.
- Confirm the input by pressing the push button OK 3.



- Access to the **Admin Settings** menu will be granted one time only.

INFO

- If the **Admin Settings** menu is exited, it can only be accessed again by entering a new **Release code**.
- Every time the **Unlock Admin Settings** menu window is called up, a new keycode will be generated. It is not possible to write down the keycode and enter the release code generated by the service department when calling up the menu window at a later time. The keycode and release code change every time.
- Every keycode and corresponding release code can only be used once.

31 Notifications and Errors

Operating and error notifications can be shown in the operating terminal display.

31.1 Operating Notifications

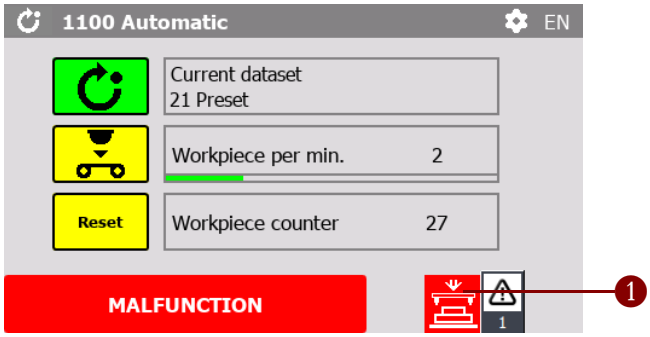
In AUTOMATIC MODE, operating notifications appear at the lower edge of the menu window in blue. The notification will automatically disappear when the cause is resolved.

Notification	Description
No automatic auxiliary signal	The HIGH signal is expected at the **automatic auxiliary signal** input of the automation interface. However, the signal is not present. Check settings: see Chapter 27.7.5 "Automatic auxiliary signal" on page 141. Check connection or peripherals: see Chapter 32.5 "Control procedure information" on page 172.
Waiting for pad safety signal	The HIGH signal is expected at the **pad safety** input of the automation interface. However, the signal is not present. Check settings: see Chapter 27.7.1 "Pad safety" on page 137. Check connection or peripherals: see Chapter 32.5 "Control procedure information" on page 172.
Pad cleaning active	The machine is carrying out a pad cleaning cycle.
Homing active	The machine is moving to the home position.
Printer not in home position	The machine is not in the home position. Homing needs to be carried out: see Chapter 24.3 "Home position" on page 120.
Automatic active	A print cycle is carried out in automatic mode.

31.2 Error Notifications

31.2.1 Display

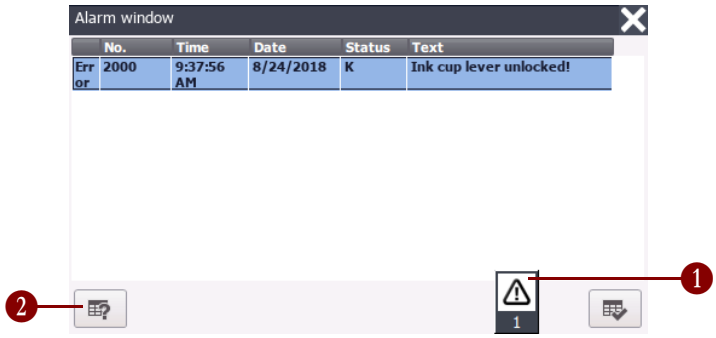
Error notifications appear at the lower edge of the current menu window in red.



The notification window can be viewed by pressing the 1 push button.
Depending on the category of the notification, the notification window may also be displayed immediately.

See Chapter 31.2.2 "Notification window" on page 166.

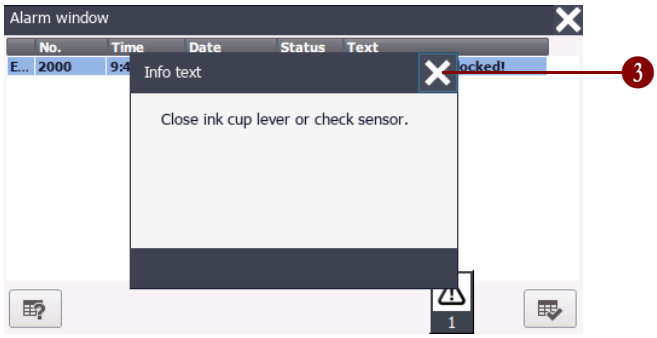
31.2.2 Notification window



All pending error notifications are listed in the notification window.

The notification window can be closed again by pressing the 1 push button.

A troubleshooting help text for each notification can be displayed by pressing the 2 push button.



The help text can be closed again by pressing the 3 push button.

31.2.3 List of notifications

Notification (Help text)	Description
STOP button pressed on the printer! (Unlock STOP button by twisting.)	The STOP button on the printer has been pressed and is locked in place. The button must be unlocked by twisting.
External emergency stop is disconnected! (Check emergency stop at automation interface: Connect terminals or check signal.)	The EMERGENCY STOP circuits on the automation interface have been interrupted. The terminals need to be connected. Check external control elements or switch on. See also Chapter 32.5 "Control procedure information" on page 172.
Drive warning! (Reset via STOP button.)	The electronic controller for the drive motor is reporting a warning. Press STOP button and unlock again by twisting. Switch on the machine control unit. If this does not clear the notification, contact the service department.
Drive malfunction! (Reset via STOP button.)	The electronic controller for the drive motor is reporting a malfunction. Press STOP button and unlock again by twisting. Switch on the machine control unit. If this does not clear the notification, contact the service department.
Pad cleaning low on tape! (Replace cleaning tape.)	The sensor for the pad cleaning tape is reporting that the cleaning tape is almost used up. The cleaning tape needs to be replaced soon.
Pad cleaning tape end / tape broken! (Replace cleaning tape.)	The sensor for the pad cleaning tape is reporting that the cleaning tape is used up or torn. The cleaning tape needs to be replaced.
Movement enable is missing! (Check movement enable signal.)	The HIGH signal is expected at the **movement enable** inputs of the automation interface. However, the signal is not present. Check connection or peripherals: see Chapter 32.5 "Control procedure information" on page 172.
Ink cup lever unlocked! (Close cup lever or check sensor.)	The ink cup is not secured. Close the lever on the ink cup fixing.

Notification (Help text)	Description
Timeout: Homing cycle! (Reset via STOP button.)	A function could not be completed in the expected time. Press STOP button and unlock again by twisting. Switch on the machine control unit. If this does not clear the notification, contact the service department.
Timeout: Pad cleaning cycle! (Reset via STOP button.)	
Timeout: Auto cycle! (Reset via STOP button.)	
Timeout: Pad cleaning movement! (Reset via STOP button.)	
Timeout: Auxiliary functions! (Reset via STOP button.)	
Timeout: Cliché movement! (Reset via STOP button.)	
Timeout: Pad stroke! (Reset via STOP button.)	
Timeout: Printhead movement! (Reset via STOP button.)	
PLC hardware error! (PLC reports error status in hardware. Check module or online diagnostics.)	Have SPS control assemblies checked by an electrician or contact service department.

32 Automation Interface

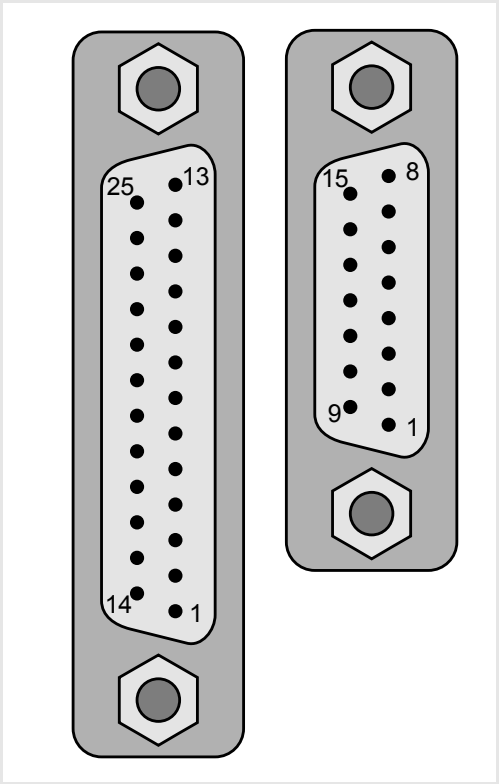
32.1 Function

The automation interface can be used to integrate the machine into higher-level control units.
The signal exchange for notifications and control functions is carried out over this interface. Please contact the manufacturer for the integration of special functions and extensions.

32.2 Electrical connector

The signal exchange takes place via two D-sub connectors.

(View of the mating face of the female connector.)



25-pole port
Signals to control the functions of the printer

15-pole port
Signals to control external modules and functions.

Signals

IN = input
OUT = output

HIGH = 24 V DC (signal switched on)
LOW = 0 V DC (signal switched off)

Voltage and power rating

Signal	Voltage	Power
Inputs	24 V DC	
Outputs	24 V DC	0.5 A
Control voltage (pins 9 & 15)	24 V DC	each max. 0.5 A

32.3 Terminal assignment

32.3.1 25-pole port

The signals marked in yellow in the table are safety-related and it is imperative that they are observed when integrating the machine into higher-level systems.
Only circuit components which correspond to the required safety category may be connected.

Pin	Signal	Function	Description
1	OUT	Cycle signal	Programmable output.
2	OUT	Ready to start	Machine status display.
3	OUT	Ready for operation automatic	Machine status display.
4	IN	START	The HIGH signal activates the currently selected function in the automatic or manual operation modes.
5 6		EMERGENCY STOP	EMERGENCY STOP channel 1
7	OUT	0 V DC	Control voltage reference potential.
8	IN	Pad safety	Configurable input for pad safety.
9	OUT	24 V DC	(NA+) Voltage is present when control unit is switched on.
10	IN	Light curtain insertion area	Light curtain insertion area channel A
11	IN		Light curtain insertion area channel B
12	OUT	Palm function	Alternating HIGH and LOW signals via signal to PIN 25.
13	OUT	Stoppage	Machine is securely in home position.
14	OUT		
15	OUT	24 V DC	Voltage is present when mains switch is switched on.
16	IN	Automatic auxiliary signal	Configurable input for additional start release in automatic mode.
17	IN	START pad cleaning	HIGH signal starts a cleaning cycle.
18	IN	Machine ON	HIGH signal switches on control unit.
19	OUT	Pad blower	Configurable output to connect a valve (pad blower).
20	OUT	Cleaning tape notification	Configurable output, HIGH signal notifies of end of tape/torn tape or lack of tape for pad cleaning.
21 22		EMERGENCY STOP	EMERGENCY STOP channel 2
23	IN	Movement release	The printer can only carry out movements if the HIGH signal is present at both inputs (23 and 24).
24	IN		
25	IN	Palm switch	Input to connect a palm switch.

Please refer to Chapter 32.5 "Control procedure information" on page 172.

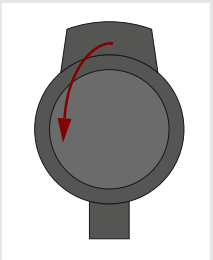
32.3.2 15-pole port

The signals marked in yellow in the table are safety-related and it is imperative that they are observed when integrating the machine into higher-level systems.
Only circuit components which correspond to the required safety category may be connected.

Pin	Signal	Function	
1	IN	Prog. IN 1	Configurable input
2	IN	Prog. IN 2	Configurable input
3	IN	Prog. IN 3	Configurable input
4	IN	Prog. IN 4	Configurable input
5	OUT	Prog. OUT 1	Programmable output
6	OUT	Prog. OUT 2	Programmable output
7	OUT	0 V DC	Control voltage reference potential
8	OUT	Prog. OUT 3	Programmable output
9	OUT	24 V DC	(NA+) Voltage is present when control unit is switched on.
10	OUT	Prog. OUT 4	Programmable output
11	IN	Light curtain print area	Light curtain print area channel A
12	IN		Light curtain print area channel B
13	IN	Stoppage feed device	HIGH signal is expected if feed device is present.
14	IN		
15	OUT	24 V DC	Voltage is present when mains switch is switched on.

Please refer to Chapter 32.5 "Control procedure information" on page 172.

32.4 Remote maintenance



The machine is fitted with a network port on the back.

The network port can be accessed by pulling off the cover cap.

A PC with programming software for the control unit or a network connection for remote maintenance can be connected to the network port.

For service please contact the manufacturer of the machine.

32.5 Control procedure information

32.5.1 25-pole port

Voltage supply for control signals

External signals must be produced with potential-free switching elements. The control voltage (24 V DC) provided on the automation interface must be used for the voltage supply. The supply of external voltage is not permitted.

EMERGENCY STOP

The expansion of the EMERGENCY STOP circuit is only possible on a two-channel basis. Both circuits (pins 5–6 and 21–22) must be switched simultaneously.

Pin 1 (OUT) Cycle signal

The activation of the output and the desired switching behavior must be set in the menu. See Chapter 27.7.4 "Cycle signal" on page 140.

Pin 2 (OUT) Ready to start

The signal displays a machine status and cannot be adjusted.
A HIGH signal is emitted when the control unit is switched on and when the machine can carry out functions in MANUAL MODE or AUTOMATIC operation modes.

Pin 3 (OUT) Ready for operation automatic

The signal displays a machine status and cannot be adjusted.
A HIGH signal is emitted when the control unit is switched on, the machine is in the home position, the AUTOMATIC operation mode is active and no fault report is displayed.

Pin 4 (IN) START

The signal activates a machine function and cannot be adjusted.
A HIGH signal activates the currently selected function in the MANUAL MODE or AUTOMATIC operation modes.
If the signal is permanently present, a function is immediately carried out as soon as it is selected from the menu. Certain functions are continually repeated if a permanent signal is present.
NOTE: A printing cycle can be carried out in AUTOMATIC operating mode if the signals from pin 3 and pin 13/14 are switched to HIGH. If both signals are switched to LOW, a home position run will be carried out first.

If two-hand operation is used as a safety guard, this signal will not have any function.
See also Chapter 32.8 "Safety guard – two-hand operation" on page 181.

Pin 8 (IN) Pad safety

The activation of the input and the desired switching behavior must be set in the menu. See Chapter 27.7.1 "Pad safety" on page 137.
The pad safety signal must be present at the input before the pad moves towards the workpiece. Otherwise, the print cycle will be interrupted and will only continue when the signal is present.

Pins 10 and 11 (IN) Light curtain insertion area

Two-channel safety loop for the connection of a light curtain for the insertion area. See also Chapter 32.7 "Definition of safety zones" on page 179.
The **START via light curtain** function in automatic mode is only possible with this light curtain. See Chapter 25.2 "Starting a print cycle" on page 124.
If the signals are not used, both inputs must be connected with 24 V DC (pin 15).
If two-hand operation is used as a safety guard, the circuit of the automation interface will change.
See Chapter 32.8 "Safety guard – two-hand operation" on page 181.

Pin 12 (OUT) Palm function

The signal has a set switching behavior and cannot be adjusted.
A signal edge from LOW to HIGH at the **Pin 25 (IN) Palm switch** alternately switches this output to LOW or HIGH. The status of the output changes with every signal edge to pin 25. When a print cycle is completed in the AUTOMATIC operation mode the signal is automatically switched to LOW.

Pins 13 und 14 (OUT) Stoppage

The signals have a set switching behavior and cannot be adjusted.
Two-channel safety signal for the connection of external safety components.
The signals are switched to HIGH when the control unit is switched off or the control unit is switched on and the machine is safely in the home position.

Pin 16 (IN) Automatic auxiliary signal

The activation of the input and the desired switching behavior must be set in the menu. See Chapter 27.7.5 "Automatic auxiliary signal" on page 141.
To start a print cycle in the AUTOMATIC operation mode the HIGH signal must be present. Otherwise the start pulse will be ignored.
If the signal switches from HIGH to LOW during a print cycle, the print cycle will be continued and completed in full.
In all other operation modes the signal will be ignored.

With this signal the fixing of a workpiece can be monitored.
For example the position monitoring (end switch) of a clamping cylinder or a pressure controller can be connected to monitor a vacuum.

Pin 17 (IN) START Pad cleaning

The signal has a set switching behavior and cannot be adjusted.
A signal edge from LOW to HIGH starts a pad cleaning cycle. This function is active in every operation mode.
When a print cycle is being carried out in the AUTOMATIC operation mode the signal is ignored.

If two-hand operation is used as a safety guard, this signal will not have any function.
See also Chapter 32.8 "Safety guard – two-hand operation" on page 181.

Pin 18 (IN) Machine ON

The signal has a set switching behavior and cannot be adjusted.
A signal edge from LOW to HIGH switches on the control unit of the machine. For this, both EMERGENCY STOP circuits (pins 5–6 and 21–22) must be closed.

Pin 19 (OUT) Pad blower

The activation of the output and the desired switching behavior must be set in the menu.
See Chapter 27.7.2 "Pad blower" on page 138.

Pad blower: a stream of air that is blown onto the pad through a nozzle. This helps to evaporate solvents from the ink which has already been absorbed by the pad before printing.

Pin 20 (OUT) Notification cleaning tape

The activation of the output and the desired switching behavior must be set in the menu.
See Chapter 27.7.6 "Sensors cleaning tape" on page 141.

Depending on the setting the signal will issue a notification for end of tape/torn tape or lack of tape for the pad cleaning.

Pins 23 und 24 (IN) Movement release

The signals have a set switching behavior and cannot be adjusted.
Two-channel safety signal for the connection of external safety components.
The printer can only carry out movements if the HIGH signal is present at both inputs (23 and 24).
If the LOW signal is present, the movement releases for all drives are safely switched off.
If the machine is integrated in a safety enclosure, the safety switches for the safety doors can be connected, for example.
If the signals are not used, both inputs must be connected with 24 V DC (pin 15).

Pin 25 (IN) Palm switch

The signal has a set switching behavior and cannot be adjusted.
A signal edge from LOW to HIGH alternately switches the **Pin 12 (OUT) Palm function** output to LOW or HIGH. The status of the output changes with every signal edge.

The function of this input can also be carried out with the foot switch. For this, the function must be activated in the SETTINGS menu.
See Chapter 27.9 "Foot switch" on page 145.

32.5.2 15-pole port

Pin 1 (IN) Prog. IN 1
Pin 2 (IN) Prog. IN 2
Pin 3 (IN) Prog. IN 3
Pin 4 (IN) Prog. IN 3

Pin 5 (OUT) Prog. OUT 1
Pin 6 (OUT) Prog. OUT 2
Pin 8 (OUT) Prog. OUT 3
Pin 10 (OUT) Prog. OUT 4

This group of inputs and outputs is used for auxiliary functions for external peripheral modules (e.g. workpiece holding fixtures with several positions).

The activation of the signals and the desired switching behavior must be set in the menu. See Chapter 27.7.3 "Auxiliary functions" on page 139.

For the switching behavior of the signals see Chapter 32.6 "Switching behavior for auxiliary functions" on page 176.

Pins 11 und 12 (IN) Light curtain print area

Two-channel safety circuit for the connection of a light curtain for the print area. See also Chapter 32.7 "Definition of safety zones" on page 179.
If the light curtain print area is not used, these two inputs may not be connected and must remain free.
If two-hand operation is used as a safety guard, the circuit of the automation interface will change.
See Chapter 32.8 "Safety guard – two-hand operation" on page 181.

Pins 13 und 14 (IN) Stoppage feed device

Two-channel safety circuit to connect stoppage monitoring for a feed device.
See also Chapter 32.7 "Definition of safety zones" on page 179.
An operator may only breach the light curtain of the insertion area if a feed device (e.g. rotary table) has stopped moving. The stoppage must be safely monitored.

If a HIGH signal is present, the light curtain of the insertion area can be breached.
If a LOW signal is present, an EMERGENCY STOP will be activated if the light curtain is breached.

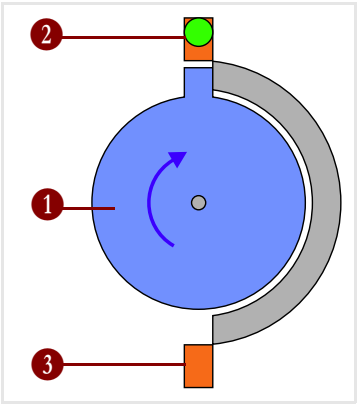
If the signals are not used, both inputs must be connected with 24 V DC (pin 15).

32.6 Switching behavior for auxiliary functions

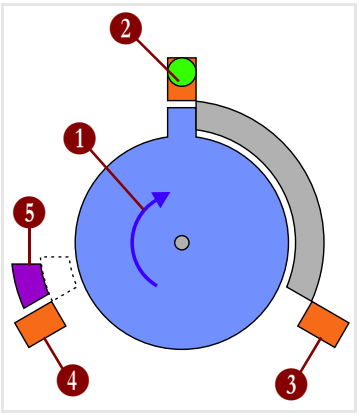
The auxiliary functions enable the movement of the workpiece. This allows several positions to be printed onto a workpiece in a print cycle.

The examples show a turning device. A linear shifting of the workpiece holding fixture is also possible.

32.6.1 Meaning of graphics



1. Rotary drive with fixed limit stops. Can be turned clockwise or counterclockwise. (Here, activated in a clockwise direction.)
2. End switch for position 1 (activated = green indicator).
3. End switch for position 2 (not activated).



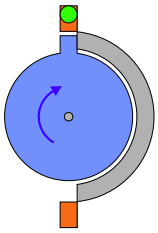
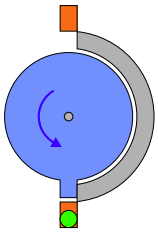
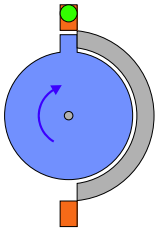
1. Rotary drive with fixed limit stops. Can be turned clockwise or counterclockwise. (Here, activated in a clockwise direction.)
2. End switch for position 1 (activated = green indicator).
3. End switch for position 2 (not activated).
4. End switch for position 3 (not activated).
5. Moveable limit stop, can be actively moved into position. (Without activation the limit stop will passively move into the position.)

32.6.2 2 Position Fixture

The switching behavior of the inputs and outputs is adapted for a workpiece holding fixture with two positions.

Inputs used: **Pin 1 (IN) Prog. IN 1**, **Pin 2 (IN) Prog. IN 2**
Outputs used: **Pin 5 (OUT) Prog. OUT 1**, **Pin 6 (OUT) Prog. OUT 2**
The inputs and outputs with a HIGH signal are each indicated in the table.

After the START button has been pressed, the following auxiliary function will be carried out in AUTOMATIC operation mode.

Positions	Step	OUT	IN
	START		
	**Move rotary drive to home position.** Activate rotary drive in a clockwise direction. Position switch signals that position has been reached.	1	1
	**Move rotary drive to position 2.** Activate rotary drive in a counterclockwise direction. Position switch signals that position has been reached.	2	2
	Press on position 2		
	**Move rotary drive to position 1.** Activate rotary drive in a clockwise direction. Position switch signals that position has been reached.	1	1
	Press on position 1		
	END		

32.6.3 3 Position Fixture

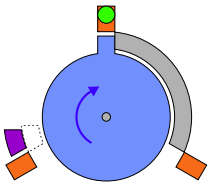
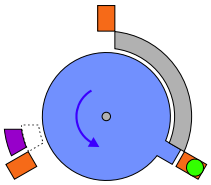
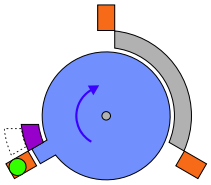
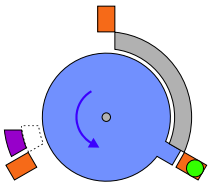
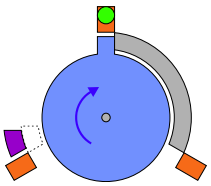
The switching behavior of the inputs and outputs is adapted for a workpiece fixture with three positions.

Inputs used: **Pin 1 (IN) Prog. IN 1**, **Pin 2 (IN) Prog. IN 2**

Outputs used: **Pin 5 (OUT) Prog. OUT 1**, **Pin 6 (OUT) Prog. OUT 2**
Pin 8 (OUT) Prog. OUT 3

The inputs and outputs with a HIGH signal are each indicated in the table.

After the START button has been pressed, the following auxiliary function will be carried out in AUTOMATIC operation mode.

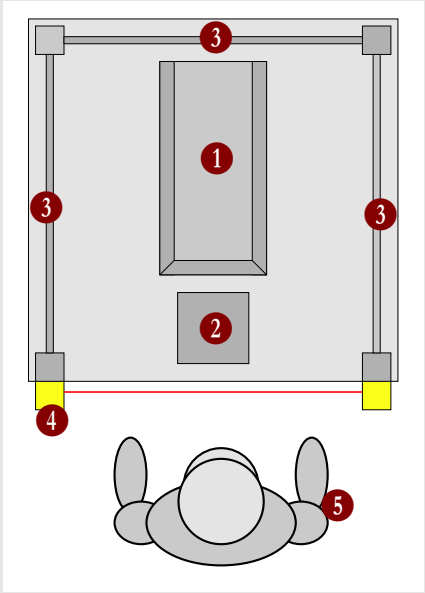
Positions	Step	OUT	IN
	START		
	**Move rotary drive to home position.** Activate rotary drive in a clockwise direction. Position switch signals that position has been reached.	1	1
	**Move rotary drive to position 2.** Activate rotary drive in a counterclockwise direction. Position switch signals that position has been reached.	2	2
	Press on position 2		
	**Move rotary drive to position 3.** Actively move the limit stop into position. Activate rotary drive in a clockwise direction. Position switch signals that position has been reached.	3 1	3
	Press on position 3		
	**Move rotary drive to position 2.** Activate rotary drive in a counterclockwise direction. Position switch signals that position has been reached. Switch off activation for limit stop (OUT 3). The limit stop will passively move into position.	2	2
	**Move rotary drive to position 1.** Activate rotary drive in a clockwise direction. Position switch signals that position has been reached.	1	1
	Press on position 1		
	END		

32.7 Definition of safety zones

The machine's safety guards can be set up in different ways, depending on requirements.

32.7.1 Safety guard with a light curtain

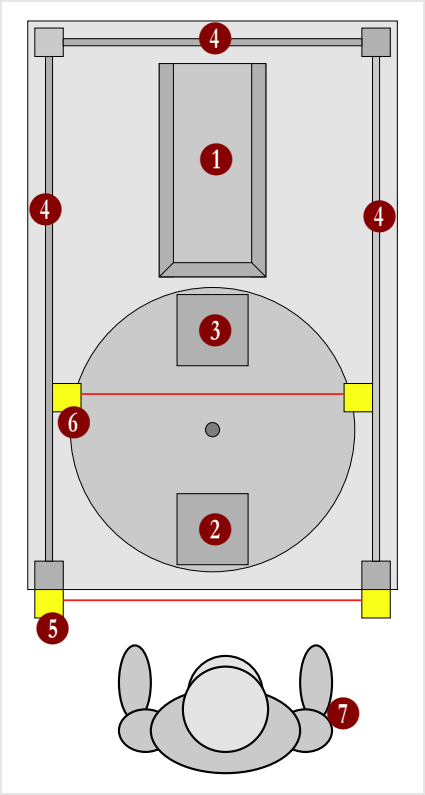
1. Printer
2. Workpiece
3. Safety guard (in some cases with safety doors)
4. Light curtain insertion area
5. Operator



In this set-up there is only one safety zone within the safety guard. The **insertion area** used by the operator for the workpieces is also the printer's **print area**.

- In order to insert a workpiece the operator must reach through the light curtain for the insertion area.
- The light curtain may only be interrupted when the printer is in the home position and is not carrying out any movements.
- CIf the light curtain is interrupted during a machine movement, an EMERGENCY STOP will be activated instantly.
- The light curtain protects the operator from the hazards in the insertion area.

32.7.2 Safety guard with two light curtains



1. Printer
2. Workpiece in insertion area
3. Workpiece in print area
4. Safety guard (in some cases with safety doors)
5. Light curtain insertion area
6. Light curtain print area
7. Operator

The machine has a feed device for the workpieces. This example features a rotary table with two workpiece fixtures. This set-up allows time savings to be achieved. The workpiece can already be changed while the printer is carrying out a print process.

The safety guard is divided into two zones.

Insertion area: This is where the operator changes the workpiece.
Print area: This is where the printer carries out the print process.

Insertion area

- In order to insert a workpiece the operator must reach through the light curtain for the insertion area.
- The light curtain may only be interrupted when the feed device (rotary table) is not carrying out movements.
- If the light curtain is interrupted while the feed device (rotary table) is moving, an EMERGENCY STOP is activated immediately.
- The light curtain protects the operator from the hazards in the insertion area.

Print area

- The light curtain may only be interrupted when the printer is in the home position and is not carrying out any movements.
- CIf the light curtain is interrupted during a machine movement, an EMERGENCY STOP will be activated instantly.
- The light curtain protects the operator from the hazards in the print area.

32.8 Safety guard – two-hand operation

If two-hand operation is used as a safety guard, the circuit of the automation interface will change.

The connections for the light barriers will be used for the connection of two-hand operation.

For this, the function must be activated in the ADMIN SETTINGS menu.
See Chapter 28.12 "Safety guard" on page 157.

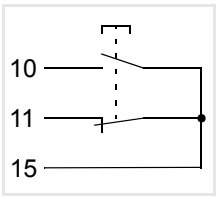
32.8.1 Terminal assignment

The signals marked in yellow in the table are safety-related and it is imperative that they are observed when integrating the machine into higher-level systems.
Only circuit components which correspond to the required safety category may be connected.

25-pole port

Pin	Signal	Function	Beschreibung
...	...		
10	IN	Two-hand operation	Button 1 (NO)
11	IN		Button 1 (NC)
...	...		
15	OUT	24V DC	Voltage is present when mains switch is switched on.
...	...		

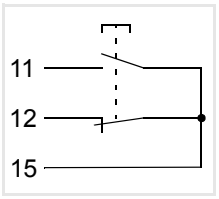
Connection from button 1 of two-hand operation.



15-pole port

Pin	Signal	Function	
...	...		
11	IN	Two-hand operation	Button 2 (NO)
12	IN		Button 2 (NC)
...	...		
15	OUT	24V DC	Voltage is present when mains switch is switched on.

Connection from button 2 of two-hand operation.



32.8.2 Function

- Both two-hand operation buttons must be pressed simultaneously to trigger a function.
- If one of the buttons is released while the machine is carrying out an automatic movement procedure, an EMERGENCY STOP will be triggered.

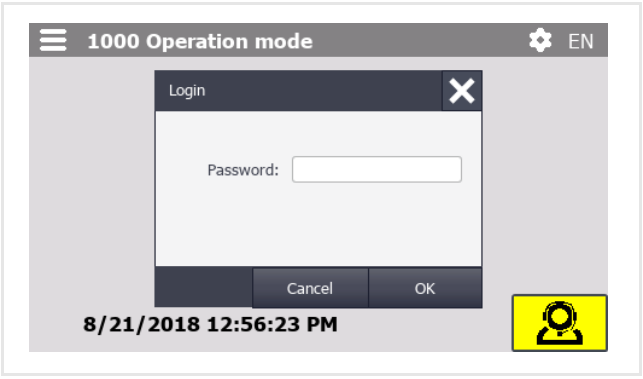
IMPORTANT INFORMATION	
	This page can be removed from the instruction manual in order to limit the dissemination of passwords. This will help to ensure that passwords are only made available to authorized persons.

The passwords can not be changed.

Password-protected access to the **Settings** menu can be gained via a push button which is labeled with this symbol.

Password-protected access to the **Admin Settings** menu can be gained via a push button which is labeled with this symbol.

When calling up the menu, the “Log in” window initially appears.



Activating the data entry fields opens an on-screen keyboard.
The following data must be entered:

Menu level: Settings

Password = **0100**

Menu level: Admin Settings

Access to the Admin Settings menu is restricted to employees of the manufacturer.

Once you have entered the required data, confirm by pressing the “OK” push button.
The log in window closes.

Access to the menu is now enabled.

34 Annex

34.1 Supplementary documents

Further documents are available depending on the machine equipment and design.
These documents are part of the machine documentation and must be carefully stored and observed.

The following documents may be available in the annex from Page 186 onwards:

34.1.1 Pneumatics diagram

- Drawing of the pneumatic drive and control circuits of the machine.

34.1.2 Circuit diagram

- Drawing of the electric drive and control circuits of the machine.

34.1.3 Declaration of Incorporation

- Declaration of incorporation when dealing with incomplete machinery intended for installation into larger systems and which are not equipped with sufficient independent safety equipment.

34.1.4 Declaration of Conformity

- Declaration of Conformity for machinery that is supplied with complete safety equipment.

34.1.5 Special functions

- Individual modifications to the function or operation associated with special functions.

34.1.6 Additional assemblies.

- Additional equipment or assemblies from third-party manufacturers on the machine which have their own documentation.

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