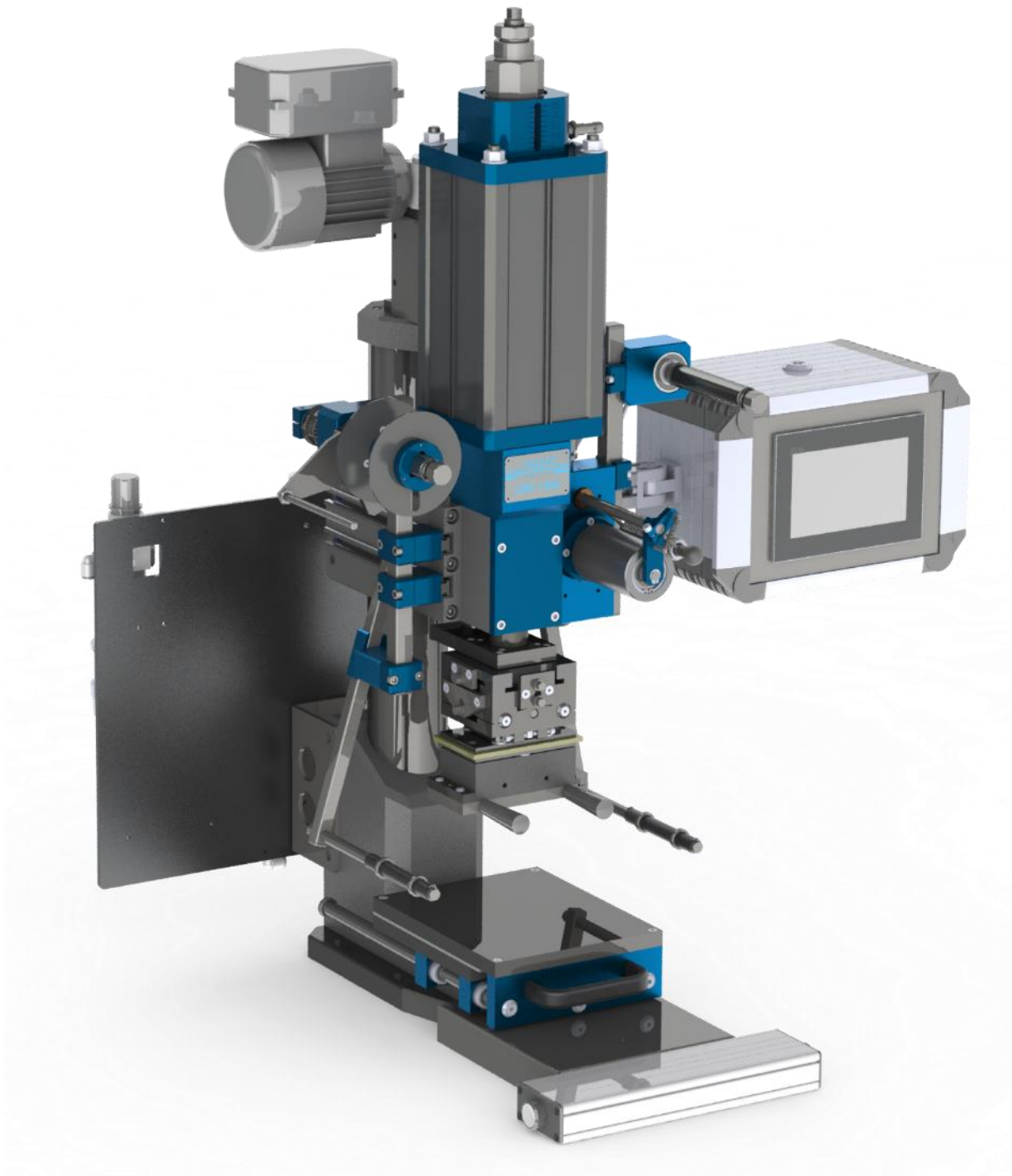


# Operating Instructions LMC



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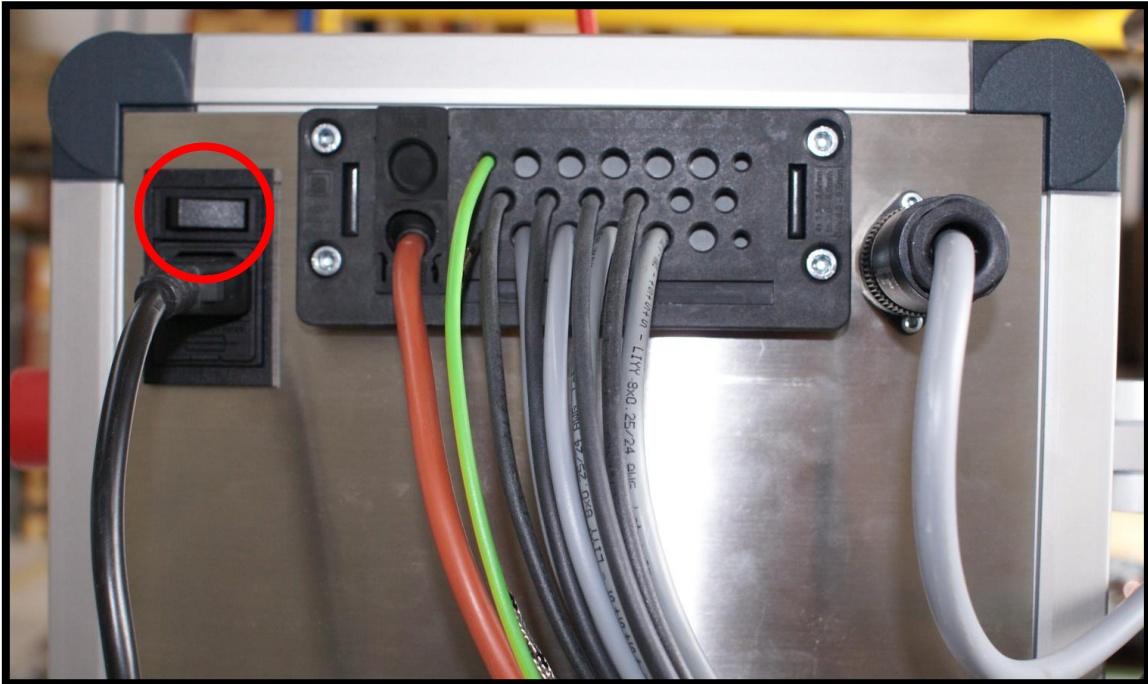
## History of the versions

File name: [Operation\\_PE10\\_V1\\_German.docx](#)

Version	Author	Date	Reason for change / Remarks
1	RH	25.02.20	Newly created
3	GP	20.03.20	Translation from German

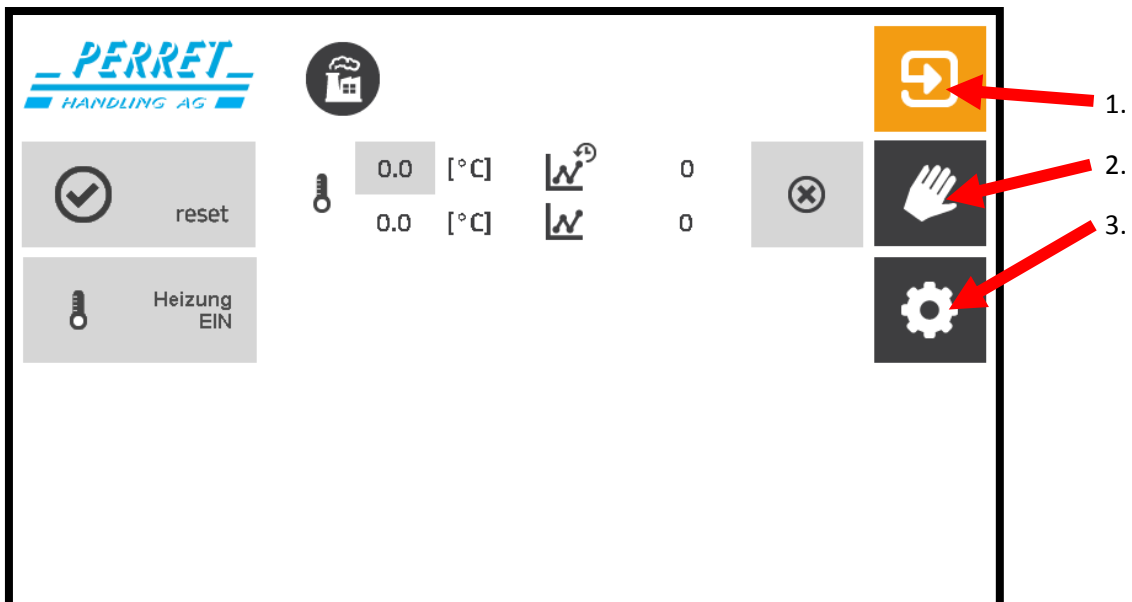
## Control system

### Switch on the machine



The machine is started by pressing the toggle switch on the rear of the control unit. The boot process may take a moment.

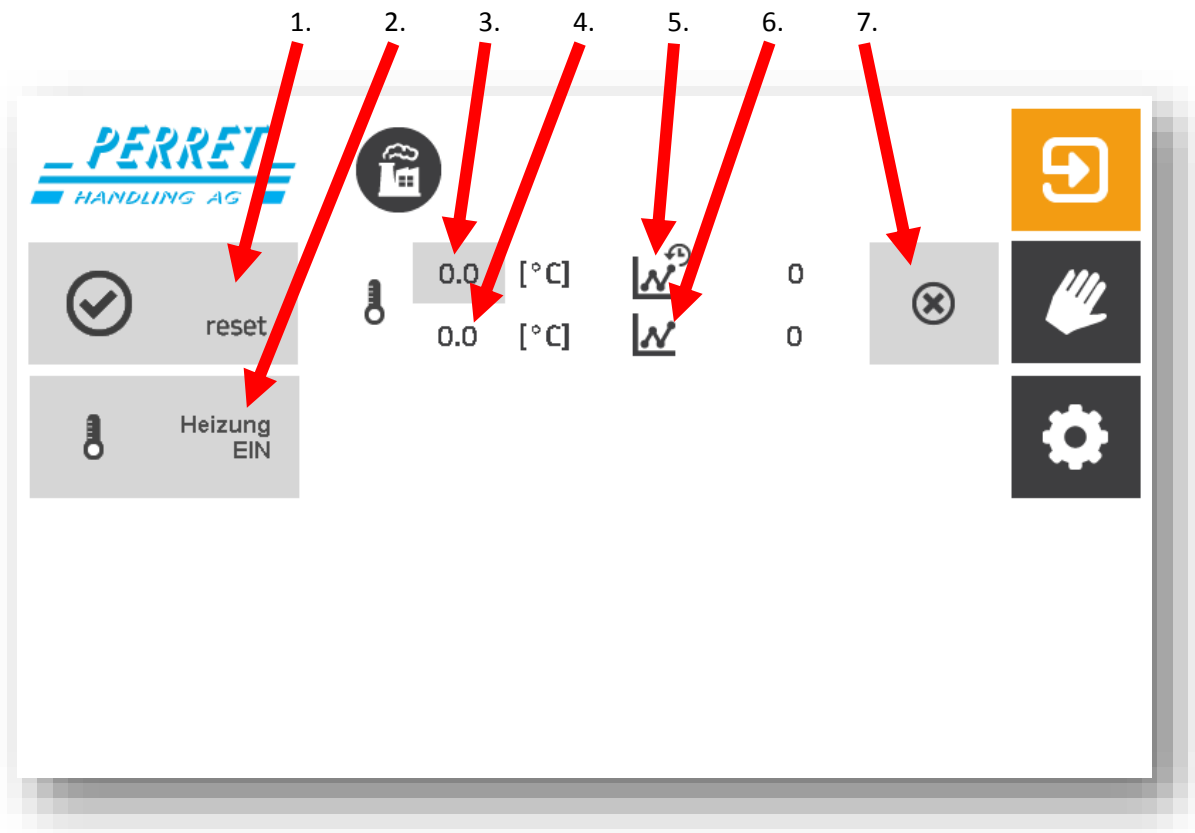
After starting the machine, the safety system must be enabled. The safety system is acknowledged with the "Reset" button. No emergency stop must be activated.



1. Automatic operation
2. Manual operation
3. Settings

## Automatic mode

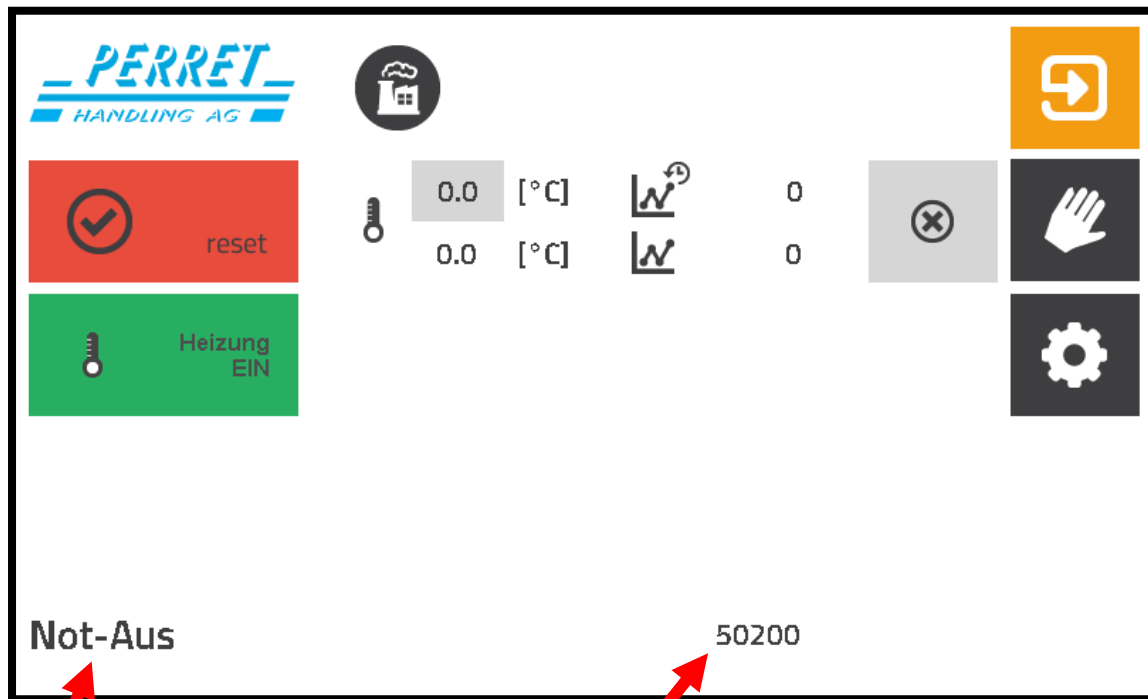
Display information in automatic mode



1. Reset
2. Heating ON/OFF
3. ACTUAL-temperature
  - a. If the temperature is above or below the set temperature range, the temperature display is • highlighted in red and the process cannot be started. If the temperature display is • highlighted in green, the temperature is in the sat range.
4. TARGET-temperature
5. Preset counter
6. Set series size
7. Counter reset
8. Caution! Hot surface!
  - a. This symbol appears when the heating has reached a temperature of  $\geq 70$  ° C.

### Display information in automatic mode in case of error

As soon as an error occurs in the process, the machine stops and the error is displayed. The error must be eliminated on the machine and acknowledged with the "Reset" button. The machine then initialises itself and moves to the home position. The cycle that led to the error is aborted.



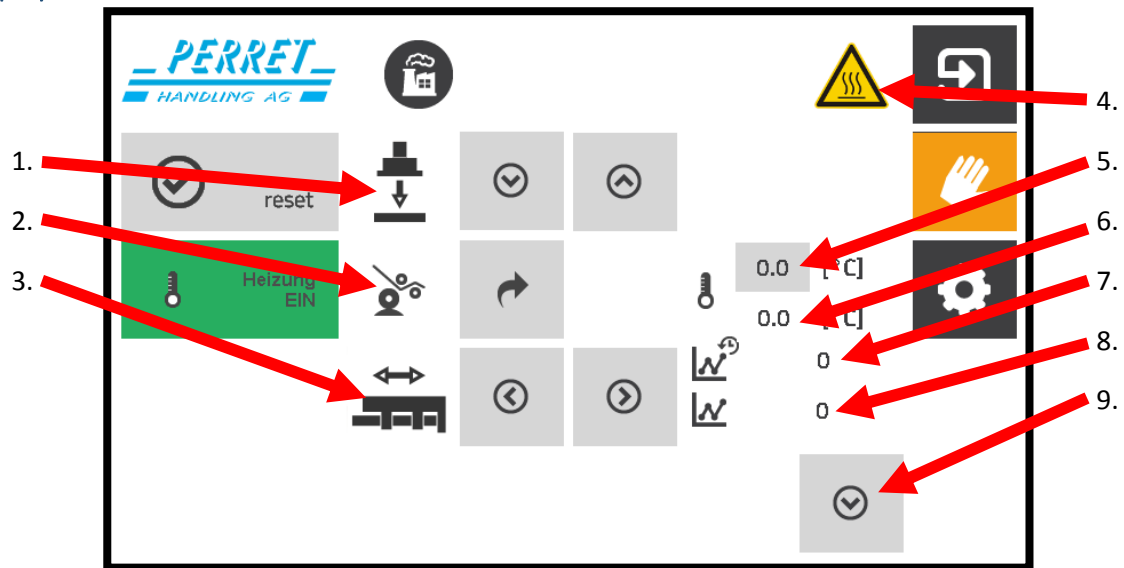
1.

2.

1. Error
2. Error code

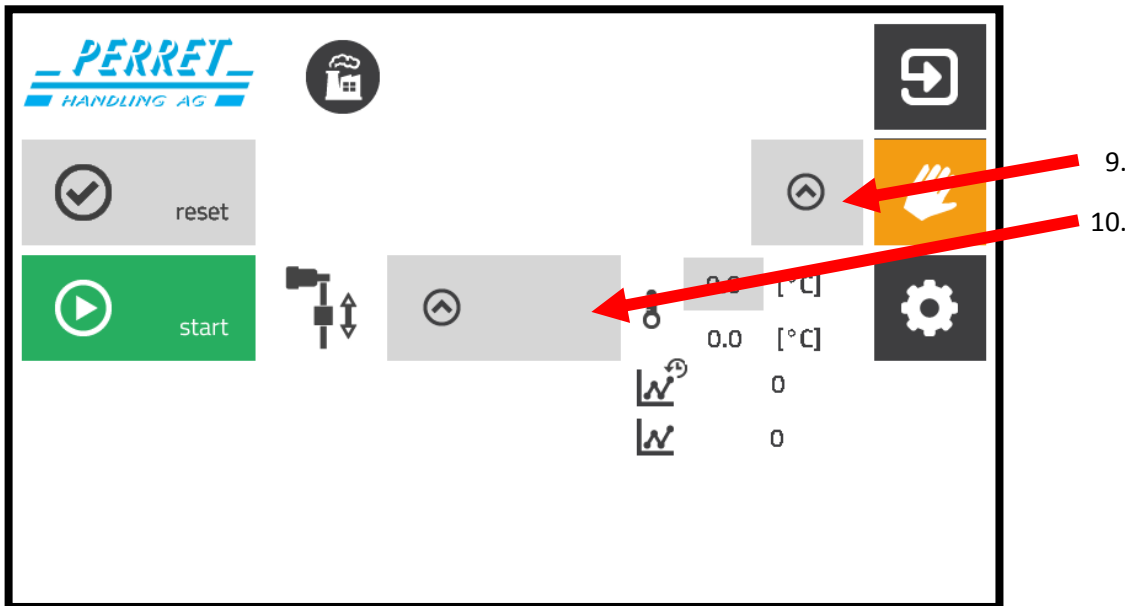
## Manual operation

### Display information in manual mode



1. Raise/lower embossing cylinder
  - a. Two-hand operation: To lower the embossing cylinder, the corresponding key and then by pressing the Two-hand operation must be confirmed.
  - b. Light curtain: To lower the embossing cylinder, the corresponding key and connect by pressing the foot pedals are confirmed. The light curtain may not be disturbed.
2. Film transport cycle
3. Sliding table forward / backward
4. Heads up! Hot surface!
  - a. This symbol appears when the heating has reached a temperature of  $\geq 70^{\circ}\text{C}$ .
5. ACTUAL temperature
6. SET temperature
7. Preset Counter
8. Set series size
9. turn the page

Height adjustment embossing head



10. turn the page

11. Raise/lower embossing head (height adjustment)

- a. Before moving the embossing head, the clamping levers must be released laterally.
- b. To minimize the play of the embossing head (to the column), tighten the clamping levers laterally again before starting work.
- c. Press the arrow key to switch between raising and lowering. To move the embossing head, keep the "Start" key pressed. (the head moves as long as the field remains pressed).

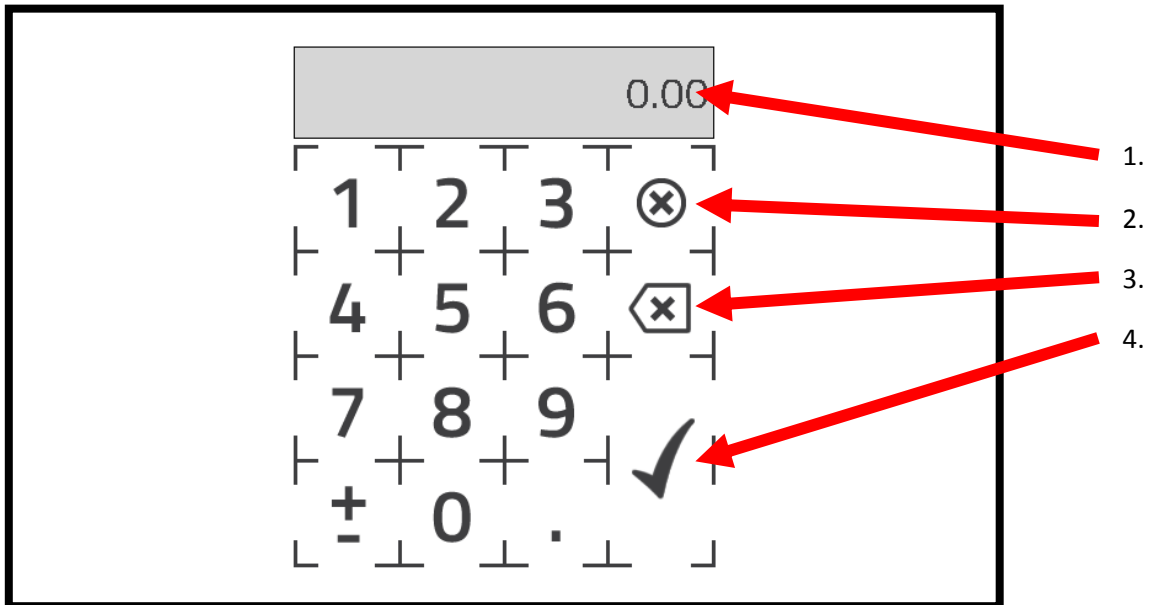


## Settings Selection

### Input of numerical values

Changeable values are highlighted in grey in the settings.

To change numerical values, tap on the corresponding field. The window with the numerical input field opens on the display.

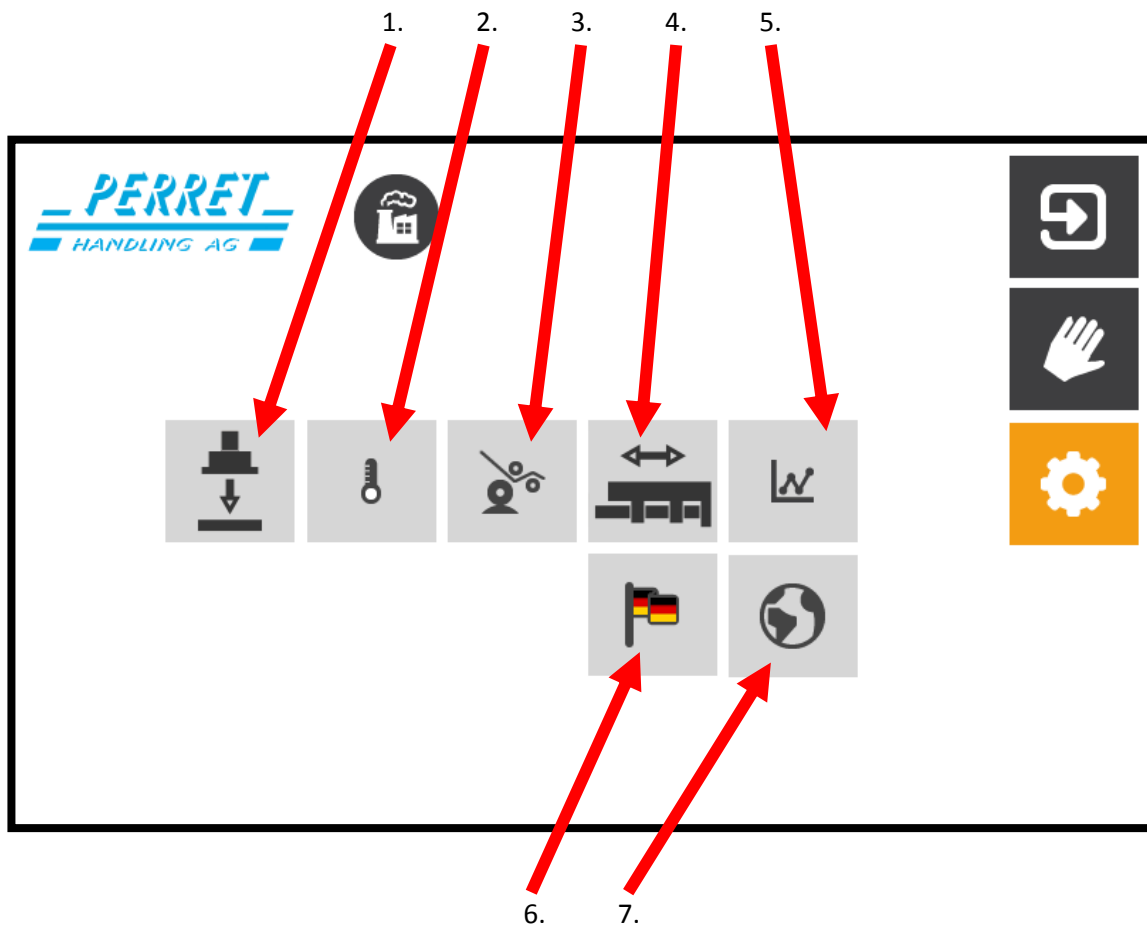


1. Display current / edited value
2. Cancel input, do not accept a new value / close input
3. Delete last character
4. Confirm new value / input window is closed

### Input limit

For each input field, the system checks the valid range for the corresponding parameter. If a value is entered that is too small or too large, the system will not accept it. The smallest / largest possible value for this parameter is displayed in the numeric input field. The entry must be repeated accordingly with a valid value.

Display information during setting

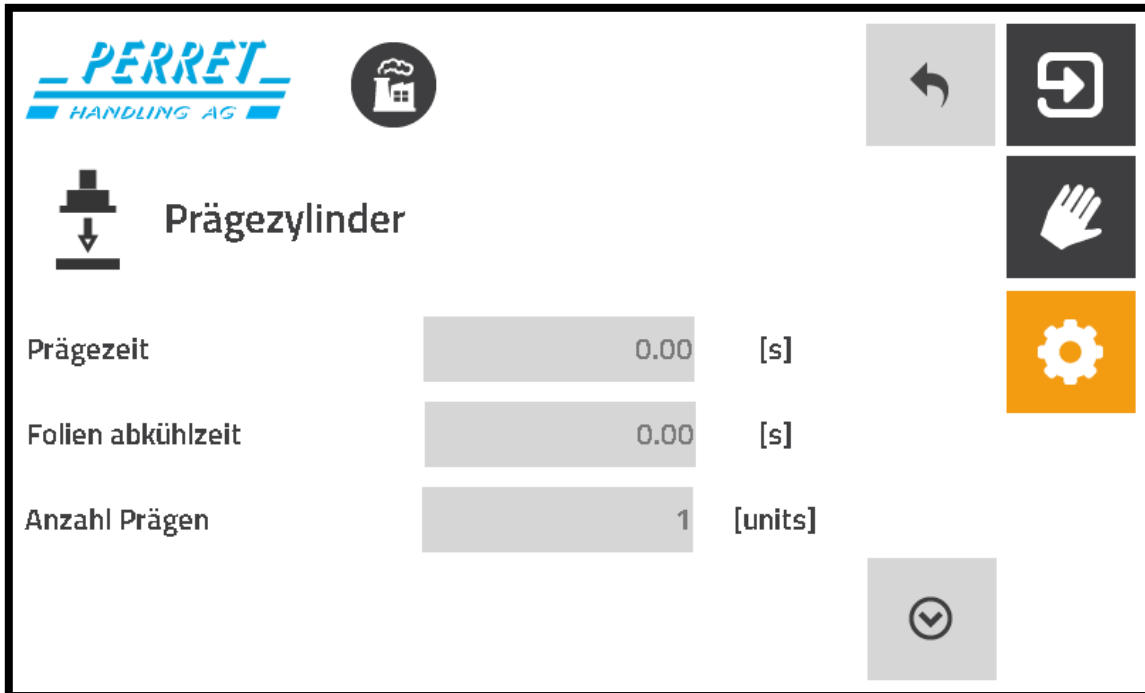


1. Settings embossing cylinder
2. Heating settings
3. Film transport settings
4. Sliding table settings
5. Settings Counter
6. Language settings
7. System settings

Note: Depending on the configuration of the machine, the image on the display may contain different keys, as only the functions supported by the current configuration can be set.

Settings

Settings embossing cylinder



Embossing time: Set embossing time.  
Time the cylinder remains in the lower position during stamping.

Foils cooling time: Set cooling time after stamping.  
Delays foil transport and the following movements.

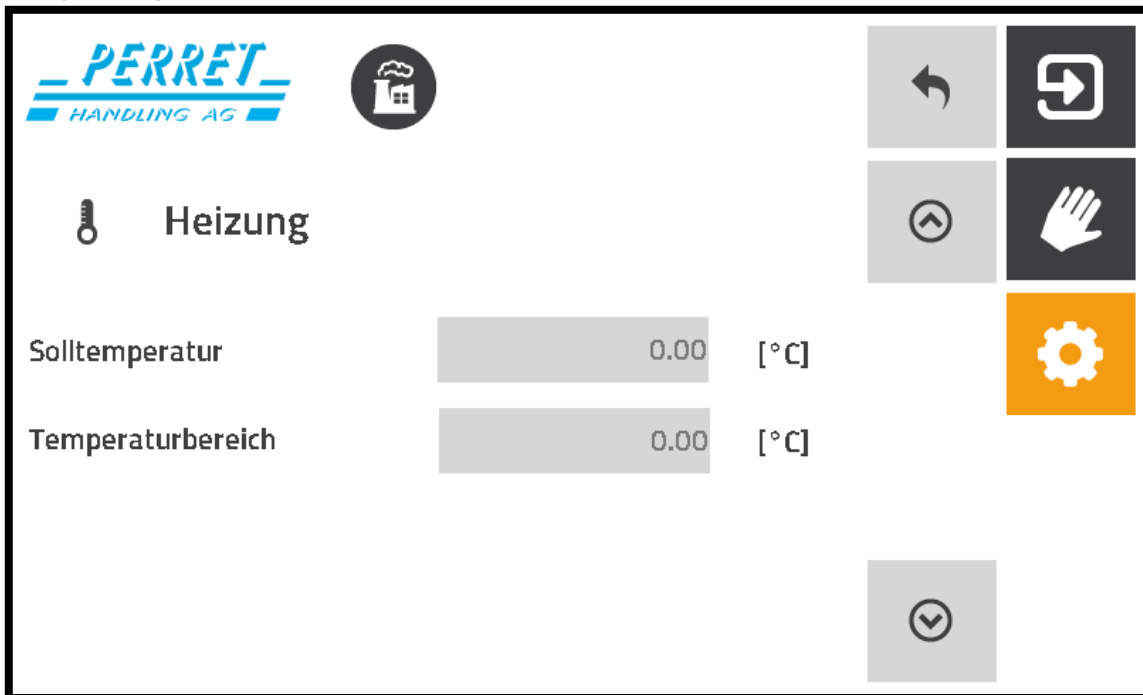
Number of embossing: Number of embossing strokes.  
**Attention:** If several embossing operations are set on the machine with two-hand operation, the 2-hand buttons must be operated for each embossing stroke (must be operated throughout the entire process).  
If the two-hand control is released between the embossings, the process is interrupted.  
The process can be continued by pressing the 2-hand buttons again. If the process is not continued after a short time, an error message appears. In this case the entire process must be repeated.

To change numerical values, tap on the corresponding field. The window with the numerical input field opens on the display.



Use the arrow keys ↑/↓ to scroll between the different settings. The arrow key ← leads directly back to the settings menu.

Heating settings



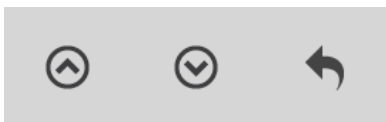
SET temperature: Set the temperature of the heating. (max. 300 °C)

Temperature range: Temperature hysteresis, permissible deviation (as tolerance field) from the SET temperature.

Example: At a set temperature of 50°C and adjusted Temperature range of 20°C. This gives a temperature range of 40-60°C (±10°C).

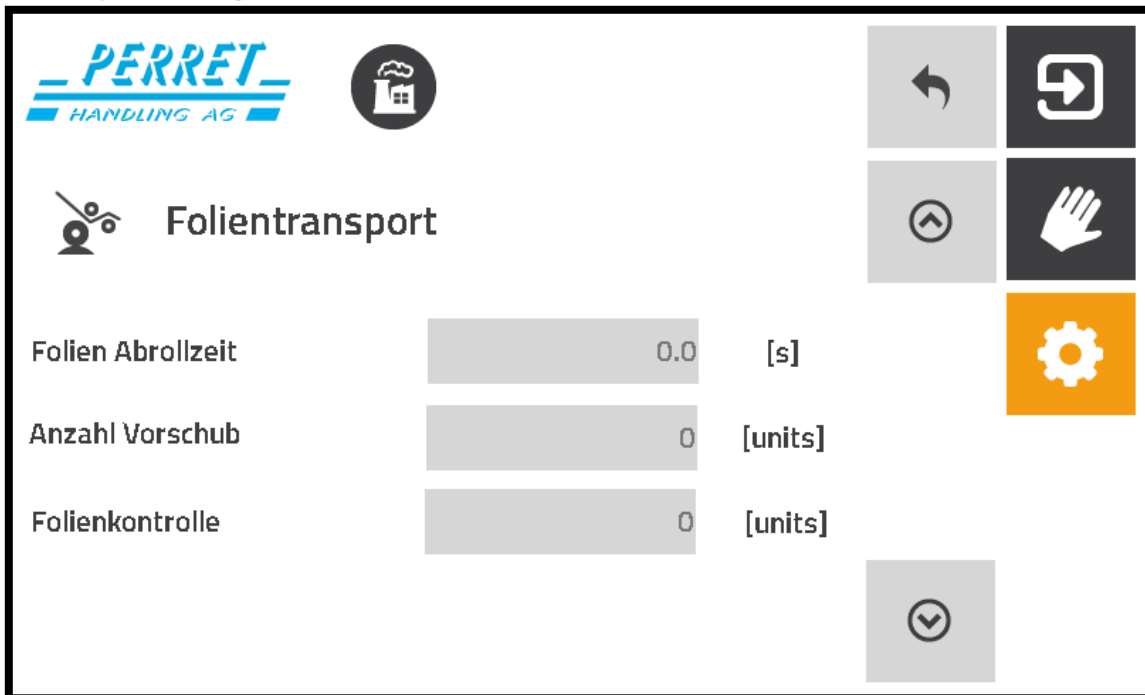
Is the temperature above or below the set temperature range, the temperature display is highlighted **-red** and the process cannot be started. can be started. If the temperature display has a **-green** background Temperature in the set range.

To change numerical values, tap on the corresponding field. The window with the numerical input field opens on the display.



Use the arrow keys ↑/↓ to scroll between the different settings. The arrow key ← leads directly back to the settings menu.

Film transport settings

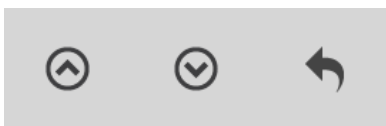


Film unwinding time: Unwinding time for film transport, according to the settings on the cylinder (distance/speed). (For further information see section "Feed settings").

Number of feeds: Number of foil feeds.

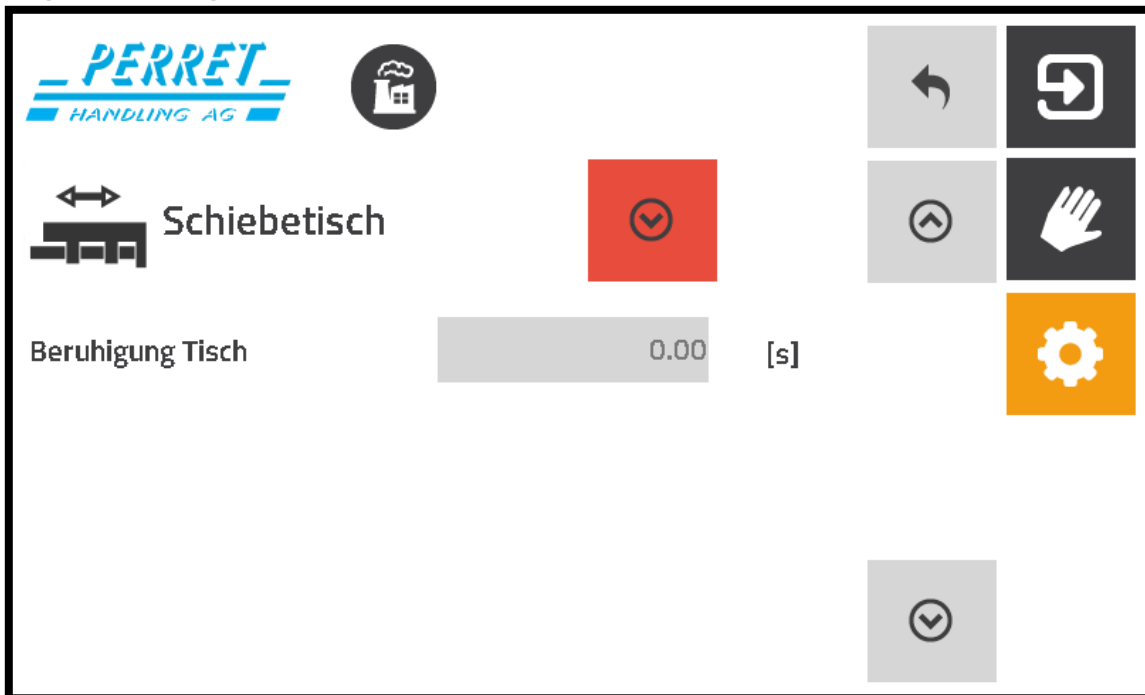
Foil control: 0: Foil control switched off  
>0: With sensor for foil control, input of permissible stamping cycles without impulse from the sensor foil control.

To change numerical values, tap on the corresponding field. The window with the numerical input field opens on the display.



Use the arrow keys ↑/↓ to scroll between the different settings. The arrow key ← leads directly back to the settings menu.

Sliding table settings



Green button ↑: The sliding table remains in working position.

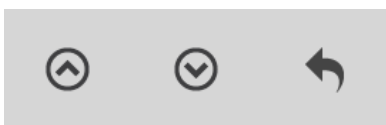


Red button ↓: The sliding table moves during the process from the loading position to the Working position and back.

Calming table: Set calming time for the sliding table.

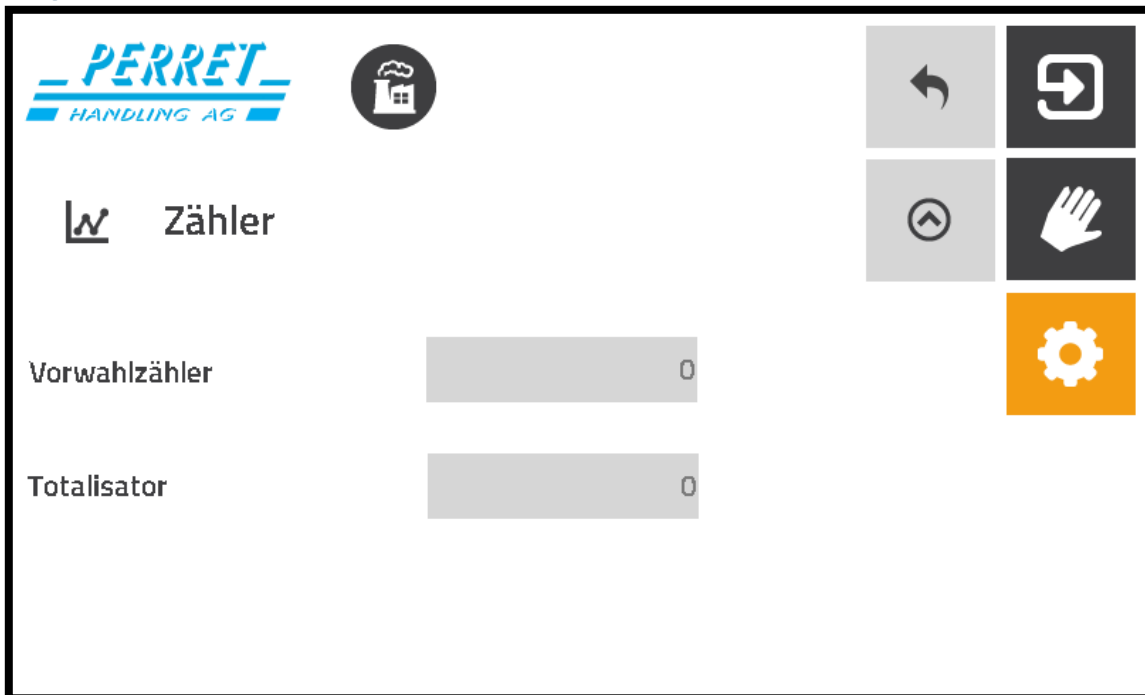
The settling time causes a delay between the run-in of the sliding table and the lowering of the embossing cylinder.

To change numerical values, tap on the corresponding field. The window with the numerical input field opens on the display.



Use the arrow keys ↑/↓ to scroll between the different settings. The arrow key ← leads directly back to the settings menu.

Settings Counter



Preset counter: Set number of pieces.  
 0: Counter counts up without preset  
 >0: Preselected number of pieces, after preset the counter counts down.  
 If the counter is at 0, the preset must be reset with Preset.

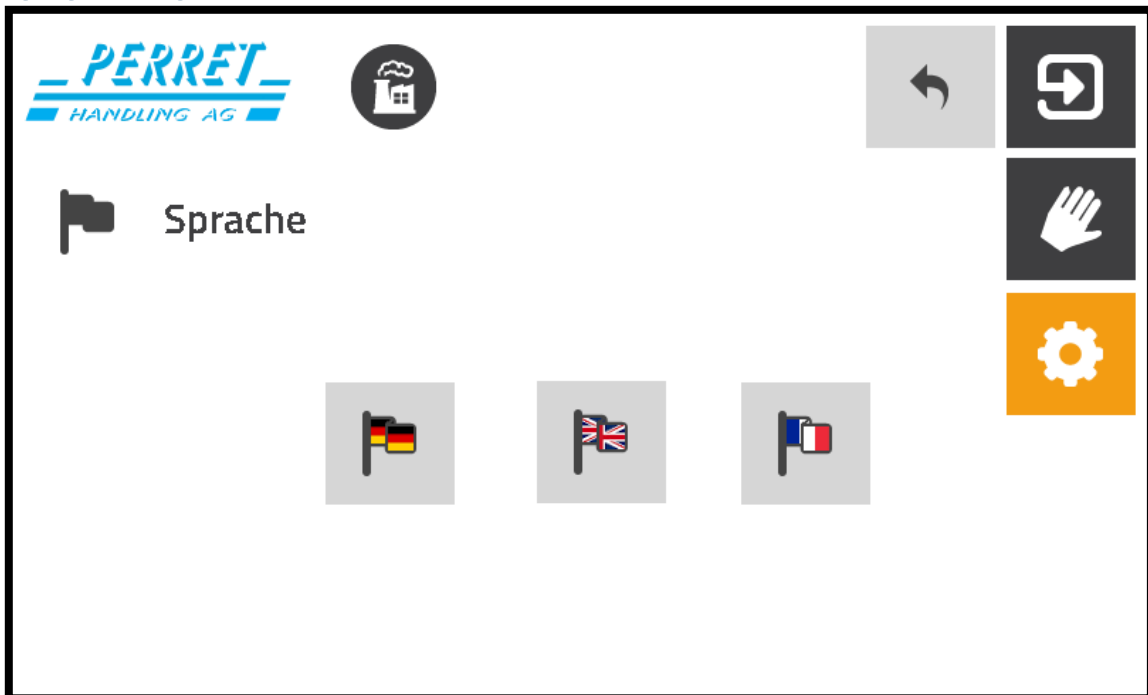
Totalizer: Counter of the total number of pieces (cannot be reset)

To change numerical values, tap on the corresponding field. The window with the numerical input field opens on the display.



Use the arrow keys ↑/↓ to scroll between the different settings. The arrow key ← leads directly back to the settings menu.

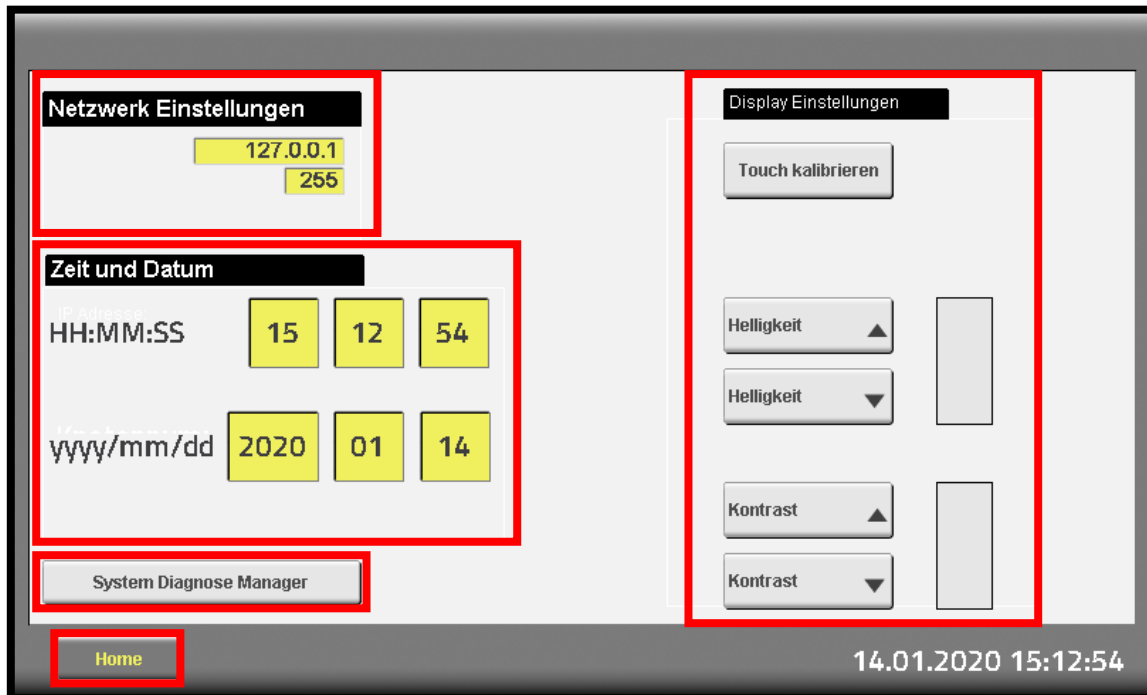
## Language setting



In the language menu you can choose between the languages German, English and French. By touching the button of your choice the language is changed.



System settings



Network settings:

IP address of the machine

Time and date:

Set the appropriate time and date.

To change numerical values, touch the corresponding field. The window with the numerical input field opens on the display.

Display Settings:

If problems occur with the touch input, the touch screen can be recalibrated here by pressing the "Calibrate Touch" button.

Brightness and contrast can be corrected by pressing the corresponding keys up or down.

The lifetime of the display can be influenced by adjusting the brightness, the brighter the shorter the lifetime!

System Diagnostic Manager: The "System Diagnostic Manager" button takes you to the system diagnostics menu where you can find further system information.

Home:

The "Home" button closes the system settings.

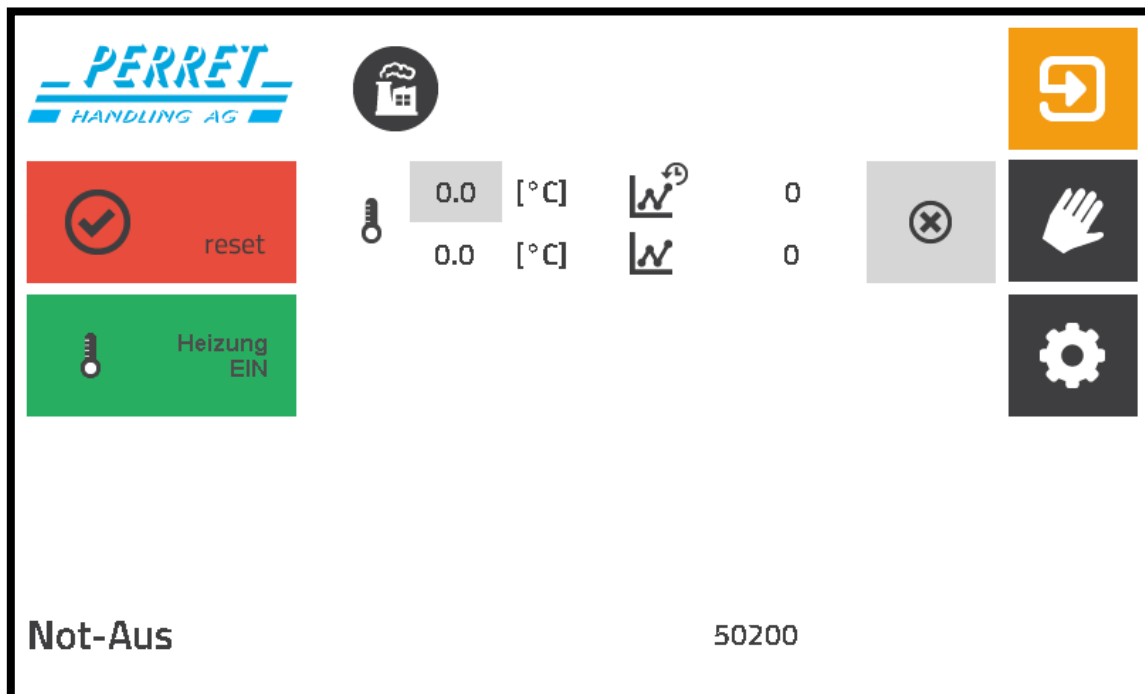
## Software update

### Preparation

- Prepare USB stick with FAT format
- Copy the installation file from the machine manufacturer to USB stick.

### Installing the software on the controller

- Heating is switched off!
- Switch off the machine
- Open the controller, there are 2 USB interfaces on the back of the panel
- Insert USB stick with installation files into one of the two USB sockets
- Closing and switching on the control unit
- The installation is executed, screen dark with information text
- End of the installation

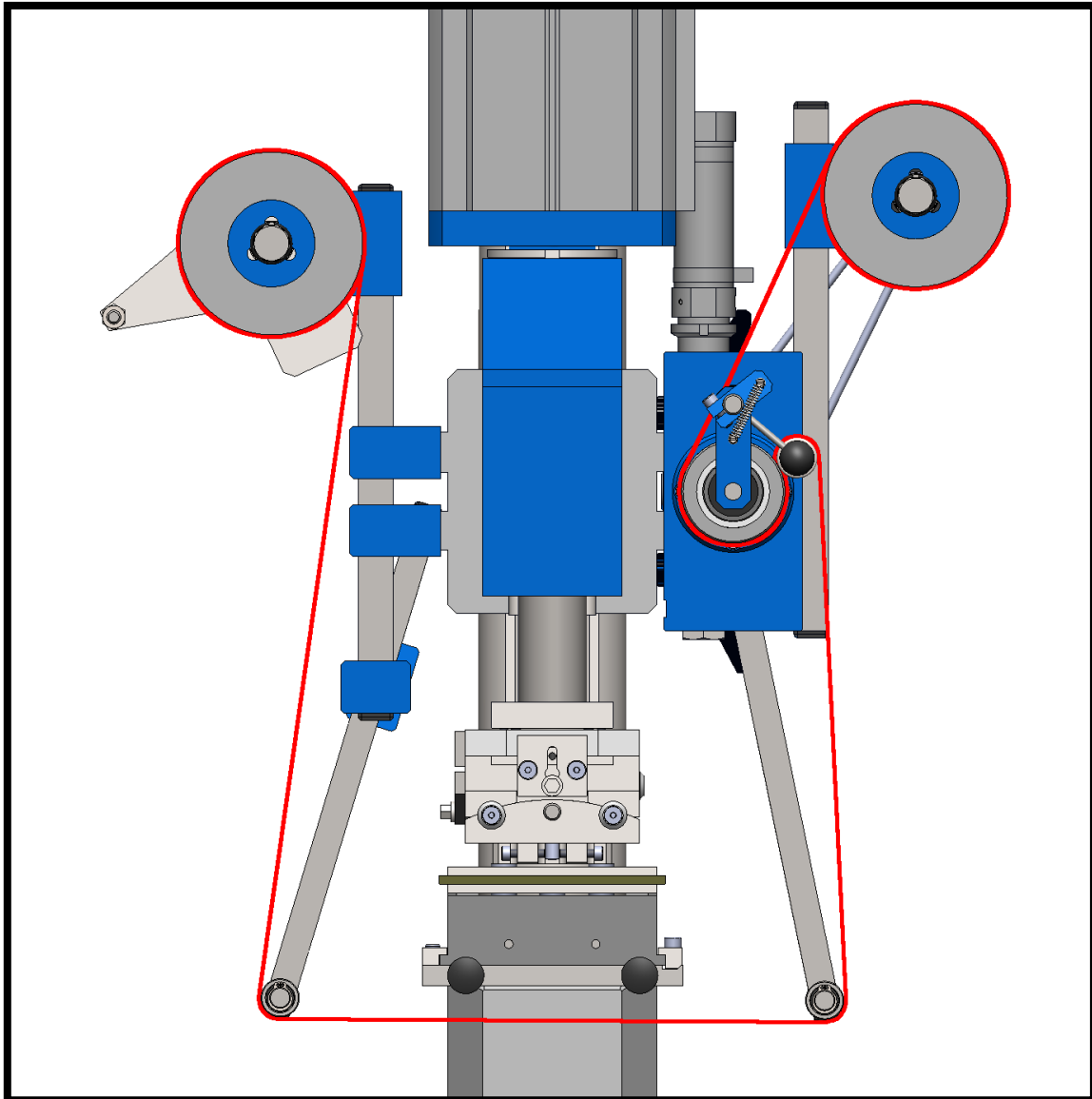


- Switch off the machine
- Open control unit, remove USB stick
- Closing and switching on the control unit

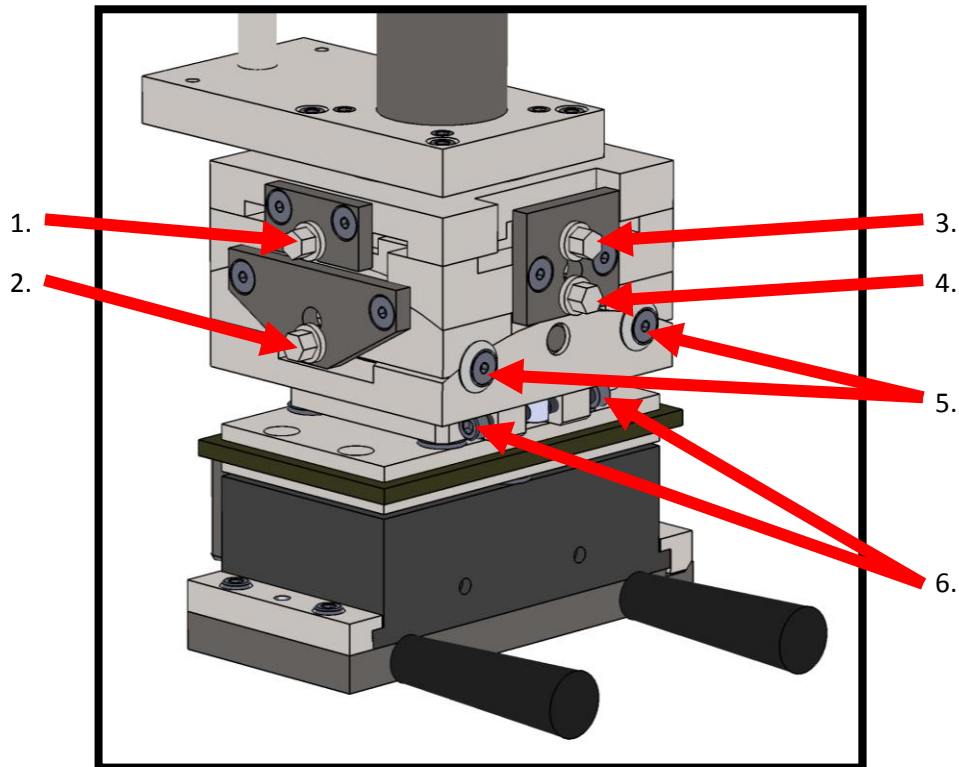
## Machine

### Foil run

Clamping of the film is done according to the following illustration:



5-axis head



**1. Adjustment X-axis**

- a. Turn WITH clockwise, punch moves to the LEFT.
- b. Turn counterclockwise, punch moves to the RIGHT.

**2. Adjustment Swivel X-axis**

- a. Turn WITH clockwise, punch deeper LEFT.
- b. Turn counterclockwise, punch RIGHT lower.

**3. Adjustment Y-axis**

- a. Turn Clockwise, punch moves to the rear.
- b. Turn counterclockwise, punch moves forwards.

**4. Adjustment Swivel Y-axis**

- a. Turn Clockwise, Punch FORE lower.
- b. Turn counterclockwise, Rear punch deeper.

**5.**

Loosen

6 screws for locking the 5-axis head before adjustment.

Retighten after adjustment.

- a. Front screws: Swivel X-axis
- b. Rear screws: Swivel X-axis
- c. Screws right: Swivel Y-axis

**6. Adjustment Turning**

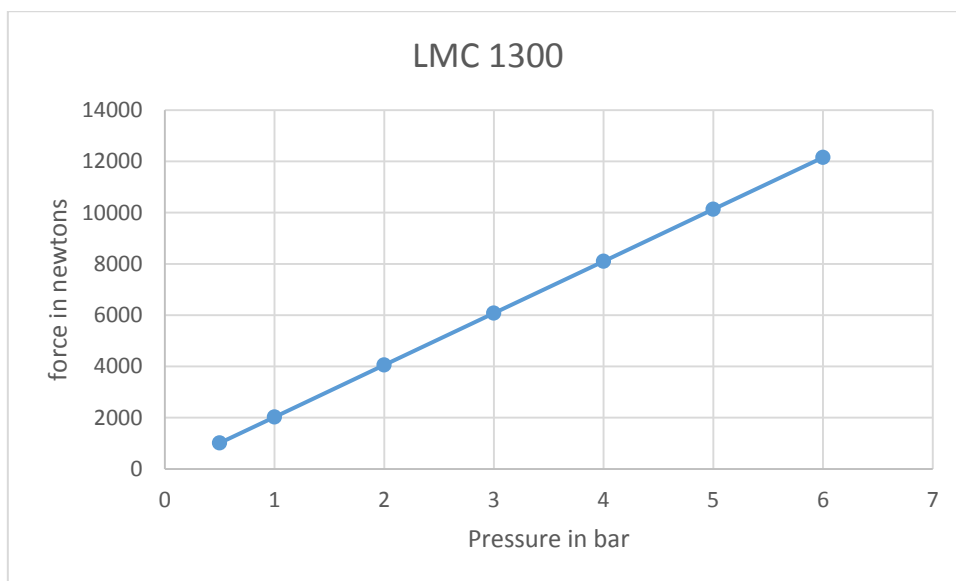
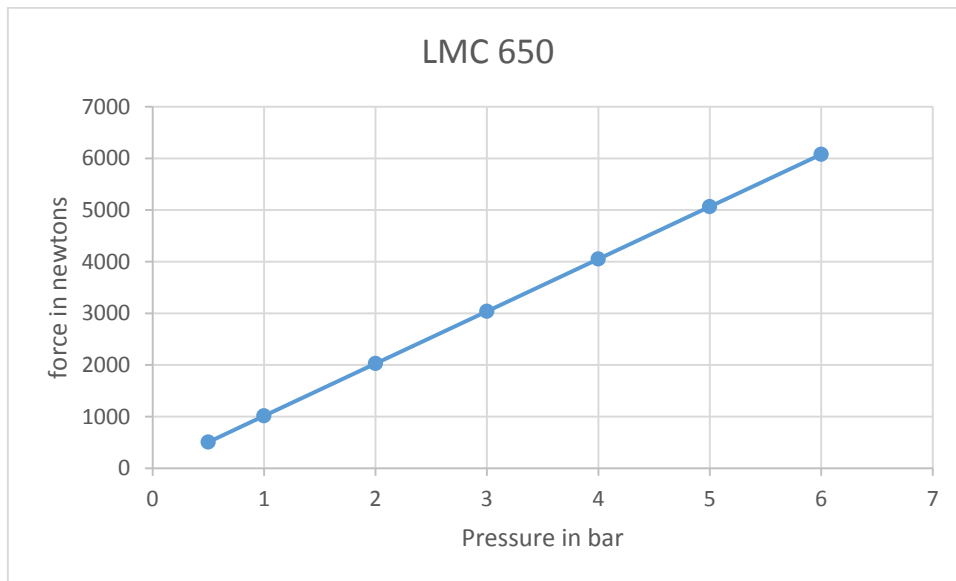
Turn the whole head LEFT/RIGHT.

To turn, one of the two screws (depending on the direction of rotation) must be loosened.

Set the desired position with the other screw. Finally, lock with the screw that was loosened first.

Settings embossing cylinder

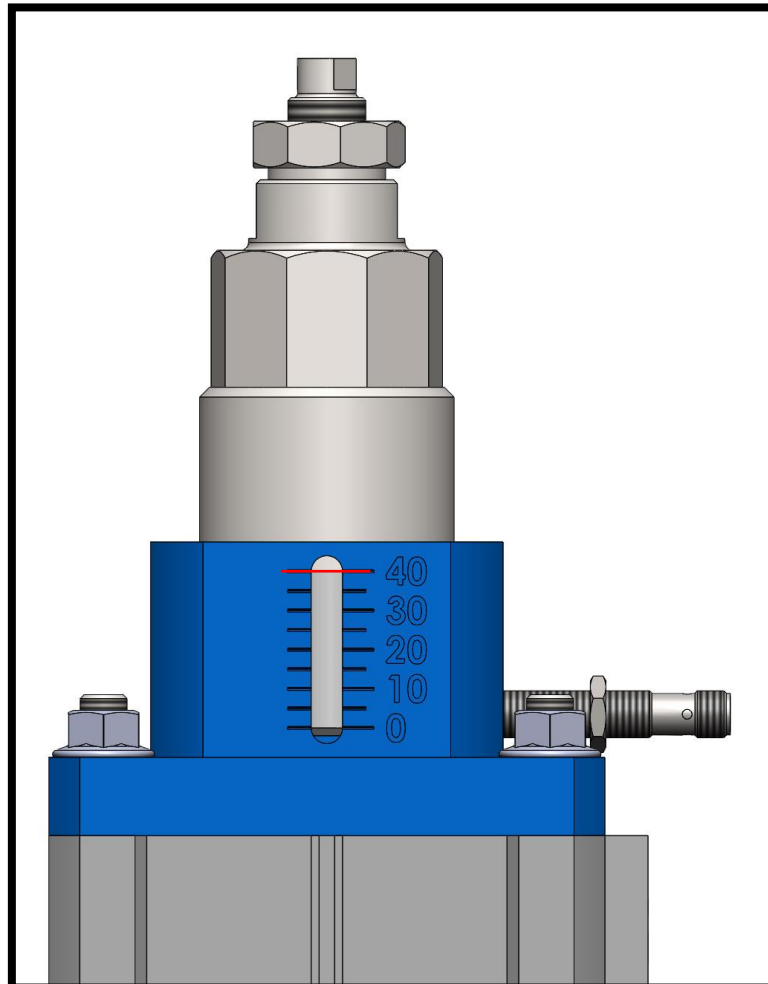
Embossing force diagram



### Cylinder stop

The cylinder stop nut is screwed in or out to adjust the cylinder stroke.

**Attention:** If the cylinder stop nut is screwed out too far, e is no longer detected by the sensor. The cycle remains in the extended position and an error is displayed. The error must be corrected on the machine and acknowledged with the "Reset" button.

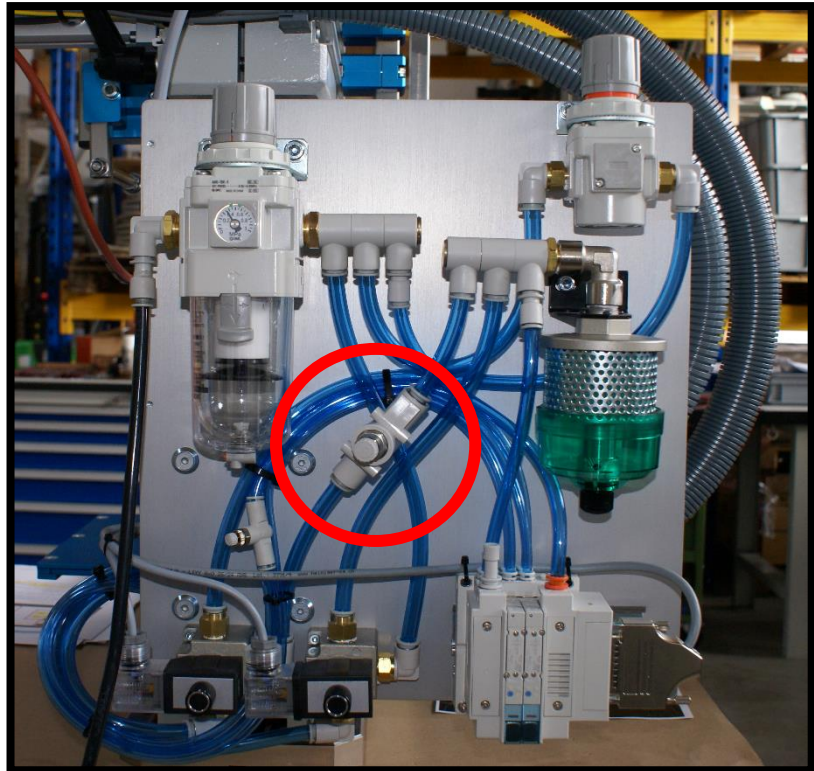
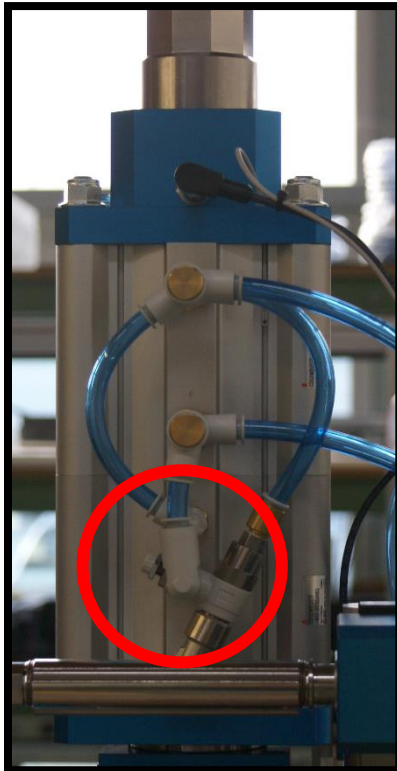


### Setting the lifting speed of the embossing cylinder

By adjusting the throttles of the embossing cylinder the lifting speed is adjusted. Both the extension and retraction of the cylinder can be adjusted independently.

The throttle located on the side of the embossing cylinder is responsible for adjusting the extension speed. (See picture)

To adjust the retraction speed, the throttle is used in the middle of the pneumatic plate.



### Adjustment cylinder film transport

Due to the construction the foil feed is limited.

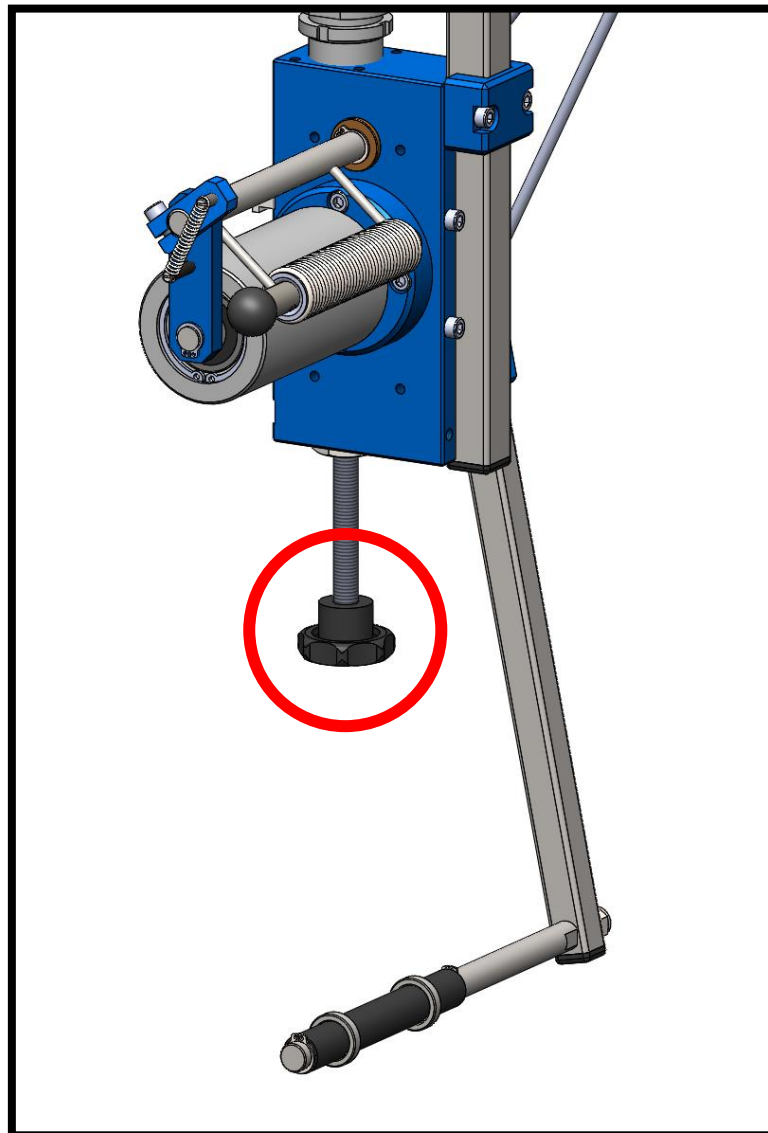
The maximum film feed that can be achieved in one process at a time is approx. 180mm.

The speed at which the cylinder extends or retracts is determined by the throttle on the cylinder.

If now, in the settings for the foil transport, a too high value is entered for the "foil unwinding time", it is possible that the foil feed exceeds the maximum feed.

The "foil rolling time" must therefore be coordinated with the choke.

In addition, the stroke of the cylinder can be limited by the rotary handle on the bottom of the unit. (See picture)





### Coupling height adjustment Embossing head

The electronic height adjustment of the embossing head is equipped with a safety clutch to prevent the motor from overheating and the spindle from jamming.

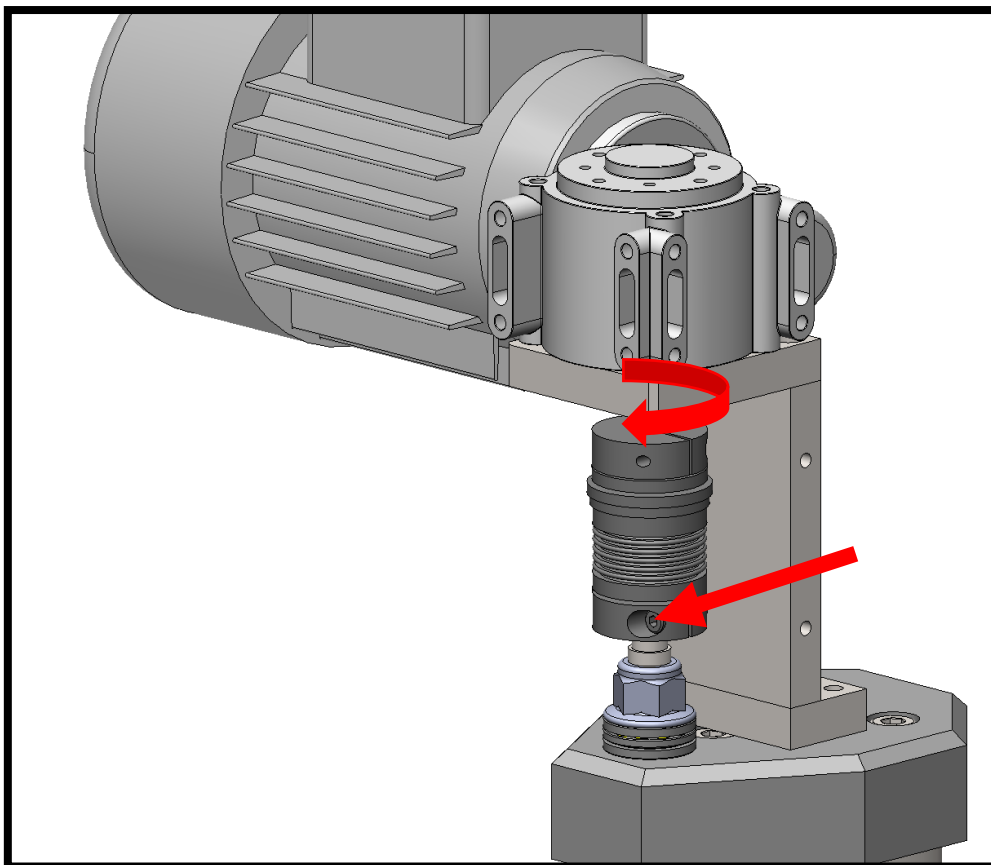
When the embossing head is moved to the stop (up/down), the clutch engages and allows the motor to rotate. When driving in the opposite direction, the clutch re-engages.

If the clutch does not re-engage directly, you can try to find the engaged position by briefly pressing the "Start" button (in manual mode).

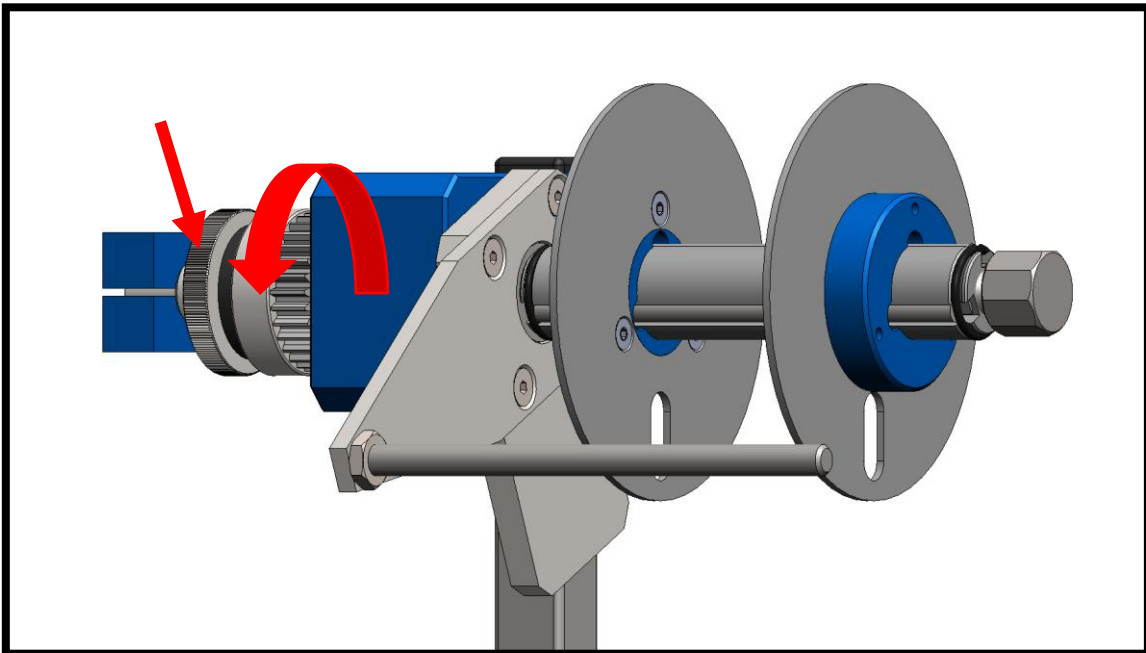
**Attention:** If you drive with a lot of momentum to the lower stop it can happen that the clutch gets tightened by the high torque. If the clutch does not re-engage when driving up, it must be released manually. (See instructions below).

### Release jammed lifting spindle

1. Remove the lifting spindle coupling cover
2. Now turn the coupling clockwise  $\curvearrowright$ . After a few degrees of rotation the clutch should be free again.
  - a. Use an Allen key and insert it into the screw head on the coupling to facilitate turning (see arrow).



## Coupling unwinding side



By turning the knurled piece on the clutch, the resistance of the roll can be adjusted.

Turn counterclockwise (from front/arrow direction): Rolling resistance increases.

Turning clockwise: Rolling resistance is reduced.

### Data sheet safety coupling:

## INSTALLATION AND OPERATING INSTRUCTIONS FOR R+W TORQUE LIMITING COUPLINGS: SERIES SK



### GENERAL FUNCTIONING

**!** Please carefully and completely read the following installation, operation and maintenance procedures for the R+W torque limiting couplings. Failure to comply with these procedures may result in poor performance and/or the failure of the coupling. **Installation of the couplings should be performed by a qualified technician.**

#### TRANSPORT

R+W couplings are delivered ready for installation. After incoming inspection the coupling should be stored in its original packaging until it is ready for installation. A copy of this installation, operation and maintenance manual should be kept with the coupling.

#### SAFETY ALERT

**!** Rotating couplings can be very dangerous. Proper guarding should be in place at all times and is the responsibility of the machine builder, user or operator. Do not approach or touch a coupling while it is rotating. Make sure that the machine is „locked out“ and cannot be accidentally started during installation or maintenance of the coupling.

#### MANUFACTURER'S DECLARATION

**according to EG guidelines for machinery 2006/42/EG Appendix IIB.** In the sense of machine guidelines (MR) shaft couplings are no machines, but components for the installation in machines. Their putting into operation is subject to the fulfillment of all requirements of machine guidelines by or after integration in the final product.

### GENERAL FUNCTIONING

R+W torque limiting couplings are ball detent style overload couplings. They protect drive and driven mechanical components from damage associated with torque overloads. Backlash free torque transmission is accomplished by a series of steel balls (4) nested in hardened detents (5). See figure 1. Disc springs push against an actuation ring (3) keeping the balls nested. The

disengagement torque is adjustable by means of an adjustment ring (1). In the event of an overload, the actuation ring moves axially allowing the balls to come out of the detents separating the drive and driven elements. The movement of the actuation ring can be sensed by means of a mechanical switch or proximity sensor triggering the drive to shut down.

### SINGLE-POSITION / MULTI-POSITION

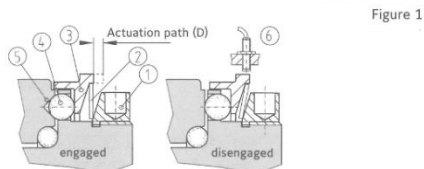


Figure 1

In a torque overload, for the single-position design (standard) and multi-position design, the spring disengages to allow the balls to come out of their detents separating the drive and driven elements. Very low residual spring pressure remains so that the coupling will re-engage once the torque is reduced below the overload setting. See diagram 1 too.

**!** **Re-engagement may only be effected at low speed.**

#### Re-engagement: Full disengagement

The R+W Torque Limiter can be re-engaged with a low engagement force E (Table 2) on six positions within a 360° circle. The markings of the re-engagement positions had to be lined up. Starting on series 60, the re-engagement can be done with 2 levers, which must be strutted on the adjustment nut. Also two screwdrivers can be used as levers. (see Pic. 3b)

**!** **Important: Re-engagement must happen on shutdown only.**

### FULL-DISENGAGE

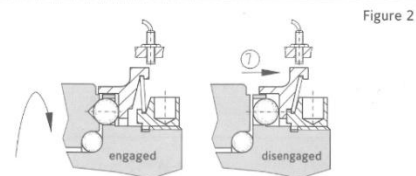


Figure 2

With this design, when a torque overload is detected, the disc spring completely flips over and places no residual spring pressure on the actuation ring. The drive and driven elements are completely separated.

**!** **Re-engagement of the coupling is not automatic and must be performed manually (Figure 3).**

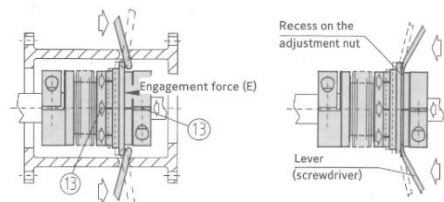


Figure 3a

Figure 3b

### MOUNTING AND DISMOUNTING SK2

**SK2**  
with clamping hub

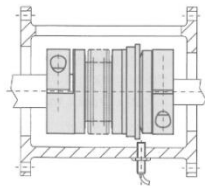


Figure 9

**Mounting:**

Prior to mounting make sure that the shaft to be connected do not exceed the angular or lateral misalignment limits for the coupling size to be used. This data can be found in the catalog. Slide the coupling on the first shaft end to the proper axial position. Using a torque wrench, tighten the clamp screw to the correct tightening torque as indicated in Table 1. Insert the second shaft into the other end of the coupling to the proper axial position. Make sure that the coupling is free of any axial forces before tightening. Tighten the clamp screw as above using a torque wrench.

**Dismounting:**

Simply loosen the clamp screw and remove the coupling from the shaft.

### AXIAL MISALIGNMENT

**R+W bellows couplings compensate for lateral, axial and angular misalignment simultaneously.**

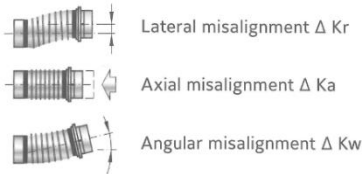


Figure 12

**Maximum shaft misalignment**

In addition to torque overload protection R+W torque limiters combined with a metal bellow compensate for lateral, axial and angular misalignment. Table 2 contains the maximum allowable values for each axis of misalignment for the different size couplings. It is important to remain within these limits to ensure maximum life and proper operation of the coupling.



**CAUTION: Exact alignment of the R+W metal bellow coupling considerably increases the service life of the coupling. Reducing or eliminating lateral misalignment eliminates the radial loading of the adjacent bearings, increasing service life and reducing heat. For drives running at high speed it is recommended to align the coupling with a dial indicator.**

SERIES		1,5	2	4,5	10	15	30	60	80/150	200	300	500	800	1500	2500	
Lateral misalignment x/x (mm)	Δ Kr	0.15/0.20	0.15/0.20	0.20/0.25	0.20/0.30	0.15/0.20	0.20/0.25	0.20/0.25	0.20/0.25	0.25/0.30	0.25/0.30	0.30/0.35	0.35	0.35	0.4	
Axial misalignment x/x (mm)	Δ Ka	1/1.5	1/2	1/2	1/2	1/2	1/2	1.5/2	2/3	2/3	2.5/3.5	2.5/3.5	3.5	3.5	4	
Angular misalignment x/x (Degree)	Δ Kw	1/1.5	1/1.5	1/1.5	1/1.5	1/1.5	1/1.5	1/1.5	1/1.5	1.5/2	1.5/2	2/2.5	2.5	2.5	2.5	
Pre-tensioning (mm)	C	0.1-0.5	0.2-0.7	0.2-0.7	0.2-1.0	0.2-1.0	0.3-1.5	0.5-1.5	0.5-1.0	x	0.5-1.5	0.5-2.0	0.8-2.0	0.8-2.2	1-2.5	
Actuation path (mm)	D	0.7	0.8	0.8	1.2	1.5	1.5	1.7	1.9	2.2	2.2	2.2	2.2	3	3	
Engagement force approx. (full disengagement design)	(N)	E	5-10	8-15	10-20	15-30	20-40	25-50	40-80	50-100	80-150	100-220	250-700	800-1200	2000-3000	3000-4000

Table 2 x/x First values are for bellows with 4-5 corrugations. Second values are for bellows with 6-8 corrugations.

### DISENGAGEMENT TORQUE SETTING

Figure 15

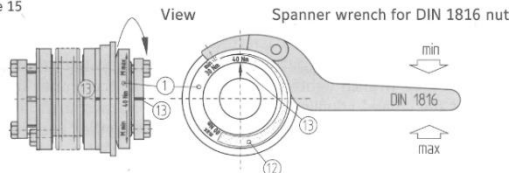
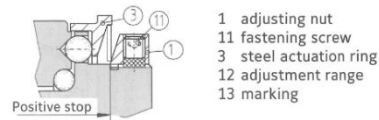


Figure 16



With SK 2/5 couplings the groove of the clamping hub serves as a marking (3)

R+W torque limiters are factory set to the customer specified disengagement torque, which is marked onto the coupling. The adjustment range (min/max) is also marked on the adjustment ring. The customer can adjust the disengagement torque as long as it falls into the range indicated on the adjustment ring.



**The adjustment range may not be left during setting.**

To adjust the disengagement torque, loosen the locking screws (11) and rotate the adjustment ring using a spanner wrench to the desired new setting. Tighten the locking screws and test the coupling.



**CAUTION: R+W torque limiters incorporate disc springs that exhibit a special spring characteristic. It is important to stay in the max-min range of the coupling.**

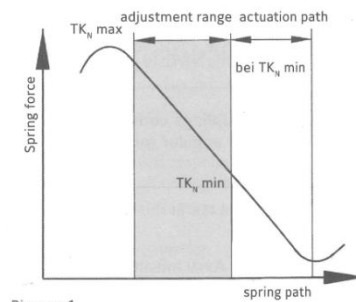


Diagram 1

### MAINTENANCE

R+W torque limiters are maintenance free as long as they are properly mounted and the maximum misalignment and radial load values are not exceeded. The internal components are permanently greased for lifetime lubrication.



**CAUTION: Disassembly of the coupling will void the warranty.**



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The above-mentioned information is based on our present knowledge and experiences and does not free the user of his own regular checks. A legally binding guarantee is not given even in regard to protection rights of third parties.