

# Translation of the original operating manual



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**Important!**  
**Read carefully before use!**  
**Keep for future reference!**

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## 0 TABLE OF CONTENTS

0	TABLE OF CONTENTS .....	3
1	IDENTIFICATION .....	6
1.1	Machine designation .....	6
1.2	Company name and address .....	6
2	TECHNICAL SPECIFICATION OF THE PRODUCT AND ITS RESIDUAL RISKS .....	7
2.1	General machine description, scope of application .....	7
2.1.1	Use of the operating manual .....	7
2.1.2	General safety instructions .....	8
2.1.3	Other general information .....	8
2.2	Safe and correct use, residual dangers .....	9
2.2.1	Preliminary remarks .....	9
2.2.2	Danger from accessories .....	12
2.2.3	General safety information .....	12
2.2.4	Proper use .....	13
2.2.5	Approved operators .....	13
2.2.6	Description of workplace .....	13
2.3	Dimensions .....	13
2.3.1	Space requirements at the machine .....	14
2.4	Machine operating conditions .....	15
2.5	Emission data .....	15
2.5.1	Sound pressure level .....	15
2.5.2	Vapours and dust .....	15
2.6	Personal safety equipment .....	15
2.7	Safety measures at installation site .....	15
2.8	Behaviour in an emergency .....	15
2.8.1	EMERGENCY STOP on the control panel .....	16
2.8.2	EMERGENCY STOP switch .....	16
2.9	Screwed (fixed) safety devices .....	17
2.10	Safety devices for stopping the machine .....	18
3	PREPARING THE PRODUCT FOR USE .....	20
3.1	Transport and storage .....	20
3.2	Unpacking the machine .....	20
3.3	Installation and connection .....	21
3.3.1	Adjusting the table height .....	21
3.3.2	Machine with traversing option .....	21
4	OPERATING THE PRODUCT .....	22
4.1	Operating elements .....	22
4.1.1	Main switch .....	22
4.1.2	Control panel .....	22
4.1.2.1	Touch field (C) .....	23
4.1.2.2	Start button (G) .....	23
4.1.2.3	Stop button (H) .....	23
4.1.2.4	EMERGENCY STOP switch (J) .....	23
4.2	Machine design .....	23
4.3	Optional modules .....	23
4.4	Personal safety equipment .....	25
4.5	Times / Parameters .....	25
4.6	Light barriers .....	29
4.6.1	Light barrier B3: .....	29
4.6.2	Light barrier B4: .....	29
4.6.3	Light barrier B9: .....	29
4.7	Adjusting the light barriers .....	30
4.8	Tensioning .....	30
4.8.1	Automatic bundle tensioning as a function of circumference – standard .....	30
4.8.2	Automatic bundle tensioning as a function of bundle height – option .....	31
4.8.3	Height measurement sensor .....	32
4.9	Coil sensing .....	33

4.9.1	Coil sensing .....	33
5	INFORMATION FOR THE SPECIFIC MACHINE .....	34
5.1	Visible signals .....	34
5.1.1	Indicator lamp .....	34
5.2	Meaning of the signals .....	34
5.3	Menu structure .....	34
5.3.1	Operator menu .....	49
5.3.1.1	Adjust the bundle settings .....	51
5.3.1.1.1	Bypass mode .....	51
5.3.1.1.2	Bypass with cycling.....	52
5.3.1.1.3	Front strapping.....	53
5.3.1.1.4	Parallel strapping .....	53
5.3.1.2	Tensioning .....	54
5.3.1.3	Bundle recipes .....	56
5.3.2	Supervisor menu.....	59
5.3.2.1	Return to start screen .....	61
5.3.2.2	Menu: Supervisor functions.....	61
5.3.2.3	Machine Info .....	62
5.3.2.4	Bundle recipe 1, 2, etc.....	63
5.3.2.5	Manual mode.....	63
5.3.2.5.1	Tensioning in manual mode.....	64
5.3.2.6	Automatic modes .....	64
5.3.2.6.1	Specification of operating mode for a certain bundle recipe .....	65
5.3.2.6.2	Specification of name for a bundle recipe .....	66
5.3.2.6.3	Adjust the bundle settings.....	67
5.3.2.6.4	Control of entry release .....	69
5.3.2.6.5	Adjusting strap tension as a function of bundle circumference .....	70
5.3.2.6.6	Adjusting tension force as a function of bundle height (option).....	71
5.3.2.6.7	Configuration of the bundle press (option) .....	72
5.3.2.6.8	Configuration of the bundle stops (option).....	73
5.3.2.6.9	Configuration of the side pushers (option).....	74
5.3.2.6.10	Do not strap bundle .....	75
5.3.2.6.11	Do not strap bundle from external (option) .....	76
5.3.2.6.12	Backup function for replacing a failed machine (option).....	77
5.3.2.6.13	Timer setting .....	81
5.3.2.6.14	Stand-by table conveyors .....	81
5.4	Fastening the strap coil .....	82
5.5	Setting up table conveyors.....	83
5.6	Setting up the press (option).....	83
5.7	Setting up the bundle stops (option) .....	83
5.8	Setting up the side pushers .....	83
5.9	Setting up a certain bundle length .....	83
5.10	Putting into service / operation .....	84
5.10.1	Switching on machine .....	84
5.10.2	Threading in the strap .....	84
5.10.3	Warning strap end .....	85
5.10.4	Operating modes .....	85
5.10.4.1	Manual mode .....	85
5.10.4.2	Bypass without strapping .....	85
5.10.4.3	Bypass without strapping with cycling.....	86
5.10.4.4	Front strap/single strap .....	86
5.10.4.5	Rear strapping.....	86
5.10.4.6	Parallel strapping – based on distance (default).....	87
5.10.4.7	Parallel strapping – based on time.....	87
5.10.4.8	Centred strapping.....	88
5.10.4.9	Multiple strapping .....	88
5.10.4.10	Triple strapping .....	88
5.10.4.11	Automatic changeover of strapping distances or strapping type (option).....	89

# TABLE OF CONTENTS



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6	MAINTENANCE AND SERVICE .....	90
6.1	Maintenance schedule .....	90
6.2	Lubricants.....	91
6.3	Cleaning and adjustment work.....	92
6.3.1	Weekly .....	92
6.3.2	Monthly, in addition to 6.3.1 (or after 100,000 strapping cycles).....	92
6.3.3	Every six months, in addition to 6.3.2 (or after 600,000 strapping cycles).....	92
6.4	Troubleshooting .....	93
7	SHUT-DOWN.....	99
8	CHECKLIST FOR MACHINE INSTALLATION.....	100
9	APPENDIX.....	102
9.1	List of illustrations.....	102

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## 1 IDENTIFICATION

### 1.1 Machine designation

Strapping Machine SMB VERO.

### 1.2 Company name and address

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COMPANY HEADQUARTERS: Goldkronach  
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REGISTRATION COURT: Amtsgericht Bayreuth HRB 1395

## 2 TECHNICAL SPECIFICATION OF THE PRODUCT AND ITS RESIDUAL RISKS

### 2.1 General machine description, scope of application

The SMB VERO automatic strapping machine is used to secure bundles by strapping them with straps. It is part of a packing line.

#### 2.1.1 Use of the operating manual

The operating manual is an integral part of the product and contains important information about operation and service. The operating manual addresses all persons involved in assembly, installation, commissioning and servicing work on the product.

The operating manual must be made accessible in legible condition. Care must be taken to ensure that the operating manual has been read through completely and understood by the plant and operations managers and those who work independently on or at the machine. Please contact SMB Schwede Maschinenbau GmbH if anything is not clear or if you need further information.

## 2.1.2 General safety instructions

The operating manual contains safety information and tips for which the following symbols are used:

<p>Icon</p> 	<p><b>Signal words</b></p> <ul style="list-style-type: none"> <li>- Type of danger and danger point</li> <li>- Consequence(s) of ignoring the instructions</li> <li>- Measure(s) to avert the danger</li> </ul>
---	---

Icon	Signal words	Meaning	Consequence of ignoring the instructions
	<b>Danger!</b>	Imminent dangers	Severe injuries
	<b>Warning!</b>		
	<b>Caution!</b>		
	<b>Attention!</b>		
	<b>Attention!</b>		Severe injuries
	<b>Note Information</b>	Useful tips	

## 2.1.3 Other general information

Screw connections marked with yellow locking paint may only be opened by authorised or trained personnel.



Only original parts approved by the manufacturer may be installed. Reliability and safety cannot be guaranteed for parts of other manufacturers and the warranty and product liability is voided.



Natural wear and damage due to overloading, improper handling or impermissible changes are not covered by the warranty.

Only use original fuses with the stipulated current rating! Shut down the machine / system immediately as soon as faults occur within the power supply system!  
Wear parts are not covered by the warranty. For example, these include:  
Plain and roller bearings (plain bearings also include all bearing points in which a relative movement takes place.)



Strap guidance parts (these include parts in which the strap is guided and all parts responsible for strap transport.)

## 2.2 Safe and correct use, residual dangers

The SMB VERO strapping machine is intended for use in a complete system. It requires no additional safety devices. However, safety devices are necessary for certain options.

The following basic safety instructions serve to prevent personal injury and damage to property. The plant operator must ensure that the basic safety instructions are observed and heeded. The operating manual must have been read through completely and understood by the plant and operations managers and those who work independently on or at the machine. Please contact SMB Schwede Maschinenbau GmbH if anything is not clear or if you need further information.

### 2.2.1 Preliminary remarks

The following safety instructions refer to work with the strapping machines.

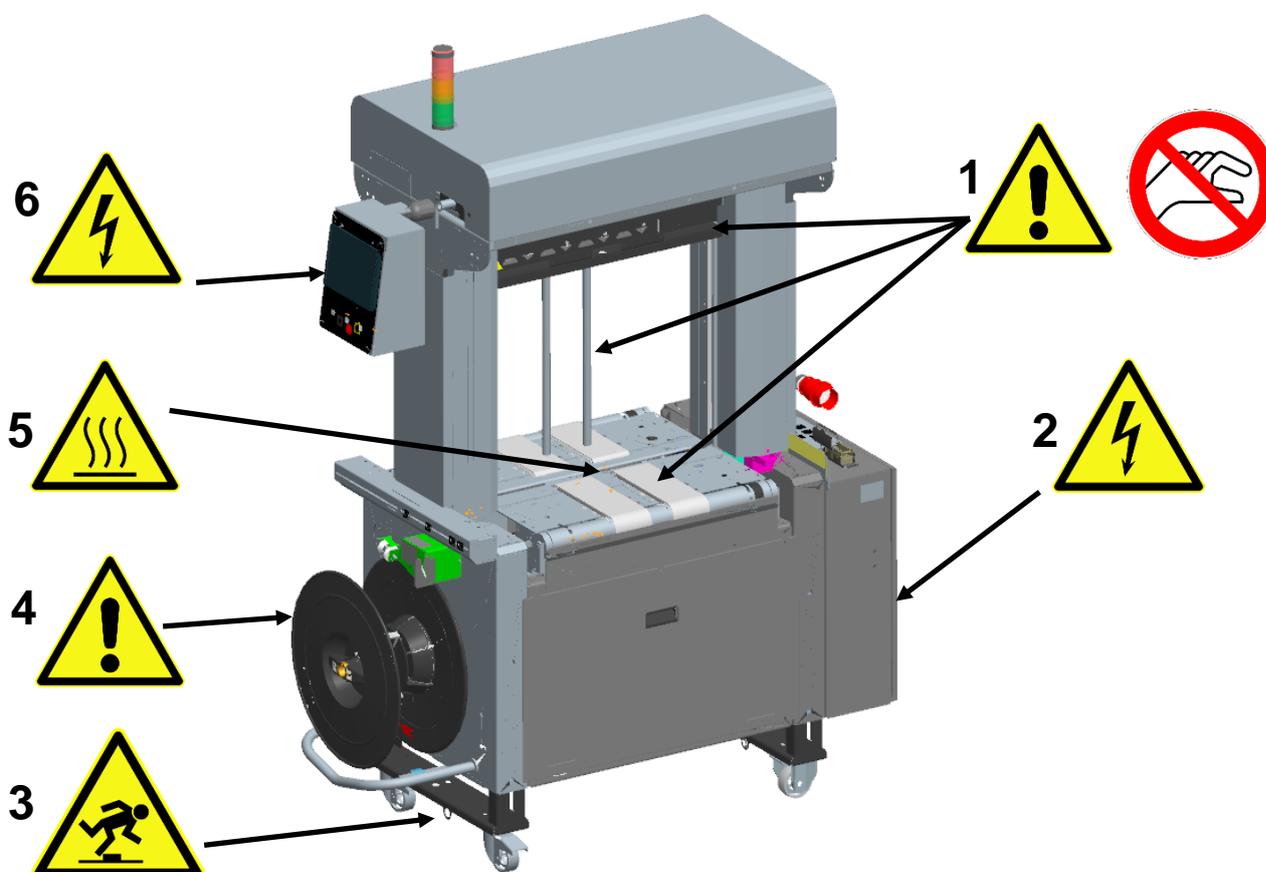


Figure 1: Potential hazards at the machine

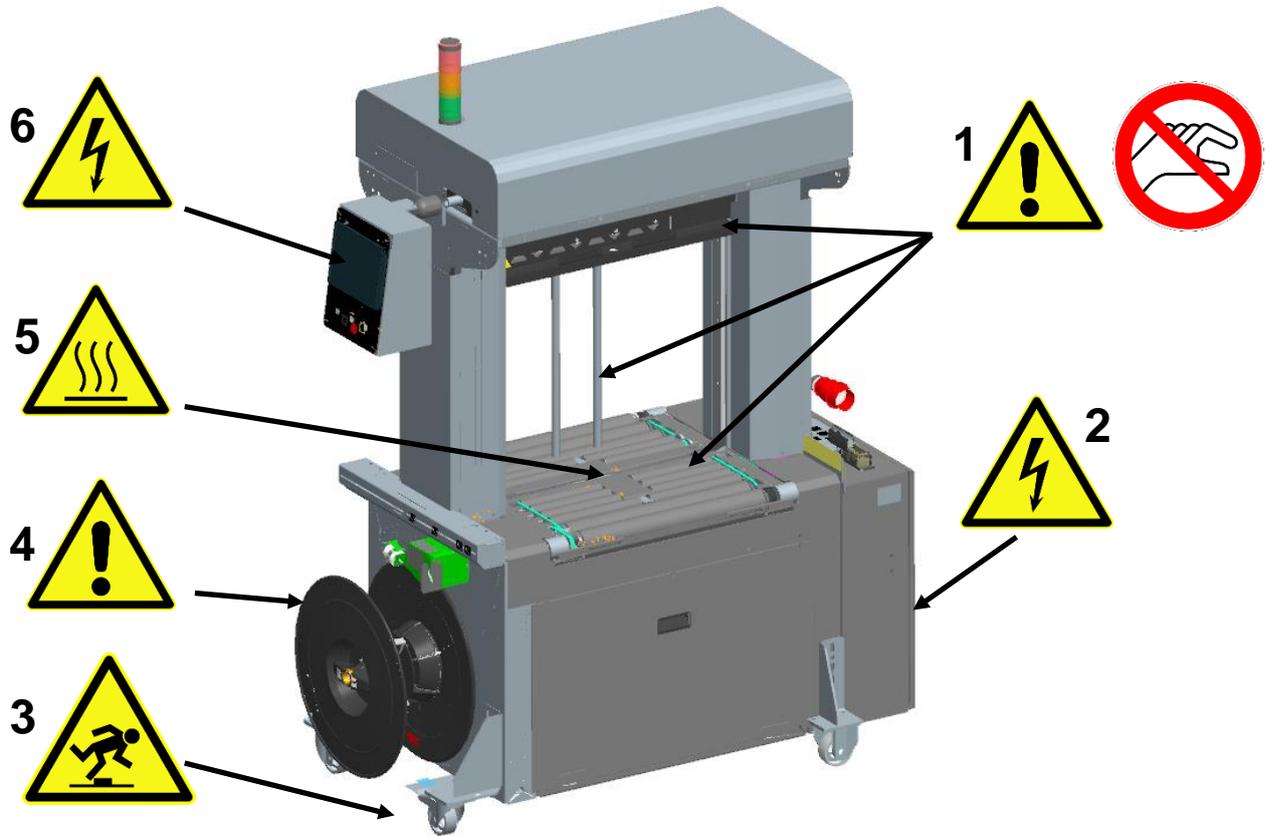


Figure 2: Option with roller table and machine rollers outside

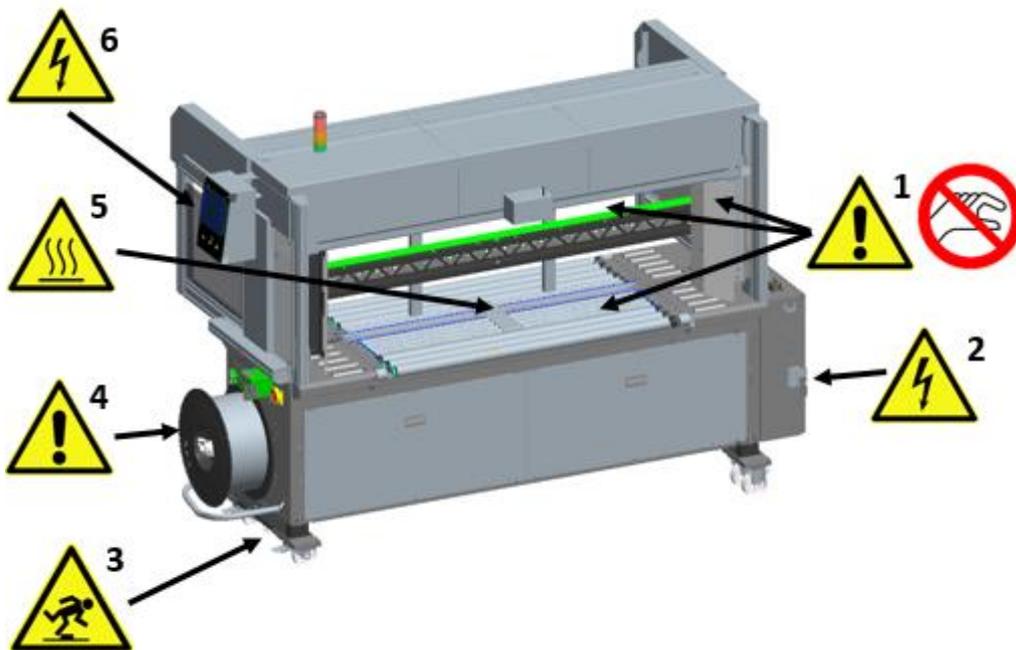


Figure 3: Type VERO-C (to the right of the coil)

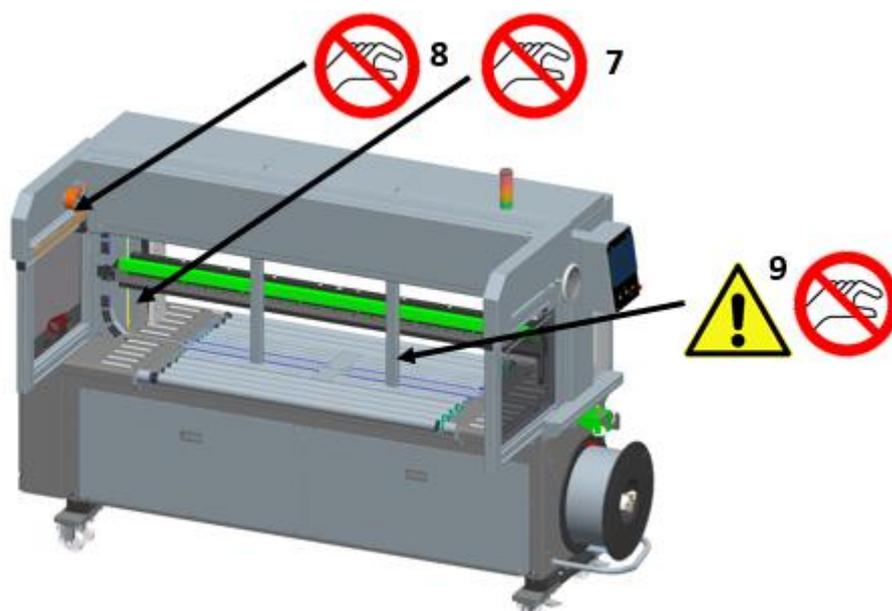


Figure 4: Type VERO-C (to the left of the coil)

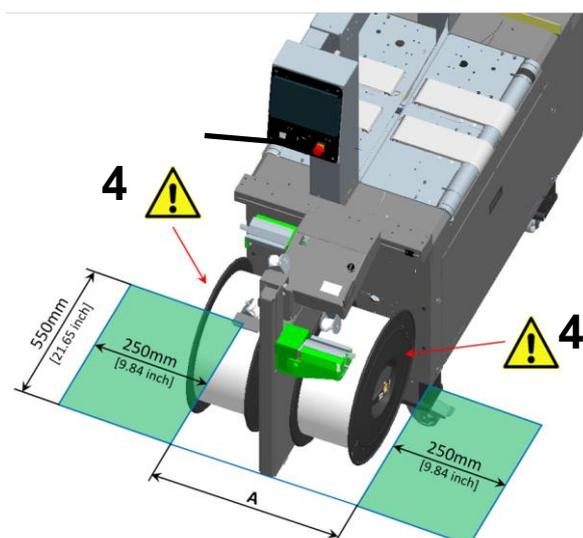


Figure 5: Option VERO with ASC

Figure 1 to 5 show various potential hazards at the machine which are explained in the following table:

Table 1: Potential hazards

Pos.	Potential hazard	Type of danger
1	Moving parts (press, roller table option, table conveyor, pusher option)	Risk of getting crushed or trapped
2	Electric cabinet with main switch	Risk of electric shock
3	Cable	Risk of tripping
4	Rotating part (strap coil)	Risk of skin abrasions
5	Welding plate	Risk of burns
6	Control panel	Risk of electric shock
7	Strap arch	Risk of getting parts of the body strapped
8	Toothed rack option for adjusting the format of the stops	Risk of fingers or hands getting trapped

9	Moving parts (bundle stops option)	Risk of shock, impact, getting trapped
10	Moving parts (side pusher stops option)	Risk of shock, impact, getting trapped

## 2.2.2 Danger from accessories



Conveyor belts and related transport devices may not deactivate the safety devices of the machine.  
The EMERGENCY STOP switch must be freely accessible.

## 2.2.3 General safety information



Please read the operating manual and safety instructions prior to starting up the equipment.

Only re-start the machine in accordance with the procedures described in the operating manual!

The machine may only be used for its intended purpose.

SMB Schwede Maschinenbau is not liable for damages caused by modifications carried out by the plant operator.



### **Attention!**

The machine must be disconnected from the power supply and secured against being switched on before opening the machine housing and the electric cabinet and prior to maintenance and repair work.

### **Important!**

Emergency Stop devices must not be bypassed or deactivated. Do not place any loose tools or parts on the machine.



Please keep to the adjustment, maintenance and inspection work schedule as stipulated in the manual. These tasks may only be performed by trained personnel.

The safety devices are installed for the safety of the operating personnel. They may not under any circumstances be modified, removed or circumvented by making changes to the machine (e.g. bypassing).

If it is necessary to dismantle safety devices when carrying out repairs or maintenance, safety devices have to be checked immediately after the conclusion of repair work or maintenance.



The strapping machine may only be operated in a safe, functional state. All safety devices and EMERGENCY STOP devices must be present and functional. Recognized defects on the safety devices must be eliminated immediately.



### **Inspection intervals**

- At the start of each shift (interrupted operation)
- Weekly (continuous operation)
- After any maintenance or repair work

## 2.2.4 Proper use



The machine is only intended for strapping bundles (bundles, cardboard packaging, boxes) with plastic strapping made of PP or PET for the stabilising purposes when in transit.

Packaged items can be given one single or several straps.  
The packaged items are automatically fed in.

A different use or a use exceeding that described is regarded as incorrect. SMB Schwede Maschinenbau GmbH is not liable for resulting damage. The plant operator bears the sole risk.



Correct use also includes observing the operating, maintenance and service conditions as stipulated by the manufacturer. Unauthorised modifications of and changes to the machine are prohibited for safety reasons. SMB Schwede Maschinenbau GmbH shall bear no liability for damage and injuries resulting from such modifications and changes.

Possible dangers which may result from strapping of dangerous products were not taken into account when designing this strapping machine. It is therefore prohibited to strap these products.

## 2.2.5 Approved operators



The strapping machine may only be operated by authorised and trained personnel.

Commissioning, maintenance and dismantling work may only be carried out by authorised and trained personnel.



### **Attention!**

The operator is responsible for others in the working area.

The responsibility for the various activities on the machine must be clearly specified and complied with. Unclear competences are a safety risk. Serious injuries may be caused



The owner must make the operating manual accessible to the operator and must make sure that the operator has read and understood it.

## 2.2.6 Description of workplace

The workplace is located at the control panel at the side of the machine.

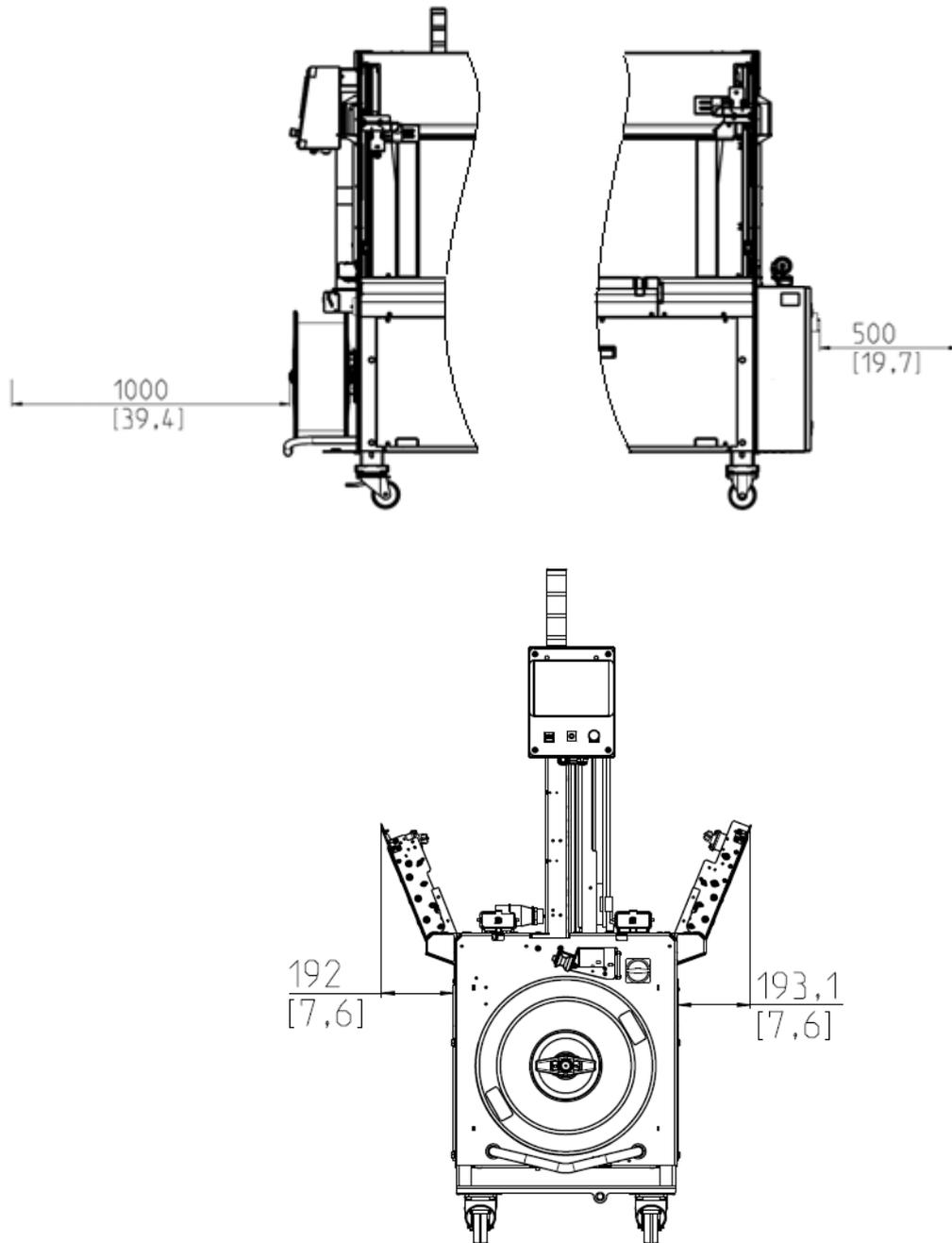
## 2.3 Dimensions

The machine dimensions are stated in the respective data sheets.  
Please also refer to the following online links:

<https://www.smb.biz/produkte/produktkatalog/?machine=smb-vero%204.0>

<https://www.smb.biz/produkte/produktkatalog/?machine=smb-vero-c>

2.3.1 Space requirements at the machine



**Figure 6: Additional space requirements**  
for opening the table tops and the electric cabinet door, and for changing the coil

## 2.4 Machine operating conditions

Temperature range from +5°C to +45°C

## 2.5 Emission data

### 2.5.1 Sound pressure level

The sound pressure level measured as per EN 13023:2003 is 78 to 79 dB(A).

### 2.5.2 Vapours and dust

When the machine is used for its due application and under ventilation conditions corresponding to current state-of-the-art operating practice, it is not expected that the respective hazardous substance limit values will be exceeded.

Please do not hesitate to contact SMB Schwede Maschinenbau GmbH for further information if you have any questions in this respect.

## 2.6 Personal safety equipment



For cleaning work: wear protective goggles for protection against flying dirt particles.

## 2.7 Safety measures at installation site

The strapping machine must be installed standing securely on a flat, firm surface. If a machine tips over it presents a threat to life and limb!



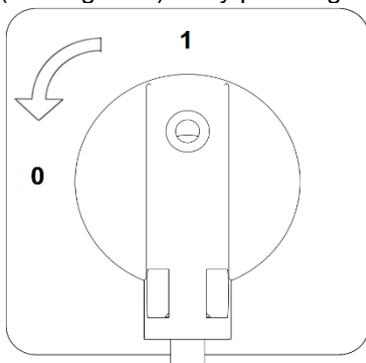
### **Important!**

Make sure with corresponding instructions and checks that the area around the workplace is always neat and tidy.

The strapping machine may only be put into operation when it has been installed to stand securely and connected by authorised, trained personnel.

## 2.8 Behaviour in an emergency

In an emergency, switch the machine off immediately by changing the main switch from "1" to "0" (see Figure 7) or by pressing the EMERGENCY STOP switch, see Figure 8 on the control panel.



**Figure 7: Switching the machine off**

## 2.8.1 EMERGENCY STOP on the control panel

In addition to the touch panel, the control panel has a start and a stop button and an EMERGENCY STOP switch (see Figure 8). More explanations for the control panel are featured in point 4.1.2.

## 2.8.2 EMERGENCY STOP switch

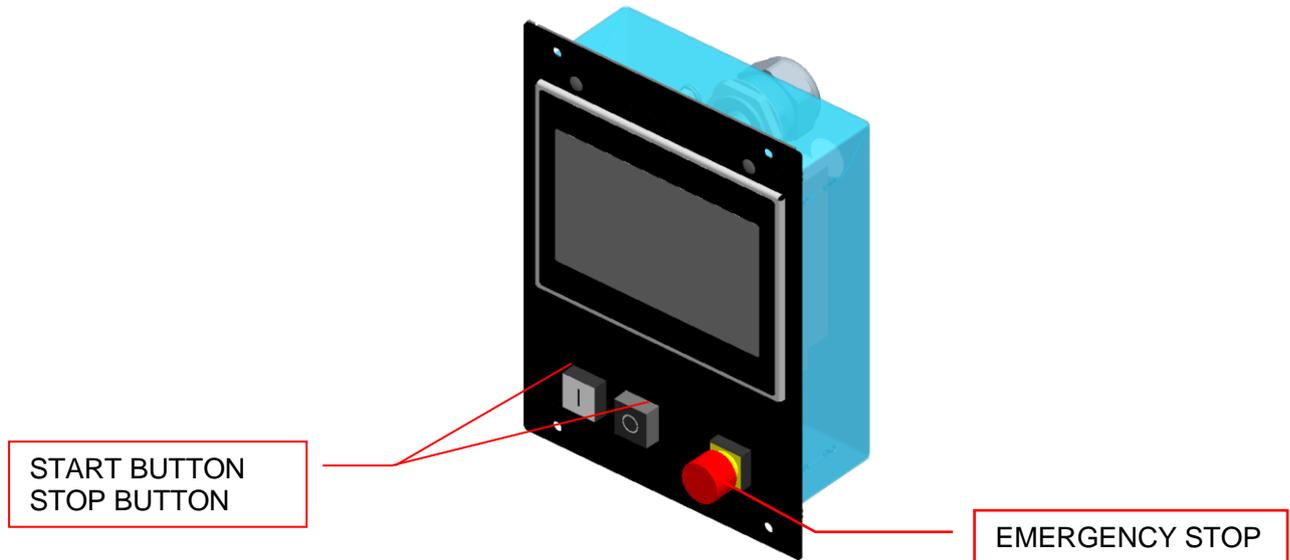


Figure 8: EMERGENCY STOP

### ATTENTION: EMERGENCY STOP



**In the default configuration, pressing the Emergency Stop button only stops the corresponding strapping machine. This does not stop the upstream and downstream machines!**

**This must be brought to the attention of the operating staff who must be reminded accordingly at regular intervals.**

An EMERGENCY STOP interlock is possible for the line as an option. In this case, the Emergency Stop signal is sent to the upstream/downstream machines to process the signal.

### IMPORTANT!

A risk evaluation according to the new Machinery Directive 2006/42/EC was carried out For this machine with these specifications and archived with the document number **d016857**. The residual risk specified by us must be re-evaluated and minimised in interaction with other components.

## 2.9 Screwed (fixed) safety devices

Safety devices are intended to protect the operating personnel.

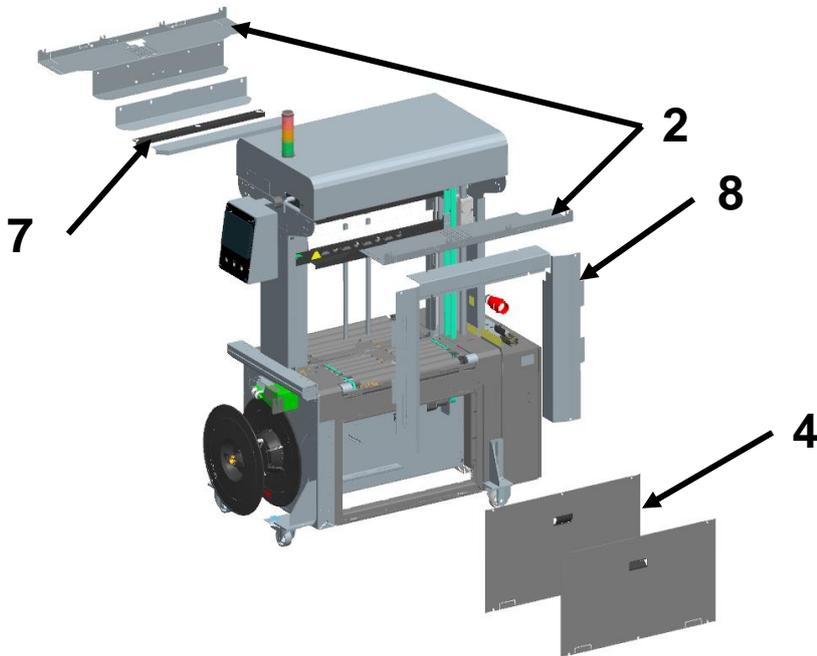


Figure 9 : Screwed safety devices

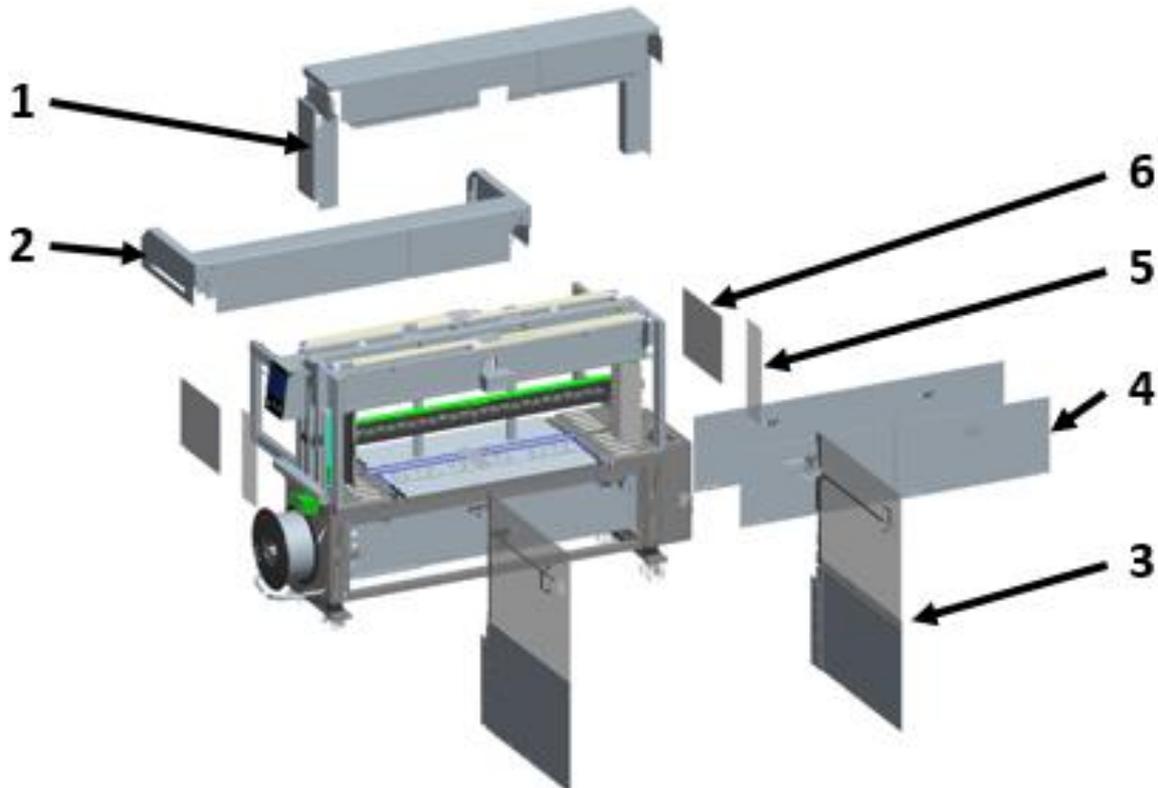


Figure 10: Screwed safety devices VERO-C

Figure 9 and 10 show all possible screwed safety devices, including options.

- 1) Compl. panelling / pushers option
- 2) Compl. panelling / bundle stop option
- 3) Compl. safety doors / option: push unit entry side and/or exit side
- 4) Compl. frame shrouding
- 5) Safety panel / pushers option
- 6) Safety panel / bundle stop option
- 7) Press foam rubber
- 8) Press arch cover

## 2.10 Safety devices for stopping the machine

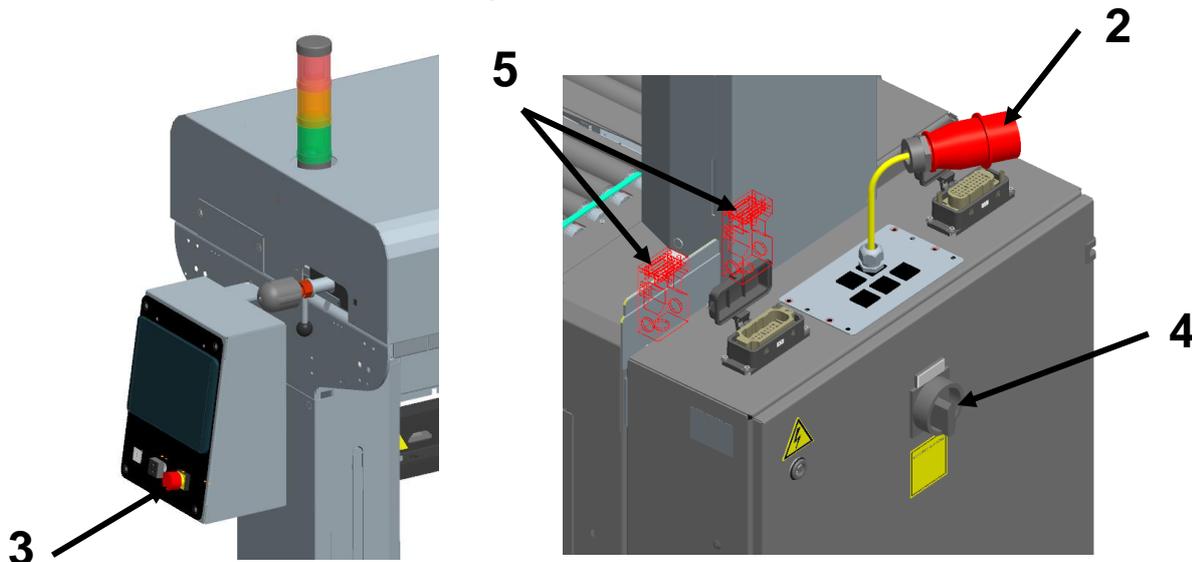


Figure 11: Safety devices

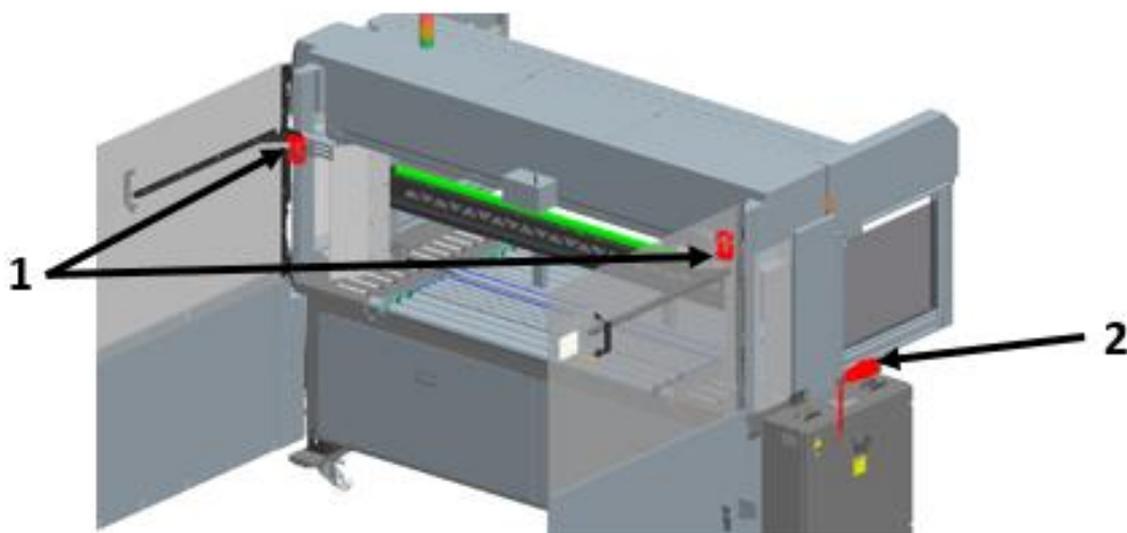
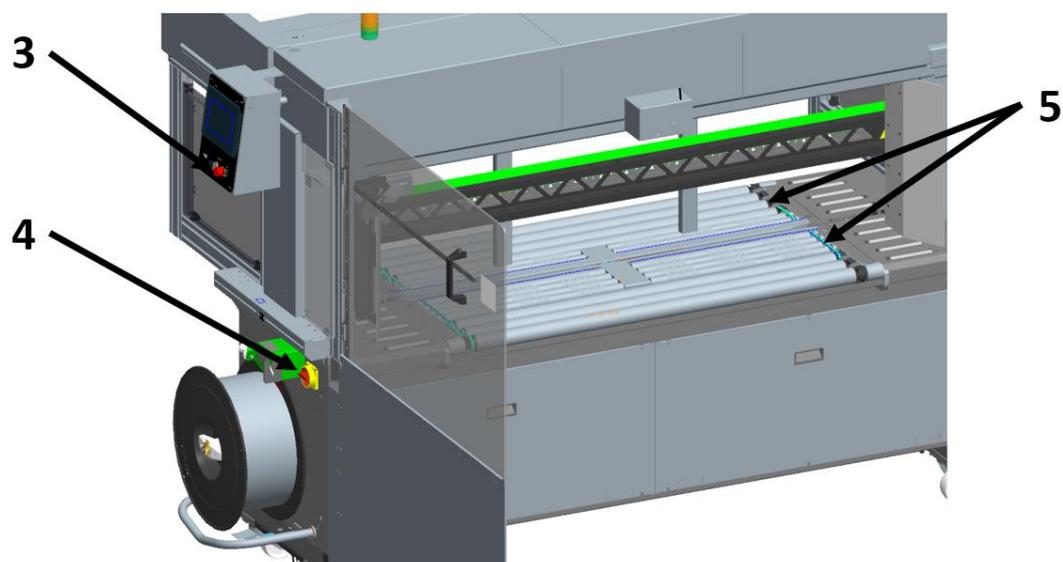


Figure 12: Safety devices VERO-C



**Figure 13: Safety devices VERO-C**

The strapping machine is shut down with the following safety devices (see Figure 10 to 13). The figure shows all positions of the safety switches, including in options.

- 1) Safety switch in every VERO-C safety door (when a door is opened, the safety switch interrupts the power supply)
- 2) Disconnecting the power plug from the power supply
- 3) EMERGENCY STOP switch on the control panel
- 4) Main switch on the machine
- 5) Safety switch under every table top (the safety switch interrupts the power supply when a table top is opened)

### 3 PREPARING THE PRODUCT FOR USE

#### 3.1 Transport and storage



The strapping machine is supplied firmly bolted onto a pallet. Only raise the pallet with a forklift truck or pallet truck. Only move the machine correctly as stated in the operating manual! The load must be reliably secured! Minimum lifting capacity of the lifting equipment: 1000 kg  
The assembled strapping machine packed on the pallet must be stored in dry, frost-free conditions.

#### 3.2 Unpacking the machine

Remove crate and film.  
Remove the bolts (B) fastening the strapping machine on the pallet.  
Lift the machine down off the pallet in the marked area (A) (see Figure 14) with a forklift truck or pallet truck.

Minimum lifting capacity of the lifting equipment: 1000 kg  
Total weight of the machine with all options and packaging approx. 970kg.



**Do not move the machine with a crane!**

Ensure that you do not squash or damage any cables when using the lifting equipment. The machine can be moved on its machine rollers.  
Always disconnect the machine from external power and control lines even if moving it only a short distance.

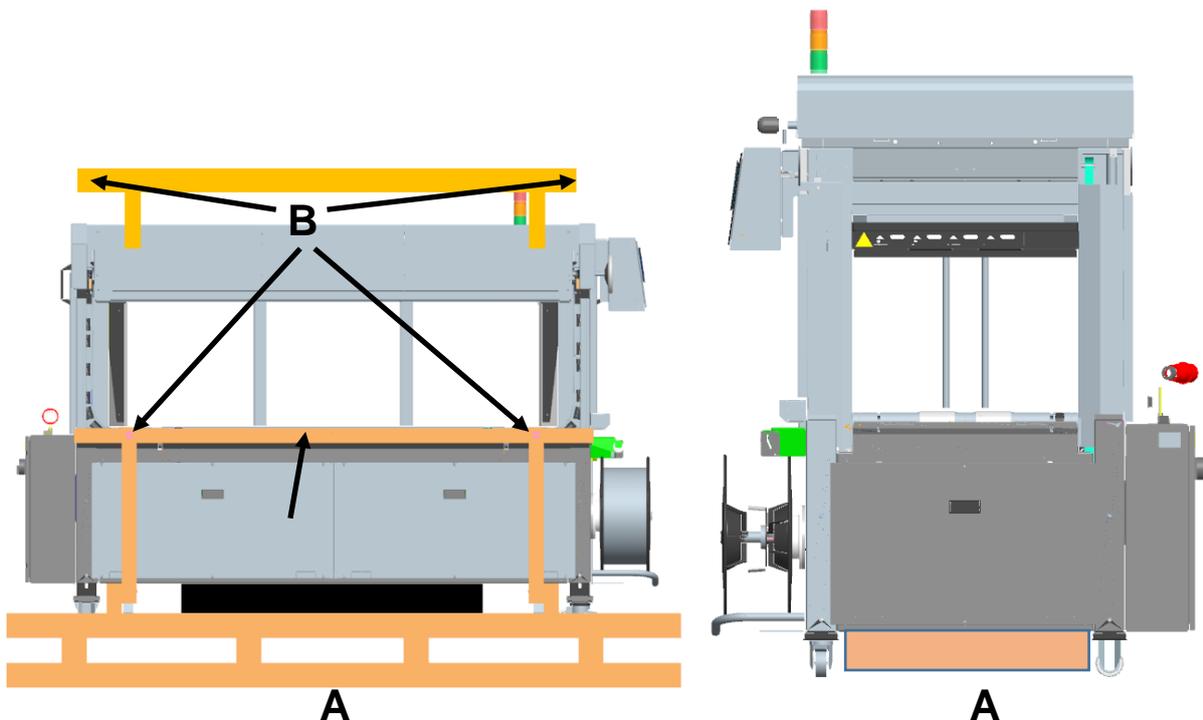


Figure 14: Area for forklift truck to move the machine

## 3.3 Installation and connection



The strapping machine may only be installed and operated in production buildings under the conditions described in point 2.4. After unpacking, you must assemble the machine again according to the enclosed manual!

Install the strapping machine in a stable position on a flat, firm surface. The strapping machine should only be integrated in the signal exchange of the packing line (interlock connection) by trained personnel.

### 3.3.1 Adjusting the table height

The table height is usually adjusted at the side pedestals. To this end, raise the strapping machine in area (A) with a lifting device (e.g. pallet truck). Loosen the screws (C) one after the other – see Figure 15 –, then pull out the side pedestals and adjust the corresponding table height. Now tighten the bolts (C) again.

### **Important!**

The table heights of the strapping unit and the peripheral equipment must form a level surface!

### 3.3.2 Machine with traversing option

The machine is designed to be mobile. This traversing unit (see Figure 16) makes it possible to move the machine in the line repeatedly without needing a forklift truck.

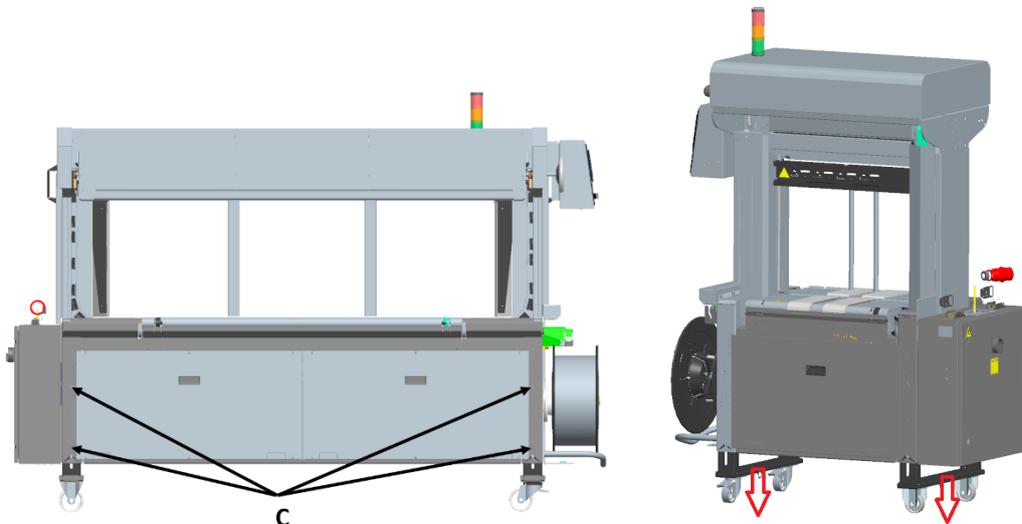


Figure 15: Height adjustment



### Braked rollers on the coil side

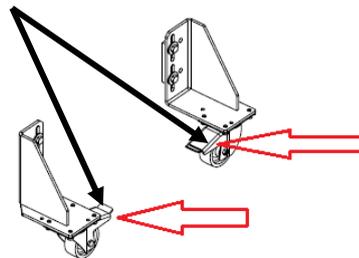


Figure 16: Mobile machine, braked rollers on the coil side

## 4 OPERATING THE PRODUCT

### 4.1 Operating elements

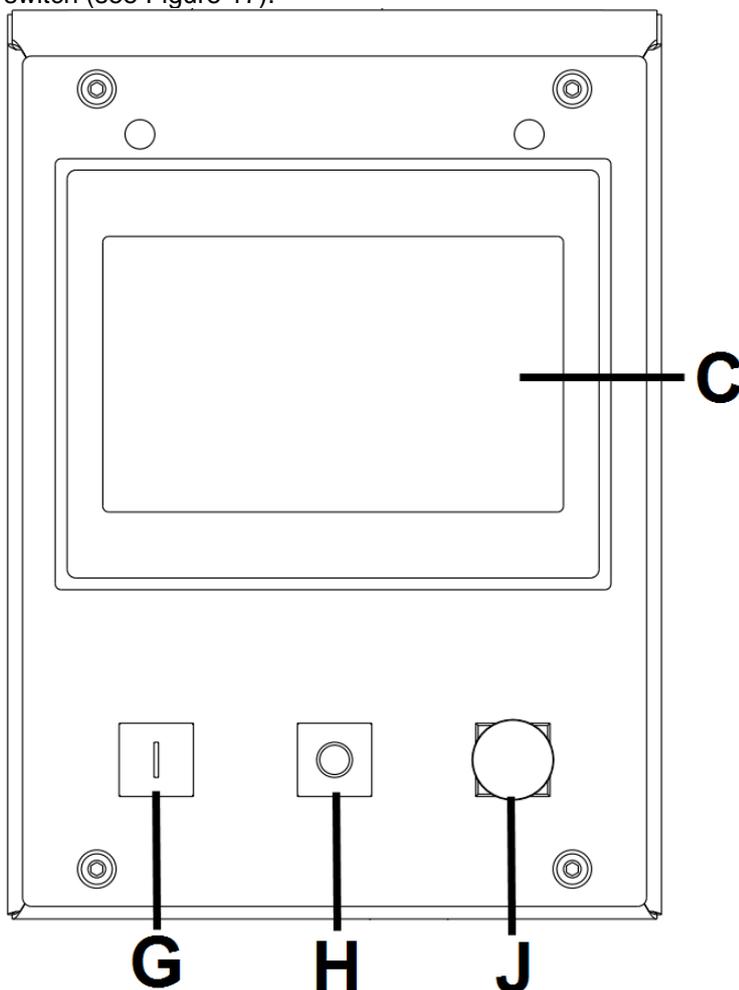
The two main switches are located in series on the machine together with the control panel (also see Figure 17).

#### 4.1.1 Main switch

Switching the main switch to the "1 ON" position puts the machine into operation. In an emergency, the main switch must be set to "0 OFF" (see also Figure 7)!

#### 4.1.2 Control panel

The control panel consists of the touch panel, a Start and a Stop button and an Emergency Stop switch (see Figure 17).



**Figure 17: Control panel components**

C: Touch field, G: Start button, H: Stop button, J: Emergency Stop switch.

## 4.1.2.1 Touch field (C)

Pressing the various fields on the touch panel enters commands and set parameters. An exact explanation of the menu can be found in chapter 5.3. The fields are provided with various icons (see Table 5). The exact meaning of the icons in the menu context is explained in chapter 5.3.

## 4.1.2.2 Start button (G)

Pressing the Start button makes machine ready for operation. In manual mode a strap cycle can be triggered.

## 4.1.2.3 Stop button (H)

Pressing the Stop button completes a strapping process already started and then stops the machine.

## 4.1.2.4 EMERGENCY STOP switch (J)

Pressing the Emergency Stop switch immediately interrupts all potentially dangerous movements of the machine.

## 4.2 Machine design

Important components of the machine are listed in Table 2 and illustrated in Figure 17 to 20.

**Table 2: List of most important machine components**

No.	Designation
1	Functional assembly with strap arch and strapping heads
2	Frame
3	Traversing unit
4	Extraction
5	Safety shackle
6	Coil holder
7	Strap deflector
8	Electric cabinet
9	Control panel with touch display and buttons
10	Table conveyors
11	Light barriers
12	Coil sensing with indicator lamp
13	Compl. mains cable for power connection
14	Arch cover
15	Frame shrouding
16	Label

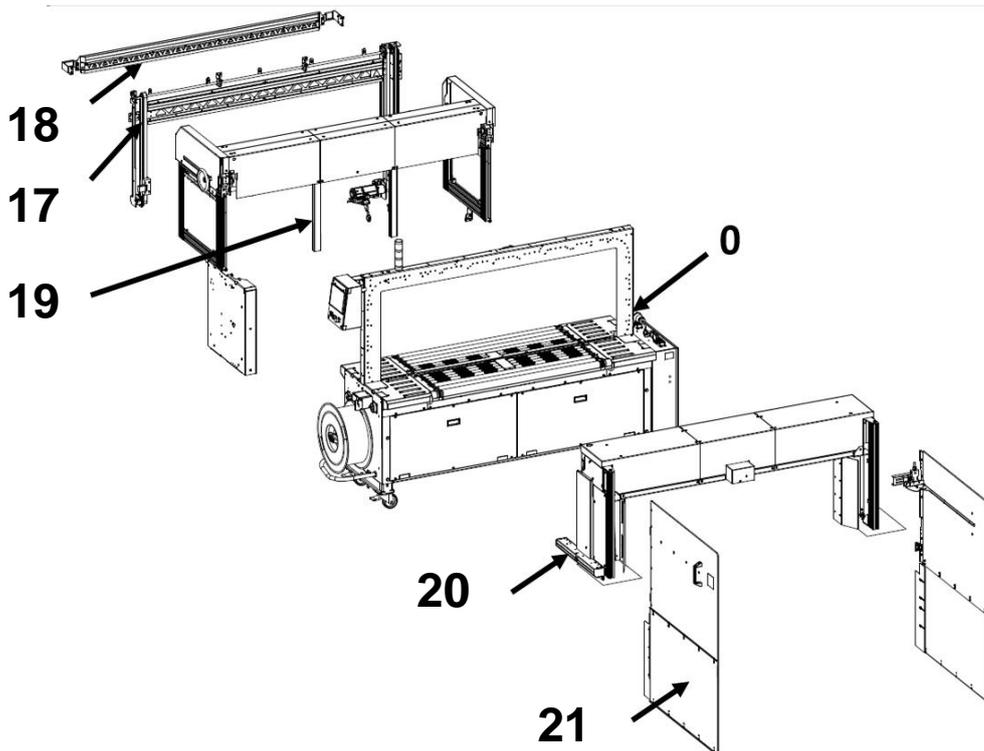
## 4.3 Optional modules

The machine VERO / VERO-C can be fitted with options (see Figure 20). The basic machine is referred to as "0" in the figure.

**Table 3: List of options**

No.	Designation
17	Electric press
18	Double press
19	Electric bundle stops
20	Side pusher unit
21	Safety doors (entry and/or exit side)
22	Roller table (option for VERO)





**Figure 20: Options for VERO-C**

#### 4.4 Personal safety equipment



For cleaning work: wear protective goggles for protection against flying dirt particles.

#### 4.5 Times / Parameters

The adjusted time settings and parameters are responsible for the functionality of the machine. Table 4 shows an overview of these times and parameters

**Table 4: Times / Parameters**

Time	Description	Meaning
A0	Customer strap counter	Displayed value can be reset
A7	Bundle rate display	Displayed value
A8	Cycle counter	Displayed value cannot be deleted
A9	Average bundle rate	Displayed value: line output referred to the last 10 bundles
L0	Press force default	Input value
Lb	Bundle height	This refers to the height of the bundle when the product stack is squeezed together by hand.
Li	Press early start time	The press is started early. Parameter Li influences the bundle rate.
LJ	Side pushers, inner position	Recipe-specific offset value for pre-positioning the pushers: either the pushers are closed for greater compression of the bundle or they stay wider open referred to the bundle width in order to protect the bundles
LK	Side pushers, outer position	Recipe-specific offset value for pre-positioning the pushers: pushers stay wider open referred to the bundle width
P3	Conveying speed	Speed of the table conveyors/roller table in mm/s Example: Value 60 means 600 mm/s
P4	Transport motor stop ramp	This is used to adjust the braking behaviour during bundle feed. The higher the value, the longer the deceleration path and the more gentle the bundle stop is. The ramp also runs for the time "P7" or "Pb".
P5	Transport motor start ramp	This is used to adjust the acceleration behaviour during bundle discharge. The larger the value, the greater the acceleration of the bundle.
P6	Parallel strapping over time (option)	With this type of strapping, the distance from the first to the second strapping is always the same. However, the parallel strapping distance from the front to the rear edge is the standard
P7	Release time front strapping	The incoming bundle interrupts the light barrier B4, starting time "P7". After the time "P7" expires, the conveyors stop and the strapping procedure is triggered if the safety light barrier B3 is covered. In the "bypass" operating mode with simultaneous accumulation, the bundle stops after the light barrier B4 is interrupted and the time "P7" expires.
P8	Release time rear strapping	The bundle stops and rear strapping is triggered after the light barrier B9 at the rear bundle edge becomes clear and after the time "P8" expires. In addition to moving the light barrier, triggering can be delayed and the distance of the strapping from the rear bundle edge can be reduced with this time.
P9	Release delay parallel strapping	With parallel strapping time: After the first strapping cycle, the conveyors start up for set time "P9" and bring the bundle into the second strapping position. (The distance from 1st to 2nd strapping is always the same)
PA	Spacing of multiple strapping	The time specifies the distance between the individual strapping cycles. The actual distance is dependent on the bundle weight and the set transport speed.
Pb	Release time 1st strapping cycle parallel and multiple strapping	Stop position of the 1st strapping cycle, in the operating modes "Parallel" and "Multiple"
PC	Correction time centred strap placement	The time corrects the spacing of the centred strap placement. The larger the value, the further the centred strapping moves toward the end of the bundle. The actual distance is dependent on the bundle weight and the set transport speed.
Pd	Press lead time	The pressing process is triggered by the time "Pd" before strapping so that sufficient time is available for the compression of the bundles and to prevent the strap from being clamped between the pressure bar and the bundle surface. This can lead to loosely strapped bundles.

PE	Bundle stop delay	The bundle stops are opened after the strapping cycle. If the strapped bundle now leaves the area of the light barrier B3, the bundle stops close immediately. This can be delayed with time "PE" in order, for example, to prevent the bundle stops from getting tangled in the downstream film-wrap of a bundle packaged with protective film.
PF	Lead time side stops	Lead time of side stops before the press has fixed the bundle in place.
PH	Bundle entry delay	With "PH" the entry time can be specified for the next bundle. When set to approx. 0.3 sec., the entry release is granted when the table conveyors start up. If "PH" is reduced, the next bundle is already started during strapping. This is necessary to achieve a short distance between the incoming bundles for an optimum bundle rate. If "PH" is set to > 0.3 sec., the distance between the bundles increases and the bundle rate is decreased. In the parallel strapping operation mode, the bundle feed is blocked for the next bundle during transport between the first and the second strapping cycle. If "PH" is set to 0, the entry is only blocked in case of a bundle accumulation. Regardless of the value set, the entry is blocked during a fault and in the manual mode.
Pi	Delay block entry release	If the entry side light barrier B9 is interrupted, the entry is blocked after the time set in "pi". The function can be switched off by setting a time value of 0. This time prevents a second bundle from entering the strapping machine.
PL	Entry delay after accumulation	The time "PL" only starts after accumulation has built up or if the strapping machine is finished more quickly than the downstream machine as soon as the downstream machine releases the exit again. The release of the entry is delayed with this time. This time is used to set the bundle distance following bundle accumulation. If the exit release of the downstream machine is received later than the bundle could exit, "pL" should be set to 0. Otherwise this time will run out during each bundle change and a considerable decrease in performance results.
Po	Height detection stop time (T13) For "bypass with cycling" mode (standard)	If the timer is set to 0, the bundles run through the machine without stopping. If the value is greater than 0, the bundles stop briefly and then run out of the machine. Timer can also be activated regardless of "don't strap".
PP	Film safety time	With the time "PP", the light barrier B4 is hidden at the start of strapping. This can prevent a piece of film-wrap trailing behind the bundle from triggering another strapping cycle. Bundles that pass light barrier B4 during this time pass through the machine without being strapped.
Pt	Release time rear strapping With parallel and multiple strapping	The bundle stop and triggering for rear strapping are carried out after the rear bundle edge becomes clear and after the time "Pt" expires. In addition to moving the light barrier, triggering can be delayed and the distance of the strapping from the rear bundle edge can be reduced with this time.
PU	Delay cycle of upstream and downstream machines	Offset value. With "PU" the entry release is delayed during performance-optimised cycling, and as a result the distance between the bundles is increased.
Py	Stand-by time of conveyors/roller table	After the set time, when no bundle runs into the machine, the transport technology of the machine is switched off. If the timer is set to 0, stand-by is switched off and the transport technology runs continually.
Pv	Offset K50 stop table conveyors upstream/downstream machines	Offset value. Used to actuate the upstream and downstream conveyors. Has a crucial influence on positioning accuracy of the bundle.
U1	Display saved bundle height or circumference (last bundle)	Displayed value
U2	Display current strap tensioning value	Displayed value
U3	Tension adjustment – smallest tension	Input value
U4	Tension adjustment – greatest tension	Input value
U5	Tension adjustment – smallest bundle circumference	Input value

## OPERATING THE PRODUCT

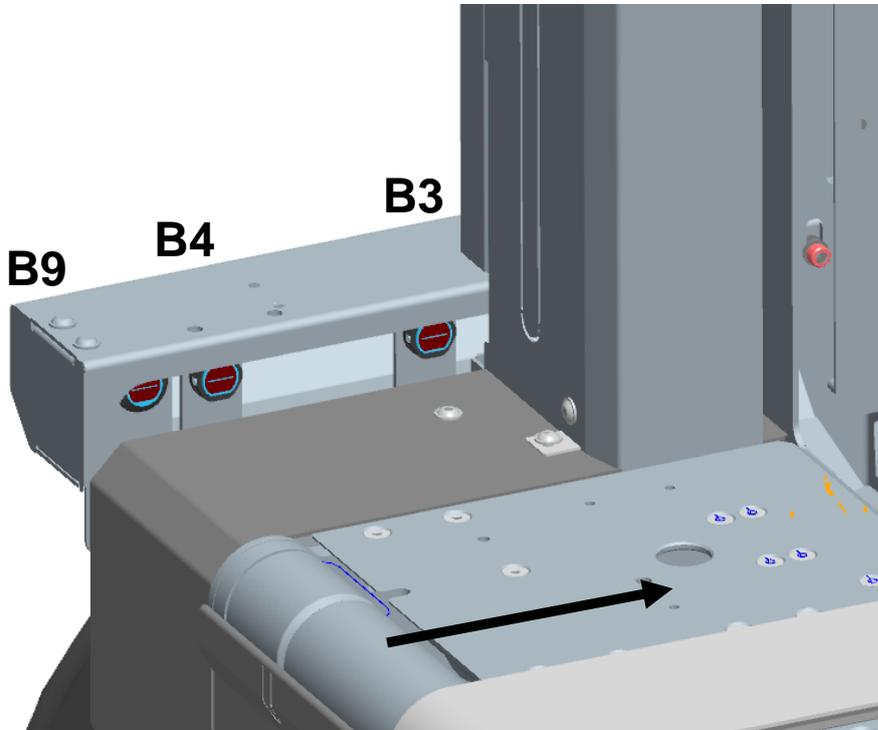


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U6	Tension adjustment – greatest bundle circumference	Input value
U7	Tension adjustment – lower bundle height	Input value
U8	Tension adjustment – upper bundle height	Input value
U9	Tension in manual mode	Input value
UG	Display saved bundle e-press bundle height	Displayed value
VG	Bundle width	Input value bundle width (influences optional bundle guidance modules)
yo	Bundle length	Entered bundle length (can then be used to calculate possibly missing strapping distances)
yH	Press pre-positioning upper end position	Input value

## 4.6 Light barriers

This chapter describes which function the light barriers B3, B4 and B9 perform for the respective strapping. Also see Figure 21.



**Figure 21: Positions of the light barriers B3, B4 and B9**

### 4.6.1 Light barrier B3:

- "Manual strapping" modes:  
The light barrier B3 has no function.
- "Bypass without strapping" mode:  
The light barrier B3 must be covered during the bundle stop.
- For all automatic modes:  
The light barrier B3 must be covered when the strapping cycle is triggered

### 4.6.2 Light barrier B4:

- "Manual strapping" modes:  
The light barrier B4 has no function.
- "Bypass without strapping" mode:  
The light barrier B4 starts the time after which the bundle stops.
- "Front strapping", "parallel strapping" and "multiple strapping" modes:  
The light barrier B4 is responsible for triggering the first strapping cycle.
- Centred strapping:  
The light barrier measures half the bundle length and triggers the strapping cycle.
- Rear strapping:  
The light barrier B4 has no function.

### 4.6.3 Light barrier B9:

- Centred strapping  
Light barrier B9 measures the bundle length.
- Rear strapping, multiple strapping and parallel strapping are activated by entering the distance to the rear bundle edge:  
rear strapping is triggered when light barrier B9 is cleared and the adjusted time has expired.

## 4.7 Adjusting the light barriers

- o o The configuration of the light barriers may not be changed.
- o o The actual dimensions must correspond to the configuration in the control panel!  
(Service menu)



**Figure 22: Button for configuring the light barriers**

## 4.8 Tensioning

It is possible to adjust bundle tension as a function of circumference or as a function of bundle height (option).

### 4.8.1 Automatic bundle tensioning as a function of circumference – standard

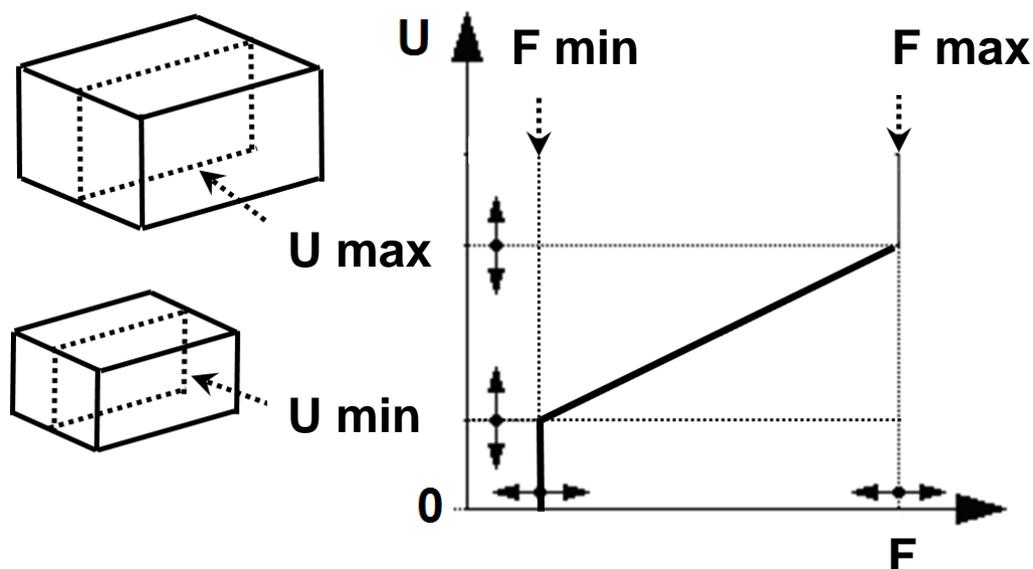
The tensioning force is controlled by measuring the bundle circumference.

In the process, a bundle with a small circumference is strapped with low tension; a bundle with a large circumference is strapped with a high tension. Here the minimum and maximum scope or the minimum and maximum tension can be adjusted with the operating menu (also see section 5.3.2.6.5). The smallest tensioning force  $F_{min}$  (equivalent to parameter "U3") is active from bundle circumference 0 up to the smallest set bundle circumference  $U_{min}$  ("U5").

The greatest tension force  $F_{max}$  ("U4") is active from the greatest set bundle circumference  $U_{max}$  ("U6").

Between the minimum and the maximum bundle circumference, the tensioning force is automatically adjusted as a function of the current bundle circumference. Also see Figure 23.

If the tensioning force is to be permanently set and therefore independent of bundle circumference, the same desired value must be set for  $F_{min}$  and  $F_{max}$  in each case, or the system is switched over to the permanent tension setting (factory setting).



**Figure 23: Tensioning force  $F$  as a function of bundle circumference  $U$ .**

## 4.8.2 Automatic bundle tensioning as a function of bundle height – option

The tensioning force is controlled by measuring the bundle height with a sensor.

A low bundle is strapped with low tension, a high bundle is strapped with high tension. Here the lower and upper bundle height and the minimum and maximum tension can be adjusted with the operating menu (also see Section 5.3.1.2)

The smallest tensioning force  $F_{min}$  (equivalent to parameter "U3") is active from bundle height 0 to the lower bundle height  $H_{min}$  ("U7").

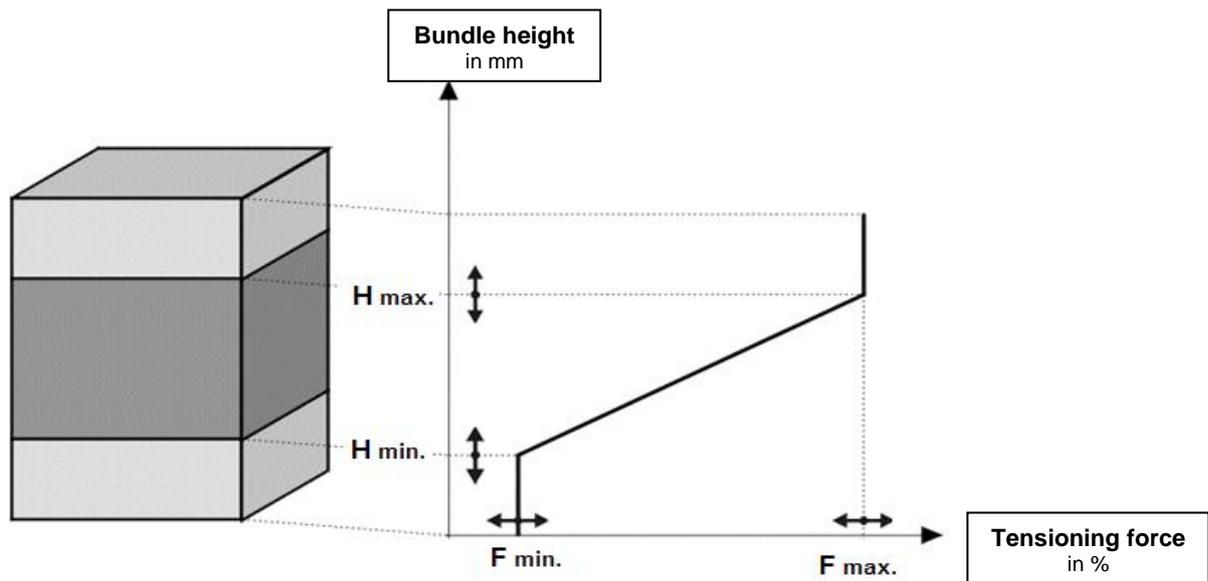
The greatest tensioning force  $F_{max}$  ("U4") is active from the upper bundle height  $H_{max}$  ("U8").

Between the lower and upper bundle height, the tensioning force adjusts itself automatically as a function of the current bundle height. Also see Figure 24.

If the tensioning force is to be permanently set and therefore independent of bundle height, the same desired value must be set for  $F_{min}$  and  $F_{max}$  in each case, or the system is switched over to the permanent tension setting (factory setting).

In the parallel or multiple strapping modes, the bundle height is only measured for the first strap. As a result, all strapping cycles on this bundle are carried out with the same tension.

In the "Manual" mode, the tensioning force saved as parameter "U9" is used for strapping.

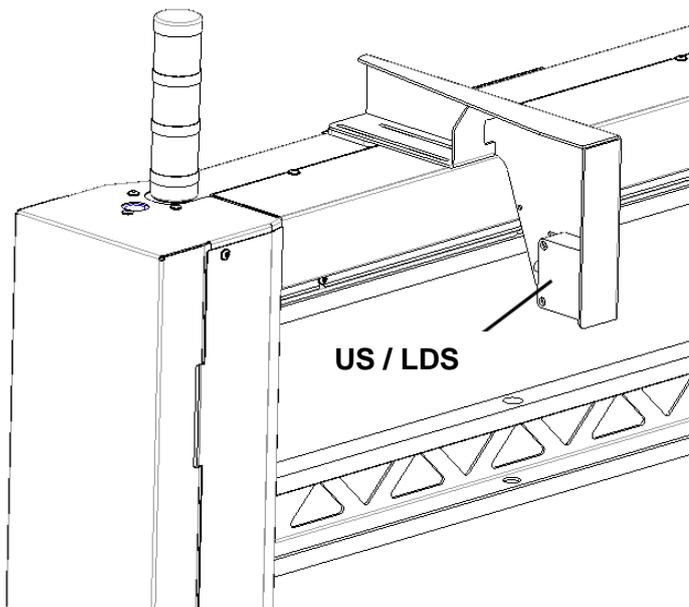


**Figure 24: Tensioning force  $F$  as a function of the bundle height.**

## 4.8.3 Height measurement sensor

The laser distance sensor is mounted on the frame on the entry side and measures the height of the bundles.

- When an electric press is fitted, the measured height is used to pre-position the pressure bar at the bundle entry point to a height just above the bundle, in order to achieve a higher bundle rate.
- With optional "height-dependent automatic tensioning", the measured height is used to adjust the tensioning value (see chapter 4.8.2)



**Figure 25: Mounting ultrasonic module (option) / laser distance sensor**

Only with ultrasonic module:

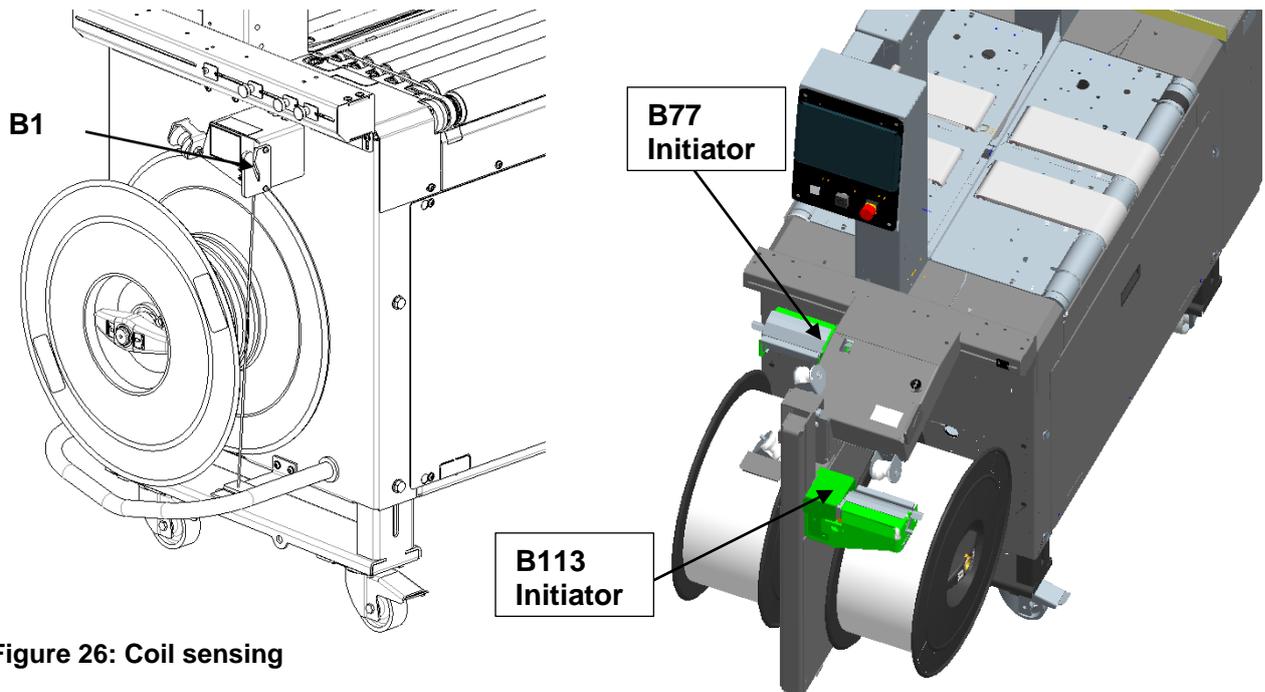
When loading the factory setting for the ultrasonic module, it must be ensured that the table tops are closed and no objects are located on them. Please lay a sheet of paper on the table top.

To load the factory setting, please proceed with ultrasound calibration in the service menu.

## 4.9 Coil sensing

### 4.9.1 Coil sensing

The machine is fitted with a light barrier (B1) for monitoring the coil. With the ASC option, each coil is fitted with an initiator (B77 / B113) which in this case performs the function of strap end detection.



**Figure 26: Coil sensing**

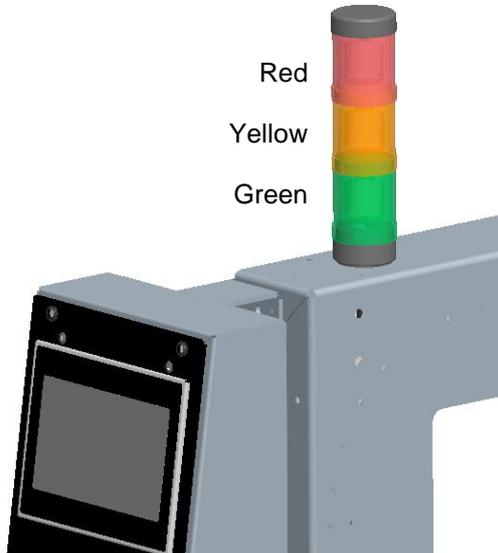
The corresponding indicator lamp flashes when the coil is nearly empty and at the end of the strap. The following symbol appears in the control panel:



**Figure 27: Warning strap end**

## 5 INFORMATION FOR THE SPECIFIC MACHINE

### 5.1 Visible signals



**Figure 28: Indicator lamp**

#### 5.1.1 Indicator lamp

The different colours of the individual lamps are used to indicate the corresponding warnings / errors.

### 5.2 Meaning of the signals

The different colours in the indicator lamp show the various possible statuses of the machine:

**RED:** machine not ready, fault active, EMERGENCY STOP button has been pressed  
Operator may possibly be able to eliminate fault or have machine returned to ready state by trained personnel

**YELLOW:** general warning (e.g. lack of strap on coil)  
Operator is informed that action is necessary, e.g. replace strap coil

**GREEN:** Machine is ready for operation  
Status message. Normal machine operation.

When red or yellow signals are given, the touch panel shows symbols for the corresponding causes or indicates which action needs to be taken.

### 5.3 Menu structure

**The menu of the machine can be controlled with a touch-sensitive display. Touching the individual fields (icons) with a finger selects menu levels or selects and confirms commands. Table 5 shows an overview of the icons used and their breakdown.**

Entries which concern the configuration must be confirmed in each case. A query is output for this purpose.

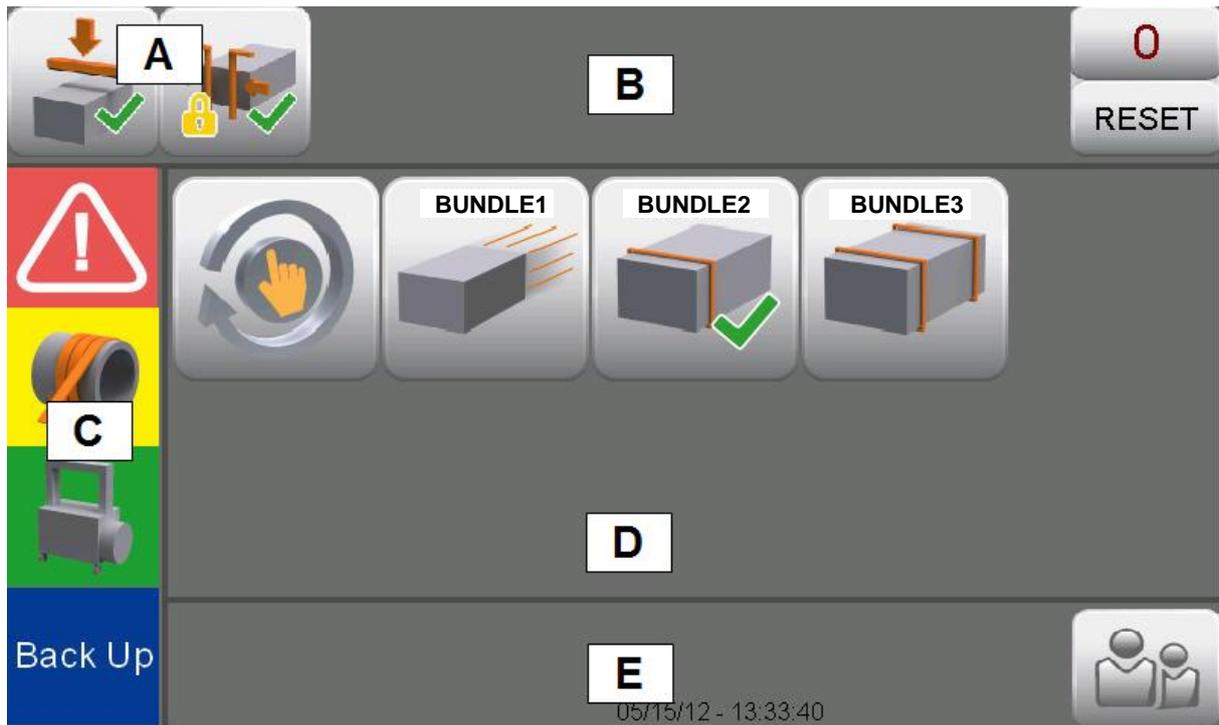
Numeric values (e.g. see Icon 42: Set timer - small icon) can be reduced or increased with the minus and plus symbol or entered manually by selecting the number field.

The start interface is divided into various fields (see Figure 29).

Non-relevant icons are hidden in each case.  
 Activated fields are each marked with a green tick.  
 Icons highlighted in green indicate the "Ready for operation" status.  
 Icons highlighted in blue represent messages.  
 Icons highlighted in yellow show running processes.

**A distinction is made between five different user groups:  
 User, Supervisor, Service, Factory and Administrator.**

The rights and setting options of these groups increase in this order.  
 The user groups "Operators", "Supervisors" and ("Service") are covered in this manual.  
 From the "Supervisors" group, it is necessary to log in with a username and passport.

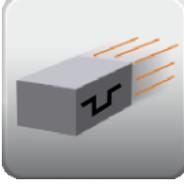
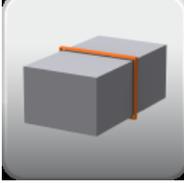
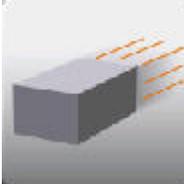


**Figure 29: Start interface of control panel**  
 (shown here: Operator menu level)

Field A: for the press and bundle stops  
 Field B: for favourites (quick access)  
 Field C: for status displays and messages  
 Field D: for bundle recipes  
 Field E: for general information (date, time) and the icon for changing the user group.  
 In this example, the green ticks show that the "BUNDLE2" bundle recipe and the press and bundle stops are activated. The machine is ready for operation (see icon on field C).

**Table 5: Overview of icons used and their description**

Parameters	Icon	Description	Type	Visible from user group
<b>j3</b>	 <p>Icon 1: Front strapping</p>	Mode button - front strapping	Operating mode	Operator
<b>j4</b>	 <p>Icon 2: Rear strapping</p>	Mode button - rear strapping	Operating mode	Operator
<b>j6</b>	 <p>Icon 3: Parallel strapping</p>	Mode button - parallel strapping Standard Distance from front edge to first strap and time measurement from 1st to 2nd strap	Operating mode	Operator
<b>j7</b>	 <p>Icon 4: Triple strapping</p>	Triple strapping button: Distance from front edge to first strap and distance from rear edge to second strap, one strap distance to the first strap in the middle	Operating mode	Operator

<b>j9</b>	 <p>Icon 5: Parallel strapping</p>	<p>Mode button - parallel strapping: Option Distance from front edge to first strap and distance from rear edge to second strap</p>	Operating mode	Operator
<b>j2</b>	 <p>Icon 6: Bypass with cycling</p>	<p>Mode button - bypass with cycling Bundle runs unstrapped through the machine which acts as accumulation area</p>	Operating mode	Operator
<b>j5</b>	 <p>Icon 7: Centred strapping</p>	<p>Mode button - middle strapping</p>	Operating mode	Operator
<b>Rz0</b>	 <p>Icon 8: Manual strapping</p>	<p>Mode button - manual strapping</p>	Operating mode	Operator
<b>j1</b>	 <p>Icon 9: Bypass</p>	<p>Mode button - bypass Bundle runs through machine unstrapped which is used as accumulation area</p>	Operating mode	Operator

**WH**



Icon 10: Bundle press

Bundle press (On/Off)

Option

Operator

**Wi**



Icon 11: Bundle stops

Bundle stops (On/Off)

Option

Operator

**S01**



Icon 12: Home

Home icon for returning to the Start page

Navigation

Supervisor

**io**



Icon 13: Ready for operation

Machine is ready for operation

Status message

Operator

**i6**



Icon 14: Heat-up time

Machine is in the heat-up time;  
a timer counts down the heat-up time

Status message

Operator

**ii**



Icon 15: Press Start button

Press start button

Action required

Operator



Icon 16: Fault message

Message on fault or error

Status message

Operator

**Uy**



Icon 17: Supervisor menu selected

Supervisor

Option

Supervisor

**ir**



Icon 18: Strap coil empty

Strap coil is empty

Status message

Operator

**i5**



Icon 19: Remove rest of strap

No strap --> remove strap rest

Remove strap residue from the strap arch

Message requires action Operator

**Uz**



Icon 20: Log in

Log in / log off  
User logs in with user name and password

Option

Operator

**Uz**



Icon 21: Log off

Log off

Option

Operator, supervisor

**Ux**



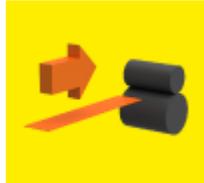
Icon 22: Service menu selected

Open Service menu

Option

Service

**i2**



Icon 23: Threading mode

Machine is in Threading mode

Status message

Operator

**qd**



Icon 24: Eject strap

Eject strap

Option

Operator

<b>i1</b>	 <p>Icon 25: Stand-by</p>	Machine is in stand-by	Status message	Operator
<b>s21</b>	 <p>Icon 26: Machine Info</p>	Machine information such as machine serial number, program number, etc. can be displayed	Information	Supervisor
<b>s05</b>	 <p>Icon 27: Strapping positions</p>	Specify strapping positions	Configuration	Supervisor
<b>q5</b>	 <p>Icon 28: Bundle name</p>	Enter / change recipe name	Configuration	Supervisor
<b>s37</b>	 <p>Icon 29: Bundle setting</p>	Bundle setting	Configuration	Supervisor

**s12**



Icon 30: Entry control

Bundle entry control

Configuration

Supervisor

**S19**



Icon 31: Timer

Timer adjustment

Configuration

Supervisor

**Wb  
WC  
WE**



Icon 32: Option deactivated/blocked

This button is used to deactivate/block the press (Wb), bundle stops (WC) and side pushers (WE) for the operator.

Configuration

Supervisor

**Wb  
WC  
WE**



Icon 33: Option activated/blocked

This button is used to activate/block the press (Wb), bundle stops (WC) and side pushers (WE) for the operator.

Configuration

Supervisor

**Wb  
WC  
WE**



Icon 34: Option can be activated

Selection option so that the operator can switch the press, bundle stops, and side pushers on and off

Configuration

Supervisor

**s13**

**iA**



Icon 35: Confirm entry



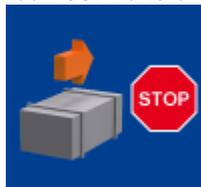
Icon 36: Cancel entry



Icon 37: Function blocked



Icon 38: Tensioning



Icon 39: Exit release

Confirm entry

Cancel entry

Single lock symbol: Function is blocked

Set strap tensioning

Exit release blocked, downstream machine blocked

Action required

Action required

Configuration

Configuration

Status message

Operator

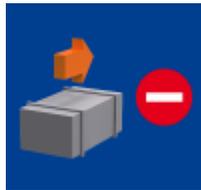
Operator

Operator

Supervisor

Operator

**Pi**



Icon 40: Entry release

Entry release block (T8)

Status message

Operator

**Wk**



Icon 41: Side pushers

Side pushers

Option

Operator



Icon 42: Set timer - small icon

Time entry without icon

Configuration

Supervisor

**s8**



Icon 43: Forward

Scroll forward in menu

Configuration

Supervisor

**s3**



Icon 44: Back

Scroll back in menu

Configuration

Supervisor

**A0**



Icon 45: Daily strapping counter

Daily counter: counts the strapping of a day

Configuration

Operator

**q6**



Icon 46: Placeholder Option 1

Placeholder icon for customer-specific optional functions  
Option 1

Option

Supervisor

**q7**



Icon 47: Placeholder Option 2

Placeholder icon for customer-specific optional functions  
Option 2

Option

Supervisor

**q8**



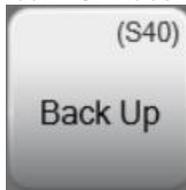
Icon 48: Placeholder Option 3

Placeholder icon for customer-specific optional functions  
Option 3

Option

Supervisor

**s40**



Icon 49: Backup

If two SMB machines are positioned in series and a fault has occurred in one machine, the faulty machine switches to bypass without strapping and reports this to the other machine. It then switches over, for example, to parallel strapping depending on the machine type

Option

Supervisor

**md**



Icon 50: Do not strap bundle

Do not strap bundle. This button reveals a menu with the possibility of adjusting the conditions under which a bundle should run unstrapped through the machine, e.g. by adjusting a certain bundle height.

Option

Supervisor

**Rz1**



Icon 51: Bundle recipe 1

The bundle recipe (1) can be selected directly or chosen from the recipe settings in the menu. In addition, it indicates the current operating mode of the recipe (bypass).

Configuration

Operator

**Rz2**



Icon 52: Bundle recipe 2

The bundle recipe (2) can be selected directly or chosen from the recipe settings in the menu. In addition, it indicates the current operating mode of the recipe (single strapping).

Configuration

Operator

**Rz3**



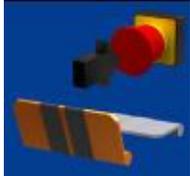
Icon 53: Bundle recipe 3

The bundle recipe (3) can be selected directly or chosen from the recipe settings in the menu. In addition, it indicates the current operating mode of the recipe (parallel strapping).

Configuration

Operator

<b>qH</b>	 <p>(qH)</p>	Create new bundle recipe	Action	Operator
Icon 54: Create new bundle recipe				
<b>qi</b>	 <p>(qi)</p>	Search for bundle recipe	Action	Operator
Icon 55: Search for bundle recipe				
<b>qk</b>	 <p>(qk)</p>	Copy bundle recipe	Action	Operator
Icon 56: Copy bundle recipe				
<b>qj</b>	 <p>(qj)</p>	<p>This icon shows that various bundle recipes are available for a certain mode (here: front strapping). Set a green tick to active this choice.</p>	Configuration	Operator
Icon 57: Multi-recipe				
<b>j8</b>		Mode button - Multiple strapping	Operating mode	Operator
Icon 58: Multiple strapping				

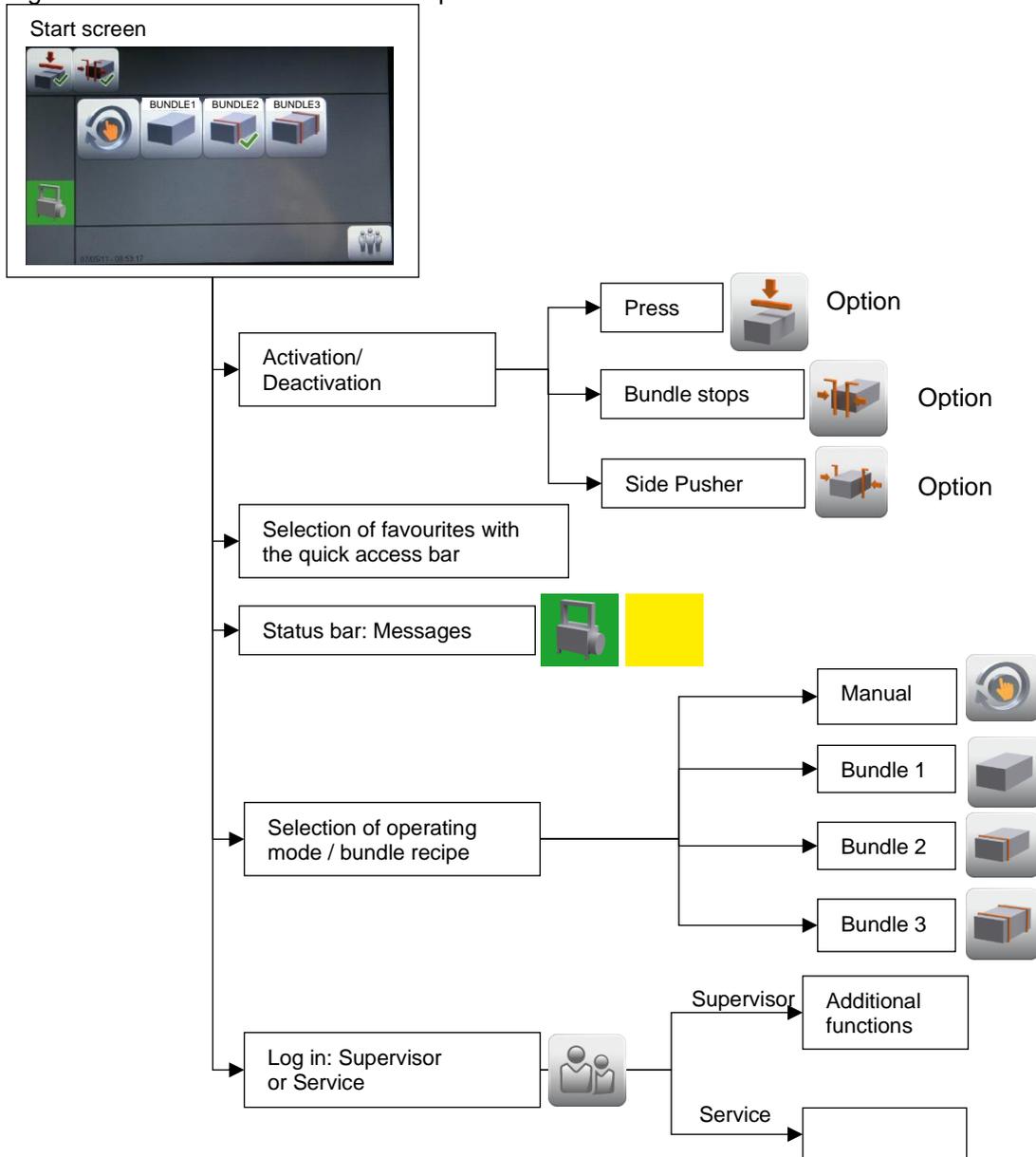
		Identifies a parameter. This is valid for all bundle recipes.	Status message	Operator
<b>i0</b>	 Icon 60: Message in the background	The previously displayed message recedes to the background so that entries can be made in the menu. Press the icon to see the message again. Example: Machine has stopped.	Message	Operator
<b>i7</b>	 Icon 61: EMERGENCY STOP	EMERGENCY STOP: Table top open or Emergency Stop button pressed	Status message	Operator
<b>i4</b>	 Icon 62: Safety door open	EMERGENCY STOP: Safety door open	Status message	Operator
<b>mL</b>	 Icon 63: Do not strap bundle from "external"	When activated, this controls the "do not strap bundle from external" function via signal.	Configuration	Supervisor

### 5.3.1 Operator menu

The operator menu level requires no log-in.

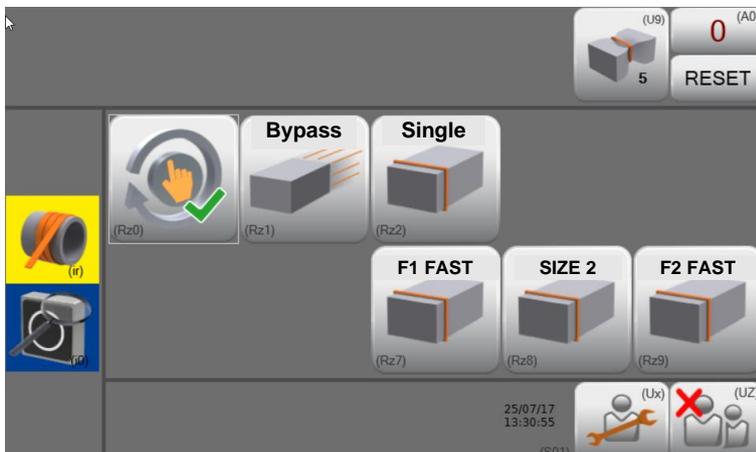
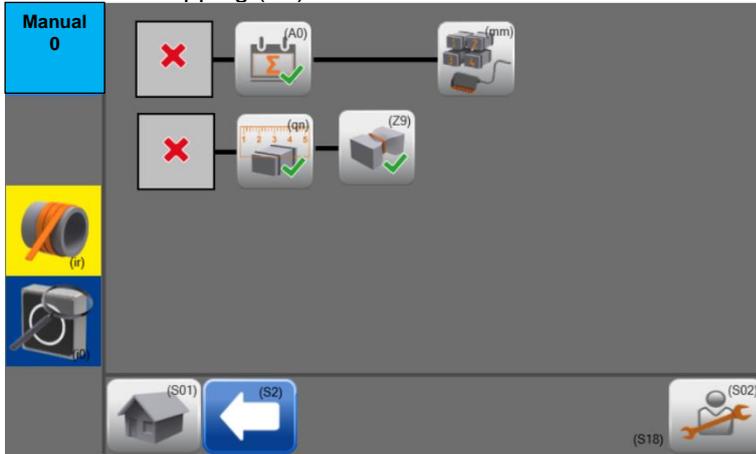
The operator can change over between manual strapping and bundle recipes and select or deselect the press or the bundle stops (options) if the supervisor/service has not blocked this selection option.

Figure 30 shows the structure of the Operator menu.



**Figure 30: Structure of menu for operator**  
with example status messages

The service can make additional functions visible for the operator/supervisor, e.g. daily strapping counter (A0), button for ascertaining the strapping position (qn) and the adjustment of strap tension for manual strapping (Z9).

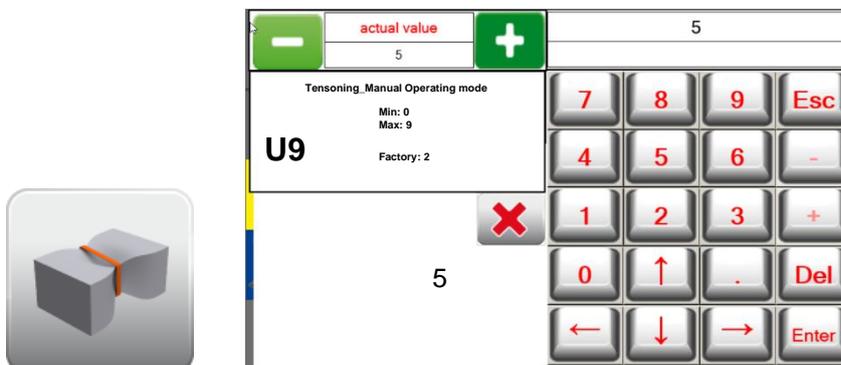


**Figure 31: User screen**

In this example, the operator can only choose between the displayed operating modes.

Apart from manual strapping, the operator can use the bundle settings to adjust a few bundle parameters for the specific operating mode. With manual strapping, the operator can only adjust the strap tension.

After selecting Icon 38: Tensioning, the tension value can be changed in a values menu.



**Figure 32: Tension values**

### 5.3.1.1 Adjust the bundle settings

This function comprises adjusting the speed profile of the table conveyors/roller table and the strapping distances.

The bundle settings can be adjusted with the Icon 27"strapping position"



to various bundles.

The window shown in Figure 33 opens.

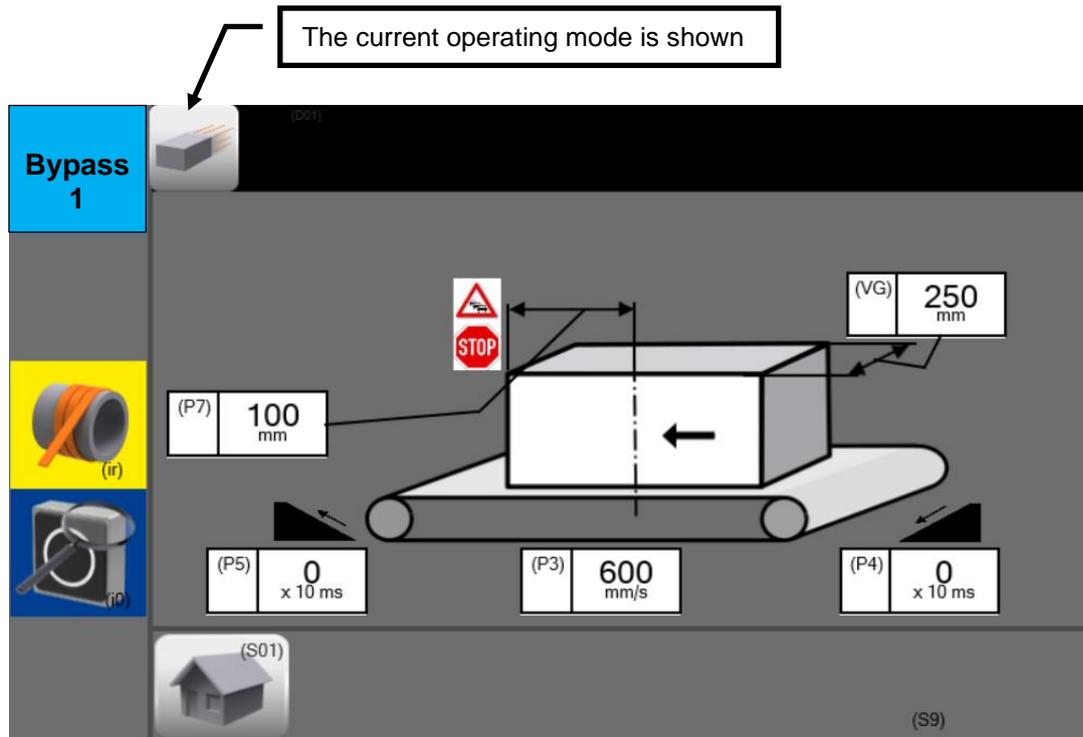
The speed of the transport system, the braking behaviour during entry and the acceleration behaviour during exit can be adjusted for this purpose. The higher the ramp value, the longer the deceleration path of the conveyors and the gentler the bundle stop or the higher the acceleration value and the bundle traverse.

It is also possible to adjust the corresponding times for the strapping distances, depending on the selected operating mode.

See also Table 4 for an explanation of the times.

#### 5.3.1.1.1 Bypass mode

When bundles have accumulated at the downstream machine, the bundles stop after the adjusted distance "P7".



**Figure 33: Strapping position bypass mode**

After pressing the button for the current operating mode, you can change to another mode (see Figure 34).

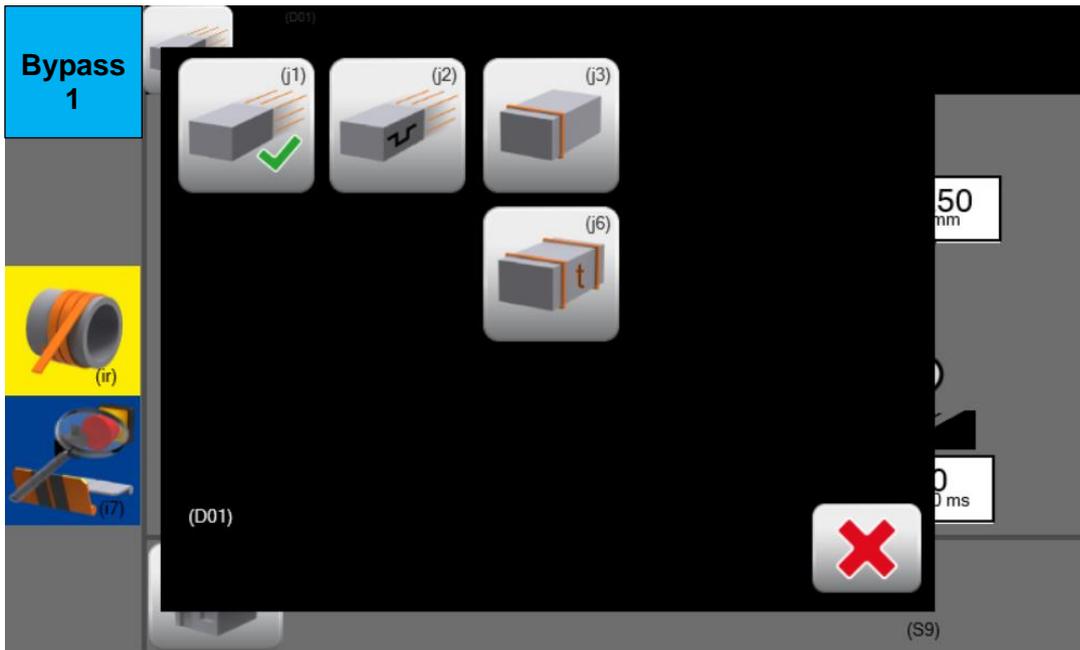


Figure 34: Mode selection window

5.3.1.1.2 Bypass with cycling

When bundles have accumulated at the downstream machine, the bundle stops for the adjusted stop duration and after the adjusted distance "P7" in the machine and is then transported out of the machine without strapping.

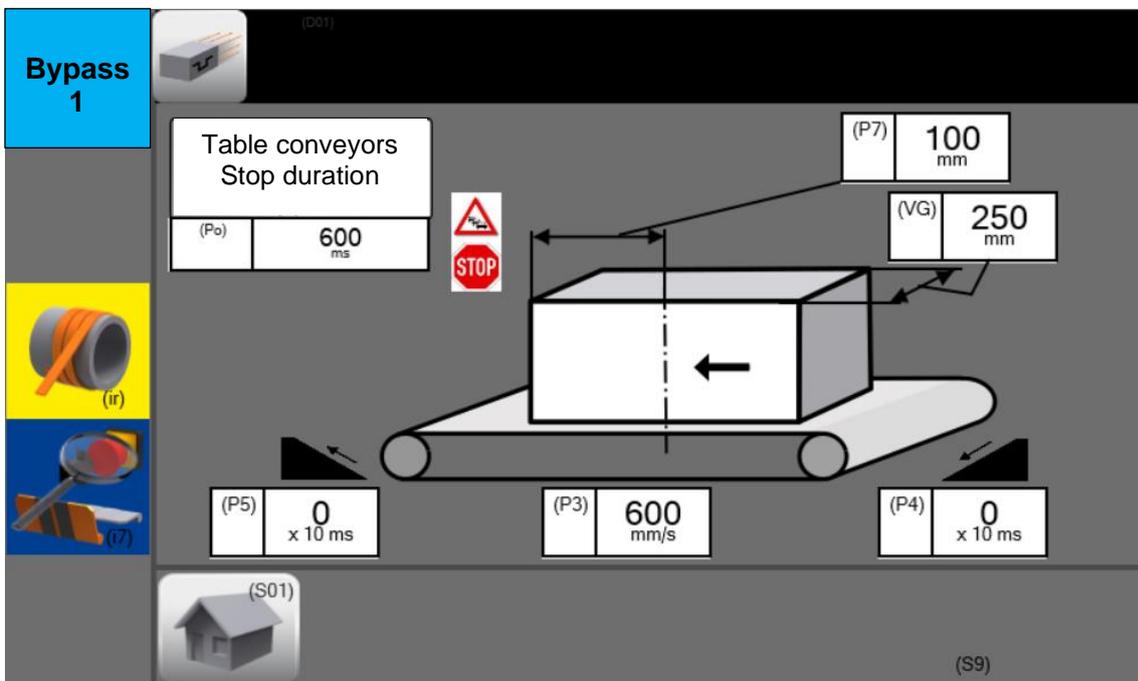
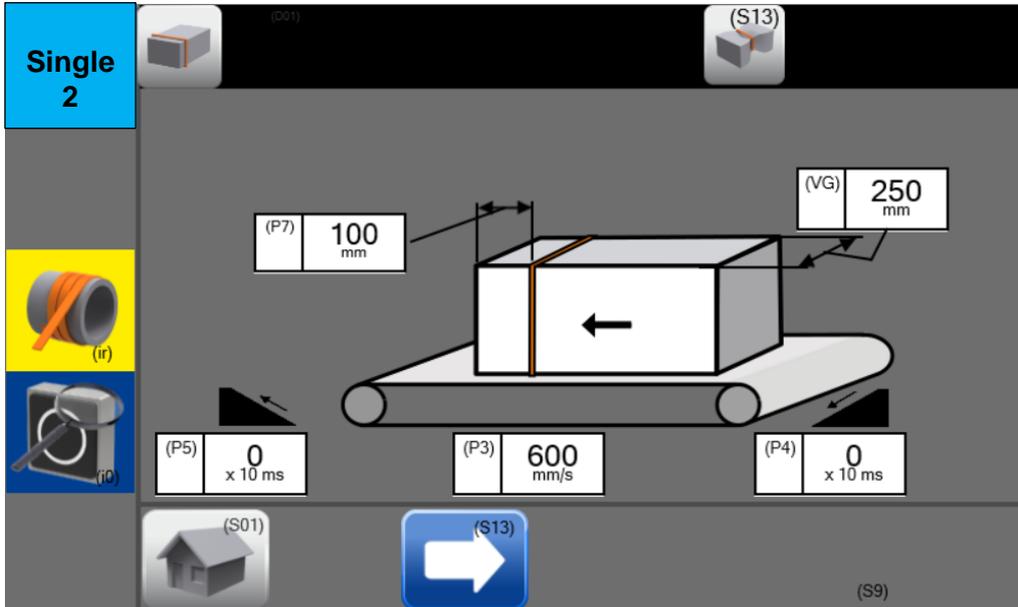


Figure 35: Strapping position for bypass with cycling

### 5.3.1.1.3 Front strapping

The distance for the strap to the front bundle edge can be adjusted in this window.



**Figure 36: Strapping position for front strapping**

### 5.3.1.1.4 Parallel strapping

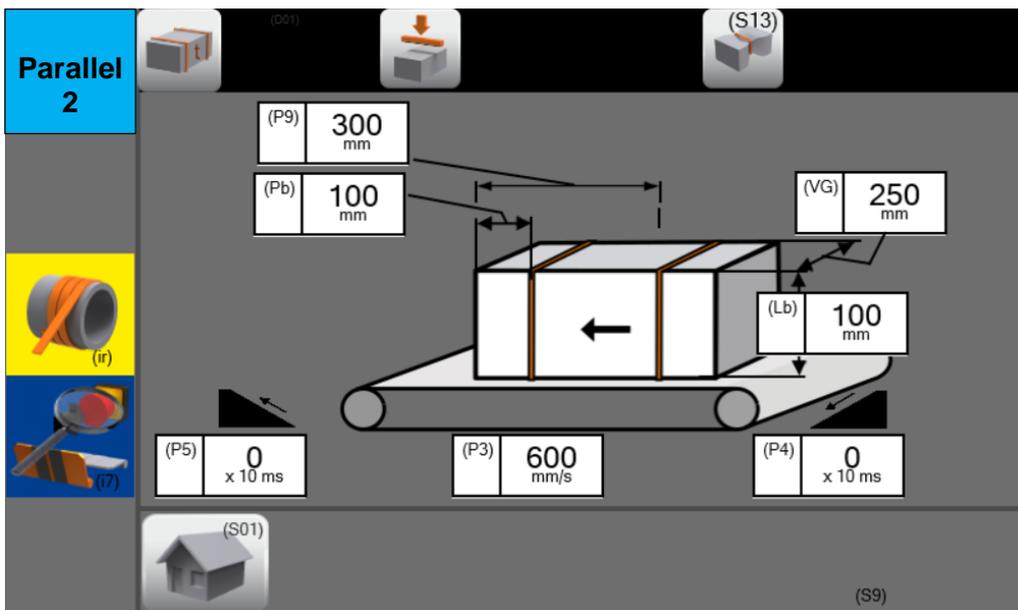
The settings for parallel strapping can be adjusted here.

The dimensions can be entered electively, missing dimensions are then calculated.

The minimum strapping distance from the bundle edges is 20 mm.

Enter the bundle width (VG).

The bundle height (Lb) is also entered. This is not the compressed height of the bundle.



**Figure 37: Strapping position for parallel strapping**

All settings can be taken from a range of values defined for each parameter, illustrated here with the setting for bundle width (VG).

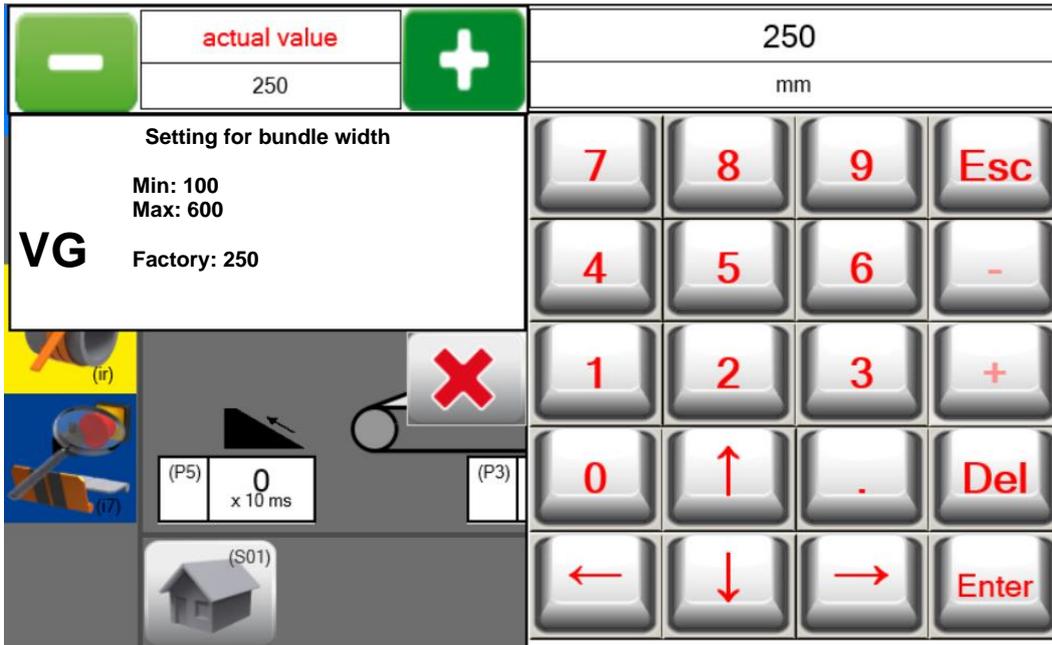


Figure 38: Selection window for bundle setting values

5.3.1.2 Tensioning

Select Icon 38: Tensioning to adjust the tension.

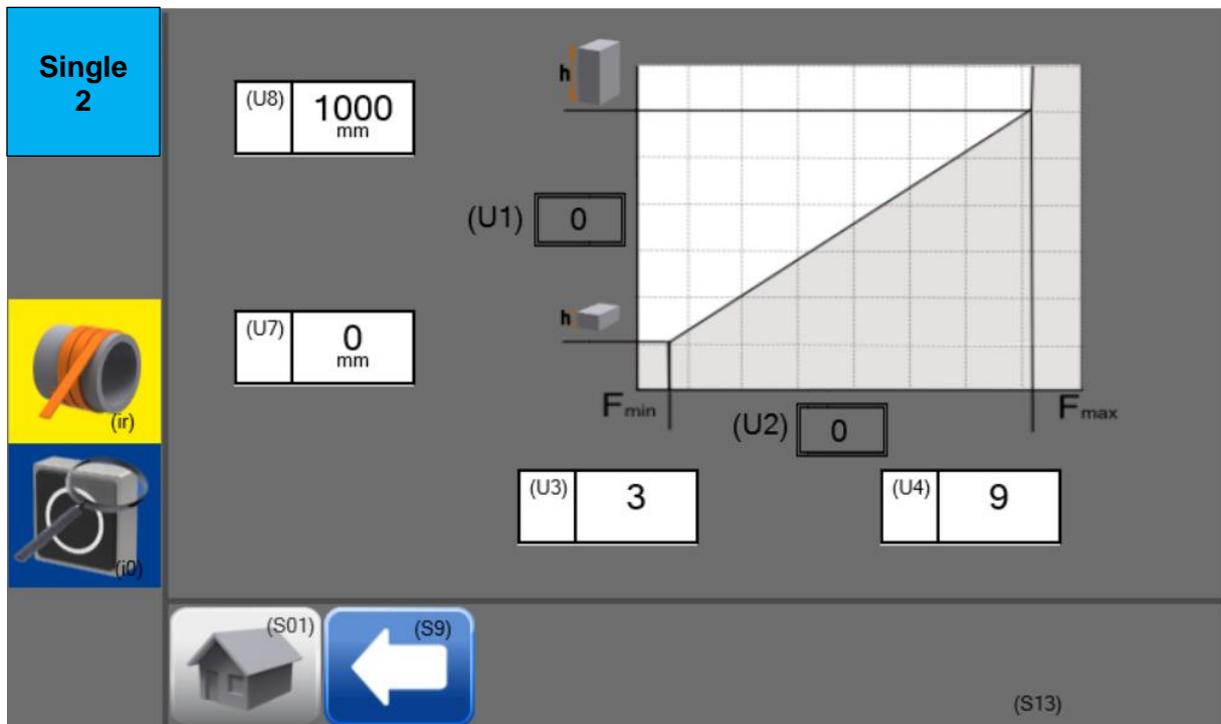


Figure 39: Adjusting the tension (as a function of height)

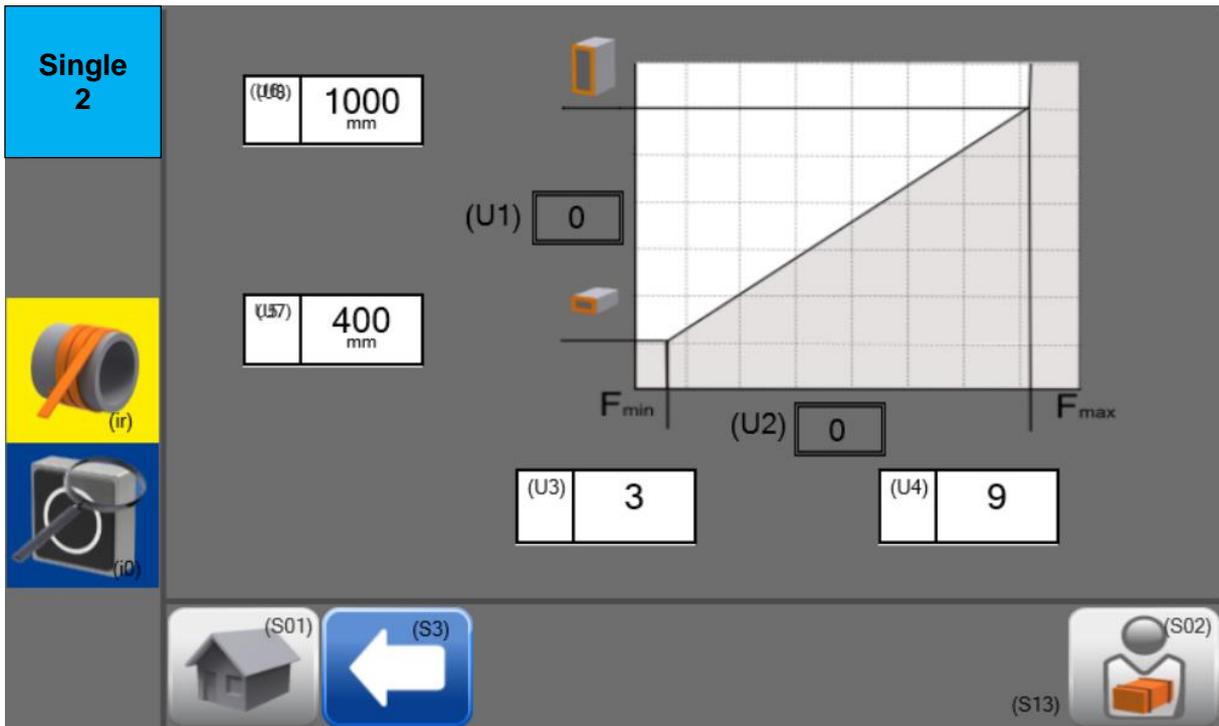


Figure 40: Adjusting the tension (as a function of circumference)

The value for the smallest tension (U3) can be selected between 0 and 9. The factory setting is also shown.

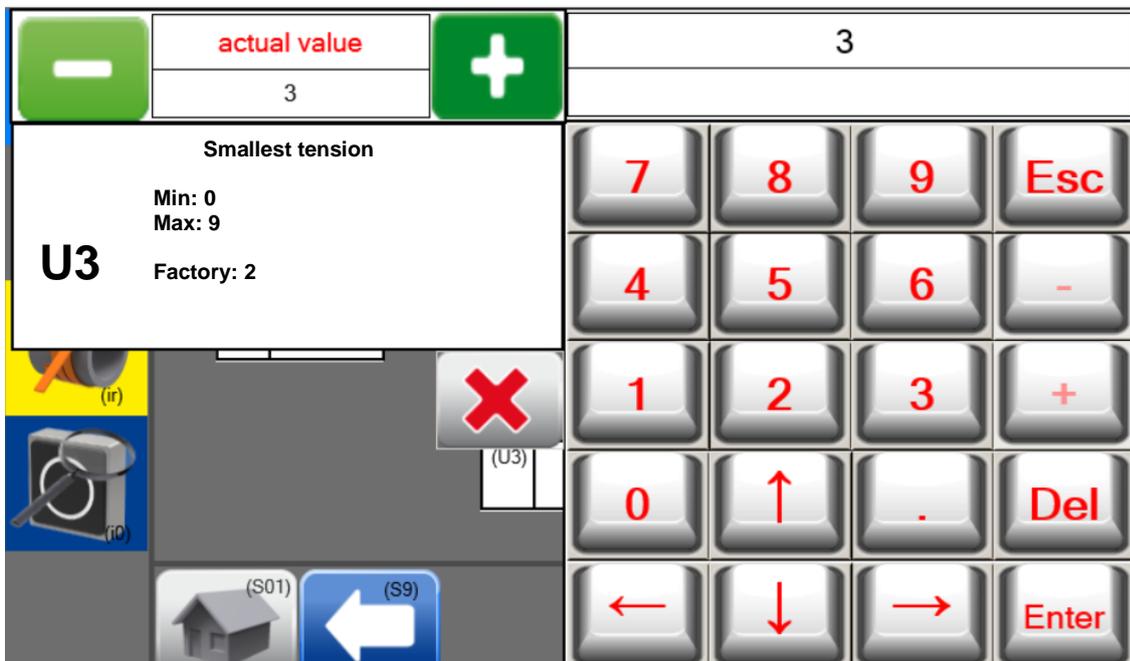


Figure 41: Smallest tension value U3

The value for the largest tension (U4) can also be selected between 0 and 9.

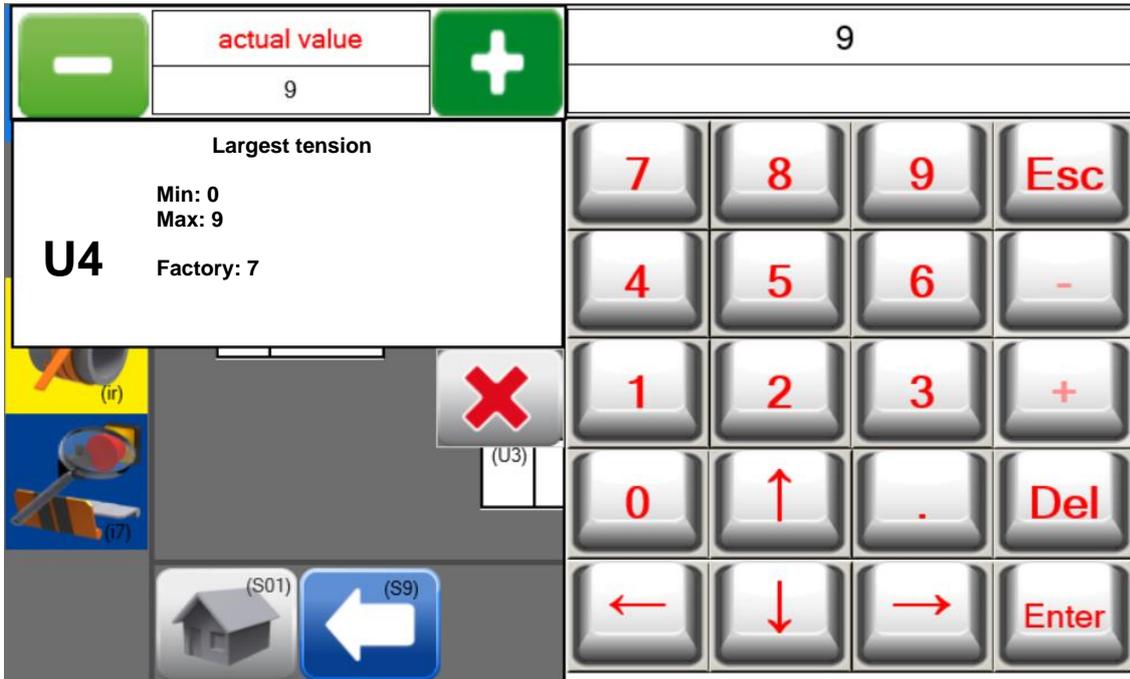


Figure 42: Largest tension value U4

### 5.3.1.3 Bundle recipes

The parameters for up to 5000 recipes (oW) can be enabled for the supervisor / operator by the service.

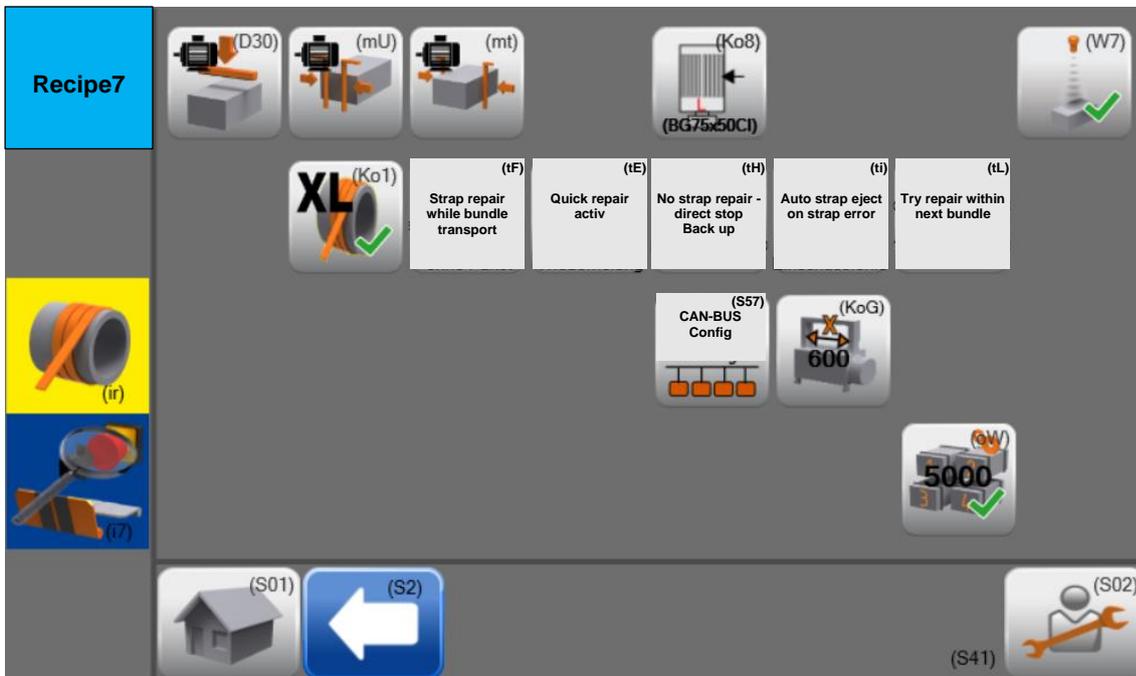
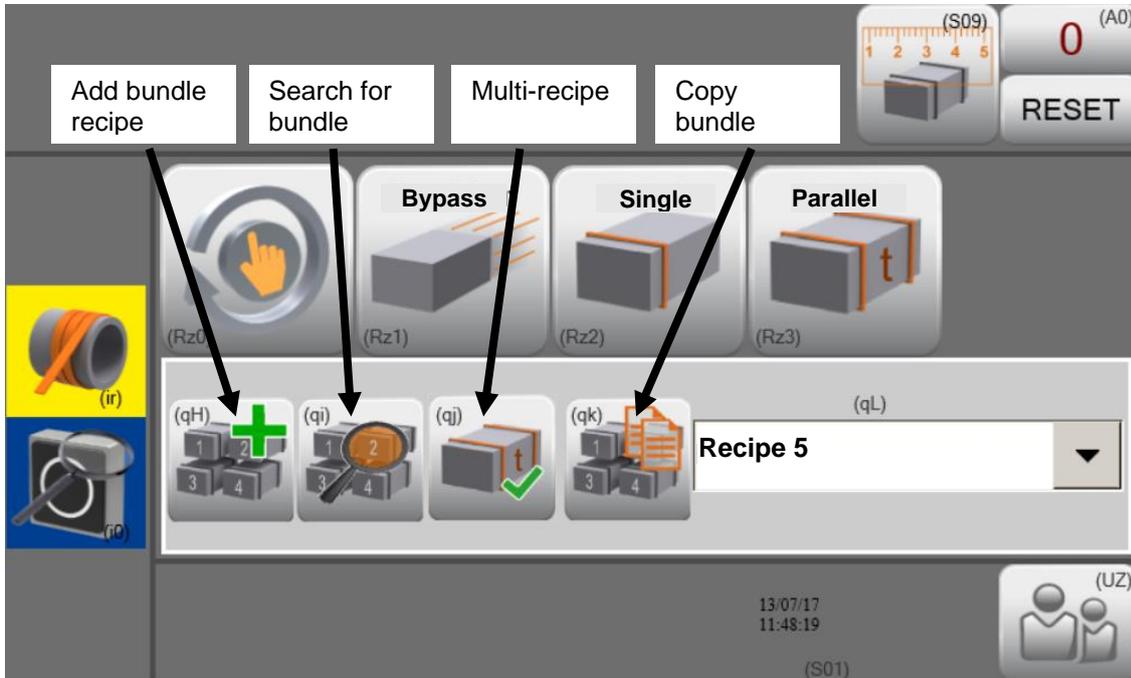


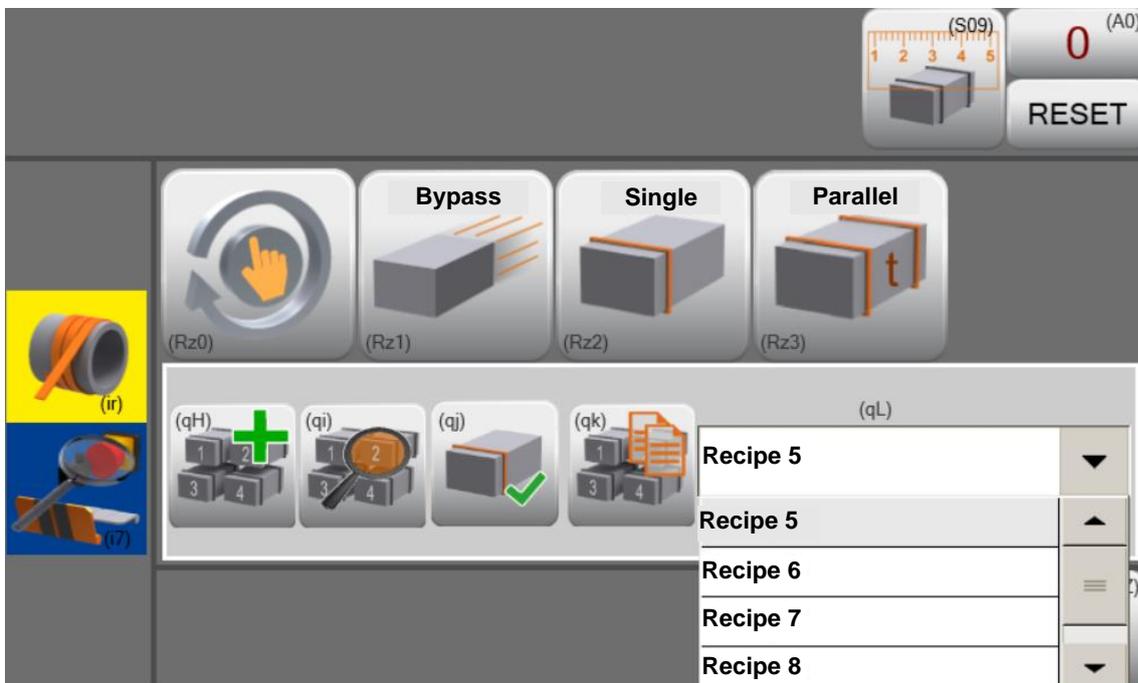
Figure 43: Recipe management enabled for up to 5000 recipes

The operator can thus use various icons to manage the bundle recipes: Icon 54: Create new bundle recipe, Icon 55: Search for bundle recipe, Icon 56: Copy bundle recipe, Icon 57: Multi-recipe. The button (qj) activates the bundle recipes available for the selected operating mode.



**Figure 44: Bundle recipes**

The operator can choose a bundle recipe from a list of available bundle recipes for an operating mode.



**Figure 45: Available bundle recipes for the front strapping mode**

If no multi-recipes are selected for a certain operating mode, then only the operating mode itself can be selected. The stored bundle recipes are then disabled.

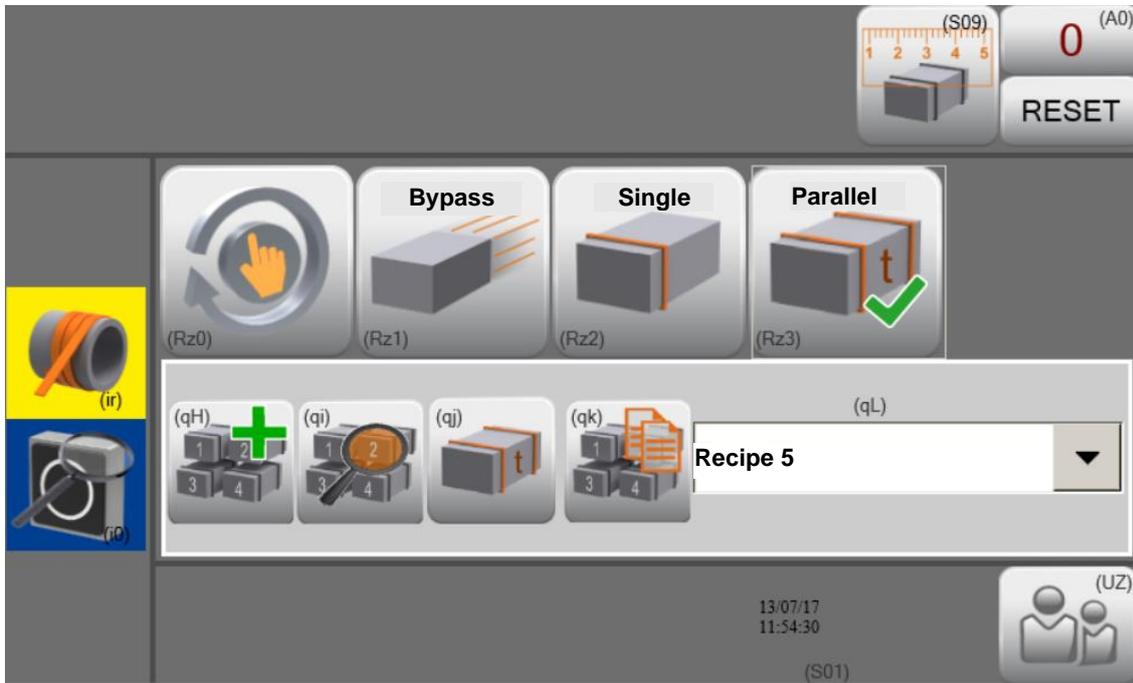
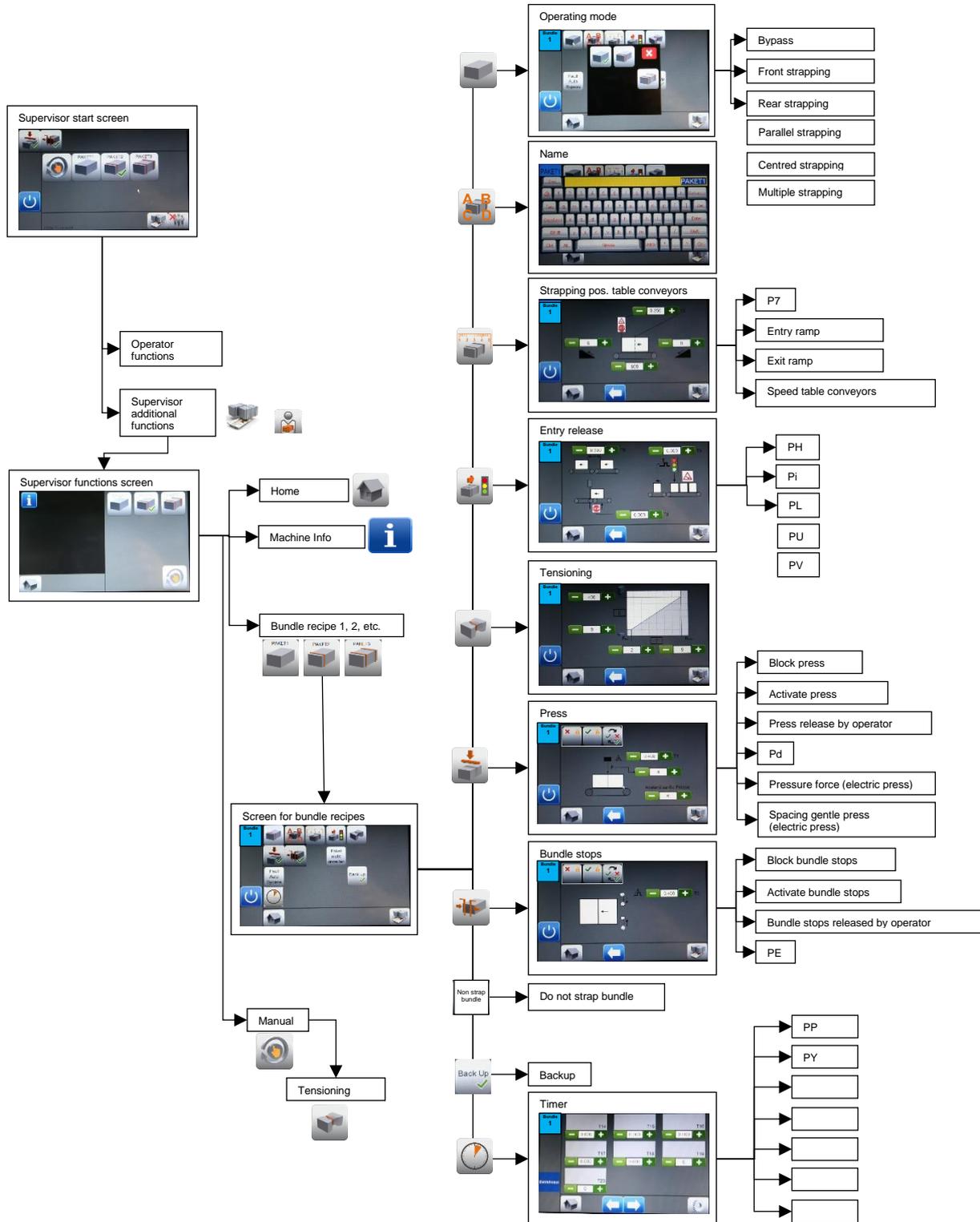


Figure 46: Direct mode selection

## 5.3.2 Supervisor menu



**Figure 47: Structure supervisor menu**

Pressing the icons shown enables the various parameters to be run and adjusted. The individual submenus are described separately from chapter 5.3.2.1.

The following pages show enlarged pictures with corresponding descriptions.

To access the Supervisor menu, it is necessary to log in with a username and a password.

Select the operator icon



Figure 48: Operator icon

on the start screen (see also Figure 47) to begin the log-in process. This icon is also used for the log-out process.

In the log-in screen (see Figure 49), the "user name" and "password" fields must be selected separately, after which a new screen with a keyboard interface appears.

Each entry must be confirmed with the Return key. After making entries in both fields,

log-in is possible by pressing the  button.

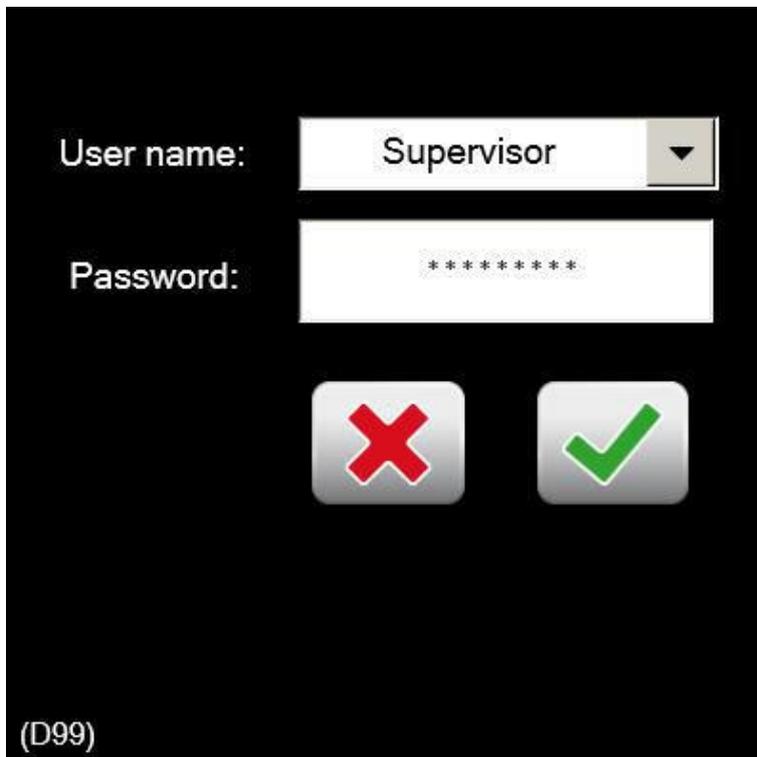


Figure 49: Log-in screen.



Operator menu => log into the Supervisor/Service menu



Supervisor menu selected / back to the operator menu



Service menu selected / back to the operator menu

Figure 47 shows the structure of the menu for the supervisor starting from the start screen after the log-in.



If you select icon (UZ) and log in as SUPERVISOR, you will find additional functions are available.

### 5.3.2.1 Return to start screen

It is possible to return to the start screen with the Icon 12: Home.



### 5.3.2.2 Menu: Supervisor functions

Click on Icon 17



to go to the menu: Supervisor functions

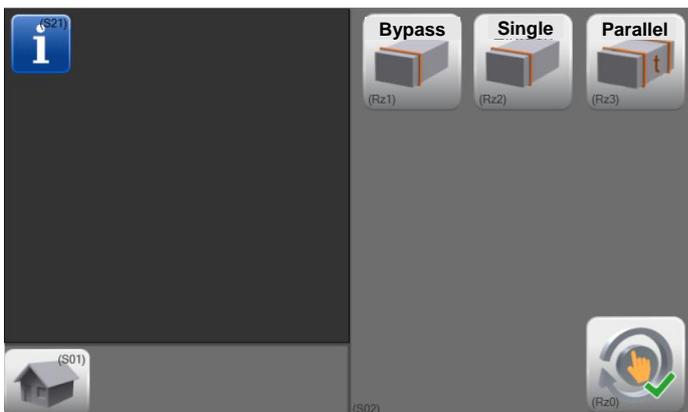


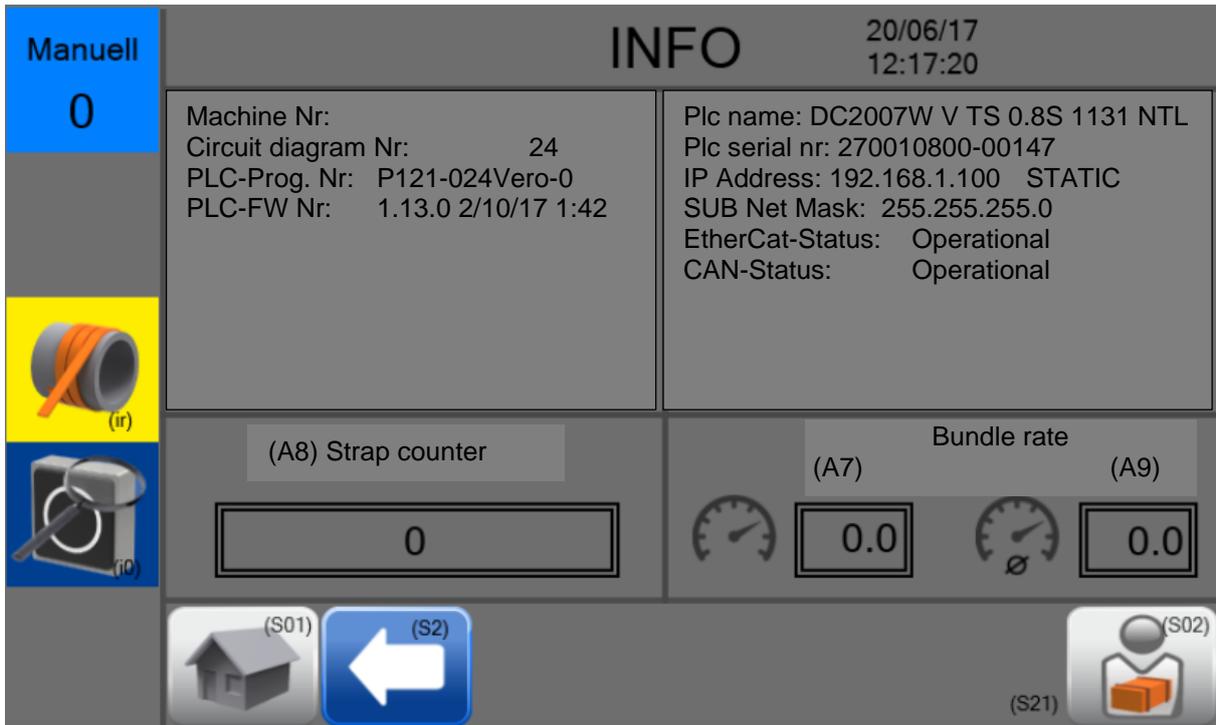
Figure 50: Supervisor functions

### 5.3.2.3 Machine Info

Use the Icon 26: Machine Info



to access machine information, such as the serial number, IP address and strapping counter etc.

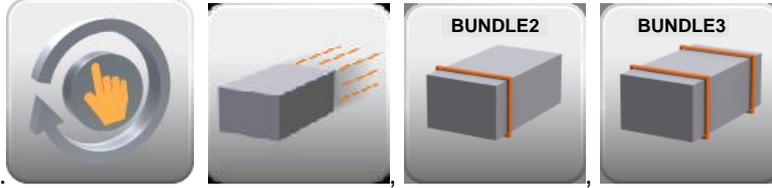


**Figure 51 Information mask**

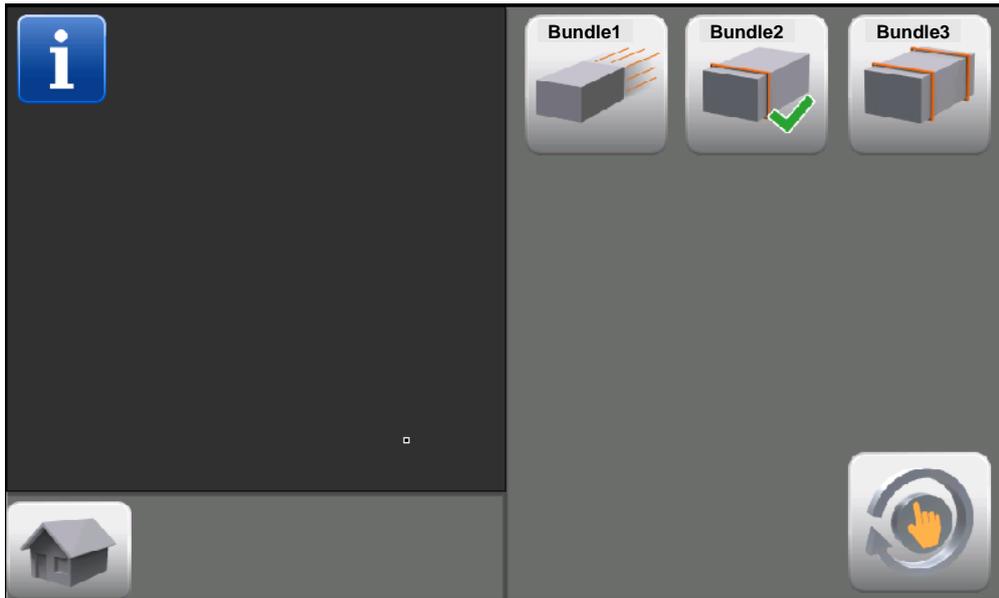
- A8 = Total strapping counter      all strapping cycles of this machine
- A7 = Bundle rate                      theoretically possible maximum bundle rate for the strapping machine with the currently adjusted parameters
- A9 = Average bundle rate              line rate referred to the last 10 bundles

### 5.3.2.4 Bundle recipe 1, 2, etc.

Selecting the buttons for the bundle recipes



opens the menu for selecting the bundle recipe, see Figure 52



**Figure 52: Bundle recipe selection menu**

Press a bundle recipe or the "manual strapping" icon to go to the corresponding Supervisor menu.

Any changes in the bundle recipes must be confirmed.



**Figure 53: Save**

### 5.3.2.5 Manual mode

Press Icon 8 to select the manual strapping mode.



5.3.2.5.1 Tensioning in manual mode

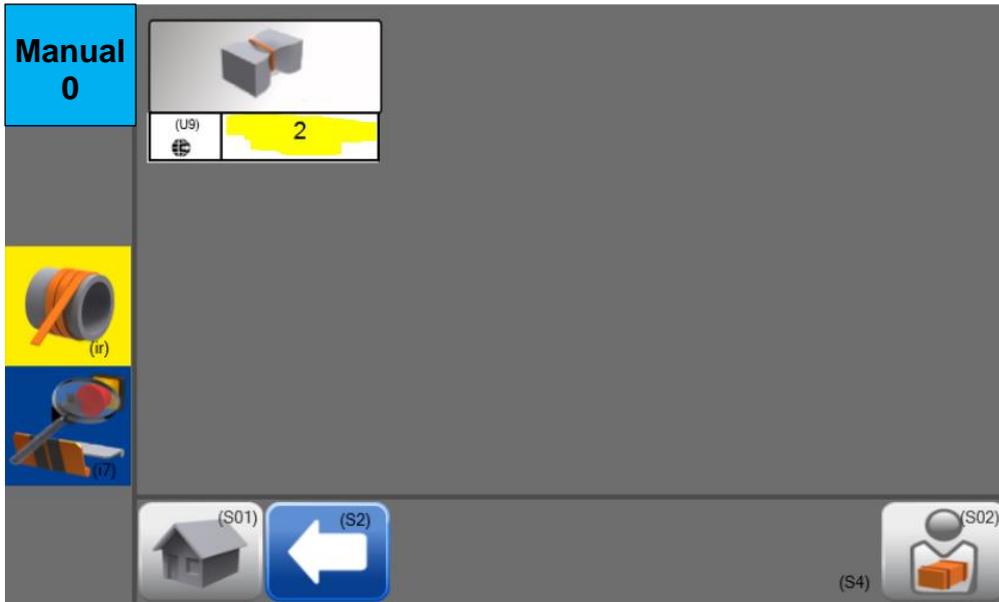


Figure 54: Manual tensioning

Select the yellow box to open an input window with information about the setting range and the factory setting. (also see section 5.3.1.2 and chapter 4.8).

5.3.2.6 Automatic modes

Selecting all automatic modes opens a window in each case for entering a bundle recipe:

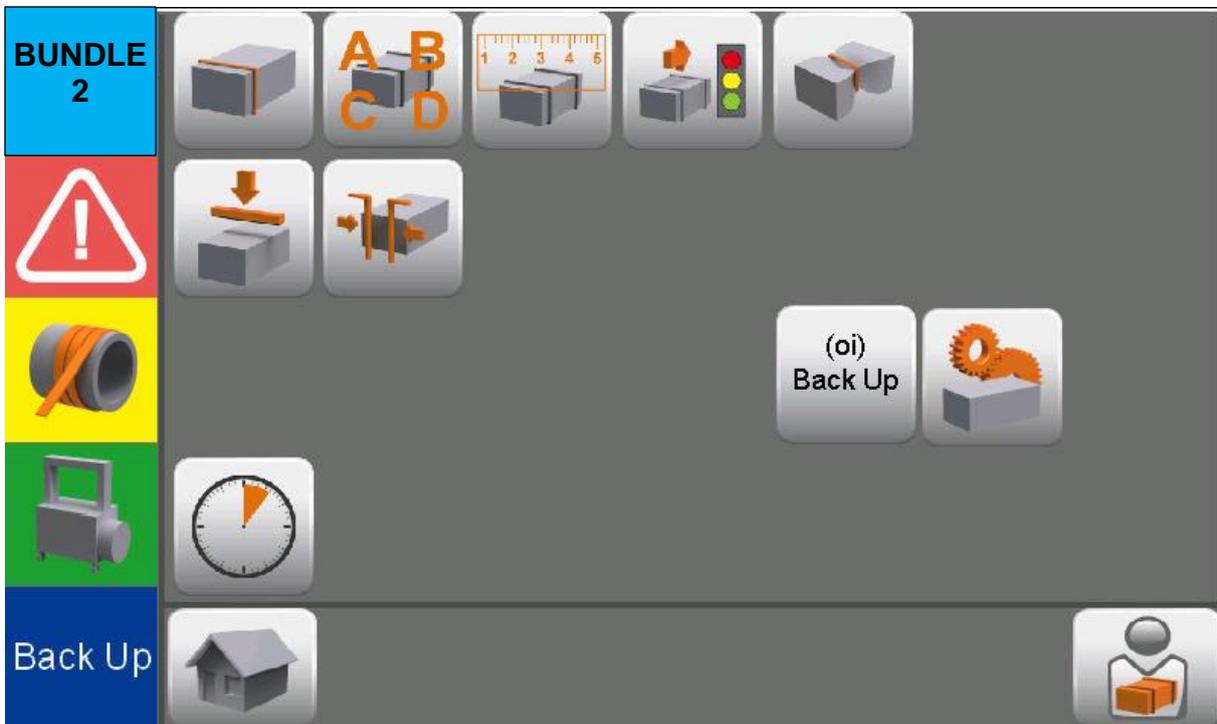


Figure 55: Start screen for adjusting bundle recipes

Various adjustment options exist, which are described in the following chapters.

## 5.3.2.6.1 Specification of operating mode for a certain bundle recipe

Select the icon for the operating mode



to open a window (see Figure 56). The required operating mode (example = front strapping) can be selected here.

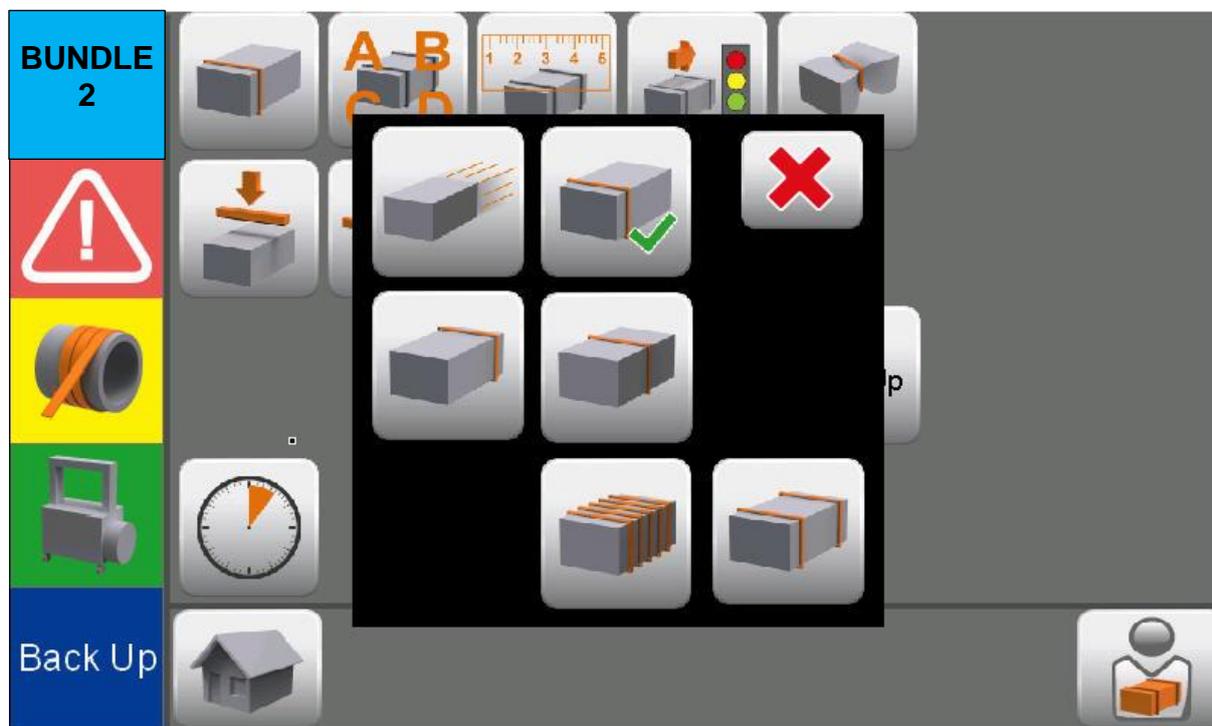


Figure 56: Specification of the mode for a certain bundle recipe

5.3.2.6.2 Specification of name for a bundle recipe

The Icon 28: Bundle name



can be used to change the name of the bundle recipe. The window shown in Figure 57 opens.



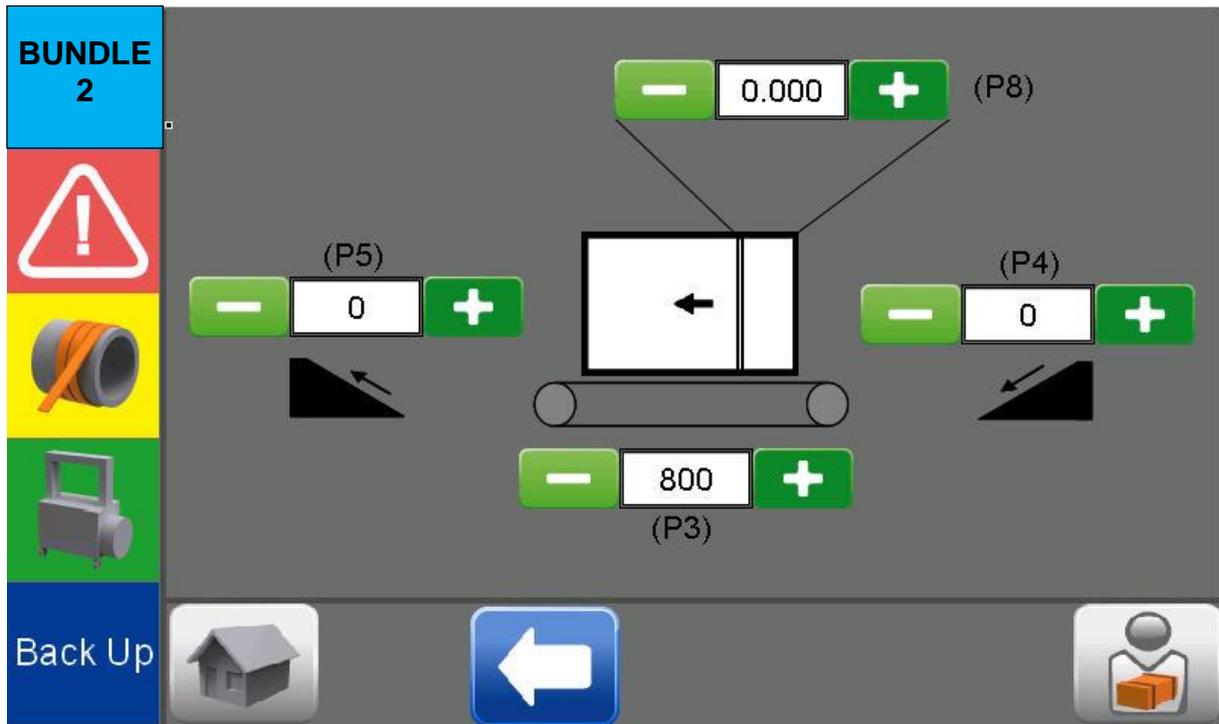
Figure 57: Specification of name for a bundle recipe.

### 5.3.2.6.3 Adjust the bundle settings

If enabled in the service menu, and only then, another input field can be made available for the operator / supervisor in all automatic modes. Here the operator / supervisor will find possibilities for adjusting bundle parameters.

See also the procedure in section 5.3.1.1

The following section looks at the bundle settings for further options.



**Figure 58: Adjusting the strapping distance - rear strapping**

Currently not programmed – A function extension would be possible if the need arises. Please contact our Service Department.

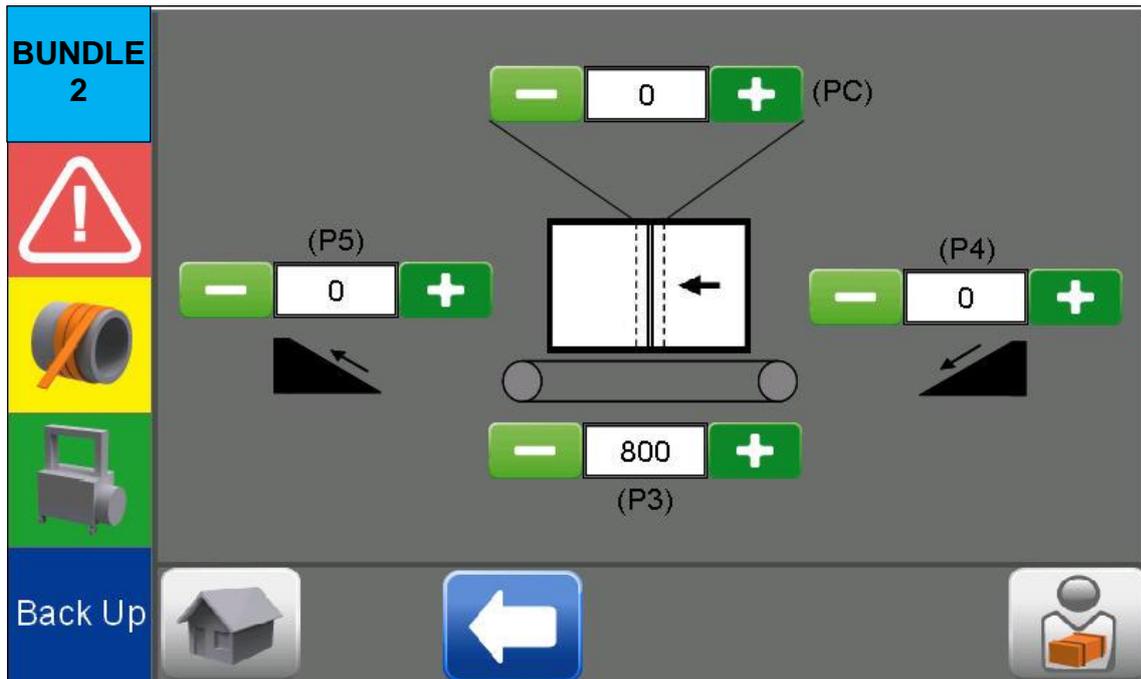


Figure 59: Adjusting the strapping distance - centred strapping

Currently not programmed – A function extension would be possible if the need arises. Please contact our Service Department.

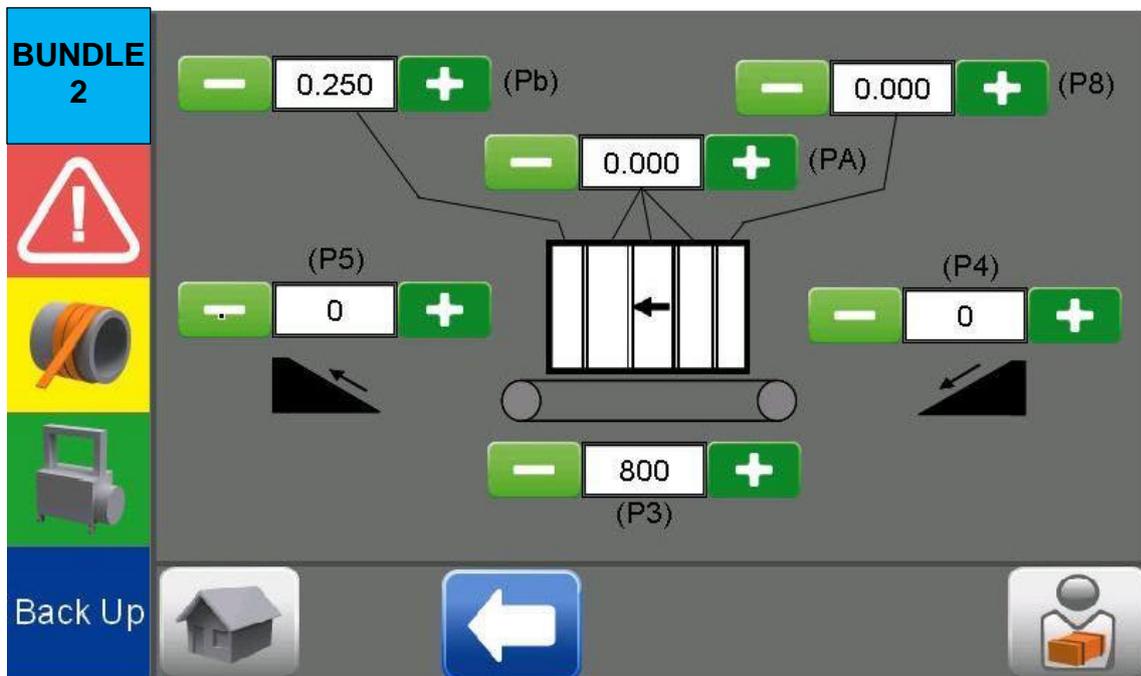
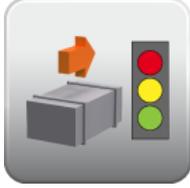


Figure 60: Adjusting the strapping distances - multiple strapping

Currently not programmed – A function extension would be possible if the need arises. Please contact our Service Department.

## 5.3.2.6.4 Control of entry release

The entry release can be controlled by the Icon 30: Entry control



The window shown in Figure 61 opens.

The times "PH", "PI" and "PL" can be adjusted here.

If the feed belt in Figure 61 appears in green, entry release is given by the upstream machine.

If the feed belt appears in red, release from the upstream machine is missing.

See also Table 4 for an explanation of the times.

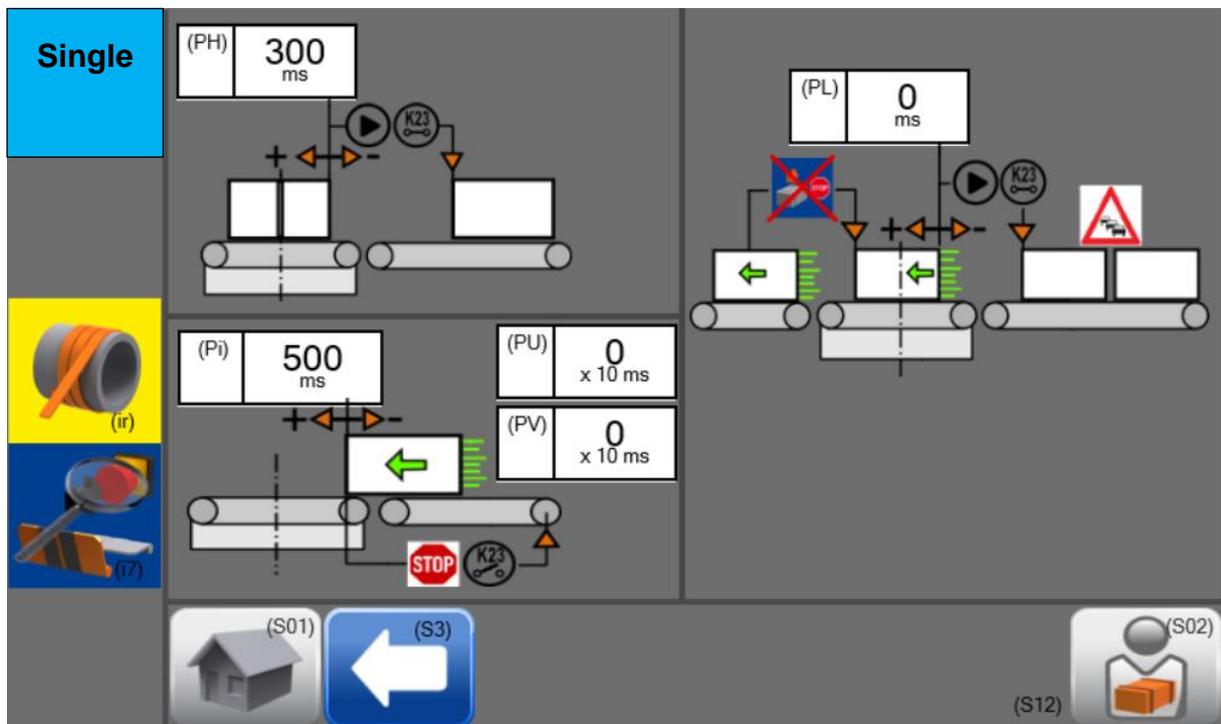


Figure 61: Control of entry release.

## 5.3.2.6.5 Adjusting strap tension as a function of bundle circumference

The tension force can be adjusted as a function of the bundle circumference with the Icon 38: Tensioning



The window shown in Figure 62 opens.

This applies to all operating modes except "Bypass without strapping" and "Manual".

The setting of  $U3 = 3$  and  $U5 = 400$  for example means that all bundles up to a circumference of 400 mm are strapped with tension force 3.

The setting of  $U4 = 9$  and  $U6 = 1000$  for example means that all bundles up to a circumference of 1000 mm are strapped with tension force 9.

See also chapter 4.8 for an explanation of the parameters.

The tension force can be manually adjusted in the "Manual" operating mode.

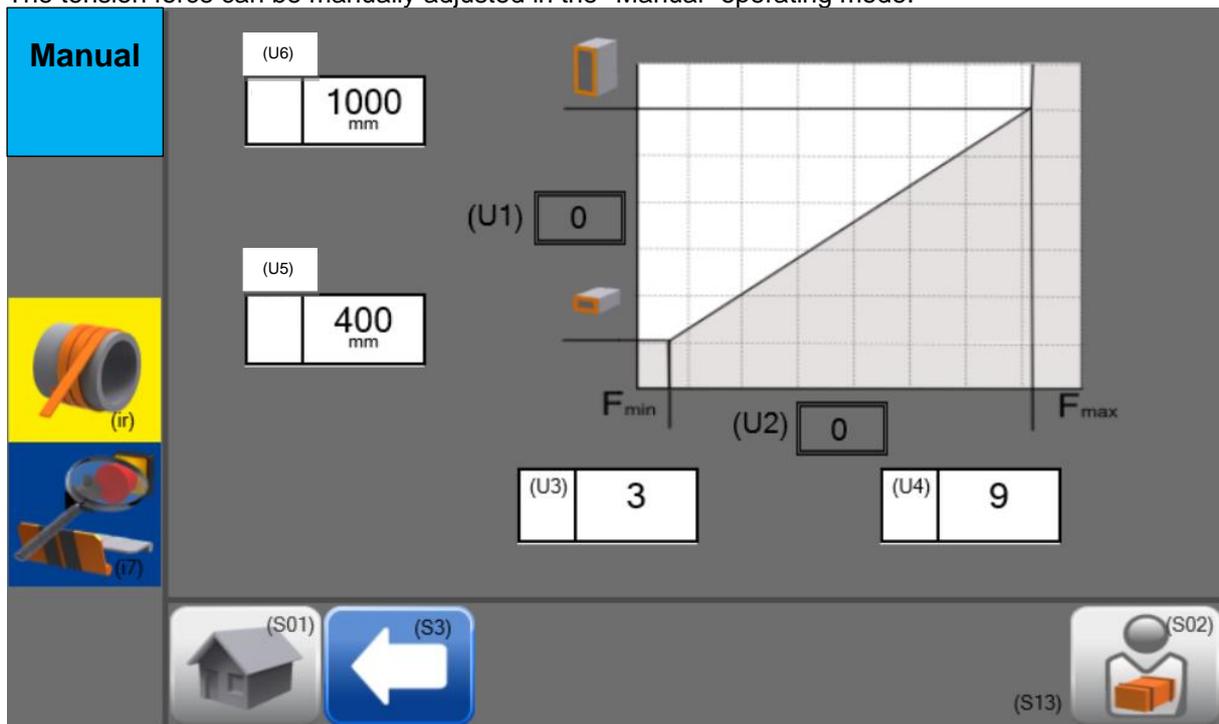


Figure 62: Adjusting tension force - circumference.

## 5.3.2.6.6 Adjusting tension force as a function of bundle height (option)

The tension force can be adjusted as a function of the bundle height with the Icon 38: Tensioning



The window shown in Figure 63 opens.

This applies to all operating modes except "Bypass without strapping" and "Manual".

The setting of U3 = 3 and U7 = 400 for example means that all bundles up to a height of 400 mm are strapped with tension force 3.

The setting of U4 = 9 and U8 = 1000 for example means that all bundles up to a height of 1000 mm are strapped with tension force 9.

See also the chapter on tension 4.8 for an explanation of the parameters.

The tension force can be manually adjusted in the "Manual" operating mode.

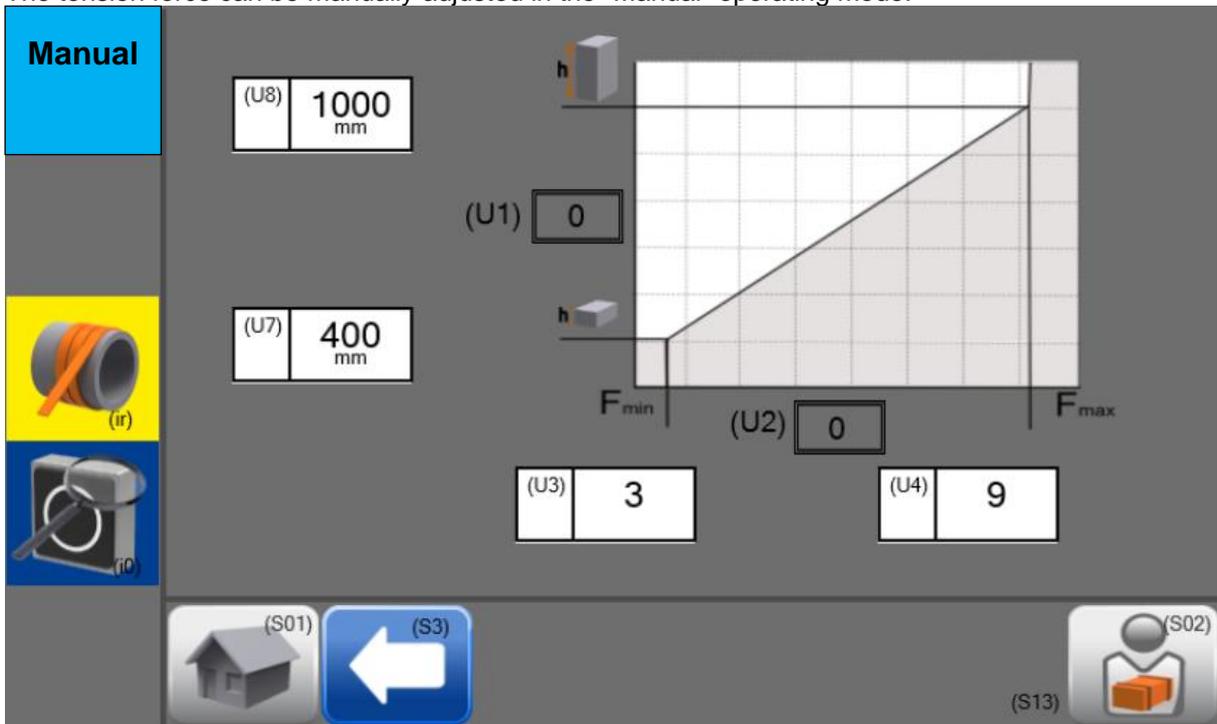


Figure 63: Adjusting tension force - height.

## 5.3.2.6.7 Configuration of the bundle press (option)

The bundle press can be configured by the Icon 10: Bundle press



but only for bundle recipes that allow the use of the press (not for manual strapping, not in bypass mode).

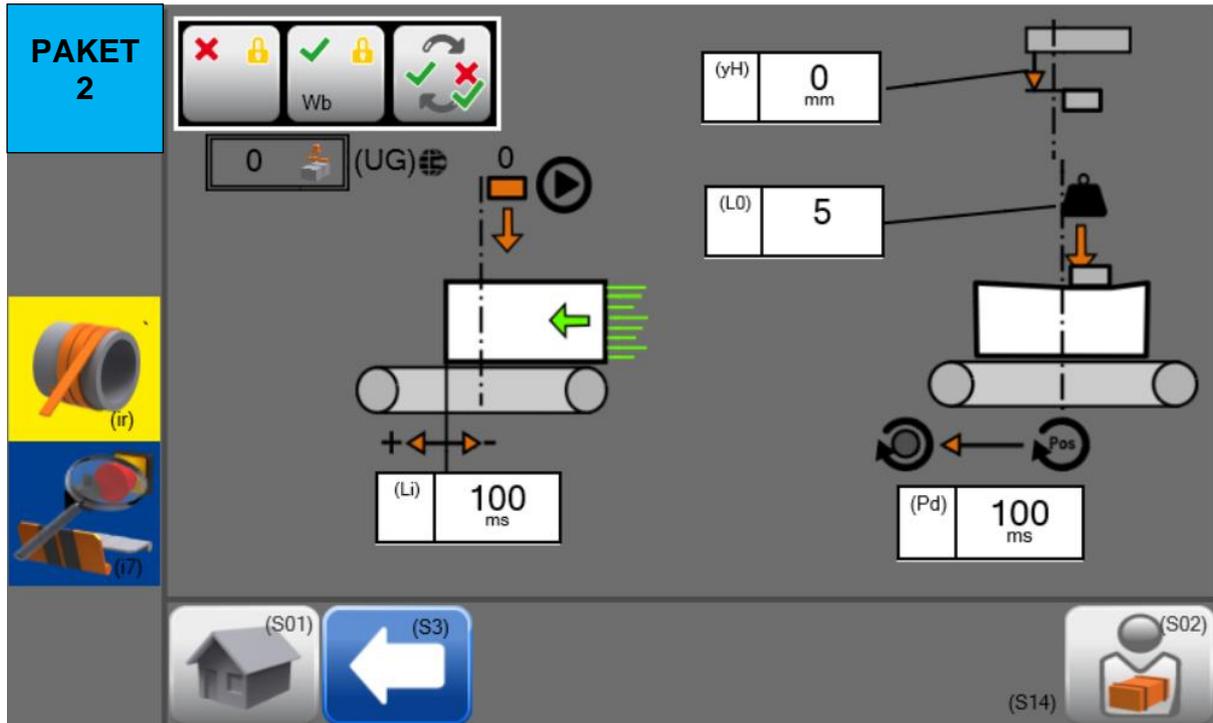


Figure 64: Configuration of bundle press.

The adjustable parameters are:

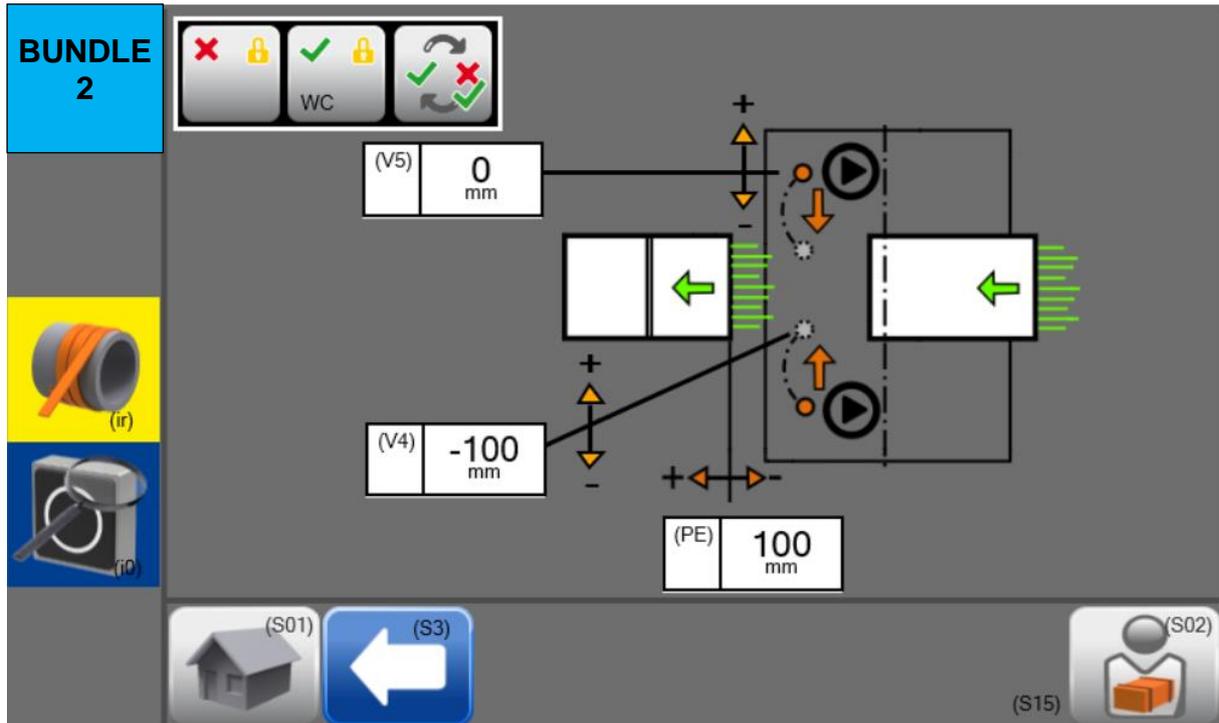
- disabling the press (Icon 32): the press **cannot** be switched on by the operator!
- enabling the press (Icon 33): the press **cannot** be switched off by the operator!
- press release (Icon 34): the operator can switch the press on or off in the start screen of the operator menu.
- press lead time "Pd" (explanation see Table 4)
- Parameter "yH" is used for prepositioning the press – the bundle height is defined to this end.
- Spacing for gentle press "Li" specifies the position from which the press moves gently (slower) (as protection for sensitive products) - **only with electr. press!**
- Pressure force "L0" specifies the pressure force - **only with electr. press!**

## 5.3.2.6.8 Configuration of the bundle stops (option)

The bundle stops can be adjusted with the Icon 11



but only for bundle recipes that allow the bundle stops to be used. The window shown in Figure 65 opens.



**Figure 65: Configuration of bundle stops.**

The adjustable parameters are:

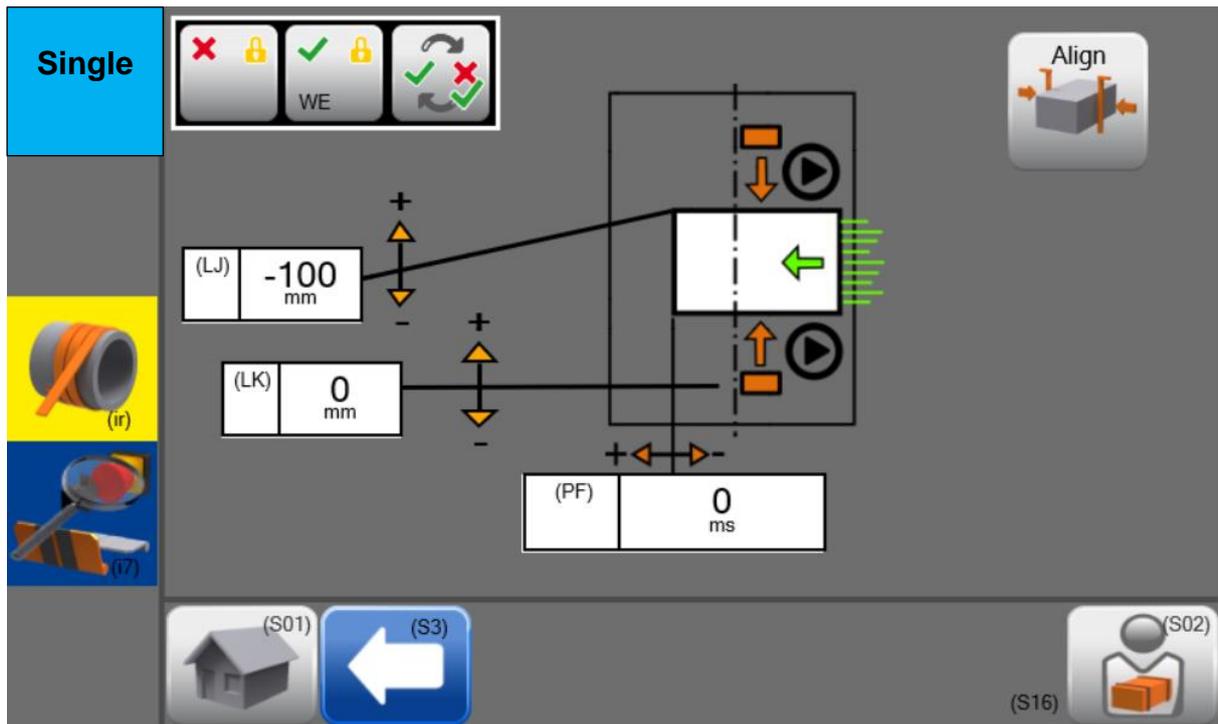
- disabling the bundle stops (Icon 32): the bundle stops **cannot** be switched on by the operator!
- enabling the bundle stops (Icon 33): the bundle stops **cannot** be switched off by the operator!
- releasing the bundle stops (Icon 34): the operator can switch the bundle stops on or off in the start screen of the operator menu.
- bundle stop delay "PE" (explanation see Table 4)
- Parameter V4: this parameter is used to adjust the working stroke of the stops
- Parameter V5: this parameter is used to preposition the stops to the corresponding bundle width

## 5.3.2.6.9 Configuration of the side pushers (option)

The side pushers can be adjusted with the Icon 41: Side pushers



but only for bundle recipes that allow the side pushers to be used. The window shown in Figure 66 opens.



**Figure 66: Configuration side pushers**

The adjustable parameters are:

- disabling the pushers (Icon 32): the pusher stops **cannot** be switched on by the operator!
- enabling the pushers (Icon 33): the pusher stops **cannot** be switched off by the operator!
- releasing the pushers (Icon 34): the operator can switch the pusher stops on or off in the start screen of the operator menu.
- The side pushers are started with lead time (T11) "PF" (explanation: see Table 4)
- Parameter LK: this parameter is used to preposition the pushers to the corresponding bundle width
- Parameter LJ: this parameter is used to adjust the working stroke of the pushers

The pushers are programmed so that the bundles are already briefly aligned by the pushers while entering the machine (front alignment). To this end, the bundle stops briefly before moving into the strapping position, where it is aligned again (rear alignment) by the pushers before strapping / pressing.



If this button is active (must be enabled in the accessories), the bundle stops work with the side pushers at the same time to align the bundle.

### 5.3.2.6.10 Do not strap bundle

Use the Icon 50: Do not strap bundle



to open the window shown in Figure 67.

The supervisor uses this icon to adjust the conditions with which the bundle should not be strapped. The settings can be different for every bundle recipe.

The screenshot shows a settings window for the 'Do not strap bundle' function. The window is titled 'Single' and contains several icons and controls:

- OFF**: A button to turn the function off.
- (mi)**: A button with a red 'X' and a green checkmark, representing a signal from a light barrier fitted to the side (option).
- (mj)**: A button with a red 'X' and a green checkmark, representing a signal from a switching threshold sensor (option) used to adjust the bundle height at which strapping begins.
- (mk)**: A button with a lightbulb icon and a counter set to 0, representing an external signal, e.g. in exchange with an upstream machine (option).
- (mL)**: A button with a bundle icon and a red 'X', representing 'Do not strap bundle from external button (mL)'. Below it is a sub-button labeled **(ot)**.
- (m1)**, **(mG)**, **(mE)**, **(mF)**, and **(m0)**: A group of buttons representing different bundle recipes or conditions.
- (S01)**, **(S3)**, **(S8)**, **(S02)**, and **(S37)**: Navigation and status buttons at the bottom of the window.

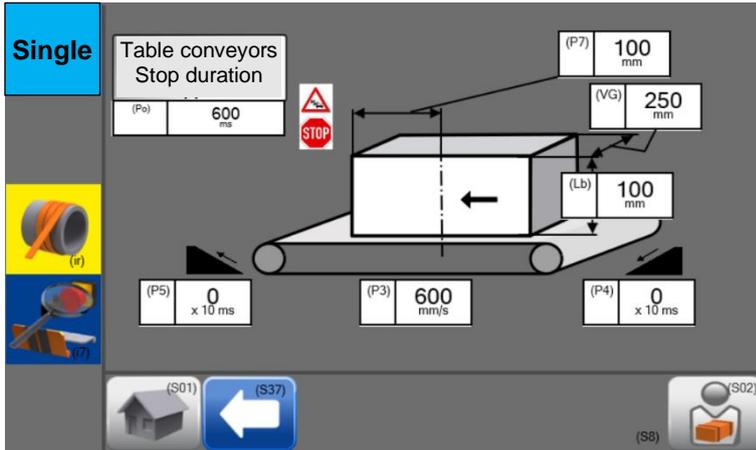
Figure 67: Settings for "Do not strap bundle"

This view can be used to select:

- Function off / on (mi)
- Signal with light barrier (mj)
- Signal with height detection (enter height) (mk)
- Signal from external (mL)

See also Table 4 for an explanation of the times.

Other parameters can be selected after the bundle settings. For example, it is possible to adjust whether and how long the bundle should stop in the bypass mode.



**Figure 68: Settings for the bypass of unstrapped bundles**

Use the parameter (m0) to select bypass or bypass with cycling. The press can be switched on or off for bypass with cycling.

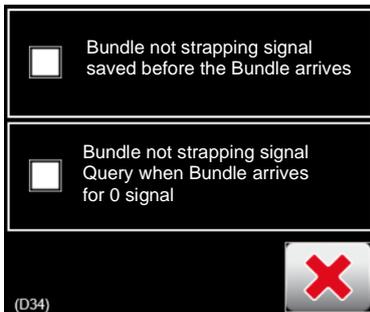
It is also possible to activate other options such as side light barrier or Do Not Strap Bundle from external. The parameter (m1) can be used to select with the timer "Po" whether the bundle should stop (to keep the distance to the previous bundle = timer not equal to 0) or not (timer equal to zero).

### 5.3.2.6.11 Do not strap bundle from external (option)

Press



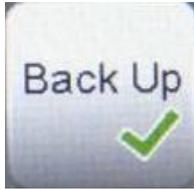
to release the function for controlling an external signal if the bundles are not to be strapped. Parameter (ot) defines the corresponding signal polling (see Figure 69).



**Figure 69: Possibility for choosing signal processing of external signal**

## 5.3.2.6.12 Backup function for replacing a failed machine (option)

Press Icon 49: Backup



to compensate for the failure of an adjacent machine by changing over from single to parallel strapping.

This function is shown in field C (status message, see Figure 29) as "backup". The settings can be different for every bundle recipe.

### 5.3.2.6.12.1 Backup OFF



The backup function is switched off. The machine stops as soon as there is a fault.

Figure 70: Backup is OFF

### 5.3.2.6.12.2 (oL) Bypass for fault, automatic changeover to bypass without strapping

A bundle bypass without strapping is still possible for various faults.

If the parameter (oL) is activated, the changeover takes place automatically.

The settings can be chosen differently for every bundle recipe.

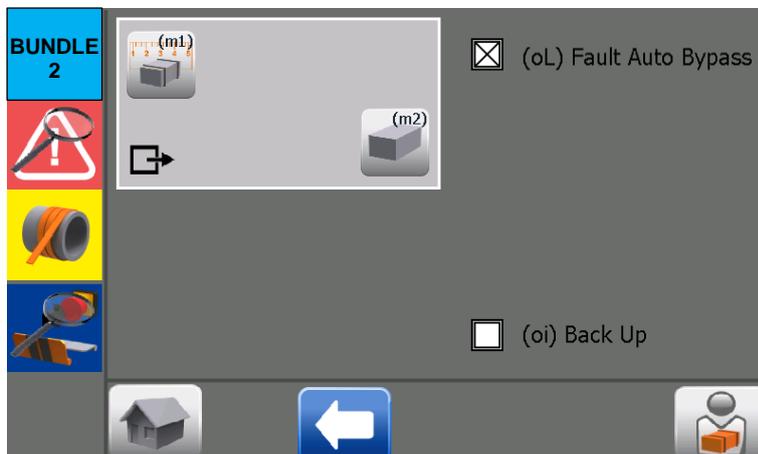
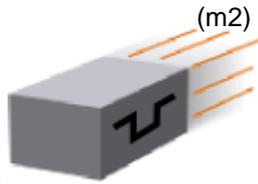
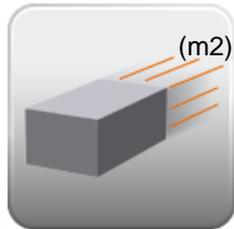


Figure 71: Backup on, bypass for fault

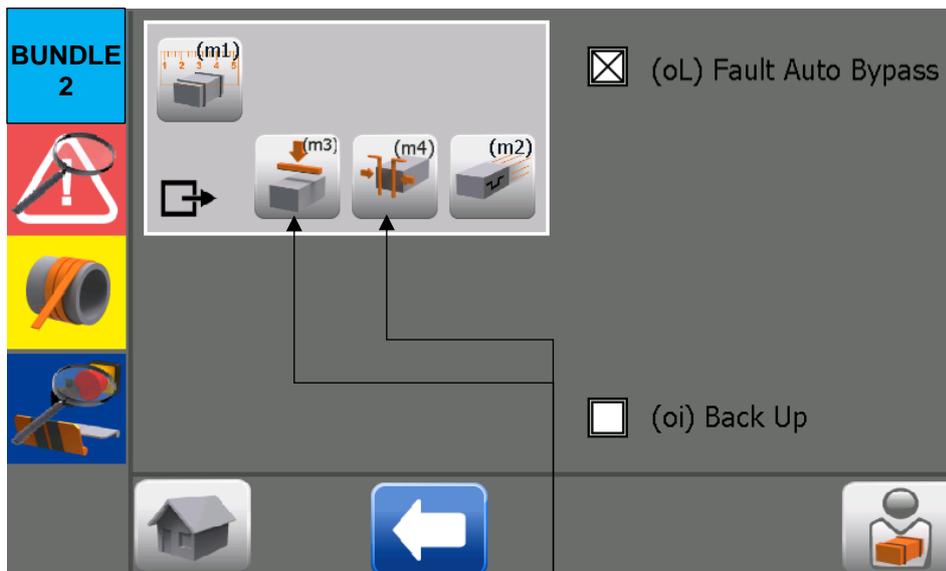
There is a choice between two bypass modes:



Selecting **(m2)** means:  
Every bundle stops for an adjustable time and then runs out of the machine unstrapped.



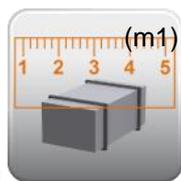
Selecting **(m2)** means:  
Bundle runs unstrapped through the machine.



**Figure 72: Bypass for fault**

Disables or enables accessories depending on machine features and mode.

Different settings can be chosen for every bundle recipe.



Selecting **(m1)** means:  
Bundle parameters can be adjusted (stop position, conveying speed, braking and start-up ramps, stop time).

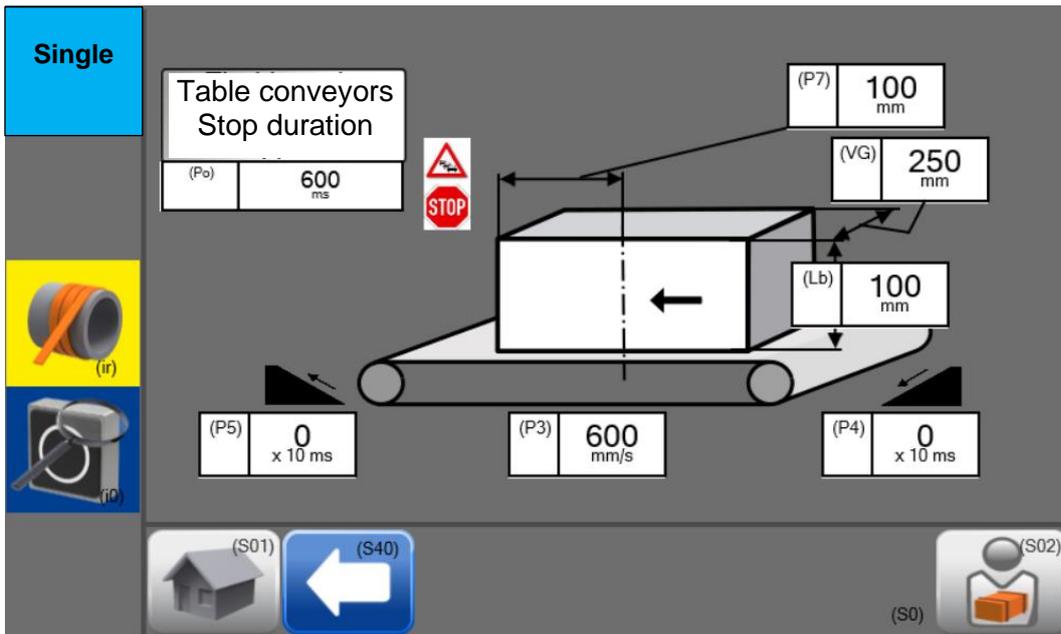


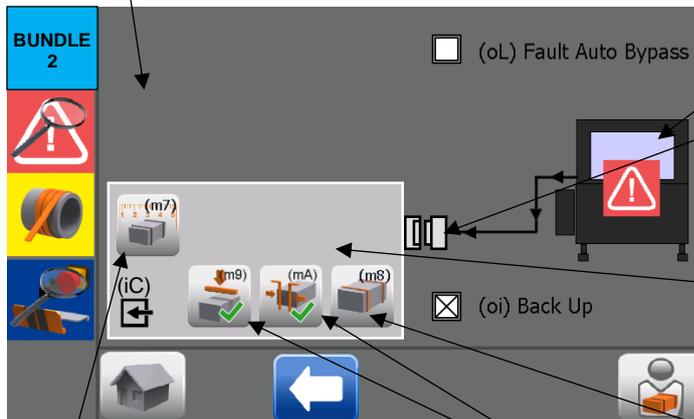
Figure 73: Adjusting stop parameters

5.3.2.6.12.3 (oi) Backup request from external

The backup request can be activated with the parameter (oi). The settings can be chosen differently for every bundle recipe.

Backup request from partner machine

When there is a fault, the machine stops



The partner machine has a fault.

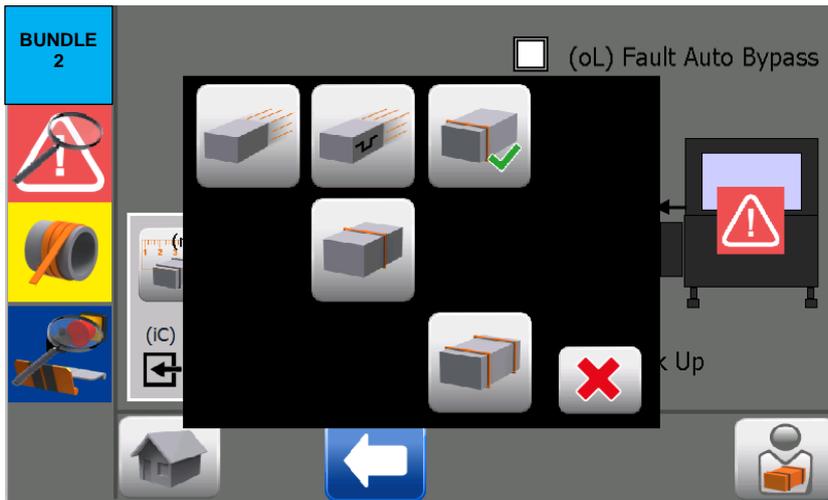
A backup request is sent via the interlock.

The machine changes automatically to this setting when the backup request is active. Example: the machine is working in the single strapping mode and changes over to parallel strapping on receiving a corresponding request.

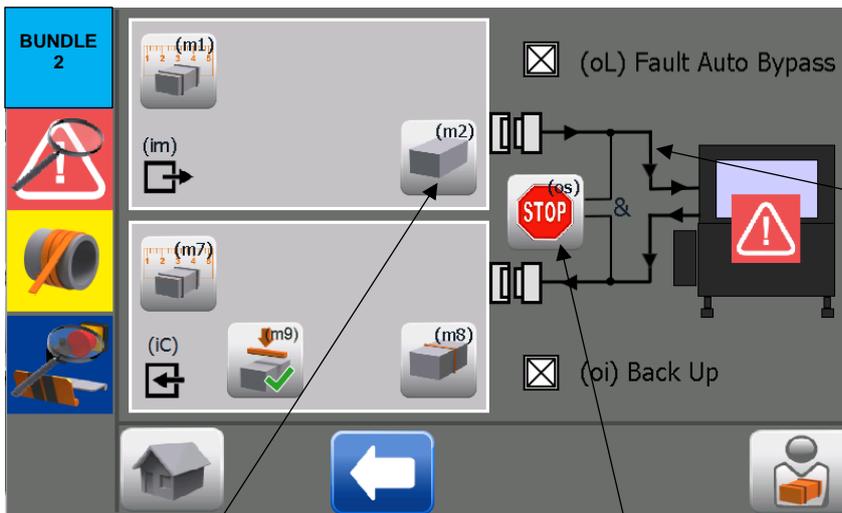
Adjusts the mode that the system changes to on request.

Adjusts the bundle stop position and conveying speed. This parameter only occurs once in each recipe. For example, if the conveying speed is changed, it is also changed in the normal mode.

Deactivates or activates accessories depending on machine features and mode.



5.3.2.6.12.4 Backup request to external  
Backup request to partner machine



The machine has a fault.

A backup request is sent to the partner machine via the interlock.

As in this example, the machine automatically switches itself to bypass without strapping.

Setting when both machines have a fault (backup request active from both machines):

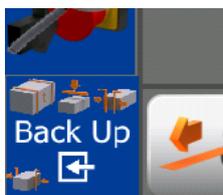


The machine stops.

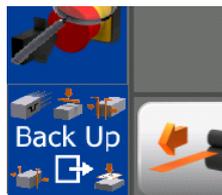


The machine continues in bypass as adjusted under (m2).

Backup request from "external"



Backup request to "external"

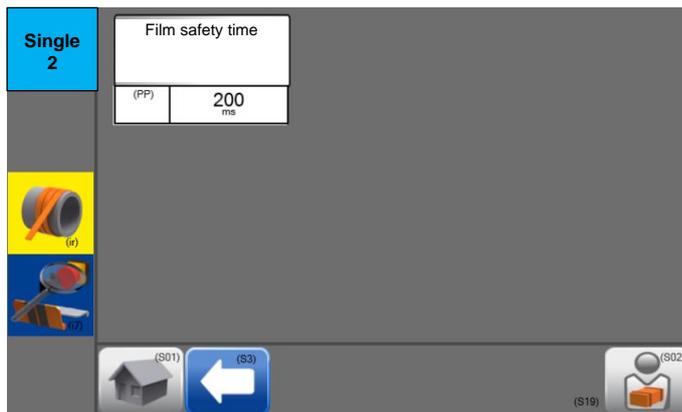


## 5.3.2.6.13 Timer setting

By selecting the Icon 31: Timer



you can adjust the various timers individually for every bundle recipe. The window shown in Figure 74 opens.



**Figure 74: Timer setting**

Scroll down with the arrow symbols Icon 43/ Icon 44 to go to other possible timer settings. See also Table 4 for an explanation of the times.

## 5.3.2.6.14 Stand-by table conveyors

If no bundles are transported into the machine, the conveying system switches the strapping machine off after the time that can be adjusted in timer Po. The timer can be found in Figure 73. When there is a 0 signal at the input (interlock plug) X2/A7 and light barriers B3, B4 and B9 are not activated (see also Figure 21), the time adjusted under "Po" starts running (WE = 30se) and the conveyor system switches off.

The conveyor system starts up again on activating the first light barrier at the entry (or each of the light barriers B3, B4 and B9), Start button, external signal at input X2/A7 or pressing the icon. If the time set in timer Po is 0, the conveyor system of the strapping machine never switches off.

Icon 25: Stand-by



## 5.4 Fastening the strap coil

Also see Figure 75.

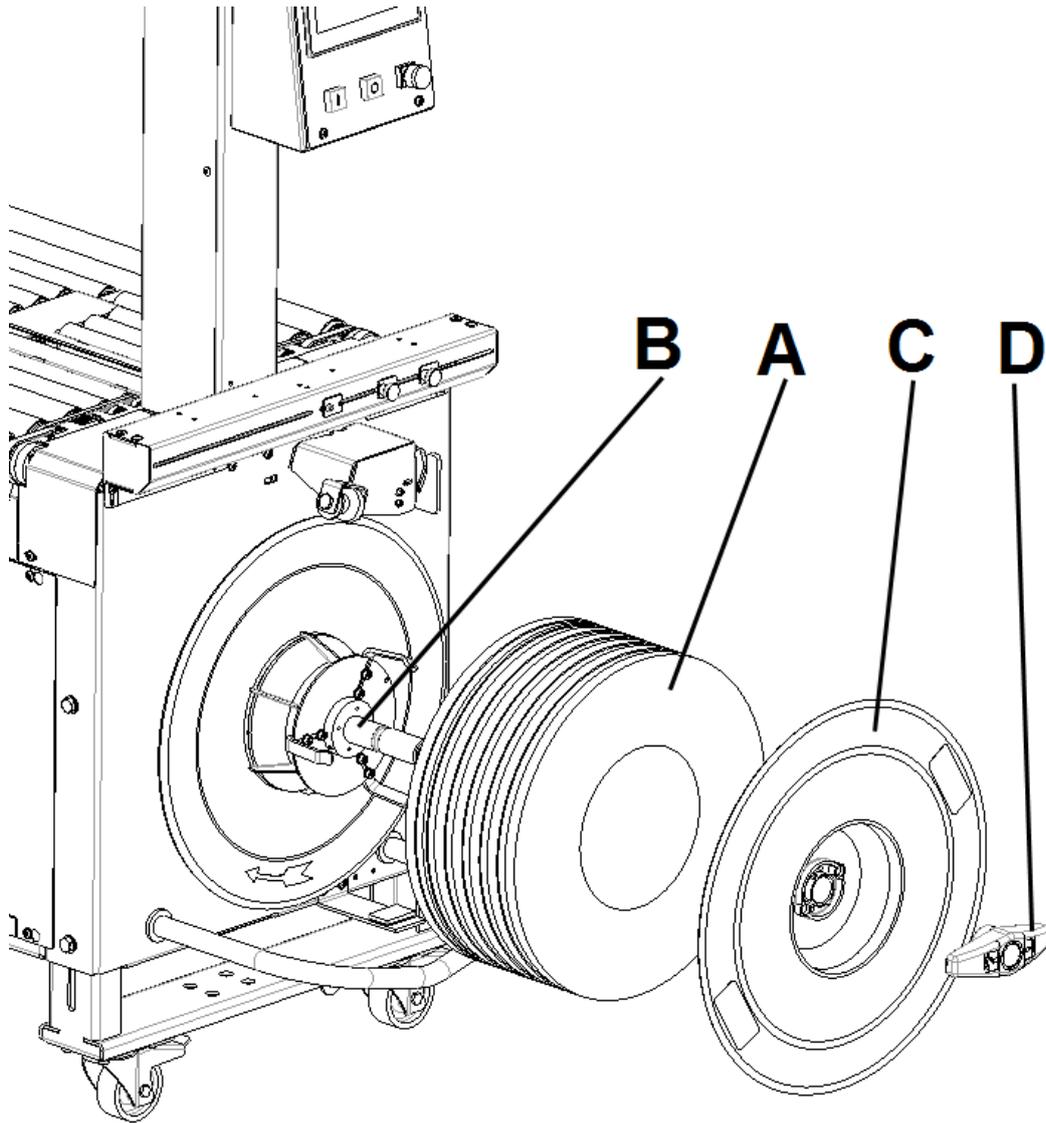
Loosen the tensioning nut (D) and remove the disc (C)

Push the strap coil (A) onto the carrier (B). When doing so, the cardboard discs must remain on the coil.

The strap coil must turn clockwise when pulling off the strap (see arrow on disc C).

Tighten the disc (C) on the shaft of the coil support and tighten it hand-tight with the tensioning nut (D) until the coil plates rest on the cardboard discs. The discs must not lift off!

Remove protective strips and the stickers.



**Figure 75: Attaching the strap coil**

## 5.5 Setting up table conveyors

The speed profiles of the table conveyors are adjusted with the control panel (see chapter 5.3.2.6.3).

## 5.6 Setting up the press (option)

The press can be switched on or off with the control panel.

Settings: see chapter 5.3.2.6.7.

## 5.7 Setting up the bundle stops (option)

The bundle stops prevent the stack from tipping over, but cannot be used to stop the bundle!

Chapter 5.3.2.6.8 describes how the bundle stops can be switched on or off and how the parameters can be configured.

## 5.8 Setting up the side pushers

The pushers align the bundle uniformly at the sides as soon as it enters the strapping position. Items that have shifted in the stack are straightened.

Chapter 5.3.2.6.9 describes how the pushers can be switched on or off and how the parameters can be configured.

## 5.9 Setting up a certain bundle length

To adjust the machine to a certain bundle length, first the stop position must be set up with the table conveyors/roller table (see chapter 5.3.1.1 and 5.3.2.6.8).

Then the bundle stops are pushed up to the bundle.

## 5.10 Putting into service / operation

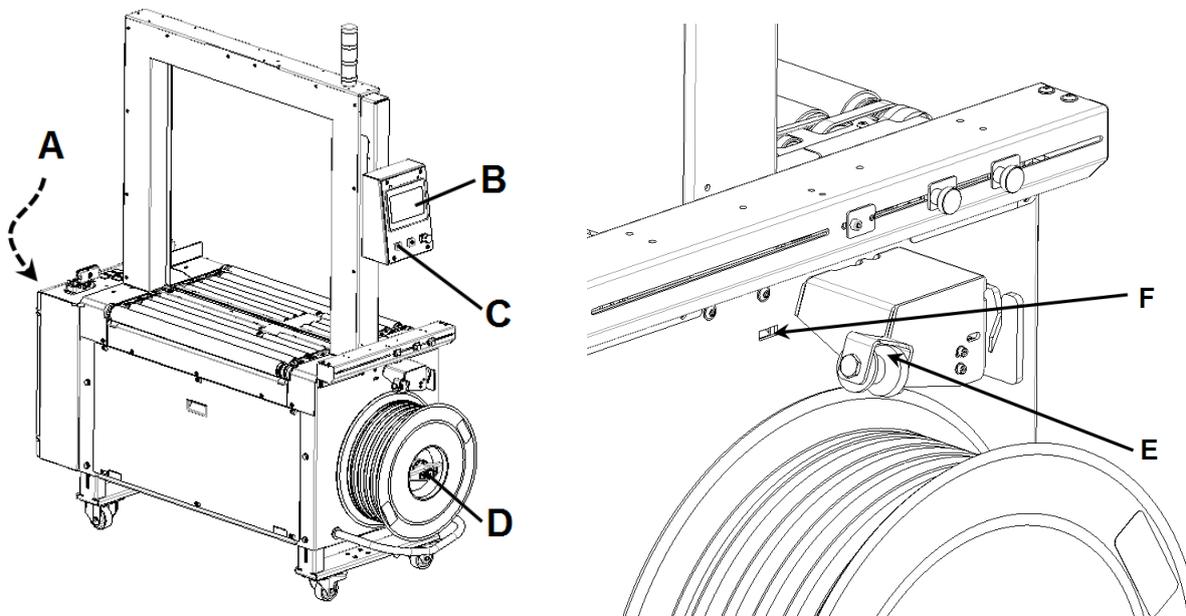
### 5.10.1 Switching on machine

- Set main switch to "I ON".
- After switching on the machine, the welding plate begins to heat up (approx. 30 s).
- After switching on the machine, wait until the LED on the control panel shows a green continuous light and "IO" appears on the display.

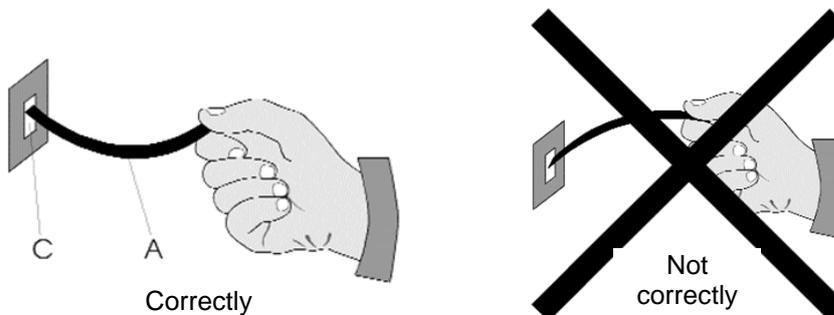
### 5.10.2 Threading in the strap

See Figure 76 and Figure 77.

- Set the main switch (A) to "1". The Icon 18: Strap coil empty appears in the display (B).
- Press the Start button (C). The coil brake (D) begins to cycle and the reservoir drive starts up.
- Thread in the end of the strap into the strap track (F) via the deflection roller (E). Watch the curvature of the strap (also see the sticker on the machine)!
- The strap is detected and the reservoir drive stops.
- After the Start button (C) is pressed, the machine automatically threads in.



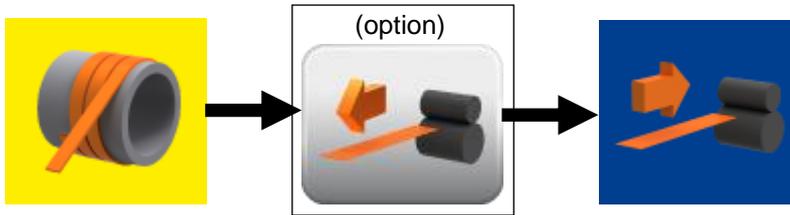
**Figure 76: Threading in strap.**  
Left: Overview, Right: Details.



**Figure 77: Correct threading in while taking curvature of strap into account**

## 5.10.3 Warning strap end

When the strap on the coil comes to an end or when the Lack of Strap display appears, first remove the strap from the machine before threading again.



**Figure 78:** Procedure for "Strap End" display

## 5.10.4 Operating modes

Heed the instructions for the light barriers (chapter 4.6) and how to adjust them (chapter 4.7), together with Table 4 the description of the times.

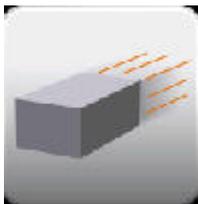
### 5.10.4.1 Manual mode



In the manual mode strapping is triggered by pressing the Start button. The light barriers, press and bundle stops have no function.

The strap tension can be adjusted manually (see here Figure 32: Tension values and chapter 5.3.2.5.1).

### 5.10.4.2 Bypass without strapping



Bundles run through the machine without being strapped. While the Icon 13: Ready for operation is displayed, the machine is in normal operating mode. If a fault has occurred in the downstream machine, the icon goes out and the Icon 39: Exit release appears. The machine is now used as an accumulation area. When the downstream equipment supplies the release signal, the strapping machine automatically resumes operation.

The press and bundle stops have no function.

## 5.10.4.3 Bypass without strapping with cycling



Bundles run through the machine without being strapped. While the Icon 13: Ready for operation is displayed, the machine is in normal operating mode. If there is a fault in the downstream machine, the strapping machine acts as accumulation area.

Various parameters can influence the bypass function:

- Stop time conveyor system ("Po")
- Stop position ("P7") referred to the front edge

Options for bundle alignment, e.g. press and bundle stops, can be switched on.

## 5.10.4.4 Front strap/single strap



The incoming bundle interrupts the trigger light barrier B4, starting time "P7".

After time "P7" expires, the conveyors stop. If safety light barrier B3 is covered, the strapping cycle is triggered.

The strapped bundle is then moved out of the machine.

Depending on the bundle weight, the stopping distance of the bundles changes (due to the inertia).

It is necessary to maintain a specific distance between the incoming bundles, which ensures that the bundle stops can move fully to the centre and that the light barriers have free access to the reflectors.

The next bundle is not detected again until the light barrier B4 was briefly clear after strapping.

To change the distance from the front edge, the corresponding parameter ("P7") has to be changed.

The value must be reduced for a smaller distance and enlarged for a bigger one.

## 5.10.4.5 Rear strapping



Rear strapping is triggered when the previously covered light barrier B9 is cleared again and the time "P8" started by this has expired. At the same time, the light barrier B3 must be covered.

To change the distance from the rear edge, the corresponding parameter ("P8") has to be changed.

The value must be reduced for a smaller distance and enlarged for a bigger one.

However, if B3 becomes clear before the timer "P8" has expired, the bundle cannot be strapped, as it has already passed the strapping level.

Depending on the bundle weight, the stopping distance of the bundles changes (due to the inertia).

The next bundle is not detected again until the light barrier B4 was briefly clear after strapping.

## 5.10.4.6 Parallel strapping – based on distance (default)



The strapping distance from the bundle front edge and bundle rear edge is always the same. The incoming bundle interrupts the light barrier B4, starting time "Pb". When this time expires, the conveyors stop. If safety light barrier B3 is covered, the strapping cycle is triggered.

The conveyors then start up again.

Rear strapping is triggered when the previously covered light barrier B9 is cleared again and the time "Pt" started by this has expired. At the same time, the light barrier B3 must be covered. To change the distance from the front or rear edge, the corresponding parameter ("Pb" or "Pt") has to be changed. The value must be reduced for a smaller distance and enlarged for a bigger one. Depending on the bundle weight, the stopping distance of the bundles changes (due to the inertia). However, if B3 becomes clear before the timer "Pt" has expired, the bundle cannot be strapped, as it has already passed the strapping level.

## 5.10.4.7 Parallel strapping – based on time



The distance between the straps is always the same.

The incoming bundle interrupts the light barrier B4, starting time "Pb".

When this time expires, the conveyors stop. If safety light barrier B3 is covered, the strapping cycle is triggered.

The conveyors then start up again.

The rear strapping cycle is triggered when the set time "P9" has expired and the safety light barrier B3 is covered.

Depending on the bundle weight, the stopping distance of the bundles changes (due to the inertia).

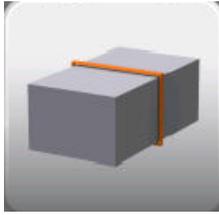
If light barrier B3 is cleared during transport to the second strapping, no further strapping is triggered.

The next bundle is not detected again until the light barrier B4 was briefly clear after strapping.

To change the distance from the front edge, the corresponding parameter ("Pb") has to be changed.

To change the distance between the two straps, the corresponding parameter ("P9") has to be changed. The value must be reduced for a smaller distance and enlarged for a bigger one.

## 5.10.4.8 Centred strapping



The incoming bundle interrupts the light barrier B9 which measures the bundle length until it is clear again.

Light barrier B4 starts the time for half the bundle length, then "PC" also starts - correction time centred strapping; strapping is triggered after this time (as long as light barrier B3 is covered). The larger "PC" is, the more the strap moves towards the rear edge of the bundle.

## 5.10.4.9 Multiple strapping



The incoming bundle interrupts the light barrier B4, starting time "Pb".

When this time expires, the conveyors stop. If safety light barrier B3 is covered, the strapping cycle is triggered.

The conveyors then start up again.

The additional strapping cycles are positioned at equal distances.

The distance can be adjusted with parameter "PA" (multiple strapping).

Strapping is applied at the same distance until the light barrier for rear strapping B9 becomes clear.

This then starts the time "Pt" for the rear-most strapping cycle. Strapping is triggered when the time has expired and the safety light barrier B3 is covered.

The number of strapping cycles depends on the bundle length and the set times "Pb", "PA" and "Pt".

## 5.10.4.10 Triple strapping



The incoming bundle interrupts the light barrier B4, starting time "Pb".

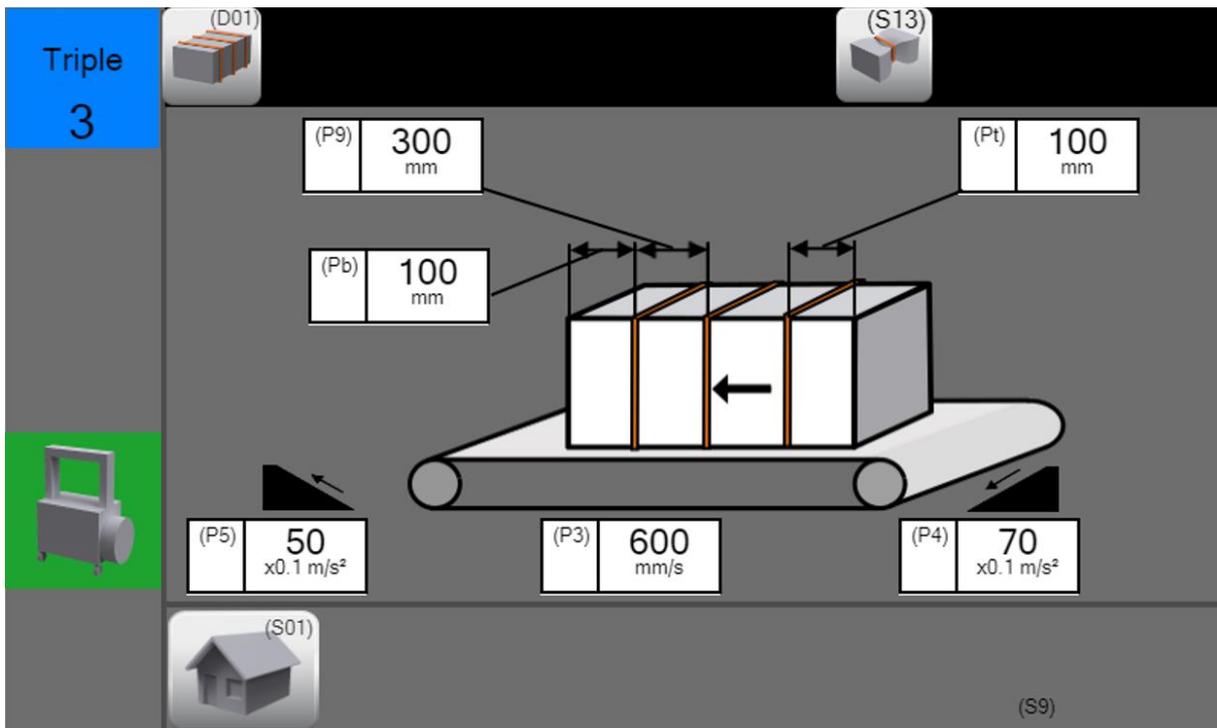
When this time expires, the conveyors stop. If safety light barrier B3 is covered, the strapping cycle is triggered.

The conveyors then start up again.

The 3 strapping cycles are positioned at equal distances.

The first strapping cycle is defined using parameter "Pb" starting from the front edge. The rear strapping cycle (3rd strapping cycle) is defined using parameter "Pt" starting from the rear edge.

The distance between the first and second strapping cycle is stipulated as "P9".



**Figure 79: Triple strapping**

5.10.4.11 Automatic changeover of strapping distances or strapping type (option)

Depending on what is required, the machine can detect different bundle lengths, bundle widths, bundle heights or bundle versions; it then adjusts the strapping distances accordingly or changes over to different strapping types.

Please contact the SMB Service Department if necessary.

6 MAINTENANCE AND SERVICE



**IMPORTANT!**

The high reliability and long service life of your strapping machine will largely depend on regular cleaning and maintenance.

**WARNING!**

- Troubleshooting, repair and maintenance work may only be carried out by trained personnel.
- Disconnect the machine from the power supply.
- Only put the machine into operation again when all shrouding and safety devices are remounted and functional.
- Remove tools and machine parts lying around from the strapping machine.
- Wear goggles when blowing compressed air through the machine
- The welding plate is still hot when the table top is opened!  
Danger of burns when touched.

6.1 Maintenance schedule

WHAT	WHEN	WHO
Safety inspection	see inspection intervals point 2.2.4	Operator
Partial cleaning, see point 6.3.1	Weekly	Operator
Lubricate sealing head (clamping jaw and clamping jaw guide)	Annually	Trained personnel (see service manual)
Functionality test Adjustment work if necessary	Monthly or after 100,000 strapping cycles Semi-annually or after 600,000 strapping cycles Annually or after 1,200,000 strapping cycles	Trained personnel (see service manual)
General cleaning	Annually or after 1,200,000 strapping cycles	Trained personnel (see service manual)
Major check	After 3,000,000 strapping cycles	Manufacturer



**IMPORTANT!**

The maintenance work must be carried out by trained personnel.

6.2 Lubricants

- Use only the specified lubricants or their equivalent (see Table 6).
- Any damage attributable to the use of incorrect lubricants is not covered by the warranty.
- The lubricant (E) must be non-resinous.

**Table 6: Lubricants**

Product	Manufacturer	Designation
<b>A</b>	Aral	Multipurp. Grease K2K-30 Multipurp. Grease K2K-30
	Esso	BEACON EP2
	Shell	Alvania EP2
<b>B</b>	Aral	Vitam GF 10
	Esso	SPIN ESSO 10
	Shell	Tellus 10
<b>C</b>	Optimol	Paste HU 09449
	Paulus u.S. GmbH Düsseldorf Germany	Poly-Butyl-Cuprisyl
<b>D</b>	Aral	Deganit L68
	Esso	MILLCOT K68
	Fuchs	Renotac 343
<b>E</b>	Aral	Aralub FDP00
	Esso	Fibrax
	Shell	Special gear grease H
<b>F</b>	Aral	Aralub HLP2
	Esso	Alvania EP1
	Shell	BEACON EP2
<b>G</b>	OKS München Germany	PTFE No. 570
		MOS2 No. 520
<b>H</b>	Esso	NUTO H10 (Art. No.: 2916)
<b>K</b>	Esso	Exxon NLGI 2, K2 K--30
<b>L</b>	Aral	Degol GS 220
	Castrol	Alphasyn PG220
		OPTIFLEX A220
	Fuchs	Renolin PG220
	Shell	Tivela S220

## 6.3 Cleaning and adjustment work

Only use original spare parts of the manufacturer.  
If item made by other manufacturers are used, the manufacturer's product liability and warranty are void.  
Additional work is described in the service manual and should only be carried out by trained personnel!

### 6.3.1 Weekly

Clean machine interior with compressed air or a vacuum cleaner, especially:

- Welding plate unit
- Strap guide and strap track
- Strap threading devices
- Strap reservoir
- Pressure plate switch
- Clean all light sensors, light barriers and reflectors (strap coil sensor) using a cloth and check for functionality.



**ATTENTION:** NEVER expose sealing washers at ball bearings or solenoids to direct air jet when cleaning strap drive and reservoir drive. This applies to the lifting magnet in the reservoir.

- Check function of fan. The air must be drawn in, not blown out.  
**ATTENTION:** Do not blow into the fan.
- Check reservoir lever for easy movement.
- Check the smooth running of the deflection roller of the threading unit.
- Check the smooth running of the tensioning roller pair, the feed roller, the pressure roller and the roller pair in the reservoir drive.
- Test strapping with several bundles, paying attention to audible and visible failures and check for correct function.

### 6.3.2 Monthly, in addition to 6.3.1 (or after 100,000 strapping cycles)

- Clean both sides of welding plate and polish with fine abrasive cloth if necessary.  
**ATTENTION: Allow the welding plate to cool off first.**
- Check sealing.
- Remove plastic deposits on holding jaws 1-3.
- Check the continuity of the strap guide from the strap drive in the right clamping jaw with a strap and clean if necessary.

### 6.3.3 Every six months, in addition to 6.3.2 (or after 600,000 strapping cycles)

- Check coil brake for smooth running

6.4 Troubleshooting



**WARNING!**

- Troubleshooting, repair and maintenance work may only be carried out by trained personnel.
- Trained personnel must always be consulted when faults occur which are not contained in the table!
- Disconnect the machine from the power supply.
- Only put the machine into operation again when all shrouding and safety devices are remounted and functional.
- Remove tools and machine parts lying around from the strapping machine.

When a fault occurs, Icon 16: Fault message appears in the status display of the control panel. The fault is shown in the display.

**Table 7: Messages and faults**

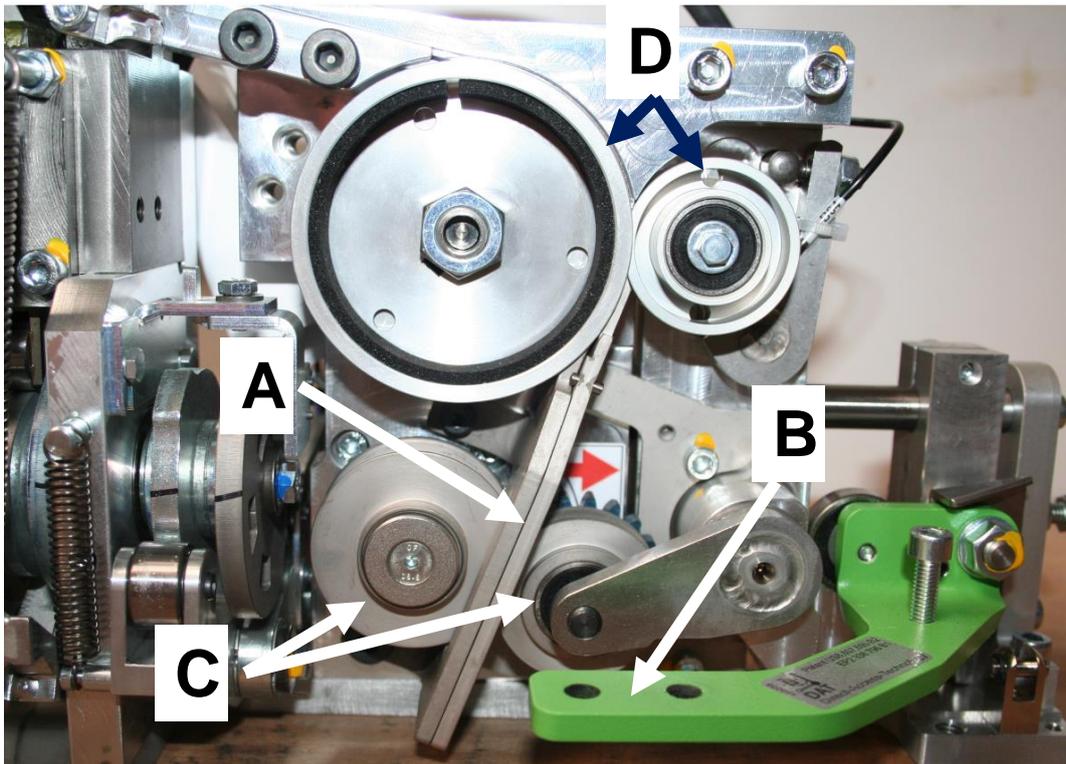
Display	FAULT/MESSAGE	CAUSE	REMEDY
A0	Customer strap counter	Customer strap counter (resettable)	Display only!
A1	Service strap counter	Service strap counter	Display only!
A2	Service counter second feeding attempt	Counter second feeding attempt	Display only!
A3	Service counter third feeding attempt	Counter third feeding attempt	Display only!
A7	Bundle rate display	Bundle rate display	Display only!
A8	Cycle counter	Strap counter cannot be cleared	Display only!
A9	Average bundle rate display	Bundle rate display	Display only!
Ao	Machine number display	Machine number display	Display only!
AP	Program number display	Program number display	Display only!
C2	Check time error reservoir drive	Reservoir time exceeded. Reservoir motor runs longer than 15s. On threading in when first reservoir filling takes longer than 9s.	The reservoir ruler must move easily without rubbing, check power supply (24VDC) or motor lead and motor fuse. Check motor itself.
C3	Main motor M1 defective	No feedback from motor. When SK step takes longer than 5s. Motor fuse defective, motor defective.	Press Start button. If fault occurs again, switch machine off and then on again. Check voltage supply (24VDC) or motor cable and motor fuse. Check motor itself.
C4	Feeding motor M2 defective	No feedback from motor. When feed or retrieval takes longer than 10s. Motor fuse defective, motor defective.	Press Start button. If fault occurs again, switch machine off and then on again. Check voltage supply (24VDC) or motor cable and motor fuse. Check motor itself.

C5	Tensioning motor M3 runtime error	No feedback from motor. When tensioning motor runs for longer than 1s. Motor fuse defective, motor defective.	Press Start button. If fault occurs again, switch machine off and then on again. Check voltage supply (24VDC) or motor cable and motor fuse. Check motor itself.
C6	Conveyor motor M5 defective	No feedback from motor. OUT 2 from transport motor is off for longer than 2s. Motor fuse defective, motor defective.	Press Start button. If fault occurs again, switch machine off and then on again. Check voltage supply (24VDC) or motor cable and motor fuse. Check motor itself.
C8	Strapping head not in home position	The strapping head has not stopped properly and is not standing correctly in the feed position.	Press Start button. If fault occurs again, switch machine off and then on again. Check whether the initiator B61 is still switched, replace if necessary
C9	Release fault	When the trigger light barrier B4 was interrupted and safety light barrier B3 then not interrupted within 2s.	Should the light barrier B3 not be covered during triggering of strapping, then this fault occurs. The triggering time for strapping P7 may be too short or too long or an excessively long stop ramp is set.
CA	Bundle fault	Bundle fault: One of the light barriers has been blocked for more than 3 seconds when the conveyors are running.	Check alignment of light barrier so that light beam is reflected back correctly. Clean light barrier or reflector if soiled. Remove items interrupting the light barrier. Press Start button.
CF	Strap not detected after threading	Strap not detected after threading	Thread in strap again as described in 5.10.2.
CH	Strap fault/feeding fault	Strap fault/feeding fault. The pressure plate switch is stiff. Strap is not loaded completely. Strap was incorrectly threaded. Strap track blocked.	Press Start button. Repeat feed. Adjust pressure plate switch. Clean bearings. Pull out strap, clean and cut off straight and thread in again as described in section 5.10.2. Open strap track with lever (see Figure 81) clean strap track. Check and clean the upper strap guide with a cut-off piece of strap.
Ci	Strap reversing fault	Strap reversing fault (big loop) -> only option "o2->1"	Contact service personnel
Co	Switch B61 is defective or loose	Switch B61 is defective or loose	Press Start button. If fault occurs again, switch machine off and then on again. Check alignment and switching gap of the initiators. Check cable/ connectors for damage and correct contacting.
CP	Switch B62 is defective or loose	Switch B62 is defective or loose	Press Start button. If fault occurs again, switch machine off and then on again. Check alignment and switching gap of the initiators. Check cable/ connectors for damage and correct contacting.
Ct	Tensioning motor M3 is stuck	Tensioning motor M3 is stuck	Check tension rollers for jamming (strap pieces). Make them work again

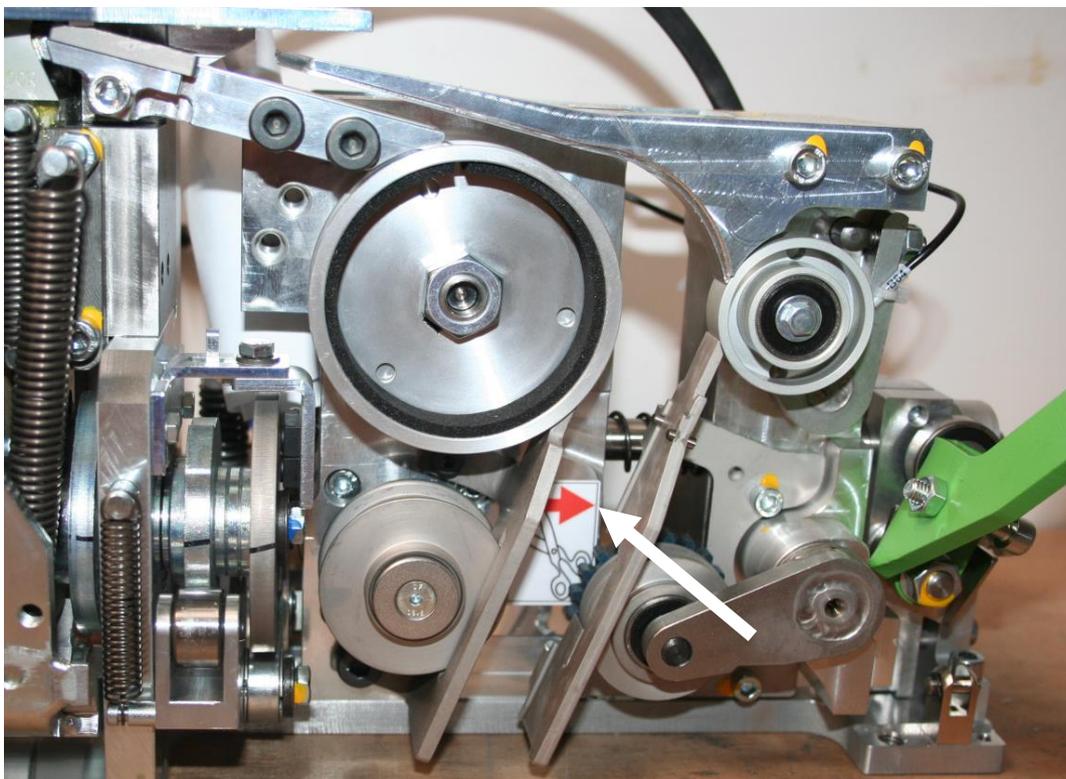
Cu	Fuse tensioning motor M3	Fuse at tensioning motor M3 is defective	Replace fuse.
Cy	Fuse belt drive M2	Fuse at belt drive motor M2 is defective	Replace fuse
E0	E-Press pressure force fault	Pressing force control not ensured. When the press moves into the upper end position during the force test (after EMERGENCY STOP) although there is insufficient force.	Replace automatic fuse, update motor firmware for press motor
E1	E-Press run time fault	Press does not reach upper end position within 4s. Press moves upward but there is no signal.	Check whether mechanical blockage has occurred. Check whether switching lever on initiator switches, replace if necessary. Check whether the default torque for the motor is insufficient.
E2	E-press - fault motor feedback	1000 = motor no main current 4000 = lag fault (e.g. press blocked upwards)	Press Start button. If fault occurs again, switch machine off and then on again. Contact service staff if this happens again.
E3	E-press watchdog fault	The motor output OUT3 can be pulsed with a read-out at PLC input K3/14 via the CAN bus for monitoring the press motor. If the pulses do not arrive at the PLC input, the press is switched off.	Press Start button. If fault occurs again, switch machine off and then on again. Contact service staff if this happens again.
E4	Communication fault CAN bus M5 motor	Communication interrupted CAN bus M5 motor	Press Start button. If fault occurs again, switch machine off and then on again. Contact service staff if this happens again.
E5	Fault bundle stops	Bundle stops move inward, but do not reach end position within 0.8s. Bundle stops move outward, but outer end position is not detected within 0.8s	Check whether bundle has jammed. Check whether initiator switches, replace if necessary.
E6	E-press CAN bus fault	CAN bus communication to press motor interrupted	Press Start button. If fault occurs again, switch machine off and then on again. Contact service staff if this happens again.
Ej	Position monitoring fault	Fault position monitoring bundle pusher B450 / K124	Contact service personnel
Er	E-press reference fault	No reference could be approached.	Press Start button. If fault occurs again, switch machine off and then on again. Contact service staff if this happens again.
i0	Operation stop	Operation stop button pressed on the machine.	Press Start button.
i1	Stand-By	At the end of the Stand By Time or after an external signal, the machine was set to Stand By. Conveyors are stopped to save energy.	Press Start button.
i2	Threading- insert strap	Machine without strap.	Machine is supplied with strap.
i3	Threading - press start button	Press Start to continue threading.	Press Start button
i5	No strap	No strap in the strap arch after a feeding fault. There may also be cut off pieces of strap in the welder unit.	Remove any possible pieces of strap from the welder unit. Then press Start button.

i6	Warning heating on (heat-up time or burning free)	Machine is not ready. The welding plate is heating up.	Wait until the heat-up time has expired and the machine is ready for operation.
i7	Emergency Stop pressed	An EMERGENCY STOP button has been pressed, or a safety switch has been triggered by opening a safety door.	Unlock the EMERGENCY STOP button or close the safety door. Then press the Start button to acknowledge.
i8	Safety door open	A safety switch has been triggered by opening a safety door.	Close safety door. Then press the Start button to acknowledge.
iA	Downstream machine blocked	Downstream machine blocked	Display only!
iC	Backup active	Request for backup from external	Display only!
iJ	Faulty height measurement	Bundle height was not measured. Sensor defective. Sensor not connected	Check bundle height measurement. Check / replace connection and actual sensor.
io	Ready f.operation	Machine is ready for operation	Display only!
ir	Lack of strap, end of coil nearly reached	Warning for operator that the coil is nearly empty	Provide new full strap coil.
r0	CAN bus fault	No subscriber responds	Press Start button. If fault occurs again, switch machine off and then on again. Contact service staff if this happens again.
r1	CAN bus fault	CAN fault – K2 does not respond. The subscriber has no connection to the CAN bus. The subscriber is defective.	Press Start button. If fault occurs again, switch machine off and then on again. Contact service staff if this happens again.
r2	CAN bus fault	CAN fault – K3 does not respond. The subscriber has no connection to the CAN bus. The subscriber is defective.	Press Start button. If fault occurs again, switch machine off and then on again. Contact service staff if this happens again.
r3	CAN bus fault	CAN fault – K4 does not respond. The subscriber has no connection to the CAN bus. The subscriber is defective.	Press Start button. If fault occurs again, switch machine off and then on again. Contact service staff if this happens again.
r5	CAN bus fault	CAN fault – HMI does not respond. The subscriber has no connection to the CAN bus. The subscriber is defective.	Press Start button. If fault occurs again, switch machine off and then on again. Contact service staff if this happens again.
r6	CAN bus fault	CAN fault – K5 does not respond. The subscriber has no connection to the CAN bus. The subscriber is defective.	Press Start button. If fault occurs again, switch machine off and then on again. Contact service staff if this happens again.
rE	Fault conveyor motor M5	Conveyor motor M5 wrong firmware version	Contact service personnel.
sn	Communication fault line control	Communication fault line control	Press Start button. If fault occurs again, switch machine off and then on again. Contact service staff if this happens again.
sX	Ethercat communication fault	Communication fault	Contact service personnel

<p>The strap is not sealed correctly or the strapping splits open again.</p>	<p>Welding plate is soiled. Welding plate temperature incorrectly set. The strap has not started to melt.</p>	<p>Carefully polish both sides of the welding plate with abrasive paper. Loose screws on electrical terminal - tighten. Increase welding plate temperature (see point 4.1.2) and check temperature before use Adjust the height of the welding plate; to do so, loosen screws Z and adjust dimension p to 0.8 + 0.2 mm. Then tighten the screws Z again. (Upper edge welding plate to lower edge pressure plate) Pull out strap, clean and cut off straight and thread in as described in section 5.10.2. Open strap track with lever (see Figure 81) clean strap track. Check and clean the upper strap guide with a cut piece of strap. Check strap hatches and correct overlapping.</p>
<p>The strap is not loaded completely</p>	<p>Strap was incorrectly threaded  Strap track blocked  Strap hatches no longer lie on each other correctly.</p>	<p>Check strap hatches and correct overlapping.</p>
<p>Strap leaves the strap arch during feeding.</p>	<p>Strap hatches no longer lie on each other correctly.</p>	<p>Check strap hatches and correct overlapping.</p>
<p>Strap can no longer be moved. Creasing between the tension rollers and feed rollers (see Figure 81).</p>	<p>Strap pieces in the strap track.</p>	<ol style="list-style-type: none"> <li>1. Unfold table top</li> <li>2. Open DAT lever (see Figure 81)</li> <li>3. Cut the strap between tension and feed rollers (the cutting position is marked with an arrow). Make sure that strap end is not cut off too low or jammed!</li> <li>4. Close DAT lever</li> <li>5. Check whether strap can be moved and is not jammed. If strap cannot be moved, repeat steps 2 to 4.</li> <li>6. Close table top</li> <li>7. Press Start button</li> <li>8. If automatic repair attempt was successful, put machine into operation again.</li> <li>9. If not, repeat attempt at 1 while paying particular attention to strap end.</li> </ol>
<p>Machine cannot be switched on.</p>	<p>Power supply is not sufficient.</p>	<p>Check power supply; plug in plug if necessary.</p>
<p>Large quantity of strap rolls off the coil.</p>	<p>Power supply strap reservoir drive motor is not sufficient.</p>	<p>Check power supply for strap reservoir drive motor.</p>
<p>Fault in strapping head feed position</p>	<p>The strapping head has not stopped properly and is not standing correctly in the feed position</p>	<ol style="list-style-type: none"> <li>1. Press Start button.</li> <li>2. Check whether the initiator B61 is still switched</li> <li>3. If the fault occurs repeatedly, contact service personnel.</li> </ol>
<p>Release fault</p>	<p>This message appears if time P7 or Pb is set too short so that the bundle does not interrupt the safety light barrier B3.</p>	<p>Correct the time P7 or Pb or, if necessary, correct the transport speed.</p>



**Figure 80: Strap drive closed**  
Strap track (A), lever (B), tension rollers (C) together with feed and press-on roller (D).



**Figure 81: Strap drive open**  
Lever and accessible strap track. Accumulations of straps can now be removed. For this purpose, cut off the strap at the point marked with an error.

## 7 SHUT-DOWN



### **IMPORTANT!**

Before shut-down, you can ask SMB Schwede Maschinenbau GmbH or an authorised sales partner whether they will take back the used strapping machine.

When disposing of the machine, a material separation should be carried out due to environmental aspects and the various materials routed to the recycling system. This should be carried out by approved specialist companies.

# CHECKLIST FOR MACHINE INSTALLATION



## 8 CHECKLIST FOR MACHINE INSTALLATION

Machine name: \_\_\_\_\_

Machine number: \_\_\_\_\_

Customer: \_\_\_\_\_

<b>Settings - mechanical parts</b>		
<b>1.</b>	<b>Machine height</b>	
1.1	Adjusted machine height (referred to upstream and downstream machines)	<input type="checkbox"/>
<b>2.</b>	<b>Pneumatic parts (option)</b>	
2.1	Connection lead provided	<input type="checkbox"/>
2.2	Maintenance unit 6 bar	<input type="checkbox"/>
2.3	Supply air pressure regulator - set as stated	<input type="checkbox"/>
<b>3.</b>	<b>Electric press (if provided)</b>	
3.1	Check pressure for setting on touch panel	<input type="checkbox"/>
3.2	Foam rubber / press pads (cf. order) provided	<input type="checkbox"/>
<b>4.</b>	<b>Electric bundle stops (if provided)</b>	
4.1	Check bundle stop settings (if provided) (bundle length)	<input type="checkbox"/>
<b>5.</b>	<b>Electrical pusher (if provided)</b>	
5.1	Check pusher stop settings (if provided) (adequate for bundle width)	<input type="checkbox"/>
<b>6.</b>	<b>Electrical connections</b>	
6.1	Drives	<input type="checkbox"/>
6.2	Sensors, light barriers	<input type="checkbox"/>
6.3	Blow-out motors (fans)	<input type="checkbox"/>
6.4	Current / voltage	<input type="checkbox"/>
6.5	Safety switch	<input type="checkbox"/>
<b>Function checks</b>		
<b>1.</b>	<b>Parameters</b>	
1.1	Parameter settings correspond to those on electric cabinet sticker	<input type="checkbox"/>
<b>2.</b>	<b>Manual strapping</b>	
2.1	Approx. 20 manual strapping cycles	<input type="checkbox"/>
2.2	Check sealing	<input type="checkbox"/>
2.3	Strapping cycles on test bundle	<input type="checkbox"/>
2.4	Strap tension setting	<input type="checkbox"/>
<b>3.</b>	<b>Automatic strapping</b>	

# CHECKLIST FOR MACHINE INSTALLATION



3.1	Approx. 20 strapping cycles in auto mode	<input type="checkbox"/>
3.2	Bundle stops delay	<input type="checkbox"/>
3.3	Adjusted operation mode	<input type="checkbox"/>
<b>4.</b>	<b>Test interlocking</b>	
4.1	Emergency Stop switch (only switches strapping machine off, inform operator)	<input type="checkbox"/>
4.11	Emergency Stop interlock (option)	
4.2	Backup	<input type="checkbox"/>
4.3	Adjust bundle entry delay	<input type="checkbox"/>
<b>5.</b>	<b>Table conveyor / roller table (if provided)</b>	
5.1	Centred alignment	<input type="checkbox"/>
5.2	Speed checked with reference to upstream and downstream machines	<input type="checkbox"/>
<b>6.</b>	<b>Check function of safety devices (if provided)</b>	
6.1	Safety doors	<input type="checkbox"/>
6.4	Table top switches, entry and exit side	<input type="checkbox"/>

Name: \_\_\_\_\_ Place: \_\_\_\_\_ Date: \_\_\_\_\_

Signature: \_\_\_\_\_

9 APPENDIX

9.1 List of illustrations

Figure 1: Potential hazards at the machine ..... 9

Figure 2: Option with roller table and machine rollers outside ..... 10

Figure 3: Type VERO-C (to the right of the coil) ..... 10

Figure 4: Type VERO-C (to the left of the coil)..... 11

Figure 5: Option VERO with ASC..... 11

Figure 6: Additional space requirements ..... 14

Figure 7: Switching the machine off ..... 15

Figure 8: EMERGENCY STOP ..... 16

Figure 9 : Screwed safety devices ..... 17

Figure 10: Screwed safety devices VERO-C ..... 17

Figure 11: Safety devices ..... 18

Figure 12: Safety devices VERO-C..... 18

Figure 13: Safety devices VERO-C..... 19

Figure 14: Area for forklift truck to move the machine ..... 20

Figure 15: Height adjustment ..... 21

Figure 16: Mobile machine, braked rollers on the coil side ..... 21

Figure 17: Control panel components ..... 22

Figure 18: Basic body of VERO with options ..... 24

Figure 19: Basic body of VERO-C..... 24

Figure 20: Options for VERO-C..... 25

Figure 21: Positions of the light barriers B3, B4 and B9 ..... 29

Figure 22: Button for configuring the light barriers ..... 30

Figure 23: Tensioning force F ..... 30

Figure 24: Tensioning force F ..... 31

Figure 25: Mounting ultrasonic module (option) / laser distance sensor..... 32

Figure 26: Coil sensing..... 33

Figure 27: Warning strap end ..... 33

Figure 28: Indicator lamp..... 34

Figure 29: Start interface of control panel ..... 35

Figure 30: Structure of menu for operator ..... 49

Figure 31: User screen ..... 50

Figure 32: Tension values ..... 50

Figure 33: Strapping position bypass mode ..... 51

Figure 34: Mode selection window ..... 52

Figure 35: Strapping position for bypass with cycling ..... 52

Figure 36: Strapping position for front strapping ..... 53

Figure 37: Strapping position for parallel strapping..... 53

Figure 38: Selection window for bundle setting values ..... 54

Figure 39: Adjusting the tension (as a function of height) ..... 54

Figure 40: Adjusting the tension (as a function of circumference) ..... 55

Figure 41: Smallest tension value U3..... 55

Figure 42: Largest tension value U4 ..... 56

Figure 43: Recipe management enabled for up to 5000 recipes ..... 56

Figure 44: Bundle recipes..... 57

Figure 45: Available bundle recipes for the front strapping mode ..... 57

Figure 46: Direct mode selection..... 58

Figure 47: Structure supervisor menu ..... 59

Figure 48: Operator icon..... 60

Figure 49: Log-in screen..... 60

Figure 50: Supervisor functions..... 61

Figure 51 Information mask..... 62

Figure 52: Bundle recipe selection menu ..... 63

Figure 53: Save ..... 63

Figure 54: Manual tensioning ..... 64

Figure 55: Start screen for adjusting bundle recipes..... 64

---

Figure 56: Specification of the mode for a certain bundle recipe .....	65
Figure 57: Specification of name for a bundle recipe .....	66
Figure 58: Adjusting the strapping distance - rear strapping.....	67
Figure 59: Adjusting the strapping distance - centred strapping.....	68
Figure 60: Adjusting the strapping distances - multiple strapping.....	68
Figure 61: Control of entry release.....	69
Figure 62: Adjusting tension force - circumference.....	70
Figure 63: Adjusting tension force - height.....	71
Figure 64: Configuration of bundle press.....	72
Figure 65: Configuration of bundle stops.....	73
Figure 66: Configuration side pushers.....	74
Figure 67: Settings for "Do not strap bundle".....	75
Figure 68: Settings for the bypass of unstrapped bundles.....	76
Figure 69: Possibility for choosing signal processing of external signal.....	76
Figure 70: Backup is OFF.....	77
Figure 71: Backup on, bypass for fault.....	77
Figure 72: Bypass for fault.....	78
Figure 73: Adjusting stop parameters.....	79
Figure 74: Timer setting.....	81
Figure 75: Attaching the strap coil.....	82
Figure 76: Threading in strap.....	84
Figure 77: Correct threading in while taking curvature of strap into account.....	84
Figure 78: Procedure for "Strap End" display.....	85
Figure 79: Triple strapping.....	89
Figure 80: Strap drive closed.....	98
Figure 81: Strap drive open.....	98
Table 1: Potential hazards.....	11
Table 2: List of most important machine components.....	23
Table 3: List of options.....	23
Table 4: Times / Parameters.....	26
Table 5: Overview of icons used and their description.....	35
Table 6: Lubricants.....	91
Table 7: Messages and faults.....	93