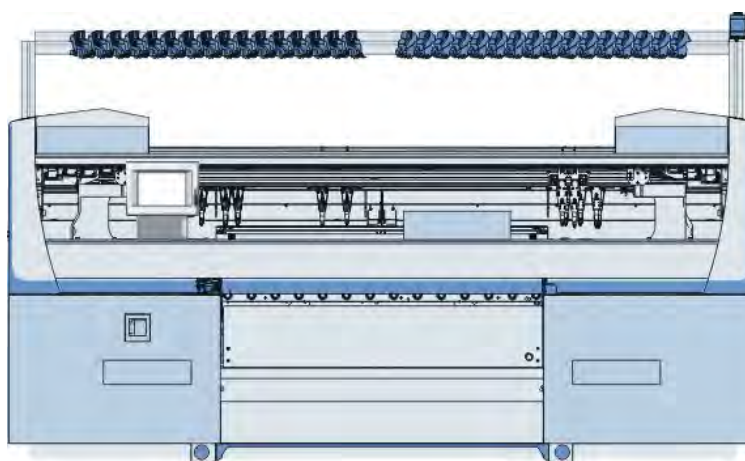


# STOLL

## Instruction manual for a safe operation of the knitting machine

	Type	Computer type	Component type
CMS ADF-3	681	OKC3.0	000 - 002



Date: 2016-04-01

Translation of the original operating instructions

Operating system of the machine: V\_OKC\_006.000.000\_STOLL (or higher)

H. STOLL AG & Co. KG, Stollweg 1, D-72760 Reutlingen, Germany

Our products are being developed further continuously. They are therefore subject to technical modifications.

# Table of Contents

<b>1</b>	<b>Documentation DVD</b>	<b>5</b>
<b>2</b>	<b>Safety instructions</b>	<b>7</b>
2.1	Intended use .....	7
2.2	Organizational measures .....	8
2.3	Personnel qualifications and selection .....	9
2.3.1	Personnel qualification .....	9
2.3.2	Selection of personnel .....	10
2.4	Warning .....	11
2.4.1	Warnings used .....	11
2.4.2	Explanation to the pictogram (ANSI) .....	14
2.4.3	Warnings in the documentation .....	16
2.5	Safety precautions regarding the machine's life phases .....	17
2.5.1	Safety instructions for the transport.....	17
2.5.2	Safety instructions for installing.....	18
2.5.3	Safety instructions for the electrical connection .....	18
2.5.4	Safety Instructions for the Exchange of Data .....	18
2.5.5	Safety Precautions for Production.....	19
2.5.6	Additional Safety Instructions for the Operation with Open Covers .....	20
2.5.7	Safety Instructions for Lubrication, Cleaning and Maintenance .....	21
2.5.8	Safety instructions for the repair.....	22
2.5.9	Safety instructions for dismantling work (dismantling) .....	26
<b>3</b>	<b>Electrical data of the machine</b>	<b>27</b>
3.1	Dimensions and weights .....	27
3.2	Electrical data .....	28
3.3	Gauge ranges .....	29
3.4	Operating conditions .....	30
3.5	Storage conditions .....	30
3.6	Noise emissions .....	31
<b>4</b>	<b>Main components of the knitting machine</b>	<b>33</b>
4.1	Front side .....	33
4.2	Rear side .....	35

<b>5</b>	<b>Security relevant operating elements</b>	<b>37</b>
5.1	Main switch .....	37
5.2	Engaging rod .....	38
<b>6</b>	<b>Optical and acoustic signal elements</b>	<b>39</b>
6.1	Signal light .....	39
6.2	Touch screen .....	40
6.3	Horn .....	41
6.4	Lamps on the yarn control device .....	42
<b>7</b>	<b>Assembly and setting up</b>	<b>43</b>
7.1	Preparing assembly .....	43
7.1.1	Preparing installation location.....	43
7.1.2	Having tools and aids ready .....	43
7.1.3	Transporting machine to installation location .....	44
7.1.4	Unpacking knitting machine.....	44
7.2	Assembling machine .....	45
7.2.1	Putting up knitting machine .....	45
7.2.2	Connecting the knitting machine if the mains voltage is not 400 V .....	49
7.2.3	Plug in battery pack.....	53
7.2.4	Mounting the yarn guide device.....	54
7.2.5	Mounting signal light.....	56
7.2.6	Set date and time .....	57
7.2.7	Aligning knitting machine.....	58
7.3	Carry out reference runs .....	60
7.4	Glue on measuring tape .....	63
7.5	Have the test rod ready .....	63
7.6	How to bring the carriage to an immediate standstill .....	64
7.7	Checking protective devices .....	65

# 1 Documentation DVD

Included in the accessories you will find a DVD with documents about your machine.

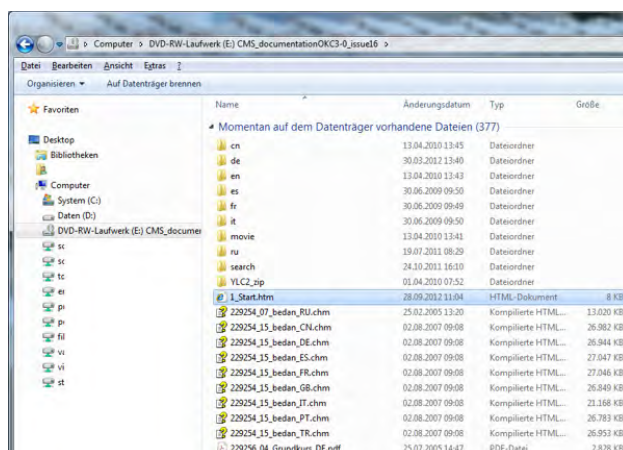


- ◆ Operating instructions
- ◆ Safety instructions
- ◆ Spare Parts Catalog
- ◆ Circuit diagram
- ◆ Brochure "Cleaning, maintenance, care"
- ◆ Pocket Card
- ◆ Training documents...

The documents are available in different languages.

For browsing the documentation DVD:

1. Insert the DVD in the computer.
2. Open the "1\_Start.htm" file double clicking on it.



- ➔ Keep the DVD where it is accessible to all personnel who are responsible for working on the knitting machine.
- ➔ In case of resale deliver the machine with the DVD.



## 2 Safety instructions

### Foreword to the instructions

These operating instructions are designed to familiarize the user with the knitting machine and its designated use.

The operating instructions contain important information on how to operate the machine safely, properly and most efficiently. Observing these instructions helps to avoid danger, to reduce repair costs and downtimes and to increase the reliability and life of the machine.

The additional equipment of your machine can deviate from this description depending on the machine type (type of machine, scope of supply, special equipment).

The translations are carried out very carefully. Should you have any doubts about the accuracy of the translation, please compare this with the accompanying original document. In case of queries, please call the Stoll Helpline.

Additional information is available via:

- the Stoll branch office or Stoll dealer in your country
- the Stoll Helpline:
  - Tel: +49-(0)7121-313-450
  - Fax: +49-(0)7121-313-455
  - E-mail: [helpline@stoll.com](mailto:helpline@stoll.com)
- Internet: <http://www.stoll.com>
- Training courses at the Stoll training centers



Preserve this operating instructions for future use. In case of reselling the machine, the operating instructions are to be included.

### 2.1 Intended use

The machine is an industrial knitting machine of the A class according to EN 55011. Observe the country-specific laws and regulations.

The sole purpose of this knitting machine is the production of stitched items. Only standard yarns are to be processed with the machine that are suitable for usage in industrial knitting machines.

The yarn guide elements are not designed for the safe conductance of high strength yarns or materials like for e.g. metals.

In case you have some specific requirements from the machine, kindly get in touch with any of the Stoll outlets.

## 2.2 Organizational measures

- The operating instructions are to be made accessible to all personnel who are responsible for working on the knitting machine.
- The operator must ensure that the contents of the operating instructions are clearly understood and can be applied by the personnel who are responsible for working on the machine.
- Apart from this the operator must ensure that the national/domestic regulations are observed and followed. They are for example regulations
  - for prevention of accidents,
  - for protection of health,
  - for environmental protection,
  - for technical rules and
  - for a safe and proper working.
- The knitting machine is to be used only in a technically sound condition and as per the stipulated conditions, awareness about the safety and dangers should be there and the operating instructions must be followed.
- The warnings on the machine are to be maintained in a complete and legible condition.  
Procurement of spare parts: [11]
- No modifications, additions or conversions may be made on the machine that are not authorized by Stoll.
- Use only the original Stoll spare parts during repairs and maintenance.
- No arbitrary changes are to be made in the program in the operating system of the computer, the machine software and the controlling system/controls.
- No foreign software is to be installed in the machine.



## 2.3 Personnel qualifications and selection

- Any work on and with the machine must be executed by reliable personnel only.  
Observe the country-specific laws and regulations.

### 2.3.1 Personnel qualification

In order that the knitting machine can be operated correctly and safely, it must be set up and operated by reasonably skilled (qualified) personnel:

- Electrician
- Mechanic
- Knitting expert
- Trained or semi-skilled person

**Electrician** An electrician will be considered a person (expert in electrical area), who can assess and execute the electrical jobs assigned to him and can identify possible dangers.

The expert possesses the following characteristics:

- technical qualification
- theoretical knowledge
- practical experience
- Knowledge of the relevant (country specific) regulations
- Knowledge of the operating instructions

**Mechanic** A mechanic will be considered a person (expert in mechanical area), who can assess and execute the mechanical jobs assigned to him and can identify possible dangers.

The expert possesses the following characteristics:

- technical qualification
- theoretical knowledge
- practical experience
- Knowledge of the relevant (country specific) regulations
- Knowledge of the operating instructions

**Knitting expert** A knitting expert will be considered a person who can assess and execute the jobs assigned to him and can identify possible dangers.  
The expert possesses the following characteristics:

- technical qualification on the knitting machine and the pattern design system
- theoretical knowledge
- practical experience
- Knowledge of the relevant (country specific) regulations
- Knowledge of the operating instructions

**Trained or semi-skilled person** A trained or semi-skilled person is considered as someone who, based on the following characteristics can carry out definite, accurate tasks on the knitting machine.

- detailed theoretical and practical orientation on the knitting machine
- practical experience
- Knowledge of possible dangers

### 2.3.2 Selection of personnel

- The operator must ensure that only personnel authorized for the same can work on the machine.
- The responsibilities of the personnel are to be laid out very clearly for the following activities.

The table shows the minimum requirements for each personnel.

Activity	Personnel
Assembly	Mechanic
Electrical connection	Electrician
Setting up	Knitting expert
Programming	Knitting expert
Patterning	Knitting expert, trained or semi-skilled person
Setting up	Knitting expert, trained or semi-skilled person
Operation	Knitting expert, trained or semi-skilled person
Production	Trained or semi-skilled person
Maintenance, care and cleaning	Knitting expert, trained or semi-skilled person
Maintenance	Mechanic, electrician or knitting expert
repair	Mechanic or Electrician
Dismantling work	Mechanic or Electrician

## 2.4 Warning

## 2.4 Warning

In this chapter you will find explanations to the warnings on the machine and in the documentation.

## 2.4.1 Warnings used

Warnings on the machines correspond to the standard ANSI Z 535.4.

Scope of validity: USA and Canada

A warning instruction as per ANSI Z 535.4 comprises of the following elements:

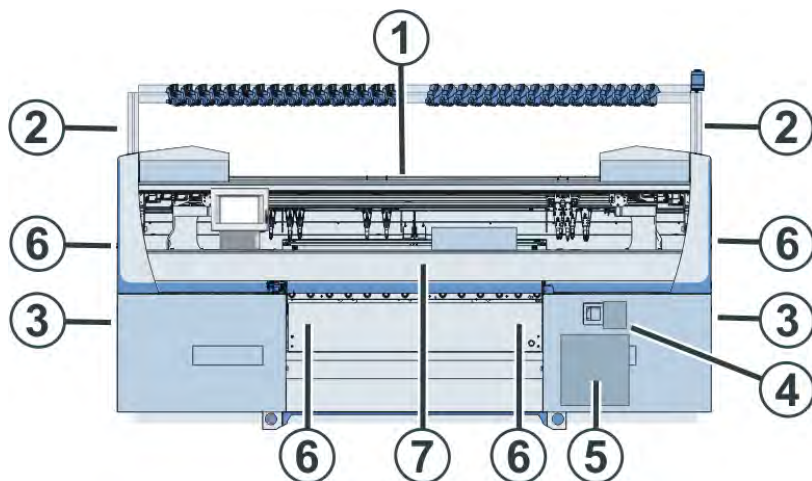


Elements of a warning

No. Explanation

- 1 one warning indication
- 2 one safety sign (displays the danger of injury)
- 3 Display of the warning step (danger: red, warning: orange, caution: yellow)
- 4 Text comprises of:
  - Type and source of danger
  - Possible outcomes
  - Measures for protection against danger and prohibitions

Site for labeling the warning  
on the machine



Site for labeling the warning on the machine

#### List of warnings on the machine







Warnings have to be maintained in a complete and legible condition at all times.  
The order numbers of the labels are found in the following table.

No.	Warning	Explanation
1	<p>ID 265 267</p>	Warning on the rear panel (sliding board)
2	<p>ID 244 270</p>	Warning on the friction feed wheel
3	<p>ID 244 261</p>	Warning on the panelling of the control cabinet right and left
4	<p>ID 244 263</p>	Warning front cover main switch
5	<p>ID 244 271</p>	Warning on the base plate control cabinet right and rear panel control cabinet right

List of warnings

### 2.4 Warning



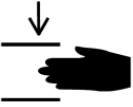



No.	Warning	Explanation
6	 <div> <b>WARNING</b>            Pinch point hazard.            Moving parts.            Keep fingers clear.         </div> <p>ID 244 272</p>	Warning on the comb take-down and on the sliding board on the right and on the left
7	 <div> <b>CAUTION</b>            Crush hazard.            Moving parts can crush and cut.            Keep hands and fingers clear.         </div> <p>ID 244 276</p>  <div> <b>CAUTION</b>            Airborne particles or lubricants.            Eye damage may result.            Wear eye protection.         </div> <p>ID 244 269</p>	Warning under the covers
8	 <p>ID 265 384</p>	Warning on the panelling of the light curtain

List of warnings

### 2.4.2 Explanation to the pictogram (ANSI)

Pictograms on the machine

Following pictograms are used on the machine:

Pictograph	Explanation
	General warning indication
	Dangerous electrical voltage
	Danger of crushing and cutting
	
	Danger from flying-off mechanical parts or lubricating materials
	Danger of suction

Pictographs used on the knitting machine

2.4 Warning

Warning steps for warning instructions as per ANSI

A warning step comprises of the following parts:

- Safety sign  
The safety sign warns about the danger of injury and death.  
In order to avoid death and injuries, all measures that are indicated along with the safety sign are to be followed.
- Signal word  
DANGER, WARNING, CAUTION, IMPORTANT
- Signal color  
depending upon the signal word: red, orange, yellow, blue

Warning step	Explanation
<div>DANGER</div>	Imminent danger of death or serious injuries (irreversible).
<div>WARNING</div>	Death of serious injury (irreversible) possible.
<div>CAUTION</div>	Slight injury (reversible) possible.
<div>IMPORTANT</div>	Damage to property possible.


Warning steps for warning instructions as per ANSI

### 2.4.3 Warnings in the documentation

The warnings in the documentation have the following structure:

- Safety sign (display the danger of injury)
- Signal word (DANGER, WARNING, CAUTION, IMPORTANT)
- Text comprises of:
  - Type and source of danger
  - Possible outcomes
  - Measures for protection against danger and prohibitions

Example:

	<b>DANGER</b>
	<b>Life-threatening high voltage!</b> Electrical shock may cause death or serious injuries. → Set machine main switch to "0". → Secure the machine against being switched on again.

Signal word	Explanation
<b>DANGER</b>	Imminent danger of death or serious injuries (irreversible).
<b>WARNING</b>	Death or serious injury (irreversible) possible.
<b>CAUTION</b>	Slight injury (reversible) possible.
<b>IMPORTANT</b>	Damage to property possible.

Explanation to the signal words



## 2.5 Safety precautions regarding the machine's life phases

## 2.5 Safety precautions regarding the machine's life phases

- Avoid any operational mode that might be prejudicial to safety.
- Take the necessary precautions to ensure that the machine is used only when in a safe and reliable state.
- Operate the machine only when all the protective and security equipment is available and functional.
- In particular, malfunctions which could limit the safety of the machine are to be remedied (or repair is to be commissioned) immediately!
- Observe the warnings on the machine and in the operating instructions by all means. By doing so you will protect yourself and the others from dangers and will help to avoid damages to the machine and other tangible assets.
- No one may remain inside the machine. Risk of death!
- Observe the start-up and shut-down procedures and the indicators.
- Before starting up or setting the machine in motion, make sure that nobody is at risk!

## 2.5.1 Safety instructions for the transport

Type of risks	Measures
Danger of injury by heavy loads.	<p>Country-specific regulations for the prevention of industrial accidents for the transport of heavy loads are to be observed.</p> <p>Use only appropriate means of transport with sufficient load capacity for transporting and installing the knitting machine (e.g. fork lift).</p> <p>The relevant country-specific laws and regulations are to be observed when transporting with a ground conveyor (e.g. fork lift).</p> <p>Ground conveyor: observe the safety instructions of the manufacturer.</p> <p>Transport the machine always with the utmost caution and care.</p>
Danger of damage to the machine.	Attach all the transport locks.

### 2.5.2 Safety instructions for installing

Type of risks	Measures
Danger of injury by heavy loads.	Observe all technical data of the machine. Country-specific regulations for the prevention of industrial accidents for the transport of heavy loads are to be observed.
Danger of damage to the machine.	Remove all transport locks. Connect side protective shrouding (on left and right-hand sides of machine).
Environment pollution	Dispose of protective films in an environmentally responsible manner. Observe the country-specific laws and regulations.

### 2.5.3 Safety instructions for the electrical connection

Type of risks	Measures
Danger to life during work on the electrical assembly of the machine.	Get the machine connected by an electrician. Note technical data.

### 2.5.4 Safety Instructions for the Exchange of Data

Type of risks	Measures
Computer viruses! Loss of data or production. Computer viruses can creep into the machine through unscanned data via USB port or network.	Bring in only virus free data on to the knitting machine.  The dangers associated with computer viruses have been increasing for years. Look into the subject and ensure that the network computer connected with the knitting machine and the data carrier used on the knitting machine are free from computer viruses!  We advise you with emphasis to the fact that the Co. H. Stoll GmbH & Co. KG will take no guarantee or responsibility for damages in this conjunction. For further enquiries please contact Stoll-Helpline.

## 2.5 Safety precautions regarding the machine's life phases


## 2.5.5 Safety Precautions for Production

Type of risks	Measures
Danger of injury	<p>Close the covers.</p> <p>Close the rear panels (sliding boards) of the machine.</p> <p>Close the lateral covers.</p> <p>Keep eyes away from the lateral yarn tensioner.</p> <p>Objects such as tools, bobbins etc. to be removed from the inside of the machine.</p> <p>If the machine is in operation, under no circumstances should you reach into it.</p> <p>If the machine is in operation, do not reach into the area of the yarn carrier rails under any circumstances.</p> <p>Stop the machine if an intervention is necessary.</p> <p>Do not tear off the yarn by hand but use scissors.</p>
Danger of winding and suction and danger of crushing.	<p>Do not reach into the fabric take-down rollers.</p> <p>Do not touch the friction feed wheel while the machine is in operation and keep away loose garments and hair strands.</p> <p>Wait for the feed wheel to stop moving after stopping the machine.</p>
Health hazard by fibers, dust and fumes.	<p>Special caution is to be observed while knitting of yarns that cause health hazards or a damage to the machine:</p> <ul style="list-style-type: none"> <li>◆ Yarns with heavy fiber fly</li> <li>◆ dyestuffs causing health hazards</li> <li>◆ Yarns made of glass fibers, metallic-annealed fibers, asbestos, carbon, PU or similar materials</li> </ul> <p>Employ suitable measures to avoid the hazard caused by fibre, dust and fumes.</p> <p>Observe the country-specific laws and regulations.</p> <p>Observe the manufacturer's specifications (safety data sheet).</p> <p>For any further queries please contact Stoll.</p>
Fire hazard by fluff, dust and other impurities.  Increased danger of short circuit during knitting of metallic or conductive materials by building up of conductive fluff and dust.	<p>Fluff, dust and other impurities to be removed regularly from the entire machine depending upon the degree of dirt at least once in every shift.</p> <p>Take care of any additional suction.</p> <p>Wear Inhalation protection gear.</p>

### 2.5.6 Additional Safety Instructions for the Operation with Open Covers

If the covers are open the engaging rod cannot be locked into it's highest position (production). The user must hold the engaging rod in this position so that the machine works at the set speed "MSECCO" (dead man's switch).

The maximum carriage speed with open cover can be set in the "Machine parameter" window. (Value range in input field "MSECCO": 0.00 to 0.20 m/s, standard: 0.05)

	<b>DANGER</b>
	<p><b>The carriage moves at production speed!</b></p> <p>Danger of crushing and cutting by the carriage.</p> <ul style="list-style-type: none"> <li>▷ If the "MSECCO" check box is deactivated, the carriage moves at production speed. After the reversal point, the carriage can move at higher speed, if it is set up that way in the knitting program.</li> <li>➔ Close the covers.</li> <li>➔ Do not deactivate the "MSECCO" check box.</li> </ul>

Type of risks	Measures
Danger of crushing and cutting by the carriage, the autarkic yarn carriers, the racking, the needle beds, the clamping and cutting devices and the additional needle beds.	Do not reach into the running machine. Move carriage step by step or at creep speed (see operating instructions).
Danger of injury by broken cam box and needle pieces.	Wear safety glasses.
Danger of crushing and suction: <ul style="list-style-type: none"> <li>◆ by the fabric take-down (main take-down, auxiliary take-down, comb take-down, belt take-down)</li> <li>◆ by the additional needle beds</li> </ul>	Do not reach in the gap between the needle beds. Keep hands, face, loose clothing and other loose objects away: danger of crushing. Do not reach into the area between the fabric take-down roller and the comb take-down.

## 2.5 Safety precautions regarding the machine's life phases

## 2.5.7 Safety Instructions for Lubrication, Cleaning and Maintenance

Type of risks	Measures
Danger of crushing and cutting by the carriage, the autarkic yarn carriers, the racking, the needle beds, the clamping and cutting devices.	<p>Switch off machine at main switch.</p> <p>Secure the machine against being switched on again.</p> <p>After working on the rear of the machine, close the sliding boards again.</p>
Cleaning with compressed air	<p>Observe the country-specific laws and regulations.</p> <p>Risk of soiling - do not blow directly into the motor.</p> <p>Recommendation: In order to avoid any dust being deposited on the inaccessible points of the machine, we recommend that the dust should be vacuum cleaned and the machine not to be cleaned by compressed air.</p> <p><b>Caution:</b> Damage of needles! The spring-mounted needle latches will be damaged if the needles are blown out with compressed air. Always vacuum fluff and dust off the needles, never blow them out.</p>
Health hazard	<p>When working with oil and grease, pay attention to the safety regulations (safety data sheets) applicable to the respective product!</p> <p>Observe the manufacturer's specifications (safety data sheet).</p>
Environment pollution	<p>Ensure that oil and grease is correctly disposed of in an environmentally responsible manner!</p> <p>Observe the country-specific laws and regulations.</p> <p>Observe the manufacturer's specifications (safety data sheet).</p>

## 2.5.8 Safety instructions for the repair

### Danger by mechanical parts

Reason	Measures
Danger of injury by rotating or moving parts.	Do not reach into the running machine. Always stop the machine during an intervention. Switch off the machine during mounting activities and secure it against being switched on again. Lock the main switch. Wear safety glasses.
Injuries may be caused by pieces broken off from needles when the carriage and needles collide at damaged points.	Wear safety glasses.
Danger of burns by motors; the needle bed and parts of electric controls that can become hot.	Wear protective gloves.
Danger of crushing and cutting by the carriage, the autarkic yarn carriers, the racking, the needle beds, the clamping and cutting devices and the additional needle beds.	Always stop the machine during an intervention. Move carriage step by step or at creep speed (see operating instructions).
Danger of crushing and cutting by the sliding board (rear side of the machine).	Do not reach into the area between the sliding board and the machine frame.
Danger of crushing and suction: ♦ by the fabric take-down (main take-down, auxiliary take-down, comb take-down, belt take-down) ♦ by the additional needle beds	Do not reach into the fabric take-down rollers nor into the belt take-down. Do not reach in the gap between the needle beds. Keep hands, face, loose clothing and other loose objects away: danger of crushing. Do not reach into the area between the fabric take-down roller and the comb take-down.
Danger of injury in the case of mounting activities by pressure and tension springs (e.g. in the main take-down and in the engaging rod), which could have stored potential energy.	Releasing the springs before removing. Wear protective gear (e.g. safety glasses, gloves).
Danger of injury in the case of mounting activities by sharp edges and protruding parts, when the protective devices are removed.	Wear protective gear (e.g. safety glasses, gloves).

### 2.5 Safety precautions regarding the machine's life phases

#### Danger by electrical energy

Reason	Measures
Danger to life by electrical shock during work on the electrical assembly of the machine.	Work is to be done only by an electrician. Switch off machine. Remove building fuses. Secure the machine against being switched on again. Lock the main switch.
Danger to life by electric shock in case of electric faults like loose or defective connectors/plugs or braised or damaged cables.	Deactivate the machine immediately. Remove building fuses. Secure the machine against being switched on again. Lock the main switch. Eliminate all faults that can be caused by an electrician.

#### Danger by operating materials

Reason	Measures
Danger of chemical burns during contact with oil, grease and other chemical substances.	Wear protective gear (e.g. safety glasses, gloves). Observe the country-specific laws and regulations. Observe the manufacturer's specifications (safety data sheet).
Injuries by oil pressure in case of damaged lines of the central lubrication that are under a high oil pressure (30 bar).	Deactivate the machine immediately. Secure the machine against being switched on again. Lock the main switch. Get the damaged lines replaced by a mechanic. Remove the outcoming oil immediately.
Injuries by compressed air in case of damaged pipes of the fluff absorption that are under a high air pressure (3-6 bar).	Deactivate the machine immediately. Secure the machine against being switched on again. Lock the main switch. Get the damaged lines replaced by a mechanic.
Danger of skidding if the oil, grease or other substances are blocked or if a leakage appears.	Immediately mop these substances. Observe the country-specific laws and regulations.
Environment pollution is caused if the disposal of replaced parts and of consumables is not done professionally.	Ensure that all consumables and replaced parts are disposed of safely and with minimum environmental impact! Observe the country-specific laws and regulations. Observe the manufacturer's specifications (safety data sheet).









### Safety precautions regarding the machine's life phases 2.5

#### Other dangers

Reason	Measures
Danger of damage by usage of unsuitable cleaning materials.	Only cleaning materials that have been mentioned in the Operating Instructions for e.g. Alcohol are to be used. Do not use cleansing materials that can cause health hazards or are corrosive.


#### Safety precautions for the battery

The following safety instructions and protective measures must always be observed when handling the battery.

Pictograph	Safety precautions and protective measures
	Observe the safety precautions and protective measures.
	No smoking. Do not allow open flame, glow or sparks in the vicinity of the battery because of explosion and fire hazards.
	Wear safety glasses as battery acid is highly corrosive.
	In case of acid splashes in the eye or on the skin flood with clear, cool running water. Afterwards, immediately see a doctor. Wash the clothing with water.
	Explosion and fire hazards, avoid short circuits. Charge the battery only in assembled state within the knitting machine.
	Battery acid is highly corrosive. During normal operation the contact with the battery acid is excluded. In case of destruction of the housing, the battery acid can escape. Danger of acid burns.
	Batteries are sensitive to mechanical damages. Handle with care.
	Danger of short circuit. The contacts of the battery are always under tension, therefore, do not place foreign objects or tools on the battery.



### 2.5 Safety precautions regarding the machine's life phases

Pictograph	Safety precautions and protective measures
	Battery contains lead (Pb) Do not dispose the battery as household waste. Dispose the battery in an environmentally responsible manner. Bring the battery to a collection facility for used batteries.

#### Mounting and checking protective devices

After the repair work all the protective devices are to be remounted and fully functional.

- Close the sliding boards (rear panels) of the machine.
- Close the lateral covers.
- Objects such as tools, bobbins etc. to be removed from the inside of the machine.
- Close the covers.

Further information:

- Checking protective devices [-> 65]

#### 2.5.9 Safety instructions for dismantling work (dismantling)

Dismantling for a longer storage or for evacuation

Type of risks	Measures
Danger to life because of electrical shock during work on the electrical assembly of the machine.	Get the machine disconnected from the mains supply by an electrician.
Danger of damage to the machine during transport.	Observe all technical data of the machine.  Country-specific regulations for the prevention of industrial accidents for the transport of heavy loads are to be observed.

Dismantling and scrapping

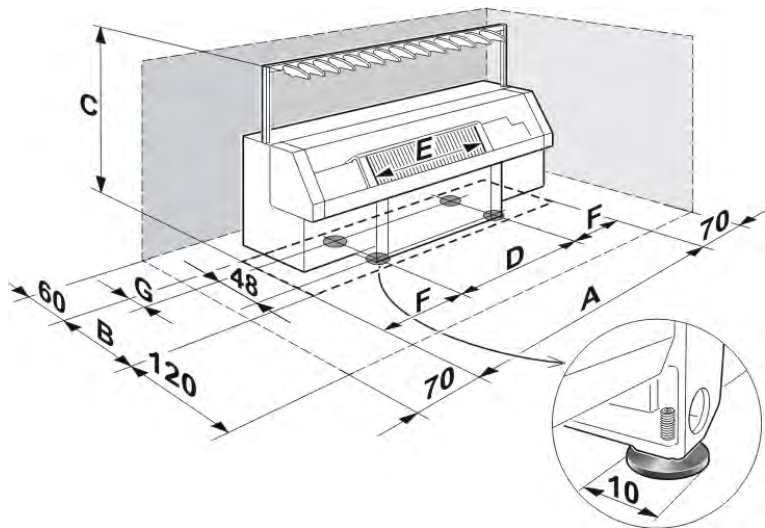
Type of risks	Measures
Danger to life because of electrical shock during work on the electrical assembly of the machine.	Get the machine disconnected from the mains supply by an electrician.
Health hazard	When working with oil and grease, pay attention to the safety regulations (safety data sheets) applicable to the respective product!  Observe the manufacturer's specifications (safety data sheet).
Environment pollution during disposal.	Ensure that oil and grease is correctly disposed of in an environmentally responsible manner!  Observe the country-specific laws and regulations.  Observe the manufacturer's specifications (safety data sheet).  Dispose of electric and electronic parts separately.  In the control unit there are accumulators. These contain lead. Do not dispose of the accumulators together with the household waste, but deliver them at a battery collecting facility, to dispose of them in an environmentally responsible manner.

Further information:

- Safety precautions for the battery [-> 24]

3 Electrical data of the machine

3.1 Dimensions and weights



Machine dimensions (in cm)

- A Width
- B Depth
- C Height
- D Spacing of set screws
- E Nominal working width
- F Distance "machine foot - lateral panel"
- G Distance "machine foot - rear panel"

The back-and-forth movement of the carriage causes the dynamic loads listed above to occur at the set screws.

	A	B	C	D	E	F	G	Weight (kg)	Dynamic weight (kg)
CMS ADF-3	308	with additional bobbin board: 128 without additional bobbin board: 100	188	153	128	77,5	18	1490	

Dimensions, weight and dynamic weight

## 3.2 Electrical data

Electrical data	Values
Supply voltage	400 V $\pm 10$ % 50 or 60 Hz
Phase number	3 Observe right-hand rotating field
Rated current	7 A
Protection of the mains to the knitting machine	16 A slow-blow each phase
Power consumption	2-3 kW

### Connection data of the knitting machine

Before connecting the machine, check the mains voltage available on site.

It is generally not admissible to connect electrical or electronic components of other makes to the machine's internal wiring. A guarantee for a faultless function of the machine cannot be ensured in those cases.

If the knitting machine is operated with a generator, make sure that the voltage supplied by the generator meets the requirements of the EN 60204-1, Parag. 4.3.1.

In case of queries, please call the Stoll Helpline.

## 3.3 Gauge ranges

## 3.3 Gauge ranges

Gauge	Area	Needle number					
		Nominal width: 114 cm (45")	Nominal width: 127 cm (50")	Nominal width: 183 cm (72")	Nominal width: 213 cm (84")	Nominal width: 218 cm (86")	Nominal width: 244 cm (96")
E 3	A		149				
E 3.5			174				
E 4			199				
E 5 E 2,5.2	B	224	249	359	419		479
E 7 E 3,5.2		314	349	503	587		671
E 8		359	399	575	671		767
E 5.2		449	499	719	839		959
E 10	C	449	499	719	839		959
E 12 E 6.2		539	599	863	1007		1151
E 14 E 7.2		629	699	1007	1175	1203	1343
E 16 E 8.2		719	799	1151	1343		1535
E 18 E 9.2		809	899	1295		1548	1727

Number of needles per needle bed



The conversion into another gauge depends on the machine type and the gauge range (A, B or C). Please demand our offer for your machine.

### 3.4 Operating conditions

- Set the machine on a level, firm surface in a building
- Do not set the machine in an area endangered by explosions or underground
- Ambient temperature 59 °F to 113 °F (+15 °C to +45 °C)
- Relative humidity:
  - min. 50 %
  - max. 80 %
  - not condensed

When yarns are being processed, electrostatic charges can be produced if the relative humidity is not at least 50 %

In the case of deviating operating conditions please contact Stoll helpline.

### 3.5 Storage conditions

If the knitting machine is to be stored for a longer period of time the following tasks must be carried out:

1. Clean the knitting machine thoroughly.
2. Lubricate knitting machine.
3. When the knitting machine is transported to another place, the transport locks must be applied.
4. All bare metals must be sprayed with an anti-corrosion material (e.g. WD-40).
5. Cover the area yarn carrier rods -needle beds with gas paper/anti-rust paper.
6. Cover the knitting machine with a protective foil.
7. Store the knitting machine in a dry place within a building.



Storage temperature -15 °C to +60 °C.  
Protect the machine carefully from corrosion especially against sea air.

In case of a longer storage check the condition of the machine regularly and spray the bare metals with an anti-corrosion material if necessary.

---

Further information:

- Safety instructions for the transport [-> 17]
- Safety instructions for dismantling work (dismantling) [-> 26]

### 3.6 Noise emissions

The measuring has been performed on a representative basis for the series CMS ADF-3 on a CMS ADF-3 E7.2. The machines of the CMS ADF-3 series emit a sound pressure level which is not higher than the specified values under comparable conditions.

Applied standards:

- ISO/CD 9902 "Textile machine regulations for noise emissions"
- ISO/CD 9902-1 and ISO/CD 9902-6.

Level specifications in dB(A)	mean sound pressure level LpA	Uncertainty KpA
CMS ADF-3	71,1	4

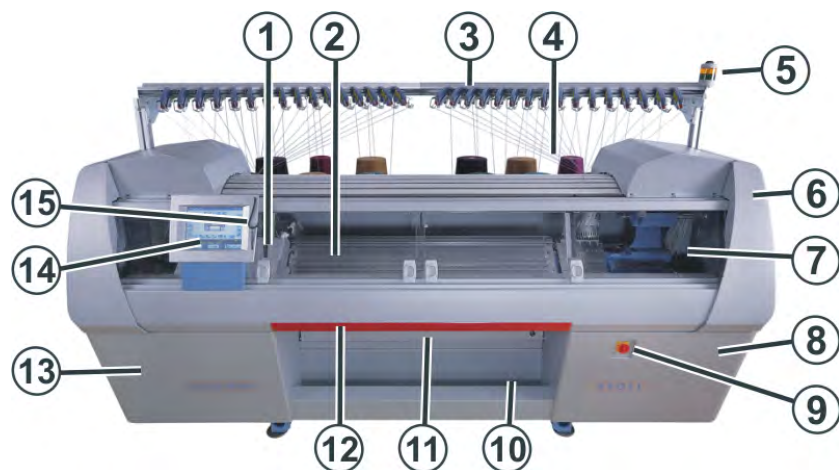
Noise emissions





## 4 Main components of the knitting machine

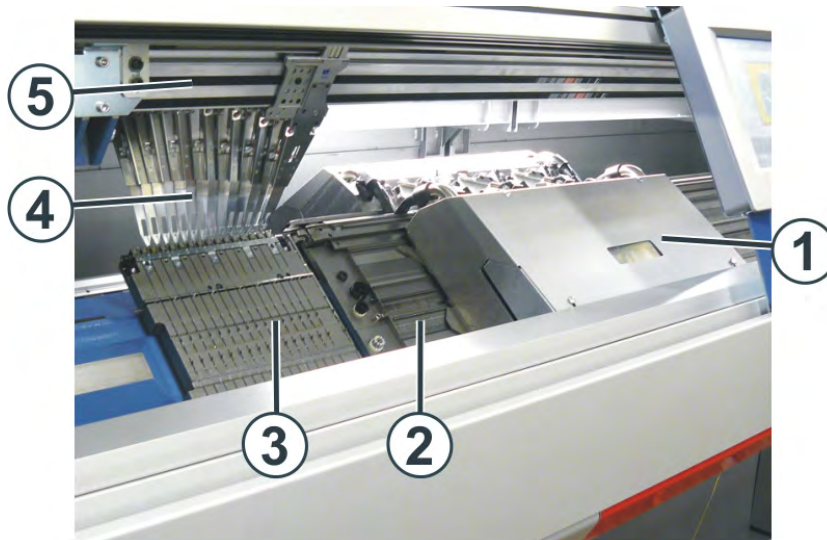
### 4.1 Front side



Front view of the knitting machine

No.	Label	No.	Label
1	Carriage	9	Main switch and emergency stop switch
2	Needle bed (front)	10	Fabric collection chamber
3	Yarn control units	11	Fabric take-down (main take-down, auxiliary take-down, comb take-down, belt take-down)
4	Bobbin board (with bobbin)	12	Engaging rod (red)
5	Signal light (green, yellow)	13	Left control cabinet
6	Safety door (left, right)	14	Touch screen
7	Covers (over carriage and needle bed)	15	USB port
8	Right control cabinet		

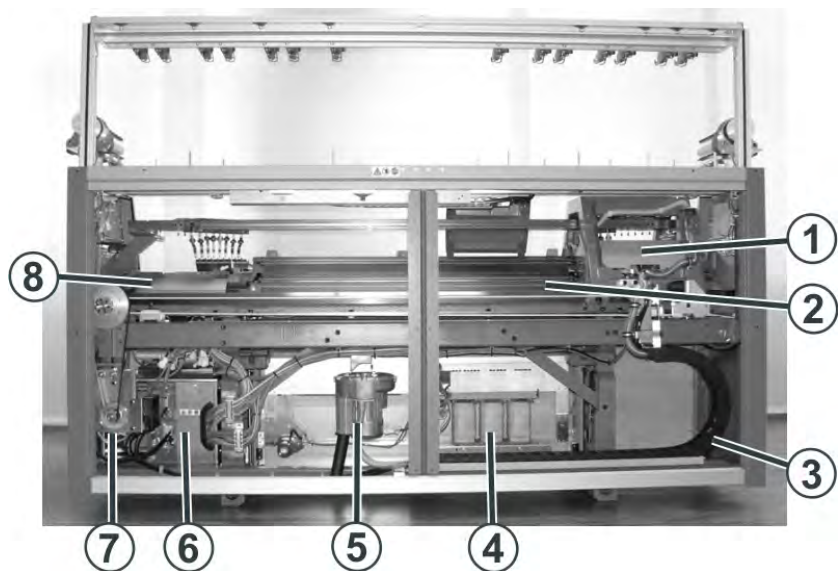
Inner view



Inner view of the knitting machine

No.	Label	No.	Label
1	Carriage	4	Determine yarn
2	Front Needle Bed	5	Yarn carrier rail
3	Left clamping and cutting bed		

4.2 Rear side



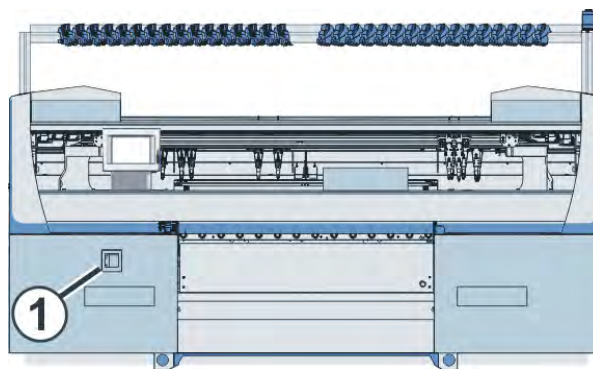
Rear side (without rear panel segments)

No.	Label	No.	Label
1	Carriage	5	Fluff absorption
2	Rear Needle Bed	6	Control unit on the right
3	Trailing cable (energy chain)	7	Main drive
4	Transformer (Fuses)	8	Racking device



## 5 Security relevant operating elements

### 5.1 Main switch



Main switch

The main switch (1) is located on the front of the machine above the left control unit.

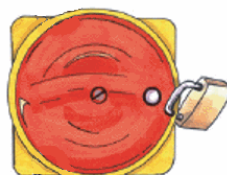
In position "1 - On" the main switch is switched on, in position "0 - Off" it is switched off.

**Switch-off process** When the main switch is turned from "1" to "0", the machine is immediately switched off. Dangerous movements are immediately stopped. However, the machine data are not lost, as they are saved with a battery. This takes approx. 60 seconds. In the process, messages appear on the touch screen. Once the process has been completed, the touch screen becomes dark and an alarm signal sounds.

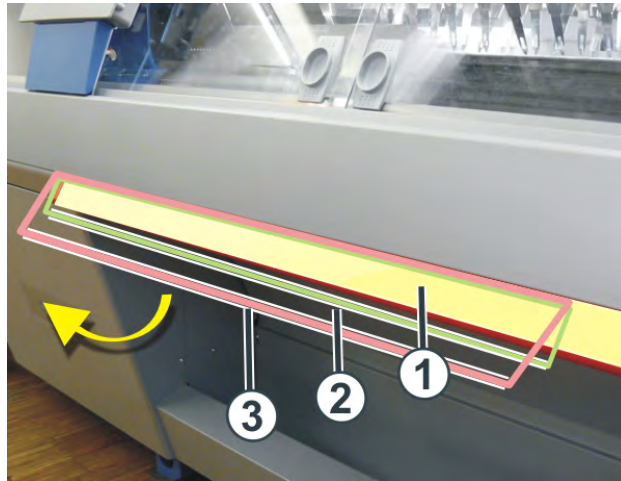
Even with the main switch switched off, the mains supply up to the main switch still carries current with extremely high voltage. The mains supply must be disconnected and secured against being switched on again before working on the main switch unit.

**Emergency-stop** The main switch is also the emergency-stop switch.

The main switch has to be locked during maintenance and service work. This prevents the main switch from being switched on accidentally.



## 5.2 Engaging rod



Engaging rod

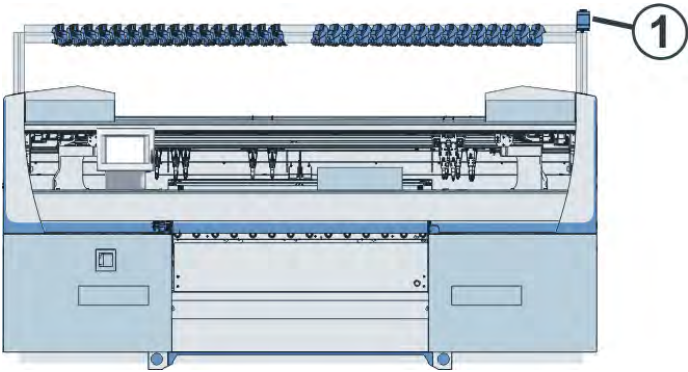
- 1 Carriage stopped
- 2 reduced speed
- 3 normal speed

The carriage assembly, and therefore also knitting, is started and stopped with the engaging rod. The engaging rod can be moved into three positions.

# 6 Optical and acoustic signal elements

The knitting machine control constantly controls the yarn, the fabric, all movable parts of machine, the motors and the electronic components. If an error occurs, the machine stops. The signal light glows yellow, a pictogram appears on the touch screen and a horn goes off.

## 6.1 Signal light



Signal light

The signal light (1) displays the operating status of the knitting machine. Depending on the machine type, the signal light is mounted either on the left or on the right machine side.

Color	Status of the knitting machine
green	Knitting machine is producing
green (flashes)	Knitting machine is stopped with engaging rod
yellow	Knitting machine is not producing, as an error has occurred during knitting
green, yellow	Both lamps light up during the shutdown process. Duration is approximately 60 seconds - from switching off main switch until machine is completely shut down.
off	Main switch is off




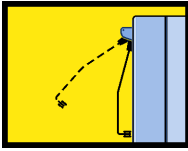
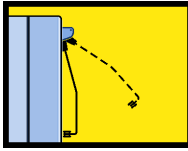


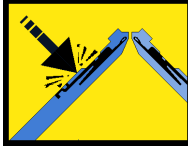
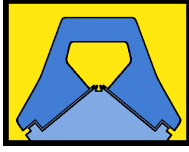
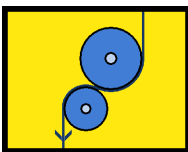
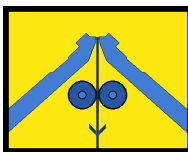
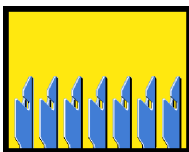

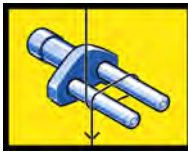

Signal light colors

## 6.2 Touch screen

The most common error causes are shown in the pictographs on the touch screen.

If an error occurs, one pictograph appears (on a yellow background), and in the case of several errors the corresponding pictographs appear consecutively. Errors which occur seldom (e. g. hardware errors) are shown with a common pictograph.


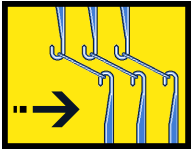
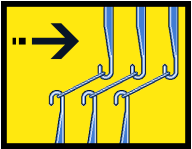
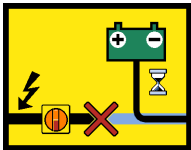
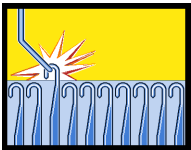
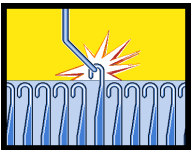
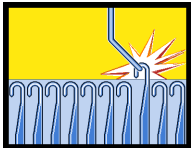
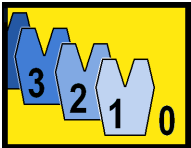
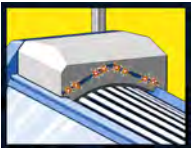
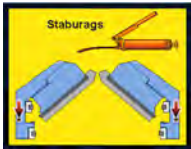

### Pictographs

		
Cover on the left	Cover on the right	Cover
		
Yarn tensioner on the left	Yarn tensioner on the right	Yarn control unit
		
Front shock stop motion	Rear shock stop motion	Carriage (carriage resistance monitor)
		
Take-down	Auxiliary Take-down	Comb Take-down
		
Belt take-down	Friction feed wheel on the left	Friction feed wheel on the right

Pictographs for the display of stop motions



6.3 Horn

Pictographs		
		
Lubrication	Front racking	Rear racking
		
Power failure	Needle stop left	Needle stop centre
		
Needle stop right	Piece counter	Light curtain
		
Grease linear guidance	miscellaneous causes of stop motion	

Pictographs for the display of stop motions

6.3 Horn

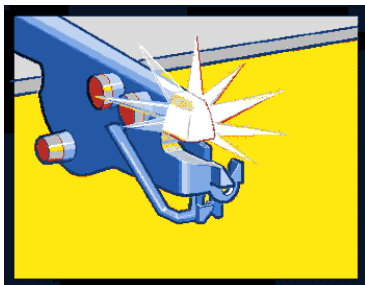
An alarm signal is produced in the following situations:

- if the machine stops because of an error
- approx. 60 seconds after this the main switch gets rotated to "0"



The alarm signal can be switched on and off (standard setting = off).

## 6.4 Lamps on the yarn control device



Lamps on the yarn control device

In the case of a yarn breakage or yarn end, the yarn break control of the yarn control device switches off the knitting machine. The error is displayed by the LED on the yarn control device, the signal light glows yellow and a message appears on the touch screen.

## 7 Assembly and setting up

### 7.1 Preparing assembly

#### 7.1.1 Preparing installation location

Installation location    The installation location of the knitting machine must fulfill the following conditions:

- flat, firm surface in a building
- sufficient space between the knitting machines for
  - Operating the machine
  - Removing the fabrics from the machine
- do not put up the machine underground

#### 7.1.2 Having tools and aids ready

The knitting machine is delivered packed in one of the following ways:

- on a transport base packed in film
- on a transport base packed in a crate

The following tools and aids are required for all types of packing:

- Accessories for knitting machine
  - Washers for machine feet
  - Grub screws for aligning the machine
  - Square spanner for opening the rear machine panel.
- Tool
- Spirit level

### 7.1.3 Transporting machine to installation location

	<b>DANGER</b>
	<p><b>Heavy knitting machine!</b></p> <p>Danger of injury for persons and damage of the knitting machine.</p> <ul style="list-style-type: none"><li>→ Country-specific regulations for the prevention of industrial accidents for the transport of heavy loads are to be observed.</li><li>→ Use only appropriate means of transport with sufficient load capacity for transporting and installing the knitting machine (e.g. fork lift).</li><li>→ The relevant country-specific laws and regulations are to be observed when transporting with a ground conveyor (e.g. fork lift).</li><li>→ Ground conveyor: observe the safety instructions of the manufacturer.</li><li>→ Transport the machine always with the utmost caution and care.</li><li>→ All transport locks are to be attached to the machine.</li></ul>

- Transport the knitting machine to the installation location in its packing and remove the packing there.

### 7.1.4 Unpacking knitting machine

1. When delivered in a crate: Remove crate lid and side walls.
2. Remove boxes with accessory parts from the fabric collection chamber.

## 7.2 Assembling machine

### 7.2.1 Putting up knitting machine

Lift the knitting machine with a ground conveyor (e.g. fork lift) and transport it.

In this case the following things have to be taken care of:

- The position of the centre of gravity is indicated on the front crosshead (carriage in left transport position).
- Both the lifting arms of the ground conveyor should be long enough so that the front and the back crosshead can be lifted.
- Lift and set the machine carefully. Danger of damage if it hits the floor very hard.



Lift the machine only on both the machine feet or on the crossheads.

Setting up knitting machine:

1. Remove the screwing of the knitting machine to the transport base.



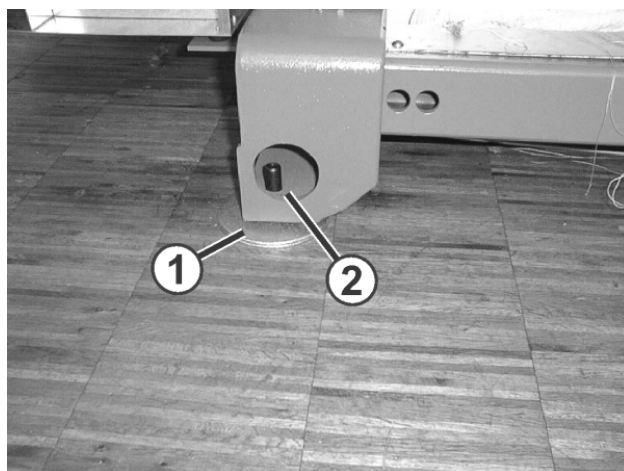
#### DANGER

##### **Heavy knitting machine!**

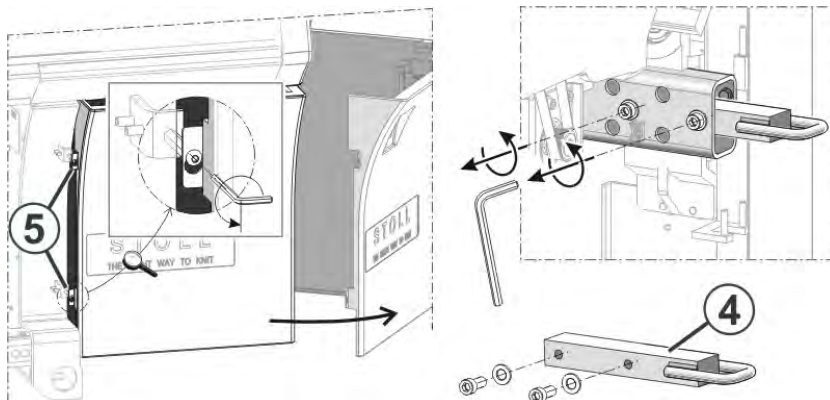
Danger of injury for persons and damage of the knitting machine.

- Country-specific regulations for the prevention of industrial accidents for the transport of heavy loads are to be observed.
- Use only appropriate means of transport with sufficient load capacity for transporting and installing the knitting machine (e.g. fork lift).
- The relevant country-specific laws and regulations are to be observed when transporting with a ground conveyor (e.g. fork lift).
- Ground conveyor: observe the safety instructions of the manufacturer.
- Transport the machine always with the utmost caution and care.
- All transport locks are to be attached to the machine.

2. Lift the knitting machine with a fork lift from the transport surface.
3. Bring the knitting machine to the site of installation.
4. Lay Washers (1) from the accessories under the knitting machine foot. Place the washers in such a manner that the cavity comes exactly under the grub screw (2).



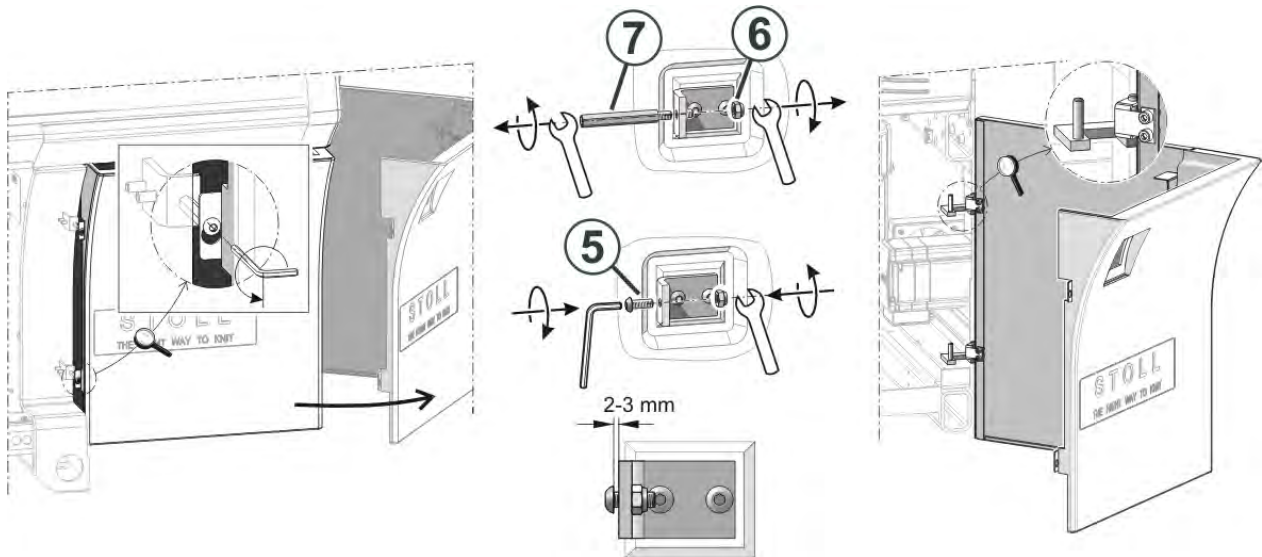
5. Setting knitting machine on the floor
6. Remove wood pieces, adhesive strips, packing film and paper.
7. Remove the screws (5).



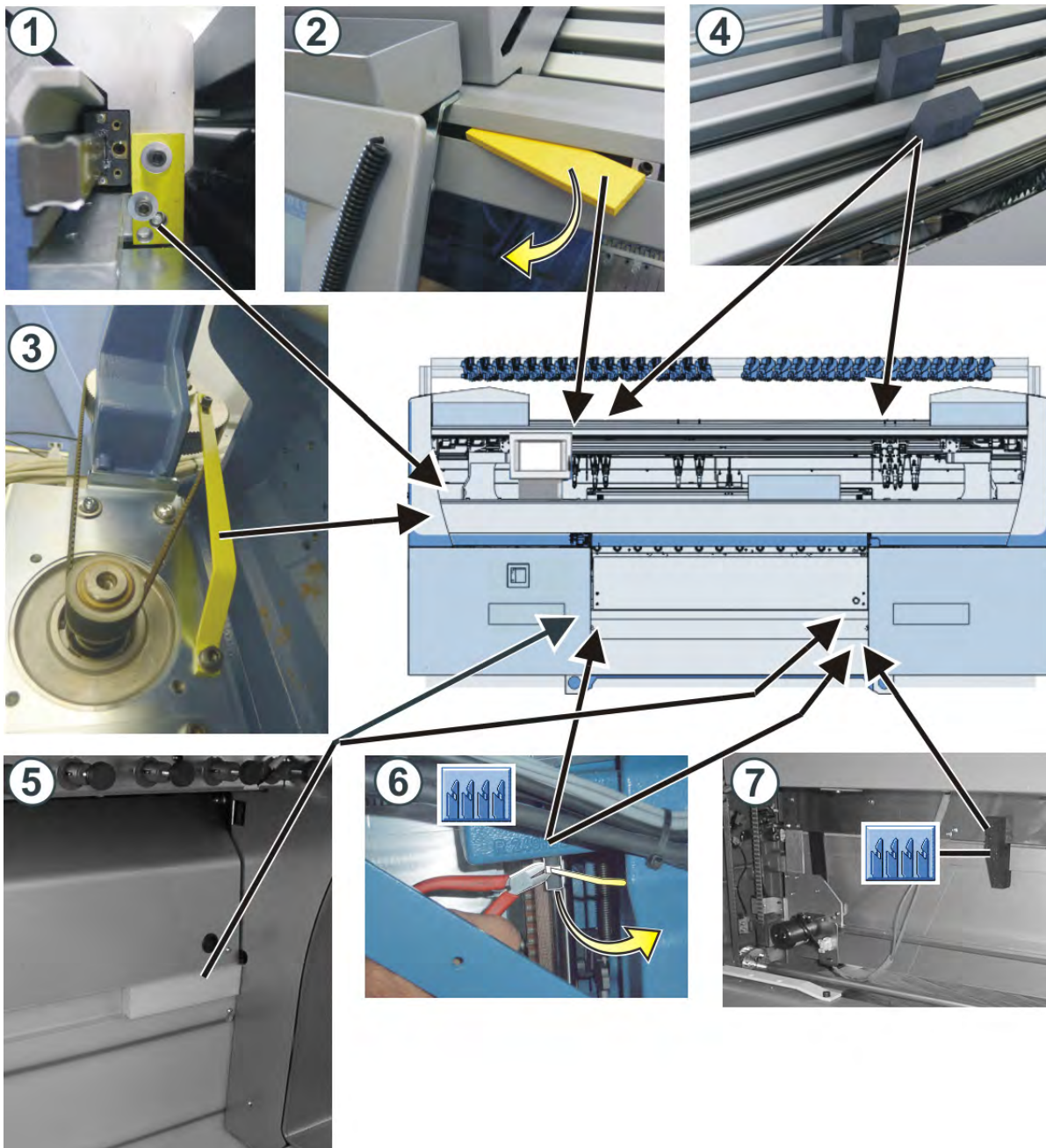
8. Swivel the cover of the control unit outwards.
9. Remove the transport flap (4).

7.2 Assembling machine

10. Remove the safety nut (6). It does not move easily since the safety nut is self-locking.



11. Unscrew the distance bolt (7).
12. Screw the screw (5) into the holder until it protrudes on the back side of the holder and the safety nut can completely be screwed-on.
13. Hook-in the control unit cover in the rear position.
14. Close the cover. Ensure that the cover engages in the screws (5).
15. Tighten the screws (5); this way the cover is secured.
16. Repeat the steps 7 to 15 on the other machine side.
17. Remove all transport locks.



Fixing spots for transport locks

Transport lock for:

- |                             |                                    |
|-----------------------------|------------------------------------|
| 1 Carriage (front and rear) | 5 Cover at comb take-down          |
| 2 Touch screen              | 6 Comb take-down (rear of machine) |
| 3 Drive                     | 7 Comb take-down (rear of machine) |
| 4 Autarkic yarn carriers    |                                    |

**i**

Preserve the transport locks.

If the transport locks need to be attached again, start with the transport locks (1) on the front and rear carriage and only after that attach the transport lock on the drive (3).



## 7.2 Assembling machine

## 7.2.2 Connecting the knitting machine if the mains voltage is not 400 V

**DANGER****Life-threatening high voltage!**

Electrical shock may cause death or serious injuries.

→ Deenergize on-site mains supply.

The knitting machine is connected in the following steps:

- Measuring the mains voltage
- Connecting the mains supply to the main switch
- Adapting the fluff absorption to the mains frequency

Authorized personnel

The knitting machine must be connected by an electrician. Country-specific laws and regulations are to be followed.

Operating the knitting machine with a generator

If the knitting machine is operated with a generator, make sure that the voltage supplied by the generator meets the requirements of the EN 60204-1, Parag. 4.3.1.

In case of queries, please call the Stoll Helpline.

Supply voltage 400 V

The machine is set for a mains voltage of 400 V as standard. With another mains voltage you need to use a series transformer.

Series transformer

	Series transformer (ID)
CMS 933	253 924
CMS 502, CMS 520 C, CMS 530	253 650
CMS 530 MT B, CMS 530 T, CMS 730 S, CMS 730 T, CMS 803, CMS 822, CMS 830 C, CMS 830 S	253 923
CMS ADF-3	300 445

Series transformer

If a series transformer is used, the protective motor switch "Q1" is to be set.


Supply voltage	Protective motor switch "Q1"
440 V	6.3 A
420 V	6.3 A
400 V	7.0 A
380 V	8.0 A
360 V	8.0 A

Connection data of the knitting machine

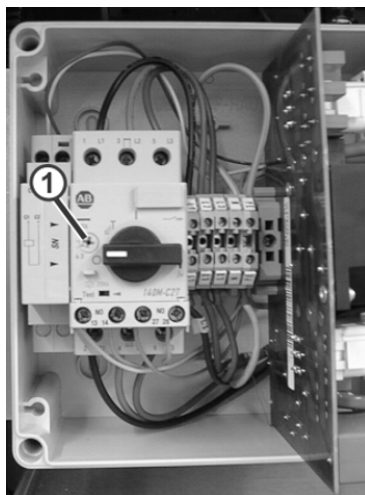
Supply voltage	Protective motor switch "Q1"
340 V	9.0 A
240 V	10.0 A
220 V	10.0 A
200 V	10.0 A

Connection data of the knitting machine

Set the protective motor switch:

	<div data-bbox="975 696 1118 734" style="background-color: red; color: white; text-align: center; padding: 2px;"><b>DANGER</b></div> <p><b>Life-threatening high voltage!</b> Electrical shock may cause death or serious injuries. → Deenergize on-site mains supply before opening the housing.</p>
---	---

1. Open the mains switch housing.




Protective motor switch Q1

2. Set the protective motor switch Q1 (1).
3. Close the main switch housing.

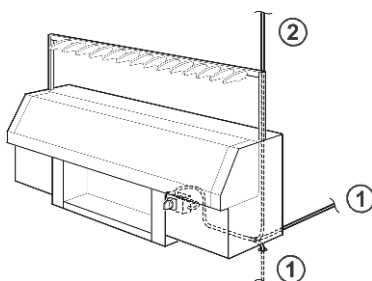
## 7.2 Assembling machine

Connect mains supply to the main switch

	<b>DANGER</b>
	<p><b>Life-threatening high voltage!</b> Electrical shock may cause death or serious injuries.</p> <ul style="list-style-type: none"> <li>→ The knitting machine must be connected by an electrician.</li> <li>→ Country-specific laws and regulations are to be followed.</li> </ul>


The knitting machine must be connected in the right-hand rotating field.

The mains supply is either led from the floor (1) to the main switch or from the ceiling through the right support (2) of the yarn guide device to the main switch.



Mains supply

1. Determine the direction of rotation of the mains supply.

	<b>DANGER</b>
	<p><b>Life-threatening high voltage!</b> Electrical shock may cause death or serious injuries.</p> <ul style="list-style-type: none"> <li>→ Deenergize on-site mains supply.</li> </ul>

2. Open the mains switch housing.



**Potential equalization missing!**


Serious errors or faults can be caused in the machine and the electronic circuit if the terminal "PE" is not connected.

-> Terminal "PE" to be connected always

3. Connect the mains supply to the terminals L1, L2, L3 and N (if present) of the terminal strip and to the yellow-green terminal (PE) for the protective conductor.
4. Close the main switch housing.

The right connection of the mains supply is controlled (right-hand rotating field: Terminals L1, L2, L3 (R, S, T)). If the signal "4272 Power Supply Phase Sequence Wrong" appears on the touch screen the connection is wrong.

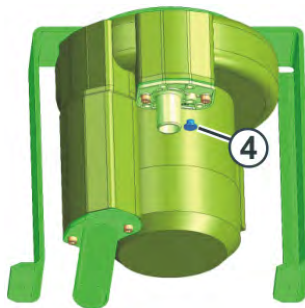
Correction of the error "4272 Power Supply Phase Sequence Wrong":

	<b>DANGER</b>
	<p><b>Life-threatening high voltage!</b> Electrical shock may cause death or serious injuries.</p> <p>→ Interrupt the mains supply to the machine. It is not sufficient to simply switch off the machine at the main switch!</p>

→ Swap the two phases of the mains supply.

Adapting fluff absorption to  
mains frequency

Depending on the mains frequency (50 Hz or 60 Hz), the fluff absorption operates with or without sealing plugs.



Adapting fluff absorption



The fluff absorption can be damaged if the mains frequency is not adapted!

The fluff absorption is overloaded if it is not adapted to the mains frequency.

-> Adapt the fluff absorption to the mains frequency.

1. Open sliding board (rear panel).
2. Check the sealing plugs (4) of the suction unit.
3. At Mains frequency 50 Hz: Insert sealing plug.
- or -
- At Mains frequency 60 Hz: Remove sealing plug.
4. Close the sliding board.

## 7.2 Assembling machine

## 7.2.3 Plug in battery pack

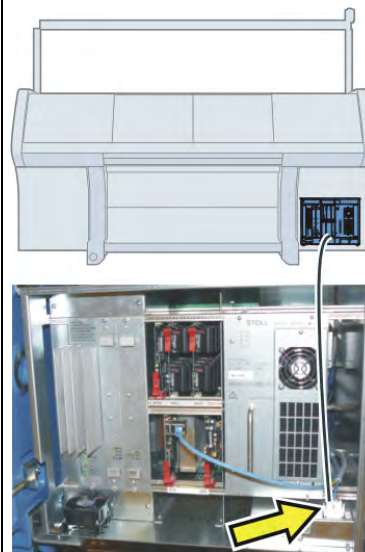
The battery pack is unplugged and not charged completely on delivery of the machine.

Plug in battery pack:

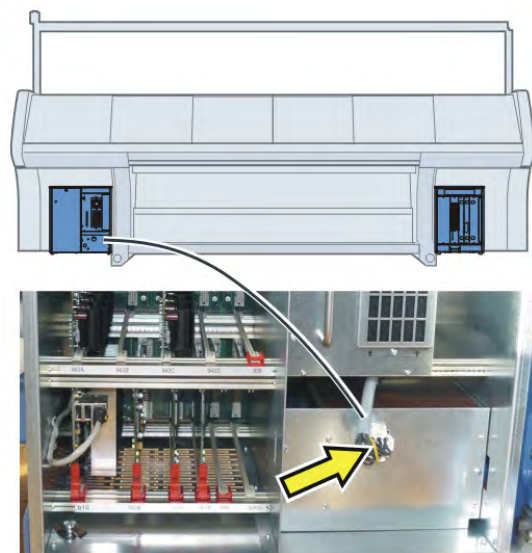
✓ The main switch is switched off.

1. Open the cover on the control unit.

CMS 530  
CMS 520 C  
CMS 502  
CMS ADF-3



CMS 530 MT B  
CMS 530 T  
CMS 730 S  
CMS 730 T  
CMS 803  
CMS 822  
CMS 830 C  
CMS 830 S  
CMS 933



2. Plug in battery pack.

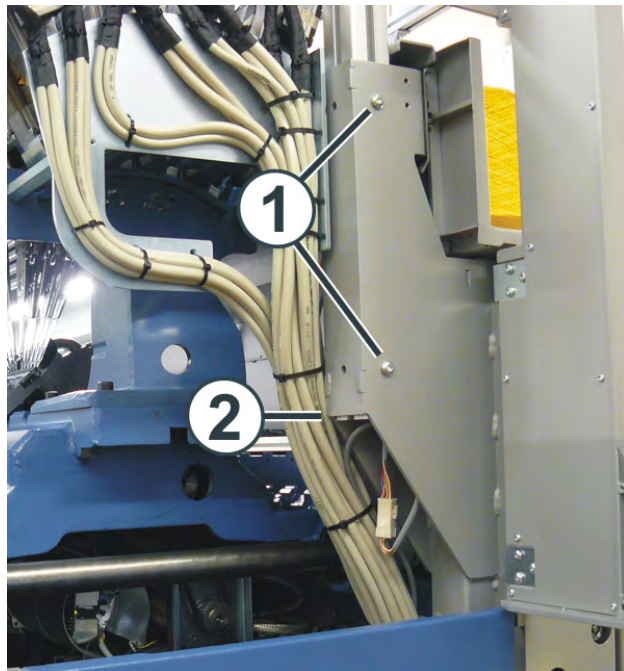
3. Close the cover.

### 7.2.4 Mounting the yarn guide device



Push the supports of the yarn guide device upward together with another mechanic to prevent the supports from jamming.

- ✓ The main switch is set to "0" and secured against being switched on again.
- 1. Open the lateral safety doors and loosen the screws (1) on both sides of the machine.



Supports for the yarn guide device

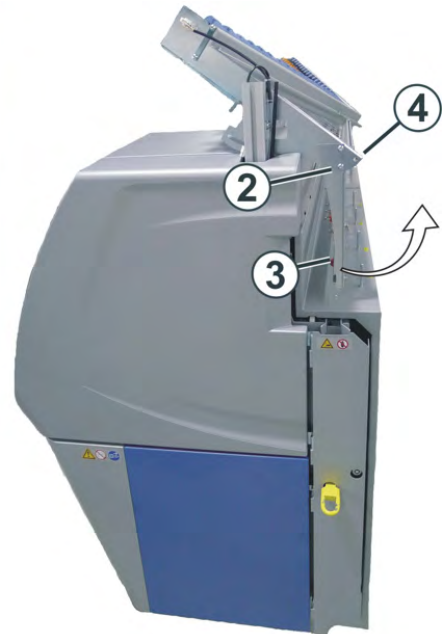
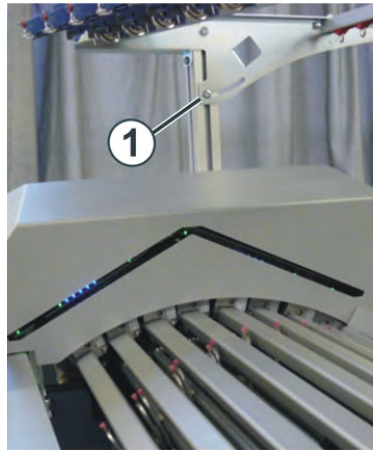
- 2. Push the left and right supports of the yarn guide device upward simultaneously until the support and the edge (2) are aligned.
- 3. Retighten the screws (1) on both sides of the machine.

### 7.2 Assembling machine

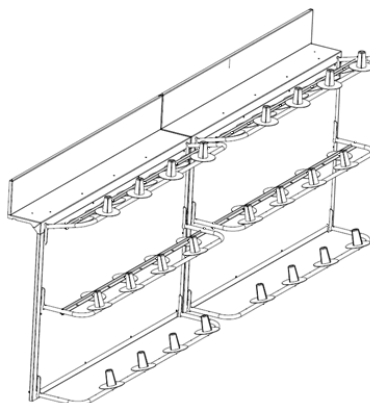
Mounting the rear track of the yarn guide device and the additional bobbin boards

The additional equipment of your machine can deviate from this description depending on the machine type (type of machine, scope of supply, special equipment).

1. Loosen the screws (1) on both machine sides.



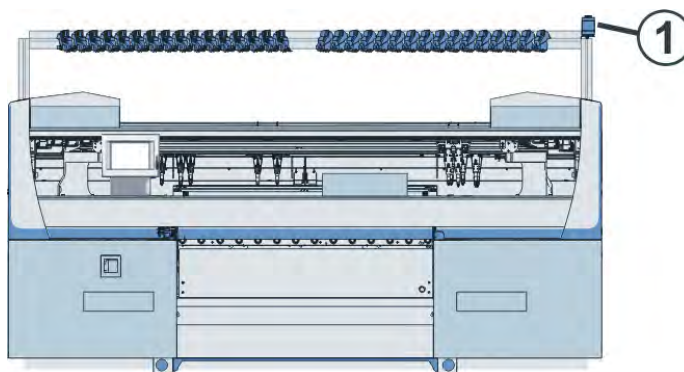
2. Position the yarn guide device horizontally and retighten the screws (1).
3. Remove the screws (2) on the left and right sides of the machine.
4. Position the rear track (3) of the yarn guide device horizontally.
5. Reinsert the screws in the position (4) and tighten them.
6. Mount and hook-in the additional bobbin boards.



## 7.2.5 Mounting signal light



The power supply for the signal light is laid in the support when the knitting machine is shipped. The signal light from the accessories needs only be connected and screwed into place.



Signal light



Carefully tighten the fastening screw of the signal light to prevent the plastic holder from being damaged.

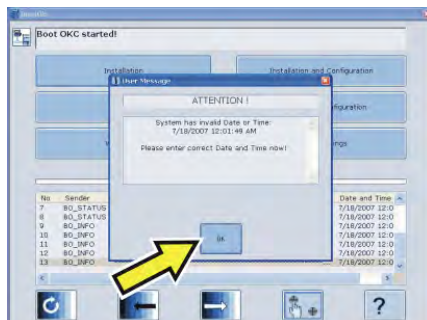
- ✓ The main switch is set to "0" and secured against being switched on again.
- 1. Plug the power cable from the right support into the signal light (1).
- 2. Screw on the signal light onto the right support with the screws present there.



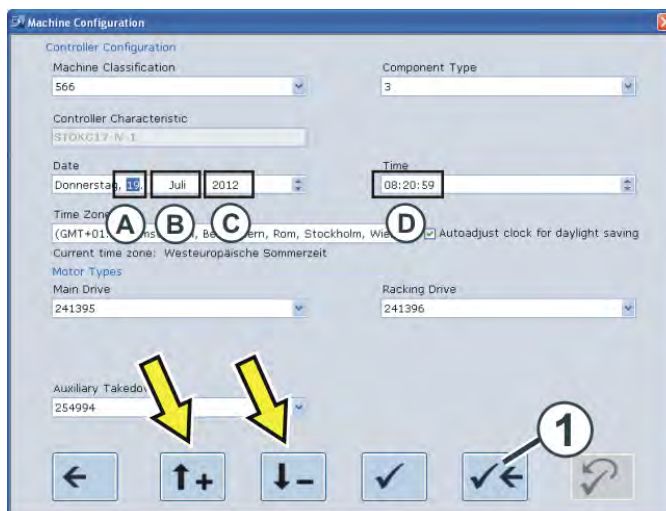
## 7.2 Assembling machine

## 7.2.6 Set date and time

1. Switch on main switch.
2. The "BootOKC" window appears and simultaneously also a message indicating that time and date are not correct.



3. Tap the "OK" key.
  - ▷ The "Machine Configuration" window appears.

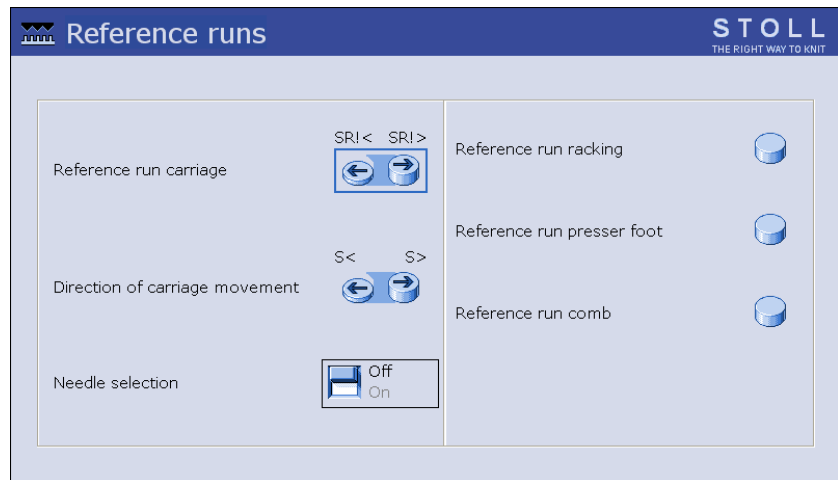


4. Adjust the date (A-C) and the time (D) with the help of the arrow keys.
5. Save the settings and return to the "BootOKC" window. Tap the (1) key for this.
6. Tap the "Restart" button in the "BootOKC" window.
7. The "Reference runs" window appears.



It continues with the section "Aligning knitting machine" [58].

## 7.2.7 Aligning knitting machine

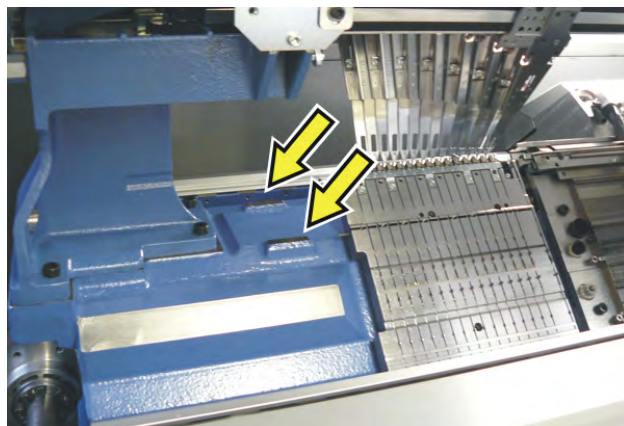


"Reference runs" window

1. Tap the "S>" key in the "Direction of movement" field.

	<b>DANGER</b>
	<p><b>Danger by moving carriage!</b></p> <p>Danger of crushing and cutting by the carriage.</p> <p>→ Close the covers.</p>

2. Pull up engaging rod. The carriage moves at creep speed to the right and carries out a reference run.
3. If the right edge of the carriage is in the center of the needle bed, press the engaging rod downwards.
  - ▷ The carriage stops.
4. Open covers.
5. Lay the spirit level on the support surfaces on the left side of the needle bed.



Left support surface for spirit level

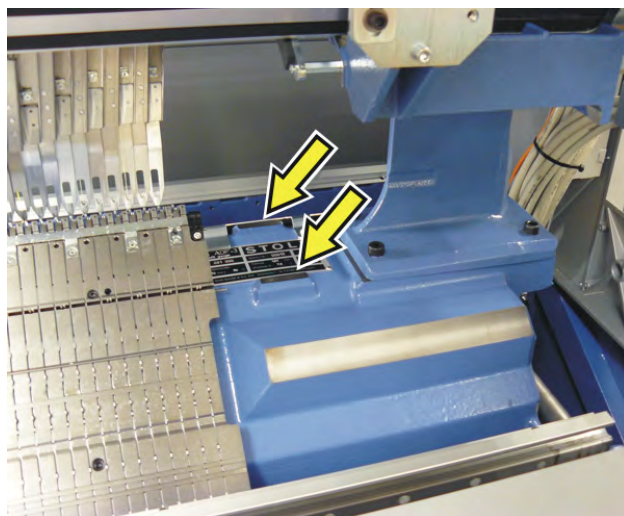
### 7.2 Assembling machine

6. Align the knitting machine with the grub screws. Execute this at the front and rear. The grub screws for aligning are in the accessories of the machine.



Grub screws for aligning the machine

7. Lay the spirit level on the support surface on the right-hand side of the needle bed.



Right support surface for the spirit level

8. Align the knitting machine with the grub screws.






Do not close the "Reference runs" window. It will be necessary again in the section "Carry out the reference runs" [■ 60].  
If the window was closed, call it up again as follows: Main menu -> Service -> Reference runs.

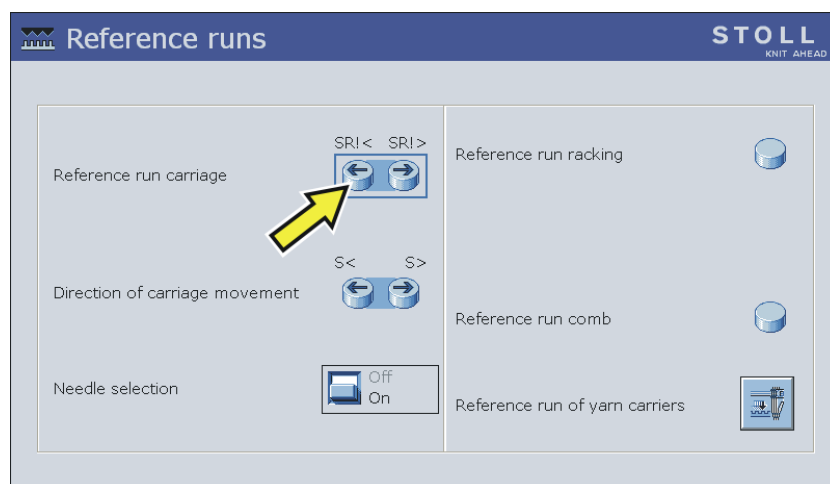
## 7.3 Carry out reference runs

Two reference runs are necessary:

- The position of the carriage towards the needles is determined during the carriage reference run.
- During the yarn carrier reference run the autarkic yarn carriers are synchronized. They move outwards to their limit stop, then into clamping position above the clamping and cutting bed.

Icon / key	Meaning
	Icon "Yarn carrier not referenced"
	Icon "Yarn carrier ready to knit"
	Call up "Main menu"

Carriage reference run ✓ The carriage is located in the center of the needle bed.



"Reference runs" window

1. In the "Reference run carriage" field tap the "SRI<" key.

## 7.3 Carry out reference runs

**DANGER****Danger by moving carriage!**

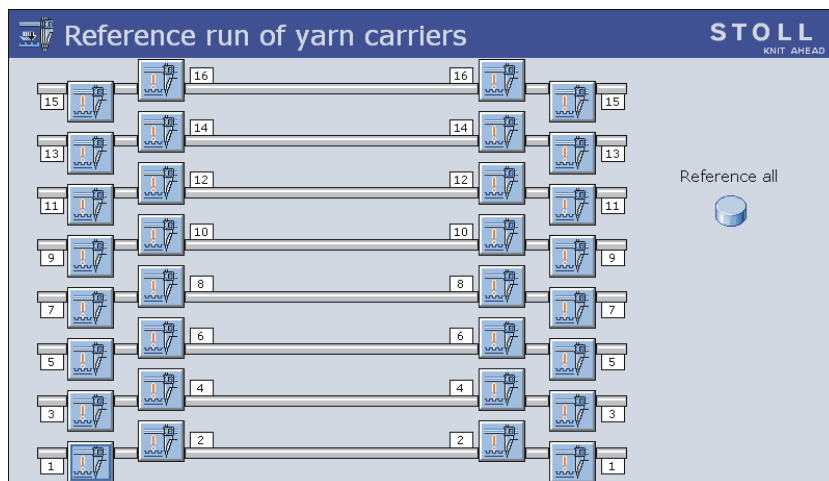
Danger of crushing and cutting by the carriage.

→ Close the covers.

2. Pull up the engaging rod and release it.
  - ▷ The carriage moves at creep speed to the left and carries out a reference run.
3. The carriage stops automatically outside the needle bed. The engaging rod falls down.
  - ▶ The message "Reference run complete" is displayed on the touch screen.

## Reference run of yarn carriers

1. The "Reference run of yarn carriers" window appears automatically.

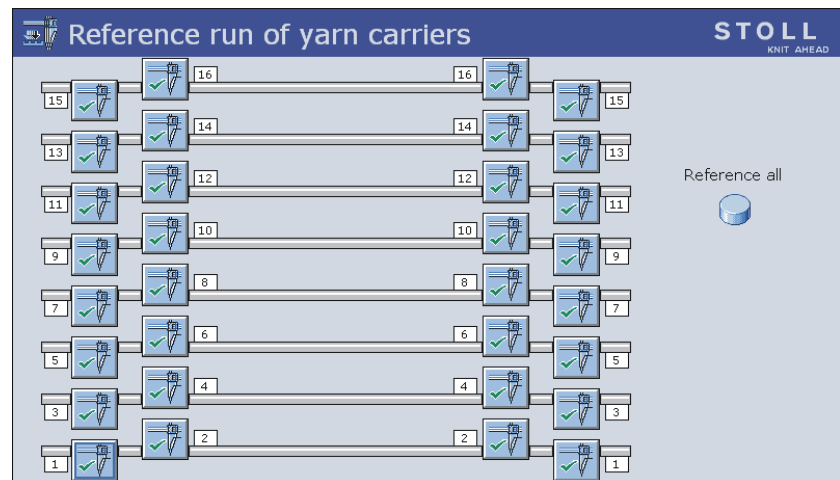


2. Tap on the "Reference all" key.
3. The yarn carriers are automatically referenced consecutively rail by rail.
  - ▷ The yarn carriers move outwards to their left or right limit stop, then into clamping position above the clamping and cutting bed.

4. If a yarn carrier is referenced, the icon changes from "Yarn carrier not referenced" to "Yarn carrier ready to knit".



5. After completing the yarn carrier reference run all the yarn carriers are ready to knit.



6. The reference run is complete, the machine is ready to knit.  
The carriage is positioned at the right position for you to be able to load a knitting program.

► Call up "Main menu".

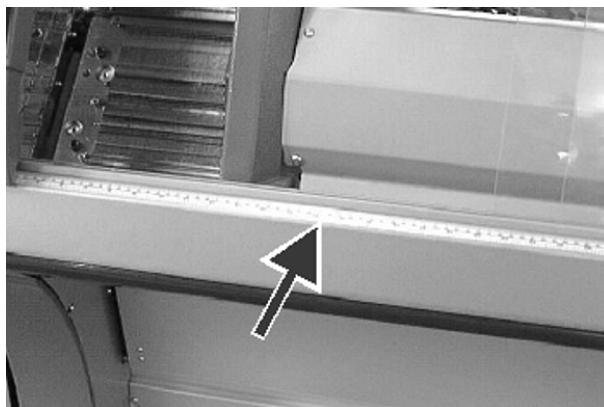


Leave the machine switched on for at least 6 hours in order to charge the accumulators fully.

## 7.4 Glue on measuring tape

## 7.4 Glue on measuring tape

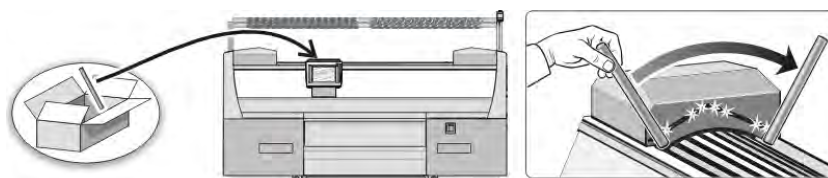
The measuring tape is used to check the fabric length on the machine. It can, for example, be glued on above the engaging rod. You will find the self-adhesive measuring tape in the accessories.



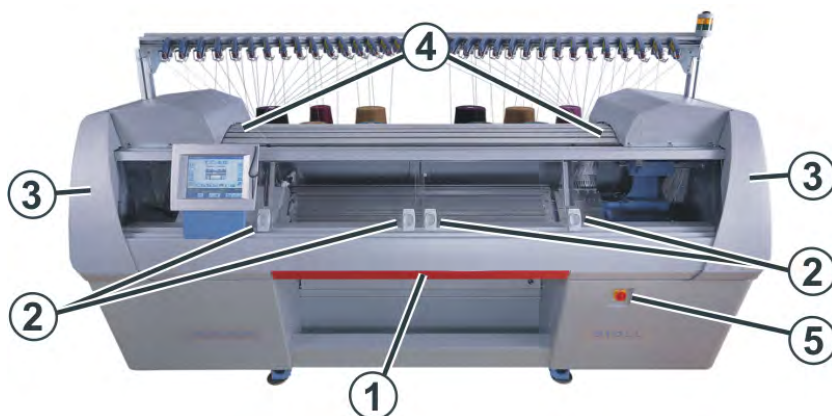
Gluing on the measuring tape

## 7.5 Have the test rod ready

Take the test rod out of the accessories and place it for example on the tray at the touch screen. You need the test rod for checking the light curtain on a daily basis.



## 7.6 How to bring the carriage to an immediate standstill



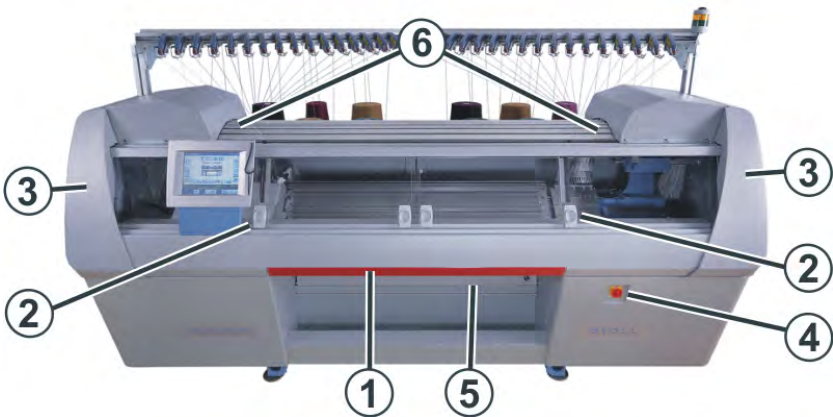
In order to stop the movement of the carriage immediately, carry out one of the following functions:



1. Press the engaging rod (1) downward.
2. Open covers (2).
3. Open safety doors (3).
4. Interrupt the light curtain (4).
5. Switch off main switch (5).



# 7.7 Checking protective devices

The protective devices must be checked at least once every 24 hours:






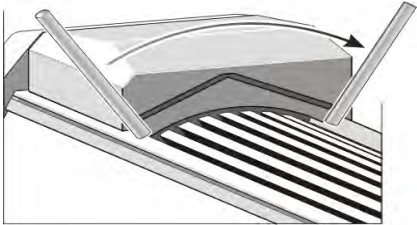


	<p><b>DANGER</b></p> <p><b>Defective protective device!</b> Death or serious injury.</p> <p>→ If a protective device does not stop the machine, it must be stopped for safety reasons and secured against being started up again. Repair must be carried out immediately.</p>
	<p><b>DANGER</b></p> <p><b>Opened covers and safety doors!</b> Danger of crushing and cutting by the carriage, the autarkic yarn carriers, the racking, the fabric take-down, the comb take-down and the additional beds.</p> <p>→ Do not reach into the running machine when the covers and safety doors are open.</p>

Protective device	Checking
Engaging rod(1)	Production setting
	<ul style="list-style-type: none"> <li>♦ Pull engaging rod to highest position and release. The carriage pulls out. The engaging rod is held by a magnet.</li> <li>♦ Press engaging rod to bottom position (zero position). The carriage must be stopped immediately</li> </ul>
	<p>Middle position</p> <ul style="list-style-type: none"> <li>♦ Pull engaging rod to middle position and release. The carriage pulls out. The engaging rod is not held by a magnet, must rather fall back to the zero position. The carriage must be stopped immediately</li> </ul>

Protective device	Checking
Covers (2)	<ul style="list-style-type: none"><li>♦ Pull engaging rod to highest position and release. The carriage pulls out.</li><li>♦ Open cover. The carriage must be stopped immediately The engaging rod falls to zero position simultaneously.</li><li>♦ Repeat this process for each cover.</li></ul>
Lateral safety doors (3)	<ul style="list-style-type: none"><li>♦ Pull engaging rod to highest position and release. The carriage pulls out.</li><li>♦ Open the safety door on the right-hand side of the machine. The carriage must be stopped immediately The engaging rod falls to zero position simultaneously.</li><li>♦ Repeat this process for the safety door on the left side of the machine.</li></ul>
Main switch (4), emergency stop switch	<ul style="list-style-type: none"><li>♦ Pull engaging rod to highest position and release. The carriage pulls out.</li><li>♦ Switch off main switch / emergency shutdown switch (position "OFF") The carriage must be stopped immediately The engaging rod falls to zero position simultaneously. The machine must switch off automatically.</li></ul>

## 7.7 Checking protective devices

Protective device	Checking
Machine with comb take-down: Comb safety door (5)	<ul style="list-style-type: none"> <li>♦ Pull engaging rod to highest position and release. The carriage pulls out.</li> <li>♦ Slide the comb safety door to the left. A recessed grip is located on the right-hand side of the comb cover plate. Caution! The comb safety door is tilted a little outwards.</li> <li>♦ The carriage must be stopped immediately. The touch screen displays an error message.</li> <li>♦ Close comb safety door again.</li> </ul> <p>To confirm the calibration, tap the  key.</p> <hr/> <p>Condition: The carriage has stopped.</p> <ul style="list-style-type: none"> <li>♦ Call up the "Comb take-down"  window and tap the "=-" key (in waiting position).</li> <li>♦ The comb take-down moves upward.</li> <li>♦ Wait briefly (2-3 seconds). The comb take-down releases the comb safety door, it tilts somewhat to the front.</li> <li>♦ Gently push the comb safety door backwards.</li> <li>♦ The upward movement of the comb must be stopped immediately. The touch screen displays an error message.</li> </ul> <p>To confirm the calibration, tap the  key.</p> <ul style="list-style-type: none"> <li>♦ Carry out a comb reference run so that the comb take-down moves again into home position. In the "Comb take-down" window, tap the "=R=" key (Comb reference run).</li> </ul>

Protective device	Checking
Light curtain (6)	<p>Condition: The carriage has stopped.</p> <p>Check the light curtain with the test rod. The test rod is located in the accessories of the machine.</p> <p>Hold the test rod so that it is at a right angle to the protective area.</p>  <ul style="list-style-type: none"> <li>◆ On the left side of the yarn carrier rails move the test rod slowly from the front to the back.</li> <li>◆ During the time, the test rod interrupts the protective area: <ul style="list-style-type: none"> <li>– the green LEDs may not glow.</li> <li>– the red LEDs must glow always.</li> </ul> </li> <li>◆ To confirm the calibration, tap the  key.</li> <li>◆ Repeat this procedure in the machine center and on the right side.</li> </ul> <hr/> <p>Condition: The carriage is moving.</p> <ul style="list-style-type: none"> <li>◆ On the left side of the yarn carrier rails move the test rod into the protective area.</li> <li>◆ The carriage must be stopped immediately</li> <li>◆ To confirm the calibration, tap the  key.</li> <li>◆ Repeat this procedure in the machine center and on the right side.</li> </ul>