

STOLL

Operating instruction for a safe operation of the knitting machine



	Type	Computer Type	Component Type
CMS 933	771 773	OKC	000 – 004 000 - 003
CMS 830 S	633	OKC	000 – 005
CMS 830 C	631	OKC	000 – 006
CMS 822	623 632	OKC	000 – 006
CMS 803	655 657	OKC	000
CMS 730 T	588	OKC	000 – 005
CMS 730 S	625	OKC	000 – 004
CMS 530 T	587	OKC	000 – 004
CMS 530 MT B	589	OKC	000
CMS 530	621 627	OKC	000 – 006 000 - 005
CMS 520 C	629	OKC	000 – 005
CMS 502	637 638	OKC	000 – 003
	653 654	OKC	000



Date: 2017-03-30

Translation of the original operating instructions

Operating system of the machine: V_OKC_006.001.000_STOLL (or higher)

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

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1 Documentation DVD

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

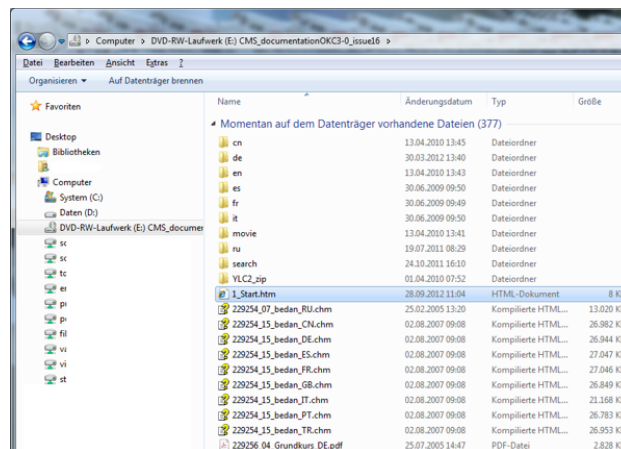


- ♦ Operating instructions
- ♦ Safety instructions
- ♦ Spare Parts Catalog
- ♦ Circuit diagram
- ♦ Brochure "Cleaning, maintenance, care"
- ♦ Pocket Card
- ♦ Training documents...

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.

Further 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
- 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: see [12]
- 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 has 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 has 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 has 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 Symbols in this document

Some information in this document are marked with special symbols to make it easier to access this information quickly.

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



Background information is provided here.



Tips for optimal procedure are provided here.



DANGER

A warning is given here!

A warning protects you from death or injuries and the knitting machine from serious damage.

→ Always read warnings carefully and observe them exactly.

One-step action

Carry out an one-step action:

- ✓ Condition for the following action.
- Carry out one-step action.

Multi-step action

Carry out a multi-step action:

- ✓ Condition for the following actions.
- 1. Carry out first action.
- 2. Carry out second action.
 - ▷ Result of the action carried-out.
- 3. Carry out third action.
 - or -
 - Carry out the alternative action for point 3.
- Result of the action sequence.



If something fails to function properly:

Information on the possible causes is provided here.

To solve the problem, carry out the action described here.

2.5 Warnings

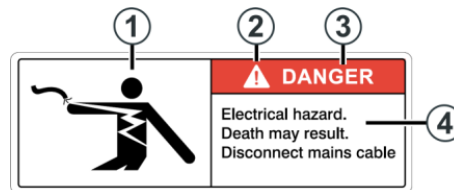
In this chapter you will find explanations to the warnings on the machine and in the documentation.

2.5.1 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:

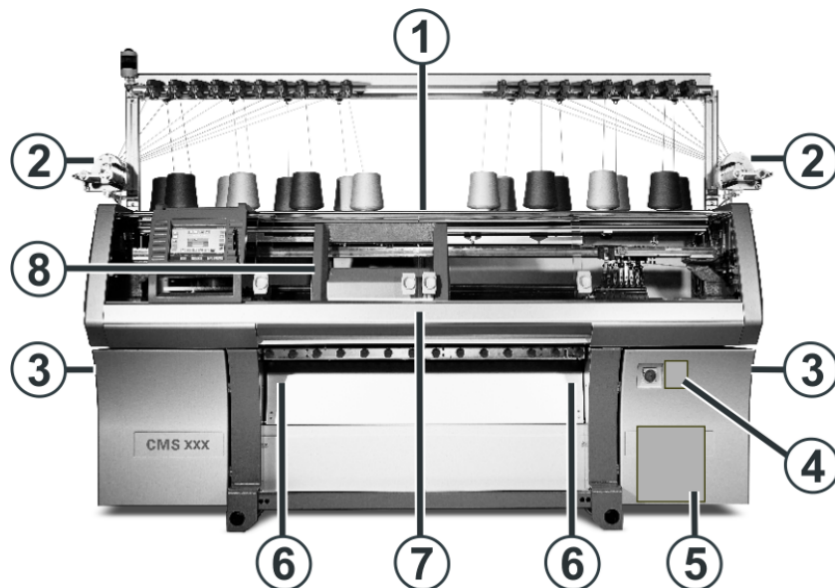


Elements of a warning

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

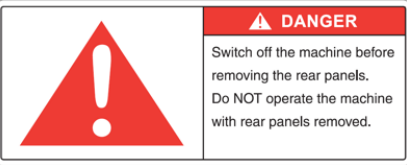
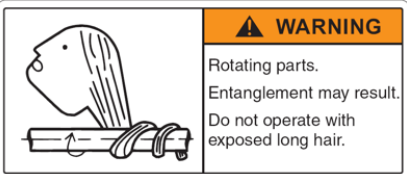
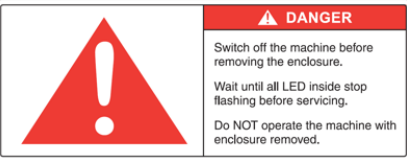

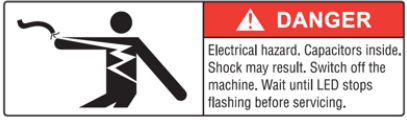
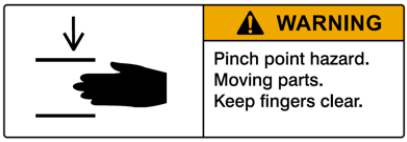


Site for labeling the warning on the machine

List of warnings on the machine


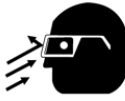



Warnings have to be maintained in a complete and legible condition at all times.
The order numbers of the labels are found in the following table.

No.	Warning	Explanation
1	 <p>ID 244 262</p>	Warning on the rear panel
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
6	 <p>ID 244 272</p>	Warning on the comb take-down

List of warnings



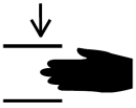



Warnings

No.	Warning	Explanation
7	<div><div>CAUTION Crush hazard. Moving parts can crush and cut. Keep hands and fingers clear.</div></div> <div>ID 244 276</div>	Warning under the covers
	<div><div>CAUTION Airborne particles or lubricants. Eye damage may result. Wear eye protection.</div></div> <div>ID 244 269</div>	
8	<div><div>CAUTION Airborne particles or lubricants. Eye damage may result. Wear eye protection.</div></div> <div>ID 244 269</div>	Warning on the central lubrication of front and rear needle beds. For tandem machines, on right-hand side of right carriage as well.

List of warnings

2.5.2 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

2.5.3 Warnings in the documentation

The warnings in the documentation have the following structure:

- **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
- **Text comprises of:**
 - Type and source of danger
 - Possible outcomes
 - Measures for protection against danger and prohibitions

Example:

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

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

Explanation to the signal words

2.6 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!

2.6.1 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.

2.6.2 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.

2.6.3 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.

2.6.4 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 sockets 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 H. Stoll AG & Co. KG will take no guarantee or responsibility for damages in this conjunction. For further enquiries please contact Stoll-Helpline.

2.6.5 Safety Precautions for Production


Type of risks	Measures
Danger of injury	<p>Close the covers.</p> <p>Close the rear panels 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>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"> ♦ Yarns with heavy fiber fly ♦ dyestuffs causing health hazards ♦ Yarns made of glass fibers, metallic-annealed fibers, asbestos, carbon, PU or similar materials <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>

Type of risks	Measures
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.	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. Take care of any additional suction. Wear Inhalation protection gear.

2.6.6 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)

	DANGER
	<p>The carriage moves at production speed!</p> <p>Danger of crushing and cutting by the carriage.</p> <ul style="list-style-type: none"> ✓ 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. → Close the covers. → Do not deactivate the "MSECCO" check box.

Type of risks	Measures
Danger of crushing and cutting by the carriages, 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 by the fabric take-down, the auxiliary take down, the comb take-down and the additional beds.	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.

2.6.7 Safety Instructions for Lubrication, Cleaning and Maintenance

Type of risks	Measures
Danger of crushing and cutting by the carriages, 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, re-fix the rear panels 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>Caution: 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>

2.6.8 Safety instructions for the repair

Danger by mechanical parts

Reason	Measures
Danger of injury by rotating or moving parts.	<p>Do not reach into the running machine.</p> <p>Always stop the machine during an intervention.</p> <p>Switch off the machine during mounting activities and secure it against being switched on again. Lock the main switch.</p> <p>Wear safety glasses.</p>
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 carriages, racking, the needle beds, the clamping and cutting devices and the additional needle beds.	<p>Always stop the machine during an intervention.</p> <p>Move carriage step by step or at creep speed (see operating instructions).</p>
Danger of crushing and suction by the fabric take-down, the auxiliary take down, the comb take-down and the additional beds.	<p>Do not reach into the fabric take-down rollers.</p> <p>Do not reach in the gap between the needle beds.</p> <p>Keep hands, face, loose clothing and other loose objects away: danger of crushing.</p> <p>Do not reach into the area between the fabric take-down roller and the comb take-down.</p>
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.	<p>Releasing the springs before removing.</p> <p>Wear protective gear (e.g. safety glasses, gloves).</p>
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).

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

Other dangers

Reason	Measures
Danger of damage by usage of unsuitable cleaning materials.	<p>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.</p>

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.
	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 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.
- Checking protective devices [📄 72]

2.6.9 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

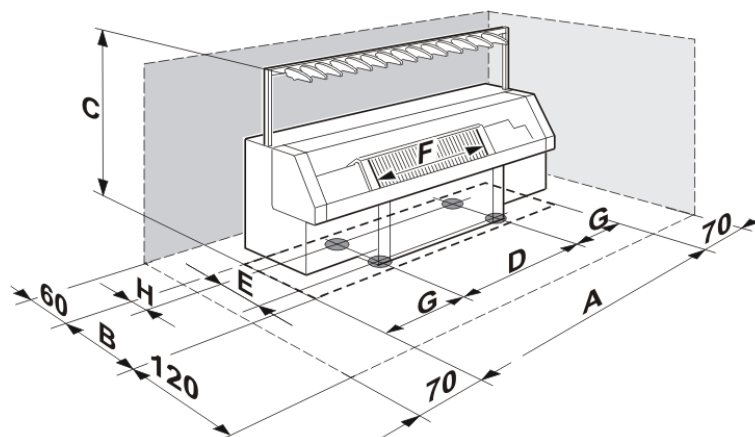
Type of risks	Measures
Danger to life because of electrical shock during work on the electrical assembly of the machine.	Get the machine disconnected from the mains supply by an electrician.
Health hazard	When working with oil and grease, pay attention to the safety regulations (safety data sheets) applicable 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.

■ Safety precautions for the battery [27]

3 Technical data of the machine

3.1 Dimensions and weights

Machine dimensions



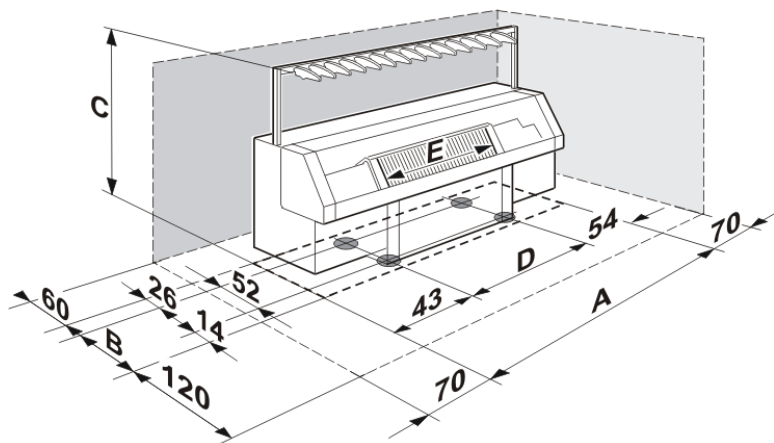
Machine dimensions (in cm)

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

	A	B	C	D	E	F	G	H
CMS 933	510	106	205	270	56	244	120	33,5
CMS 830 S	403	91	205	239	52	218	82	25
CMS 830 C k&w	403	91	205	239	52	213	82	25
CMS 822	403	91	205	239	52	213	82	25
CMS 730 T k&w	355	91	205	209	52	183	73	25
CMS 530 MT B	270	91	205	153	52	127	58,5	25
CMS 530	270	91	205	153	52	127	58,5	25
CMS 520 C+	270	91	205	153	52	127	58,5	25

Machine dimensions (in cm)

CMS 330 W
CMS 502 HP+



Machine dimensions (in cm)

- A

Width
- B

Depth
- C

Height
- D

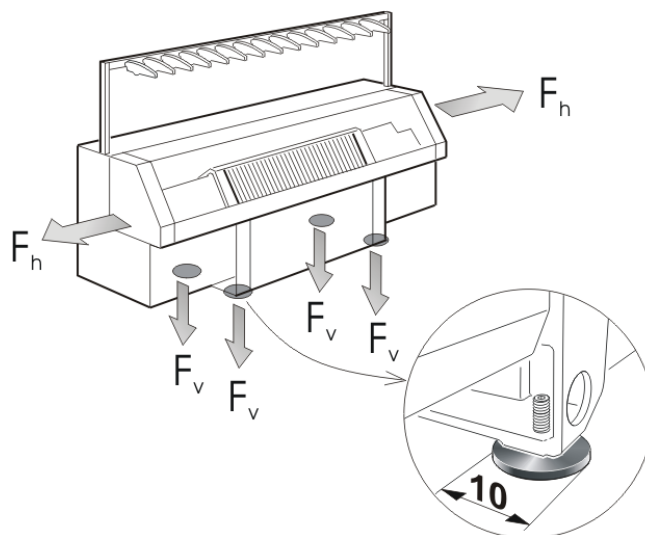
Spacing of set screws
- E

Nominal working width

	A	B	C	D	E
CMS 330 W	237	92	205	140	91,5
CMS 502 HP+	237	92	205	140	114

Machine dimensions (in cm)

Weight and dynamic weight The back-and-forth movement of the carriage causes the dynamic loads (F_v , F_h) listed above to occur at the set screws.



	Machine out of action	Machine in action	
	Weight (kg)	F_v (kg) per set screw	F_b (kg) per machine
CMS 933	2060	860	170
CMS 830 S	1640	670	130
CMS 830 C k&w	1690	710	160
CMS 822	1670	710	170
CMS 730 T k&w	1510	630	160
CMS 530 MT B	1260	550	160
CMS 530	1240	540	150
CMS 520 C+	1250	550	160
CMS 502 HP+	1025	450	130
CMS 330 W	1004	460	150

Weight and dynamic weight (without special attachments, without yarn)

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
Connection value	2.3 kW CMS 502: 1.7 kW CMS 520: 2.0 kW CMS 822: 2.6 kW CMS 830 S: 2.7 kW CMS 933: 3.0 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

Gauge	Area	Needle number (nominal width)						
		91,5 cm (36")	114 cm (45")	127 cm (50")	183 cm (72")	213 cm (84")	218 cm (86")	244 cm (96")
E 3 E 1,5.2	A			149				
E 3.5				174				
E 4 E 2.2				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		503	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 anticorrosion agent (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.

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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 anticorrosion agent if necessary.

- Safety instructions for the transport [17]
- Safety instructions for dismantling work (dismantling) [29]

3.6 Noise emissions

The measuring has been performed on a representative basis for the series CMS 5xx HP on a CMS 530 HP E7.2. The machines of the CMS 5xx HP series emit a sound pressure level which is not higher than the specified values under comparable conditions.

Applied standards:

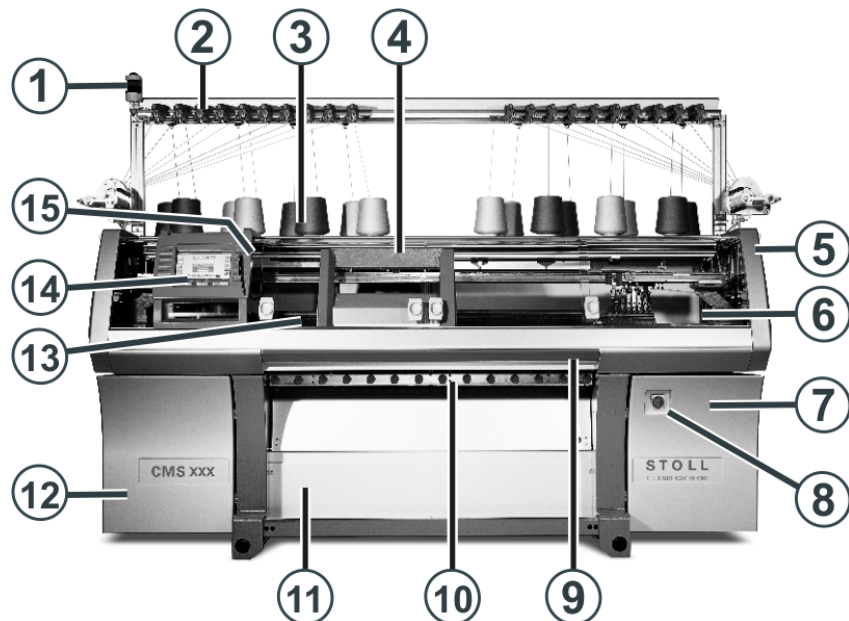
- ISO/CD 9902 "Textile machine regulations for noise emissions"
- ISO/CD 9902-1 and ISO/CD 9902-6.

Level specifications in dB(A)	mean sound pressure level LpA	Uncertainty KpA
CMS 530 HP	74,7	4

Noise emissions

4 Main components of the knitting machine

4.1 Front side



Front view of the knitting machine

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

Front side

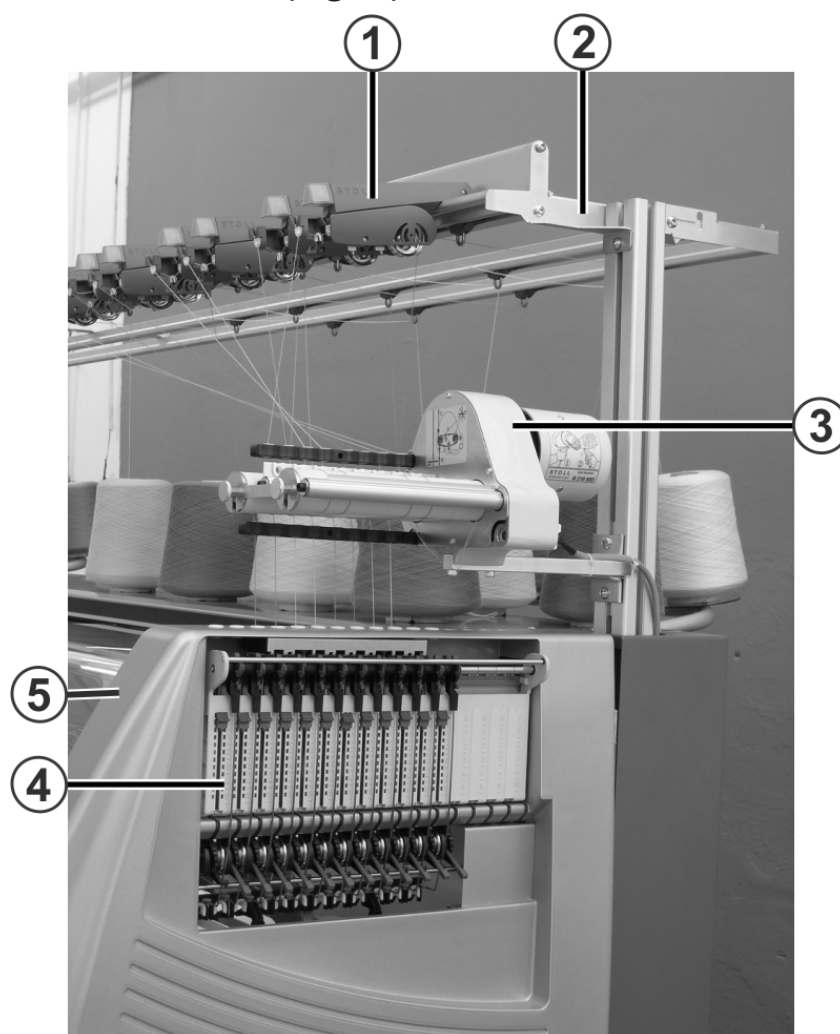
Inner view



Inner view of the knitting machine

No.	Designation	No.	Designation
1	Carriage	4	Yarn Carrier
2	Front needle bed	5	Yarn carrier rod
3	Left clamping and cutting bed		

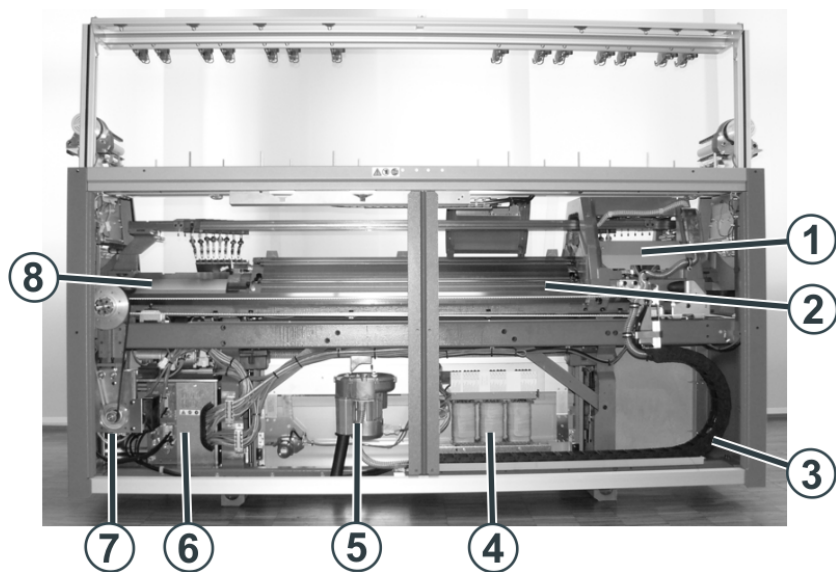
4.2 Lateral view (right)



Right lateral view

No.	Designation	No.	Designation
1	Yarn control unit	4	Lateral yarn tensioner
2	Yarn guide device	5	Lateral safety door
3	Friction feed wheel		

4.3 Rear side



Rear side (without rear panel segments)

No.	Designation	No.	Designation
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

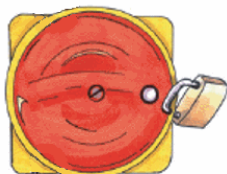
The main switch (1) is located on the front of the machine above the right control unit.

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

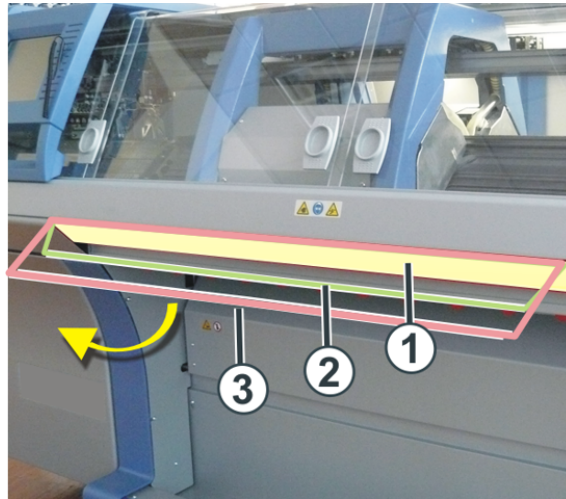
Shutdown process When the main switch is turned from "1" to "0", the machine is immediately switched off. Dangerous movements are immediately stopped. However, the machine data are not lost, as they are saved with a battery. This takes approx. 60 seconds. In the process, messages appear on the touch screen. Once the process is complete, the touch screen becomes dark.

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.




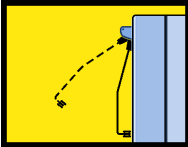
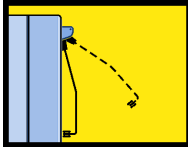



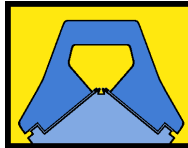
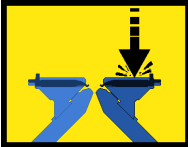
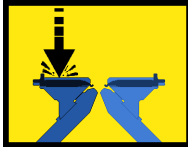

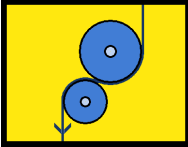
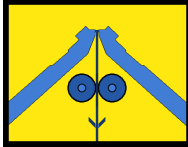
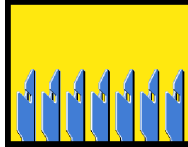
Color	Status of the knitting machine
green	Knitting machine is producing
green (flashes)	Knitting machine is stopped with engaging rod
yellow	Knitting machine is not producing, as an error has occurred during knitting
green, yellow	Both lamps light up during the shutdown process. Duration is approximately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

Signal light colors

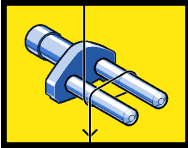
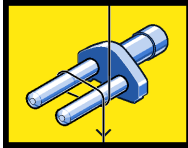


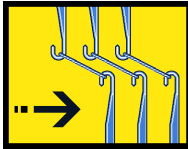
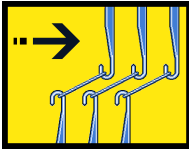
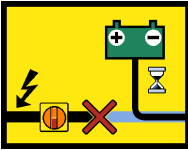
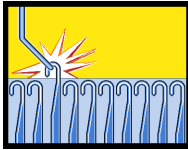
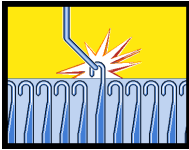
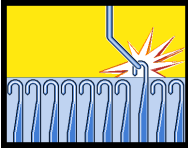
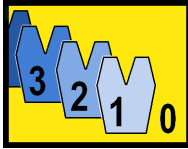
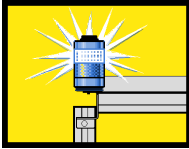
6.2 Touch screen

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)
		
Additional needle bed front	Additional needle bed rear	Shock stop motion (additional needle bed)
		
Take-down	Auxiliary Take-down	Comb take-down

Pictographs for the display of stop motions

Pictographs		
		
Friction feed wheel on the left	Friction feed wheel on the right	Lubrication
		
Greasing (ultra coarse machine)	Front racking	Rear racking
		
Power failure	Needle stop left	Needle stop centre
		
Needle stop right	Piece Counter	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"

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

6.4 Lamp on the yarn control device



Lamp 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
 - Setscrews for aligning the machine
 - Square spanner for opening the rear machine panel.
- Tool
- Spirit level

7.1.3 Transporting machine to installation location

	DANGER
	<p>Heavy knitting machine!</p> <p>Danger of injury for persons and damage of the knitting machine.</p> <ul style="list-style-type: none">→ 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.

- 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 rear 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

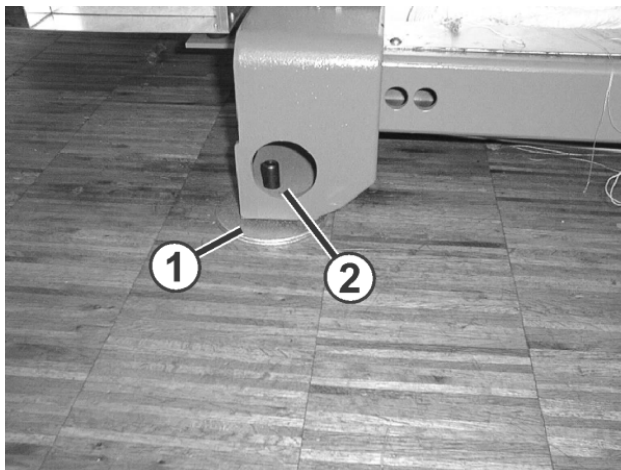
Heavy knitting machine!

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

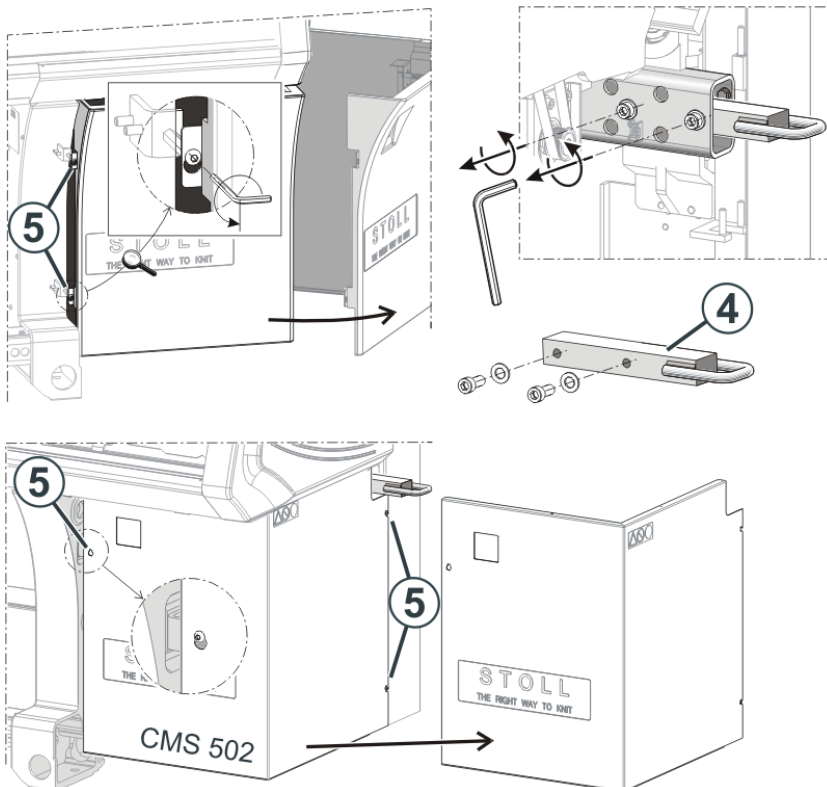
- Country-specific regulations for the prevention of industrial accidents for the transport of heavy loads are to be observed.
- Use only appropriate means of transport with sufficient load capacity for transporting and installing the knitting machine (e.g. fork lift).
- The relevant country-specific 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). In the case of the CMS 502, loosen the screws (5).

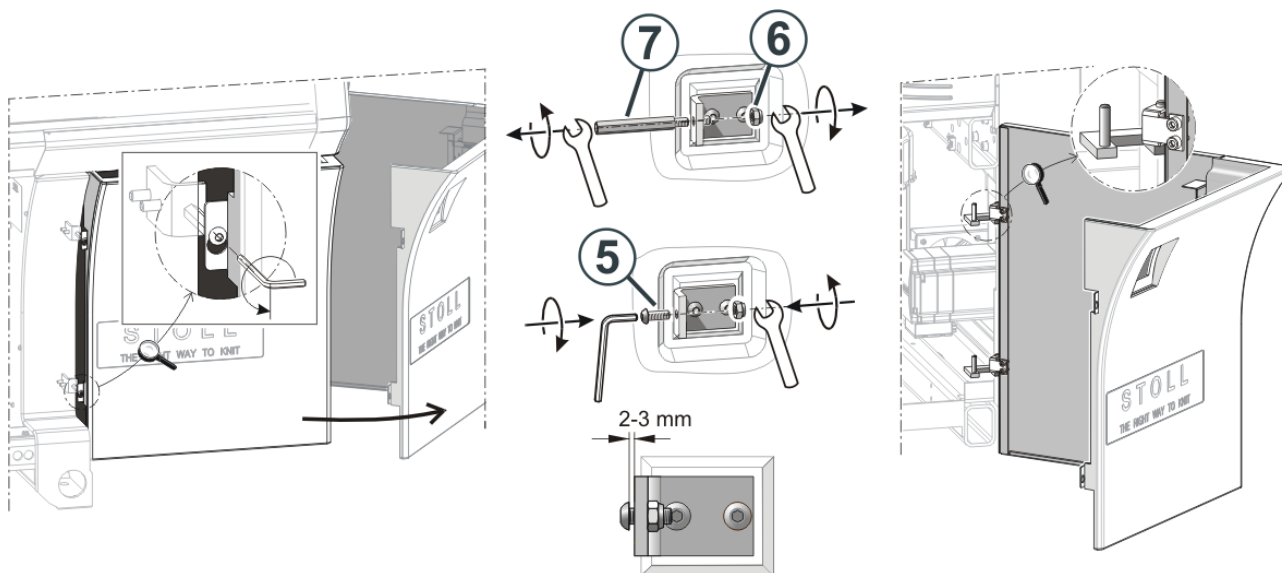


8. Swivel the cover of the control unit outwards. In the case of the CMS 502, remove the cover.
9. Remove the transport flap (4).



In the case of the CMS 502, the steps 10 to 13 are not necessary.

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 at the rear of the holder and the safety nut can completely be screwed-on.

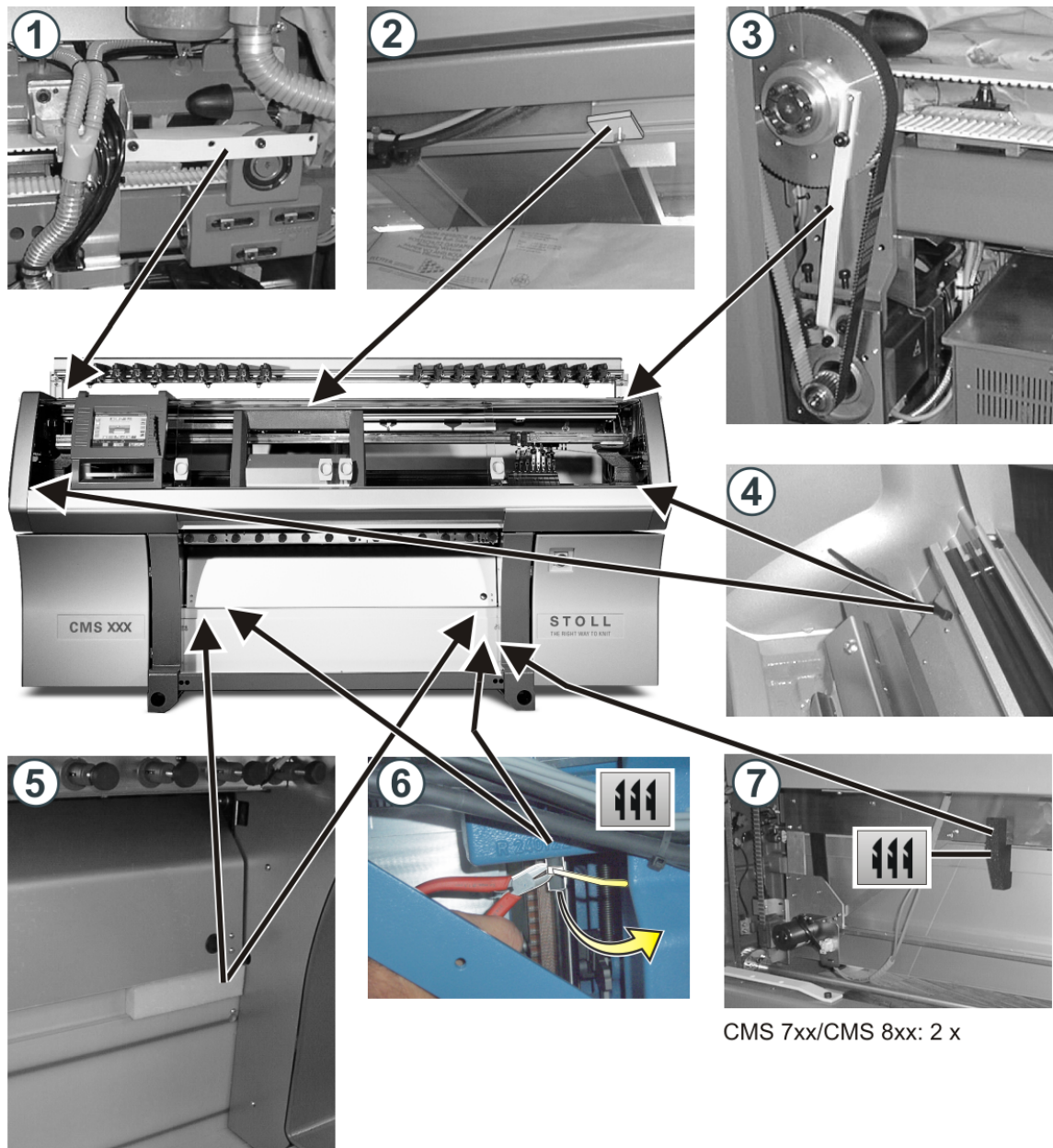
13. Hook-in the control unit cover in the rear position.

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.



CMS 7xx/CMS 8xx: 2 x

Fixing spots for transport locks

Transport lock for:

- | | |
|------------------------|---|
| 1 Carriage | 5 Cover at comb take-down |
| 2 Touch screen | 6 Comb take-down |
| 3 Drive | 7 Comb take-down (2 pieces for CMS 7xx and CMS 8xx) |
| 4 Left and right cover | |



Preserve the transport locks.

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.

Mains 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, CMS ADF-3	253 650
CMS 530 T, CMS 730 S, CMS 730 T, CMS 822, CMS 830 C, CMS 830 S	253 923

Series transformer


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

Mains 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
340 V	9.0 A
240 V	10.0 A
220 V	10.0 A

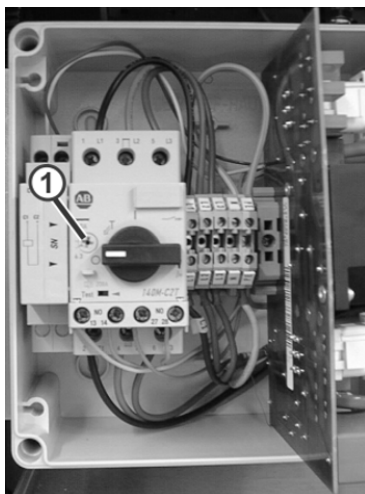
Mains voltage	Protective motor switch "Q1"
200 V	10.0 A

Connection data of the knitting machine

Set the protective motor switch:

	DANGER
	Life-threatening high voltage! Electrical shock may cause death or serious injuries. → Deenergize on-site mains supply before opening the housing.


1. Open the mains switch housing.



Protective motor switch Q1

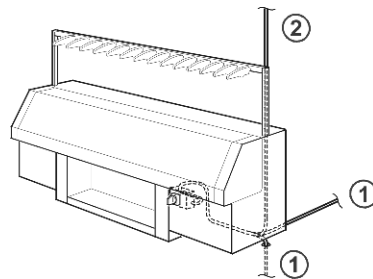
2. Set the protective motor switch Q1 (1).
3. Close the main switch housing.

Connect mains supply to the main switch

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


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.


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


2. Open the mains switch housing.

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Potential equalization missing!


Serious failures or faults can be caused in the machine and the electronic circuit if the terminal  (PE) is not connected.

→ Always connect terminal .

3. Connect the mains supply to the terminals L1, L2, L3 and N (if present) and to the terminal  for the protective conductor "PE".
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.

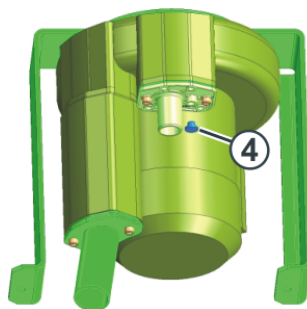
Correction of the error "4272 Power Supply Phase Sequence Wrong":

	DANGER
	<p>Life-threatening high voltage!</p> <p>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

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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 the rear panel segments.
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 rear panel segments.

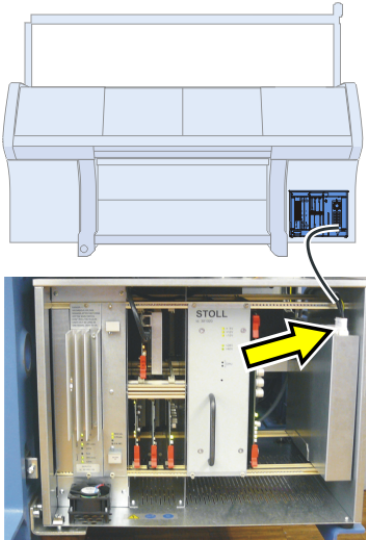
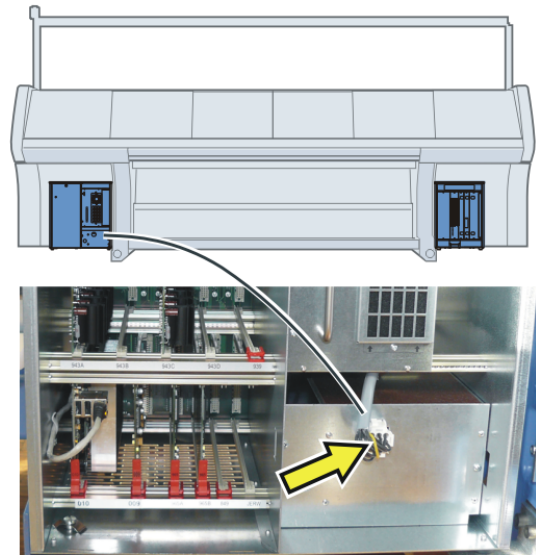
7.2.3 Plug in battery pack

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.

<p>CMS 330 CMS 530 CMS 520 C+ CMS 502</p>	
<p>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</p>	

2. Plug in battery pack.

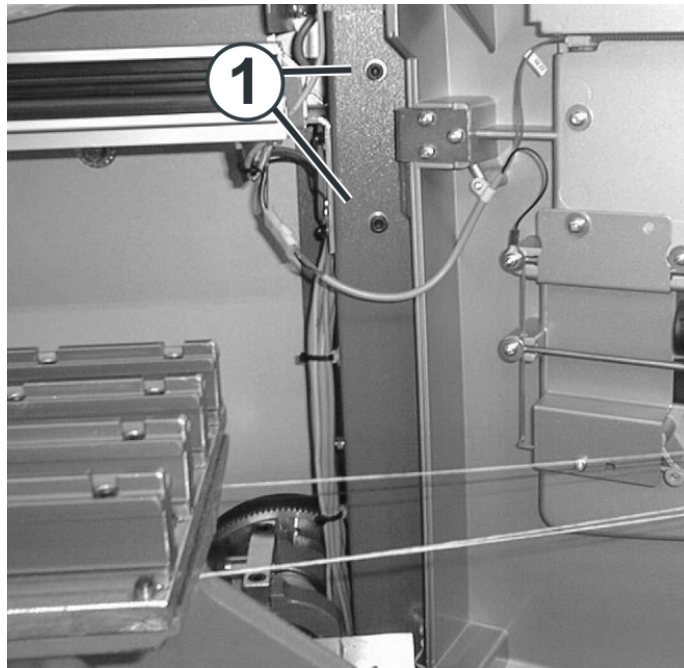
3. Close the cover.

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.



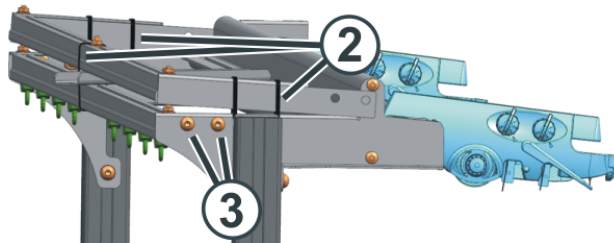
Supports for the yarn guide device

- 2. Push the left and right supports of the yarn guide device upward simultaneously until the distance between the bobbin board and the yarn guide device is 50 to 55 cm.
- 3. Retighten the screws (1) on both sides of the machine.

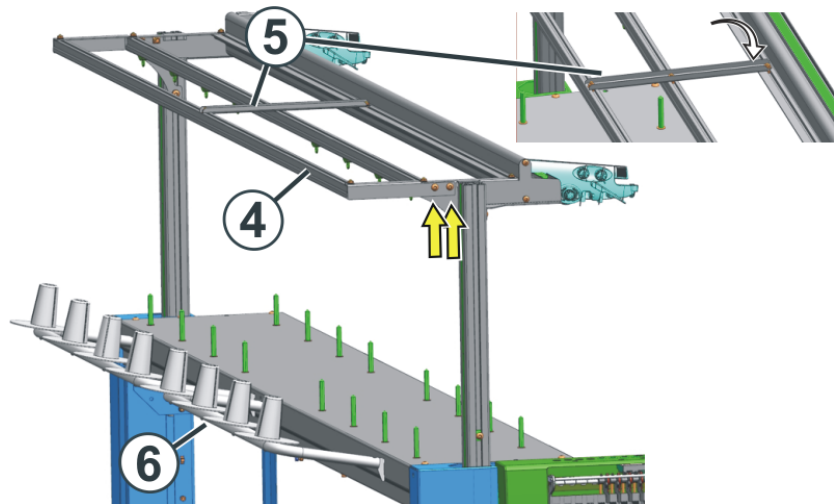
Mounting the rear track of the yarn guide device and the additional bobbin boards

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. Removing transport locks (2).



2. Remove the screws (3) on the left and right sides of the machine.



3. Mount the rear track (4) of the yarn guide device.
4. Connect all the tracks of the yarn guide device with the help of the support (5).
5. Hook in both additional bobbin boards (6).

7.2.5 Mounting signal light

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The power supply for the yarn control devices and the signal light are moved into the supports 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.

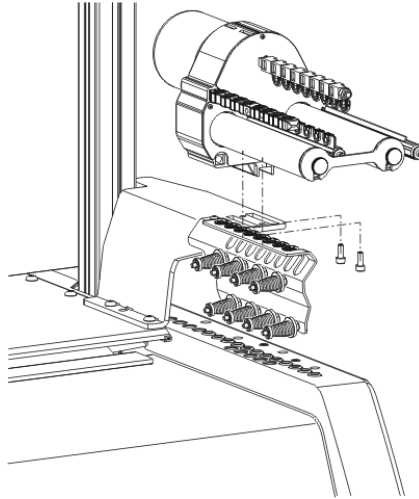
- ✓ The main switch is set to "0" and secured against being switched on again.
- 1. Plug the power cable from the right support into the signal light (1).
- 2. Screw on the signal light onto the right support with the screws present there.

7.2.6 Mounting friction feed wheel

Depending on the machine type, the friction feed wheel is already mounted.

Mounting friction feed wheel:

1. Screw the friction feed wheel on the holder.



Mounting the friction feed wheel



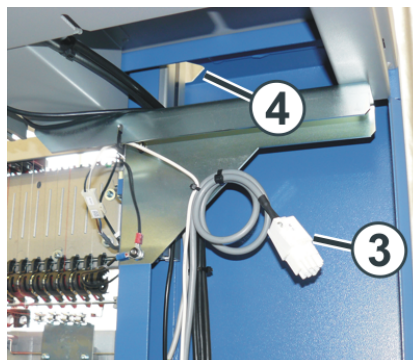
DANGER

Life-threatening high voltage!

Electrical shock may cause death or serious injuries.

- Set machine main switch to "0".
- Secure the machine against being switched on again.

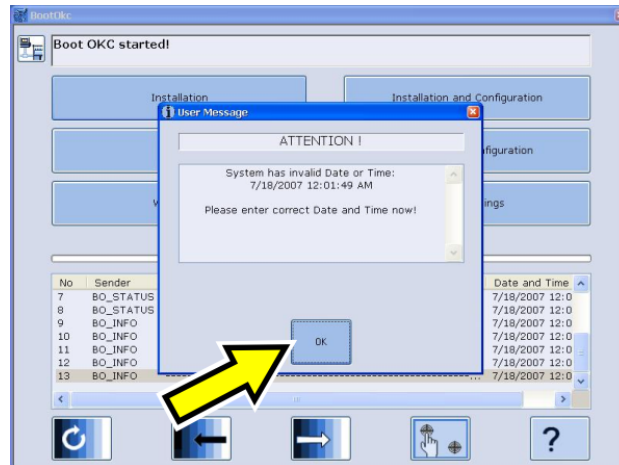
2. Open the rear panel segments.
3. Route the cable (3) for the friction feed wheel toward the outside through the opening (4).



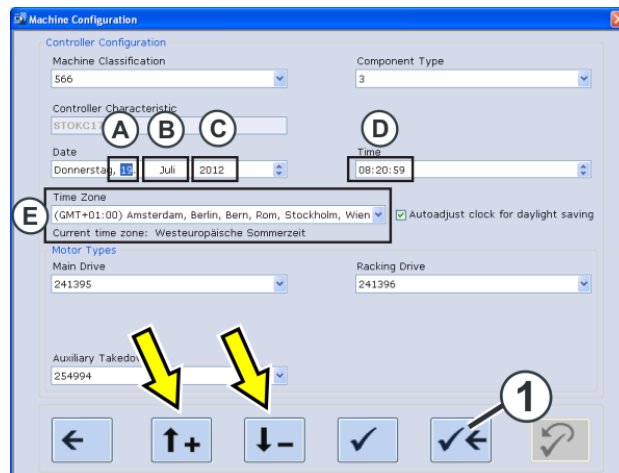
4. Plug the cable into the friction feed wheel.
5. Repeat the process on the other machine side.

7.2.7 Check date and time, set time zone

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.

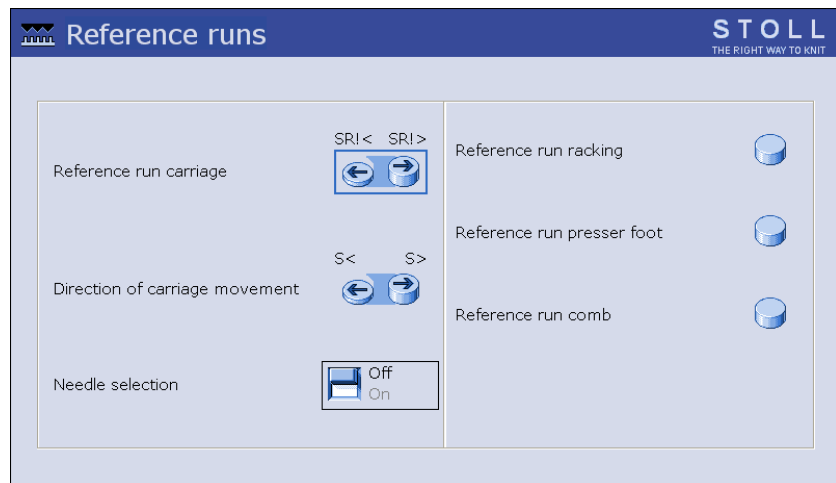


4. Check the date (A-C) and the time (D). Minor corrections of the time can be carried out with the help of the arrow keys.
5. Set the time zone (E) with the help of the arrow keys.
6. Save the settings and return to the "BootOKC" window. Tap the (1) button for this.
7. Tap the "Restart" button in the "BootOKC" window.
8. The "Reference runs" window appears.



It continues with the section "Aligning knitting machine".

7.2.8 Aligning knitting machine

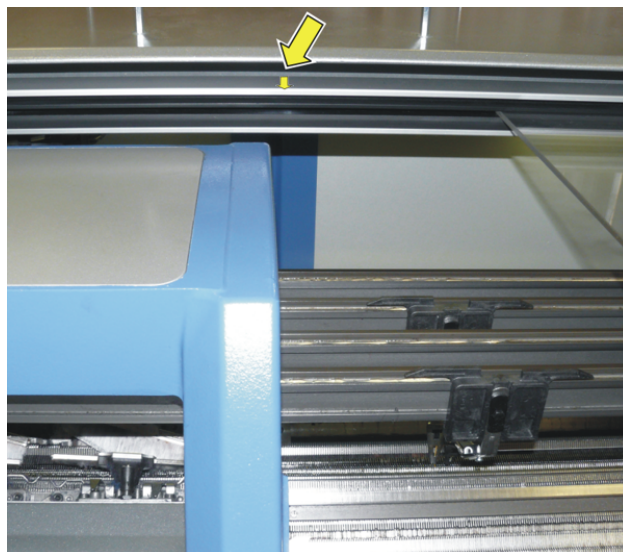


"Reference runs" window

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

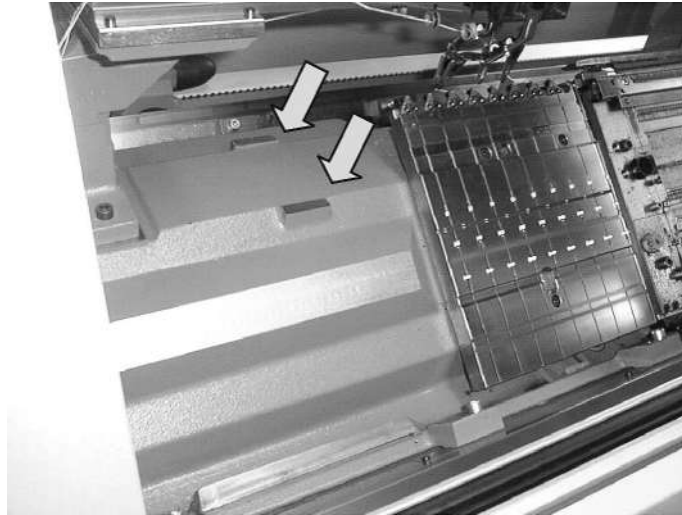
	DANGER
	<p>Danger by moving carriage! Danger of crushing and cutting by the carriage. → Close the covers.</p>

2. Pull the engaging rod upwards. 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 (arrow marking), press the engaging rod downwards.
 ▷ The carriage stops.



"Carriage arrow marking" position (for a better overview, the covers were opened)

4. Switch off main switch and secure it against being switched on again.
5. Open covers.
6. Lay the spirit level on the support surfaces on the left side of the needle bed.



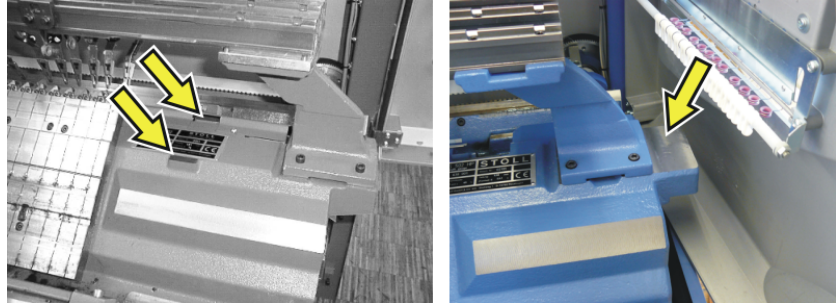
Left support surface for spirit level

7. Align the knitting machine with the setscrews. Execute this at the front and rear. The setscrews for aligning are in the accessories of the machine.



Setscrews for aligning the machine

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



Right support surface for the spirit level (on the right: CMS 502)

9. Align the knitting machine with the setscrews.

i





For the subsequent mounting activities, the carriage remains in the needle bed (until the section "Carry out reference run").

i

Do not close the "Reference runs" window. It will be necessary again in the section "Carry out the reference run" [68]. If the window was closed, call it up again as follows: Main menu -> Service -> Reference runs.

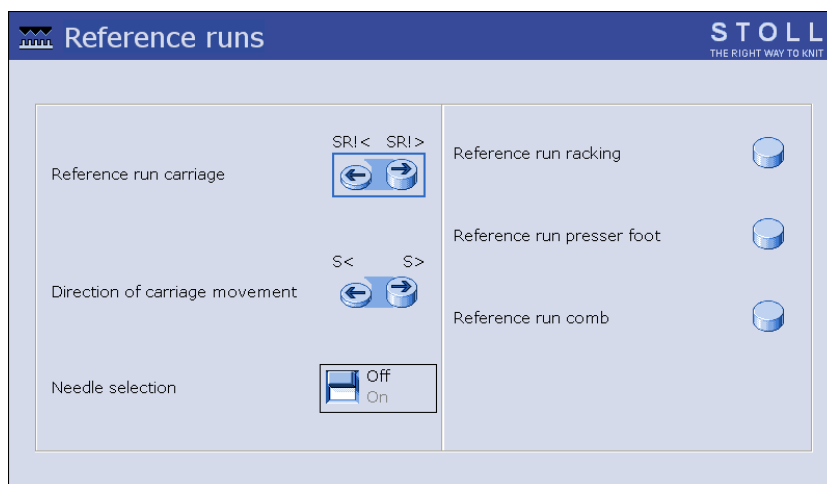
7.3 Carry out the reference run

The position of the carriage towards the needles is determined during the reference run.

Key	Function
	Call up the "Service" menu
	Call up "Reference runs" window
	Confirm message
	Call up "Main menu"

Keys for carrying out the reference run

- ✓ The carriage is located in the center of the needle bed.
- 1. Turn the main switch at the front of the machine to **1**.
 - ▷ The Stoll logo is displayed. As soon as the machine is ready, the "BootOkc" window appears.
- 2. Tap on the "Warmstart" key.
 - ▷ The "Main menu" appears.
- 3. Call up the "Service" menu from the "Main menu".
- 4. Call up the "Reference runs" window.



- 5. Tap the "SRI >" key in the "Reference run carriage" field.

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

Danger of crushing and cutting by the carriage.

→ Close the covers.

6. Pull up the engaging rod and release it. The carriage moves at creep speed to the right and carries out a reference run.



Reference run with older machines (before August 2013):

The carriage moves automatically in both directions

During the reference run, the carriage can move independently into both directions.

The carriage stops automatically as soon as the reference data is determined. The engaging rod falls down.

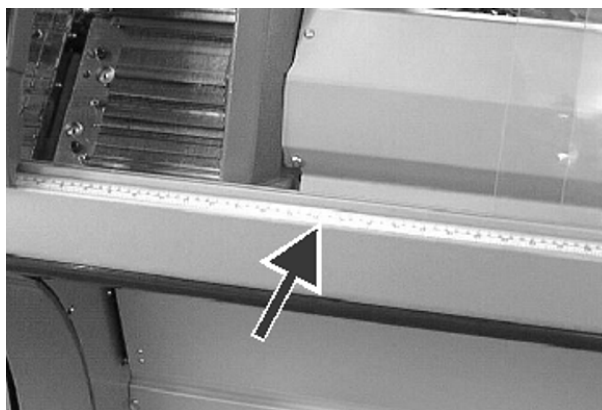
7. The carriage stops automatically outside the needle bed. The engaging rod falls down.
 8. The message "Reference run complete" is displayed on the touch screen.
 9. Confirm message.
 10. Move the carriage assembly into the left reversing position.
In the "Reference runs" window tap on the key "S<" and start machine with the engaging rod.
 11. If the carriage is located outside the needle bed, stop the machine.
 12. In the "Reference runs" window tap on the key "S>".
 13. Pull up the engaging rod briefly. The carriage may run only a few centimeters towards right. The carriage must still be positioned outside the needle bed.
 14. 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.

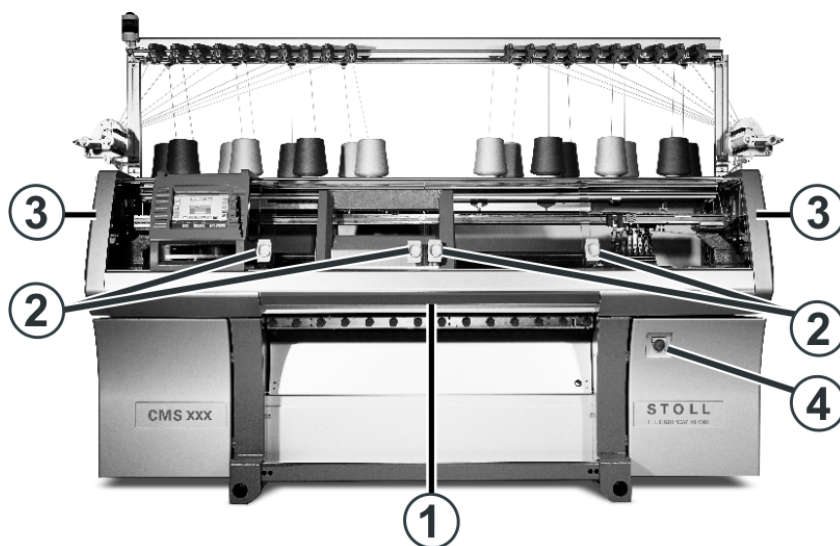
7.4 Glue on measuring tape

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 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. Switch off main switch (4).

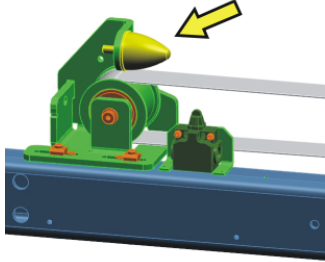



7.6 Checking protective devices




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



	DANGER
	Defective protective device! Death or serious injury. → 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.
	DANGER
	Opened covers and safety doors! Danger of crushing and cutting by the carriages, racking, fabric take-down, comb take-down and additional beds! → Do not reach into the running machine when the covers and safety doors are open.

Protective device	Checking
Engaging rod (1)	Production setting
	<ul style="list-style-type: none"> ♦ Pull engaging rod to highest position and release. The carriage pulls out. The engaging rod is held by a magnet. ♦ Press engaging rod to bottom position (zero position). The carriage must be stopped immediately
	Middle position <ul style="list-style-type: none"> ♦ 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
Covers (2)	<ul style="list-style-type: none"> ♦ Pull engaging rod to highest position and release. The carriage pulls out. ♦ Open cover. The carriage must be stopped immediately. The engaging rod falls to zero position simultaneously. ♦ Repeat this process for each cover.
Lateral safety doors (3)	<ul style="list-style-type: none"> ♦ Pull engaging rod to highest position and release. The carriage pulls out. ♦ 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. ♦ Repeat this process for the safety door on the left side of the machine.
Main switch (4), emergency stop switch	<ul style="list-style-type: none"> ♦ Pull engaging rod to highest position and release. The carriage pulls out. ♦ 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.

Protective device	Checking
Limit switch drive only with older machines (before August 2013):	<p>Check if the left and right end stops for the carriage have the correct position and if they are damaged.</p>  <ul style="list-style-type: none"> ♦ Call up the "Reference runs"  window from the main menu and tap the "S<" key. ♦ Pull engaging rod to highest position. The carriage moves towards left. The carriage must stop shortly before reaching the bumper. The limit switch triggers the stop signal. ♦ Push carriage from limit switch manually. <p>To confirm the calibration, tap the  key.</p> <ul style="list-style-type: none"> ♦ Repeat the check on the right-hand side of the machine, in that call up the window "Reference runs" in the main menu  and tap the "S>" key.

Protective device	Checking
Machine with comb take-down: Comb safety door (5)	<ul style="list-style-type: none"> ♦ Pull engaging rod to highest position and release. The carriage pulls out. ♦ 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. ♦ The carriage must be stopped immediately. The touch screen displays an error message. ♦ Close comb safety door again. <p>To confirm the calibration, tap the  key.</p> <p>Condition: The carriage has stopped.</p> <ul style="list-style-type: none"> ♦ Call up the "Comb take-down"  window and tap the "=-" key (in waiting position). ♦ The comb take-down moves upward. ♦ Wait briefly (2-3 seconds). The comb take-down releases the comb safety door, it tilts somewhat to the front. ♦ Gently push the comb safety door backwards. ♦ The upward movement of the comb must be stopped immediately. The touch screen displays an error message. ♦ To confirm the calibration, tap the  key. ♦ 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).