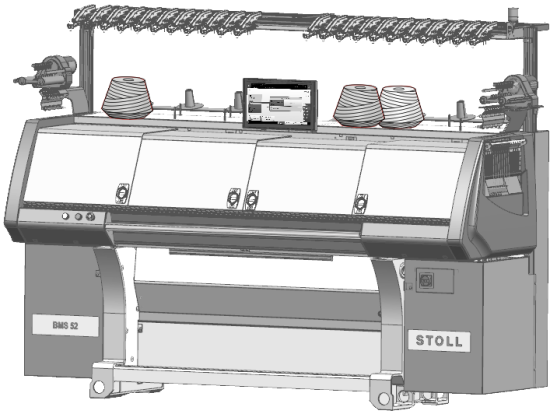
Operating instruction for a safe operation of the knitting machine



	Type	Computer Type	Component type
BMS 52	836	CKC1.0	000 - 001
	839	CKC1.0	000 - 001

Date: 2023-01-31
Original operating instructions
Operating system of the machine: V_CKC_001.001.000_STOLL (or higher)

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Table of Contents

1 Documents about your knitting machine

You can find documents about your knitting machine in the STOLL customer network.

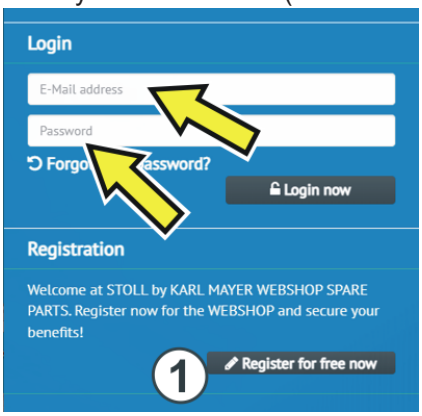
https://www.stoll.com/en/customer-net/

- Operating instructions
- Safety Instructions
- Spare Parts Catalog
- Circuit diagram
- Online help
- Training documents...

The documents are available in different languages.

1.1 How to find the documents about your knitting machine

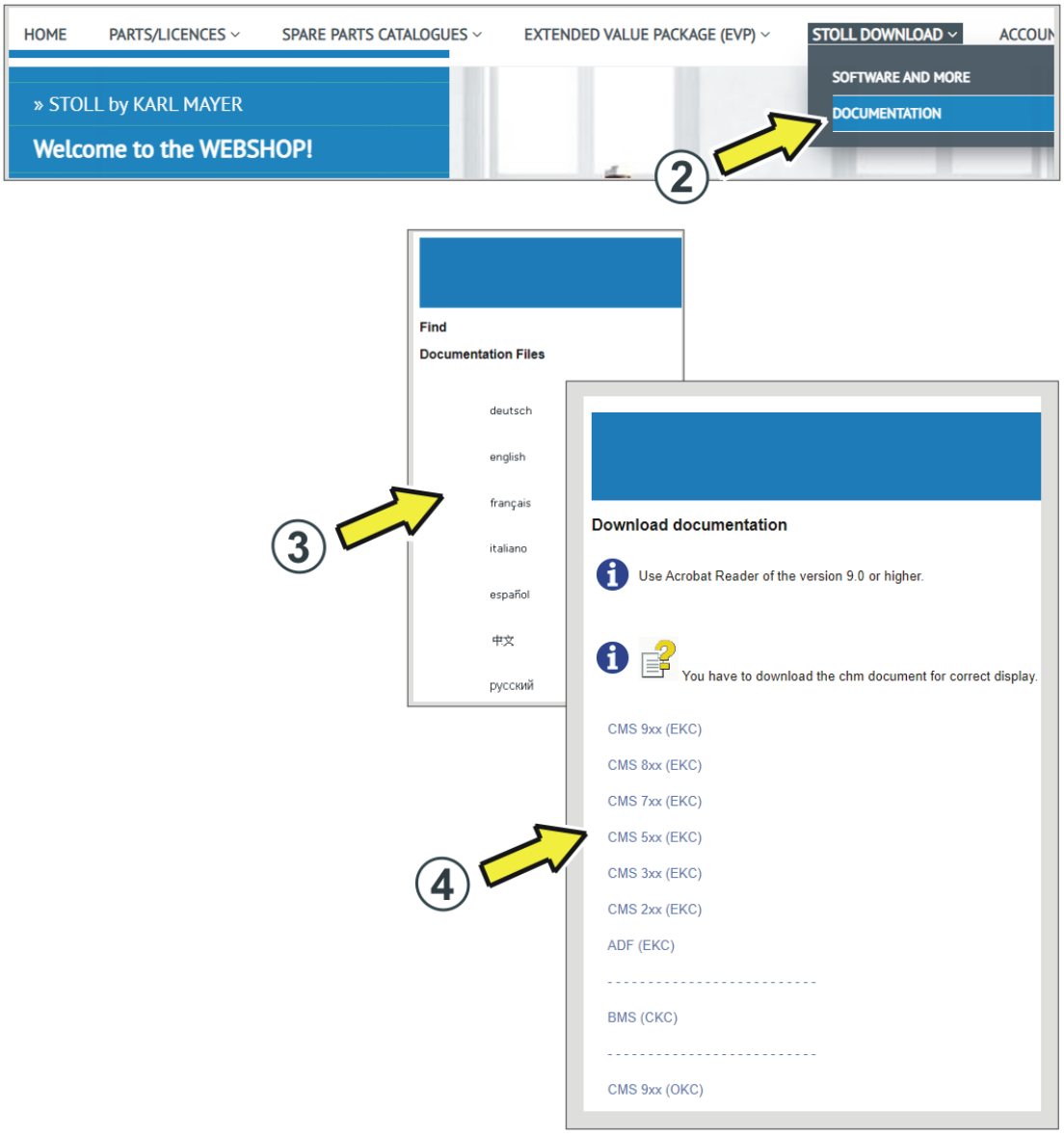
1. Call-up the STOLL customer network.
   https://www.stoll.com/en/customer-net/
2. Enter your access data (e-mail address and password).



If you do not have any access data, tap the button (1).
Fill in the form and send it to STOLL (button "REGISTRATION").

3. In the STOLL customer network select the following path:

   STOLL DOWNLOAD -> DOCUMENTATION -> Select language -> Select machine



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
- Internet: http: //www.stoll.com
- Training courses at the Stoll training centers

i 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.

i The knitting machine is not intended for use in residential areas. Radio interference can occur.

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
Running-in	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).

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i 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

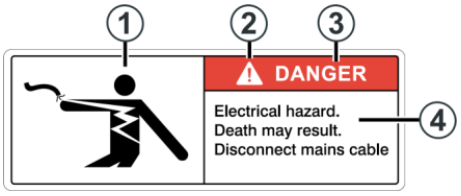
In this chapter you will find explanations to the warnings on the machine and in the documentation.

2.5.1 Warnings used

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

Scope of validity: USA and Canada

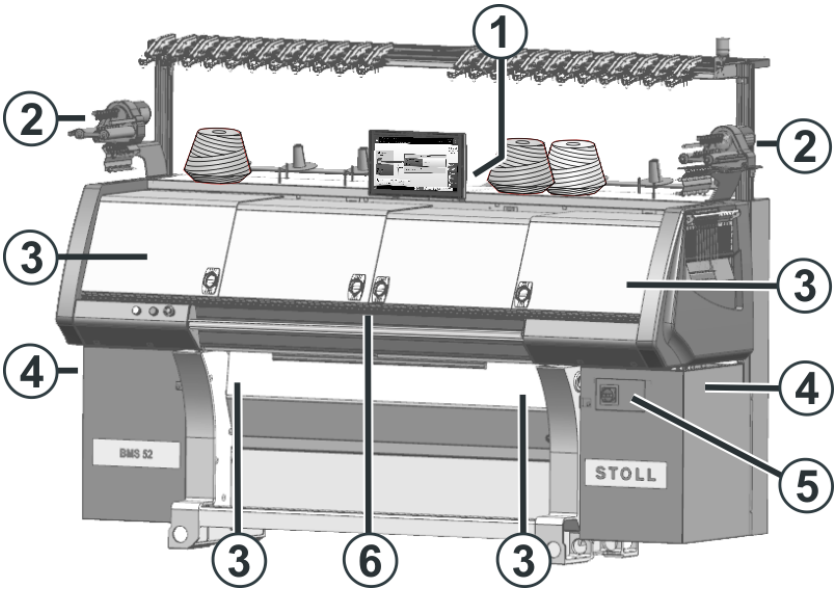
A warning instruction as per ANSI Z 535.4 comprises of the following elements:



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

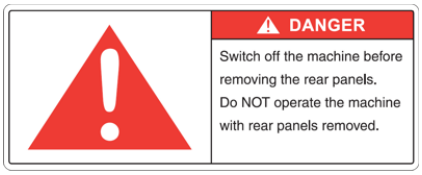
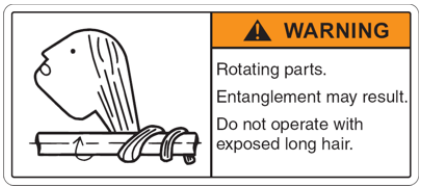
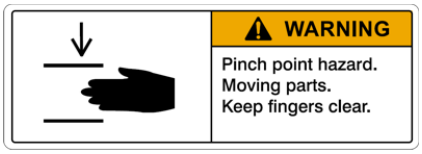
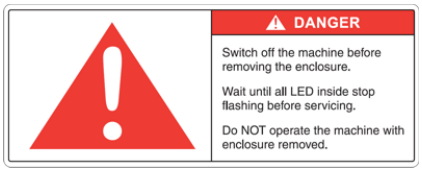
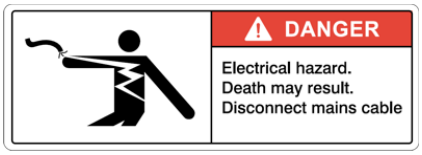
Site for labeling the warning on the machine



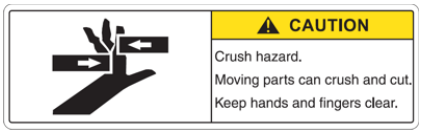
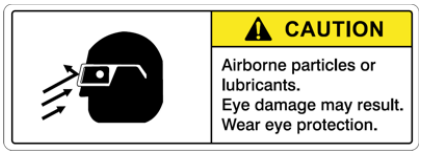
Site for labeling the warning on the machine

List of warnings on the machine

i 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	 ID 244 262	Warning on the rear panel
2	 ID 244 270	Warning on the friction feed wheel
3	 ID 244 272	Warning on the right and left collecting clamp unit and on the comb take-down
4	 ID 244 261	Warning on the panelling of the control cabinet right and left
5	 ID 244 263	Warning front cover main switch

List of warnings

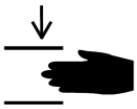
No.	Warning	Explanation
6	 ID 244 276  ID 244 269	Warning under the covers

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

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.

Signal word	Explanation
DANGER	Imminent danger of death or serious injuries (irreversible).
WARNING	Death of 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.
- 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.	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.
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.
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 Stoll 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
Risk of Injury	Close the covers. Close the rear panels of the machine. Keep eyes away from the lateral yarn tensioner. Objects such as tools, bobbins etc. to be removed from the inside of the machine. If the machine is in operation, under no circumstances should you reach into it. Stop the machine if an intervention is necessary. Do not tear off the yarn by hand but use scissors.
Danger of winding and suction and danger of crushing.	Do not reach into the belt take-down. Do not touch the friction feed wheel while the machine is in operation and keep away loose garments and hair strands. Wait for the feed wheel to stop moving after stopping the machine.
Health hazard by fibers, dust and fumes.	Special caution is to be observed while knitting of yarns that cause health hazards or a damage to the machine: ◆ Yarns with heavy fiber fly ◆ Dyestuffs causing health hazards ◆ Yarns made of glass fibers, metallic-annealed fibers, asbestos, carbon, PU or similar materials Employ suitable measures to avoid the hazard caused by fiber fly, dust and fumes. Observe the country-specific laws and regulations. Observe the manufacturer's specifications (safety data sheet). For any further queries please contact Stoll.

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 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, collecting clamps.	Switch off machine at main switch. Secure the machine against being switched on again. After working on the rear of the machine, re-fix the rear panels again.
Cleaning with compressed air	Observe the country-specific laws and regulations. Risk of soiling - do not blow directly into the motor. 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. **Caution**: Damage of needles! The 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.
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	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).

2.6.7 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 carriages, racking, the needle beds, the clamping and collecting clamps.	Always stop the machine during an intervention.
Danger of crushing and suction by the fabric take-down (belt take-down, comb take-down)	Do not reach into the belt take-down. Do not reach into 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 belt take-down and the comb take-down.
Danger of injury in the case of mounting activities by pressure and tension springs (e.g. 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).

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).
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).

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.
 	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.
- Objects such as tools, bobbins etc. to be removed from the inside of the machine.
- Close the covers.
- Checking protective devices [🗋 77]

2.6.8 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

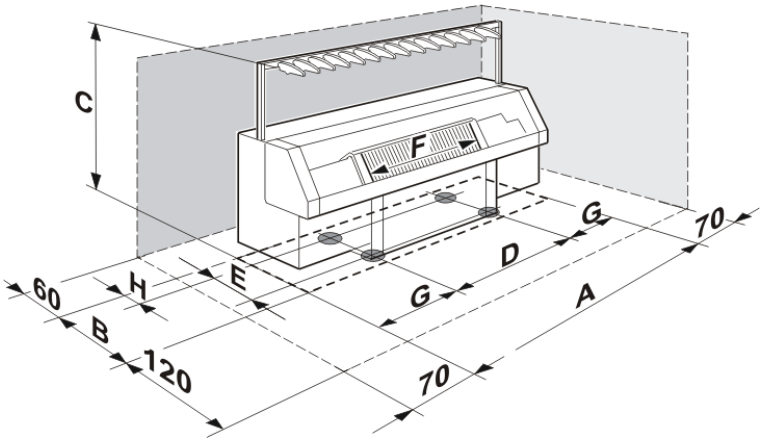
Type of Risks	Measures
Danger to life because of electrical shock during work on the electrical assembly of the machine.	Get the machine disconnected from the mains supply by an electrician.
Health hazard	When working with oil and grease, pay attention to the safety regulations (safety data sheets) applicable 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 [▷ 26]

3 Technical data of the machine

3.1 Dimensions and weights

Machine dimensions



Machine dimensions (in cm)

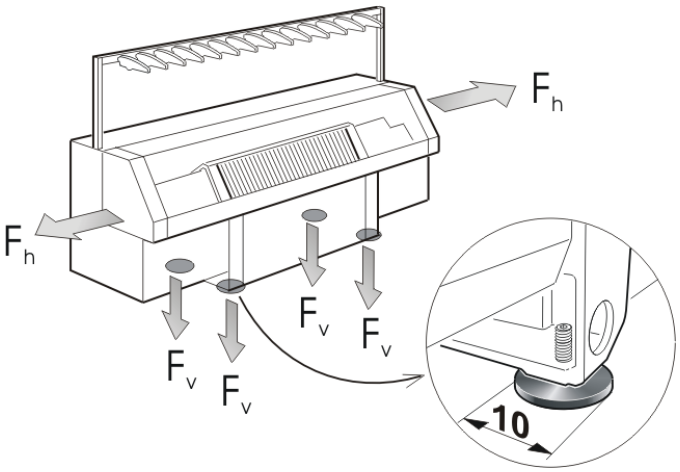
A	Width	F	Nominal working width
B	Depth	G	Distance "machine foot - lateral panel"
C	Height	H	Distance "machine foot - rear panel"
D, E	Spacing of set screws		

	A	B	C	D	E	F	G	H
BMS 52	253	91	200	158	52	132	48	27

Machine dimensions (in cm)

Weight and dynamic weight

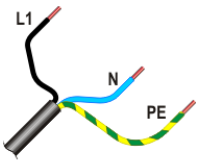
The back-and-forth movement of the carriage causes the dynamic loads (F_v, F_h) listed above to occur at the set screws.



	Machine out of action	Machine in action	
	Weight (kg)	F_v (daN) [kg] per set screw	F_h (daN) [kg] per machine
BMS 52 (836)	956	410	100
BMS 52 (839)	1156	480	110

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

3.2 Electrical data

Electrical data	Values
Supply voltage	230 V ±10 % 50 or 60 Hz
Phase number	1 (2)
Rated current	10 A
Protection of the mains to the knitting machine	16 A slow-blow
Mains supply, cross-section	 3x ≥ 1,5 mm²
	BMS 52
Connection value	BMS 52: 1.7 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	Needle number (nominal width)
	132 cm (52")
E 3,5.2	363
E 12 E 6.2	623
E 14 E 7.2	727

Number of needles per needle bed

The conversion into another gauge depends on the machine type. 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.

i 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.

3.6 Noise emissions

The measuring has been performed on a representative basis for the series BMS 52 ki on a BMS 52 ki E12. The machines of the BMS 52 ki series emit a sound pressure level which is not higher than the specified values under comparable conditions.

Applied standards:

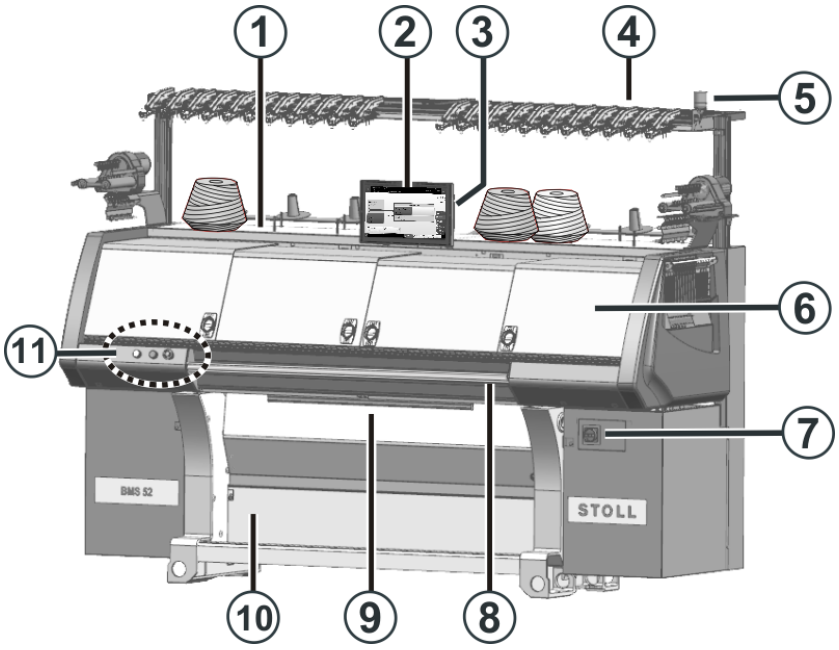
- ISO/CD 9902 "Textile machine regulations for noise emissions"
- ISO/CD 9902-1 and ISO/CD 9902-6.

Level specifications in dB(A)	mean sound pressure level LpA	Uncertainty KpA
BMS 52 ki	78,5	4

Noise emissions

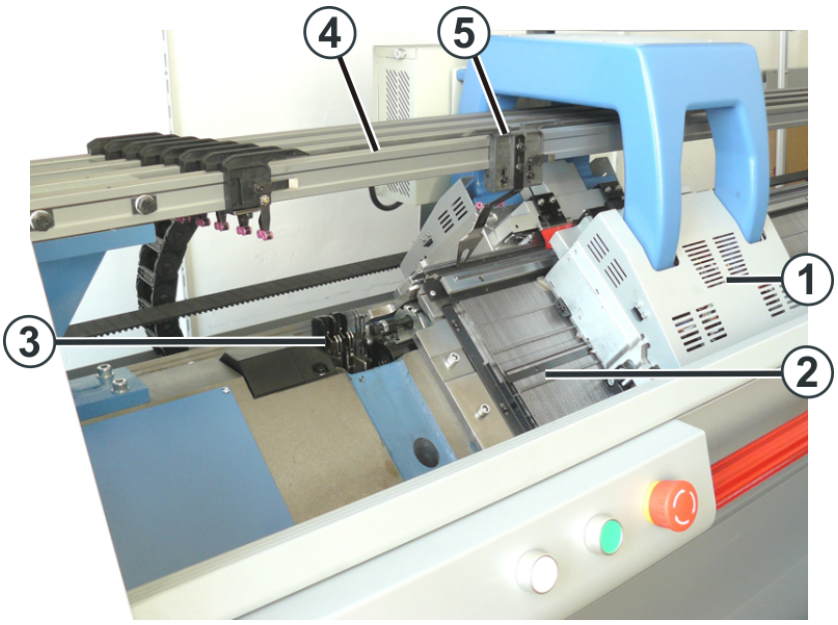
4 Main components of the knitting machine

4.1 Front side



No.	Designation	No.	Designation
1	Bobbin board (with bobbin)	7	Main switch and emergency switching-off switch
2	Touch screen	8	Engaging rod (red)
3	USB port	9	Fabric take-down (belt take-down, comb take-down)
4	Yarn control units	10	Fabric Collection Chamber
5	Signal light (green, yellow)	11	Emergency stop pushbutton, Standby button
6	Covers (over carriage and needle bed)		

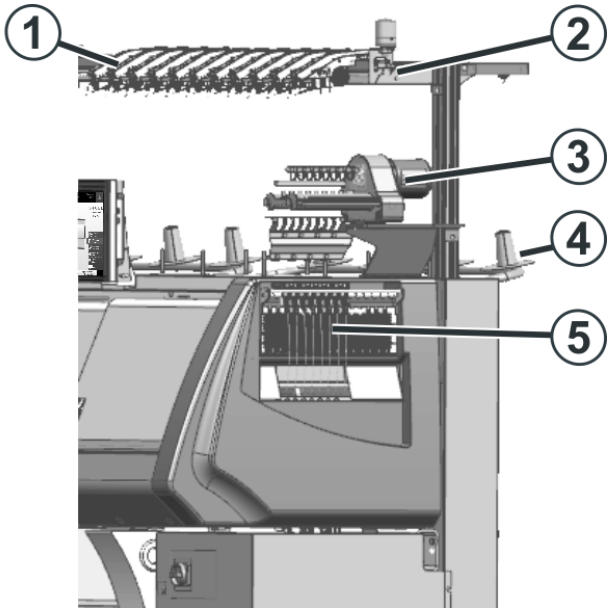
Inner view



Inner view of the knitting machine

No.	Designation	No.	Designation
1	Carriages	4	Yarn carrier rail
2	Front Needle Bed	5	Yarn Carriers
3	Left collecting clamp unit		

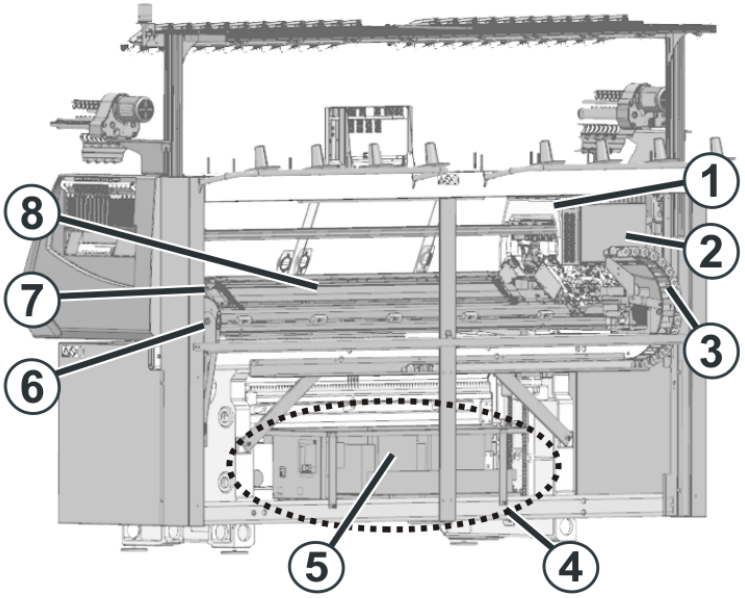
4.2 Lateral view (right)



Right lateral view

No.	Designation	No.	Designation
1	Yarn control unit	4	Additional bobbin board
2	Yarn guide device	5	Lateral yarn tensioner
3	Friction feed wheel		

4.3 Rear side

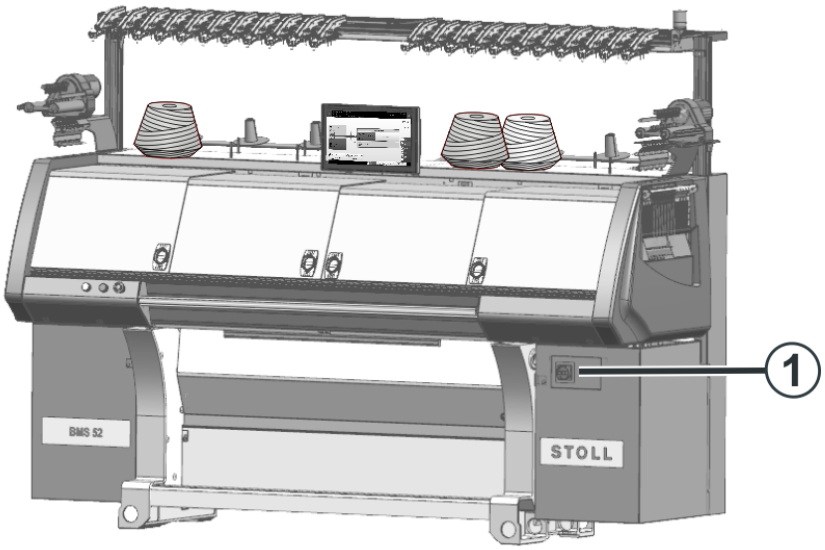


Rear side (without rear panel segments)

No.	Designation	No.	Designation
1	Carriages	5	Transformer (Fuses)
2	Control (carriage)	6	Main Drive
3	Trailing cable (energy chain)	7	Racking device
4	Control	8	Rear needle bed

5 Security relevant operating elements

5.1 Main switch



Main switch

The main switch (1) is located on the right machine side.

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

Shutdown process

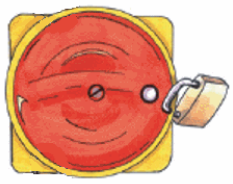
When the main switch is turned from "1" to "0", the machine is immediately switched off. Dangerous movements are immediately stopped. However, the machine data are not lost, as they are saved with a battery. This takes approx. 60 seconds. In the process, messages appear on the touch screen. Once the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

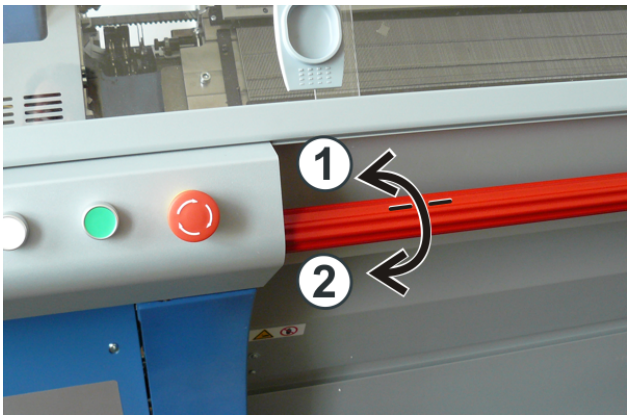
The main switch is also the emergency switching-off switch.

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, Emergency stop and Standby

Engaging rod



Engaging rod

1 Carriage stopped
2 Production

The carriage and thus the production is started or stopped with the engaging rod.

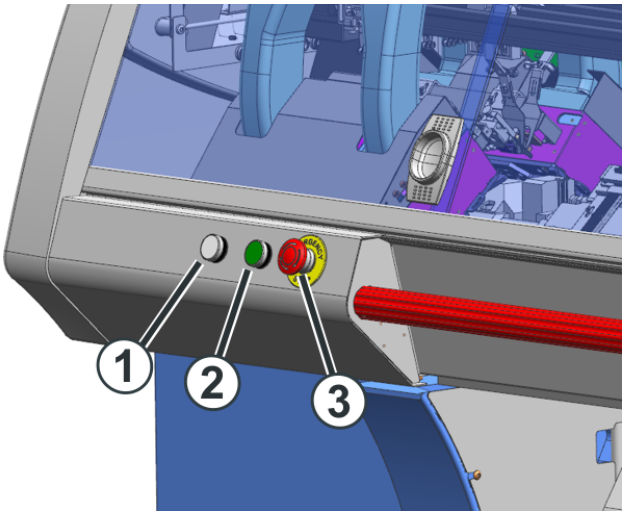
- If you turn the engaging rod forward (2), the production will start. The carriage moves to the reversing position at reduced speed. The carriage then moves at normal speed.
- If you turn the engaging rod forward (2) again, the speed is reduced after the carriage reversal.
- Whenever you turn the engaging rod forward, the speed changes (change between normal and reduced speed).

ⓘ The speed will be changed in the next carriage reversal.

The set speed is shown on the display.

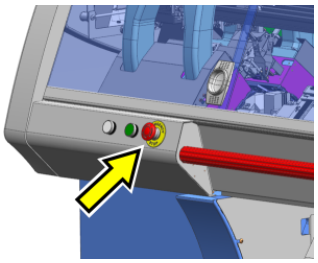
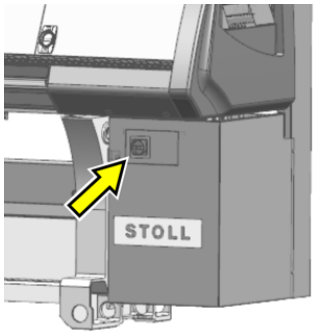
	green: normal speed
	yellow: reduced speed

Emergency stop and Standby



1	white	Switch on standby mode If you interrupt production for a longer period of time, you can switch to standby mode. This saves energy. 1. Stop the carriage in the left reversing position. 2. Press the button (1). The lighting in the interior of the machine will be switched off. The display turns off. ⓘ The running carriage immediately will stop even if you press the button (1) accidentally. Continue production: Turn the engagement rod forward.
2	green	Reactivate production readiness (switch off standby mode) ◆ Press the button (2). After a few seconds the machine is ready to knit. Continue production: Turn the engagement rod forward.
3	red	Emergency stop pushbutton To stop the carriage immediately in the event of danger, press this switch. The emergency stop pushbutton locks in the OFF position. Continue production: Pull out the emergency stop pushbutton. Turn the engagement rod forward.

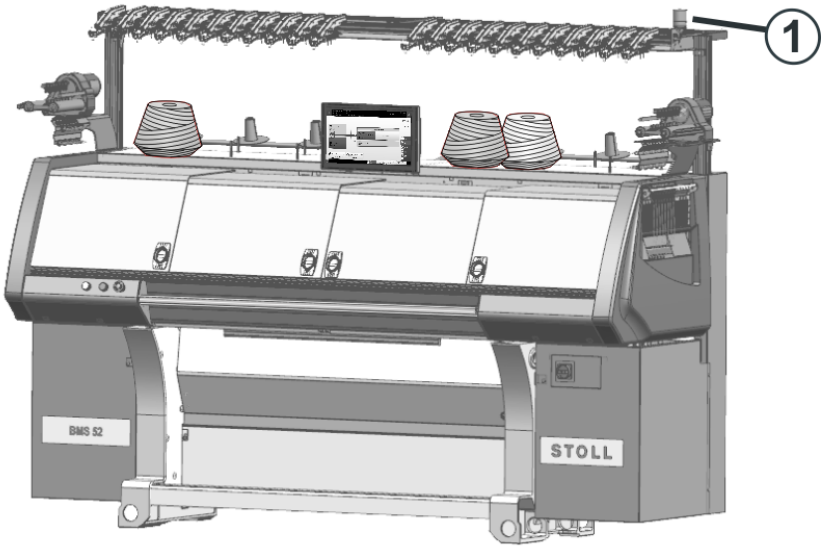
Difference between Emergency Stop < -- > Emergency Switching-off

Emergency Stop		◆ Stop the machine in case of emergency. ◆ The hazardous movements are stopped immediately (carriage, drive belt, racking). ◆ The machine is **not** disconnected from power supply. All electrical components remain switched on.
Emergency Switching-off		◆ Switch off the machine in case of emergency. ◆ The hazardous movements are stopped immediately (carriage, drive belt, racking). ◆ The power supply to the machine will be interrupted. The machine is switched off in order to exclude electrical hazards.

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.

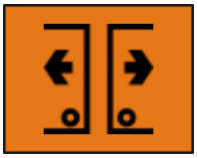
Color	Status of the knitting machine
green	Knitting machine is producing
green (flashes)	Knitting machine is stopped with engaging rod
Yellow	Knitting machine is not producing, as an error has occurred during knitting
green, yellow	Both lamps light up during the shutdown process. Duration is approximately 60 seconds - from switching off main switch until machine is completely shut down.
off	Main switch is switched 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	 Yarn tensioner on the left	 Yarn tensioner on the right
 Yarn Control Unit	 Front shock stop motion	 Rear shock stop motion
 Carriages	 Belt Take-Down	 Comb take-down
 Comb is in the needle bed	 Comb light barrier interrupted	 Oiling or Greasing
 Needle stop left	 Needle stop center	 Needle stop right

Pictographs for the display of stop motions

Pictographs		
		
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"

i	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

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.

➔ 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 center 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.

i	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).

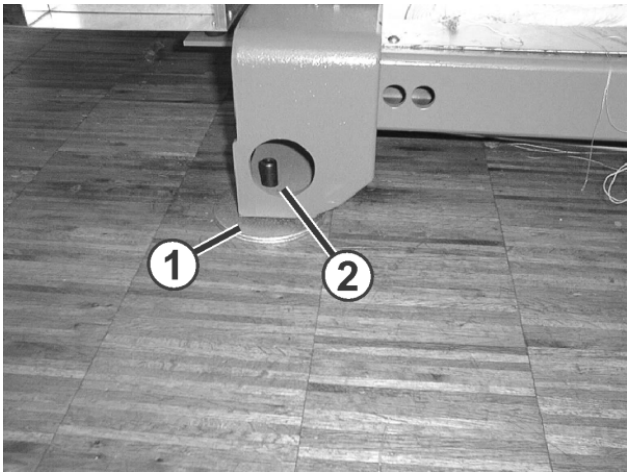
➔ Ground conveyor: observe the safety instructions of the manufacturer.

➔ Transport the machine always with the utmost caution and care.

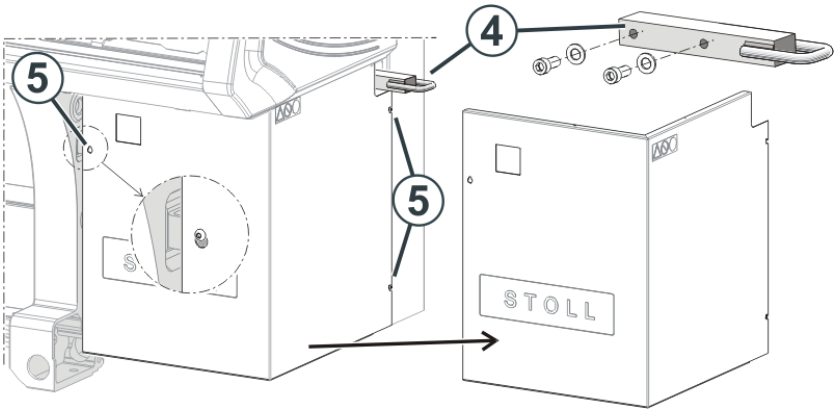
➔ All transport locks are to be attached to the machine.

2. Lift the knitting machine with a fork lift from the transport surface.
3. Bring the knitting machine to the site of installation.

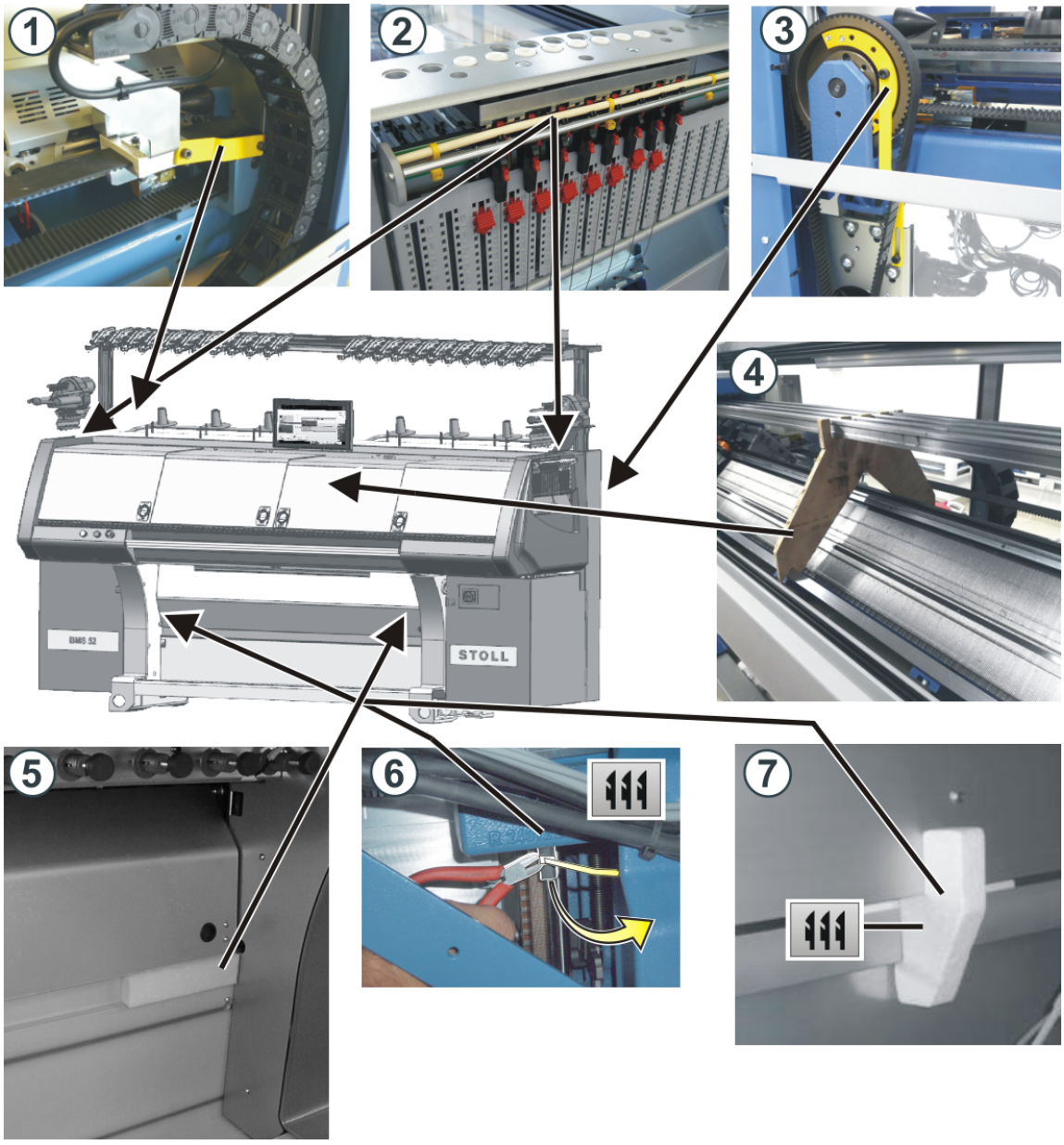
4. Lay Washers (1) from the accessories under the knitting machine foot. Place the washers in such a manner that the cavity comes exactly under the grub screw (2).



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



8. Remove cover.
9. Remove the transport flap (4).
10. Close the cover. Ensure that the cover engages in the screws (5).
11. Tighten the screws (5); this way the cover is secured.
12. Repeat the steps 7 to 11 on the other machine side.
13. Remove all transport locks.



Fixing spots for transport locks

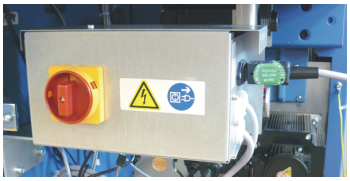
Transport lock for:

1	Carriages	5	Cover at comb take-down
2	Lateral yarn tensioner	6	Comb take-down
3	Drive	7	Comb take-down
4	Yarn carrier rods		

i Preserve the transport locks.

7.2.2 Connecting knitting machine, overview

Depending on the machine type, the knitting machine is connected differently.

Machine type	Main switch	Mains voltage	Chapter
BMS 52		230 V	Connecting the knitting machine (mains voltage 230 V) [🗋 53]
		230 V / 120 V	Connecting the knitting machine (mains voltage 230 V / 120 V, "Phase-Phase") [🗋 57]

7.2.3 Connecting the knitting machine (mains voltage 230 V)

This description is valid for:	
Mains voltage	230 V
Countries	e.g. Europe, China, Hong Kong
Machine type	BMS 52

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:

- Connecting the mains supply

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.

Connect mains supply

DANGER

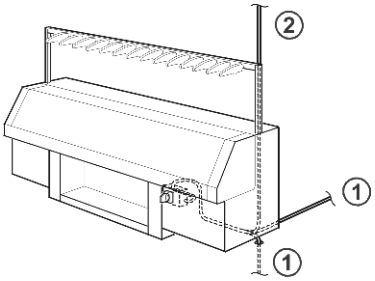
Life-threatening high voltage!

Electrical shock may cause death or serious injuries.

➔ The knitting machine must be connected by an electrician.

➔ Country-specific laws and regulations are to be followed.

Lead the mains supply cable to the main switch:



- via the floor (1)
- coming from the ceiling (2) through the right support of the yarn guide device

How to connect the mains supply:

DANGER

Life-threatening high voltage!

Electrical shock may cause death or serious injuries.

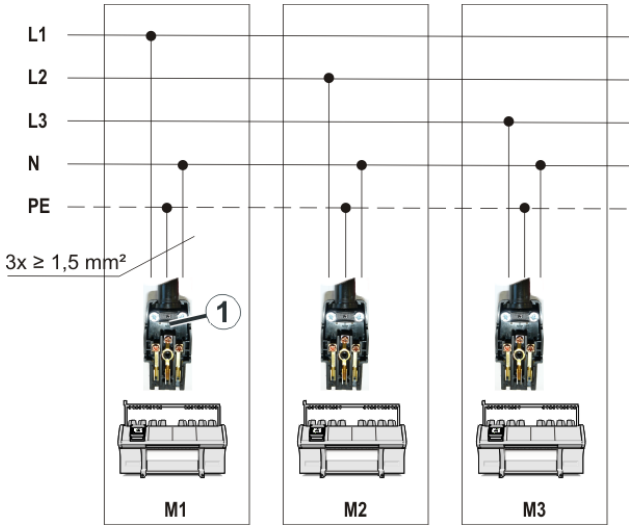
➔ Deenergize on-site mains supply.

✓ The main switch is switched off ("0")

✓ The mains supply to the machine is unplugged (currentless)

1. Open the cover at the main switch.
2. Connect the mains supply to the plug (1). The plug is located in the accessories of the machine.

   Make sure that the operational mains supply is loaded evenly (mains symmetry).



WARNING

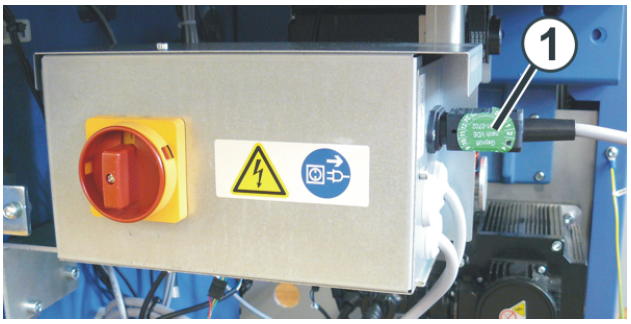
Potential equalization missing!

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. The terminal ⏚ for the protective conductor "PE" must be connected.

4. Connect the plug (1) to the main switch.



5. Close the cover at the main switch.

7.2.4 Connecting the knitting machine (mains voltage 230 V / 120 V, "Phase-Phase")

This description is valid for:	
Mains voltage	230 V / 120 V
Countries	e.g. USA, Canada
Machine type	BMS 52

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:

- Connecting the mains supply

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.

Connect mains supply

DANGER

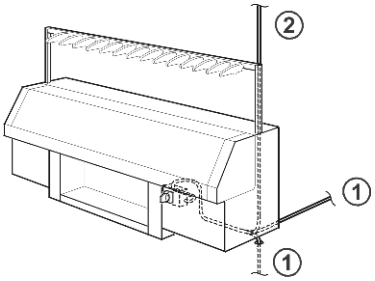
Life-threatening high voltage!

Electrical shock may cause death or serious injuries.

➔ The knitting machine must be connected by an electrician.

➔ Country-specific laws and regulations are to be followed.

Lead the mains supply cable to the main switch:



- via the floor (1)
- coming from the ceiling (2) through the right support of the yarn guide device

How to connect the mains supply:

DANGER

Life-threatening high voltage!

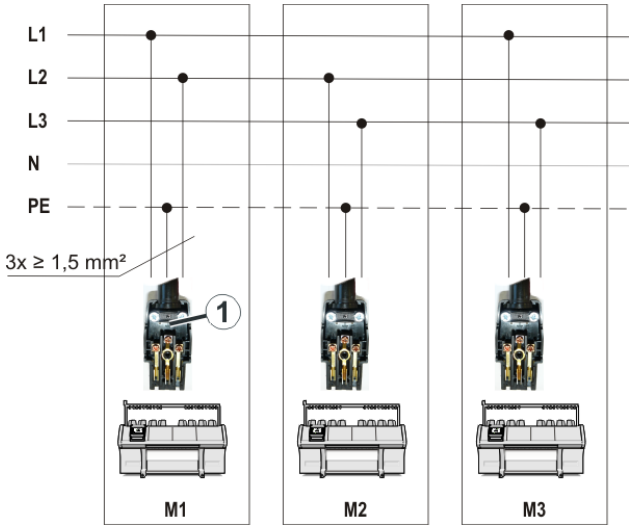
Electrical shock may cause death or serious injuries.

➔ Deenergize on-site mains supply.

✓ The main switch is switched off ("0")

✓ The mains supply to the machine is unplugged (currentless)

1. Open the cover at the main switch.
2. Connect the mains supply to the plug (1). The plug is located in the accessories of the machine.
   Make sure that the operational mains supply is loaded evenly (mains symmetry).



WARNING

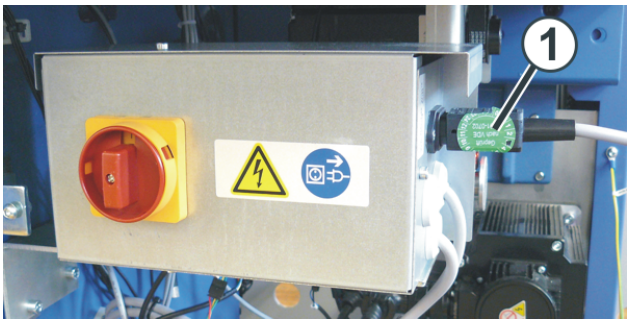
Potential equalization missing!

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. The terminal ⏚ for the protective conductor "PE" must be connected.

4. Connect the plug (1) to the main switch.



5. Close the cover at the main switch.

7.2.5 Plug in battery pack

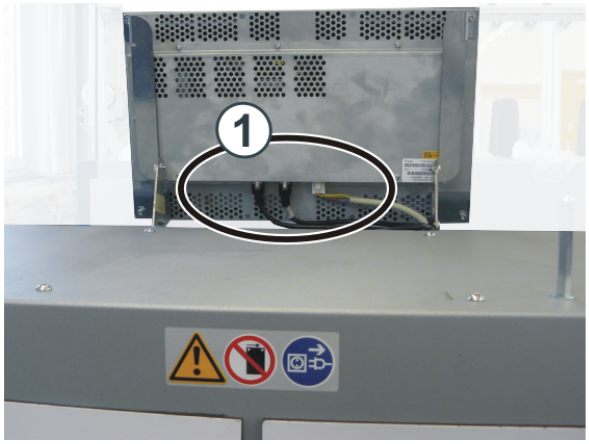
The battery pack is unplugged and not charged completely on delivery of the machine.

Plug in battery pack:

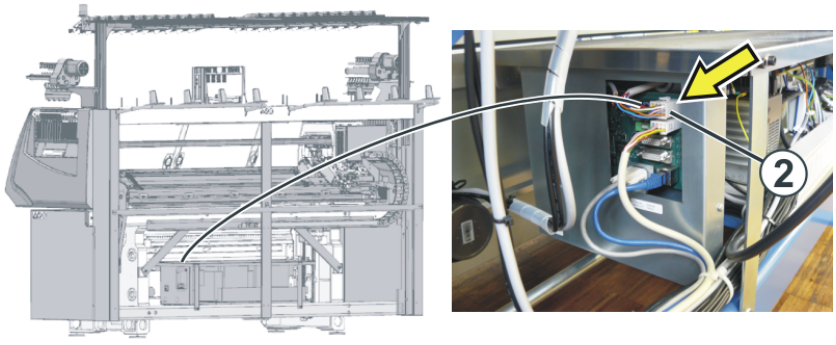
ⓘ It is essential to adhere to this order.
Otherwise, there is a risk that the display will be damaged.
- First plug in the display
- Then insert the battery pack

✓ The main switch is switched off.

1. Plug in display (1).



2. On the rear of the machine remove the rear panel.



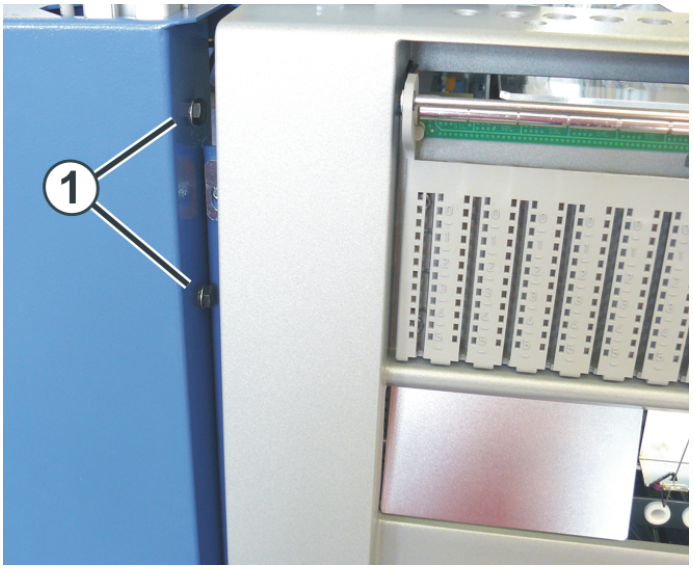
3. Plug in battery pack (2).
4. Close the rear panel.

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



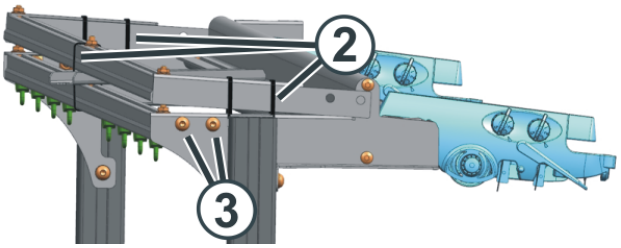
Supports for the yarn guide device

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.

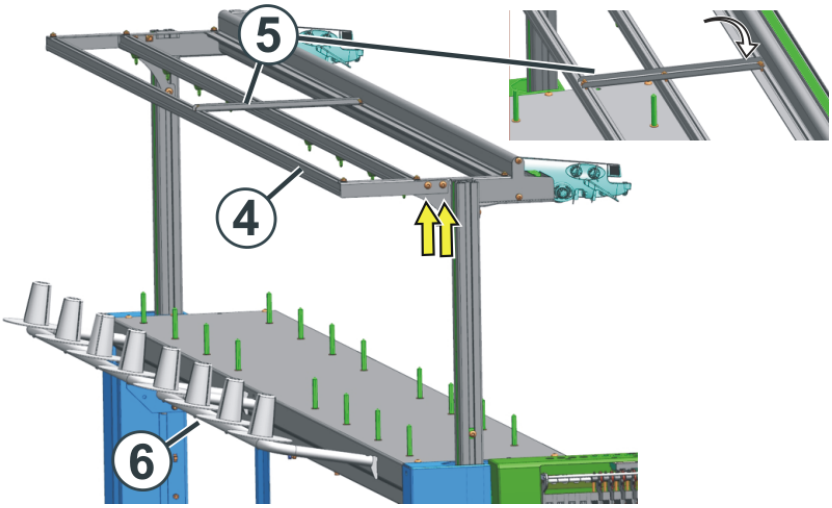
Mounting the rear track of the yarn guide device and the additional bobbin boards

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).



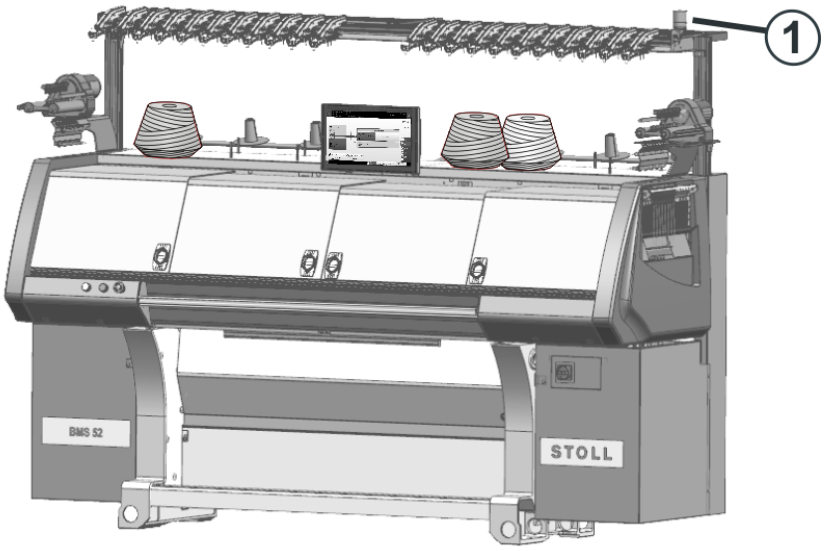
2. Remove the screws (3) on the left and right sides of the machine.



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).

7.2.7 Mounting signal light

> **i** 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.

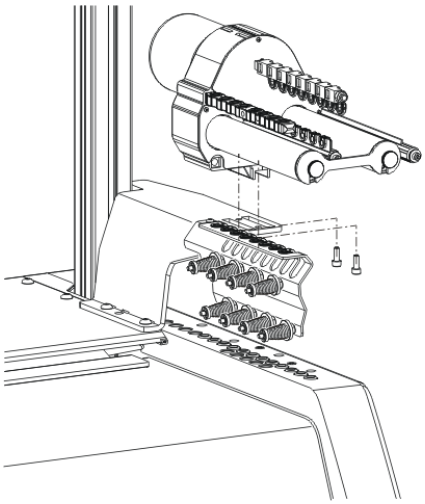
1. Plug the power cable from the right support into the signal light (1).
2. Screw on the signal light onto the right support with the screws present there.

7.2.8 Mounting friction feed wheel

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

Mounting friction feed wheel:

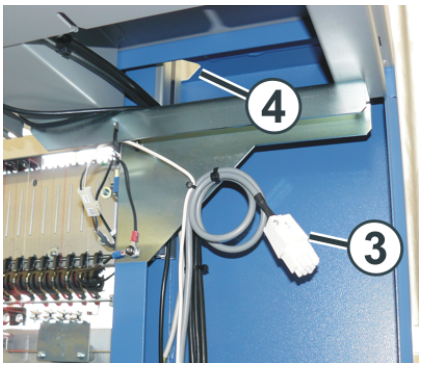
1. Screw the friction feed wheel on the holder.



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.

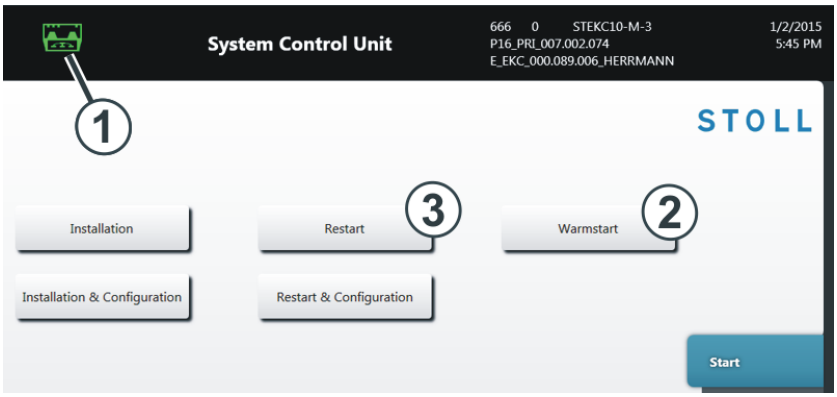
7.3 Aligning knitting machine

Preparations

1. Turn the main switch at the front of the machine to **1**.

   ▷ The STOLL logo is displayed.

2. The "System Control Unit" window is displayed.
   As soon as the control is ready, the icon (1) changes its color from red to green.

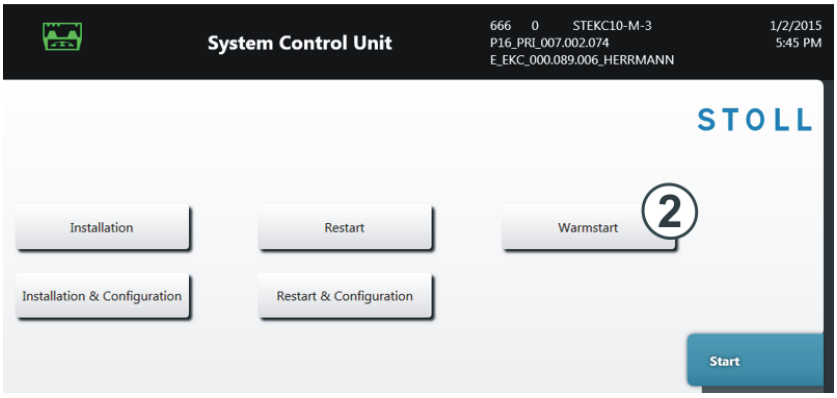


3. The control checks if a "Warmstart" (2) is possible. If the button is inactive (grayed out), no "Warmstart" will be possible, a "Restart" (3) is to be carried out.

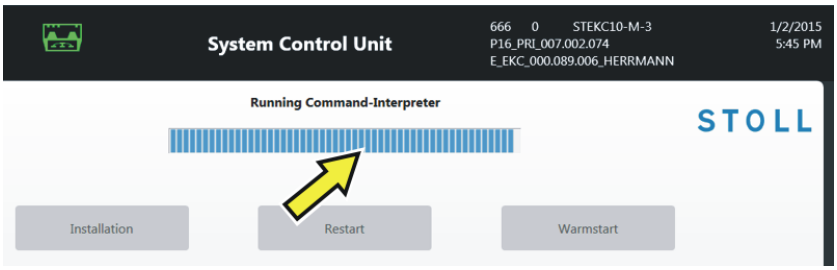
Difference Warmstart < -- > Restart	
When switching off the machine, all the data will be saved. When switching on the machine, the control checks if all the data does completely exist.	
Data complete	If the data is complete, then a "Warmstart" will be possible.
Data incomplete	If the data is incomplete, then a "Restart" will be required. Reason: When switching off the machine, not all the data could be completely saved

7.3.1 Carry out Warmstart

1. Tap "Warmstart" (2) button.

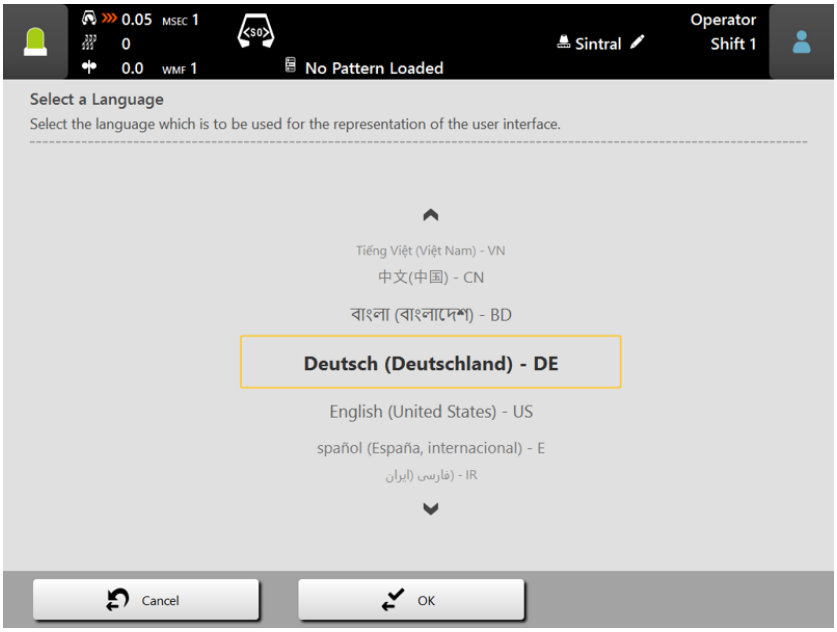


2. You can recognize the control boot at the progress bar.



3. The control carries out a configuration automatically.

4. The "Select a Language" menu appears.
   Select the language which is to be used for the representation of the user interface.



5. Confirm the entry with "OK".
6. If the "Produce Order" menu appears, then the "Warmstart" is finished.

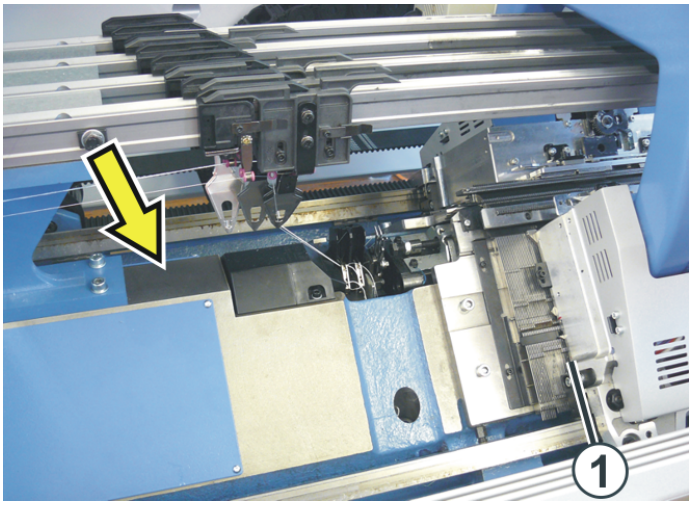
7.3.2 Aligning knitting machine

	**DANGER** **Danger by moving carriage!** Injuries by crushing or cutting possible. ➔ Close the covers.

Aligning knitting machine

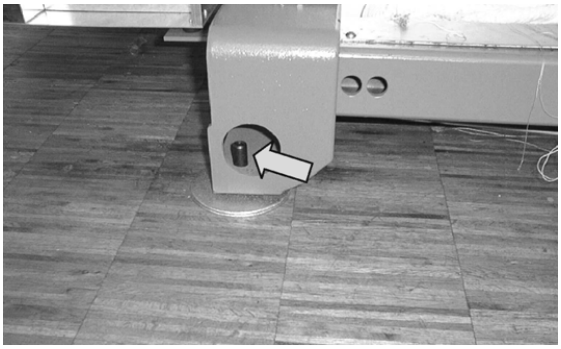
✓ The covers are closed.

1. Turn the engagement rod forward.
   ▷ The step motors are referenced automatically.
   The carriage moves with slower speed to the right.
2. If the left edge of the carriage (1) is within the needle bed, turn the engaging rod backwards.
   ▷ The carriage stops.
3. Open the covers.
4. Lay the spirit level on the support surface on the left-hand side of the needle bed.



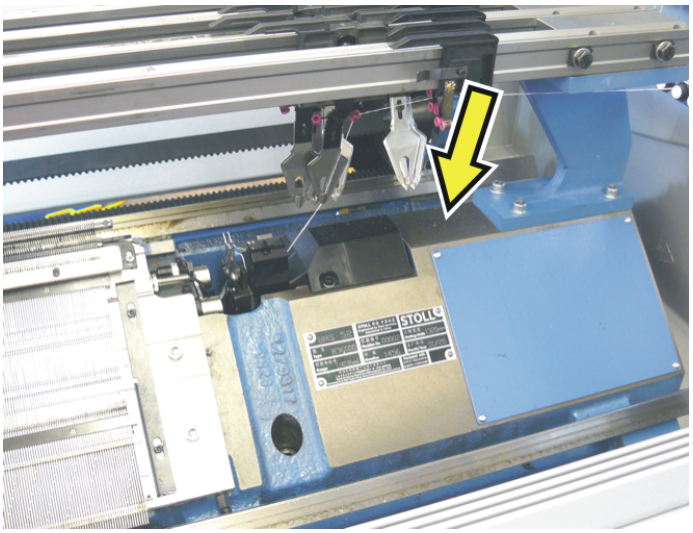
"Carriage in the needle bed" position (the covers were opened for a better overview)

5. Align the left-hand side of the knitting machine with the setscrews. Execute this at the front and rear of the machine. The setscrews for aligning are in the accessories of the machine.



Setscrews for aligning the machine

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



Right support surface for the spirit level

7. Align the right-hand side of the knitting machine with the setscrews. Execute this at the front and rear of the machine.
8. Check the setting for the left machine side.
   Repeat the steps 4 to 7 until no more correction is necessary.
9. Close the covers.
10. Turn the engagement rod forward.
    ▷ The carriage moves with slower speed to the right. The carriage returns outside the needle bed, it moves a short distance and stops. The engaging rod falls down.
11. The step motors and the racking are referenced automatically.
    ▷ The following message appear on the touch screen:
    Rear racking: Reference run finished

▶ The machine is ready to knit.
The carriage is positioned at the right position for you to be able to load a knitting program.

i	The accumulators must be completely loaded. Leave machine switched on for at least 6 hours.

7.4 Check the date and the time

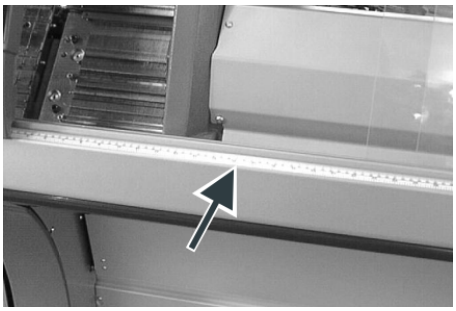
For doing this, proceed as follows:

1. Log in as "Senior Operator", PIN "2222"

2. Open the "Time and Language" menu.
   Path: Configure Machine -> System Settings -> Time and Language
3. Check date, time and the time zone.
4. Correct the data, if necessary.

7.5 Glue on measuring tape

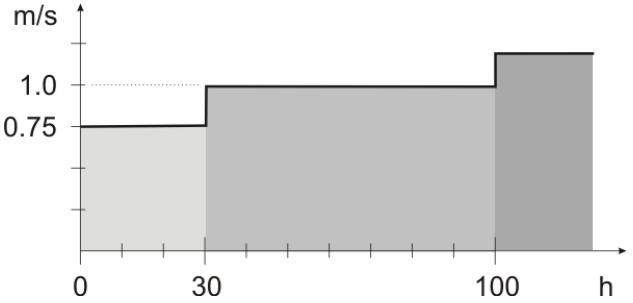
The measuring tape is used to check the fabric length on the machine. It can, for example, be glued on above the engaging rod. You will find the self-adhesive measuring tape in the accessories.



Gluing on the measuring tape

7.6 Reducing wear during running-in period

To guarantee an optimal initial setting-up of the machine, the carriage speed is to be limited in the first 100 operating hours.

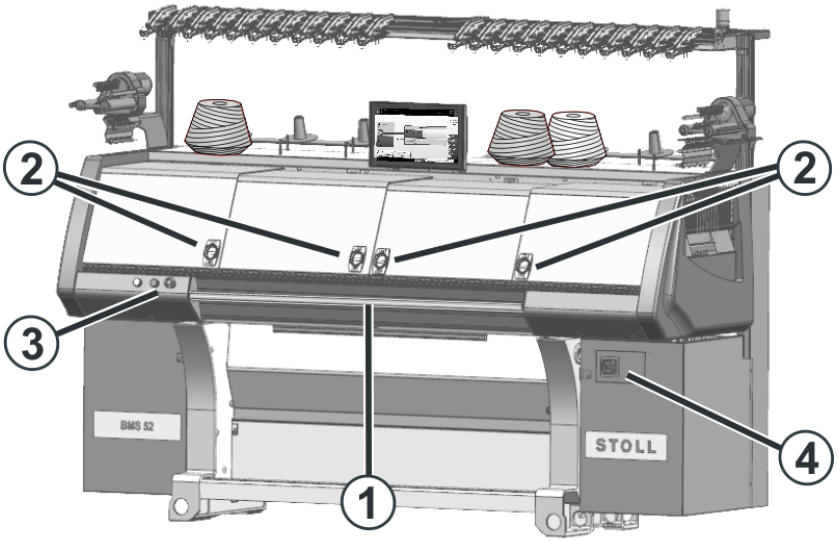


- 30 h: maximum carriage speed: 0.75 m/s
- 70 h: maximum carriage speed: 1.00 m/s

Thereby an optimal running of the machine will be reached, and the wear of the needle beds and the knitting systems will be reduced.

A corresponding message appears on the touch screen.

8 How to bring the carriage to an immediate standstill



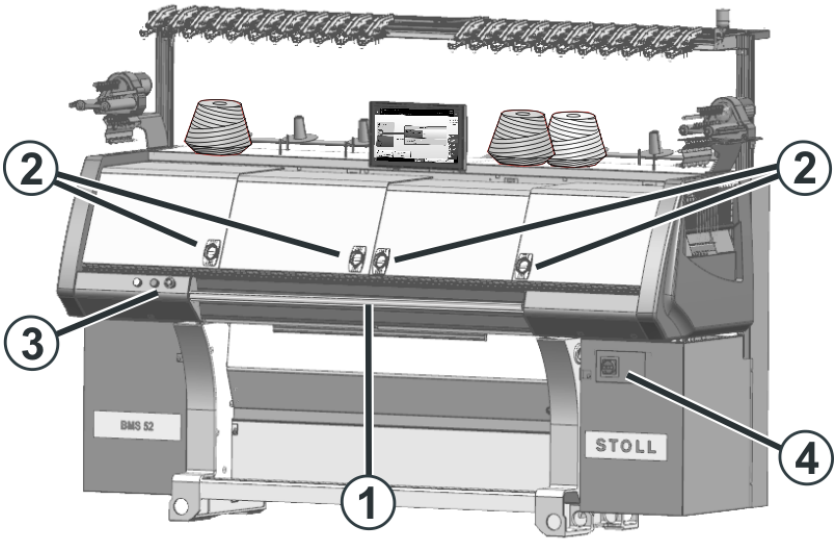
In order to stop the movement of the carriage immediately, carry out one of the following functions:

1. Turn the engagement rod (1) backwards (zero position).
2. Open covers (2).
3. Press the emergency stop pushbutton (3).
4. Switch off main switch (4).

9 Checking protective devices

Check the protective devices:

- at every shift change
- at least once a day



	**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
	◆ Turn the engagement rod forward and release it. The carriage starts moving. ◆ Turn the engagement rod backwards (zero position). The carriage must be stopped immediately.
Covers (2)	◆ Turn the engagement rod forward and release it. The carriage starts moving. ◆ Open cover. The carriage must be stopped immediately. ◆ Close cover anew. To confirm the error message, tap the following button:  ◆ Repeat this process for each cover.

Protective device	Checking
Emergency stop pushbutton (3)	◆ Turn the engagement rod forward and release it. The carriage starts moving. ◆ Press the emergency stop pushbutton. The carriage must be stopped immediately. The emergency stop pushbutton locks in the OFF position. ◆ Pull out the emergency stop pushbutton. ◆ To confirm the error message, tap the following button: 
Main switch (4), emergency switching-off switch	◆ Turn the engagement rod forward and release it. The carriage starts moving. ◆ Switch off the main switch / emergency switching-off switch (position "OFF"). The carriage must be stopped immediately. The machine must switch off automatically.

Documents about your knitting machine

You can find documents about your knitting machine in the STOLL customer network.

https://www.stoll.com/en/customer-net/