

STOLL

ASCAN

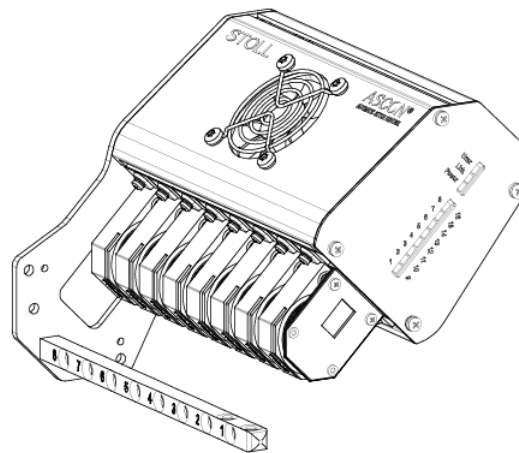


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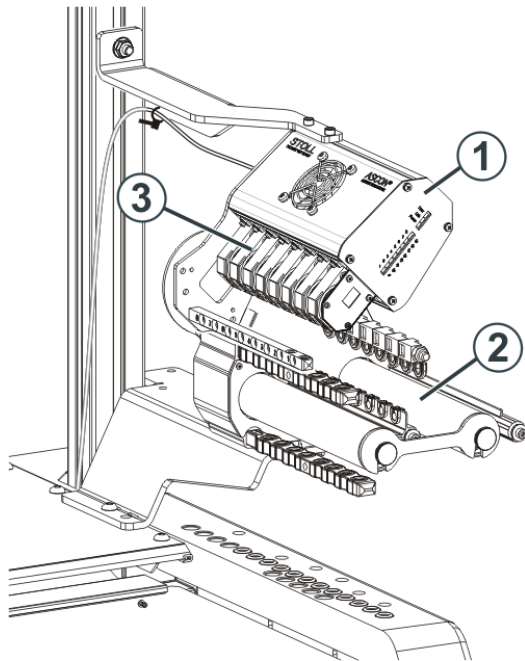
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1 Description of ASCON device

1.1 General description of ASCON device

The ASCON device is used to measure and control the yarn length that is processed on the knitting machine.



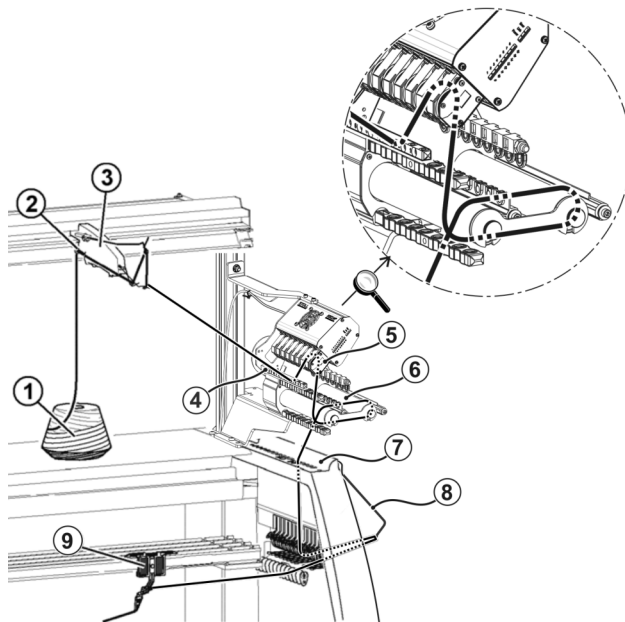
Knitting machine with ASCON device

1	ASCON device	3	Measuring Wheels
2	Friction feed wheel		

- A ASCON device (1) can be mounted on each machine side.
- Each ASCON device works always together with one friction feed wheel (2).
- The ASCON device is equipped with eight measuring wheels (3) with which the yarn for one yarn carrier each is led.

The ASCON device is connected to the control unit of the knitting machine. With the measured yarn length, the stitch length of the fabric can be corrected by adjusting the stitch cams. The thread runs via a measuring wheel, which detects the yarn length and passes it on to the computer. The computer compares the current value with the target value and corrects the stitch cam position if necessary.

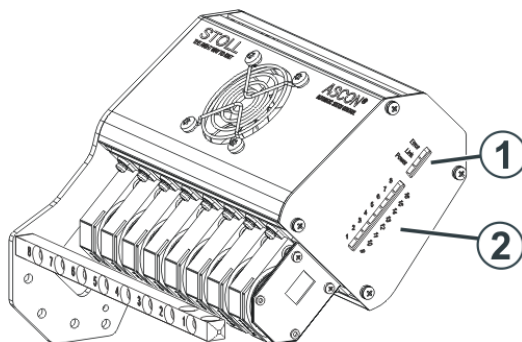
1.2 Thread routing with ASCON device



Course of yarn with ASCON device

1	Bobbin	6	Friction feed wheel
2	Yarn guide bracket	7	Safety door
3	Yarn control device	8	Lateral yarn tensioner
4	Yarn guide rod	9	ASCON device
5	Measuring wheel		

1.3 LEDs on the ASCON device



1	Operating status	Power	Power supply available
		Link	Data link OK
		Error	Connection to the computer of the knitting machine interrupted <ul style="list-style-type: none"> ◆ Take the message at the touch screen into account

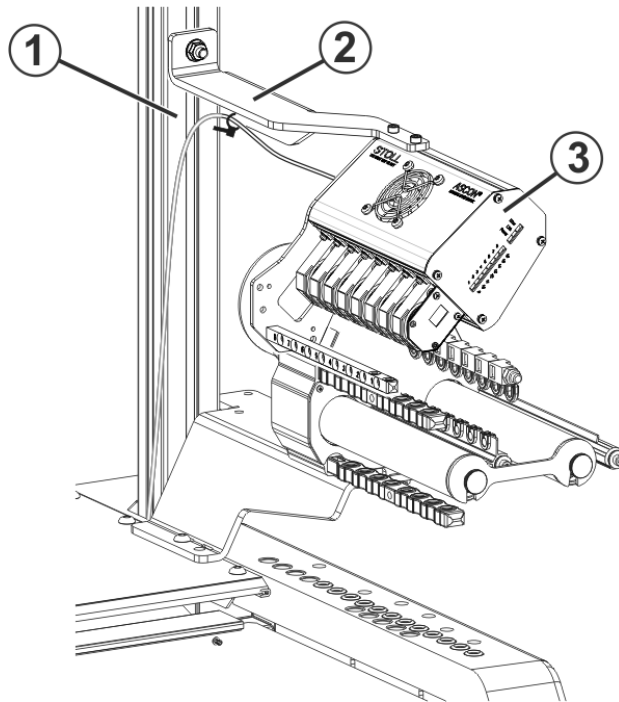
			<ul style="list-style-type: none"> ◆ Check cabling ◆ Switch the machine main switch off and on. ◆ i: During the installation of the operating system, it is possible that the LED glows. This is not an error. When the installation is complete, the LED will go out.
2	Display of the measuring wheel, which is working	Measuring wheel 1-8 (right device) or Measuring wheel 9-16 (left device)	

2 Assembly

This chapter contains information on:

2.1 Mounting the ASCON Device

If only one ASCON device is to be mounted, it is mounted on the right support (1).



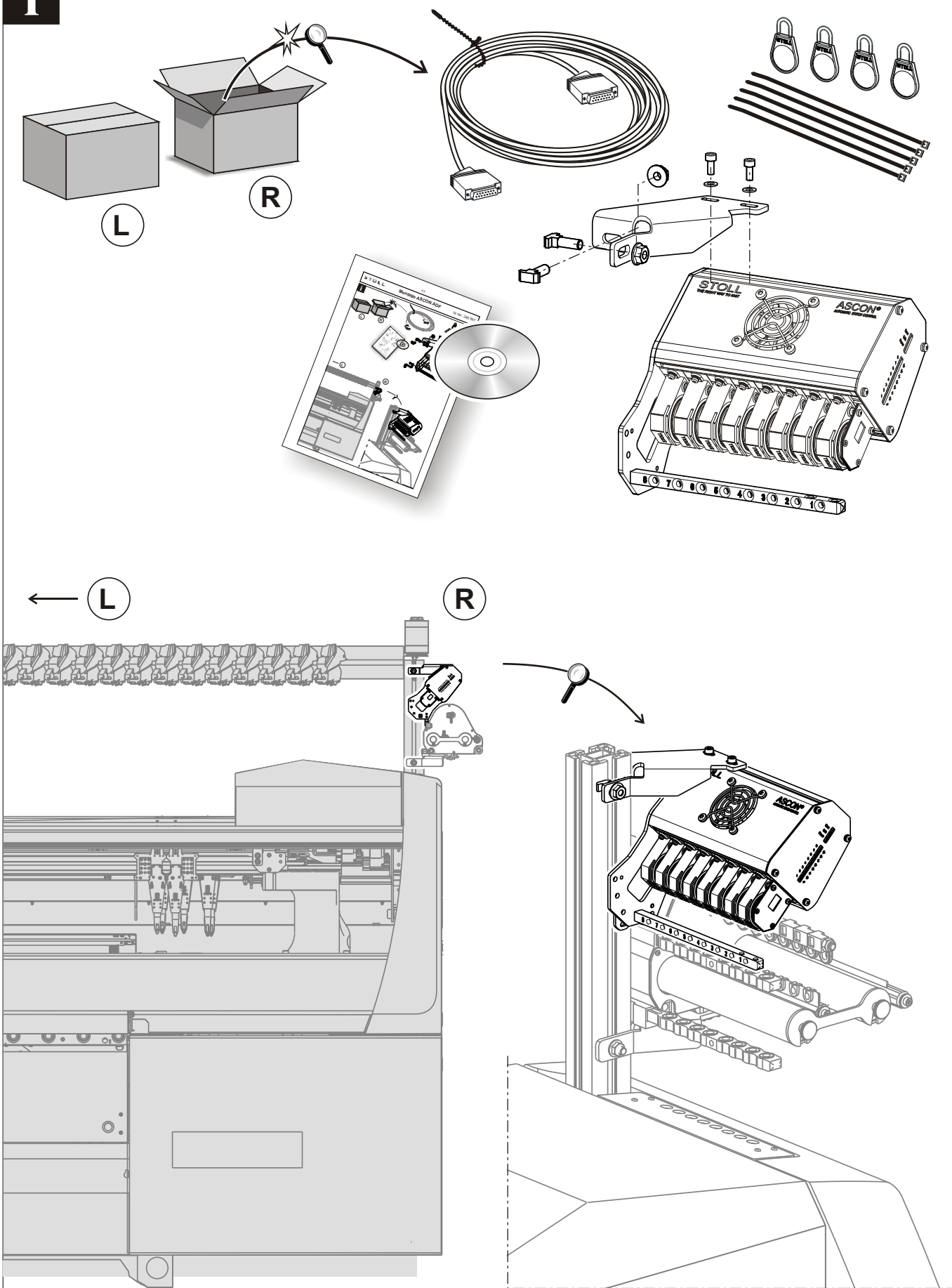
Mounting of the ASCON device

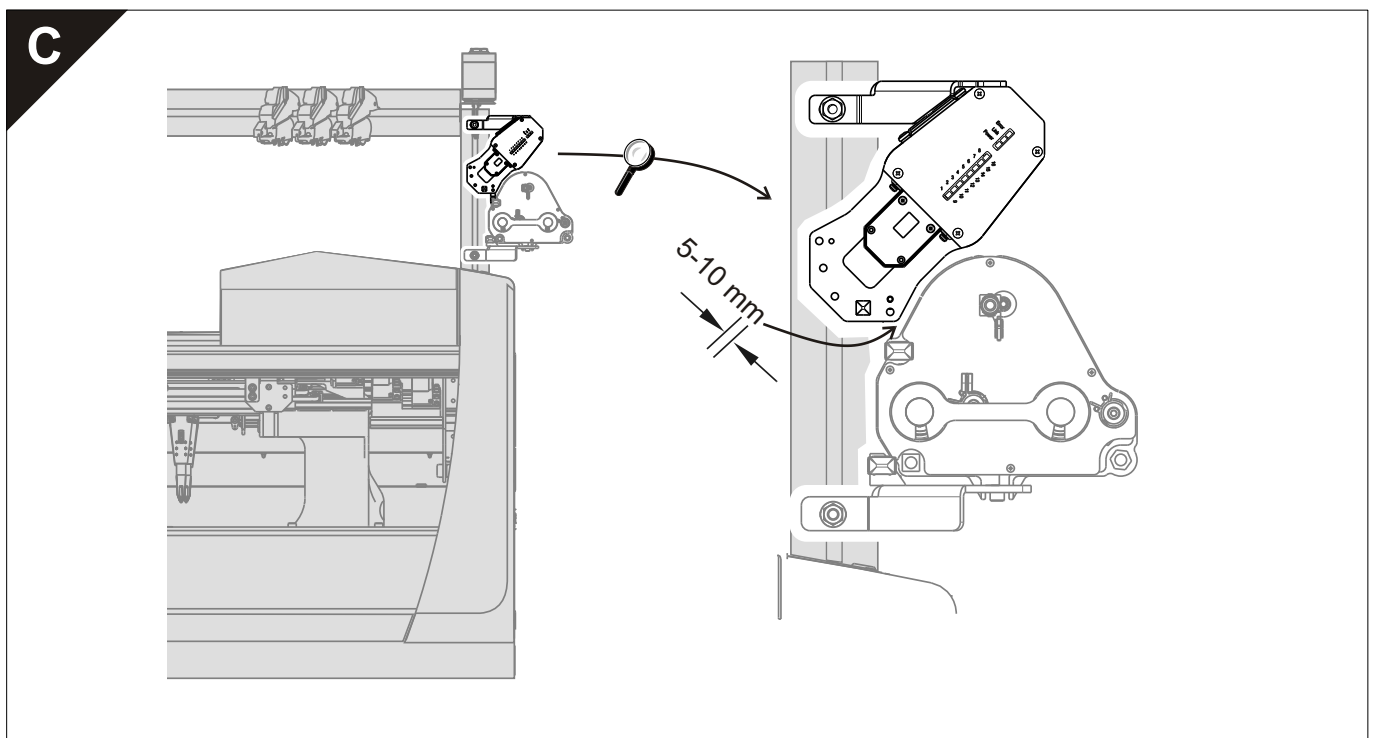
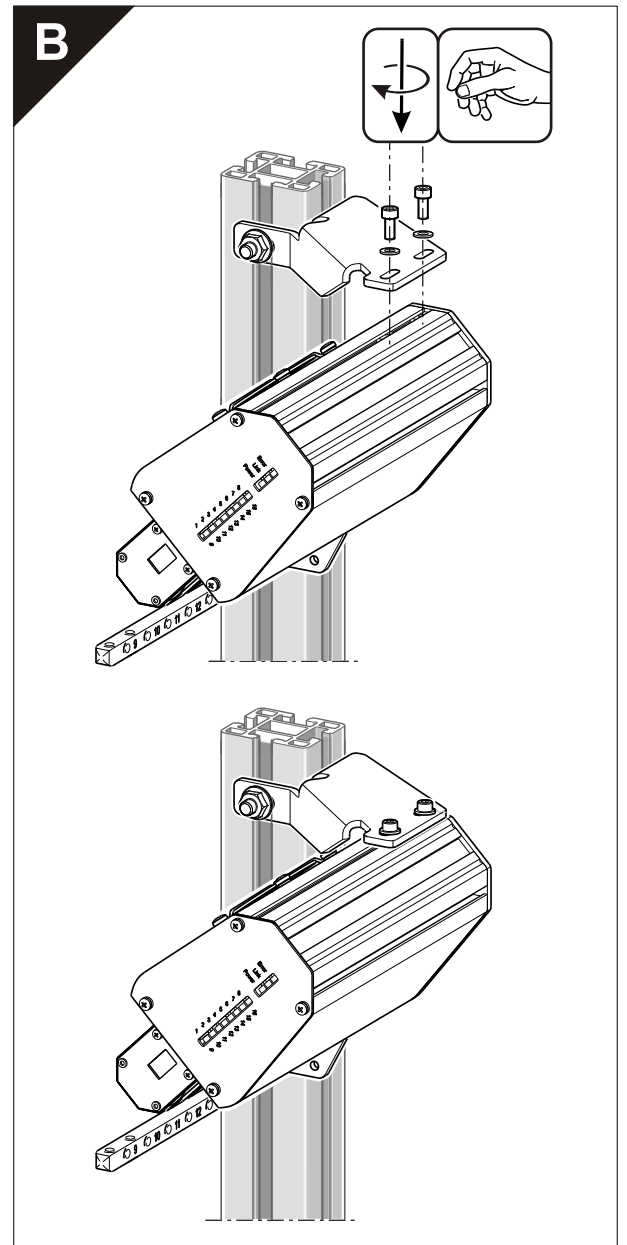
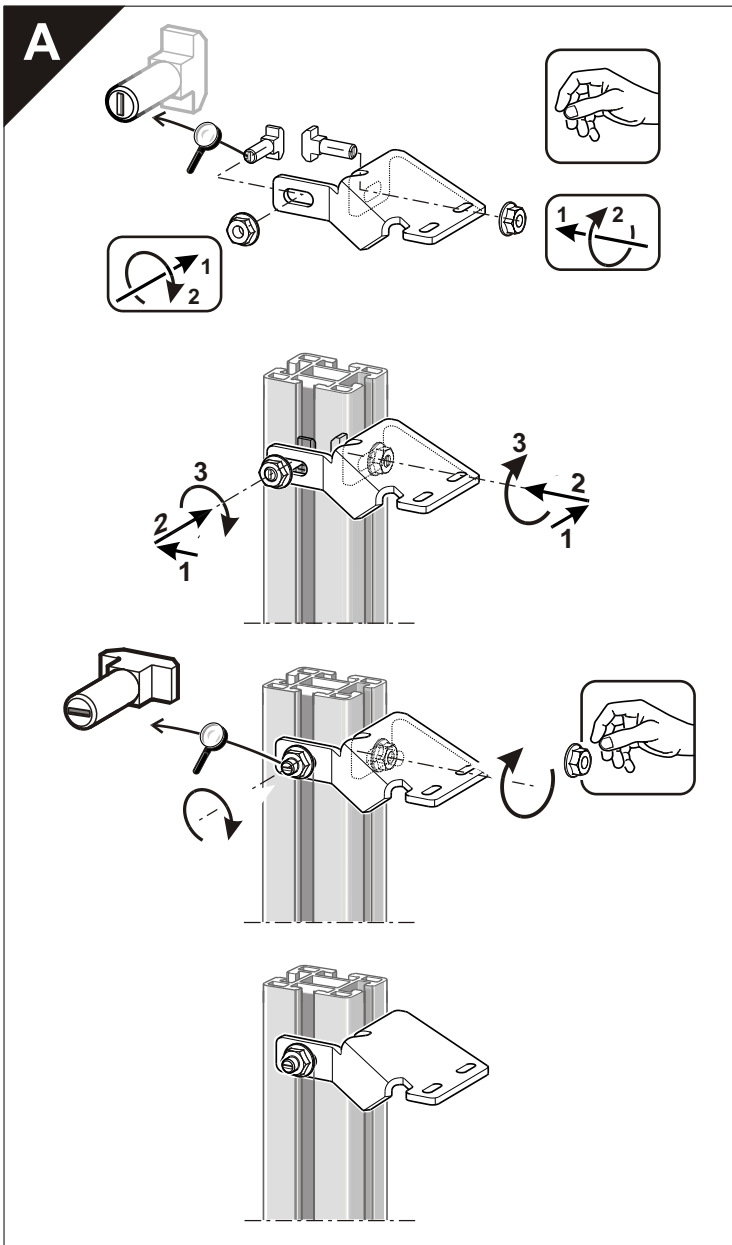
A second ASCON device is mounted on the left support.

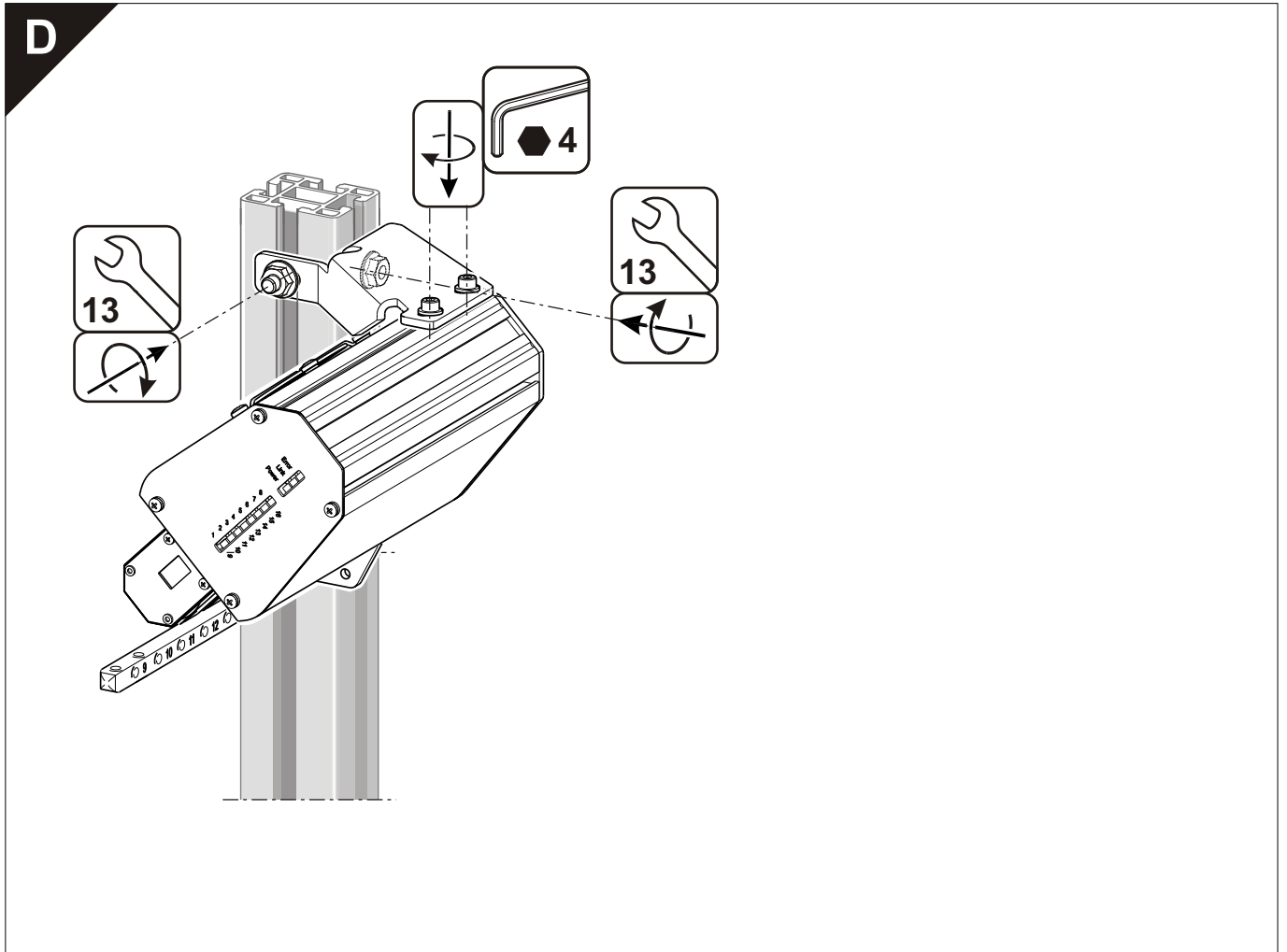
Mounting the ASCON device:

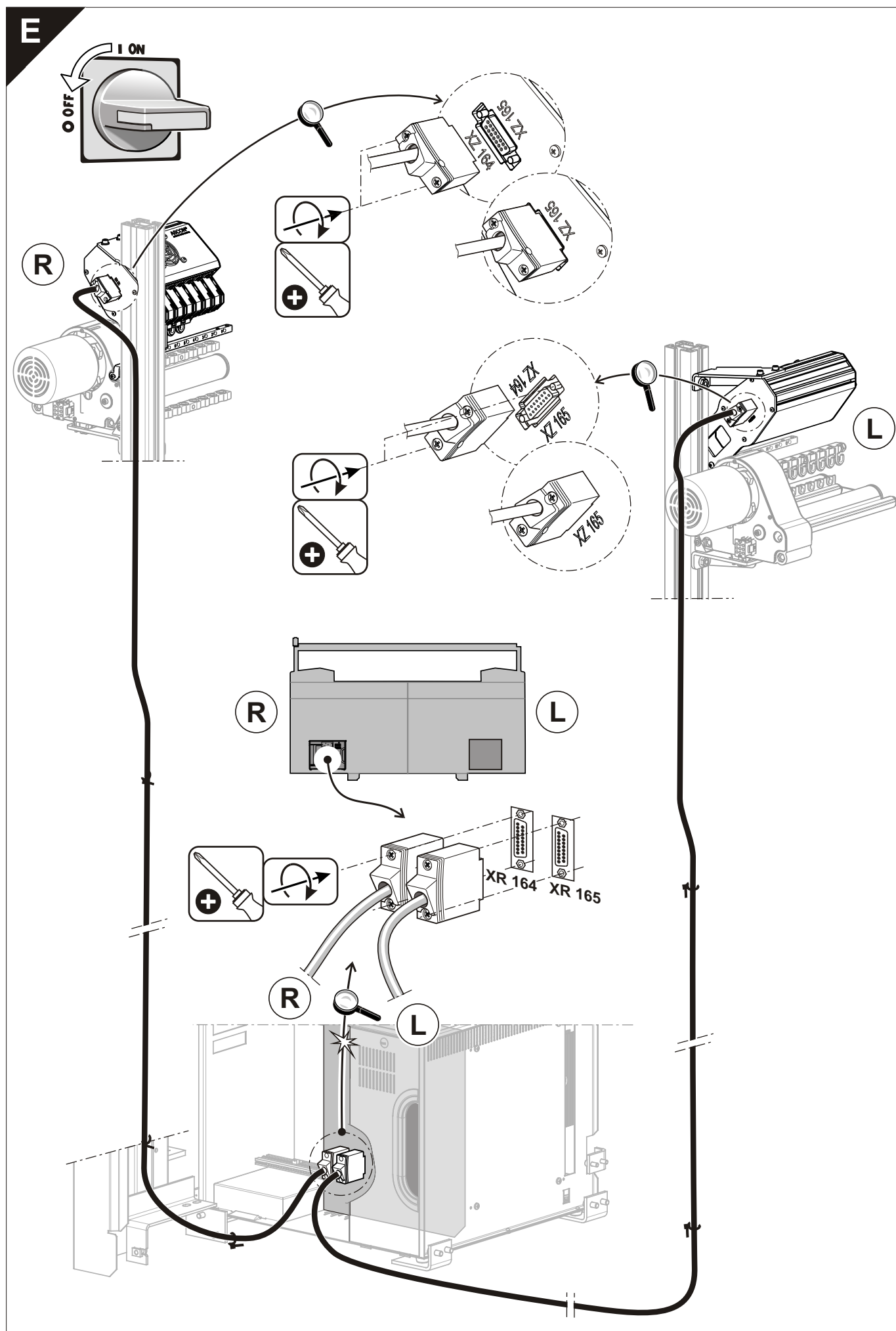
1. Position the support (2) on the bolts of support (1).
2. The distance between the bobbin board and the holder is about 45 cm.
3. Tighten the screw on support (1).
4. Fasten the ASCON device (3) on the bracket (2).
 - CMS \geq 08/2013 ID 266069 [▢ 18]
 - CMS \leq 08/2013 ID 259381 [▢ 21]
 - ADF \geq 06/2017 ID 265567_01 [▢ 10]
 - ADF \leq 05/2017 ID 265 567_00 [▢ 14]

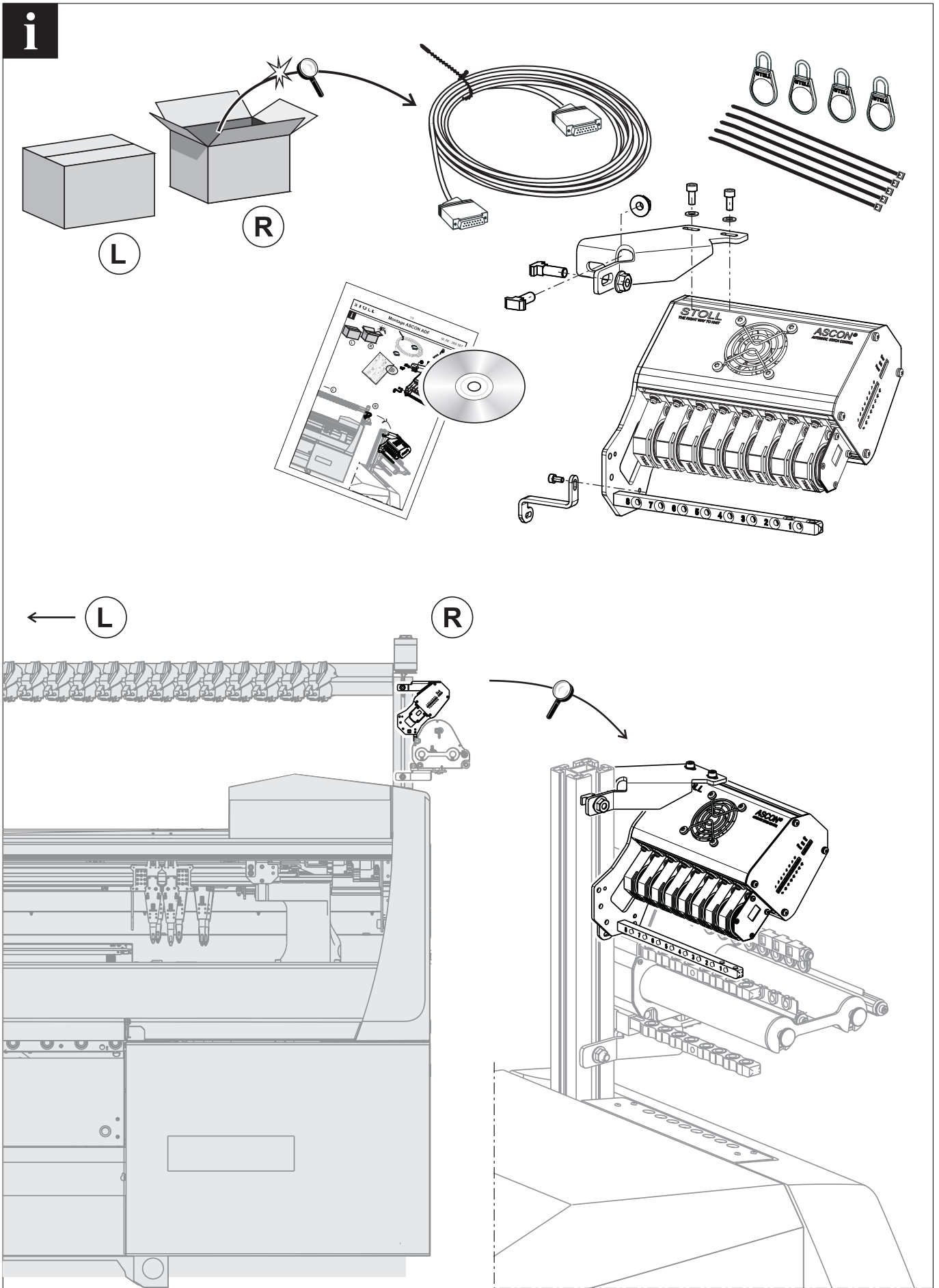
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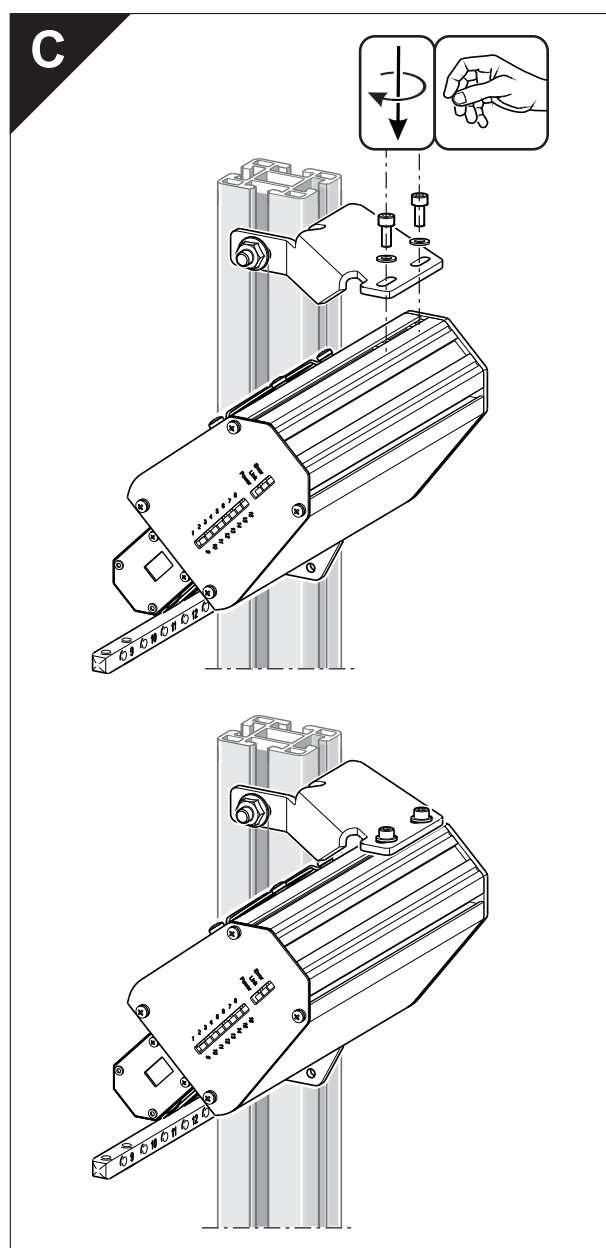
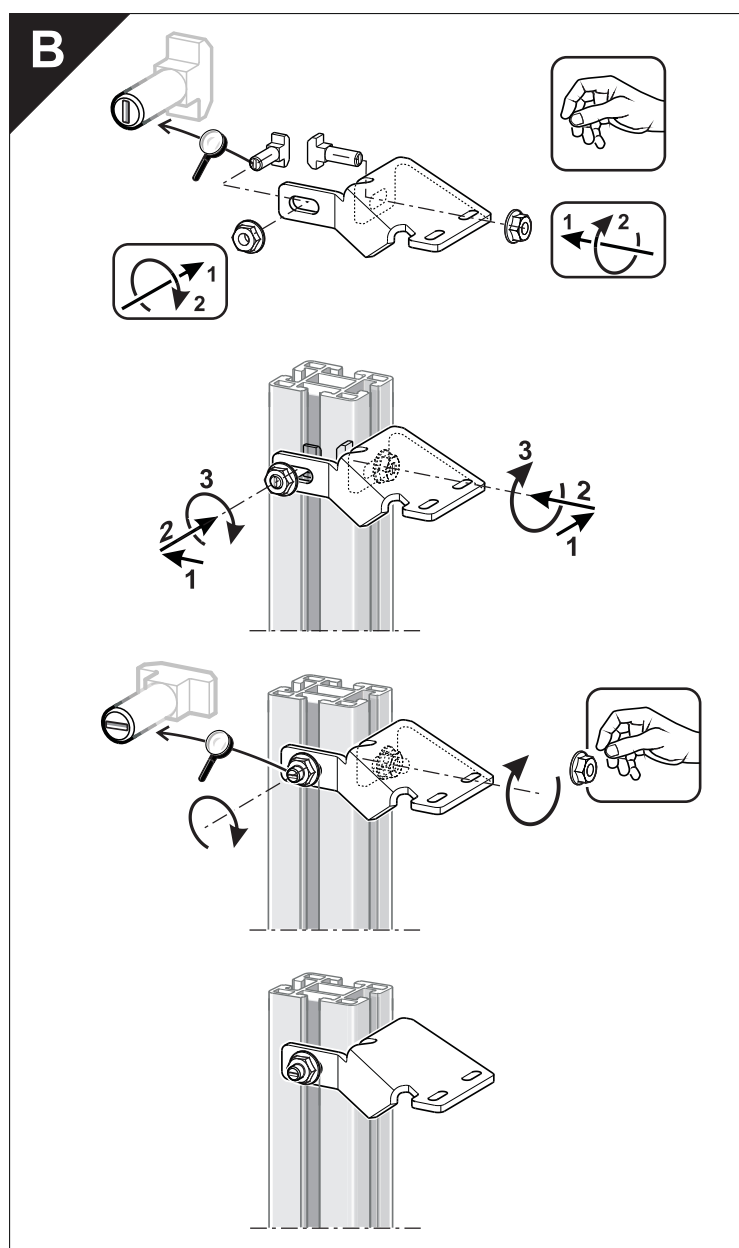
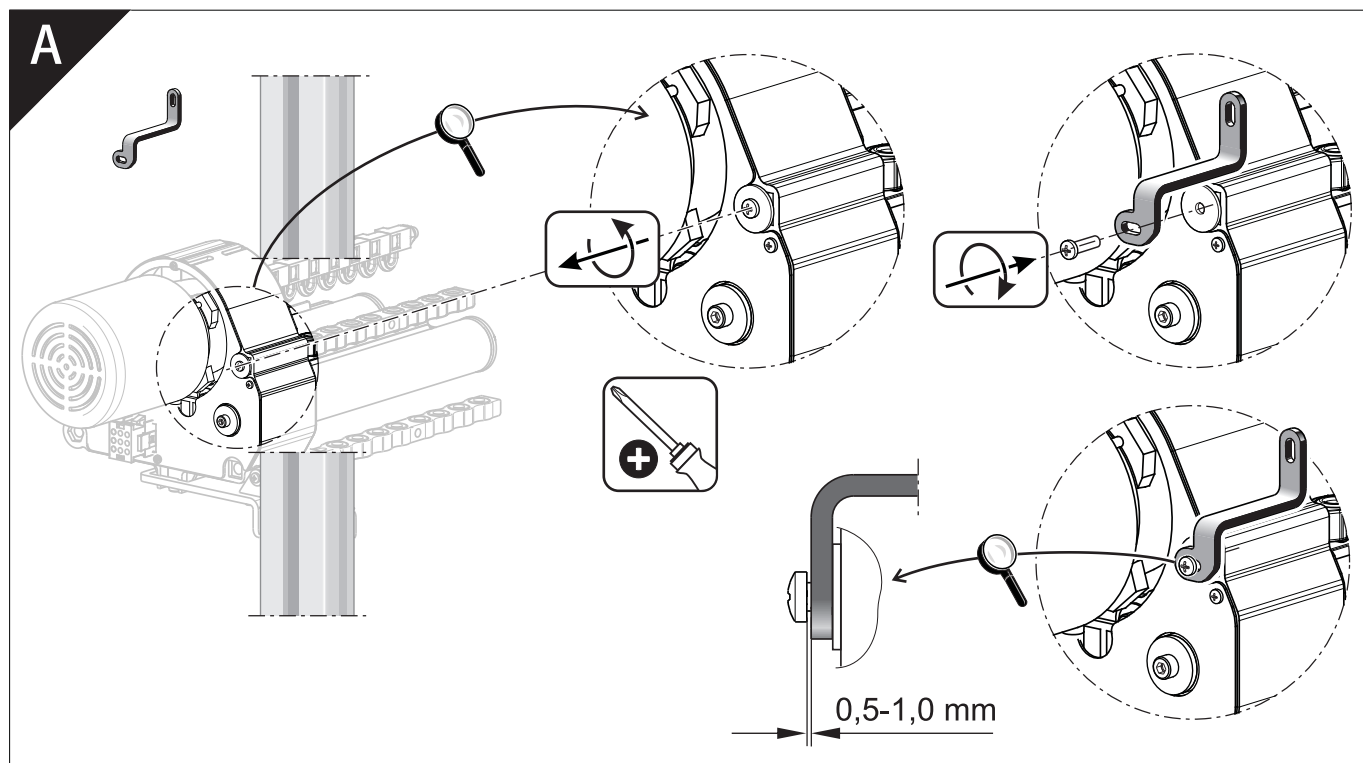


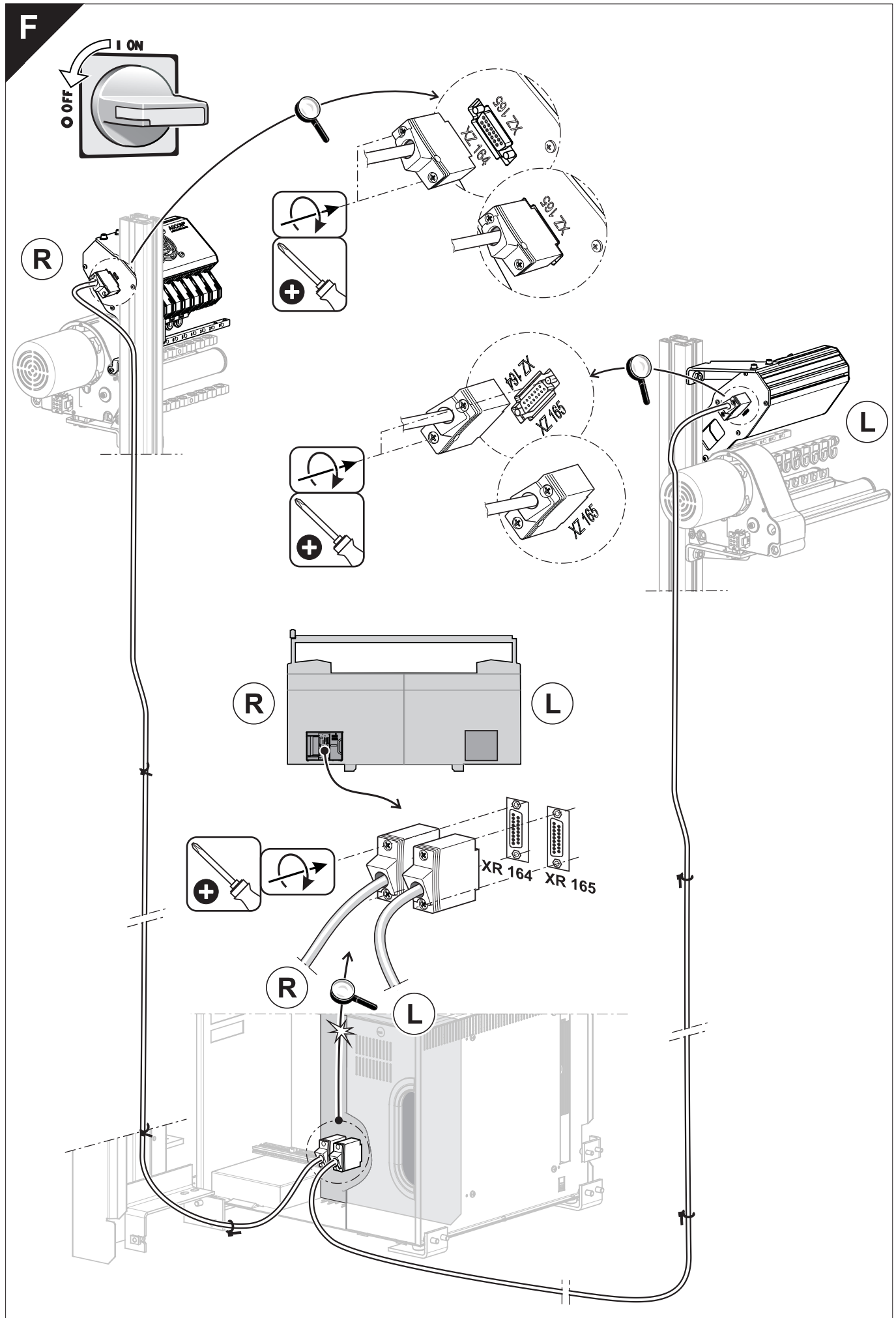




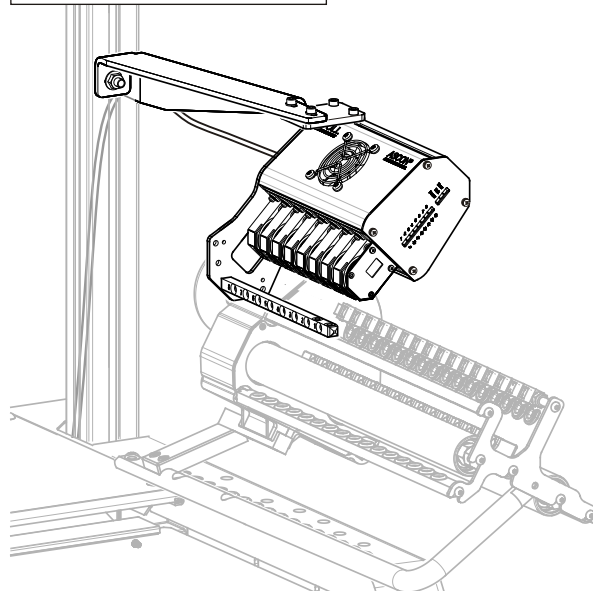
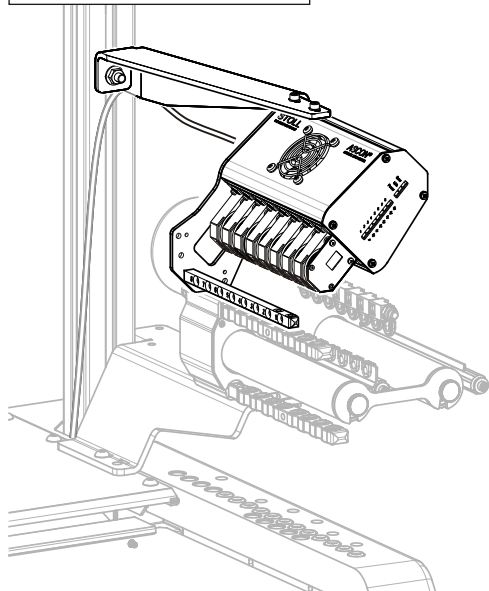
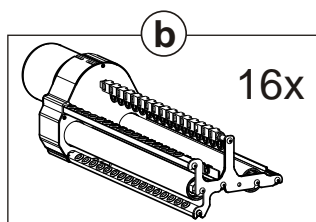
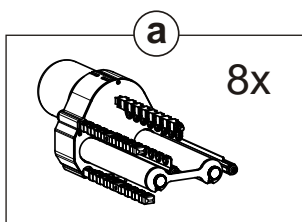
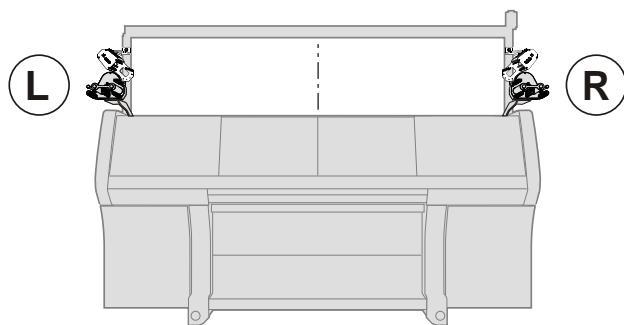
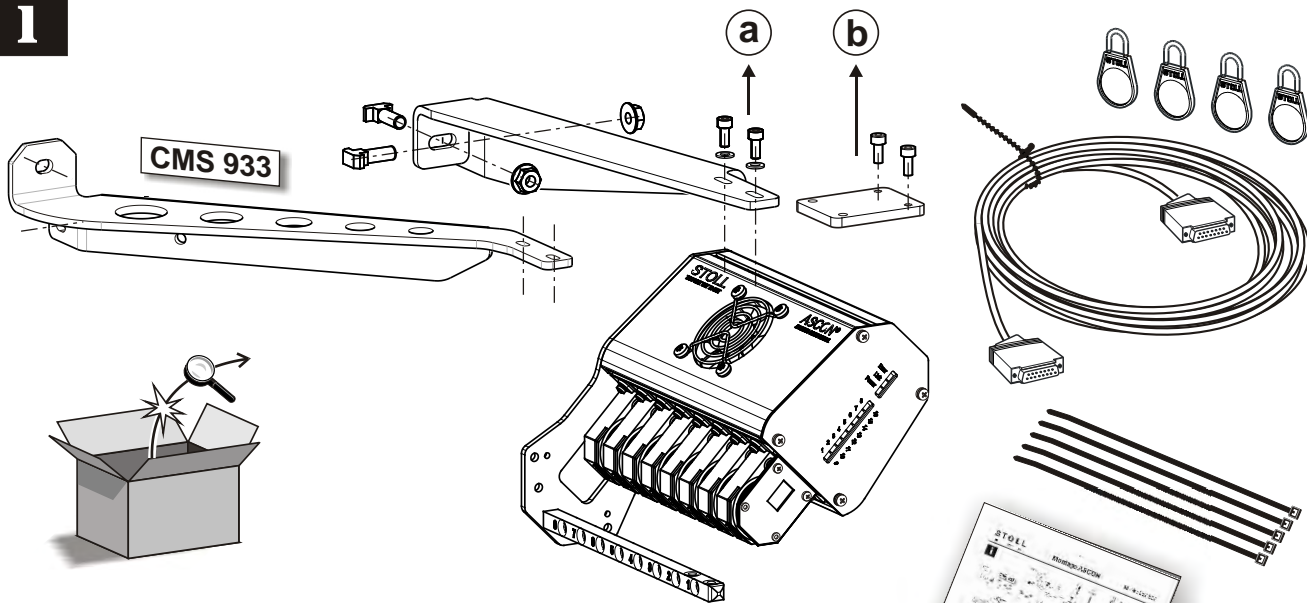


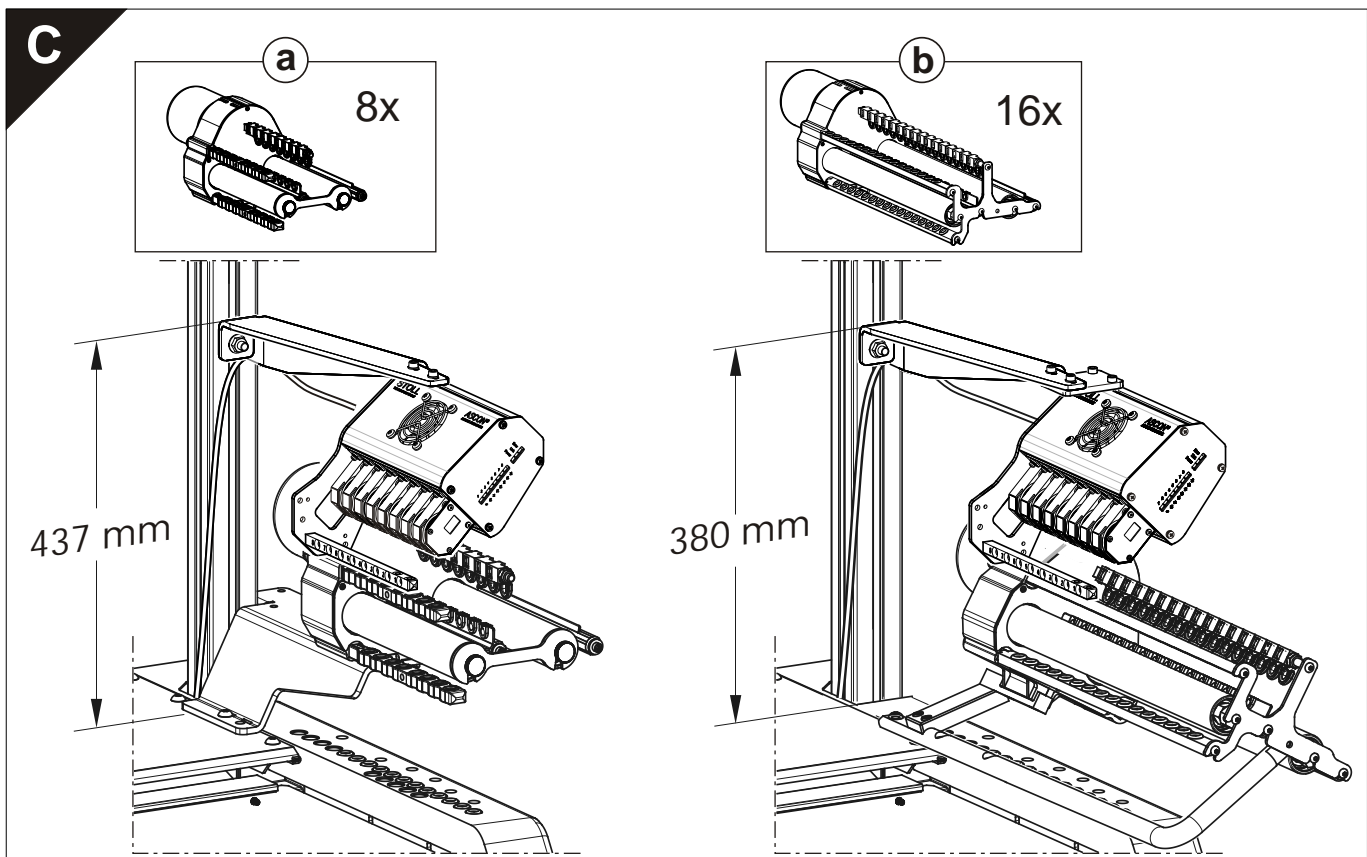
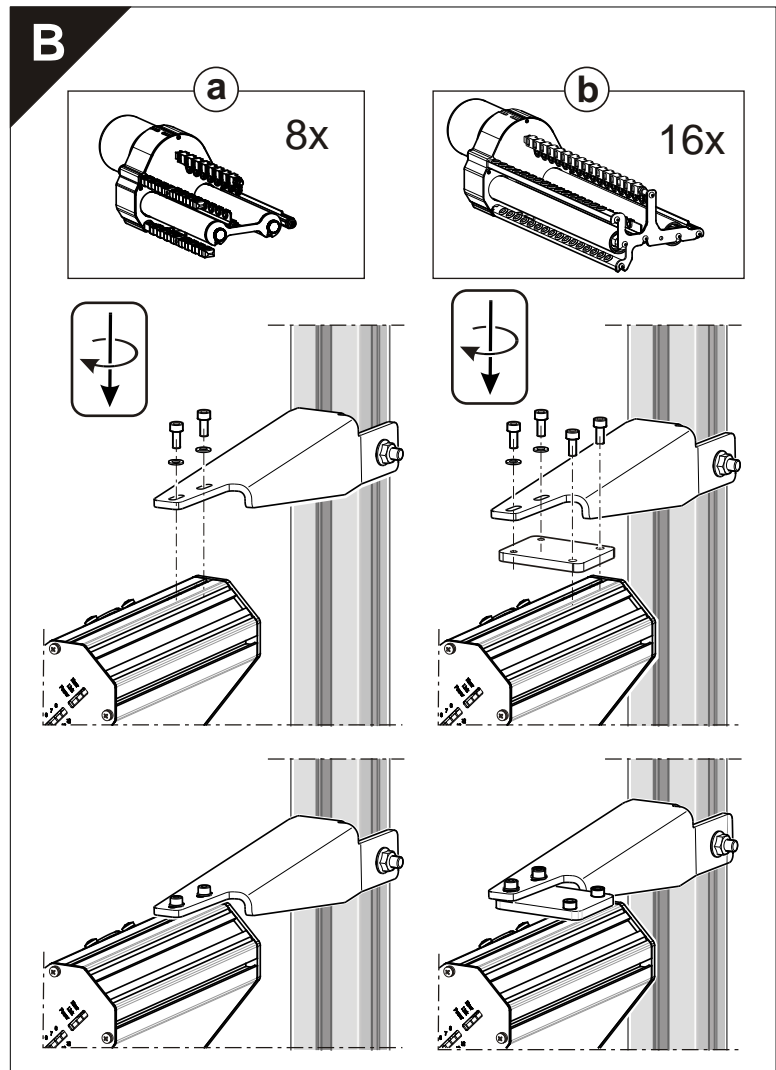
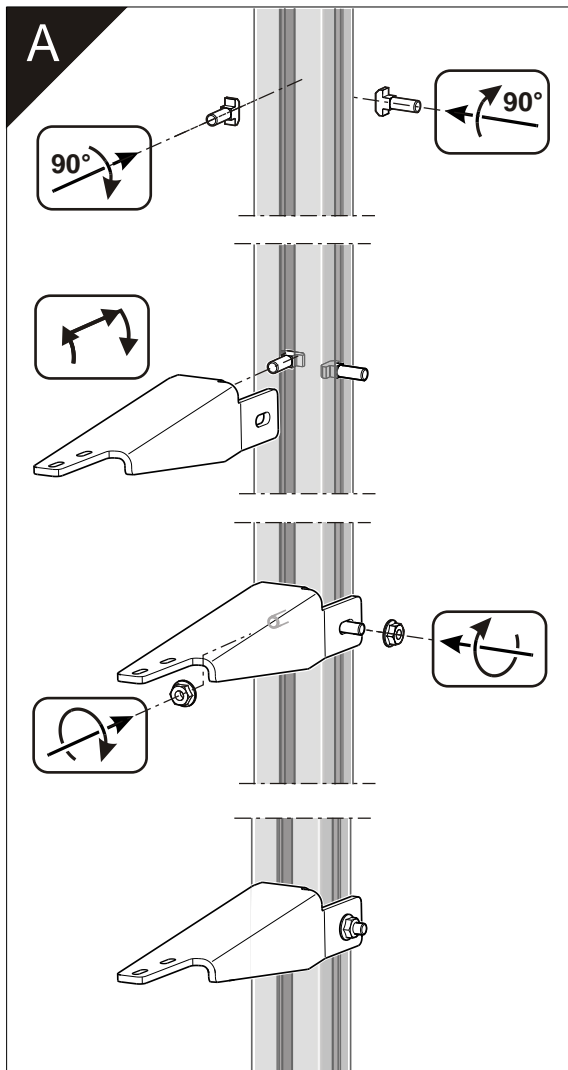


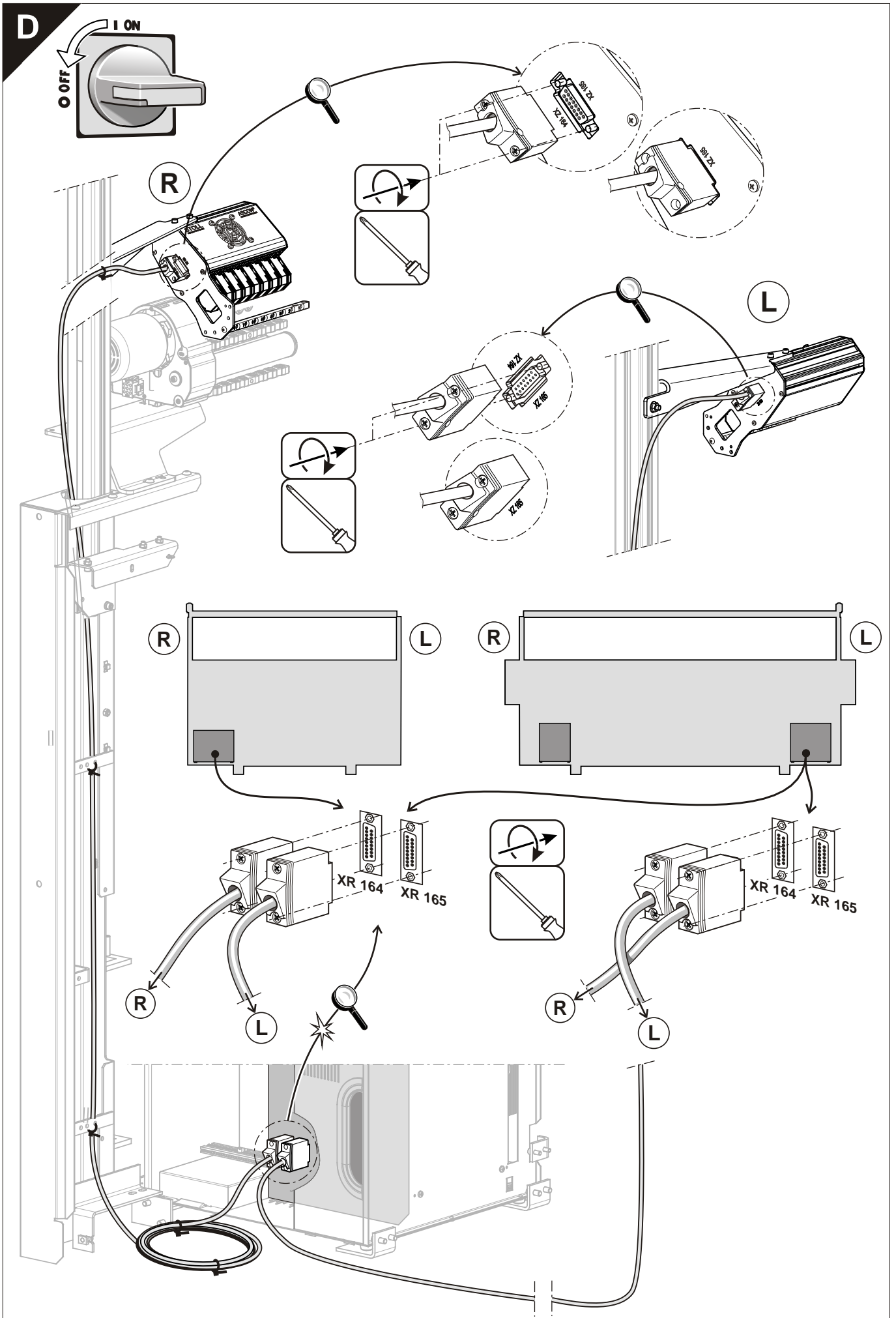




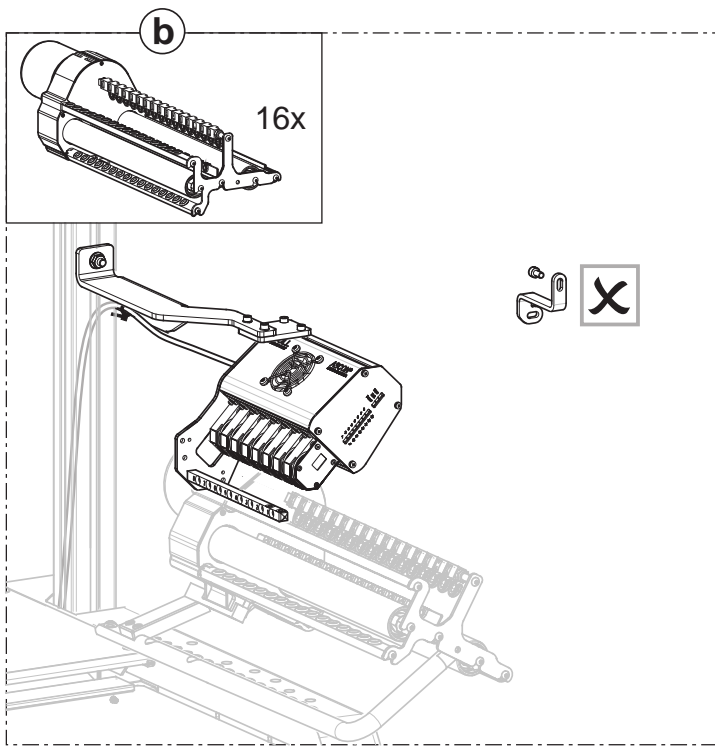
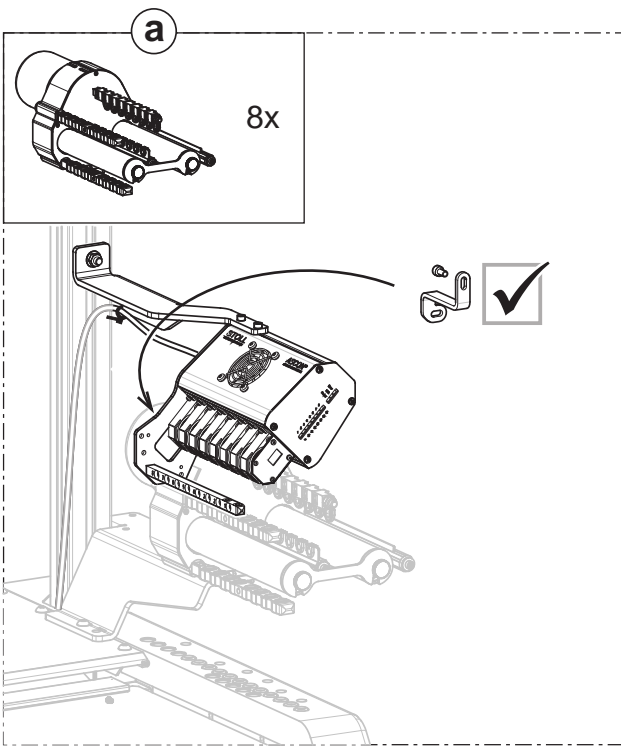
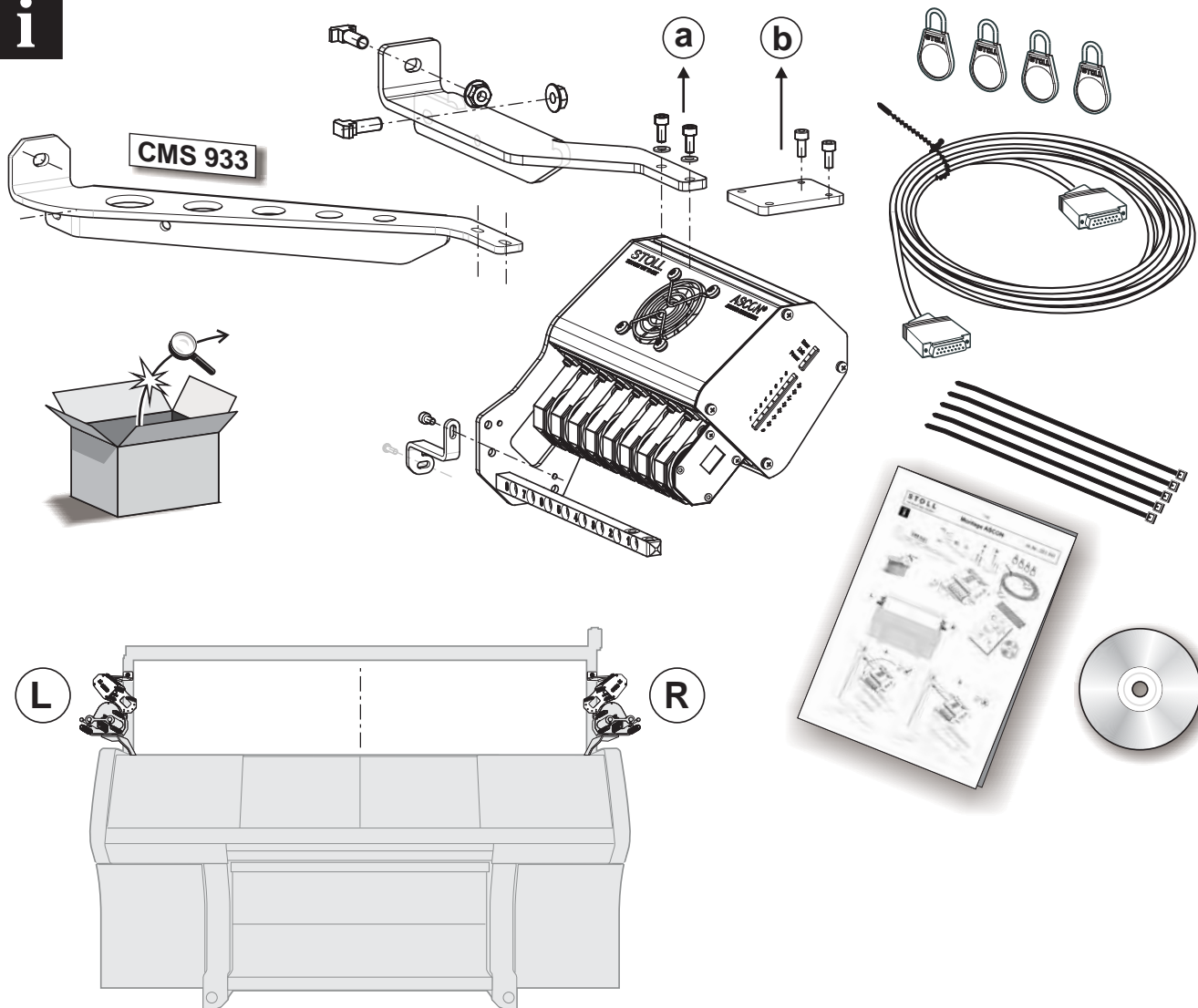
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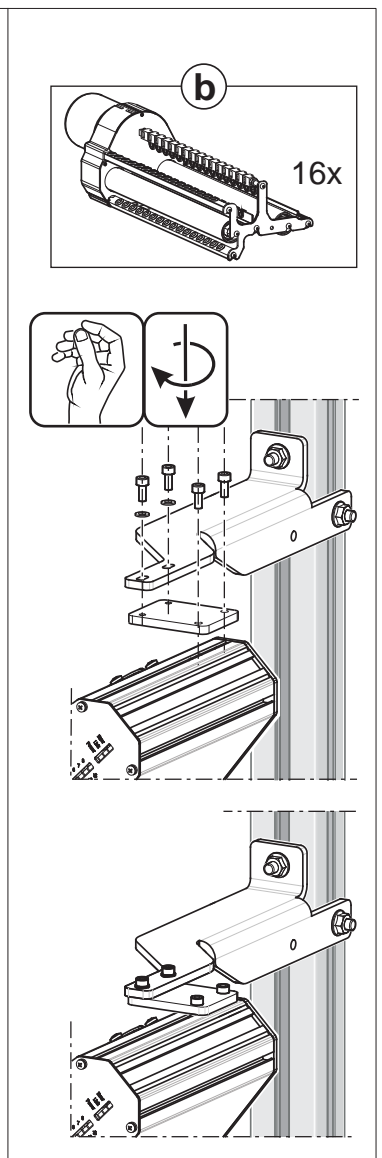
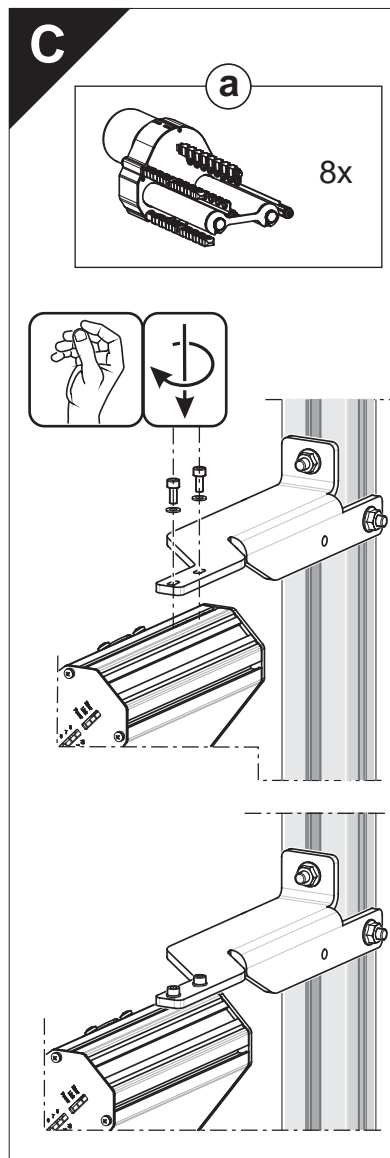
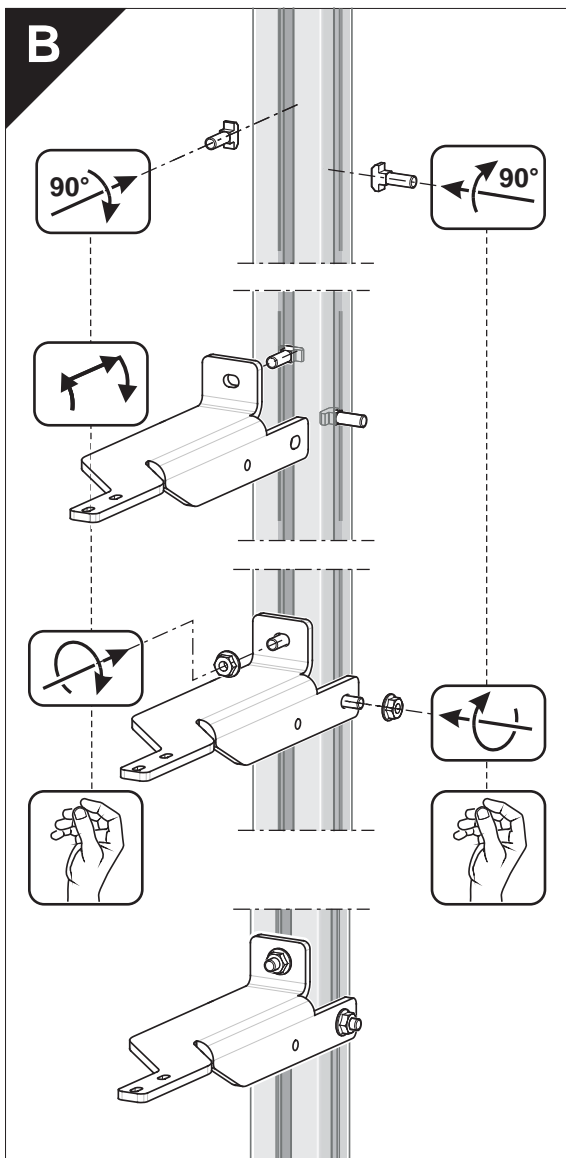
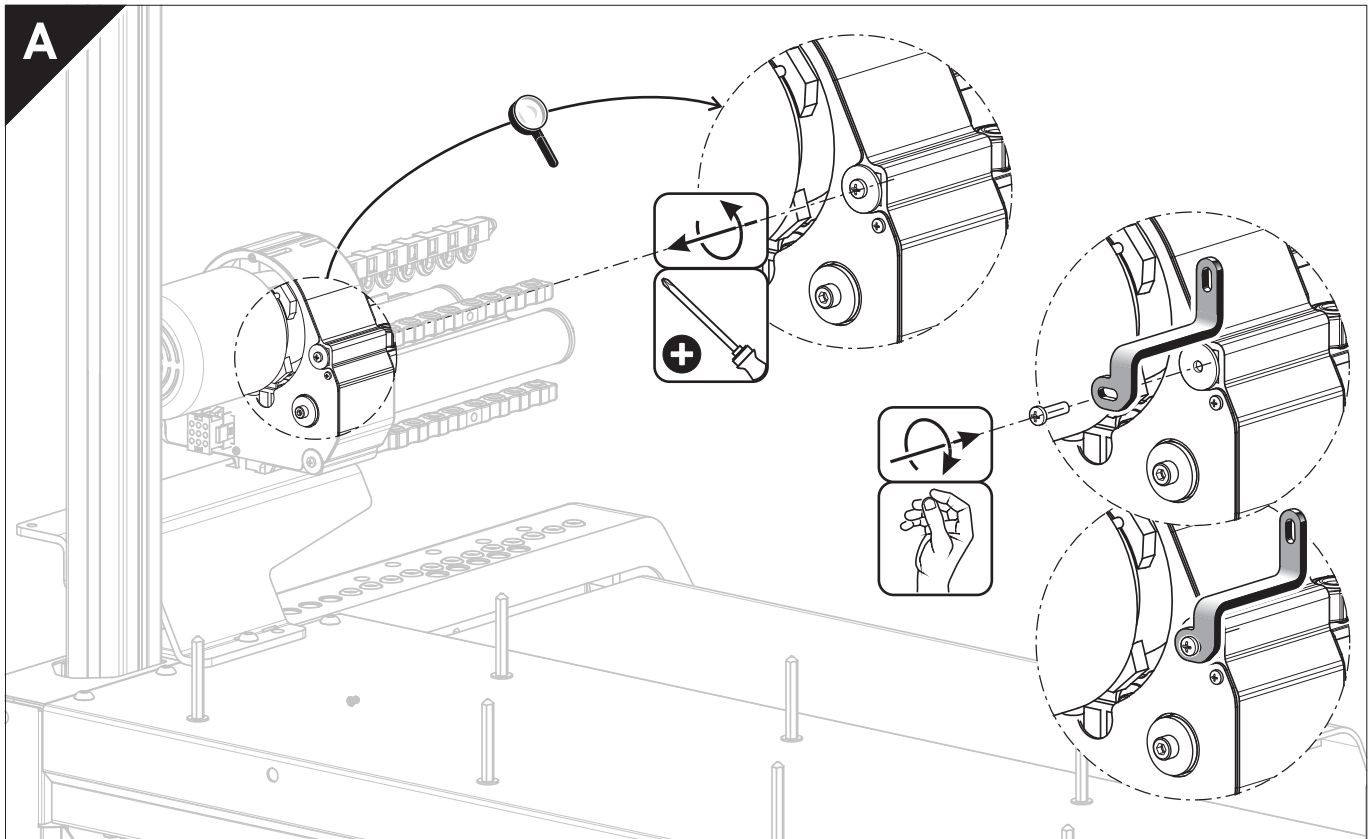


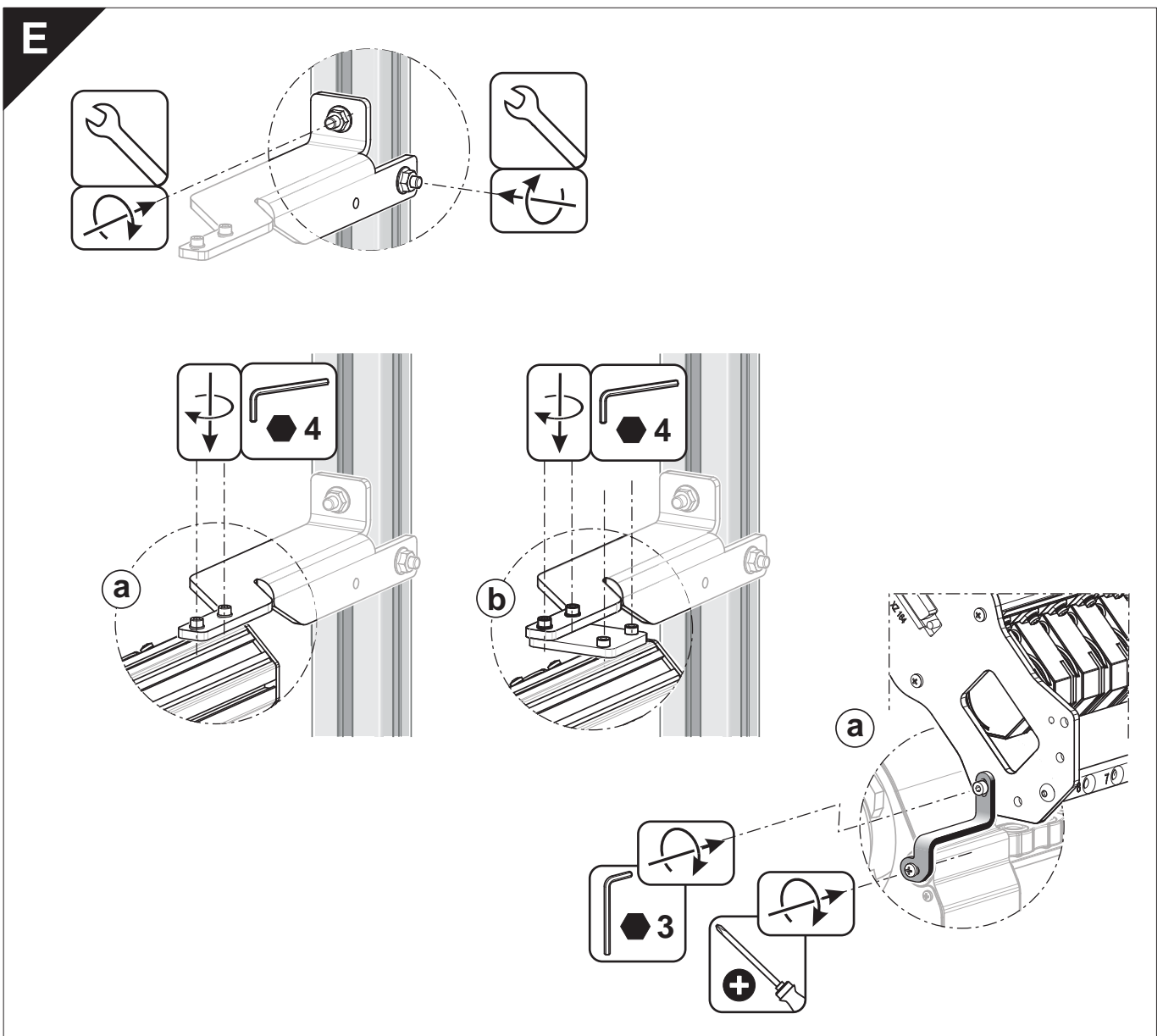
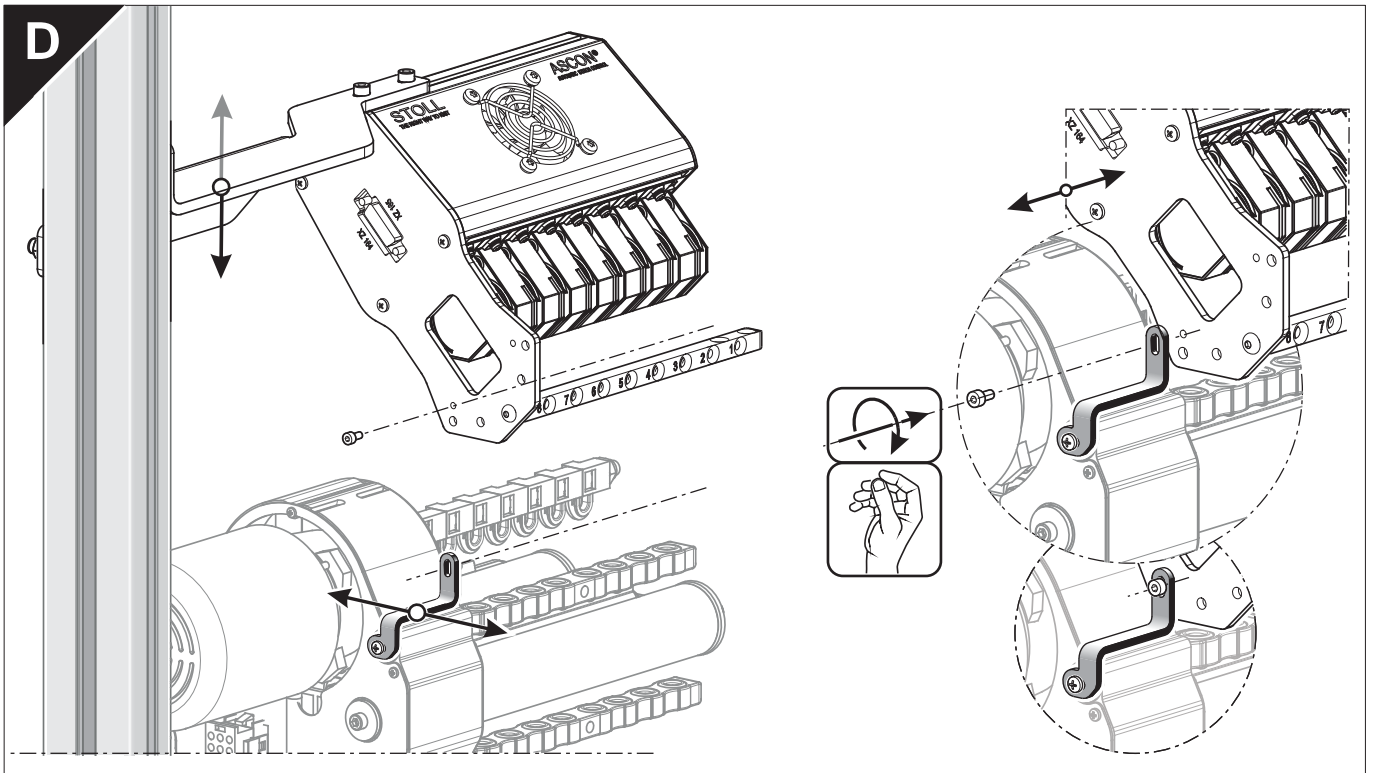


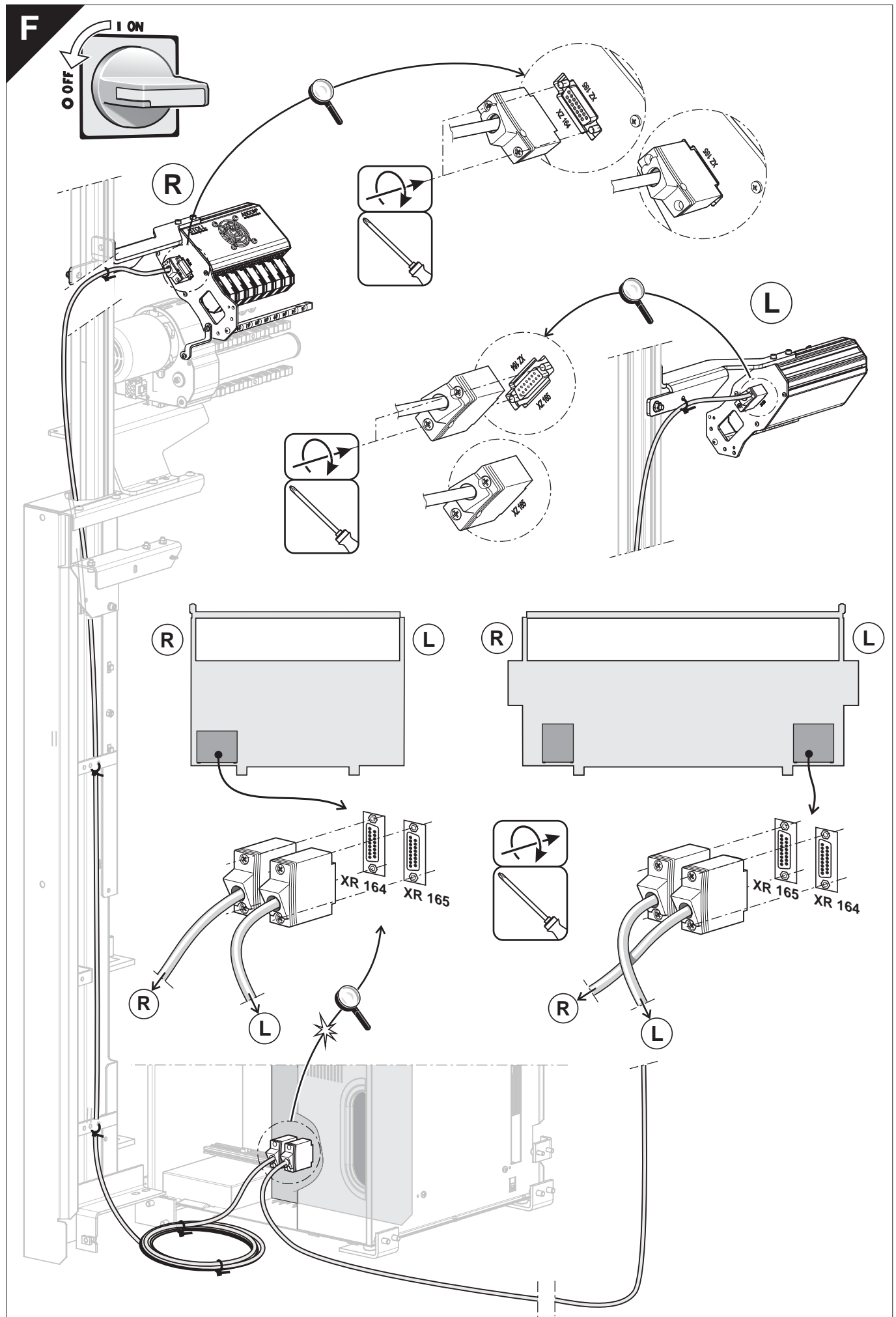


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3 Preliminary Work

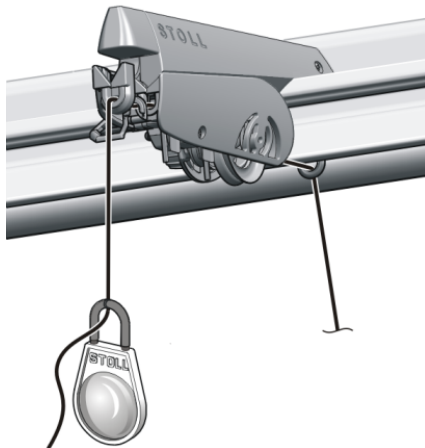
This chapter contains information on:

- Log on ASCON device [▢ 78]
- LEDs on the ASCON device [▢ 6]
- Switch off yarn length control [▢ 50]

3.1 Adjusting yarn control device

The minimum tension of 8 cN must be set on the yarn control unit, so that the ASCON device can operate correctly.

1. Thread in the thread up to the end of the yarn control unit.
2. Clamp the yarn end in the coil spring of the adjustment weight.



Adjustment weight

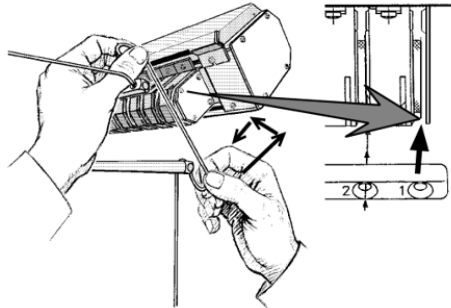
3. If the weight pulls down the thread, close the yarn brake until the weight stops.
 - ▷ The yarn tension is 8 cN.
For a thin, smooth yarn this yarn tension can be too low.
4. Remedy: hook-in two adjusting weights in the yarn and repeat point 3.
 - ▶ The yarn tension is 16 cN.
If this yarn tension is too high, reduce the adjustment step by step on the yarn control unit.



Adjust all the yarn control units precisely, as the yarn tension considerably influences the measuring.

Thread the yarns through the ASCON device so that they do not cross each other.

3.2 Threading thread through ASCON device



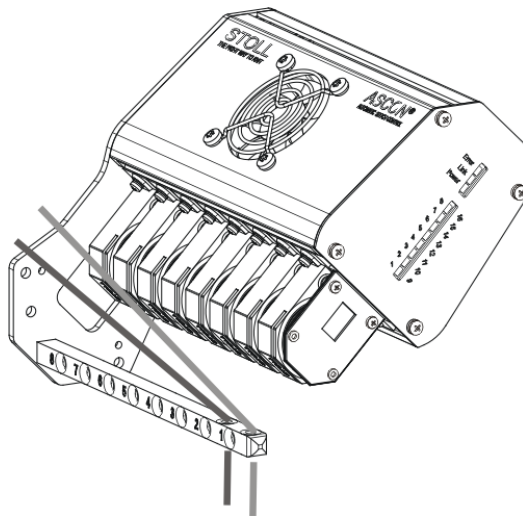
Path of the thread through the ASCON device

→ Push thread upward with both hands through the threading gap and lay it around the measuring wheel.

i Thread the yarns through the ASCON device so that they do not cross each other.

Positioning the comb and draw thread

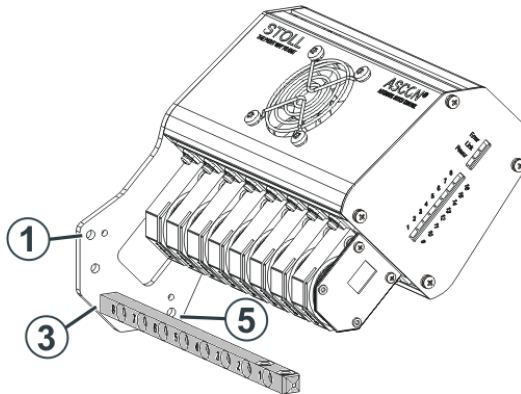
We recommend to position the comb and draw thread on the very end of the bobbin board. Thread-up these threads through the upper eyelets at the yarn guide rod and guide them to the lateral safety door.



This way you avoid that the threads, which are thread-in in the ASCON device, cross the comb and draw thread.

Changing winding angle

You can mount the yarn guide rod in 5 positions, from position (1) (smallest winding angle) up to position (5) (largest winding angle). Position (3) - standard setting.



If you enlarge the winding angle, the friction of the thread at the measuring wheel is increased. This way you avoid that a thin, smooth thread slides-through at the measuring wheel.

4 How to Use the Yarn Length Control

4.1 Conceptual Considerations

Consider and plan the use of yarn length control even before creating the pattern. Some points about the right operating mode:

Working with mm

- The right operating mode in most of cases
- With common characteristics of a collection, a group of patterns or of an order as:
 - Yarns
 - Knitting Modes
 - Gauges
 - Machine types
- With sets of sizes and same articles in different colors
- With a low quantity of pieces of the individual fabric pieces
- Working with mm (millimeters) [▢ 36]

Working with original fabric

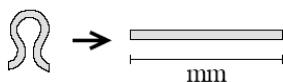
- For special cases
 - Narrow fabric pieces
 - Complex structures in the fabric piece
Example: Aran with cable
 - Special request concerning the stitch appearance in individual areas
 - Separate fabric piece of high quantity
- Working with original fabric (YLC-MP Master Piece) [▢ 42]

Creating the Knitting Program

Then note the following points when creating all knitting programs according to your decisions.

Here as example "Working with mm":

- With yarn length control right from the start
- With the right operating mode "Working with mm"
- With stitch lengths in millimeters



- With unique combinations of NP indices for the front and rear needle bed in the characteristic areas
 - Yarn in common
 - Knitting mode in common

Provide Yarn Length Control in the knitting program

- Unique combination of NP indices (NP5 + NP6)
- All knitting programs
 - of one article
 - of one order
 - of one set of sizes
 - of one collection
- Standardized assignment of yarns to yarn carriers and measuring wheels
- Import the determined basic conditions to all M1plus patterns in order to get them contained in the relevant knitting programs.

Knit the fabric piece as sample and determine the basic conditions

The determination of the basic conditions is required for importing this data into all the M1plus patterns.

4.2 Provide Yarn Length Control in the knitting program

The yarn length control can be use on the machine without specifications in the knitting program.



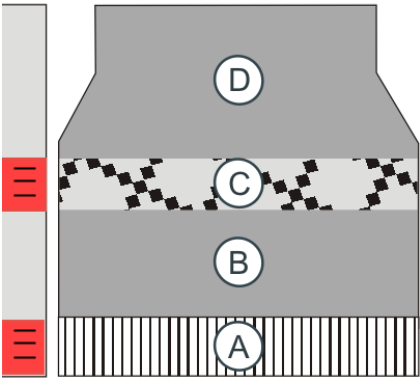
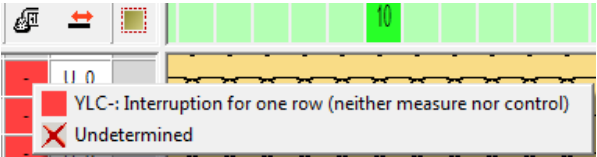
Nevertheless, it may be reasonable to provide the yarn length control on the M1plus.

- If there are areas to be excluded
- If specifications referring the operating mode, measuring wheel allocation and the correction values are to be made

4.2.1 Enter the YLC command on the M1plus


In the Setup Editor you can select the operating mode and change it without having to change anything in the Sintral.

Therefore, keep the "Undetermined" mode (keep default) in the control column for the B and D areas

	 "Yarn Length Control" control column
	D "Undetermined", keep default
	C YLC-: Enter interruption for one row (neither measure nor control) 
	B "Undetermined", keep default A Exclude the start from the yarn length control in the "Configuration / Knitting Areas" dialog box. <input checked="" type="checkbox"/> No measuring within the start

i: If an YLC error message appears in each fabric always at the same place (for example "YLC Yarn error"), you can deactivate the YLC control for this knitting row.
Example: Area C

Enter the YLC command:

1. Display the "Yarn length control" control column 
 2. Select the desired entry in the context menu.
 3. Enter the selection in the desired area.
- The M1plus marks the beginning and the end of the area by "YLC(-" (start) and "YLC-)" (end).

Yarn length control within the fabric start

We recommend not to control the fabric start when:

- if more than 16 yarn carriers are needed for the fabric start and the pattern.
- the fabric start and the pattern will be knitted with the same yarn carriers.
 - Reason:
In most of the cases the fabric start and the pattern have different knitting modes (start: double jersey , pattern: single jersey).
Different correction values are effective for these two knitting modes. If you use the same yarn carriers for the fabric start and the pattern (measuring wheel), this is often visible since the yarn length measuring device needs several knitting rows until a constant new correction value is determined.
 - Remedy:
Use other yarn carriers for the fabric start.
 - If this is not possible, we recommend not to control the fabric start.
Exclude the start from the yarn length control in the "Configuration / Knitting Areas" dialog box. "No measuring within the start"

4.2.2 Configure measuring wheels

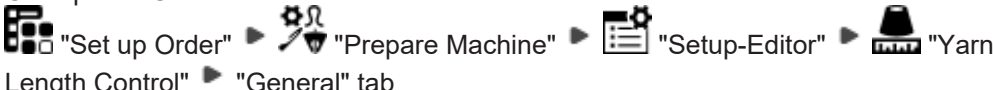
Define this items for the measuring wheels in use:

- Measuring wheel
- Yarn Carriers
- Yarn data (optional)
- Correction values (optional)






With this program point you specify, which measuring wheel works together with which yarn carrier and which yarn thickness is used.

i Take care of a standardized assignment of yarns to yarn carriers and measuring wheels! Assign "yarn carrier, measuring wheel and yarn" to each other already on the M1plus in order to get these data into the Setup file.

Configure measuring wheels on EKC:

1. Call up the "General" tab.

 2. Select the yarn carrier to be assigned to the respective measuring wheel in column Y.
 3. Call up the "Correction values" tab.
 4. Set the value for "Maximal deviation from target value per knitting row" "Correction %:".
 Default = 15 %
 If this value is exceeded when determining the correction values, the machine will stop automatically and an error message appears.
- The measuring wheels are configured.

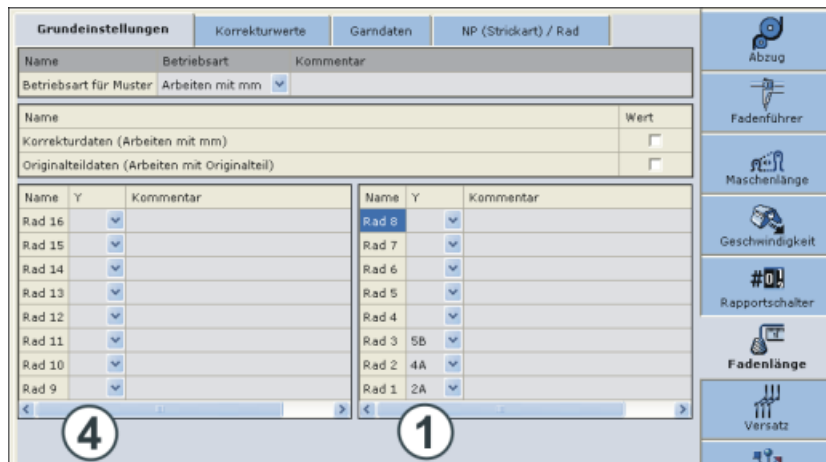
i All assigned yarn carriers must be entered in the YG line of the knitting program.

Key	Function
	Call up the "Yarn Length Control"
	Call up the Setup2 editor
	Confirm entries
	return to the "Yarn Length Control" window
	Call up Main menu

Keys for configuring the measuring wheels

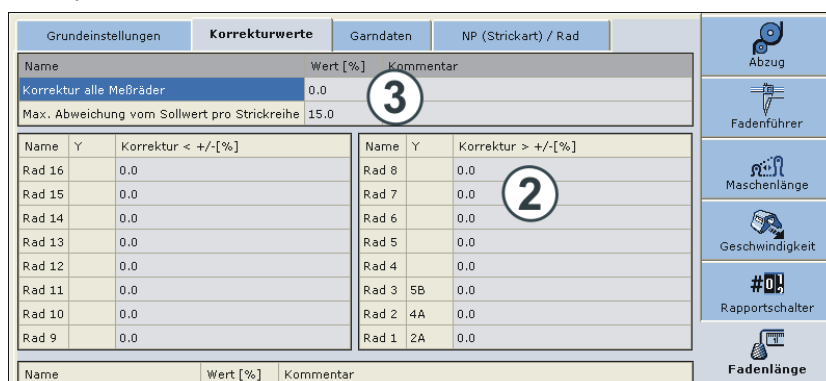
Configure measuring wheels on OKC:

1. Call up the "Yarn length control" window from the "Main menu".
2. In the "Yarn Length Control" window call up the Setup2 editor.



Configure measuring wheels

3. "Basic Settings" tab
Select the yarn carrier to be assigned to the respective measuring wheel in column (1). If a second ASCON device is used, activate the allocation "Measuring wheel - Yarn carrier" in the (4) column.
4. Confirm entries.
5. Call up the "Correction values" tab.



6. Enter the correction value.
7. Adjust the value for "Maximal deviation from target value per knitting row" (3) (default: 15 %).
If this value is exceeded when determining the correction values, the machine will stop automatically and an error message appears.
8. Confirm entries.
9. Call up the "Yarn Data" tab.
10. Enter data.
11. Confirm input.
 - ▷ The yarn consumption can be calculated now
 - ▶ The measuring wheels are configured.
12. Return to the Yarn Length Control window.

Select operating mode

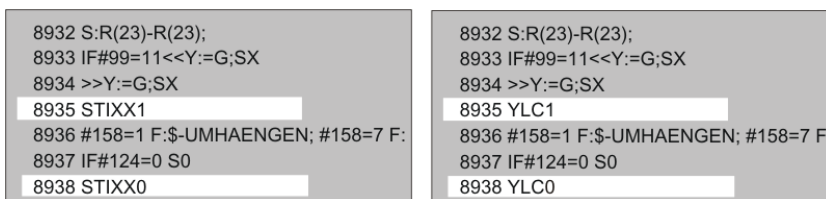
**Allocation
Measuring
wheel -
yarn carrier**

The allocation measuring wheel - yarn carrier will additionally be displayed in the "Yarn carrier" window (column "Wheel"). This is helpful for setting up the machine: You don't need to be switching back-and-forth among the different windows .

4.2.3 Enter the command manually in the knitting program

You can enter the commands for the yarn length measurement also manually in a knitting program.

1. Enter the desired Sintral command in the first row of the area to be controlled (in the example "STIXX1").



2. Enter the command "STIXX0" at the end of the area (deactivate control).

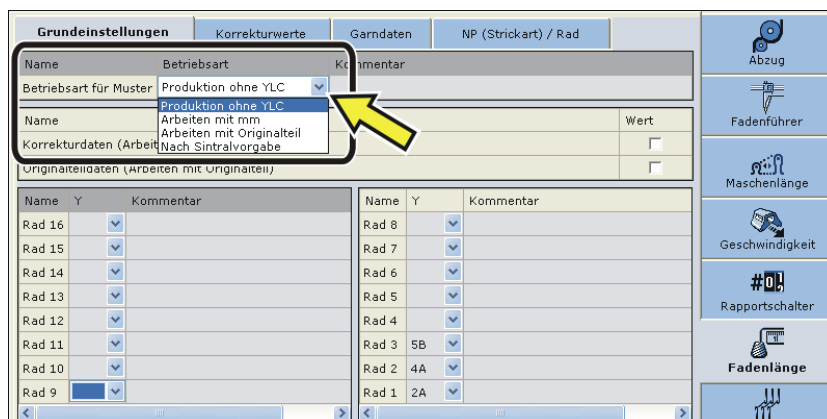
i You can enter either the Sintral command "YLC" or "STIXX" into the knitting program. The OKC knitting machine understands both specifications.

4.3 Select operating mode

Define the operating mode best when creating the knitting program.

Select operating mode:

1. In the "Setup-Editor" call up the "Yarn Length Control" window.
 - ▷ The setting window appears.
2. Call up the "Basic Settings" tab.
3. Activate the "Operating mode for patterns"field.



	Operating Mode	Explanation
On	<ul style="list-style-type: none"> ♦ Working with mm ♦ Working with original fabric 	YLC control is activated.

	◆ as specified by Sintral	
Off	◆ Production without YLC	YLC control is deactivated

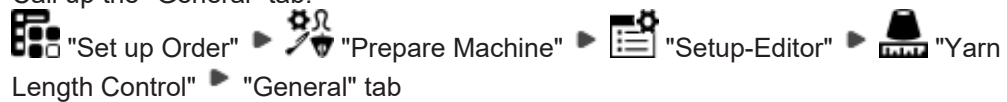
1. Select the desired operating mode in the "Operating mode for patterns" field.
2. Confirm input.

You can also determine or change the operating mode of the yarn length control on the machine.

Then further settings will be necessary for the yarn length control or the basic conditions will need to be determined again.

Specify operating mode:

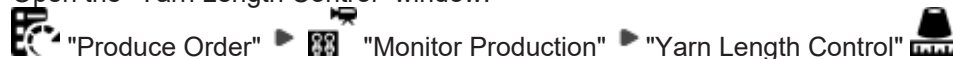
1. Call up the "General" tab.







2. Select the operating mode in the "Operating mode for patterns" picklist.

- Production without YLC
- Working with mm
- Working with original fabric
- as specified by Sintral

3. Open the "Yarn Length Control" window.



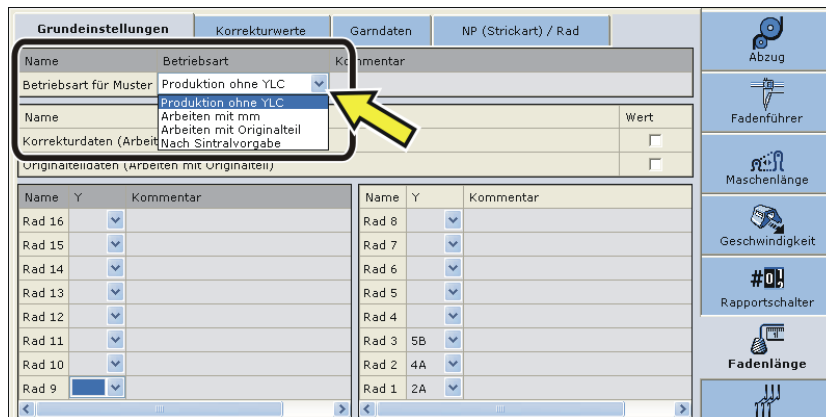
4. Confirm with "OK".

Key	Function
	Call up the "Yarn Length Control"
	Call up Setup2 editor.
	Confirm entries
	return to the "Yarn Length Control" window

Keys to select the operating mode

Select operating mode:

1. Call up the "Yarn length control" window from the "Main menu".
2. In the "Yarn Length Control" window call up the Setup2 editor.
 - ▷ The setting window appears.
3. Call up the "Basic Settings" tab.
4. Activate the "Operating mode for patterns" field.



	Operating Mode	Explanation
On	<ul style="list-style-type: none"> ◆ Working with mm ◆ Working with original fabric ◆ as specified by Sintral 	<p>YLC control is activated.</p> <p>The YLC mode from the Sintral program or the Setup2 editor is active.</p>
Off	<ul style="list-style-type: none"> ◆ Production without YLC 	<p>YLC control is deactivated</p> <p>The control is no longer automatically activated.</p>

5. Select the desired operating mode in the "Operating mode for patterns" field.
6. Confirm input.
7. Return to the "Yarn Length Control" window.

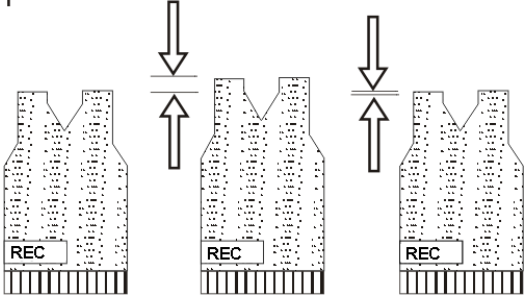
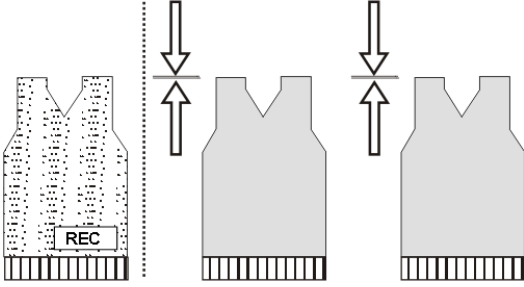
4.4 Measuring and correcting yarn length

This chapter contains information on:

- Special Sintral commands [74]
- Working with original fabric (YLC-MP Master Piece) [42]
- Log file on OKC for YLC modes [50]

4.4.1 Working with mm (millimeters)

Action	Properties
<p>Determine Basic Conditions</p> <div style="border: 1px solid gray; padding: 5px; margin-top: 5px;"> <p style="text-align: center; margin: 0;">Action</p> <ul style="list-style-type: none"> <input checked="" type="radio"/> Determine basic conditions <input type="radio"/> Production </div>	<ul style="list-style-type: none"> ◆ REC – learning phase: Determination of the correction values before the production is started. ◆ You can make greater corrections in the learning phase.

Action	Properties
	 <ul style="list-style-type: none"> ◆ The current fabric can get unusable if the corrections are very great. ◆ You can repeat the learning phase several times if necessary. Therefore keep the "Determine Basic Conditions" button activated. ◆ Stitch lengths will be measured with the values defined in the knitting program. ◆ A separate correction value is determined for each carriage direction. ◆ A separate NP value is determined for each knitting mode. This way a separate correction value can be determined. <div style="border: 1px solid black; padding: 2px; text-align: center; margin-top: 10px;"> NP (Knitting Mode) / Wheel </div>
<p>Production</p> <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> <p style="text-align: center; margin: 0;">Action</p> <p style="margin: 0;"><input type="radio"/> Determine basic conditions</p> <p style="margin: 0;"><input checked="" type="radio"/> Production</p> </div>	<ul style="list-style-type: none"> ◆ If the pattern meets your expectations, apply the correction values (actual values). For this purpose, activate the "Production" switch. ◆ Differences between the bobbins are compensated.  <ul style="list-style-type: none"> ◆ The stitch cams will automatically be controlled during the production, if necessary. At first larger corrections are possible, for the following pieces, the corrections become smaller. ◆ The ASCON device controls in small steps so that a change of the stitch length is hardly visible within the fabric. If one yarn carrier is seldom in action and the correction is very large, then the first fabric and in an unfavorable case even further fabrics may be unusable.

- Individual correction values for each knitting mode [40]
- Loading and saving the Master Piece data [45]

4.4.1.1 Determine Basic Conditions

With "Determine basic conditions", the correction values are recorded (REC).

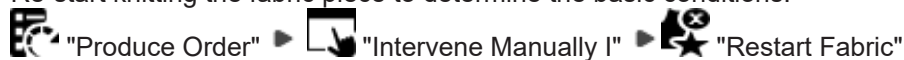
- ✓ The measuring wheels are configured.
- ✓ The yarn tension at the yarn control unit is set for each yarn (at least 8 cN).
- ✓ The operating mode "Working with mm" is selected in the Setup Editor.
- ✓ No YLC data available
- or -
- ✓ You want to re-determine the basic conditions.

1. Open the "Yarn Length Control" window.



2. Activate "Determine basic conditions".

3. Re-start knitting the fabric piece to determine the basic conditions.



- ▷ The fabric piece will be produced.
The correction value is determined for each stitch cam position (NP).
- ▷ Once the fabric has been completed, the machine stops automatically.
The correction values are determined.
The check box (2) is enabled automatically.
The "YLC Record basic conditions (REC MM) again or change to production (YLC MM)" message appears.

4. Remove the fabric from the machine and control it.

5. change to production if the fabric is OK.

- or -

record basic conditions again if the fabric is not OK.

6. Save correction values.

For this, save the pattern in the "Load & Save" menu.

7. Start production.

- ▶ The data are compared with the currently determined data. If necessary, the ASCON device carries out a correction.

- ▶ Yarn variations are compensated.

- ▶ The stitch density and therefore, also the dimensions of the fabric are constant.

8. Save again the current correction values to be able to use them for later production. For this, save the pattern in the "Load & Save" menu.

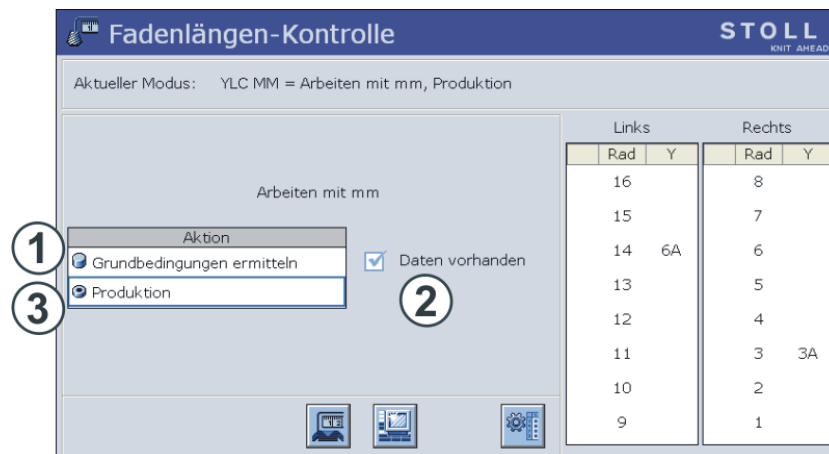


For the production of another making-up size, the basic conditions do not need to be determined again, as the yarn length of a stitch (NP in mm) does not change.

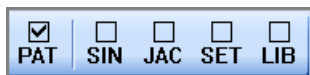
- ✓ The measuring wheels are configured.
- ✓ The yarn tension at the yarn control unit is set for each yarn (at least 8 cN).
- ✓ The working mode "Working with mm" is selected in the Setup2-Editor.
- ✓ No YLC data available
- or -
- ✓ You want to re-determine the basic conditions.

1. Tap on the key (1) in the "Yarn Length Control" window.

▷ The "Data available" check box (2) is disabled.



2. Start the machine.
 - ▷ The fabric piece will be produced.
 - ▷ The correction value is determined for each stitch cam position (NP).
3. Once the fabric has been completed, the machine stops automatically.
 - ▷ The correction values are determined, the check box (2) will automatically get enabled.
 - ▷ The "YLC Record basic conditions (REC MM) again or change to production (YLC MM)" message appears.
4. Machine with comb take-down:
 - Remove the fabric from the machine and control it.
 - or -
 - Machine without comb take-down:
 - Continue knitting until the fabric can be taken out of the machine.
 - Remove the fabric from the machine and control it.
5. If the fabric is OK, tap the key (3).
 - or -
 - If the fabric piece is not OK, repeat the steps (2) to (4).
6. Save correction values. For this, save the pattern in the "Load & Save" menu.



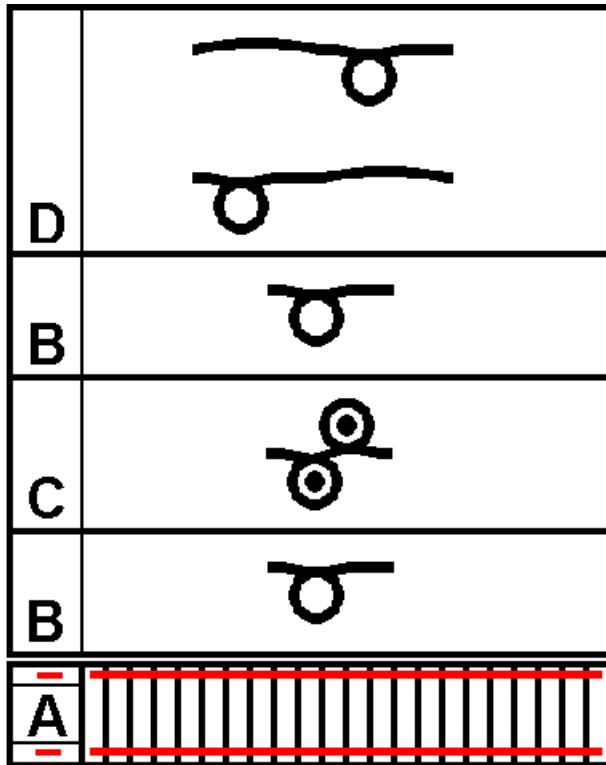
7. Start the production.
 - ▶ The data are compared with the currently determined data. If necessary, the ASCON device carries out a correction.
 - ▶ Yarn variations are compensated.
 - ▶ The stitch density and therefore, also the dimensions of the fabric are constant.
8. Save again the current correction values to be able to use them for later production. For this, save the pattern in the "Load & Save" menu.



For the production of another making-up size, the basic conditions do not need to be determined again, as the yarn length of a stitch (NP in mm) does not change.

4.4.1.2 Individual correction values for each knitting mode

You can assign a separate correction value to each knitting mode.



i In order to prevent the calculation of correction values from being distorted when using the operating mode "Working with mm" (YLC MM), individual knitting rows and smaller knitting areas should not be included in the calculation. These include for ex. the net row in the cuff, knit-in rows, small stripe patterns, cuffs with reduced height, etc.

Pattern workstation:

- ✓ "Working with mm" operating mode
- 1. In the pattern and the Setup Editor, determine a separate stitch length (NP value) in mm for each knitting mode.
"Value [mm]"
- 2. Specify the "Working with mm" operating mode.
- 3. Exclude the start and special knitting areas with "YLC-" from the yarn length control, if necessary.

EKC machine

- 1. Select the "Working with mm" operating mode.

"Set up Order" ► "Set up Pattern" ► "General" tab ► "Operating mode for patterns"
- 2. Call up the "NP / Wheel" tab.

3. Activate the desired knitting mode with the assigned NP value to determine the correction values.
4. Deactivate the knitting modes excluded from measuring and correcting.
5. Open the "Yarn Length Control" window.



6. Activate "Determine basic conditions".
7. Re-start knitting the fabric piece to determine the basic conditions.



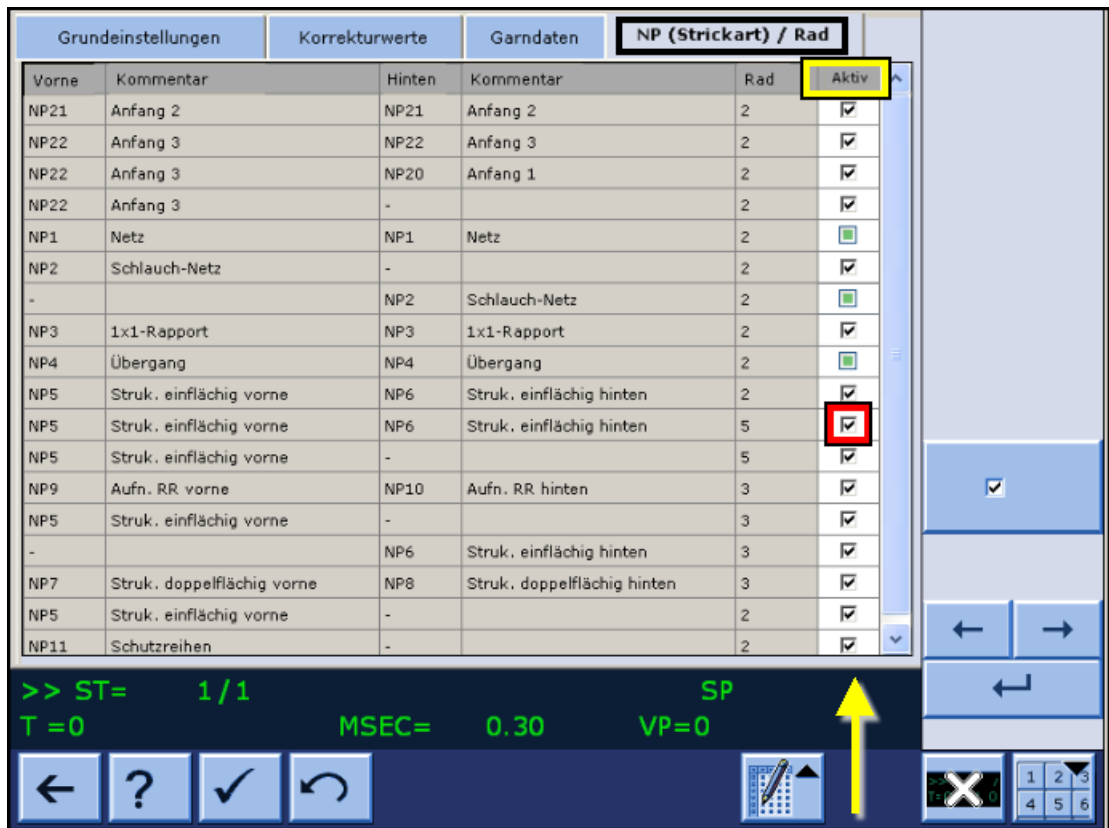
- The corrections for the NP values of the selected knitting modes are determined.

Front	Comment	Rear	Comment	Wheel	Active
NP 1	Netz-MG	NP 1	Netz-MG	0	<input type="checkbox"/>
NP 2	Schlauch-Netz-MG			0	<input type="checkbox"/>
NP 3	1x1-MG	NP 3	1x1-MG	0	<input checked="" type="checkbox"/>
NP 4	Übergang-MG-lose	NP 4	Übergang-MG-lose	0	<input type="checkbox"/>
NP 7	Multi gauge grob vorne			0	<input type="checkbox"/>

- Take-down
- Yarn Carriers
- Stitch Length
- Speed
- Rapport-schalter
- Yarn Length Control

OKC machine

1. Activate the "Operating mode for patterns" field.
2. Select the "Working with mm" operating mode.
3. Call up the "NP (knitting mode) / Wheel" tab.



4. Activate the desired knitting mode with the assigned NP value to determine the correction values.
 5. Deactivate the knitting modes excluded from measuring and correcting.
 6. Start the machine.
- The correction values for selected knitting modes are determined.

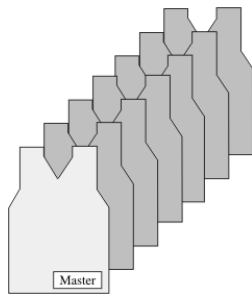
4.4.2 Working with original fabric (YLC-MP Master Piece)

Certain patterns are not suitable for controlling them with the operating mode "Working with mm" (YLC-MM). Irregular yarn consumption and the resulting deviations obstruct the yarn length control.

Examples:

- Fabric pieces with frequent changes of the knitting mode
- Complex structures in the fabric piece
- Narrow fabric pieces
Width: ≥ 5 inch

To be able to control these patterns, knit a original fabric (Master Piece) with the knitting mode "Working with original fabric" / "Determine basic conditions". In the process the Master Piece data is determined and stored. The Master Piece data is used as target values for all further fabrics to be produced. You can generate original fabrics until the achieving the requirements for appearance, fabric length and weight. With several test pieces, the data of the last one is always stored as the original fabric (Master Piece). The size of the memory is sufficient for approximately 8000 knitting rows.



Master Piece and corresponding production

For the following production, the Master Piece data are used for all further fabrics and the stitch lengths are corrected accordingly, if required.

Determine the basic conditions in the Master Piece and produce duplicates:

- ✓ The measuring wheels are configured.
 - ✓ The yarn control unit for each yarn is set to at least 8 cN.
 - ✓ The operating mode "Working with original fabric" is selected in the Setup.
1. Start the knitting program with the "Determine Basic Conditions" mode.
 - ▷ The original fabric is generated.
Once the original fabric has been completed, the machine stops automatically.
 - ▷ The following note is displayed: "Knit an original fabric (Master Piece) once again or change to production".
 2. Remove the original fabric from the machine and control it.
 3. If the Master Piece is OK, change to production.
- or -
If the Master Piece is not OK, determine again the basic conditions.
 4. Start the production with the engaging rod.
 - ▶ The data of the original is compared to the data determined at the moment. The stitch lengths will be corrected accordingly if necessary.

i

- During the production with the yarn length control with Master Piece, only minor changes may be made to the values for fabric take-down (WM), yarn carrier staggering (YD) and carriage speed (MSEC).
 - The length of the fabric can be influenced with yarn correction in the Setup.
 - During the production with the yarn length control with Master Piece, no cycle counters may be changed.
The Master Piece data are not to be used for fabrics with different sizes.
 - If you change pattern parameters, e.g. NP values or cycle counters, you must determine again the basic conditions.
-


Yarn corrections in the Setup

With the operating mode "Working with original fabric" it is possible to modify the fabric length without having to record the original fabric (Master Piece) again.





If, for example, the same pattern is to be knitted with another yarn color (not yarn thickness)

you do not need to determine once again the basic conditions. Enter the deviation of the length difference in percentage in the "Yarn correction for Master Piece" line. The stitch lengths are controlled accordingly in all areas by the yarn length control.

Executing yarn correction:

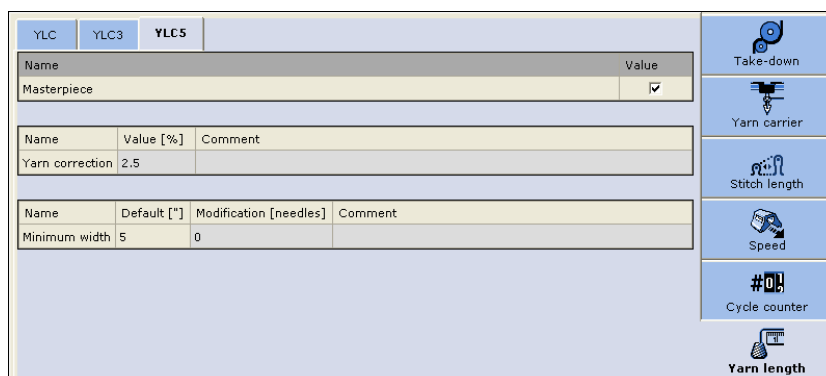
1. Call up the "Correction Values" tab.

2. Enter the desired value in the "Yarn Correction for Master Piece" line.
 Value range: -10%...+10%, step width: 0.1
3. Confirm entries.

Executing yarn correction:

Key	Function
	Call up the "Yarn Length Control"
	Call up Setup2 editor.
	Confirm entries
	return to the "Yarn Length Control" window

Keys to carry out a yarn correction

1. In the "Yarn Length Control" window call up the Setup2 editor.
2. Call up the "Correction values" tab.
3. Enter the desired value in the "Yarn correction for Master Piece" line.
 Value range: -10%...+10%, step width: 0.1

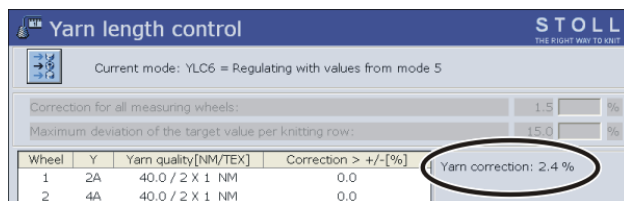


Name	Value
Masterpiece	<input checked="" type="checkbox"/>

Name	Value [%]	Comment
Yarn correction	2.5	

Name	Default ["]	Modification [needles]	Comment
Minimum width	5	0	

4. Confirm entries.
5. Return to the "Yarn Length Control" window and start the production.
 ► In the "Yarn length control" you can see the value set for the yarn correction.



4.4.2.1 Loading and saving the Master Piece data

The Master Piece data can be saved and loaded again (file name: Pattern name.stx). The determined basic conditions are used as set values for all other fabrics.

Application scope:

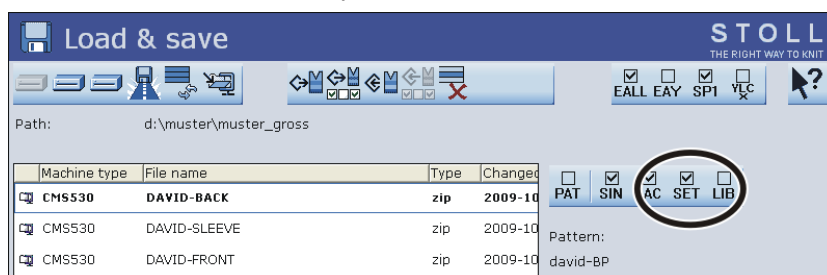
- If the pattern is to be knitted once again on the same machine later on.
- If the pattern is to be knitted on another machine with the same gauge.

Loading and saving the Master Piece data:

Key	Function
	Call up "Main menu"
	Call up the "Load & save" window
	"Save" file
	"Load" file

Buttons for loading and saving the Master Piece data

1. From the "Main menu" call up the "Load & Save" window.



"Load & save" window

2. Check whether the "SET" check box is activated.
 3. Saving data, tap the "Save" key for it.
- or -
Loading data, tap the "Load" key for it.
- When the "YLC5" data is loaded, the switch "YLC6 - Measuring and controlling according to the original fabric (YLC5)" is automatically activated.

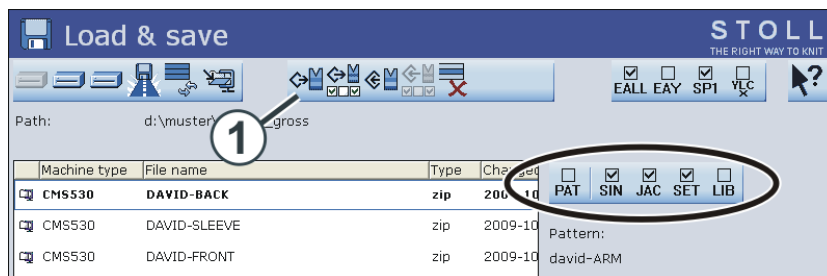
4.4.2.2 Master Piece and order

Also with an order with several positions (sequences), you can work with original fabrics (Master Pieces).

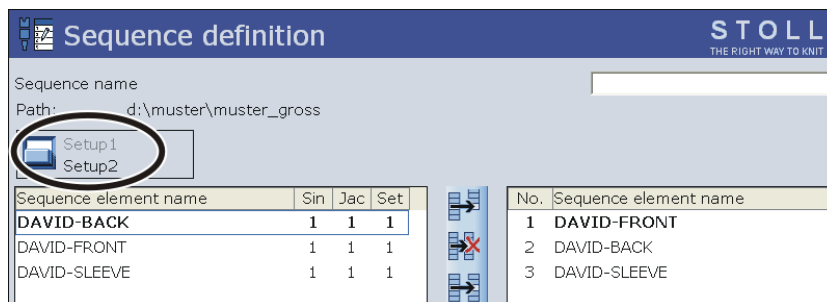
- For each knitting program of the order you determine the basic conditions in the Master Piece
- You put the order together based on the knitting programs with the corresponding Master Piece data.
- The yarn lengths are controlled for each knitting program of the order with the corresponding Master Piece data during the production.

Using Master Piece data in the sequence:

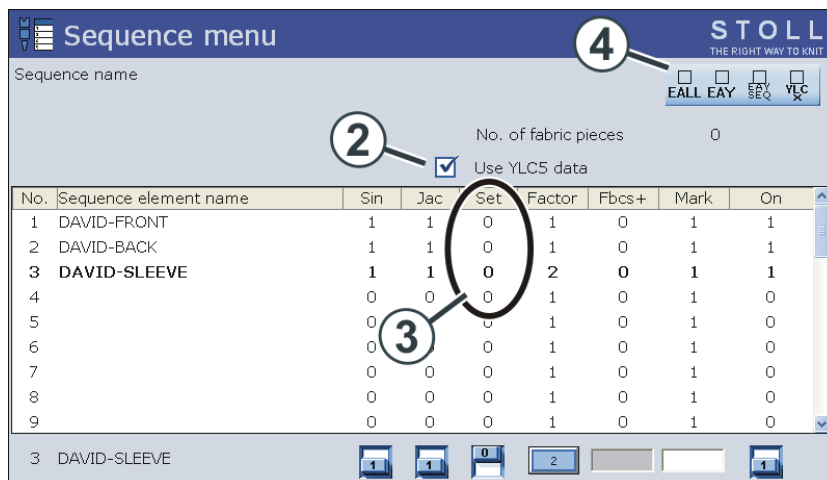
- ✓ The check boxes "SIN", "JAC", "SET" are active
- ✓ Or the check box "PA" is active



1. Tap the (1) key.
 - ▷ The knitting program and the setup data are loaded.
2. Generate the original fabric.
3. If the Master Piece corresponds to your specifications, save the Master Piece data.
4. Repeat these steps for all the knitting programs, which are to be put together to the sequence.
5. Activate Setup2 in the "Sequence definition" window and put together the sequence.



6. Return to the "Sequence menu" window.



Use YLC5 data (2)					
<input checked="" type="checkbox"/>	<p>Activate the use of YLC5 data. Depending on the adjustment in the "Set" column, it has the following consequence for the sequence element:</p> <table border="1"> <tr> <td>Set=0</td> <td>only the YLC5 data is used for the sequence element.</td> </tr> <tr> <td>Set=1</td> <td>The Setup and YLC5 data are used for the sequence element.</td> </tr> </table>	Set=0	only the YLC5 data is used for the sequence element.	Set=1	The Setup and YLC5 data are used for the sequence element.
Set=0	only the YLC5 data is used for the sequence element.				
Set=1	The Setup and YLC5 data are used for the sequence element.				
<input type="checkbox"/>	<p>Deactivate the use of YLC5 data. The adjustment in the "Set" column is effective for each sequence element.</p>				

7. Make settings.

8. Knit the sequence.



One setup file for all the sequence elements

The adjustment in the "Sequence menu" shows the following procedure when sequence knitting:

A setup file is loaded that is used for all the sequence elements.

"EALL" (4) has to be deactivated so that the setup data will not be deleted.

Only the YLC5 data is used with all the sequence elements. Adjustment (2) and (3).

- Working with original fabric (YLC-MP Master Piece) [42]
- Loading and saving the Master Piece data [45]

4.4.3 Show Correction Values

The correction values of the last knitted row are displayed as a table..

Condition:

- The ASCON device is logged on.
- The function "Yarn Length Control" is activated.
- An area with "Yarn Length Control" was already knitted.

Measuring and correcting yarn length

Designation	Data shown
Wheel	Number of measuring wheel
Deviation[%]	Average deviation since the last automatic change of the NP value
System / Knit info	Number of active knitting system Active needle bed (f: front, ^: rear, x: both)
NP^	Current NP value (rear needle bed) It consists of NP value, NPK correction and the current YLC correction value.
NPV	Current NP value (front needle bed) It consists of NP value, NPK correction and the current YLC correction value.

→ Open the "Yarn Length Control" window.



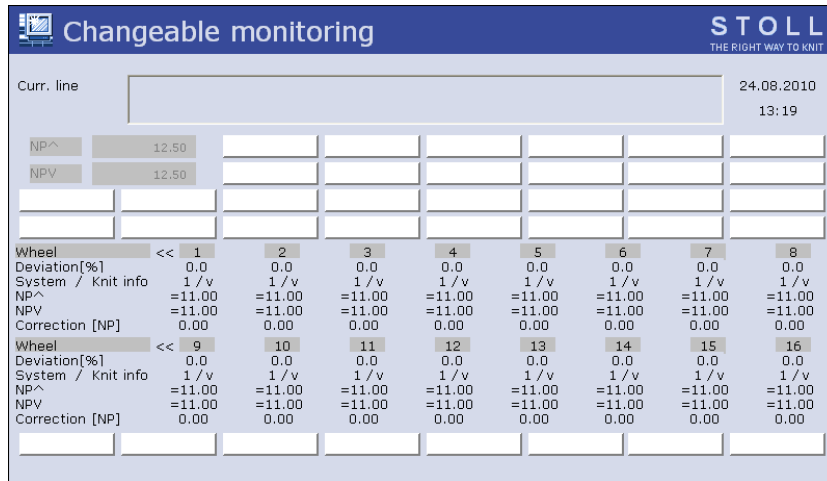
Yarn Length Control

Working with mm

Determine Basic Conditions

Wheel	Yarn Carriers	Deviation %	Info System	Stitch Length			Wheel
				At the Front NPv	At the Rear NP^	Correction NP	
16		0.0	0 -	11.00	11.00	0.00	
15		0.0	0 -	11.00	11.00	0.00	
14		0.0	0 -	11.00	11.00	0.00	
13		0.0	0 -	11.00	11.00	0.00	
12	4A	0.0	0 -	12.80	11.00	0.00	
11		0.0	0 -	11.00	11.00	0.00	
10		0.0	0 -	11.00	11.00	0.00	
9		0.0	0 -	11.00	11.00	0.00	
		0.0	0 -	11.00	11.00	0.00	8
		0.0	0 -	11.00	11.00	0.00	7
		0.0	0 -	11.00	11.00	0.00	6
		0.0	0 -	11.00	11.00	0.00	5
		0.0	0 -	11.00	11.00	0.00	4
	3B	0.2	3 - v	12.80	12.00	-0.35	3
		0.0	0 -	11.00	11.00	0.00	2

Cancel OK



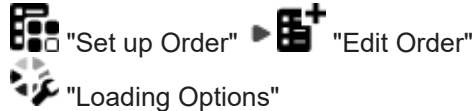
"Changeable monitoring" window with logged-on yarn length measuring device

4.4.4 Deleting correction values

If a new pattern is loaded, the previous correction values are not deleted. If the new pattern is to be knitted with new correction values, you must delete the previous correction values automatically or manually.

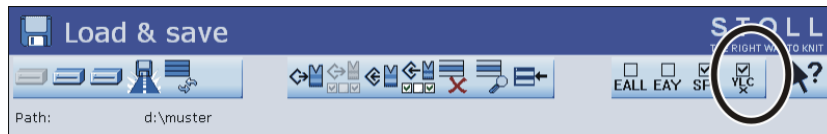
Deleting correction values automatically

- Activate the check box "EYLC" when loading the pattern.



Deleting correction values automatically

- Activate the check box "YLC X" when loading the pattern.

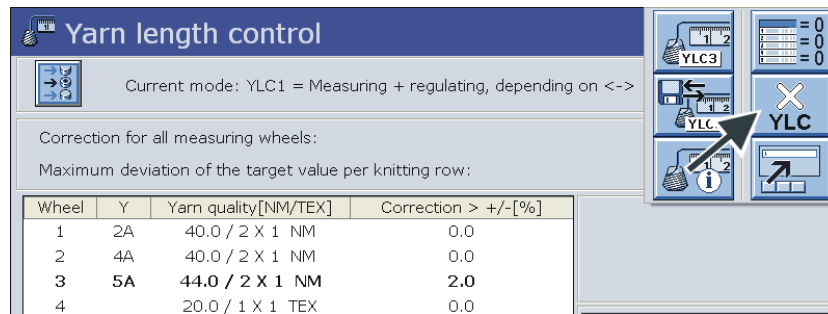


Deleting YLC correction values automatically

Delete correction values manually:

1. Call up the "Yarn length control" window from the "Main menu".
2. Call up Additional function keys.
3. Press the "X YLC" button.

Switch off yarn length control



"Yarn length control" window with additional function keys

- The correction values are deleted.

4.4.5 Log file on OKC for YLC modes

In the Log file you can have a look at each mode change with date and time.

Key	Function
	Call up the "Yarn Length Control"
	Call up Additional function keys
	Call up the "YLC Log" window
	Call up Main menu

Keys for the display of the mode changes

Display mode changes:

1. Call up the "Yarn Length Control" window from the main menu.
2. Call up Additional function keys.
3. Call up the "YLC Log" window.
 - ▷ The mode changes with date and time are displayed.
4. Call up Main menu.

4.5 Switch off yarn length control






Switch on and off the yarn length control:

1. Call up the "General" tab.



2. Select the operating mode in the "Operating mode for patterns" picklist. "Production without YLC"

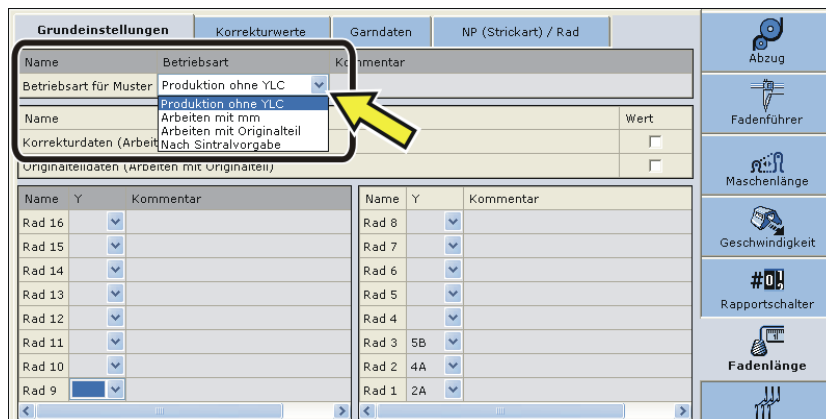
Return to the designated operating mode to turn-on the yarn length control again.

Key	Function
	Call up the "Yarn Length Control"
	Call up the Setup2 editor
	Confirm entries
	return to the "Yarn Length Control" window
	Call up Main menu

Buttons for adjusting the YLC control

Activate and deactivate YLC control:

1. Call up the "Yarn length control" window from the "Main menu".
2. In the "Yarn Length Control" window call up the Setup2 editor.
 - ▷ The setting window appears.



	Operating Mode	Explanation
On	<ul style="list-style-type: none"> ♦ Working with mm ♦ Working with original fabric ♦ as specified by Sintral 	<p>YLC control is activated.</p> <p>The YLC mode from the Sintral program or the Setup2 editor is active.</p>
Off	<ul style="list-style-type: none"> ♦ Production without YLC 	<p>YLC control is deactivated</p> <p>The control is no longer automatically activated.</p>

3. Select the desired operating mode in the "Operating mode for patterns" field.
4. Confirm input.

5. Return to the "Yarn Length Control" window.

4.6 Master Setup

Determine the basic conditions once and use them many times.

What is a Master Setup:

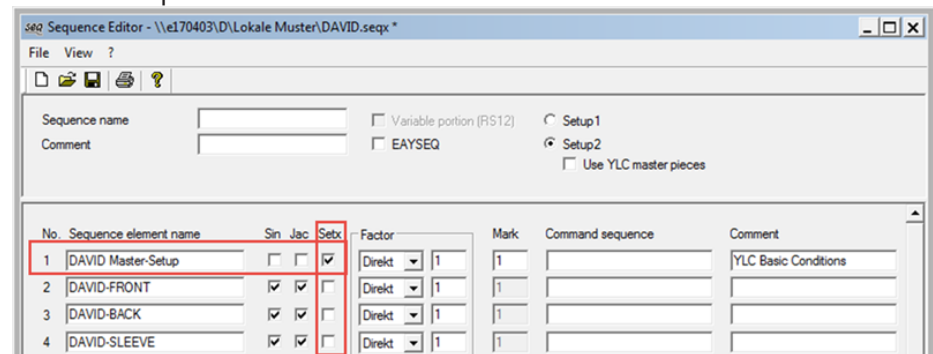
The Master Setup contains all important pattern parameters for all the knitting programs used in the order. The Master Setup must be prepared at the pattern workstation by the programmer for using it as Master Setup.

i




If a common Setup file is used for the sequence, it must be separately located at the first position. As a result, this will now only be loaded once and will be skipped over during the next sequence run-throughs.

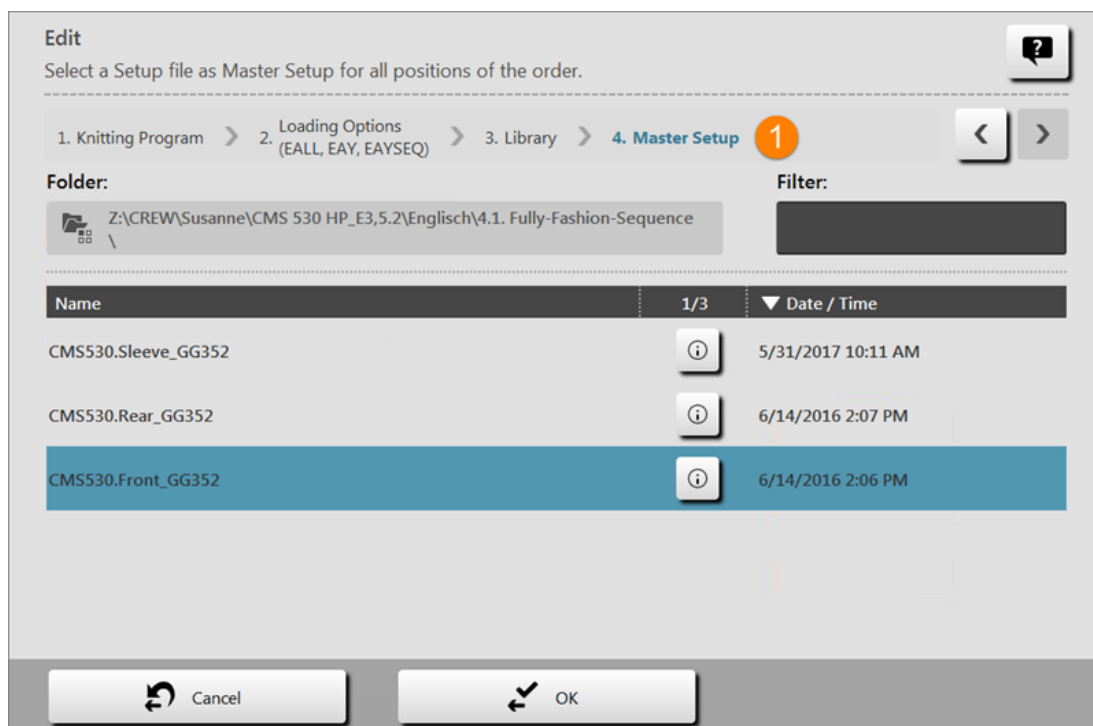
If the Setup file is not located in the first position, it will be loaded during each sequence run-through.

This Setup file can only be loaded with the machine stopped. The carriage waits at the reversal point until the Setup file is loaded. This also applies when several Setup files are used.



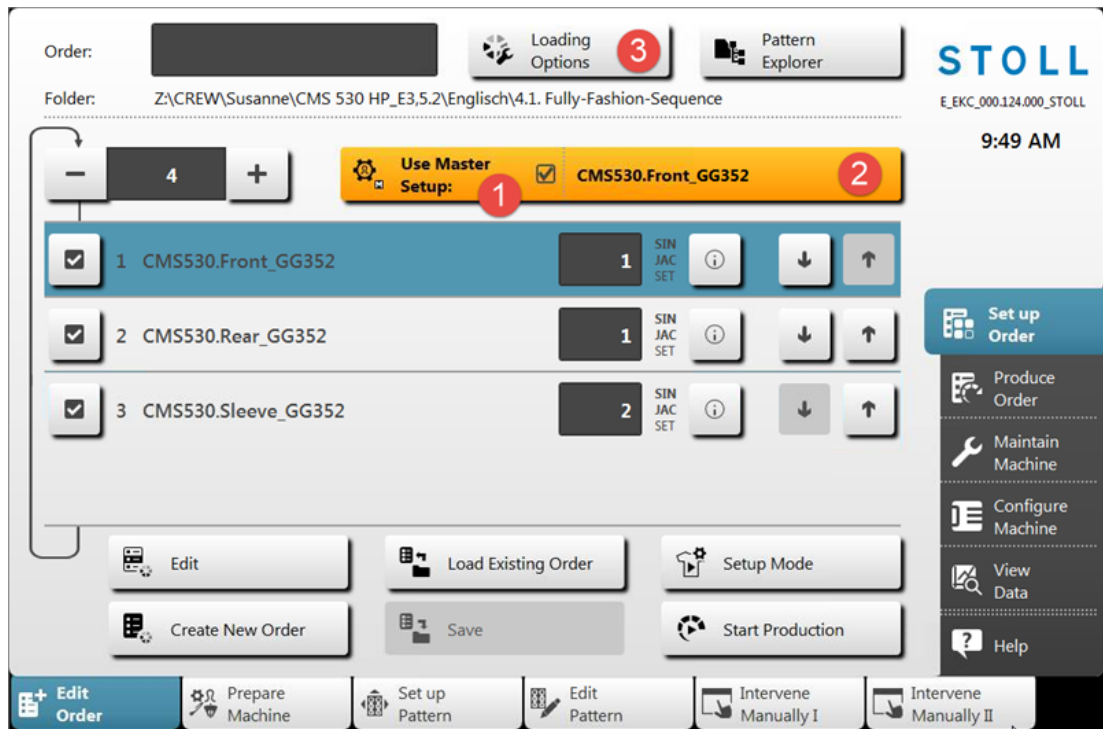
Working with a Master Setup:


- ✓ You are signed in as senior operator .
 - ✓ The yarn carriers are in the clamping and cutting bed.
 - ✓ The order is created with several knitting programs.
1. In the dialog activate the  "Use Master Setup"  button.
 - ▶ The dialog "Edit" for the selection **4.Master Setup** is displayed.


**i**

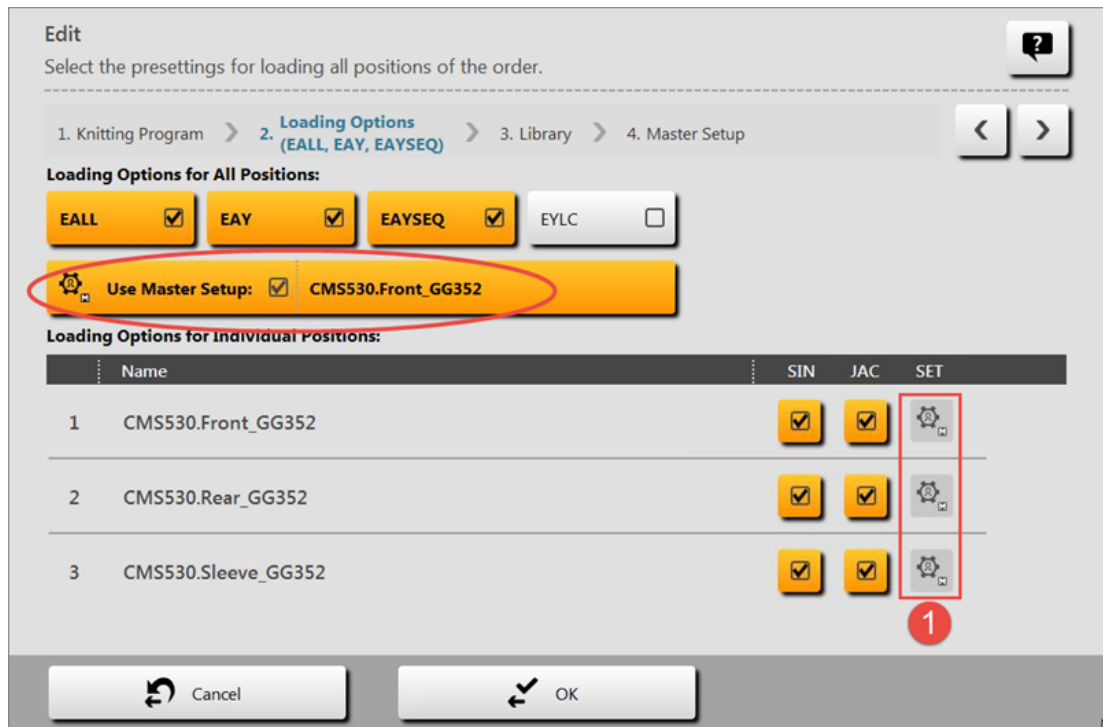
The Master Setup must be saved together with the knitting programs of the order in the same folder.
If there are several setup files in the folder, they will be displayed all in the list.

2. Select the desired setup file.
3. Confirm the selection with the "OK" button.
- ▶ Return to the main window, where the selected Master Setup is displayed.



1	Activated orange colored  "Use Master Setup" <input checked="" type="checkbox"/> button.
2	Name of the selected Master Setup
3	Selection of the loading options

4. Open the "Edit" dialog box with the  "Loading options" button.



1	Display for working with a Master Setup
2	Use the activated orange colored "Use Master Setup" <input checked="" type="checkbox"/> button with the name of the used setup file

i Working with the Master Setup can be disabled in the main window or via the loading options.

- Working with Master Setup with orders with several knitting programs [56]




4.6.1 Working with Master Setup with orders with several knitting programs

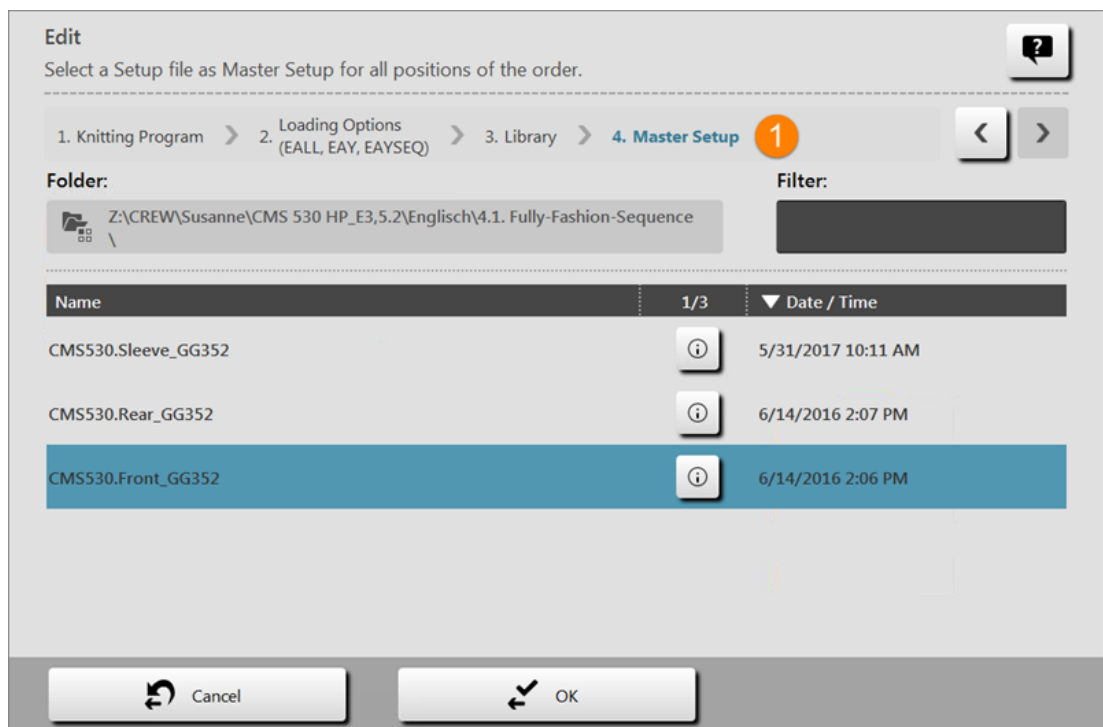
i In case of orders with several knitting programs, it is possible to work with a Master Setup.

What is a Master Setup:


The Master Setup contains all important pattern parameters for all the knitting programs used in the order. The Master Setup must be prepared at the pattern workstation by the programmer for using it as Master Setup.

Working with a Master Setup:


- ✓ You are signed in as senior operator .
 - ✓ The yarn carriers are in the clamping and cutting bed.
 - ✓ The order is created with several knitting programs.
1. In the dialog activate the  "Use Master Setup"  button.
 - ▶ The dialog "Edit" for the selection **4.Master Setup** is displayed.




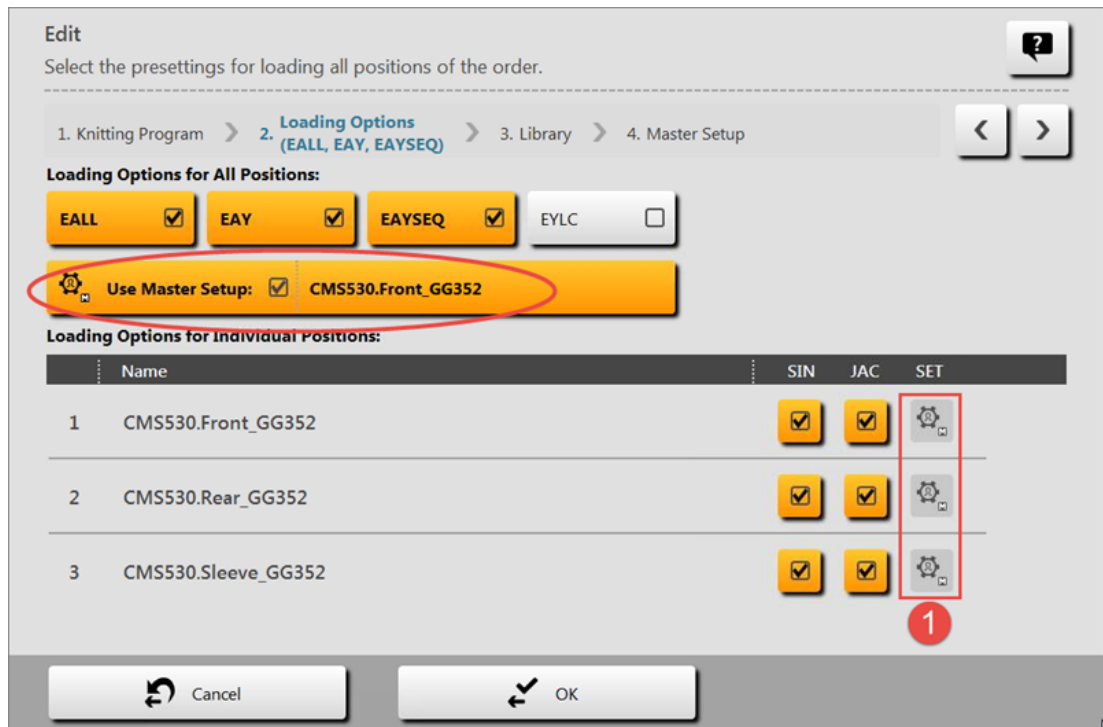
- i** The Master Setup must be saved together with the knitting programs of the order in the same folder.
If there are several setup files in the folder, they will be displayed all in the list.

2. Select the desired setup file.
3. Confirm the selection with the  "OK" button.
- ▶ Return to the main window, where the selected Master Setup is displayed.



1	Activated orange colored  "Use Master Setup" <input checked="" type="checkbox"/> button.
2	Name of the selected Master Setup
3	Selection of the loading options

4. Open the "Edit" dialog box with the  "Loading options" button.



1	Display for working with a Master Setup
2	Use the activated orange colored "Use Master Setup" <input checked="" type="checkbox"/> button with the name of the used setup file

i Working with the Master Setup can be disabled in the main window or via the loading options.

4.7 Use yarn disposition

The ASCON device measures the consumed yarn length and continuously calculates the yarn consumption.



Enter the yarn quality:

i If you have already carried out the allocation "Yarn carrier, measuring wheel, yarn quality" on the M1plus, this data will be applied to the "Yarn Length Control" window.

1. Open "Setup Editor".
2. Open the "Yarn length control" / "Yarn data" tab.
3. Enter number of threads per yarn carrier and yarn quality.

4. Return to the "Yarn Length Control" tab.

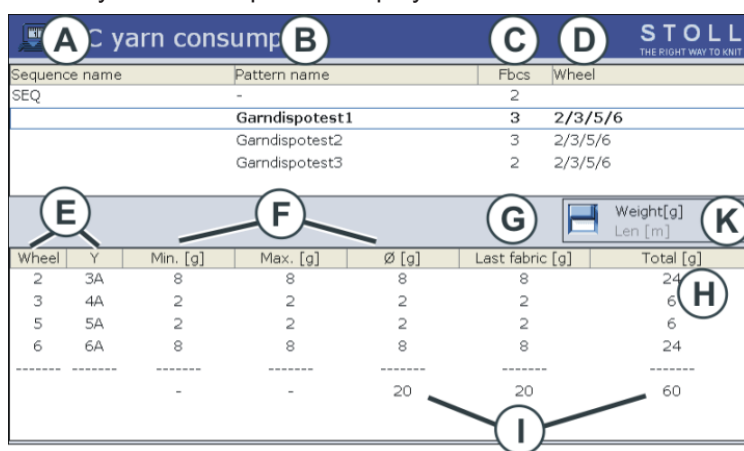
Call up the
yarn
consumption

Key	Function
	Call up the "Yarn Length Control"
	Call up the "Yarn consumption" window

Keys for calling up the yarn consumption

1. In the "Yarn Length Control" window tap the "Yarn Consumption" (2) key.

▷ The yarn consumption is displayed.



Sequence name	Pattern name	Fbcs	Wheel
SEQ	-	2	
	Garndispostest1	3	2/3/5/6
	Garndispostest2	3	2/3/5/6
	Garndispostest3	2	2/3/5/6

Wheel	Y	Min. [g]	Max. [g]	Ø [g]	Last fabric [g]	Total [g]
2	3A	8	8	8	8	24
3	4A	2	2	2	2	6
5	5A	2	2	2	2	6
6	6A	8	8	8	8	24
		-----	-----	-----	-----	-----
		-	-	20	20	60

A	<ul style="list-style-type: none"> ◆ Name of sequence ◆ Name of the sequence list
B	<ul style="list-style-type: none"> ◆ Name of the pattern (individual pattern) ◆ Name of the sequence element
C	Number of pieces knitted so far
D	Display of the measuring wheels that are in use
E	Display showing which yarn carrier works together with which measuring wheel
F	Yarn consumption of the pieces knitted so far
	Min minimum yarn consumption
	Max maximum yarn consumption
	Ø average yarn consumption
G	Yarn consumption of the last knitted piece
H	Yarn consumption of all the knitted pieces
I	Sum of the yarn consumption of the respective column
K	Switching the display of the yarn consumption over to: <ul style="list-style-type: none"> ◆ Weight (in grams) ◆ Length (in meters)

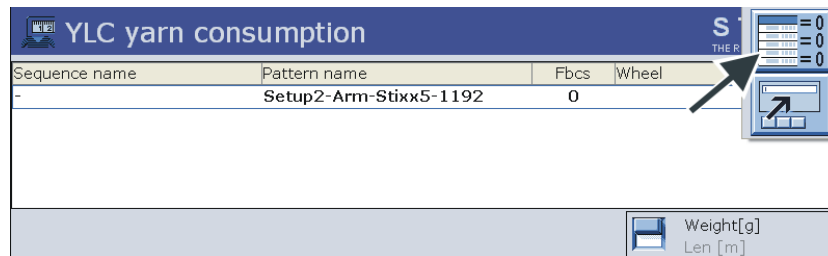
**Yarn consumption with a sequence (or sequence list)**

Select the corresponding line in the upper area of the table (sequence element, entire sequence).

The yarn consumption of the selected line is displayed in the lower area of the table.

Delete the yarn consumption manually:

1. In the "YLC yarn consumption" window call up the "Additional function keys".
2. Press the "Delete yarn consumption" key.



- The consumption values are deleted.

5 Helpful to know

5.1 About this document

5.1.1 Function of this document

You will find the following information about the yarn length measuring device in this document:

- Design and function
- Assembly and setting up
- Operation with a Stoll knitting machine

This document may only be used together with the safety instructions and the operating manual of a STOLL knitting machine.

5.1.2 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).

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.

5.1.3 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

5.2 The yarn length measuring device works this way


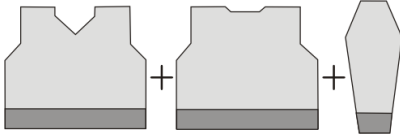
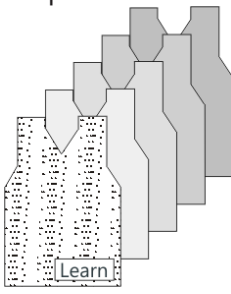


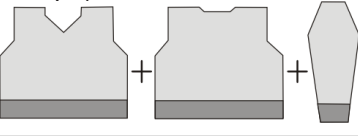
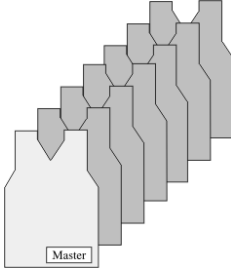
This chapter contains information on:

- Provide Yarn Length Control in the knitting program [▢ 30]
- Calculating correction values [▢ 71]

5.2.1 Overview of Operating Modes

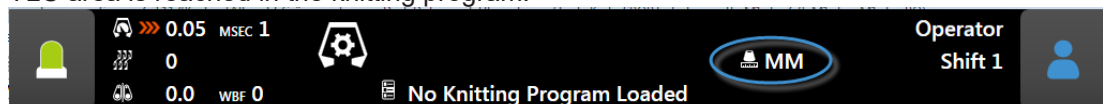
5.2.1.1 Overview over the YLC modes MM and MP

Application areas of the modes

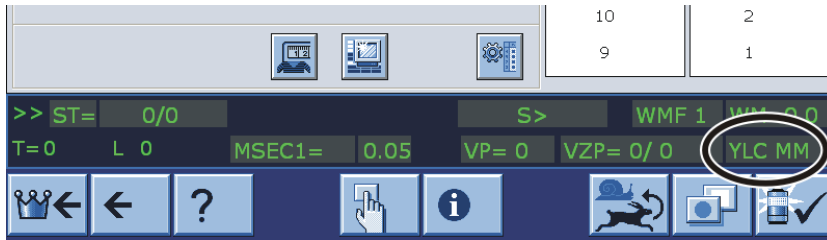
	Pattern	Determine Basic Conditions	Production
Working with mm YLC MM	<ul style="list-style-type: none"> ◆ Standard fabrics (width: ≥ 7 inches)  ◆ Sequence  ◆ Continuous fabrics 	<p>Determine basic conditions before the production</p> 	<p>A separate correction value is determined for each stitch cam position (knitting mode).</p> <p>Further information regarding stitch cam position (knitting mode).</p>
"Working with original fabric" (Master Piece) YLC MP	<ul style="list-style-type: none"> ◆ with irregular yarn consumption (change of the knitting mode, single jersey / double jersey)  ◆ Narrow fabrics (width: ≥ 5 inches), e.g. with knit and wear articles  ◆ Sequence (only possible with Setup2)  	<p>Draw the original fabric</p> 	<p>The YLC data is used as target value for all further fabrics.</p>







Current mode when knitting

The current YLC mode will be displayed on the bottom right in the state line as soon as a YLC area is reached in the knitting program.



The yarn length measuring device works this way



	Designation	Explanation
REC MM 	Measuring the YLC data	<ul style="list-style-type: none"> The YLC data for the "Working with mm" will be determined.
YLC MM 	Measuring + regulating, depending on <->	<ul style="list-style-type: none"> A separate correction value is determined for each carriage direction. The stitch cams will be corrected if necessary.
REC MP 	Measuring the YLC data for Master Piece	<ul style="list-style-type: none"> The YLC data for the original fabric (Master Piece) will be determined. No YLC regulation.
YLC MP 	Regulating with values from REC MP	<ul style="list-style-type: none"> The YLC data is used as target value for all further fabrics.
YLC MIN 	Suspending	<ul style="list-style-type: none"> The regulation for a carriage stroke is suspended.
YLC OFF 	Switch off (neither measure nor control)	<ul style="list-style-type: none"> Machine works without YLC correction values ("Production without YLC" mode). "YLCOFF" indicates that a ASCON device is logged-on on the machine.
YLC1 : YLC8		<ul style="list-style-type: none"> YLC modes for OKC operating system V. 2.7 (or former)


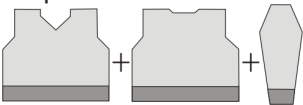
■ Overview of the YLC modes 1 – 8 (up to OKC operating system V. 2.7) [64]

5.2.1.1.1 Overview of the YLC modes 1 – 8 (up to OKC operating system V. 2.7)

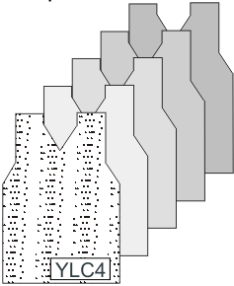
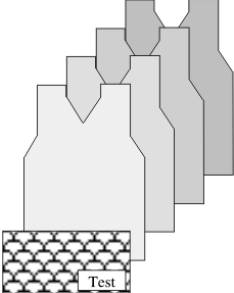


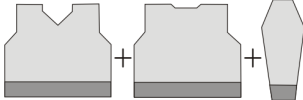
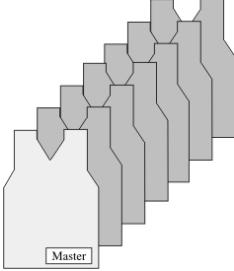
	Designation	Explanation
YLC1	Measuring + regulating, depending on <->	<ul style="list-style-type: none"> A separate correction value is determined for each carriage direction. The stitch cams will be corrected if necessary.

	Designation	Explanation
YLC2	Adjusting stitch cams	<ul style="list-style-type: none"> Adjustment program required D:\Stoll\M1plus\5.2.xxx\Sintra\YLC\cmsxxx.ylc2_npk-adjustment.zip Program-DVD M1plus (V. 5.2 or higher)
YLC3	Measuring in test fabric for mode 1, 7 or 8	Generate test fabric piece before starting the production.
YLC4	Determine measuring + correction values for modes 1, 7 or 8.	<ul style="list-style-type: none"> Determine correction values before the production Apply correction values for the production
YLC5	Measuring in the original fabric for mode 6	<ul style="list-style-type: none"> The YLC5 data for the original fabric (Master Piece) will be determined. No YLC regulation.
YLC6	Regulating with values from mode 5	The YLC5 data is used as target value for all further fabrics.
YLC7	Measuring + regulating, independent of <->	<ul style="list-style-type: none"> A correction value is determined independent from the carriage direction. Difference compared to YLC1 .
YLC8	Measuring + regulating, depending on <-> and S1-Sn	<ul style="list-style-type: none"> similar to YLC1. A separate correction value is determined for each carriage direction and knitting system. The stitch cams will be corrected if necessary.
YLC0	Switch off (neither measure nor control)	<ul style="list-style-type: none"> Machine works without YLC correction values. <p>YLC0 indicates that a YLC device is logged-on on the machine.</p>

Application areas of the modes

Pattern	If required: Determining correction values	Generate original fabric (Master Piece)	Production
<ul style="list-style-type: none"> Standard fabrics (width: ≥ 7 inches)  Sequence  Continuous fabrics 	YLC4		<p>YLC1</p> <p>A separate correction value is determined for each carriage direction.</p>

The yarn length measuring device works this way


Pattern	If required: Determining correction values	Generate original fabric (Master Piece)	Production
	<p>Determine correction values before the production</p> 		
	<p>YLC3 Determining correction values with test fabric piece</p> 		<p>YLC8 A separate correction value is determined for each carriage direction and knitting system.</p>
			<p>YLC7 A correction value is determined independent from the carriage direction.</p>
<ul style="list-style-type: none"> ◆ with irregular yarn consumption (change of the knitting mode, single jersey / double jersey)  ◆ Narrow fabrics (width: ≥ 5 inches), e.g. with knit and wear articles  ◆ Sequence (only possible with Setup2)  		<p>YLC5 Generate original fabric</p> 	<p>YLC6 The YLC5 data is used as target value for all further fabrics.</p>

5.2.1.2 Operating Modes and their Usage

There are four operating modes available in the Setup2 Editor.

- Production without YLC

- Working with mm
- Working with original fabric
- as specified by Sintral

Operating Mode	Explanation
Production without YLC	The knitting machine works without measuring and controlling.
Working with mm	<p>When to use:</p> <ul style="list-style-type: none"> ◆ Standard fabrics having a width of ≥ 7 inches. ◆ Fabrics produced in sequences ◆ Continuous fabrics <p>Procedure:</p> <p>The target values are calculated for each knitting row. The basis for this is the calculated yarn length.</p> <p>The used yarn length is measured and compared to the calculated yarn length (calculated based on machine gauge, stitch length and needle number).</p> <p>In case of deviations that occur within the allowed range, the stitch length is corrected (see Calculating correction values [71]).</p>
Working with original fabric	<p>When to use:</p> <ul style="list-style-type: none"> ◆ Fabrics with knitting modes, that have an irregular yarn consumption and therefore prevent a regulation. Examples for this are patterns with changing binding and complex knitting modes like Aran and cable stitch. ◆ Narrow fabrics with a width of ≥ 5 inches, e.g. the sleeve with knit and wear articles. ◆ Elements knitted-on with a width of ≥ 5 inches, e.g. trimmings. ◆ Fabrics produced in sequences. <p>Procedure:</p> <p>The target values are not calculated, but measured. The basis for this is the measured yarn length.</p> <p>The used yarn length is measured and compared to the specifications of the Master Piece.</p> <p>In case of deviations that occur within the allowed range, the stitch length is corrected (see Calculating correction values [71]).</p>
as specified by Sintral	<p>When to use:</p> <p>Working with knitting programs that were generated with an M1plus version V5.8 or older.</p> <p>This is the default setting in the Setup2 Editor. Therefore, you can load an older knitting program into the machine and start the production immediately without selecting a operating mode in the Setup2 Editor.</p> <p> The knitting machine knows the older commands (YLC1, YLC7...).</p>

The yarn length measuring device works this way

5.2.2 Adjusting the Stitch Cams with Programs from the M1plus



To adjust the stitch cams, you will find adjustment programs and a manual in the D:\ Stoll\ M1plus\ 5.X.XXX\ Sintral\ YLC directory by default



Load and run the machine dependent adjustment program *.zip on the CMS-OKC with the operating system V 2.1 (or higher) in order to re-adjust the stitch cams.

The adjustment programs for different types of machines:

CMS	Special feature	Yarn Carrier and Measuring Wheel	Program
CMS 520 CMS 530 CMS 730 CMS 740 CMS 822	Comb thread left on bar 2	Specify the yarn carriers and measuring wheels by RS18 inSetup2. YGC:2/4	CMS5xx.YLC2_NPK-Adjustment_Combthread-left.zip
CMS 502, CMS 420 E CMS 520 CMS 530 CMS 730 CMS 740 CMS 822	Comb thread right on bar 2	Specify the yarn carriers and measuring wheels by RS18 inSetup2. YGC:/24	CMS5xx.YLC2_NPK-Adjustment_Combthread-right.zip
CMS 730 S CMS 830 S	Gauge E3,5.2 E5.2 E6.2 E7.2 Comb thread left on bar 2	Yarn carrier 4 at the right Measuring wheel 4 active YGC:2/4	CMSx30S.YLC2_NPK-Adjustment_Combthread-left.zip
CMS 730 S CMS 830 S	Gauge E9.2 Comb thread left on bar 2	Yarn carrier 4 at the right Measuring wheel 4 active YGC:2/4	CMSx30S.YLC2_NPK-Adjustment_Combthread-left 9.2.zip
CMS922 CMS933	Two yarn carrier for residual yarn (widening and cast-off functions) Bar 1 right and bar 2 left.	Yarn carrier 4 at the right Measuring wheel 4 active YG:2/1 4	CMS9xx.YLC2_NPK-Adjustment.zip
CMS 530HP B	Belt take-down	Yarn carrier 4 at the right Measuring wheel 4 active YGC:2/4	CMS5xx.ylc2_npk-adjustment_Belt_take-down.zip

CMS	Special feature	Yarn Carrier and Measuring Wheel	Program
CMS 502HP+ B CMS 502HP B			
CMS ADF B	ADF Belt take-down	Yarn carrier 4 at the right Measuring wheel 4 active YGC:2/4	CMSADF.ylc2_npk-adjustment_Belt_take-down.zip

5.2.2.1 Yarn List to Adjust Stitch Cams

Gauge	Number of threads per yarn carrier	Yarn thickness	Yarn Quality
E 20	1	NM 50/2	100% Cotton or very inelastic yarns
E18	1	NM 50/2	
E 16	1	NM 50/2	
E 14	1	NM 34/2	
E 12	1	NM 34/2	
E 12m10	1	NM 34/2	
E 10	2	NM 34/2	
E 10m8	2	NM 34/2	
E 8	2	NM 34/2	
E 7	3	NM 34/2	
E 7m5	3	NM 34/2	
E 5	2	NM 14/2	
E 4	3	NM 14/2	
E 3.5	4	NM 14/2	
E 3	4	NM 14/2	
E 3,5.2	3	NM 14/2	
CMS 730 S CMS 830 S	E 3,5.2	2	
	E 3,5.2	3	NM 34/2
	E 5.2	3	NM 34/2
	E 6.2	2	NM 34/2
	E 7.2	1	NM 34/2
	E 9.2	1	NM 50/2

■ Adjusting Stitch Cams CMS OKC with Setup2 [70]

5.2.2.2 Adjusting Stitch Cams CMS OKC with Setup2

Adjust stitch cams:

**Service job**

Basic settings of the CMS will be overwritten!

To be done by experienced service technicians only.

Save all machine data (dongle) on the USB-Memory-Stick

- ✓ Device for the yarn length control is mounted on the CMS.
 - ✓ Suitable yarns according to the yarn list are at hand.
 - ✓ The operating system with Setup2 is installed.
1. Define the yarn carrier type by RS18 in the Setup2 file.
 - I 8= Adjustment Yarn (RS18=8)
 - I 7= Adjustment Yarn (RS18=7)
 - I 6= Adjustment Yarn (RS18=6)
 - I 5= Adjustment Yarn (RS18=5)
 - I 4= Adjustment Yarn (RS18=4)
 - I 3= Adjustment Yarn (RS18=3)
 - I 2= Adjustment Yarn (RS18=2)
 - I 1= Adjustment Yarn (RS18=1)
 2. Thread up the yarn carriers in use.
 3. Lead the thread over the allocated measuring wheel.
 4. Adjust the yarn tension to 8 cN at the minimum.
 5. Select the adjusting program ("ylc2_npk-Adjustment.zip") according to the machine type.
 6. Load the adjustment program.
 7. Watch-out the fabric width with machines without comb.
Set counters if necessary in order to get the matching fabric width for adjusting.
 8. Set the cycle counter in Setup2 if necessary:
 - RS1 controls the length before the measuring starts
(Example: if you want to knit into the main take-down)
DefaultRS1=5
 - RS16 controls the fabric width for adjusting.
Default: RS16=0 equals half the width of the needle bed.
RS16=1 equals 2/3 of the width of the needle bed
RS16=2 equals the hole width of the needle bed.
 - RS19 controls the system functions
 - RS19=0 Stitch formation only
 - RS19=1 Stitch formation and split curve
 - RS2=999 controls the adjusting and must not be changed.
(therefore not part of Setup2)
 9. Start the program.
 10. The machine stops and prompt appears:
"!! NPK DATA WILL BE DELETED !! -- ?? COPY DONGLE ??\"

11. Go ahead if you have ensured, that the former NPK data of the machine (Dongle/MC-Data) are saved or written down.

- Yarn List to Adjust Stitch Cams [▢ 69]

5.2.3 Calculating correction values

The following examples are to show you how the ASCON device works.

Working with mm

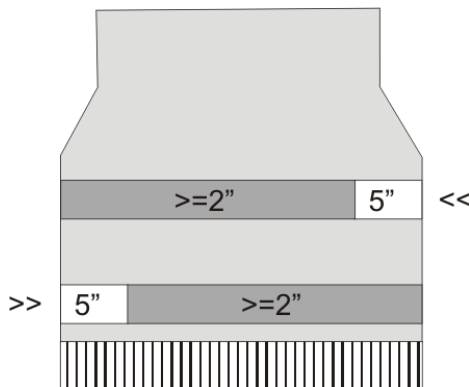
Machine: CMS 530, gauge E12
Knitting mode: Single jersey (RL)
SEN =1-400

NP=12.0, this corresponds to a stitch length of 7.11 mm with E12 Stitch length (tables) [▢ 81]

Calculation:

- 5 inches are deducted from the 400 needles (see drawing: "area not taken into account"). 5 inches correspond to 60 needles with the gauge E12 (5 x 12 = 60).
- 400-60 = 340 needles
- 340 x 7.11 mm = 2417.4 mm (target value for the yarn length)

At the beginning of the knitting row an area of 5 inches is not taken into account, as it would distort the measuring result (catch up and accelerate the yarn).



Working with mm: measuring area and area not taken into account

	area not taken into account
	Measuring area

The provided stitch length in each knitting row is detected by the ASCON device and passed onto the computer. The yarn length of several knitting rows will be summed up, separated by carriage direction. The sum is compared to the target value and a correction value is determined. If necessary, the computer adjusts the stitch cams so that more or less yarn is consumed.

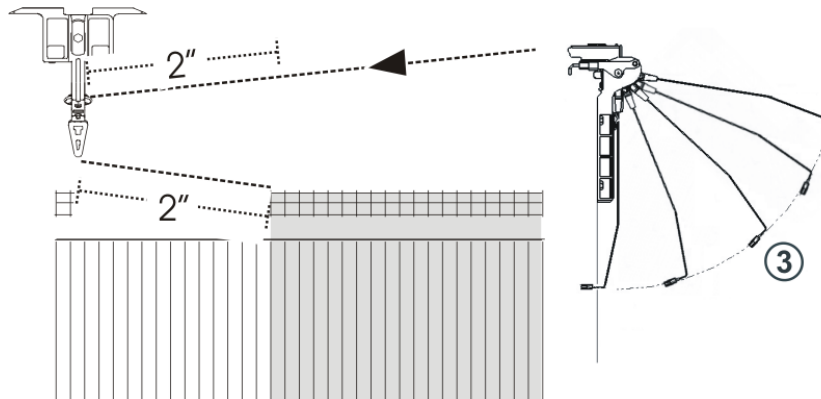


If the knitting area of a row is smaller than 7 inches, no ASCON data is measured.

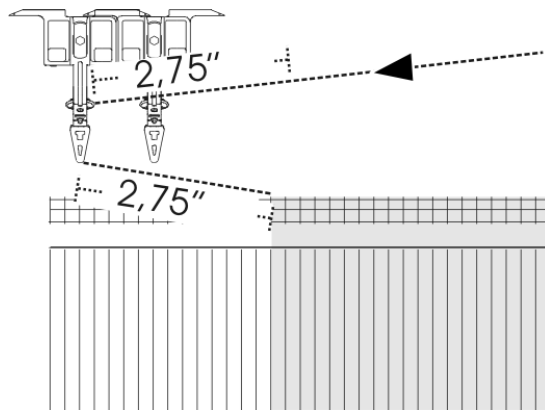
Parking position of the yarn carriers

- The value for the yarn carrier distance "YD" may not be greater than "32". "YD=32" means: the yarn carrier is 2 inches away from the fabric selvedge (32 x 1/16 inch = 2 inches).

The yarn length measuring device works this way



- 2 x 2 inches yarn length need to be caught up and accelerated (1 inch). If the YD value is greater than "32", this distance exceeds the area not taken into account of 5 inches. This distorts the measuring result.
Recommendation:
 - Reduce the restoring force of the yarn tensioner.
 - minimize the yarn tensioning path of the yarn tensioner (position 3).
- If two yarn carriers are used on one rail, the ASCON device cannot optimally control due to the larger distance of the second yarn carrier. The second yarn carrier is at least 2.75 inches away from the fabric selvedge.

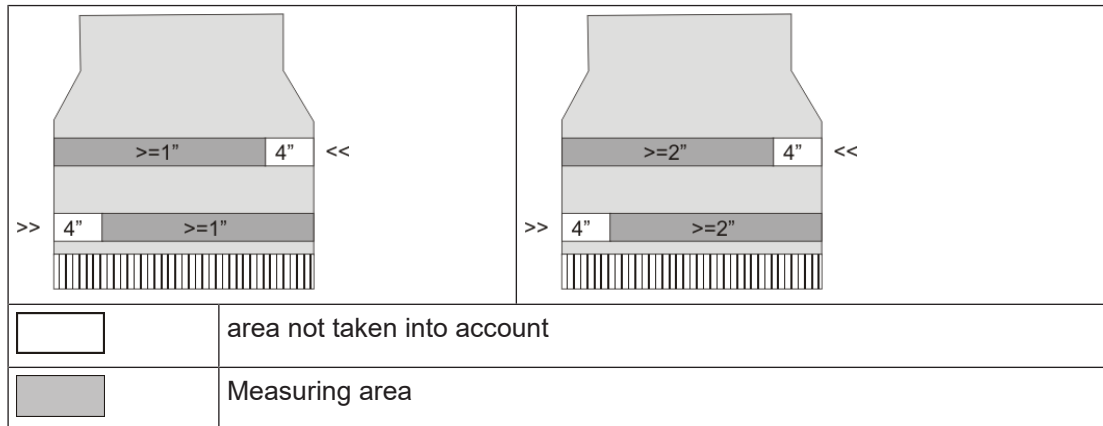


- 2 x 2,75 inches of yarn length need to be caught up and accelerated (1 inch). This distance lies outside the area not taken into account of 5 inches. This distorts the measuring result.

Working with original fabric

When "Working with original fabric", the target values are not calculated, but measured.

The minimum width is:	
5 inches for gauge E3 to E14	6 inches for gauges E16, E18, E8.2 and 9.2



Working with original fabric: measuring area and area not taken into account

i If the knitting area of a row is smaller than 5 inches (6 inches for E16, E18, E8.2, E9.2), no ASCON data is measured.

Changing the minimum width

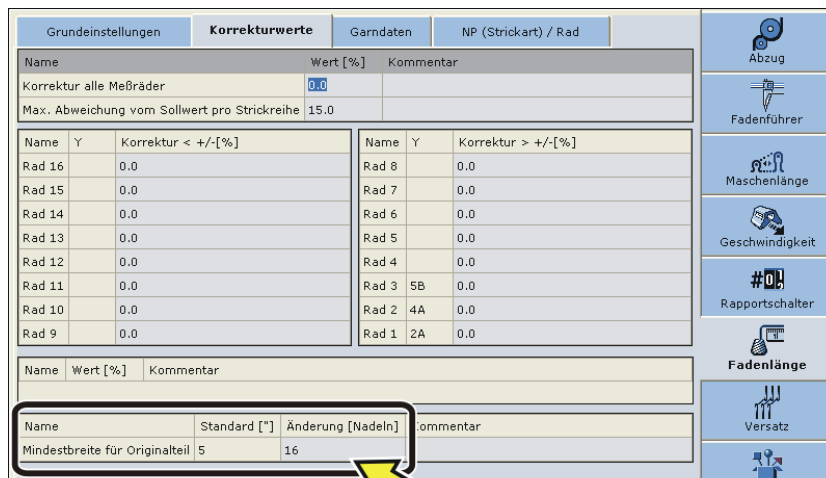
If the error message "YLC: deviation from set value of measuring wheel x is y%" is displayed, check the following items:

- If the yarn is threaded over the correct measuring wheel
- If the measuring wheel runs smoothly
- If the rubber running ring at the measuring wheel is OK
- If the yarn tension is OK (see previous section YLC1 - "Parking position of the yarn carriers")

In case that the error message is still displayed, change the minimum width.

Changing the minimum width:

1. In the Setup2 Editor call up the "Correction values" tab (Setup2 Editor -> Menu "Yarn length" -> "Correction values")



The yarn length measuring device works this way

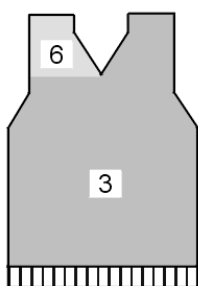
2. In the "Modification (needles)" column increase the value for the minimum width a little, for example by 16 needles.
Value range: - 2 E...0...+ 2 E (E = Number of needles per inch = Gauge of the machine)
Example for E16: - 32...0...+ 32 needles
3. Confirm input
4. Afterwards you need to knit the original fabric again.
5. If the error appears again, enlarge the minimum width once more.

5.2.4 Special Sintral commands

- These Sintral commands for yarn length control are still supported by the "According to Sintral specification" operating mode.
- Use the "Working with mm" or "Working with Master Piece" operating mode for new knitting programs. Conceptual Considerations [□ 29]

"YLC-" command The "YLC-" command deactivates the control for one carriage stroke. If an YLC error message appears in each fabric always at the same place (for example "YLC Yarn error"), you can deactivate the YLC control for this knitting row.

"YLCDEV" Command With the "YLCDEV" command the correction values are copied from a yarn carrier (measuring wheel) already in use to a new one. This prevents possible corrections of the newly used yarn carrier.



Example for working with the "YLCDEV" command

Example	Explanation	Specification in Sintral program
V-neck	Up to the start of the V-neck only yarn carrier 3 works. In the V-neck it knits the right part and yarn carrier 6 the left part.	YLCDEV:3-6; Result: The correction value of yarn carrier 3 will be applied for yarn carrier 6.

Working with "YLCDEV" command

Per carriage stroke up to four value pairs can be specified.
Example: YLCDEV:3-6 3-5 2-4 1-7.

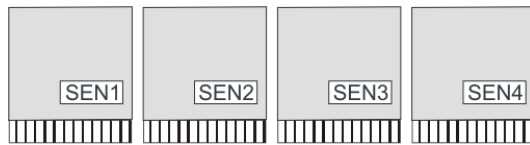


You can enter either the Sintral command "YLC" or "STIXX" into the knitting program. The OKC knitting machine understands both instructions.

5.2.5 Several SEN and NPJ areas

Several SEN areas

Controlling with the ASCON device is also possible with patterns with several SEN areas.



Pattern with four SEN areas

Each SEN area can have different correction values. The switching between different correction values happens automatically, regardless whether you are working with one or with several knitting systems.

The minimum knitting width per SEN area:

- Working with mm (YLC MM) = 7 inches
- Working with original fabric (YLC MP) = 5 inches

Working with NPJ

The stitch lengths of all needles are added and the mean value is calculated out of it. The mean value is the set value for the yarn length of this knitting row.



5.2.6 What was new in OKC 2.8?

Software version: Operating system V_OKC_002.008.000_STOLL

The most important changes in this version:

Working in the Setup2 Editor was simplified. The number of modes was reduced.

- For the production:
 - Working in mm mode replaces the modes YLC1/7/8.
- Determine correction values before starting the production:
 - Determine Basic Conditions mode replaces the modes YLC3/4.
- Further supplements:
 - If several yarns are combined in one yarn carrier, the yarns can be distributed to several measuring wheels.
 - Faster regulation when changing the knitting mode. The regulation is carried out via the stitch cam positions used in the pattern.



Previous patterns are executable without any modifications. All the YLC modes are still available in the Sintral program.

5.2.7 What was new in OKC 2.6?

The most important changes in this version:

- YLC - Yarn disposition
 - The "Yarn disposition" window was re-designed.
 - The table displays the following data:

The yarn length measuring device works this way

- Yarn consumption of all the knitted pieces (individual pattern, sequence, sequence element, sequence list, order menu)
- Yarn consumption of the last knitted piece
- Yarn consumption of the current piece
- Yarn consumption of the individual measuring wheels
- YLC5 – Minimum width with higher gauges
With some patterns appeared the problem that it was not possible to determine the data for the original fabric (Master Piece) without errors. The reason was the inaccuracy of the measuring, caused by a very changing yarn tension when catching up the yarn in the carriage reversal.
Therefore the minimum width was increased from 5 to 6 inches (gauge E16, E18, E8.2 and E9.2).
The minimum width with the gauges E3 to E14 will continue being 5 inches.

The minimum width is adjustable for all gauges:
Setup2-Editor -> "Stitch length" menu -> "YLC5" tab

What do you need to take care of with the existing patterns with gauge E16, E18, E8.2 and E9.2?
 - If you were able to knit your pattern without problems up to now, change the minimum width in the "YLC5" tab to 5 inches. See, section "YLC5".
 - If you do not change the minimum width, you need to knit the original fabric again.
- YLC regulation for gauge E 2,5.2
Up to now: The YLC regulation was adjusted the same way as with higher gauges.
New: With gauge E2,5.2 the regulation is now carried out as fast as with coarse gauges (E3 – E4)

5.2.8 What was new in OKC 2.2?

Software version: Operating system V_OKC_002.002.000_STOLL

The most important changes in this version:

- Alternative pattern structure
You can enter the YLC mode in the Sintral program or in the Setup2 editor.
Up to now: The YLC mode is defined in the Sintral program.
New: Enter the YLC mode in the Setup2 editor. This specification is valid for the whole knitting program (START...END).
You can select the following modes: 0, 1, 5, 7, 8 (0= The specifications of the Sintral program are carried out)
Notice: The YLC mode in Setup2 has priority over the YLC command in Sintral (Exception for "0")

During the pattern preparation on the M1plus, mark the areas which the control is to be deactivated for. For doing this, in the control column enter "Yarn length control" via the area "YLC-".

In the Sintral program, the beginning and the end of the area are marked with "YLC(-" and "YLC-)".
Start: YLC(-
End: YLC-)

- YLC5 - generate master piece
Once the original fabric has been completed, the machine stops automatically. In order to see the stop cause immediately, the reference "Knit the original fabric (master piece) once again or change to production (YLC6)" appears.

- Command "ASCON" replaced by "YLC"
All commands "ASCON" have been renamed "YLC".
- Mode "YLC6" – cycle counter inactive
The cycle counters may not be modified in the "YLC6" mode. Therefore the input fields are inactive (grayed out) in the window "Cycle counter".
- "YLC6" mode – yarn correction
If you are working in mode "YLC6", it is possible to modify fabric length without having to record the original fabric (Master Piece) again.
For this purpose, enter a value in the Setup2 Editor in the "Yarn correction" line (menu "Yarn length" -> tab "YLC5").
Value range: -10%...+10%
Notice: The stitch tension is modified for the whole fabric, not for individual areas.
- "Changeable monitoring" window
Display of the effective NP value. It consists of NP value, NPK correction and the current YLC correction value.
In addition to this, the current correction value is displayed.
- Log file for the ASCON modes
In the Log file you can have a look at the mode change with date and time.
(Window "Yarn length control" -> additional function keys -> YLC Log)

5.2.9 What was new in OKC 2.1?

Software version: Operating system V_OKC_002.001.000_STOLL

The most important changes in this version:

- New designations
The menu, the messages and the operating modes had the designation STIXX up to now. These designations were changed into "Yarn length control" or "YLC" (Yarn length control).
The commands for the knitting program have not been changed. This means that you can use the previous knitting programs.
- Finer control of the yarn length
 - Starting with the operating system V 1.5, (OKC machine) the step width of the NP values is halved, from "0.1" to "0.05".
The control takes into account the finer increment of the NP values. Thus, the fabric length is controlled more precisely.
 - Specify the NP values in millimeters ("Stitch length"). The step width is 0.01 millimeters. This is valid for the NP values and for the NPK value.
- Save the data for the original piece (YLC5)
The data can be saved and loaded again (file name: Pattern name.stx). The determined data are used as actual values for all other fabrics.
User area:
 - If the pattern is to be knitted once again on the same machine later on.
 - If the pattern is to be knitted on another machine with the same gauge.
- Sequence knitting and "YLC5"
Each sequence element can be controlled with the YLC5 mode. Save the YLC5 data for each sequence element. When loading the sequence element, the YLC5 data are also loaded.
- Working with "NPJ"
The stitch lengths of all needles are added and the mean value is calculated out of it. The mean value is the target value for the yarn length of this knitting row.

The yarn length measuring device works this way

- Fabric width with "YLC1"
The minimum fabric width is reduced from 10 to 7 inches.
- Yarn consumption for 10 fabrics
Display of yarn consumption of previous knitted fabrics (10 fabrics at most).
- New YLC mode - "YLC4"
With this mode the device runs through a learning curve. The actual values are determined like with "YLC1" but without controlling the stitch length.
The command "STIXX1" ("STIXX7" or "STIXX8") is entered in the knitting program. You set-up the pattern on the knitting machine and switch-on the learning curve "YLC4". You produce a fabric and carry out the fine adjustment (set the cycle counter, adjust the WM values and the stitch length, ...). Thereby the actual values are determined automatically. If necessary, you can repeat this several times, the actual values are determined anew for each fabric (START).
If the fabric meets your expectations regarding the length, width and look, you apply the actual values to the production ("YLC1", "YLC7" or "YLC8" mode).
Result: All pieces are produced with the same values.
- New YLC mode - "YLC8"
The difference between "YLC8" and "YLC1" lies in the determination of the correction values. The ranges of application are identical.
 - "YLC1": A separate correction value is determined for each yarn carrier, regardless in which knitting system it works.
 - "YLC8": A separate correction value is determined for each yarn carrier, depending on the knitting system in which it works.
- The left and right ASCON device can be used independently of each other.
In contrast to the STIXX device: The STIXX device on the left machine side requires the STIXX device on the right machine side.
- Correction values and "Warm start"
The correction values are saved. Therefore, you can immediately continue knitting with a "Warm start".
- You can enter either the ASCON or the STIXX command in the knitting program. The knitting machine understands both instructions.
Previous knitting programs do not need to be changed.

5.2.10 Log on ASCON device

The ASCON device must be logged-on on the machine, so that the knitting machine can process the data of the ASCON device.

We recommend you to load always the most recent operating system.

starting with
operating
system
V_OKC_002
.000.000 (or
higher)

Starting with this operating system, the machine automatically recognizes if a ASCON devices is connected. In order to update the software on the ASCON device, you have to install the operating system of the knitting machine without making any change.

1. Restart the machine (switch main switch off and then on again).
 2. Press the "Installation" button in the "BootOkc" menu.
 3. Since you must not carry out any changes, simply click through the different windows until the "Main menu" is displayed.
- ▶ When the installation is finished, the "Yarn Length Control" key appears additionally in the "Main menu".

The yarn length measuring device works this way

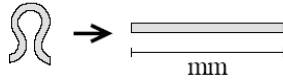


PART 5.3

Stitch length (tables)

5.3 Stitch length (tables)

Stitch length with all machines (not in the case of CMS 730 S, CMS 830 S)



NP	E 3	E 1,5,2 (3)	E 3.5	E 4	E 2.2 (3)	E 5	E 7	E 8	E 10 (1)	E 10 (2)
6.5						6.26				
7.0	7.67		5.90	7.03		6.96			1.83	
7.5	9.25		7.40	8.48		7.52			2.15	2.20
8.0	10.83		8.90	9.93		8.22			2.85	2.80
8.5	12.42	13.96	10.40	11.38	11.38	8.92	4.66		3.56	3.60
9.0	14.00	15.32	11.90	12.83	12.83	9.48	5.46	3.58	4.26	4.20
9.5	15.85	16.68	13.40	14.28	14.28	10.18	6.10	4.30	4.97	4.80
10.0	17.17	18.05	14.90	15.73	15.73	10.88	6.90	5.20	5.67	5.60
10.5	18.75	19.41	16.40	17.18	17.18	11.44	7.70	5.92	6.38	6.20
11.0	20.33	20.77	17.90	18.63	18.63	12.14	8.34	6.82	7.00	7.00
11.5	21.92	22.14	19.40	20.08	20.08	12.84	9.14	7.54	7.71	7.60
12.0	23.50	23.50	20.90	21.53	21.53	13.40	9.94	8.44	8.41	8.40
12.5	25.08	24.86	22.40	22.98	22.98	14.10	10.58	9.34	9.12	9.00
13.0	26.67	26.23	23.90	24.43	24.43	14.80	11.38	10.06	9.82	9.80
13.5	28.25	27.59	25.40	25.88	25.88	15.36	12.18	10.96	10.53	10.40
14.0	29.83	28.95	26.90	27.33	27.33	16.06	12.82	11.68	11.23	11.00
14.5	31.42	30.32	28.40	28.78	28.78	16.76	13.62	12.58	11.94	11.80
15.0	33.00	31.68	29.90	30.23	30.23	17.32	14.26	13.30	12.57	12.40

Stitch length - yarn consumption per stitch (mm) with R/L fabric (Table 1)

- (1) CMS 933, CMS 822, CMS 530, CMS 520, CMS ADF-3
- (2) CMS 830 C, CMS 730 T, CMS 530 T, CMS 520 C, CMS 502
- (3) CMS 520 C+

CMS 730 T	E10 E12 E14 E6.2 E7.2	For these gauges there are different cams for loose and tight knitting.
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Stitch length (tables)

NP	E 12	E 14	E 16	E 18	E 2,5.2	E 2,5.2 m.4L	E 2,5.2 (3)	E 3 m.3L
6.5					6.26	5.29		10.55
7.0					6.96	6.06	4.36	10.55
7.5					7.52	6.91	5.71	11.80
8.0	2.85		1.88		8.22	7.68	7.06	13.05
8.5	3.38	2.58	2.16	1.86	8.92	8.45	8.41	14.30
9.0	3.91	3.13	2.51	2.21	9.48	9.30	9.76	15.55
9.5	4.45	3.68	2.86	2.56	10.18	10.07	11.11	16.80
10.0	4.98	4.23	3.21	2.91	10.88	10.84	12.46	18.05
10.5	5.51	4.78	3.56	3.26	11.44	11.69	13.81	19.30
11.0	6.05	5.33	3.91	3.61	12.14	12.46	15.16	20.55
11.5	6.58	5.88	4.26	3.96	12.84	13.23	16.51	21.80
12.0	7.11	6.43	4.61	4.31	13.40	14.08	17.86	23.05
12.5	7.65	6.98	4.96	4.66	14.10	14.85	19.21	24.30
13.0	8.18	7.53	5.31	5.01	14.80	15.62	20.56	25.55
13.5	8.71	8.08	5.66	5.36	15.36	16.47	21.91	26.80
14.0	9.25	8.63	6.01	5.71	16.06	17.24	23.26	28.05
14.5	9.78	9.18	6.36	6.06	16.76	18.01	24.61	29.30
15.0	10.31	9.73	6.71	6.41	17.32	18.86	25.96	30.55

Stitch length - yarn consumption per stitch (mm) with R/L fabric (Table 2)

(3) CMS 830 C

CMS 730 T	E10 E12 E14 E6.2 E7.2	For these gauges there are different cams for loose and tight knitting.
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NP	E 3,5.2	E 3,5.2 m.4L	E 5.2	E 6.2	E 6.2 (knit and wear) (4)	E 7.2	E 7.2 (knit and wear) (5)	E 8.2	E 9.2
6.5		5.48							
7.0		5.48							
7.5		5.48	3.54	2.14	1.77				
8.0	4.97	5.48	3.86	2.47	2.07	2.14	1.58	1.57	1.61
8.5	5.30	5.84	4.66	3.02	2.57	2.58	1.99	1.91	1.91

NP	E 3,5.2	E 3,5.2 m.4L	E 5.2	E 6.2	E 6.2 (knit and wear) (4)	E 7.2	E 7.2 (knit and wear) (5)	E 8.2	E 9.2
9.0	6.13	6.63	5.46	3.57	3.08	3.13	2.49	2.33	2.30
9.5	6.80	7.42	6.26	4.12	3.58	3.68	3.00	2.75	2.68
10.0	7.63	8.30	7.06	4.67	4.08	4.23	3.50	3.18	3.06
10.5	8.47	9.09	7.86	5.22	4.58	4.78	4.01	3.60	3.45
11.0	9.13	9.88	8.66	5.77	5.08	5.33	4.51	4.02	3.83
11.5	9.97	10.76	9.46	6.32	5.58	5.88	5.02	4.45	4.21
12.0	10.80	11.56	10.26	6.87	6.09	6.43	5.52	4.87	4.60
12.5	11.47	12.35	11.06	7.42	6.59	6.98	6.03	5.29	4.98
13.0	12.30	13.23	11.86	7.97	7.09	7.53	6.53	5.72	5.36
13.5	13.13	14.02	12.66	8.52	7.59	8.08	7.04	6.14	5.75
14.0	13.97	14.81	13.46	9.07	8.09	8.63	7.54	6.56	6.13
14.5	14.80	15.69	14.26	9.62	8.59	9.18	8.05	6.99	6.51
15.0	15.47	16.48	15.06	10.17	9.10	9.73	8.55	7.41	6.90

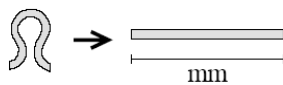
Stitch length - yarn consumption per stitch (mm) with R/L fabric (Table 3)

(4) CMS 822

(5) CMS 530, CMS 822, CMS ADF-3

CMS 730 T	E10 E12 E14 E6.2 E7.2	For these gauges there are different cams for loose and tight knitting.
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Stitch length
at CMS 730
S, CMS 830
S



NP	E 3,5.2	E 5.2	E 6.2	E 7.2	E 9.2
3.0	5,72	3,82	2,67	2,67	2,50
3.5	6,11	3,82	2,67	2,67	2,50
4.0	6,49	3,82	2,67	2,67	2,50
4.5	6,88	3,82	2,67	2,67	2,50
5.0	7,26	3,82	2,67	2,67	2,50
5.5	7,65	4,29	2,67	2,67	2,50
6.0	8,03	4,77	2,76	2,67	2,50
6.5	8,42	5,24	3,21	2,67	2,50

Stitch length (tables)

NP	E 3,5.2	E 5.2	E 6.2	E 7.2	E 9.2
7.0	8,80	5,72	3,66	2,94	2,50
7.5	9,19	6,19	4,11	3,39	2,50
8.0	9,57	6,67	4,56	3,84	2,57
8.5	9,96	7,14	5,01	4,29	2,90
9.0	10,34	7,62	5,46	4,74	3,24
9.5	10,73	8,09	5,91	5,19	3,57
10.0	11,11	8,57	6,36	5,64	3,91
10.5	11,50	9,04	6,81	6,09	4,24
11.0	11,88	9,52	7,26	6,54	4,57
11.5	12,27	9,99	7,71	6,99	4,91
12.0	12,65	10,47	8,16	7,44	5,24
12.5	13,04	10,94	8,61	7,89	5,58
13.0	13,42	11,42	9,06	8,34	5,91
13.5	13,81	11,89	9,51	8,79	6,24
14.0	14,19	12,37	9,96	9,24	6,58
14.5	14,58	12,84	10,41	9,69	6,91

Stitch length - yarn consumption per stitch (mm) with R/L fabric (Table 1)

NP	E 3,5.2	E 5.2	E 6.2	E 7.2	E 9.2
15.0	14,96	13,32	10,86	10,14	7,25
15.5	15,35	13,79	11,31	10,59	7,58
16.0	15,73	14,27	11,76	11,04	7,92
16.5	16,12	14,74	12,21	11,49	8,25
17.0	16,50	15,22	12,66	11,94	8,58
17.5	16,89	15,69	13,11	12,39	8,92
18.0	17,27	16,17	13,56	12,89	9,25
18.5	17,66	16,64	14,01	13,29	9,59
19.0	18,04	17,12	14,46	13,74	9,92
19.5	18,43	17,59	14,91	14,19	10,25
20.0	18,81	18,07	15,36	14,64	10,59
20.5	19,20	18,54	15,81	15,09	10,92
21.0	19,58	19,02	16,26	15,54	11,26
21.5	19,97	19,49	16,71	15,99	11,59
22.0	20,35	19,97	17,16	16,44	11,93
22.5	20,74	20,44	17,61	16,89	12,26
23.0	21,12	20,92	18,06	17,34	12,59

NP	E 3,5.2	E 5.2	E 6.2	E 7.2	E 9.2
23.5	21,12	21,39	18,51	17,79	12,93
24.0	21,12	21,87	18,96	18,24	13,26
24.5	21,12	22,34	19,41	18,69	13,60
25.0	21,12	22,82	19,86	19,14	13,93
25.5	21,12	22,82	20,31	19,59	14,26
26.0	21,12	22,82	20,67	20,04	14,60
26.5	21,12	22,82	20,67	20,49	14,93
27.0	21,12	22,82	20,67	20,67	15,27
27.5	21,12	22,82	20,67	20,67	15,60

Stitch length - yarn consumption per stitch (mm) with R/L fabric (Table 2)