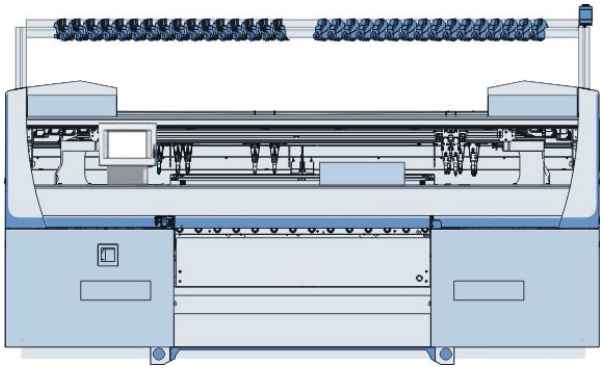
STOLL

Supplementary instructions for CMS machines with EKC control



	Type	Computer Type	Component Type
CMS 933	775 776	EKC1.0	000
CMS 822	665 666	EKC1.0	000
CMS 530 W CMS 530 BW	698	EKC1.0	000
CMS 530	670 656	EKC1.0	000
CMS 520 C+	672	EKC1.0	000
CMS 502 HP+	690 669	EKC1.0	000
CMS 330	694	EKC1.0	000
CMS 330 W	695	EKC1.0	000
ADF 530-16	805 685	EKC1.0	000
ADF 530-16 W	806	EKC1.0	000
ADF 530-32	804	EKC1.0	000
ADF 530-32 W	688	EKC1.0	000
CMS 730 T	591	EKC1.0	000
CMS 803	660 661	EKC1.0	000
CMS 830 C	662	EKC1.0	000
CMS 830 S	664	EKC1.0	000

CE

Date: 2017-10-10
Original operating instructions
Operating system of the machine: V_EKC_001.001.000_STOLL (or higher)
H. STOLL AG & Co. KG, Stollweg 1, D-72760 Reutlingen, Germany

Table of Contents

1 About this document

Supplementary instructions

This supplementary instructions are to provide you with an overview over the features that are new with this machine.

You will find the descriptions, which did not change in the operating instructions and in the safety instructions on the documentation DVD.

Documentation DVD

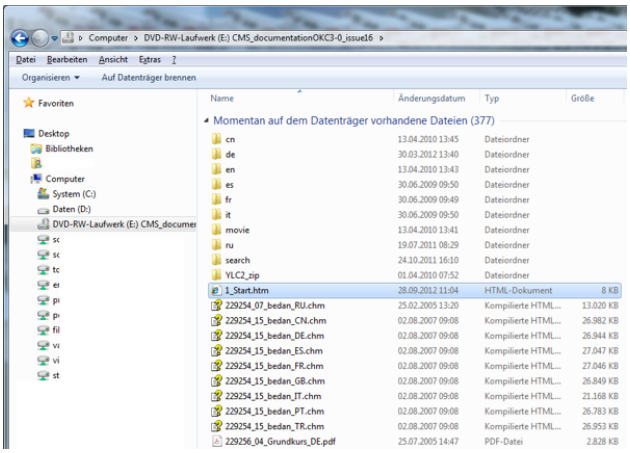
Included in the accessories you will find a DVD with documents about your machine.

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

The documents are available in different languages.

For browsing the documentation DVD:

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



i Keep the DVD where it is accessible to all personnel who are responsible for working on the knitting machine.

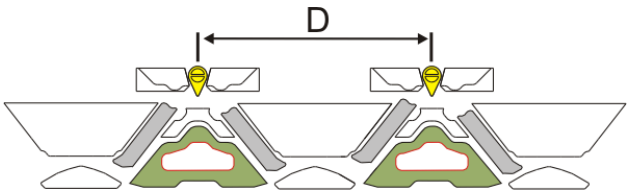
In case of resale deliver the machine with the DVD.

2 Overview

The new CMS generation with the control **EKC 1.0** is on the market since 2017/09.

The essential characteristics of these machines are:

- New user interface
- ADF machine:
  - New course of yarn
  - New sliding board
- Gauge E5 to E8
  A higher productivity by means of a shortened system distance.
  With these gauges, the system distance has been reduced from 6 to 5,2 inches.



D	Explanation
D5	5" Distance between the knitting systems Gauge: E10 | E12 | E14 | E16 | E18 | E6.2 | E7.2 | E8.2 | E9.2
D5,2	5,2" Distance between the knitting systems Gauge: E5 | E7 | E8 | E2,5.2 | E3,5.2 | E5.2
D6	6" Distance between the knitting systems CMS 730 T, CMS 830 S: all gauges
D9	9" Distance between the knitting systems CMS 520 C+, CMS 830 C: all gauges

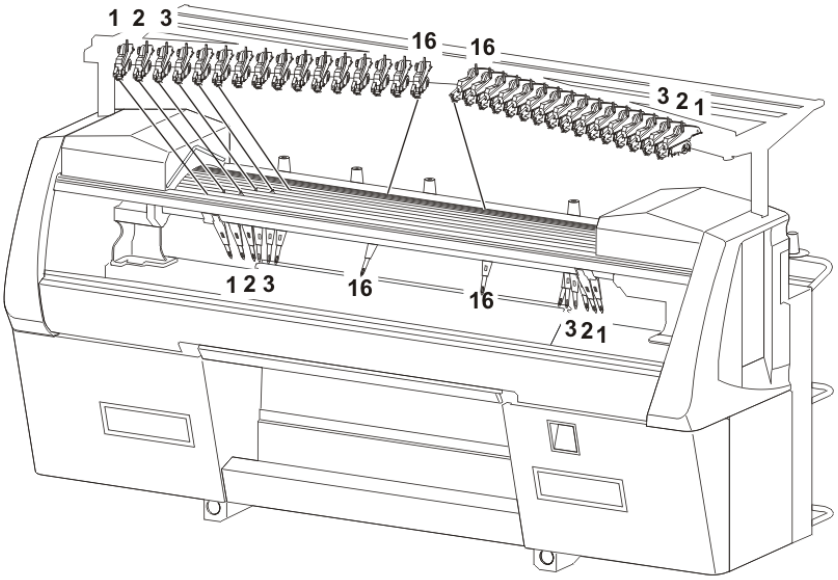
	System distance / Machine type			
	D5	D5,2	D6	D9
CMS 330	694			
CMS 330 W	695			
CMS 530	670	656		
CMS 530 W	698			
CMS 502 HP+	690	669		
CMS 520 C+				672
ADF 530-16	805	685		
ADF 530-16 W	806			

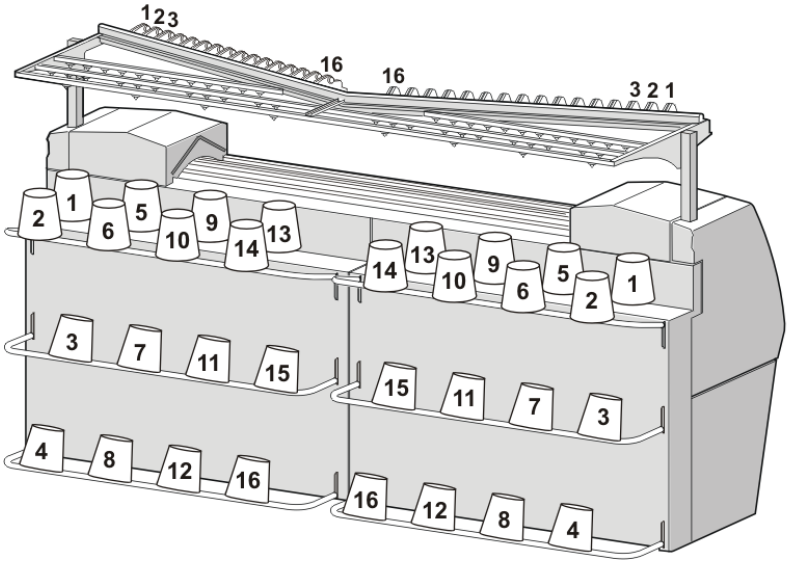
	System distance / Machine type			
	D5	D5,2	D6	D9
ADF 530-32	804			
ADF 530-32 W	688			
CMS 822	665	666		
CMS 933	775	776		
CMS 730 T			591	
CMS 803	660	661		
CMS 830 C				662
CMS 830 S			664	

2.1 Course of yarn (ADF)

New course of yarn

The yarn feeding is carried out from the top - directly from the yarn control device to the yarn carrier. To prevent the threads from touching each other, the yarn control devices are arranged in a V-shape.





In order to ensure that the course of yarn from the bobbin to the yarn carrier runs straight, there is a fixed allocation of bobbin, yarn control device and yarn carrier.

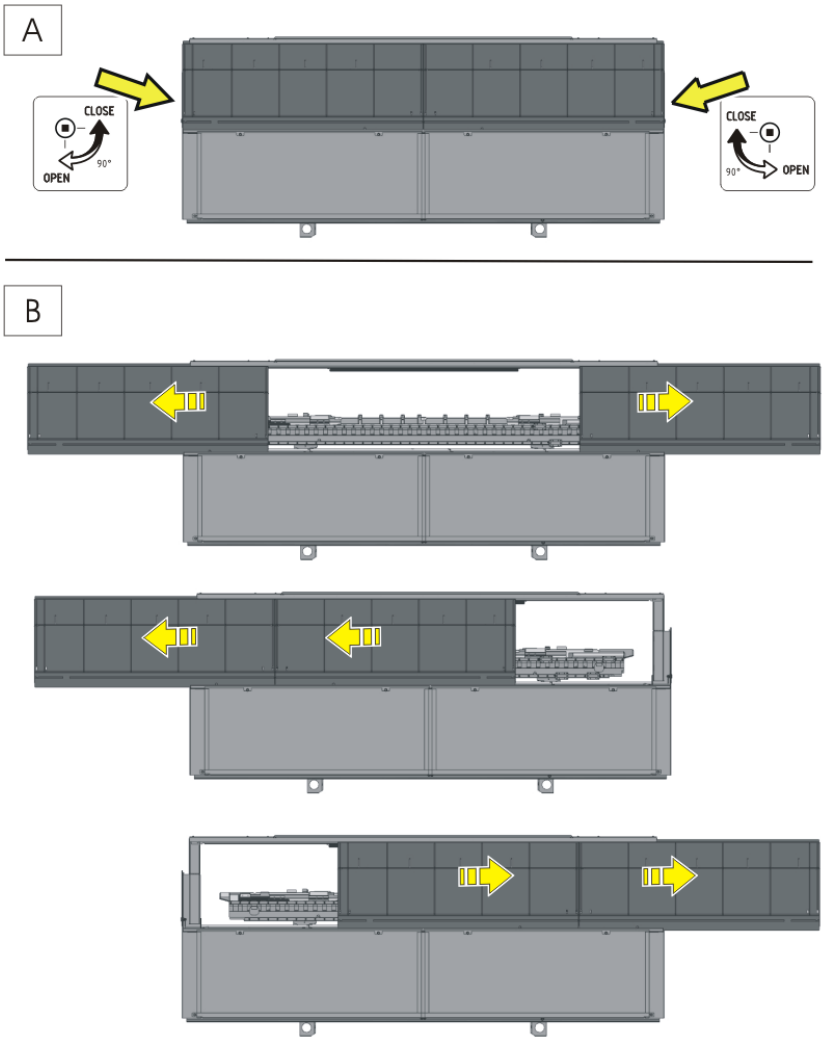
- Bobbin 1 - Yarn control device 1 - Yarn carrier 1
- Bobbin 2 - Yarn control device 2 - Yarn carrier 2, etc.

This yarn feeding causes:

- the most reduced yarn tension possible
- that the threads do not touch each other

2.2 Sliding board (ADF)

The sliding board consists of two individual boards. Each sliding board can be pushed to the left or to the right.

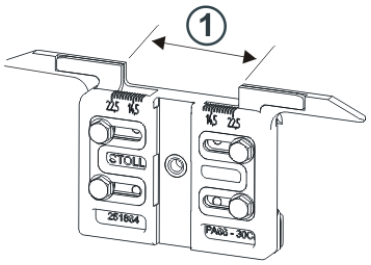


A	The sliding boards are secured at two points. Use the square spanner from the accessories for opening.
B	Each sliding board can be pushed to the left or to the right. To be able to remove rear carriage part from the machine, push both sliding boards into the same direction.

3 Repairing the knitting machine

3.1 Plating - Plating yarn carrier carriage

Not for CMS 520 C, CMS 830 C



Two yarn carriers which differ depending on the engaging width (1) on the yarn carrier carriage, are used for plating with normal yarn carriers. The engaging width is adjustable individually (23-46 mm) on this yarn carrier carriage.

Combination possibilities of the yarn carriers:

- 2 plating yarn carrier carriages
- 1 standard yarn carrier, and 1 plating yarn carrier carriage

Example for a plating pattern

Colored plating pattern

The light, visible yarn on the fabric front side is the plating yarn (yarn carrier with the smaller engaging width)
The dark yarn is the basic yarn (yarn carrier with the larger engaging width)

i When an elastic thread is knitted, it is said that it is plated which is technologically not quite correct. The yarn is actually knitted with the plating process, and from the technological point of view, the elastic thread is the basic yarn, and the visible one is the plating yarn.

Clamping and cutting bed 2x16

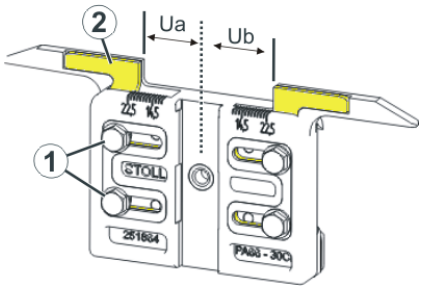
When using 16 times clamping / cutting, every other clamping / cutting point has to be deactivated to ensure that both threads are reliably clamped and cut.

Carry out the settings in the "Optional Features" window.

➔ Switch off and on the main switch -> System Control Unit -> Restart & Configuration -> Optional Features

- Quantity of Clamping and Cutting Points on the Left, setting: 16/8
- Quantity of Clamping and Cutting Points on the Right, setting: 16/8

3.1.1 Adjusting



Adjust engaging width:

1. Loosen both screws (1).
2. Push insert (2) into the desired position.
   A scale simplifies the adjustment.
3. Re-tighten both screws (1).
4. Repeat the setting process for the other side.

The entire engaging width consists of the value for the left (Ua) and the right (Ub) hand-side.
Both values may be equal (symmetrical setting) or may differ.

Recommended engaging width (specifications in millimetres)

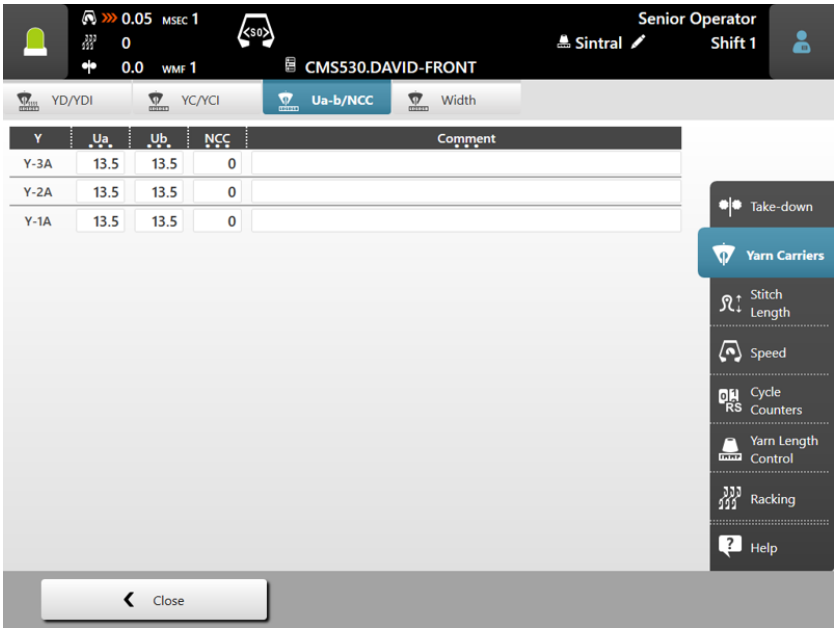
Gauge / Machine	leading	Following
E10 | E12 | E14 E16 | E18 | E6.2 E7.2 | E8.2 | E9.2	29 Ua: 14.5 Ub: 14.5	43 Ua: 21.5 Ub: 21.5
E5 | E7 | E8 E2,5.2 | E3,5.2 E5.2	27 Ua: 13.5 Ub: 13.5	46 Ua: 23.0 Ub: 23.0
CMS 730 T	29 Ua: 14.5 Ub: 14.5	46 Ua: 23.0 Ub: 23.0
CMS 830 S	33 Ua: 16.5 Ub: 16.5	42 Ua: 21.0 Ub: 21.0

Settings on the knitting machine

The Ua and Ub values are important for parking the yarn carriers correctly:

- at the fabric selvedge
- within the clamping and cutting bed

Path: Setup Editor -> "Yarn Carriers" menu -> "Y:Ua-b / Ncc" tab



	Explanation	Value range
Y	Corrections of yarn carrier 1A to 8D	
Ua	Adjust the engaging width (left) when plating with normal yarn carriers.	Minimum value: 11.5 mm Maximum value: 23 mm Step width: 0.5 mm
Ub	Adjust the engaging width (right) when plating with normal yarn carriers.	
NCC	Only for machines with clamping and cutting bed: Control of the clamping depth of the respective clamping and cutting needle. Default setting: n=0 e.g.: Sink the clamping and cutting needle by 5 steps deeper: NCC=5	Minimum value: -10 Maximum value: 10 Step width: 1

i Set the clamping depth (NCC)

For a thin or elastic plating yarn, it may be necessary to withdraw the clamping and cutting needle deeper in order to ensure reliable cutting.

3.2 Switching power supply 40 V off and on

The power supply of the carriage (step motors, selection systems, yarn carrier plunger) can be switched off for assembling works. This eliminates the switching off and on of the main machine switch and thereby the waiting time until the computer of the knitting machine has shut down and rebooted.

The machine cannot be started with the engaging rod when the power supply is switched off.

Switch power supply off and on again:

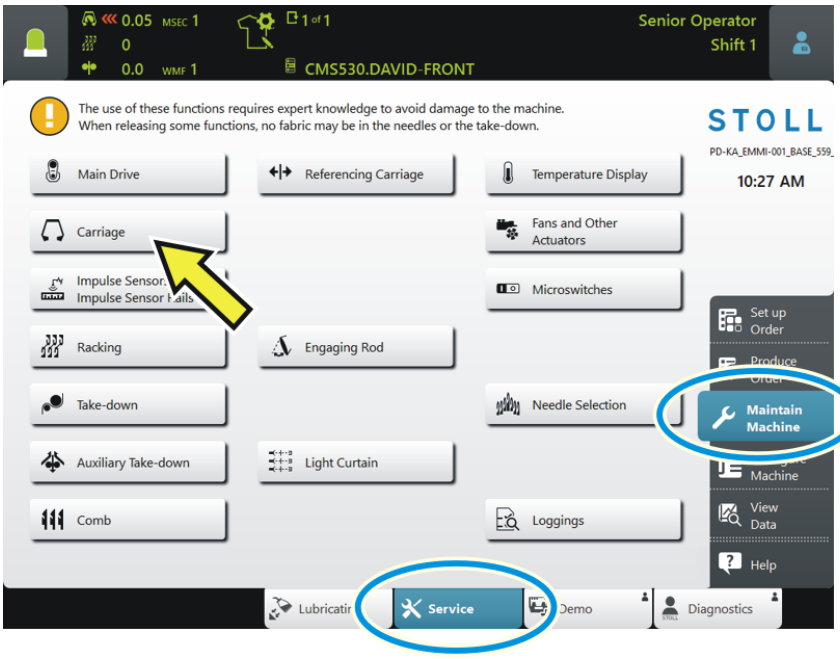
✓ You are signed in as "Maintenance" or "Senior Operator".

✓ Machine is stopped.

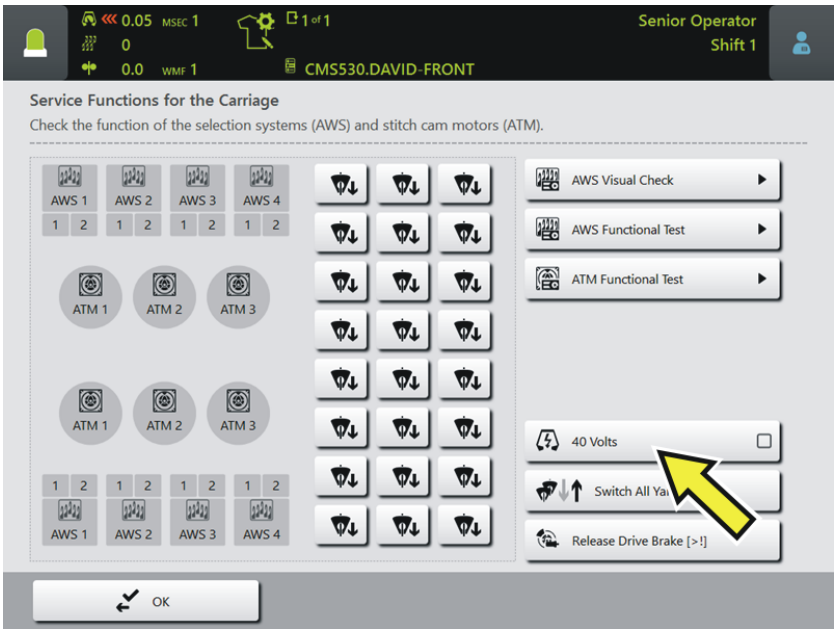
1. Open the "Carriage" menu.

Maintain Machine → Service → Carriage

With tandem machine: Left Carriage or Right Carriage



2. Switch power supply "40 V" off (☐).



3. If you tap the button again, the power supply is switched on again (☑)
   The button is highlighted in color.
4. Close the menu, for this, tap the button "OK".

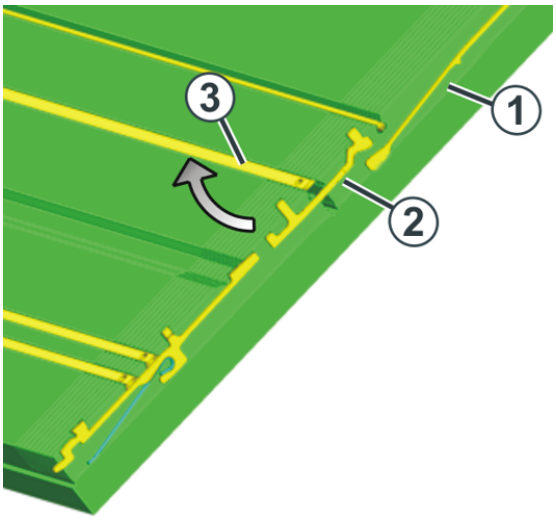
3.3 Replacing intermediate slider

There are different models depending on the machine type and the gauge.

Type 1

Valid for:
CMS 530 CMS 822 CMS 933 ADF CMS 502 HP+ CMS 330 CMS 803

To replace the intermediate slider, you need a small pair of pliers.



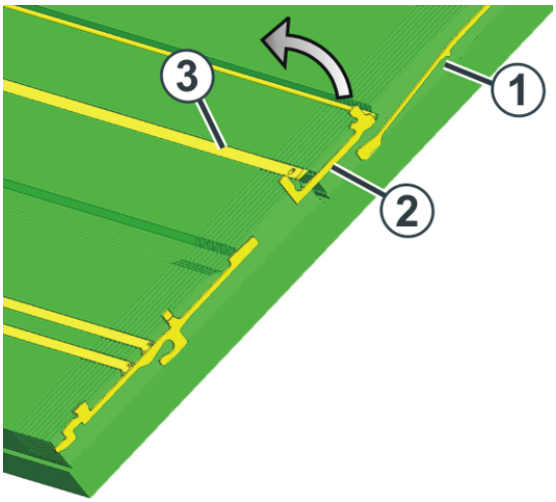
Replacing the intermediate slider

1. Push the needle and coupling part (1) upward.
2. Using the pliers, pull the lower butt of the intermediate slider (2) downwards out of the needle bed while pressing the upper butt into the needle bed and pressing it under the cover rail (3).
3. Install the new intermediate slider in the reverse order.
4. Slide the needle and coupling parts into the home position.

Type 2

Valid for:
CMS 730 T

To replace the intermediate slider, you need a small pair of pliers.



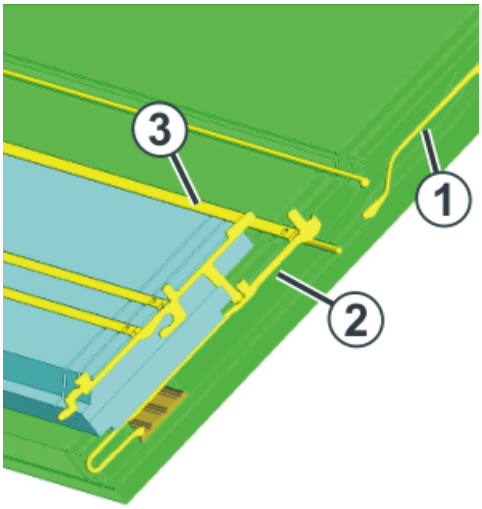
Replacing the intermediate slider

1. Push the needle and coupling part (1) upward.
2. Push the intermediate slider (2) until the lower butt bumps into the cover rail (3).
3. Pull the upper butt of the intermediate slider out of the needle bed while pressing the lower butt into the needle bed and under the cover rail.
4. Install the new intermediate slider in the reverse order.
5. Slide the needle and coupling parts into the home position.

Type 3

Valid for:
CMS 830 C CMS 520 C+

To replace the intermediate slider, you need a small pair of pliers.



Replacing the intermediate slider

1. Push the needle and coupling part (1) upward.
2. Push the spring wedge (3) to the side.
3. Pull out the intermediate slider (2) upwards.
4. Install the new intermediate slider in the reverse order.
5. Slide the needle and coupling parts into the home position.

3.4 Replacing gear racks in the step motor

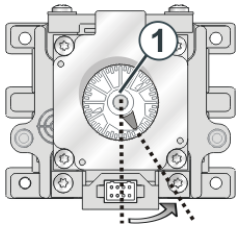
There are different models depending on the machine type and the gauge.

Type 1

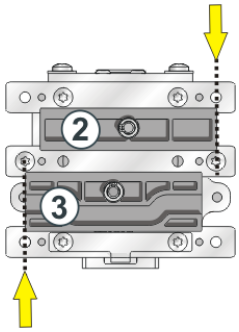
Valid for:
CMS 530 CMS 822 CMS 933 ADF CMS 502 HP+ CMS 330 CMS 803

Replacing gear racks:

1. Remove the step motor.
2. Rotate positioning disk (1) to the mounting position (5 o'clock).

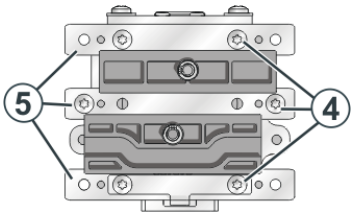


3. Turn over the step motor and check the mounting position.
   The adjustment is correct if
   The upper gear rack (2) and the boring are aligned.
   The lower gear rack (3) and the boring are aligned.



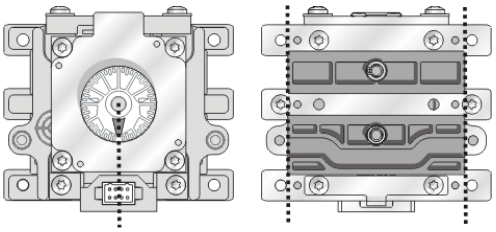
2	Control of the stitch tension
3	Control of the pressure cams for tuck and stitch take over

4. Remove the screws (4) for the defective gear rack.



5. Remove carefully the guide strips (5) and the gear rack.
6. Replace defective gear rack.
7. Mount the new gear rack and the guide bars.
8. Check whether the gear racks are positioned correctly. For this purpose, turn the positioning disk (1) to the home position (6 o'clock).

   ▷ The gear racks must be aligned.



9. If this is not the case, repeat steps 2 till 8.

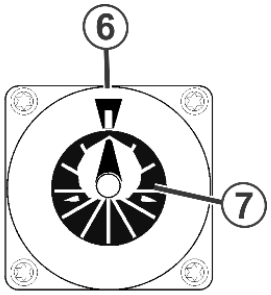
▶ The gear rack is replaced.

Type 2

Valid for:
CMS 730 T CMS 830 C CMS 520 C+

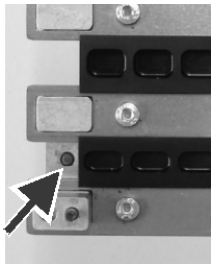
Replacing gear racks:

1. Remove the step motor.
2. Rotate positioning disk (7) to the home position (6).



Step motor home position

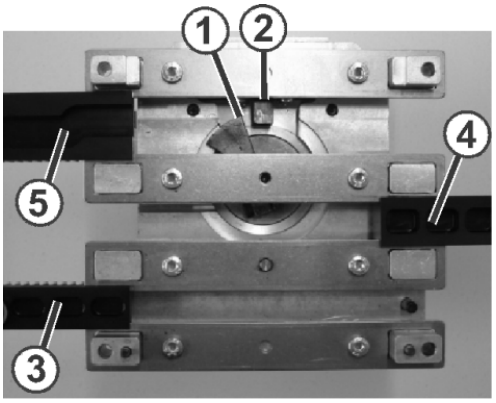
3. Set at the rear the left pin of the lower gear rack guide.



Pin of gear rack guide

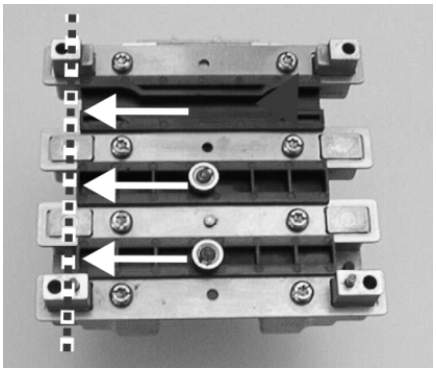
4. Push lower gear rack manually to the left until all gear racks can be removed.
5. Replace defective gear rack.

6. Set the installation position. For this purpose, turn the serrated lock washer (1) in such a way that the right edge is positioned somewhat in front of the light barrier (2). (Visually expressed: if this setting is transferred to a clock, then it will show the time: 11:58)



Built-in position

7. In this installation position, push in the gear rack (3) from the left until a light resistance can be felt.
   ▷ The gear rack contacts the pinion.
8. Push in gear rack (5) as well.
9. Push in gear rack (4) from the right until a light resistance can be felt.
   ▷ The gear rack contacts the pinion.
10. Push gear rack (3) and (4) inward evenly.
    ▷ The gear rack (5) is automatically pulled inward while pushing the gear rack (4).
11. Check whether the gear racks are positioned correctly. For this purpose, turn the positioning disk (7) to the home position (6).
12. The gear racks must be aligned.

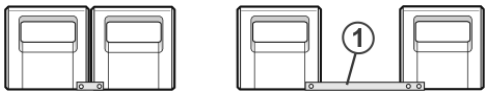


Monitoring of built-in position

13. If this is not the case, repeat step 3 through 11.
14. Move pin of the lower gear rack guide at the rear to the home position.

▶ Replacement of the gear racks is complete.

3.5 Coupling carriage assembly wide or narrow (CMS 822)



Narrow coupling and wide coupling

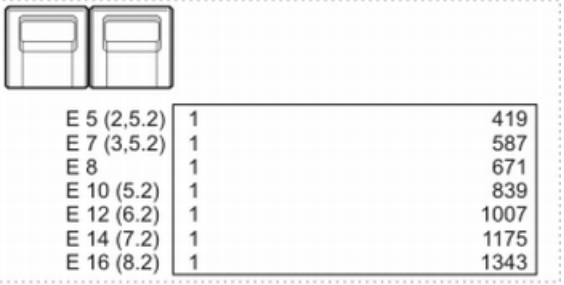
Both carriage assemblies can work together coupled wide in the tandem mode or coupled narrow.

The coupling width depends on:

- the fabric width
- the needed parking area for the yarn carrier between both fabrics

The following tables show you the relation between the coupling width, the fabric width and the parking area for the yarn carrier.

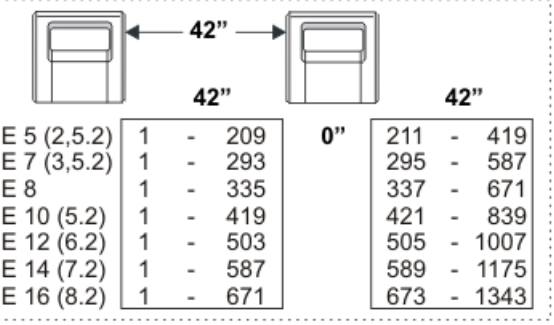
Needle area with 84" needle bed width



E 5 (2,5.2)	1	419
E 7 (3,5.2)	1	587
E 8	1	671
E 10 (5.2)	1	839
E 12 (6.2)	1	1007
E 14 (7.2)	1	1175
E 16 (8.2)	1	1343

narrow coupling

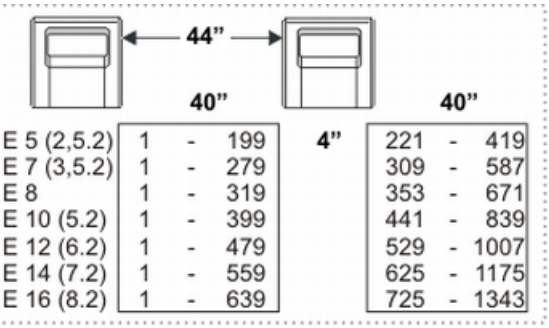
Coupling width 42"



E 5 (2,5.2)	1	-	209	0”	211	-	419
E 7 (3,5.2)	1	-	293		295	-	587
E 8	1	-	335		337	-	671
E 10 (5.2)	1	-	419		421	-	839
E 12 (6.2)	1	-	503		505	-	1007
E 14 (7.2)	1	-	587		589	-	1175
E 16 (8.2)	1	-	671		673	-	1343

Needle area for coupling width 42"

Coupling width 44"



E 5 (2,5.2)	1	-	199	4”	221	-	419
E 7 (3,5.2)	1	-	279		309	-	587
E 8	1	-	319		353	-	671
E 10 (5.2)	1	-	399		441	-	839
E 12 (6.2)	1	-	479		529	-	1007
E 14 (7.2)	1	-	559		625	-	1175
E 16 (8.2)	1	-	639		725	-	1343

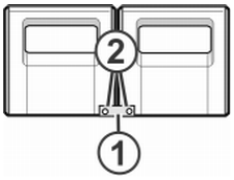
Needle area for coupling width 44"

Couple Carriage Assembly Wide

✓ The order is finished.

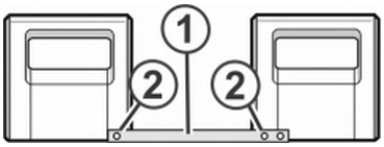
An empty row is automatically set, the icon <S0> is shown in the information area.

1. Start the machine with the engaging rod and stop it again when the carriage is located shortly after the left reversing position.
2. Switch off 40 V power supply.
3. Open the locking of the rear panel segments with the square spanner from the enclosed accessories and remove the segments.



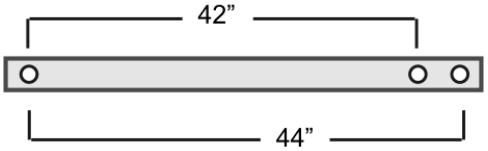
Narrow coupling of carriage assembly

4. Remove the screws (2). Remove the coupling rod (1).



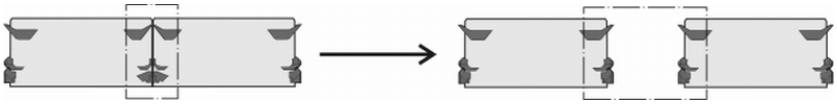
Wide coupling of carriage assembly

5. For wide coupling (tandem machine), push the right carriage to the right until the coupling rod (1) can be assembled.



Coupling widths for CMS 822

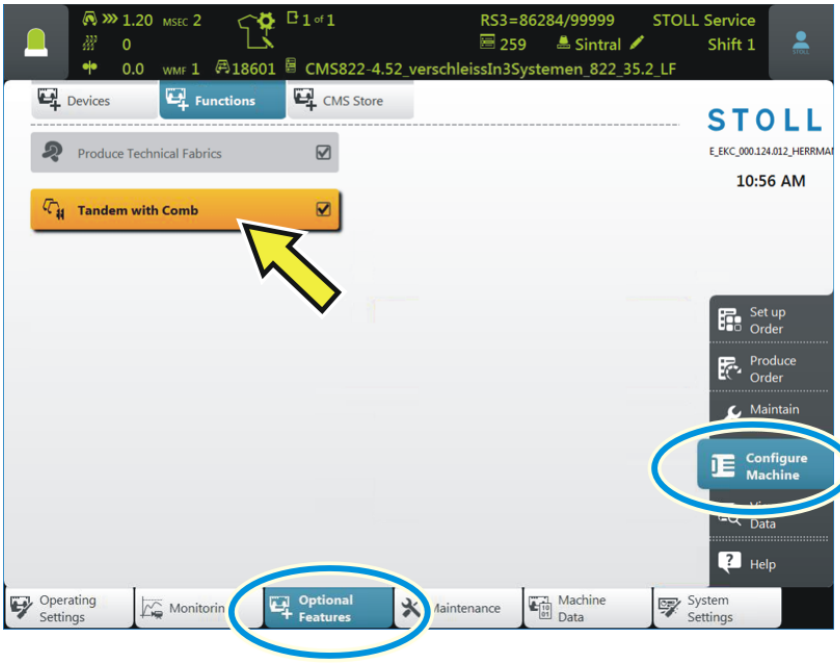
6. Insert the screws (2) and tighten.
7. Remove the carriage part in order to replace the cams.



Replace cams for wide coupling

8. Place carriage part on contact surface and assembly with carriage assembly.
9. Close the rear panel.
10. Switch on 40 V power supply.
11. Confirm the input with "OK".

12. Start the machine with the engaging rod.
    ▷ The carriage stops and the "Coupling width ?" error appears.
13. Start the machine with the engaging rod.
    ▷ Carriage assembly runs in the creep speed. The control adjusts to the new coupling width.
14. Stop the carriage in the left reversing point again.
15. Open the "Functions" menu.
    Configure Machine → Optional Features → Functions



16. Tandem with Comb
    Check the setting and change if necessary.
    ☑ - The comb and clamping / cutting are activated.
    ☐ - The comb and clamping / cutting are deactivated.

▶ Load the knitting program.

i	If the carriage assembly operate coupled wide, all needles outside the fabric pieces must be free of fabric. All yarn carriers must be positioned.

Couple Carriage Assembly Narrow

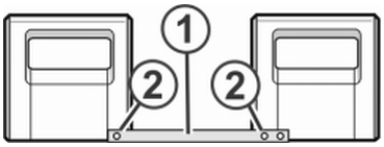
✓ The order is finished.

An empty row is automatically set, the icon <S0> is shown in the information area.

1. Start the machine with the engaging rod and stop it again when the carriage is located shortly after the left reversing position.
2. Remove the carriage part in order to replace the cams.

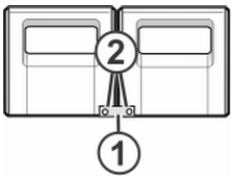
Replace cams for narrow coupling

3. Place carriage part on contact surface and assembly with carriage assembly.
4. Open the locking of the rear panel segments with the square spanner from the enclosed accessories and remove the segments.



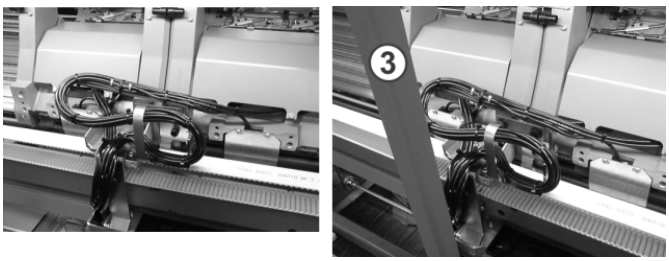
Wide coupling of carriage assembly

5. Remove the screws (2). Remove the coupling rod (1).



Narrow coupling of carriage assembly

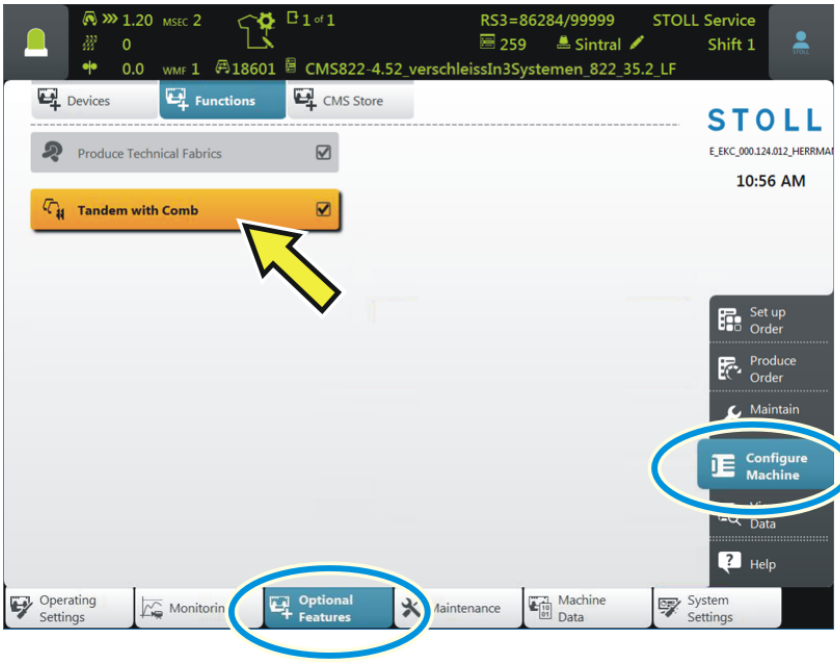
6. For narrow coupling (tandem machine), push the left carriage assembly to the right and hook in the coupling rod (1).
7. Insert the screws (2) and tighten.
8. Lay the cable harness into the retainer. This prevents the cables at the support (3) from rubbing and being damaged.



Lay loom of cables into retainer

9. Close the rear panel.

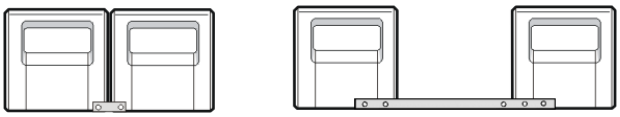
10. Switch on 40 V power supply.
11. Confirm the input with "OK".
12. Start the machine with the engaging rod.
    ▷ The carriage stops and the "Coupling width ?" error appears.
13. Start the machine with the engaging rod.
    ▷ Carriage assembly runs in the creep speed. The control adjusts to the new coupling width.
14. Stop the carriage in the left reversing point again.
15. Open the "Functions" menu.
    Configure Machine → Optional Features → Functions



16. Tandem with Comb
    Check the setting and change if necessary.
    ☑ - The comb and clamping / cutting are activated.
    ☐ - The comb and clamping / cutting are deactivated.

▶ Load the knitting program.

3.6 Coupling carriage assembly wide or narrow (CMS 933)



Narrow coupling and wide coupling

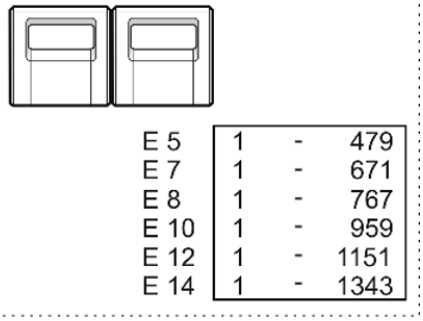
Both carriage assemblies can work together coupled wide in the tandem mode or coupled narrow.

The coupling width depends on:

- the fabric width
- the needed parking area for the yarn carrier between both fabrics

The following tables show you the relation between the coupling width, the fabric width and the parking area for the yarn carrier.

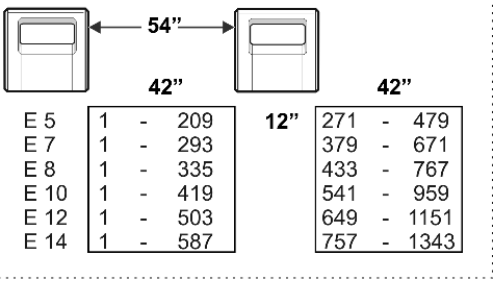
Needle area with 96" needle bed width



E 5	1	-	479
E 7	1	-	671
E 8	1	-	767
E 10	1	-	959
E 12	1	-	1151
E 14	1	-	1343

narrow coupling

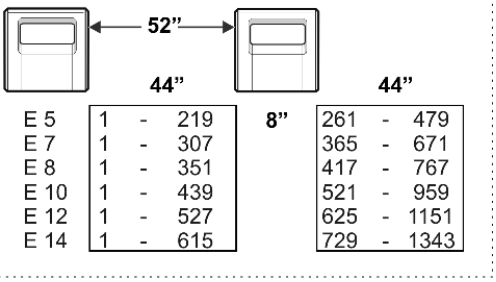
Coupling width 54"



E 5	1	-	209	12”	271	-	479
E 7	1	-	293		379	-	671
E 8	1	-	335		433	-	767
E 10	1	-	419		541	-	959
E 12	1	-	503		649	-	1151
E 14	1	-	587		757	-	1343

Needle area for coupling width 54"

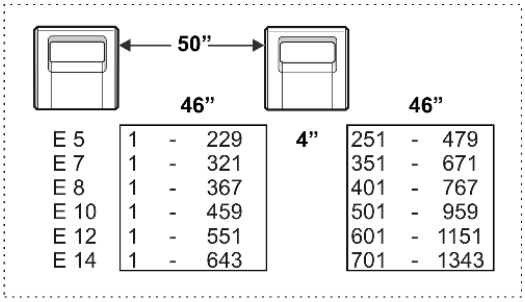
Coupling width 52"



E 5	1	-	219	8”	261	-	479
E 7	1	-	307		365	-	671
E 8	1	-	351		417	-	767
E 10	1	-	439		521	-	959
E 12	1	-	527		625	-	1151
E 14	1	-	615		729	-	1343

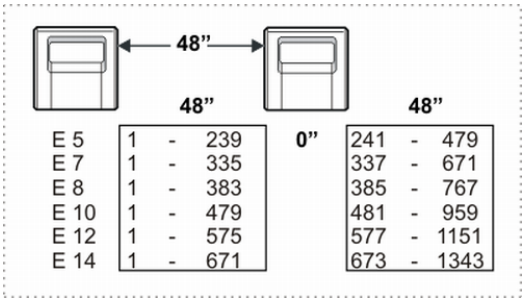
Needle area for coupling width 52"

Coupling width 50"



Needle area for coupling width 50"

Coupling width 48"



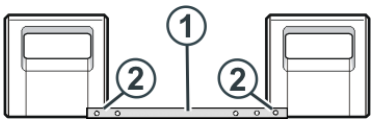
Needle area for coupling width 48"

Couple Carriage Assembly Wide

✓ The order is finished.

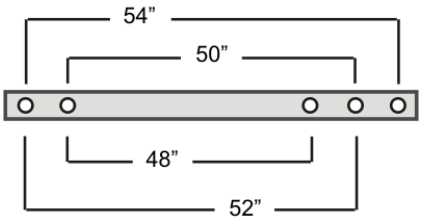
An empty row is automatically set, the icon <S0> is shown in the information area.

1. Start the machine with the engaging rod and stop it again when the carriage is located shortly after the left reversing position.
2. Switch off 40 V power supply.
3. Open the locking of the rear panel segments with the square spanner from the enclosed accessories and remove the segments.
4. loosen screws (2) and remove them.



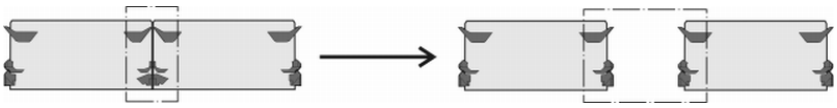
Coupling of carriage assembly

5. For wide coupling (tandem machine), push the right carriage to the right until the coupling rod (1) can be assembled.



Coupling widths for CMS 933

6. Insert the screws (2) and tighten.
7. Remove the carriage part in order to replace the cams.



Replace cams for wide coupling

8. Place carriage part on contact surface and assembly with carriage assembly.
9. Close the rear panel.
10. Switch on 40 V power supply.
11. Confirm the input with "OK".
12. Start the machine with the engaging rod.
    ▷ The carriage stops and the "Coupling width ?" error appears.
13. Start the machine with the engaging rod.
    ▷ Carriage assembly runs in the creep speed. The control adjusts to the new coupling width.
14. Stop the carriage in the left reversing point again.
15. Load the knitting program.

i	If the carriage assembly operate coupled wide, all needles outside the fabric pieces must be free of fabric. All yarn carriers must be positioned.

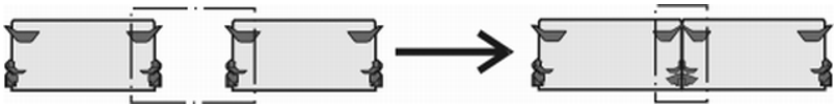
Couple Carriage Assembly Narrow

✓ The order is finished.

An empty row is automatically set, the icon 

is shown in the information area.

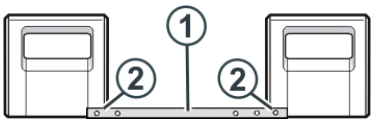
1. Start the machine with the engaging rod and stop it again when the carriage is located shortly after the left reversing position.
2. Remove the carriage part in order to replace the cams.



Replace cams for narrow coupling

3. Place carriage part on contact surface and assembly with carriage assembly.
4. Open the locking of the rear panel segments with the square spanner from the enclosed accessories and remove the segments.

5. loosen screws (2) and remove them.



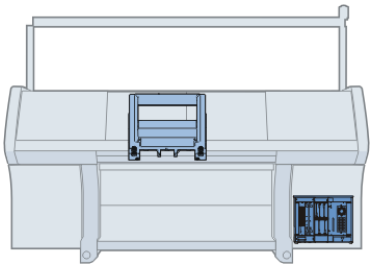
Coupling of carriage assembly

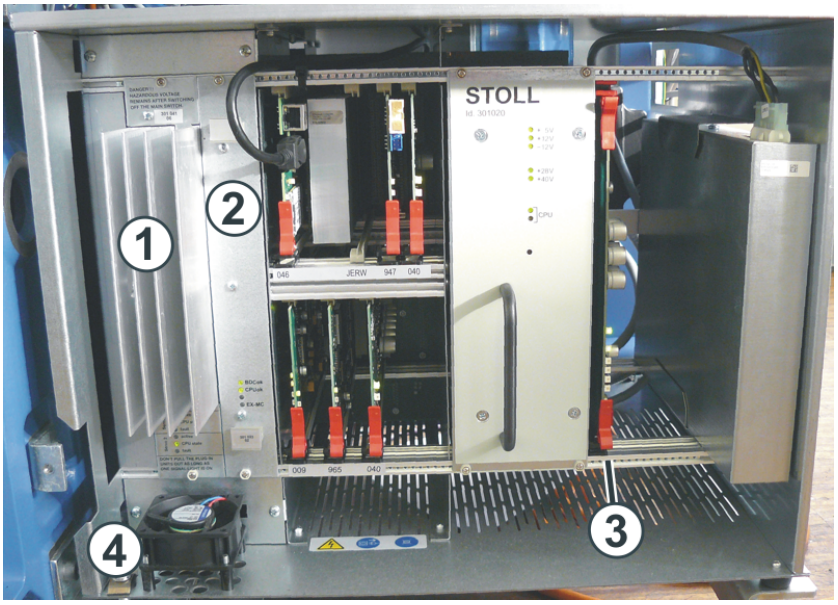
6. For narrow coupling (tandem machine), push the left carriage assembly to the right and hook in the coupling rod (1).
7. Insert the screws (2) and tighten.
8. Close the rear panel.
9. Switch on 40 V power supply.
10. Confirm the input with "OK".
11. Start the machine with the engaging rod.
    ▷ The carriage stops and the "Coupling width ?" error appears.
12. Start the machine with the engaging rod.
    ▷ Carriage assembly runs in the creep speed. The control adjusts to the new coupling width.
13. Stop the carriage in the left reversing point again.
14. Load the knitting program.

3.7 Overview of the electronic control (control cabinet right)

Valid for:	
	Type
CMS 530	670
	656
CMS 530 W CMS 530 BW	698
CMS 502 HP+	690
	669
CMS 330	694
CMS 330 W	695

The machine control is located in the right control cabinet under the cover.
The card for controlling the yarn carrier magnets is located in the carriage.

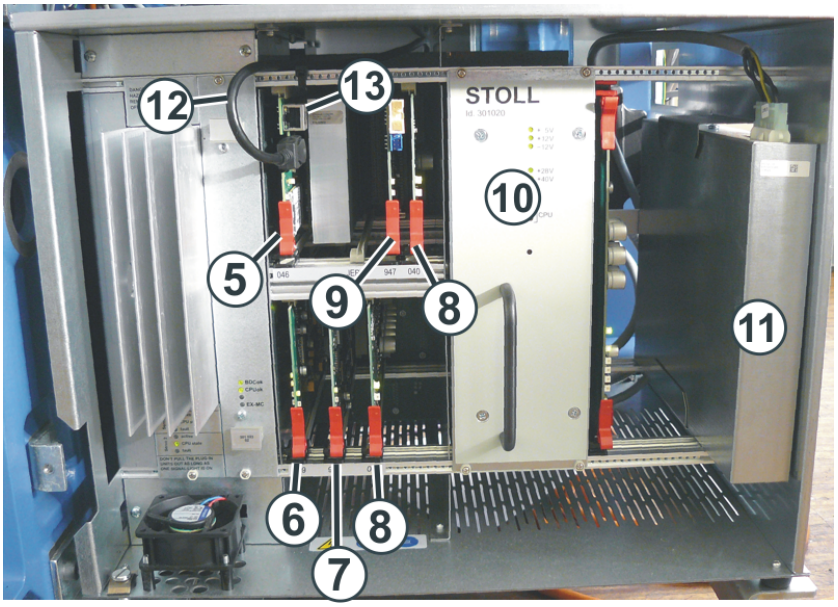




Right control cabinet

	Card	Function
1	041 (ID 301 041)	Drive and racking control unit Controlling the drive and racking motor. Passing on the error messages from the motors to card 009.
2	023 (ID 301 023)	Input card, output card, fuse for (1) The card ensures that the machine cannot be started as long as an error is present. Switching off main switch: ◆ if the automatic switching off of the machine is activated ◆ in case of extreme overvoltage ◆ if the servos are not ready for operation Controlling the fluff absorption and fault lamp. Ballast fuse for servo drive and racking. Controlling horn, lighting, piezo elements, and central lubrication.
3	018 (ID 301 018)	Fabric take-down card Controlling the fabric take-down motors (main take-down, auxiliary take-down, comb, comb hook motor, belt take-down). Passing on the error messages from the fabric take-down motors to board 009. Controlling the feed wheel.
4		Fan

Electronic cards



Right control cabinet

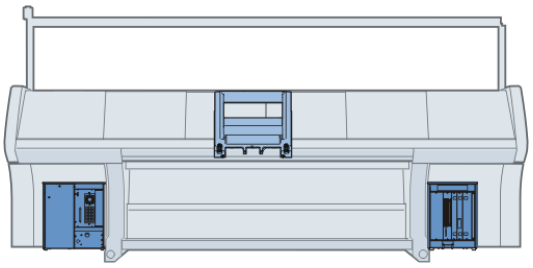
	Card	Function
5	046 (ID 301 046)	Controlling the input unit and the touch screen. Controlling the SSD hard disk (Solid-State-Drive). The SSD hard disk is integrated on the board.
6	009 (ID 301 009)	Main computer; collecting all messages from the other cards. Output of instructions to the other cards. Control of the knitting sequence. Controlling the carriage (main drive) and the racking position of the rear needle bed.
7	965 (ID 300 965)	Monitoring of the carriage assembly positions. Actuation of the selection systems and the step motors. Forwarding of the information to the card 040.
8	040 (ID 301 040)	Motor driver of the step motors of the stitch cams. Cooperation with the card 965.
9	947 (ID 300 947)	Controlling the weave-in devices.
10	301 020	Power supply unit with LEDs Checking the charging state of the batteries. Activating charging.
11	301 027	Battery plug-in unit
12		Display cable
13		Socket for Ethernet connection, if the machine is interconnected.

Electronic cards

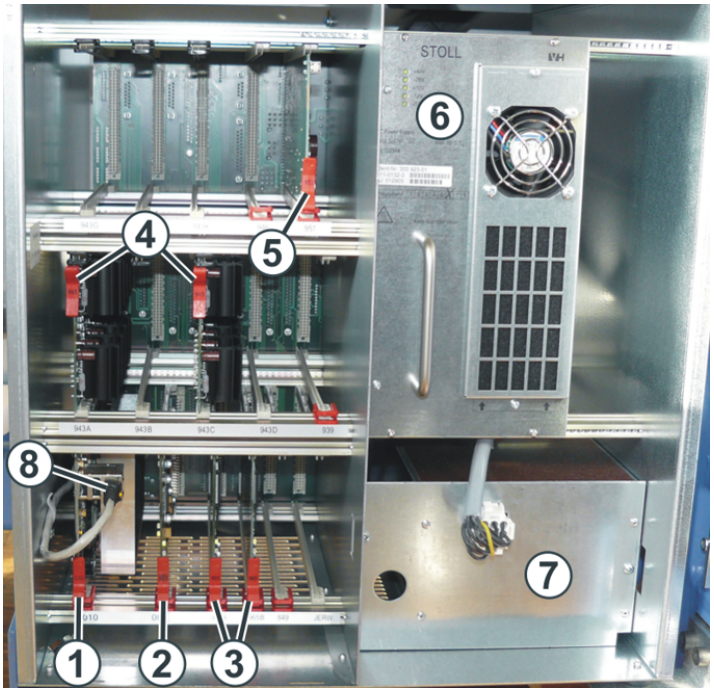
3.8 Overview of the electronic control (control cabinet left and right)

Valid for:	
	Type
CMS 933	775
	776
CMS 830 C	662
CMS 822	665
	666
CMS 803	660
	661

The machine control is located in the left and right control cabinet under the covers. The card for controlling the yarn carrier magnets is located in the carriage.



Left control cabinet

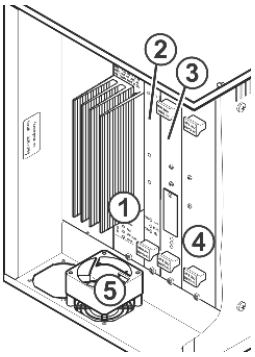


Left control cabinet

	Card	Function
1	046 (ID 301 046)	Controlling the input unit and the touch screen. Controlling the SSD hard disk (Solid-State-Drive). The SSD hard disk is integrated on the board.
2	009 (ID 301 009)	Main computer; collecting all messages from the other cards. Output of instructions to the other cards. Control of the knitting sequence. Controlling the carriage (main drive) and the racking position of the rear needle bed.
3	965 (ID 300 965)	Monitoring of the carriage assembly positions. Actuation of the selection systems and the step motors. Forwarding of the information to the card 040.
4	040 (ID 301 040)	Motor driver of the step motors of the stitch cams. Cooperation with the card 965.
5	951 (ID 300 951)	Checking the charging state of the batteries. Activating charging. Controlling horn, lighting, piezo elements, and central lubrication.
6	300 923	Power supply unit with LEDs
7	300 924	Battery plug-in unit
8		Ethernet cable, if the machine is networked.

Electronic cards

3.8.1 Right control cabinet *



Right control cabinet

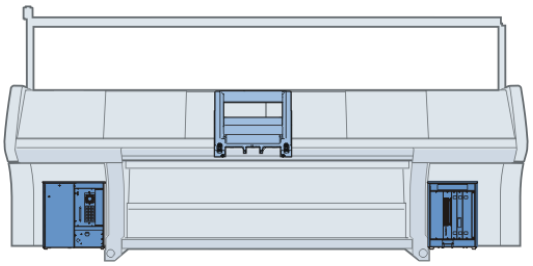
	Card	Function
1	041 (ID 301 041)	Drive and racking control unit Controlling the drive and racking motor. Passing on the error messages from the motors to card 009.
2	953 (ID 300 953)	Relay board, fuse for (1) The relay card ensures that the machine cannot be started as long as an error is present. Switching off main switch: ◆ if the automatic switching off of the machine is activated ◆ in case of extreme overvoltage ◆ if the servos are not ready for operation Controlling the feed wheel, fluff absorption and fault lamp. Ballast fuse for servo drive and racking.
3	929 (ID 300 929)	Fabric take-down card Controlling the fabric take-down motors (main take-down, auxiliary take-down, comb, contact motor). Passing on the error messages from the fabric take-down motors to board 009.
4	936 (ID 300 936)	Capacitor card Motor capacitors for fabric take-down motors (for needle bed widths 72", 84", and 96")
5		Fan

Electronic cards

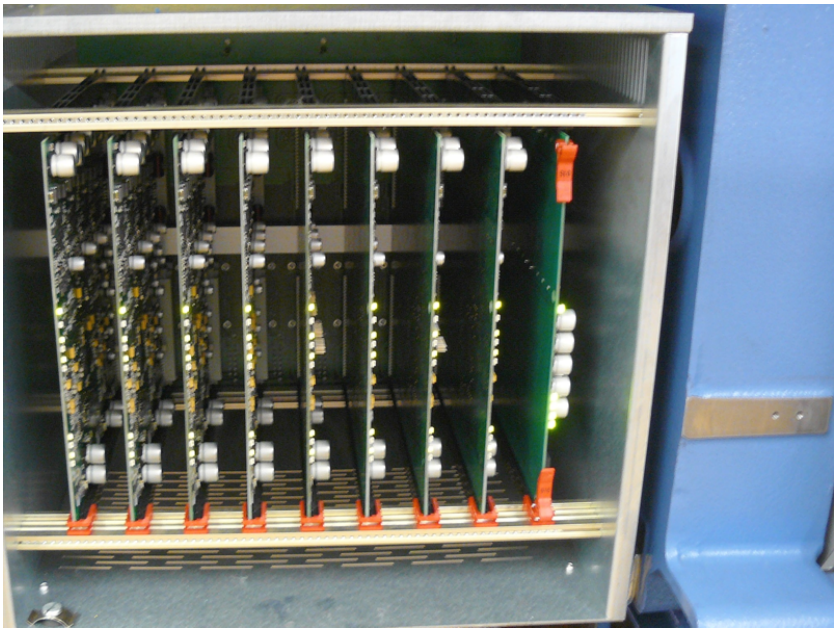
3.9 Overview of the electronic control (control cabinet left and right)

Valid for:	
	Type
ADF 530-16	805 685
ADF 530-16 W	806
ADF 530-32	804
ADF 530-32 W	688

The machine control is located in the left and right control cabinet under the covers.



Left control cabinet

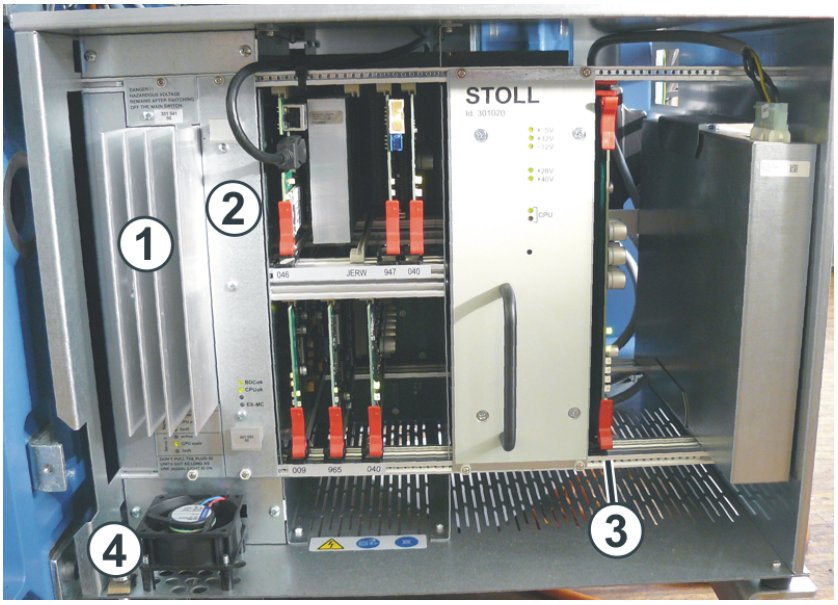


Left control cabinet

Card	Function
013 (ID 301 013)	Controlling the motors for the yarn carriers. Each card controls 4 yarn carrier drives (servo motors) and 4 high/low motors (step motors).
015 (ID 301 015)	Power supply of the motors for the yarn carriers.

Electronic cards

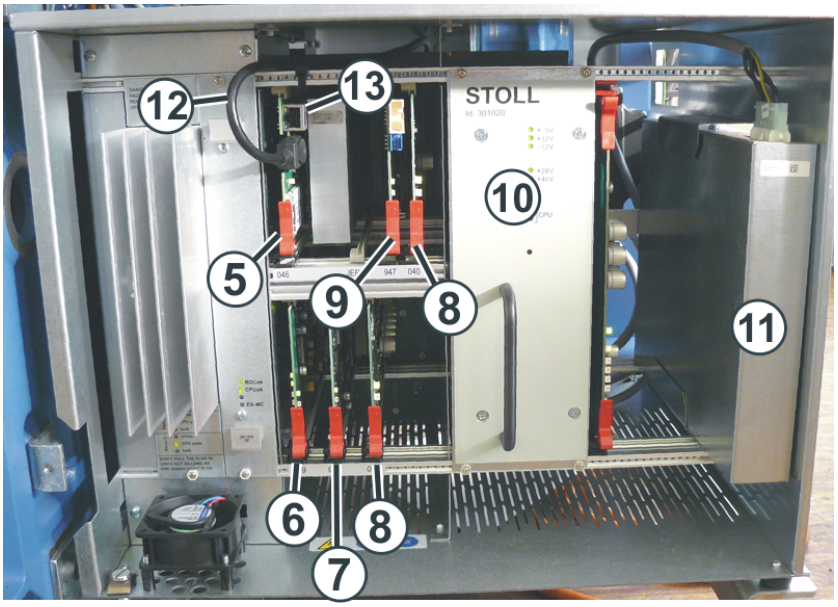
Right control cabinet



Right control cabinet

	Card	Function
1	041 (ID 301 041)	Drive and racking control unit Controlling the drive and racking motor. Passing on the error messages from the motors to card 009.
2	023 (ID 301 023)	Input card, output card, fuse for (1) The card ensures that the machine cannot be started as long as an error is present. Switching off main switch: ◆ if the automatic switching off of the machine is activated ◆ in case of extreme overvoltage ◆ if the servos are not ready for operation Controlling the fluff absorption and fault lamp. Ballast fuse for servo drive and racking. Controlling horn, lighting, piezo elements, and central lubrication.
3	018 (ID 301 018)	Fabric take-down card Controlling the fabric take-down motors (main take-down, auxiliary take-down, comb, comb hook motor, belt take-down). Passing on the error messages from the fabric take-down motors to board 009. Controlling the feed wheel.
4		Fan

Electronic cards



Right control cabinet

	Card	Function
5	046 (ID 301 046)	Controlling the input unit and the touch screen. Controlling the SSD hard disk (Solid-State-Drive). The SSD hard disk is integrated on the board.
6	009 (ID 301 009)	Main computer; collecting all messages from the other cards. Output of instructions to the other cards. Control of the knitting sequence. Controlling the carriage (main drive) and the racking position of the rear needle bed.
7	965 (ID 300 965)	Monitoring of the carriage assembly positions. Actuation of the selection systems and the step motors. Forwarding of the information to the card 040.
8	040 (ID 301 040)	Motor driver of the step motors of the stitch cams. Cooperation with the card 965.
9	947 (ID 300 947)	Controlling the weave-in devices.
10	301 020	Power supply unit with LEDs Checking the charging state of the batteries. Activating charging.
11	301 027	Battery plug-in unit
12		Display cable
13		Socket for Ethernet connection, if the machine is interconnected.

Electronic cards

4 Stitch Tension Range

The tension ranges for knitting and splitting differ. The reason for this is the shape of the split-stitch piece. The specifications in the table show the minimum and maximum NP values.

Valid for:	
CMS 933	CMS 330
CMS 822	ADF
CMS 530	CMS 803
CMS 502 HP+	

	min. NP	max. NP	min. NP (Split)	max. NP (Split)
E 3	7.0	16.7	8.2	15.6
E 3,5	7.0	16.7	8.2	15.6
E 4	7.0	16.7	8.2	15.6
E 5	6.5	16.9	8.0	14.1
E 7	8.3	18.7	9.8	15.9
E 8	8.8	19.5	10.3	16.6
E 10	7.25	19.2	9.3	17.65
E 12	7.55	20.0	8.4	16.2
E 14	7.95	20.7	8.8	16.85
E 16	7.6	21.9	8.9	17.85
E 18	7.6	21.9	8.9	17.85
E 5.2	7.8	17.5	9.0	14.7
E 6.2	7.55	20.0	8.4	16.2
E 7.2	7.95	20.7	8.8	16.85
E 8.2	8.0	22.3	9.3	18.25
E 9.2	8.0	22.3	9.3	18.25
E 2,5.2	6.5	16.9	8.0	14.1
E 2,5.2 m.4L	6.5	16.9	8.0	16.15
E 3,5.2	8.3	18.7	9.8	15.9
E 3,5.2 m.4L	8.3	18.7	9.8	17.95

Stitch Tension Range

Valid for:	
CMS 830 C CMS 730 T	CMS 520 C+

	min. NP	max. NP	min. NP (Split)	max. NP (Split)
E 1,5.2	8.3	18.0	9.6	16.9
E 3 m.3L	7.0	16.7	8.2	15.6
E 3,5	7.0	16.7	8.2	15.6
E 2.2	8.5	18.2	9.8	17.1
E 5	6.5	16.9	8.0	14.1
E 7	8.3	18.7	9.8	15.9
E 8	8.8	19.5	10.3	16.6
E 10	7.4	21.5	9.4	17.7
E 12	7.7	21.5	9.4	15.1
E 14	8.1	22.3	9.8	15.5
E 16	8.1	22.5	9.5	15.2
E 18	8.1	22.5	9.5	15.2
E 5.2	7.8	17.5	9.0	14.7
E 6.2	7.7	21.5	9.4	15.1
E 7.2	8.1	22.3	9.8	15.5
E 8.2	8.1	22.5	9.5	15.2
E 9.2	8.1	22.4	9.5	15.5
E 2,5.2	6.5	16.9	8.0	14.1
E 2,5.2 m.4L	6.5	16.9	8.0	16.15
E 3,5.2	8.3	18.7	9.8	15.9
E 3,5.2 m.4L	8.3	18.7	9.8	17.95

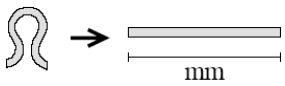
Stitch Tension Range

CMS 730 T	E12 E14 E6.2 E7.2	For these gauges there are different cams for loose and tight knitting.

- Economic production and the influencing factors [🗋 49]

5 Stitch Length

The specified values serve as a guideline. Depending on the yarn, these values may differ, as the quality and the specific weight of the material influence the stitch length.



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 502 HP+, ADF

(2) CMS 730 T

(3) CMS 830 C, CMS 520 C+

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	E12 E14 E6.2 E7.2	For these gauges there are different cams for loose and tight knitting.

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
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

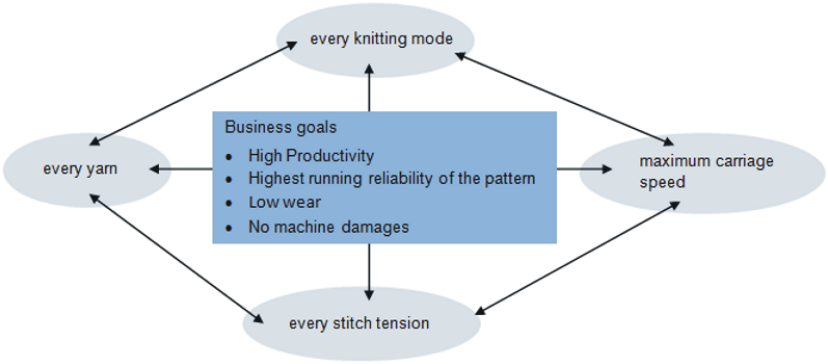
(5) CMS 530, CMS 822, ADF

CMS 730 T	E12 E14 E6.2 E7.2	For these gauges there are different cams for loose and tight knitting.

■ Economic production and the influencing factors [🗋 49]

6 Economic production and the influencing factors

The requirements for a knitting machine can be divided into two main groups: the machine related goals and the business goals.
The knitting machine is to work with maximum speed with every knitting mode, every stitch tension, regardless of the yarn. Simultaneously a high productivity is expected from the knitting machine and the pattern shall be knitted faultless.



The simultaneous achievement of all goals is seldom possible, as there is a conflict between some goals. A conflict because they cannot be accomplished all simultaneously. Between the individual goals there are rather interactions, which can have negative effects on the accomplishment of other goals. In other words, there are goals that cannot be achieved together or that exclude each other.

Example:
One conflict exists between the yarn thickness, the stitch tension and the carriage speed. If the intention is to work at the upper limit, the maximum with all of the three goals, this will lead to a reduced running reliability of the pattern, an increased wear and in some cases even to machine damages.

The influencing factors

Running reliability	◆ Structure of the pattern (knitting mode, Flexible Gauge, ...) ◆ Carriage Speed ◆ Stitch length (stitch tension) ◆ Yarn quality (friction coefficient, elasticity, twisting, moisture, hairiness, bobbin setup, tensile strength) ◆ Yarn gauge, yarn count/twisted yarn ◆ Yarn type (fancy yarn) ◆ Yarn tension, yarn feeding ◆ Fabric take-down

Wear and machine damages	The unsuitable combination of the influencing factors may lead to increased wear and to the damage of machine parts.
Conclusion	Therefore the influencing factors have to be adjusted. It's not possible to achieve any carriage speed and stitch tension with every yarn and knitting pattern. Recommendation: Start with a lower carriage speed (e.g. 0.7 m/sec) and increase it step by step. Defective machine parts caused by disregarding our guidelines, are excluded from warranty.