

STOLL Flat Knitting Machine

CMS

Handling and Knitting Technique



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Content

1	CMS – Handling and Knitting Technique	. 9
2	CMS Documents	11
3	Overview of Patterns for the CMS Basic Training	13
4	Needle Beds and their Elements	15
5	Operating and Signal Elements	19
6	Fabric Take-down	25
6.1	Main Take-down	25
6.1.1	Remove Fabric Winding from the Main Take-down	27
6.2	Auxiliary Take-down	29
6.3	Comb Take-down	31
7	Safety Precautions for Production	35
8	Additional Safety Instructions for the Operation with Open Covers	37
9	Elements of a knitting program	39
10	Structure of a Knitting Program	41
11	Comparing Setup1 to Setup2	45
12	Pattern 1: Half Cardigan - Set up the Machine	47
12.1	Loading Files, Library and Folders	48
12.1.1	Loading Pattern	49
12.1.2	Changing the Path of a Drive or Folder	54
12.1.3	Loading Library	56
12.2	Setting Cycle Counter and Quantity of Fabrics	57
12.3	Carrying out a Program Check	61



12.4	Threading up the Machine	63
12.4.1	Yarn Carrier Home Position	68
12.4.2	Threading up from the Bobbin Board to the Yarn Carrier	69
12.4.2.1	Threading up the Yarn Control Unit	69
12.4.2.2	Threading up the Friction Feed Wheel	71
12.4.2.3	Using the Storage Feed Wheel	72
12.4.2.4	Threading up Lateral Yarn Tensioners	73
12.4.2.5	Adjusting Lateral Yarn Tensioner	74
12.4.2.6	Threading up the Yarn Carriers	76
12.4.3	Position the Yarn Carriers	79
12.4.4	Thread up the Yarn Carriers after Yarn Breakage	80
12.5	Starting Machine	81
12.5.1	Picking-up after Pressing-off Function	82
13	Setting up the Pattern	85
14	Working with the Sintral Editor	87
14.1	Keys of the First Level of the Sintral Editor	88
14.2	Keys of the Second Level of the Sintral Editor	90
14.2.1	Tile Window Vertically	92
14.2.2	Go to Submenu	94
14.2.3	Submenu for Delete	95
14.3	Changes within the Sintral:	96
14.4	Invalid Characters in Sintral	97
15	Pattern 1:	
10	Half Cardigan - Changing Pattern Parameters	99
15.1	Operating Mode of the Machine and Knitting Program	00
15.2	Load and Set-up the Pattern	06
15.3	Modifications on the Machine: Yarn Carrier Distance and Stitch Length 107	
15.4	Settings on the Machine: Carriage Speed and Fabric Take-down	11
15.5	Other Settings on the Machine:	
	Main Take-down, Auxiliary Take-down and Comb	16
15.6	Save Pattern 1	19
16	Clearing the Main Memory of the Machine 1	21
17	Different Jacquards 1	23
18	Pattern 2: Jacquard with different reverse sides 1	27
18.1	Load and Set-up the Pattern 1	28
19	Pattern instruction: JA, PA, PM and SEN 1	29
19.1	Variants of the PA / PM Structure	32

20	Pattern 3: Scarf with Full Cardigan	133
20.1	Multi-piece Knitting without Using the Comb	134
20.2	Load and Set-up the Pattern	135
21	Pattern 4: Structure with 4x4 Cable	137
21.1	Operating Mode of the Machine and Knitting Program	139
21.2	Load and Set-up the Pattern in the Machine	141
21.3	Racking Positions and Racking Commands	142
21.4	Handle Racking Commands on the Machine	144
21.5	Handling of the RS17 Cycle Counter	147
22	Overview of the Machine Types and Operating Modes '	149
23	Coupling widths of Tandem Machines: CMS 9xx and CMS 4xx TC	157
23.1	Couple Carriage Assembly Wide	160
23.2	Couple Carriage Assembly Narrow	162
24	Operating Modes and Coupling Widths of CMS 822 ?	165
25	Pattern 5: Structure Pattern with Applications	169
25.1	Operating Mode of the Machine: Tandem without Comb	171
25.2	Operating Mode of the Machine: Tandem with comb	173
25.3	Couple the Machine Wide, Load and Set-up the Pattern in the Machine	175
25.4	Tandem without Comb: Thread up Yarn Carriers and Position them	176
25 4 1	Interchange of Yarn Carriers of the Left and Right Carriage	178
25.4.2	Additional Stitch Length Correction for the Right Fabric	179
25.4.3	Switch-off the Needle Selection	180
26	Pattern 6: Fully Fashion	181
26.1	Additional Information with Fully Fashion - with Comb	182
26.2	Additional Information with Fully Fashion - without Comb	185
26.3	Counters with CMS 822	187
26.4	Narrowing and Widening of Fully Fashion:	189
26.5	Load and Set-up the Pattern in the Machine	191
27	NPJ / Flexible Stitch / Power Tension Settings	195
27.1	Table for Modifying the Stitch Tensions	198
27.2	Applications of NPJ (PTS)	200

STOLL

20	Pattern 7: Intarsia	203
28.1	Load and Set-up the Pattern in the Machine	204
28.2	Exchange Yarn Carriers	206
28.3	Adjust the Intarsia Yarn Carriers	210
28.4	Intarsia Technique and Programming	213
28.5	Braking Value of Intarsia Yarn Carriers	219
28.6	Handling the Braking Values	221
28.7	Handling the Adjusting Program	224
28.8	Staggering the Yarn Carriers Automatically	227
28.9	Yarn Carrier Correction	228
28.10	Handling of the Yarn Carrier Corrections	229
28.11	Yarn Carrier Corrections with Tandem Machines	231
-		-
29	Pattern 8: Split pattern	233
29.1	Install Raising Cam for Split-stitch	234
29.2	Load and Set-up the Pattern in the Machine	235
29.3	Split Pattern with Extension Cycles	236
30	Pattern 9: Plating	241
•••		
30.1	Different Ways of Plating	242
30.1 30.1.1	Different Ways of Plating Machine Type and Operating System	242 243
30.1 30.1.1 30.1.2	Different Ways of Plating Machine Type and Operating System Engaging Width and Rail Allocation	242 243 247
30.1 30.1.1 30.1.2 30.2	Different Ways of PlatingMachine Type and Operating SystemEngaging Width and Rail AllocationLoad and Set-up the Pattern in the Machine	242 243 247 248
30.1 30.1.1 30.1.2 30.2 30.3	Different Ways of PlatingMachine Type and Operating SystemEngaging Width and Rail AllocationLoad and Set-up the Pattern in the MachineSintral Commands for Plating Yarn Carriers	242 243 247 248 250
30.1 30.1.1 30.1.2 30.2 30.3 30.4	Different Ways of Plating Machine Type and Operating System Engaging Width and Rail Allocation Load and Set-up the Pattern in the Machine Sintral Commands for Plating Yarn Carriers Settings during Production	242 243 247 248 250 252
30.1 30.1.1 30.1.2 30.2 30.3 30.4 30.5	Different Ways of Plating Machine Type and Operating System Engaging Width and Rail Allocation Load and Set-up the Pattern in the Machine Sintral Commands for Plating Yarn Carriers Settings during Production Plating Kit	242 243 247 248 250 252 253
30.1 30.1.1 30.1.2 30.2 30.3 30.4 30.5 30.5.1	Different Ways of Plating Machine Type and Operating System Engaging Width and Rail Allocation Load and Set-up the Pattern in the Machine Sintral Commands for Plating Yarn Carriers Settings during Production Plating Kit Assemble the Plating Kit	 242 243 247 248 250 252 253 254
30.1 30.1.1 30.1.2 30.2 30.3 30.4 30.5 30.5.1 30.5.2	Different Ways of Plating Machine Type and Operating System Engaging Width and Rail Allocation Load and Set-up the Pattern in the Machine Sintral Commands for Plating Yarn Carriers Settings during Production Plating Kit Assemble the Plating Kit Threading up the Plating Kit	242 243 247 248 250 252 253 254 255
30.1 30.1.1 30.1.2 30.2 30.3 30.4 30.5 30.5.1 30.5.2 30.5.3	Different Ways of Plating Machine Type and Operating System Engaging Width and Rail Allocation Load and Set-up the Pattern in the Machine Sintral Commands for Plating Yarn Carriers Settings during Production Plating Kit Assemble the Plating Kit Threading up the Plating Kit Double Bow Plating Yarn Carrier	 242 243 247 248 250 252 253 255 256
 30.1 30.1.1 30.1.2 30.2 30.3 30.4 30.5 30.5.1 30.5.2 30.5.3 30.5.4 	Different Ways of Plating Machine Type and Operating System Engaging Width and Rail Allocation Load and Set-up the Pattern in the Machine Sintral Commands for Plating Yarn Carriers Settings during Production Plating Kit Assemble the Plating Kit Threading up the Plating Kit Double Bow Plating Yarn Carrier Adjust the Double Bow Plating Yarn Carrier	 242 243 247 248 250 252 253 254 255 256 258
30.1 30.1.1 30.1.2 30.2 30.3 30.4 30.5 30.5.1 30.5.2 30.5.3 30.5.4 30.5.5	Different Ways of Plating Machine Type and Operating System Engaging Width and Rail Allocation Load and Set-up the Pattern in the Machine Sintral Commands for Plating Yarn Carriers Settings during Production Plating Kit Assemble the Plating Kit Threading up the Plating Kit Double Bow Plating Yarn Carrier Adjust the Double Bow Plating Yarn Carrier Threading up the Double Bow Plating Yarn Carrier	242 243 247 248 250 252 253 254 255 256 258 259
 30.1 30.1.1 30.1.2 30.2 30.3 30.4 30.5 30.5.1 30.5.2 30.5.3 30.5.4 30.5.5 30.6 	Different Ways of Plating Machine Type and Operating System Engaging Width and Rail Allocation Load and Set-up the Pattern in the Machine Sintral Commands for Plating Yarn Carriers Settings during Production Plating Kit Assemble the Plating Kit Threading up the Plating Kit Double Bow Plating Yarn Carrier Adjust the Double Bow Plating Yarn Carrier Adjustable Plating Yarn Carrier Carriage	 242 243 247 248 250 252 253 254 255 256 258 259 260
 30.1 30.1.1 30.1.2 30.2 30.3 30.4 30.5 30.5.1 30.5.2 30.5.3 30.5.4 30.5.5 30.6 30.6.1 	Different Ways of Plating Machine Type and Operating System Engaging Width and Rail Allocation Load and Set-up the Pattern in the Machine Sintral Commands for Plating Yarn Carriers Settings during Production Plating Kit Assemble the Plating Kit Threading up the Plating Kit Double Bow Plating Yarn Carrier Adjust the Double Bow Plating Yarn Carrier Adjustable Plating Yarn Carrier Carriage Setting	242 243 247 248 250 252 253 254 255 256 258 259 260 261
 30.1 30.1.1 30.1.2 30.2 30.3 30.4 30.5.1 30.5.1 30.5.2 30.5.3 30.5.4 30.5.5 30.6 30.6.1 30.7 	Different Ways of Plating Machine Type and Operating System Engaging Width and Rail Allocation Load and Set-up the Pattern in the Machine Sintral Commands for Plating Yarn Carriers Settings during Production Plating Kit Assemble the Plating Kit Threading up the Plating Kit Double Bow Plating Yarn Carrier Adjust the Double Bow Plating Yarn Carrier Threading up the Double Bow Plating Yarn Carrier Setting Engaging Values and Clamping Depth	 242 243 247 248 250 252 253 254 255 256 258 259 260 261 262
 30.1 30.1.1 30.1.2 30.2 30.3 30.4 30.5.1 30.5.1 30.5.2 30.5.3 30.5.4 30.5.5 30.6 30.6.1 30.7 31 	Different Ways of Plating	 242 243 247 248 250 252 253 254 255 256 258 259 260 261 262 265

(Ν	I	т	A	н	Е	A	D

33	Pattern10: Sequence	273
33.1	Workflow and Usage of Sequences	274
33.2	Load and Set-up the Pattern in the Machine	276
33.3	Generate Sequence	277
33.3.1	Working with Sequence Names	286
33.4	Save and Load the Sequence	288
33.5	Creating a Sequence List	289
34	Service	293
34.1	Safety Instructions for Lubrication, Cleaning and Maintenance	293
34.2	Cleaning the Knitting Machine	294
34.2.1	Clean the Suction and Control Unit (component type 00)	298
34.2.2	Clean the Suction and the Control Unit	
	(starting with component type 01)	300
34.3	Cleaning the Auxiliary Take-down	302
34.4	Remove Carriage Part and clean the Knitting System	305
34.5	Lubricate the Knitting Machine	309
34.5.1	Lubricate the CMS 822	314
34.5.2	Central Lubrication	315
34.6	Safety Instructions for the Exchange of Data	318
34.7	Save and Copy Service Data	319
34.8	Installing Software	321
34.8.1	Install the Software - Direct Installation	322
34.8.1.1	Install the Software with Language Selection - Direct Installation	323
34.8.1.2	Lindating Software Indirect Installation	332 333
3/ 9	Software Download	337
54.5		557
35	Miscellaneous	343
35.1	Toolbar	343
35.2	Monitoring	345
35.3	Control of Knitting Systems and of Holding-down Jacks	349
35.4	Report	352
35.5	Running Time Control	354
35.6	Yarn Table	359
35.7	Stitch Tension Range	362



36	Pocket Card	365
36.1	Infos	365
36.1.1	What is new? - Changes at a glance	365
36.1.1.1	Changes in version 2.1	365
36.1.1.2	Changes in version 2.0	366
36.1.1.3	Changes in version 1.9	366
36.1.1.4	Changes in version 1.8	367
36.1.1.5	Changes in version 1.7	368
36.1.1.6	Changes in version 1.6	369
36.1.1.7	Changes in version 1.5	370
36.1.1.8	Changes in version 1.4	370
36.1.1.9	Changes in version 1.3	371
36.1.1.1	0 Changes in version 1.2	371
36.1.1.1	1 Changes in version 1.1	372
36.1.2	ASCII character set	373
36.2	Knitting specifications	374
36.2.1	Direct commands (Knitting specifications)	375
36.2.2	Knitting specifications (additional beds)	375
36.2.3	Knitting Specifications (CMS 730 S, CMS 830 S)	376
36.3	Yarn Carrier	377
36.3.1	Direct commands (yarn carrier)	379
36.4	Clamping and cutting	380
36.4.1	Direct commands (Clamping and cutting)	380
36.5	Racking	381
36.5.1	Direct commands (Racking)	381
36.5.2	Direct commands (Racking) (CMS 330 TC 4)	381
36.5.3	Racking specifications for the additional beds (CMS 730 T, CMS 330 T 382	C-T)
36.5.4	Racking specifications for the additional beds (CMS 530 T, CMS 330 T) 383	C-R)
36.5.5	Racking specifications for the front needle bed (CMS 330 TC 4)	384
36.6	Stitch cam settings	385
36.6.1	Direct commands (Stitch cam settings)	385
36.6.2	Stitch cam settings (CMS 730 S, CMS 830 S)	386
36.7	Speed specifications	387
36.7.1	Direct commands (speed specifications)	387
36.8	Structuring specifications in knitting program	388
36.9	Stop motions	389
36.9.1	Direct commands (stops)	389
36.9.2	Piezo stop motions (CMS 730 T, CMS 330 TC-T, CMS 330 TC 4)	389
36.9.3	Piezo stop motions (CMS 530 T, CMS 330 TC-R)	389
36.10	Switch units on/off	390
36.10.1	Direct commands (switch units on/off)	390
36.10.2	Switching units on and off (CMS 730 S, CMS 830 S)	391

36.11	Holding-down jacks (CMS 830 C, CMS 330 TC-C)	392
36.12	Information commands	392
36.13	Fabric take-down	393
36.13.1	Direct commands (fabric take-down)	393
36.13.2	Auxiliary Take-down	393
36.13.3	Specific commands - CMS 5xx, 7xx, 8xx (OKC)	394
36.13.4	Specific commands - CMS 9xx (OKC)	395
36.13.5	Specific commands - CMS 3xx (ST 168, 268, 468)	395
36.13.6	Specific commands - CMS 4xx (ST 168, 268, 468)	396
36.13.7	Additional commands for machines with comb take-down	397
36.13.7.	1 Direct commands (Comb take-down)	397
36.14	Pattern specifications	398
36.14.1	Direct commands (pattern specifications)	398
36.15	Jacquard	399
36.15.1	Direct commands (Jacquard)	399
36.16	Jacquard-dependent decisions	400
36.17	IF-decisions	400
36.18	Cycle counters and counters	401
36.18.1	Direct commands (cycle counters and counters)	401
36.19	Counter	402
36.19.1	Calculating with counters	404
36.20	Intarsia	405
36.20.1	Intarsia commands with "Stoll multi gauges" pattern technology	405
36.21	Fully fashion knitting	406
36.22	Direct commands	408
36.23	Yarn Length Control (YLC, STIXX, ASCON)	410
36.24	Service commands	411
36.24.1	Yarn carrier (Direct commands)	411
36.24.2	Racking (Direct commands)	411
36.24.3	Racking (direct commands) (CMS 330 TC 4)	411
36.24.4	Stitch cam settings (Direct commands)	412
36.24.5	Carriage movement	412
36.24.5.	1 Carriage movement (direct commands)	412
36.24.6	Instructions (Direct commands)	412
36.24.7	Information commands (Direct commands)	413
36.24.8	Fabric take-down (Direct commands)	413

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1 CMS – Handling and Knitting Technique

1 CMS – Handling and Knitting Technique



These document refers to the **CMS 530 OKC** machine type if nothing else is specified.



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WARNING

Dangerous operations! Handling the knitting machine requests to follow the safety precautions.

1 Pay attention to the instruction manual for a safe operation of the knitting machine without fail. 1 CMS – Handling and Knitting Technique



2 CMS Documents

2 CMS Documents

The following documents about operation and maintenance of the CMS are delivered on DVD together with the machine:

Safety instructions

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

These documents contribute to a safe and hazardless operation. The safety instructions and the brochure "Cleaning, maintenance, care" are delivered printed as well. 2 CMS Documents





3 Overview of Patterns for the CMS Basic Training

3 Overview of Patterns for the CMS Basic Training

Pattern	Pattern name	Machine	Comb	Setup	Features
1	Half Cardigan	CMS 530 CMS 822	without comb	Setup 2	Setting up the machine
		CMS 530 CMS 822			Modifying the pattern parameters
2	Jacquard with different reverse sides	CMS 530 CMS 822	without comb	Setup 2	Pattern mix different Jacquard backs
3	Scarf with Full Cardigan	CMS 530	without comb	Setup 2	Double Pieces
		CMS 822			2-pieces narrow coupling
4	Cable 4x4	CMS 530 CMS 822	With Comb	Setup2	Racking correction
	Cable 4x4 2-pieces	CMS 530 CMS 822		Setup2	Double Pieces
	Cable 4x4 Setup1	CMS 530 CMS 822		Setup1	Racking correction
	Cable 4X4_RS17	CMS 530 CMS 822		Setup2	Knitting start with comb, further pieces without comb
5	Structure pattern with application	CMS 530	With Comb	Setup2	
		CMS 822-2	without comb		Coupling width tandem operation 44"
		CMS 822 (Tandem- CCC)	With Comb		Coupling width tandem operation 44"
6	Fully Fashion	CMS 530	With Comb	Setup2	NPJ at the shape edge
		CMS 822			NPJ at the shape edge
		CMS 822			NPJ at shape edge coupling width tandem operation 44"
7	Intarsia	CMS 530	With Comb	Setup2	Intarsia yarn carriers
		CMS 822			narrow coupling
8	Splitting	CMS 530 CMS 822	With Comb	Setup2	CMS 530: Split parts in system 2 (center) CMS 822: Split parts in system 2 and 3
9	Plating-2 YC	CMS 530	With Comb	Setup2	Plating with 2 yarn carriers: Rail 4: Normal YC Rail 5: YC with U 46mm
	Plating double bow	CMS 530			Plating yarn carrier double bow on rail 5
10	Sequence	CMS 530 CMS 822	With Comb	Setup2	

3 Overview of Patterns for the CMS Basic Training



4 Needle Beds and their Elements

Layout of the needle beds:

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- The front needle bed is permanently screwed to the support of the needle beds.
- The rear needle bed can laterally be racked relative to the front needle bed by the racking device.



No.	Elements	No.	Elements
1	Holding-down jack	5	Selection jack
2	Needle	6	Selector spring
3	Coupling part	7	Needle bar
4	Intermediate slider	8	Cover rail

The moveable parts (2) till (6) are fixed by multiple cover rails (8) in the needle bed.





I. Replacing needle and coupling part

- 1) Open the needle rail (1) with pull-out hook (6).
- 2) Pull the needle (2) and coupling part (3) upward.
- 3) Press the coupling part downward, when the butt of the coupling parts(4) bumps into the holding-down jack bed.
- 4) Assemble the new needle and coupling part.
- 5) Push the butt of the coupling part into the needle bed under the jack bed.



While doing so, make sure that the needle is guided in above the knock-over wire.





II. Replace intermediate slider:

CMS machines with a cam box distance of 6"



- 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 part into the home position.

CMS machines with a cam box distance of 5"



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





- 1) Push the needle and coupling part (1) upward.
- 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) Install the new intermediate slider in the reverse order.
- 4) Slide the needle and coupling part into the home position.

III. Replacing the selection jack:



- 1) Push the needle with the coupling part upward.
- 2) Push the intermediate slider (1) until the lower butt bumps into the spring wedge (2).
- 3) Push the selection jack (3) upward until it bumps into the cover rail (4).
- 4) Press the butt (5) of the selection jack into the needle bed while at the same time sliding the selection jack further upward.
- 5) Remove the selection jack.
- 6) Install the new selection jack in the reverse order.
- 7) Slide the intermediate slider in home position.
- 8) Slide the needle and the coupling part into the home position.

5 Operating and Signal Elements

Components of the knitting machine:

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	Label	Explanation
1	Yarn control unit	Monitors the thread.
2	Bobbin board	The bobbins are placed on it.
3	Carriage	It moves over the needle beds and controls the work positions of the yarn carriers and of the needles in the needle bed.
4	Signal light	It displays the operating state of the knitting machine
5	Safety door (left, right)	The reversing position of the carriage is secured by the safety door.
6	Covers	The entire traversing path of the carriage is secured with a safety door. You have to forbid everyone from reaching out into the running machine.
7	Control Unit	 Controls the knitting process. It saves the data of the knitting program. It controls the needle selection and the motors in the carriage.
8	Main switch	Switching on and off of the machine. EMERGENCY-STOP switch



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	Label	Explanation
9	Engaging rod	It activates and stops the carriage run.
10	Fabric Take-down	Main take-down: Pulls the stitches away from the needle downwards to the fabric container. Auxiliary take-down: Grasps the fabric directly under the needle bed. Comb take-down: With the comb take-down fabric pieces are automatically started and press off after completion.
11	Fabric collection chamber	The fabric take-down guides the finished fabric into the fabric collection chamber. There the fabric is protected from soiling.
12	Touch screen	The touch screen enables communication with the machine control
13	USB connection	Connection for a removable data carrier, containing knitting programs, operating systems and machine data. Recommendations: Use USB Memory Stick. Further Possibilities: • Floppy disk drive • CD drive • DVD drive • External hard disk drive





Switching-on the machine at main switch

Engaging the machine with the engaging rod



Positions of engaging rod	
1	Carriage stopped
2	reduced speed
3	normal speed





The signal light (1) displays the operating status of the knitting machine.

Type: two-flame signal light (green, yellow)

Color	State
green	Knitting machine is producing.
green (flashes)	Knitting machine is stopped with an engaging rod
yellow	The knitting machine is not producing, as an error has occurred during knitting.
green, yellow	Both lamps light up during the shutdown process.
off	Main switch is off.

USB Memory Stick



The socket for the USB-Memory-Stick is located on the left side of the machine above the cover.

User interface:

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No.	Element
1	The input unit enables communication with the machine control
2	Touch pen.

Functions at the touch screen:

- Display of operating data
- Changing machine settings and pattern data
- Input of commands
- Calling up help information



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6 Fabric Take-down

6.1 Main Take-down

The Main Take-down:

Compact class multi gauge class knit&wear class	CMS 502	Top class

No.	Elements
1	Take-down rollers
2	Knurled screws
3	Scale

- A motor drives the take-down rollers (1).
 These provide the take-down tension and guide the finished fabric into the fabric collection chamber.
- The contact pressure can individually be adjusted with knurled screws (2).
- The scale (3) simplifies the adjustment.

Take-down tension

The take-down tension consists of:

- Pretension at the carriage reversing point (WMI)
- Take-down tension during knitting (WM)





The optimum value for the take-down tension depends on:

- Working width
- Yarn
- Pattern

Premature wear of the take-down rollers

The roller rubber of the take-down roller (1) is prematurely worn by:

- Fabric take-down values too high (roller spins)
- Contact pressure too high
- abrasive, sanding yarns
- yarn finishes such as greases or oils
- UV radiation

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• Cleaning agents harmful to rubber.

Use cleaning petrol!

6.1.1 Remove Fabric Winding from the Main Take-down

1) Call up the "Take-down" window with

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Key	Function	
1	Open or close the main take-down	
2	Turn the main take-down forward or back.	
3	Open or close the auxiliary take-down	

- 2) Tap the "Main take-down" "Op." key (1).
- ⇒ The take-down will be opened.
- 3) Pull the fabric smooth.

- or -

- Press the "Main take-down" "Backw." (2) key until the fabric winding can be removed.
- 4) Free the take-down rollers from loose threads and fabric remainders.



- 5) Tap the "Main take-down" "Clo." key (1).
- ⇒ Take-down will be closed.
- 6) Start the machine with the engaging rod.

6.2 Auxiliary Take-down

The Auxiliary Take-down:

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Position	Element
1	Main Take-down
2	Auxiliary Take-down

- The auxiliary take-down grasps the fabric directly under the needle bed.
- The take-down force and the take-down speed are programmable.
- The auxiliary take-down supports:
 - Stitch formation
 - Adjustment of the fabric take-down to requirements typical of the fabric
 - Narrowing or widening





Adjust the contact pressure:

• For machines with a needle bed of 50 inches: Adjust the contact pressure with the detent plate (1)



• For machines with needle beds of 72, 84 or 96 inches:

Enter the contact pressure in the window under "Contact pressure (W+P)".



6.3 Comb Take-down

The Comb Take-down:

With the comb take-down fabrics are started on empty needles. The fabric will be thrown off then and a new fabric will be started on empty needles again.





Comb hooks with the sliders open or closed:



i

With the start of a new fabric on empty needles the comb take-down will provide the take-down function and pulls the fabric down till the fabric is taken down by the main take-down.

The work procedure of the comb take-down:

- ▷ The Sintral must call up a function for the **start with comb**.
- \triangleright There is no fabric hanging in the needles.
- \triangleright The comb take-down adopts the settings of the main take-down.
- ▷ The main take-down and the auxiliary take-down are open.

1) The knitting program is started.

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- 2) The comb thread (elastic yarn) is inserted in the two first rows.
- 3) The comb take-down comes up with open sliders of the comb hooks until the elastic yarn lays in the hooks.
- 4) The sliders of the comb hooks get closed.
- 5) The comb goes down to a defined position (below comb level)
- 6) Further rows get knitted.
- 7) The draw thread gets inserted.
- 8) The new fabric (shaped piece) gets knitted.
- 9) The comb take-down pulls the fabric down until the comb hooks are below the main take-down.
- 10) The take-down rollers of the main take-down get closed.
- 11) The comb hooks get open.
- 12) The main take-down takes control of the fabric.
- 13) The comb goes to home position.
- 14) The fabric gets completed.
- 15) The finished fabric gets cast-off.
- 16) A new fabric can be started.




7 Safety Precautions for Production

7 Safety Precautions for Production

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Type of risks	Measures		
Danger of injury	Close the covers. Close the rear panels of the machine. Close the lateral covers. Keep eyes away from the lateral yarn tensioner. Objects such as tools, bobbins etc. to be removed from the inside of the machine. If the machine is in operation, under no circumstances should you reach into it. Stop the machine if an intervention is necessary. Do not tear off the yarn by hand but use scissors.		
Danger of winding and suction and danger of crushing.	Do not reach into the fabric take-down rollers. Do not touch the friction feed wheel while the machine is in operation and keep away loose garments and hair strands. Wait for the feed wheel to stop moving after stopping the machine.		
Health hazard by fibers, dust and fumes.	 Special caution is to be observed while knitting of yarns that cause health hazards or a damage to the machine: Yarns with heavy fiber fly dyestuffs causing health hazards Yarns made of glass fibers, metallic-annealed fibers, asbestos, carbon, PU or similar materials Employ suitable measures to avoid the hazard caused by fibre, dust and fumes. Observe the country-specific laws and regulations. Observe the manufacturer's specifications (safety data sheet). For any further queries please contact Stoll. 		
Fire hazard by fluff, dust and other impurities. Increased danger of short circuit during knitting of metallic or conductive materials by building up of conductive fluff and dust.	Fluff, dust and other impurities to be removed regularly from the entire machine depending upon the degree of dirt at least once in every shift. Take care of any additional suction. Wear Inhalation protection gear.		

7 Safety Precautions for Production





8 Additional Safety Instructions for the Operation with Open Covers

8 Additional Safety Instructions for the Operation with Open Covers

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

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





8 Additional Safety Instructions for the Operation with Open Covers

Type of risks	Measures	
Danger of crushing and cutting by the carriages, racking, the needle beds, the clamping and cutting devices and the additional needle beds.	Do not reach into the running machine. Move carriage step by step or at creep speed (see operating instructions).	
Danger of injury by broken cam box and needle pieces.	Wear safety glasses.	
Danger of crushing and suction by the fabric take-down, the auxiliary take down, the comb take-down and the additional beds.	Do not reach in the gap between the needle beds. Keep hands, face, loose clothing and other loose objects away: danger of crushing. Do not reach into the area between the fabric take-down roller and the comb take-down.	

Type of risks	Measures	
Danger of crushing and cutting by the carriage, the autarkic yarn carriers, the racking, the needle beds, the clamping and cutting devices and the additional needle beds.	Do not reach into the running machine. Move carriage step by step or at creep speed (see operating instructions).	
Danger of injury by broken cam box and needle pieces.	Wear safety glasses.	
Danger of crushing and suction by the fabric take-down, the auxiliary take down, the comb take-down and the additional beds.	Do not reach in the gap between the needle beds. Keep hands, face, loose clothing and other loose objects away: danger of crushing. Do not reach into the area between the fabric take-down roller and the comb take-down.	

9 Elements of a knitting program

9 Elements of a knitting program

Components of a knitting program:

• Sintral program (*.sin)

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- Jacquard program (*.jac)
- Parameters of production
 - SETUP1 (*.set): starting with machine generation ST 711
 - SETUP2 (*.setx): for machine generation OKC (starting with V 2.1.xxx) only

SETUP1	SETUP2		
 Stitch length (NP) Fabric take-down menu (WMF) Staggering the yarn carriers at the fabric selvedge (YD) Carriage speed (MSEC) Configuration of the Measuring Wheels 	 Stitch length (NP) Fabric take-down menu (WMF) Staggering the yarn carriers at the fabric selvedge (YD) Carriage speed (MSEC) Configuration of the Measuring Wheels 		
	 Additional specifications with SETUP2: Indirect staggerings of the yarn carriers (YDI) Corrections of yarn carriers (YCI) Correction value for loop sinking depth depending on yarn carrier (NCC) Cycle Counters Racking corrections Stitch lengths correction (NPK, NPR, PNP, NPS) Yarn length control at the right and left side Comments 		

9 Elements of a knitting program



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10 Structure of a Knitting Program

10 Structure of a Knitting Program

I. Structure:

Program overview			
<pre>1 C CMS530.Half cardigan-Jac E8 <setup2> 2 C #90= C picking-up after pressing-off (#90=0999) 3 C RS19= C without elastic thread (RS19=01) 4 C RS1=5 C 1x1 Cycle 5 C RS2=20 C Cycle Half cardigan</setup2></pre>			
11 C NP1=9.0Net12 C NP2=10.0Tubular Net13 C NP3=9.51x1-Cycle14 C NP4=12.0Transition15 C NP5=10.0Structure double jersey in front15 C NP5=10.0Structure double jersey at back17 C NP7=8.8Half cardigan Tuck loop18 C NP8=9.6Half cardigan Stitch19 C NP18=9.5picking-up after pressing-off Start20 C NP19=9.5picking-up after pressing-off Cycle21 C NP20=9.0Start122 C NP21=10.0Start223 C NP22=11.0Start324 C NP24=12.0Start5			
25 C MSECI=0.70 40 START 41 Y-CR0 50 YG:1=A / 1=B 2=C 4=D 6=E; 59 YD YC			
80 FBEG: M1-SIZES; 81 F1= 82 PA: PAI: 83 PM: F1: SEN=230 84 FEND			
85 JA1=1189(1100-1100) xx F: (function call)			
xx END			
xx FBEG (Beginning of the function) xx FEND (end of function)			
999 SO WO			

10 Structure of a Knitting Program



II. Knitting instructions:

Sintral command	Meaning		
<<	Carriage direction to the left		
>>	Carriage direction to the right		
<>	any carriage direction		
S:;	Knitting specification		
*+.ABEGHIKL MOPQTWYZ abeghiklmopqt wxyz	Jacquard symbols for single needle selection		
N	Symbols written after N are not selected, but all other symbols Example: S: A - NA ;		
%.	Symbols written after the % move needles to the tuck position, symbols written before % in the stitch position Example: S: A%Y – 0;		
0	All needle do not knit		
-	Break between front and rear system		
1	Break between the systems		
;	End of a knitting specification		
<1->	Decrease Jacquard		
<a>	Releases the Jacquard selection in the color field A		
Y:;	Yarn Carrier		
S1 S6	Knitting system 1 to knitting system 6		
U^S	Transfer to rear		
UVS	Transfer to front		
UXS	Transfer to the rear and to the front		
\$^S	Split to the rear		
\$VS	Split to the front		
\$XS	Split to the front and rear		
RS	Cycle Counters		
FBEG	Beginning of the function		
FEND	Function end		
SBEG	Start of stroke processing. The knitting specifications are determined using conditions.		
SEND	End of stroke processing.		
JA18	Jacquard1 8		
#	Counter		
IF	IF-decisions		
IFN	If not		

10 Structure of a Knitting Program



10 Structure of a Knitting Program

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11 Comparing Setup1 to Setup2

11 Comparing Setup1 to Setup2

	Setup1	Setup2	
Fabric take-down functions	8 functions	50 fabric take-down functions (WMF)	
(WMF)		50 Auxiliary take-down functions (W+F) Switching auxiliary take-down on and off (W+1 , W+0)	
		Tabs for WM% and WMK%	
Yarn carrier staggering YD	One staggering (YD)	20 staggerings (YD, YDI1-YDI20)	
Yarn carrier corrections	One correction	20 indirect corrections (YCI1-YCI20) 1 : Some corrections for all 32 yarn carriers can be defined with each function.	
	Correction of the normal yarn carriers not contained in the setup	All normal and intarsia yarn carrier corrections are contained in the YCI tab	
	 Correction of the Intarsia yarn carriers in the KI / K<i> tab</i> 	with tandem operation: the correction values for the right carriage are part of the Y:Oa-b tab	
Specifications for the stitch cam positions (NP)	100	100	
Specifications for the carriage speed (MSEC)	9	20	
Correction of the loop sinking depth depending on yarn carrier (NCC)	no part of the setup-file	A correction value per yarn carrier is possible	
Yarn length	Indications for yarn length control on the right	Indications for yarn length control on the right and left	
Cycle counters	no indications possible	39 cycle counters	
Racking corrections	VKA to VKZ, no part of the setup-file	50 Indices for racking corrections (VCI)	
Comments	no indications possible	for each indication possible	
Correction of the stitch length of the right carriage with tandem operation (NPR)	Not possible	possible	
Additional information	none	 Machine Number Online Number Host Name 	
File Extension (File Extension)	.set	.setx (XML file)	
File extensions for extracted patterns	Files: • *.sin • *.jac • *.set	Files compressed in one folder *.zip:	

11 Comparing Setup1 to Setup2





12 Pattern 1: Half Cardigan - Set up the Machine



12.1 Loading Files, Library and Folders

You can load files (**sin**, **jac**, **set** and **zip**), a library (**Auto-Sintral**), or folders into the machine from:

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- Removable Disks
 - USB Memory Stick
 - Floppy disk drive
 - CD drive
 - DVD drive
 - External hard disk drive
- Hard disk of the computer in the knitting machine
- Online
- Network drive



12.1.1 Loading Pattern

I. Load pattern in machine

٨	CAUTION	
<u> </u>	 Computer viruses! Loss of data or production. Computer viruses can creep into the machine through unscanned data via USB port or network. 1 Bring in only virus free data on to the knitting machine. 	

- 1) Tap the **L** key in the "Main Menu".
- \Rightarrow The window "Load & save" is displayed.
- 2) Specify before reading in a pattern:

📙 Load	& save		STOLL THE M. NIT WAY TO KNIT
Knit	₽₹	ົ↔≌⇔≝⊛≌⊕₩╤┱	
Path:	d:\muster		
Machine type	File name	Type Changed	
CMS822	AUSL_6.2_E1.0	2009-11	PAT SIN JAC SET LIB
CM5822	RR-VKA-8xx	2009-01	Pattern:

Key		Function
₽ EALL	EALL	Delete / Do not delete pattern (sin , jac , set) from main memory 1 : Cycle counters, counters and NP values will be reset.
EAY	EAY	Delete / Do not delete all yarn carrier positions
⊻ SP1	SP1	Run / Do not run the "Start program from line 1" command automatically after loading the pattern. 1 : No need to call up the "Machine Start" window.
YLC YLC	∏ YLC ×	Delete / Do not delete the correction values automatically with loading the pattern 1 : Key is only available if an YLC device is mounted.

3) Select the desired folder (direct selection folder).



Key	Function				
Keys for	Keys for direct selection of a predefined folder				
Loading data from floppy disk i: Connect floppy disk drive to the USB socket					
	Loading data from DVD or CD i: Connect drive to the USB socket				
	Loading data via network				
	Loading data from hard disk				
Ŷ	Loading data from the USB memory stick				
Knit LAN	Loading data from a shared folder (network folder) e.g. from the pattern workstation M1plus				
R	Definition (path) of a key for direct selection of a folder				



- 4) Select the key for example.
- \Rightarrow The content of the selected directory appears in the selection window.

Display of all programs of a selected folder:

l	🚽 Load	& save		STOLL THE RIGHT WAY TO KNIT
j.	⊐ <mark>₽</mark> ₩		×	EALL EAY SP1
Pa	ath:	\\WXP22739\MC_SZ\Anwender_SC\Finkbeiner		
	Machine type	File name Type	Changed 🔽	
q	CMS530	Demo-Setup2	2009-11 PAT	SIN JAC SET LIB
	CMS530	Demo-Setup1	2009-11 Patt	ern:



Symbol	Meaning
сцį	Program was generated with Setup2 . The elements of the program (sin /jac / setx) will be saved as zip file. i : Only with OKC machines
no	Program was generated with Setup1 The elements of the program will be saved as sin / jac / set .



 \checkmark

⇒ All program elements belonging to a pattern will be selected.

Selecting the desired program / program elements (type of files):

Кеу	Function					
PAT PAT	Load / Do not load all program elements belonging to a pattern i: All program elements must have the same name.					
	Load / Do not load Sintral (sin)					
	Load / Do not load JACQUARD (jac)					
SET SET	 Load / Do not load SETUP (set / setx) set: File extension with Setup1 setx: File extension with Setup2 					
	Library = protected memory area Load / Do not load program element e.g. Auto-Sintral					

With the selection of "SIN" / "JAC" / "SET" only the selected i file types will be displayed in the selection window.

6) Refresh the selection window by the key if necessary.



- 7) Select the desired file (pattern) in the selection window.
- Pattern with Setup2: ٠

Pattern is labeled with

Pattern with Setup1: ٠ Pattern has no label

8) Tap the desired button:



Load pattern with Setup data (Setup1 or Setup2).



Load the pattern with selected Setup data (only Setup2).

9) Confirm the following prompt with the "1" key.

- or -

▼ Cancel the procedure with the "0" key.

10) Select the desired data in the following window if is called up.



⇒ The pattern memory will be cleared and the selected pattern will be loaded.



The loaded program elements appear in the "Load & Save" window at the right-hand side.

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HEAD



⇒ The "Main menu" window appears.

II. Show the content of a compressed pattern (zip file):

The pattern was generated on M1plus with Setup2 and saved as zip file.

- 1) Select the desired folder (direct selection folder).
- Select the desired program elements with the "SIN" / "JAC" und "SET" keys.
- 3) Select a pattern with the \square label in the selection window.





- ⇒ The compressed pattern will be opened and the desired program elements appear.
- 5) Select the desired program element (**sin** /**jac** / **setx**) in the selection window.
- 6) Call up the function desired next:

Key	Function
X	Delete the selected file of the selected folder
	Show the selected file in the corresponding editor.
-	Add selected file and accompanying pattern elements to the pattern already loaded

- 7) Close the compressed pattern with again if desired.
- ⇒ The single program elements (sin / jac / setx) are displayed as zip file.

III. Call up Help in the Load & Save window:





- 2) Tap the desired key then for which you want help.
- ⇒ An information text appears.



12.1.2 Changing the Path of a Drive or Folder

You can change the allocation of the keys as desired.

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Default allocation (paths) of the keys

Кеу	Drive	Explanation
¥∎	F:\	USB Memory Stick
	Name:\	Network drive
	D:\	Hard disk
Knit LAN	D:\Stoll\KnitLan	Network folder (M1plus)

1) Tap the desired key.



⇒ The input window "Select new folder " appears.

Select new folder	
e-e d:\muster	_
muster	
LAN KnitLAN / ftp	
- W2K28844	
BootFiles	
Mc-ReadOnly	
Mc-ReadWrite	~
← ✓←	

- 3) Select the desired folder.
- 4) Confirm the entry and close the window with the \checkmark key.
- ⇒ In the "Load & Save" window, the display of the key is adapted to the new path.

	Load	& save		
Pat	:h:	d:\muster		
	Machine type	File name	Type Changed	
	CMS530	SEQ3-3	2009-11	PAT SIN JAC SET LIB
	CMS530	SEQ3-2	2009-11	Pattern:
	CMS530	SEQ3-1	2009-11	Demo-Setup2
	CMS530	SEQ3	2009-11	Jacquard:
-1	CMS530	Demo-Setup2	2009-12	Demo-Setup2
	CMS530	Demo-Setup1	2009-11	Setup:
				Demo-Setup2
				Library:
4				
Tot	:al: 6	3984	2009-11-06 08:58:30	

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KNIT AHEAD

i

The path will be displayed in the line below.



12.1.3 Loading Library

Load library (Auto-Sintral) into the main memory:

The Auto-Sintral is necessary for patterns generated on the Sirix with the JSA program.

1) Select the desired folder.



- All Sintral (sin) program elements of the selected folder are displayed in the selection window.
- 3) Select the **Auto-Sintral** corresponding to the type of machine.



- \Rightarrow A prompt appears.
- 5) Tap the key "1" to confirm.
- ⇒ The Auto-Sintral will be red in and will be displayed at "Library".

12.2 Setting Cycle Counter and Quantity of Fabrics

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Cycle Counters

- Cycle counter are used for the length control
- Defined pattern areas are repeated by variables
- The cycle counters are allocated to pattern areas in the Sintral.
- Possible variables of cycle counters:
 - Setup1: RS1 to RS19
 - Setup2: RS1 to RS39

Piece counter

- "Piece number": Specified quantity of fabrics
- "Still to be knitted": the displayed number will be reduced by 1 when a fabric is completed.

I. Call up the SetupEditor:



1) Tap the key in the Main menu.





Keys	Meaning							
	Switchir	ng on or off the table to	ols					
		Go to row. Select the desired line in the selection list The cursor jumps to the desired line of the table. 1: Active with more than 21 lines.						
		Inserting a Line						
		Delete selected line						
		Copy the values of a s	selected	line				
		Insert the values of th	e copied	l line				
1 2 3 4 5 6 4 5 6	Switch on or off the virtual keyboard							
	Virtual k	eyboard to enter numb	ers in th	e Values section				
	7 4 1 0 5	$ \begin{array}{c} 0.50 \\ 2 \\ 0.00 \\ 1 \\ 0.00 \\ 0$	1 2 3 4 5 6	Minimum value for the selected entry field Maximum value for the selected entry field Move the cursor: one field to the left Move the cursor: one field to the right Delete the entry to the left of the cursor Confirm input I: The cursor jumps to the next field.				

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12 Pattern 1: Half Cardigan - Set up the Machine

Keys				Mear	ning										
•	. :	2	3	4	5	6	7	8	9	0	-	=	+	_	in the
TAB	Q	W	' I	E	R	ТΥ	7 I	J	Ι	o I	P	[]	↓	
CPS LC	к	Α	S	D	F	G	н	J	к	L	;	·	\	. ←	
SHIFT	Z	×	(с	V			в	N	м	1	•	/	\rightarrow	

Only cycle counters present in the pattern are displayed and i can be modified.

key.

- 2) Modify the desired cycle counter.
- 3) Close the "SetupEditor" with the
- Modified values will be saved to the setx-file. ⇔

II. Call up Cycle counters & counters window:



i

1) Tap the **#D** key in the Main menu.

# <mark>0]</mark> Сус		STOLL THE RIGHT WAY TO KNIT					
		Piece number	0 0	_	Still to	be knitted	0
RS1:	0	RS6:		RS11:	0	RS16:	0
RS2:	0	RS7:	0	RS12:	0	RS17:	0
RS3:	0	RS8:	0	RS13:	0	RS18:	0
RS4:	0	RS9:	0	RS14:	0	RS19:	0
RS5:	0	RS10:	0	RS15:	0	MT:	•
#L:	0	#LM:	0	#RM:	0	#R:	0
#51:	0	#53:	0	#54:	0	#52:	• 0

- 2) Set cycle counters used in the pattern: . (RS1 RS19)
- 3) Enter the desired quantity of pieces at "Piece number".
 - When producing cut goods, the length of the fabric is specified by the MT (maximum number of courses) counter.



- 4) Confirm the selection with the key.
- ⇒ The settings for the cycle counters will be applied to Setup2 but not yet saved to the Setup file.
- 5) Go back to the "Main menu".

III. Behavior of the cycle counters when saving the pattern:

Program generated with Setup2:

• All cycle counters in use will be saved to the setx file

Program generated with Setup1:

• All cycle counters in use will be listed in the Sintral and saved to the **sin** file.





12.3 Carrying out a Program Check

A pattern re-loaded into the machine must be tested for knitting ability.

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Test the knitting program:

- 1) Call up the "Sintral Editor" by
- 2) Tap the key.



⇒ During the test the pattern is shown in the upper window and the TP messages in the lower window.

TP 10→8 TP				STOLL THE RIGHT WAY TO KNIT
	<u>* qq</u> = <u>}</u> ?			
1 C CMSS30.Zopf-LL-Ri 2 C #137= C 27 3 RS1=5 C 27 4 RS2=10 C RS 5 C RS17= C AX 11 C NP1=9.0 Netz 12 C NP2=10.0 Schl 13 C NP3=10.0 2x1/ 14 C NP4=11.0 Uebe 15 C NP5=12.0 Stru 16 C NP6=12.0 Stru 26 6 [11] +0% TP	ppe-530-E12 E12 is.Antangsr.E20 (#137=16 1 Rapport 2 auchnetz 2x2-Rapport rgang k. einflaechig vorne k. einflaechig hinten	29.10.2005 518)	10:43:27 <n1> 4</n1>	+.0.020 Build 3 F
Melaungen TP OK				
Aktuelle Zeile:	Warnungen:	0	Anzahl Touren	: 0



Functions of the TP window:

Key	Label	Function
	"Start program test"	Start program test from the first line.
TP.	"Start program test from"	Start program test from a certain line on
	"Interrupt program test"	Interrupt program test and restart it
TP	"End program test"	End program test
	"Jump"	Go to a certain position
	"Go directly to"	Quick jump to the corresponding mark (e.g. from FBEG to FEND)
¥	"Display warning"	Activate/deactivate presentation of warnings during TP .
Ð	"Enlarge"	Display text enlarged
Q	"Reduce"	Display the text decreased
.	"Change size"	Change window size of pattern and error output
?←	"Direct help"	Call up direct help for the key pressed next.

12.4 Threading up the Machine

I. Call up the yarn carrier allocation:

1) Call up the "Machine Start" menu with the key of the Main Menu.

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👫 Machine start		STOLL THE RIGHT WAY TO KNIT
Start		Needle selection
SP from line 1	0	Off On Needle selection
SPF SO		Off On Left carriage
SPF row fixed	999	Off On Right carriage
P.aft. press-off from row	950	Yarn carrier
		Delete positions (EAY)

- 2) Tap the "SP from Line 1" key.
- 3) Move the carriage from the left to the reverse at the right.
- 4) Call up Main menu.



5) Call up the Yarn carrier menu.



⇒ The yarn carrier allocation will be displayed.

Yarn carrier STOL THE RIGHT WAY TO H														
Y	SEN1	Y:=n	0/1	YG	YP	Ка	Kb	K <i>a</i>	K <i>b Type</i>	I<>	Ba	Bb	Ua	Ub
1A	1	А	1	-37	-37	0.0	0.0		N		9	9	14.5	14.5
1B	1	В	1	436	436	0.0	0.0		N		9	9	14.5	14.5
2A	1	С	1	-45	-45	0.0	0.0		N		9	9	14.5	14.5
2В	1	D	1	444	444	0.0	0.0		N		9	9	14.5	14.5
6A	1	Е	1	476	476	0.0	0.0		N		9	9	14.5	14.5

1A

Current YCI:

Current YDI:

►

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Column	Meaning
Y	Specification of yarn carrier
SEN 1	Specification of SEN area in which yarn carrier works
Y: =n	Specification of yarn type
0/1	Yarn type switched on or off
YG	Home position of the yarn carrier with needle xx
YP	Current yarn carrier position with needle xx
Ka	Yarn carrier correction value a (left) with selected knitting
Kb	Yarn carrier correction value b (right) with selected knitting
K <i>a</i>	Correction value a (left) for swiveled intarsia yarn carrier
K <l>b</l>	Correction value b (right) for swiveled intarsia yarn carrier
N/I	 Definition of the yarn carrier type: Normal yarn carrier (N) Intarsia yarn carrier (I)
 <>	Swiveling direction of intarsia yarn carrier
Ba	Yarn carrier braking value a (left)
Bb	Yarn carrier braking value b (right)
Ua	Engaging value of the yarn carrier when plating to the left
Ub	Engaging value of the yarn carrier when plating to the right
MSEC	Carriage speed related to yarn carrier (with technical fabrics)
v	Number of selvedge needles until first knitting needle (technical fabrics)

II. Positioning the bobbins when using up to 16 yarn carriers:

You have different possibilities to position the bobbins depending on the machine type and the quantity of yarn carriers.

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- 1) Place the bobbins from the outside toward the center of the machine.
- 2) Position the movable yarn guide brackets in order to get one yarn guide over each bobbin.

Top view:



- 3) Thread each thread through a yarn guide bracket.
- 4) Thread in the yarn carriers:
- Start with the yarn carriers of the highest track number, from the back to the front.
- Lead the thread of the inner yarn control device via the rear track of the roller deflector.
- Lead the thread of the outer yarn control device via the front track of the roller deflector.
- 5) Lead all threads for a yarn carrier on this side via the same track of the roller deflector.
- 6) Thread in the draw thread, the elastic thread and the comb thread into the corresponding yarn carriers.

III. Positioning the bobbins when using more than 16 yarn carriers:

1) Position the bobbins on the bobbin board of the knitting machine and on the supplementary board starting from the outside to the center.

Arrangement of the bobbins using a supplementary bobbin board:

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- 2) Feed the threads from the additional bobbin board ((1)) and ((3)) via the yarn guide bracket to the yarn control units ((1)) and ((3)).
- 3) Feed the threads from the additional bobbin board ((2)) and ((4)) via the yarn guide bracket to the yarn control units ((2)) and ((4)).
 i: Do not cross the threads.





- 4) Thread in the yarn carriers:
- Start with the yarn carriers of the highest track number, from the back to the front.
- Lead the thread of the outer yarn control device via the rear track of the roller deflector.
- Lead the thread of the inner yarn control device via the front track of the roller deflector.



- 5) Lead all threads for a yarn carrier on this side via the same track of the roller deflector.
- 6) Thread in the draw thread, the elastic thread and the comb thread into the corresponding yarn carriers.



12.4.1 Yarn Carrier Home Position

Default allocations of yarn carriers for the different types of machines:

Machine type Comb		Yarn type	left track	right track
CMS 5xx	With comb	Rib thread		2
		Elastic thread		1
		Comb Thread	2	
		Draw thread	1	
	Without comb	Rib thread		2
		Elastic thread		1
		Comb Thread		
		Draw thread 1		
CMS 822	With comb	Rib thread 1		3
		Elastic yarn 1		1
		Comb thread 1 2		
		Draw thread 1	1	
	With comb coupled	Elastic yarn 1		1
		Rib thread 1 3		3
		Comb thread 1	2	
		Draw thread 1	1	
	with comb,	Elastic yarn 2	7	
	uncoupled	Draw thread 2		7
		Rib thread 1	3	3
		Comb thread 2		2
		Comb thread 1	2	
		Elastic yarn 1		1
		Draw thread 1	1	
CMS 822	Without comb	Rib thread 1		2
		Elastic yarn 1		1
		Draw thread 1	1	
CMS 9xx		Elastic thread		8
		Draw thread	8	
		Rib thread		3

12.4.2 Threading up from the Bobbin Board to the Yarn Carrier

Lead the thread from the bobbin to the yarn carrier via the yarn control unit and the lateral yarn tensioner.

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Further information:

12.4.2.1 Threading up the Yarn Control Unit



I. Yarn control unit (FKE):

1	Thread break control	4	Yarn brake disc
2	Knot detector for large knots	5	LED
3	Knot detector for small knots		



II. Threading up the FKE:

 Bring thread break control in work position.
 Pull thread break control a little towards left till it is not held by the stopping cam anymore.





- 2) Thread each thread through a yarn control device as shown in the picture.
- 3) Lead the thread to the yarn carrier via the yarn control device and the lateral yarn tensioner.



- or -


▼ Lead the thread to the yarn carrier via the yarn control device, the friction feed wheel and the lateral yarn tensioner.



1	Bobbin		Yarn deflector
2	Yarn guide bracket	6	Yarn Carrier
3	Yarn control unit	7	Lateral yarn tensioner
4	Safety door	8	Friction feed wheel

12.4.2.2 Threading up the Friction Feed Wheel



- 1) Lead the thread through the eyelet (1).
- 2) Lead the thread from the friction roller (5) through the swivel arm (4) around the friction roller (3).
- 3) Carry on the thread on the top side and thread it through the eyelet (2), lead it over the friction roller (5) to the eyelet (6).



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Different ways to thread up the friction feed wheel:

12.4.2.3 Using the Storage Feed Wheel

Use storage feed wheels with fine and delicate yarns.

- Storage feed wheels are standard with the gauges E14 E18
- You can use storage feed wheels with the gauges E3.5 E12 and E7.2
 E9.2.





The feed wheel serves for intermediate storage of the thread. Spikes will be caught and compensated when unwinding the yarn from the bobbin.

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12.4.2.4 Threading up Lateral Yarn Tensioners

Depending on the machine gauge and the component type there are different types.

- Type 1
- Type 2

i

Thread up the yarn tensioners:



Type 2

Type 1



Make sure that you thread the thread vertically through the lateral safety door.

1) Bring the Lateral yarn tensioner in still position (anchoring). Thereby the active thread clamp is open.

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2) Thread the thread through one of the eyelets (1) on the lateral safety door.

Use Eyelet number 3 to10 when the thread is coming from the friction feed wheel. So the clamp positions of the active thread clamp are positioned exactly under it.

Use Eyelet number 1 and 2 or from eyelet no.11: for the thread if you working without the feed wheel.

- 3) Thread the thread vertically downwards in the eyelet (2) of the lateral yarn tensioner.
- 4) Feed the thread through the yarn deflector (3) to the yarn carrier.
- 5) Bring lateral yarn tensioner in work position.
- 6) With type 2: Pull the thread in the open eyelet (4) of the permanent brake.

12.4.2.5 Adjusting Lateral Yarn Tensioner

I. Adjust the yarn tension:



Type 1



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- Lateral yarn tensioner: Adjusting the restoring force on the linear regulator (2).
- 2) Open permanent brakes (5).
- 3) Adjusting yarn control unit.
- 4) Adjusting permanent brakes (5).
- Lateral yarn tensioner: Adjust the yarn tensioning path at the notched plate (3).

II. Set restoring force:

- 1) Remove lateral yarn tensioner (1) from the stay.
- 2) Linear regulator (2) is to be set in a manner that the lateral yarn tensioner has enough strength to hold the thread tensioned always.
- Control the setting while the machine is knitting. In this case the thread must not sag rather it should always be tensioned by the yarn tensioner.

III. Adjusting permanent brake:

Adjust the permanent brake in such a manner that the lateral yarn tensioner swivels only a bit (approx. 25 degrees)
 If a thread loop is formed between the friction feed wheel and the permanent brake (on the inner side of the lateral safety door) then the yarn brake on the yarn control unit should be set a little stronger and the yarn brake should be set a little weaker.

Type 2

IV. Set the yarn tensioning path of the yarn tensioner:

The yarn tensioning path of the yarn tensioner can be set from 80 to 35 degrees.

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The yarn tensioning path is adjusted with the four lock positions of the lock segment (A-D).



Position	max. angle	Function
A	80 °	Home position of the lock segment. Active thread clamp in action. Largest yarn tensioning path.
В	65 °	Active thread clamp in action.
С	50 °	Active thread clamp in action.
D	35 °	Active thread clamp out of action. Smallest yarn tensioning path.

12.4.2.6 Threading up the Yarn Carriers



DANGER

Danger by moving carriage

Danger of crushing and cutting by the carriage.1 Do not start the machine with the covers open.

- 1) Open covers.
- 2) Thread up the yarn through the eyelets, the yarn guide star and yarn carrier head.



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3) Insert the yarn ends into the cutting needles of the clamping points with machines having a clamping and cutting device.



No.	Element
1 Clamping point with cutting needle	
2	Catch hook

- 4) Insert the yarn ends into needles within the fabric with machines without a clamping and cutting device.
- 5) Pull down the needles manually.
- 6) Cut off the yarn end.
- 7) Close the covers.





12.4.3 Position the Yarn Carriers

I. Position the yarn carriers at the fabric selvedge:

- \triangleright The yarn carriers used in the pattern are threaded in
- ▷ Without thread clamping and cutting device (**YG**)
- 1) Position the yarn carriers at the fabric selvedge according to the "Yarn carrier" dialog box.

II. Position the yarn carriers at the clamping point.

Function of the **YGC** command:

With YGC		Without YGC		
The yarn carrier is a clamping point of th	allocated to the e same number.	The yarn carrier is allocated to the clamping point following next.		
Yarn carrier	Clamping point	Yarn carrier	Clamping point	
1	1	1	1	
2	2	2	2	
4	4	4	3	
6	6	6	4	

▷ The yarn carriers used in the pattern are threaded in

- ▷ With clamping and cutting device (**YGC**)
- 1) Check if **YGC** is used in Sintral.
- 2) Position the yarn carriers at the corresponding clamping points.



12.4.4 Thread up the Yarn Carriers after Yarn Breakage



With production: Thread up yarn carriers after yarn breakage.

- 1) Open covers.
- 2) Thread up the yarn through the yarn guide star and yarn carrier head.
- 3) Lay-in the thread in the needle head using a knitting hook.
- 4) Lead the yarn end opposed to the carriage direction.
- 5) Hold the yarn end outside the danger zone(carriage)
- 6) Pull the engaging rod to position 2 (reduced speed) keeping the carriage in view.
 - ⇒ The carriage will move at reduced speed (MSECCO)
- 7) Release the engaging rod when the thread is fixed in the fabric and the position is accessible.
- 8) Cut-off the yarn end.
- 9) Close the covers and continue production.

Further information:

Additional Safety Instructions for the Operation with Open Covers [-> 37]



12.5 Starting Machine

i

You need not to do the following procedure if the "Threading up the machine" of the previous chapter is already done.

I. Start the machine with a loaded pattern:

- ▷ Operative program is loaded
- \triangleright The yarn carriers used in the knitting program are threaded in.
- Call up the "Machine Start & Stop" menu with the "Main Menu".

👫 Machine start		S T O L L THE RIGHT WAY TO KNIT
Start		Needle selection
SP from line 1	0	On Needle selection
SPF SO		Off On
SPF row fixed	999	On Right carriage
P.aft. press-off from row	950	Yarn carrier
		Delete positions (EAY)

- 2) Tap the "SP from line 1" key.
- 3) Start the machine with the engaging rod.



The carriage is positioned at the left reversal point after the knitting.

12.5.1 Picking-up after Pressing-off Function

- The Picking-up after Pressing-off function is used for:
 - Knitting programs for machines without comb
 - Knitting programs for machines with comb but without using it

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- The Picking-up after Pressing-off function can be activated or deactivated.
- You can specify the width and length of Picking-up after Pressing-off.

Setting	Function
#90=0	Switch-off the Picking-up after Pressing-off function
#90=1	Activate the picking-up after pressing-off function (Automatic calculation of the length - depending on the gauge)
#90=2	The picking-up after pressing-off knitting process will be done twice
#90=3	The picking-up after pressing-off knitting process will be done three times
#90=xx	The picking-up after pressing-off knitting process will be done XX times
#51 / #52	Specify the knitting width for Picking-up after Pressing-off Example: Fabric is started with the comb and the comb will be switched off by RS17.





13 Setting up the Pattern

13 Setting up the Pattern

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You can have a look at the settings and correct them if necessary during production.

I. Call up the "Setting-up the pattern" menu:

- 1) Tap the key in the Main Menu.
- ⇒ The settings are displayed in the "Setting-up the pattern" menu.



1	Display of: • Carriage Direction • Cycle Counters • SEN area • Coupling width (for tandem machine) • Counter The active cycle counter is highlighted. The values cannot be modified.
2	Setting up of the knitting systems: • Needle Action • Stitch tension • Yarn Carrier • Jacquard line
3	Current Sintral line
4	Fabric take-down valuesFabric take-down function

13 Setting up the Pattern

5	Status line: Here the individual values can be changed or the corresponding setting menu called up.
6	Actions for yarn carrier plunger, fabric take-down, comb take-down and auxiliary take-down
7	Call up "Stitch length" window
8	Additional yarn carrier distance for fully fashion knitting

II. Change values directly:

- 1) Tap the corresponding field.
- ⇒ Menu for input appears.



- 2) Activate the virtual keyboard by
 3) Characterization
- 3) Change the values by the virtual keyboard. 1 2 3 4 5 6 7 8 9 0 . - DEL 🗲 (+) (+) 🗲 **→**
- 4) Confirm the changes.



14 Working with the Sintral Editor

You can modify or complete the knitting program in the Sintral Editor.

Open the Sintral Editor:

- 1) Call up the "Sintral Editor" by
- ⇒ The "Sintral Editor" is displayed with its first level of keys.

1 C CMS530.Zop:	f-LL-Rippe-530-E12 E12 29.10.2005 10:43:27 <m1> 4.0.020 Build 3 Release (du</m1>	ie 🔺
2 C #137=	C Zus.Anfangsr.E20 (#137=1618)	
3 RS1=5	C 2x1 Rapport	
4 RS2=10	C RS2	
5 C RS17=	C Abwerfen (RS17=0)	
11 C NP1=9.0	Netz	
12 C NP2=10.0	Schlauchnetz	
13 C NP3=10.0	2x1/2x2-Rapport	
14 C MD4-11 O	W-1	



During production you can view the knitting program only.



14.1 Keys of the First Level of the Sintral Editor

Keys of the first level of the Sintral Editor:

	Label	Function
	"Switch toolbar"	Switch over toolbar to second level
	"Mask jump"	Toggle in the toolbar for Go to mask
	"Start of marking"	Start of selection: Set the beginning of a marking. Any existing selection will be deleted
→	"End of marking"	End of selection: Set the end of a selection
χ	"Cut"	Cut selected area
	"Сору"	Copy selected area
	"Insert"	Paste copied or cut area
S	"Undo"	Multi-level Undo
C	"Redo"	Multi-level Redo
#	"Search"	Search a certain term
	"Find next"	Continue to find a certain term
interest of the second	"Replace"	Find a term and replace it with a new term
	"Jump"	Go to a certain position
•	"Go to submenu"	Open the submenu for Go to



	Label	Function
	"Go directly to"	Quick jump to the corresponding mark (e.g. from FBEG to FEND)
1 2 3 QWE A S	"Keyboard"	Toggle off/on the keyboard
₹?	"Direct help"	Call up direct help for the key pressed next.



14.2 Keys of the Second Level of the Sintral Editor

The second level is called up by the key.

	Θ	Q			
- [1	C CMS	8530.Zopf-L	L-Rippe-530-E12 E12 29.10.2005 10:43:27 <m1> 4.0.020 Build 3 Release (de</m1>	-
	2	C #13	37=	C Zus.Anfangsr.E20 (#137=1618)	
	3	RS1=3	5	C 2x1 Rapport	
	4	RS2=:	10	C R52	
	5	C RS:	17=	C Abwerfen (RS17=0)	
	11	C NP:	1=9.0	Netz	
	12	C NP2	2=10.0	Schlauchnetz	
	13	C NPC	3=10.0	2x1/2x2-Rapport	

Keys of the second level of the Sintral Editor:

Key	Label	Function					
	"Switch toolbar"	Switch over toolbar to first level					
Ð	"Enlarge"	Display text enlarged					
Q	"Reduce"	Display the text decreased					
	"Remove window divisions"	Cancel tile (horizontal or vertical)					
::	"Tile window horizontally"	Split display horizontally					
	"Tile window vertically"	Tile display vertical					
FBEG	"Function list"	Toggle on/off the display of pattern functions.					
	"Error messages on/off"	Toggle off/on the Sintral error messages					
	"Pack and unpack jacquard"	Pack/unpack selected jacquard lines					
1100	"Set start of jacquard"	Set start of jacquard on current line					
	"Auto-Sintral"	Switch between current pattern and Auto-Sintral					



Key	Label	Function					
×	"Delete all"	delete the complete pattern					
•	"Submenu for Delete"	Open the submenu for Delete					
↓ 10 15 15	"Sort"	Sort the selected area ascending by line numbers					
	"Renumber"	Reissue line numbers in the selected area					
₹?	"Direct help"	Call up direct help for the key pressed next.					



14.2.1 Tile Window Vertically

Tile window horizontally or vertically:

Horizontally tiled window:

	Γ	1 C CMSED Zonfill Dinno-500 F12 F12 20 10 2005 10:42:27 CM15 4 0 020 Puild 2 Delegge (del	
	Ľ	1 C CH3530.2001-66-Rippe-530-612 E12 29.10.2005 10:43:27 KH2 4.0.020 Build 5 Refease (de)	1
		2 C #137- C 248. Antangsi. E20 (#137-1010)	-
		A DE2=10 C DE2	
		$= 1 \text{ K}_{2} = 10 \text{ C} \text{ K}_{2} = 0$	
		11 C ND1=0 O Note:	
		11 C MP1-5.0 MeC2 12 C MP2-10 O Schleuchnetz	
		12 C M2-10.0 2v1/2v2-Deprort	
		14 C ND4-11 O Hebergeng	
		15 C MF-11.0 Ocbergenig vorne	
		15 C ND6-12.0 Struk einflachig binten	
		17 C ND7=0 5 bburfen/Nechbuligren v	
		19 C MD9=0 E abverten/Macheulieren_^	•
	ωĒ	1100 160 2774162 -500 -500	1
14	10	1101 100 2778162 - 559 - 559	-
		1102 160 2778162 -590 =500	
		1103 160 2778162 -599 =599	
		1104 160 2771162 -160 277162 =599	_
		1105 160,277162,-160,277162,=599.	_
		1106 160 2771162 -160 277*162 =599	
		1107 160,277162,-160,277162,=599	
		1108 160.138(.) 163160.277*162.=599.	
		1109 159.139(.A) 162160.277*162.=599.	
		1110 160.138(.) 163160.277*162.=599.	
		1111 159.139(.8)162160.277*162.=599.	
		1112 164,4(,+)2(4,+4,),4(,+)2(2(4,+,,)11,2(4,+,,)4,)3(+,)+2(5,+,)+,+,+2(2(5,+,)11,2(5,+,)4,)4	
		$1113 \ 163.4(.+)2(4.+,+).4(.+)2(4.+,+3.11(.+)4.+,+4.)4(+.)2(4.+,+).+.+2(5.+,+3.11(.+)4.+,+3.)(-1)4(-1)4(-1)4(-1)4(-1)4(-1)4(-1)4(-1)$	
		1114 160.44872 (3A373A) A572 (3Y3A) A778 (YA) 2 (3Y4A) 4A374A778 (YA) 2 (2 (374A) 57) 372 (4A374A778 (YA) 2 (37	
		1115 145.2(19.4(.T))74.2(11.4(.T))66.2(20.4(.T))166599.=599.	
		1116 144.2(19.4(.T))74.2(11.4(.T))66.2(20.4(.T))167599.=599.	
		1117 160.9A2 (6A3Y) 2 (7A2 (8A3Y4AYY8 (YA) 3Y4A3Y) 16A3YA) 5A3Y16A162160.277*162.=157*2 (27*2 (28*15+	-
	A	1 1 [1] +0% Zopf-LL-Rippe-530-B12	1

Key	Function
::	Tile window horizontally
A	enlarge lower part
V	enlarge upper part

Vertically tiled window:

	QQ E E				
	1 C CMS530.Zopf 2 C #137= 3 RS1=5 4 PS2=10	-LL-Rippe-530-E12 E12 29. ▲ C Zus.Anfangsr.E20 (#13' C 2x1 Rapport C PS2	ELL-Rippe-530-E12 E12 2 C Zus.Anfangsr.E20 (# C 2x1 Rapport C PS2	29.10.2005 10:43:27 < ∮137=1618)	M1>
	5 C RS17= 11 C NP1=9.0 12 C NP2=10.0	C Abwerfen (RS17=0) Netz Schlauchnetz	C Abwerfen (RS17=0) Netz Schlauchnetz		
	13 C NP3=10.0 14 C NP4=11.0 15 C NP5=12.0	2x1/2x2-Rapport Uebergang Struk. einflaechig vorne	2x1/2x2-Rapport Uebergang Struk. einflaechig vo	orne	
	16 C NP6=12.0 17 C NP7=9.5 18 C NP8=9.5	Struk. einflaechig hint Abwerfen/Nachkulieren_v Abwerfen/Nachkulieren_^	Struk. einflaechig hi Abwerfen/Nachkulieren Abwerfen/Nachkulieren	inten v h	
	19 C NP11=12.0 20 C NP15=11.0 21 C NP16=11.0 22 C NP20=0 0	Schutzreihen Reiskorn vorne Reiskorn hinten Anfengi	Schutzreihen Reiskorn vorne Reiskorn hinten		
	23 C NP21=10.0 24 C NP22=11.0 25 C NP24=12.0	Anfang2 Anfang3 Anfang5	Anfang2 Anfang3 Anfang5		
	26 C NP25=19.0 27 C MSECI=0.70 39 IF #L=0 #L=1	_2 .61 IF #R=0 #R=437 #LM=0 #1	_2 .61 IF #R=0 #R=437 #LM=0) #RM=0	
	40 START 41 PF0 42 Y-CR1				
	50 YGC:1=A 2=K / 51 YDF=2 52 C	2=B;	2=B;	<u>I</u>	
	53 C 54 C 55 C 2=K Kammfad	LEFT I II- Ien1 I	LEFT len1	I RIG I I 2=B Bundfaden1	HT
∢		+0% Zopf-LL-Rippe-530-E12			

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Key	Function							
	Tile window vertically							
\triangleleft	enlarge right part							
\triangleright	enlarge left part							



Call up Go to submenu:

 \triangleright The first level of the "Sintral Editor" appears.

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- Tap the key if necessary.
- ⇒ The key will be displayed in the toolbar.
- 2) Press the arrow key
- \Rightarrow The submenu is displayed.



- 3) Select the destination in the submenu
- to the start
- to the end of the file
- into the desired line

Key	Function
▲	Go to the start of the file
▲	Go to the end of the file
←	Go to the start of the line
→	Go to the end of the line
JAC	Go to the begin of jacquard

14.2.3 Submenu for Delete

STOLL

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Call up the Delete submenu

- $\,\triangleright\,\,$ The second level of the "Sintral Editor" appears.
- 1) Tap the key if necessary.

⇒ The key will be displayed in the toolbar.

- 2) Press the arrow key next to it.
- \Rightarrow The submenu is displayed.
- 3) Select the desired subject to be deleted in the sub-menu:
- Sintral
- Jacquard
- a desired line



Кеу	Function						
× SIN	Delete Sintral from file						
JAC	Delete jacquard from file						
X 10	Delete specified line from file						



14.3 Changes within the Sintral:

Edit the Sintral:

- ▷ Machine is not running
- 1) Call up the "Sintral Editor" with the key.

1		1 C CMS530.20pf-LL-Rippe-530-E12 E12 29.10.2005 10:43:27 <m1> 4.0.020 Build 3 Release (de 2 C #137= C Zus.Anfangsr.E20 (#137=1618) 3 RS1=5 C 2x1 Rapport 4 RS2=10 C RS2 5 C RS17= C Abverfen (RS17=0)</m1>) 🛓					
1	11 C NP1=9.0 Netz 12 C NP2=10.0 Schlauchnetz 13 C NP3=10.0 2x1/2x2-Rapport 14 C NP4=11.0 Uebergang 15 C NP5=12.0 Struk. einflaechig vorne							
		17 C NP7=9.5 Abwerfen/Nachkulieren v 18 C NP8=9 5 Abwerfen/Nachkulieren v	▼ ▶					
46	HC	1100 160.277H162599.=599. 1101 160.277H162599.=599. 1102 160.277H162599.=599. 1103 160.277H162599.=599.	-					
1		1104 160.277A162160.2777162.=599. 1105 160.277A162160.277162.=599. 1106 160.277A162160.277162.=599. 1107 160.277A162160.277162.=599. 1106 160.138(.A)165160.277162.=599.						
1		$\begin{array}{l} 1109 & 139 & 139 & (1.3) & (1.5$	4) ·					
		1115 145.2 (19.4 (.T)) 74.2 (11.4 (.T)) 66.2 (20.4 (.T)) 167.599. 1116 144.2 (19.4 (.T)) 74.2 (11.4 (.T)) 66.2 (20.4 (.T)) 167.599.599. 1116 144.2 (19.4 (.T)) 74.2 (11.4 (.T)) 66.2 (20.4 (.T)) 167.599.599. 1117 160.942 (643Y) 2 (742 (643Y44YY6 (Y4)3Y443Y) 1643Y4) 543Y164162160.277*162.=157*2 (27*2 (28*15))	⊥ :+ ┸ ▶					
	~	T T T I IOS SOLT DE VILLE COO BEE	Y					



- 2) Tap the **TATST** key of the toolbar.
- ⇒ The virtual keyboard is displayed.
- 3) Make changes.
- A prompt appears:
 "Memory protection: Should the pattern really be modified?"
- 4) Confirm the prompt with "Yes".
 - \Rightarrow The Sintral can be edited.
- 5) Confirm entry with **____** of the keyboard.
- ⇒ Modifications of the program will be saved to the pattern memory.
 - If you want to archive the modifications you have the save the them afterwards.

14.4 Invalid Characters in Sintral

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			CAUTION													
			In Fa Cl Cl er Th th 1	 Invalid Characters in Sintral Fault message or fault on the knitting machine due to invalid characters in the Sintral. Possible cause: Characters not found in the ASCII character set were entered with a text editor. The computer of the knitting machine does not understand them. 1 Enter only characters of the ASCII character set in the knitting program.												
	1	"	#	Ş	010	&	۲	()	*	+	,	-		1	
0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?	
0	А	В	С	D	Е	F	G	Н	Ι	J	Κ	L	М	Ν	0	
Ρ	Q	R	S	Т	U	۷	W	Χ	Y	Ζ	[/]	^	_	
`	а	b	С	d	е	f	g	h	i	j	k	1	m	n	0	
р	q	r	S	t	u	v	W	х	У	Z	{	1	}	~		

ASCII character set





15 Pattern 1: Half Cardigan -Changing Pattern Parameters

Start						
Operating mode of the machine	 Without using the comb Without clamping / cutting 					
Pattern description	Changes in the program:					
	 Distance of the yarn carrier from the fabric selvedge: 					
	Stitch Length					
	Carriage Speed					
	 Fabric take-down 					

15.1 Operating Mode of the Machine and Knitting Program

Operating Mode of the Machine:

 Operating mode without using the comb: The knitting program (Sintral, Jacquard and Setup) comes with a draw thread at the start.

The draw thread enables to separate the pieces after knitting or ironing. **Result:**

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The individual pieces are knitted in a common panel following each other.

With this operating mode a fabric must always hang in the needles.

SINTRAL program element:

i

Program structure and knitting functions of a M1plus program with Setup2:

```
1 C CMS530.Halfcardigan E8 /eisenlohr 12/15/09 15:12:30 <M1> 5.2.003 Build 1 Release (gb) #139=627 #156=0 I-TYPE2 <SETUP2>
             C Sauberstricken (#90=0..999)
C ohne Gummifaden (RS19=0..1)
C 1x1 Rapport
 2 C #90=
 3 C RS19=
  4 C RS1=5
                 C Repeat Halfcardigan
  5 C RS2=20
11 C NP1=9.0
12 C NP2=10.0
                  Setup Row
Setup Tub
 13 C NP3=9.5
                   1x1-Cycle
                  Loose Row
Struc Double jersey front
14 C NP4=12.0
15 C NP5=10.0
 16 C NP6=10.0
                   Struc Double jersey back
17 C NP7=8.8
18 C NP8=9.6
                   Half-Cardigan Tuck
                                                                                                      T
                   Half-Cardigan Loop
 19 C NP18=9.5
                   Picking-up Start
20 C NP19=8.8
21 C NP20=9.0
                   Picking-up Cycle
                   Start1
 22 C NP21=10.0
                   Start2
 23 C NP22=11.0
                   Start3
 24 C NP24=12.0
                   Start5
25 C MSECI=0.70
 40 START
 41 Y-CR0
 50 YG:1=A / 1=B 2=C 4=D 6=E:
--I
 52 C
                    LEFT
                                         I
                                                         RIGHT
                                      I 6=E Rib thread 2
I 4=D Ground
 53 C-----I------
                                                                            ----I
 54 C
                                                                                Ι
 55 C
                                                                                I
56 C
                                         T 2=C Rib thread 1
                                                                               т
 57 C 1=A Draw thread1
                                         I 1=B Elastic thread1
                                                                                Ι
 58 C-
                                    ----T-
59 YD
 80 FBEG:M1-SIZES;
 81 F1=1-230
82 PA:JA1; PAI:JA1;
83 PM:1:F1; SEN=1-230
84 FEND C M1-SIZES
85 JA1=1189(1100-1100)
110 #99=0
111 SOY #99=1
112 IF #99=1 #99=0 MS PRINT/CHECK YARN CARRIER/
113 F:M1-SINTRAL;
114 END
```



115	FBEG:M1-SINTRAL;								
116	IF #90=>1 IF #90<=999 F:SCHALTER-1; C Sauberstricken								
117	JA1=1179								
118	Y-2A:F1*^0; Y-6A:F1+^0;								
119	<< S:<1-><*>A(21) -Y(21) /<1-><+>A(22) -Y(22);	Y:=C/=E;			s1	s2		WMF1	MSEC3
120	>> S:<1-><*>A(22)-Y(22)/<1->UVS+/<1->UVS+;	Y:=C;			S1	s2	s3		
121	<< s:<1-><*>AH(22)-H(20);	Y:=C;	V 0		S1				MSEC4
122	Y-1A:HL0 HR1 F1A^0;								
123	>> S:<1-> <a>0-Y(20)/<1->U^ST;	Y:=A;			s2				
124	~		VU		S 0			WO	
125	>> S:<1-><*>A(21)-Y(21)/<1->0-Y:	Y := C/0:			S 2	S 3		WMF 1	MSEC3
126	<< S:<1->IIVS+:		VT.1		51				MSEC3
127	>>		VII		50			WO	110200
120		V:-C/0.	v0		20	~ 2		LIME 1	
120	$(1 - 1)^{-1} (20)^{-1} (20)^{-1} (21)^{-1} ($	1.=0/0,	vu		32	33		WHE I	
129					50			WU	
130	Y-IA:HLO HRO;								
131	<< S:<1-> <a>A(24) =0;	Y:=A!;			S2			WMF 1	
132	IF RS19=0 F:SCHALTER-3; C ohne Gummifaden								
133	IF RS19=1 F:SCHALTER-4; C mit Gummifaden								
134	IF RS1<>0 F:RAPPORT-5; C 1x1 Rapport								
135	JA1=1151								
136	Y-2A:F1*^0; Y-6A:F1+^0;								
137	>> S:<1-><*>A(3)-Y(3)/<1-><+>A(4)-Y(4);	Y:=C/=E;	V#	V 0	s2	S 3		WMF1	MSEC3
138	Y-4A:F1E^0;								
139	<< S:<1-><*>HI(8) -H&I(7) /<1-> <e>H(5) -H(6) /<1-><+>I(8) -&I(7) :</e>	Y:=C/=D/=E:	vu		S 1	s2	s 3		MSEC2
140	>> S:<1-><*>H(5)-H(6)/<1-> <e>T(8)-%T(7)/<1-><+>H(5)-H(6):</e>	Y:=C/=D/=E:	VII		51	52	53		
141	TE PC2XA E PARPORT-6: C Papeat Walfcardigan	10,-2,-2,	••		~ 1				
142	TR1=1127								
142	U 02.51400. V 43.51500. V (3.51400.								
143	Y-ZA:FI^**0; Y-4A:FIE**0; Y-6A:FI+**0;					~ ^	~ ~		
144	<< S:<1-><*>I(8)-%I(7)/<1-> <e>H(5)-H(6)/<1-><+>I(8)-%I(7);</e>	Y:=C/=D/=E;	VU	V0	S1	S2	S3	WMF 1	MSEC2
145	REP*5								
146	>> S:<1-><*>H(5)-H(6)/<1-> <e>I(8)-%I(7)/<1-><+>H(5)-H(6);</e>	Y:=C/=D/=E;	VU		S1	s2	s3		
147	<< S:<1-><*>I(8)-%I(7)/<1-> <e>H(5)-H(6)/<1-><+>I(8)-%I(7);</e>	Y:=C/=D/=E;	VU		S1	s2	s3		
148	REPEND								
149	>> S:<1-><*>H(5)-H(6)/<1-> <e>I(8)-%I(7)/<1-><+>H(5)-H(6);</e>	Y:=C/=D/=E;	VU		S1	s2	s3		
150	<< S:<1-><*>I(8)-%I(7);	Y:=C;	VU		S1				
151	>> S:<1-><*>H(5)-H(6):	Y:=C:	VU		s 3				
152	FEND C M1-STNTRAL								
153	C Sauberstricken								
154	FBEG:SCHALTER-1;								
155	JA1=1189								
156	IF #90=1 #90=#137*4 IF #137>20 #90=#90/10* 2 IF #137>100	#90=#90/10							
157	Y-2A:F1*^0: Y-6A:F1+^0:								
158	<pre>// S:<1-><*>> (18) -V(18) /<1-><+>>-V:</pre>	V-C/-F-			c1	c 2		WMF 2	WS0 MSEC2
150	<pre>\</pre>	V:=C/=E:			22	~~ ~~			
160	$TE = \frac{400}{100} = \frac{100}{100} = \frac{20}{100} = \frac{20}{100$	1C/=E,			32	دد			
100	TE #PONZO F.KAFFORT-2, C SauberStrKap								
101	JA1=1101								
162	Y-2A:F1*^0;								
163	<< S:<1-><*>H(19)-H(19);	Y:=C;			s1			WMF2	MSEC2
164	#90=0 PRINT /PUT FABRIC INTO MAIN TAKEDOWN/								
165	>> S:<1-><*>H(19)-H(19);	Y:=C;			s3			WS1	MS;
166	FEND C Sauberstricken								
167	C SauberstrRap								
168	FBEG:RAPPORT-2;								
169	RBEG*#90								
170	JA1=1185								
171	Y-2A·F1*^0· Y-6A·F1+^0·								
172	<pre>// S:/1->/*># (19) -# (19) //1->/*>#-# ·</pre>	VC/-E-			C 1	62		WME 2	MSEC2
172	<pre>>>> 0</pre>	1C/-E, YC/-E.			21	22		MUIE Z	19202
174	22 9.11 21 21 21 11 (12) / 11 - 21 71 - 11 , DEND	1C/=E,			32	دد			
1/4	NEW D								

175 FEND C Sauberstr.-Rap 176 C ------ ohne Gummifaden ------177 FBEG:SCHALTER-3; 178 JA1=1165

179	Y-2A:F1*^0; Y-6A:F1+^0;						
180	>> S:<1-><*>A(1)-Y(1)/<1-><+>A(2)-0;	Y:=C/=E;	v# v	0 S2	s3	WMF1	MSEC3
181	<< s:<1-><*>0-Y(2)/<1-><+>A(3)-Y(3);	Y:=C/=E;	V#	S1	s2		
182	FEND C ohne Gummifaden						

183	C mit Gummifaden							
184	FBEG:SCHALTER-4;							
185	JA1=1161							
186	Y-2A:F1*^0;							
187	>> S:<1-><*>A(1)-Y(1);	Y:=C;	V#	V 0	s2		WMF1	MSEC3
188	Y-1B:HL1 HR0 F1B ⁺⁰ ;							
189	<< s:<1-> 0-Y(2);	Y:=B;	V#		s2			
190	Y-1B:HL0 HR0; Y-6A:F1+^0;							
191	>> S:<1-> 0-Y/<1-><+>A(2)-0;	Y:=B/=E;	V#		s2	s3		
192	<< s:<1-><*>A(3)-Y(3)/<1-><+>A-Y;	Y:=C/=E;	V#		S1	s2		
193	FEND C mit Gummifaden							
194	C 1x1 Rapport							
195	FBEG:RAPPORT-5;							
196	RBEG*RS1							
197	JA1=1155							
198	Y-2A:F1*^0; Y-6A:F1+^0;							
199	>> S:<1-><*>A(3)-Y(3)/<1-><+>A-Y;	Y:=C/=E;	V#	V 0	S 2	s3	WMF1	MSEC3
200	<< s:<1-><*>A(3)-Y(3)/<1-><+>A-Y;	Y:=C/=E;	V#		S 1	. s2		
201	REND							
202	FEND C 1x1 Rapport							
203	C Repeat Halfcardigan							
204	FBEG:RAPPORT-6;							
205	RBEG*RS2							
206	JA1=1143							
207	Y-2A:F1*^0; Y-4A:F1E^0; Y-6A:F1+^0;							
208	<< S:<1-><*>I(8) -%I(7) /<1-> <e>H(5) -H(6) /<1-><+>I(8) -%I(7) ;</e>	Y:=C/=D/=E;	VU	V 0	S 1	. S2 S3	WMF1	MSEC2
209	>> S:<1-><*>H(5)-H(6)/<1-> <e>I(8)-%I(7)/<1-><+>H(5)-H(6);</e>	Y:=C/=D/=E;	VU		S1	S2 S3		
210	REND							
211	FEND C Repeat Halfcardigan							
999	S0 W0							

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15 Pattern 1: Half Cardigan - Changing Pattern Parameters

Program element Jacquard:

1100	153	S3	_	>	НННННННННННННН-***********	Half Cardigan
1101	152	S1	-	<	IIIIIIIIIIIII-************************	
1102	151	S3	-	>	НННННННННННННН-+++++++++++++++++	
1103	151	s2	-	>	IIIIIIIIIIIIIII-EEEEEEEEEEEEE	
1104	151	S1	-	>	ННННННННННННННН-************	
1105	149	S3	-	<	IIIIIIIIIIIII-++++++++++++++++++++++++	
1106	149	s2	-	<	ННННННННННННННН-ЕЕЕЕЕЕЕЕЕЕЕЕ	
1107	149	S1	-	<	IIIIIIIIIIIII-************************	
1108	148	s3	-	>	НННННННННННННН-+++++++++++++++++	
1109	148	s2	-	>	IIIIIIIIIIIIIII-EEEEEEEEEEEEE	
1110	148	S1	-	>	НННННННННННННН-************	
1111	149	S3	-	<	IIIIIIIIIIIII-++++++++++++++++++++++++	
1112	149	S2	-	<	ННННННННННННННН-ЕЕЕЕЕЕЕЕЕЕЕЕ	
1113	149	S1	-	<	IIIIIIIIIIIII-************************	
1114	148	S3	-	>	НННННННННННННН-+++++++++++++++++	
1115	148	S2	-	>	IIIIIIIIIIIIII-EEEEEEEEEEEEE	
1116	148	S1	-	>	НННННННННННННН-************	
1117	149	S3	-	<	IIIIIIIIIIIII-++++++++++++++++++++++++	
1118	149	s2	-	<	ННННННННННННННН-ЕЕЕЕЕЕЕЕЕЕЕЕЕ	
1119	149	S1	-	<	IIIIIIIIIIIII-************************	
1120	148	S3	-	>	НННННННННННННН++++++++++++++++++++++++	
1121	148	s2	-	>	IIIIIIIIIIIIIII-EEEEEEEEEEEEEE	
1122	148	S1	-	>	ННННННННННННННН-*************	
1123	149	S3	-	<	IIIIIIIIIIIIII-+++++++++++++++++++++++	
1124	149	S2	-	<	ННННННННННННННН – ЕЕЕЕЕЕЕЕЕЕЕЕ	
1125	149	S1	-	<		
1126	148	53	-	~		
1127	148	SZ Q1	-	~	IIIIIIIIIIIIIIIII-EEEEEEEEEEEEE	
1128	148	SI	-	>		
1105	149	53	-	>		
1100	149	5Z 01	-)		
1100	1/0	03 03	_)		
1100	1/0	33 92	_	<		
1110	140	SZ 91	_	Ś		
1105	149	97 97	_	2	TTTTTTTTTTTTTTTTT-++++++++++++++++++++	
1106	149	s2	_	Ì	HHHHHHHHHHHHHHHHHHHHHHHHH	
1101	152	S1	_	~	TTTTTTTTTTTTTTTT-*********************	
1102	151	53	_	>		
1103	1.51	S2	_	, >	TTTTTTTTTTTTTTTTT-EREEREEREEREE	
1104	151	S1	_	>	 <u>HHHHHHHHHHHHHHHH</u> _****************	
1105	149	S3	_	<	IIIIIIIIIIIIII-+++++++++++++++++++++++	
1106	149	s2	_	<	ННННННННННННННН-ЕЕЕЕЕЕЕЕЕЕЕЕ	
1101	152	S1	_	<	IIIIIIIIIIIII-************************	
1102	151	s3	-	>	НННННННННННННН++++++++++++++++++++++++	
1103	151	S2	-	>	IIIIIIIIIIIIII-EEEEEEEEEEEEE	
1104	151	S1	-	>	НННННННННННННН-************	
1105	149	S3	-	<	IIIIIIIIIIIII-++++++++++++++++++++++++	
1106	149	s2	-	<	ННННННННННННННН-ЕЕЕЕЕЕЕЕЕЕЕЕ	



1140	1 / 1	0.1		,		Stort
1149	120	SI	-	<		Start
1150	120	53	-	~		
1151 .	139	SZ	-	>	AYAYAYAYAYAYAYAY - * * * * * * * * * * * * * * * * * *	
1152 2	202	SZ	-	<		
1153 2	202	SI	-	<	AYAYAYAYAYAYAYAYAY-********************	
1154 2	201	S3	-	>	AYAYAYAYAYAYAYAY-++++++++++++++++++++++	
1155 2	201	S2	-	>	AYAYAYAYAYAYAYAY-**********************	
1156 2	194	S2	-	<	AYAYAYAYAYAYAYAY-++++++++++++++++++++++	
1157 :	194	S1	-	<	AYAYAYAYAYAYAYAY-**********************	
1158 3	193	S3	-	>	A.A.A.A.A.A.A.A++++++++++++++++++++++	
1159 3	193	S2	-	>	.Y.Y.Y.Y.Y.Y.Y.Y-BBBBBBBBBBBBBBBB	Preparing knitting rows
1160 1	191	s2	-	<	.Y.Y.Y.Y.Y.Y.Y.Y-BBBBBBBBBBBBBBBBB	
1161 3	189	S2	-	>	AYAYAYAYAYAYAY-***************	
1162 1	183	S2	-	<	AYAYAYAYAYAYAY-++++++++++++++++++++++++	
1163 1	183	S1	-	<	.Y.Y.Y.Y.Y.Y.Y.Y-***************	
1164 1	182	s3	-	>	A.A.A.A.A.A.A++++++++++++++++++++++++	
1165 1	182	S2	-	>	AYAYAYAYAYAYAY-***************	
1166 1	133	S2	-	<	A.A.A.A.A.A.AAAAAAAAAAAAAAAAAA	
1166 3	131	S0	-	>		
1167 1	130	S3	-	<	ҮНҮНҮНҮНҮНҮНҮНҮН	
1168 3	130	s2	-	<	AYAYAYAYAYAYAY-**************	
1168 3	129	S0	-	>		
1169 3	128	S1	-	<	.+.+.+.+.+.+.+	
1170 1	127	S3	-	>	YYYY	
1171 1	127	s2	-	>	AYAYAYAYAYAYAYAY-**************	
1171 1	126	S0	-	<		
1172 3	125	s3	-	>	.T.T.T.T.T.T.T.T	
1173 1	125	S2	-	>	ҮҮҮҮААААААААААААААА	
1174 3	123	S1	-	<	АНАНАНАНАНАНАН-************	
1175 3	122	S3	-	>	.+.+.+.+.+.+.+	
1176 3	122	S2	-	>	+.+.+.+.+.+.+	
1177 3	122	S1	-	>	AYAYAYAYAYAYAYAY-**************	
1178 1	120	s2	-	<	YAYAYAYAYAYAYA-++++++++++++++++++++++++	
1179 1	119	S1	-	<	AYAYAYAYAYAYAYAY-**************	
1180 1	167	S3	_	>	ННННННННННННННН-************	
1181 :	165	S1	_	<	ННННННННННННННН-************	
1182 :	175	S3	_	>	НННННННННННННН-+++++++++++++++++	
1183 3	175	s2	_	>	НННННННННННННН-***********	
1184 3	174	s2	_	<	НННННННННННННН-+++++++++++++++++	
1185 3	174	S1	_	<	НННННННННННННН-***********	
1186 3	161	S3	_	>	YAYAYAYAYAYAYA -++++++++++++++++++++++++	
1187 1	161	s2	_	>	AYAYAYAYAYAYAYAY-*************	
1188 1	160	s2	_	<	YAYAYAYAYAYAYA -++++++++++++++++++++++++	
1189 3	160	S1	_	<	AYAYAYAYAYAYAYAY-**************	
1189	160	S1	-	<	AYAYAYAYAYAYAY-***************	



Jacqu	ard Li	Description					
	Sintr	al line					
		Knitt	ing S				
			Carri	iage Direction			
				Pattern design con	sti	ruction (PA)	
					S	eparator character (-)	
						Intarsia pattern design construction (PAI)	

Pattern instruction PA and PAI:

Sintral command: PA: JA1; PAI: JA1;

Due to **PA: JA1; PAI: JA1;** and the (-) separator, the PAI will be positioned congruently on the PA.





15.2 Load and Set-up the Pattern

Load the pattern and set-up the machine

- 1) Load pattern into the machine.
- 2) Set up the pattern:
- Threading up the Yarn Carriers
- Position the Yarn Carriers
- Check the knitting area
- carry out "picking-up after pressing-off" or cast-off manually if necessary

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- 3) Start the machine.
- 4) Make the following changes:
- Cycle counter (RS)
- Stitch length (NP)
- Fabric take-down values (WM, W+, WMK etc.)
- Staggering the yarn carriers at the fabric selvedge (YD)
 - The changes are kept during working at the machine. Save the changes before deleting the working memory.
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15 Pattern 1: Half Cardigan - Changing Pattern Parameters

15.3 Modifications on the Machine: Yarn Carrier Distance and Stitch Length

It may be necessary to do some of the following changes of the knitting program when setting up:

- Yarn carrier distance (YD)
- Stitch length (**NP**)

I. Modify the yarn carrier distance:

YD / YDI	YCI	Y:Ua-b.	/ Y:Ncc		ø
Name	YD	Left	Right	Comments	Take-down
YD	YD8	32.0	32.0		
	YD7	27.0	18.0		Varp carrier
	YD6	9.0	4.0		
	YD5	15.0	22.0		ത്
	YD4	22.0	15.0		Stitch length
	YD3	18.0	27.0		
	YD2	4.0	9.0		
	YD1	8.0	12.0		speed
					#D; Cycle counter
					Racking
					Miscellaneous

	Explanation	Value range
« YD	Distance between yarn carriers and fabric selvedge Collapse	
YD1 : YD8	Distance of the yarn carriers on track 1 to 8 from the left and right fabric selvedge	Minimum value: 0 Maximum value: 160 Step width: 0.5=1/32 inch=0.8 mm
≈ YDI	Additional, indirect yarn carrier staggering (YDI1 to YDI20) Collapse (reduced display) Expand (expanded display)	Minimum value: 0 Maximum value: 160 Step width: 0.5=1/32 inch=0.8 mm
Comment	Comment	ASCII Characters



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- 1) Call up the "Setup2 Editor" with the
- 2) Tap the "Yarn carrier" key.
- ⇒ The "Yarn carrier" appears with its three tabs.
- "YD / YDI" tab: Staggering the yarn carriers at the fabric selvedge.
- "YCI" tab
- "Y: Oa-b" tab (with tandem machines only)
- "Y:Ua-b / Y:Ncc" tab
- 3) Open the "YD / YDI" tab.
- ⇒ The yarn carrier staggering YD used in the pattern and all the indirect yarn carrier staggerings YDI will be displayed.
- 4) Make changes in the **YD** table.
- 5) Quit the "Setup2 Editor" with the key.
- ⇒ Modified values will be saved to the setx-file.
- 6) Start the machine with the engaging rod.
- ⇒ The changes will be carried out with the next use of the yarn carrier.

Behavior with changes:

- When working with Setup2:
 - Changes are applied to the "Setup2 Editor" and will be saved to the setx file when saving the pattern.
- When working with Setup1:

- Changes as direct data input

Changes in the "YC staggering" window will be kept for one piece only.

For the new piece (reduced piece counter) the Sintral program will be reloaded from **START** to **END**.

Result: The changes will be overwritten by the settings of the Sintral.

- Changes with the Sintral Editor

The Sintral program will be changed and saved. **Result:** The changes will not be overwritten but will be kept for all the following pieces.

II. Change stitch length:

NP				Q
Name	Value	Value [mm]	Comments	Take-down
NPK	0.00			N
Name	Value	Value [mm]	Comments	∜ Yarn carrier
NP1	9.00		Setup Row	,
NP2	10.00		Setup Tub	ഘി
NP3	9.50		1x1-Cycle	Stitch length
NP4	12.00		Loose Row	
NP5	10.00		Struc Double jersey front	Speed
NP6	10.00		Struc Double jersey back	opood
NP7	8.80		Half-Cardigan Tuck	#0,
NP8	9.60		Half-Cardigan Loop	Cycle counter
NP9	12.50		Safety rows	111
NP11	8.80		Setup Row front	111
NP20	9.00		Start1	Racking
NP21	10.00		Start2	<u></u>
NP22	11.00		Start3	Miscellaneous
NP24	12.00		Start5	
NP25	17.00		Comb Thread	

	Explanation	Value range
NPK	Correction for all stitch cams	Minimum value: -2 Maximum value: 2 Step width: 0.05
NP1 - NP100	Stitch cam position 1 to 100	
Value	Stitch length in NP values or mm	
Value [mm]	Specification in NP values.	Minimum value: 6.5 Maximum value: 22.5 Step width: 0.05
Value [mm] ✓	Settings in millimeters. Setting the yarn length per stitch (Yarn Length Control).	Minimum value: 2.20 Maximum value: 33.00 Step width: 0.01
Comment	Comment	ASCII Characters

1) With the sev

- or -



▼ Call-up the "Setup2 Editor" with the key and tap the "Stitch length" key.



Result: The "NP" tab appears with all NP-values used in the pattern.

- 2) Tap the entry box and change values or the comment
- 3) Confirm entries with

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15 Pattern 1: Half Cardigan - Changing Pattern Parameters

15.4 Settings on the Machine: Carriage Speed and Fabric Take-down

It may be necessary to do some of the following settings when setting up the knitting program:

- Carriage speed (MSEC)
- Fabric take-down (WM / WMF)

I. Adjust the carriage speed:

					e e
Name	Value	Number of Rows	Comments		Take-down
MSECK	0.00	1			The second se
Name	Value	Comments			♥ Yarn carrier
MSEC	0.80				
MSEC0	0.00	Standard-S0			ഷി
MSECI	0.70				Stitch length
MSECC	0.00				BR
					Speed
Name	Value	Comments			#00
MSEC2	1.00	Standard-Knitting			# 26
MSEC3	1.00	Knitting6		┛┝	Cycle counter
					Racking
					Miscellaneous

	Explanation	Value range (meters/second)
MSECK	Carriage speed for small knots over m rows, standard: 1 row	Minimum value: 0.05 Maximum value: 1.20 Step width: 0.05
MSEC	Speed (normal speed)	Minimum value: 0.05 Maximum value: 1.20 Step width: 0.05
MSEC0	Speed for empty rows (S0)	Minimum value: 0.05 Maximum value: 1.40 Step width: 0.05



	Explanation	Value range (meters/second)
MSEC1	Speed for transfer rows	Minimum value: 0.05 Maximum value: 1.20 Step width: 0.05
MSECI	Speed with Intarsia Yarn Carrier	Minimum value: 0.05 Maximum value: 1.00 Step width: 0.05
MSECC	Speed outside the needle bed when the yarn carrier is brought in the clamp or taken out of the clamp.	Minimum value: 0.05 Maximum value: 0.50 Step width: 0.05
MSEC2- 20	Speed for knitting rows	Minimum value: 0.05 Maximum value: 1.20 Step width: 0.05
Comme nt	Comment	ASCII Characters

Call up the "Carriage speed" menu with in the Main menu.

- or -



- ▼ Call up the "Setup2 Editor" with the key.
- 2) Tap an input field.
- 3) Enter values or a comment.

II. Adjusting fabric take-down:

WMF tab:

The values for the fabric take-down have to comply with:

- the knitting mode
- the yarn in use
- the stitch length

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15 Pattern 1: Half Cardigan - Changing Pattern Parameters

WMF	W+F	WM% /	WMK%								ø
Name	WM min	WM max	N min	N max	WMI	WM^	WMC	WM+C	WMK+C	Comments	Take-down
WMF1	2.0	8.9	0	230	3	0	10	20	50	Forward	*
WMF2	0.0	30.0	0	0	3	0	0	10	10	Cast-off 30	Varn carrier
WMF3	0.0	2.0	0	0	0	0	0	10	10	Cast-off 2	
WMF4	0.0	2.0	0	0	0	20	0	10	10	Cast-off 3	ബി
<										>	Stitch length
											Speed #DR Cycle counter Yarn length Racking Miscellaneous

	Explanation	Value range
WMF	Fabric take-down function	WMF1 to WMF50
WM min	Minimum fabric take-down value (with Fully Fashion)	Minimum value: 0 Maximum value: 31.5 Step width: 0.1
WM max	Maximum fabric take-down value (value must always be specified)	Minimum value: 0 Maximum value: 31.5 Step width: 0.1
N min	Minimum quantity of needles (with Fully Fashion)	Minimum value: 0 Maximum value: Needle number of the CMS Step width: 1
N max	Maximum quantity of needles (with Fully Fashion)	Minimum value: 0 Maximum value: Needle number of the CMS Step width: 1
WMI	Fabric take-down impulse	Minimum value: 0 Maximum value: 15 Step width: 1



	Explanation	Value range
WM^	Open the brake of the active take-down system (main take-down or comb take- down) for a maximum of 2.5 seconds, take-down roller or comb take-down turn back by a maximum number of the indicated degrees (depending on the fabric tension and the fabric take-down value). CMS 5xx, 7xx, 8xx: 9-60 degrees CMS 9xx: 9-120 degrees If either of both the conditions is fulfilled, then the brake is closed again. Fabric take-down value (n=0-31.5) becomes active again at the reversion.	No turning back: 0 Minimum value: 9 Maximum value: 120 Step width: 1
WMC	Set the speed control of the active take- down system (main take-down or comb take-down) to the value n (0-32). If the take-down system turns too quickly, the machine is stopped. 0= no stop motion, 1= insensitive, 32= very sensitive	Minimum value: 0 Maximum value: 32 Step width: 1
WM+C	Monitoring of main take-down. If the take-down has not been used after n (0- 100) knitting rows, the machine will stop. (0 = no supervision)	Minimum value: 0 Maximum value: 100 Step width: 1
WMK+C	Controlling the comb. If the comb has not moved after n (0-100) knitting rows, the machine will stop. (0 = no supervision)	Minimum value: 0 Maximum value: 100 Step width: 1
Comment	Comment	ASCII Characters



- 1) Call up the window from the main menu.
- 2) Tap the "Take-down" key.

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15 Pattern 1: Half Cardigan - Changing Pattern Parameters

W+F tab:

		Explanation	Value range
W+F		Auxiliary Take-down function	W+F1 - W+F50
W+F On	•	Switch on auxiliary take-down. The auxiliary take-down will be closed. The speed of the auxiliary take-down W+=n is active	
		Switch off the auxiliary take-down. The auxiliary take-down will be opened.	
W+=		Input of the speed of the auxiliary take-down Turning value n (1-15)	Minimum value: 1 Maximum value: 15 Step width: 1
W+P		Contact pressure n (0-10), only for machines with 72 and 84 inch working width	Minimum value: 0 Maximum value: 10 Step width: 1
W+C		Monitoring of auxiliary take-down. If the auxiliary take-down has not been used after n (0-100) knitting rows, the machine will stop. ($0 = no$ supervision)	Minimum value: 0 Maximum value: 100 Step width: 1
Comment		Comment	ASCII Characters

WM% WMK% tab:

	Explanation	Value range		
WM%	Modify the fabric take-down value by n percent	-80 to 80		
WMK%	Changing the fabric take-down value by n percent while the comb take- down is working. The value is active till the fabric is taken down by the main take-down.	-80 to 80		
Comment	Comment	ASCII Characters		
		All characters and numbers (UTF-8)		

15.5 Other Settings on the Machine: Main Take-down, Auxiliary Take-down and Comb

It may be necessary to do some of the following additional settings when setting up the knitting program or during production:

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- Behavior of the main take-down or auxiliary take-down
- · Control of the main take-down or of the auxiliary take-down
- Comb functions

I. Adjust the take-down.

1) Call up the "Take-down" window via the *metal* key in the Main menu.

🔊 Take-down			STOLL THE RIGHT WAY TO KNIT
Actual WM 0.0	Change in line:	221	
Main take-de	own	Auxiliary take-dowr	1
Actual WMF:		W+F current:	•
Take-down value (WM)	0.0	Aux.take-down speed (W+=)	8
Take-down impulse (WMI)	3		
Correction % (WM%)	0 🖸		
Main take-down		Auxiliary take-down	Clo.
	Clo. Op.		
Main take-down			
	Backw. Forw.		

 Tap the corresponding key in order to operate the main take-down or auxiliary take-down manually.

II. Adjusting the control of the fabric take-down:

During production, the control of knitting machine compares the current values with threshold values. If a threshold value is exceeded, the knitting machine stops and displays an error message.





2) Call up "Fabric take-down Control" menu with the 2000 key.

🖗 Fab	ric take-down Control	STOLL THE RIGHT WAY TO KNIT
	Control	
	Control main take-down (WM+C)	0
	Turning control of the take-down system (WMC)	0
	Additional take-down control (W+C)	0
	Comb control (WMK+C)	0

- 3) Enter a threshold value into the entry field.
- 4) Confirm entries.

III. Adjust the comb functions:

An interruption of production can require different comb functions.



2) Activate the desired function with the corresponding key.

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15 Pattern 1: Half Cardigan - Changing Pattern Parameters

15.6 Save Pattern

Save the pattern from the machine:



⇒ The window "Load & save" is displayed.



2) Select the desired folder (direct selection folder).



- 3) Select the key for example.
- 4) Select the file to be saved:
- Entire pattern "PAT"
- Sintral file "SIN"
- Jacquard file "JAC"
- Setup file "SET"
- Library "LIB"



5) Tap the key. Pattern with Setup data (Setup1 or Setup2)

- ⇒ The window for entering the pattern name appears.
- 6) Rename the pattern if necessary
- 7) Confirm input with



The pattern will be saved to the selected pattern folder. You can save the pattern with the selected setup data (for Setup2 only)



You can select the desired Setup data in the following window.





16 Clearing the Main Memory of the Machine

16 Clearing the Main Memory of the Machine

I. Clear the main memory of the machine completely:

- 1) Tap the key in the "Main Menu".
- ⇒ The window "Load & save" is displayed.

📙 Load	& save			STOLL THE RIGHT WAY TO KNIT
	8 3 2	↔≝∻≝∉≝	×	
Path:	\\WXP22739\MC_SZ\	Anwender_SC\Eisenlohr,		
Machine type	File name	Туре	Changed	
CMS530	Perlfang		2009-12	PAT SIN JAC SET LIB
ф СМS530	Halfcardigan		2009-12	Pattern:
				Halfcardigan
				Jacquard:
				Halfcardigan
				Setup:
				Halfcardigan
				Library:
•			•	
Total: 2	4681	J2009-12-08 13:38:49		



⇒ The keys of the sub-menu appear.



 \Rightarrow The main memory will be deleted.

II. Delete individual files in the main memory:

- Sintral (sin)
- Jacquard (jac)
- Setup (set / setx)
- Library (Autosintral)



2) The window "Load & save" is displayed.

16 Clearing the Main Memory of the Machine

- ⊠ SIN 4 . ■ JAC $\mathbf{\nabla}$ SET $\mathbf{\nabla}$ LĪB . 4) Tap the key. The keys of the sub-menu appear. ⇔ 5) Tap the key. The selected program elements will be deleted from the main memory ⇔ 6) Return to the Main menu.
- 3) Select the file to be deleted:

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17 Different Jacquards

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The name of the different Jacquards describes the design of the backside

Name	Stitch line	Fabric front	Fabric back
Jacquard float	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8		
Jacquard stripe			
Jacquard twill			
Jacquard Net (all needles)			



Name	Stitch line	Fabric front	Fabric back
Jacquard Net 1x1			
Jacquard Net 1X2	Q 0		
Jacquard Net 1X3			
Jacquard stripe relief			



Name	Stitch line	Fabric front	Fabric back
Jacquard twill relief			
Jacquard net relief			





18 Pattern 2: Jacquard with different reverse sides

18 Pattern 2: Jacquard with different reverse sides



18 Pattern 2: Jacquard with different reverse sides



Load the pattern and set-up the machine

- 1) Load pattern into the machine.
- 2) Set up the pattern:
- Threading up the Yarn Carriers
- Position the Yarn Carriers
- Check the knitting area
- carry out "picking-up after pressing-off" or cast-off manually if necessary

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- 3) Start the machine.
- 4) Make the following changes:
- Cycle counter (RS)
- Stitch length (NP)
- Fabric take-down values (WM, W+, WMK etc.)
- Staggering the yarn carriers at the fabric selvedge (YD)
 - The changes are kept during working at the machine. Save the changes before deleting the working memory.



19 Pattern instruction: JA, PA, PM and SEN

19 Pattern instruction: JA, PA, PM and SEN

Pattern instruction JA

Specification	Definition
JA n=	Jacquard definition for the vertical repetition (n = 1-8)
JA1= 1140 (1100-1140)	Start line in the Jacquard element (jac)
JA1=1140(1100-1140)	Repetitions
	1100
	1102A
00000000000	1104AA
$\frac{0}{0}$	1106AA.
000000000000	1108 A A
0000000000	1110 A A
00000000	1112 A A
<u></u>	1114 A A
<u>000000000000</u>	1116 А А
<u>0000000000</u> 000	1118 . A A
<u>000000000</u>	1120 AA
<u>000000000</u>	1122 AA
<u>0000000000000000000000000000000000000</u>	1124 . A A
<u>000000000</u>	1126 A A
<u>0000000000000000000000000000000000000</u>	1128 A A
<u>0000000000</u>	1130 A A
<u>0000000000</u>	1132AA
00000000000	1134AA
00000000000	1136AA.
00000000000000	1138AA
000000000000000000000000000000000000000	1140 A 🛛 🗸

19 Pattern instruction: JA, PA, PM and SEN



Pattern instruction PA and fields:

Specification	Definition
PA: JA1;	Pattern design construction (= pattern memory)
FA - FZ F0 - F9	Field A to field Z and field 0 to field 9 Horizontal pattern areas of the PA are defined with the field definitions.
FA = n - m	Name of field
FA= n - m	Width of the field n = start of the field within PA m = end of the field within PA Example: FA= 1-8 Field FA starts on the first column and ends on the eighth column of the PA.



Pattern instructions PM and SEN:

Specification	Definition
РМ: ;	 Pattern pack-machine (horizontal pattern positioning) of fields Jacquard symbols
PM: n FA ;	Repeats the FA field n times;
PM: <fa></fa> ;	Repeats the FA field from the first to the last needle
SEN= n - m	Selected needle area, from needle n to m



19 Pattern instruction: JA, PA, PM and SEN

Insert a marking needle:

Marking needle	Description
NSn, m	Not knitting needle: n and m
NSn-m	Not knitting needle: n to m
NSVn	Not knitting needle: n in front
NS^n	Not knitting needle: at rear n
NS0	Not knitting needle: Deactivated

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19 Pattern instruction: JA, PA, PM and SEN

19.1 Variants of the PA / PM Structure

Example for the use of PA, PAI and PM with knitting programs from the M1 / M1plus:

- The Jacquard will be placed at the end of the allocated memory. The positioning depends on the size of memory and the width of pattern. Example of positioning: Size of memory minus width of pattern (SEN) = X (X rounded off to hundred).
- The PAI will be placed on the same position in the way that PAI will cover the PA.
- Definitions for FA, FB and others depend on the Jacquard positioning.
- The PA structure starts at memory position 1.
- F1 will be generated from the PA.
- PM, SEN and with the use of the comb #L / #R determine the positioning of the fabric on the machine.

M1 / M1plus Sintral program: Structure of PA-PM without using the comb.

80 FBEG:M1-SIZES; 81 C ----- FA --- FB -----82 IF RS16=0 RS16=0 83 IF RS16=0 FA=5701-5706 FB=5707-5715 FC=5716-5718 FD=5719-5724 84 C ----- PA --- PAI -----85 IF RS16=0 PA:5701:JA1 1:4FA 5FB FC 4FD<.>; PAI:5701:JA1 1:4FA 5FB FC 4FD<N>; 86 C ----- F1 --- PM: --- SEN -----87 IF RS16=0 F1=1-96 PM:152:F1; SEN=152-247 88 FEND C M1-SIZES

Sintral Program from M1 / M1plus: Structure of PA-PM using the comb:

```
80 FBEG:M1-SIZES;
81 C ----- FA --- FB -----
82 IF RS16=0 RS16=0
83 IF RS16=0 FA=5488-5493 FB=5494-5502 FC=5503-5505 FD=5506-5511
84 C ----- PA --- PAI -----
85 IF RS16=0 PA:5301:JA1 152:4FA 5FB FC 4FD<.>; PAI:5301:JA1 152:4FA 5FB FC 4FD<N>;
86 C ----- F1 --- PM: --- SEN -----
87 IF RS16=0 F1=1-399 PM:1:F1; SEN=1-399 #51=152 #52=247 #55=-36 #56=-36
88 FEND C M1-SIZES
```

Width of memory for PA:

There are different types of computers with different widths of memory for CMS machines:

Machine type:	Computer Type:	Width of Memory
CMS	ST211 -511	1320
	ST611 - 811	1568
	ST168 - 468	5760
	окс	5760

20 Pattern 3: Scarf with Full Cardigan

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20.1 Multi-piece Knitting without Using the Comb

Working with several SEN areas:

• Machines without comb or without using it

Sintral commands		
Yarn carrier home position:	YG1: YG2: YG3: YG4:	
Pattern fields	F1: - or - F1: / F2: / F3: / F4:	
Pattern pack machine	PM: F1 xx: F1 xx: F1 xx: F1; - or - PM: F1 xx: F2 xx: F3 xx: F4;	
Selected needle area	SEN1= SEN2= SEN3= SEN4=	

Several SEN areas with the corresponding intermediate spacing for yarn carriers:



20.2 Load and Set-up the Pattern

Load the pattern and set-up the machine

- 1) Load pattern into the machine.
- 2) Set up the pattern:

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- Threading up the Yarn Carriers
- Position the Yarn Carriers
- Check the knitting area
- carry out "picking-up after pressing-off" or cast-off manually if necessary
- 3) Start the machine.
- 4) Make the following changes:
- Cycle counter (RS)
- Stitch length (NP)
- Fabric take-down values (WM, W+, WMK etc.)
- Staggering the yarn carriers at the fabric selvedge (YD)
 - The changes are kept during working at the machine. Save the changes before deleting the working memory.



21 Pattern 4: Structure with 4x4 Cable

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Pattern name	Cable_4x4			
	 1-piece pattern Cable 4x4-2-pieces 			
	 2-pieces pattern 			
	Cable_RS17			
	 1-piece pattern with function for RS17 			
Start	1x1			
Operating mode of the	with comb function			
machine	 With clamping / cutting Cast-off function at fabric end 			
Pattern description	 Structure with 1x1 and 2x2 rib 4x4 cables crossed over to the left and to the right 			



Fabric view and stitch line of the 4x4< and 4x4> cable cross-over:



21.1 Operating Mode of the Machine and Knitting Program

Operating Mode of the Machine:

Operating mode without using the comb: The knitting program (Sintral, Jacquard, Setup) is structured the way that the **comb function** is called-up at the start of the program and the **cast-off function** at the fabric end.

Result:

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Each piece is started with the comb and casted-off at the end. Single fabrics are produced.



Sintral program element:

```
1 C CMS530.Zopf_4x4 E8 /eisenlohr 01/19/10 12:53:07 <M1> 5.2.004 Build 1 Release (gb) #139=566 #156=0 I-TYPE2 <SETUP2>
 1 C CRS530.2opr_4x4 E8 /eiseniohr 01/19/10 12:53:07

2 C RS17= C Kamm ein/aus (RS17=0)

3 C #98= C Abwerfen ein/aus (#98=0)

4 C RS19= C Without Elastic Varn (RS19=0..1)

5 C RS1=5 C 1x1 Cycle

6 C RS2=1 C Cable Repeat

7 C RS3=1 C Repeat End

8 C #69= C MS*#69 (1-4s) (#69=1..4)

1 C WD=0 C Solum Repu
 11 C NP1=9.0
                     Setup Row
 12 C NP2=10.0
                     Setup Tub
                     1x1-Cycle
 13 C NP3=9.5
 14 C NP4=12.0
                      Loose Row
                      Struc Single jersey front
Struc Single jersey back
 15 C NP5=12.8
 16 C NP6=12.5
 17 C NP7=11.5
                      Default front
 18 C NP8=12.5
                      Safety rows
 19 C NP11=8.8
                      Setup Row front
 20 C NP20=9.0
                      Start1
 21 C NP21=10.0
                      Start2
 22 C NP22=11.0
                      Start3
 23 C NP24=12.0
                      Start5
 24 C NP25=17.0
                      Comb Thread
 25 C MSECI=0.70
 39 IF #L=0 #L=1 IF #R=0 #R=399 #LM=0 #RM=0
 40 START
 41 PF0
 42 Y-CR1
 50 YGC:1=A 2=C / 1=B 2=D 6=E;
 51 YDF=2
                            -----I-----I------
 52 C-----
                                                                                            -I
 53 C
                      LEFT
                                                                RIGHT
                                               I
                                                                                            I
 54 C-----
                                            ----I------
                                                                                            -I
                                           I 6=E Rib thread 2
I 2=D Rib thread 1
 55 C
                                                                                            Т
 56 C 2=C Comb thread1
                                                                                            I
 57 C 1=A Draw thread1
                                               I 1=B Elastic thread1
                           -----I-
 58 C----
 59 YD
 80 FBEG:M1-SIZES:
 81 F1=1-399
 82 PA:JA1; PAI:JA1;
 83 PM:1:F1; SEN=1-399 #51=1 #52=399
 84 FEND C M1-SIZES
 85 JA1=1390(1100-1100)
110 Y-1B:HR1G; Y-2B:HR1G;
111 #99=0
112 IF RS17=0 SOY
                        #99=1
113 IF RS17=1 S0YCR0 #99=1
114 IF #99=1 #99=0 MS PRINT/CHECK YARN CARRIER/
115 F:M1-SINTRAL:
116 END
```



Comb function within the Sintral program element:

- 1. Clearing the needle beds (knitting without yarn carrier)
- 2. Inserting the comb thread (special elastic yarn)
- Raising the comb to the top till the comb thread is catched by the comb hooks

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4. Closing the comb hooks

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5. Lowering the comb till the comb hooks are no longer between the needles

Cast-off function within the Sintral program element:

The function is called-up at the end of the fabric to ensure an empty needle bed when starting the next fabric.

200	C Bhyorfen					
200	C Abwerren					
281	FBEG:SCHALTER-9;					
282	JA1=1103 #L=125 #LM=0 #RM=0 #R=275					
283	<< S:<1->H(8)-H(8)/<1->H-H;	Y:0/0;	vo	S1 S2	WMF5	MSEC=0.70
284	#98=1					
285	>> S:<1->H-H/<1->H-H;	¥:0/0;		S2 S3	WMF2	MS=2.5
286	86 IF #69=>1 IF #69<=4 F:SCHALTER-10; C MS*#69 (1-4s)					
287	FEND C Abwerfen					
288	C MS*#69 (1-4s)					
289	FBEG:SCHALTER-10;					
290	JA1=1100 #L=125 #LM=0 #RM=0 #R=275					
291	<<		vo	s0	WMF2	MSEC=0.70
292	IF#69=1 MS=1					
293	IF#69=2 MS=2					
294	IF#69=3 MS=3					
295	IF#69=4 MS=4					
296	>>			S0		
297	FEND C MS*#69 (1-4s)					

You can define an **additional standstill time (MS)** in the reversal point of the carriage using the **counter #69** in the cast-off function. This is necessary in certain cases to ensure the casting-off of the fabric.

21.2 Load and Set-up the Pattern in the Machine

Procedure:

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- Load pattern in machine
- Set up the pattern:
 - Threading up the Yarn Carriers
 - Position the Yarn Carriers
 - Check the needle bed: no fabric hanging in the needles

- ...

Starting Machine

Make the following changes:

- Stitch length (NP)
- Fabric take-down values (WM, W+, WMK, ...)
- Cycle counters (**RS**)
- Staggering the yarn carriers at the fabric selvedge (YD)
- Racking corrections (VCI)



21.3 Racking Positions and Racking Commands

Racking positions:

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Label	Symbol	Position of the needle bed
V0	Normal racking	H
V#	Half racking	
VU	Transfer racking	11

The maximum racking course of the rear needle bed covers 2 inch to left and 2 inch to the right starting from the home position 0.


Racking functions:

Command	Function
VCI n	 n = 1 – 50 racking functions available. One function is used for each racking in use. The function has all commands to control the racking.

General commands for racking

Commands	Designation / Min./max. values	Movement of the needle bed:
Racking Correction • VKn > m • VKn < m	n = A – Z < = to the left > = to the right m = 1-10	4 3 2 1 0 1 2 3 4
	m = 0	Racking correction is turned off
	m = ?	Machine stops at the given racking position in order to check the racking position and correct it if necessary.
Overracking • V+ n • V- n	n = 1 - 24	4 3 2 1 0 1 2 3 4
Racking speed ◆ VV = n	n = 1-32	Standard setting: VV=32 (highest speed)

i:

- Additional racking commands are valid for the whole carriage stroke
- Additional racking commands for machines with additional beds are possible



21.4 Handle Racking Commands on the Machine

Make the following modifications in order to improve the quality and reliability of knitting (with racking specification) if necessary:

- Racking correction
- Racking speed
- Overracking

Enter values for racking correction:

- Machine is running till the automatical stop of the machine (? Sintral command)
- ▷ Machine is manually stopped at the racking position you want to check.
- 1) Call up the "Racking correction" window from the Main menu





- ▼ Call up the "Setup2 Editor" with the key.
- 2) Tap the "Racking" key.



3) Tap an input field.

CMS – Handling and Knitting Technique

21 Pattern 4: Structure with 4x4 Cable

4) Enter values or a comment.

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- VKn<? or VKn>? command in Sintral:
 - Specify the direction by changing the ? symbol to << or >>.
 - Enter the necessary VK value.
- VKn<0 or VKn>0 command in Sintral:
 - Enter the necessary VK value.

Programming with Setup2:

Sintral function for cable:

C Cable Repeat				
FBEG:RAPPORT-8;				
RBEG*RS2				
JA1=1337 #L=125 #LM=0 #RM=0 #R=275				
Y-2B:HL1 HR1 F1+^0; Y-6A:F1A^0;				
<< s:<1-> <a>A(5)-Y(6)/<1-><+>A-Y;	Y:=E/=D;	VU V0	S2 S3	WMF1 MSEC2
>> S:<1-> <a>A(5)-Y(6)/<1->U^ST/<1->U^ST;	Y:=E;		S1 S2 S3	
<<		VU	S 0	W0
>> S:<1-><+>A(5)-Y(6);	Y:=D;	VU	s3	WMF1
<< S:<1-> <a>A(5)-Y(6)/<1->UXST-+/<1->UXST-+;	Y:=E;		S1 S2 S3	
>> S:<1->UVS+/<1->UVS+;		VR4 VCI2	S1 S2	WMF3
<< s:<1->UVS+/<1->UVS+;		VL4 VCI1	S2 S3	W0
>> s:<1->UVs+/<1->UVs+;		VR4 VCI2	S1 S2	W0
<< S:<1->U^ST/<1->U^ST/<1-><+>A(5)-Y(6);	Y:=D;	V0	S1 S2 S3	WMF1
>> S:<1-> <a>A(5)-Y(6)/<1-><+>A-Y;	Y:=E/=D;	VU	S1 S2	
REND				
FEND C Cable Repeat				

Result:

Due to **VCIn** after the racking position, the specifications of **Setup2** will be carried out.

Programming with Setup1:

Sintral function for cable:

C Cable Repeat						
FBEG:RAPPORT-8;	т					
RBEG*RS2	T					
JA1=1337 #L=125 #LM=0 #RM=0 #R=275						
Y-2B:HL1 HR1 F1+^0; Y-6A:F1A^0;						
<< S:<1-> <a>A(5)-Y(6)/<1-><+>A-Y;	Y:=E/=D;	VU V0	s2	s 3	WMF1	MSEC2
>> S:<1-> <a>A(5)-Y(6)/<1->U^ST/<1->U^ST;	Y:=E;		S1	s2	s3	
<<		VU	s0		WO	
>> S:<1-><+>A(5)-Y(6);	Y:=D;	VU	S 3		WMF1	
<< S:<1-> <a>A(5)-Y(6)/<1->UXST-+/<1->UXST-+;	Y:=E;		S1	s2	s3	
>> S:<1->UVS+/<1->UVS+;		VR4 F:VCI2;	S1	s2	WMF3	
<< s:<1->UVS+/<1->UVS+;		VL4 F:VCI1;	s2	S 3	WO	
>> S:<1->UVS+/<1->UVS+;		VR4 F:VCI2;	S1	s2	W0	
<< S:<1->U^ST/<1->U^ST/<1-><+>A(5)-Y(6);	Y:=D;	V0	S1	s2	S3 WMF1	
>> S:<1-> <a>A(5)-Y(6)/<1-><+>A-Y;	Y:=E/=D;	VU	S1	s2		
REND						
FEND C Cable Repeat						



Result:

Due to **F:VCIn;** after the racking position, a sub-function with the corresponding specifications will be called-up.

Sub-function with racking specifications:

FBEG:VCI1; VKA<? VV=1 V+8 FEND FBEG:VCI2; VKA<? VV=1 V+8 FEND

Save changes:

- When working with Setup2:
 - Changes are applied to the "Setup2 Editor" and will be saved to the setx file when saving the pattern.
- When working with Setup1:
 - Changes as direct data input

111	
لدلدلد	
111	

Make changes in the "Racking correction" window **111**. **Result:** The changes will be kept for the following pieces. **Data** will **not be saved**.

Changes within the Sintral Editor
 Changes are applied to the Sintral program and will be saved to the sin file when saving the pattern.

Result: The modifications are saved and available for production.

21.5 Handling of the RS17 Cycle Counter

Operating mode using the comb:

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Comb function with RS17 cycle counter

RS17	Function
RS17 = 0	Comb and clamping / cutting activated
RS17 = 1	Comb and clamping / cutting deactivated

 Special cast-off function with commands for clamping the yarn carriers

209	C Abwerren						
290	FBEG:SCHALTER-10;						
291	JA1=1103 #L=125 #LM=0 #RM=0 #R=275						
292	<<	Y-1A:C;	V 0	S1		MSEC=	0.70 W0
293	>>	Y-6A:C;		S1	Y-2B:C; S2	W0	
294	IF RS19=1 F:SCHALTER-11; C mit Gummifaden						
295	JA1=1103 #L=125 #LM=0 #RM=0 #R=275						
296	<< S:<1->H(8)-H(8)/<1->H-H;	Y:0/0;	V 0	S1	s2	WMF5	MSEC=0.70
297	#98=1						
298	>> S:<1->H(8)-H(8)/<1->H-H;	Y:0/0;		s2	s3	WMF2	MS=2.5
299	IF #69=>1 IF #69<=4 F:SCHALTER-12; C MS*#69 (1-4s)						
300	FEND C Abwerfen						

i

The cast-off function is called-up only if the cycle counter **RS17** is set back to **0**.

Load and set-up the pattern with RS17:

- 1) Load pattern in machine
- 2) Set up the pattern:
- Threading up the Yarn Carriers
- Position the Yarn Carriers
- Check the needle bed No fabric must hang in the needles
- Set piece counters
- Set cycle counters
- 3) Starting Machine
- ⇒ The first fabric piece is started with comb
- 4) Stop the machine as soon as the comb thread (Y-2A) is clamped.



5) Open the "Setup2 Editor" with the



- 6) Tap the "Cycle counters" key.
- 7) Enter the value 1 for cycle counter RS17.
- 8) Confirm the entry with the key.
- ⇒ Comb and clamping / cutting are deactivated for the following fabric pieces.
- 9) Produce the fabric pieces until the piece counter turns to 0 and the machine stops.
- 10) Enter cycle counter **RS17 = 0**.



- 12) Start the machine with the engaging rod.
- ⇒ The yarn carriers will be clamped, the fabric casted-off and the new fabric will be started with the comb.

- or -

- 13) Set cycle counters **RS17 = 0** during the last fabric piece is knitting.
- ⇒ The special cast-off function will be carried out. The yarn carriers will be clamped at the end and the fabric will be casted off.



22 Overview of the Machine Types and Operating Modes

There are different machine types within the **CMS** generation which can work in different operating modes.

• Operating mode without using the comb:

The knitting program (Sintral, Jacquard and Setup) comes with a draw thread at the start.

The draw thread enables to separate the pieces after knitting or ironing. **Result:**

The individual pieces are knitted in a common panel following each other.

With this operating mode a fabric must always hang in the needles.

• Operating mode without using the comb:

The knitting program (Sintral, Jacquard, Setup) is structured the way that the **comb function** is called-up at the start of the program and the **cast-off function** at the fabric end.

Result:

i

Each piece is started with the comb and casted-off at the end. Single fabrics are produced.

i

There must **not** be a fabric in the needle bed or main takedown.



Machine types with comb and clamping and cutting device:



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Machine types without comb and clamping and cutting device:





1 When knitting with Fully Fashion, all the machine types work in Fully Fashion mode (**PF0** command) independently whether with or without comb and clamping and cutting device





23 Coupling widths of Tandem Machines: CMS 9xx and CMS 4xx TC

Operating Modes:

- Wide coupled in tandem mode
- Narrow coupling as 4 system machine.



Coupling widths for CMS 411 TC / 422 TC and CMS 922:



Coupling widths for CMS 433 TC and CMS 933:





Needle area with 96 inch needle bed width:

Gauge	Needle rage
E5	1 - 479
E7	1 - 671
E8	1 - 767
E10	1 - 959
E12	1 - 1151
E14	1 - 1343

Coupling widths and distances between the fabrics:



Coupling width 56":

Gauge	Knitting width 40"	Empty Space	Knitting width 40"
E5 (2,5.2)	1 - 199	16"	281 - 479
E7 (3,5.2)	1 - 279		393 - 671
E8	1 - 319		449 - 767
E10 (5.2)	1 - 399		561 - 959
E12 (6.2)	1 - 479		673 - 1151
E14 (7.2)	1 - 559		785 - 1343

Coupling width 54":

Gauge	Knitting width 42"	Empty Space	Knitting width 42"
E5 (2,5.2)	1 - 209	12"	271 - 479
E7 (3,5.2)	1 - 293		379 - 671
E8	1 - 335		433 - 767
E10 (5.2)	1 - 419		541 - 959
E12 (6.2)	1 - 503		649 - 1151
E14 (7.2)	1 - 587		757 - 1343

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23 Coupling widths of Tandem Machines: CMS 9xx and CMS 4xx TC

Coupling width 52":

Gauge	Knitting width 44"	Empty Space	Knitting width 44"
E5 (2,5.2)	1 - 219	8"	261 - 479
E7 (3,5.2)	1 - 307		365 - 671
E8	1 - 351		471 - 767
E10 (5.2)	1 - 439		521 - 959
E12 (6.2)	1 - 527		625 - 1151
E14 (7.2)	1 - 615		729 - 1343

Coupling width 50":

Gauge	Knitting width 46"	Empty Space	Knitting width 46"
E5 (2,5.2)	1 - 229	4"	251 - 479
E7 (3,5.2)	1 - 321		351 - 671
E8	1 - 367		401 - 764
E10 (5.2)	1 - 459		501 - 959
E12 (6.2)	1 - 551]	601 - 1151
E14 (7.2)	1 - 643		701 - 1343

Coupling width 48":

Gauge	Knitting width 48"	Empty Space	Knitting width 48"
E5 (2,5.2)	1 - 239	0"	240 - 479
E7 (3,5.2)	1 - 335		336 - 671
E8	1 - 383		384 - 764
E10 (5.2)	1 - 479		480 - 959
E12 (6.2)	1 - 575		576 - 1151
E14 (7.2)	1 - 671		672 - 1343

i width of 48 inches.

You can not use the maximum knitting width with a coupling



23.1 Couple Carriage Assembly Wide

1) Program an empty row and fix the knitting specification.

- or -

- ▼ Call up the "Machine Start" menu and tap the "SPF S0" key.
- 2) Start the machine with the engaging rod and stop it again when the carriage is located shortly after the left reversing position.

Switch off the 40 Volt power supply:

- 3) Press the key in the Main Menu.
- 4) Tap the key.
- 5) Switch off the "40 Volt power supply".
- 6) Open and remove the rear panel segments.



7) Loosen screws (2) and remove coupling rod (1).



- 8) For wide coupling (tandem machine), push the right carriage to the right until the coupling rod (1) can be mounted.
- 9) Insert the screws (2) and tighten.
- 10) Remove the carriage part in order to replace the cams.



- 11) Place carriage part on contact surface and assembly with carriage assembly.
- 12) Close the rear panel.
- 13) Switch on the 40 Volt power supply.
- 14) Call up the "Main menu".
- 15) Call up the "Service" menu.

- 16) Call up the "Basic settings" menu.
- 17) Call up the "Machine configuration 2" menu.



- 18) Check the setting in the "Tandem with comb" field."Yes": Machine is working with comb take-down"No": Machine works without comb take-down
- The carriage assembly runs in the creep speed until it automatically stops and the message "Reconfiguration" appears on the display.
 The control adjusts to the new coupling width.
 After a short time the message disappears again.
- 19) Move the carriage to the left. Thereby in the window "Reference runs" tap on the key "S<" and start machine with the engaging rod.
- 20) Stop the machine when the left carriage is outside the needle bed.
- 21) In the window "Reference runs" tap on the key "S>".
- 22) Pull up the engaging rod for short.The carriages may move to the left some inch (2") only.
- \Rightarrow The reference run is completed.
- 23) Load the knitting program.

i	If the carriage assembly operate coupled wide, the needles between and at the right and left of the fabric pieces must
	be free of fabric.
	All yarn carriers must be positioned.

- 24) Calling up yarn carrier assignment.
- 25) Load the new knitting program.
- 26) Start the program.



23.2 Couple Carriage Assembly Narrow

1) Program an empty row and fix the knitting specification.

- or -

- ▼ Call up the "Machine Start" menu and tap the "SPF S0" key.
- 2) Start the machine with the engaging rod and stop it again when the carriage is located shortly after the left reversing position.
- 3) Switch off the 40 Volt power supply.
- 4) Remove the carriage part in order to replace the cams.



- 5) Place carriage part on contact surface and assembly with carriage assembly.
- 6) Open and remove the rear panel segments.



7) Remove the screws (2).



- 8) Take off the coupling rod (1).
- 9) For narrow coupling (tandem machine), push the left carriage assembly to the right and hook in the coupling rod (1)
- 10) Insert the screws (2) and tighten.
- 11) Lay loom of cables into clip.

This prevents the cables at the support (3) from rubbing and being damaged.



- 12) Close the rear panel.
- 13) Switch on the 40 Volt power supply.

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23 Coupling widths of Tandem Machines: CMS 9xx and CMS 4xx TC

- 14) Call up the "Service" menu.
- 15) Call up the "Reference runs" window.
- 16) Start reference runs.
- \Rightarrow The reference run is completed.
- 17) Load the new knitting program.
 - or -
- ▼ Start the loaded program.





24 Operating Modes and Coupling Widths of CMS 822

24 Operating Modes and Coupling Widths of CMS 822

Coupling with CMS 822



The needle area of the CMS 822 is 84".

Operating mode: 4-system machine

E 5 (2,5.2)	1	419
E 7 (3,5.2)	1	587
E8	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

- Operating mode: Narrow coupling with or without comb
 - All four systems working in **one SEN** area.



- Operating mode: Narrow coupling without comb
 - All four systems working in more than one SEN area (4 at max).

Coupling widths for CMS 822:





24 Operating Modes and Coupling Widths of CMS 822

Operating mode: Tandem machine without comb

• Two systems working in **one SEN** area.

Coupling width 42"

P	-	- 42	" →	P		4	577
	,	44			J	44	
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

Coupling width 44"

P	•	- 44	" →			40	53
E E (2 E 2)	1		100	A"	221		410
E 5 (2,5.2)		-	199	4	221	-	419
E 7 (3,5.2)	1	-	279		309	-	587
E8	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

- Two fabrics will be produced side by side.
- The knitting program is generated for the left carriage with knitting systems S1 and S2. Needle selection is calculated internally for the left fabric piece and transferred to the right carriage, which produces the right fabric piece.





The workflow of the CMS 822 corresponds to the workflow of CMS 4xx TC / CMS 9xx.

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24 Operating Modes and Coupling Widths of CMS 822

Operating mode: Tandem machine with comb

• Two systems working in **one SEN** area.

Coupling width 42":

	-	- 42 42	" →			42	2"
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

Coupling width 44":

	•	- 44	"→]		
	ļ	40)"		J	40	**
E 5 (2,5.2)	1	-	199	4"	221	-	419
E 7 (3,5.2)	1	-	279		309	-	587
E8	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

- Two fabrics will be produced side by side.
- Both carriages function as one carriage with a wide space and with the system sequence:



- The yarn carriers for the left fabric piece are positioned in the left clamping and cutting device.
- The yarn carriers for the right fabric piece are positioned in the right clamping and cutting device.
- One yarn carrier knits-in the comb thread (elastic thread) over both fabric pieces.

24 Operating Modes and Coupling Widths of CMS 822

Special features with the operating mode tandem with comb (CCC):

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Switch the needle selection on or off:



⇒ The "Machine Start" menu is displayed.

🕮 Machine start	STOLL THE RIGHT WAY TO KNIT
Start	Needle selection
SP from line 1	Off On Needle selection
SP from line	0
SPF SO	
SPF row fixed	999 2 G On Right carriage
P.aft. press-off from row	950 Yarn carrier
	Delete positions (EAY)

Needle selection						
"Needle		"Off"	Needle selection deactivated			
selection"		"On"	Needle selection activated			
L: For Tandem-Machines with wide coupled carriages only:						
"Left carriage"	(1)	"Off"	Needle selection deactivated in left carriage			
		"On"	Needle selection activated in left carriage			
"Right carriage"	(2)	"Off"	Needle selection deactivated in right carriage			
		"On"	Needle selection activated in right carriage			

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25 Pattern 5: Structure Pattern with Applications

25 Pattern 5: Structure Pattern with Applications

Pattern name	 Operating mode tandem without comb Struktur+Appli-Tandem Operating mode tandem with comb
	Struktur+Appli-Tandem+Kamm
Start	Struktur+Appli-Tandem+Kamm Tubular
Start Operating mode of the machine	Coperating mode tandem with comb Struktur+Appli-Tandem+Kamm Tubular CMS 530 Operating mode with comb CMS 822 Operating mode tandem without comb Operating mode tandem with comb



Fabric view and stitch line

	Presentation
Basic pattern	
Application	
Neighboring applications	



25.1 Operating Mode of the Machine: Tandem without Comb

Tandem without Comb

The knitting program (Sintral, Jacquard, Setup) is structured as follows:

 The knitting program is generated for the left carriage with knitting systems S1 and S2. Needle selection is calculated internally for the left fabric piece and transferred to the right carriage, which produces the right fabric piece.



A draw thread is knitted at the start of the program.
 The draw thread enables to separate the pieces after knitting or ironing.

Result:

The fabrics are knitted as one piece, connected by the draw thread.



With this operating mode, a fabric must always be in the main take-down.

Important settings for this operating mode:



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- 5) Set **No** at "Tandem with comb" for this operating mode.
- ⇒ Clamping / cutting deactivated.
- 6) Go back to the "Main menu" with



- 7) Start the reference run.
- ⇒ The Tandem without Comb mode is active after the reference run.

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25 Pattern 5: Structure Pattern with Applications

25.2 Operating Mode of the Machine: Tandem with comb

Tandem with comb (CCC):

The knitting program (Sintral, Jacquard, Setup) is structured as follows:

 Both carriages function as one carriage with a wide space and with the system sequence:



- The yarn carriers for the left fabric piece are positioned in the left clamping and cutting device.
- The yarn carriers for the right fabric piece are positioned in the right clamping and cutting device.
- One yarn carrier knits-in the comb thread (elastic thread) over both fabric pieces due to the **comb function** at the start of the program.
- A **Cast-off function** is called-up at the fabric end.

Result:

Each piece is started with the comb and casted-off at the end. Single fabrics are produced.

i With this operating mode **no** fabric must be in the main takedown.

Make important settings for this operating mode:

1)	Call up the main menu		
2)	Call up the "Service" menu with the key		
3)	Call up the Basic settings window with		
4)	Tap the key.		
⇔	The "Machine configuration 2" window is displa	yed.	
	Machine configuration 2		STOL
	Production of technical fabrics?	No	No
	Tandem with comb	Yes (Yes 🔻

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- 5) Set **Yes** at "Tandem with comb" for this operating mode.
- ⇒ Clamping / cutting gets active with this setting.
- 6) Go back to the "Main menu" with
- 7) Start the reference run.
- ⇒ The Tandem with Comb mode is active after the reference run.

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25 Pattern 5: Structure Pattern with Applications

25.3 Couple the Machine Wide, Load and Set-up the Pattern in the Machine

Set up the pattern:

- 1) Load pattern in machine
- 2) Couple the carriage wide: 44"
- 3) Carry out the reference run
- 4) Check the settings in the "Machine Configuration 2" window:
- Tandem with comb: no
 Result: Machine works in tandem mode without comb.
- Tandem with comb: yes
 Result: Machine works without comb, but not in tandem mode
 Two fabrics will be produced side by side.
- 5) Threading up the Yarn Carriers
- 6) Position the Yarn Carriers
- 7) Check the needle bed: There is no fabric hanging in the needles?
- 8) Starting Machine

Make the following changes:

- 1) Stitch length (NP)
- 2) Fabric take-down values (WM, W+, WMK, ...)
- 3) Cycle counters (RS)
- 4) Staggering the yarn carriers at the fabric selvedge (YD)

25.4 Tandem without Comb: Thread up Yarn Carriers and Position them

Calling up the assignment and allocation of the yarn carriers:

- 1) Call up the "Machine Start" menu with the **Main** Key of the Main Menu.
- 2) Tap the "SP from Line 1" key.
- 3) Move the carriage from the left to the reverse at the right.
- 4) Call up the Main menu with



- 5) Call up the Yarn carrier menu
- ⇒ The yarn carrier allocation will be displayed.

ţ	Ya	rn (car	rier									Ţ	STO	
Y	SEN1	Y:=n	0/1	YG	YP	Ka	КЬ	K <i>a</i>	K <i>b</i>	Type	I<>	Ba	Bb	Ua	Ub
1 A	1	Α	1	-37	-37	0.0	0.0			N		9	9	14.5	14.5
1B	1	в	1	436	436	0.0	0.0			N		9	9	14.5	14.5
2A	1	С	1	-45	-45	0.0	0.0			Ν		9	9	14.5	14.5
2B	1	D	1	444	444	0.0	0.0			Ν		9	9	14.5	14.5
6A	1	Е	1	476	476	0.0	0.0			Ν		9	9	14.5	14.5
1A Current Y				rrent YCI	:			(Curre	nt YDI:					

6) Tap the key.



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- 7) Call up the "Allocation yarn carrier" window with the
- ⇒ The "Allocation yarn carrier" window appears.

							THE RIGHT WAY TO KNIT
		Left carr	iage	R	ight carria	age	
	Y	YG	YP	Y	YG	ΥP	
	1AL	-10	-10	1 AR	690	690	
	2AL	225	225	2AR	925	925	
	3AL	243	243	3AR	943	943	
	4AL	234	234	4AR	934	934	
	6AL	229	229	6AR	929	929	
L							

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- 8) Position the yarn carriers as specified at the fabric selvedge and thread them up.
 - **i** If the yarn carrier specifications in the Sintral differs from the yarn carriers really present on the machine, you can shift yarn carriers from the left to the right carriage.

25.4.1 Interchange of Yarn Carriers of the Left and Right Carriage

If the yarn carrier specifications in the Sintral differs from the yarn carriers really present on the machine, you can shift yarn carriers from the left to the right carriage.

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50	YG:1=A / 2=B 3=C	4=D 6=E;				
51	YLR:3-5;C			I		
52	C	LEFT	I		RIGHT	I
53	c		I			I
54	с		I 6	=E Rib	thread 2	I
55	С		I 4	=D		I
56	С		I 3	=C		I
57	с		I 2	=B Rib	thread 1	I
58	C 1=A Draw thread	d1	I			I
59	c		I			I
60	YD YC					

Command	Meaning
YLR:n-m;	Interchange of yarn carriers of the left and right carriage n = left carriage m = right carriage Example: YLR:3-5; YLR:3-5 4-5;

3) Confirm entry with

of the keyboard.

 \Rightarrow Modifications of the program will be saved to the pattern memory.
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25 Pattern 5: Structure Pattern with Applications

25.4.2 Additional Stitch Length Correction for the Right Fabric

Correct the stitch length at the right carriage:



Input fields	Meaning
NPR:< <k-l>>m-n</k-l>	Correction of the stitch cam positions of the right carriage depending on the carriage direction << / >> = Carriage direction k, m = Stitch length for the front needle bed I, n = Stitch length for the rear needle bed

- 3) Tap the entry field and enter values and a comment.
- 4) Confirm entries with

<u>្តាំ</u> Stitch length 25 Pattern 5: Structure Pattern with Applications

Switch-off the Needle Selection 25.4.3

Switch the needle selection on or off:

i

i

The needle selection can be switched on or off individually for one carriage with faulty fabric pieces.

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1) Call up the "Machine Start" menu with the



2) Make the desired settings at "Needle selection":

Setting		Function		
"Needle	"Off"	Switch off needle selection		
selection"	"On"	Switch needle selection on		
	 L: This setting does not affect the settings at left or right carriage. Meaning the corresponding setting will be kept when switching off the needle selection. Result: Simplified handling when knitting in tandem mode. 			
Only with tandem machines				
"Left carriage"	"Off"	Switch off the needle selection of the left carriage		
	"On"	Switch on the needle selection of the left carriage		
"Right carriage"	"Off"	Switch off the needle selection of the right carriage		
	"On"	Switch on the needle selection of the right carriage		

All needle selection settings are switched on by default.

26 Pattern 6: Fully Fashion

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Pattern name	Fully-Fashion
Start	1x1
Operating mode of the machine	 With comb and clamping and cutting Without comb and clamping and cutting
Pattern description	 Additional fully fashion commands Counters in use for fully fashion knitting Different Stitch Lengths on Shape Edge

26.1 Additional Information with Fully Fashion - with Comb

Additional commands are necessary in Sintral with **Fully Fashion with comb**:

• PF0

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- WMN
- Counter
- Yarn carrier home position
- YDF

I. Fully Fashion commands:

Comma nd	Function
PFN	Machine is working as a normal machine (Needle selection over the total width of the SEN)
PF0	Machine is working as a fully fashion machine (Needle selection within #L - #R)
WMN	Value of the fabric take-down depending on the quantity of needles (changes with the knitting width)
YDF	Additional distance of the yarn carriers with Fully Fashion





Counter	Function
#L	Selvedge counter of the left fabric selvedge
#R	Selvedge counter of the right fabric selvedge
#51	Start-width at the left
#52	Start-width at the left

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III. Counters at the V-neck:

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Counter	Function
#LM	Selvedge counter middle left
#RM	Selvedge counter middle right
#53	Start-width middle-left
#54	Start-width middle-right

IV. Yarn carrier home position

- With comb: YGC: 1=A 2=B 5=E / 2=C 4=D 6=F;
- Yarn carrier are positioned at the clamping point.

V. Distance of the yarn carrier from the fabric selvedge:

- YD: Distance of the yarn carrier from the fabric selvedge
- YDF: Additional yarn carrier distance for fully fashion knitting



Command:		
YDF = n	Yarn carrier distance during fully fashion knitting (Needles)	n = 1 - 20



26.2 Additional Information with Fully Fashion - without Comb

Additional commands and functions are necessary with **Fully Fashion** without comb:

- Transition rows
- Yarn carrier home position

I. Transition rows:



- The transition rows form the transition from the end width of the actual fabric piece to the starting width of the following piece.
- The FF-TRANSITION function contains functions for widening and casting-off.
- You can control the length by **RS17**.
- Separate yarn carriers allow to use residual yarn.



Sintral function:

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C-----FBEG:FF-TRANS;
IF #LM<#54 IF #RM>#53 IF #RM-#LM>2 F:!-WIDENING-V;
IF #L=#51 IF #R=#52 #LM=0 #RM=0 GOTO FEND
IF #L<=#51 IF #R>=#52 F:!-PRESS-OFF; #L=#51 #R=#52 #LM=0 #RM=0 GOTO FEND
IF #L>=#51 IF #R<=#52 F:!-VIDENING; #L=#51 #R=#52 #LM=0 #RM=0 GOTO FEND
IF #L<>#51 IF #R<>#52 F:!-PRESS-OFF; F:!-WIDENING; #L=#51 #R=#52 #LM=0 #RM=0
FEND
FEND



II. Yarn carrier home position

Without comb:

- YG: 2=V 4=A 8=D / 1=S 3=G 6=G 8=G;
 - Due to SOY, the yarn carriers without F are positioned at the SEN.
- YG: 2=V 4=A 8=D / 1=S 3F=G 6F=G 8=G;
 - Due to S0Y, the yarn carriers with F are positioned at the fabric selvedge.

26.3 Counters with CMS 822

I. Operating mode: 4-system machine

The use of the counters with this operating mode corresponds to CMS 9xx / 4xxTC.

Working procedure:

- Working with all four systems in one **SEN** area.
- Working with all four systems in several **SEN** areas (1-4).

II. Operating mode: Tandem machine without comb

The use of the counters with this operating mode corresponds to **CMS 9xx** / **4xxTC** wide coupled.



The information of the knitting program will be transferred from the left carriage to the right carriage.



III. Operating mode: Tandem machine with comb:

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Counter	Function	
# L1	Left fabric	Selvedge counter for the left fabric selvedge
# R1	Right piece	Selvedge counter for the left fabric selvedge
# LM1	Left fabric	Selvedge counter for the left side in the center
# RM1	Left fabric	Selvedge counter for the right-hand side in the center
# 55	Left fabric	Start-width at the left
# 56	Left fabric	Start-width at the left
# 57	Left fabric	Start-width middle-left
# 58	Left fabric	Start-width middle-right
# L2	Right piece	Selvedge counter for the left fabric selvedge
# R2	Right piece	Selvedge counter for the left fabric selvedge
# LM2	Right piece	Selvedge counter for the left side in the center
# RM2	Right piece	Selvedge counter for the right-hand side in the center
# 59	Right piece	Start-width at the left
# 60	Right piece	Start-width at the left
# 61	Right piece	Start-width middle-left
# 62	Right piece	Start-width middle-right



26.4 Narrowing and Widening of Fully Fashion:

Narrowing procedure with fully fashion:

Fabric view of the left narrowing edge	Fabric view of the right narrowing edge
Stitch line of the left narrowing edge	Stitch line of the right narrowing edge

Widening with fully fashion:

Fabric view of the left selvedge	Fabric view of the right selvedge
Stitch line of the left selvedge	Stitch line of the right selvedge

Changes of the counters #L / #LM / #RM / #R at the shape edge:

>> S:<1->UVS+/<1->UVS+; << S:<1->UVS+/<1->UVS+; >> S:<1-> A(J1)-Y(J2)/<1->U^ST/<1->U^ST;	VR1 VL1 Y:=D; V0 #L>1 #R<	S1 S2 S2 S3 1 S1 S2 S3	WMF2 WMF1
<pre>>> S:<1->UVS+/<1->UVS+; << S:<1->UVS+/<1->UVS+; >> S:<1->UXST-+/<1->U^ST;</pre>	VR1 VL1 V0 #LM<1 #H	S1 S2 S2 S3 RM>1 S2 S3	WMF2 WMF1

Binding-off of Fully Fashion:

You can change the form of a fully fashion fabric by binding-off as well. The binding-off consists of knitting and transferring of individual stitches. Different variants of binding-off are available.



26.5 Load and Set-up the Pattern in the Machine

Procedure:

- Load pattern in machine
- Set up the pattern:
 - Threading up the Yarn Carriers
 - Position the yarn carriers at the clamping point.
- Starting Machine

Make the following changes:

- Stitch length (NP/NPJ)
- Fabric take-down values (WM, W+, WMK, ...)
- Staggering the yarn carriers at the fabric selvedge (YD)

Pattern changes - Apply shape counters

:	Us	e this function only for the following machines:
I	1	Machine without comb take-down
	2	Machine with comb take-down but without use of comb

The machine compars automatically the shape counters (old-new) in order to e able to adjust the new knitting width (widening or narrowing) with the pattern change. The values of the shape counters of the previous pattern are necessary for this.



You can enter the values of the previous pattern manually or simply apply them by the "Apply shape counter" key.

The condition is that the pattern was created as Fully Fashion knitting program on the **M1plus**.

You can use this helpful function with basic patterns (without shape) as well.

Tabelle 1	Tabelle 1: Keys to apply the shape counters						
Key	Function						
	Call up "Machine start" window						
	Call up "Additional function keys"						
#L #R	"Apply shape counter" key						

Apply shape counter:

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- 1) Call up the window "Machine start" from the "Main menu".
- 2) Tap on "Additional function keys".
- 3) Tap the "Apply shape counter" key. Confirm the prompt that follows with "YES". \Rightarrow The values of the shape counter are applied to the new pattern.
- 4) Tap the "SP from line 1" key.





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27 NPJ / Flexible Stitch / Power Tension Settings

27 NPJ / Flexible Stitch / Power Tension Settings

You can use different stitch tension values for selected needle groups within one knitting row.

I. Areas of application:

- Pattern with different knitting modes in one knitting row
- Fabric selvedge with fully fashion
- Intarsia pattern

II. Application of the NPJ command:

NPJ means Needle sinker Position Jacquard

Command	Meaning
NPJ n	n = 1-8 Define up to 8 jacquards in order to control the stitch tension.
PANP	Pattern design construction for the control of the stitch cams with NPJ Necessary if the jacquard for NPJ differs from the jacquard of the pattern.

You can influence the transition of the stitch tensions of neighboring knitting areas.





Stitch tension setting with symbol "="
 The change of the stitch tension will be done in field A and field Y equally.



Example of a sintral command: NPJ1: .=11.0 A=11.0 Y=12.0; C front needle bed NPJ2: .=11.0 A=11.0 Y=12.0; C rear needle bed <> S: <1-> A (J1) – Y (J2); SX

- Stitch tension setting with symbol "!"
 - Example 1:

The change of stitch tension will be moved into field **A**.



Allocating the "!" symbol:

NPJ1: .=11.0 A=11.0 Y! 12.0; C front needle bed NPJ2: .=11.0 A=11.0 Y! 12.0; C rear needle bed

– Example 2:

The change of stitch tension will be moved into field Y.



Allocating the "!" symbol:

NPJ1: .=11.0 A! 11.0 Y=12.0; C front needle bed NPJ2: .=11.0 A! 11.0 Y=12.0; C rear needle bed



Specification in the Sintral program

You change the indirect **NPJ** values in the "Setup2 Editor".

```
FBEG:M1-SIZES;
```

```
F1=1-399

PA:JA1; PAI:JA1; PANP<>:JA1;

PM:1:F1; SEN=1-399 #51=1 #52=399 #53=199 #54=200

FEND C M1-SIZES

JA1=2989(1100-1100)

C ----- NPJ -----

NPJ1:.=12.0 *=11 +=5; C vorne

NPJ2:.=12.0 *=11 +=6; C hinten
```

```
You can specify NPJ values directly in the Sintral as well.
```

III. Rules for NPJ:

×X.

- Watch out the distance between the areas (symbols).
- Symbol "." must always be specified.
- All other symbols will get the value of the symbol ".". Therefore do not a "!" to this symbol.
- "!" may not be applied to areas (symbols) lying next to each other.



 Watch-out the idle times with subsequent changes of the stitch tension (X).





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27.1 Table for Modifying the Stitch Tensions

Distances and idle times for modifying the stitch tensions with MSEC = 1.0:

With the machine types ST 211 - ST 811

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The change of the stitch tension is independent of
machine type.

Gauge	Quantity of needles for changing stitch tension by one value	Idle time
E 3	2.66	5
E 3,5	3.2	5
E 5 (2,5.2)	1.8	7
E 7 (3,5.2)	2.25	8
E 8	3	9
E 10 (5.2)	4.5	11
E 12 (6.2)	4.5	13
E 14 (7.2)	4.5	14
E 16 (8.2)	4.8	4
E 18 (9.2)	5.4	4.5
E 20	6	5

With the machine types ST 168 - ST 468 and OKC

These types of machines control the step motors faster.

- Reduced quantity of needles for changing the stitch length by one step
- Reduced idle time.

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27 NPJ / Flexible Stitch / Power Tension Settings

Stitch length change	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.5	2.0	2.5	3.0	X
E 3	0,1	0,3	0,4	0,5	0,7	0,8	0,9	1,1	1,2	1,3	2	2,7	3,4	4	1,2
E 3,5	0,2	0,3	0,5	0,6	0,8	0,9	1,1	1,3	1,4	1,6	2,4	3,2	3,9	4,7	1,3
E 5 (2,5.2)	0,2	0,3	0,5	0,6	0,8	0,9	1,1	1,2	1,4	1,5	2,3	3	3,8	4,5	1,7
E 7 (3,5.2)	0,2	0,4	0,6	0,8	1,0	1,3	1,5	1,7	1,9	2,1	3,2	4,2	5,3	6,3	2,1
E 8	0,2	0,5	0,7	1,0	1,2	1,4	1,7	1,9	2,2	2,4	3,6	4,8	6	7,2	2,3
E 10 (5.2)	0,3	0,6	0,9	1,2	1,5	1,8	2,1	2,4	2,7	3	4,5	6	7,5	9	2,8
E 12 (6.2)	0,4	0,7	1,1	1,4	1,8	2,2	2,5	2,9	3,2	3,6	5,4	7,2	9	10,8	3,3
E 14 (7.2)	0,4	0,8	1,3	1,7	2,1	2,5	2,9	3,4	3,8	4,2	6,3	8,4	10,5	12,6	3,7
E 16 (8.2)	0,5	1,0	1,4	1,9	2,4	2,9	3,4	3,8	4,3	4,8	7,2	9,6	12	14,4	4,2
E 18 (9.2)	0,5	1,1	1,6	2,2	2,7	3,2	3,8	4,3	4,9	5,4	8,1	10,8	13,5	16,2	4,6

X = Quantity of needles for the idle time

Power Tension Settings (PTS) depending on the machine speed:

Command	Meaning
MSECNPJ = n.nn	n.nn = 0.05 - 1.20 Speed setting with the work with the NPJ command Not specified: MSEC = 1.0

The table shows the required quantity of needles at different machine speeds for changing the stitch tension by one value.

MSECNPJ= off-duty period	1.0	x	0.9	x	0.8	x	0.7	x	0.6	x	0,5	x
E 3	1,3	1,2	1,2	1,1	1	1	0,9	0,8	0,8	0,7	0,7	0,6
E 3,5	1,б	1,3	1,4	1,2	1,3	1	1,1	0,9	1	0,8	0,8	0,7
E 5 (2,5.2)	1,5	1,7	1,4	1,5	1,2	1,4	1	1,2	0,9	1	0,8	0,9
E 7 (3,5.2)	2,1	2,1	1,9	1,9	1,7	1,7	1,5	1,5	1,3	1,3	1,1	1,1
E 8	2,4	2,3	2,2	2,1	1,9	1,8	1,7	1,6	1,4	1,4	1,2	1,2
E 10 (5.2)	3	2,8	2,7	2,5	2,4	2,2	2,1	2	1,8	1,7	1,5	1,4
E 12 (6.2)	3,6	3,3	3,2	3	2,9	2,6	2,5	2,3	2,2	2	1,8	1,7
E 14 (7.2)	4,2	3,7	3,8	3,3	3,4	3	2,9	2,6	2,5	2,2	2,1	1,9
E 16 (8.2)	4,8	4,2	4,3	3,8	3,8	3,4	3,4	2,9	2,9	2,5	2,4	2,1
E 18 (9.2)	5,4	4,6	4,9	4,1	4,3	3,7	3,8	3,2	3,2	2,8	2,7	2,3

X = Quantity of needles for the idle time



27.2 Applications of NPJ (PTS)

Use different knitting modes in one knitting row (= one knitting



Use different stitch tensions on the left and right fabric selvedge:

For fully fashion fabric with different knitting modes at the fabric selvedges.





Same symbols at the left and right edge:

PANP

Different stitch tensions at the left and right selvedge are not possible.

Command	Meaning
PANP <>	Pattern design construction for the control of the needle sinkers with NPJ.
	 Necessary if the jacquard for NPJ differs from the jacquard of the pattern. Different stitch tensions at the left and right selvedge.

Different symbols at the left and right selvedge:



Exampl e	Meaning	Effect
Α	The same value for stitch tension will be applied to the "P" and "A" symbol	Same stitch tension of the selvedge stitches
В	Any value for stitch tension will be applied to the "P" symbol.	Different stitch tension of the selvedge stitches
	Any value for stitch tension will be applied to the "P" symbol.	Different stitch tensions at the left and right selvedge

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Different symbols for the stitch tensions at the selvedge outside shape must be entered manually.



28 Pattern 7: Intarsia

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Pattern name	Intarsia			
Start	2x1			
Operating mode of the machine	 with comb function With clamping / cutting Cast-off function at fabric end 			
Pattern description	Intarsia SJ with 7 Intarsia yarn carriers			



28.1 Load and Set-up the Pattern in the Machine

Procedure:

- Load pattern in machine
- Set up the pattern:
 - Exchange Yarn Carriers (normal yarn carriers against Intarsia yarn carriers)
 - Thread-up the Intarsia yarn carriers
 - Adjust the Intarsia Yarn Carriers
 - Position the Intarsia yarn carriers
- Starting Machine

Make the following changes:

- Stitch length (**NP**)
- Fabric take-down values (WM, W+, WMK, ...)
- Cycle counters (**RS**)
- Staggering the yarn carriers at the fabric selvedge (YD)
- Braking value of the yarn carriers
- Corrections of yarn carriers (YC / YCI)

Types of Intarsia yarn carriers:



	Intarsia yarn carriers	Use
1	Туре 1	CMS machines ST 711 – 811 OKC machines with old yarn carrier drive
2	Type 2	Machines with OKC 3.0 control (new yarn carrier drive)

How an Intarsia yarn carrier works:

- 1. An intarsia yarn carrier is set upright from its swiveled position before knitting.
- 2. Knitting of the yarn carrier in its color field.
- 3. The brake is actuated and the yarn carrier is stopped at the end of the color field.
- 4. Swiveling the yarn carrier in its color field.





28.2 Exchange Yarn Carriers

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It is best to use intarsia yarn carriers for intarsia pattern.

I. Change the yarn carriers on the machine:

- 1) Stop the carriage assembly into the left reversing position.
- 2) Loosen the screws (3) of the yarn carrier limiter.
- 3) Remove yarn carrier limiter.





- 4) Push the normal yarn carriers to position (A) at the right and remove them.
- 5) Mount the intarsia yarn carriers at position (A) on the track and push them into their starting positions.To do this, press the clamp (1) outward or the lifter (2) inward.



6) Mount the yarn carrier limiters with disengaging arms on the tracks!



7) Stag the yarn carrier limiters and lock them.

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II. Possibilities to equip the yarn carrier rails:

1 A normal yarn carrier type 1 and a intarsia yarn carrier type 2 cannot work on the same yarn carrier rail.

Combination of yarn carrier type 1 and yarn carrier type 2





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Watch-out the yarn carrier rail allocation with the combination of normal yarn carriers type 1 and intarsia yarn carriers:



Tip:

Equip the yarn carrier rails from inward to outward.

Benefit:

With the allocation from inward to outward no track must be kept empty when using intarsia and normal yarn carriers.

III. Use normal yarn carrier type 2 and intarsia yarn carriers type 2:

A **normal yarn carrier type2** and a **intarsia yarn carrier** can work on one yarn carrier rail.



Mount the yarn carrier limiters with disengaging arms on the tracks!



Benefit:

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- You can equip the yarn carrier rails as desired.
- You can equip all the tracks.





28.3 Adjust the Intarsia Yarn Carriers

I. Adjust the guidance of yarn carriers:

 To check whether the yarn carrier can be lifted from the yarn carrier rail, take the left and right sides of the yarn carrier housing in both hands and move the yarn carrier housing upward and downward.



- 2) If necessary push the setting key inwards with the adjusting key till the yarn carrier cannot be raised any more.
- 3) Turn the setting key back by one-eighth of a turn.
 - Same procedure with normal and intarsia yarn carriers.

II. Set type 1 or type 2 of intarsia yarn carrier:

The yarn carriers are correctly adjusted when:

- an unswiveled yarn carrier passes by a swiveled yarn carrier.
- the distance between the cam center of the knitting system and the yarn carrier in each system is identical in both carriage directions.
- the thread is laid on the open latch at exactly the same point by each yarn carrier for both selvedge needles.
- the yarn carrier tips move exactly between the needle beds in the needle cross and the distance between yarn carrier tips and the closed needle latch is 0.5 mm to 1 mm
- The yarn carriers of the track 1 and 8 are also set 0.5 higher so that they do not touch the lateral limiters of the needle bed.

Set type 1 of intarsia yarn carrier:

- 1) Park the carriage assembly in needle space.
- 2) Loosen the screw (1) to adjust the height of the yarn carrier.



- 3) Adjust the height of the yarn carrier and retighten the screw (1).
- 4) Loosen the screw (2) to adjust the position of the yarn carrier head relative to the needle beds.
 - Add screw safeguard (e.g. **Loctite**) to the screw if necessary.

Adjust intarsia yarn carriers type 2:

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- 1) Stop carriage assembly in needle area.
- 2) Loosen the screw (2) to adjust the height of the yarn carrier.



- 3) Adjust the height of the yarn carrier and retighten the screw (2).
- In order to laterally adjust the position of the yarn carrier tip, bend the yarn carrier bow carefully (without using force) with the adjusting part (3).



III. Move the intarsia yarn carrier in the area of the carriage:



1) Press the lifters inward with the shifting device and shift the yarn carrier out of the area of the carriage.

IV. Check and correct the stopping point of the intarsia yarn carrier:

As soon as an intarsia yarn carrier reaches the end of its working area, the driver is lifted out of the yarn carrier. The yarn carrier is braked and swivels back into its color field.

Cause of wrong parking position	Remedy
Inner surface of the yarn carrier rail is oily or greasy	Clean the oily or greasy braking surface of the yarn carrier rail.
Stopping time of the yarn carrier is not set correctly	Adjust the braking value of the yarn carriers directly on the machine.
Pressure plates are worn	Turn over or replace the pressure plates (see operating instructions of the machine)

28.4 Intarsia Technique and Programming

I. Knitting process for intarsia:

General illustration:

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>>	<u>ប្រជាជ្យមូលក្រក្</u>
>>	vasavasava
>>	99999999 9
>>	<u>ບອວບອວບອບ</u>
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- Knitting-in / knitting-out the yarn carriers with tuck binding / float
- Tuck binding at the color field edge

Fabric front:



Fabric back:





II. Distance of the yarn carriers with double assignment of the yarn carrier rails:

Normal yarn carrier	Intarsia yarn carrier type 2 (New intarsia yarn carrier)	Intarsia yarn carrier type 1 (Previous intarsia yarn carrier)
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28 Pattern 7: Intarsia

III. Distances of the intarsia yarn carriers with double assignment:

The distances depend on:

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- on the intarsia binding between the color fields.
- The parking position of the yarn carrier in the preceding row.
 - In case of color fields that have an angular course the distance can be greater.
- the yarn carrier correction value K<I>





* Intarsia yarn carrier type 2 (New intarsia yarn carrier)

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* Intarsia yarn carrier type 1 (Previous intarsia yarn carrier)

The table shows minimum distances of two intarsia yarn carriers.

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IV. Intarsia binding at the color field edge:

Possibilities:

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• Binding with tuck (closed)



- Binding with stitch (closed)
- No binding (open)

V. Terms with Intarsia:

The yarn carrier must be positioned for the following knitting row in order to follow the width modification of the color field (motif).

How to position the yarn carriers:

• Feed

Result: The shape of the motif will be kept.

<<	_																		2 722
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	V
		•	•	•	•	•	•	•			****					••••	••••		•
>>		0	0	0	0	0	0	6		V	•			V			5		•
		•	•	•	•	•	•	•			···.:				:.				•
>>		•	.	.	•	•	•	V	0	0	0	0	0	0	0	0	0	0	0
20022			•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•
<<		•	•	•		•			0	0	0	0	0	0	0	0	0	0	0
-			•	: :•	((.	•	•	•	•	•	1.	•	•	•	•	•	•	•	•
<<		0	0	0	0	0	0	0	5	•									•

Reduce

Result: The shape of the motif will be modified.





VI. Programming within Sintral:

Specification in the Sintral program

- Home positions of the yarn carriers YGC
- JA1/PA/PAI/PM
- Yarn carrier definition as Intarsia yarn carrier
- IF #L=0 #L=1 IF #R=0 #R=399 #LM=0 #RM=0 START PF0 Y-CR1 YGC:1=A 2=B 5=F 6=G 7=I / 2=C 3=D 4=E 6=H; YDF=2 C-----I

С	LEFT	I		R	IGHT	
C		I				
C 7=I E	Seifarbe 4/ Color 4	I				
C 6=G G	rundfarbe/ Ground color	I	6=H	Grundfarbe/	Ground color	
C 5=F E	Beifarbe 3/ Color 3	I				:
С		I	4=E	Beifarbe 2/	Color 2	:
С		I	3=D	Beifarbe 1/	Color 1= Ground	i col:
С 2=В К	(ammfaden/ Comb thread	I	2=C	Bundfaden1/	Rib color 1	
C 1=A 7	Frennfaden/ Draw thread	I				
C		I				;
PA:JA1; PM:1:F1 FEND C JA1=253 Y-2B:HF	: PAI:JA1; L; SEN=1-399 #51=1 #52=399 M1-SIZES 33(1100-1100) X1G; Y-6B:HRIG;	_				
Y-2A:I; #99=0	Y-2B:1; Y-3A:1; Y-4A:1; Y-5	4 : I	; Y-6	A:I; Y-6B:I	; Y-/A:I;	
IF RS17	7=0 SOY #99=1					
IF RS17	/=1 S0YCR0 #99=1					
IF #99=	=1 #99=0 MS PRINT/Fadenfuehre	r u	eberp	ruefen/		
F:M1-S1	INTRAL;		_			
END						

Sintral for the Intarsia knitting process:

- Definition for swiveling the intarsia yarn carriers
- Definition of the color field for a yarn carrier

```
JA1=1142 #L=101 #LM=0 #RM=0 #R=298
Y-2B:I<> HL1 HR1 F1+^0; Y-6A:I<> HL1 HR0 F1L^0; Y-7A:I<> F1K^0;
<< S:<1-><L>A%O(5)-0/<1-><K>A%O-0/<1-><+>A%O-0; Y:=G/=I/=C;
                                                                         S1 S2 S3
                                                                 V0
                                                                                       WMF1 MSEC2
>>
                                                                         S0
                                                                                       WO
Y-3A:I<> F1B^0; Y-4A:I<> F1E^0; Y-5A:I<> F1I^0;
<< S:<1-><I>A%O(5)-0/<1-><B>A%O-0/<1-><E>A%O-0; Y:=F/=D/=E;
                                                                         S1 S2 S3
                                                                                       WMF1
>>
                                                                         S 0
                                                                                       W0
Y-6B:I<> HL1 HR1 F1A^0;
<< S:<1-><A>A(5)-0;
                                                 Y:=H;
                                                                         S3
                                                                                       WMF1
>> S:<1-><A>A%O(5)-0/<1-><E>A%O-0/<1-><B>A%O-0; Y:=H/=E/=D;
                                                                         S1 S2 S3
                                                                         S0
                                                                                       W0
<<
>> S:<1-><I>A%O(5)-0/<1-><+>A%O-0/<1-><K>A%O-0;
                                                 Y:=F/=C/=I;
                                                                         S1 S2 S3
                                                                                       WMF1
<<
                                                                         S0
                                                                                       WO
>> S:<1-><L>A(5)-0;
                                                 Y:=G;
                                                                         s3
                                                                                       WMF1
```

28.5 Braking Value of Intarsia Yarn Carriers

Braking values are changed in order to compensate mechanical variances of the yarn carriers on the machine.

Command	Function	Value range
Y-1A:Bn-m;	Braking value for yarn carrier 1A n = value for the left edge m = value for the right edge	alt: 09 15 New: -90 9 (starting with V_OKC_002.002.000_STOLL)



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yarn carriers are not properly positioned at the edge of their color field



- The yarn carrier at the left edge must be corrected towards its own color field: 0... -9
- The yarn carrier at the right edge must be corrected away from its color field: 0... 9
- Behavior of the correction of braking values:
- Negative values move the yarn carrier nearer to the knitting area
- Positive values move the yarn carriers away from the knitting area





• The yarn carrier at the left edge is located at the left of the needle center:

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- The yarn carrier at the right edge is located at the right of the needle center:
 - Loading a new pattern with **EALL** will **not delete** the existing braking values. Therefore check the braking values or set them to the default values always after loading.

28.6 Handling the Braking Values

Adjust the intarsia yarn carriers mechanically correct on the machine at first.

Valuate braking values:

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- ▷ The yarn carriers are adjusted mechanically correct.
- 1) Start the program.
- 2) Start knitting until the Intarsia yarn carriers are in use.
- 3) Check the position.
- 4) Call up the Main menu with





⇒ The yarn carrier allocation will be displayed.

ţ	Ya	rn (car	rier									S TI	S T O	
Y	SEN	Y:=n	0/1	YG	YP	Ka	Кb	K <i>a</i>	K <i>b</i>	Туре	I<>	Ba	Bb	Ua	Ub
1 A	1	Α	1	-37	-37	0.0	0.0			N		0	0	14.5	14.5
2A	1	В	1	-45	-45	0.0	0.0	0.0	0.0	I		-4	0		
2B	1	С	1	444	444	0.0	0.0	0.0	0.0	Ι		2	0		
ЗA	1	D	1	452	452	0.0	0.0	0.0	0.0	Ι		1	1		
4A	1	Е	1	460	460	0.0	0.0	0.0	0.0	Ι		2	1		
5A	1	F	1	-69	-69	0.0	0.0	0.0	0.0	Ι		1	0		
6A	1	G	1	-77	-77	0.0	0.0	0.0	0.0	I		0	0		
6B	1	н	1	476	476	0.0	0.0	0.0	0.0	Ι		0	0		
7A	1	Ι	1	-85	-85	0.0	0.0	0.0	0.0	Ι		з	0		
<															>
	7	1A					Cı	irrent YC	I:			(Curre	nt YDI:	

6) Tap the key.

₩ YC braking	values		STOLL THE RIGHT WAY TO KNIT
8	8.1 8.2 YB: 0 0 YB: 0 0	8.3 YB: 0 0 YB: 0 0	
7	7.1 7.2 YB: 0 0 YB: 0 0	7.3 7.4 YB: 0 0 YB: 0 0	
6	6.1 6.2 YB: 0 0 YB: 0 0	Y-6A N A 6.4 YB: 0 0 YB: 0 0	
5	5.1 5.2 YB: -4 -6	Y-5A N A 5.4 YB: 0 0 YB: 0 0	
4	4.1 YB: 9 9 YB: 9 9	Y-4B N A 4.4 YB: 0 0 YB: 0 0	
3	3.1 3.2 YB: 0 0 YB: 0 0	Y-3A N A 3.4 YB: 2 3 YB: 0 0	
2	2.1 YB: 0 0 YB: 0 0	Y-2B N A 2.4 YB: 0 0 YB: 0 0	
1	1.1 Y-1A N A YB: 0 0 YB: 0 0	1.3 1.4 YB: 0 0 YB: 0 0	

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 \Rightarrow The entry field appears.

Open the input window with the $\frac{Y \cdot 34 \text{ N A}}{Y \text{ B} \cdot 2 \text{ 3}}$ key if necessary.

	6	5.4	
Ва	0	Bb	0
Shifting	99	Delete Activating	
	(√ ←]

- 7) Check the parking positions of every yarn carrier with both the knitting directions to the left and right.
- 8) Enter values and confirm entries.

Correction values **"Ba**" for parking positions on the left and **"Bb**" for the right.



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Pos	Situation
1	Yarn carrier at the left color field not corrected
2	Yarn carrier at the left color field corrected
3	Yarn carrier at the right color field corrected

The changes in the table for braking values are not reset with **EALL** / **EAY**

9) Check the position again when this yarn carrier is knitting the next time

i



28.7 Handling the Adjusting Program

You can determine the braking values by an adjusting program.

The adjusting program:

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The adjusting program is a procedure inserted in the Intarsia knitting program which brings to use all yarn carriers before the start. The yarn carriers work on the same needle in order to get a vertical color stripe. With it you can determine the optimal parking position of the yarn carriers at the left and right.

I. Activate the adjusting program:

▷ The loaded knitting program contains the adjusting program.

1) Tap the **#D** key in the "Main Menu".

- Set the cycle counter to activate the adjusting program. With the use of Setup:
- Setup1: RS18 =1
- Setup2: RS39 =1
- Call up the "Machine Start & Stop" menu with the "Main Menu".
- 4) Start the machine.
 - ⇒ The machine brings the yarn carriers in use into knitting positions and processes the adjusting program.
- 5) Open the entry window for braking values by the
- Check the parking positions of every yarn carrier with both the knitting directions to the left and right.
- 7) Enter correction values **Ba** for parking position on the left and **Bb** for the right.
- 8) Confirm the settings.
- 9) Exit the adjusting program after validating all Intarsia yarn carriers in

use by the **L**trl W key and start the knitting program.

II. Second part of the adjusting program:

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A second procedure (Part 2) will be necessary for not yet validated yarn carriers if more than 16 yarn carriers are used in the knitting program.

- Activate the second part of the adjusting program by the key.
 ⇒ The machine brings the yarn carriers not yet used into knitting positions without a stop.
- 2) Check the parking positions of the further yarn carriers and enter a correction value if necessary.
- 3) Exit the adjusting program by the key and start the knitting program.



Pos	Program
1	First part of the adjusting program
2	Second part of the adjusting program:
3	Embroidery stitch lines of the intarsia yarn carriers (vertical line, one needle wide)
4	Pattern

i	The cycle counters RS18 / RS39 will automatically be set to "zero".
	The braking values will be kept even if the knitting program is deleted from the main memory of the machine.



III. Reset braking values:

- 1) Reset single braking values to "0" manually.
- Reset all braking values by the and ^{YB:#→00}/_{YB:#→00} key.

28.8 Staggering the Yarn Carriers Automatically

How to position the yarn carriers:

- The yarn carriers are positioned staggered at the fabric selvedge according to **YD**.
- The yarn carriers are staggered automatically within the fabric (autostaggering)

Example:

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- The yarn carrier follows the selection
- Positioning of the yarn carriers within the v-neck

When to use the auto-staggering:

- For all yarn carriers that are 'upright'
 - Normal yarn carrier
 - Intarsia yarn carrier not swiveled
- Not with swiveled intarsia yarn carrier

For corrected yarn carriers (**YK**) the auto-staggering is deactivated. The remaining yarn carriers will be parked using auto-staggering.



28.9 Yarn Carrier Correction

i

After a correct mechanical positioning of the yarn carriers with the braking value, the **yarn carrier corrections** can be used for a **pattern technical positioning**.

Command	Meaning	Value range
YC	Table with direct yarn carrier corrections for the yarn carriers in use i : YC table is always displayed	
YCI n	Further tables with indirect yarn carrier corrections for the different pattern areas i: Display depending on the pattern creation	n = 1 -19
Y-1A :Kn-m	Correction for yarn carrier 1A with selected knitting n = value for the left edge m = value for the right edge	Min. value: -120 Max. value: 120 Steps:
Y-1A :KI n-m	Correction of not swivelled Intarsia yarn carriers	alt: 1= 1/16 inches = 1.6 mm
Y-1A :K <i>n-m</i>	Correction of swivelled Intarsia yarn carriers	

Default values for the correction of normal / Intarsia yarn carrier:

Command	Normal yarn carriers or Intarsia yarn carriers (not swivelled)	Intarsia yarn carrier (swivelled)
Y-1A: K0-0;	12 -12	
Y-1A: K I 0-0;	12 -12	
Y-1A: K <i> 0-0;</i>		0 -0

kev.

28.10 Handling of the Yarn Carrier Corrections

Entering and changing yarn carrier corrections:

- 1) Call up the dialog of the "SETUP2 editor" with the
- 2) Tap the "Yarn carrier" key in the dialog.
- ⇒ The dialog is displayed with three tabs.
- 3) Open the YC / YCI tab.

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⇒ The **YC** used in the pattern with the used yarn carriers and all the indirectly used yarn carrier corrections **YCI** are displayed.



YD / YDI	YC / Y	сі	Ŷ	:Ua-b / ነ	r:Nec				ø
Name	Y	Ka	Кb	K <i>a</i>	K <i>b</i>	MSEC	٧	Comment	Take-down
YC	Y-1A								
	Y-2A								¥
	Y-2B								Tarii Carrier
	Y-3A								0
	Y-4A								Stitch length
	Y-5A								
	Y-6A								
	Y-6B								Speed
	Y-7A								#111
									Cycle counter
									Racking Miscellaneous

4) Make changes in the **YC** table.

Column	Meaning
YC / YCI	Direct and indirect tables for yarn carrier correction
Y	Display of the yarn carriers used in the pattern
Ka / Kb	 Correction left (a) / right (b) for all yarn carriers Normal yarn carrier Intarsia yarn carrier (not swiveled) Plating yarn carrier
K <l>a / K<l>b</l></l>	Correction left (a) / right (b) only for Intarsia yarn carrier swiveled
MSEC	Defined carriage speed when knitting with selected yarn carrier
Vn	 Reduce carriage speed for the selected yarn carrier. I.e. the speed is reduced to 75% after the carriage reversal point until reaching the knitting area of the selected yarn carrier. You can chosen between three options n (03) then: n = 1: Acceleration up to 100% n = 2: Reduce to 50% - Retain speed for 2 inch fabric width - Accelerate to 100% n = 3: Reduce to 50% - Retain speed for 5 inch fabric width - Accelerate to 100% n = 0: Deletion of the defined carriage speed

- 5) Quit the "Setup2 Editor" with the
- ⇒ Changed values are saved in **.setx**.
- 6) Start the machine with the engaging rod.
- \Rightarrow The changes will be carried out with the next use of the yarn carrier.

key.

kev.

28.11 Yarn Carrier Corrections with Tandem Machines

I. Yarn carrier corrections for the right carriage:

• CMS 933

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CMS 822: Tandem mode without comb

Possible reasons for a correction:

- different wear of the yarn carriers used in the left and right carriages
- different directions of the yarn feed in the left and right carriages
- different lubrication

II. Enter the yarn carrier correction:

- 1) Call up the dialog of the "SETUP2 editor" with the
- 2) Tap the "Yarn carrier" key in the dialog.
- \Rightarrow The dialog is displayed with three tabs.
- 3) Open the **Y:Oa-b** tab.
- ⇒ No offset values are displayed.
- 4) Activate the table tools with the key.
- 5) Tap the key.
- ⇒ A window for the yarn carrier selection appears.
- 6) Select yarn carrier
- \Rightarrow The new line with the selected yarn carrier is displayed.
- 7) Enter the offset values in the table.

	Explanation	Value range
Y-3A:Oa- b	Offset specification for the yarn carrier 3A to be corrected, which works in the right carriage	
	Correction for the right carriage with tandem mode: a = O ffset for the left parking position b = O ffset for the right stopping position 1 : The correction value refers to the stop value of the left carriage.	Min. value: -8 Max. value: 8 Step width: 0.5 = 1/32 " = 0,8 mm





These correction values are machine-dependent! The values are **not deleted** with **EALL** and when readingin a new operating system. The correction values must be deleted manually.



29 Pattern 8: Split pattern





29.1 Install Raising Cam for Split-stitch

Exchange raising cam:

i

- When the knitting machine is shipped, the raising cams for transfer (2) are mounted. Split cams (3) must be mounted into the machine in order to
- Split cams (3) must be mounted into the machine in order to knit with split-stitch technique.



- Exchange cam (2) with cam (3). Therefore remove the carriage parts. More [
 305].
- 2) The installation of split cams is possible in every knitting system.

Due to production related reasons it is recommended to apply the following systems:

• With CMS 530:



• With CMS 822:

i



The raising cam for split-stitch (3) can also be used for normal transfer patterns. In case of particularly delicate yarns, however, the raising cam for transfer (2) should be used so that the yarn does not tear when transferring the stitches.



29.2 Load and Set-up the Pattern in the Machine

Procedure:

- Mounting Split Cams
- Load pattern in machine
- Set up the pattern:
 - Threading up the Yarn Carriers
 - Position the yarn carriers at the clamping point.
- Starting Machine

Make the following changes:

- Stitch length (**NP**)
- Fabric take-down values (WM, W+, WMK, ...)
- Adjust cycle counter (RS2)
- Adjust extension cycle (**RS3**)
- Adjust cycle counter (**RS4**)



29.3 Split Pattern with Extension Cycles

Knitting sequence for split:



- 1 Needle raising: needle in transfer position
- 2 Yarn insertion: Needle take-down
- **3** rear split-stitch, new front stitch



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Knitting specifications f	or split	
Split from the front to the rear	0000000000 AAAAA AAAAAAAA	S:\$^S e%A; ↑ ↑ ↑ Split to the rear front stitch
Split from the rear to the front	<u>@@@@@@@@@@@</u> YYYYYkYYYYY	S:\$VS k%Y; ↑ ↑ ↑ Split to the front back stitch
Split from the front to the rear and from the rear to the front	<u>2024 202</u> Y Y Y B A A A A Y Y K Y	Split to the front back stitch ↓ ↓ S:\$XS e%A-k%Y; ↑ ↑ Split to the rear front stitch

Sintral with instructions for split:

<<	S:<1-><+>\$XSe%A(5)-%Y(6)/<1->U^ST;	Y:=D;		S2 S3	
>>	S:<1->UVS+;		VR1	S1	WMF2
<<	S:<1->UVS+;		VL1	S3	
>>	S:<1->UXST-+/<1-> <a>A(5)-Y(6);	Y:=E;	V0	S1 S2	WMF1



Stitch line and Jacquard:



Settings of the cycle counters for length control:





Sintral: Cycle and counter for length control

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```
IF RS2<>0 F:RAPPORT-8; C Muster / Pattern
IF RS3=>1 IF RS3<=4 F:SCHALTER-9; C Verlaengerung / Length Control
IF RS3=>2 IF RS3<=4 F:SCHALTER-10; C Verlaengerung / Length Control
IF RS3=>3 IF RS3<=4 F:SCHALTER-11; C Verlaengerung / Length Control
IF RS3=4 F:SCHALTER-12; C Verlaengerung / Length Control</pre>
```

Sintral functions: Pattern cycle

FBEG:RAPPORT-8;					
RBEG*RS2					
JA1=1376 #L=100 #LM=0 #RM=0 #R=299					
Y-2B:HL1 HR1 F1+^0; Y-6A:F1A^0;					
<< S:<1-><+>A(5)-Y(6)/<1-> <a>\$XSe&A-&Y/<1->U^ST;	Y:=D/=	E;V0	S1 S	2 S3	WMF1
REP*12					
>> S:<1->UVS+;		VR1	S1		WMF2
<< S:<1->UVS+;		VL1		s3	
>> S:<1->UXST-+/<1-><+>A(5)-Y(6);	Y:=D;	V0	S1 S	2	WMF1
<< S:<1-><+>\$XSe%A(5)-%Y(6)/<1->U^ST;	Y:=D;		S	2 S3	
>> S:<1->UVS+;		VR1	S1		WMF2
<< S:<1->UVS+;		VL1		s3	
>> S:<1->UXST-+/<1-> <a>A(5)-Y(6);	Y:=E;	V0	S1 S	2	WMF1
<< S:<1-> <a>\$XSe%A(5)-%Y(6)/<1->U^ST;	Y:=E;		S	2 S3	
REPEND					
REND					

Sintral functions: Extension

FBEG:SCHALTER-9;						
JA1=1216 #L=100 #LM=0 #RM=0 #R=299						
Y-2B:HL1 HR1 F1+^0; Y-6A:F1A^0;						
<< S:<1-> <a>A(5)-Y(6)/<1-><+>\$XSe%A-%Y/<1->U^ST;	Y := E / = D;	V0	S1	s2	s3	WMF1
REP*2						
>> S:<1->UVS+;		VR1	S1			WMF2
<< S:<1->UVS+;		VL1			s3	
>> S:<1->UXST-+/<1-> <a>A(5)-Y(6);	Y:=E;	V0	S1	s2		WMF1
<< S:<1-> <a>\$XSe%A(5)-%Y(6)/<1->U^ST;	Y:=E;			s2	s3	
REPEND						
>> S:<1->UVS+;		VR1	S1			WMF2
<< S:<1->UVS+;		VL1			s3	
>> S:<1->UXST-+/<1-> <a>A-Y;	Y:=E;	V0	S1	s2		WMF1
<<		VU	S0			W0
>> S:<1-><+>\$XSe%A-%Y/<1->U^ST;	Y :=D ;			s2	s3	WMF1
<< S:<1->UVS+;		VR1	S1			WMF2
>> S:<1->UVS+;		VL1			s3	
FEND						



30 Pattern 9: Plating

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Pattern name	Plating
Start	1x1 with Doubling
Operating mode of the machine • with comb function • With clamping / cutting	
knitting technique	Structure
Pattern description	 Start plated with Elastan (Plating elastic yarn) Basic pattern plated with color (Color plating)



30.1 Different Ways of Plating

When plating, one stitch is built of two different yarns following each other, inserted by one system into one needle. Right and left stitches differ due to the basic color or plating color lying on the top. This way the fabric gets a different look at the front and at the rear.

Two variants are differentiated:

- Color Plating
- Elastane or Spandex Plating (elastic yarn)



30.1.1 Machine Type and Operating System

Double Eyelet-Plating Yarn Carrier	Using machine type	Special feature
	ST 211 to OKC	Threading up for color plating: Thread the plating yarn through the central eyelet and the basic yarn through the oblong hole.

I. Machine type-depending options of plating.

Two special yarn carrier carriages	Using machine type	Special feature
23 mm	ST 711, ST 811, ST 168, ST 268, ST 468, OKC	Threading up for color plating: Thread the plating yarn in the yarn carrier with the shortened engaging width and the basic yarn in the yarn carrier with the enlarged engaging width.

One normal and one special yarn carrier carriage	Using machine type	Special feature
a = 46 mm	ST 711, ST 811, ST 168, ST 268, ST 468, OKC	Threading up for color plating: Thread the plating yarn in the normal yarn carrier with the shorter engaging width and the basic yarn in the yarn carrier with the larger engaging width.



Adjustable yarn carrier carriage	Using machine type	Special feature
	окс	Threading up for color plating: Thread the plating yarn in the yarn carrier with the shorter engaging width and the basic yarn in the yarn carrier with the larger engaging width.

Normal yarn carrier type 2	Yarn carrier engaging widths	Special features and usage
a	43 mm	CMS 933, CMS 822, CMS 530, CMS 520 • E10 E12 E14 E16 E18 E6.2 E7.2 E8.2 E9.2
	46 mm	CMS 933, CMS 822, CMS 530, CMS 520 • E5 E7 E8 E2,5.2 E3,5.2 E5.2
		CMS 740, CMS 730 T, CMS 530 T • all gauges
	29 mm	Standard yarn carrier ("normal" knitting)
	23 mm	 i: only usable under certain conditions. Depending on the machine gauge (≥ E10) and the machine speed, the needle latches can be damaged. Remedy: Increase the engaging width.

Double Bow Plating Yarn Carrier	Using machine type	Special feature
	OKC, component type 2	 Threading up for color plating: Thread the plating yarn in the fix yarn carrier bow and the basic yarn in the moving bow. 1: Only possible with tandem machines with: 8 clamping and cutting positions 16/8 clamping and cutting positions without clamping and cutting positions

II. Plating with machines before operating system V1.5.

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i	With an Operating system before V1.5 the command Ua / b cannot be used .
	The command Ua/b can only be used starting with operating system V1.5 .

Using a thread clamping and cutting device and an operating system older than V1.5, the parking position of the yarn carrier has to be corrected as the engaging width differs from the standard dimension.

- The direct command KPL is valid for the left thread clamping and cutting device
- The direct command KPR is valid for the right thread clamping and cutting device



Call up the input window for direct commands and enter the correction on the machine.

	Explanation	Value range
KPLn=m	Position at the clamp n (1-8) left	Min. value: -16
KPRn=m	Position at the clamp n (1-8) right	Max. value: 16 Step width: 0.5 = 1/32 inches = 0.8 mm

These correction values are retained until the operating system is read in again or the values are reset to "0" manually.



III. Plating and the use of Intarsia yarn carriers

Plating with Intarsia yarn carriers is only possible in combination of normal yarn carrier type 2.



30.1.2 Engaging Width and Rail Allocation

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I. Different engaging width of the yarn carrier carriages



The different engaging widths of the yarn carrier carriages are defined by the Ua/b value in the MC program. This way the correct parking position of the machine can be calculated.
 If a yarn carrier is used with other engaging widths, it is necessary to take account of this in the MC program.

II. Yarn carrier rail allocation:

For plating are mainly used the yarn carriers of the rails 4 + 5 and 3 + 6. An optimum yarn insertion is achieved with the central yarn carrier rails.



30.2 Load and Set-up the Pattern in the Machine

Procedure:

- Load pattern in machine
- Threading up the Yarn Carriers
- Starting Machine

I. Threading up plating yarn carriers depending on technique and type:

Technique of Plating	Used plating yarn carrier type	Threading-up the plating yarn	Thread-up the basic yarn
Color plating	Double Eyelet	Central Eyelet	Oblong Hole
	Special yarn carrier carriages	Yarn carrier with short engaging width	Yarn carrier with large engaging width
	Double bow	Fix Central Bow	Moving Bow
Elastane plating	Double Eyelet	Oblong Hole	Central Eyelet
	Special yarn carrier carriages	Yarn carrier with large engaging width	Yarn carrier with short engaging width
	Double bow	Moving Bow	Fix Central Bow
	1: The elastic yarn is the invisible (at the start inner) yarn of single jersey stitches.		

Threading up for elastane plating: Thread the basic yarn through the central eyelet and the elastane yarn through the oblong hole or through the following yarn carrier.	Example:	
Thread the basic yarn through the central eyelet and the elastane yarn through the oblong hole or through the following yarn carrier.	Ĩ.	Threading up for elastane plating:
		Thread the basic yarn through the central eyelet and the elastane yarn through the oblong hole or through the following yarn carrier.



II. Carry out possible changes:

- Stitch length (**NP**)
- Fabric take-down values (WM, W+, WMK, ...)

30.3 Sintral Commands for Plating Yarn Carriers

Sintral commands for the different yarn carriers:

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For different yarn carrier types the corresponding designations are used in the MC program:

Command	Explanation
Y-5A:PA;	Double Bow Plating Yarn Carrier
Y-5A:P;	Double eyelet yarn carrier
Y-5A:Un-m	Yarn carrier with variable engaging width (n = engaging value left, m = engaging value right

Sintral definition for double bow yarn carrier:

For positioning correctly the double bow yarn carrier the following command is necessary:

85 JA1=2222(1100-1100) 110 Y-4A:PA; Y-5A:PA; 111 #99=0

Sintral definition for double eyelet yarn carrier:

For positioning correctly the double eyelet yarn carrier the following command is necessary:

85 JA1=2222(1100-1100) 110 Y-4A:P; Y-5A:P; 111 #99=0

Definition for different engaging widths in the Setup2 Editor:

For positioning correctly the yarn carriers with different engaging widths the following commands in Setup are necessary.


YD / YI	ог Ус,	YCI	Y:Oa-b	Y:Ua-b / Y:Ncc	
Name	Ua	Ub	Ncc	Comment	Take-down
Y-4A	12.0	12.0	0		.
Y-5A	23.0	23.0	0		¥arn carrier
					<u>្ត្រ</u> Stitch length
					Speed
					#D) Cycle counter
					Yarn length
					راللہ Racking
					Miscellaneous

Sintral for two yarn carriers with different engaging width:

Double specification for yarn carriers in Sintral:

<<	S:<1-> <abg>H(2)-H(2)/<1->UVS+/<1->UVS+;</abg>	Y :=D=E ;		S1 S2	2 S3
>>	S:<1-> <abg>A(7)-0;</abg>	Y:=D=E;	VU	S1	
<<	S:<1-> <abg>A(7)-0;</abg>	Y :=D=E ;	VU		S3
>>	S:<1-> <abg>A(7)-0;</abg>	Y:=D=E;	VU	S1	
<<	S:<1-> <abg>A(7)-0;</abg>	Y:=D=E;	VU		S3
>>	S:<1-> <abg>A(7)-0;</abg>	Y :=D=E ;	VU	S1	

30.4 Settings during Production

Influences on the quality of plating:

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- Adjustment of the plating yarn carriers (two yarn carriers):
 - The two yarn carriers must be positioned exactly in the centre of the needle crossing.
 - Adjust the eyelet of the following thread about 0.5 mm higher.
 - The basic yarn lying above has to cover the plating yarn lying underneath of it optimally.
 - Recommendable: Leave one yarn carrier rail unutilized to prevent the yarn carriers from displacing each other.



II. Influences on the quality of plating with double jersey:

- Setting the plating yarn carrier (double bow):
- Adjust the eyelet of the following thread about 3 to 3.5 mm higher.
- Yarn tension:
 Adjust a higher yarn tension for the following basic yarn as for the leading plating yarn.

i: Double the yarn tension nearly.

- Fabric take-down: Work with a reduced fabric take-down.
 Halve the fabric take-down value nearly.
- NP value:

Produce a test fabric with different NP-values. **1**: Miss-knit to tight.



30.5 Plating Kit

For optimal plating, especially for elastane plating (elastic plating) use the plating kit.



It contains the following components:

- Horizontally located bobbin holders
- Double Bow Plating Yarn Carrier

30.5.1 Assemble the Plating Kit

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Mount the bobbin holder on the left and right support of the yarn control unit.



Insert two additional eyelets in each safety door.





30.5.2 Threading up the Plating Kit

When threading up watch that the yarn is threaded vertically downwards in the additional eyelets.



Thread the thread into the yarn carrier 4/5 or 3/6.



30.5.3 Double Bow Plating Yarn Carrier

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With the double bow yarn carrier it is possible to carry out color and quality platings (elastane).



Possible uses of the double bow yarn carrier

Use for gauges E 5 to E 18 only:				
OKC (component type 002) CMS 822 (component type 003) CMS 420 E (type 579, component type 000)				
Required operating system	V_OKC_001.006.000_STOLL (or higher)			

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With older OKC machines (component type 000 and 001) the yarn carrier can also be used:

Machines withou	t thread clamping	CMS 933	CMS 711	CMS 503
and cutting devic	e	CMS 922		CMS 502
Machines with th	read clamping and		CMS 730 T	CMS 530 T
cutting device *			CMS 730 S	
Required operating system	V_OKC_001.005.00	0_STOLL (0	r higher)	

Clamping and cutting of the double bow yarn carrier

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.

Machine	Clamping / cutting
OKC (component type 002)	Setting: 2x8
CMS 822 (component type 003) CMS 420 E (type 579, component type 000)	Setting: 2x16/8 Carry out the settings in the "Machine Configuration 2" window. (BootOkc> Restart and Configuration> Machine configuration 2)



30.5.4 Adjust the Double Bow Plating Yarn Carrier

1	Central bow (fixed)	Plating Yarn
2	Follower bow (movable, following the central bow)	Basic Yarn

Central bow (1) - adjust height:

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Follower bow (2) - adjust height:

Follower bow (2) - carry out the lateral adjustment:

- 1) Loosen the screw (3) (turn by 90 degrees).
- 2) Adjust the central bow the same way as the normal yarn carrier.
- 3) Retighten the screw.
- 1) Loosen both screws (4) (turn by 90 degrees).
- Adjust the height turning the screw (5).
 Standard setting: 2 mm higher than the central bow.
- 3) Retighten both screws (4).
- 4) Turn the screw (5) enough to prevent it from touching the upper or lower edge. If the screw is making contact, then the yarn carrier does not move smoothly and will be damaged.
- 1) A screw is located in the boring (6). Adjust it with an Allen key (2 mm) (Setting range: 0 2 mm).
- 2) The distance from the bow (2) to the bow (1) can be set individually on each side. A scale simplifies the setting of the distance.





30.5.5 Threading up the Double Bow Plating Yarn Carrier

The follower and the central bow of the double bow yarn carrier can be threaded up from the left and from the right or from the same side.

Threading options:



30.6 Adjustable Plating Yarn Carrier Carriage



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For plating with normal yarn carriers are required two yarn carriers that differs by the engaging width (1) at the yarn carrier carriage. On the plating yarn carrier carriage the engaging width is individually adjustable (23-46 mm).

Combination possibilities of the yarn carriers:

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

Possible uses:

- With all OKC machines of the E5 E18 gauge
- Only starting with operating system V_OKC_001.005.000_STOLL



30.6.1 Setting



Adjust engaging width:

- 1) Loosen both screws (1).
- Push insert (2) into the desired position.
 A scale simplifies the adjustment.
- 3) Retighten 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**)side.

Both values may be equal (symmetrical setting) or may differ.

30.7 Engaging Values and Clamping Depth

Different engaging width of the yarn carrier carriages:

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1 The different engaging widths of the yarn carrier carriages are defined by the **Ua/b** value . This way the correct parking position of the machine can be calculated.

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30 Pattern 9: Plating

\$	Ya	arn (car	rier									Ţ	STO	
Y	SEN	Y:=n	0/1	YG	YP	Ka	КЬ	K <i>a</i>	K <i>b</i>	Туре	I<>	Ba	Bb	Ua	Ub
1A	1	Α	1	-37	-37	0.0	0.0			Ν		0	0	14.5	14.5
2A	1	В	1	-45	-45	0.0	0.0	0.0	0.0	Ι		-4	0		
2B	1	С	1	444	444	0.0	0.0	0.0	0.0	Ι		2	0		
ЗA	1	D	1	452	452	0.0	0.0	0.0	0.0	Ι		1	1		
4A	1	Е	1	460	460	0.0	0.0	0.0	0.0	Ι		2	1		
5A	1	F	1	-69	-69	0.0	0.0	0.0	0.0	Ι		1	0		
6A	1	G	1	-77	-77	0.0	0.0	0.0	0.0	Ι		0	0		
6B	1	н	1	476	476	0.0	0.0	0.0	0.0	Ι		0	0		
7A	1	Ι	1	-85	-85	0.0	0.0	0.0	0.0	Ι		з	0		
<							ш							J	>
	7	1A					Cu	rrent YC	Ι:			(Curre	nt YDI:	

Change engaging width:

- ١
- 1) Call up in the main menu "Setup".
- 2) Tap the "Yarn carrier" key.
- 3) Open the Y:Ua-b / Y:Ncc tab

YD / YD	DI YO	C / YCI	Y:Oa-b	Y:Ua-b / Y:Ncc	ø
Name	Ua	Ub	Ncc	Comment	Take-down
Y-4A	12.0	12.0	0		1
Y-5A	23.0	23.0	0		∛ Yarn carrier
					Stitch length Stitch length Cyde counter Yarn length Racking

4) Enter new values into the **Ua** / **Ub** fields.

Gauge	leading	following
E 5 E2,5.2 E 3,5.2	23 mm Ua: 11,5 Ub: 11,5	41 mm Ua: 20,5 Ub: 20,5
E 7-18 E 7.2- 9.2	29 mm Ua: 14,5 Ub: 14,5	46 mm Ua: 20,5 Ub: 20,5

Recommended engaging width according to the machine gauge:

II. Clamping and cutting with CMS 530 Component type 000 and 001:



If the engaging width is set to **46 mm**, the catch hook (3) can strike against the yarn carrier and damage the catch hook or the yarn carrier.

Remedy:

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- Reduce the engaging value.
- Work without "Clamping and cutting".

III. Loop sinking depth of the clamping and cutting device

- In case of very fine or smooth yarn it can be beneficial to change the clamping depth of the clamping needle.
- By the **Ncc** command the clamping depth can be influenced.

	Explanation	Value range
Ncc=n	Control of the loop sinking depth n of the clamping and cutting needles. Standard setting: n=0 e.g.: sink the cutting needles by 5 steps deeper: NCC=5	Min. value: -10 Max. value: 10 Step width: 1

31 File manager: Manage pattern

Manage files and folders with the "File manager"

I. Opening the File Manager:

- 1) Call up the window in the "Main menu".
- 2) Tap the key.
- 3) Open the window with the key.
- ⇒ File Manager window appears.



Left side of the table	Right side of the table
Execute different actions on folders Example:create a new folder	Files of the selected folder are displayed. i: The list appears in alphabetical order (default)

You can access the following data carriers:

- USB Memory Stick
- Hard disk drive of the the knitting machine
- Online
- Network drive

II. Functions of the File Manager

Key	Label	Function
ĨĊ,	"Update"	Refresh the contents of all the folders
	"Create folder"	Create folder in the selected directory i : You have to select a drive or folder
	"Copy folder"	Copy the selected folder including contents to a target folder
×	"Delete folder"	Delete the selected folder including contents
E CHO	"Rename folder"	Change the name of the selected folder
¢ ₃ Ш	"Update"	Update the contents of the folder
X	"Deleting file"	Delete selected file
x	"Delete all"	Delete all files in the selected folder
	"Display file"	Display selected file
ксно	"Rename file"	Change name of selected file
	"Set Write Protection"	Set write protection of the selected file
	"Deactivate Write Protection"	Deactivate write protection of the selected file
\ ?	"Direct help"	Call up direct help for the key pressed next.

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III. Specify the sorting order

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- 1) Click the header of the list (1).
- ⇒ The "Sort by" window appears.
- 2) Select the type of sorting and confirm it.

	Sorting a	iccording to	
🕝 File name			
😕 Туре			
🕝 Machine type			
G Changed on			
오 Descending			
G Ascending			
		11	
	~		

IV. Create new folder:

- Call up the input window with the key.
- ⇒ The window "Create new folder" appears

Create new folder						
Input new name						
	← ✓←					

- 2) Enter the name of the new folder with the virtual keyboard.
- 3) Confirm input with
- ⇒ The new folder will be created with the desired name.

You can cancel the entry with





32 Copying Files

32 Copying Files

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I. Copy files from the hard disk to the USB memory stick:

- 1) Insert the USB memory stick into the USB socket.
- 2) Call up the "Load & Save" window in the Main Menu with



- 3) Tap the key.
- 4) Open the copying catalog with the button.
- ⇒ The "Copying catalog" window is displayed.

Copying catalog		STOLL THE RIGHT WAY TO KNIT
Source		Destination
CMS530.david-RT.sin		CMS530.david-RT.sin
CMS530.david-bp.sin		CMS530.david-RT.set
CMS530.david-ARM.sin		david-RT.jac
CMS530.david-RT.set	X	
CMS530.david-bp.set		
CMS530.david-ARM.set	×	
DAVIDseq		
david-ARM.ord	RA	
DAVID.mon		
david-RT.jac		
david-bp.jac	5	
david-ARM.jac	X	
	2	
Total: 12 2005-11-16 09:18:21	J	Total: 3 2005-11-16 09:18:21
d:\muster		f:

STOLL

32 Copying Files

Key	Label	Function
	Copy file	Copy file selected in Source to Target
	Copy all	Copy all files from Source to Target
×	Deleting file	"Delete selected file"
X	Delete all	Delete all files of the selected pattern folder
	Set Write Protection	Set write protection of the selected file
	Deactivate Write Protection	Deactivate write protection of the selected file
K	Select current pattern folder	Open the dialog box for definition of the current pattern folder
?	Direct help	Call up "Direct Help" for the key pressed next
	Exchange contents	Exchange contents of Source and Target; Source is always on the left, Target on the right
¢₅∭	Update	Refresh the contents of the pattern folder

- 5) Specify the path for the **Source** and **Target** list.
 - The path will be displayed below the respective list.
- 6) Select the desired file in the left list (Source).
- 7) Tap the "Copy file" key.
- \Rightarrow The file is copied and displayed in the list at the right (target).
- 8) Repeat the last two steps to copy other files.

32 Copying Files



II. Individually set the sequencing of the lists:

1) Click on the header (1) of the list to be changed.

Copying catalog			STOLL THE RIGHT WAY TO KNIT
Source		Destination	
CMS530.david-RT.sin	<u></u>	CMS530.david-RT.sin	
CMS530.david-bp.sin		CMS530.david-RT.set	
CMS530.david-ARM.sin		david-RT.jac	
CMS530.david-RT.set	X		\smile
CMS530.david-bp.set			
CMS530.david-ARM.set	×		
DAVIDseq			
david-ARM.ord			
DAVID.mon			
david-RT.jac			
david-bp.jac	8		
david-ARM.jac	A		
	2		
Total: 12 2005-11-16 09:18:21		Total: 3	2005-11-16 09:18:21
d:\muster		f:	

2) Select and confirm the sort sequence in the "Sort by" window.

	Sorting ac	cording to	
🕝 File name			
🕑 Туре			
🕝 Machine type			
G Changed on			
Descending			
G Ascending			
		11	

32 Copying Files



33 Pattern10: Sequence

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Pattern name	Sequence
Start	2x1
Operating mode of the machine	 with comb function With clamping / cutting
Pattern description	 Fully Fashion RL as sequence Front Back Sleeve (2x)



33.1 Workflow and Usage of Sequences

Working procedure:

- Subsequent production of a certain number of knitting programs.
- The knitting programs are automatically loaded into the main memory of the machine.



Usage:

- Fully fashion: The knitting of parts in the sequence of front, back and sleeve.
- Knitting sets of sizes
 The same pattern in different sizes.

Requirements:

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All the knitting programs used in the sequence must have the following identical settings:

- Same type of the machine
- Same SEN areas
- Home positions of the yarn carriers:
 - With TC machines:
 Same yarn carrier home position in the knitting programs
 - With OKC machines: Different yarn carrier home positions in the knitting programs are possible with EAY SEQ.

i:

_

1. Each program must receive a yarn carrier home position

2. All yarn carriers must be brought to their home position before **END**.

Recommended for knitting programs with comb use.



33.2 Load and Set-up the Pattern in the Machine

Procedure:

- Save all the knitting programs for the sequence e.g. on the hard disc.
- Putting together a sequence
- Load the first sequence element into the pattern memory.
- Set up the pattern:
 - Threading up the Yarn Carriers
 - Position the Yarn Carriers
 - Control of the needle bed: no fabric hanging in the needles
 - and so on
- Starting Machine

Make the following changes:

- Stitch length (NP)
- Fabric take-down values (WM, W+, WMK etc.)
- Cycle counter (RS)
- Staggering the yarn carriers at the fabric selvedge (YD)

33.3 Generate Sequence

Condition:

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All the knitting programs for the sequence are to be located in the same storage medium:

- On the hard disc of the machine
- USB stick
- Knit-Memory-Card (old MC)



Putting together a sequence:

 $\,\triangleright\,\,$ All the knitting programs are stored on the hard disc.

1) Call up the "Sequence menu" with the

key of the Main menu.

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Sequence me	nu
-------------	----

Sequence name

	r 🛱

No. Sequence element name	Sin	Jac	Set	Factor	Fbcs+	Mark	On	^
1	0	0	0	1	0	1	0	
2	0	0	0	1	0	1	0	
3	0	0	0	1	0	1	0	
4	0	0	0	1	0	1	0	
5	0	0	0	1	0	1	0	
6	0	0	0	1	0	1	0	
7	0	0	0	1	0	1	0	
8	0	0	0	1	0	1	0	
9	0	0	0	1	0	1	0	*
1				1				

Key	Function
EALL	
	When loading a sequence element the previous pattern (in the pattern memory) is deleted.
EAY	
	When starting a sequence the previous yarn carrier home position is deleted.
EAY SEQ	
	When loading the next sequence element the previous yarn carrier position is deleted.
	Watch the necessary specifications in Sintral!
YCLx	
	The YLC correction values are deleted.
	i: Only active with yarn length control





⇒ A list with the "additional function keys" is displayed.

Fequence menu						#01	
Sequence name				·			
	Cin	100	Cat	Factor	- Eb er	mm	
1 1	0		Set 0	Factor			
2	0	0	0	1	0		
3	0 0	n	n	1	0		
4	õ	õ	õ	1	Ő		
5	õ	Ō	0	1	Ō		
6	0	0	0	1	o		
7	0	0	0	1	0		
8	0	0	0	1	0		
9	0	0	0	1	o		
1				1	<u> </u>		



⇒ The "Sequence definition" window (Putting together a sequence) is opened.



🗄 🔁 Sequence definiti	STOLL THE RIGHT WAY TO KNIT				
Sequence name• Path: d:\muster Setup1 Setup2					
Sequence element name	Sin	Jac	Set	\rightarrow	No. Sequence element name
FF-INTARSIA-RR	1	1	1		1 FF-SEQUENZ-VT
FF-INTARSIA-RR_NARESH	1	1	1	→X	2 FF-SEQUENZ-RT
FF-SEQUENZ-ARM	1	1	1	8.9	3 FF-SEQUENZ-ARM
FF-SEQUENZ-RT	1	1	1		
FF-SEQUENZ-VT	1	1	1		
SETUP2	1	1	1	⁶ y∭ ×	

Кеу	Function						
	Setup1	Adjustment for pattern with Setup1					
	Setup2	Adjustment for pattern with Setup2					
	Add a selected element at the end						
	Replace the selected element						
	Insert the selected element						
X	Delete selected element						
€g	Refresh the contents of the pattern folder						

4) In the table at the left **Sequence element name** select the first sequence element e.g. **FF-Sequenz-VT**.



- ⇒ The selected element is inserted in the table at the right.
- 6) Select and insert the next sequence element, e.g. **FF-Sequenz-RT**.

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key.

33 Pattern10: Sequence

7) Select and insert as the last element e.g. FF-Sequenz-Arm.

i

The order in the table at the right corresponds to the order of processing.

You can add further elements to the list if necessary

8) Return to the "Sequence menu" by the

	Sequence menu						S THE		. L
Sequ	ience name							≀ ∰	
				No. d	of fabric p	ieces	0		
				Use \	/LC5 data				
No.	Sequence element name	Sin	Jac	Set	Factor	Fbcs+	Mark	On	^
1	FF-SEQUENZ-VT	1	1	1	1	0	1	1	
2	FF-SEQUENZ-RT	1	1	1	1	0	1	1	
3	FF-SEQUENZ-ARM	1	1	1	2	0	1	1	
4		0	0	0	1	0	1	0	
5		0	0	0	1	0	1	0	
6		0	0	0	1	0	1	0	
7		0	0	0	1	0	1	0	
8		0	0	0	1	0	1	0	
9		0	0	0	1	0	1	0	*
1	FF-SEQUENZ-VT				1				

Label	Meaning
No.	Consecutive number of the sequence elements
Sequence element name	Name of the sequence element
Sin / Jac / Set (Setx)	1 = the program element is loaded0 = the program element is not loaded
Factor	Repetition of the sequence element
Pces+	Repeat knitting of the sequence element
Mark	Delete the previous sequence element starting with line n . n = 1 : Deleting starting with program line 1
On	1 = Sequence element activated0 = Sequence element deactivated



- 9) Select the sequence element and carry out the adjustment:
- Under Sin / Jac / Set set the values 1 or 0.
- Under **Factor** establish the repetition of the sequence element.
- Under **On** activate or deactivate the sequence element.

10) Switch over to more function keys with

	Sequence menu						#01	
Sequ	ience name							
				No. d	of fabric pi	eces		
				Use \	/LC5 data			
No.	Sequence element name	Sin	Jac	Set	Factor	Fbc		
1	FF-SEQUENZ-VT	1	1	1	1	0	1	
2	FF-SEQUENZ-RT	1	1	1	1	0		
3	FF-SEQUENZ-ARM	1	1	1	1	0		
4		0	0	0	1	0		
5		0	0	0	1	0		
6		0	0	0	1	0		
7		0	0	0	1	0		
8		0	0	0	1	0	M	
9		0	0	0	1	0		
1	FF-SEQUENZ-VT	1			1		4	1

Key	Function
	 Saving a sequence (sequence definition) under a name (does not correspond to the sequence name) File: Loading a sequence
	Open the sequence definition window: Put together the programs to a sequence
	Assembling a sequence list from several saved sequences (sequence definitions) i: Not possible with Setup2
	Call up Running time control
	 Deleting the displayed list in the sequence menu window in the sequence list window
	Starting the sequence 1 : Here, a check is carried out to ascertain whether all sequence elements exist and the first sequence element is loaded.
	Deactivate all sequence elements above the activated element. Example: When repeating knitting it is possible to deactivate a larger number of sequence elements at once.
	Switch on sequence elements

11) Start the sequence by pressing the **11** key.

ke



More additional function keys in the sequence menu:

	1) Switch	over to	more fu	unction	keys with		_	
	Sequence menu						# 0 \	
Curr	ent sequence element			Next	element			
FF-S	EQUENZ-VT			Repe	ating fact	or		┎╳╴
SIN	JAC SETA			No. c	of fabric pi	eces		
				Use Y	'LC5 data		Innin	, f
No.	Sequence element name	Sin	Jac	Set	Factor	Fbc		
1	FF-SEQUENZ-VT	1	1	1	1	0		∞≦≦
2	FF-SEQUENZ-RT	1	1	1	1	0		ĨĨ ₩
3	FF-SEQUENZ-ARM	1	1	1	1	0		Μ.
4		0	0	0	1	0		📑 🛨
5		0	0	0	1	0		V .
6		0	0	0	1	0		
7		0	0	0	1	0		
8		0	0	0	1	0-	L	
9		0	0	0	1	0	1	0 🔽
1	FF-SEQUENZ-VT	1	1	1	1			1
>>	ST= 1/1			S	EQ 1			WO
Τ=	1 MSEC=	0.3	0	VP=	0			
w]

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33 Pattern10: Sequence

Key	Function
	Ending the sequence knitting : Once knitting of sequence has been completed, this key must be pressed before reading in a new pattern.
↓ [∞] -	Restarts a sequence 1 : The sequence is terminated as quickly as possible, the active sequence element. Then the first sequence element will be restarted.
	"Clamp sequence - on" key. 1 : The currently active sequence element with its repeat factor continues to be knitted until the piece counter is on "0" or the button "Clamp sequence - off" is actuated.
	Restart of the current sequence element 1 : The sequence element currently being knitted is terminated as quickly as possible. The sequence element is restarted.
+	Making up for missing parts
	Export whole sequence i : After selecting memory target, all loaded sequence elements are saved, carried out modifications included.
T III	Jacquard start in sequence menu 1 : The default value of the jacquard start is adjustable in the sequence menu (value in column "Mark"). Default setting: 1100

2) If necessary, save the sequence definition (sequence) under a



- ⇒ The sequence is saved as .seq file with Setup1 and as .seqx with Setup2.
 - A sequence file name is not the same as a sequence name! **No sequence name** was used in this example.



33.3.1 Working with Sequence Names

I. Using sequence names:



A sequence name is not the same as a sequence file name!

Example:

Program name	Sequence name	Sequence element name
FF-Sequenz-VT	FF-Sequenz	-VT
FF-Sequenz-RT		-RT
FF-Sequenz-Arm		-Arm

1) Open the sequence menu with





- 3) Tap the **Sequence** definition" key.
- 4) Select sequence element name.
- 5) Apply with the key.
- ⇒ The selected element is inserted in the table at the right.


🖡 🔁 Sequence defini	tion STOLL
Sequence name	FF-Sequenz D
Path: d:\muster	
Setup1 Setup2	
Sequence element name	Sin Jac Set . No. Sequence element name
-RT -VT	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
6)	Continue with the next sequence element.
7)	In the "Sequence definition" menu under sequence name enter e.g. FF-Sequenz and confirm it.
⇒	All program names are displayed shortened by this part of the name.
8)	Return to the "Sequence menu" by the key.
П. :	Save the sequence definition under sequence file name (seq / seqx):
\triangleright	The sequence menu is open.
1)	Call up further functions with the key.
2)	Call up the "Catalog Sequence Data" menu with the key.

3) Save the sequence definition (sequence) with the key.

- ⇒ The entry window appears with the sequence name specified.
- 4) Enter a sequence file name and confirm.

i

The sequence file name does not need to be the same as the sequence name.



33.4 Save and Load the Sequence

I. Save the sequence definition under sequence file name (seq / seqx):

- \triangleright The sequence menu is open.
- 1) Call up further functions with the **_____** key.
- 2) Call up the "Catalog Sequence Data" menu with the
- 3) Save the sequence definition (sequence) with the key
- \Rightarrow The entry window appears.
- 4) Enter a sequence file name and confirm.

II. Load a sequence (seq / seqx):

- 1) Open "Sequence menu" dialog box:
- 2) Call up the "Catalog Sequence Data" menu with the
 - key.
- Select the sequence file name (sequence) and load it with the key.
- ⇒ The sequence elements named in the sequence are loaded.

33.5 Creating a Sequence List

Function of sequence lists:

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The sequence lists contain several sequence file names (sequences), which are to be produced in sequence.

Recommendation: Sequence lists are suitable for the production of different sizes.

I. Putting together a sequence list:

▷ There are several sequence definitions (sequences) saved under one sequence file name.

(e.g. hard disc)

i





Call up further functions in the "Sequence menu" with the key.



Sequence list	S		L D KNIT
Sequence list file name	EALL EA	AY SÊĽ	
No. Sequence name	ST1	ST2	^
1	1	0	
2	1	0	=
3	1	0	
4	1	0	
5	1	0	
6	1	0	
7	1	0	
8	1	0	
9	1	0	
10	1	0	
11	1	0	*
1			1

2) Call up the "Sequence List" via the



Call up further functions in the Sequence List menu with the key.



- ⇒ The sequence list definition is displayed.
- 5) Select the desired sequence file name and add it to the list with
- 6) Following the same procedure add more sequences to the list.



key return to the "Sequence list" menu.

8) In the list with the sequences under **ST1** enter the desired **piece number**.



- 9) Tap the **equence** list with
- ⇒ The sequence list is initialized and the data of the first sequence list is loaded.
 - An already started sequence list can be stopped via the

II. Save sequence list:

 \triangleright The sequence list menu is open.



⇒ The "additional function keys" are displayed.



2) Call up the "Catalog Data of Sequence List" via the



- 3) Select with the key.
- ⇒ The entry window appears.

key.

CMS – Handling and Knitting Technique

- 33 Pattern10: Sequence
- 4) Enter the sequence list file name and confirm it.
- 5) With the key return to the "Sequence list menu."

III. Load a sequence list:

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- \triangleright The sequence list menu is open.
- Call up further functions with the key in the "Sequence List" menu.
- 2) Call up the "Catalog Data of Sequence List" via the
- 3) Select the desired Sequence list file name.
- 4) Load the sequence list with the key.
- ⇒ The sequence names contained in the sequence list will be loaded.



34 Service

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34.1 Safety Instructions for Lubrication, Cleaning and Maintenance

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



34.2 Cleaning the Knitting Machine

To ensure the operability of the knitting machine and ensure the quality of the fabric, the knitting machine must be cleaned regularly.

Cleaning interval	Cleaning work	
if necessary	Cleaning the touch screen	
6-24 operating hours	Cleaning suction and lint container	
daily	Vacuuming off knitting machine Cleaning needle bed Cleaning the active thread clamp Cleaning the permanent brakes Cleaning the friction feed wheel	
100 operating hours	Cleaning main drive fan	
once a month	Cleaning fan and radiators in right control unit Cleaning filter mat of power supply unit	
2 months	Quick cleaning of the clamping and cutting device	
3 to 6 months	Thoroughly cleaning needle bed	
6 months	Clean the knitting systems Thoroughly cleaning the clamping and cutting device	

I. Clean needle beds:

×0.

- 1) Stop the knitting machine.
- 2) Push up all needles completely.



3) Vacuum off dirt in the area of the needle hook/pelerine spring (1) and in the area of the needle bed (2).

In order to avoid any dust being deposited on the inaccessible points of the machine, we recommend that the dust should be vacuum cleaned and the machine not to be cleaned by compressed air.



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CAUTION

Damage of needles!

The spring-mounted needle latches will be damaged if the needles are blown out with compressed air.

Always vacuum fluff and dust off the needles, never blow them out.

II. Cleaning with cleaning apparatus:

1

The cleaning apparatus is used to clean the needle hooks and the holdingdown jacks.

The cleaning apparatus is machine and gauge dependent. The cleaning apparatus can be adapted to the gauge of the needle bed by replacing the cam.



Cleaning apparatus (left: OKC machine, right: TC machine)

	Function
1	Handles
2	Guide assembly
3	Connection for compressed-air
4	Connection for suction
5	gauge dependent cam

The cleaning apparatus is mounted on the right or left of the front needle bed and then pushed over the needle bed by hand.

If a thread clamping and cutting device is installed on the needle bed, the cleaning apparatus is mounted over the thread clamping and cutting device.



WARNING

Dangerous operation!

Operation requires the observance of security measures 1 Observe the operating instructions of the cleaning apparatus by all means.



III. Clean the main drive fan:



- 1) Set the main switch to "0" and wait until the touch screen is dark and an alarm signal sounds.
- 2) Swing open the cover on the right-hand control unit.
- 3) Clean fan (1).
- 4) Close the cover on the right control unit.

IV. Cleaning the active thread clamp:

Bring the lateral yarn tensioner in still position.
 ⇒ Thereby the active thread clamp is open.



2) Blow the eyelets in the lateral safety door by compressed air.

V. Cleaning the permanent brakes:

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1) Clean both the brake settings of each permanent brake with a cloth.



- 2) The permanent brake can be dismantled and blown out with compressed air if it is very dirty.
- For this purpose, pull the adjusting lever of the permanent brake outwards and simultaneously press the lug of the permanent brake on the inner side of the safety door.
 - \Rightarrow The permanent brake flaps underneath.
- 4) Blow out the permanent brake with the compressed air.

VI. Cleaning the friction feed wheel:

1) Vacuum off the fluff and dust from the friction feed wheel.



2) Remove dirt (e. g. paraffin) from the friction rollers.



34.2.1 Clean the Suction and Control Unit (component type 00)

I. Clean the lint container and the suction turbine:



- 1) Slide on cover over needle bed.
- 2) Push the lock of the lint container (1) toward the rear and pull away the container downward.
- 3) Empty the lint container.



- 4) Clean the filter (2) in the lint container and the filter (3) at the vacuum device.
- 5) Reinstate the lint container.
- 6) Remove left rear panel segment.



7) Clean motor cover.

II. Clean the suction tube:

1) Remove the suction tube (4) from the carriage and blow it out with compressed air.



II. Cleaning at the left and right control unit:





- Switch off machine.
 Set the main switch to "0" and wait until the touch screen is switched off.
- 2) Remove the covers of the left and right control unit.
- Control unit on the left: Vacuum off both filter mats, remove them and blow them out. Reassemble them.
- 4) Control unit on the right: Vacuum off and blow out the fan and radiator.
- 5) Fix the covers of both control units.



34.2.2 Clean the Suction and the Control Unit (starting with component type 01)

I. Clean the lint container and the suction turbine:

- 1) Stop knitting machine when carriage is located on right half of needle bed.
- 2) Slide on cover over needle bed.
- 3) Push locking of lint container inwards and pull away container upwards.



- 4) Empty the lint container.
- 5) Clean filter (1) of lint container.
- 6) Reinstate the lint container.
- 7) Remove left rear panel segment.
- 8) Clean motor cover.



II. Clean the suction tube:

i	 Damage to the suction tube! The suction tube will be damaged at the coupling point suction tube-hose if you lift it by the suction nozzle. 1 Lift the suction tube always in the middle so that the coupling point of suction tube and hose is separated.
	coupling point of suction tube and hose is separated

1) Lift the suction tube in the middle until the fixing clip is pulled out of the carriage.



2) Blow out the suction tube with compressed air.

III. Cleaning at the right control unit:

- Switch off machine. Set the main switch to "0" and wait until the touch screen is switched off.
- 2) Swing open the cover on the right control unit.



- 3) Vacuum-off and blow-out the fan (1) and heat sink (2).
- 4) Close the cover on the right control unit.



34.3 Cleaning the Auxiliary Take-down

With machines with auxiliary take-down it can happen that yarns are winded around the take-down rollers of the auxiliary take-down. For them to be removed the needle beds can be positioned upright.

Preparing the machine:

- Before positioning the needles beds upright, the fabric is to be removed from the needles.
- 1) Stop the carriage assembly into the left reversing position.
- 2) Tap the "Release drive brake" key in the Manual interventions window and slide the carriage assembly to the left up to the stop point.

Positioning the needle bed upright:

1) Remove two screws (2) on each side of the machine.



2) Lift the front needle bed carefully, tilt it to the front and lean it against the machine cover.



Cleaning the auxiliary take-down rollers:

1) Call up the "Take-down" window with key.





- 2) Tap the "Auxiliary take-down" "Op." key.⇒ The take-down rollers (3) are moved apart
- 3) Press the "Auxiliary take-down" "Open" / "Close" key until the threads can be removed.

- or -

- Press the "Auxiliary take-down" "Back" key until the threads can be removed.
- 4) Free the take-down rollers from the threads.
- Close the auxiliary take-down. Tap the "Auxiliary take-down" "Clo." key.
 - **Danger:**Damage of the take-down rollers. Do not use pointed or sharp objects to remove the threads!



Returning the needle beds:

1) Reassemble the needle bed in the reverse order. When doing so, make sure that the front needle bed contacts the pin (1) and the rear needle bed contacts the roller (2).



2) Screw the needle bed again onto each machine side.

34.4 Remove Carriage Part and clean the Knitting System

Remove the carriage part:

• For cleaning

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- With the carriage part blocked
- For disassembling and assembling split cams
- For changing cams
 e.g. wide or narrow coupling of tandem machines

I. Switch off 40 V power supply:

The power supply of the carriage part (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.

- 1) Tap the "Service" key in the Main menu.
- 2) In the service window tap on "Manual interventions service"
- 3) Set the switch for "Switch the 40 Volt power supply" to OFF.
- 4) Answer the message "Switch off" with "Yes".

II. Remove the carriage part:

1) Remove the carriage assembly cover (1).



- 2) Remove the suction tubes from the carriage assembly.
- 3) Loosen the screws on the plugs (3) and pull out the plugs.





4) Unscrew the shoulder screws (2) and screws (4) on the left and right sides of the carriage assembly.



- 5) Swivel left and right swivelling plates (5) inward.
- Tap the "Release drive brake" key in the Manual interventions window.



7) Push the carriage assembly directly over the carriage part in the intended direction.

i	Damage to needles and knitting system!
20 -70 -11	is changed when maying the corriged eccombly the
	is changed when moving the carnage assembly, the
	1 Do not change the pushing direction of the corrigge on
	sembly

- If the carriage assembly is blocked: The drive brake has automatically closed.
 Release the drive brake again and continue to push the drive brake again aga
 - Release the drive brake again and continue to push the carriage assembly.
- 2) Lift the carriage part off the support surface.
 - or -

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▼ Open the side cover and lift out the carriage part to the side.

III. Cleaning the knitting systems and selection systems:

- 1) Clean the selection systems with a clean cloth.
- 2) Clean the cams with a cloth and check them for wear and damage.
- 3) Check for metallic fragments (e.g. parts of broken needles) at the cams or selection systems.
- 4) Remove fragments if necessaryi: Do not use magnetic tools.
- 5) Apply oil to the cams with a brush.

For further information about cleaning the knitting and selection systems refer to the operating instructions.

IV. Put the carriage part on:

1) Mount the carriage part on the left or right outside the needle bed in such a way that it contacts the support surface (1).



- 2) In the service window tap on "Manual interventions service"
- 3) Set the switch for "Switch the 40 Volt power supply" to **ON**.



- Tap the "Release drive brake" key in the Manual interventions window.
- 5) Push the carriage assembly directly over the carriage part.
- 6) Set the switch for "Switch the 40 Volt power supply" to **OFF**.
- 7) Uniformly screw in the shoulder screws (3) until the carriage assembly is raised somewhat.



- 8) Swivel the left and right swiveling plates outward below the carriage assembly.
- 9) Tighten the screws (3) and (4) uniformly.
- 10) Insert the plug (2) and screw-in the safety screws on the plugs.
- 11) Mount the suction tubes on the carriage assembly.
- 12) Mount the carriage assembly cover.

V. Switch on 40 V power supply:

- 1) In the window tap on "Manual interventions service"
- 2) Set the switch for "Switch the 40 Volt power supply" to **ON**.

34.5 Lubricate the Knitting Machine

Maintain parts of the machine:

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You have to clean and lubricate the knitting machine regularly in order to maintain the operability of the knitting machine.



Only the lubricants approved by STOLL may be used. See operating instructions Unsuitable lubricants may damage the machine. Failure to comply will void the warranty.

Lubricating intervals		
6-10 operating hours Note:Select a shorter interval if necessary	Oiling the needle bed without central lubrication.	
10 operating hours	Oiling the jack bed, the thread clamping and cutting device and the yarn carrier rods.	
100 operating hours	 Oiling the carriage guide rail Oiling the needle latch hinges Greasing the pulse generator rails and the carriage guide Greasing the coupling parts and the intermediate sliders Greasing the yarn carrier rods 	
6 months	Greasing the racking device and needle bed supports	

Lubricate with oil:









14



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34 Service





Set the lubrication interval for the needle bed:

For the needle bed a lubricating interval of between 1 and 65.535 courses can be set.

However, this value depends on:

- Machine speed
- Ambient temperature
- Number of knitting systems

Key	Label
₩€	Main menu
	Machine settings
	Additional function keys
0	Sensors
\checkmark	Confirm input

- 1) Call up the "Machine settings" window.
- 2) Call up "Additional function keys".
- 3) Call up the "Sensors" window.

* Sensors		STOLL THE RIGHT WAY TO KNIT
Resistance monitor 9 9	Horn	() 2 •
	Intermittent tone	1
	Light barrier comb	1
Control main take-down (WM+C)		0
Turning control of the take-down system (WMC)		0
Auxiliary take-down control (W+C)		0
Syst. run through until lubric. 32500	stop motion	
Remaining system run through: 32500		
1		65535

4) Enter a value for "System run-throughs until oiling".

- 5) Stopping the machine when exceeding the number of system runthroughs:
- ◆ Yes:Checkbox □ deactivated
- ◆ No: Checkbox ☑ activated
- 6) Confirm input.

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7) Call up Main menu.



34.5.1 Lubricate the CMS 822

Greasing the control sliders (CMS 822)

With the machine type **CMS 822** the holding-down jack control and the needle brush are driven by a motor.



▼ Apply grease to the control slider and the drive with a brush.

34.5.2 Central Lubrication

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All machines with four or more knitting systems are equipped with a central lubrication as a standard equipment (not for **CMS 822**). If a central lubrication is mounted on the knitting machine you can switch it on and off.



- Oil needle bed
- Oiling jack bed
- Oiling carriage guide rail



I. Activate the central lubrication:

Key	Function
	Call up the Machine settings window
	Additional function keys
	Central lubrication window



Central lubricat	ion	STOLL THE RIGHT WAY TO KNIT
Central lubrication	(
Adjustments First lubrication Stoll inputs User adjustments	Lubricat. process after system run thr Lubric. processes until lubric. of all ne	roughs: 5000 3
System run throughs since	last lubrication proce	0
Releasing a lubrica	tion process 5	eration Off 6

No.	Function
1	Switch on/off the central lubrication
2	Three settings are available for the lubrication interval:
	First lubrication : This setting is used for the initial lubrication of a new machine at the Stoll factory. The values cannot be modified. (Attention: risk of soiling the fabric) Select this setting for approx. 15 minutes after a gauge conversion or with a machine which has been out of operation for a longer period of time.
	STOLL inputs: This setting can be used for production. The values cannot be modified. The values cannot be modified.
	User settings: In this mode, the values can be changed by the user. (Attention: An improper setting could lead to insufficient oiling. Ensure that the central lubrication applies sufficient oil to the needle bed.)
3	Each setting consists of two values.
	Setting of the number of knitting systems after which lubrication occurs. The lubrication procedure stretches across the current traversing path of the carriage.
	Lubrication procedures until all needles are lubricated. Setting of the number of lubrication procedures after which the entire needle bed is to be lubricated.
4	Number of system run-throughs since the last lubrication process.
5	A lubrication procedure is triggered in the next carriage reversal. The entire needle bed is lubricated.
6	The oil line is de-aerated with this switch. The oil pump is switched on for max. 30 seconds. Only use this switch for de-aerating, not for lubrication. Caution: Risk of soiling the fabric.

II. Oil the thread clamping and cutting device on the right

Machines which have central lubrication must have their thread clamping and cutting device on the right-hand side oiled manually. For mechanical reasons, the central lubrication does not reach all eight clamping positions.



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▼ Use a brush to apply oil to all working butts of the clamping points.



34.6 Safety Instructions for the Exchange of Data

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

34.7 Save and Copy Service Data

Why to save machine data (dongle data):

Loss of data

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- Installation of a new version of the Stoll operating system
- Exchanging the hard disk

Content of dongle data:

- Machine data
- Options of the machine
- Configuration of the machine
- Report
- Network settings
- Other internal information



Dongle-Data is saved in a file with the name **mcnumber.dgl (mcnumber** = machine number).

Possible data medium for saving:

- Hard disk
- USB Memory Stick
- Floppy (connection of a disk drive via a USB port)
- Network

Copy service data:

🔚 Copying service data	STOLL THE RIGHT WAY TO KNIT
Path: F:	
A:\ [Floppy]	Copy Logfiles
F:\ [\\hesekiel\schematd]	Copy Dongle
M1 Netz	Copy Print
S1	Copy Report
tdtools	🕞 Сору МС
G:\ [\\heskiel\schematd1]	Select language with next startup

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34 Service

Key	Function
Copy Logfiles	Save the error log (Logfile) of the internal data previous to the fault.
Copy Dongle	Save all the important machine data
Copy Print	Save the print file (Printscript) Note: It is also saved with Copy Logfile
Copy Report	Save the report data with the Stoll machine number
Сору МС	The machine specific settings (correction values) are saved in a zip file. Attention: data can only be transferred back to the machine by manual entry. Note: The machine data sheet is attached to the right control cabinet (back). Solution:
	No language selection appears after switching on the machine
	The language selection appears after switching on the machine

Saving the machine data on USB Memory Stick:

- 1) Call up the Service menu with the key.
- Open the Copying service data dialog with
- \Rightarrow The "Copying service data" dialog box appears.
- Select the desired storage medium: e.g. USB Memory Stick
- 4) Insert the USB memory stick into the USB socket.
- 5) Tap on the "Copy Dongle" key.
- ⇒ The entire machine data is saved under the mcnumber.dgl file name on the USB Memory Stick.
 - Loading of the machine settings with the "Load Dongle" key in the "Basic Settings" window.

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- 6) Go back to the main menu with
- 7) Take out the USB-Memory-Stick.

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For saving other service data proceed the same way.

34.8 Installing Software

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The installation of the Stoll operating system can be carried out in two ways:

- Direct Software Installation (when switching-on the machine).
- Indirect Software Installation (during production).



34.8.1 Install the Software - Direct Installation

Install the software directly:

- 1) Switch on machine.
- ⇒ The "BootOkc" window appears.
- 2) The automatical warm start can be stopped by tapping any key and the following actions can be carried out:
- 3) Select the desired function.

Okc				
Wait	ting for Conne	ection to Master		
Installation Installation and Configuration			onfiguration	
		Restart 2	Restart and Cor	nfiguration
Warmstart Basic Settings				
		connecting	3	
No	Sender	MessageText		Date and Time
81	BO_DEBUG	Auspraegung: STOKC15-L-1 MCklas	se: 904 ab BM: 0	22.12.2005 11:5
82	BO_DEBUG	Auspraegung: STOKC15-L-1 MCklas	se: 905 ab BM: 0	22.12.2005 11:5
83	BO_DEBUG	TelegramHand ted		22.12.2005 11:5
84	BO_DEBUG	Communicatio 4 r Started		22.12.2005 11:5
85	BO_STATUS	Connection to r failed		22.12.2005 11:5
86	BO_DEBUG	Application successfully initialized	and the Males	22.12.2005 11:5
87	BO_DEBOG	waiting for connection: StatusMas	teroniine = Halse	22.12.2005 11:5
1				i de la constancia de la c
C	,	5	(h) +	?

No.	Function
1	Symbol and Status Bar
2	Function keys
3	Progress Display
4	Display of status and error messages Note: Further debug information can be connected to. It is saved in a log file and can be copied with Copy Logfile , if needed.
5	Setting keys for the Touch Screen
Кеу	Function
-------------------------------------	---
"Installation"	Start the installation process of a Stoll operating system. The storage location of the Stoll operating system can be selected in the "Basic Settings" window.
"Restart"	Starts the software anew (Reboot).
"Warm start"	Carries out a manual warm start.
"Installation and Configuration"	Starts the installation process of a Stoll operating system including configuration of the machine. The storage location of the Stoll operating system can be selected in the "Basic Settings" window.
"Restart and Configuration"	Starts the software anew (Reboot) with configuration of the machine inclusive.
"Basic Settings"	Calls up the "Basic Settings Menu" window.
C	Set the screen brightness infinite.
	Set screen brightness one step darker.
\rightarrow	Set the screen one step brighter.
	Calibrate touch screen.

34.8.1.1 Install the Software with Language Selection - Direct Installation

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Carry-out the installation with language selection:

- 1) Switch on machine at the main switch.
- ⇒ The "BootOkc" window appears.
- 2) Touch the "Basic Settings" key during the warm start.
- ⇒ The automatic warm start will be canceled.

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34 Service

Boot Source					
C Current Version (HD)		C Network	코	USB-Device	~
O New Version (HD)		C User Defined Path		O Previous Version (HD)	
Change Path	\mathbf{R}	f:\myfolder\			
Delay Time for automatic	Warmsta	rt		0255 sec	30
Configure Machine		Configure Network		Disable Debug Output	⊡_ }
Load Dongle	♦	Save Dongle	æ	Copy Logfiles	
Restore Last Version		Show Current Version	(\mathbf{i})	Version History	610
					\mathbf{S}

Key	Function
←	End setting process without saving
\checkmark	Save settings
✓←	Save settings and end setting process
S	Restore former settings

3) Select a source for the installation data in the "Boot Source" section.

Кеу	Function
Current Version (HD)	Renewed installation of the existing version.
New Version (HD)	Installation of a new version.
Previous Version (HD)	Installation of the previous version.
Network	Installing the software via network.
USB Device	Installation from an external device which is connected to the USB socket.
User Defined Path	Installation from a user-defined directory.
Change Path	Key for selection of a directory

4) Confirm input with

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- 5) Tap the desired key in the "BootOkc" window.
- "Installation":
 Without the possibility of changing the Machine parameters.
- "Installation and Configuration":
 With the possibility of changing the Machine parameters.

:	Installation and Configuration
1	The corresponding dialog boxes for the configuration of the machine will appear with this kind of installing.

Result:

The "User Message" (**INSTALLATION STARTED**!) window will appear and the path to the installation data will be displayed.

🕽 User Message	
INSTALLATION STARTED	!
Install new software from: d:\mybootfolder\ Check Option <force installation:<="" td=""><td>>?</td></force>	>?
GRCE INSTALLATION	
YES	NO

6) **FORCE INSTALLATION**:

Install the operating system completely new or repair it.

- or -

FORCE INSTALLATION:

Quickly install the data that has changed.

- 7) To confirm the installation press on the key "YES".
- ⇒ The version number of the selected Stoll operating system gets displayed in the "User Message" (ATTENTION!) window.



Ð	Jser Message	
	ATTENTION !	
	-	
	INSTALL NEW VERSION ?	<u>_</u>
	STOLL OKC-OS-Version: E_XXX_001.004.000_STOLL created: 26.10.2005	
		T
	YES	NO

The current operating system will be overwritten.

8) Confirm with the "OK" key.

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⇒ The "Install Languages" window will appear.

f_Install Languages Select Langu Available La 世 ゼロ・ ロー セ マー マー	uages to Install ! anguages - Turkish - Chinese - Japanese - Czech - Russian - French - Polish - Spanish - Italian - English - Korean	
÷	√ ←	

9) Select the desired language(s).





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Tap the key if no language is to be selected. **Note: German** will be installed automatically.



Carry out machine configuration:

 \triangleright The "Language" window is displayed.

Language			STOLL THE RIGHT WAY TO KNIT
english english Pfad: \\WXP22914\BOOT-OKG		 english français italiano español česky türkce 中文 	He Right www.to кыт i i i w лт.:
(111722314)0001-000	o yoccoon (into yo		

1) Add languages from the right to the left table with if necessary.



- 2) Select the dialog language in the left table.
- 3) Confirm selection.
- 4) Proceed to the next window.
- ⇒ The "Machine configuration" window is displayed.



💀 Machine configurati	ion		STOLL THE RIGHT WWY TO KNIT
Machine classification		566	
Version		0	
Machine type			
Specification of control		STOKC15-N-1	
Knit and wear machine		No	x.2 KW
Serial number	9999		
Needle gauge		6.2 •	
Needle hook gauge		7 🔹	
Online ID	13		
Date	16.12.2005 11:51:52		

- The data have been set at the factory and will not be changed.
- 5) Change **Online ID** and **date** if necessary.
- 6) Proceed to the next window.
- \Rightarrow The "Machine configuration 2" window is displayed.
 - The data have been set at the factory and will not be changed.

🔁 Machine config	juration 2	2	STOLL THE RIGHT WAY TO KNIT
Production of technical fat	orics?	No	No
Tandem with comb		No	No
Yarn carrier driving type	1	2	2
Clamping/cutting points	2	2x16	2x16

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NIT AHEAD

34 Service

No.	Function Tandem with comb No Operating mode with CMS 822: Wide coupling without comb (tandem) 1: Clamping and cutting device deactivated.			
	Yes	Operating mode with CMS 822: Wide coupling with comb (tandem) 1 : Clamping and cutting device activated.		
1	Specificatio	n of the yarn carrier drives (magnetic bar) are available		
	Туре 1	 Yarn Carrier Drive All machines with STx11 control Sometimes with machines with OKC 2.0 control 		
	Туре 2	 Yarn Carrier Drive All machines with OKC 3.0 control Sometimes with machines with OKC 2.0 control 		
2	Quantity of clamping and cutting devices			
	2 x 8	With machines with 8 clamping and cutting positions each on the right and on the left		
	2 x 16	With machines with 16 clamping positions each on the right and on the left		
	2 x 16/8	With machines with 16 clamping and cutting positions on each side of which only every other clamping and cutting position shall be used.		

- 7) Proceed to the next window.
- ⇒ The "Machine Options" window is displayed. The data is set at the factory.
- Machine fault! The presence or lack of machine options must correctly be specified, as otherwise a fault may occur on the machine.
 8) If necessary, change the data and confirm the changes.
- 9) Proceed to the next window.
- ⇒ The "Machine Parameter" window is displayed.
 - The data is set at the factory.

10) If necessary, change the data and confirm the changes.

- 11) Proceed to the next window.
- ⇒ The "Needle bed parameters" window is displayed.
 - The data is set at the factory.



Needle bed parameters			STOLL
election displacement vi 0	0	fr 0 br	0
Racking ground correction (VGK)	0	front (VVGK)	0
Racking ground correct. left (VZLGK)	0	on the right (VZRGK)	0
Racking position correction (VPK)	0	front (VVPK)	0
Piezo at the front	20	Back	20
Piezo Additional needle bed at the front	20	Back	20
Piezo Addit. needle bed on left at front	20	Back	20
Piezo Addit. needle bed on right at front	20	Back	20

12) If necessary, change the data and confirm the changes.

- 13) Proceed to the next window.
- ⇒ The "NPK-Values" window is displayed. The data is set at the factory.

NPK values STOLL THE FIGHT WAY TO KINT								
	From	nt <<	Fron	t >>	Rea	r <<	Rear	>>
ATM system	<<	<< \$	>>	>>\$	<<	<< \$	>>	>>\$
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ATM system	F	ront << \$	Fre	ont >> \$	<<	Rear << \$	Re >>	ar >> \$

- 14) If other NPK values are to be used, change the values and confirm the changes.
- 15) Proceed to the next window.
- ⇒ The "Knit Report Configuration" window is displayed.

STOLL

34 Service

Knit Report configuration	STOLL THE RIGHT WAY TO KNIT
Stoll Knit Report®	
Knit Report state:	Automatically
Update state:	
[<u>^</u>

16) If other settings are to be used, change the settings and confirm the changes.

:	Use the "additional function keys" to activate/deactivate the
I	running time control and/or measurement of running time.

- 17) Proceed to the next window.
- ⇒ The machine configuration is complete.
 The "Reference runs" window is displayed.



34.8.1.2 Reference Run

Carrying out reference run after installation:

▷ The "Reference runs" window is displayed.

Reference movem	ents		STOLL THE RIGHT WWY TO KNIT
Reference run carriage	SRI< SRI>	Reference run racking	9
	S< S>	Reference run presser foot	9
Direction of carriage movement		Reference run comb	9
Needle selection	On On		

 If the carriage assembly is stopped in the left reversing position, tap the "SR!>" key.

- or -

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- If the carriage assembly is stopped in the right reversing position, tap the "SR!<" key.
- 2) Start the machine with the engaging rod.
 - The carriage assembly carries out a reference run and stops after having loaded the reference data.
- 3) Press the engaging rod downward.
- 4) Tap the "S<" or "S>" key corresponding to the carriage direction selected for the reference run.
- 5) Start the machine with the engaging rod.
- ⇒ You must stop the carriage at the left outside the needle bed.
- 6) To move the carriage assembly a few centimeters to the right, tap the "S>" key?
- 7) Start the machine with the engaging rod and stop it again immediately.
 - The carriage assembly must still be positioned outside the needle space.
- 8) Switch back to the previous window.
- ⇒ The installation process is complete and the "Main menu" is displayed.

Reference run racking

Ensure that the stitches of one needle bed are cast-off.

34.8.2 Updating Software - Indirect Installation

Indirect Installation:

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- The new Stoll operating system is located on the hard disk in a separate memory area (Update software)
- The software can be loaded while the machine is producing
- The software will be read-in when starting the machine the next time



Update software:

1) Call up the "Service" menu with the key.





	Function
\diamondsuit	Copy the software in a separate memory area of the local hard disk
€ _Ŷ	Update display
? ?	Direct help



- 3) Select the desired source folder in the selection window.
- USB Memory Stick
- Network

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- When searching for the Stoll operating system the selected folder section and a section under this section (sub-folder section) is also searched.
- 4) Select the desired Stoll operating system (Type **OS**).





- 5) Tap the ("Carry out update") key.
- ⇒ The installation files are copied on the hard disk of the machine in a separate storage location.

The "Update successfully installed" appears.

After a successfully completed copy, two program points are displayed in the "Software updating" window.

*a Software updating		STOLL
Path: G:\cms-468\BC)-Ordner	
cms-468	<> ■	
BO-Ordner	Available updates	Туре
sprachen	_OKC_001.178.000_STOLL	os
ci_cms		
co_cms		
expand	Jo+h.	
export	OS: E OKC 001 178 000 STOLL	
export_3xx		
export_4xx (1)	Undo updating	
export_E_2005_struktur	Automatic installation	

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STOLL

34 Service

Key	Function				
1	Software will not be updated. The data of the separate memory area are deleted.				
2	You can or manu	choose if the installation should be carried out automatically ally when switching on machine again			
	N	After a waiting time of 10 seconds the installation is automatically carried out till the window "Reference runs" (like in the case of "Installation"). Within the waiting time the installation can be cancelled by tapping on "Cancel". Note: Select this setting if only the operating system should be updated.			
		 Installation as with Installation and Configuration Select this setting if machine data have been modified. Example: Gauge conversion Assembly of special attachment 			

- 6) In the "Software updating" window activate the \bowtie checkbox.
- 7) Call up the "Main menu" with the key.
- 8) Switch off machine at the main switch.
- 9) Switch on machine at the main switch.
- ➡ The BootOkcwindow will be displayed with the User Message (START UPDATE NOW?) message box:



- 10) Activate the **Installation without configuration** checkbox.
- \Rightarrow This shortens the installation process.

STOLL

34 Service

Deactivate the Installation without configuration checkbox, if the machine parameters are also to be altered simultaneously with the installation of the new Stoll operating system.

- 11) Start the installation process tapping on "YES".
- ⇒ The path for the installation data is displayed in the User Message (INSTALLATION STARTED!) message box.
 - Continue the installation procedure as described under Install Software with language selection [B 323].

34.9 Software Download

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The Stoll operating system for **CMS** machines can be downloaded via the internet from the **STOLL-FTP-Server**.

Set up a connection to the download directory:

- ▷ The pattern workstation or your computer has an internet connection and you hold a customer number and a PIN.
- 1) Activate the Internet Explorer on the pattern workstation or the PC.



- 2) Call up the Stoll homepage under www.stoll.com
- 3) On the STOLL homepage click on the "CUSTOMER-NET" tab.



⇒ The http://customer.stoll.com browser is displayed.



		LOGIN
KUNDENNR.	PIN	
CUSTOMER NR.		

Bitte geben Sie Ihre Kunden-Nummer und Ihre PIN ein. Please enter your customer nr. and PIN.

- 4) Enter the Customer nr. and the PIN in the entry fields.
- 5) Start with the "LOGIN" key



6) Select the Software updates link.



- 7) Click on the "This link will guide you directly to the Stoll FTP server" text.
- ⇒ The FTP root directory on ftp.Stoll.com is displayed.
- 8) Click on the customer_downloads link.
- 9) Select the cms_bootfiles directory

10) Select the the machine type accordingly.

- cmt 211
- okc
- st168

MC type	Software Version
cmt211	V_00 . 01. xxx. xxx
okc	V_OKC_002 . xxx . xxx_STOLL
st168	V_ST1680_32 . 03. xxx. xxx_STOLL

I. Select the software for OKC machine and download it:

1) Select the software version according to the **OKC** machine.

Туре	Function
knitlang.zip	Software for language installation
knitsys.zip	MC operating system
OKC_download.de pdf	Download operating system description German
OKC_download.gb pdf	Download operating system description English
release notes.pdf	Version description - English
Versionsbeschreibung.pdf	Version description - German

2) Select the knitsys.zip file, the Dateidownload window is displayed.



- 3) Download the software with the "Save" key.
- 4) Specify the path in the "Save as" dialog box.
- 5) Finish the process with "Close" in the "Download completed" dialog box.
- 6) Repeat the sequence for the knitlang.zip file.
- ⇒ The downloaded files are located in the specified directory as zip file and can be loaded on the knitting machine via USB Memory Stick or network.



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The files may not be decompressed.





II. Select the software for ST168 machine and download it:

Directory selection for ST168 machine

File	Operating system	Contents	
disk1	MC operating system part 1	boot_pm2. zpp	
disk2	MC operating system part 2	boot_pm2.002 master2.log	
disk3	MC operating system part 3	bo_exe.zip	
disk4	MC operating system part 4	bo_lib.zip	
disk5	MC operating system part 5	bo_la_de.zip	
download.pdf	Download operating system description		
HD-ANALYST	Updates the Windows operating system on the CMS		
language.disks	Software for language installation		
release notes.pdf	Version description - English		
Versionsbeschreibung.pdf	Version description - Ge	erman	

- 1) Download the **disk1** to **disk5** files with its content one after the other.
- 2) Select the disk1 file.
- 3) Select the **boot_pm2. zpp** file, the file download window is displayed.



- 4) Download the software with the "Save" key.
- 5) Specify the path in the "Save as" dialog box.
- 6) Finish the process with "Close" in the "Download completed" dialog box.
- 7) Repeat the sequence for the disk2 to disk-5 files.
- ⇒ The downloaded files are contained in the specified directory as zip file and can be loaded on the knitting machine via floppy disks.



The **zip** file is not to be unzipped.

8) Save the software on floppy disks.

Disk	File
1	boot_pm2.zpp
2	boot_pm2.002 master2.log
3	bo_exe.zip
4	bo_lib.zip
5	bo_la_de.zip
6	Language
7 + 8	Additional languages

Result:

The downloaded files are located on the floppy disks as **zip** file and can be loaded on the knitting machine.





35 Miscellaneous

35.1 Toolbar

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The configurable toolbar allows you to jump directly to the individual menus without having to pass through the "Main menu" or using the "Additional functions" key.

- The toolbar overlays the title bar of a menu.
- You can include the icons of your favorite menus in the toolbar.



	Meaning
1	List of the menus which can be selected for the toolbar.
2	Presentation of the selected menus.
3	Insert the menu selected in (1) into the toolbar.
4	Remove the menu selected in (2) from the toolbar.
5	Change the position of a symbol in the toolbar (2).
6	If there are more than 11 symbols in the toolbar, the display can be moved to the left or right with the arrow keys.



I. Add a symbol to the toolbar:

- 1) Call up "Service" menu with the key of the Main menu.
- 2) Call up "Configuration toolbar" menu with the key of the Service menu.

- 3) Tap the desired symbol (1).
- 4) Press the (3) key.

- or -

- ▼ Double-tap on the symbol.
- \Rightarrow The symbol is displayed in the toolbar (2).

The marking \times indicates that the symbol has been selected from the list (1) for the toolbar.

II. Toggle on or off the toolbar:

You can call up the toolbar in any menu.

- 1) Tap the left symbol in the title bar.
- ⇒ The toolbar overlays the title bar.



2) To close the symbols again, tap the empty field next to them.

35.2 Monitoring

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The current Sintral line and the corresponding values for the cycle counters, Jacquards, stitch tension and counters are displayed in the "Changeable monitoring" window for each carriage stroke during productions. You can specify yourself which values are to be displayed or have them determined automatically.



The counters and cycle counters which are exclusively used in the **Auto-SINTRAL** program are not displayed.

I. Configure the Monitoring:

 Call up "Changeable Monitoring" via the button of the main menu.

	Cha	ngeable	e monito	oring						S TH		
Act. lir	ie	1)							_	16.11.: 15:2	2005 26
NP^		12.5	12.5	12.	5		NP1: 1	1.0				
NPV NP46:	12.5	12.5 NP51: 12.5	12.5 NP41: 12.5	NP52: 12.5	NP60:	12.5	NP56: 1	.2.5	NP65:	12.5	NP88:	12.5
NP94:	12.5 12.5	-(2)-	NP 3.5	NP74: 12.5 NP45: 12.5	NP82:	12.5 12.5	NP24: 1	.2.5	NP23:	12.5	NP21:	12.5
NP19:	12.5	NP73: 12.5	NP81: 12.5			1			NP31:	12.5	Kammar	
	4)	0.0 0	1in FF Max W		0 W+C	0			= w+		Kummer	itar
		NP58: 12.5	NP38: 12.5		RS10:	0		+				
					RS2:	56			#17:	0	RS8:	0
RS1:	8				NP17:	12.5			#19:	0	JA3:	0

Pos.	Function
1	Display of the current Sintral line
2	 White field with frame: The field can be linked to a value. Fields with a thin frame will be covered when switching on function blocks (4). Fields with a thick frame will not be covered when switching on function blocks.
3	Gray field: If a field (2) is limited to a value, the color changes from white to gray.
4	Function block: The display of a function block can be activated and deactivated.



II. Link a field to a value:

- 1) Tap a white field with a frame.
- \Rightarrow The setting window appears.

Type: 🔥	Value: 🔥
=	1
RS	2
AL	3
NP	4
# 💌	5 💌
Selected:	RS4
<	<

- 2) Select the type of the value in the left column.
- 3) Select the value in the right column.
- ⇒ The selected value is displayed in the lower line.
- 4) Confirm entries.
- 5) If necessary, link further fields to a value.
- If one value is to be deleted, select the empty (white) field above "RS" in the left column below Type.
- 7) End the setting procedure.

Further Possibilities:

Кеу	Function
✓←	End the setting procedure
←	End the setting procedure without saving
	Empty all fields
0 0 0 0 0 0 0 0 0 0 0 0 0 10 0 0 0 0 20 1 1 0 1 0	Automatic configuration

III. Insert function blocks:

Various function blocks can furthermore be displayed for the configurable values. The selected function blocks are positioned at fixed positions over the existing fields (with thin frames). They are covered only, so that the fields are visible again when switching off the function block.

- 1) Call up the Additional function keys with the
- key.
- 2) Activate and de-activate the additional function blocks.

Key	Function
<u>क्</u> री	Function block "Stitch tension"
	Block of functions "SEN areas"
	Function block "Yarn carrier"
FBEG:	Function block "Function name"
	Function block "Fabric take-down value" Only if YLC is switched off.
"Print"	Function block "Sintral print line"
	Function block "STIXX"

IV. Save Configuration:

1) Call up the Additional function keys with the key.



- key. 2) Select the
- ⇒ The "Monitoring deposit" menu appears.

🖣 Catalog m	onitoring		STOLL THE RIGHT WAY TO KN	- IT
1				
Current configuratio	n:			
Path:	Local data			
File name		Туре	Changed on	
DAVID		mon	06.12.2005 15:57:07	
Total: 1				



3) Specify the path for the memory location with the key.





35.3 Control of Knitting Systems and of Holding-down Jacks

The knitting system:

Each knitting system can knit using the three-way technique without limitation.

Single needle selection in seven positions:

Stitch

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- Tuck
- Out of operation
- Transfer
- Receiving
- Splitting transferring
- Splitting receiving

Possibilities of stitch formation:

- Stitch
- Tuck
- Out of operation
- Transfer from the front to the rear needle bed or vice versa
- Transfer simultaneously in both directions

The selection system only selects the needles which knit a stitch or tuck, transfer or split-stitch.

All other needles are not selected and do not sink the stitches.

I. Layout of the knitting system:



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	Label	Function					
1	Stitch cam						
2	Raising cam						
3	Receiving pressure part						
4	Tuck pressure part						
5	Selection system						
6	Selection position 1 Stitch, Transfer Surrounding, Transfer Split						
7	Selection position 2	Tuck, Receiving Surrounding, Receiving Split					

II. Holding-down function:

The holding-down jacks hold down the fabric when the needles for stitch formation are driven out. The holding down jacks are moved by the holding-down jack control unit on the carriage.



	Meaning
1	Holding-down jack control unit
2	Swiveling brush holder
3	Jack slider
4	Leading jack slider
5	Following jack slider

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The leading jack slider (4) is switched upward.

This pivots the holding-down jacks downward into the holding-down position during needle raising and these hold down the stitches. The following jack slider (5) is pulled back and the holding-down jacks pivot back again. The holding-down jacks are open during yarn insertion. When the carriage reverses, the jack sliders are switched over automatically.



35.4 Report

The control collects all operating data recorded since the operating system was first read in and since the current knitting program was started.

Run Report:

- 1) Call up in the Main menu
- 2) Tap the key.
- 3) Call up the "Report" menu with the key.

Report STOL) L L			
15.11.2005 1 🕢 david-ARM							Ren	ort0		
		U	F	%	н	Μ	F	%	— I Кор	M
		SIN	0		37	18			37	18
	Report0	RUN *	0	100.00	37	18		100.00	37	18
		$\vee = \vee$	0	0.00	0	0	0	0.00	0	0
		/-\	0	0.00	0	0	0	0.00	0	0
		000	0	0.00	0	0	0	0.00	0	0
		>!	0	0.00	0	0	0	0.00	0	0
		-/)	0	0.00	0	0	0	0.00	0	0
		%	0	0.00	0	0	0	0.00	0	0
		PR	0	0.00	0	0	0	0.00	0	0
		MS~	0	0.00	0	0	0	0.00	0	0
	< € ₩	->/	0	0.00	0	0	0	0.00	0	0
		∨[]	0	0.00	0	0	0	0.00	0	0
		#<>				0				0
		#ML		(2))	0		(3)		0
		ST				0		\bigcirc		0

	Meaning
1	Types of operating data
2	Data which have resulted after reading in the operating system
3	Data can be deleted with the "Report 0" button.

Event	Meaning
F	Number of errors or number of stop motions
%,Н,М	Percent, hours, minutes
SIN	Working time of the control unit (SINTRAL loaded)
RUN	Production period
V=V	Stop by switching off at engaging rod
/-\	Stop by yarn control device, yarn feed
000	Stop by piece counter
>!	Stop by stop resistance
-/)	Stopping by needle position sensor
%	Stop by fabric take-down
PR	Stop by program
MS~	Machine stop or brief power outage
->/	Stop by shock stop
V[]	Racking error
# <>	Total number of strokes
#ML	Number of strokes at reduced speed
ST	Number of produced fabric pieces

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35.5 Running Time Control

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In order to display the "Running time control" menu this must be activated in the "Knit Report configuration" menu. ("TC START MENU" / "Restart and Configuration" / "Knit Report Configuration" / "Additional function keys")

The running times of sequence lists, sequences or orders, their individual elements or individual patterns are recorded and displayed in the "Running time control" window.

This adds knitting process data to the commands **MIN**, **MINSEQ** und **MINSEQEL**:

Display of the running time of a pattern (sequence, sequence element, order).

The current, last, minimum, maximum and average running times are displayed.

- Display of the expected remaining running time of a pattern (sequence, sequence element, order).
- Display of the number of pieces that have been knitted and are still to be knitted.
- Display of running time with or without loading and standby times.

I. Open the Running time control:

- 1) Call up the "Service" menu with the **Levin** key in the "Main menu".
- 2) Call up the "Statistics" menu with key.
- 3) Tap the key.

- or -

- Call it up with the additional function keys in the "Sequence menu" or "Sequence list".
- ⇒ The "Running time control" menu appears.



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	Meaning			
1	Total running time	Display of the estimated total running time of the sequence, sequence list or pattern.		
2	gross	Display of the total production time including loading and standing times as well as manual interventions.		
	Net	Display of the pure machine running time from SP (Start Program) to piece finished .		
3/4	No.	Current number.		
	Sequence/ Sequence element name	Name of the sequence, the order, the sequence element or of the pattern.		
	current	Previous running time of the current sequence of the order or of the sequence element or pattern.		
	last	Running time of the last knitted sequence of the order or of the sequence element or pattern.		
	min.	Minimum running time of the sequence of the order or of the sequence element or pattern.		
	max.	Maximum running time of the sequence of the order or of the sequence element or pattern.		
	Ø	Average running time of the sequence of the order or of the sequence element or pattern.		
	Fbcs	Amount of sequences or orders or of the sequence elements or patterns already knitted.		
	Total	Amount of the total sequences or orders or of the sequence elements or patterns.		

355



II. Saving, loading, deleting running time:

- 1) Tap the "Additional functions" key in the "Running time control" menu.
- 2) Call up "Storage of running time data" menu with the key.

📲 Catalog running tin	ne data	STOLL THE RIGHT WAY TO KNIT
	Data older th	nan 6 weeks 🔲 Keep Delete
Current configuration:	A123_050120_0939	
Path:	F:	
File name	Туре	Changed on
Total: 0		

- 3) Specify the desired path for the key.
 4) Select a file under File name.
 5) Select an action:

 Save
 Save

 i Switch on the virtual keyboard to enter a name.

 Load

 Load
 i The pattern memory must be deleted in order to load the running time data.

 belete

 Delete
- 6) If an additional prompt appears, tap the "1" (Yes) key or the "0" (No) key to confirm.

III. Display running time data:

1) Call up the "Running time control" window in the "Service" window.

- 2) Select sequence, sequence element or pattern.
- 3) Call up "Additional function keys".



4) Call up the "Running time data of pattern" menu or the "Running time data sequence" menu.



Running time data of pattern					
Name					
Remaining running time estimated (mm:ss) Final time estimated:					
Run.time piece	No.	Date	Start	Complete	Running time
¥					

Entry	Meaning
"Name"	Name of sequence, sequence element or pattern
"Remaining running time"	Estimated remaining running time in the format mmm:ss
"End time"	Estimated end (date and time) Possible only after a run-through
"Run.time piece"	At sequence: Longest and shortest run-through time of the sequence At sequence element/pattern: Longest and shortest run-through time of the piece
"No."	Number of the sequence, sequence element or of the piece
"Date"	Creation Date
"Start"	Starting time
"Finished"	Completion moment
"Running time"	Running time in hhh.mm



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- Necessary remaining running time for the desired number of pieces.
- Expected end of production for the desired number of pieces
- Longest and shortest running time of the pieces produced up to now.

Reset of the piece counter will re-calculate the running time data.
35.6 Yarn Table

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The specified values serve as a guideline. The quality and the specific weight of a yarn must also be taken into account. Instead of a simple yarn, we recommend twisted yarn. With coarser machines it is advisable to use several twisted threads.

Gauge	assembled processing [Nm]	Final count [Nm]
	Several fine threads are assembled and fed as a thick yarn to the yarn carrier.	Yarn thickness of the assembled threads Example: 6 x 16/2 16/2=8 8:6=1,33
2	6 x 16/2	1,2 - 1,4
2.5	6 x 18/2	1,3 - 1,6
3	5 x 18/2	1 - 2
3 m.3L	15 x 20/2	0,65 - 1
3.5	6 x 24/2	1,4 - 2,5
4	5 x 24/2 6 x 34/2	1,4 - 3
5	4 x 24/2 4 x 34/2	3 - 4,5
7	2 x 22/2 2 x 28/2	4,5 - 7
8	2 x 24/2 2 x 34/2	6 - 8
10	2 x 36/2 1 x 24/2	8 - 12
12	1 x 24/2 2 x 44/2	10 - 18
14	1 x 28/2 2 x 40/1	14 - 20
16	1 x 48/2 1 x 54/2 1 x 60/2	20 - 30

Tabelle 2: Yarn t	able - Allocation of machine gauge an	d
yarn thickness (Table 1)	



Gauge	assembled processing	Final count [Nm]
18	1 x 54/2 1 x 60/2 1 x 80/2	20 - 40
20	1 x 80/2	20 - 40
2,5.2 (all needles)	3 x 28/2 2 x 14/2	3 - 4,5
2,5.2 m.4L	All needles: 3 x 28/2 Nm	3 – 4,5
	Every 2nd needle: 8 x 28/ 2 Nm	1,3 - 2
	Every 2nd needle with cast-off technique: maximum 13 x 28/2 Nm	1,1
2,5.2 (CMS 830 C) (each 2nd needle)	3 x 14/2 6 x 14/2	1 - 2
2,5.2 (each 2nd needle)	3 x 14/2 4 x 14/2	1,3 - 2
3,5.2 (all needles)	2 x 28/2 3 x 28/2	4,5 - 7
3,5.2 (each 2nd needle)	3 x 14/2 7 x 28/2	1,5 - 2,5
3,5.2 m.4L	All needles: 3 x 28/2 Nm	4,5 – 7
	Every 2nd needle: 7 x 28 / 2 Nm	1,5 – 2,5
	Every 2nd needle with cast-off technique: maximum 9 x 28/2 Nm	1,5
5.2 (all needles)	1 x 20/2 2 x 28/2	8 - 12
5.2 (each 2nd needle)	3 x 28/2 4 x 28/2	3 - 4,5

Tabelle 3: Yarn table - Allocation of machine gauge andyarn thickness (Table 2)

Tabelle 4: Yarn tab	le - Allocation of	of machine gauge and	k
yarn thickness (Ta	ble 3)		

Gauge	assembled processing [Nm]	Final count [Nm]			
6.2 (all needles)	2 x 44/2 1 x 28/2	10 - 16			
6.2 (each 2nd needle)	2 x 28/2 3 x 28/2	4,5 - 7			

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35 Miscellaneous

	,	
Gauge	assembled processing [Nm]	Final count [Nm]
7.2 (all needles)	1 x 28/2 1 x 30/2	14 - 20
7.2 (each 2nd needle)	2 x 28/2 2 x 30/2	6 - 8
8.2 (all needles)	1 x 50/2 2 x 60/2	15 - 25
8.2 (each 2nd needle)	2 x 50/2 3 x 60/2	10 - 12
9.2 (all needles)	1 x 40/2 1 x 60/2	20 - 30
9.2 (each 2nd needle)	2 x 40/2 2 x 44/2 2 x 60/2 3 x 60/2	10 - 16

Tabelle 4: Yarn table - Allocation of machine gauge and yarn thickness (Table 3)

Tabelle 5: Knitting technique information

Gauge	Explanation
2,5.2 and 3,5.2 (knit and wear)	If an extreme yarn (non-elastic and/or very thick) is used, it should not be knitted too loosely (in the upper NP area), as there is a danger of wear of the cams and needle bed.
9.2	For tight knitting, special cams must be used (ID No. 213 303, 213 304 and 210 285). They are included in the machine accessories.



35.7 Stitch Tension Range

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

Valid for:	
CMS 933	
CMS 822	
CMS 530	
CMS 520	

Tabelle 6: Stitch Tension Range

	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

Valid for:	
CMS 830 C	
CMS 740	
CMS 730 T	
CMS 530 T	
CMS 520 C	
CMS 502	

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	min. NP	max. NP	min. NP (Split)	max. NP (Split)				
E 3	7.0	16.7	8.2	15.6				
E 3 m.3L	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	7.4	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				

Tabelle 7: Stitch Tension Range





36 Pocket Card

36.1 Infos

36.1.1 What is new? - Changes at a glance

Current version of pocket card: 2.1

Software version:

- OKC: V_OKC_002.007.000_STOLL
- M1: M1plus V. 5.7

36.1.1.1 Changes in version 2.1

The most important changes in this version:

Command S:\$n-m;
 Stitch via split curve with freely selectable racking type ("Knitting specification")

Supplements and corrections:

 Command W+=n: Setting the turning speed r.p.m. of the auxiliary takedown

The value range was supplemented (Chapter "Auxiliary take-down")

- Knitting specifications [-> 374]
- Auxiliary Take-down [-> 393]



36.1.1.2 Changes in version 2.0

The most important changes in this version:

- Command YG:nF=m; Yarn carrier (yarn type) stops after EAY or S0Y at #L, #R (chapter "Yarn carrier")
- #196: YLC mode ("Counter" chapter)

Supplements and corrections:

 Command PANP:<...>; The spelling was wrong, the correct one is PANP<...>:; ("Stitch cam settings" chapter)

Further information:

- Yarn Carrier [-> 377]
- Counter [-> 402]
- B Stitch cam settings [-> 385]

36.1.1.3 Changes in version 1.9

The most important changes in this version:

 Command Y-1A:YDm-o; Yarn carrier distance from the left (m) or right (o) fabric selvedge ("Yarn carrier" chapter)

Supplements and corrections:

 Command YDn=m-o The description was wrong:

The specification refers to the track and not to the single yarn carrier.

What is correct is: Yarn carrier distance on track n (1-8) from the left (m) and right (o) hand fabric selvedge.

 Command Y-1A:RALL The spelling was wrong, the correct one is Y-RALL ("Clamping and cutting" chapter)

- Yarn Carrier [-> 377]
- Clamping and cutting [-> 380]

36.1.1.4 Changes in version 1.8

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The most important changes in this version:

Command WMK%

Changing the fabric take-down value by n percent while the comb takedown is working. The value is active till the fabric is taken down by the main take-down.

Value range: -80...0...80. (Chapter "Additional commands for machines with comb take-down")

- Yarn length control: Command YLC(-...YLC-) Switch off the regulation for one area (Chapter "Yarn Length Control (YLC, STIXX, ASCON)"
- New yarn carrier Normal yarn carrier type 2 (without lifters) The intarsia yarn carrier type1 or type2 and the normal yarn carrier type2 can work on one track. Command Y-1A:N2; (Chapter "Yarn carrier")

Supplements and corrections:

- Chapter "Yarn Length Control (YLC, ASCON, STIXX) "All the "ASCON" commands were renamed to "YLC".
- Command Y-1A:Bn-m: Yarn carrier 1A braking value
 From the operating system V 2.2 on, this command is not allowed anymore.

The yarn carrier braking values are no longer displayed in the knitting program but instead on the machine in the "YC braking values" window. If you want to load a knitting program with yarn carrier braking values appears the error message "Command is not permitted, carry out the adjustment in the YC braking values window". Remedy: Delete the command in the knitting program and enter the braking values on the machine.

Therefore, the command was deleted in the pocketcard.

- Additional commands for machines with comb take-down [-> 397]
- Yarn Length Control (YLC, STIXX, ASCON) [-> 410]
- Yarn Carrier [-> 377]



36.1.1.5 Changes in version 1.7

The most important changes in this version:

- New functions for Setup2:
 - WMF Fabric take-down function (chapter "Fabric take-down")
 - W+F Auxiliary take-down function (chapter "Auxiliary take-down")
 - YD Yarn carrier staggering process (chapter "Yarn carrier")
 YDI Further Yarn carrier staggerings
 YC Yarn carrier corrections
 YCI Further Yarn carrier corrections
 - VCI Racking-function (chapter "Racking")
- #199: Counter for the Auxiliary take-down (1= available, 0= not available) (chapter "Counter")

Supplements and corrections:

- The chapter "STIXX" was renamed "Yarn length control (YLC, ASCON, STIXX)"
- Command Y-1A:B"n"-"m"; Modification of the value range (chapter "Yarn carrier") Up to now: Yarn carrier 1A braking value, left (n)-right (m) selvedge; n,m =±0-15 New: Yarn carrier 1A braking value, left (n)-right (m) selvedge; Value range: 0...9...18, standard: 9 0-8: reduced stroke 10-18: prolongated stroke

- Fabric take-down [-> 393]
- Auxiliary Take-down [-> 393]
- Yarn Carrier [-> 377]
- Racking [-> 381]
- Yarn Length Control (YLC, STIXX, ASCON) [-> 410]
- Counter [-> 402]

36.1.1.6 Changes in version 1.6

The most important changes in this version:

• Command =0=

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Up to now: Comb moves to the lower limit switch. New: Opening of the comb hook, comb moves to the lower limit switch (Chapter "Additional commands for machines with comb take-down")

 Command =H= Up to now: Opening the comb hooks New: Opening of the comb hook, comb stops. (Chapter "Additional commands for machines with comb take-down")

Commands for CMS 730 S, CMS 830 S:

- Knitting specifications (CMS 730 S, CMS 830 S)
- Stitch cam settings (CMS 730 S, CMS 830 S)
- Switch units on/off

Supplements and corrections:

- Command Y-CR0 and Y-CR1: The specification "is maintained at EALL" is wrong, the right one is: "deleted automatically with EALL" (chapter "Clamping and cutting")
- Command **Y-1A:U**=m-o: Adjust the engaging width when plating with normal yarn carriers.

The specification is no Sintral command, that's why it has been deleted in the pocket card. The engaging width is set on the knitting machine in the menu "Yarn carrier".

- Additional commands for machines with comb take-down [-> 397]
- Knitting Specifications (CMS 730 S, CMS 830 S) [-> 376]
- Stitch cam settings (CMS 730 S, CMS 830 S) [-> 386]
- Switching units on and off (CMS 730 S, CMS 830 S) [-> 391]
- Clamping and cutting [-> 380]



36.1.1.7 Changes in version 1.5

The most important changes in this version:

• Command Y-5A:PA;

The yarn carrier 5A will be defined as a double bow yarn carrier. The specification is important for yarn carrier checking and for clamping / cutting. The command considers the larger width for both yarn carrier tips. (Chapter "Yarn carrier")

36.1.1.8 Changes in version 1.4

The most important changes in this version:

- Command **MSECC=n.nn**: Carriage speed outside the needle bed when the yarn carrier is brought in the clamp or taken out of the clamp. (Chapter "Speed specifications")
- Command =WC("n")=: Releasing the fabric.
 Up to now: The waiting time is the opening time of the take-down.
 New: The waiting time is the time of the carriage standstill. During the waiting time, the fabric is re-tensioned. (Chapter "Additional commands for machines with comb take-down")
- Command =^=(n): The value range has been modified. Up to now: The transfer position (comb take-down - fabric take-down) is n (0-25) millimetres lower than the standard setting. New: The transfer position can be set higher by n millimeters (0...-22) or deeper (0...25) than the standard setting. For the CMS 730 S, the transfer position can only be set deeper.

(Chapter "Additional commands for machines with comb take-down")

36.1.1.9 Changes in version 1.3

The most important changes in this version:

- More precise home position of a yarn carrier The yarn carriers are stopped in the fabric, at the fabric selvedge and in the clamping/cutting bed precisely. The step width is halved from 1/16 inches to 1/32 inches. (Chapter "Yarn carrier" and "Direct commands (clamping and cutting)")
- Command Y-1A:U="m"-"o": Adjust the engaging width when plating with normal yarn carriers. (Chapter "Yarn carrier")
- More precise stitch cam positions. Step width halved from 0.1 to 0.05. (Chapter "Stitch cam settings" and "Direct commands (stitch cam settings)")
- New commands for clamping and cutting: (Chapter "Clamping and cutting")
 - Y-1A:R;
- Switchable outputs for external equipment (OUT1=n, OUT2=n). (Chapter "Switch units on/off")

36.1.1.10 Changes in version 1.2

The most important changes in this version:

- Command =WC(n)=: Release the fabric in case of machines with comb take-down (Chapter "Additional commands for machines with comb take-down")
- Command AST: Periodic switching on and off of the suction device (Chapter "Switch on/off units")
- Command Y-1A:F1AY^0;: The home position of the yarn carrier is only dependent on field 1, not on the racking position (Chapter "Yarn carrier")
- Command Y-1A:Wn;: Waiting position of yarn carrier during fully fashion knitting (Chapter "Yarn carrier")
- #197, #198: Counter for the sequence knitting (Chapter "Counter")
- Line numbers for a knitting program are expanded to 99999 lines (Chapter "Knitting specifications")

Supplements and corrections:

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36.1.1.11 Changes in version 1.1

The most important changes in this version:

- New shaped selvedge counters #L1, #L2 to #R2 (Chapter "Fully fashion knitting" and chapter "Counters")
- Command PSC: Open/close the holding-down jacks on CMS 330 TC-C (chapter "Holding-down jacks on CMS 330 TC-C")

Supplements and corrections:

- Command NCC: The command may only be used for machines with clamping/cutting bed (chapter "Clamping and cutting")
- Command NCC: The specification NCC5 in the example is wrong, the correct one is NCC=5 (chapter "Clamping and cutting")
- Command MSECNPJ: The maximum speed is not 1.0, but 1.2 (chapter "Speed specifications")

36.1.2 ASCII character set

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If the error message "Invalid character" appears when reading in the knitting program, check the knitting program for special or foreign-language characters. Only the characters of the ASCII character set may be used. A possible cause could be that other characters have been entered with a word processing program and these are not understood by the knitting machine computer.

	1	"	#	\$	%	&	۲	()	*	+	,	-	-	1
0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
0	А	В	С	D	Е	F	G	Н	Ι	J	Κ	L	М	Ν	0
Ρ	Q	R	S	т	U	۷	W	Х	Y	Ζ	[1]	~	
`	а	b	С	d	е	f	g	h	i	j	k	1	m	n	0
р	q	r	S	t	u	V	w	х	У	Ζ	{	1	}	~	

ASCII character set



36.2 Knitting specifications

1-7999 Knitting program line numbers

10000-99999

- 1100-7999 Knitting program or Jacquard line numbers
- 8000-9999 Reserved area for AutoSintral
 - << Carriage direction to the left
 - >> Carriage direction to the right
 - <> Carriage direction optional
 - **S:**"..."; Knitting specification
 - **DI.** Direct selection, I= stitch .= no selection %= Tuck, e.g. **DI.%D.I**
 - R All needles knit a stitch
 - F All needles knit a tuck
 - 0 All needles do not knit ("0=zero")
 - <" n"-> Jacquard areas n (1-8) decrease
 - <" n"+> Jacquard areas n (1-8) increase
- *+.ABEGHIKL Jacquard symbols for single needle selection

MOPQTWYZ

abeghiklmopqtwyz

- N Symbols written after N are not selected, but all other symbols, e.g. S:A-NA;
- **%** Symbols written after the % move needles to the tuck position, symbols written before % in the stitch position
- UVS Transfer to the front, e.g. S:UVS+;
- U^S Transfer to the rear, e.g. S:U^ST;
- UXS Transfer to the rear and to the front simultaneously, e.g. S:UXST-+; T= transfer to the rear += transfer to the front
- UXS"n"%"m"; Transfering and casting-off simultaneously, e.g. S:UXST%A-+%Y; n= jacquard symbol, transferring m= Jacquard symbol, cast-off %= symbols written in front of the % move needles to the transfer position, symbols written after the % move needles to the cast-off position,
- \$^S"n"%"m"; Split stitch rear, knit front n= Jacquard symbol, split stitch rear, knit front m= Jacquard symbol (direct selection), front stitch %= symbols written in front of the % move needles to the split stitch position, symbols written after the % move needles to the stitch position
- **\$VS**"n"%"m"; Split stitch front, knit rear
- **\$XS**"n"%"m"-"n"%"m"; Split stitch front and rear, knit front and rear

\$"n"-"m"; Stitch via split curve with freely selectable racking type (also possible: \$R-0, \$R-R) Specification with tuck not possible (e.g. \$%A-0, \$F-0)

1	Separates between the systems	
-	- Separates between the front and rear systems	
;	End of a specification sequence, always after ":";	
S "n"	Knitting and transfer system n (1-6)	
SX	Automatic system allocation	
SO	Empty row	
-/)0	Switch off needle selection for this row	
-/)S0 Deactivate needle selection for one system, Example of deactivating S2: S1 -/)S0 S2 S3		
-/)1	Switch needle selection on	
-/)1-0	Only for tandem machine: Left needle selection on, right off for this row (also possible: 0-1, 0-0, 1-1)	
NS "n","m" 1	Individual needles miss-knit at the front and rear	
NS"n"-"m","" 1	Needles in the specified area miss-knit at the front and rear	
NSV "n","m"	Individual needles miss-knit at the front	
NS^ "n","m"	Individual needles miss-knit at the rear	
NSV"n"-"m","" 1	Needles in the specified area miss-knit at the front	
NS^"n"-"m","" 1 Needles in the specified area miss-knit at the rear		

C Comment

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¹ Command also possible in "Direct commands" window

36.2.1 Direct commands (Knitting specifications)

- -/)0 Switch off needle selection (until -/)1)
- -/)1 Switch needle selection on
- -/)1-0 Only for tandem machine: Left needle selection on, right off (until -/)1-1) (also possible: 0-1, 0-0, 1-1)

36.2.2 Knitting specifications (additional beds)

- UZVN^S Transferring from front additional needle bed to rear needle bed
- UZ^NVS Transferring from rear additional needle bed to front needle bed
- UNVZ^S Transfer from front needle bed to rear additional needle bed
- UN^ZVS Transferring from rear needle bed to front additional needle bed
- UN^NVS Transfer from rear needle bed to front needle bed
- UNVN^S Transfer from front needle bed to rear needle bed



36.2.3 Knitting Specifications (CMS 730 S, CMS 830 S)

- & The symbols after & knit Short Stitch (in connection with the second stitch tension) e.g. S:AYT&G;
- &% The symbols after &% knit Short Tuck (in connection with the second stitch tension) e.g. S:AYT&%G;
- !% The symbols after !% knit Not sunken tuck (in connection with second stitch tension) e.g. S:AYT!%G;

36.3 Yarn Carrier

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YG: "n"/"n";	Yarn Carrier Home Position (n=1-8)		
YG "m":"n"/"n";	Yarn Carrier Home Position for piece m (m=1-4)		
YG: " n" F ;	Yarn carrier n (1-8) stops after EAY EAY or S0Y at #L, #R		
YG: "n"="m";	Assign yarn carrier to a symbol (yarn type); n (1-8), m (A-Z,.,+,*)		
YG: "n" F= "m";	Yarn carrier (yarn type) stops after EAY or S0Y at #L, #R		
S0Y	Empty courses until all yarn carriers are in yarn carrier home position		
Y: " n";	Yarn carrier specification n (0-8)		
Y:= " n";	Yarn carrier type n (A-Z,.,+,*)		
Y-1A:= " n";	Change yarn carrier type n (A-Z,.,+,*)		
YLR: "n"-"m";	Exchange of yarn carriers between left (n) and right (m) carriage (tandem machine only). E.g.: YLR:3-4 5-2;		
Y:" n "S ;	Yarn carrier n (1-8, 1A-8D) follows selected needles		
Y: " n" H ;	Yarn carrier n (1-8, 1A-8D) goes into HOME position		
Y-1A:K "n"-"m"; 1	Correction value for yarn carrier 1A if not swiveled and if the yarn carrier is positioned within the fabric. (n=left, m=right) Value range: -1200120. Step width: 1=1/16 inch=1.6 mm as of OKC: Step width: 0.5=1/32 inch=0.8 mm		
Y-1A:K<i></i> "n"-"m"; ¹	Yarn carrier 1A correction value with swiveled intarsia yarn carrier. (n=left, m=right) Value range: -1200120. Step width: 1=1/16 inch=1.6 mm as of OKC: Step width: 0.5=1/32 inch=0.8 mm		
Y-1A:KI "n"-"m"; ¹	Yarn carrier 1A correction value with intarsia yarn carrier not swiveled. (n=left, m=right) Value range: -1200120. Step width: 1=1/16 inch=1.6 mm as of OKC: Step width: 0.5=1/32 inch=0.8 mm		
Y-1A:K0; 1	Deletes yarn carrier correction for yarn carrier 1A		
Y-1A:0;	Yarn carrier 1A switching off of selected function (correction values are reset to the default values)		
Y-1A:HL "m";	Yarn carrier 1A moves on the left to position m (0-4) m=0 means back to the HOME-position		
Y-1A:HR "m";	Yarn carrier 1A moves on the right to position m (0-4)		
Y-1A:HL"m"G;	; Yarn carrier 1A goes on the left to position m (0-4). This position becomes the new home position.		
Y-1A:HR "m" G ;	Yarn carrier 1A goes on the right to position m (0-4). This position becomes the new home position.		



Y-1A:F1AY; Yarn carrier 1A follows symbols AY in field 1; max. F1-F4 and max. 8 symbols per yarn carrier.

The specifications can be entered one after another, but the field must be the last specification, e.g.: Y-1A:I< K10-8 F1AY;

- **Y-1A:F1AY^0;** The home position of the yarn carrier is only dependent on field 1, independent of the racking position (e.g. for a very large racking).
 - Y:" n"!; Yarn carrier n (1-8) is stopped outside the SEN area.
 - Y-1A:=1; Yarn carrier yarn type in action
 - Y-1A:=0; Yarn carrier yarn type out of action
 - #G Memory of yarn carrier whose current position is not in agreement with the YG
 - **#Y**"n" Memory for number of yarn carriers of a yarn type n (A-Z,.,+,*) in the current carriage position
 - () Brackets to repeat information, e.g.: Y:10(2/3/3) 8(4/5/5);
 - Y-1A:N2; Normal yarn carrier type 2 (without lifters) The intarsia yarn carrier type1 or type2 and the normal yarn carrier type2 can work on one track.
 - Y-1A:V" n"; Reduce carriage speed (n) for yarn carrier 1A (n = 0..3). The speed is reduced to 75 % from the carriage reversal point until the area of use for yarn carrier 1A is reached. Finally it can be chosen between the following possibilities:
 1 = Acceleration up to 100%

2 = Braking down to 50%, maintain speed over a fabric width of 2 inches, acceleration up to 100%

3 = Braking down to 50%, maintain speed over a fabric width of 5 inches, acceleration up to 100%

0 = Cancelling out of carriage speed specific to yarn carrier

- Y-1A:MSEC="n.nn" If yarn carrier 1A is used, then the carriage speed is n meters/second (0.05 1.2; 0.00=switch-off)
 - **Y-1A:P;** Yarn carrier 1A is defined as a plating yarn carrier. Indication important for yarn carrier control. This order takes into account the wider widths of the plating yarn carrier tip when positioning the yard carrier. (Not for plating with 2 yarn carriers)
 - Y-5A:PA; The yarn carrier 5A will be defined as a double bow yarn carrier.The specification is important for yarn carrier checking and for clamping / cutting.The command considers the larger width for both yarn carrier tips.
 - **YD**"n"="m"-"o" ¹ Yarn carrier distance on track n (1-8) from the left (m) and right (o) hand fabric selvedge

m,o=0-160

Step width: 1=1/16 inch=1.6 mm

- as of OKC: Step width: 0.5=1/32 inch=0.8 mm
- Not active when a YD specification was made for a single yarn carrier (**Y-1A:YDm-o**).
- Y-1A:YD"m"-"o"; Distance from yarn carrier 1A from the left (m) and right (o) hand fabric selvedge.
 m,o=0-160
 Step width: 0.5=1/32 inch=0.8 mm
 also possible:

Y-1A:YDm; Distance from the left fabric selvedge

- Y-1A:YD-o; Distance from the right fabric selvedge
- Only for OKC machines starting with operating system version
- V_OKC_002.005.000_STOLL (or higher)

YDF=" n" 1 Additional yarn carrier distance n (1-20 needles) during fully fashion knitting

- Y-1A:W" n"; Additional yarn carrier distance n (0-999 needles) when fully fashion knitting. The yarn carrier is put in a waiting position outside the fabric selvedge. The reference point is the HOME position of the yarn carrier.
 The yarn carriers will not follow the fabric edge during narrowing.
 The function is switched off when the yarn carrier is reused.
 - YD Yarn carrier staggering process (default setting)
 Distance of the yarn carriers from the left and the right fabric selvedge (track 1 to 8 = YD1 to YD8)
 Value range: 0-160. Step width: 0.5=1/32 inch=0.8 mm (From Setup2)
 - YDI"n" Further yarn carrier staggering processes on the left and right hand fabric selvedge (n=1-20)
 Value range: 0-160. Step width: 0.5=1/32 inch=0.8 mm (From Setup2)
 - **YC** Yarn carrier corrections for all yarn carriers (default setting) (From Setup2)
 - YCI"n" Further yarn carrier corrections (n=1-20) for all yarn carriers 0 = Factory settings are effective (From Setup2)
 - ¹ Command also possible in "Direct commands" window

36.3.1 Direct commands (yarn carrier)

- Y^A Switch off all yarn carriers selected by the program. Not with intarsia yarn carriers. (also possible: Y^A1)
- **YV** Switch on all yarn carriers selected by the program. Not with intarsia yarn carriers. (also possible: **YV1**)
- Y^"n"S"m" Switch off yarn carrier; n= yarn carrier 1-8, m= knitting system 1-6
- YV"n"S"m" Switch on yarn carrier up to the reversion

STOL

- **Y?** Display of the current yarn carrier position and the home position, as well as the correction values, carriage speed and racking position
- YD Indicates table displaying staggered position of yarn carriers at the fabric selvedge.
- YD? Shows a graph displaying the staggered position of yarn carriers at the fabric selvedge
- EAY Eliminate all yarn carrier positions



36.4 Clamping and cutting

- **YGC:**"n"/"n"; Yarn carrier home position (to each yarn carrier is allocated the clamping position which has the same number) (yarn carrier 1 clamping position 1, yarn carrier 2 clamping position 2, etc.)
 - SOYCR0 Empty courses until all yarn carriers are at the area of use (SEN or #L, #R)
 - Y-1A:C; Clamping and cutting the yarn of yarn carrier 1A
 - Y-1A:R; The clamp for the yarn of the yarn carrier 1A will be opened
- **Y-1A:R**" n"; The clamping device for yarn carrier 1A is open after n stitch rows (n=number -1) Value range: 0-120
 - 0 = clamp for yarn carriers 1A is not open
 - 1 = clamp for yarn carriers 1A is open
 - Y-RALL All clamps in carriage direction will be opened, as defined in YG.
 - Y-CR0¹ "Clamping and cutting" function out of operation (deleted automatically with EALL)
 - Y-CR1¹ "Clamping and cutting" function in operation (deleted automatically with EALL)
- Y-CR[0/1][L/R] Activate/deactivate clamping/cutting 0 = deactivated, 1 = activated L = left, R = right
 - Y:1K; Yarn carrier 1 knits and is then clamped and cut
 - NCC="n" Only for machines with clamping-cutting bed: Control of the clamping depth of the clamping and cutting needles, n=-10...0...10. Standard setting: n=0 e.g.: sink the cutting needles by 5 steps deeper: NCC=5
 - ¹ Command also possible in "Direct commands" window

36.4.1 Direct commands (Clamping and cutting)

 KPL"n"="m"
 Correction of the home position of the yarn carrier on the left thread clamping and cutting device (is retained for EALL).

 n = clamp 1-16
 m = value

 Value range: -16...0...16. Standard: 0
 Step width: 1=1/16 inch=1.6 mm as of OKC: Step width: 0.5=1/32 inch=0.8 mm)

KPR"n"="m" Correction of the home position of the yarn carrier on the right thread clamping and cutting device (is retained for **EALL**).

36.5 Racking

STOLL

- V<"n" Rear needle bed racks n needles to the left (n=1,2,3...)
- V>"n" Rear needle bed racks n needles to the right (n=1, 2, 3...)
 - **V0** Racking to position 0, home position
- VR"n" Racking to position n on the right, e.g. VR1
- VL"n" Racking to position n on the left
 - V# Half racking
 - VU Transfer racking (knitting and transfer)
- VK"n">"m" ¹ Racking correction n (A-Z) by m steps (0-10, ?) to the right ? = special function for setting the racking correction on the machine 0 = switch off correction
- VK"n"<"m"¹ Racking correction n (A-Z) by m steps (0-10, ?) to the left
 - VK"n" Racking correction identical to previous correction n (A-Z)
 - V+"n" Additional to racking specification: Racking will make an extra movement of n value (1-24) and then return immediately.
 Without a racking specification: Racking will make a movement of n value (1-24) to the right and return immediately
 - V-"n" Additional to racking specification: Racking will make an extra movement of n value (1-24) in the opposite direction and then in racking position
 Without a racking specification: Racking will make a movement of n value (1-24) to the left and return immediately
 - VV="n" Racking speed n (1-32), without any specification VV=32
 - VJA¹ The Jacquard selection on the rear always begins at the first needle, irrespective of the racking (normal setting after **START**).
 - VJA^0 The Jacquard selection on the rear remains stationary relative to the front bed, despite of the racking position.
 - VCI"n" Racking function n (n=1-50) (From Setup2)
 - ¹ Command also possible in "Direct commands" window

36.5.1 Direct commands (Racking)

- V>1 The needle bed racks 1 needle to the right (then at the carriage reversion back again)
- V<1 The needle bed racks 1 needle to the left (then at the carriage reversion back again)
- VK Displays current correcting value
- VK"n" Displays value of correction and direction of indicated correcting letters

36.5.2 Direct commands (Racking) (CMS 330 TC 4)

VVP Displays the racking position of the front needle bed (also possible: VVP?)



36.5.3 Racking specifications for the additional beds (CMS 730 T, CMS 330 TC-T)

- **VZV**<"n" Front additional needle bed racks n needles to the left (n=1,2,3...)
- VZ^<"n" Rear additional needle bed racks n needles to the left (n=1, 2, 3...)
- VZV>"n" Front additional needle bed racks n needles to the right (n=1, 2, 3...)
- VZ^>"n" Rear additional needle bed racks n needles to the right (n=1, 2, 3...)
 - VZV0 Racking front additional needle bed to position 0, home position
 - VZ^0 Racking rear additional needle bed to position 0, home position
- VZVR"n" racking front additional needle bed right to position n, e.g. VZVR1
- VZ^R"n" racking rear additional needle bed right to position n, e.g. VZ^R1
- VZVL"n" racking front additional needle bed left to position n, e.g. VZVL1
- VZ^L"n" Racking rear additional needle bed left to position n, e.g. VZ^L1
- VZVK"n">"m" Racking correction n (A-Z) of front additional needle bed by m steps (0-10) to the right (>) or left (<)
- VZ^K"n">"m" Racking correction n (A-Z) of rear additional needle bed by m steps (0-10) to the right (>) or left (<)
 - VZVK"n" Racking correction identical to previous correction n (A-Z) for front additional needle bed
 - VZ[^]K"n" Racking correction identical to previous correction n (A-Z) for rear additional needle bed
 - VZV+"n" Additional to racking specification: Racking of front additional needle bed will make an extra movement of n value (1-24) (+n) or in the opposite direction (-n) and then return immediately.
 Without a racking specification: Racking of front additional needle bed will make a

movement of n value (1-24) to the right (+) or left (-) and return immediately

VZ^+"n" Additional to racking specification: Racking of rear additional needle bed will make an extra movement of n value (1-24) (+n) or in the opposite direction (-n) and then return immediately.

Without a racking specification: Racking of rear additional needle bed will make a movement of n value (1-24) to the right (+) or left (-) and return immediately

- VVZV="n" Racking speed of front additional needle bed n (1-32), without any specification VVZV=32
- VVZ^{*}="n" Racking speed of rear additional needle bed n (1-32), without any specification VVZ^{*}=32

36.5.4 Racking specifications for the additional beds (CMS 530 T, CMS 330 TC-R)

STOLL

KNIT AHEAD

VZL<"n"	The left additional needle bed half racks n needles to the left (n=1,2,3)		
VZR<"n"	The right additional needle bed half racks n needles to the left (n=1, 2, 3)		
VZL> "n"	The left additional needle bed half racks n needles to the right (n=1, 2, 3)		
VZR>"n"	The right additional needle bed half racks n needles to the right (n=1, 2, 3)		
VZL0	Racking left additional needle bed half to position 0, home position		
VZR0	Racking right additional needle bed half to position 0, home position		
VZLR"n"	Racking left additional needle bed half to position n on right, e.g. VZLR1		
VZRR"n"	Racking right additional needle bed half to position n on right, e.g. VZRR1		
VZLL"n"	Racking left additional needle bed half to position n on left, e.g. VZLL1		
VZRL"n"	Racking right additional needle bed half to position n on left, e.g. VZRL1		
VZLK "n">"m"	Racking correction n (A-Z) left additional needle bed half by m steps (0-10) to the right (>) or left (<)		
VZRK"n">"m"	Racking correction n (A-Z) right additional needle bed half by m steps (0-10) to the right (>) or left (<)		
VZLK"n"	Racking correction identical to previous correction n (A-Z) for left additional needle bed half		
VZRK"n"	Racking correction identical to previous correction n (A-Z) for right additional needle bed half		
VZL+"n"	Additional to racking specification: Racking for left additional needle bed half will make an extra movement of n value (1-24) (+n) or in the opposite direction (-n) and then return immediately. Without a racking specification: Racking for left additional needle bed half will make a movement of n value (1-24) to the right (+) or to the left (-) and return immediately		
VZR+"n"	Additional to racking specification: Racking for right additional needle bed half will make an extra movement of n value (1-24) (+n) or in the opposite direction (-n) and then return immediately. Without a racking specification: Racking for right additional needle bed half will make a movement of n value (1-24) to the right (+) or to the left (-) and return immediately		

VVZ="n" Racking speed for additional beds n (1-32), without any specification VVZ=32



36.5.5 Racking specifications for the front needle bed (CMS 330 TC 4)

- VV<"n" Front needle bed racks n needles to the left (n=1, 2, 3...)
- VV>"n" Front needle bed racks n needles to the right (n=1, 2, 3...)
 - VV0 Racking to position 0, home position
- VVR"n" Racking to position n on the right, e.g. VVR1
- VVL"n" Racking to position n on the left, e.g. VVL1
- VVK"n">"m" Racking correction n (A-Z) by m steps (0-10) to the right
- VVK"n"<"m" Racking correction n (A-Z) by m steps (0-10) to the left
 - VVK"n" Racking correction identical to previous correction n (A-Z)
 - VV+"n" Additional to racking specification: Racking will make an extra movement of n value (1-24) and then return immediately.
 Without a racking specification: Racking will make a movement of n value (1-24) to the right and return immediately
 - VV-"n" Additional to racking specification: Racking will make an extra movement of n value (1-24) in the opposite direction and then in racking position
 Without a racking specification: Racking will make a movement of n value (1-24) to the left and return immediately
 - VVV="n" Racking speed n (1-32), without any specification VVV=32

36.6 Stitch cam settings

STOLL

- NP"n"="m.mm" ¹ Stitch cam position n (1-100) is set to stitch tension m, e.g. NP1=12.5 Step width: 0.1 as of OKC: Step width: 0.05 NP"x"-"y" Indirect specification of the stitch cam position for all systems (x= front, y= rear) x, y= 1-100, J1-J8, e.g. NP4-4, NP4, NP-4, NPJ1-J8, NP#3-#4 NPR:"<<k-l>>m-n"; Correction of the stitch cam position for the right carriage (only for tandem operation, "Clamping and cutting" function out of action) - = separates between the front and rear systems k,l,m,n = correction value -2.0 .. 2.0. Step width: 0.1. as of OKC: Step width: 0.05 >>, << = carriage direction S:A("n")-Y("m"); Indirect specification of stitch tension (n, m = 1-100, J1-J8) S:A(8.5)-Y(9.0); Direct specification of the stitch tension NPJ" n":...; Jacquard controlled stitch cam position n (1-8). Symbol "." must always be specified. Specification with "=": The tension change is equally distributed among both tension ranges. e.g. NPJ1:.=11.0 A=13.0 Y=12.2; Specification with "!": The area indicated with "!" remains unchanged. The stitch tension change is carried out in the adjacent area. e.g. NPJ1:.=11.0 A!13.0 Y=12.2; Areas with "!" may not be adjacent in the fabric. Tension assignment for a maximum of 35 Jacquard symbols S:A(J1)-Y(J2); Knitting specification with stitch tension setting according to NPJ1 front and NPJ2 rear PANP:...; Pattern arrangement for stitch cam positions PANP<...>:; Pattern arrangement for stitch cam positions with NPJ. Different stitch tensions can be specified on the left and right fabric selvedges
 - PMNP:...; Pattern pack on the machine/stitch cam positions

¹ Command also possible in "Direct commands" window

36.6.1 Direct commands (Stitch cam settings)

- **NP12.0-12.5** Direct specification of the stitch tension, 12.0 at the front, 12.5 at the rear, for all systems
 - NP Deletes the direct specification of the stitch tension
 - **NP?** Displays all values of stitch tension for NP1-NP100 (without correction)
 - NPK="n.nn" Stitch cam correction by n= -2.0...0...+2.0, e.g. NPK=-0.5 Step width: 0.1 as of OKC: Step width: 0.05
 - NPK=0 Deletes stitch cam correction (with EALL it is deleted automatically)
 - NP^ Displays actual setting at the rear
 - NPV Displays actual setting at the front
 - NPR Display of the stitch cam position with NPR correction



36.6.2 Stitch cam settings (CMS 730 S, CMS 830 S)

NPSn=m.mm	Stitch cam position second tension n (1-100) is set to stitch tension m, e.g. NPS1=- 2.0 The stitch cam value for the second stitch tension is specified relatively to the "normal" stitch tension. Value range: -8.00 till 0.0. Standard 0.0. Step width: 0.1
NPSx-y	Indirect specification of the stitch cam position second tension for all systems (x= front, y= rear) x, y= 1-100
S:A&B(n,x)-Y&G(m,y);	Indirect specification of stitch tension (n, m = 1-100, J1-J8) and of the stitch tension second tension (x, y = 1-100)
S:A&B(8.5,-2.0)-Y&G(9.0,-1.5);	Direct specification of stitch tension and the stitch tension second tension. Symbol A knits with tension "8.5". Symbol B knits with second stitch tension "6.5" (8.5-2.0=6.5). (Note: The stitch cam value for the second stitch tension is specified relatively to the "normal" stitch tension.)
PNPn=m.mm	Set stitch cam position Reclaiming n (1-100) to stitch tension m, e.g. PNP1=-2.0 The stitch cam value for reclaiming is specified relatively to the "normal" stitch tension. If the reclaiming and the second stitch tension are used in the same knitting system, then the reclaiming will be indicated relatively to the second stitch tension. Value range: equal to NP values. Standard 0.0. Step width: 0.1 {-} = deactivate reclaiming
PNPx-y	Indirect indication of the stitch cam position reclaiming for all systems (x= front, y= rear) x, y= $1-100$
S:{n}A-{m}Y;	Indirect indication of stitch tension reclaiming (n, m = 1-100)
S:{-2.0}A-{-1.5}Y;	Direct indication of the stitch tension reclaiming

36.7 Speed specifications

STOLL

KNIT AHEAD

ML	Machine at low speed (one row)	
ML1	Machine at low speed (up to ML0 = normal speed)	
MLO	The machine runs at specified speed	
MSEC="n.nn" 1	Carriage speed n.nn metres/sec., e.g. MSEC=1.20	
MSEC"m"	Indirect carriage speed (m=2-9)	
MSECm="n.nn" 1	Position the indirect carriage speed m (0-9) on the value n.nn 0 = Speed with empty rows ("S0") (n.nn=0.05 - 1.4; 0.00) 1 = Speed for transfer rows (n.nn=0.05 - 1.2; 0.00=switch off) 29 = Speed for knitting rows (n.nn=0.05 -1.2)	
MSECK="n","m" 1	Carriage speed n (0.05 - 1.2) for small knots over m rows, standard: 1 row with $\ensuremath{\textbf{ML}}$	
MSECI=" n" 1	Carriage speed n (0.05 - 1.0) for Intarsia yarn carriers	
MSECNPJ="n"	Carriage speed n (0.05 -1.2) for NPJ	
MSECC="n.nn" 1	Carriage speed outside the needle bed when the yarn carrier is brought in the clamp or taken out of the clamp. (n.nn=0.05 - 0.5; 0.00=switch off)	

¹ Command also possible in "Direct commands" window

36.7.1 Direct commands (speed specifications)

MSEC	Displays carriage speed
MSECY="n"	Carriage speed n (0.05 - 1.2) from the carriage reversal point until the area of use of the yarn carriers is reached. Then MSEC is active again.
ML "n"	Number of knitting rows (n=1-6) with reduced speed after a stop (0=function out)
МТ	Displays value of maximum number of courses
MS	Machine stop at left reversing position
MSN	Machine stop at next reversing position

 $\textbf{MSn} \hspace{0.1in} \text{Machine stop in n minutes}$



36.8 Structuring specifications in knitting program

START	Program - Start		
END	Program - End		
RS "n"="m" ¹	Sets cycle counter n (1-19) on number m (1-9999)		
RBEG*"n"	Cycle - start, times n (n= number, cycle counter or counter)		
REND	Cycle - End		
REP*"n"	Repeat n times (n= number, cycle counter or counter)		
REPEND	Repeat - End		
FBEG:"Name";	Function begin, name max. 255 characters, all characters permitted except *		
FEND	Function end		
GOTO "n"	Go to line n (n= number or counter)		
GOTO FEND	Go to function end		
F:"Name";	Call up function		
F:"Name"*"n";	Call up function n times (n= number, cycle counter or counter)		
GOSUB "n"	Carry out line n (n= number or counter)		
GOSUB "n"-"m"	Carry out line n up to line m (n, m = number or counter)		
GOSUB "n"*"x"	Carry out line n, x times (x= number, cycle counter or counter)		
GOSUB "n"-"m"*"x"	Carry out line n up to m, x times (x= number, cycle counter or counter)		
&n="""'	Definition of a symbol variable n (0-9). Specification of Jacquard symbols or a yarn type. Example of Jacquard symbols: &1='AYT' S:<1->&1-0; Example of yarn type: &1='A' Y:&1; Not possible as combination (e.g. &1&2)		
SBEG	Start of stroke processing. The knitting specifications are determined using conditions. The instructions for a carriage stroke do not end with at the end of a Sintral line, but when SEND is reached.		
SEND	End stroke processing.		

¹ Command also possible in "Direct commands" window

36.9 Stop motions

STOLL

NIT AHEAD

PV= " n" ¹	Piezo-electric stop for front to the value n (1-32) 1= low sensitivity, 32= high sensitivity (also possible: PVn)
P^= " n" ¹	Piezo-electric stop for rear to the value n (1-32) 1= low sensitivity, 32= high sensitivity (also possible: P^n)
MOT=" n" 1	Stop resistance to the value n (1-32) 1= low sensitivity, 32= high sensitivity (also possible: MOTn)
MT= " n" ¹	Maximum number of courses for the knitted piece. After n courses the piece will be ended as with <ctrl z=""></ctrl> . Piece counter is decreased.
MT=0 1	Switch off MT
MS ¹	Machine stop after reversion
MS= "n"	Machine stop at the reversion for n (0.1-4.0) seconds

36.9.1 Direct commands (stops)

- PV Displays value of front piezo-electric stop
- P^ Displays value of rear piezo-electric stop
- MOT Displays stop resistance value

36.9.2 Piezo stop motions (CMS 730 T, CMS 330 TC-T, CMS 330 TC 4)

- **PZV=**" n" ¹ Piezo-electric stop for front additional needle bed to the value n (1-32) 1= low sensitivity, 32= high sensitivity
- PZ^=" n" 1 Piezo-electric stop for rear additional needle bed to the value n (1-32)

36.9.3 Piezo stop motions (CMS 530 T, CMS 330 TC-R)

- **PZLV=**" n" ¹ Piezo-electric stop for left front additional needle bed to the value n (1-32) 1= low sensitivity, 32= high sensitivity
- PZL^=" n" ¹ Piezo-electric stop for left rear additional needle bed to the value n (1-32)
- PZRV=" n" ¹ Piezo-electric stop for right front additional needle bed to the value n (1-32)
- PZR^=" n" ¹ Piezo-electric stop for right rear additional needle bed to the value n (1-32)

¹ Command also possible in "Direct commands" window



36.10 Switch units on/off

- CL=" n" ¹ Number of courses n (1-9999) until the next cleaning course. The cleaning course is executed over the whole needle bed (also possible: CLn)
- CL=" n"< 1 Number of courses n (1-9999) until the next cleaning course. The cleaning course is only carried out toward the left up to the needle bed end (also possible: CLn<)</p>
 - AS=1 ¹ Switch on suction device (also possible: AS1)
 - AS=0 ¹ Switch off suction device (also possible: AS0)
 - AS=2¹ Switch on suction and blowing device (only on CMS 330 TC 4 up to component type 008) (also possible: AS2)
- **AST=x,y,z**¹ Periodic switch on and off of the suction device.
 - x = Number of courses without suction (1 course = 2 rows)
 - y = Number of courses with suction
 - z = (optional) long stroke of carriage over the entire needle bed (on: <math>z = 1, off: z = 0)
 - LK1¹ Monitoring of fabric collection chamber on (on CMS with comb take-down)
 - LK0 ¹ Monitoring of fabric collection chamber off (on CMS with comb take-down)
 - **SFO** "n" Switch both feed wheels (left and right) on (n = 1) or off (n = 0) (caution direct command **FO n**)
- **SFO** "n"-"m" Switch left and right feed wheels on or off separately (n, m = 0, 1) (attention direct command **FO n-m**)
 - LI" n" ¹ Switch lighting on/off (1= on, 0= off) (also possible: LI=n)
 - LI[^]" n" ¹ Setting the horn volume (n=0-3) 1= low, 3= high, 0= off
 - **OUT1=n** as of OKC: switch on/off device 1 (on: n=1, off: n=0) (adapter ident. number. 253291 necessary.)
 - **OUT2=n** as of OKC: switch on/off device 2 (on: n=1, off: n=0) (adapter ident. number. 253291 necessary.)

¹ Command also possible in "Direct commands" window

36.10.1 Direct commands (switch units on/off)

FO1	Feed	whee	on

- FO0 Feed wheel off
- FO1-1 left and right feed wheels on
- FO1-0 left feed wheel on and right feed wheel off
- FO0-1 left feed wheel off and right feed wheel on
- FO0-0 left and right feed wheels off

36.10.2 Switching units on and off (CMS 730 S, CMS 830 S)

ES:n; Presser foot in position n (1, U, S, 0)

1 - Switch presser foot on

STOLL

KNIT AHEAD

- U Switch presser foot on with transfer rows
- S Switch presser foot on with knitting rows
- 0 Switch presser foot off
-)(R Open thread clamp on the right; it is closed again automatically.
-)(L Open thread clamp on the left, it is closed again automatically.



36.11 Holding-down jacks (CMS 830 C, CMS 330 TC-C)

PSC=1 Opening of the holding-down jacks for a knitting row (e.g. with a large racking so that the yarn does not tear)

36.12 Information commands

PRINT/"TEXT"/ Displaying Text between two symbols (e.g. /.../) on the screen. Output of counter values, e.g. value of counter 10: PRINT /"Counter" 10: [#10]/

36.13 Fabric take-down

STOLL

- W0 Fabric take-down value is 0, no fabric take-down impulse for this row
- WM=" n" ¹ Fabric take-down value = n (0, 0.1, 0.2, 0.3-31.5) (n=number or counter)
- WMI=" n" ¹ Fabric take-down impulse n (0-15)
- WM%=" n" 1 Fabric take-down value +/-n% (1-80), e.g. WM%=+20, WM%=-30, WM%=#88
- **WMN=**" n" ¹ Fabric take-down value is changed according to the number of needles n (number or counter) working
- WMN=0¹ Erases the WMN command
- WMC" n" ¹ Set the speed control of the active take-down system (main take-down or comb take-down) to the value n (0-32). If the take-down system turns too quickly, the machine is stopped.
 0= no stop motion, 1= insensitive, 32= very sensitive
- WM+C=" n" ¹ Monitoring of main take-down. If the take-down has not been used after n (0-100) knitting rows, the machine will stop. (0=control off) (n=number or counter)
 - **WMF**"n" Call up fabric take-down function n (n=1-50) 0 = End function call, default values are active

36.13.1 Direct commands (fabric take-down)

- WM Shows WM settings (also possible: WM?)
- WMC Shows value for speed control

36.13.2 Auxiliary Take-down

- W+0 ¹ Open auxiliary take-down
- **W+1**¹ Close auxiliary take-down (the last given values are active)
- W+=" n" ¹ Turning value n (1-15)
 1= Auxiliary take-down closed, does not turn
 2 = lowest turning speed r.p.m., 15= highest turning speed r.p.m.
- W+P=" n" ¹ Contact pressure n (0-10), only for machines with working width of 72, 84, 86 and 96 inches (ST 468, OKC)
- W+C=" n" ¹ Monitoring of auxiliary take-down. If the auxiliary take-down has not been used after n (0-100) knitting rows, the machine will stop. (0 = no supervision)
 - W+F"n" Call up auxiliary take-down function n (n=1-50) (From Setup2)
 - ¹ Command also possible in "Direct commands" window



36.13.3 Specific commands - CMS 5xx, 7xx, 8xx (OKC)

WM^"n","m" ¹ Open the brake of the active take-down system (main take-down or comb take-down) for a maximum of 2,5 seconds, take-down roller or comb take-down turn back by a maximum number of degrees m (depending on the fabric tension and the fabric take-down value n). If either of both the conditions is fulfilled, then the brake is closed again.
 m=9-60 degrees, fabric take-down value (n=0-31.5) becomes active again at the reversion.
 WM^" n" ¹ Special case of WM^"n","m". Equivalent to WM^"n",60
 WM^"n", M¹ The brake of the active take-down system (main take-down or comb take-down) is open, powered turn-back of the take-down roller or the comb take-down by m degrees, regardless of the fabric tension, close the brake again.

m=9-60 degrees, fabric take-down value (**n=0-31.5**) becomes active again at the reversion.

¹ Command also possible in "Direct commands" window
36.13.4 Specific commands - CMS 9xx (OKC)

W0n Fabric take-down value = 0, fabric take-down impulse n (0-15), e.g. W05

- WM^"n","m" ¹ Open the brake of the active take-down system (main take-down or comb takedown) for a maximum of 2,5 seconds, take-down roller or comb take-down turn back by a maximum number of degrees m (depending on the fabric tension and the fabric take-down value n). If either of both the conditions is fulfilled, then the antirun-back device is closed again. m=9-120 degrees, fabric take-down value (n=0-31.5) is active immediately after
 - WM[^]" n^{" 1} Special case of WM[^]"n","m". Equivalent to WM[^]"n",120

closing the anti-run-back device.

- WM^"n","m",M ¹ The brake of the active take-down system (main take-down or comb take-down) is open, powered turn-back of the take-down roller or the comb take-down by m degrees, regardless of the fabric tension, close the anti-run-back device again. m=9-120 degrees, fabric take-down value (n=0-31.5) is active immediately after closing the anti-run-back device.
 - WM-¹ Open the anti-run-back device
 - WM+ 1 Close the anti-run-back device
 - WS1 ¹ Fabric sensors on

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WS0 ¹ Fabric sensors off

¹ Command also possible in "Direct commands" window

36.13.5 Specific commands - CMS 3xx (ST 168, 268, 468)

WM^"n","m" ¹ Open the brake of the active take-down system (main take-down or comb take-down) for a maximum of 2,5 seconds, take-down roller or comb take-down turn back by a maximum number of degrees m (depending on the fabric tension and the fabric take-down value n). If either of both the conditions is fulfilled, then the brake is closed again. m=8-60 degrees, fabric take-down value (n=0-31.5) becomes active again at the

m=8-60 degrees, fabric take-down value (**n=0-31.5**) becomes active again at the reversion.

- WM^" n" 1 Special case of WM^"n","m". Equivalent to WM^"n",60
- WM^"n","m",M ¹ The brake of the active take-down system (main take-down or comb take-down) is open, powered turn-back of the take-down roller or the comb take-down by m degrees, regardless of the fabric tension, close the brake again. m=9-60 degrees, fabric take-down value (n=0-31.5) becomes active again at the reversion.

¹ Command also possible in "Direct commands" window



36.13.6 Specific commands - CMS 4xx (ST 168, 268, 468)

W0n Fabric take-down value = 0, fabric take-down impulse n (0-15), e.g. W05

WM^"n","m" ¹ Open the brake of the active take-down system (main take-down or comb take-down) for a maximum of 2,5 seconds, take-down roller or comb take-down turn back by a maximum number of degrees m (depending on the fabric tension and the fabric take-down value n). If either of both the conditions is fulfilled, then the anti-run-back device is closed again. m=9-120 degrees, fabric take-down value (n=0-31.5) is active immediately after

m=9-120 degrees, fabric take-down value (**n=0-31.5**) is active immediately after closing the anti-run-back device.

- WM[^]" n" ¹ Special case of WM[^]"n","m". Equivalent to WM[^]"n",120
- WM^"n","m",M ¹ The brake of the active take-down system (main take-down or comb take-down) is open, powered turn-back of the take-down roller or the comb take-down by m degrees, regardless of the fabric tension, close the anti-run-back device again. m=9-120 degrees, fabric take-down value (n=0-31.5) is active immediately after closing the anti-run-back device.
 - WM-1 Open the anti-run-back device
 - WM+ ¹ Close the anti-run-back device
 - WS1 ¹ Fabric sensors on
 - WS0 ¹ Fabric sensors off
 - ¹ Command also possible in "Direct commands" window

36.13.7 Additional commands for machines with comb take-down

=W= 1 Open Main Take-down

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- =C= ¹ Close the main take-down
- **=WC("** n")= Releasing the fabric. The carriage stops in the reversion, the main take-down opens and closes. During the waiting time of n seconds the fabric is tensioned again. n = 0 to 20 seconds.
 - =%= 1 Close comb brake
 - =^= ¹ Comb upward, pick up comb thread and take it off downward
 - *(" n")= Comb upward, pick up comb thread and take it off downward, transfer position (comb take-down/fabric take-down) by n millimeters higher (0...-22) or lower (0...25) than standard setting.
 For the CMS 730 S, the transfer position can only be set deeper.
 - =-= ¹ Comb moves into waiting position
 - =S= ¹ Comb moves onto upper limit switch (for adjustment only)
 - =0= ¹ Opening of the comb hook, comb moves to the lower limit switch.
 - =H= ¹ Opening of the comb hook, comb stops
- WMK+C=" n" ¹ Controlling the comb. If the comb has not moved after n (0-100) knitting rows, the machine will stop. (0=control off) (n=number or counter)
 - **WMK%** Changing the fabric take-down value by n percent while the comb take-down is working. The value is active till the fabric is taken down by the main take-down. Value range: -80...0...80
 - ¹ Command also possible in "Direct commands" window

36.13.7.1 Direct commands (Comb take-down)

- =X= Open comb brake
- =R= Comb reference run



36.14 Pattern specifications

- SEN="n"-"m" ¹ Selected knitting area from needle n m
- SEN"x"="n"-"m" ¹ Select knitting area for piece x (1-4) from needle n m
 - SEL"x":1; ¹ Switch on piece x (1-4) (SENx)
 - SEL"x":0; ¹ Switch off piece x (1-4) (SENx)
- **JA**"x"="k"("m"-"n") Jacquard x (1-8), k = starting line, m = first line, n = last line e.g. **JA1=1112(1102-1112)**
 - JA<" n"-> Decrease Jacquard n (1-8), sets memory JS, JB
 - JA<" n"+> Increase Jacquard n (1-8), sets memory JS, JB
 - **F**"x"="n"-"m" Pattern field x from n to m (x = A-Z, 0-9, ^, [,])
 - PA:"..."; Pattern pack arrangement
 - PKV:"..."; Pattern pack correction front

PKV:0; Erase pattern pack correction front

- PK^:"..."; Pattern pack correction rear
 - PK^:0; Erase pattern pack correction rear
- PM:"..."; Pattern pack on machine
 - ¹ Command also possible in "Direct commands" window

36.14.1 Direct commands (pattern specifications)

SEN Output of the currently set SEN, SEN1=...SEN2... a.s.o.

36.15 Jacquard

1100-7999 Jacquard line numbers

*+.ABEGHIKL Jacquard Symbols

MOPQTWYZ

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abeghiklmopqtwyz

- XNS Jacquard symbols (special signs)
 - X- With overlapping the background is not changed
 - N- Do not select
 - S- Always select
- ...-... Separating character between PA and PAI
- ...=... Separating character between PAI and PANP

36.15.1 Direct commands (Jacquard)

J? Displays current Jacquard line



36.16 Jacquard-dependent decisions

- JA" n"- Jacquard n (1-8) decreases until next Jacquard line, sets the counters JS, JB and turns back
- JA" n"+ Jacquard n (1-8) increases until next Jacquard line, sets the counters JS, JB and turns back
- JB"n" Memory n (1-8) for the first 20 symbols of the Jacquard line
- JB<" n"-> Memory JB n (1-8) decreases until next Jacquard line, sets the counter JB
- JB<" n"+> Memory JB n (1-8) increases until next Jacquard line, sets the counter JB
 - JB" n"- Memory JB n (1-8) decreases until next Jacquard line, sets the counter JB and turns back
 - **JB**" n"+ Memory **JB** n (1-8) increases until next Jacquard line, sets the counter **JB** and turns back
 - JS="n" Processing memory for Jacquard symbols from the nth column
- IF JS='T' If JS='T' then ...
- IFN JS='T' If not JS='T' then ...
- IF JB='YYYA' If Jacquard begins with'YYYA', then ...
- IF JB" n"='AYT*' If the symbols AYT* are located from the n-th column in the Jacquard, then ...
- IFN JB='YYYA' If Jacquard does not begin with 'YYYA', then...
- IFN JB" n"='AYT*' If the symbols AYT* are not located from the n-th column in the Jacquard, then ...

36.17 IF-decisions

- IF IF-decisions
- A>B A greater than B
- A<B A smaller than B
- A=B A is equal to B
- A<>B A is not equal to B
- A=>B A is equal to or greater than B
- A<=B A is smaller than or equal to B
- A and B can be numbers, counters or mathematical expressions (+-), E.g.: IF RS19=1 F:ANFANG-2X1
 - IFN If not, ... E.g.: IFN RS19=1 F:ANFANG-1X1

36.18 Cycle counters and counters

ST=" n" ¹ Set piece counter to the value n (1-99999). (also possible: PC="n" or CP="n")

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RS"n"="m" ¹ Sets cycle counter n (1-19) on number m (1-99999)

¹ Command also possible in "Direct commands" window

36.18.1 Direct commands (cycle counters and counters)

- ST Displays the value of the piece counter
- **RS**"n" Displays contents of cycle counter n (1-19)
- RS? Displays contents of all cycle counters 1-19



36.19 Counter

#1 - #99 The counters 1-99 are available for any use. #40 - #99 are deleted with **EALL** Setting #1 - #119: from 1 to 99999

The following counters will be reset to 0 with START:

#1 - #39 #46 - #49 #120 - #122 #125 - #134

The following counters remain unchanged:

```
#40 – #45
#50 - #99
```

- #35 Momentary Jacquard width (number of symbols in the jacquard line)
- #41 Identical to #L
- #42 Identical to #R
- #43 Identical to #LM
- #44 Identical to #RM
- #46 Identical to #FL
- #47 Identical to #FR
- #48 Identical to #F1 (widening or narrowing on left side)
- #49 Identical to #F2 (widening or narrowing on right-hand side)

Counters for single-piece knitting

- **#51** Start-width at the left
- #52 Start-width at the left
- #53 Start-width middle-left
- #54 Start-width middle-right
- #55 Auxiliary counters for size correction
- **#56** Auxiliary counters for size correction

Counters for two-piece knitting

- #55 left piece: Start-width at the left
- #56 left piece: Start-width at the left
- **#57** left piece: Start-width middle-left
- #58 left piece: Start-width middle-right
- #59 right piece: Start-width at the left
- #60 right piece: Start-width at the left



- #61 right piece: Start-width middle-left
- #62 right piece: Start-width middle-right
- #63 Auxiliary counters for size correction
- #64 Auxiliary counters for size correction

Piece counter and cycle counters

- #100 or ST Piece counter
- #101 or RS1 Cycle counter 1

: :

#119 or RS19 Cycle counter 19

From #120 on, the counters can only be read

- #120 Which cycle is running
- #121 How many times does the active cycle run in total
- #122 How many times does the active cycle still have to run
- #123 The current program line number
- #124 Carriage direction: <<=1, >>=0
- #125 Automatic row counter
- #126 Automatic course counter
- #127 Current JA1 line number
- #128 Current JA2 line number
- **#129** Current **JA3** line number
- #130 Current JA4 line number
- #131 Current JA5 line number
- #132 Current JA6 line number
- #133 Current JA7 line number
- **#134** Current **JA8** line number
- #135 Metres/second multiplied by 100 (e.g. 1.25=125)
- #136 Machine number 0...9999
- **#137** Gauge, e.g. 3...12
- #138 Needle number of this gauge, e.g. 996
- #139 Machine type (e.g. CMS 400 = 700)
- **#140** Limit switch of the comb. (0= comb bottom, 1= not bottom, 2= machine without comb)
- #141 First fabric piece (SEN1) left fabric selvedge
- #142 First fabric piece (SEN1) right fabric selvedge
- #143 Second fabric piece (SEN2) left fabric selvedge



- #144 Second fabric piece (SEN2) right fabric selvedge
- #145 Third fabric piece (SEN3) left fabric selvedge
- #146 Third fabric piece (SEN3) right fabric selvedge
- #147 Fourth fabric piece (SEN4) left fabric selvedge
- #148 Fourth fabric piece (SEN4) right fabric selvedge
- #149 Number of knitting systems
- #156 Coupling width in inches (tandem machine)
- **#157** Clamping-cutting function **"Y-CR"** (0=switched on, 1=off, 2=only right-hand side switched on, 3=only left side switched on)
- #196 YLC mode
- **#197** as of OKC: Prompt to know whether the sequence knitting is active (#197=1) or not (#197=0)
- #198 as of OKC: Shows how often the current sequence element is still repeated
- **#199** Auxiliary take-down (1= available, 0= not available)

36.19.1 Calculating with counters

- + Addition, e.g.: #11=#10+7
- Subtraction, e.g.: #L=#L-2
- * Multiplication, e.g.: #10=#11*3
- / Division, e.g.: #8=#103/4
- () Prioritization using brackets; dot for dash applies
- EVEN#"n" Counter n contains only even number values, rounds off
- EVEN4#"n" Counter n contains only 4 divisible number values, rounds off

36.20 Intarsia

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- Y-1A:I; Yarn carrier 1A is defined as an intarsia yarn carrier but does not swing
- Y-1A:I<; Yarn carrier 1A is defined as an intarsia yarn carrier, it swings in the carriage direction indicated
- Y-1A:I>; Yarn carrier 1A is defined as an intarsia yarn carrier, it swings in the carriage direction indicated
- Y-1A:I<>; Yarn carrier 1A is defined as an intarsia yarn carrier, it swings to both left and right
- INTS:"..."; Intarsia structure e.g. INTS:%A-0; Tuck structure at the front if a Jacquard symbol A is present in PA:
 - INTSX: Tuck structure at the end of the colour field
- INTSN:"..."; No intarsia structure for specified symbols
 - INTS:0; Switching off of the intarsia structure
 - INTS:0-0; Switch off intarsia structure at front and rear
 - **PAI:**"..."; Pattern pack arrangement for intarsia, colour field information. Only 1 field is permissible in the pattern pack.
 - H In the PAI, the symbol H is allocated to both adjacent color fields
- S:<A>"..."; Releases the Jacquard selection (PA:) in the color field A

36.20.1 Intarsia commands with "Stoll multi gauges" pattern technology

- **INTS**"n":"..."; Widen the intarsia structure area to n needles (n=2-3) in the left and right colour field edges
- INTS"n"L:"..."; Widen the intarsia structure area to n needles (n=2-3) in the left colour field edge
- INTS"n"R:"..."; Widen the intarsia structure area to n needles (n=2-3) in the right colour field edge
 - INTS" n"X: Widen tuck structure to n needles (n=2-3) at the colour field end
 - INTS" n": Switching off of the intarsia structure with n needles (n=2-3)



36.21 Fully fashion knitting

- PFN Machine works as a standard machine without FF function (automatically after START)
- PF0 Machine works as an FF machine; corrections with N by the selvedge counter (#L, #R, #LM, #RM and #L1 to #R2)
- PF1 Switch on PA correction PL: and PR:. Plus function from PF0
- PF2 All indicated PA corrections are carried out
- PL:'LLLL'; PA correction on the left with 4 times symbol L (narrowing selvedge)
- PR:'PPPP'; PA correction on the right
- PLM:'MMMM'; PA correction on the centre left
- PRM:'QQQQ'; PA correction on the centre right
 - PL:; Deletion of the left PA correction
 - PL=" n"> PA correction area on the left during narrowing Correct n needles according to the H Jacquard line
 - PL=" n" < PA correction range left while widening
 - PR=" n" > PA correction range right consists of n needles while widening
 - PR=" n"< PA correction range right consists of n needles while narrowing
 - PLM=" n"> PA correction range left centre consists of n needles while widening
 - PLM=" n"< PA correction range left centre consists of n needles while narrowing
 - PRM=" n"> PA correction range right centre consists of n needles while narrowing
 - PRM=" n"< PA correction range right centre consists of n needles while widening
- *+.ABEGHIKL Jacquard symbols for PA corrections

MOPQTWYZ

abeghiklmopqtwyz

- H At the start of a Jacquard line: Identification of a correction line
- PFSL Needle selection from #L to #LM (#L1 to #LM1, #L2 to #LM2)
- PFSR Needle selection from #RM to #R (#RM1 to #R1, #RM2 to #R2)
- **PFS0** Deletes **PFSL** or **PFSR** (also possible: **PFS**)

Counters for single-piece knitting

- **#L** Selvedge counter left
- #R Selvedge counter right
- #LM Selvedge counter middle left
- **#RM** Selvedge counter middle right

Counters for two-piece knitting

#L1 left piece: selvedge counter left

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AHEAD

- **#R1** left piece: selvedge counter right
- #LM1 left piece: selvedge counter left centre
- **#RM1** left piece: selvedge counter right centre
- #L2 right piece: selvedge counter left
- #R2 right piece: selvedge counter right
- #LM2 right piece: selvedge counter left centre
- #RM2 right piece: selvedge counter right centre

Modification of shape counters

- #L>"n" Increase #L by n, e.g. #L>2 (or #L1>"n"... #R2>"n")
- #L<"n" Decrease #L by n (or #L1<"n" ... #R2<" n")
- #L>#FL Increase #L by the content of #FL
- FL:"nnnn..."; Shape memory on the left (n=0-7) (changes #L, #L1, #L2), e.g. FL:+50(1) -25(10)
- FR:"nnnn..."; Shape memory on the right (n=0-7) (changes #R, #R1, #R2)
 - F+ Reading of the shape memories FL and FR, values in #FL and #FR, directions in #F1 or #F2
 - #FL Counter for shape modification on the left (changes #L, #L1, #L2)
 - **#FR** Counter for shape modification on the right (changes **#R**, **#R1**, **#R2**)
 - #F1 Counter for widening or narrowing on the left
 - #F2 Counter for widening or narrowing on the right
- **F**("x"):"nnnn..."; Definition for shape memory x (1-6), e.g. **F(1):+50(1) -25(10)**
 - F("x")+ Reading of the shape memory x (1-6), amount in #F(x), direction in #F<x>
 - **#F**<"x"> Counter for widening or narrowing after reading the shape memory x (1-6) with **F**(x)+
 - #F("x") Counter for amount of shape modification after reading the shape memory x (1-6)
 with F(x)+



36.22 Direct commands

- W- Shows all lines from the first line (automatic switch over to the "Sintral-Editor" window)
- W" n"- Shows all lines from the line n (automatic switch over to the "Sintral-Editor" window)
- W"n"-"m" Shows the lines n to m (automatic switch over to the"Sintral-Editor" window)
 - EALL Deletes everything
 - LEALL Deletes protected memory area (library)
 - TP Test the program
 - TP"n" Test the program from line n
 - TPW Tests and displays the program
 - TPW"n" Tests and displays the protocol from line n
 - SP Start the program, switch on the memory protection
 - SP1 Start the program on line 1
 - SPF Start the program and fix it on the first knitting row
 - SPF"n" Start the program on line n and fix it there (also possible: SPnF)
- <CTRL A> Cancels text output or TP
- <CTRL W> Interrupts the current knitting pattern cycle, subsequent cycles are knitted as programmed
- <CTRL Z> The machine automatically makes a restart on a new piece when the following conditions have been met:
 - 1. Racking located on home position
 - 2. Yarn carriers located at starting position
 - 3. Carriage direction permits new start

As long as these conditions are not met, cycles (**RBEG...REND**) will only be knitted once.

- OIL="n" Number of system passes (n=1-65535) until message "Lubricate needle bed"
 - OIL Input after lubrication of needle beds
 - OIL? Query of system passes until the message "Lubricate needle bed"
 - EX0 Machine and power supply are switched off if piece counter is on 0
 - EX1 Machine and power supply are switched off after a piece is finished
 - EXS Power supply is switched off if the machine stops
 - EX Deletes EX0, EX1 or EXS
 - MIN Shows running time of the last knitted part (from START...END)
- MINSEQ Displays running time for a complete sequence (also possible: MINSEQ?)
- MINSEQEL Displays running time of the last knitted sequence element (also possible: MINSEQEL?)
 - DA= Input of the date and time e.g.: DA=31.10.87 14:10
 - DA Query of the date
 - MC!#"n" Sets machine number n (1-9999) for KnitLAN connection

S# "n"	Switch on shift counter and report n (1-5)
---------------	--

- S#" n"=0 Delete shift counter and report n (1-5)
 - S#? Displays contents of the shift counters
 - **SH** Short report, display of last cause of stopping with time. Example: 3 09:16 means: Stopping due to piece counter = 0.
- REPORT Report
- REPORTL Report on printer
- REPORTS Shows all shift reports on the display
- **REPORTSL** Printout of all shift reports
- REPORT0 Delete report



36.23 Yarn Length Control (YLC, STIXX, ASCON)

- YLC1 Measurement and control, depending on the carriage direction (also possible: STIXX1)
- YLC2 Special knitting program for adjusting the stitch cams (also possible: STIXX2)
- YLC3 Measuring in test fabric for mode 1, 7 or 8 (also possible: STIXX3)
- YLC4 Measuring + Determining correction values (also possible: STIXX4)
- YLC5 Measuring in original fabric for mode 6 (also possible: STIXX5)
- YLC6 Control with the correction values from mode 5 (also possible: STIXX6)
- YLC7 Measurement and control, independent of carriage direction (also possible: STIXX7)
- YLC8 Measurement and control, depending on carriage direction and knitting system (also possible: STIXX8)
- YLC0 ¹ Switch off (neither measure nor control) (also possible: STIXX0)
 - YLC- Interrupt the control for one carriage stroke (also possible: STIXX-)
- YLC(-...YLC-) Deactivate control in one area Start: YLC(-End: YLC-)
- YLCDEV:"x"-"y"; Transfer the correction values from yarn carrier (measuring wheel) x to yarn carrier y. Up to 4 transfers can be specified per carriage stroke. Example: YLCDEV:3-6 3-5 2-4 1-7 (also possible: STIXXDEV:"x"-"y";)
 - ¹ Command also possible in "Direct commands" window

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36.24 Service commands

36.24.1 Yarn carrier (Direct commands)

EXY^ Switch off all yarn carriers when switching off the machine main switch (command is active until switching off)

36.24.2 Racking (Direct commands)

VPK> "n"	Racking position correction n steps (1-8) to the right
VPK< "n"	Racking position correction n steps (1-8) to the left
VPK	Shows machine-specific racking position correction
VGK> "n"	Racking basic correction by n (0-150) steps to the right (factory setting!)
VGK< "n"	Racking basic correction by n (0-150) steps to the left (factory setting!)
VGK	Shows current setting of racking basic correction (factory setting!)
VGKABS	Shows current setting (absolute value) of racking basic correction (factory setting!)
VGKABS>"n"	Changes the current setting of the rightwards racking basic correction to the absolute value n (factory setting!)
VGKABS<"n"	Changes the current setting of the leftwards racking basic correction to the absolute value n (factory setting!)
V>REF	Racking reference run
>!V	Release the rear racking brake

36.24.3 Racking (direct commands) (CMS 330 TC 4)

- >!VV Release the front racking brake
- >!VZ Release the racking brake for additional beds
- VVPK>"n" Front racking position correction n steps (1-8) to the right
- VVPK<"n" Front racking position correction n steps (1-8) to the left
- VVGK>"n" Front racking basic correction by n (0-150) steps to the right
- VVGK<"n" Front racking basic correction by n (0-150) steps to the left





36.24.4 Stitch cam settings (Direct commands)

NPK("n")^<="m"\$"p"	Individual correction of stitch cam n (1-6) at rear, < - carriage direction (< toward left, > toward right) m (-2.0, +2.0) - Normal loop sinking of stitches \$ - Correct split range by p (-2.0, +2.0)
NPK("n") V<="m"\$"p"	Individual correction of stitch cam n (1-6) at front,
NPK(" n")^<=0	Deletes individual correction rear, carriage direction to the left

¹ Command also possible in "Direct commands" window

36.24.5 Carriage movement

MCW>< 1	Short stroke (is automatically switched on with EALL)
MCW<> 1	Long stroke
MCW="n"-"m" 1	Carriage path from needle n to m, independently of $\ensuremath{\textbf{SEN}}$ area
	¹ Command also possible in "Direct commands" window

36.24.5.1 Carriage movement (direct commands)

- SR!> Search for reference mark, moving to the right
- SR!< Search for reference mark, moving to the left
 - S> Carriage to the right
 - S< Carriage to the left
 - >! Release the carriage drive brake

36.24.6 Instructions (Direct commands)

- DIS"n" Switching off the display after n minutes (3-60)
 - DIS Display of the set value (also possible: DIS?)

36.24.7 Information commands (Direct commands)

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MC?	Shows all machine-specific data
VER	Versions of the operating systems for software and hardware
COPY LOGFILES	Copies the current log files of the machine to floppy disk.
MC-SAVE	Save current machine data to hard disk (not for OKC)
MC-RESTORE	Restore machine data previously backed up with MC-SAVE from the hard disk to the machine memory (not for OKC)
MC-RESTOREDATA	Copy the STOLL factory settings back to the machine memory (not for OKC)
SAVE DONGLE	Copies the current machine data to floppy disk.

36.24.8 Fabric take-down (Direct commands)

WAK	Indicates correction value for fabric take-down
WMADJ	Indicates correction value for fabric take-down with small WM values
WKK	Indicates correction value for comb take-down

