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Part 4: Programming manual Cl. 550-12-12

1. General

This programming manual contains important information on the safe, proper and economic use of the 200-3 and 200-6 multiprogram control.

<table>
<tr><th></th><th>200-3 controls</th><th>200-6 controls</th></tr>
<tr><td>Memory capacity of the controls</td><td>20 different models with
10 size groups</td><td>15 different models with
15 size groups and with the corresponding half sizes (see size table).
A preprogramming is possible in all model variants.</td></tr>
<tr><td rowspan="2">Data transfer</td><td>Transfer to a 32k memory card</td><td>Transfer to a 128k memory card</td></tr>
<tr><td colspan="2">The controls are marked with the appropriate identification plate. From this memory card the data can be read-in to a multiprogram control again.
Transfers from a 128k card to a 32k card and vice versa are not possible.
This procedure can be repated as often as desired within the storage period of the memory card.
Storage period of the memory card: Approx. 4 years without a battery replacement.</td></tr>
<tr><td rowspan="2">Programming comfort</td><td>The base size entered is valid for all programs.
There are 10 programs in memory.</td><td>The base size can be chosen for each program.
The memory contains 45 additional sizes, that is, all normal half sizes, too.</td></tr>
<tr><td colspan="2">The sewing program is generated for one sleeve in the base size through a teach-in procedure.
The program for the second sleeve is arrived at through mirroring. The transfer of the generated program in the complete size set is automatic.
The fullness controls allow a precisely repeatable setting and calling-up of varying fullness quantities.
The automatic program sequence assures uniform quality and high capacity.</td></tr>
<tr><td>Operating comfort</td><td colspan="2">All steps necessary for the generation of a program are shown in a monitor text. The monitor text can be called up in different languages.
A graphic shows the individual programmes sewing steps.
All important data is listed on the monitor next to the graphic.
Programs can be given names and comments via text entry.</td></tr>
</table>

Please note

The symbols representing keys in this documentation are given in the table below.

Symbol	Signification
… **+** …	Press the keys **at the same time**.
(eg **Y** + **P)**	Press the key **Y** and keep depressed, additionally press the key **P**.
… **,** …	Press the keys **successively**.
(eg **P** , **0**)	Press the key **P** and release. Then press the key **0**.

2. Operating elements

On-screen displays

Each operation mode (manual operation and automatic operation) is represented by a special on-screen display.

Screen operating elements

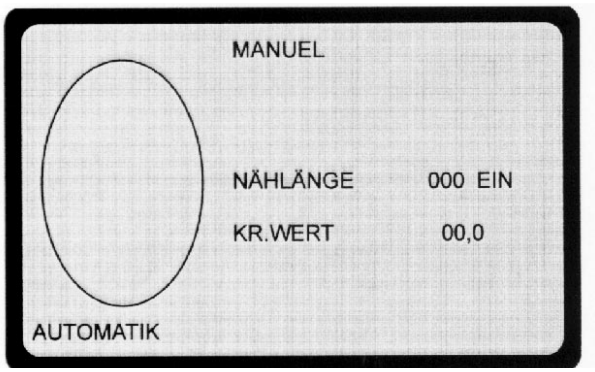
The operating elements of the **200-3** and **200-6** multiple program control are divided up into two key groups.
The **screen operating elements** are located on the left beside the screen.
They consist of five keys located underneath each other.

Keyboard operating elements

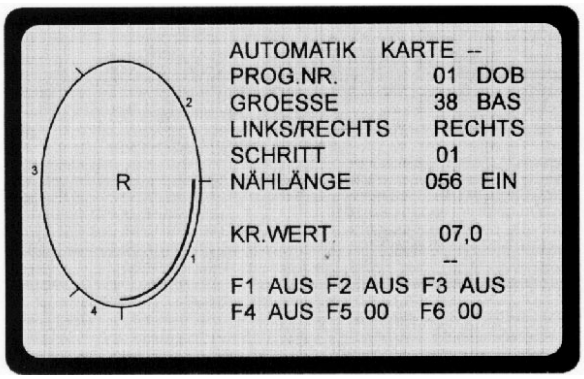
The **keyboard operating elements** are located underneath the screen.

They consist of 30 keys arranged in two rows.

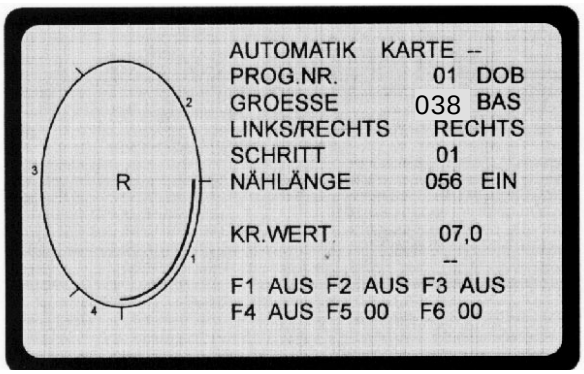
2.1 On-screen displays



Manual operation



Automatic operation 200-3 controls



Automatic operation 200-6 controls

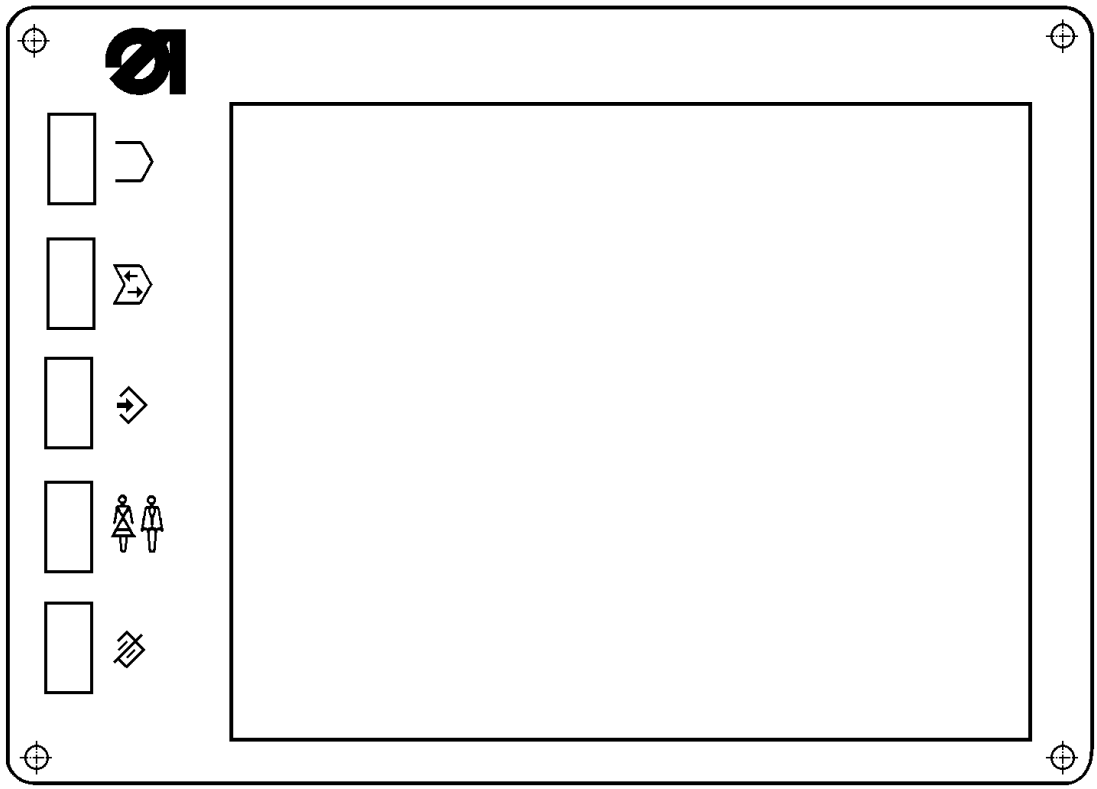
Manual operation

With the manual operation the operator preselects the gathering value.
The number of stitches is counted automatically during sewing and displayed on the screen.

Automatic operation

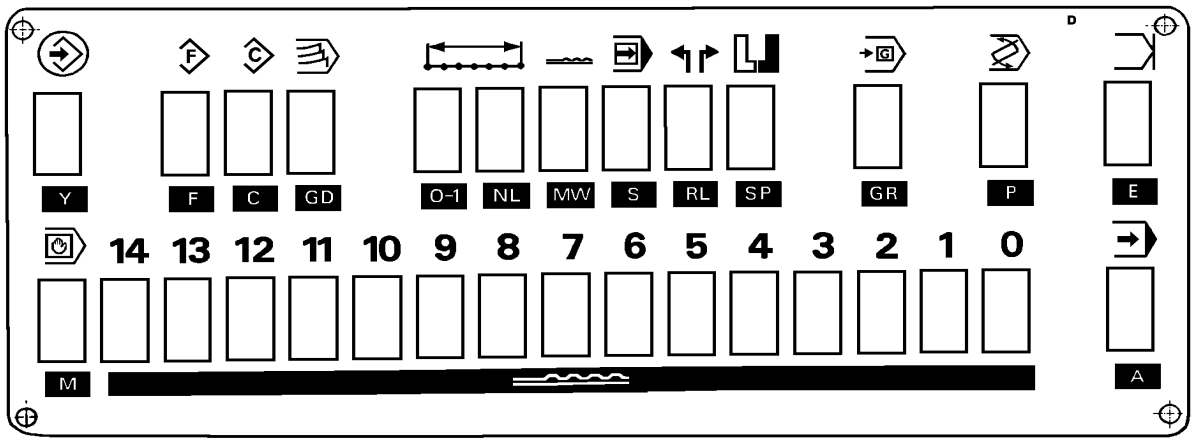
With the automatic operation the on-screen display contains all values needed to set up a complete sewing program.
The operator can break up the seam section into a maximum of 13 steps.
The programmed steps are marked in the graphics.

2.2 Screen operating elements



Key	Function
	Programming mode: - Selecting the graphics - Enabling end with/without thread trimmer (FA) - **Y** + : calling up text input
	Data transfer to memory card: - Changing the direction of transfer - **Y** + : transferring data **Program sequence mode:** - **Y** + : calling up the program sequence mode - Selecting the program sequence (A-E)
	Y + : calling up the program sequence mode (press both red keys)
	Changing the application (DOB/HK): - First, press the key **Y** and the **main switch** at the same time **Programming mode:** - Setting the basic size in the 1st step
	Y + : erasing the program

2.3 Keyboard operating elements



Key	Function	Display
Y	**Y** + : calling up the programming mode **Y** + : erasing the program **Y** + : calling up the program sequence **Y** + : transferring the programs to the memory card (with inserted memory card) **Y** + : entering text **Y + P** : changing the language of the on-screen text	
F	Enabling the selection of the additional functions **(F1-F6)**	**F1...F6**
C	Copying the set of sizes	
GD	Enabling to enter the grading	**GRADING**
0-I	Enabling/disabling the seam length measurement	**SEWING LENGTH**

Key	Function	Display
 **NL**	Enabling to enter the sewing length	**SEWING LENGTH**
MW	Enabling to enter the gathering value (of the fullness)	**GATH. VALUE**
 **S**	Calling up the next step	**STEP**
 **RL**	Selecting the starting piece (witherased program)	**LEFT/RIGHT**
 **SP**	Mirroring the first prorammed piece	
 **GR**	Enabling to select the size	**SIZE**
 **P**	Enabling the program selection	**PROG.NO.**
 **E**	- Entering the piece end - Entering the program end - Programming further steps	**end** **END** **- -**
 **M**	- Switching on the manual operation - **Y + M**: calling up the starting position of the ellipse Calling up the next starting position using **M**	 **STARTING POS.:**
0...14 	**Programming mode:** P : Entering the program number GR : Entering the size MW : Entering the gathering value NL : Entering the number of stitches (sewing length) GD : Entering the grading F : Selecting the additional function **Data transfer to the memory card:** - Enter the card number	 **PROG.NO.** **SIZE** **GATH. VALUE** **SEWING LENGTH** **GRADING** **F1...F6** **F5, F6** **CARD NUMBER**
 **A**	- Switching on the automatic operation - Calling up the program start	

3. Size tables

In the following tables the basic sizes for the various countries are in bold type and marked with BAS.

3.1 Sizes for 200-3

Ladies' wear (DOB) 200-3

German	French	Italian	GB	USA	Japanese
32	34	36	6	6	3
34	36	38	8	8	5
36	38	40	10	10	7
38 BAS	**40 BAS**	**42 BAS**	**12 BAS**	**12 BAS**	**9 BAS**
40	42	44	14	14	11
42	44	46	16	16	13
44	46	48	18	18	15
46	48	50	20	20	17
48	50	52	22	22	19
50	52	54	24	24	21

Men's wear (HAKA) 200-3

German	French	Italian	GB	USA	Japanese
44	44	36	34	38	2
46	46	38	36	39	3
48	48	40	38	40	4
50 BAS	**50 BAS**	**40 BAS**	**40 BAS**	**41 BAS**	**5 BAS**
52	52	44	42	42	6
54	54	46	44	43	7
56	56	48	46	44	8
58	58	50	48	45	9
60	60	52	50	46	10
62	62	54	52	47	11

3.2 Sizes for 200-6

DOB (Women's outerwear)

Size Gr. 1	Size Gr. 2	Size Gr. 3	Size Gr. 4	Size Gr. 5	Size Gr. 6
German	German	French	Italian	GB/ USA	Japanese
BAS 38	BAS 122	BAS 40	BAS 42	BAS 12	BAS 9
Ladies	Girls	Ladies	Ladies	Ladies	Ladies
32 - 16/64	104	34	36	06	03
34 - 17/68	110	36	38	08	05
36 - 18/72	116	38	40	10	07
38 - 19/76	122	40	42	12	09
40 - 20/84	128	42	44	14	11
42 - 21/88	134	44	46	16	13
44 - 22/92	140	46	48	18	15
46 - 23/96	146	48	50	20	17
48 - 24/100	152	50	52	22	19
50 - 25/104	158	52	54	24	21
52 - 26/108	164	54	56	26	23
54 - 27/112	170	56	58	28	25
56 - 28/116	176	58	60	30	27
58 - 29/120	182	60	62	32	29
60 - 30/124	188	62	64	34	31

3.2 Sizes for 200-6

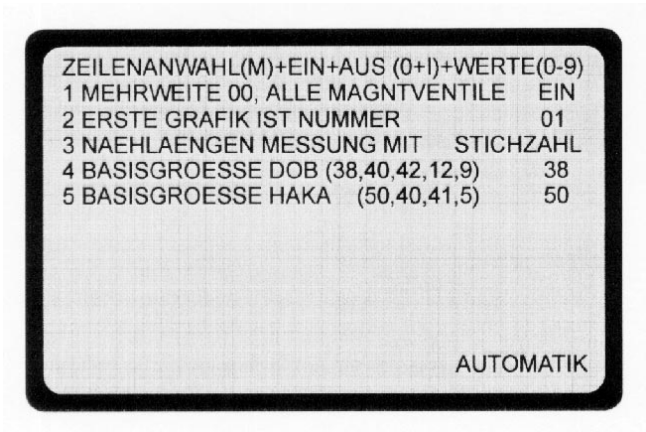
HK (Men's wear)

Size Gr. 1	Size Gr. 2	Size Gr. 3	Size Gr. 4	Size Gr. 5	Size Gr. 6
German	A,B,CH,D, F, NL	French	Italian	GB/ USA	Japanese
BAS 50	BAS 50	BAS 50	BAS 40	BAS 40	BAS 5
men	men	men	men	men	men
44 - 86/45/22	44 - 86/ 45/ 22	44 - 86/ 45/ 22	34	34 - 35	02
46 - 90/ 47/ 23	46 - 90/ 47/ 23	46 - 90/ 47/ 23	36	36 - 37	03
48 - 94/ 49/ 24	48 - 94/ 49/ 24	48 - 94/ 49/ 24	38	38 - 39	04
50 - 98/ 51/ 25	50 - 98/ 51/ 25	50 - 98/ 51/ 25	40	40 - 41	05
52 - 102/53/26	52 - 102/53/26	52 - 102/53/26	42	42 - 43	06
54 - 106/55/27	54 - 106/55/27	54 - 106/55/27	44	44 - 45	07
56 - 110/57/28	56 - 110/57/28	56 - 110/57/28	46	46 - 47	08
58 - 114/59/29	58 - 114/59/29	58 - 114/59/29	48	48 - 49	09
60 - 118/61/30	60 - 118/61/30	60 - 118/61/30	50	50 - 51	10
62 - 122/63/31	62 - 122/63/31	62 - 122/63/31	52	52 - 53	11
64 - 126/65/32	64 - 126/65/32	64 - 126/65/32	54	54 - 55	12
66 - 130/67/33	66 - 130/67/33	66 - 130/67/33	56	56 - 57	13
68 - 134/69/34	68 - 134/69/34	68 - 134/69/34	58	58- 59	14
70 - 138/71/35	70 - 138/71/35	70 - 138/71/35	60	60 - 61	15
72 - 138/73/36	72 - 138/73/36	72 - 138/73/36	62	62 - 63	16

4. Base setting of the controls

4.1 200-3 controls

Depending on the application of the control a defined basic adjustment must be made.
It is advisable to check this basic adjustment prior to starting the machine.
After a reset it is imperative to check the basic adjustment!



200-3 controls

4.1.1 Selection of the size group (valid for all programs /see size table page 8)

Calling up the basic adjustment:

- Press key **A**.
- Press key **Y** and keep depressed, also press key **0**.
  The basic adjustment of the control appears on the screen.
- Switch over to field 5 using key **M**.

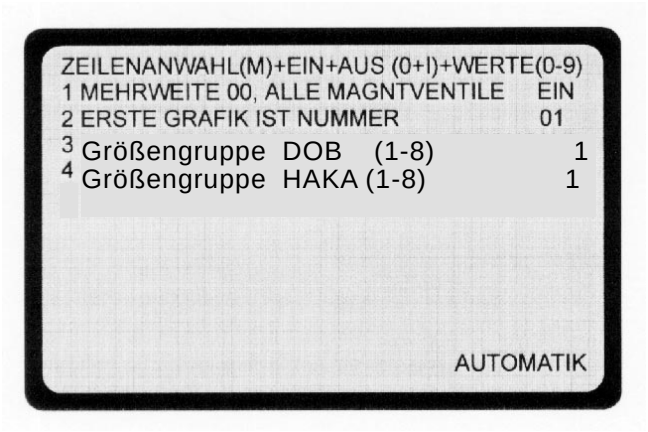
The fields are to be set according to the specifications in the following table.

Field	Adjustment	Remarks
1 FULLNESS 00, ALL SOLENOID VALVES **ON/OFF**	**ON**	Changeover from **OFF** to **ON** using key **0-I.** Switch over to field 2 using key **M**.
2 FIRST GRAPHICS IS NO **01/08**	eg 01	Select the desired graphics. (eg graphics 01 for pre-gathering) Switch over to field 3 using key **M**.
3 SEWING LENGTH MEASUREMENT WITH **STITCH NO./ DISTANCE MEASUREMENT**	STITCH NO.	Changeover from **DISTANCE MEASUREMENT to STITCH NO**.: **Press key Y** and keep depressed, also press key F. Switch over to field 4 using key **M**.
4 BASIC SIZE DOB (38;40;42;12;9)	eg 38	The basic size for DOB is being set. The basic sizes for different countries can be found in the **sizes** table (see page 8). Switch over to field 5 using key **M**.

Field	Adjustment	Remarks
5 BASIC SIZE HAKA (50;40;41;5)	eg 50	The basic size for HAKA is being set. The basic sizes for different countries can be found in the **sizes** table (see chapter 3.1). Press key **A** to quit the basic adjustment.

4.2 200-6 controls

Depending on the application of the control a defined basic adjustment must be made.
It is advisable to check this basic adjustment prior to starting the machine.
After a reset it is imperative to check the basic adjustment!



200-6 controls

4.1.2 Selection of the size group (valid for all programs /see size table page 9/10)

Calling up the basic adjustment:

- Press key **A**.
- Press key **Y** and keep depressed, also press key **0**.
  The basic adjustment of the control appears on the screen.
- The **M** key select the next line.

The fields are to be set according to the specifications in the following table.

Field	Adjustment	Remarks
1 FULLNESS 00, ALL SOLENOID VALVES **ON/OFF**	**ON**	Changeover from **OFF** to **ON** using key **0-I.** Switch over to field 2 using key **M**.
2 FIRST GRAPHICS IS NO **01/08**	eg 01	Select the desired graphics. (eg graphics **01** for pre-gathering) The **M** key causes an advence to the next line.
3 SIZE GROUP DOB (1-8)	see the listed table DOB	With the selection of one of the listed tables automatically the **basic size** will be set and the **size row** determinant. (See page 9).

Field	Adjustment	Remarks
4 SIZE GROUP HAKA (1-8)	eg 01	The automatic mode is shown after pressing the **A** key. The now selected size group is valid for all programs. Their base size is shown, e.g.050 BAS. The size group is stored after erasing of a program. In case of a **RESET** the base size determination must be made again.

4.3 Selecting the base size per program

In principle a size group is programmed as before with the corresponding base size in the base setting
(see "calling up the base setting").
Additionally after that another size series with the corresponding base size can be allocated to each single program
(see size table DOB/HAKA, sheet 9/10)

Programming of program-depending basis size

Sequence of operations	Key	Remarks
1. Call-up basis size as per basis setting	**GR +** eG 050	Display shows **BAS** behind size.
2. Call-up programming-mode	**Y +** 	Push both red keys; the control indicates **"ready for programming"**
3. Delete program	**Y +** 	Monitor indicates **"program will be deleted"**
4. Call-up Service display	**Y + O**	The size group appears **HAKA/DOB** (see size table)
5. Select **HAKA** or **DOB**	**M**	The figure will be brightly shown.
6. Selct group of sizes (see size table)	**1 - 8**	The selected figure will be shown.
7. Push key for AUTOMATIC	**A**	The selected program with the selected size series and correspond. basis size apears.
8. Further run-off of program refer to point 6.		

If a program as described above having a particular basis size will be deleted, the basis setting as determined in the basis setting will appear.

A deviating basis setting must be put-in newly.

4.4 Allocation of the function keys

The f-functions can be allocated to the steps.

F-function	Adjustment	class	Remarks
F1 on	F , 1 , O-I	550 - 16	needle thread tension is loosened
F1 on	**F , 1 , O-I**	550 - 12 - 12	facing strip is fed
F2 on	**F , 2 , O-I**	550 - 12 - 12	facing strip is out
F3 on ***		550 - 12 - 12	not allocated
F4 on	**F , 4 , O-I**	550 - 12 - 12	speed reduction
F5 1 2...14	**F , 5 , 1** **F , 5 , 2...14**	550 - 12 - 12 -----	stitch length reduction not allocated
F6 1...14	**F , 6 , 1**...**14**	-----	not allocated

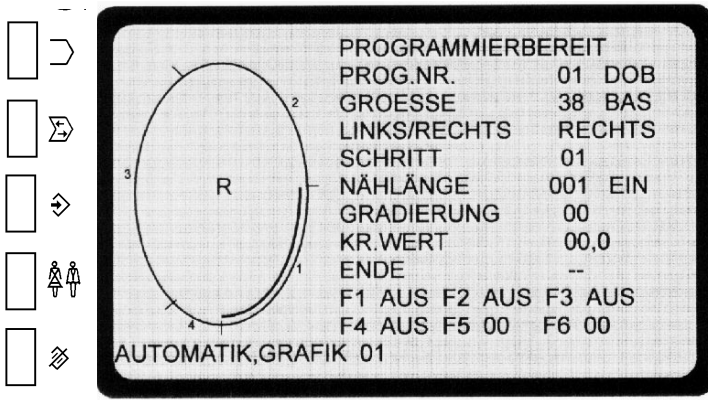
***Only valid for sewing units delivered before December 1993!
F3 on = F , 3 , O-I = stitch length reduction

5. Reset

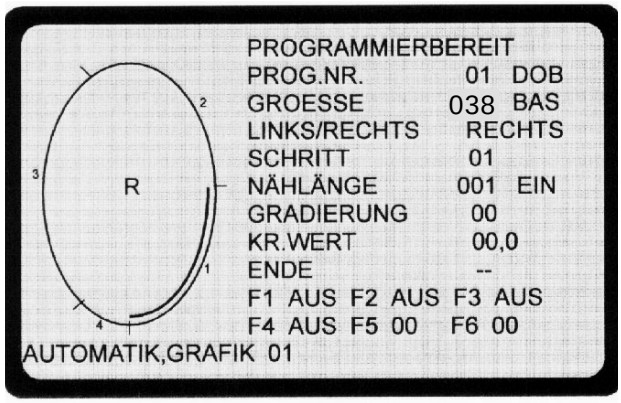
A **Reset** is required
- when all programs in the control are to be erased
- when an error occurs that cannot be remedied

Sequence of operations:
- Press both red keys and **keep depressed**.
- Turn off main switch, and wait approx. 10 seconds.
- Turn on main switch, and do **not release** the two red keys.
- Release the two red keys only, when the basic adjustment pattern appears on the screen.
- All programs in the control are erased.
- Check the basic adjustment!

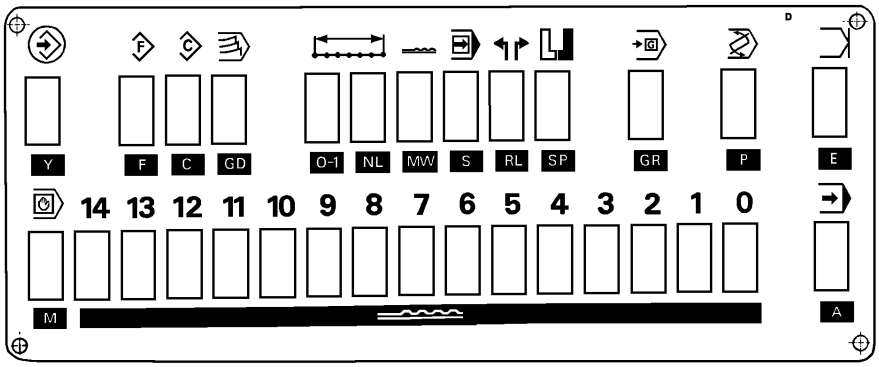
6. Programming instructions:
pre-gathering the sleeve head / setting the sleeve



200-3 controls



200-6 controls



The sewing program is set up in the basic size in **teach-in mode**, and is mirrored and graded automatically.
The control measures the subsections when sewing the individual steps and incorporates them automatically into the program.

Sequence of operations	Keys	Remarks
1. Check the basic adjustment.	**A** **Y + 0**	Only for the first machine start or after a Reset. To check the basic adjustment: see chapter 4 / 4.2.
2. Select program number. Enter the program number. (eg progr.no. 01)	**P** **0 , 1**	PROG.NO. is highlighted. possible program numbers: 200-3 controls **01...20** 200-6 controls **01...15**
3. Select size. Enter the size. (eg size 38 200-3) (eg size 038 200-6)	**GR** **3 , 8** **0 , 3 , 8**	SIZE is highlighted. Basic sizes: DOB 38, HK 50 DOB 038, HK 050
4. Call up the programming mode.	**Y +**	Press both red keys. The control indicates **READY TO BE PROGRAMMED.**
5. Erase the former program.	**Y +**	Prior to setting up a new program always press the erasing keys.
6. Select the graphics.		Press the key until the graphics 01 (ellipse) appears.

Sequence of operations	Keys	Remarks
7. Select the starting sleeve.	**RL**	In the case of a wrong choice press the erasing keys (see 5.) Re-select the starting sleeve.
8. Lay the seam beginning of the selected sleeve under the foot.		
9. Select gathering intensity.	**MW**	Gathering intensity = Fullness
Enter the gathering intensity.	**0...14**	The gathering intensity is to be determined from experimental values.
10. Sew step 1.		During sewing the number of stitches is being counted and automatically stored.
11. Select grading (where necessary) Enter the grading. (eg grading value 02)	**GD** **0 , 2**	The value indicates how much the sewing length of the step changes with each grading value. **Example:** the designer specifies a change in seam length of 5 mm from one size to the next. With a stitch length of 2.5 mm this corresponds to 2 stitches. Thus, the grading 02 is entered. When calling up another size the section is automatically increased or decreased by the set grading.
12. Call up the next Repeat points 9. to 12.	**S**	Per sleeve a maximum step. of 13 steps can be entered. **ATTENTION!** In the case of more than 13 steps the sleeve cannot be mirrored later. Press the two red keys to get back to the 1st program step (**to check or to later change certain program steps**). The next step is called up using key **S**.
13. Switch off the stitch **last** step.	**0-I**	In the **SEWING** counting during the **LENGTH** field the number of stitches **is in brackets. Behind the number of stitches OFF** appears. Stitch counting is switched off during the **last** program step so that the operator can determine the seam end manually. During sewing the deactivated stitch counting is indicated in the **SEWING LENGTH** field by brackets and **OFF**.
14. Enter the sleeve end.	**E**	During sewing of the last step, **E** (end) must be entered (program end). In the **END** field appears **end**. Underneath the graphics appears **MIRR., END, CONTINUE.**

Sequence of operations	Keys	Remarks
		MIRR.: sleeve is being mirrored. (see **15.**) **END** : only the piece just created is being stored. (see: **only store right/left sleeve**) **CONTINUE**: press key **E** until (--) appears in the **END** field. Enter further steps.
15. Mirror the sleeve.	**SP**	The program for the right/left sleeve is created by mirroring and then stored. Underneath the graphics appears **COPY, AUTOMATIC**. **COPY**: copying set of sizes (see **16.**) **AUTOMATIC:** see: **only incorporating the basic size**
16. Copy the set of sizes.	**C**	The created program is copied into each size of the application (DOB/HAKA). The control switches over to automatic operation.
17. The machine is ready to sew.		The ellipse with the laid down steps is displayed.

Only storing the right/left sleeve

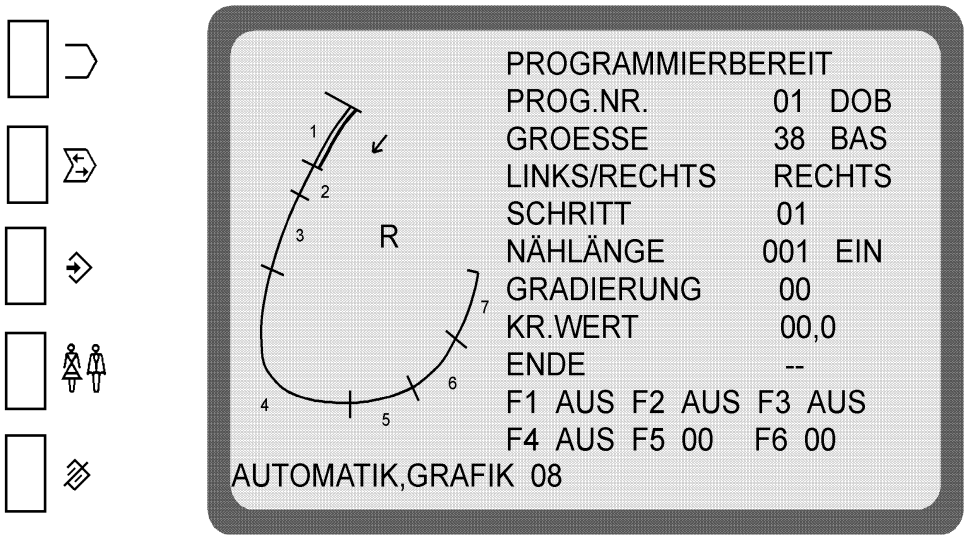
Only store the right/left sleeve.	**E**	When pressing key **E** again, only the program created for the right or left sleeve is stored. In the **END** field appears **END**. Mirroring is no longer possible. Underneath the graphics appears **COPY, AUTOMATIC**. Continue with **16.**

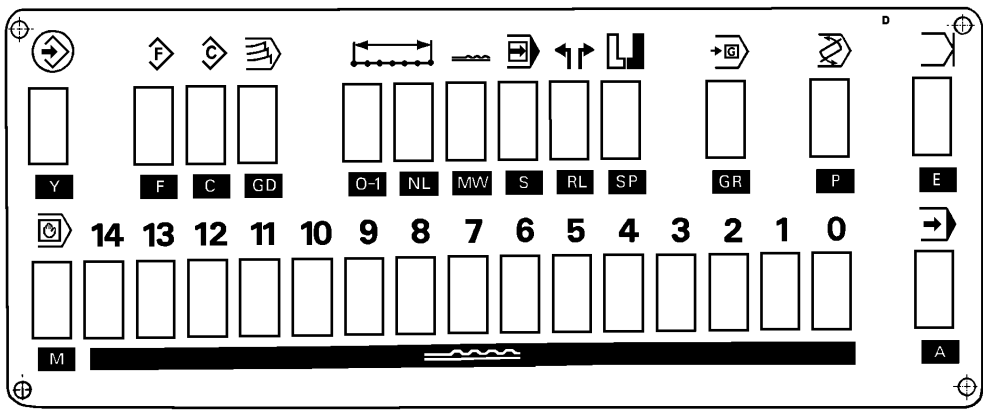
Only copying the basic size

Only copy the basic size.	**A**	By pressing key **A** the created program is only copied and stored in the basic size. Continue with **17**.

Error message	Remedy
ER.SEWING LENGTH GRAD **<**	The grading value must always be smaller than the sewing length of the step. Sew the step or enter the sewing length.
PROG.NOT OK	The program contains invalid values. Check the values and correct the invalid value.
PROG. HAS NO END	The programming mode cannot be quit. Press **E** key, then press the **A** key. No reaction! Press both **red** keys. Erase the program and then press the **A** key.

Programming instructions reinforcing





The sewing program is set up in the basic size in **teach-in mode**, and is automatically mirrored and graded.
The control measures the subsections during sewing of the steps and automatically incorporates them in the program.
During sewing the tape feeder automatically feeds the reinforcement tape.
After a programmed number of stitches the tape scissors cut the reinforcement tape within the seam.

Sequence of operations	Keys	Remarks
1. Load the reinforcement tape.		Loading the tape
2. Check the basic adjustment.	**A**	Only at the first machine start or after a Reset.
	Y + **0**	Checking the basic adjustment: see chapter 4.1/4.2.
3. Select program number.	**P**	**PROGR.NO.** is highlighted.
Enter the program number. (eg progr. no. 01)	**0 , 1**	possible program numbers: **01...20**
4. Select size.	**GR**	**SIZE** is highlighted.
Enter the size. (eg 38)	**3 , 8**	**Basic sizes: DOB 38, HK 50**
5. Call up the programming mode.	**Y** + 	Press both red keys. The control displays **READY TO BE PROGRAMMED**.
6. Erase the former program.	**Y** + 	Prior to setting up a new program, always press the erasing keys.
7. Select the graphics.		Press the key until graphics 08 appears.
8. Select the starting piece.	**RL**	When the wrong piece was selected, press the erasing keys (see 6.) Re-select the starting piece.
9. Place the seam beginning of the selected piece under the foot.		
10. Select gathering intensity.	**MW**	Gathering intensity = Fullness
Enter the gathering intensity.	**0...14**	The gathering intensity is to be determined from experimental values.
11. Sew step 1.		During sewing the number of stitches is being counted and automatically stored. **ATTENTION !** In the first step, the **minimum** sewing length must be **2 stitches**.
12. Select grading (if necessary).	**GD**	The value indicates how much the sewing length of the step changes with each grading value. **Example:** the designer specifies a change in seam length of 5 mm from one size to the next. With a stitch length of 2.5 mm this corresponds to 2 stitches. Thus, the grading 02 is entered. When calling up another size the section is automatically increased or decreased by the set grading.
Enter the grading (eg grading 02)	**0 , 2**	
13. Select step 2.	**S**	In the **STEP** field **02** is displayed.

Sequence of operations	Keys	Remarks
14. Switch on the tape feeder.	**F , 1**	In field **F1 OFF** is highlighted.
Activate the tape feeder.	**0-I**	In field **F1 ON** is highlighted. The reinforcement tape is fed. The flip switch **A** at the feeding attachment must be at **on** (centre position).
15. Select gathering intensity.	**MW**	The gathering intensity is to be determined from experimental values.
Enter the gathering intensity.	**0...14**	
16. Sew step 2.		**ATTENTION !** In the 2nd step, the minimum sewing length must be **15 stitches**.
17. Select grading (if necessary).	**GD**	see **12.**
Enter the grading (eg grading 02)	**0 , 2**	
18. Select step 3.	**S**	When the 3rd step is selected, step 4 appears. Step 3 is created automatically by the control. In the **STEP** field **04** is highlighted.
19. Select and enter the gathering intensity.	**MW**	see **10.**
20. Sew step 4.		
21. Select and enter the grading.	**GD**	see **12.**
22. Program further steps.		**ATTENTION !** Each program must contain a **minimum of 5 steps**. Per piece a maximum of 13 steps can be entered. With more than 13 steps the piece cannot be mirrored later.
23. Cut the reinforcement tape.	**F , 2**	In field **F2 OFF** is highlighted.
Activate the tape cutter.	**0-I**	In field **F2 ON** is highlighted. The reinforcement tape is cut closely above the funnel. **ATTENTION!** Enter no more steps. Otherwise, mirroring is no longer possible.
24. Sew up to the end of the piece.		**ATTENTION !** The last step must contain **a minimum of 15 stitches**. The number of stitches is counted and automatically stored. During the last step of the program the stitch counting is switched off so that the operator can manually determine the seam end.
25. Actuate the thread trimmer.		

Sequence of operations	Keys	Remarks
26. Enter the piece end.	**E**	The control automatically creates another step. In the **END** field appears **end**. Underneath the graphics appears **MIRR., END, CONTINUE.** **MIRR.**: sleeve is being mirrored. (see **27.**) **END :** only the piece just created is being stored. Mirroring is not possible. (see: **only store right/left piece**) **CONTINUE:** press key **E**until (--) appears in the **END** field. Enter further steps.
27. Mirror the piece.	**SP**	The program for the right/left piece is created by mirroring and then stored. Underneath the graphics appears **COPY, AUTOMATIC.** **COPY:** copying the set of sizes (see 28.) **AUTOMATIC:** see: **only incorporating the basic size**
28. Copy the set of sizes.	**C**	The created program is copied into each size of the application (DOB/ HAKA).
29. The machine is ready to sew.		The graphics with the laid down steps is displayed.

Only storing the right/left piece

Only store the right/left piece.	**E**	When pressing key **E** again, only the program created for the right or left piece is stored. Mirroring is no longer possible. In the **END** field appears **END**. Underneath the graphics appears COPY, AUTOMATIC. Continue with **28.**

Only copying the basic size

Only copy the basic size.	**A**	By pressing key **A** the created program is only copied and stored in the basic size. Continue with **29**.

Error message	Remedy
ER.SEWING LENGTH GRAD <	The grading value must be smaller than the sewing length. Sew the step or enter the sewing length.
SEWING LENGTH >14 ENTER	In the called up step the sewing length value must be larger than 14. Correct the sewing length.
PROG.NOT O K	The program contains invalid values. Check the values and correct the invalid value.
PROG. HAS NO END	Press key **E** or both **red** keys. Then delete program and subsequently push key **A**.

7. Changing an existing program

7.1 Changing the entire set of sizes

It is necessary to make a change in an existing program.
The change is to be effective in **all** sizes.

Sequence of operations	Keys	Remarks
1. Call up the program to be changed. (eg progr. no. 01)	**P** **0 , 1**	
2. Select the basic size. (eg size 38 for DOB 200-3) (eg size 038 for DOB 200-6)	**GR** **3 , 8** **0 , 3 , 8**	Basic sizes: DOB 38; HK 50 DOB 038; HK 050
3. Call up the programming mode.	**Y +** 	Press both red keys. The control displays **READY TO BE PROGRAMMED**.
4. Call up the step to be changed	**S**	Press key **S** until the step to be changed appears.
5. Make the change.		eg enter another gathering value.
6. Call up the last step of the 1st programmed piece.	**S**	end appears in the **END** field. Underneath the graphics appears **MIRR.; END, CONTINUE**. If this is not the case, press key **E** until **MIRR., END, CONTINUE** appears.
7. Mirror the piece.	**SP**	The change is transferred to the mirrored sleeve. **COPY, AUTOMATIC** appears underneath the graphics.
8. Copy the set of sizes.	**C**	The change is transferred to all sizes.

7.2 Changing only one size

It is necessary to make a change in an existing program.
The change is to be effective just in **one** size.

Sequence of operations	Keys	Remarks
1. Call up the program to be changed. (eg progr. no. 01)	**P** **0 , 1**	
2. Call up the size to be changed. (eg size 40 200-3) (eg size 040 200-6)	**GR** **4 , 0** **0 , 4 , 0**	
3. Call up the programming mode.	**Y +** 	Press both red keys. The control displays **READY TO BE PROGRAMMED**.
4. Call up the step to be changed.	**S**	Press key S until the step to be changed appears.
5. Make the change.		eg enter another gathering value.
6. Call up the last step of the	**S**	end appears in the 1st programmed piece. **END** field. Underneath the graphics appears **MIRR., END, CONTINUE**. If this is not the case, press key **E** until **MIRR., END, CONTINUE** appears.

Sequence of operations	Keys	Remarks
7. Mirror the piece.	**SP**	The change is transferred to the mirrored piece. **END, AUTOMATIC** appears underneath the graphics.
8. Switch on the automatic	**A**	The change is made operation. in the called up size only.

7.3 Changing only the right or left piece

It is necessary to make a change in an existing program.
The change is just to be effective for the **right or left** piece.

Sequence of operations	Keys	Remarks
1. Call up the program to be changed. (eg progr. no. 01)	**P** **0 , 1**	
2. Select the basic size. (eg size 38 for DOB 200-3) (eg size 038 for DOB 200-6)	**GR** **3 , 8** **0 , 3 , 8**	Basic sizes: (eg size 38 for DOB; HK 50) (eg size 038 for DOB; HK 050
3. Call up the programming mode.	**Y** + ➡	Press both red keys. The control indicates **READY TO BE PROGRAMMED**.
4. Call up the step to be changed of the right or left piece.	**S**	Press key **S** until the step to be changed of the right or left piece appears. **end** appears in the **END** field in the last step of the 1st piece. Again press key **S** to change over to the 2nd piece.
5. Make the change.		eg enter another gathering value.
6. Switch on the automatic operation.	**A**	The change is made in the right or left piece only. **ATTENTION!** After the changes of point 5. have been made, mirroring and copying into the set of sizes is no longer allowed.

7.4 Selecting and Changing the half size with the 200-6 controls

See size table DOB / HAKA (sheet 9/10)

All size entries must be three digit.

eg size 102 key 102
eg size 52 key 052

After the programming of the base size, all half sizes (as listed in the size table after the base size) are given the same values.

If some points in the half sizes must be changed, this can be done as described in the instructions item 7.1 "changing an existing progam".
Attention!
Altered half sizes are made to conform to the base size again after a change in the base size and the pressing of the C key.
In a program already generated with altered half sizes the C key may no longer be used. With a change of the BAS size and altered half sizes, the A key is always to be used to enter the automatic mode.
If necessary, the sizes must be changed individually.

8. Program sequence

Up to 6 individual programs can be linked in a **program sequence**. After the program sequence has been activated, the control uses the programs of the sequence successively.
A total of 5 program sequences (A-E) can be stored.

Application example:

On a garment the right armhole, neck opening, and the left armhole are to be reinforced successively.
Both armholes are to be reinforced additionally using reinforcement tape.

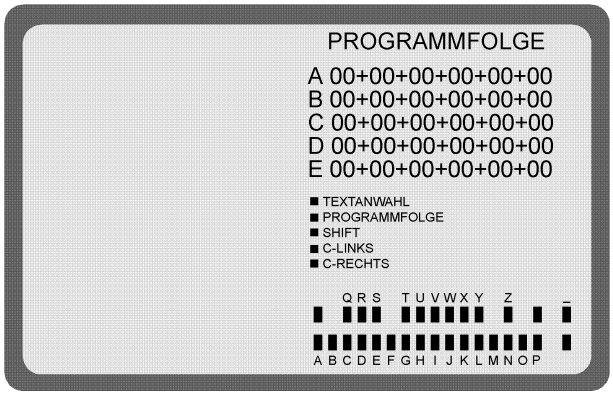
Initially, the operator sets up the three programs (P 01, P 02, P 03) for the individual operations.

P 01: reinforcing the right armhole with tape (without mirroring)

P 02: reinforcing the neck opening without tape (without mirroring)

P 03: reinforcing the left armhole with tape (without mirroring)

Then, the three programs (P 01, P 02, P 03) are linked up to form a program sequence.



8.1 Setting up a program sequence

Sequence of operations	Keys	Remarks
1. Call up the program sequence mode. (**in automatic operation**)	**Y +**	The program sequence (A-E) called up last is highlighted.
2. Select the program sequence (A-E)		Press the key until the desired program sequence (A-E) is highlighted.
3. Select the place in the program sequence.	**P**	Place 1 in the program sequence is highlighted.
4. Enter the program number. 200-3 controls 200-6 controls	**1...20** **1...15**	After input of the program number for place 1, select the next place using key **P**. Enter the respective program number. In each program sequence 6 programs can be entered. As long as the program sequence is not quit, each program place can be written over (input **1...20** or **1...15**) or erased (input **0**).

Sequence of operations	Keys	Remarks
5. Call up another program sequence.		See **2**. 5 program sequences (A-E) can be called up successively.
6. Quit the program sequence mode.	**A**	The first program of the program sequence is called up. In the field **SUCCESSOR PROGR.** the successor program is displayed. After sewing the program the successor program is called up. **The program sequence is aborted when a program is selected directly.** From program E-PROM dated **July 24, 1993** up there are two ways to quit the program sequence mode: - by pressing the key **0-I** - by selecting a program that is not part of the sequence.

8.2 Activating the program sequence

Sequence of operations	Keys	Remarks
1. Call up the program sequence mode. (**in automatic operation**)	**Y**+ 	The program sequence called up last (A-E) **is highlighted.**
2. Select the program sequence (A-E).		Press the key until the desired program sequence (A-E) is highlighted. **ATTENTION!** When a program place was selected using key **P**, be sure to press key **P** until the last program of the sequence is highlighted. Otherwise, the programs to the right of the highlighted program are being erased from the sequence.
3. Activate the program sequence.	**A**	

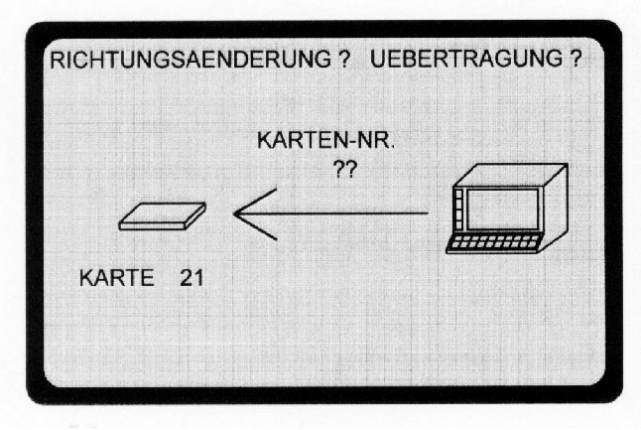
8.3 Erasing the program sequence

Sequence of operations	Keys	Remarks
1. Call up the program sequence mode. (**in automatic operation**)	**Y** + 	The program sequence (A-E) called up last is highlighted.
2. Select the program sequence (A-E).		Press the key until the desired program sequence (A-E) is highlighted.
3. Erase the program sequence.	**P** **0**	The first place of the program sequence is highlighted. **00** appears on the first place of the program sequence.
4. Call up another program sequence.		See 2.
5. Quit the program sequence mode.	A	The program sewn last appears.

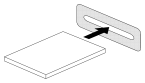
9. Memory card

The memory card is used for long-term preservation (approx. 4 years) of programs.
Programs can be transferred from this memory card to other machines.
The control transfers the programs to the memory card.
Memorized programs can again be loaded from the card into the control.

9.1 Transferring programs to the memory card

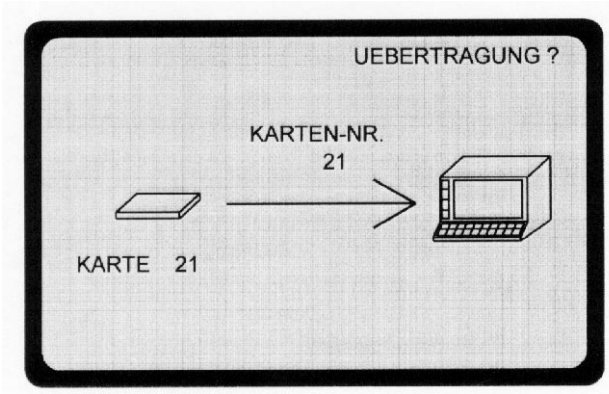


The programs set up with the control are transferred to the memory card during the automatic operation.
They are secured and, if necessary, can be loaded as often as desired into the control.

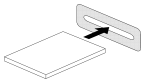
Sequence of operations	Keys	Remarks
1. Insert the card in the arrow-indicated direction. Green arrow points downwards.		Display: see figure. In the case of an empty memory card RAM CARD EMPTY appears.
2. Enter the card no. (eg card no. 01)	0 , 1	The card number is displayed. ATTENTION! The direction of transfer cannot be changed any more.
3. Transfer the data.	Y + 	During the transfer process a row of crosses is displayed at the bottom of the screen. The transfer process is completed when REMOVE MEMORY CARD appears.
4. Remove the memory card.		Label the card and keep it in the envelope.

Error message	Remedy
RAM CARD EMPTY	The message indicates that no programs are yet on the memory card.
TRANSFER ERROR CARD WITHOUT PROGRAMS	When the card is removed too soon, the data on the card are being erased. Re-insert the card. Repeat the memorizing process.

9.2 Loading the programs into the control



The programs memorized on the card are being transferred to the control.

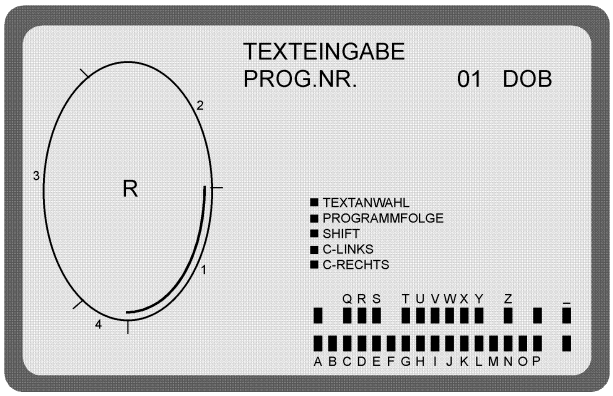
Sequence of operations	Keys	Remarks
1. Insert the card in the arrow-indicated direction. Green arrow points downwards.		In the case of an empty memory card RAM CARD EMPTY appears.
2. Change the direction of transfer		Display: see figure. The direction of the arrow changes.
3. Transfer the data.	Y + 	During the transfer process a row of crosses is displayed at the bottom of the screen. The transfer process is completed, when REMOVE CARD appears.
4. Remove the memory card.		Keep the card in its envelope.

Error message	Remedy
RAM CARD EMPTY	The message indicates that no programs are on the memory card.
BOX EMPTY	The message indicates that all data in the control are erased.
TRANSFER ERROR ALL PROGRAMS IN THE BOX ARE ERASED	When the card is removed too soon, all data in the control are being erased. Re-insert the card. ATTENTION! Repeat the transfer process starting with 2. (Changing the direction of transfer!).

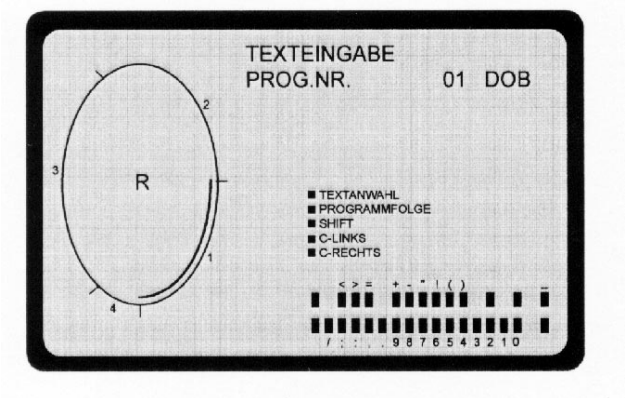
10. Entering text

The text input mode serves to provide the individual programs with designations, comments, notes, etc.
It is thus easier for the user to locate certain programs.
For the called up programs 2 lines of text with 38 characters each can be entered via the keys of the control.
The function of the keys is displayed on the screen.
By pressing the Shift-key the key function is changed from letters to digits and characters.

Display for text input

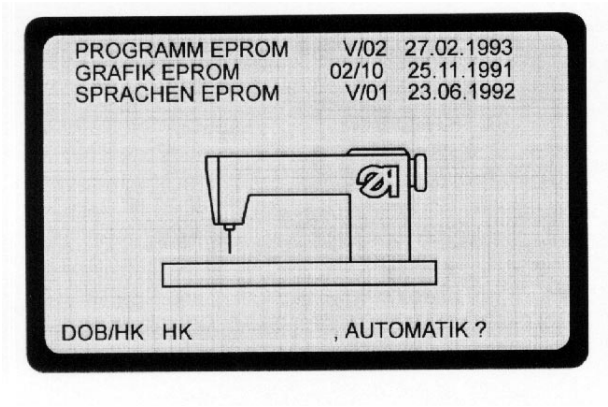


Display after a change of the key function



Sequence of operations	Keys	Remarks
1. Call up the desired program.		
2. Call up the text input mode.	Y + ⇨	The function of the keys is displayed on the screen.
3. Enter the text..		The entered text appears above the graphics.
4. Quit the text input mode.	A	

11. Calling up the EPROM states



The EPROM states indicate which program versions exist in the respective control.
These specifications are important, as the programs are constantly being revised. As a result of this, certain functions change from EPROM to EPROM.
In this programming manual we refer to such changes by specifying the corresponding EPROM state.

EPROM. Erasable Programmable Read Only Memory

Sequence of operations	Keys	Remarks
Call up the EPROM states.	Y	Keep key Y depressed. Turn off main switch. Keep key Y depressed. Turn on main switch. Keep key Y depressed until the screen starting pattern with the EPROM states appears.

11.1 Preselecting the application (DOB/HK)

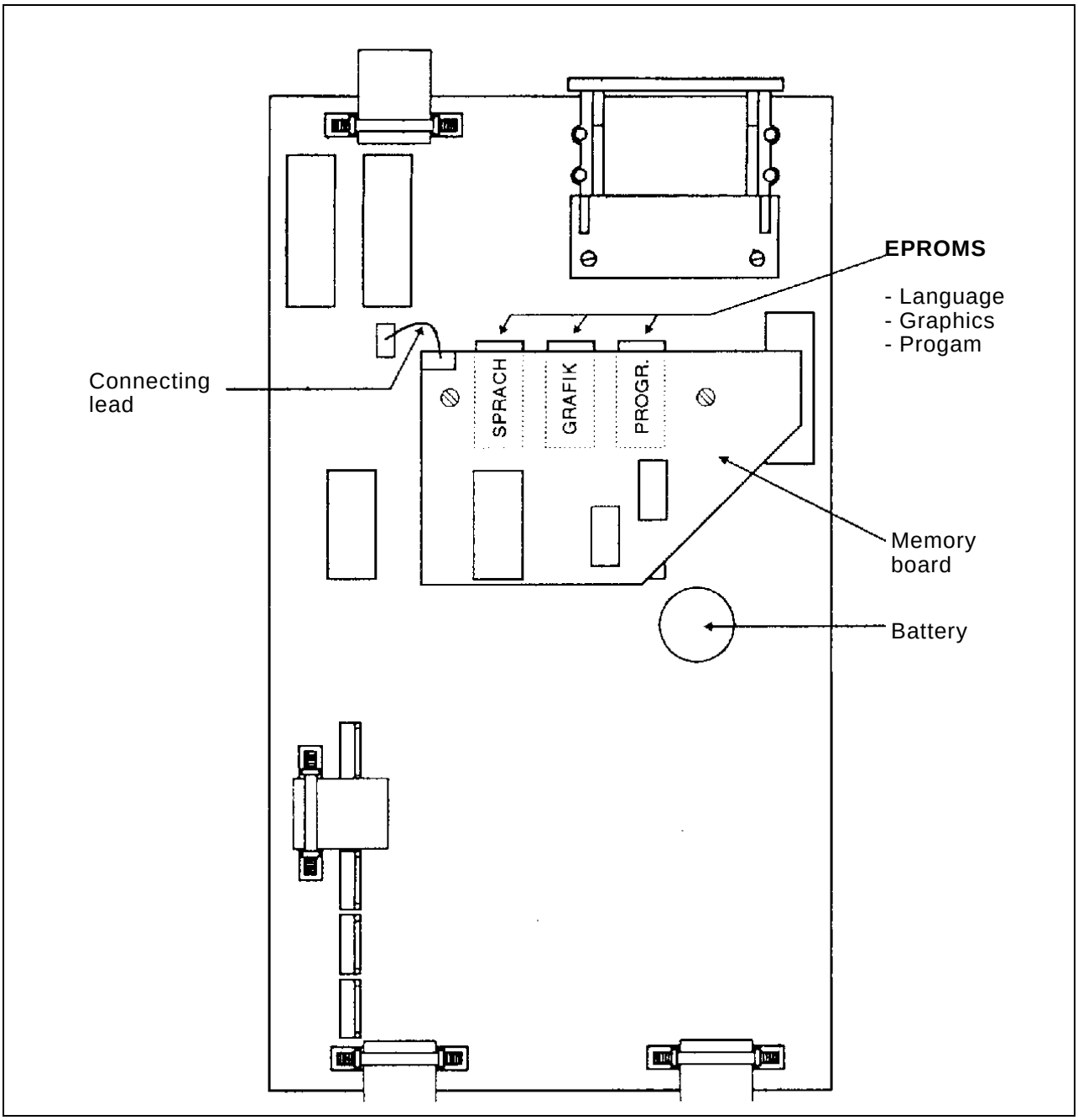
In the on-screen display shown in 11. the application (DOB/HK) is preselected for all undefined programs as well.

Sequence of operations	Keys	Remarks
1. Call up the EPROM states.	Y	Keep key Y depressed. Turn off main switch. Keep key Y depressed. Turn off main switch. Keep key Y depressed until the screen starting pattern with the EPROM states appears.
2. Change the application.		In the field DOB/HK either DOB or HK is highlighted. This means that all undefined programs are intended for the application DOB or HK.
3. Switch on the automatic operation.	A	In the field DOB/HK the selected application (DOB or HK) is highlighted.

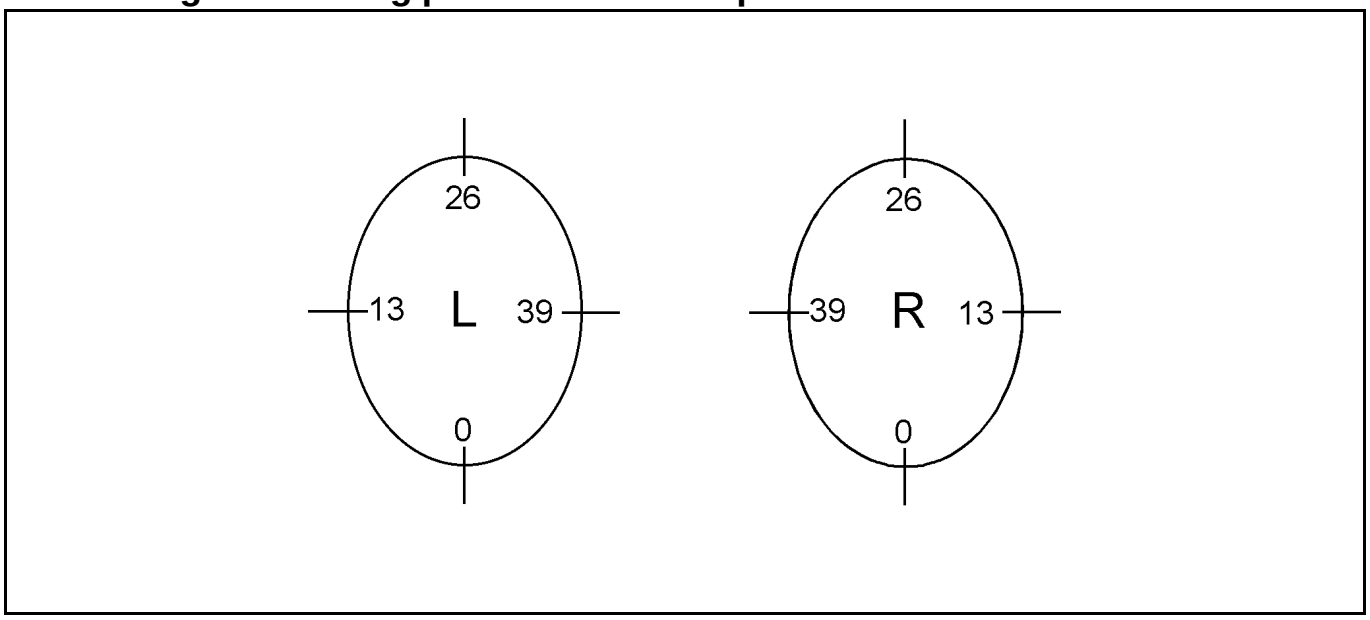
11.2 Replacing the EPROMs (200-6)

- Turn the main switch off.
- Pull the 220V mains plug and the 30 pin plug from the controls.
- Pull the controls from the mounting.
- Screw off the bottom plate of the controls.
- Pull off the connecting lead to the memory board.
- Srew off the memory board and pull carefully from the base.
- Pull the EPROMs from the holders and insert new EPROMs.
- Insert the memory board into the base and screw fast.
- Plug on the connecting lead to the memory board.

All programs are erased when the memory board is removed.



12. Setting the starting position of the ellipse

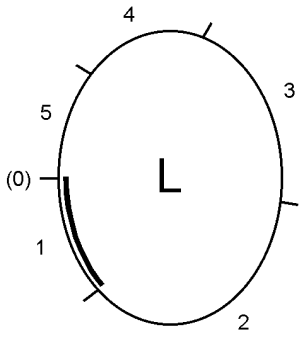


The ellipse (graphics 01) is divided up into 52 sections (00 to 51).
The starting position applies to all sizes of a program.
The adjustment can only be made in the programming mode with called up basic size.

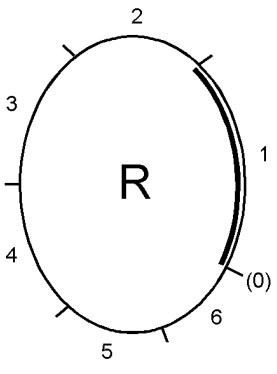
Sequence of operations	Keys	Remarks
1. Call up the programmingmode.	Y + ➡	Press both red keys. The control displays READY TO BE PROGRAMMED.
2. Call up the starting position.	Y + M	Display: eg STARTING POS.: 00
3. Change the starting position.	M	Press the key M until the desired starting position is displayed in the field STARTING POS.:.
4. Showing the new starting position.	A	The control switches back to automatic operation. The graphics appears with the changed starting position.

Examples:

STARTING POS.: 13



STARTING POS.: 07



13. Changing the language of the on-screen text

The language of the on-screen text can only be changed during automatic operation.
Two different language EPROMs with 8 languages each are available:

200-3		200-6	
EPROM-Set 1:	EPROM-Set 2:	EPROM-Set 1:	EPROM-Set2:
9850 550008 EP01	9850 550008 EP02	9850 550028 EP01	9850 550028 EP02
German English Frensh Spanish Italian Portuguese Swedish Polish	German English Frensh Turkish Romanian	German English Frensh Spanish Italian Portuguese Swedish Polish	German English Frensh Turkish Romanian
EPROM-Set 3:	EPROM-Set 4:	EPROM-Set 3:	EPROM-Set 4:
9850 550008 EP03	9850 550008 EP04	9850 550028 EP03	9850 550028 EP04
English Japanese	German Bulgarian	English Japanese	German Bulgarian
EPROM-Set 5:	EPROM-Set 6:	EPROM-Set 5:	EPROM-Set 6:
9850 550008 EP05	9850 550008 EP06	9850 550028 EP05	9850 550028 EP06
German Russian	English Chinese	German Russian	English Chinese

Sequence of operations	**Keys**	**Remarks**
1. Call up languages.	Y + P	The languages are listed. The current language is highlighted.
2. Select another language.	Y + P	Keep key Y depressed and press key P until the desired language is highlighted.
3. Change the language.	A	The on-screen text is in the selected language.

14. Adjusting the gathering values to different materials / Percental change of the crimp value

From program EPROM dated July 24, 1993 up the gathering values of an existing program can be adjusted to different materials.
Via the program adjustment the gathering values are increased or decreased in all program steps by a certain percentage.
(max +14% / -14%)
The program adjustment is done during automatic operation.

Application example:

A sewing program exists for a piece in a defined material.
This piece is now to be sewn with another material with other properties.

During sewing of the piece it turns out that the gathering values of the program are too small or too large for the new material.

Via the program adjustment the gathering values of the entire program must thus be increased or decreased by a certain percentage.
The operator enters this percentage.
Then, the control automatically increases or decreases the gathering values in all program steps by the entered percentage.
Now, the program is adjusted to the different material properties.

Sequence of operations	Keys	Remarks
1. Select change of gathering value in %.	GD	Underneath the GATH.VALUE field % 00 is highlighted.
2. Enter the percentage.	0...14	The gathering values can only be adjusted between max +14% / -14%.
3. Select increase or decrease.	0-I	The display changes between + (increase) and - (decrease).
4. Switch on the automatic operation.	A	The %-value (except value 00) is displayed during sewing underneath the GATH.VALUE field. ATTENTION! When re-selecting the called up program number or another program number the %-value is reset to 00.

15. Determining the gathering value

The gathering value or fullness can either be determined from experimental values or by testing.

Sequence of operations	Keys	Remarks
1. Switch on the manual operation.	M	
2. Enter the estimated gathering value.	0...14	Estimate and enter the gathering value or fullness for a section.
3. Sew the section.		If necessary, sew the section without threads.
4.Check whether notch is on notch.		When the notches are not accurately superposed, change the gathering value. Repeat the procedure with a new gathering value starting with 2. until notch is on notch.
5. Switch on the automatic operation	A	The control switches over to automatic-operation.

16. Service

ATTENTION!
Any work on the electrical equipment of the machine must only be performed by skilled electricians or accordingly trained personnel.

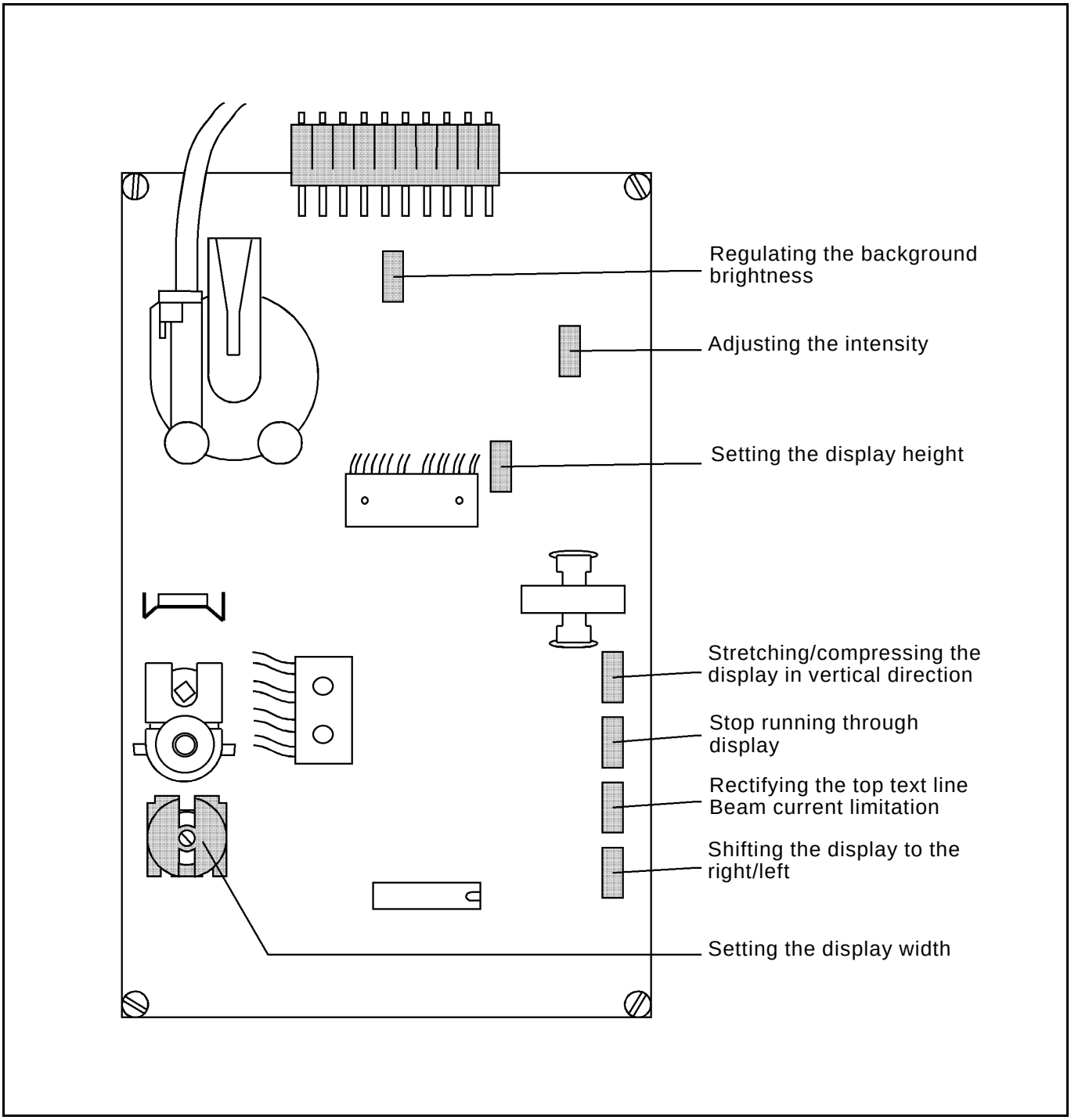
16.1 Correcting the on-screen display (200-3 / 200-6)

The accurate adjustment and alignment of the on-screen display is performed via the screen test pattern.
The necessary corrections are carried out using the potentiometers on the monitor board.

Caution High-Voltage !
Do not touch live parts.
Only use insulated tools.

Sequence of operations	Remarks
1. Insert the memory card in the arrow-indicated direction. Green arrow points downwards.	Main switch is turned off.
2. Turn on main switch.	The screen test pattern appears. It consists of a grid of squares. ATTENTION ! With correct adjustment the distance of the square grid to the lower screen edge must be slightly larger than to the upper edge. Otherwise, the bottom line of the screen displays is not visible.
To correct the screen display:	
3. Turn off main switch.	
4. Remove the memory card.	
5. Mark the entire visible screen cutout on the glass pane of the screen using a pencil.	To make sure that the visible screen cutout can still be outlined after the hood has been removed.
6. Remove the 220 Volt mains plug and the 30-pin-plug from the control.	
7. Remove the control from its holder.	
8. Unscrew the hood.	
9. Insert the memory card in the arrow-indicated direction. Green arrow points downwards.	
10. Insert the 220 Volt mains plug into the control.	The screen test pattern appears.
11. Perform the corrections using the potentiometers.	For correction possibilities: see figure of the potentiometers on the monitor board. The monitor board is installed upright laterally beside the screen.

Potentiometers on the monitor board (200-3 / 200-6):



16.2 Changing the battery of the memory card

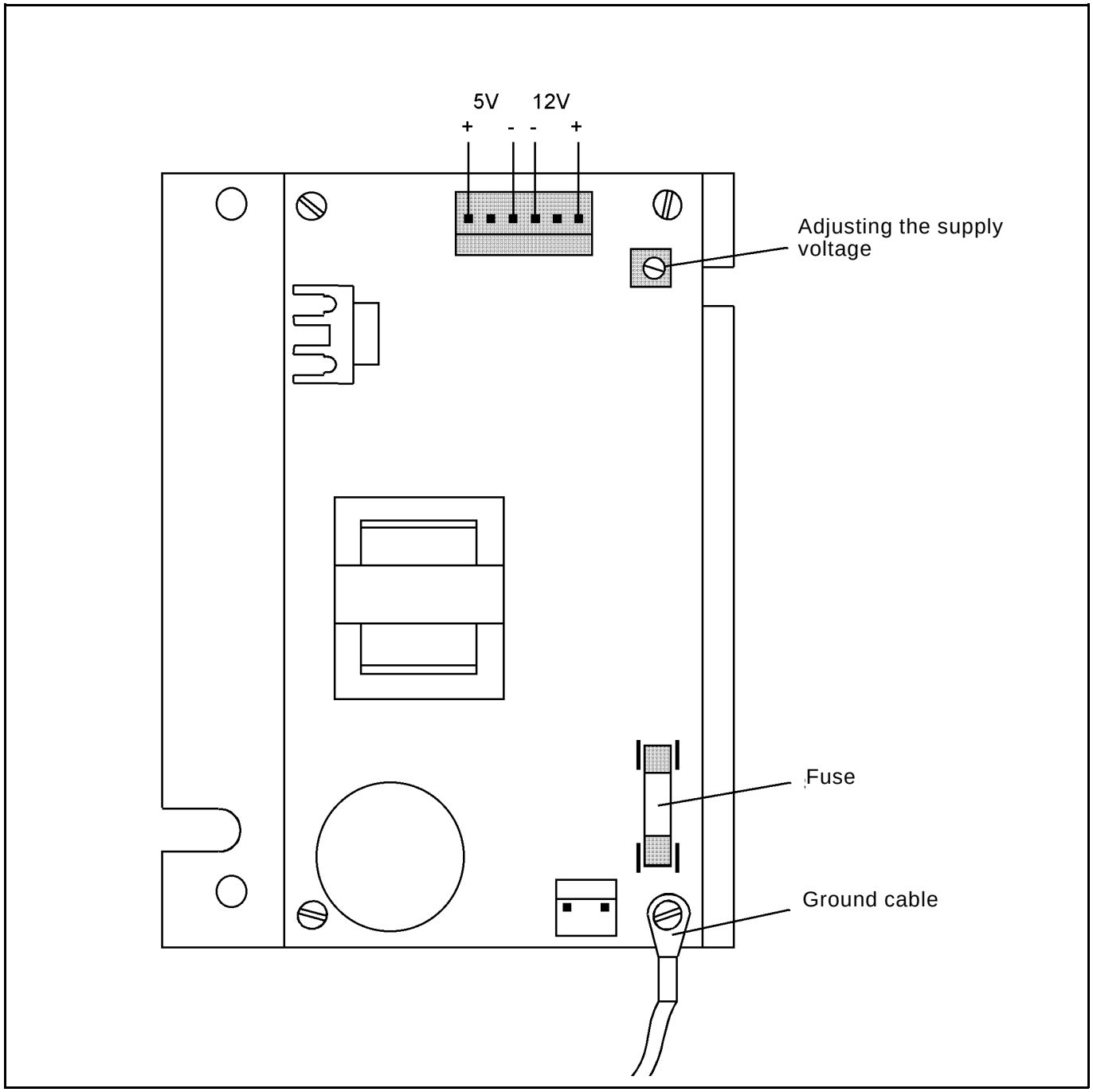
See instructions on the memory card.

ATTENTION !
Programs memorized on the card are being erased when the battery is changed.
Prior to changing the battery load the programs into a control !

16.3 Changing the fuse (200-3 / 200-6)

- Turn off main switch.
- Remove the 220 Volt mains plug and 30-pin-plug from the control.
- Remove the control from its holder.
- Unscrew the bottom cover plate of the control.
- Loosen all cable plug connections.
- Unscrew the hood.
- Change the fuse (5MF, 2A, 250 V).
  The fuse is located on the power pack underneath the screen (see figure power pack).
- After the change of the fuse be sure to re-connect all cable plug connections.

Power pack:



16.4 Replacing the mains connection (200-3 / 200-6)

- Turn off main switch.
- Remove the 220 Volt mains plug and 30-pin-plug from the control.
- Remove the control from its holder.
- Unscrew the bottom cover plate of the control.
- Loosen all cable plug connections.
- Unscrew the hood.
- The power pack is located underneath the screen.
- Loosen the cable plug connections at the power pack.
- Remove the ground cable.
- Loosen the fastening screws and change the power pack.
- After installation of a new power pack re-insert the ground cable and re-connect the cable plug connections.

ATTENTION !
After a change of the power pack the supply voltage (5V) must be readjusted for the computer!

Adjusting the supply voltage:

Caution High-Tension !
Do not touch live parts.
Only use insulated tools.

- The supply voltage for the computer must be adjusted to 5V +/- 2.5 %.
  It is measured between the pins 1 and 3.
- Set the supply voltage using the potentiometer VR1 on the power pack (see figure power pack).

16.5 Changing the graphics card (200-3 / 200-6)

- Turn off main switch.
- Remove the 220 Volt mains plug and 30-pin-plug from the control.
- Remove the control from its holder.
- Unscrew the bottom cover plate of the control.
- Loosen all cable plug connections.
- Unscrew the hood.
- The graphics card is located laterally beside the screen.
- Remove the plug from the graphics card.
  The safety bracket is unlocked.
- Remove the graphics card and change.
- After installation of the new graphics card re-connect all cable plug connections.

16.6 Changing the storage battery (200-3 / 200-6)

- Turn off main switch.
- Remove the 220 Volt mains plug and 30-pin-plug from the control.
- Remove the control from its holder.
- Unscrew the bottom cover plate of the control.
  The PC board becomes visible.
  The storage battery is soldered to the PC board
  (see figure PC board).
- Loosen all cable plug connections.
- To change the storage battery unscrew the PC board.
- After installation of the new storage battery re-connect all cable plug connections.

In the case of longer machine standstill, open the bridge a2 so that the storage battery does not discharge too quickly.

ATTENTION !
When opening the bridge the programs are being erased from the control.
Prior to opening the bridge transfer all programs to the memory card!

Prior to re-starting the machine, re-close the bridge a2.

16.7 Changing the EPROMS (200-3)

- Turn off main switch.
- Remove the 220 Volt mains plug and 30-pin-plug from the control.
- Remove the control from its holder.
- Unscrew the bottom cover plate of the control.
- Unscrew the safety bridge (see figure of the PC board).
- Carefully remove the EPROMS and insert new ones.

ATTENTION !
When inserting make sure that the notch on the EPROM is on the same side with the arrow head on the PC board.

- To avoid errors, always change the entire set of EPROMS (language, graphics, and program EPROM) !

Control board (200-3):