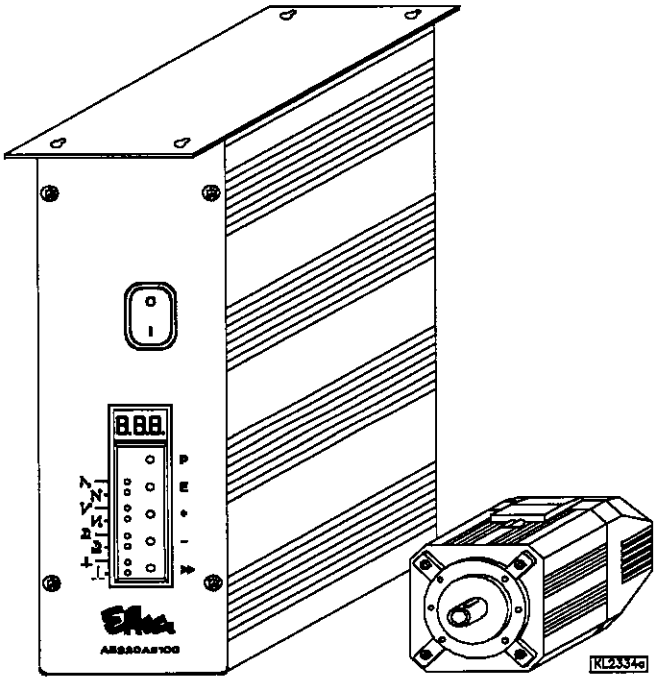
Efka dc1500

CONTROL AB220A5100



INSTRUCTION MANUAL

No. 402239 English

Efka
FRANKL & KIRCHNER
GMBH & CO KG

Efka
EFKA OF AMERICA INC.

Efka
EFKA ELECTRONIC MOTORS
SINGAPORE PTE. LTD.

Contents

1. Important Safety Instructions

When using an EFKA drive and accompanying devices (e.g. for sewing machines), basic safety precautions should always be followed, including the following:

- Read all instructions thoroughly before using this drive.
- Drive, its accessories and accompanying devices should be mounted and put into operation by qualified personnel in accordance with the guidelines provided in the instruction manual.

To reduce the risk of burns, fire, electric shock, or personal injury:

- Use this drive only for its intended use as described in the instruction manual.
- Use only attachments recommended by the manufacturer or as contained in the instruction manual.
- Do not operate without corresponding protective devices.
- Never operate this drive if one or more parts (e.g. cables, plugs) are damaged, if it is not working properly, if any damages can be identified or are to be suspected (e.g. after it has been dropped). Only qualified personnel are authorized to make adjustments, eliminate faults and complete repair work.
- Never operate the drive with the air openings blocked. Keep ventilation openings of the drive free from the accumulation of lint, dust and loose cloth.
- Never drop or insert any object into any opening.
- Do not use drive outdoors.
- Do not operate where aerosol (spray) products are being used or where oxygen is being administered.
- To disconnect, turn off main switch, then remove plug from outlet.
- Do not unplug by pulling on cord. To unplug, grasp the plug, not the cord.
- Keep fingers away from all moving machine parts. Special care is required e.g. around the sewing machine needle and the V-belt.
- Before mounting and adjusting accompanying devices, i.e. position transmitter, reversing device, light barrier, etc., disconnect drive from mains (turn off main switch, remove mains plug from outlet [DIN VDE 0113 part 301; EN 60204-3-1; IEC 204-3-1]).
- Always switch off (0) machine and remove plug from outlet, when removing covers, mounting accompanying devices, position transmitter especially, light barrier, etc., or any other devices mentioned in the instruction manual.
- Only qualified personnel are authorized to work on the electrical components.
- Work on high voltage circuit areas is forbidden, except as stated in the respective regulations, e.g. DIN VDE 0105 part 1.
- Only specially trained personnel are authorized to complete repair work.
- Cables to be wired must be protected against expectable strain and fastened adequately.
- Cables near moving machine parts (e.g. V-belts) must be wired at a minimum distance of 25 mm (see DIN VDE 0113 part 301; EN 60204-3-1; IEC 204-3-1).
- For safety it is preferred to wire the cables separately from each other.
- Before connecting the mains line make sure that the mains voltage corresponds to the specifications on the motor rating plate and on the nameplate of the power pack.
- Connect this drive to a properly grounded outlet only. See Grounding Instructions.
- Electric accompanying devices and accessories must only be connected to safety low voltage.
- EFKA DC drives are protected according to overvoltage class 2 (DIN VDE 0160 § 5.3.1).
- Observe all safety guidelines before undertaking conversions or modifications.
- For repair and maintenance use only original replacement parts.

Warnings in the instruction manual which point out particular risks of personal injury or risk to the machine are marked with this symbol wherever applicable.

This symbol is a warning on the control and in the instruction manual. It indicates hazardous voltage.

CAUTION - In the case of failure this area can be current-carrying even after having turned the power off (non discharged capacitors).

- The drive is not an independently operating unit, but is designed to be incorporated into other machinery. It must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the EC Directive.

Save these instructions for future reference.

2. Range of Applications

The drive is suitable for lockstitch, chainstitch and overlock machines of various manufacturers.

This drive can be used as a replacement for the following controls, if using adapter cords (adapter cords see Special Accessories):

Machine manufacturer	Replacing	Machine	Class	Thread trimming mode	Adapter cord
Aisin	AB62AV	Lockstitch	AD3XX,AD158 3310,EK1	0	1112815
Brother	AB62AV	Lockstitch	737-113,737-913	0	1112814
Brother	AC62AV	Chainstitch	FD3 B257	5	1112822
Dürkopp Adler	DA62AV	Lockstitch	210,270	0	1112845
Global		Chainstitch	CB2803-56	5	1112866
Juki	AB62AV	Lockstitch	5550-6	14	1112816
Juki	AB62AV	Lockstitch	5550-7	14	1113132
Kansai	AC62AV	Chainstitch	RX 9803	5	1113130
Pegasus	AC62AV	Chainstitch	W500/UT W600/UT/MS with / without stitch condensing	5	1112821
Pegasus	AB60C	Backlatch		8	1113171
Pfaff	PF62AV	Lockstitch	563,953,1050, 1180	0	1112841
Rimoldi		Chainstitch	F27	5	1113096
Singer	SN62AV	Lockstitch	211,212,591	2	1112824
Union Special	US80A	Lockstitch	63900AMZ	10	1112823
Union Special	AC62AV	Chainstitch	34700 with stitch lock	5	1112844
Union Special	US80A	Chainstitch	34000, 36200	4	1112865
Union Special	US80A	Chainstitch	CS100, FS100	4	1112905
Yamato	AC62AV	Chainstitch	VC series	5	1112818
Yamato	AC62AV	Chainstitch	VG series	5	1113178
Yamato	AB60C	Backlatch	ABT3	9	1112826
Yamato		Backlatch	ABT13	9	1112898

2.1 Use in Accordance with Regulations

The drive is not an independently operating machine, but is designed to be incorporated into other machinery. It must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the EC Directive (Appendix II, paragraph B of the Directive 89/392//392/EEC and supplement 91/368/EEC).

The drive has been developed and manufactured in accordance with the respective EC standards:

EN 60204-3-1: 1990	Electrical equipment of industrial machines: Particular requirements for industrial sewing machines, sewing units and sewing systems.

The drive can only be operated:

- on thread processing machines
- in dry areas

3. Complete Drive Unit Consisting of

1	Direct current motor	DC1500
1	Electronic control	AB220A5100
	- Power pack	N201
1	Actuator	EB301A
1	Set of standard accessories	B156 documentation
1	Set of accessories consisting of:	Z53 pitman rod 400...700 mm long 37-pin SubminD plug potential equalization cord bracket for fastening EB3..

Note

If there no metallical contact between drive (motor) and machine head, the potential equalization cord supplied with the unit is to be wired from the machine head to the terminal provided on the control box!

3.1 Special Accessories

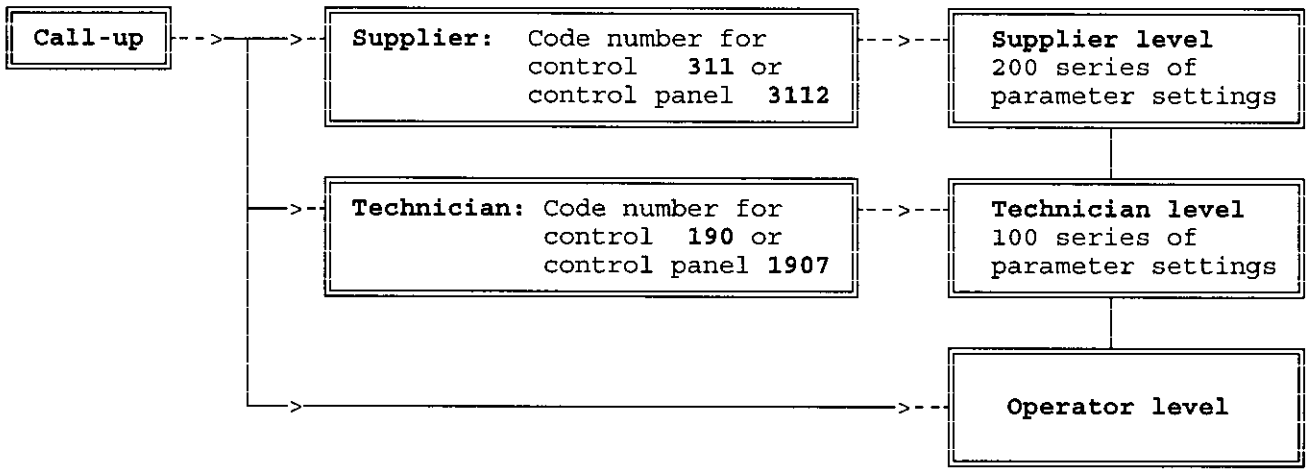
Control panel Variocontrol V810 with 9-pole/25-pole adapter	- part no. 5970153
Control panel Variocontrol V820 with 9-pole/25-pole adapter	- part no. 5970154
Reflection light barrier module LSM002	- part no. 6100031
Solenoid type EM1..(for e.g. sewing foot lifting, backtacking, etc.)	- available versions see specification "solenoids"
Fitting piece for position transmitter	- part no. 0300019
Knee switch type KN3 (pushbutton) with cord of approx. 950 mm length without plug	- part no. 58.0013
Adapter cord for the connection to AISIN high-speed seamer AD3XX, AD158, 3310 and overlock machine EK1	- part no. 1112815
Adapter cord for the connection to BROTHER cl. 737-13, 737-913	- part no. 1112814
Adapter cord for the connection to BROTHER chainstitch machine cl. FD3 B257	- part no. 1112822
Adapter cord for the connection to DÜRKOPP ADLER cl. 210 and 270	- part no. 1112845
Adapter cord for the connection to GLOBAL cl. CB2803-56	- part no. 1112866
Adapter cord for the connection to JUKI high-speed seamer with index -6	- part no. 1112816
Adapter cord for the connection to JUKI high-speed seamer with index -7	- part no. 1113132
Adapter cord on JUKI lockstitch machines for the connection of the position sensor integrated in the handwheel	- part no. 1113157
Adapter cord for the connection to KANSAI machines cl. RX 9803	- part no. 1112819
Adapter cord for the connection to PEGASUS cl. W500/UT, W600/UT/MS with or without stitch condensing	- part no. 1112821
Adapter cord for the connection to PEGASUS backlatch machine	- part no. 1113171
Adapter cord for the connection to PFAFF cl. 563, 953, 1050, 1180	- part no. 1112841
Adapter cord for the connection to RIMOLDI cl. F27	- part no. 1113096
Adapter cord for the connection to SINGER cl. 211, 212U, 212UTT and 591	- part no. 1112824
Adapter cord for the connection to UNION SPECIAL lockstitch machine cl. 63900AMZ (as a replacement for the US80A)	- part no. 1112823
Adapter cord for the connection to UNION SPECIAL cl. 34700 with stitch lock	- part no. 1112844
Adapter cord for the connection to UNION SPECIAL cl. 34000 and 36200 (as a replacement for the US80A)	- part no. 1112865
Adapter cord for the connection to UNION SPECIAL cl. CS100 and FS100	- part no. 1112905
Adapter cord for the connection to YAMATO VC series chainstitch machine	- part no. 1112818
Adapter cord for the connection to YAMATO backlatch machine ABT3	- part no. 1112826
Adapter cord for the connection to YAMATO backlatch machine ABT13	- part no. 1112898
Adapter cord for the connection to YAMATO VG series chainstitch machine	- part no. 1113178
Adapter cord for the connection to interface 232-2 (EFKANET)	- part no. 1113119
Sewing light transformer	- please indicate line voltage and sewing light voltage (6.3V or 12V)
9-pole SubminD male connector	- part no. 0504135
9-pole SubminD female connector	- part no. 0504136
Semimonocoque casing for 9-pole SubminD	- part no. 0101523
37-pole SubminD connector with semimonocoque casing	- part no. 1112900
Singel pins for 37-pole SubminD with strand of 5 cm length	- part no. 1112899

4. Operating the Control without Control Panel

4.1 Access to Programming on Command Input

In order to prevent the unintentional modification of preset functions the input commands are distributed at various levels, as shown in the diagram below.

The following persons have access:
- the supplier to the highest and all subordinate levels by a code number
- the technician to the next lower and all subordinate levels by a code number
- the operator to the lowest level without code number

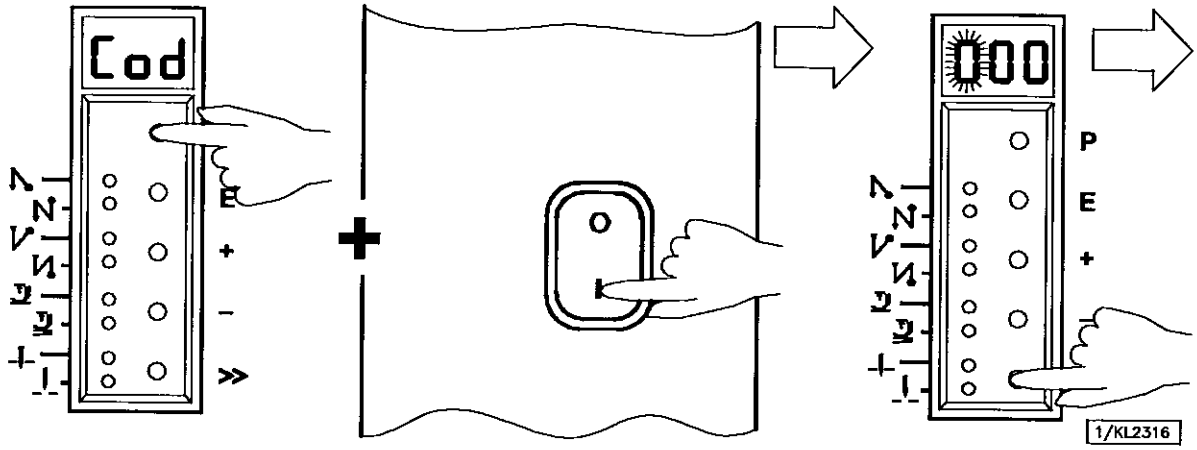


4.2 Programming the Code Number

Note
The parameter numbers in the illustrations below serve as examples and may not be available in all program versions. In this case, the display shows the next higher parameter number. See Parameter List.

1. Press pushbutton P and turn power on

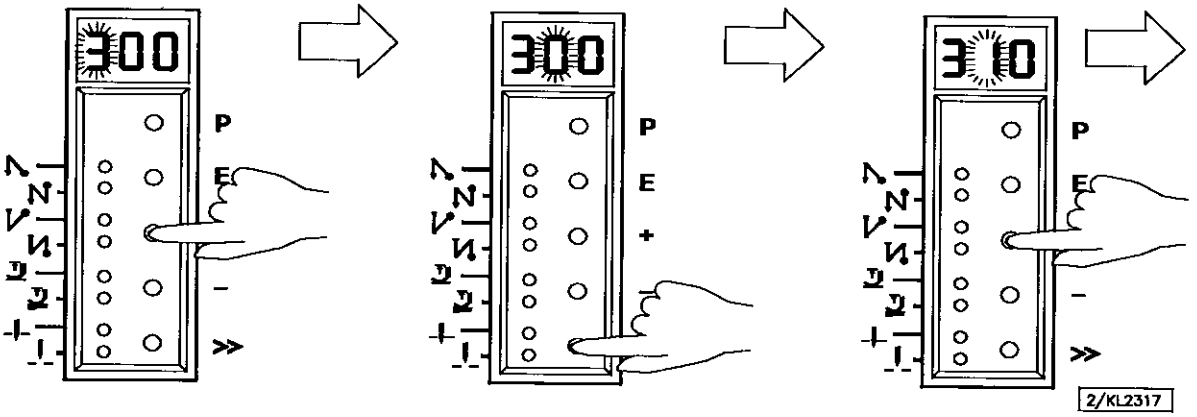
2. Press pushbutton >> (1st digit blinks)



3. Press pushbutton + and/or - to select the 1st digit
Technician level => Code no. 190
Supplier level => Code no. 311

4. Press pushbutton >> (2nd digit blinks)

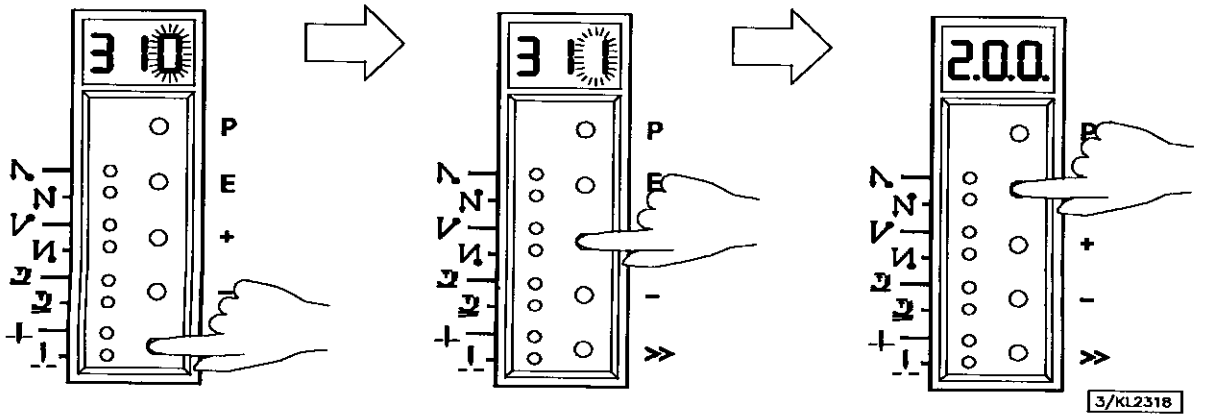
5. Press pushbutton + and/or - to select the 2nd digit



6. Press pushbutton >> (3rd digit blinks)

7. Press pusbutton + and/or - to select the 3rd digit

8. Press pushbutton E; the parameter number is displayed, which is indicated by points between the digits.



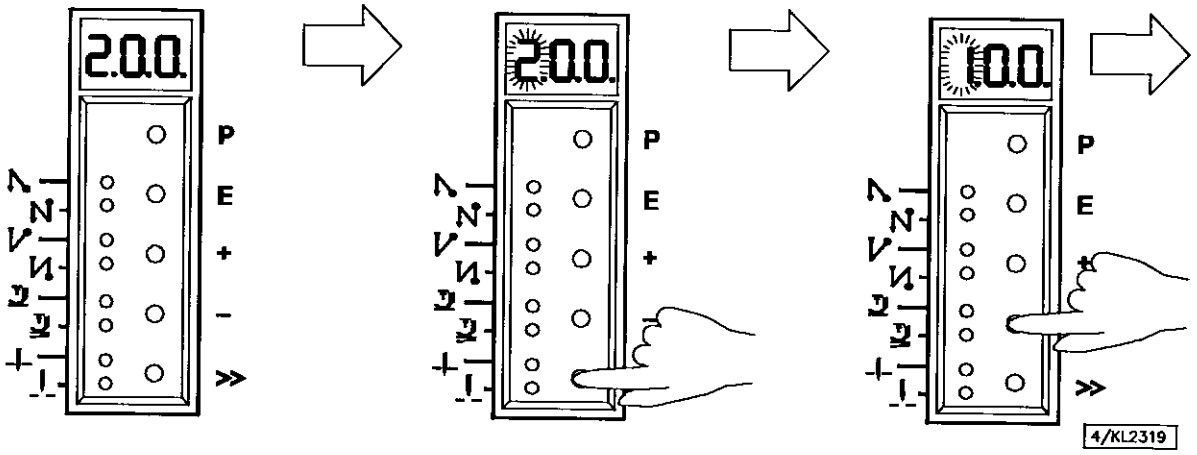
4.3 Selection of the Parameters

4.3.1 Direct Selection

1. After inputting the code number on the programming level

2. Press pushbutton > > (1st digit blinks)

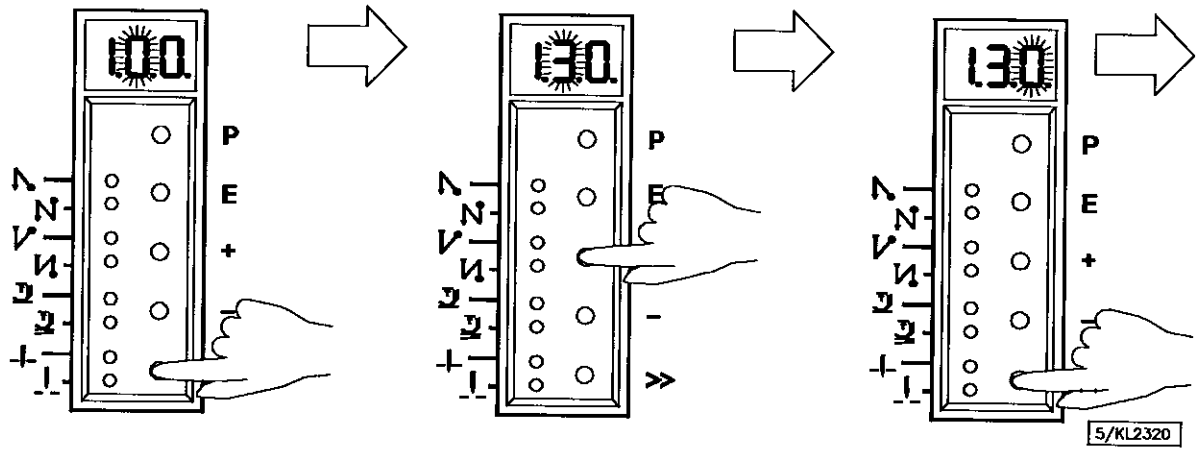
3. Press pushbutton + and/or - to select the 1st digit



4. Press pushbutton > > (2nd digit blinks)

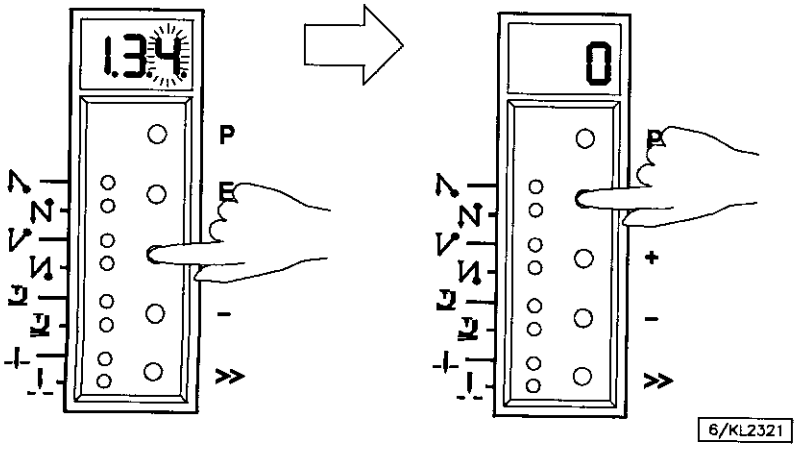
5. Press pushbutton + and/or - to select the 2nd digit

6. Press pushbutton > > (3rd digit blinks)



7. Press pushbutton + and/or - to select the 3rd digit

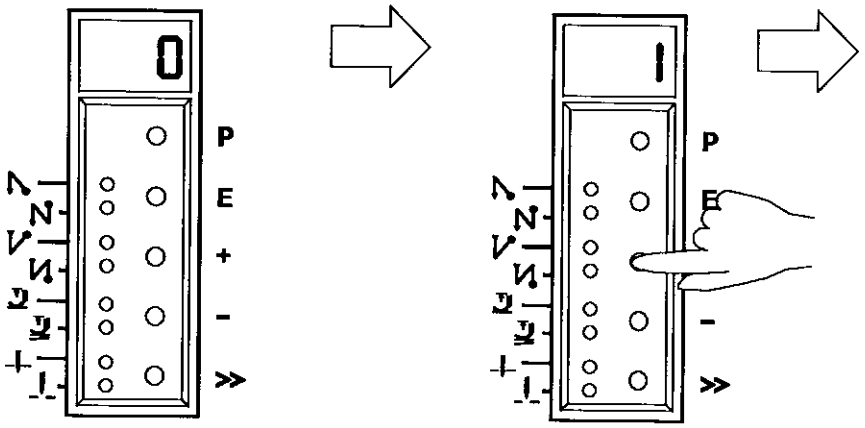
8. Press pushbutton E; parameter value is displayed. There are no points between the digits.



4.3.2 Changing Parameter Values

1. Display after selecting the parameter value

2. Change parameter value by pressing pushbutton + and/or -



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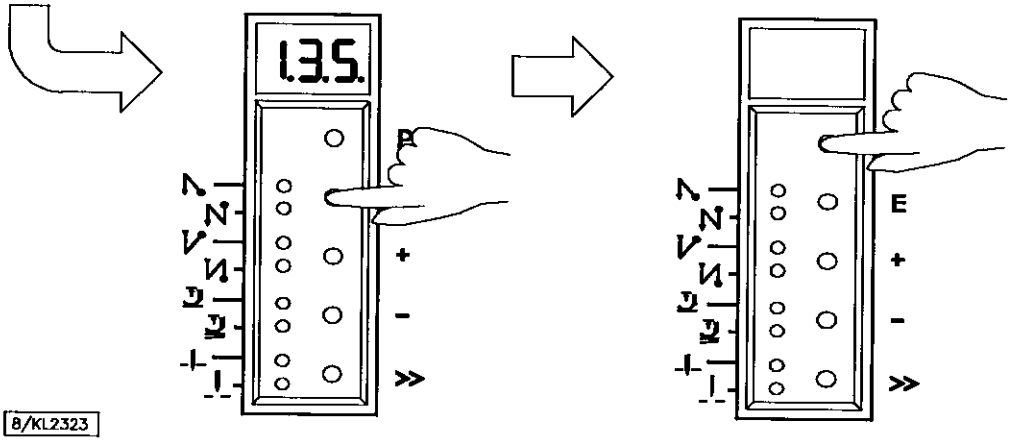
Possibility n° 1

Press pushbutton **E**. The **next** parameter number is displayed.

Press pushbutton **P**. Exit programming. The changed parameter values will only be saved by starting to sew again!

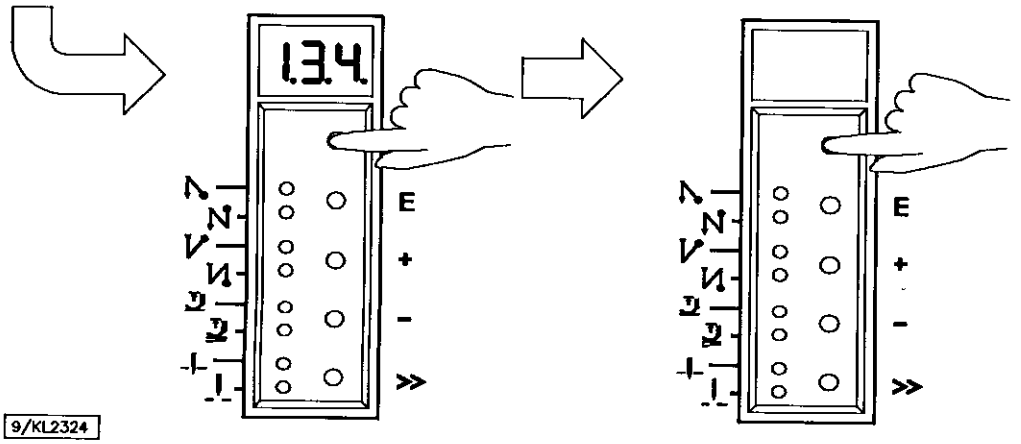


8/KL2323

Possibility n° 2

Press pushbutton **P**. The **same** parameter number is displayed.

Press pushbutton **P**. Exit programming. The changed parameter values will only be saved by starting to sew again!



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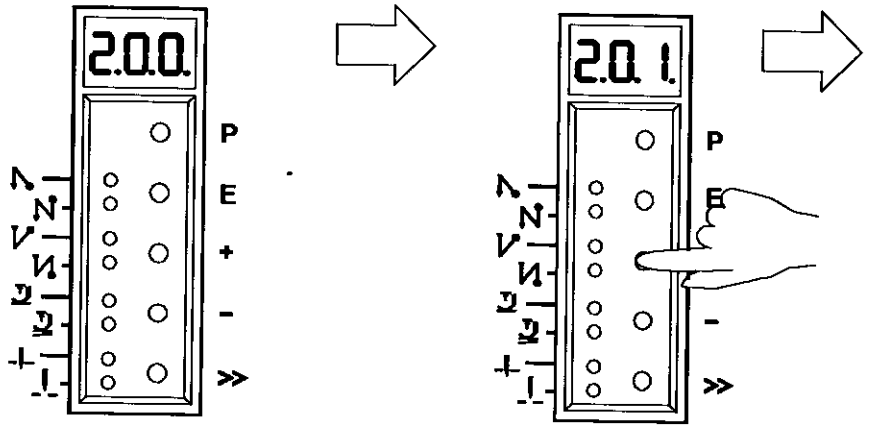
4.3.3 Selection by Using the +/- Pushbuttons

1. After inputting the code number on the programming level

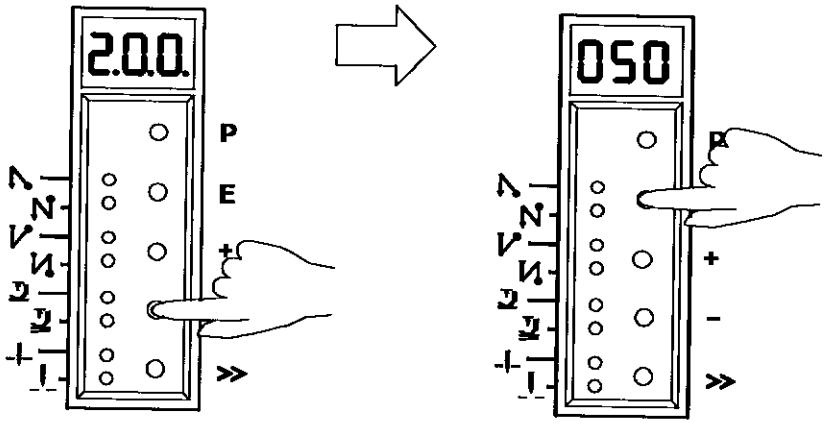
2. Select the next parameter by pressing the + pushbutton



10/KL2325

3. Select the previous parameter by pressing the - pushbutton

4. After pressing pushbutton **E**, the parameter value is displayed

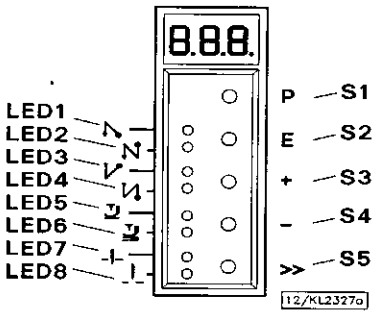


11/KL2326

4.4 Changing All Parameter Values of the Operator Level

All parameter values of the operator level (see Parameter List) can be changed without inputting a code number.

Press pushbutton **P**	=>	First parameter number will be displayed.
Press pushbutton **E**	=>	Parameter value will be displayed.
Press pushbuttons +/-	=>	Parameter value will be changed.
Press pushbutton **E**	=>	Next parameter will be displayed.
Press pushbutton **E**	=>	Parameter value will be displayed.
Press pushbuttons +/-	=>	Parameter value will be changed.
etc.		
Press pushbutton **P** 2x	=>	Exit programming on the operator level.



4.5 Switchable Functions

Switchable functions can be changed by pressing a pushbutton. The switching state is indicated by light emitting diodes (LED). See above illustration!

Table: Allocation of functions for pushbuttons and LEDs

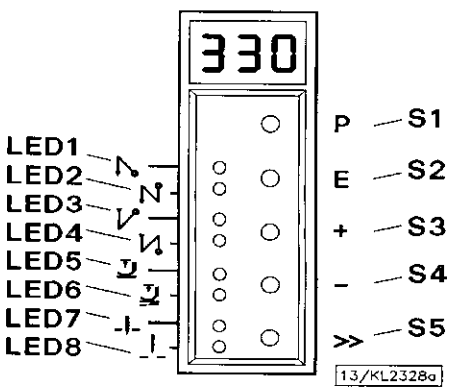
Function	Pushbutton		LED number	
Single start backtack	E	(S2)	1 = on	2 = off
Double start backtack	E		1 = off	2 = on
Start backtack off	E		1 = off	2 = off
Single end backtack	+	(S3)	3 = on	4 = off
Double end backtack	+		3 = off	4 = on
End backtack off	+		3 = off	4 = off
Sewing foot lifting at stop in the seam (automatic)	-	(S4)	5 = on	6 = off
Sewing foot lifting at the seam end (automatic)	-		5 = off	6 = on
Sewing foot lifting at stop in the seam and at the seam end (automatic)	-		5 = on	6 = on
Sewing foot lifting (automatic) off		-	5 = off	6 = off
Basic position down (position 1)	>>	(S5)	7 = on	8 = off
Basic position up (position 2)	>>		7 = off	8 = on

4.6 Direct Input of Maximum Speed Limitation (DED)

The maximum speed of the machine can be limited to the specific level according to the application directly by using control pushbuttons +/- during machine run or during intermediate machine stop.
This function is blocked at the start of the seam and/or after the seam end. The actual value is shown on the display and must be multiplied by 10. When using a control panel, the full speed value will be displayed.

Example:

The value 330 on the control display corresponds to a speed of 3300 RPM



4.7 Program Identification on the Control

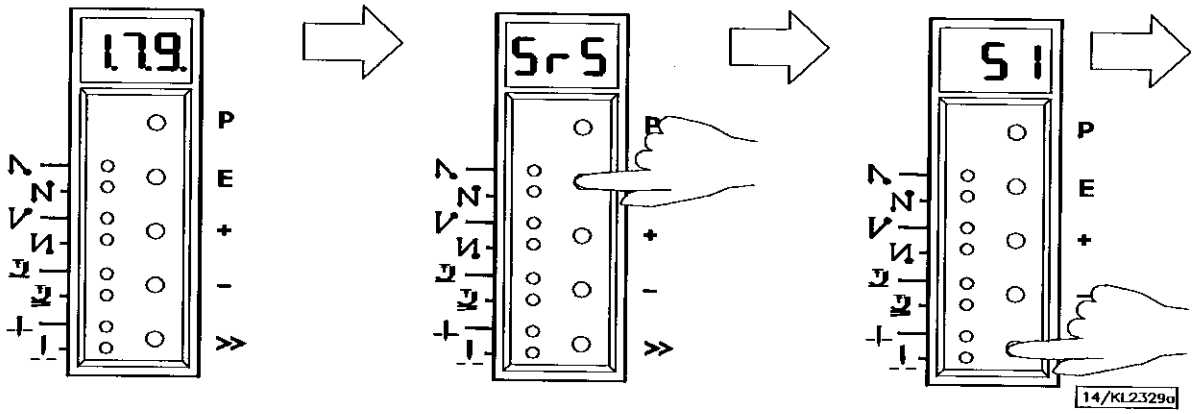
Functions **without** control panel	Parameter
Display of program number, modification index and identification number	179

After having selected parameter 179, the display shows the following information in succession (**example**):

1. Select parameter 179.

2. Press pushbutton **E**.
Abbreviation "Sr5" is displayed.

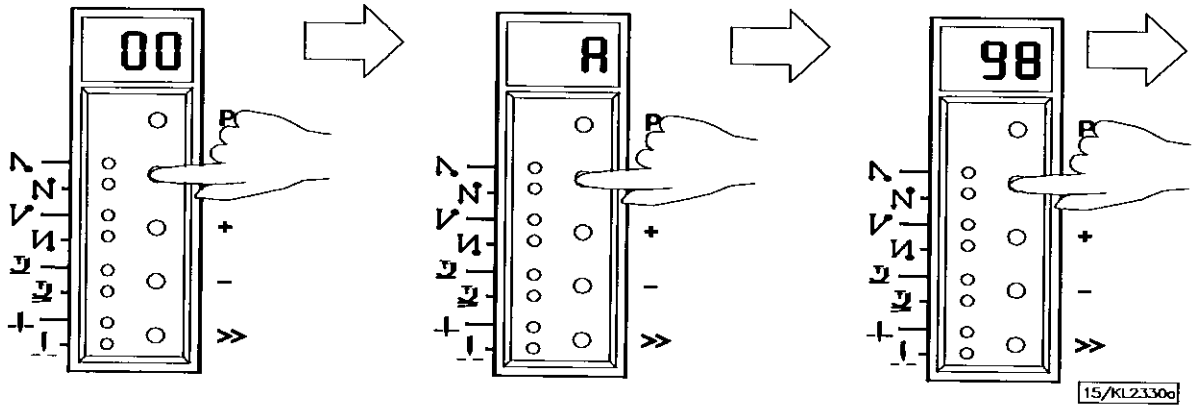
3. Press pushbutton **>>**.
The first 2 digits of the program number are displayed.



4. Press pushbutton **E**.
The second 2 digits of the program number are displayed.

5. Press pushbutton **E**.
The program modification index is displayed.

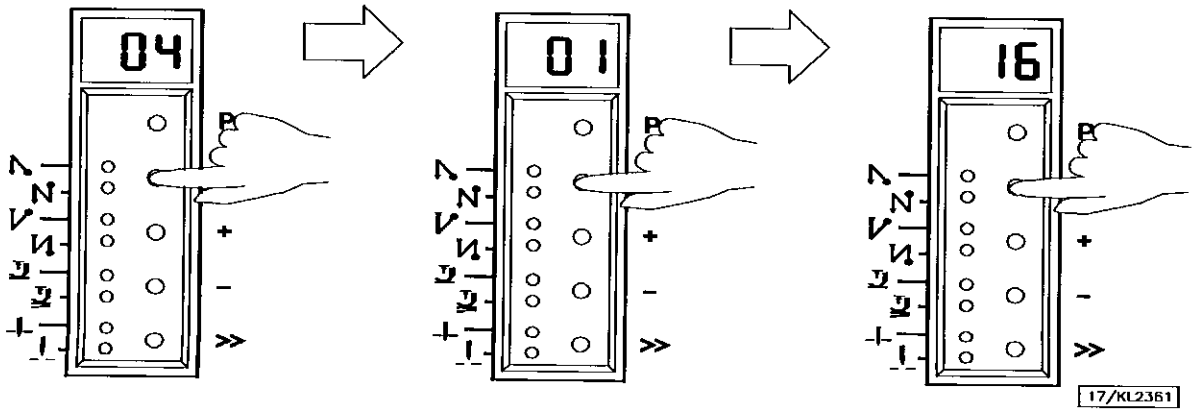
6. Press pushbutton **E**.
The identification number digits 1 and 2 are displayed.



7. Press pushbutton **E**.
The identification number digits 3 and 4 are displayed.

8. Press pushbutton **E**.
The identification number digits 5 and 6 are displayed.

9. Press pushbutton **E**.
The identification number digits 7 and 8 are displayed.



The routine will be repeated after pressing pushbutton **E**. The routine will be exited and the actual parameter number displayed after pressing pushbutton **P** once. The routine will be exited and the drive will again be ready for sewing after pressing pushbutton **P** twice.

5. Operating the Control with Control Panel

5.1 Operating the Control Panel V810

5.1.1 Code Number Input on Control Panel V810

Technician level code number => 1907 and/or supplier level code number => 3112

Example: If the technician level CODE number has been selected on the control panel V810:

■		TURN POWER OFF		
■	[P] +	TURN POWER ON First digit blinks	==>	[C - 0 0 0 0]
■	[+] [-]	Press + button and/or - button to select the first digit	==>	[C - 1 0 0 0]
■	[>>]	Press >> button second digit blinks !	==>	[C - 1 0 0 0]
■	[+] [-]	Press + button and/or - button to select the second digit	==>	[C - 1 9 0 0]
■	[»] [»]	Press >> button twice fourth digit blinks !	==>	[C - 1 9 0 0]
■	[+] [-]	Press + button and/or - button to select the fourth digit	==>	[C - 1 9 0 7]
■	[E]	If CODE number is correct First PARAMETER number at the selected level is displayed !	==>	[F - 1 0 0]

5.1.2 Input by Parameters at the Operator Level on Control Panel V810

Example: If CODE number has not been input !

■		TURN POWER ON!	==>	[A b 2 2 0 A]
■	[P]	First parameter at the operator level is displayed !	==>	[F - 0 0 0]
■	[+]	Second parameter at the operator level is displayed ! The next and/or previous parameter can be called up with the +/- buttons.	==>	[F - 0 0 1]
■	[E]	Parameter value is displayed	==>	[0 0 3]
■	[+]	Change parameter value by pressing the +/- buttons	==>	[X X X]

■	[E]	Parameter value is entered; Display advances to the next parameter	==>	F - 0 0 2
■	[+]	Press the + button several times until the desired parameter is displayed	==>	F - 0 0 9
■	[E]	Parameter value is displayed	==>	O F F
■	[+]	Altered parameter value is displayed	==>	O N
■	[E]	Next parameter is displayed	==>	F - 0 1 3
	or			
■	[P]	Exit programming	==>	A b 2 2 0 A

These values are saved when you start sewing. They remain in effect even after turning the machine off.

Note! The parameter number can also be directly selected, like the code number!

5.1.3 Input by Parameters at the Technician/Supplier Level on the Control Panel V810

Example: If the technician CODE number has been selected !

■		After CODE number input the first PARAMETER number is displayed	==>	F - 1 0 0
■	[+]	Press + button; next parameter number is displayed	==>	F - 1 1 0
■	[E]	Press E button; parameter value is displayed	==>	0 1 8 0
■	[+] [-]	Change parameter value!	==>	0 X X X
■	[E]	Parameter value is entered; display advances to the next parameter	==>	F - 1 1 1
	or			
■	[P]	Parameter value is entered; the actual PARAMETER number is displayed	==>	F - 1 1 0
	or			
■	[P] [P]	Press pushbutton P twice ! Exit programming	==>	A b 2 2 0 A

These values are saved when you start sewing. They remain in effect even after turning the machine off.

5.2 Operating the Control Panel V820

5.2.1 Code Number Input on Control Panel V820

Technician level code number = > 1907 and/or supplier level code number = > 3112

Example: If the technician level CODE number has been selected on the control panel V820:

- TURN POWER OFF
- [P] + TURN POWER ON ==> C-0000
- [1] [9] [0] [7] Input ==> CODE number ! C-1907
- [E] If CODE number is wrong repeat input ! ==> C-0000 InF F1
- [E] If CODE number is correct the first PARAMETER number at the selected level is displayed ! ==> F-100

5.2.2 Input by Parameters at the Operator Level on Control Panel V820

Example: If CODE number has not been input !

- TURN POWER ON! ==> 4000 Ab220A
- [P] Display shows no reading! ==>
- [E] First parameter at the operator level is displayed; PARAMETER number is not displayed ==> c2 003
- [+] [-] Change parameter value! ==> c2 XXX
- [E] Parameter value is entered; display advances to the next parameter ==> c1 003

or

- [P] Exit programming ==> 4000 Ab220A

5.2.3 Input by Parameters at the Technician/Supplier Level on the Control Panel V820

Example: If the technician CODE number has been selected !

▪	After CODE number input the first PARAMETER number is displayed	==>	F-100
▪ E	The most significant digit of the parameter number blinks	==>	F-100
▪ 1 1 0	Input desired PARAMETER number!	==>	F-110
▪ E	If parameter number is wrong repeat input!	==>	F-XXX InF F1
▪ E	If PARAMETER number is correct	==>	F-110 n1 180
▪ + -	Change parameter value!	==>	F-110 n1 XXX
▪ E	Parameter value is entered; display advances to the next parameter	==>	F-111 n2 4000
or			
▪ P	Parameter value is entered; a new PARAMETER number can be called up	==>	F-XXX
or			
▪ P P	Press pushbutton P twice! Exit programming	==>	4000 Ab220A

▪ **These values are saved when you start sewing. They remain in effect even after turning the machine off.**

5.3 Program Identification

Functions	Parameter
Display of program no., modification index and identification no.	179

Display example parameter 179 on the control panel V810:

- Select parameter 179!
- Press pushbutton **E** => **Sr5 [°]** appears on the display
- Press pushbutton **> >** => e.g. **5100A** appears on the display (program number with index)
- Press pushbutton **E** => e.g. **981019** appears on the display (1st part of identification number)
- Press pushvbutton **E** => e.g. **15** appears on the display (2nd part of identification number)
- Press pushbutton **P** 2x => **Ab220A** appears on the display (sewing process can be started)

Display example parameter 179 on the control panel V820:

- Select parameter 179!
- Press pushbutton **E** => **F-179 Sr5 [°]** appears on the display
- Press pushbutton **> >** => e.g. **5100A** appears on the display (program number with index)
- Press pushbutton **E** => e.g. **98101915** appears on the display (identification number)
- Press pushbutton **P** 2x => **4000 Ab220A** appears on the display (sewing process can be started)

5.4 Maximum Speed Limitation by Direct Input (DED)

The maximum speed of the machine can be limited to the specific level according to the application directly by using control pushbuttons +/- after each seam end.
The actual value is shown on the display.
The setting range is between the speeds programmed with parameter 111 (upper limit) and parameter 121 (lower limit).

5.4.1 Setting on Control Panel V810

- Type of control is displayed ==> `A b 2 2 0 A`
- [+] Display of maximum speed . (reading remains on for max. 5 sec.) ==> `4 0 0 0`
- [+] [-] Change value of maximum speed; e.g. press button - 8 x ! ==> `3 2 0 0`.
- After approx. 5 seconds the display shows ==> `A b 2 2 0 A`

5.4.2 Setting on Control Panel V820

Actual value on the display in the direct mode

- Display of maximum speed and type designation ==> `4000 Ab220A`
- [+] [-] Change value of maximum speed; e.g. press button - 8 x ! `3200 Ab220A`

Note
Changing the setting of the maximum speed limitation also affects the start backtack, end backtack and stitch counting speeds

5.5 Pushbuttons for Background Information (HIT) with V820

(setting of the pushbuttons see figure on the last page)

Note
The following functions are possible only with control panel V820 !

For fast operator information the values of functions activated by pressing the pushbuttons 1, 2, 3, 4 and 9 are indicated on the display of the Variocontrol for approx. 3 seconds. During this time the respective values can be varied immediately by the + and - pushbuttons.

5.5.1 Examples for HIT

Increase stitch-count seam section from 20 stitches to 25 stitches.
Stitch counting function (pushbutton 2) is off.

■	Display after power on	==>	4000 Ab220A
■ ↓ 2	Press button 2 briefly! Left arrow and stitch counting function is on	==>	Stc 020
■ +	Press button +! Increase number of stitches from 20 to 25 !	==>	Stc 025
■	Display after approx. 3 seconds	==>	4000 Ab220A

Stitch counting function (pushbutton 2) is already on.

■	Display after power on	==>	4000 Ab220A
■ ↓ 2	Press button 2 for at least 1 second! Left arrow goes off momentarily; stitch counting function is on	==>	Stc 020
■ +	Press button +! Increase number of stitches from 20 to 25!	==>	Stc 025
■	Display after approx. 3 seconds	==>	4000 Ab220A

These values are saved when you start sewing. They remain in effect even after turning the machine off.

Function key F

With the function key (pushbutton 9) various parameters, also from a higher level, can be switched on or off. This pushbutton can be set with the following functions:

1. Softstart ON/OFF
2. Ornamental backtack ON/OFF
3. Start of sewing blocked with light barrier uncovered ON/OFF
4. Unlock the chain ON/OFF

The F key setting can be changed as follows:

■	Display after power on!	==>	4000 Ab220A
■ P	Press button P !	==>	
■ E	Press button E !	==>	c2 002
■ E	Press button E several times until the abbreviation -F- appears (ornamental backtack on/off)	==>	-F- 2

■	[-]	Press button -! (softstart on/off)	==>	-F- 1
■	[P]	Press button P !	==>	4000 Ab220A
■		**»The setting is completed«**		

The number of softstart stitches can be changed as follows:

Example: change number of stitches from 1 to 3 (softstart function (pushbutton 9) is off).

■	[9]	Press button 9 briefly! The corresponding arrow above the pushbutton lights up (softstart function is on)	==>	SSc 001
■	[+]	Press button +! Increase number of stitches!	==>	SSc 003
■		Display after approx. 3 seconds	==>	4000 Ab220A

Example: change number of stitches from 1 to 3 (softstart function (pushbutton 9) is already on).

■	[9]	Press button 9 for at least 1 sec.! The corresponding arrow above the pushbutton goes off momentarily (softstart function is on)	==>	SSc 001
■	[+]	Press button +! Increase number of stitches!	==>	SSc 003
■		Display after approx. 3 seconds	==>	4000 Ab220A

These values are saved when you start sewing. They remain in effect even after turning the machine off.

5.5.2 Special Functions of the Control Panel V820

For setting a parameter quickly to the minimum or maximum value press pushbutton **0** (minimum value) or **9** (maximum value) 3 times!.

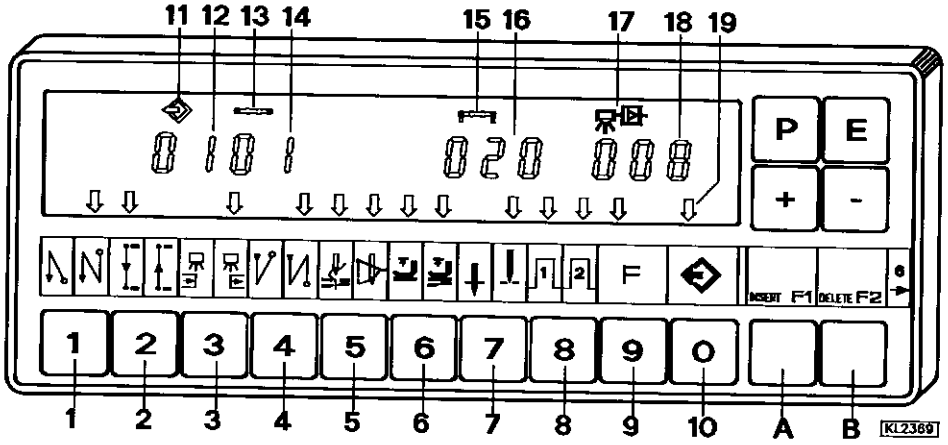
Example:

■	[2] [0] [0]	Select parameter 200!	==>	F-200
■	[E]	Press pushbutton **E**!	==>	F-200 t1 050
■	[0] [0] [0]	Press pushbutton **0** 3x!	==>	F-200 t1 000
■	[9] [9] [9]	Press pushbutton **9** 3x!	==>	F-200 t1 500

5.6 Programming Seams (Teach-in)

- A maximum of 40 patterns with a total of 40 seams can be programmed (i.e. 1 pattern with 40 seams each or 40 patterns with 1 seam each. In between, all combinations are possible).
- Programming is possible with or without code number!
- The functions start backtack, end backtack, stitch counting, light barrier, thread trimming, sewing foot lift and needle positions can be assigned individually to each seam.
- The functions of signals 1 and 2 can also be assigned to each seam, on condition that insertable strip no. 6 has been inserted into control panel V820 and the respective parameter (292 = 6) has been activated.
- The stitches for the functions start and end backtack and stitch counting, as well as the compensating stitches for light barrier function can be programmed individually for each seam section.
- Several counted seam sections can be linked (pushbutton 9)!

Attention! The "Teach in" function has been changed as compared to the type series 62 and 82!
Seams and/or patterns can be added by pressing pushbutton **INSERT F1** or erased by pressing pushbutton **DELETE F2**. Before programming new patterns and/or seams it is advisable to erase previously saved patterns and/or seams by pressing pushbutton **DELETE F2** according to chapter 5.6.5. If patterns or seams are to be inserted between existing ones, press pushbutton **INSERT F1** according to chapter 5.6.4.
Example: 3 patterns are available. Delete the 2nd pattern by pressing pushbutton **DELETE F2**. The 3rd pattern takes the place of the 2nd pattern. A new 2nd pattern can be installed by pressing pushbutton **INSERT F1**. The pattern in 2nd place will go back to being pattern no. 3.
If patterns and/or seams are only to be added, proceed as described in the following chapters.



1 = Single start backtack On (lefthand arrow)
Double start backtack On (righthand arrow)
Start backtack Off

2 = Counted seam forward On (lefthand arrow)
Counted seam backward On (righthand arrow)
Counted seam Off

3 = Light barrier uncovered/covered On (lefthand arrow)
Light barrier covered/uncovered On (righthand arrow)
Light barrier Off

4 = Single end backtack On (lefthand arrow)
Double end backtack On (righthand arrow)
End backtack Off

5 = Thread trimmer On (lefthand arrow)
Thread wiper On (righthand arrow)
Thread trimmer and thread wiper On (both arrows)
Thread trimmer and thread wiper Off

6 = Sewing foot in the seam On (lefthand arrow)
Sewing foot after seam end On (righthand arrow)
Sewing foot in the seam and after seam end On (both arrows)
Sewing foot Off

7 = Basic position down (lefthand arrow)
Basic position up (righthand arrow)

8 = Signal 1 On (lefthand arrow)
Signal 2 On (righthand arrow)
Signal 1 and 2 On (both arrows)

9 = Switching from one seam to the next On (lefthand arrow)
Switching from one seam to the next Off

10 = Programmed seams "Teach in" On (lefthand arrow)
Programmed seams "Teach in" Off

11 = Symbol for pattern

12 = Display of pattern number

13 = Symbol for seam

14 = Display of seam number

15 = Symbol for number of stitches of a seam

16 = Display of number of stitches

17 = Symbol for light barrier

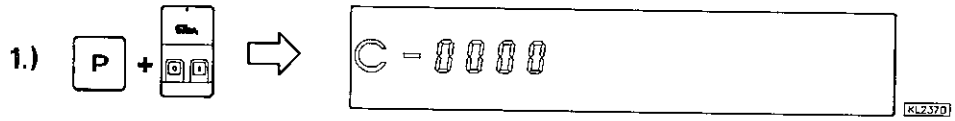
18 = Display of light barrier compensating stitches

19 = Arrow for Teach in

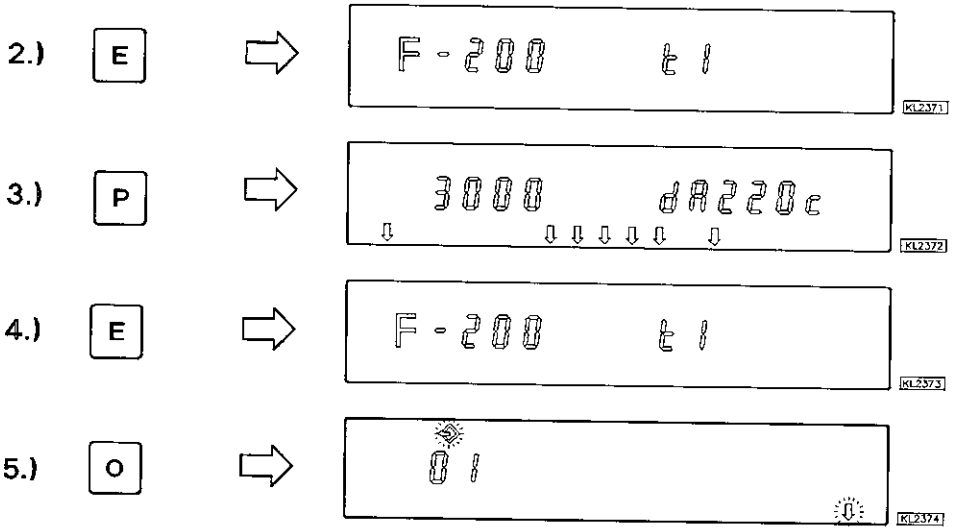
A = INSERT => Insert seams or patterns

B = DELETE => Delete seams or patterns

5.6.1 Programming after Inputting the Code Number



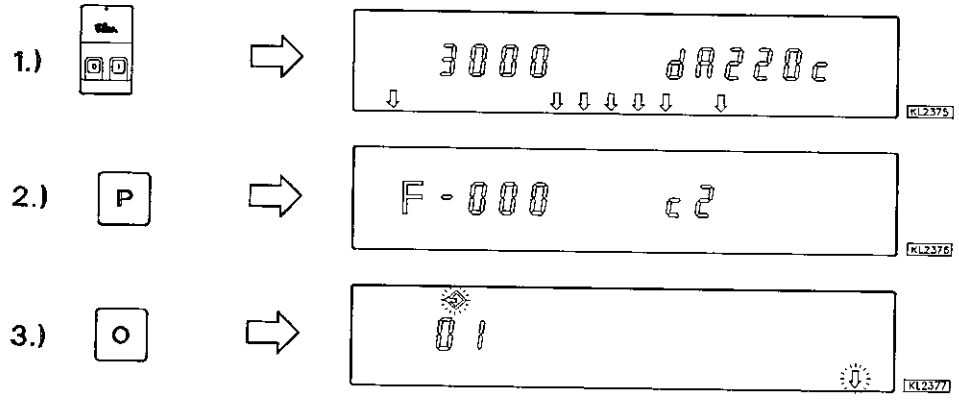
- Input code number with pushbuttons **0...9**



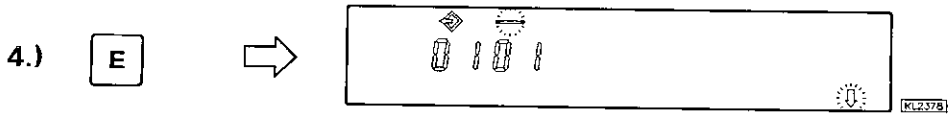
- Activate programming seams TEACH IN with pushbutton **0** / display of pattern number. The next pattern number can be selected with pushbutton + only after having programmed the current one.

Continue programming seams with item 4.) in the chapter below!

5.6.2 Programming without Inputting the Code Number

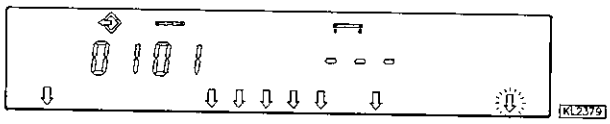


- Activate programming seams TEACH IN with pushbutton **0** / display of pattern number. The next pattern number can be selected with pushbutton + only after having programmed the current one.

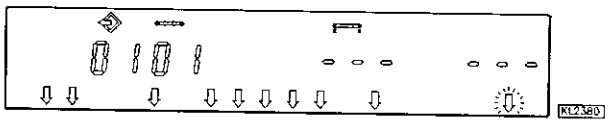


- Display of seam number

5.) [E] ⇨

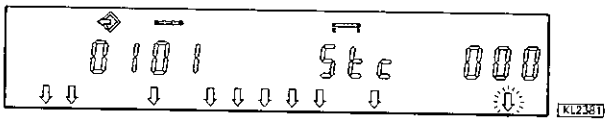


6.) [1] ... [9] ⇨



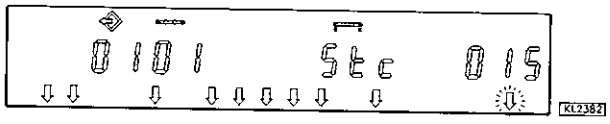
- Activate all desired functions of the current seam, as for ex. light barrier, with pushbuttons **1...9**.

7.) [2] ⇨



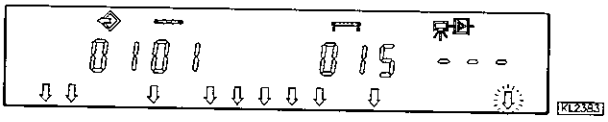
- After activating stitch counting with pushbutton **2**, the number of stitches can be changed within 2 seconds. If stitch counting has already been selected, press pushbutton **2** for approx. 2 seconds in order to change the number of stitches. The arrow above pushbutton 2 switches briefly.

8.) [+] [-] ⇨



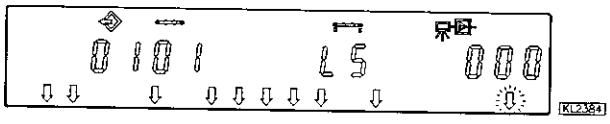
- Press pushbutton +/- immediately after.

9.) ⇨



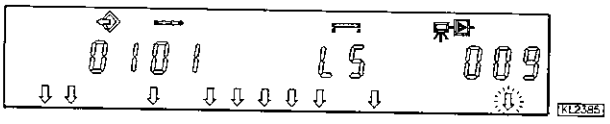
- If pushbuttons +/- have not been pressed (within 2 seconds), the previously inputted number of stitches will be displayed under the corresponding symbol (normal display).

10.) [3] ⇨



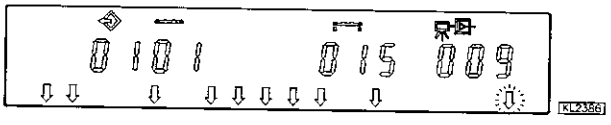
- After activating the light barrier with pushbutton **3**, the number of light barrier compensating stitches can be changed within 2 seconds. If the light barrier has already been selected, press pushbutton **3** for approx. 2 seconds in order to change the number of light barrier compensating stitches. The arrow above pushbutton 3 switches briefly.

11.) [+] [-] ⇨



- Press pushbutton +/- immediately after.

12.) ⇨



- If pushbuttons +/- have not been pressed (within 2 seconds), the previously inputted number of stitches will again be displayed under the corresponding symbol (normal display).
- Change to the next seam by pressing 1x pushbutton **E**.
- Exit programming seams by pressing 2x pushbutton **P**.
- Saving is done by **sewing start**.

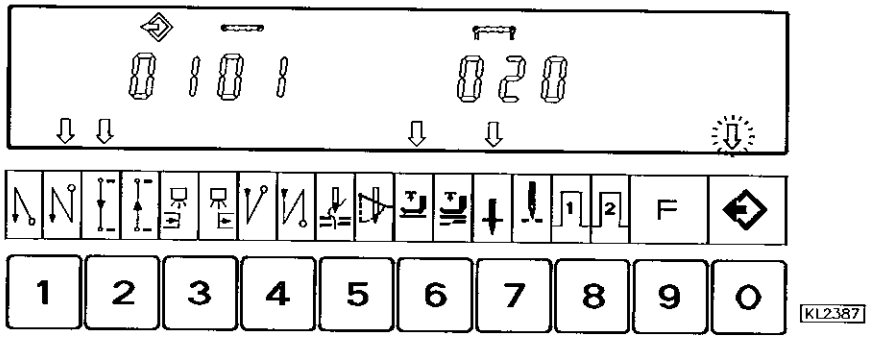
5.6.3 Detailed Example

A seam **01** with double start backtack, stitch counting forward, position down, sewing foot up, a seam **02** with stitch counting forward, position down, and a seam **03** with light barrier, double end backtack, thread trimming, position up, sewing foot up, are to be programmed (without inputting the code number) under the next possible pattern number, e.g. **01**.

- Turn power on
- Press pushbutton P => Parameter 000 is displayed
- Press pushbutton 0 => Pattern number is displayed. The pattern symbol and the lefthand arrow above pushbutton 0 blinks!
- Press pushbutton F2 => Existing patterns will be deleted. If there is a 2nd pattern or further patterns, pattern no. 01 must be inserted by pressing pushbutton INSERT F1.

Set functions of seam 01:

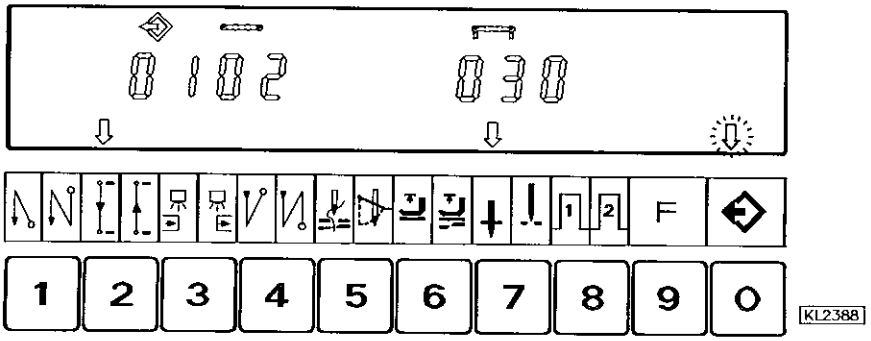
- Press pushbutton E => Seam number 01 appears
- Press pushbutton E => Functions can be programmed.
- Press pushbutton 1 => Righthand arrow above pushbutton 1 shows that double start backtack is On. The start backtack stitches must be inputted individually!
- Press pushbutton 2 => Lefthand arrow above pushbutton 2 shows that stitch counting forward is On. The number of stitches can be altered, as shown previously!
- Press pushbutton 6 => Lefthand arrow above pushbutton 6 shows that the sewing foot is automatically lifted in the seam
- Press pushbutton 7 => Lefthand arrow above pushbutton 7 shows that the needle is in position down.



Display of **seam 01** after correctly inputting the functions!

Set functions of seam 02:

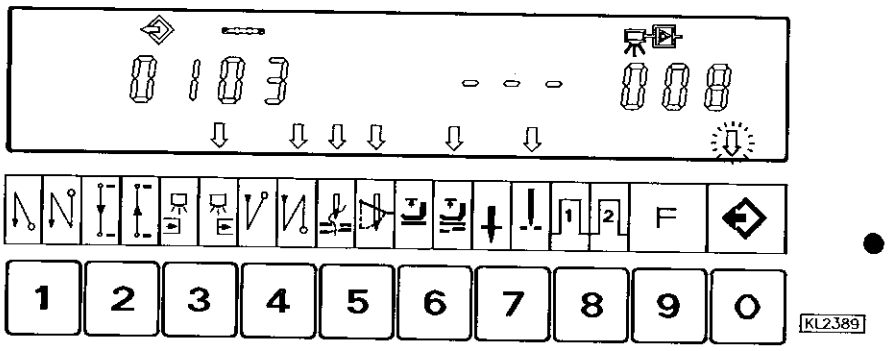
- Press pushbutton E => Seam number 02 appears
- Press pushbutton 2 => Lefthand arrow above pushbutton 2 shows that stitch counting forward is On. The number of stitches can be altered, as shown previously!
- Press pushbutton 7 => Lefthand arrow above pushbutton 7 shows that the needle is in position down.



Display of **seam 02** after correctly inputting the functions!

Set functions of seam 03:

- Press pushbutton E => Seam number 03 appears
- Press pushbutton 3 => Righthand arrow above pushbutton 3 shows that light barrier works from covered => uncovered.
- Press pushbutton 4 => Lefthand arrow above pushbutton 4 shows that double end backtack is On. The end backtack stitches must be inputted individually!
- Press pushbutton 5 => Both arrows above pushbutton 5 show that thread trimmer and thread wiper are On.
- Press pushbutton 6 => Righthand arrow above pushbutton 6 shows that the sewing foot is automatically lifted after the seam end.
- Press pushbutton 7 => Righthand arrow above pushbutton 7 shows that the needle is in position up.



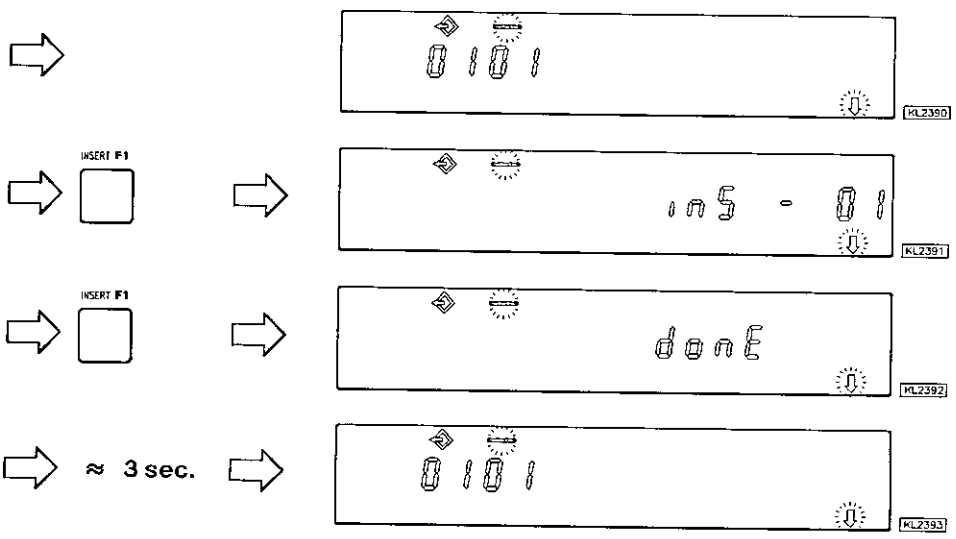
Display of **seam 03** after correctly inputting the functions!

- Press 2x pushbutton P => Exit programming seams
- 1x sewing start => Programmed data are saved!

5.6.4 Inserting a Seam or a Pattern

A pattern or a seam may be inserted with pushbutton **A >INSERT<**, on condition that the symbol above the pattern or seam number is blinking when programming.

- Select pattern or seam number where the new number is to be inserted. Symbol above the pattern or seam number must be blinking. Proceed as shown in chapters "**Programming with or without Inputting the Code Number**".
- Press 2x pushbutton **A** (INSERT F1) in brief succession. New pattern or seam number will be inserted. All subsequent numbers are automatically augmented by "1". The following example shows how a seam is inserted before the existing seam.

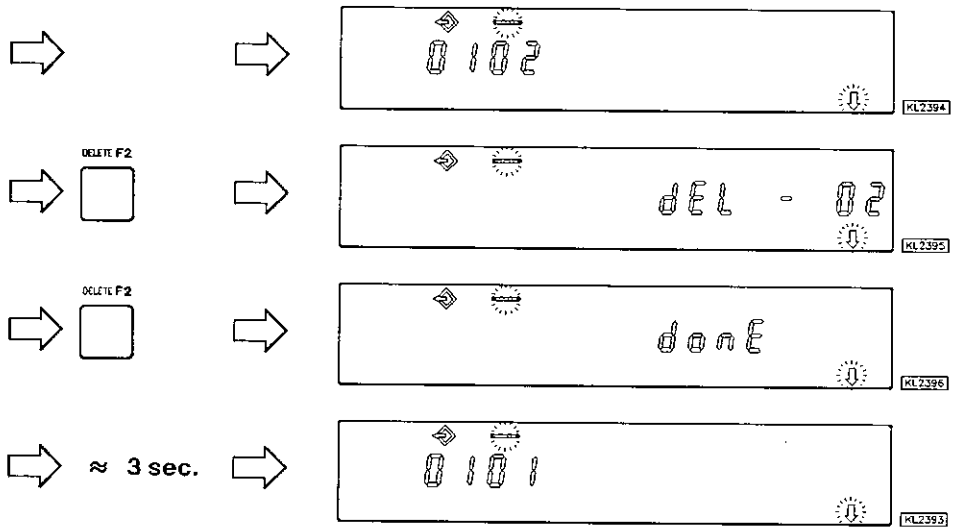


- Any desired function can now be assigned to the new seam!

5.6.5 Deleting a Seam or a Pattern

A pattern and/or a seam may be deleted with pushbutton **B** **>DELETE<**, on condition that the symbol above the pattern or seam number is blinking when programming.

- Select pattern or seam number to be deleted. Symbol above the pattern or seam number must be blinking. Proceed as shown in chapters "**Programming with or without Inputting the Code Number**".
- Press 2x pushbutton **B** (DELETE F2) in brief succession. The pattern or seam number will be deleted. All subsequent numbers are automatically reduced by "1". The following example shows how one seam out of two is deleted.



5.6.6 Execution (Pattern) Mode

- Press pushbutton **0** => The programmed seams are activated. Arrow above pushbutton 0 is On (but does not blink).
- Press pushbutton +/- => Selection of pattern. Only if several patterns are programmed.
- Press pushbutton **E** => If one should not start with the 1st seam, select different seam number. Press pushbutton E several times until the desired seam number is displayed.
- The drive can now be started by pressing the pedal and the pattern can be be executed!
- Press pushbutton **0** => The programmed seams are deactivated. Arrow above pushbutton 0 is Off.

5.6.7 Further Settings for Teach in

Functions		Parameter
Seam suppression when 0 stitches are set	(Std)	321

Parameter 321 = 0 **Seam suppression off:** i. e. if the light barrier is not on and stitch counting with 0 stitches is set, a free seam will be performed.

Parameter 321 = 1 **Seam suppression on:** i. e. if the light barrier is not on and stitch counting with 0 stitches is set, the program switches to the next seam if this function is on. If functions as for ex. start or end backtack, thread trimmer, signals A1 / A2 are on, they will be performed before the program switches to the next seam.

Functions	Parameter
Correction seam On/Off, interruption of seam and/or pattern with thread trimmer (dkn)	322

Parameter 322 = 0 Correction seam off
- The seam can be interrupted with pedal in pos. -2. The control switches automatically to the next seam number.

Parameter 322 = 1 Correction seam on
- The seam can be interrupted by the thread trimmer with pedal in pos. -2 and a correction seam (free seam) can be executed manually.
- The correction seam can be completed with pedal in pos. -2 or with light barrier On. After that the control switches automatically to the next seam number.

Parameter 322 = 2 Interruption of seam and/or pattern with thread trimmer
- The seam can be interrupted by the thread trimmer with pedal in pos. -2, even if the thread trimmer is off. After that the control switches back to the **first** seam of the selected pattern.

Sewing foot lift functions when "Teach in" is On:

After power on the sewing foot is down even if the sewing foot lift after thread trimming is On on the control panel. The sewing foot can be lifted with pedal in pos. -1 or -2.

If the sewing foot lift is on at the seam end (on control panel V820 righthand arrow above pushbutton 6 On), the sewing foot is lifted after completing this seam. After pedal in pos. 0 (neutral) the control switches to the next seam and the sewing foot remains lifted until the sewing is started. Whether or not the sewing foot is On or Off does not influence the seam end in the new seam.

Automatic sewing foot lift with pedal forward at the seam end when light barrier or stitch counting is On:

Parameter 023 = 0 Automatic sewing foot lift off
Parameter 023 = 1 Automatic sewing foot lift on

Parameter 023	Pushbutton 6 (righthand arrow)	Sewing foot with pedal forward	Sewing foot with pedal = 0
0	0	Off	Off
1	0	On	Off
1	1	On	On
0	1	On	On

Functions	Parameter
Sewing foot lifted after power On, or as programmed (FLn)	323

Parameter 323 = 0 The sewing foot lift function works as programmed.
Parameter 323 = 1 The sewing foot is always lifted after power On, even if automatic sewing foot lift has not been programmed.

6. Starting Service

Before putting the control into operation, the following must be ensured, checked and/or adjusted:

- **The correct installation of the drive, the position transmitter and accompanying devices, if necessary**
- **The correct selection of the trimming operation with parameter 290**
- **If necessary, the correct adjustment of the direction of rotation of the motor with parameter 161**
- **The correct selection of the functions of the pushbuttons (inputs) with parameters 240...249**
- **The setting of the transmission ratio between motor shaft and machine shaft with parameter 272**
- **The setting of the type of postion sensor with parameter 270**
- **If necessary, the setting of the number of angular degrees after the sensor position with parameter 271**
- **If necessary, the setting of the positions with parameter 171 (possible with all settings of parameter 270)**
- **The correct positioning speed with parameter 110**
- **The correct maximum speed compatible with the sewing machine with parameter 111**
- **The setting of the remaining relevant parameters**
- **Start sewing in order to save the set values**

7. Setting and Starting Service with the Aid of the Fast Installation Routine (SIR)

The Fast Installation Routine (SIR) passes through all parameters necessary for programming the functional sequence and the positions.

Parameter for functional sequence "thread trimming operations" => F-290

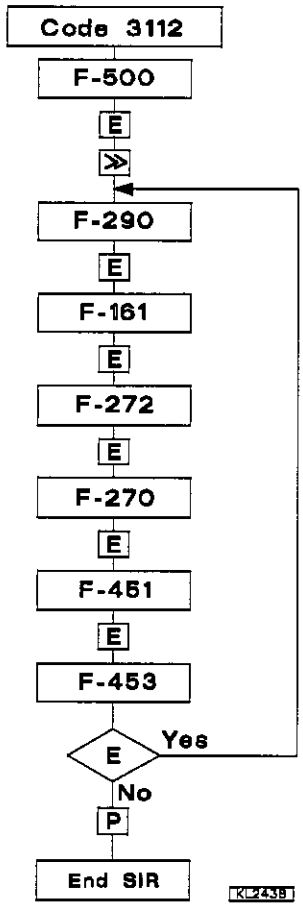
Parameter for direction of rotation of the motor => F-161

Parameter for transmission ratio
Important! The transmission ratio should be determined and indicated as precisely as possible. => F-272

Parameter for types of position sensors => F-270

Parameter for position 1 => F-451

Parameter for position 2 => F-453



The values can be changed by pressing pushbuttons +/-. When the parameter is displayed on control panel V810, press pushbutton E once more for the value to be displayed.

SIR offers the possibility to set the most important settings for initial operation by using a menu.
For safety reasons, all selections on the menu must be addressed. Only then, correct setting of all parameters is guaranteed!
Die gewohnte Parametereinstellung wird nicht beeinträchtigt.

Function **with** control panel		Parameter
Recall of the Fast Installation Routine SIR	(Sir)	500

Setting on control panel V810:

- Input code number 3112 and select parameter 500 !
- Press pushbutton **E** => Character [o] appears blinking
- Press pushbutton **>>** => Parameter **2.9.0** appears (functional sequence "thread trimming operations"
- Press pushbutton **E** => Parameter value **0 5** appears
- Press pushbutton **+/-** => Parameter value can be changed
- Press pushbutton **E** => Parameter **1.6.1** appears (direction of rotation of the motor)
- Press pushbutton **E** => Parameter value **1** appears
- Press pushbutton **+/-** => Parameter value can be changed
- Press pushbutton **E** => Parameter **2.7.2** appears (transmission ratio)
- Press pushbutton **E** => Parameter value **1 0 0** appears
- Press pushbutton **+/-** => Parameter value can be changed
- Press pushbutton **E** => Parameter **2.7.0** appears (types of position sensors)
- Press pushbutton **E** => Parameter value **0** appears
- Press pushbutton **+/-** => Parameter value can be changed
- Press pushbutton **E** => Parameter **4.5.1** appears (Position 1 leading edge) (Position 1 trailing edge is automatically set at 60°)
- Press pushbutton **E** => Parameter value appears
- Press pushbutton **+/-** => Parameter value can be changed
- Press pushbutton **E** => Parameter **4.5.3** appears (Position 2 leading edge) (Position 2 trailing edge is automatically set at 60°)
- Press pushbutton **E** => Parameter value appears
- Press pushbutton **+/-** => Parameter value can be changed
- By pressing pushbutton **E** once more the program returns to parameter 290!
- Press pushbutton **P** twice => Exit SIR routine

Setting on control panel V820:

- Input code number 3112 and select parameter 500 !
- Press pushbutton **E** => Character [o] appears blinking
- Press pushbutton **>>** => **290 AUt 05** appears on the display (functional sequence "thread trimming operations"
- Press pushbutton **+/-** => Parameter value can be changed
- Press pushbutton **E** => **161 drE 1** appears on the display (direction of rotation of the motor)
- Press pushbutton **+/-** => Parameter value can be changed
- Press pushbutton **E** => **272 trr 100** appears on the display (transmission ratio)
- Press pushbutton **+/-** => Parameter value can be changed
- Press pushbutton **E** => **270 PGM 0** appears on the display (types of position sensors)
- Press pushbutton **+/-** => Parameter value can be changed
- Press pushbutton **E** => **451** appears on the display (Position 1 leading edge) (Position 1 trailing edge is automatically set at 60°)
- Press pushbutton **+/-** => Parameter value can be changed
- Press pushbutton **E** => **453** appears on the display (Position 2 leading edge) (Position 2 trailing edge is automatically set at 60°)
- Press pushbutton **+/-** => Parameter value can be changed
- By pressing pushbutton **E** once more the program returns to parameter 290!
- Press pushbutton **P** twice => Exit SIR routine

8. Setting the Basic Functions

8.1 Direction of Rotation of the Motor

Functions **with** or **without** control panel		Parameter
Direction of rotation of the motor	(drE)	161

Parameter 161 = 0: Clockwise rotation of the motor (look at the motor shaft)
Parameter 161 = 1: Counterclockwise rotation of the motor

Attention
If the motor is mounted differently, e.g at a different angle or with gear, make sure that the value set by parameter 161 corresponds to the direction of rotation.

8.2 Transmission Ratio

Note:
The transmission ratio must always be entered, since only motors with integrated incremental transmitter will be used. **The transmission ratio should be determined and set as precisely as possible!**

The transmission ratio beween motor shaft and shaft of the sewing machine head must be inputted, so that the set speeds of parameters F-110...F-117 correspond to the sewing speeds.

Functions **with** or **without** control panel		Parameter
Transmission ratio between motor shaft and machine shaft	(trr)	272

The transmission ratio can be selected with parameter 272 within a range of 0.23...255.

Example: The value 50 must be set, if the diameter of pulleys on the motor is 40 mm and on the sewing machine head is 80 mm. If the value 200 is selected by parameter F-272, the pulley on the motor must be double the size of the pulley on the sewing machine head.

$$\text{Value of parameter 272} = \frac{\text{Diameter of the pulley on the motor}}{\text{Diameter of the pulley on the machine}} \times 100$$

8.3 Selection of the Functional Sequences (Thread Trimming Operations)

Lockstitch, chainstitch and overlock machines with different functional sequences can be operated by using this control. The functional sequences can be selected by parameter 290.

Attention
Before switching the functional sequences disconnect cables from the inputs and outputs! Please ensure that the machine installed provides the set functional sequence! **Settings with parameter 290 only after power on!**

Setting the functional sequence by using Parameter 290

Mode	Designation	Adapter	Outputs							
	Power transistors ==>	**Functions**	**FL ST2/35**	**VR ST2/34**	**M1 ST2/37**	**M2 ST2/28**	**M3 ST2/27**	**M4 ST2/36**	**M5 ST2/32**	**M6 ST2/30**
0	**Lockstitch**; e.g.	**Functions**	**FL**	**VR**	**FA1**	**FA2**	**FW**	**FA1+2**	**ML**	**MST**
	Brother (737-113, 737-913)	1112814	FL	VR	FA1 +	FA2	FW			
	Aisin (AD3XX, AD158, 3310, EK1	1112815	FL	VR	FA1 +	FA2	FW			
	Pfaff (563, 953, 1050, 1180)	1112841	FL	VR	FA1	FA2	FW		ML	
	Dürkopp Adler (210, 270)	1112845	FL	VR	FA1 +	FA2	FW			
2	**Lockstitch**; e.g.	**Functions**	**FL**	**VR**		**FA**	**FSPL**	**FL1**	**ML**	**MST**
	Singer (212 UTT)	1112824	FL	VR		FA	FSPL	FL1		
3	**Lockstitch**; e.g. Dürkopp-Adler (467)		FL	VR	FA	FSPL	FW		ML	MST
4	**Chainstitch**; e.g. Union Special	**Functions**	FL	FA-R	M1	FA-V	FW	STV	ML	
	(34000, 36200 »replacement for US80A«)	1112865	FL	FA-R		FA-V	FW		ML	
	(CS100 and FS100)	1112905	FL	FA-R	M1	FA-V	FW		ML	
5	**Chainstitch; parallel sequence**	**Functions**	**FL**	**STV**	**M1**	**M2**	**M3**	**M4**	**ML**	**MST**
	Yamato (VC series)	1112818	FL	STV	FA		FW			
	Yamato (VG series)	1113178	FL	STV	FA		FW		ML	
	Kansai (RX 9803)	1112819	FL		FA		FW			
	Pegasus (W500/UT, W600/UT/MS with or without stitch condensing)	1112821	FL	STV	FA	FA	FW			
	Brother (FD3-B257)	1112822	FL	STV	FA	FA	FW			
	Union Special (34700)	1112844	FL	STV	FA	FA	FW		NK	
	Global (CB2803-56)	1112866	FL				FA			
	Rimoldi (F27)	1113096	FL		FW	FAO	FAU		ML	
6	**Chainstitch; tape cutter / fast scissors**		FL	STV	M1	M2	AH1	AH2	ML	MST
7	**Overlock**		FL	KS	M1	M2	AH	FSPL	ML	MST
8	**Backlatch**	**Functions**	**FL**		**PD≤-1**	**PD≥1**	**PD≥1***		**ML**	**MST**
	Pegasus	1113171			PD≤-1	PD≥1				
9	**Backlatch**	**Functions**	**FL**		**PD≤-1**	**PD≥1**	**PD≥1***		**ML**	**MST**
	Yamato (ABT3)	1112826			PD≤-1	PD≥1				
	Yamato (ABT13)	1112898			PD≤-1	PD≥1				
10	**Lockstitch**; e.g.	**Functions**	**FL**	**FA-R**	**M1**	**FA-V**	**FW**	**STV**	**ML**	**MST**
	Union Special (63900AMZ »replacement for US80A«) and on Refrey lockstitch machines	1112823	FL	FA-R		FA-V	FW		ML	
14	**Lockstitch**; e.g.	**Functions**	**FL**	**VR**	**FA1+2**	**FA2**	**FW**	**FA1**	**ML**	**MST**
	Juki (5550-6)	1112816	FL	VR	FA1+2		FW			
	Juki (5550-7)	1113132+	FL	VR	FA1+2	FZ	FW			
	(position sensor integrated in the handwheel)	1113157								
15	**Backlatch** Pegasus (SSC100)		FL	KS/KB	KB	KS	FSPL	AH	ML	HP
16	**Overlock**; feed-off-the-arm machine e.g. Yamato (FD62)		FL	KS	RB	M2	AH	FSPL	ML	MST

*) The signal emitted at this output is inverted!

Abbreviations of the solenoid outputs see following page !

Outputs:

FL	= Sewing foot lifting	FL1	= Sewing foot lifting without pulsing
VR	= Backtacking	STV	= Stitch condensing
FA	= Thread trimmer	FA1	= Thread trimmer pos. 1...1A
FA2	= Thread trimmer pos. 1A...2	FA1+2	= Thread trimmer pos.1 to pos.2
FA-V	= Thread trimmer forward	FA-R	= Thread trimmer backward
FAU	= Bobbin thread trimmer	FAO	= Needle thread trimmer
FSPL	= Thread tension release	AH	= Tape cutter
FW	= Thread wiper	AH1/AH2	= Fast scissors
ML/NK	= Machine running /needle cooling	KS	= Chain suction
RB	= Chain blowing in opposite direction	STB	= Blow fabric onto stack
KB	= Chain blowing	KS+KB	= Chain suction + blowing
MST	= Machine at standstill	HP/FF1	= High lift for walking foot/flip-flop 1
PD≥1	= Pedal steps 1...12	PD≤-1	= Pedal steps -1 / -2
PD=0	= Pedal step 0	PD=-2	= Pedal step -2
L-STL	= Lamp stitch length	DR-UK	= Reversal of the direction of rotation
FZ	= Thread puller		

Mode 0 Lockstitch machines
- Thread trimming from leading to trailing slot position 1
- Thread trimming from trailing slot position 1 to leading slot position 2
- Thread trimming from leading slot position 1 to leading slot position 2
- Thread wiping for a programmable time (t6)
- Sewing foot lifting (see chapter "Sewing Foot Lifting")
- Backtacking (see chapter "Start Backtack" and/or "End Backtack")
- Signal "machine running"
- High lift for walking foot/flip-flop 1 at limited speed after pressing the pushbutton

Mode 2 Lockstitch machines (Singer 212 UTT)
- Thread trimming for a programmable time (kt2) after intermediate stop in position 1
- Thread tension release from leading slot position 1 to leading slot position 2
- Sewing foot lifting (see chapter "Sewing Foot Lifting")
- Backtacking (see chapter "Start Backtack" and/or "End Backtack")
- Signal "machine running"
- High lift for walking foot/flip-flop at limited speed after pressing the pushbutton

Mode 3 Lockstitch machines with thread trimming system (e.g. Dürkopp-Adler)
- Thread trimming for programmable increments (iFA) after intermediate stop in position 1
- Thread tension release from trailing slot position 2 after delay (FSE) for the operating time (FSA)
- Thread wiping for a programmable time (t6)
- Sewing foot lifting (see chapter "Sewing Foot Lifting")
- Backtacking (see chapter "Start Backtack" and/or "End Backtack")
- Signal "machine running"
- High lift for walking foot/flip-flop 1 at limited speed after pressing the pushbutton

Mode 4 Chainstitch machines (Union Special)
- Thread trimmer forward after stop in position 2 after delay (kd2) for the operating time (kt2)
- Thread trimmer backward after stop in position 2 after delay (kd1) for the operating time (kt1)
- Thread tension release after stop in position 2 after delay (kd3) for the operating time (kt3)
- Sewing foot lifting (see chapter "Sewing Foot Lifting")
- Stitch condensing (see chapter "Start Stitch Condensing" and/or "End Stitch Condensing")
- Signal "machine running"

Mode 5 Chainstitch machines in general

- Signal M1 after stop in position 2 after delay (kd1) for the operating time (kt1)
- Signal M2 after stop in position 2 after delay (kd2) for the operating time (kt2)
- Signal M3 after stop in position 2 after delay (kd3) for the operating time (kt3)
- Signal M4 after stop in position 2 after delay (kd4) for the operating time (kt4)
- Sewing foot lifting with time delay (kdF) after thread wiping (see chapter "Sewing Foot Lifting")
- Stitch condensing (see chapter "Start Stitch Condensing" and/or "End Stitch Condensing")
- Signal "machine running"
- Signal "machine at standstill"

Mode 6 Chainstitch machines with tape cutter or fast scissors

- Signal M1 after stop in position 2 after delay (kd1) for the operating time (kt1)
- Signal M2 after stop in position 2 after delay (kd2) for the operating time (kt2)
- Fast scissors (M3) after delay (kd3) for the operating time (kt3) alternating with M4
- Fast scissors (M4) after delay (kd4) for the operating time (kt4) alternating with M3
- Sewing foot lifting (see chapter "Sewing Foot Lifting")
- Stitch condensing (see chapter "Start Stitch Condensing" and/or "End Stitch Condensing")
- Signal "machine running"
- Signal "machine at standstill"

Mode 7 Overlock machines

- Signal M1 after stop in position 2 after delay (kd1) for the operating time (kt1)
- Signal M2 after stop in position 2 after delay (kd2) for the operating time (kt2) or with parameter 232 = 1, as fast scissors alternating with M3 (set parameter 282 = 0)
- Chain suction during stitch counting (c1) at the start of the seam and stitch counting (c2) at the seam end.
- Thread tension release at the seam end after light barrier uncovered until pedal in pos. 0 (neutral)
- Tape cutter at the start of the seam after stitch counting (c3) and at the seam end after stitch counting (c4)
- Sewing foot lifting (see chapter "Sewing Foot Lifting")
- If parameter 018 = 1, parameter 022 must also be set at "1"
- Signal "machine running"
- Signal "machine at standstill"

Mode 8 Backlatch machines (Pegasus)

- Signal M1 with pedal in position -1 and -2
- Signal M2 with pedal in positions 1-12
- Inverted signal M3 with pedal in positions 1-12
- Sewing foot lifting (see chapter "Sewing Foot Lifting")
- Signal "machine running"
- Signal "machine at standstill"
- Machine run at automatic speed
- Automatic speed has priority over machine run blockage
- Machine run blockage effective with open input **(input in1 / parameter 240 = 6)**
- Pushbutton for machine run at automatic speed **(input in3 / parameter 242 = 10)**

Mode 9 Backlatch machines (Yamato)

- Signal M1 with pedal in position -1 and -2
- Signal M2 with pedal in positions 1-12
- Inverted signal M3 with pedal in positions 1-12
- Sewing foot lifting (see chapter "Sewing Foot Lifting")
- Signal "machine running"
- Signal "machine at standstill"
- Pushbutton for machine run at automatic speed **(input in3 / parameter 242 = 10)**
- Machine run blockage effective with open input **(input in1 / parameter 240 = 6)**
- Machine run blockage has priority over automatic speed

Mode 10 Lockstitch machines (Refrey trimmer)

- Thread trimmer forward from trailing slot position 1 to leading slot position 2
- Thread trimmer backward after stop in position 2 for the operating time (kt1). After that the signal is pulsed.
- Thread tension release with signal parallel to thread trimmer
- Thread wiper (M3) after delay (kd3) for the operating time (kt3)
- Sewing foot lifting (see chapter "Sewing Foot Lifting")
- Backtacking (see chapter "Start Backtack" and/or "End Backtack")
- Signal "machine running"

Mode 14 Lockstitch machines (Juki 5550-4, 5550-7)

- Thread trimming (M1) from leading slot position 1 to leading slot position 2
- Thread trimming (M4) from trailing slot position 1 to leading slot position 2
- Thread wiping (M3) for a programmable time (t6)
- Thread puller (M2) after stop in position 2 after delay (kd2) for the operating time (kt2)
- Sewing foot lifting (see chapter "Sewing Foot Lifting")
- Backtacking (see chapter "Start Backtack" and/or "End Backtack")
- Signal (M5) "machine running"
- Signal (M6) "machine at standstill"
- Positioning by means of a Juki handwheel sensor connected to the control unit

Mode 15 Backlatch machines

- Chain blowing (M1) during the stitch counting (c4) at the start of the seam and for the operating time (kt1) at the seam end, after completing the tape cutting
- Chain suction (M2) during the stitch counting (c3) at the start of the seam and for the operating time (kt1) at the seam end, after completing the tape cutting
- Thread tension release (M3) after stitch counting (c1) On and after light barrier uncovered and stitch counting (c2) OFF
- 1st tape cutting (m4) after light barrier uncovered and stitch counting (ckL) for the operating time (kt4), 2nd tape cutting after delay (kd4) for the operating time (kt4)
- Chain suction + blowing (VR) at the end of the 1st tape cutting after delay (kd2) ON and OFF with a time lapse (kt2) after the start of the 2nd tape cutting
- Sewing foot lifting (see chapter "Sewing Foot Lifting")
- Signal "machine running"
- High lift for walking foot operation mode stored **(input in4 / parameter 243 = 14)**
- Manual tape cutting **(input in5 / parameter 244 = 15)**

Mode 16 Overlock machines (feed-off-the-arm machines) only in conjunctrion with V820 and insertable strip no. 7!

- Chain suction (VR) during stitch counting (c1) at the start of the seam
- Thread tension release (M4) ON at the seam end after light barrier uncovered and the compensating stitches, until pedal position 0 (neutral) after machine standstill
- Tape cutter (M3) with parameter 232 = 0 at the start of the seam after stitch counting (c3) and at the seam end after stitch counting (c4) for the operating time (kt3)
- Fast scissors with parameter 232 = 1 at the start of the seam after stitch counting (c3) and at the seam end after stitch counting (c4), alternating with output (M3) for the operating time (kt3) and output (M8) for the operating time (At1)
- Chain blowing in opposite direction (M1) at the start of the seam after delay (kd1) for the operating time (kt1)
- Blow fabric onto stack (M7) ON at the seam end after light barrier uncovered until machine standstill, with a time lapse of (kt5)
- Signal (M2) at the seam end after delay (kd2) for the operating time (kt2)
- Sewing foot lifting with pedal in pos. -1 and/or -2
- Signal "machine running"

See parameter list chapter "**Timing Diagrams**" for the various modes!

8.4 Functions of the Pushbuttons Inputs in1...i10

Functions **with** or **without** control panel				Parameter
Input 1	selectable input functions	0...29	in1	240
Input 2	" "	0...29	in2	241
Input 3	" "	0...29	in3	242
Input 4	" "	0...29	in4	243
Input 5	" "	0...29	in5	244
Input 6	" "	0...29	in6	245
Input 7	" "	0...29	in7	246
Input 8	" "	0...29	in8	247
Input 9	" "	0...29	in9	248
Input 10	" "	0...29	i10	249

See Parameter List for possible input functions of the pushbuttons.

8.5 Positioning Speed

Functions **with** or **without** control panel		Parameter
Positioning speed	(n1)	110

The positioning speed can be set by parameter 110 on the control within a range of 70...390 RPM.

8.6 Maximum Speed Compatible with the Sewing Machine

The maximum speed of the machine is determined by the pulley selected and by the following settings:

- Set the maximum speed by parameter 111 (n2).
- Set the maximum speed limitation to the specific level according to the application as described in chapter "Direct Input of the Maximum Speed Limitation (DED)"

8.7 Maximum Speed

Functions **with** or **without** control panel		Parameter
Maximum Speed	(n2)	111

Note:
For the maximum speed of the sewing machine see instruction manual of the sewing machine manufacturer.

Note:
Select the pulley such that the maximum speed of the machine corresponds to the speed indicated on the motor nameplate.

When programming 3-digit and/or 4-digit parameter values in the control (without control panel), the 2-digit and/or 3-digit values displayed must be mutliplied by 10.

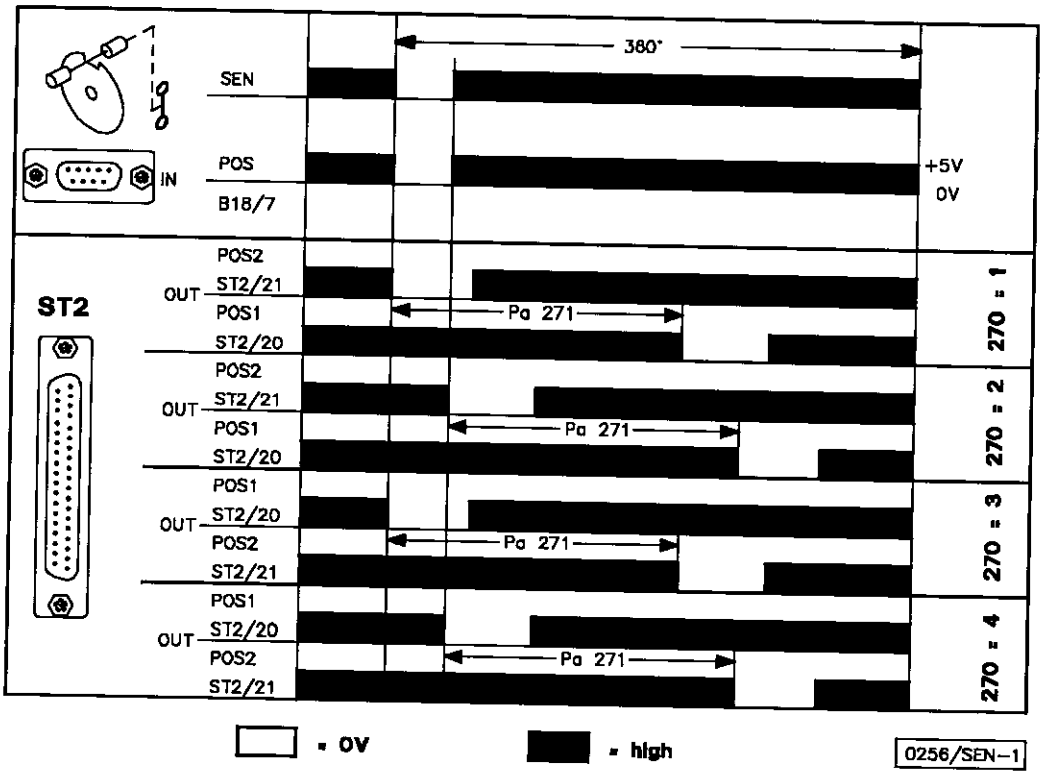
8.8 Positions

Functions **with** or **without** control panel		Parameter
Selection according to position sensors	(PGM)	270
Number of angular degrees from the sensor position to position 2	(PGr)	271
Transmission ratio between motor shaft and machine shaft	(trr)	272

After setting parameter 270 at "1, 2, 3 or 4", an angular degree must be selected with parameter 271, which determines the stop in position 2 and/or 1 after the sensor position. The transmission ratio must already have been inputted with parameter 272.

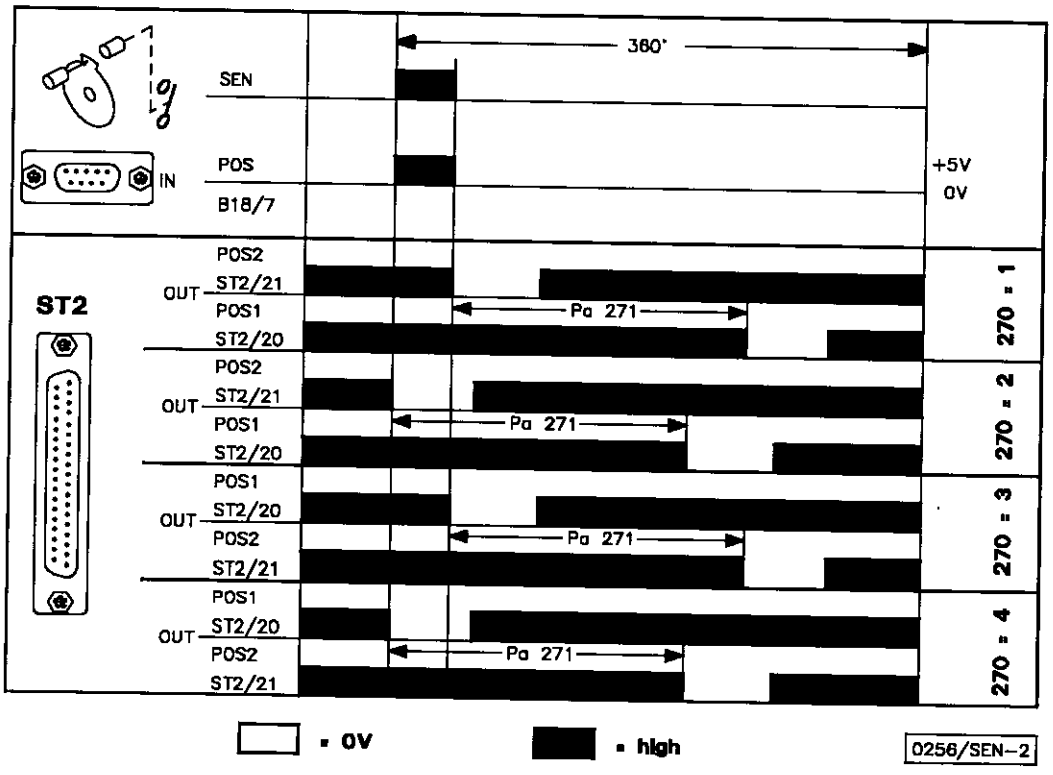
Connection of a sensor e.g. light barrier to socket B18/7. The following settings are possible with parameter **270**:

- Parameter **270 = 0** - Positions are generated through the transmitter incorporated in the motor and can be set with parameter **171**.
- Parameter **270 = 1** - Setting the sensor at position 2.
  - Position 1 will be set according to the angular degree setting with parameter **271**.
  - Start measuring from leading edge position 2.
  - 0V on input B18/7 (inside of the window)
  - +5V on input B18/7 (outside of the window)
- Parameter **270 = 2** - Setting the sensor at position 2.
  - Position 1 will be set according to the angular degree setting with parameter **271**.
  - Start measuring from trailing edge position 2.
  - Input and output level as with setting "1".
- Parameter **270 = 3** - Setting the sensor at position 1.
  - Position 2 will be set according to the angular degree setting with parameter **271**.
  - Start measuring from leading edge position 1.
  - Input and output level as with setting "1"
- Parameter **270 = 4** - Setting the sensor at position 1.
  - Position 2 will be set according to the angular degree setting with parameter **271**.
  - Start measuring from trailing edge position 1.
  - Input and output level as with setting "1"
- Parameter **270 = 5** - No position sensor is available. The drive stops unpositioned. The thread trimmer function is suppressed with this setting.



Connection of a sensor e.g. light barrier or proximity switch to socket B18/7. The following settings are possible with parameter **270**:

- Parameter **270 = 1**
  - Setting the sensor at position 2.
  - Position 1 will be set according to the angular degree setting with parameter **271**.
  - Start measuring from trailing edge position 2.
  - 0V on input B18/7 (outside of the window)
  - +5V on input B18/7 (inside of the window)
- Parameter **270 = 2**
  - Setting the sensor at position 2.
  - Position 1 will be set according to the angular degree setting with parameter **271**.
  - Start measuring from leading edge position 2.
  - Input and output level as with setting "1".
- Parameter **270 = 3**
  - Setting the sensor at position 1.
  - Position 2 will be set according to the angular degree setting with parameter **271**.
  - Start measuring from trailing edge position 1.
  - Input and output level as with setting "1"
- Parameter **270 = 4**
  - Setting the sensor at position 1.
  - Position 2 will be set according to the angular degree setting with parameter **271**.
  - Start measuring from leading edge position 1.
  - Input and output level as with setting "1"



OUT (position window) = npn transistor (emitter to 0V) is conductive.
Width of position window cannot be adjusted!

8.8.1 Setting the Reference Position (Parameter 270 = 0)

The angular positions necessary on the machine, e.g. for "needle down position" or "thread lever up position" are stored in the control. In order to establish a relationship between the electric position transmitter information and actual mechanical position, a reference position is needed.

The reference position must be set:

- for initial operation
- after replacing the motor
- after replacing the microprocessor

Setting the reference position on the control

- Input code number and select parameter 170!
- Press pushbutton **E** => Display **Sr1**
- Press pushbutton **> >** => Display **P o** (character **o** rotating)
  Turn handwheel until rotating character **o** goes off on the display. => Display **P**
- Then set the needle to the bottom dead center by turning the handwheel. => Set machine reference point
- Press pushbutton **P** 1x => Actual parameter number is displayed
- Press pushbutton **P** 2x => Exit programming at the technician level.

Setting the reference position on control panel V810

- Input code number and select parameter 170!
- Press pushbutton **E** => Display **Sr1 [°]**
- Press pushbutton **> >** => Display **PoS0 o** (character **o** rotating)
  Turn handwheel until rotating character **o** goes off on the display. => Display **PoS0**
- Then set the needle to the bottom dead center by turning the handwheel. => Set machine reference point
- Press pushbutton **P** 1x => Actual parameter number is displayed
- Press pushbutton **P** 2x => Exit programming at the technician level.

Setting the refernce position on control panel V820

- Input code number and select parameter 170!
- Press pushbutton **E** => Display **F-170 Sr1 [°]**
- Press pushbutton **> >** => Display **PoS0 o** (character **o** rotating)
  Turn handwheel until rotating character **o** goes off on the display. => Display **PoS0**
- Then set the needle to the bottom dead center by turning the handwheel. => Set machine reference point
- Press pushbutton **P** 1x => Actual parameter number is displayed
- Press pushbutton **P** 2x => Exit programming at the technician level.

If error message **A3** (reference position not set) appears, repeat the above setting sequence!

8.8.2 Setting the Positions on the Control Box (Parameter 270 = 0)

With parameter 270 = 0 the positions integrated in the motor are activated and can be set as follows:

- Select parameter 171 after inputting the code number!
- Press pushbutton **E** => **Sr2** will be displayed
- Press pushbutton **> >** => **P1E** will be displayed; set "position 1 On"
- Press pushbutton **E** => **P2E** will be displayed; set "position 2 On"
- Press pushbutton **E** => **P1A** will be displayed; set "position 1 Off"
- Press pushbutton **E** => **P2A** will be displayed; set "position 2 Off"
- Press pushbutton **P** 2x => Exit programming on the technician level.

8.8.3 Setting the Positions on Control Panel V810 (Parameter 270 = 0)

With parameter 270 = 0 the positions integrated in the motor are activated and can be set as follows:

■		Select parameter 171 !	==>	F - 1 7 1
■	E	Press pushbutton **E** !	==>	S r 2 [°]
■	>>	Press pushbutton >> (pushbutton B); The first parameter value of position 1E is displayed	==>	P 1 E 1 4 0
■	+ -	If necessary, change parameter value by pressing pushbutton >> and/or +/- or by turning the handwheel	==>	P 1 E X X X
■	E	Parameter value of position 2 appears on the display	==>	P 2 E 2 6 0
■	+ -	If necessary, change parameter value by pressing pushbutton >> and/or +/- or by turning the handwheel	==>	P 2 E X X X
■	E	Parameter value of position 1A appears on the display	==>	P 1 A 0 8 0
■	+ -	If necessary, change parameter value by pressing pushbutton >> and/or +/- or by turning the handwheel	==>	P 1 A X X X
■	E	Parameter value of position 2A appears on the display	==>	P 2 A 4 0 0
■	+ -	If necessary, change parameter value by pressing pushbutton >> and/or +/- or by turning the handwheel	==>	P 2 A X X X
■	P P	Settings are completed. Exit programming !	==>	A b 2 2 0 A

8.8.4 Setting the Positions on Control Panel V820 (Parameter 270 = 0)

With parameter 270 = 0 the positions integrated in the motor are activated and can be set as follows:

▪	Display before programming	==>	4000 Ab220A
▪ P	A parameter number blinks on the display	==>	F-XXX
▪ 1 7 1	Input PARAMETER NUMBER 171!	==>	F-171
▪ E	The abbreviation of the parameter appears on the display	==>	Sr2 [°]
▪ >>	The first parameter value of position 1 is displayed (pushbutton B)	==>	P1E 140
▪ 0 9	If necessary, change parameter value with the pushbuttons +/- and/or **0...9** or by turning the handwheel!	==>	P1E XXX
▪ E	Parameter value of position 2 appears on the display	==>	P2E 460
▪ 0 9	If necessary, change parameter value with the pushbuttons +/- and/or **0...9** or by turning the handwheel!	==>	P1E XXX
▪ E	Parameter value of position 1A appears on the display	==>	P1A 080
▪ 0 9	If necessary, change parameter value with the pushbuttons +/- and/or **0...9** or by turning the handwheel!	==>	P1E XXX
▪ E	Parametervalue of position 2A appears on the display	==>	P2A 400
▪ 0 9	If necessary, change parameter value with the pushbuttons +/- and/or **0...9** or by turning the handwheel!	==>	P1E XXX
▪ P P	Settings are completed. Exit programming!	==>	4000 Ab220A

Note

When adjusting the positions by turning the handwheel, make sure that the displayed numerical value changes.

- The display unit of the set position is increments.
- One rotation of the handwheel corresponds to 512 increments.
- The display changes in increments of 2.
- A change from one to the next value thus corresponds to approx. 1.4 angular degrees.

8.9 Display of the Signal and Stop Positions

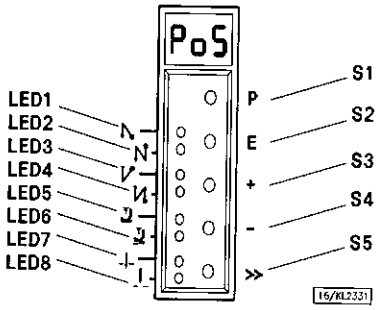
Function **with** or **without** control panel		Parameter
Display of positions 1 and 2	(Sr3)	172

The setting of the positions can easily be tested by parameter 172.

- Address parameter 172
- Without control panel, "PoS" appears on the control display
- With control panel, "Sr3" appears on the control panel display

Control display without control panel

- LED 7 on — corresponds to position 1E
- LED 7 turns off — corresponds to position 1A
- LED 8 on — corresponds to position 2E
- LED 8 turns off — corresponds to position 2A



Display on the control panel V810

- Arrow above symbol "position 1" above pushbutton 4 On — corresponds to position 1E
- Arrow above symbol "position 1" above pushbutton 4 turns Off — corresponds to position 1A
- Arrow above symbol "position 2" above pushbutton 4 On — corresponds to position 2E
- Arrow above symbol "position 2" above pushbutton 4 turns Off — corresponds to position 2A

Display on the control panel V820

- Arrow above symbol "position 1" above pushbutton 7 On — corresponds to position 1E
- Arrow above symbol "position 1" above pushbutton 7 turns Off — corresponds to position 1A
- Arrow above symbol "position 2" above pushbutton 7 On — corresponds to position 2E
- Arrow above symbol "position 2" above pushbutton 7 turns Off — corresponds to position 2A

8.10 Positioning Shift

Functions **with** or **without** control panel		Parameter
Positioning shift	(PSv)	269

Determine with parameter 269 whether the drive is to stop exactly in the position (parameter 269 = 0) or some increments after the position.

8.11 Braking Behavior

Functions **with** or **without** control panel		Parameter
Braking effect when modifying the preset value ≤ 4 stages Braking effect when modifying the preset value ≥ 5 stages	(br1) (br2)	207 208

- The braking effect for the stop is influenced by parameter 207
- The braking effect between the speed stages is controlled by parameter 208

The following applies to all setting values:
The higher the value the stronger the braking reaction!

8.12 Braking Power at Standstill

Function **with** or **without** control panel		Parameter
Braking power at standstill	(brt)	153

This function prevents unintentional "wandering" of the needle at standstill.
The effect can be tested by turning the handwheel.

- The braking power works at standstill
  - at stop in the seam
  - after the seam end
- The effect can be set
- The higher the set value, the higher the braking power

8.13 Start Behavior

Function **with** or **without** control panel		Parameter
Starting edge	(ALF)	220

The drive accelerating dynamics can be adapted to the characteristic of the sewing machine (light, heavy).

- High setting value = high acceleration

With a high starting edge setting and, in addition, possibly high braking parameter values on a light machine, the behavior may appear coarse. In this case, one should try to optimize the settings.

8.14 Inputs for Proximity Switches

Function **with** or **without** control panel		Parameter
Switch proximity switches for inputs in2, in7, in8, in9	(nAm)	295

If parameter 295 is set at "1", a load resistor is connected in parallel to inputs in2, in7, in8, in9, which allows to operate 2 wire proximity switches.

8.15 Actual Speed Display

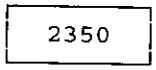
Functions		Parameter
Actual speed display	(nIS)	139

If parameter 139 = 1, the following information is shown on the display:

The abbreviations in parentheses ( ) are visible only if a control panel V820 is connected!

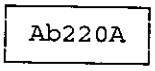
Control panels: = = > **V810** **V820**

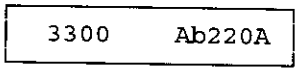
During machine run:
- The actual speed
- **Example:** 2350 rotations per minute



At stop in the seam:
- The stop indication

At machine standstill after trimming:
- On the V810, indication of the type of control
- On the V820, indication of the set maximum speed and the type of control
- **Example:** 3300 rotations per minute and control type AB220A





9. Functions without Control Panel

9.1 Softstart

Functions **with** or **without** control panel		Parameter
Softstart on/off	(SSt)	134

Function:
- after power on
- at the beginning of a new seam
- speed pedal controlled and limited to (n6)
- lower speed of a function running parallel predominates (e.g. start backtack, stitch counting)
- stitch counting synchronized to position 1
- interruption with pedal in position 0 (neutral)
- cessation by full heelback (position -2)

When using a control panel V820, direct access by function key (pushbutton 9) is possible!

Functions **with** control panel V820		Parameter
Softstart on/off	(-F-)	F-008 = 1

9.1.1 Softstart Speed

Functions **with** or **without** control panel		Parameter
Softstart speed	(n6)	115

When programming 3-digit and/or 4-digit parameter values in the control, the 2-digit and/or 3-digit values displayed must be mutliplied by 10.

9.1.2 Softstart Stitches

Functions **with** or **without** control panel		Parameter
Softstart stitches	(SSc)	100

If the function "slow stitch after power on" has been selected by parameter 231, the first stitch after power on will be performed at positioning speed, independently of the Softstart setting.

The abbreviations in parentheses ( ) are visible only if a control panel V820 is connected!

9.2 Sewing Foot Lifting

Functions **without** control panel		Pushbutton on the control
Automatic in the seam	Left LED above pushbutton ON	Pushbutton S4
Automatic after thread trimmming	Right LED above pushbutton ON	Pushbutton S4

Functions **with** control panel		V810	V820
Automatic in the seam	Left arrow above pushbutton ON	Pushbutton 3	Pushbutton 6
Automatic after thread trimmming	Right arrow above pushbutton ON	Pushbutton 3	Pushbutton 6
If parameter 290 = 16 with insertable strip "7"	Left arrow above pushbutton ON		Pushbutton 9

Functions **with** or **without** control panel		Parameter
Automatic sewing foot with pedal forward at the seam end, if light barrier or stitch counting is On		023
Activation delay of sewing foot lift when pedal is in position -1, half heelback	(t2)	201
Start delay after switching off the sewing foot lift signal	(t3)	202
Time of full power	(t4)	203
Holding power for sewing foot lift 1...100%	(t5)	204
Delay after thread wiping until sewing foot lifting	(t7)	206
Activation delay of sewing foot lift when thread wiper is Off	(tFL)	211
Upper limit of sewing foot lift operating time 1...100	(EF-)	254

Sewing foot is lifted:

- in the seam
  - by heeling the pedal back (position -1)
    or automatically (with pushbutton **S4** on the control, left LED lights up)
    or automatically (with pushbutton **3** on the control panel V810)
    or automatically (with pushbutton **6** on the control panel V820)
  - by pressing a pushbutton depending on preselection of parameters 239...249
- after thread trimming
  - by heeling the pedal back (position -1 or -2)
    or automatically (with pushbutton **S4** on the control, right LED lights up)
    or automatically (with pushbutton **3** on the control panel V810)
    or automatically (with pushbutton **6** on the control panel V820)
  - by pressing a pushbutton depending on preselection of parameters 239...249
  - by light barrier, automatically, with pedal forward according to the setting of param. 023
  - by stitch counting, automatically, with pedal forward according to the setting of param. 023
  - start delay after thread wiping (t7)
  - start delay without thread wiping (tFL)

Unintentional foot lifting before thread trimming, when changing from pedal position 0 (neutral) to position -2, can be prevented by setting an activation delay (t2) by parameter 201.

Holding power of the lifted foot:

The sewing foot is lifted by full power. Then the solenoid is switched to partial power in order to reduce the load for the control and for the connected solenoid.
The duration of full power is set by parameter 203, the holding power at partial power by parameter 204.

Caution!
If the holding power is set too high the solenoid and the control may be permanently damaged. Please observe the allowed operating time of the solenoid and set the appropriate value according to the table below.

Value	Operating time	Effect
1 100	1 % 100 %	low holding power high holding power (full power)

Foot lowers:
- Push pedal to position 0 (neutral)
- Push pedal to position 1/2 (slightly forward)
- Release pushbutton for manual sewing foot lift

When pushing the pedal forward from lifted sewing foot, the start delay (t3) that can be set by parameter 202 becomes effective.
See also chapter "Timing Diagrams"!

9.3 Start Backtack/Start Stitch Condensing

Functions **without** control panel		Control
Single start backtack Double start backtack Start backtack Off	LED 1 ON LED 2 ON both LEDs OFF	Pushbutton S2
Start stitch condensing On; number of stitches with stitch regulator (parameter 001) Start stitch condensing On; number of stitches without stitch regulator (parameter 000), then number of stitches with stitch regulator (parameter 001) Start stitch condensing Off	LED 1 ON LED 2 ON both LEDs OFF	Pushbutton S2

Functions **with** control panel		V810/V820
Single start backtack Double start backtack Start backtack Off	Left arrow above pushbutton ON Right arrow above pushbutton ON both arrows OFF	Pushbutton 1
Start stitch condensing On; number of stitches with stitch regulator (parameter 001) Start stitch condensing On; number of stitches without stitch regulator (parameter 000), then number of stitches with stitch regulator (parameter 001) Start stitch condensing Off	Left arrow above pushbutton ON Right arrow above pushbutton ON both arrows OFF	Pushbutton 1

The start backtack/start stitch condensing starts by pushing the pedal forward at the beginning of the seam. The backtack is delayed by the time t3 from lifted foot (start delay after switching off the sewing foot lift signal).
Start backtack as well as start stitch condensing are executed automatically at speed n3. They cannot be interrupted. With softstart running parallel, the respective lower speed predominates.
If backtack synchronization (parameter 298) is not switched on, the stitch regulator is synchronized to position 1.
After stitch counting (parameter 001), the stitch regulator, and, after a delay time t1, the speed n3 will be switched off. Then pedal control is returned.
Counting is synchronized to position 1.

9.3.1 Speed n3 at the Start of the Seam

Functions **with** or **without** control panel		Parameter
Speed for start backtack/stitch condensing	(n3)	112

When programming 3-digit and/or 4-digit parameter values in the control (without control panel), the 2-digit and/or 3-digit values displayed must be mutliplied by 10.

9.3.2 Stitch Counting for Start Backtack/Start Stitch Condensing

Functions **with** or **without** control panel		Parameter
Number of stitches forward and/or without stitch regulator Number of stitches backward and/or with stitch regulator	(Arv) (Arr)	000 001

The stitches for start backtack /start stitch condensing with or without stitch regulator can be programmed and varied by the above parameters directly in the control or on a connected control panel V810V820.

Moreover, when activating the function, the corresponding value ca be indicated on the display of the control panel V820 for approx. 3 seconds by actuating pushbutton 1, for fast operator information (HIT). During this time the value can be changed immediately with pushbuttons + and -. The display remains the same during set-up.
If the value of the activated function is to be changed, pushbutton 1 must be actuated somewhat longer. The function will thus be disconnected and/or commutated. Subsequently, the function with the respective value is shown on the display again.

9.3.3 Stitch Correction and Speed Release

Functions **with** or **without** control panel		Parameter
Stitch correction time Stitches until speed release after start backtack	(t8) (t1)	150 200

The speed release after the single and double start backtack can be influenced by parameter 200.

For slow backtack mechanisms in the double start backtack the stitch regulator can be disabled with a time-lag of t8 (start backtack stitch correction), which prolongs the backward section. This time-lag can be selected by parameter 150.

9.3.4 Double Start Backtack

The forward section will be sewn for a number of stitches that can be set. Then, the signal for the stitch regulator will be emitted, and the backward section will be executed. For both sections the number of stitches can be set separately.

9.3.5 Single Start Backtack/Start Stitch Condensing

The stitch regulator signal will be emitted for a number of stitches that can be set, and the backward section and/or start stitch condensing will be executed.

9.4 End Backtack/End Stitch Condensing

Functions **without** control panel		Control
Single end backtack Double end backtack End backtack Off	LED 3 ON LED 4 ON both LEDs OFF	Pushbutton S3
End stitch condensing On; number of stitches with stitch regulator (parameter 002) End stitch condensing On; number of stitches with stitch regulator (parameter 002), then number of stitches without stitch regulator (parameter 003) End stitch condensing Off	LED 3 ON LED 4 ON both LEDs OFF	Pushbutton S3

Functions **with** control panel		V810	V820
Single end backtack Double end backtack End backtack Off	Left arrow above pushbutton ON Right arrow above pushbutton ON both arrows OFF	Pushbutton 2	Pushbutton 4
End stitch condensing On; number of stitches with stitch regulator (parameter 002) End stitch condensing On; number of stitches with stitch regulator (parameter 002), then number of stitches without stitch regulator (parameter 003) End stitch condensing Off	Left arrow above pushbutton ON Right arrow above pushbutton ON both arrows OFF	Pushbutton 2	Pushbutton 4

The end backtack/stitch condensing starts either by heelback, in seams with stitch counting at the end of counting, or from the light barrier seam at the end of the light barrier compensating stitches. From machine standstill, the stitch regulator will be switched on immediately. After lowering of the sewing foot, the switch-on point of the stitch regulator is delayed by the time t3 (start delay after switching off the sewing foot lift signal). The first leading position 1 is counted as 0 stitch, whenever the function is started outside of position 1. If backtack synchronization (parameter 298) is not switched on, the stitch regulator is synchronized to position 1.
End backtack as well as end stitch condensing are executed automatically at speed n4. They cannot be interrupted.
From full machine run, the signal will be switched on only after reaching the speed n4 and the synchronization to position 2.

9.4.1 Speed n4 at the Seam End

Functions **with** or **without** control panel		Parameter
Speed for end backtack/end stitch condensing	(n4)	113

When programming 3-digit and/or 4-digit parameter values in the control (without control panel, the 2-digit and/or 3-digit values displayed must be mutliplied by 10.

9.4.2 Stitch Counting for End Backtack/End Stitch Condensing

Functions **with** or **without** control panel		Parameter
Number of stitches backward and/or with stitch regulator Number of stitches forward and/or without stitch regulator	(Err) (Erv)	002 003

The stitches for end backtack/end stitch condensing with or without stitch regulator can be programmed and varied by the above parameters directly in the control or on a connected control panel V810/V820.

Moreover, when activating the function, the corresponding value ca be indicated on the display of the control panel V810/V820 for approx. 3 seconds by actuating pushbutton 4, for fast operator information (HIT). During this time the value can be changed immediately with pushbuttons + and -. The display remains the same during set-up.
If the value of the activated function is to be changed, pushbutton 4 must be actuated somewhat longer. The function will thus be disconnected and/or commutated. Subsequently, the function with the respective value is shown on the display again.

9.4.3 Stitch Correction and Last Stitch Backward

Functions **with** or **without** control panel		Parameter
Last stitch backward On/Off	(FAr)	136
Stitch correction time	(t9)	151

The backtack solenoid in the double end backtack can be delayed by selecting a stitch correction time (t9) by parameter 151.
For some sewing procedures it is desirable that the backtack solenoid in the single end backtack is disabled only after trimming. This function can be switched on by parameter 136.

Parameter 136 = 0 last stitch forward
Parameter 136 = 1 last stitch backward

9.4.4 Double End Backtack/End Stitch Condensing

The backward section and/or end stitch condensing will be executed for a number of stitches that can be set. Then, the stitch regulator will be disabled, and the forward section and/or normal stitch condensing stitches will be executed. For both sections the number of stitches can be set seperately.
After stitch counting (parameter 003), the trimming function will be initiated. During the entire operation the sewing speed is reduced to speed n4, with the exception of the last stitch, which will be executed at postioning speed n1.
For slow backtack mechanisms in the double end backtack the stitch regulator can be disabled with a time-lag of t9 (end backtack stitch correction).

9.4.5 Single End Backtack/End Stitch Condensing

The stitch regulator signal will be emitted for a number of stitches that can be set, and the backward section and/or end stitch condensing will be executed. During the last stitch the speed is reduced to positioning speed.

9.4.6 Backtack Synchronization

Functions **with** or **without** control panel		Parameter
Backtack synchronization for start and end backtack on/off	(nSo)	298
Speed for backtack synchronization	(nrS)	299

If parameter 298 is on, the backtack speed will be switched to backtack synchronization speed one stitch before engaging and disengaging of the backtack solenoid. The backtack speed is released again at the next position 2. If the synchronization speed, that can be set by parameter 299, is higher than the backtack speed, the latter is maintained. Backtack synchronization is possible in the start and end backtack.

9.5 Start Ornamental Backtack/Stitch Condensing

Functions **without** control panel		Control
Function ornamental backtack On/Off		135
Ornamental backtack stop time		210
Single start ornamental backtack	LED 1 on	Pushbutton S2
Double start ornamental backtack	LED 2 on	
Start ornamental backtack Off	both LEDs off	

Functions **with** control panel		V810/V820
Function ornamental backtack On/Off	(SrS)	135
Ornamental backtack stop time	(tSr)	210
Single start ornamental backtack	left arrow above pushbutton ON	Pushbutton 1
Double start ornamental backtack	right arrow above pushbutton ON	
Start ornamental backtack Off	both arrows OFF	

The parameters of the start backtacking speed and of the backtacking stitches forward and backward are identical with the standard start backtack. The function wit intermediate stop is also effective on chainstitch machines.

Differences from the standard start backtack:

- The drive stops for the switching of the stitch regulator
- The stop time can be set

When using a control panel V820, direct access by function key (pushbutton 9) is possible!

Functions **with** control panel		Parameter
Ornamental backtack On/Off	(-F-)	008 = 2

9.6 End Ornamental Backtack/Stitch Condensing

Functions **without** control panel		Control
Function ornamental backtack On/Off		135
Ornamental backtack stop time		210
Single end ornamental backtack	LED 3 on	Pushbutton S3
Double end ornamental backtack	LED 4 on	
End ornamental backtack Off	both LEDs off	

Functions **with** control panel		V810	V820
Function ornamental backtack On/Off	(SrS)	135	
Ornamental backtack stop time	(tSr)	210	
Single end ornamental backtack	left arrow above pushbutton ON	Pushbutton 2	Pushbutton 4
Double end ornamental backtack	right arrow above pushbutton ON		
End ornamental backtack Off	both arrows OFF		

The parameters of the end backtacking speed and of the backtacking stitches backward and forward are identical with the standard end backtack.

Differences from the standard start backtack:

- The drive stops for the switching of the stitch regulator
- The stop time can be set

When using a control panel V820, direct access by function key (pushbutton 9) is possible!

Functions **with** control panel		Parameter
Ornamental backtack On/Off	(-F-)	008 = 2

9.7 Intermediate Backtack

The backtack solenoid can be switched on anywhere in the seam and at standstill by pressing an external pushbutton depending on the preselection of parameters 239...249.

See chapter "**Connection Diagram**" in the Parameter List!

9.8 Stitch Regulator Suppression/Recall

Effective in standard and ornamental backtack

The next backtack and/or stitch condensing operation can be suppressed or recalled once by pressing an external pushbutton depending on the preselection of parameters 239...249.

When pressing	Start backtack/ Stitch condensing On	Start backtack/ Stitch condensing Off	End backtack/ Stitch condensing On	End backtack/ Stitch condensing Off
Before start of seam	No backtack/ Stitch condensing	Backtack/ Stitch condensing	---	---
In the seam	---	---	No Backtack/ Stitch condensing	Backtack/ Stitch condensing

The double backtack is performed in the above cases.

See chapter "**Connection Diagram**" in the Parameter List!

9.9 Holding Power of the Stitch Regulator Solenoid

Functions **with** control panel		Parameter
Time of full power	(t10)	212
Holding power of the stitch regulator solenoid 1...100%	(t11)	213
Upper limit operating time for backtacking and/or thread trimmer backward 1...100	(EV-)	255

The stitch regulator solenoid is activated by full power. Then the solenoid is switched to partial power in order to reduce the load for the control and for the connected solenoid.
The duration of full power is set by parameter 212, the holding power at partial power by parameter 213.

Value	Operating time	Effect
1	1 %	low holding power
100	100 %	high holding power (full power

Caution!

If the holding power is set too high the solenoid and the control may be permanently damaged. Please observe the allowed operating time of the solenoid and set the appropriate value according to the above table.

9.10 Reversion

Functions **with** or **without** control panel		Parameter
Positioning speed	(n1)	110
Number of reversion increments	(Ird)	180
Activation delay of reversion	(drd)	181
Reversion ON/OFF	(Frd)	182

The function "reversion" is performed after trimming. When the stop position is reached, the drive stops for the time of the activation delay of reversion (parameter 182). Then it reverses at positioning speed for an adjustable number of increments. 1 increment corresponds to approx. 3°.

9.11 Unlocking the Chain (Mode 4/5/6/7/16)

Functions **with** or **without** control panel		Parameter
Number of run-out stitches when unlocking the chain	(c6)	184
Function "unlock the chain" in modes 4, 5, 6, 7 and 16	(MEK)	190

When unlocking the chain at the seam end, the functions **backtacking, chain suction, trimming operation** and **tape cutter/fast scissors** are automatically suppressed. If, however, parameter 190 = 3, the function **tape cutter/fast scissors** is possible. After pressing the pushbutton "unlocking the chain" and with pedal in position 0 (neutral), the drive always stops in position 1.

Settings necessary for the function of unlocking the chain:

- Set "unlocking the chain" with parameter 190 = 1 / 2 / 3 (190 = 0 "unlocking the chain switched off)
- Switch on reversion with parameter 182
- Set **activation delay** with parameter 181 and **reversing angle** with parameter 180
- Determine the **function "unlocking the chain" for a pushbutton** with one of the parameters 240...249

Parameter 190 = 1: Sequence with pedal in position -2 from machine run or from position 2:

- Press pushbutton "unlocking the chain"
- Run at positioning speed to position 1
- Sequence of the reversing angle at positioning speed after an activation delay that can be set

Parameter 190 = 1: Sequence with pedal in position -2 from standstill in position 1:

- Press pushbutton "unlocking the chain"
- Sequence of the reversing angle at positioning speed after an activation delay that can be set

Parameter 190 = 2: Automatic sequence with light barrier at the seam end without tape cutting/ pedal in position -2 according to the setting of parameter 019:

- Press pushbutton "unlocking the chain"
- After light barrier sensing, run to position 1
- Sequence of the reversing angle at positioning speed after an activation delay that can be set

Parameter 190 = 3: Automatic sequence with light barrier at the seam end with tape cutting and run-out stitches (only possible in mode 7 and if parameter 018 = 0) / pedal in position -2 according to the setting of parameter 019:

- Press pushbutton "unlocking the chain"
- After light barrier sensing, execution of compensating stitches and end counting until tape cutting
- Run-out stitches until unlocking the chain, can be set with parameter 184
- Sequence of the reversing angle at positioning speed after an activation delay that can be set

If parameter **290 = 16** and the insertable strip "7" for control panel V820 has been selected, the following functions will be performed:

Functions	Pushb. 7	Pushb. 8
Standard sequence with tape cutting at the start of the seam and at the seam end	Off	Off
Unlock the chain On according to the setting of parameter 190 = 0...3	On	Off
Unlock the chain according to the setting of parameter 190 = 3	On/Off	On

The functioning of the control during operation is shown in the timing diagrams in the Parameter List. See also chapter **"Tape Cutter Functions" (Mode 16)"**

When using a control panel V820, direct access by function key (pushbutton 9) is possible!

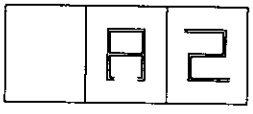
Functions with control panel		Parameter
Unlock the chain On/Off	(-F-)	008 = 4

9.12 Machine Run Blockage (Safety Switch)

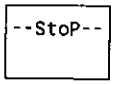
Attention!
This is not a safety function.
The line voltage must still be switched off during maintenance and repair work.

The function "machine run blockage" is possible by connecting a switch to socket ST2, depending on the preselection of parameters 239...249. When using a control panel V810/V820, an acoustic signal can be switched on and/or off with parameter 149.

Display after the activation of the machine run blockage without control panel:

Display on the control ! ==> 

Display after the activation of the machine run blockage with control panel:

Display on the control panel V810 !
(Symbol blinks and an acoustic signal is emitted with parameter 127 = 1) = = > 

Display on the control panel V820 !
(Symbol blinks and an acoustic signal is emitted with parameter 127 = 1) = = > 

Machine run blockage in the free seam, in the seam with stitch counting and in the light barrier seam:

By opening and/or closing the switch the seam is interrupted
- Stop in the basic position
- Needle up is not possible
- Sewing foot lifting is possible

Machine run blockage in the start backtack/start stitch condensing:

By opening and/or closing the switch the start backtack/start stitch condensing is interrupted.
- Stop in the basic position
- Needle up is not possible
- Sewing foot lifting is possible
- After the deactivation of the machine run blockage the seam will be continued with the seam section following the start backtack/start stitch condensing

Machine run blockage in the end backtack/end stitch condensing:

By opening and/or closing the switch the end backtack/end stitch condensing is interrupted and the seam is finished.
- Sewing foot lifting is possible

If the machine run blockage is activated in the overlock mode, the seam section will be interrupted. After deactivating the machine run blockage, the seam section will be continued.

New start after machine run blockage

Functions **with** or **without** control panel		Parameter
New start after machine run blockage	(PdO)	234

Parameter 234 determines how a new start is possible after closing and/or opening the switch.

Parameter 234 = 0 New start after the deactivation of the machine run blockage without influence by the pedal. This setting is, for example, applicable to automats.

Parameter 234 = 1 New start after the deactivation of the machine run blockage only if the pedal had been put to position 0 (neutral)

9.13 High Lift For Walking Foot Signal Output M6 / Flip-Flop 1

Functions **with** or **without** control panel		Parameter
High lift for walking foot On/Off	(hP)	137
Signal "high lift for walking foot" inverted/not inverted	(ihP)	263

The high lift for walking foot is effective only if input function 13 and/or 14 has been selected with parameters 240...249 and if parameter 137 = 1. With all other settings the high lift for walking foot is ineffective. The signal "machine running" is emitted at the corresponding output (M6).

Parameter 263 = 0 Emission of signal "high lift for walking foot" (output M6) when pushbutton is closed

Parameter 263 = 1 Emission of signal "high lift for walking foot" (output M6) when pushbutton is open

9.13.1 High Lift Walking Speed

Functions **with** or **without** control panel		Parameter
High lift walking speed	(n10)	117

9.13.2 High Lift Walking Speed Run-Out Time

Functions **with** or **without** control panel		Parameter
High lift walking speed run-out time	(thP)	152

9.13.3 High Lift Walking Stitches

Functions **with** or **without** control panel		Parameter
Number of high lift walking stitches	(chP)	185

When pressing the external pushbutton "high lift for walking foot", the speed is limited to high lift walking speed. The solenoid for high lift for walking foot is switched on if the speed ≤ high lift walking speed. It is possible to program run-out stitches by parameter 185. The high lift for walking foot remains on until stitch counting is completed. The speed limitation remains effective during the run-out time after disengaging of the solenoid for high lift for walking foot.

9.13.4 High Lift for Walking Foot Operation Mode Not Stored (parameters 240...249 = 13)

The following function will be performed if for run-out stitches "0" is programmed with parameter 185:

- Press pushbutton "high lift for walking foot" at drive standstill; signal "high lift for walking foot" is On.
- Release pushbutton "high lift for walking foot" at drive standstill; signal "high lift for walking foot" is Off.

The following function will be performed if for run-out stitches ">0" is programmed with parameter 185:

- 1. Press pushbutton "high lift for walking foot" at drive standstill; signal "high lift for walking foot" is On and remains On after releasing the pushbutton.
- 2. Press pushbutton "high lift for walking foot" at drive standstill; signal "high lift for walking foot" remains On and will be switched off after releasing the pushbutton.

If the signal "high lift for walking foot" is On at the start of the drive, the speed is limited. After the run-out stitches, the signal is switched off and the speed limitation is released after the run-out time (parameter 152).

While the drive is running if for run-out stitches "≥ 0" is programmed with parameter 185:

- Press pushbutton "high lift for walking foot" while the drive is running; signals "high lift for walking foot" and "high lift walking speed" are On.
- Release pushbutton "high lift for walking foot" while the drive is running; signal "high lift for walking foot" is switched off after the run-out stitches. The speed limitation is released after the run-out time (parameter 152).

9.13.5 High Lift for Walking Foot Operation Mode Stored/Flip-Flop 1 (parameters 240...249 = 14)

- 1. Press pushbutton "high lift for walking foot" while the drive is running; signals "high lift for walking foot" and "high lift walking speed" are On.
- 2. Press pushbutton "high lift for walking foot" while the drive is running; signal "high lift for walking foot" is switched off after the run-out stitches. The speed limitation is released after the run-out time (parameter 152).

9.14 Bobbin Thread Monitor

Functions **with** or **without** control panel		Parameter
Bobbin thread monitor without stop = 2 / with stop = 1 / Off = 0	(rFw)	030
Number of stitches for bobbin thread monitor	(cFw)	031

For operating the bobbin thread monitor, a number of stitches is preset with parameter 031, depending on the length of the bobbin thread. After these stitches have been executed, the drive stops and a visual signal appears on the display. If a control panel is connected, an audible signal is also emitted, when parameter 149 is set accordingly. This signals that the bobbin thread will run out. When pushing the pedal again, the seam can be completed or the thread can be trimmed. After inserting a full bobbin and pushing the enter button, a new sewing operation can be started.

Activate bobbin thread monitor:

- Set parameter 030 at "1" and/or "2".
- Input the desired maximum number of stitches with parameter 031 (inputted value x 100 = number of stitches, e.g. 80 x 100 = 8000).
- Set parameter 293 and/or 294 at "19" for starting the counter with pushbutton A or B.
- When using a control panel V820, pushbutton 8 is provided for that (depending on the selection of the insertable strip by parameter 292).
- When using a control panel, an audible signal can be activated by setting parameter 127 accordingly.
- Start the sewing operation.

Bobbin thread monitor is On:

- **Parameter 030 = 1:** The drive stops when the stitch counter has run out. The message **A7** appears on the control and/or the bobbin thread monitor symbol blinks on control panel V810/V820. If control panel V820 is connected an audible signal is emitted, if parameter 127 is set at "1".
- **Parameter 030 = 2:** When the stitch counter has run out, the message **A7** appears on the control and/or the bobbin thread monitor symbol blinks on control panel V810/V820 without automatic stop. If control panel V820 is connected an audible signal is emitted.

Making the bobbin thread monitor ready for operation:

- Insert a full bobbin.
- Press the selected external pushbutton or the respective pushbutton on the connected control panel. Press pushbutton 8 on control panel V820.
- Set counting with parameter 031 and start counting.
- The symbol stops blinking and the message "A7" on the control disappears after trimming.

9.15 Thread Trimming

Function **without** control panel		Parameter
Thread trimmer On/Off	(FA)	013
Thread wiper On/Off	(FW)	014

Function **with** control panel	V820
Thread trimmer and/or thread wiper On/Off	Pushbutton 5

The trimming operation can be switched on and off separately with parameters 013 and 014. When a control panel V820 is connected, the functions can also be switched on and off with pushbutton 5.

9.15.1 Thread Trimmer/Thread Wiper (Modes 0, 2, 3, 10 and 14)

Function **with** or **without** control panel		Parameter
Thread wiper time	(t6)	205
Activation delay thread wiper	(dFw)	209
Activation angle of thread trimmer	(iFA)	250
Switch-off delay of thread tension release	(FSA)	251
Activation delay of thread tension release	(FSE)	252
Stop time for thread trimmer	(tFA)	253
Holding power output M1 of the thread trimmer backward	(t11)	213

The thread trimming with lockstitch machines (modes 0, 2, 3, 10 and 14) is performed at trimming speed.
The drive stops in position 2 at the seam end, when thread trimming is off; it stops in position 1 at the end of programmed seams.
The thread wiper can be switched on only if the thread trimmer is also switched on. The operating time with lockstitch machines can be set according to the selection of the trimming mode (see chapter "Timing Diagrams"). The return time (t7) that can be set with parameter 206 prevents sewing foot lifting before the thread wiper is in its initial position. If a thread wiper is not connected there will be a time lag (tFL) after thread trimming until the sewing foot is lifted.

9.15.2 Trimming Speed

Function **with** or **without** control panel		Parameter
Trimming speed	(n7)	116

9.15.3 Chainstitch Thread Trimmer (Modes 4, 5 and 6)

The thread trimming with chainstitch machines (modes 4, 5 and 6) is performed at machine standstill in position 2.
The drive stops in position 2 at the seam end, when thread trimming is off.
The signal sequence of M1...M4 and of the sewing foot can be set to either parallel or sequential with parameters 280...288.

9.15.3.1 Trimming Signal Times

Function **with** or **without** control panel		Parameter
Delay time output M1	(kd1)	280
Activation time output M1	(kt1)	281
Delay time output M2	(kd2)	282
Activation time output M2	(kt2)	283
Delay time output M3	(kd3)	284
Activation time output M3	(kt3)	285
Delay time output M4	(kd4)	286
Activation time output M4	(kt4)	287
Delay time until sewing foot On	(kdF)	288
Activation time output M7 (signal if parameter 290 = 16)	(kt5)	289

The functioning of the control during operation is shown in the timing diagrams in the Parameter List. See also chapter "Selection of the Functional Sequences (Thread Trimming Operations)".

9.16 Functions for Overlock Machines (Mode 7)

9.16.1 Signal Chain Suction

The signal **chain suction** can be preselected for the start and end counting, respectively by pressing pushbutton **S2** on the control and pushbutton **1** on the control panel V810/V820. If chain suction and tape cutter are switched off at the start of the seam, the respective countings will be suppressed.

Functions **without** control panel		Control
Chain suction at the start of the seam On	LED 1 on	Pushbutton S2
Chain suction at the end of the seam On	LED 2 on	

Functions **with** control panel		V810/V820
Chain suction at the start of the seam On	Left arrow above pushbutton ON	Pushbutton 1
Chain suction at the end of the seam On	Left arrow above pushbutton ON	

Functions **with** or **without** control panel		V810/V820
Sequence overlock mode (mode 7/16) with or without stop	(UoS)	018
Signal "chain suction" at the seam end until the end of counting c2 or until pedal in pos. 0 (neutral)	(SPO)	022
Speed during the signal "chain suction" at the start of the seam	(kSA)	143
Speed during the signal "chain suction" at the seam end	(kSE)	144
Switch on signal chain suction and thread tension release at the seam end	(kSL)	193
Braking curve in the overlock mode On/Off	(bdO)	235

The following settings are possible in the overlock mode (mode 7) with the following parameters:

Parameter 018 = 0 Sequence with stop.
Parameter 018 = 1 Sequence without stop. Parameter 022 must be set at ON.
Parameter 022 = 0 The signal "chain suction at the seam end" is switched off after counting c2.
Parameter 022 = 1 The signal "chain suction at the seam end" remains On until the pedal is in pos. = (neutral).

With the following parameters the speed function can be selected while the signal "chain suction at the start of the seam and at the seam end" is emitted.

Parameter 143 = 0 Fixed speed n3 (parameter 112) at the start of the seam.
Parameter 143 = 1 Pedal controlled speed at the start of the seam
Parameter 144 = 0 Fixed speed n4 (parameter 113) at the seam end.
Parameter 144 = 1 Pedal controlled speed at the seam end.
Parameter 193 = 0 Thread tension release and chain suction after the light barrier compensating stitches.
Parameter 193 = 1 Chain suction from light barrier uncovered onwards and thread tension release after the light barrier compensating stitches.
Parameter 235 = 0 Braking curve Off.
Parameter 235 = 1 Braking curve for accurate stop with chain suction at the seam end On.

9.16.2 Start and End Countings

Functions **with** or **without** control panel		Parameter
End counting (c2) at limited speed n4 until stop	(c2)	000
Start counting (c1) at limited speed n3 for chain suction	(c1)	001
Counting (c3) tape cutter at the seam end	(c3)	002
End counting (c4) for tape cutter at the seam end	(c4)	003
Seam end in mode 7 through end counting (c2) or (c4)	(MHE)	191
Stitch counting speed at the start of the seam	(n3)	112
Stitch counting speed at the seam end	(n4)	113

With parameter 191, the following settings are possible for determining the seam end:
Parameter 191 = 0 Seam end after counting c4 (tape cutter)
Parameter 191 = 1 Seam end after counting c2 (chain suction)

9.17 Function of Output Signal M8

Functions **with** or **without** control panel		Parameter
Functions of signal M8	(m08)	296

The following settings are possible with parameter 296:
296 = 0 Function "signal 8" off.
296 = 1 Signal M8 "seamer is switched on at the start of the seam with pedal <0 and in the seam with signal "machine running".
296 = 2 Signal M8 "seamer" is switched on at the start of the seam with pedal <0 and always in the seam.
296 = 3 Signal M8 is switched on as "center cutter".
296 = 4 Signal M8 is switched on with "needle up/down".
296 = 5 Signal M8 is switched on alternating with M3 with "fast scissors" on overlock machines (parameter 290 = 16 and parameter 232 = ON).

9.18 Function of Output Signal M11

Functions **with** or **without** control panel		Parameter
Functions of signal M11	(m11)	297

The following settings are possible with parameter 297:
Parameter 297 = 0 Function according to setting of parameter 290
Parameter 297 = 1 Signal M11 is switched on whenever the light barrier is uncovered
Parameter 297 = 2 Signal M11 is switched on whenever the light barrier is covered
Parameter 297 = 3 Signal M11 is switched on only after light barrier uncovered and/or covered until seam end
Parameter 297 = 4 Signal M11 is switched on as with setting 3. Signal M5 (machine running), however, is switched off while signal M11 is emitted.

9.19 Tape Cutter (Mode 6/7/15/16)

9.19.1 Functions for Mode 6

The signal **tape cutter/fast scissors** is emitted only at the seam end. A manual tape cutter/fast scissors can also be set. See also chapter "**Manual Tape Cutter/Fast Scissors**".

Functions **with** or **without** control panel	Parameter
Tape cutter at the seam en On/Off	014

9.19.1.1 Output and Times for Tape Cutter

Functions **with** or **without** control panel		Parameter
Delay time for output M3 (ST2/27) **tape cutter** AH	(kd3)	284
Activation time for output M3 (ST2/27) **tape cutter** AH	(kt3)	285

- Parameter **232** must be set at "**0**".
- The delay time for the tape cutter is usually set at "0"!

9.19.1.2 Outputs and Times for Fast Scissors

Functions **with** or **without** control panel		Parameter
Delay time for output M3 (ST2/27) **fast scissors** AH1	(kd3)	284
Activation time for output M3 (ST2/27) **fast scissors** AH1	(kt3)	285
Delay time for output M4 (ST2/36) **fast scissors** AH2	(kd4)	286
Activation time for output M4 (ST2/36) **fast scissors** AH2	(kt4)	287

- Parameter **232** must be set at "**1**".
- The delay times for the "fast scissors" are usually set at "0"!

9.19.2 Functions for Mode 7

The signal **tape cutter/fast scissors** can be set separately for start and/or end counting. See also chapter "**Manual Tape Cutter/Fast Scissors**".

Functions **without** control panel		Control
Tape cutter/fast scissors at the start of the seam On	LED 3 On	Pushbutton S3
Tape cutter/fast scissors at the seam end On	LED 4 On	
Tape cutter/fast scissors at the start and at the end of the seam On	LED 3 and 4 On	
Tape cutter/fast scissors at the start and at the end of the seam Off	LED 3 and 4 Off	

- When using control panel V810, parameter 291 will automatically be set to insertable strip "**7**" if 290 = 7.
- When using control panel V820, parameter 292 will automatically be set to insertable strip "**5**" if 290 = 7.

Functions **with** control panel		V810	V820
Tape cutter/fast scissors at the start of the seam On	left arrow above pushbutton ON	Pushb. 2	Pushb. 4
Tape cutter/fast scissors at the end of the seam On	right arrow above pushbutton ON		
Tape cutter/fast scissors at the start and at the end of the seam On	both arrows above pushbutton ON		
Tape cutter/fast scissors at the start and at the end of the seam Off	both arrows above pushbutton OFF		

The signal tape cutter can be influenced with parameter 020 to the effect that the signal remains On at the seam end and will be switched off after some run-out stitches, which can be set with parameter 012, when starting to sew again. This action serves as clamp.

Functions **with** or **without** control panel		Parameter
Clamp at the seam end (output ST2/27) On/Off (mode 7)	(kLM)	020
Run-out stitches (ckL) of the clamp at the start of the seam (mode 7) or stitch counting after light barrier uncovered until tape cutter On (mode 15)	(ckL)	021

9.19.2.1 Output and Times for Tape Cutter

Functions **with** or **without** control panel		Parameter
Delay time for output M3 (ST2/27) **tape cutter** AH	(kd3)	284
Activation time for output M3 (ST2/27) **tape cutter** AH	(kt3)	285

- Parameter **232** must be set at "**0**".
- The delay time for the tape cutter is usually set at "0"!

9.19.2.2 Outputs and Times for Fast Scissors

Functions **with** or **without** control panel		Parameter
Delay time for output M3 (ST2/27) **fast scissors** AH1	(kd3)	284
Activation time for output M3 (ST2/27) **fast scissors** AH1	(kt3)	285
Delay time for output M2 (ST2/28) **fast scissors** AH2	(kd2)	282
Activation time for output M2 (ST2/28) **fast scissors** AH2	(kt2)	283

- Parameter **232** must be set at "**1**".
- The delay times for the "fast scissors" are usually set at "0"!

9.19.3 Functions for Mode 15

Functions **without** control panel		Control
Countings c1 and c2 On/Off	LED 1/2	Pushbutton S2
Countings c3 and c4 On/Off	LED 3/4	Pushbutton S3
Sewing foot lift functions On/Off	LED 5/6	Pushbutton S4
Basic position 1 or 2	LED 7/8	Pushbutton S5

- The signal **tape cutter** can be set separately for start and/or end counting.
- When using control panel V820, parameter 292 will automatically be set to insertable strip "**5**" if 290 = 15.

Functions **with** control panel	V820
Chain suction/chain blowing at the start and/or at the end of the seam On/Off	Pushbutton 1
Stitch counting On/Off	Pushbutton 2
Light barrier On/Off	Pushbutton 3
Tape cutter at the start and/or at the end of the seam On/Off	Pushbutton 4
Chain blowing On/Off	Pushbutton 5
Sewing foot in the seam and/or at the seam end On/Off	Pushbutton 6
Basic position 1 or 2	Pushbutton 7
Set bobbin thread monitor	Pushbutton 8
Reversion On/Off	Pushbutton 9
No function	Pushbutton 0

9.19.3.1 Output and Times for Tape Cutter

Functions **with** or **without** control panel		Parameter
Counting after light barrier uncovered until tape cutter M4 On	(ckL)	021
Delay time of output VR for chain suction	(kt6)	256
Start counting until tape cutter M4 On	(c7)	257
End counting until tape cutter M4 On	(c8)	258
Delay time until tape cutter M4 On	(kd4)	286
Activation time tape cutter M4	(kt4)	287

Function of the tape cutter after switching on output M6:

- The seam end is initiated by light barrier uncovered.
- Counting (ckL) is initiated at the same time.
- After counting, tape cutter M4 will be activated for the time (kt4).
- After the delay time (kd4), tape cutter M4 will be activated for the time (kt4) for the 2nd time.
- At standstill of the drive the tape cutter process (double tape cutting) can be repeated any number of times with a pushbutton (setting parameter 244 = 15) connected to socket ST2/5.

Function of the tape cutter when output M6 is switched off:

- At the start of the seam the tape cutter will be activated for the time (kt4) after a number of stitches (c7) that can be set.
- After light barrier sensing the tape cutter will be activated for the time (kt4) at the seam end after a number of stitches (c8) that can be set with parameter 258.
- At standstill of the drive the tape cutter can be repeated any number of times with a pushbutton (setting parameter 244 = 15) connected to socket ST2/5.

See also the Parameter List chapter "**Timing Diagrams**"!

9.19.4 Functions for Mode 16

Functions **without** control panel		Control
Counting c1 On/Off	LED 1/2	Pushbutton S2
Countings c3 and c4 On/Off	LED 3/4	Pushbutton S3
Sewing foot lift functions On/Off	LED 5/6	Pushbutton S4
Basic position 1 or 2	LED 7/8	Pushbutton S5

- The signal **tape cutter/fast scissors** can be set separately for start and/or end counting.
- Control panel V810 cannot be used with parameter setting 290 = 16 (mode 16).
- When using control panel V820, parameter 292 will automatically be set to insertable strip "7" if 290 = 16.

Functions **with** control panel	V820
Tape cutter/fast scissors at the start of the seam On/Off	Pushbutton 1
Tape cutter/fast scissors at the end of the seam On/Off	Pushbutton 2
Light barrier On/Off	Pushbutton 3
Chain suction On/Off	Pushbutton 4
Blow fabric onto stack from light barrier uncovered On/Off	Pushbutton 5
Tape cutting at the end of the seam On/Off	Pushbutton 6
Reversion On/Off	Pushbutton 7
Unlocking the chain On/Off	Pushbutton 8
Sewing foot in the seam and/or at the seam end On/Off	Pushbutton 9
Basic position 1 or 2	Pushbutton 0

The settings of pushbuttons **7** and **8** on control panel V820 have priority over the setting of parameter 019.

Functions	Pushb. 2	Pushb. 6
Tape cutting at the seam end Off, counting c4 until stop	Off	Off
Tape cutting at the seam end On, counting c4 until stop	On	Off
Tape cutting at the seam end Off, counting c3 until stop	On/Off	On

9.19.4.1 Output and Times for Tape Cutter

Functions **with** or **without** control panel		Parameter
Delay time for output M3 (ST2/27) **tape cutter** AH	(kd3)	284
Activation time for output M3 (ST2/27) **tape cutter** AH	(kt3)	285

- Parameter **232** must be set at "**0**".
- The delay time for the tape cutter is usually set at "0"!

9.19.4.2 Outputs and Times for Fast Scissors

Functions **with** or **without** control panel		Parameter
Delay time for output M3 (ST2/27) **fast scissors** AH1	(kd3)	284
Activation time for output M3 (ST2/27) **fast scissors** AH1	(kt3)	285
Delay time for output M8 (ST2/24) **fast scissors** AH2	(Ad1)	274
Activation time for output M8 (ST2/24) **fast scissors** AH2	(At2)	275

- Parameter **232** must be set at "**1**".
- The delay times for the "fast scissors" are usually set at "0"!

9.19.4.3 Function "Blow Fabric onto Stack"

Functions **with** or **without** control panel		Parameter
Function "blow fabric onto stack"	(bLA)	194
Activation time for output M7	(kt5)	289

Parameter 194 = 0 Blow fabric onto stack (output M7) at the seam end over time (kt5) that can be set with parameter 289

Parameter 194 = 1 Blow fabric onto stack (output M7) from light barrier uncovered until seam end and after seam end with a time lapse of (kt5)

See also the Parameter List chapter "**Timing Diagrams**"!

9.20 Manual Tape Cutter/Fast Scissors

When pressing an external pushbutton depending on the preselection of parameters 239...249, the **tape cutter** and/or **fast scissors** can be switched anywhere in the seam and at standstill.

See chapter "**Connection Diagram**" in the Parameter List!

9.21 Manual Stacker

Function **with** or **without** control panel		Parameter
Stacker function with open/closed pushbutton	(iS1)	264
Activation time for manual stacker	(ktS)	265

After pressing the pushbutton that has been allocated for the purpose, a stacker signal will be emitted over a certain period of time (parameter 265) on output M7 (socket ST2/23). The pushbutton is to be selected with one of the parameters 240...249. The manual stacker function is possible in each mode except mode 16.

Parameter 240...249 = 26 Allocation of the pushbutton for the manual stacker signal.

Parameter 264 = 0 Emission of the signal "manual stacker" (output M7) when pushbutton is closed

Parameter 264 = 1 Emission of the signal "manual stacker" (output M7) when pushbutton is open

Parameter 265 Activation time for the manual stacker signal

9.22 Selection of Signals M8, M9 and M10 at the Start of the Seam

Function **with** or **without** control panel		Parameter
Signals M8, M9, M10 on/off (0 = off / 1 = on)	(ASi)	273
Delay time for signal M8 at the start of the seam	(Ad1)	274
Activation time for signal M8 at the start of the seam	(At1)	275
Delay time for signal M9 at the start of the seam	(Ad2)	276
Activation time for signal M9 at the start of the seam	(At2)	277
Delay time for signal M10 at the start of the seam	(Ad3)	278
Activation time for signal M10 at the start of the seam	(At3)	279

Three different signals (M8, M9 and M10) can be programmed for various applications at the start of the seam. These can be switched on and off with parameter 273. The delay and activation times can be selected with parameters 274...279.

9.23 Seam with Stitch Counting

Functions **without** control panel	Parameter
Stitch counting On/Off	015

Functions **with** control panel	V820
Stitch counting On/Off	Pushbutton 2

9.23.1 Stitches for Stitch Counting

Functions **with** or **without** control panel		Parameter
Number of stitches for a seam with stitch counting	(Stc)	007

The stitches for stitch counting can be programmed and varied with the above parameters directly in the control or on a connected control panel V810/V820.
Moreover, when activating the function, the corresponding value ca be indicated on the display of the Variocontrol V820 for approx. 3 seconds by actuating pushbutton 2, for fast operator information (HIT). During this time the value can be changed immediately with pushbuttons + and -.

9.23.2 Stitch Counting Speed

Functions **with** or **without** control panel		Parameter
Positioning speed	(n1)	110
Stitch counting speed	(n12)	118
Activation of speed n12 with open/closed pushbutton	(inr)	266
Speed mode for a seam with stitch counting	(SGn)	141

Speed control for stitch counting can be selected with parameter 141.

Parameter 141 = 0 Execution at pedal controlled speed.
Parameter 141 = 1 Execution at fixed speed n12, when pedal is forward.
Parameter 141 = 2 Execution at limited speed n12, when pedal is forward.
Parameter 141 = 3 Automatic execution at fixed speed n12 as soon as the pedal has been pushed once. Interruption by "heelback (-2)" is possible.
Parameter 141 = 4 Automatic execution at fixed speed n1 as soon as the pedal has been pushed once. Interruption by "heelback (-2)" is possible.
Parameter 266 = 0 Activation of speed n12 with closed pushbutton.
Parameter 266 = 1 Activation of speed n12 with open pushbutton.

The sewing speed is reduced in each stitch depending on the actual speed (max. 11 stitches before the end of stitch counting) in order to be able to stop exactly at the end of the stitch counting. When the light barrier is switched on, free sewing will be performed after stitch counting.

9.23.3 Seam with Stitch Counting When Light Barrier Is On

Functions **without** control panel		Parameter
Light barrier On/Off	(LS)	009
Stitch counting On/Off	(StS)	015

Functions **with** control panel	Pushbutton
Light barrier On/Off Stitch counting On/Off	Pushbutton 3 Pushbutton 2

When "stitch counting and light barrier function" is set, the number of stitches will be executed first, then the light barrier will be activated.

9.24 Free Seam and Seam with Light Barrier

Functions **with** or **without** control panel		Parameter
Positioning speed	(n1)	110
Upper limit of the maximum speed	(n2)	111
Limited speed according to setting of parameter 142	(n12)	118
Speed n12 inverted/not inverted	(inr)	266
Lower limit of the maximum speed	(n2_)	121
Speed mode Free seam	(SFn)	142

Speed control for the free seam and for the seam with light barrier can be selected by the speed mode.

Parameter 142 = 0 Execution at pedal controlled speed from n1 to n2.

Parameter 142 = 1 Execution at fixed speed n12, when pedal is forward (position >=1).

Parameter 142 = 2 Execution at limited speed n12, when pedal is forward (position >=1)

Parameter 142 = 3 Only for the seam with light barrier:
- Automatic execution at fixed speed as soon as the pedal has been pushed once.
- The seam end is initiated by the light barrier.
- Interruption by heelback (-2) is possible.
- If the light barrier is not on, speed as with parameter setting 142 = 0.

When using a control panel, the maximum speed will be indicated on the display after power on and after thread trimming and can be changed directly with pushbuttons +/- on the control panel. The setting range is limited by the set values of the parameters 111 and 121.

9.25 Light Barrier

Functions **with** or **without** control panel V810	Parameter
Light barrier On/Off	009

Functions **with** control panel V820		Pushbutton
Light barrier covered/uncovered On Light barrier uncovered/covered On Light barrier Off	righthand arrow above pushbutton On lefthand arrow above pushbutton On both arrows Off	Pushbutton 3

The light barrier function on the input of socket B18/5 is active only if parameter value 239 = 0.

9.25.1 Speed after Light Barrier Sensing

Functions **with** or **without** control panel		Parameter
Speed after light barrier sensing	(n5)	114

9.25.2 General Light Barrier Functions

Functions **with** or **without** control panel		Parameter
Light barrier compensating stitches	(LS)	004
Number of light barrier seams	(LSn)	006
Light barrier sensing uncovered/covered	(LSd)	131
Sewing start blocked/unblocked with light barrier uncovered	(LSS)	132
Light barrier seam end with thread trimming On/Off	(LSE)	133
Speed of the light barrier compensating stitches	(PLS)	192

- After sensing the seam end, counting of the compensating stitches at light barrier speed is performed.
- Interruption with pedal in position 0. Cessation with pedal in position -2.
- Disabling of the thread trimming operation by parameter 133, independently of the setting with pushbutton 5 on control panel V820. Stop in the basic position.
- Programming of up to 15 light barrier seams, according to the setting of parameter 006, with stop in the basic position. After the last light barrier seam, a thread trimming operation will be performed.
- Light barrier sensing uncovered or covered at the seam end can be selected with parameter 131 or pushbutton 3 on the control panel.
- Machine start blockage, when light barrier is uncovered, can be programmed with parameter 132.
- Speed selection pedal controlled/n5 during the light barrier compensating stitches with parameter 192.

The light barrier compensating stitches can be programmed and varied with the above parameters directly in the control or on a connected control panel V810/V820.

Moreover, when activating the function, the corresponding value ca be indicated on the display of the control panel V810/V820 for approx. 3 seconds by actuating pushbutton 3, for fast operator information (HIT). During this time the value can be changed immediately with pushbuttons + and -. The display remains the same during set-up.
If the value of the activated function is to be changed, pushbutton 3 must be actuated somewhat longer. The function will thus be disconnected and/or commutated. Subsequently, the function with the respective value is shown on the display again.

When using a control panel V820, direct access by function key (pushbutton 9) is possible!

Functions **with** control panel V820		Parameter
Sewing start blocked with light barrier uncovered On/Off	(-F-)	008 = 3

9.25.3 Reflection Light Barrier LSM002

Sensitivity Adjustment:

Depending on the distance of the light barrier to the reflection area, adjust sensitivity to a minimum.
(Turn potentiometer as far as possible to the left).

- Potentiometer directly on the light barrier module

Mechanical Adjustment:
The orientation is facilitated through a visible light spot on the reflection area.

9.25.4 Automatic Start by Light Barrier

Functions **with** or **without** control panel		Parameter
Delay of automatic start	(ASd)	128
Automatic start on/off	(ALS)	129
Light barrier sensing uncovered	(LSd)	131
Sewing start blocked with light barrier uncovered	(LSS)	132

The function allows the automatic start of sewing as soon as the light barrier has sensed the insertion of fabric.

The following conditions must be met:
- Parameter 009 = 1 (light barrier on).
- Parameter 129 = 1 (automatic start on).
- Parameter 131 = 1 (light barrier sensing uncovered).
- Parameter 132 = 1 (no sewing start, when light barrier uncovered).
- The pedal must remain pressed forward at the seam end.

For safety reasons, this function becomes active only after a normal sewing start in the first seam. The light barrier must be covered, when the pedal is in neutral position; then the pedal can be pushed forward.
This safety function is reset, when the pedal does not remain pushed forward after the end of the seam.

9.25.5 Light Barrier Filter for Knitted Fabrics

Functions **with** or **without** control panel		Parameter
Number of stitches of the light barrier filter	(LSF)	005
Light barrier filter On/Off	(LSF)	130
Light barrier sensing uncovered and/or covered	(LSd)	131

The filter prevents premature triggering of the light barrier function, when sewing knitted fabrics.
- The filter can be switched on or off by parameter 130
- The filter is not active if parameter 005 = 0
- By changing the number of filter stitches the mesh will be adapted
- Knitted fabric sensing will only be activated if the light barrier senses uncovered -> covered, if parameter 131 = 0
- Knitted fabric sensing will only be activated if the light barrier senses covered -> uncovered, if parameter 131 = 1

9.25.6 Functional Variations of the Light Barrier Input

Function	Parameter
Selection of the input function on socket B18/5	239

If the light barrier function is not used, the input on socket B18/5 can be set with a switching function, analogous with the inputs in1...i10.

The following input functions are possible with parameter 239:

239 = 0 **Light barrier function:** The input is prepared for a light barrier function.
239 = 1...31 **All other input functions are identical with those described for parameter 240 below.**

9.26 Switching Functions of the Inputs in1...i10

Function		Parameter
Selection of the input function	(in1...i10)	240...249

The following input functions are possible with parameters 240...249:

240 = 0 **Input function blocked**

240 = 1 **Needle up/down:** When the pushbutton is pressed, the drive runs from position 1 to position 2 and/or from position 2 to position 1. If the drive is outside of the stop position it runs to the next position possible.

240 = 2 **Needle up:** When the pushbutton is pressed, the drive runs from position 1 to position 2.

240 = 3 **Single stitch (basting stitch):** When the pushbutton is pressed, the drive performs one rotation from position 1 to position 1. If the drive is in position 2, it runs to position 1, when the pushbutton is pressed and from position 1 to position 1 each time when the pushbutton is pressed again.

240 = 4 **Full stitch:** When the pushbutton is pressed, the drive performs one entire rotation depending upon the stop position.

240 = 5 **Needle to position 2:** If the drive is outside of position 2 it runs to position 2 when the pushbutton is pressed.

240 = 6 **Machine run blockage effective with open contact:** When the switch is open, the drive stops in the preselected basic position.

240 = 7 **Machine run blockage effective with closed contact:** When the switch is closed, the drive stops in the preselected basic position.

240 = 8 **Machine run blockage effective with open contact (unpositioned):** When the switch is open, the drive stops immediately unpositioned

240 = 9 **Machine run blockage effective with closed contact (unpositioned):** When the switch is closed, the drive stops immediately unpositioned

240 = 10 **Run at automatic speed (n12):** When the pushbutton is pressed, the drive runs at automatic speed. The pedal is not used.

240 = 11 **Run at limited speed (n12):** When the pushbutton is pressed, the drive runs at limited speed. The dal must be pushed forward.

240 = 12 **Sewing foot lifting with pedal in position 0 (neutral)**

240 = 13 **High lift for walking foot operation mode not stored (modes 0...4):** While the pushbutton is pressed down, the signal "high lift for walking foot" is emitted and the drive runs with speed limitation (n10).

240 = 14 **High lift for walking foot operation mode stored/flip-flop 1 (modes 0...4):** When the pushbutton is pressed, the signal "high lift for walking foot" is emitted and the drive runs with speed limitation (n10). When the pushbutton is pressed again, the process is switched off.

240 = 15 **Tape cutter and/or fast scissors (mode 6/7):** When the pushbutton is pressed, the tape cutter is switched on over a preset time.

240 = 16 **Intermediate backtack/intermediate stitch condensing**: When the pushbutton is pressed, the backtack and/or the stitch condensing is switched on anywhere in the seam and at standstill of the drive.

240 = 17 **Stitch regulator suppression/recall**: When the pushbutton is pressed, the backtack and/or stitch condensing process is suppressed or recalled once.

240 = 18 **Unlocking the chain**: When the pushbutton is pressed, reversion is performed at the seam end. Moreover, backtacking and thread trimmer will be suppressed.

240 = 19 **Bobbin thread monitor**: After inserting a full bobbin, the stitch counter is set with parameter 031, when the pushbutton is pressed.

240 = 20 **Handwheel running in the direction of rotation:** When the pushbutton is pressed, the drive runs in the direction of rotation according to the setting of parameter 161.

240 = 21 **Handwheel running in the opposite direction of rotation:** When the pushbutton is pressed, the drive runs in the opposite direction of rotation according to the setting of parameter 161.

240 = 22 **Speed limitation with external potentiometer:** When the pushbutton is pressed, the external speed limitation becomes effective. Parameter 126 must be set at 2.

240 = 23 **External light barrier**

240 = 24/25 No function

240 = 26 **Manual stacker**

240 = 27 **Switching to the next pattern in "Teach in"**

240 = 28 **Switch back to the previous pattern in "Teach in"**

240 = 29 **Seamer signal of** (see parameter 296)

240 = 30 **High lift for walking foot if sewing foot is On**

240 = 31 No function

The input functions of parameters 241...249 are identical with those described for parameter 240.

9.27 Setting Function Keys F1/F2 on Control Panels V810/V820

Functions		Parameter
Selection of the input function on pushbutton (A) "F1" on the control panels V810/V820	(tF1)	293
Selection of the input function on pushbutton (B) "F2" on the control panels V810/V820	(tF2)	294

The following functions are possible with parameters 293 and 294:

293/294 = 0 **Input function blocked**

293/294 = 1 **Needle up/down:** When the pushbutton is pressed, the drive runs from position 1 to position 2 and/or from position 2 to position 1. If the drive is outside of the stop position it runs to the next position possible.

293/294 = 2 **Needle up:** When the pushbutton is pressed, the drive runs from position 1 to position 2.

293/294 = 3 **Single stitch (basting stitch):** When the pushbutton is pressed, the drive performs one rotation from position 1 to position 1. If the drive is in position 2, it runs to position 1 when the pushbutton is pressed, and from position 1 to position 1 each time when the pushbutton is pressed again.

293/294 = 4 **Full stitch:** When the pushbutton is pressed, the drive performs one entire rotation depending upon the stop position.

293/294 = 5 **Needle to position 2:** If the drive is outside of position 2 it runs to position 2 when pressing the pushbutton.

293/294 = 6...12 No function

293/294 = 13 **High lift for walking foot operation mode not stored:** While the pushbutton is pressed down, the signal "high lift for walking foot" is emitted and the drive runs with speed limitation (n10).

293/294 = 14 **High lift for walking foot operation mode stored/flip-flop 1:** When the pushbutton is pressed, the signal "high lift for walking foot" is emitted and the drive runs with speed limitation (n10). When the pushbutton is pressed again, the process is switched off.

293/294 = 15 **Tape cutter and/or fast scissors (mode 6/7):** When the pushbutton is pressed, the tape cutter is switched on over a preset time.

293/294 = 16 **Intermediate backtack/intermediate stitch condensing:** When the pushbutton is pressed, the backtack is switched on anywhere in the seam and at standstill of the drive.

293/294 = 17 **Stitch regulator suppression/recall**: When the pushbutton is pressed, the backtack is suppressed or recalled once.

293/294 = 18 No function

293/294 = 19 Reset bobbin thread monitor, if parameter 030 = >0

293/294 = 20...29 No function

9.28 Functioning of Handwheel When Pressing a Pushbutton

Functions **with** or **without** control panel		Parameter
Number of handwheel increments carried out when the pushbutton is pressed once	(ihr)	260
Speed for the handwheel	(nhr)	261
Delay time until the pushbutton is pressed down causing the handwheel to rotate continuously	(ihP)	262

The handwheel can be set in motion by pressing a pushbutton. Select the pushbutton with parameters 240...249.

240...249 = 20 Direction of rotation of the handwheel according to setting of parameter 161.

240...249 = 21 Direction of rotation of the handwheel opposite to that set by parameter 161.

Parameter 260 Selection of the number of increments which are to be performed after pressing a pushbutton.

Parameter 261 Setting the speed for the handwheel.

Parameter 262 Setting the delay time. When keeping the pushbutton pressed down, the handwheel rotates slowly increment by increment. After the delay time the speed switches to the one set with parameter 261.

9.29 Speed Limitation with External Potentiometer

Functions **with** or **without** control panel		Parameter
Speed limitation with external potentiometer (maximum value)	(toP)	124
Speed limitation with external potentiometer (minimum value)	(bot)	125
Function speed limitation with external potentiometer	(Pot)	126

A speed limitation can be set with parameters 124 and 125 using the external potentiometer which can be connected to sockets ST2/2, ST2/3 and ST2/4.

Parameter 124: Maximum value for speed limitation with external potentiometer
Parameter 125: Minimum value for speed limitation with external potentiometer

The following functions for speed limitation are possible with parameter 126:

Parameter 126 = 0: Function external potentiometer Off.

Parameter 126 = 1: The external potentiometer is active whenever the pedal is pressed forward. The drive always runs with the set speed limitation.

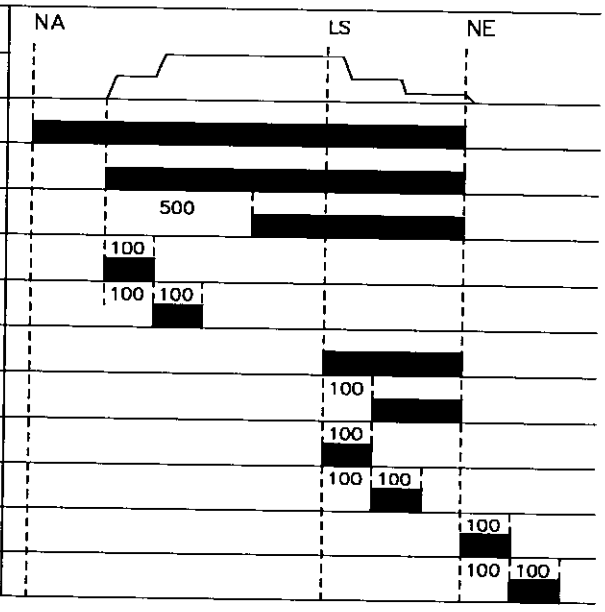
Parameter 126 = 2: The external potentiometer is only active if an input has been set at "22" with parameters 240...249. If the selected input is switched on and the pedal pressed forward, the drive runs at limited speed. The speed limitation can be switched on and off with the pushbutton anywhere in the seam.

9.30 Signals A1 and A2

Functions **with** control panel V820		Pushbutton
Signal A1 On	left arrow above pushbutton On	Pushbutton 8
Signal A2 On	right arrow above pushbutton On	
Signals A1 and A2 On	both arrows above pushbutton On	
Signals A1 and A2 Off	both arrows above pushbutton Off	

Signals A1 and A2 can be assigned to a seam with pushbutton 8 on control panel V820 (insertable strips 6, 8 or 9). The following parameters determine the moment in which the signals are assigned in the seam and how long these signals are active. The example below illustrates the various possibilities (with parameter 320 = 0).

A1	Pa.301	Pa.302	Pa.303	Pa.304	Pa.305
A2	Pa.311	Pa.312	Pa.313	Pa.314	Pa.315
	0	0	0	0	0
	0	0	1	0	0
	0	0	1	500ms	0
	1	0	0	0	100ms
	1	0	1	100ms	100ms
	0	1	0	0	0
	0	1	1	100ms	0
	1	1	0	0	100ms
	1	1	1	100ms	100ms
	1	2	0	0	100ms
	1	2	1	100ms	100ms



0267/BILD1

Different power transistors can be selected with **parameter 300** for signal A1 and **parameter 310** for signal A2.

Parameter 300/310 =0 = No function
1 = Signal A1/A2 at output M1
2 = Signal A1/A2 at output M2
3 = Signal A1/A2 at output M3
4 = Signal A1/A2 at output M4
5 = Signal A1/A2 at output M5
6 = Signal A1/A2 at output M6
7 = Signal A1/A2 at output M7
8 = Signal A1/A2 at output M8
9 = Signal A1/A2 at output M9
10 = Signal A1/A2 at output M10
11 = Signal A1/A2 at output M11
12 = Signal A1/A2 at output VR

It is possible to select with **parameter 301** for signal A1 and **parameter 311** for signal A2 whether the signals shall be switched on until the seam end or for a programmable time.

Parameter 301/311 **0** = Signals A1/A2 are active until seam end
1 = Signals A1/A2 are effective for a programmable time

It is possible to select with **parameter 302** for signal A1 and **parameter 312** for signal A2 whether the signals shall be effective at the start of the seam, after light barrier sensing or at the seam end.

Parameter 302/312 **0** = Signals A1/A2 start at the beginning of the seam
1 = Signals A1/A2 start after light barrier sensing
2 = Signals A1/A2 start at the seam end

It is possible to select with **parameter 303** for signal A1 and **parameter 313** for signal A2 whether the signals shall be activated with or without delay.

Parameter 303/313 **0** = Signals A1/A2 are activated without delay time
1 = Signals A1/A2 are activated with delay time

The delay times can be selected separately for signal A1 with **parameter 304** and for signal A2 with **parameter 314.**

The operating times can be selected separately for signal A1 with **parameter 305** and for signal A2 with **parameter 315.**

The speed modes can be selected separately for signal A1 with **parameter 306** and for signal A2 with **parameter 316.** The speed limitation is effective only when the respective signal is on.

Parameter 306/316 **0** = Pedal controlled speed
1 = Limited to speed n9 (parameter 288) during signal emission
2 = Limited to speed n11 (parameter 289) during signal emission

The switch-off moment can be set with **parameter 320** for signals A1 and A2.

Parameter 320 **0** = Signals are effective until seam end
1 = Signals are effective until pedal position 0 (neutral)

9.31 Audible Signal

Functions **with** or **without** control panel		Parameter
Audible signal On/Off	(AkS)	127

An audible signal, which is emitted for the following functions, can be switched on with parameter 127:

- When the bobbin thread monitor is active, after stitch counting
- When the machine run blockage (safety switch) is activated

9.32 Signal "Machine Running"

Functions **with** or **without** control panel		Parameter
Mode "machine running"	(LSG)	155
Switch-off delay for signal "machine running"	(t05)	156

155 = 0 Signal "machine running" Off
155 = 1 Signal "machine running" will always be emitted, when the drive is running
155 = 2 Signal "machine running" will always be emitted, when the speed is higher than 3000 RPM
155 = 3 Signal "machine running" will always be emitted, when the pedal is not in position 0 (neutral)

The switch-off time of the signal can be delayed with parameter 156.

9.33 Signal Output Position 1

- Transistor output with open collector
- Switches whenever the needle is in the slot between position 1 and 1A
- Independent of sewing, thus also when turning the handwheel manually
- Suitable e.g. for the connection of a counter
- An inverted signal is emitted on socket ST2/20

9.34 Signal Output Position 2

- Transistor output with open collector
- Switches whenever the needle is in the slot between position 2 and 2A
- Independent of sewing, thus also when turning the handwheel manually
- Suitable e.g. for the connection of a counter
- An inverted signal is emitted on socket ST2/21

9.35 Signal Output - 512 Impulses/Rotation

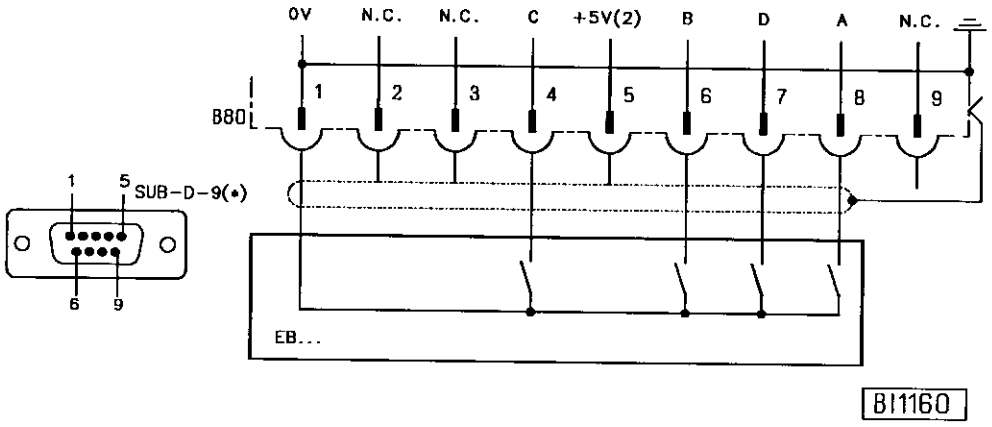
- Transistor output with open collector
- Switches whenever a generator slot of the position transmitter is sensed
- 512 impulses per rotation of the handwheel
- Independent of sewing, thus also when turning the handwheel manually
- Suitable e.g. for the connection of a counter
- An inverted signal is emitted on socket ST2/22

9.36 Actuator

With the help of the actuator connected with the pedal on the socket B80 the commands for the sewing operation are inputted. Instead of the built-in actuator another external actuator can be connected to socket B80.

Table: Coding of the pedal steps

Pedal step:	D	C	B	A		
-2	H	H	L	L	Full heelback	(e. g. initiating the seam end)
-1	H	H	H	L	Slight heelback	(e. g. sewing foot lifting)
0	H	H	H	H	Pedal in pos. 0 (neutral)	
½	H	H	L	H	Pedal slightly forward	(e. g. sewing foot lowering)
1	H	L	L	H	Speed stage 1	(n1)
2	H	L	L	L	.	
3	H	L	H	L	.	
4	H	L	H	H	.	
5	L	L	H	H	.	
6	L	L	H	L	.	
7	L	L	L	L	.	
8	L	L	L	H	.	
9	L	H	L	H	.	
10	L	H	L	L	.	
11	L	H	H	L	.	
12	L	H	H	H	Pedal fully forward / speed stage 12 (n2)	



EB... Actuator

2) Nominal voltage 5V, I_{max} = 20mA

Function **with** or **without** control panel		Parameter
Selectable pedal functions	(-Pd)	019

- 019 = 0 Pedal in pos. -1 blocked in the seam. With pedal in pos. -2, however, sewing foot lifting in the seam is possible
- 019 = 1 With pedal in pos. -1, sewing foot lifting in the seam is blocked
- 019 = 2 With pedal in pos. -2, thread trimming is blocked
- 019 = 3 With pedal in pos. -1 and -2, all functions are activated

Function **with** or **without** control panel		Parameter
Speed stage graduation	(nSt)	119

The characteristic curves of the pedal (speed change from stage to stage) can be adjusted by this parameter.

Possible characteristic curves:
- linear
- progressive
- highly progressive

10. Signal Test

Functions **with** or **without** control panel		Parameter
Test of inputs and outputs	(SR4)	173

Function test of the external inputs and the transistor power outputs with the actuators connected to them (e.g. solenoids and solenoid valves).

10.1 Signal Test Using the Incorporated Control Panel or V810 and/or V820

Output test:

- Address parameter 173
- Select the desired output with the +/- **pushbuttons**
- Actuate the selected output with **pushbutton > >** on the control panel V810 or on the incorporated control panel
- Actuate the selected output with **pushbutton B** (bottom right) on the control panel V820

Pushbutton	Output	
ON/OFF	Input test	
01	Backtacking	on socket ST2/34
02	Sewing foot lifting	on socket ST2/35
03	Output M1	on socket ST2/37
04	Output M3	on socket ST2/27
05	Output M2	on socket ST2/28
06	Output M4	on socket ST2/36
07	Output M5	on socket ST2/32
08	Output M11	on socket ST2/31
09	Output M6	on socket ST2/30
10	Output M9	on socket ST2/25
11	Output M8	on socket ST2/24
12	Output M7	on socket ST2/23
13	Output M10	on socket ST2/29

Input test:

- Press the (-) pushbutton several times until "OFF" or "ON" appears on the control display.
- Actuation of the external switches on the inputs in1...i10 or pushbuttons will be indicated by alternating the switching state (ON/OFF) on the display.
- Several switches must not be closed at the same time.

The abbreviations in parentheses ( ) are visible only if a control panel V820 is connected!

11. Error Messages

General Information			
On the control	**On the V810**	**On the V820**	**Signification**
A1	InF A1	InF A1	Pedal not in neutral position, when switching the machine on
A2	-StoP- blinking + displayed symbol	-StoP- blinking + displayed symbol	Machine run blockage
A3	InF A3	InF A3	Reference position is not set
A7	Symbol blinking	Symbol blinking	Bobbin thread monitor

Programming Functions and Values (Parameters)			
On the control	**On the V810**	**On the V820**	**Signification**
Returns to 000 and/or to the last parameter number	Returns to 0000 and/or to the last parameter number	Like with V810 InF F1 is displayed	Wrong code number or parameter number input

Serious Situation			
On the control	**On the V810**	**On the V820**	**Signification**
E1	InF E1	InF E1	After power On, position transmitter or commutation transmitter defective or connecting cables have been changed by mistake. During machine run or after a sewing operation, only position transmitter defects can be identified.
E2	InF E2	InF E2	Line voltage too low, or time between power off and power on too short
E3	InF E3	InF E3	Machine locks or does not reach the desired speed
E4	InF E4	InF E4	Control disturbed by deficient grounding or loose contact

Hardware Disturbance			
On the control	**On the V810**	**On the V820**	**Signification**
H1 converter	InF H1	InF H1	Commutation transmitter cord or frequency disturbed
H2	InF H2	InF H2	Processor disturbed

12. Operating Elements and Socket Connectors

12.1 Position of the Operating Elements and Indicators

S1 Pushbutton **P**
- Recall or exit programming mode

S2 Pushbutton **E**
- Start backtack single / double / off
- Enter button for modifications in the programming mode

S3 Pushbutton +
- End backtack single / double / off
- Increase of the value indicated in the programming mode

S4 Pushbutton -
- Automatic sewing foot lifting at stop in the seam On/Off
- Automatic sewing foot lifting after thread trimming On/Off
- Decrease of the value indicated in the programming mode

S5 Pushbutton > >
- Basic position 1 or 2
- Im Programmiermodus als Shift-Taste

LED1 Indicator for single start backtack

LED2 Indicator for double start backtack

LED3 Indicator for single end backtack

LED4 Indicator for double end backtack

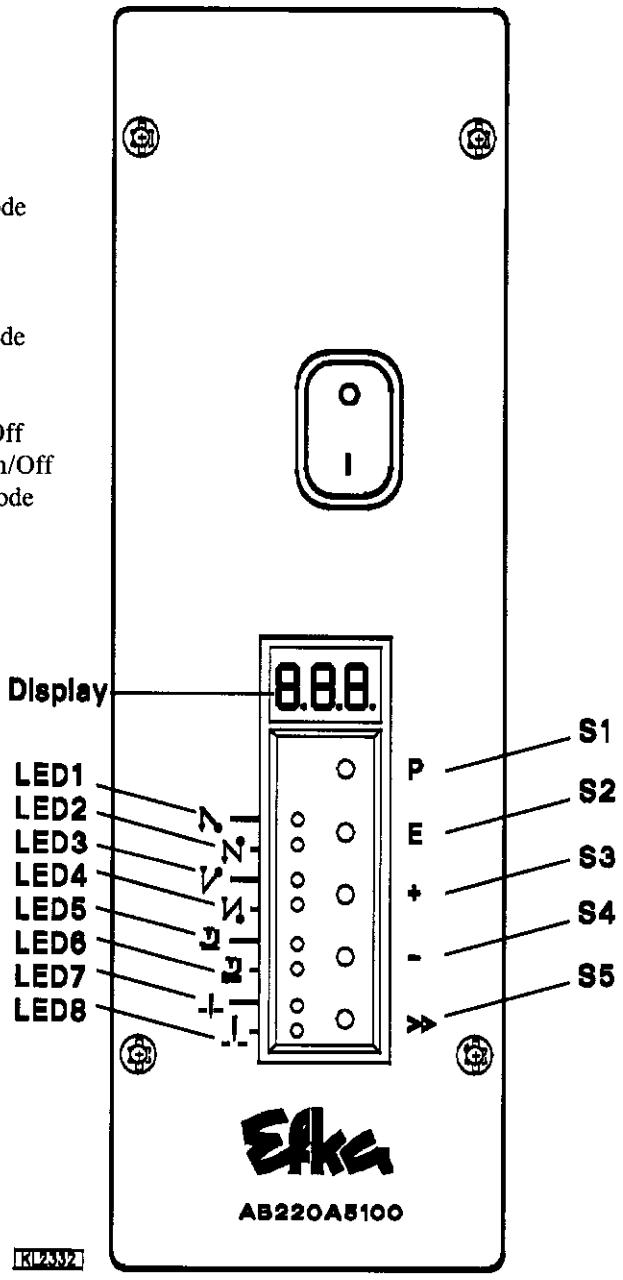
LED5 Indicator for automatic sewing foot lifting at stop in the seam

LED6 Indicator for automatic sewing foot lifting after the trimming operation

LED7 Indicator for basic position "needle position 1"

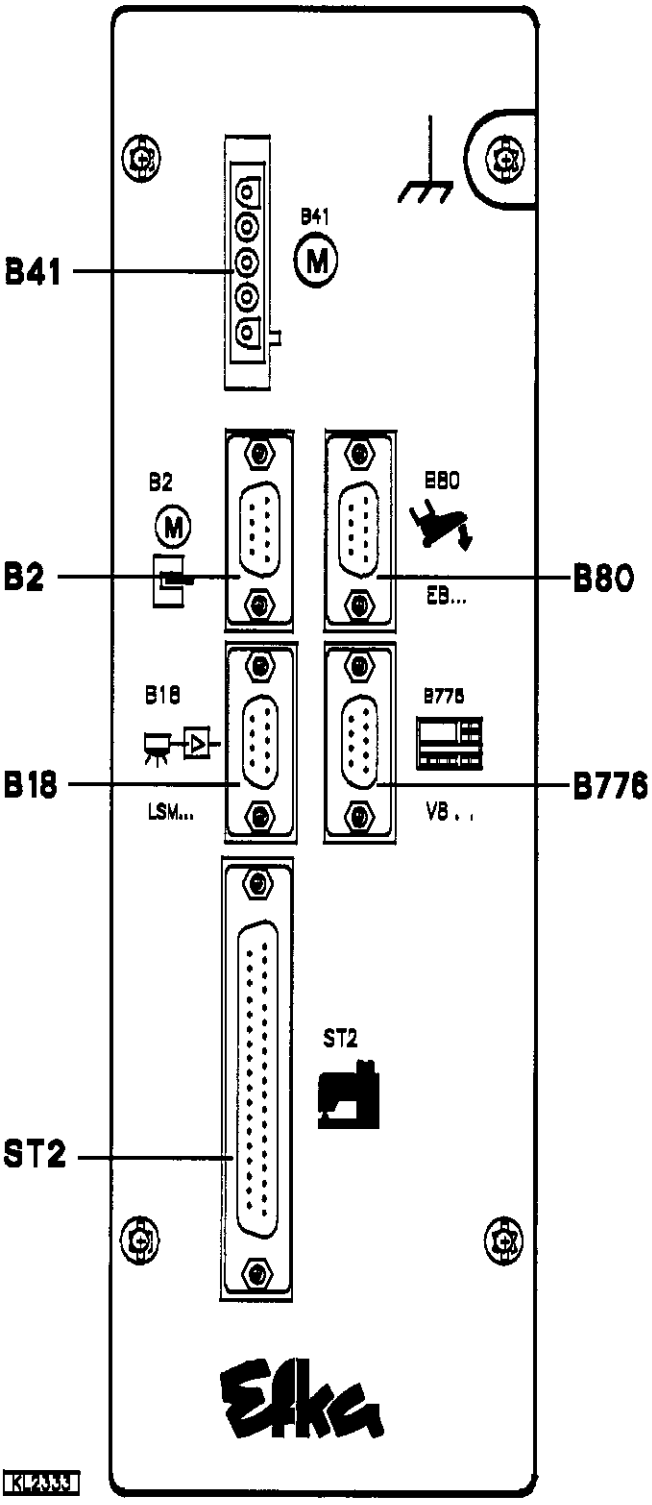
LED8 Indicator for basic position "needle position 2"

Display 3 digits



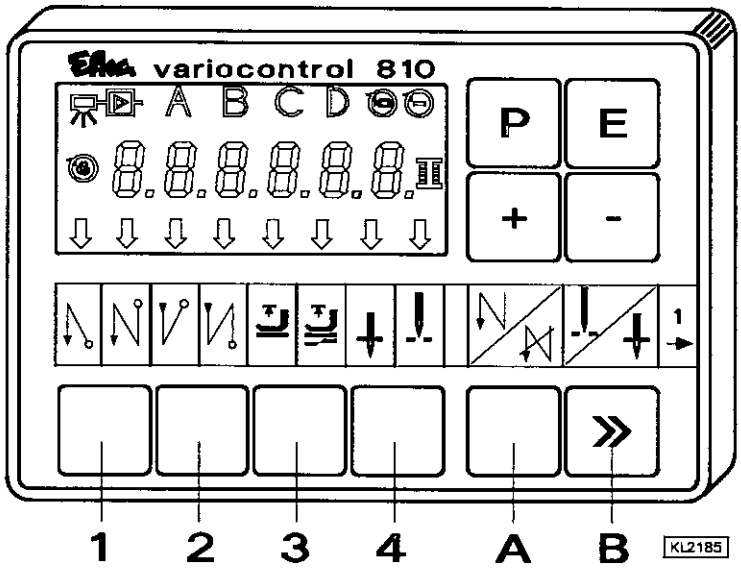
12.2 Position of the Socket Connectors

B2	Sensors for Positions
B18	Light barrier module
B80	Actuator
B776	Control panel
ST1	Socket for motor power supply
ST2	Inputs and outputs for solenoids / solenoid valves / dsiplays / pushbuttons and switches



For your notes:

13. Operating Elements of the Control Panel V810

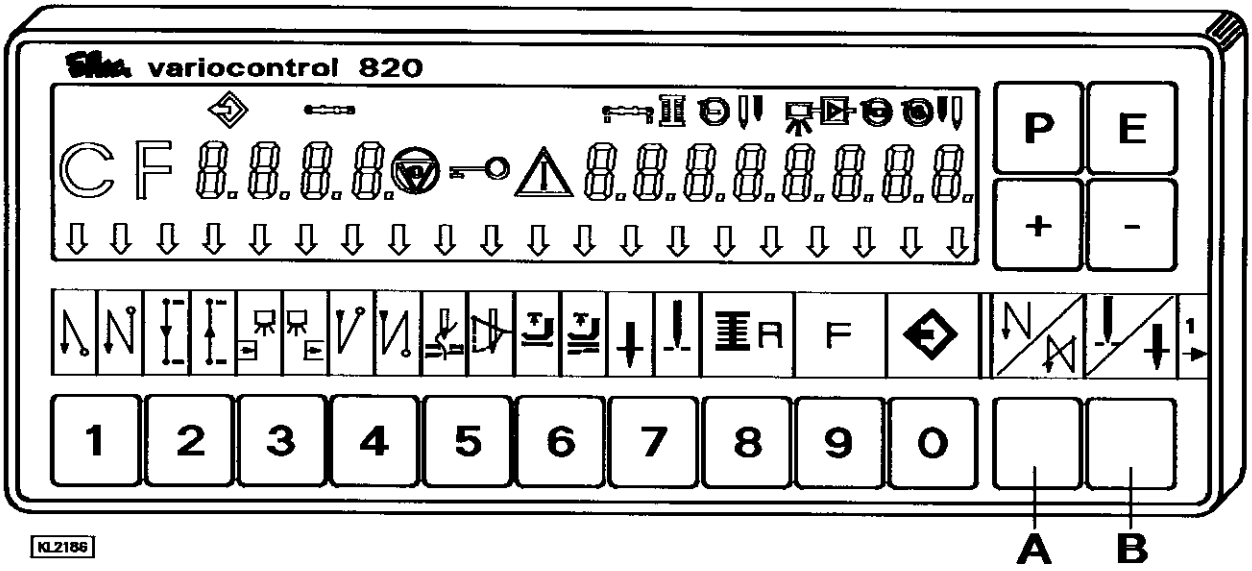


The control panel V810 is supplied with the insertable strip **no. 1** above the pushbuttons. For different functions, this strip can be replaced by another one supplied with the control panel. Change parameter 291 in this case. See also instruction manual **V810 / V820**!

Functional Setting of the Pushbuttons

Pushbutton P =	Recall or exit of programming mode
Pushbutton E =	Enter button for modifications in the programming mode
Pushbutton + =	Increase of the value indicated in the programming mode
Pushbutton - =	Decrease of the value indicated in the programming mode
Pushbutton 1 =	Start backtack SINGLE / DOUBLE / OFF
Pushbutton 2 =	End backtack SINGLE / DOUBLE / OFF
Pushbutton 3 =	Automatic foot lifting after thread trimming ON / OFF Automatic foot lifting at stop in the seam ON / OFF
Pushbutton 4 =	Basic position of the needle (bottom/upper dead center) POSITION 1 / POSITION 2
Pushbutton A =	Pushbutton for intermediate backtack (pushbutton A can be set with various input functions by using parameter 293)
Pushbutton B =	Pushbutton for needle up/down (pushbutton B can be set with various input functions by using parameter 294). Moreover, pushbutton B can be used as shift button in the programming mode.

14. Operating Elements of the Control Panel V820



The control panel V810 is supplied with the insertable strip **no. 1** above the pushbuttons. For different functions, this strip can be replaced by another one supplied with the control panel. Change parameter 291 in this case. See also instruction manual **V810 / V820**!

Functional Setting of the Pushbuttons

Pushbutton P = Recall or exit of programming mode
Pushbutton E = Enter button for modifications in the programming mode
Pushbutton + = Increase of the value indicated in the programming mode
Pushbutton - = Decrease of the value indicated in the programming mode
Pushbutton 1 = Start backtack SINGLE / DOUBLE / OFF
Pushbutton 2 = Stitch counting seam FORWARD / BACKWARD / OFF
Pushbutton 3 = Light barrier function COVERED-UNCOVERED / UNCOVERED-COVERED / OFF
Pushbutton 4 = End backtack SINGLE / DOUBLE / OFF
Pushbutton 5 = THREAD TRIMMER / THREAD TRIMMER + THREAD WIPER / OFF
Pushbutton 6 = Automatic foot lift after thread trimming ON / OFF
Automatic foot lifting at stop in the seam ON / OFF
Pushbutton 7 = Basic position of the needle (bottom/upper dead center)
POSITION 1 / POSITION 2
Pushbutton 8 = Reset for bobbin thread monitor
Pushbutton 9 = Function key - can be programmed
Pushbutton 0 = Teach-in / execution of 40 possible seam sections

Pushbutton A = Pushbutton for intermediate backtack (pushbutton A can be set with various input functions by using parameter 293)
Pushbutton B = Pushbutton for needle up/down (pushbutton B can be set with various input functions by using parameter 294). Moreover, pushbutton B can be used as shift button in the programming mode.

Special Setting of the Pushbuttons for HIT

The following can be changed by pushbuttons +/- after pressing pushbuttons 1, 3, 4 or 9:

Pushbutton 1 = Number of stitches of the selected start backtack
Pushbutton 2 = Number of stitches of the seam with stitch counting
Pushbutton 3 = Number of light barrier compensating stitches
Pushbutton 4 = Number of stitches of the selected end backtack
Pushbutton 9 = Number of stitches or switching the programmed function on/off

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