Efka variostop

CONTROL

1F82AV2306

with control panel V810/V820

INSTRUCTION MANUAL

WITH PARAMETER LIST

No. 402241 english

Efka
FRANKL & KIRCHNER
GMBH & CO KG

Efka
EFKA OF AMERICA INC.

Efka
EFKA ELECTRONIC MOTORS
SINGAPORE PTE. LTD.

Contents Page

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 machines of various manufacturers.

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/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	Induction motor with electromagnetic clutch	V....
1	Control	variostop 1F82AV2306
	- Power pack	N30
1	9-pole/25-pole adapter (screw-connected with the control)	no. 0504539
1	Position transmitter	P5-2
1	Set of standard accessories	B10
	consisting of:	belt guard, complete (for pulleys up to 132 mm ϕ) set of hardware motor mounting foot bracket 1 and 2, short documentation
1	Set of accessories	Z1
	consisting of	pitman rod, complete 10-pin plug (Mes100)
1	Pulley	

Note:

For this control, the control panels V810/V20 are provided.
The control panels V720...V740 no longer function on this control.

3.1 Special Accessories

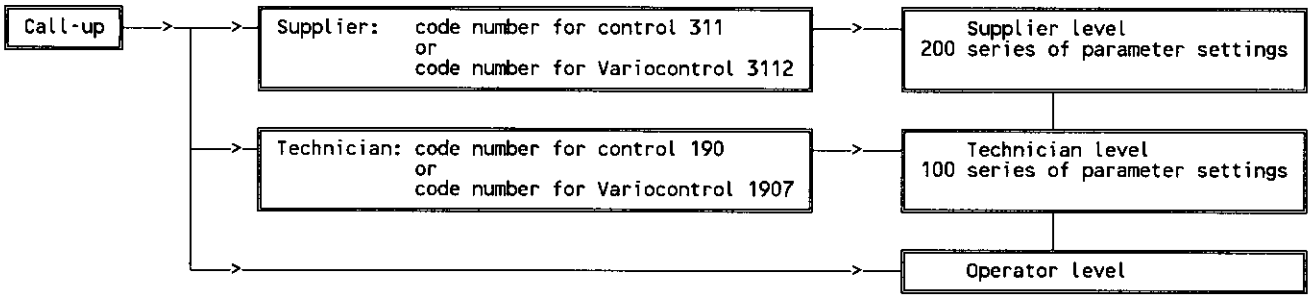
Control panel Variocontrol V810	- part no. 5970153
Control panel Variocontrol V820	- part no. 5970154
Belt guard (for pulleys up to 180 mm ϕ)	- part no. 7960012
Storage unit Memory Box MB001	- part no. 7900052
Storage card Memory Card MC001	- part no. 1111602
Reflection light barrier module LSM001A	- part no. 6100028
Solenoid type EM1..(for e.g. presser foot lift, backtacking, etc.)	- available versions see specification "solenoids"
Adapter cord for the connection to JUKI high-speed seamer with index -1...-6 (large Molex plugs)	- part no. 1112298
Adapter cord for the connection to JUKI high-speed seamer with index -7 (Molex Minifit)	- part no. 1112367
Adapter cord for the connection to BROTHER cl. 737-913 without presser foot lifting	- part no. 1100182
Adapter cord for the connection to BROTHER cl. 737 (setting as Brother Mark II)	- part no. 1112310
Adapter cord for the connection to DAEWOO	- part no. 1112311
Adapter cord for the connection to MITSUBISHI DY-359	- part no. 1112306
Adapter cord for the connection to AISIN high-speed seamer AD320, 340, 345, 3310, overlock EK1 and to TOYOTA LS2-AD158-203	- part no. 1112476
Extension cable for external actuator, approx. 750 mm long, complete with plug and socket connector	- part no. 1111845
Extension cable for external actuator, approx. 1500 mm long, complete with plug and socket connector	- part no. 1111787
5-pin plug with locking screw for the connection of another external actuator	- part no. 0501278
External actuator type EB301 with approx. 250 mm connecting cable and 5-pin plug with locking screw	- part no. 41.0011
External actuator type EB302 (softer spring) approx. 250 mm connecting cable and 5-pin plug with locking screw	- part no. 41.0012
Foot control type FB301 with one pedal for standing operation with approx. 1400 mm connecting cable and plug	- part no. 4170013
Foot control type FB302 with three pedals for standing operation with approx. 1400 mm connecting cable and plug	- part no. 4170018
Potential equalization cord 700 mm long, LIY 2.5 mm², grey, with forked cable brackets on both sides	- part no. 1100313
Fitting piece for position transmitter	- part no. 0300019
Extension cable for position transmitter P5-.., approx. 1100 mm long, complete with plug and socket connector	- part no. 1111584
Extension cable for position transmitter P5-.., approx. 315 mm long, complete with plug and socket connector	- part no. 1111229
Knee switch type KN3 (pushbutton) with cord of approx. 950 mm length without plug	- part no. 58.0013
Sewing light transformer	- please indicate line voltage and sewing light voltage (6.3V or 12V)
3-pin plug with locking screw (Hirschmann MAS 3100) B12	- part no. 0500402
7-pin plug with locking screw (Hirschmann MAS 7100S) B18	- part no. 0502474
10-pin plug (Hirschmann MES 100) B3	- part no. 0500357

4. Operating the Control

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.

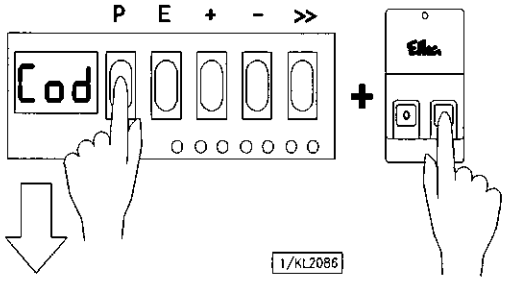
The following persons have access:
- the supplier to the highest and all subordinate levels by a code number
- the technician to the next lower and all subordinate levels by a code number
- the operator to the lowest level without code number



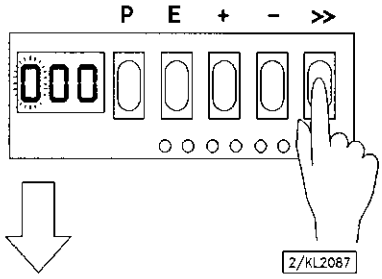
4.2 Programming the Code Number

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.

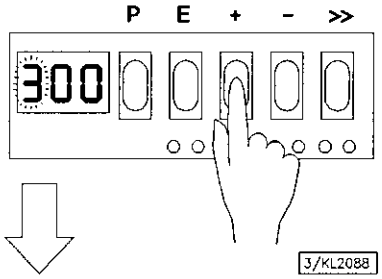
1. Press pushbutton **P** and turn power on



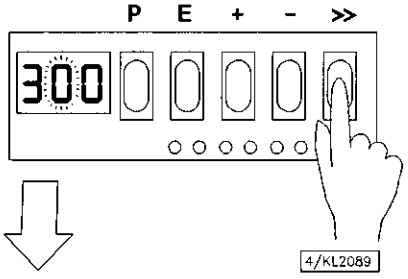
2. Press pushbutton > > (first digit blinks)



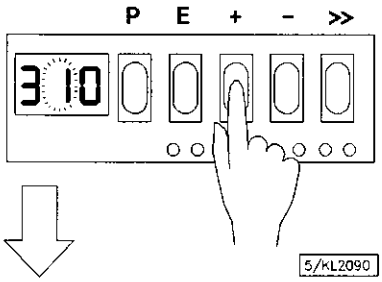
3. Press pushbutton + and/or - to select the first digit
Technician level = = > Code no. 190
Supplier level = = > Code no. 311



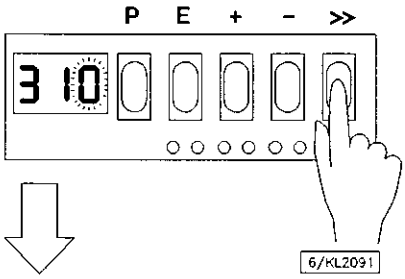
4. Press pushbutton > > (second digit blinks)



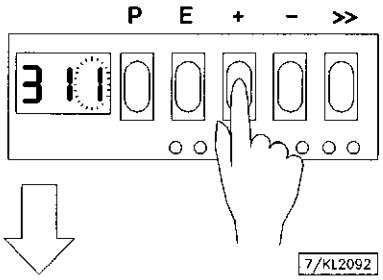
5. Press pushbutton + and/or - to select the second digit



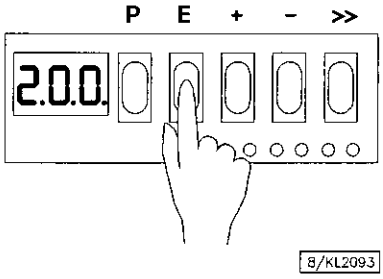
6. Press pushbutton > > (third digit blinks)



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



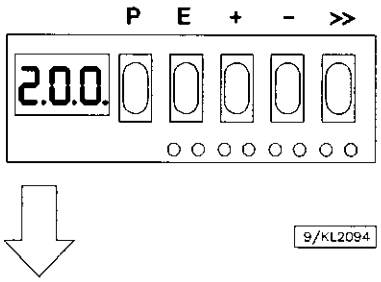
8. Press pushbutton E; the parameter number is displayed, which is indicated by points between the digits.



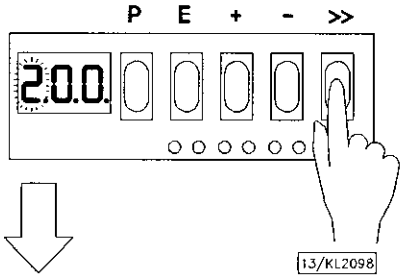
4.3 Selection of the Parameters

4.3.1 Direct Selection

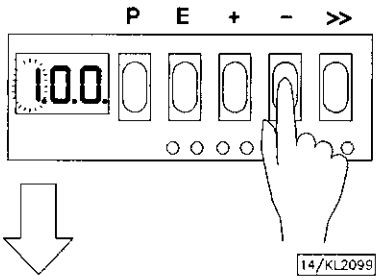
1. After inputting the code number on the programming level



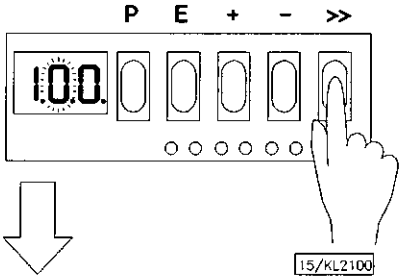
2. Press pushbutton > > (first digit blinks)



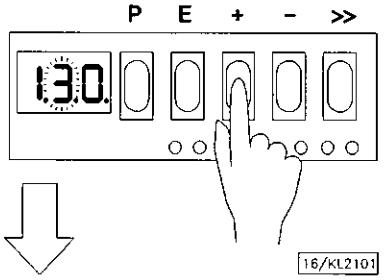
3. Press pushbutton + and/or - to select the first digit



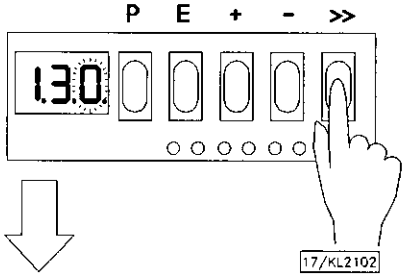
4. Press pushbutton > > (second digit blinks)



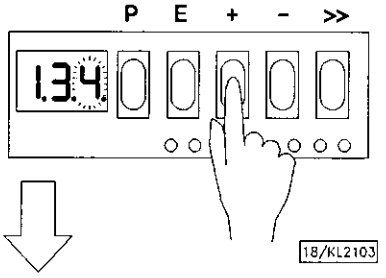
5. Press pushbutton + and/or - to select the second digit



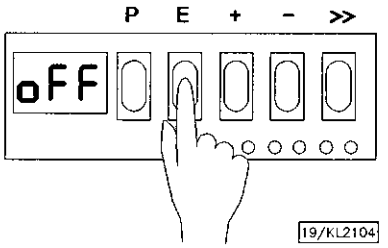
6. Press pushbutton > > (third digit blinks)



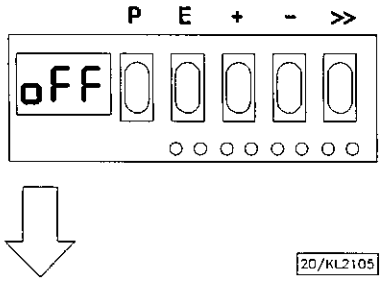
7. Press pushbutton + and/or - to select the third digit



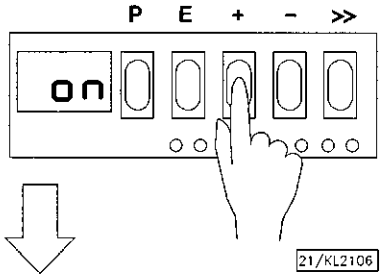
8. Press pushbutton E; parameter value is displayed. There are no points between the digits.



4.3.2 Changing Parameter Values



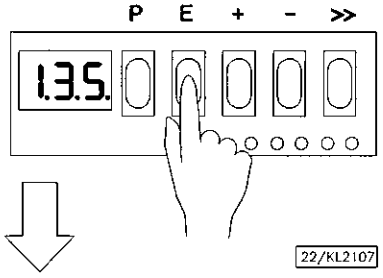
Display after selecting the parameter value



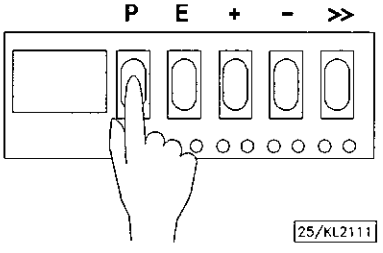
Change parameter value by pressing pushbutton + and/or -

Possibility n° 1:

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

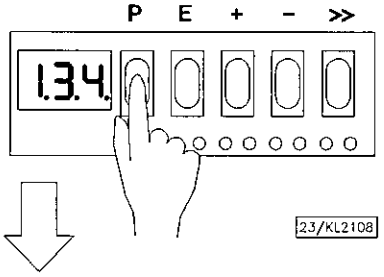


Press pushbutton **P**. Exit programming. The changed parameter values will only be saved by starting to sew again!

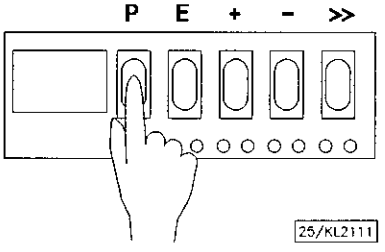


Possibility n° 2:

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

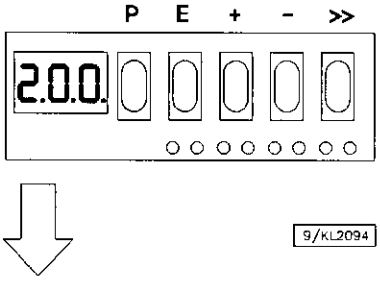


Press pushbutton **P**. Exit programming. The changed parameter values will only be saved by starting to sew again!

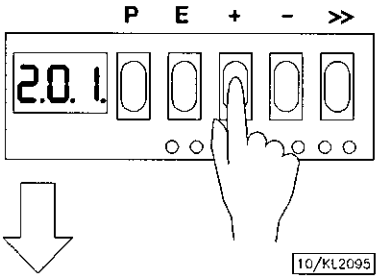


4.3.3 Selection by Using the +/- Pushbuttons

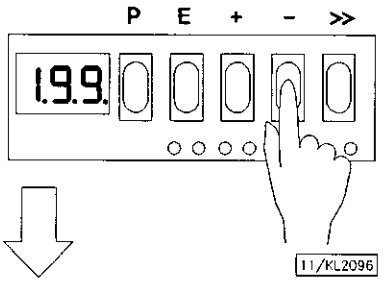
1. After inputting the code number on the programming level



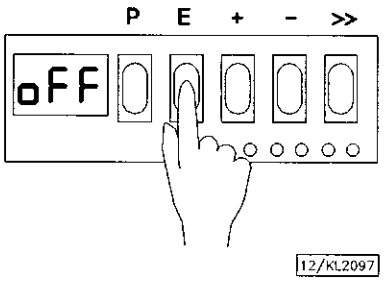
2. Select the next parameter by pressing the + pushbutton



3. Select previous parameter by pressing the - pushbutton



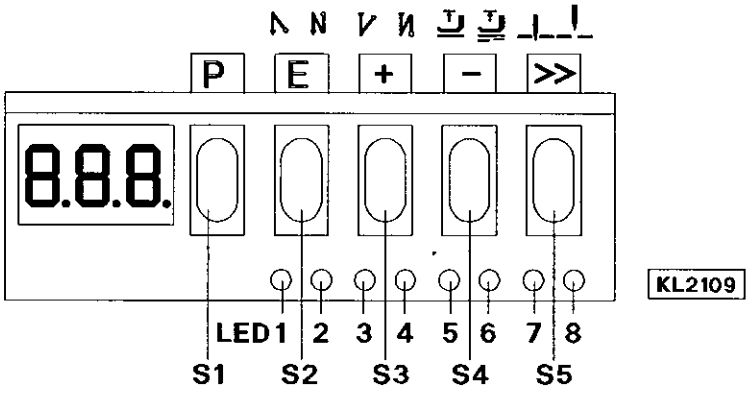
4. After pressing pushbutton E, the parameter value is displayed



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

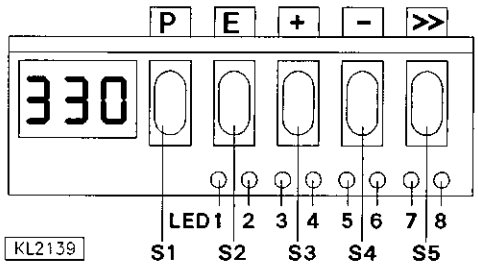
Function	Pushbutton	LED number	
Single start backtack	**E** (S2)	1 = on	2 = off
Double start backtack	**E**	1 = off	2 = on
Start backtack off	**E**	1 = off	2 = off
Single end backtack	+ (S3)	3 = on	4 = off
Double end backtack	+	3 = off	4 = on
End backtack off	+	3 = off	4 = off
Presser foot lifting at stop in the seam (automatic)	- (S4)	5 = on	6 = off
Presser foot lifting at the seam end (automatic)	-	5 = off	6 = on
Presser foot lifting at stop in the seam and at the seam end (automatic)	-	5 = on	6 = on
Presser 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 pushbuttons +/- on the control during machine run or during intermediate 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.

Example:

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



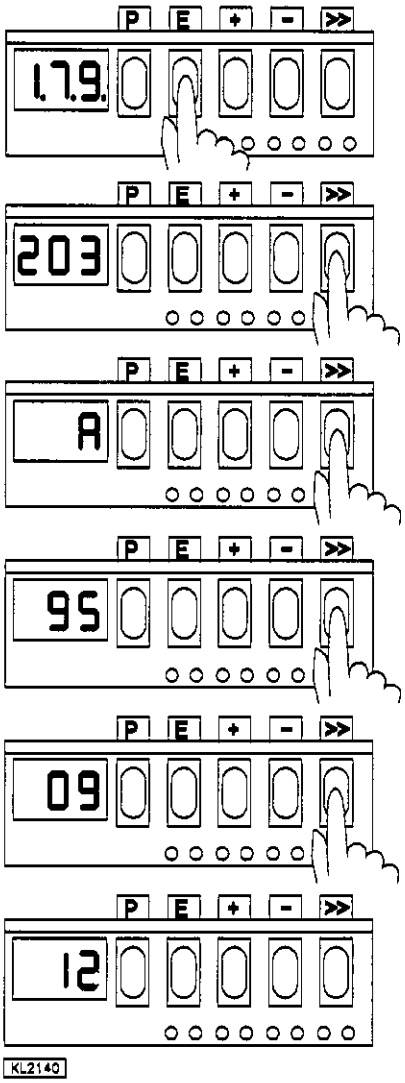
4.7 Program Identification on the Control

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:

- Select parameter 179 and press pushbutton E!
- On the display the program number (2203) is shortened by one digit! Continue by pressing pushbutton > > !
- The display shows the modification index (A) of the program! Continue by pressing pushbutton > > !
- Identification number digit 1 and 2! Continue by pressing pushbutton > > !
- Identification number digit 3 and 4! Continue by pressing pushbutton > > !
- Identification number digit 5 and 6!



The routine is exited by pressing pushbutton P twice. The drive is again ready for sewing. When pressing pushbutton E, the routine is as well exited, and the next parameter number is displayed.

5. Operating the Control with V810/V820

5.1 Direct Operation

By pushing the numeral buttons and some symbol buttons on the control panel V810/V820 it is possible to switch functions on or off, **e.g. start backtack**.

- Double start backtack is on	right arrow above pushbutton 1 on	↓ 1
Push button 1 briefly - Start backtack is off	both arrows are off	1
Push button 1 briefly - Single start backtack is on	left arrow on	↓ 1

5.2 Operating the Control Panel V810

5.2.1 Code Number Input on the 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

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

Example: If CODE number has not been input !

■		TURN POWER ON!	==>	X X 8 2 X X
■	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	The parameter value is displayed	==>	O F F
■	+	The changed parameter value is displayed	==>	O N
■	E	The next parameter is displayed	==>	F - 0 1 3
	or			
■	P	Exit programming	==>	X X 8 2 X X

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!

5.2.3 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; the 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 2 x ! Exit programming ==> X X 8 2 X X

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

5.3 Operating the Control Panel V820

5.3.1 Code Number Input on the 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 InFo F1
- [E] If CODE number is correct the first PARAMETER number at the selected level is displayed ! ==> F-100

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

Example: If CODE number has not been input !

- TURN POWER ON! ==> 4000 XX82XX
- [P] Display shows no reading! ==>
- [E] First parameter at the operator level is displayed; PARAMETER number is not displayed ==> Arv 003
- [+] [-] Change parameter value! ==> Arv XXX

- [E] Parameter value is entered; display advances to the next parameter ==> Arr 003

or

- [P] Exit programming ==> 4000 XX82XX

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

5.3.3 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] Gewünschte PARAMETER-Nummer eingeben! ==> F-110
- [E] If parameter number is wrong repeat input! ==> F-XXX InFo 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 2 x ! Exit programming ==> 4000 XX82XX

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

5.4 Program Identification

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

Display example parameter 179 on the control panel V810:

Select parameter 179 ! The display shows:

- [E] Display of program no. 2305 and index A ==> [2 3 0 5 A]
- [»] Display of identification number ==> [9 8 0 1 1 4]

Display example parameter 179 on the control panel V820:

The display of control panel V820 shows the program number shortened by one digit with index on the left and an 8-digit identification number on the right.

Select parameter 179 ! The display shows:

Program no.: 2305 / index: A (the most significant digit is not displayed) = = > [305A 98011408] < = = **identification number: 98011408**

5.5 Maximum Speed Limitation by Direct Input (DED)

```
Upper limit of the maximum speed (nmaxmax)        --> F-111
Lower limit of the maximum speed (nmaxmin)        --> F-121
```

The maximum speed of the machine can be limited to the specific level according to the application directly by using control pushbuttons +/-.

- When pressing the +/- pushbuttons, the actual speed is displayed.
- When pressing the +/- pushbuttons again, the speed can be changed after the seam end.

The setting range is between the speeds programmed with parameter 111 (upper limit) and parameter 121 (lower limit).

5.5.1 Setting on Control Panel V810

- Type designation is displayed ==> [X X 8 2 X X]
- [+] 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 ==> [X X 8 2 X X]

5.5.2 Setting on Control Panel V820

Actual value on the display in the direct mode

- Display of maximum speed and type designation ==> | 4000 XX82XX |

- [+] [-] Change value of maximum speed; e.g. press button (-) 8 x ! | 3200 XX82XX |

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

5.6 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 control panel for approx. 3 seconds. During this time the respective values can be varied immediately by the + and - pushbuttons. See examples below.

Note
When the bobbin thread monitor is on, the functions of the "HIT" pushbuttons are activated only if the sewing has been started after power on.

5.6.1 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 XX82XX |

- ↓ [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 XX82XX |

Stitch counting function (pushbutton 2) is already on.

■		Display after power on	==>	4000 XX82XX
■	↓ 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 XX82XX

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. SSt Softstart ON/OFF
2. SrS Ornamental backtack ON/OFF
3. LSS Sewing start blocked with light barrier uncovered ON/OFF

The F key setting can be changed as follows:

■		Display after power on!	==>	4000 XX82XX
■	P	Press button P !	==>	
■	E	Press button E !	==>	Arv 002
■	E	Press button E several times until the abbreviation **-F-** is displayed (ornamental backtack on/off)	==>	-F- 2
■	-	Press button (-) ! (softstart on/off)	==>	-F- 1
■	P	Press button P !	==>	4000 XX82XX

■ **»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 XX82XX

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 XX82XX

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

5.7 Programming Seams (Teach-in) with V820

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

- A maximum of 8 patterns with a total of 40 seams can be established.
- Programming is possible only if a code number has not been input after switching on!
- The functions start backtack, end backtack, stitch counting, thread trimming and presser foot lifting can be assigned individually to each seam.

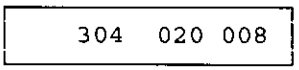
Example 1:	Pattern 1	40 seams
	Pattern 2-8	0 seams
Example 2:	Pattern 1	4 seams
	Pattern 2	5 seams
	Pattern 3	6 seams
	Pattern 4	25 seams
	Pattern 5-8	0 seams
Example 3:	Pattern 1	10 seams
	Pattern 2	15 seams
	Pattern 3-8	0 seams

Examples 1 and 2 show that optimal utilization of the storage capacity is possible.

5.7.1 Teach-in Mode

- Each seam pattern is programmed and stored separately.
- After input of the pattern the teach-in mode must be exited.
- Saving is done by sewing start.

Display configuration:




```
 3   Pattern number  (1...8)
04   Seam number     (0...40)
020  Stitches for the seam with stitch counting  (0...254)
008  Stitches after light barrier sensing        (0...254)
```

Programming:

After power on, without entering a code cumber!

1 =>	P	=>	LC display is cleared	==>
2 =>	E	=>	Display of a parameter at the operator level	==> aaa bbb
3 =>	0	=>	Left arrow above pushbutton 0 blinks; entry into pattern and seam programming	==> 101 ---
4 =>	0	=>	Changing the pattern number	==> 201 ---

The seam functions can be programmed with the pushbuttons on the control panel V820 (e.g. presser foot lifting, start backtack, etc.).

5.7.1.1 Seam with Stitch Counting

=>	2	=>	Left arrow above pushbutton 2 ON; switching on the stitch counting; display of the actual number of stitches	==> 201 004

5.7.1.2 Backward Seam with Stitch Counting

=>	2	=>	Right arrow above pushbutton 2 ON; switching on backward sewing; switching to forward sewing by pressing the pushbutton again	==> 201 004

When sewing backwards, all sewing operations including backtack are executed in reversed feeding direction. The functions "light barrier seam" and "backward seam" block each other, i.e. the light barrier cannot be switched on when the backward seam has been selected, or, backward sewing is not possible, when the light barrier is switched on.

=>	+	-	Changing the number of stitches with pushbuttons +/- or sewing the seam by using the pedal

5.7.1.3 Stitch Counting and/or Light Barrier

=>	3	=>	Light barrier covered/uncovered On; switching on the light barrier; display of the actual number of compensating stitches	==> 201 004 007
=>	+	-	Changing the number of compensating stitches	

If stitch counting **and** light barrier are turned on at the same time the stitches for stitch counting have to be programmed before the light barrier compensating stitches.

After programming the functions

=> [E] => Enter the seam. Display of the next seam. ==> [202 ---]

= = > The seam is entered by pressing the pushbutton E or by heelback.

=> [P] => Exit programming! Display of the first seam section to be executed in the selected pattern ==> [0201 004 007]

After all seams have been programmed, each seam can be recalled individually with pushbutton E for checking.

Note
Several seam patterns cannot successively be programmed without interruption. Each pattern must be completed with pushbutton P, otherwise it gets lost.

Note
The patterns are permanently saved only after the sewing has been started.

5.7.1.4 Detailed Example

A seam 1 with stitch counting and start backtack, a seam 2 with stitch counting and a seam 3 with light barrier seam and end backtack are to be programmed under pattern number 4.

Display before programming ==> [XXXX]

1. => [P] => LC display is cleared ==> [ ]

2. => [E] => Display of a parameter at the operator level ==> [aaa bbb]

↓

3. => [0] => Left arrow above pushbutton 0 blinks; Pattern 1, seam 1 ==> [101 ---]

↓

4. => [0] => Left arrow above pushbutton 0 blinks; Pattern 2, seam 1 ==> [201 ---]

↓

5. => [0] => Left arrow above pushbutton 0 blinks; Pattern 3, seam 1 ==> [301 ---]

↓

6. => [0] => Left arrow above pushbutton 0 blinks; **Pattern 4, seam 1** ==> [401 ---]

↓

7. => [1] => Left arrow above pushbutton 1 ON; Single start backtack is on ==> [401 ---]

↓

8. => [6] => Right arrow above pushbutton 6 ON; Presser foot lifting at the seam end is on ==> [401 ---]

	↓					
9. =>	2	=>	Left arrow above pushbutton 2 ON; Stitch counting forward is on	==>	401 000	
10.=>	+	-	Changing the number of stitches with pushbuttons or sewing the seam by using the pedal	==>	401 017	
		=>	Seam length of 17 stitches is set			
11.=>	E	=>	**Pattern 4, seam 2**	==>	402 ---	
	↓					
12.=>	2	=>	Left arrow above pushbutton 2 ON; Stitch counting forward is on	==>	402 000	
13.=>	+	-	Changing the number of stitches with pushbuttons or sewing the seam by using the pedal	==>	402 008	
		=>	Seam with 8 stitches is set			
14.=>	E	=>	**Pattern 4, seam 3** Free seam is selected	==>	403 ---	
	↓					
15.=>	3	=>	Left arrow above pushbutton 3 ON; Light barrier covered/uncovered is activated	==>	403 --- 000	
16.=>	+	-	Changing the number of stitches with pushbuttons; 5 compensating stitches are set	==>	403 --- 005	
	↓					
17.=>	4	=>	Left arrow above pushbutton 4 ON; Single end backtack is on	==>	403 --- 005	
	↓ ↓					
18.=>	5	=>	Both arrows above pushbutton 5 ON; thread trimmer and thread wiper are on	==>	403 --- 005	
19.=>	E	=>	**Pattern 4, seam 4** By changing to the next seam the settings of the preceding seams are automatically entered	==>	404 ---	
20.=>	P	=>	Exit programming, first seam can be executed	==>	401 017	

5.7.2 Max. Number of Seams Exceeded

If the total number of 40 seams is exceeded by inputting a program, for the time being, the teach-in mode cannot be completed with pushbutton P.
A further sewing start is impaired. The display shows the warning below.
Pressing pushbutton P again causes the deletion of the pattern indicated on the display. The teach-in mode is exited if the total number of 40 seams is not exceeded. Otherwise a new warning will be indicated.

Display:

YYXX dEL NN

XX: Last input and/or recalled pattern number (1...8)
YY: Number of programmed seams of the recalled pattern (0...40)
NN: Total number of input seams

The operator must now decide which pattern is to be deleted!

=> [0] => Call-up of the pattern to be deleted

YYXX dEL NN

XX: Pattern number
YY: Number of seams of this pattern
NN: Total number of input seams

=> [P] => Deletion of the pattern

YYXX dEL NN

XX: Pattern number of the deleted pattern
YY: 00 = no more seam is programmed
NN: Total number of input seams if more than 40

When 40 seams are exceeded, the teach-in mode is exited, and the last input seam will be indicated.

5.7.3 Execution (Pattern) Mode

1. => [0] Switch on mode with pushbutton 0 (left arrow above pushbutton On) ==> | 0X01 ZZZ |

2. => [+] [-] Select pattern 1...8; Seam number 01 is displayed ==> | 0X**01** 030 |

3. => [E] If one should not start with seam 1, select different seam number; push button E several times until the desired seam number is displayed ==> | 0X**05** ZZZ |

- The pattern can now be started by pressing the pedal.

4. => [0] Exit the execution (pattern) mode Switch off mode with pushbutton 0

6. Starting Service

The machine is ready for operation immediately after:

- mounting the drive and the position transmitter
- adapting the control to the sewing machine
- setting the needle positions on the position transmitter

7. Setting the Basic Functions

7.1 Positioning Speed

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

The positioning speed can be set with parameter 110 within a range of 70...390 RPM.

7.2 Maximum Speed Compatible with the Sewing Machine

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

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

7.3 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.

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

7.4 Positions

Before setting the position transmitter ensure that the direction of rotation of the motor shaft is correctly set !

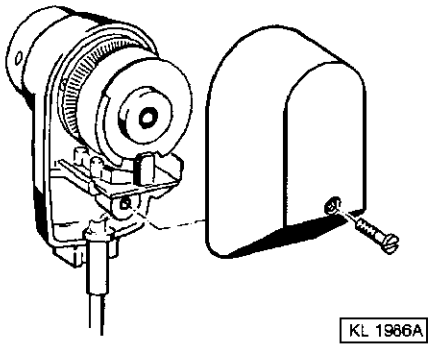
Attention!
If the motor is mounted differently, e.g at a different angle or with gear, make sure that the parameter value is assigned correctly to the direction of rotation. Set positions if necessary.

Attention!
Turn power off before adjusting the positioning discs.

Attention!
Be very careful when adjusting the positioning discs.
Risk of injury.
Please ensure that positioning discs and generator disc (inner disc) are not damaged.

The positions are set as follows:

- Remove position transmitter cover after loosening the screw.
- Select basic position **needle down** (LED 7 on the control lights up) by pushbutton S5.
- Adjust central disc for position 1 in the desired direction.
- Push pedal briefly forward.
- Check stop position.
- Push pedal backward (trimming).
- Select basic position **needle up** (LED 8 on the control lights up) by pushbutton S5.
- Adjust outer disc for position 2 in the desired direction.
- Push pedal briefly forward.
- Check stop position.
- Repeat procedure if necessary.
- Select the desired basic position by pushbutton S5.
- Put cover on again and tighten screw.



The same sequence can be performed by using the pushbutton for **basic position** on the control panel.

Note:
For functional sequences that are controlled by the slot width, set slot width if necessary according to the above. The desired functional sequence is to be activated in order to check the setting. The opening angle of position transmitters with adjustable slot width must not be below 20°.

Note:
To ensure a correct trimming operation, the positions 1 and 2 must not overlap.

7.5 Display of the Signal and Stop Positions

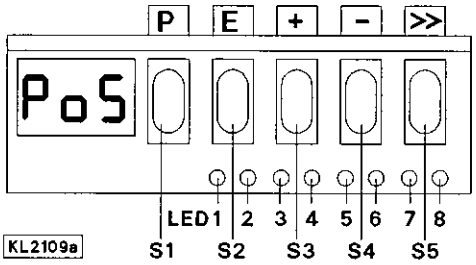
Function **with** or **without** control panel		Parameter
Display of positions 1 and 2	(Sr3)	172

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

- Address parameter F-172
- Without control panel, "PoS" appears on the control display
- With control panel, "Sr3" appears on the display of the control panel
- Turn handwheel corresponding to the direction of rotation of the motor

Control display without control panel

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



Display on the control panel

- Arrow above symbol "position 1" on — corresponds to position 1
- Arrow above symbol "position 1" turns off — corresponds to position 1A
- Arrow above symbol "position 2" on — corresponds to position 2
- Arrow above symbol "position 2" turns off — corresponds to position 2A

When a control panel V810 or V820 is connected, the positions will be shown only on the coontrol panel display!

7.6 Braking Behavior

Function **with** or **without** control panel		Parameter
Braking effect with speeds > 800 RPM	(br1)	207
Braking effect with speeds < 800 RPM	(br2)	208

The braking effect of the drive can be set.

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

7.7 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 trimming
- The effect can be set
- The higher the set value, the higher the braking power
- It works immediately after power on

7.8 Start Behavior

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

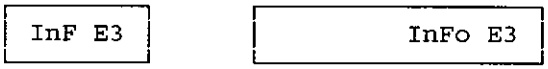
The drive accelerating dynamics can be adapted to the characteristic of the sewing machine (light, heavy).

- 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.

If the machine does not reach the preset speed or the drive is blocked, the following message appears on the display:

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



7.9 Speed Gate

Function **with** or **without** control panel		Parameter
Speed gate	(dGn)	221
Speed gate damping period	(tdG)	222

The speed gate setting and the setting of the speed gate damping period are important for exact positioning. The switching point of the speed gate is determined by positioning speed + value in parameter 221; example: n1 = 180 RPM + value 100 = 280 RPM.

7.10 Display Actual Speed

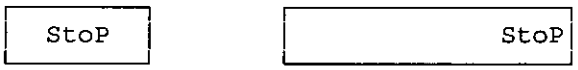
Functions		Parameter
Display actual speed	(nIS)	139

If parameter 139 is switched ON the following information is shown on the display:

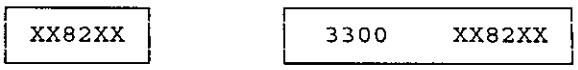
Control panels: = = > **V810** **V820**

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 XX82XX



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

8. Functions with or without Control Panel

8.1 First Stitch After Power On

Functions **with** or **without** control panel		Parameter
1 stitch at positioning speed after POWER ON	(Sn1)	231

For the protection of the sewing machine and when parameter 231 is on, the first stitch after power on will be performed at positioning speed, independently of the pedal position and the function Softstart.

8.2 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 limited (n6), pedal controlled
- 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		Parameter
Softstart on/off	(-F-)	F-008 = 1

8.2.1 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.

8.2.2 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!

8.3 Presser Foot Lifting

Functions **without** control panel		Pushbutton on the control
Automatic in the seam	LED 5 lights up	Pushbutton S4
Automatic after thread trimmming	LED 6 lights up	Pushbutton S4

Functions **with** control panel		V810	V820
Presser foot lift at stop in the seam (automatic)	Left arrow above pushbutton ON	Pushbutton 3	Pushbutton 6
Presser foot lift after thread trimmming (automatic)	Right arrow above pushbutton ON		
Presser foot lift at stop in the seam and after thread trimming (automatic)	Both arrows above pushbutton ON		
Presser foot lift Off			

Functions **with** or **without** coontrol panel		Parameter
Activation delay when pedal is in position -1, half heelback	(t2)	201
Start delay after switching off the presser foot lift signal	(t3)	202
Time of full power	(t4)	203
Operating time with pulsing	(t5)	204
Delay after thread wiping until presser foot lifting	(t7)	206
Delay after thread trimming without thread wiper until presser foot lifting	(tFL)	211

Presser foot is lifted:

- in the seam
  - by heeling the pedal back (position -1)
    or automatically (with pushbutton 3 on the control panel V810)
    or automatically (with pushbutton 6 on the control panel V820)
  - by pressing the pushbutton on socket B18/1-5 if parameter 239 = 12
- after thread trimming
  - by heeling the pedal back (position -1 or -2)
    or automatically (with pushbutton 3 on the control panel V810)
    or automatically (with pushbutton 6 on the control panel V820)
  - by pressing the pushbutton on socket B18/1-5 if parameter 239 = 12
  - by light barrier, automatically
  - by stitch counting, automatically
  - activation delay after thread wiping (t7)
  - activation 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) with parameter 201.

Holding power of the lifted foot:

The presser 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 with parameter 203, the holding power at partial power with 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.

Stage	Operating time	Effect
1	12.5 %	low holding power
2	25 %	
3	37.5 %	
4	50 %	
5	62.5 %	
6	75 %	
7	87.5 %	high holding power
0	100%	full power

Foot lowers:
- from manual foot lifting: push pedal to position 0 (neutral)
- from automatic foot lifting: push pedal to position 1/2 (slightly forward)

When pushing the pedal forward from lifted presser foot, the start delay (t3) that can be set by parameter 202 becomes effective.

See also chapter "Timing Diagrams"!

8.4 Start Backtack

Functions **without** control panel		Pushbutton on the control
Single start backtack	LED 1 lights up	Pushbutton S2
Double start backtack	LED 2 lights up	
Start backtack Off	both LEDs off	

Functions **with** control panel		Pushbutton on the V810/V820
Single start backtack	Left arrow above pushbutton 1 ON	Pushbutton 1
Double start backtack	Right arrow above pushbutton 1 ON	
Start backtack Off	both arrows OFF	

The start backtack 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 from lifted foot).
The backtack is executed automatically at start backtacking speed. It cannot be interrupted. With softstart running parallel, the respective lower speed predominates.
Switching on the start backtack is synchronized to position 1.
After the execution of the backward seam, the stitch regulator, and, after a delay time t1, the start backtacking speed, will be switched off. Then pedal control is returned.
The counting is synchronized to position 1.

8.4.1 Start Backtacking Speed

Functions **with** or **without** control panel		Parameter
Start backtacking speed	(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.

8.4.2 Start Backtack Stitches

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

The stitches for start backtack forward and backward can be programmed by the above parameters in the control or on a connected control panel.
The start backtack stitches can also be varied directly on the control, as described in chapter "Changing All Parameter Values of the Operator Level".
When using a control panel V820, the stitches can be varied with pushbuttons 1 and +/-. See chapter "Pushbuttons for Background Information (HIT) with V820".

8.4.3 Stitch Correction and Speed Release

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

8.4.4 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.

8.4.5 Single Start Backtack

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

8.5 End Backtack

Functions **without** control panel		Pushbutton on the control
Single end backtack	LED 3 lights up	Pushbutton S2
Double end backtack	LED 4 lights up	
End backtack Off	both LEDs off	

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

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

The end backtack starts either by heelback, in seams with stitch counting at the end of the 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. From lifted foot, the switch-on point is delayed by the time t3 (start delay from lifted presser foot). The first leading position 1 is counted as 0 stitch, whenever the function is started outside of position 1. The counting and disabling of the stitch regulator is synchronized to position 1.
From full machine run, the signal will be switched on only after reaching the end backtacking speed and the synchronization to position 2. The end backtack is performed automatically. An interruption is not possible.

8.5.1 End Backtacking Speed

Functions **with** or **without** control panel		Parameter
End backtacking speed	(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.

8.5.2 End Backtack Stitches

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

The stitches for end backtack forward and backward can be programmed by the above parameters in the control or on a connected control panel.
The end backtack stitches can also be varied directly on the control, as described in chapter "Changing All Parameter Values of the Operator Level".
When using a control panel V820, the stitches can be varied with pushbuttons 4 and +/-. See chapter "Pushbuttons for Background Information (HIT) with V820".

8.5.3 Stitch Correction and Last Stitch Backward

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

The backtack solenoid in the double end backtack can be delayed by inputting a stitch correction time (t9) with 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 selected with parameter 136.

8.5.4 Double End Backtack

The backward section will be sewn for a number of stitches. Then, the stitch regulator will be disabled, and the forward section will be executed. For both sections the number of stitches can be set seperately.
After the execution of the forward section, the trimming function will be initiated. During the entire operation the sewing speed is reduced to end backtacking speed, with the exception of the last stitch, which will be executed at positioning 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).

8.5.5 Single End Backtack

The single end backtack will be executed at end backtacking speed. During the last stitch the speed is reduced to positioning speed. Depending on parameter 136 the stitch regulator remains on or is switched off.

- Parameter 136 = ON last stitch backward
- Parameter 136 = OFF last stitch forward

8.6 Start Ornamental Backtack

Functions **without** control panel		Pushbutton on the control
Function ornamental backtack On/Off		135
Single start ornamental backtack	LED 1 lights up	Pushbutton S2
Double start ornamental backtack	LED 2 lights up	
Start ornamental backtack Off	both LEDs off	

Functions **with** control panel		Pushbutton on the V810/V820
Function ornamental backtack On/Off	(SrS)	135
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.

Functions **with** or **without** control panel		Parameter
Ornamental backtack stop time	(tSr)	210

Differences from the standard start backtack:
- The drive stops for the switching of the stitch regulator
- The stop time can be set
- After the backtack section backward follows a backtack section forward with the same number of stitches as the backward section

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-)	F-008 = 2

8.7 End Ornamental Backtack

Functions **without** control panel		Pushbutton on the control
Function ornamental backtack On/Off		135
Single end ornamental backtack	LED 3 lights up	Pushbutton S3
Double end ornamental backtack	LED 4 lights up	
End ornamental backtack Off	both LEDs off	

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

Functions **with** control panel		V810	V820
Function ornamental backtack On/Off	(SrS)	135	
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.

Functions **with** or **without** control panel		Parameter
Ornamental backtack stop time	(tSr)	210

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-)	F-008 = 2

8.8 Intermediate Backtack

The backtack solenoid can be switched on anywhere in the seam and at standstill by pressing the external pushbutton on socket B12/1-2.
See chapter "**Connection Diagram**" !

8.9 Backtack Suppression/Recall

Effective in standard and ornamental backtack

The next backtacking operation can be suppressed or recalled once by pressing the external pushbutton on socket B12/2-3.

When pressing	Start back-tack On	Start back-tack Off	End back-tack On	End back-tack Off
Before start of seam	no backtack	backtack	---	---
In the seam	---	---	no backtack	backtack

The double backtack is performed in the above cases.

See chapter "**Connection Diagram**" !

8.10 Holding Power of Backtacking

Functions **with** control panel		Parameter
Time of full power	(t10)	212
Holding current of backtacking	(t11)	213

The backtack 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 with parameter 212, the holding power at partial power with parameter 213.

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.

Stage	Operating time	Effect
1	12.5 %	low holding power
2	25 %	
3	37.5 %	
4	50 %	
5	62.5 %	
6	75 %	
7	87.5 %	
0	100%	high holding power

8.11 Stitch Counter with/without Automatic Stop

Functions		Parameter
Stitch counter without stop = 2 / with stop = 1 / Off = 0	(rFw)	030
Number of stitches	(cFw)	031

This function can be operated for stitch counting with or without automatic stop.
Furthermore, this function can be used 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. When using a control panel, an audible signal is also emitted, when parameter 127 is set at ON. 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.

Note
If the power is switched off when operating a bobbin thread monitor, before the preset number of stitches has been executed, the value of the counted stitches gets lost!

Activate stitch counting:

- 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).
- When using a control panel V810, insert strip no. 3 and set parameter 291 at "3". For the start of the counter with pushbutton B. set parameter 294 at "19".
- When using a control panel V820, pushbutton 8 is provided for the above function.
- An audible signal can be activated by setting parameter 127 accordingly.
- Press the corresponding pushbutton on the V810 or V820 and start the sewing operation.

Stitch counter is On:
- The drive stops when the stitch counter has run out.
- If a control panel V810 or V820 is connected, a symbol blinks on the display and an audible signal is emitted if parameter 127 = ON.
- While pressing the pedal, an acoustic signal is emitted.
- The acoustic signal turns off, when the pedal is in position 0 (neutral).
- The symbol on the V810 or V820 keeps on blinking.
- Continue or complete the sewing operation. All sewing functions are maintained.

Making the stitch counter ready for operation:
- Insert a full bobbin, when operating a bobbin thread monitor.
- Press the the respective pushbutton.
- Set the counting with parameter 031 and start the counting
- The symbol stops blinking

Stitch counter function without using a control panel:
Kindly take note of the following:
- Set parameters 030 and 031 as above.
- Connect a pushbutton to light barrier socket B18.
- Set parameter 239 = 19 (reset stitch counter).
- The drive stops after the stitches have been executed and the message A3 appears on the control after thread trimming.

8.12 Thread Trimming Operation

Function **without** control panel	Parameter
Thread trimmer On/Off	013
Thread wiper On/Off	014

Function **with** control panel		V820
Thread trimmer On	left arrow above pushbutton 5 On	Pushbutton 5
Thread trimmer and thread wiper On	both arrows above pushbutton 5 On	
Thread wiper On	right arrow above pushbutton 5 On	
Thread trimmer and thread wiper Off	both arrows Off	

Function **with** or **without** control panel		Parameter
Trimming speed	(n7)	116
Activation time of thread wiper	(t6)	205
Delay thread wiper end until presser foot lifting	(t7)	206
Delay of presser foot lifting when thread wiper off	(tFL)	211
Switch-off delay of thread trimmer after stop of the drive	(tFv)	214

The functions "thread trimmer" and "thread wiper" can be switched on and off with pushbutton 5 on control panel V820.
The thread trimming operation is initiated by full heelback or automatically at the end of a counted seam section or automatically by light barrier sensing after the light barrier compensating stitches. If the function "trimming stitch backward" is on (parameter 136 = ON), the backtack solenoid in the end backtack remains on until stop in position 2.
The thread trimming 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 signal is switched on for a time that can be set with parameter 205 after reaching position 2.
The delay time (t7) that can be set with parameter 206 prevents presser foot lifting before the thread wiper is in its basic position.
If a thread wiper is not connected there will be a time lag (tFL) after the drive has come to a standstill until the presser foot is lifted.

8.13 Functions of the Pushbutton Needle up / down

Function **with** or **without** control panel		Parameter
Functions of pushbuttons 0 = No function 1 = Needle up/down 2 = Needle up 3 = Single stitch 4 = Full stitch	(Sht)	140

140 = 1; needle up-down
When pressing the pushbutton on socket B3/1-6, 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 preselected basic position.

140 = 2; needle up
When pressing the pushbutton on socket B3/1-6, the drive runs from position 1 to position 2. If the drive is outside of position 1 it will not move for safety reasons.

140 = 3; single stitch
When pressing the pushbutton on socket B3/1-6, the drive performs one rotation from position 1 to position 1. If the drive is in position 2 it runs to position 1, when pressing the pushbutton, and from position 1 to position 1 each time when pressing the pushbutton again.
If the drive is outside of the stop position it runs to position 1.

140 = 4; full stitch
When pressing the pushbutton on socket B3/1-6, the drive performs one rotation from the stop position. If the drive is outside of the stop position it runs to the preselected basic position.

8.14 Seam with Stitch Counting

Functions **without** or **with** control panel V810	Parameter
Stitch counting On/Off	015

Functions **with** control panel V820		Pushbutton
Stitch counting forward On Stitch counting backward On Stitch counting Off	left arrow above pushbutton On right arrow above pushbutton On both arrows Off	Pushbutton 2

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

8.14.1 Stitches for Stitch Counting

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

8.14.2 Stitch Counting Speed

Functions **with** or **without** control panel		Parameter
Stitch counting speed	(n12)	118
Speed mode for a seam with stitch counting	(SGn)	141

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

141 = 0: Execution at pedal controlled speed.
141 = 1: Execution at fixed speed n12, when pedal is forward.
141 = 2: Execution at limited speed n12, when pedal is forward.
141 = 3: Automatic execution at fixed speed as soon as the pedal has been pushed once.
Interruption by "heelback (-2)" is possible.

The sewing speed is reduced in each stitch depending on the actual speed (max. 11 stitches before the end of the 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 the stitch counting.

8.14.3 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 on the V820
Light barrier On/Off	Pushbutton 3
Stitch counting On/Off	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.

8.15 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
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 with parameter 142.

142 = 0: Execution at pedal controlled speed from n1 to n2.
142 = 1: Execution at fixed speed n12, when pedal is forward (position >=1).
142 = 2: Execution at limited speed n12, when pedal is forward (position >=1)
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 by pushbuttons +/- on the control panel. The setting range is limited by the set values of the parameters 111 and 121.

8.16 Light Barrier

Functions **without** or **with** 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	left arrow above pushbutton On right arrow above pushbutton On both arrows Off	Pushbutton 3

8.16.1 Speed after Light Barrier Sensing

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

8.16.2 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	(LSd)	131
Sewing start blocked with light barrier uncovered	(LSS)	132
Light barrier seam end with thread trimming	(LSE)	133

- 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 with parameter 133, independently of the setting with pushbutton 5 on the 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 by parameter 131.
- Blocking of machine start, when light barrier is uncovered, can be programmed by parameter 132.

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

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

8.16.3 Reflection Light Barrier

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

Functions **with** control panel V820	Pushbutton
Light barrier On/Off	Pushbutton 3

Adjustments

Sensitivity:

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).

- LSM001/LSM001A - Potentiometer directly on the light barrier module

Mechanical Adjustment:
- LSM001/LSM001A - The orientation is facilitated through a visible light spot on the reflection area.

8.16.4 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 132 = on (no sewing start, when light barrier uncovered).
- Parameter 131 = on (light barrier sensing uncovered).
- Parameter 129 = on (automatic start on).
- Light barrier switched on.
- The pedal must remain pushed 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.

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

8.16.5 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

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 is uncovered

8.16.6 Functional Variations of the Light Barrier Input

Functions **with** or **without** control panel		Parameter
Selection of the input function on socket B18/5	(FEL)	239

If the light barrier function is not used, a different function can be selected for the input on socket B18/5, and a pushbutton can be connected.

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 **Needle up/down:** When pressing the pushbutton 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 preselected basic position.
239 = 2 **Needle up:** When pressing the pushbutton the drive runs from position 1 to position 2.
239 = 3 **Single stitch (basting stitch):** When pressing the pushbutton the drive performs one rotation from position 1 to position 1. If the drive is in position 2, it runs to position 1 when pressing the pushbutton and from position 1 to position 1 each time when pressing the pushbutton again.
239 = 4 **Full stitch:** When pressing the pushbutton the drive performs one entire rotation depending upon the stop position.
239 = 5 **Needle to position 2:** If the drive is outside of position 2 it runs to position 2 when pressing the pushbutton.
239 = 6 **Blocking of machine run effective with open contact:** When opening the switch the drive stops in the preselected basic position.
239 = 7 **Blocking of machine run effective with closed contact:** When closing the switch the drive stops in the preselected basic position.
239 = 8 **Blocking of machine run effective with open contact (unpositioned):** When opening the switch the drive stops immediately unpositioned
239 = 9 **Blocking of machine run effective with closed contact (unpositioned):** When closing the switch the drive stops immediately unpositioned
239 = 10 **Run at automatic speed (n12):** When pressing the pushbutton the drive runs at automatic speed. The pedal is not used.
239 = 11 **Run at limited speed (n12):** When pressing the pushbutton the drive runs at limited speed. The pedal must be pushed forward.
239 = 12 **Presser foot lifting with pedal in position 0 (neutral)**
239 = 13...15 **No function**
239 = 16 **Intermediate backtack:** When pressing the pushbutton, the backtack is switched on anywhere in the seam and at standstill of the drive.
239 = 17 **Backtack suppression/recall:** When pressing the pushbutton, the backtack is suppressed or recalled once.
239 = 18 **No function**
239 = 19 **Reset stitch counter**: When pressing the pushbutton, the stitch counter is set with parameter 031.

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

Functions with control panel	Parameter
Selection of the input function on pushbutton (A) "F1" on V810/V820 (tF1)	293
Selection of the input function on pushbutton (B) "F2" on 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 pressing the pushbutton 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 preselected basic position.
293/294 = 2 **Needle up:** When pressing the pushbutton the drive runs from position 1 to position 2.
293/294 = 3 **Single stitch (basting stitch):** When pressing the pushbutton the drive performs one rotation from position 1 to position 1. If the drive is in position 2, it runs to position 1 when pressing the pushbutton and from position 1 to position 1 each time when pressing the pushbutton again.
293/294 = 4...15 **No function.**
293/294 = 16 **Intermediate backtack**: When pressing the pushbutton, the backtack is switched on anywhere in the seam and at standstill of the drive.
293/294 = 17 **Backtack suppression/recall**: When pressing the pushbutton, the backtack is suppressed or recalled once.
293/294 = 18 **No function.**
293/294 = 19 **Reset stitch counter**: When pressing the pushbutton, the stitch counter is set with parameter 031.

8.18 Acoustic Signal

Function **with** control panel		Parameter
Acoustic signal On/Off	(AkS)	127

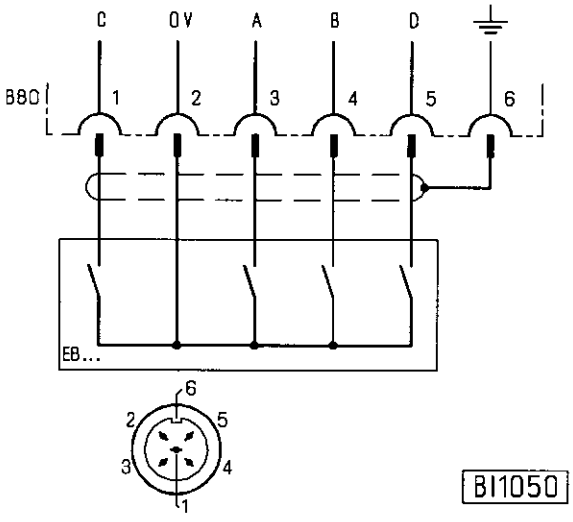
An acoustic signal, which is emitted for the following functions, can be switched on with parameter 127:
- When the stitch counter is active, after the preset number of stitches has been executed
- When the blocking of machine run (safety switch) is activated

8.19 Actuator

With the help of the actuator connected with the pedal 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. presser foot lifting)
0	H	H	H	H	Pedal in position 0 (neutral)	
½	H	H	L	H	Pedal slightly forward	(e.g. presser 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	Speed stage 12 (Pedal fully forward)	(n2)



EB... - Actuator

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

8.20 Master Reset

Recovery of factory settings.

- Press pushbutton "**P**" and turn power on
- Input code number "**1907**"
- Press pushbutton "**E**"
- Parameter 100 is shown on the display
- Press pushbutton "**E**"
- The parameter value is shown on the display
- Set at "**170**" with pushbutton "+"
- Press pushbutton "**P**" twice
- Turn power off
- Turn power on. All parameters are reset to their factory settings.

Note
For the above function, all external consumers as for example presser foot lift, must be switched off. Parameter 153 (holding power at machine standstill) should be set at "0".

9. Signal Test

Functions **with** or **without** control panel		Parameter
Input and output test	(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).

9.1 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** on the control panel V820

Pushbutton	Output	Socket / Pin
01	Backtacking	B3/9
02	Presser foot lift	B3/4
03	Thread trimmer 1	B3/10
04	Thread trimmer 2	B3/2
05	Thread wiper	B3/8
06	Thread tension release	B3/5

Input test:

- Press the (-) pushbutton several times until "OFF" or "ON" appears on the display.
- Actuation of the external switches 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.

10. Error Messages

General Information			
On the control	**On the V810**	**On the V820**	**Signification**
A1	InF A1	InFo A1	Pedal not in neutral position, when switching the machine on
A3	Symbol blinking	Symbol blinking	Stitch counter (bobbin thread monitor)

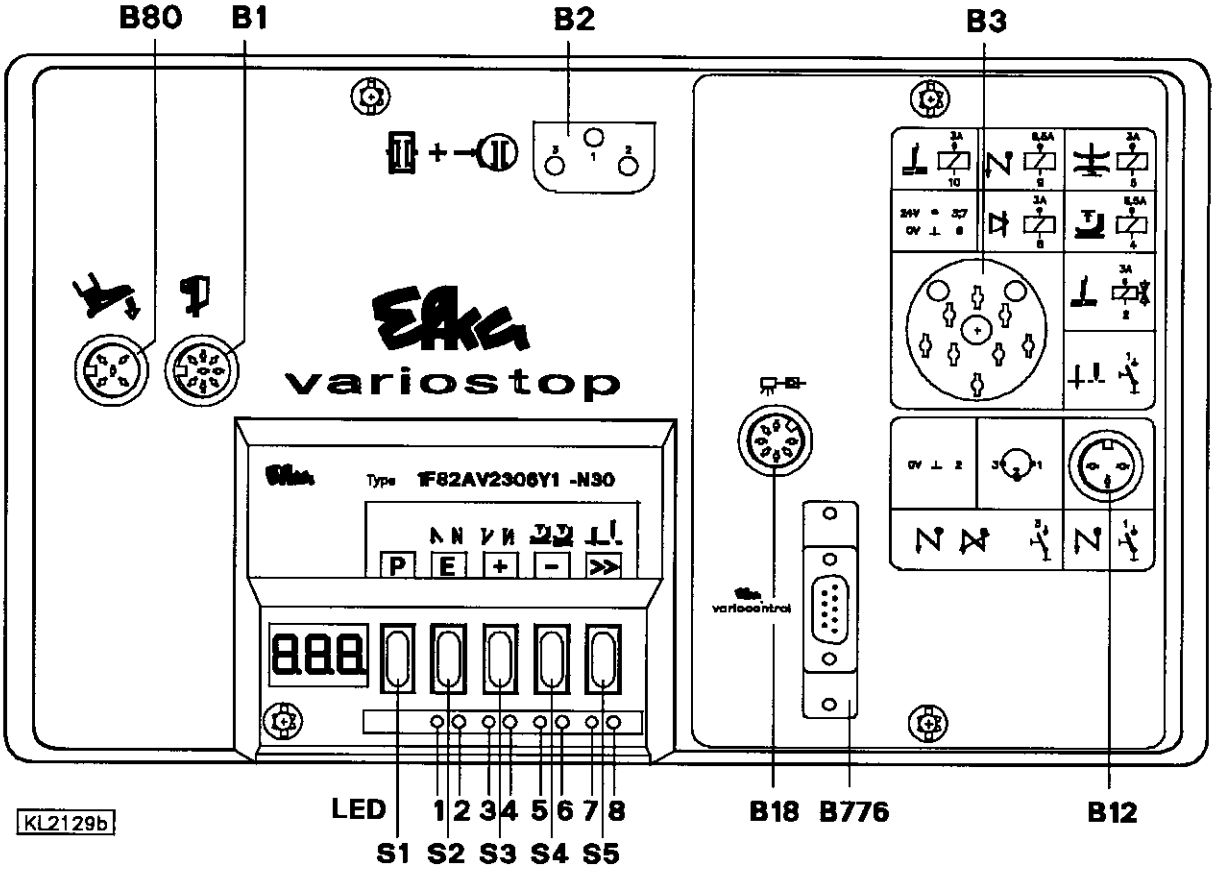
Programming Functions and Values (Parameters)			
On the control	**On the V810**	**On the V820**	**Signification**
Returns to the first digit	Returns to the first digit	InFo F1	Wrong code number or parameter number input

Serious Situation			
On the control	**On the V810**	**On the V820**	**Signification**
E1	InF E1	InFo E1	Position transmitter not connected or defective
E2	InF E2	InFo E2	Line voltage too low, or time between power off and power on too short
E4	InF E4	InFo E4	Control disturbed by deficient grounding or loose contact

Hardware Disturbance			
On the control	**On the V810**	**On the V820**	**Signification**
H2	InF H2	InFo H2	Processor disturbed

11. Socket Connectors

11.1 Position in the Control

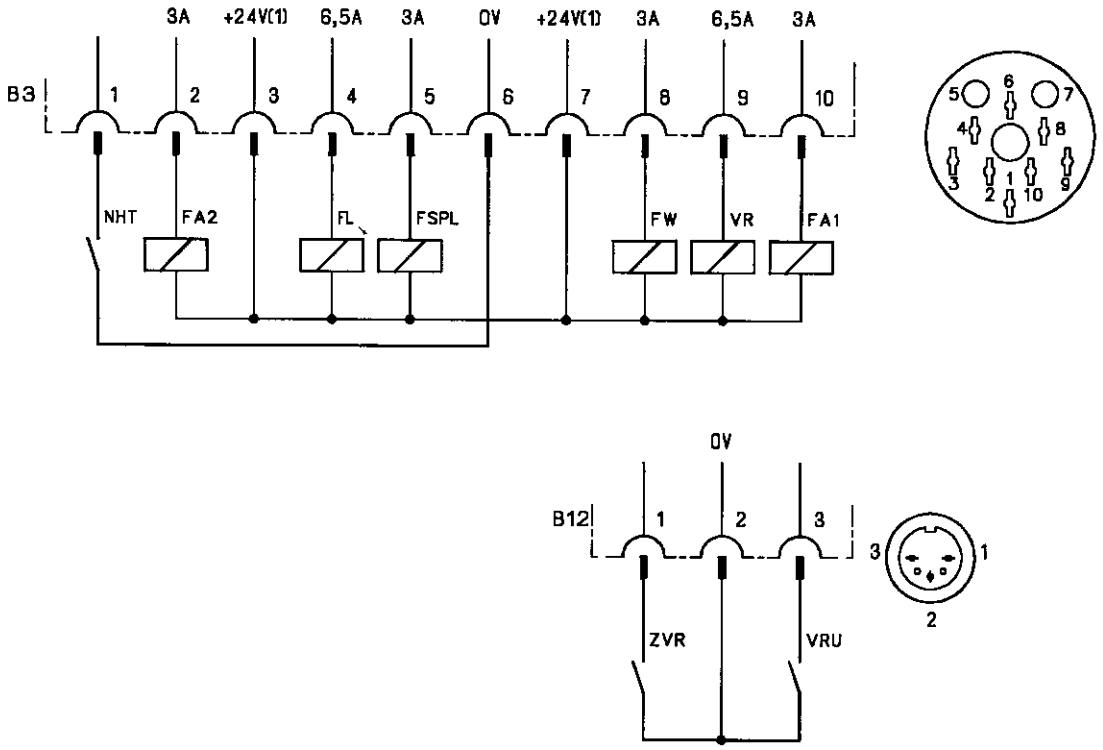


B1 - Position transmitter
B2 - Clutch/brake of the motor
B3 - Output presser foot lift, backtacking, thread trimmer 1/2, thread wiper, thread tension release
B12 - Input intermediate backtack, backtack suppression/recall
B18 - Light barrier module
B80 - Actuator
B776 - Control panel V810/V820 (srew-connected with 25-pole/9-pole adapter)

S1..S5 - Pushbuttons for programming and selection of functions

LED 1..8 - Indicators for switched on functions

11.2 Connection Diagram



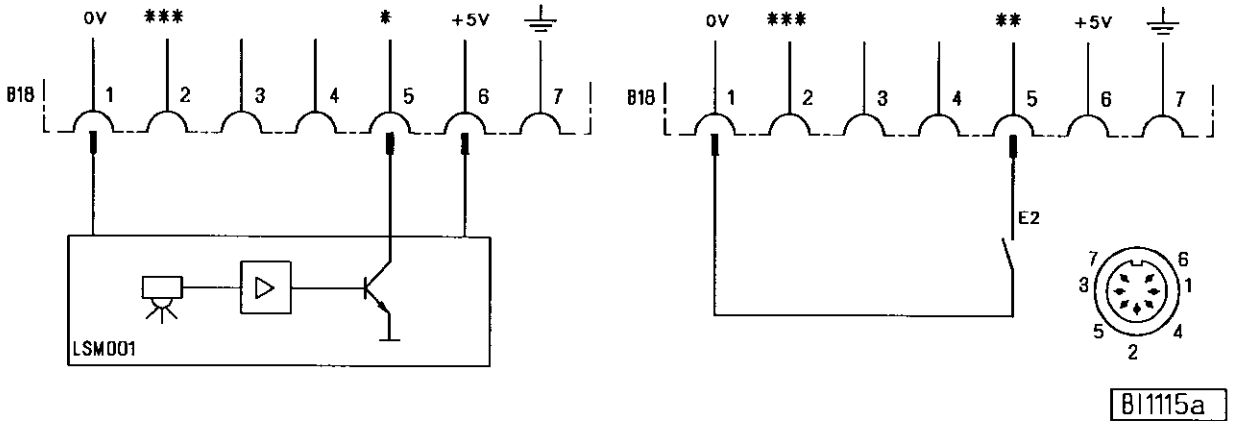
BI1099a

Attention!
When connecting the outputs, ensure that a total power of 96VA constant load will not be exceeded !

FL - Presser foot lifting
VR - Backtacking
FA1 - Thread trimmer 1
FA2 - Thread trimmer 2
FW - Thread wiper
FSPL - Thread tension release

NHT - Needle up-down (according to setting of parameter 140)
ZVR - Intermediate backtack
VRU - Backtack suppression/recall

1) Nominal voltage 24V, no-load voltage max. 36V



LSM001 - Reflection light barrier module

* - Parameter 239 = 0 => Light barrier function is selected (identified when switched to 0V)

** - Parameter 239 = 1...19 => Various input functions are possible on socket B18/5

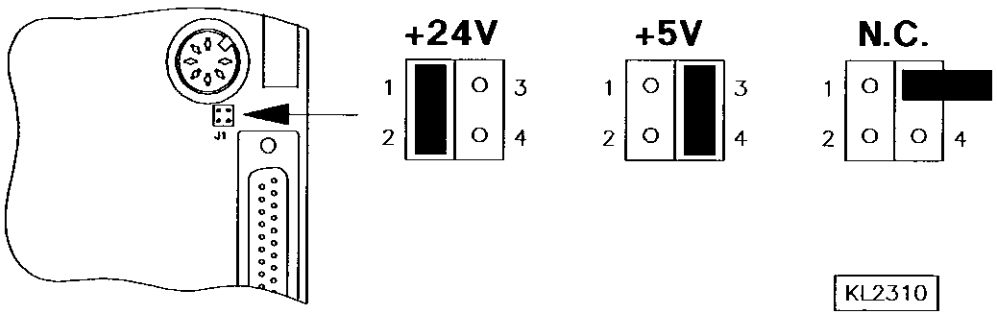
Attention!

Please ensure that pushbuttons or switches are connected according to the top right connection diagram. In the case of a short circuit with current-carrying sockets the electronic control may be permanently damaged !

*** +24V => Connect left pins 1 and 2 with jumper.

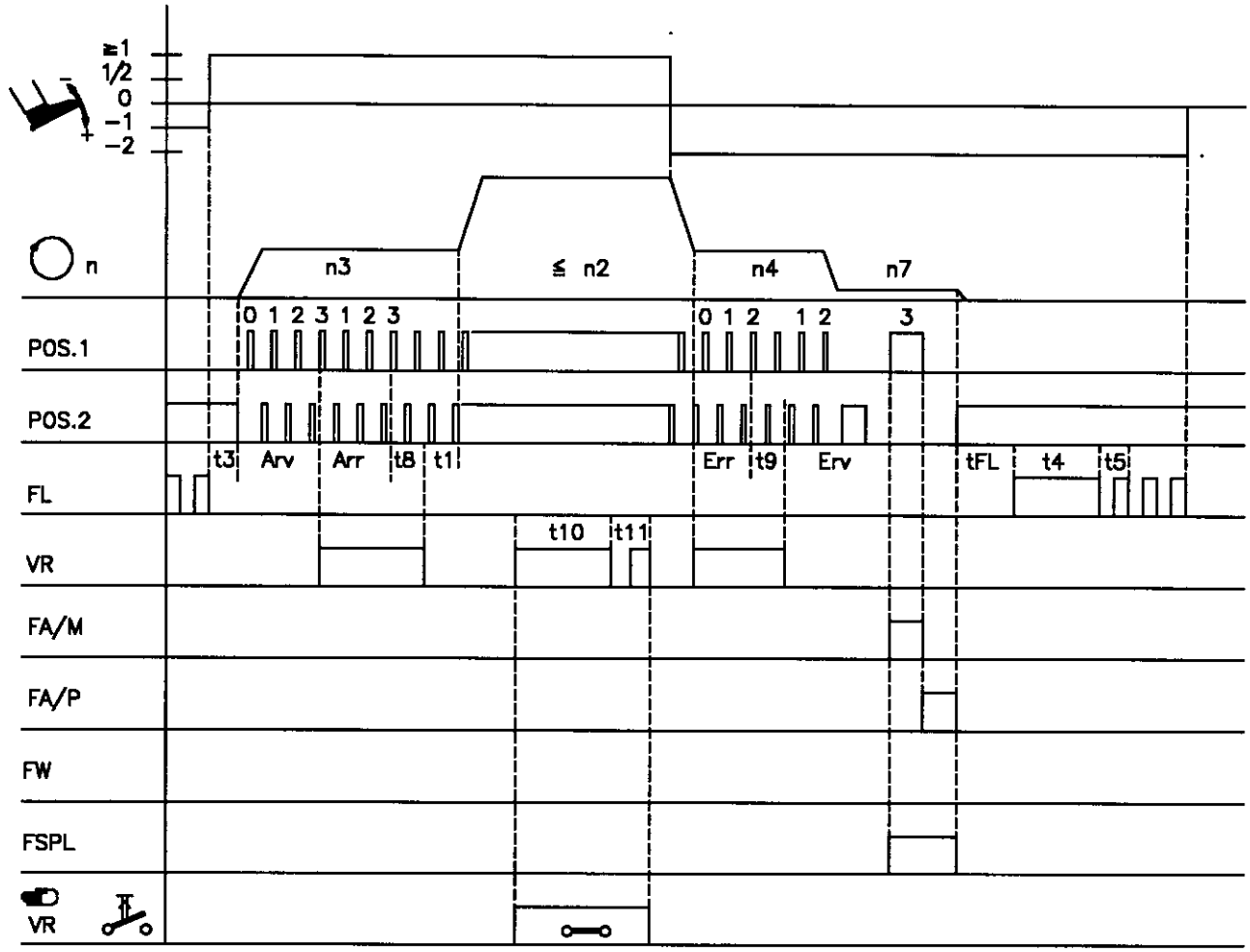
+5V => Connect right pins 3 and 4 with jumper.

N.C. => Connect jumper with only one pin **(factory setting)** or remove completely.



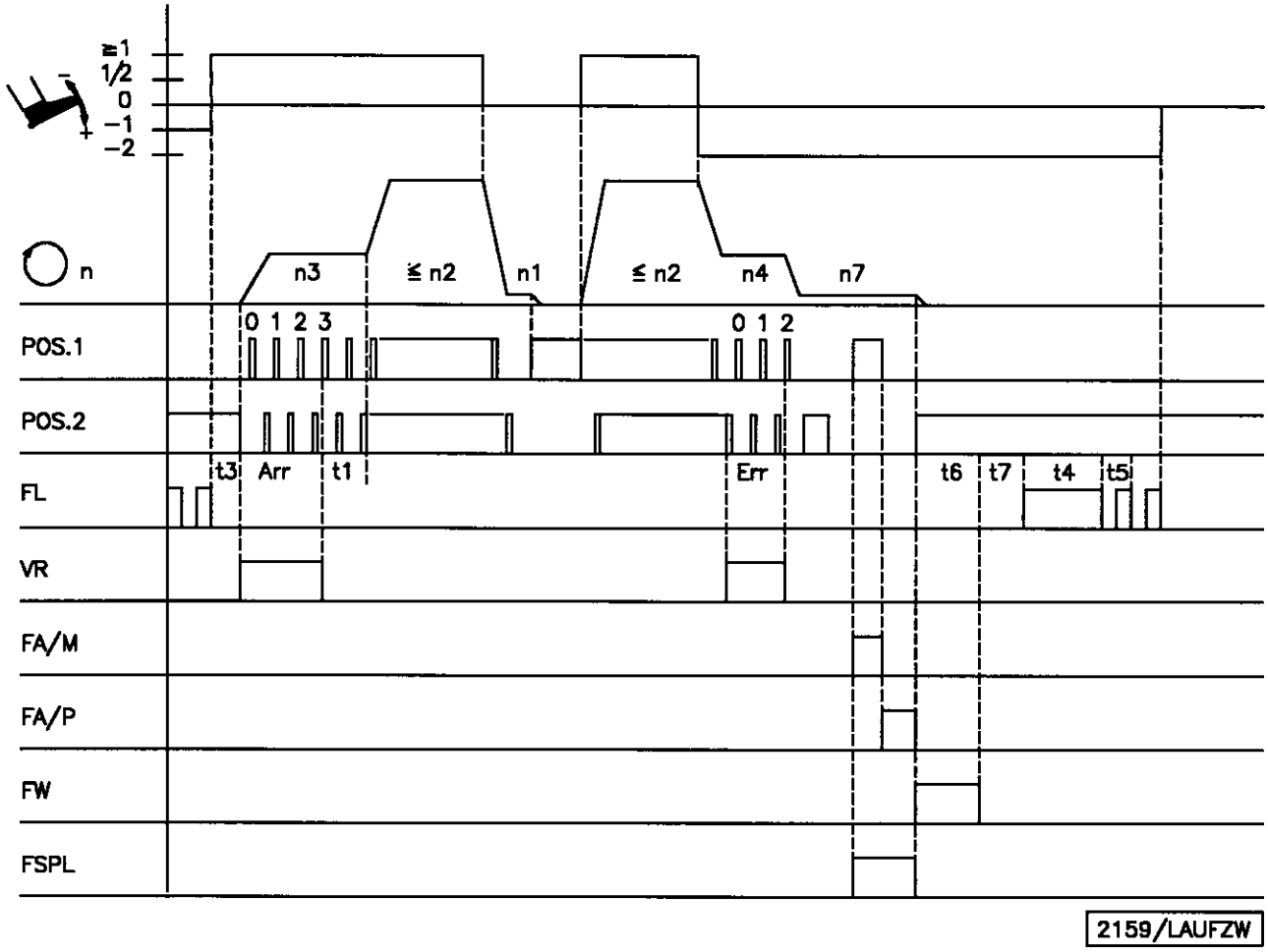
12. Timing Diagrams

Trimming from full run



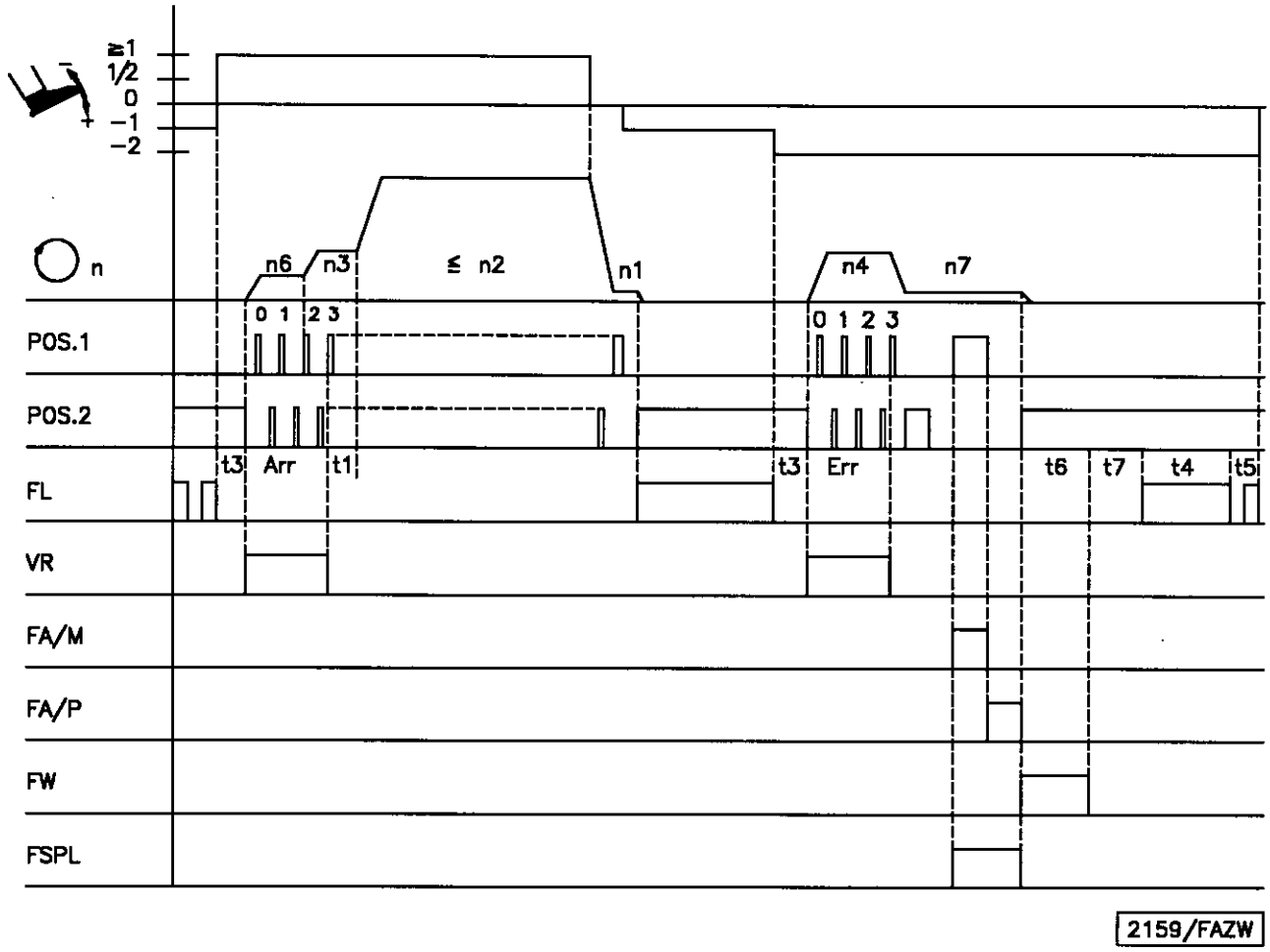
Abbreviation	Function	Param.	Pushb. Control	Pushbutton V810	Pushbutton V820
	Double start backtack with stitch correction on Double end backtack with stitch correction on Thread wiper off or not connected	 014	Pushb. S2 Pushb. S3	Pushb. 1 Pushb. 2	Pushb. 1 Pushb. 4 Pushb. 5
n2	Maximum speed	111			
n3	Start backtacking speed	112			
n4	End backtacking speed	113			
n7	Trimming speed	116			
t1	Delay until speed release after start backtack	200			
t3	Start delay from lifted foot	202			
t4	Full power of presser foot lifting	203			
t5	Pulsing of presser foot lifting	204			
t8	Start backtack stitch correction	150			
t9	End backtack stitch correction	151			
t10	Full power of backtacking	212			
t11	Pulsing of backtacking	213			
tFL	Activation delay presser foot without thread wiper	211			
Arv	Start backtack stitches forward	000			
Arr	Start backtack stitches backward	001			
Err	End backtack stitches backward	002			
Erv	End backtack stitches forward	003			

Run with intermediate stop



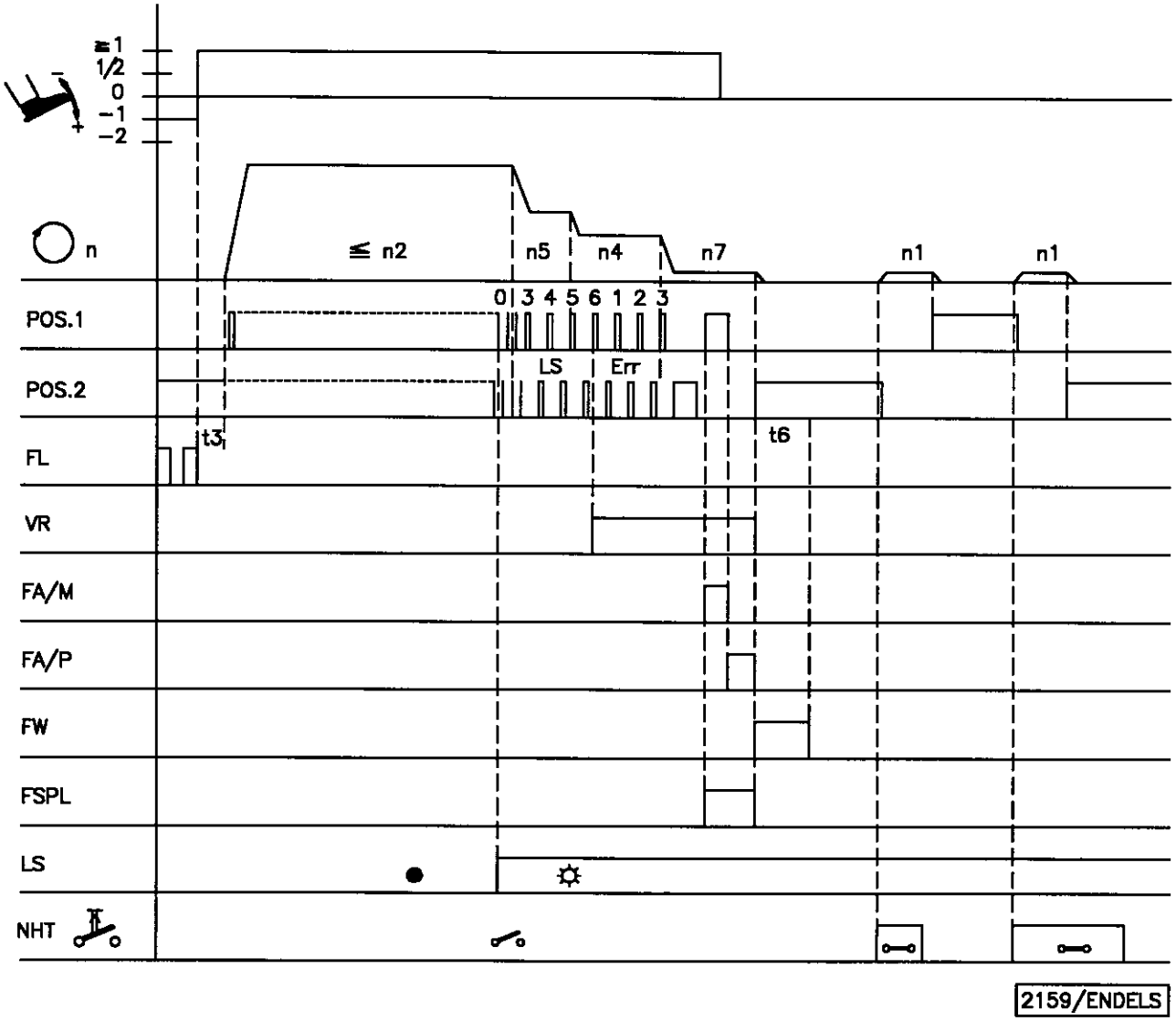
Abbreviation	Function		Param.	Pushb. Control	Pushbutton V810	Pushbutton V820
	Single start backtack	on		Pushb. S2	Pushb. 1	Pushb. 1
	Single end backtack	on		Pushb. S3	Pushb. 2	Pushb. 4
n1	Positioning speed		110			
n2	Maximum speed		111			
n3	Start backtacking speed		112			
n4	End backtacking speed		113			
n7	Trimming speed		116			
t1	Delay until speed release after start backtack		200			
t3	Start delay from lifted foot		202			
t4	Full power of presser foot lifting		203			
t5	Pulsing of presser foot lifting		204			
t6	Activation time thread wiper		205			
t7	Delay of presser foot lifting after thread wiper		211			
Arr	Start backtack stitches backward		001			
Err	End backtack stitches backward		002			

Trimming from intermediate stop



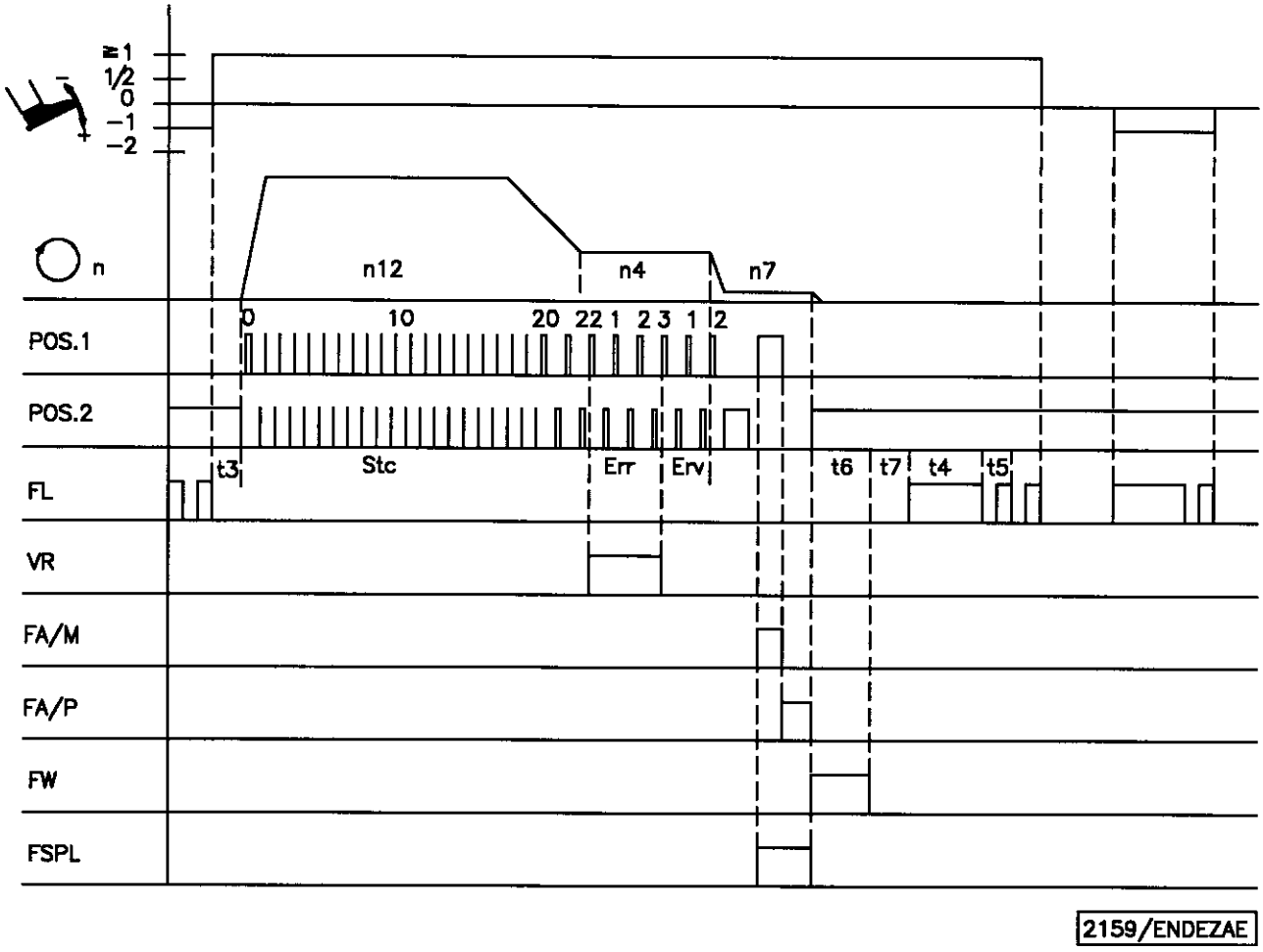
Abbreviation	Function		Param.	Pushb. Control	Pushbutton V810	Pushbutton V820
	Softstart	on	134			
	Single start backtack	on		Pushb. S2	Pushb. 1	Pushb. 1
	Single end backtack	on		Pushb. S3	Pushb. 2	Pushb. 4
	Basic position 2	on		Pushb. S4	Pushb. 4	Pushb. 7
n1	Positioning speed		110			
n2	Maximum speed		111			
n3	Start backtacking speed		112			
n4	End backtacking speed		113			
n6	Softstart speed		115			
n7	Trimming speed		116			
t1	Delay until speed release after start backtack		200			
t3	Start delay from lifted foot		202			
t4	Full power of presser foot lifting		203			
t5	Pulsing of presser foot lifting		204			
t6	Activation time thread wiper		205			
t7	Delay end thread wiper until presser foot lifting		206			
SSc	Softstart stitches		100			
Arr	Start backtack stitches backward		001			
Err	End backtack stitches backward		002			

End sensing by light barrier



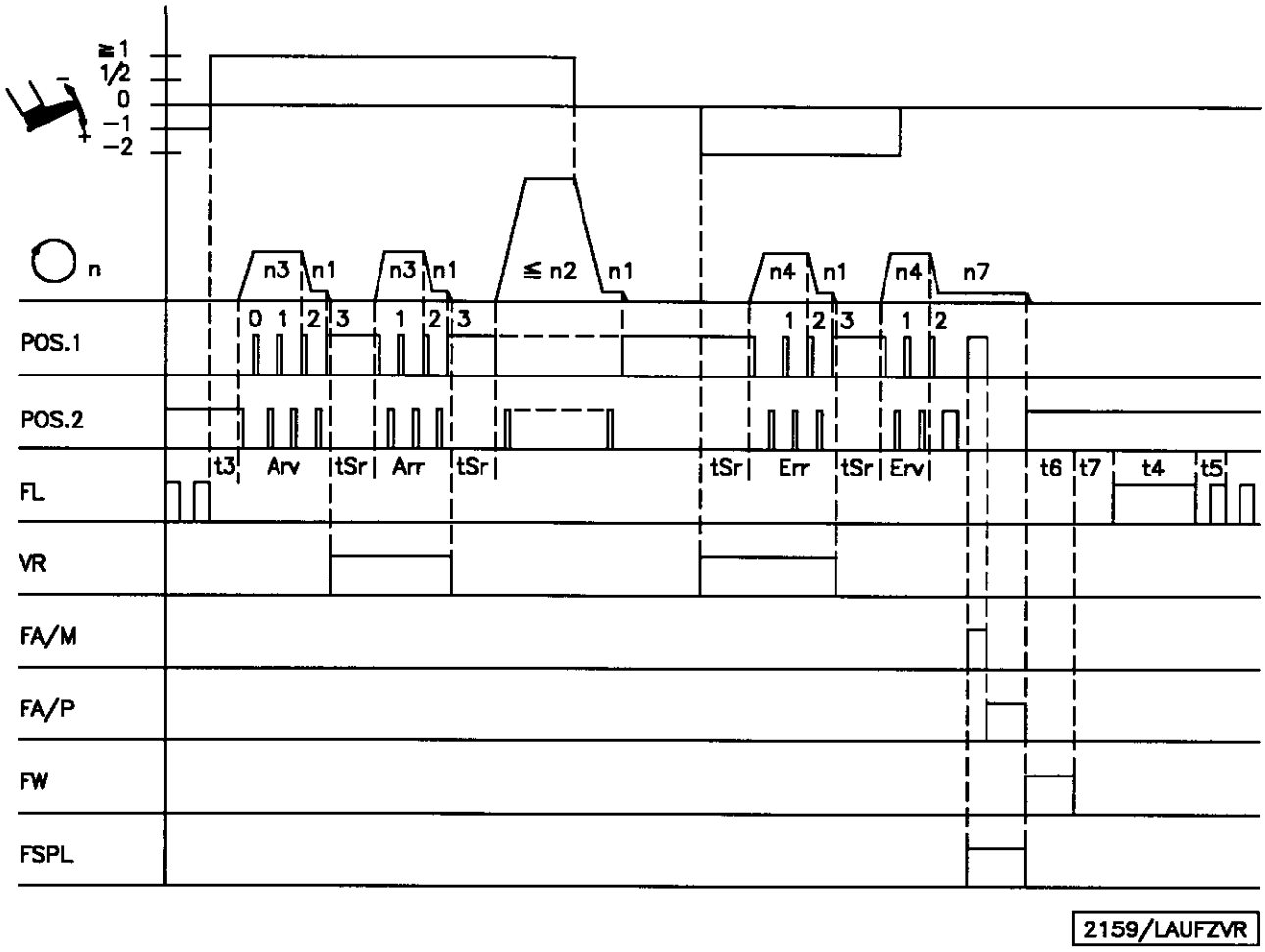
Abbreviation	Function		Param.	Pushb. Control	Pushbutton V810	Pushbutton V820
	Start backtack	off		Pushb. S2	Pushb. 1	Pushb. 1
	Single end backtack	on		Pushb. S3	Pushb. 2	Pushb. 4
	Light barrier	on	009			Pushb. 3
	Light barrier covered/uncovered		131			
	Trimming stitch backward		136			
n1	Positioning speed		110			
n2	Maximum speed		111			
n4	End backtacking speed		113			
n5	Speed after light barrier sensing		114			
n7	Trimming speed		116			
t3	Start delay from lifted foot		202			
t6	Activation time thread wiper		205			
Err	End backtack stitches backward		002			
LS	Stitches after light barrier sensing		004			

Seam end by stitch counting



Abbreviation	Function		Param.	Pushb. Control	Pushbutton V810	Pushbutton V820
	Start backtack	off		Pushb. S2	Pushb. 1	Pushb. 1
	Double end backtack	on		Pushb. S3	Pushb. 2	Pushb. 4
	Stitch counting	on				Pushb. 2
	Speed mode stitch counting (limited speed)		141 = 2			
n4	End backtacking speed		113			
n7	Trimming speed		116			
n12	Automatic speed for stitch counting		118			
t3	Start delay from lifted foot		202			
t4	Full power of presser foot lifting		203			
t5	Pulsing of presser foot lifting		204			
t6	Activation time thread wiper		205			
t7	Delay end thread wiper until presser foot lifting		206			
Err	End backtack stitches backward		002			
Erv	End backtack stitches forward		003			
Stc	Stitches for seam with stitch counting		007			

Run with ornamental backtack



Abbreviation	Function		Param.	Pushb. Control	Pushbutton V810	Pushbutton V820
	Double start backtack	on		Pushb. S2	Pushb. 1	Pushb. 1
	Double end backtack	on		Pushb. S3	Pushb. 2	Pushb. 4
	Ornamental backtack	on	135			
	Presser foot stored after thread trimmer	on		Pushb. S4	Pushb. 3	Pushb. 6
n1	Positioning speed		110			
n2	Maximum speed		111			
n3	Start backtacking speed		112			
n4	End backtacking speed		113			
n7	Trimming speed		116			
t3	Start delay from lifted foot		202			
t4	Full power of presser foot lifting		203			
t5	Pulsing of presser foot lifting		204			
t6	Activation time thread wiper		205			
t7	Delay end thread wiper until presser foot lifting		206			
tSr	Stop time for ornamental backtack		210			
Arv	Start backtack stitches forward		000			
Arr	Start backtack stitches backward		001			
Err	End backtack stitches backward		002			
Erv	End backtack stitches forward		003			

13. Parameter List

13.1 OPERATOR LEVEL

Parameter		Designation	Unit	max	min	Preset	Ind. Prg. No.
000	Arv	Start backtacking stitches forward		254	0	2	A
001	Arr	Start backtacking stitches backward		254	0	4	A
002	Err	End backtacking stitches backward		254	0	2	A
003	Erv	Final backtacking stitches forward		254	0	2	A
004	LS	Light barrier compensating stitches		254	0	7	A
005	LSF	Number of stitches of the light barrier filter for knitted fabrics		254	0	0	A
006	LSn	Number of light barrier seams		15	1	1	A
007	Stc	Number of stitches for the seam with stitch counting		254	0	20	A
008	-F-	Setting of pushbutton 3 with a parameter from the technician level 1 = Softstart ON/OFF 2 = Ornamental backtack ON/OFF 3 = Sewing start blocked with light barrier uncovered ON/OFF		3	1	1	A
009	LS	Light barrier	ON/OFF			OFF	A
013	FA	Thread trimmer ON/OFF	ON/OFF			ON	A
014	FW	Thread wiper ON/OFF	ON/OFF			ON	A
015	StS	Stitch counting	ON/OFF			OFF	A
030	rFw	0 = Stitch counter OFF 1 = Stitch counter with stop 2 = Stitch counter without stop		2	0	0	A
031	cFw	Number of stitches for stitch counter		25500 ***)	0	0	A

***) When programming the 5-digit parameter values, the 3-digit value displayed must be multiplied by 100.

13.2 TECHNICIAN LEVEL

Code no. 190 with control operation
Code no. 1907 with V810/V820 operation

Parameter	Designation	Unit	max	min	Preset	Ind. Prg. No.
Group 0	**Stitches/Countings**					
100 SSc	Number of softstart stitches		20	0	0	A
Group 1	**Speeds**					
110 n1	Positioning speed	RPM	390 *)	70	200	A
111 n2-	Upper limit setting range n-max	RPM	9900 *)	n2_	4000	A
112 n3	Start backtacking speed	RPM	6500 *)	200	1500	A
113 n4	End backtacking speed	RPM	6500 *)	200	1500	A
114 n5	Speed after light barrier sensing	RPM	6500 *)	200	1200	A
115 n6	Softstart speed	RPM	1500 *)	70	500	A
116 n7	Trimming speed	RPM	500 *)	70	200	A
118 n12	Automatic speed for stitch counting	RPM	6500 *)	400	3500	A
119 nSt	Speed stage graduation 1 = linear 2 = slightly progressive 3 = highly progressive		3	1	2	A
Group 2	**Speeds**					
121 n2_	Lower limit setting range n-max	RPM	n2- *)	400	400	A
127 AKS	Acoustic signal	ON/OFF			OFF	A
128 ASd	Start delay, when starting command is given by covering the light barrier (see parameter 129)	ms	2000 *)	0	0	A
129 ALS	Machine start by covering the light barrier (only in conjunction with parameter 132 = ON)	ON/OFF			OFF	A

*) When programming the 3-digit and/or 4-digit control parameter values, the 2-digit and/or 3-digit value displayed must be multiplied by 10.

TECHNICIAN LEVEL

Code no. 190 with control operation
Code no. 1907 with V810/V820 operation

Parameter	Designation	Unit	max	min	Preset	Ind. Prg. No.
Group 3	**Switching functions**					
130 LSF	Light barrier filter for knitted fabrics	ON/OFF			OFF	A
131 LSd	ON = Light barrier sensing "uncovered" OFF = Light barrier sensing "covered"	ON/OFF			ON	A
132 LSS	Blocking of machine start, when light barrier "uncovered"	ON/OFF			ON	A
133 LSE	Thread trimmer, when completing the seam after light barrier sensing	ON/OFF			ON	A
134 SSt	Softstart	ON/OFF			OFF	A
135 SrS	Ornamental backtack	ON/OFF			OFF	A
136 FAr	Trimming stitch backward	ON/OFF			OFF	A
139 nIS	Display of machine speed	ON/OFF			OFF	A
Group 4	**Switching functions**					
140 Sht	Function of the pushbutton 0 = no function 1 = needle up-down 2 = needle up 3 = single stitch 4 = full stitch		4	0	2	A
141 SGn	Speed status for a seam with stitch counting 0 = speed controllable by the pedal up to the set maximum speed (parameter 111) 1 = fixed speed (parameter 118) without influence by the pedal (machine stop by pushing the pedal to the basic position) 2 = limited speed controllable by the pedal up to the set limit (parameter 118) 3 = at fixed speed (parameter 118), can be interrupted by full heelback		3	0	0	A

TECHNICIAN LEVEL

Code no. 190 with control operation
Code no. 1907 with V810/V820 operation

Parameter	Designation	Unit	max	min	Preset	Ind. Prg. No.
Group 4	**Switching functions**					
142 SFn	Speed status for the free seam and for the seam with light barrier 0 = speed controllable by the pedal up to the set maximum speed (parameter 111) 1 = fixed speed (parameter 118) without influence by the pedal (machine stop by pushing the pedal to the basic position) 2 = limited speed controllable by the pedal up to the set limit (parameter 118) 3 = at fixed speed (parameter 118), can be interrupted by full heelback		3	0	0	A
Group 5	**Time functions**					
150 t8	Stitch correction of the double start backtack (prolongation of the operating time of the stitch regulator / not effective with ornamental backtack)	ms	500	0	0	A
151 t9	Stitch correction of the double end backtack (prolongation of the operating time of the stitch regulator / not effective with ornamental backtack)	ms	500	0	0	A
153 brt	Braking power at machine standstill		50	0	0	A
Group 7	**Service functions**					
172	**Display on the control:** Pos. 1 to 1A (LED 7 lights up) Pos. 2 to 2A (LED 8 lights up) **Function will be active only after the sewing has been started once!**					A
172	**Display of the positions on control panel V810:** Position 1 to 1A (left arrow above pushbutton 4 On) Position 2 to 2A (right arrow above pushbutton 4 On) **Function will be active only after the sewing has been started once!**					
172	**Display of the positions on control panel V820:** Position 1 to 1A (left arrow above pushbutton 7 On) Position 2 to 2A (right arrow above pushbutton 7 On) **Function will be active only after the sewing has been started once!**					

TECHNICIAN LEVEL

Code no. 190 with control operation
Code no. 1907 with V810/V820 operation

Parameter	Designation	Unit	max	min	Preset	Ind. Prg. No.
Group 7	**Service functions**					
173	Checking of the signal outputs and inputs using the incorporated control panel or control panels V810/V820 - Select the desired output with the +/- pushbuttons - Actuate the selected output with the >> pushbutton 01 = Backtacking (B3/9) 02 = Presser foot lifting (B3/4) 03 = Thread trimmer 1 (B3/10) 04 = Thread trimmer 2 (B3/2) 05 = Thread wiper (B3/8) 06 = Thread tension release (B3/5) ON/OFF = By actuating the switches connected to the control the function of these switches is checked and displayed with "ON/OFF".					A
179	**Display on the control panel V820:** control program number with index and identification number **Display on the control or control panel V810:** When pressing the button ">>", the data will be displayed in succession					A

13.3 SUPPLIER LEVEL

Code no. 311 with control operation
Code no. 3112 with V810/V820 operation

Parameter	Designation	Unit	max	min	Preset	Ind. Prg. No.
Group 0	**Time functions**					
200 t1	Delay until speed release after start backtack		500	0	100	A
201 t2	Activation delay of presser foot lifting with half heelback	ms	500	20	80	A
202 t3	Start delay after presser foot lifting	ms	500	0	300	A
203 t4	Time of full power of presser foot lifting	ms	600	0	500	A
204 t5	Holding power for presser foot lifting Stages 0...7 Stage 1 = 12.5% Stage 7 = 87.5% Stage 0 = 100% Stage 1 = low holding power Stage 0 = high holding power		7	0	3	A
205 t6	Thread wiper time	ms	500	0	120	A
206 t7	Delay end of thread wiping until presser foot lifting ON or until start of the drive	ms	800	40	40	A
207 br1	Braking effect with speeds > 800 RPM		255	1	80	A
208 br2	Braking effect with speeds < 800 RPM		255	1	50	A
Group 1	**Time functions**					
210 tSr	Stop time for switching the stitch regulator in the ornamental backtack	ms	500	0	140	A
211 tFL	Activation delay of presser foot lifting with thread wiper off	ms	500	0	60	A
212 t10	Time of full power of backtacking	ms	600	0	500	A
213 t11	Holding power for backtacking Stages 0...7 Stage 1 = 12.5% Stage 7 = 87.5% Stage 0 = 100% Stage 1 = low holding power Stage 0 = high holding power		7	0	3	A

SUPPLIER LEVEL

Code no. 311 with control operation
Code no. 3112 with V810/V820 operation

Parameter	Designation	Unit	max	min	Preset	Ind. Prg. No.
Group 2	**Speeds**					
220 ALF	Accelerating power of the drive		255	1	40	A
221 dGn	Speed gate		990	0	100	A
222 tGn	Speed gate damping period	ms	500	20	120	A
Group 3	**Switching functions**					
231 Sn1	Execution of the first stitch after power ON at positioning speed	ON/OFF			ON	A
Group 4	**Switching functions**					
239	**Selection of the input function on socket B18/5** 0 = Light barrier function, if 009 = ON 1 = Needle up/down 2 = Needle up 3 = Single stitch (basting stitch) 4 = Full stitch 5 = Needle to position 2 6 = Blocking of machine run effective with open contact 7 = Blocking of machine run effective with closed contact 8 = Blocking of machine run (unpositioned) effective with open contact 9 = Blocking of machine run (unpositioned) effective with closed contact 10 = Automatic speed without pedal (n12) 11 = Limited speed with pedal (n12) 12 = Presser foot lifting with pedal in position 0 (neutral) 13 = No function 14 = No function 15 = No function 16 = Intermediate backtack 17 = Backtack suppression/recall 18 = No function 19 = Reset stitch counter		19	0	0	A

*) When programming the 3-digit and/or 4-digit control parameter values, the 2-digit and/or 3-digit value displayed must be multiplied by 10.

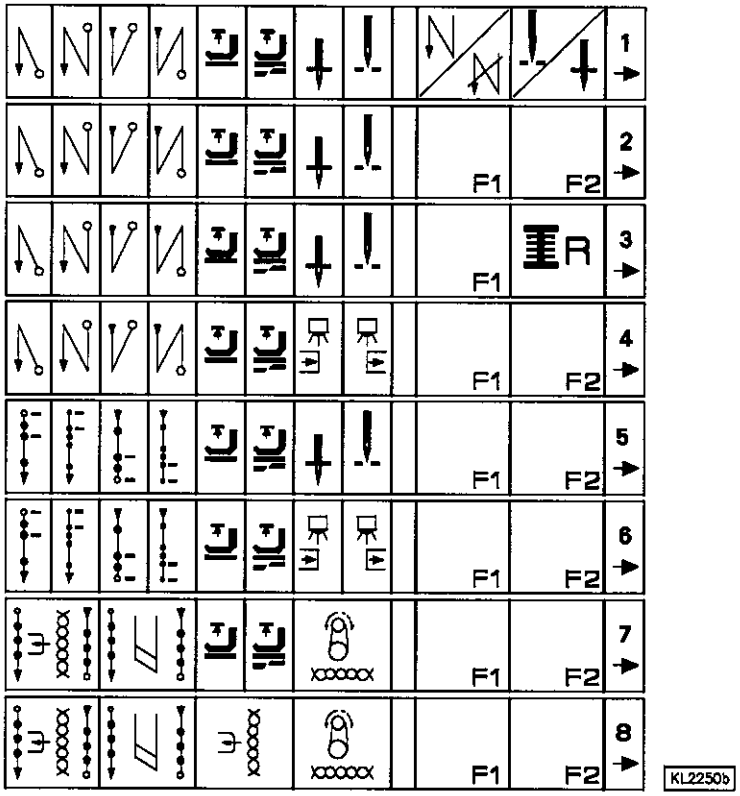
SUPPLIER LEVEL

Code no. 311 with control operation
Code no. 3112 with V810/V820 operation

Parameter	Designation	Unit	max	min	Preset	Ind. Prg. No.
Group 9	**Switching functions**					
291 810	Select insertable strip number for control panel V810 (illustrations of insertable strips see the following chapter)		7	1	1	A
292 820	Select insertable strip number for control panel V820 (illustrations of insertable strips see the following chapter)		6	1	1	A
293 tF1	**Selection of the input function by pushbutton (A) "F1" on control panel V810/V820** 0 = No function 1 = Needle up/down 2 = Needle up 3 = Single stitch (basting stitch) 4 = Full stitch 5 = Needle to position 2 6 = No function 7 = No function 8 = No function 9 = No function 10 = No function 11 = No function 12 = No function 13 = No function 14 = No function 15 = No function 16 = Intermediate backtack 17 = Backtack suppression/recall 18 = No function 19 = Reset stitch counter		19	0	17	A
294 tF2	**Selection of the input function by pushbutton (B) "F2" on control panel V810/V820** Functions of the pushbutton as with parameter 293		19	0	1	A

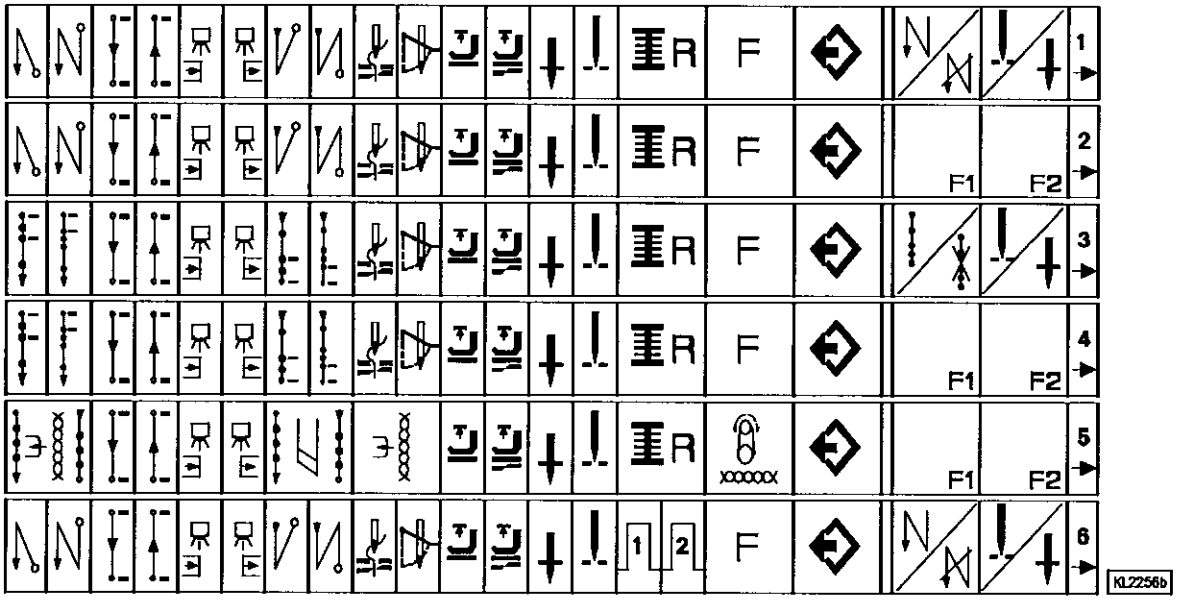
13.4 Insertable Strips for Control Panel V810/V820

Insertable strips for control panel V810



For this control insertable strips nos. 1...4 can be used.

Insertable strips for control panel V820

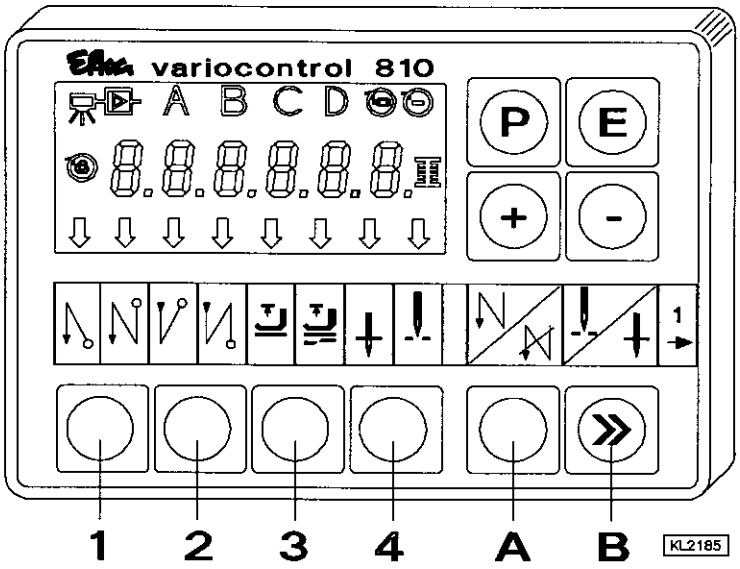


For this control insertable strip nos. 1 and 2 can be used.

Note

When changing the settings of parameters 291 / 292, the functions of V810 / V820 change as well. Function keys F1 / F2 are excepted. These are influenced by parameters 293 / 294.

14. 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 with another one supplied with the control panel. Change parameter 291 in this case. See also instruction manual **V810 / V820**!

Functional Setting of the Pushbuttons

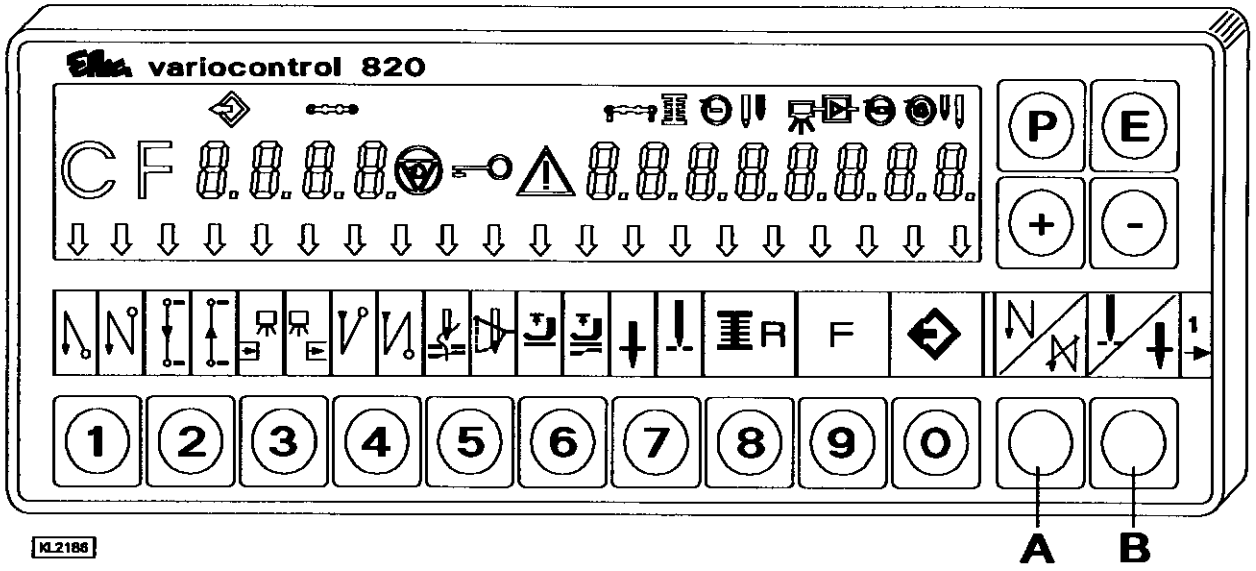
Pushbutton P = Recall or exit of programming mode
Pushbutton E = Enter button for modifications in the programming mode
Pushbutton + = Increase of the value indicated in the programming mode
Pushbutton - = Decrease of the value indicated in the programming mode

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

Explanation of the symbols see instruction manual V810/V820!

15. 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 with 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 stitch counter
Pushbutton 9 = Function key - can be programmed (parameter 008)
Pushbutton 0 = Teach-in / execution of 40 possible seam sections

Pushbutton A = Pushbutton for backtack suppression/recall (pushbutton A can be set with different input functions by using parameter 293)
Pushbutton B = Pushbutton for needle up/down (pushbutton B can be set with different input functions by using parameter 294). Moreover, pushbutton B serves 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, 2, 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

Explanation of the symbols see instruction manual V810/V820!

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