

# **efka** vario dc

**CONTROL**

**DA82GA3312**

with control panel V810/V820

## **INSTRUCTION MANUAL**

**No. 402275**

**English**



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## 1 Range of Applications

The drive is suitable for lockstitch, machines:

Brand	Series
DÜRKOPP ADLER	N291, 069, 204, 205, 221, 266, 267, 268, 269, 366, 271, 381, 382, 467, 767, 768, 4180, 4280, 8967

### 1.1 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 relevant EC standards:

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

Operate the drive only

- on thread processing machines
- in dry areas



#### CAUTION

When selecting the installation site and the layout of the connecting cable, the safety instructions must be followed with no exceptions. Particular attention should be paid to maintaining the proper distance from moving parts!

## 2 Scope of Supply

1	Direct current motor	<b>DC1600</b>	
1	Electronic control	<b>vario dc DA82GA3312</b>	
	- Power pack	<b>N153</b>	(optional N155)
	- Actuator	<b>EB301</b>	(optional EB302, softer spring)
1	Control panel	<b>V810</b>	(optional V820)
1	Position transmitter	<b>P6-1</b>	
1	Power switch	<b>NS108</b>	(optional NS108D)
1	Set of standard accessories consisting of:	<b>B131</b>	
		belt guard, complete set of hardware motor mounting foot bracket 1 and 2, short documentation	
1	Set of accessories consisting of:	<b>Z57</b>	extension cable for EB3..

#### Note

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

## 2.1 Special Accessories

<b>Control panel</b> Variocontrol V810	- part no. 5970153
<b>Control panel</b> Variocontrol V820	- part no. 5970154
<b>Reflection light barrier module</b> LSM001A	- part no. 6100028
<b>EFKANET interface</b> IF232-2	- part no. 7900068
<b>Actuating solenoid</b> type EM1.. (for e. g. sewing foot lifting, backtacking, etc.)	- see specification "solenoids" for available models
<b>Extension cable</b> for commutation transmitter, approx. 1100 mm long, complete with plug and socket connector	- part no. 1112247
<b>Extension cable</b> for position transmitter, approx. 1100 mm long, complete with plug and socket connector	- part no. 1100409
<b>Extension cable</b> for motor connection, approx. 1500 mm long	- part no. 1111857
<b>Extension cable</b> for external actuator, approx. 750 mm long, complete with plug and socket connector	- part no. 1111845
<b>Extension cable</b> for external actuator, approx. 1500 mm long, complete with plug and socket connector	- part no. 1111787
<b>5-pin plug</b> with locking screw for the connection of another external actuator	- part no. 0501278
<b>External actuator</b> type EB302 (softer spring) with approx. 250 mm connecting cable and 5-pin plug with locking screw	- part no. 4170012
<b>Foot control</b> type FB301 with one pedal for standing operation, with approx. 300 mm connecting cable and plug	- part no. 4170013
<b>Foot control</b> type FB302 with three pedals for standing operation, with approx. 1400 mm connecting cable and plug	- part no. 4170018
<b>Potential equalization cord</b> 700 mm long, LIY 2.5 mm <sup>2</sup> , grey, with spades on both sides	- part no. 1100313
<b>Pulley</b> 40 mm Ø with special belt intake and slip-off protection (use SPZ belt)	- part no. 1112223
<b>Pulley</b> 50 mm Ø with special belt intake and slip-off protection (use SPZ belt)	- part no. 1112224
<b>Knee switch</b> type KN3 (pushbutton) with cord of approx. 950 mm length without plug	- part no. 5870013
<b>Sewing light transformer</b>	- please indicate line voltage and sewing light voltage (6,3V or 12V)
<b>Pitman rod for foot control</b>	- available versions on inquiry
<b>8-pin plug</b> with locking screw MAS 8100S	- part no. 0502865
<b>8-pin plug</b> with locking screw MAS 8100SN	- part no. 0501279
<b>15-contact SubminD</b> male connector with half-shell housing	- part no. 1113193
<b>37-contact SubminD</b> male connector with half-shell housing	- part no. 1112900

### Note

Select the pulley such that the motor runs at approx. 4000 RPM with max. stitch number.

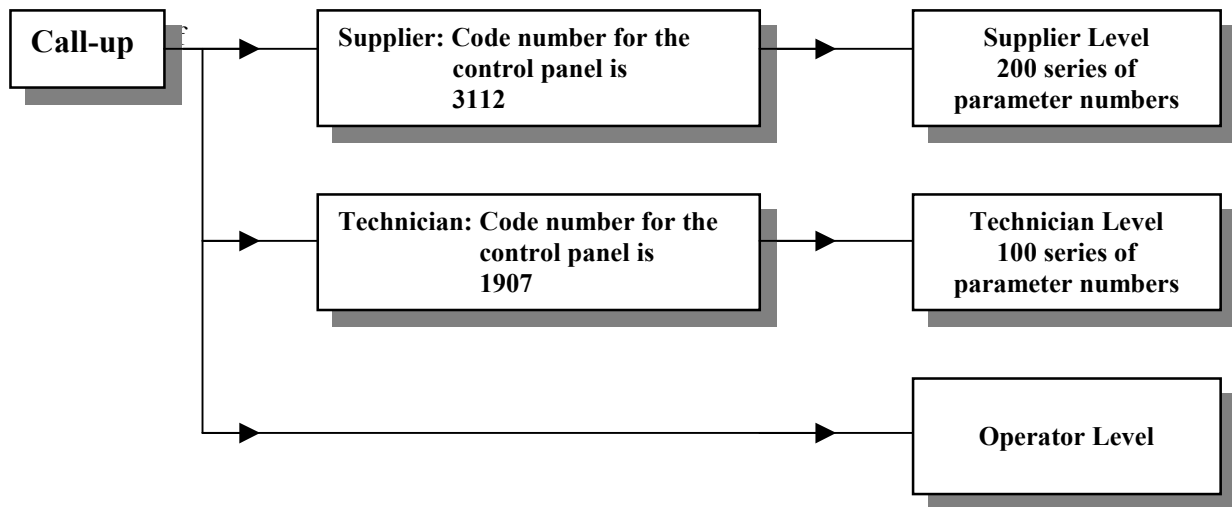
### 3 Operation

#### 3.1 Access Authorization upon Command Input

In order to prevent unintentional changes of preset functions the command input is distributed at various levels.

**The following persons have access:**

- the supplier to the highest and all subordinate levels using a code number
- the technician to the next lower and all subordinate levels using a code number
- the operator to the lowest level without using a code number





## 3.2 V810 Control Panel Operation

### 3.2.1 Code Number Input on the V810 Control Panel

Technician Level Code Number => 1907 and Supplier Level Code Number => 3112

**Example:** Technician level CODE number selection on the V810 control panel

		TURN POWER OFF		
<b>P</b>	+	TURN POWER ON. First digit blinks !	→	<b>C - 0 0 0 0</b>
<b>+</b>	<b>-</b>	Press the + or – key to select the first digit !	→	<b>C - 1 0 0 0</b>
<b>&gt;&gt;</b>		Press the >> key ! Second digit blinks !	→	<b>C - 1 0 0 0</b>
<b>+</b>	<b>-</b>	Press the + or – key to select the second digit !	→	<b>C - 1 9 0 0</b>
<b>&gt;&gt;</b>	<b>&gt;&gt;</b>	Press the >> key twice ! Fourth digit blinks !	→	<b>C - 1 9 0 0</b>
<b>+</b>	<b>-</b>	Press the + or – key to select the fourth digit!	→	<b>C - 1 9 0 7</b>
<b>E</b>		If the CODE number is correct, the first PARAMETER number at the selected level is displayed !	→	<b>F - 1 0 0</b>

### 3.2.2 Parameter Input at the Operator Level on the V810 Control Panel

**Example:** CODE number has not been input !

		TURN POWER ON !	→	<b>d A 8 2 G A</b>
<b>P</b>		First parameter at the operator level is displayed.	→	<b>F - 0 0 0</b>
<b>+</b>		Second parameter at the operator level is displayed. The next or previous parameter can be called by pressing the +/- keys.	→	<b>F - 0 0 1</b>
<b>E</b>		Parameter value is displayed !	→	<b>0 0 3</b>
<b>+</b>		Change parameter value by pressing the +/- keys.	→	<b>X X X</b>
<b>E</b>		Parameter value is entered. Display advances to the next parameter.	→	<b>F - 0 0 2</b>
<b>+</b>		Press the + key several times until the desired parameter is displayed !	→	<b>F - 0 0 9</b>
<b>E</b>		Parameter value is displayed !	→	<b>O F F</b>

<b>+</b>	New parameter value is displayed !	→	ON
<b>E</b>	Next parameter is displayed !	→	F - 010
or			
<b>P</b>	Exit programming !	→	d A 8 2 G A

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

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

### 3.2.3 Parameter Input at the Technician/Supplier Level on the V810 Control Panel

**Example:** After CODE number input at the technician level.

		After CODE number input, the first PARAMETER number is displayed!	→	F - 100
<b>+</b>		Press the + key ! The next parameter number is displayed !	→	F - 110
<b>E</b>		Press key E! The parameter value is displayed !	→	0180
<b>+</b>	<b>-</b>	Change the parameter value !	→	0XXX
<b>E</b>		Parameter value is entered. Display advances to the next parameter.	→	F - 111
or				
<b>P</b>		Parameter value is entered. The actual PARAMETER number is displayed!	→	F - 110
or				
<b>P</b>	<b>P</b>	Press key P twice ! Exit programming !	→	d A 8 2 G A

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

## 3.3 V820 Control Panel Operation

### 3.3.1 Code Number Input on the V820 Control Panel

**Technician Level Code Number => 1907 and Supplier Level Code Number => 3112**

**Example:** Technician level CODE number selection on the V820 control panel

		TURN POWER OFF !		
<b>P</b>	+	TURN POWER ON !	→	C-0000
<b>1</b>	<b>9</b>	<b>0</b>	<b>7</b>	Input CODE number !
				→
				C-1907

<b>E</b>	If CODE number is incorrect, repeat input !	→	C-0000 InFo F1
<b>E</b>	If CODE number is correct, the first PARAMETER number at the selected level is displayed.	→	F-100

### 3.3.2 Parameter Input at the Operator Level on the V820 Control Panel

**Example:** CODE number has not been input !

	TURN POWER ON !	→	4000 dA82GA
<b>P</b>	Display shows no reading !	→	
<b>E</b>	Stitches for the start backtack forward at the operator level are displayed. PARAMETER number is not displayed.	→	Arv 003
+	-	→	Arv XXX
<b>E</b>	Parameter value is entered. Display advances to the stitches for the start backtack backward.	→	Arr 003
or			
<b>P</b>	Exit programming !	→	4000 dA82GA

### 3.3.3 Parameter Input at the Technician/Supplier Level on the V820 Control Panel

**Example:** After CODE number input at the technician level.

	After CODE number input, the first PARAMETER number is displayed.	→	F-100
<b>E</b>	The most significant digit of the PARAMETER number blinks.	→	F-100
1	1	0	Input desired PARAMETER number!
		→	F-110
<b>E</b>	If PARAMETER number is incorrect, repeat input!	→	F-XXX InFo F1
<b>E</b>	If PARAMETER number is correct	→	F-110 n1 180
+	-	→	F-110 n1 XXX
<b>E</b>	Parameter value is entered. Display advances to the next parameter.	→	F-111 n2- 4000
or			
<b>P</b>	Parameter value is entered. A new PARAMETER number can be selected.	→	F-XXX
or			
<b>P</b>	<b>P</b>	→	4000 dA82GA

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

### 3.4 Program Identification

Function	Parameter
Program number, modification index and identification number display	179

Display example parameter 179 on the V810 control panel:

- Select parameter 179!
- Press the **E** key → e. g. **3312A** is displayed (Program number with index)
- Press the **>>>** key → e. g. **011105** is displayed (Identification number)
- Press the **P** key twice → **dA82GA** is displayed (Sewing process can be started)

Display example parameter 179 on the V820 control panel:

- Select parameter 179!
- Press the **E** key → **312A 01110535** is displayed (Program number shortened by one digit with index and identification number)
- Press the **P** key twice → **4000 dA82GA** is displayed (Sewing process can be started)

### 3.5 Direct Input of Maximum Speed Limitation (DED) with Control Panel

The maximum speed of the machine must be limited to the specific level according to the application. Do the setting at the operator level using the +/- keys after each seam end. The actual value is shown on the display. The speed setting range is between parameter 111 (upper limit) and parameter 121 (lower limit).

#### 3.5.1 Setting on the V810 Control Panel

	Type designation is displayed	→	<b>d A 8 2 G A</b>
<div style="border: 1px solid black; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center;">+</div>	Maximum speed is displayed (reading remains on for max. 5 seconds)	→	<b>4 0 0 0</b>
<div style="display: flex; gap: 5px;"> <div style="border: 1px solid black; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center;">+</div> <div style="border: 1px solid black; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center;">-</div> </div>	Change the value; e. g. press the – key 8 times !	→	<b>3 2 0 0</b>
After approx. 5 seconds the display shows		→	<b>d A 8 2 G A</b>

#### 3.5.2 Setting on the V820 Control Panel

Actual display value at the operator level

	Maximum speed and type designation are displayed	→	<b>4000 dA82GA</b>
<div style="display: flex; gap: 5px;"> <div style="border: 1px solid black; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center;">+</div> <div style="border: 1px solid black; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center;">-</div> </div>	Change the maximum speed value; e. g. press the – key 8 times !	→	<b>3200 dA82GA</b>

**This value is saved when you start sewing. It remains in effect even after turning the machine off!**

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

### 3.6 Keys for Background Information (HIT) with V820

(key assignment see figure on the last page)

#### Note

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

For fast operator information, the values of functions enabled using key 1, 2, 3, 4 or 9 are displayed on the control panel for approx. 3 seconds. During this time, the respective values can be varied directly by pressing the + or - key.

#### 3.6.1 Example of HIT

**Increase stitch-count seam section from 20 stitches to 25 stitches.**

Stitch-count function (key 2) is off.

↓	Display after power on	→	4000 dA82GA
2	Press key 2 briefly ! Lefthand arrow and stitch-count function are on	→	Stc 020
+	Press the + key ! Increase the number of stitches from 20 to 25 !	→	Stc 025
	Display after approx. 3 seconds	→	4000 dA82GA

Stitch-count function (key 2) is already On.

↓	Display after power on	→	4000 dA82GA
2	Press key 2 for at least 1 second! Lefthand arrow goes off momentarily; stitch-count function is on	→	Stc 020
+	Press the + key ! Increase the number of stitches from 20 to 25 !	→	Stc 025
	Display after approx. 3 seconds	→	4000 dA82GA

**This value is saved when you start sewing. It remains in effect even after turning the machine off!**

#### Function key F

Various parameters, even higher-level parameters, can be enabled or disabled by pressing the function key (key 9). The following functions may be assigned to the function key:

- 1 Softstart ON/OFF
- 2 Ornamental backtack ON/OFF
- 3 High lift for walking foot operational mode stored = ON / operational mode not stored = OFF
- 4 Needle cooling ON/OFF
- 5 Reverse motor rotation ON/OFF

The key assignment can be changed as follows:

	Display after power On	→	4000 dA82GA
P	Press key P!	→	

E	Press key <b>E</b> !	→	c2 002
E	Press key <b>E</b> several times until the letter symbol <b>-F-</b> appears ! (ornamental backtack On/Off)	→	-F- 2
-	Press the <b>-</b> key! (softstart On/Off)	→	-F- 1
P	Press key <b>P</b> !	→	4000 dA82GA

**The assignment is completed.**

**The number of softstart stitches can be changed as follows:**

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

9	Press key <b>9</b> briefly ! The arrow above the key lights up (softstart function is On)	→	SSc 001
+	Press the <b>+</b> key ! Number of stitches increases.	→	SSc 003
	Display after 3 seconds	→	4000 dA82GA

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

9	Press key <b>9</b> for at least 1 sec. ! The arrow above the key goes off momentarily (softstart function is On)	→	SSc 001
+	Press the <b>+</b> key ! Number of stitches increases.	→	SSc 003
	Display after 3 seconds	→	4000 dA82GA

**This value is saved when you start sewing. It remains in effect even after turning the machine off!**

### 3.7 Programming of Seams

Um häufig vorkommende Nähabläufe komfortabel einstellen und abrufen bzw. verschiedene Nähte mit unterschiedlichen Einstellungen aneinanderreihen zu können, ist die Naht-Programmierung möglich.

- 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 powering on!
- The functions “start backtack”, “end backtack”, “stitch counting”, “thread trimming” and “sewing foot lift” can be assigned individually to each seam.
- For all 8 patterns, different numbers of start and end backtacking stitches can be programmed.
- The maximum number of stitches for the forward or backward section is limited to 15 stitches.
- It is possible to “teach in” seams with stitch counting by executing the desired sections.

**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

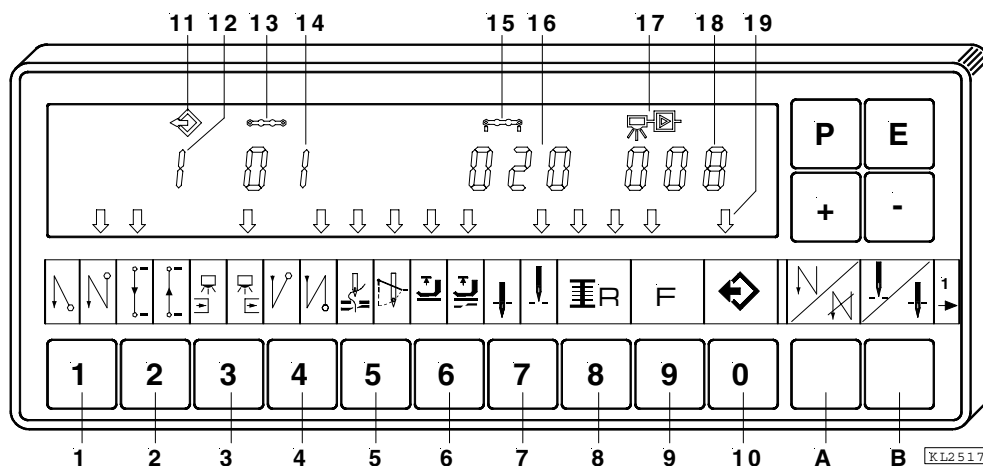
**Example 3:** Pattern 1                    10 seams

                  Pattern 2                    15 seams

                  Pattern 3-8                    0 seams

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

#### Functions of programming of seams:



	Function	Arrow		Function	Arrow
1	Single start backtack On	left	7	Basic position down	left
	Double start backtack On	right		Basic position up	right
	Start backtack Off	---	8	No function	---
2	Counted seam forward On	left	9	Switching from one pattern or seam to the next according to the setting of parameter 277	
	Counted seam backward On	right	10	Memory for programming of seams On	left
	Counted seam Off	---		Memory for programming of seams Off	---
3	Light barrier uncovered/covered On	left	11	Program symbol	
	Light barrier covered/uncovered On	right	12	Display of program number	
	Light barrier Off	---	13	Seam symbol	
4	Single end backtack On	left	14	Display of seam number	
	Double end backtack On	right	15	Symbol of number of stitches of a seam	
	End backtack Off	---	16	Display of number of stitches	
5	Thread trimmer On	left	17	Light barrier symbol	
	Thread wiper On	right	18	Display of light barrier compensating stitches	
	Thread trimmer and thread wiper On	both	19	Programming mode On	blinking
	Thread trimmer and thread wiper Off	---		Execution (pattern) mode On	constant
6	Sewing foot in the seam On	left	A	No function during programming	
	Sewing foot after seam end On	right	B	No function during programming	
	Sewing foot in the seam and after seam end On	both			
	Sewing foot Off	---			

### 3.7.1 Programming Mode

- Each seam pattern is programmed and stored separately.
- Exit the teach-in mode after pattern input.
- The values are saved when you start sewing.

#### Display configuration:

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

→ 

3 04 020 008
--------------

#### Programming:

After power On without code number input !

- |            |  |   |  |   |   |            |
|------------|--|---|--|---|---|------------|
| 1          | <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="padding: 2px 10px;">P</td></tr></table> | P | LC display is cleared  | → | <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="padding: 2px 10px;"> </td></tr></table>          |            |
| P          |  |   |  |   |   |            |
|            |  |   |  |   |   |            |
| 2          | <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="padding: 2px 10px;">E</td></tr></table> | E | Display of a parameter at the operator level                                   | → | <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="padding: 2px 10px;">aaa bbb</td></tr></table>    | aaa bbb    |
| E          |  |   |  |   |   |            |
| aaa bbb    |  |   |  |   |   |            |
| 3          | <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="padding: 2px 10px;">0</td></tr></table> | 0 | Lefthand arrow above key 0 blinks.<br>Entry into pattern and seam programming. | → | <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="padding: 2px 10px;">1 01 - - -</td></tr></table> | 1 01 - - - |
| 0          |  |   |  |   |   |            |
| 1 01 - - - |  |   |  |   |   |            |
| 4          | <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="padding: 2px 10px;">0</td></tr></table> | 0 | Changing the pattern number  | → | <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="padding: 2px 10px;">2 01 - - -</td></tr></table> | 2 01 - - - |
| 0          |  |   |  |   |   |            |
| 2 01 - - - |  |   |  |   |   |            |

The seam functions (e.g. sewing foot lift, start backtack, etc.) can be programmed using the keys on the control panel.

### 3.7.2 Seam with Stitch Counting

↓

- |  |   |   |   |   |          |
|--|---|---|---|---|----------|
| <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="padding: 2px 10px;">2</td></tr></table> | 2 | Lefthand arrow above key 2 On;<br>stitch counting is On;<br>actual number of stitches is displayed. | → | <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="padding: 2px 10px;">2 01 004</td></tr></table> | 2 01 004 |
| 2  |   |   |   |   |          |
| 2 01 004   |   |   |   |   |          |

### 3.7.3 Backward Seam with Stitch Counting

↓

- |  |   |  |   |   |          |
|--|---|--|---|---|----------|
| <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="padding: 2px 10px;">2</td></tr></table> | 2 | Righthand arrow above key 2 On;<br>backward sewing is On; switch to<br>forward sewing by pressing the key again. | → | <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="padding: 2px 10px;">2 01 004</td></tr></table> | 2 01 004 |
| 2  |   |  |   |   |          |
| 2 01 004   |   |  |   |   |          |

When sewing backward, all sewing operations including backtack are performed in reverse feeding direction. The functions "light barrier seam" and "backward seam" block each other, i.e. the light barrier cannot be enabled if the backward seam has been selected, or, backward sewing is not possible if the light barrier is enabled.



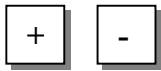
Change the number of stitches using the +/- keys,  
or execute the seam section using the pedal !

### 3.7.4 Stitch Counting and/or Light Barrier

↓

- |  |   |  |   |   |              |
|--|---|--|---|---|--------------|
| <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="padding: 2px 10px;">3</td></tr></table> | 3 | Light barrier covered/uncovered On;<br>actual number of compensating stitches<br>is displayed. | → | <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="padding: 2px 10px;">2 01 004 007</td></tr></table> | 2 01 004 007 |
| 3  |   |  |   |   |              |
| 2 01 004 007   |   |  |   |   |              |





Changing the number of compensating stitches

If stitch counting **and** light barrier are to be On at the same time, the number of stitches for a seam with counting must be programmed before the light barrier compensating stitches.

#### After programming the functions

<b>E</b>	Seam is entered; the next seam is displayed.	→	2 02 ---
----------	---	---	----------

The seam is entered by pressing key E or by heelback.

<b>P</b>	End of programming ! The first seam section to be executed in the selected pattern is displayed.	→	2 01 004 007
----------	--	---	--------------

After all seams have been programmed, each seam can be called again with the E key for checking.

#### Note

Several seam patterns cannot be programmed successively without interruption. Each pattern must be completed with the P key; otherwise it gets lost.

#### Note

The patterns are permanently saved only after you have started sewing.

### 3.7.5 Detailed Example

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

	<b>Display before programming</b>	→	XXXX		
1	<table border="0"> <tr> <td style="border: 1px solid black; padding: 2px; text-align: center;"><b>P</b></td> <td style="padding: 0 10px;">LC display is cleared</td> </tr> </table>	<b>P</b>	LC display is cleared	→	
<b>P</b>	LC display is cleared				
2	<table border="0"> <tr> <td style="border: 1px solid black; padding: 2px; text-align: center;"><b>E</b></td> <td style="padding: 0 10px;">Display of a parameter at the operator level</td> </tr> </table>	<b>E</b>	Display of a parameter at the operator level	→	aaa bbb
<b>E</b>	Display of a parameter at the operator level				
	↓				
3	<table border="0"> <tr> <td style="border: 1px solid black; padding: 2px; text-align: center;"><b>0</b></td> <td style="padding: 0 10px;">Lefthand arrow above key 0 blinks. Pattern 1, seam 1</td> </tr> </table>	<b>0</b>	Lefthand arrow above key 0 blinks. Pattern 1, seam 1	→	1 01 ---
<b>0</b>	Lefthand arrow above key 0 blinks. Pattern 1, seam 1				
	↓				
4	<table border="0"> <tr> <td style="border: 1px solid black; padding: 2px; text-align: center;"><b>0</b></td> <td style="padding: 0 10px;">Lefthand arrow above key 0 blinks. Pattern 2, seam 1</td> </tr> </table>	<b>0</b>	Lefthand arrow above key 0 blinks. Pattern 2, seam 1	→	2 01 ---
<b>0</b>	Lefthand arrow above key 0 blinks. Pattern 2, seam 1				
	↓				
5	<table border="0"> <tr> <td style="border: 1px solid black; padding: 2px; text-align: center;"><b>0</b></td> <td style="padding: 0 10px;">Lefthand arrow above key 0 blinks. Pattern 3, seam 1</td> </tr> </table>	<b>0</b>	Lefthand arrow above key 0 blinks. Pattern 3, seam 1	→	3 01 ---
<b>0</b>	Lefthand arrow above key 0 blinks. Pattern 3, seam 1				
	↓				
6	<table border="0"> <tr> <td style="border: 1px solid black; padding: 2px; text-align: center;"><b>0</b></td> <td style="padding: 0 10px;">Lefthand arrow above key 0 blinks. <b>Pattern 4, seam 1</b></td> </tr> </table>	<b>0</b>	Lefthand arrow above key 0 blinks. <b>Pattern 4, seam 1</b>	→	4 01 ---
<b>0</b>	Lefthand arrow above key 0 blinks. <b>Pattern 4, seam 1</b>				
	↓				
7	<table border="0"> <tr> <td style="border: 1px solid black; padding: 2px; text-align: center;"><b>1</b></td> <td style="padding: 0 10px;">Lefthand arrow above key 1 blinks. Number of stitches for the start backtack section backward is displayed. Vary the number of stitches using the +/- key.</td> </tr> </table>	<b>1</b>	Lefthand arrow above key 1 blinks. Number of stitches for the start backtack section backward is displayed. Vary the number of stitches using the +/- key.	→	4 01 --- 03
<b>1</b>	Lefthand arrow above key 1 blinks. Number of stitches for the start backtack section backward is displayed. Vary the number of stitches using the +/- key.				

8	↓ [ 1 ]	Righthand arrow above key 1 blinks. Number of stitches for the start backtack section forward is displayed. Vary the number of stitches using the +/- key.	→	4 01   - - -   04
If a different key is pressed, start backtack section input is completed, and the righthand arrow above key 1 stops blinking. The double start backtack is enabled.				
9	↓ [ 6 ]	Righthand arrow above key 6 On. Sewing foot lift at the seam end is On.	→	4 01   - - -
10	↓ [ 2 ]	Lefthand arrow above key 2 On. Stitch counting forward is On.	→	4 01   000
11	[ + ]   [ - ]	Change the number of stitches using the +/- keys, or execute the seam section using the pedal.  Seam length is set at 17 stitches !	→	4 01   017
12	[ E ]	<b>Pattern 4, seam 2</b>	→	4 02   - - -
13	↓ [ 2 ]	Lefthand arrow above key 2 On. Stitch counting forward is On.	→	4 02   000
14	[ + ]   [ - ]	Change the number of stitches using the +/- keys, or execute the seam section using the pedal.  Seam length is set at 8 stitches !	→	4 02   008
15	[ E ]	<b>Pattern 4, seam 3.</b> Free seam is selected.	→	4 03   - - -
16	↓ [ 3 ] →	Lefthand arrow above key 3 On. Light barrier covered/uncovered is On.	→	4 03   - - -   000
17	[ + ]   [ - ]	Change the number of stitches using the +/- keys; 5 compensating stitches are set.	→	4 03   - - -   005
18	↓ [ 4 ]	Lefthand arrow above key 4 blinks. Number of stitches for the end backtack section backward is displayed. Vary the number of stitches using the +/- key.	→	4 01   - - -   04
If a different key is pressed, end backtack section input is completed, and the lefthand arrow above key 4 stops blinking. The single end backtack is enabled.				

19	↓ ↓ [ 5 ]	Both arrows above key 5 On. Thread trimmer and thread wiper are On.	→	4 03   - - -   005
20	[ E ]	<b>Pattern 4, seam 4.</b> Advance to the next seam acknowledges the settings of the preceding seams.	→	4 04   - - -
21	[ P ]	Exit programming; the first seam can be executed !	→	4 01   017

### 3.7.6 Maximum Number of Seams Exceeded

If by inputting a program the total number of 40 seams is exceeded, the teach-in mode cannot be completed by pressing the **P** key. A new start of sewing is impaired. The display shows a warning (dEL). By pressing the **P** key again the pattern displayed will be deleted. Exit the teach-in mode now if the total number of 40 seams is not exceeded. Otherwise there will be a new warning.

#### Display:

**X:** Last input or selected pattern number (1..8)

**YY:** Number of programmed seams of the selected pattern (0..40)

**NN:** Total number of input seams if more than 40

→

dEL X YY NN
-------------

The user must now decide which pattern should be deleted !

0
---

Selection of the pattern to be deleted

→

dEL X YY NN
-------------

**X:** Pattern number

**YY:** Number of seams of this pattern

**NN:** Total number of input seams if more than 40

P
---

Deletion of the pattern

→

dEL X YY NN
-------------

**X:** Pattern number of the deleted pattern

**YY:** 00 = no more seam is programmed

**NN:** Total number of input seams if more than 40

Exit the teach-in mode if the number of seams equals or falls below 40, and the last input seam will be displayed.

### 3.7.7 Execution (Pattern) Mode

- ↓
- 1 

0
---

 → Enable mode by pressing key **0** (arrow above key 0 lights up). Seam number 01 is displayed.
- |          |
|----------|
| X 01 ZZZ |
|----------|
- 2 

+	-
---	---

 Select pattern 1..8.
- |          |
|----------|
| X 01 ZZZ |
|----------|
- 3 

E
---

 If you do not wish to start with seam 1, press the **E** key several times until the desired seam number is displayed !
- |          |
|----------|
| X 05 ZZZ |
|----------|
- Start the pattern by pressing the pedal !
- 4 

0
---

 Complete the execution (pattern) mode; Disable mode by pressing key **0**!

### 3.7.8 Further Settings for TEACH IN

Functions	Parameter
Seam suppression if 0 stitches are set	(Std) 275

**Parameter 275 = 0 Seam suppression disabled:** i. e. if the light barrier is Off and stitch counting is set at 0 stitches, a free seam will be performed.

**Parameter 275 = 1 Seam suppression enabled:** i. e. if the light barrier is Off and stitch counting is set at 0 stitches, the program switches to the next seam if the function is On. In case functions such as start of end backtack, thread trimmer, are On, they will be performed before switching to the next seam.

Functions	Parameter
Correction seam On/Off, seam or pattern interruption by thread trimmer (dkn)	276

**Parameter 276 = 0 Correction seam disabled:** The seam can be interrupted by pressing the pedal to pos. -2. The control switches automatically to the next seam number.

**Parameter 276 = 1 Correction seam enabled:**

- The seam can be interrupted by pressing the pedal to pos. -2 and thread trimming, and a correction seam (free seam) can be performed manually.
- The correction seam can be completed by pressing the pedal to pos. -2 or by light barrier if it is On. Then the control switches automatically to the next seam number.

**Parameter 276 = 2 Seam or pattern interruption by thread trimming:**

- The seam can be interrupted by pressing the pedal to pos. -2 and thread trimming, even if the thread trimmer is Off. Then the program switches back to the **first** seam of the selected pattern.

Functions	Parameter
Selector: Switch from one seam or pattern to the next (nFS)	277

- **Parameter 277 = 0** Switching from one seam to the next is active.
- **Parameter 277 = 1** Switching from one pattern to the next is active.

## 4 Putting into Service

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

- The correct installation of the drive, position transmitter and accompanying devices, if necessary
- If necessary, the correct adjustment of the direction of motor rotation using parameter 161
- Verify using parameter 280 that the appropriate series is connected
- The setting of the reference position using parameter 170
- The setting of the positions using parameter 171
- The correct positioning speed using parameter 110
- The correct maximum speed compatible with the sewing machine using parameter 111
- The setting of the remaining relevant parameters
- Start sewing in order to save the set values

If the power is turned off before sewing has been started, the settings get lost!

## 5 Setting the Basic Functions

### 5.1 Direction of Motor Rotation

Functions	Parameter
Direction of motor rotation	(drE) 161

Parameter 161 = 0

Clockwise motor rotation

Parameter 161 = 1

Counterclockwise motor rotation (look at the motor shaft)



#### ATTENTION

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

### 5.2 Selection of the Machine Series

Functions	Parameter
Display of the machine series	(SEL) 280

The various machine models are specified by resistors. The following resistance values (tolerance  $\pm 1\%$ ) are provided:

Machine model =	271, N291, 8967	=	100 $\Omega$
	204, 205, 221, 266, 366	=	220 $\Omega$
	069, 267, 268, 269, 4180, 4280	=	680 $\Omega$
	381, 382, 467, 767, 768	=	1000 $\Omega$

The special functional sequences for this machine type and the various preset values are activated depending on the resistor identified. The machine select is displayed using parameter 280. The resistance value is displayed in Ohm directly on the control panel.

### 5.2.1 Emergency Run Function If Machine Select Is Invalid

If the control cannot identify an admissible value for the machine select resistor, only emergency run functions are possible. All parameter settings and preset values are preserved.

Display:

V810

V820

Emergency run function due to invalid machine select →

InF A5

InF A5

**Available emergency run functions**

- Speed is limited to 1000 RPM
- Machine run blockage (safety switch)
- Needle cooling
- Sewing foot lift when heeling the pedal back (-1, -2)

### 5.3 Positions

Functions		Parameter
Setting the reference position	(Sr1)	170
Setting the signal and stop positions	(Sr2)	171
Display of the signal and stop positions	(Sr3)	172

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

#### 5.3.1 Setting the Reference Position

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

**The reference position must be set:**

- for initial operation
- after replacing the position transmitter
- after replacing the microprocessor

**Reference position = Needle point at the height of the needle plate, from downward movement of the needle in the direction of rotation of the motor shaft.**

**Note**

If a different needle position (other than reference position) is set, the values of the signal and stop positions (Pos1 and Pos2) preset by the manufacturer are no longer valid and must be reset.

#### 5.3.2 Setting the Reference Position on Control Panel V810

Select parameter 170.



F - 170



Press key E.



Sr1 0



Press key >> (B).



Pos0 [ ]

Turn handwheel until desired reference position is reached.

**Note:** Turn at least until marker [ ] has disappeared!



Press key E.  
Reference position is entered.



F - 171

Unless the reference position has been stored, an error message will appear on the display.

→

in F A 3
----------

Turn handwheel several times, press key **E** and select parameter **170**. Then repeat the above sequence.

### 5.3.3 Setting the Reference Position on Control Panel V820

Select 170.

E
---

Press key **E**

→

F-170 Sr1
-----------

»
---

Press key >> (**B**)

→

F-170 PoS 0 [ ]
-----------------

Turn handwheel until desired reference position is reached.

**Note:** Turn at least until marker [ ] has disappeared!

E
---

Press key **E**.

Reference position is entered.

→

F-171
-------

Unless the reference position has been stored, an error message will appear on the display.

→

InFo A3
---------

Turn handwheel several times until the desired reference position is reached.

### 5.3.4 Setting the Positions on the V810 Control Panel

Select parameter 171.

→

F - 171
---------

E
---

Press key **E**.

→

Sr 2
------

»
---

Press key >> (**B**).

Parameter value of position 1 appears.

→

1 046
-------

+	-
---	---

If necessary, change parameter value by pressing the +/- key or by turning the handwheel.

→

1 XXX
-------

E
---

Press key **E**.

Parameter value of position 2 appears.

→

2 270
-------

+	-
---	---

If necessary, change parameter value by pressing the +/- key or by turning the handwheel

→

2 XXX
-------

E
---

Press key **E**.

Parameter value of position 1A appears.

→

1 A 086
---------

+	-
---	---

If necessary, change parameter value by pressing the +/- key or by turning the handwheel

→

1 A XXX
---------

E
---

Press key **E**.

Parameter value of position 2A appears.

→

2 A 460
---------

+	-
---	---

If necessary, change parameter value by pressing the +/- key or by turning the handwheel

→

2 A XXX
---------

E	Press key <b>E</b> . Parameter value of position 3 appears on the display! <b>Without function!</b>	→	3 0 0 0	
E	Press key <b>E</b> . Parameter value of position 3A appears on the display! <b>Without function!</b>	→	3 A 0 0 0	
P	P	Settings are completed. Exit programming.	→	d A 8 2 G A

### 5.3.5 Setting the Positions on the V820 Control Panel

→	Display before programming	→	4000 dA82GA		
P	Press key <b>P</b> . A parameter number blinks on the display.	→	F-XXX		
1	7	1	Input parameter number 171.	→	F-171
E	Press key <b>E</b> . The abbreviation of the parameter appears on the display.	→	F-171 Sr2		
»	Press key >> ( <b>B</b> ). Display of the 1st parameter value of position 1.	→	F-171 1 046		
+	-	If necessary, change parameter value by pressing the +/- keys or by turning the handwheel.	→	F-171 1 XXX	
E	Press key <b>E</b> . Parameter value of position 2 appears on the display.	→	F-171 2 270		
+	-	If necessary, change parameter value by pressing the +/- keys or by turning the handwheel.	→	F-171 2 XXX	
E	Press key <b>E</b> . Parameter value of position 1A appears on the display.	→	F-171 1A 086		
+	-	If necessary, change parameter value by pressing the +/- keys or by turning the handwheel.	→	F-171 1A XXX	
E	Press key <b>E</b> . Parameter value of position 2A appears on the display.	→	F-171 2A 460		
+	-	If necessary, change parameter value by pressing the +/- keys or by turning the handwheel.	→	F-171 2A XXX	
E	Press key <b>E</b> . Parameter value of position 3 appears on the display! <b>Without function!</b>	→	F-171 3 000		
E	Press key <b>E</b> . Parameter value of position 3 appears on the display! <b>Without function!</b>	→	F-171 3A 000		
P	P	Settings are completed. Exit programming.	→	4000 dA82GA	



**Note**

When setting the positions by turning the handwheel, make sure that the displayed numerical value changes. The setting values of the positions are programmed in the factory. After setting the reference position the machine is ready for use. Changing these settings is necessary only on non-standard machines or for fine tuning.

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

## 5.4 Positioning Speed

Functions	Parameter
Positioning speed (n1)	110

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

## 5.5 Maximum Speed Compatible with the Sewing Machine

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

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

## 5.6 Maximum Speed

Functions	Parameter
Maximum speed (n2)	111

**Note**

See instruction manual of the sewing machine manufacturer for the maximum speed of the sewing machine.

**Note**

Select the pulley such that the motor runs at approx. 4000 RPM with max. number of stitches.

## 5.7 Display of the Signal and Stop Positions

Functions	Parameter
Display of positions 1 and 2 (Sr3)	172

The position settings can easily be checked using parameter 172. The function is possible only if sewing has already been started.

- Select parameter 172
- The control panel display shows "Sr3"
- Turn handwheel according to the direction of motor rotation
- Lefthand arrow above key 4 on V810 or key 7 on V820 On → corresponds to position 1
- Lefthand arrow above key 4 on V810 or key 7 on V820 turns off → corresponds to position 1A
- Righthand arrow above key 4 on V810 or key 7 on V820 On → corresponds to position 2
- Righthand arrow above key 4 on V810 or key 7 on V820 turns off → corresponds to position 2A

Positions 3, 3A and the reference position are not displayed.

## 5.8 Braking Characteristics

Functions		Parameter
Braking effect when varying the preset value $\leq 4$ stages	(br1)	207
Braking effect when varying the preset value $\geq 5$ stages	(br2)	208
Machine selection: 0 = normal, 1 = medium duty, 2 = heavy duty, 3 = models 4180 and 4280	(rEG)	225

- Parameter 207 regulates the braking effect between speed stages
- Parameter 208 influences the braking effect for the stop

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

## 5.9 Braking Power at Standstill

Functions		Parameter
Braking power at standstill	(brt)	153

This function prevents unintentional "wandering" of the needle at standstill.

The effect can be checked by turning the handwheel.

- The braking power is effective at standstill
  - at stop in the seam
  - after the seam end
- The effect can be set
- The higher the set value, the stronger the braking power
- It does not work after power On,

## 5.10 Starting Characteristics

Functions		Parameter
Accelerating power of the drive	(ALF)	220

The drive acceleration dynamics can be adapted to the sewing machine characteristic (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 characteristic may appear coarse. In this case, one should try to optimize the settings.

## 5.11 Actual Speed Display

Functions		Parameter
Actual speed display	(nIS)	139

If parameter 139 = ON, the V810/820 display shows the following information:

### During operation:

- The actual speed
- Example:** 2350 revolutions per minute



2350

2350

### At stop in the seam:

- The stop indication



StoP

StoP

### At 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 revolutions per minute and type of control DA320G



dA82GA

3300 dA82GA

## 6 Functions and Settings

### 6.1 First Stitch after Power On

Functions	Parameter
1 stitch at positioning speed after power On	(Sn1) 231

For the protection of the sewing machine and if parameter 231 is On, the first stitch after power On will be performed at positioning speed n1, independently of the pedal position and the softstart function.

### 6.2 Softstart

Functions	Parameter
Softstart On/Off	(SSt) 134

#### Functions:

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

When using the V820 control panel, direct access is possible by means of the function key (key 9)!

Functions	Parameter
Softstart On/Off	(-F-) 008 = 1

#### 6.2.1 Softstart Speed

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

#### 6.2.2 Softstart Stitches

Functions	Parameter
Number of softstart stitches	(SSc) 100

### 6.3 Sewing Foot Lifting

Functions	V810	V820
Sewing foot lifting at stop in the seam (automatic)	lefthand arrow above key On	Key 3
Sewing foot lifting after thread trimming (automatic)	righthand arrow above key On	Key 6
Sewing foot lifting at stop in the seam and after thread trimming (automatic)	both arrows above key On	
Sewing foot lifting Off	both arrows above key Off	

Functions	Parameter
Switch-on delay with pedal in position -1 (half heelback)	(t2) 201
Start delay after disabling the sewing foot lift signal	(t3) 202
Time of full power	(t4) 203
Duty ratio (ED) with pulsing	(t5) 204
Delay after thread wiping until sewing foot lifting	(t7) 206
Fast sewing foot lifting On/Off	(FLS) 216
Time monitoring of sewing foot lift (monitoring Off at '0')	(tFL) 297

**Sewing foot is lifted:**

- in the seam by half heelback (position -1)  
or automatically (using key 3 on the V810 control panel)  
or automatically (using key 6 on the V820 control panel)
- after thread trimming by heelback (position -1 or -2)  
or automatically (using key 3 on the V810 control panel)  
or automatically (using key 6 on the V820 control panel)  
automatically using the light barrier  
automatically by stitch counting  
switch-on delay after thread wiper (t7)

It is possible to prevent unintentional foot lifting before thread trimming when changing from pedal position 0 (neutral) to position -2 by setting a switch-on delay (t2) using parameter 201.

**Holding power of the lifted foot:**

The sewing foot is lifted by full power. Then the system switches automatically to partial power in order to reduce the load for the control and the connected solenoid.  
Set the duration of full power using parameter 203 and the partial holding power using parameter 204.



**CAUTION!**

If the holding power is set too high, the solenoid and the control may be permanently damaged. Please observe the permissible duty ratio (ED) of the solenoid, and set the appropriate value according to the table below.

Stage	Duty ratio (ED)	Effect
1	12.5 %	low holding power
2	25.0 %	
3	37.5 %	
4	50.0 %	
5	62.5 %	
6	75.0 %	
7	87.5 %	
0	100.0 %	high holding power (full power)

**Sewing foot lowers:**

- Press pedal to position 0 (neutral)
- Press pedal to position ½ (slightly forward)

Upon pressing the pedal forward from lifted sewing foot, the start delay (t3), that can be set using parameter 202, becomes effective.

See List of Parameters chapter "Timing Diagrams"!

**6.4 Sewing Foot Pressure Reduction**

Functions	Parameter
Sewing foot pressure reduction with speed limitation, function of the key on socket D/4 (mFd)	146

The sewing foot pressure consists of a basic value generated by spring power and a value generated pneumatically. After power On, the sewing foot always works at full pressure. The sewing foot pressure can be reduced by pressing the key connected to socket D/4-15. The sewing foot pressure output is disabled. It is enabled by pressing the key again. The reduced sewing foot pressure is indicated by a light emitting diode. At reduced sewing foot pressure the speed is limited depending on parameter 146. Speed limitation DB2000 or DB3000 can be selected using parameter 146. Moreover, it is possible to select inverted sewing foot pressure reduction. Normal sewing foot pressure can be enabled by pressing the key again. The key can be pressed at any time except during automatic seams or seam sections. The sewing foot lift does not have influence on the sewing foot pressure.

<b>Parameter 146 =</b>	<b>1</b>	<b>Sewing foot pressure reduction</b> with speed limitation DB2000
<b>Parameter 146 =</b>	<b>2</b>	<b>Sewing foot pressure reduction</b> with speed limitation DB3000
<b>Parameter 146 =</b>	<b>3</b>	Lift <b>roller</b> (see chapter "Roller")
<b>Parameter 146 =</b>	<b>4</b>	Inverted <b>sewing foot pressure reduction</b>

## 6.5 Start Backtack

Functions	V810/V820
Single start backtack Double start backtack Start backtack Off	lefthand arrow above key On righthand arrow above key On both arrows Off
	Key 1

The start backtack starts by pressing the pedal forward at the beginning of the seam. From lifted sewing foot the backtack is delayed by the time t3 (start delay after disabling the sewing foot lift signal). The start backtack is executed automatically at speed n3. If softstart is running parallel, the respective lower speed is prevailing.

Whether or not an interruption of the start and end backtack is possible can be determined with parameter 284. It does not work with the ornamental backtack.

**Parameter 284 = ON** Backtack can be interrupted by pedal position 0 (neutral). A separate speed using **parameter 125** is available for this purpose.

**Parameter 284 = OFF** Automatic backtack cannot be interrupted

By pressing the pedal forward after an interrupted start backtack, the backtack can be continued; by half heelback (-1), the the sewing foot can be lifted, or, by full heelback (-2), trimming without end backtack can be completed. The sewing foot is not automatically lifted when interrupting the backtack.

The start backtack stitch length is set with the following parameter:

**Parameter 137 = ON** Backtack is performed with normal stitch length.

**Parameter 137 = OFF** Backtack is performed with long stitches.

The stitch length (normal or long stitches) during backtack can be selected with parameter 137. The indicator does not light up during backtack.

Counting as well as enabling and disabling of the backtacking signal is synchronized to position 1. The backtacking signal will be disabled after completion of the backward section (parameter 001) and start backtack speed n3 after a delay time t1. Then pedal control is returned.

### 6.5.1 Speed n3 at the Start of the Seam

Functions	Parameter
Start backtack speed	(n3) 112

When programming 3-digit or 4-digit parameter values on the control, the 2-digit or 3-digit values displayed must be multiplied by 10.

### 6.5.2 Start Backtacking Stitch Count

Functions	Parameter
Number of stitches forward	(Arv) 000
Number of stitches backward	(Arr) 001

The number of start backtacking stitches can be set using the above parameters directly on the V810/V820 control panel. For fast operator information (HIT) when using the V820 control panel, the value of the function enabled using key 1 can be displayed for approx. 3 seconds. During this time, the value can be varied directly by pressing key + or -.

### 6.5.3 Speed Release

Functions	Parameter
Delay until speed release after start backtack (t1)	200

Speed release after single and double backtack can be influenced by parameter 200.

### 6.5.4 Double Start Backtack

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

### 6.5.5 Single Start Backtack

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

## 6.6 End Backtack

Functions	V810	V820
Single end backtack Double end backtack End backtack Off	lefthand arrow above key On righthand arrow above key On both arrows Off	Key 2 Key 4

The end backtack starts by heelback, in a seam with stitch counting at the end of counting, or, from the light barrier seam at the end of the light barrier compensating stitches. The stitch regulator is immediately enabled from machine standstill. After lowering the sewing foot, the switch-on point of the stitch regulator is delayed by the time t3 (start delay after disabling the sewing foot lift signal). The first leading edge of position 1 counts as 0 stitch whenever the function is not started in position 1. Counting and disabling the stitch regulator is synchronized to position 1. From full machine run, the signal will be switched in only after having reached the end backtack speed n4 and synchronization to position 2. Whether or not an interruption of the start and end backtack is possible can be determined with parameter 284. It does not work with the ornamental backtack.

**Parameter 284 = ON** Backtack can be interrupted by pedal position 0 (neutral). **A separate speed using parameter 126 is available for this purpose.**

**Parameter 284 = OFF** Automatic backtack cannot be interrupted

By pressing the pedal forward after an interrupted end backtack, the backtack can be continued; by half heelback (-1), the sewing foot can be lifted, or, by full heelback (-2), trimming without end backtack can be completed. The sewing foot is not automatically lifted when interrupting the backtack.

The end backtack stitch length is set with the following parameter:

**Parameter 137 = ON** Backtack is performed with normal stitch length.

**Parameter 137 = OFF** Backtack is performed with long stitches.

The stitch length (normal or long stitches) during backtack can be selected with parameter 137. The indicator does not light up during backtack.

#### 6.6.1 Speed n4 at the Seam End

Functions	Parameter
End backtack speed (n4)	113

## 6.6.2 End Backtacking Stitch Count

Functions		Parameter
Number of stitches backward	(Err)	002
Number of stitches forward	(Erv)	003

The number of end backtacking stitches can be set using the above parameters directly on the V810/V820 control panel. For fast operator information (HIT) when using the V820 control panel, the value of the function enabled using key 4 can be displayed for approx. 3 seconds. During this time, the value can be varied directly by pressing key + or -.

## 6.6.3 Last Stitch Backward

Functions		Parameter
Last stitch backward On/Off	(FAr)	136

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 using parameter 136 and works only in the single end backtack.

- Parameter 136 = 0      **Trimming stitch forward and thread wiper function On.**  
 Parameter 136 = 1      **Trimming stitch backward and thread wiper function On.**  
 Parameter 136 = 2      **Trimming stitch forward with short trimmer signal On. Thread wiper function Off.**  
 Parameter 136 = 3      **Trimming stitch forward with signal for stitch length reduction during softstart and signal for short trimmer On. Thread wiper function Off.**  
 Parameter 136 = 4      **Trimming stitch forward with signal for stitch length reduction during softstart. Thread wiper function Off.**

## 6.6.4 Double End Backtack

The backward section will be executed for a number of stitches that can be set. Then the stitch regulator will be disabled and the forward section will be executed. The number of stitches for the two sections can be set separately. After stitch counting (parameter 003) the trimming function will be initiated. During the entire operation the sewing speed is reduced to speed n4, with the exception of the last stitch, which will be performed at positioning speed n1.

## 6.6.5 Single End Backtack

The single end backtack is performed at end backtack speed (n4). During the last stitch the speed is reduced to positioning speed. The stitch regulator remains On or is disabled depending on parameter 136.

## 6.6.6 Backtack Synchronization

Function		Parameter
Backtack synchronization for start and end backtack On/Off	(nSo)	123
Backtack synchronization speed	(nrS)	124

If parameter 123 is on, the backtack speed will be switched to backtack synchronization speed one stitch before engaging and disengaging of the backtack solenoid. The backtack speed is released at the next position 2. If the synchronization speed, that can be set using parameter 124, is higher than the backtack speed, the latter is maintained. Backtack synchronization is possible in the start and end backtack.

## 6.7 Start and End Backtack with Switch-On and Switch-Off Delay

It is possible to compensate inertia of the start and end backtack system by parameter setting. Use parameter 101 and 102 for the start backtack and parameter 103 and 104 for the end backtack.

Functions		Parameter
Switch-on delay for the stitch regulator during start backtack	(t15)	101
Switch-off delay for the stitch regulator during start backtack	(t16)	102
Switch-on delay for the stitch regulator during end backtack	(t17)	103
Switch-off delay for the stitch regulator during end backtack	(t18)	104

**6.8 Start Ornamental Backtack**

Functions		V810/V820
Number of start ornamental backtack stitches forward	(SAv)	080
Number of start ornamental backtack stitches backward	(SAr)	081
Ornamental backtack function On/Off	(SrS)	135
Ornamental backtack stop time	(tSr)	210
Last counted forward section of the start ornamental backtack	(Zrv)	215
On/Off		
Stop time after the ornamental backtack at the start of the seam	(SSL)	217
On/Off		
Single start ornamental backtack	lefthand arrow above key On	Key 1
Double start ornamental backtack	righthand arrow above key On	
Start ornamental backtack Off	both arrows Off	

Parameter 112 for the start backtack speed applies to both the standard start backtack and the start ornamental backtack.

**In contrast to the standard start backtack the following applies to the start ornamental backtack:**

- The drive stops for stitch regulator switching.
- 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 according to the setting of parameter 215.
- The stop time (parameter 210) after the ornamental backtack can be enabled at the start using parameter 217, on condition that parameters 135 and 137 are set to “ON”. See also timing diagram in the List of Parameters.

**When using the V820 control panel, direct access is possible by means of the function key (key 9)!**

Functions		Parameter
Ornamental backtack On/Off	(-F-)	008 = 2

**6.9 End Ornamental Backtack**

Functions		V810	V820
Single end ornamental backtack	lefthand arrow above key On	Key 2	Key 4
Double end ornamental backtack	righthand arrow above key On		
End ornamental backtack Off	both arrows Off		

Functions		Parameter
Number of end ornamental backtack stitches backward	(SEv)	082
Number of end ornamental backtack stitches forward	(SEr)	083
Ornamental backtack function On/Off	(SrS)	135
Ornamental backtack stop time	(tSr)	210

Parameter 113 for the end backtack speed applies to both the standard end backtack and the end ornamental backtack.

**In contrast to the standard end backtack the following applies to the end ornamental backtack:**

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

**When using the V820 control panel, direct access is possible by means of the function key (key 9)!**

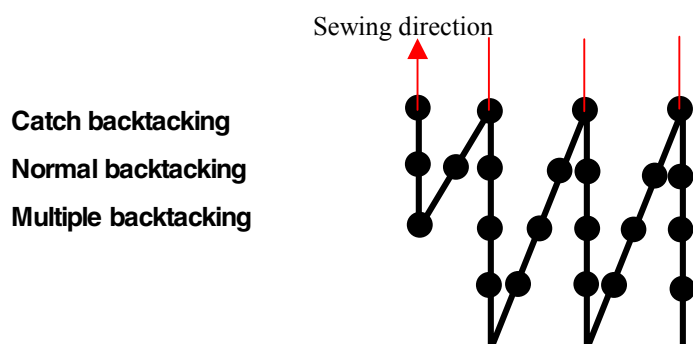
Functions		Parameter
Ornamental backtack On/Off	(-F-)	008 = 2



## 6.10 Multiple Backtacking

Functions		Parameter
Repetitions of double start backtacking	(wAR)	090
Repetitions of double end backtacking	(wER)	091

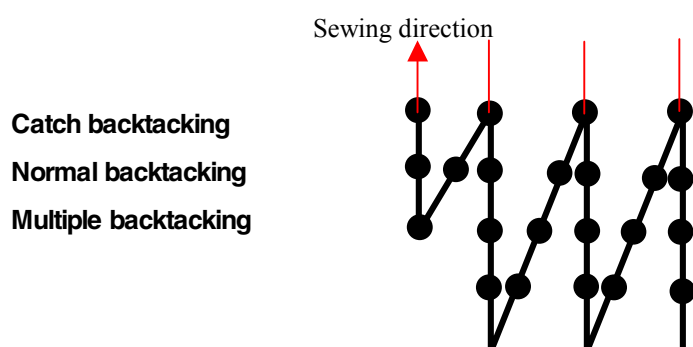
Multiple backtacking is possible only if double start or end backtacking is On. (Value 0 = Multiple backtacking Off).



## 6.11 Catch backtacking

Functions		Parameter
Number of catch backtacking stitches forward	(cb1)	092
Number of catch backtacking stitches backward	(cb2)	093

Catch backtacking is possible only at the start of the seam if double start backtacking is On, not with start ornamental backtacking (Value 0 = Catch backtacking Off). The catch backtacking function is active only if parameter 093 > 0.



## 6.12 Intermediate Backtack

Upon pressing an external key on socket A/5-33 or C/1-2, the backtack solenoid can be enabled anywhere in the seam. The speed limitation of parameter 288 or 289 becomes effective according to the setting of parameters 135 and 287. See List of Parameters chapter **Connection Diagram!**

Function		Parameter
Intermediate backtack, function of the key on socket D/5	(Fc5)	148 = 2
Speed limitation DB3000 for manual backtack On/Off	(dbA)	287
Speed limitation for manual ornamental backtack	(n9)	288
Speed limitation for manual backtack	(n11)	289

### Intermediate backtack:

Backward sewing with speed limitation according to the setting of parameter 289 is performed when the key is pressed down.

**Intermediate ornamental backtack:**

By pressing the key in the seam, the drive stops and the backtack solenoid is activated. The speed limitation according to the setting of parameter 288 is effective during the entire intermediate backtack operation. Backward sewing is performed when the key is pressed down and the stitches are counted. When releasing the key, the drive stops, the backtack solenoid is disabled and a forward seam is performed according to the counted stitches after the ornamental backtack stop time. After that the speed limitation is released.

**6.13 Backtack Suppression/Recall**

**Effective in standard and ornamental backtack**

The next backtack operation can be suppressed or recalled once by pressing an external key on socket A/14-33. This is acknowledged by a light emitting diode connected to socket A/24. It goes off when the backtack function is completed or the key is pressed again.

Function	Parameter
Backtack suppression/recall, function of the key on socket D/3	(Fc3) 147 = 2

Upon pressing	Start backtack On	Start backtack On	End backtack On	End backtack On
Before start of seam	No backtack	Backtack	---	---
In the seam	---	---	No backtack	Backtack

The double backtack is performed in the above cases.  
See List of Parameters chapter **Connection Diagram!**

**6.14 Holding Power of the Stitch Regulator Solenoid**

Function	Parameter
Time of full power	(t10) 212
Holding power of the stitch regulator solenoid	(t11) 213

The stitch regulator solenoid is engaged by full power. Then the system switches automatically to partial power in order to reduce the load for the control and the connected solenoid. Set the duration of full power using parameter 203 and the partial holding power using parameter 204.



**CAUTION!**

If the holding power is set too high, the solenoid and the control may be permanently damaged. Please observe the permissible duty ratio (ED) of the solenoid and set the appropriate value according to the table below.

Stage	Duty ratio (ED)	Effect
1	12.5 %	low holding power
2	25.0 %	
3	37.5 %	
4	50.0 %	
5	62.5 %	
6	75.0 %	
7	87.5 %	
0	100.0 %	high holding power (full power)

## 6.15 Reverse Motor Rotation

Functions		Parameter
Positioning speed	(n1)	110
Number of increments in reverse motor rotation	(ird)	180
Switch-on delay of reverse motor rotation	(drd)	181
Reverse motor rotation On/Off	(Frd)	182

The function "reverse motor rotation" is performed after trimming. When the stop position is reached, the drive stops for the duration of the switch-on delay of reverse motor rotation (parameter 182). Then it runs in reverse direction at positioning speed for an adjustable number of increments (1 increment corresponds to approx. 0.7°). After reverse motor rotation the thread wiper will be activated for the time t6.

When using the V820 control panel, direct access is possible by means of the function key (key 9)!

Function		Parameter
Reverse motor rotation On/Off	(-F-)	008 = 5

## 6.16 Machine Run Blockage (Safety Switch)



### CAUTION!

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

Functions		Parameter
New sewing start after machine run blockage	(PdO)	281
Functioning of the switch for machine run blockage	(LOS)	282
Function "machine run blockage"	(LSP)	283

Select how the drive is restarted after deactivating machine run blockage using parameter 281.

**Parameter 281 = 0** Immediate start from any pedal position

**Parameter 281 = 1** Start only with pedal in position 0 (neutral)

Determine the functioning of the safety switch using parameter 282.

**Parameter 282 = 0** Make contact [N.O.] (switch closed = machine run blockage On)

**Parameter 282 = 1** Break contact [N.C.] (switch open = machine run blockage On)

Switch the function "machine run blockage" using parameter 283.

**Parameter 283 = 0** Machine run blockage Off

**Parameter 283 = 1** Function "machine run blockage" 1 (safety function) fastest stop without positioning

**Parameter 283 = 2** Function "machine run blockage" 2 (control function) with positioning in the actual position

The function "machine run blockage" is enabled by connecting a switch to socket A/11-33 or B/2-3. When using a V810 / V820 control panel, an acoustic signal can be enabled or disabled using parameter 127.

### Display and signal after enabling machine run blockage on the control panel:

V810 control panel display

(symbol blinks and acoustic signal if parameter 127 = 1)



**- S t o P -**

V820 control panel display

(symbol blinks and acoustic signal if parameter 127 = 1)



In all variants of the function "machine run blockage" sewing foot lifting is possible, needle up/down or its variants, however, is not.

### 6.16.1 Machine Start Blockage (Blockage 1 and 2)

If the input “machine run blockage“ is activated at machine standstill, the run of the drive is blocked despite pressing the pedal. Machine start is possible only after deactivating the input.

### 6.16.2 Function “Machine Run Blockage” 1 (Safety Function) Parameter 283 = 1

#### In the start backtack:

- Fastest stop without positioning. The start backtack will be interrupted.
- Trimming is impossible.
- After deactivating the machine run blockage the start backtack and the seam will be continued by pressing the pedal to position >1, or thread trimming will be initiated by full heelback (-2).

#### In the free seam:

- Fastest stop without positioning.
- Trimming is impossible.
- After deactivating the machine run blockage the seam will be continued by pressing the pedal to position >1, or thread trimming will be initiated by full heelback (-2).

#### During stitch counting:

- Fastest stop without positioning. Stitch counting will be interrupted.
- Trimming is impossible.
- After deactivating the machine run blockage stitch counting will be continued by pressing the pedal to position >1, or thread trimming will be initiated by full heelback (-2).

#### During the light barrier compensating stitches:

- Fastest stop without positioning. The light barrier compensating stitches will be interrupted.
- Trimming is impossible.
- After deactivating the machine run blockage the light barrier compensating stitches will be continued by pressing the pedal to position >1, or thread trimming will be initiated by full heelback (-2).

#### In the end backtack:

- Fastest stop without positioning. The end backtack will be interrupted.
- Trimming is impossible.
- After deactivating the machine run blockage the end backtack will be continued by pressing the pedal to position >1, or thread trimming will be initiated by full heelback (-2).

### 6.16.3 Function “Machine Run Blockage” 2 (Control Function) Parameter 283 = 2

#### In the start backtack, during stitch counting and the light barrier compensating stitches:

- Stop in the selected position.
- Trimming without end backtack by full heelback is possible when machine run blockage is On. In this case, a new seam will be started after deactivating machine run blockage.
- After deactivating the machine run blockage the start backtack or stitch counting will be continued by pressing the pedal to position >1, or thread trimming will be initiated by full heelback (-2).

#### In the free seam:

- Stop in the selected position.
- Trimming without end backtack by full heelback is possible when machine run blockage is On. In this case, a new seam will be started after deactivating machine run blockage.
- After deactivating the machine run blockage the seam will be continued by pressing the pedal to position >1, or thread trimming will be initiated by full heelback (-2).

#### In the end backtack:

- The end backtack will be completed with a stop in the selected position. The start of the next seam is blocked.
- Trimming by full heelback is possible when machine run blockage is On.
- After deactivating the machine run blockage the sewing operation will be completed by thread trimming by half heelback, unless the thread has been trimmed before.
- If the thread is trimmed when machine run blockage is On, a new seam will be started after deactivating the machine run blockage.

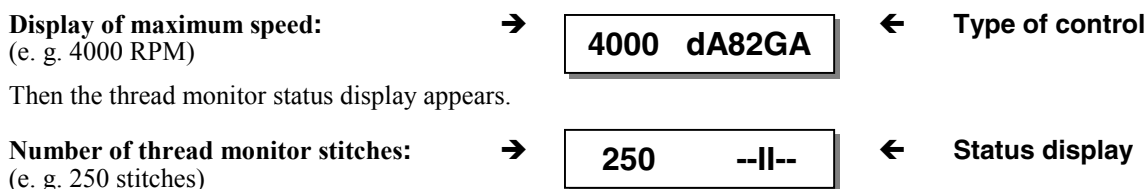
#### During thread trimming:

- Thread trimming will be completed. The start of the next seam is blocked.
- After deactivating the machine run blockage the start of the next seam is possible.

## 6.17 Thread Monitor

Functions		Parameter
Number of thread monitor stitches	(cFw)	085
Thread monitor mode	(rFw)	195

If the thread monitor function is On (parameter 195 = 1...4), the type of control and the set maximum speed are displayed for 1 sec. After power On.



At this point (after power On) the number of stitches can be regulated in steps of 10 using the +/- key. The function **DED = Direct Input of Speed Limitation** is available only after having started sewing or trimming.

### 6.17.1 Input Signals

The form of input signal helps distinguish which of the bobbins is empty.

- Righthand bobbin empty:** = Continuous signal (min. 1 sec.)
- Lefthand bobbin empty:** = Frequency 5 Hz or signal for approx. 100 msec
- Lefthand and righthand bobbin empty:** = Frequency 10 Hz or signal for approx. 50 msec

### 6.17.2 Parameter 195 = 0 – No Thread Monitor Function

The thread monitor function is Off.

### 6.17.3 Parameter 195 = 1 – Model 270 / No Stop / Sewing Foot Down after Seam End

After the bobbin is empty, the bobbin thread counter is activated when receiving an input signal, and the thread monitor symbol blinks on the display of the V810 or V820 control panel. After counting, **C** is displayed for the lefthand bobbin and **D** for the righthand bobbin on the V810 control panel. On the V820 control panel, another symbol for the righthand, lefthand bobbin or both bobbins is displayed instead of the type designation. Furthermore, the respective LEDs blink with approx. 4 Hz on the machine (righthand, lefthand or both). The displays remain on even if the input signal is no longer received. The sewing foot is not lifted after thread trimming and after counting. The sewing foot is lifted only after the pedal has been heeled back from position 0 (neutral). The displays go off (the blinking frequency of 4 Hz is disabled), if no more input signals are received after thread trimming and the subsequent sewing start after 14 stitches. This is an indicator that the bobbin has been replaced, and the bobbin thread counter is reset to zero.

### 6.17.4 Parameter 195 = 2 – Model 767, N291 / With Stop / Sewing Foot Up after Seam End

After the bobbin is empty, the bobbin thread counter is activated when receiving an input signal, and the thread monitor symbol blinks on the display of the V810 or V820 control panel. After counting, **C** is displayed for the lefthand bobbin and **D** for the righthand bobbin on the V810 control panel. On the V820 control panel, another symbol for the righthand, lefthand bobbin or both bobbins is displayed instead of the type designation. Furthermore, the respective LEDs blink with approx. 4 Hz on the machine (righthand, lefthand or both), and the drive stops. Even automatic seam sections like seams with stitch counting or light barrier seams are interrupted. They can be completed by pressing the pedal forward from position 0 (neutral).

Note the following exceptions:

- If bobbin thread counting is completed in the start backtack, the latter will be completed and the drive stops.
- If bobbin thread counting is completed in the end backtack, the latter will be fully completed with the thread trimming operation.

After thread trimming the sewing foot is automatically lifted. The displays go off (the blinking frequency of 4 Hz is disabled), if no more input signals are received after thread trimming and the subsequent sewing start after 14 stitches. This is an indicator that the bobbin has been replaced, and the bobbin thread counter is reset to zero.

### 6.17.5 Parameter 195 = 3 – Model 767, N291 / With Stop / Sewing Foot Down after Seam End

Functions as with parameter 195 = 2, but the sewing foot is lifted after thread trimming only after the pedal has been heeled back from position 0 (neutral).

### 6.17.6 Parameter 195 = 4 – With Thread Monitor Stitch Counting

By pressing a key connected to socket A/12-33, a stitch counter is activated (max. 9990 stitches), and the thread monitor symbols are continuously displayed. When a V820 control panel is connected, the function can be activated using key 8.

At each intermediate stop, the remaining number of stitches will be displayed. When counting is completed, the thread monitor symbol (righthand or lefthand) blinks on the display of the V820 control panel. **C** is displayed for the lefthand bobbin and **D** for the righthand bobbin on the V810 control panel. Furthermore, the respective LEDs blink with approx. 4 Hz on the machine, and the drive stops. Even automatic seam sections, except start and end backtack, are interrupted. The seam can be continued by pressing the pedal forward from position 0 (neutral). The number of stitches is set such that after completing these stitches, the bobbin is not completely empty. After replacing the bobbin, the key must be pressed so that the counter is reset to the preset value and activated again. If the drive is turned off during thread monitor counting, this value is saved and counting is continued after power On. If the key is pressed for less than one second, the counter is set to the preset value.

Key pressed >1 sec. → Thread monitor function is deactivated/activated  
 Key pressed <1 sec. → Counter is set to the preset value

## 6.18 Needle Cooling

Functions		Parameter
Switch speed for needle cooling On/Off	(nnk)	120
Switch-off delay of needle cooling after stop	(dnk)	183
Needle cooling/under-edge trimmer function	(Fnk)	185

**Parameter 185 = 1 Needle cooling:** Needle cooling is enabled during the entire sewing operation. Disabling after the stop can be delayed by the time “switch-off delay of needle cooling after stop”, which can be set with parameter 183.

**Parameter 185 = 2** Reserved for options

**Parameter 185 = 3 Needle cooling depending on speed:** The corresponding switch speed can be set using parameter 120.

When using the V820 control panel, direct access is possible by means of the function key (key 9)!

Function		Parameter
Needle cooling On/Off	(-F-)	008 = 4

## 6.19 High Lift for Walking Foot

Functions		Parameter
High lift walking speed	(n10)	117
High lift for walking foot operational mode stored = ON / not stored = OFF	(hPr)	138
High lift for walking foot, function of the key on socket D/6	(Fc6)	149 = 1
Run-out time of high lift walking speed after disabling high lift for walking foot	(thP)	152
Minimum number of stitches for high lift for walking foot	(chP)	184
High lift for walking foot switch-on delay	(hPv)	189
(This delay time is effective only if the actual speed is higher than the high lift walking speed)		

### 6.19.1 Manual High Lift for Walking Foot – Speed Limitation

The high lift during sewing can be set on a handwheel intended for this. The high lift shaft in the machine is hereby turned. The position of the high lift shaft is queried by means of a turn switch, which limits the maximum machine speed to DB3000 in position 1 and to DB2000 in position 2.

### 6.19.2 Maximum High Lift for Walking Foot by Using a Key

By pressing the key connected to socket A/7-33 or D/6-15 (parameter 149 = 1) or B/1-2, high lift for walking foot and a light emitting diode are enabled. The maximum speed is limited to the high lift walking speed (DB2000). If the actual speed is higher than the high lift walking speed, the drive slows down to high lift walking speed before the output “high lift for walking foot“ is enabled. When high lift for walking foot is disabled, the speed limitation remains On for the time set using parameter 152. 3 operational modes are possible: **not stored**, **stored** and **not stored with a minimum number of stitches**.

### 6.19.3 High Lift for Walking Foot Operational Mode Not Stored (Pa. 138 = OFF, Pa. 184 = 0)

By pressing the key “high lift for walking foot“, the output “high lift for walking foot“ is enabled depending on the actual speed until the key is released.

### 6.19.4 High Lift for Walking Foot Operational Mode Stored (Pa. 138 = ON)

By pressing the key “high lift for walking foot“, the output “high lift for walking foot“ is enabled depending on the actual speed. The output is disabled when the key is pressed again. This function is independent of the set minimum number of stitches (parameter 184).

### 6.19.5 High Lift for Walking Foot Operational Mode Not Stored with Minimum Number of Stitches (Pa. 138 = OFF, Pa. 184 = >0)

By pressing the key “high lift for walking foot“, the output “high lift for walking foot“ is enabled depending on the actual speed until the key is released or the stitches set using parameter 184 have been executed.

When the key is pressed at machine standstill, the high lift for walking foot is enabled and remains On after the start of sewing, at least for the set minimum number of stitches. Prolongation of the ON period is possible by keeping the key pressed down until after stitch counting.

#### Note

If several speed limitations are activated at the same time, the maximum speed is limited to the lower value.

When using the V820 control panel, direct access is possible by means of the function key (key 9)!

Functions	Parameter
High lift for walking foot operational mode stored = ON / not stored = OFF	(-F-) 008 = 3

## 6.20 Speed Limitation

### 6.20.1 Speed Limitation DB2000/DB3000

Functions	Parameter
High lift walking speed (DB2000)	(n10) 117
Speed limitation (DB2000), function of the key on socket A/9 1 = speed n10 limited / 2 = speed n10 fixed	(mnF) 143
Speed limitation (DB3000), function of the key on socket D/5	(Fc5) 148 = 1
High lift walking speed (DB3000)	(n11) 289

The speed is limited to 2000 RPM or 3000 RPM using the control inputs on A/9 (DB2000) and A/10 (DB3000). The speed limitations can be varied using parameters 117 and 289. When changing the switching state of the control inputs, the respective speed limitation is delayed by approx. 50 ms or is released.

**Note**  
If several speed limitations are activated at the same time, the maximum speed is limited to the lower value.

### 6.20.2 Analog Speed Limitation

The maximum speed can be limited by an analog voltage on input A/3. The analog voltage is generated by a potentiometer which functions as voltage divider. If no potentiometer is connected, the maximum voltage is applied to the input. A potentiometer for speed limitation on the control is also possible.

### 6.20.3 Analog Speed Limitation Speedomat

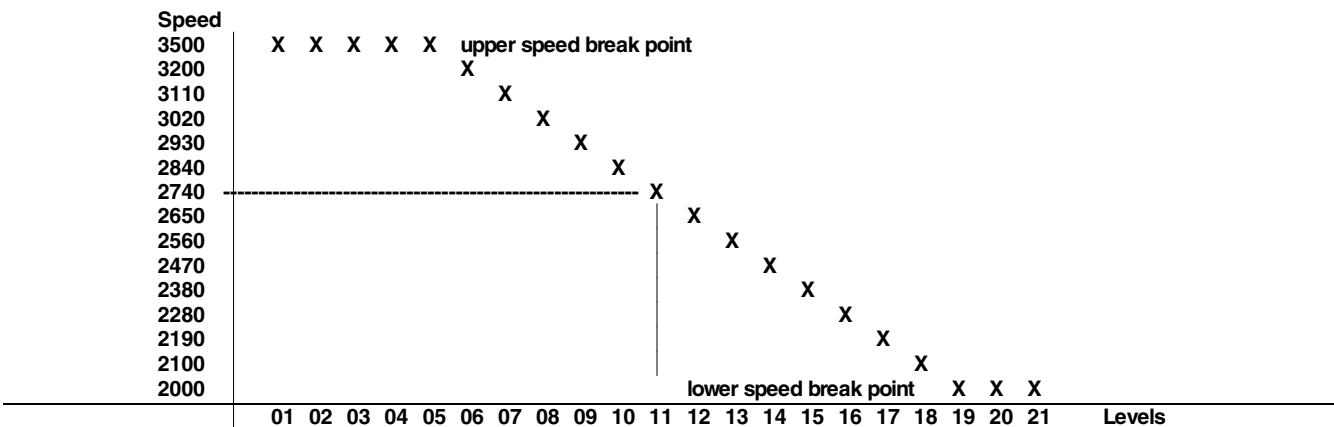
The speedomat function enables a speed limitation depending on the set sewing foot high lift (21 levels). The actual value of the high lift is transmitted to the control by the position of a potentiometer (10kΩ) with an angle of rotation of 60°, which is coupled with the high lift shaft. The maximum angle of rotation of the high lift shaft is 48°. Thus the setting range of the potentiometer is from 9kΩ (nmax = 4.5V on socket A/3) to 1kΩ (nlim. = 0.5V on socket A/3).

Potentiometer connections see chapter "Connection Diagram".

Functions		Parameter
Maximum speed	(n2)	111
High lift walking speed	(n10)	117
Speed setting depending on high lift	(knP)	188

- It is possible to program the assignment of the speed limitation to the 21 speedomat levels.
- Minimum high lift = maximum speed (n2)
- Maximum high lift = minimum speed (n10)

Graduation of the examples below is as follows:



Display example of parameter 182 on the V820 control panel:



- Signification: **XX** → Display of the level up to which the maximum speed is effective (upper break point).
- YY** → Display of the level from which the maximum speed is effective (lower break point).
- AB** → Display of the level set on the potentiometer.
- ZZZZ** → Speed resulting from the set high lift level.
- EEEE** → Outside the speed range.



### 6.20.4 Jumper S1

The jumper S1 located at the top right of the printed circuit board next to the 37-contact socket has the following function:

- Jumper closed if no external potentiometer is connected.
- Jumper open (factory setting) if an external potentiometer is connected.

### 6.20.5 Setting the Speed Limitation Depending on High Lift with the V820 Control Panel

- Determine maximum speed (n2) using parameter 111.
- Determine minimum speed (n10) using parameter 117.
- Call parameter 188.
- |          |
|----------|
| <b>E</b> |
|----------|

 Press key **E**. → 

<b>F-182</b>	<b>hP [ ° ]</b>
--------------	-----------------
- |           |
|-----------|
| <b>F2</b> |
|-----------|

 Press key **F2**. → 

<b>ZZZZ</b>	<b>XX AB YY</b>
-------------	-----------------
- Set high lift for walking foot (potentiometer on the machine) to the level up to which full speed is to be maintained (upper break point).
- |          |
|----------|
| <b>E</b> |
|----------|

 New value of **AB** is taken over to **XX**. → 

<b>ZZZZ</b>	<b>XX AB YY</b>
-------------	-----------------
- Set high lift for walking foot (potentiometer on the machine) to the level from which minimum speed is to be effective (lower break point).
- |          |
|----------|
| <b>E</b> |
|----------|

 New value of **AB** is taken over to **YY**. → 

<b>ZZZZ</b>	<b>XX AB YY</b>
-------------	-----------------
- Press the **P** key once → Actual parameter is displayed. / Press the **P** key twice → Exit programming.

### 6.20.6 Setting the Speed Limitation Depending on High Lift with the V810 Control Panel

- Call parameter 188.
- |          |
|----------|
| <b>E</b> |
|----------|

 Press key **E**. → 

<b>hP</b>	<b>[ ° ]</b>
-----------	--------------
- |           |
|-----------|
| <b>F2</b> |
|-----------|

 Press key **F2**. Actual display. → 

<b>11.</b>	<b>3200</b>
------------	-------------
- |           |
|-----------|
| <b>F2</b> |
|-----------|

 Press key **F2**. Previous values are displayed. → 

<b>05</b>	<b>19</b>
-----------	-----------
- |           |
|-----------|
| <b>F2</b> |
|-----------|

 Press key **F2**. → 

<b>11.</b>	<b>3200</b>
------------	-------------
- Set new value (level) with potentiometer on the machine. → 

<b>08.</b>	<b>3200</b>
------------	-------------
- |           |
|-----------|
| <b>F2</b> |
|-----------|

 Press key **F2**. → 

<b>05</b>	<b>19</b>
-----------	-----------
- |          |
|----------|
| <b>E</b> |
|----------|

 Press key **E**. New value 08 (upper break point) is entered. → 

<b>08</b>	<b>08</b>
-----------	-----------
- |           |
|-----------|
| <b>F2</b> |
|-----------|

 Press key **F2**. → 

<b>08.</b>	<b>3200</b>
------------	-------------
- Set new value (level) with potentiometer on the machine. → 

<b>17.</b>	<b>3200</b>
------------	-------------
- |           |
|-----------|
| <b>F2</b> |
|-----------|

 Press key **F2**. → 

<b>08</b>	<b>08</b>
-----------	-----------

- **E** Press key **E**. New value 17 (lower break point) is entered. → **0 8    1 7**
- **P** Press key **P** once. Display of the actual parameter number. → **F - 1 8 2**
- or
- **P** **P** Press key **P** twice. Exit programming. → **d A 8 2 G A**

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

#### Note

If you set a value on the potentiometer, which is between the actual break points, both values will be overwritten when pressing key **E**. Only after that is it possible to program new lower and/or upper break point values.

## 6.21 Switch Stitch Length

Functions		Parameter
Number of light barrier compensating stitches for long stitches	(LS)	004
Number of light barrier compensating stitches for short stitches	(cLS)	010
High lift walking speed (DB2000)	(n10)	117
Stitch length during backtack: normal stitch / long stitch	(SLu)	137
Normal stitch / long stitch with speed limitation (key on A/8 and D/2)	(StL)	145
1 = without speed limitation		
2 = with DB2000		
3 = with DB3000		
Stitch length in the next seam (after the trimming operation)	(Stn)	187
Speed limitation (DB3000)	(n11)	289

When the key connected to socket A/8-33 or D/2-15 is pressed, the stitch length can be reduced to a smaller value by enabling the output "switch stitch length" (LED Off). When the key is pressed again, the stitch length is switched. This function can be enabled or disabled at any time, except in automatic seams and seam sections. Sewing is possible without speed limitation, with speed limitation DB2000 or DB3000 depending on the setting of parameter 145.

The compensating stitches for light barrier seams are set at the operator level using parameter 004 or 010.

The start or end backtack stitch length is set using the following parameter:

**Parameter 137 = ON** The backtack is performed with normal stitches.

**Parameter 137 = OFF** The backtack is performed with long stitches.

The light emitting diodes do not flash when switching the stitch length by means of autoselect in the start or end backtack.

The stitch length with which the next seam after trimming will be performed can be selected using parameter 187.

**Parameter 187 = 1** The selected stitch length remains On.

**Parameter 187 = 2** Switch to long stitches after thread trimming.

**Parameter 187 = 3** Switch to normal stitches after thread trimming.

After power On, normal stitches are automatically enabled (solenoid On, LED Off).

## 6.22 Roller

Functions		Parameter
Roller function on key on socket D/4	(mFd)	146 = 3
Roller function on key on socket D/3	(Fc3)	147 = 3
Roller function on key on socket D/6	(Fc6)	149 = 3
Stitches until roller lowering	(ctw)	186
Stitch delay after lowering the sewing foot until roller lowering On/Off	(PLc)	260
Roller lifting depending on sewing foot and backtack	(FLk)	261
When enabling high lift for walking foot, roller remains lowered/lifted	(hPt)	262

The roller is lifted by enabling the solenoid valve on output A/15. After power On, output A/15 and the corresponding LED on D/12 are On.

- The roller and its indicator are switched off (roller lowered) when pressing the key connected to socket D/4, only if parameter 146 = 3.
- The roller and its indicator are switched on when pressing the key again.
- The roller is lowered after the start backtack (at the start of the seam when the start backtack is Off) after a number of stitches that can be set (parameter 186), unless it has been lowered before by pressing the appropriate key.
- The roller is lifted when thread trimming is started.

The following functions are set using parameter 261:

**Parameter 261 = 0** No coupling of roller and sewing foot lift or backtack.

**Parameter 261 = 1** The roller is lifted with sewing foot lift or backtack.

**Parameter 261 = 2** The roller is lifted with sewing foot lift. After the sewing foot has lowered, the roller lowers after the set number of stitches (using parameter 186 and its activation according to parameter 260), or by pressing the appropriate key.

**Parameter 261 = 3** The roller is lifted with the backtack. After the backtack has been completed, the roller lowers immediately.

If the roller is up when activating the intermediate backtack, it remains up after the backtack has been completed.

**Parameter 262 = 0** The roller remains lowered when enabling the high lift for walking foot.

**Parameter 262 = 1** The roller is lifted when enabling the high lift for walking foot.

## 6.23 Thread Clamp

Functions		Parameter
<b>Thread clamp functions</b>	<b>(FkL)</b>	<b>154</b>
<b>Increments up to thread clamp enable (signal 1)</b>	<b>(k1)</b>	<b>155</b>
<b>Increments up to thread clamp disable (signal 1)</b>	<b>(k1-)</b>	<b>156</b>
<b>Increments up to thread clamp enable (signal 2)</b>	<b>(k2)</b>	<b>157</b>
<b>Increments up to thread clamp disable (signal 2)</b>	<b>(k2-)</b>	<b>158</b>

The thread clamp functions can be selected using parameter 154. The thread clamp signal is blocked right after power On.

The thread clamp signal is issued:

- whenever the sewing foot is lifted
- during reverse running
- after the drive has started

**The following functions are possible with parameter 154:**

**Parameter 154 = 0** Thread clamp Off

**Parameter 154 = 1** **Thread clamp function:** Use of the parameter values 155...158. The thread clamp (signal 1) is enabled after the increments preset using parameter 155 and disabled after the increments preset using parameter 156. If increments have been selected using parameters 157 and 158, the thread clamp signal (signal 2) will be issued again. The number of increments of parameter 156 or 158 must always be higher than that of parameter 155 or 157.

**Parameter 154 = 2...7** **Thread clamp function:** Use of preset values according to the table below.

Parameter 154	Select 100Ω, 220Ω, 680Ω, 1000Ω	
	Thread Clamp On	Thread Clamp Off
2	302	344
3	274	316
4	246	388
5	100	198
6	070	156
7	070	270

If parameter 154 >0, the speed is limited to 250 RPM.

## 6.24 Thread Trimming Operation

Functions	Parameter	V820
Thread trimmer On	lefthand arrow On	Key 5
Thread trimmer and thread wiper On	both arrows On	
Thread wiper On	righthand arrow On	
Thread trimmer and thread wiper Off	both arrows Off	
Thread trimmer On/Off	(FA)	
Thread wiper On/Off	(FW)	
	013	
	014	

Functions	Parameter	
Last stitch at the seam end backward/forward short trimmer	(FAr)	136
Thread trimmer activation angle by means of increments	(iFA)	190
Thread tension release switch-off delay	(FSA)	191
Thread tension release switch-on delay by means of increments	(FSE)	192
Stop time for thread trimmer	(tFA)	193
Thread trimmer switch-on delay by means of increments	(FAE)	194
Thread wiper ON period	(t6)	205
Delay time from end of thread wiper to start of sewing foot lift	(t7)	206

The thread trimmer and thread wiper functions can be enabled and disabled using key 5 on the control panel.

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. When the thread trimmer is Off, the drive stops immediately in the set reverse position.

**Parameter 136 = 0** Trimming stitch forward and thread wiper function On.

**Parameter 136 = 1** Trimming stitch backward and thread wiper function On.

**Parameter 136 = 2** Trimming stitch forward and On with short trimmer signal. Thread wiper function Off.

**Parameter 136 = 3** Trimming stitch forward with signal for stitch length reduction during softstart and signal for short trimmer On. Thread wiper function Off.

**Parameter 136 = 4** Trimming stitch forward with signal for stitch length reduction during softstart. Thread wiper function Off.

The thread trimmer signal is enabled for 1msec with the first stitch after power On. Thread monitor sensitivity is thereby switched to 100% provided that a thread wiper function has been activated using parameter 195.

### 6.24.1 Thread Trimmer

The thread trimmer signal is enabled when reaching trimming speed with leading position 1 and after a switch-on delay (parameter 194) and is disabled after completion of the angle which can be adjusted (parameter 190), or at the very latest with the stop in position 2. A stop time for the thread trimmer, during which the drive is at standstill after reaching position 1, can be set with parameter 193. If position 2 is not reached due to a mechanical defect, the thread trimmer signal is disabled after 10 sec.

### 6.24.2 Thread Wiper

The thread wiper signal is enabled for a time that can be regulated with parameter 205 after reaching position 2. After the thread wiper has been disabled, there will be a time lag that can be regulated with 206 until the sewing foot is lifted. The thread wiper signal is active if parameter 136 is set to "0" or "1". At setting "2" the short trimmer function is active.

### 6.24.3 Thread Tension Release

The thread tension release signal can be enabled with a time lag relative to the thread trimmer. The time lag is an angular value ( 1 increment = 0.7°) consisting of increments inputted in parameter 192. The signal is disabled in position 2. It can, however, be extended for a time that can be regulated with parameter 191.

### 6.24.4 2nd Thread Tension Release (FSPL2)

Functions	Parameter
Function of output B5/6 "motor running" (mml)	198 = 1
Function of output B5/6 "thread tension release depending on speed"	198 = 2
Function of output B5/6 "thread tension release depending on speed"	198 = 3

**Parameter 198 = 1** Motor running

**Parameter 198 = 2** If the actual speed is **higher** than the speed set using parameter 120, FSPL2 is **On**.  
If the actual speed is **lower** than the speed set using parameter 120, FSPL2 is **Off**.

**Parameter 198 = 3** If the actual speed is **lower** than the speed set using parameter 120, FSPL2 is **On**.  
If the actual speed is **higher** than the speed set using parameter 120, FSPL2 is **Off**.

**Special feature if parameter 198 = 2 or 3 (function "2nd thread tension release"):**

	Parameter 198 = 2	Parameter 198 = 3
During start or end backtack	FSPL2 = Off	FSPL2 = On
Output "thread tension release On (ST2/36)	FSPL2 = On	FSPL2 = Off
Output sewing foot lifting On (ST2/35)	FSPL2 = On	FSPL2 = Off

### 6.24.5 Thread Tension Reduction

Functions	Parameter
Thread tension reduction , function of the key on socket D/3 (Fc3)	147 = 1
Thread tension reduction , function of the key on socket D/6 (Fc6)	149 = 2

Thread tension can be reduced by pressing a key connected to D/3 or D/6, depending on the programming of parameters 147 and 149. Thread tension reduction is indicated by a light emitting diode.

### 6.24.6 Coupling Thread Tension Release with the Sewing Foot

Functions	Parameter
Coupling thread tension release / reduction with sewing foot lifting (kFn)	196

**Parameter 196 = 0** Thread tension release and thread tension reduction "Off" during sewing foot lifting.

**Parameter 196 = 1** Thread tension release and thread tension reduction "On" during sewing foot lifting in the seam.

**Parameter 196 = 2** Thread tension release and thread tension reduction "On" during sewing foot lifting after thread trimming.

**Parameter 196 = 3** Thread tension release and thread tension reduction "On" during sewing foot lifting in the seam and after thread trimming.

If parameter 147 = 1 (key on socket D/3) or parameter 149 = 2 (key on socket D/6), thread tension reduction can be enabled at any time. The operational mode of the keys is stored. Furthermore, the function can be assigned to key A or B on the control panel using parameters 293 and 294.

### 6.24.7 Coupling Thread Tension Reduction with High Lift for Walking Foot / Speedomat

Functions	Parameter
Coupling thread tension reduction with high lift for walking foot and speedomat (kFh)	197

- **Parameter 197 = 0** Coupling thread tension reduction with high lift for walking foot and speedomat Off.
- **Parameter 197 = 1** Thread tension reduction is disabled and high lift for walking foot enabled using the key on socket A/7. The speedomat has no effect.
- **Parameter 197 = 2** When reaching high lift walking speed by adjusting the speedomat, thread tension reduction is disabled. The key on socket A/7 has no effect.
- **Parameter 197 = 3** When reaching high lift walking speed by adjusting the speedomat, thread tension is disabled. The key on socket A/7 works as with setting 197 = 1.

If parameter 197 = 1...3, thread tension reduction can be enabled at any time using the key on socket D/3.

## 6.25 Seam with Stitch Counting

Functions		V820
Stitch counting forward On Stitch counting backward On Stitch counting Off	lefthand arrow above key On righthand arrow above key On both arrows Off	Key 2

### 6.25.1 Number of Stitches for a Seam with Stitch Counting

Functions		Parameter
Number of stitches for a seam with stitch counting Stitch counting On/Off	(Stc) (StS)	007 015

The number of stitches for a seam with stitch counting can be programmed and varied using the above parameters directly on the V810/V820 control panel.

For fast operator information (HIT) when using the V820 control panel, the value of the function enabled using key 2 can be displayed for approx. 3 seconds. During this time, the value can be varied directly by pressing key + or -.

### 6.25.2 Stitch Counting Speed

Functions		Parameter
Positioning speed Stitch counting speed Speed mode for a seam with stitch counting	(n1) (n12) (SGn)	110 118 141

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

**Parameter 141 = 0** Execution at pedal controlled speed.

**Parameter 141 = 1** Execution at fixed speed n12, when pressing the pedal forward (position >1).

**Parameter 141 = 2** Execution at limited speed n12, when pressing the pedal forward (position >1).

**Parameter 141 = 3** Automatic execution at fixed speed after having pressed the pedal once. The procedure can be interrupted by "heelback (-2)".

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

## 6.26 Free Seam and Seam with Light Barrier

Functions		Parameter
Positioning speed Upper limit of maximum speed Limited speed according to setting of 142 Lower limit of maximum speed Speed mode free seam	(n1) (n2) (n12) (n2_) (SFn)	110 111 118 121 142

Speed control for the free seam and the seam with stitch counting can be selected using the speed mode.

- Parameter 142 = 0** Execution at pedal controlled speed  
**Parameter 142 = 1** Execution at fixed speed n12, when pressing the pedal forward (position >1)  
**Parameter 142 = 2** Execution at limited speed n12, when pressing the pedal forward (position >1)  
**Parameter 141 = 3** Only for the seam with light barrier:  
 - Automatic execution at fixed speed after having pressed the pedal once.  
 - The seam end is initiated by light barrier.  
 - The procedure can be interrupted by heelback (-2).  
 - If the light barrier is not on, speed as with parameter setting 142 = 0.

The maximum speed is displayed on the control panel after power On and thread trimming and can be varied directly using key +/- . The setting range lies between the values of parameters 111 and 121.

## 6.27 Light Barrier

- Light barrier module LSM001A is provided and is connected to socket B18.
- Moreover, an external light barrier can be connected to socket A/13.
- Both light barrier inputs initiate the same function and can be enabled and disabled with the same parameters.

Function on the V810 control panel	Parameter
Light barrier On/Off (LS)	009

Functions	V820
Light barrier covered/uncovered On Light barrier uncovered/covered On Light barrier Off	righthand arrow above key On lefthand arrow above key On both arrows Off
	Key 3

### 6.27.1 Speed after Light Barrier Sensing

Functions	Parameter
Speed after light barrier sensing (n5)	114

### 6.27.2 General Light Barrier Functions

Functions	Parameter
Light barrier compensating stitches (for long stitches) (LS)	004
Number of light barrier seams (LSn)	006
Light barrier compensating stitches (for normal stitches) (cLS)	010
Light barrier sensing uncovered/covered (LSd)	131
Start of sewing blocked/unblocked with light barrier uncovered (LSS)	132
Light barrier seam end with thread trimming On/Off (LSE)	133

- After sensing the seam end, the compensating stitches are counted at light barrier speed.
- Suspension of the procedure with pedal in pos. 0 (neutral). Interruption of the procedure with pedal in pos. -2.
- The thread trimming operation can be disabled using parameter 133, regardless of the setting of key 5 on the V820 control panel. Stop in the basic position.
- Programming of max. 15 light barrier seams depending on the setting of parameter 006 with stop in the basic position. Thread trimming after the last light barrier seam.
- Light barrier sensing uncovered or covered at the seam end can be selected using parameter 131.
- Start blockage with light barrier uncovered programmable using parameter 132.
- Speed selection pedal controlled / n5 during the light barrier compensating stitches using parameter 192.
- The light barrier compensating stitches can be programmed and varied using the above parameters on the V810/V820 control panel.

For fast operator information (HIT) when using the V820 control panel, the value of the function enabled using key 3 can be displayed for approx. 3 seconds. During this time, the value can be varied directly by pressing key + or -.

### 6.27.3 Reflection Light Barrier LSM001A

#### Sensitivity setting:

Set minimum sensitivity depending on the distance between light barrier and reflection area (turn potentiometer as far as possible to the left).

- Potentiometer directly on the light barrier module

#### Mechanical orientation:

Orientation is facilitated by a visible light spot on the reflection area.

### 6.27.4 Automatic Start Controlled by Light Barrier

Functions		Parameter
Delay of automatic start	(ASd)	128
Automatic start On/Off	(ALS)	129
Light barrier sensing uncovered	(LSd)	131
Start of sewing blocked with light barrier uncovered	(LSS)	132

This function enables an automatic start of the sewing operation as soon as the light barrier senses the insertion of fabric.

#### Prerequisites for the operation:

- Parameter 009 = ON (light barrier On).
- Parameter 129 = ON (automatic start On).
- Parameter 131 = ON (light barrier sensing uncovered).
- Parameter 132 = ON (no start of sewing with light barrier uncovered).
- The pedal must be kept pressed forward at the seam end.

For safety reasons this function is enabled only after a normal start of sewing. The light barrier must be covered as long as the pedal is in position 0 (neutral). Then press the pedal forward. This function is disabled when the pedal is no longer pressed forward after the seam end.

### 6.27.5 Light Barrier Filter for Knitted Fabrics

Functions		Parameter
Number of stitches of the light barrier filter	(LSF)	005
Light barrier filter On/Off	(LSF)	130
Light barrier sensing uncovered or covered	(LSd)	131

The filter prevents premature enabling of the light barrier function when sewing knitted fabrics.

- Enabling/Disabling of the filter using parameter 130
- The filter is not active if parameter 005 = 0
- Adaptation to the mesh is possible by varying the number of filter stitches.
- Knitted fabric sensing with light barrier uncovered → covered, if parameter 131 = OFF  
Knitted fabric sensing with light barrier covered → uncovered, if parameter 131 = ON

## 6.28 Needle Up/Down / Single Stitch

The needle up/down or single stitch function can be activated using the keys on two different inputs and selected using separate parameters.

#### Mode for the key connected to connector A/6

Functions		Parameter
Functions of the key on socket A/6	(nh1)	140
Functions of the key on socket D/1	(nh2)	144
1 = Needle up		
2 = Needle up/down		
3 = Single stitch		
4 = Single stitch with stitch length switching (normal stitch length)		
5 = Needle up if outside position 2 or reverse position		
6 = Machine stop in position 2		



**Parameter 140/144 = 1: Needle up**

When the key is pressed, the drive runs from position 1 to the reverse position. This does not depend on whether reverse motor rotation is On or Off. If parameter 180 is set to 0, the drive stops in position 2. If the drive is outside the slot position 1, it does not move for safety reasons. The function is blocked after power On until sewing is started.

**Parameter 140/144 = 2: Needle up/down**

When the key is pressed, the drive runs from position 1 to the reverse position or from the reverse position to position 1. This does not depend on whether reverse motor rotation is On or Off. If parameter 180 is set to 0, the drive stops in position 2. If the drive is outside the slot between position 1 and 1A or position 2 and 2A, it runs to the next possible position. After power On, the drive runs to the next position identified.

**Parameter 140/144 = 3: Single stitch**

When the key is pressed, the drive performs one rotation from position 1 to position 1. If the drive is in the reverse position, it runs to position 1 when pressing the key and from position 1 to position 1 each time the key is pressed again.

**Parameter 140/144 = 4: Single stitch with normal stitch length**

When the key is pressed, the drive performs one rotation from position 1 to position 1. If the drive is in the reverse position, it runs to position 1 when pressing the key and from position 1 to position 1 each time the key is pressed again. At the same time, the output "switch stitch length" on socket A/30 is enabled and the corresponding light emitting diode on socket A/29 disabled.

**Parameter 140/144 = 5: Needle in position 2**

When the key is pressed, the drive runs to position 2 or reverse position, independently of its present position. This function is also possible after power On.

**Parameter 140/144 = 6: Machine stop in position 2**

After the key has been pressed, the drive stops in position 2 and the sewing foot is lifted. The machine run blockage symbol blinks on the V820 and "stop" on the V810, respectively. The drive functions are blocked. Only after power Off/On is the drive again ready for operation.

## 6.29 F1/F2 Function Key Assignment on the V810/V820 Control Panels

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

The following functions are possible using parameters 293 and 294:

293/294 = 0	<b>Input function blocked</b>
293/294 = 1	<b>Needle up:</b> Function according to setting of parameter 140 or 144.
293/294 = 2	<b>Needle up-down:</b> Function according to setting of parameter 140 or 144.
293/294 = 3	<b>Single stitch (basting stitch):</b> Function according to setting of parameter 140 or 144.
293/294 = 4	<b>Single stitch with normal stitch length:</b> Function according to setting of parameter 140 or 144.
293/294 = 5	<b>Needle to position 2:</b> Function according to setting of parameter 140 or 144.
293/294 = 6	<b>Switch stitch length:</b> Normal or long stitch.
293/294 = 7	<b>Thread tension:</b> Function for thread tension reduction.
293/294 = 8	<b>Sewing foot pressure:</b> Function for sewing foot pressure reduction.
293/294 = 9	<b>Roller:</b> Lift or lower.
293/294 = 10	<b>Speed limitation DB3000.</b>
293/294 = 11/12	<b>No function</b>
293/294 = 13	<b>High lift for walking foot operational mode not stored/stored according to setting of parameter 138:</b> The signal "high lift for walking foot" is issued as long as the key is pressed down, and the drive runs with speed limitation (n10).
293/294 = 14/15	<b>No function</b>
293/294 = 16	<b>Intermediate backtack:</b> Upon pressing the key, the backtack will be enabled anywhere in the seam and at standstill of the drive.
293/294 = 17	<b>Backtack suppression / recall:</b> Upon pressing the key, the backtack will be suppressed or recalled once.
293/294 = 18	<b>Coupling the sewing foot with thread tension release:</b> This function can be enabled or disabled according to the setting of parameter 196.
293/294 = 19	<b>Reset thread monitor:</b> After inserting a full bobbin, the stitch counter is set to the value determined using parameter 085.

### 6.30 Signal Output Position 2

- Transistor output with open collector
- Signal whenever the needle is in the slot between position 2 and 2A
- Independent of sewing, thus also when turning the handwheel manually
- Suitable e. g. for the connection of a counter
- An inverted signal is issued at socket B/8

### 6.31 Signal Output 512 Impulses per Rotation

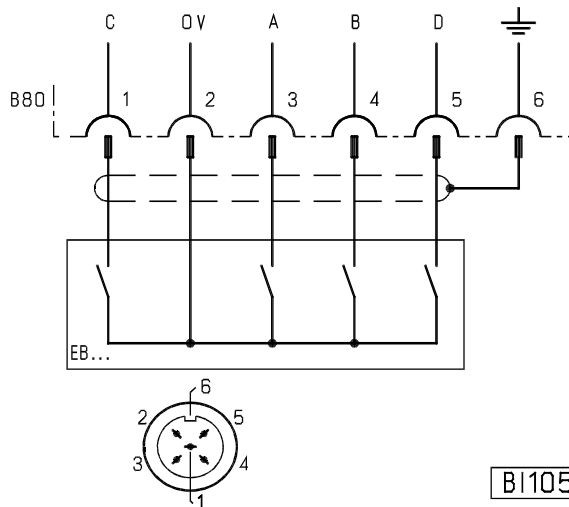
- Transistor output with open collector
- Signal whenever a generator slot of the position transmitter is sensed
- 512 impulses per rotation of the handwheel
- The impulses are issued independently of sewing, thus also when turning the handwheel manually
- Suitable e. g. for the connection of a counter
- An inverted signal is issued at socket B/7

### 6.32 Actuator

The commands for the sewing operation are input by means of the actuator, which is connected to the pedal. Instead of the built-on actuator a different actuator can be connected to socket B80.

**Table: Coding of the Pedal Steps**

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



EB.. Actuator

Functions	Parameter
Speed stage graduation (nSt)	119

The pedal characteristics (speed change from stage to stage) can be varied.

Possible characteristic curves:

- linear
- progressive
- highly progressive

### 6.33 Acoustic Signal

Functions	Parameter
Acoustic signal when machine run blockage or thread monitor is On (AkS)	127

An acoustic signal which sounds in the following cases can be enabled using parameter 127:

- **Parameter 127 = 0** Acoustic signal Off.
- **Parameter 127 = 1** Acoustic signal from stop after execution of the stitches to pressing key 8.
- **Parameter 127 = 2** The drive stops after execution of the stitches. Sewing is possible up to the seam end. Then the acoustic signal sounds until key 8 is pressed.
- **Parameter 127 = 3** The drive stops after execution of the stitches, and the acoustic signal sounds 5 times. Sewing is possible up to the seam end. Then the acoustic signal sounds until key 8 is pressed.

### 6.34 Master Reset

<b>Recovery of factory settings.</b>
--------------------------------------

- Press the "P" key and turn power on
- Input code number "190"
- Press the "E" key
- Parameter 100 appears on the display
- Press the "E" key
- The parameter value is shown on the display
- Set to "170" using the "+" key
- Press the "P" key twice
- Turn power off
- Turn power on. All parameters, except 111, 161, 170, 171, 190...194, have been reset to their factory settings.

## 7 Input and Output Function Test

Functions	Parameter
Input and output test	(Sr4) 173

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

### 7.1 Function Test with the V810/V820 Control Panel

#### Output test:

- Select parameter 173
- Select the desired output by means of the +/- keys
- Enable the selected output by means of the >> key on the V810 or the incorporated control panel
- Enable the selected output by means of the **B** key (bottom right) on the V820

Display	Assignment of the Outputs	Socket / Pin
01	<b>Backtacking</b>	on socket A/34
02	<b>Sewing foot lifting</b>	on socket A/35
03	<b>Thread trimmer</b>	on socket A/37
04	<b>Thread wiper</b>	on socket A/27
05	<b>Switch stitch length</b>	on socket A/30
06	<b>Thread tension release</b>	on socket A/36, B/5, C/5
07	<b>Thread tension reduction</b>	on socket A/20
08	<b>Needle cooling</b>	on socket A/28
09	<b>Motor running</b>	on socket A/26, B/6
10	<b>High lift for walking foot</b>	on socket A/32
11	<b>Not assigned</b>	on socket A/22
12	<b>LED for needle up/down</b>	on socket D/9
13	<b>LED for long stitch</b>	on socket D/10
14	<b>Thread clamp</b>	on socket A/18
15	<b>LED for high lift limitation</b>	on socket A/31
16	<b>LED for righthand thread monitor</b>	on socket A/25
17	<b>LED for sewing foot pressure reduction</b>	on socket D/12
18	<b>LED for thread tension reduction / backtack suppression/recall</b>	on socket D/11
19	<b>Sewing foot pressure reduction</b>	on socket A/21
20	<b>LED for lefthand thread monitor</b>	on socket A/23
21	<b>Flip-flop</b>	on socket C/6
22	<b>LED high lift limitation/ thread tension reduction</b>	on socket D/14
23	<b>LED backtack suppression/recall</b>	on socket A/24
24	<b>LED speed limitation DB3000/intermediate backtack</b>	on socket D/13
25	<b>LED for long stitch</b>	on socket A/29
26	<b>Not assigned</b>	on socket A/17
27	<b>Not assigned</b>	on socket A/16
28	<b>Roller feed</b>	on socket A/15

#### Input test:

- Press the – key several times until "OFF" or "ON" appears on the control display.
- Actuation of external switches is displayed by the switching state ON/OFF.
- Several switches must not be closed at the same time.

The letter symbols in parentheses ( ) are visible only if the V820 control panel is connected!

## 8 Error Displays

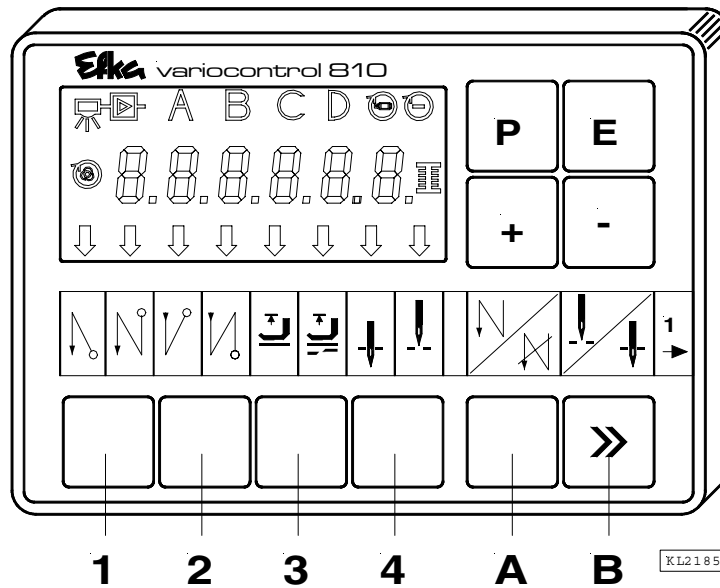
<b>General Information</b>		
<b>On the V810</b>	<b>On the V820</b>	<b>Signification</b>
InF A1	InF A1	Pedal not in neutral position, when turning the machine on
-StoP- blinking	Symbol blinking	Machine run blockage
InF A3	InF A3	The position to which all position values refer has not been stored (reference position missing)
InF A5	InF A5	Emergency run, identification of an invalid machine select

<b>Programming Functions and Values (Parameters)</b>		
<b>On the V810</b>	<b>On the V820</b>	<b>Signification</b>
Returns to the first digit	Like V810 + display InF F1	Wrong code number or parameter number input

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

<b>Hardware Disturbance</b>		
<b>On the V810</b>	<b>On the V820</b>	<b>Signification</b>
InF H1	InF H1	Commutation transmitter cord or frequency converter disturbed.
InF H2	InF H2	Processor disturbed

## 9 Operating Elements of the V810 Control Panel



The V810 control panel is supplied with slide-in strip **no. 1** above the keys. For different functions the strip can be replaced with a different one supplied with the control panel. Set parameter **291** in this case. See also **V810 / V820** instruction manual!

### Function Key Assignment

Key P = Call or exit of programming mode

Key E = Enter key for modifications in the programming mode

Key + = Increase of the value indicated in the programming mode

Key - = Decrease of the value indicated in the programming mode

Key 1 = Start backtack SINGLE / DOUBLE / OFF

Key 2 = End backtack SINGLE / DOUBLE / OFF

Key 3 = Automatic sewing foot lift after thread trimming ON / OFF

Automatic sewing foot lift at stop in the seam ON / OFF

Key 4 = Basic position needle down (POSITION 1) / needle up (POSITION 2)

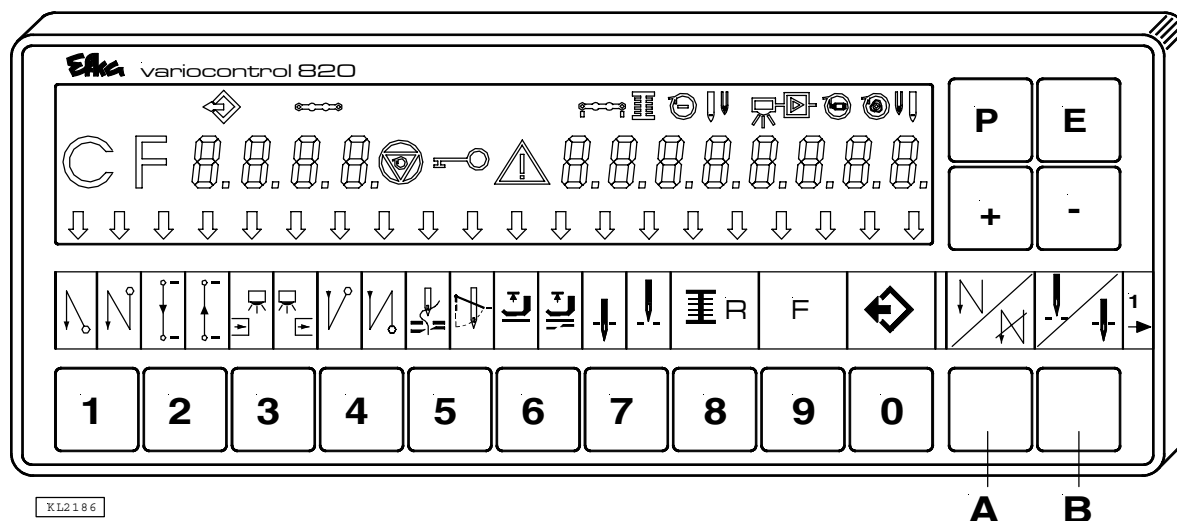
Key A= Key for backtack suppression/recall

(Different input functions can be assigned to key A using parameter 293)

Key B= Key for needle up or shift key in the programming mode

(Different input functions can be assigned to key B using parameter 294)

## 10 Operating Elements of the V820 Control Panel



The V820 control panel is supplied with slide-in strip **no. 1** above the keys.

### Function Key Assignment

- Key P = Call or exit of programming mode
  - Key E = Enter key for modifications in the programming mode
  - Key + = Increase of the value indicated in the programming mode
  - Key - = Decrease of the value indicated in the programming mode
  - Key 1 = Start backtack SINGLE / DOUBLE / OFF
  - Key 2 = Stitch counting seam FORWARD / BACKWARD / OFF
  - Key 3 = Light barrier function COVERED-UNCOVERED / UNCOVERED-COVERED / OFF
  - Key 4 = End backtack SINGLE / DOUBLE / OFF
  - Key 5 = THREAD TRIMMER / THREAD TRIMMER + THREAD WIPER / OFF
  - Key 6 = Automatic sewing foot lift after thread trimming ON / OFF  
Automatic sewing foot lift at stop in the seam ON / OFF
  - Key 7 = Basic position needle down (POSITION 1) / needle up (POSITION 2)
  - Key 8 = Thread monitor ON / OFF (>1 sec) or reset (<1 sec)
  - Key 9 = Function key, programmable
  - Key 0 = Teach-in / execution of 40 possible seam sections
- 
- Key A = Key for backtack suppression/recall  
(Different input functions can be assigned to key A using parameter 293)
  - Key B = Key for needle up or shift key in the programming mode  
(Different input functions can be assigned to key B using parameter 294)

### Special Key Assignment for HIT

After having pressed key 1, 2, 3, 4 or 9, the following can be varied using key +/-:

- Key 1 = Number of stitches of the selected start backtack
- Key 2 = Number of stitches of the seam with stitch counting
- Key 3 = Number of light barrier compensating stitches
- Key 4 = Number of stitches of the selected end backtack
- Key 9 = Number of stitches or On/Off of the programmed function



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