Efka vario dc

CONTROL PF82AV3304

INSTRUCTION MANUAL

No. 402227 english

Efka
FRANKL & KIRCHNER
GMBH & CO KG

Efka
EFKA OF AMERICA INC.

Efka
EFKA ELECTRONIC MOTORS
SINGAPORE PTE. LTD.

Contents Page

1. Important Safety Instructions

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

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

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

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

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

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

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

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

Save these instructions for future reference.

2. Range of Applications

The drive is suitable for sewing machines:

Brand	Series
PFAFF	all with: 900/51 or similar and 900/99 909/03 910/03 or 910/02 911/74 or 911/70

2.1 Use in Accordance with Regulations

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

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

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

The drive can only be operated:

· on thread processing machines
· in dry areas

3. Complete Drive Unit Consisting of

1	Direct current motor	DC....
1	Electronic control	vario dc PF82AV3304
	- Power pack	N153 (optional N155)
	- Actuator	EB301 (optional EB302, softer springs)
1	Control panel Variocontrol	V810 (optional V820)
1	9-pole/25-pole adapter (screw-connected with the control)	no. 0504539
1	Position transmitter	P6-1
1	Mains switch	NS105
1	Set of standard accessories	B141
	consisting of:	belt guard, complete set of hardware motor mounting foot bracket 1 and 2, short documentation
1	Set of accessories	Z3
	consisting of:	pitman rod, complete
1	Pulley	size according to request

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

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

3.1 Special Accessories

Variocontrol V810	- part no. 5970153
Variocontrol V820	- part no. 5970154
Reflection light barrier module LSM001	- part no. 6100028
Solenoid type EM1..(for e.g. presser foot lifting, backtacking, etc.)	- available versions see specification "solenoids"
Extension cable for external actuator, approx. 750 mm long, complete with plug and socket connector	- part no. 1111845
Extension cable for external actuator, approx. 1500 mm long, complete with plug and socket connector	- part no. 1111787
5-pin plug with locking screw for the connection of another external actuator	- part no. 0501278
External actuator type EB301 with approx. 250 mm connecting cable and 5-pin plug with locking screw	- part no. 41.0011
External actuator type EB302 (softer spring) approx. 250 mm connecting cable and 5-pin plug with locking screw	- part no. 41.0012
Foot control type FB301 with one pedal for standing operation with approx. 1400 mm connecting cable and plug	- part no. 4170013
Foot control type FB302 with three pedals for standing operation with approx. 1400 mm connecting cable and plug	- part no. 4170018
Potential equalization cord 700 mm long, LIY 2.5 mm², grey, with forked cable brackets on both sides	- part no. 1100313
Extension cable for position transmitter P6-.., approx. 1100 mm long, complete with plug and socket connector	- part no. 1100409
Extension cable for commutation transmitter, approx. 315 mm long, complete with plug and socket connector	- part no. 1111229
Extension cable for commutation transmitter, approx. 1100 mm long, complete with plug and socket connector	- part no. 1111584
Extension cable for motor connection, approx. 400 mm long	- part no. 1111858
Extension cable for motor connection, approx. 1500 mm long	- part no. 1111857
Pulley 40 mm ϕ with special belt intake and slip-off protection (use SPZ belt)	- part no. 1112223
Pulley 50 mm ϕ with special belt intake and slip-off protection (use SPZ belt)	- part no. 1112224
Knee switch type KN3 (pushbutton) with cord of approx. 950 mm length without plug	- part no. 58.0013
Sewing light transformer	- please indicate line voltage and sewing light voltage (6.3V or 12V)
3-pin plug with locking screw (Hirschmann MAS 3100) B8, B12	- part no. 0500402
4-pin plug with locking screw (Hirschmann MAS 4100) B15, B16	- part no. 0500615
5-pin plug with locking screw (Hirschmann MAS 5100S) B9	- part no. 0501431
6-pin plug with locking screw (Hirschmann MAS 6100) B6, B13, B14	- part no. 0500703
6-pole connector with locking screw (Hirschmann MAK 6100) B5	- part no. 0501162
6-pin plug (Hirschmann MES 60) B3	- part no. 0500457
7-pin plug with locking screw (Hirschmann MAS 7100S) B18	- part no. 0502474
8-pin plug with locking screw (Hirschmann MAS 8100S) B17	- part no. 0502865

Note:

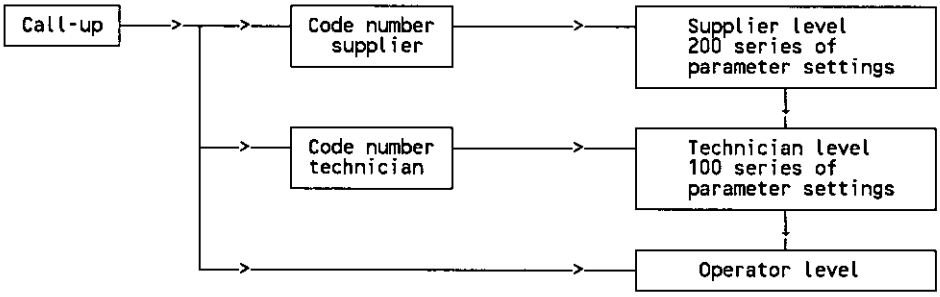
Select the pulley such that the motor runs at approx. 4000 RPM with max. stitch number.

4. Operating the Control

4.1 Access to Programming on Command Input

In order to prevent the unintentional modification of preset functions the input commands are distributed at various levels.

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



4.2 Direct Operation

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

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

4.3 Operating the Control Panel V810

4.3.1 Code Number Input on the Control Panel V810

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

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

■		TURN POWER OFF		
■	P +	TURN POWER ON First digit blinks	==>	C - 0 0 0 0
■	+ -	Press + button and/or - button to select the first digit	==>	C - 1 0 0 0
■	»	Press >> button second digit blinks !	==>	C - 1 0 0 0

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

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

Example: If CODE number has not been input !

■		TURN POWER ON!	==>	X X 8 2 X X
■	[P]	First parameter at the operator level is displayed !	==>	F - 0 0 0
■	[+]	Second parameter at the operator level is displayed ! The next and/or previous parameter can be called up with the +/- buttons.	==>	F - 0 0 1
■	[E]	Parameter value is displayed	==>	0 0 3
■	[+]	Change parameter value by pressing the +/- buttons	==>	X X X
■	[E]	Parameter value is entered; Display advances to the next parameter	==>	F - 0 0 2
■	[+]	Press the + button several times until the desired parameter is displayed	==>	F - 0 0 9
■	[E]	The next parameter is displayed	==>	O F F
■	[+]	The parameter value is displayed	==>	O N
■	[E]	The next parameter is displayed	==>	F - 0 1 3
	or			
■	[P]	Parameter value is entered **»Exit programming«**	==>	X X 8 2 X X

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

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

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

Example: If the technician CODE number has been selected !

- After CODE number input the first PARAMETER number is displayed ==> F - 1 0 0
- [+] Press + button; the next parameter number is displayed ==> F - 1 1 0
- [E] Press E button; parameter value is displayed ==> 0 1 8 0
- [+] [-] Change parameter value! ==> 0 X X X
- [E] Parameter value is entered; display advances to the next parameter ==> F - 1 1 1

or

- [P] Parameter value is entered; the actual PARAMETER number is displayed ==> F - 1 1 0

or

- [P] [P] Press 2 x ! **»Exit programming«** ==> X X 8 2 X X

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

4.4 Operating the Control Panel V820

4.4.1 Code Number Input on the Control Panel V820

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

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

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

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

Example: If CODE number has not been input !

▪	TURN POWER ON!	==>	4000 XX82XX
▪ [P]	Display shows no reading!	==>	
▪ [E]	First parameter at the operator level is displayed; PARAMETER number is not displayed	==>	Arv 003
▪ [+] [-]	Change parameter value!	==>	Arv XXX
▪ [E]	Parameter value is entered; display advances to the next parameter	==>	Arr 003
or			
▪ [P]	Parameter value is entered	==>	4000 XX82XX
▪	**»Exit programming«**		

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

Example: If the technician CODE number has been selected !

▪	After CODE number input the first PARAMETER number is displayed	==>	F-100
▪ [E]	The most significant digit of the parameter number blinks	==>	F-100
▪ [1] [1] [0]	Gewünschte PARAMETER-Nummer eingeben!	==>	F-110
▪ [E]	If parameter number is wrong repeat input!	==>	F-XXX InFo F1
▪ [E]	If PARAMETER number is correct	==>	F-110 n1 180
▪ [+] [-]	Change parameter value!	==>	F-110 n1 XXX
▪ [E]	Parameter value is entered; display advances to the next parameter	==>	F-111 n2 4000
or			
▪ [P]	Parameter value is entered; a new PARAMETER number can be called up	==>	F-XXX
or			
▪ [P] [P]	Press 2 x ! **»Exit programming«**	==>	4000 XX82XX

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

4.5 Program Identification

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

Display example parameter 179 on the control panel V810:

Select parameter 179 ! The display shows:

- [E] Display of program no. 3305 and index A ==> [3 3 0 5 A]
- [»] Display of identification number ==> [9 8 0 1 1 4]

Display example parameter 179 on the control panel V820:

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

Select parameter 179 ! The display shows:

Program no.: 3305 / index: A (the most significant digit is not displayed) ==> [305A 98011408] <== **identification number: 98011408**

4.6 Maximum Speed Limitation by Direct Input (DED)

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

The maximum speed of the machine can be limited to the specific level according to the application directly by using control pushbuttons +/- after each seam end. After power on, this is possible only if the bobbin thread monitor function is switched off.
The actual value is shown on the display.
The setting range is between the speeds programmed with parameter 111 (upper limit) and parameter 121 (lower limit).

4.6.1 Setting on Control Panel V810

- Actual value on the display in the direct mode ==> [X X 8 2 X X]
- [+] Display of maximum speed (reading remains on for max. 5 sec.) ==> [4 0 0 0]
- [+] [-] Change value of maximum speed; e.g. press button (-) 8 x ! ==> [3 2 0 0]
- After approx. 5 seconds the display shows ==> [X X 8 2 X X]

4.6.2 Setting on Control Panel V820

Actual value on the display in the direct mode

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

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

Note
After power on and if the bobbin thread monitor is on, the number of stitches of the bobbin thread monitor stitch counting can be input directly instead of the maximum speed.

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

4.7 Pushbuttons for Background Information (HIT) with V820

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

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

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

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

4.7.1 Examples for HIT

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

- Display after power on ==> | 4000 XX82XX |

- ↓ [2] Press button 2 briefly! Left arrow and stitch counting function is on ==> | Stc 020 |

- [+] Press button (+)! Increase number of stitches from 20 to 25 ! ==> | Stc 025 |

- Display after approx. 3 seconds ==> | 4000 XX82XX |

Stitch counting function (pushbutton 2) is already on.

■		Display after power on	==>	4000 XX82XX
■	↓ 2	Press button 2 for at least 1 second! Left arrow goes off momentarily; stitch counting function is on	==>	Stc 020
■	+	Press button (+) ! Increase number of stitches from 20 to 25!	==>	Stc 025
■		Display after approx. 3 seconds	==>	4000 XX82XX

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

Function key F

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

1. SSt Softstart ON/OFF
2. SrS Ornamental backtack ON/OFF
3. hP High lift for walking foot ON/OFF
4. Sht Single stitch with pushbutton needle up/down ON/OFF
5. LSS Sewing start blocked with light barrier uncovered ON/OFF
6. rd Reversion ON/OFF

The F key setting can be changed as follows:

■		Display after power on!	==>	4000 XX82XX
■	P	Press button P !	==>	
■	E	Press button E !	==>	Arv 002
■	9	Press button 9 (function key F) ! The corresponding arrow above the pushbutton blinks (ornamental backtack on/off)	==>	-F- 2
■	-	Press button (-) ! (softstart on/off)	==>	-F- 1
■	P	Press button P !	==>	4000 XX82XX

■ **»The setting is completed«**

The number of softstart stitches can be changed as follows:

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

▪	[9]	Press button 9 briefly! The corresponding arrow above the pushbutton lights up (softstart function is on)	==>	SSc 001
▪	[+]	Press button (+) ! Increase number of stitches!	==>	SSc 003
▪		Display after approx. 3 seconds	==>	4000 XX82XX

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

▪	[9]	Press button 9 for at least 1 sec.! The corresponding arrow above the pushbutton goes off momentarily (softstart function is on)	==>	SSc 001
▪	[+]	Press button (+) ! Increase number of stitches!	==>	SSc 003
▪		Display after approx. 3 seconds	==>	4000 XX82XX

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

4.8 Programming Seams (Teach-in) with V820

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

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

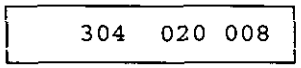
Example 1:	Pattern 1	40 seams
	Pattern 2-8	0 seams
Example 2:	Pattern 1	4 seams
	Pattern 2	5 seams
	Pattern 3	6 seams
	Pattern 4	25 seams
	Pattern 5-8	0 seams
Example 3:	Pattern 1	10 seams
	Pattern 2	15 seams
	Pattern 3-8	0 seams

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

4.8.1 Teach-in Mode

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

Display configuration:




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

Programming:

After power on, without entering a code cumber!

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

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

4.8.1.1 Seam with Stitch Counting

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

4.8.1.2 Backward Seam with Stitch Counting

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

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

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

4.8.1.3 Stitch Counting and/or Light Barrier

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

=>	+	-	Changing the number of compensating stitches

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

After programming the functions

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

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

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

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

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

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

4.8.1.4 Detailed Example

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

Display before programming ==> [XXXX]

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

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

↓

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

↓

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

↓

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

↓

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

↓

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

↓

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

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

4.8.2 Max. Number of Seams Exceeded

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

Display:

YYXX dEL NN

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

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

=> [0] => Call-up of the pattern to be deleted | YYXX dEL NN |

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

=> [P] => Deletion of the pattern | YYXX dEL NN |

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

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

4.8.3 Execution (Pattern) Mode

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

2. => [+] [-] Select pattern 1...8; Seam number 01 is displayed ==> | 0X01 030 |

3. => [E] If one should not start with seam 1, select different seam number; push button E several times until the desired seam number is displayed ==> | 0X05 ZZZ |

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

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

5. Starting Service

When putting the control into operation, adhere to the following programming sequence:

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

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

5.1 Direction of Rotation of the Motor

Functions		Parameter
Direction of rotation of the motor	(drE)	161

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

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

Note
When changing the direction of rotation of the motor, the positions must be reprogrammed.

5.2 Positions

Functions		Parameter
Setting the reference position (position 0)	(SR1)	170
Setting the signal and stop positions	(SR2)	171
Display of the signal and stop positions	(SR3)	172

5.2.1 Setting the Reference Position

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 the electric position transmitter information and actual mechanical position, a reference position is needed.

The reference position must be set:

- for initial operation
- after replacing the 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 another 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.

5.2.2 Setting the Reference Position on Control Panel V810

- Select parameter 170 ! ==> `F - 1 7 0`
- `E` Press pushbutton E ! ==> `S r 1 0`
- `»` Press pushbutton >> ! ==> `P o S 0 []`
- Turn handwheel until desired reference position is reached
  Note: Turn at least until marker ([]) has disappeared
- `E` Press pushbutton E ! ==> `F - 1 7 1`
  Reference position is entered
- If the reference position has not been stored, an error message will appear on the display. ==> `i n F E 3`
- Turn handwheel repeatedly, press the E button and select parameter 170. Then repeat the above sequence.

5.2.3 Setting the Reference Position on Control Panel V820

- Select 170 !
- `E` Press pushbutton E ! ==> `F-170 Sr1`
- `>>` Press pushbutton >> ! ==> `F-170 PoS 0 []`
- Turn handwheel until desired reference position is reached
  Note: Turn at least until marker ([]) has disappeared
- `E` Press pushbutton E ! ==> `F-171`
  Reference position is entered
- If the reference position has not been stored, an error message will appear on the display. ==> `InFo E3`
- Turn handwheel several times until the desired reference position is reached.

5.3 Setting the Positions

5.3.1 Setting the Positions on Control Panel V810

■		Select parameter 171 !	==>	F - 1 7 1
■	E	Press pushbutton E !	==>	S r 2
■	»	First parameter value of position 1 is displayed	==>	1 1 6 2
■	+ -	If necessary, change parameter value with the +/- pushbuttons or by turning the handwheel!	==>	1 X X X
■	E	Parameter value of position 2 appears on the display	==>	2 4 6 0
■		If necessary, change parameter value with the +/- pushbuttons or by turning the hanfwheel!	==>	2 X X X
■	E	Parameter value of position 1A appears on the display	==>	1 A 2 5 4
■		If necessary, change parameter value with the +/- pushbuttons or by turning the hanfwheel!	==>	1 A X X X
■	E	Parameter value of position 2A appears on the display	==>	2 A 0 4 8
■		If necessary, change parameter value with the +/- pushbuttons or by turning the hanfwheel!	==>	2 A X X X
■	E	Parameter value of position 3 appears on the display (no function)	==>	3 0 0 0
■	E	Parameter value of position 3A appears on the display (no function)	==>	3 A 0 0 0
■	P P	Settings are completed Exit programming !	==>	X X 8 2 X X

5.3.2 Setting the Positions on Control Panel V820

■		Display before programming	==>	4000 XX82XX
■	P	A parameter number blinks on the display	==>	F-XXX

■ [1] [7] [1]	Input PARAMETER NUMBER 171!	==>	F-171
■ [E]	The abbreviation of the parameter appears on the display	==>	F-171 Sr2
■ [>>]	First parameter value of position 1 is displayed	==>	F-171 1 162
■ [+] [-]	If necessary, change parameter value with the +/- pushbuttons or by turning the handwheel!	==>	F-171 1 XXX
■ [E]	Parameter value of position 2 appears on the display	==>	F-171 2 460
■	If necessary, change parameter value with the +/- pushbuttons or by turning the handwheel!	==>	F-171 2 XXX
■ [E]	Parameter value of position 1A appears on the display	==>	F-171 1A 254
■	If necessary, change parameter value with the +/- pushbuttons or by turning the handwheel!	==>	F-171 1A XXX
■ [E]	Parameter value of position 2A appears on the display	==>	F-171 2A 048
■	If necessary, change parameter value with the +/- pushbuttons or by turning the handwheel!	==>	F-171 2A XXX
■ [E]	Parameter value of position 3 appears on the display (no function)	==>	F-171 3 000
■ [E]	Parameter value of position 3A appears on the display (no function)	==>	F-171 3A 000
■ [P] [P]	Settings are completed Exit programming!	==>	4000 XX82XX

Note

When adjusting 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 increments.
- *One rotation of the handwheel corresponds to 512 increments.*
- The display changes in increments of 2.
- A change from one to the next value thus corresponds to approx. 1.4 angular degrees.

5.4 Display of the Signal and Stop Positions

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

The settings of the positions can be easily checked with parameter 172. The function is possible only if the sewing has been briefly started.

- Select parameter 172
- Turn handwheel according to the direction of rotation of the motor
  - Left arrow above button 4 (V810) and/or button 7 (V820) on => corresponds to position 1
  - Left arrow above button 4 (V810) and/or button 7 (V820) turns off => corresponds to position 1A
  - Right arrow above button 4 (V810) and/or button 7 (V820) on => corresponds to position 2
  - Right arrow above button 4 (V810) and/or button 7 (V820) turns off => corresponds to position 2A

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

5.5 Positioning Speed

Functions		Parameter
Positioning speed	(n1)	110

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

5.6 Maximum Speed

Functions		Parameter
Maximum Speed	(n2)	111

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

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

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

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

5.7 Braking Behavior

Functions		Parameter
Braking effect when modifying the preset value ≤ 4 stages	(br1)	207
Braking effect when modifying the preset value ≥ 5 stages	(br2)	208

The braking effect of the drive can be set.
The following applies to all setting values:
The higher the value the stronger the braking reaction!

5.8 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 tested by turning the handwheel.

- The braking power works at standstill
  - at stop in the seam
  - after thread trimming
- The effect can be set
- The higher the set value, the higher the braking power
- It does not work after power on, unless the sewing has not been started

5.9 Start Behavior

Functions		Parameter
Starting edge	(ALF)	220

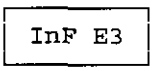
The drive accelerating dynamics can be adapted to the characteristic of the sewing machine (light, heavy).

- High setting value = high acceleration

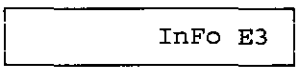
With a high starting edge setting and, in addition, possibly high braking parameter values on a light machine, the behavior may appear coarse. In this case, one should try to optimize the settings.

Incorrect setting can cause the drive to lock or not to reach the set speed. In this case the drive stops and the display shows an error message.

V810



V820



6. Functions and Settings

6.1 First Stitch After Power On

Functions		Parameter
1 stitch at npos after POWER ON	(Sn1)	231
Positioning speed	(n1)	110

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

6.2 Function Key on Control Panel V820 (Pushbutton 9)

Functions		Parameter
Determine function for pushbutton 9	(-F-)	008

A programmed function can be switched on or off directly by using the function key (pushbutton 9).

Programmable functions:

008 = 1 - Softstart ON/OFF
008 = 2 - Ornamental backtack ON/OFF
008 = 3 - High lift for walking foot ON/OFF
008 = 4 - Single stitch with pushbutton needle up/down ON/OFF
008 = 5 - Sewing start blocked with light barrier uncovered ON/OFF
008 = 6 - Reversion ON/OFF

6.3 Display Actual Speed

Functions		Parameter
Display actual speed	(nIS)	139

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

Control panels:	= = >	**V810**	**V820**
During machine run: - The actual speed - **Example:** 2350 rotations per minute		2350	2350
At stop in the seam: - *The stop indication*		StoP	StoP
At machine standstill after trimming: - On the V810, indication of the type of control - On the V820, indication of the set maximum speed and the type of control - **Example:** 3300 rotations per minute and control type XX82XX		XX82XX	3300 XX82XX

6.4 Softstart

Functions		Parameter
Softstart number of stitches	(SSc)	100
Softstart speed	(n6)	115
Softstart on/off	(SSt)	134

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

Direct access by function key on control panel V820 (pushbutton 9)

Functions		Parameter
Softstart on/off	(-F-)	008 = 1

6.5 Presser Foot Lift

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

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

Presser foot is lifted:
- in the seam
  - by heeling the pedal back (position -1)
    or automatically (with pushbutton 3 on the Variocontrol V810)
    or automatically (with pushbutton 6 on the Variocontrol V820)
  - by pressing the pushbutton on socket B3/3 (parameter 280)
- after thread trimming
  - by heeling the pedal back (position -1 or -2)
    or automatically (with pushbutton 3 on the Variocontrol V810)
    or automatically (with pushbutton 6 on the Variocontrol V820)
  - by pressing the pushbutton on socket B3/3 (parameter 280)
  - by light barrier, automatically, with pedal forward according to the setting of param. 023
  - by stitch counting, automatically, with pedal forward according to the setting of param. 023
  - start delay after thread wiping (t7)
  - start delay without thread wiping (tFL)

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

Holding power of the lifted foot:

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

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

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

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

When pushing the pedal forward from lifted presser foot, the start delay (t3) that can be set with parameter 202 becomes effective.
See Parameter List chapter "**Timing Diagrams**"!

6.6 Start Backtack

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

Functions		Parameter
Number of stitches forward	(Arv)	000
Number of stitches backward	(Arr)	001
Start backtack speed	(n3)	112
Run-out time	(t1)	200
Start delay from lifted foot	(t3)	202
Stitch correction time	(t8)	150

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

The start backtack starts by pressing the pedal forward at the beginning of the seam. The backtack is delayed by the time t3 from lifted foot (start delay after lifted presser foot). The start backtack is executed automatically at speed n3. It cannot be interrupted. With softstart running parallel, the respective lower speed predominates.
The switching on and off of the stitch regulator is synchronized to position 1.
After the backward section has been executed (parameter 001), the stitch regulator, and, after a delay time t1, the start backtack speed n3 will be switched off. Then pedal control is returned.
The speed release after the single and double start backtack can be influenced by parameter 200.

6.6.1 Double Start Backtack

The forward section will be sewn for a number of stitches that can be set. Then, the signal for the stitch regulator will be emitted, and the backward section will be executed. For both sections the number of stitches can be set separately.
For slow backtack mechanisms in the double start backtack the stitch regulator can be disabled with a time-lag of t8 (start backtack stitch correction), which prolongs the backward section.

6.6.2 Single Start Backtack

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

6.7 End Backtack

Functions		V810	V820
Single end backtack	Left arrow above pushbutton ON	Pushbutton 2	Pushbutton 4
Double end backtack	Right arrow above pushbutton ON		
End backtack Off	both arrows OFF		

Functions		Parameter
Number of stitches backward	(Err)	002
Number of stitches forward	(Erv)	003
End backtack speed	(n4)	113
Last stitch backward ON/OFF	(FAr)	136
Stitch correction time	(t9)	151
Start delay from lifted foot	(t3)	202

The end backtack starts either by heelback, in seams with stitch counting at the end of the counting, or from the light barrier seam at the end of the light barrier compensating stitches. From machine standstill, the stitch regulator will be switched on immediately.
From lifted presser foot, the switch-on point of the signal is delayed by the time t3 (start delay after presser foot lift).
The first leading position 1 is counted as 0 stitch, whenever the function is started outside of position 1. The counting and the switching off of the stitch regulator are synchronized to position 1.
From full machine run, the signal will be switched on only after reaching the end backtack speed and the synchronization to position 1. The end backtack is executed automatically.

6.7.1 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. For both sections the number of stitches can be set seperately.
After the forward section has been executed, the trimming function will be initiated. During the entire operation the sewing speed is reduced to end backtack speed, with the exception of the last stitch, which will be executed at postioning speed n1.
For slow backtack mechanisms in the double end backtack the stitch regulator can be disabled with a time-lag of t9 (end backtack stitch correction).

6.7.2 Single End Backtack

The single end backtack is performed at end backtack speed. During the last stitch the speed is reduced to positioning speed. The stitch regulator is switched on or off depending upon parameter 136.

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

6.8 Start Ornamental Backtack

Functions		V810/V820
Single start ornamental backtack	*left arrow above pushbutton ON*	*Pushbutton 1*
Double start ornamental backtack	right arrow above pushbutton ON	
Start ornamental backtack Off	both arrows OFF	

Functions		Parameter
Function ornamental backtack On/Off	(SrS)	135
Ornamental backtack stop time	(tSr)	210

Differences from the standard start backtack:

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

Direct access by function key on control panel V820 (pushbutton 9)

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

6.9 End Ornamental Backtack

Functions		V810	V820
Single end ornamental backtack	left arrow above pushbutton ON	Pushbutton 2	Pushbutton 4
Double end ornamental backtack	right arrow above pushbutton ON		
End ornamental backtack Off	both arrows OFF		

Functions		Parameter
Function ornamental backtack On/Off	(SrS)	135
Ornamental backtack stop time	(tSr)	210

The sequence corresponds to that of the normal end backtack. The drive stops between the backtack sections for the ornamental backtack stop time (tSr). The number of stitches for the forward and backward section can be set separately.

Direct access by function key on control panel V820 (pushbutton 9)

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

6.10 Backtack Suppression/Recall

- Effective in standard and ornamental backtack

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

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

The double backtack is performed in the above cases.

6.11 Intermediate Backtack

The backtack solenoid can be switched on anywhere in the seam and at standstill by pressing the external pushbutton on socket B6/3.

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

6.12 Activation of the Backtack Solenoid

Functions		Parameter
Time of full power	(t10)	212
Operating time with pulsing	(t11)	213

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

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

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

6.13 Reversion

Functions		Parameter
Positioning speed	(n1)	110
Number of reversion increments	(lrd)	180
Activation delay of reversion	(drd)	181

The function "reversion" is performed after trimming.
When the stop position is reached, the drive stops for the time of the activation delay of reversion (parameter 182). Then it reverses at positioning speed for an adjustable number of increments.
1 increment corresponds to approx. 0.7°.
After reversion the thread wiper will be activated for the time t6.

Direct access by function key on control panel V820 (pushbutton 9)

Functions		Parameter
Reversion On/Off	(-F-)	008 = 6

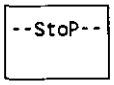
6.14 Blocking of Machine Run (Safety Switch)

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

Functions		Parameter
Function "blocking of machine run (safety switch)" on the input of socket B3/2-3, if switched to "ON"	(LSP)	280

The function "blocking of machine run" is possible by connecting a switch to socket B3/2-3.

Display and signal after the activation of the blocking of machine run with control panel V810/V820:

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

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

Blocking of machine run in the free seam, in the seam with stitch counting and in the light barrier seam:

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

Blocking of machine run in the start backtack:

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

Blocking of machine run in the end backtack:

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

New start after blocking of machine run

A new start after closing and/or opening the switch is only possible if the pedal has been in position 0 (neutral).

6.15 High Lift For Walking Foot

Functions		Parameter
High lift for walking foot On/Off	(hP)	137
High lift for walking foot operation mode stored/not stored	(hPr)	138

When pressing the pushbutton connected to socket B8/1-2, the high lift for walking foot is switched on. It is always effective except when parameter 186 is set at "2".

6.15.1 High Lift Walking Speed

Functions		Parameter
High lift walking speed	(n10)	117

6.15.2 High Lift Walking Speed Run-Out Time

Functions		Parameter
High lift walking speed run-out time	(thP)	152

6.15.3 High Lift Walking Stitches

Functions		Parameter
Number of high lift walking stitches	(chP)	185

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

6.15.4 High Lift for Walking Foot Operation Mode Not Stored (parameter 138 = OFF)

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

6.15.5 High Lift for Walking Foot Operation Mode Stored (parameter 138 = ON)

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

Direct access by function key on control panel V820 (pushbutton 9)

Functions		Parameter
High lift for walking foot On/Off	(-F-)	008 = 3

6.16 Thread Monitor

Functions		Parameter
Thread monitor On/Off	(SSF)	080
Thread monitor status	(SSF)	182
Activation time of the pneum. thread trimmer in the case of a bobbin thread error	(tFA)	183
Number of backtacking stitches in the case of a thread error	(SFr)	184
Number of stitches until stop in the case of a thread error	(cSP)	189

Status thread monitor

Parameter 182 = 0 thread monitor off
Parameter 182 = 1 version for magnetic thread trimmer in the case of a bobbin thread error
Parameter 182 = 2 version for pneumatic thread trimmer in the case of a bobbin thread error
Parameter 182 = 3 version for stop without thread trimming in the case of a bobbin thread error

Attention!
Turn power off before changing the thread or the bobbins.

6.16.1 Bobbin Thread Monitor for Magnetic Thread Trimmer (182 = 1)

In each seam section, trimming is initiated and the final backtack is suppressed by the thread monitor module after recognition of the empty bobbin (ERRS). The bobbin can be changed after the power has been turned off.

Start backtack:

After recognition of an empty bobbin, the start backtack is completed, and trimming without end backtack is initiated.
The bobbin can be changed after the power has been turned off.
When starting to sew, the start backtack is suppressed, the reset signal is emitted and the started seam is continued.

Seam with stitch counting:

After recognition of an empty bobbin in a seam with stitch counting >6 stitches, trimming is initiated and the end backtack is suppressed.
The bobbin can be changed after the power has been turned off.
When starting to sew again, the reset signal for the thread monitor module is emitted and a correction seam (pedal controlled) is executed, which can be completed by pedal in position -2.
After the power has been turned off, the bobbin changed and the power turned on again, this correction seam can be switched off outside of the "teach-in" with pushbutton 2 on the Variocontrol.
After recognition of an empty bobbin, the seam with stitch counting <6 stitches before the seam end is completed, and the drive stops in needle down position (pos 1). This is an indication that the bobbin has to be changed.
The thread can be trimmed by heelback (-2), while sewing or presser foot lifting are blocked.
The bobbin can be changed after the power has been turned off.
By starting to sew again, a new seam is started, and the reset signal is emitted.
If stitch counting without thread trimmer is programmed and the empty bobbin with <6 stitches is recognized, stitch counting is completed. After the first stitch of the following seam, thread trimming and the stop for changing the bobbin are performed.

Free seam:

After recognition of an empty bobbin in the free seam, trimming is initiated and the end backtack is suppressed.
The bobbin can be changed after the power has been turned off.
When starting to sew again, the reset signal is emitted and the started seam is continued.

Light barrier compensating stitch counting:

After recognition of an empty bobbin, the light barrier compensating stitch counting is completed, and the drive stops in needle down position (pos 1). This is an indication that the bobbin has to be changed.
The thread can be trimmed by heelback (-2), while sewing or presser foot lifting are blocked.
The bobbin can be changed after the power has been turned off.
By starting to sew again, a new seam is started, and the reset signal is emitted.

End backtack:

After recognition of an empty bobbin, the end backtack is completed, and the drive stops in needle down position (pos 1). This is an indication that the bobbin has to be changed.
The thread can be trimmed by heelback (-2), while sewing or presser foot lifting are blocked.
The bobbin can be changed after the power has been turned off.
By starting to sew again, a new seam is started, and the reset signal is emitted.

Thread trimmer:

After recognition of an empty bobbin, the thread trimming is completed. The sewing start for the next seam is blocked once. This is an indication that the bobbin has to be changed.
The thread can be trimmed by heelback (-2), while sewing or presser foot lifting are blocked.
The bobbin can be changed after the power has been turned off.
By starting to sew again, a new seam is started, and the reset signal is emitted.

6.16.2 Bobbin Thread Monitor for the Pneumatic Thread Trimmer 926/01 (182 = 2)

In each seam section, a special backtack is initiated and the end backtack is suppressed by the thread monitor module after recognition of the empty bobbin (the needle stitches the same hole twice). The drive stops in position 2, and the pneumatic thread trimmer (FAP) is switched on over time (parameter 183). eingeschaltet. In the following, this procedure is referred to as knotting stitches.
The bobbin can be changed after the power has been turned off.
When starting to sew, the same special backtack is performed. However, the number of holes (1 or 2) can be selected with parameter 184.

Start backtack:

After recognition of an empty bobbin, the start backtack is completed. Then, knotting stitches and thread trimming (FAP) are performed.
The bobbin can be changed after the power has been turned off.
When starting to sew, knotting stitches are performed again, the reset signal is emitted and the started seam is continued.

Seam with stitch counting:

After recognition of an empty bobbin in a counted seam >6 stitches, knotting stitches and thread trimming (FAP) are performed.
The bobbin can be changed after the power has been turned off.
When starting to sew again, knotting stitches are performed again, the reset signal is emitted, and the remaining stitches of the same counted seam are executed.

After recognition of the empty bobbin in a counted seam <6 stitches before seam end, the stitch counting is finished, and the drive stops in position 1. This is an indication that the bobbin has to be changed.
The thread can be trimmed by heelback (-2), while sewing or presser foot lifting are blocked.
The bobbin can be changed after the power has been turned off.
By starting to sew again, a new seam is started, and the reset signal is emitted.
If stitch counting without thread trimmer is programmed and the empty bobbin with <6 stitches before seam end is recognized, stitch counting is completed. After the first stitch of the following seam, a knotting stitch, thread trimming and the stop for changing the bobbin are performed.

Free seam:

After recognition of an empty bobbin in a free seam, knotting stitches and thread trimming (FAP) are performed.
The bobbin can be changed after the power has been turned off.
When starting to sew again, knotting stitches are performed again, the reset signal is emitted, and the remaining stitches of the same counted seam are executed.

Light barrier compensating stitches:

Sequence as described for bobbin thread monitor for magnetic thread trimmer!

End backtack:

Sequence as described for bobbin thread monitor for magnetic thread trimmer!

Thread trimmer:

Sequence as described for bobbin thread monitor for magnetic thread trimmer!

6.16.3 Bobbin Thread Monitor 926/04 (182 = 3)

In each seam section, after recognition of the empty bobbin, the thread monitor module activates a counting (parameter 189), at the end of which a stop in the basic position is initiated.
Sewing can be continued by the pedal in position 0 (neutral) and then pushing the pedal forward.
If the counting is activated a reset signal is **not** emitted at the start of the seam.
Automatic sequences as start and end backtack are only executed after a stop in the basic position has been initiated.

6.16.4 Needle Thread Monitor (182 = 1, 2 or 3)

The sequence in the case of a needle thread error (ERRN) is identical with the sequence of a bobbin thread error for the magnetic thread trimmer.

6.17 Bobbin Thread Monitor

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

For operating the bobbin thread monitor, a number of stitches is preset with parameter 031, depending on the length of the bobbin thread. After these stitches have been executed, the drive stops and a visual signal appears on the display. An audible signal is also emitted, when parameter 127 is set accordingly. This signals that the bobbin thread will run out. When pushing the pedal again, the seam can be completed or the thread can be trimmed. After inserting a full bobbin and pushing the enter button, a new sewing operation can be started.

Activate bobbin thread monitor:

- Set parameter 030 at "1" and/or "2".
- Input the desired maximum number of stitches with parameter 031 (inputted value x 100 = number of stitches, e.g. 80 x 100 = 8000).
- When using a control panel V810, insert strip no. 3 and set parameter 291 at "3". Activate the function for the start of the counter of the selected number of stitches with pushbutton B.
- When using a control panel V820, pushbutton 8 is provided for that.
- An audible signal can be activated by setting parameter 127 accordingly.
- Start the sewing operation.

Bobbin thread monitor is On:

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

Making the bobbin thread monitor ready for operation:

- Insert a full bobbin.
- Press the the respective pushbutton.
- Set the counting with parameter 031 and start the counting
- The symbol stops blinking

6.18 Thread Trimming Operation

Functions		V820
Thread trimmer On	left arrow above pushbutton 5 On	Pushbutton 5
Thread trimmer and thread wiper On	both arrows above pushbutton 5 On	
Thread trimmer and thread wiper Off	both arrows Off	

The functions "thread trimmer" and "thread wiper" can be switched on and off with pushbutton 5 on control panel V820.

The thread trimming operation is initiated by full heelback or automatically at the end of a counted seam section or automatically by light barrier sensing after the light barrier compensating stitches. If the function "trimming stitch backward" is on (parameter 136 = ON), the backtack solenoid in the end backtack remains on until stop in position 2.

6.18.1 Thread Trimmer

Functions		Parameter
Thread trimmer On/Off	(FA)	013
Trimming speed	(n7)	116

The thread trimmer can also be switched on and off with parameter 013 on control panels V810/V820.
The thread trimming is performed at trimming speed.
The drive stops in position 2 at the seam end, when the thread trimmer is off; it stops in position 1 at the end of programmed seams.

6.18.2 Thread Wiper

Functions		Parameter
Thread wiper On/Off	(FW)	014
Thread wiper time	(t6)	205
Delay after thread wiping until presser foot lift	(t7)	206
Delay after thread trimming without thread wiper until presser foot lift	(tFL)	211

The thread wiper can also be switched on and off with parameter 014 on control panels V810/V820.
The thread wiper signal is switched on for a time that can be set with parameter 205 after reaching position 2.
The delay time (t7) that can be set with parameter 206 prevents presser foot lifting before the thread wiper is in its basic position.
If a thread wiper is not connected there will be a time lag (tFL) after the drive has come to a standstill until the presser foot is lifted.

6.19 Speed Limitation 1 and 2

Functions		Parameter
Speed limitation 1	(n11)	187
Speed limitation 2	(n9)	188

The speed limitation is activated by pressing on of the external pushbuttons (N-B1, N-B2).
The maximum speed is limited to the level set with parameter 187 or 188. It remains pedal controlled.
The limitation to the lower speed is caused by pressing both pushbuttons at the same time.

6.20 Functional Variants of the External Pushbutton Needle Up

Functions		Parameter
Mode for pushbutton needle up	(Fnt)	186

The function of the pushbutton connected to input "needle up" can be programmed with parameter 186.

Functions:

Parameter 186 = 1 - Needle up / single stitch
Parameter 186 = 2 - Single stitch with blocking solenoid
Parameter 186 = 3 - Speed limitation

6.20.1 Needle Up / Single Stitch

Functions		Parameter
Switching needle up / single stitch	(Sht)	140

Parameter 186 = 1

Needle up

When pressing the pushbutton, the drive runs from position 1 to position 2.
If the drive is not in position 1 it will not move for safety reasons.

Single stitch

When pressing the pushbutton, the machine performs one rotation from position 1 to position 1.
If the drive is in position 2 it runs to position 1, when pressing the pushbutton, and from position 1 to position 1 each time the pushbutton is pressed again.
If the drive is not in the stop position it runs to position 1.

Direct access by function key on control panel V820 (pushbutton 3)

Functions		Parameter
Single stitch On/Off	(-F-)	008 = 4

6.20.2 Single Stitch with Blocking Solenoid

Parameter 186 = 2

When pressing the pushbutton at stop in the seam, the machine performs one rotation from position 1 to position 1.
The presser foot will be lowered, blocking and backtack solenoid will be switched on.
After trimming this function will be blocked.

6.20.3 Speed Limitation 1

Functions		Parameter
Speed limitation 1	(n11)	187

Parameter 186 = 3

Speed limitation 1 is activated by pressing the pushbutton.
The maximum speed is limited to the level set with parameter 187. It remains pedal controlled.

6.21 Setting of Function Keys F1/F2 on Control Panels V810/V820

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

The following functions are possible with parameters 293 and 294:

293/294 = 0	**Input function blocked**
293/294 = 1	**Parameter 140 = OFF / needle up/down:** When pressing the pushbutton, the drive runs from position 1 to position 2. **Parameter 140 = ON / single stitch (basting stitch):** When pressing the pushbutton, the drive performs one rotation from position 1 to position 1. If the drive is in position 2, it runs to position 1 when pressing the pushbutton and from position 1 to position 1 each time when the pushbutton is pressed again.
293/294 = 2...5	**No function**
293/294 = 6	***Parameter 186 = 2 / function blocking solenoid***
293/294 = 7	**Speed limitation 1 (n11)**
293/294 = 8	**Speed limitation 2 (n9)**
293/294 = 9...15	**No function**
293/294 = 16	**Intermediate backtack**: When pressing the pushbutton, the backtack is switched on anywhere in the seam and at standstill of the drive.
293/294 = 17	**Stitch regulator suppression/recall**: When pressing the pushbutton, the backtack is suppressed or recalled once.
293/294 = 18	**No function**
293/294 = 19	**Bobbin thread monitor**: After inserting a full bobbin, the stitch counter is set with parameter 031.

6.22 Seam with Stitch Counting

Functions		V820
Stitch counting On/Off	left arrow above pushbutton On	Pushbutton 2

Functions		Parameter
Stitch counting On/Off	(StS)	015
Number of stitches	(Stc)	007
Automatic/stitch counting speed	(n12)	118
Speed mode for the seam with stitch counting	*(SGn)*	141

Speed control for the stitch counting can be selected with the speed mode (parameter 141).

141 = 0:	Execution at pedal controlled speed from n1 to nmax.
141 = 1:	Execution at fixed speed n12, when pedal is forward (position > =1).
141 = 2:	Execution at limited speed n12, when pedal is forward (position > =1).
141 = 3:	Automatic execution at fixed speed as soon as the pedal has been pushed once. Interruption by "heelback (-2)" is possible.

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

6.23 Free Seam and Seam with Light Barrier

Functions		Parameter
Positioning speed	(n1)	110
Upper limit of the maximum speed (nmaxmax)	(n2)	111
Limitation of the maximum speed		Setting with DED
Lower limit of the maximum speed (nmaxmin)	(n2_)	121
Automatic/stitch counting speed	(n12)	118
Speed mode free seam / seam with light barrier	(SFn)	142

Speed control for the free seam can be selected with the speed mode (parameter 142).

142 = 0: Execution at pedal controlled speed from n1 to nmax.
142 = 1: Execution at fixed speed n12, when pedal is forward (position > =1).
142 = 2: Execution at limited speed n12, when pedal is forward (position > =1)
142 = 3: Only for the seam with light barrier:
Automatic execution at fixed speed as soon as the pedal has been pushed once. The seam end is initiated by the light barrier. Interruption by heelback (-2) is possible.

When the light barrier is deactivated, the speed is pedal controlled up to n2 according to the setting of parameter 111. The maximum speed will be indicated on the display after power on (unless the bobbin thread monitor function is on) and after thread trimming (not after power on) and can be changed directly by pushbuttons +/- on the Variocontrol. The setting range is limited by the set values of the parameters 111 and 121.

6.24 Light Barrier

6.24.1 General Light Barrier Functions (V810/V820)

Functions		Parameter
Light barrier compensating stitches	(LS)	004
Number of light barrier seams	(LSn)	006
Light barrier sensing uncovered	(LSd)	131
Sewing start blocked with light barrier uncovered	(LSS)	132
Light barrier seam end with thread trimming	(LSE)	133

- After sensing the seam end, counting of the compensating stitches at light barrier speed is performed.
- Interruption with pedal in position 0.
- Disabling of the thread trimming operation with parameter 133 (independently of the setting with pushbutton 5 on control panel V820). Stop in the basic position.
- Programming of up to 15 light barrier seams with stop in the basic position. After the last light barrier seam, a thread trimming operation will be performed.
- Light barrier sensing uncovered or covered at the seam end can be selected with parameter 131.
- Blocking of machine start, when light barrier is uncovered, can be programmed with parameter 132.

Direct access by function key on control panel V820 (pushbutton 9)

Functions		Parameter
Sewing start blocked with light barrier uncovered On/Off	(-F-)	008 = 5

6.24.2 Reflection Light Barrier

Functions	V820
Light barrier On/Off	Pushbutton 3

Functions		Parameter
Light barrier On/Off	(LS)	009

Settings

Sensitivity:

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

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

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

6.24.3 Automatic Start by Light Barrier

Functions		Parameter
Delay of automatic start	(ASd)	128
Automatic start ON/OFF	(ALS)	129
Light barrier sensing uncovered	(LSd)	131
Sewing start blocked with light barrier uncovered	(LSS)	132

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

The following conditions must be met:
- Pushbutton 3 on control panel V820 On (left arrow On), light barrier On
- Parameter 129 = ON (automatic start On).
- Parameter 131 = ON (light barrier sensing uncovered).
- Parameter 132 = ON (no sewing start, when light barrier uncovered).
- The pedal must remain pushed forward at the seam end.

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

6.24.4 Light Barrier Filter for Knitted Fabrics

Functions		Parameter
Number of filter stitches	(LSF)	005
Light barrier filter ON/OFF	(LSF)	130

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

- The filter can be switched on or off by parameter 130
- By changing the number of filter stitches the mesh will be adapted
- Knitted fabric sensing will only be activated if the light barrier senses covered -> uncovered, if parameter 131 = ON
- Knitted fabric sensing will only be activated if the light barrier senses uncovered -> covered, if parameter 131 = OFF

6.24.5 Heelback Blocked

Functions		Parameter
Heelback blocked (-1, -2) On/Off	(EPd)	281

After switching parameter 281 on it is possible to prevent the activation of the functions initiated by heelback (presser foot lifting, thread trimming).
This function is only effective, when the light barrier is on.

6.25 Stop in Reverse Position

Functions		Parameter
Stop in reverse position on/off	*(rdP)*	190
Number of reversion increments	(InP)	180

When this function is on and basic position 2 is selected, the drive stops in the seam in the position that corresponds to the stop position after trimming with reversion.

It is possible to move the needle up with pushbutton "needle up" with stop in the aforementioned position, if the reverse position is at least 20 increments away from position 1. Otherwise, the drive stops in position 2.

6.26 Signal Output POS1

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

6.27 Signal Output Impulses

- Transistor output with open collector
- Switches whenever a slot of the positioning track on the position transmitter disk is sensed (512 times per rotation)
- Independent of sewing, thus also when turning the handwheel manually
- Suitable e.g. for the connection of a counter

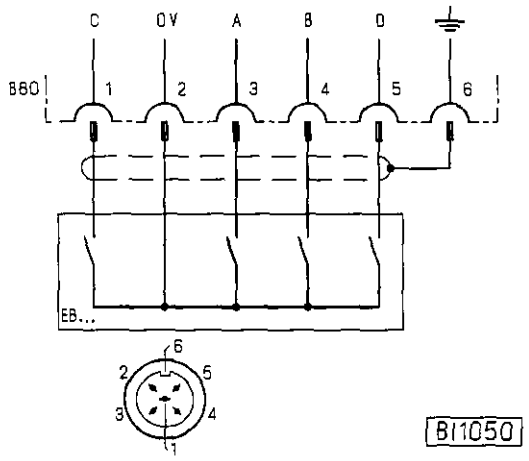
6.28 Actuator EB301 and EB302

With the help of the actuator connected with the pedal the commands for the sewing operation are input.
Instead of the actuator connected to socket connector B80 (see chapter Socket Connectors) another external actuator can be connected.

The actuator EB302 differs from EB301 by softer springs. Lower actuating forces are thus needed.

Table: Coding of the pedal steps

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



EB... - Actuator

Functions		Parameter
Speed stage graduation	(nSt)	119

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

Possible characteristic curves:
- linear
- progressive
- highly progressive

6.29 Master Reset

Recovery of factory settings.

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

7. Signal Test

Functions		Parameter
Input and output test	(SR4)	173

Output test:

- Function test of the the transistor power outputs with the actuators connected to them (e.g. solenoids and solenoid valves).
- Address parameter 173
- Select the desired output with the +/- pushbuttons
- Actuate the selected output with pushbutton > >

Pushbutton	Output	Socket / Pin
01	Backtacking	B15/1, B16/1
02	Presser foot lift	B3/5
03	Magnetic thread trimmer	B13/1, B14/1
04	Pneumatic thread trimmer	B13/4, B14/4
05	Thread wiper	B13/5, B14/5
06	Machine running	B14/6
07	Machine running + light barrier uncovered	B9/4
08	free	
09	High lift for walking foot	B5/5, B6/1
10	Reset thread monitor	B17/4

Input test:

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

8. Error Messages

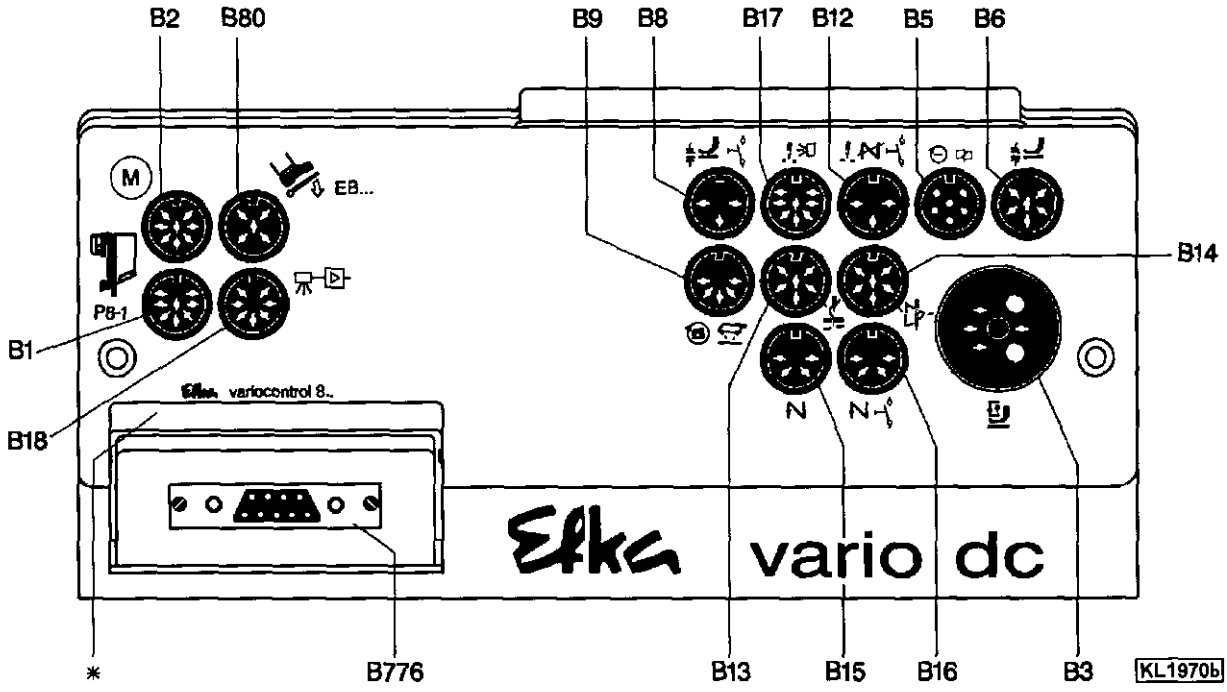
General Information		
On the V810	**On the V820**	**Signification**
InF A1	InFo A1	Pedal not in neutral position, when switching the machine on
-StoP- blinking	Symbol blinking	Blocking of machine run
InF A3	InFo A3	The position to which all position values refer has not been stored (reference position is missing).

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

Serious Situation		
On the V810	**On the V820**	**Signification**
InF E1	InFo 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	InFo E2	Line voltage too low, or time between power off and power on too short.
InF E3	InFo E3	Machine locks or does not reach the desired speed
InF E4	InFo E4	Control disturbed by deficient grounding or loose contact

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

9. Socket Connectors on the Control



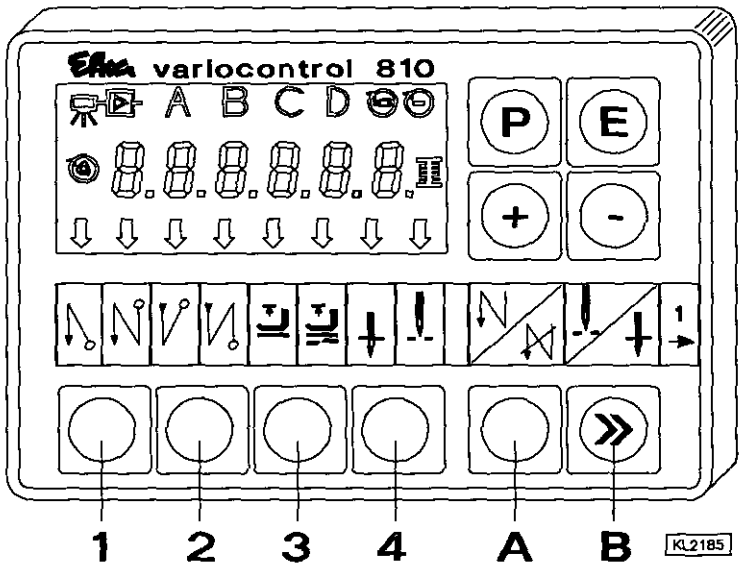
B1 - Position transmitter
B2 - Commutation transmitter for d.c. motor
B3 - Output presser foot lift / input blocking of machine run or ext. switch for presser foot lift
B5 - Output high lift for walking foot or blocking solenoid / inputs speed limitation 1 and 2
B6 - Output high lift for walking foot or blocking solenoid
B8 - Input high lift for walking foot or speed limitation
B9 - Output machine running or machine running and light barrier uncovered
B12 - Input needle up, backtack suppression/recall
B13 - Output thread trimmer (magn. and pneum.), thread wiper, machine running
B14 - Output thread trimmer (magn. and pneum.), thread wiper, machine running
B15 - Output backtacking / input intermediate backtack
B16 - Output backtacking / input intermediate backtack
B17 - Thread monitor
B18 - Light barrier module
B80 - Actuator
B776 - Control panel Variocontrol (screw-connected with 25/9-pole adapter)

*) Type designation

For your notes:

For your notes:

10. Operating Elements of the Variocontrol V810



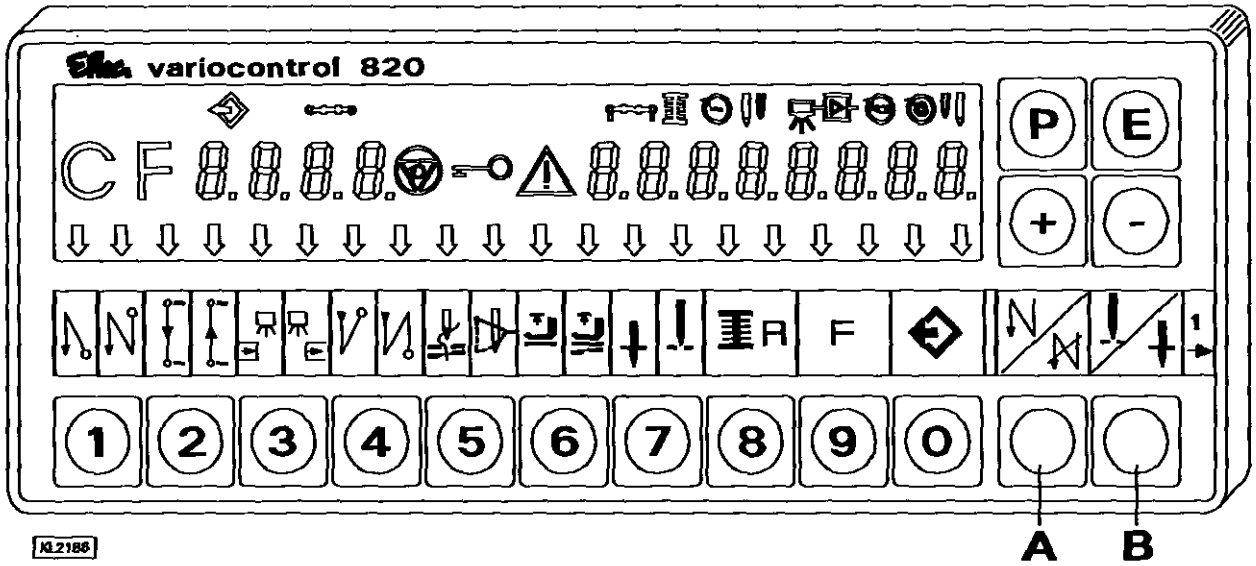
The control panel V810 is supplied with the insertable strip **no. 1** above the pushbuttons. For different functions, this strip can be replaced with another one supplied with the Variocontrol. Change parameter 291 in this case. See also *instruction manual* **V810 / V820**!

Functional Setting of the Pushbuttons

Pushbutton P =	*Recall or exit of programming mode*
Pushbutton E =	Enter button for modifications in the programming mode
Pushbutton + =	Increase of the value indicated in the programming mode
Pushbutton - =	Decrease of the value indicated in the programming mode
Pushbutton 1 =	*Start backtack SINGLE / DOUBLE / OFF*
Pushbutton 2 =	End backtack SINGLE / DOUBLE / OFF
Pushbutton 3 =	Automatic foot lifting after thread trimming ON / OFF Automatic foot lifting at stop in the seam ON / OFF
Pushbutton 4 =	Basic position of the needle (bottom/upper dead center) POSITION 1 / POSITION 2
Pushbutton A =	Pushbutton for backtack suppression/recall (pushbutton A can be set with different input functions by using parameter 293)
Pushbutton B =	Pushbutton for needle up/single stitch, according to the setting of parameter 140 *and/or shift button in the programming mode* (pushbutton B can be set with various input functions by using parameter 294)

Explanation of the symbols see instruction manual V810/V820!

11. Operating Elements of the Variocontrol V820



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

Functional Setting of the Pushbuttons

Pushbutton P = Recall or exit of programming mode
Pushbutton E = Enter button for modifications in the programming mode
Pushbutton + = Increase of the value indicated in the programming mode
Pushbutton - = Decrease of the value indicated in the programming mode
Pushbutton 1 = Start backtack SINGLE / DOUBLE / OFF
Pushbutton 2 = Stitch counting seam FORWARD / BACKWARD / OFF
Pushbutton 3 = Light barrier function COVERED-UNCOVERED / UNCOVERED-COVERED / OFF
Pushbutton 4 = End backtack SINGLE / DOUBLE / OFF
Pushbutton 5 = THREAD TRIMMER / THREAD TRIMMER + THREAD WIPER / OFF
Pushbutton 6 = Automatic foot lift after thread trimming ON / OFF
Automatic foot lifting at stop in the seam ON / OFF
Pushbutton 7 = Basic position of the needle (bottom/upper dead center)
POSITION 1 / POSITION 2
Pushbutton 8 = Bobbin thread monitor ON / OFF
Pushbutton 9 = Function key - can be programmed (parameter 008)
Pushbutton 0 = Teach-in / execution of 40 possible seam sections

Pushbutton A = Pushbutton for backtack suppression/recall (pushbutton A can be set with different input functions by using parameter 293)
Pushbutton B = Pushbutton for needle up/single stitch, according to the setting of parameter 140 and/or shift button in the programming mode
(pushbutton B can be set with various input functions by using parameter 294)

Special Setting of the Pushbuttons for HIT

The following can be changed by pushbuttons +/- after pressing pushbuttons 1, 2, 3, 4 or 9:
Pushbutton 1 = Number of stitches of the selected start backtack
Pushbutton 2 = Number of stitches of the seam with stitch counting
Pushbutton 3 = Number of light barrier compensating stitches
Pushbutton 4 = Number of stitches of the selected end backtack
Pushbutton 9 = Number of stitches or switching the programmed function on/off

Explanation of the symbols see instruction manual V810/V820!