

Efka vario dc

CONTROL

DA82CV3255

INSTRUCTION MANUAL

No. 402246

english

Efka
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GMBH & CO KG

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EFKA ELECTRONIC MOTORS
SINGAPORE PTE. LTD.

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Parameter List - see separate brochure

1. Important Safety Instructions

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

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

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

- Use this drive only for its intended use as described in the instruction manual.
- Use only attachments recommended by the manufacturer or as contained in the instruction manual.
- Do not operate without corresponding protective devices.
- Never operate this drive if one or more parts (e.g. cables, plugs) are damaged, if it is not working properly, if any damages can be identified or are to be suspected (e.g. after it has been dropped). Only qualified personnel are authorized to make adjustments, eliminate faults and complete repair work.
- Never operate the drive with the air openings blocked. Keep ventilation openings of the drive free from the accumulation of lint, dust and loose cloth.
- Never drop or insert any object into any opening.
- Do not use drive outdoors.
- Do not operate where aerosol (spray) products are being used or where oxygen is being administered.
- To disconnect, turn off main switch, then remove plug from outlet.
- Do not unplug by pulling on cord. To unplug, grasp the plug, not the cord.
- Keep fingers away from all moving machine parts. Special care is required e.g. around the sewing machine needle and the V-belt.
- Before mounting and adjusting accompanying devices, i.e. position transmitter, reversing device, light barrier, etc., disconnect drive from mains (turn off main switch, remove mains plug from outlet [DIN VDE 0113 part 301; EN 60204-3-1; IEC 204-3-1]).
- Always switch off (0) machine and remove plug from outlet, when removing covers, mounting accompanying devices, position transmitter especially, light barrier, etc., or any other devices mentioned in the instruction manual.
- Only qualified personnel are authorized to work on the electrical components.

- Work on high voltage circuit areas is forbidden, except as stated in the respective regulations, e.g. DIN VDE 0105 part 1.
- Only specially trained personnel are authorized to complete repair work.
- Cables to be wired must be protected against expectable strain and fastened adequately.
- Cables near moving machine parts (e.g. V-belts) must be wired at a minimum distance of 25 mm (see DIN VDE 0113 part 301; EN 60204-3-1; IEC 204-3-1).
- For safety it is preferred to wire the cables separately from each other.
- Before connecting the mains line make sure that the mains voltage corresponds to the specifications on the motor rating plate and on the nameplate of the power pack.
- Connect this drive to a properly grounded outlet only. See Grounding Instructions.
- Electric accompanying devices and accessories must only be connected to safety low voltage.
- EFKA DC drives are protected according to overvoltage class 2 (DIN VDE 0160 § 5.3.1).
- Observe all safety guidelines before undertaking conversions or modifications.
- For repair and maintenance use only original replacement parts.



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



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

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

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

Save these instructions for future reference.

2. Range of Applications

The motor is suitable for sewing machines:

Brand	Series
Dürkopp-Adler	244, 270 chain stitch sewing machines general

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 DA82CV3255
	- Power pack	N152 (optional N153, N155)
	- Actuator	EB301 (optional EB302, softer springs)
1	Control panel Variocontrol	V720, V730 oder V740 *1)
1	Position transmitter	P6-1
1	Mains switch	NS105
1	Set of standard accessories consisting of:	B131 belt guard, complete set of hardware motor mounting foot bracket 1 and 2, short documentation

*1) Light barrier control possible by using:

V720 - Reflection light barrier module LSM001

V730 - Reflection light barrier LS-001-006 or reflection light barrier module LSM001

V740 - Transmitted light barrier Varioply or reflection light barrier module LSM001

3.1 Special Accessories

Storage unit Memory Box MB001	- part no. 7900052
Storage card Memory Card MC001	- part no. 1111602
Reflection light barrier module LSM001A	- part no. 6100028
Reflection light barrier Variolux LS-001-006	- part no. 6100005
Transmitted light barrier Varioply - transmitter DLS-001	- part no. 6100027
- receiver DLL-...	- available versions see specification "Varioply"
Solenoid type EM1..(for e.g. presser foot lift, 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 control	- 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
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 (Mas3100)	- part no. 0500402
6-pin plug with locking screw (Mas6100)	- part no. 0500703
7-pin plug with locking screw (Mas7100S)	- part no. 0502474
10-pin plug (Mes100)	- part no. 0500357

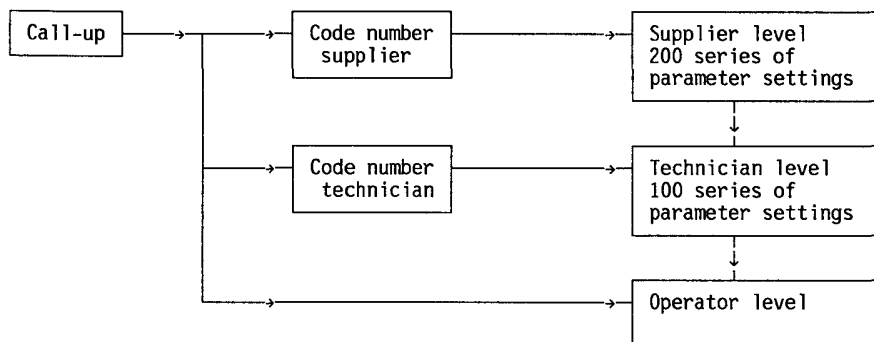
4. Operation

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



4.2 Code Number Input

1. TURN POWER OFF

2. -> **P** + TURN POWER ON

==> **C-0000**

3. -> **1** -> **2** -> **3** ->.. Input CODE NUMBER !
(Example)

4. -> **E** -> If CODE NUMBER wrong
repeat input !

==> **C-0000**
InFo F1

-> If CODE NUMBER correct

==> **F-XXX**

F-XXX = first parameter number in the recalled level

4.3 Direct Operation

By pushing the numeral buttons and some symbol buttons on the Variocontrol it is possible to turn functions on or off.

Example start backtack:

- Double start backtack is on

top LED7 lights up

I **7**
0

Push button 7 briefly

- Start backtack is off

both LED7 off

0 **7**
0

Push button 7 briefly

- Single start backtack is on

bottom LED7 lights up

0 **7**
I

4.4 Input with Parameters at the Operator Level

>> ONLY IF CODE NUMBER HAS NOT BEEN INPUT <<

1. -> ==> LED pushbutton P blinks !

==>

2. -> -> The first parameter is displayed;
the parameter no. does not appear

==>

aaa = abbreviation of the parameter
bbb = value of the parameter

3. -> -> -> Change parameter value !

4. -> -> PARAMETER VALUE is entered
Display advances to the next PARAMETER

==>

OR

-> -> PARAMETER VALUE is entered !

==>

4.5 Input with Parameters at the Technician and Supplier Level

-> After input of the CODE NUMBER
Display of the first PARAMETER NO.

==>

1. -> ==> The most significant digit
on the display blinks!

==>

2. -> -> -> ->.. Input desired PARAMETER NO.

(Example)

3. -> -> If PARAMETER NUMBER wrong
repeat input !

==>

-> If PARAMETER NUMBER correct

==>

F-XXX = recalled parameter number
aaa = abbreviation of the parameter
bbb = value of the parameter

4. -> -> -> Change parameter value !

5. -> -> PARAMETER VALUE is entered
Display advances to the next PARAMETER

==>

OR

-> -> PARAMETER VALUE is entered
Call-up of a new PARAMETER NO.
is possible, as in step 1!

==>

OR

-> -> -> Press button
twice

==>

5. Starting Service

5.1 General Instructions

When putting the control into operation, observe the following programming sequence:

- Set the direction of rotation of the motor, parameter F-161
- If necessary, set the reference position, parameter F-170
- If necessary, set the positions, parameter F-171
- If necessary, set the speeds, parameters F-110...F-118
- If necessary, set the remaining relevant parameters
- Start sewing in order to save the set values
- If the power is turned off the settings made before starting to sew get lost.

Note:

If the direction of rotation of the motor is changed the positions must be reprogrammed.

5.2 Initial Operation (New Motor)

The instructions for initial operation are valid under the following conditions only:

- The positions must not have been reprogrammed.
 - The direction of rotation of the motor shaft must be set at "counterclockwise rotation".
- Before mounting the position transmitter the sewing machine shaft is to be set to the reference position.

Note:

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.

Markings on the position transmitter shaft and on the position transmitter housing have to be aligned, then mount the position transmitter on the sewing machine shaft.

If necessary, set the speeds, parameter F-110...F-118.

If necessary, set the remaining relevant parameters.

Start sewing in order to save the set values.

- If the power is turned off the settings made before starting to sew get lost.

6. Aids for Putting into Operation and for Setting

6.1 Fast Installation Routine (SIR)

SIR offers the possibility to set the most important settings for initial operation by using the menu.

For safety reasons, all selections on the menu must be addressed. Only then, correct setting of all parameters is guaranteed!

The normal parameter settings are not affected.

6.1.1 Putting into Operation by Using SIR

-> P + TURN POWER ON

==>

C-0000

6.1.2 Language Selection of the Multilingual Display

-> -> Call-up of the possible languages (actual language blinks) ==>

dEU	USA
ESP	FrA

-> -> Select the desired language ==>

dEU	USA
ESP	FrA

6.1.3 Reference Position = Position 0 (Neutral)

-> -> Turn position transmitter at least until the marker ([) has disappeared. ==>

Position
0 [

Note:

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.

6.1.4 Position 1

-> -> Turn position transmitter to the desired position. ==>

Position
1 060

Set positions by turning the handwheel until the desired position is reached, but at least until the action has been completed on the display.

or

-> -> -> Set the increments
(2 increments correspond to approx. 1.4 °)

6.1.5 Position 2

-> -> Turn position transmitter to the desired position. ==>

Position
2 438

or

-> -> -> Set the increments

6.1.6 Position 1A

-> -> Turn position transmitter to the desired position. ==>

Position
1A 126

or

-> -> -> Set the increments

6.1.7 Position 2A

-> E -> Turn position transmitter to the desired position. ==> PoSition
2A 506

or

-> + -> - -> Set the increments

6.1.8 Positioning Speed

-> E -> Set the positioning speed ==> Lo SPEED
n1 0150

or

-> + -> - -> Change value

6.1.9 Maximum Speed

-> E -> Set the maximum speed ==> hi SPEED
n2 3000

-> + -> - -> Change value

6.1.10 Direction of Rotation

-> E -> Set the direction of rotation ==> rotAtion
drE 1

-> + -> - -> Change value

6.1.11 Complete the Fast Installation Routine

-> E -> Entry into normal operation after POWER ON. ==> 3000
DA82CV

6.1.12 Multilingual Display

dEU USA ESP FrA		Language selection		
dEU	USA	ESP	FrA	
PoSition 0]	PoSition 0]	PoSicion 0]	PoSition 0]	Reference position
PoSition 1 060	PoSition 1 060	PoSicion 1 060	PoSition 1 060	Leading position 1
PoSition 2 438	PoSition 2 438	PoSicion 2 438	PoSition 2 438	Leading position 2
PoSition 1A 126	PoSition 1A 126	PoSicion 1A 126	PoSition 1A 126	Trailing position 1A
PoSition 2A 506	PoSition 2A 506	PoSicion 2A 506	PoSition 2A 506	Trailing position 2A
niEdriG n1 0150	Lo SPEED n1 0150	vEL bAJA n1 0150	vit rAPi 2A 466	Positioning speed
hoch n2 3000	hi SPEED n2 3000	vEL ALtA n2 3000	vit rAPi n2 3000	Maximum speed
drEhri drE 1	rotAtion drE 1	rotAcion drE 1	rotAtion drE 1	Direction of rotation

6.2 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 pushbuttons +/- after each seam end. After power on, this is only possible if the bobbin thread monitor function is deactivated.

The actual value is shown on the display.

The setting range is between the speeds programmed by F-111 (upper limit) and F-121 (lower limit).

Actual value on the display in the direct mode:

4300	==> Display of speed nmax
xx82xV	==> Type of control

=>  =>  ==> Change value

New value on the display after pressing e.g. pushbutton - 8 times

3500	==> Display of speed n_{max}
xx82xV	==> Type of control

Note

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

6.3 Pushbuttons for Background Information (HIT)

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

For fast operator information the values of the functions are indicated on the display of the Variocontrol for approx. 3 seconds by pressing the pushbuttons 1, 3 7, 8 and 0, when switching on. During this time the respective value can be changed immediately by the pushbuttons + and -. (See examples below.).

6.3.1 Examples for HIT

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

If stitch counting (pushbutton 1) is turned off.

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Display after power on:
-> Maximum speed
-> Type designation

1

Press pushbutton 1 briefly.
LED beside pushbutton 1 lights up,
stitch counting is turned on.

Stc 020

Display:
20 stitches are set

+

Press pushbutton +,
number of stitches increases.

Stc 025

Display:
25 stitches are set
Changes are automatically entered after
3 seconds.

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Display after approx. 3 seconds:
-> Maximum speed
-> Type designation

If stitch counting (pushbutton 1) is turned on.

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Display after power on:
-> Maximum speed
-> Type designation

1

Press pushbutton 1 for at least 1 second,
LED beside pushbutton 1 goes off
momentarily, function stitch counting
remains on.

Stc 020

Display:
20 stitches are set

+

Press pushbutton +,
number of stitches increases.

Stc 025

Display:
25 stitches are set
Changes are automatically entered after
3 seconds.

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DA82CV

Display after approx. 3 seconds:
-> Maximum speed
-> Type designation

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

Function key F

By the function key (pushbutton 3) various parameters, also from a higher level, can be switched on or off. This pushbutton can be set to the following functions:

1. SSt Softstart ON/OFF
2. SrS Ornamental backtack ON/OFF
3. Sht Single stitch ON/OFF
4. LSS Sewing start blocked by light barrier uncovered ON/OFF

The setting of the F pushbutton can be changed as follows:

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Display after power on.
-> Maximum speed
-> Type designation

P

Press pushbutton P.

E

Press pushbutton E.

3

Press pushbutton 3 (function key F),
corresponding LED blinks.

-F- 2

Display:
Actual status (ornamental backtack ON/OFF)

-

Press pushbutton -.
(+ increases, - decreases the display value)

-F-	1
-----	---

Display:
New status (softstart ON/OFF)

P

Press pushbutton P.

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Setting is completed, display:
-> Maximum speed
-> Type designation

The number of softstart stitches can be changed as follows:

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

3

Press pushbutton 3 briefly.
LED beside pushbutton 3 lights up,
function softstart is turned on. .

SSc 001

Display:
1 stitch is set

+

Press pushbutton +,
number of stitches increases.

SSc 003

Display:
3 stitches are set
Changes are automatically entered after
3 seconds.

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DA82CV

Display after approx. 3 seconds:
-> Maximum speed
-> Type designation

If softstart (pushbutton 3) was turned on.

F

Press pushbutton F at least for 1 second,
LED beside pushbutton F goes off
momentarily, function softstart remains
on.

SSc 001

Display:
1 stitch is set

+

Press pushbutton +,
number of stitches increases.

SSc 003

Display:
3 stitches are set

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DA82CV

Display after approx. 3 seconds:
-> Maximum speed
-> Type designation

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

6.4 Programming Seams (Teach-in)

- A maximum of 8 patterns with a total of 40 seams can be established.
- Programming is possible only if no code number is 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.
- Backward sewing by reversing the feeding direction can only be programmed in the teach-in mode.

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.

6.4.1 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:

X	YY	ZZZ	X	Pattern number (1...8)
LS	SSS		YY	Seam number (0...40)
			ZZZ	Stitches for the seam with stitch counting (0...254)
			LS	Appears when light barrier function on
			SSS	Stitches after light barrier sensing (0...254)

Programming:

1 ->	P	==> LED pushbutton P blinks	==>	
2 ->	E	==> Display of a parameter at the operator level	==>	aaa bbb
3 ->	2	==> LED pushbutton 2 blinks Entry into pattern and seam programming!	==>	1 01 ---
4 ->	2	==> Changing the pattern number!	==>	2 01 ---

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

6.4.1.1 Seam with Stitch Counting

=> 1 ==> Turning on the stitch counting; display of the actual stitches. ==> 2 01 004

6.4.1.2 Backward Seam with Stitch Counting

=> 1 ==> Turning on backward sewing (display "-" in front of the number of stitches). Switching to forward sewing by pressing the pushbutton again. ==> 2 01-004

Backward sewing, including backtack, is performed 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 is selected, and vice versa, a backward seam is impossible when the light barrier is switched on.

-> + -> - Changing the stitches by pushbuttons +/- or sewing the seam by using the pedal.

6.4.1.3 Stitch Counting/ Light Barrier Covered/Uncovered and/or Uncovered/Covered

=> 0 ==> Light barrier effective covered/uncovered; display of the actual number of compensating stitches. ==> 2 01 004
LS 007

=> 0 ==> Light barrier effective uncovered/covered; display shows "-" before the actual number of compensating stitches. ==> 2 01 004
LS -007

=> 0 ==> Light barrier off ==> 2 01 004

=> + -> - Modification of the number of light barrier 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.

6.4.1.4 Program Switching from One Seam to the Next

=> 3 ==> Switching from seam 1 to seam 2 programmed; LED pushbutton 3 lights up ==> 1 01 020

If switching from one seam to the next is programmed in the set seam it will be linked to the next seam. The setting only makes sense if stitch countings and/or light barrier seams are set.

The drive stops after light barrier sensing and switching from one seam to the next only on the following conditions:

- If the thread trimmer is on (except in mode 8)
- If signal A1 and/or A2 is programmed at the seam end and switched on on the control panel

6.4.1.5 After Programming the Functions

=> **E** ==> Enter the seam.
Display of the next seam. ==>

2	02	---
---	----	-----

=> **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. ==>

2	01	004
LS		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 start

6.4.1.6 Detailed Example

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

Display before programming	==>	xxxx XY82ZV
1. -> P ==> LED pushbutton P blinks	==>	
2. -> E ==> Display of a parameter at the operator level	==>	aaa bbb
3. -> 2 ==> LED pushbutton 2 blinks Pattern 1, seam 1	==>	1 01 ---
4. -> 2 ==> LED pushbutton 2 blinks Pattern 2, seam 1	==>	2 01 ---
5. -> 2 ==> LED pushbutton 2 blinks Pattern 3, seam 1	==>	3 01 ---
6. -> 2 ==> LED pushbutton 2 blinks Pattern 4, seam 1	==>	4 01 ---
7. -> 7 * ==> Bottom LED pushbutton 7 lights up Single start backtack is on	==>	4 01 ---
8. -> 5 * ==> Bottom LED pushbutton 5 lights up Foot lifting at the seam end is on	==>	4 01 ---

*) Press pushbutton several times until the LED of the desired function lights up!

9.	->	3	==>	LED pushbutton 5 lights up Switching from one seam to the next is on	==>	4 01 ---
10.	->	1	==>	Stitch counting is on	==>	4 01 000
11.	->	+	->	-	Changing the number of stitches by pushbuttons or by using the pedal	4 01 017
			==>	Seam length of 17 stitches is adjusted		
12.	->	E	==>	Pattern 4, seam 2	==>	4 02 ---
13.	->	6	==>	Signal A1 is on	==>	4 02 ---
14.	->	1	==>	Stitch counting is on	==>	4 02 000
15.	->	+	->	-	Changing the number of stitches by pushbuttons or by using the pedal	4 02 008
			==>	Seam with 8 stitches is adjusted		
16.	->	E	==>	Pattern 4, seam 3 Free seam is selected	==>	4 03 ---
17.	->	0	*	==>	Light barrier is activated	4 03 --- LS 000
18.	->	+	->	-	Changing the stitches with pushbuttons 5 compensating stitches are adjusted	4 03 --- LS 005
19.	->	8	*	==>	Top LED pushbutton 8 lights up Single end backtack is on	4 03 --- LS 005
20.	->	9	*	==>	Bottom LED pushbutton 9 lights up Thread trimmer is on	4 03 --- LS 005
21.	->	E	==>	Pattern 4, seam 4 By changing to the next seam the settings of the preceding seams are automatically entered.	==>	4 04 ---
22.	->	P	==>	Programming terminated, first seam can be executed	==>	4 01 017

*) Press pushbutton several times until the LED of the desired function lights up!

6.4.2 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:

DELETE
X YY NN

X: 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!

->

2

 ==> Call-up of the pattern to be deleted

DELEtE
X YY NN

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

->

P

 ==> Deletion of the pattern

DELEtE
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

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

6.4.3 Execution (Pattern) Mode

1. Switch on mode with pushbutton 2
 (LED lights up)

->

2

 ==>

X	01	ZZZ
---	----	-----

2. Select pattern 1...8
 - Seam number 01 is displayed

->

+

 ->

-

 ==>

X	01	030
---	----	-----

3. If one should not start with seam 1
 select different seam number
 - Push button E several times
 until desired seam number is displayed

->

E

 ==>

2	05	ZZZ
---	----	-----

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

- Exit the execution (pattern) mode
- Switch off by pushbutton 2

->

2

7. Functions and Settings

7.1 First Stitch after Power On

Functions	Abbreviation	Parameter
1 stitch in npos after POWER ON Positioning speed	Sn1 n1	F-231 F-110

At the first start after power on, the motor runs at positioning speed (n1) for one rotation from pos. 1 to pos. 1, independent from the pedal position and set start backtacking speed if parameter Sn1 is on.

7.2 Machine Select

Functions	Abbreviation	Parameter
Display machine select Trimming speed	SEL n1	F-280 F-110

Depending on whether the jumper for machine select is on socket connector B3 or not, one basic setting (e.g. trimming speed) is made when switching on for the first time.

Without jumper: --> SEL=1, n7=150
With jumper: --> SEL=2, n7=180

7.3 Program Identification

Functions	Abbreviation	Parameter
Display program no., modification index and identification no.		F-179

The program number with index is shown in the top line on the display, and an 8-digit identification number in the bottom line .

Display example parameter 179:

PrG3212A	<-- Program number: 3212 / Index: A
92031211	<-- Identification number: 92031211

7.4 Function Key (Pushbutton 3)

Functions	Abbreviation	Parameter
Determine function for pushbutton 3	-F-	F-008

By the function key (pushbutton 3) a preprogrammed function can be switched on or off directly.

Programmable functions:

- F-008 = 1 - Softstart on/off
- F-008 = 2 - Ornamental backtack on/off
- F-008 = 3 - Full stitch with pushbutton for needle up/down on/off
- F-008 = 4 - Sewing start blocked with light barrier uncovered on/off

7.5 Display of Actual Speed

Functions	Abbreviation	Parameter
Display of actual speed	nIS	F-139

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

During machine run:

- the actual speed
- **example:** 2350 rotations per minute

2350

At machine standstill after the trimming operation:

- the adjusted maximum speed and the type of control
- **example:** 3300 rotations per minute and control type XY82ZV

3300
XY82ZV

At stop in the seam:

- the stop indication

StoP

7.6 Direction of Rotation of the Motor

Functions	Abbreviation	Parameter
Direction of rotation of the motor	drE	F-161

Look at the motor shaft: F-161 = 0 - clockwise rotation
 F-161 = 1 - counterclockwise rotation



Attention!

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

7.7 Softstart

Functions	Abbreviation	Parameter
Softstart number of stitches	SSc	F-100
Softstart speed	n6	F-115
Softstart on/off	SSt	F-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 (pushbutton 3)

Functions	Abbreviation	Parameter
Softstart on/off	-F-	F-008 = 1

7.8 Start Backtack

Functions	Abbreviation	Parameter
Single/double off		Pushbutton-7
Number of stitches forward	Arv	F-000
Number of stitches backward	Arr	F-001
Speed n3	n3	F-112
Run-out time	t1	F-200
Start delay after switching off the presser foot lift signal	t3	F-202
Stitch correction time	t8	F-150

The start backtack starts by pressing the pedal forward at the beginning of the seam. The backtack is delayed by the time t3 (start delay after switching off the presser foot lift signal).

The backtack is executed automatically at start backtacking speed. It cannot be interrupted. With softstart running parallel, the respective lower speed predominates.

The counting is synchronized to position 1.

After the execution of the backward seam, the backtacking signal, and, after a delay time t1, the start backtacking speed, will be turned off. Then pedal control is returned.

7.8.1 Double Start Backtack

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

7.8.2 Single Start Backtack

The backtacking signal will be emitted for an adjustable number of stitches, and the backward section will be sewn.

7.9 End Backtack

Functions	Abbreviation	Parameter
Single/double/off		Pushbutton 8
Number of stitches backward	Err	F-002
Number of stitches forward	Erv	F-003
End backtacking speed	n4	F-113
Last stitch backward on/off	FAr	F-136
Stitch correction time	t9	F-151
Start delay after switching off the presser foot lift signal	t3	F-202

The end backtack starts either by heeling the pedal back, 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 turned on immediately.

From lifted foot, the switch-on point is delayed by the time t3 (start delay after switching off the presser foot lift signal). The first leading position 1 is counted as 0 stitch, whenever the function is started outside of position 1. The counting and the turning off of the stitch regulator is synchronized to position 1.

From full machine run, the signal will be turned on only after reaching the end backtacking speed and the synchronization to position 2. The end backtack will be performed automatically. An interruption is not possible.

7.9.1 Double End Backtack

The backward section will be sewn for a number of stitches. Then, the stitch regulator will be turned off, and the forward section will be executed. For both sections the number of stitches is separately adjustable.

After the execution of the forward section, the trimming function will be initiated. During the entire operation the sewing speed is reduced to end backtacking speed, with the exception of the last stitch, which will be executed at positioning speed n1.

With slow backtack mechanisms, for the double end backtack, the stitch regulator can be delayed with a time lag of t9 (end backtack stitch correction).

7.9.2 Single End Backtack

The single end backtack will be executed at end backtacking speed. During the last stitch the speed is reduced to positioning speed. Depending on parameter F-136 (Far) the stitch regulator remains on or is turned off.

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

7.10 Start Ornamental Backtack

Functions	Abbreviation	Parameter
Single/double/off		Pushbutton-7
Number of ornamental backtacking stitches forward	SAv	F-080
Number of ornamental backtacking stitches backward	SAr	F-081
Start backtacking speed	n3	F-112
Ornamental backtack on/off	SrS	F-135
Start delay after switching off the presser foot lift signal	t3	F-202
Ornamental backtack stop time	tSr	F-210

Differences from the standard start backtack:

- The motor stops for the switching of the stitch regulator
- The stop time can be adjusted
- After the backtacking section backward follows a backtacking section forward with the same number of stitches as the backward section

Direct access by function key (pushbutton 3)

Functions	Abbreviation	Parameter
Ornamental backtack ON/OFF	-F-	F-008 = 2

7.11 End Ornamental Backtack

Functions	Abbreviation	Parameter
Single/double/off		Pushbutton-8
Number of ornamental backtacking stitches backward	SEv	F-083
Number of ornamental backtacking stitches forward	n3	F-113
End backtacking speed	SrS	F-135
Ornamental backtack on/off	t3	F-202
Start delay after switching off the presser foot lift signal	tSr	F-210
Ornamental backtack stop time		

It corresponds to the normal end backtack. Between the various seam sections the motor stops in position 1 for the ornamental backtack stop time (tSr). The number of stitches of the forward and backward section can be set separately.

Direct access by function key pushbutton 3)

Functions	Abbreviation	Parameter
Ornamental backtack ON/OFF	-F-	F-008 = 2

7.12 Suppression/Recall of Backtack

■ Effective in standard and ornamental backtack

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

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

The double backtack is performed in the above cases.

7.13 Intermediate Backtack

The backtack solenoid can be switched on anywhere in the seam by pressing the external pushbutton on socket B12/1-2.

When switching on or off, the intermediate backtack is synchronized to position 2.

Note:

The external switch has a double function
During machine run ==> intermediate backtack
At machine standstill ==> needle up/down

Firing of the backtack solenoid at machine standstill is not possible.

7.14 Activation of the Backtack Solenoid

Functions	Abbreviation	Parameter
Time of full power	t10	F-212
Operating time with pulsing	t11	F-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 F-212, the holding power at partial power with F-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

7.15 Seam with Stitch Counting

Functions	Abbreviation	Parameter
Stitch counting on/off		Pushbutton 1
Number of stitches	Stc	F-007
Stitch counting speed	n12	F-118
Speed mode for a seam with stitch counting	SGn	F-141

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

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

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.

7.16 Free Seam and Seam with Light Barrier

Functions	Abbreviation	Parameter
Positioning speed	n1	F-110
Upper limit of the maximum speed (nmaxmax)	n2	F-111
Maximum speed		see display
Lower limit of the maximum speed (nmaxmin)	n2_	F-121
Limited speed	n12	F-118
Speed mode "free seam" / "seam with light barrier"	SFn	F-142

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

- Mode 0:** Execution at pedal controlled speed from n1 to nmax.
Mode 1: Execution at fixed speed n12, when pedal is forward (position > = 1).
Mode 2: Execution at limited speed n12, when pedal is forward (position > = 1).
Mode 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 light barrier. Cessation is possible by heelback (-2).

If the light barrier is not active the speed is pedal controlled up to n2 corresponding to the setting of parameter F-111. The maximum speed will be indicated on the display 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 F-111 and F-121.

7.17 Light Barrier

7.17.1 General Light Barrier Functions (V720, V730, V740)

Functions	Abbreviation	Parameter
Light barrier compensating stitches	LS	F-004
Number of light barrier seams	LSn	F-006
Speed after light barrier sensing	n5	F-114
Light barrier sensing uncovered	LSd	F-131
Sewing start blocked with light barrier uncovered	LSS	F-132
Light barrier seam end with thread trimming	LSE	F-133

- After sensing the seam end, counting of the compensating stitches at light barrier speed is performed.
- Interruption with pedal in position -0 is possible.
- Disabling of the thread trimming operation with parameter F-133, independent of the setting with pushbutton 9 on the Variocontrol. 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 end (uncovered) or beginning of fabric (covered), can be selected with parameter F-131.
- Blocking of machine start, when light barrier is uncovered, programmable with parameter F-132.

7.17.2 Reflection Light Barrier (V720, V730)

Functions	Abbreviation	Parameter
Light barrier on/off Sensitivity setting when using LS001		Pushbutton 0 Potentiometer on the V730
Mechanical adjustment of light barrier LS001	SR5	F-174

Settings

Sensitivity:

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

- LS001 - Potentiometer on the Variocontrol
- LSM001 or LSM001A - Potentiometer directly on the light barrier module

Mechanical Adjustment:

- LS001 - Addressing of parameter F-174 to indicate optimal mechanical adjustment by bargraph display.
- By orienting the light barrier over the reflection area the highest possible bargraph level must be reached, then fix light barrier in this position.
- LSM001 or LSM001A - The orientation is facilitated through a visible light spot on the reflection area.

7.17.3 Transmitted Light Barrier (V740)

Functions	Abbreviation	Parameter
Light barrier ON/OFF Switch between fabric ply/end sensing Select sensitivity levels Sensitivity setting		Pushbutton 0 Pushbutton 0 Pushbutton L Pushbuttons + and -
Sensitivity setting Mechanical adjustment	LSI SR5	F-009 F-174

Sensitivity setting:

- 8 levels programmable with parameter F-009 and pushbutton "L".
- Each level adjustable from 0-255 with pushbuttons +/-.
- Bargraph and valency indication on the display.

Select the sensitivity level:

- Level 1 - 7, when sewing with fabric ply sensing. Call-up with pushbutton "L" possible before each seam.
- Level 8, when sewing with seam end sensing. Automatic call-up by the control.

» L ==> When pressing pushbutton "L" once, the set sensitivity level and the set sensitivity will be indicated. Select the next sensitivity level with each actuation of the pushbutton.

» + » - The sensitivity can then be changed immediately. If there is no more change of values the display changes back to the initial status. Sewing is possible again

Note:

Sensitivity level 8 can only be set at the technician or supplier level.

Mechanical adjustment of the light barrier sensor

- Address parameter F-174 to indicate optimal mechanical adjustment by bargraph display.
- The transmitted light barrier sender is to be oriented such that the highest possible bargraph level is reached.
- When the upper and/or lower limit of the bargraph is exceeded, the sensitivity is automatically set by pressing pushbutton "L" such that the bar is in central position. The above adjustment can then be continued.

7.17.4 Automatic Start by Light Barrier (V730, V740)

Functions	Abbreviation	Parameter
Delay of automatic start	ASd	F-128
Automatic start on/off	ALS	F-129
Sewing start blocked with light barrier uncovered	LSS	F-132

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

The following conditions must be met:

- Parameter F-132 = ON (no sewing start, when light barrier uncovered).
- Parameter F-129 = ON (Automatic start on).
- Light barrier switched on at the Variocontrol (pushbutton 0).
- 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 pedal forward.

This safety function is reset, when the pedal does not remain pushed forward after the end of the seam.

7.17.5 Light Barrier Filter for Knitted Fabrics

Functions	Abbreviation	Parameter
Number of filter stitches	LSF	F-005
Light barrier filter ON/OFF	LSF	F-130

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

- With parameter F-130 the filter can be switched on or off.
- By changing the number of filter stitches the mesh will be adapted.

7.18 Mode for Thread trimming - Lock Stitch/Chain Stitch

Functions	Abbreviation	Parameter
Chain stitch/lock stitch trimmer	KEt	F-185

By selecting the mode it is possible to operate the same control on machines with chain stitch or lock stitch trimming systems.

F-185 = OFF lock stitch
F-185 = ON chain stitch

7.19 Thread Trimmer, Thread Wiper - Lock Stitch Mode

F-185 = OFF

Functions	Abbreviation	Parameter
Thread trimmer on/off Thread trimmer and thread wiper on/off		Pushbutton 9 Pushbutton 9
Trimming speed	n7	F-116
Last stitch backward	FAr	F-136
Chain stitch/lock stitch trimmer	KEt	F-185
Time of thread wiper	t6	F-205
Delay after thread wiping until presser foot lifting	t7	F-206

- The thread trimmer can be switched on or off separately or together with the thread wiper with pushbutton 9.
- If parameter F-136 is on, the backtack solenoid for the single end backtack remains connected until machine standstill.
- The thread trimmer will be switched on with position 1 and switched off with position 1A.
- Trimming speed is n7.
- Then the thread wiper will be switched on for the time t7.
- Presser foot lifting after switching off the thread wiper can be delayed by the time t7.
- The stop position after trimming is position 2.

7.20 Thread Trimmer, Thread Catcher - Chain Stitch Mode

F-185 = OFF

Functions	Abbreviation	Parameter
Thread trimmer on/off Thread trimmer and thread catcher on/off		Pushbutton 9 Pushbutton 9
Last stitch backward	FAr	F-136
Chain stitch/lock stitch trimmer	KEt	F-185
Operating time of the thread trimmer	KFA	F-186
Operating time of the thread catcher	KFw	F-187
Activation delay of the thread catcher	dFw	F-188
Delay after thread wiping until presser foot lifting	t7	F-206

- The thread trimmer can be switched on or off separately or together with the thread wiper with pushbutton 9.
- If parameter F-136 is on, the backtack solenoid for the single end backtack remains connected until machine standstill.
- The thread trimmer will be switched on for the time KFA, when reaching the stop position 2.
- The thread catcher will be switched on for the time KFw after its activation delay.
- Presser foot lifting after switching off the thread catcher can be delayed by the time t7.

7.21 Needle Up/Down

Functions	Abbreviation	Parameter
Mode for pushbutton needle up/down	Mht	F-140

With the help of this parameter the function "needle up/down" can be switched.

Needle up: F-140 = 1

When the pushbutton is pressed, the motor only runs from position 1 to position 2. If the motor is not in position 1 it does not move for safety reasons.

Change of position: F-140 = 2

When the pushbutton is pressed, the motor runs from position 1 to position 2 and/or from position 2 to position 1. If the motor is not in the stop position it runs to the next possible position.

Single stitch: F-140 = 3

When the pushbutton is pressed, the machine performs one rotation from position 1 to position 1. If the motor is in position 2 it runs to position 1, when pressing the pushbutton. It runs from position 1 to position 1 on each subsequent actuation of the pushbutton. If the motor is not in the stop position it runs to the preselected basic position.

Function off: F-140 = 4

When pressing the pushbutton at stop, there will be no change of position.

The function manual backtacking activated with this pushbutton during machine run is not affected.

Direct access by function key pushbutton 3)

Functions	Abbreviation	Parameter
Single stitch on/off	-F-	F-008 = 3

**Attention!**

For safety reasons this direct access is only possible when parameter F-140 is set at 2 or 3.

7.22 Presser Foot Lifting

Functions	Abbreviation	Parameter
Automatic in the seam Automatic after trimming		Pushbutton 5 Pushbutton 6
Activation delay when pedal is in position -1, half heelback	t2	F-201
Start delay after switching off the presser foot lift signal	t3	F-202
Time of full power	t4	F-203
Operating time with pulsing	t5	F-204
Delay time from end of thread wiper until start of presser foot lift	t7	F-206

Presser foot is lifted:

- in the seam
- after trimming
- by heelback (position -1) or automatically (pushbutton 5)
- by heelback (position -1 or -2) or automatically (pushbutton 6)
- by light barrier, automatically
- by stitch counting, automatically
- activation delay after thread wiping (t7)
- activation delay without thread wiping (tFL)

Unintentional foot lifting before thread trimming, when changing from pedal position 0 (neutral) to position -2, can be prevented by setting an activation delay (F-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 F-203, the holding power at partial power with F-204.

**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 %	high holding power
6	75 %	
7	87.5 %	
0	100 %	
		full power

Foot lowers:

■ from manual foot lifting: press pedal to position 0 (neutral)

■ from automatic foot lifting: press 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 chapter "Timing Diagrams"!

7.23 Reversion

Functions	Abbreviation	Parameter
Reversion ON/OFF		Pushbutton 9
Positioning speed	n1	F-110
Number of reversion increments	InP	F-183
Delay time of reversion	drd	F-181
Reversion ON/OFF	Frd	F-182

The function "reversion" is performed after trimming.

When the stop position is reached, the drive stops for the time of the activation delay of reversion (F-181).

Then it reverses at positioning speed for an adjustable number of increments.

1 increment corresponds to approx. 0.7°.

7.24 Bobbin Thread Monitor

Functions	Abbreviation	Parameter
Number of stitches after activation of the bobbin thread monitor	cFw	F-085
Stop after bobbin thread monitor counting	SFw	F-086
Bobbin thread monitor function	rFw	F-195

If one of the 4 functions of the bobbin thread monitor is selected, the type of control and the set maximum speed are shown on the display for 1 sec. after power on.

3000	= = > Speed indication nmax
DA82CV	= = > Type of control

Then the bobbin thread monitor status is shown on the display.

0250	= = > No. of stitches (F-085) of the bobbin thread monitor stitch counting (e.g. 250)
-- --	= = > Status indication

At that moment (after power on), the number of stitches can be set with pushbuttons +/- in steps of ten. The functions DED and HIT are available only after the first sewing start and/or trimming.

Moreover, a stop after the bobbin thread monitor counting can be selected with parameter 086.

Parameter 086 = ON Drive stops after bobbin thread monitor counting

Parameter 086 = OFF Drive keeps running after the thread monitor counting

7.24.1 Adjustment of the Bobbin Thread Monitor

(Necessary only in modes 1...3)

It is possible to adjust the bobbin thread monitor after power on.

Left bobbin:

A signal on the bobbin thread monitor input of the control with a frequency of $\leq 3\text{Hz}$ indicates that the left bobbin is empty. The left horizontal bar of the symbol on the display blinks.

Right bobbin:

A signal on the bobbin thread monitor input of the control with a frequency of $\geq 3\text{Hz} \leq 6\text{Hz}$ indicates that the right bobbin is empty. The right horizontal bar of the symbol on the display blinks.

Left and right bobbin:

A signal on the bobbin thread monitor input of the control with a frequency of $\geq 6\text{Hz} \leq 12\text{Hz}$ indicates that both bobbins are empty. Both horizontal bars of the symbol on the display blink.

During the adjustment the sensitivity of the bobbin thread monitor is reduced to 30 %. When starting to sew after power on, the output for the thread trimmer is activated for 1 ms. The sensitivity is again switched to 100 %.

7.24.2 Functions of the Bobbin Thread Monitor

Parameter F-195 = 0

Bobbin thread monitor function is switched off.

Parameter F-195 = 1

After receiving an input signal the bobbin thread monitor is activated. After the counting F-085 (max. 2500 stitches) the bobbin thread monitor indication blinks on the display (right, left or both).

The indications remain on the display even if the bobbin thread monitor signal is no longer emitted.

The indications go off if input signals are no longer emitted within 14 stitches after the thread trimming and the next sewing start.

Parameter F-195 = 2

After receiving an input signal the bobbin thread monitor is activated. After the counting F-085 (max. 2500 stitches) the bobbin thread monitor indication blinks on the display (right, left or both), and the drive stops.

After the pedal has been pressed to position 0 (neutral), the seam can be completed.

The indications remain on the display even if the bobbin thread monitor signal is no longer emitted.

The indications go off if input signals are no longer emitted within 14 stitches after the thread trimming and the next sewing start.

Parameter F-195 = 3

After receiving an input signal the bobbin thread monitor is activated. After the counting F-085 (max. 2500 stitches) the bobbin thread monitor indication blinks on the display (right, left or both).

After the thread trimming operation the presser foot is not lifted. The presser foot is lifted only after the pedal has been in position 0 (neutral) and has then been heeled back. The indications remain on the display even if the bobbin thread monitor signal is no longer emitted.

The indications go off if input signals are no longer emitted within 14 stitches after the thread trimming and the next sewing start.

Parameter F-195 = 4 (simple bobbin thread control)

When a pushbutton is connected to socket B6/2-3, simple bobbin thread control is possible.

When pressing the pushbutton on the input, the stitch counting F-085 (max. 5000 stitches) is activated. The remaining number of stitches is indicated at each intermediate stop. After the counting the bobbin thread monitor indication blinks on the display (right and left), as well as the previously set stitches. The drive stops at the same time. Even automatic seam section will be interrupted (exception start and end backtack). The seam can be continued, when pressing the pushbutton again after the pedal has been pressed to position 0 (neutral).

The number of stitches is to be set such that the bobbin will not be completely empty after sewing these stitches. After changing the bobbin the pushbutton must be pressed in order to reset and reactivate the counter.

If the drive is turned off during the bobbin thread monitor counting, the count is saved, and the counting will be continued after power On. If the pushbutton is pressed for more than one second, the counting will always be reset.

7.25 Flip-Flop Functions (FF)

Functions	Abbreviation	Parameter
Limited speed for flip-flop function	n9	F-183
Flip-flop mode	FFF	F-190
Number of stitches until FF1 off (mode 5)	cF1	F-191
Number of stitches until FF1 on (mode 6)	cF2	F-192
Number of stitches until FF1 off (mode 6)	cF3	F-193
FF1 off after thread trimming (mode 2 or 6)	FFE	F-194

Depending on the mode selected with F-190 various operations are triggered by an external pushbutton. Output FF1, display LED FF1, seam execution, backtacking and speed limitation etc. are affected.

Parameter 190 = 1 / Flip-Flop Mode 1

After POWER ON the output FF1 is switched on. The display LED FF1 remains off.

By pressing the external pushbutton FF1 the output FF1 is switched off and the LED FF1 is switched on. Speed limitation (n9) is activated, start and end backtack are suppressed.

By pressing the pushbutton again or after trimming the machine returns to the same setting following POWER ON.

Parameter 190 = 2 / Flip-Flop Mode 2

Fullness control 1 with speed limitation:

After POWER ON the output FF1 and the LED FF1 are switched off.

By pressing the external pushbutton FF1 the output FF1 and the LED FF1 can be switched on at any time and the speed is limited to n9 (parameter F-183).

When pressing the pushbutton again, the output FF1 and the corresponding LED are switched off.

If FF1 is on, the intermediate backtack will be suppressed. During the start backtack the output FF1 is switched off and the LED FF1 remains on.

If FF1 is on, the end backtack will be performed with a stop like in the ornamental backtack. The output FF1 is switched off at the beginning of the stop time and remains off until the thread trimming is completed. The LED FF1 remains on.

After the thread trimming, the setting of parameter F-194 determines whether the output FF1 and the LED FF1 are switched on or off at the beginning of the next seam.

F-194 = ON = > Output FF1 and LED FF1 will be switched off after thread trimming

F-194 = OFF = > Output FF1 and LED FF1 will be switched on after thread trimming

Parameter 190 = 3 / Flip-Flop Mode 3

The function FF1 is used here as a machine run signal.

At machine standstill the output and the LED FF1 can be switched on with the external pushbutton FF1.

During the end backtack the output will be switched off.

Parameter 190 = 4 / Flip-Flop Mode 4

When pressing the external pushbutton FF1 at stop, there will be a change of position. The output FF1 will be switched on and the LED FF1 will be switched off.

If the external pushbutton is pressed during machine run the partial stitch signal (output FF1) will be switched on and the LED FF1 lights up.

After trimming or by pressing the pushbutton again the output and the LED will be switched off.

If the machine stops, when the pushbutton is pressed, there will be a change of position with output FF1 switched on.

Renewed sewing with the pushbutton pressed switches the output and the LED FF1 on.

In this mode, the light barrier function causes the motor to stop in the selected basic position after the execution of the compensating stitches.

The seam end can only be initiated by heelback (-2).

Parameter 190 = 5 / Flip-Flop Mode 5

Puller activation by output FF1:

After POWER ON the output FF1 (puller up) and the LED FF1 are switched on.

When pressing the pushbutton, the output FF1 and the LED FF1 will be switched off (lower puller).

When pressing the pushbutton again, the output and the LED FF1 will be switched on again (lift puller).

After the start backtack the puller lowers after an adjustable number of stitches (output and LED FF1 off), unless it has already been switched off.

At the beginning of the end backtack or of thread trimming the puller is always lifted (signal FF1 and LED FF1 are switched on).

If the puller is lowered and the presser foot is lifted the puller is also immediately lifted. After lowering the presser foot the puller is lowered after an adjustable number of stitches (cf F1).

If an intermediate backtack is activated with lowered puller the puller is immediately lifted. After the execution of the backtack the puller is immediately lowered. If the puller is lifted when activating the intermediate backtack it remains lifted after the execution of the backtack.

Parameter 190 = 6 / Flip-Flop -Mode 6**Edge trimmer, center cutter activation by output FF1:**

If parameter 194 is on, after thread trimming the output FF1 and the LED FF1 are switched off during manual or automatic operation.

Parameter 190 = 7 / Flip-Flop Mode 7**Fullness control 2 without speed limitation:**

After POWER ON the output FF1 and the LED FF1 are switched on.

By pressing the external pushbutton FF1 the output FF1 and the LED FF1 can be switched off at any time.

When pressing the pushbutton again, the output FF1 and the corresponding LED are switched on.

If FF1 is on, the intermediate backtack will be suppressed. During the start backtack the output FF1 is switched off and the LED FF1 remains on.

If FF1 is on, the end backtack will be performed with a stop like in the ornamental backtack. The output FF1 is switched off at the beginning of the stop time and remains off until the thread trimming is completed. The LED FF1 remains on.

After the thread trimming, the output and the LED FF1 are on.

Manual operation:

Manual operation is programmed by setting the number of stitches of parameters cF2 and cF3 = 0 stitches.

After POWER ON the output and the LED FF1 are switched off.

With the external pushbutton FF1 the output and the LED FF1 can be switched on and off anywhere in the seam.

Automatic operation:

Automatic operation is programmed by setting the number of stitches of at least one of the parameters cF2 and cF3 $cF3 \geq 0$ stitches.

The external pushbutton FF1 is always effective.

The cF2 counting begins with the sewing start.

Parameter 192 > 0 and 193 = 0

After the stitch counting (cF2) the output and the LED FF1 will be switched on, unless they had already been switched on by pushbutton FF1. They can be switched off with the pushbutton.

Parameter 192 > 0 and 193 > 0

After the stitch counting (cF2) the output and the LED FF1 will be switched on and will be switched off after the stitch counting (cF3).

The pushbutton FF1 is always effective.

7.26 Signal Output - POS1

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

8. Machine Functions

8.1 Braking Behavior

Functions	Abbreviation	Parameter
Braking effect when modifying the preset value ≤ 4 stages	br1	F-207
Braking effect when modifying the preset value ≥ 5 stages	br2	F-208

The braking effect of the motor can be set.

The following applies to all setting values:

The higher the value the more aggressive the braking reaction!

8.2 Braking Power at Standstill

Functions	Abbreviation	Parameter
Braking power at standstill	brt	F-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 sewing has not been started

8.3 Start Behavior

Functions	Abbreviation	Parameter
Starting edge	ALF	F-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.

INFO E3

8.4 Setting the Positions

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

8.4.1 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 electrical position transmitter information and actual mechanical position a reference position is needed.

POSITION 0

The reference position must be set:

- for initial operation
- after changing the position transmitter
- after changing 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 (pos 1 and pos 2) preset by the manufacturer are no longer valid and **must** be reset.

Programming:

1.) Address F-170. ==> LED pushbutton 3 blinks

2.) Press pushbutton 3 briefly ==>

Position
0]

3.) Turn handwheel until desired reference position is reached

Note: Turn at least until marker (]) has disappeared

4.) Press pushbutton E ==> Position 0 (neutral) is read by the control

If the reference position has not been stored there will be an error message on the display:

INFO A3

5.) Repeat operation from step 3 onwards

8.4.2 Signal and Stop Positions

Functions	Display
Position 1 lower needle position, switch-on position for thread trimmer (lock stitch)	Pos1
Position 2 upper needle position, switch-off position of thread trimmer (lock stitch), switch-on position of thread trimmer (chainstitch)	Pos2
Position 1A internal switching point (in the program)	Pos1A
Position 2A internal switching point (in the program)	Pos2A
Position 3 not used	Pos3
Position 3A not used	Pos3A

Programming:

1. Address F-171 ==> LED pushbutton 3 blinks!
2. Press pushbutton 3 ==>

Position	1	xxx
----------	---	-----

 Value xxx can be modified with pushbutton +/- or by turning the handwheel!
Set position 1
4. Press pushbutton E ==>

Position	2	xxx
----------	---	-----

Set position 2
3. Press pushbutton E ==>

Position	1A	xxx
----------	----	-----

Set position 1A
5. Press pushbutton E ==>

Position	2A	xxx
----------	----	-----

Set position 2A
6. ~~Press pushbutton E~~ ==>

Position	3	000
----------	---	-----

Position does not have to be set!
7. Press pushbutton E ==>

Position	3A	000
----------	----	-----

Position does not have to be set!
8. Press pushbutton E ==> Back to step 2!
9. Press pushbutton P ==> Positions will be stored

Note:

When setting the positions with the handwheel, make sure that the numerical value indicated on the display changes.

The setting values are programmed in the factory. After setting the reference position the machine is ready for use. The settings only need to be changed on non-standard machines and/or for fine tuning.

The display unit of the set positions is increments.

One rotation of the handwheel corresponds to 512 increments.

The change on the display is shown in increments of 2.

A change from one to the next value thus corresponds to approx. 1.4 angular degrees.

8.4.3 Display of the Signal and Stop Positions

The setting of the positions can easily be tested with parameter F-172.

- Address parameter F-172
- Turn handwheel corresponding to the direction of rotation of the motor
 - LED pushbutton 1 on - corresponds to position 1
 - LED pushbutton 1 turns off - corresponds to position 1A
 - LED pushbutton 2 on - corresponds to position 2
 - LED pushbutton 2 turns off - corresponds to position 2A

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

9. Memory Box

Functions	Abbreviation	Parameter
Language selection		F-178
Memory Box operation ON/OFF	FMb	F-197
Memory Card formatting ON/OFF	Foc	F-198

With the help of the Memory Box available as a special accessory it is possible to permanently store programs input on the Variocontrol with a Memory Card and to recall them whenever necessary. This avoids having to reprogram for recurring sewing operations.

■ A maximum of 10 different programs (data records) can be stored, each with the total program contents of the control (see chapter Programming Seams - Teach-in)

9.1 Preparation for Memory Box Operation



Attention! - Turn power off

- Unplug Variocontrol from the control
- Plug Memory Box into control
- Plug Variocontrol into Memory Box
- Turn power on
- Activate Memory Box with parameter F-197

9.2 Formatting of the Memory Card

The Memory Card is the storage medium for the programs.

Before using each Memory Card for the first time it must be prepared for receiving data by "formatting".

Note:

Original EFKA Memory Cards, with EFKA label, have been formatted and tested in the factory.

- Insert Memory Card with the labelled side up into the slot of the Memory Box.
 - If the Memory Card is correctly inserted the green LED on the Memory Box lights up.
 - If LED does not light up repeat operation or use different card.
- Switch parameter F-198 on.
- Press pushbutton P or E.
 - The display on the Variocontrol shows a growing series of lines from left to right.
 - When the series reaches its full length, the formatting is finished.
- The formatting can also be used to erase all data on the Memory Card.

9.3 Operating the Memory Box

1. » Insert Memory Card with the labelled side up into the slot of the Memory Box.
If the Memory Card is correctly inserted the green LED on the Memory Box lights up.
2. » Turn "Programming Seams (Teach-in)" off ==> pushbutton 2
3. » Save data

Note:

All parameters and sewing data that can be set are stored with the exception of the direction of rotation and the needle positions.

- Push pedal twice in short intervals, after end of seam, and put back to position 0 (neutral)
- Input any address between 0 and 9 for the data record.
 - The yellow BUSY-LED on the Memory Box lights up.
 - In case a data record already exists under the selected reference number, it will be overwritten.
- Display after the storing is terminated

SAvE
0--9

SAvE
|||||

3000
DA82CV

4. » Reading data from the Memory Card into the control (2 possibilities)

Possibility no. 1:

- Push pedal forward (stage 12), then turn power on
- Input address under which the desired data record is stored.

rEAd
0--9

Attention: For storing data permanently start sewing once before turning the power off!

Possibility no. 2:

- Push pedal twice in short intervals, after end of seam.
- Push pedal fully forward and put back to position 0 (neutral)
- Input address under which the desired data record is stored.
 - The yellow BUSY-LED on the Memory Box lights up.
- Display after saving the program.

SAvE
0--9

rEAd
0--9

rEAd
|||||

3000
DA82CV

Note:

For storing data permanently start sewing once before turning the power off!

5. » Exit

- **Interruption:**

- Press one of the green pushbuttons (P E + -) on the Variocontrol
- The Variocontrol display shows the values of normal operation

- **If data are not to be saved:**

- Turn power off and on again

- **If data are to be saved:**

- For storing data permanently start sewing once before turning the power off!

6. » Operation without Variocontrol

- Writing and reading is done by pressing the pedal as described in step 3 and 4.
- Data record 1 is always automatically selected.
- Reading-in is only possible if power is turned on with pedal fully forward.

7. » Error messages

An error message is shown on the display, when the faults indicated below occur.
The red LED on the Memory Box signals faults.

 InFo Cxx

"xx" stands for a number in the following table:

INFO-No.	Display
C01	Memory Card not inserted
C02	Memory Card cannot be written on
C03	Memory Card formatting
C04	Memory Card writing or reading error
C05	Connection interrupted
C06	Data are not found
C07	No more space for data

Language selection:

- A language can be selected with parameter F-178. All additional information is then shown in the corresponding language.

dEU USA
 ESP FrA

10. Error Messages

General Information

Display	Signification
Info A1	Pedal not in neutral position, when switching the machine on
Info A3	The reference position (position 0) has not been stored
Info A4	Control panel not clearly selected

Programming of Functions and Values (Parameters)

Display	Signification
Info F1	Wrong code number or parameter number input

Serious Situation

Display	Signification
Info E1	Position transmitter not connected or defective
Info E2	Line voltage too low, or time between power off and power on too short
Info E3	Machine locks, or does not reach the desired speed
Info E4	Control disturbed by deficient grounding or loose contact

Hardware Disturbance

Display	Signification
Info H1	Commutation transmitter cord or frequency converter disturbed
Info H2	Processor disturbed

Memory Card Information

Display	Signification
Info C01	Memory Card not inserted
Info C02	Memory Card cannot be written on
Info C03	Memory Card formatting
Info C04	Memory Card writing or reading error
Info C05	Connection interrupted
Info C06	Cannot find data on Memory Card
Info C07	Storage space on Memory Card occupied

11. Signal Test

Functions	Abbreviation	Parameter
Test of inputs and outputs	SR4	F-173

Output test:

- Function test of the transistor power outputs and actuators connected to them (e.g. solenoids and solenoid valves)
- Test is initiated by pressing pushbuttons 0...9 on the Variocontrol

Assignment of the pushbuttons to the outputs

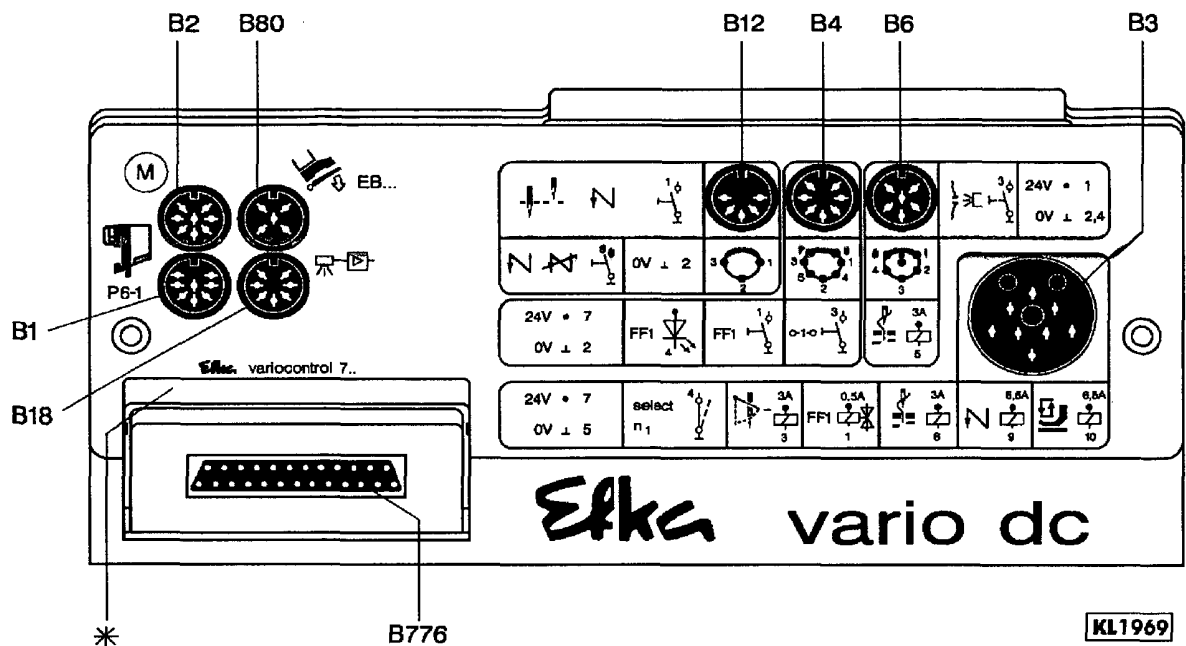
Pushbutton	Output
1	Backtacking
2	Presser foot lifting
3	Thread trimmer
4	Thread wiper
5	Flip-flop signal
6	LED flip-flop
7	free
8	free
9	free
0	free

Input test:

- 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.

12. Socket Connectors

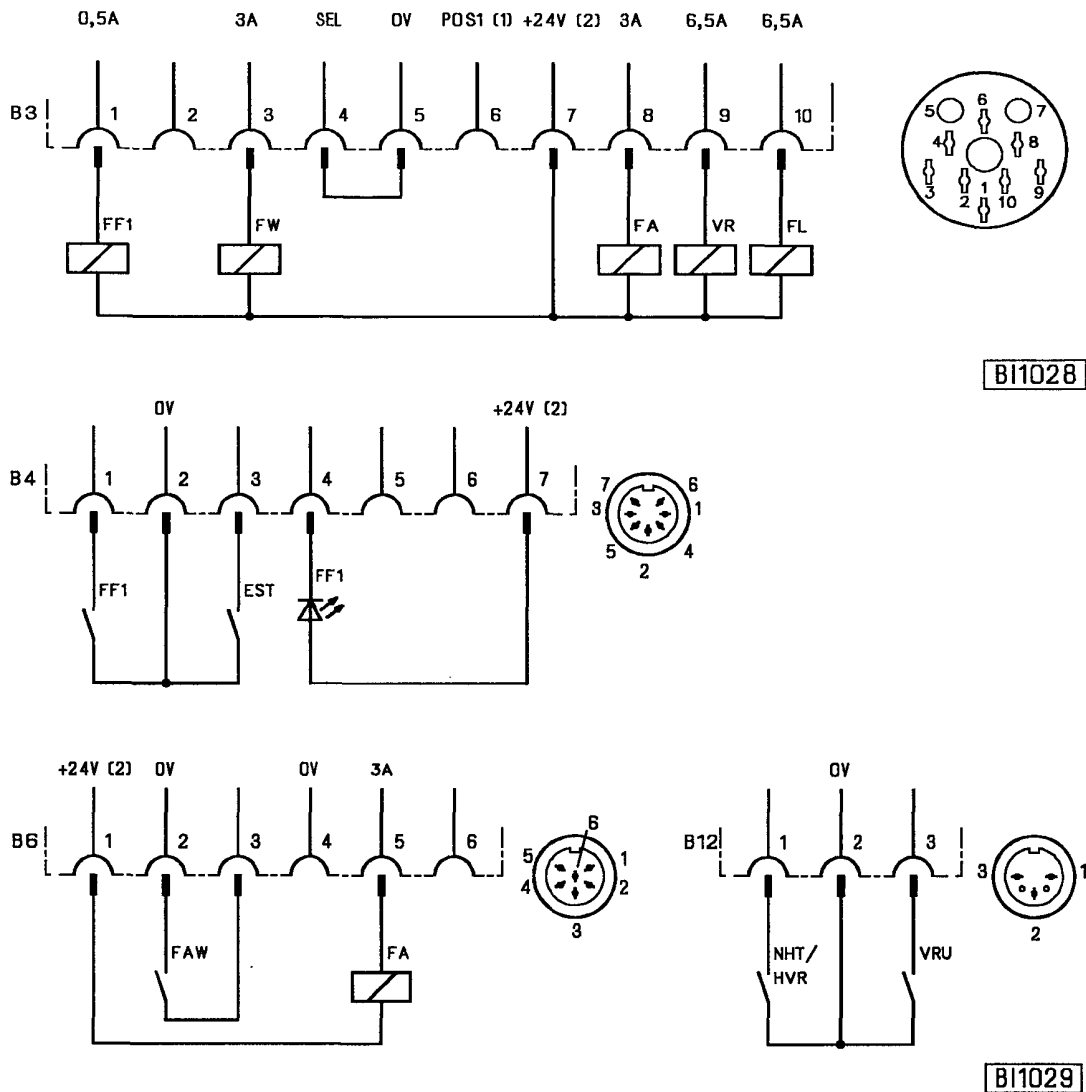
12.1 Position in the Control



- B1 - Positions transmitter
- B2 - Commutation transmitter for d.c. motor
- B3 - Machine
- B4 - Pushbuttons and display
- B6 - Machine
- B12 - Pushbuttons
- B18 - Light barrier module
- B80 - External actuator
- B776 - Control panel Variocontrol

*) Type designation

12.2 Connection Diagram



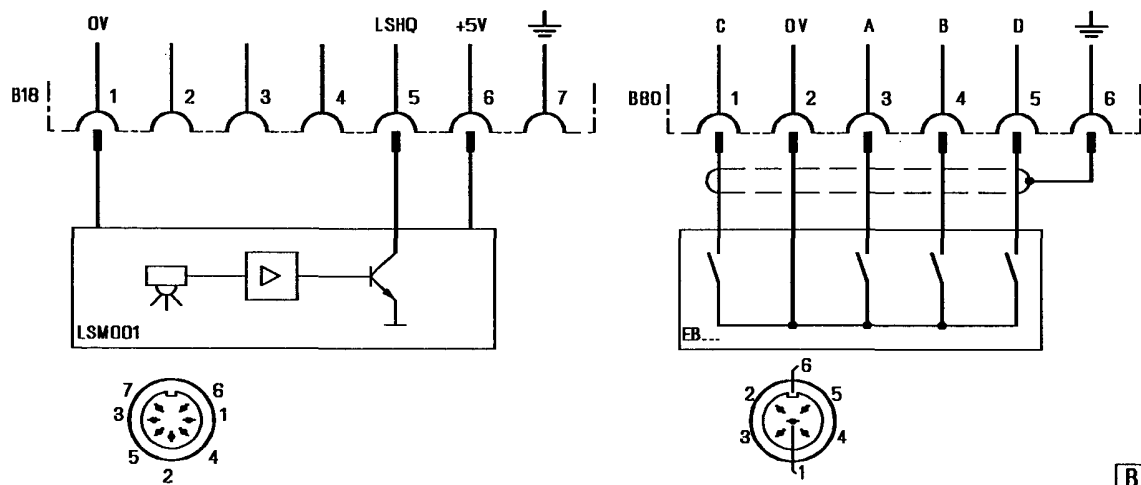
Attention!

The indicated currents are maximum values per output. With a constant load, the total power of 96VA must not be exceeded.

EST - Single stitch
FA - Thread trimmer
FAW - Bobbin thread monitor
FF1 - Flip-flop function
FL - Presser foot lift
FW - Thread wiper

HVR - Intermediate backtack
(intermediate stitch condensing)
NHT - Needle up/down
SEL - Machine select
VR - Backtacking (stitch condensing)
VRU - Backtack or stitch condensing
suppression /recall

1) Transistor output with open collector (max. 40V, 500mA)
2) Nominal voltage 24V, no-load voltage max. 36V



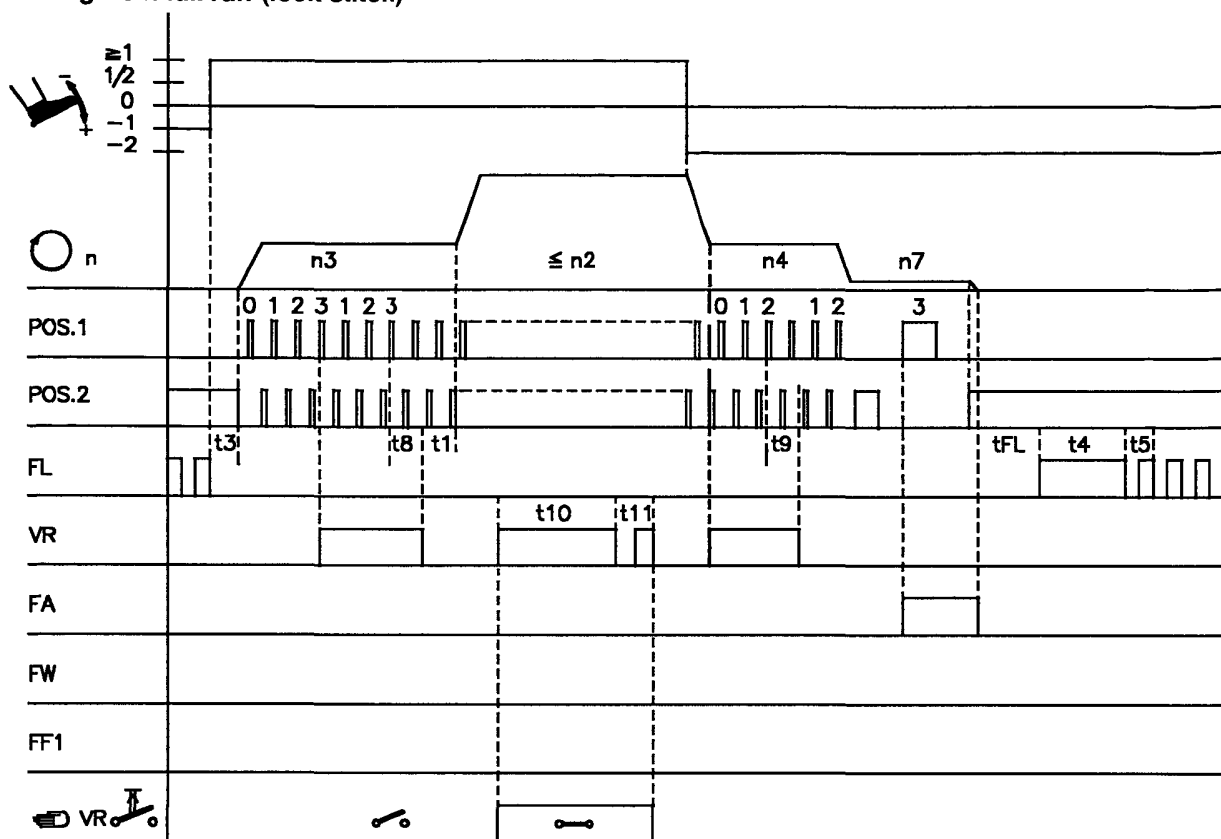
B11083

LSHQ - Light barrier command (identified if switched to 0V)

LSM001 - Reflection light barrier module
 EB... - External actuator

13. Function Diagrams

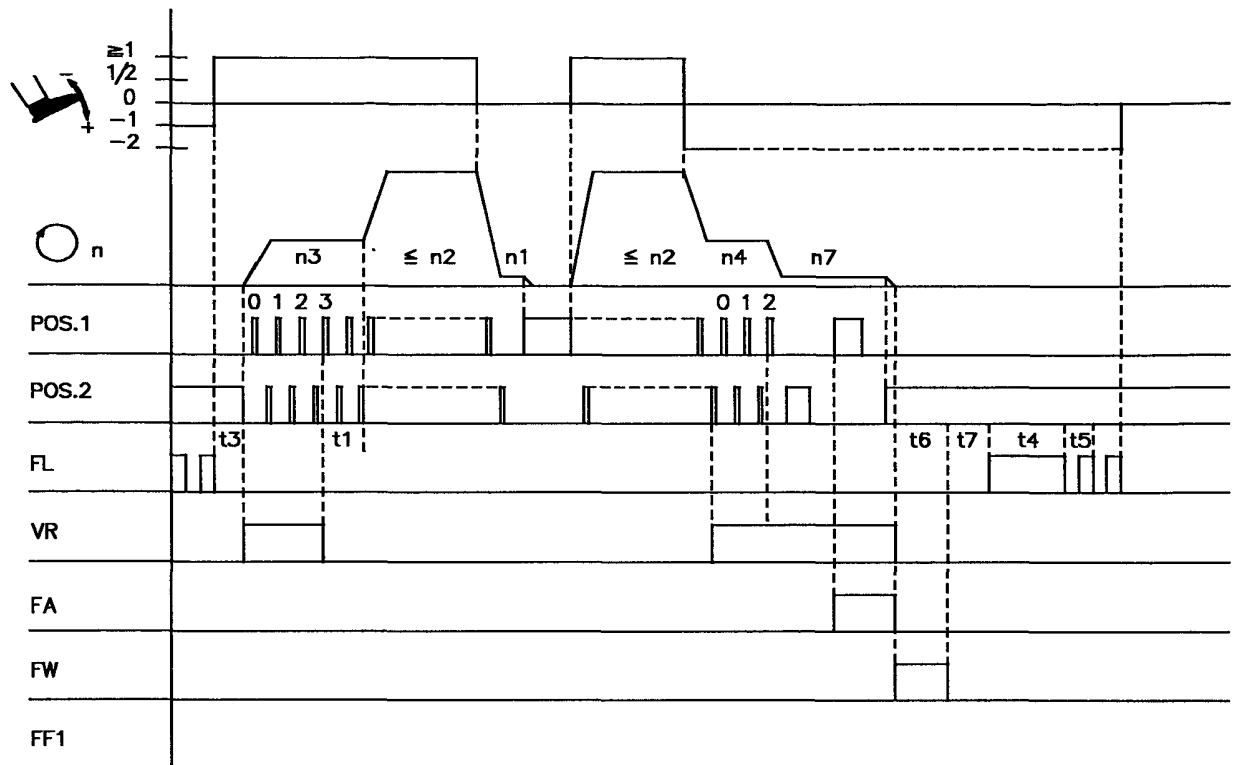
Trimming from full run (lock stitch)



0192/FALAUF

Abbreviation	Function	Parameter/Pushbutton
	Lock stitch trimmer	on F-185
	Double start backtack with stitch correction	on Pushbutton 7
	Double end backtack with stitch correction	on Pushbutton 8
	Thread wiper	off Pushbutton 9
n2	Maximum speed	F-111
n3	Start backtacking speed	F-112
n4	End backtacking speed	F-113
n7	Trimming speed	F-116
t1	Delay from end of start backtack to speed release	F-200
t3	Start delay from lifted foot	F-202
t4	Full power of presser foot lifting	F-203
t5	Presser foot lift pulsing	F-204
t6	Time of thread wiper	F-205
tFL	Delay time of presser foot lifting, when thread wiper off	F-211
t8	Start backtack stitch correction	F-150
t9	End backtack stitch correction	F-151

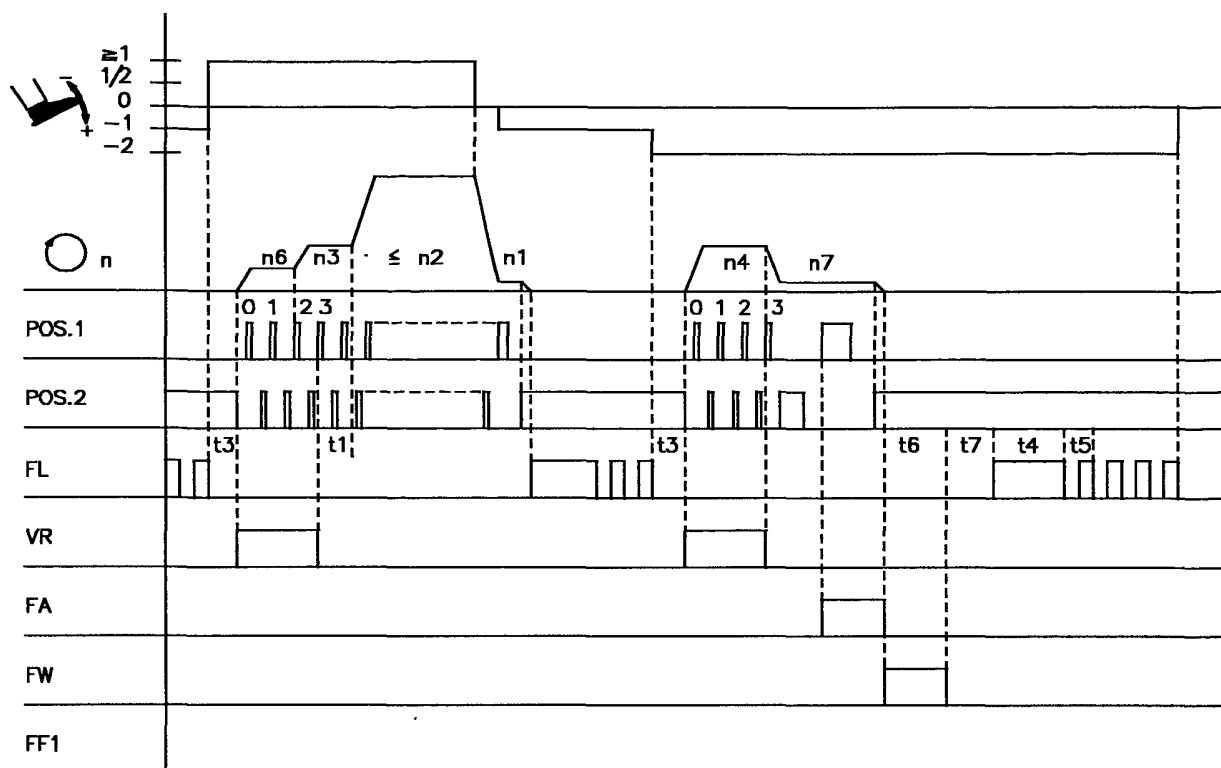
Run with intermediate stop (lock stitch)



0192/LAUFZW

Abbreviation	Function	Parameter/Pushbutton
FAr	Lock stitch trimmer	on
	Single start backtack	on
	Single end backtack	on
	Basic position needle down	on
	Last stitch backward	on
n1	Positioning speed	F-110
n2	Maximum speed	F-111
n3	Start backtacking speed	F-112
n4	End backtacking speed	F-113
n7	Trimming speed	F-116
t1	Delay from end of start backtack to speed release	F-200
t3	Start delay from lifted foot	F-202
t4	Full power of presser foot lifting	F-203
t5	Presser foot lift pulsing	F-204
t6	Time of thread wiper	F-205
t7	Delay time of presser foot lifting after thread wiping	F-206

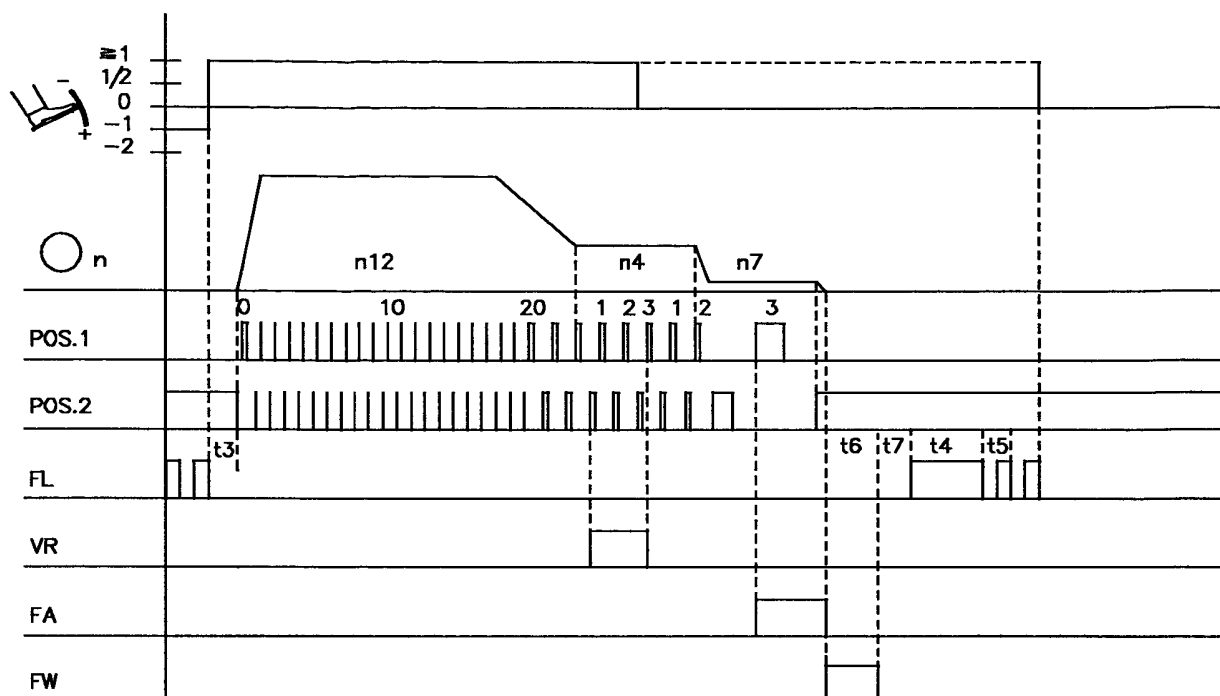
Trimming from intermediate stop (lock stitch)



0192/FAZW

Abbreviation	Function	Parameter/Pushbutton
FAr	Lock stitch trimmer	on F-185
	Softstart	on F-134
	Single start backtack	on Pushbutton 7
	Single end backtack	on Pushbutton 8
	Basic position needle up	on Pushbutton 4
	Last stitch backward	on F-136
n1	Positioning speed	F-110
n2	Maximum speed	F-111
n3	Start backtacking speed	F-112
n4	End backtacking speed	F-113
n6	Softstart speed	F-115
n7	Trimming speed	F-116
t1	Delay from end of start backtack to speed release	F-200
t2	Delay of presser foot lifting with pedal in position -1	F-201
t3	Start delay from lifted foot	F-202
t4	Full power of presser foot lifting	F-203
t5	Presser foot lift pulsing	F-204
t6	Time of thread wiper	F-205
t7	Delay time of presser foot lifting after thread wiping	F-206

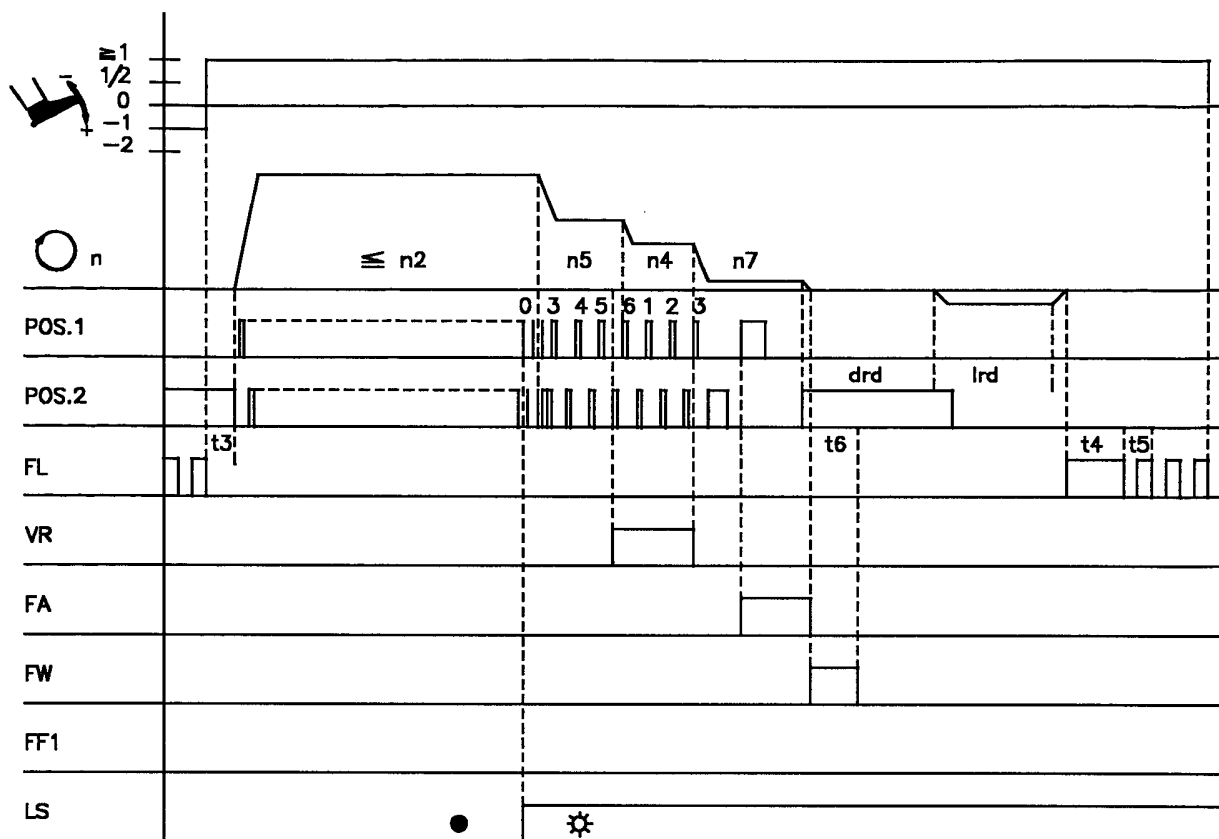
Seam end by stitch counting (lock stitch)



0192/ENDEZAE

Abbreviation	Function	Parameter/Pushbutton
	Lock stitch trimmer Start backtack Stitch counting Double end backtack	on off on on F-185 Pushbutton 7 Pushbutton 1 Pushbutton 8
n4 n7 n12	End backtacking speed Trimming speed Stitch counting speed	F-113 F-116 F-118
t3 t4 t5 t6 t7	Start delay from lifted foot Full power of presser foot lifting Presser foot lift pulsing Time of thread wiper Delay time of presser foot lifting after thread wiping	F-202 F-203 F-204 F-205 F-206

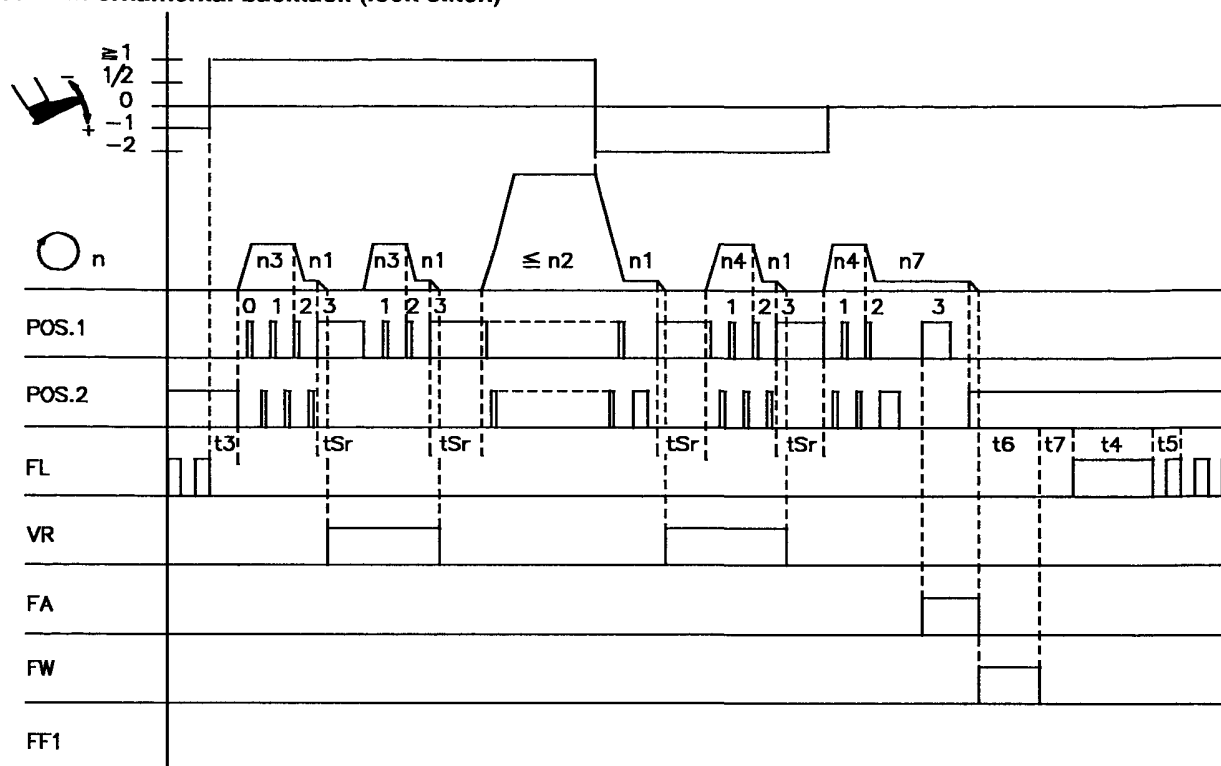
Seam end by light barrier (lock stitch)



0192/ENDELS

Abbreviation	Function	Parameter/Pushbutton
	Lock stitch trimmer	on F-185
	Start backtack	off Pushbutton 7
	Light barrier covered/uncovered	on F-131
	Single end backtack	on Pushbutton 8
	Reversion	on Pushbutton 9
	Light barrier	on Pushbutton 0
n2	Maximum speed	F-111
n4	End backtacking speed	F-113
n5	Speed after light barrier sensing	F-114
n7	Trimming speed	F-116
t3	Start delay from lifted foot	F-202
t4	Full power of presser foot lifting	F-203
t5	Presser foot lift pulsing	F-204
t6	Time of thread wiper	F-205
drd	Delay of reversion	F-181
lrd	Increments of reversion	F-180

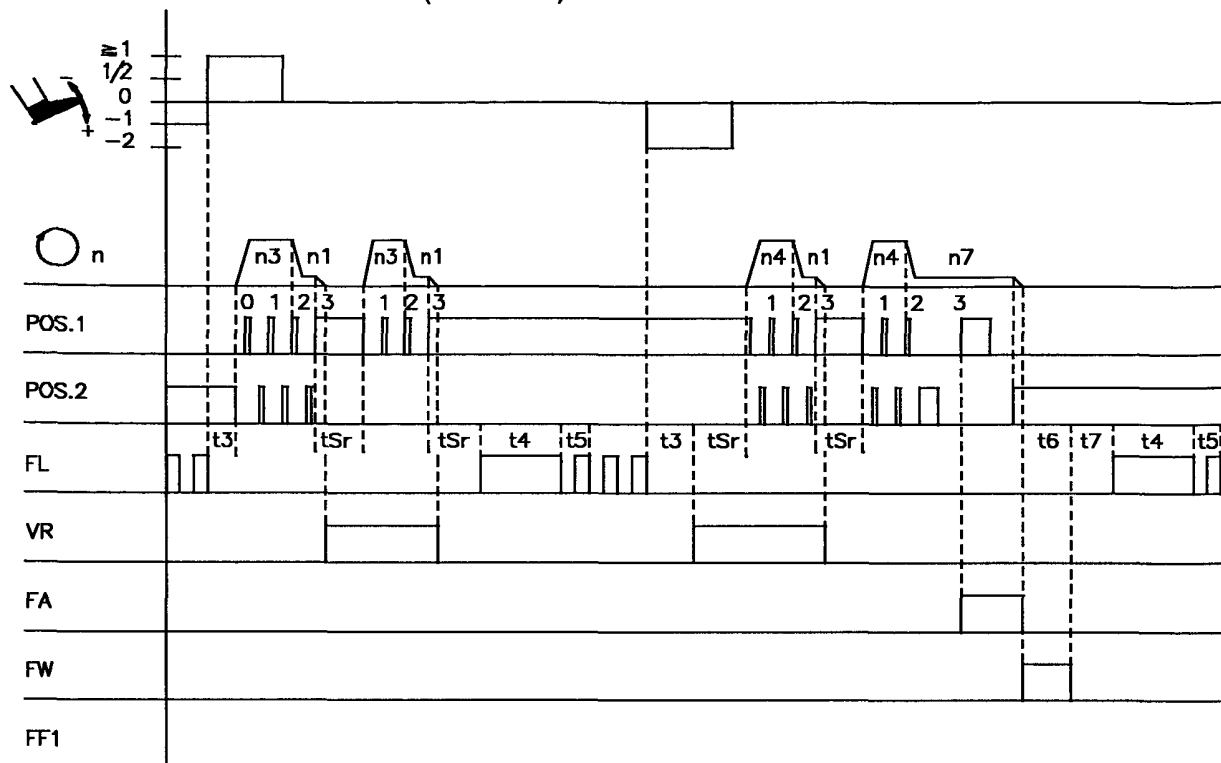
Run with ornamental backtack (lock stitch)



0192/LAUFZVR

Abbreviation	Function	Parameter/Pushbutton
	Lock stitch trimmer Ornamental backtack Presser foot lifting saved after trimming	on on on F-185 F-135 Pushbutton 6
n1	Positioning speed	F-110
n2	Maximum speed	F-111
n3	Start backtacking speed	F-112
n4	End backtacking speed	F-113
n7	Trimming speed	F-116
t3	Start delay from lifted foot	F-202
t4	Full power of presser foot lifting	F-203
t5	Presser foot lift pulsing	F-204
t6	Time of thread wiper	F-205
t7	Delay time of presser foot lifting after thread wiping	F-206
tSr	Stop time for ornamental backtack	F-210

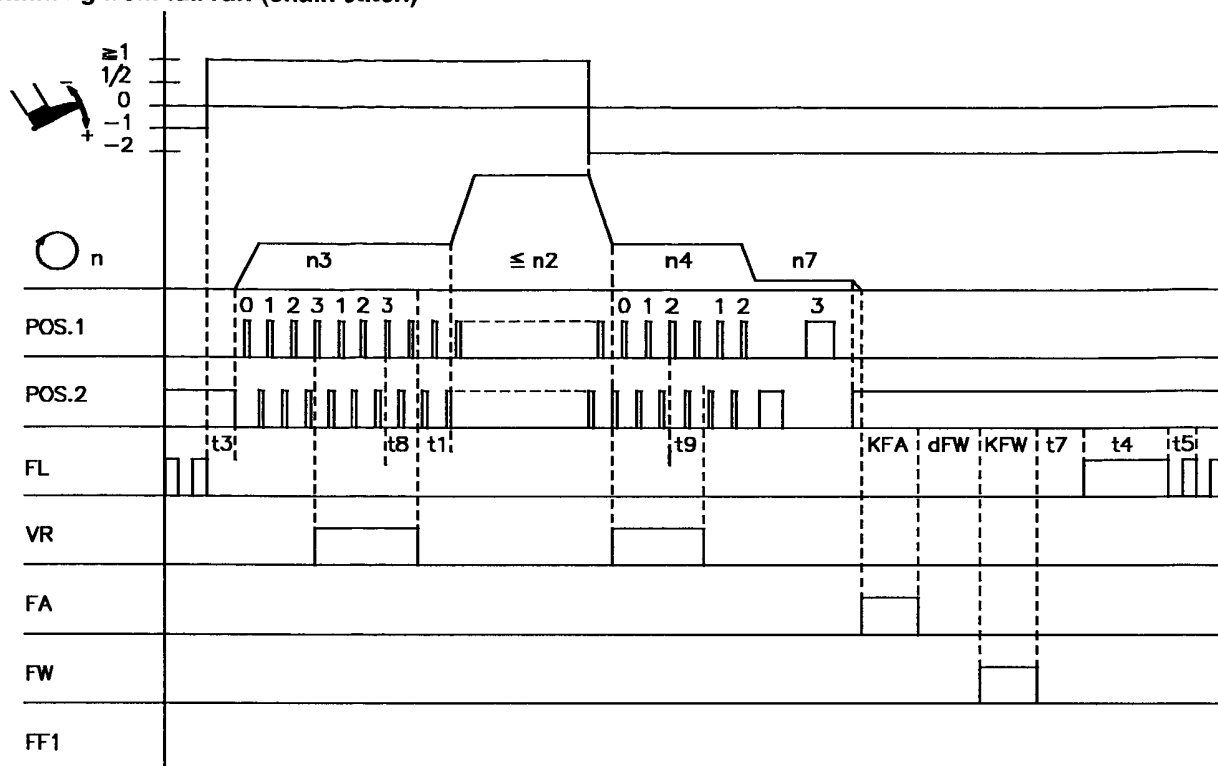
Short run with ornamental backtack (lock stitch)



0192/LAUFZVR1

Abbreviation	Function	Parameter/Pushbutton
	Lock stitch trimmer	on F-185
	Ornamental backtack	on F-135
	Presser foot lifting saved after thread trimming	on Pushbutton 6
	Presser foot lifting saved at stop in the seam	on Pushbutton 5
n1	Positioning speed	F-110
n3	Start backtacking speed	F-112
n4	End backtacking speed	F-113
n7	Trimming speed	F-116
t3	Start delay from lifted foot	F-202
t4	Full power of presser foot lifting	F-203
t5	Presser foot lift pulsing	F-204
t6	Time of thread wiper	F-205
t7	Delay time of presser foot lifting	
	after thread wiping	F-206
tSr	Stop time for ornamental backtack	F-210

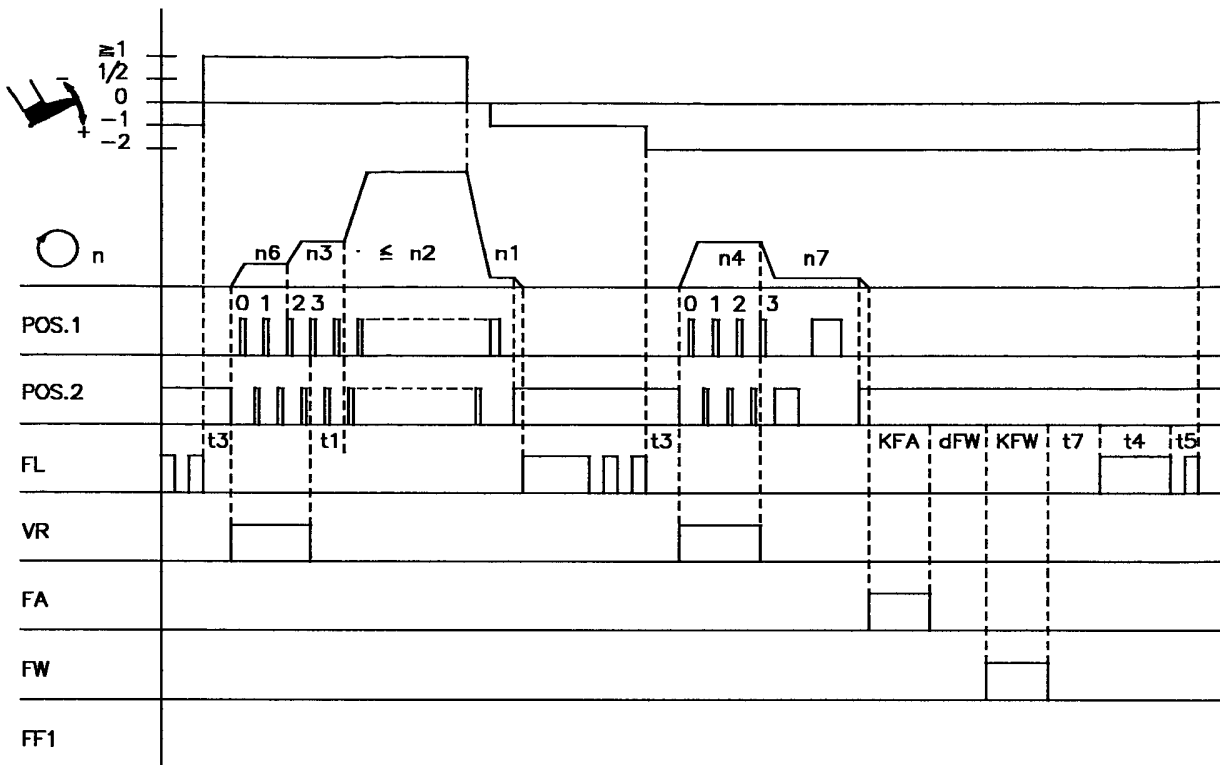
Trimming from full run (chain stitch)



0192/FALAUFK

Abbreviation	Function	Parameter/Pushbutton
	Chain stitch trimmer	on F-185
	Double start backtack with stitch correction	on Pushbutton 7
	Double end backtack with stitch correction	on Pushbutton 8
n2	Maximum speed	F-111
n3	Start backtacking speed	F-112
n4	End backtacking speed	F-113
n7	Trimming speed	F-116
t1	Delay from end of start backtack to speed release	F-200
t3	Start delay from lifted foot	F-202
t4	Full power of presser foot lifting	F-203
t5	Presser foot lift pulsing	F-204
t7	Delay time of presser foot lifting after thread catching	F-206
t8	Start backtack stitch correction	F-150
t9	End backtack stitch correction	F-151
KFA	Activation time of chain stitch trimmer	F-186
dFW	Delay until thread catching	F-187
KFW	Activation time of the thread catcher	F-188

Trimming from intermediate stop (chain stitch)



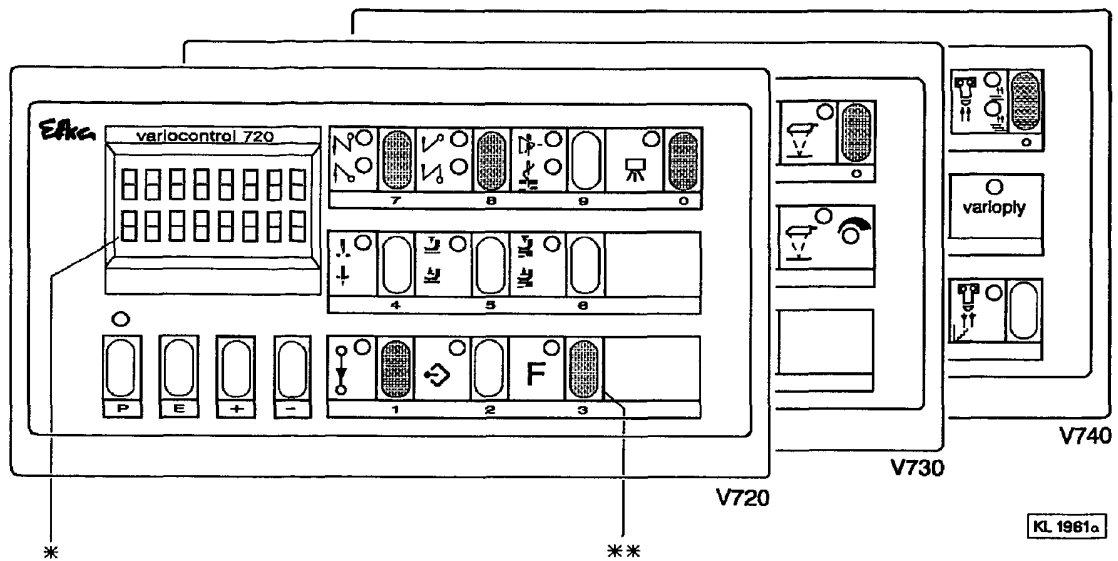
0192/FAZWK

Abbreviation	Function	Parameter/Pushbutton
	Chain stitch trimmer	on F-185
	Softstart	on F-134
	Single start backtack	on Pushbutton 7
	Single end backtack	on Pushbutton 8
	Basic position needle up	on Pushbutton 4
n1	Positioning speed	F-110
n2	Maximum speed	F-111
n3	Start backtacking speed	F-112
n4	End backtacking speed	F-113
n6	Softstart speed	F-115
n7	Trimming speed	F-116
t1	Delay from end of start backtack to speed release	F-200
t3	Start delay from lifted foot	F-202
t4	Full power of presser foot lifting	F-203
t5	Presser foot lift pulsing	F-204
t7	Delay time of presser foot lifting after thread catching	F-206
KFA	Activation time of chain stitch trimmer	F-186
dFW	Delay until thread catching	F-187
KFW	Activation time of the thread catcher	F-188

For your notes

For your notes

14. Operating Elements of the Variocontrol



*) Display

**) Pushbuttons with hatching: special setting for HIT

Functional Setting of the Pushbuttons

Pushbutton P = Recall or exit 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 = Stitch counting ON / OFF
 Pushbutton 2 = Teach-in / execution of 40 possible seam sections
 Pushbutton 3 = Function key - programmable
 Pushbutton 4 = Basic position of the needle (bottom/upper dead center) POSITION 1 / POSITION 2
 Pushbutton 5 = Automatic foot lift at stop in the seam ON / OFF
 Pushbutton 6 = Automatic foot lift after thread trimming ON / OFF
 Pushbutton 7 = Start backtack SINGLE / DOUBLE / OFF
 Pushbutton 8 = End backtack SINGLE / DOUBLE / OFF
 Pushbutton 9 = THREAD TRIMMER / THREAD TRIMMER + THREAD WIPER / OFF
 Pushbutton 0 = Light barrier function:
 V720/V730: ON / OFF
 V740: EDGE SENSING / FABRIC PLY SENSING / OFF
 Pushbutton L = Sensitivity setting for fabric ply sensing (see chapter "Light Barrier")

Special Setting of the Pushbuttons for HIT

Pushbutton P = Recall or exit 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 = Stitch counting ON / OFF
 Pushbutton 3 = Function key - programmable
 Pushbutton 7 = Start backtack SINGLE / DOUBLE / OFF
 Pushbutton 8 = End backtack SINGLE / DOUBLE / OFF
 Pushbutton 0 = Light barrier function:
 V720/V730: ON / OFF
 V740: EDGE SENSING / FABRIC PLY SENSING / OFF



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