

# **efka** vario dc

**CONTROL**

**FP82AV3235**

## **INSTRUCTION MANUAL**

**No. 402141**

**english**

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**efka**  
FRANKL & KIRCHNER  
GMBH & CO KG

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EFKA OF AMERICA INC.

**efka**  
EFKA ELECTRONIC MOTORS  
SINGAPORE PTE. LTD.

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Form for Record programming see center fold

**Parameter list** - see separate brochure



## 1. Important Safety Instructions

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

- Read all instructions thoroughly before using this drive.
  - Drive and accompanying appliances 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 appliances, i.e. positioner, 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 appliances, 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 appliances 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                                                                         |
|-----------------------|--------------------------------------------------------------------------------|
| various manufacturers | Lockstitch, chainstitch,<br>overlock machines and<br>automatic sewing machines |

### 2.1 Use in Accordance with Regulations

The drive is not an independently operating machine, but it 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/EEG and supplement 91/368/EEG).

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

EN 60204-3-1:1990      Electric equipment of industrial machines:  
special 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 | Control                                    | vario dc FP82AV3235                                                                                     |
|   | - Power pack                               | N153 (optional N155)                                                                                    |
|   | - External actuator                        | EB301 (optional EB302, reduced actuating force)                                                         |
| 1 | Control panel Variocontrol                 | V722                                                                                                    |
| 1 | Position transmitter                       | P6-1                                                                                                    |
| 1 | Mains switch                               | NS105                                                                                                   |
| 1 | Set of standard accessories consisting of: | B131<br>belt guard complete<br>set of hardware<br>motor foot<br>bracket 1 and 2, short<br>documentation |
| 1 | Set of accessories consisting of:          | Z32<br>pitman rod complete<br>plug Mes 60<br>plug Mes 100                                               |
| 1 | Pulley                                     |                                                                                                         |

### 3.1 Special Accessories

|                                                                                                                          |                                                                       |
|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| <b>Storage unit</b> Memory Box MB001                                                                                     | - part no. 7900052                                                    |
| <b>Storage card</b> Memory Card MC001                                                                                    | - part no. 1111602                                                    |
| <b>Reflection light barrier module</b> Variolux LSM001                                                                   | - part no. 6100028                                                    |
| <b>Solenoid type</b> EM1..(for e.g. presser foot lifting, backtacking, etc.)                                             | - available versions see specification Solenoids                      |
| <b>Extension cable</b> for external actuator, approx. 750 mm long, complete with plug and socket connector               | - part no. 1111845                                                    |
| <b>Extension cable</b> for external actuator, approx. 1500 mm long, complete with plug and socket connector              | - part no. 1111787                                                    |
| <b>5-pin plug</b> with slide index for the connection of another external control                                        | - part no. 0501278                                                    |
| <b>Foot control type</b> FB302 for standing operation with approx. 1400 mm connecting cable and plug                     | - part no. 4160018                                                    |
| <b>Fitting piece</b> for position transmitter on Juki machines                                                           | - part no. 0300019                                                    |
| <b>Potential equalization cord</b> 700 mm long, LIY 2.5 mm <sup>2</sup> , grey, with forked cable brackets on both sides | - part no. 1100313                                                    |
| <b>Extension cable</b> for position transmitter P6-..., approx. 1100 mm long, complete with plug and socket connector    | - part no. 1100409                                                    |
| <b>Extension cable</b> for commutation transmitter, approx. 315 mm long, complete with plug and socket connector         | - part no. 1111229                                                    |
| <b>Extension cable</b> for commutation transmitter, approx. 1100 mm long, complete with plug and socket connector        | - part no. 1111584                                                    |
| <b>Extension cable</b> for motor connection, approx. 400 mm long                                                         | - part no. 1111858                                                    |
| <b>Extension cable</b> for motor connection, approx. 1500 mm long                                                        | - part no. 1111857                                                    |
| <b>Pulley</b> 40 mm $\phi$ with special belt intake and slip-off protection (use SPZ belt)                               | - part no. 1112223                                                    |
| <b>Pulley</b> 50 mm $\phi$ with special belt intake and slip-off protection (use SPZ belt)                               | - part no. 1112224                                                    |
| <b>Knee switch type</b> KN3 (pushbutton) with cord of approx. 950 mm length without plug                                 | - part no. 58.0013                                                    |
| <b>Adapter cord</b> for Brother class 737-913 without presser foot lifting                                               | - part no. 1100182                                                    |
| <b>Adapter cord</b> for Brother class 737                                                                                | - part no. 1112310                                                    |
| <b>Adapter cord</b> for Daewoo                                                                                           | - part no. 1112311                                                    |
| <b>Adapter cord</b> for Juki high-speed seamer with index 1 to 6, e.g. class DDL-5550N-4                                 | - part no. 1112298                                                    |
| <b>Adapter cord</b> for Juki high-speed seamer with index 7, e.g. classes DDN-5410N-7, DDL-5550N-7, DDU-5490N-7          | - part no. 1112367                                                    |
| <b>Adapter cord</b> for Mitsubishi class DY-359                                                                          | - part no. 1112306                                                    |
| <b>Adapter cord</b> for Pegasus backlatch machines                                                                       | - part no. 1112443                                                    |
| <b>Adapter cord</b> for Aisin high-speed seamer AD320, 340, 345, 352, 3310 and Aisin overlock EK1                        | - part no. 1100698                                                    |
| <b>Sewing light transformer</b>                                                                                          | - please indicate line voltage and sewing light voltage (6.3V or 12V) |
| <b>6-pin plug</b> with slide index                                                                                       | - part no. 0500703                                                    |
| <b>7-pin plug</b> with slide index                                                                                       | - part no. 0502474                                                    |

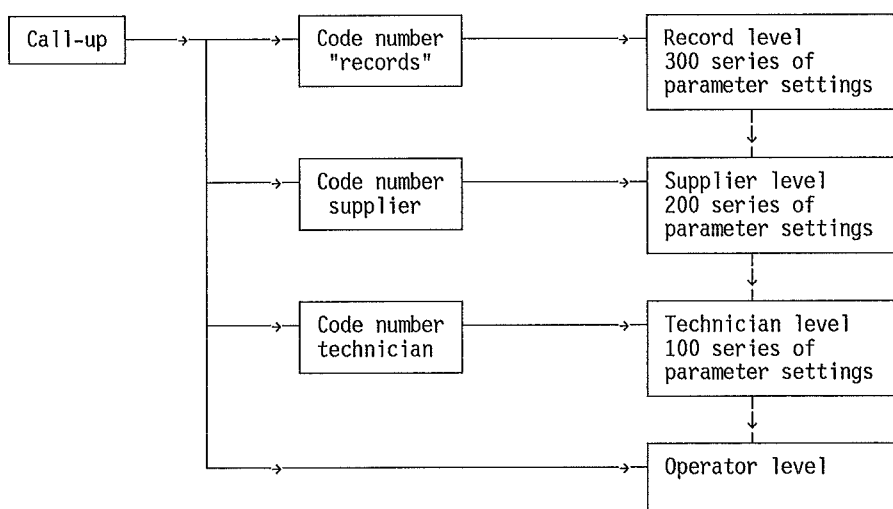
## 4. Operation

### 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 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 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 <span style="border: 1px solid black; padding: 2px 5px;">7</span> |
| Push button 7 briefly         |                       | 0 <span style="border: 1px solid black; padding: 2px 5px;">7</span> |
| - Start backtack is off       | both LED7 off         | 0 <span style="border: 1px solid black; padding: 2px 5px;">7</span> |
| Push button 7 briefly         |                       | 0 <span style="border: 1px solid black; padding: 2px 5px;">7</span> |
| - Single start backtack is on | bottom LED7 lights up | I <span style="border: 1px solid black; padding: 2px 5px;">7</span> |

### 4.4 Input by Parameters on the Operator Level

>> ONLY If CODE NUMBER WAS NOT INPUT <<

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

2. -> E -> Display of the first parameter ==> aaa bbb  
 parameter no. does not appear !

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

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

4. -> E -> PARAMETER VALUE is entered ==> aaa bbb  
 Display steps to next PARAMETER

OR

-> P -> PARAMETER VALUE is entered !

==> EXIT PROGRAMMING !

## 4.5 Input by Parameters on the Technician and Supplier Level

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

-> On with step 3 ! <-

-> Call-up after termination of a seam !

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

2. -> 1 -> 2 -> 3 ->.. Input desired PARAMETER NO.  
 (Example)

3. -> E -> If PARAMETER NUMBER wrong ==> F-XXX  
InFo F1  
 repeat input !

-> If PARAMETER NUMBER correct ==> F-XXX  
aaa bbb

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

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

5. -> E -> PARAMETER VALUE is entered ==> F-XXX  
aaa bbb  
 Display steps to next Parameter

OR

-> P -> PARAMETER VALUE is entered ==> F-XXX  
 Call-up of a new PARAMETER NO.  
 as under step 1 possible !

OR

-> P -> P -> Press button ==> EXIT PROGRAMMING !  
 twice

## 5. Operating the Motor

### 5.1 General Instructions

When putting the control into operation, the programming is changed in the following manner:

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 was turned off the adjustments 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 to "anticlockwise 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. If another needle position (other than reference position) is adjusted 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.

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 was turned off the adjustments 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 Thread Trimming System

-> E -> Selection thread trimming system ==> SELEct  
FAS 1

-> + -> - -> Change value

#### 6.1.4 Direction of Rotation

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

-> + -> - -> Change value

#### 6.1.5 Reference Position

-> E -> Set the reference position.  
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.

### 6.1.6 Position 1

-> E -> Set position 1  
 Turn position transmitter to  
 the desired position. ==> PoSition  
1 000

or

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

### 6.1.7 Position 1A

-> E -> Set position 1A  
 Turn position transmitter to  
 the desired position. ==> PoSition  
1A 086

-> + -> - -> Set the increments

### 6.1.8 Position 2

-> E -> Set position 2  
 Turn position transmitter to  
 the desired position. ==> PoSition  
2 254

-> + -> - -> Set the increments

### 6.1.9 Position 2A

-> E -> Set position 2A  
 Turn position transmitter to  
 the desired position. ==> PoSition  
2A 354

-> + -> - -> Set the increments

### 6.1.10 Positioning Speed

-> E -> Set the positioning speed ==> Lo SPEEd  
n1 0180

-> + -> - -> Change value

### 6.1.11 Start Backtack Speed

-> E -> Set the start backtack speed ==> Ar drEHZ  
n3 1500

-> + -> - -> Change value

### 6.1.12 End Backtack Speed

-> E -> Set the end backtack speed ==> Er drEHZ  
n4 1500

-> + -> - -> Change value

### 6.1.13 Maximum Speed

-> E -> Set the maximum speed ==> hi^SPEED  
n2 5000

-> + -> - -> Change value

### 6.1.14 Complete the Fast Installation Routine

-> E -> Entry into normal operation after POWER ON. ==> 5000  
FP82AV

### 6.1.15 Multilingual Display

|                                         |  |                                         |                                         |                                         |                        |
|-----------------------------------------|--|-----------------------------------------|-----------------------------------------|-----------------------------------------|------------------------|
| <div> dEU USA<br/> ESP FrA </div>       |  | Language selection                      |                                         |                                         |                        |
| <div> dEU<br/> SELEct<br/> FAS 1 </div> |  | <div> USA<br/> SELEct<br/> FAS 1 </div> | <div> ESP<br/> SELEct<br/> FAS 1 </div> | <div> FrA<br/> SELEct<br/> FAS 1 </div> | Thread trimming system |
| <div> drEhri<br/> drE 1 </div>          |  | <div> rotAtion<br/> drE 1 </div>        | <div> rotAcion<br/> drE 1 </div>        | <div> rotAtion<br/> drE 1 </div>        | Direction of rotation  |
| <div> PoSition<br/> 0 ] </div>          |  | <div> PoSition<br/> 0 ] </div>          | <div> PoSicion<br/> 0 ] </div>          | <div> PoSition<br/> 0 ] </div>          | Reference position     |
| <div> PoSition<br/> 1 000 </div>        |  | <div> PoSition<br/> 1 000 </div>        | <div> PoSicion<br/> 1 000 </div>        | <div> PoSition<br/> 1 000 </div>        | Position 1             |
| <div> PoSition<br/> 1A 086 </div>       |  | <div> PoSition<br/> 1A 086 </div>       | <div> PoSicion<br/> 1A 086 </div>       | <div> PoSition<br/> 1A 086 </div>       | Position 1A            |
| <div> PoSition<br/> 2 254 </div>        |  | <div> PoSition<br/> 2 254 </div>        | <div> PoSicion<br/> 2 254 </div>        | <div> PoSition<br/> 2 254 </div>        | Position 2             |
| <div> PoSition<br/> 2A 354 </div>       |  | <div> PoSition<br/> 2A 354 </div>       | <div> PoSicion<br/> 2A 354 </div>       | <div> PoSition<br/> 2A 354 </div>       | Position 2A            |
| <div> niEdriG<br/> n1 0180 </div>       |  | <div> Lo SPEEd<br/> n1 0180 </div>      | <div> vEL bAJA<br/> n1 0180 </div>      | <div> vit LEnt<br/> 2A 0180 </div>      | Positioning speed      |
| <div> Ar drEHZ<br/> n3 1500 </div>      |  | <div> bt SPEEd<br/> n3 1500 </div>      | <div> v rEMini<br/> n3 1500 </div>      | <div> brid ini<br/> n3 1500 </div>      | Start backtack speed   |
| <div> Er drEHZ<br/> n4 1500 </div>      |  | <div> bt SPEEd<br/> n4 1500 </div>      | <div> v rEMFin<br/> n4 1500 </div>      | <div> brid ini<br/> n4 1500 </div>      | End backtack speed     |
| <div> hoch<br/> n2^ 5000 </div>         |  | <div> hi SPEEd<br/> n2^ 5000 </div>     | <div> vEL ALtA<br/> n2^ 5000 </div>     | <div> vit rAPi<br/> n2^ 5000 </div>     | Maximum speed          |

## 6.2 Direct Input of the Maximum Speed Limitation (DED)

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

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

|        |                                       |
|--------|---------------------------------------|
| 3300   | ==> Display of speed n <sub>max</sub> |
| xx82xV | ==> Type of control                   |

=> 

|   |
|---|
| + |
|---|

 => 

|   |
|---|
| - |
|---|

 ==> Change value

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

|        |                                       |
|--------|---------------------------------------|
| 2500   | ==> Display of speed n <sub>max</sub> |
| 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 -. The display remains the same during set-up.

If the value of an activated function is to be changed the respective function key must be pressed somewhat longer. The function will then be returned to its original setting. Subsequently, the function with the respective value is shown on the display again.

### 6.3.1 Examples for HIT

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

If stitch counting (pushbutton 1) was turned off.

5000  
FP82AV

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.

5000  
FP82AV

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

If stitch counting (pushbutton 1) was turned on.

5000  
FP82AV

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.

5000  
FP82AV

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

With the sewing start the new value is saved.

## 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 Full stitch with pushbutton needle up/down ON/OFF
4. LSS Sewing start blocked with light barrier uncovered ON/OFF
5. rd Reversion ON/OFF

### Note

If programming seams (teach-in) is switched on the above functions have no effect. Instead, switching from one seam to the next can be programmed by pushbutton 3 (F).

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

5000  
FP82AV

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.

5000  
FP82AV

Setting is terminated, 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) was 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.

5000  
FP82AV

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

5000  
FP82AV

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

With the sewing start the new value is saved.

## 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 was inputted after switching on!
- The functions start backtack, end backtack, stitch counting, thread trimming, A1, A2, switching from one seam to the next, light barrier sensing covered/uncovered and/or uncovered/covered and presser foot lifting can be allocated individually for each seam.
- Backward sewing by reversing the feeding direction can only be programmed in the teach-in mode.
- Switching from one seam to the next can be programmed for linking individual seams.

**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 => | <div>P</div> | ==> | LED pushbutton P blinks                                            | ==> | <div></div>         |
| 2 => | <div>E</div> | ==> | Display of a parameter on the operator level                       | ==> | <div>aaa bbb</div>  |
| 3 => | <div>2</div> | ==> | LED pushbutton 2 blinks<br>Entry into pattern and seam programming | ==> | <div>1 01 ---</div> |
| 4 => | <div>2</div> | ==> | Changing the pattern number                                        | ==> | <div>2 01 ---</div> |

By 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 by pushbutton E for checking.

**Note:**

Several seam patterns cannot successively be programmed without interruption. Each pattern must be terminated by 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 a seam 3 with light barrier seam and end backtack are to be programmed under the pattern number 4.

|       |                                                                                                                   |     |                |
|-------|-------------------------------------------------------------------------------------------------------------------|-----|----------------|
|       | <b>Display before programming</b>                                                                                 | ==> | xxxx<br>XY82ZV |
| 1. => | <span style="border: 1px solid black; padding: 2px;">P</span> ==> LED pushbutton P blinks                         | ==> |                |
| 2. => | <span style="border: 1px solid black; padding: 2px;">E</span> ==> Display of a parameter<br>on the operator level | ==> | aaa bbb        |

|        |                                |                                                                                                                                                          |     |                                                 |
|--------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------------------------------------------------|
| 3. =>  | <input type="text" value="2"/> | LED pushbutton 2 blinks<br>==> Pattern 1, seam 1                                                                                                         | ==> | <input type="text" value="1 01 ---"/>           |
| 4. =>  | <input type="text" value="2"/> | LED pushbutton 2 blinks<br>==> Pattern 2, seam 1                                                                                                         | ==> | <input type="text" value="2 01 ---"/>           |
| 5. =>  | <input type="text" value="2"/> | LED pushbutton 2 blinks<br>==> Pattern 3, seam 1                                                                                                         | ==> | <input type="text" value="3 01 ---"/>           |
| 6. =>  | <input type="text" value="2"/> | LED pushbutton 2 blinks<br>==> <b>Pattern 4, seam 1</b>                                                                                                  | ==> | <input type="text" value="4 01 ---"/>           |
| 7. =>  | <input type="text" value="7"/> | * LED bottom pushbutton 7 lights up<br>==> Single start backtack is on                                                                                   | ==> | <input type="text" value="4 01 ---"/>           |
| 8. =>  | <input type="text" value="5"/> | * LED bottom pushbutton 5 lights up<br>==> Foot lifting at the seam end<br>is on                                                                         | ==> | <input type="text" value="4 01 ---"/>           |
| 9. =>  | <input type="text" value="3"/> | LED pushbutton 3 lights up<br>==> Switching from one seam to the<br>next is on                                                                           | ==> | <input type="text" value="4 01 ---"/>           |
| 10. => | <input type="text" value="1"/> | ==> Stitch counting is on                                                                                                                                | ==> | <input type="text" value="4 01 000"/>           |
| 11. => | <input type="text" value="+"/> | -> <input type="text" value="-"/> Changing the number of stitches<br>by pushbuttons or by using the<br>pedal<br>==> Seam length of 17 stitches is<br>set |     | <input type="text" value="4 01 017"/>           |
| 12. => | <input type="text" value="E"/> | ==> <b>Pattern 4, seam 2</b>                                                                                                                             | ==> | <input type="text" value="4 02 ---"/>           |
| 13. => | <input type="text" value="6"/> | ==> Signal A1 is on                                                                                                                                      | ==> | <input type="text" value="4 02 ---"/>           |
| 14. => | <input type="text" value="1"/> | ==> Stitch counting is on                                                                                                                                | ==> | <input type="text" value="4 02 000"/>           |
| 15. => | <input type="text" value="+"/> | -> <input type="text" value="-"/> Changing the number of stitches<br>by pushbuttons or by using the<br>pedal<br>==> Seam with 8 stitches is set          |     | <input type="text" value="4 02 008"/>           |
| 16. => | <input type="text" value="E"/> | ==> <b>Pattern 4, seam 3</b><br>Free seam is selected                                                                                                    | ==> | <input type="text" value="4 03 ---"/>           |
| 17. => | <input type="text" value="0"/> | * ==> Light barrier is activated                                                                                                                         | ==> | <input type="text" value="4 03 ---"/><br>LS 000 |

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

18. -> + -> - Changing the stitches by pushbuttons  
5 compensating stitches are set
19. -> 8 \* LED top pushbutton 8 lights up  
==> Single end backtack is on ==>
20. -> 9 \* LED bottom pushbutton 9 lights up  
==> Thread trimmer is on ==>
21. -> E ==> **Pattern 4, seam 4**  
By changing to the next seam the settings of the preceding seams are automatically entered.
22. -> P ==> Programming completed,  
first seam can be executed ==>

|    |    |     |
|----|----|-----|
| 4  | 03 | --- |
| LS |    | 005 |

|    |    |     |
|----|----|-----|
| 4  | 03 | --- |
| LS |    | 005 |

|    |    |     |
|----|----|-----|
| 4  | 03 | --- |
| LS |    | 005 |

|   |    |     |
|---|----|-----|
| 4 | 04 | --- |
|---|----|-----|

|   |    |     |
|---|----|-----|
| 4 | 01 | 017 |
|---|----|-----|

**Note**

If stitch counting with 0 stitches is inputted this seam will be skipped. If start or end backtack or thread trimmer are activated these functions will be executed. If, however, parameter F-232 = ON these functions will be suppressed.

==>

|   |    |     |
|---|----|-----|
| 4 | 01 | 000 |
|---|----|-----|

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

**6.4.2 Correction Seam**

If the sewing process in a seam section with stitch counting is interrupted by full heelback, this seam section can be completed manually.

==> 8 bars can be seen on the LC display ==>

|       |
|-------|
| ----- |
|-------|

If the function correction seam is not needed, it can be switched off by parameter F-276.

### 6.4.3 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 by 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.

### 6.4.4 Execution (Pattern) Mode

1. => 

|   |
|---|
| 2 |
|---|

 ==> Switch on mode by pushbutton 2 (LED lights up) ==> 

|          |
|----------|
| X 01 ZZZ |
|----------|
2. => 

|   |
|---|
| + |
|---|

 ==> 

|   |
|---|
| - |
|---|

 ==> F-155 = OFF  
 Select pattern 1...8  
 - Seam number 01 is displayed ==> 

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

  
 or  
 F-155 = ON  
 If a pushbutton is connected to socket B4/2-4 (input E3) it is possible to switch to the next pattern.  
 If a pushbutton is connected to socket B4/2-5 (input E4) it is possible to switch to the previous pattern.
3. => 

|   |
|---|
| E |
|---|

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

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

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

4. => 

|   |
|---|
| 2 |
|---|

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

#### Note

All programmed functions can be performed without control panel V722.

### 6.4.5 Blocking the Operating Elements on the V722

If parameter F-156 = OFF, all operating elements except pushbuttons "+", "-", and "2" on the control panel are out of operation.

|              |    |                        |
|--------------|----|------------------------|
| Pushbutton + | -> | go to next pattern     |
| Pushbutton - | -> | go to previous pattern |
| Pushbutton 2 | -> | teach-in on/off        |

---

## 7. Functions and Settings

### 7.1 First Stitch after Power On

| Functions                                            | Abbreviation<br>on the display | Parameter      |
|------------------------------------------------------|--------------------------------|----------------|
| 1 stitch at npos after POWER ON<br>Positioning speed | Sn1<br>n1                      | F-231<br>F-110 |

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

### 7.2 Program Identification

| Functions                    | Abbreviation<br>on the display | Parameter |
|------------------------------|--------------------------------|-----------|
| Display program no. and date |                                | 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 |

### 7.3 Function Key (Pushbutton 3)

| Functions                           | Abbreviation<br>on the display | 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.

Functions that can be programmed:

- 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
- F-008 = 5 - Reversion on/off

#### Note

In the seam programming **Teach in**, the switching from one seam to the next is determined by pushbutton 3!

## 7.4 Display Actual Speed

| Functions            | Abbreviation on the display | Parameter |
|----------------------|-----------------------------|-----------|
| Display 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:

- The set 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
- Example:

StoP

## 7.5 Direction of Rotation of the Motor

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

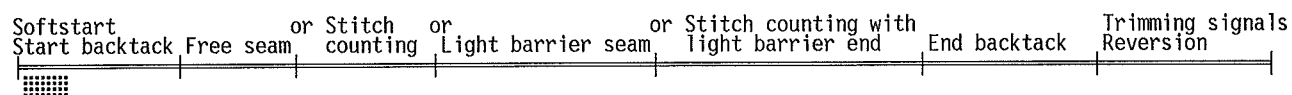
Look at the motor shaft:      F-161 = 0 - clockwise rotation  
                                          F-161 = 1 - counterclockwise rotation



### Attention

If the motor is mounted differently, e.g. at a different angle or with gear, make sure that the parameter value is allocated correctly for the direction of rotation. If necessary, the positions must be reset.

## 7.6 Softstart



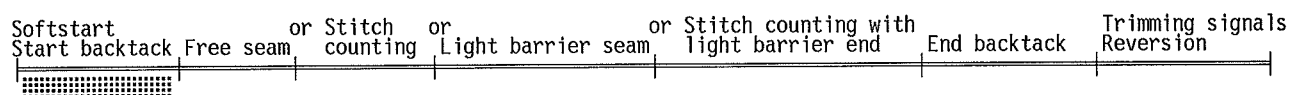
| Functions                    | Abbreviation on the Display | Parameter |
|------------------------------|-----------------------------|-----------|
| Softstart number of stitches | SSc                         | F-100     |
| Softstart speed              | n6                          | F-115     |
| Softstart on/off             | SSt                         | F-134     |

**Function:**

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

**Direct access by function key (pushbutton 3)**

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

**7.7 Start Backtack**

| Functions                    | Abbreviation on the display | Parameter    |
|------------------------------|-----------------------------|--------------|
| Single/double off            |                             | Pushbutton 7 |
| Number of stitches forward   | Arv                         | F-000        |
| Number of stitches backward  | Arr                         | F-001        |
| Start backtack speed         | n3                          | F-112        |
| Stitch correction time       | t8                          | F-150        |
| Run-out time                 | t1                          | F-200        |
| Start delay from lifted foot | t3                          | F-202        |

The start backtack starts by pushing the pedal forward at the beginning of the seam. The backtack is delayed by the time t3 from lifted foot (start delay from lifted foot).

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

The activation of the start backtack is synchronized to position 1.

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

The counting is synchronized to position 1.

**7.7.1 Double Start Backtack**

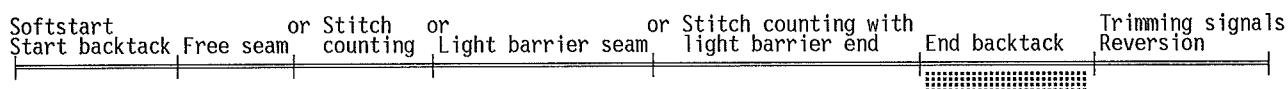
The forward section will be sewn for a number of stitches that can be set. Then, the signal for the stitch regulator will be emitted, and the backward section will be executed. For both sections the number of stitches can be set separately.

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.

## 7.7.2 Single Start Backtack

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

## 7.8 End Backtack



| Functions                    | Abbreviation on the display | Parameter    |
|------------------------------|-----------------------------|--------------|
| Single/double/off            |                             | Pushbutton 8 |
| Number of stitches backward  | Err                         | F-002        |
| Number of stitches forward   | Erv                         | F-003        |
| End backtack speed           | n4                          | F-113        |
| Last stitch backward on/off  | FAr                         | F-136        |
| Stitch correction time       | t9                          | F-151        |
| Start delay from lifted foot | t3                          | F-202        |

The end backtack starts either by heelback, in the case of 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 from lifted foot). The first leading position 1 is counted as 0 stitch, whenever the function is started outside of position 1. The counting is synchronized to position 1.

The activation of the stitch regulator is synchronized to position 1.

### 7.8.1 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 can be set separately.

After the execution of the forward section, 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 positioning speed n1.

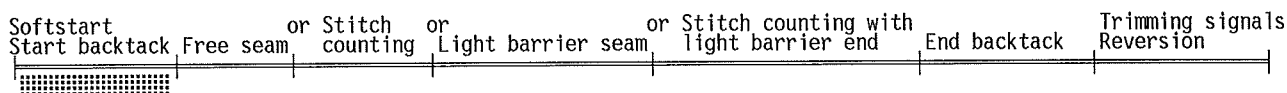
With slow backtack mechanisms, for the double end backtack, the stitch regulator can be delayed with a time lag of t9 (end backtack stitch correction).

### 7.8.2 Single End Backtack

The single end backtack is sewn at end backtack speed. During the last stitch the speed is reduced to positioning speed. Depending on parameter F-136 (FAr) the stitch regulator remains on or turns off.

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

## 7.9 Start Ornamental Backtack



| Functions                                       | Abbreviation on the display | Parameter    |
|-------------------------------------------------|-----------------------------|--------------|
| Single/double/off                               |                             | Pushbutton 7 |
| Number of ornamental backtack stitches forward  | Arv                         | F-000        |
| Number of ornamental backtack stitches backward | Arr                         | F-001        |
| Start backtack speed                            | n3                          | F-112        |
| Ornamental backtack on/off                      | SrS                         | F-135        |
| Start delay from lifted foot                    | t3                          | F-202        |
| Ornamental backtack stop time                   | tSr                         | F-210        |

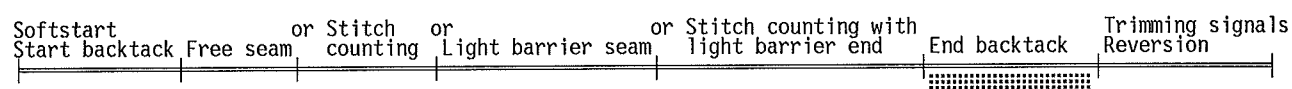
Differences from the standard start backtack:

- The drive stops for the switching of the stitch regulator
- The stop time can be set
- The number of stitches of the forward and backward section can be set separately.

Direct access by function key (pushbutton 3)

| Functions                  | Abbreviation on the display | Parameter |
|----------------------------|-----------------------------|-----------|
| Ornamental backtack on/off | -F-                         | F-008 = 2 |

## 7.10 End Ornamental Backtack



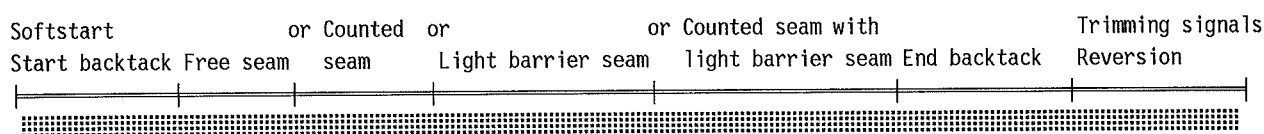
| Functions                                                       | Abbreviation on the display | Parameter    |
|-----------------------------------------------------------------|-----------------------------|--------------|
| Single/double/off                                               |                             | Pushbutton 8 |
| Number of ornamental backtack stitches backward at the seam end | Err                         | F-002        |
| Number of ornamental backtack stitches forward at the seam end  | Erv                         | F-003        |
| End backtack speed                                              | n3                          | F-113        |
| Ornamental backtack on/off                                      | SrS                         | F-135        |
| Start delay from lifted foot                                    | t3                          | F-202        |
| Ornamental backtack stop time                                   | tSr                         | F-210        |

The process corresponds to the normal end backtack. Between the various seam sections the drive 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 on the display | Parameter |
|----------------------------|-----------------------------|-----------|
| Ornamental backtack on/off | -F-                         | F-008 = 2 |

## 7.11 Intermediate Backtack



The backtack solenoid can be switched on anywhere in the seam by the external pushbutton.

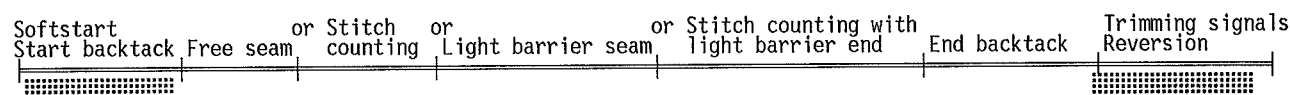
See chapter **Connection Diagram** !

### Note

Firing of the backtack solenoid at machine standstill is impossible.

## 7.12 Suppression/Recall of Backtack

■ Effective in standard and ornamental backtack



The subsequent backtacking operation can be suppressed or recalled once by the external pushbutton.

See chapter **Connection Diagram** !

| 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 Holding Power of Backtacking

| Functions                      | Abbreviation on the display | Parameter |
|--------------------------------|-----------------------------|-----------|
| Time of full power             | t10                         | F-212     |
| Holding current of backtacking | 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 by F-212, the holding power at partial power by F-213.

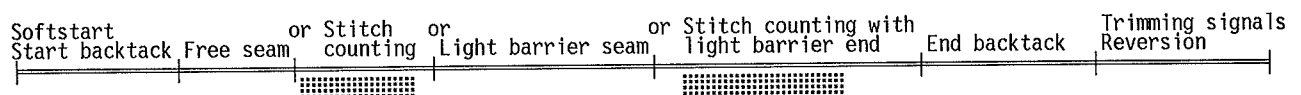


### Caution!

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

| 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<br>full power |
| 0     | 100 %          |                                  |

## 7.14 Seam with Stitch Counting



| Functions                                            | Abbreviation on the display | 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        |
| Suppression of stitch counting if 0 stitches are set | Std                         | F-232        |

Speed control for the stitch counting can be selected by the speed mode.

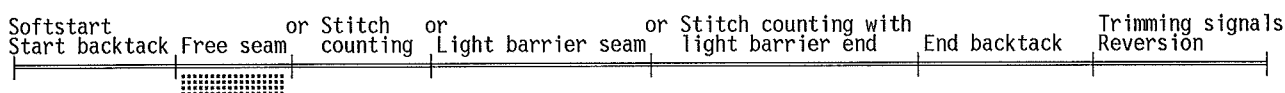
- F-141 = 0:** Execution at pedal controlled speed.  
**F-141 = 1:** Execution at fixed speed n12 as long as pedal is pushed.  
**F-141 = 2:** Execution at limited speed n12 as long as pedal is pushed.  
**F-141 = 3:** Automatic execution at fixed speed as soon as the pedal has been pushed once. Termination 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.

A seam section with stitch counting without stitches can be suppressed by parameter F-232.

- F-232 = ON** If 0 stitches are inputted, the seam will be interrupted. If switching from one seam to the next is programmed, the next seam section will be executed immediately.  
**F-232 = OFF** If 0 stitches are inputted, free sewing will be performed until the pedal is pushed to position -2. When pushing the pedal again, the next seam section will be activated.

## 7.15 Free Seam and Seam with Light Barrier



| Functions                        | Abbreviation on the display | Parameter   |
|----------------------------------|-----------------------------|-------------|
| Positioning speed                | n1                          | F-110       |
| Upper limit of the maximum speed | n2 <sup>-</sup>             | F-111       |
| Maximum speed                    |                             | see display |
| Limited speed                    | n12                         | F-118       |
| Lower limit of the maximum speed | n2 <sub>-</sub>             | F-121       |
| Speed mode Free seam             | SFn                         | F-142       |

Speed control for the free seam can be selected by the speed mode.

- F-142 = 0:** Execution at pedal controlled speed from n1 to nmax.  
**F-142 = 1:** Execution at fixed speed n12, when pedal is forward (position > = 1).  
**F-142 = 2:** Execution at limited speed n12, when pedal is forward (position > = 1).  
**F-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. Termination by heelback (-2) is possible.

If the light barrier is not active the speed is pedal controlled up to nmax corresponding to the adjustment of parameter F-111.

The maximum speed will be indicated on the display after power on and thread trimming 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.

## 7.16 Needle Up/Down

| Functions                          | Abbreviation on the display | 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/down: F-140 = 0

When the pushbutton is pressed, the drive only runs from position 1 to position 2 and/or from position 2 to position 1. If the drive is outside of position 1 it runs to the next possible position.

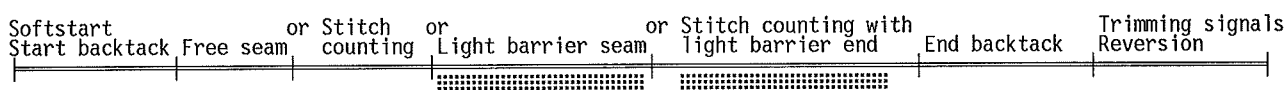
### Full stitch: F-140 = ON

When the pushbutton is pressed, the machine performs on rotation according to the selected basic position. If the drive is outside of the stop position it runs to the selected basic position.

Direct access by function key (pushbutton 3)

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

## 7.17 Light Barrier



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

| Functions                                         | Abbreviation on the display | 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.
- Stop of the drive with pedal in position 0 (neutral) is possible.
- Disabling of the thread trimming operation by parameter F-133, independent of 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 uncovered or covered at the end of the fabric, can be selected by parameter F-131.
- Blocking of machine start, when light barrier is uncovered, can be programmed by parameter F-132.
- Speed control for the speed after light barrier sensing can be selected by the speed mode.

**F-143 = 0:** Speed after light barrier sensing according to pedal actuation up to nmax.  
**F-143 = 1:** Execution at fixed speed n5, when pedal is pushed forward (position > = 1).  
**F-143 = 2:** Execution at limited speed n5, when pedal is pushed forward (position > = 1)  
**F-143 = 3:** Automatic execution at fixed speed n5 as soon as the pedal has been pushed once. Termination is possible by "heelback (-2)".

Direct access by function key (pushbutton 3)

| Functions                                                | Abbreviation on the display | Parameter |
|----------------------------------------------------------|-----------------------------|-----------|
| Sewing start blocked with light barrier uncovered on/off | -F-                         | F-008 = 4 |

### 7.17.2 Reflection Light Barrier Module

| Functions            | Abbreviation on the display | Parameter    |
|----------------------|-----------------------------|--------------|
| Light barrier on/off |                             | Pushbutton 0 |

## Adjustments

### Sensitivity:

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

- LSM001 - Potentiometer directly on the light barrier module

### Mechanical Adjustment:

- LSM001 - The orientation is facilitated through a visible light spot on the reflection area.

## 7.17.3 Automatic Start Controlled by Light Barrier

| Functions                                         | Abbreviation on the display | 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 sewing can be started automatically by this function 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.

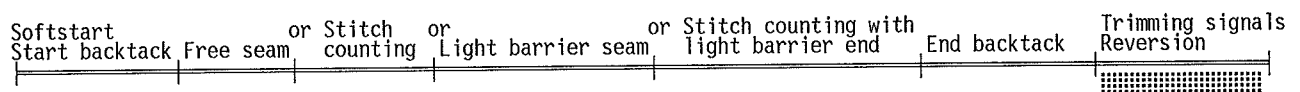
## 7.17.4 Light Barrier Filter for Knitted Fabrics

| Functions                   | Abbreviation on the display | 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.

- By parameter F-130 the filter can be switched on or off.
- By changing the number of filter stitches the mesh will be adapted.
- Knitted fabric sensing is activated only by light barrier sensing from covered to uncovered.

## 7.18 Thread Trimmer Systems



| Functions                                   | Abbreviation on the display | Parameter    |
|---------------------------------------------|-----------------------------|--------------|
| Thread trimmer on/off                       |                             | Pushbutton 9 |
| Trimming speed                              | n7                          | F-116        |
| Trimming stitch backward                    | FAr                         | F-136        |
| Thread trimmer systems modes 1...8          | FAS                         | F-182        |
| Run-out time thread tension release         | tFS                         | F-183        |
| Thread trimming stop time                   | tFA                         | F-184        |
| Activation delay M1 (chainstitch)           | kd1                         | F-191        |
| Activation time M1 (chainstitch)            | kt1                         | F-192        |
| Activation delay M2 (chainstitch)           | kd2                         | F-193        |
| Activation time M2 (chainstitch)            | kt2                         | F-194        |
| Activation delay M3 (chainstitch)           | kd3                         | F-195        |
| Activation time M3 (chainstitch)            | kt3                         | F-196        |
| Activation time thread trimmer (lockstitch) | t6                          | F-205        |
| Delay thread wiper                          | dFw                         | F-209        |

- It is possible to switch on the thread trimming at the seam end by pushbutton 9.
- Various lockstitch and chainstitch thread trimmers can be selected by parameter F-182.
- Thread trimming in the lockstitch modes is performed at trimming speed.
- When thread trimming is off, the drive stops in position 2 at the seam end, but when stopping at the end of programmed seams in the basic position.
- If parameter F-136 is set at ON in the single end backtack the backtack solenoid remains on until the stop position is reached.
- The delay time for the thread wiper that can be set with parameter F-209 is only effective in lockstitch trimming systems.

| Trimmer functions set by using pushbutton 9 on the control panel |                              |                               |                             |                               |
|------------------------------------------------------------------|------------------------------|-------------------------------|-----------------------------|-------------------------------|
| Mode                                                             | Top LED off<br>Bottom LED on | LED oben ein<br>LED unten aus | Top LED on<br>Bottom LED on | Top LED off<br>Bottom LED off |
| 1...6                                                            | M1 + M2                      | M3                            | M1 + M2 + M3                | ---                           |
| 7                                                                | M1 + M2                      | M2 + M3                       | M1 + M2 + M3                | ---                           |
| 8                                                                | M1                           | M2 + M3                       | M1 + M2 + M3                | ---                           |

## Thread trimming systems

**Mode 1** (F-182 = 1) Lockstitch thread trimming system e.g. Dürkopp-Adler, Juki, Pfaff...

- Thread trimming from leading slot edge position 1 until trailing slot edge position 1
- Thread trimming from trailing slot edge position 1 until leading slot edge position 2
- Thread trimming from leading slot edge position 1 until trailing slot edge position 2
- Thread wiping over a time that can be set (t6)

**Mode 2** (F-182 = 2) Lockstitch thread trimming system e.g. Necchi

- Thread trimming from leading slot edge position 1 until trailing slot edge position 2
- Thread tension release from trailing slot edge position 1 until end thread wiper time

**Mode 3** (F-182 = 3) Lockstitch thread trimming system e.g. Singer

- Thread trimming from trailing slot edge position 1 until leading slot edge position 2
- Stop of the drive after trimming at the trailing edge of position 2
- Thread wiping over a time that can be set (t6)

**Mode 4** (F-182 = 4) Lockstitch thread trimming system e.g. Singer

- Thread trimming over a time that can be set (tFA) starting from leading slot edge position 1
- Intermediate stop of the drive during trimming
- Thread tension release from leading slot edge position 1 until leading slot edge position 2

**Mode 5** (F-182 = 5) Lockstitch thread trimming system e.g. Adler class 767

- Thread trimming from leading slot edge position 1 until trailing slot edge position 1
- Stop of the drive during trimming over the time (tFA)
- Thread tension release starting from leading slot edge position 2 until end of run-out time (tFS)

**Mode 6** (F-182 = 6) Lockstitch thread trimming system e.g. Adler class 221

- Thread trimming from leading slot edge position 1 until leading slot edge position 2
- Thread tension release from leading slot edge position 1 until leading slot edge position 2

**Mode 7** (F-182 = 7) Chainstitch machines general

- From leading slot edge position 2 the signals M1...3 are emitted over the times (kt1...3) delayed by the times (kd1...3)
- Signal "motor running" at output M4

**Mode 8** (F-182 = 8) Chainstitch machines with fast scissors

- From leading slot edge position 2 the signal M2 and/or M3 is alternately emitted over the time kt2 and/or kt3 (fast scissors).
- The signal M1 is always emitted at the seam end according to the setting on the control panel.
- If a pushbutton is connected on socket B4/2-6 at output E5 the signal M2 and/or M3 can be operated manually in this mode. This function is possible even if the trimming operation is partially or completely switched off on the control panel.

### Note

When changing the direction of rotation by the handwheel the positions must be reset !

**See Timing Diagrams!**

## 7.19 Presser Foot Lifting

| Functions                                                    | Abbreviation on the display | Parameter                    |
|--------------------------------------------------------------|-----------------------------|------------------------------|
| Automatic in the seam<br>Automatic after trimming            |                             | Pushbutton 5<br>Pushbutton 6 |
| Activation delay when pedal is in position -1, half heelback | t2                          | F-201                        |
| Start delay from lifted foot                                 | t3                          | F-202                        |
| Time of full power                                           | t4                          | F-203                        |
| Holding current of presser foot lifting (ED)                 | t5                          | F-204                        |

### Presser foot is lifted:

- in the seam                      - by heel back (position -1)  
                                         or automatically (pushbutton 5)
- after trimming                - by heelback (position -1 or -2)  
                                         or automatically (pushbutton 5)

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 by F-203, the holding power at partial power by F-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 %           | high holding power |
| 7     | 87.5 %         |                    |

### Foot lowers:

- from manual foot lifting, when pedal is in position 0 (neutral) (position  $\geq 0$ )
- from automatic foot lifting, when pedal heeled forward (position  $> 0$ )

The start is delayed until the foot has securely lowered.

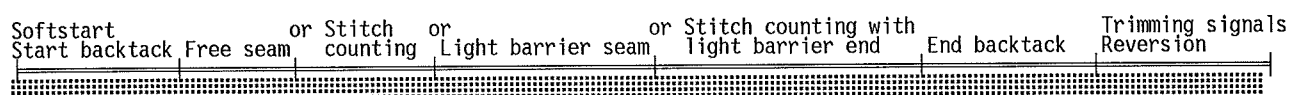
- delay time can be set F-202

## 7.20 Blocking of Machine Run (Safety Switch)



### Caution!

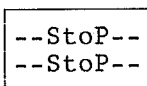
This is not a safety function.  
The line voltage must still be switched off during maintenance and repair work.



| Functions                                                                                                                                                  | Abbreviation on the display | Parameter |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------|
| Blocking of machine run input function<br>0 = Blocking of machine run active, when switch closed<br>1 = Blocking of machine run active, when switch opened | LSP                         | F-185     |

### Display after activation of the blocking of machine run:

Symbol



blinking alternately !

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

The seam is interrupted by opening the switch.

- Stop in the basic position
- Needle up is not possible
- Presser foot lifting is possible

### Blocking of machine run in the start backtack:

The start backtack is interrupted by opening the switch.

- Stop in the basic position
- Needle up is not possible
- Presser foot lifting is possible
- After unblocking the machine run, the seam is continued with the seam section following the start backtack

### Blocking of machine run in the end backtack:

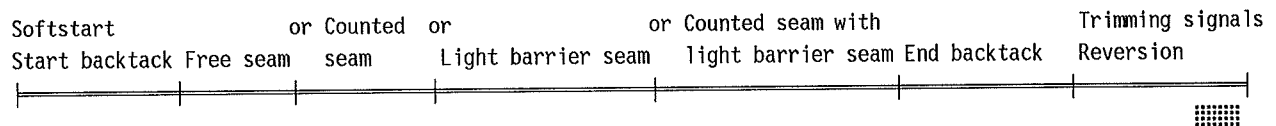
The end backtack is interrupted by opening the switch and the seam is completed.

- Presser foot lifting is possible

### New start after blocking of machine run:

A new start after closing the switch is only possible if the pedal was in position 0 (neutral).

## 7.21 Reversion



| Functions                      | Abbreviation on the display | Parameter |
|--------------------------------|-----------------------------|-----------|
| Positioning speed              | n1                          | F-110     |
| Number of reversion increments | Ird                         | F-180     |
| Activation delay of reversion  | drd                         | F-181     |

The function "reversion" is performed after trimming.

When the stop position is reached, the drive stops for the duration of the activation delay of reversion (F-181). Then it reverses at positioning speed for a number of increments that can be set.

1 increment corresponds to approx. 0.7°.

Direct access by function key (pushbutton 3)

| Functions        | Abbreviation on the display | Parameter |
|------------------|-----------------------------|-----------|
| Reversion on/off | -F-                         | F-008 = 5 |

## 7.22 Signals A1 and A2

| Functions        | Abbreviation on the display | Parameter    |
|------------------|-----------------------------|--------------|
| Signal A1 and A2 |                             | Pushbutton 6 |

The signals A1 and A2 can be allocated for a seam by pushbutton 6 on the control panel V722. The following parameters serve for setting the moment when the signals are allocated in the seam and how long they are active. See the example below for the various possibilities.

| F-250 | F-251 | F-252 | F-253 | F-254 | F-257 | Start of seam | Light barrier | Seam end |
|-------|-------|-------|-------|-------|-------|---------------|---------------|----------|
| 0     | 0     | 0     | 0     | 0     | 0     |               |               |          |
| 0     | 1     | 0     | 0     | 0     | 0     |               |               |          |
| 0     | 1     | 0     | 500ms | 0     | 0     |               |               |          |
| 0     | 0     | 1     | 0     | 100ms | 0     |               |               |          |
| 0     | 1     | 1     | 0     | 100ms | 0     |               |               |          |
| 0     | 1     | 1     | 500ms | 100ms | 0     |               |               |          |
| 0     | 0     | 0     | 0     | 0     | 1     |               |               |          |
| 1     | 0     | 0     | 0     | 0     | 0     |               |               |          |
| 2     | 0     | 1     | 0     | 100ms | 0     |               |               |          |

- The starting point can be selected with **parameter F-250** for signal A1 and **F-260** for signal A2.
  - 0 = Starting point at the beginning of the seam
  - 1 = Starting point with light barrier sensing
  - 2 = Starting point at the seam end
- An activation delay can be selected with **parameter F-251** for signal A1 and **F-261** for signal A2.
  - 0 = No delay until start of signal
  - 1 = Time delay until start of signal
- The operating time can be selected with **parameter F-252** for signal A1 and **F-262** for signal A2.
  - 0 = Signal emission until seam end
  - 1 = Signal emission over a time
- The delay time can be selected with **parameter F-253** for signal A1 and **F-263** for signal A2.
 

Setting the delay time 0...2500 ms
- The operating time can be selected with **parameter F-254** for signal A1 and **F-264** for signal A2.
 

Setting the operating time 0...2500 ms
- A NOT condition for the inputs E1...E5 can be programmed with **parameter F-255** for signal A1 and **F-265** for signal A2, e.g.:
  - 00000 on the LC display = no input is effective
  - 00001 on the LC display = input E1 is active (the outputs A1 and/or A2 can be switched on, when input E1 is active)
  - 00101 on the LC display = input E1 AND input E3 are active (the outputs A1 and/or A2 can be switched on, when input E1 AND E3 are active)
- An OR condition for the inputs E1...E5 can be programmed with **parameter F-256** for signal A1 and **F-266** for signal A2, e.g.:
  - 00000 on the LC display = no input is effective
  - 00001 on the LC display = input E1 is active (input E1 switches the signals A1 and/or A2 according to setting F-255 and/or F-265)
  - 00101 on the LC display = input E1 OR input E3 is active (input E1 or E3 switches the signals A1 and/or A2 according to setting F-255 and/or F-265)
- The speed mode can be selected with **parameter F-257** for signal A1 and **F-267** for signal A2.
  - 0 = Pedal speed
  - 1 = Speed n9 -> when signal A1 or A2 is emitted, the drive runs at speed n9
  - 2 = Speed n11 -> when signal A1 or A2 is emitted, the drive runs at speed n11
- The function of the inputs E1...E5 can be programmed for operating mode stored or not stored with **parameter F-270**, e.g.:
  - 00000 on the LC display = the function of all switched on inputs is operating mode stored
  - 00001 on the LC display = only the function of the input E1 is operating mode not stored
  - 00101 on the LC display = only the function of the inputs E1 and E3 is operating mode not stored
- The speed n9 is set with **parameter F-271**
- The speed n11 is set with **parameter F-272**

- **Parameter F-273** determines when the signals A1 and A2 are switched off

OFF = Signals effective until end of stitch counting  
 ON = Signals effective until pedal in position 0 (neutral)

## 7.23 External Actuator EB301 and EB302

With the help of the external actuator connected with the pedal the commands for the sewing process are inputted. Instead of the external actuator connected to the socket connector B80 (table 2) another external actuator can be connected.

The external actuator EB302 has softer springs than EB301. This means that a lower actuating force is 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)                         |
| $\frac{1}{2}$ | H | H | L | H | Pedal slightly forward (e.g. presser foot lowering)   |
| 1             | H | L | L | H | Speed stage 1 ( $n_{pos}$ )                           |
| 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 ( $n_{max}$ )<br>(Pedal fully forward) |

| Functions                | Abbreviation on the display | Parameter |
|--------------------------|-----------------------------|-----------|
| Speed stage distribution | nSt                         | F-119     |

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

**Possible characteristic curves:**

- linear
- progressive
- highly progressive

## 8. Machine Functions

### 8.1 Braking Behavior

| Functions                                                   | Abbreviation on the display | Parameter |
|-------------------------------------------------------------|-----------------------------|-----------|
| Braking effect when modifying the set value $\leq 4$ stages | br1                         | F-207     |
| Braking effect when modifying the set value $\geq 5$ stages | br2                         | F-208     |

The braking effect of the drive 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 on the display | Parameter |
|-------------------------------------|-----------------------------|-----------|
| Braking power at standstill         | brt                         | F-153     |
| Input E1...E5 braking at standstill | iSb                         | F-154     |

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

The effect can be tested by turning the handwheel.

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

Parameter F-154 determines with which input E1...E5 the braking at standstill is to be activated.

### 8.3 Start Behavior

| Functions     | Abbreviation on the display | Parameter |
|---------------|-----------------------------|-----------|
| Starting edge | ALF                         | F-220     |

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

- High setting = 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.

## 8.4 Setting the Positions

| Functions                                             | Abbreviation on the display | 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 electric 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 EPROM or 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 adjusted 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 was not stored there will be an error message on the display:

INFO A3

- Repeat operation from step 3 onwards

## 8.4.2 Signal and Stop Positions

| Functions                          | Display |
|------------------------------------|---------|
| Position 1 (lower needle position) | Pos1    |
| Position 2 (upper needle position) | Pos2    |
| Position 1A                        | Pos1A   |
| Position 2A                        | Pos2A   |
| Position 3                         | Pos3    |
| Position 3A                        | Pos3A   |

### Programming:

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

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

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

|          |    |     |
|----------|----|-----|
| Position | 1A | xxx |
|----------|----|-----|
4. Press pushbutton E  
Set position 2 ==> 

|          |   |     |
|----------|---|-----|
| Position | 2 | xxx |
|----------|---|-----|
5. Press pushbutton E  
Set position 2A ==> 

|          |    |     |
|----------|----|-----|
| Position | 2A | xxx |
|----------|----|-----|
6. Press pushbutton E  
Position does not have to be set ! ==> 

|          |   |     |
|----------|---|-----|
| Position | 3 | 000 |
|----------|---|-----|
7. Press pushbutton E  
Position does not have to be adjusted ! ==> 

|          |    |     |
|----------|----|-----|
| Position | 3A | 000 |
|----------|----|-----|
8. Press pushbutton E ==> Back to step 2!
9. Press pushbutton P ==> Positions will be read by the control

#### Note:

When adjusting the positions by the handwheel, make sure that the numerical value indicated on the display changes.

The setting values of the positions 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 position settings can easily be tested by 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.

## 8.5 Memory Box

| Functions                     | Abbreviation<br>on the display | 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 inputted 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)

The "record" data of the programming are stored separately.

### 8.5.1 Preparation for Memory Box Operation



**Caution!**  
Turn power off

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

## 8.5.2 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.

## 8.5.3 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 adjustable parameters and sewing data are stored with the exception of the direction of rotation and the needle positions.

**Note:**

The parameters of the **sewing data** and "**record**" data can be stored in two separate data records !

- Push pedal twice in short intervals, after end of seam, and put back to position 0 (neutral)
- Select from "**record**" data record with pushbutton +
- Back to the **sewing data** record with pushbutton -
- Input any address between 0 and 9 for the sewing and/or "record" data record

SAvE  
0--9

==> +  
- <==

SAvE  
rEc 0--9

- 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.

SAvE  
|||||

- Display after the storing is completed

5000  
FP82AV

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

**Note:**  
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)
  - Select from "record" data record with pushbutton +
  - Back to the sewing data record with pushbutton -
- Input address under which the desired data record is stored.
  - The yellow BUSY-LED on the Memory Box lights up.

SAvE  
0--9

rEAd  
0--9

==> +  
- <==

rEAd  
rEc 0--9

rEAd  
|||||

- Display after saving the program

5000  
FP82AV

**Note:**  
For storing data permanently start sewing once before turning the power off!  
The "record" data will be saved immediately after reading from the card.

5. » Operation without Variocontrol

- Writing and reading is done by pushing the pedal as described in step 3 and 4.
- Program 1 is always automatically selected.
- Reading-in is only possible if power is turned on with pedal fully forward.
- Alternating between writing and reading:
  - Pedal backward twice in short intervals = writing
  - Pedal fully forward and POWER ON = reading

6. » 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!

## 7. » Error messages

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

-----  
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<br>(check write-protection!)                                                                            |
| 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                                                                                                                   |
| C08      | Information for "record"<br>Number of version of the "record" data on the<br>card does not correspond to the control.<br>Input manually! |

## Language selection:

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

dEU USA  
ESP FrA

Copy the table below and use it for entering the allocation for the inputs and outputs !

Copy the form overleaf and use it for easier and safer "record" programming !

|                |            |          |
|----------------|------------|----------|
| PROGRAM No.    |            |          |
| Inputs-Outputs | LC Display | Function |
| Input E1       | 0000x      |          |
| Input E2       | 000x0      |          |
| Input E3       | 00x00      |          |
| Input E4       | 0x000      |          |
| Input E5       | x0000      |          |
| Output A1      | 0000x      |          |
| Output A2      | 000x0      |          |
| Output A3      | 00x00      |          |
| Output A4      | 0x000      |          |
| Output A5      | x0000      |          |

**Note**

Input E.. = Switch open --> 0

Input E.. = Switch closed --> 1

Abbreviations used overleaf:

- EBB = End backtack backward
- EBF = End backtack forward
- SBB = Start backtack backward
- SBF = Start backtack forward

| PROGRAM No. |                                                                                                                                                                                                                                                                                                                                                                 |  |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Para.       | Function                                                                                                                                                                                                                                                                                                                                                        |  |
| F-300       | Address RECORD nos. 1...32                                                                                                                                                                                                                                                                                                                                      |  |
|             |                                                                                                                                                                                                                                                                                                                                                                 |  |
| F-301       | Start condition AND of inputs E5...E1                                                                                                                                                                                                                                                                                                                           |  |
| F-302       | Selection high/low active of AND E5...E1                                                                                                                                                                                                                                                                                                                        |  |
| F-303       | Start condition OR of inputs E5...E1                                                                                                                                                                                                                                                                                                                            |  |
| F-304       | Selection high/low active of OR E5...E1                                                                                                                                                                                                                                                                                                                         |  |
| F-305       | Start cond. AND for outputs A5...A1 off                                                                                                                                                                                                                                                                                                                         |  |
| F-306       | Start cond. OR for outputs A5...A1 off                                                                                                                                                                                                                                                                                                                          |  |
| F-307       | Comparative speed for start                                                                                                                                                                                                                                                                                                                                     |  |
| F-308       | Start condition AND for comparative speed F-307                                                                                                                                                                                                                                                                                                                 |  |
| F-309       | Start condition OR for comparative speed F-307                                                                                                                                                                                                                                                                                                                  |  |
| F-310       | Start condition 1 AND<br>for sewing process<br>00000001 = Beginning of seam<br>00000010 = Seam end<br>00000100 = Light barrier uncovered<br>00001000 = Light barrier covered<br>00010000 = LED A1 on V722 active<br>00100000 = LED A2 on V722 active<br>01000000 = Motor at standstill<br>10000000 = Motor running                                              |  |
| F-311       | Start condition 1 OR for sewing process as described under F-310                                                                                                                                                                                                                                                                                                |  |
| F-312       | Start condition 2 AND<br>for sewing process<br>00000001 = Query pedal back to -2<br>00000010 = Query pedal back to -1<br>00000100 = Query pedal in pos. 0<br>00001000 = Query pedal forward<br>00010000 = LED EBB active on the V722<br>00100000 = LED EBF active on the V722<br>01000000 = LED SBB active on the V722<br>10000000 = LED SBF active on the V722 |  |
| F-313       | Start condition 2 OR for sewing process as described under F-312                                                                                                                                                                                                                                                                                                |  |
| F-319       | Next record if FALSE                                                                                                                                                                                                                                                                                                                                            |  |
| F-320       | Switch on A5...A1 statically                                                                                                                                                                                                                                                                                                                                    |  |
| F-321       | Activation time A1                                                                                                                                                                                                                                                                                                                                              |  |
| F-322       | Activation time A2                                                                                                                                                                                                                                                                                                                                              |  |
| F-323       | Activation time A3                                                                                                                                                                                                                                                                                                                                              |  |
| F-324       | Activation time A4                                                                                                                                                                                                                                                                                                                                              |  |

[illegible]



## 9. 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                                                                                                                                                                    |
| Info A7 | Version number of the "record" data of the EPROM does not correspond to the data stored on the printed circuit board.<br>Erase "record" data by parameter F-290.<br>Enter new "record" data manually. |

### 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 (check write-protection!)                                                                                                     |
| 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                                                                                                                          |
| Info C08 | Information for "record"<br>Number of version of the "record" data on the card does not correspond to the data in the control.<br>Enter the new data manually. |

## 10. Signal Test

| Functions                  | Abbreviation<br>on the display | Parameter |
|----------------------------|--------------------------------|-----------|
| Test of inputs and outputs | SR4                            | F-173     |

### Output tests:

- 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.

**Table: Allocation of the pushbuttons for the outputs**

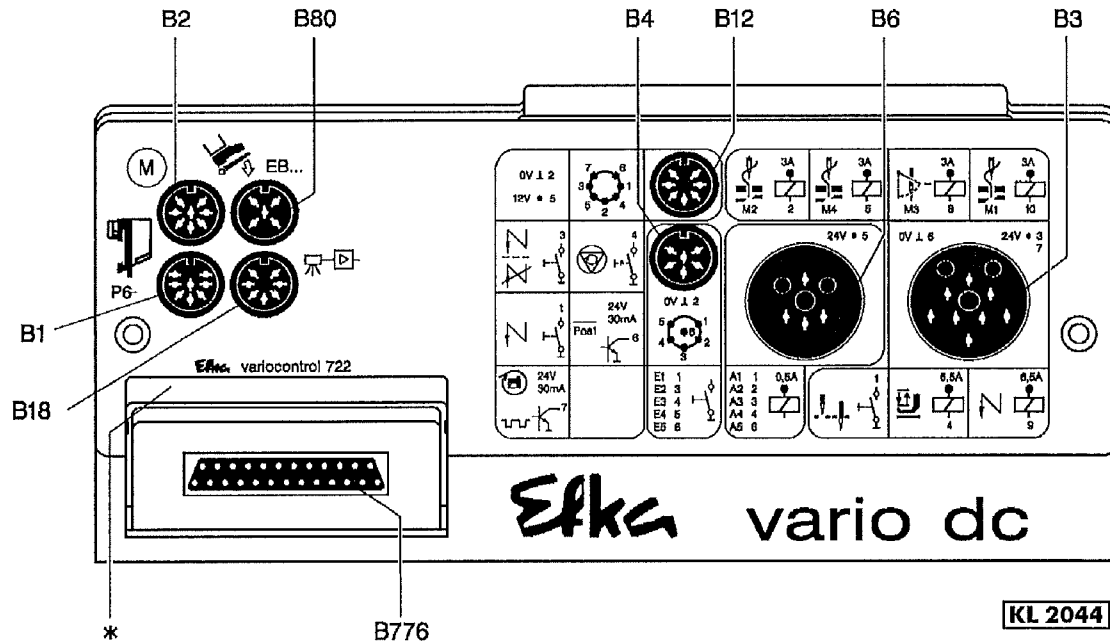
| Pushbutton | Output               |
|------------|----------------------|
| 1          | Backtacking          |
| 2          | Presser foot lifting |
| 3          | Output M1            |
| 4          | Output M2            |
| 5          | Output M3            |
| 6          | Output M4            |
| 7          | Output A1            |
| 8          | Output A2            |
| 9          | Output A3            |
| 0          | Output A4            |
| -          | Output A5            |

### Input tests:

- 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.

## 11. Socket Connectors

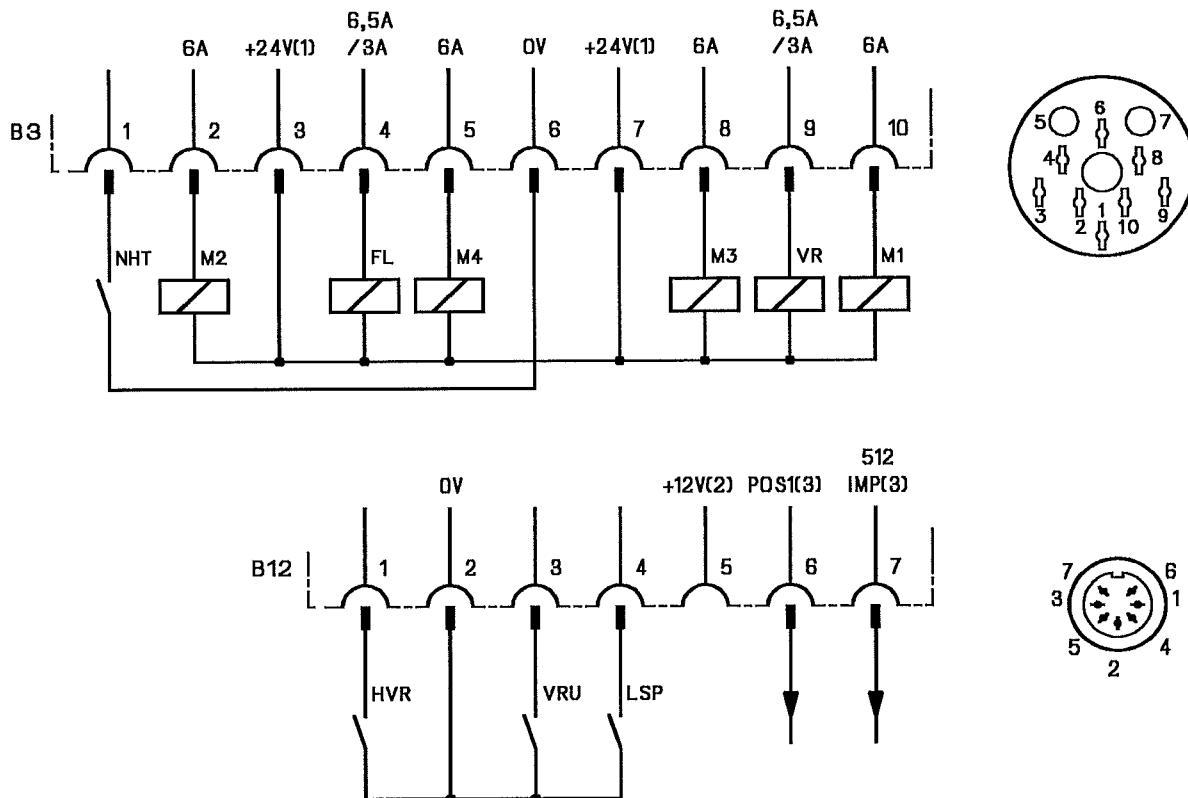
### 11.1 Position in the Control



- B1 - Position transmitter
- B2 - Commutation transmitter for d.c. motor
- B3 - Machine
- B4 - Inputs E1...E5 for pushbuttons and switches
- B6 - Outputs A1...A5
- B12 - Inputs for pushbuttons / outputs
- B18 - Light barrier module
- B80 - External actuator
- B776 - Control panel Variocontrol

\* = Type designation

## 11.2 Connection Diagram



B11065



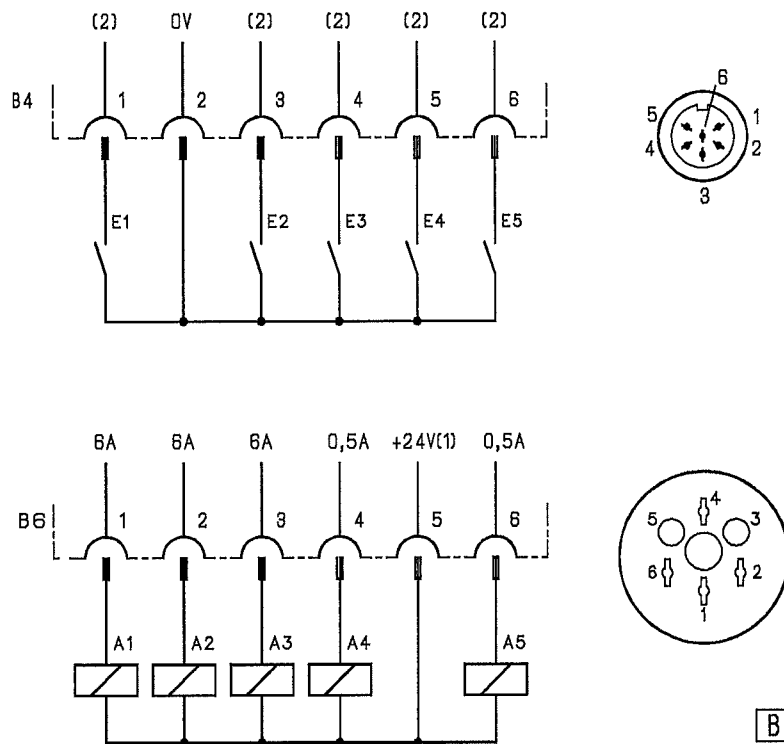
### Attention!

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

- M1 - Output according to mode setting
- M2 - Output according to mode setting
- M3 - Output according to mode setting
- M4 - Output according to mode setting
- VR - Backtacking
- FL - Presser foot lifting
- POS1 - Impulses of position 1
- IMP - Generator impulses (512/rotation)

- NHT - Needle up/down
- HVR - Intermediate backtack
- VRU - Recall/suppression of backtacking
- LSP - Blocking of machine run

- 1) Nominal voltage 24V, no-load voltage max. 36V
- 2) Output +12V, max. 50mA
- 2) Transistor output with open collector (max. 40V, 30mA)



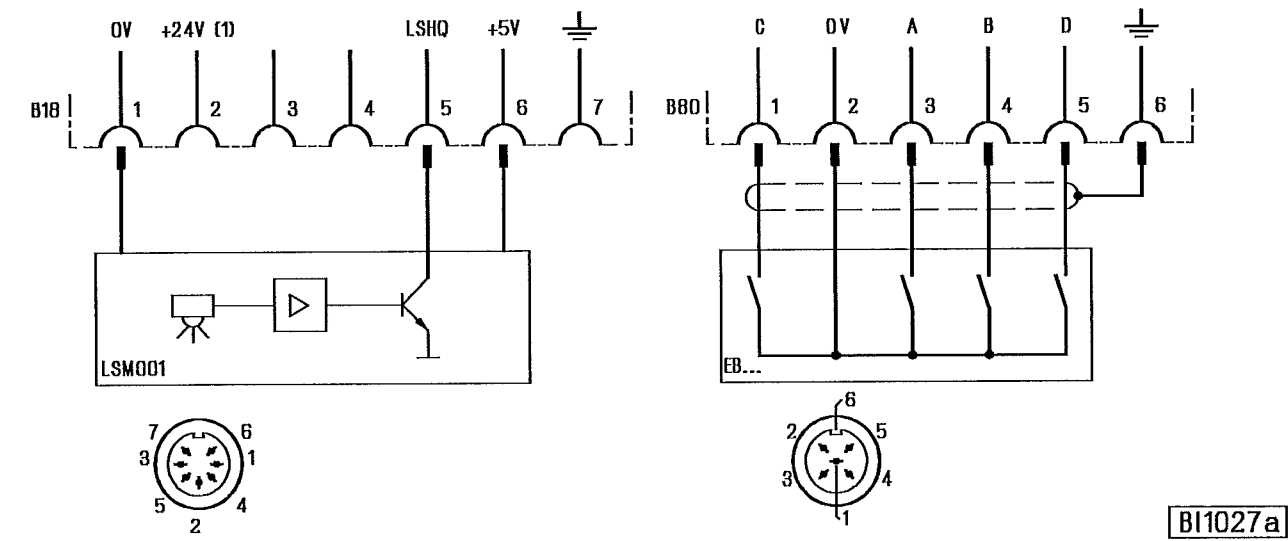
### Attention!

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

A1...A5 - Outputs 1...5

E1...E5 - Inputs 1...5

- 1) Nominal voltage 24V, no-load voltage max. 36V  
 2) Inputs max. 40V

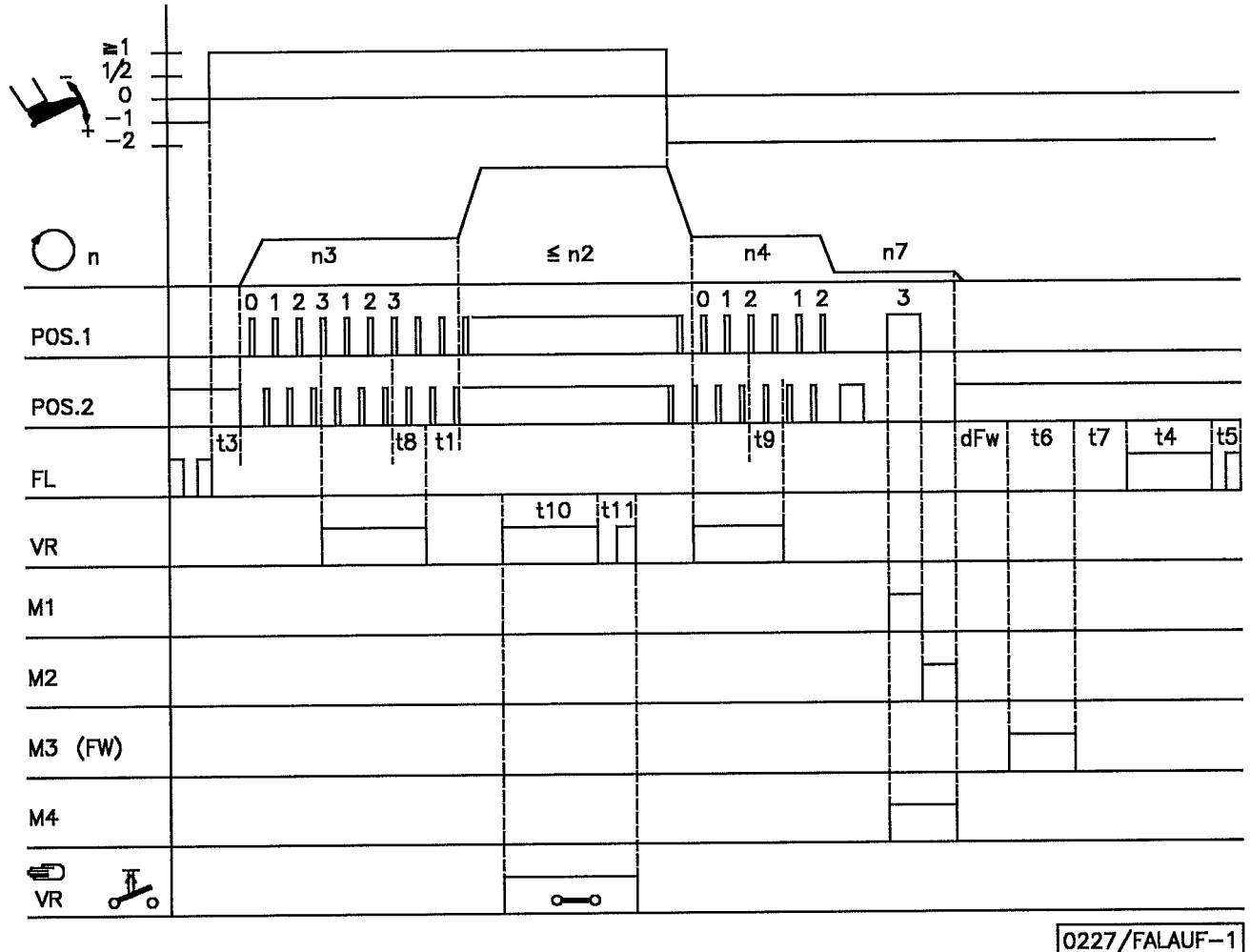


- LSHQ - Light barrier command ( identified when switched to 0V)
- LSM001 - Reflection light barrier module
- EB... - External actuator

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

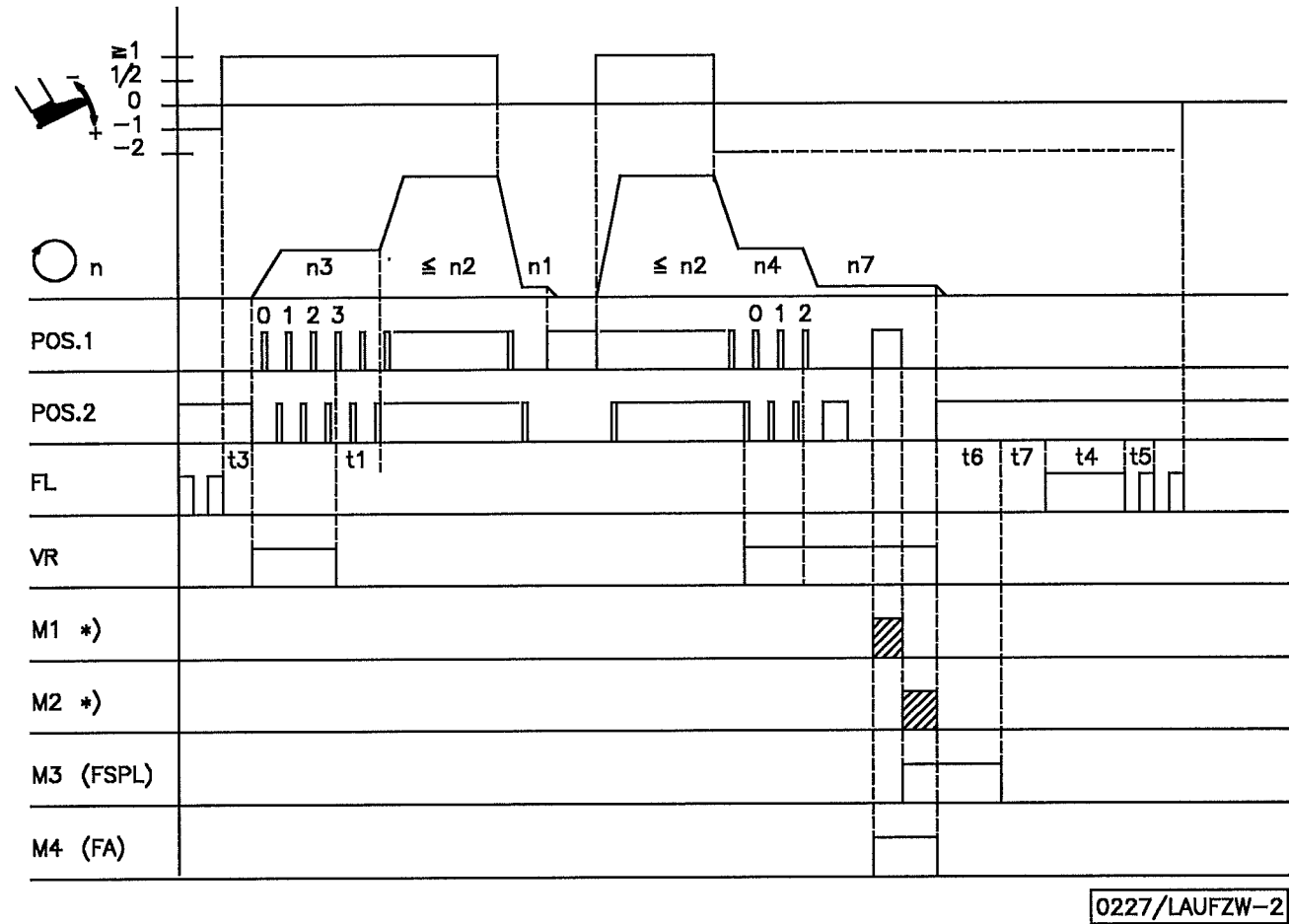
## 12. Timing Diagrams

### Mode 1: Trimming from full run



| Abbreviation                                                      | Function                                                                                                                                                                                                                                                                                                                                                                                   | Parameter/Pushbutton                                                                            |
|-------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| FAS                                                               | Double start backtack with stitch correction<br>Double end backtack with stitch correction<br>Mode 1 lockstitch thread trimmer                                                                                                                                                                                                                                                             | on<br>on<br>Pushbutton 7<br>Pushbutton 8<br>F-182 = 1                                           |
| n2<br>n3<br>n4<br>n7                                              | Maximum speed<br>Start backtack speed<br>End backtack speed<br>Trimming speed                                                                                                                                                                                                                                                                                                              | F-111<br>F-112<br>F-113<br>F-116                                                                |
| t1<br>t3<br>t4<br>t5<br>t6<br>t7<br>t8<br>t9<br>dFw<br>t10<br>t11 | Delay end of start backtack until speed release<br>Start delay from lifted foot<br>Full power of presser foot lifting<br>Presser foot lift pulsing<br>Activation time thread wiper<br>Delay end thread wiper until presser foot lifting<br>Start backtack stitch correction<br>End backtack stitch correction<br>Delay thread wiper<br>Full power of backtacking<br>Pulsing of backtacking | F-200<br>F-202<br>F-203<br>F-204<br>F-205<br>F-206<br>F-150<br>F-151<br>F-209<br>F-212<br>F-213 |

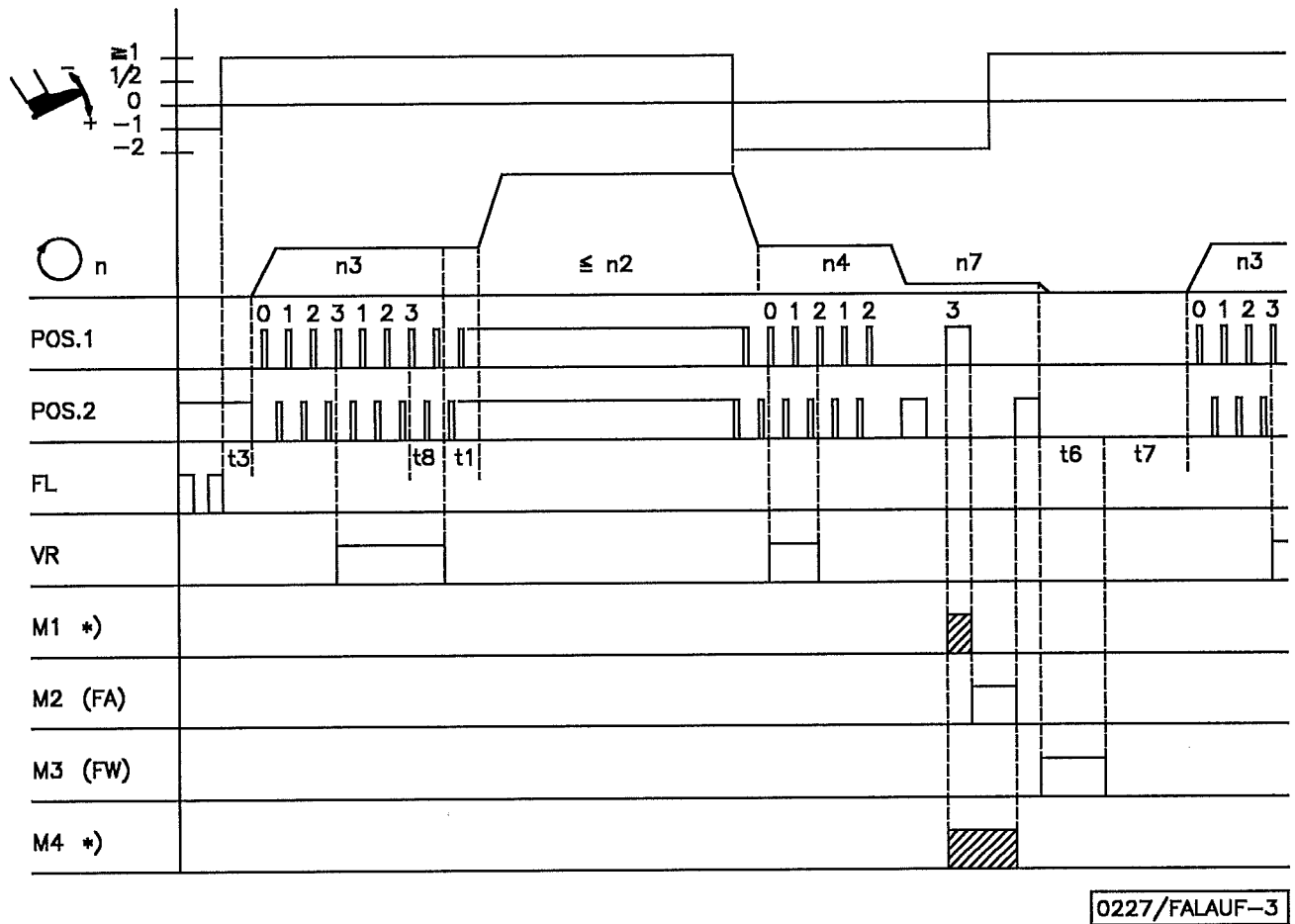
Mode 2: Run with intermediate stop



\*) The marked signals are not needed in this mode!

| Abbreviation                     | Function                                                                                                                                                                                                                                | Parameter/Pushbutton                                           |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| FAR<br>FAS                       | Single start backtack<br>Single end backtack<br>Trimming stitch backward<br>Mode 2 lockstitch thread trimmer                                                                                                                            | on<br>on<br>Pushbutton 7<br>Pushbutton 8<br>F-136<br>F-182 = 2 |
| n1<br>n2<br>n3<br>n4<br>n7       | Positioning speed<br>Maximum speed<br>Start backtack speed<br>End backtack speed<br>Trimming speed                                                                                                                                      | F-110<br>F-111<br>F-112<br>F-113<br>F-116                      |
| t1<br>t3<br>t4<br>t5<br>t6<br>t7 | Delay end of start backtack until speed release<br>Start delay from lifted foot<br>Full power of presser foot lifting<br>Presser foot lift pulsing<br>Activation time thread wiper<br>Delay end thread wiper until presser foot lifting | F-200<br>F-202<br>F-203<br>F-204<br>F-205<br>F-206             |

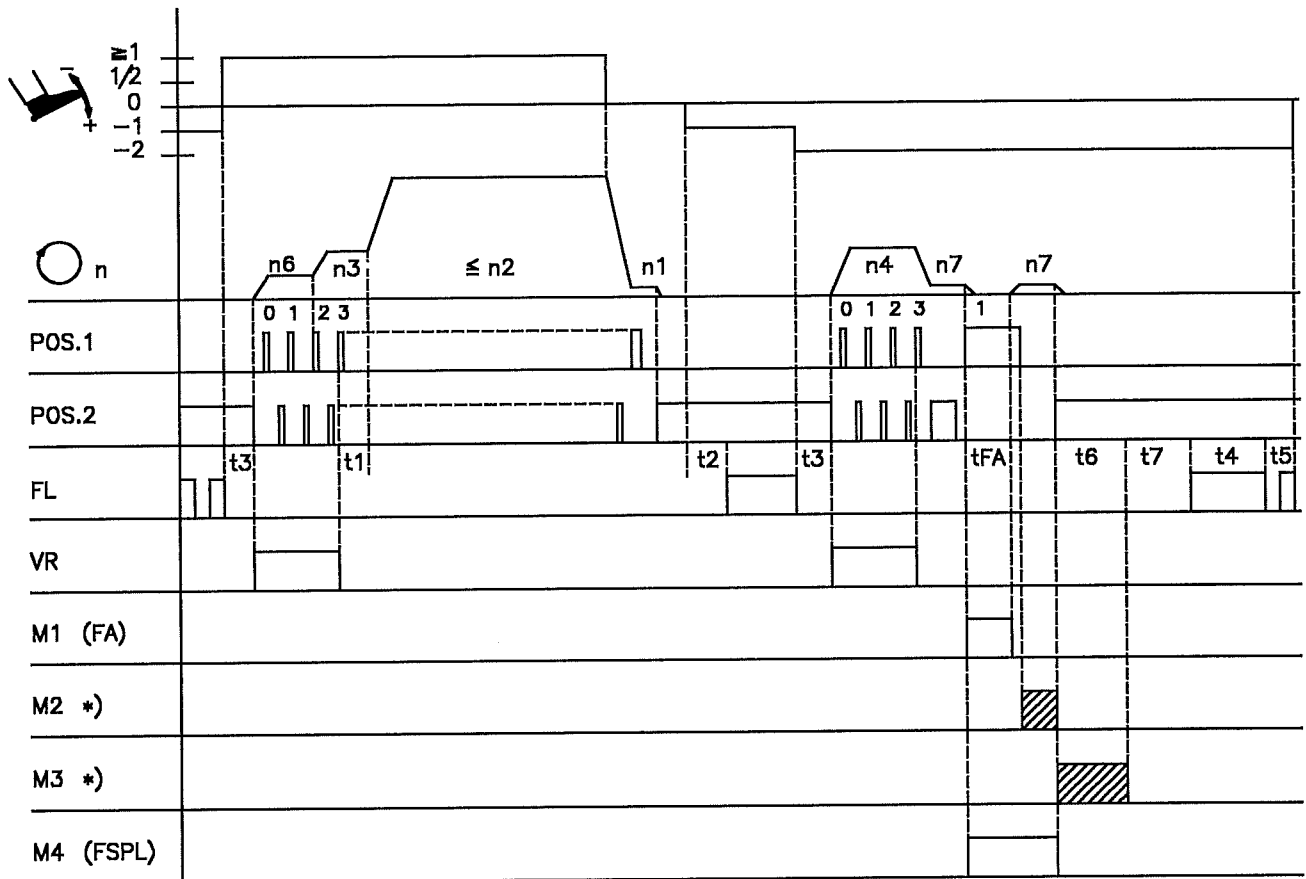
## Mode 3: Trimming from full run



\*) The marked signals are not needed in this mode!

| Abbreviation               | Function                                                                                                                                                                                                 | Parameter/Pushbutton                                  |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| FAS                        | Double start backtack with stitch correction<br>Double end backtack<br>Mode 3 lockstitch thread trimmer                                                                                                  | on<br>on<br>Pushbutton 7<br>Pushbutton 8<br>F-182 = 3 |
| n2<br>n3<br>n4<br>n7       | Maximum speed<br>Start backtack speed<br>End backtack speed<br>Trimming speed                                                                                                                            | F-111<br>F-112<br>F-113<br>F-116                      |
| t1<br>t3<br>t6<br>t7<br>t8 | Delay end of start backtack until speed release<br>Start delay from lifted foot<br>Activation time thread wiper<br>Delay end thread wiper until presser foot lifting<br>Start backtack stitch correction | F-200<br>F-202<br>F-205<br>F-206<br>F-150             |

## Mode 4: Trimming from intermediate stop



0227/FAZW-4

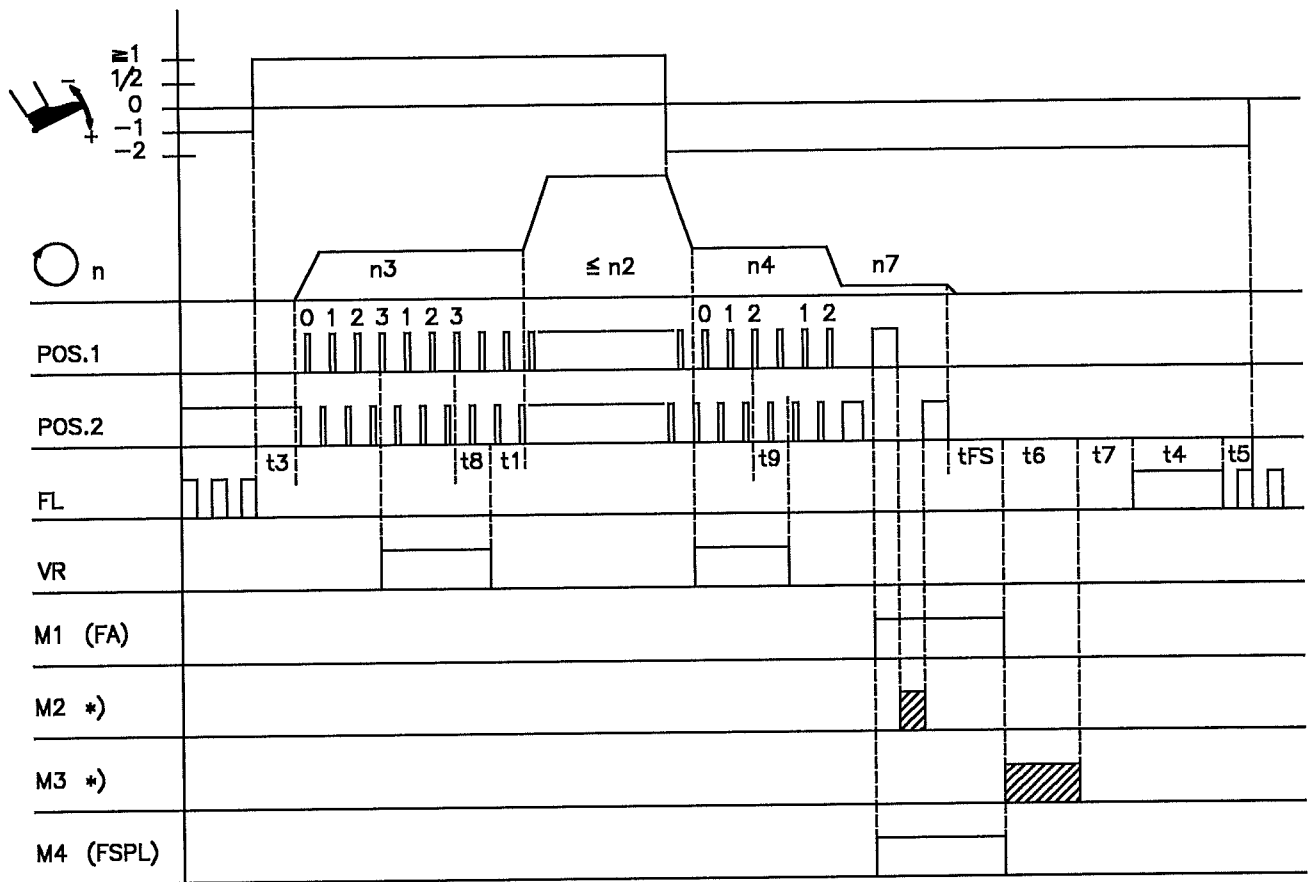
\*) The marked signals are not needed in this model

| Abbreviation                                  | Function                                                                                                                                                                                                                                                                                                                                 | Parameter/Pushbutton                                                 |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| FAS                                           | Single start backtack<br>Single end backtack<br>Mode 4 lockstitch thread trimmer                                                                                                                                                                                                                                                         | on<br>on<br>Pushbutton 7<br>Pushbutton 8<br>F-182 = 4                |
| n1<br>n2<br>n3<br>n4<br>n6<br>n7              | Positioning speed<br>Maximum speed<br>Start backtack speed<br>End backtack speed<br>Softstart speed<br>Trimming speed                                                                                                                                                                                                                    | F-110<br>F-111<br>F-112<br>F-113<br>F-115<br>F-116                   |
| t1<br>t2<br>t3<br>t4<br>t5<br>t6<br>t7<br>tFA | Delay end of start backtack until speed release<br>Delay of presser foot lifting with pedal in position -1 and/or -2<br>Start delay from lifted foot<br>Full power of presser foot lifting<br>Presser foot lift pulsing<br>Activation time thread wiper<br>Delay end thread wiper until presser foot lifting<br>Thread trimmer stop time | F-200<br>F-201<br>F-202<br>F-203<br>F-204<br>F-205<br>F-206<br>F-184 |

**\*) The marked signals are not needed in this mode!**

| Abbreviation | Function                                          | Parameter/Pushbutton |
|--------------|---------------------------------------------------|----------------------|
| LSd          | Light barrier                                     | Pushbutton 0         |
| FAS          | Reversion                                         | Pushbutton 3         |
|              | Single end backtack                               | Pushbutton 8         |
|              | Light barrier covered/uncovered                   | F-131                |
|              | Mode 5 lockstitch thread trimmer                  | F-182 = 5            |
| n1           | Positioning speed                                 | F-110                |
| n2           | Maximum speed                                     | F-111                |
| n4           | End backtack 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           | Activation time thread wiper                      | F-205                |
| t7           | Delay end thread wiper until presser foot lifting | F-206                |
| lrd          | Number of reversion increments                    | F-180                |
| drd          | Activation delay of reversion                     | F-181                |
| tFS          | Run-out time thread tension release               | F-183                |
| tFA          | Thread trimmer stop time                          | F-184                |

## Mode 6: Thread trimming from full run

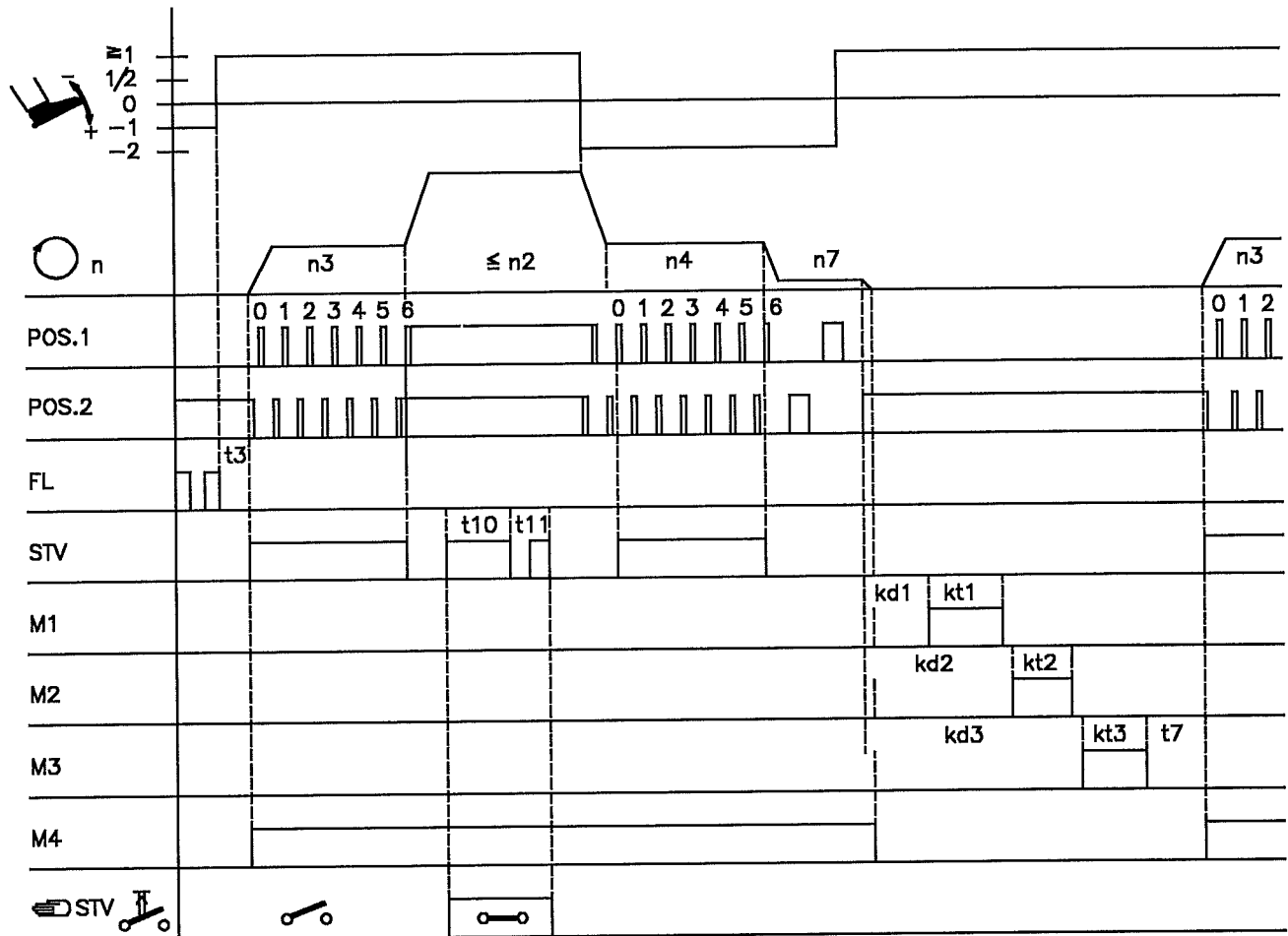


0227/FALAUFG-6

\*) The marked signals are not needed in this mode!

| Abbreviation                                               | Function                                                                                                                                                                                                                                                                                                                                                                       | Parameter/Pushbutton                                                                   |
|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| FAS                                                        | Double start backtack with stitch correction<br>Double end backtack with stitch correction<br>Mode 6 lockstitch thread trimmer                                                                                                                                                                                                                                                 | on<br>on<br>Pushbutton 7<br>Pushbutton 8<br>F-182 = 6                                  |
| n2<br>n3<br>n4<br>n7                                       | Maximum speed<br>Start backtack speed<br>End backtack speed<br>Trimming speed                                                                                                                                                                                                                                                                                                  | F-111<br>F-112<br>F-113<br>F-116                                                       |
| t1<br>t3<br>t4<br>t5<br>t6<br>t7<br>t8<br>t9<br>tFS<br>t11 | Delay end of start backtack until speed release<br>Start delay from lifted foot<br>Full power of presser foot lifting<br>Presser foot lift pulsing<br>Activation time thread wiper<br>Delay end thread wiper until presser foot lifting<br>Start backtack stitch correction<br>End backtack stitch correction<br>Run-out time thread tension release<br>Pulsing of backtacking | F-200<br>F-202<br>F-203<br>F-204<br>F-205<br>F-206<br>F-150<br>F-151<br>F-183<br>F-213 |

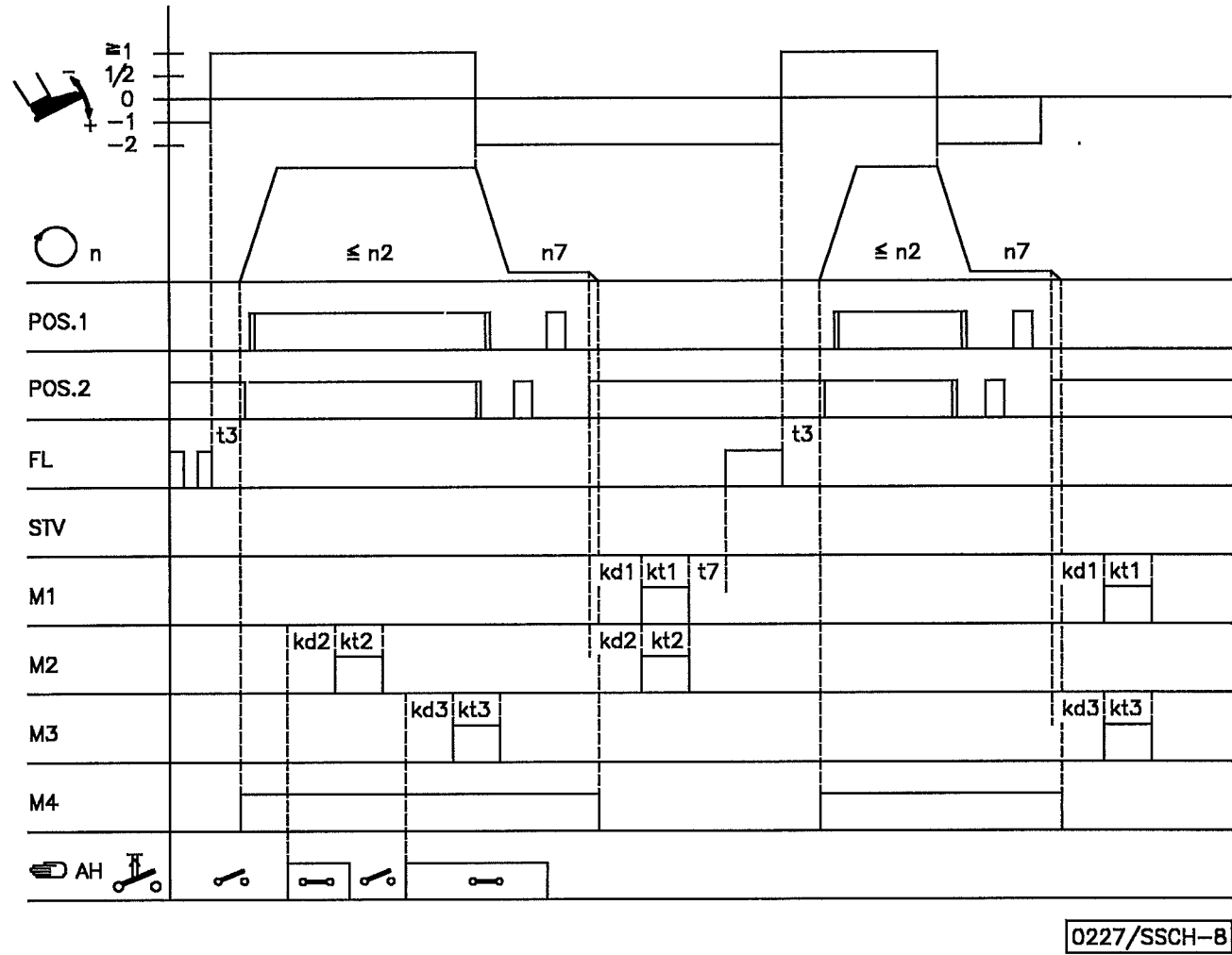
## Mode 7: Chainstitch thread trimming from full run



0227/FALAUF-7

| Abbreviation                                                     | Function                                                                                                                                                                                                                                                                                    | Parameter/Pushbutton                                                                   |
|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| FAS                                                              | Stitch condensing at the beginning<br>Stitch condensing at the end<br>Mode 7 chainstitch trimmer                                                                                                                                                                                            | on<br>on<br>Pushbutton 7<br>Pushbutton 8<br>F-182 = 7                                  |
| n2<br>n3<br>n4<br>n7                                             | Maximum speed<br>Start backtack speed<br>End backtack speed<br>Trimming speed                                                                                                                                                                                                               | F-111<br>F-112<br>F-113<br>F-116                                                       |
| t3<br>t7<br>t10<br>t11<br>kd1<br>kt1<br>kd2<br>kt2<br>kd3<br>kt3 | Start delay from lifted foot<br>Delay end thread wiper until presser foot lifting<br>Full power of stitch condensing<br>Pulsing of stitch condensing<br>Activation delay M1<br>Activation time M1<br>Activation delay M2<br>Activation time M2<br>Activation delay M3<br>Activation time M3 | F-202<br>F-206<br>F-212<br>F-213<br>F-191<br>F-192<br>F-193<br>F-194<br>F-195<br>F-196 |

Mode 8: Chainstitch thread trimming (fast scissors)

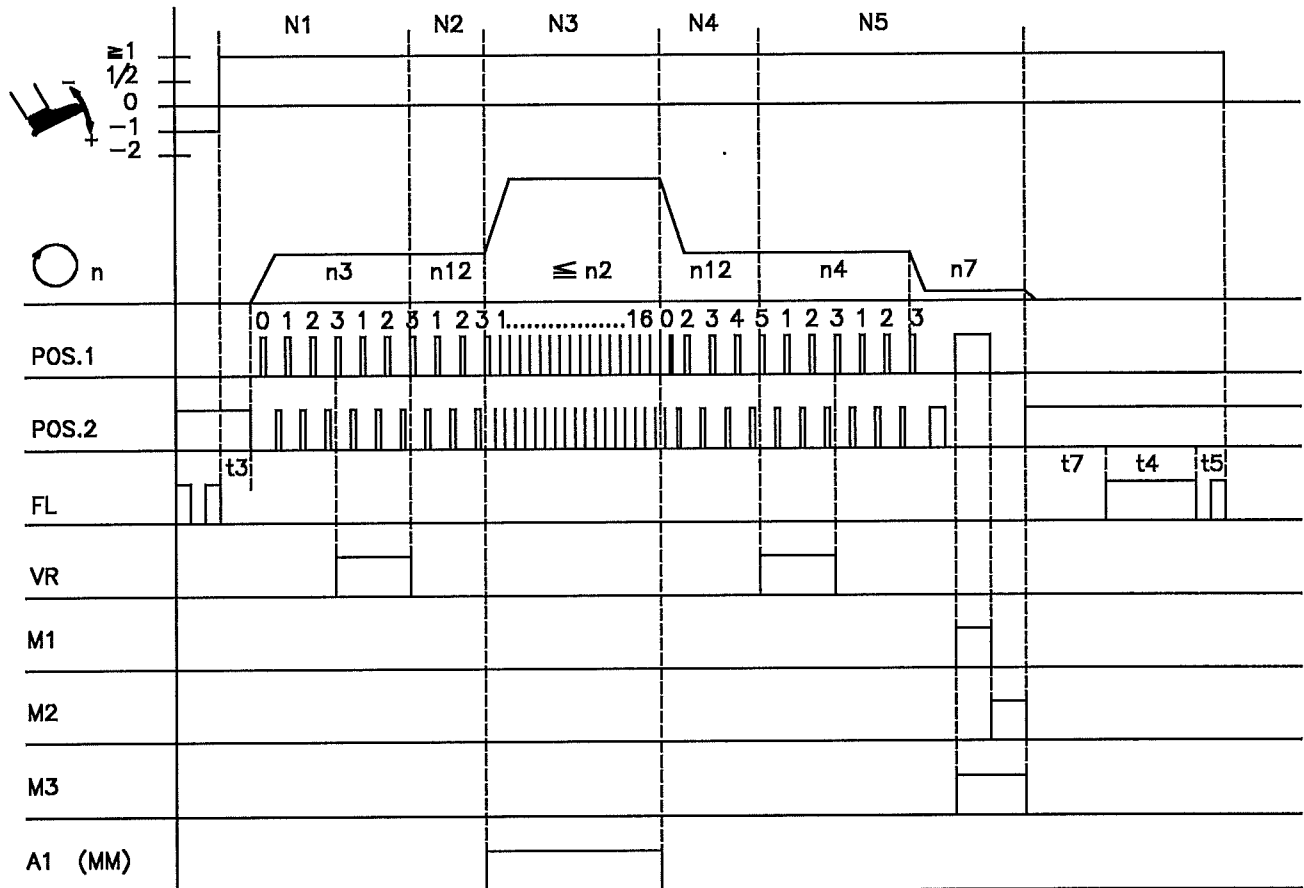


| Abbreviation | Function                                          | Parameter/Pushbutton |
|--------------|---------------------------------------------------|----------------------|
| FAS          | Mode 8 chainstitch trimmer                        | F-182 = 8            |
| n2           | Maximum speed                                     | F-111                |
| n7           | Trimming speed                                    | F-116                |
| t3           | Start delay from lifted foot                      | F-202                |
| t7           | Delay end thread wiper until presser foot lifting | F-206                |
| kd1          | Activation delay M1                               | F-191                |
| kt1          | Activation time M1                                | F-192                |
| kd2          | Activation delay M2                               | F-193                |
| kt2          | Activation time M2                                | F-194                |
| kd3          | Activation delay M3                               | F-195                |
| kt3          | Activation time M3                                | F-196                |

## Timing diagram example 1

Example of a sewing machine with center cutter function (MM)

N1 = Seam 1, N2 = Seam 2 etc.



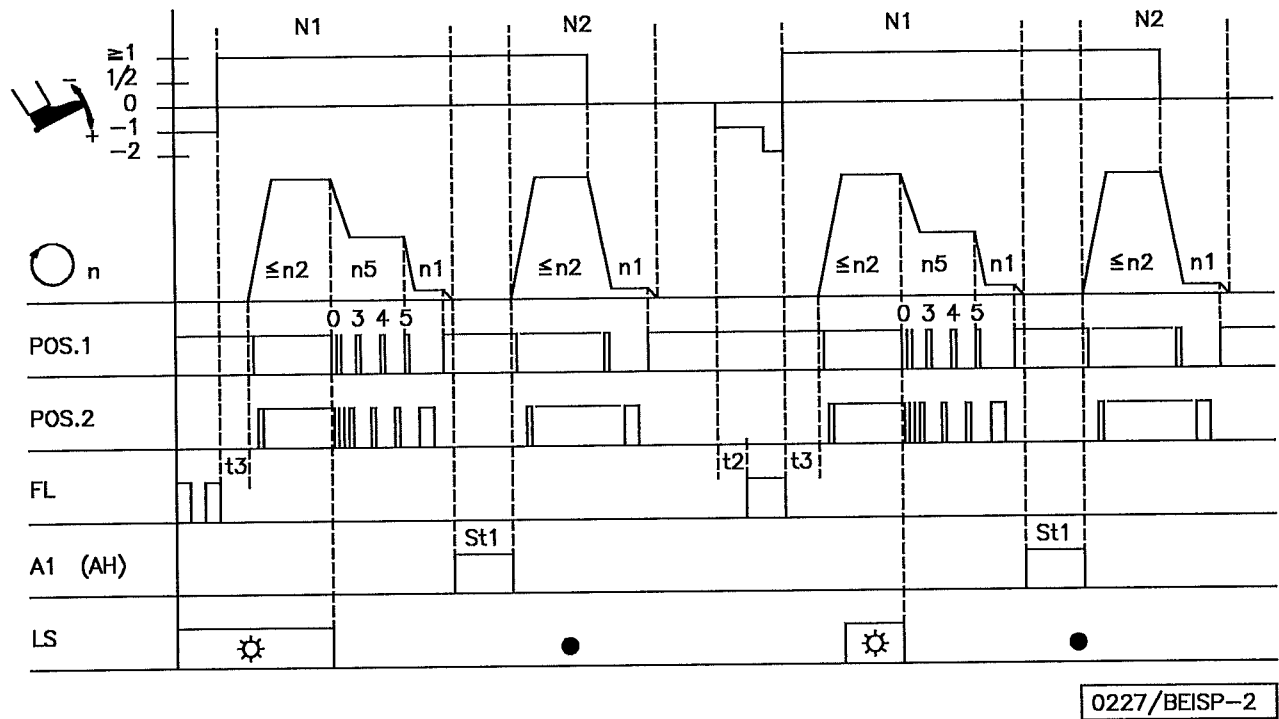
0227/BEISP-1

| Abbreviation | Function                                                      | Parameter/Pushbutton |
|--------------|---------------------------------------------------------------|----------------------|
| tr1          | Double start backtack                                         | on                   |
| So1          | Double end backtack                                           | on                   |
| nA1          | Seam section N1...N4 with switching from one seam to the next |                      |
| FAS          | Start signal A1 at the beginning of the seam (N3)             | F-250                |
|              | Duration of signal A1 until seam end (N3)                     | F-252                |
|              | Pedal speed during emission of signal A1                      | F-257                |
|              | Lockstitch thread trimmer e.g. mode 1                         | F-182 = 1            |
| n2           | Maximum speed                                                 | F-111                |
| n3           | Start backtack speed                                          | F-112                |
| n4           | End backtack speed                                            | F-113                |
| n7           | Trimming speed                                                | F-116                |
| n12          | Automatic speed for stitch counting                           | F-118                |
| 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 end thread wiper until presser foot lifting             | F-206                |

Timing diagram example 2

Example of a sewing machine with chain cutter (AH) and stop

N1 = Seam 1, N2 = Seam 2 etc.



| Abbreviation         | Function                                                                                                                                                             | Parameter/Pushbutton             |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| tr1<br>St1           | Light barrier on<br>Seam section N1/N2 with switching from one seam to the next<br>Start signal A1 at the seam end (N1)<br>Duration of signal A1                     | Pushbutton 0<br>F-250<br>F-254   |
| n1<br>n2<br>n5<br>n9 | Positioning speed<br>Maximum speed<br>Speed after light barrier sensing<br>Automatic speed for signal A1                                                             | F-110<br>F-111<br>F-114<br>F-271 |
| t2<br>t3<br>t4<br>t5 | Delay of presser foot lifting with pedal in position -1 and/or -2<br>Start delay from lifted foot<br>Full power of presser foot lifting<br>Presser foot lift pulsing | F-201<br>F-202<br>F-203<br>F-204 |

## 13. "Record" Programming

The control FP82AV offers the possibility to program complex control processes. 5 outputs and 5 inputs are available, which can be programmed especially for user oriented applications.

See the following description for the step-by-step programming.

If the basic concept is clear complicated processes can also be carried out relatively quickly and easily.

### 13.1 General

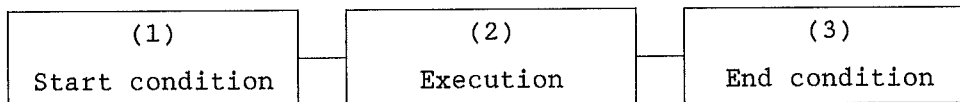
Programming is done according to a fixed pattern. The control process is performed in a logical sequence of separate steps.

These separate steps are called RECORD.

A maximum of 32 RECORDS (separate steps) can be programmed.

### 13.2 Structure of a Record

A record is divided into 3 basic functional blocks.



**Start condition** = Determines under which conditions the record function will be performed.

**Execution** = Activation of functions which influence the control process, as for example setting output A3, switching on speed limitation, etc.

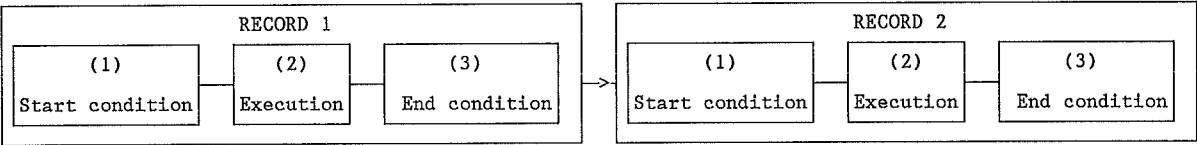
**End condition** = Determines the conditions which prevent switching to the next record.

A record consists of a total of 37 parameters, which serve to program a multitude of conditions or executions. The functioning of the individual parameters will be explained in greater detail further below.

The interaction of the individual groups (start condition, execution, end condition) within a record and the functional sequence resulting from it will be explained using a simple example.

13.3 Structure of a Programmed Sequence

A control process consists of several combined records.



The following example will explain how to perform a simple control process with only 2 records:

Program Name = Label feeding

A mechanism, which feeds a label to the seam, is to be activated by a pushbutton.  
A terminal switch senses when the mechanical feed has reached the end position.  
After reaching the end position, the mechanism remains activated for another 2 seconds and then returns to the start position.

Note  
high active 00001 = switch closed  
low active 00000 = switch open

- Start condition

Record 1

==>

Wait until pushbutton is pressed.
- Execution

Record 1

==>

Activate mechanism for label.
- End condition

Record 1

==>

Wait until terminal switch is activated. Then continue with record 2.
- Start condition

Record 2

==>

No start condition is necessary here.
- Execution

Record 2

==>

Activate a time of 2 seconds for mechanical activation.
- End condition

Record 2

==>

Wait until time of 2 seconds is over. Then return to record 1 and wait until pushbutton is pressed again.

See the following timing diagram for this sequence:

Sequence label feed

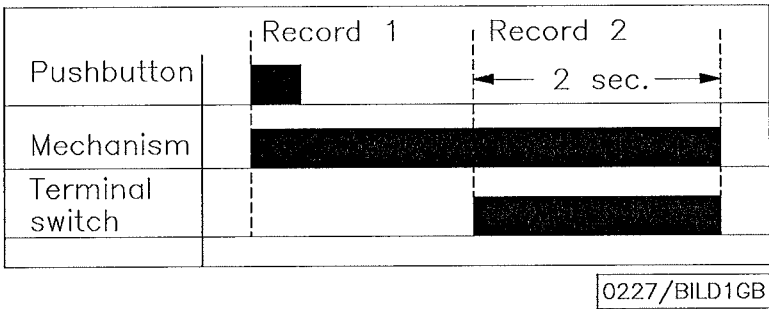


Fig. 1:

The functional sequence already shows a very important course of action in record programming. Each step of a functional sequence and/or each change of a logic condition is performed or sensed by a new record. Therefore it is useful to make a simple sketch of the desired functional sequence before starting to program. The parameters of a record will now be described. Then the actual programming of a record will be shown by using the above example again.

### 13.4 Recall of the Record Parameters

#### Note

Contrary to the way of programming parameters by using the +/- pushbuttons, in record programming the values can be inputted directly by the number buttons of the Variocontrol.

The record level is reached by inputting code no. 3333. Input the code no. as described in chapter "Input Code Number".

=> **P** ==> The most significant digit on the display blinks ==> **F-300**

#### Note

Copy the center fold of this manual and use it for easier and safer record programming !

The record parameters

| Parameter | Function                            | Display |
|-----------|-------------------------------------|---------|
| F-300     | Address the record to be programmed | 01 - 32 |

=> **E** ==> The record to be programmed is selected by this parameter. After selecting the record number by pressing pushbuttons 0...9 and pushbutton E, the display switches automatically to the first parameter in the recalled record. ==> **F300 rEc 01**

Abbreviation SAT  
Parameter number (3)01  
Record number 01

=> **E** ==> The display shows the next parameter ==> **0101 SAT 00000**

Data - e.g. 00000 = Inputs E1...E5

=> When addressing another record, e.g. 14, the top line of the display would be as follows ! ==> **1401 SAT 00000**

All parameters described on the following pages can be addressed directly by inputting numbers. All parameters start with digit 3, e.g. 302, 304, 307, etc.

The 3, however, is not shown on the display.

#### Example:

=> The display shows parameter F-311 in record 25 ==> **2511 So3 00000000**

#### Note

Since each parameter is available in each record, the record must be addressed before the desired parameter.

**Example:**

Output A4 in record 8 is to be switched on over a time of 150 ms.

=> Address record no. 8 !

==> 

|                |
|----------------|
| F300 rEc<br>08 |
|----------------|

=> Address parameter F-324 (activation time output A4) !

==> 

|                   |
|-------------------|
| 0824 SAt<br>00150 |
|-------------------|

The display shows the actual record number and the parameter (3)24. The time of 150 ms can be inputted by pushbuttons 0...9.

**13.4.1 Start Conditions**

| Parameter | Function                                    | Display       |
|-----------|---------------------------------------------|---------------|
| F-301     | AND - start condition of the inputs E1 - E5 | 00000 - 11111 |

=> 

|   |
|---|
| E |
|---|

 ==> Selection of parameter F-301

==> 

|                   |
|-------------------|
| 0101 SAt<br>00000 |
|-------------------|

Bottom line of display 00000 = Inputs E5 E4 E3 E2 E1

With the **AND** - start condition several conditions can be linked.

**Example:**

The record is to be started if input E1 **AND** E5 are actuated together. In this case the parameter must be modified as follows:

=> 

|   |
|---|
| 1 |
|---|

|   |
|---|
| 0 |
|---|

 ==> Selection of the desired inputs E5 and E1

==> 

|                   |
|-------------------|
| 0101 SAt<br>10001 |
|-------------------|

The digit that blinks can be modified by pushbutton 1 or 0.

The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

| Parameter | Function                                                     | Display       |
|-----------|--------------------------------------------------------------|---------------|
| F-302     | Selection HIGH/LOW active of the inputs linked by <b>AND</b> | 00000 - 11111 |

=> 

|   |
|---|
| E |
|---|

 ==> Selection of parameter F-302

==> 

|                   |
|-------------------|
| 0102 SAM<br>00000 |
|-------------------|

Bottom line of display 00000 = Inputs E5 E4 E3 E2 E1

It is possible to determine with the start condition **AND - HIGH / LOW active** whether the condition is met at output E1 -E5 with opened or closed pushbutton.

**Example:**

The record is to be started if the pushbuttons at input E1 **AND** E5 are closed. The parameter must be modified as follows:

0 = LOW active                      Condition is met if switch is opened !  
 1 = HIGH active                    Condition is met if switch is closed !

=>   ==> Selection of the inputs E5 and E1 on HIGH ==> 

|          |
|----------|
| 0102 SAM |
| 10001    |

The digit that blinks can be modified by pushbutton 1 or 0.

The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

| Parameter | Function                                   | Display       |
|-----------|--------------------------------------------|---------------|
| F-303     | OR - start condition of the inputs E1 - E5 | 00000 - 11111 |

=>  ==> Selection of parameter F-303 ==> 

|          |
|----------|
| 0103 Sot |
| 00000    |

Bottom line of display 00000 = Inputs E5 E4 E3 E2 E1

With the **OR** - start condition several conditions can be linked.

**Example:**

The record is to be started if input E2 **OR** E4 are actuated together. In this case the parameter must be modified as follows:

=>   ==> Selection of the desired inputs E4 and E2 ==> 

|          |
|----------|
| 0104 Sot |
| 01010    |

The digit that blinks can be modified by pushbutton 1 or 0.

The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

| Parameter | Function                                                    | Display       |
|-----------|-------------------------------------------------------------|---------------|
| F-304     | Selection HIGH/LOW active of the inputs linked by <b>OR</b> | 00000 - 11111 |

=>  ==> Selection of parameter F-304 ==> 

|          |
|----------|
| 0104 SoM |
| 00000    |

Bottom line of display 00000 = Inputs E5 E4 E3 E2 E1

It is possible to determine with the start condition **OR - HIGH / LOW active** whether the condition is met at output E1 -E5 with opened or closed pushbutton.

**Example:**

The record is to be started if the pushbuttons at input E2 **OR** E4 are closed. The parameter must be modified as follows:

0 = LOW active                      Condition is met if switch is opened !  
 1 = HIGH active                    Condition is met if switch is closed !

=> 1    0 ==> Selection of the inputs E4 and E2 on HIGH ==> 0104 SoM  
01010

The digit that blinks can be modified by pushbutton 1 or 0.

The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

| Parameter | Function                                            | Display       |
|-----------|-----------------------------------------------------|---------------|
| F-305     | <b>AND</b> - start condition if outputs A1 - A5 off | 00000 - 11111 |

=> E ==> Selection of parameter F-305                      ==> 0105 SA1  
00000

Bottom line of display    00000 = Outputs A5 A4 A3 A2 A1

The **AND** - start condition determines which of the active outputs A1 - A5 prevents the start of the next record. If an output in a record is switched on over time the start of the next record can be prevented with this function, until after the activation time has been completed this output is no longer active!

**Example:**

The record is to be started if output A3 **AND** A4 are no longer active. In this case the parameter must be modified as follows:

=> 1    0 ==> Selection of the outputs A4 and A5                      ==> 0105 SAT  
01100

The digit that blinks can be modified by pushbutton 1 or 0.

The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

| Parameter | Function                                           | Display       |
|-----------|----------------------------------------------------|---------------|
| F-306     | <b>OR</b> - start condition if outputs A1 - A5 off | 00000 - 11111 |

=> E ==> Selection of parameter F-306                      ==> 0106 So1  
00000

Bottom line of display    00000 = Outputs A5 A4 A3 A2 A1

The **OR** - start condition determines which of the active outputs A1 - A5 prevent the start of the record. If an output in a record is switched on over time the start of the next record can be prevented with this function, until after the activation time has been completed this output is no longer active!

**Example:**

The record is to be started if output A1 **OR** A3 **OR** A5 are no longer active. In this case the parameter must be modified as follows:

=> 1    0 ==> Selection of the outputs A5, A3 and A1                      ==> 0106 Sot  
10101

The digit that blinks can be modified by pushbutton 1 or 0.

The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

| Parameter | Function                                  | Display     |
|-----------|-------------------------------------------|-------------|
| F-307     | Start condition comparative speed reached | 0000 - 9999 |

=> E ==> Selection of parameter F-307 ==> 0107 ScM  
0000

Bottom line of display 0000 = Comparative speed

A speed can be determined with this parameter. The start condition of the record is met if this speed is reached.

**Example:**

The record is to be started if the drive has reached a speed of 3000 RPM. If the speed is lower the record will not be started.

The parameter must be modified as follows:

=> 0 9 ==> Selection of the comparative speed ==> 0107 ScM  
3000

The digit that blinks can be modified by pushbuttons 0 - 9.

The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

| Parameter | Function                                                           | Display |
|-----------|--------------------------------------------------------------------|---------|
| F-308     | <b>AND</b> - start condition if comparative speed of F-307 reached | 0 - 1   |

=> E ==> Selection of parameter F-308 ==> 0108 SA2  
0

Bottom line of display 0 = **AND** start condition comparative speed off

1 = **AND** start condition comparative speed on

It is possible to determine with the **AND** start condition whether the condition is met in conjunction with another condition.

**Example:**

The record is to be started if the pushbutton on input E2 (F-301) is closed **AND** the speed of 3000 RPM has been reached.

The parameter must be modified as follows:

=> 1 ==> Set selection of the condition at 1 ==> 0108 SA2  
1

The digit that blinks can be modified by pushbutton 1 or 0.

| Parameter | Function                                                          | Display |
|-----------|-------------------------------------------------------------------|---------|
| F-309     | <b>OR</b> - start condition if comparative speed of F-307 reached | 0 - 1   |

=> E ==> Selection of parameter F-309 ==> 0109 So2  
0

Bottom line of display 0 = **OR** start condition comparative speed off

1 = **OR** start condition comparative speed on

**Example:**

The record is to be started if the pushbutton on input E2 (F-301) is closed **OR** the speed of 3000 RPM has been reached.

The parameter must be modified as follows:

=> 1 ==> Set selection of the condition at 1 ==> 0109 So2  
1

The digit that blinks can be modified by pushbutton 1 or 0.

| Parameter | Function                                       | Display             |
|-----------|------------------------------------------------|---------------------|
| F-310     | AND - start condition 1 for the sewing process | 00000000 - 11111111 |

=> E ==> Selection of parameter F-310 ==> 0110 SA3  
00000000

Bottom line of display

00000000 =  
 00000001 = Start at the beginning of the seam  
 00000010 = Start at the seam end  
 00000100 = Start if light barrier uncovered  
 00001000 = Start if light barrier covered  
 00010000 = Start if top LED (signal 1) on control panel V722 on  
 00100000 = Start if bottom LED (signal 2) on control panel V722 on  
 01000000 = Start if motor at standstill  
 10000000 = Start if motor running

**Note**

The condition light barrier uncovered/covered is independent of whether the function light barrier is switched on on the control panel.

This parameter is needed for synchronizing a programmed record sequence with the actual sewing process. This parameter determines several start conditions which are dependent on the sewing process.

**Example:**

The record is to be started if the motor is running **AND** the light barrier is uncovered.

The parameter must be modified as follows:

=> 1 0 ==> Selection of the AND start condition for the sewing process ==> 0110 SA3  
10000100

The digit that blinks can be modified by pushbutton 1 or 0.

The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

| Parameter | Function                                      | Display             |
|-----------|-----------------------------------------------|---------------------|
| F-311     | OR - start condition 1 for the sewing process | 00000000 - 11111111 |

=> E ==> Selection of parameter F-311 ==> 0111 So3  
00000000

Bottom line of display

00000000 =  
 00000001 = Start at the beginning of the seam  
 00000010 = Start at the seam end  
 00000100 = Start if light barrier uncovered  
 00001000 = Start if light barrier covered  
 00010000 = Start if top LED (signal 1) on control panel V722 on  
 00100000 = Start if bottom LED (signal 2) on control panel V722 on  
 01000000 = Start if motor at standstill  
 10000000 = Start if motor running

#### Note

The condition light barrier uncovered/covered is independent of whether the function light barrier is switched on on the control panel.

This parameter determines several start conditions which are dependent on the sewing process.

#### Example:

The record is to be started if the motor is at standstill **OR** the seam end has been reached.

The parameter must be modified as follows:

=>   ==> Selection of the OR start condition for the sewing process ==> 

|          |
|----------|
| 0110 SA3 |
| 01000010 |

The digit that blinks can be modified by pushbutton 1 or 0.

The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

| Parameter | Function                                              | Display             |
|-----------|-------------------------------------------------------|---------------------|
| F-312     | <b>AND</b> - start condition 2 for the sewing process | 00000000 - 11111111 |

=>  ==> Selection of parameter F-312 ==> 

|          |
|----------|
| 0112 i2U |
| 00000000 |

Bottom line of display

00000000 =  
 00000001 = Query pedal back to position -2  
 00000010 = Query pedalback to position -1  
 00000100 = Query pedal in position 0 (neutral)  
 00001000 = Query pedal forward  
 00010000 = LED end backtack backward active on the V722  
 00100000 = LED end backtack forward active on the V722  
 01000000 = LED start backtack backward active on the V722  
 10000000 = LED start backtack forward active on the V722

The digit that blinks can be modified by pushbutton 1 or 0.

The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

| Parameter | Function                                             | Display             |
|-----------|------------------------------------------------------|---------------------|
| F-313     | <b>OR</b> - start condition 2 for the sewing process | 00000000 - 11111111 |

=>  ==> Selection of parameter F-313 ==> 

|          |
|----------|
| 0113 i2o |
| 00000000 |

Bottom line of display

00000000 =  
 00000001 = Query pedal back to position -2  
 00000010 = Query pedalback to position -1  
 00000100 = Query pedal in position 0 (neutral)  
 00001000 = Query pedal forward  
 00010000 = LED end backtack backward active on the V722  
 00100000 = LED end backtack forward active on the V722  
 01000000 = LED start backtack backward active on the V722  
 10000000 = LED start backtack forward active on the V722

The digit that blinks can be modified by pushbutton 1 or 0.

The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

| Parameter | Function                                         | Display |
|-----------|--------------------------------------------------|---------|
| F-319     | Next record if start condition is <b>NOT</b> met | 01 - 32 |

=> E ==> Selection of parameter F-319 ==> 0119 FAL  
01

Bottom line of display 01 = Display of record number recalled if the start condition is **NOT** met.

A branch to another record can be established with this parameter if the start condition is not met.

#### Example 1:

The start condition whether a pushbutton has been pressed is queried in record 04. If this start condition is not met no other action is to be performed. In this case this input must be repeatedly queried. Thus record 04 is repeatedly run through, as long as the start condition is not met.

The parameter must be modified as follows:

=> 0 ... 9 ==> Selection of the record ==> 0419 FAL  
04

#### Example 2:

The start condition whether the motor is at standstill is queried in record 05. If this start condition is not met record 13 is to be performed where the motor is stopped. In this case a branch to record 13 must be established if start condition is not met.

The parameter must be modified as follows:

=> 0 ... 9 ==> Selection of the record ==> 0519 FAL  
13

The digit that blinks can be modified by pushbutton 1 or 0.

The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

### 13.4.2 Execution

| Parameter | Function                       | Display       |
|-----------|--------------------------------|---------------|
| F-320     | Switchin on the inputs A1...A5 | 00000 - 11111 |

=> E ==> Selection of parameter F-320 ==> 0120 oUt  
00000

Bottom line of display 00000 = Outputs A5, A4, A3, A2, A1

The outputs A1...A5 can be switched on statically with this parameter.

**Note**

The outputs A1 and A2 can only be switched on if parameter F-274 is set at ON.

**Example:**

The outputs A1, A2 and A5 are switched on in record 22.

The parameter must be modified as follows:

=> 0 ... 1 ==> Selection of the outputs A1...A5 ==> 0420 oUt  
10011

The digit that blinks can be modified by pushbutton 1 or 0.

The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

An output that has been switched on statically in a record remains active until it is marked by a 0 as switched off in another record after the start condition has been met!

| Parameter | Function                         | Display       |
|-----------|----------------------------------|---------------|
| F-321     | Switching on output A1 over time | 00000 - 60000 |
| F-322     | Switching on output A2 over time | 00000 - 60000 |
| F-323     | Switching on output A3 over time | 00000 - 60000 |
| F-324     | Switching on output A4 over time | 00000 - 60000 |
| F-325     | Switching on output A5 over time | 00000 - 60000 |

=> E ==> Selection of parameters F-321...F-322 ==> 01XX onX  
00000

Top line of display XX = stands for parameter number (21-25) of the selected output

Bottom line of display 00000 = operating time of output AX

The outputs A1...A5 can be switched on over a time with these parameters.

**Note**

The outputs A1 and A2 can only be switched on if parameter F-274 is set at ON.

**Example:**

The output A3 is switched on for a time of 1.5 seconds in record 16.

The parameter must be modified as follows:

=> 0 ... 9 ==> Setting the time for output A3 ==> 1623 on3  
01500

The digit that blinks can be modified by pushbutton 1 or 0.

The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

An output that has been switched on in a record over a time remains active until the time is over. This is independent of whether a new record is called up afterwards.

| Parameter | Function               | Display       |
|-----------|------------------------|---------------|
| F-326     | Setting the delay time | 00000 - 60000 |

=> E ==> Selection of parameter F-326 ==> 0126 SdL  
00000

Bottom line of display 00000 = delay time

A delay time can be inputted with this parameter. Only after this time is over, the end conditions of the record will be processed. This means that the record sequence is interrupted for this time.

This function is very useful if a delay time is to be programmed between the emission of e.g. 2 output signals. In this case the first output could be set in record 1, then the delay time could be programmed. Output 2 can be switched on in record 2, which is called up only after this time is over.

**Example:**

A delay time of 1.6 seconds is switched on in record 4.

The parameter must be modified as follows:

=> 0 ... 9 ==> Set time delay ==> 0426 SdL  
01600

The digit that blinks can be modified by pushbutton 1 or 0.

The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

| Parameter      | Function                                                                                                                    | Display                |
|----------------|-----------------------------------------------------------------------------------------------------------------------------|------------------------|
| F-327<br>F-328 | Set counting<br>Switch counting<br>0 = Counting off<br>1 = Counting with position 1<br>2 = Counting with generator impulses | 00000 - 60000<br>0 - 2 |

=> E ==> Selection of parameter F-327 ==> 0127 GSS  
00000

Bottom line of display 00000 = Number of stitches

A counter value can be inputted with this parameter. The counter process can be queried in the end condition of the record.

This function is very useful if a counting is to be programmed between the emission of e.g. 2 output signals. In this case the first output could be set in record 1, then the counting could be programmed. The sequence of record 1 is interrupted until the counter has run out. Output 2 can be switched on in record 2, which is called up only after the counting is over.

**Example:**

A counting of 6 stitches is switched on in record 04.

The parameter must be modified as follows:

=> 0 ... 9 ==> Set time delay ==> 0427 GSS  
00006

The digit that blinks can be modified by pushbutton 1 or 0.

The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

**Note**

If generator impulses are to be counted parameter F-328 must be switched to 2!

| Parameter | Function                           | Display             |
|-----------|------------------------------------|---------------------|
| F-329     | Alteration 1 of the sewing process | 00000000 - 11111111 |

=> E ==> Selection of parameter F-329 ==> 0129 PA6  
00000000

|                        |            |                                                                                                                           |
|------------------------|------------|---------------------------------------------------------------------------------------------------------------------------|
| Bottom line of display | 00000000 = |                                                                                                                           |
|                        | 00000001 = | Stop with start by pedal in position 0 (neutral)                                                                          |
|                        | 00000010 = | Stop with start with pedal not in position 0 (neutral)                                                                    |
|                        | 00000100 = | Stop in position 1                                                                                                        |
|                        | 00001000 = | Stop in position 2                                                                                                        |
|                        | 00010000 = | Switch on presser foot lifting                                                                                            |
|                        | 00100000 = | Run at positioning speed                                                                                                  |
|                        | 01000000 = | Limit run to speed n10                                                                                                    |
|                        | 10000000 = | Interruption of the sewing function. The sewing process is interrupted at the seam end as long as this value is set at 1. |
|                        | 01100000 = | Run at fixed speed n10, independent of the pedal                                                                          |

The sewing process and the sewing drive can be influenced by this parameter.

**Example:**

Stop in position 1 and interrupt sewing process in record 19.

The parameter must be modified as follows:

=> 1 0 ==> Selection of the conditions for the sewing process ==> 1929 PA6  
10000100

The digit that blinks can be modified by pushbutton 1 or 0.

The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

**Note**

|                          |                                                                                                                                                                                 |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Switch on presser foot   | will only be activated if the drive is at standstill.                                                                                                                           |
| Run at positioning speed | if a running command is no longer given and no defined end command is set the drive stops in the set basic position! The running command is effective without pedal actuation ! |
| Limit speed at n9        | it is possible to switch from limited to fixed speed with parameter F-275. The speed limitation is only effective in conjunction with pedal actuation !                         |

| Parameter | Function                           | Display             |
|-----------|------------------------------------|---------------------|
| F-330     | Alteration 2 of the sewing process | 00000000 - 11111111 |

=> E ==> Selection of parameter F-330 ==> 0130 oS2  
00000000

Bottom line of display      0000000 =  
                                  0000001 =      Pedal coding A  
                                  0000010 =      Pedal coding B  
                                  0000100 =      Pedal coding C  
                                  0001000 =      Pedal coding D  
                                  0010000 =      Pedal blocked, function by "record"  
                                  0100000 =      Reversion by "record" (increments set in F-180)  
                                  1000000 =      Presser foot blocked, presser foot only by "record"

The sewing process and the sewing drive can be influenced by this parameter (see also parameter F-329). The function pedal coding A...D is only possible in conjunction with "pedal blocked".

### 13.4.3 End Condition

| Parameter | Function                                  | Display       |
|-----------|-------------------------------------------|---------------|
| F-341     | AND - end condition of the inputs E1 - E5 | 00000 - 11111 |

=> E ==> Selection of parameter F-341 ==> 0141 PA  
00000

Bottom line of display    00000 = Inputs E5 E4 E3 E2 E1

With the **AND** - start condition several conditions can be linked.

#### Example:

Switching to the next record is to be prevented until input E1 **AND** E5 are actuated together. In this case the parameter must be modified as follows:

=> 1    0 ==> Selection of the desired inputs E5 and E1 ==> 0141 PA  
10001

The digit that blinks can be modified by pushbutton 1 or 0.

The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

|             |                                 |    |                   |
|-------------|---------------------------------|----|-------------------|
| => <b>E</b> | => Selection of parameter F-342 | => | 0142 PAM<br>00000 |
|-------------|---------------------------------|----|-------------------|

The digit that blinks can be modified by pushbutton 1 or 0.  
The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

| Parameter | Function                                             | Display       |
|-----------|------------------------------------------------------|---------------|
| F-344     | Selection HIGH/LOW active of the inputs linked by OR | 00000 - 11111 |

=> E ==> Selection of parameter F-344 ==> 0144 PoM  
00000

Bottom line of display 00000 = Inputs E5 E4 E3 E2 E1

It is possible to determine with the start condition **OR - HIGH / LOW active** whether the condition is met at output E1 -E5 with opened or closed pushbutton.

**Example:**

The record is to be started if the pushbuttons at input E2 **OR** E4 are closed. The parameter must be modified as follows:

0 = LOW active                      Condition is met if switch is opened !  
1 = HIGH active                    Condition is met if switch is closed !

=> 1 0 ==> Set selection of inputs E4 and E2 on LOW active ==> 0144 PoM  
01010

The digit that blinks can be modified by pushbutton 1 or 0.

The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

| Parameter | Function                                              | Display       |
|-----------|-------------------------------------------------------|---------------|
| F-345     | <b>AND</b> - end condition if the outputs A1 - A5 off | 00000 - 11111 |

=> E ==> Selection of parameter F-345 ==> 0145 PA1  
00000

Bottom line of display 00000 = Outputs A5 A4 A3 A2 A1

The **AND** - end condition determines which of the active outputs A1 - A5 prevents the switching to the next record. If an output in a record is switched on over time the switching to the next record can be prevented with this function, until after the activation time has been completed this output is no longer active!

**Example:**

Switch to the next record only if output A3 **AND** A4 are no longer active. In this case the parameter must be modified as follows:

=> 1 0 ==> Selection of the outputs A4 and A5 ==> 0145 PA1  
01100

The digit that blinks can be modified by pushbutton 1 or 0.

The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

| Parameter | Function                                  | Display       |
|-----------|-------------------------------------------|---------------|
| F-346     | OR - end condition if outputs A1 - A5 off | 00000 - 11111 |

=> E ==> Selection of parameter F-346 ==> 0146 Po1  
00000

Bottom line of display 00000 = Outputs A5 A4 A3 A2 A1

The **OR** - end condition determines which of the active outputs A1 - A5 prevents the switchin to the next record. If an output in a record is switched on over time the switching to the next record can be prevented with this function, until after the activation time has been completed this output is no longer active!

**Example:**

Switch to the next record only if output A1 **OR** A3 **OR** A5 are no longer active. In this case the parameter must be modified as follows:

=> 1 0 ==> Selection of the outputs A5, A3 and A1 ==> 0146 Pot  
10101

The digit that blinks can be modified by pushbutton 1 or 0.

The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

| Parameter | Function                                | Display     |
|-----------|-----------------------------------------|-------------|
| F-347     | End condition comparative speed reached | 0000 - 9999 |

=> E ==> Selection of parameter F-347 ==> 0147 PcM  
0000

Bottom line of display 0000 = Comparative speed

A speed can be determined with this parameter. Switch to the next record if this speed is reached.

**Example:**

Switch to the next record if the drive is below or has reached a speed of **3000** RPM. If the speed is higher no switching to the next record.

The parameter must be modified as follows:

=> 0 9 ==> Selection of the comparative speed ==> 0147 PcM  
3000

The digit that blinks can be modified by pushbuttons 0 - 9.

The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

| Parameter | Function                                                         | Display |
|-----------|------------------------------------------------------------------|---------|
| F-348     | <b>AND</b> - end condition if comparative speed of F-347 reached | 0 - 1   |

=> E ==> Selection of parameter F-348 ==> 0148 PA2  
0

Bottom line of display 0 = **AND** end condition comparative speed off  
1 = **AND** end condition comparative speed on

It is possible to determine with the **AND** end condition whether the condition is met in conjunction with another condition.

**Example:**

Switch to the next record only if the pushbutton on input E2 (F-341) is closed **AND** the speed is below or has reached 3000 RPM.

The parameter must be modified as follows:

=> 1 ==> Set selection of the condition at 1 ==> 0148 PA2  
1

The digit that blinks can be modified by pushbutton 1 or 0.

| Parameter | Function                                                        | Display |
|-----------|-----------------------------------------------------------------|---------|
| F-349     | <b>OR</b> - end condition if comparative speed of F-347 reached | 0 - 1   |

=> E ==> Selection of parameter F-349 ==> 0149 Po2  
0

Bottom line of display 0 = **OR** end condition comparative speed off  
1 = **OR** end condition comparative speed on

**Example:**

Switch to the next record only if the pushbutton on input E2 (F-341) is closed **OR** the speed is below or has reached 3000 RPM.

The parameter must be modified as follows:

=> 1 ==> Set selection of the condition at 1 ==> 0149 Po2  
1

The digit that blinks can be modified by pushbutton 1 or 0.

| Parameter | Function                                                                   | Display |
|-----------|----------------------------------------------------------------------------|---------|
| F-350     | <b>AND</b> - end condition if the counting of F-347 has not been completed | 0 - 1   |

=> E ==> Selection of parameter F-350

==> 0150 PA3  
0

Bottom line of display    0 = **AND** end condition counter (F-327) run out off  
                                   1 = **AND** end condition counter (F-327) run out on

It is possible to determine with the **AND** condition whether the end condition is met in conjunction with another condition.

**Example:**

Switch to the next record only if the counting of parameter F-327 is completed **AND** the input E2 is active.  
 The parameter must be modified as follows:

=> 1 ==> Set selection of the condition at 1

==> 0150 PA3  
1

The digit that blinks can be modified by pushbutton 1 or 0.

| Parameter | Function                                                                  | Display |
|-----------|---------------------------------------------------------------------------|---------|
| F-351     | <b>OR</b> - end condition if the counting of F-347 has not been completed | 0 - 1   |

=> E ==> Selection of parameter F-351

==> 0151 Po3  
0

Bottom line of display    0 = **OR** end condition counter (F-327) run out off  
                                   1 = **OR** end condition counter (F-327) run out on

**Example:**

Switch to the next record only if the counting of parameter F-327 is completed **OR** the input E2 is active.  
 The parameter must be modified as follows:

=> 1 ==> Set selection of the condition at 1

==> 0151 Po3  
1

The digit that blinks can be modified by pushbutton 1 or 0.

| Parameter | Function                                            | Display             |
|-----------|-----------------------------------------------------|---------------------|
| F-352     | <b>AND</b> - end condition 1 for the sewing process | 00000000 - 11111111 |

=> E ==> Selection of parameter F-352

==> 0152 PA5  
00000000

|                        |                                                                                    |
|------------------------|------------------------------------------------------------------------------------|
| Bottom line of display | 00000000 =                                                                         |
|                        | 00000001 = Stop of the record until beginning of the seam has been reached         |
|                        | 00000010 = Stop of the record until seam end has been reached                      |
|                        | 00000100 = Stop of the record until light barrier uncovered                        |
|                        | 00001000 = Stop of the record until light barrier covered                          |
|                        | 00010000 = Stop of the record until top LED (signal 1) on control panel V722 on    |
|                        | 00100000 = Stop of the record until bottom LED (signal 2) on control panel V722 on |
|                        | 01000000 = Stop of the record until motor at standstill                            |
|                        | 10000000 = Stop of the record until motor running                                  |

**Note**

The condition light barrier uncovered/covered is independent of whether the function light barrier is switched on on the control panel.

This parameter determines several end conditions which are dependent on the sewing process.

**Example:**

Switching to the next record is to be prevented until the motor is at standstill **AND** the seam end has been reached. The parameter must be modified as follows:

=> 1 0 ==> Selection of the AND end condition for the sewing process ==> 0152 PA5  
10000010

The digit that blinks can be modified by pushbutton 1 or 0.

The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

| Parameter | Function                                    | Display             |
|-----------|---------------------------------------------|---------------------|
| F-353     | OR - end condition 1 for the sewing process | 00000000 - 11111111 |

=> E ==> Selection of parameter F-353 ==> 0153 Po5  
00000000

|                        |                                                                                    |
|------------------------|------------------------------------------------------------------------------------|
| Bottom line of display | 00000000 =                                                                         |
|                        | 00000001 = Stop of the record until beginning of the seam has been reached         |
|                        | 00000010 = Stop of the record until seam end has been reached                      |
|                        | 00000100 = Stop of the record until light barrier uncovered                        |
|                        | 00001000 = Stop of the record until light barrier covered                          |
|                        | 00010000 = Stop of the record until top LED (signal 1) on control panel V722 on    |
|                        | 00100000 = Stop of the record until bottom LED (signal 2) on control panel V722 on |
|                        | 01000000 = Stop of the record until motor at standstill                            |
|                        | 10000000 = Stop of the record until motor running                                  |

**Note**

The condition light barrier uncovered/covered is independent of whether the function light barrier is switched on on the control panel.

This parameter determines several end conditions which are dependent on the sewing process.

**Example:**

Switching to the next record is to be prevented until the motor is at standstill **OR** the seam end has been reached.  
The parameter must be modified as follows:

=> 1 0 ==> Selection of the OR end condition for the sewing process ==> 0153 Po5  
01000010

The digit that blinks can be modified by pushbutton 1 or 0.

The digit that is to be modified can be recalled in the bottom line by pushbutton + or -.

| Parameter | Function                                            | Display             |
|-----------|-----------------------------------------------------|---------------------|
| F-354     | <b>AND</b> - end condition 2 for the sewing process | 00000000 - 11111111 |

=> E ==> Selection of parameter F-354 ==> 0154 o2U  
00000000

Bottom line of display

00000000 =  
 00000001 = Query pedal back to position -2  
 00000010 = Query pedalback to position -1  
 00000100 = Query pedal in position 0 (neutral)  
 00001000 = Query pedal forward  
 00010000 = LED end backtack backward active on the V722  
 00100000 = LED end backtack forward active on the V722  
 01000000 = LED start backtack backward active on the V722  
 10000000 = LED start backtack forward active on the V722

| Parameter | Function                                           | Display             |
|-----------|----------------------------------------------------|---------------------|
| F-355     | <b>OR</b> - end condition 2 for the sewing process | 00000000 - 11111111 |

=> E ==> Selection of parameter F-355 ==> 0155 o2o  
00000000

Bottom line of display

00000000 =  
 00000001 = Query pedal back to position -2  
 00000010 = Query pedalback to position -1  
 00000100 = Query pedal in position 0 (neutral)  
 00001000 = Query pedal forward  
 00010000 = LED end backtack backward active on the V722  
 00100000 = LED end backtack forward active on the V722  
 01000000 = LED start backtack backward active on the V722  
 10000000 = LED start backtack forward active on the V722

These parameters (F-354 and F-355) determine several end conditions which are dependent on the sewing process (see also parameters F-352 and F353).

| Parameter | Function                                       | Display |
|-----------|------------------------------------------------|---------|
| F-359     | Next record if end condition is <b>NOT</b> met | 01 - 32 |

=> E ==> Selection of parameter F-359 ==> 0159 nEt  
02

Bottom line of display 02 = Display of record number recalled if the start condition is **NOT** met.

**Note**

At the end of a record the next record recalled by the program must be determined. Ensure that only record numbers of programmed records are inputted.

### 13.5 Program Example 01 == > Label Feed

On the following pages the sequence of a label feed already described in chapter "Structure of a Record" is programmed. For an overall view see also the attached form where all parameters of a record are listed. Fill the form with the corresponding parameter values. For each record a separate form is used. Thus the programming of the sequence becomes clearer, and the user establishes his/her own documentation.

The form is divided into the following 4 sections:

- Information section** == > The user fills in all information necessary for documenting the functional sequence:
- Program number of the record
  - Name of the functional sequence performed
  - Determination of the inputs and outputs used
- Start conditions** == > The parameters for programming the start condition are entered here.
- Execution** == > The parameters for programming the output functions are entered here.
- End conditions** == > The parameters for programming the end conditions are entered here.

The program example is marked with the number **01** - label feed.

Input **E1** is determined for activating the label feed with a pushbutton.

Input **E2** is determined for switching "label in end position" with the terminal switch.

Both inputs are "**high-active**", since a function is activated with closed pushbutton and/or terminal switch.

The solenoid valve for activating the label mechanism is allocated for **output A5**.

**Record 01**

The following parameters are used:

- F-301 = AND - start condition - query pushbutton for activating the label feed.
- F-302 = Setting the function of the pushbutton to high-active.
- F-310 = AND - start condition - additional query whether motor is at standstill.
- F-319 = Enter the record recalled if the start condition is not met.
- The start condition is met only if the pushbutton is pressed AND the motor is at standstill. If this condition is not met no action is to be performed, and the state of the pushbutton and of the motor is to be further queried, i.e. the start condition of record 01 is to be further queried. Therefore the record number 01 is entered in this parameter.
- F-320 = If the start condition is met output A5 for activating the label mechanism must be switched on. This is done by setting the corresponding output by parameter F-320.
- F-341 = AND - end condition - query terminal switch whether the mechanism has reached the end position. As long as this is not the case, recalling the next record (in this case record 02) is prevented.
- F-342 = Setting the function of the terminal switch (make contact) to high-active. If the terminal switch functions as break contact the input must be set to low-active.
- F-359 = Enter the record number recalled if the end condition is no longer met, i.e. if the terminal switch is closed.

**Record 02**

Wait in record 01 until the label mechanism has reached the end position. Then the program calls up record 02. Only the remaining activation time of 2 seconds for output A5 must be performed in record 02, i.e. a start condition for record 02 is not necessary.

**Note**

In factory condition all parameters of the records except F-319 and F-359 are set at 0 in the control. The number of the actual record is entered in parameter F-319, the number of the next record in parameter F-359.

Since in the start condition all parameters are set at 0, a start condition does not exist, and record 02 starts immediately with the execution section.

The following parameters are used:

- F-325 = An activation time of 2 seconds for output A5 is programmed with this parameter.
- F-345 = AND - end condition - query whether output A5 is still active and/or whether the activation time of 2 seconds is still on. Recalling the next record is prevented until output A5 is no longer active.
- F-359 = Enter the record number recalled if the end condition is no longer met, i.e. if output A5 is no longer active.  
The function label feed is completed here. Wait for the next start of the function in record 01 by returning to record 01.

See the following two pages for the exact entries for the programming of the example label feed.

The next chapter describes another example of record programming.

The label feed shown in example 1, which can only be activated manually by a pushbutton, is extended by an automatic sequence.

This is to show how the sequence of a record can influence the sewing process.

The chapter also shows how a record can be automatically activated by the sewing program.

**Note**

Copy the center fold of this manual and use it for easier and safer record programming !

**Form 1, example 1:**

| PROGRAM No.                     | 01           | Program example no. 01 - manual label feed            | 01/1 |
|---------------------------------|--------------|-------------------------------------------------------|------|
| Determination of Inputs/outputs | LC - Display | Function                                              |      |
| Input E1                        | 0000x        | Pushbutton : Start label feed                         |      |
| Input E2                        | 000x0        | Terminal switch: Label in end position                |      |
| Input E3                        | 00x00        |                                                       |      |
| Input E4                        | 0x000        |                                                       |      |
| Input E5                        | x0000        |                                                       |      |
| Output A1                       | 0000x        |                                                       |      |
| Output A2                       | 000x0        |                                                       |      |
| Output A3                       | 00x00        |                                                       |      |
| Output A4                       | 0x000        |                                                       |      |
| Output A5                       | x0000        | Solenoid valve: Activate mechanism for label movement |      |

| Para. | Function                                | Entry           | LC        | Remarks                                     |
|-------|-----------------------------------------|-----------------|-----------|---------------------------------------------|
| F-300 | Address RECORD nos. 1...32              | > 01 <          |           | Record 01                                   |
|       |                                         | 8 7 6 5 4 3 2 1 |           |                                             |
| F-301 | Start condition AND of inputs E5...E1   |                 | 0 0 0 0 1 | Wait until pushbutton label feed is pressed |
| F-302 | Selection high/low active of AND E5..E1 |                 | 0 0 0 0 1 | Active when pushbutton closed               |
| F-303 | Start condition OR of inputs E5...E1    |                 |           |                                             |

|       |                                                                                                                                                                                                                                                                                                               |   |   |   |   |   |   |   |   |                                             |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|---|---------------------------------------------|
| F-309 | Start condition OR for comparative speed F-307                                                                                                                                                                                                                                                                |   |   |   |   |   |   |   |   |                                             |
| F-310 | Start condition AND for sewing process<br>00000001 = Beginning of seam<br>00000010 = Seam end<br>00000100 = Light barrier uncovered<br>00001000 = Light barrier covered<br>00010000 = LED A1 on V722 active<br>00100000 = LED A2 on V722 active<br>01000000 = Motor at standstill<br>10000000 = Motor running | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | Function starts only if motor at standstill |

|       |                              |  |  |   |   |   |   |                                                 |
|-------|------------------------------|--|--|---|---|---|---|-------------------------------------------------|
| F-319 | Next record if FALSE         |  |  |   |   | 0 | 1 | Wait if motor running or pushbutton not pressed |
| F-320 | Switch on A5...A1 statically |  |  | 1 | 0 | 0 | 0 | Start condition met! Output A5 (label feed) On  |
| F-321 | Activation time A1           |  |  |   |   |   |   |                                                 |

|       |                                         |  |  |  |   |   |   |   |   |                                                   |
|-------|-----------------------------------------|--|--|--|---|---|---|---|---|---------------------------------------------------|
| F-341 | End condition AND of inputs E5...E1     |  |  |  | 0 | 0 | 0 | 1 | 0 | Wait till label in end pos. (wait till E2 active) |
| F-342 | Selection high/low active of AND E5..E1 |  |  |  | 0 | 0 | 0 | 1 | 0 | Active if terminal switch is closed               |
| F-343 | End condition OR of inputs E5...E1      |  |  |  |   |   |   |   |   |                                                   |

[illegible]

## Form 2, example 1:

|                                 |              |                                                       |      |
|---------------------------------|--------------|-------------------------------------------------------|------|
| PROGRAM No.                     | 01           | Program example no. 01 - manual label feed            | 01/2 |
| Determination of inputs/outputs | LC - Display | Function                                              |      |
| Input E1                        | 0000x        | Pushbutton : Start label feed                         |      |
| Input E2                        | 000x0        | Terminal switch: Label in end position                |      |
| Input E3                        | 00x00        |                                                       |      |
| Input E4                        | 0x000        |                                                       |      |
| Input E5                        | x0000        |                                                       |      |
| Output A1                       | 0000x        |                                                       |      |
| Output A2                       | 000x0        |                                                       |      |
| Output A3                       | 00x00        |                                                       |      |
| Output A4                       | 0x000        |                                                       |      |
| Output A5                       | x0000        | Solenoid valve: Activate mechanism for label movement |      |

| Para. | Function                                 | Entry           | LC | Remarks   |
|-------|------------------------------------------|-----------------|----|-----------|
| F-300 | Address RECORD nos. 1...32               | > 02 <          |    | Record 02 |
|       |                                          | 8 7 6 5 4 3 2 1 |    |           |
| F-301 | Start condition AND of inputs E5...E1    |                 |    |           |
| F-302 | Selection high/low active of AND E5...E1 |                 |    |           |
| F-303 | Start condition OR of inputs E5...E1     |                 |    |           |

|       |                              |  |  |             |  |  |     |                                  |
|-------|------------------------------|--|--|-------------|--|--|-----|----------------------------------|
| F-319 | Next record if FALSE         |  |  |             |  |  | 0 2 |                                  |
| F-320 | Switch on A5...A1 statically |  |  | 0 0 0 0 0 0 |  |  |     | Switch off signal A5 statically  |
| F-321 | Activation time A1           |  |  |             |  |  |     |                                  |
| F-322 | Activation time A2           |  |  |             |  |  |     |                                  |
| F-323 | Activation time A3           |  |  |             |  |  |     |                                  |
| F-324 | Activation time A4           |  |  |             |  |  |     |                                  |
| F-325 | Activation time A5           |  |  | 2 0 0 0 0   |  |  |     | Activate signal A5 for 2 seconds |
| F-326 | General delay time           |  |  |             |  |  |     |                                  |

|       |                                                                 |  |  |   |   |   |   |   |                                              |
|-------|-----------------------------------------------------------------|--|--|---|---|---|---|---|----------------------------------------------|
| F-344 | Selection high/low active of OR E5...E1                         |  |  |   |   |   |   |   |                                              |
| F-345 | End cond. AND for outputs A5...A1 off                           |  |  | 1 | 0 | 0 | 0 | 0 | Wait until signal time (2s) for A5 is over   |
| F-346 | End cond. OR for outputs A5...A1 off                            |  |  |   |   |   |   |   |                                              |
| F-347 | Comparative speed for end condition                             |  |  |   |   |   |   |   |                                              |
| F-348 | End condition AND for comparative speed F-347                   |  |  |   |   |   |   |   |                                              |
| F-349 | End condition OR for comparative speed F-347                    |  |  |   |   |   |   |   |                                              |
| F-350 | End condition AND if counting F-327 not completed               |  |  |   |   |   |   |   |                                              |
| F-351 | End condition OR if counting F-327 not completed                |  |  |   |   |   |   |   |                                              |
| F-352 | End condition 1 AND for sewing process as described under F-310 |  |  |   |   |   |   |   |                                              |
| F-353 | End condition 1 OR for sewing process as described under F-310  |  |  |   |   |   |   |   |                                              |
| F-354 | End condition 2 AND for sewing process as described under F-312 |  |  |   |   |   |   |   |                                              |
| F-355 | End condition 2 OR for sewing process as described under F-313  |  |  |   |   |   |   |   |                                              |
| F-359 | Next record if TRUE                                             |  |  |   |   |   | 0 | 1 | Condition is met! Return to the start REC 01 |

### 13.6 Program Example 02 == > Automatic Label Feed

Before the record programming example no. 02, the function of pushbutton 6 on the control panel V722 must be explained in greater detail.

The output signal A1 or A2 can be allocated for a seam by pushbutton 6. It is possible to determine by means of parameters F-250 to F-257 for signal A1 and by means of parameter F-260 to F-267 for signal A2 when the signal will be emitted in a seam.

#### Example:

The signal **A1** is to be switched on over a preset time at the end of a counted seam.

- Parameter F-250 = 2 Emission of the signal at the seam end
- Parameter F-252 = 1 Activation of the signal over a time
- Parameter F-254 = 50 Activation of the signal over a time of 50 ms

The signal **A2** is to be activated for the duration of the stitch counting.

- Parameter F-260 = 0 Emission of the signal at the beginning of the seam
- Parameter F-262 = 0 Activation of the signal until seam end

In the following outline the sequence is not yet connected to a programmed record:

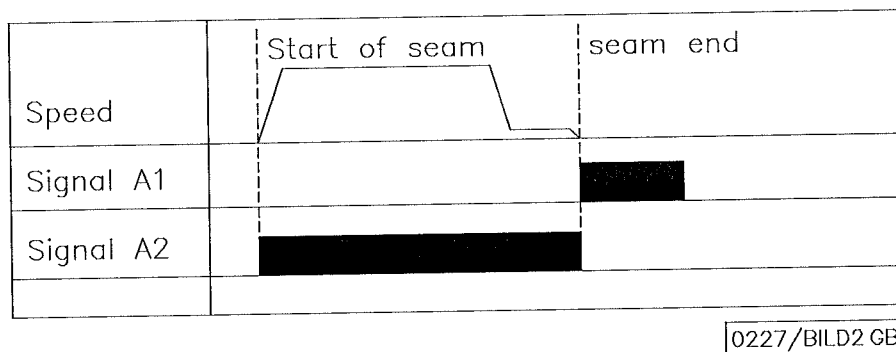


Fig. 2:

If the signal A1 or A2 is activated at the seam end the drive stops after the counting. This also happens if switching from one seam to the next is programmed. The drive stops over the signal time of A1 or A2. Only thereafter the switching from one seam to the next becomes effective.

It is however possible to use the stop point of the signal A1 at the seam end (or signal A2 at the beginning of the seam) as the starting point for the sequence which was programmed as a record in example 01 (label feed).

The sequence would be as follows:

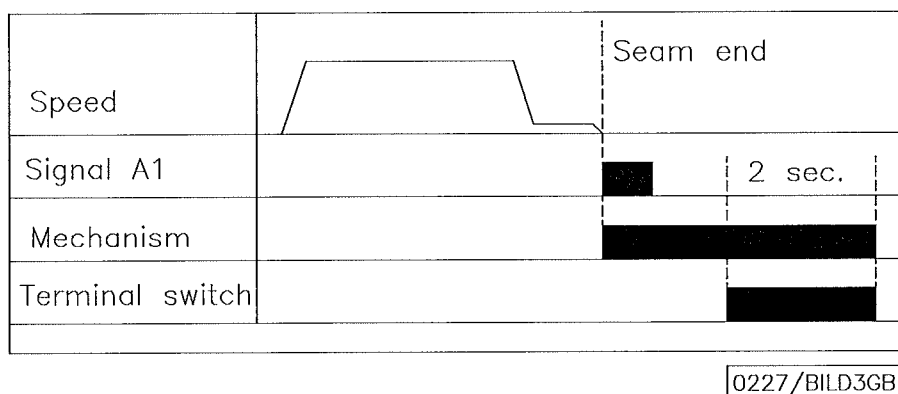


Fig. 3:

In example 1 the label feed is activated manually by a pushbutton. The sequence can also be controlled automatically by the additional query in record 01 whether the top LED of pushbutton 6 on the control panel V722 is switched on. The record 01 senses that the LED on pushbutton 6 is switched on. However, the condition to start the sequence label feed is met only when reaching the seam end and the drive is at standstill.

The record parameter F-310 in record 01 queries whether the top LED on pushbutton 6 on the control panel (signal A1) is switched on.

The following sewing process shall serve as a basis for example 02 - "automatic label feed":

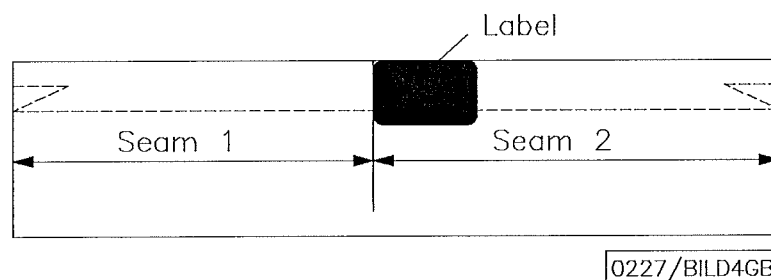


Fig. 4:

Seam 1 = Double start backtack  
 Stitch counting 20 stitches  
 Stop and automatic label feed  
 After completion of the label feed automatic switching to seam 2

Seam 2 = Stitch counting 25 stitches  
 Double end backtack  
 Thread trimming

The sewing process of the 2 seam sections is programmed by means of the control panel V722. For seam 1 the top LED on V722 must be switched on by pushbutton 6. This determines the start function for automatic label feed. The drive stops in seam 1 after the stitch counting. Then the record sequence starts.

The switching from on seam to the next must be activated by pushbutton 3 on V722 in order that seam 2 will be automatically executed after the first seam.

The sewing process in the record must be stopped by parameter F-329 in order that the switching from one seam to the next will not become effective before the completion of the label feed.

**Note**

The signals A1 and A2 controlled by the normal sewing process (by switching on pushbutton 6 on control panel V722) can also be allocated for record programming. By switching parameter F-275 from OFF to ON the outputs A1 and A2 are controlled by record programming.

The signals A1 and A2, however, continue to be allocated for the sewing process as described above, i.e. the starting point for signal A1 or A2 in a seam remains the same, only outputs A1 and A2 are no longer set.

In the attached record form, correct programming for the automatic label feed is outlined.

For the integration of the automatic sequence into the manual sequence, two additional records are needed for the following reason:

**The start condition must be divided into two parts.**

Part 1 == > Query whether pushbutton "manual label feed" **OR** "automatic label feed" has been selected.

Part 2 == > Query whether the drive is at standstill.

The label feed is performed if the start condition of part 1 **AND** part 2 is met!

**Note**

If a start condition consists of an OR and/or AND connection both conditions must be queried in separate records!

**Stop of the sewing process at the end of seam 1 until the label feed is completed**

The stop of the sewing process programmed in record 02 and 03 must be deactivated after the completion of the function. This is done by switching to record 04 where the corresponding parameter F-329 is programmed to 00000000.

**Explanation of the programming on the attached forms !**

- Record 01:     - Wait until pushbutton for manual label feed is pressed.  
                   If pushbutton is pressed continue in record 03.  
                   If pushbutton is not pressed continue in record 02.
- Record 02:     - If end of the first seam is reached and LED A1 on Variocontrol  
                   V722 is switched on continue in record 03.  
                   - If the label feed has not started manually or automatically return to record 01.
- Record 03:     - If the drive is at standstill output A5 (label feed) On.  
                   - Wait until label is in end position (terminal switch E2 active), then to record 05.
- Record 04:     - Switch off output A5 statically.  
                   - Set activation time for output A5.  
                   - Wait until activation time for output A5 is over, then to record 05.
- Record 05:     - Set activation time for output A5 at 0.  
                   - Release sewing process at the seam end.  
                   - Eliminate AND condition for output A5.  
                   - Sequence is completed. Return to the start to record 01.

**Note**

Copy the center fold and use it for easier and safer record programming !

|                                 |    |              |                                                       |      |
|---------------------------------|----|--------------|-------------------------------------------------------|------|
| PROGRAM No.                     |    | 02           | Program example no. 02 - automatic/manual label feed  | 02/1 |
| Determination of inputs/outputs |    | LC - Display | Function                                              |      |
| Input                           | E1 | 0000x        | Pushbutton : Start label feed                         |      |
| Input                           | E2 | 000x0        | Terminal switch: Label in end position                |      |
| Input                           | E3 | 00x00        |                                                       |      |
| Input                           | E4 | 0x000        |                                                       |      |
| Input                           | E5 | x0000        |                                                       |      |
| Output                          | A1 | 0000x        |                                                       |      |
| Output                          | A2 | 000x0        |                                                       |      |
| Output                          | A3 | 00x00        |                                                       |      |
| Output                          | A4 | 0x000        |                                                       |      |
| Output                          | A5 | x0000        | Solenoid valve: Activate mechanism for label movement |      |

| Para. | Function                                 | Entry           | LC        | Remarks                                     |
|-------|------------------------------------------|-----------------|-----------|---------------------------------------------|
| F-300 | Address RECORD nos. 1...32               | > 01 <          |           | Record 01 Query manual start                |
|       |                                          | 8 7 6 5 4 3 2 1 |           |                                             |
| F-301 | Start condition AND of inputs E5...E1    |                 |           |                                             |
| F-302 | Selection high/low active of AND E5...E1 |                 |           |                                             |
| F-303 | Start condition OR of inputs E5...E1     |                 | 0 0 0 0 1 | Wait until pushbutton label feed is pressed |
| F-304 | Selection high/low active of OR E5...E1  |                 | 0 0 0 0 1 | Active when pushbutton closed               |
| F-305 | Start cond. AND for outputs A5...A1 off  |                 |           |                                             |

[illegible]

|       |                                                                  |  |  |  |  |     |  |                                  |           |
|-------|------------------------------------------------------------------|--|--|--|--|-----|--|----------------------------------|-----------|
| F-341 | End condition AND of inputs E5...E1                              |  |  |  |  |     |  |                                  |           |
| F-342 | Selection high/low active of AND E5..E1                          |  |  |  |  |     |  |                                  |           |
| F-343 | End condition OR of inputs E5...E1                               |  |  |  |  |     |  |                                  |           |
| F-344 | Selection high/low active of OR E5...E1                          |  |  |  |  |     |  |                                  |           |
| F-345 | End cond. AND for outputs A5...A1 off                            |  |  |  |  |     |  |                                  |           |
| F-346 | End cond. OR for outputs A5...A1 off                             |  |  |  |  |     |  |                                  |           |
| F-347 | Comparative speed for end condition                              |  |  |  |  |     |  |                                  |           |
| F-348 | End condition AND for comparative<br>speed F-347                 |  |  |  |  |     |  |                                  |           |
| F-349 | End condition OR for comparative<br>speed F-347                  |  |  |  |  |     |  |                                  |           |
| F-350 | End condition AND if counting F-327<br>not completed             |  |  |  |  |     |  |                                  |           |
| F-351 | End condition OR if counting F-327<br>not completed              |  |  |  |  |     |  |                                  |           |
| F-352 | End condition AND for sewing process<br>as described under F-310 |  |  |  |  |     |  |                                  |           |
| F-353 | End condition OR for sewing process<br>as described under F-310  |  |  |  |  |     |  |                                  |           |
| F-354 | End condition AND for sewing process<br>as described under F-312 |  |  |  |  |     |  |                                  |           |
| F-355 | End condition OR for sewing process<br>as described under F-312  |  |  |  |  |     |  |                                  |           |
| F-359 | Next record if TRUE                                              |  |  |  |  | 0 3 |  | Manual OR automatic sequence ==> | RECORD 03 |

**Form 2, example 2:**

|                                 |              |                                                       |      |
|---------------------------------|--------------|-------------------------------------------------------|------|
| PROGRAM No.                     | 02           | Program example no. 02 - automatic/manual label feed  | 02/2 |
| Determination of inputs/outputs | LC - Display | Function                                              |      |
| Input E1                        | 0000x        | Pushbutton : Start label feed                         |      |
| Input E2                        | 000x0        | Terminal switch: Label in end position                |      |
| Input E3                        | 00x00        |                                                       |      |
| Input E4                        | 0x000        |                                                       |      |
| Input E5                        | x0000        |                                                       |      |
| Output A1                       | 0000x        |                                                       |      |
| Output A2                       | 000x0        |                                                       |      |
| Output A3                       | 00x00        |                                                       |      |
| Output A4                       | 0x000        |                                                       |      |
| Output A5                       | x0000        | Solenoid valve: Activate mechanism for label movement |      |

| Para. | Function                                | Entry           | LC | Remarks                         |
|-------|-----------------------------------------|-----------------|----|---------------------------------|
| F-300 | Address RECORD nos. 1...32              | > 02 <          |    | Record 02 Query automatic start |
|       |                                         | 8 7 6 5 4 3 2 1 |    |                                 |
| F-301 | Start condition AND of inputs E5...E1   |                 |    |                                 |
| F-302 | Selection high/low active of AND E5..E1 |                 |    |                                 |
| F-303 | Start condition OR of inputs E5...E1    |                 |    |                                 |

|       |                                                                                                                                                                                                                                                                                                               |   |   |   |   |   |   |   |   |                                        |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|---|----------------------------------------|
| F-309 | Start condition OR for comparative speed F-307                                                                                                                                                                                                                                                                |   |   |   |   |   |   |   |   |                                        |
| F-310 | Start condition AND for sewing process<br>00000001 = Beginning of seam<br>00000010 = Seam end<br>00000100 = Light barrier uncovered<br>00001000 = Light barrier covered<br>00010000 = LED A1 on V722 active<br>00100000 = LED A2 on V722 active<br>01000000 = Motor at standstill<br>10000000 = Motor running | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | Seam end AND LED on V722 switched on ? |

|       |                                                                  |  |  |  |   |   |                                         |  |
|-------|------------------------------------------------------------------|--|--|--|---|---|-----------------------------------------|--|
| F-313 | Start condition 2 OR for sewing process as described under F-312 |  |  |  |   |   |                                         |  |
| F-319 | Next record if FALSE                                             |  |  |  | 0 | 1 | No manual or automatic start ==> REC 01 |  |
| F-320 | Switch on A5...A1 statically                                     |  |  |  |   |   |                                         |  |
| F-321 | Activation time A1                                               |  |  |  |   |   |                                         |  |

[illegible]

## Form 3, example 2:

| PROGRAM No.                     | 02           | Program example no. 02 - automatic/manual label feed  | 02/3 |
|---------------------------------|--------------|-------------------------------------------------------|------|
| Determination of inputs/outputs | LC - Display | Function                                              |      |
| Input E1                        | 0000x        | Pushbutton : Start label feed                         |      |
| Input E2                        | 000x0        | Terminal switch: Label in end position                |      |
| Input E3                        | 00x00        |                                                       |      |
| Input E4                        | 0x000        |                                                       |      |
| Input E5                        | x0000        |                                                       |      |
| Output A1                       | 0000x        |                                                       |      |
| Output A2                       | 000x0        |                                                       |      |
| Output A3                       | 00x00        |                                                       |      |
| Output A4                       | 0x000        |                                                       |      |
| Output A5                       | x0000        | Solenoid valve: Activate mechanism for label movement |      |

| Para. | Function                              | Entry           | LC | Remarks                  |
|-------|---------------------------------------|-----------------|----|--------------------------|
| F-300 | Address RECORD nos. 1...32            | > 03 <          |    | Record 03 Start sequence |
|       |                                       | 8 7 6 5 4 3 2 1 |    |                          |
| F-301 | Start condition AND of inputs E5...E1 |                 |    |                          |

|       |                                                                                                                                                                                                                                                                                                               |                 |  |                                               |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--|-----------------------------------------------|
| F-310 | Start condition AND for sewing process<br>00000001 = Beginning of seam<br>00000010 = Seam end<br>00000100 = Light barrier uncovered<br>00001000 = Light barrier covered<br>00010000 = LED A1 on V722 active<br>00100000 = LED A2 on V722 active<br>01000000 = Motor at standstill<br>10000000 = Motor running | 0 1 0 0 0 0 0 0 |  | Function starts only if motor at standstill ! |
|       |                                                                                                                                                                                                                                                                                                               | x               |  |                                               |

|       |                                                                  |  |  |  |   |   |   |                                             |   |                                                   |
|-------|------------------------------------------------------------------|--|--|--|---|---|---|---------------------------------------------|---|---------------------------------------------------|
| F-313 | Start condition 2 OR for sewing process as described under F-312 |  |  |  |   |   |   |                                             |   |                                                   |
| F-319 | Next record if FALSE                                             |  |  |  |   | 0 | 1 | Drive is still running ==> return to REC 01 |   |                                                   |
| F-320 | Switch on A5...A1 statically                                     |  |  |  | 1 | 0 | 0 | 0                                           | 0 | Start condition is met! Output A5 (label feed) On |
| F-321 | Activation time A1                                               |  |  |  |   |   |   |                                             |   |                                                   |

|       |                                                                                                                                                                                                                                                                                                                                                |   |   |   |   |   |   |   |   |                                                              |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|---|--------------------------------------------------------------|
| F-328 | Counting with POS.1 = 1 or GEN. = 2                                                                                                                                                                                                                                                                                                            |   |   |   |   |   |   |   |   |                                                              |
| F-329 | Alteration of the sewing process<br>00000001= Stop with start with pedal 0<br>00000010= Stop with start w/o pedal 0<br>00000100= Stop in position 1<br>00001000= Stop in position 2<br>00010000= Activate presser foot lift<br>00100000= Run at positioning speed<br>01000000= Limit run to speed n10<br>10000000= Stop sewing at the seam end | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Stop sewing process at the seam end for automatic label feed |
|       |                                                                                                                                                                                                                                                                                                                                                | x |   |   |   |   |   |   |   |                                                              |
| F-341 | End condition AND of inputs E5...E1                                                                                                                                                                                                                                                                                                            |   |   |   | 0 | 0 | 0 | 1 | 0 | Wait until label is in end position (E2 active)              |
| F-342 | Selection high/low active of AND E5..E1                                                                                                                                                                                                                                                                                                        |   |   |   | 0 | 0 | 0 | 1 | 0 | Active if terminal switch closed                             |

|       |                     |  |  |  |  |  |  |     |  |                                                   |
|-------|---------------------|--|--|--|--|--|--|-----|--|---------------------------------------------------|
| F-359 | Next record if TRUE |  |  |  |  |  |  | 0 4 |  | Condition (terminal switch active) met ==> REC 04 |
|-------|---------------------|--|--|--|--|--|--|-----|--|---------------------------------------------------|

**Form 4, example 2:**

|                                 |              |                                                       |      |
|---------------------------------|--------------|-------------------------------------------------------|------|
| PROGRAM No.                     | 02           | Program example no. 02 - automatic/manual label feed  | 02/4 |
| Determination of inputs/outputs | LC - Display | Function                                              |      |
| Input E1                        | 0000x        | Pushbutton : Start label feed                         |      |
| Input E2                        | 000x0        | Terminal switch: Label in end position                |      |
| Input E3                        | 00x00        |                                                       |      |
| Input E4                        | 0x000        |                                                       |      |
| Input E5                        | x0000        |                                                       |      |
| Output A1                       | 0000x        |                                                       |      |
| Output A2                       | 000x0        |                                                       |      |
| Output A3                       | 00x00        |                                                       |      |
| Output A4                       | 0x000        |                                                       |      |
| Output A5                       | x0000        | Solenoid valve: Activate mechanism for label movement |      |

| Para. | Function                              | Entry | LC            | Remarks   |
|-------|---------------------------------------|-------|---------------|-----------|
| F-300 | Address RECORD nos. 1...32            | >     | 04 <          | Record 04 |
|       |                                       | 8     | 7 6 5 4 3 2 1 |           |
| F-301 | Start condition AND of inputs E5...E1 |       |               |           |

|       |                                                                                                                                                                                                                                                                                                                                                |   |   |   |   |   |   |   |                                     |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|-------------------------------------|
| F-313 | Start condition 2 OR for sewing process as described under F-312                                                                                                                                                                                                                                                                               |   |   |   |   |   |   |   |                                     |
| F-319 | Next record if FALSE                                                                                                                                                                                                                                                                                                                           |   |   |   |   | 0 | 4 |   |                                     |
| F-320 | Switch on A5...A1 statically                                                                                                                                                                                                                                                                                                                   |   |   | 0 | 0 | 0 | 0 | 0 | Switch off signal A5 statically     |
| F-321 | Activation time A1                                                                                                                                                                                                                                                                                                                             |   |   |   |   |   |   |   |                                     |
| F-322 | Activation time A2                                                                                                                                                                                                                                                                                                                             |   |   |   |   |   |   |   |                                     |
| F-323 | Activation time A3                                                                                                                                                                                                                                                                                                                             |   |   |   |   |   |   |   |                                     |
| F-324 | Activation time A4                                                                                                                                                                                                                                                                                                                             |   |   |   |   |   |   |   |                                     |
| F-325 | Activation time A5                                                                                                                                                                                                                                                                                                                             |   |   | 2 | 0 | 0 | 0 | 0 | Activate signal A5 for 2 seconds !  |
| F-326 | General delay time                                                                                                                                                                                                                                                                                                                             |   |   |   |   |   |   |   |                                     |
| F-327 | General counting                                                                                                                                                                                                                                                                                                                               |   |   |   |   |   |   |   |                                     |
| F-328 | Counting with POS.1 = 1 or GEN. = 2                                                                                                                                                                                                                                                                                                            |   |   |   |   |   |   |   |                                     |
| F-329 | Alteration of the sewing process<br>00000001= Stop with start with pedal 0<br>00000010= Stop with start w/o pedal 0<br>00000100= Stop in position 1<br>00001000= Stop in position 2<br>00010000= Activate presser foot lift<br>00100000= Run at positioning speed<br>01000000= Limit run to speed n10<br>10000000= Stop sewing at the seam end | 1 | 0 | 0 | 0 | 0 | 0 | 0 | Stop sewing process at the seam end |
|       | x                                                                                                                                                                                                                                                                                                                                              |   |   |   |   |   |   |   |                                     |

|       |                                       |  |  |   |   |   |   |   |                                            |
|-------|---------------------------------------|--|--|---|---|---|---|---|--------------------------------------------|
| F-345 | End cond. AND for outputs A5...A1 off |  |  | 1 | 0 | 0 | 0 | 0 | Wait until signal time (2 sec.) A5 is over |
| F-346 | End cond. OR for outputs A5...A1 off  |  |  |   |   |   |   |   |                                            |
| F-347 | Comparative speed for end condition   |  |  |   |   |   |   |   |                                            |

|       |                                                                |  |  |  |  |     |                                           |  |  |
|-------|----------------------------------------------------------------|--|--|--|--|-----|-------------------------------------------|--|--|
| F-355 | End condition 2 OR for sewing process as described under F-312 |  |  |  |  |     |                                           |  |  |
| F-359 | Next record if TRUE                                            |  |  |  |  | 0 5 | Condition is met ==> continue with REC 05 |  |  |

|                                 |              |                                                       |      |
|---------------------------------|--------------|-------------------------------------------------------|------|
| PROGRAM No.                     | 02           | Program example no. 02 - automatic/manual label feed  | 02/5 |
| Determination of inputs/outputs | LC - Display | Function                                              |      |
| Input E1                        | 0000x        | Pushbutton : Start label feed                         |      |
| Input E2                        | 000x0        | Terminal switch: Label in end position                |      |
| Input E3                        | 00x00        |                                                       |      |
| Input E4                        | 0x000        |                                                       |      |
| Input E5                        | x0000        |                                                       |      |
| Output A1                       | 0000x        |                                                       |      |
| Output A2                       | 000x0        |                                                       |      |
| Output A3                       | 00x00        |                                                       |      |
| Output A4                       | 0x000        |                                                       |      |
| Output A5                       | x0000        | Solenoid valve: Activate mechanism for label movement |      |

| Para. | Function                              | Entry LC |   |   |   |   |   |   | Remarks   |
|-------|---------------------------------------|----------|---|---|---|---|---|---|-----------|
| F-300 | Address RECORD nos. 1...32            | > 05 <   |   |   |   |   |   |   | Record 05 |
|       |                                       | 8        | 7 | 6 | 5 | 4 | 3 | 2 | 1         |
| F-301 | Start condition AND of inputs E5...E1 |          |   |   |   |   |   |   |           |

|       |                                                                  |  |  |   |   |   |   |   |                                                  |
|-------|------------------------------------------------------------------|--|--|---|---|---|---|---|--------------------------------------------------|
| F-313 | Start condition 2 OR for sewing process as described under F-312 |  |  |   |   |   |   |   |                                                  |
| F-319 | Next record if FALSE                                             |  |  |   |   | 0 | 5 |   |                                                  |
| F-320 | Switch on A5...A1 statically                                     |  |  | 0 | 0 | 0 | 0 | 0 | End condition is met! Output A5 (label feed) Off |
| F-321 | Activation time A1                                               |  |  |   |   |   |   |   |                                                  |

|       |                                                                                                                                                                                                                                                                                                                                                                                    |   |   |   |   |   |   |   |   |                                               |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|---|-----------------------------------------------|
| F-328 | Counting with POS.1 = 1 or GEN. = 2                                                                                                                                                                                                                                                                                                                                                |   |   |   |   |   |   |   |   |                                               |
| F-329 | Alteration of the sewing process<br>00000001= Stop with start with pedal 0<br>00000010= Stop with start w/o pedal 0<br>00000100= Stop in position 1<br>00001000= Stop in position 2<br>00010000= Activate presser foot lift<br>00100000= Run at positioning speed<br>01000000= Limit run to speed n10<br>10000000= Stop sewing at the seam end<br>01100000= Run at fixed speed n10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Release of the sewing process at the seam end |

|       |                                         |  |  |   |   |   |   |   |                             |
|-------|-----------------------------------------|--|--|---|---|---|---|---|-----------------------------|
| F-344 | Selection high/low active of OR E5...E1 |  |  |   |   |   |   |   |                             |
| F-345 | End cond. AND for outputs A5...A1 off   |  |  | 0 | 0 | 0 | 0 | 0 | Switch off stop condition ! |
| F-346 | End cond. OR for outputs A5...A1 off    |  |  |   |   |   |   |   |                             |

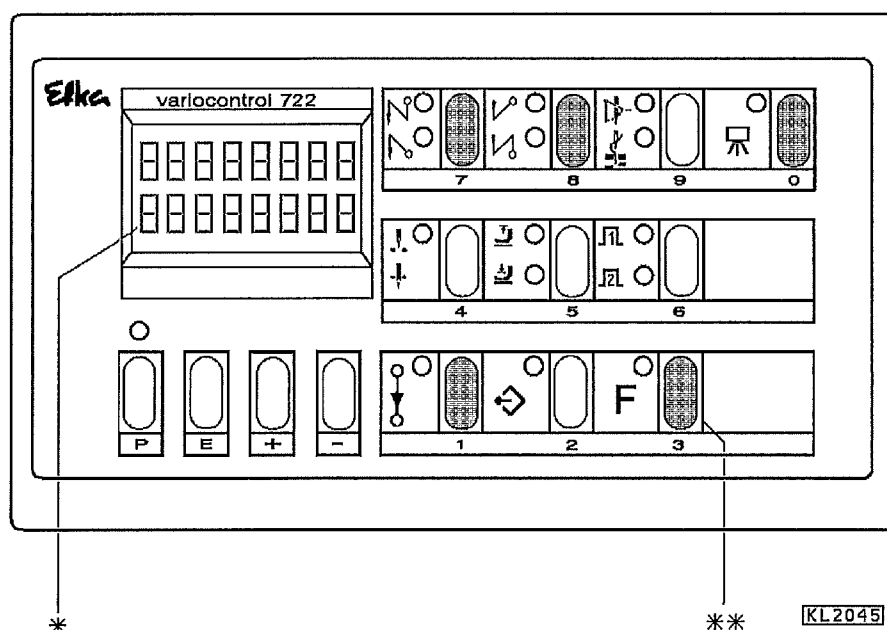
|       |                                                                |  |  |  |  |   |   |                                                 |  |
|-------|----------------------------------------------------------------|--|--|--|--|---|---|-------------------------------------------------|--|
| F-355 | End condition 2 OR for sewing process as described under F-312 |  |  |  |  |   |   |                                                 |  |
| F-359 | Next record if TRUE                                            |  |  |  |  | 0 | 1 | Sequence completed ! Return to the start REC 01 |  |

**For your notes:**

**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 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 = | Stitch counting ON / OFF                                                                                |
| Pushbutton 2 = | Teach-in / execution of 40 possible seam sections                                                       |
| Pushbutton 3 = | Function key - can be programmed                                                                        |
|                | When programming seam sections in the Teach-in - switching from one seam to the next                    |
| 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 / after trimming ON / OFF                                       |
| Pushbutton 6 = | SIGNAL 1 / SIGNAL 2 ON / OFF                                                                            |
| Pushbutton 7 = | Start backtack SINGLE / DOUBLE / OFF                                                                    |
| Pushbutton 8 = | End backtack SINGLE / DOUBLE / OFF                                                                      |
| Pushbutton 9 = | Mode 1...6 THREAD TRIMMER (M1+M2) / THREAD WIPER (M3) /<br>THREAD TRIMMER + THREAD WIPER (M1+M2+M3)/OFF |
|                | Mode 7 THREAD TRIMMER (M1+M2) / THREAD WIPER (M2+M3) /<br>THREAD TRIMMER + THREAD WIPER (M1+M2+M3)/OFF  |
|                | Mode 8 THREAD TRIMMER (M1) / THREAD WIPER (M2+M3) /<br>THREAD TRIMMER + THREAD WIPER (M1+M2+M3)/OFF     |
| Pushbutton 0 = | Light barrier function ON / OFF; in the teach-in OFF                                                    |
|                | Light barrier function COVERED/UNCOVERED / UNCOVERED/COVERED / OFF;<br>in the teach-in ON               |

### Special Setting of the Pushbuttons for HIT

|                |                                                           |
|----------------|-----------------------------------------------------------|
| Pushbutton 1 = | Number of stitches of the seam with stitch counting       |
| Pushbutton 3 = | Number of stitches or switch on/off programmed function   |
| Pushbutton 7 = | Number of stitches of the selected start backtack section |
| Pushbutton 8 = | Number of stitches of the selected end backtack section   |
| Pushbutton 0 = | Number of light barrier compensating stitches             |



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