Efka vario dc

CONTROL

DA82GM3303

with control panel V820

INSTRUCTION MANUAL

No. 402254   English

Contents

Page

Parameter List - see separate brochure

1. Important Safety Instructions

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

- Read all instructions thoroughly before using this drive.

- Drive, its accessories and accompanying devices should be mounted and put into operation by qualified personnel in accordance with the guidelines provided in the instruction manual.

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

- Use this drive only for its intended use as described in the instruction manual.

- Use only attachments recommended by the manufacturer or as contained in the instruction manual.

- Do not operate without corresponding protective devices.

- Never operate this drive if one or more parts (e.g. cables, plugs) are damaged, if it is not working properly, if any damages can be identified or are to be suspected (e.g. after it has been dropped). Only qualified personnel are authorized to make adjustments, eliminate faults and complete repair work.

- Never operate the drive with the air openings blocked. Keep ventilation openings of the drive free from the accumulation of lint, dust and loose cloth.

- Never drop or insert any object into any opening.

- Do not use drive outdoors.

- Do not operate where aerosol (spray) products are being used or where oxygen is being administered.

- To disconnect, turn off main switch, then remove plug from outlet.

- Do not unplug by pulling on cord. To unplug, grasp the plug, not the cord.

- Keep fingers away from all moving machine parts. Special care is required e.g. around the sewing machine needle and the V-belt.

- Before mounting and adjusting accompanying devices, i.e. postion transmitter, reversing device, light barrier, etc., disconnect drive from mains (turn off main switch, remove mains plug from outlet [DIN VDE 0113 part 301; EN 60204-3-1; IEC 204-3-1]).

- Always switch off (0) machine and remove plug from outlet, when removing covers, mounting accompanying devices, position transmitter especially, light barrier, etc., or any other devices mentioned in the instruction manual.

- Only qualified personnel are authorized to work on the electrical components.

- Work on high voltage circuit areas is forbidden, except as stated in the respective regulations, e.g. DIN VDE 0105 part 1.

- Only specially trained personnel are authorized to complete repair work.

- Cables to be wired must be protected against expectable strain and fastened adequately.

- Cables near moving machine parts (e.g. V-belts) must be wired at a minimum distance of 25 mm (see DIN VDE 0113 part 301; EN 60204-3-1; IEC 204-3-1).

- For safety it is preferred to wire the cables separately from each other.

- Before connecting the mains line make sure that the mains voltage corresponds to the specifications on the motor rating plate and on the nameplate of the power pack.

- Connect this drive to a properly grounded outlet only. See Grounding Instructions.

- Electric accompanying devices and accessories must only be connected to safety low voltage.

- EFKA DC drives are protected according to overvoltage class 2 (DIN VDE 0160 § 5.3.1).

- Observe all safety guidelines before undertaking conversions or modifications.

- For repair and maintenance use only original replacement parts.

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

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

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

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

Save these instructions for future reference.

2. Range of Applications

The drive is suitable for Dürkopp Adler lockstitch machine classes N291, 467 and 767 in conjunction with a master PC and the corresponding Dürkopp Adler program for documented sewing.

2.1 Use in Accordance with Regulations

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

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

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

The drive can only be operated:

· on thread processing machines
· in dry areas

3. Complete Drive Unit Consisting of

1	Direct current motor	DC....
1	Electronic control	vario dc DA82GM3303
	- Power pack	N153 (optional N155)
	- Actuator	EB301 (optional EB302, softer springs)
1	Control panel Variocontrol	V820
1	9-pole/25-pole adapter	No. 0504539
1	Position transmitter	P6-1
1	Mains switch	NS106 (optional NS106d, NS107, NS107s)
1	Set of standard accessories	B131
	consisting of:	belt guard, complete
		set of hardware
		motor mounting foot
		bracket 1 and 2, short
		potential equalization cord
		documentation

⚠️   **Attention!**
This control box can only be operated in conjunction with a master PC and the corresponding Dürkopp Adler programm for documented sewing!

Note:
■   Select the pulley such that the motor runs at approx. 4000 RPM with max. stitch number.
■   For this DA82GM control, the V820 control panel is provided. The V720...V740 control panels do not work on this control.

3.1 Special Accessories

Pitman rod for actuation	- available versions on inquiry
Reflection light barrier module LSM001A	- part no. 6100028
Solenoid type EM1..(for e.g. sewing foot lifting, backtacking, etc.)	- available versions see specification "solenoids"
Extension cable for external actuator, approx. 750 mm long, complete with plug and socket connector	- part no. 1111845
Extension cable for external actuator, approx. 1500 mm long, complete with plug and socket connector	- part no. 1111787
5-pin plug with locking screw for the connection of another external actuator	- part no. 0501278
External actuator type EB301 with approx. 250 mm connecting cable and 5-pin plug with locking screw	- part no. 41.0011
External actuator type EB302 (softer spring) approx. 250 mm connecting cable and 5-pin plug with locking screw	- part no. 41.0012
Foot control type FB301 with one pedal for standing operation with approx. 1400 mm connecting cable and plug	- part no. 4170013
Foot control type FB302 with three pedals for standing operation with approx. 1400 mm connecting cable and plug	- part no. 4170018
Extension cable for position transmitter P6-.., approx. 1100 mm long, complete with plug and socket connector	- part no. 1100409
Extension cable for commutation transmitter, approx. 315 mm long, complete with plug and socket connector	- part no. 1111229
Extension cable for commutation transmitter, approx. 1100 mm long, complete with plug and socket connector	- part no. 1111584
Extension cable for motor connection, approx. 400 mm long	- part no. 1111858
Extension cable for motor connection, approx. 1500 mm long	- part no. 1111857
Knee switch type KN3 (pushbutton) with cord of approx. 950 mm length without plug	- part no. 58.0013
Sewing light transformer	- please indicate line voltage and sewing light voltage (6.3V or 12V)
8-pin plug with locking screw (Hirschmann MAS 8100S)	- part no. 0502865
8-pin plug with locking screw (Hirschmann MAS 8100SN)	- part no. 0501279
15-pole SubminD connector	- part no. 0503700
Semimonocoque casing for 15-pole SubminD	- part no. 0101534
37-pole SubminD connector	- part no. 0504280
Semimonocoque casing for 37-pole SubminD	- part no. 0101533

Note:

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

4. Operating the Control

4.1 Access to Programming on Command Input

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

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

```
┌─────────┐        ┌──────────────┐            ┌────────────────────┐
│ Call-up │──>──>──│ Code number  │──────>──────│ Supplier level     │
└─────────┘   │    │  supplier    │             │ 200 series of      │
              │    └──────────────┘             │ parameter settings │
              │                                 └────────────────────┘
              │                                          │
              │    ┌──────────────┐            ┌────────────────────┐
              ├─>──│ Code number  │─────>───────│ Technician level   │
              │    │  technician  │             │ 100 series of      │
              │    └──────────────┘             │ parameter settings │
              │                                 └────────────────────┘
              │                                          │
              │                                 ┌────────────────────┐
              └────────────>────────────────>───│ Operator level     │
                                                └────────────────────┘
```
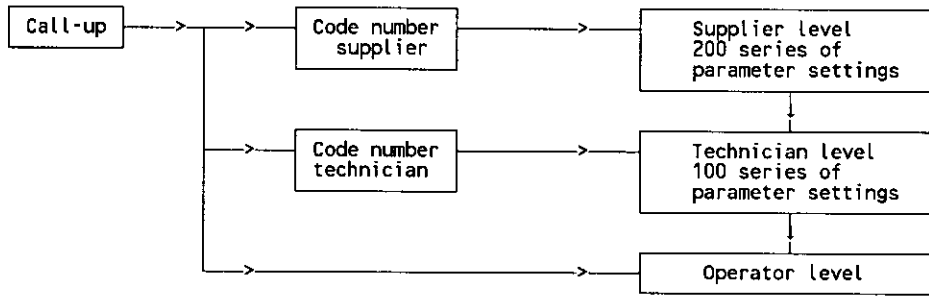
4.2 Direct Operation

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

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

4.3 Operating the Control Panel V820

4.3.1 Code Number Input on the Control Panel V820

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

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

■   TURN POWER OFF

■ `P` + TURN POWER ON   ==>   `C-0000`

■ `1` `9` `0` `7`   Input   ==>   `C-1907`
                CODE number !

■ `E`   If CODE number is wrong   ==>   `C-0000   InFo F1`
      repeat input !

■ `E`   If CODE number is correct
      the first PARAMETER number at the   ==>   `F-100`
      selected level is displayed !

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

Example: If CODE number has not been input !

-           TURN POWER ON!   ==> | 4000   XX82XX |

- [P]   Display shows no reading!   ==> | |

- [E]   First parameter at the
operator level is displayed;   ==> | Arv   003 |
PARAMETER number is not displayed

- [+] [-]   Change parameter value!   ==> | Arv   XXX |

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

   or

- [P]   Exit programming   ==> | 4000   XX82XX |

-

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

Example: If the technician CODE number has been selected !

-           After CODE number input the first   ==> | F-100 |
PARAMETER number is displayed

- [E]   The most significant digit   ==> | F-100 |
of the parameter number blinks

- [1] [1] [0]   Input desired PARAMETER   ==> | F-110 |
number!

- [E]   If parameter number is wrong   ==> | F-XXX   InFo F1 |
repeat input!

- [E]   If PARAMETER number is correct   ==> | F-110   n1   180 |

- [+] [-]   Change parameter value!   ==> | F-110   n1   XXX |

- [E]   Parameter value is entered;
display advances to the next   ==> | F-111   n2   4000 |
parameter

   or

- [P]   Parameter value is entered;
a new PARAMETER number can be   ==> | F-XXX |
called up

   or

- [P] [P]   Press pushbutton P twice!   ==> | 4000   XX82XX |
Exit programming

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

4.4 Program Identification

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

Display example parameter 179 on the control panel V820:

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

Select parameter 179 ! The display shows:

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

4.5 Maximum Speed Limitation by Direct Input (DED)

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

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

4.5.1 Setting on Control Panel V820

Actual value on the display in the direct mode

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

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

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

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Function key F

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

1. SSt   Softstart ON/OFF
2. SrS   Ornamental backtack ON/OFF
3. hPr   High lift for walking foot operational mode stored = ON/ operational mode not stored = OFF
4. Snh   Needle cooling ON/OFF
5. Frd   Reversion ON/OFF

The F-key setting can be changed as follows:

-          `Display `<u>`after power on`</u>`!`   `==>`   `4000      XX82XX`

- `P`   `Press button P !`   `==>`

- `E`   `Press button E !`   `==>`   `Arv   002`

- `E`   `Press button E several times until`
          `the abbreviation -F- appears`   `==>`   `-F-     2`
          `(ornamental backtack on/off)`

- `-`   `Press button - !`   `==>`   `-F-     1`
          `(softstart on/off)`

- `P`   `Press button P !`   `==>`   `4000      XX82XX`

-           `»The setting is completed«`

The number of softstart stitches can be changed as follows:

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

- `9`   `Press button 9 briefly!`
          `The corresponding arrow above the`   `==>`   `SSc   001`
          `pushbutton lights up`
          `(softstart function is on)`

- `+`   `Press button + !`   `==>`   `SSc   003`
          `Increase number of stitches!`

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

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

- `9`   `Press button 9 for at least 1 sec.!`
          `The corresponding arrow above the`   `==>`   `SSc   001`
          `pushbutton goes off momentarily`
          `(softstart function is on)`

- `+`   `Press button + !`   `==>`   `SSc   003`
          `Increase number of stitches!`

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

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

5. Starting Service

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

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

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

5.1 Direction of Rotation of the Motor

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

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

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

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

5.2 Selection of the Machine Series

Functions		Parameter
Display machine series	(SEL)	280

The various machine classes are specified by resistors. The following resistance values (tolerance ± 1%) are provided:
100Ω   =   N291
1000Ω   =   467, 767

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

5.2.1 Emergency Run Function when Machine Select Is Invalid

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

Display:

Control panel: = = >   **V820**

Emergency run function due to invalid
machine select

```
┌─────────────────────────┐
│        InFo A5          │
└─────────────────────────┘
```

Available emergency run functions

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

5.3 Positions

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

5.3.1 Setting the Reference Position

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

The reference position must be set:

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

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

```
┌──────────────────────────────────────────────────────────────────────────────────┐
│                                     Note                                           │
│ If another needle position (other than reference position) is set the values of the│
│ signal and stop positions (pos1 and pos2) preset by the manufacturer are no longer │
│ valid and must be reset.                                                           │
└──────────────────────────────────────────────────────────────────────────────────┘
```

5.3.2 Setting the Reference Position on Control Panel V820

- Select 170 !

- [E]   Press pushbutton **E** !   ==> | F-170   Sr1 |

- [>>]   Press pushbutton >>   ==> | F-170   PoS 0 [] |
            (pushbutton B)

- Turn handwheel until desired reference position is reached
   Note: Turn at least until marker ([]) has disappeared

■ | E | Press pushbutton **E** !   ==> | F-171 |
                Reference position is entered

■ If the reference position has not been stored, ==> | InFo E3 |
   an error message will appear on the display.

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

5.4 Setting the Positions

5.4.1 Setting the Positions on Control Panel V820

■   Display before programming   ==> | 4000   XX82XX |

■ | P | A parameter number blinks   ==> | F-XXX |
                  on the display

■ | 1 | | 7 | | 1 | Input PARAMETER NUMBER 171! ==> | F-171 |

■ | E | The abbreviation of the   ==> | F-171   Sr2 |
                  parameter appears on the display

                  First parameter value of
■ | >> | position 1 is displayed   ==> | F-171   1   046 |

                       If necessary, change parameter
■ | + | | - | value with the +/- pushbuttons ==> | F-171   1   XXX |
                       or by turning the handwheel!

                  Parameter value of position 2
■ | E | appears on the display   ==> | F-171   2   270 |

   If necessary, change parameter value with
■ the +/- pushbuttons or by turning the   ==> | F-171   2   XXX |
   handwheel!

                  Parameter value of position 1A
■ | E | appears on the display   ==> | F-171   1A   086 |

   If necessary, change parameter value with
■ the +/- pushbuttons or by turning the   ==> | F-171   1A   XXX |
   handwheel!

                  Parameter value of position 2A
■ | E | appears on the display   ==> | F-171   2A   460 |

- If necessary, change parameter value with
  the +/- pushbuttons or by turning the   ==> | F-171   2A   XXX |
  handwheel!

- [E]   Parameter value of position 3
           appears on the display   ==> | F-171   3   000 |
           (no function)

- [E]   Parameter value of position 3A
           appears on the display   ==> | F-171   3A   000 |
           (no function)

- [P] [P]   Settings are completed
                 Exit programming!   ==> | 4000   XX82XX |

Note

·When adjusting the positions by turning the handwheel, make sure that the displayed numerical value changes.

The setting values of the positions are programmed in the factory. After setting the reference position the machine is ready for use. Changing these settings is necessary only on non-standard machines or for fine tuning.

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

5.5 Display of the Signal and Stop Positions

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

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

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

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

5.6 Positioning Speed

Functions	Parameter
Positioning speed (n1)	110

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

5.7 Maximum Speed

Functions		Parameter
Maximum Speed	(n2)	111

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

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

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

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

5.8 Braking Behavior

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

- The braking effect for the stop is influenced by parameter 207
- The braking effect between the speed stages is controlled by parameter 208

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

5.9 Braking Power at Standstill

Functions		Parameter
Braking power at standstill	(brt)	153

This function prevents unintentional "wandering" of the needle at standstill.
The effect can be tested by turning the handwheel.

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

5.10 Start Behavior

Functions	Parameter
Accelerating power of the drive (ALF)	220

The drive accelerating dynamics can be adapted to the characteristic of the sewing machine (light, heavy).
- High setting value = high acceleration

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

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

Control panels   = = >   **V820**
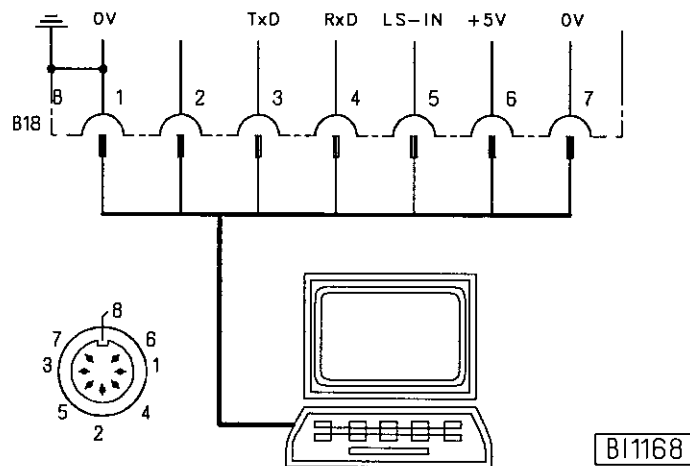
InFo E3

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

6. Functions and Settings

6.1 Control Operation with Master PC and Dürkopp Adler Software for Documented Sewing

The master PC is connected to socket B18 on the DA82GM control for serial bidirectional data transmission.

6.1.1 Setting of the Sewing Program

■ After power On parameters can be varied on the V820 control panel. After that only the sewing sequence and error messages will be displayed.

■ Seam programming is carried out on the PC. Sequences of 1 program with a total of 40 seams can be programmed and transmitted.

6.1.2 Sewing Sequence

■ After power On, the start of the drive is blocked.

■ The drive signals the PC that it is ready for operation. During programming the sewing machine is disabled.

■ The PC can query at any time whether the drive is ready for operation.

■ After the PC has registered all sewing application related data, the DA82GM sewing machine control is enabled.

■ After each partial seam, the sewing data (seam number, kind of seam as for example light barrier function and number of stitches) as well as error code are sent to the PC by the thread monitor.

■ Each seam can be interrupted and enabled by the PC.

■ Moreover, the sewing process can be interrupted by the PC and the program can be started with the first seam.

■ After the last seam, the drive waits until it is re-enabled by the PC.

6.1.3 Error Messages for the Data to Be Transmitted

The following error messages are displayed on the V820 control panel:

P1   PC does not answer or the connection is interrupted.

P2   Communication with PC disturbed. PC signals NAK (Not acknowledge)

6.2 First Stitch After Power On

Functions	Parameter
Execution of the 1st stitch after POWER ON at positioning speed (Sn1) Positioning speed (n1)	231 110

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

6.3 Function Key on Control Panel V820 (Pushbutton 9)

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

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

Programmable functions:

$$008 = 1 \text{ - Softstart ON/OFF}$$
$$008 = 2 \text{ - Ornamental backtack ON/OFF}$$
$$008 = 3 \text{ - High lift for walking foot operational mode stored} = \text{ON/}$$
$$\text{operational mode not stored} = \text{OFF}$$
$$008 = 4 \text{ - Needle cooling ON/OFF}$$
$$008 = 5 \text{ - Reversion ON/OFF}$$

6.4 Actual Speed Display

Functions	Parameter
Machine speed display (nlS)	139

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

Control panels: = = >   **V820**

During machine run:
- The actual speed
- Example: 2350 rotations per minute

2350

At stop in the seam:
- The stop indication

StoP

At machine standstill after trimming:
- On the V820, indication of the set maximum speed and the type of control

3300   dA82GA

- Example: 3300 rotations per minute and control type XX82XX

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

6.5 Softstart

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

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

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

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

6.6 Sewing Foot Lift

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

Functions		Parameter
Activation delay of sewing foot lift when pedal is in position -1, half heelback	(t2)	201
Start delay after switching off the sewing foot lift signal	(t3)	202
Time of full power	(t4)	203
Holding power of sewing foot lift	(t5)	204
Delay after thread wiping until sewing foot lifting	(t7)	206

Sewing foot is lifted:
- in the seam
  - by heeling the pedal back (position -1) or automatically (with pushbutton 6 on the V820 control panel) This function is blocked in the tear-up seam!
- after thread trimming
  - by heeling the pedal back (position -1 or -2) or automatically (with pushbutton 6 on the V820 control panel)
  - by light barrier, automatically, when enabled by the PC
  - by stitch counting, automatically, when enabled by the PC
  - start delay after thread wiping (t7)

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

Holding power of the lifted foot:

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

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

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

Foot lowers:
- Press pedal to position 0 (neutral)
- Press pedal to position 1/2 (slightly forward)

By pressing the pedal forward from lifted sewing foot, the start delay (t3) that can be regulated with parameter 202 becomes effective.
See Parameter List chapter **"Timing Diagrams"**!

6.7 Reduction of the Sewing Foot Pressure

Functions	Abbreviation	Parameter
Reduction of the sewing foot pressure with speed limitation 1 = DB2000 / 2 = DB3000	MFd	146

The sewing foot pressure consists of a basic value generated by spring power and a value generated pneumatically. After power on, the sewing foot always works with full pressure. The sewing foot pressure can be reduced by pressing the pushbutton connected to socket D/4-15. The output sewing foot pressure is switched off. It is switched on, when the pushbutton is pressed again. The reduced sewing foot pressure is indicated by a light emitting diode. When the sewing foot pressure is reduced, the speed is limited depending on parameter 146. The speed limitation can be selected among DB2000 or DB3000 with parameter 146. Moreover, it is possible to select inverted reduction of the sewing foot pressure. When the pushbutton is pressed again, the normal sewing foot pressure is switched on. The pushbutton can be pressed at any time, but does not work during automatic seams or seam sections. The sewing foot lift does not have influence on the sewing foot pressure.

- **Parameter 146 = 1**   **Reduction of sewing pressure** with speed limitation DB2000
- **Parameter 146 = 2**   **Reduction of sewing pressure** with speed limitation DB3000
- **Parameter 146 = 3**   Lift **roller** (see chapter "Roller")

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

6.8 Start Backtack

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

Functions		Parameter
Number of stitches forward	(Arv)	000
Number of stitches backward	(Arr)	001
Start backtack speed	(n3)	112
Normal/long stitches during backtack	(SLu)	137
Delay until speed release after the start backtack	(t1)	200
Start delay after switching off the sewing foot lift signal	(t3)	202
Stitch correction time of the start backtack	(t8)	150
Start and end backtack can be interrupted by pedal position 0 (neutral)	(StP)	284

The start backtack starts by pressing the pedal forward at the beginning of the seam. The backtack is delayed by the time t3 from lifted foot (start delay after lifted sewing foot). The start backtack is executed automatically at speed n3. With softstart running parallel, the respective lower speed predominates.

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

- **Parameter 284 = ON**   Backtack can be interrupted by pedal position 0 (neutral)
- **Parameter 284 = OFF**   Automatic backtack cannot be interrupted

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

The start backtack stitch length is set by means of the autoselect resistors as follows:

$100 \ \Omega$ =   The backtack is always performed with the 2nd stitch length / short stitches.
$1000 \ \Omega$ =   The backtack is performed with the set stitch length.

The stitch length (1st stitch length / long stitch or 2nd stitch length / short stitch) can be selected during the backtack with parameter 137.

Counting as well as switching the stitch regulator on and off is synchronized to position 1.

After the backward section has been executed, the stitch regulator, and, after a delay time t1, the start backtack speed will be switched off. Then pedal control is returned.

The speed release after the single and double start backtack can be influenced by parameter 200.

6.8.1 Double Start Backtack

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

For slow backtack mechanisms in the double start backtack the stitch regulator can be disabled with a time-lag of t8 (start backtack stitch correction), which prolongs the backward section.

6.8.2 Single Start Backtack

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

6.9 End Backtack

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

Functions		Parameter
Number of stitches backward	(Err)	002
Number of stitches forward	(Erv)	003
End backtack speed	(n4)	113
Last stitch backward On/Off	(FAr)	136
Notmal/long stitches during backtack	(SLu)	137
Stitch correction time of the end backtack	(t9)	151
Start delay after switching off the sewing foot lift signal	(t3)	202
Start and end backtack can be interrupted by pedal position 0 (neutral)	(StP)	284

The end backtack starts either by heelback, in seams with stitch counting after counting is completed, or from the light barrier seam at the end of the light barrier compensating stitches. From machine standstill, the stitch regulator will be switched on immediately.

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

From full machine run, the signal will be switched on only after reaching the end backtack speed and the synchronization to position 1.

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

- **Parameter 284 = ON**   Backtack can be interrupted by pedal position 0 (neutral)
- **Parameter 284 = OFF**   Automatic backtack cannot be interrupted

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

The end backtack stitch length is set by means of the autoselect resistors as follows:
- **100 Ω   =**   The backtack is always performed with the 2nd stitch length / short stitches.
- **1000 Ω   =**   The backtack is performed with the set stitch length.

The stitch length (1st stitch length / long stitch or 2nd stitch length / short stitch) can be selected during the backtack with parameter 137.

6.9.1 Double End Backtack

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

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

For slow backtack mechanisms in the double end backtack the stitch regulator can be disabled with a time-lag of t9 (end backtack stitch correction). A machine with an autoselect resistor of 100 Ω emits the "switch stitch length" signal during the backtack.

6.9.2 Single End Backtack

The single end backtack is performed at end backtack speed. During the last stitch the speed is reduced to positioning speed. The stitch regulator is switched on or off depending upon parameter 136. If parameter 136 = OFF, the signal "switch stitch length" is emitted during the trimming stitch forward.

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

6.9.3 Backtack Synchronization

Functions		Parameter
Backtack synchronization time	(tnS)	123
Speed for backtack synchronization	(nrS)	124

In the function "backtack synchronization" the backtack speed will be switched to backtack synchronization speed one stitch before engaging and disengaging of the backtack solenoid. The backtack speed is released again after the backtack synchronization time (parameter 123). If the synchronization speed (parameter 124) is higher than the backtack speed, the latter is maintained. Backtack synchronization is possible only in the end backtack. If parameter 123 is set at "0", backtack synchronization will be switched off.

6.10 Start Ornamental Backtack

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

Functions		Parameter
Number of ornamental backtack stitches forward	(SAv)	080
Number of ornamental backtack stitches backward	(SAr)	081
Start backtack speed	(n3)	112
Ornamental backtack ON/OFF	(SrS)	135
Start delay after switching off the sewing foot lift signal	(t3)	202
Ornamental backtack stop time	(tSr)	210

Differences from the standard start backtack:
- ■ The drive stops for the switching of the stitch regulator.
- ■ The stop time can be set.
- ■ After the backtack section backward follows a backtack section forward with the same number of stitches as the backward section.
- ■ The number of ornamental backtack stitches can be set with separate parameters.
- ■ Machines with autoselect resistor 100Ω emit the signal "switch stitch length" during the backtack.

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

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

6.11 End Ornamental Backtack

Functions	V820

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

Functions		Parameter
Number of ornamental backtack stitches backward	(SEr)	082
Number of ornamental backtack stitches forward	(SEv)	083
End backtack speed	(n4)	113
Ornamental backtack ON/OFF	(SrS)	135
Start delay after switching off the sewing foot lift signal	(t3)	202
Ornamental backtack stop time	(tSr)	210

The sequence corresponds to that of the normal end backtack. The drive stops between the backtack sections for the ornamental backtack stop time (tSr). The number of stitches for the forward and backward section can be set separately. Machines with autoselect resistor 100Ω emit the signal "switch stitch length" during the backtack.

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

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

6.12 Backtack Suppression/Recall

■ Effective in standard and ornamental backtack

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

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

The double backtack is performed in the above cases.

6.13 Intermediate Backtack

The backtack solenoid can be switched on anywhere in the seam and at standstill by pressing the external pushbutton on socket A/5-33 and/or C/1-2. The speed limitation of parameter 288 or 289 becomes effective according to the setting of parameter 135.

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

Functions		Parameter
Speed limitation for manual ornamental backtack	(n9)	288
Speed limitation for manual backtack	(n11)	289

Intermediate backtack:

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

Intermediate ornamental backtack:

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

6.14 Activation of the Backtack Solenoid

Functions		Parameter
Time of full power of backtacking	(t10)	212
Holding power of backtacking	(t11)	213

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

⚠

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

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

6.15 Reversion

Functions		Parameter
Positioning speed	(n1)	110
Number of reversion increments	(lrd)	180
Activation delay of reversion	(drd)	181
Reversion On/Off	(Frd)	182

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

Direct access by function key (pushbutton 9)

Functions		Parameter
Reversion On/Off	(-F-)	008 = 5

6.16 Machine Run Blockage (Safety Switch)

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

Functions		Parameter

New sewing start after machine run blockage
   ON = only with pedal in position 0 (neutral)
   OFF = immediate start
	(PdO)	281

Functioning of the switch for machine run blockage
   0 = make contact (N.O.)
   1 = break contact (N.C.)
	(LOS)	282

Function machine run blockage
   0 = function off
   1 = blockage 1, without positioning
   2 = blockage 2, with positioning
	(LSP)	283

The function "machine run blockage" is possible by connecting a switch to socket A/11-33 or B/2-3.

Display and signal after the activation of the machine run blockage with V820 control panel:

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

6.16.1 Variants of the Function Machine Run Blockage

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

Machine start blockage (blockage 1 and 2)
If the input machine run blockage is activated at machine standstill the run of the drive is blocked despite pushing the pedal. Machine start is only possible after deactivating the input.

	Blockage 1 (parameter 283 = 1)	Blockage 2 (parameter 283 = 2)
In the start backtack	- Stop unpositioned, start backtack is interrupted - Continue start backtack or complete seam after deactivation	- Stop in selected position - Trimming with activated machine run blockage possible, also with backtack - New start of the seam after deactivation - Correction seam - if the thread has not been trimmed

	Blockage 1 (parameter 283 = 1)	Blockage 2 (parameter 283 = 2)
In the free seam	- Stop unpositioned - Trimming not possible - Continue or complete seam after deactivation	- Stop in selected position - Trimming with activated machine run blockage possible, also with backtack - New start of the seam after deactivation - Correction seam - if the thread has not been trimmed
In stitch counting	- Stop unpositioned - Trimming not possible - Continue or complete stitch counting with seam end after deactivation	- Stop in selected position - Trimming with activated machine run blockage possible, also with backtack - New start of the seam after deactivation - Correction seam - if the thread has not been trimmed
In the light barrier compensating stitch counting	- Stop unpositioned - Trimming not possible - Continue or complete light barrier compensating stitch counting with seam end after deactivation	- Trimming with activated machine run blockage possible, also with backtack - New start of the seam after deactivation - Continue compensating stitch counting with seam end - if the thread has not been trimmed
In the end backtack	- Stop unpositioned, end backtack is interrupted - Trimming not possible - Continue or complete end backtack with thread trimming after deactivation	- The seam end is performed completely

6.17 Bobbin Thread Monitor

Functions		Parameter
Stop after the bobbin thread monitor stitch counting	(SFW)	085
Bobbin thread monitor ON/OFF	(rFW)	195

If the function bobbin thread monitor is on (parameter 195 = 1...4), the type of control and the set maximum speed is shown on the display for 1 sec. after power on.

Display of the maximum speed: = = > | 4000   XX82XX | < = = **Type of control**
(e. g. 4000 RPM)

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

Number of stitches of the   ==> | 0250   --II-- | < = = **Status display**
bobbin thread monitor (e. g. 250)

At that time (after power on), the number of stitches can be set in increments of 10 with the +/- pushbuttons.
The functions **DED = Direct Input of Maximum Speed Limitation** and **HIT = Pushbuttons for Background Information** become available only after the first sewing start and/or trimming.

6.17.1 Input Signals

The type of input signal indicates which bobbin is empty.

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

6.17.2 F-195 = 0 - No Bobbin Thread Monitor Function

The bobbin thread monitor function is switched off.

6.17.3 F-195 = 1 - Cl. 270/No Stop / Sewing Foot Down after Seam End

After receiving an input signal, when the bobbin is empty, the bobbin thread counter is activated and the bobbin thread monitor symbols appear on the display (right, left or both). After counting is completed, the bobbin thread monitor symbol blinks on the display. The corresponding LEDs on the machine blink as well (right, left or both) with approx. 4Hz. The display remains even if the input signal is no longer emitted. After counting is completed, the sewing foot is not lifted after the trimming operation. The sewing foot is lifted only after the pedal has been pressed to position 0 (neutral) and then heeled back. The display goes off (the blinking frequency of 4Hz is switched off), if no more input signals are received after 14 stitches after trimming and the subsequent sewing start. This is an indicator that the bobbin has been replaced and the bobbin thread counter is reset to zero.

6.17.4 F-195 = 2 - Cl. 767, N291/With Stop/Sewing Foot Up after Seam End

After receiving an input signal, when the bobbin is empty, the bobbin thread counter is activated and the bobbin thread monitor symbols appear on the display (right, left or both). After counting is completed, the bobbin thread monitor symbol blinks on the display. The corresponding LEDs on the machine blink as well (right, left or both) with approx. 4Hz and the drive stops. Even automatic seam sections like seams with stitch counting or light barrier seams are interrupted. They can be completed by pressing the pedal to position 0 (neutral) and then forward.
Note the following exceptions:
- If the bobbin thread counting is completed in the start backtack, the latter will be completed and the drive stops.
- If the bobbin thread counting is completed in the end backtack, the latter will be fully completed with thread trimming operation.
After thread trimming the sewing foot is automatically lifted. The display goes off (the blinking frequency of 4Hz is switched off), if no more input signals are received after 14 stitches after trimming and the subsequent sewing start. This is an indicator that the bobbin has been replaced and the bobbin thread counter is reset to zero.

6.17.5 F-195 = 3 - Cl. 767, N291/No Stop/Sewing Foot Down after Seam End

After receiving an input signal, when the bobbin is empty, the bobbin thread counter is activated and the bobbin thread monitor symbols appear on the display (right, left or both). After counting is completed, the bobbin thread monitor symbol blinks on the display. The corresponding LEDs on the machine blink as well (right, left or both) with approx. 4Hz.
The sewing foot is not lifted after the trimming operation. The sewing foot is lifted only after the pedal has been pressed to position 0 (neutral) and then heeled back.
The display goes off (the blinking frequency of 4Hz is switched off), if no more input signals are received after 14 stitches after trimming and the subsequent sewing start. This is an indicator that the bobbin has been replaced and the bobbin thread counter is reset to zero.

6.17.6 F-195 = 4 - With Bobbin Thread Monitor Stitch Counting

By pressing a pushbutton connected to socket A/12-33 a stitch counter is activated (max. 9900 stitches) and the bobbin thread monitor symbols are continuously displayed.

At each intermediate stop, the remaining number of stitches will be displayed. After counting is completed, the bobbin thread monitor symbol (right and left) blinks on the display. The corresponding LEDs on the machine blink as well (right, left or both) with approx. 4Hz and the drive stops. Even automatic seam sections, except start and end backtack, are interrupted. The seam can be continued by pressing the pedal to position 0 (neutral) and then forward. The number of stitches is set such that after completing these stitches the bobbin is not completely empty. After replacing the bobbin, the pushbutton must be pressed so that the counter is reset to the preset value and is activated again.

If the drive is switched off during bobbin thread monitor counting, this value is saved and counting is continued after power on. If the pushbutton is pressed for more than one second, the counter is set to the preset value.

Pushbutton pressed > 1 sec.   = >   Bobbin thread monitor function is deactivated
Pushbutton pressed < 1 sec.   = >   Counter is set to the preset value

6.18 Needle Cooling

Functions		Parameter
Switch-off delay of needle cooling after stop	(dnk)	183
Function needle cooling (output)	(Fnk)	185

Needle cooling is switched on during the entire sewing operation. Switching off after the stop can be delayed by the time "prolongation of needle cooling after stop", which can be adjusted with parameter 183.

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

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

6.19 High Lift for Walking Foot

Functions		Parameter
High lift walking speed	(n10)	117
High lift for walking foot operational mode stored = ON/ not stored = OFF	(hPr)	138
Function of the pushbutton on D/6	(Fc6)	149
1 = High lift for walking foot		
2 = Reduction of thread tension		
Run-out time of the high lift walking speed after switching off the high lift for walking foot	(thP)	152
Minimum number of stitches in high lift for walking foot	(chP)	184
Activation delay of high lift for walking foot	(hPv)	189
(This delay time is effective only if the actual speed is higher than the high lift walking speed)		

6.19.1 Manual High Lift for Walking Foot - Speed Limitation

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

6.19.2 Maximum High Lift for Walking Foot by Using a Pushbutton

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

6.19.3 High Lift for Walking Foot Operational Mode Not Stored (F-138 = OFF, F-184 = 0)

By pressing the pushbutton "high lift for walking foot", the output "high lift for walking foot" is switched on depending on the actual speed until the pushbutton is released.

6.19.4 High Lift for Walking Foot Operational Mode Stored (F-138 = ON)

By pressing the pushbutton "high lift for walking foot", the output "high lift for walking foot" is switched on depending on the actual speed until the pushbutton is released. The output is switched off, when the pushbutton is pressed again. This function is independent of the set minimum number of stitches (parameter 184).

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

By pressing the pushbutton "high lift for walking foot", the output "high lift for walking foot" is switched on depending on the actual speed until the pushbutton is released or until the number of stitches set with parameter 184 has been executed.
When the pushbutton is pressed at machine standstill, high lift for walking foot is switched on and remains on after the sewing start, at least for the set minimum number of stitches. Prolongation of the operating time is possible if the pushbutton remains pressed after stitch counting.

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

Direct access by function key (pushbutton 9)

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

6.20 Speed Limitation

6.20.1 Speed Limitation DB2000/DB3000

Functions		Parameter
High lift walking speed (DB2000)	(n10)	117
Mode pushbutton speed limitation (DB2000), pushbutton on A/9	(MnF)	143
1 = Speed n10 limited		
2 = Speed n10 fixed		
Speed limitation (DB3000)	(n11)	289

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

Note

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

6.20.2 Analog Speed Limitation

The maximum speed can be limited by an analog voltage on input A/3. The analog voltage is generated by a potentiometer which functions as voltage divider. If a potentiometer is not connected, the maximum voltage is applied to the input. A potentiometer for speed limitation on the control is also possible.

6.20.3 Analog Speed Limitation Speedomat

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

Potentiometer connections see chapter "**Connection Diagram**".

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

-   The assignment of the speed stages to the 21 speedomat levels can be programmed.
-   Minimum high lift limitation = maximum speed (n2)
-   Maximum high lift limitation = minimum speed (n10)

Display example of parameter 188 on control panel V820:

```
 2740      05 11 19
```

Signification: 05   -> Display of the level up to which the maximum speed is effective
                19   -> Display of the level from which the minimum speed is effective
                11   -> Display of the level set on the speedomat (potentiometer)
              2840   -> Speed resulting from set high lift level

Graduation of the following example:

```
Speed
3500 |  X  X  X  X  X upper speed break point
3200 |              X
3110 |                X
3020 |                  X
2930 |                    X
2840 |----------------------X
2740 |                        X
2650 |                          X
2560 |                            X
2470 |                              X
2380 |                                X
2280 |                                  X
2190 |                                    X
2100 |                                      X
2000 |            lower speed break point    X  X  X
     |_____
      01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21
```
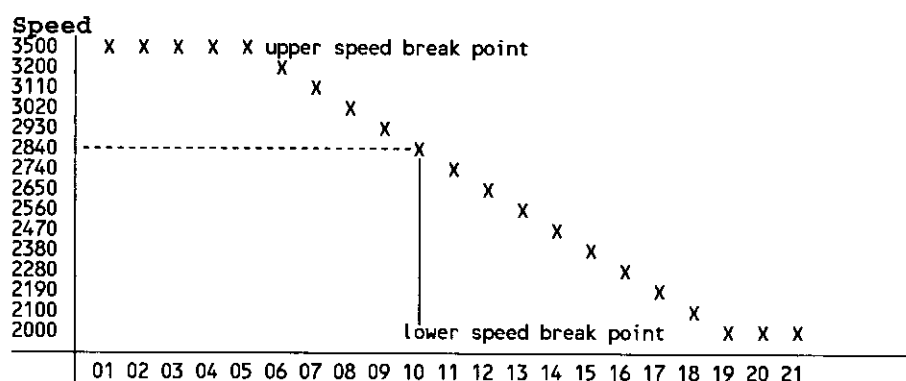
6.20.4 Jumper S1

The jumper S1 located at the top right of the printed circuit board next to the 37-pole socket has the following function:
- Jumper closed, if no external potentiometer is connected.
- Jumper open (factory setting), if an external potentiometer is connected.

6.20.5 Setting the Speed Limitation Depending on High Lift with V820

- Determine max. speed with parameter 111
- Determine high lift walking speed with parameter 117

- Recall parameter 188, enter with pushbutton E $==>$ | ZZZZ   XX AB YY |

       XX = lower break point
       YY = upper break point
       AB = corresponding level
       ZZZZ = speed

- Set high lift for walking foot (potentiometer on the machine) to the level up to which full speed shall be maintained (lower break point)

- Enter with pushbutton E $==>$ new value of AB is taken over to XX

- Set high lift for walking foot (potentiometer on the machine) to the level from which minimum high lift walking speed shall be effective (upper break point)

- Enter with pushbutton E $==>$ new value of AB is taken over to YY

- Exit programming with pushbutton P

Note
If the functions "speed limitation depending on high lift and on stitch length" are used at the same time, the maximum speed is limited to the respective lower set high lift and stitch length value.

6.21 Switch Stitch Length

Functions		Parameter
Number of light barrier compensating stitches when switching the stitch length	(cLS)	010
High lift walking speed (DB2000)	(n10)	117
Normal stitch / long stitch with speed limitation (pushbutton on A/8 and D/2)	(StL)	145
1 = without speed limitation		
2 = with DB2000		
3 = with DB3000		
Stitch length in the next seam (after the trimming operation)	(Stn)	187
Speed limitation (DB3000)	(n11)	289

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

Set a different number of compensating stitches with parameter 010 at the operator level in order to adapt light barrier seams to the different stitch length.

The start and/or end backtack stitch length is set by means of the autoselect resisotrs as follows:

         100 Ω   =   The backtack is always performed with the 2nd stitch length / short stitches.

         1000 Ω =   The backtack is performed with the set stitch length.

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

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

-      **Parameter 187 = 1**   The selected stitch length remains on.
-      **Parameter 187 = 2**   Switch to 1st stitch length/long stitches after thread trimming.
-      **Parameter 187 = 3**   Switch to 2nd stitch length/short stitches after thread trimming.

After Power On, the 2nd stitch length/short stitches are automatically switched on (solenoid On, LED Off).

6.22 Roller

Functions		Parameter
Lift roller	(MFd)	146 = 3
Stitches for lowering the roller	(ctw)	186

The roller is lifted by switching on the solenoid valve on output A/15. After power on, output A/15 and the corresponding light emitting diode on D/12 are switched on. The roller is lifted.

-      The roller and its indicator are switched off (roller is lowered) with the initial pressing of the pushbutton connected to socket D/4, only if parameter 146 = 3.
-      The roller and its indicator are switched off, when the pushbutton is pressed again.
-      The roller is lowered after the start backtack (at the start of the seam, when the start backtack is off) after a number of stitches that can be set (parameter 186), unless it had been lowered before by pressing a pushbutton.
-      The roller is lifted when starting the end backtack or the thread trimmer.
-      If the sewing foot is lifted with lowered roller, the roller is also lifted. After lowering the sewing foot, the roller is lowered after the set number of stitches or by pressing a pushbutton.
-      If a manual intermediate backtack is performed with lowered roller, the roller is immediately lifted. After having completed the intermediate backtack, the roller is immediateley lowered.
-      If the roller is up when activating the intermediate backtack, it remains up after completing the backtack.

6.23 Thread Clamp

Functions		Parameter
Thread clamp function	(FKL)	154
Increments up to switching on the thread clamp (signal 1)	(K1)	155
Increments up to switching off the thread clamp (signal 1)	(K1-)	156
Increments up to switching on the thread clamp (signal 2)	(K2)	157
Increments up to switching off the thread clamp (signal 2)	(K2-)	158

The thread clamp functions can be selected with parameter 154.

The thread clamp signal is blocked right after power on.

The thread clamp signal is emitted:

- whenever the sewing foot is lifted
- during the reversing operation
- after the drive has started

The following functions are possible with parameter 154:

- **Parameter 154 = 0**   **Thread clamp Off**
- **Parameter 154 = 1**   **Thread clamp function:** Use of the parameter values 155...158.

    The thread clamp (signal 1) is switched on after the increments preset with parameter 155 and is switched off after the increments preset with parameter 156. If increments have been selected with parameters 157 and 158 the thread clamp signal (signal 2) will be emitted once again. During this function the speed is limited to a fixed speed (250 RPM).

    The number of increments of parameter 156 and 158 must always be higher than that of parameter 155 and 157, respectively.
- **Parameter 154 = 2...6**   **Thread clamp function:** Preset values are used according to the table below:

Pa. 154	Select 100Ω (N291) Thread clamp		Select 1000Ω (467, 767) Thread clamp	
	On	Off	On	Off
2	302	344	302	344
3	274	316	274	316
4	246	388	246	388
5	100	198	100	198
6	070	156	070	156

6.24 Thread Trimming Operation

Functions		Parameter	V820
Thread trimmer On	left arrow On		Pushb. 5
Thread trimmer and thread wiper On	both arrows On		
Thread trimmer On	right arrow On		
Thread trimmer and thread wiper Off	both arrows Off		
Thread trimmer On		013	
Thread wiper Off		014	

Functions		Parameter
Trimming stitch backward	(FAr)	136
Activation angle of thread trimmer	(iFA)	190
Switch-off delay of thread tension release	(FSA)	191
Activation delay of thread tension release	(FSE)	192
Stop time for thread trimmer	(tFA)	193
Thread wiper time	(t6)	205
Delay after thread wiping until sewing foot lifting	(t7)	206

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

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

The thread trimmer signal is switched on for 1 msec. with the first stitch after power on. The bobbin thread monitor sensitivity is hereby switched to 100%, provided that a bobbin thread monitor has been activated with parameter 195.

6.24.1 Thread Trimmer

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

6.24.2 Thread Wiper

The thread wiper signal is switched on for a time that can be regulated with parameter 205 after reaching position 2. After the thread wiper has been switched off, there will be a time lag that can be regulated with parameter 206 until the sewing foot can be lifted.

6.24.3 Thread Tension Release

The thread tension release signal can be switched on with a time lag relative to the thread trimmer. The time lag consists of increments that are inputted as angular values (1 increment = 0.7°) in parameter 192. The signal is switched off in position 2. It can, however, be extended for a time that can be regulated with parameter 191.
After the thread wiper has been switched off, there will be a time lag that can be regulated with parameter 206 until the sewing foot can be lifted.

6.24.4 Reduction of Thread Tension

Functions		Parameter
Function of the pushbutton on D/3 1 = Reduction of thread tension / 2 = Backtack suppression/recall	(Fc3)	147
Function of the pushbutton on D/6 1 = High lift for walking foot / 2 = Reduction of thread tension	(Fc6)	149

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

6.25 Seam with Stitch Counting

Functions		V820
Stitch counting forward On/Off	left arrow above pushbutton On	Pushbutton 2
Stitch counting backward On/Off	right arrow above pushbutton On	
Stitch counting Off	both arrows Off	

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

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

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

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

6.26 Free Seam and Seam with Light Barrier

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

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

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

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

6.27 Light Barrier

6.27.1 General Light Barrier Functions (V820)

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

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

6.27.2 Reflection Light Barrier

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

Functions		Parameter
Light barrier On/Off	(LS)	009

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 and LSM001A   - Potentiometer directly on the light barrier module

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

6.27.3 Automatic Start by Light Barrier

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

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

The following conditions must be met:

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

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

6.27.4 Light Barrier Filter for Knitted Fabrics

Functions		Parameter
Number of filter stitches	(LSF)	005
Light barrier filter On/Off	(LSF)	130

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

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

6.28 Needle Up/Down; Single Stitch

The function needle up/down and/or single stitch can be activated by pushbuttons on two different inputs.
The modes for both inputs can be programmed separately.

Mode for the pushbutton connected to connector A/6

Functions		Parameter

Needle up/down; single stitch
  1 = Needle up
  2 = Needle up/down
  3 = Single stitch
  4 = Single stitch with stitch length switching (normal stitches)
  5 = Needle up if outside of position 2 and/or reverse position
	(nh1)	140

Mode for the pushbutton connected to connector D/1

Functions		Parameter

Needle up/down; single stitch
  1 = Needle up
  2 = Needle up/down
  3 = Single stitch
  4 = Single stitch with stitch length switching (normal stitches)
  5 = Needle up if outside of position 2 and/or reverse position
	(nh2)	144

Needle up: Parameter 140/144 = 1
When the pushbutton is pressed, the drive runs from position 1 to the reverse position. This does not depend on whether reversion is on or off. If parameter 180 is set at 0, the drive stops in position 2. If the drive is outside of position 1 it does not move for safety reasons. This function is blocked after power on until the sewing is started.

Needle up/down: Parameter 140/144 = 2
When the pushbutton is pressed, the drive runs from position 1 to the reverse position and/or from the reverse position to position 1. This does not depend on whether reversion is on or off. If parameter 180 is set at 0, the drive stops in position 2. If it is outside of the slot between position 1 and 1A and/or position 2 and 2A it runs to the next possible position. After power on, the drive runs to the next position identified. The drive does not start when the sewing foot is lifted.

Single stitch: Parameter 140/144 = 3
When the pushbutton is pressed, the machine performs one rotation from position 1 to position 1. If the drive is in the reverse position it runs to position 1, when the pushbutton is pressed, and from position 1 to position 1 each time the pushbutton is pressed again. The drive does not start when the sewing foot is lifted.

Single stitch with stitch length switching: Parameter 140/144 = 4
When the pushbutton is pressed, the machine performs one rotation from position 1 to position 1. If the drive is in the reverse position it runs to position 1, when the pushbutton is pressed, and from position 1 to position 1 each time the pushbutton is pressed again. At the same time, the output "switch stitch length" is switched on and the corresponding light emitting diode is switched off. The drive does not start when the sewing foot is lifted.

Needle in position 2: Parameter 140/144 = 5
When the pushbutton is pressed, the drive runs independently from its present position to position 2 and/or to the reverse position. This function is also possible after power on. The drive does not start when the sewing foot is lifted.

6.29 Audible Signal

Function	Parameter
Audible signal On/Off	127

An audible signal, which is emitted for the following functions, can be switched on with parameter 127:

- When the machine run blockage (safety switch) is activated

6.30 Signal Output POS2

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

6.31 Signal Output Impulses (G1)

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

6.32 Supply Voltage 5V and/or 12V

For external devices as e.g. the thread monitor there is a supply voltage of +5V on socket A/6. After opening the cover, this voltage can be changed to +12V by moving a jumper on the printed circuit board to a different position.

⚠️
Attention!
Only qualified personnel are authorized to undertake this commutation!

- **Attention!** Turn power off by all means.
- Open cover
- +5V   =   Connect lefthand pins 1 and 2 with jumper (factory setting)
- +15V   =   Connect righthand pins 3 and 4 with jumper
- Close cover
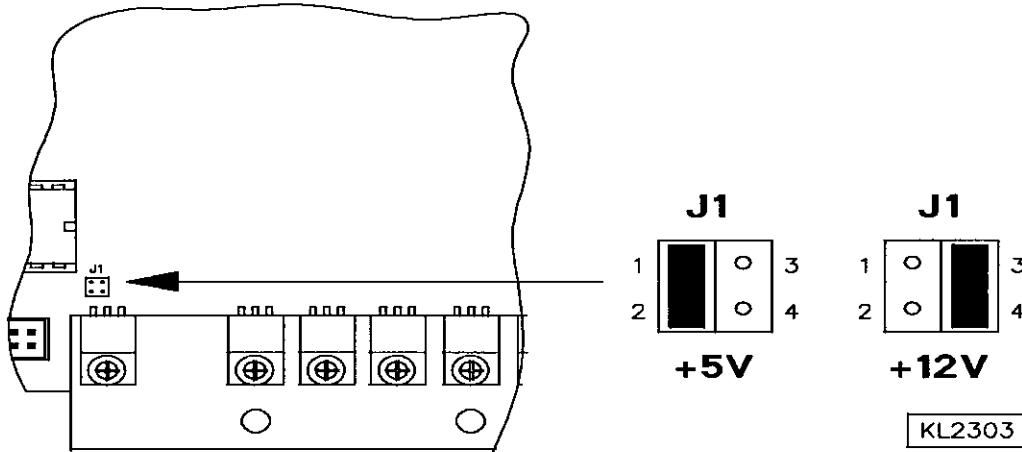
6.33 Actuator EB301 and EB302

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

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

Table: Coding of the pedal steps

Pedal step:	D	C	B	A		
-2	H	H	L	L	Full heelback	(e. g. initiating the seam end)
-1	H	H	H	L	Slight heelback	(e. g. sewing foot lifting)
0	H	H	H	H	Pedal in pos. 0 (neutral)	
½	H	H.	L	H	Pedal slightly forward	(e. g. sewing foot lowering)
1	H	L	L	H	Speed stage 1	(n1)
2	H	L	L	L	.	
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	Pedal fully forward / speed stage 12 (n2)	
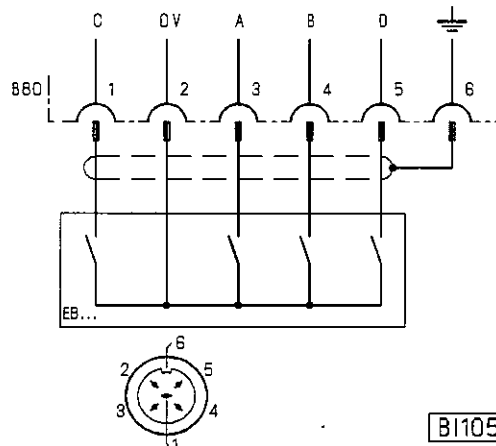
EB...   - Actuator

Functions	Parameter
Speed stage graduation (nSt)	119

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

Possible characteristic curves: - linear
                                         - progressive
                                         - highly progressive

6.34 Master Reset

<div style="border:1px solid">

Recovery of factory settings.

</div>

- Press pushbutton "P" and turn power on
- Input code number "1907"
- Press pushbutton "E"
- Parameter 100 is shown on the display
- Press pushbutton "E"
- The parameter value is shown on the display
- Set at "170" with pushbutton "+"
- Press pushbutton "P" twice
- Turn power off
- Turn power on. All parameters, except 111, 161, 170, 171, 190...194, are reset to their factory settings.

7. Signal Test

Functions	Parameter
Input and output test (SR4)	173

Output test:

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

Pushbutton	Output	Socket / Pin
01	Backtacking	A/34, B/6
02	Sewing foot lift	A/35
03	Thread trimmer	A/37
04	Thread wiper	A/27
05	2nd stitch length/short stitch	A/30
06	Thread tension release	A/36, B/5, C/5
07	Reduction of thread tension	A/20
08	Needle cooling	A/28
09	Motor running	A/26
10	High lift for walking foot	A/32
11	without setting	A/22
12	LED single stitch with stitch length switching	D/9
13	LED 1st stitch length/long stitch	D/10
14	Thread clamp	A/18
15	LED high lift limitation	A/31
16	LED bobbin thread monitor at the right	A/25
17	LED reduction of sewing foot pressure	A/12
18	LED reduction of thread tension/ backtack suppression/recall	A/11
19	Reduction of sewing foot pressure	A/21
20	LED bobbin thread monitor at the left	A/23
21	Flip-flop	C/6
22	LED high lift limitation/reduction of thread tension	D/14
23	LED backtack suppression/recall	A/24
24	LED speed limitation 3000/intermediate backtack	D/13
25	LED 1st stitch length/long stitch	A/29
26	not used	A/17
27	not used	A/16
28	Roller feed	A/15

Input test:

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

8. Error Messages

General Information	
On the V820	**Signification**
InFo A1	Pedal not in neutral position, when switching the machine on
Symbol blinking	Machine run blockage
InFo A3	The position to which all position values refer has not been stored (reference position is missing).
InFo A5	Emergency run, no valid machine select can be identified

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

Serious Situation	
On the V820	**Signification**
InFo E1	After power On, position transmitter or commutation transmitter defective or connecting cables have been changed by mistake. During machine run or after a sewing operation, only position transmitter defects can be identified.
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	
On the V820	**Signification**
InFo H1	Commutation transmitter cord or frequency converter disturbed
InFo H2	Processor disturbed
InFo P1	Data recording device does not answer or communication interrupted
InFo P2	Communication with data recording device disturbed, device signals NAK (not acknowledge)

9. Socket Connectors on the Control

KL2008c
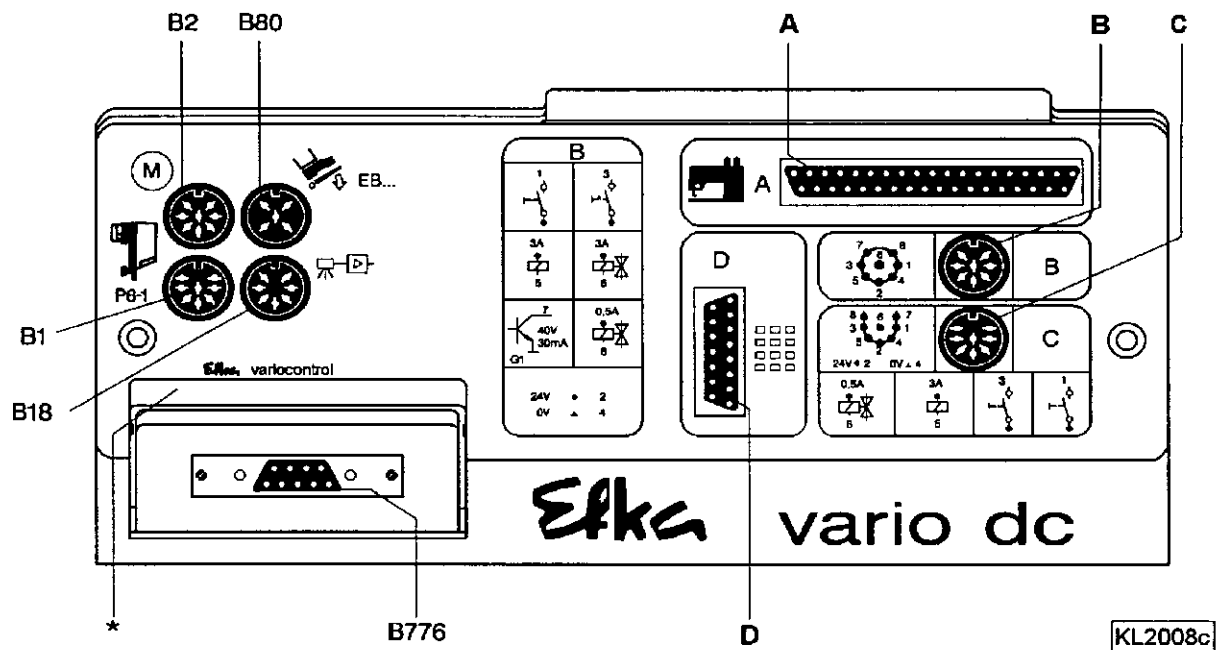
B1   - Position transmitter
B2   - Commutation transmitter for d.c. motor
A (ST2) - Inputs and outputs for solenoids / solenoid valves / displays / pushbuttons and switches
B (B4)   - Inputs and outputs
C (B5)   - Inputs and outputs
D (B3)   - Pushbuttons and light emitting diodes
B18   - Light barrier module
B80   - Actuator
B776   - Control panel Variocontrol (as shown: 9/25-pole adapter plugged in)

*)   Type designation

10. Operating Elements of the Control Panel V820
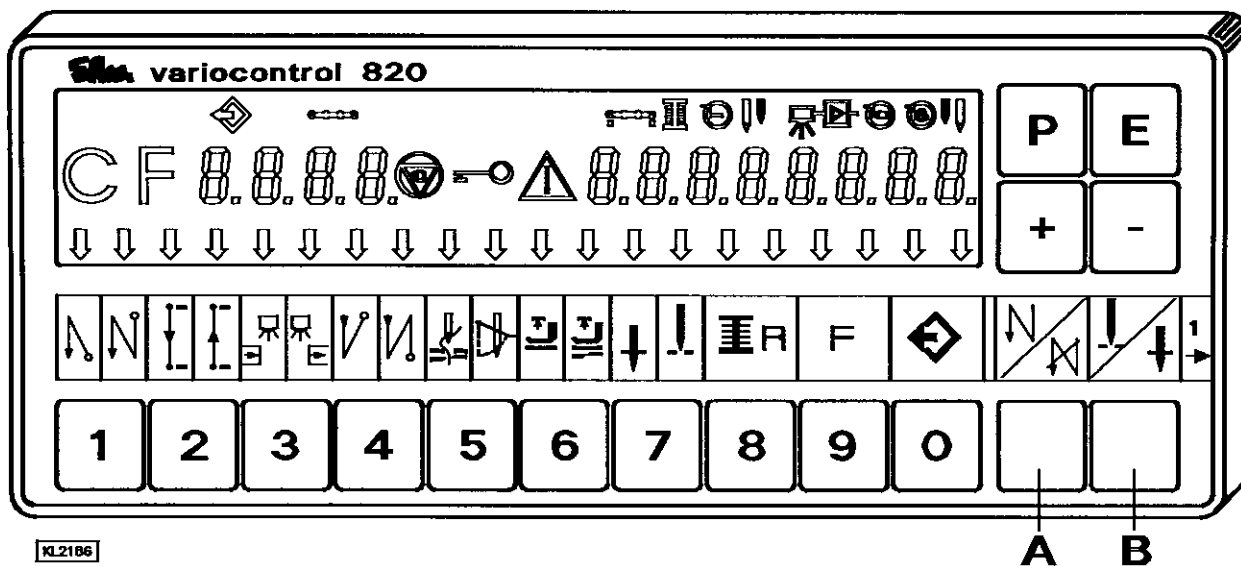
The control panel V810 is supplied with the insertable strip no. 1 above the pushbuttons.

Functional Setting of the Pushbuttons

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

Pushbutton A = Pushbutton for intermediate backtack (pushbutton A can be set with different input functions by using parameter 293)

Pushbutton B = Pushbutton for needle up (pushbutton B can be set with different input functions by using parameter 294). Can also be used as shift button in the programming mode.

Special Setting of the Pushbuttons for HIT

The following can be changed by pushbuttons + /- after pressing pushbuttons 1, 2, 3, 4 or 9:

Pushbutton 1 =	Number of stitches of the selected start backtack
Pushbutton 2 =	Number of stitches of the seam with stitch counting
Pushbutton 3 =	Number of light barrier compensating stitches
Pushbutton 4 =	Number of stitches of the selected end backtack
Pushbutton 9 =	Number of stitches or switching the programmed function on/off

For your notes

For your notes

For your notes

Efka

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