

Efka vario dc

CONTROL

AB62AV

INSTRUCTION MANUAL

No. 402041 english

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1. Safety instructions

1. Motor, accessories and auxiliary devices can be mounted and put into operation only by an expert after taking note of the instruction manual.
2. Motor, accessories and auxiliary devices must be used only in conformity with their designed function.
3. Operation without corresponding protective devices is forbidden.
4. Motor must be completely mounted before electric connection.
5. Only skilled labour is allowed to work on the electric appliances.
6. Only especially trained staff is allowed to complete repair work.
7. Cables to be wired must be protected against expectable strain and fastened adequately.
8. Cables near moving machine parts (e.g. pulleys) must be wired at a minimum distance of 25 mm. (DIN VDE 0113)
9. For a safe separation it is preferred to wire the cables separately from each other. (DIN VDE 0160)
10. Connect the sewing light to the mains independently of the motor power supply.
11. Before connecting the mains line make sure that the mains voltage corresponds to the specifications on the control nameplate.
12. Machine and motor must be connected through a potential equalization conductor.
13. Before mounting and adjusting auxiliary devices and accessories, especially position transmitter, reversing device, light barrier, etc., disconnect the motor (disconnect the main switch, pull off mains plug [DIN VDE 0113]).

14. Electric auxiliary devices and accessories must only be connected to protective low voltage.
15. Disconnect the motor for any repair and maintenance work. (disconnect the main switch, pull off mains plug [DIN VDE 0113]).
16. The motor resists overvoltage according to overvoltage class 2. (DIN VDE 0160)
17. Working on parts and devices under voltage is forbidden.
- Exceptions are regulated by DIN VDE 0105
18. Observe all safety instructions before undertaking conversions and modifications.
19. For repair and maintenance use only original parts from the manufacturer.
20. Warning indications in the instruction manual point out particular risks of personal injury or risk for the machine and are marked with the symbol below wherever applicable.
Observe and follow these instructions as well as the generally valid safety instructions!



2. Application field of the control

You can use this control for lockstitch sewing machines of various manufacturers such as Brother.

Classes: DB2-B705-400/500, DB2-B715-400/500, DB2-B757-400/500.
LT2-B832-500, LT2-B835-500.

The functions of the control are divided into two fields.

Adjustments outside the service flap (see fig. 1 page 7)

With potentiometer P3

- stitch counting speed (n.stich)
and in the programming mode
- reversing angle during reversion
- braking frequency at standstill

With potentiometer P8

- reduction of the maximum speed (n.max)
and in the programming mode
- activation delay until reversion

Selection of final backtack	Switch S1
Selection of initial backtack	Switch S2
Needle position at stop within the seam	Switch S3
Foot lift at stop within the seam	Switch S4

Adjustments with opened service flap

- Positioning speed (n.pos.) P1
- Allowed maximum speed of the sewing machine (n.max.max.) P2
- Initial and final backtack (n.ar. n.er.) P4,P5
- Correction of stitch diagram P6
- Starting delay with presser foot up P7

- Programming mode
- Function of the pushbutton needle up; needle up/down
- Softstart ON/OFF
- Presser foot lift at the end of the seam
- Sense of rotation of the motor shaft
- Test of backtacking and stitch counting speeds
- Speed range
- Compensating stitches when light barrier is operating
- Various functions when light barrier is operating
- Stitch numbers of initial and final backtack

The sewing machine is ready for operation after:

- correct mounting the motor and the position transmitter
- adjusting the needle position on the position transmitter.
- adapting the control to the sewing machine

3 Short instructions for the operator

3.1 How to adjust the working speed

The working speed can be adjusted while the motor is running.

Increase the speed by:

- turning potentiometer P8 to the right.

Reduce the speed by:

- turning potentiometer P8 to the left.

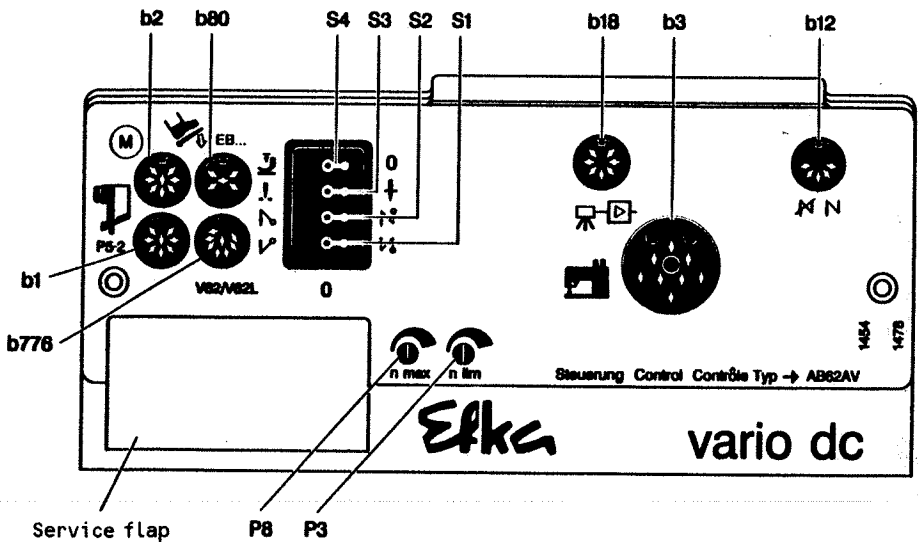


Figure 1

3.2 How to adjust the stitch counting speed

(Stitch counting speed can only be activated when a monitor is connected)

Caution! When using the operating elements V62 or V62L, plug or unplug Variocontrol only when motor off.

The stitch counting speed can be adjusted while the motor is running.

Increase the speed by:

- turning potentiometer P3 to the right.

Reduce the speed by:

- turning potentiometer P3 to the left.

3.3 Selector switch for type of backtack, presser foot and needle position

Switch	Function	Switch position		
		left	middle	right
S1	Final backtack	simple	off	double
S2	Initial backtack	simple	off	double
S3	Needle position at stop within the seam	up	-	down
S4	Presser foot up at each stop within the seam	yes	-	no

4. Instructions for the technician

4.1 The programming mode

The programming mode aims at protecting the sewing machine from unintentional operating errors. The functions essential to safety described in chapter 4.3 can only be adjusted when the programming mode is on. The switches designed for programming are accessible when the service flap is opened.

Open the service flap!

For this purpose, press on the top side of the flap!

You can see 4 groups of miniature switches, called DIL switches (S7 to S10) and 6 potentiometers (P1, P2, P4 to P7).

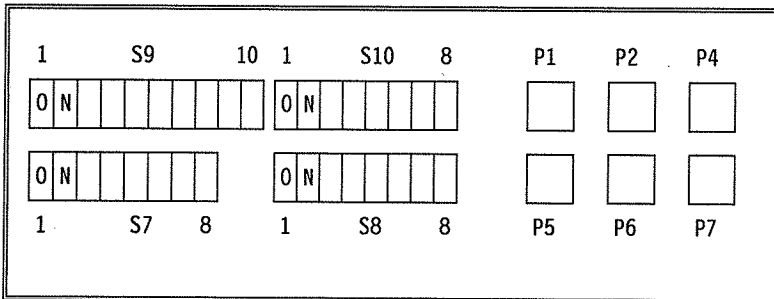


Figure 2

NOTE:

DIL switches are connected by pressing down the labelled side

Connection of programming mode

- Terminate the started seam by back pedalling
- S9/1 = ON

An acoustic signal can be heard in the programming mode (see chapter 4.14).

Note:

Potentiometers P3 and P8 receive another function as long as the programming mode is connected.

Disconnection of programming mode

S9/1 = OFF

Note:

The changed values will be stored, if potentiometers P3 and P8 are adjusted by more than $\pm 5^\circ$ in the programming mode.

The original values of P3 and P8 have to be readjusted.

4.2 Necessary adjustments in the programming mode before use

4.2.1 The sense of rotation of the motor shaft

Switch on the programming mode according to chapter 4.1. An acoustic signal can be heard (see chapter 4.14).

Adjust the sense of rotation of the motor shaft with switch S9/6.

S9/6 = **ON** = clockwise rotation (look at the pulley)

S9/6 = **OFF** = anticlockwise rotation (look at the pulley)

Actuating switch S9/6 when the programming mode is disconnected will cause no reaction. In order to cause any change in the sense of rotation after switching on the programming mode, first set S9/6 to the initial position.

The sense of rotation will reverse only after changing the switch position again.

4.2.2 The braking at machine standstill

The braking at machine standstill can only be adjusted if the motor had already started once immediately after power on, and if the started seam was terminated by back pedalling.

Open the service flap

Switch on the programming mode according to chapter 4.1. An acoustic signal can be heard (see chapter 4.14).

Turn switches S1 to S4 to the left. As long as this setting function is active, the acoustic signal can be heard (see chapter 4.14).

The braking effect is tested at the handwheel and can be adjusted with **potentiometer P3**.

Set switch **S9/1** to **OFF** in order to store the adjustment and to conclude the programming. Then set potentiometer **P3** and switches **S1-S4** back to their initial position.

4.2.3 The reversion of the machine

The reversion of the machine can only be adjusted if the motor had already started once after power on and if the started seam was terminated by back pedalling.

Open the service flap

Switch on the programming mode according to chapter 4.1. An acoustic signal can be heard (see chapter 4.14).

Turn switches S1 to S4 to the right.

As long as this function is active, it will be indicated acoustically (see chapter 4.14).

Adjustment of the reversing angle

The reversing angle can be adjusted from 0-380° with **potentiometer P3**, i.e. the motor can reverse by slightly more than 1 rotation max.

Adjustment of the activation delay until reversion

An activation delay from 0-1000 ms until the beginning of the reversion can be adjusted with **potentiometer P8**.

The values change only after adjusting the potentiometers by more than $\pm 5^\circ$ of the range.

Caution!

If P3 is set on 0 (= left stop), there will be no reversion of the motor. Set S9/1 to OFF in order to store the setting values. Programming is concluded, P3 and P8 receive their initial signification and values.

You can test the adjusted values (reversing angle or delay time) in the programming mode. Actuate the pedal forward. The motor starts running at corresponding speed. By heeling the pedal back a complete trimming sequence will be performed, i.e. thread trimming, thread wiping, reversion and foot lifting.

4.2.4 The selection of the speed range

The speed range can only be changed if the programming mode (S9/1= ON) is connected. as long as the programming mode is connected you can hear an acoustic signal(see chapter 4.14).

S9/8 = ON = maximum speed until 10000 RPM

S9/8 = OFF = maximum speed until 5000 RPM

Caution!

Actuating S9/8 while the programming mode is disconnected will cause no reaction. In this case, switch S9/8 must be first brought back into its initial position after connecting the programming mode. The change of the switch position will then occasion the commutation of the speed range.

Caution!

The maximum speed of the motor comes to 5000 RPM. In order that the sewing machine reaches its maximum speed a pulley must be mounted, which will have the convenient transmission ratio for the speed range.

4.2.5 The activation time of the thread wiper

- Terminate the started seam by back pedalling

Open the service flap

- Switch S9/1 = ON = programming mode
- Turn S1-S4 to the left
- Now the activation time of the thread wiper can be adjusted with potentiometer P8

The activation time can be tested in the active programming mode. Machine run by pedalling forward, then pedal back. A complete trimming sequence is thus executed: thread trimming, thread wiping, reversion and foot lifting.

Conclusion of the programming process

- Set S9/1 to **OFF**
- Set S1-S4 to previous position
- P8 recovers its initial signification

4.3 Necessary adjustments on position transmitter P5-2, switches and potentiometers before use

Before adjusting the position transmitter make sure that the sense of rotation of the motor shaft is correctly set. (see chapter 5: Adjustments of your control at delivery)

4.3.1 How to adjust the position transmitter

Caution! Power off by adjusting the discs of the position transmitter



Caution! Make sure that the generator disc is not damaged when adjusting the positions

- **Open the position transmitter**
(unscrew the cover of the position transmitter)

Adjustment of position 1 (lower needle position)

- Turn switch S3 to the right
- Actuate the pedal forward, then release it
- Adjust the (central) disc for position 1

Repeat the above process until the desired position is reached.

NOTE: The central disc is a double disc by which the slot width and thus the signal thread trimming 1 (FA1) can be changed. Moreover, the end of the signal thread trimming 1 (FA1) and the beginning of the signal thread trimming 2 (FA2) are determined. (see also signal diagrams under 7.)

4.3.2 The adjustment of the machine speed

How to adjust the desired speed of your machine

Open the service flap

- Select your speed range (see chapter 4.2.4)

Turn: (see fig. 4)

- potentiometer **P2** to the left stop

From outside turn:

- potentiometer **P8** to the right stop

Now actuate the pedal forward

Motor runs at corresponding speed

- Turn potentiometer **P2** to the right until the desired speed is adjusted

4.3.3 The external speed reduction

The maximum speed adjusted with P2 (n_{maxmax}) can be reduced to 1/4 through potentiometer P8 (n_{max}).

By turning P8 to the right stop the maximum speed adjusted with P2 will be executed.

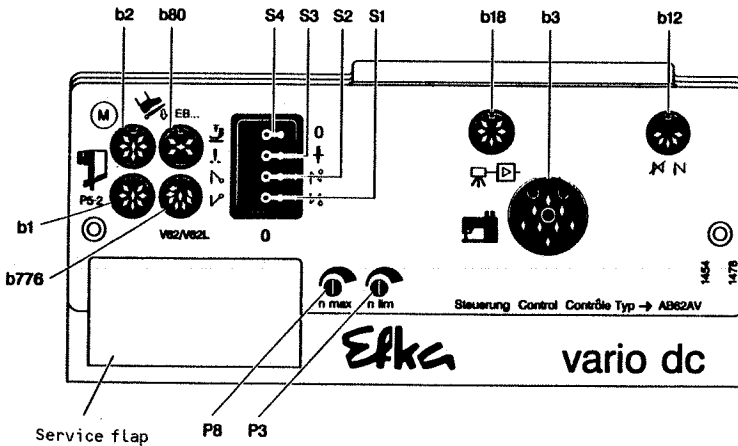


Figure 4

4.3.4 The maximum speed

With potentiometer P2 (n.maxmax) the maximum speed can be changed. The setting range for speed class up to 5000 RPM amounts to 625 - 5000 RPM. The setting range for speed class up to 10000 RPM amounts to 1250 - 10000 RPM.

Adjustment:

Open the service flap

- Select speed class (see chapter 4.2.4)
- Turn potentiometer **P2** (n.maxmax) to the left stop
- Turn potentiometer **P8** (n.max) to the right stop
- Turn potentiometer **P2** (n.maxmax) to the right until the desired maximum speed is adjusted

<u>Caution!</u>	Changing the maximum speed also involves new settings of initial, final backtacking and stitch counting speeds.
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4.3.5 The adjustment of the positioning speed

Open the service flap

With potentiometer **P1** the positioning speed can be adjusted in a range from 60 RPM to approx. 440 RPM.

4.3.6 The adjustment of the initial backtacking speed

Open the service flap

The initial backtacking speed (n.ar) can be adjusted with potentiometer **P4** in a range from 1/8 to the maximum speed.

4.3.7 The adjustment of the final backtacking and light barrier speed

Open the service flap

With potentiometer **P5** the final backtacking speed (n.er) can be adjusted in a range from 1/8 to the maximum speed.

The light barrier compensating stitches will be executed in the same way as the final backtacking speed (n.er).

4.3.8 Test operations for backtacking and stitch counting speeds

- Terminate the started seam by back pedalling
- Set S9/7 to **ON** (S9/1 must be on **OFF**)
As long as the test is running, you can hear an acoustic signal

Test operation for initial backtacking speed

- Switch on initial backtack (S2), switch off final backtack (S1)
- By actuating the pedal forward the machine will run at initial backtacking speed
The desired speed can be adjusted with **P4**.

Test operation for final backtacking speed

- Switch on final backtack (S1), switch off initial backtack (S2)
- By actuating the pedal forward, the machine will run at final backtacking speed
The desired speed can be adjusted with **P5**.

Test operation for stitch counting speed

- Switch off initial and final backtack (S1,S2)
- By actuating the pedal forward, the machine will run at stitch counting speed
The desired speed can be adjusted with **P3**.
- Set S9/7 to **OFF** again

4.3.9 Selection of initial and final backtack

The function of initial backtack can be adjusted at the Variocontrol V62 or V62L or at the control with switch S2.

S2 = left single initial backtack
S2 = middle initial backtack off
S2 = right doubleinitial backtack
(see figure 1 and chapter 3.3)

The function of final backtack can be adjusted in the same way as for initial backtack, either at the Variocontrol V62 or V62L, or at the control with switch S1.

S1 = left single final backtack
S1 = middle final backtack off
S1 = right double final backtack
(see figure 1 and chapter 3.3)

4.4 Adjustment of stitch numbers for initial and final backtack

Open the service flap

- Select your backtack (e.g. single initial backtack)
- Turn switch **S2** to the left.

If the initial backtacking section is to be executed forward, you must adjust DIL switches **S7 1-4** (see figure 5 and Programming of DIL switches)

If the initial backtacking section is to be executed backward, you must adjust DIL switches **S7 5-8**.

Turn switch **S2** to the right for a double initial backtack, otherwise follow the same stitch adjustment. If a Variocontrol is connected, you can also adjust the types of backtack at it. A single or double final backtack is adjusted with **S1**.

S1 = left single final backtack
S1 = right double final backtack

Caution! If switches 1 + 2 are in the middle position and no Variocontrol is connected, no backtack will be executed.

- Adjust stitches for final backtacking section forward with **S8 1-4**
- Adjust stitches for final backtacking section backward with **S8 5-8**

Table 1: Coding of the number of stitches for initial and final backtack

Number of stitches	Switches			
	S7/1 S7/5 S8/1 S8/5	S7/2 S7/6 S8/2 S8/6	S7/3 S7/7 S8/3 S8/7	S7/4 S7/8 S8/4 S8/8
0	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	ON	ON	OFF	OFF
4	OFF	OFF	ON	OFF
5	ON	OFF	ON	OFF
6	OFF	ON	ON	OFF
7	ON	ON	ON	OFF
8	OFF	OFF	OFF	ON
9	ON	OFF	OFF	ON
10	OFF	ON	OFF	ON
11	ON	ON	OFF	ON
12	OFF	OFF	ON	ON
13	ON	OFF	ON	ON
14	OFF	ON	ON	ON
15	ON	ON	ON	ON

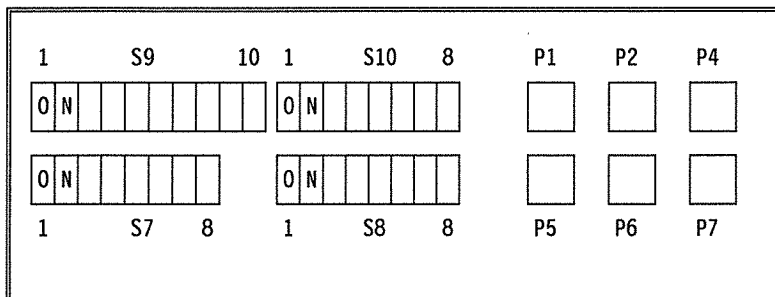


Figure 5

Programming of seam sections		
Switch	Position	Signification
S7/1	on	} 3 initial backtacking stitches forward
S7/2	on	
S7/3	off	
S7/4	off	
S7/5	on	} 3 initial backtacking stitches backward
S7/6	on	
S7/7	off	
S7/8	off	
S8/1	on	} 3 final backtacking stitches backward
S8/2	on	
S8/3	off	
S8/4	off	
S8/5	off	} 2 final backtacking stitches forward
S8/6	on	
S8/7	off	
S8/8	off	

4.5 The time adjustment of the stitch diagram correction

Open the service flap

With potentiometer P6 the time for the correction of the stitch diagram can be adjusted in a range from 0 ms to 510 ms.

If the potentiometer P6 is changed in the position "power OFF" the new value will not be transferred to "power ON"

4.6 The adjustment of the basic position of the needle

The motor stops in the selected basic position at stop within the seam.

Needle up

switch S3 = left

Needle down

switch S3 = right

4.7 The presser foot position

Select your presser foot lift!

Presser foot lift at stop within the seam **ON**

Turn switch S4 to the **left**

Presser foot lift at stop within the seam **OFF**

Turn switch S4 to the **right**

Presser foot lift at seam end

Open the service flap

Switch S9/4 = **ON**

Presser foot lift stored at seam end **ON**

Switch S9/4 = **OFF**

Presser foot lift stored at seam end **OFF**

A starting delay from lifted presser foot can be adjusted with potentiometer P7 from 0 to 510 ms.

If the potentiometer P7 is changed in the position "power OFF" the new value will not be transferred to "power ON"

4.8 The function of pushbutton "needle up/down"

The function of the external pushbutton S55 (see chapter 9) can be adjusted with DIL switch S9/2.

Open the service flap

- Turn S9/2 = ON = needle up

When actuating the external pushbutton S55, the motor will run from pos. 1 = needle down to pos. 2 = needle up.

- Turn S9/2 = OFF = needle up/down

When actuating the external pushbutton S55, the motor will run from pos. 1 to pos. 2 and from pos. 2 to pos. 1.

<p>NOTE: If the motor comes to a stop outside the slot between the two positions it moves to the selected position.</p>
--

If the presser foot is lifted, it lowers whenever the motor runs from pos. 1 to pos. 2 or from pos. 2 to pos.1.

4.9 The selection of softstart

Open the service flap

The softstart function can be adjusted by means of DIL switch S9/3

S9/3 = ON softstart connected
S9/3 = OFF softstart disconnected

When softstart is connected, the first 2 stitches will be executed at a speed of 500 RPM.

If the programmed speed is under 500 RPM, the corresponding pedal speed will be executed.

4.10 The stitch counting by working with VARIOCONTROL

The available sewing programmes for stitch counting are programmed through the separate operating element V62 or V62L (see special instructions for V62 or V62L).

With potentiometer P3 you can adjust the speed at which the stitch counting will be executed (see chapter 3.2).

<u>Caution!</u> Plug or unplug Variocontrol only when motor off.

4.11 The use of the light barrier function

The control can function with a light barrier module LSM 001.
Connection to socket b18 at the control (see fig. 6)

For executing different sewing programmes a Variocontrol V62L can be used. Connection to socket b776 (see fig. 6 and also special instruction manual for V62L).

Caution! Plug or unplug Variocontrol only when motor off.

Open the service flap

Different adjustments by means of the DIL switches
allow variations of the light barrier function

S10/3 = OFF Sewing start possible with light barrier "uncovered"
 S10/3 = ON Sewing start not possible with light barrier "uncovered"
 S10/4 = OFF Seam end with thread trimming triggered by light barrier
 S10/4 = ON Seam end without thread trimming triggered by light barrier
 S10/5 = OFF Light barrier sensing "uncovered"
 S10/5 = ON Light barrier sensing "covered"
 S9/9 = Light barrier compensating stitches
 S9/10 = Light barrier compensating stitches
 S10/1 = Light barrier compensating stitches
 S10/2 = Light barrier compensating stitches
 S10/6 = Light barrier filter for knitted fabrics
 S10/7 = Light barrier filter for knitted fabrics
 S10/8 = Light barrier filter for knitted fabrics

NOTE: The light barrier filter for knitted fabrics will be activated when the setting of the number of filter stitches (S10/6 -S10/8) is not equal to 0.

4.12 The external set-point adjuster

The external set-point adjuster is connected to socket b80 (see fig. 1 page 7).
 The following table describes the coding of each pedal step:

Pedal steps:	D	C	B	A	Function
-2	H	H	L	L	Function sequence for seam end
-1	H	H	H	L	Lift presser foot
0	H	H	H	H	Motor stops
½	H	H	L	H	Lower presser foot
1	H	L	L	H	Speed stage 1
2	H	L	L	L	Speed stage 2
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

L = input set on 0V Switch closed
 H = input opened Switch opened

4.13 Acoustic error messages

Caution!

All error messages cause the machine to stop. The error message is emitted until disconnection of the motor.

ERROR 1: Position transmitter defective or not mounted

Signal: 1 short beep, short pause, 1 long beep, ...

This error message will be emitted in the following cases:

- the position transmitter is defective or not connected
- the position transmitter is not mounted on the sewing machine shaft

ERROR 2: Blocking control

Signal: 2 short beeps, short pause, 1 long beep, ...

This message can have the following causes:

- the control notices that the machine shaft does not move despite motor activation
- the maximum speed is not reached (e.g. wrong pulley, etc.)
- the actual value is by 1000 RPM lower than the set value

ERROR 3: Commutation transmitter

Signal: 3 short beeps, short pause, 1 long beep, ...

This error message will be emitted if

- the control senses that the commutation transmitter is defective or not connected
- the connections for position transmitter and commutation transmitter were changed by mistake

ERROR 4: Processor breakdown (illegal opcode)

Signal: 4 short beeps, short pause, 1 long beep, ...

This error message indicates that the microprocessor is no more able to work properly.

This failure can have the following causes:

- disturbances from outside (e.g. sewing machine head not earthed, defective power supply etc.)
- hardware malfunction on the printed circuit board of the computer.

ERROR 88: Mains interruption

Signal: 1 long beep, short pause, 1 long beep,...

This error message is emitted when the mains supply is briefly interrupted (up to about 2 sec.).

4.14 Acoustic messages in the active programming mode

Braking frequency at standstill

Signal: 1 short beep, long pause, ...

This message indicates that the programming mode is activated and the braking frequency at standstill can be adjusted by means of potentiometer P3.

Reversion

Signal: 2 short beeps, long pause, ...

This message indicates that the programming mode is activated and the reversion can be adjusted by means of potentiometers P3 and P8.

Test operation for backtacking speeds

Signal: 3 short beeps, long pause, ...

This message is emitted as long as S9/7 is in position ON and after terminating the started seam by heeling the pedal as long as S9/7 is in position ON.

5. Adjustments of your control at delivery

Programming of operations		
Switches	Position	Signification
S9/1	off	Programming mode off
S9/2	off	Pushbutton needle up/down
S9/3	off	Softstart off
S9/4	off	No presser foot lift at the end of the seam
S9/5	off	Trimming stitch backward off
S9/6	off	Left rotation of the motor shaft
S9/7	off	Test operation for backtacking speeds off
S9/8	off	Speed class 5000 RPM

Programming of light barrier		
Switches	Position	Signification
S9/9	on	} 5 light barrier compensating stitches barrier
S9/10	off	
S10/1	on	
S10/2	off	
S10/3	on	
S10/4	on	Sewing start blocked by light barrier "uncovered"
		Seam end triggered by light barrier with thread trimming
S10/5	on	Light barrier sensing "covered"
S10/6	off	} 0 filter stitches for knitted fabrics
S10/7	off	
S10/8	off	

Adjustments of potentiometers		
Potentiometer	Position	Signification
P1	200 RPM	Positioning speed (n.pos)
P2	4000 RPM	Maximum speed (n.maxmax)
P3	3500 RPM	Stitch counting speed (n.stich)
P4	1500 RPM	Initial backtacking speed (n.ar)
P5	1500 RPM	Final backtacking speed (n.er)
P6	0 ms	Time for correction of stitch diagram
P7	80 ms	Time for starting delay from lifted foot
	(+/-10 ms)	t8
P8	4000 RPM	n.max = n.maxmax
		t3

Other preset functions (via programming mode)		
Switches	Position	Signification
	off	Braking frequency at standstill
	0 ms	Reversion delay
	0°	Reversing angle
	80 ms	Operating time for thread wiper
		drd ird t6

Programming of backtacking sections		
Switches	Position	Signification
S7/1	on	} 3 initial backtacking stitches forward
S7/2	on	
S7/3	off	
S7/4	off	
S7/5	on	} 3 initial backtacking stitches backward
S7/6	on	
S7/7	off	
S7/8	off	
S8/1	on	} 3 final backtacking stitches backward
S8/2	on	
S8/3	off	
S8/4	off	
S8/5	off	} 2 final backtacking stitches forward
S8/6	on	
S8/7	off	
S8/8	off	

Switches accessible from outside		
Switches	Position	Signification
S1	right	Double final backtack
S2	right	Double initial backtack
S3	right	Needle position at stop within the seam needle down
S4	right	Foot lift at stop within the seam off

Other preset values:

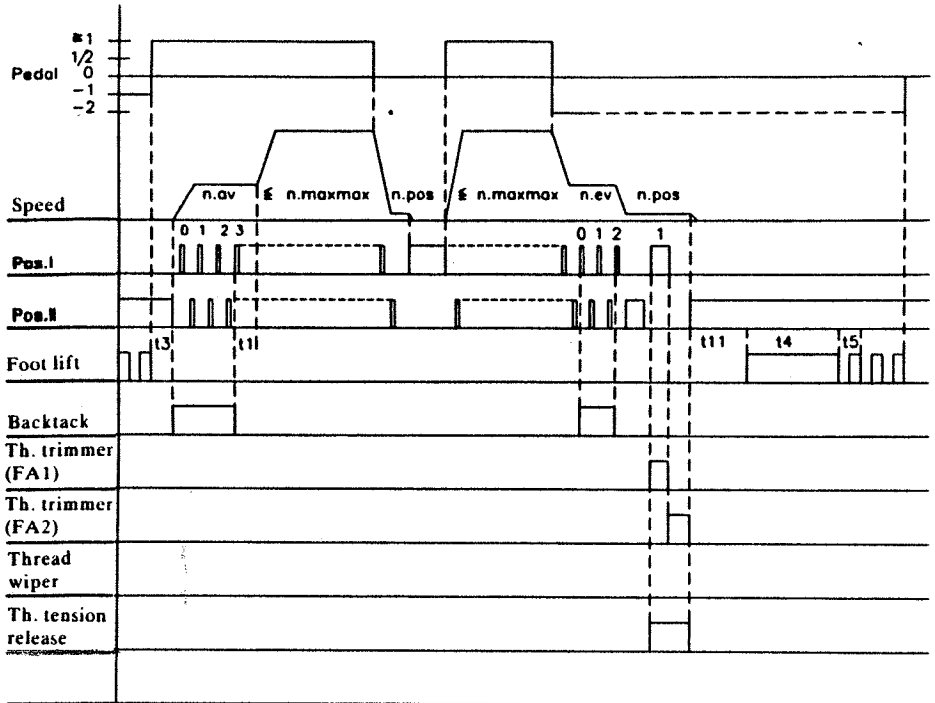
The following values are preset in the EEPROM and cannot be modified by the operator.

t1	Delay of speed release after initial backtack	100 ms (+/-10 ms)
t2	Delay of presser foot lift by heeling the pedal half back	120 ms (+/-10 ms)
t4	Full drive of the presser foot lift	400 ms (+/-10 ms)
	Clock ratio of presser foot lift	1:1
t5	Clock frequency of the presser foot lift	15 kHz
t7	Delay of presser foot lift after thread wiping	80 ms (+/-10 ms)
t9	Clock frequency of backtack	15 kHz
	Clock ratio of backtack	1:1
t10	Full drive of backtack	400 ms (+/-10 ms)
t11	Delay of presser foot lift without thread wiper	50 ms (+/-10 ms)
t12	Starting delay after thread trimming	300 ms (+/-10 ms)
n.soft	Softstart speed	500 RPM
c.soft	Softstart stitches	2

6. Definitions

Basic position of the needle	Needle position at stop within the seam
Braking at standstill	Braking effect at machine standstill in order to prevent the handwheel from moving by itself
Final backtack	Backstacking at the end of the seam by automatic forward, backward and forward sections.
Initial backtack	Backstacking at the beginning of the seam by automatic forward, backward and forward sections.
Maximum speed	Highest speed of the sewing machine
to position	Machine stop in certain positions (needle positions)
Positioning and trimming speed	Adjusted lowest speed of the sewing machine, at which positioning and thread trimming are executed
Potentiometer	Adjustable electric resistance
Softstart	The first 2 stitches of a seam are performed at a reduced speed
Speed range	Operative range of the sewing machine limited by the positioning and trimming speed, as well as by the maximum speed

Machine run with intermediate stop

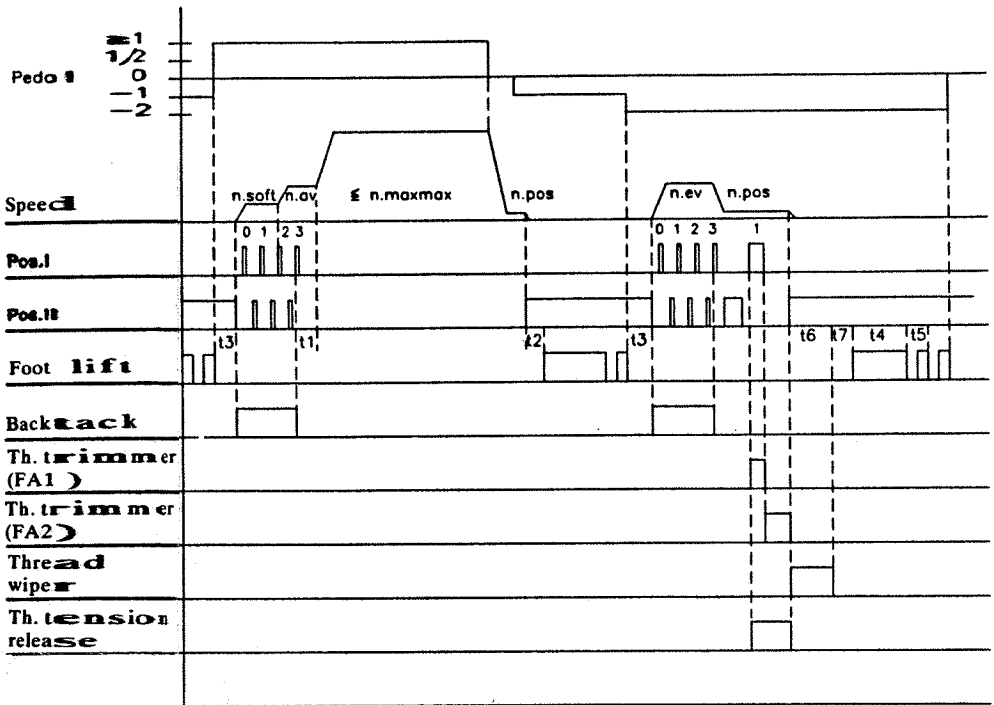


Single initial backtrack on (switchable with S2)
 Single final backtrack on (switchable with S1)
 Thread wiper not connected

t1 = Delay of speed release after initial backtrack
 t3 = Starting delay after presser foot lift (adjustable with P7)
 t4 = Full drive of presser foot lift
 t5 = Frequency of presser foot lift
 t11 = Delay of presser foot lift without thread wiper

n.pos = Positioning speed (adjustable with P1)
 n.maxmax = Maximum speed (adjustable with P2)
 n.av = Initial backtacking speed (adjustable with P4)
 n.ev = Final backtacking speed (adjustable with P5)

Trimming from intermediate stop

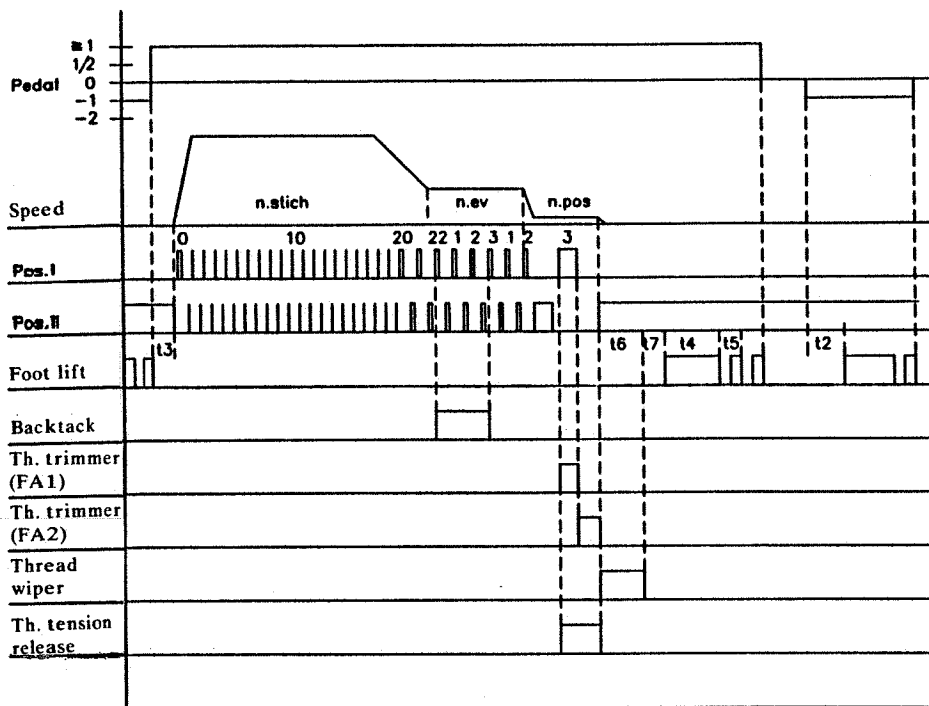


Softstart on (adjustable with S9/3)
 Single initial backtack on (switchable with S2)
 Single final backtack on (switchable with S1)
 Basic position II on (switchable with S3)

t1 = Delay of speed release after initial backtack
 t2 = Delay of presser foot lift by back pedalling half back
 t3 = Starting delay after presser foot lift (adjustable with P7)
 t4 = Full drive of presser foot lift
 t5 = Frequency of presser foot lift
 t6 = Operating time of thread wiper
 t7 = Delay of presser foot lift after thread wiping

n.maxmax = Maximum speed (adjustable with P2)
 n.av = Initial backtacking speed (adjustable with P4)
 n.ev = Final backtacking speed (adjustable with P5)
 n.pos = Positioning speed (adjustable with P1)
 n.soft = Softstart speed (fixed in the programme)

End sensing by stitch counting



Initial backtack off (switchable with S2)
 Stitch counting on (connected to Variocontrol)
 Double final backtack on (switchable with S1)

t2 = Delay of presser foot at pedal-1
 t3 = Starting delay after presser foot lift
 t4 = Full drive of presser foot lift
 t5 = Frequency of presser foot lift
 t6 = Operating time of thread wiper
 t7 = Delay of presser foot lift after thread wiping

n.pos = Positioning speed (adjustable with P1)
 n.stich = Stitch counting speed (adjustable with P3)
 n.ev = Final backtacking speed (adjustable with P5)

8. Connections to the sockets

- b1 - Position transmitter P5-2
- b2 - Commutation transmitter for DC motor
- b3 - Solenoid presser foot lift, thread trimmer, thread wiper, backtack, pushbutton needle up/down
- b12 - Pushbutton suppression of backtack / execution of backtack
Backtacking within the seam
- b18 - Light barrier module LSM 001
- b80 - External set-point adjuster EB301 (standard) or EB101, EB102
- b776 - Operating element V62 or V62L

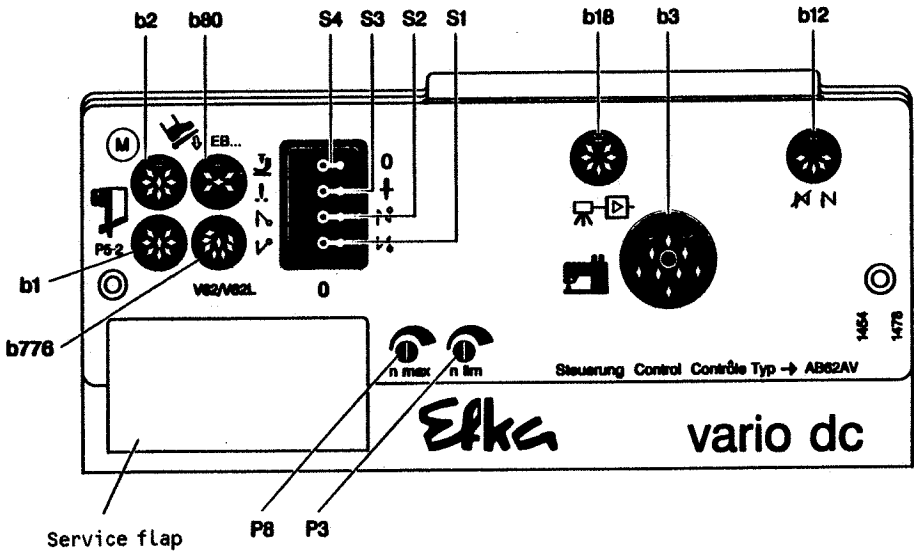


Figure 6

10. Unit consisting of

The motor consists of the following parts

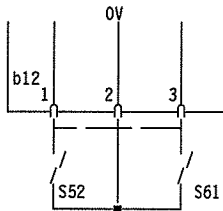
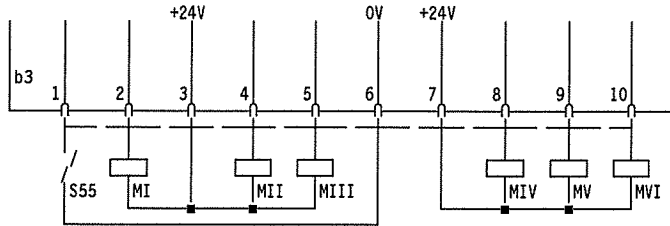
1	direct current motor type DC....	
1	control box AB62AV with	
	-power pack	type N152
	-set-point adjuster	type EB301
1	position transmitter	type P5-2
1	main switch	type NS105
1	set of standard accessories	B125
1	set of accessories	Z4
1	pulley	DIN 42692-L-B71-L

11. Special Accessories

operating element VARIOCONTROL type V62	part no. 59.0131 {1}
operating element VARIOCONTROL type V62L	part no. 59.0146 {1}
light barrier module VARIOLUX type LSM-001	part no. 61.00028
operating solenoid type EM1.. (for e.g. presser foot lift, backtack etc.)	different versions on demand
extension cable for external set-point adjuster EB301, approx. 1500 mm long, with plug and plug and socket connection	part no. 1111787
5-pin plug with slide index for connection of another external control	part no. 0501278
extension cable for position transmitter P4-..and. P5-..., approx. 1100 mm long, with plug and plug and socket connection	part no. 1111584
knee switch type KN3 (pushbutton) with cord, approx. 950 mm long without plug	part no. 58.0013 {1}
sewing light transformer	please indicate mains voltage and sewing light voltage (6,3V or 12V)
3-pin plug with slide index	part no. 0500402
10-pin plug	part no. 0500357

{1} available in different colours on demand

9. Connection diagram of the sockets



- MI - Solenoid thread trimmer FA2 (max. 6.5A)
- MII - Solenoid (or solenoid valve) presser foot lift (max. 6.5A)
- MIII - Solenoid thread trimmer 1 + 2 = FA1 + FA2 (max. 6.5A)
- MIV - Solenoid thread wiper (max. 6.5A)
- MV - Solenoid (or solenoid valve) backtack (max. 6.5A)
- MVI - Solenoid thread trimmer FA1 (max. 6.5A)

- S52 - Pushbutton for: BACKTACKING WITHIN THE SEAM
- S55 - Pushbutton for: MOVING THE NEEDLE FROM POSITION DOWN TO UP
MOVING THE NEEDLE FROM POSITION UP TO DOWN
- S61 - Pushbutton for: SUPPRESSING THE CONNECTED INITIAL or FINAL BACKTACK ONCE and EXECUTING THE DISCONNECTED INITIAL or FINAL BACKTACK ONCE
(Actuation of S61 before sewing start = initial backtack,
actuation of S61 within the seam = final backtack)

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