
efka dc modular

CONTROL

AB70B4008

INSTRUCTION MANUAL

PARAMETER LIST

INSTRUCTION

FOR THE ELECTRICAL CONNECTION OF ADDITIONAL DEVICES

No. 206377 english

CONTENTS

1. SOME PRELIMINARY REMARKS	page 3
2. PUTTING INTO OPERATION AND HANDLING	page 5
2.1 OPENING OF TECHNICIAN LEVEL	page 5
2.2 ADJUSTMENT OF SENSE OF ROTATION OF THE MOTOR	page 6
2.3 ADJUSTMENT AND STORAGE OF POSITIONS	page 7
2.3.1 BASIC POSITION	page 7
2.3.2 NEEDLE POSITIONS	page 8
2.3.2.1 CORRECTION OF NEEDLE POSITIONS	page 9
2.4 ADDRESSING AND PROGRAMMING OF PARAMETERS (TECHNICIAN LEVEL)	page 10
2.5 (DIS)CONNECTION OF BASIC FUNCTIONS (OPERATOR LEVEL)	page 13
2.6 PERFORMANCE OF RESET	page 14
3. PARAMETER LIST	page 16
3.1 SOME ADVICES	page 16
3.2 FAULT INDICATIONS	page 17
3.3 PARAMETERS OF TECHNICIAN LEVEL	page 18
3.4 DIAGRAMS OF SIGNALS	page 23
4. INSTRUCTIONS FOR THE ELECTRICAL CONNECTION OF THE ADDITIONAL DEVICES	page 28

1. SOME PRELIMINARY REMARKS

The control's field application comprises the following machines:

Lockstitch machines, chainstitch machines and overlock machines of different manufacturers

The control is provided with a keyboard accessible from outside which serves for the programming of the control and for the selection of the desired machine functions; the input connection states and values are stored in the control.

The access to functions and parameters is divided between two levels:

OPERATOR LEVEL

On this level some basic functions can be (dis)connected which are frequently required by the machine user for the sewing operations and must therefore be easily changeable.

TECHNICIAN LEVEL

On this level all parameters which are not submit to frequent changes can be adjusted. These parameters are stated in the later following parameter list. In addition, also the basic functions of the OPERATOR LEVEL can be addressed and (dis)connected on this level.

IMPORTANT! BOTH THE (DIS)CONNECTION OF THE BASIC FUNCTIONS AND THE ADDRESSING AND PROGRAMMING OF THE PARAMETERS ARE, AS A MATTER OF PRINCIPLE, ONLY POSSIBLE IMMEDIATELY AFTER THE MACHINE HAS BEEN SWITCHED ON OR AFTER A PRECEDING TRIMMING OPERATION.

THE CONNECTION STATES AND SETTINGS ARE TRANSFERRED INTO THE MEMORY OF THE CONTROL AFTER TERMINATED ADJUSTMENT OPERATION BY SHORT START OF SEWING. THE MACHINE MAY ONLY BE SWITCHED OFF AFTERWARDS AS OTHERWISE THE PREVIOUSLY SET VALUES WILL GET LOST (exception: RESET).

After having been mounted on the machine and after adjustment of its sense of rotation and of the positions, the motor is immediately ready for operation since the machine specific parameters have already been programmed according to the instructions of the machine manufacturer resp. the supplier.

It is recommended to initiate an automatic matching of the speed of rotation, and that on the first putting into operation of the machine, after an exchange of the control and after the replacement of the machine head by that of another class or another brand. The matching considers the dynamic behaviour of the machine and optimizes the accuracy of the speed of rotation.

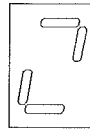
2. PUTTING INTO OPERATION AND HANDLING

2.1 OPENING OF TECHNICIAN LEVEL

In order to be able to address and program the parameters of the TECHNICIAN LEVEL, this must be opened:

- (1) Press pushbutton P and switch on the machine while keeping pushbutton depressed.

- display indicates blinking:



- (2) With pushbutton E the parameters available according to the parameter list can now successively be recalled. For this purpose the pushbutton must repeatedly be pressed until the abbreviation of the desired parameter appears on the display (= operating step (1) in chapters 2.2, 2.3.1, 2.3.2 and 2.4).

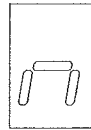
The opened TECHNICIAN LEVEL respectively remains accessible until the machine is switched off. After a sewing operation the pedal just has to be shortly heeled completely back and then pushbutton P depressed. On the display above symbol reappears. After pressing of pushbutton E the display indicates the abbreviation of the parameter addressed at last, the connection state or input value of which now being correctable, if required.

2.2 ADJUSTMENT OF SENSE OF ROTATION OF THE MOTOR

The required sense of rotation of the motor has to be adjusted before the needle positions (chapter 2.3.2), since these must be readjusted on every reversion of the sense of rotation.

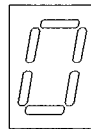
- (1) Address parameter "sense of rotation of the motor" with pushbutton E.

- display indicates:



- (2) Press pushbutton +.

- display indicates:



(= clockwise rotation)

or

- display indicates:



(= anti-clockwise rotation)

- (3) Change the connection state, if required, with pushbutton + or -.

2.3 ADJUSTMENT AND STORAGE OF POSITIONS

The positions of the machine are registered by the position transmitter in steps (increments) of approx. $0,7^\circ$. One revolution of the handwheel is thus subdivided into 512 increments.

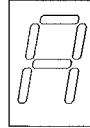
The counting starts from a basic position to be input which may e. g. be the position where the needle point is at the height of the needle plate (this basic position is freely determinable).

Once input, the needle positions will also remain stored if the position transmitter is exchanged; merely the basic position will have to be input anew.

2.3.1 BASIC POSITION

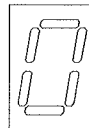
(1) Address parameter "basic position" with pushbutton E.

- display indicates:



(2) Press pushbutton +.

- display indicates blinking:



(3) Turn handwheel until the indication on the display stops blinking, then position handwheel in a way that the needle point will be at the height of the needle plate (or in another desired position).

Now, the adjustment operation can either be terminated with operating step (4) or - if, besides the basic position, also the needle positions shall be adjusted - be continued with operating step (2) in chapter 2.3.2.

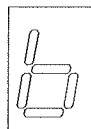
(4) Press pushbutton P.

- indication on the display disappears
- adjustment operation is terminated

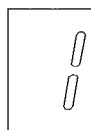
2.3.2 NEEDLE POSITIONS

- (1) Address parameter "lower needle position" with pushbutton E.

- display indicates:



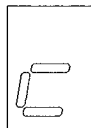
- (2) Press pushbutton +.
- display indicates blinking:



- (3) Turn handwheel until the indication on the display stops blinking, then adjust lower needle position.

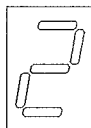
- (4) Address parameter "upper needle position" with pushbutton E.

- display indicates:



- (5) Press pushbutton +.

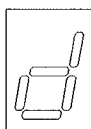
- display indicates blinking:



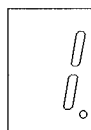
- (6) Turn handwheel until the indication on the display stops blinking, then adjust upper needle position.

- (7) Address parameter "adjustment of connection point for signal FA2" (see chapter 3.4.1) with pushbutton E.

- display indicates:



- (8) Press pushbutton +.
- display indicates blinking:



- (9) Turn handwheel until the indication on the display stops blinking, then adjust connection point for signal FA2.
- (10) Press pushbutton P.
- indication on the display disappears
- adjustment operation is terminated

In case of any inaccuracies of positioning these will be recognized by the control during the first test run and will then automatically be corrected.

2.3.2.1 CORRECTION OF NEEDLE POSITIONS

If a needle position is to be corrected, the adjustment operation will have to be repeated. Thereby, those positions which need not be modified can be skipped by repeatedly pressing pushbutton E until the abbreviation of the desired parameter appears on the display.

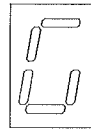
The position to be corrected can then be readjusted according to the preceding description.

2.4 ADDRESSING AND PROGRAMMING OF PARAMETERS (TECHNICIAN LEVEL)

As an example for all other parameters the addressing and programming of parameters "maximum speed" and "softstart stitches" are described hereafter.

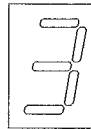
- (1) Address parameter "maximum speed" with pushbutton E.

- display indicates:



- (2) Press pushbutton +.

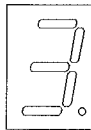
- display indicates e. g.:



(= the earlier set speed value lies between 3000 and 3400 RPM, indicated by the figure)

or

- display indicates e. g.:

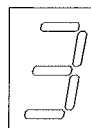


(= the earlier set speed value lies between 3500 and 3900 RPM, indicated by the figure with point)

- (3) Increase or decrease maximum speed with pushbutton + or -, e. g. as follows:

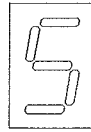
desired speed of rotation = 5600 RPM
set speed of rotation = 3400 RPM

- display indicates:



Keep pushbutton + depressed until

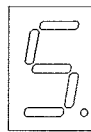
- display indicates:



(= 5000 RPM)

Repeatedly press pushbutton + shortly until

- display indicates:



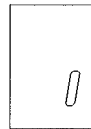
(= 5500 RPM)

Press pushbutton + once again shortly
(= 5600 RPM).

The speed value is, in this example, changed in steps of 100 RPM, i. e. every short pressing of pushbutton + or - increases or decreases the value by 100 RPM, whereas sustained pressing of a pushbutton continuously changes the value by a multiple of 100 RPM (step sizes of other parameters: see parameter list).

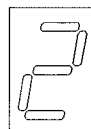
(4) Address parameter "softstart stitches" with pushbutton E.

- display indicates:



(5) Press pushbutton +.

- display indicates e. g.:



(= earlier set stitch number)

(6) Increase or decrease stitch number with pushbutton + or -.

Further parameters can analogously be addressed and programmed.

(7) Press pushbutton P.

- indication on the display disappears
- adjustment operation is terminated

2.5 (DIS)CONNECTION OF BASIC FUNCTIONS (OPERATOR LEVEL)

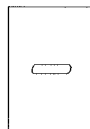
With pushbutton E, + and - the following functions can be (dis)connected:

- Pushbutton E - SOFTSTART
 OFF (LED is not illuminated)
 ON (LED is illuminated)
- Pushbutton + - THREAD TRIMMER
 (and THREAD WIPER)
 OFF (LED is not illuminated)
 ON (LED is illuminated)
- Pushbutton - - NEEDLE POSITION AT STOP BEFORE
 TRIMMING
 DOWN (LED is not illuminated)
 UP (LED is illuminated)

In addition, the adjusted maximum speed (see chapter 3.3) can be reduced down to 50% during a sewing operation. The speed ranges 2...11 fit automatically to the changed maximum speed.

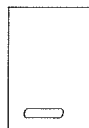
Adjustment:

While machine is running press pushbutton - until display indicates:



The maximum speed is thus reduced.

While machine is running press pushbutton - until display indicates:



The maximum speed is thus reduced by 50%.

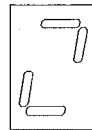
By pressing pushbutton + while machine is running the reduced maximum speed can be increased again or the reduction cancelled.

If one starts sewing for a short moment after the adjustment, the control memorizes the speed value, which remains saved after the switch-off of the machine.

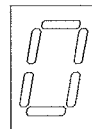
2.6 PERFORMANCE OF RESET

By means of a RESET all basic functions and parameters can be reset to the adjustments made by the manufacturer.

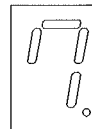
- (1) Switch off machine.
- (2) Press pushbutton P and switch on machine while keeping pushbutton depressed.
 - display indicates blinking:



- (3) Repeatedly press pushbutton - until
 - display indicates:



- (4) Set number 76 with pushbutton + or - according to operating step (3) in chapter 2.4 (step size = 1).
 - display indicates:

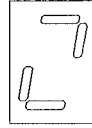


The RESET is terminated with operating step (5) or (6). Step (5) initiates a reset to the sewing mode and enables the continuation of sewing, after step (6) the programming mode is connected and the reset connection states resp. settings can be checked and, if required, readjusted (as described in chapter 2.4).

- (5) Press pushbutton P shortly.
 - RESET is terminated
 - indication on the display disappears

(6) Press pushbutton P a bit longer.

- RESET is terminated
- display indicates blinking:



3. PARAMETER LIST

3.1 SOME ADVICES

The following description of the parameters includes the function, the setting range (from/to) resp. the possibility of adjustment (on/off), in > < the PRESET value or PRESET connection state provided by the manufacturer as well as in () the setting step by which a value or a connection state can be modified by short pressing of pushbutton + or -.

The EPROM on the P-C board is marked with the programme number of the control and with an index in form of a letter. In the following list the index from which on the respective parameter is available and thus programmable is assigned to each parameter. In addition, such an index can also be assigned to a partial range of the parameter (possibility of adjustment, PRESET value etc.), if this has become available or has been modified after the start of production. If one index or several indices are put in (), its/their availability will be confined to controls having an EPROM marked with one of these indices.

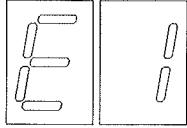
Some parameters which are provided for the setting of large spaces of time (e. g. 0...2500 ms) can only be programmed by steps (e. g. 0...9 steps). Each step comprises 4 times so that with the existing 10 steps up to 40 times are available for the settings. Within one step every short pressing of pushbutton + or - leads to the time directly superiour or inferiour without change of the step indication on the display.

The times assigned to the steps are progressive in direction of the maximum value (corresponding to the displacement of a conventional mechanic potentiometer).

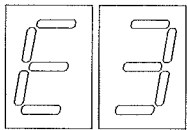
The "non-mechanical thread wiper" which will be subsequently often quoted is a device which executes the "thread wiping" function by blowing air.

3.2 FAULT INDICATIONS

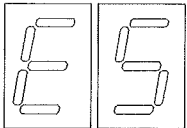
The abbreviations appear on the display in constant change.



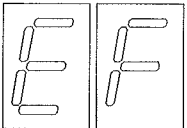
Position transmitter is not connected or is defective, or supply voltage is too low



Pedal is not in basic position when machine is switched on

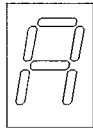


Machine blocks or does not reach the speed predetermined by the pedal position (after elimination of the fault switch motor off and on again)



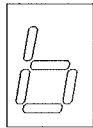
Processor in control disturbed

3.3 PARAMETERS OF TECHNICIAN LEVEL



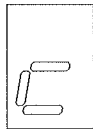
Basic position
(e. g. needle point at needle plate level)

A



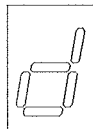
Lower needle position

A



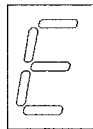
Upper needle position

A



Connection point for signal FA2
(see chapter 3.4.1)

A



Positioning speed

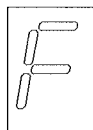
A

60...390 RPM >150< (10)

D

70...500 RPM >150< (10)

B



Trimming speed

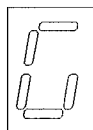
A

60...390 RPM >180< (10)

D

70...500 RPM >180< (10)

B



Maximum speed

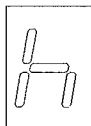
A

400...9900 RPM >3000< (100)

(A)

1000...9900 RPM >3000< (100)

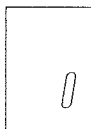
B



Softstart speed

A

70...990 RPM >500< (10)



Softstart stitches

A

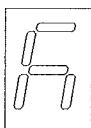
0...9 >3< (1)



Operating time of thread wiper
(for lockstitch machines and chainstitch
machines with mechanical thread wiper -
adjustable time: 0...2500 ms)

A

Steps 0...9 >4<



Start delay after terminated thread wiping
(for lockstitch machines)

A

Activation delay of presser foot lift
after thread trimming resp. after thread
wiping
(for chainstitch machines with mechanical
thread wiper)

Activation delay of presser foot lift
after thread trimming
(for overlock machines)

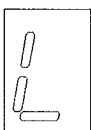
Activation delay of thread wiper
(for chainstitch machines with non-
mechanical thread wiper)

0...990 ms >80< (10)

(A)

50...800 ms >80< (10)

B

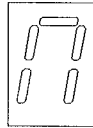


Increments for reversion

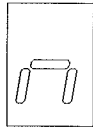
A

(512 increments = 1 revolution of the
handwheel)

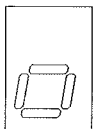
0...500 >0< (10)



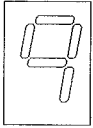
Activation delay of reversing operation A
 0...990 ms >0< (10)



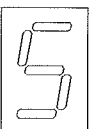
Sense of rotation of the motor (A) C
 0 = clockwise rotation
 1 = anticlockwise rotation
 >1<



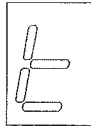
Force of partial brake during standstill A
 of the machine
 Steps 0...30 >0< (1) (A)
 Steps 0...30 >5> (1) B



Adaptation of the control to the machine (A) C
 and trimming system
 (see the following diagrams of signals)
 Control is adjusted for:
 1 = lockstitch machines
 2 = chainstitch machines
 with mechanical thread wiper
 3 = overlock machines
 4 = chainstitch machines
 with non-mechanical thread wiper
 >1<



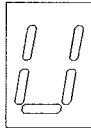
Operating time of thread trimmer A
 (for chainstitch machines and overlock
 machines -
 adjustable time: 0...2500 ms)
 Steps 0...9 >3<



Start delay after presser foot lift
(for chainstitch machines and overlock machines)

A

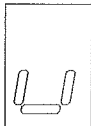
0...600 ms >80< (10)



Activation delay of presser foot lift
(for chainstitch machines with non-mechanical thread wiper -
adjustable time: 0...2500 ms)

A

Steps 0...9 >5<

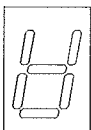


Blocking of machine run by machine switch
S68

A

1 = with machine switch open the machine
run is blocked
(unblocking of machine run: close S68,
move pedal in neutral position)
0 = blocking of machine run is not
activated (S68 without function)

>0<



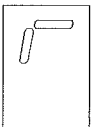
Softstart stitches after power ON

C

0 = OFF

1 = ON

>1<

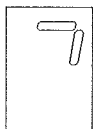


Braking effect at a speed reduction without
initiation of a machine stop

A

Steps 1...25 >3< (1)

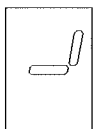
Step 25 = maximum effect



Braking effect after initiation of a machine stop until positioning A

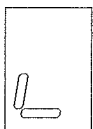
Steps 1...25 >10< (1)

Step 25 = maximum effect



Amplification factor for speed regulation A

Steps 0...63 >5< (1)



PDM Constant (PLO) A

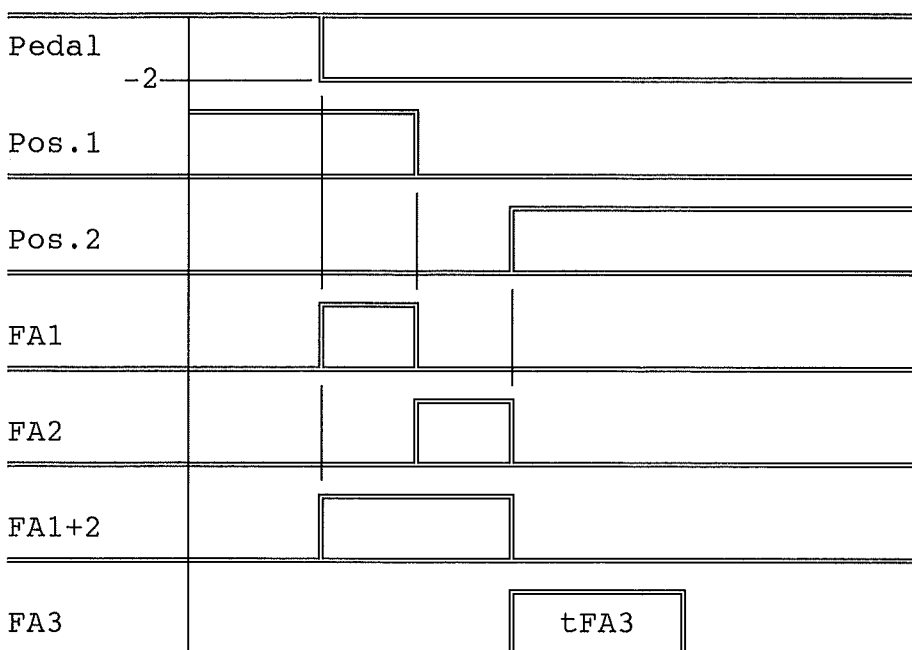
0...99 >40< (1)

3.4 DIAGRAMS OF SIGNALS (seam end)

3.4.1 Lockstitch machines

Pedal -2 = pedal completely heeled back
 Pos.1 = lower needle position
 Pos.2 = upper needle position
 FA1* = thread trimmer (MI)
 FA2* = thread trimmer (MII)
 FA1+2* = thread trimmer (MIV)
 FA3 = thread wiper (MIII)
 tFA3 = operating time of thread wiper

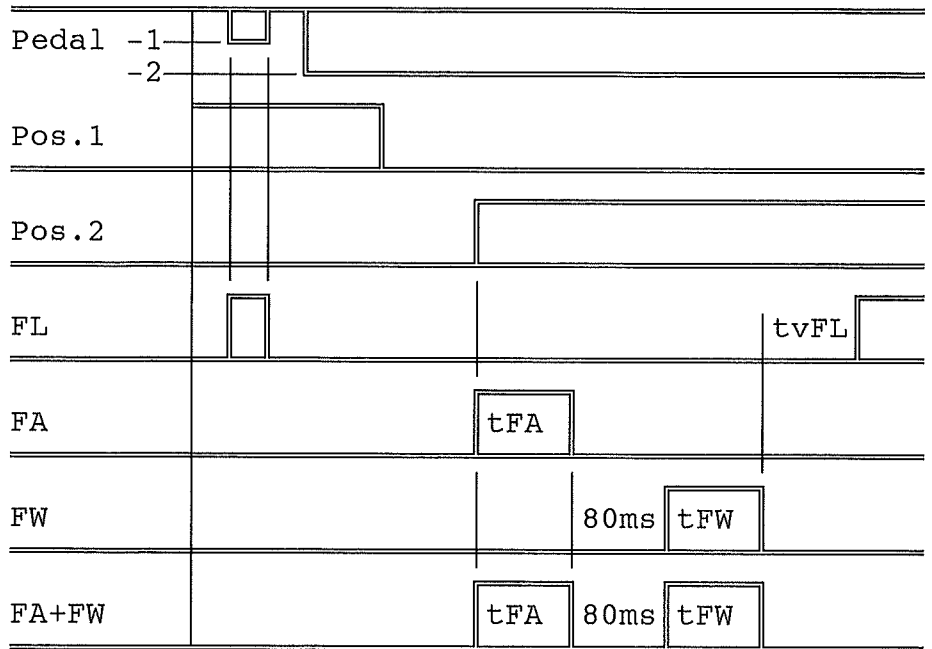
*Depending on the thread trimmer system one of these signals is to be used.



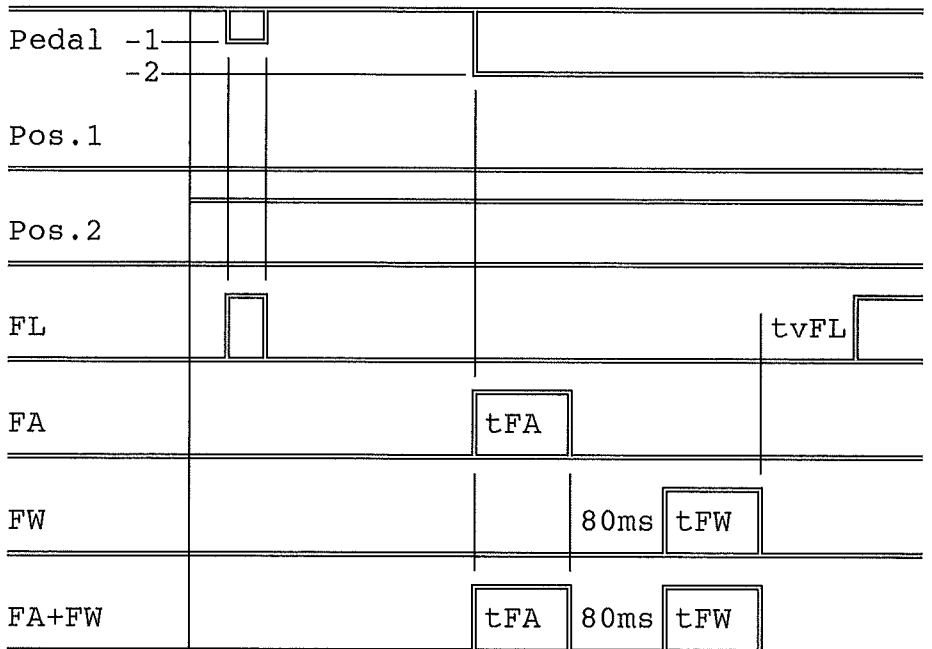
3.4.2 Chainstitch machines with mechanical thread wiper

Pedal -1 = pedal slightly heeled back
 Pedal -2 = pedal completely heeled back
 Pos.1 = lower needle position
 Pos.2 = upper needle position
 FA = thread trimmer (MI)
 tFA = operating time of thread trimmer
 FW = thread wiper (MII)
 tFW = operating time of thread wiper
 FA+FW = signal for optional use (MIV)
 FL = presser foot lift (MIII)
 tvFL = activation delay of presser foot lift after thread trimming resp. after thread wiping

3.4.2.1 Needle position at stop before trimming
= DOWN



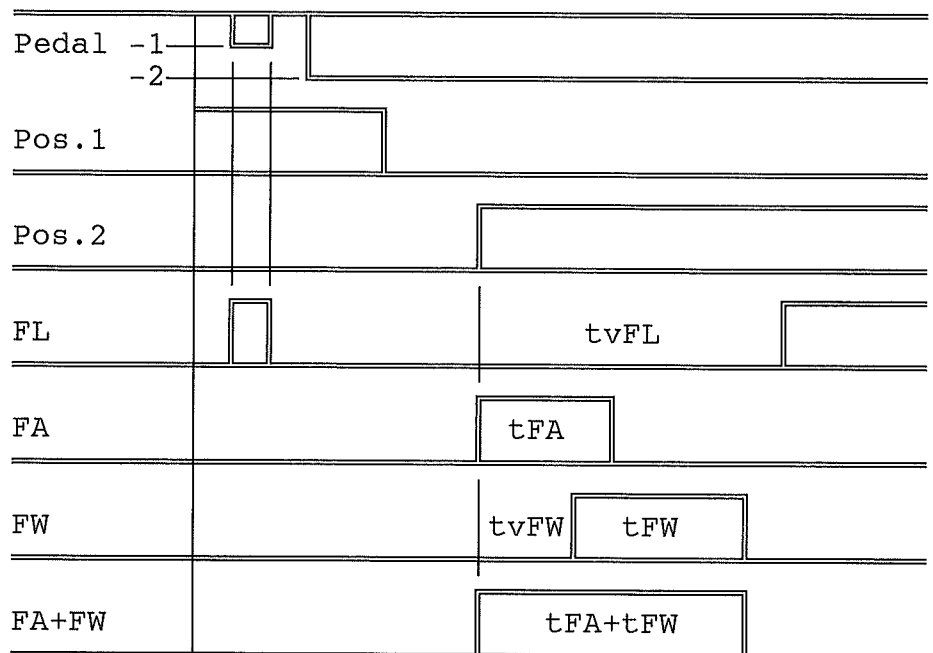
3.4.2.2 Needle position at stop before trimming
= UP



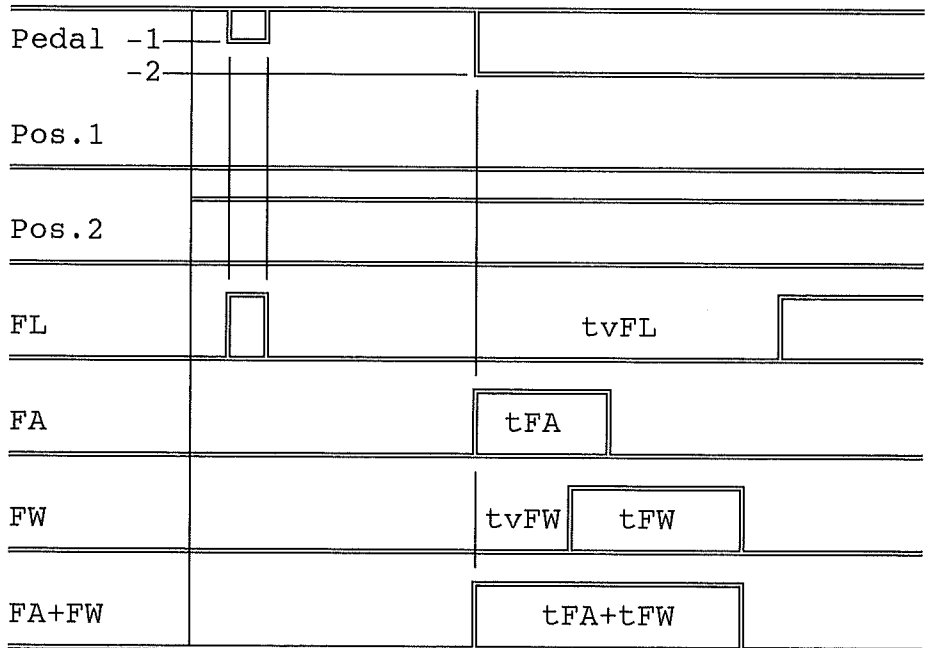
3.4.3 Chainstitch machines with non-mechanical thread wiper

Pedal -1 = pedal slightly heeled back
 Pedal -2 = pedal completely heeled back
 Pos.1 = lower needle position
 Pos.2 = upper needle position
 FA = thread trimmer (MI)
 tFA = operating time of thread trimmer
 FW = thread wiper (MII)
 tFW = operating time of thread wiper
 tvFW = activation delay of thread wiper
 FA+FW = signal for optional use (MIV)
 FL = presser foot lift (MIII)
 tvFL = activation delay of presser foot lift

3.4.3.1 Needle position at stop before trimming = DOWN



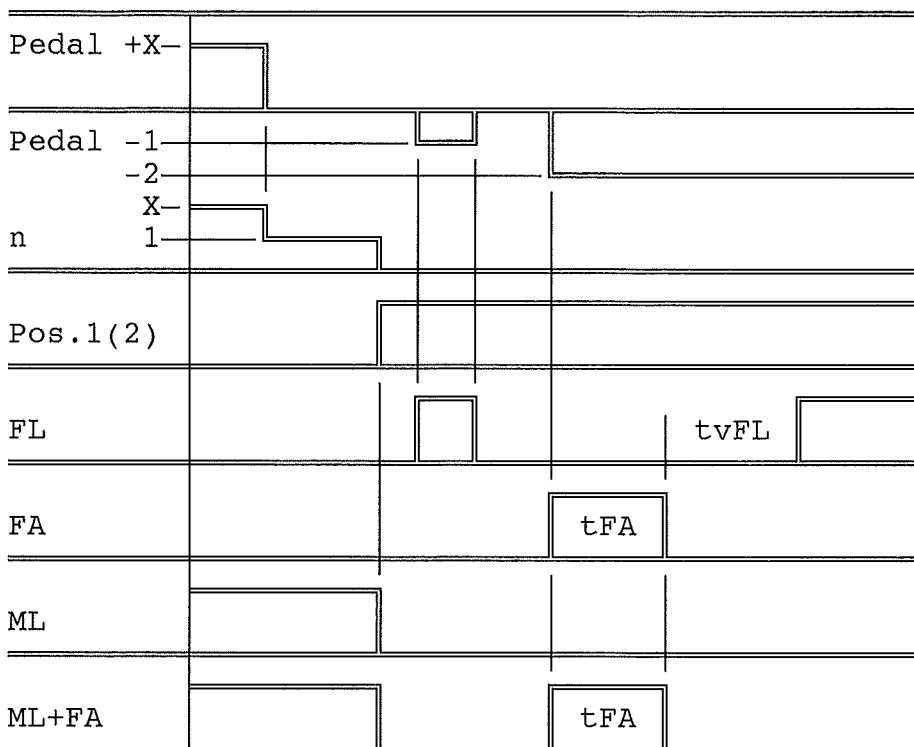
3.4.3.2 Needle position at stop before trimming = UP



3.4.4 Overlock machines

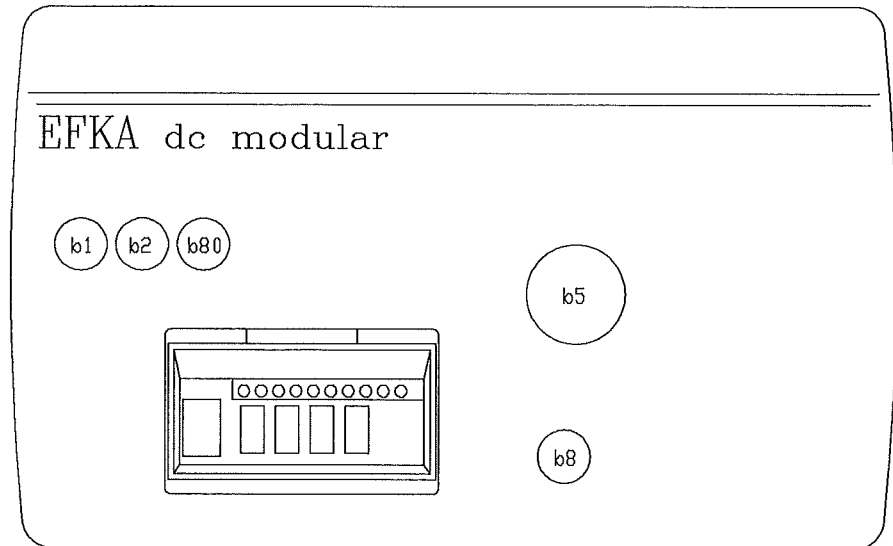
3.4.4.1 Needle position at stop before trimming = DOWN or UP

Pedal +X = pedal actuated forward
 Pedal -1 = pedal slightly heeled back
 Pedal -2 = pedal completely heeled back
 Pos.1 = lower needle position
 Pos.2 = upper needle position
 nX = sewing speed
 n1 = positioning speed
 FA = thread trimmer (MI)
 tFA = operating time of thread trimmer
 ML = signal "machine is running"
 (MII - needle cooling)
 FL = presser foot lift (MIII)
 tvFL = activation delay of presser foot lift
 after thread trimming
 ML+FA = signal for optional use (MIV)



4. INSTRUCTIONS FOR THE ELECTRICAL CONNECTION OF THE ADDITIONAL DEVICES

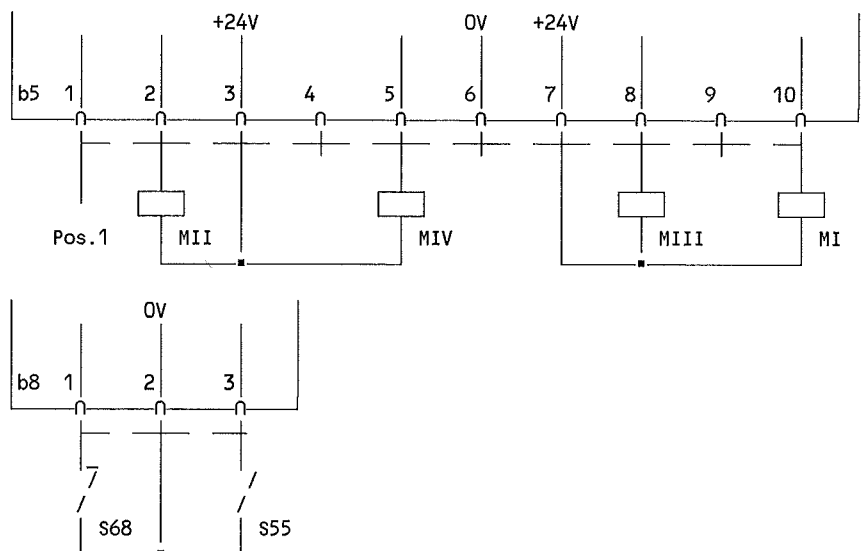
Usable power packs: N102, N104, N111



KL 1914

- b1 - socket for position transmitter P6-1
- b2 - socket for commutation of the motor
- b5, b8 - sockets for solenoids, solenoid valves and switches
- b80 - socket for external actuation EB1..

Connections to sockets b5 and b8:



- MI - solenoid thread trimmer¹⁾²⁾³⁾
(max. 3.0A)
- MII - signal FA2¹⁾
(max. 3.0A)
- solenoid thread wiper²⁾
(max. 3.0A)
- solenoid valve needle cooling³⁾
(= signal ML)
(max. 0.7A)
- MIII - solenoid thread wiper¹⁾
(max. 3.0A)
- solenoid valve presser foot lift²⁾³⁾
(max. 0.7A)
- MIV - signal FA1+2¹⁾
(max. 3.0A)
- signal FA+FW²⁾
(max. 3.0A)
- signal ML+FA³⁾
(max. 0.7A)
- Pos.1 - counting signal (0V, max. 0.1A):
position 1...1.
- S55 - pulse switch (make contact) for:
NEEDLE FROM DOWN POSITION TO UP PO-
SITION / NEEDLE FROM UP POSITION TO
DOWN POSITION*
- S68 - micro switch (break contact) for:
BLOCKING OF MACHINE RUN⁴⁾
(see parameter "Blocking of machine
run by machine switch S68")

1)with lockstitch machines

2)with chainstitch machines

3)with overlock machines

4)CAUTION! The switching off of the machine
necessary for maintenance and repair work is
not rendered superfluous by this device!

Plugs for sockets: b5 = part no. 500357
b8 = part no. 500402
b80 = part no. 501278

*Caution! The pushbutton is effective within
the following ranges:

- approx. 10° before the lower position up to
35° after the lower position and
- approx. 10° before the upper position up to
35° after the upper position.

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