Efka

CONTROL **YA620A 5080**

Operating manual

With parameter list

- Putting into Service
- Settings
- Functional Description
- Connection Diagrams
- Timing Diagrams

No. 402454 English

Important Notes

The particulars used in various figures and tables, such as type, program number, speed, etc., serve as examples. They may differ from those in your display.

For current versions of the Instructions for Use and Lists of Parameters, necessary for operating EFKA drives in accordance with regulations, please refer to the EFKA web site **www.efka.net**, page **"Downloads"**.

On our web site, you will also find the following supplementary instructions for this control:

- General instructions for use and programming
- Use with USB Memory Stick
- Adapter cords

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1. Use in Accordance with Regulations

The drive is not an independent functional machine. It has been designed for integration into other machines by trained specialists.

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/EEC and supplement 91/368/EEC).

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

IEC/EN 60204-31   Electrical equipment of industrial machines:
                              Particular requirements for industrial sewing machines, sewing units and sewing systems.

Operate the drive only in dry areas.

⚠	**ATTENTION** When selecting the installation site and the layout of the connecting cable, the Safety Instructions must be followed with no exceptions. Particular attention should be paid to maintaining the proper distance from moving parts!

1.1 Special Accessories

The special accessories available ex works allow the augmentation and enhancement of functions, operating, connecting, and mounting options.
Since the range of available components is continually expanded, we kindly ask you to contact us in case of need.

Designation	Material No.
Control panel Variocontrol V810	5970153
Control panel Variocontrol V820	5970154
Reflection light barrier module LSM002	6100031
Hall sensor module HSM001	6100032
Pulse encoder IPG001	6100033
Adapter cord for the connection of light barrier module and/or Hall sensor module HSM001 and/or pulse encoder IPG001	1113229
Extension cable approx. 1000 mm long for commutation transmitter DC12.. + DC15..	1113151
Extension cable approx. 1000 mm long for Netz DC12.. line + DC15..	1113931
Potential equalization cord 700 mm long, LIY 2.5 mm^2, gray, with spades on both sides	1100313
Foot control type FB302B with three pedals for standing operation, with approx. 1400 mm connecting cable and plug	4170025
Fitting piece for position transmitter	0300019
Knee switch type KN19 (pushbutton) with cord of approx. 450 mm length and western plug (RJ11)	5870021
Knee switch type KN20 (pushbutton + selector switch) with cord of approx. 1640 mm length and Western plug (RJ11)	5870022
Undertable mounting kit for DC1250	1113956
Undertable mounting kit for DC1550	1113427
9-contact SubminD male connector	0504135
9-contact SubminD female connector	0504136
Half-shell housing for 9-contact SubminD	0101471
37-contact SubminD male connector, complete	1112900
Single pins for 37-contact SubminD with strand of 50 mm length	1112899

1.1.1 Adapter Cords for Special Machines

2. Putting into Service
Before putting the control into service, the following must be ensured, checked and/or adjusted:
- Selection of motor type using parameter **467**
- The correct installation of the drive, position transmitter and accompanying devices, if necessary
- The correct selection of the trimming operation using parameter **290**
- If necessary, the correct adjustment of the direction of motor rotation using parameter **161**
- The correct selection of the functions of keys (inputs) using parameters **240...246**
- The setting of the transmission ratio between motor shaft and machine shaft using parameter **272**
- The setting of the type of position sensor using parameter **270**

Designation	Material No.

- If necessary, the adjustment of the positions using parameter **171**
  if necessary, the setting of the positions using parameter **171** (possible with all settings of parameter **270**)
- The correct positioning speed using parameter **110**
- The correct maximum speed compatible with the sewing machine using parameter **111**
- The setting of the remaining relevant parameters
- Begin sewing in order to save the set values

3. Quick access

These are button combinations that are linked in the direct access with settings & function of the control. Quick access can, however, can *only* be used with machines that are already set up.

1.2 Parameter back up

When the machine has been completely set up, the settings should be backed up.

1.2.1 Parameter backup

- Turning off the controls
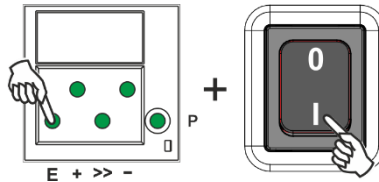
- Hold the E button down & turn on the controls
- (Hold down the E button 5 sec after turning on)
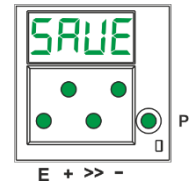
- "SAVE" is shown on the display
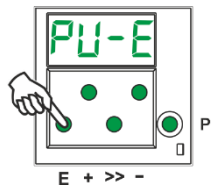
- Press the E button once, to execute the backup process
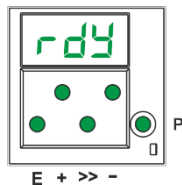
- When the process is completed, "rdy" is displayed for 1 second
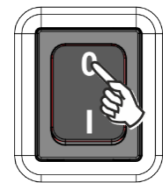
- Turning off the controls

1.2.2 Restoring parameters from the backup

- Turning off the controls
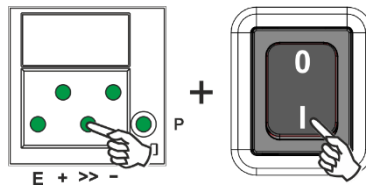
- >>-Hold the button down (5 sec) & turn on controls
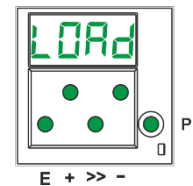
- "LOAD" is shown on the display
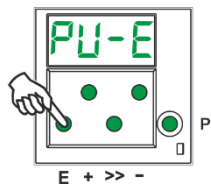
- Press the E button once, to execute the backup process
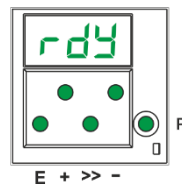
- When the process is completed, "rdy" is displayed for 1 second

- Turning off the controls

1.2.3 Save the parameter backup on a USB stick

(The parameters can be views with a text editor or Microsoft Word. The parameters in this file must *not* be changed!)
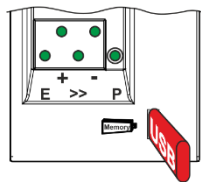
- Insert an empty USB Stick
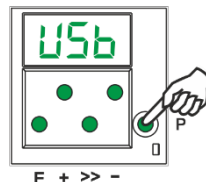
- Wait until "USB" shows on the display and press the P key

- Use the +/- buttons to get to parameter F-532. (".5.3.2" is shown on the display)
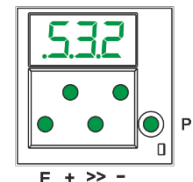
- Use the +/- buttons to get to parameter F-532. (".5.3.2" is shown on the display)
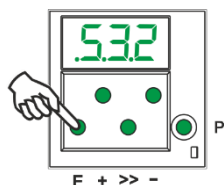
- Press the E button once
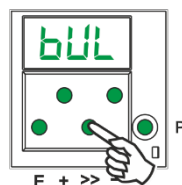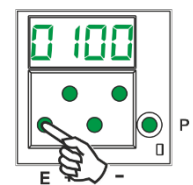
- Press the >> button

- Press the E button
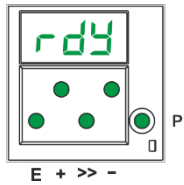
- When the process is completed, "rdy" is displayed for 1 second

- Turn off

1.2.4 Restoring the parameter backup from the USB stick

This process does not change the actual parameter settings. To load the backup to the current parameter setting, execute **Chapter 5.1.2 "Restoring parameters from backup"**. (After this process)
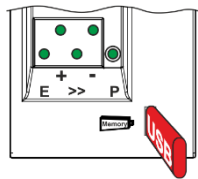
- Insert the USB stick with the file "0100DATA.PAB"
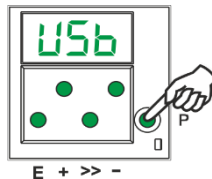
- Wait until "USB" shows on the display and press the P key
- Use the +/- buttons to get to parameter F-533. (".5.3.3" is shown on the display)
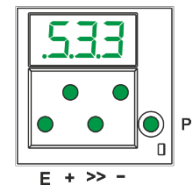
- Use the +/- buttons to get to parameter F-533. (".5.3.3" is shown on the display)
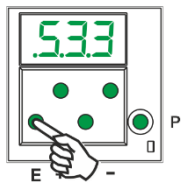
- Press the E button once
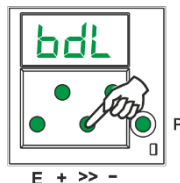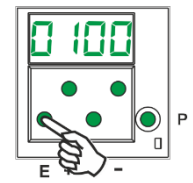
- Press the >> button
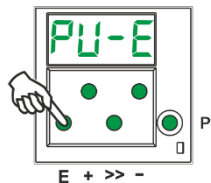
- Press the E button

- Press the E button once, to execute the backup process
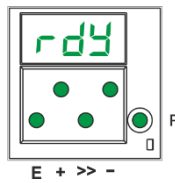
- When the process is completed, "rdy" is displayed for 1 second

- Turn off

1.3   Setting the reference position

(For detailed instructions refer to Chapter **6.9.1. Setting the reference position)**
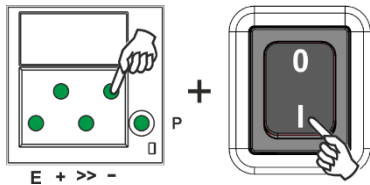
- Hold down the button and switch on the controls
- (Until Pos0 show for 1 second)
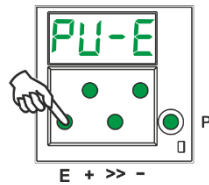
- Press the E button
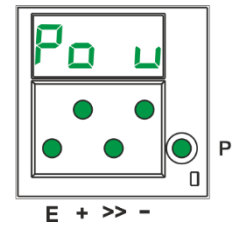
- "P0" and a rotating "u" are displayed
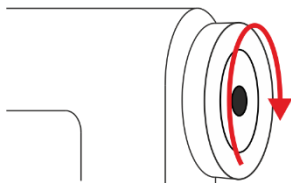
- Turn the handwheel until the rotating "u" disappears
- Bring the handwheel to the zero position (needle up / OT)
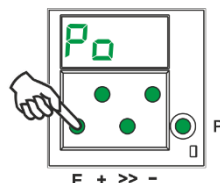
- Press the E button

- Turn off

Note: If the rotating "u" does not disappear after 10 rotations, change the direction of rotations.

4. Setting the Basic Functions

1.4   Selection of Functional Sequences (Thread Trimming Operations)

This drive is suitable for different lockstitch, chainstitch and overlock machines. The mode for the functional sequence required on the respective machine can be selected using parameter **290**.

⚠️ **ATTENTION**
Before switching the functional sequences, you must disconnect input and output plug-and-socket connections between control and machine. Please ensure that the functional sequence (mode) suitable for the respective machine is selected.
Settings with parameter 290 are possible only after the power is turned On.

You will find a summary of the modes that can be set and the corresponding machines and adapter cords, to include available output signals in the List of Parameters chapter: Table of adapter cords.

Further information see chapter "Timing Diagrams" for the various modes.

1.5   Functions of the Keys Inputs in1...in7

The function that is started when a button or switch connected to one of the inputs in1 to in7 is actuated can be selected using parameters **240...246**.
The possible functions are listed in the section "Parameter list".

1.6   Positioning speed

Function **with** or **without** control panel		Parameters
Positioning speed	(n1)	**110**

The positioning speed can be set using parameter **110** on the control within a range of 70...390 RPM.

1.7   Maximum Speed Compatible with the Sewing Machine

The maximum speed of the machine is determined by the selected pulley and by the following settings:
▪ Set the maximum speed using parameter **111** (n2).
▪ Set the maximum speed limitation to the specific level according to the application as described in chapter "Direct Input of Maximum Speed Limitation (DED)".

1.8   Maximum speed

Function **with** or **without** control panel		Parameters
Maximum speed	(n2)	**111**

NOTE
See instruction manual of the sewing machine manufacturer for the maximum speed of the sewing machine.

NOTE
Select the pulley such that the motor runs at approx. 4000 RPM with max. number of stitches.

1.9 Positions

Function **with** or **without** control panel		Parameters
Mode for the position sensor	(PGm)	**270**
Setting the needle positions	(Sr2)	**171**
Transmission ratio between motor shaft and machine shaft	(trr)	**272**

A sensor can be used as a position sensor, e.g. Efka Hall sensor module (HSM1) or pulse generator (IPG) with either NC or NO functionality.
It is connected to socket B18/7.
Parameter **270** is used to select the mode to be selected depending on the type and mounting of the sensor used (see section Parameter List under parameter **270** for a description and flow chart).
After configuration of parameter **270** to "**1, 2, 3 o 4**", parameter **171** must be used to set the angle for positions 1 and/or 2, incoming and outgoing.
Alternatively, the positions can be configured using the fast-installation routine.
The transmission ratio must already have been input using parameter **272**.

1.10 Display of the Signal and Stop Positions

Function **with** or **without** control panel		Parameters
Display of positions 1 and 2	(Sr3)	**172**

The position settings can easily be checked by means of parameter **172**.
- Select parameter **172**
- The control panel display shows "Sr3"
- Turn hand wheel according to the direction of motor rotation

Control display (control panel not connected)

- Segment ❺ is turned on   corresponds to position 1 On
- Segment ❺ is turned off   corresponds to position 1 Off
- Segment ❻ is turned on   corresponds to position 2 On
- Segment ❻ is turned off   corresponds to position 2 Off

KL2556a
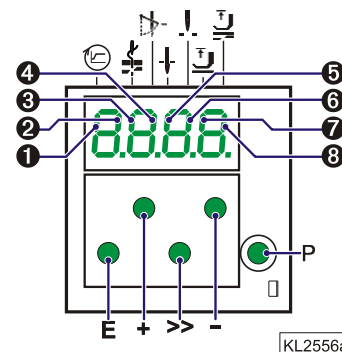
V810 / V820 control panel display

- Arrow above symbol "position 1" on key 4 (V810) / on key 7 (V820) is displayed   corresponds to position 1 On
- Arrow above symbol "position 1" on key 4 (V810) / on key 7 (V820) is displayed   corresponds to position 1 Off

- Arrow above symbol "position 2" on key 4 (V810) / on key 7 (V820) is displayed   corresponds to position 2 On
- Arrow above symbol "position 2" on key 4 (V810) / on key 7 (V820) is displayed   corresponds to position 2 Off

If the V810 or V820 control panel is connected, the positions will be displayed only on the control panel!

1.11 Positioning shift

Function **with** or **without** control panel		Parameters
Positioning shift	(PSv)	**269**

Determine by means of parameter **269** whether the drive is to stop exactly on the position (Parameter **269 =0**) or some increments after the position.

1.12 Braking Characteristics

Function **with** or **without** control panel		Parameters
Braking ramp running	(br1)	**207**
Braking ramp stop	(br2)	**208**
Braking ramp for $n < 350^{min^{-1}}/_{ms}$ when drive stopped	(br3)	**219**

- Parameter **207** regulates the braking effect between speed stages
- Parameter **208** influences the braking effect for the stop
- Parameter **219** influences the braking effect before the stop

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

1.13 Braking Power at Standstill

Function **with** or **without** control panel		Parameters
Braking Power at Standstill	(brt)	**153**

This function prevents unintentional "wandering" of the needle at standstill.
The effect can be checked by turning the hand wheel.

- The braking power is effective at standstill
  - at stop in the seam
  - after the seam end

- The effect can be set
- The higher the set value, the stronger the braking power

1.14 Starting Characteristics

Function **with** or **without** control panel		Parameters
Starting edge	(ALF)	**220**

The drive acceleration dynamics can be adapted to the sewing machine characteristic (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 characteristic may appear coarse. In this case, one should try to optimize the settings.

1.15 Actual Speed Display

Function **with** control panel		Parameters
Display actual speed	(nIS)	**139**

If parameter **139 = 1**, the V810/V820 display shows the following information:

		V810	**V820**

During operation:
- The actual speed
- **Example:** 2350 revolutions per minute

➜ **2350**   **2350**

At stop in the seam:
- The stop indication

➜ **StoP**   **StoP**

At standstill after trimming:

- On the V810, indication of the type of control
- On the V820, indication of the set maximum speed and the type of control

➜ **YA620A**   **4000   YA620A**

Example: 4000 revolutions per minute and type of control AB425S

1.16 Operating hours counter

Function **with** or **without** control panel		Parameters
Acoustic signal (operating part)	(AkS)	**127**
Service routine for total operating hours	(Sr6)	**176**
Service routine for operating hours before service	(Sr7)	**177**
Input of operating hours before service	(Sr)	**217**

The integrated operating hours counter records the time of motor operation. Downtimes are not recorded. Time recording accuracy is 1ms. There are two ways of operating hours counting.

1. Basic operating hours counting:

217 =0   Operational mode: Operating hours counting

2. Service Hours Monitoring:

217 =>0   Operational mode: Number of operating hours before the next service.
Input of operating hours before the next service.
This value is compared to the operating hours counter.
The input of hours is done in steps of 10. i. e. the lowest display of 001 corresponds to 10 hours
(e. g. 055 = 550 hours).
When the set number of operating hours are reached, the message "C1" will show on the display after each trimming operation. In addition, the speed indicator blinks on the control or on the V820 control panel during operation or after drive standstill.
Moreover, an acoustic signal is emitted when using a V810/V820 control panel if parameter **127=1**.

176   In this service routine, the total operating hours can be read out according to the procedure example described below for parameter **177**.

177   Display of operating hours since the **last** service.

Display example of operating hours or hours since the last service and operating hours counter reset.

Display on the control:

- Select parameter **177**
- Press the **E** key   ➜   **Sr7**
- Press the **>>** key   ➜   **h t**   (hours /thousands letter symbol)
- Press the **E** key   ➜   **000**   hours /thousands display)
- Press the **E** key   ➜   **h h**   (hours / hundreds letter symbol)
- Press the **E** key   ➜   **000**   (hours / hundreds display)
- Press the **E** key   ➜   **Min**   (minutes letter symbol)
- Press the **E** key   ➜   **00**   (minutes display)
- Press the **E** key   ➜   **SEc**   (seconds letter symbol)
- Press the **E** key   ➜   **00**   (seconds display)
- Press the **E** key   ➜   **MS**   (milliseconds letter symbol)
- Press the **E** key   ➜   **000**   (milliseconds display)
- Press the **E** key   ➜   **rES**   See chapter "Set and Reset Operating Hours Counter"
- Press the **E** key   ➜   The process will be repeated from the hours display.
- Press the **P** key twice ➜   e.g. **400**   (sewing process can be started)

Display on the V810 control panel:

- Select parameter **177**
- Press the **E** key   ➜   **Sr7 [°]**
- Press the **>>** key   ➜   **hoUr**   (hours letter symbol)
- Press the **E** key   ➜   **000000**   (hours display)
- Press the **E** key   ➜   **Min**   (minutes letter symbol)
- Press the **E** key   ➜   **00**   (minutes display)
- Press the **E** key   ➜   **SEc**   (seconds letter symbol)
- Press the **E** key   ➜   **00**   (seconds display)
- Press the **E** key   ➜   **MSEc**   (milliseconds letter symbol)
- Press the **E** key   ➜   **000**   (milliseconds display)
- Press the **E** key   ➜   **rES F2**   See chapter "Set and Reset Operating Hours Counter"
- Press the **E** key   ➜   The process will be repeated from the hours display.
- Press the **P** key twice ➜   e.g. **YA620A** (sewing process can be started)

Display on the V820 control panel:

- Select parameter **177**
- Press the **E** key   ➔   **F-177**   **Sr7** [°]
- Press the **>>** key   ➔   **hoUr**   **000000**   (hours display)
- Press the **E** key   ➔   **Min**   **00**   (minutes display)
- Press the **E** key   ➔   **Sec**   **00**   (seconds display)
- Press the **E** key   ➔   **MSEc**   **000**   (milliseconds display)
- Press the **E** key   ➔   **rES**   **F2**   See chapter "Set and Reset Operating Hours Counter"
- Press the **P** key twice   ➔   e.g. **4000** **YA620A**   (sewing process can be started)

1.16.1 Set and Reset Operating Hours Counter

The number of hours has been reached (service necessary):
- Press the **>>** key once   ➔   The operating hours counter is set to "0" and restarted.

The number of hours has not yet been reached:
- Press the **>>** key three times   ➔   The operating hours counter is set also to "0" and restarted.

A value in parameter 177 has been changed:
- After displaying **rES ...,** when the **E** key is pressed again, **SEt** will then be displayed.
- If the changed value is to be saved, press the **>>** key 3 times.

1.16.2 Total Operating Hours Display

In this service routine enabled using parameter **176**, the total number of operating hours is displayed.
The sequence of displayed values is as with parameter **177**.
The values can only be displayed, not varied. Therefore, letter symbols "rES" for "reset" and "SEt" for "set" will not appear.

5. Functions with or without Control Panel
1.17 First Stitch after Power On

Function **with** or **without** control panel		Parameters
1 stitch at positioning speed after power On	(Sn1)	**231**

If parameter **231** is on, the first stitch after power on will be performed at positioning speed for the protection of the sewing machine. This is independent of the pedal position and the softstart function.

1.18 Softstart

Function **with** or **without** control panel		Parameters
Softstart On/Off	(SSt)	**134**

Functions:
- After power on
- At the beginning of a new seam
- Speed pedal controlled and limited to (n6)
- Lower speed of a parallel function prevailing (e. G. Stitch count)
- Stitch counting synchronized to position 1
- Suspension with pedal in position 0 (neutral)
- Interruption by full heelback (position -2)

When using the V820 control panel, direct access by means of the function key (key 9) is possible!

Function **with** control panel		Parameters
Softstart On/Off	(-F-)	**008 =1**

1.18.1 Softstart speed

Function **with** or **without** control panel		Parameters
Softstart speed	(n6)	**115**

1.18.2 Softstart stitches

Function **with** or **without** control panel		Parameters
Number of softstart stitches	(SSc)	**100**

1.19 Sewing foot lifting

Function **without** control panel		Control
Automatic in the seam	Segment 7 on	Key **–** (S4)
Automatic after thread trimming	Segment 8 on	

Function **with** control panel		V810	V820
Automatic in the seam	Left-hand arrow above key On	Key 3	Key 6
Automatic after thread trimming	Right-hand arrow above key On	Key 3	Key 6
If parameter 290 = 16, with slide-in strip "7"	Left-hand arrow above key On		Key 9

Function		Parameters
Automatic sewing foot with pedal forward at the seam end if light barrier or stitch counting is On	(AFL)	**023**
Coupled thread tension release and sewing foot lifting. The function can be activated only with a thread trimmer that depends on the angle.	(FSP)	**024**
Switch-on delay with pedal in position –1	(t2)	**201**
Start delay after disabling the sewing foot lifting signal	(t3)	**202**
Time of full power of sewing foot lifting	(t4)	**203**
Duty ratio (ED) with pulsing	(t5)	**204**
Delay after thread wiping until sewing foot lifting	(t7)	**206**
Delay after thread trimming without thread wiper until sewing foot lifting	(tFL)	**211**
Upper limit ON period of sewing foot lifting 1...100	(EF-)	**254**

Sewing foot is lifted:
- in the seam

by heelback (position -1)
or automatically (using the **-** S4 key on the control, segment 7 lights up)
or automatically (using key **3** on the V810 control panel)
or automatically (using key **6** on the V820 control panel)
by pressing a key depending on the pre-selection of parameters **240...246**
- after thread trimming

by heelback (position -1 or -2)
or automatically (using the **-** S4 key on the control, segment 8 lights up)
or automatically (using key **3** on the V810 control panel)
or automatically (using key **6** on the V820 control panel)
by pressing a key depending on the pre-selection of parameters **240...246**
automatically by light barrier when pedal forwards, according to the setting of parameter **023**
automatically by stitch counting when pedal forwards, according to the setting of parameter **023**
Switch-on delay after thread wiper (t7)
Switch-on delay without thread wiper (tFL)

It is possible to prevent unintentional foot lifting before thread trimming when changing from pedal position 0 (neutral) to position -2 by setting a switch-on delay (t2) using parameter**201**.

Holding power of the lifted foot:
The sewing foot is lifted by full power. Then the system switches automatically to partial power in order to reduce the load for the control and the connected solenoid.
Set the duration of full power using parameter **203** and the partial holding power using parameter **204**.

⚠	**ATTENTION**
	If the holding power is set too high, the solenoid and the control may be permanently damaged. Please observe the permissible duty ratio (ED) of the solenoid and set the appropriate value according to the table below.

Value	Duty ratio (ED)	Effect
1	1 %	Low holding power
100	100 %	High holding power (full power)

Sewing foot lowers:
- Press pedal to position 0 (neutral)
- Press pedal to position ½ (slightly forward)
- Release key for manual sewing foot lifting

Upon pressing the pedal forward from lifted sewing foot, the start delay (t3) that can be set using parameter **202** becomes effective.

1.20 Start Stitch Condensing

Function **without** control panel		Control
Start stitch condensing On; number of stitches with stitch regulator (Parameter **001**)	Segment 1 on Segment 2 on	Key **E** (S2)
Start stitch condensing On; number of stitches without stitch regulator (Parameter **000**) after that number of stitches with stitch regulator (Parameter **001**)	Both segments off	
Start stitch condensing Off		

Function **with** control panel		V810/V820
Start stitch condensing On; number of stitches with stitch regulator (Parameter **001**)	Left-hand arrow above key On, right-hand arrow above key On	Key 1
Start stitch condensing On; number of stitches without stitch regulator (Parameter **000**) after that number of stitches with stitch regulator (Parameter **001**)		
Start stitch condensing Off	Both arrows Off	

The start stitch condensing starts by pressing the pedal forward at the beginning of the seam. From lifted sewing foot the Stitch condensing is delayed by the time t3 (start delay after switching off the sewing foot lifting

signal). Start Stitch condensing as well as start stitch condensing are executed automatically at speed n3. They cannot be interrupted. If softstart is running parallel, the respective lower speed is prevailing. The stitch regulator will be switched off after completion of the stitch count (Parameter **001**) and the speed n3 after a delay time t1. Then pedal control is returned. The stitch regulator and counter are synchronized to position 1.

1.20.1 Speed n3 at the Start of the Seam

Function **with** or **without** control panel		Parameters
Start Stitch condensing	(n3)	**112**
Start Stitch condensing speed can be interrupted by pedal in pos. 0 (neutral)	(n2A)	**162**
Stitch condensing can be interrupted by pedal in pos. 0 (neutral) On/Off	(StP)	**164**

1.20.2 Stitch Counting for Start Stitch condensing

Function **with** or **without** control panel		Parameters
Number of stitches forward or without stitch regulator	(c2)	**000**
Number of stitches backward or with stitch regulator	(c1)	**001**
Double start Stitch condensing repetition	(war)	**090**
Stitch condensing repetition On/Off	(Fwr)	**092**

The start Stitch condensing stitches with or without stitch regulator can be programmed and varied using the above parameters directly on the control or on a connected V810/V820 control panel.

For fast operator information (HIT) when using the V820 control panel, the value of the function switched on using key **1** can be displayed for approx. 3 seconds. During this time, the value can be varied directly by pressing key **+** or **-**.

1.20.3 Stitch Correction and Speed Release

Function **with** or **without** control panel		Parameters
Stitch correction time	(t8)	**150**
Delay until speed release after start Stitch condensing	(t1)	**200**

Speed release after single and double Stitch condensing can be influenced by parameter **200**.

In the case of slow Stitch condensing mechanisms it is possible to delay disabling of the stitch regulator in the single and double start Stitch condensing by the time t8 (start Stitch condensing stitch correction) and thereby prolong the backward section. This time-lag can be selected by means of parameter **150**.

1.20.4 Double start Stitch condensing

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

1.20.5 Start Stitch Condensing

The stitch regulator signal will be issued and the backward section and/or start stitch condensing will be executed for a number of stitches that can be set.

1.21 End Stitch Condensing

Function **without** control panel		Control
End stitch condensing On; number of stitches with stitch regulator (Parameter **002**)	Segment 3 on Segment 4 on	Key **+** (S3)
End stitch condensing on; stitch count with stitch regulator (Parameter **002**), afterwards the stitch count without the stitch regulator (Parameter **003**).	Both segments off	
End stitch condensing Off		

Function **with** control panel		V810	V820
End stitch condensing On; number of stitches with stitch regulator (Parameter **002**)	Left-hand arrow above key On, right-hand arrow above key On	Key 2	Key 4
End stitch condensing on; stitch count with stitch regulator (Parameter **002**), afterwards the stitch count without the stitch regulator (Parameter **003**).	Both arrows Off		
End stitch condensing Off			

The end Stitch condensing in a seam with stitch counting starts by heelback at the end of counting, or, from the light barrier seam at the end of the light barrier compensating stitches. The stitch regulator is immediately enabled from machine standstill. After lowering the sewing foot, the switch-on point of the stitch regulator is delayed by the time t3 (start delay after switching off the sewing foot lifting signal). The first leading edge of position 1 counts as 0 stitch whenever the function is not started in position 1. The stitch regulator is synchronized to position 1. End Stitch condensing as well as end stitch condensing are executed automatically at speed n4. They cannot be interrupted. From full machine run, end Stitch condensing will be switched in only after having reached the speed n4 and synchronization to position 2.

1.21.1 Speed n4 at the Seam End

Function **with** or **without** control panel		Parameters
End Stitch condensing	(n4)	**113**
End Stitch condensing speed can be interrupted by pedal in pos. 0 (neutral)	(n2E)	**163**
Start and end Stitch condensing or stitch condensing can be interrupted by pedal in pos. 0 (neutral) On/Off	(StP)	**164**

1.21.2 Stitch Counting for End Stitch condensing

Function **with** or **without** control panel		Parameters
Number of stitches forward or without stitch regulator	(c3)	**002**
Number of stitches backward or with stitch regulator	(c4)	**003**
Double end Stitch condensing repetition	(wer)	**091**
Stitch condensing repetition On/Off	(Fwr)	**092**

The end Stitch condensing stitches with or without stitch regulator can be programmed and varied using the above parameters directly on the control or on a connected V810/V820 control panel.
For fast operator information (HIT) when using the V820 control panel, the value of the function switched on using key **4** can be displayed for approx. 3 seconds. During this time, the value can be varied directly by pressing key **+** or **-**.

1.21.3 Stitch Correction and Last Stitch Backward

Function **with** or **without** control panel		Parameters
Last stitch backward On/Off	(FAr)	**136**
Stitch correction time	(t9)	**151**

The Stitch condensing solenoid can be delayed in the double end Stitch condensing by selecting a stitch correction time (t9) using parameter **151**.
For some sewing procedures it is desirable that the Stitch condensing solenoid in the single end Stitch condensing is disabled only after trimming. This function can be selected using parameter **136**.

136 =0   Trimming stitch backward Off
136 =1   Trimming stitch backward On with single end Stitch condensing
136 =2   Trimming stitch or positioning stitch always backward at the seam end

1.21.4 Double End Stitch Condensing

The backward section and/or end stitch condensing will be executed for a number of stitches that can be set. Then the stitch regulator will be disabled and the forward section and/or normal stitch condensing stitches will be executed. The number of stitches for the two sections can be set separately.
After stitch counting (Parameter **003**) the trimming function will be initiated. During the entire operation the sewing speed is reduced to speed n4,. with the exception of the last stitch, which will be performed at positioning speed n1.
In the case of slow Stitch condensing mechanisms it is possible to delay disabling of the stitch regulator in the single and double end Stitch condensing by the time t9 (end Stitch condensing stitch correction).

1.21.5 Single End Stitch condensing

The stitch regulator signal will be issued and the backward section and/or end stitch condensing will be executed for a number of stitches that can be set. During the last stitch the speed is reduced to positioning speed.

When using the V820 control panel, direct access by means of the function key (key 9) is possible!

Function **with** control panel		Parameters
Stitch condensing repetition On/Off	(-F-)	**008 =8**

1.22 Unlocking the Chain (Mode 5/6/7)

Function **with** or **without** control panel		Parameters
Number of run-out stitches when unlocking the chain	(c6)	**184**
Function "unlock the chain" in modes 5, 6 and 7	(mEk)	**190**

Upon unlocking the chain at the seam end, the functions **thread trimming** and tape cutter/fast scissors are automatically suppressed. When setting parameter **190 = 3**, the function **tape cutter/fast scissors** is however possible. After pressing the key "unlocking the chain" and with pedal in position 0 (neutral), the drive always stops in position 1.

Settings necessary for the operation "unlocking the chain":
▪   Set "unlock the chain" using parameter **190 =1 / 2 / 3 / 4** (**190 =0** "unlock the chain" off)
▪   Set **switch-on delay** using parameter **181** and **reversing angle** using parameter **180**
▪   Determine the **function of the key "unlock the chain"** using one of the parameters **240...246**
▪   If parameter **290** is set at"

190 =0   **Unchaining switched off**
190 =1   **Sequence with pedal in position -2 from machine run or from position 2:**
                   - Press key "unlock the chain"
                   - Run at positioning speed to position 1
                   - Sequence of reversing angle at positioning speed after a switch-on delay that can be set

190 =1   **Sequence with pedal in position -2 from standstill in position 1:**
- Press key "unlock the chain"
- Run at positioning speed to position 1
- Sequence of reversing angle at positioning speed after a switch-on delay that can be set

190 =2   **Automatic sequence with light barrier at the seam end without tape cutting / pedal in position –2 according to the setting of parameter 019**
- Press key "unlock the chain"
- Run to position 1 after light barrier sensing
- Sequence of reversing angle at positioning speed after a switch-on delay that can be set

190 =3   **Automatic sequence with light barrier on the seam end with tape cutter and run-out stitches(Only possible in mode 7 and if parameter 018 =0)**
- Press key "unlock the chain"
- After light barrier detection, sequence of the compensation stitches and end count up to tape cutting
- Run-out stitches up to unlocking the chain, adjustable with parameter 184
- Sequence of reversing angle at positioning speed after a switch-on delay that can be set

190 =4   **Sequence with pedal in position –2 / no unlocking of the chain if seam end with light barrier, cutting and run-out stitches is set:**
- Press the pedal to position -2
- Run at positioning speed to position 1
- Sequence of reversing angle at positioning speed after a switch-on delay that can be set
- No unlocking of the chain at the seam end with light barrier
- Reverse motor rotation is suppressed when the drive stops. The signals "blow fabric onto stack", M2 and "sewing foot lift" will be issued.

When using the V820 control panel, direct access by means of the function key (key 9) is possible!

Function with control panel		Parameters
Unlocking the chain On/Off	(-F-)	**008 =4**

1.23 Machine run blockage

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

The function "machine run blockage" is enabled by connecting a switch to socket ST2, depending on the pre-selection of parameters 240...246. When using a V810 / V820 /control panel, an acoustic signal can be switched on and/or off by means of parameter 127.

Display after enabling machine run blockage without control panel:
Control display   ➔   A 2
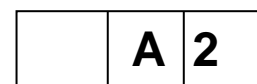
Display and signal after enabling machine run blockage with control panel:
Display on the V810 control panel!   ➔   -S t o P-
(symbol blinks and acoustic signal if parameter 127 = 1)

Display on the V820 control panel!
(symbol blinks and acoustic signal if parameter 127 = 1)➔

Machine run blockage in the free seam, seam with stitch counting and light barrier seam:
The seam is suspended by opening and/or closing the switch.
- Stop in the basic position
- Needle up is not possible
- Sewing foot lifting is possible

Machine run blockage in the start Stitch condensing:
The start stitch condensing is interrupted by opening and/or closing the switch.
- Stop in the basic position
- Needle up is not possible
- Sewing foot lifting is possible
- After disabling of the machine run blockage, the seam will be continued with the section following the start Stitch condensing

Machine run blockage in the end Stitch condensing:
The end Stitch condensing is interrupted, and the seam is completed by opening and/or closing the switch.
- Sewing foot lifting is possible

1.24 Speed Limitation Depending on High Lift

Function with or without control panel		Parameters
Maximum speed	(n2)	111
High lift walking speed	(n10)	117
Lift-dependent speed limiting with potentiometer on	(Pot)	126 =7
High lift for walking foot - measurement value of potentiometer for minimum lift		911
High lift for walking foot - measurement value of potentiometer for maximum lift		912

The lift-dependent speed limitation depends on the position of the adjustment wheel for the lift, which is coupled with a potentiometer It may be activated or deactivated using parameter **126**.
126 =0 Deactivated. The maximum speed n10 set with parameter **117** is in effect.
126 =7 Activated. The speed is limited to a value that depends on the lift level configured.

The speed is limited in the range between the maximum speed (n2, parameter **111**) for the minimum height, and a high lift walking speed (n10, parameter **117**) for the maximum lift.

1.24.1 Programming the measurement value of the poti

- Call parameter **911**.
- Turn the adjustment wheel for the lift until the value displayed changes.
- Then set the **minimum** height lift.
- Confirm the change with the **E** button

- Call parameter **912**.
- Turn the adjustment wheel for the lift until the value displayed changes.
- Then set the **maximal** height lift.
- Confirm the change with the **E** button

- Call parameter **401**.
- Set a value of **1** to save the changes. Storage by pressing the **P** button twice with subsequent approximation is not possible here

NOTE
If the values are outside the permitted range, fault message **A11** will be emitted.

1.25 Speed Limitation n9

Function **with** or **without** control panel		Parameters
Speed Limitation n9	(n9)	122

When a key is pushed to which input function **33** is assigned, speed limitation n9 is activated. The speed is controlled by the pedal up to the limit.

1.26 Thread trimming operation

Function		Parameters
Thread trimmer On/Off	FA	**013**
Thread wiper On/Off	FW	**014**

Function **with** control panel	V820
Thread trimmer or thread wiper On/Off	Key 5

When a V820 control panel is connected, the functions can also be switched on and off using key 5.

1.26.1 Thread Trimmer/Thread Wiper (Lockstitch Modes)

Function		Parameters
Thread wiper time	(t6)	**205**
Thread wiper switch-on delay	(dFw)	**209**
Holding power output M1 of the thread trimmer backward	(t11)	**213**
Thread trimmer activation angle	(iFA)	**250**
Switch-off delay of thread tension release	FSA	**251**
Thread tension release switch-on delay	FSE	**252**
Stop time for thread trimmer	(tFA)	**253**
Upper limit ON period of thread trimmer backward	EV-	**255**
Switch-on delay angle of the thread trimmer	FAE	**259**

Thread trimming in the lockstitch modes is performed at trimming speed.
When the thread trimmer is off, the drive stops in position 2 at the seam end; it stops in position 1 at the end of programmed seams.
The thread wiper ON period can be set depending on the selected trimming mode (see chapter "Timing Diagrams" in the List of Parameters). The delay time (t7) (Parameter **206**) prevents sewing foot lifting before the thread wiper is in its initial position.
If the thread wiper is not connected, there will be a delay time (tFL) after thread trimming until sewing foot lifting.

1.26.2 Trimming speed

Function		Parameters
Trimming speed	(n7)	**116**

1.26.3 Chainstitch thread cutter (var. modes)

Thread trimming in the chainstitch modes is performed at machine standstill in position 2.
The signal sequence of M1...M4 and sewing foot lifting at the seam end can be set as desired using parameters **280...288** (Parallel or sequential).
When the thread trimmer is off, the drive stops in position 2 at the seam end.

1.26.4 Chainstitch Machine Trimming Signal Times

Signal delay times and ON periods can be set with the help of the following parameters.
See chapter 8 »Setting the Basic Functions, Selection of Functional Sequences« in this manual for further information on chain stitch seam end variants and chapter »Timing Diagrams« in the List of Parameters.

Function		Parameters
Delay time output M1	(kd1)	**280**
ON period output M1	(kt1)	**281**
Delay time output M2	(kd2)	**282**
ON period output M2	(kt2)	**283**
Delay time output M3	(kd3)	**284**
ON period output M3	(kt3)	**285**
Delay time output M4	(kd4)	**286**
ON period output M4	(kt4)	**287**
Delay time until sewing foot On	(kdF)	**288**

1.27 Seam with Stitch Counting

Function **without** control panel		Parameters
Stitch counting On/Off	(n7)	**015**

Function **with** control panel	V820
Stitch counting On/Off	Key 2

1.27.1 Number of Stitches for a Seam with Stitch Counting

Function with or **without** control panel		Parameters
Number of stitches for the seam with stitch counting	(Stc)	007

The number of stitches for stitch counting can be set directly on the control with parameter **007** or on a connected V810/V820 control panel.
For fast operator information (HIT) when using the V820 control panel, the value of the function switched on using key **2** can be displayed for approx. 3 seconds. During this time, the value can be varied directly by pressing key **+/-**.

1.27.2 Stitch Counting Speed

Function		Parameters
Positioning speed	(n1)	**110**
Stitch Counting Speed	(n12)	**118**
Speed mode for a seam with stitch counting	(SGn)	**141**

A certain speed behavior for the stitch counting can be selected using **parameter141**.
141 =0   Execution at pedal controlled speed
141 =1   Execution at fixed speed n12, when pressing the pedal forward (position >1)
141 =2   Execution at limited speed n12, when pressing the pedal forward (position >1)
141 =3   Automatic execution at fixed speed after having pressed the pedal once. The procedure can be interrupted by "heelback (-2)"
141 =4   Automatic execution at fixed speed n1 after having pressed the pedal once. The procedure can be interrupted by "heelback (-2)"

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

1.27.3 Seam with Stitch Counting When Light Barrier Is On

Function **with** or **without** control panel		Parameters
Light barrier On/Off	LS	**009**
Stitch counting On/Off	(StS)	**015**

Function **with** control panel	V820
Light barrier On/Off	Key 3
Stitch counting On/Off	Key 2

When "stitch counting and light barrier function" is set, the number of stitches will be executed first, then the light barrier will be activated.

1.28 Free Seam and Seam with Light Barrier

Function	Parameters

Positioning speed	(n1)	**110**
Upper limit of maximum speed	(n2)	**111**
Limited speed according to setting of parameter **142**	(n12)	**118**
Lower limit of maximum speed	(n2_)	**121**
Speed mode free seam	(SFn)	**142**

Speed control for the free seam and the seam with stitch counting can be selected using the speed mode.

142 =0   Execution at pedal controlled speed
142 =1   Execution at fixed speed n12, when pressing the pedal forward (position >1)
142 =2   Execution at limited speed n12, when pressing the pedal forward (position >1)
142 =3   Only for the seam with light barrier:
 - Automatic execution at fixed speed after having pressed the pedal once.
 - The seam end is initiated by light barrier.
 - The procedure can be interrupted by heelback (-2).
 - If the light barrier is not on, speed as with parameter setting **142 = 0**.

When using a control panel, the maximum speed is displayed after power on and thread trimming and can be varied directly using the **+/-** keys on the control panel. The setting range lies between the values of parameters **111** and **121**.

1.29 Light barrier

Function **with** or **without** control panel	Parameters
Light barrier On/Off	**009**

Function **with** control panel		V820
Light barrier covered/uncovered On	Right-hand arrow above key On	Key 3
Light barrier uncovered/covered On	Left-hand arrow above key On	
Light barrier Off	Both arrows Off	

The light barrier function at the input of socket B18/8 is active only if parameter value **239 = 0**.

1.29.1 Speed after Light Barrier Sensing

Function with or without control panel		Parameters
Speed after Light Barrier Sensing	(n5)	**114**

At the end of the light barrier stitch count at speed n5, the end count for the tape cutter (c4) is continued under pedal control. If the stitch count for the tape cutter is set to 0 and the light barrier balancing stitch count set until the tap cutter is introduced, then the count is done independently of the pedal at a speed of n5.

1.29.2 General Light Barrier Functions

Function		Parameters
Light barrier compensating stitches	LS	**004**
Number of light barrier seams	(LSn)	**006**
Light barrier sensing uncovered/covered	(LSd)	**131**
Start of sewing blocked/unblocked with light barrier uncovered	LSS	**132**
Light barrier seam end with thread trimming On/Off	(LSE)	**133**
Speed of the light barrier compensating stitches	PLS	**192**

- After sensing the seam end, the compensating stitches are counted at light barrier speed.
- Suspension of the procedure with pedal in pos. 0 (neutral). Interruption of the procedure with pedal in pos. -2.
- The thread trimming operation can be disabled using parameter **133**, regardless of the setting of key **5** on the V820 control panel. Stop in the basic position.
- Programming of max. 15 light barrier seams depending on the setting of parameter **006** with stop in the basic position. Thread trimming after the last light barrier seam.
- Light barrier sensing uncovered or covered at the seam end can be selected using parameter **131**.
- Start blockage with light barrier uncovered programmable using parameter **132**.
- Speed selection pedal controlled / n5 during the light barrier compensating stitches using parameter **192**.

The light barrier compensating stitches can be programmed and varied using the above parameters directly on the control or on a connected V810/V820 control panel.

For fast operator information (HIT) when using the V820 control panel, the value of the function switched on using key **3** can be displayed for approx. 3 seconds. During this time, the value can be varied directly by pressing key **+** or -.
When using a V820 control panel, direct access by means of the function key (key 9) is possible.

Function **with** control panel		Parameters
Start of sewing blocked with light barrier uncovered On/Off	(-F-)	**008 =3**

1.29.3 Reflection Light Barrier LSM002

Sensitivity setting:
Set minimum sensitivity depending on the distance between light barrier and reflection area (turn potentiometer as far as possible to the left).
▪ Potentiometer directly on the light barrier module

Mechanical orientation:
Orientation is facilitated by a visible light spot on the reflection area.

1.29.4 Automatic Start Controlled by Light Barrier

This function is not possible when parameter F-290 =8 or 9 (modes 8 and 9)!

Function		Parameters
Delay of automatic start	(ASd)	**128**
Automatic start On/Off	(ALS)	**129**
Light barrier sensing uncovered	(LSd)	**131**
Start of sewing blocked with light barrier uncovered	LSS	**132**

This function enables an automatic start of the sewing operation as soon as the light barrier senses the insertion of fabric.

Prerequisites for the operation:
▪ Parameter **009 = 1** Light barrier On
▪ Parameter **129 = 1** Automatic start On
▪ Parameter **131 = 1** Light barrier sensing uncovered
▪ Parameter **132 = 1** No start of sewing with light barrier uncovered
▪ The pedal must be kept pressed forward at the seam end.

For safety reasons this function is enabled only after a normal start of sewing. The light barrier must be covered as long as the pedal is in position 0. Then press the pedal forward. This function is disabled when the pedal is no longer pressed forward after the seam end.

1.29.5 Light barrier filter for knitted fabrics

Function		Parameters
Number of stitches of the light barrier filter	(LSF)	**005**
Light barrier filter On/Off	(LSF)	**130**
Light barrier sensing uncovered or covered	(LSd)	**131**

The filter prevents premature enabling of the light barrier function when sewing knitted fabrics.
▪ Enabling/Disabling of the filter using parameter **130**
▪ The filter is not active if parameter **005 = 0**
▪ Adaptation to the mesh is possible by varying the number of filter stitches.
▪ Knitted fabric sensing with light barrier
    - Uncovered ➜ covered, if parameter **131 = 0**.
    - Covered ➜ uncovered, if parameter **131 = 1**.

1.29.6 Functional Variations of the Light Barrier Input

Function	Parameters
Selection of the input function on socket B18/8	**239**

If the light barrier function is not used, a switching function can be assigned to the input on socket B18/8 as well as to inputs in1...i7.

The following input functions are possible with parameter **239**
239 =0   **Light barrier function:** The input is prepared for a light barrier function.
239 =>0   **All other input functions are identical, as described in the next section "Inputs for switches and keys".**

1.30 Switching Functions of Inputs in1...i13

Function		Parameters
Selection of the input function	(in1...in7)	**240...246**
	(in11-LSM)	**239**
	(in12...in13)	**550...551**

The functions of the keys/switches connected to socket connectors ST2, B18 and B22 can be selected for inputs in1...in13 using parameters **240...246, 239 (LSM), 550, 551**.

240...246, 239 (LSM), 550, 551 =
0   **Input function blocked.**
1   **Needle up/down:** Upon pressing the key, the drive runs from position 1 to position 2 or from position 2 to position 1. If the drive is outside of the stop position, it moves to the preselected home position.
2   **Needle up:** Upon pressing the key, the drive runs from position 1 to position 2.
3   **Single stitch (basting stitch)**: Upon pressing the key, the drive performs one rotation from position 1 to position 1. If the drive is in position 2, it runs to position 1 upon pressing the key and from position 1 to position 1 each time the key is pressed again.
4   **Full stitch**: Upon pressing the key, the drive performs a full rotation depending on the set stop position.
5   **Needle to position 2**: If the drive is outside of position 2, then after pushing the key it moves to position 2. After the power is switched on, the drive runs until it has synchronized.
6   **Machine run blockage effective with open contact**: Upon opening the switch, the drive stops in the pre-selected basic position.
7   **Machine run blockage effective with closed contact**: Upon closing the switch, the drive stops in the pre-selected basic position.
8   **Machine run blockage effective with open contact (unpositioned)**: Upon opening the switch, the drive stops immediately unpositioned.
9   **Machine run blockage effective with closed contact (unpositioned)**: Upon closing the switch, the drive stops immediately unpositioned.
10 **Run at automatic speed (n12)**: Upon pressing the key, the drive runs at automatic speed. The pedal is not used. (This input function is inverted in mode 9.)
11 **Run at limited speed (n12)**: Upon pressing the key, the drive runs at limited speed. The pedal must be pressed forward.
12 **Sewing foot lifting with pedal in position 0** (neutral).
15 **Tape cutter or fast scissors (mode 6/7)**: Upon pressing the key, the tape cutter will be enabled for a preset time.
18 **Unlocking the chain**: Upon pressing the key, the motor performs a reverse rotation at the seam end. Moreover, Stitch condensinging and thread trimmer will be suppressed.
24 **Needle to position 2**: Upon pressing the key, the drive runs from position 1 to position 2, and the sewing foot is lifted. The start is blocked after that. Upon pressing the key again, the sewing foot is lowered, and the start is possible again.
27 **Unlocking the chain**: Upon pressing the key, the function "unlock the chain" will be performed without using the pedal.
28 **External light barrier**: In this mode it is possible to initiate the seam end using a key, not the light barrier. But the light barrier function must be On.
33 **Speed n9**: Below this speed, operation can be pedal controlled.
34 **Automatic speed n9**: The speed can be suspended by pressing the pedal to position 0.
37 **Speed n12 with break contact**: Below this speed, operation can be pedal controlled.
38 **Automatic speed n12 with break contact**: Not influenced by the pedal.
41 **Tape cutting only at machine standstill.**

42   **Enable hot thread chain cutting or sewing foot lifting:** Function only effective in mode 37

43   **No function**

44   **Functions the same as actuating the pedal –2**: When the key is pushed the seam end is introduced. If the functions "end Stitch condensing" and "trimming operation" are activated, they will be completed. The drive stops in position 2.

45   **- 90 No function**

91   **Threading mode 66**

92   **– 100 No function**

101 **Signal AFF1 switchable as flip-flop:** Upon pressing the key, signal AFF1 is activated and deactivated when pressing the key again.

102 **Signal AFF2 switchable as flip-flop**: Upon pressing the key, signal AFF2 is activated and deactivated when pressing the key again.

103 **Signal AFF3 switchable as flip-flop:** Upon pressing the key, signal AFF3 is activated and deactivated when pressing the key again, manual lock automatic

104 **Manual lock automatic**

105 **-109 No function**

109 **Part lift mode 66**

110 **No function**

111 **Machine run blockage effective in Pos. 2 at the seam end with closed contact**

112 **Foot lifting FlipFlop**

113 **– 117 No function**

118 **FlipFlop for running at maximum speed**

1.31 Software Debouncing of All Inputs

Function **with** or **without** control panel		Parameters
Software debouncing of all inputs	(EnP)	**238**

238 **=0**   No debouncing

238 **=1**   Debouncing

1.32 F1/F2 Function Key Assignment on the V810/V820 Control Panels

Function with control panel		Parameters
Selection of input function on the (A) "F1" key on the V810/V820 control panels	(tF1)	**293**
Selection of input function on the (B) "F2" key on the V810/V820 control panels		
	(tF2)	**294**

The function of the keys F1 (A) and F2 (B) can be selected on the control panels using parameters **293 and 294**.

293/294 =

0   **Input function blocked**

1   **Needle up/down:** Upon pressing the key, the drive runs from position 1 to position 2 or from position 2 to position 1. If the drive is outside of the stop position, it moves to the preselected home position.

2   **Needle up** Upon pressing the key, the drive runs from position 1 to position 2.

3   **Single stitch (basting stitch):** Upon pressing the key, the drive performs one rotation from position 1 to position 1. If the drive is in position 2, it runs to position 1 upon pressing the key and from position 1 to position 1 each time the key is pressed again.

4   **Full stitch:** Upon pressing the key, the drive performs a full rotation depending on the stop position.

5   **Needle to position 2:** If the drive is outside of position 2, then after pushing the key it moves to position 2. After the power is switched on, the drive runs until it has synchronized.

6...12   **No function**

13   **High lift for walking foot operational mode not stored:** The signal "high lift for walking foot" is issued as long as the key is held down, and the drive runs with speed limitation (n10).

14   **High lift for walking foot operational mode stored /flip-flop 1:** The signal "high lift for walking foot" is issued upon briefly pressing the key, and the drive runs with speed limitation (n10). The operation is disabled upon pressing the key again.

15   **Tape cutter or fast scissors (mode 6/7):** Upon pressing the key, the tape cutter will be enabled for a preset time.

16   **Intermediate Stitch condensing:** Upon pressing the key, the Stitch condensing will be enabled anywhere in the seam and at standstill of the drive.

17   **Stitch condensing suppression / recall:** Upon pressing the key, the Stitch condensing will be suppressed or recalled once.
18   **No function**
19   Bobbin thread monitor
20...100 No function

1.33 Special pedal function Single stitch / Full stitch

Function		Parameters
Special pedal function Single stitch / Full stitch	(EZP)	**041**
Pedal travel forwards for detection of the special pedal function	(GrP)	**042**
Time for detection of the special pedal function	(dPd)	**051**
Speed for single stitch / full stitch	(n9)	**122**

With the single stitch / full stitch function, it is possible to enable the execution of a stitch though pedal forwards actuation.
For this it is necessary to move the pedal forward only far enough so that the percentage portion (e.g., 40%) of the maximum possible pedal travel (100%) set by the parameter **042**, is not exceeded.
The execution is done as single stitch (Parameter **041 = 1**) or full stitch (Parameter **041 =2**)
If the travel set with parameter **042** is exceeded within the time set with parameter **051**, the drive runs with the speed specified by the respective pedal setting, even when under the threshold.
First after pedal 0-position can the special pedal function be actuated again.
The single/full stitch is executed in the speed set with parameter **122**. To ensure that only a single stitch is executed, the setting 300 rpm must not be exceeded.

041 =0   Special pedal function Off
041 =1   Single stitch:
              The performs one rotation from position 1 to position 1. If it is standing in position 2, it runs to position 1 the first time and then each time from position 1 to position 1.
041 =2   Full stitch:
              The drive executes a complete rotation corresponding to its starting position.

1.34 Signal "Machine Running"

Function		Parameters
Mode "machine running"	(LSG)	**155**
Switch-off delay for signal "machine running"	(t05)	**156**

Set activation of signal "machine running" using parameters 155/156 .

155 =0   Signal "machine running" Off.
155 =1   Signal "machine running" will be issued whenever the drive is running.
155 =2   The signal "machine running" will be issued whenever the speed is higher than 3000 RPM
155 =3   Signal "machine running" will be issued whenever the pedal is not in position 0 or neutral.
155 =4   Signal "machine running" will be issued only after motor synchronization (one rotation at positioning speed after power On).
156   Delay of switch-off time.

1.35 Signal Output Position 1

- Transistor output with open collector (max. +40 V, I_{max} 10 mA)
- Signal whenever the needle is in the slot between position 1 and 1A
- Independent of sewing, thus also when turning the handwheel manually
- Suitable e. g. for the connection of a counter
- An inverted signal is issued at socket ST2/22

1.36 Signal Output Position 2

- Logic level output (+5 V, I_{max} 5 mA)
- Signal 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
- An inverted signal is issued at socket B18/9

1.37 Signal Output 512 Impulses per Rotation

- Logic level output (+5 V, I_{max} 5 mA)
- Signal whenever a generator slot of the position transmitter is sensed
- 512 impulses per rotation of the handwheel
- Independent of sewing, thus also when turning the handwheel manually
- Suitable e. g. for the connection of a counter
- A signal is issued at socket B18/1+6

1.38 Actuator

1.38.1 Analog actuator

Function **with** or **without** control panel		Parameters
Selectable pedal functions	(-Pd)	**019**
Characteristic of the "analog pedal" EB401	(APd)	**026**

The effect of pedal actuation on the drive functions can be set using parameter **019**:

019 =0	Pedal in pos. -1 (slightly back) blocked in the seam. But with pedal in pos. -2 (all the way back) sewing foot lifting is possible in the seam (function active whenever the light barrier is On).
019 =1	With pedal in pos. -1 (slightly back) sewing foot lifting is blocked in the seam.
019 =2	With pedal in pos. -2 (all the way back) thread trimming is blocked (function active whenever the light barrier is On).
019 =3	The functions "pedal in pos. -1 (slightly back) and "pedal in pos -2 (all the way back) are active.
019 =4	The functions "pedal in pos. –1" (slightly back) and "pedal in pos. –2" (all the way back) are blocked in the seam (function active whenever the light barrier is On).
019 =5	Start seam end by placing the portal at -1 (slightly back)

The characteristics of the "analog pedal" is adjustable with parameter **026**:

026 =0	Analog function off
026 =1	12-level selected, like prior pedal function of the digital actuator.
026 =2	Continuously variable (i.e. for external potentiometer, without trimming function)
026 =3	24-level
026 =4	60-level
026 =5	48-level
026 =6	40-Step for SOP (standing operation)

6. Signal Test

Function **with** or **without** control panel		Parameters
Input and output test	(Sr4)	**173**

Function test of external inputs, multiple-function key bar and transistor power outputs with connected actuators (e.g. solenoids and solenoid valves).

1.39 Signal Test Using the Incorporated Control Panel or the V810/V820

1.39.1 Inputs to the control

- Select parameter **173** (OFF is displayed).
- **Control pad on controller:** By actuating the keys or switches connected to inputs in1 to in7, the number of the input actuated appears on the display, e.g. **i06**. More than one switch and/or key may not be actuated at

the same time.
If more than one key or switch is activated at once, the number of the lowest-numbered input is displayed.
If, for example, **in3, in5, in6, in7** are actuated, **i03** is displayed.
Note: Checking of positions is described in chapter "Displaying the signal and stop positions".

- **V810 control panel:** The numbers of the inputs in1...in7, in11 (LSM), in12, and in13 appear individually on the LCD display. Here, too, several switches and/or keys may not be actuated at the same time.
  The signals "Light barrier, sensor (IPG... or HSM...), generator pulses 1 and 2, position 1 and 2" can be checked directly for functionality. The display is carried out using the arrows assigned to keys 2 to 4

Display example for input 03 on the V810 control panel: ➔ | in   i03 |

- **V820 control panel:** The numbers of the inputs in1...in7, in11 (LSM), in12, and in13 appear individually on the LCD display. In addition, the active inputs are displayed by arrows over keys 1 through 6, even if multiple inputs are actuated at once.
- If more than one key or switch is activated at once, the number of the lowest-numbered input is displayed. If, for example, **in3, in5, in6, in7** are actuated, **03** is displayed.

The signals "Light barrier, positions, etc." are displayed by arrows above keys 8, 9, 0.

Display example for input 03 on the V820 control panel: ➔ | 2-06   in   03 |
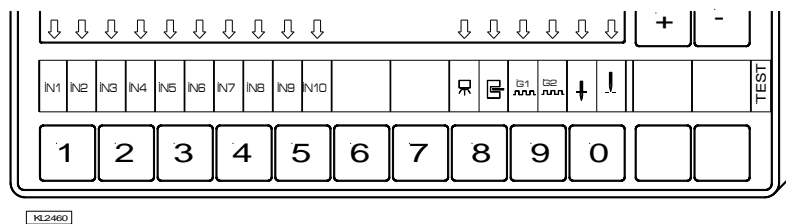
V820 Control Panel   **V810 Control Panel**
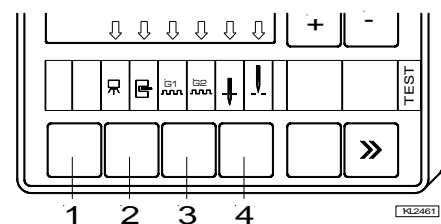
NOTE
If an input is active with open contact, the corresponding arrow lights up when the contact is open. If an input is active with closed contact, the corresponding arrow lights up when the contact is closed!

1.39.2 Outputs of control

- Select parameter **173**.
- Select the desired output using the **+/-** keys.
- On the V810 control panel or on the built-in keypad in the control, the **>>** key is used to turn on the associated output, if it is connected and working.
- On the V820 control panel, instead of the **>>** key the key lower right, at the outer edge must be pressed.

Display example for Stitch condensinging output on the V810 control panel:

➔ | 2-34 | oUt | vr |

Display example for Stitch condensinging output on the V820 control panel:

➔ | 2-34 | oUt | vr |

Assignment of outputs		
Display	**Function / Output**	**on socket ST2**
OUT VR	Stitch condensing	34
OUT FL	Sewing foot lifting	35
OUT 1	M1	37
OUT 2	M2	28
OUT 3	M3	27
OUT 4	M4	36
OUT 5	M5	32
OUT 6	M6	30
OUT 7	M7	23
OUT 8	M8	24
OUT 9	M9	25
OUT 10	M10	29
OUT 11	M11	31
POS 1	Position 1	20

7. Table of Machine Functions and Adapter Cords

⚠ **ATTENTION**
Before switching functional sequences, detach cables from the inputs and outputs! It must be absolutely certain that for the functional sequence to be changed the machine provided has been installed! Then proceed with the setting using parameter 290!

8. Operating Elements and Socket Connectors
1.40 Positions of the Front Side

A	**Power switch**
B	**Network control lights**
C	**Control panel** (onboard module) **+ Display** (4-digit 7-segment display)
Key	
P	Call or exit programming mode
E	Start Stitch condensing single / double / off Enter key for modifications in the programming mode
+	End Stitch condensing single / double / off In the programming mode - increase of the value indicated
>>	Basic position 1 or 2 In programming mode as shift key
–	Automatic sewing foot lifting at stop in the seam On/Off Automatic sewing foot lifting after thread trimming On/Off In the programming mode - decrease of the value indicated
The upper vertical segments of the 4 digit 7 -segment display indicate the switching states of foot lifting and basic position.	
1	start Stitch condensing
2	Double start Stitch condensing
3	Single end Stitch condensing Tape cutter at the start of the seam ON/OFF (mode 7)
4	Double end Stitch condensing Tape cutter at the seam end ON/OFF (mode 7)
5	Basic position "needle position 1"
6	Basic position "needle position 2"
7	Automatic sewing foot lifting at stop in the seam
8	Automatic sewing foot lifting after the thread trimming operation
Connector	
B20	USB Memory Stick
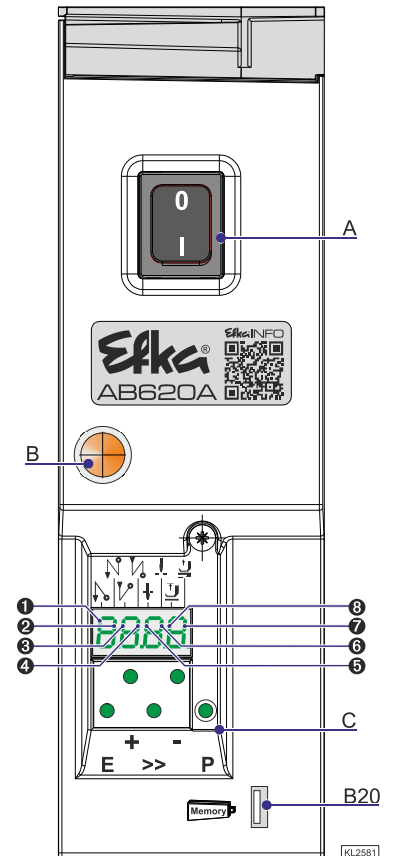
1.41 Positions of the rear side

Connector	
B2	Commutation transmitter
B18	Light barrier module LSM002 - Hall sensor module HSM001 - Pulse encoder IPG001 *(Adapter cord 1113229 in case of multiple assignment)*
B41	Motor power supply
B80	Actuator
ST2	Socket for inputs and outputs e. g. solenoids, solenoid valves, displays, keys and switches
B776	V810/V820 Control Panel
KN19	Knee switch
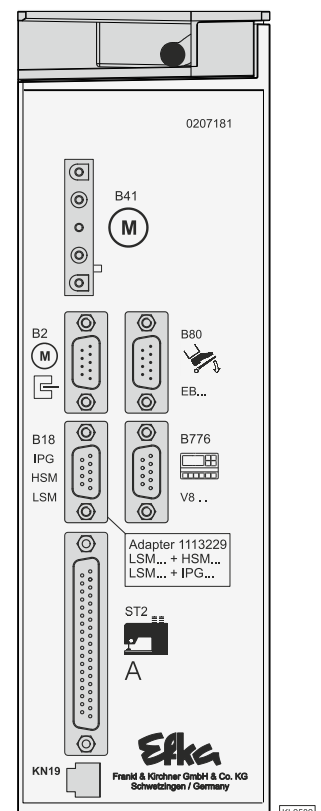
1.42 Connection Diagrams

Inputs switched to 0V
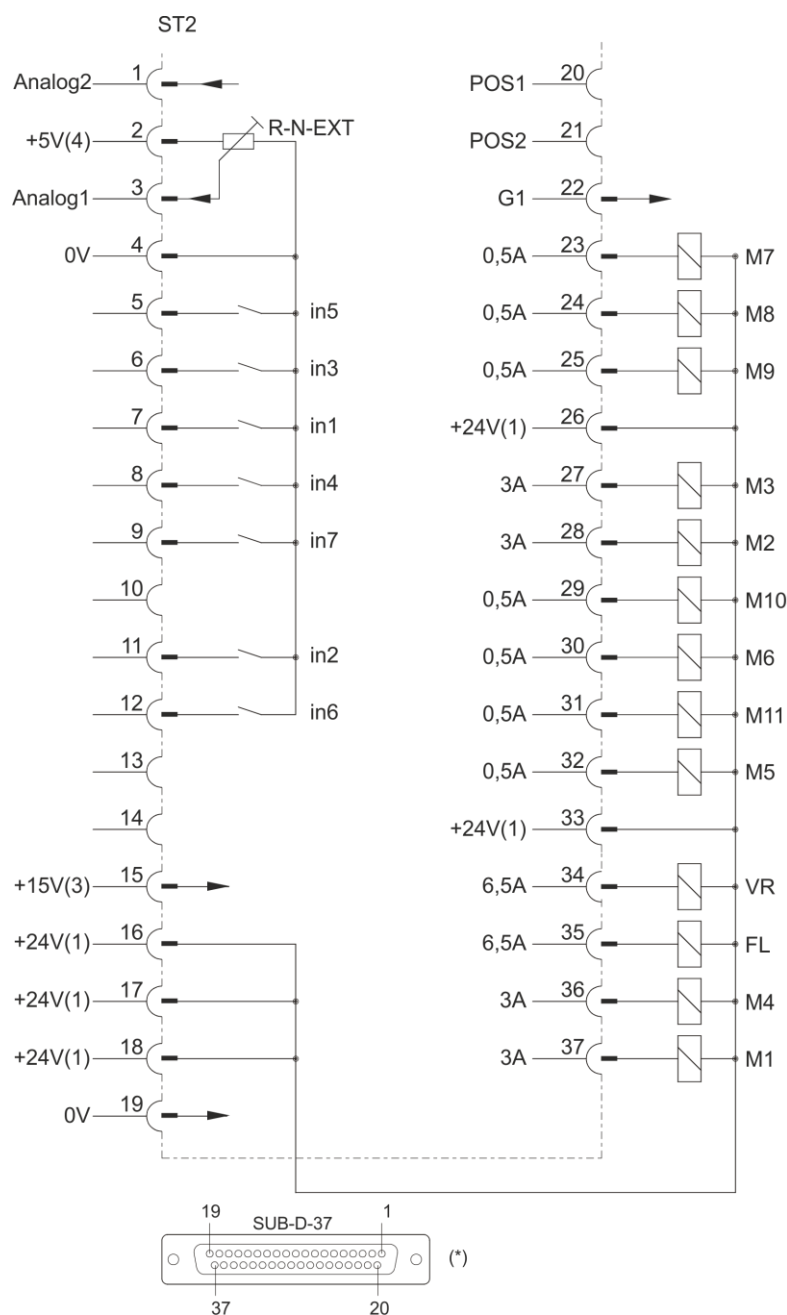
ST2				

Left connector (ST2):
- 1 Analog2
- 2 +5V(4) — R-N-EXT
- 3 Analog1
- 4 0V
- 5 in5
- 6 in3
- 7 in1
- 8 in4
- 9 in7
- 10
- 11 in2
- 12 in6
- 13
- 14
- 15 +15V(3)
- 16 +24V(1)
- 17 +24V(1)
- 18 +24V(1)
- 19 0V

Right connector:
- 20 POS1
- 21 POS2
- 22 G1
- 23 0,5A M7
- 24 0,5A M8
- 25 0,5A M9
- 26 +24V(1)
- 27 3A M3
- 28 3A M2
- 29 0,5A M10
- 30 0,5A M6
- 31 0,5A M11
- 32 0,5A M5
- 33 +24V(1)
- 34 6,5A VR
- 35 6,5A FL
- 36 3A M4
- 37 3A M1

19 SUB-D-37 1
37   20   (*)

Bi2008a

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

---

in1	Input 1	R-N-EXT	External potentiometer for speed limitation	M4	Output 4
in2	Input 2	VR	Stitch condensing	M5	Output 5
in3	Input 3	POS1	Position 1	M6	Output 6
in4	Input 4	POS2	Position 2	M7	Output 7
in5	Input 5	FL	Sewing foot lifting		
in6	Input 6	G1	Generatorsignal	M8	Output 8
in7	Input 7	M1	Output 1	M9	Output 9
		M2	Output 2	M10	Output 10
		M3	Output 3	M11	Output 11

Inputs switched to +24 V

ST2		
Analog2 — 1		
+5V(4) — 2	R-N-EXT	
Analog1 — 3		
0V — 4		
5	in5	
6	in3	
7	in1	
8	in4	
9	in7	
10		
11	in2	
12	in6	
13		
14		
+15V(3) — 15		
+24V(1) — 16		
+24V(1) — 17		
+24V(1) — 18		
0V — 19		

POS1 — 20
POS2 — 21
G1 — 22
0,5A — 23 — M7
0,5A — 24 — M8
0,5A — 25 — M9
+24V(1) — 26
3A — 27 — M3
3A — 28 — M2
0,5A — 29 — M10
0,5A — 30 — M6
0,5A — 31 — M11
0,5A — 32 — M5
+24V(1) — 33
6,5A — 34 — VR
6,5A — 35 — FL
3A — 36 — M4
3A — 37 — M1

19   SUB-D-37   1

37   20

(*)
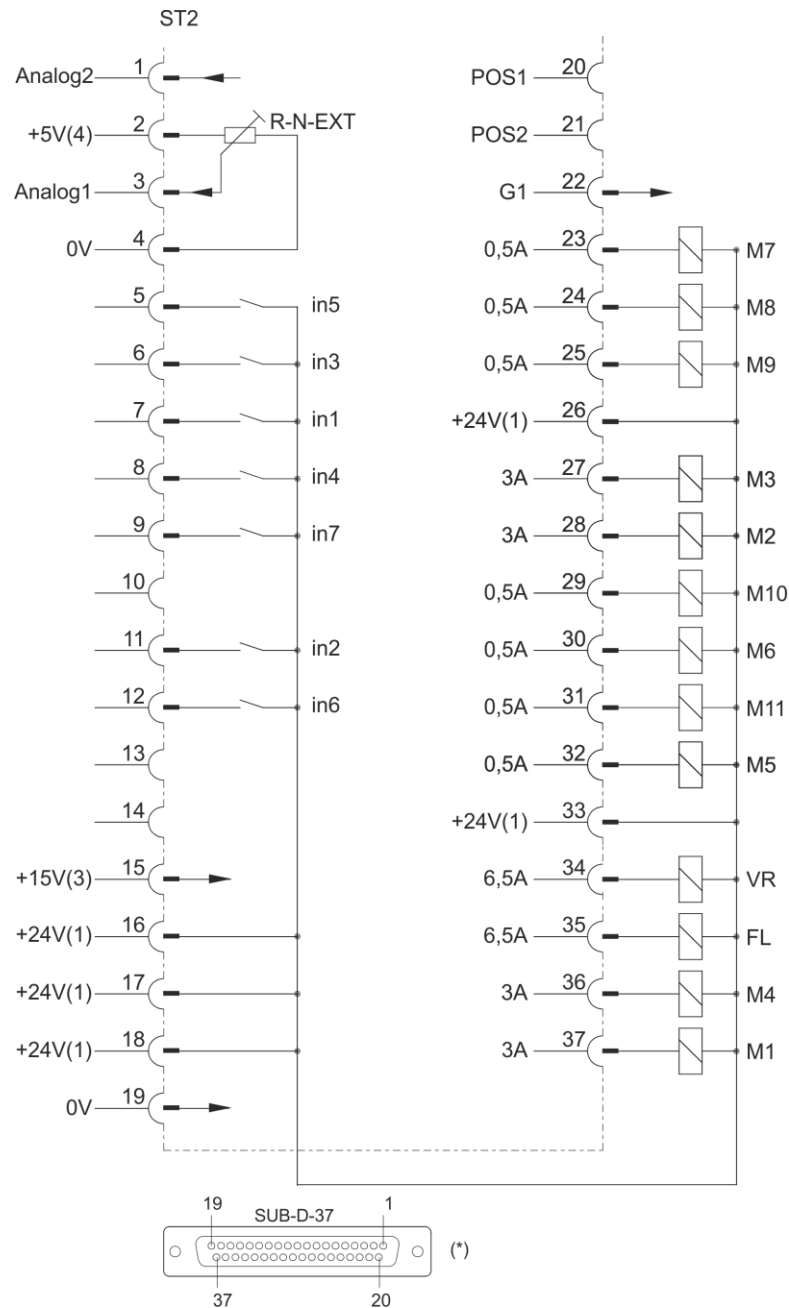
Bi2009a

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

1) Nominal voltage +24 V, no-load voltage max. +30 V momentarily after power on
2) Transistor output with open collector max. +40 V, I_{max} 10 mA
3) Nominal voltage +15 V, I_{max} 30 mA
4) Nominal voltage +5 V, I_{max} 20 mA
*) View: Front view of the control (component side) and/or rear view of the outgoing connecting cable

Connection of a HSM001 Hall sensor module or an IPG001 pulse encoder

Connection of a light barrier module LSM002
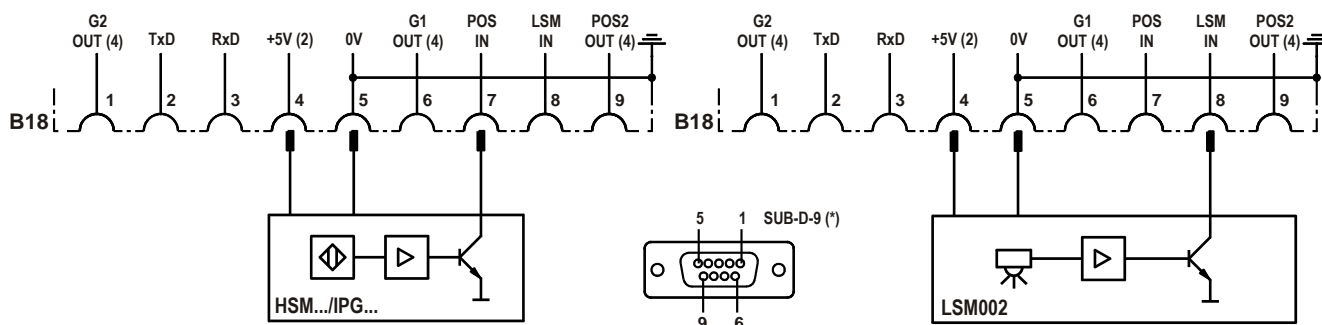
BI1174a

Adapter cord 1113229 in case of multiple assignment of socket B18!

POS2 OUT	Output for position 2	LSM IN	Possibility of connecting a light barrier module to socket B18/8
POS IN	Input for positions (e. g. connection of a sensor)	LSM002	Reflection light barrier module
G1/G2 OUT	Output of generator impulses	HSM001	Hall sensor module
TXD/RXD	Serial transmission lines	IPG	Pulse encoder

If parameter 239 is set to >0, it is possible to operate a key at the input of the B18/8 connector.
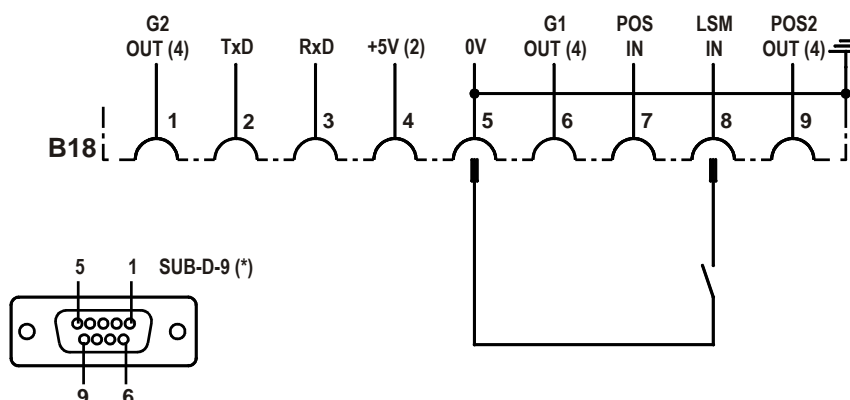
BI1159a

There is a supply voltage of +5 V on the B18/4 socket for external devices. This voltage can be switched to +15 V using parameter 362.

2) Nominal voltage +5V, I_{max} 100 mA (switchable to +15 V, I_{max} 100 mA)
4) Logic level output +5 V, I_{max} 5 mA
*) View: Front view of the control (component side) and/or rear view of the outgoing connecting cable

BI1179
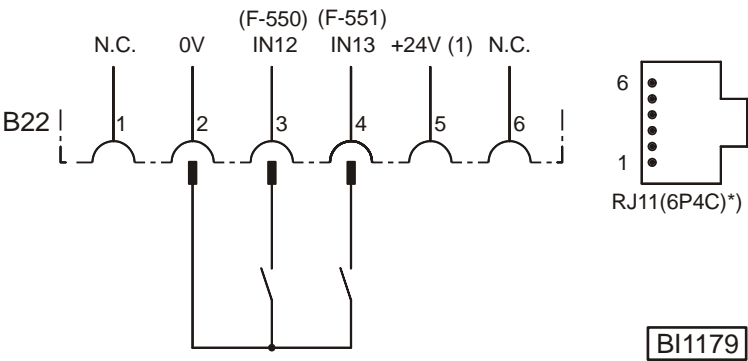
IN12	Input 12, function programmable using parameter 550	IN13	Input 13, function programmable using parameter 551

Connecting the analogous actuator EB401

BI2004
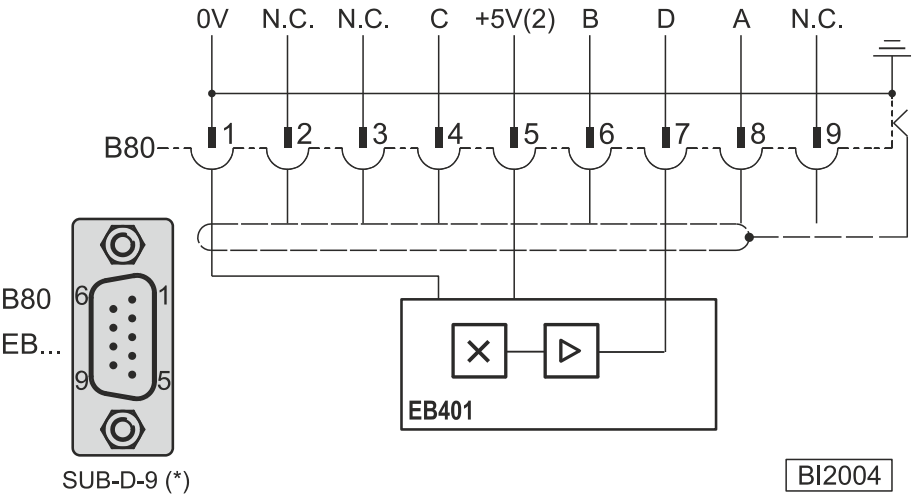
EB.. = Actuator

Code table for digital target value preset (grey code)

Pedal step ➔	-2	-1	0	½	1	2	3	4	5	6	7	8	9	10	11	12
Input A (B80/8)	L	L	H	H	H	L	L	H	H	L	L	H	H	L	L	H
Input B (B80/6)	L	H	H	L	L	L	H	H	H	H	L	L	L	L	H	H
Input C (B80/4)	H	H	H	H	L	L	L	L	L	L	L	L	H	H	H	H
Input D (B80/7)	H	H	H	H	H	H	H	H	L	L	L	L	L	L	L	L

Connection for frequency run

Bi1160b
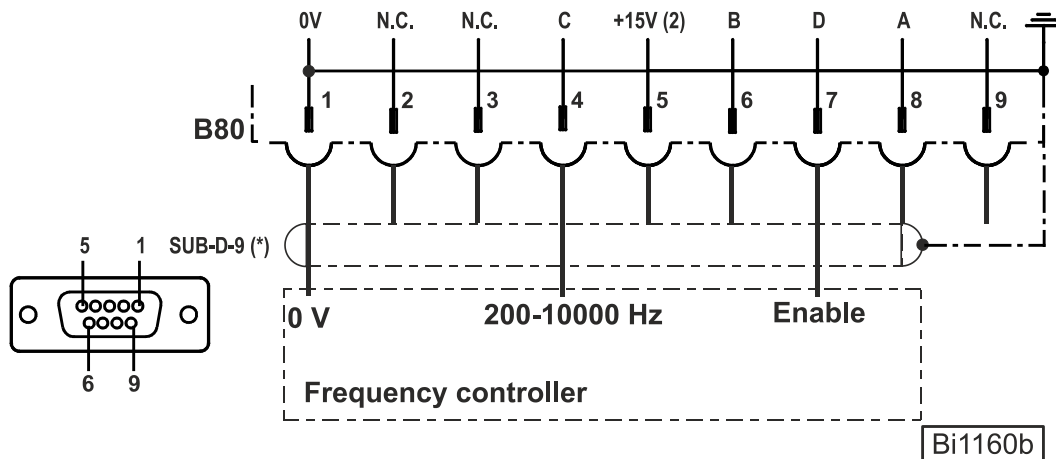
Connections:	0 V on Pin 1
	Frequency output on Pin 4
	Frequency controller output on Pin 7

In order to introduce motor running 0V must be applied to pin 7

Frequency rates: 0-5 V / 200-10000 Hz
Min. speed 50 min^{-1}
Max. speed F-111

| Parameter F-396 =0 | Frequency Off |
| F-396 =1 | Frequency On |

Plug B80 input signal

Pin8 "A"	Pin6 "B"	Pin4 "C"	Pin5 "D"	Motor state
X	X	X	Deactivated.	Stop
X	X	Frequency < 60 Hz	Activated (0V)	Stop
X	X	Frequency > 60 Hz	Activated (0V)	Running
X	X	Frequency > 60 Hz	Deactivated.	Stop
0 V	0 V	X	Deactivated.	Trimmer

1) *Nominal voltage +24 V, no-load voltage max. +30 V momentarily after power on*
2) *Nominal voltage +5 V, I_{max} 20 mA*
*) *View: Front view of the control (component side) and/or rear view of the outgoing connecting cable*

9. Timing Diagrams

Mode 0-5 (chainstitch)
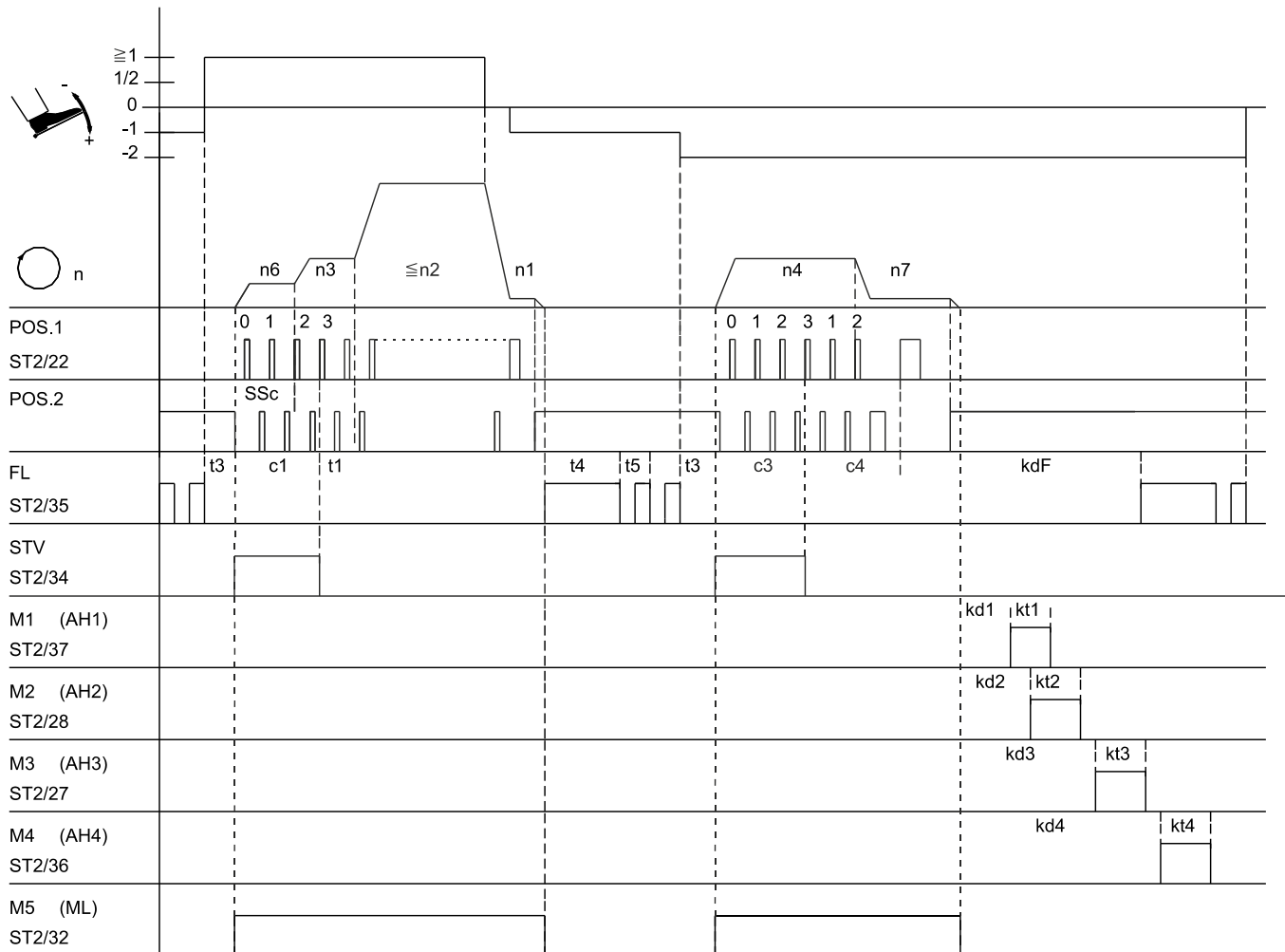
0330/MODE-05

Mark	Function		Parameters	Control	V810	V820
FAm	Mode 5		290 =5			
SSt	Softstart		134 =1			
	Start stitch condensing	On		Key **E**	Key 1	Key 1
	End stitch condensing	On		Key **+**	Key 2	Key 4
n1	Positioning speed		110			
n2	Maximum speed		111			
n3	Start stitch condensing speed		112			
n4	End stitch condensing speed		113			
n6	Softstart speed		115			
n7	Trimming speed		116			
c1	Stitch counting of start stitch condensing		001			
c3	Stitch counting of end stitch condensing		002			
c4	Stitch counting at the seam end without stitch regulator		003			
SSc	Softstart stitches		100			
t1	Delay until speed release after start Stitch condensing		200			
t3	Start delay from lifted sewing foot		202			
t4	Full power of sewing foot lifting		203			
t5	Pulsing of sewing foot lifting		204			
kdF	Switch-on delay of sewing foot lifting		288			
kd1-kd4	Delay times of outputs M1...M4		280/2/4/6			
kt1-kt4	ON periods of outputs M1...M4		281/3/5/7			

Operator Level

The preset values indicated apply to mode 0 (Parameter 290 = 0).
For preset values applicable to other modes see table in chapter 11.1 »Preset Values Depending on Mode«.

Parameters		Designation	Unit	Max	Min	Preset	Ind.
000	c2	- Number of stitches of start stitch condensing without stitch regulator	Stitches	254	0	2	
001	c1	- Number of stitches of start stitch condensing with stitch regulator	Stitches	254	0	4	
002	c3	- Number of stitches of end stitch condensing with stitch regulator	Stitches	254	0	2	
003	c4	- Number of stitches of end stitch condensing without stitch regulator	Stitches	254	0	2	
004	LS	Light barrier compensating stitches	Stitches	254	0	7	
005	LSF	Number of stitches of the light barrier filter for knitted fabrics	Stitches	254	0	1	
007	Stc	Number of stitches for the seam with stitch counting	Stitches	999	0	20	
008	-F	A parameter from the technician level is assigned to key 9 on the V820 control panel 1 = Softstart On/Off		1	1	1	
009	LS	Light barrier On/Off		1	0	0	
013	FA	Thread trimmer On/Off		1	0	0	
014	Fw	Thread wiper On/Off		1	0	0	
015	StS	Stitch counting On/Off		1	0	0	
017	SAb	Stop for tape cutting at the seam end On/Off (Function only when overlock mode is active).		1	0	0	
019	-Pd	0 = Pedal in pos. -1 blocked in the seam. But with pedal in pos. -2 sewing foot lifting is possible in the seam (function active whenever the light barrier is On) 1 = With pedal in pos. -1 sewing foot lifting is blocked in the seam. 2 = Pedal in pos. –2, thread trimming disabled. (Function only if parameter 009 = 1) 3 = Pedal in pos. –1 and –2 enabled in the seam. 4 = Pedal -1 and -2 locked in the seam (function only when parameter 009 =1) 5 = Start seam end by with pedal -1		5	0	3	
023	AFL	Automatic sewing foot lifting with pedal forward at the seam end, if light barrier or stitch counting is On. 0 = Automatic foot lifting off 1 = Automatic foot lifting On		1	0	1	
024	FSP	Coupled thread tension release and sewing foot lifting. The function can be activated only with a thread trimmer that depends on the angle. 0 = No coupling 1 = Coupled thread tension release and sewing foot at the seam end with thread trimmer off 2 = Coupled thread tension release and sewing foot in the seam and at the seam end with thread trimmer off 3 = Coupled thread tension release and sewing foot always effective		3	0	0	
026	APd	Characteristic of the "analog pedal" 0 = Analog function off 1 = 12-level, like previous pedal function 2 = continuously variable 3 = 24-level 4 = 60-level 5 = 48-level 6 = 48 level / standing operation (SOP; foot control 304)i		6	0	4	
027	plu	Area for setting + 1/2 of the analog pedal in percent		80	10	30	
030	rfw	Bobbin thread monitor 0 = Off 1 = Active with stop 2 = Active without stop 3 = Active with stop and start blockage after thread trimming 4 = As 1, but with display of remaining stitches 5 = As 2, but with display of remaining stitches 6 = As 3, but with display of remaining stitches		6	0	B	

			Unit	Max	Min	Preset	Ind.
031	cfw	Number of stitches for bobbin thread monitor. (The 3-digit value must be multiplied by 100).		255	0	B	
037	Tu	Monitoring for FF1 signal in sec		60	0	0	037
041	EZP	Special pedal function Single stitch / Full stitch 0 = Function Off 1 = Single stitch (assuming needle up to needle down). Afterwards alas a complete hand wheel rotation in speed n9) 2 = Full stitch (a complete hand wheel rotation in speed n9) 3 = Speed limitation up to F-042		2	0	0	
042	GrP	Pedal travel forwards for detection of the special pedal function	%	100	0	40	
049	KML	Clutch motor running (Kopplung MotorRunnig) signal (F-290=7) =0 OFF =1 clutch with pedal Mi1 & pedal Mi2 in the seam =2 clutch with pedal Mi1 & pedal Mi2 outside of the seam =3 clutch with pedal Mi1 & pedal Mi2 in and outside of the seam 3		3	0	0	
051	dPd	Time for detection of the special pedal function	ms	2550	0	100	
082	DDr	Suck stitches to waste	Stitches	254	0	25	D
083	tDr	Time sucking waste	ms	5000	0	0	D
084	Mle	Stitches for motor ECO On	Stitches	254	0	5	
085	Mla	Stitches for motor ECO runs down	Stitches	254	0	5	

1.43 Technical level (Code no. 1907)

Parameters		Designation	Unit	Max	Min	Preset	Ind.
100	SSc	Number of softstart stitches	Stitches	254	0	2	
110	n1	Positioning speed for threading (mode 66)	RPM	390	70	200	
111	n2	Upper limit setting range of the maximum speed	RPM	9900	n2_	5000	
112	n3	Start Stitch condensinging speed	RPM	9900	200	1200	
113	n4	End Stitch condensinging speed	RPM	9900	200	1200	
114	n5	Speed after light barrier sensing	RPM	9900	200	1200	
115	n6	Softstart speed	RPM	9900	70	500	
116	n7	Trimming speed	RPM	700	70	200	
117	n10	High lift for walking speed limitation	RPM	9900	400	1000	
118	n12	Automatic speed for stitch counting	RPM	9900	400	3500	
119	nSt	Speed stage graduation 1 = Linear 2 = Slightly progressive 3 = Highly progressive		3	1		
121	n2	Lower limit setting range of the maximum speed	RPM	n2_	200	400	
122	n9	Limited speed n9	RPM	9900	200	2000	
123	n11	Limited speed n11	RPM	9900	200	2500	
128	ASd	Start delay, when command "start" is given by covering the light barrier (see parameter 129)	ms	2000	0	0	
129	ALS	Machine start by covering the light barrier (only in conjunction with parameter 132 = 1) 0 = Function Off 1 = Light barrier covered ➔ pedal forward (>1) ➔machine run pedal controlled. 2 = Pedal forward (>1) ➔ light barrier covered machine run ➔ pedal controlled. 3 = Light barrier covered ➔ machine run at automatic speed n12 (without pedal) 4 = Pedal forward (>1) ➔ light barrier covered machine run ➔pedal controlled. 5 = Light barrier covered ➔ machine run at automatic speed n12 (without pedal) **Attention!** If 129 = 3, the machine starts immediately after covering the light barrier without influence by the pedal! It can be stopped only by uncovering the light barrier or by machine run blockage! If machine run blockage is disabled, the machine starts immediately even if the light barrier is still covered! 6 = The same as 3, run without pedal when covering the light curtain, however start up only when FI is lowered.		3	0	0	
130	LSF	Light barrier filter for knitted fabrics		1	0	0	
131	LSd	0 = Light barrier sensing "covered" 1 = Light barrier sensing uncovered		1	0	1	
132	LSS	0 = Machine start possible with light barrier uncovered or covered.		1	0	1	

		1 = Machine start blocked with light barrier uncovered if parameter 131 = 1.Machine start blocked with light barrier covered,					
133	LSE	Thread trimming operation, when completing the seam after light barrier sensing On/Off		1	0	1	
134	SSt	Softstart On/Off		1	0	0	
139	nIS	Display of machine speed On/Off		1	0	0	
140	dnE	Delay of seam end with pedal in pos. -2	ms	2550	0	0	

No.	Abbr.	Description	Unit				
141	SGn	Speed status for the seam with stitch counting 0 = Speed controllable by the pedal up to the set maximum speed (Parameter 111) 1 = Fixed speed (Parameter 118) without influence by the pedal (machine stop by pressing the pedal to the basic position) 2 = Limited speed controllable by the pedal up to the set limit (Parameter 118) 3 = At fixed speed (Parameter 118) can be interrupted by full heelback -2 4 = At fixed speed (Parameter 110) can be interrupted by full heelback -2		4	0	0	
142	SFn	Speed status for the free seam and for the seam with light barrier 0 = Speed controllable by the pedal up to the set maximum speed (Parameter 111) 1 = Fixed speed (Parameter 118) without influence by the pedal (machine stop by pressing the pedal to the basic position) 2 = Limited speed controllable by the pedal up to the set limit (Parameter 118) 3 = At fixed speed (Parameter 118) can be interrupted by full heelback (only for seams with light barrier).		3	0	0	
143	kSA	Stitch counting at the start of the seam (e. g. chain suction) 0 = Speed controllable by the pedal up to the set maximum speed (Parameter 111) 1 = Fixed speed (Parameter 112) without influence by the pedal (machine stop by pressing the pedal to the basic position) 2 = Limited speed controllable by the pedal up to the set limit (Parameter 112) 3 = At fixed speed (Parameter 112), can be suspended or interrupted depending on the setting of parameter 019.		3	0	0	
144	kSE	Stitch counting at the seam end (e. g. chain suction) 0 = Speed controllable by the pedal up to the set maximum speed (Parameter 111). 1 = Fixed speed (Parameter 113) without influence by the pedal (machine stop by pressing the pedal to the basic position). 2 = Limited speed controllable by the pedal up to the set limit (Parameter 113) 3 = At fixed speed (Parameter 113), can be suspended or interrupted depending on the setting of parameter 019.		3	0	0	
153	brt	Braking power at machine standstill		50	0	15	
155	LSG	Mode signal run 0 = Signal Off. 1 = Signal run On. 2 = Signal "run" enabled when the speed is >3000 RPM. 3 = Signal with pedal <> 0. 4 = Signal enabled only after motor synchronization (one rotation at positioning speed after power On). 5 = Motor runs Eco with setting F-84 and F-85 6 = Motor runs the same as chain suction at the seam start / end with counter F-084 and F-085 7 = The same as 6, however chain suction at the start of the seam can be interrupted and with switch-off delay F-156		7	0	1	
156	t05	Switch-off delay for the signal "run" or signal with pedal in pos. 0 (neutral)	ms	2550	0	0	
161	drE	Direction of motor rotation 0 = Clockwise rotation 1 = Counterclockwise rotation		1	0	1	
172	Sr3	Display on the control: Pos. 1 to 1A (LED segment 5 lights up) Pos. 2 to 2A (LED segment 6 lights up)					
172	Sr3	**Display on the V810 control panel:** Pos. 1 to 1A(left-hand arrow above key 4 On) Pos. 2 to 2A(right-hand arrow above key 4 On)					

172	Sr3	**Display on the V820 control panel:** Pos. 1 to 1A(left-hand arrow above key 7 On) Pos. 2 to 2A(right-hand arrow above key 7 On)					
173	Sr4	Testing of signal inputs and outputs **Inputs** By actuating the switches connected to the control, the function of these switches is checked and displayed on the control. With the switch open, **OFF** appears (only in the control panel of the control) and with the switch closed, the corresponding input **in1...in7, i11 (LSM), i12, i13** appears (on the V810/820/850, also the number of the connector socket and pin). **Outputs** ▪ Select the desired output using the **+/-** keys. ▪ With the button **>>** the corresponding output is switched on, as long as it is connected and functional. {table below}			OFF	
174	Lng	Language selection V860 control panel 1 = English 2 = German			2	

Output	Socket
Stitch condensinging	ST2/34
Sewing foot lifting	ST2/35
M1	ST2/37
M2	ST2/28
M3	ST2/27
M4	ST2/36
M5	ST2/32
M6	ST2/30
M7	ST2/23
M8	ST2/24
M9	ST2/25
M10	ST2/29
M11	ST2/31

176	Sr6	Service routine for total operating hours display. The process is as with display example of parameter 177.				
177	Sr7	Service routine for display of hours since the last service.				

177 Sr7

Service routine for display of hours since the last service.

Display example for the operator control panel:

Press the E key	➔	Display	Sr7=
Press the >> key	➔	Display	h t
Press the E key	➔	Display	0000
Press the >> key	➔	Display	h h
Press the E key	➔	Display	0000
Press the E key	➔	Display	Min
Press the E key	➔	Display	00
Press the E key	➔	Display	SEc
Press the E key	➔	Display	00
Press the E key	➔	Display	MS
Press the E key	➔	Display	000
Press the E key	➔	Display	rES

Press the E key again to restart routine, or press the P key twice to return to operational status

Display example for the V810 control panel:

Press the E key	➔	Display	Sr7 [°]
Press the >> key	➔	Display	hoUr
Press the E key	➔	Display	000000
Press the E key	➔	Display	Min
Press the E key	➔	Display	00
Press the E key	➔	Display	SEc
Press the E key	➔	Display	00
Press the E key	➔	Display	MSEc
Press the E key	➔	Display	000
Press the E key	➔	Display	rES F2
Press the P key twice	➔	Display e.g.	YA620A

Display example for the V820 control panel:

Press the E key	➔	Display	F-177	Sr7 [°]
Press the >> key	➔	Display	hoUr	000000
Press the E key	➔	Display	Min	00
Press the E key	➔	Display	SEc	00
Press the E key	➔	Display	MSEc	000
Press the E key	➔	Display	rES	F2
Press the P key twice	➔	Display e.g.	YA620A	

179 Sr5

Display of control program number with index and more identification numbers. The data is displayed in sequence by keystroke.

Display example for the operator control panel:

Press the E key	➔	Display	Sr5=	
Press the >> key	➔	Display e.g.	5080	(Prog. No.)
Press the E key	➔	Display e.g.	A	(Index)
Press the E key	➔	Display e.g.	06	(Year)
Press the E key	➔	Display e.g.	10	(Month)
Press the E key	➔	Display e.g.	24	(Day)
Press the E key	➔	Display e.g.	16	(Hour)
Press the E key	➔	Display e.g.	--	
Press the E key	➔	Display e.g.	----	

Press the E key again to restart routine, or press the P key twice to return to operational status

Parameters		Designation	Unit	Max	Min	Preset	Ind.
		Display example for the V810 control panel: Press the E key → Display Sr [°] Press the >> key → Display e.g. 5080 Press the E key → Display e.g. 010823 Press the E key → Display e.g. 15 Press the E key → Display e.g. 1F68 Press the P key twice → Display YA620A **Display example for the V820 control panel:** Press the E key → Display F-179 Sr5 [°] Press the >> key → Display e.g. PrG 5080 Press the E key → Display e.g. dAt 01082315 Press the E key → Display e.g. Chk 1F68 Press the E key → Display e.g. 132650210015 Press the E key → Display e.g. Skn 01047543 Press the P key twice → Display 4000 YA620A					
192	PLS	Speed of the light barrier compensating stitches 0 = Speed n5 after light barrier sensing 1 = Speed pedal controlled		1	0	0	
200	t1	Delay until speed release after start Stitch condensing	ms	500	0	100	
201	t2	Sewing foot switch-on delay after thread wiper with half heelback	ms	2550	20	80	
202	t3	Start delay after disabling the sewing foot lifting signal	ms	500	0	50	
203	t4	Time of full power of sewing foot lifting	ms	600	0	500	
204	t5	Holding power for sewing foot lifting 1...100% 1%→ low holding power 100%→ high holding power	%	Pa.254	1	40	
205	t6	Thread wiper time	ms	2550	0	120	
206	t7	Delay from end of thread wiper until sewing foot lifting On	ms	800	0	40	
207	br1	Braking effect when varying the preset value ≤ 4 stages (indicated values only with transmission ratio 1:1)		55	1	15	
208	br2	Braking effect when varying the preset value ≥ 5 stages (indicated values only with transmission ratio 1:1)		55	1	20	
209	dFw	Thread wiper switch-on delay	ms	2550	0	0	
211	tFL	Sewing foot lifting switch-on delay with thread wiper off	ms	500	0	60	
219	br3	Braking ramp for n < 350 $^{min^{-1}}/_{ms}$ when drive stopped		55	1	4	
220	ALF	Accelerating power of the drive (indicated values only with transmission ratio 1:1)		55	1	35	
229	dP2	Delay of heelback (-2)	ms	2000	0	0	
236	FLP	0 = FI always permitted 1 = FI only permitted in position 2 2 = FI after cutting stored pedal plus ½ lifts storing, pedal minus 1 switches stored FI on. 3 = Storage for standing actuation FBxxx 4 = FI generally deactivated 5 = Stored foot lifting at the seam end can be deactivated with pedal plus ½ and pedal minus 1.		5	0	0	B
239	FEL	Selection of the input function on socket B18/8 0 = Light barrier function, if 009 =1 All other functions as with parameter 240.		112	0	0	

***)   *The 4-digit value displayed must be multiplied by 10.*

Supplier level (Code No. 3112)

Parameters		Designation	Unit	Max	Min	Preset	Ind.
240	in1	Selection of the input functions on socket ST2/7 for input 1		112	0	0	
		0 = No function					
		1 = Needle up/down					
		2 = Needle up					
		3 = Single stitch (basting stitch)					
		4 = Full stitch					
		5 = Needle to position 2					
		6 = Machine run blockage effective with open contact					
		7 = Machine run blockage effective with closed contact					
		8 = Machine run blockage unpositioned effective with open contact					
		9 = Machine run blockage unpositioned effective with closed contact					
		10 = Automatic speed n12 without pedal (N.O. contact)					
		11 = Limited speed n12 pedal controlled					
		12 = Sewing foot lifting with pedal in position 0 (neutral)					
		23 = No function					
		24 = Needle to position 2 (see instruction manual)					
		28 = External light barrier (according to setting of parameter 131)					
		33 = Speed n9 pedal controlled					
		34 = Automatic speed n9 can be suspended by pressing the pedal to pos. 0 (neutral)					
		37 = Speed n12 pedal controlled (break contact)					
		38 = Automatic speed n12 without pedal (break contact [N.C.])					
		43 = No function					
		44 = Seam end the same as with pedal 2					
		45..81 = No function					
		102 = AFF2 ex. switch stitch length					
		110 = Machine run blockage in Pos. 2 at the seam end open					
		113 – 117 No function					
241	in2	Selection of input function on socket ST2/11 for input 2		112	0	0	
		0 = No function					
		All other functions of the keys as with parameter 240					
242	in3	Selection of input function on socket ST2/6 for input 3		112	0	0	
		0 = No function					
		All other functions of the keys as with parameter 240					
243	in4	Selection of input function on socket ST2/8 for input 4		112	0	0	
		0 = No function					
		All other functions of the keys as with parameter 240					
244	in5	Selection of input function on socket ST2/5 for input 5		112	0	0	
		0 = No function					
		All other functions of the keys as with parameter 240					
245	in6	Selection of input function on socket ST2/12 for input 6		112	0	0	
		0 = No function					
		All other functions of the keys as with parameter 240					
246	in7	Selection of input function on socket ST2/9 for input 7		112	0	0	
		0 = No function					
		All other functions of the keys as with parameter 240					
250	iFA	Thread trimmer activation angle	Degrees	359	0	180	
254	EF-	Upper limit (Pa.204) clocking the sewing foot lifting switch on period (ED) 1...100 %	%	100	1	100	
268	SEL	Speed limitation via "select". (F290=55 & F290=74)		1			
269	PSv	Positioning shift	Incr.	100	0	10	
270	PGm	Mode of a position sensor with a **normally closed function** (N.C.).		6	0	0	
		0 = The positions are generated using the transmitter incorporated in the motor and can be set using parameter 171 *)					
		7 = The positions are generated using the external position encoder					
272	trr	Transmission ratio between motor shaft and machine shaft (calculation formula see instruction manual!) **The transmission ratio should be determined and indicated as precisely as possible!**		40000	150	1000	
280	kd1	Delay time output M1	ms	5000	0	0	
281	kt1	ON period output M1	ms	5000	0	100	
282	kd2	Delay time output M2	ms	5000	0	100	
283	kt2	ON period output M2	ms	5000	0	100	
284	kd3	Delay time output M3	ms	5000	0	200	
285	kt3	ON period output M3	ms	5000	0	100	

286	kd4	Delay time output M4	ms	5000	0	300	
287	kt4	ON period output M4	ms	5000	0	100	
288	kdF	Delay time until sewing foot On	ms	5000	0	380	
290	FAm	**Value mode**	**UT**	**STA/WIPER**	**UTQ**	**BAF**	**EZH**
		0 = Yamato VC, VE, VF, VG	X	WIPER			
		1 = Yamato VC, VE, VF, VG	X	STA			
		2 = Yamato VC, VE, VF, VG	X	WIPER		X	
		3 = Yamato VC, VE, VF, VG	X	STA		X	
		4 = Yamato VC, VE, VF, VG	X	WIPER			X
		5 = Yamato VC, VE, VF, VG	X	STA			X
		6 = Yamato VC, VE, VF, VG		WIPER	X		
		7 = Yamato VC, VE, VF, VG		STA	X		
		8 = Yamato VC, VE, VF, VG		WIPER	X	X	
		9 = Yamato VC, VE, VF, VG		STA	X	X	
		10 = Yamato VC, VE, VF, VG		WIPER	X		X
		11 = Yamato VC, VE, VF, VG		STA	X		X
291	810	Select slide-in strip number for the V810 control panel (illustration see instruction manual for part V810/V820. At setting **0**, keys 1…4 are disabled.		13	0	1	
292	820	Select slide-in strip number for the V820 control panel (illustration see instruction manual for part V810/V820. At setting **0**, keys 1…0 are disabled.		17	0	1	
293	tF1	Selection of the input function using key (A) "F1" on the V810/V820 control panel 0 = Key F1 is disabled 1 = Needle up/down 2 = Needle up 3 = Single stitch (basting stitch) 4 = Full stitch 5 = Needle to position 2 6...12 = No function 13 = High lift for walking foot with speed limitation n10 (operational mode not stored) 14 = High lift for walking foot with speed limitation n10 (operational mode stored) 15 = Tape cutter / fast scissors (in chainstitch and overlock mode) 16 = Intermediate Stitch condensing 17 = Stitch regulator suppression / recall 18 = No function 19 = Bobbin thread monitor 20..Rest = No function		100	0	17	
294	tF2	**Selection of the input function using key (B) "F2" on the V810/V820 control panel** Functions of the key as with parameter 293, but at setting **0** key F2 is disabled.		100	0	1	
297	mSO	**Custom signal** 0 = Function Off 1 = Signal is switched on whenever the light barrier is uncovered (Pa.131 =1) or covered (Pa 131 =0) 2 = Signal is switched on whenever the light barrier is covered (Pa.131 =1) or uncovered (Pa 131 =0) 3 = Signal switches on from the light barrier to the seam end. 4 = Signal M11 switches on like with setting 3. However, the signal M5 (machine running) is switched off during output M11. When signal M11 is issued, signal M6 (machine at standstill) is also		3	0	0	
340	1L	Lower switching threshold of input IN1	%	100	0	30	
341	1L	Upper switching threshold of input IN1	%	100	0	80	
342	2L	Lower switching threshold of input IN2	%	100	0	30	
343	2h	Upper switching threshold of input IN2	%	100	0	80	
344	3L	Lower switching threshold of input IN3	%	100	0	30	
345	3h	Upper switching threshold of input IN3	%	100	0	80	
346	4L	Lower switching threshold of input IN4	%	100	0	30	
347	4h	Upper switching threshold of input IN4	%	100	0	80	
348	5L	Lower switching threshold of input IN5	%	100	0	30	
349	5h	Upper switching threshold of input IN5	ms	100	0	80	
350	6L	Lower switching threshold of input IN6	%	100	0	30	

No.	Code	Description	Unit	Max	Min	Default	B	Ref
351	6h	Upper switching threshold of input IN6	%	100	0	80		
352	7L	Lower switching threshold of input IN7	%	100	0	30		
353	7h	Upper switching threshold of input IN7	%	100	0	80		
360	11L	Lower switching threshold of input LSM	%	100	0	50		
361	11h	Upper switching threshold of input LSM	%	100	0	70		
362	15V	Switch +5V/+15V on B18 0 = +5V 1 = +15V		1	0	0		
369	FSL	Target setpoint via input PedalC with frequency (AB600A) 0 = AUS 1 = ON / PedalD =Enable 2 = ON / input function 54 = enable		2	0	0		369
370	n2	Direct input of maximum speed	RPM	F-111	F-121	Display		
377	tFI	Time monitoring foot lifting	sec	250	0	0	B	
396	FSL	Target setpoint via input PedalC with frequency 0 = OFF 1 = ON / PedalD = Enable 2 = ON / input function 54 = Enable		2	0	0		0
400	rSt	Reset to mode 5 if <> 93		255		93	B	400 rSt
401	EEP	Immediate storage of all changed data - Input code number 3112 after power On - Press the E key - -Input parameter 401 - Press the E key - Set display from 0 to 1 - Press the E or P key - All data are stored		1	0	0		
467	MOT	Selection of motor 1 = Efka, DC1500 2 = Efka, DC1550 3 = Efka, DC1200 ; 4 = Efka, DC1250 5 = Quick, QE3760 (Quick Rotan) 6 = Quick, QE5540 (Quick Rotan) 7 = - 8 = - 9 = Efka, DC1210 10 =Efka DC1230		2	1	1		
500	Sir	Recall of Fast Installation Routine (SIR) (see chapter "Fast Installation Routine (SIR)"						
510		Transfer parameter settings from control to Memory Stick						
511		Transfer parameter settings from Memory Stick to control						
550	in12	Selection of input function on socket B22/3 for input 12 0 = No function All other functions of the keys as with parameter 240		42	0	0		
551	in13	Selection of input function on socket B22/4 for input 13 0 = No function All other functions of the keys as with parameter 240		42	0	0		
552	12L	Lower switching threshold of input IN12	%	100	0	30		
553	12h	Upper switching threshold of input IN12	%	100	0	80		
554	13L	Lower switching threshold of input IN13	%	100	0	30		
555	13h	Upper switching threshold of input IN13	%	100	0	80		

10. Error Displays

On the control	Signification
General Information	
A1	Pedal not in neutral position when turning the machine on
A2	Machine run blockage
A3	Reference position is not set
A6	Light barrier monitoring
A7	Bobbin thread monitor
A9	No thread trimming mode available in parameter 290
A10	Security code missing
A11	High lift foot for walking - measurement of the potis not permitted
A12	The maximum speed configured cannot be reached at this transmission ratio
A16	Error in preset parameter structure.
A17	Error of serial EE PROM
A500	Max. number of files (99) on Memory Stick exceeded
A501	File not found on Memory Stick
A503	Data on Memory Stick and in the control is not equal
A504	Checksum error in file
A512	Error reading/writing file
A511	Error reading/writing file
C1	Operating hours counter has reached or exceeded the service time
C2	Fatal exception error
C3	Program error
C4	C4-001 10h test runs have elapsed, release missing
USB error	
D1	USB Info
Programming Functions and Values (Parameters)	
Returns to 0000 or to last parameter number	Wrong code or parameter number input
Serious Condition	
E1	The external pulse encoder e.g. IPG... is defective or not connected
E2	Line voltage too low, or time between power Off and power On too short
E3	Machine blocked or does not reach the desired speed
E4	Control disturbed by deficient grounding or loose contact
E5	Motor end level over-temperature
E7	24 V power supply unit overload
E8	Too much data for the EEPROM or flash memory
E9	EEPROM or flash memory defective.
E10	End phase transistor short circuit(Output FL, VR, M1, M2, M3, oder M4)
E11	Thermal overload of output stage transistor
E12	Short-circuit on output M5
E13	Thread trimmer does not reach the end position
E14	Power voltage too high: The power voltage is greater than 290 V eff. (The DC motor cannot be started; if running, the motor is stopped without positioning. The motor is passively braked (runs down)!
E15	Internal communications error with intermediate circuit
E16	Power voltage too low: The power feed voltage was less than 120 V eff. (The DC motor cannot be started, and the 24 V is turned off.)
E17	Charging PTC too warm. The intermediate circuit could not be charged to the voltage needed. Possible cause: Switching the controller on/off to many times within a short time. Correction: Turn off controller and allow it to cool. (The duration of the cooling off phase depends on the ambient conditions and can take several minutes).
E18	Intermediate circuit voltage greater than 450 V, braking resistance possibly failed
E19	No motor connected, inverter defective, motor phase failed
E20	Speed too high

E21	Error in the 5 V power supply
E22	EB401: Analog value outside the range
E23	V860: Error during communication
E24	Customer null point sensor not detected
E25	IGM/HSM not detected

Programming and Data Transfer	
F1	Parameter unavailable; wrong code number
F7	RS232 Time out
F8	RS232, error in data transfer, NAK received
Hardware Disturbance	
H1	Commutation transmitter cord or frequency converter disturbed
H2	Processor disturbed

Statusmessage	
WAIT	Cause: No control software loaded. Solution 1: Software must be loaded with IF232 cable.
PROG	Cause: Controls updates the intermediate circuit processor. If no software update can be executed, this could also be an error of processor communication. Then the message appears every time it is switched on. Solution 1: Software must be loaded with IF232 cable. Solution 2: The controls must be sent in for repair.

For your notes:

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