



dc12xx

CONTROL

AB620A5030



Instruction Manual with list of parameters

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

Note
For initial operation after software updating or maintenance procedures, make sure to set parameter 467 for the specific motor to be used.
DC1200, F-467 = 3 / DC1250, F-467 = 4

Nr. 402446 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 Range of Applications

The drive is suitable for lockstitch, chainstitch and overlock machines of various manufacturers.

It can be operated with or without control panel.

The easy-to use V810 or V820 control panels extend the range of functions.

With the help of adapter cords (adapter cords see Special Accessories), the drive can be used in replacement of the controls listed in the table below, as long as backtacking, stitch condensing, and chain suction are not used.

Machine manufacturer	Replacing	Machine	Model	Thread trimming mode	Adapter cord
Aisin	AB62AV	Lockstitch	AD3XX, AD158, 3310, EK1	0	1112815
Brother	AB62AV	Lockstitch	737-113, 737-913	0	1113420
Brother	AC62AV	Chainstitch	FD3 B257	5	1112822
Dürkopp Adler	DA62AV	Lockstitch	210, 270	0	1112845
Global		Chainstitch	CB2803-56	5	1112866
Juki	AB62AV	Lockstitch	5550-6	14	1112816
Juki	AB62AV	Lockstitch	5550-7, 8500-7, 8700-7	14	1113132
Kansai	AC62AV	Chainstitch	RX 9803	5	1113130
Pegasus	AC62AV	Chainstitch	W500/UT, W600/UT/MS, mit/ohne STV	5	1112821
Pegasus	AB60C	Backlatch		8	1113234
Pfaff	PF62AV	Lockstitch	563, 953, 1050, 1180	0	1113491
Rimoldi		Chainstitch	F27	5	1113096
Singer	SN62AV	Lockstitch	212 UTT	2	1112824
Union Special	AC62AV	Chainstitch	34700 mit Stichsicherung	5	1112844
Yamato	AC62AV	Chainstitch	VC-Serie	5	1113345
Yamato		Chainstitch	VG-Serie	5	1113345
Yamato	AB60C	Backlatch	ABT3	9	1112826
Yamato		Backlatch	ABT13, ABT17	9	1113205
Medium to heavier duty, in general		Lockstitch	e. g. Dürkopp Adler, Juki, Pfaff, Sunstar, Golden Wheel	3	Ask for suitable adapter cords

1.1 Use in Accordance with Regulations

The drive is not an independently operating machine, but is designed to be incorporated into other machinery by specially trained personnel.

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!

2 Scope of Supply

Standard Scope of Supply		
1	Direct current motor	DC1200 optional DC1250
1	Electronic control/Power supply unit	AB620A5030/N214
1	Actuator	EB401
1	Set of accessories (standard)	B156
	consisting of:	Plastic bag for B156 + documentation
and		
1	Set of accessories	Z66
	consisting of:	37-contact SubminD plug, pitman rod, potential equalization cord
Option 1		
1	Set of standard accessories	B169
	consisting of:	Undertable mounting kit, plastic bag for B169 + documentation
and		
1	Set of accessories	Z66
	consisting of:	37-contact SubminD plug, pitman rod, potential equalization cord

NOTE

If there is no metallical contact between drive (motor) and machine head, the potential equalization cord supplied with the unit is to be wired from the machine head to the terminal provided on the control box!

2.1 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 and/or EFKANET	1113229
Extension cable approx. 1000 mm long for commutation transmitter DC15..	1113151
Extension cable approx. 1000 mm long for DC15.. line	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 with western connector (RJ11)	5870021
Knee switch type KN20 (pushbutton + toggle switch) with cord of approx. 1640 mm length with western connector (RJ11)	5870022
Mounting kit for DC12.. + DC15.. on PEGASUS model W600	1113125
Mounting kit for DC12.. + DC15.. on PEGASUS Ex/Ext	1113126
Mounting kit for DC12.. + DC15.. on PEGASUS model W1500N, W1600	1113647
Undertable mounting kit for DC1200/DC1250	1113956

Designation	Material No.
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

2.1.1 Adapter Cords for Special Machines

Machine / Type / Model	Material No.
 AISIN high-speed seamer AD3XX, AD158, 3310 and overlock machine EK1	1112815
 BROTHER model 737-113, 737-913	1113420
 BROTHER lockstitch machine with 100 Ω select resistor, models 7xxx, B84xx, 877B, B87xx, 878B (mode 31)	1113420
 BROTHER chainstitch machine with 150 Ω select resistor, models FD3-B257, 25xx, 26xx, 27xx (mode 32)	1112822
 BROTHER models B721, B722, B724, B737, B748, B772, B774, B778, B842, B845, B872, B875 <i>Connection of the position sensor incorporated in the handwheel</i>	1113433
 DÜRKOPP ADLER models 210 and 270	1112845
 GLOBAL model CB2803-56	1112866
 JUKI high-speed seamer with index -6	1112816
 JUKI high-speed seamer with index -7	1113132
 JUKI lockstitch machines <i>Connection of the position sensor incorporated in the handwheel</i>	1113157
 KANSAI machine model RX 9803	1113130
 PEGASUS models W500/UT, W600/UT/MS with or without stitch condensing	1112821
 PEGASUS backlatch machine	1113234
 PFAFF models 563, 953, 1050, 1180 (without thread monitor)	1113491
 SINGER models 211, 212U, 212UTT and 591	1112824
 UNION SPECIAL lockstitch machine model 63900AMZ (in replacement of US80A)	1112823
 UNION SPECIAL model 34700 with stitch lock	1112844
 UNION SPECIAL models 34000 and 36200 (in replacement of US80A)	1112865
 UNION SPECIAL models CS100 and FS100	1112905
 YAMATO VC/VG series chainstitch machines	1113345
 YAMATO backlatch machine ABT3	1112826
 YAMATO backlatch machine ABT13, ABT17	1113205
 Mitsubishi lockstitch machines <i>Connection of the position sensor incorporated in the handwheel</i>	1113411

For interconnection diagrams of the adapter cords, please refer to our web site at www.efka.net/downloads.

3 Putting into Service

Before putting the control into service, the following must be ensured, checked and/or adjusted:

- Selection of the motor type DC1200 or DC1250 (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**
- 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

4 Setting and Putting into Service with the Aid of the Fast Installation Routine (SIR)

Functions	Parameter
Call-up of the Fast Installation Routine SIR	(Sir) 500

The Fast Installation Routine (SIR) passes through all parameters necessary for programming the functional sequence and the positions.

With SIR you can do the most important settings for initial operation with menu prompting.

For safety reasons, the menu must be executed point by point. This ensures correct setting of all important parameters. The setting of other parameters is not affected.

Input the code number at the supplier level.

The 1. parameter at the supplier level is displayed.

Input parameter **500**.

Parameter **290** for functional sequence "thread trimming operations".

Parameter **467** for selection of motor.
(1=DC1500, 2=DC1550, 3=DC1200, 4=DC1250)

Parameter **111** for maximum speed.

Parameter **161** for direction of motor rotation.

Parameter **270** for type of position sensor.

Parameter **272** for transmission ratio.

Important! The transmission ratio should be determined and indicated as precisely as possible.

If parameter **270 = 0 or 5** continue input with parameter 451.

Checking the transmission ratio.

Pedal operates forward. Run the drive until ready (rdy) is indicated.

Pedal in position 0 (neutral). Checking is finished.

If parameter **270 = 6**, setting the reference position.

Turn the handwheel until character o goes off on the display.

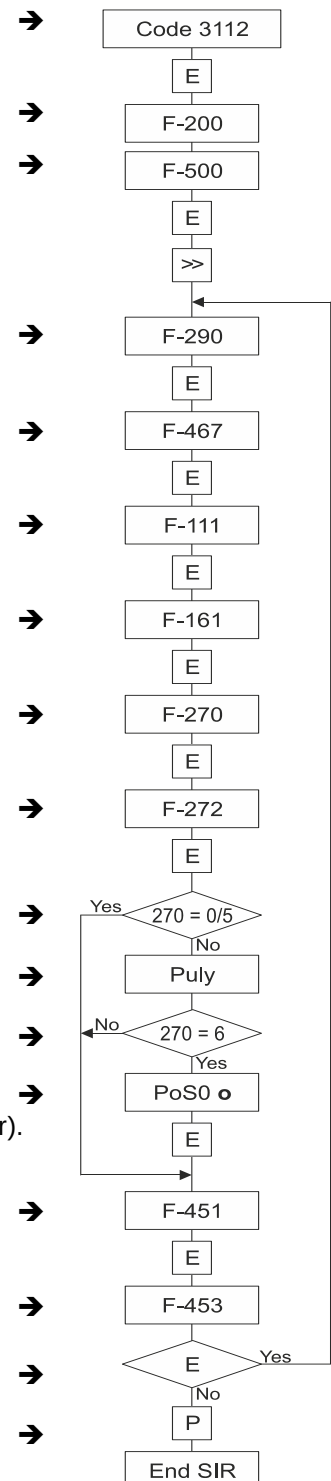
Setting the Reference Position (e.g. height of the needle plate, bottom dead center).

Parameter **451** for position 1.

Parameter **453** for position 2.

To repeat the expiration from parameter 467 press key **E**

or finish with key **P** (2x).



KL2438d

The values can be varied by pressing keys +/-.

Setting on the control panel of the control (onboard) or on the V810:

1	Input code number 3112!	
2	Press the E key	→ The lowest parameter 2.0.0. appears at this level.
3	Select 500	→ Parameter 5.0.0. is displayed.
4	Press the E key	→ Sir is displayed. On the V810 the character[o] appears. Onboard: The lower 2 segments of the right side 7-segmentdisplay are flashing.
5	Press the >> key	→ Parameter 2.9.0. appears. (functional sequence "trimming operations")
6	Press the E key	→ Parameter value e.g. 05 appears.
7	Press the +/- key	→ Parameter value can be changed.
8	Press the E key	→ Parameter 4.6.7. appears. (selection of motor; 1 = DC1500, 2 = DC1550, 3 = DC1200, 4 = DC1250)
9	Press the E key	→ Parameter value e.g. 1 appears.
10	Press the +/- key	→ Parameter value can be changed.
11	Press the E key	→ Parameter 1.1.1. appears. (maximum speed)
12	Press the E key	→ Value of the opposed speed appears.
13	Press the +/- key	→ Parameter value can be changed.
14	Press the E key	→ Parameter 1.6.1. appears. (direction of motor rotation)
15	Press the E key	→ Parameter value e.g. 1 appears.
16	Press the +/- key	→ Parameter value can be changed.
17	Press the E key	→ Parameter 2.7.0. appears. (type of position sensor)
18	Press the E key	→ Parameter value e.g. 0 appears.
19	Press the +/- key	→ Parameter value can be changed.
20	Press the E key	→ Parameter 2.7.2. appears. (transmission ratio)
21	Press the E key	→ Parameter value e.g. 1000 appears.
22	Press the +/- key	→ Parameter value can be changed.
23		If parameter is 270 = 0 or 5 , or the transmission ratio already took place, continue with mark 31.
24	Press the E key	→ PULY is displayed. (checking the transmission ratio)
25	Pedal operates forward	Run the drive until ready (rdy) is indicated. With a too high opposed maximum speed the error message A12 takes place. Press key E so often until parameter 1.1.1. (mark 12) is reached again around the permissible maximum speed to put.
26	Pedal in position 0 (neutral)	Checking is finished.
27		If parameter 270 ≠ 6 is continue with mark 31.
28		P0 o (V810 PoS0 o) is displayed (o rotates). (setting the reference position)
29	Turn the handwheel in direction of motor rotation until character o goes off on the display *. Setting the reference position (e.g. needle point to the height of the needle plate, bottom dead center).	
30	Press the E key	→ Parameter 4.5.1. appears. (position 1 leading edge; position 1 trailing edge is automatically set 60° higher)
31	Press the E key	→ Angle of position 1 is indicated.
32	Turn the handwheel	→ Setting position 1 (at least 1 rotation *).
33	or press the +/- key	→ Parameter value can be changed.
34	Press the E key	→ Parameter 4.5.3. appears. (position 2 leading edge; position 2 trailing edge is automatically set 60° higher)
35	Press the E key	→ Angle of position 2 is indicated.
36	Turn the handwheel	→ Setting position 2 (at least 1 rotation *).
37	or press the +/- key	→ Parameter value can be changed.
38	Upon pressing the E key once more the program returns to parameter 4.6.7. !	
39	Press the P key twice	→ Exit SIR routine.

*) All operations carried out by turning the hand wheel must always be carried out in the direction of rotation set up on the machine. Under no circumstances should you turn against the machine direction.

Setting on the V820 control panel:

1	Input code number 3112!	
2	Press the E key	→ The lowest parameter 200 appears at this level.
3	Select 500	→ Parameter 500 is displayed.
4	Taste E betätigen	→ Sir [o] is displayed.
5	Press the >> key	→ Parameter 290 FAm 05 appears. (functional sequence "trimming operations")
6	Press the +/- key	→ Parameter value can be changed.
7	Press the >> key	→ Parameter 467 MOT 1 appears. (selection of motor; 1 = DC1500, 2 = DC1550, 3 = DC1200, 4 = DC1250)
8	Press the +/- key	→ Parameter value can be changed.
9	Press the E key	→ Parameter 111 n2 appears. (maximum speed)
10	Press the +/- key	→ Parameter value can be changed.
11	Press the E key	→ Parameter 161 drE 1 appears. (direction of motor rotation)
12	Press the +/- key	→ Parameter value can be changed.
13	Press the E key	→ Parameter 270 PGm 0 appears (type of position sensor)
14	Press the +/- key	→ Parameter value can be changed
15	Press the E key	→ Parameter 272 trr 100 appears (transmission ratio)
16	Press the +/- key	→ Parameter value can be changed
17		If parameter is 270 = 0 or 5 , or the transmission ratio already took place, continue with mark 25.
18	Press the E key	→ PULY Ab620A is displayed. (checking the transmission ratio)
19	Pedal operates forward	Run the drive until ready (rdy) is indicated. With a too high opposed maximum speed the error message A12 takes place. Press key E so often until parameter 1.1.1. (mark 9) is reached again around the permissible maximum speed to put.
20	Pedal in position 0 (neutral)	Checking is finished.
21		If parameter 270 ≠ 6 is continue with mark 25.
22		PoS 0 o is displayed (o rotates). (setting the reference position)
23	Turn the handwheel in direction of motor rotation until character o goes off on the display *. Setting the reference position (e.g. needle point to the height of the needle plate, bottom dead center).	
24	Press the E key	→ Parameter 451 P1E appears. (position 1 leading edge; position 1 trailing edge is automatically set 60° higher)
25	Press the E key	→ Angle of position 1 is indicated.
26	Turn the handwheel	→ Setting position 1 (at least 1 rotation *).
27	or press the +/- key	→ Parameter value can be changed.
28	Press the E key	→ Parameter 453 P2E appears. (position 2 leading edge; position 2 trailing edge is automatically set 60° higher)
29	Press the E key	→ Angle of position 2 is indicated.
30	Upon pressing the E key once more the program returns to parameter 467!	
31	Press the P key twice	→ Exit SIR routine.

*) All operations carried out by turning the hand wheel must always be carried out in the direction of rotation set up on the machine. Under no circumstances should you turn against the machine direction.

5 Setting the Basic Functions

5.1 Direction of Motor Rotation

Function with or without control panel	Parameter
Direction of motor rotation	(drE) 161

161 = 0 Clockwise motor rotation (look at the motor shaft)

161 = 1 Counterclockwise motor rotation

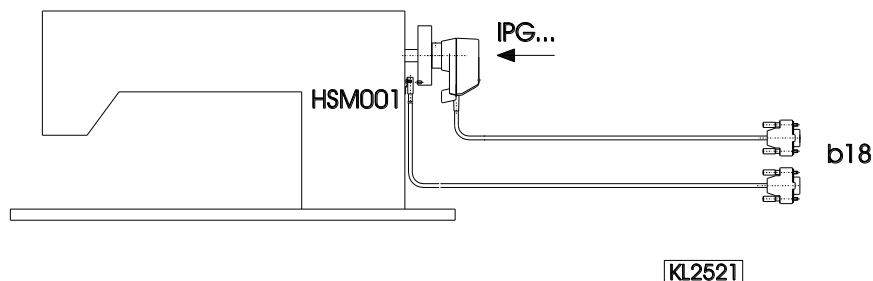


Attention

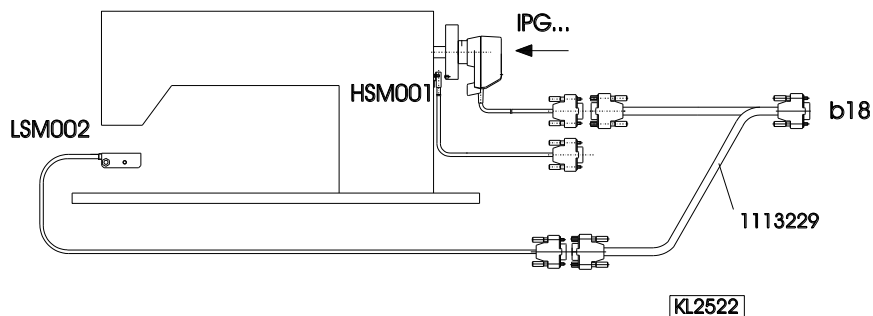
If the motor is mounted differently, e. g. at a different angle or with gear, make sure that the value set using parameter **161** corresponds to the direction of rotation.

5.2 Use of a HSM001 Hall Sensor Module or IPG... Pulse Encoder

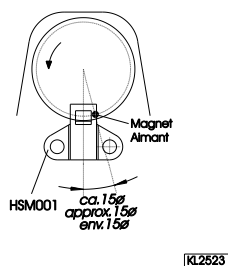
Representation and installation of a HSM001 Hall sensor module or IPG... pulse encoder



Representation and installation of a HSM001 Hall sensor module or IPG... pulse encoder together with a LSM002 light barrier module by means of adapter cord no. 1113229

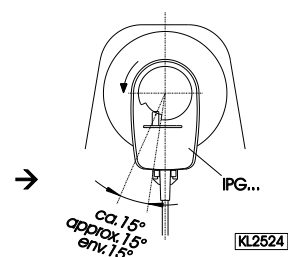


Operation with HSM001 Hall sensor module



- ←
- Get machine to the needle-up position.
 - Position bore for magnet such that the magnet is located approx. 15° after the sensor in the sense of rotation.
 - Get machine to the needle-up position.
 - Turn disk in the pulse encoder such that the leading edge will be located approx. 15° after the sensor on the board in the sense of rotation.

Operation with IPG... pulse encoder



5.3 Transmission Ratio

NOTE

The transmission ratio must always be input, because only motors with integrated incremental transmitter will be used. **The transmission ratio should be determined and set as precisely as possible!**

The transmission ratio between motor shaft and shaft of the sewing machine head must be input, so that the set speeds of parameters **110...117** correspond to the sewing speeds.

Function with or without control panel	Parameter
Transmission ratio between motor shaft and machine shaft (trr)	272

The transmission ratio can be selected within a range of 150...40000 using parameter **272**.

Example: With a motor pulley diameter of 40mm and a sewing machine head pulley diameter of 80mm the value 500 can be calculated using the formula below. If the value 2000 has been selected in parameter 272, it follows that the motor pulley is double the size of the sewing machine head pulley.

$$\text{Value of parameter 272} = \frac{\text{Motor pulley diameter}}{\text{Machine pulley diameter}} \times 1000$$

5.4 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 in List of Parameters chapter "Table of Adapter Cords" a summary of the modes that can be set and the corresponding machines and adapter cords, to include available output signals.

Mode 0	Lockstitch Machines
	Thread trimmer from leading to trailing edge of slot position 1
	Thread trimmer from trailing edge of slot position 1 to leading edge of slot position 2
	Thread trimmer from leading edge of slot position 1 to leading edge of slot position 2
	Thread wiper for a programmable time (t6)
	Sewing foot lifting (see chapter "Sewing Foot Lifting")
	Backtacking (see chapter "Start Backtack" and "End Backtack")
	Signal "machine running"
Mode 2	Lockstitch Machines (Singer 212 UTT)
	Thread trimmer for a programmable time (kt2) after intermediate stop in position 1
	Thread tension release from leading edge of slot position 1 to leading edge of slot position 2
	Sewing foot lifting (see chapter "Sewing Foot Lifting")
	Backtacking (see chapter "Start Backtack" and "End Backtack")
	Signal "machine running"
Mode 3	Lockstitch Machines (medium to heavier duty) with Thread Trimming System (e. g. Dürkopp Adler, Juki, Pfaff, Sunstar, Golden Wheel)
	Thread trimmer for programmable increments (iFA) after intermediate stop in position 1
	Thread tension release from trailing edge of slot position 2 after delay (FSE) during ON period (FSA)
	Thread wiper for a programmable time (t6)
	Sewing foot lifting (see chapter "Sewing Foot Lifting")
	Backtacking (see chapter "Start Backtack" and "End Backtack")
	Signal "machine running"
	High lift for walking foot/flip-flop at limited speed after pressing the key

Mode 5	Chainstitch Machines In General
Signal M1 after stop in position 2 after delay (kd1) during ON period (kt1)	
Signal M2 after stop in position 2 after delay (kd2) during ON period (kt2)	
Signal M3 after stop in position 2 after delay (kd3) during ON period (kt3)	
Signal M4 after stop in position 2 after delay (kd4) during ON period (kt4)	
Time-delayed (kdF) sewing foot lifting after standstill in position 2 (see chapter "Sewing Foot Lifting")	
Stitch condensing (see chapter "Start Stitch Condensing" and "End Stitch Condensing")	
Signal "machine running"	
Mode 6	Chainstitch Machines with Tape Cutter or Fast Scissors
Signal M1 after stop in position 2 after delay (kd1) during ON period (kt1)	
Signal M2 after stop in position 2 after delay (kd2) during ON period (kt2)	
Fast scissors (M3) after delay (kd3) during ON period (kt3) alternating with M4	
Fast scissors (M4) after delay (kd4) during ON period (kt4) alternating with M3	
Sewing foot lifting (see chapter "Sewing Foot Lifting")	
Stitch condensing (see chapter "Start Stitch Condensing" and "End Stitch Condensing")	
Signal "machine running"	
Mode 7	Overlock Machines
Signal M1 after stop in position 2 after delay (kd1) during ON period (kt1)	
Signal M2 after stop in position 2 after delay (kd2) during ON period (kt2) or if parameter 232=1, as fast scissors alternating with M3 (parameter 282=0)	
Chain suction during stitch count (c1) at the start of the seam and stitch counting (c2) at the seam end	
Thread tension release after light barrier uncovered	
Tape cutter at the start of the seam after stitch count (c3) and at the seam end after stitch count (c4) and the delay time (kd3)	
Sewing foot lifting (see chapter "Sewing Foot Lifting"). If parameter 018 = 1, parameter 022 must also be set at "1"	
Signal "machine running"	
Mode 8	Backlatch Machines (Pegasus)
Signal M1 with pedal in positions -1 and -2	
Signal M2 with pedal in positions 1-12	
Inverted signal M3 with pedal in positions 1-12	
Sewing foot lifting (see chapter "Sewing Foot Lifting")	
Signal "machine running"	
Operation at automatic speed	
Automatic speed has priority over machine run blockage	
Machine run blockage effective with open contact (input in1 / parameter 240=6) »Automatic speed has priority over machine run blockage«	
Key for operation at automatic speed (input in3 / parameter 242=10)	
Mode 9	Backlatch Machines (Yamato)
Signal M1 with pedal in positions -1 and -2	
Signal M2 with pedal in positions 1-12	
Inverted signal M3 with pedal in positions 1-12	
Sewing foot lifting (see chapter "Sewing Foot Lifting")	
Signal "machine running"	
Key for operation at automatic speed (input in3 / parameter 242=10)	
Machine run blockage effective with open contact (input in1 / parameter 240=6)	
Machine run blockage has priority over automatic speed	
Mode 14	Lockstitch Machines (Juki 5550-6, 5550-7, 8500-7, 8700-7)
Thread trimmer (M1) from trailing edge of slot position 1 to leading edge of slot position 2	
Thread trimmer (M4) from leading edge of slot position 1 to leading edge of slot position 2	
Thread wiper (M3) for a programmable time (t6)	
Thread puller (M2) after stop in position 2 after delay (kd2) during ON period (kt2)	
Sewing foot lifting (see chapter "Sewing Foot Lifting")	
Backtacking (see chapter "Start Backtack" and "End Backtack")	
Signal (M5) "machine running"	
Positioning by Juki handwheel sensor on the control	

Mode 25	Lockstitch Machines with Thread Trimming System (Juki LU2210/LU2260)
	Thread trimmer for programmable increments (iFA) after intermediate stop in position 1
	Thread tension release from trailing edge of slot position 2 after delay (FSE) during ON period (FSA)
	Thread wiper for a programmable time (t6)
	Sewing foot lifting (see chapter "Sewing Foot Lifting")
	Backtacking (see chapter "Start Backtack" and "End Backtack")
	Signal "machine running"
	High lift for walking foot/flip-flop at limited speed after pressing the key
Mode 37	Union Special, bag machine

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

5.5 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** to **246**.

The possible functions are listed in the section "Parameter list".

5.6 Positioning Speed

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

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

5.7 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)".

5.8 Maximum Speed

Function with or without control panel	Parameter
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.

When programming 3-digit or 4-digit parameter values on the control (without control panel), the 2-digit or 3-digit values displayed must be multiplied by 10.

5.9 Positions

Function with or without control panel	Parameter
Selection according to position sensor	(PGm) 270
Number of angular degrees from the sensor position to position 2	(PGr) 271
Transmission ratio between motor shaft and machine shaft	(trr) 272

A sensor can be used as a position sensor, e.g. a light barrier or proximity switch 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, or 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**.

5.9.1 Setting the Reference Position (Parameter 270 = 0 or 6)

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

The reference position must be set:

- for initial operation
- after replacing the motor

Setting the reference position on the control box:

- Input code number and select parameter **170**.
- Press the **E** key → Display **Sr1**
- Press key **>>** → Display **P o** (character o rotating)
- Turn handwheel until rotating character **o** → Display **P**
goes off on the display.
- By turning the handwheel, set the → Set machine reference point
needle to the bottom dead center, or
the needle point to the height of the
needle plate in the direction of
rotation of the motor shaft, while
needle is moving downward.
- Press the **P** key once → Actual parameter number is displayed
- Press the **P** key twice → Exit programming at the technician level

Setting the reference position on the V810 control panel

- Input code number and select parameter **170**.
- Press the **E** key → Display **Sr1 [o]**
- Press key **>>** → Display **PoS0 o** (character o rotating)
- Turn handwheel until rotating character **o** → Display **PoS0**
goes off on the display.
- By turning the handwheel, set the → Set machine reference point
needle to the bottom dead center.
- Press the **P** key once → Actual parameter number is displayed
- Press the **P** key twice → Exit programming at the technician level

Setting the reference position on the V820 control panel

- Input code number and select parameter **170**.
- Press the **E** key → Display **F-170 Sr1 [o]**
- Press key **>>** → Display **PoS0 o** (character o rotating)
- Turn handwheel until rotating character **o** → Display **PoS0**
goes off on the display.
- By turning the handwheel, set the → Set machine reference point
needle to the bottom dead center.
- Press the **P** key once → Actual parameter number is displayed
- Press the **P** key twice → Exit programming at the technician level

5.9.2 Setting the Positions on the Control (Parameter 270 = 0 or 6)

Do these settings whenever the encoder incorporated in the motor is used (parameter **270 = 0**), or a position transmitter mounted on the machine head (e.g. IPG pulse encoder or HSM Hall sensor) (parameter **270 = 6**), whose preset values must be adapted.

- Nach Eingabe der Code-Nummer Parameter **171** wählen!
- Press the **E** key → **[o]** is displayed
- Press key **>>** → **P1E** is displayed; set "position 1 On" on the handwheel
- Press the **E** key → **P2E** is displayed; set "position 2 On" on the handwheel
- Press the **E** key → **P1A** is displayed; set "position 1 Off" on the handwheel
- Press the **E** key → **P2A** is displayed; set "position 2 Off" on the handwheel
- Press the **P** key twice → Exit programming at the technician level

5.9.3 Setting the Positions on the V810 Control Panel (Parameter 270 = 0 or 6)

Do these settings whenever the encoder incorporated in the motor is used (parameter **270 = 0**), or a position transmitter mounted on the machine head (e.g. IPG pulse encoder or HSM Hall sensor) (parameter **270 = 6**), whose preset values must be adapted.

	Select parameter 171	→	F - 1 7 1
E	Press the E key	→	[o]
>>	Press key >> (B key). Display of the 1st parameter value of position 1	→	P 1 E 1 4 0
+ -	If necessary, change parameter value by pressing key >> or +/- or by turning the handwheel (> 1 rotation)	→	P 1 E X X X
E	Parameter value of position 2 appears on the display	→	P 2 E 2 6 0
+ -	If necessary, change parameter value by pressing key >> or +/- or by turning the handwheel (> 1 rotation)	→	P 2 E X X X
E	Parameter value of position 1A appears on the display	→	P 1 A 0 8 0
+ -	If necessary, change parameter value by pressing key >> or +/- or by turning the handwheel (> 1 rotation)	→	P 1 A X X X
E	Parameter value of position 2A appears on the display	→	P 2 A 4 0 0
+ -	If necessary, change parameter value by pressing key >> or +/- or by turning the handwheel (> 1 rotation)	→	P 2 A X X X
P P	Press the P key twice. Settings are completed. Exit programming.	→	A b 6 2 0 S

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

5.9.4 Setting the Positions on the V820Control Panel (Parameter 270 = 0 or 6)

Do these settings whenever the encoder incorporated in the motor is used (parameter **270 = 0**), or a position transmitter mounted on the machine head (e.g. IPG pulse encoder or HSM Hall sensor) (parameter **270 = 6**), whose preset values must be adapted.

	Display before programming	→	4000 Ab620A
P	A parameter number blinks on the display	→	F-XXX
1 7 1	Input parameter number 171	→	F-171
E	The abbreviation of the parameter appears on the display	→	F-171 Sr2 [o]
»	Display of the 1st parameter value of position 1 (B key)	→	P1E 140
0 ... 9	If necessary, change parameter value by pressing keys +/- or 0...9 or by turning the handwheel (> 1 rotation).	→	P1E XXX
E	Parameter value of position 2 appears on the display	→	P2E 460
0 ... 9	If necessary, change parameter value by pressing keys +/- or 0...9 or by turning the handwheel (> 1 rotation).	→	P2E XXX
E	Parameter value of position 1A appears on the display	→	P1A 080
0 ... 9	If necessary, change parameter value by pressing keys +/- or 0...9 or by turning the handwheel (> 1 rotation).	→	P1A XXX
E	Parameter value of position 2A appears on the display	→	P2A 400
0 ... 9	If necessary, change parameter value by pressing keys +/- or 0...9 or by turning the handwheel (> 1 rotation).	→	P2A XXX
P P	Settings are completed. Exit programming.	→	4000 Ab620A

NOTE

When setting the positions by turning the handwheel, make sure that the displayed numerical value changes!

- The display unit of the set position values is “degrees”.

5.10 Display of the Signal and Stop Positions

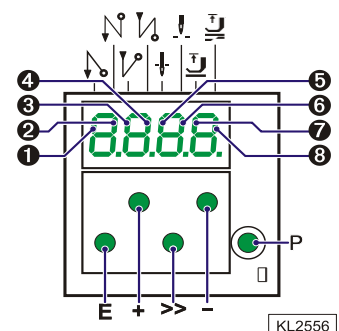
Function with or without control panel	Parameter
Display of positions 1 and 2 (Sr3)	172

The position settings can easily be checked by means of parameter **172**.

- Select parameter **172**
- The control panel display shows "Sr3"
- Turn handwheel according to the direction of motor rotation

Control display (control panel not connected)

- | | | |
|-------------|-----------|----------------------------|
| ▪ Segment 5 | turns on | corresponds to position 1 |
| ▪ Segment 5 | turns off | corresponds to position 1A |
| ▪ Segment 6 | turns on | corresponds to position 2 |
| ▪ Segment 6 | turns off | corresponds to position 2A |



V810/V820 control panel display

- Arrow above symbol "position 1" on key 4 (V810) / on key 7 (V820) is displayed corresponds to position 1
- Arrow above symbol "position 1" on key 4 (V810) / on key 7 (V820) is displayed corresponds to position 1A
- Arrow above symbol "position 2" on key 4 (V810) / on key 7 (V820) is displayed corresponds to position 2
- Arrow above symbol "position 2" on key 4 (V810) / on key 7 (V820) is displayed corresponds to position 2A

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

5.11 Positioning Shift

Function with or without control panel		Parameter
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.

5.12 Braking Characteristics

Function with or without control panel		Parameter
Braking effect when varying the preset value ≤ 4 stages	(br1)	207
Braking effect when varying the preset value ≥ 5 stages	(br2)	208

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

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

5.13 Braking Power at Standstill

Function with or without control panel		Parameter
Braking power at standstill	(brt)	153

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

- 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

5.14 Starting Characteristics

Function with or without control panel		Parameter
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.

5.15 Actual Speed Display

Function with or without control panel		Parameter
Actual speed display	(nIS)	139

If parameter **139 = 1**, the V810/820 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	→ Ab620A	4000 Ab620A

Example: 4000 revolutions per minute and type of control AB620A

5.16 Operating Hours Counter

Function with or without control panel		Parameter
Acoustic signal	(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 hours are programmed 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.

Control display:

- 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 → z. B. **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 display)
- Press the **E** key → **000000** (minutes letter symbol)
- Press the **E** key → **Min** (minutes display)
- Press the **E** key → **00** (seconds letter symbol)
- Press the **E** key → **SEc** (seconds display)
- Press the **E** key → **00** (milliseconds letter symbol)
- Press the **E** key → **MSEc** (milliseconds display)
- Press the **E** key → **000** (hours 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 → z. B. **Ab620A** (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 → z. B. **4000** **Ab620A** (sewing process can be started)

5.16.1 Set and Reset Operating Hours Counter

The number of hours has been reached (service necessary):

- Press the **>>** or **F2** key once → The operating hours counter is set to "0" and restarted.

The number of hours has not yet been reached:

- Press the **>>** or **F2** key 3 times → The operating hours counter is set 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 **>>** or **F2** key 3 times.

5.16.2 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.

6 Functions with or without Control Panel

6.1 First Stitch after Power On

Function with or without control panel	Parameter
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.

6.2 Softstart

Function with or without control panel	Parameter
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. start backtack, stitch counting)
- 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	Parameter
Softstart On/Off	(-F-) 008 = 1

6.2.1 Softstart speed

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

When programming 3-digit or 4-digit parameter values on the control, the 2-digit or 3-digit values displayed must be multiplied by 10.

6.2.2 Softstart stitches

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

6.3 Sewing foot lifting

Function without control panel	Control
Automatic in the seam	LED-segment 7 On
Automatic after thread trimming	LED-segment 8 On

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

Function with or without control panel		Parameter
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 - key (S4) 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 - key (S4) 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.

6.4 Start Backtrack/Start Stitch Condensing

Function without control panel		Control
Single start backtrack	LED-segment 1 On	Key E (S2)
Double start backtrack	LED-segment 2 On	
Start backtrack Off	Both segments Off	
Start stitch condensing On; number of stitches with stitch regulator (parameter 001)	LED-segment 1 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)	LED-segment 2 On	
Start stitch condensing Off	Both segments Off	

Function with control panel		V810/V820
Single start backtrack	Left-hand arrow above key On	Key 1
Double start backtrack	Right-hand arrow above key On	
Start backtrack Off	Both arrows Off	
Start stitch condensing On; number of stitches with stitch regulator (parameter 001)	Left-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)	Right-hand arrow above key On	
Start stitch condensing Off	Both arrows Off	

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

6.4.1 Speed n3 at the Start of the Seam

Function with or without control panel		Parameter
Start backtrack/start stitch condensing speed	(n3)	112
Start backtrack/start stitch condensing speed can be interrupted by pedal in pos. 0 (neutral)	(n2A)	162
Start and end backtrack or stitch condensing can be interrupted by pedal in pos. 0 (neutral)	(StP)	164
On/Off		

When programming 3-digit or 4-digit parameter values on the control, the 2-digit or 3-digit values displayed must be multiplied by 10.

6.4.2 Stitch Counting for Start Backtrack/Start Stitch Condensing

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

The start backtrack/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 **-**.

6.4.3 Stitch Correction and Speed Release

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

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

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

6.4.4 Double start backtack

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.

6.4.5 Single Start Backtack / 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.

6.5 End Backtack / End Stitch Condensing

Function without control panel	Control
Single end backtack Double end backtack End backtack Off	LED-segment 3 On LED-segment 4 On Both segments Off
End stitch condensing On; number of stitches with stitch regulator (parameter 002) End stitch condensing On; number of stitches with stitch regulator (parameter 002) after that number of stitches with stitch regulator (Parameter 003) End stitch condensing Off	LED-segment 3 On LED-segment 4 On Both segments Off

Function with control panel	V810	V820
Single end backtack Double end backtack End backtack Off	Left-hand arrow above key On Right-hand arrow above key On Both arrows Off	Key 2 Key 4
End stitch condensing On; number of stitches with stitch regulator (parameter 002) End stitch condensing On; number of stitches with stitch regulator (parameter 002) after that number of stitches with stitch regulator (Parameter 003) End stitch condensing Off	Left-hand arrow above key On Right-hand arrow above key On Both arrows Off	Key 2 Key 4

The end backtack/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 backtack as well as end stitch condensing are executed automatically at speed n4. They cannot be interrupted. From full machine run, end backtack / end stitch condensing will be switched in only after having reached the speed n4 and synchronization to position 2.

6.5.1 Speed n4 at the Seam End

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

When programming 3-digit or 4-digit parameter values on the control, the 2-digit or 3-digit values displayed must be multiplied by 10.

6.5.2 Stitch Counting for End Backtack/End Stitch Condensing

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

The end backtack/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 **-**.

6.5.3 Stitch Correction and Last Stitch Backward

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

The backtack solenoid can be delayed in the double end backtack by selecting a stitch correction time (t9) using parameter **151**.

For some sewing procedures it is desirable that the backtack solenoid in the single end backtack 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 backtack

136 = 2 Trimming stitch or positioning stitch always backward at the seam end

6.5.4 Double End Backtack/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 backtack mechanisms it is possible to delay disabling of the stitch regulator in the single and double end backtack by the time t9 (end backtack stitch correction).

6.5.5 Single End Backtack / 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	Parameter
Backtack repetition On/Off (-F-)	008 = 8

6.5.6 Backtack Synchronization

Function with or without control panel	Parameter
Backtack synchronization for start and end backtack On/Off (nSo)	298
Backtack synchronization speed (nrS)	299

If parameter **298** is on, the backtack speed will be switched to backtack synchronization speed one stitch before engaging and disengaging of the backtack solenoid. The backtack speed is released at the next position 2. If the synchronization speed that can be set by means of parameter **299** is higher than the backtack speed, the latter is maintained. Backtack synchronization is possible in the start and end backtack.

6.6 Start Ornamental Backtack/Stitch Condensing

Function without control panel	Control
Function "ornamental backtack" On/Off (SrS)	135
Ornamental backtack stop time (tSr)	210
Single start ornamental backtack LED-segment 1 On	Key E (S2)
Double start ornamental backtack LED-segment 2 On	
Start ornamental backtack Off Both segments Off	

Function with control panel	V810/V820
Function "ornamental backtack" On/Off (SrS)	135
Ornamental backtack stop time (tSr)	210
Single start ornamental backtack Left-hand arrow above key On	Key S1
Double start ornamental backtack Right-hand arrow above key On	
Start ornamental backtack Off Both arrows Off	

The parameters of the start backtack speed and the backtack stitches forward and backward are identical with the standard start backtack.

Difference from the standard start backtack:

- The drive stops for stitch regulator switching
- The stop time can be set

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

Function with control panel	Parameter
Ornamental backtack On/Off (-F-)	008 = 2

6.7 End Ornamental Backtack/Stitch Condensing

Function without control panel	Control
Function "ornamental backtack" On/Off (SrS)	135
Ornamental backtack stop time (tSr)	210
Single end backtack LED-segment 3 On	Key + (S3)
Double end backtack LED-segment 4 On	
End backtack Off Both segments Off	

Function with control panel		V810	V820
Function "ornamental backtack" On/Off	(SrS)	135	135
Ornamental backtack stop time	(tSr)	210	210
Single end backtack	Left-hand arrow above key On	Key 2	Key 4
Double end backtack	Right-hand arrow above key On		
End backtack Off	Both arrows Off		

The parameters of the end backtack speed and the backtack stitches forward / backward are identical with the standard end backtack.

Difference from the standard end backtack:

- The drive stops for stitch regulator switching
- The stop time can be set

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

Function with control panel	Parameter
Ornamental backtack On/Off	(-F-) 008 = 2

6.8 Intermediate Backtack

Upon pressing an external key according to the pre-selection of parameters **240...246**, the backtack solenoid can be switched on anywhere in the seam and at standstill.

Function with or without control panel	Parameter
Counted manual backtack On/Off	(chr) 087
Speed of manual backtack	(n13) 109
Ornamental backtack On/Off	(SrS) 135
Manual ornamental backtack speed	(n9) 122
Speed status for manual backtack	(Shv) 145

The speed function for the manual backtack can be set using parameter **145**.

145 = 0 Speed controllable by the pedal up to the set maximum speed (parameter **111**)

145 = 1 Fixed speed (parameter **109**) without influence by the pedal (machine stop by pressing the pedal to the basic position)

145 = 2 Limited speed controllable by the pedal up to the set limit (parameter **109**)

Intermediate backtack (parameter 135 = 0):

Backward sewing with speed limitation according to the setting of parameter **109** is performed when the key is held down.

Intermediate ornamental backtack (parameter 135 = 1):

By pressing the key in the seam, the drive stops and the backtack solenoid is activated. The speed limitation n9 according to the setting of parameter **122** is effective during the entire intermediate backtack operation.

Backward sewing is performed when the key is held down and the stitches are counted. When the key is released, the drive stops, the backtack solenoid is switched off and a forward seam is performed according to the counted stitches after the ornamental backtack stop time. After that the speed limitation is released.

Moreover, the number of stitches for each type of backtack can be selected using **Parameter 087**.

087 = 0 Stitches Normal manual backtack

087 = 1...255 Stitches Manual backtack with counted backtack

Intermediate backtack (parameter 135 = 0) with counted backtack section (parameter 087 = >0):

During manual backtack the speed is n13 (parameter 109). According to the setting of parameter **145** it is pedal controlled, fixed or limited.

Intermediate ornamental backtack (parameter 135 = 1) with counted backtack section (parameter 087 = >0):

After pressing the appropriate key, the drive stops in position 1. The backtack solenoid is enabled. After the ornamental backtack stop time (parameter **210**) has elapsed and the pedal has been pressed forward, the drive runs until counting (parameter **087**) has been completed. The drive stops again in position 1. The backtack

solenoid is disabled, and the time set using parameter **210** elapses. Then the seam section forward is repeated. The sequence is performed at speed n9 (parameter **122**).

6.9 Stitch Regulator Suppression/Recall

Effective in standard and ornamental backtack

The next backtack and/or stitch condensing operation can be suppressed or recalled once by pressing an external key according to the pre-selection of parameters **240...246**.

Upon pressing the key,	Start Backtack/ Stitch condensing On	Start Backtack/ Stitch condensing Off	End backtack / Stitch condensing On	End Backtack/ Stitch condensing Off
Before the start of the seam	No backtack / stitch condensing	Backtack / Stitch Condensing	-----	-----
in the seam	-----	-----	No backtack / stitch condensing	Backtack / Stitch Condensing

The double backtack is performed in the above cases.

6.10 Holding Power of the Stitch Regulator Solenoid

Function with or without control panel	Parameter
Time of full power (t10)	212
Holding Power of the Stitch Regulator Solenoid (t11)	213
Upper limit stitch regulator ON period (EV-)	255

The stitch regulator solenoid is engaged by full power. Then the system switches automatically to partial power in order to reduce the load for the control and the connected stitch regulator solenoid. Set the duration of full power using parameter **212** and the partial holding power using parameter **213**.



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)

6.11 Reverse motor rotation

Function with or without control panel	Parameter
Positioning speed (n1)	110
Reversing angle (ird)	180
Switch-on delay of reverse motor rotation (drd)	181
Reverse motor rotation On/Off (Frd)	182

The function "reverse motor rotation" is performed after trimming. When the stop position is reached, the drive stops for the duration of the switch-on delay of reverse motor rotation. Then it runs in reverse direction at positioning speed according to the set degrees.

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

Function with or without control panel	Parameter
Number of run-out stitches upon 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 **backtacking**, **chain suction**, **thread trimming** and **tape cutter/fast scissors** are automatically suppressed. If, however, parameter **190 = 3**, the function **tape cutter/fast scissors** is 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 "7", a switch at the input in1...in7 must be closed and programmed to "18".
- If parameter **290** is set at "16", the function "unlock the chain" must be switched on corresponding to slide-in strip **7** using key **8** on the V820 control panel.

190 = 0 Unlocking the chain 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"
- 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 at the seam end with tape cutting and run-out stitches (only possible in modes 7 and if parameter 018 = 0):

- Press key "unlock the chain"
- After light barrier sensing, execution of compensating stitches and end counting until tape cutting
- Run-out stitches until unlocking the chain can be set using 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.

See timing diagrams in the List of Parameters for operation characteristics of the control.

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

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

6.13 Machine Run Blockage



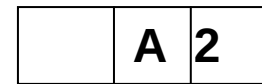
caution

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



Display and signal after enabling machine run blockage with control panel:

V810 control panel display

(symbol blinks and acoustic signal if parameter **127 = 1**)



V820 control panel display

(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 lift is possible

Machine run blockage in the start backtack / start stitch condensing:

The start backtack / start stitch condensing is interrupted by opening and/or closing the switch.

- Stop in the basic position
- Needle up is not possible
- Sewing foot lift is possible
- After disabling of the machine run blockage, the seam will be continued with the section following the start backtack / start stitch condensing

Machine run blockage in the end backtack / end stitch condensing:

The end backtack / end stitch condensing is interrupted, and the seam is completed by opening and/or closing the switch.

- Sewing foot lift is possible

6.14 High Lift for Walking Foot Flip-Flop 1

Function with or without control panel	Parameter
High lift for walking foot On/Off (hP)	137
Signal "high lift for walking foot" when key is closed/open (ihP)	263

High lift for walking foot is effective only if input function 13 or 14 has been selected using parameters **240...246** and parameter **137 = 1**. With all other settings high lift for walking foot is ineffective. The signal "machine at standstill" is issued at the corresponding output (M6). Select using parameter **263** whether the key is to be active when open or when closed.

263 = 0 Signal "high lift for walking foot M6" is issued when key is closed

263 = 1 Signal "high lift for walking foot M6" is issued when key is open

6.14.1 High Lift Walking Speed

Function with or without control panel	Parameter
High lift walking speed (n10)	117

6.14.2 High Lift Walking Speed Run-Out Time

Function with or without control panel	Parameter
High lift walking speed run-out time (thP)	152

6.14.3 High Lift Walking Stitches

Function with or without control panel	Parameter
Number of high lift walking stitches (chP)	185

Upon pressing the external key "high lift for walking foot" depending on the setting of parameters **240...246**, the speed is limited to high lift walking speed. The solenoid for high lift for walking foot is switched on if the speed $\leq$ high lift walking speed. It is possible to program run-out stitches using parameter **185**. This way, high lift for walking foot remains on until stitch counting has been completed. The speed limitation remains effective during run-out time after the solenoid for high lift for walking foot has been switched off.

6.14.4 High Lift for Walking Foot Operational Mode Not Stored (Parameters 240...246 = 13)

The following function is performed if "0" run-out stitches have been programmed using parameter **185**:

- Press the key "high lift for walking foot"; signal "high lift for walking foot" is On.
- Release the key "high lift for walking foot"; signal "high lift for walking foot" turns off.

The following function is performed if ">0" run-out stitches have been programmed using parameter **185**:

- When the "high lift for walking foot" key is pressed for the first time at drive standstill, signal "high lift for walking foot" is enabled and remains On after releasing the key.
- When pressing the "high lift for walking foot" key again at drive standstill, signal "high lift for walking foot" turns off.

If the signal "high lift for walking foot" is On when starting the drive, the speed will be limited. The signal turns off after the run-out stitches have been executed, and the speed limitation will be disabled after the run-out time (parameter **152**). If the key is held down until after counting, high lift for walking foot remains On. If the key is pressed only briefly, counting takes priority.

While the drive is running, if ">0" run-out stitches have been programmed using parameter **185**:

- Press the key "high lift for walking foot" while the drive is running; the signal "high lift for walking foot" and high lift walking speed are On.
- Release the key "high lift for walking foot" while the drive is running; the signal "high lift for walking foot" turns off after the run-out stitches have been executed, and the speed limitation will be disabled after the run-out time (parameter **152**).

6.14.5 High Lift for Walking Foot Operational Mode Stored /Flip-Flop 1 (Parameters 240...246 = 14)

- When the "high lift for walking foot" key is pressed for the first time while the drive is running, signal "high lift for walking foot" and high lift walking speed are On.
- When the "high lift for walking foot" key is pressed again while the drive is running, the signal "high lift for walking foot" turns off immediately, and the speed limitation will be disabled after the run-out time (parameter **152**).

6.15 Speed Depending on High Lift

Function with or without control panel	Parameter
Maximum speed (n2)	111
High lift for walking foot speed limitation (n10)	117
Speed depending on high lift 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 speed limitation 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.

6.15.1 Programming of the Measurement Value of the Potentiometer

- 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 **maximum** 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.

6.16 Speed Limitation n9

Function with or without control panel	Parameter
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.

6.17 Thread Trimming Operation

Function with or without control panel	Parameter
Thread trimmer On/Off (FA)	013
Thread wiper On/Off (FW)	014

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

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

6.17.1 Thread Trimmer/Thread Wiper (Lockstitch Modes)

Function with or without control panel	Parameter
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
Thread tension release switch-off delay (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.

6.17.2 Trimming Speed

Function with or without control panel	Parameter
Trimming speed (n7)	116

6.17.3 Chainstitch Thread Trimmer (Various 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.

6.17.4 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 with or without control panel	Parameter
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
ON period output M7 (signal if parameter 290 = 16) (kt5)	289

6.18 Bag Sewing Machine Functions

Function with or without control panel	Parameter
Chainstitch machine functions e. g. bag sewing machine functions (Sak)	198

There are various setting possibilities in mode 5 using **parameter 198**:

- 198 = 0** Thread trimming or hot thread chain cutting and sewing foot lifting are enabled by means of the pedal.
- 198 = 1** Thread trimming or hot thread chain cutting is enabled by means of the knee switch, and the sewing foot is lifted using the pedal.
- 198 = 2** Thread trimming or hot thread chain cutting is enabled by means of the pedal, and the sewing foot is lifted by means of the knee switch.

For bag sewing machine operation the parameters indicated below must be adapted manually.. For the knee switch select an input in1...in7, and set the corresponding parameter to **"42"**.

Function with or without control panel	Parameter
Delay time output M2 (kd2)	282
ON period output M2 (impulse) (kt2)	283
Delay time output M3 for hot thread chain cutting (kd3)	284
ON period output M3 for hot thread chain cutting (kt3)	285
Delay time until sewing foot On (kdF)	288
Input for knee switch function (in1...in7)	240...246

6.19 Overlock Machine Functions (Mode 7)

6.19.1 Chain Suction Signal

The chain suction signal can be pre-selected for start and end counting, respectively, using the **E** key on the control and key **1** on the V810/V820 control panel. If chain suction and tape cutter are switched off at the start of the seam, the respective counts will be suppressed. But they will be performed at the seam end.

Function without control panel	Control
Chain suction at the start of the seam On LED 1 On LED-segment 1 On	Key S2
Chain suction at the seam end On LED-segment 2 On	

Function with control panel	V810/V820
Chain suction at the start of the seam On left-hand arrow above key On	Key 1
Chain suction at the seam end On right-hand arrow above key On	

Function with or without control panel	Parameter
Stop when tape cutting at the seam end On/Off (SAb)	017
Sequence overlock mode (modes 7/16) with or without stop (UoS)	018
Chain suction signal at the seam end until end of count c2 or until pedal in pos.0 (neutral) (SPO)	022
Start counting (parameter 157) for thread tension release at the start of the seam (tFS)	025
Speed during stitch counting at the start of the seam (kSA)	143
Speed during stitch counting at the seam end (kSE)	144
Stitches until thread tension release Off after light barrier covered at the start of the seam (SFS)	157
Enable chain suction and thread tension release signal at the seam end (kSL)	193
Thread tension release On at the seam end until pedal in pos. 0 (neutral) or until the next start of a seam (FSn)	199
Braking curve in overlock mode On/Off (bdO)	235
Switch-off delay for chain suction at the seam end if parameter 022 = 2 (tkS)	237
Start count cancellation and seam end initiation by light barrier uncovered On/Off (Abc)	267

There are various setting possibilities with the following parameters in the overlock mode (mode 7).

- 018 = 0** Sequence with stop.
- 018 = 1** Sequence without automatic stop at the seam end. When the command "run" is given, the drive runs at the pre-selected speed. The program switches to the next start of a seam without issuing signals M1/M2, when the pedal is in pos. 0 (neutral) or the light barrier is covered.
- 018 = 2** Sequence as with setting 1. But signals M1/M2 will be issued when the pedal is in pos. 0 (neutral), and the program switches to the next start of a seam.
- 018 = 3** Sequence as with setting 1. But signals M1/M2 will be issued when the pedal is in pos. -2, and the program switches to the next start of a seam. Intermediate stop and sewing foot lifting with pedal in pos. -1 is possible.
- 018 = 4** If the light barrier is covered during the end count for chain suction, the program switches immediately to the next start of a seam. If the end count has been completed and the light barrier remains uncovered, the drive stops immediately.
- 018 = 5** Tape cutting at the start of the seam with stop.
- 022 = 0** The chain suction signal at the seam end is disabled after count c2.
- 022 = 1** The chain suction signal at the seam end remains on until pedal in pos. 0 (neutral).
- 022 = 2** Chain suction until the drive is at standstill and the switch-off delay (parameter **237**) has elapsed. The switch-off delay will be disabled whenever a new seam is started.
- 025 = 0** Start counting for thread tension release at the start of the seam.
- 025 = 1** Start counting for thread tension release when the light barrier is covered.
- 193 = 0** Thread tension release and chain suction after the light barrier compensating stitches.
- 193 = 1** Chain suction from light barrier uncovered onwards and thread tension release after the light barrier compensating stitches.
- 199 = 0** Thread tension release On at the seam end until pedal in pos. 0 (neutral).
- 199 = 1** Thread tension release On at the seam end or at the start of the seam.
- 199 = 2** Thread tension release On at the seam end or at the start of the seam and after "power On".
- 267 = 0** Start count cancellation by light barrier uncovered impossible.
- 267 = 1** Start count cancellation by light barrier uncovered.
Chain suction or tape cutting at the start of the seam are cancelled whenever the light barrier senses "uncovered", and the seam end will be initiated.

It is possible to select the speed function for stitch counting at the start of the seam and at the seam end using the following parameters.

- 143 = 0** Speed controllable by the pedal up to the set maximum speed (parameter **111**).
- 143 = 1** Fixed speed (parameter **112**) without influence by the pedal. Stop with pedal in pos. 0 (neutral).
- 143 = 2** Limited speed (parameter **112**) controllable by the pedal up to the set limit.
- 143 = 3** At fixed speed (parameter **112**), can be cancelled or interrupted depending on the setting of parameter **019**.
- 144 = 0** Speed controllable by the pedal up to the set maximum speed (parameter **111**).
- 144 = 1** Fixed speed (parameter **113**) without influence by the pedal. Stop with pedal in pos. 0 (neutral).
- 144 = 2** Limited speed (parameter **113**) controllable by the pedal up to the set limit.
- 144 = 3** At fixed speed (parameter **113**), can be cancelled or interrupted depending on the setting of parameter **019**.

6.19.2 Start and End Counts

Function with or without control panel	Parameter
End count (c2) at limited speed n4 until stop (c2)	000
Start count (c1) at limited speed n3 for chain suction (c1)	001
Count (c3) tape cutter at the start of the seam (c3)	002
End count (c4) for tape cutter at the seam end (c4)	003
Seam end in mode 7 through end count (c2) or (c4) (mhE)	191
Stitch counting speed at the start of the seam (n3)	112
Stitch counting speed at the seam end (n4)	113

The following settings are possible for determining the seam end using parameter **191**:

- 191 = 0** Seam end after count c4 (tape cutter)
- 191 = 1** Seam end after count c2 (chain suction)

6.20 Tape Cutter/Fast Scissors (Modes 6/7)

6.20.1 Tape Cutter/Fast Scissors in Mode 6

The signal **tape cutter/fast scissors** is issued only at the seam end. Furthermore, the manual tape cutter/fast scissors function can be set. See also chapter "**Manual Tape Cutter/Fast Scissors**".

Function with or without control panel	Parameter
Tape cutter at the seam end On/Off	014

Output and Times for Tape Cutter

Function with or without control panel	Parameter
Delay time for output M3 (ST2/27) tape cutter AH (kd3)	284
ON period for output M3 (ST2/27) tape cutter AH (kt3)	285

- Parameter **232** must be set at "**0**" (tape cutter function).
- The delay time for the tape cutter is usually set at "**0**".

Output and Times for Fast Scissors

Function with or without control panel	Parameter
Delay time for output M3 (ST2/27) fast scissors AH1 (kd3)	284
ON period for output M3 (ST2/27) fast scissors AH1 (kt3)	285
Delay time for output M4 (ST2/36) fast scissors AH2 (kd4)	286
ON period for output M4 (ST2/36) fast scissors AH2 (kt4)	287

- Parameter **232** must be set at "**1**" (fast scissors function).
- The delay times for "fast scissors" are usually set at "**0**".

6.20.2 Tape Cutter/Fast Scissors in Mode 7

The signal **tape cutter/fast scissors** can be set separately for start and end counting. See also chapter "**Manual Tape Cutter/Fast Scissors**".

Function without control panel	Control
Tape cutter/Fast scissors at the start of the seam On	LED-segment 3 On
Tape cutter/Fast scissors at the seam end On	LED-segment 4 On
Tape cutter/Fast scissors at the start and at the end of the seam On	LED-segment 3 and 4 On
Tape cutter/Fast scissors at the start and at the end of the seam Off	LED-segment 3 and 4 Off

- When using the V810 control panel, parameter **291** will automatically be set to slide-in strip "7" if **290 = 7**.
- When using the V820 control panel, parameter **292** will automatically be set to slide-in strip "5" if **290 = 7**.

Function with control panel	V810	V820
Tape cutter/Fast scissors at the start of the seam On	left-hand arrow above key On	Key 2
Tape cutter/Fast scissors at the seam end On	right-hand arrow above key On	Key 4
Tape cutter/Fast scissors at the start and at the end of the seam On	both arrows above key On	
Tape cutter/Fast scissors at the start and at the end of the seam Off	both arrows above key Off	

The tape cutter signal can be influenced by parameter **020** in such a way that the signal remains on at the seam end and is off when you begin sewing again after some run-out stitches, which can be set using parameter **021**. This action serves as clamp.

Function with or without control panel	Parameter
Clamp at the seam end (output ST2/27) On/Off (mode 7) (kLm)	020
Run-out stitches of the clamp at the start of the seam (mode 7) or stitch counting after light barrier uncovered until tape cutter On (mode 15) (ckL)	021

Output and Times for Tape Cutter

Function with or without control panel	Parameter
Delay time for output M3 (ST2/27) tape cutter AH (kd3)	284
ON period for output M3 (ST2/27) tape cutter AH (kt3)	285

- Parameter **232** must be set at "0" (tape cutter function).
- The delay time for the tape cutter is usually set at "0".

Output and Times for Fast Scissors

Function with or without control panel	Parameter
Delay time for output M3 (ST2/27) fast scissors AH1 (kd3)	284
ON period for output M3 (ST2/27) fast scissors AH1 (kt3)	285
Delay time for output M4 (ST2/36) fast scissors AH2 (kd4)	286
ON period for output M4 (ST2/36) fast scissors AH2 (kt4)	287

- Parameter **232** must be set at "1" (fast scissors function).
- The delay times for "fast scissors" are usually set at "0".

6.21 Manual Tape Cutter/Fast Scissors

Upon pressing an external key depending on the pre-selection of parameters **240...246**, the **tape cutter** or **fast scissors** can be enabled anywhere in the seam or at standstill.

See also chapter "Connection Diagram" in the List of Parameters!

6.22 Seam with Stitch Counting

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

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

6.22.1 Number of Stitches for a Seam with Stitch Counting

Function with or without control panel	Parameter
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 +/-.

6.22.2 Stitch Counting Speed

Function with or without control panel	Parameter
Positioning speed (n1)	110
Stitch Counting Speed (n12)	118
Speed mode for a seam with stitch counting (SGn)	141
Activation of speed n12 when key is open/closed (inr)	266

Speed control for stitch counting can be selected using parameter **141**.

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.

6.22.3 Seam with Stitch Counting when Light Barrier is On

Function with or without control panel	Parameter
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.

6.23 Free Seam and Seam with Light Barrier

Function with or without control panel	Parameter
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**.

6.24 Light barrier

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

Function with control panel	V820
Light barrier covered/uncovered On	right-hand arrow above key On
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**.

6.24.1 Speed after Light Barrier Sensing

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

6.24.2 General Light Barrier Functions

Function with or without control panel	Parameter
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 the V820 control panel, direct access by means of the function key (key 9) is possible.

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

6.24.3 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.

6.24.4 Automatic Start Controlled by Light Barrier

This function is not possible in modes 8 and 9!

Function with or without control panel	Parameter
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 (neutral). Then press the pedal forward. This function is disabled when the pedal is no longer pressed forward after the seam end.

6.24.5 Light barrier filter for knitted fabrics

Function with or without control panel	Parameter
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**.

6.24.6 Functional Variations of the Light Barrier Input

Function with or without control panel	Parameter
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...in7.

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".**

6.25 Switching Functions of Inputs in1...i13

Function with or without control panel	Parameter
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 not in the stop position, it runs to the pre-selected basic 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 not in position 2, it runs to position 2 upon pressing the key. After power On the drive runs until it has been 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 (function of the key according to setting of parameter 266). 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, backtacking 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 effective only in mode 37.

6.26 Software Debouncing of All Inputs

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

- 238 = 0 No debouncing
- 238 = 1 Debouncing

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

Functions	Parameter
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 not in the stop position, it runs to the pre-selected basic 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 not in position 2, it runs to position 2 upon pressing the key. After power On the drive runs until it has been 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 backtack:** Upon pressing the key, the backtack will be enabled anywhere in the seam and at standstill of the drive.
- 17 **Backtack suppression / recall:** Upon pressing the key, the backtack will be suppressed or recalled once.
- 18...100 **No function**

6.28 Special pedal function Single stitch / Full stitch

Function		Parameter
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 the function Single stitch / Full stitch	(n9)	122

With the single stitch / full stitch, 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**.

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.

6.29 Signal "Machine Running"

Function with or without control panel		Parameter
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 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.

6.30 Signal Output Position 1

- Transistor output with open collector
- 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

6.31 Signal Output Position 2

- Transistor output with open collector
- 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

6.32 Signal Output 512 Impulses per Rotation

- Transistor output with open collector
- 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

6.33 Actuator

6.33.1 Analog actuator

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

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

- 019 = 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).
019 = 1 With pedal in pos. -1 sewing foot lifting is blocked in the seam.
019 = 2 With pedal in pos. -2 thread trimming is blocked (function active whenever the light barrier is On).
019 = 3 The functions "pedal in pos. -1" and "pedal in pos. -2" are active.
019 = 4 The functions "pedal in pos. -1" and "pedal in pos. -2" are blocked in the seam (function active whenever the light barrier is On).

The effect of pedal actuation on the drive functions can be set using parameter **026**:

- 026 = 0** Analog function off
026 = 1 12-level selected, like prior pedal function of the digital actuator.
026 = 2 continuously variable
026 = 3 24-level
026 = 4 48-level (progressive)
026 = 5 48-level (progressive)

7 Signal Test

Function with or without control panel	Parameter
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).

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

7.1.1 Inputs to the control

- Select parameter **173**.
- **Operator control panel:** 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

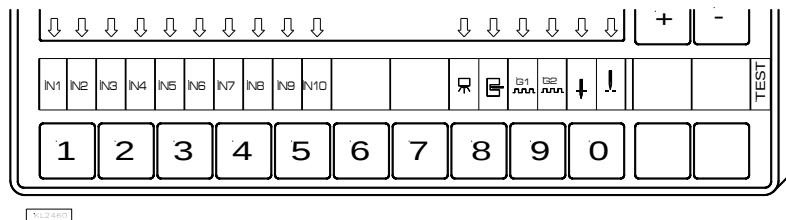
- **V820 control panel:** The numbers of the inputs in1...in7, in11 (LSM), in12, and in13 appear individually on the LCD display. In addition, the active inputs are displayed by arrows over keys 1 through 6, even if multiple inputs are actuated at once.
- If more than one key or switch is activated at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

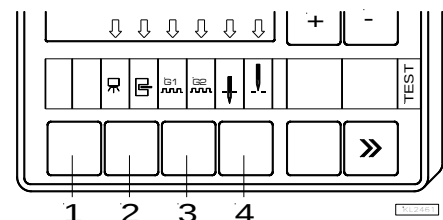


2-06 in 03

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!

7.1.2 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 backtacking output on the V810 control panel:



2-34 oUt vr

Display example for backtacking output on the V820 control panel:



2-34 oUt vr

Assignment of outputs		
Display	Function / Output	On socket A (ST2)
OUT VR	Backtacking	34
OUT FL	Sewing foot lift	35
OUT 1	M1	37
OUT 2	M2	28
OUT 3	M3	27
OUT 4	M4	36
OUT 5	M5	32
POS 1	Position 1	22

8 Table of Machine Functions and Adapter Cords



ATTENTION

Before switching functional sequences, detach cables from the inputs and outputs! Please ensure that the machine installed provides the functional sequence to be set! Then proceed with the setting using parameter 290!

Setting the functional sequence using parameter 290

Mode	Function / Machine	Adapter	Functions / Outputs							
			FL	VR	M1	M2	M3	M4	M5	
		Power transistors →	ST2/35	ST2/34	ST2/28	ST2/27	ST2/36	ST2/32		
0	Lockstitch: e. g.		FL	VR	FA1	FA2	FW	FA1+2	ML	
	Brother (737-113, 737-913)	1113420	FL	VR	FA1	FA2	FW			
	Aisin (AD3XX, AD158, 3310; EK1)	1112815	FL	VR	FA1	FA2	FW			
	Pfaff (563, 953, 1050, 1180)	1113491	FL	VR	FA1	FA2	FW		ML	
	Dürkopp Adler (210, 270)	1112845	FL	VR	FA1	FA2	FW			
2	Lockstitch: e. g.		FL	VR		FA	FSPL	FL1	ML	
	Singer (212 UTT)	1112824	FL	VR		FA	FSPL	FL1		
3	Lockstitch: e. g. Dürkopp Adler (467)		FL	VR	FA	ML	FW	FSPL		
5	Chainstitch: parallel sequence		FL	STV	AH1	AH2	AH3	AH4	ML	
	Yamato (VC/VG series)	1113345	FL	STV	FA		FW		ML	
	Kansai (RX 9803)	1113130	FL		FA		FW		ML	
	Pegasus (W500/UT, W600/UT/MS with or without stitch condensing)	1112821	FL	STV	FA	FA	FW			
	Union Special (34700)	1112844	FL	STV	FA	FA	FW		ML/NK	
	Global (CB2803-56)	1112866	FL				FA			
	Rimoldi (F27)	1113096	FL		FW	FAO	FAU		ML	
6	Chainstitch: tape cutter/fast scissors		FL	STV	FA	M2	AH1	AH2	ML	
7	Overlock		FL	KS	FA	M2	AH	FSPL	ML	
8	Backlatch		FL		PD≤-1	PD≥1	PD≥1*		ML	
	Pegasus	1113234			PD≤-1	PD≥1				
9	Backlatch		FL		PD≤-1	PD≥1	PD≥1*		ML	
	Yamato (ABT3)	1112826			PD≤-1	PD≥1				
	Yamato (ABT13, ABT17)	1113205			PD≤-1	PD≥1				
14	Lockstitch: e. g.		FL	VR	FA1+2	FA2	FW	FA1	ML	
	Juki (5550-6)	1112816	FL	VR	FA1+2		FW			
	Juki (5550-7, 8500-7, 8700-7)	1112816	FL	VR	FA1+2		FW			
	Adapter for position sensors incorporated in the handwheel	1113157								
25	Lockstitch: (LU2210 / LU2260)		FL	VR	FA	FSPL	FW	HP	ML	

*) The signal issued at this output is inverted!

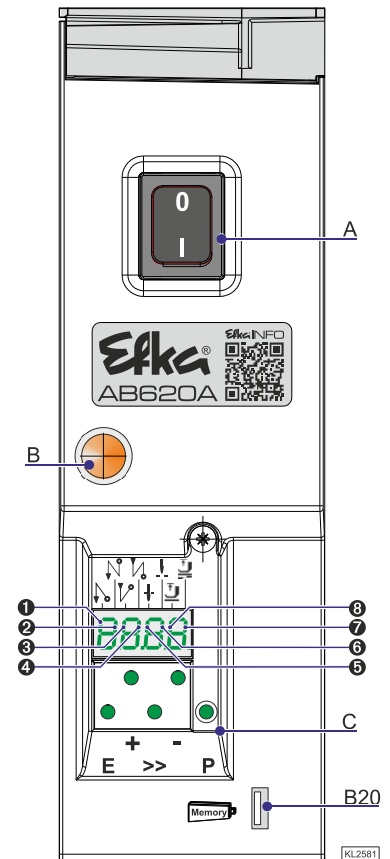
Explanation of letter symbols of the above table and chapter "Timing Diagrams"

Outputs		Outputs	
AH	Tape cutter	FL1	Sewing foot lifting without pulsing
AH1/AH2	Fast scissors	FSPL	Thread tension release
FA	Thread trimmer	FW	Thread wiper
FA1	Thread trimmer pos. 1...1A (e. g. Pfaff, magnetic)	ML/NK	Machine running / Needle cooling
FA1+2	Thread trimmer pos. 1...2	PD≥1	Pedal forwards until the engine is running (min. to max. rotational speed)
FA2	Thread trimmer pos. 1A...2 (e. g. Pfaff, pneumatic)	PD≤-1	Pedal slightly back (FL) or entirely back (FA)
FAO	Needle thread trimmer	PD=0	Pedal in pos. 0 (neutral)
FAU	Bobbin thread trimmer	PD-2	Full heelback (FA)
FL	Sewing foot lifting	VR	Backtacking

9 Operating Elements and Socket Connectors

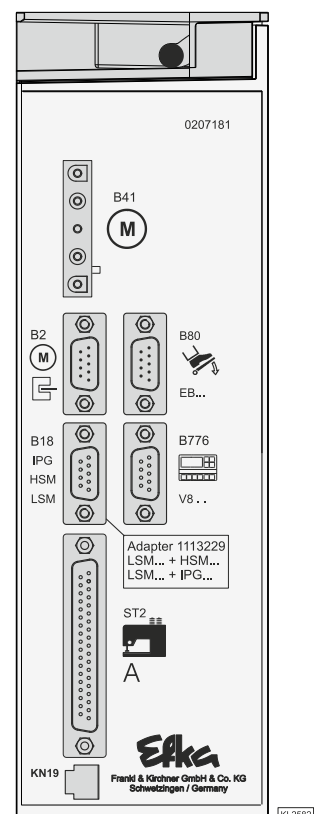
9.1 Positions of the Front Side

A	Power switch
B	Mains pilot lamp
C	Control panel (onboard module) + Display (4 digit 7 segment display)
Key	
P	Call or exit programming mode
E	Start backtack single / double / off Enter key for modifications in the programming mode
+	End backtack single / double / off In the programming mode - increase of the value indicated
>>	Basic position 1 or 2 Shift key in the programming mode
-	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 backtacking, foot lifting and basic position.	
1	Single start backtack
2	Double start backtack
3	Single end backtack Tape cutter at the start of the seam On/Off (Mode 7)
4	Double end backtack 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



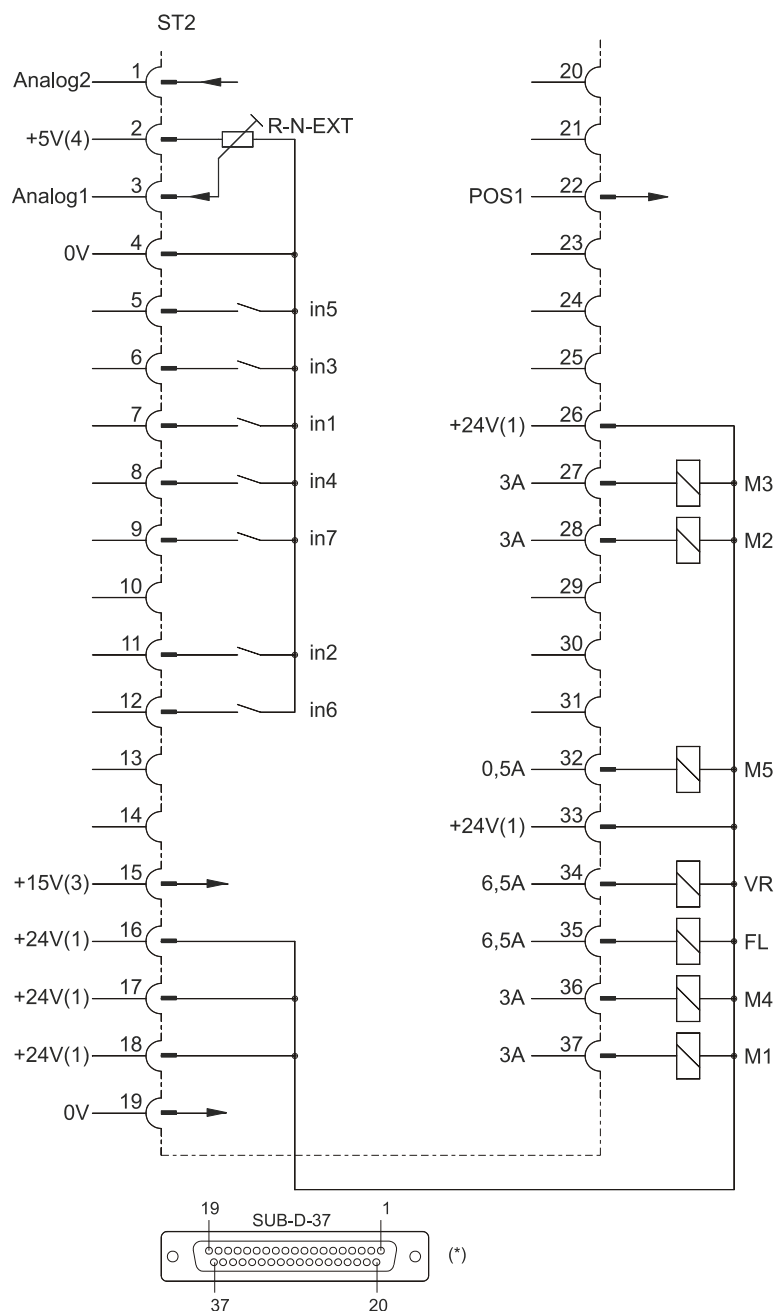
9.2 Positions of the Rear Side

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
B776	V810/V820 control panel
ST2	Socket for inputs and outputs e. g. solenoids, solenoid valves, displays, keys and switches
KN19	Knee switch



9.3 Connection Diagrams

Inputs switched to 0V



BI2008

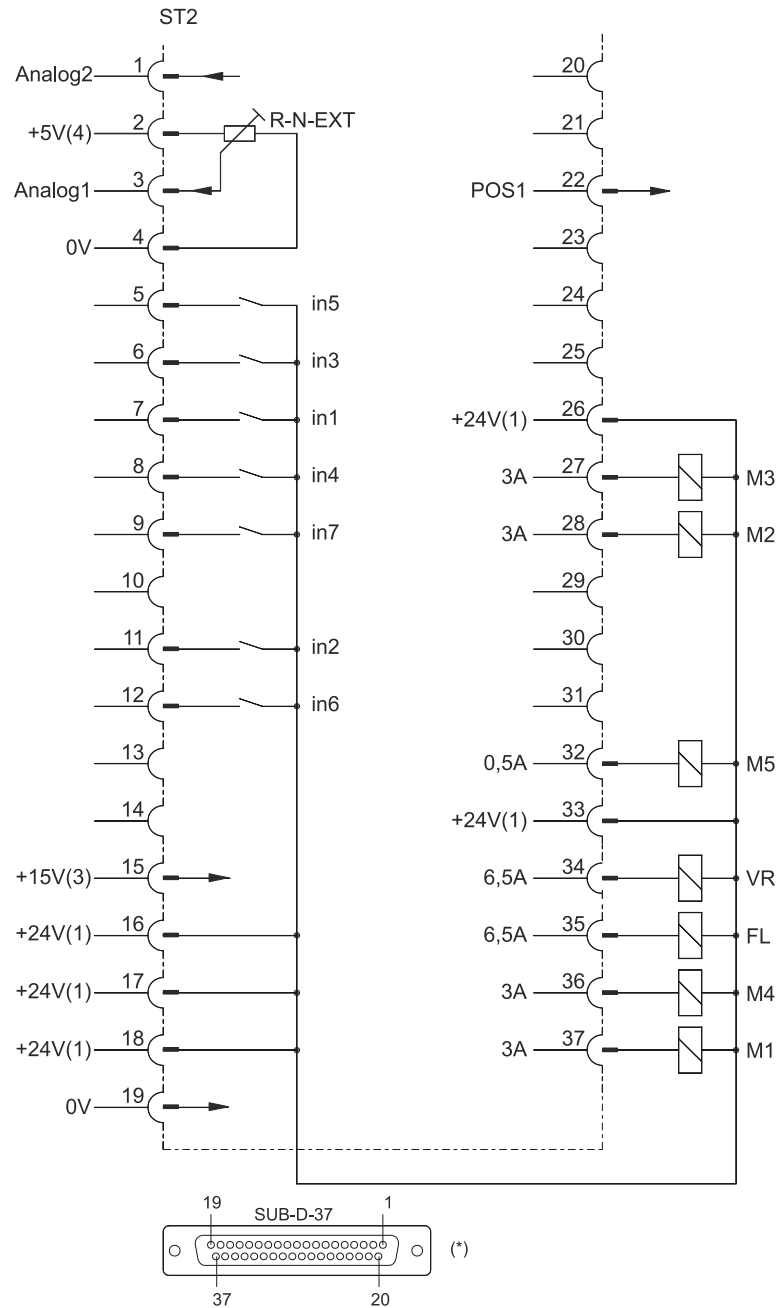


ATTENTION

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

in1	Input 1	M1	Output 1
in2	Input 2	M2	Output 2
in3	Input 3	M3	Output 3
in4	Input 4	M4	Output 4
in5	Input 5	M5	Output 5
in6	Input 6	FL	Sewing foot lifting
in7	Input 7	VR	Backtacking
R-N-EXT	External potentiometer for speed limitation	POS1	Position 1

Inputs switched to +24V



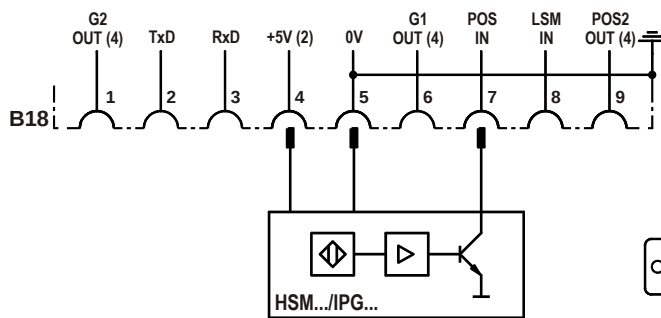
ATTENTION

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

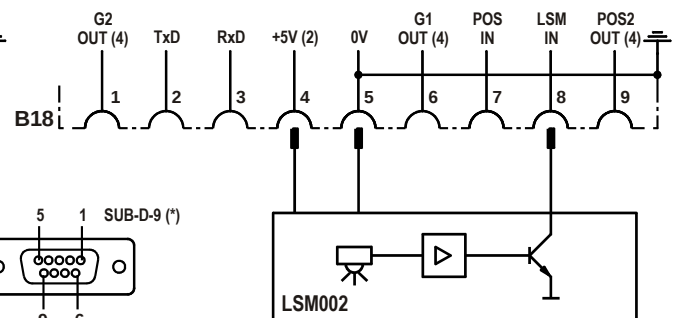
Beim An-
96VA Dau-

- 1) Nominal voltage +24V, no-load voltage max. +30V momentarily after power on
- 2) Transistor output with open collector max. 40V, I_{max} 10mA
- 3) Nominal voltage +15V, I_{max} 30mA
- 4) Nominal voltage +5V, I_{max} 20mA
- *) 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 LSM002 light barrier module

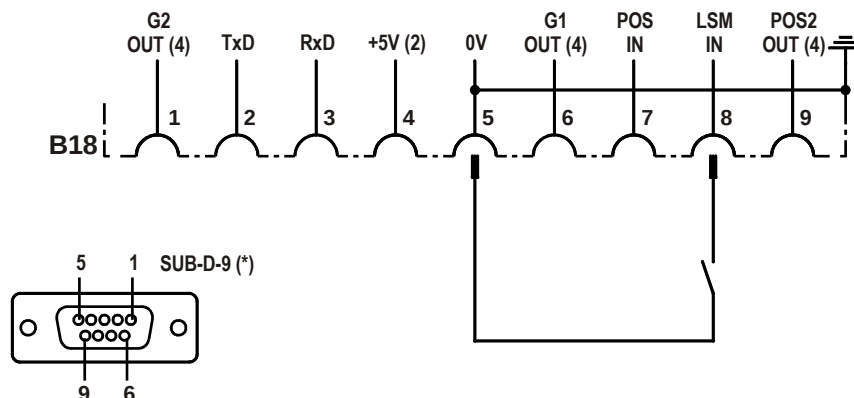


BI1174a

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.



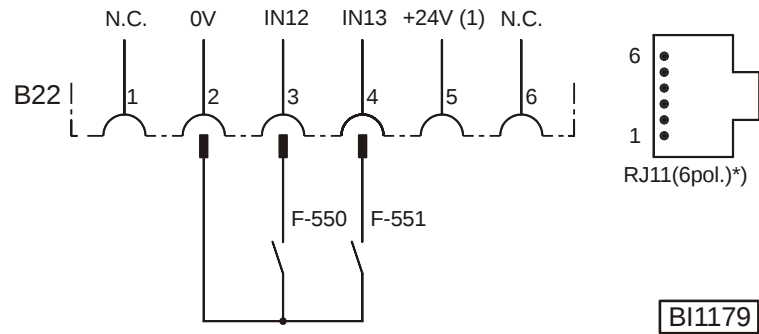
BI1159a

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

2) Nominal voltage +5V, I_{max} 100mA (switchable to +15V, 100mA)

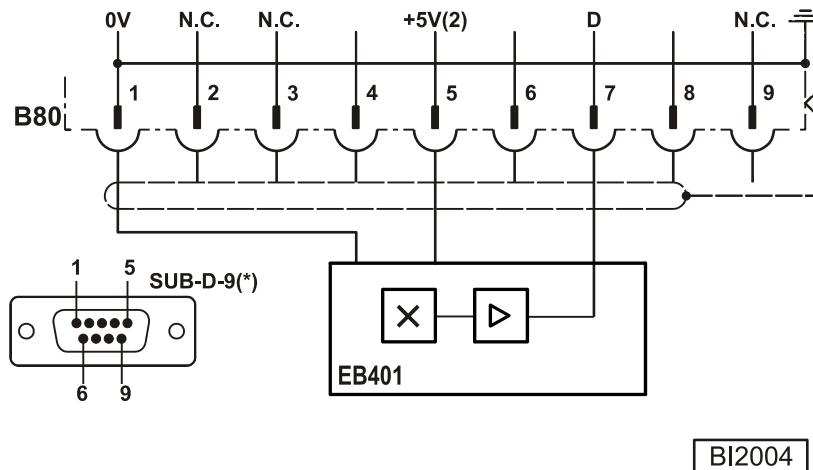
4) Logic level output +5V, I_{max} 10mA

*) Front view of the control (component side) / rear view of the outgoing connecting cable



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

Connection of an analog actuator EB401



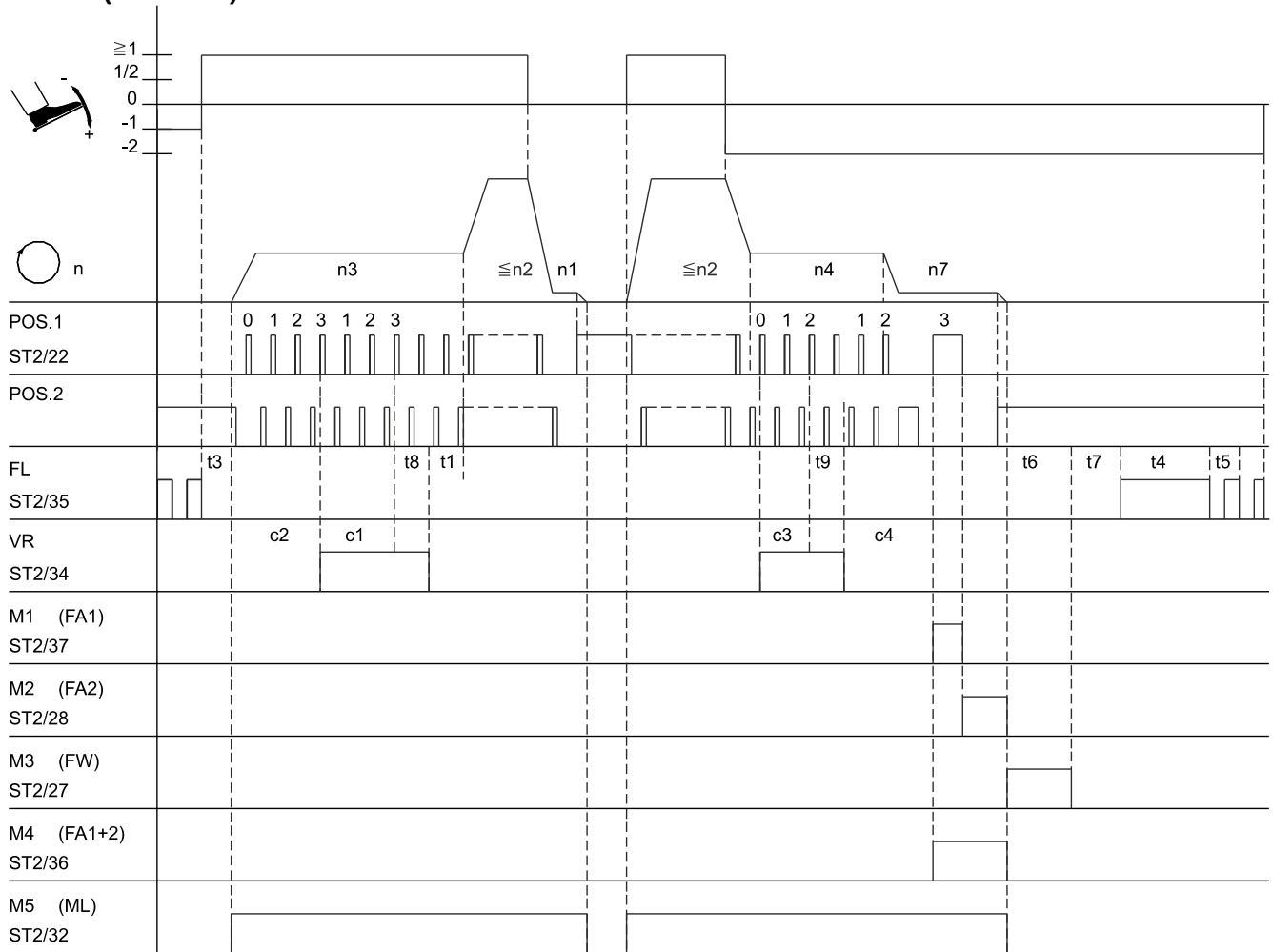
1) Nominal voltage +24 V, no-load voltage max. +30 V momentarily after power on

2) Nominal voltage +5 V, I_{max} 20 mA

*) Front view of the control (component side) and/or rear view of the outgoing connecting cable

10 Timing Diagrams

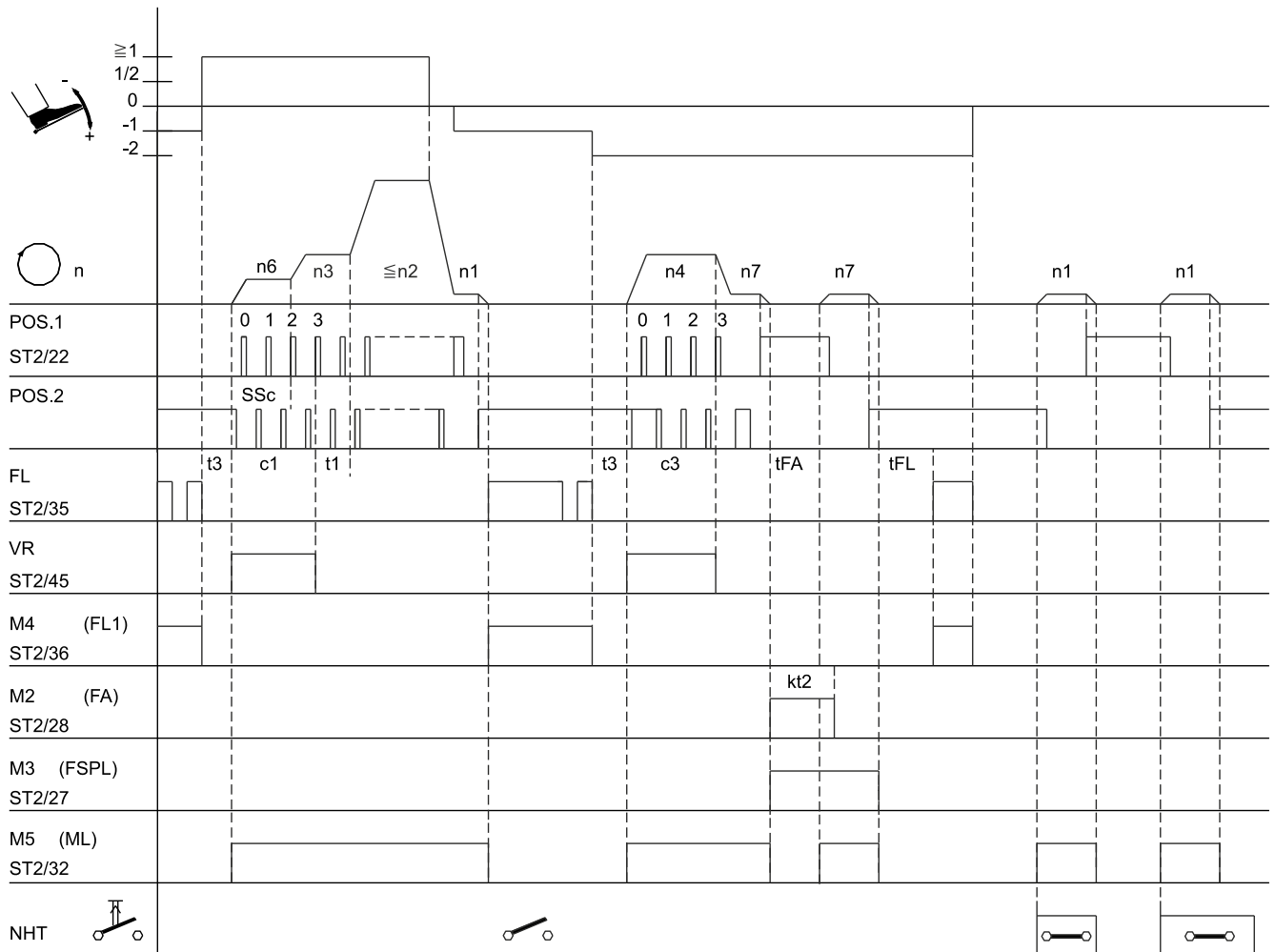
Mode 0 (lockstitch)



0330/MODE-00

Mark	Function	Parameter	Control	V810	V820
FAm	Mode 0	290 = 0/27			
	Double start backtack with stitch correction	On	Key E	Key 1	Key 1
	Double end backtack with stitch correction	On	Key +	Key 2	Key 4
n1	Positioning speed	110			
n2	Maximum speed	111			
n3	Start backtack speed	112			
n4	End backtack speed	113			
n7	Trimming speed	116			
c2	Start backtack stitches forward	000			
c1	Start backtack stitches backward	001			
c3	End backtack stitches backward	002			
c4	End backtack stitches forward	003			
t8	Start backtack stitch correction	150			
t9	End backtack stitch correction	151			
t1	Delay until speed release after start backtack	200			
t3	Start delay from lifted sewing foot	202			
t4	Full power of sewing foot lifting	203			
t5	Pulsing of sewing foot lifting	204			
t6	Thread wiper ON period	205			
t7	Sewing foot switch-on delay after thread wiper	206			

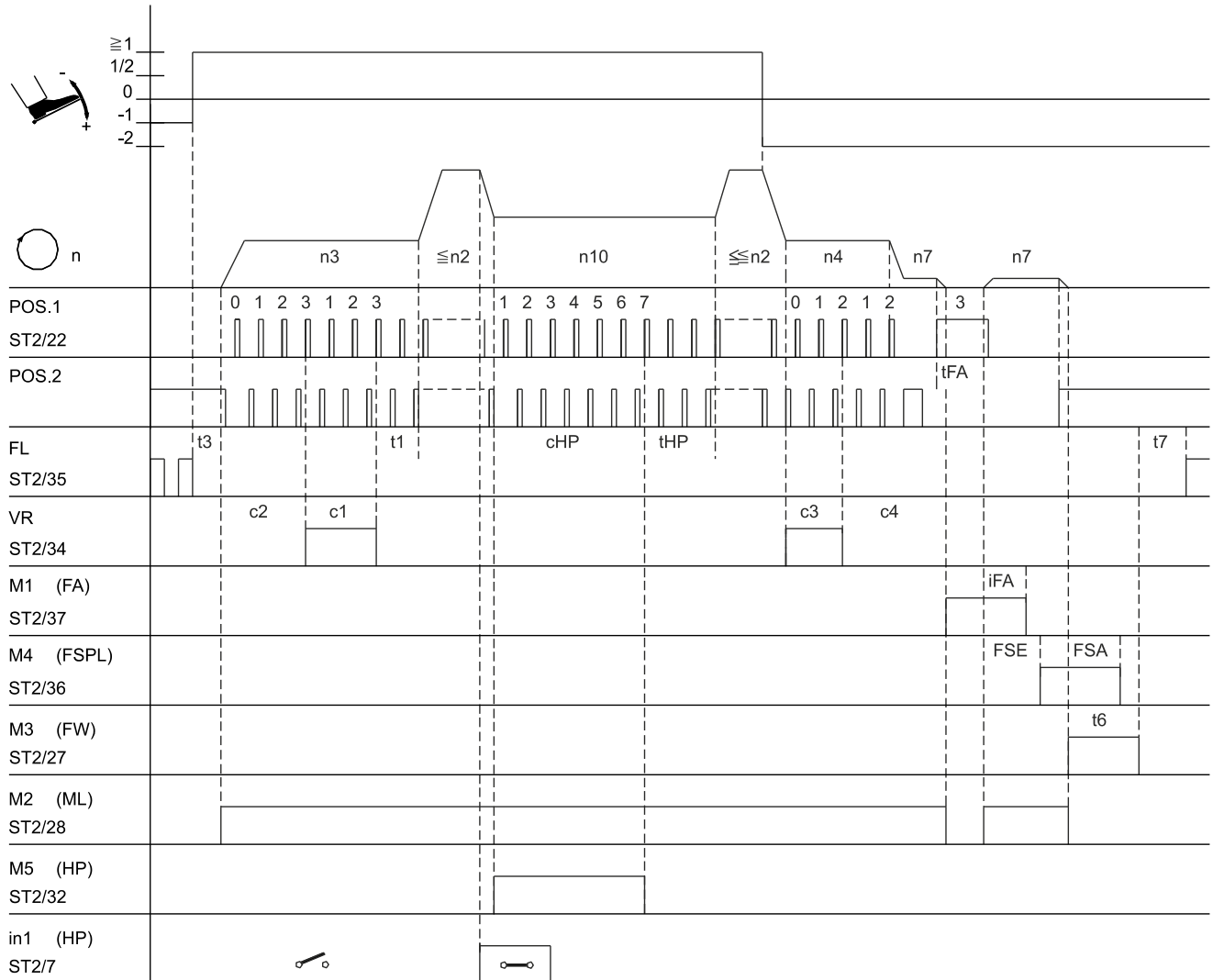
Mode 2 (lockstitch)



0330/MODE-02

Mark	Function	Parameter	Control	V810	V820
FAm	Mode 2	290 = 2			
SSt	Softstart	134 = 1			
	Single start backtack		Key E	Key 1	Key 1
	Single end backtack		Key +	Key 2	Key 4
n1	Positioning speed	110			
n2	Maximum speed	111			
n3	Start backtack speed	112			
n4	End backtack speed	113			
n6	Softstart speed	115			
n7	Trimming speed	116			
c1	Start backtack stitches backward	001			
c3	End backtack stitches backward	002			
SSc	Softstart stitches	100			
t1	Delay until speed release after start backtack	200			
t3	Start delay from lifted sewing foot	202			
tFL	Switch-on delay of sewing foot lifting	211			
tFA	Stop time for thread trimmer	253			
kt2	Thread trimmer ON period	283			

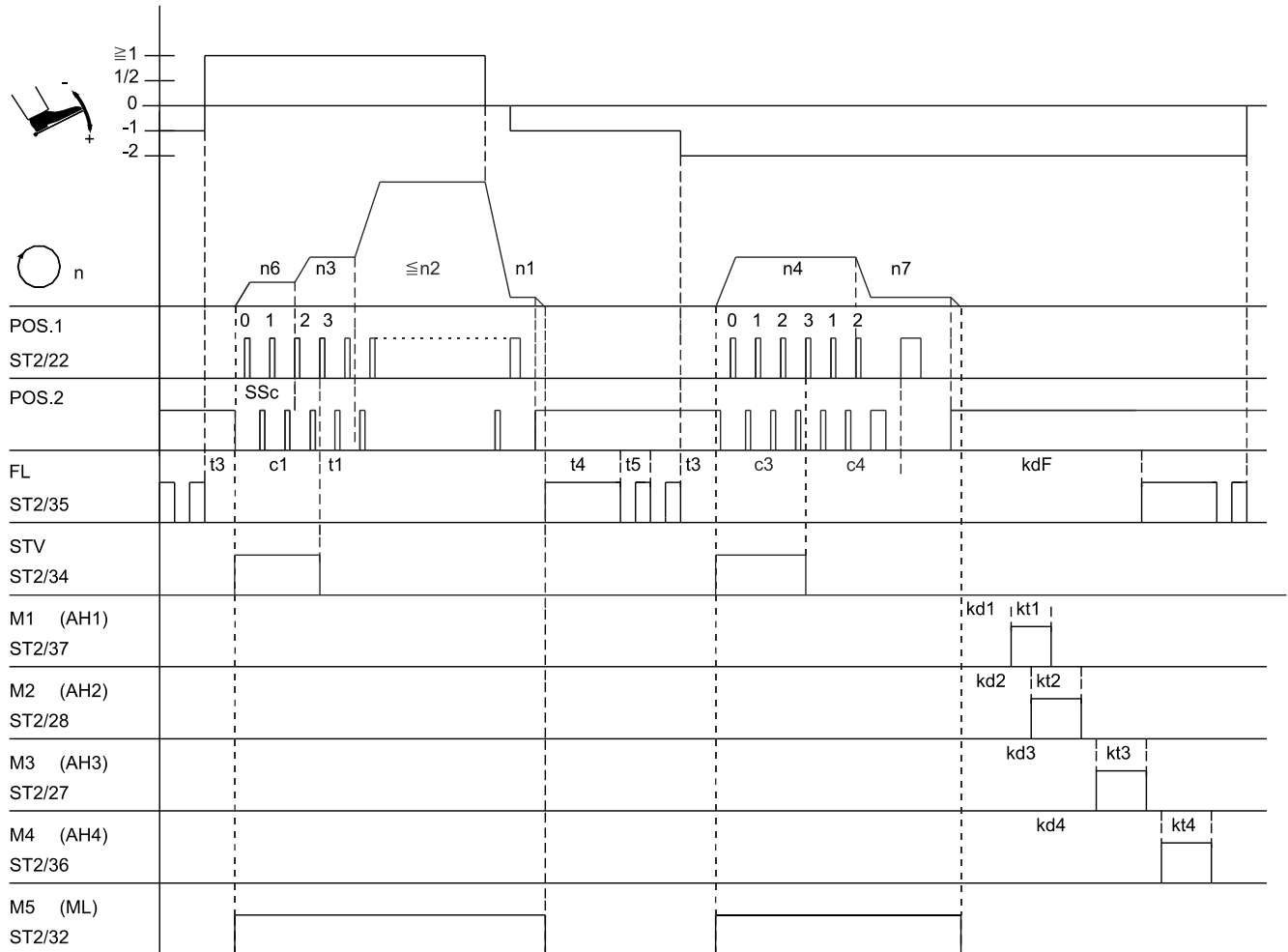
Mode 3 (lockstitch)



0330/MODE-03

Mark	Function	Parameter	Control	V810	V820
FAm	Mode 3	290 = 3			
	Double start backtack		Key E	Key 1	Key 1
	Double end backtack		Key +	Key 2	Key 4
hP	High lift for walking foot	137 = 1			
n2	Maximum speed	111			
n3	Start backtack speed	112			
n4	End backtack speed	113			
n7	Trimming speed	116			
n10	High lift walking speed	117			
c2	Start backtack stitches forward	000			
c1	Start backtack stitches backward	001			
c3	End backtack stitches backward	002			
c4	End backtack stitches forward	003			
thP	High lift walking speed run-out time	152			
chP	Stitch counting high lift for walking foot	185			
t6	Thread wiper ON period	205			
t7	Sewing foot switch-on delay after thread wiper	206			
iFA	Activation angle of the thread trimmer	250			
FSA	Switch-off delay of thread tension release	251			
FSE	Switch-on delay angle of thread tension release	252			
tFA	Stop time for thread trimmer	253			

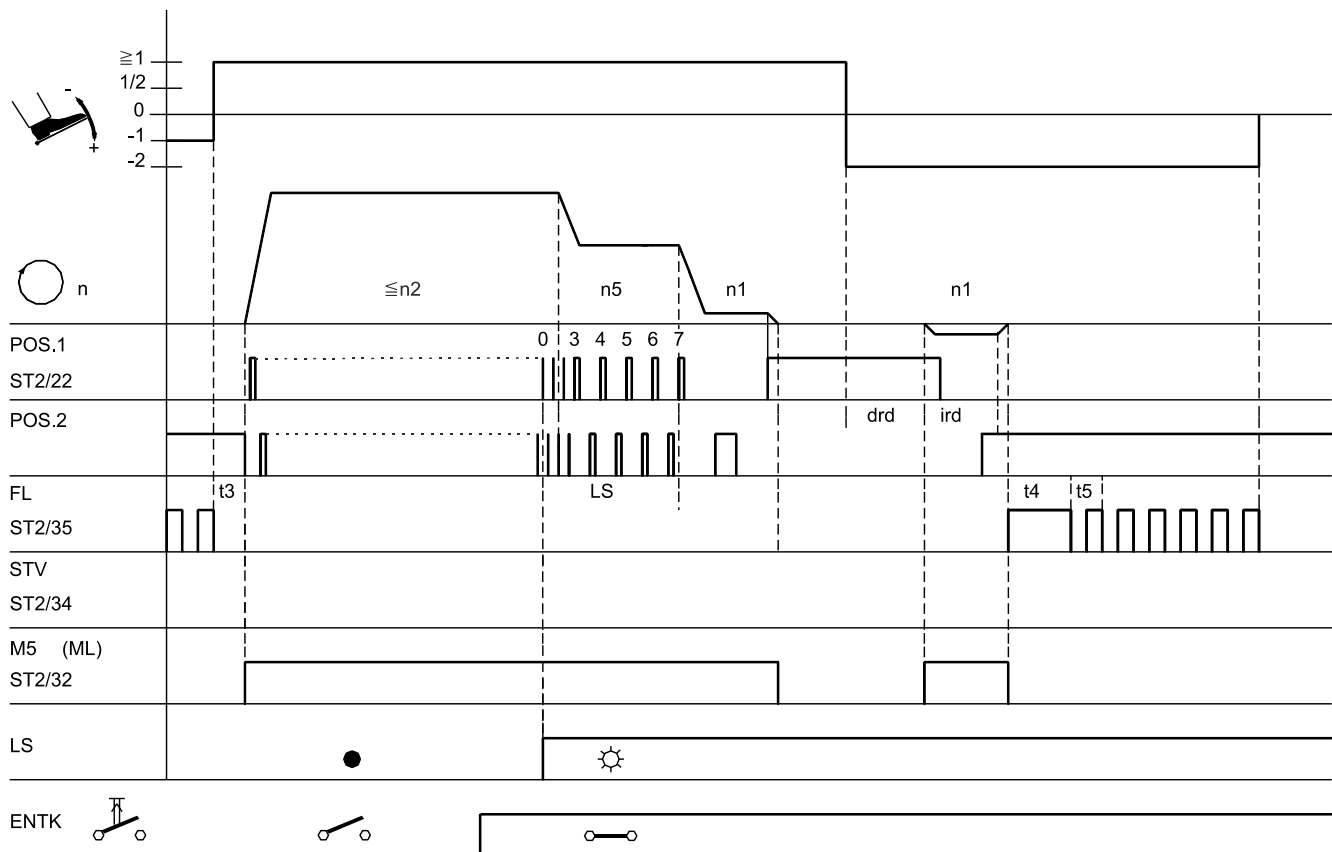
Mode 5 (chainstitch)



0330/MODE-05

Mark	Function	Parameter	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 backtack	200			
t3	Start delay from lifted sewing foot	202			
t4	Full power of sewing foot lifting	203			
t	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			

Mode 5, 6 or 7 (function “unlocking the chain” with light barrier)

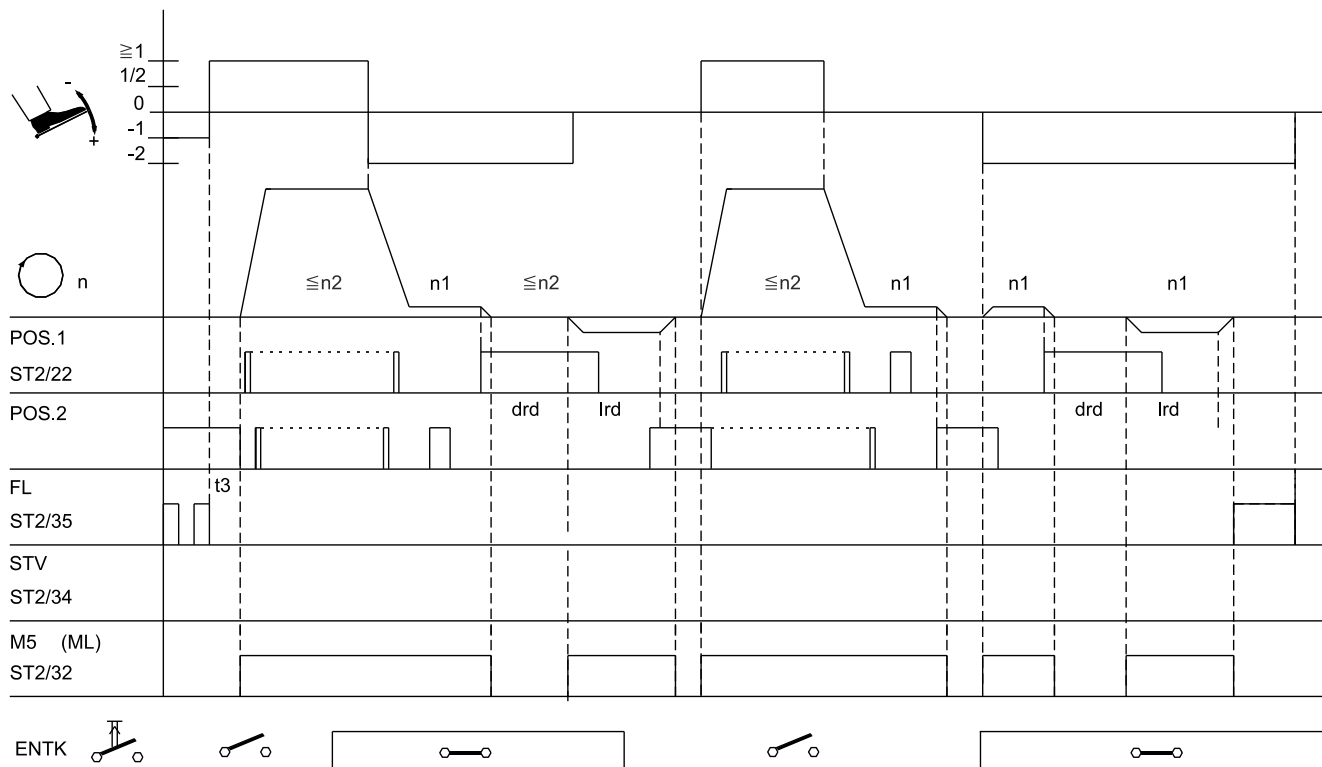


0330/ENTK-01

Mark	Function	Parameter	Control	V810	V820
FAm	Mode 5	290 = 5	Key >>	Key 4	Key 7
drE	Direction of motor rotation	161 = 0			
Frd	Reverse motor rotation	182 = 1			
	Basic position 2				
	End stitch condensing and thread trimmer *)				
LS	Light barrier	009 = 1			
mEk	Unlock the chain automatically with light barrier	190 = 2			
in7	Machine run blockage effective with open contact	246 = 6			
in8	Automatic speed n12 without pedal	247 = 10			
in..	Assign the function “unlocking the chain” to an input	2..			
n1	Positioning speed	110			
n2	Maximum speed	111			
n5	Speed after light barrier sensing	114			
LS	Light barrier compensating stitches	004			
ird	Number of reversing increments	180			
drd	Switch-on delay of reverse motor rotation	181			
t3	Start delay from lifted sewing foot	202			
t4	Full power of sewing foot lifting	203			
t5	Pulsing of sewing foot lifting	204			
tGn	Speed gate damping period	222			
dGF	Speed gate 2	224 = 1			
kdF	Switch-on delay of sewing foot lifting	288			

*) When unlocking the chain, the functions “stitch condensing” and “thread trimmer” are suppressed!

Mode 5, 6 or 7 (function “unlocking the chain”)

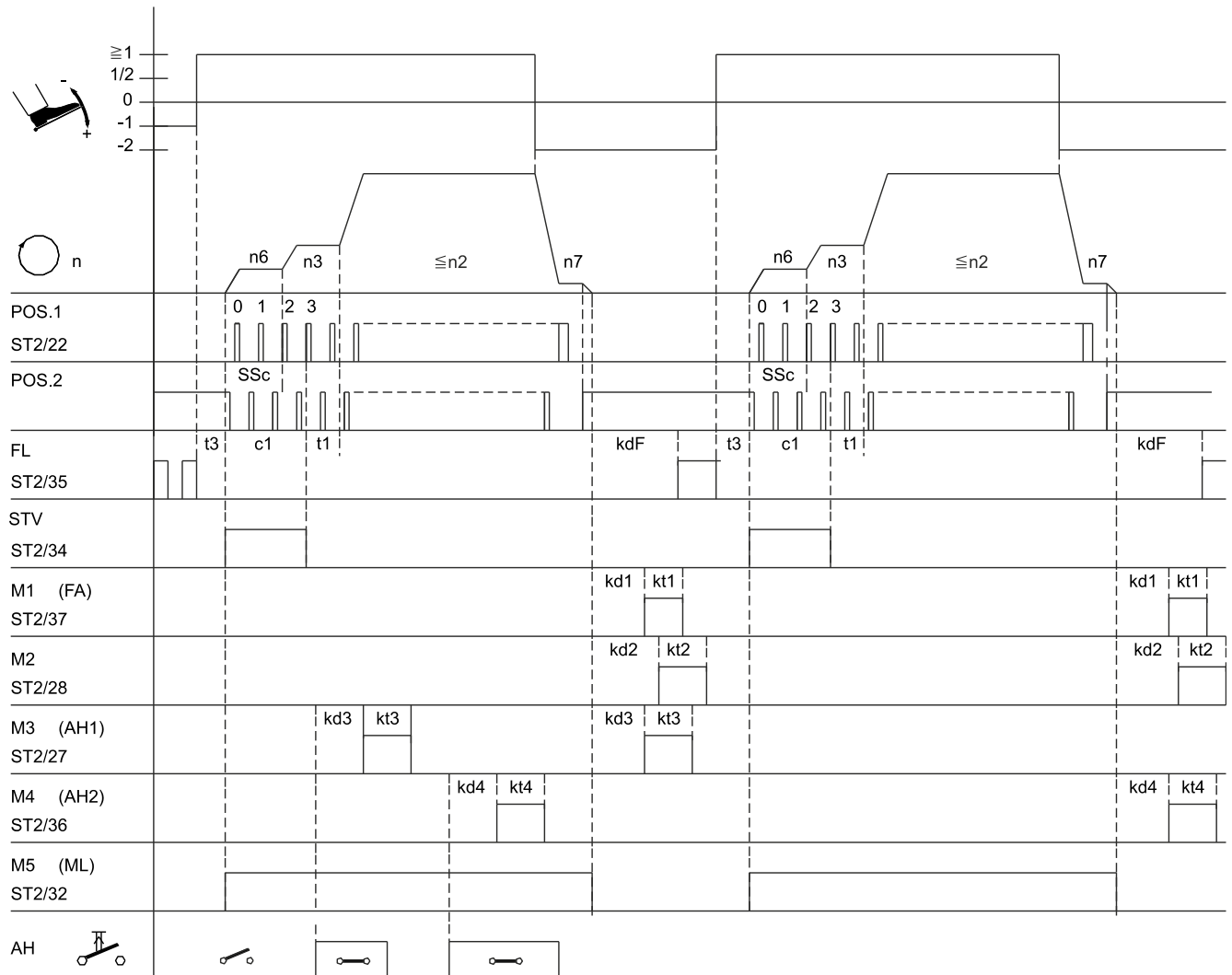


0330/ENTK-02

Mark	Function	Parameter	Control	V810	V820
FAm	Mode 5	290 = 5	Key >>	Key 4	Key 7
drE	Direction of motor rotation	161 = 0			
Frd	Reverse motor rotation	182 = 1			
	Basic position 2				
in7	End stitch condensing and thread trimmer *)	On			
	Machine run blockage effective with open contact	On			
in8	Automatic speed n12 without pedal	246 = 6			
in..	Assign the function “unlocking the chain” to an input	247 = 10 2..			
n1	Positioning speed	110			
n2	Maximum speed	111			
ird	Number of reversing increments	180			
drd	Switch-on delay of reverse motor rotation	181			
t3	Start delay from lifted sewing foot	202			
t4	Full power of sewing foot lifting	203			
t5	Pulsing of sewing foot lifting	204			
tGn	Speed gate damping period	222			
dGF	Speed gate 2	224 = 1			

*) When unlocking the chain, the functions “stitch condensing” and “thread trimmer” are suppressed!

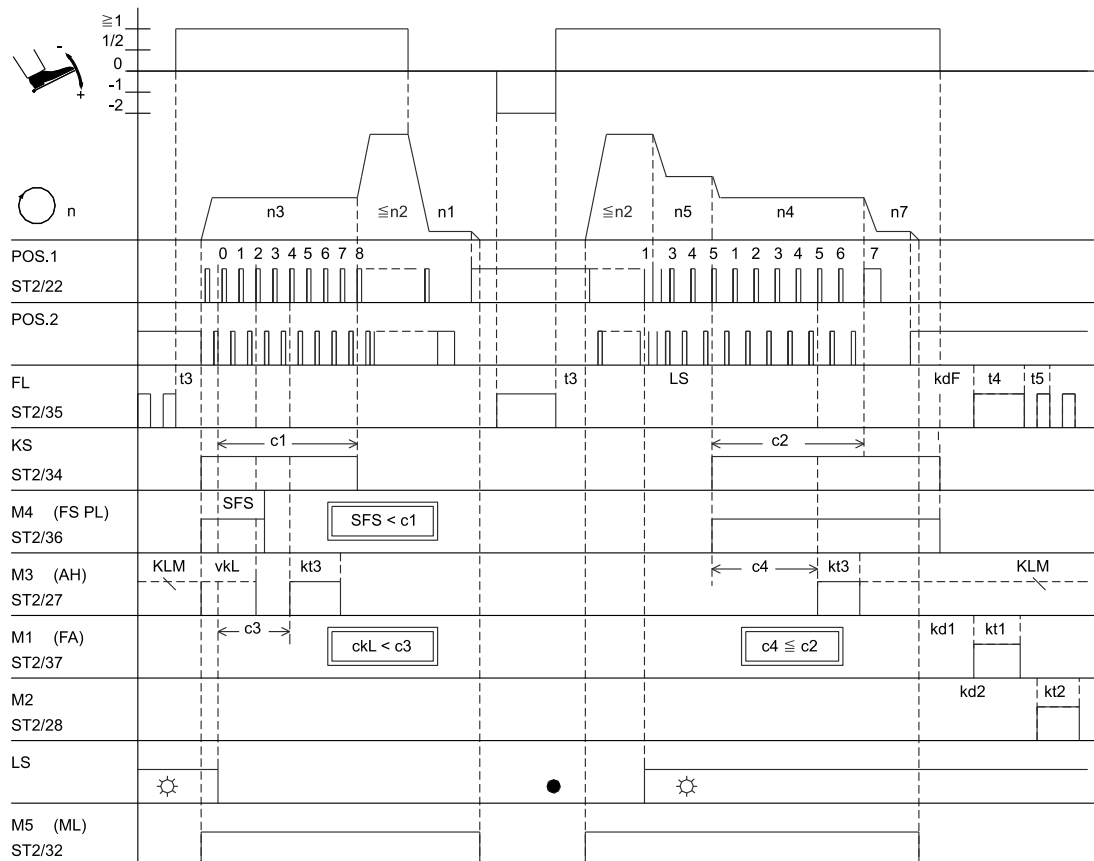
Mode 6 (chainstitch with fast scissors) parameter 232 = 1



0330/MODE-06

Mark	Function	Parameter	Control	V810	V820
FAM	Mode 6	290 = 6			
SSt	Softstart	134 = 1			
USS	Start stitch condensing	On	Key E	Key 1	Key 1
	Chainstitch with fast scissors M3/M4	232 = 1			
n2	Maximum speed	111			
n3	Start stitch condensing speed	112			
n6	Softstart speed	115			
n7	Trimming speed	116			
c1	Stitch counting of start stitch condensing	001			
SSc	Softstart stitches	100			
t1	Delay until speed release after stitch condensing	200			
t3	Start delay from lifted sewing foot	202			
kd1/kd2	Delay times of outputs M1/M2	280 / 282			
kt1/kt2	ON periods of outputs M1/M2	281 / 283			
kd3/kd4	Delay times of outputs M3/M4 (AH1/AH2)	284 / 286			
kt3/kt4	ON periods of outputs M3/M4 (AH1/AH2)	285 / 287			
kdF	Switch-on delay of sewing foot lifting	288			

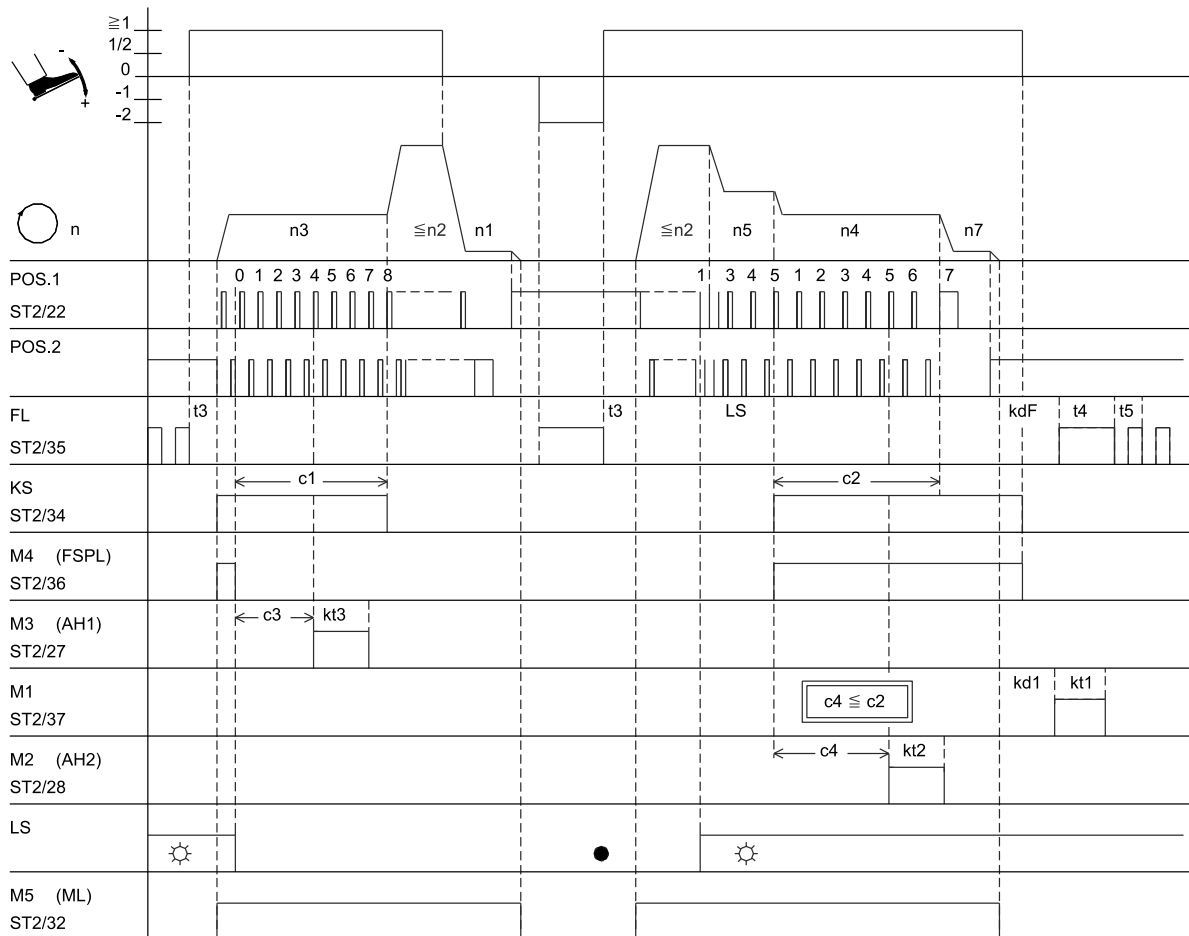
Mode 7 (overlock) parameter 232 = 0 (tape cutter) / parameter 018 = 0 (seam end with stop)



0330/MODE-07a

Mark	Function	Parameter	Control	V810	V820
FAm	Mode 7	290 = 7			
	Counts c1, c2, c3 and c4	On	Key E/+	Key 1/2	Key 1/4
	Sewing foot lifting at the seam end	On	Key -	Key 3	Key 6
LS	Light barrier	009 = 1			
UoS	Sequence "overlock mode with stop"	018 = 0			
-Pd	Function "pedal in pos. -2" blocked	019 = 2			
kLm	Clamp at the seam end	020 = 1			
SPO	Chain suction at the seam end until pedal in pos. 0	022 = 1			
tFS	Beginning of thread tension release at the start of the seam	025 = 0			
LSS	Start blockage with light barrier uncovered	132 = 0			
KSA	Stitch counting at the start of the seam at fixed speed n3	143 = 0			
KSE	Stitch counting at the seam end at fixed speed n4	144 = 0			
mhE	Seam end after count c2	191 = 1			
PLS	Speed n5 after light barrier sensing	192 = 0			
kSL	Chain suction On after light barrier compensating stitches	193 = 0			
USS	Tape cutter function	232 = 0			
n1	Positioning speed	110			
n2	Maximum speed	111			
n3	Speed for start counting	112			
n4	Speed for end counting	113			
n5	Speed after light barrier sensing	114			
n7	Trimming speed	116			
c2	End counting for chain suction	000			
c1	Start counting for chain suction	001			
c3	Start counting for tape cutter	002			
c4	End counting for tape cutter	003			
LS	Light barrier compensating stitches	004			
ckL	Run-out stitches clamp at the start of the seam	021			
SFS	Stitches from light barrier uncovered until end of thread tension release (M4)	157			
kd1/kd	Delay times of outputs M1/M2	280/282			
kt1/kt2	ON periods of outputs M1/M2	281/283			
kt3	ON period of tape cutter	285			
kdF	Switch-on delay of sewing foot lifting	288			

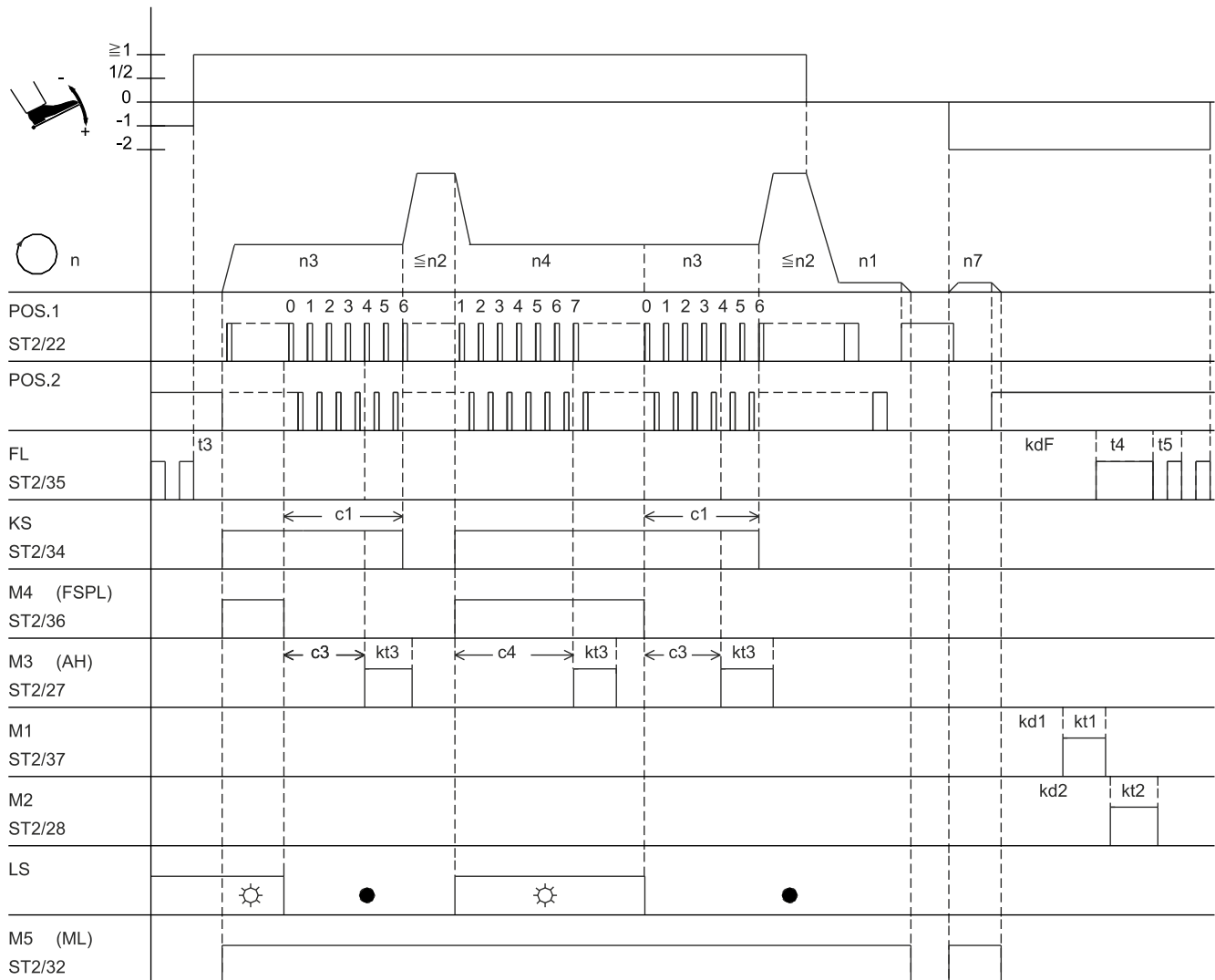
Mode 7 (overlock) parameter 232 = 1 (fast scissors) / parameter 018 = 0 (seam end with stop)



0330/MODE-07c

Mark	Function	Parameter	Control	V810	V820
FAm	Mode 7	290 = 7			
	Counts c1, c2, c3 and c4	On	Key E/+	Key 1/2	Key 1/4
	Sewing foot lifting at the seam end	On	Key -	Key 3	Key 6
LS	Light barrier	009 = 1			
UoS	Sequence "overlock mode with stop"	018 = 0			
-Pd	Function "pedal in pos. -2" blocked	019 = 2			
kLm	Clamp at the seam end Off	020 = 0			
SPO	Chain suction at the seam end until pedal in pos. 0	022 = 1			
LSS	Start blockage with light barrier uncovered	132 = 0			
kSA	Stitch counting at the start of the seam at fixed speed n3	143 = 0			
kSE	Stitch counting at the seam end at fixed speed n4	144 = 0			
mhE	Seam end after count c2	191 = 1			
PLS	Speed n5 after light barrier sensing	192 = 0			
kSL	Chain suction On after light barrier compensating stitches	193 = 0			
USS	Function "fast scissors"	232 = 1			
n1	Positioning speed	110			
n2	Maximum speed	111			
n3	Speed for start counting	112			
n4	Speed for end counting	113			
n5	Speed after light barrier sensing	114			
n7	Trimming speed	116			
c2	End counting for chain suction	000			
c1	Start counting for chain suction	001			
c3	Start counting for tape cutter	002			
c4	End counting for tape cutter	003			
LS	Light barrier compensating stitches	004			
kd1	Delay time of output M1	280			
kd2	Delay time of output M2	282 = 0			
kt1/kt	ON periods of outputs M1/M2	281/283			
kt3	ON period of tape cutter	285			
kdF	Switch-on delay of sewing foot lifting	288			

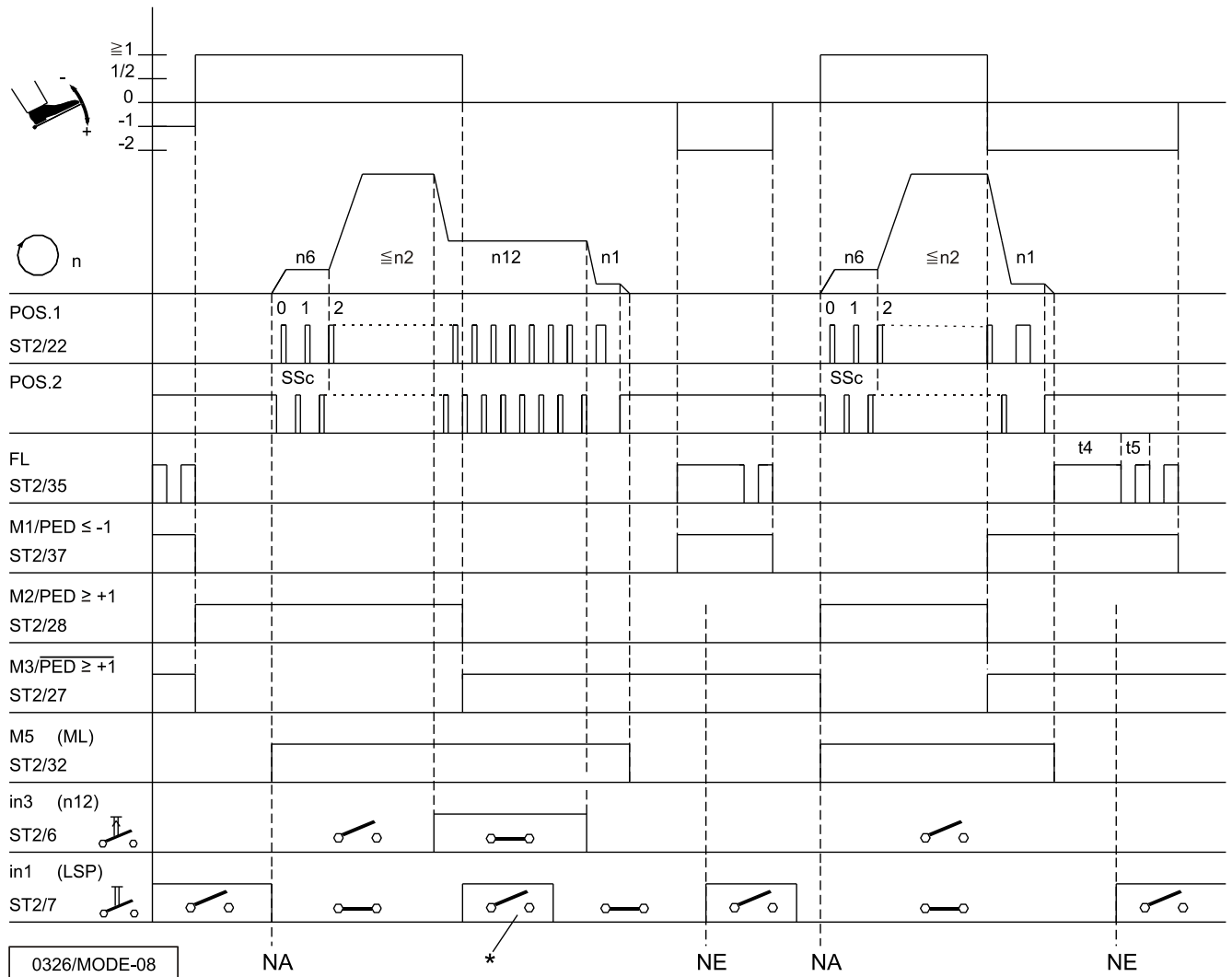
Mode 7 (overlock) parameter 232 = 0 (tape cutter) / parameter 018 = 1 (seam end without stop)



0330/MODE-07b

Mark	Function	Parameter	Control	V810	V820
FAm	Mode 7	290 = 7	Key E/+	Key 1/2	Key 1/4
	Counts c1, c2, c3 and c4	On			
LS	Light barrier compensating stitches	004 = 0			
LS	Light barrier	009 = 1			
UoS	Sequence "overlock mode at the seam end without stop"	018 = 1			
-Pd	Function "pedal in pos. -1/-2" activated in the seam	019 = 3			
SPO	Chain suction at the seam end until pedal in pos. 0	022 = 1			
kSA	Stitch counting at the start of the seam at fixed speed n3	143 = 1			
kSE	Stitch counting at the seam end at fixed speed n4	144 = 1			
USS	Tape cutter function	232 = 0			
n1	Positioning speed	110			
n2	Maximum speed	111			
n3	Speed for start counting	112			
n7	Trimming speed	116			
c1	Start counting for chain suction	001			
c3	Start counting for tape cutter	002			
c4	End counting for tape cutter	003			
t3	Start delay from lifted sewing foot	202			
kd1/kd2	Delay times of outputs M1/M2	280/282			
kt1/kt2	ON periods of outputs M1/M2	281/283			
kt3	ON period of tape cutter	285			
kdF	Switch-on delay of sewing foot lifting	288			

Mode 8 (backlatch Pegasus)



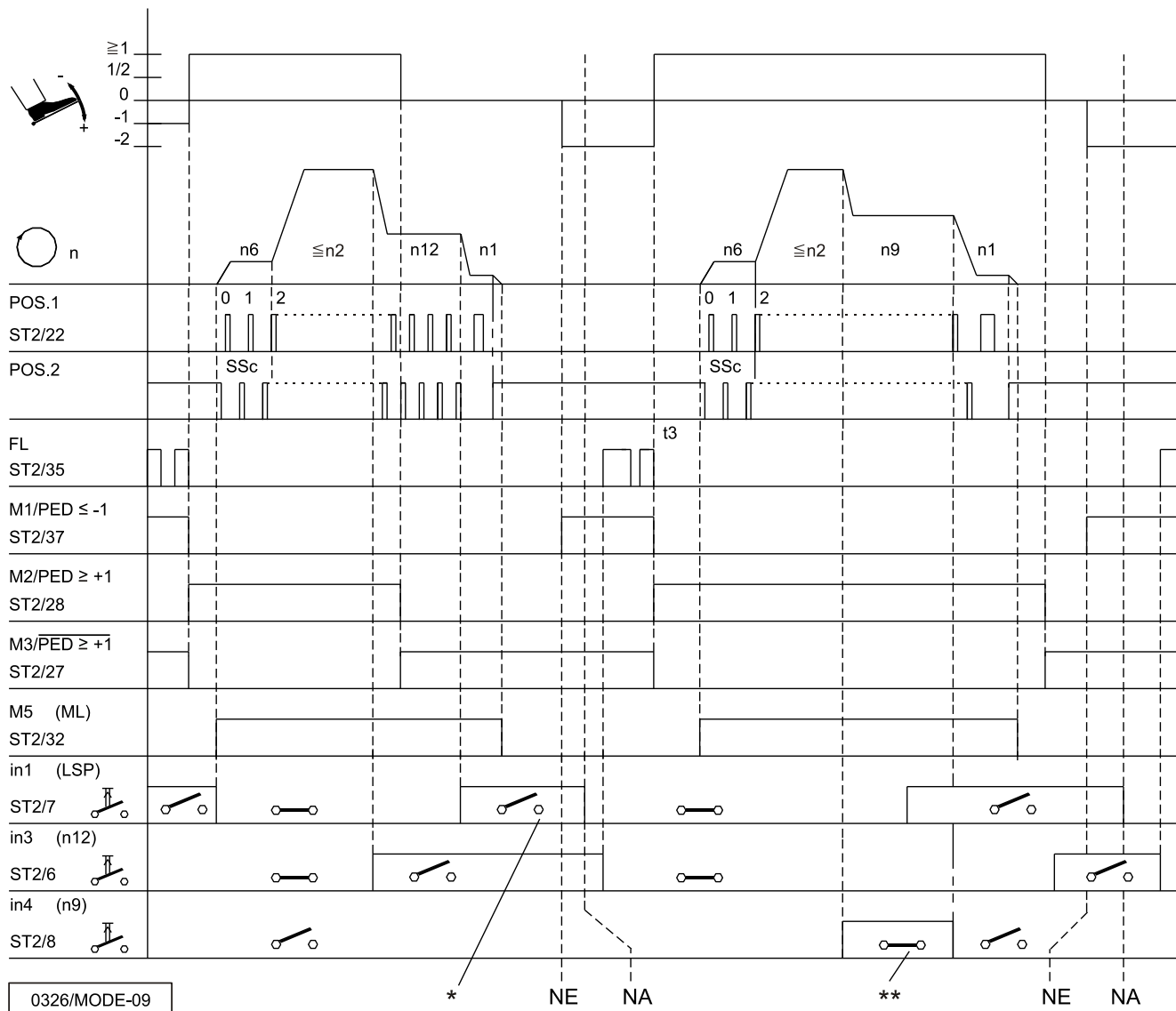
Mark	Function	Parameter	Control	V810	V820
FAm	Mode 8	290 = 8	Key >>	Key 4	Key 7
SSSt	Basic position 2	134 = 1			
in1	Softstart	240 = 6			
in3	Machine run blockage activated with open switch	242 = 10			
n1	Positioning speed	110			
n2	Maximum speed	111			
n6	Softstart speed	115			
n12	Automatic speed	118			
SSc	Softstart stitches	100			
t4	Full power of sewing foot lifting	203			
t5	Pulsing of sewing foot lifting	204			

*) When automatic speed is On, machine run blockage (safety switch) does not work!

NA Start of seam

NE Seam end

Mode 9 (backlatch Yamato)



Mark	Function	Parameter	Control	V810	V820
FAm	Mode 9	290 = 9	Key >>	Key 4	Key 7
SSSt	Basic position 2	On			
in1	Softstart	134 = 1			
in3	Machine run blockage activated with open switch	240 = 6			
PGm	Automatic speed with open switch (the function of input 3 is inverted in mode 9) Setting an external sensor to position 2 (A sensor must be connected!)	242 = 10 270			
n1	Positioning speed	110			
n2	Maximum speed	111			
n6	Softstart speed	115			
n12	Automatic speed	118			
SSc	Softstart stitches	100			
t3	Start delay from lifted sewing foot	202			
t4	Full power of sewing foot lifting	203			
t5	Pulsing of sewing foot lifting	204			

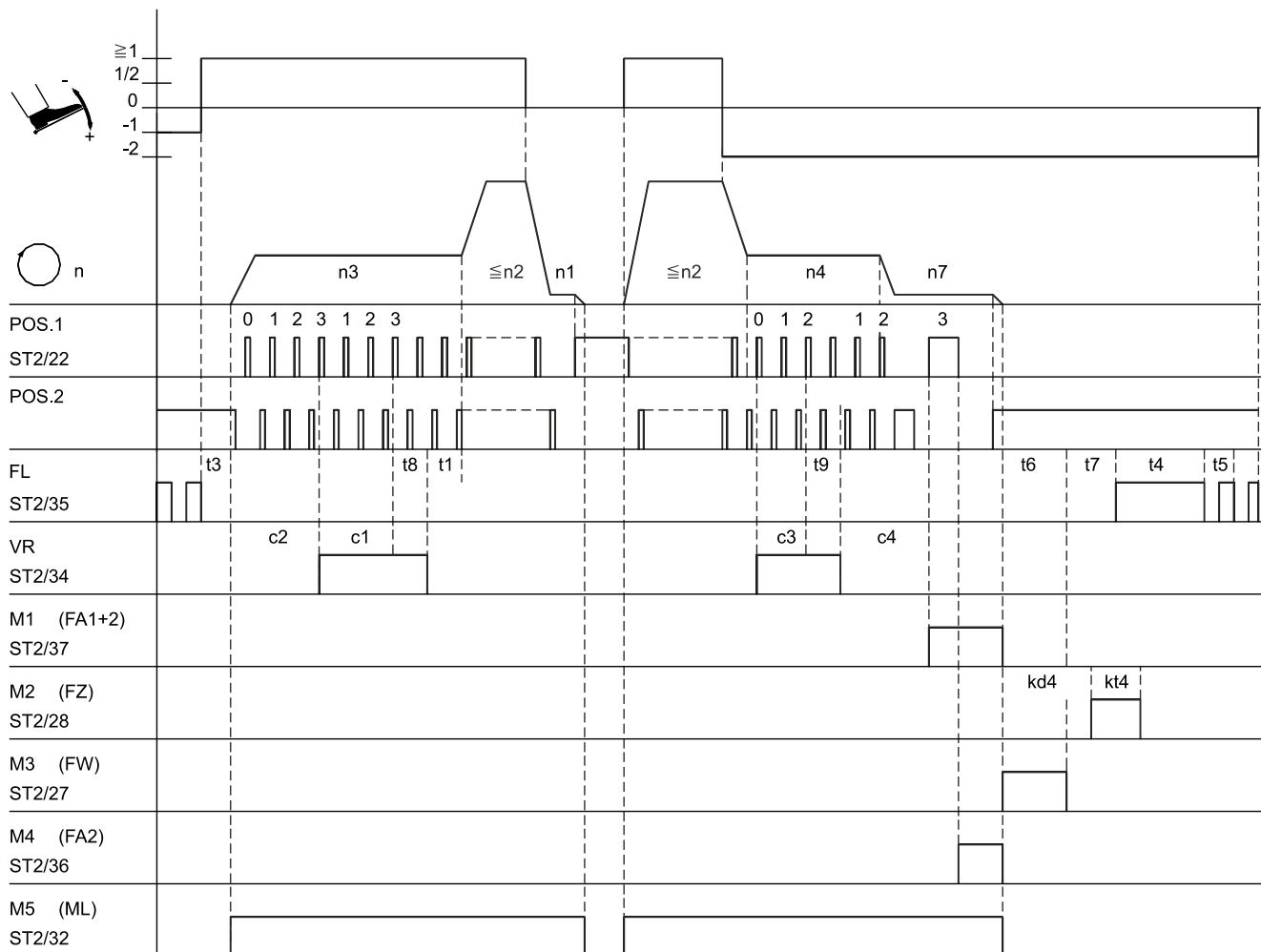
*) With this setting, machine run blockage (safety switch) takes priority over automatic speed!

**) Automatic speed n9 takes priority over machine run blockage (safety switch)!

NA Start of seam

NE Seam end

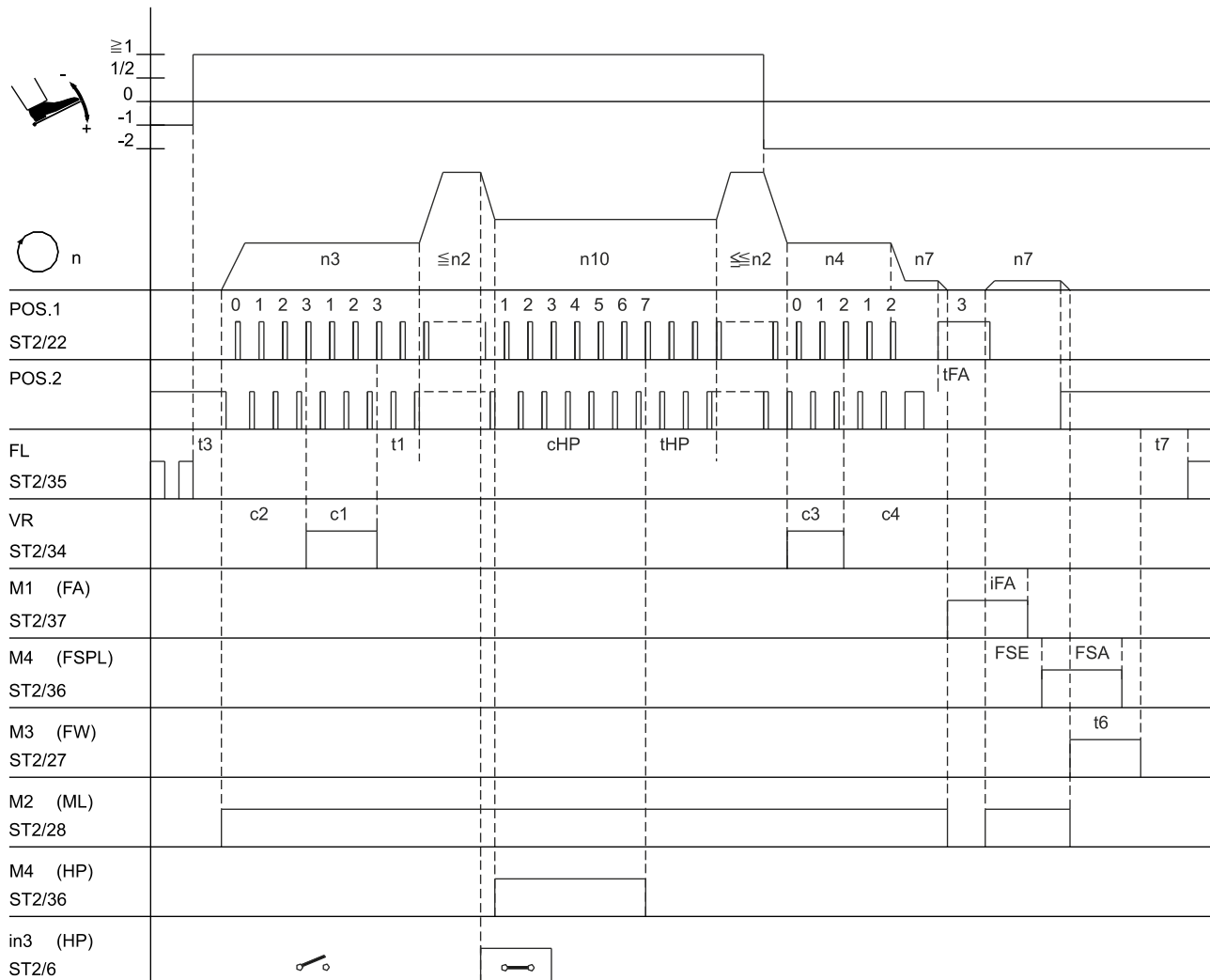
Mode 14 (lockstitch)



0330/MODE-14

Mark	Function	Parameter	Control	V810	V820
FAm	Mode 14	290=14			
	Double start backtack with stitch correction	On	Key E	Key 1	Key 1
	Double end backtack with stitch correction	On	Key +	Key 2	Key 4
PGm	Setting an external sensor to position 1 (An external sensor must be connected!)	270=3			
n1	Positioning speed	110			
n2	Maximum speed	111			
n3	Start backtack speed	112			
n4	End backtack speed	113			
n7	Trimming speed	116			
c2	Start backtack stitches forward	000			
c1	Start backtack stitches backward	001			
c3	End backtack stitches backward	002			
c4	End backtack stitches forward	003			
t8	Start backtack stitch correction	150			
t9	End backtack stitch correction	151			
t1	Delay until speed release after start backtack	200			
t3	Start delay from lifted sewing foot	202			
t4	Full power of sewing foot lifting	203			
t5	Pulsing of sewing foot lifting	204			
t6	Thread wiper ON period	205			
t7	Switch-on delay of the sewing foot after thread wiper	206			
kd4	Delay time output M2	286			
kt4	ON period output M2	287			

Mode 25 (lockstitch Juki LU2210/LU2260)



0330/MODE-25

Mark	Function	Parameter	Control	V810	V820
FAm	Mode 25	290 = 25			
	Double start backtack		Key E	Key 1	Key 1
	Double end backtack		Key +	Key 2	Key 4
Pot	External potentiometer is active	126 = 3			
hP	High lift for walking foot	137 = 1			
in3	High lift for walking foot with speed limitation n10	242 = 14			
PGm	Setting an external sensor to position 1 (A sensor must be connected!)	270 = 3			
n2	Maximum speed	111			
n3	Start backtack speed	112			
n4	End backtack speed	113			
n7	Trimming speed	116			
n10	High lift walking speed	117			
c2	Start backtack stitches forward	000			
c1	Start backtack stitches backward	001			
c3	End backtack stitches backward	002			
c4	End backtack stitches forward	003			
thP	High lift walking speed run-out time	152			
chP	Stitch counting high lift for walking foot	185			
t1	Delay until speed release after start backtack	200			
t3	Start delay from lifted sewing foot	202			
t6	Thread wiper ON period	205			
t7	Switch-on delay of the sewing foot after thread wiper	206			
iFA	Activation angle of the thread trimmer	250			
FSA	Switch-off delay of thread tension release	251			
FSE	Switch-on delay angle of thread tension release	252			
tFA	Stop time for thread trimmer	253			

11 List of Parameters

11.1 Preset Values Depending on Mode

The preset values which are different in the various modes are listed in the table below. When switching the mode using parameter 290, these values change automatically.

Mode → Parameter	0	2	3	5	6	7	8	9	14	25	37
002	-	-	-	-	-	-	-	-	-	-	-
003	-	-	-	-	-	-	-	-	-	-	-
004	-	-	-	-	-	0	-	-	-	-	-
005	-	-	-	-	-	-	-	-	-	-	-
007	-	-	-	-	-	-	-	-	-	-	-
009	-	-	-	-	-	1	-	-	-	-	-
013	-	-	-	-	-	-	0	0	-	-	-
014	-	0	-	-	-	0	0	0	-	-	-
019	-	-	-	-	-	2	-	-	-	-	-
023	-	-	-	-	-	-	-	-	-	-	-
100	-	-	-	-	-	-	-	-	-	-	-
110	-	-	-	-	-	-	250	250	-	-	390
111	-	-	-	-	-	-	-	-	-	3500	1200
114	-	-	-	-	-	-	-	-	-	-	-
115	-	-	-	-	-	-	-	-	-	-	-
116	-	-	-	-	-	-	-	-	-	-	390
118	-	-	-	-	-	-	-	-	-	-	-
119	-	-	-	-	-	-	-	-	-	-	-
122	-	-	-	-	-	-	-	6000	-	-	-
130	-	-	-	-	-	1	-	-	-	-	-
131	-	-	-	-	-	-	-	-	-	-	-
132	-	-	-	-	-	0	-	-	-	-	-
133	-	-	-	-	-	-	-	-	-	-	-
134	-	-	-	-	-	-	-	-	-	-	-
161	-	-	-	0	0	0	0	0	-	-	-
180	-	-	-	-	-	-	-	-	-	32	0
181	-	-	-	-	-	-	-	-	-	-	-
182	-	-	-	-	-	1	-	-	-	1	-
190	-	-	-	-	-	2	-	-	-	-	-
192	-	-	-	-	-	1	-	-	-	-	-

- = For the positions marked with “-“ the preset values listed in the List of Parameters are used !

Mode →	0	2	3	5	6	7	8	9	14	25	37
Parameter											
201	-	-	-	-	-	-	-	-	-	-	-
202	-	-	-	-	-	-	0	0	-	-	-
203	-	-	-	-	-	-	-	-	-	-	-
204	-	-	-	-	-	-	-	-	-	50	-
205	-	-	-	-	-	-	-	-	-	-	-
206	-	-	-	-	-	-	-	-	-	-	-
207	-	-	-	-	-	-	-	-	-	5	16
208	-	-	-	-	-	-	-	-	-	-	16
209	-	-	-	-	-	-	-	-	-	-	-
211	-	-	-	-	-	-	-	-	-	-	-
220	-	-	-	-	-	-	-	-	-	10	16
221	-	-	-	-	-	-	-	-	-	-	-
222	-	-	-	-	-	-	-	-	-	-	-
223	-	-	-	-	-	-	-	-	-	-	-
224	-	-	-	-	-	-	-	-	-	-	-
239	-	-	-	-	-	-	-	-	-	-	-
240	-	-	13	-	-	-	6	6	-	16	42
241	-	-	7	-	-	-	-	-	16	-	-
242	-	-	1	-	-	-	10	38	-	14	-
243	-	-	22	-	-	-	1	34	-	-	-
244	-	-	16	-	-	-	-	-	-	-	-
245	-	-	19	-	-	-	12	12	-	-	-
246	-	-	33	-	-	-	-	-	-	-	-
250	-	-	180	-	-	-	-	-	-	30	-
251	-	-	-	-	-	-	-	-	-	-	-
252	-	-	-	-	-	-	-	-	-	-	-
253	-	-	70	-	-	-	-	-	-	20	-
254	-	-	-	-	-	-	-	-	-	-	-
269	-	-	-	-	-	-	-	25	-	-30	-
270	-	-	-	-	-	-	-	1	3	-	1
271	-	-	-	-	-	-	-	-	200	-	-
272	-	-	-	-	-	-	-	-	-	-	304
280	-	-	-	-	-	100	-	-	-	-	-
281	-	-	-	-	-	-	-	-	-	-	-
282	-	0	-	-	-	200	-	-	-	-	80
283	-	-	-	-	-	-	-	-	-	-	120
284	-	-	-	-	0	0	-	-	-	-	750
285	-	-	-	-	-	-	-	-	-	-	2000
286	-	-	-	-	0	0	-	-	-	-	-
287	-	-	-	-	-	0	-	-	-	-	-
288	-	-	-	-	-	-	-	-	-	-	-
328	1	-	-	-	-	-	-	-	-	5	-
370	4000	-	-	-	-	-	-	-	-	3500	1200
467	1	-	-	-	-	-	-	-	-	-	2

- = For the positions marked with “-“ the preset values listed in the List of Parameters are used !

Further Presets Depending on Mode

(Positions and Functions Switchable Using the Control Keys)

Mode →	0	2	3	5	6	7	8	9	14	25	37
171/1E	-	-	-	-	-	-	-	-	-	-	-
171/2E	-	-	-	-	-	-	-	-	-	-	-
171/1A	-	-	-	-	-	-	-	-	-	-	-
171/2A	-	-	-	-	-	-	-	-	-	-	-
Basic pos.	1	1	1	2	2	2	2	2	1	1	1
Single start backtack	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Double start backtack	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
Single end backtack	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Double end backtack	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON

11.2 Operator Level

NOTE

The preset values indicated apply to mode 0 (parameter 290 = 0).

For preset values applicable to other modes see table in chapter 6.1 »Preset Values Depending on Mode«.

Parameter	Designation	Unit	max	min	Preset	Ind.
000 c2	- Number of stitches of start backtack forward - Number of stitches of start stitch condensing without stitch regulator - Number of stitches of end counting "chain suction"	stitches	254	0	2	
001 c1	- Number of stitches of start backtack backward - Number of stitches of start stitch condensing with stitch regulator - Number of stitches of start counting "chain suction"	stitches	254	0	4	
002 c3	- Number of stitches of end backtack backward - Number of stitches of end stitch condensing with stitch regulator - Number of stitches of tape cutter at the start of the seam	stitches	254	0	2	
003 c4	- Number of stitches of end backtack forward - Number of stitches of end stitch condensing without stitch regulator - Number of stitches of tape cutter at the seam end	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	
006 LSn	Number of light barrier seams		15	1	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 2 = Ornamental backtack On/Off 3 = Start of sewing blocked with light barrier uncovered On/Off 4 = Unlocking the chain On/Off 8 = Backtack repetition On/Off		8	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 when tape cutting at the seam end On/Off (function effective only in the overlock mode)		1	0	0	
018 UoS	0 = Sequence "overlock mode with stop" 1 = Sequence "overlock mode without automatic stop. When the command "run" is given, the drive runs at the pre-selected speed. With pedal in pos. 0 or light barrier covered , the program switches to the next start of a seam without issuing signals M1/M2. 2 = As with setting "1". But with pedal in pos. 0 signals M1/M2 will be issued, and the program switches to the next start of a seam. 3 = As with setting "1". But with pedal in pos. -2 signals M1/M2 will be issued, and the program switches to the next start of a seam. Intermediate stop and sewing foot lift with pedal in pos. -1 are possible. 4 = If the light barrier is covered during the end count for chain suction, the program switches immediately to the next start of a seam. If the end count has been completed and the light barrier remains uncovered, the drive stops. 5 = Tape cutting at start of the seam with stop.		5	0	0	

Operator Level

Parameter	Designation	Unit	max	min	Preset	Ind.
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 in pos. -1 and -2 blocked in the seam. (Function only if parameter 009 = 1) 5 = Start seam end by placing the pedal at -1	5	0	3	
020	kLm	Clamp at the seam end On/Off	1	0	0	
021	ckL	Run-out stitches clamp at the start of the seam	stitches	254	0	2
022	SPO	0 = Chain suction until the end of count c2 1 = Chain suction at the seam end until pedal in pos. 0 (neutral) 2 = Chain suction until the drive is at standstill and the switch-off delay (parameter 237) has elapsed	2	0	0	
023	AFL	Automatic sewing foot lifting with pedal forward at the seam end, if light barrier or stitch counting is On 0 = Automatic sewing foot Off 1 = Automatic sewing foot 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	
025	tFS	Start counting (pa. 157) for thread tension release at the start of the seam 0 = Start counting at the start of the seam 1 = Start counting when the light barrier is covered	1	0	1	
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 = 48-level (progressive) 5 = 48-level (progressive)	5	0	4	
038	khP	Coupling of high lift for walking foot and 2. thread tension reduction 0 = Off 1 = Coupling On	1	0	0	
041	EZP	Special pedal function Single stitch / Full stitch 0 = Function off 1 = Single stitch 2 = Full stitch	2	0	0	
042	GrP	Pedal travel forwards for detection of the special pedal function	%	100	0	40
051	dPd	Time for detection of the special pedal function	ms	2550	0	100
086	vct	Counted forward section in manual ornamental backtack On/Off	1	0	1	
087	chr	0 = Manual backtack at speed n13 (parameter 109) 1..255 = Manual ornamental backtack at speed n9 (parameter 122)	stitches	255	0	0
090	wAr	Repetition of the initial/ multiple backtack	255	0	3	
091	wEr	Repetition of the final/ multiple backtack	255	0	3	
092	Fwr	Backtack repetition On/Off	1	0	0	

11.3 Technician Level (Code No. 1907)

Parameter	Designation	Unit	max	min	Preset	Ind.
100 SSc	Number of softstart stitches	stitches	254	0	2	
101 EvA	Switch-on delay for the backtacking solenoid in the initial backtack	ms	255	0	43	
102 AvA	Power-off delay for the backtacking solenoid in the initial backtack	ms	255	0	4	
103 EvE	Switch-on delay for the backtacking solenoid in the final backtack	ms	255	0	43	
104 AvE	Power-off delay for the backtacking solenoid in the final backtack	ms	255	0	5	
108 PEr	Stop position of the ornamental backtack 1 = Position 1 leading 2 = Position 2 leading 3 = Position 1 trailing		3	1	1	
109 n13	Speed of manual backtack	RPM	9900	200	1500	
110 n1	Positioning speed	RPM	390	70	200	
111 n2	Upper limit setting range of the maximum speed	RPM	9900	n2	5000	
112 n3	Start backtacking speed	RPM	9900	200	1200	
113 n4	End backtacking 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 foot speed limitation	RPM	9900	400	1000	
118 n12	Automatic speed for stitch counting	RPM	9900	400	3500	
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	
124 toP	Speed limitation using ext. potentiometer (minimum value)	RPM	9900	Pa.125	4000	
125 bot	Speed limitation using ext. Potentiometer (minimum value)	RPM	Pa.125	0	200	
126 Pot	Function "speed limitation using external potentiometer" 0 = Function "external potentiometer" Off 7 = Speed depending on high lift by means of potentiometer (adjustment range parameter 911 + 912)		7	0	0	
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) 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!		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 = Machine start blocked with light barrier uncovered if parameter 131 = 1. Start blocked if light barrier darkened,		1	0	1	
133 LSE	Thread trimming operation, when completing the seam after light barrier sensing On/Off		1	0	1	
134 SSSt	Softstart On/Off		1	0	0	
135 SrS	Ornamental backtack On/Off		1	0	0	
136 FAr	0 = Trimming stitch backward Off 1 = Trimming stitch backward On with single end backtack 2 = Trimming stitch or positioning stitch always backward at the seam end		2	0	0	

Technician Level (Code No. 1907)

Parameter	Designation	Unit	max	min	Preset	Ind.
137	hP	High lift for walking foot function activated/deactivated	1	0	1	
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
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 4 = at fixed speed (parameter 110) can be interrupted by full heelback.	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 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 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	
145	Shv	Speed status for the manual backtack 0 = Speed controllable by the pedal up to the set maximum speed (parameter 111) 1 = Fixed speed (parameter 109) 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 109)	2	0	0	
150	t8	Stitch correction of the double start backtack (prolongation of the stitch regulator ON period /not effective with ornamental backtack)	ms	500	0	0
151	t9	Stitch correction of the double end backtack (prolongation of the stitch regulator ON period / not effective with ornamental backtack)	ms	500	0	0
152	thP	High Lift Walking Speed Run-Out Time	ms	500	80	150
153	brt	Braking power at machine standstill		50	0	5

Technician Level (Code No. 1907)

Parameter	Designation	Unit	max	min	Preset	Ind.																		
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)		4	0	1																			
156 t05	Switch-off delay for the signal “run” or signal with pedal in pos. 0 (neutral)	ms	2550	0	0																			
157 SFS	Stitches until thread tension release Off after light barrier covered at the start of the seam (Only in mode 7)	stitches	254	0	0																			
161 drE	Direction of motor rotation 0 = Clockwise rotation 1 = Counterclockwise rotation		1	0	0																			
162 n2A	Start backtack speed whenever the backtack can be interrupted by pedal in pos. 0 (neutral) (parameter 164)	RPM	9900	200	600																			
163 n2E	End backtack speed whenever the backtack can be interrupted by pedal in pos. 0 (neutral) (parameter 164)	RPM	9900	200	600																			
164 StP	Start and end backtack can be interrupted by pedal in pos. 0 (neutral) On/Off		1	0	0																			
170 Sr1	Setting the reference position: - Press the E key - Press the >> key. - Turn handwheel until symbol on display goes off. Then set the handwheel to the reference position. - Press the P key twice																							
171 Sr2	Setting the needle positions: 1E = Start position 1 2E = Start position 2 1A = End position 1 2A = End position 2	degrees	359	0	26 319 200 355																			
172 Sr3	Display on the control: Pos. 1 bis 1A (LED-segment 5 lights up) Pos. 2 bis 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 and the keypad on machine head					OFF																		
	Inputs to the control 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, also the number of the connector socket and pin).																							
	Outputs of control - Select the desired output using the +/- keys. - The >> key is used to turn on the associated output, if it is connected and working.																							
	<table><tr><th>Output</th><th>Socket</th></tr><tr><td>Backtacking</td><td>ST2/34</td></tr><tr><td>Sewing foot lifting</td><td>ST2/35</td></tr><tr><td>M1</td><td>ST2/37</td></tr><tr><td>M2</td><td>ST2/28</td></tr><tr><td>M3</td><td>ST2/27</td></tr><tr><td>M4</td><td>ST2/36</td></tr><tr><td>M5</td><td>ST2/32</td></tr><tr><td>POS1</td><td>ST2/22</td></tr></table>	Output	Socket	Backtacking	ST2/34	Sewing foot lifting	ST2/35	M1	ST2/37	M2	ST2/28	M3	ST2/27	M4	ST2/36	M5	ST2/32	POS1	ST2/22					
Output	Socket																							
Backtacking	ST2/34																							
Sewing foot lifting	ST2/35																							
M1	ST2/37																							
M2	ST2/28																							
M3	ST2/27																							
M4	ST2/36																							
M5	ST2/32																							
POS1	ST2/22																							

Technician Level (Code No. 1907)

Parameter	Designation	Unit	max	min	Preset	Ind.
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. 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. Ab620A 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. Ab620A					
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. 5030 (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					

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Parameter	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. 5030 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 Ab620A Display example for the V820 control panel: Press the E key → Display F-179 Sr5 [°] Press the >> key → Display e.g. PrG 5030 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 Ab620A						
180	rd	Reversing angle	degrees	359	0	175	
181	drd	Switch-on delay of reverse motor rotation	ms	990	0	10	
182	Frd	Reverse motor rotation On/Off		1	0	0	
183	FFm	Disabling of flip-flop functions at the seam end 0 = Flip-flop 1 and flip-flop 2 not disabled at the seam end 1 = Flip-flop 1 disabled at the seam end 2 = Flip-flop 2 disabled at the seam end 3 = Flip-flop 1 and flip-flop 2 disabled at the seam end		3	0	0	
184	c6	Number of run-out stitches when unlocking the chain	stitches	254	0	20	
185	chP	Minimum number of stitches for high lift for walking foot	stitches	254	0	0	
190	mEk	Function “unlock the chain” in modes 5, 6, and 7 (parameter 290) 0 = Unlocking the chain Off 1 = Unlocking the chain manually (with pedal in pos. -2 without cutting at the seam end) 2 = Unlocking the chain automatically - by means of light barrier or - pedal in pos. -2 (parameter 019) without cutting at the seam end 3 = Unlocking the chain automatically - by means of light barrier or - pedal in pos. -2 (parameter 019) with cutting and run-out stitches (parameter 184) at the seam end, then unlocking the chain (only if parameter 290 = 7) 4 = Unlocking the chain only with pedal in pos. –2. No unlocking the chain with seam end by means of light barrier, cutting and run-out stitches		4	0	1	
191	mhE	Seam end in the overlock mode by end count c2 or c4 0 = Seam end after count c4 – tape cutter 1 = Seam end after count c2 – chain suction		1	0	0	
192	PLS	Speed of the light barrier compensating stitches 0 = Speed n5 after light barrier sensing 1 = Speed pedal controlled		1	0	0	
193	kSL	Enable chain suction signal and thread tension release 0 = Thread tension release and chain suction after the light barrier compensating stitches 1 = Chain suction from light barrier uncovered onwards and thread tension release after the light barrier compensating stitches		1	0	0	
198	SAk	Functions with chainstitch machines e. g. bag sewing machine (parameter 290 = 37) 0 = Function “thread trimming” or “hot thread chain cutting” and sewing foot lift using the pedal. 1 = Function “thread trimming” or “hot thread chain cutting” using the knee switch, and sewing foot lift using the pedal. 2 = Function “thread trimming” or “hot thread chain cutting” using the pedal and sewing foot lift using the knee switch.		2	0	0	

Technician Level (Code No. 1907)

Parameter	Designation	Unit	max	min	Preset	Ind.
199 FSn	Thread tension release at the seam end On/Off 0 = Thread tension release Off at the seam end and pedal in position 0. 1 = Thread tension release On at the seam end and pedal in position 0. 2 = Thread tension release On at the seam end and after power On and pedal in position 0.		2	0	0	

11.4 Supplier Level (Code Nr. 3112)

Parameter	Designation	Unit	max	min	Preset	Ind.
200 t1	Delay until speed release after start backtack	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	
210 tSr	Stop time for switching the stitch regulator in the ornamental backtack	ms	500	0	140	
211 tFL	Sewing foot lifting switch-on delay with thread wiper off	ms	500	0	60	
212 t10	Time of full power of backtacking or thread trimmer forward	ms	600	0	500	
213 t11	Holding power for backtacking or thread trimmer backward 1...100% 1% → low holding power 100% → high holding power	%	Pa.255	1	40	
215 Zrv	0 = Last forward stitchcount of the start backtack Off. 1 = Last forward stitchcount of the start backtack On.		1	0	0	
217 Sr	Number of operating hours before service in steps of 10 (operating hours recording enabled if set at "0").	hours	99900 ***)	00000	00000	
218 SkL	Choice special machines 0 = No special machines 1 = Kl. 204 2 = Big Bag		2	0	0	
219 br3	Braking power at stop of the drive		55	1	4	
220 ALF	Accelerating power of the drive (indicated values only with transmission ratio 1:1)		55	1	35	
221 dGn	Speed gate 1	RPM	990	50	100	
222 tGn	Speed gate damping period (effective only if parameter 224 = 0)	ms	990	0	20	
225 br4	Setting the braking curve for the light barrier and machine run blockage (values only with transmission ratio 1:1)		55	1	20	
229 dP2	Delay after pedal heelback	ms	2000	0	0	
231 Sn1	Execution of the first stitch after Power On at positioning speed		1	0	0	
232 USS	Overlock with fast scissors On/Off		1	0	0	
233 c	Switch-on delay of thread tension release (Only in mode 7)	stitches	254	0	0	
237 tkS	Switch-off delay for chain suction at the seam end, if parameter 022 = 2.	ms	2550	0	0	
238 EnP	Software debouncing for all inputs: 0 = No debouncing 1 = Debouncing		1	0	1	
239 FEL	Selection of the input function on socket B18/5 0 = Light barrier function, if 009 = 1 All other functions as with parameter 240.		41	0	0	

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

Supplier Level (Code no. 3112)

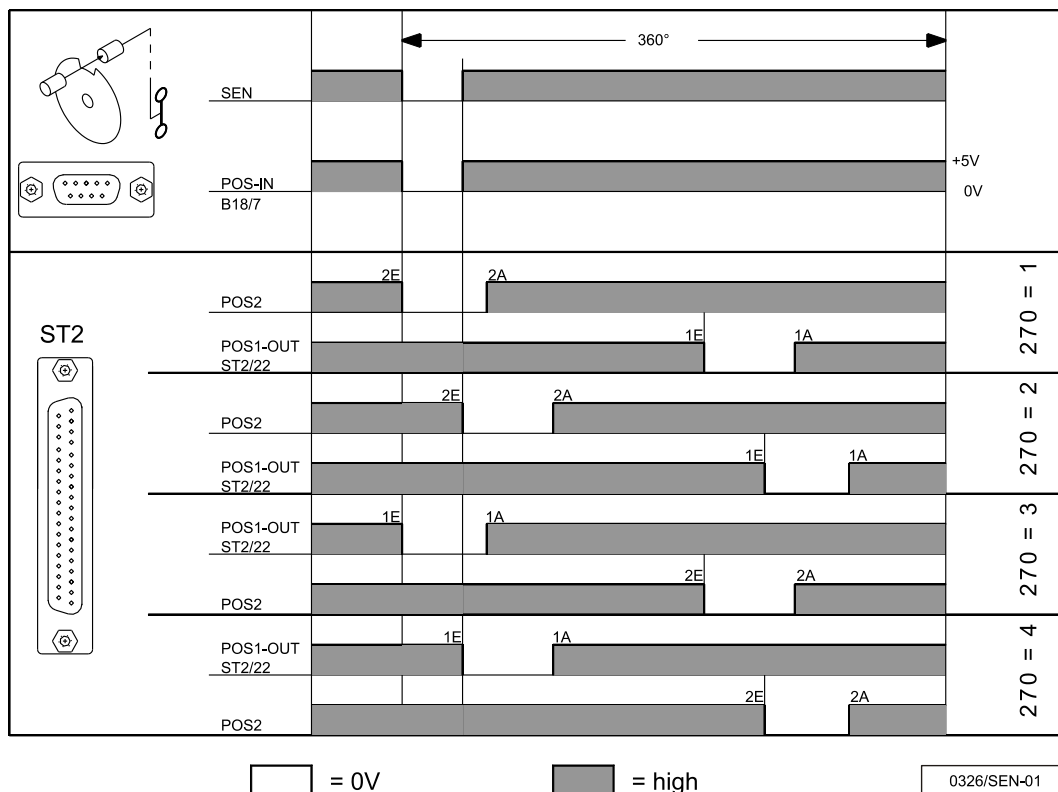
Parameter	Designation	Unit	max	min	Preset	Ind.
240	in1 Selection of input functions on socket ST2/7 for input 1 0 = No function 1 = Needle up/down 2 = Needle up 3 = Single stitch (basting stitch) 4 = Full stitch 5 = Needle to position 2 6 = Machine run blockage effective with open contact 7 = Machine 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 (see parameter 266) 12 = Sewing foot lifting with pedal in position 0 (neutral) 13 = High lift for walking foot with speed limitation n10 (operational mode not stored) 14 = High lift for walking foot (flip-flop 1) with speed limitation n10. Set parameter 137 to 1. 15 = Tape cutter / fast scissors, function only in chainstitch and overlock mode. Set parameter 137 to 1. 16 = Intermediate backtack / intermediate stitch condensing 17 = Stitch regulator suppression / recall 18 = Unlocking the chain, can be activated by keystroke, but will be executed only at the seam end 23 = No function 24 = Needle to position 2 (see instruction manual) 27 = Unlocking the chain, function is performed upon pressing the key 28 = External light barrier (according to setting of parameter 131) 30 = High lift for walking foot, if sewing foot is On 31 = Function "speed limitation bit0" (speed n11) 32 = Function "speed limitation bit1" (speed n10) (bit0 + bit1 = speed n9). 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.]) 41 = Tape cutting only at machine standstill 42 = Enable hot thread chain cutting or sewing foot lifting. Function effective only in mode 37.		42	0	0	
241	in2 Selection of input function on socket ST2/11 for input 2 0 = No function All other functions of the keys as with parameter 240		42	0	0	
242	in3 Selection of input function on socket ST2/6 for input 3 0 = No function All other functions of the keys as with parameter 240		42	0	0	
243	in4 Selection of input function on socket ST2/8 for input 4 1 = No function All other functions of the keys as with parameter 240		42	0	0	
244	in5 Selection of input function on socket ST2/5 for input 5 5 = No function All other functions of the keys as with parameter 240		42	0	0	
245	in6 Selection of input function on socket ST2/12 for input 6 6 = No function All other functions of the keys as with parameter 240		42	0	0	
246	in7 Selection of input function on socket ST2/9 for input 7 7 = No function All other functions of the keys as with parameter 240		42	0	0	

Supplier Level (Code no. 3112)

Parameter	Designation	Unit	max	min	Preset	Ind.
250	iFA Thread trimmer activation angle	degrees	359	0	180	
251	FSA Switch-off delay of thread tension release	ms	990	0	50	
252	FSE Switch-on delay angle of thread tension release	degrees	359	0	0	
253	tFA Stop time for thread trimmer Upper limit (pa. 204) duty ratio for sewing foot lifting 1...100	%	500	0	70	
254	EF- Stop time for thread trimmer 213) duty ratio for backtacking/thread trimmer backward 1...100	%	100	1	100	
259	FAE Switch-on delay angle of the thread trimmer	degrees	359	0	0	
263	ihP 0 = Signal "high lift for walking foot" , when key is closed. 1 = Signal "high lift for walking foot" , when key is open. (Function only if parameter 137 = 1)		1	0	0	
267	Abc Overlock mode: Start count cancellation and seam end initiation by light barrier uncovered		1	0	0	
268	FSE Foot lifting with thread tension release at the seam end 0 = Foot lifting disabled 1 = Foot lifting enabled (Only in mode 36)		1	0	0	
269	PSv Positioning shift	incr.	100	0	15	

Supplier Level (Code no. 3112)

Parameter	Designation	Unit	max	min	Preset	Ind.
270 PGm	Modus of a position sensor with normally open function (N.O.)		6	0	0	
	0 = The positions are generated using the transmitter incorporated in the motor and can be set using parameter 171 *). 1 = Setting the sensor to position 2. Set position 1 using parameter 171 *), starting from trailing edge position 2. 2 = Setting the sensor to position 2. Set position 1 using parameter 171 *), starting from leading edge position 2. 3 = Setting the sensor to position 1. Set position 2 using parameter 171 *), starting from trailing edge position 1. 4 = Setting the sensor to position 1. Set position 2 using parameter 171 *), starting from leading edge position 1. 5 = No position sensor available. The drive stops unpositioned. The thread trimmer function is suppressed with this setting. 6 = The positions are determined by preset values. The reference position must be correctly set for this purpose. In machines with position sensors incorporated in the handwheel the reference position is determined by mechanical adjustment. In all other cases the reference position must be set (see chapter "Setting the Reference Position") in order for the angles preset by machine select for positions 1 and 2 to be correct. If necessary, the preset values can be adapted as described in chapters "Setting the Positions".					

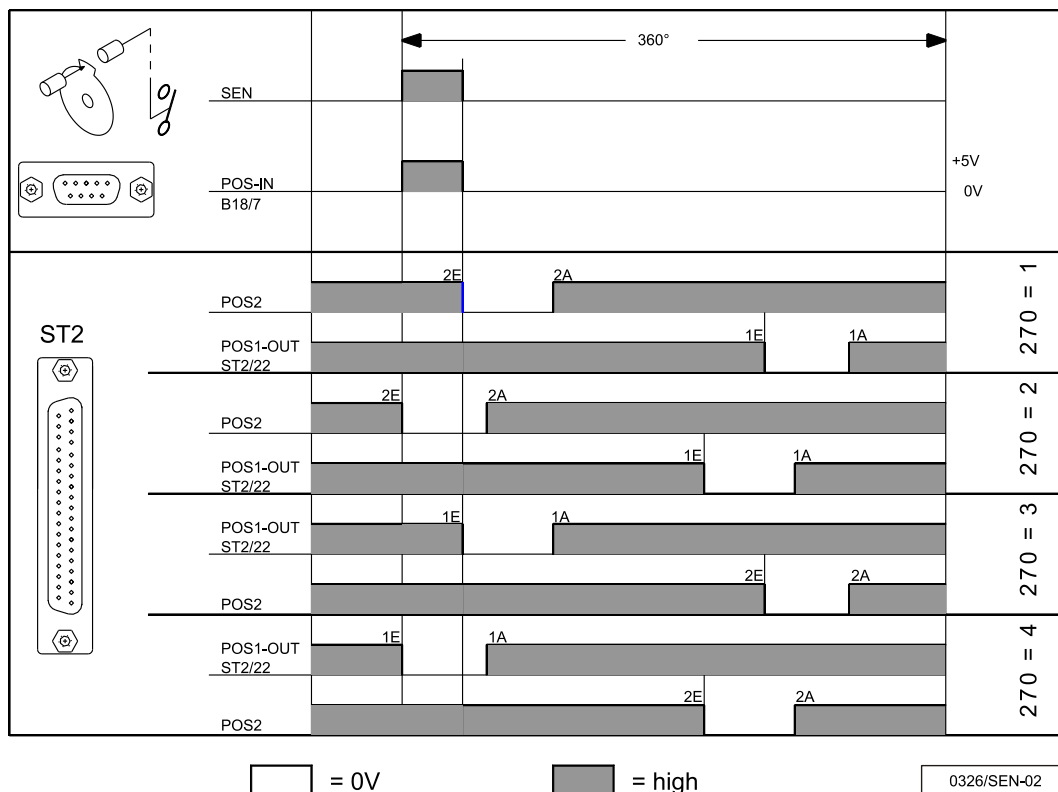


The angles between positions 1 and 2, incoming and outgoing, can be configured using Parameter 171.

*) Alternatively, the positions can be configured using the fast-installation routine.

Supplier Level (Code no. 3112)

Parameter	Designation	Unit	max	min	Preset	Ind.
270	PGm	Modus of a position sensor with 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 *). 1 = Setting the sensor to position 2. Set position 1 using parameter 171 *), starting from trailing edge position 2. 2 = Setting the sensor to position 2. Set position 1 using parameter 171 *), starting from leading edge position 2. 3 = Setting the sensor to position 1. Set position 2 using parameter 171 *), starting from trailing edge position 1. 4 = Setting the sensor to position 1. Set position 2 using parameter 171 *), starting from leading edge position 1. 5 = No position sensor available. The drive stops unpositioned. The thread trimmer function is suppressed with this setting. 6 = The positions are determined by preset values. The reference position must be correctly set for this purpose. In machines with position sensors incorporated in the handwheel the reference position is determined by mechanical adjustment. In all other cases the reference position must be set (see chapter "Setting the Reference Position") in order for the angles preset by machine select for positions 1 and 2 to be correct. If necessary, the preset values can be adapted as described in chapters "Setting the Positions".					



The angles between positions 1 and 2, incoming and outgoing, can be configured using Parameter 171.

*) Alternatively, the positions can be configured using the fast-installation routine.

Parameter	Designation	Unit	max	min	Preset	Ind.
272	trr	Transmission ratio between motor shaft and machine shaft (calculation formula see instruction manual!)	40000	150	1000	
	The transmission ratio should be determined and indicated as precisely as possible!					

Supplier Level (Code no. 3112)

Parameter	Designation	Unit	max	min	Preset	Ind.
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	Selection of machine specific mode 0 = Lockstitch: (FA1, FA2, FA3, FA1+FA2): e. g. Brother, Dürkopp Adler, Mitsubishi, Pfaff, Toyota »Slide-in strip for V810/V820 = 1« 2 = Lockstitch: e. g. Singer (212 UTT) »Slide-in strip for V810/V820 = 1/1« 3 = Lockstitch (medium to heavier duty, in general): e. g. Dürkopp Adler, Juki, Pfaff, Sunstar, Golden Wheel »Slide-in strip for V810/V820 = 1/1« 5 = Chainstitch in general: M1, M2, M3 and M4 parallel sequence »Slide-in strip for V810/V820 = 5/3« 6 = Chainstitch with tape cutter and/or fast scissors and M1 / M2 at the seam end »Slide-in strip for V810/V820 = 5/3« 7 = Overlock: »Slide-in strip for V810/V820 = 7/5« 8 = Backlatch: Pegasus »Slide-in strip for V810/V820 = 7/5« 9 = Backlatch: Yamato »Slide-in strip for V810/V820 = 7/5« 14 = Lockstitch: Juki (5550-6, 5550-7) »Slide-in strip for V810/V820 = 1/1« 25 = Lockstitch: Juki (LU2210/LU2260) »Slide-in strip for V810/V820 = 1/1« 37 = Union Special bag machine »Slide-in strip for V810/V820 = 1/1« Other modes are selectable, but their functions correspond to mode 0!		37	0	0	
291 810	Select the slide-in strip number for the V810 control panel (illustration see chapter "Slide-in strip for V810/V820"). At setting 0 , keys 1....4 are disabled.		8	0	1	
292 820	Select the slide-in strip number for the V820 control panel (illustration see chapter "Slide-in strip for V810/V820"). At setting 0 , keys 1....0 are disabled.		5	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 backtack/intermediate stitch condensing 17 = Stitch regulator suppression / recall 18..100 = No function		100	0	17	

Supplier Level (Code no. 3112)

Parameter	Designation	Unit	max	min	Preset	Ind.	
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	
298	nSo	Backtack synchronization On/Off		1	0	0	
299	nrS	Backtack synchronization speed	RPM	3000	150	400	
328	ob	Functional change-over of the keys of the operating field of the control 0 = All keys disabled 1 = All keys enabled, key E works on start backtack, key + works on end backtack (except mode 7) 2 = All keys enabled, key E works on chain suction key + works on tape cutter (only in mode 7)		6	0	5	
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	%	100	0	80	
350	6L	Lower switching threshold of input IN6	%	100	0	30	
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	
370	n2	Direct input of maximum speed	RPM	F-111	F-121	Display	
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 = DC1500 2 = DC1550 3 = DC1200 4 = DC1250		4	1	3	
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					
512		Compare control and Memory Stick parameter settings					
513		Delete parameter setting file from Memory Stick					
527		Transfer control software from Memory Stick to control					
529		Delete control software file from Memory Stick					

Supplier Level (Code no. 3112)

Parameter	Designation	Unit	max	min	Preset	Ind.
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		41	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		41	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	
911	High lift for walking foot - measurement value of potentiometer for minimum lift		255	0	0	
912	High lift for walking foot - measurement value of potentiometer for maximum lift		255	0	0	

12 Error Displays

On the control	On the V810	On the V820	Signification
General Information			
A1	InF A1	InF A1	Pedal not in neutral position when turning the machine on
A2	-StoP- blinking	-StoP- blinking + symbol display	Machine run blockage
A3	InF A3	InF A3	Reference position is not set
A9	InF A9	InF A9	No thread trimming mode available in parameter 290
A11			High lift for walking foot, measured value of the potentiometer inadmissibly
A12			Opposed maximum speed is not attainable with this transmission ratio
A500	FileFI	File Full	Max. number of files (99) on Memory Stick exceeded
A501	noFile	noFile	File not found on Memory Stick
A503	not EQ	not EQ	Data on Memory Stick and in the control is not equal
C1	InF C1	InF C1	Operating hours counter has reached or exceeded the service time
C2	InF C2	InF C2	Fatal exception error
C3	InF C3	InF C3	Program error
Programming Functions and Values (Parameters)			
Returns to 0000 or to last parameter number		Like V810 + display InF F1	Wrong code or parameter number input
Serious Condition			
E1	InF E1	InF E1	The external pulse encoder e.g. IPG... is defective or not connected.
E2	InF E2	InF E2	Line voltage too low, or time between power Off and power On too short
E3	InF E3	InF E3	Machine blocked or does not reach the desired speed. Wrong motor selected (param. 467)
E4	InF E4	InF E4	Control disturbed by deficient grounding or loose contact
E7	InF E7	InF E7	24 V power supply overload
E8	InF E8	InF E8	Too much data for the EEPROM or flash memory
E9	InF E9	InF E9	EEPROM or flash memory defective.
E10	InF E10	InF E10	Short-circuit on output (output FL, VR, M1, M2, M3, M4 or M10)
E11	InF E11	InF E11	Thermal overload of output stage transistor

E12	InF E12: 003	InF E12: 003	Short-circuit on output M5
Programming and Data Transfer			
F1	InF F1	InF F1	Parameter unavailable; wrong code number
F7	InF F7	InF F7	RS232 timeout
F8	InF F8	InF F8	RS232, error in data transfer, NAK received
Hardware Disturbance			
H1	InF H1	InF H1	Commutation transmitter cord or frequency converter disturbed
H2	InF H2	InF H2	Processor disturbed

For your notes:



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