



dc15xx

CONTROL

AB425S585



Instruction Manual

- Putting into Service
- Settings
- Functional Description

No. 402326 English

Note
For initial operation after software updating or maintenance procedures, make sure to set parameter 467 for the specific motor to be used.
DC1500, F-467 = 1 / DC1550, F-467 = 2

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
- ✗ Use of the C200 compiler
- ✗ 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, V820 or V850 control panels extend the range of functions.

Further control functions can be programmed using the Efka Compiler C200 software and the user-friendly V900 touchscreen panel.

Moreover, up to 2 stepping motors can be operated. See connection diagram in the parameter list.

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:

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
Brother		Lockstitch	B-891	22	---
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
Juki		Lockstitch	LU1510-7	20	1113200
Juki		Lockstitch	DNU1541-7	20	1113557
Juki		Lockstitch	LU2210, LU2260	25	1113526
Kansai	AC62AV	Chainstitch	RX 9803	5	1113130
Pegasus	AC62AV	Chainstitch	W500/UT, W600/UT/MS, with/without stitch condensing	5	1112821
Pegasus	AB60C	Backlatch		8	1113234
Pegasus		Chainstitch	MHG-100	24	1113267
Pfaff	PF62AV	Lockstitch	563, 953, 1050, 1180	0	1113491
Pfaff		Lockstitch	1425, 1525	13	1113324
Rimoldi		Chainstitch	F27	5	1113096
Singer	SN62AV	Lockstitch	212 UTT	2	1112824
Union Special	US80A	Lockstitch	63900AMZ	10	1112823
Union Special	US80A	Chainstitch	34000, 36200	4	1112865
Union Special	AC62AV	Chainstitch	34700 with stitch lock	5	1112844
Union Special	US80A	Chainstitch	CS100, FS100	4	1112905
Yamato	AC62AV	Chainstitch	VC series	5	1113345
Yamato		Chainstitch	VG series	5	1113345
Yamato	AB60C	Backlatch	ABT3	9	1112826
Yamato		Backlatch	ABT13, ABT17	9	1113205
Yamato		Chainstitch	Stitch lock	21	1113345

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	DC1500 optional DC1550
1	Electronic control/Power supply unit	AB425S5850/N213
1	Actuator	EB301A
1	Set of accessories (standard)	B156
	consisting of:	Plastic bag for B156 + documentation
Option 1		
1	Set of standard accessories	B156
	consisting of:	Plastic bag for B156 and documentation
and		
1	Set of accessories	Z55
	consisting of:	37-contact SubminD plug, potential equalization cord
Option 2		
1	Set of standard accessories	B156
	consisting of:	Plastic bag for B156 and documentation
and		
1	Set of accessories	Z53
	consisting of:	Pitman rod 400...700mm long, 37-contact SubminD plug, potential equalization cord, bracket for fastening EB...
Option 3		
1	Set of standard accessories	B159
	consisting of:	Plastic bag for B159, documentation and motor mounting parts
and		
1	Set of accessories	Z53
	consisting of:	Pitman rod 400...700mm long, 37-contact SubminD plug, potential equalization cord, bracket for fastening EB...

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
Control panel Variocontrol V850	5990159
Control panel Variocontrol V900 (only in conjunction with compiler programming)	5990161
Reflection light barrier module LSM002	6100031
Hall sensor module HSM001	6100032
Pulse encoder IPG001	6100033
EFKANET interface IF232-4	7900077
Adapter cord for the connection of light barrier module and/or Hall sensor module HSM001 and/or pulse encoder IPG001 and/or EFKANET	1113229
Compiler C200 for programming additional functions	1113262
Adapter cord for the connection of sockets B18 each on the SM210A stepping motor control and on the control described here (see connection scheme in the separate instruction manual "General Operation ")	1113172
Actuating solenoid type EM1.. (for e. g. sewing foot lifting, backtacking, etc.)	Ask for available models
Extension cable approx. 1000 mm long for commutation transmitter DC15..	1113151
Extension cable approx. 1000 mm long for DC15.. line	1113150
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 KN3 (pushbutton) with cord of approx. 950 mm length without plug	5870013
Knee switch type KN19 (pushbutton) with cord of approx. 450 mm length without plug	5870021
Mounting kit for DC1500 on PEGASUS model W600	1113125
Mounting kit for DC1500 on PEGASUS Ex/Ext	1113126
Undertable mounting kit for DC15..	1113235
Undertable mounting kit (reinforced) for DC15..	1113427
Sewing light transformer	please indicate line voltage and sewing light voltage (6.3V or 12V)
9-contact SubminD male connector	0504135
9-contact SubminD female connector	0504136
Half-shell housing for 9-contact SubminD	0101523
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	1113433
Connection of the position sensor incorporated in the handwheel	
BROTHER model B891	1113290
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	1113157
Connection of the position sensor incorporated in the handwheel	
JUKI lockstitch machine models LU1510-7 and LU1521N-7	1113557
JUKI lockstitch machine model DNU1541-7	1113557
JUKI lockstitch machine model DNU1541-7	1113558
Connection of the position sensor incorporated in the handwheel	
JUKI lockstitch machine models LU2210, LU2260	1113526
JUKI lockstitch machine model LU2220N-7	1113704
KANSAI machine model RX 9803	1113130
PEGASUS models W500/UT, W600/UT/MS with or without stitch condensing	1112821
PEGASUS backlatch machine	1113234
PEGASUS chainstitch machine MHG-100	1113267
PFAFF models 563, 953, 1050, 1180 (without thread monitor)	1113491
PFAFF models 1425, 1525	1113324
RIMOLDI model F27	1113096
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 + stitch lock	1113345
YAMATO backlatch machine ABT3	1112826
YAMATO backlatch machine ABT13, ABT17	1113205
MITSUBISHI lockstitch machines	1113411
Connection of the position sensor incorporated in the handwheel	

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

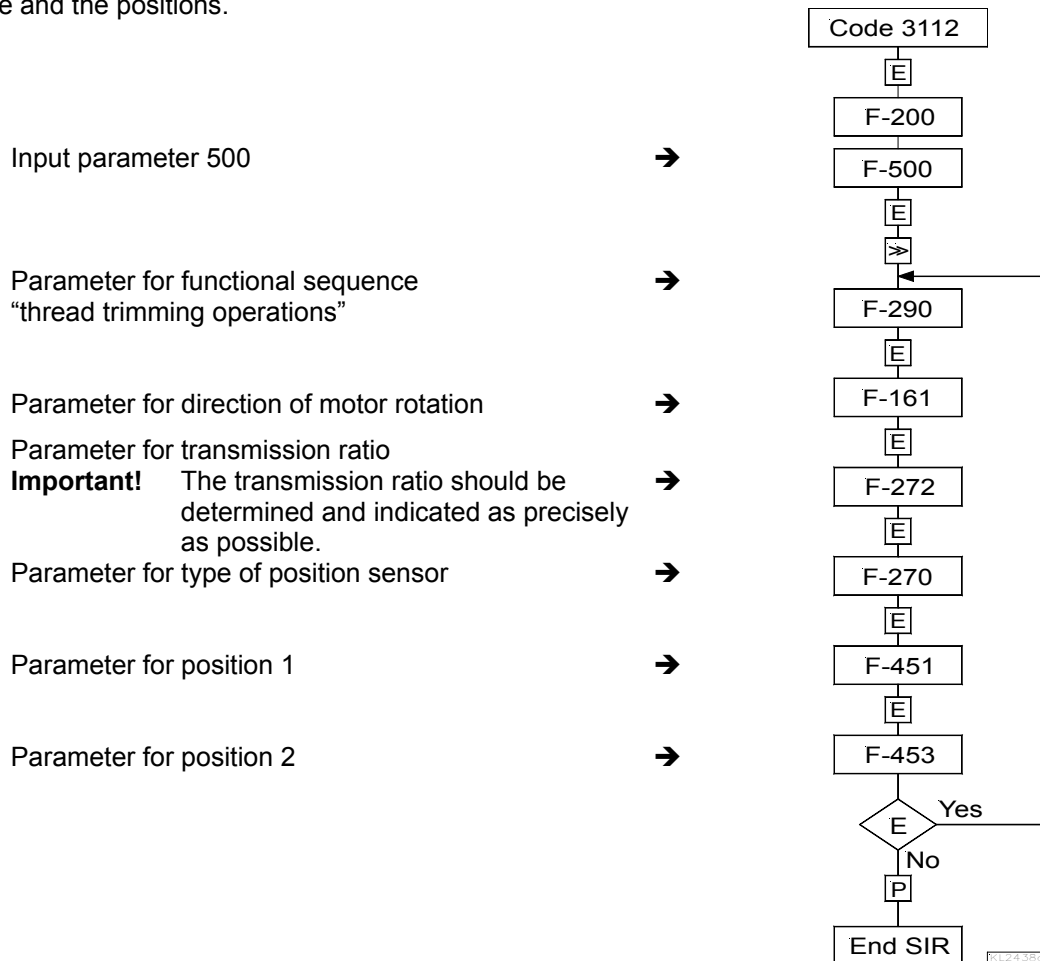
3 Putting into Service

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

- 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...249
- 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 number of angular degrees after the sensor position using parameter 271
- 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)

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



The values can be varied by pressing keys +/- . When the parameter is displayed on the V810 control panel, press the E key once more for the value to be displayed.

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.

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

Setting on the V810 control panel:

- Input code number **3112!**
- Press the **E** key → The lowest parameter **2.0.0.** appears at this level
- Select **500** → Parameter **5.0.0.** is displayed
- Press the **E** key → Character **[o]** appears blinking
- Press the **>>** key → Parameter **2.9.0.** appears (functional sequence “trimming operations”)
- Press the **E** key → Parameter value **05** appears
- Press the **+/-** key → Parameter value can be changed
- Press the **E** key → Parameter **1.6.1.** appears (direction of motor rotation)
- Press the **E** key → Parameter value **1** appears
- Press the **+/-** key → Parameter value can be changed
- Press the **E** key → Parameter **2.7.2.** appears (transmission ratio)
- Press the **E** key → Parameter value **100** appears
- Press the **+/-** key → Parameter value can be changed
- Press the **E** key → Parameter **2.7.0.** appears (type of position sensor)
- Press the **E** key → Parameter value **0** appears
- Press the **+/-** key → Parameter value can be changed
- Press the **E** key → Parameter **4.5.1.** appears (position 1 leading edge; position 1 trailing edge is automatically set at 60°)
- Press the **E** key → Parameter value appears
- Press the **+/-** key → Parameter value can be changed
- or turn the handwheel → Set position after min. 1 rotation
- Press the **E** key → Parameter **4.5.3.** appears (position 2 leading edge; position 2 trailing edge is automatically set at 60°)
- Press the **E** key → Parameter value appears
- Press the **+/-** key → Parameter value can be changed
- or turn the handwheel → Set position after min. 1 rotation
- Upon pressing the **E** key once more the program returns to parameter 290
- Press the **P** key twice → Exit SIR routine

Setting on the V820/V850 control panel:

- Input code number **3112!**
- Press the **E** key → The lowest parameter **2.0.0.** appears at this level
- Select **500** → Parameter **5.0.0.** is displayed
- Press the **E** key → Character **[o]** appears blinking
- Press the **>>** key → Parameter **290 FAm 05** appears (functional sequence “trimming operations”)
- Press the **+/-** key → Parameter value can be changed
- Press the **E** key → Parameter **161 drE 1.** appears (direction of motor rotation)
- Press the **+/-** key → Parameter value can be changed
- Press the **E** key → Parameter **272 trr 100** appears (transmission ratio)
- Press the **+/-** key → Parameter value can be changed
- Press the **E** key → Parameter **270 PGm 0** appears (type of position sensor)
- Press the **+/-** key → Parameter value can be changed
- Press the **E** key → Parameter **451** appears (position 1 leading edge; position 1 trailing edge is automatically set at 60°)
- Press the **+/-** key → Parameter value can be changed
- or turn the handwheel → Set position after min. 1 rotation
- Press the **E** key → Parameter **453** appears (position 2 leading edge; position 2 trailing edge is automatically set at 60°)
- Press the **+/-** key → Parameter value can be changed
- or turn the handwheel → Set position after min. 1 rotation
- Upon pressing the **E** key once more the program returns to parameter 290
- Press the **P** key twice → Exit SIR routine

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

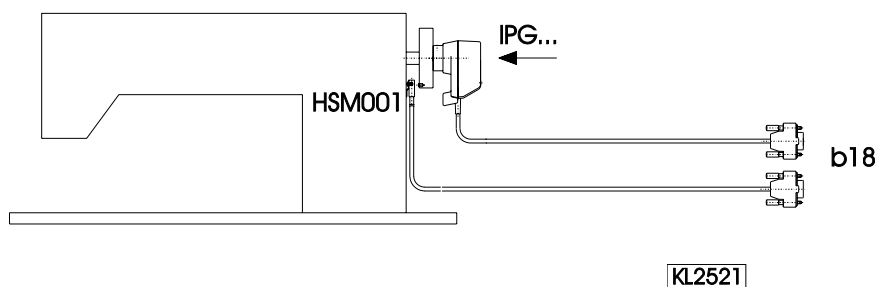


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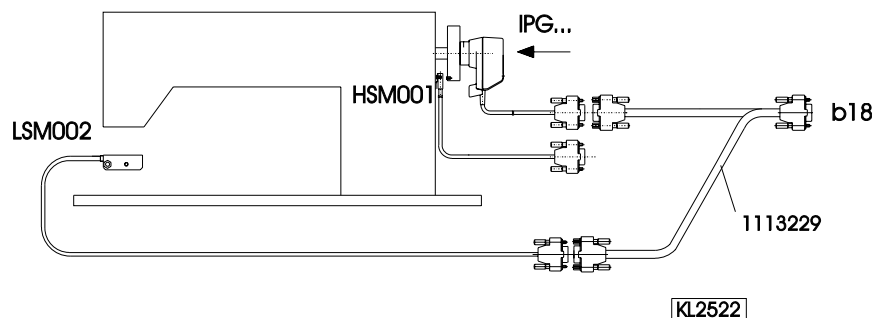
If the motor is mounted differently, e. g. at a different angle or with gear, make sure that the value set using parameter 161 corresponds to the direction of rotation.

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

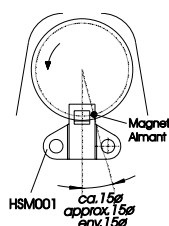


Representation and installation of a HSM001 Hall sensor module or IPG... pulse encoder together with a LSM002 light barrier module by means of adapter cord no. 1113229

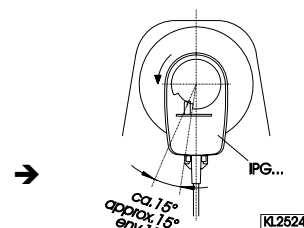


Operation with HSM001 Hall sensor module

Operation with IPG... pulse encoder



- ← - 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.



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 020...9999 using parameter 272.

Example: With a motor pulley diameter of 40mm and a sewing machine head pulley diameter of 80mm the value 50 can be calculated using the formula below. If the value 200 has been selected in parameter 272, it follows that the motor pulley is double the size of the sewing machine head pulley.

$$\text{Value of parameter 272} = \frac{\text{Motor pulley diameter}}{\text{Machine pulley diameter}} \times 100$$

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"
	High lift for walking foot/flip-flop at limited speed after pressing the key
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"
	High lift for walking foot/flip-flop at limited speed after pressing the key
Mode 3	Lockstitch Machines with Thread Trimming System (e. g. Dürkopp Adler)
	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 4	Chainstitch Machines (Union Special)
	Thread trimmer forward after stop in position 2 after delay (kd2) during ON period (kt2)
	Thread trimmer backward after stop in position 2 after delay (kd1) during ON period (kt1)
	Thread wiper after stop in position 2 after delay (kd3) during ON period (kt3)
	Sewing foot lifting (see chapter "Sewing Foot Lifting")
	Stitch condensing (see chapter "Start Stitch Condensing" and "End Stitch Condensing")
	Signal "machine running"
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"
	Signal "machine at standstill"
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"
	Signal "machine at standstill"
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"
	Signal "machine at standstill"
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"
	Signal "machine at standstill"
	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"
	Signal "machine at standstill"
	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 10	Lockstitch Machines (Refrey Trimmer)
Thread trimmer from trailing edge of slot position 1 to leading edge of slot position 2	
Thread trimmer backward after stop in position 2 during ON period (kt1). After that the signal is pulsed.	
Thread tension release whose signal is parallel to the thread trimmer	
Thread wiper (M3) after delay (kd3) during ON period (kt3)	
Sewing foot lifting (see chapter "Sewing Foot Lifting")	
Backtacking (see chapter "Start Backtack" and "End Backtack")	
Signal "machine running"	
Mode 13	Lockstitch Machines with Thread Trimming System (Pfaff 1425, 1525)
Thread trimmer (M1) is enabled after angular degrees (FAE) during angular degrees (iFA)	
Thread tension release (M2) from position 1 after delay (FSE) during ON period (FSA)	
Thread wiper (M3) after delay (dFw) during ON period (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	
Key for function "needle up" (input in1 / parameter 240=2)	
Key for function "intermediate backtack" (input in2 / parameter 241=16)	
Key for run to position 2 (input in3 / parameter 242=24)	
Key for speed limitation (n12) (input in4 / parameter 243=11)	
Key for flip-flop speed limitation (n11) (input in5 / parameter 244=22)	
Key for speed limitation (n9) (input in7 / parameter 246=33)	
Key for high lift for walking foot with speed limitation (n10) operational mode stored (input in8 / parameter 247=14)	
Key for stitch regulator suppression /stitch regulator recall (input in9 / parameter 248=17)	
Key for speed limitation with external potentiometer (input i10 / parameter 249=25)	
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"	
Signal (M6) "machine at standstill"	
Positioning by Juki handwheel sensor on the control	
Mode 15	Backlatch Machines (Pegasus SSC100)
Chain blowing (M1) during stitch count (c4) at the start of the seam and during ON period (kt1) at the seam end after tape cutting	
Chain suction (M2) during stitch count (c3) at the start of the seam and during ON period (kt1) at the seam end after tape cutting	
Thread tension release (M3) On after stitch count (c1) and Off after light barrier uncovered and stitch count (c2)	
1st tape cutting (M4) after light barrier uncovered and stitch counting (ckL) during ON period (kt4), 2nd tape cutting after delay (kd4) during ON period (kt4)	
Chain suction + blowing (VR) On at the end of the 1st tape cutting after delay (kd2) and Off after the start of the 2nd tape cutting with a time lapse (kt2)	
Sewing foot lifting (see chapter "Sewing Foot Lifting")	
Signal "machine running"	
High lift for walking foot operational mode stored (input in4 / parameter 243=14)	
Manual tape cutting (input in5 / parameter 244=15)	
Mode 16	Overlock Machines (Feed-Off-The-Arm Machines) only with V820/850 and slide-in strip 7
Chain suction (VR) during stitch count (c1) at the start of the seam	
Thread tension release (M4) On at the seam end after light barrier uncovered and the compensating stitches until pedal position 0 (neutral) after machine standstill	
Tape cutter (M3) if parameter 232=0 at the start of the seam after stitch count (c3) and at the seam end after stitch count (c4) during ON period (kt3)	
Fast scissors if parameter 232=1 at the start of the seam after stitch count (c3) and at the seam end after stitch count (c4) alternating with output (M3) during ON period (kt3) and output (M8) during ON period (At1)	
Chain blowing in opposite direction (M1) at the seam end after delay (kd1) during ON period (kt1)	
Blow fabric onto stack (M7) On at the seam end after light barrier uncovered until machine standstill with a time lapse (kt5)	
Signal (M2) at the seam end after delay (kd2) during ON period (kt2)	
Sewing foot lifting with pedal in position -1 or -2	
Signal "machine running"	

Mode 17	Chainstitch Machines (Pegasus Stitch Lock)
	Thread trimmer (FA) after stop depending on angle after delay (kd2) during ON period (kt2)
	Stitch lock signal (STS) after intermediate stop in position 2 after delay (kd3) during ON period (kt3) and after stop depending on angle
	Top cover thread cutter (LFA) after stop depending on angle and delay (kd2) during ON period (kt2)
	Time-delayed (kdF) sewing foot lifting after standstill in position 2 (see chapter "Sewing Foot Lifting")
	Signal "machine running"
Mode 20	Lockstitch Machines (Juki LU1510-7/DNU1541-7)
	Thread trimmer (FA) 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 after stop in position 2 after delay (kd3) during ON period (kt3)
	Sewing foot lifting (see chapter "Sewing Foot Lifting")
	Backtacking (see chapter "Start Backtack" and "End Backtack")
	Signal (M5) "machine running" / Signal (M6) "machine at standstill"
Mode 21	Chainstitch Machines (Stitch Lock)
	Thread trimmer (M1) after stop in position 2 after delay (kd1) during ON period (kt1)
	Thread wiper (M3) after stop in position 2 after delay (kd3) during ON period (kt3)
	Stitch lock signal (STV) after stop in position 1 after delay (kd2) during ON period (kt2)
	Time-delayed (kdF) sewing foot lifting after standstill in position 2 (see chapter "Sewing Foot Lifting")
	Stitch condensing (M2) (see chapter "Start Stitch Condensing" and "End Stitch Condensing")
	Signal (M5) "machine running"
Mode 22	Lockstitch Machines with Thread Trimming System (e. g. Brother B-891)
	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"
	Switch stitch length/flip-flop at limited speed after pressing the key
Mode 23	Lockstitch Machines (Dürkopp Adler 271...275)
	Thread trimmer (M1) 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 (M3) for a programmable time (t6)
	Sewing foot lifting (see chapter "Sewing Foot Lifting")
	Backtacking (see chapter "Start Backtack" and "End Backtack")
	Signal (M2) "machine running"
	High lift for walking foot/flip-flop (M5) at limited speed after pressing the key
Mode 24	Chainstitch Machines (Pegasus MHG-100)
	Thread trimmer (M1) after stop in position 2 after delay (kd2) during ON period (kt2)
	Thread trimmer (M2) after stop in position 2 after delay (kd1) during ON period (kt1)
	Thread wiper (M3) after stop in position 2 after delay (kd3) during ON period (kt3)
	Sewing foot lifting (see chapter "Sewing Foot Lifting")
	Signal (M7) "hemming guide"
	Signal (M8) "hemming blow 1"
	Signal (M9) "hemming blow 2"
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 26	Lockstitch Machines (Jentschmann) Functions as with mode 3.
Mode 27	Lockstitch Machines (ISM) Functions as with mode 0.

Mode 28	Backlatch Machines
Chain suction (VR) On at the start of the seam during stitch count (c1) and at the seam end from light barrier uncovered onwards during stitch count (c2)	
Chain blowing 1 (M1) after delay (kd1) during ON period (kt1) at the seam end	
Chain blowing 2 (M2) during ON period (kt2) at the seam end	
Thread clamp (M3) On at the seam end after delay (kd3) and Off after stitch count (ckL) at the start of the seam	
Thread tension release (M4) On after stitch count (SFS) at the start of the seam and Off after light barrier uncovered at the seam end	
Lift suction head (M8) from standstill onwards after delay (Ad1) during ON period (At1)	
Suction head (M9) On from standstill onwards after delay (Ad2) during ON period (At2)	
Chain shifting device (M10) On at the start of the seam after stitch count (c3) Off after stitch count (c4)	
Sewing foot lifting (see chapter "Sewing Foot Lifting")	
Signal "machine running"	
Mode 29	KMF function: synchronous operation
Mode 30	Lockstitch Machines (Juki LU1521N-7) with short trimmer. Functions as with mode 20.
Mode 31	Lockstitch Machines (Brother). Functions as with mode 0.
Mode 32	Chainstitch Machines (Brother). Functions as with mode 5.
Mode 33	Motion Control , only machine run function
Mode 35	Lockstitch Machines , Bramac
Mode 36	Backlatch , Rimoldi PL27
Mode 37	Union Special , bag machine
Mode 41	Lockstitch Machines , Juki LU2220N-7

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

5.5 Functions of the Keys Inputs in1...i10

Function with or without control panel				Parameter
Input 1	selectable input functions	0...76	(in1)	240
Input 2	"	0...76	(in2)	241
Input 3	"	0...76	(in3)	242
Input 4	"	0...76	(in4)	243
Input 5	"	0...76	(in5)	244
Input 6	"	0...76	(in6)	245
Input 7	"	0...76	(in7)	246
Input 8	"	0...76	(in8)	247
Input 9	"	0...76	(in9)	248
Input 10	"	0...76	(i10)	249

See List of Parameters for possible input functions of the keys.

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

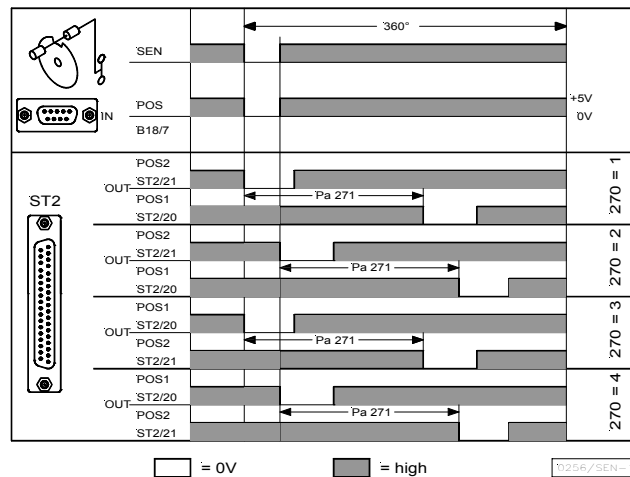
Function with or without control panel	Parameter
Selection according to position sensor (PGm)	270
Number of angular degrees from the sensor position to position 2 (PGr)	271
Transmission ratio between motor shaft and machine shaft (trr)	272

After setting parameter 270 at "1, 2, 3 or 4", an angular degree must be selected using parameter 271, which determines the stop in position 2 or 1 after the sensor position. The angles are preset in modes 31 and 32, parameter 270 = 6. The transmission ratio must already have been input using parameter 272.

Connection of a sensor (N.O. function) e. g. light barrier to socket B18/7.

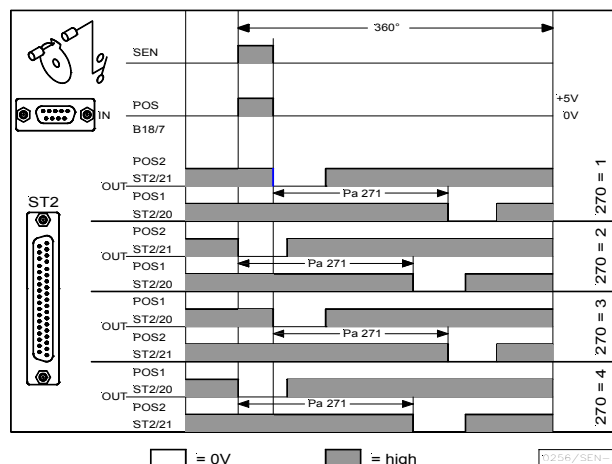
The following settings are possible using **parameter 270**:

- 270 = 0** - The positions can be generated with the help of the transmitter incorporated in the motor and can be set by means of parameter 171.
- 270 = 1** - Setting the sensor to position 2.
- Position 1 is set according to the angular degree setting by means of parameter 271.
- Start measuring from leading edge position 2.
- 0V at input B18/7 (inside of the window)
- +5V at input B18/7 (outside of the window)
- 270 = 2** - Setting the sensor to position 2.
- Position 1 is set according to the angular degree setting by means of parameter 271.
- Start measuring from trailing edge position 2.
- Input and output level as with setting "1"
- 270 = 3** - Setting the sensor to position 1.
- Position 2 is set according to the angular degree setting by means of parameter 271.
- Start measuring from leading edge position 1.
- Input and output level as with setting "1"
- 270 = 4** - Setting the sensor to position 1.
- Position 2 is set according to the angular degree setting by means of parameter 271.
- Start measuring from trailing edge position 1.
- Input and output level as with setting "1"
- 270 = 5** - There is no position sensor. The drive stops unpositioned. The thread trimmer is suppressed.
- 270 = 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".



Connection of a sensor (N.C. function) e. g. light barrier or proximity switch to socket B18/7.
The following settings are possible using parameter 270:

- 270 = 0** - The positions can be generated with the help of the transmitter incorporated in the motor and can be set by means of parameter 171.
- 270 = 1**
 - Setting the sensor to position 2.
 - Position 1 is set according to the angular degree setting by means of parameter 271.
 - Start measuring from trailing edge position 2.
 - 0V at input B18/7 (inside of the window)
 - +5V at input B18/7 (outside of the window)
- 270 = 2**
 - Setting the sensor to position 2.
 - Position 1 is set according to the angular degree setting by means of parameter 271.
 - Start measuring from leading edge position 2.
- 270 = 3**
 - Input and output level as with setting "1"
 - Setting the sensor to position 1.
 - Position 2 is set according to the angular degree setting by means of parameter 271.
 - Start measuring from trailing edge position 1.
- 270 = 4**
 - Input and output level as with setting "1"
 - Setting the sensor to position 1.
 - Position 2 is set according to the angular degree setting by means of parameter 271.
 - Start measuring from leading edge position 1.
- 270 = 5** - There is no position sensor. The drive stops unpositioned. The thread trimmer is suppressed.
- 270 = 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".



OUT (position window) = npn transistor (emitter to 0V) is conductive. The width of position window cannot be adjusted.

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
- after replacing the microprocessor

Setting the reference position on the control

- 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** goes off on the display. → Display **P**
- By turning the handwheel, set the needle to the bottom dead center (**imperative in mode 32**), 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. → Set machine reference point
- 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** goes off on the display. → Display **PoS0**
- Set the needle to the bottom dead center by turning the handwheel. → Set machine reference point
- 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 V820/850 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** goes off on the display. → Display **PoS0**
- Set the needle to the bottom dead center by turning the handwheel. → Set machine reference point
- Press the **P** key once → Actual parameter number is displayed
- Press the **P** key twice → Exit programming at the technician level

If error message A3 (reference position not set) appears, repeat the above setting sequence!

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.

- Input code number and select parameter **171**.
- Press the **E** key → **[o]** is displayed
- Press the **>>** 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 - 171
E	Press the E key	→	[o]
»	Press key >> (B key). Display of the 1st parameter value of position 1	→	P 1 E 140
+ -	If necessary, change parameter value by pressing key >> or +/- or by turning the handwheel (> 1 rotation)	→	P 1 E XXX
E	Parameter value of position 2 appears on the display	→	P 2 E 260
+ -	If necessary, change parameter value by pressing key >> or +/- or by turning the handwheel (> 1 rotation)	→	P 2 E XXX
E	Parameter value of position 1A appears on the display	→	P 1 A 080
+ -	If necessary, change parameter value by pressing key >> or +/- or by turning the handwheel (> 1 rotation)	→	P 1 A XXX
E	Parameter value of position 2A appears on the display	→	P 2 A 400
+ -	If necessary, change parameter value by pressing key >> or +/- or by turning the handwheel (> 1 rotation)	→	P 2 A XXX
P P	Press the P key twice. Settings are completed. Exit programming.	→	A b 425 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 V820/850 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.

	Display before programming	→	4000 Ab425S
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 Ab425S

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

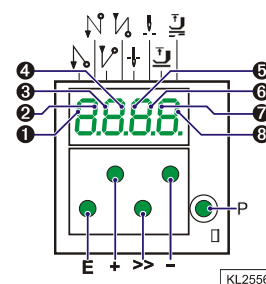
Function with or without control panel	Parameter
Display of positions 1 and 2 (Sr3)	172

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



V810/V820/V850 control panel display

- Arrow above symbol "position 1" on key 4 (V810) / on key 7 (V820/V850) is displayed corresponds to position 1
- Arrow above symbol "position 1" on key 4 (V810) / on key 7 (V820/V850) is displayed corresponds to position 1A
- Arrow above symbol "position 2" on key 4 (V810) / on key 7 (V820/V850) is displayed corresponds to position 2
- Arrow above symbol "position 2" on key 4 (V810) / on key 7 (V820/V850) is displayed corresponds to position 2A

If the V810, V820 or V850 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 Inputs for Proximity Switches

Function with or without control panel	Parameter
Switch proximity switches for inputs in2, in7, in8, in9 (nAm)	295

If parameter 295 is set at "1", a load resistor is connected in parallel to inputs in2, in7, in8, in9, which allows to operate 2 wire proximity switches.

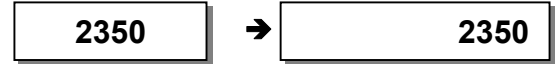
5.16 Actual Speed Display

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

If parameter 139 = 1, the V810/820/850 display shows the following information:

During operation:

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



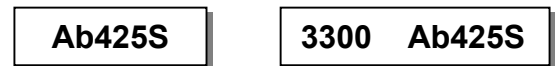
At stop in the seam:

- The stop indication



At standstill after trimming:

- On the V810, indication of the type of control
- On the V820/V850, indication of the set maximum speed and the type of control
- Example:** 3300 revolutions per minute and type of control AB425S



5.17 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
Functions of signal M11 (m11)	297

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/V850 control panel during operation or after drive standstill.

Moreover, an acoustic signal is emitted when using a V810/V820/V850 control panel if parameter 127 = 1.

If parameter 297 = 7, output M11 (socket ST2/31) is prepared for displaying the reached number of pre-selected operating hours. Upon reaching the operating hours, a connected indicator lamp blinks continuously until the counter is reset.

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 → e. g. **400** (sewing process can be started)

Display on the V810 control panel:

- Select parameter 177.
- Press the **E** key → **Sr7 [°]**
- Press the **>>** key → **hoUr** (hours letter symbol)
- Press the **E** key → **000000** (hours display)
- Press the **E** key → **Min** (minutes letter symbol)
- Press the **E** key → **00** (minutes display)
- Press the **E** key → **SEc** (seconds letter symbol)
- Press the **E** key → **00** (seconds display)
- Press the **E** key → **MSEc** (milliseconds letter symbol)
- Press the **E** key → **000** (milliseconds display)
- Press the **E** key → **rES F2** see chapter "Set and Reset Operating Hours Counter"
- Press the **E** key → The process will be repeated from the hours display.
- Press the **P** key twice → e. g. **Ab425S** (sewing process can be started)

Display on the V820/V850 control panel:

- Select parameter 177:
- Press the **E** key → **F-177** **Sr7 [°]**
- Press the **>>** key → **hoUr** **000000** (hours display)
- Press the **E** key → **Min** **00** (minutes display)
- Press the **E** key → **Sec** **00** (seconds display)
- Press the **E** key → **MSEc** **000** (milliseconds display)
- Press the **E** key → **rES** **F2** see chapter "Set and Reset Operating Hours Counter"
- Press the **P** key twice → e. g. **4000** **Ab425S** (sewing process can be started)

5.17.1 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.

5.17.2 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 position 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/V850 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 Automatic after thread trimming	left-hand LED above key On right-hand LED above key On Key S4 Key S4

Function with control panel	V810	V820/V850
Automatic in the seam	left-hand arrow above key On	Key 3
Automatic after thread trimming	right-hand arrow above key On	Key 6
If parameter 290 = 16, with slide-in strip "7"	left-hand arrow above key On	Key 9

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 lift. The function can be activated only with a thread trimmer that depends on the angle. (Modes 3, 13, 20, 22, 23, 25)	(FSP) 024
Switch-on delay with pedal in position -1 (half heelback)	(t2) 201
Start delay after switching off the sewing foot lift signal	(t3) 202
Time of full power	(t4) 203
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
Selection of the sewing foot lift function	(FLP) 236
Upper limit ON period of sewing foot lifting 1...100	(EF-) 254

Sewing foot is lifted:

- in the seam
 - by half heelback (position -1)
 - or automatically (using the **S4** key on the control, left-hand LED lights up)
 - or automatically (using key **3** on the V810 control panel)
 - or automatically (using key **6** on the V820/V850 control panel)
- after thread trimming
 - by pressing a key depending on the pre-selection of parameters **240...249**
 - by heelback (position -1 or -2)
 - or automatically (using the **S4** key on the control, right-hand LED lights up)
 - or automatically (using key **3** on the V810 control panel)
 - or automatically (using key **6** on the V820/V850 control panel)
 - by pressing a key depending on the pre-selection of parameters **240...249**
 - automatically using light barrier with pedal forward according to the setting of parameter **023**
 - automatically using stitch counting with pedal forward 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**.



CAUTION

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 lift

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

The following settings are possible with **parameter 236**:

- 236 = 0** Sewing foot lifting is possible from all positions.
236 = 1 Sewing foot lifting is possible only from position 2.
236 = 2 Sewing foot lifting is stored in pedal position –1 or –2. The storing can be undone by pressing the pedal slightly forward.

See List of Parameters chapter "**Timing Diagrams**"!

6.4 Start Backtack/Start Stitch Condensing

Function without control panel		Control
Single start backtack Double start backtack Start backtack Off	LED 1 On LED 2 On both LEDs Off	Key S2
Start stitch condensing On; number of stitches with stitch regulator (parameter 001) Start stitch condensing On; number of stitches without stitch regulator (parameter 000), after that number of stitches with stitch regulator (parameter 001) Start stitch condensing Off	LED 1 On LED 2 On both LEDs Off	Key S2

Function with control panel		V810/V820/V850
Single start backtack Double start backtack Start backtack Off	left-hand arrow above key On right-hand arrow above key On both arrows Off	Key 1
Start stitch condensing On; number of stitches with stitch regulator (parameter 001) Start stitch condensing On; number of stitches without stitch regulator (parameter 000), after that number of stitches with stitch regulator (parameter 001) Start stitch condensing Off	left-hand arrow above key On right-hand arrow above key On both arrows Off	Key 1

The start backtack/start stitch condensing starts by pressing the pedal forward at the beginning of the seam. From lifted sewing foot the backtack is delayed by the time t3 (start delay after switching off the sewing foot lift signal). Start backtack 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. If backtack synchronization (parameter **298**) is off, the stitch regulator will be synchronized to position 1. 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. Counting is synchronized to position 1.

6.4.1 Speed n3 at the Start of the Seam

Function with or without control panel		Parameter
Start backtack/start stitch condensing speed (n3)		112
Start backtack/start stitch condensing speed can be interrupted by pedal in pos. 0 (neutral) (n2A)		162
Start and end backtack 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/V850 control panel. For fast operator information (HIT) when using the V820/V850 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 the **+** or **-** key.

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 backtrack (t1)	200

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

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

6.4.4 Double Start Backtrack

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 Backtrack / 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 Backtrack / End Stitch Condensing

Function without control panel	Control
Single end backtrack Double end backtrack End backtrack Off	LED 3 On LED 4 On both LEDs Off Key S3
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 without stitch regulator (parameter 003) End stitch condensing Off	LED 3 On LED 4 On both LEDs Off Key S3

Function with control panel	V810	V820/V850
Single end backtrack Double end backtrack End backtrack 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 without 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 lift signal). The first leading edge of position 1 counts as 0 stitch whenever the function is not started in position 1. If backtack synchronization (parameter **298**) is not switched on, the stitch regulator is synchronized to position 1. End backtack as well as end stitch condensing are performed 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 (neutral) (n2E)	163
Start and end backtack 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.

6.5.2 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/V850 control panel.

For fast operator information (HIT) when using the V820/V850 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 the **+** or **-** key.

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 (c9)	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 in the 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/V850 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	135
Ornamental backtack stop time	210
Single start ornamental backtack LED 1 On	Key S2
Double start ornamental backtack LED 2 On	
Start ornamental backtack Off both LEDs Off	

Function with control panel	V810/V820/V850
Function "ornamental backtack" On/Off (SrS)	135
Ornamental backtack stop time (tSr)	210
Single start ornamental backtack left-hand arrow above key On	Key 1
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/V850 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 Backtrack/Stitch Condensing

Function without control panel	Control
Function "ornamental backtrack" On/Off Ornamental backtrack stop time Single end ornamental backtrack Double end ornamental backtrack End ornamental backtrack Off	135 210 Key S3 LED 3 On LED 4 On both LEDs Off

Function with control panel	V810	V820/V850
Function "ornamental backtrack" On/Off Ornamental backtrack stop time Single end ornamental backtrack Double end ornamental backtrack End ornamental backtrack Off	(SrS) (tSr) left-hand arrow above key On right-hand arrow above key On both arrows Off	135 210 Key 2 Key 4

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

Difference from the standard end backtrack:

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

When using the V820/V850 control panel, direct access by means of the function key (key 9) is possible.

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

6.8 Intermediate Backtrack

Upon pressing an external key according to the pre-selection of parameters **240...249**, the backtrack solenoid can be switched on anywhere in the seam and at standstill.

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

The speed function for the manual backtrack 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 backtrack (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 backtrack (parameter **135 = 1**):

By pressing the key in the seam, the drive stops and the backtrack solenoid is activated. The speed limitation according to the setting of parameter 288 is effective during the entire intermediate backtrack 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 backtrack solenoid is switched off and a forward seam is performed according to the counted stitches after the ornamental backtrack stop time. After that the speed limitation is released.

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

- 087 = 0 stitch** Normal manual backtrack
- 087 = 1...255 stitches** Manual backtrack with counted backtrack section

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 entire sequence is performed at speed n9 (parameter 122).

6.9 Intermediate Backtack / Single Stitch (Correction Sewing), (Mode 31)

Function with control panel	V810	V820/V850
Function "intermediate backtack / single stitch" on input in1 Function "single stitch" On/Off	F-240 = 76 Key 3	F-240 = 76 Key 8

An intermediate backtack with all options described in chapter "Intermediate Backtack" can be activated during machine run using a key connected to input in1.

One stitch will be performed at stop in the seam. The single stitch function can be disabled on the Variocontrol.

6.10 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...249**.

Upon pressing	Start backtack/ Stitch condensing On	Start backtack/ Stitch condensing Off	End backtack/ Stitch condensing On	End backtack/ Stitch condensing Off
Before start of 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.

See List of Parameters chapter **Connection Diagram!**

6.11 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 solenoid. Set the duration of full power using parameter **212** and the partial holding power using parameter **213**.

**CAUTION**

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)

6.12 Reverse Motor Rotation

Function with or without control panel		Parameter
Positioning speed	(n1)	110
Number of reversing degrees	(ird)	180
Reversing angle	(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.

6.13 Unlocking the Chain (Mode 4/5/6/7/16)

Function with or without control panel		Parameter
Number of run-out stitches upon unlocking the chain	(c6)	184
Function "unlock the chain" in modes 4, 5, 6, 7 and 16	(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...249**
- If parameter **290** is set at **"7"**, a switch at the input in1...i10 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/V850 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 16 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.

If parameter **290 = 16** and slide-in strip **"7"** has been selected for the V820/V850 control panel, the following functions will be performed:

Function with V820/V850 control panel	Key 7	Key 8
Standard sequence with tape cutting at the start of the seam and at the seam end	Off	Off
Unlocking the chain On according to the setting of parameter 190 = 0...4	On	Off
Unlocking the chain according to the setting of parameter 190 = 3	On/Off	On

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

6.14 Machine Run Blockage (Safety Switch)



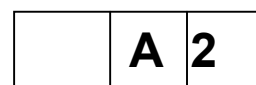
CAUTION

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...249**. When using a V810 / V820 / V850 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/V850 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

New start after machine run blockage

Function with or without control panel	Parameter
New start after machine run blockage (Pdo)	234

Parameter 234 determines how a new start is possible after closing and/or opening the switch.

234 = 0 New start after disabling machine run blockage without influence by the pedal. This setting is applicable, for example, to automats.

234 = 1 New start after disabling machine run blockage only if the pedal is in position 0 (neutral).

6.15 High Lift for Walking Foot Signal Output M6 / 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 M6" 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...249** 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

6.15.1 High Lift Walking Speed

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

6.15.2 High Lift Walking Speed Run-Out Time

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

6.15.3 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...249**, 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.

6.15.4 High Lift for Walking Foot Operational Mode Not Stored (Parameters 240...249 = 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**).

6.15.5 High Lift for Walking Foot Operational Mode Stored /Flip-Flop 1 (Parameters 240...249 = 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).

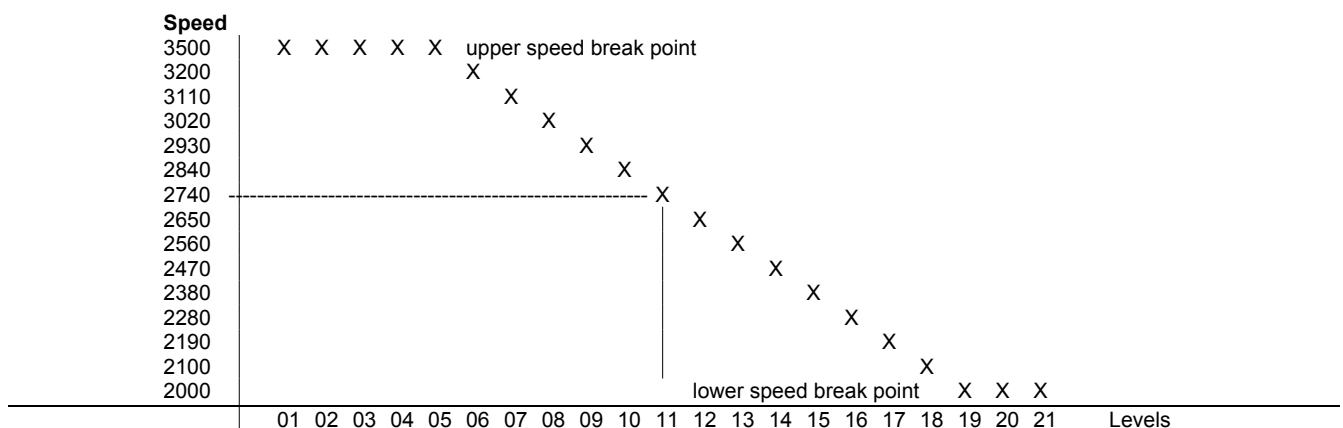
6.16 Speed Depending on High Lift

6.16.1 Operating Mode of Speed Limitation Depending on High Lift

Functions		Parameter
Maximum speed	(n2)	111
High lift walking speed	(n10)	117
Speed depending on high lift with potentiometer	(Pot)	126 = 3
Speed setting depending on high lift	(hP)	188

- It is possible to program the assignment of the speed limitation to the 21 high lift levels.
- Minimum high lift = maximum speed (n2)
- Maximum high lift = minimum speed (n10)

Graduation of the examples below is as follows:



- Display example for parameter 188 on the V820/V850 control panel:

ZZZZ XX AB YY

- Signification:**
- XX → Display of the level up to which the maximum speed is effective (upper break point).
 - YY → Display of the level from which the maximum speed is effective (lower break point).
 - AB → Display of the level set on the potentiometer.
 - ZZZZ → Speed resulting from the set high lift level.
 - EEEE → Outside of the speed range.

6.16.2 Setting the Speed Limitation Depending on High Lift with the V820/V850 Control Panel

- Determine maximum speed (n2) using parameter 111.
- Determine minimum speed (n10) using parameter 117.
- Set parameter 126 to “3”.
- Call parameter 188.

- E** Press the E key.

→

F-188 hP [°]

- **F2** Press the **F2** key. → **ZZZZ XX AB YY**
- Set high lift for walking foot (potentiometer on the machine) to the level up to which full speed is to be maintained (upper break point).
- **E** New value of **AB** is taken over to **XX**. → **ZZZZ XX AB YY**
- Set high lift for walking foot (potentiometer on the machine) to the level from which minimum speed is to be effective (lower break point).
- **E** New value of **AB** is taken over to **YY**. → **ZZZZ XX AB YY**
- Press the **P** key once → Actual parameter is displayed. / Press the **P** key twice → Exit programming.

6.16.3 Setting the Speed Limitation Depending on High Lift with the V810 Control Panel

- Call parameter **188**.
- **E** Press the **E** key. → **hP [°]**
- **F2** Press the **F2** key. Actual display. → **1 1. 3 2 0 0**
- **F2** Press the **F2** key. Previous values are displayed. → **0 5 1 9**
- **F2** Press the **F2** key. → **1 1. 3 2 0 0**
- Set new value (level) with potentiometer on the machine. → **0 8. 3 2 0 0**
- **F2** Press the **F2** key. → **0 5 1 9**
- **E** Press the **E** key. New value 08 (upper break point) is entered. → **0 8 0 8**
- **F2** Press the **F2** key. → **0 8. 3 2 0 0**
- Set new value (level) with potentiometer on the machine. → **1 7. 3 2 0 0**
- **F2** Press the **F2** key. → **0 8 0 8**
- **E** Press the **E** key. New value 17 (lower break point) is entered. → **0 8 1 7**
- **P** Press the **P** key once. Display of the actual parameter number. → **F - 1 8 8**
- or
- **P** **P** Press the **P** key twice. Exit programming. → **A b 4 2 5 S**

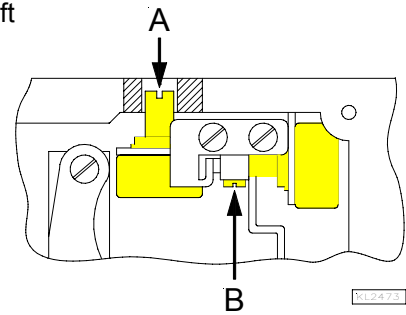
These values are saved when you begin sewing. They remain in effect even after turning the machine off!

NOTE

If you set a value on the potentiometer, which is between the actual break points, both values will be overwritten when the **E** key is pressed. Only after that is it possible to program new lower and/or upper break point values.

6.16.4 Potentiometer Adjustment on JUKI Machine Model LU-2210/LU2260

1. Set potentiometer **(A)** in the machine head, which is accessible by a bore at the rear, to the left endstop.
2. Turn the handwheel to position 1 for the speed depending on high lift (minimum high lift).
3. Set parameter **126** to **3** (activation of external potentiometer for the speed depending on high lift).
4. Select parameter **188**. The V820/V850 control panel display shows e. g. **3000 05 08 18**
5. Press the **F1** key, and the display shows e. g. **Poti 185**
6. The display value should be **between 170 and 200**.
7. Is this the case, the adjustment is completed. Proceed with point 10.
8. Should the value be outside the limits, there would be an acoustic signal.



View of the machine head with open cover

9. Loosen the 4 screws on the machine head and remove the cover with the setting knob. Loosen adjusting screw **(B)** and turn the potentiometer shaft to set the value between the above limits. Then the acoustic signal will be switched off.
10. Press the **F1** key. The displayed value is taken over, and a short acoustic signal will be issued.
11. If the display shows **EEEE**, turn the potentiometer **(A)** in the machine head, which is accessible by a bore at the rear, to the right so that **EEEE** goes off, and level 1 (maximum speed) is displayed.

6.17 Speed Limitation n9

Function with or without control panel	Parameter
Speed limitation n9 (n9)	122

If parameters **240...249 = 33**, a speed limitation n9 will be switched on upon pressing an external key.

6.18 Speed Limitation n11 with Signal Output M10 / Flip-Flop 2

Function with or without control panel	Parameter
Speed limitation n11 (n11)	123
Disabling of flip-flop functions at the seam end On/Off (FFm)	183
Function "speed limitation n11" inverted/non-inverted (FFi)	186
Function of signal M10 on socket ST2/29 after "power on" (FFo)	187

The speed limitation can be switched on by pressing a key on any of the inputs in1...i10 and switched off by pressing the key again. A signal output which can be programmed individually (inverted/non-inverted) is provided for the speed limitation. Furthermore, the function of signal output M10 can be determined after "power on".

Settings necessary for speed limitation n11

Assign the function "speed limitation n11" to the key using one of the parameters **240...249 = 22**. This function has a flip-flop effect.

Determine using **parameter 186** whether signal M10 for speed limitation n11 shall be inverted or non inverted.

186 = 0 Speed limitation n11 On/Signal M10 On or Speed limitation n11 Off/Signal M10 Off.

186 = 1 Speed limitation n11 Off/Signal M10 On or Speed limitation n11 On/Signal M10 Off.

Determine using **parameter 187** whether signal M10 is issued at socket ST2/29 after "power on".

187 = 0 Signal M10 not active after "power on"; speed limitation n11 according to setting of parameter **186** (inverted/non-inverted)

187 = 1 Signal M10 active after "power on"; speed limitation n11 according to setting of parameter **186** (inverted/non-inverted)

6.19 Disabling of Flip-Flop Functions at the Seam End

Function with or without control panel	Parameter
Disabling of flip-flop functions at the seam end On/Off (FFm)	183

Determine using **parameter 183** whether signals M6 and/or M10 shall be switched off at the seam end. If **183 = 0**, the signals can be switched off only using the appropriate keys.

183 = 0 Signal M6 (flip-flop 1) and signal M10 (flip-flop 2) are not switched off at the seam end.

183 = 1 Signal M6 (flip-flop 1) is switched off at the seam end.

183 = 2 Signal M10 (flip-flop 2) is switched off at the seam end.

183 = 3 Signal M6 (flip-flop 1) and signal M10 (flip-flop 2) are switched off at the seam end.

6.20 Bobbin Thread Monitor

Function with or without control panel	Parameter
Bobbin thread monitor On/Off (rFw)	030
Number of bobbin thread monitor stitches (cFw)	031

For bobbin thread monitor operation a number of stitches depending on the length of the bobbin thread has been preset using parameter **031**. After the execution of these stitches the drive stops and a visual signal appears on the display. If a control panel is connected, an acoustic signal is also issued if parameter **127** is set accordingly. This signals that the bobbin thread will run out. After pressing the pedal again, the seam can be continued and the thread can be trimmed. After inserting a full bobbin and pressing the ENTER key, a new sewing operation can be started.

Enable bobbin thread monitor:

Select **parameter 030 = 1...3**.

- Input the desired maximum number of stitches in parameter **031** (input value x 100 = number of stitches, e. g. 80 x 100 = 8000).
- For starting the counter set the A or B key at "19" using parameter **293** or **294**.

When using a control panel, an acoustic signal can also be enabled using parameter **127**.

Start the sewing operation.

Bobbin thread monitor in operation:

030 = 0: Bobbin thread monitor is off.

030 = 1: The drive stops after the stitch counter has run out. The message "A7" appears on the control, and the bobbin thread monitor symbol blinks on the V810/V820/V850 control panel, respectively. There will be an acoustic signal if a V820/V850 is connected and parameter **127** is set at "1".

030 = 2: The drive stops after the stitch counter has run out. The message "A7" appears on the control, and the bobbin thread monitor symbol blinks without stopping automatically on the V810/V820/V850 control panel, respectively. There will be an acoustic signal if a V820/V850 is connected.

030 = 3: The drive stops after the stitch counter has run out. Thread trimming is possible with pedal in pos. -2. The start is blocked. The message "A7" appears on the control, and the bobbin thread monitor symbol blinks on the V810/V820/V850 control panel, respectively. There will be an acoustic signal if a V820/V850 is connected and parameter **127** is set at "1".

030 = 4: Function as with parameter **030 = 1**, but remaining stitches will be displayed.

030 = 5: Function as with parameter **030 = 1**, but remaining stitches will be displayed.

030 = 6: Function as with parameter **030 = 1**, but remaining stitches will be displayed.

Getting the bobbin thread monitor ready for operation:

- Insert a full bobbin.
- Press the selected external key, or the appropriate key on the connected control panel (key 8 on the V820/V850).
Set counting to the value determined by parameter **031**.
The symbol stops blinking, and the message "A7" on the control will be switched off after trimming.

6.21 Bobbin Thread Monitor (Modes 20 and 25)

This bobbin thread monitor can be operated at a voltage of 15V.

Function with or without control panel	Parameter
External bobbin thread monitor Off / with stop after stitch counting / without stop (UFw)	035
Remaining number of stitches for bobbin thread monitor (cUF)	036
Light barrier input 2 of Juki bobbin thread monitor / connection to socket ST2/11 (in2)	241 = 57
Light barrier input 1 of Juki bobbin thread monitor / connection to socket ST2/13 (in9)	248 = 57
External Enter key after replacing the bobbin / connection to socket ST2/14 (i10)	249 = 19

Set the number of stitches for the bobbin thread stitch count using parameter **036**, or key +/- if using a V820/V850 control panel, after pressing key **8**.

After recognizing the signal on input in2 or in9, the stitch count is started and the remaining stitches are displayed on the control panel. After this count, the following alerts will be issued:

- The bobbin symbol blinks on the V810/V820/V850 control panel.
- The external LED connected to socket ST2/23 blinks.
- The acoustic signal is issued on the control panel if parameter **127** is set to "1".

The "Enter" function can be performed using the external key on socket ST2/14 (parameter **249 = 19**) or the **F1/F2** key on the V810/V820/V850 control panels (parameter **293 or 294 = 19**) or key **8** on the V820 control panel (parameter **292 = 1 or 2**).

The process is influenced by the setting of **parameter 035**.

035 = 1: The drive stops in the pre-selected basic position. The sewing process is blocked, and pedal in pos. -2 is possible until the Enter key is pressed. After pressing the Enter key, sewing is possible up to the seam end. At the seam end the bobbin must be replaced. The sewing process is enabled after pressing the Enter key once more, and the alerts will be disabled.

035 = 2: The drive does not stop, and sewing is possible up to the seam end. At the next start of the seam the bobbin must be replaced. The sewing process is enabled after pressing the Enter key once more, and the alerts will be disabled.

6.22 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/V850
Thread trimmer or thread wiper On/Off	Key 5

When a V820/V850 control panel is connected, the functions can also be switched on and off using key **5**.

6.22.1 Thread Trimmer/Thread Wiper (Lockstitch Modes)

Function with or without control panel	Parameter
Stop during thread trimming depending on angle (dr°)	197
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.

6.22.2 Trimming Speed

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

6.22.3 Activation of Short Trimmer

With sewing machines equipped with a short trimmer system, the required functional sequence can be activated using parameter 168. The selected value determines from which output the signal required for short trimming will be issued. The thread trimming function must be On.

Function with or without control panel	Parameter
Short trimmer function Off (kFA)	168 = 0
Short trimmer On (Dürkopp Adler model 767 mode 3)	168 = 3
Short trimmer On (Juki LU1521N-7 mode 30)	168 = 9
Short trimmer On (Juki LU2210 mode 25)	168 = 12

6.22.4 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.

6.22.5 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

6.23 Bag Sewing Machine Functions (Mode 5)

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. See List of Parameters chapter "Timing Diagrams" mode 5 (bag sewing machine) for the values. For the knee switch select an input in1...i10, 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...i10)	240...249

6.24 Stitch Lock Machine Functions (Mode 21)

Function with or without control panel	Parameter
Stitch lock function On/Off (StL)	196

The following settings are possible using **parameter 196**:

196 = 0 The stitch lock function is off. Output ST2/34 operates as stitch condensing.

196 = 1 The stitch lock function is on. Output ST2/34 operates as stitch lock and output ST2/28 (M2) as stitch condensing.

Note that the output functions have been switched! Pay particular attention when connecting a different sewing machine!

The corresponding values are set automatically in mode 21! See table in chapter "Preset Values Depending on Mode".

6.25 Functions for Pegasus MHG-100 Machine (Mode 24)

Function with or without control panel	Parameter
Delay time from light barrier uncovered to release of light barrier speed n5 (dnL)	158
Stitch counting until signal M9 Off (cb2)	159

The corresponding values are set automatically in mode 24! See table in chapter "Preset Values Depending on Mode".

See timing diagrams in the List of Parameters for functions of this machine model.

6.26 Overlock Machine Functions (Mode 7)

6.26.1 Chain Suction Signal

The chain suction signal can be pre-selected for start and end counting, respectively, using the **S2** key on the control and key **1** on the V810/V820/V850 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 Chain suction at the seam end On	LED 1 On LED 2 On Key S2

Function with control panel	V810/V820/V850
Chain suction at the start of the seam On Chain suction at the seam end On	left-hand arrow above key On right-hand arrow above key On Key 1

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 overlook 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.
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".
235 = 0 Braking curve Off.
235 = 1 Braking curve On for precise stop upon chain suction at the seam end.
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**.

6.26.2 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)

6.27 Function of Output Signal M8

Function with or without control panel	Parameter
Functions of signal M8 (m08)	296

The following settings are possible using **parameter 296**:

- 296 = 0** Function signal M8 Off
- 296 = 1** Signal M8 "hemmer foot" is On at the start of the seam with pedal in pos. <0 and in the seam with signal "machine running".
- 296 = 2** Signal M8 "hemmer foot" is On at the start of the seam with pedal in pos. <0 and always in the seam.
- 296 = 3** Signal M8 enabled as "center cutter".
- 296 = 4** Signal M8 is On with "needle up / down".
- 296 = 5** Signal M8 alternates with M3 when set as "fast scissors" on overlock machines (parameter **290 = 16** and parameter **232 = 1**).

6.28 Function of Output Signal M11

Function with or without control panel	Parameter
Functions of signal M11 (m11)	297

The following settings are possible using **parameter 297**:

- 297 = 0** Function according to setting of parameter **290**
- 297 = 1** Signal M11 is On whenever the light barrier is uncovered.
- 297 = 2** Signal M11 is On whenever the light barrier is covered.
- 297 = 3** Signal M11 is On only after light barrier uncovered or covered until seam end.
- 297 = 4** Signal M11 is On as with setting 3. Signal M5 (machine running), however, is Off while signal M11 is On.
- 297 = 5** Signal M11 is On from **light barrier sensing, pedal in pos. -2** or **hemmer foot signal off** key onwards.
- 297 = 6** Signal M11 is On when the key on input in2 is open. Signal M11 is switched off after the section set using parameter **007** has been executed, when the key on input in2 is closed. At drive standstill, signal M11 is switched off immediately.
- 297 = 7** Signal M11 is issued whenever the operating hours counter reading (parameter 177) has reached the value of service monitoring (parameter 217).
- 297 = 8** Signal M11 is issued whenever machine run blockage is enabled.

6.29 Tape Cutter/Fast Scissors (Modes 6/7/15/16)

6.29.1 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".

6.29.2 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 3 On
Tape cutter/Fast scissors at the seam end On	LED 4 On
Tape cutter/Fast scissors at the start and at the end of the seam On	LED 3 and 4 On
Tape cutter/Fast scissors at the start and at the end of the seam Off	LED 3 and 4 Off
	Key S3

- 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/V850
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".

6.29.3 Tape Cutter/Fast Scissors in Mode 15

Function without control panel	Parameter
Count c1 and c2 On/Off	LED 1/2 Key S2
Counts c3 and c4 On/Off	LED 3/4 Key S3
Functions of sewing foot lifting On/Off	LED 5/6 Key S4
Basic position 1 or 2	LED 7/8 Key S5

- The **tape cutter** signal can be set separately for start and end counting.
- When using the V820/V850 control panel, parameter **292** will automatically be set to slide-in strip "5" if **290 = 15**.

Function with control panel	V820/V850
Chain suction/blowing at the start of the seam and/or at the seam end On/Off	Key 1
Stitch counting On/Off	Key 2
Light barrier On/Off	Key 3
Tape cutter at the start of the seam and/or at the seam end On/Off	Key 4
Chain blowing On/Off	Key 5
Sewing foot in the seam and/or at the seam end On/Off	Key 6
Basic position 1 or 2	Key 7
Set bobbin thread monitor to the preset value	Key 8
Reverse motor rotation On/Off	Key 9
No function	Key 0

Output and Times for Tape Cutter

Function with or without control panel	Parameter
Counting after light barrier uncovered until tape cutter M4 On (ckL)	021
Tape cutter function (USS)	232
Delay time of output VR for chain suction (kt6)	256
Start counting until tape cutter M4 On (c7)	257
End counting until tape cutter M4 On (c8)	258
Delay time until tape cutter M4 On (kd4)	286
ON period tape cutter M4 (kt4)	287

Tape cutter function after enabling output M6:

- The seam end is initiated by light barrier uncovered.
- Counting (ckL) is initiated at the same time.
- After counting, tape cutter M4 will be activated for the time (kt4).
- After the delay time (kd4), tape cutter M4 will be activated for the time (kt4) for the 2nd time.
- At standstill of the drive the tape cutter operation (double tape cutting) can be repeated any number of times by pressing the key (setting parameter **244 = 15**) connected to socket ST2/5.

Tape cutter function when output M6 is disabled:

- At the start of the seam, the tape cutter will be activated for the time (kt4) after a number of stitches (c7) that can be set by means of parameter **257**.
- After light barrier sensing, the tape cutter will be activated for the time (kt4) at the seam end after a number of stitches (c8) that can be set by means of parameter **258**.
- At standstill of the drive the tape cutter operation (double tape cutting) can be repeated any number of times by pressing the key (setting parameter **244 = 15**) connected to socket ST2/5.

See also chapter "Timing Diagrams" in the List of Parameters.

6.29.4 Tape Cutter/Fast Scissors in Mode 16

Function without control panel	Parameter
Count c1 On/Off LED 1/2	Key S2
Counts c3 and c4 On/Off LED 3/4	Key S3
Functions of sewing foot lifting On/Off LED 5/6	Key S4
Basic position 1 or 2 LED 7/8	Key S5

- The signal **tape cutter/fast scissors** can be set separately for start and end counting.
- The V810 control panel cannot be used if parameter **290 = 16** (mode 16).
- When using the V820/V850 control panel, parameter **292** will automatically be set to slide-in strip "7" if **290 = 16**.

Function with control panel	V820
Tape cutter/Fast scissors at the start of the seam On/Off	Key 1
Tape cutter/Fast scissors at the seam end On/Off	Key 2
Light barrier On/Off	Key 3
Chain suction On/Off	Key 4
Blow fabric onto stack from light barrier uncovered onwards On/Off	Key 5
Tape cutting at the seam end On/Off	Key 6
Reverse motor rotation On/Off	Key 7
Unlocking the chain On/Off	Key 8
Sewing foot in the seam and/or at the seam end On/Off	Key 9
Basic position 1 or 2	Key 0

The settings of key **7** and **8** on the V820/V850 control panel have priority over the setting of parameter 019.

Functions	Key 2	Key 6
Tape cutting at the seam end Off, count c4 until stop	Off	Off
Tape cutting at the seam end On, count c4 until stop	On	Off
Tape cutting at the seam end Off, count c3 until stop	On/Off	On

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 M8 (ST2/24) fast scissors AH2 (kd4)	286
ON period for output M8 (ST2/24) fast scissors AH2 (kt4)	287
Selection of signal M8 functions (m08)	296

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

Function "Blow Fabric onto Stack"

Function with or without control panel	Parameter
Function "blow fabric onto stack" (bLA)	194
ON period for output M7 (kt5)	289

194 = 0 Blow fabric onto stack (output M7) at the seam end over the time (kt5), which can be set using parameter **289**.

194 = 1 Blow fabric onto stack (output M7) from light barrier uncovered to seam end; after the seam end over the time (kt5).

See also chapter "Timing Diagrams" in the List of Parameters.

6.30 Manual Tape Cutter/Fast Scissors

Upon pressing an external key depending on the pre-selection of parameters **240...249**, 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!

6.31 Manual Stacker

Function with or without control panel	Parameter
Stacker function with open/closed key (iS1)	264
ON period for manual stacker (ktS)	265

After pressing the key that has been allocated for the purpose, a stacker signal will be issued for a certain period of time (parameter **265**) at output M7 (socket ST2/23). Select the key using one of parameters **240...249**. The manual stacker function is possible in all modes except mode 16.

240...249 = 26	Allocation of the key for the manual stacker signal.
264 = 0	Signal "manual stacker" (output M7), when key is closed.
264 = 1	Signal, "manual stacker" (output M7), when key is open.
265	ON period of manual stacker signal.

6.32 Selection of Signals M8, M9 and M10 at the Start of the Seam

Function with or without control panel	Parameter
Signals M8, M9, M10 On/Off (0 = Off / 1 = On)	(ASi) 273
Delay time for signal M8 at the start of the seam	(Ad1) 274
Signal M8 ON period at the start of the seam	(At1) 275
Delay time for signal M9 at the start of the seam	(Ad2) 276
Signal M9 ON period at the start of the seam	(At2) 277
Delay time for signal M10 at the start of the seam	(Ad3) 278
Signal M10 ON period at the start of the seam	(At3) 279

Three different signals (M8, M9, M10) can be programmed for various applications at the start of the seam. These can be enabled and disabled using parameter **273**. Select delay times and ON periods using parameters **274...279**.

6.33 Seam with Stitch Counting

Function without control panel	Parameter
Stitch counting On/Off	015

Function with control panel	V820/V850
Stitch counting On/Off	Key 2

6.33.1 Number of Stitches for a Seam with Stitch Counting

Function with or without control panel	Parameter
Number of stitches for a seam with stitch counting	(Stc) 007

The number of stitches for stitch counting can be set directly on the control or on a connected V810/V820/V850 control panel.

For fast operator information (HIT) when using the V820/V850 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 +/-.

6.33.2 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	(ktS) 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 after having pressed the pedal once. The procedure can be interrupted by "heelback (-2)".

266 = 0 Speed n12 is activated when key is closed.

266 = 1 Speed n12 is activated when key is open.

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.

6.33.3 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/V850
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.

6.34 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 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)

141 = 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**.

6.35 Light Barrier

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

Function with control panel	V820/V850
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 B18/5 is active only if parameter **239 = 0**.

6.35.1 Speed after Light Barrier Sensing

Function with or without control panel	Parameter
Speed after light barrier sensing (n5)	114

6.35.2 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/V850 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/V850 control panel.

For fast operator information (HIT) when using the V820/V850 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/V850 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

6.35.3 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.

6.35.4 Light Barrier Monitoring

Function with or without control panel	Parameter
Stitches for light barrier monitoring (LSc)	195

In order to check the optical and electrical function it is possible to select a number of stitches by means of parameter **195**. While these stitches are performed, the light barrier must be activated at least once. When the count is completed and the light barrier has not been activated, the drive stops and the message **A6** appears.

- Select a number of stitches that is larger than necessary for the seam.
- The function is off if the number of stitches is "0".

6.35.5 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.

6.35.6 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**

6.35.7 Functional Variations of the Light Barrier Input

Function with or without control panel	Parameter
Selection of the input function on socket B18/5	239

If the light barrier function is not used, a switching function can be assigned to the input on socket B18/5 as well as to inputs in1...i10.

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 with those described for parameter **240** below.

6.36 Switching Functions of Inputs in1...i10

Function with or without control panel	Parameter
Selection of the input function (in1...i10)	240...249

The functions of the keys/switches connected to socket connectors ST2 and B4 can be selected for inputs in1...i10 using parameters **240...249**.

240...249 =

- 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)**
- 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). Set parameter 137 to On.
- 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. Set parameter 137 to On.
- 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 / Intermediate stitch condensing:** Upon pressing the key, the backtack or stitch condensing will be enabled anywhere in the seam and at standstill of the drive.
- 17 Stitch regulator suppression / recall:** Upon pressing the key, the backtack or stitch condensing operation will be suppressed or recalled once.
- 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.
- 19 Reset bobbin thread monitor:** After inserting a full bobbin, the stitch counter is set to the value determined by parameter 031.
- 20 Handwheel running in the direction of rotation:** Upon pressing the key, the drive runs in the direction of rotation according to the setting of parameter 161.
- 21 Handwheel running in the direction of rotation:** Upon pressing the key, the drive runs in the opposite direction of rotation according to the setting of parameter 161.
- 22 Speed limitation n11 (flip-flop 2):** Upon pressing the key in the seam, the speed limitation n11 is enabled, and a signal is issued at the output ST2/29. The speed limitation will be disabled upon pressing the key again, and the signal at the output is no longer issued.
- 23 No function**
- 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.
- 25 Speed limitation with external potentiometer:** Upon pressing the key, the external speed limitation becomes effective. Parameter 126 must be set at "2".
- 26 Manual stacker:** Upon pressing the key, the function is performed in all modes (except mode 16).
- 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.
- 29 Hemmer foot signal off:** See parameter 296. This function is effective only in the seam.
- 30 High lift for walking foot:** Upon pressing the key, high lift for walking foot is enabled if the sewing foot is On.
- 31 Function "speed limitation bit0":** Upon pressing the key "bit0", the speed n11 will be enabled. Upon simultaneously pressing the keys "bit0" and "bit1", speed n9 will be enabled.
- 32 Function "speed limitation bit1":** Upon pressing the key "bit1", speed n10 will be enabled. Upon simultaneously pressing the keys "bit0" and "bit1", speed n9 will be enabled.
- 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.

- 35 **Automatic speed n9:** The speed can be interrupted by pressing the pedal to position -2.
- 36 **Automatic speed n9:** No influence by the pedal.
- 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.
- 39 **Switch to the next pattern in TEACH IN:** Upon pressing the key, the program switches to the next pattern.
- 40 **Switch back to the previous pattern TEACH IN:** Upon pressing the key, the program switches to the previous pattern.
- 41 **Tape cutting only at machine standstill.**
- 42 **Enable hot thread chain cutting or sewing foot lifting:** This function is effective only in the chainstitch mode.
- 43 **No function**
- 44 **Function like pressing the pedal to pos. -2:** Upon pressing the key, the seam end is initiated. If the functions "end backtack" and "trimming operation" are activated, they will be completed. The drive stops in position 2.
- 45...47 **No function**
- 48 **Signal A1 is issued:** Upon pressing the key, signal A1 is issued immediately.
- 49 **Signal A1 switchable as flip-flop:** Upon pressing the key, signal A1 is activated and deactivated when pressing the key again.
- 50 **No function**
- 51 **Signal A2 is issued:** Upon pressing the key, signal A2 is issued immediately.
- 52 **Signal A2 switchable as flip-flop:** Upon pressing the key, signal A2 is activated and deactivated when pressing the key again.
- 53 **No function**
- 54 **Function like pressing the pedal to step 12:** If start backtack or softstart is enabled, it will be performed.
- 55 **Reversal of the direction of rotation**
- 56 **No function**
- 57 **Input for bobbin thread monitor:** Set desired operating mode using parameter 035.
- 58..65 **No function**
- 66 **Thread trimming is suppressed.**
- 67 **Thread trimming and backtacking are suppressed.**
- 68 **Interruption of seam in TEACH IN and switch to next seam.**
- 69 **Interruption of seam in TEACH IN and switch to preceding seam.**
- 70 **No function**
- 71 **Preparation for backlatch function**
- 76 **Intermediate backtack / single stitch (correction sewing), mode 31**

6.37 Software Debouncing of All Inputs

Functions	Parameter
Software debouncing of all inputs (EnP)	238

- 238 = 0 No debouncing
- 238 = 1 Debouncing

6.38 F1/F2 Function Key Assignment on the V810/V820/V850 Control Panels

Functions	Parameter
Selection of input function on the (A) "F1" key on the V810/V820/V850 control panels (tF1)	293
Selection of input function on the (B) "F2" key on the V810/V820/V850 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 No function****19 Reset bobbin thread monitor:** After inserting a full bobbin, the stitch counter is set to the value determined by means of parameter **031**.

6.39 Handwheel Rotation by Keystroke

Function with or without control panel	Parameter
Number of handwheel rotation steps (increments) triggered by keystroke (ihr)	260
Speed of handwheel rotation triggered by keystroke (nhr)	261
Delay time until the key is pressed down causing the handwheel to rotate continuously (ihP)	262

The handwheel can be set in motion by pressing a key. Select the input (in1...i10) used for this function and the direction of rotation using parameters **240...249**.

240...249 = 20 Direction of rotation corresponds to that of the machine.

240...249 = 21 Direction of rotation is opposite to that of the machine.

260 - Number of steps by which the handwheel rotates upon keystroke.

261 - Speed of handwheel rotation triggered by keystroke.

262 - Delay time until the key is pressed down causing the handwheel to rotate continuously

When the key is pressed **briefly**, i.e. no longer than the time set using parameter **262**, the handwheel rotates by the steps set using parameter **260**.

When the key is **held down**, the handwheel rotates continuously until the key is released.

The handwheel rotates at the speed set using parameter **261**.

6.40 Speed Limitation by means of External Potentiometer

Function with or without control panel	Parameter
Speed limitation by means of external potentiometer (maximum value) (toP)	124
Speed limitation by means of external potentiometer (minimum value) (bot)	125
Function "speed limitation with external potentiometer" (Pot)	126

The functioning of the speed limitation when using an external potentiometer can be selected using parameter **126**.

The desired limitation speed is set using a potentiometer connected to socket ST2/2-4. The maximum/minimum value of speed limitation is set using parameters **124/125**.

- 124:** Maximum value for speed limitation with external potentiometer
125: Minimum value for speed limitation with external potentiometer
126 = 0 Function "external potentiometer" Off.
126 = 1 The external potentiometer is active whenever the pedal is pressed forward. The drive always runs with the set speed limitation.
126 = 2 The external potentiometer is active only if an input is set at "25" by means of parameters **240...249**. If the selected input is enabled and the pedal pressed forward, the drive runs at limited speed. The speed limitation can be enabled and disabled anywhere in the seam using the key.
126 = 3 Speed depending on high lift with potentiometer e.g. Juki (LU-2210/2260).
126 = 4 Speed depending on high lift with potentiometer e.g. Dürkopp Adler (767).

6.41 Signals A1 and A2

When using the V820/V850 control panel, direct access by means of the function key (key 9) is possible.

Function with control panel	Parameter
Signal A1 and/or A2 On/Off with slide-in strip 1...4 (left-hand arrow = A1, right-hand arrow = A2)	(-F-) 008 = 5

Function with control panel	V820/V850
Signal A1 On Signal A2 On Signals A1 and A2 On Signals A1 and A2 Off	left-hand arrow above key On right-hand arrow above key On both arrows above key On both arrows above key Off Key 8

Parameters 300-309, 330, 331 for A1 and 310-319, 335, 336 for A2 determine when and how long the **signals** are enabled or disabled, or other conditions take effect.

When a V820/V850 control panel is used, signals A1/A2 can be assigned to a seam using key **8** (slide-in strips 6, 8, 9 and 10).

Using parameter **300/310**, it is possible to set which output (M1-M11 or VR) can be switched by A1/A2.

Using parameter **301/311**, it is possible to select if signal A1/A2 is effective until the seam end, stop at the seam end, over time or during stitch counting.

- 301/311**
- 0** Until seam end (parameter **320**)
 - 1** Over time (parameter **304/305/314/315**)
 - 2** Until stop at the seam end
 - 3** During stitch counting (parameter **308/309/318/319**)
 - 4** Puller function

Using parameter **302/312**, it is possible to select if the signal A1/A2 shall be effective at the start of the seam, after light barrier sensing or at the seam end.

- 302/312**
- 0** Signal at the beginning of the seam
 - 1** Signal after light barrier sensing
 - 2** Signal at stop of the drive at the seam end
 - 3** Signal from light barrier covered at the start of the seam
 - 4** Signal only manually switchable

Using parameter **303/313**, it is possible to select if the signals shall be activated with or without delay.

- 303/313**
- 0** Without delay time
 - 1** After a delay time (parameter **308/318**)
 - 2** After a stitch count (parameter **309/319**)

The delay time can be selected using parameter **304/314**.

The ON period can be selected using parameter **305/315**.

The speed mode can be set using parameter **306/316**. The speed limitation is effective only when the signal is On.

- 306/316**
- 0** Pedal controlled speed
 - 1** Limitation to speed n9 (parameter **288**)
 - 2** Limitation to speed n11 (parameter **289**)

The function for A1/A2 can be enabled or disabled separately using parameter **307/317**.

Using parameter **308/318**, it is possible to select if the signals shall be activated with or without delay stitch count.

- 308/318**
- 0** Without delay stitches
 - 1** With delay stitches

Separate stitch counts can be selected using parameter **309/319**.

The switch-off moment can be set using **parameter 320**.

- 320**
- 0** Signals effective until seam end
 - 1** Signals effective until pedal has been pressed to pos. 0 (neutral)

Using parameter **330** for signal A1 and parameter **335** for signal A2, it is possible to select if these signals and sewing foot lifting shall be coupled or these signals and backtacking shall be coupled.

- 330/335**
- 0** Coupling off
 - 1** Coupling with sewing foot lifting
 - 2** Coupling with backtacking
 - 3** Coupling with sewing foot lifting and backtacking

Signals A1/A2 can be inverted using parameter **331/336**.

Signals A1/A2 can be switched using the "F" key on the V820/V850 control panel if parameter **008** is set accordingly.

6.41.1 Puller Function Using Signal A1 and/or A2

Puller operation is possible using signals A1/A2. Use the following parameters:

- **300/310** Selection of power transistor for the puller solenoid.
- **301/311=4** Signals A1/A2 enable the puller function.
- Select the input for triggering the puller function using parameters **240...249=49/52**. This way, the puller can be lifted and lowered manually.
- **302 + 303/312 + 313=0** The puller will be lifted at the start of the seam without delay.
- **309/319** Number of stitches until the puller is lowered at the start of the seam.
- **330/335** Coupling of the puller and sewing foot lifting or coupling of the puller and backtacking.
- **307/317** Puller function On (puller up)/Off (puller down).
- If parameter **008=6/7**, the puller (signals A1/A1) can be lifted or lowered by pressing key 9 on the V820/V850 control panel.

6.42 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.

6.43 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 ST2/20

6.44 Signal Output Position 2

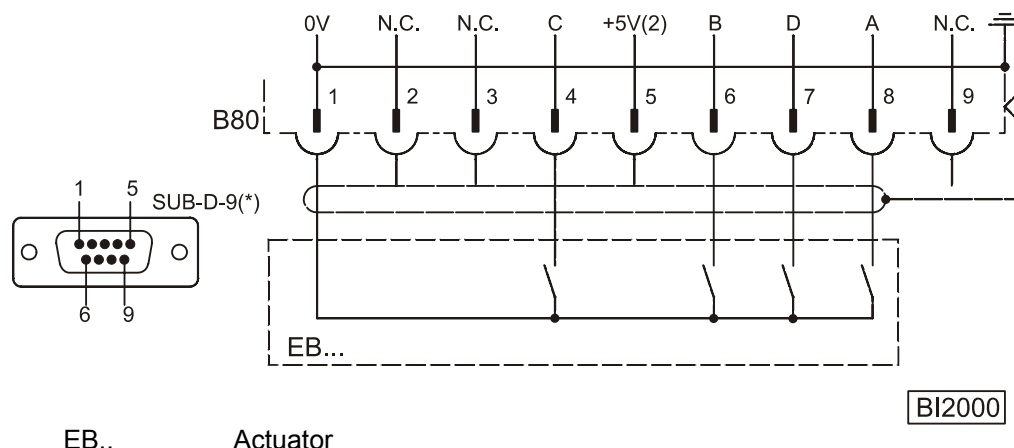
- Transistor output with open collector
- Signal whenever the needle is in the slot between position 2 and 2A
- Independent of sewing, thus also when turning the handwheel manually
- Suitable e. g. for the connection of a counter
- An inverted signal is issued at socket ST2/21

6.45 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 ST2/22

6.46 Actuator

The commands for the sewing operation are inputted using the actuator which is connected to the pedal. Instead of the built-on actuator another actuator can also be connected to socket B80.



EB.. Actuator

Table: Coding of the Pedal Steps

Pedal step	D	C	B	A	
-2	H	H	L	L	Full heelback (e. g. initiating the seam end)
-1	H	H	H	L	Slight heelback (e. g. sewing foot lifting)
0	H	H	H	H	Pedal in pos. 0 (neutral)
½	H	H	L	H	Pedal slightly forward (e. g. sewing foot lowering)
1	H	L	L	H	Speed stage 1 (n1)
2	H	L	L	L	Speed stage 2
3	H	L	H	L	Speed stage 3
4	H	L	H	H	Speed stage 4
5	L	L	H	H	Speed stage 5
6	L	L	H	L	Speed stage 6
7	L	L	L	L	Speed stage 7
8	L	L	L	H	Speed stage 8
9	L	H	L	H	Speed stage 9
10	L	H	L	L	Speed stage 10
11	L	H	H	L	Speed stage 11
12	L	H	H	H	Speed stage 12 (n2) Pedal fully forward

Function with or without control panel	Parameter
Selectable pedal functions (-Pd)	019

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).

Function with or without control panel	Parameter
Speed stage graduation (nSt)	119

The pedal characteristics (speed change from stage to stage) can be varied.

Possible characteristic curves:

- linear
- progressive
- highly progressive

6.47 Acoustic Signal

Function with control panel	Parameter
Acoustic signal On/Off (AkS)	127

An acoustic signal which sounds in the following cases can be enabled by means of parameter **127**:

- When the bobbin thread monitor is On, after completion of the stitch count.
- When the machine run blockage is On.
- During service hours monitoring

7 Signal Test

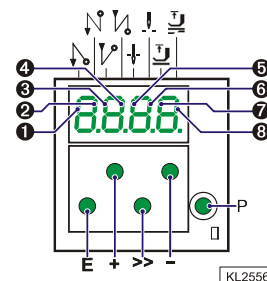
Function with or without control panel	Parameter
Input and output test (Sr4)	173

Function test of external inputs and transistor power outputs with connected actuators (e.g. solenoids and solenoid valves).

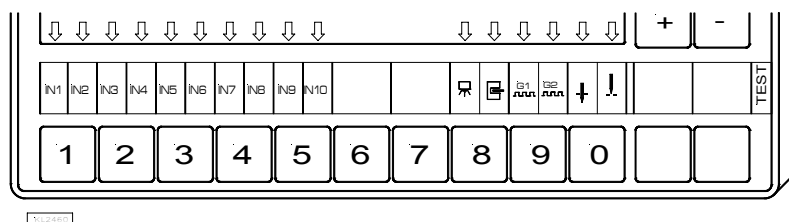
7.1 Signal Test Using the Incorporated Control Panel or the V810/V820/V850

Input Test:

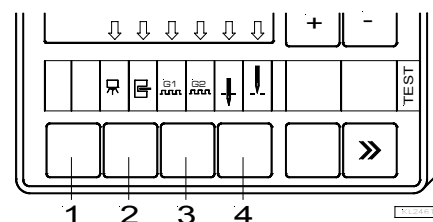
- Select parameter 173.
- Control: Functions of signals “light barrier, sensor (IPG... or HSM...), generator impulse 1 and 2, positions 1 and 2” can be checked directly and indicated by means of LEDs 3...8. Inputs in1...in10 are displayed individually. Several switches and/or keys must not be actuated at the same time.
- **V810 control panel:** The above signals are indicated by means of arrows above the keys 2...4. Inputs in1...in10 appear individually on the LC display. Several switches and/or keys must not be actuated at the same time (see control).
- **V820 control panel:** Inputs in1...in10 and signals “light barrier, sensor, generator impulse 1 and 2, positions 1 and 2” are displayed by means of arrows above the keys 1...10. Several inputs can be actuated and displayed at the same time.
- If several keys and/or switches are actuated at the same time, e.g. in3, in5, in6, in7, the least significant input will be displayed, e.g. in3.
- **V850 control panel:** As V820, but with display e.g.: ST2/07:IN1 = ON



V820/V850 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.

Output Test:

- Select the desired output using the +/- keys
- Enable the selected output using the >> key on the V810 or the incorporated control panel
- Enable the selected output using the key at the bottom right on the V820/V850

Display	Output	on socket
01	Backtacking	ST2/34
02	Sewing foot lift	ST2/35
03	M1	ST2/37
04	M2	ST2/28
05	M3	ST2/27
06	M4	ST2/36
07	M5	ST2/32
08	M6	ST2/30
09	M7	ST2/23
010	M8	ST2/24
011	M9	ST2/25
012	M10	ST2/29
013	M11	ST2/31

For your notes:

For your notes:

For your notes:



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