

MODEL S-311+ACL

OPERATING INSTRUCTIONS



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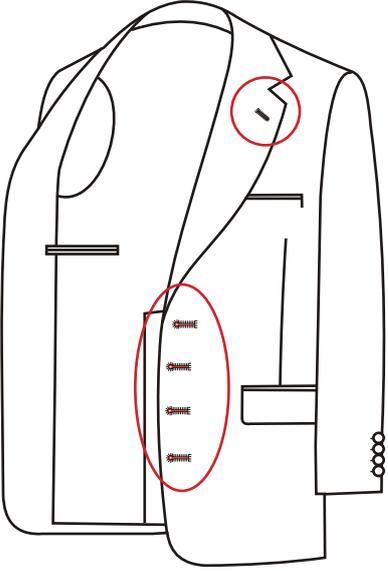
A - INTRODUCTION

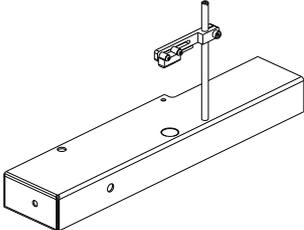
1. GENERAL INFORMATION

Electronical eylet buttonhole machine with a cutting block enables sewing of buttonholes within the range 13-38 mm (limitations given by the machine type) and without the need to change the cutting block . The device is supplied with AF and LTT models.

Machine models with ACL device:

- | | |
|----------------------|-----------------------|
| a) AF/ACL | e) LTT/ACL |
| b) AF/ACL-LP1 | f) LTT/ACL-LP1 |
| c) AF/ACL-LP2 | g) LTT/ACL-LP2 |
| d) AF/ACL-LPE | h) LTT/ACL-LPE |

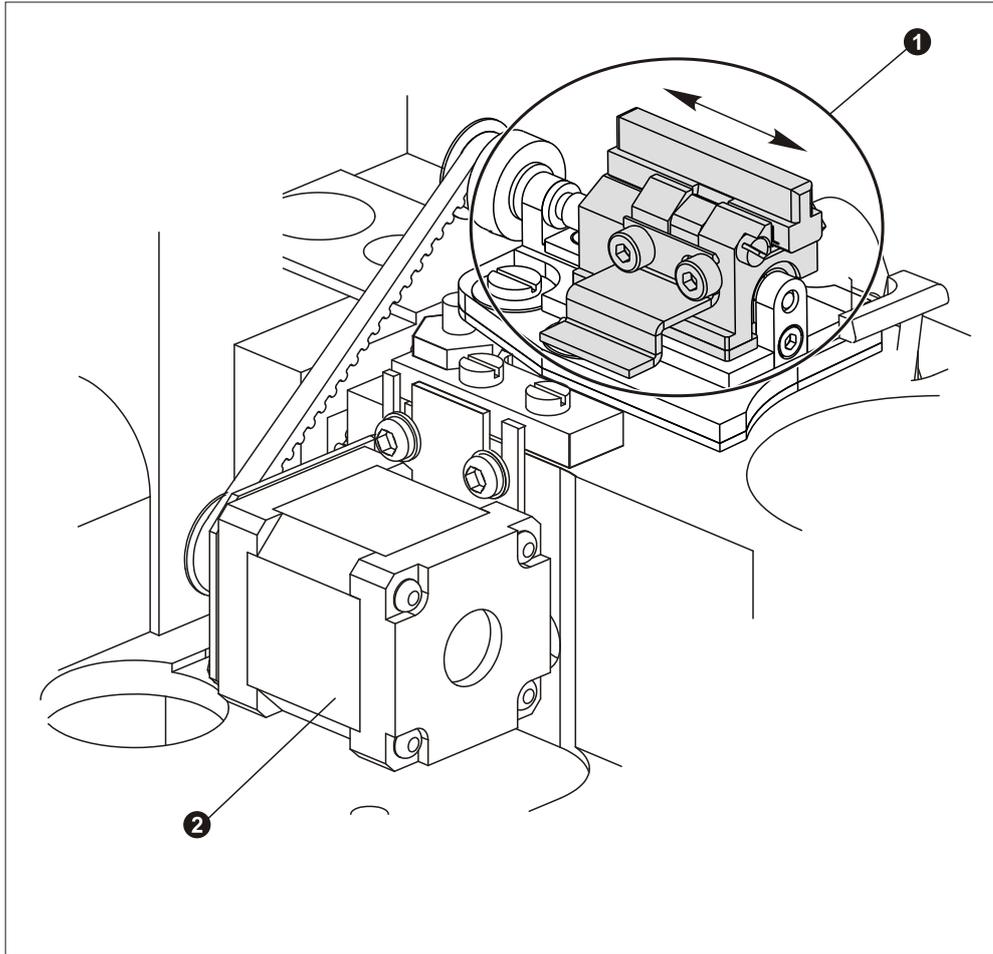
<p>1. AF/ACL and LTT/ACL handles the widest range of sewing 13-38 mm without change of cutting steel.</p> <p>2. AF/ACL-LP1 and LTT/ACL-LP1 handles the range of sewing 13-26 mm. This application enables automatic sewing of buttonholes on the front of jackets. The device is also able to cut the straight part of the buttonhole on the jacket lapel within the range 8-21 mm.</p> <p>3. AF/ACL-LP2 and LTT/ACL-LP2 handles the range of sewing 13-30 mm. This device is also able to cut the straight part of the buttonhole on the jacket lapel within the range 12-25 mm.</p> <p>4. AF/ACL-LP2 and LTT/ACL-LPE handles the range of sewing 13-30 mm. This device is also able to cut the straight part of the buttonhole on the jacket lapel within the range 6-25 mm.</p>	
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<p>It is possible to order the optical sensor kit (03.5519.3.004) for LP1, LP2 and LPE versions as an additional accessory. It can automatically identify the type of buttonhole sewn on the jacket front (button hole or lapel hole)</p>	
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ABBREVIATIONS USED IN THE MANUAL	
AF	Adjustable flybar
LTT	Long Tail Trimmer – all thread are trimmed long
ACL	Adjustable Cutting Length
ACL-LP1	Adjustable Cutting Length – application on jackets - Lapel 1
ACL-LP2	Adjustable Cutting Length – application on jackets - Lapel 2
ACL-LPE	Adjustable Cutting Length – application on jackets
OS-LP	Lapel optical sensor to identify buttonhole being sewn

A - INTRODUCTION

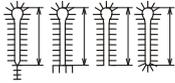
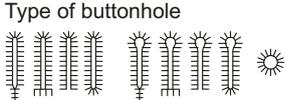
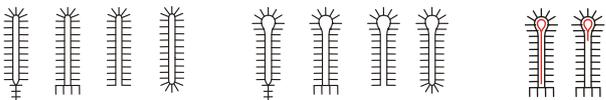
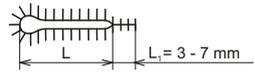
2. TERMINOLOGY OF MACHINE PARTS



- ① Sliding block
- ② Motor

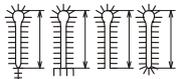
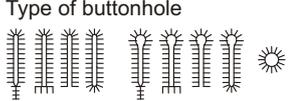
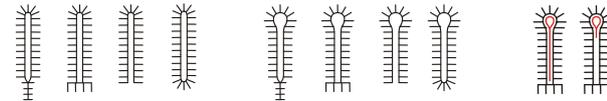
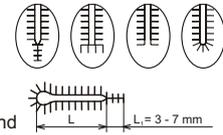
A - INTRODUCTION

3. TECHNICAL SPECIFICATION

Machine type/model	AF/ACL	AF/ACL-LP1	AF/ACL-LP2	AF/ACL-LPE
Performance of the machine	1000 - 2000 stitches per minute (500 - 1000 rotation per minute of the drive shaft)			
Buttonhole length 	13 - 38 mm	13 - 26 mm	13 - 30 mm	13 - 30 mm
Cutting length	13 - 38 mm	5 - 21 mm	12 - 25 mm	6 - 30 mm
Stitch density	0,5 - 2,0 mm (each step 0,1 mm)			
Number of stitch in the eye	4 - 20			
Electronic bite (width of sewing)	2,1 mm (AF, LTT), (± 0,3 mm elektronically); 2,7 mm (± 0,3 mm elektronically)			
Electronic bite (cross bar)	2,1 mm (AF, LTT), (± 0,5 mm elektronically); 2,7 mm (± 0,5 mm elektronically)			
Type of buttonhole 				
Type of eye	Without eye; 2,2 x 3,0 mm; 2,8 x 4,2 mm; 3,0 x 4,6 mm; 3,2 x 5,0 mm; 3,4 x 4,2 mm			
Length of fly bar	3,0 - 20,0 mm	See section D 5 (manual S-311)		
Length of cross bar	4 - 8 mm			
Density of cross bar	0,5 - 1,5 mm			
Number of stitches in round end	4 - 20			
Upstroke of clamp feet (max)	12 mm			
Thickness of the work piece (max)	Up to 8,0 mm			
Cutting	Cut before (CB), cut after (CA), no cutt (OFF), partial cutting (LP1 a LP2)			
Cutting space	From - 0,50 up to + 1,2 mm			
Correction of cutting length	± 1,5 mm			
Movement of the bedplate	64 mm			
Needle	02.0558.0.111 (Nm 100)			
Recommendet threads*	80, 100, 120, gimp 30-100.			
Upper thread trimming 				
Bottom thread and gimp timing 	—————			
Trimming range 				
Operational conditions	According to IEC 364-3, IEC 364-5-51 temperature from +5°C to 40°C, relative humidity from 30 to 80%			
Air pressure	0,55 MPa = 80 PSI			
Noise level	L_{WA} =86,9db; $L_{p(A)}$ =74,8 db; measured according EN ISO 3746:1995			
Dimension of the machine head	530 mm (hight) x 370 mm (width) x 560 mm (depth)			
Weight of the machine head	64 kg			
Dimension of the machine stand	730 mm (hight) x 1100 mm (width) x 700 mm (depth) + 150 mm uplift			
Total weight of the machine	175 kg			
Electricity power connection	1NPE~60Hz 230 V/TN/S; 1NPE~50Hz 230 V/TN/S			
Circuit breaker	Min. 10A Charakteristik C (EN60947-2)			

* **Note:** If you use threads 100 or less strong, the manufacturer recommends using left looper (order number 17.0069.4.019). If you use low quality threads, they can burn in the needle area (in such case the manufacturer recommends lowering machine speed - rotation).

A - INTRODUCTION

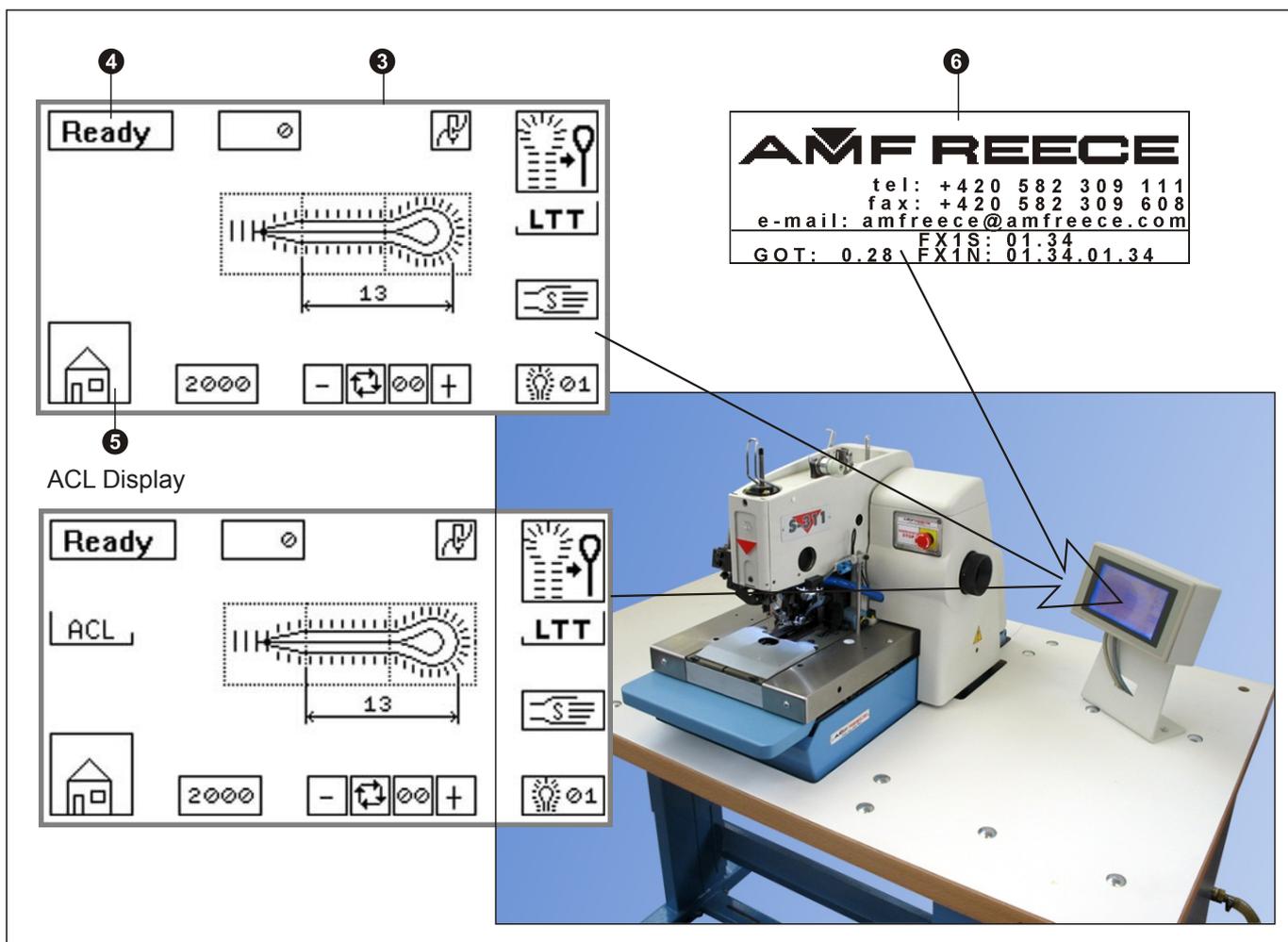
Machine type/model	LTT/ACL	LTT/ACL-LP1	LTT/ACL-LP2	LTT/ACL-LPE
Performance of the machine	1000 - 2000 stitches per minute (500 - 1000 rotation per minute of the drive shaft)			
Buttonhole length 	13 - 38 mm	13 - 26 mm	13 - 30 mm	13 - 30 mm
Cutting length	13 - 38 mm	5 - 21 mm	12 - 25 mm	6 - 30 mm
Stitch density	0,5 - 2,0 mm (each step 0,1 mm)			
Number of stitch in the eye	4 - 20			
Electronic bite (width of sewing)	2,1 mm (AF, LTT), ($\pm 0,3$ mm elektronically); 2,7 mm ($\pm 0,3$ mm elektronically)			
Electronic bite (cross bar)	2,1 mm (AF, LTT), ($\pm 0,5$ mm elektronically); 2,7 mm ($\pm 0,5$ mm elektronically)			
Type of buttonhole 				
Type of eye	Without eye; 2,2 x 3,0 mm; 2,8 x 4,2 mm; 3,0 x 4,6 mm; 3,2 x 5,0 mm; 3,4 x 4,2 mm			
Length of fly bar	3,0 - 20,0 mm	See section D 5 (manual S-311)		
Length of cross bar	4 - 8 mm			
Density of cross bar	0,5 - 1,5 mm			
Number of stitches in round end	4 - 20			
Upstroke of clamp feet (max)	12 mm			
Thickness of the work piece (max)	Up to 8,0 mm			
Cutting	Cut before (CB), cut after (CA), no cutt (OFF), partial cutting (LP1 a LP2)			
Cutting space	From - 0,50 up to + 1,2 mm			
Correction of cutting length	$\pm 1,5$ mm			
Movement of the bedplate	64 mm			
Needle	02.0558.0.111 (Nm 100)			
Recommendet threads*	80, 100, 120, gimp 30-100.			
Upper thread trimming 				
Bottom thread and gimp timing 				
Operational conditions	According to IEC 364-3, IEC 364-5-51 temperature from +5°C to 40°C, relative humidity from 30 to 80%			
Air pressure	0,55 MPa = 80 PSI			
Noise level	$L_{WA}=86,9$ db; $L_{pA}=74,8$ db; measured according EN ISO 3746:1995			
Dimension of the machine head	530 mm (hight) x 370 mm (width) x 560 mm (depth)			
Weight of the machine head	64 kg			
Dimension of the machine stand	730 mm (hight) x 1100 mm (width) x 700 mm (depth) + 150 mm uplift			
Total weight of the machine	175 kg			
Electricity power connection	1NPE~60Hz 230 V/TN/S; 1NPE~50Hz 230 V/TN/S			
Circuit breaker	Min. 10A Charakteristik C (EN60947-2)			

**** Note:** When sewing the round end buttonhole and starting the sewing in the eye, it is necessary to change the machine into the AF model and trim the treads manually.

B - CORRECT USAGE

1. SETTING UP THE MACHINE INTO HOME POSITION TO GET READY FOR SEWING

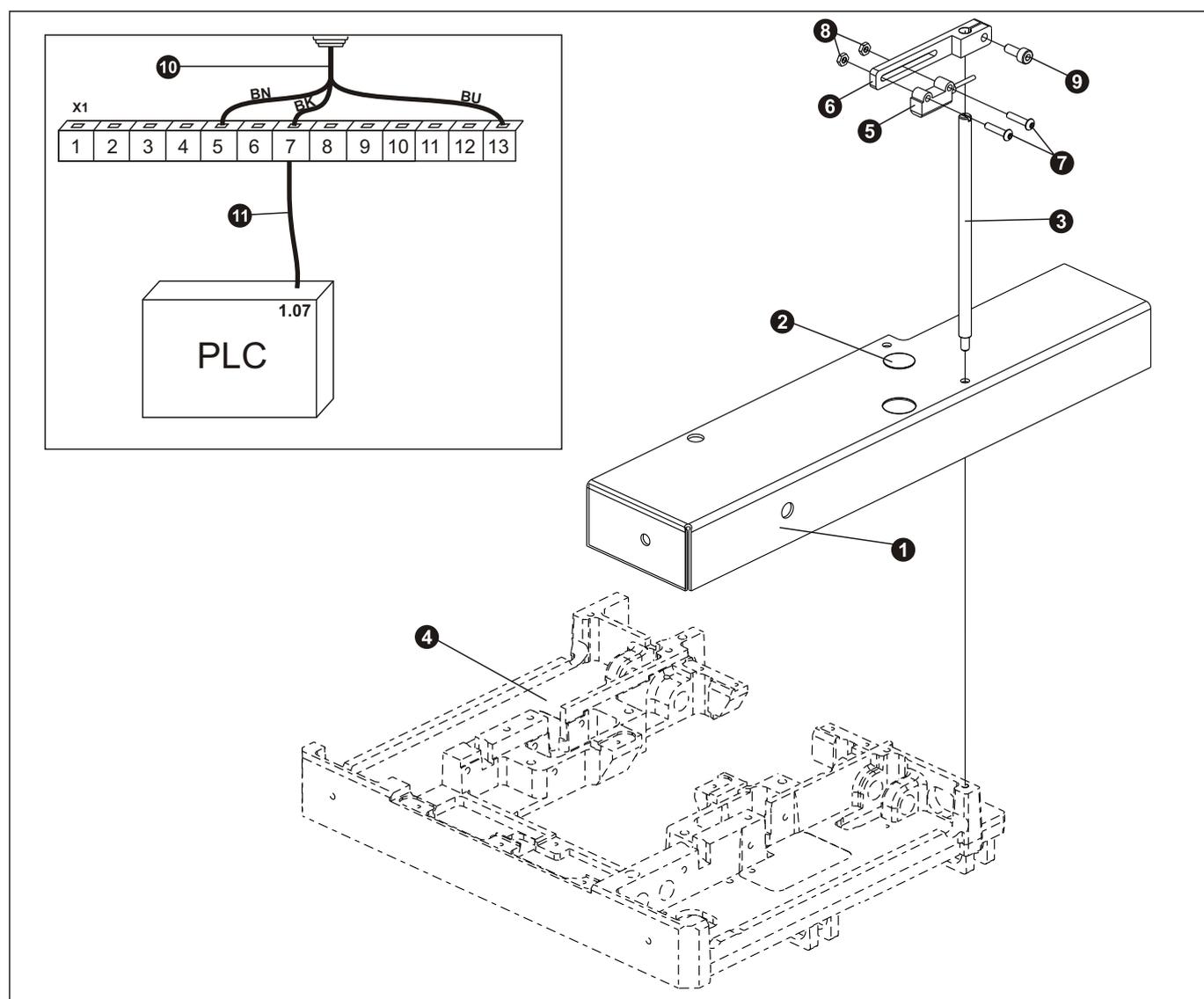
1. Turn the switch clockwise into the "on" I.
2. The display is activated and illuminated. The screen ⑥ with information about the manufacturer and program numbers downloaded in the machine show up. Wait until the machine show up. Wait until the main screen ③ appears.
3. If the error message **E01** appears in the panel ④ (machine not in home position), press  ⑤. If other error message appears on the display, see the Trouble shooting section.
4. The machine is ready to operate when the message **Ready** appears on the display in the panel ④.
(Display description on page 1-28, S-311).
5. If you wish to switch the machine to ACL mode, follow the introduction in section D, chapter 1.
Setting up the ACL display, page 1-7 ACL



C - MACHINE INSTALLATION

1. OPTICAL SENSOR INSTALATION

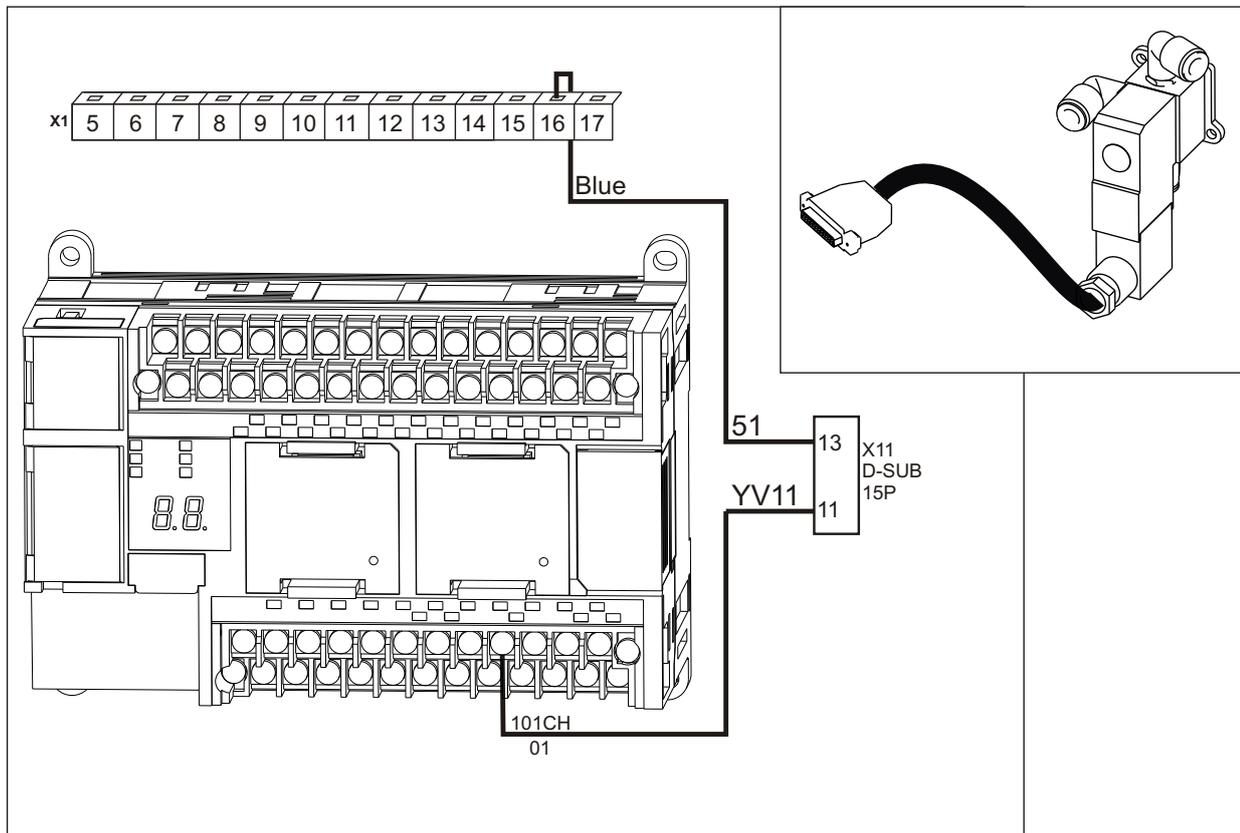
1. Dismantle the right cover of the machine bedplate and replace it with the new cover **1** supplied in the kit.
2. Place and seal the reflective foil **2** into the hole already made in the bedplate.
3. Put the vertical holder of the sensor **3** through the opening in the cover and fit it onto the machine bedplate **4**.
4. Mount the sensor **5** onto the horizontal holder **6** using screws **7** and nuts **8**.
5. Place the kit onto the vertical holder **3** and secure it with the screw **9**.
6. Put the sensor cable **10** through the gap in the cover of the machine sewing head.
7. Fit the leading wires **10** into the clamps provided in the switch board.
8. Connect cable **11** trough distribution frame and PLC entry 1.07.



C - MACHINE INSTALLATION

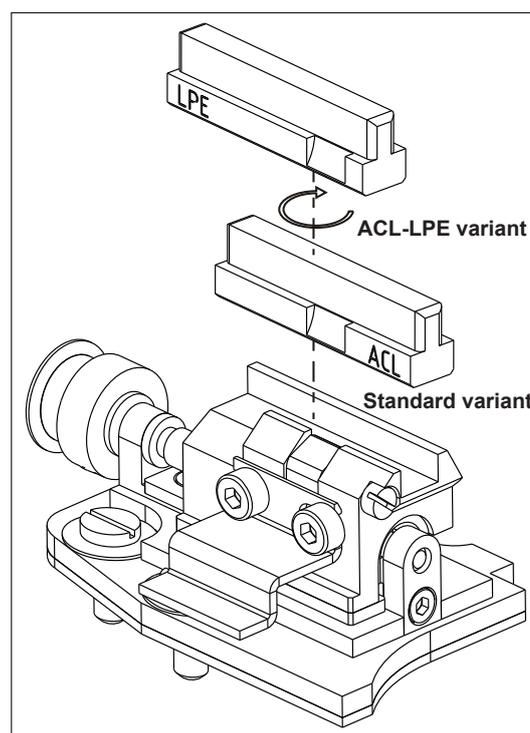
2.1 FEED CABLE INSTALLATION FOR SWITCH VALVE OF CUTTING

1. Connect cable 06.1900.0.015 into marked terminal in electrobox.
2. Connect cable 06.1900.0.016 into valve connector
3. Fasten then opposite cable end into the plug on electrobox and lock with screws.



2.2 LPE CUTTING BLOCK INSTALLATION

Take out the existing cutting block supplied as standard with ACL version, turn for 180°, so on left side (from operator view) on the block was LPE sign seen. Fasten turned cutting block back to moveable cutting block mechanism.



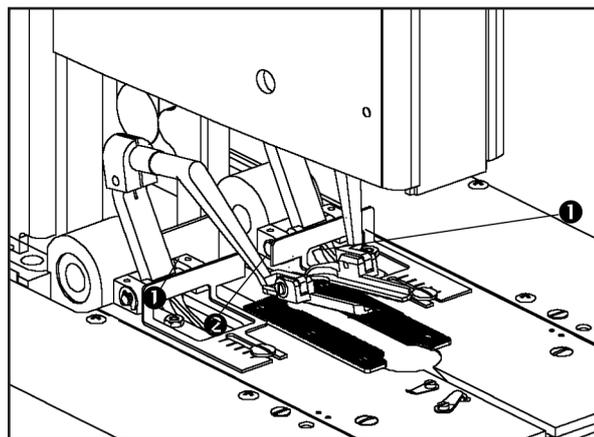
D - OPERATING THE MACHINE FUNCTIONS

1. SEWING A BUTTONHOLE

1. Set up the machine into home position for sewing as in chapter **C1** in this section. It is recommended to leave the machine in that state for 3 minutes to warm up before sewing.

2. Check that the threads are threaded correctly as described in chapter **C3** and place the work piece under the machine clamp feet. Front stoppers **1** on the clamp feet help to place the buttonhole correctly. They are adjustable in length.

3. Pressing slightly the pedal **2** into the first position, the work piece is clamped. (Loosing the pedal the clamp feet lift up).



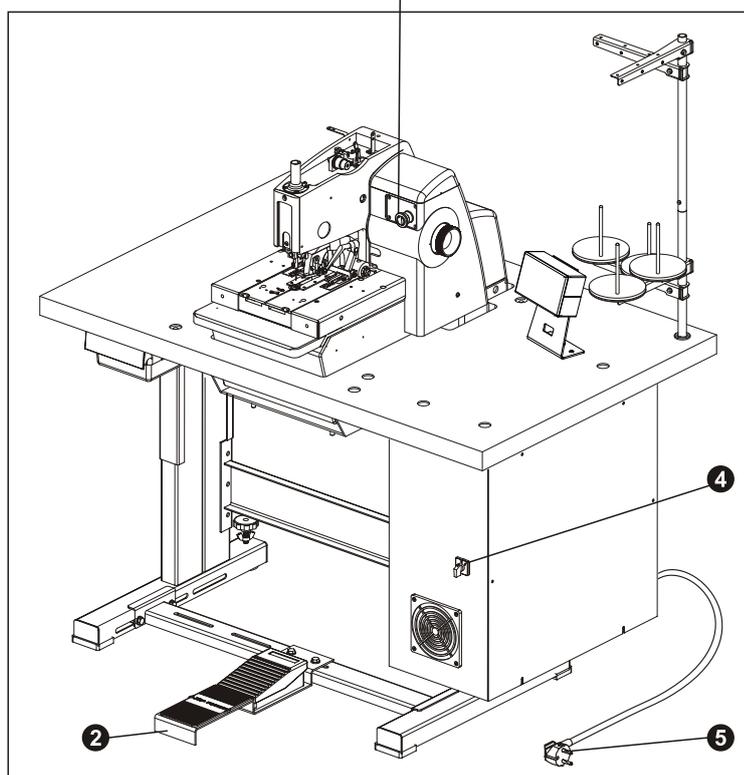
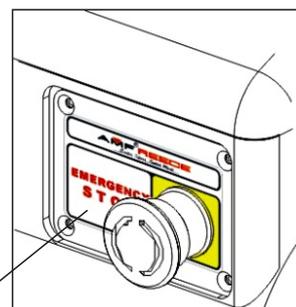
4. Pressing the pedal down into the second position starts sewing of the buttonhole shape selected in the program. Once the buttonhole is sewn, the fabric cut and upper thread trimmed, the clamp feet lift up and the machine moves back to the home position.

5. When the clamp feet have been already lifted up, the work piece can be moved to sew next buttonhole.

6. Using the STOP button **3** placed on the machine arm stops the cycle immediately. The machine does not operate after the button being released (error E01, see section Trouble shooting).

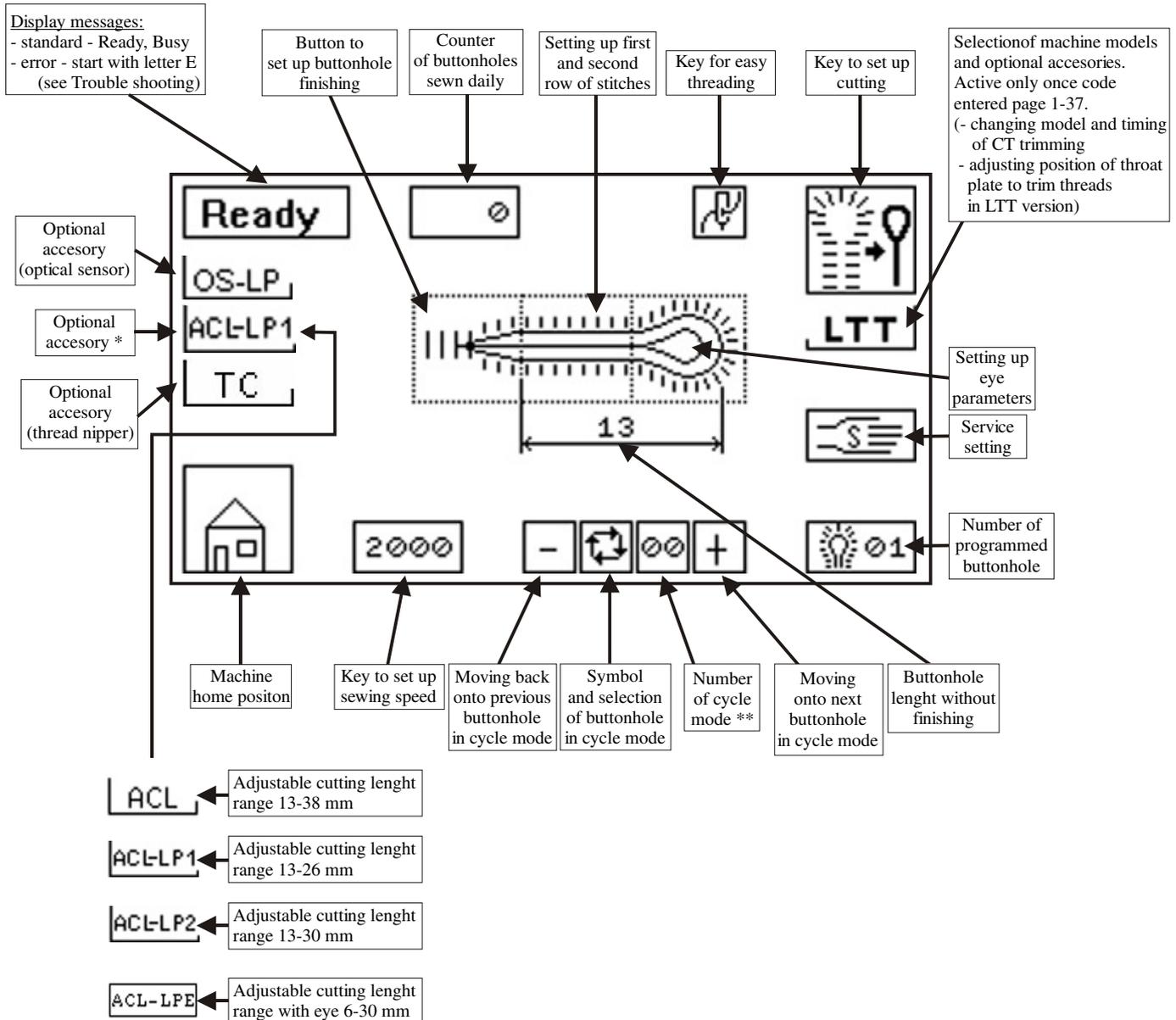
7. Pressing the foot pedal **2** before the buttonhole is finished does not let the clamp feet go up and the machine sews the button again.

8. When you have finished working, switch the machine off with the button **4**. For security reason, we also recommend disconnecting the cable **5** from the socket and closing the air supply.



D - OPERATING THE MACHINE FUNCTIONS

2. DESCRIPTION OF THE ACL SCREEN



* The optional accessory (optical sensor) is in operation only when ACL/LP1, ACL/LP2, ACL-LPE models are activated.

** 1 - 47 Cycle mode in operation.

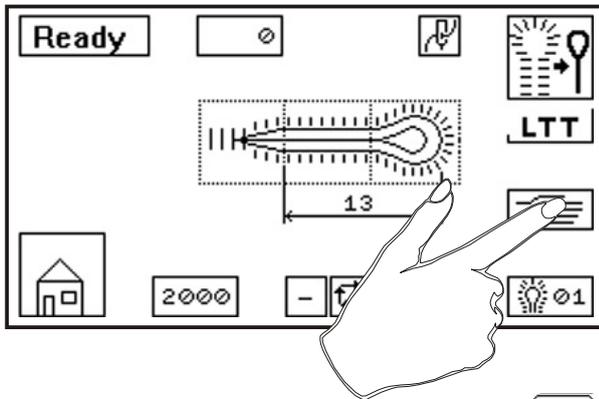
0 - Cycle mode not in operation (when "0" set up, the machine sews only one buttonhole).

Sections dealing with **buttonhole shape and parameters set up, sewing speed, cycle counter, cutting, service set up, cycle mode, buttonhole programming and error messages** can be found on pages 1-29 – 1-40 in S 311 manual.

D - OPERATING THE MACHINE FUNCTIONS

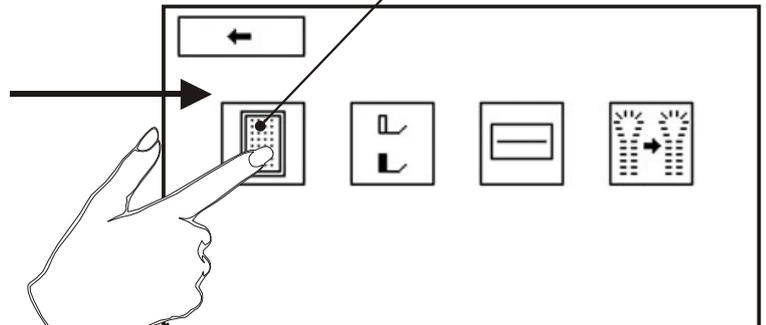
3. SETTING UP ACL DISPLAY

S-311 Main screen



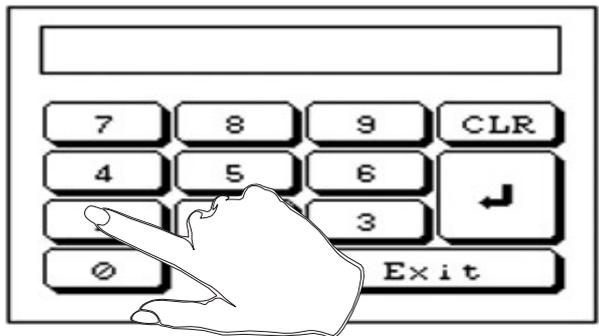
Back to main screen

Press key to select the code



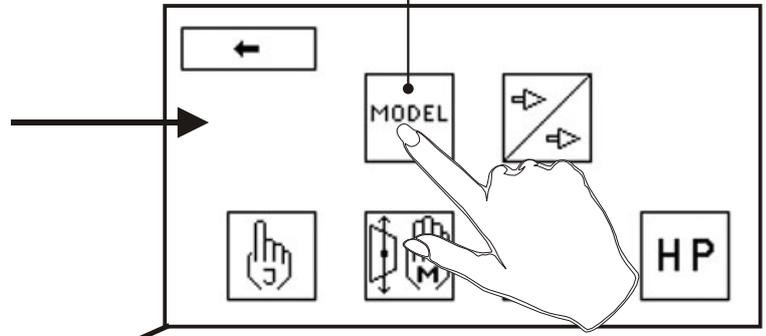
Password: 1 2 3

To confirm your selection, press

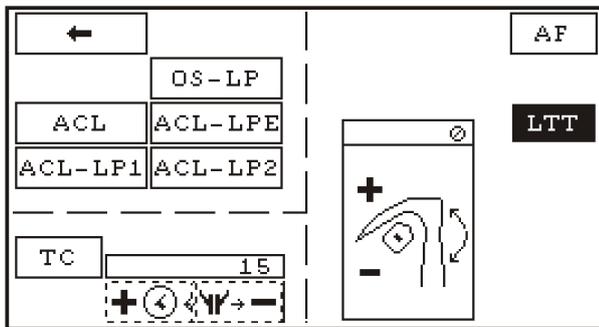


Key to select the machine mode

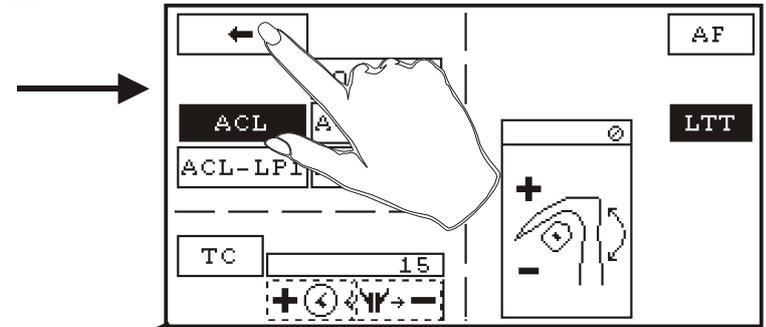
Back to main screen



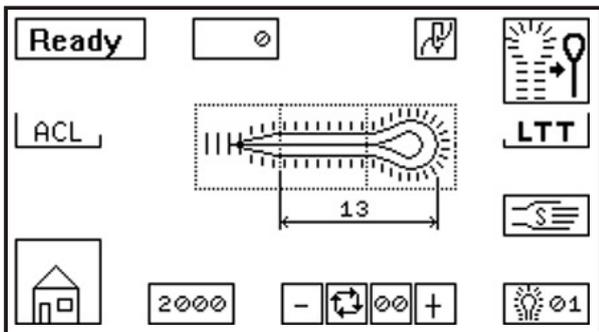
Back to main screen



Back to main screen



ACL display main screen

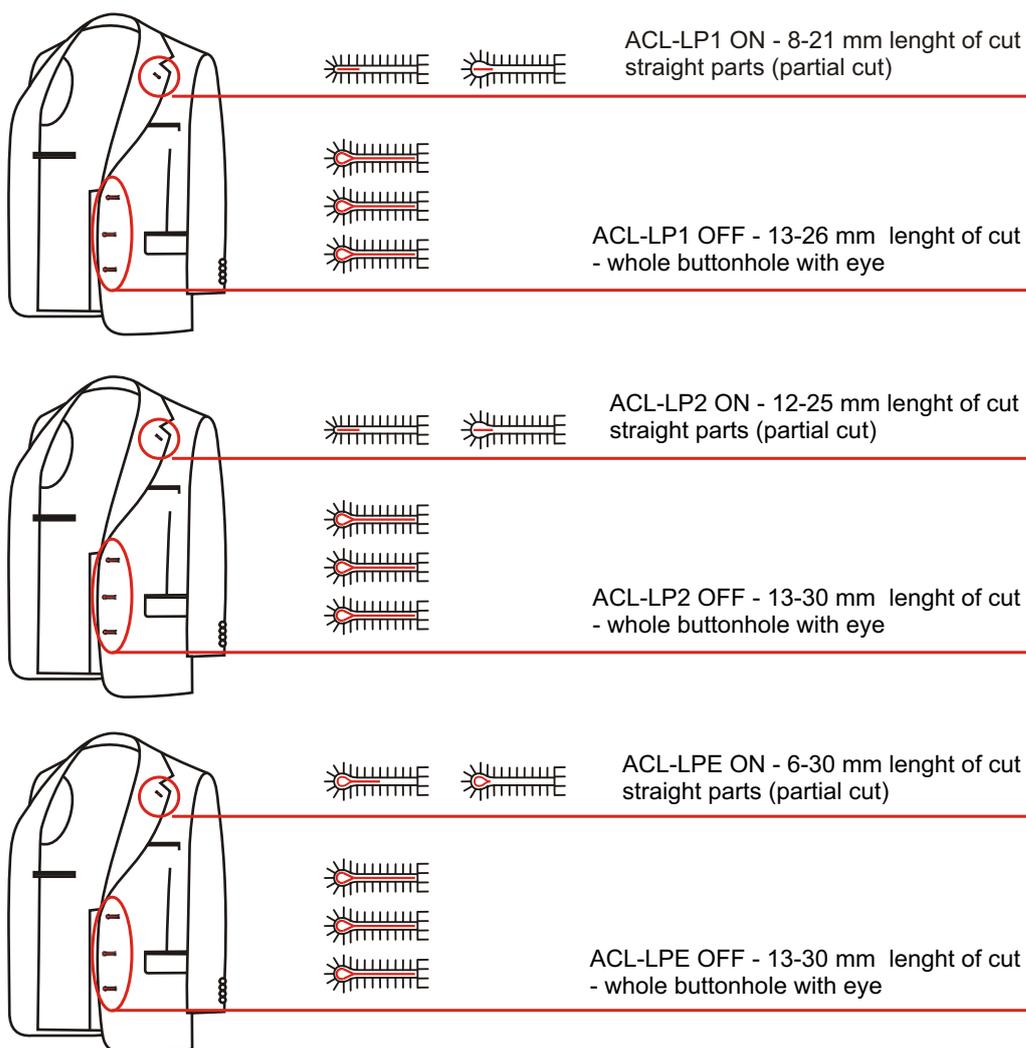


D - OPERATING THE MACHINE FUNCTIONS

4. LAPEL SYSTEM – OPTIONAL ACCESSORY TO ACL MECHANISM

Lapel system provides the operator with greater freedom when selecting the buttonhole dimensions. The operator can sew a buttonhole with eye cut and a buttonhole without eye cut during one sewing cycle and does not need to change the cutting knife. Another advantage of this device is the possibility to program the length and position of cuts. Lapel system can be fitted to the S311 AF and LTT models with integrated ACL system. There are three versions **ACL-LP1**, **ACL-LP2** and **ACL-LPE** which differ in the range of cut.

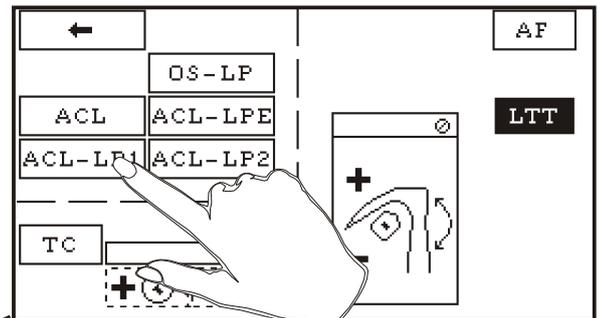
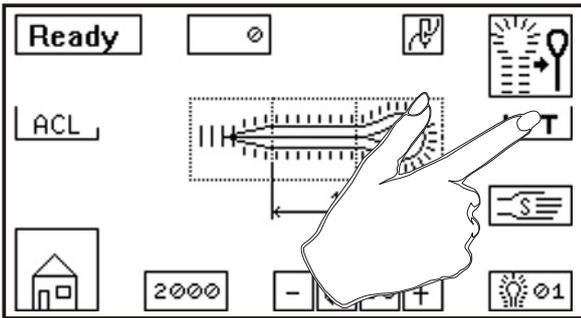
LAPEL SYSTEM			
Length of cut	ACL-LP1	ACL-LP2	ACL-LPE
Length of cut in buttonhole with eye	13-26 mm	13-30 mm	13-30 mm
Length of cut in lapel buttonhole	08-21 mm	12-25 mm	6-25 mm
Knife	3,2x5,0 (26 mm) 19.0087.0.442	3,2x5,0 (30 mm) 19.0087.0.443	3,2x5,0 (30 mm) 19.0087.0.443
Cutting block	26 mm 19.0064.5.959	30 mm 19.0064.5.964	Standard ACL 19.0064.5.958
Pneumatic kit			12.0008.3.546
Connecting cables			06.1900.0.015 06.1900.0.016
Air tube			12.0008.3.431



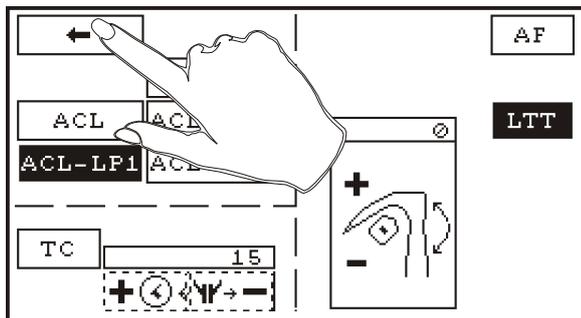
D - OPERATING THE MACHINE FUNCTIONS

4.1. SETTING UP THE MACHINE FOR ACL LP1 (ACL-LP2, ACL-LPE) VERSION

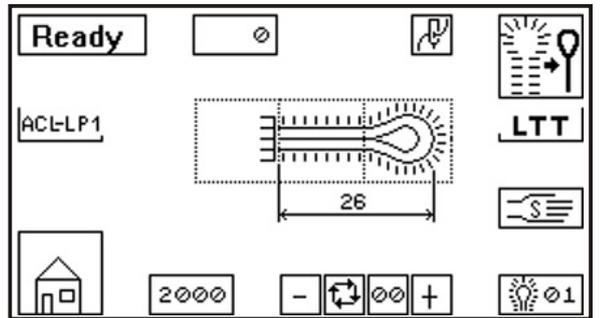
S-311 main screen



Back to main screen



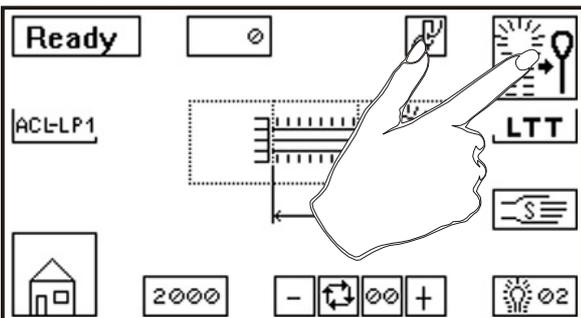
S-311 main screen



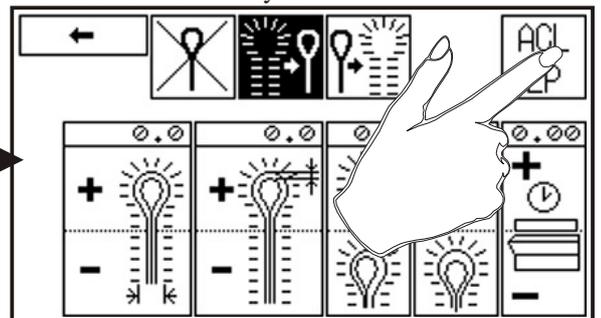
Once the ACL-LP1 system is activated, a buttonhole with eye cut along the whole sewing appears on the display. The length of cut is set up automatically according to the selected model; in this case 13-26 mm. this type of buttonhole is used on jacket front. If you want to modify the buttonhole parameters, follow instructions in chapters on pages 1-29 1-40 in the S311 standard manual.

4.2. SETTING UP THE LAPEL BUTTONHOLE FOR ACL-LP1 (ACL-LP2, ACL-LPE) VERSION

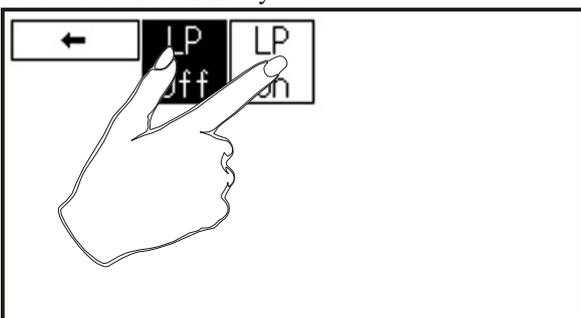
S-311 main screen



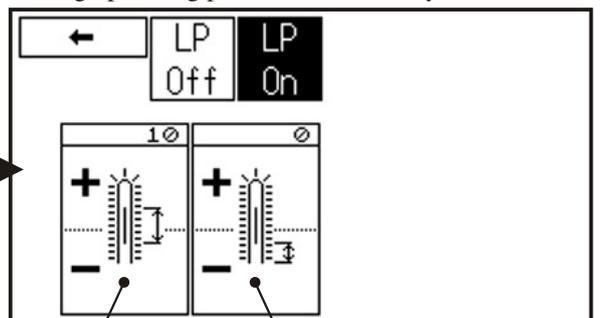
Activation of ACL-LP system



Activation of ACL-LP system



Setting up cutting parameters in ACL system



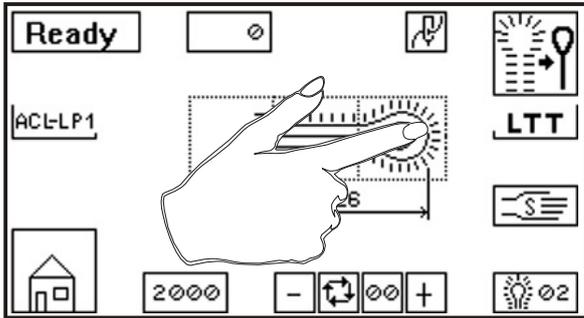
Key to set up length of cut

Key to set up distance of cut from sewing start

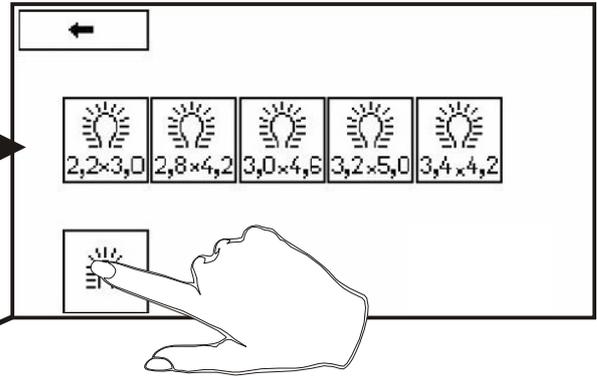
D - OPERATING THE MACHINE FUNCTIONS

4.2. SETTING UP THE LAPEL BUTTONHOLE FOR ACL-LP1 (ACL-LP2, ACL-LPE) VERSION

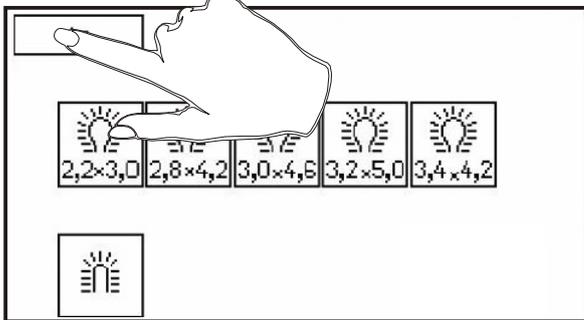
S-311 main screen



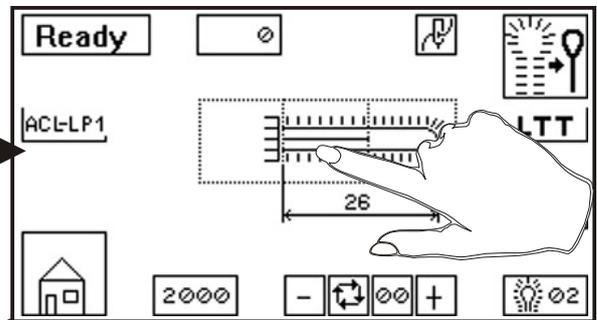
Setting up eye type



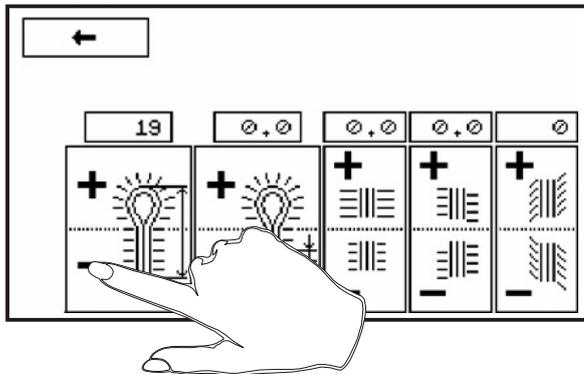
Back to main screen



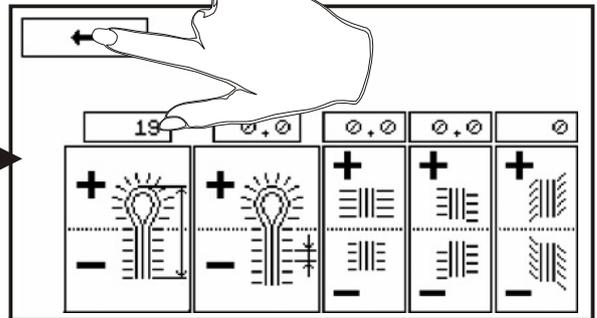
Setting up length of buttonhole



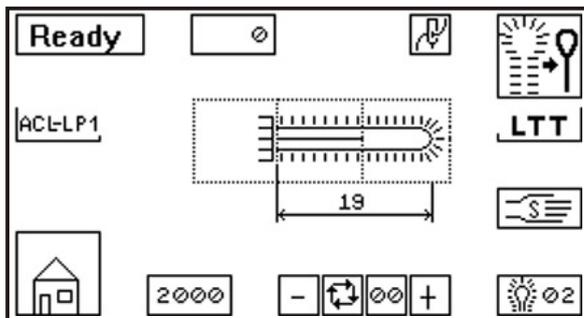
Setting up length of buttonhole



Back to main screen



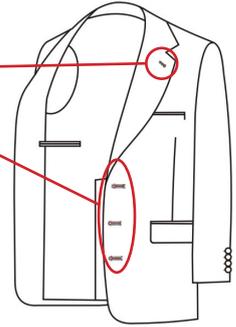
S-311 main screen



D - OPERATING THE MACHINE FUNCTIONS

4.3. USING THE PROGRAMMED BUTTONHOLE IN CYCLE MODE:

Example: You wish to sew buttonholes in program no 1 in this order: **1, 1, 1, 2.**



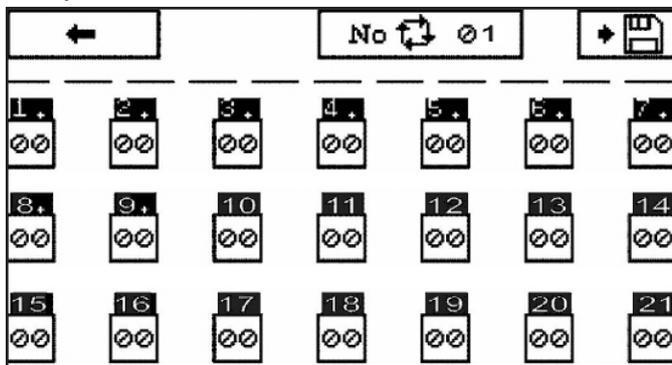
1. Press the key for setting up the program number.

Numerical keypad appears. Select the program number **1** and confirm .

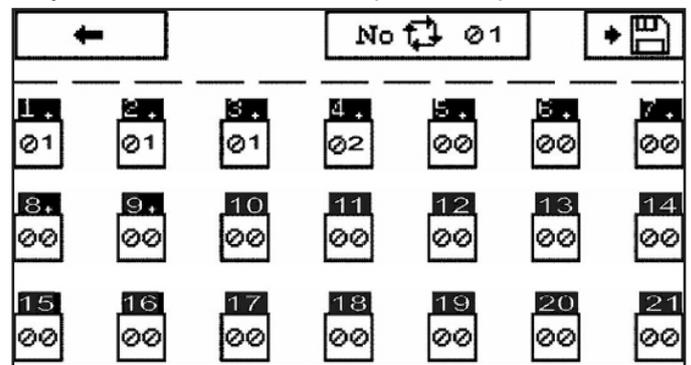
2. Press the key

The display shows the screen where you can select the order of buttonholes to be sewn. Press the first number and select the number of buttonhole **1** (buttonhole which is to be sewn first) with the keypad. Confirm by pressing ENT. Then press the second key and select the next buttonhole number in order **1**. Repeat this process until all buttonholes to be sewn are set. If you select **0** at the end, the machine starts sewing from the first selected buttonhole (it means 1).

Cycle mode screen



Cycle mode screen with complete set up



3. Press to save the buttonholes set up in the program 1.
Go back to the main screen .

4. The display shows the number of program 1 and the number of the buttonhole 1

5. Once the buttonholes and are finished, the buttonhole number changes into the next one that is to be

sewn , in means 2

6. If thread breaks during sewing any buttonhole, use and key on the main screen to go back onto the required buttonhole and sew it again.

D - OPERATING THE MACHINE FUNCTIONS

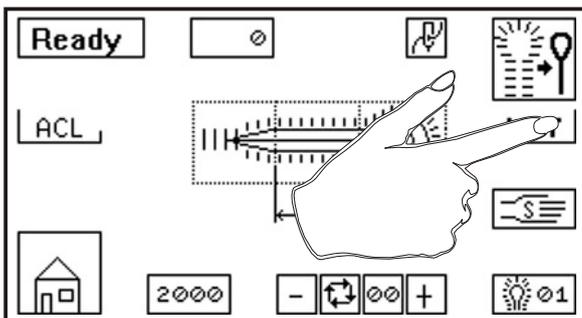
5. OPTICAL SENSOR –OPTIONAL ACCESSORY FOR LAPEL SYSTEM

This special device has been designed in order to automatize the sewing cycle when producing ladies' and men's jackets. The function of the device is to identify the buttonhole type that is to be sewn and make the work easier for the operator. At the same time it reduces errors during work process. The optical sensor consists of two parts; the sensor itself and reflective foil. The sensor is placed on the holder and fitted onto the machine bedplate. The work piece is identified by covering and uncovering the reflective foil. If the foil is covered, the machine sews a button hole. If it is uncovered, the machine sews a lapel hole.

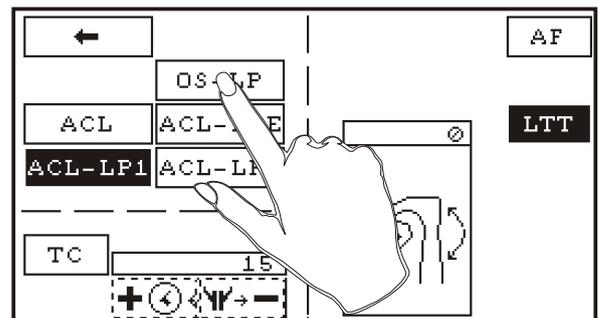


5.1. OPTICAL SENSOR - DEVICE ACTIVATION

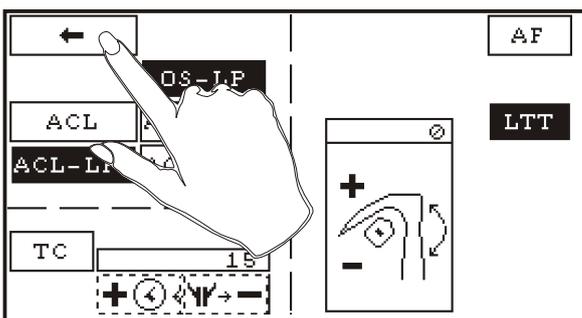
S-311 main screen



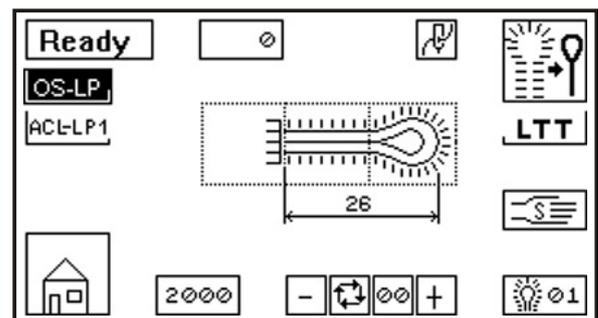
Activation of optical sensor



Back on main screen



S-311 main screen



D - OPERATING THE MACHINE FUNCTIONS

5.2. USING THE PROGRAMMED BUTTONHOLE IN CYCLE MODE WITH OPTICAL SENSOR ACTIVATED:

Example: You wish to sew buttonholes in program no 1 in this order: 1,1,1,2.

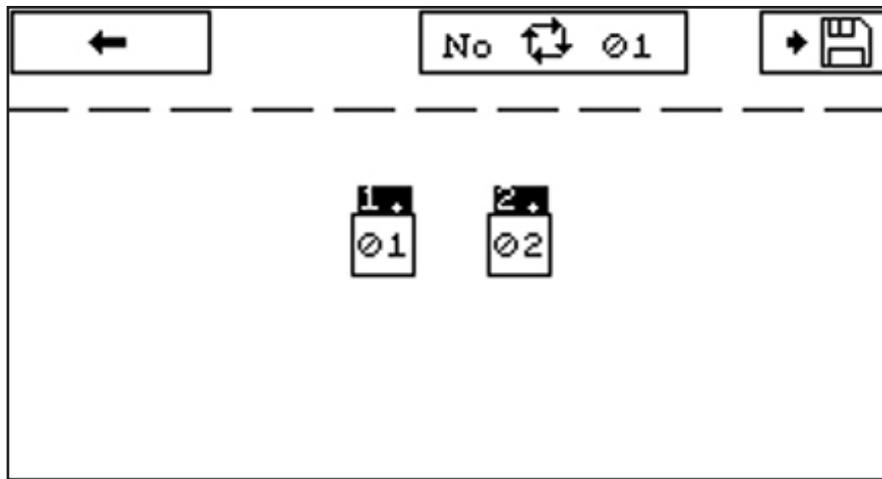
1. Press the key for *setting up the program number*. 

Numerical keypad appears. Select the program number 1 and confirm .

2. Press the key .

The display shows the screen where you can select only two types of buttonholes. The hole number one is always automatically pre-set as a button hole, the second as a lapel hole. Press the first number and by the keypad select the hole number 1 which is to be sewn first. Confirm by pressing **ENT**. Then press the second key and select the next hole number in order 2.

Cycle mode screen with optical sensor activated

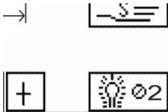


3. Press  to save the buttonholes set up in the program 1.

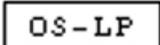
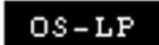
Go back to main screen .

4. The display shows the number of program 1  and the number of buttonhole 1 , which is to be sewn first.

5. Once the buttonholes  and  are finished, the buttonhole number changes into the next one that is to be

sewn , it means 2 .

6. If threads breaks during sewing any buttonhole, it is not necessary to re-set the buttonholes in the cycle mode with  and  keys. The optical sensor automatically identifies the type of buttonhole that is being sewn by initial placement of the workpiece into the machine. The buttonhole type changes on the display once the pedal is pressed. The indication on the display provides information to the operator which buttonhole is to be sewn.

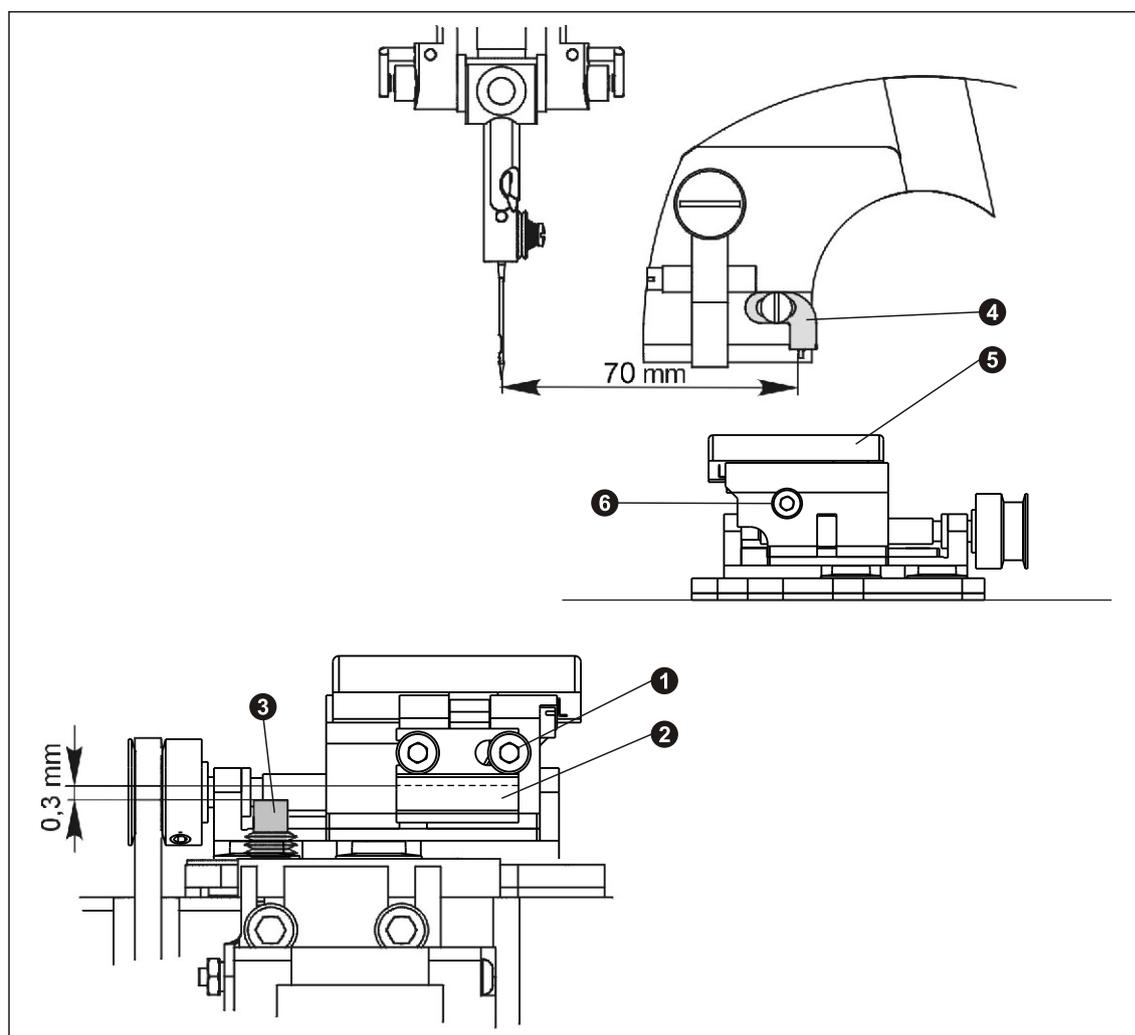
 The machine will sew a lapel hole,  the machine will sew a button hole.

E - STANDARD MACHINE ADJUSTMENT

1. SLIDING BLOCK HOLDER ADJUSTMENT

Correct adjustment of mechanical parts enables changing the cut within a given range when the buttonhole length is changed.

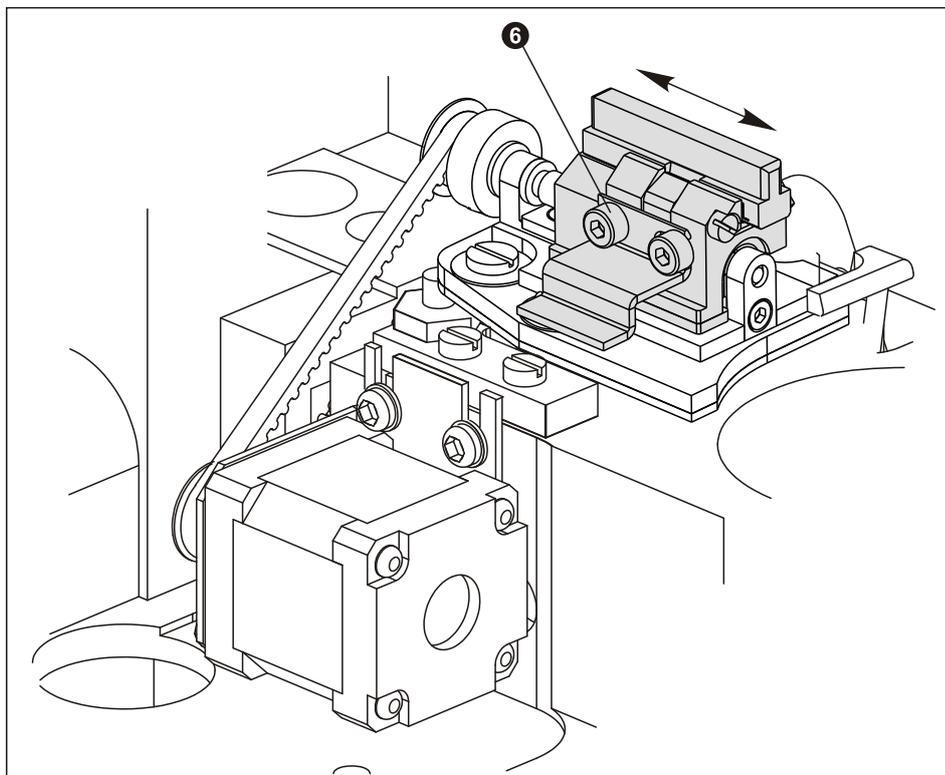
1. Adjust the screening **2** so that its edge stays in the alignment with sliding block edge **1**
2. Distance between the sensor **2** and the sensor **3** must be adjusted to 0,3 mm.
3. Adjust the stopper **4** on the cutting lever to 70 mm from the needle point.
4. Adjust the correct cutting length by moving the cutting block **5**; firstly loosen the clamp screw **6**.



E - STANDARD MACHINE ADJUSTMENT

2. CUTTING BLOCK POSITION ADJUSTMENT IN ACL MECHANISM

1. Adjust the machine for version ACL - (LP1, LP2, LPE) see section C - 4.1.
2. Adjust the requested cutting length on the display.
3. Insert the paper between knife and block and test the cut with button for cutting.
4. If the adjusted parameters do not match with control cut, correct the cutting block position manually.
5. Loose the clamp screw **6** and shift block into requested position.
6. Tighten the clamp screw **6** to secure the block position and repeat the cut testing.



E - STANDARD MACHINE ADJUSTMENT

3. PRESSURE ADJUSTMENT ON THE REGULATORS OF THE FILTER UNIT

Correct pressure adjustment affect the cutting knives life cycle.

1. Adjust pressure 0,6 MPa (0,5 MPa) on the main regulator **A**.
2. Adjust pressure 0,4 MPa on cutting regulator **B**.
3. Adjust pressure 0,2-0,25 MPa on auxiliary regulator **C**.

Warning!

The knives can be damaged in the case the parameters set by manufacturer on B and C regulators are not observed.

