AMF® REECE

Better Ideas, Better Made

MODEL S-4001 ISBH+I SM 30°

ELECTRONIC BUTTON STITCHER MACHINE

PARTS AND SERVICE MANUAL

MACHINE SERIAL No:

PART NUMBER 97.2430.1.086

This manual is valid from the machine Serial No.: U241937

06 / 2018

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LIMITED WARRANTY ON NEW AMF REECE EQUIPMENT

Warranty provisions:

A ninety (90) day limited service labor warranty to correct defects in installation, workmanship, or material without charge for labor. This portion of the warranty applies to machines sold as ”installed” only.

A one (1) year limited material warranty on major component parts to replace materials with defects. Any new part believed defective must be returned freight prepaid to AMF Reece, Inc. for inspection. If, upon inspection, the part or material is determined to be defective, AMF Reece, Inc. will replace it without charge to the customer for parts or material.

Service labor warranty period shall begin on the completed installation date. Material warranty shall begin on the date the equipment is shipped from AMF Reece, Inc.

Exclusions:

Excluded from both service labor warranty and material warranty are: (1) Consumable parts which would be normally considered replaceable in day-to-day operations. These include parts such as needles, knives, loopers and spreaders. (2) Normal adjustment and routine maintenance. This is the sole responsibility of the customer. (3) Cleaning and lubrication of equipment. (4) Parts found to be altered, broken or damaged due to neglect or improper installation or application. (5) Damage caused by the use of non-Genuine AMF Reece parts. (6) Shipping or delivery charges.

There is no service labor warranty for machines sold as ”uninstalled”.

Equipment installed without the assistance of a certified technician (either an AMF Reece Employee, a Certified Contractor, or that of an Authorized Distributor) will have the limited material warranty only. Only the defective material will be covered. Any charges associated with the use of an AMF Reece Technician or that of a Distributor to replace the defective part will be the customer’s responsibility.

NO OTHER WARRANTY, EXPRESS OR IMPLIED, AS TO DESCRIPTION, QUALITY, MERCHANTABILITY, and FITNESS FOR A PARTICULAR PURPOSE, OR ANY OTHER MATTER IS GIVEN BY SELLER OR SELLER’S AGENT IN CONNECTION HEREWITH. UNDER NO CIRCUMSTANCES SHALL SELLER OR SELLER’S AGENT BE LIABLE FOR LOSS OF PROFITS OR ANY OTHER DIRECT OR INDIRECT COSTS, EXPENSES, LOSSES OR DAMAGES ARISING OUT OF DEFECTS IN OR FAILURE OF THE EQUIPMENT OR ANY PART THEREOF.

WHAT TO DO IF THERE IS A QUESTION REGARDING WARRANTY

If a machine is purchased through an authorized AMF Reece, Inc. distributor, warranty questions should be first directed to that distributor. However, the satisfaction and goodwill of our customers are of primary concern to AMF Reece, Inc. In the event that a warranty matter is not handled to your satisfaction, please contact AMF Reece office:

Prostejov, Czech Republic
Phone: (+420) 582-309-275
Fax: (+420) 582-360-608
e-mail: service@amfreece.cz

Warranty Registration Card

(Please Fax or Mail immediately after installation)

Note: All Warranty Claims Void, unless Registration Card on file at AMF Reece HQ

Machine model number:
(S101, S100, S104, S105, S311, Decostitch, S4000, EBS Mark II, etc)

Manufacturer‘s serial or production number:

Installation Site Information:

Customer‘s Name:

Customer‘s Mailing Address:

Customer‘s Telephone Number:

Supervising Mechanic‘s or Technician‘s Name:

Signature of Supervising Technician:

AMF Reece Technician‘s Name:

AMF Reece Technician‘s Signature:

Type of garment produced at this location?

Average Daily Production Expected from this machine?
(number of buttonholes, jackets sewn, pants produced, buttons sewn, etc)

Any special requirements required at this location?

What other AMF Reece Machines are at this location?

How can we serve you better?

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A - INTRODUCTION

1. BASIC INFORMATION

The sewing machine S-4001 ISBH+I SM 30° is designed and produced to be very reliable. Important design goals have been to provide a safe machine that is simple and inexpensive to maintain.
The patented rotary needle bar shaft drive, a major benefit, delivers longer needle bar life. The added benefits of lower vibration and less noise, translate into less operator fatigue.
Simple buttonhole length adjustment located outside the machine, eliminates the need for tilt back, while the quick stop repair function delivers safety and makes repairs easier.

Special electronic and mechanical safety devices protect the operator and the machine. There is a special power lock out switch that permits the machine to be locked in the off position, so that it cannot be cycled accidentally. There is an emergency off switch. There is a low air pressure detector that will not permit machine operation if air pressure is dangerously low.
There are safety-warning labels on the machine in all areas that require special care. These must not be removed. If they are lost replace them immediately.
You are the most important safety equipment of all. Be sure you understand the proper operation of the machine. Never remove safety mechanisms or labels. We have made every effort to provide the safest possible machine, but without complete knowledge of how this machine operates, and the use of proper care by the operator, this machine can cause serious injury or death. That is why there are safety warnings throughout these instructions that carry one of these messages.

There are four categories of safety instructions in this manual:

DANGER! Ignoring instructions may endanger operator's life.

CAUTION! Ignoring instructions may cause a serious injury of the operator or damage the machine.

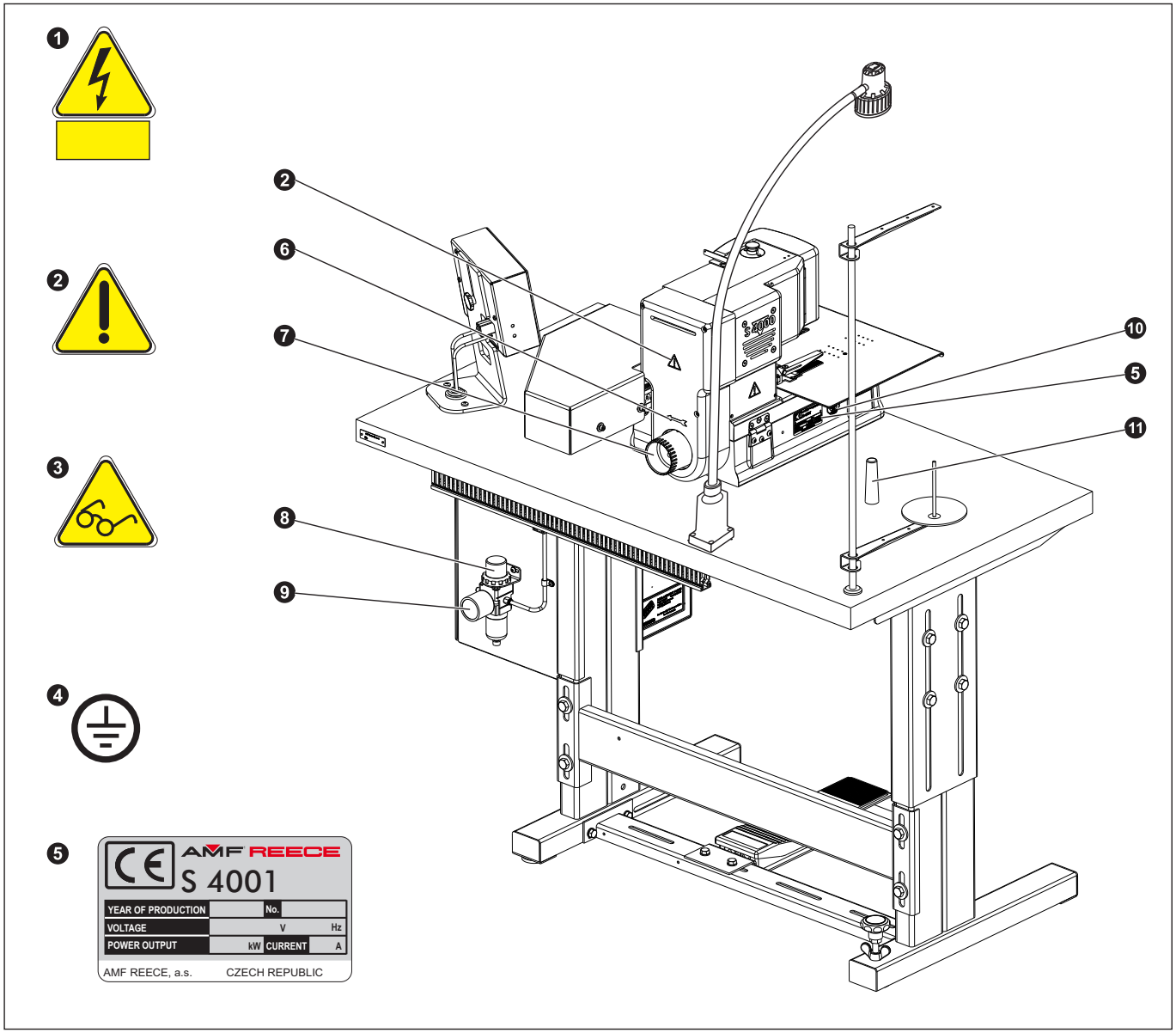
WARNING! Ignoring instructions may cause damage on the machine or injury of the operator.

NOTICE! Breaking procedures may cause functional problems of the machine.

We recommend that servicemen from AMF Reece supervise the installation of the machines and initial training of your mechanics and operators.
The most effective method ensuring safety of operators working on the machine is a strict safety program including instructions for safety operation. Operators and servicemen should wear safety glasses.

A - INTRODUCTION

2. SAFETY DEVICE AND LABELS



❶ Warning
❷ Covers removed, possible injury
❸ Warning when opening cover eyes injury danger
❹ Grounding
❺ Standard label
❻ Rotation direction
❼ Hand wheel
❽ Air pressure regulator
❾ Manometer with pressure sensor
❿ Label TÜV SÜD
⓫ Rest pin
⓬ Thread stand
⓭ Head cover
⓮ Needle bar cover

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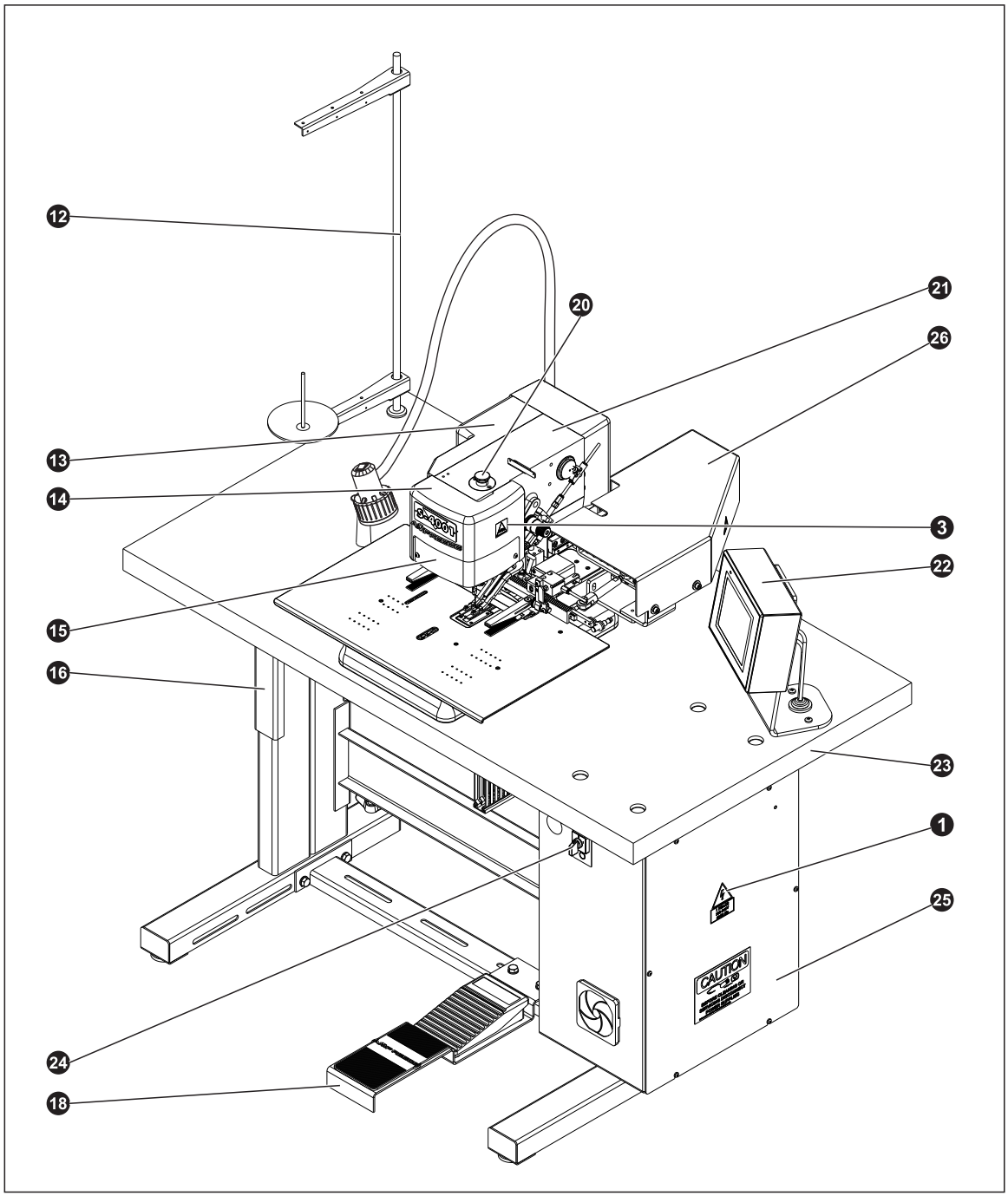
3. GENERAL MACHINE PARTS DESCRIPTIONS



⑮ Eye guard
⑯ Table
⑱ Foot pedal
⑲ Halogen lamp Button
⑳ Emergency Stop Button
㉑ Machine head
㉒ Control panel
㉓ Table top
㉔ Main Switch
㉕ Control box
㉖ Indexer

A - INTRODUCTION

4. TECHNICAL CONDITIONS

Machine type	S 4001 ISBH+I 30°
Description	Electronic controller chains stitch straight buttonhole machine for sewing imitation buttonholes on cuff Wiggins. With the automatic indexer, preset programs automatically control the sewing of multiple buttonholes either straight or on an angle
Sewing speed	1500-3800 stitches/min (500 - 1900 rev/min of the drive shaft)
Buttonhole length	15.8 - 25 mm (5/8” - 1”)
Stitch density	3 - 12 stitches/cm (8 - 35 spi)
Type of the buttonhole	Single thread chain stitch without center cutting
Machine clamp foot height	12.7 mm (1/2”)
Maximum work thickness	to 3 mm (1/8”)
Bite range	1.7 - 2.3 (1/15” - 3/32”)
Distance between the first and the second row of stitches	0 - 0.9 mm
Recommended thread	Thread size 80, 100, 120
Needle system	Needle 750 SC 90/14 (it is possible to order 80/12; 70/10)
Lubrication	Semi-automatic
Operating Conditions	According to IEC 364-3, IEC 364-5-51 temperature from +5°C to 40°C, relative air humidity from 30 to 80 %
Air pressure	0.55 MPa (80 PSI) Indexer 0,4 Mpa (58 PSI)
Machine db level	Laeg = 74dB; LWA = 87dB; LpC, peak = 103dB
Machine head dimension	340 mm (height) x 470 (width) x 250 mm (length)
Machine head weight	62 kg
Table Dimension	700 mm (height) x 600 mm (width) x 1100 mm (length)
Electrical Requirements	1NPE~60Hz 230V/TN-S (according to EN 60204-1)
	1NPE~50Hz 230V/TN-S (according to EN 60204-1)
Line Circuit Breaker	10A characteristic C (according to EN 60947-2)
	16A characteristic B (according to EN 60947-2)
Indexer number of buttonholes	1 — 8
Distance between buttonholes	4 — 73 mm
Max. indexer feeding	87 — 102 mm according to the set angle
Angle setting	0° — 30°

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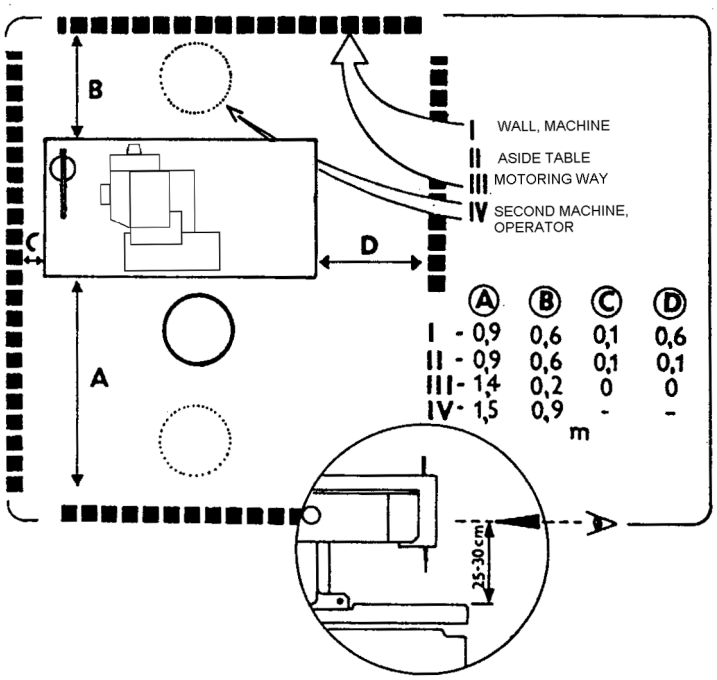
5. INSTRUCTIONS FOR OPERATOR SAFETY AND MAINTENANCE

When installing the machine we recommend the minimum clearances noted above around the machine. Read all of the instructions that follow. DO NOT PUT THE MACHINE INTO OPERATION UNTIL YOU ARE COMPLETELY FAMILIAR WITH ALL INSTALLATION AND OPERATING INSTRUCTIONS.



DANGER!

- Before connecting the machine to the power supply, be positive that all safety covers are correctly installed.
- Always engage the power lockout switch, or disconnect the main power supply, before removing any safety covers.

WARNING!

- Locate the Emergency Stop button. Be sure you know how to use it.
- Be sure that you have a reliable and uniform power supply.
- Be sure that all electrical supply lines are in good condition and have no signs of damage to avoid electrical shock.
- If any covers become damaged, they must be repaired or replaced immediately.
- Do not touch moving parts of the machine while it is operating.
- Keep clear of the needle.
- Always switch off the main power before changing the needle.
- Before cleaning the machine or performing service to the machine, engage the power lock out switch or disconnect the main power supply.
- When the machine is not in use engage the power lock out switch or disconnect the main power supply.
- When this machine is used incorrectly, or is incorrectly maintained, it can be dangerous. Everyone who uses this machine, or maintains this machine, must be completely familiar with this manual.

CAUTION!

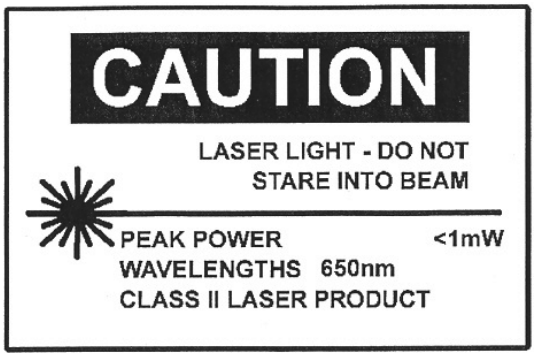
- Perform all regular service as described by this manual.
- If there is any problem with the power supply, turn off the main power switch.
- Do not remove, paint over, damage or in any way change safety labels. If a safety label cannot be easily read, replace it.
- Long hair and loose clothing may be dangerous near any machinery. Always contain long hair and avoid loose clothing, so that it cannot be caught by machinery and cause injury.
- Never use this machine while under the influence of drugs or alcohol.
- If anything seems to be operating incorrectly in the machine call for maintenance assistance immediately.
- Be sure that there is adequate light for safe operation. A normal minimum light level is 750 lux.

A - INTRODUCTION

CAUTION: LASER RADIATION

DO NOT VIEW DIRECTLY WITH OPTICAL INSTRUMENTS

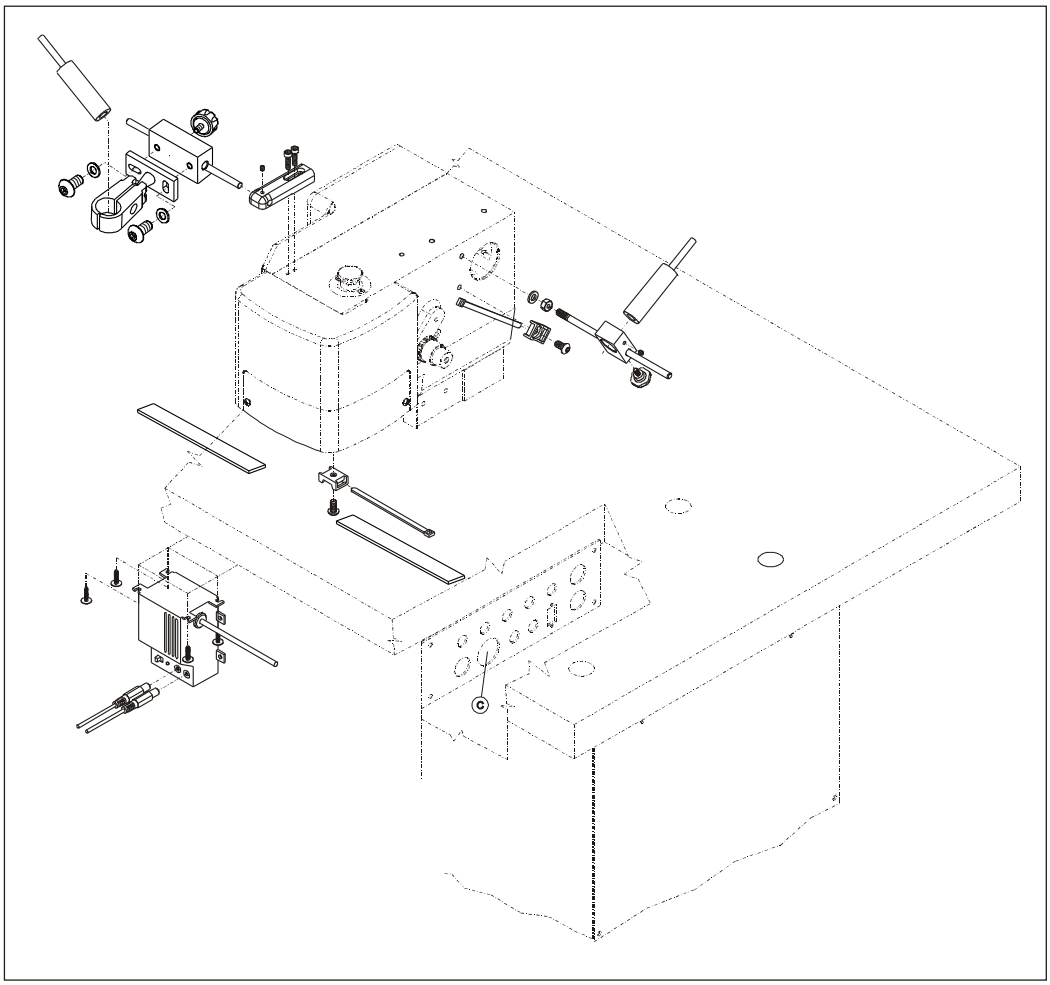
Read carefully the supplemental rules described below before setting up laser system.



C.C. E.A. laser product has been designed and manufactured specifically for the work place and for use in working, conditions.
It complies to the existing work safety regulation included in directive 73/23 and subsequent 93/68.
It has been made following to the International Standart CE/EN 60825.

Use C.C.E.A. laser system belong Class II. To this class emit low-power beam =/< lmW to be seen into the visible spectrum. They are not considered dangerous if just the laser beam will be accidentally (fraction of second) pointed at the eyes. The palpebral
reflection would not allow a length of exposure higher than 0,25 seconds. It is absolutely necessary wearing specific safety glases (with declared wavelength and filter), when eyes are directly and lasting exposed at the laser radiation. Our Lasers are followings: 650 nm.

LABELLING:
The label showing the laser class must bepermanently attached so as to be clearly visible and readable when the system is working, for maintenance and other needs. Labels must be see without a direct exposure at the laser radiation.



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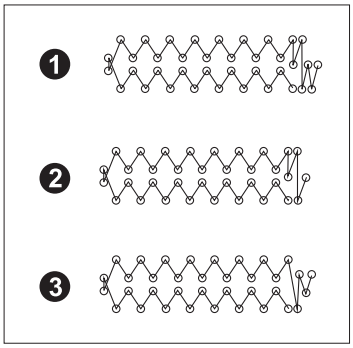
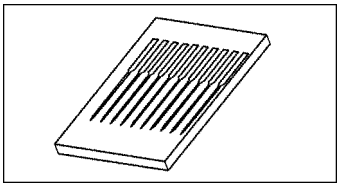
A - INTRODUCTION

6. SPECIAL ACCESSORIES

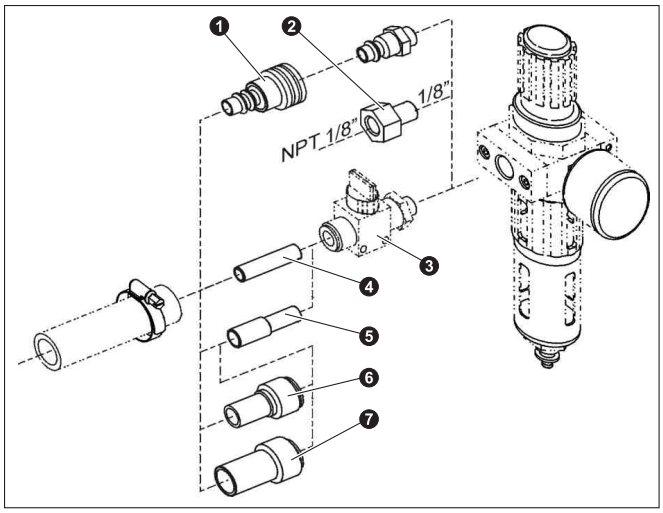
- machine device, which is not included in the standard equipment of the machine and a customer can order it



Sewing cam
- it is possible to sew a different buttonhole shape ❶, ❸ than standard buttonhole ❷ is
- a cutomer can order it - ❶ part number 24.3079.0.000
  - ❸ part number 24.3080.0.000
- to change a cam - see section E20



Needles 750 SC 80/12, 70/10
- the manufacturer recommends to use these needles when sewing the thin materials
- part number 02.0750.2.100 (80/12), 02.0750.2.109 (70/10)



Connector Ø 8 ❶
- order it if the connecting tube has the inner diameter 8 mm. The connector Ø 10 is supplied with the machine.
- part number is 12.0008.3.607

Pneumatic Adapater ❷
- order it if using 1/8“ NPT
- part number 12.0008.3.081

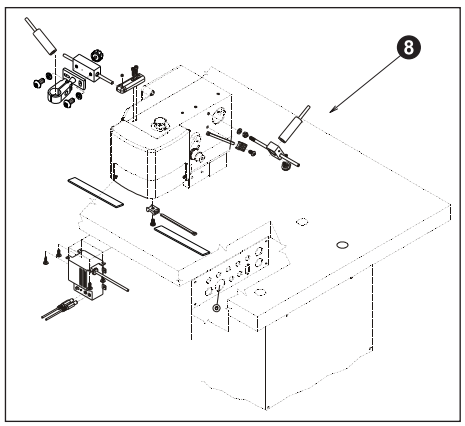
Hand valve ❸
- to dissipate any air from the machine, order it (air circuit is bled). It is necessary to order the connectors (see below) to the hand valve for connection to the air tubes.
- part number 12.0008.3.463

Connectors

❹ 12.0008.3.464 Ø 8
for connection to the tube with inner Ø 8 mm
❺ 12.0008.3.466 Ø 10
for connection to the tube with inner Ø 10 mm
❻ 12.0008.3.467 Ø 12
for connection to the tube with inner Ø 12 mm*
❼ 12.0008.3.465 Ø 16
for connection to the tube with inner Ø 16 mm*

* To connect the tube with inner Ø 12 and Ø 16, it is also necessary to order Ø 10

Laser light kit
❽ 03.5519.0.022

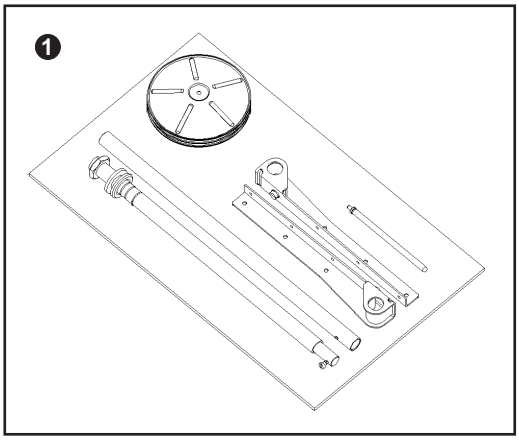


B - MACHINE INSTALLATION

1. CONTENT OF THE SHIPPING BOX

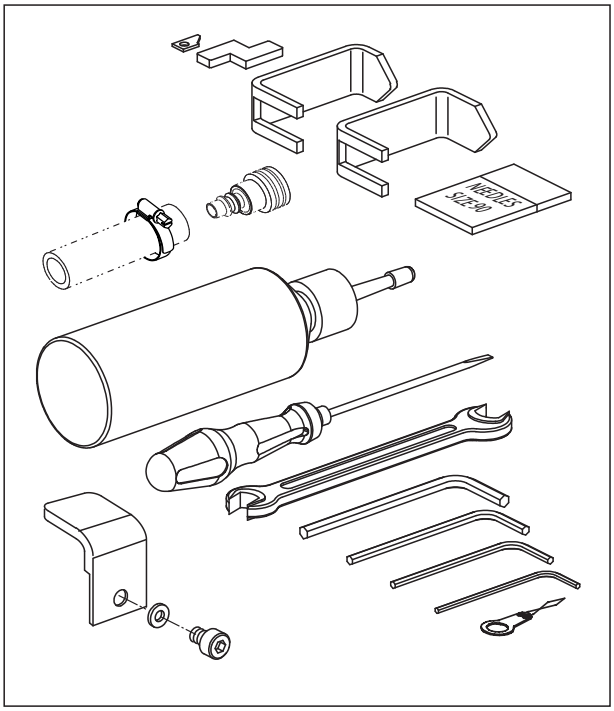
1. The shipment contains one box.
2. There is a carton with accessories, service manual with parts section and thread stand ❶ in the box.
3. During unpacking the shipment, follow the labels which are ona cover.

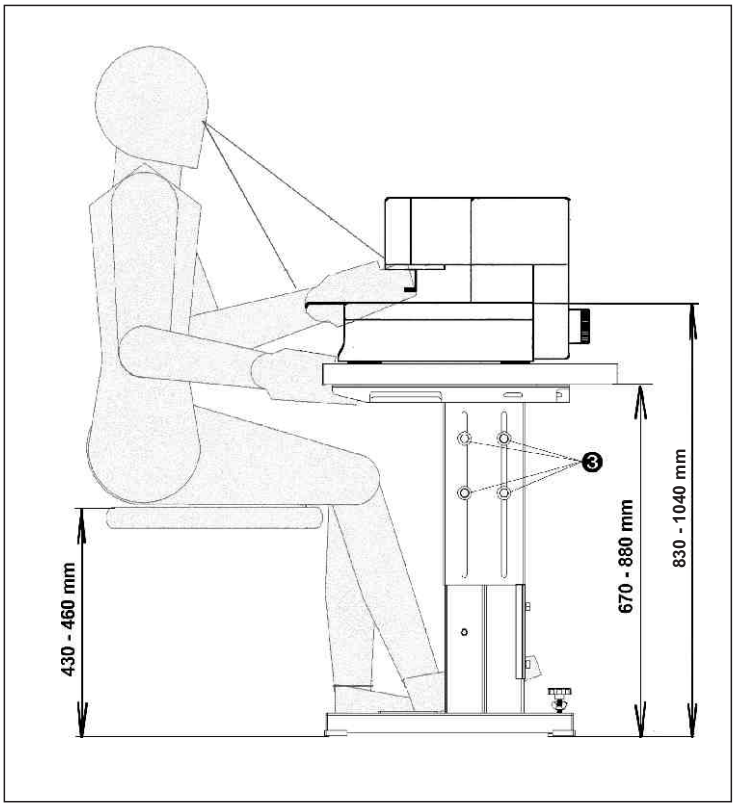
CAUTION: If the machine or crate was damaged in shipment inform the freight company immediately. Check the contents of the crate immediately and report any damage or missing items to the manufacturer immediately, late reports will not be considered.

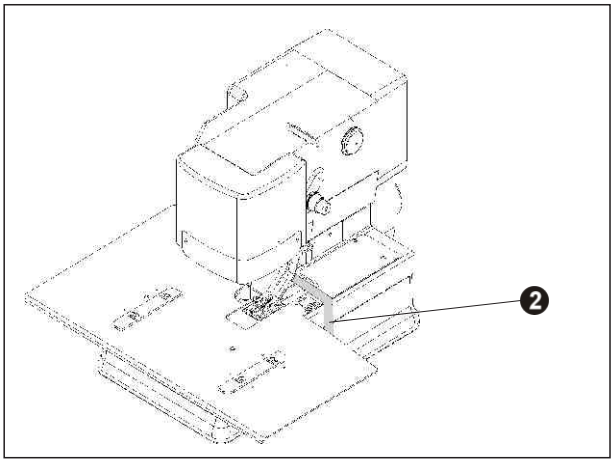


2. ACCESSORIES

A package of accessories is supplied with this machine, please refer to page **3-63** for detailed descriptions.
The height of the working area is standardly set in range 830 - 850 mm from the manufacturer. When using this height of the working area, recommended height of the operator seat is in range 430 - 460 mm. The height of the table can be set in range 670 - 880 mm by screws ❸. Remove the shipping strap ❷ after unpacking the machine, the use of this strap is recommended anytime the machine is transported.







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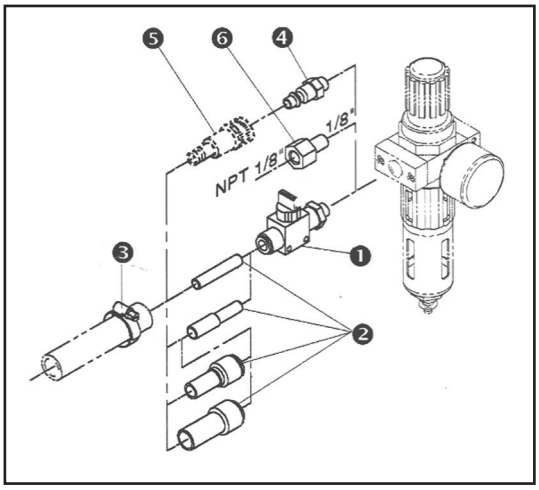
B - MACHINE INSTALLATION

3. POWER AND AIR CONNECTION

1. The machine is equipped with a quick coupler ❹ required with connector for inner Ø of the tube 10. The connector for inner Ø of the tube 8 is not supplied with the machine, a customer has to order it. The manufacturer recommends to use connector ❻ for who requires to connect the tube with connector NPT. If a customer needs to use a shut off valve ❶, which allows fast releasing of the air from the circuit, he must order it.
   A variety of connectors ❷ can be used separately or in combination to adapt to the available input supply hose. It depends on type of the tube which is used by a customer. These connectors are not included in the accessories. A tubing clamp ❸ is provided.



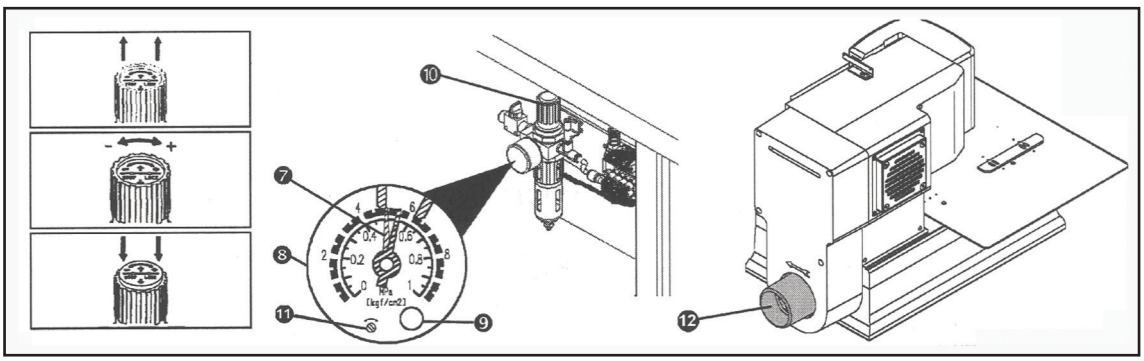
NOTE:

Parts ❶, ❷, ❺, ❻ are included in Extra Parts - see 3-63.

2. After air connection check the set air pressure on the dial of the regulator. It should be in range 0.5 - 0.6 MPa. The green pointer ❼ indicates the lowest working air pressure 0.5 MPa, which is set from the manufacturer on the regulator ❽. If the air pressure is lower than 0.5 Mpa after connecting the machine to the power supply „Low Pressure“ message appears on the control panel display. To adjust the working pressure, loosen the regulator cap lock ❿ and turn the regulator cap clockwise to increase the pressure. Push the regulator cap ❿ down.

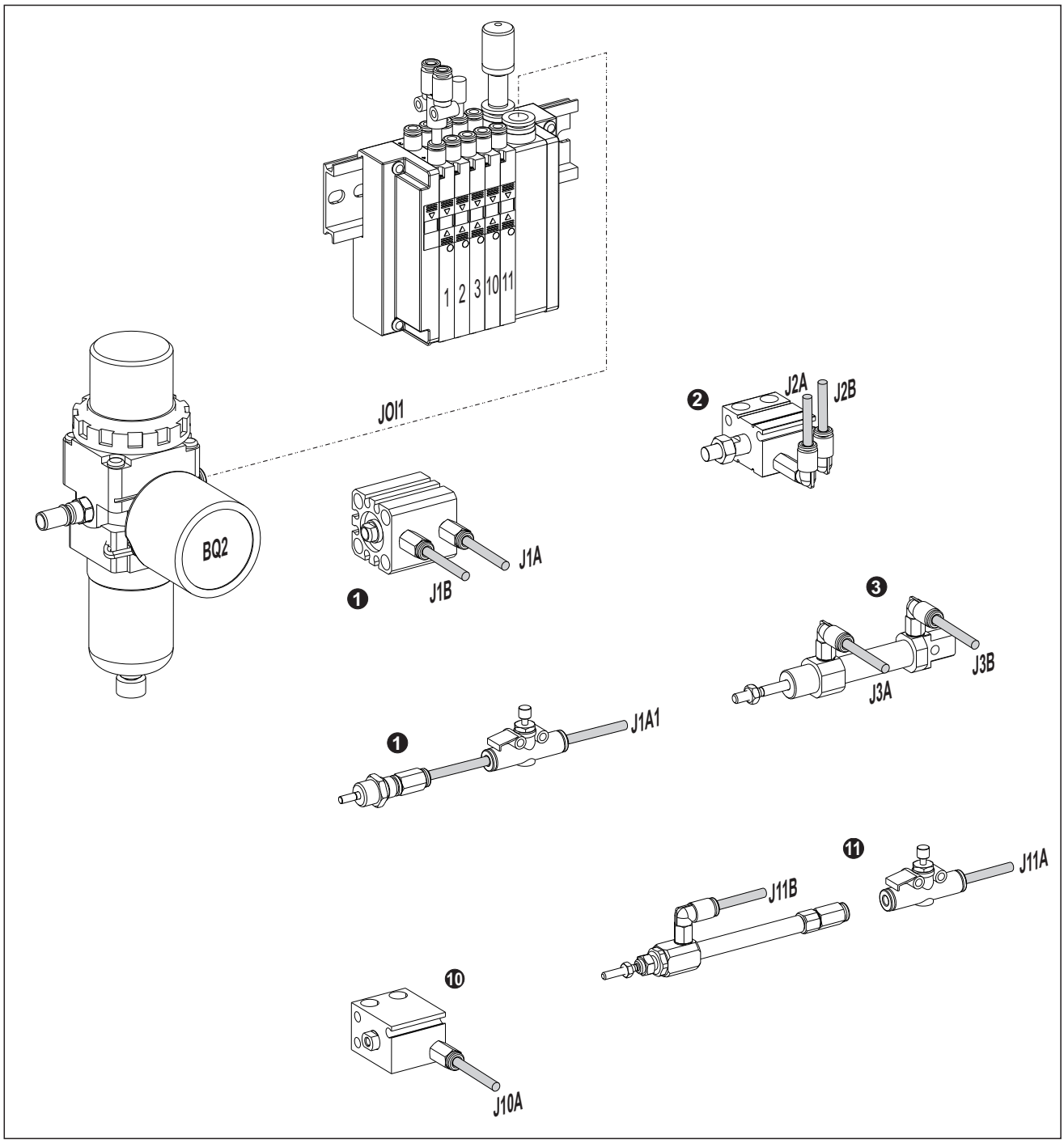
3. Power supply must be 208 to 230 volts 1 phase, 50 or 60 hertz. Receptacle plug must meet requirements of IEC standard 364-4-41, its circuit breaker must be minimal 10A with characteristic C according to the EN 60947-2 (or 16A with characteristic B). No other devices must not be connected to the circuit breaker of the socker. The hand wheel ⓬ must turn counter clockwise.

The machine is equipped with a filters which contain capacitors which generate an high frequency leakage current. In order to prevent nuisance tripping, residual current protection device must be protected against these high frequency currents: this is the case for industrial residual current device (example „S“ type).



B - MACHINE INSTALLATION

4. Head Pneumatic



❶ - thread draw-off, tension release
❷ - clamp feet 1
❸ - thread trimming
❿ - indexer clamping feet
⓫ - thread pick-up
J0I1 - air input
BQ2 - regulator with air pressure switch

Tubes identification

J X X X
- air distribution
- pneumatic cylinder identification (1, 2, 3,...); 0 - air supply
- auxiliary branch (1, 2, 3,...)
- A - incoming branch; B - reverse branch; I - valve supply

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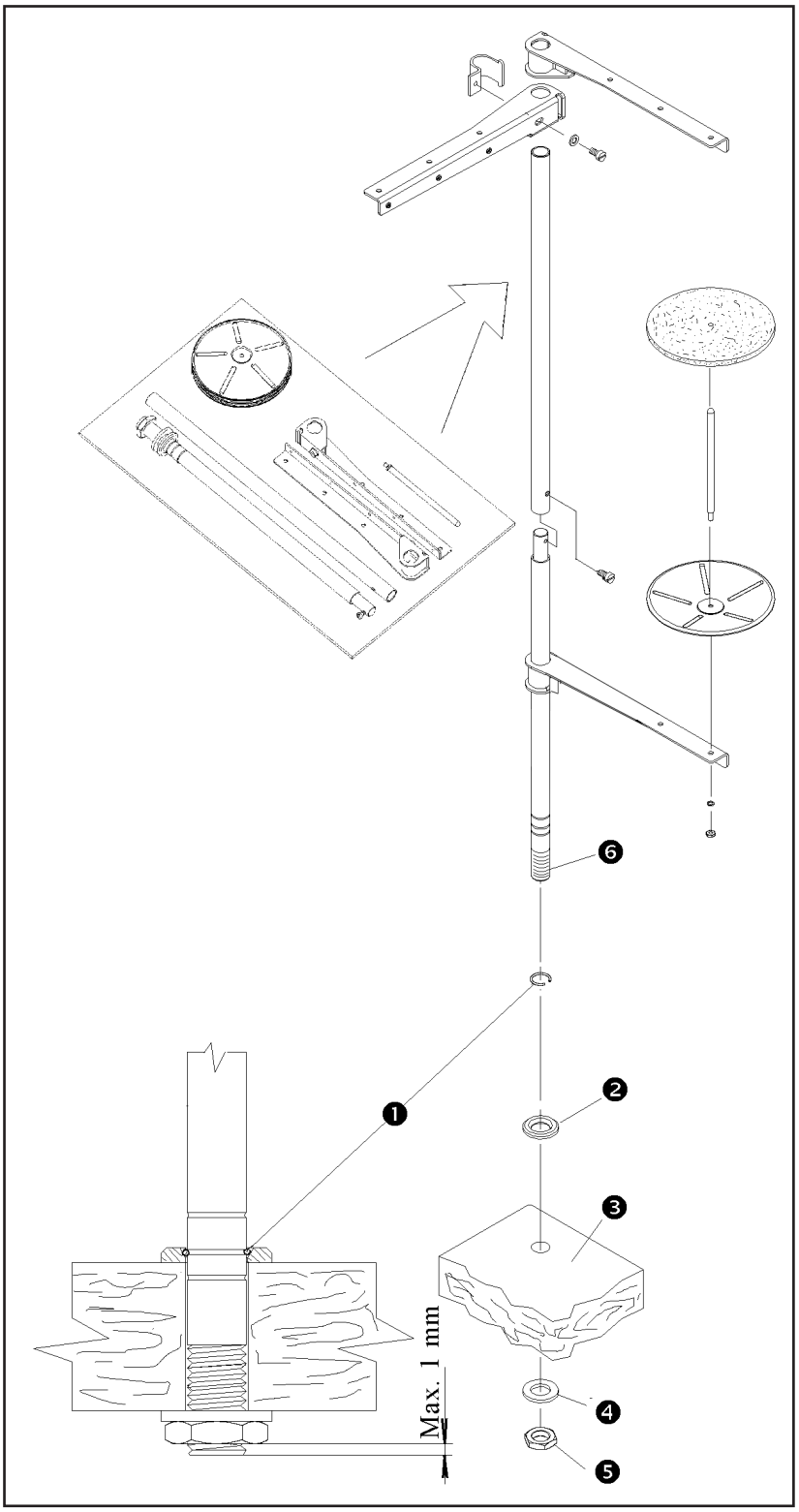
B - MACHINE INSTALLATION

4. THREAD STAND INSTALLATION

1. Put the thread stand together according to the drawing.

2. Position of the locking ring ❶ allows assembly of the thread stand for various thickness of the table top. Threaded end of the post ❻ must not extend more that 1 mm (1/32) through the locking nut ❺.

3. Insert the washer ❷ and the post into the hole provided in the right rear of the table top ❸. Insert the washer ❹ and tighten the nut ❺.



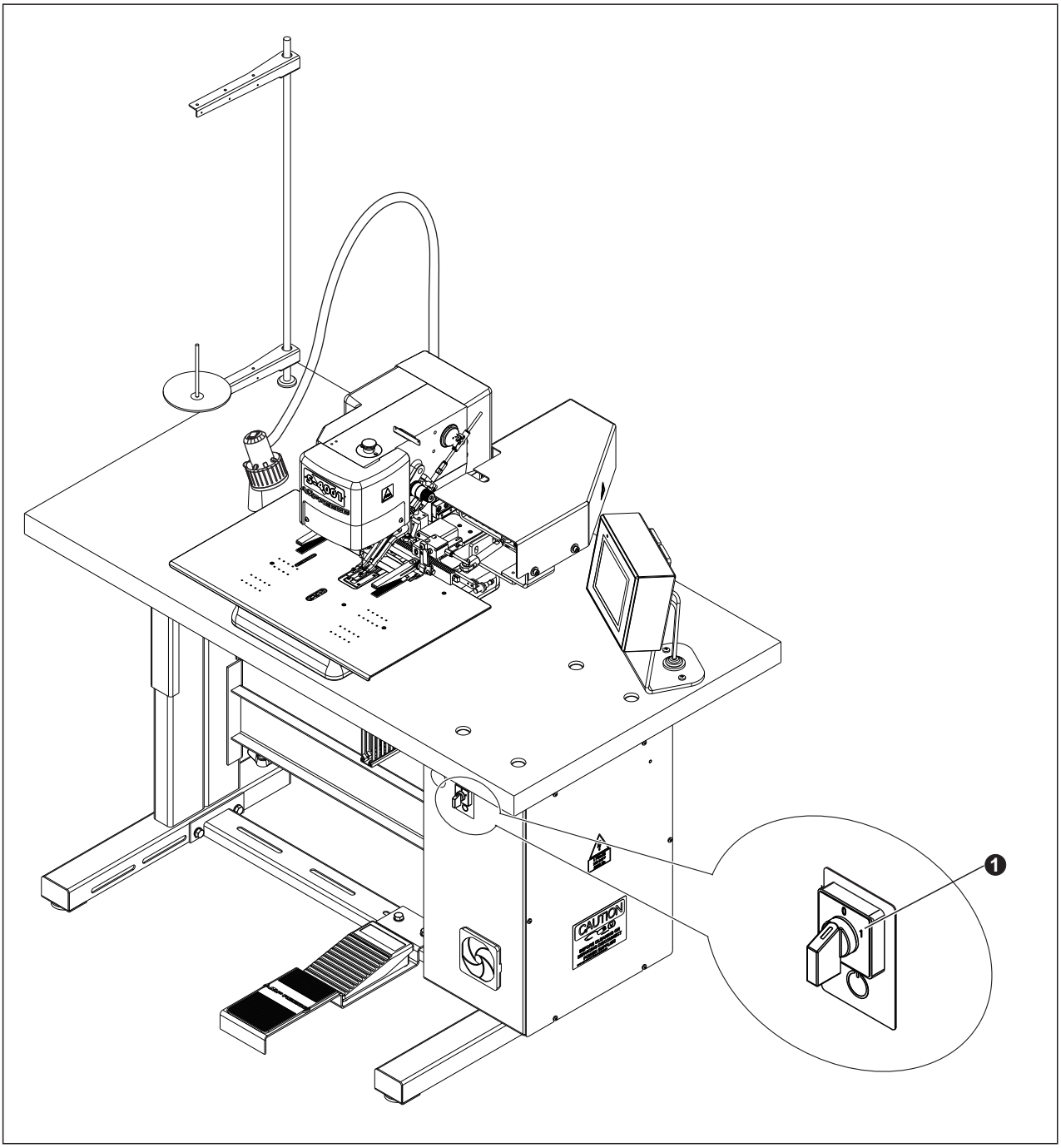
C - CORRECT USAGE

1. POWER UP / HOME POSITION

1.1. Turn the main power switch on ❶  by turning clockwise to the **I** position.

1.2. The machine is ready for operation when the control panel display lights, the Ready message appears on the display.

1.3. The machine must be in the home position before starting to sew (to be certain, press the foot treadle and sew one dummy buttonhole).



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C - CORRECT USAGE

2. NEEDLE INSTALLATION

WARNING! Before performing this adjustment, switch the main machine power off to prevent accidental starting of the machine. Disconnect the air supply and dissipate any stored energy.
Use needles ordering number 02.0750.2.110 (750SC 90/14) only - see accessories.
It is also possible to use needles ordering number 02.0750.2.100 (750 SC 80/12),02.0750.2.109 (750 SC 70/10) for sewing the thin materials - these needles are not included in the standard machine equipment.

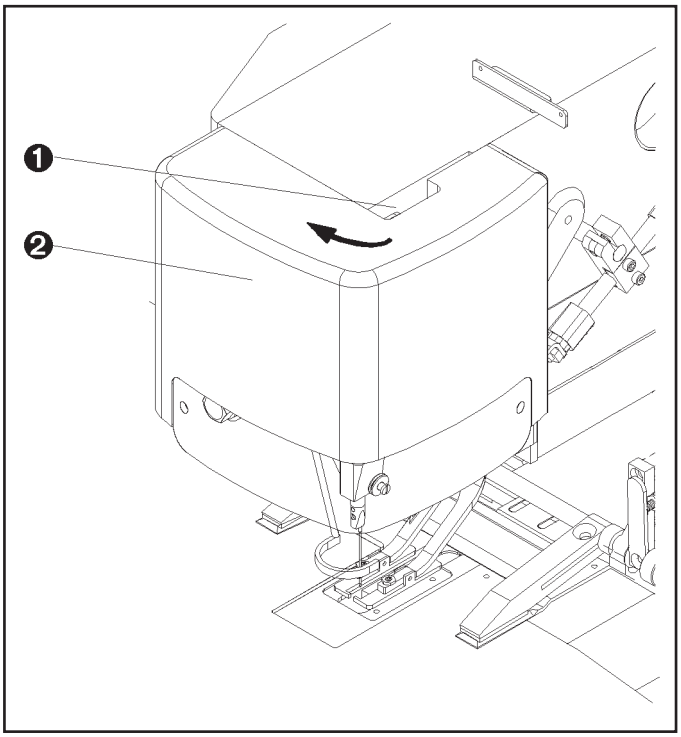
1. Using the screwdriver push the latch ❶ and open the needle bar cover ❷.

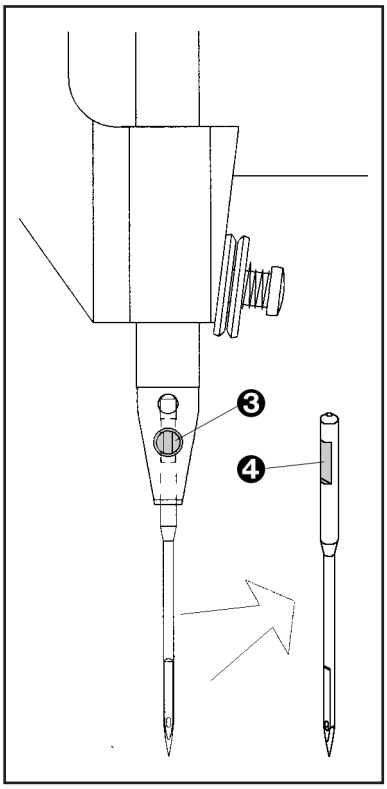
Note: The accessories contain the lever ❺ (ordering number 22.0213.0.000) and screw (ordering number 08.6000.4.005) with washer (08.6850.4.000) ❻, which is possible to fit to the latch. It allows opening of the cover without using the tool.

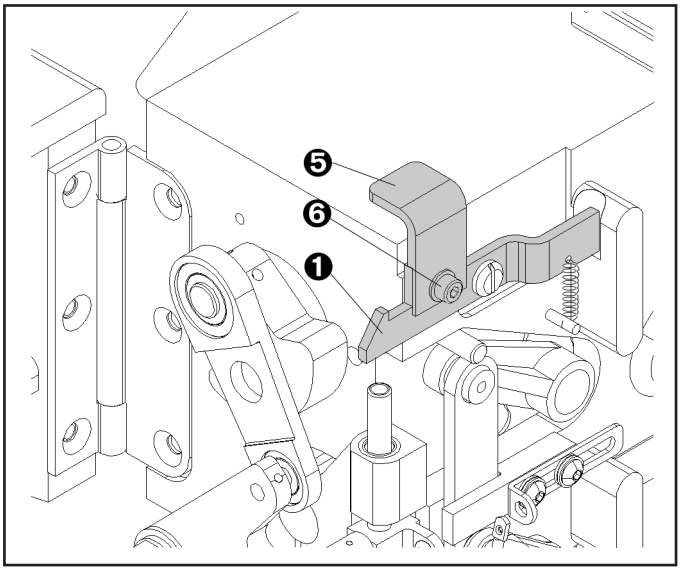
2. Loosen the screw ❸ and remove the needle.

3. Insert the new needle so that the long thread groove ❹ is in the rear and the spot for the clamping screw ❸ is in line. Do not install a bent or broken needle. Roll the needle on a flat surface to check for straightness.

4. Tighten the screw ❸ well.



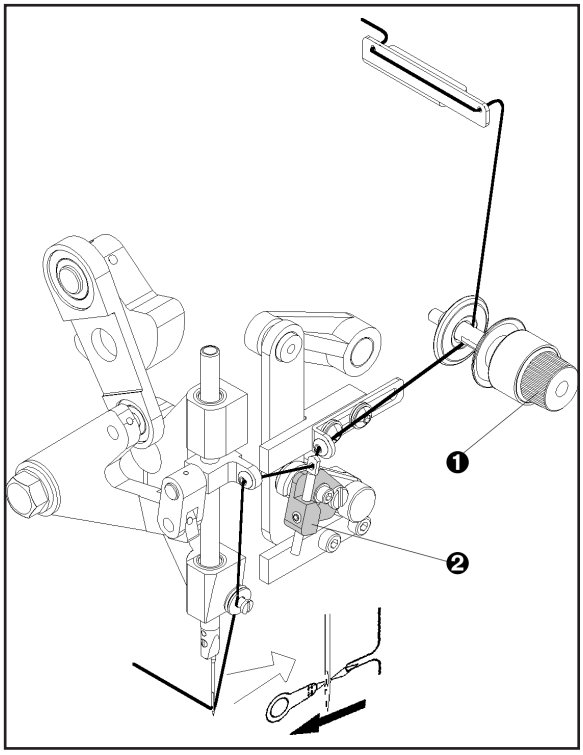


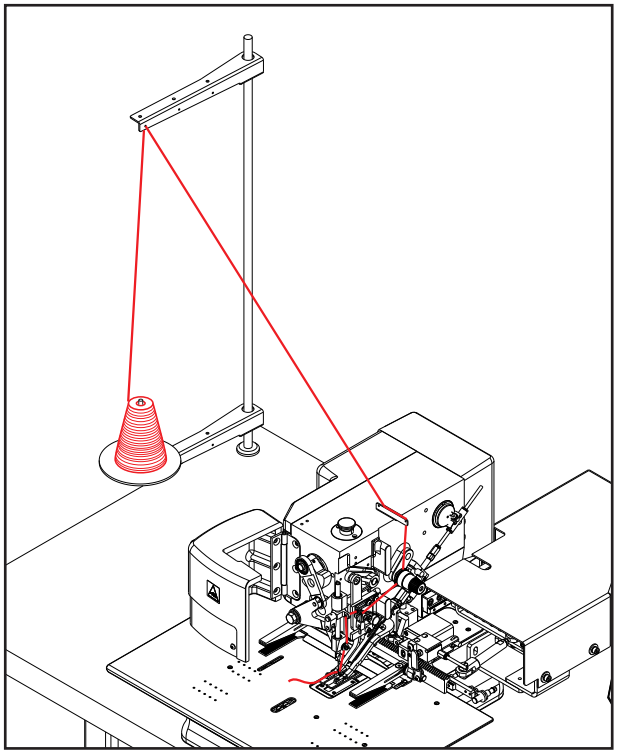


C - CORRECT USAGE

3. THREADING

WARNING! Switch the main machine power off to prevent accidental starting of the machine. Disconnect the air supply and dissipate any stored energy.
When threading, see the pictures below. Change the thread tension by nut ❶ according to the sewing conditions. To increase the thread draw off (for example sewing on the thin fabrics) there is an arm ❷ installed on the thread draw off lever.





The appearance and quality of the buttonhole may be affected by one or more of the following:

- clamping of the material
- bartack quality
- thread tension
- type of thread (size, etc.)
- sewing width
- sewn material (thickness, density)

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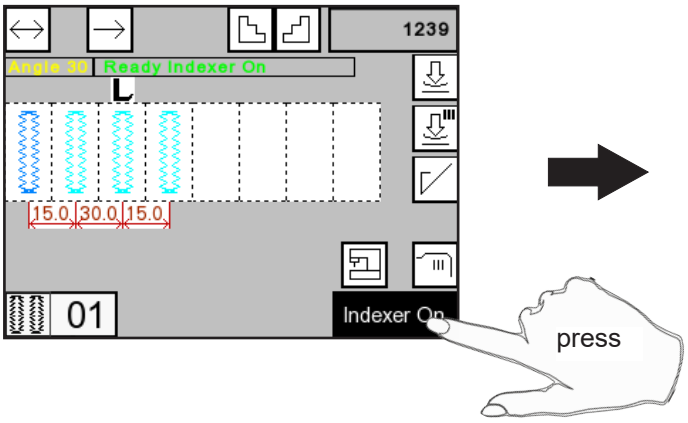
D - MACHINE CONTROLS

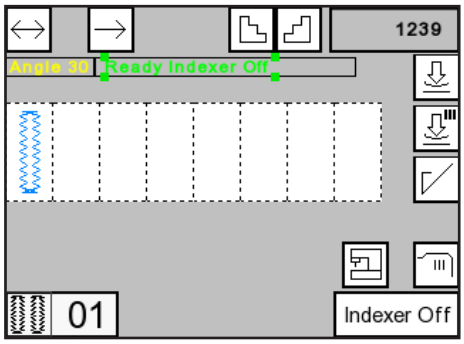
1. BUTTONHOLE SEWING PROCEDURE

1.1. Bring the machine to the home position according to the section C1.

a) sewing without indexer

Check, if the message Ready indexer Off appears on the display. If not, follow steps below:

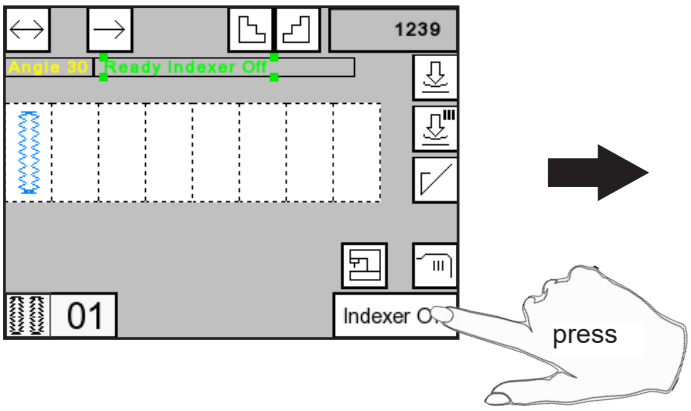


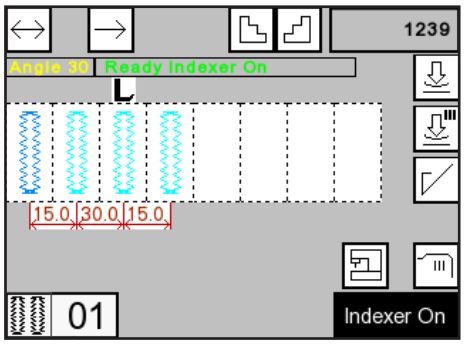


The machine sews only 1 buttonhole.

b) sewing with indexer

Check, if the message Ready indexer On appears on the display. If not, follow steps below:

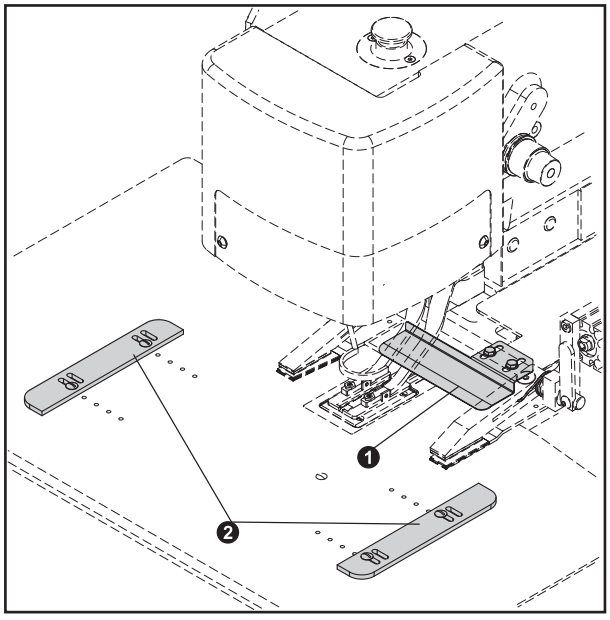




After this setting, the machine will sew with the indexer according to the parameters set in the program.

1.2. Be certain that the machine is threaded correctly according to the section C3 and insert the sewn work under the clamp feet. To place a buttonhole, use the adjustable front stop ❶ and side gages ❷.
Note: There are no side stoppers ❷ on machines with positioning laser lights.

1.3. When the foot pedal ❸ is pressed to the first position, the sewn work is clamped by the head clamp feet. (Releasing the foot treadle will raise the clamp feet).
Note: It is possible to set the control so that both the clamping and the sew start are simultaneous, consult the programming section for this information.

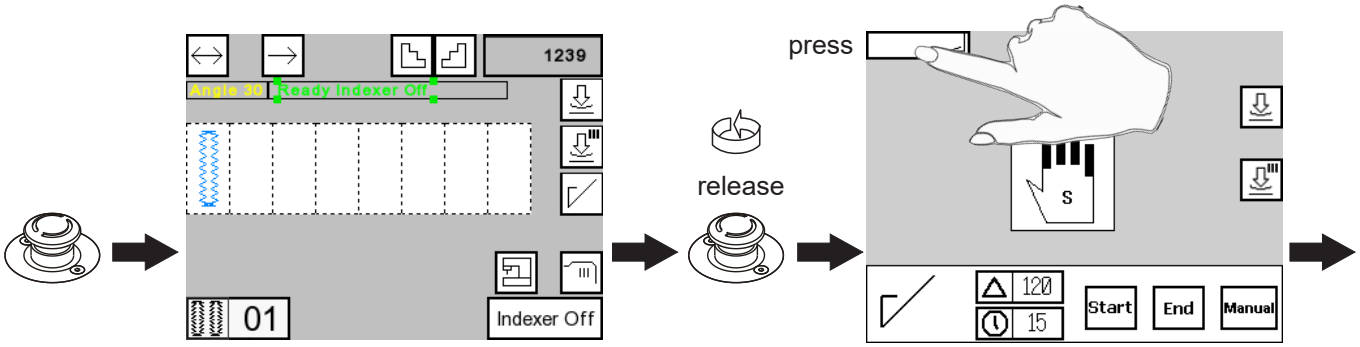


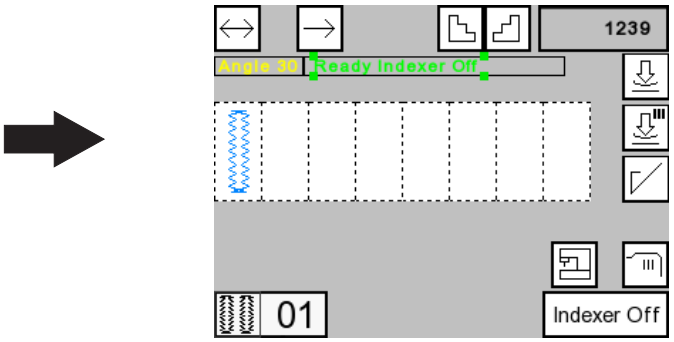
D - MACHINE CONTROLS

1.4. When the foot pedal is pressed to its second position, the sewing is started with or without indexer, it depends on set program - see 1a, b. When the buttonhole is sewn and the thread is trimmed, the machine goes to the home position and clamp feet raise.

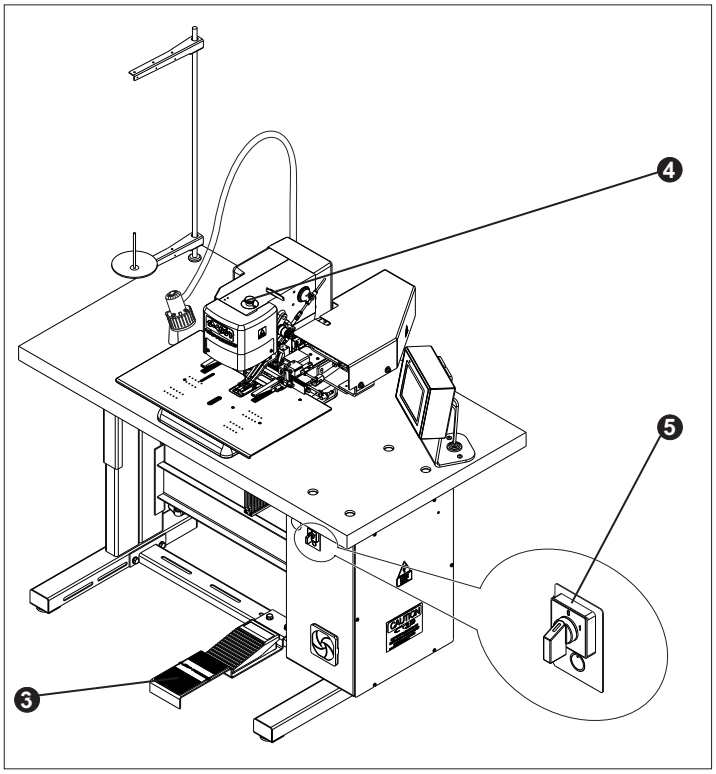
1.5. When the clamp feet are up, it is possible to move the sewn work for sewing the second buttonhole - but only for sewing without indexer.
The machine automatically sews the buttonholes according to the set program - *sewing with indexer*.

1.6. a) sewing without indexer
Machine can be stopped in any place of the cycle by pressing the Emergency Stop button ❹.





and pressing the foot pedal, the machine finishes the buttonhole.



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D - MACHINE CONTROLS

1.6. b) sewing with indexer

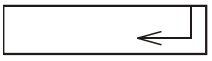
If it is necessary to interrupt the cycle during the sewing with indexer (example: needle breakage, thread breakage):

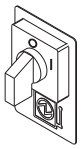
b1) Press the foot pedal to the second position, the machine stops in the home position after buttonhole is finished.

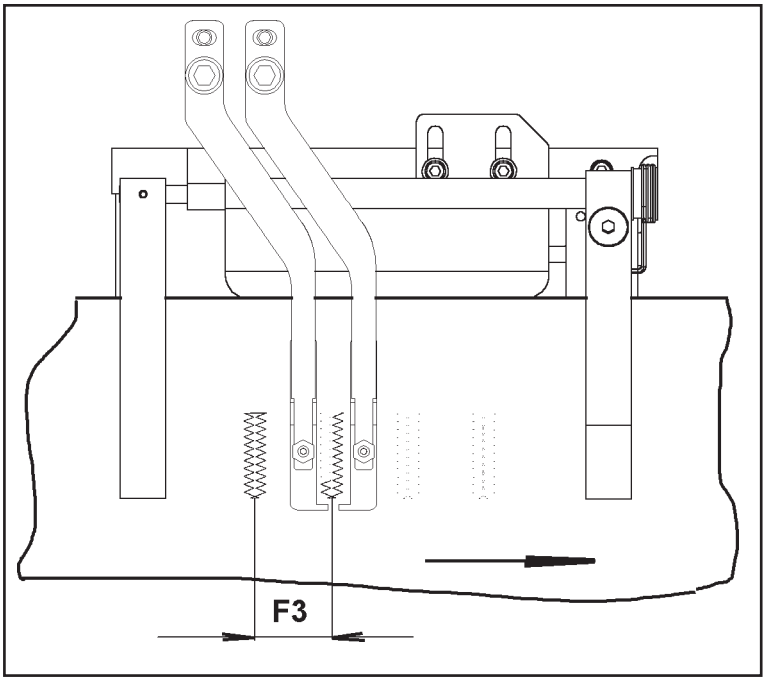
b2) Indexer clamp feet stay down. By the  and  buttons you can shift indexer clamp feet to the desired position and finish sewing by pressing the foot pedal ❸.

b3) If you need to take out the fabric, you can do it by pressing the foot pedal ❸ to the first position and rejecting then. You can hold the fabric by pressing the foot pedal ❸.

b4) If it is necessary to interrupt the cycle because of the operator safety:

press Emergency Stop Button ❹  . The machine stops immediately, the indexer clamp feet raise up and move to the home position - see b2. Release the button  , press  button and sew one dummy buttonhole, to bring the needle bar to the home position.

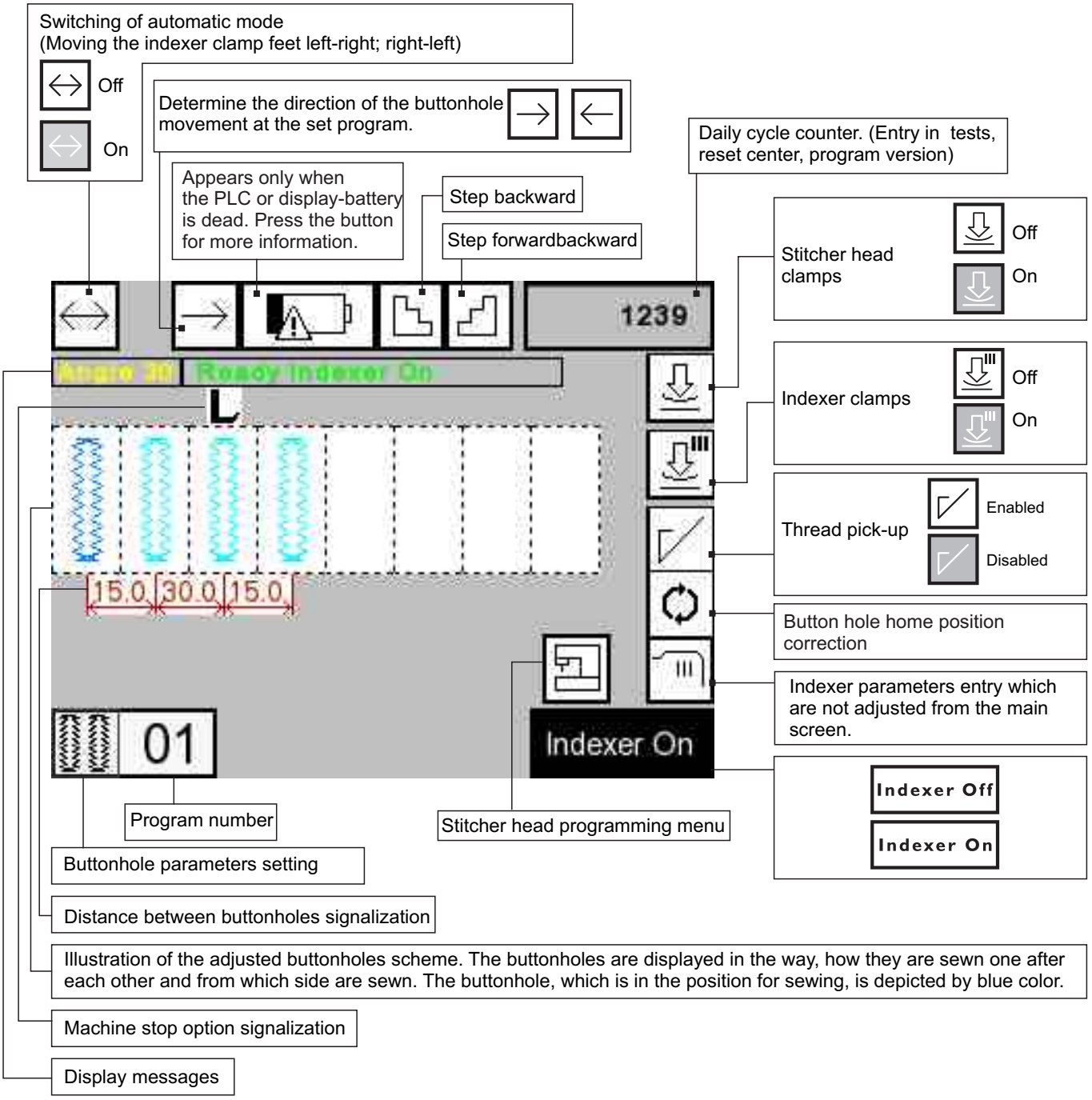
1.7. When the work is done, switch the machine off by turning the main switch ❺  to the 0 position, then stop the air supply by closing the valve which is behind the regulator.



D - MACHINE CONTROLS

2. OPERATOR CONTROL PANEL PUSH BUTTONS AND SWITCHES

Emergency Stop Button



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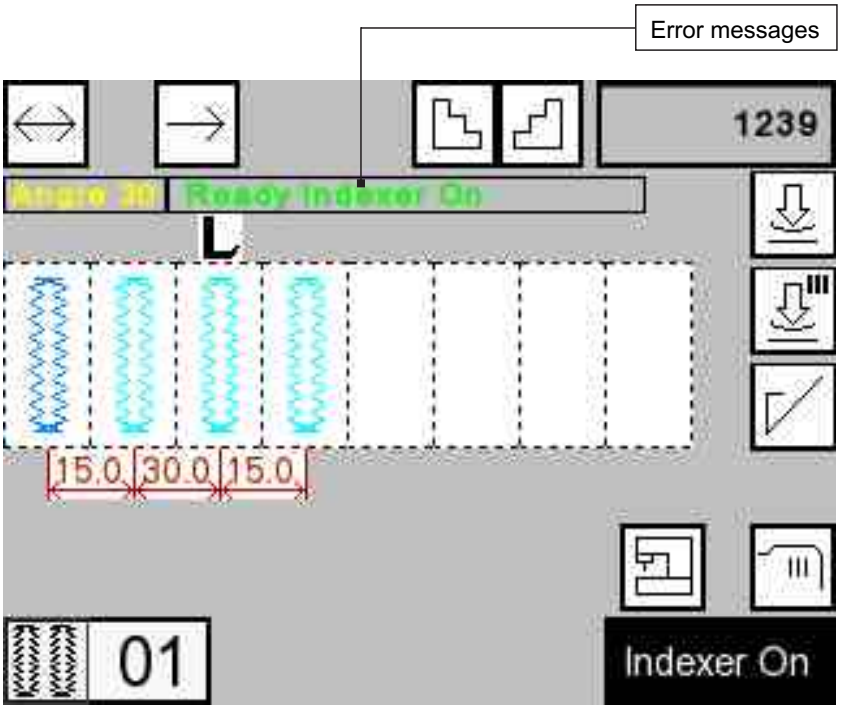
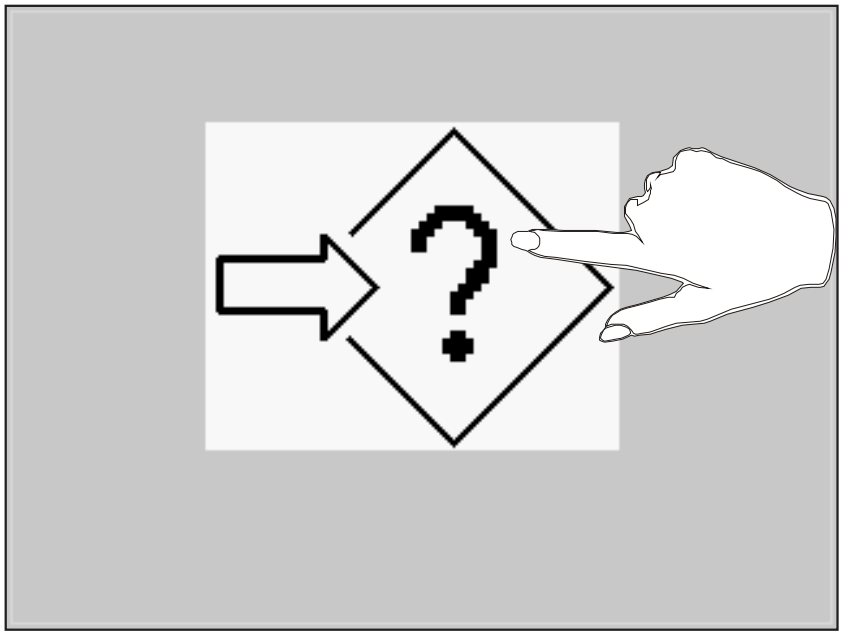
D - MACHINE CONTROLS



- Ready indexer On
- Ready indexer Off
- Emergency stop
- Wait please
- Busy
- Motor not ready
- Low air pressure
- Home position time out

Error setting



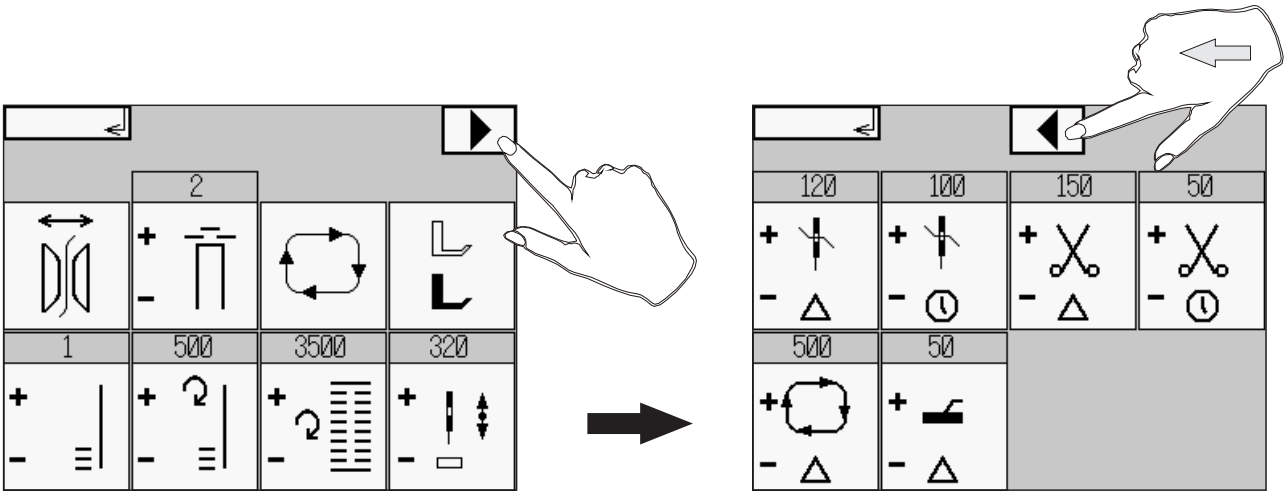
It will display if the value of the parameter is adjusted out of range.

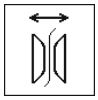
Press the screen on the display, you will return on the main screen.

Press button ↵ you will get to the main screen.

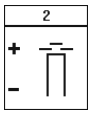
3. STITCHING HEAD PARAMETERS MENU

Enter the sewing head program menu by pressing button  .

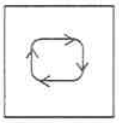


A  Off  On

Turning the second thread tensioner in bar on / off.

B 

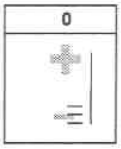
Setting the number of bar stitches sewn with slow speed (in the range of 0 - 6 stitches).



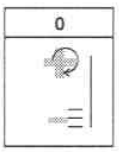
Setting the machine cycling. (On/Off).
If the button lights, function is active.

Setting the foot pedal position. (Possible setting 1step/2steps).
Adjustment for position 1 means, that the machine closes clamps and starts sewing in one moment.

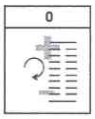
Adjustment for position 2 means, that the machine closes clamps on 1 position and on position 2 stars sewing cycle.



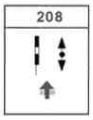
Selecting the number of stitches in slow start.
(Range 0 - 3 rpm)



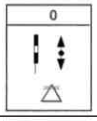
Setting the slow start speed at the sewing cycle.
(Range 500 - 1000 rpm)



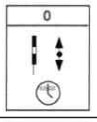
Maximal speed.
(Range 1000 - 3840 ppm)



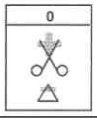
Correction of the needle bar upper position. (Range 0 - 600 imp)



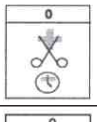
Draw-off delay.
(Range 60 - 150 ms)



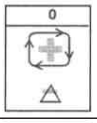
Timming of the knife/draw-off activation.
(Range 30 - 200 ms)



Setting the trim delay.
(Range 0 - 200 ms)



Setting the trim timing activation.
(Range 30 - 60 ms)



Setting the delay between the sewing cycles. (Range 500 - 2500 ms)

Clamp feets opening delay adjustment, in the end of cycle. (Range 0 - 100 ms)

To return to the main screen, press ↵ key.

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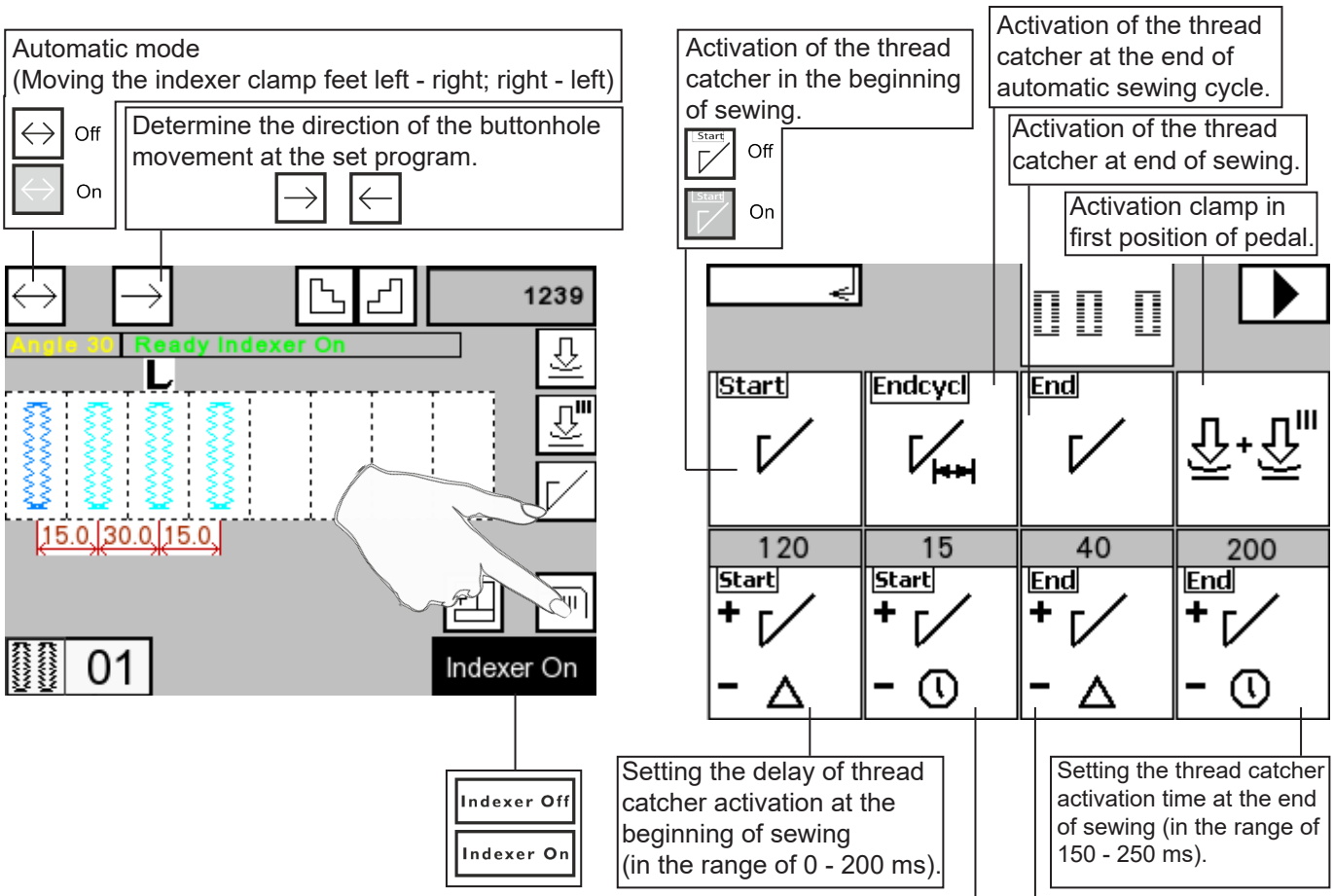
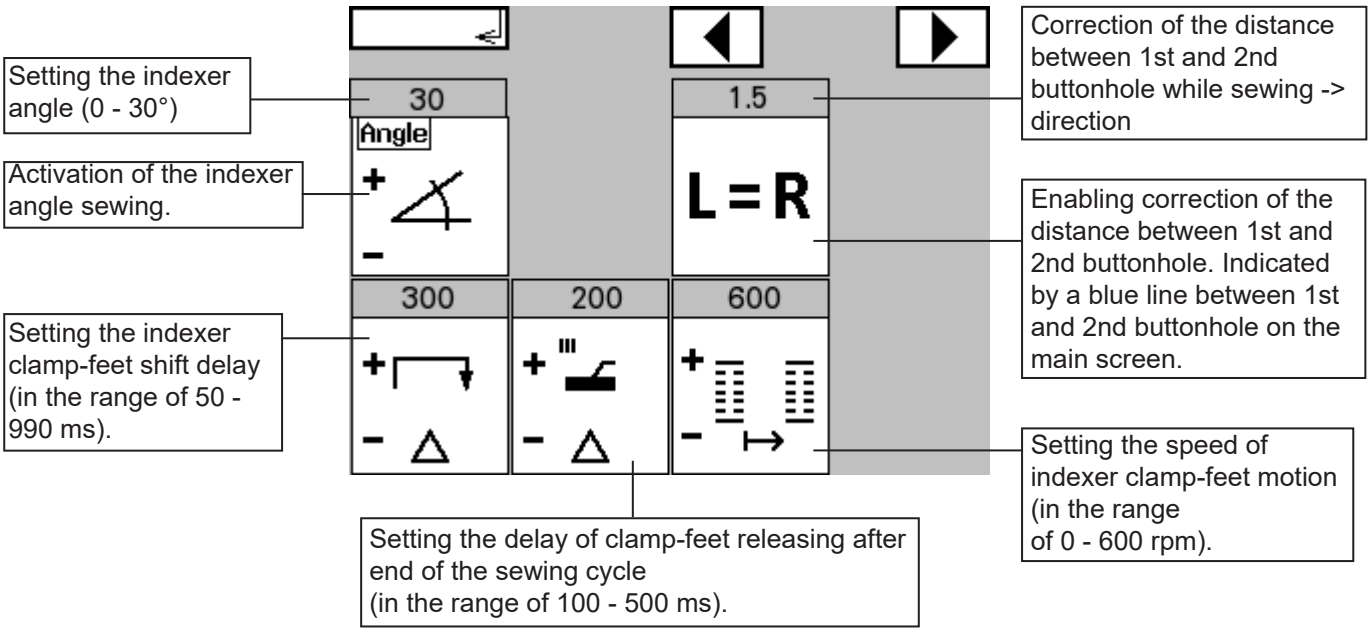
D - MACHINE CONTROLS

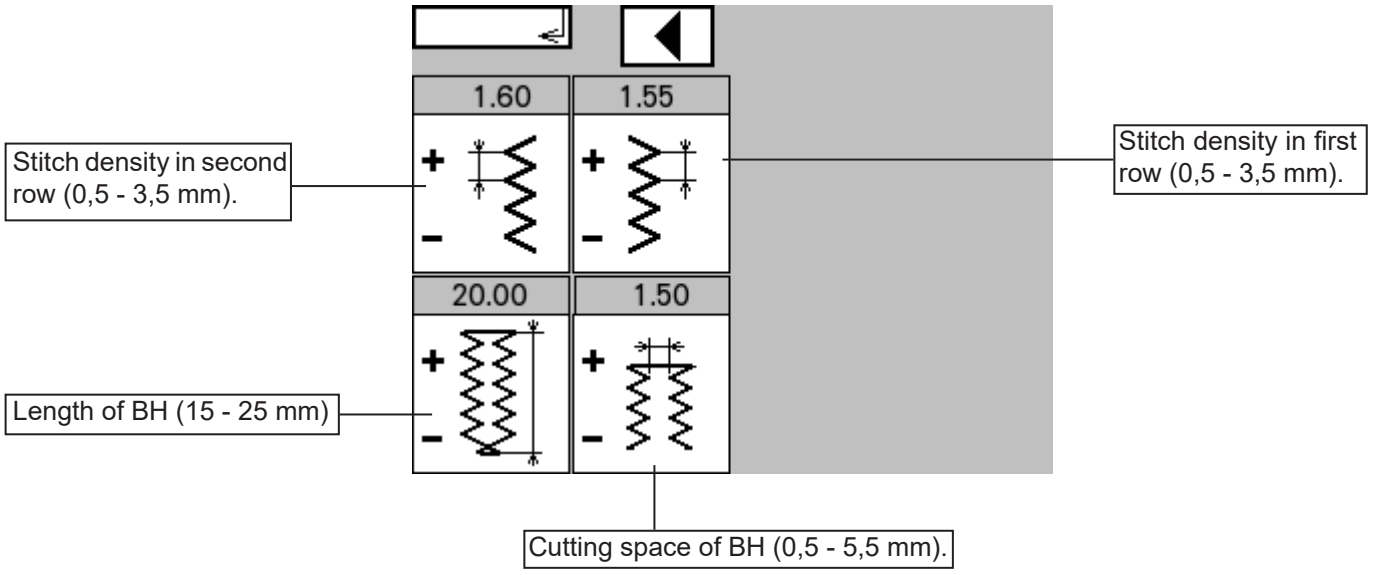
4. INDEXER PARAMETERS MENU



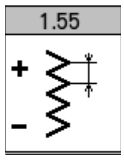


D - MACHINE CONTROLS

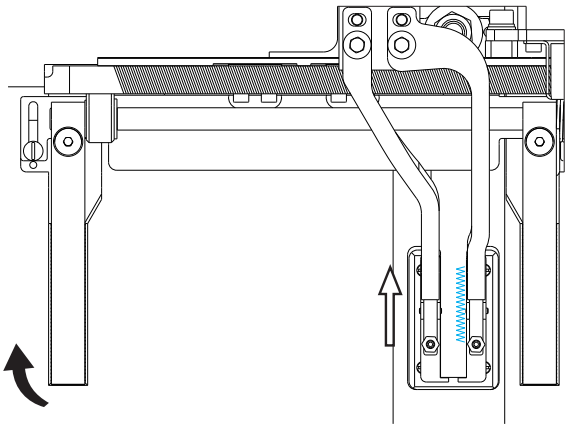
These parameters need to be adjusted according to the stitching head mechanical adjustment:

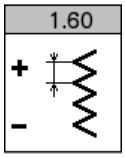


Indexer clamp-feet need to be synchronized with sewing clamp-feet. If this is not the case, the indexer clamp-feet seem to turn in clockwise or anti-clockwise direction. Then do the following adjustment:

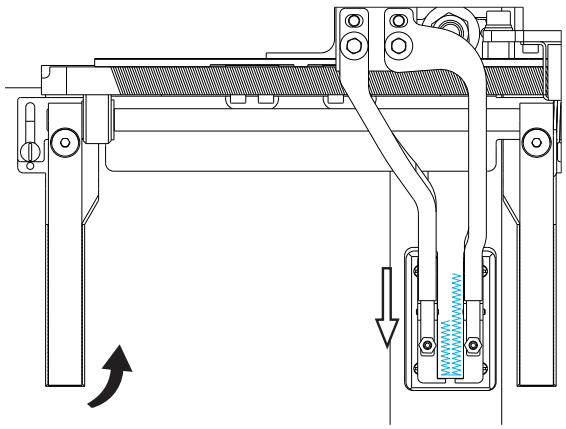


Stitch density in first row (0,5 - 3,5 mm): Start observing sewing of the first row of buttonhole stitches, clamp-feet are moving away from the operator (as per the picture). If indexer clamp-feet turn in clockwise direction (refer to the thick round arrow in the picture) when the first row is sewn, then increase this parameter until you reach synchronization of indexer and sewing clamp-feet. In the opposite case (Indexer clamp-feet rotate anti-clockwise), decrease the parameter.





Stitch density in second row (0,5 - 3,5 mm): Then observe sewing of the second row of buttonhole stitches, clamp-feet are moving towards the operator (as per the picture). If indexer clamp-feet turn in anti-clockwise direction (refer to the thick round arrow in the picture) when the second row is sewn, then increase this parameter until you reach synchronization of indexer and sewing clamp-feet. In the opposite case (Indexer clamp-feet rotate clockwise), decrease the parameter.



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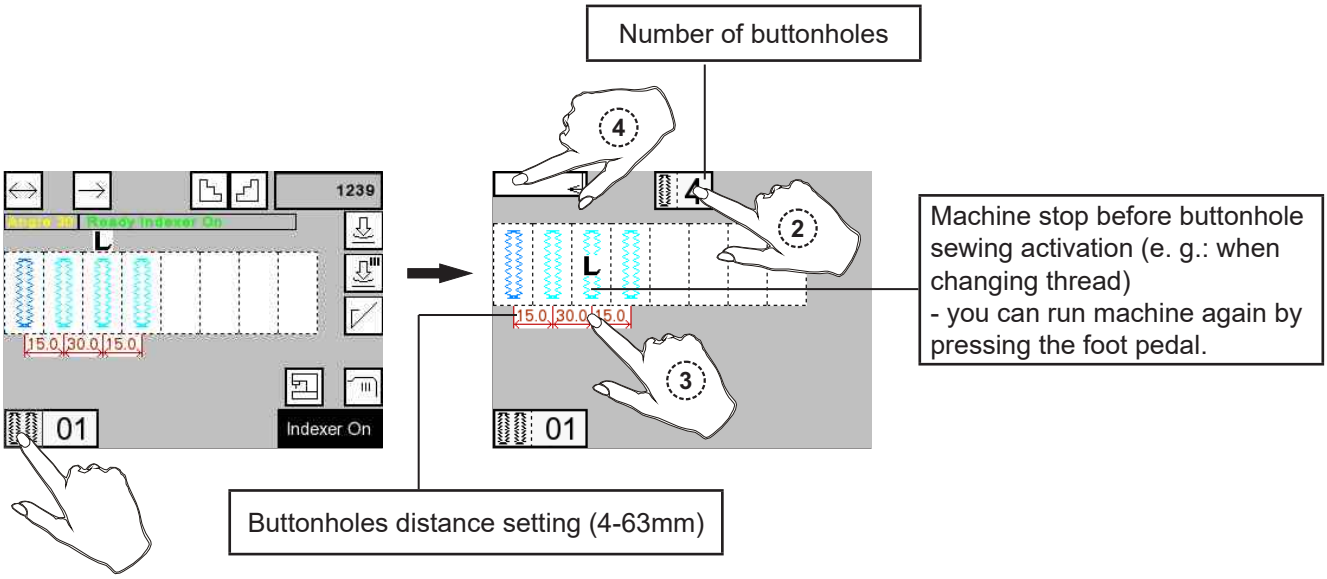
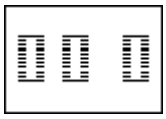
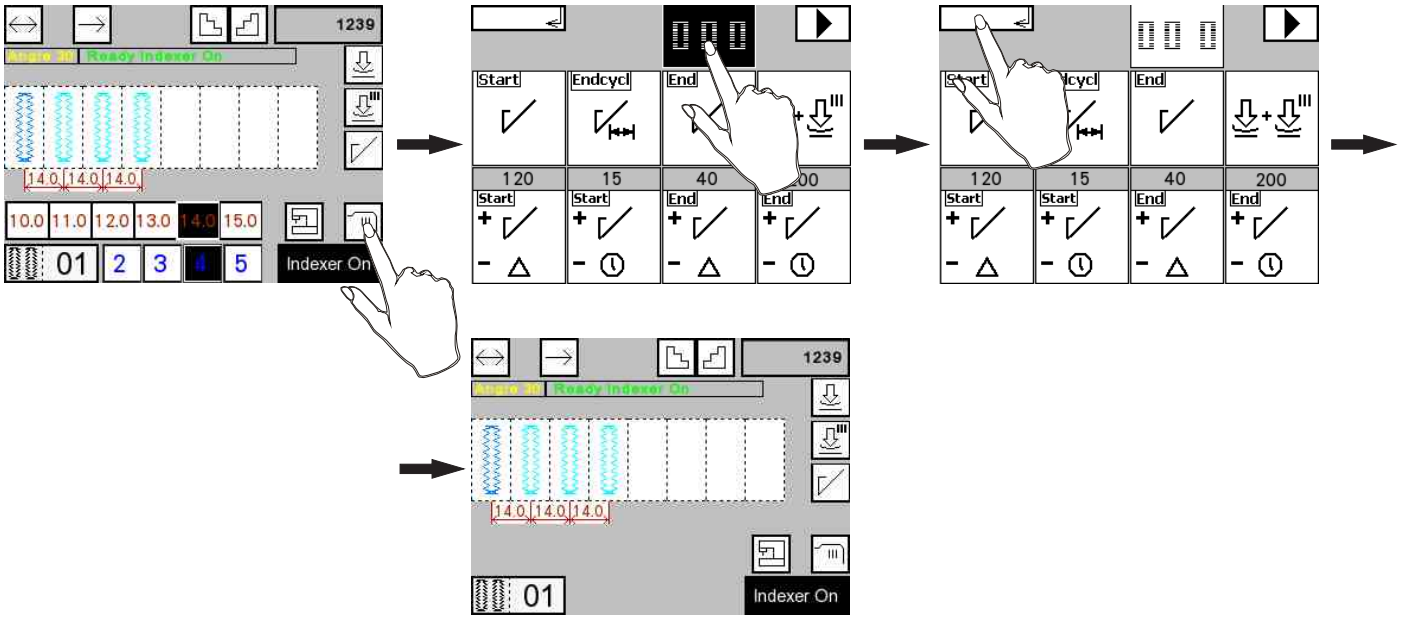
5. INDEXER PROGRAMMING

5.1. Buttonholes parameters setting



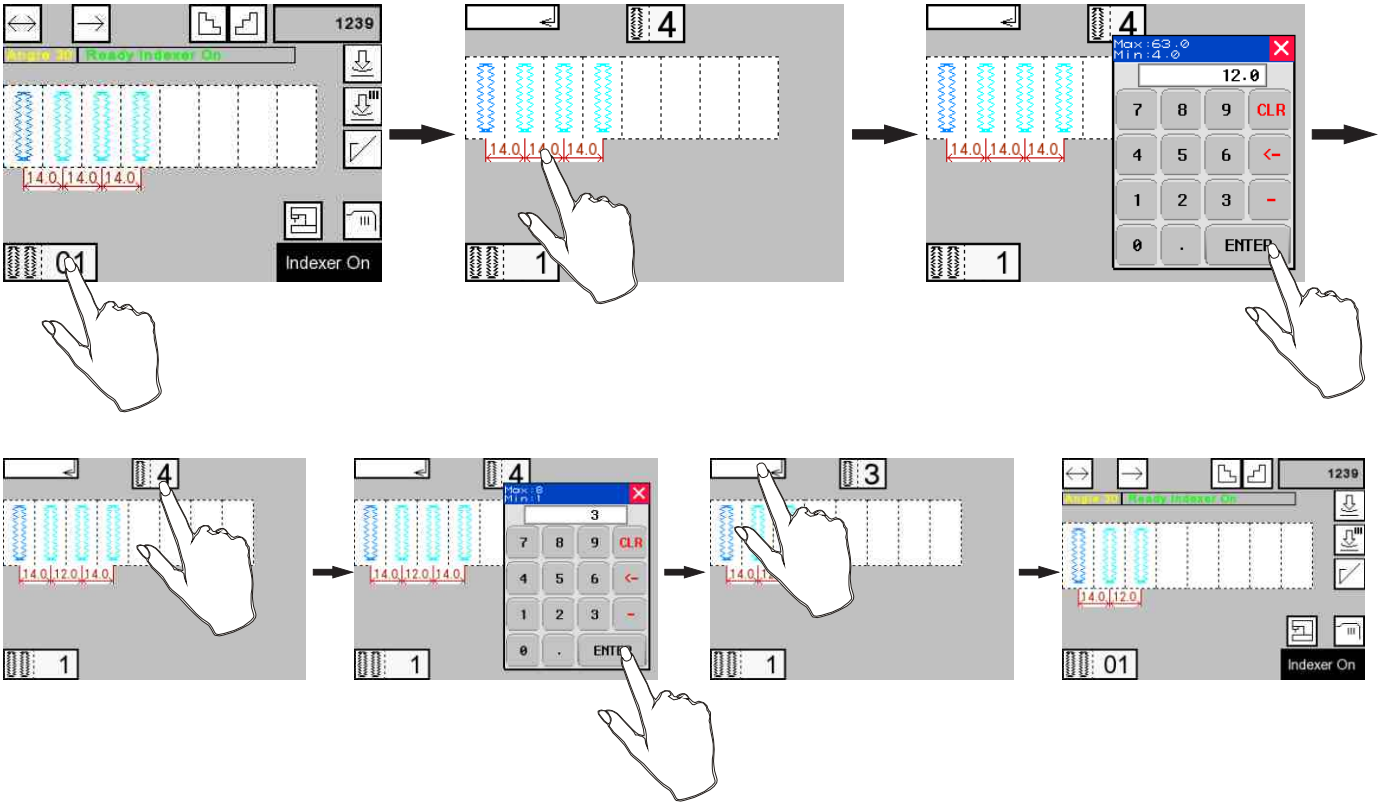
5.2. Standard mode

This mode is activated by this icon  in indexer programming menu.



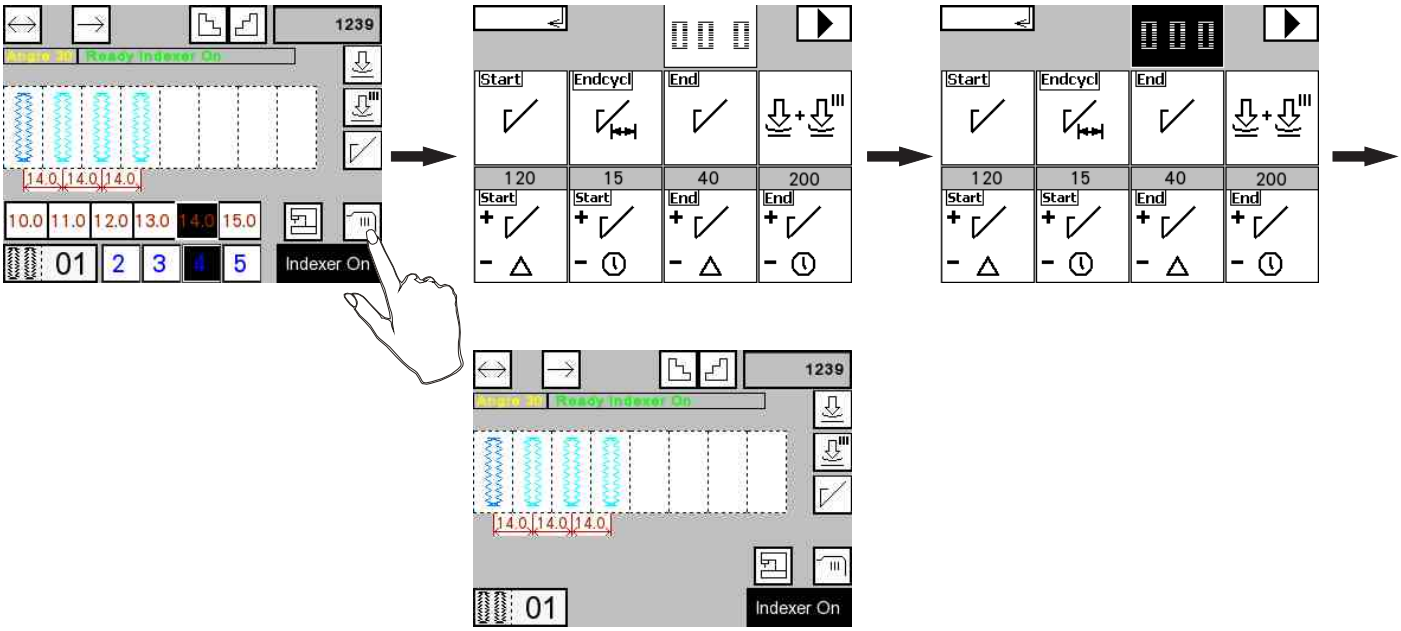
Sequence of buttonhole count and spacing setting:

Note: It is possible to have different distance between each buttonhole.



5.3. Special mode

This mode is activated by this icon  in indexer programming menu.



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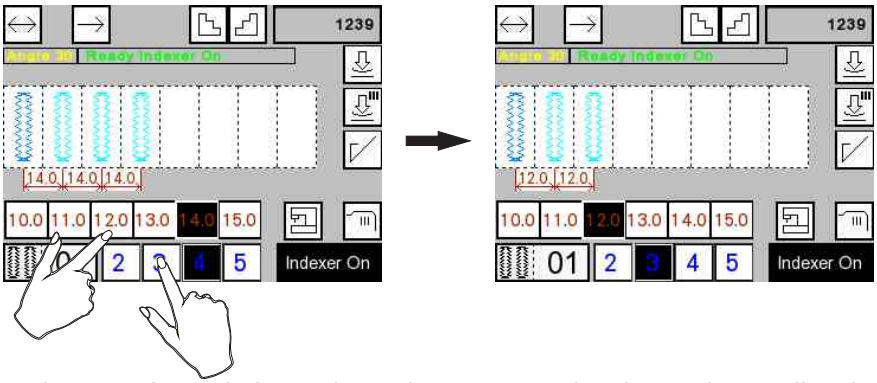
D - MACHINE CONTROLS

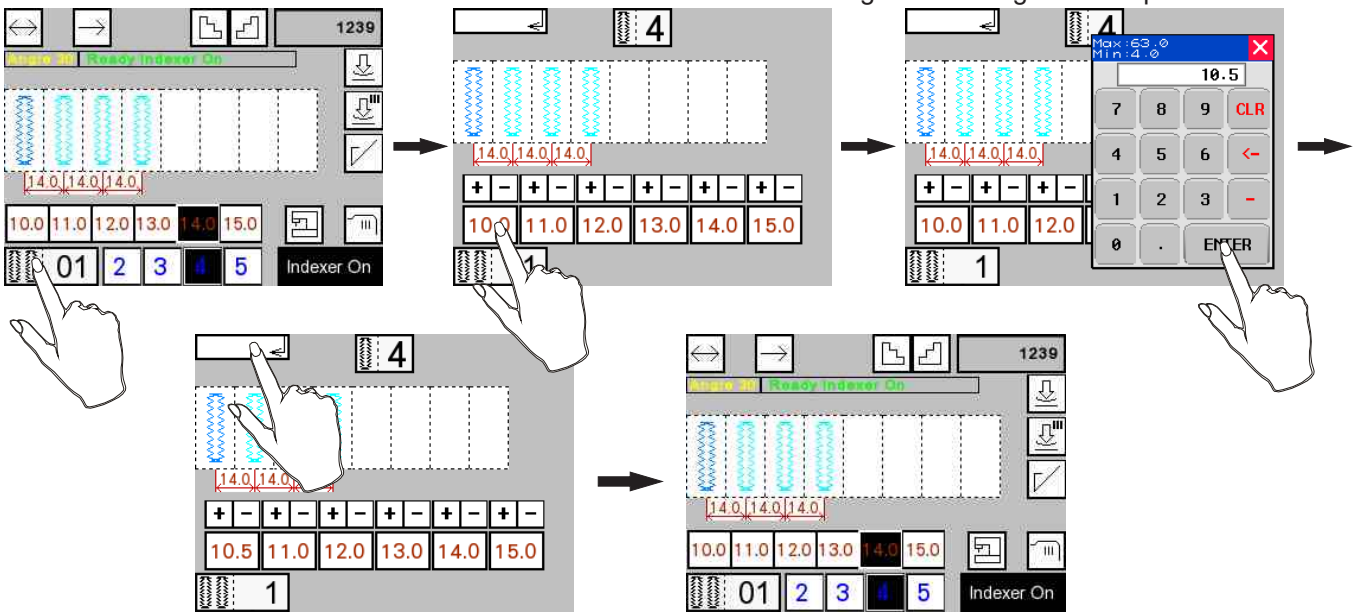
Sequence of buttonhole count and spacing setting:

Note1: Distances between buttonholes are equal.

Note2: Count of buttonhole and distance between buttonholes are possible to change directly from the main screen.



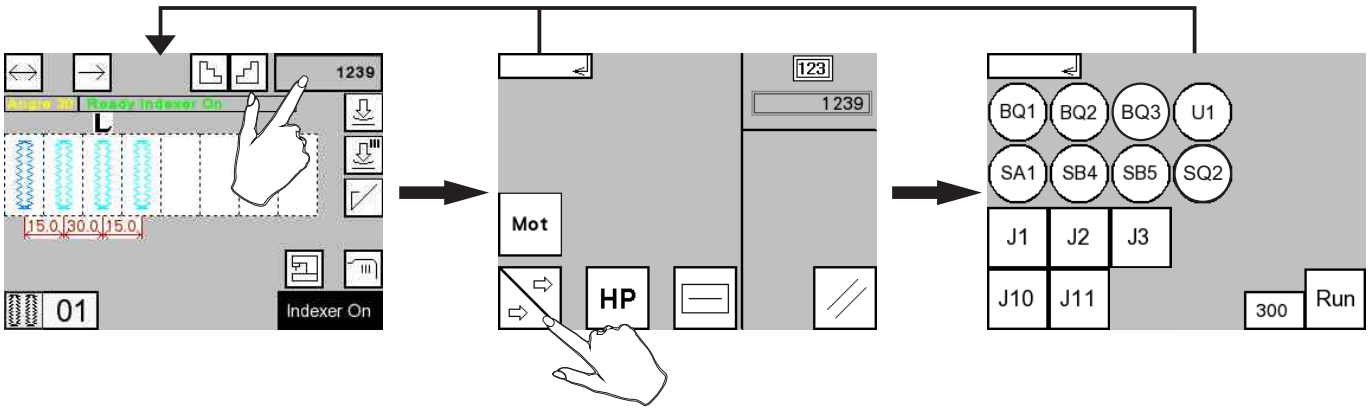
Value of distance between buttonholes at the main screen can be changed according these steps.



D - MACHINE CONTROLS

6. TESTS

Warning! Tests can be performed only by skilled service technicians.



BQ1 The end position sensor BQ1. Activate the sensor using a metal tool - icon starts lighting. BQ1

BQ2 The end position axis X. Activate the sensor using a metal tool - icon starts lighting. BQ2

BQ3 The end position axis Y. Activate the sensor using a metal tool - icon starts lighting. BQ3

SQ2 If the air pressure is less than 0,5 MPa the button is underlighted. SQ2

U1 If the servodriver is in operation the icon lights. U1

SA1 After pressing button key EMERGENCY STOP  the icon lights. SA1

SB4 When the foot pedal is pressed to its first position the button SB4 is underlighted. SB4

SB5 When the foot pedal is pressed to its second position the button SB5 is underlighted. SB5

J1 Press button key to activate the draw-off. The valve J1 is tested by this parameter. J1

J2 When the button key is pressed, the clamp feet are closed.The valve J2 is tested by this parameter. J2

J3 Press button key to activate the thread trimming. The valve J3 is tested by this parameter. J3

J10 Press button key to close the indexer clamp feet. The valve J10 is tested by this parameter. J10

J11 Press button key to activate the thread pick. The valve J11 is tested by this parameter. J11

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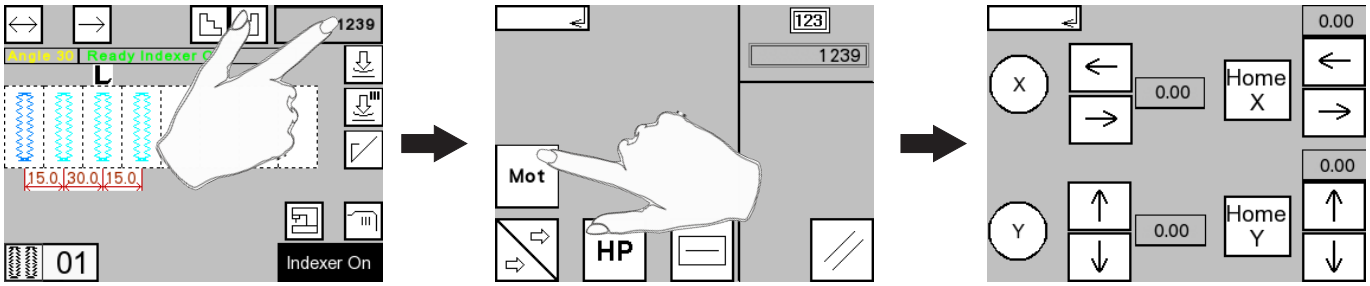
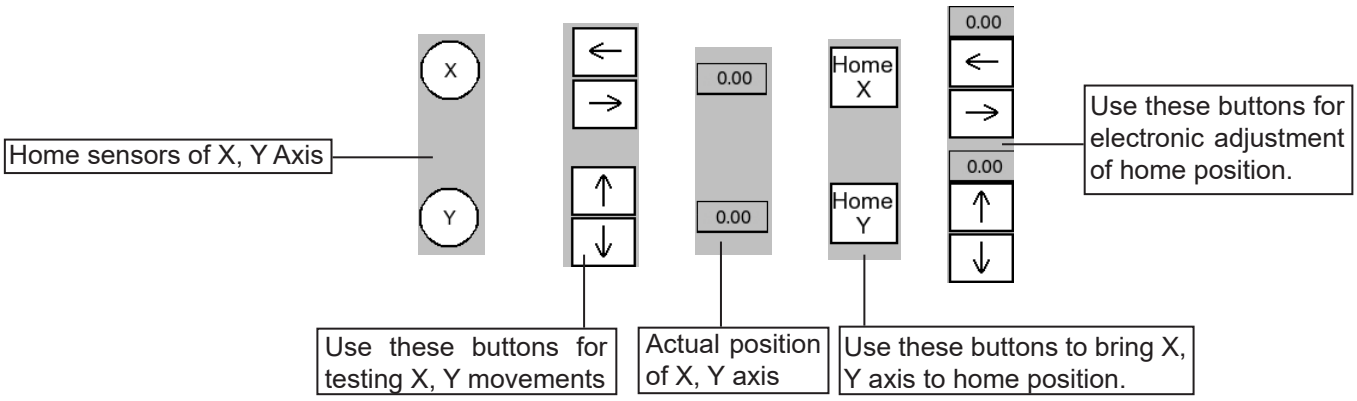
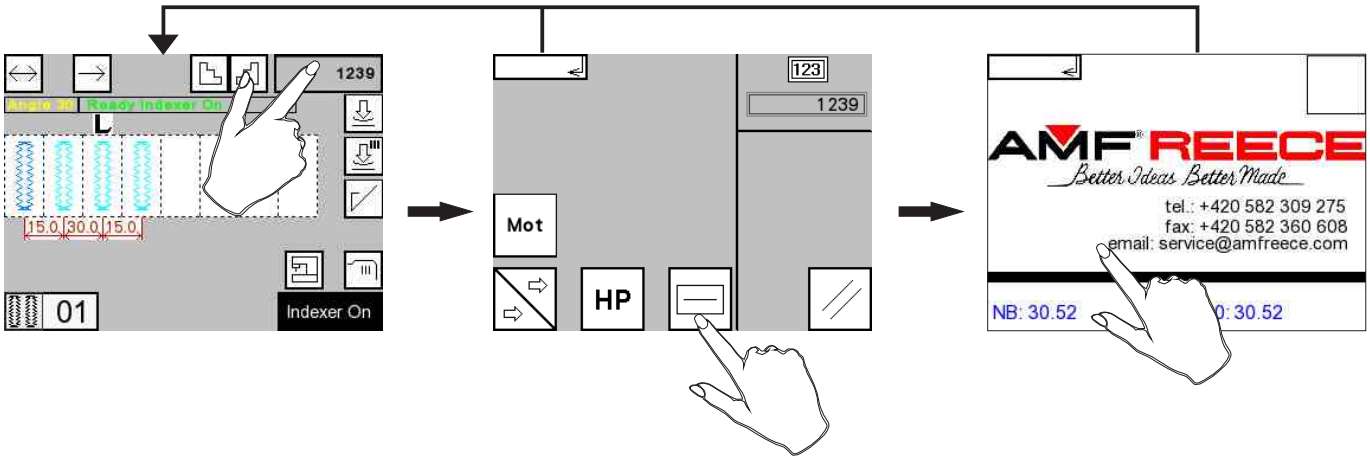
D - MACHINE CONTROLS

6.1. Stepper motor test

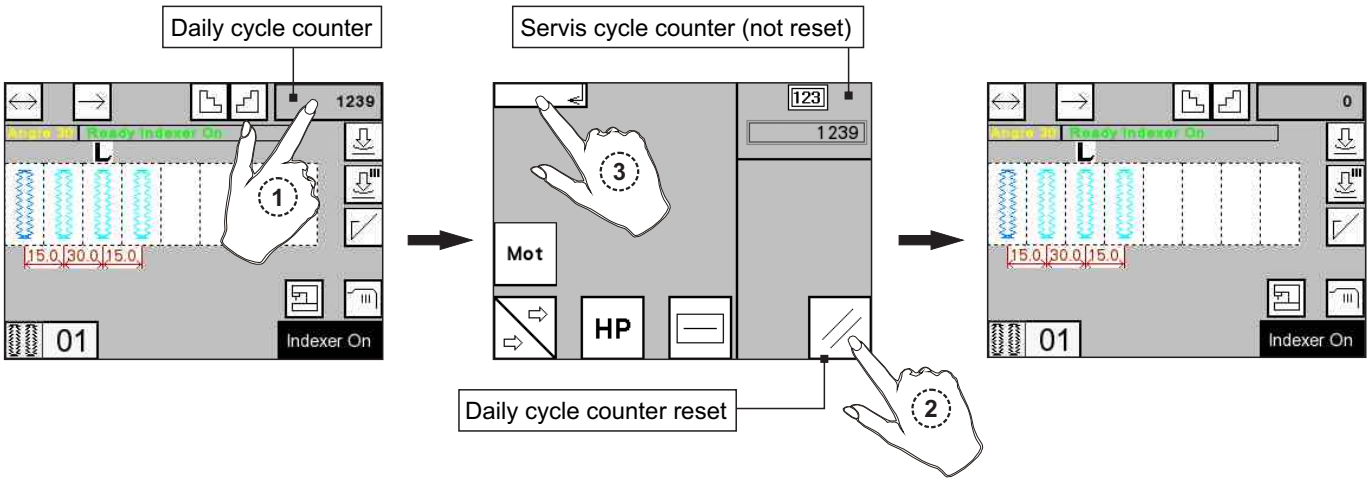




7. PROGRAM VERSION



8. COUNTER RESET



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D - MACHINE CONTROLS

9. FACTORY SETTING

- all the parameters are set according to table 1.

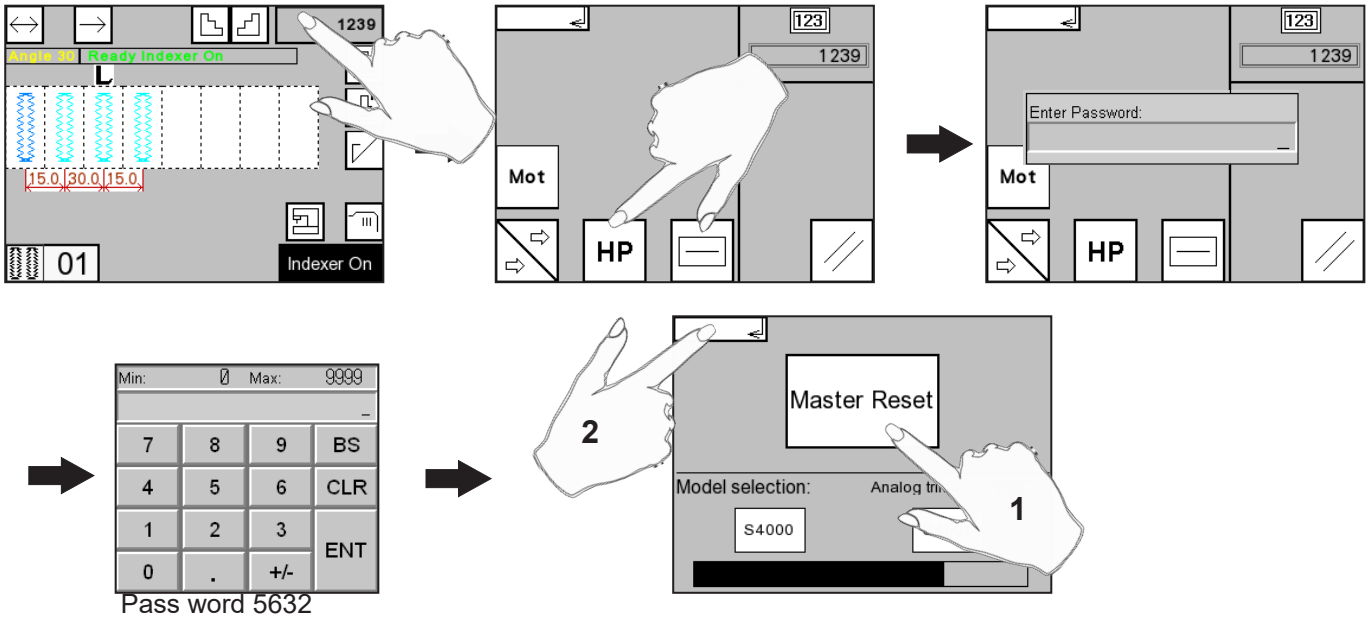


Table 1

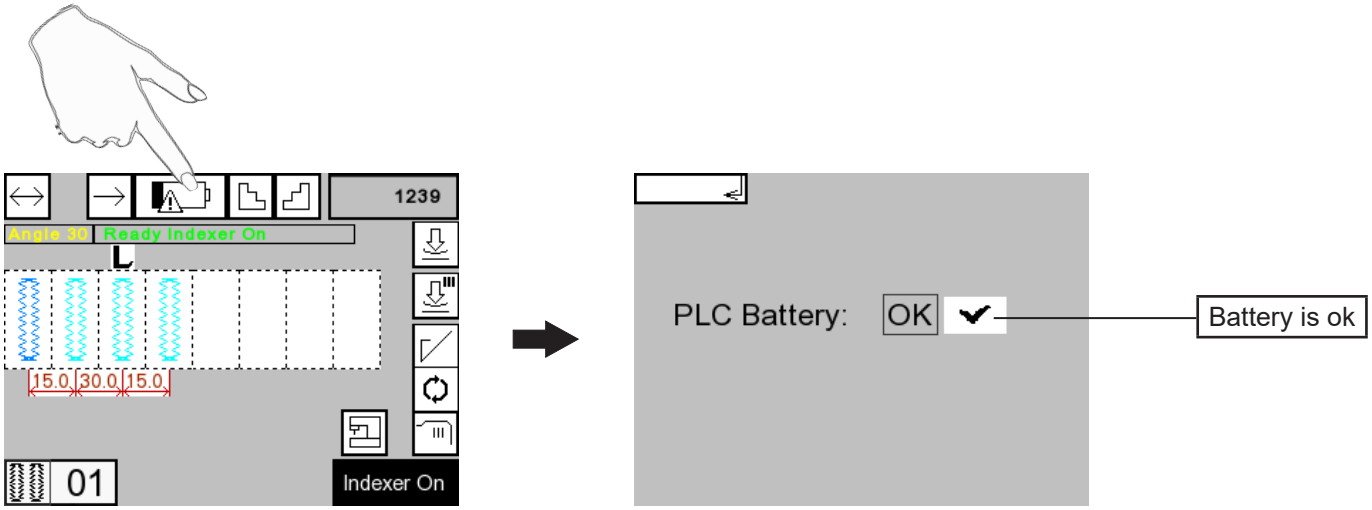
	PARAMETER	RANGE	SETTING
1.		Off / On	Off
		0 - 6	0
		Off / On	Off
		1 step / 2 steps	2 poloha
		0 - 3	0
		500 - 1000 rpm	1000
		1000 - 3840 rpm	3500
		0 - 600 ipm	320
2.		60 - 150 ms	120
		30 - 200 ms	100
		0 - 200 ms	150
		30 - 60 ms	50
		500 - 2500 ms	500
		0 - 100 ms	50

	PARAMETER	RANGE	SETTING
	Indexer	Indexer Off / Indexer On	Indexer On
		Off / On	Off
	4	1 - 8	4
	15mm	4 - 63 mm	16
		Off / On	Off
		Off / On	Off
		Off / On	On
		Off / On	On
1.		0 - 200 ms	120
		0 - 40 ms	15
		0 - 100 ms	40
		50 - 300 ms	200
		0° - 30°	0°
	L=R	L=R Off / L≠R On	0 - 2 mm 1
2.		200 - 990 ms	300
		100 - 500 ms	200
		0 - 600 rpm	600
		0,5 - 3,5 mm	1,60
3.		0,5 - 3,5 mm	1,55
		15 - 25 mm	20
		0,5 - 5,5 mm	1,50

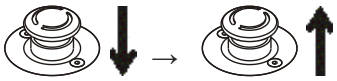
10. DEAD BATTERY

If the PLC or display battery is dead, a flashing icon  appears on the main screen. By pressing the icon, one can find out which battery needs to be replaced.

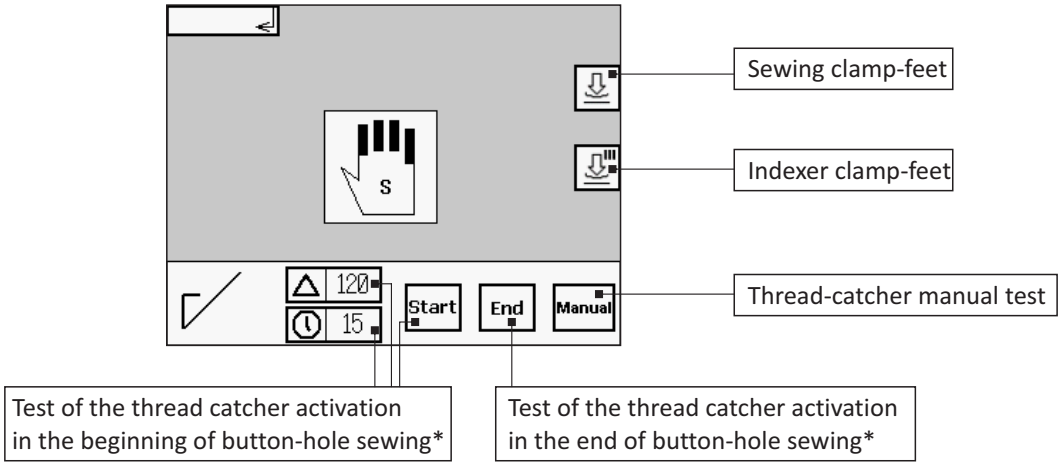
Warning! The battery shall be replaced in 4 days, all the data are lost afterwards!



11. SERVICE MODE

After pressing and releasing the emergency stop button  → the Service Screen appears.

The clamp feet and thread catcher can be tested with deactivated servomotor from this screen.



* The icons will not appear if this function is not activated in the indexer settings.

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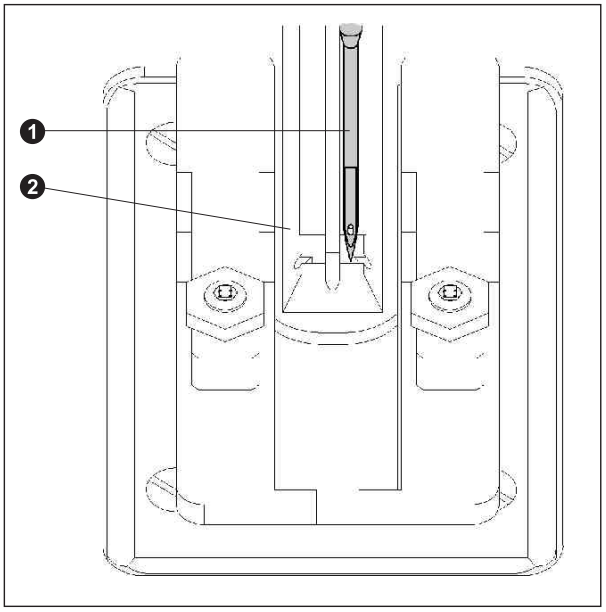
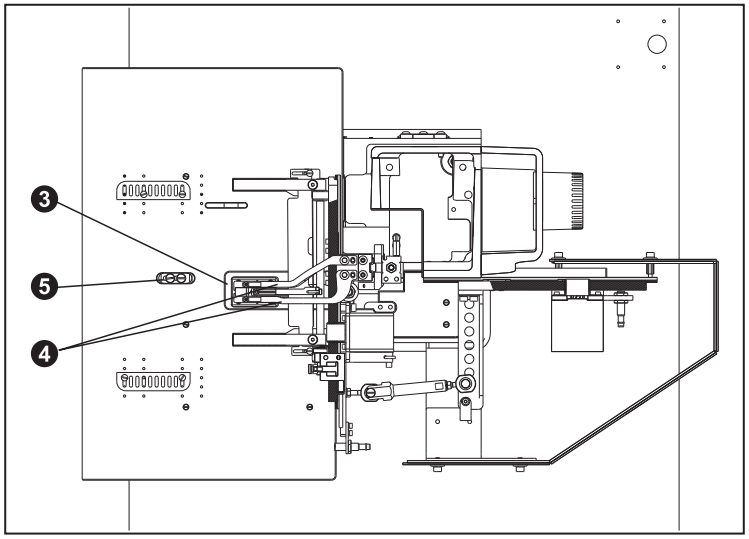
E - STANDARD MACHINE ADJUSTMENT

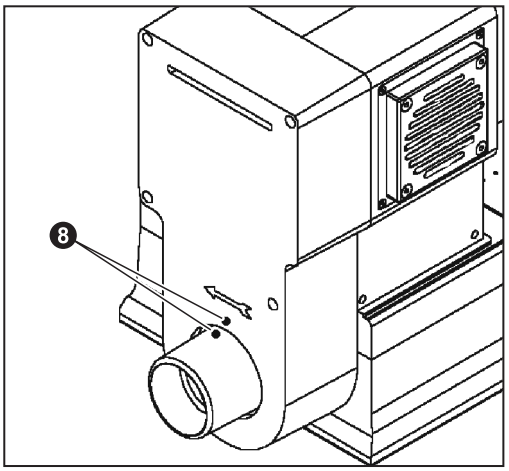
1. MACHINE HOME POSITION

1. The needle bar is in the upper position. The needle ❶ descends to the right side of the throat plate slot ❷ during the first stitch. The marks ❽ on the handwheel and cover casting are aligned.

2. The clamp plate ❸ with clamp feet ❹ is in the full forward position. The clamp plate moves to the rear during the first row of stitching.

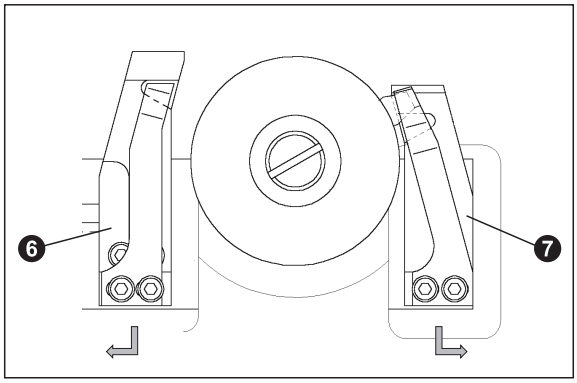






2. MAIN CAM ADJUSTMENT

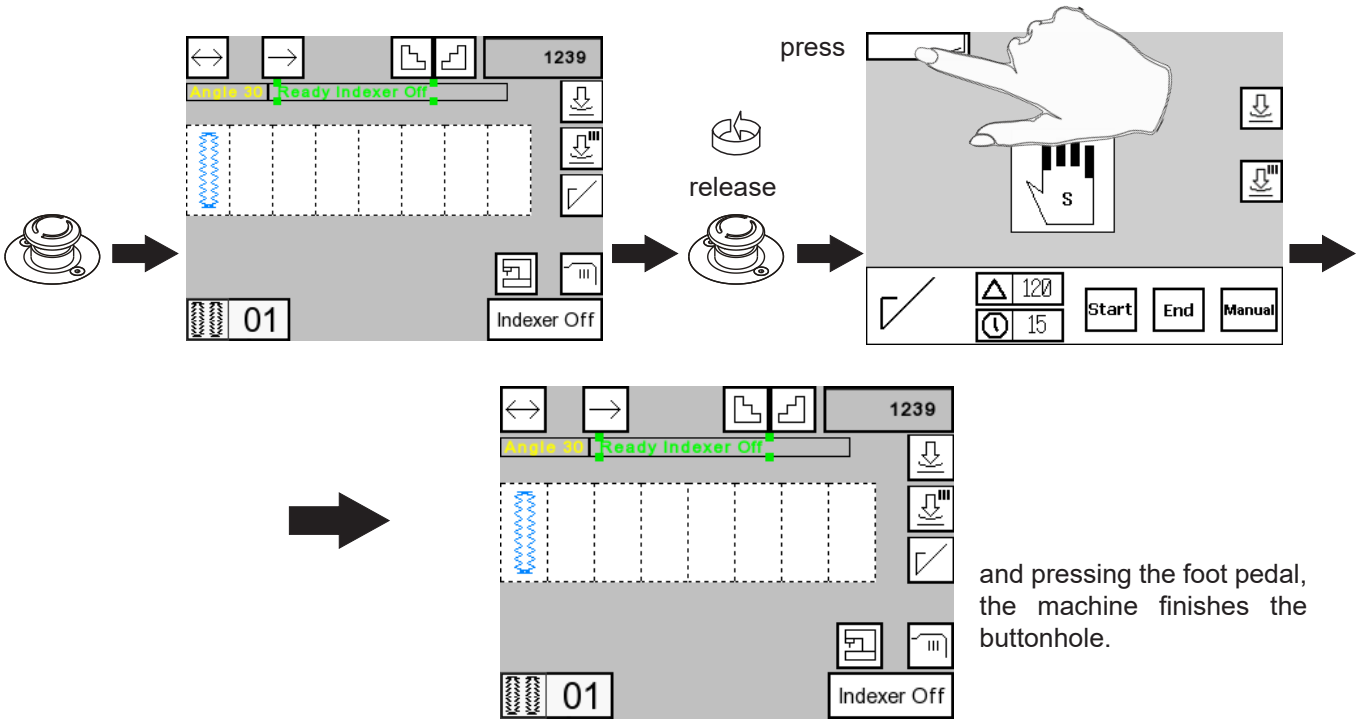
1. Tilt the machine on the rest pin and view the main cam assembly.
2. Initial setting is the following: Set the left shifter arm ❻ maximum left and right shifter arm ❼ maximum right.
3. Further setting shall be done according to **section E9**.



E - STANDARD MACHINE ADJUSTMENT

3. MACHINE ADJUSTMENT BASICS

1. Before making mechanical adjustment switch the machine to the *service mode* by pressing the button ❼ Emergency Stop .



and pressing the foot pedal, the machine finishes the buttonhole.

CAUTION: It is not possible to start sewing by pressing the foot pedal when working in Service Mode.

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E - STANDARD MACHINE ADJUSTMENT

4. NEEDLE BAR

4.1. Needle bar crank position

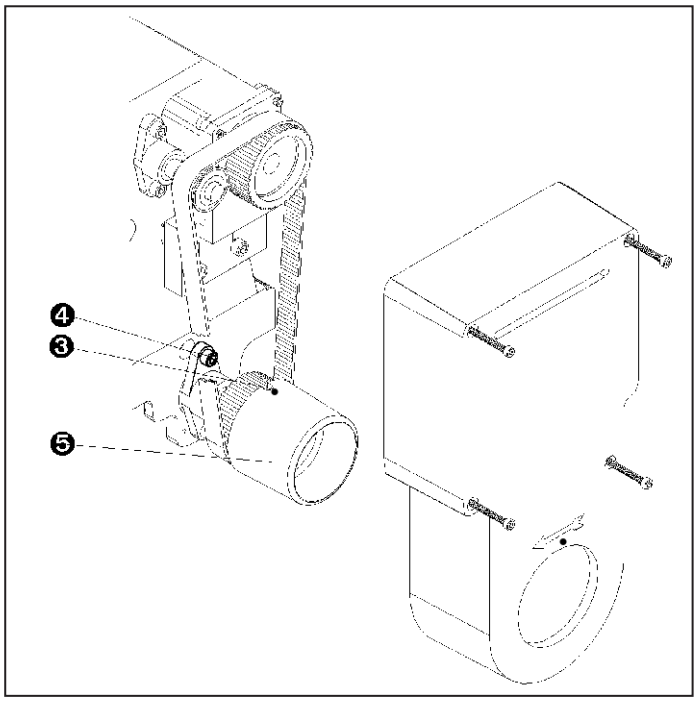
Turn the hand wheel ❺ until the reference point of the pulley is in connection with the mark on the back cover as the picture in section E1. The needle bar need to be in the top position. If the needle bar is not in the indicated position turn the hand wheel ❺ and loosen lightly the screw ❶ in the needle bar crank ❷, hold the hand wheel and turn the crank in the direction to obtain the condition. Check again and tighten the screw ❶ when the position is reached.

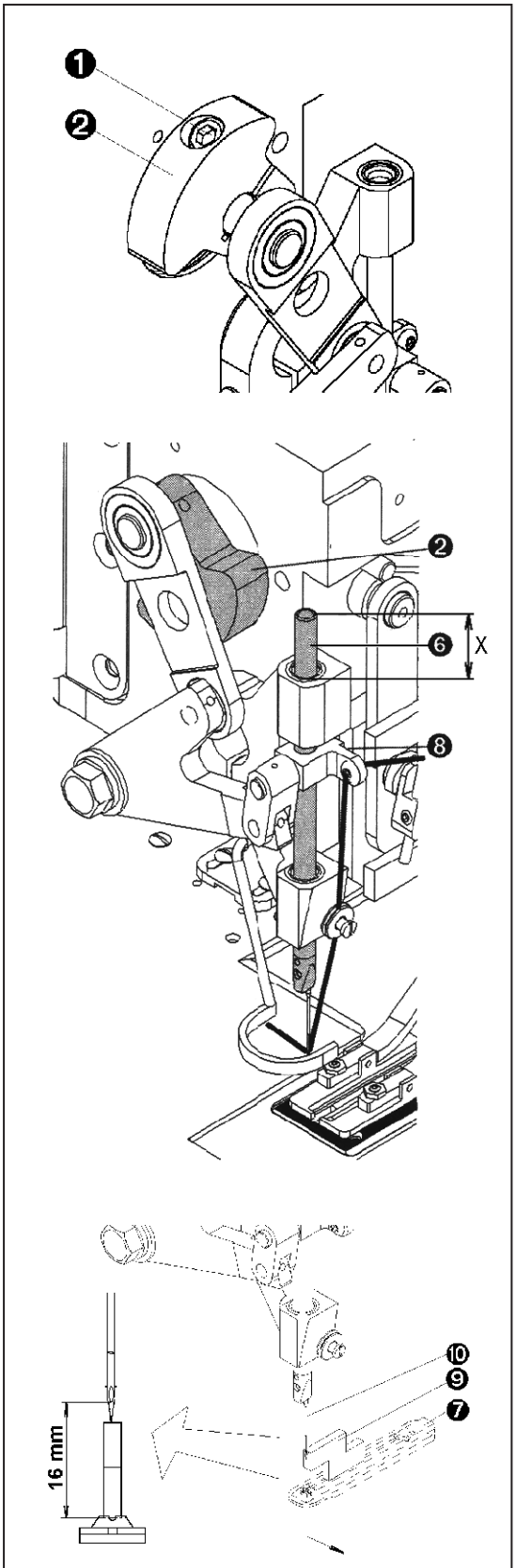
NOTE: The needle bar should be in the top dead centre position when the mark ❸ is at 12 o'clock. To check, turn the hand wheel clockwise and counter-clockwise. The needle bar ❻ must move downward in either direction. The needle shall make its first stroke into the right side of the throat plate.

4.2. The needle bar height adjustment

Adjust the needle bar ❻ height to 16 mm (5/8") from the surface of the throat plate ❼ to the lower edge of the needle eye. Use height gauge ❾. Loosen the set screw ❽ and move the needle bar up or down as necessary.

NOTE: Alternativelly, check distance **X** at the top death point=16.8 mm and bottom death point=10.2 mm.



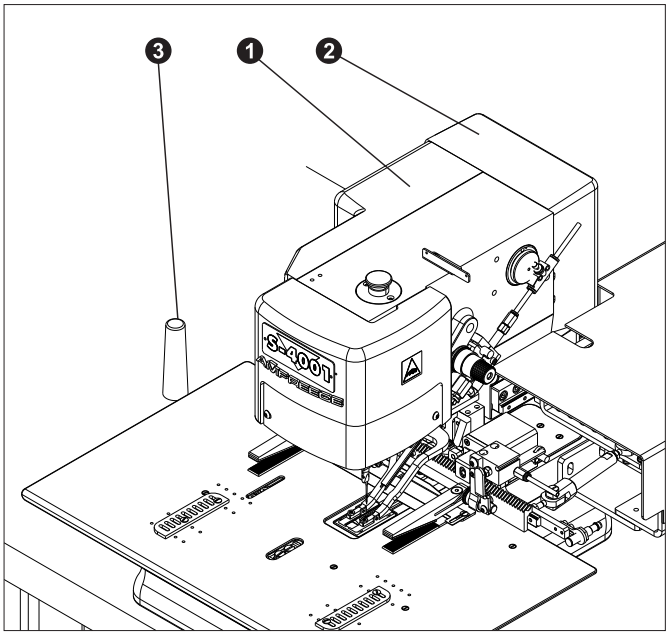


the first stitch direction

E - STANDARD MACHINE ADJUSTMENT

5. BITE

Before the bite adjustment, remove the pulley cover ❷ and the head cover ❶.



5.1. Bite cam adjustment

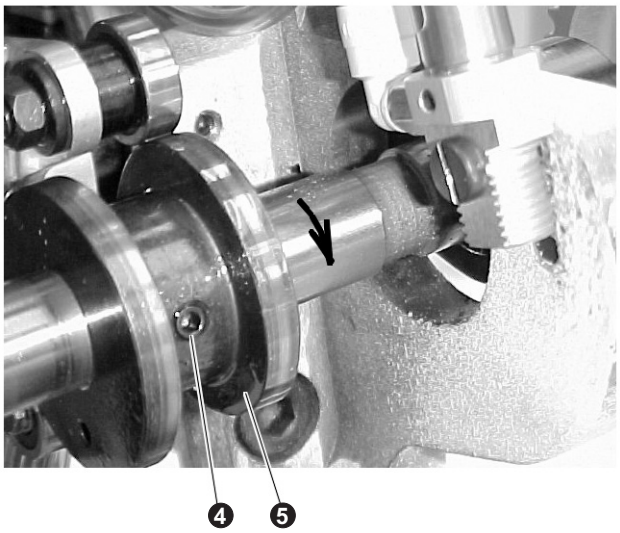
a) Check if the machine is in the home position.

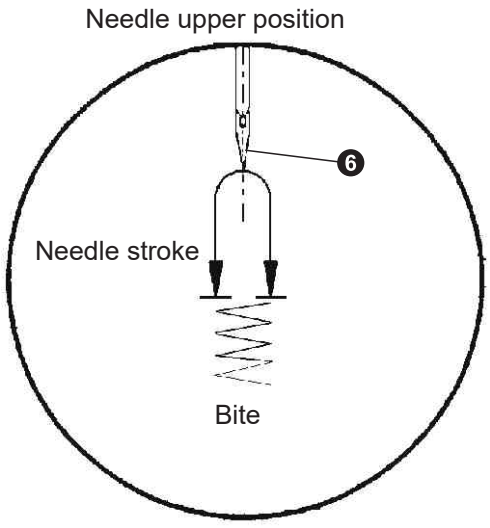
b) Tilt the machine on the rest wood pin ❸. If the adjustment is correct, the second cam locking screw ❹ (counter clockwise of the bite cam ❺ - view from the front of the machine) must be roughly perpendicular to the bedplate casting.

c) Adjust the position of the bite cam so that the needle bite motion occurs equally with the needle out of the work piece on the up and down stroke.

NOTE: There must be no bite movement before the needle ❻ neither comes out of the garment nor after it has descended into the garment - see illustration.

d) Tighten both locking screws ❹ securely.





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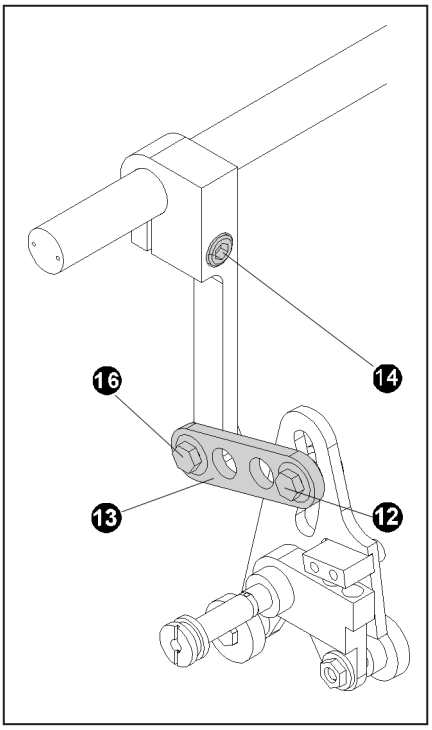
E - STANDARD MACHINE ADJUSTMENT

5.2. Bite width adjustment

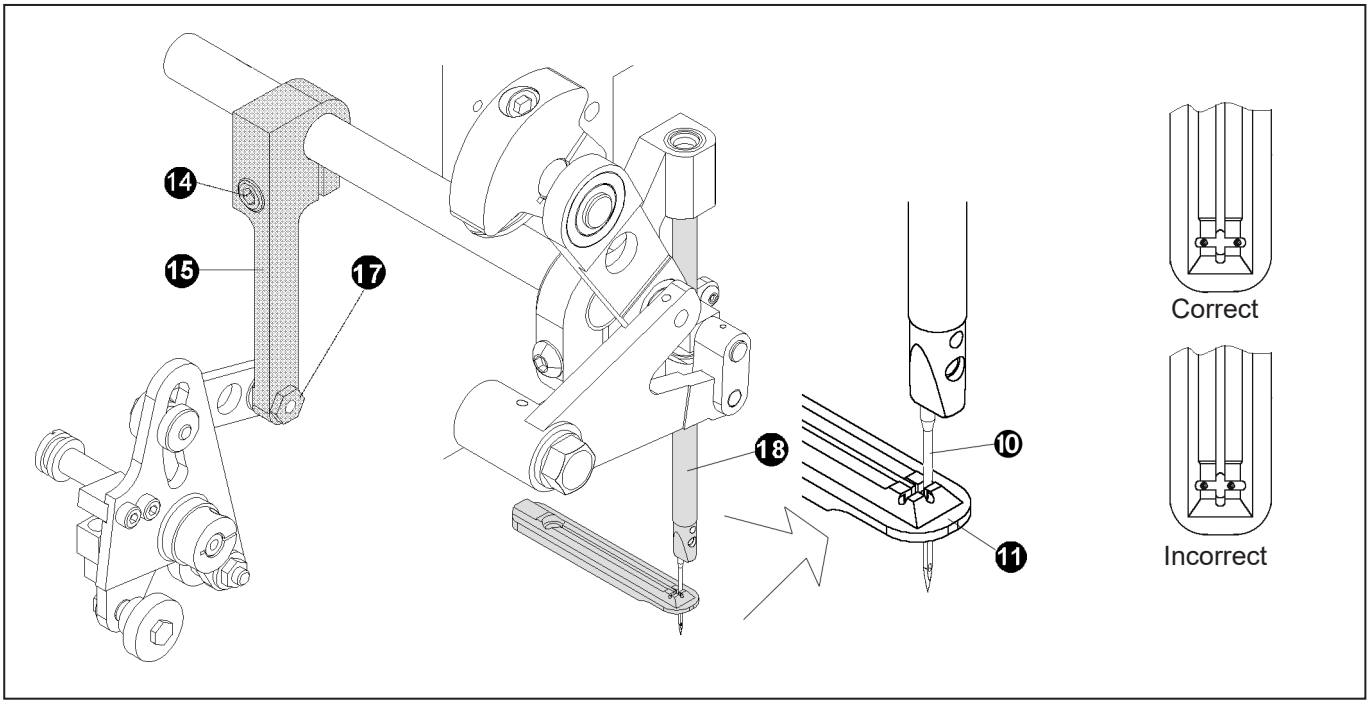
To adjust the bite width, first remove the head cover. The S-4001 is fitted with a regular bite throat plate ⓫, that allows a bite range of 1.5 mm (1/16“) to 2.3 mm (3-32“).

a) loosen the adjusting screw ⓬
b) to increase the bite width, raise the bite lever ⓭
c) to decrease the bite width, lower the bite lever ⓭
d) tighten the adjusting screw ⓬

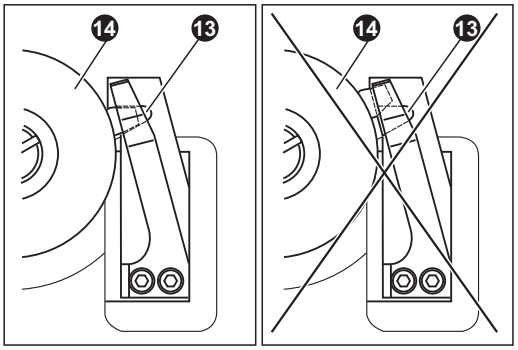


5.3. Centering the bite over the throat plate

a) with the machine in the home position - loosen the clamping screw ⓮ on the bite lever ⓯
b) for rough adjustment, using the hand wheel, rotate the needle bar to its full down position and move the needle ⓾ to the right side of the throat plate slot ⓫. Turn the hand wheel to the second needle down stroke and compare the needle position on the left side of the throat plate. Continue adjustment until the needle is roughly of equal distance from the right and left sides.
c) tighten the clamping screw ⓮
d) for finite adjustment loosen the screw ⓰ and rotate the excentric nut ⓱. Tighten the locking screw ⓰.



6. FEEDING



1. Tilt the sewing head on the rest pin.

2. Bevel Gear Adjustment.
Manually turn the hand wheel in the sewing direction to be sure the drive disk switch spring ⓭ in the main cam disengages with any dog of the drive disk worm gear hub ⓮. To be in the first row of stitches the dog of the drive disk wormgear hub ⓮ need to be completely under the drive disk switch spring blade ⓭, not before-as the picture indication.

3. Remove the bevel gear cover and loosen the screws ❶ and ❷ on the horizontal bevel gears and screw on the stop ❸.

4. Loosen two adjusting screws ❹ in the right collar ❺. Adjust the dimension 11mm from the end of the feed shaft ❻ to the collar ❼ by pressing the feed shaft ❻ against the right collar ❺. Tighten the adjusting screws ❹ in the right collar ❺. The tension of the left collar on the shaft is set.

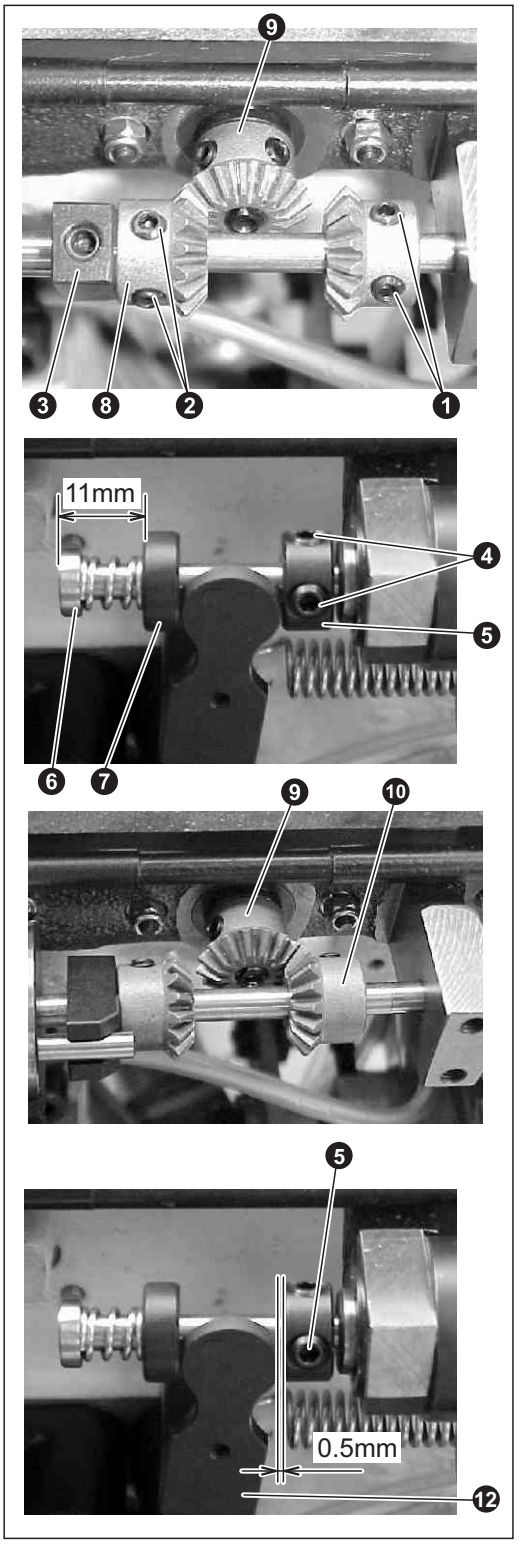
5. Engage the bevel gear ❿ with the vertical gear ❾ and tight on the shaft flat one of the two set screw ❶. This is a preliminary adjustment, no need to tight completely.
CAUTION: do not run the machine with the gear ❿ in this position.

6. Engage the left bevel gear ❽ with the vertical bevel gear ❾ and check the teeth of the gear ❽ and ❿ are perfectly aligned. Use a marking line on the shaft as a reference to obtain the gears are aligned. If the teeth are not aligned turn the gear ❽, this operation turns the gear ❾ and consequently the gear ❿ turns in opposite direction with the shaft. Check again the marking and make this operation again if necessary, turning in one direction or opposite, till the teeth are perfectly aligned. Lock in this position both set screws ❷.

7. Move the stop ❸ against the gear, push the stop rotating it in counter clockwise direction (view from the front of the machine) and tighten the set screw on the stop ❸.

8. Loosen the set screw ❶ on the shaft flat, and slide the right gear ❿ far away toward the back of the machine and tighten one screw ❶ partially.

9. Manually turn the hand wheel in the sewing direction until the feed shifter lever moves to its full left position and the main cam reaches its second rest position (drive disk switch spring in the main cam ⓭ engages with the dog of the drive disk worm gear hub ⓮ for second row of stitches). The right gear ❿ is now not near the vertical gear ❾, loose the set screw ❶ on the flat and push the gear completely toward the gear ❾ to engage perfectly. To be sure the gear ❿ is completely engaged, push the shaft toward the back of the machine, by pressing its head ❻, in the way to create a space of 0.5 mm between the lever ⓬ and the collar ❺, as indicated in the picture. With the gear completely engaged in this condition tighten both set screws ❶ securely.
The bevel gear adjustment is done. By manually turning the hand wheel finish the sewing cycle and bring the machine to the home position. Reinstall the bevel gear cover.



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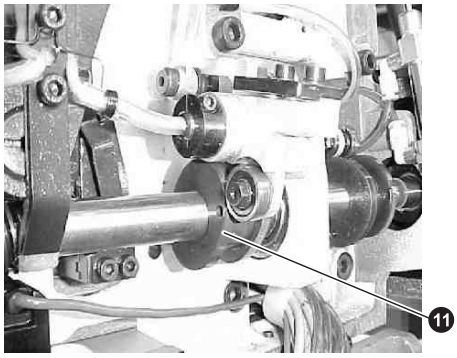
E - STANDARD MACHINE ADJUSTMENT

10. Setting the feeding timing:

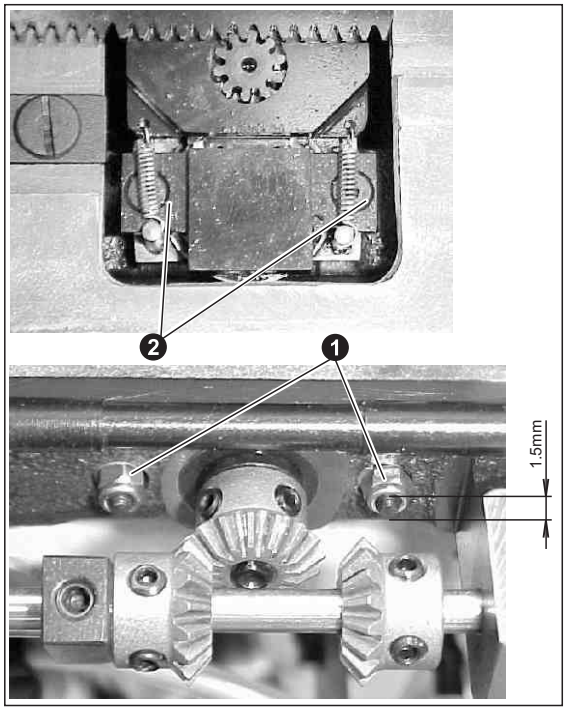


Clamp plate movement occurs only when the needlepoint has risen above the garment and must be completed before the needle descends into the garment.
NOTE: Bear in mind that the clamp plate movement need to start when the needle bar is near to reach the top death point, in the way the pull up of the thread from material is made firmly. This condition helps to obtain a flat sewing, no puckering.
Anyway the clamp plate movement need to finish feeding in time before the needle start to penetrate the material. The longer is the stitch the earlier need to be set the start of the feeding to avoid the feeding finishes with the needle just inside the material.

11. To check the adjustment use a piece of paper to see the needle punctures.

12. If the feeding occurs while the needle is in the work or in case it starts too early, loosen the screws ⓫, on the feed cam, and adjust its position so that the rule explained in point 10 is respected. Retighten the feed cam set screws.

7. SLIP CLUTCH



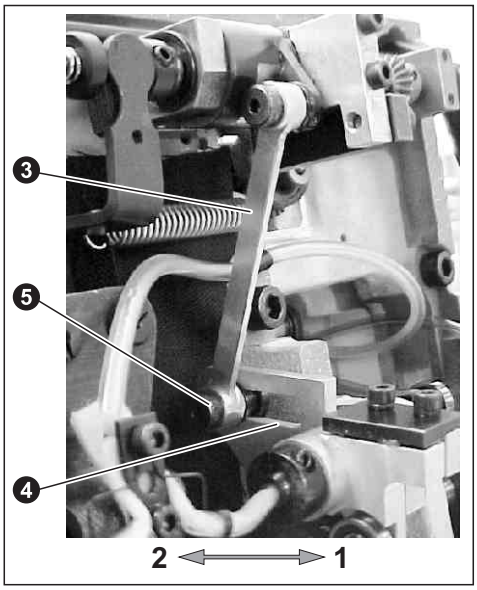
The slip clutch pressure is factory set and under normal conditions will not need adjustment. The correct clutch torque setting is 0.43 Nm (60 to 65 inch ounces).

Hold the nut ❶ and tighten the adjusting screws ❷ with a torque screwdriver. Apply an equal amount of pressure to both sides of the clutch.

NOTE: If a torque screwdriver is not available, tighten the lock nuts so that the screws ❷ extend through the nuts ❶ 1.5 mm.

CAUTION: Too little torque will produce an improper material feed. Too big torque may damage parts (bevel gears).

8. STITCH DENSITY



Adjust the feed connecting link position ❸ in the cam follower slot ❹ to obtain the correct stitch density.

To increase the density you need to move in the direction arrow 1:
a) Loosen the hex socket screw ❺ and move the link ❸ away from the bedplate, arrow direction 1, to increase density.
b) Tighten the hex socket screw ❺.

Maximum density is 12 stitches per 10 mm (30 stitches per inch), the appearance is based accordingly the thread size.

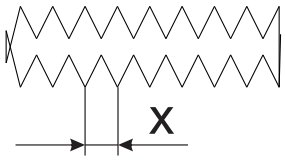
To decrease the density you need to move in the direction arrow 2:
a) Loosen the hex socket screw ❺ and move the link ❸ toward the bedplate, arrow direction 2, to decrease density.
b) Tighten the hex socket screw ❺.

Minimum density is 4 stitches per 10 mm (10 stitches per inch), the appearance is based accordingly the thread size.

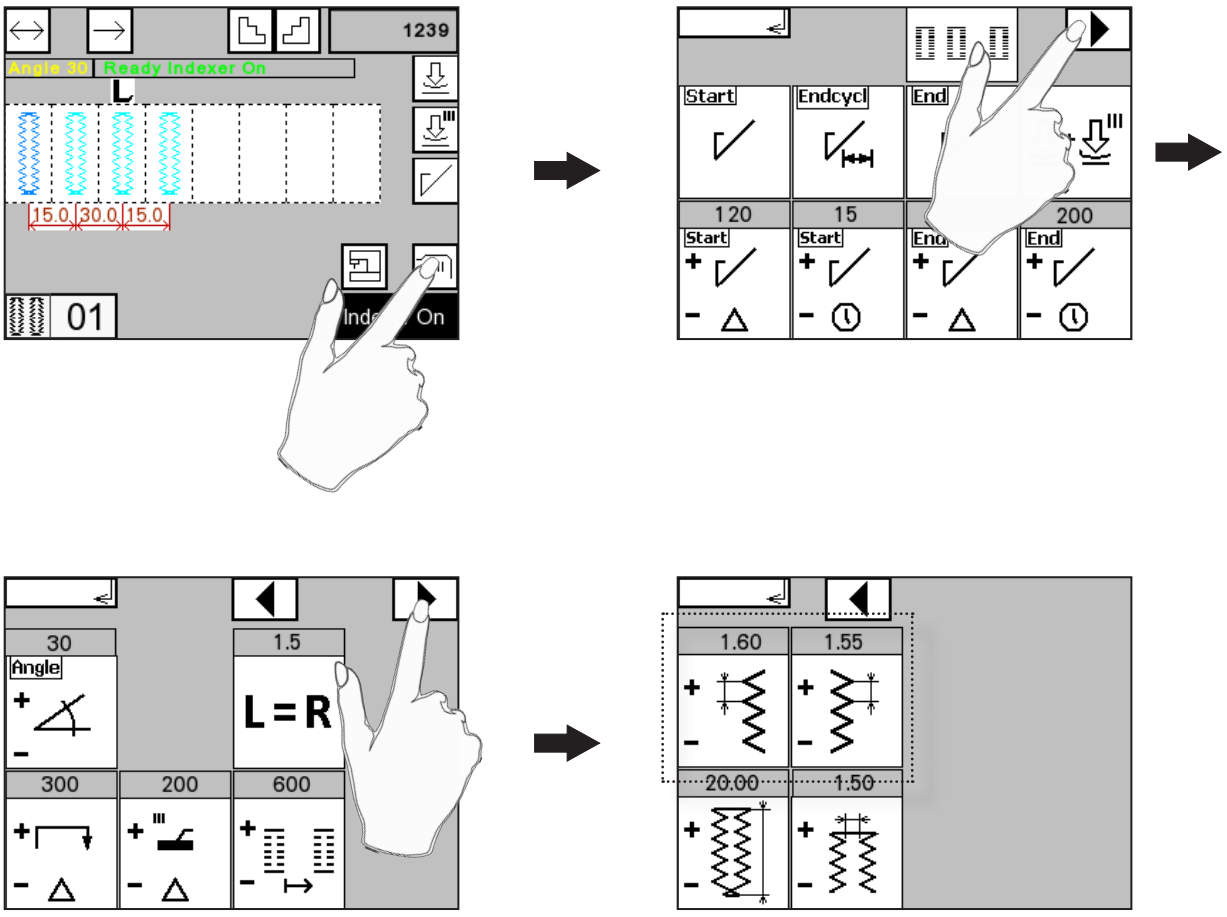
E - STANDARD MACHINE ADJUSTMENT

8.1. As the Indexer unit needs to be synchronized with the sewing head, it is necessary to set the mechanically adjusted stitch density in the Indexer parameters on the machine touch-screen panel.

a) Switch the machine to service mode – refer to the section E3
b) Insert a piece of paper under the clamp-feet and rotate the hand-wheel
c) Take the paper out and measure the stitch spacing **x**



d) Return to the main screen and set the measured spacing on the following screen:



Refer to chapter D4 for details about this setting.

NOTICE:
In case you don't do this adjustment properly, the Indexer clamp-feet will not be synchronized with the sewing head clamp-feet and they will rotate unintentionally during sewing!

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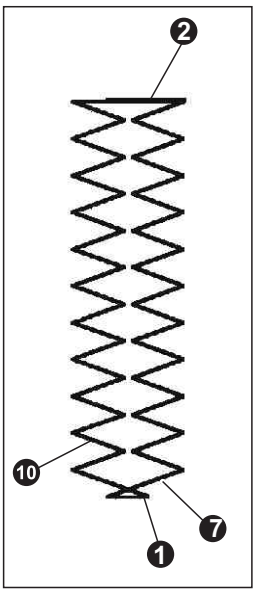
E - STANDARD MACHINE ADJUSTMENT

9. ADJUSTMENT OF BARRING STITCHES

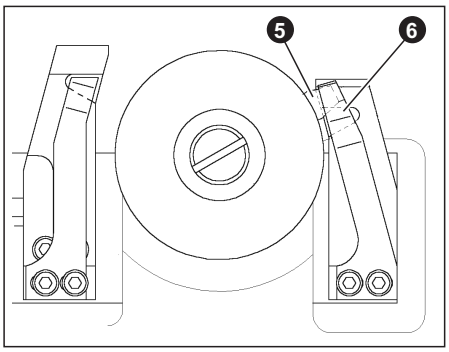


The properly set of the first ❶ and of the second ❷ bar is shown in the picture beside. Each bar is performed by a half turn of the cam; in the half turn 5 stitches are performed. ❼ is the first, ❿ is the last, then the cam is disengaged.

9.1. First bar adjustments

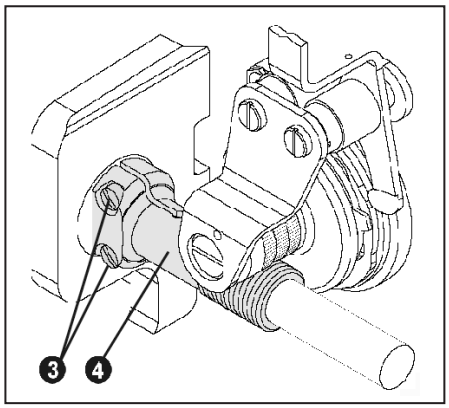
Insert a piece of paper under the clamp feet and clamp in the service mode to see how the machine works. Turn the hand wheel through the sewing cycle until the dog ❺ releases the back shifter arm pocket ❻. Then the cam will be engaged and start to turn while you turn the hand wheel.

The principle of work:
After a few degrees of the cam turning the clamp plate starts to move to perform the first stitch of the bar ❼.
Needle bar is going from bottom to top, the clamp plate will move toward the right, the needle bar holder will move toward the left, so the stitch ❼ will be same length of the others but with large bite size.
The needle needs to be with the eye at the level of the paper in the rising stroke when the clamp plate starts to move beside toward the right.



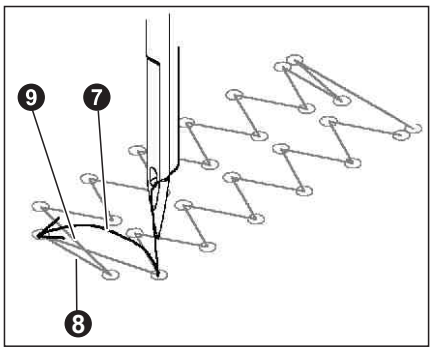
Adjustment:
The timing of the cam turning is defined from the worm ❹ on the main shaft. Loosen the screws ❸, maintain firmly the worm and turn the hand wheel.

- Turn a few degrees in the sewing direction to delay the timing of the cam in relationship of the needle bar stroke. That means the needle will be higher or out of the paper when the clamp plate moves sideways.
- Turn a few degrees in the counter-sewing direction to advance the timing of the cam in relationship of the needle bar stroke. That mean the needle will be lower or inside the paper when the clamp plate starts to move sideways.



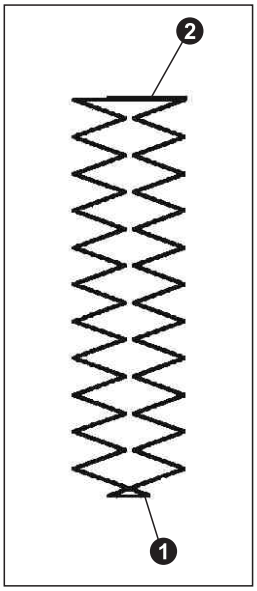
Tighten the screws ❸ after the adjustment and check the principle of work is respected.

NOTE: Pay attention that making this adjustment the worm ❹ not slide sideway toward the cam. The head of the worm need to stay in contact with the bearing of the shaft, so the worm need to be pushed always toward the front of the machine.



The principle of work:
The first stitch ❼ has just been adjusted, the second stitch ❽ is performed only by the needle bar movement, coming up from left toward the right (no clamp plate movement).
The third stitch ❾ is performed as the first with the needle bar movement from right to left in relationship of the clamp plate movement toward the right.
If the first stitch is very well adjusted the third will be consequently well adjusted also, in case of difference a compromise between the two positions need to be found.

9.2. Second bar adjustments

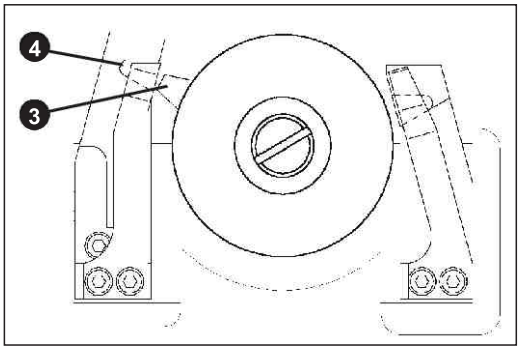


The principle of work:
The second bar ❷ is performed according to the first bar adjustment made before; changing the setting of the first bar influences the second bar too.

Insert a piece of paper under the clamp feet and clamp in service mode to see how the machine works. Turn the hand wheel through the sewing cycle until the dog ❸ releases the front shifter arm pocket ❹. Then the cam will be engaged and starts to turn while you turn the hand wheel.
Before performing the second bar the machine makes 3 stitches regular bite.
The last 2 stitches are made to firmly lock the sewing end.
The diagram below shows the stitches.

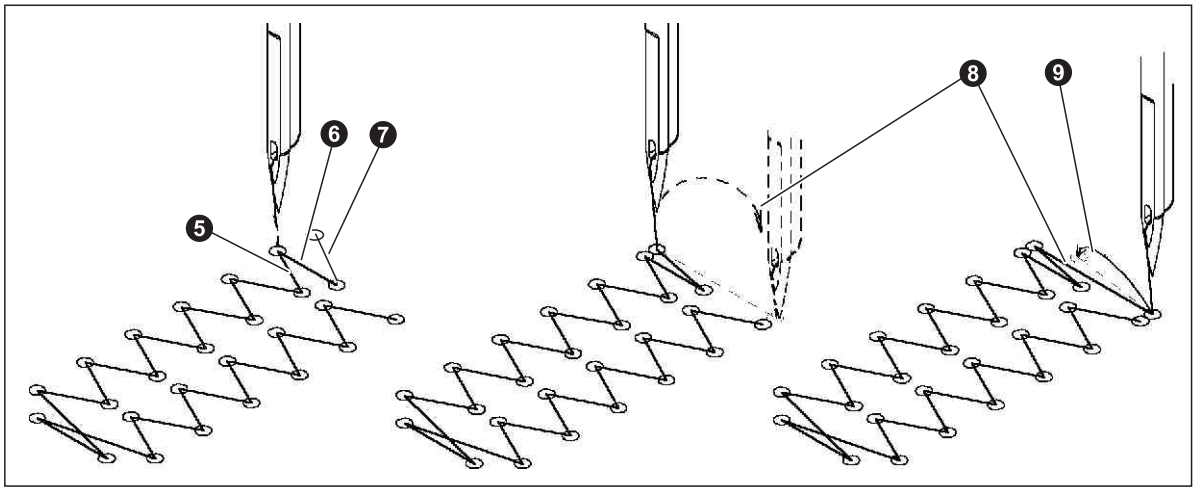
Stitches ❺, ❻, ❼ are of standard bite, stitch ❽ is the large bar, stitch ❾ is the final locking stitch.

Adjustment:
Check the side clamp plate movement in the stitches ❹ and ❺, see the picture below, start when the needle is out of the fabric.



If the movement starts earlier or later then the needle eye is at the paper level, the adjustment of the first bar needs to be checked.

In case there is a difference of the movement comparing first and second bar, it will be necessary to adjust the first bar advanced or delayed of the rule and find a compromise that no side movement happens with needle in the fabric.



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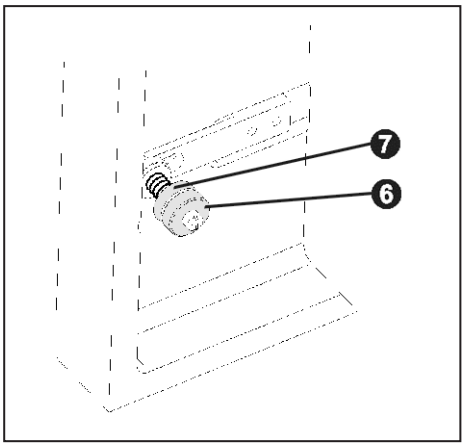
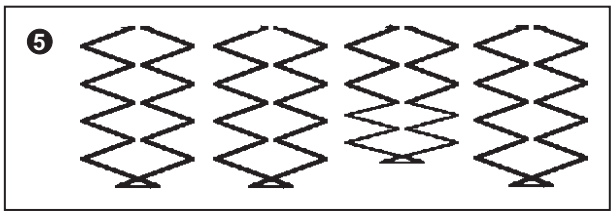
9.3. First bar position adjustments

If the length of the buttonholes is not the same as show in the picture ❺, adjust the brake:

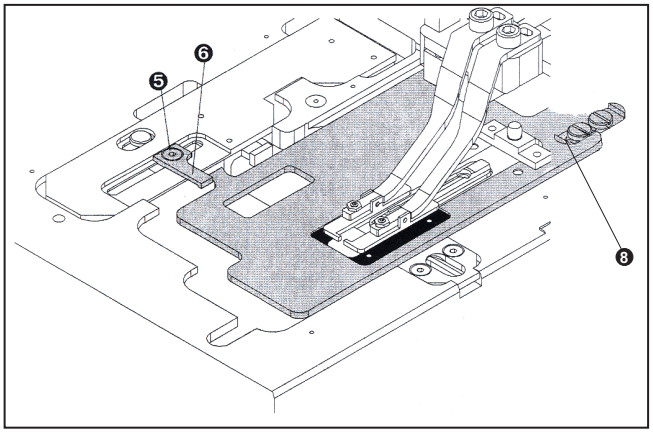


1. Loosen the nut ❻ and turn the nut ❼ clockwise to increase the brake or counter-clockwise to reduce the brake. This adjustment will provide a constant length of the buttonholes in the first bar.

NOTE: If the spring tension on the brake is too strong, the stitch density in the bar may be increased.

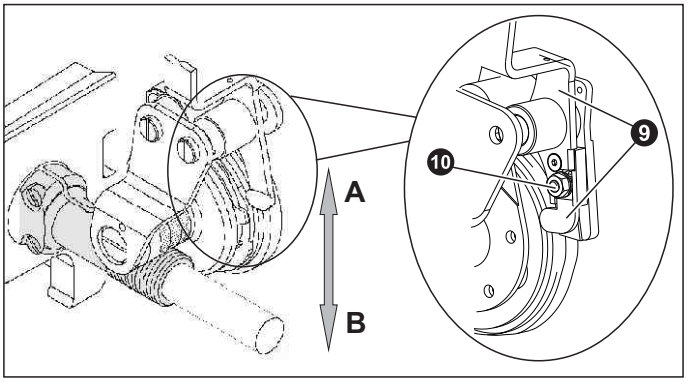


2. Turn the machine by handwheel until you reach the first bar. Check a proper adjustment of the stop ❽.



9.4. First bar shape adjustments

The timing of the exchange of the reverse of the feed is adjustable by the length of the lever ❾ adjustable by loosen the nut ❿:

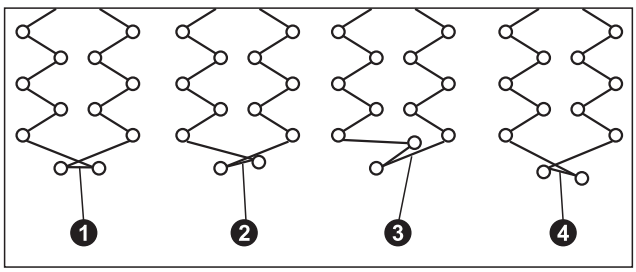


- Loosen the nut and move the dog of the lever in the **A** direction to advance the timing the back gear move toward the vertical gear (see the previous pages).

- Loosen the nut and move the dog of the lever in the **B** direction to delay the timing the back gear move toward the vertical gear (see the previous pages).

NOTE: Anytime the length of the lever is adjusted, the setting of the gear of the previous pages need to be made again from a beginning.

To obtain the best adjustment of the shape of the first bar try many times to sew without threading the needle and observe the holes of the needle. The right adjustment is represented in beside pictures ❶ and ❷. The picture ❸ shows a length of the lever too short; too advanced adjustment. The picture ❹ shows a length of the lever too long; too delayed adjustment.



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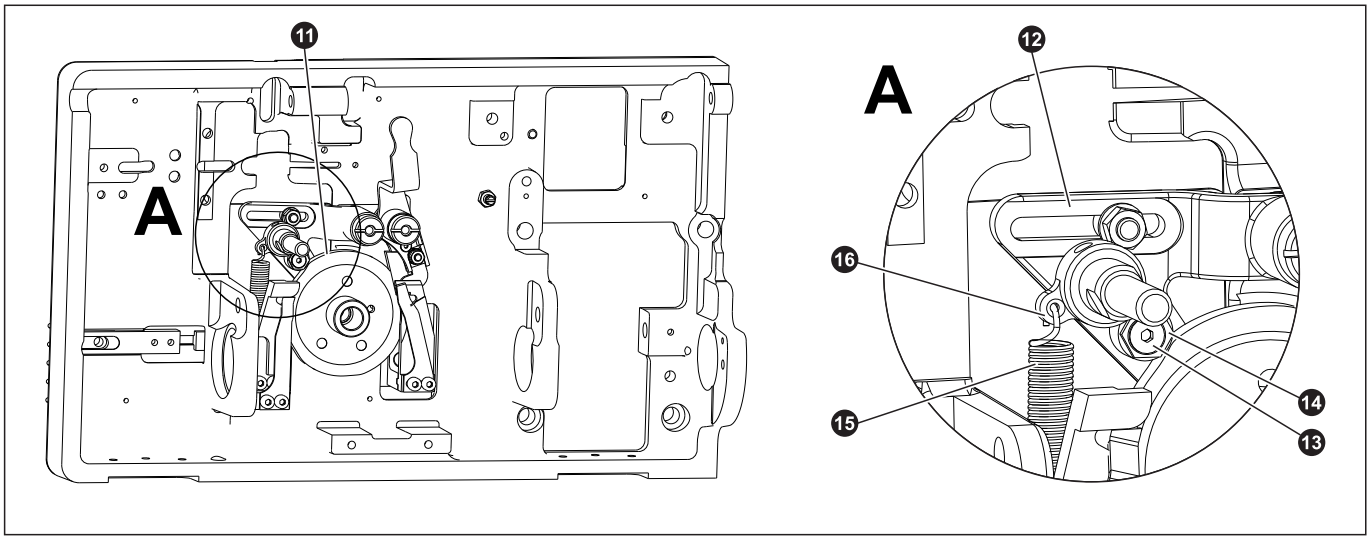
9.5. The clearance adjustment of the inside and outside rolls of the cam during the cam turning

a) Turn the hand wheel until the cam ⓫ starts to turn.
b) Continue turning the hand wheel. The main cam assembly ⓫ moves the lever ⓬.
c) Check by hand the minimal clearance of the lever ⓬ throughout one entire turn.

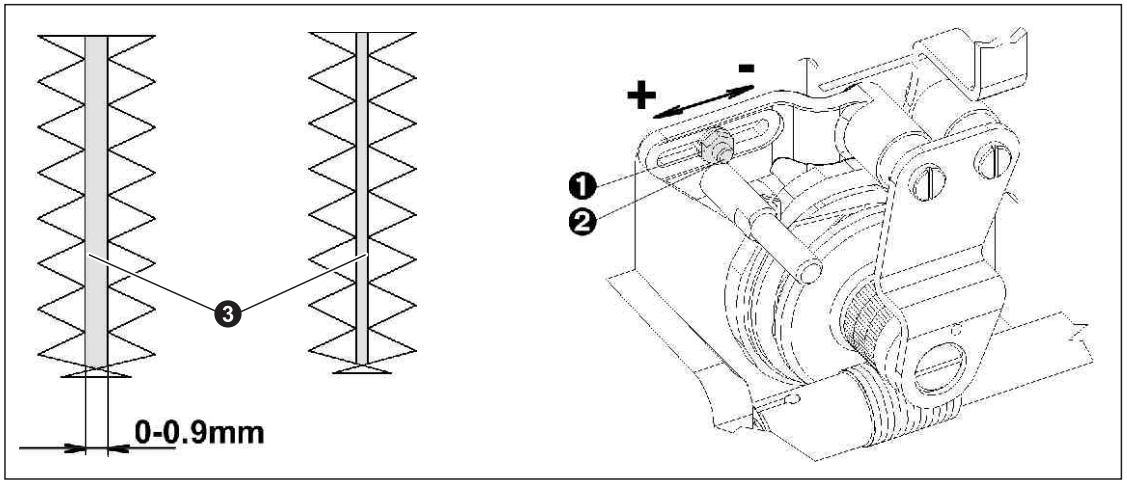
NOTE: After the half turn the cam engages, continue to turn till restart again.

d) The minimal clearance of the lever is defined from the distance of the inside and outside rolls
e) Slightly loosen the M4 screw ⓭ and turn the eccentric ⓮ to move the outside roll closer or further from the cam
f) Tighten the M4 screw after adjustment and check the clearance in all positions.
g) There is a spring ⓯ that keeps the outside roll pressed on the cam to maintain the position with minimum clearance remaining between the two rolls. The collar ⓰ that engaging the spring ⓯ needs to be set so that the spring goes straight vertical as shown in the picture.



10. SPACE BETWEEN THE FIRST AND SECOND ROW OF STITCHES

1. Tilt the sewing head on the rest pin.
2. Loosen the nut ❶ and move the stud ❷ to the required position (to the right - space ❸ decreases, to the left - space increases. The space can be adjusted in range 0 - 0.9 mm.
3. Sew buttonhole on scrap fabric to check setting.



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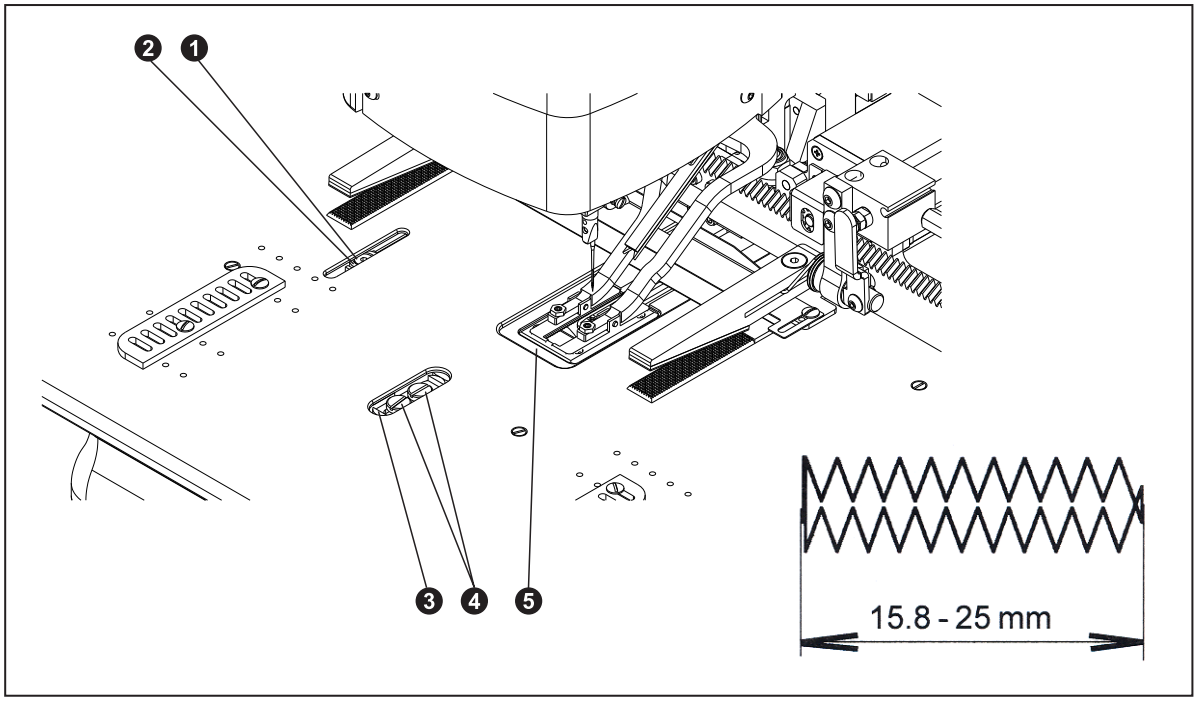
11. BUTTONHOLE LENGTH CHANGE

1. Loosen the screw ❶ and move the stop ❷ as needed. To the right - the buttonhole is shortened, to the left - the buttonhole is extended (refer to the picture below). The length can be set in the range 15.8 - 25 mm (0.62 - 0.98“).

2. Loosen the screws ❸ and slide the stop ❹. Sew two sample buttonholes on paper and measure their length.

3. When the lenght of the buttonhole is correct, move the front stop ❹ against the edge of the clamp plate ❺. The machine is ready for sewing with the changed buttonhole length.



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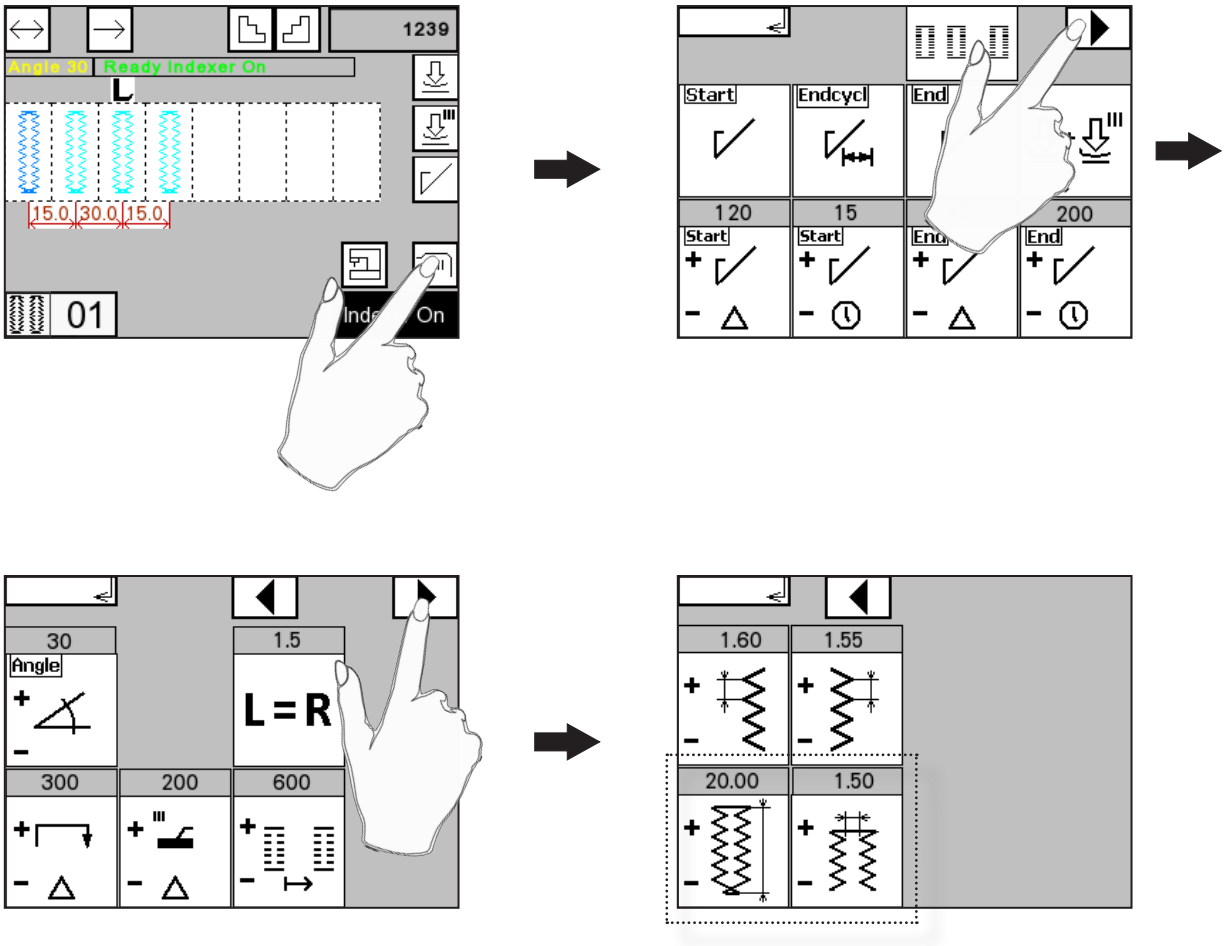
11.1. As the Indexer unit needs to be synchronized with the sewing head, it is necessary to set the mechanically adjusted buttonhole length and cutting space in the Indexer parameters on the machine touch-screen panel.

a) Whenever you change the mechanical setting of the buttonhole length and cutting space, turn off the Indexer (refer to section D) and sew a buttonhole. Measure its length / cutting space.
b) Set the measured length / cutting space on the following screen:



Refer to chapter D4 for details about this setting.

NOTICE:
In case you don't do this adjustment properly, the Indexer clamp-feet will not be synchronized with the sewing head clamp-feet and the garment can be distorted!

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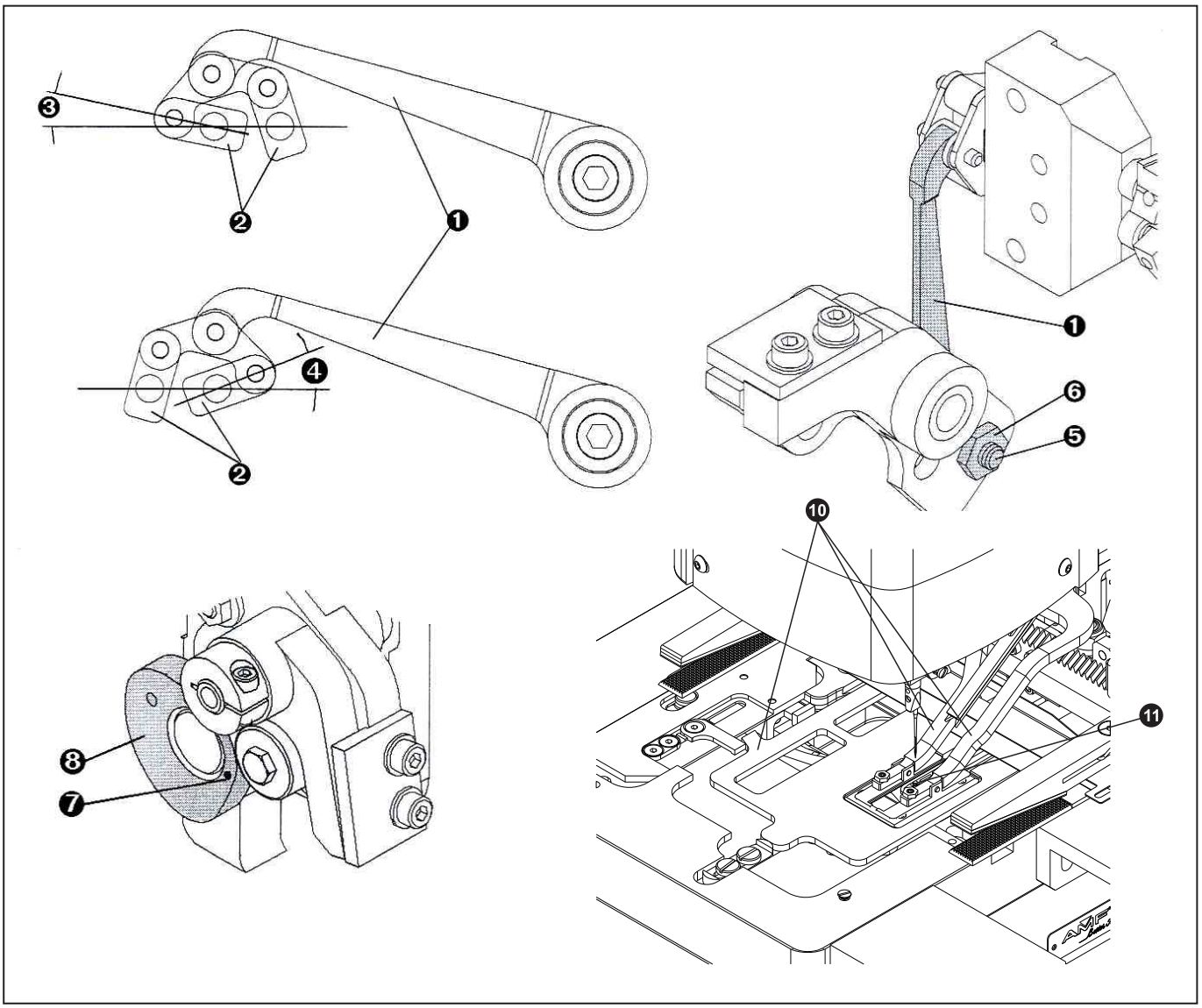
12. LOOPER ADJUSTMENT

Before making the loopers adjustment, follow the below described points:

1. Turn the hand wheel and observe the position of the connecting link ❶ at both ends of the looper link arm travel ❷. Angle **A** must equal angle **B**.
2. If incorrect - loosen the hex mounting screw ❺ and rotate the eccentric adjusting nut ❻ as needed.
3. Tighten the hex mounting screw ❺.

NOTE: The eccentricity also slightly influences the loopers stroke - see the arrows in the picture below. Check the marking of the eccentric situated on the back hex nut - while balancing the eccentric on top the stroke is longer, at bottom it is shorter. Longer stroke means smaller angles (A) and (B), thus the loopers turn more.

4. Turn the hand wheel and bring the needle bar to the upper position.
5. Check the needle is straight; better use a new needle to set the new timing.
6. Tilt the machine head on the rest pin and check if the mark ❼ on the looper cam ❽ is visible from the front of the machine (as in the picture). If not, remove the cam and install it correctly.
7. Remove the cover plate, disconnect the main air supply and the tubes from the clamp feet cylinder and remove the clamping assembly ❿ from the machine, remove the throat plate ⓫, trimming hook cover and trimming hook. Dismantle the loopers with holders.



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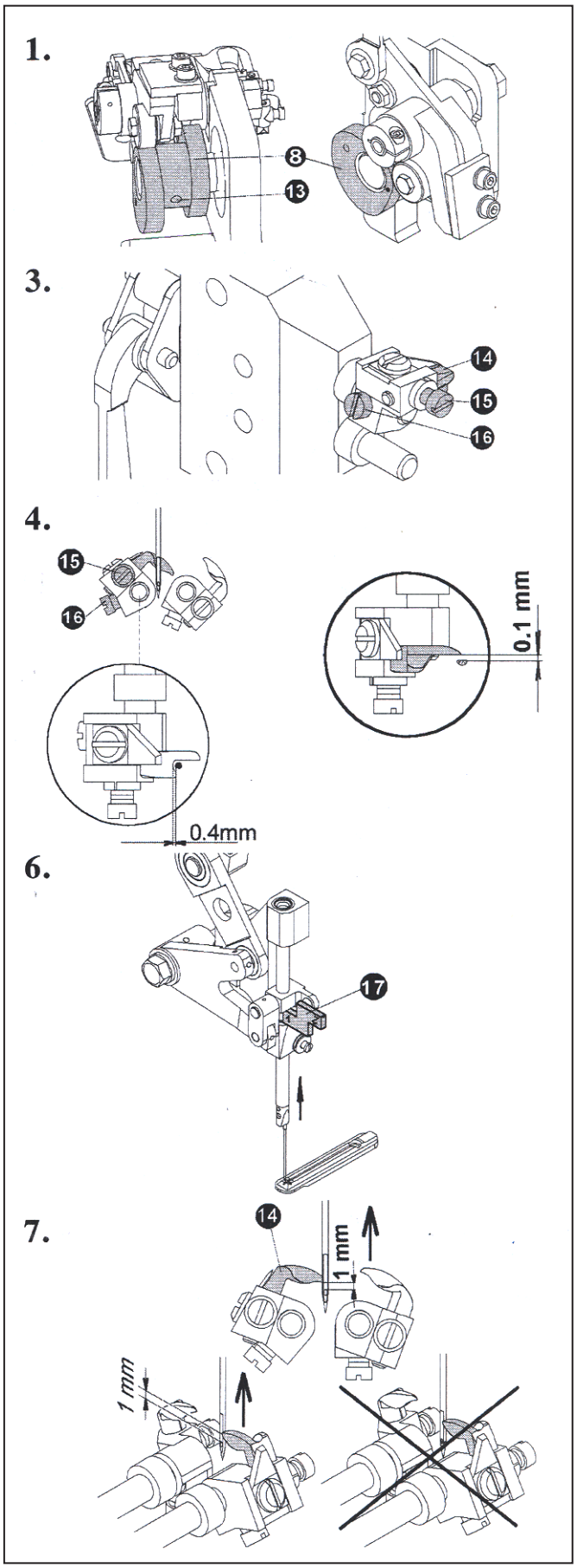
The first looper adjustment

1. Bring the machine to the home position and loosen the screws ⓭ of the looper cam ❽ and adjust the looper cam to the lowest position.
2. Loosen the looper set screw ⓯ and turn the looper to be perpendicular to the hole in the looper holder.
3. Install the holder with the first looper ⓮ on the shaft.
4. Loosen the looper holder screw ⓰ and move the holder so that the needle passes the looper in the center of the looper recess. There m u s t be clearance 0,4 mm between the needle and the looper recess. Tighten the looper holder screw ⓰.
5. Loosen the looper screw ⓯ and turn the looper ⓮ to the needle to obtain the distance 0,1 mm between the needle and the looper tip.
6. Turn the hand wheel counter clockwise and insert the gauge ⓱ with 1 mark (wider side of the gauge) between the needle bar holder and t h e needle bar clamp when the needle returns to the home position from the lower position.
7. Check to determine if the tip of the looper is at the centerline of the needle 1 mm above the needles eye.
8. If incorrect - loosen the looper cam screw ⓭ by the wrench and hold it . Turn the hand wheel (counter clockwise - if the looper tip is higher than1 mm; clockwise - if less than 1 mm). Tighten both looper cam screws ⓭ securely.
9. If it is necessary to adjust the looper cam again, check the clearance 0,4 mm between the needle and the looper recess.



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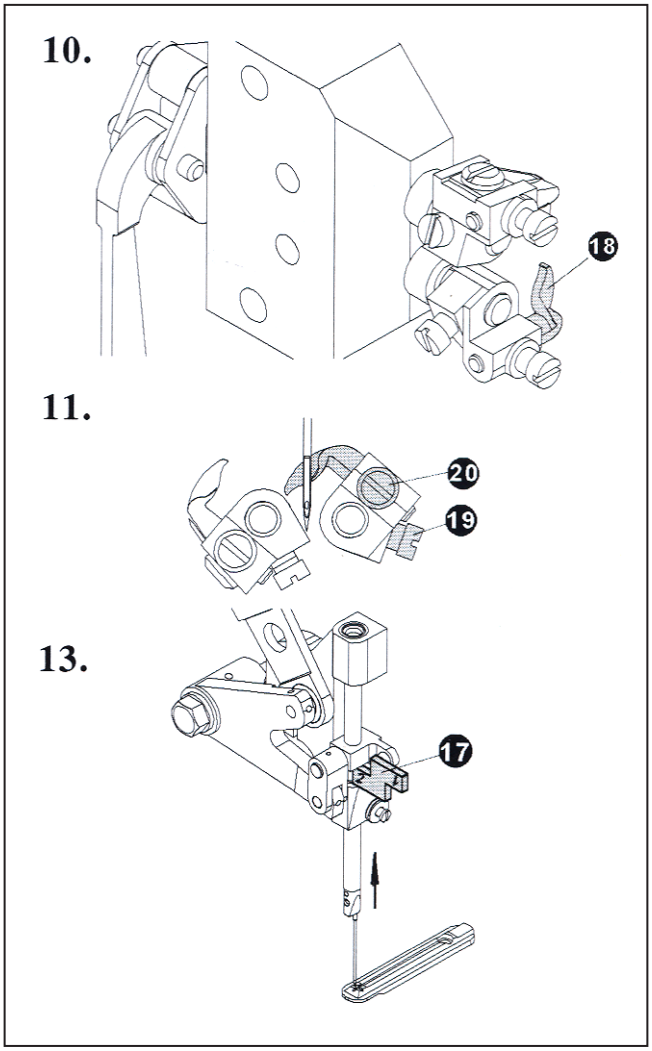
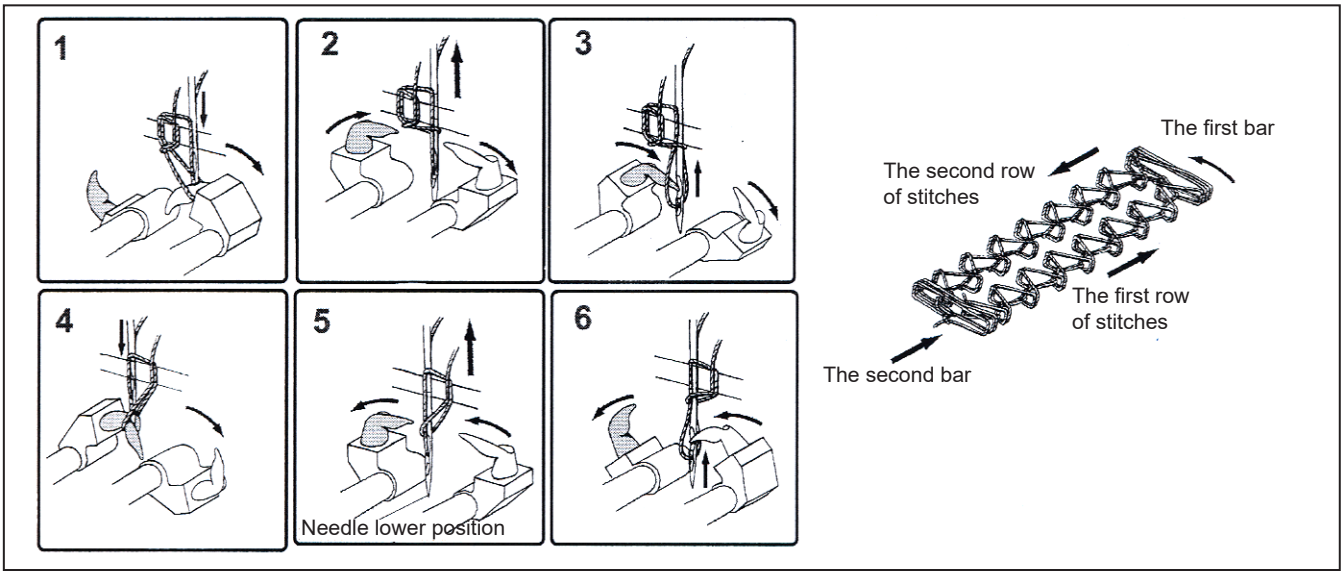
The second looper adjustment

10. Insert the second looper ⓲ on the looper shaft.
11. Loosen the looper holder screw ⓳ and move the holder so that the needle passes the center of the looper recess. There must be clearance 0,4 mm between the needle and the looper recess. Tighten the looper holder screw.
12. Loosen the looper screw ⓴ and turn the looper ⓲ to the needle to obtain the distance 0,1 mm between the needle and the looper tip.
13. Turn the handwheel counter clockwise, insert gage ⓱ with mark 2 (narrower side of the gage) between the needle bar holder and needle bar clamp.
14. Check if the looper tip crosses the axis of the needle 1 mm above the needle eye.
15. If it is necessary to adjust the looper cam again, check the first looper adjustment.





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13. THREAD DRAW-OFF

13.1. Adjustment of the Draw-Off Lever Position

The correct adjustment ensures a long enough thread tail for starting the sewing of the next buttonhole.Remove the covers because this mechanism adjustment is performed in the rear of the head. Air supply is necessary for this adjustment.

a) Loosen the screw ❻.
b) The piston ❼ of the cylinder ❽ is in the home position (retracted). Move the lever ❾ to the pin ❿ with minimal clearance 0.1 mm. Tighten the screw ❻.
c) Check the correct clearance adjustment by switching the valve ⓫ of the draw-off cylinder (YV1).

13.2. The Thread end Adjustment

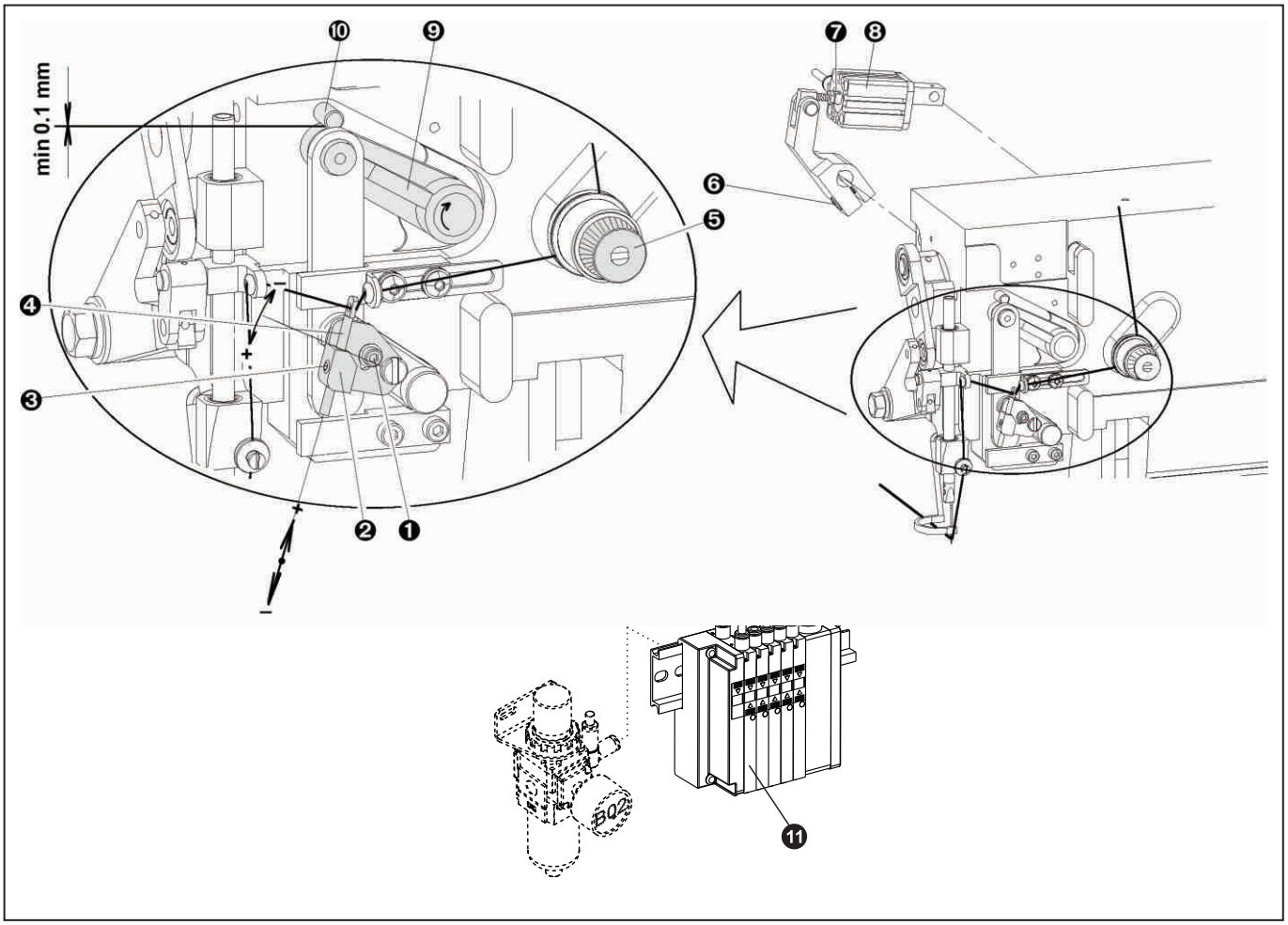
If the first stitches are missing or the buttonhole is not sewn, follow the below mentioned steps:

a) Loosen the screw ❶.
b) Turn the draw-off lever ❷ counter clockwise to increase the thread tail length; turn the draw-off lever clockwise to decrease the thread tail length.

13.3. Locking the Stitches

If the skipped stitches problem appears during the sewing, follow the below mentioned steps:

a) Loosen the screw ❸.
b) Move the thread take-up ❹ to increase the size of the needle loop.



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14. THREAD TENSION

The thread tension influences the appearance of the buttonhole. A thread tension change may be needed if the thread and fabric change. Check to be certain all parts, which contact the thread, are smooth and polished with no burrs or sharp edges.

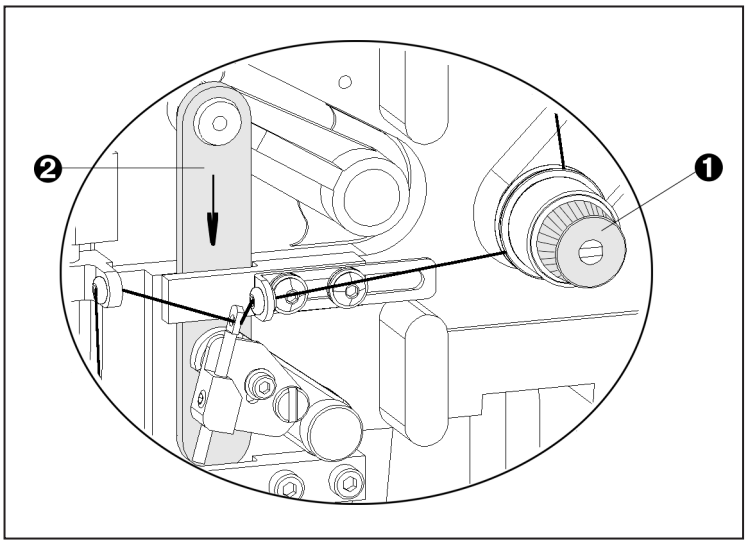
- By turning the tension knob ❶ clockwise, the thread tension increases.
- By turning the tension knob ❶ anti-clockwise, the thread tension decreases.

NOTE: Too big thread tension can cause the unsightly appearance of the buttonhole when sewing on a thin and elastic material.

14.1. Adjustment of the Tension Discs Opening

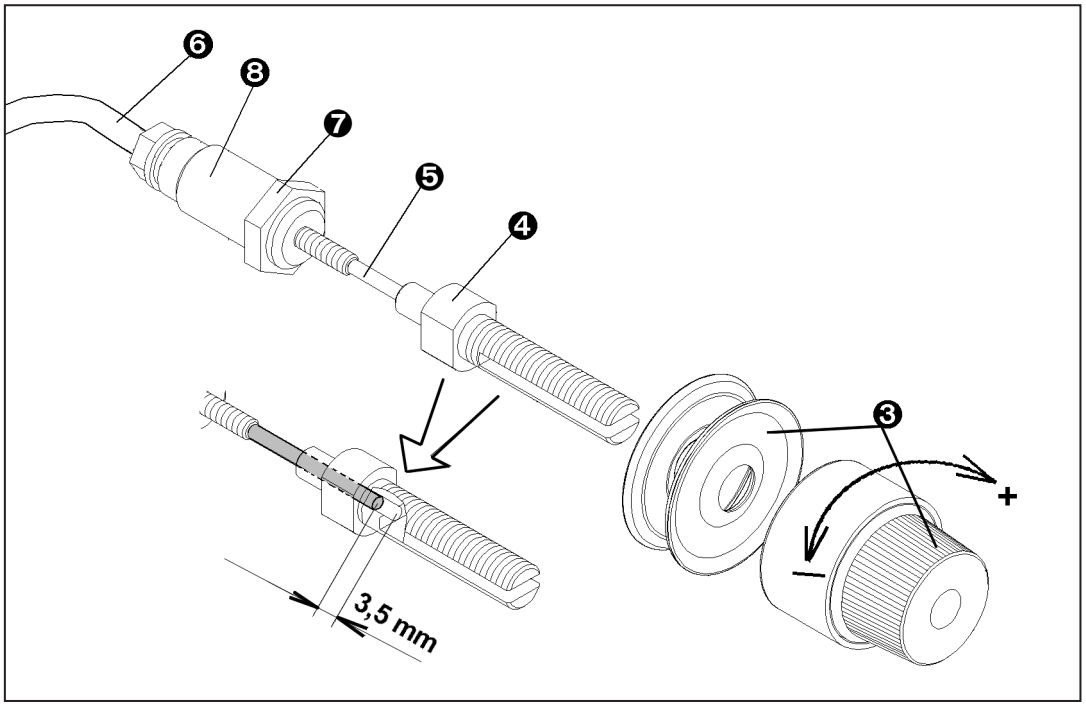
The opening of the tension discs is performed when the second bar is sewn. When the tension discs are opened, it is possible:

a) To pull the thread from the spool when the draw-off lever ❷ receives the impulse for operation.
b) By decreasing or increasing of the air flow it is possible to regulate the tightening of the last stitch of the buttonhole.



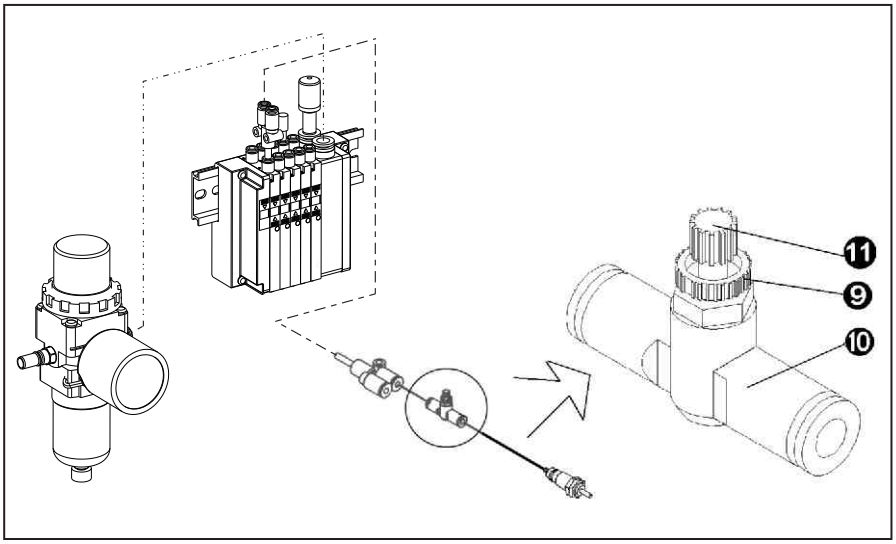
14.2. The Correct Position of the Tension Mechanism

a) Remove the tension assembly ❸ from the shaft ❹.
b) Check if the distance between the stud slot edge and the pin ❺ is 3.5 mm If incorrect, it is necessary to adjust the position on the pin.
c) Remove the pulley cover and the head cover to obtain a good access for this adjustment. Switch off the air supply.
d) Disconnect the air tube ❻ from the cylinder.
e) Loosen the nut ❼ and turn thecylinder ❽ as necessary. Turning clockwise the pin is extended. Tighten the nut ❼ when the correct measurement is obtained.
f) Connect the air tube ❻ to the cylinder, open the air supply and install the covers.



14.3. Regulation of the Tension Discs Opening

If the last stitch is not tightened, follow the below mentioned steps:
a) Loosen the locking nut ❾ on the speed controller ❿.
b) To obtain better tightening of the last stitch, tighten screw ⓫ and lock the nut ❾ securely.



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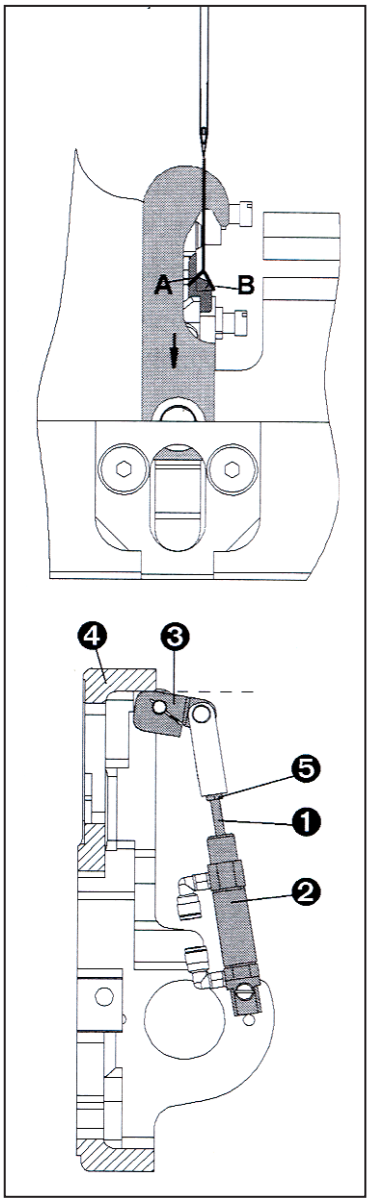
15. THREAD TRIMMING

Trimming mechanism ensures the correct thread trimming after sewing the last stitch. The trimming hook moves in the direction of arrow, both thread loop legs A and B are pulled forward. When the thread hook approaches the end of the stroke, leg A contact the trimming knife, cutting the thread.

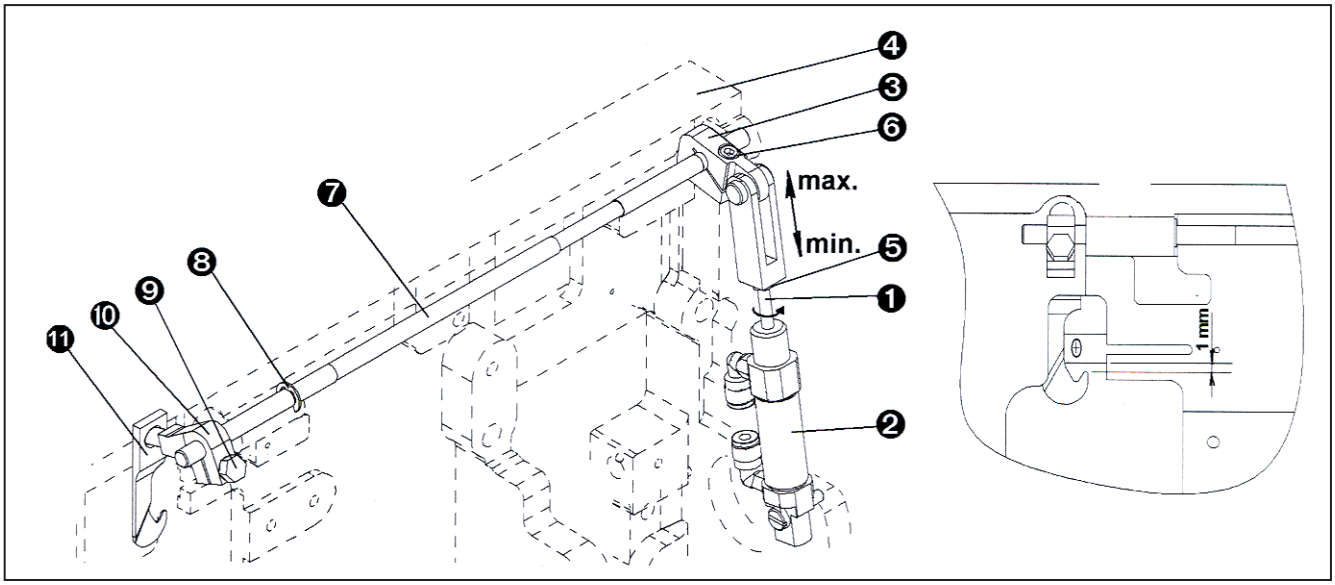


15.1. Trimming Cylinder Adjustment

a) tilt the machine head on the rest pin and close the air supply. Extend the piston ❶ of the cylinder ❷ to the maximum position.
b) check to be certain that the cylinder does not push the lever ❸ too high and into contact with the bedplate casting ❹. If no clearance exists, adjust as described in c, d, and e below.
c) loosen the screw ❻
d) to obtain the correct position of the lever ❸, loosen the nut ❺ and turn the cylinder piston ❶ in or out as needed
e) tighten the nut ❺ and the screw ❻. After this adjustment check if no axial clearance exists on the shaft ❼.
f) if the axial clearance exists on the shaft, loosen the screw ❻, move the shaft ❼ to the left so that the locking ring ❽ touches the recess in the plate ❸. Move the lever to the right and tighten the screw ❻.

15.2. The Trimming Hook ⓫ Adjustment

a) push the piston ❶ of the trimming cylinder ❷ to the maximal position and loosen the screw ❾ of the trimming actuator ❿.
b) turn the trimming actuator ❿ and set the clearance 1.0 mm between the throat plate and the point of the trimming hook.
c) tighten the screw ❾ of the trimming actuator ❿.
d) open the air supply and check by switching the valve of the trimming cylinder if the actuator ❿ does not hit the bedplate casting.



16. MACHINE HEAD CLAMP-FEET ADJUSTMENT

16.1. Clamp Height Adjustment

Make sure the air-supply is switched on and the clamp-feet are in up position. If the clamp-feet are not in up position, push the  button from the machine touch-screen panel.

a) Loosen the nut ❶.
b) Turning the piston-rod ❷ clockwise the clamp-feet ❸ get closer to the clamping mat ❹, turning it anticlockwise they get further. Default setting is 9 mm.
c) Tighten the nut ❶.

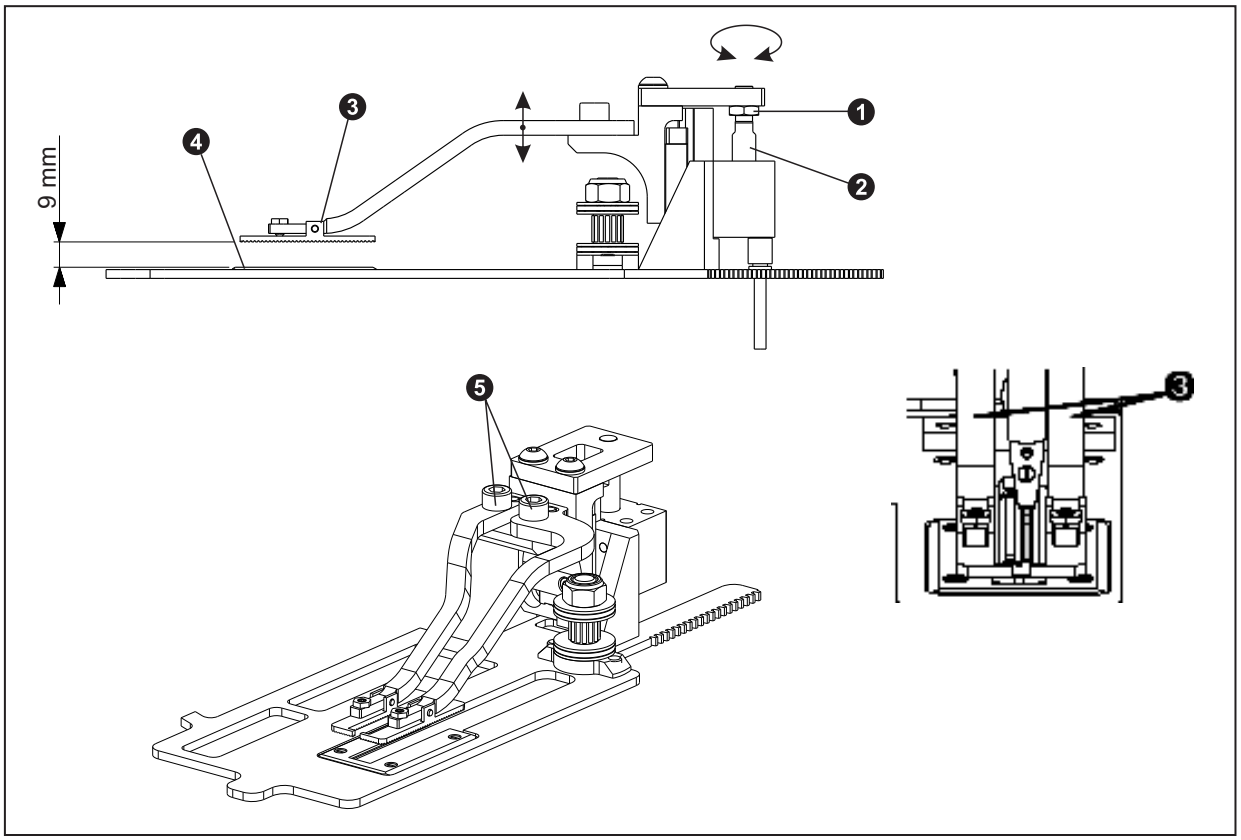
NOTICE:
After the adjustment the clamp-feet should be not be higher than the needle tip when the machine is in home position.

16.2. Adjustment of the Distance Between the Clamp-Feet

Check the clamp-feet are in down position, if they are not push the  button from the machine touch-screen panel.

a) Turn the hand-wheel slowly to be sure the needle does not hit the clamp-feet ❸.
If the needle does hit the clamp-feet:
b) Push the  button to rise the clamp-feet.
c) Loosen the screws ❺, move the clamp-feet arm further from the needle and tighten the screws ❺ afterwards.
d) Check the correct adjustment as per the point a).

NOTICE:
During this adjustment keep the minimum distance between the needle and clamp-feet. Too large distance can cause skip-stitches when sewing thin or elastic fabric.



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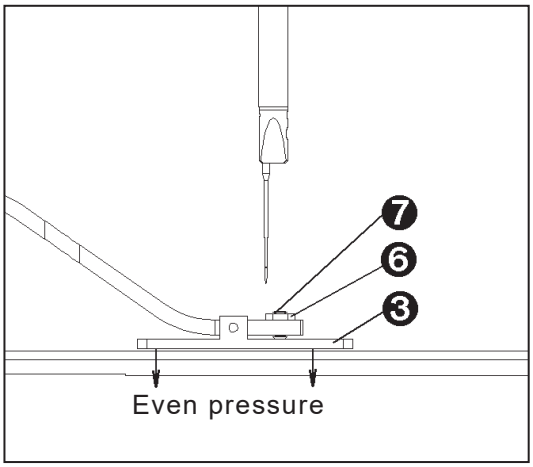
16.3. Clamp-Feet Pressure Adjustment

The whole length of the clamp-feet must hold the garment evenly with same pressure; if this is not the case, it is necessary to readjust the correct pressure of clamp-feet ❸.

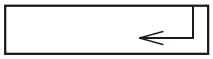
a) Rise the clamp-feet by pressing the button  .
b) Loosen the nut ❻.
c) Turn the screw ❼ clockwise to reach higher pressure of the clamp-foot ❸ in its front part, turning it anticlockwise you reach higher pressure in its back part.
d) Tighten the nut ❻.
e) Insert a piece of fabric under the clamp-feet ❸ and push the  button to hold it.
f) Check the fabric is evenly held by the clamp-feet ❸ in whole length.

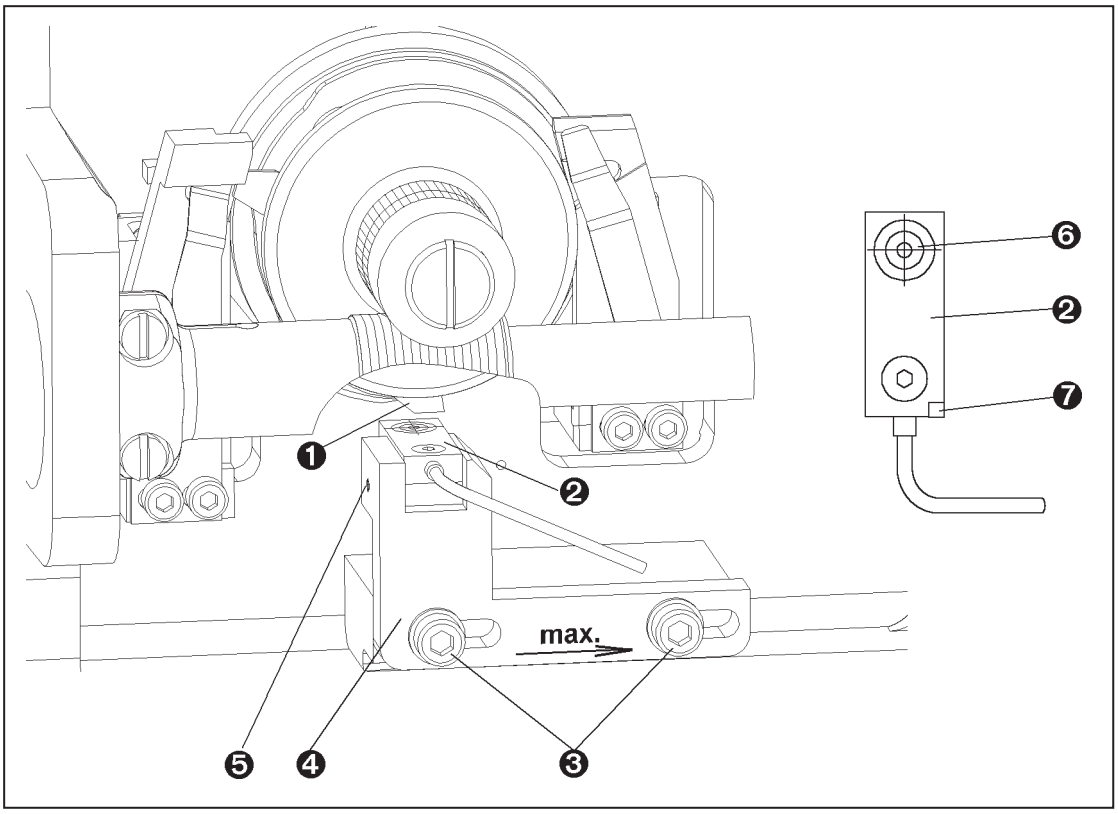
NOTICE:
Wrong pressure adjustment can cause skip-stitches during sewing.



17. ADJUSTMENT OF THE STOPPING SENSOR POSITION

Follow the below described steps to set the position of the sensor.

1. Put machine in the service mode (see E-3).
2. Turn the handwheel counter clockwise until the machine is in the position for sewing the second bar. The stop disk finger ❶ must be perpendicular to the sensor ❷.
3. Loosen the screws ❸ and move the sensor bracket ❹ to the right. Tighten the screws ❸.
4. Loosen M3 screw ❺ and adjust the sensor position so that the stop disk finger ❶ is in the center of the sensor mark ❻. The red LED ❼ lights up on the sensor.
5. Tighten the M3 screw ❺.
6. Return the machine head back to the working positon.
7. Push the  key on the control panel and switch the machine to the working mode.
8. Start the machine and check the correct stopping of the machine. The needle bar must stop in the home (upper) position.



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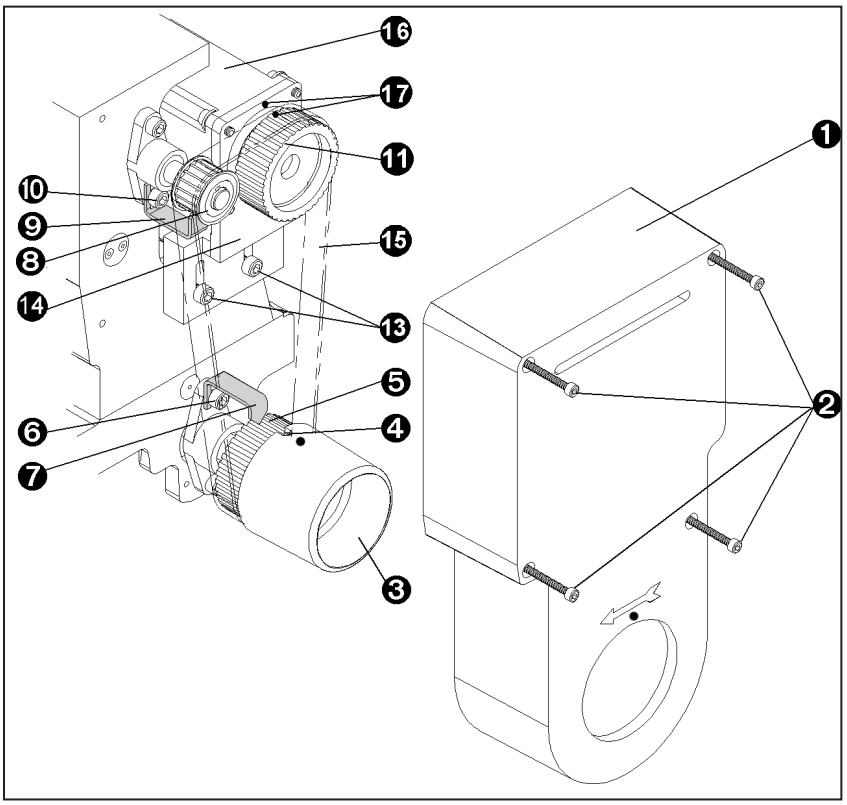
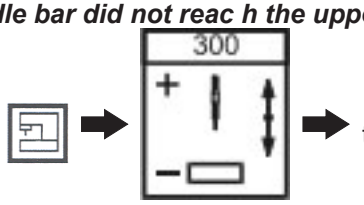
E - STANDARD MACHINE ADJUSTMENT

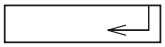
18. CHANGING THE DRIVE BELT

1. Remove the pulley cover ❶ after loosing the M4 screws ❷.
2. By turning the handwheel ❸ adjust the position of the shaft so that the screw ❹ on the pulley ❺ is level with screw ❻ on the bearing carrier lower shaft.
3. Lock the position by the holder 24.0030.0.000 ❼, which is included in the accessories. Using the screw ❻ fix the holder to the bearing holder upper screw.
4. Turn the pulley ❽ of the needle bar shaft, until the needle bar reaches the upper position.
5. Lock the position by the holder 24.0024.0.000 ❾, which is included in the accessories. Using the screw ❿ fix the holder to the bearing carrier lower mounting screw.
6. Rotate the motor pulley ⓫ until the marks ⓱ on the motor pulley and the motor bracket are aligned.
7. Loosen the screws ⓭ on the motor bracket ⓮ and move the motor with the machine bracket down to fit the belt.
8. Fit the belt ⓯ on the shaft pulleys ❺, ❽ and motor pulley ⓫. To tighten the belt ⓯, move the motor bracket ⓮ with motor ⓰ up. Tighten the screws ⓭ to lock the motor bracket. Be sure the marks ⓱ are aligned.
9. Remove the pulley holders ❼, ❾.
10. Press the pedal to check the adjustment. The needle bar must be in the upper position.
11. Small changes of the needle bar adjustment are possible in the program parameters:

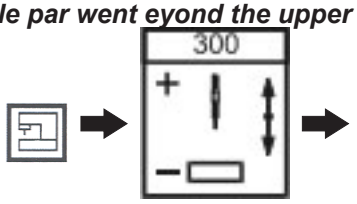


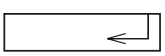
a) needle bar did not reac h the upper position

- push  to obtain the correct position of the needle bar, increase the value

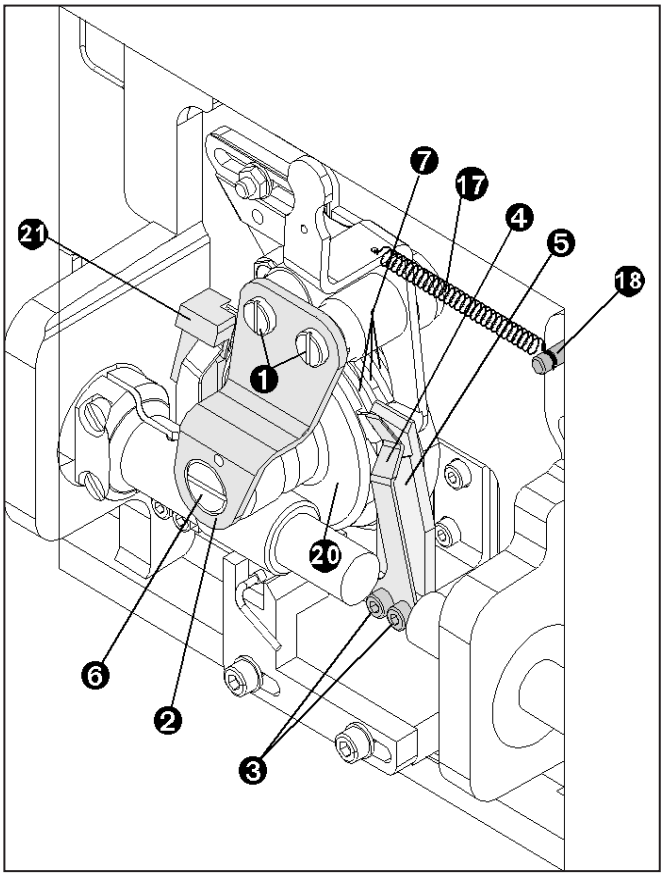
- press  , to return to the main screen.

b) needle par went eyond the upper position

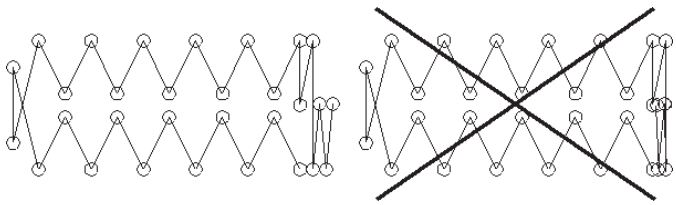
- push  to obtain the correct position of the needle bar, decrease the value

- push  , to return to the main screen

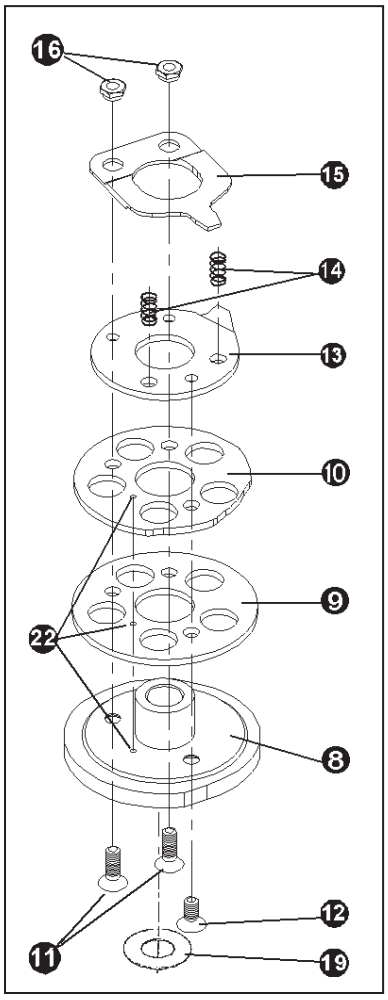
19. THE MAIN CAM CHANGE



1. Loosen the screws ❶ and remove the holder ❷.
2. Unscrew the screws ❸ and remove the right control spring ❹ and the holder ❺.
3. Loosen the stud ❻ and remove the worm gea hub and the main cam assembly ❼. Dismantle the assembly.
4. Assemble the main cam assembly according to the following steps:
   a) Install the washer ❾ on the barring cam ❽. The mounting hole ㉒ must be covered.
   b) Install the feed reversing cam ❿ by the same way.
   c) Place the stop disc ⓭ on the feed reversing cam ❿ and fix it using the screws ⓫ and ⓬.
   d) Insert the springs ⓮ into the holes in the stop disc and install the drive disc spring ⓯. Lock it using two screws⓰.
5. Remove the spring ⓱ from the pin ⓲.
6. Using a grease, place the thrust washer ⓳ on a bedplate.
7. Install the main cam assembly ❼ and the worm gear hub on the thrust washer. Lock it by stud ❻.
8. Install the spring ⓱ on the pin ⓲.
9. Install the holder ❺,control spring ❹ and tighten the screws ❸.
10. Install the holder ❷ and lock it by screws ❶.
11. Turn the hand wheel to check the clearance on the main cam - see section E9, point 3.
12. Switch the machine on and check if the machine stops in the home position - see section E2, E9, point 1
13. Check the shape of a bar - see E9, point 2.
14. Sew a few buttonholes . The shape of a bar must be as shown on picture below.



15. If incorrect, tilt the machine head and move the left shifter arm to the left to obtain correct shape of a bar (the clearance between the control spring and the shifter arm spring ㉑ must approximately be 1.2 - 1.5 mm).



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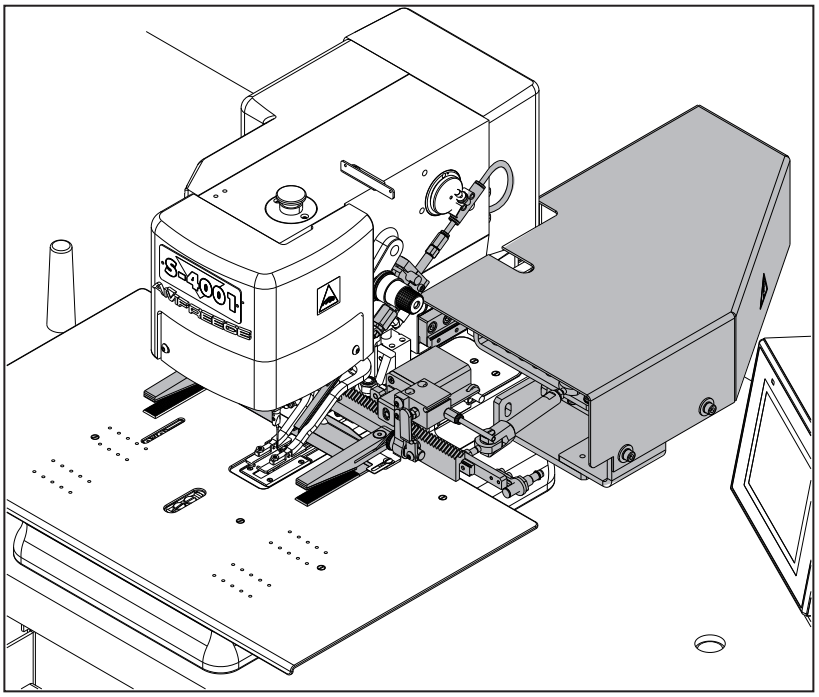
F - INDEXER - ANGLE 30°

1. INTRODUCTION

Indexer is a device capable of automatic sewing of a batch of imitation buttonholes on jacket sleeve with defined number of buttonholes, their spacing and angle. Indexer is composed of the clamping mechanism, Y-axis drive, thread pick-up and covers. Accurate indexer positioning is ensured by stepper motors and position sensors.

Indexer range:
Number of buttonholes: 1 - 8
Angle: 0° - 30°, adjustable with 1° resolution



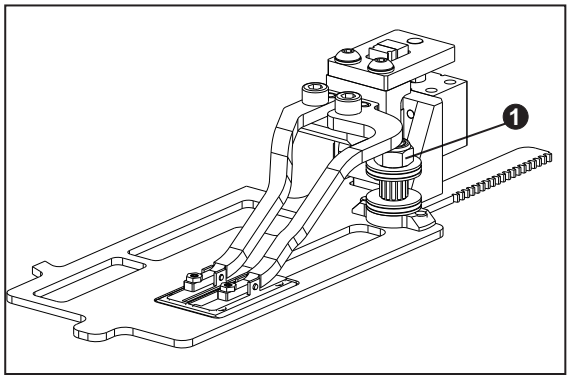
2. SEWING HEAD AND INDEXER CONNECTION

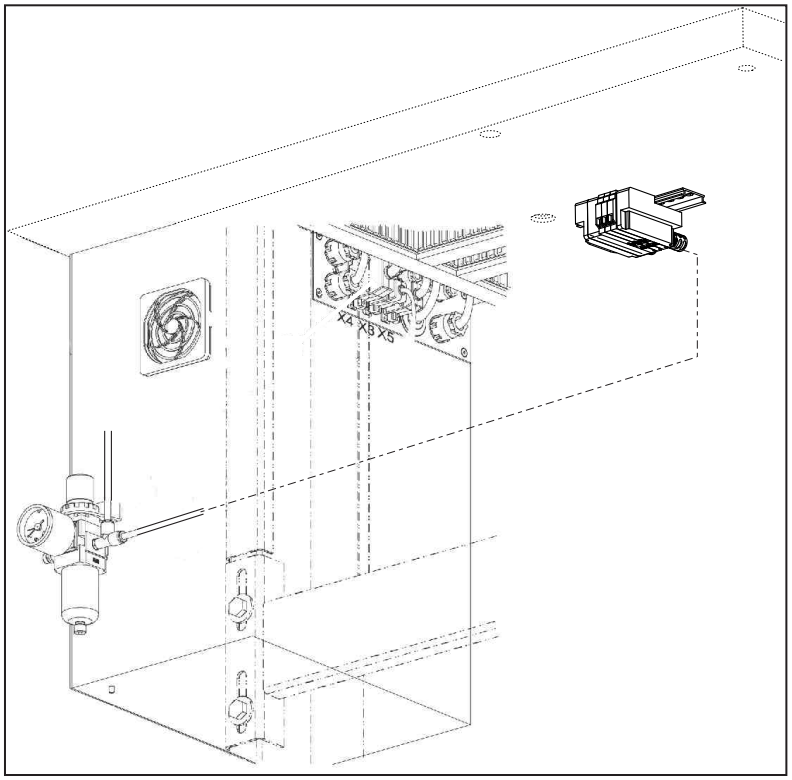
Indexer drive is mechanically connected with the sewing head which allows its easy tilting without the need to uninstall anything.

The indexer clamp-feet are mounted on the sewing head feeding mechanism and locked by the nut ❶.

Thread pick-up mechanism is mounted on the sewing head.

Pneumatic clamping and thread pick-up cylinders are connected to the valves YV10 and YV11, which are a part of the sewing-head valve block and located under the wooden table-top, refer to the chapter B4.

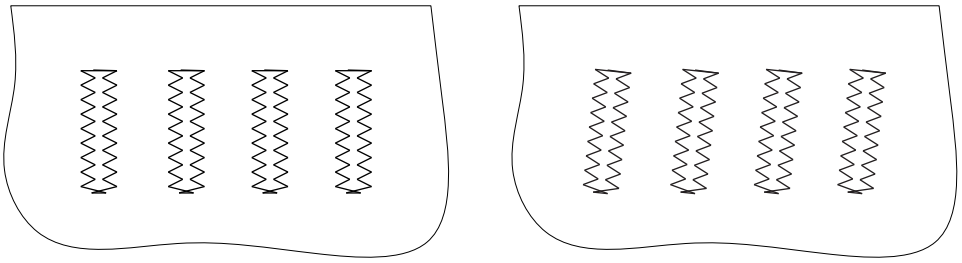




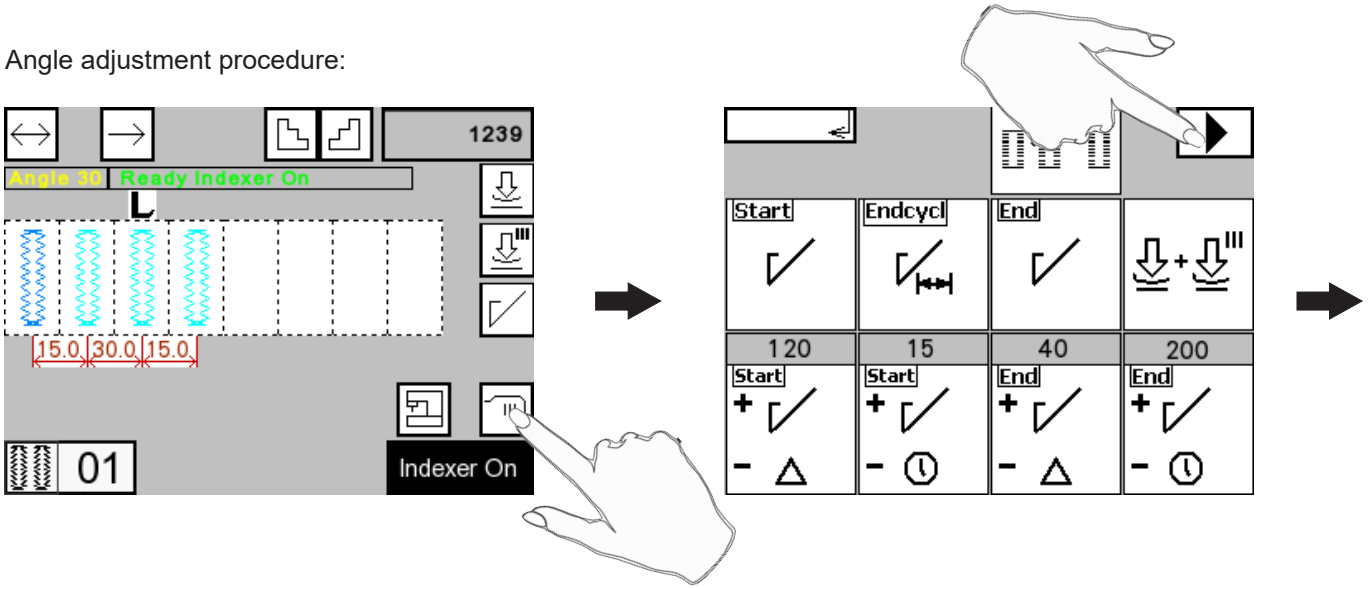
F - INDEXER - ANGLE 30°

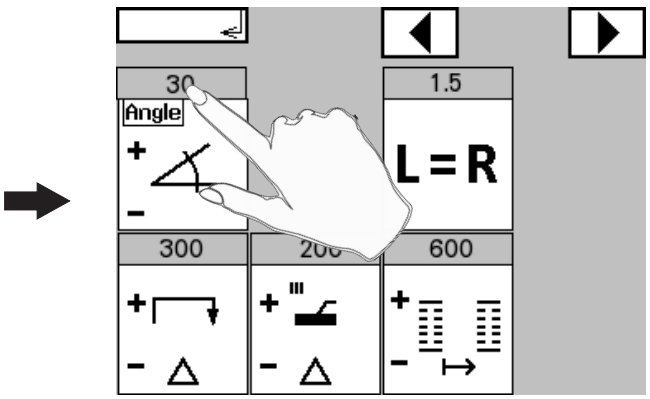
3. INDEXER FUNCTION

Indexer allows sewing of buttonholes with straight or angle clamp-feet movement.
All indexer parameters are adjustable from the touch-screen control panel.



Angle adjustment procedure:





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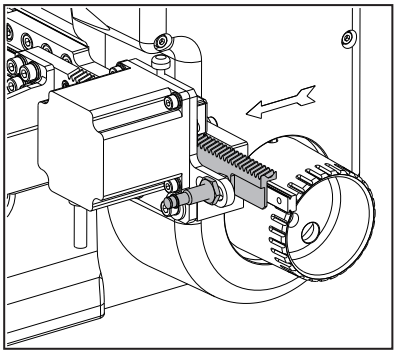
F - INDEXER - ANGLE 30°

4. HOME POSITION ADJUSTMENT

4.1. Indexer Clamp-feet Adjustment – Axis Y

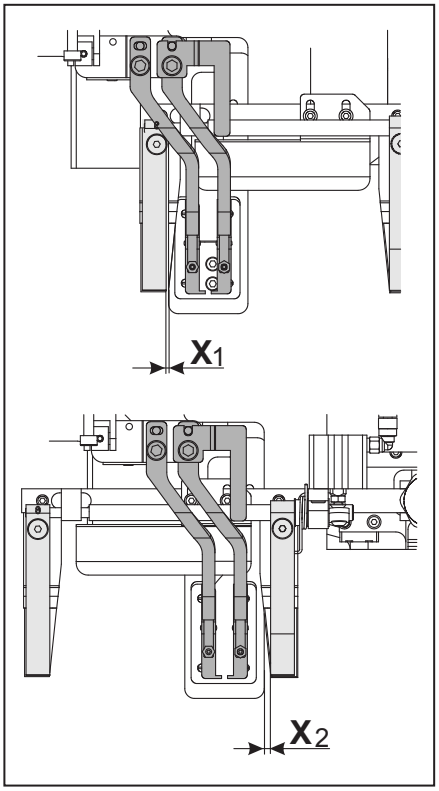
a) Activate the indexer from the touch-screen panel by pressing the button Indexer Off.
b) Check the sewing length matches the parameter set on the machine touch-screen panel, refer to the chapter E11
c) Check the sewing density matches the parameter set on the machine touch-screen panel, refer to the chapter E8.

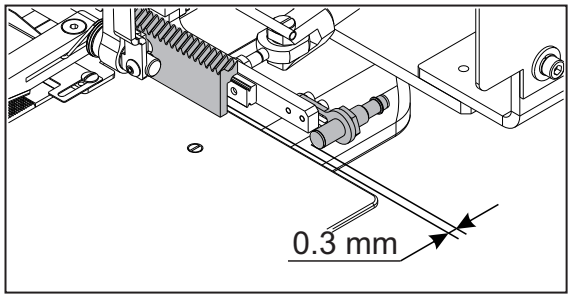
d) By pressing the buttons ← → move the indexer clamp-feet to the rightmost position (left indexer foot is close to the sewing head clamp-feet), adjust the angle to 0°.
e) Check the indexer clamp-foot is parallel to the edge of the slot in the stainless cover-plate. If it is not the case, do the following:
- remove the indexer cover
- loose the sensor nut and move the sensor to the desired position, tighten the nut again; check the clearance between the sensor and the plate it detects to be approx. 0.3 mm
- by pressing the buttons Indexer On Indexer Off check the correct adjustment
- mount the indexer cover again



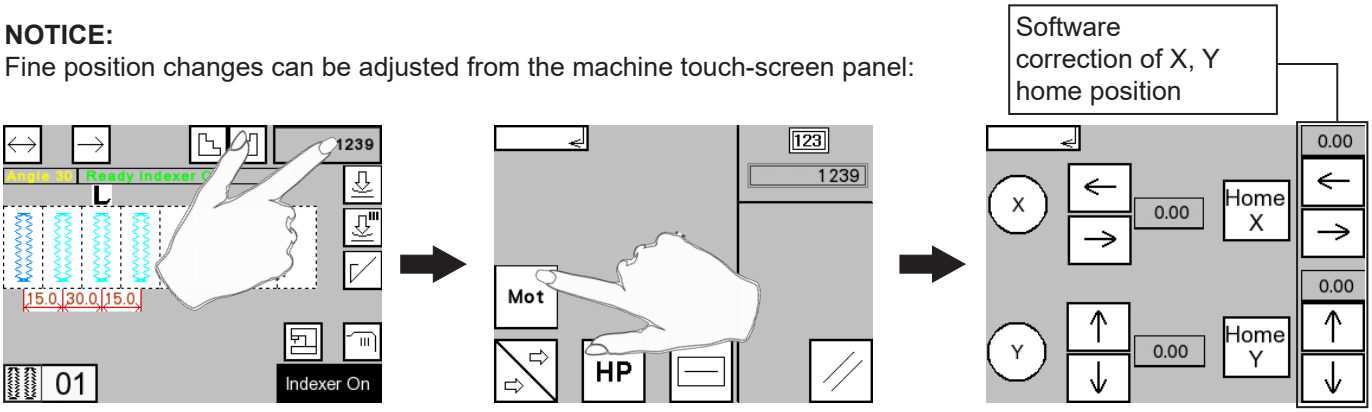
4.2. Indexer Clamp-feet Adjustment – Axis X

a) By pressing the buttons ← → check the distances X1, X2 between the indexer clamp-feet and edge of the slot in the stainless cover-plate are equal. If this is not the case, do the following:
- loosen the sensor nut and move the sensor to the desired position, loosen the nut again; check the clearance between the sensor and the plate it detects to be approx. 0.3 mm
- by pressing the buttons Indexer On Indexer Off check the correct adjustment





NOTICE:
Fine position changes can be adjusted from the machine touch-screen panel:



5. THE INDEXER CLAMPING FEED PRESSURE ADJUSTMENT

1. First place the material under the left clamping feed.
2. Press the button  on display. Pull the clamped material and check if the material is held well.
3. Do the same with the right clamping feed.
4. If the pressure is not the same on both clamping feed, follow the below mentioned steps:

The left clamping feed holds the material more than the right one

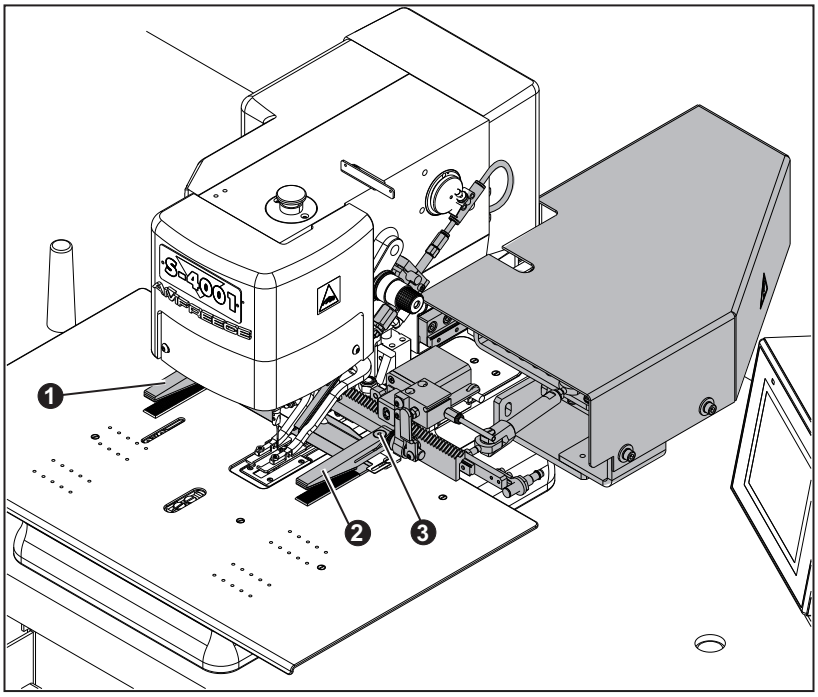
a) Press the left clamping feed ❶ by hand down to the clamp mat.
b) Move the right clamping feed ❷ closer to the clamp mat by loosing the screw ❸ on the right clamping feed.
c) Tighten the screw ❸ and release the left clamping feed by hand ❶.

The left clamp foot holds the material less than the right one

a) Press the left clamping feed by hand down to the clamp mat.
b) Move the right clamping feed back from the clamp mat by loosing the screw on the right clamping feed.
c) Tighten the screw and release the left clamping feed by hand.

Check the correction of the adjustment according to the points 1-4.

NOTE: Since the clamp cylinder is closer to the right clamping feed, it is necessary to set the stronger pressure on the left clamping feed.



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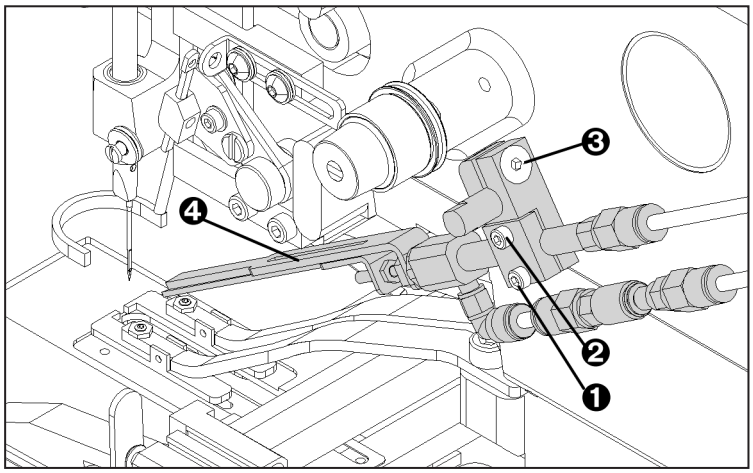
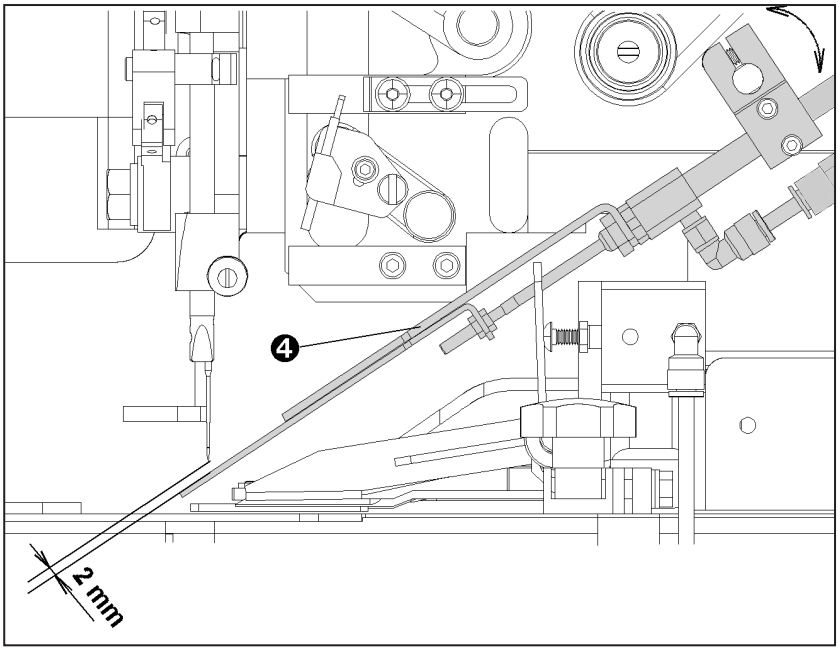
F - INDEXER - ANGLE 30°

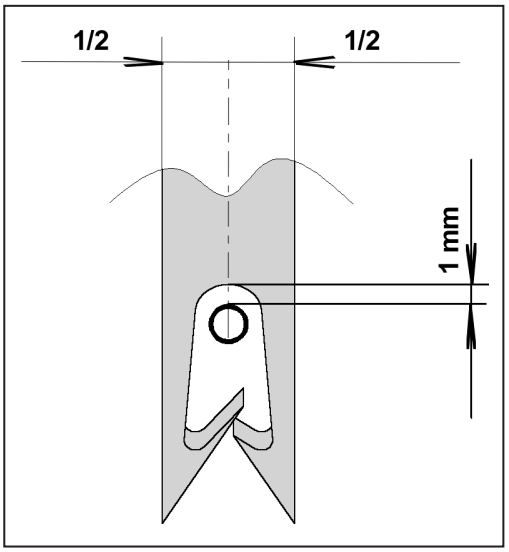
6. THREAD PICK-UP ADJUSTMENT

If the thread is not caught and held after trimming it is necessary to adjust the thread pick-up.

1. The machine must be in the home position.
2. Disconnect the air tubes of the thread puller.
3. Loosen the screws ❶, ❷, ❸.
4. Manually extend the cylinder ❹.
5. Adjust the thread puller position to obtain the distance 2 mm between the needle tip and the thread puller and at the same time to have the needle in the centre of the thread puller slot. Tighten the screw ❸.
6. Move the thread puller assembly so that the distance between the needle and the end of the slot is approximately 1 mm. Tighten the screws ❶, ❷.
7. Connect the thread puller air tubes and check the adjustment.







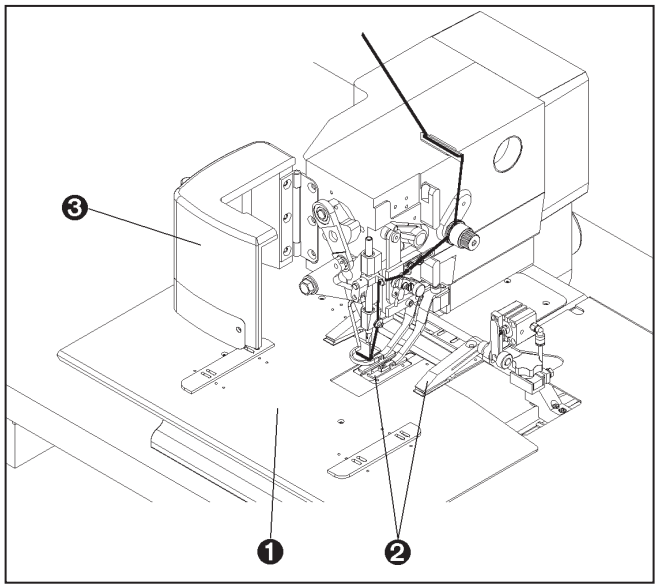
G - MAINTENANCE

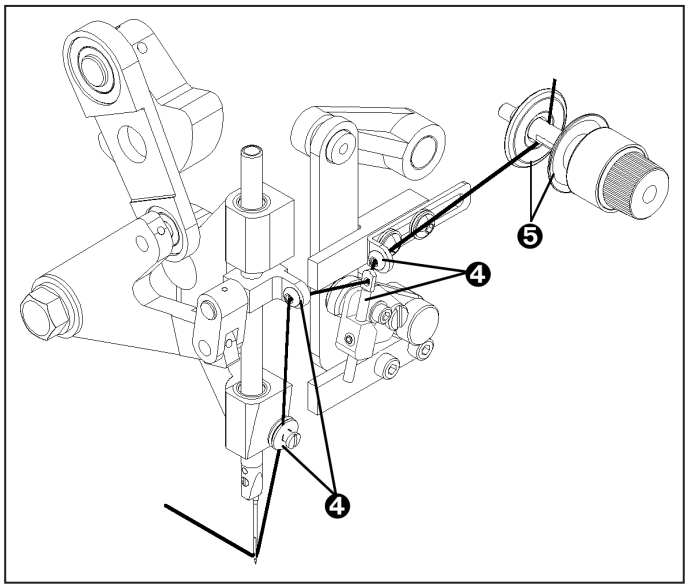
Warning:
- Check for damage to electrical cables
- Check safety covers for damage and replace if needed immediately
- Keep your hands out of the sewing area
- Do not modify the machine in any way, which could eliminate safety parts
- Do not attach external lights or other devices to the machine´s electrical system

Caution:
- Do not neglect periodic maintenance.
- If you have fault in electrical power supply, switch off the operating switch (circuit breaker).
- Do not damage, correct and remove safety labels.
- Do not work with the machine when you are under the influence of the drugs or alcohol.
- User has to ensure the lighting of the working area minimal 750 Luxes.

1. MACHINE CLEANING AND MAINTENANCE

1. Switch the power off and disconnect airsupply.
2. For cleaning and oiling, remove the cover ❶ and take out the clamp feet mechanism ❷. Clean the clamping area from the fabric and thread lints.
3. Open the needle bar cover ❸ and clean the thread lints from the guides ❹ and thread tension ❺.
4. Clean the thread lints and fabric from the sewing area - throat plate, loopers.
5. Lubricate the machine according to the section G 4.





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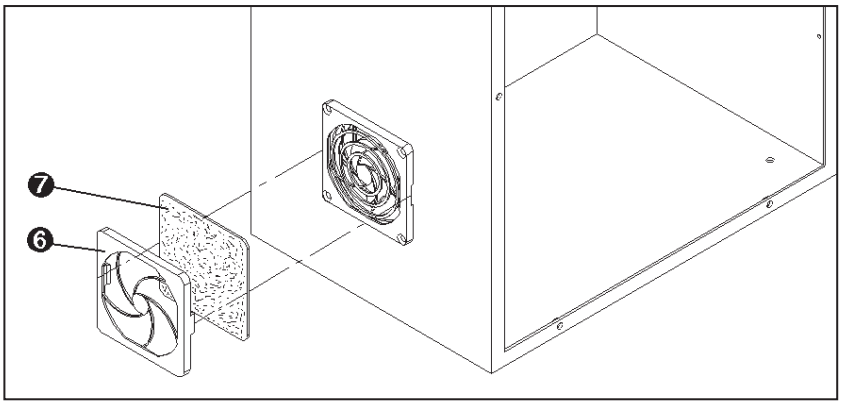
G - MAINTENANCE

6. Remove the filter cover ❻ with cleaning pad ❼. Remove the dust from the cleaning pad or in case of considerable dirt, wash it using a mild detergent.
   Perform the same cleaning on the rear fan.

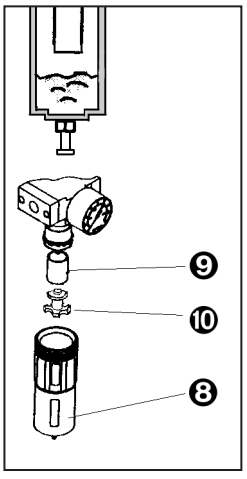
7. The filter and regulator maintenance
   Bowl assembly - polycarbonate bowls may be damaged and possibly fail if exposed to synthetic oils, thinner solvents, trichlorethylene, kerosene and other aromatic hydrocarbons. Clean only with a neutral detergent.
   Auto drain - Drain line length should be shorter than 5 m. Be sure not to have any upward turns in the drain line which would prevent drainage.



If the unit has no function it is necessary to:
a) check if the supplied pressure is higher than the set pressure of the regulator
b) check if the valve assembly is clean
c) check the membrane or spring because of damage
d) check if the air flow direction is correct

Change of the filter element
Conditions
- low flow rate
- high pressure drop
- when the pressure drops to 0.7 bar
- filter element change after one year (in case it has not been changed)

a) unscrew the polycarbonate bowl ❽
b) take the filter element out ❾ with baffle ❿
c) change old filter element with new one
d) fit the baffle ❿ into new filter element ❾ and place them both back
e) place the polycarbonate bowl back



8. Check the mechanisms especially in the sewing area by sight.

9. When the maintenance and checking are finished, insert the clamp feet mechanism to the machine.

G - MAINTENANCE

2. PERIODIC MAINTENANCE

once a day (8 hours of operation)
- cleaning of the sewing mechanism area and inner frame of the machine
- lubrication of mechanisms - see section G4.

once a week (40 hours of operation)
- visual check - external and internal mechanisms
- fill oil into reservoir with oil level indicator, or sooner if required

once a month (160 hours of operation)
- check of the clearance in sewing mechanism drive
- check of the screw connections tightening (obtain values below)
- check of condensate in regulator
- check of dirty of cleaning pads in control box

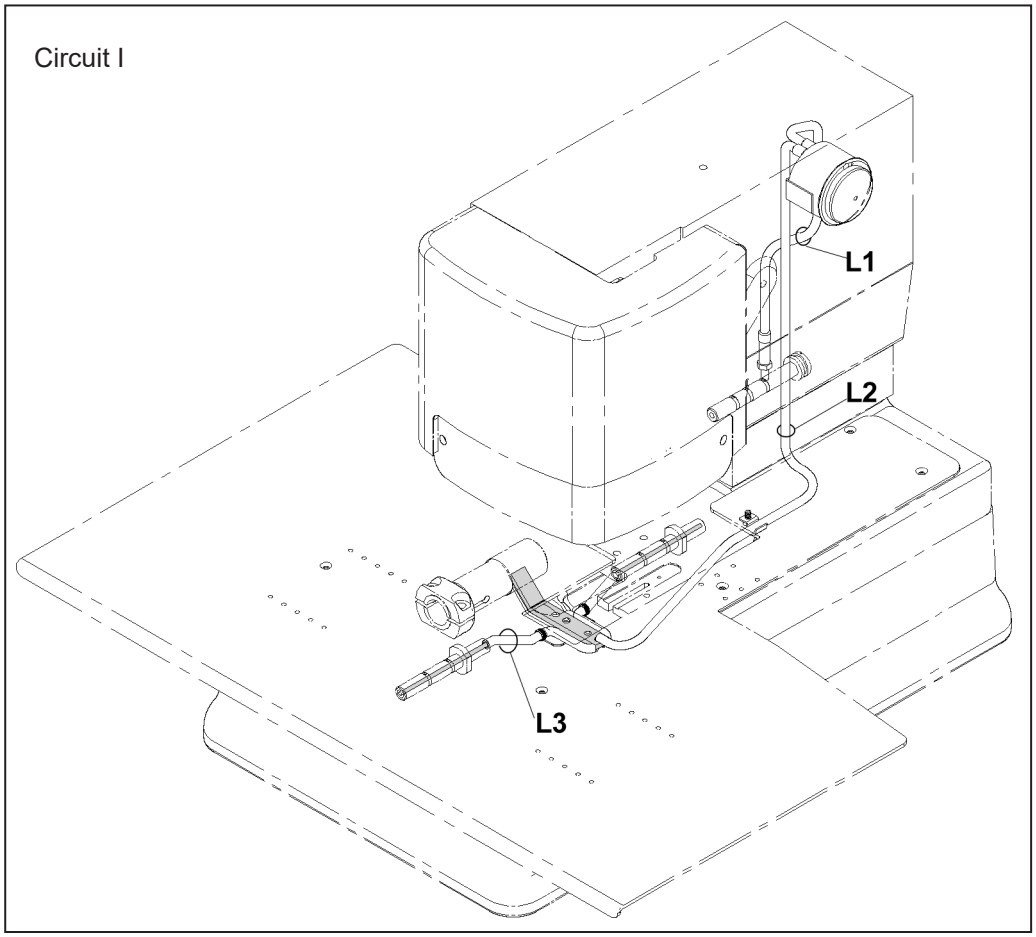
Recommended values for screws tightening (Nm):

M3	0,5	0,6	0,8
M4	1,2	1,5	2,0
M5	2,5	3,0	4,0
M6	4,0	5,0	7,0
M8		8,0	16,0
M10		10,0	30,0

3. LUBRICATION DIAGRAM

The machine is mostly equiped with needle and ball bearings, which in combination with single lubrication circuit decrease the requirements for maintenance.

Circuit I - with the oil supply in oil indicator for lubrication of the bite, feeding and looper levers and worm gears. In case of replacement of any part of distribution, it is possible to order the tube kits and wicks. To connect the tubes - see picture.



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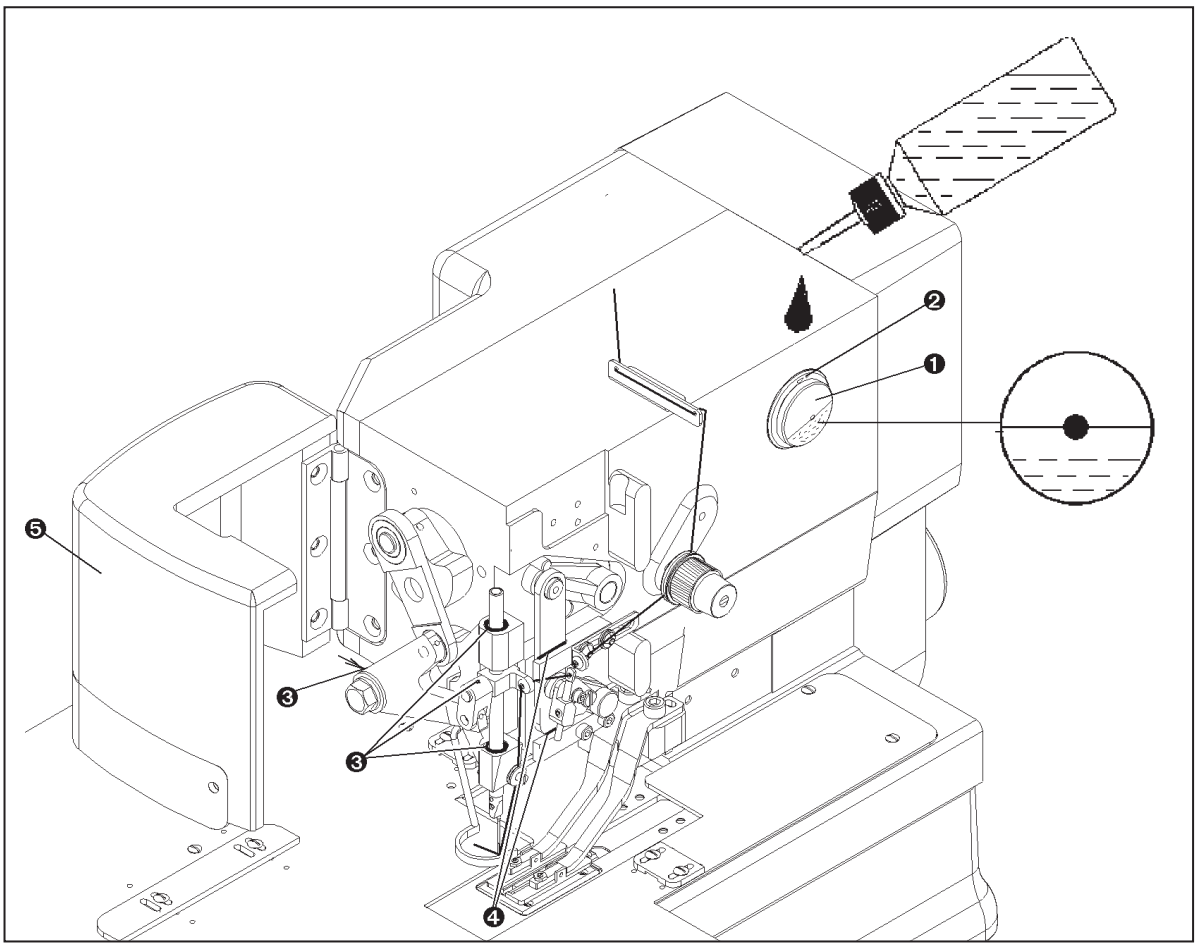
G - MAINTENANCE

4. MACHINE LUBRICATION

1. It is necessary to lubricate the places shown below before the machine is switched on for the first time or after a long idle period. Use oil ESSO TERESSO 32 or similar quality.
2. The amount of oil in the reservoir ❶ is indicated by the red mark. Too much oil may cause its overflowing from the base area.
3. The reservoir is fitted through the hole ❷ in front of the gage.
4. The points for lubrication of the needle bar mechanism ❸ and draw-off mechanism ❹ are shown in the illustration below (after opening the needle bar cover ❺. Lubricate the main cam worm gear through the hole ❻. Lubricate all of these points every 8 hours.

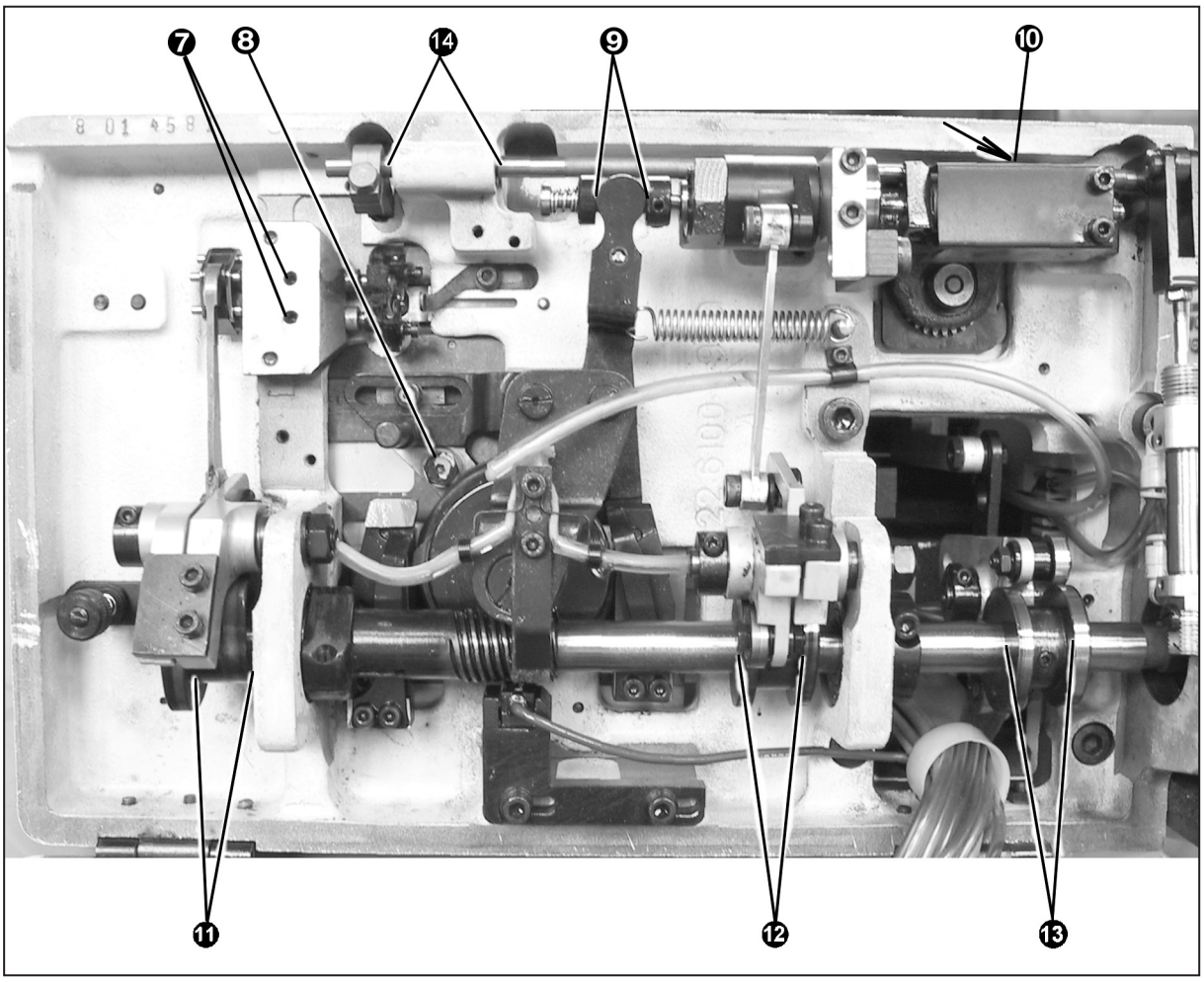


5. Tilt the machine head on the rest pin and lubricate the places shown in the picture.

❼ looper shafts
❽ roller
❾ shifter
❿ bevel gears
⓫ looper cam surfaces
⓬ feed cam surfaces
⓭ bite cam surfaces
⓮ trimmer shaft

Tilt the sewing head back into the sewing position.

6. After lubrication it is important to sew minimum 10 buttonholes on scrap fabric to dispel any excess oil. Wipe all visible excess oil from the mechanism in the work area.



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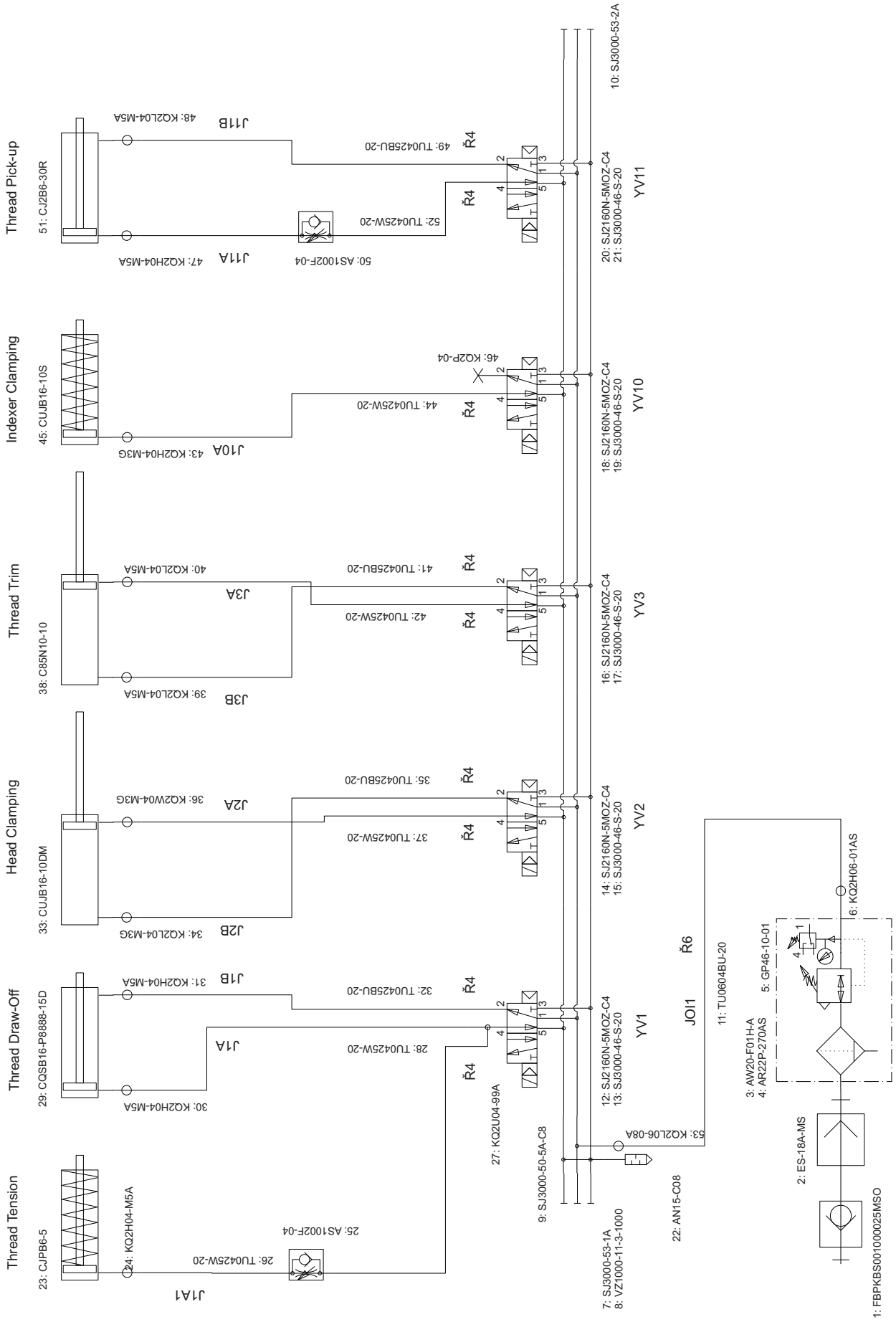
G - MAINTENANCE

5. MACHINE DISPOSAL

1. To ensure machine ecological disposal, it is necessary to remove nonmetallic parts from the machine. To take these parts out, it is necessary to perform the partial dismantling of the machine, remove covers, dismantle the machine arm and remove the frame.
2. Aluminium and diralumin parts must be treated separately, also nonferrous metal parts and plastic parts.
3. Parts mentioned in point 2 can be found in the spare parts manual with these marks:
   - ● aluminium parts
   - ●● non-ferrous metal parts
   - ●●● plastic and non-metalic parts

H - PNEUMATIC DIAGRAM



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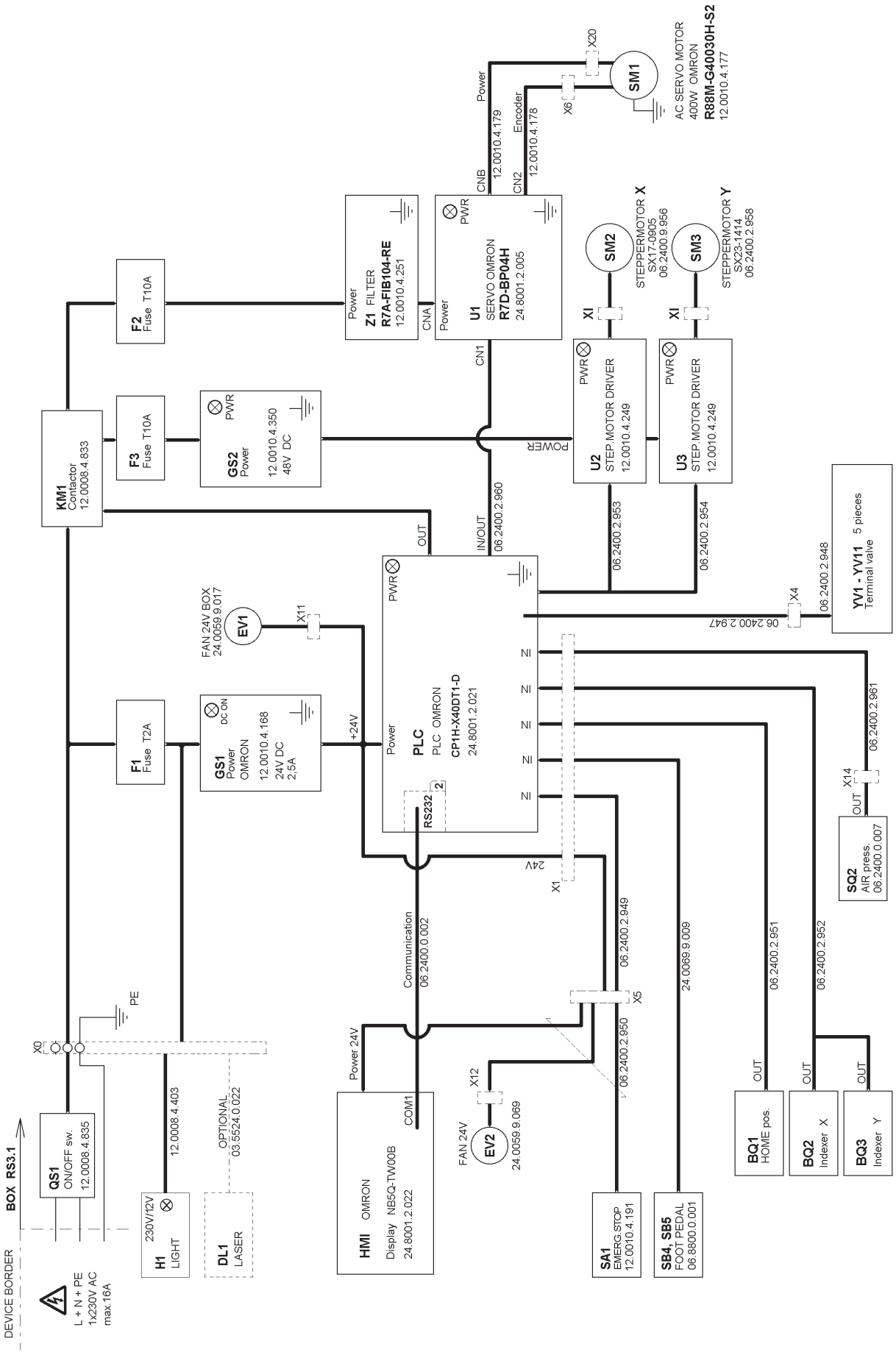
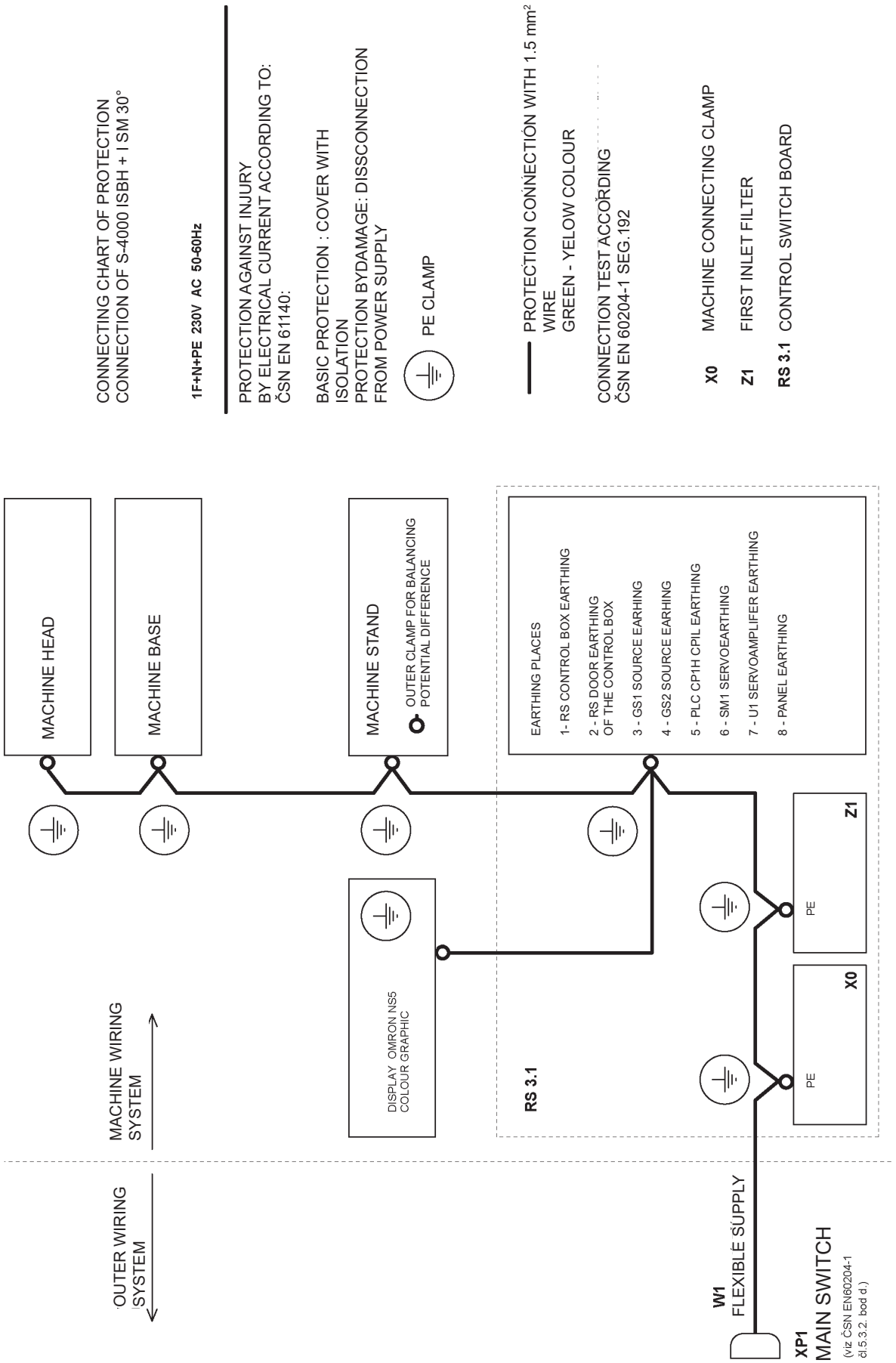
I - ELECTRICAL DIAGRAM



I - ELECTRICAL DIAGRAM



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TROUBLESHOOTING

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TROUBLESHOOTING

1. MECHANICAL FAULTS

FAULT	POSSIBLE CAUSE	PROBABLE SOLUTION
Thread breakage	Needle, looper, throat plate damaged	Change damaged parts
	Incorrect needle and sewing mechanism adjustment	Check the adjustment of the mechanisms
	Thread tension is too tight	Adjust correct tension
	Incorrect threading	See section C3 for checking.
	Thread guides polished incorrectly	Polish
	Poor thread quality	Replace thread
	Thread is too heavy for selected needle and throat plate	Use recommended thread sizes - see section A4
Machine fails to sew	Needle, looper, throat plate damaged	Change damaged parts
	Incorrectly adjusted needle bar height	See section E4 for checking
	Incorrectly adjusted clearance between needle and throat plate	See section E5 for checking
	Incorrect loopers timing	See section E12 for checking
Machine sews in one spot	Incorrectly adjusted front stop	Adjust the stop - see section E11
Stitch skip at the beginning of sewing	Needle, looper, throat plate damaged	Change damaged parts
	Needle thread end is too short	See section E13, point 2
	Incorrectly adjusted needle bar height	See section E4
	Incorrectly adjusted clearance between needle and throat plate	See section E5
	Incorrect loopers timing	See section E12
	Incorrectly adjusted clamp feet pressure	See section E 16
Stitch skip during sewing	Needle, looper, throat plate damaged	Change damaged parts
	Incorrectly adjusted needle bar height	See section E4
	Incorrectly adjusted clearance between needle and throat plate	See section E5
	Incorrect loopers timing	See section E12
	Incorrect thread tension adjustment	Adjust the tension correctly see section E14
	Incorrect threading	See section C3
	Thread loops are too small	See section E13 point 3
	Incorrectly adjusted clamp feet pressure	See section E16
	The clamp feet are adjusted too far from the sewing	See section E16

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TROUBLESHOOTING

FAULT	POSSIBLE CAUSE	PROBABLE SOLUTION
Thread not trimmed at the end of the cycle	Trimming knife damaged	Replace knife
	Wrong adjustment of pulling hook	See section E 15 point 2
	Throttle valve regulating tension disc is too loose.	See section E14 point 3
	Incorrect loopers timing	See section E12
	Incorrect setting of trimming delay	Change Trim delay parameter D3
	Trimming length incorrectly set	Change Trim time parameter D3
Sewing motor turns, machine does not sew	Belt broken or loose	See section E18 for changing
Machine sews continually, does not stop	Stopping sensor adjusted incorrectly	See section E17 for correct position adjustment
Zero pressure on regulator	Shut off valve closed	Open shut off valve
Low air pressure	Filter element dirty	Change the filter element
	Air fitting or tubing obstruction	Check supply lines

2. INDEXER FAULTS

FAULT	POSSIBLE CAUSE	PROBABLE SOLUTION
Thread pick up does not catch the thread (breaks needle)	Thread puller position adjusted incorrectly	See section F7 for adjustment
	Thread Pick-up delay set incorrectly	Change Thread Pick-up delay parameter in indexer menu
	Incorrect setting of Thread Pick-up timing	Change Thread Pick-up time parameter in indexer menu
	Thread Pick-up parameter is not activated	Activate the Thread Pick up parameter in indexer menu
	Valve 11 does not switch on	Check or replace
Sewn buttnoholes vary in spacing	One of the pneumatic valves 13 — 18 does not switch on	Check or replace the valves
	Indexer clamp feet do not have the same pressure	See section F5
The machine sews in one spot, no movement of material	Indexer clamp feet are not closed	Valve 10 does not switch on, check or replace
	Low air pressure	Check main supply and manual shut-off valve
	Indexer clamp feet delay incorrectly set	Change Move delay parameter in indexer menu
	Activation of indexer clamp feet timing incorrectly set	Change Clamps delay parameter in indexer menu
Indexer clamps do not swivel	Indexer clamp feet are not adjusted for angle movement	Loosen the screw and move it from the locking lever
	Angle parameter not activated	Activate the Angle parameter in Indexer menu
	Valve 12 does not switch on	Check or replace
	Air comming into the cylinder is too tighten	Loosen the vylve on the swivelling cylinder

3. ERROR MESSAGES OF THE CONTROL PANEL DISPLAY

FAULT	POSSIBLE CAUSE	PROBABLE SOLUTION
Low air pressure	Hand valve of the regulator switched off (if assembled)	Open the hand valve
	The air pressure in the air supply piping below 5 MPa	Increase the air pressure
Emergency stop	Emergency Stop button is switched on	Release the Emergency Stop button
Operation mode	The machine is in the operation mode, motor is disconnected	Press  on the control panel
The distance between buttonholes larger than 63 mm	The maximal length of the indexer clamp feet movement is exceeded	See Service - Section D 5.1.
VAL > MIN VAL > MAX	Parameter range exceeded	Choose lower or higher value

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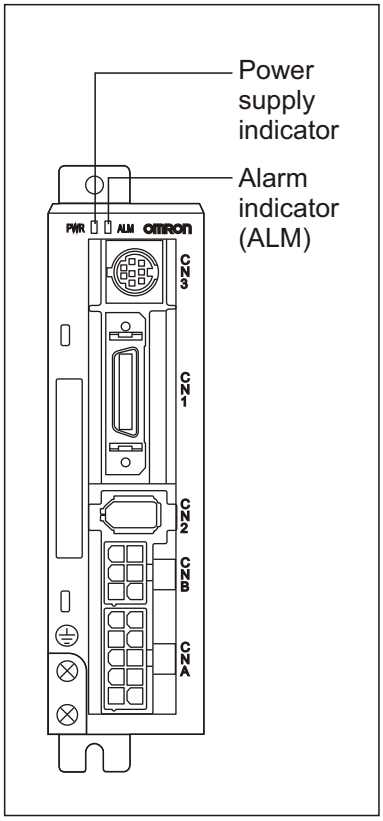
4. ERROR MESSAGES OF THE SERVO

The following messages can be seen on the servo, which is placed inside the control box. In order to eliminate these messages, switch off the machine for 1 minute. Then switch the machine on again. The error message should not appear on the display. If the message appears - call AMF Reece service.



PWR - Power supply indication:

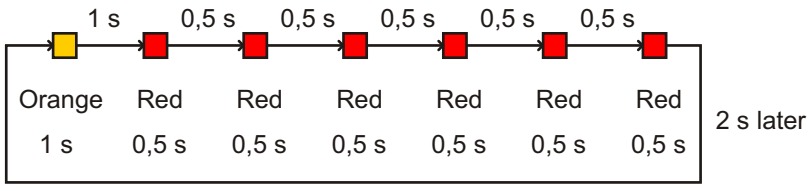
INDICATOR	STATUS
Lit green	Voltage is good
Lit orange - Flashes at a 1 sec. intervals	Varning - i.e.: - Exceeded power - Exceeded feed back - Default of inner fan
Lit red	Alarm - default

ALM - Default indication (Alarm indicator):
in case default appears, the indicator is switched on.

Alarm indicator on the Servo Drive

The alarm LED indicator on the front of the Servo Drive lights up if an error is detected. The indicator shows the alarm code by the number of orange and red flashes.

Example:
When an overload alarm (alarm code 16) has occurred and the Unit has stopped the indicator will flash in orange and 6 times in red.
Orange 10s digit, Red: 1s digit



TROUBLESHOOTING

Alarm code	Error detection function	Detection details and cause of error	Alarm reset possible
11	Power supply undervoltage	The DC voltage of the main circuit fell beloww the specificed value while the RUN Command Input was ON	Yes
12	Overvoltage	The DC voltage of the main circuit is abnormally high	Yes
14	Overcurrent	Overcurrent flowed to the IGBT. Servomotor power line ground fault or short circuit	No
15	Built-in resistor overheat	The resistor in the Servo Drive is abnormally overheating	No
16	Overload	Operation was performed with torque significantly exceeding the rated level for several seconds to several tens of seconds.	Yes
18	Regeneration overload	The regeneration energy exceeded the prosessing capacity of the regeneration resistor.	No
21	Encoder disconnection detected	The encoder wiring is disconnected.	No
23	Encoder data error	Data from the encoder is abnormal.	No
24	Deviation counter overflow	The number of accumulated pulses in the deviation counter exceeded the seting in the Deviation Counter Overflow Level (Pn63)	Yes
26	Overspeed	The servomotor exceeded the maximum number of rotations. If the torque function was used, the Servomotor´s rotation speed exceeded the settings in the Overspeed Detection Level Setting (Pn70 and Pn73)	Yes
27	Electronic gear setting error	The section in Electronic Gear Ratio Numerator 1 (Pn46) or Electronic Gear Ratio Numerator 2 (Pn47) is appropriate.	Yes
29	Deviation counter overflow	The number of accumulated pulses for the deviation counter exceeded 134,217,728.	Yes
34	Overrun limit error	The servomotor exceeded the allowable operating range set in the Overrun Limit Setting (Pn26).	Yes
36	Parameter error	Data in the parameter saving area was corrupted when data was read from the FEPROM at power ON.	No
37	Parameter corruption	The checksum didn´t match when data was read from the FEPROM at power ON.	No
38	Drive prohibit input error	The forward drive prohibit and reverse drive prohibit inputs are both turned OFF.	Yes
48	Encoder phase Z error	A phase-Z pulse was not detected regularly	No
49	Encoder CS signal error	A logic error of the CS signal was detected	No
95	Encoder CS signal error	The combination of the Servomotor and Servo Drive is not appropriate. The encoder was not connected when the power supply was turned ON.	No
96	LSI setting error	Excessive noise caused the LSI setting not to be completed properly.	No
Others	Other errors	The servo Drive´s self-diagnosis function detected an error in the Servo Drive.	No

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5. ELECTRICAL FAULTS

FAULT	POSSIBLE CAUSE	PROBABLE SOLUTION
When switch  in position I, neither the work light, display or the cooling fan operate	No power supply	Check main power supply or voltage in the socket
	Fuse F1 failure	Replace fuse PN 12.0008.4.665
	Power switch QS1 damaged	Replace the switch 12.0008.4.835
	Power GS1 failure	Replace the power 12.0010.4.168
When switch  in position I, display does not operate	Cable from the display disconnected	Check the display connection
	Display or its control damaged	Replace display PN 24.8001.2.014
When sewing operation started, motor does not operate. Contactor KM1 switched on.	Fuse F2 damaged	Replace fuse 12.0008.4.664
	Contactor KM1 damaged	Replace contactor 12.0008.4.833
	Filter Z1 damaged	Replace filter 12.0010.4.251
	Servodriver U1 error	Call AMF Reece service or replace servodriver U1 24.8001.2.005
	Error in sewing motor circuit	Switch the machine off for 1 minute, or restart it, alternatively call AMF Reece service
When sewing operation started, motor fails to operate. Contactor KM1 switched off.	Make sure the machine is ready for operation	Press key in the display  (see section D1, point 6)
	Contactor KM1 damaged	Replace contactor 12.0008.4.833
	Check the Emergency Stop button	Replace button 12.0010.4.191
	Control unit PLC error	Replace the control unit PLC 24.8001.2.011
The needle does not stop in the upper position	Position of the sensor BQ1 incorrectly adjusted	Adjust according to section E17
	Sensor BQ1 failure	Replace the sensor 06.2400.0.009
	Check the servo amplifier and servo	To set the servo amplifier - call AMF Reece service, alternatively replace motor (page 2-9) and servo amplifier (page 2-9)
When sewing operation started, air valves do no operate. The air pressure correct.	Fork is not fitted properly into connector X3, X4	Check the connector X3, X4 connection
	Block CPAW failure	Replace the block 12.0010.4.071.
Broken drive indexer	Lack of power supply to drive.	Check contactor KM1 switching. Replace contactor 12.0008.4.833
No flash light on GS 2 power supply	Fuse F3 burnt.	Replace fuse 12.0008.4.664.
	Power GS2 failure.	Replace power supply 12.0010.4.255.
	Driver U2 failure.	Replace driver 12.0010.4.249
No flash light on U2 driver	Power GS2 failure.	Replace power 12.0010.4.255
	Driver U2 failure.	Replace driver 12.0010.4.249
When switched on, indexer motor not in its position	Indexer motor SM2 failure.	Replace motor 06.2400.0.905
		Replace driver 12.0010.4.249
Indexer motor rotates and hits a stopper	Indexer sensor BQ10 failure	Check adjustment or replace sensor 12.0010.4.093