

**838****Spezialnähmaschine**

Betriebsanleitung

[Instruction manual](#)**DE****EN**

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# Foreword

This instruction manual is intended to help the user to become familiar with the machine and take advantage of its application possibilities in accordance with the recommendations.

The instruction manual contains important information on how to operate the machine securely, properly and economically. Observation of the instructions eliminates danger, reduces costs for repair and down-times, and increases the reliability and life of the machine.

The instruction manual is intended to complement existing national accident prevention and environment protection regulations.

The instruction manual must always be available at the machine/sewing unit.

The instruction manual must be read and applied by any person that is authorized to work on the machine/sewing unit. This means:

- Operation, including equipping, troubleshooting during the work cycle, removing of fabric waste,
- Service (maintenance, inspection, repair) and/or
- Transport.

The user also has to assure that only authorized personnel work on the machine.

The user is obliged to check the machine at least once per shift for apparent damages and to immediately report any changes (including the performance in service), which impair the safety.

The user company must ensure that the machine is only operated in perfect working order.

Never remove or disable any safety devices.

If safety devices need to be removed for equipping, repairing or maintaining, the safety devices must be remounted directly after completion of the maintenance and repair work.

Unauthorized modification of the machine rules out liability of the manufacturer for damage resulting from this.

Observe all safety and danger recommendations on the machine/unit! The yellow-and-black striped surfaces designate permanent danger areas, eg danger of squashing, cutting, shearing or collision.

Besides the recommendations in this instruction manual also observe the general safety and accident prevention regulations!

## General safety instructions

**The non-observance of the following safety instructions can cause bodily injuries or damages to the machine.**

1. The machine must only be commissioned in full knowledge of the instruction book and operated by persons with appropriate training.
2. Before putting into service also read the safety rules and instructions of the motor supplier.
3. The machine must be used only for the purpose intended. Use of the machine without the safety devices is not permitted. Observe all the relevant safety regulations.
4. When gauge parts are exchanged (e.g. needle, presser foot, needle plate, feed dog and bobbin) when threading, when the workplace is left, and during service work, the machine must be disconnected from the mains by switching off the master switch or disconnecting the mains plug.
5. Daily servicing work must be carried out only by appropriately trained persons.
6. Repairs, conversion and special maintenance work must only be carried out by technicians or persons with appropriate training.
7. For service or repair work on pneumatic systems, disconnect the machine from the compressed air supply system (max. 7-10 bar). Before disconnecting, reduce the pressure of the maintenance unit. Exceptions to this are only adjustments and functions checks made by appropriately trained technicians.
8. Work on the electrical equipment must be carried out only by electricians or appropriately trained persons.
9. Work on parts and systems under electric current is not permitted, except as specified in regulations DIN VDE 0105.
10. Conversion or changes to the machine must be authorized by us and made only in adherence to all safety regulations.
11. For repairs, only replacement parts approved by us must be used.
12. Commissioning of the sewing head is prohibited until such time as the entire sewing unit is found to comply with EC directives.
13. The line cord should be equipped with a country-specific mains plug. This work must be carried out by appropriately trained technicians (see paragraph 8).



It is absolutely necessary to respect the safety instructions marked by these signs.

**Danger of bodily injuries !**

Please note also the general safety instructions.



## Introduction and safety instructions

**Part 1: Operating Instructions Class 838 - Original Instructions**

(Edition 10/2014)

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# 1 Product description

The Dürkopp Adler **838** is a special sewing machine for heavy sewing.

- It is a post-bed double-lockstitch machine.
- It has a bottom drop (feed) mechanism and a drive-powered top roller. There are two setting wheels (knobs) which allow the selection of two stitch lengths. There is also a pneumatically-controlled device with a button for toggling between the two stitch lengths during sewing.
- Depending on if the subclass is a single-needle or double-needle sewing machine, the following automatic functions are featured: an electro-magnetic thread trimmer, pneumatically-controlled bartacking, a sewing foot lift, and a switchable upper thread tensioner.
- The machine is equipped with a large double-sectioned vertical hook.
- The maximum lift for the sewing foot is 12 mm.
- The residual thread length after thread trimming is about 15 mm.
- There is a safety clutch to avoid displacing or damaging the hook if the thread gets jammed in the shuttle track.
- The throat plate has replaceable inserts with the stitch hole dimension difference, which are optional in dependence on the needle number.
- The machine features automatic wick lubrication and a viewing window in the arm for watching the machine and hook lubrication. Some of the oil is lost during the hook lubrication. The remaining oil is redirected by the pump back to the central reservoir.
- Integrated bobbin winder.

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## 2. Designated use

The **838** machines are suitable for use in producing shoes, decorative ornamental work, and upholstery. The typical sewing material is leather (either natural or synthetic). The sewing machine can also be used for sewing shoe textiles.

The setup of the machine depends on the material to be sewed and whether it is heavy or extra heavy.

Generally only dry material may be sewn with this sewing unit. The material may be no thicker than 7 mm when compressed by the lowered top roller.

The sewing material must not contain any hard objects since the sewing machine is not equipped with any form of eye protection.

This sewing machine may be set up and operated only in dry, well-maintained premises. If the sewing machine is used in other premises which are not dry and well-maintained it may be necessary to take further precautions which should be agreed in advance (see EN 60204-31: 1999).

As manufacturers of industrial sewing machines, we proceed on the assumption that personnel who work on our products will have received training at least sufficient to acquaint them with all normal operations and with any hazards which these may involve.

### 3 Subclasses and sewing equipment

#### 3.1 Subclasses

**838-160522**

Single-needle double lockstitch post bed sewing machine with bottom feed, with driven roller foot and large hook, electro-magnetic thread cutter, pneumatic second stitch length, seam bartacking and sewing foot lifting.

**838-260522**

Double-needle double lockstitch post bed sewing machine with bottom feed, with driven roller foot and large hook, electro-magnetic thread cutter, pneumatic second stitch length, seam bartacking and sewing foot lifting.

#### 3.2 Sewing equipment

Sewing equipment	Class and sub-class	Number of neeles	Sewing type	Needle width: Nm		Label number of polyester thread		max. stitch length	Sewing speed		Top roller diameter	Gearing gap for the feed dog	Seam clearance gap	Noise intensity level of machine **
				Range	Standard	Range	Standard		Max.	Standard *				
				0,01 mm	0,01 mm	-	-		1/min	1/min				
838-E1	0838 170522	1	heavy	120-160	120	25-10	20	8	2000	1600	35	1,5	-	
838-E2		1	extra heavy	180-230	180	10-8	10	8	1600	1600	35	1,5	-	
838-E3/1,6	0838 270522	2	heavy	120-180	180	25-10	10	8	2000	1600	35	1,5	1,6	
838-E4/2,0		2	heavy	120-180	180	25-10	10	8	2000	1600	35	1,5	2,0	
838-E5/2,4		2	heavy	120-180	180	25-10	10	8	2000	1600	35	1,5	2,4	
838-E6/3,2		2	heavy	120-180	180	25-10	10	8	2000	1600	35	1,5	3,2	

\* When sewing very thick layers, it is necessary to reduce the sewing speed significantly.

\*\* Equivalent acoustic pressure level of the machine at the operator's place at maximum sewing speed and machine time utilization 20% . Measured with filter A.



## 4 Optional equipment

The following optional equipments are available for the class **838**:

Order No.	Optional equipment	Subclasses	
		838-170522	838-270522
9880 888101	Integrated sewing light 2 LEDs incl. transformer	x	x
9880 888100	Diode sewing light 3W	x	x
0688 130384	Knee lever for the sewing foot lifthing	x	x
9780 000108	WE-8, maintenance unit for the pneum. optional equipment	x	x
0797 003031	Pneum. connection kit for the connection of the stand with the maintenance unit	x	x
9805 791113	USB-Memory-Stick for data transfer with the EFKA Control DA321G	x	x
0867 490010	Bracket for the control panel	x	x
N800 080030	Retractable material guide	x	x
N800 080004	Retractable roller material guide	x	x
0888 220334	Top roller Ø 25 mm knurled	x	x
0888 220344	Top roller Ø 25 mm smooth	x	x
0888 220354	Top roller Ø 25 mm rubberized	x	x
0888 220374	Top roller Ø 35 mm smooth	x	x
0888 220384	Top roller Ø 35 mm rubberized	x	x
0888 220394	Top roller Ø 45 mm, width 3,8 mm	x	x
0888 220404	Top roller Ø 45 mm, width 2,0 mm	x	x
9081 300001	Tool kits M-type	x	x
0888 220564	Top roller setting without tools	x	x
9880 002001	Knee switch	x	x
9835 901005	Dongle for direct drive	x	x
9880 888104	Integrated sewing light 2 LEDs without for direct drive	x	x
9850 001089	Transformer for 2 LEDs	x	x
Stand			
MG 55 400334	Stand set MG 55-3 for toothed belt drive, with pedal, table top size 1060 x 500 mm	x	x

x = Optional equipment

o = Standard equipment

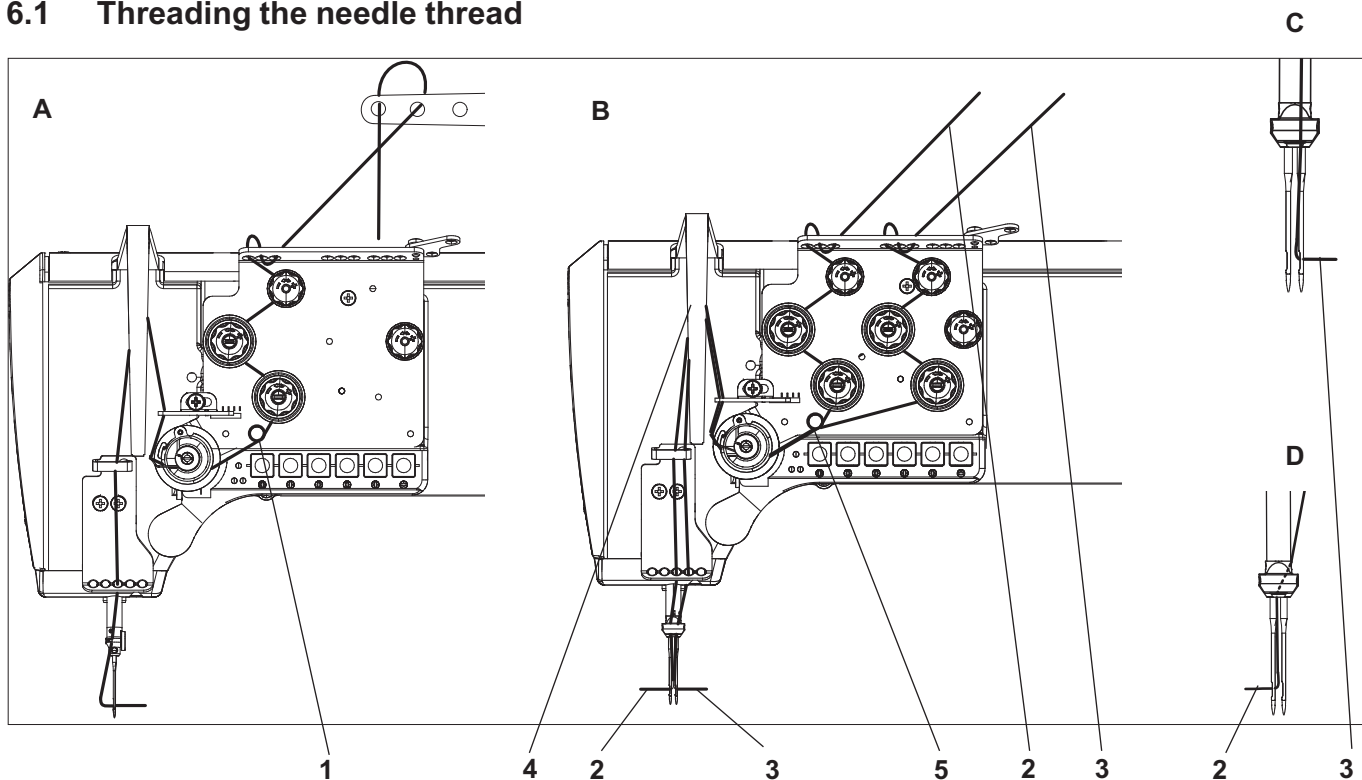
Additional optional equipments can be requested at our Application Center (APC).  
E-Mail: [marketing@duerkopp-adler.com](mailto:marketing@duerkopp-adler.com)

## 5 Technical parameters

Stitch type	double lockstitch 301
Needle system	134LR, 134 KKLR, 134, 134 D
Foot lifting with a hand lever	6 mm
Foot lifting with a knee lever or automatically	12 mm
Thread length after trimming	max. 15 mm
Machine head clearance height	300 mm
Machine head clearance width	280 mm
Machine base plate plan dimensions	178 x 518 mm
Table top plan dimensions	1060 x 500 mm
Table top minimum height	740 mm
Table top maximum height	900 mm
Machine height	max. 1630 mm
Maximum input (short-time)	0,8 kW
Weight of stand	30 kg
Weight of motor EFKA DC 1550	10 kg
Weight of machine head with DAC	54 kg
Compressed air feed	6 bar

## 6 Operation

### 6.1 Threading the needle thread



#### Caution: danger of injury!

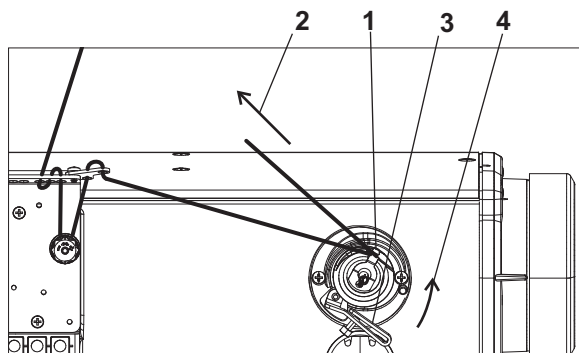
Turn off the main switch.

The needle must be threaded only when the machine is turned off.

- Follow illustration (A) when threading single-needle sewing machines. If the sewing machine is outfitted for the sewing of heavy-duty materials, then wind the thread around the pin (1).
- Follow the illustration (B) when threading double-needle sewing machines. Insert the thread (2) for the left needle into the left thread tension device and then in the upper eyelet of the thread lever (4).
- When needles are situated side-by-side, thread the needle eye according to illustration (B).
- When the needles are situated diagonally to each other, thread the needle according to the illustration (C - right needle) and illustration (D - left needle).
- If the sewing machine is intended for the sewing of heavy-duty materials, then wind the thread around the pin (5).

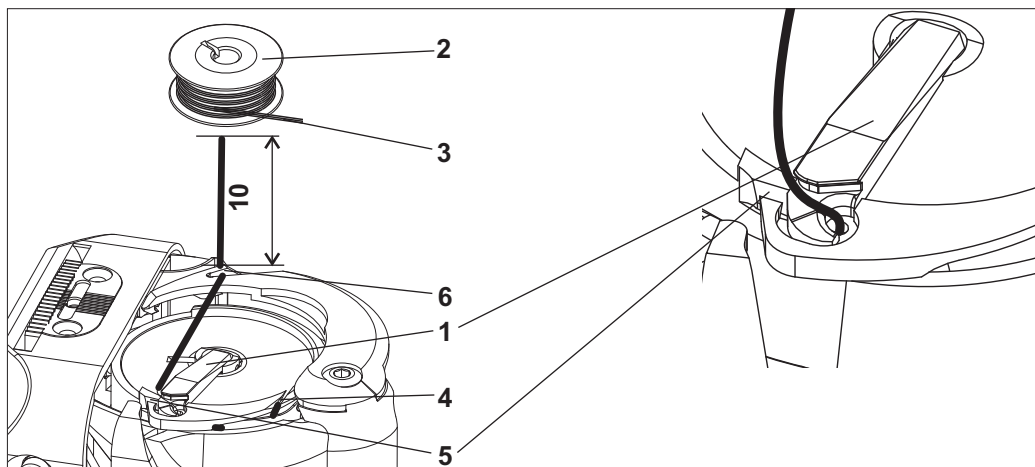
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## 6.2 Winding on the hook thread



- Insert the thread as shown in the illustration.
- Stick the thread behind the knife blade (1). Then cut by pulling in the direction of arrow (2).
- Put the bobbin on the bobbin shaft and move the bobbin lever (3) in direction (4).
- Start up the machine.
- After the thread is wound around the bobbin, stick the thread once again behind the knife blade (1) and cut off.
- Put an empty bobbin on the bobbin shaft for the next winding process and move the bobbin lever (3).

## 6.3 Changing the hook thread bobbin



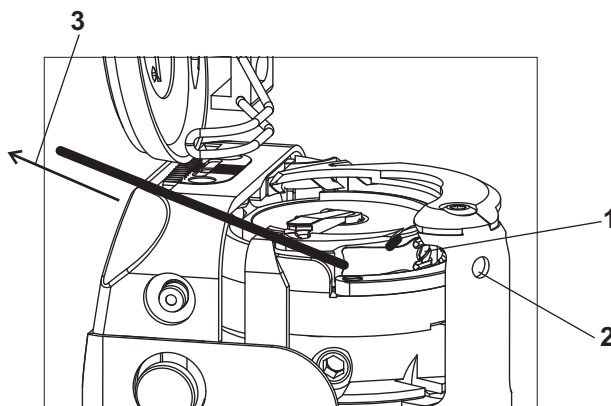
### Caution: danger of injury!

Be sure to turn off the main switch and wait until the motor has completely stopped.

- Raise up the flap cover (1).
- Insert the bobbin (2) with the thread end (3) positioned as shown in the illustration.
- Pull the thread through slit (4) and slit (5). Then close the flap and secure the thread under the spring (6).
- Trim off the thread end as show in the illustration.

## 6.4 Adjusting the thread tension

### 6.4.1 Adjusting the hook thread tension



#### Caution: danger of injury!

Turn off the main switch.

Adjust the shuttle thread tension only when the sewing machine is turned off.

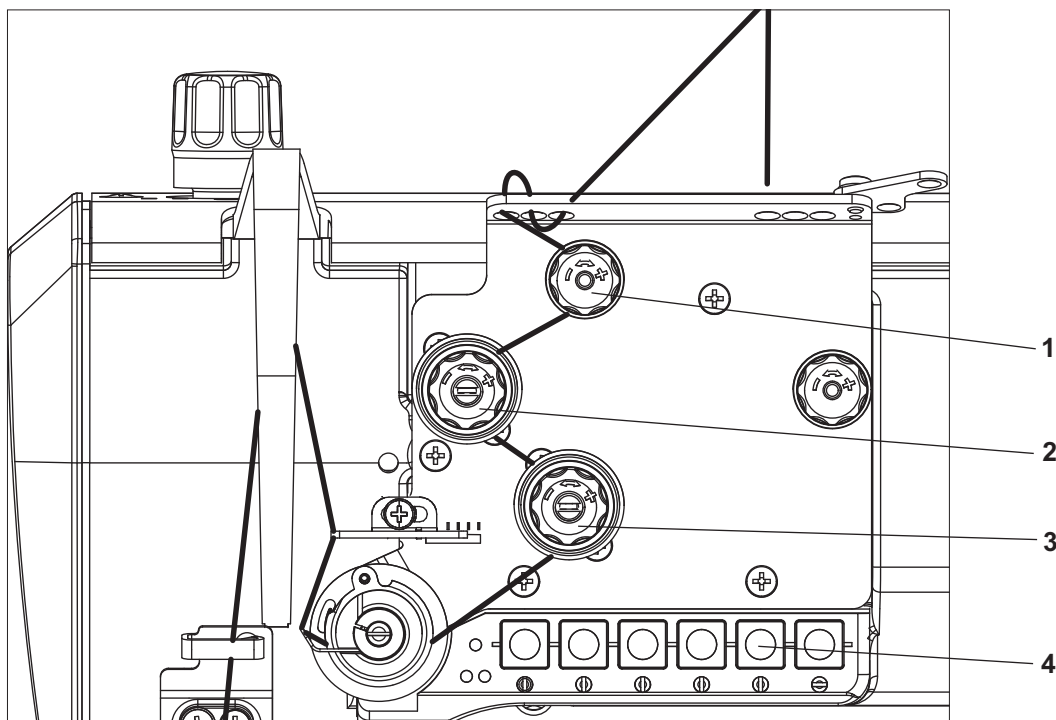
- Adjust the shuttle thread tension by turning the screw (1) with a screwdriver. The screwdriver should be inserted through the opening (2). The tension is increased by tightening the screw.
- The thread tension should then be checked with a thread tension gauge (dynamometer). Insert the thread as shown in the illustration and pull in the direction of arrow (3).  
The thread tension set at the factory depends on the selected machine configuration (see table below). This tension setting is suitable for typical sewing processes. You should lower the tension when working with materials which are soft and thin. If the seam must be tightly sewn, then you should increase the tension while simultaneously lowering the sewing speed.

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#### Average values for hook thread tension

Type of sewing	Width of needle used/ Nm	Thread tension in grams
heavy	120-160	90
extra heavy	180-230	90

#### 6.4.2 Adjusting the needle thread tension



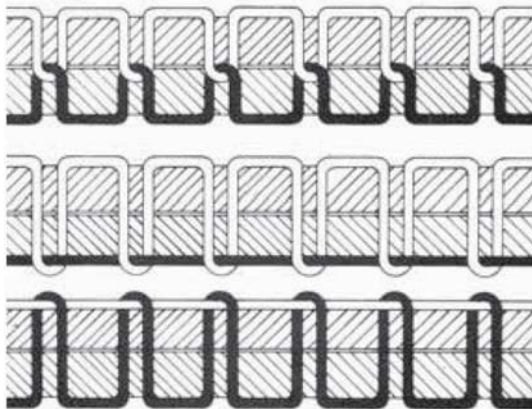
##### ***Adjusting the pre-tensioner (1)***

- When the main thread tensioner (3) and the supplementary tensioner (2) are open, there must still be a slight tension remaining on the needle thread. This residual tension is created by the pre-tensioner (1). The pre-tensioner (1) influences both the length of the cut needle thread and the starter thread for the next seam. (The pre-tensioner (1) is not deactivated with the sewing foot lift.)

##### ***Adjusting the thread tension (2) and (3)***

You can switch off the supplementary tensioner (2) by pressing the button (4). You can switch the supplementary tensioner (2) back on by pressing the button (4) again. The switchable supplementary tensioner (2) is helpful for quickly altering the needle thread tension. For example, it can be used to attain a good stitch draw and consistent stitch pattern when working with different textile materials within a single seam.

- Press the button (4).
- Make a seam on a few layers of materials and regulate the thread tension by means of the main tensioner (3) until the proper cross-over point is attained (see illustration).
- Extend the material layers and press button (4) to activate the supplementary tensioner (2). Control until the proper cross-over point (thread binding) has been attained.

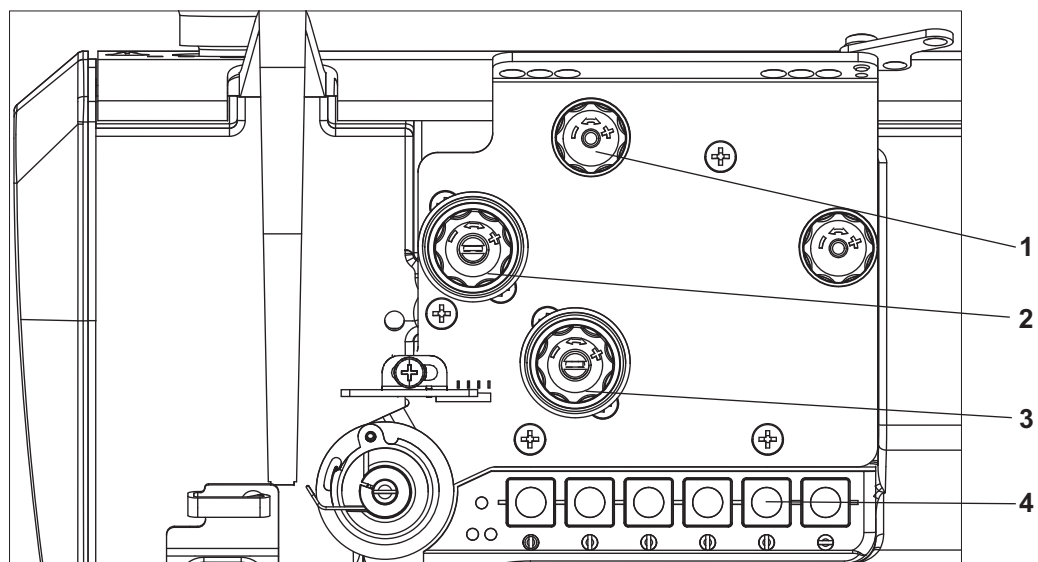


Correct thread interlacing in the center of the sewing material

Needle thread tension too weak  
or  
Hook thread tension too strong.

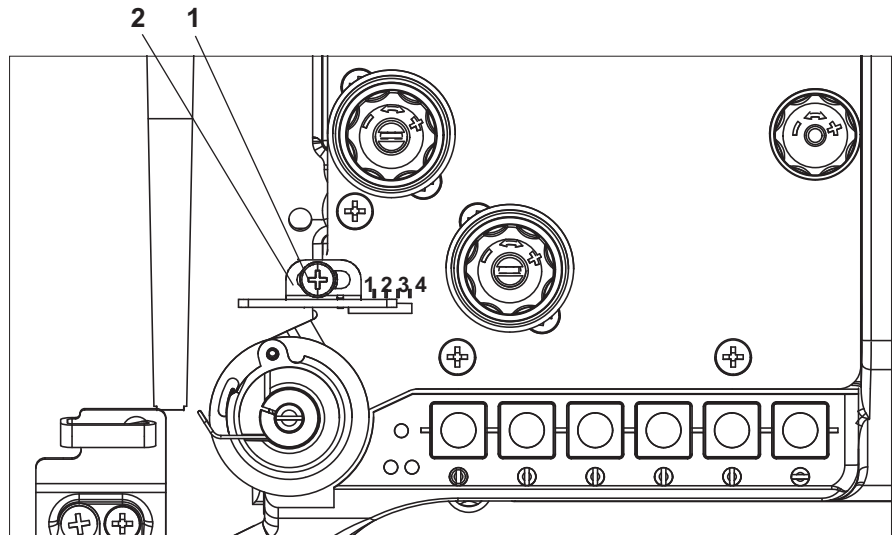
Needle thread tension too strong  
or  
Hook thread tension too weak.

## 6.5 Activating and deactivating the thread tension



- The pre-tensioner (1) should never be deactivated.
- The main tensioner (3) and supplementary tensioner (2) are switched off using an electro-pneumatic cylinder. Deactivation can result from:
  - Pressing the button (4) (see chapter 6.4.2).
  - Trimming cycle: during the cutting process, the main tensioner (3) and the supplementary tensioner (2) are temporarily turned off.

## 6.6 Adjusting the thread regulator



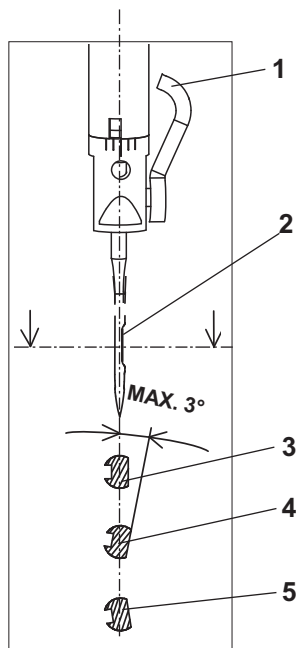
The thread regulator (2) is used to control the quantity of needle thread required by the stitch formation.

The best sewing results can only be ensured when using a precisely adjusted thread regulator.

- Loosen the screw (1). Move the thread regulator (2). Then tighten the screw (1).
- For most sewing jobs, the thread regulator is best positioned when the right edge of the regulator is aligned with the number 3.
- The setting at position 4 is appropriate when using a thin sewing material with a very short stitch.



## 6.7 Changing the needle for a single-needle machine



### Caution: danger of injury!

Turn the main switch off.

Change the needle only when the sewing machine is switched off.

- Move the lever (1) forward in order to loosen the screw which is used to fasten the needle.
- Pull the needle under and out from the needle bar. Insert a new needle with the needle scarf (2) positioned on the right, according to section cuts (3) or (4). Push in until the needle has reached the end stop located in the needle bar hole. The needle should not be positioned as shown in section cut (5).
- Then tighten the needle attachment screw and turn the lever back (1) to the rear.

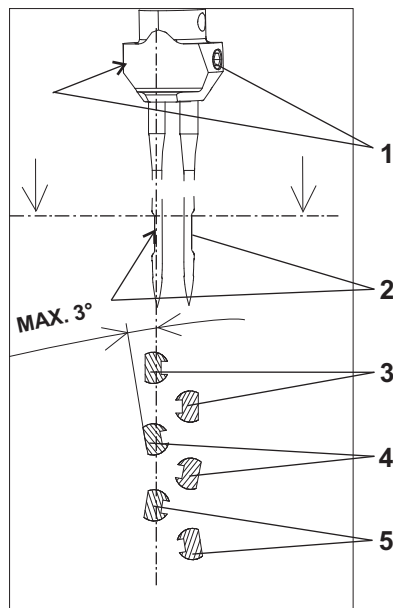


### CAUTION Danger of breakage!

A bad positioned needle can cause damage to the hook tip.

When changing to a needle with a different thickness, the clearance between the hook and the needle, as well as the position of the stitch plate in relation to the post bed, must both be adjusted accordingly (check the service instructions).

## 6.8 Changing the needle for double-needle machines



### Caution: danger of injury!

Only change the needle when the main tensioner is turned off and the motor has come to a stop.

- Loosen screws (1).
- Pull the needles under and out from the needle bar. Insert the new needles with the needle scarf (2) according to section cuts (3) or (4). Push in until the needles have reached the end stop located in the needle bar holes. The needles should not be positioned as shown in section cut (5).
- Tighten the needle attachment screws.

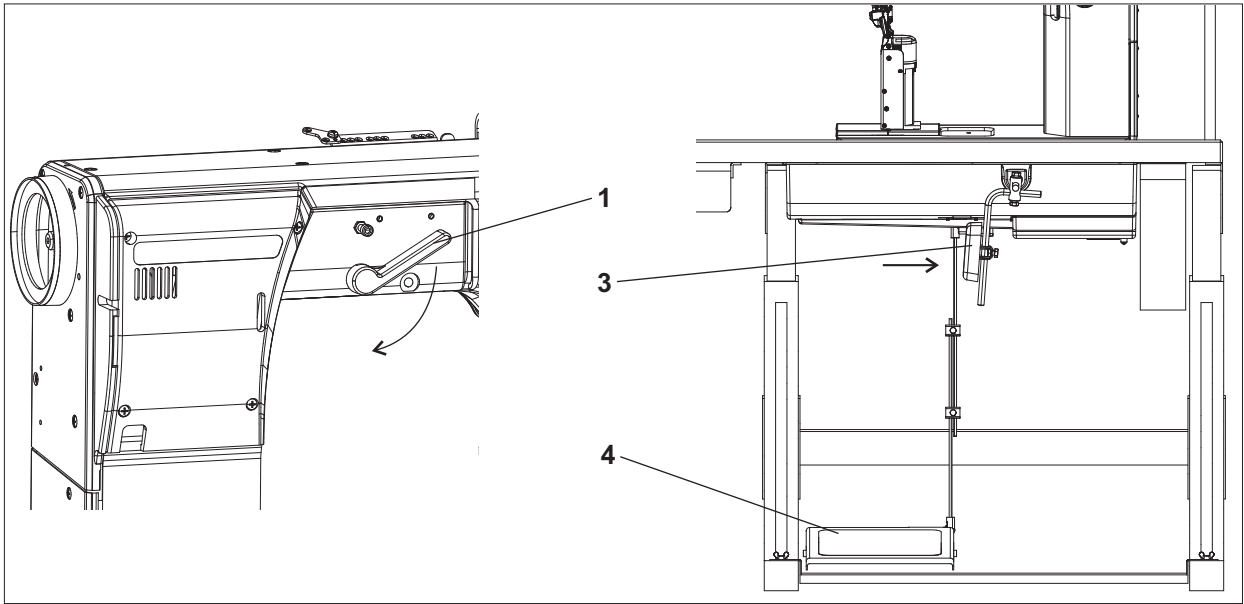


### CAUTION Danger of breakage!

Poorly positioned needles can cause damage to the hook tips.

When changing to needles with a different thickness, the clearance between the hook and the needle, as well as the position of the stitch plate in relation to the post bed, must both be adjusted accordingly (check the service instructions)

## 6.9 Lifting and folding the top roller



### ***Lifting the top roller with a hand lever***

- Lift the top roller by the lever turning (1) in the arrow direction to the stop (the top roller remains lifted, the lever (1) remains tilted).
- Lower the top roller by putting the lever (1) to the initial position, or by pressing the knee lever (3) and its subsequent release.
- After the top roller lifting with the hand lever, the machine may be started up (e.g. for hook thread winding).

### ***Top roller lifting with the knee lever***

- The top roller is lifted by pressing the lever (3); the top roller is lowered at the lever release.



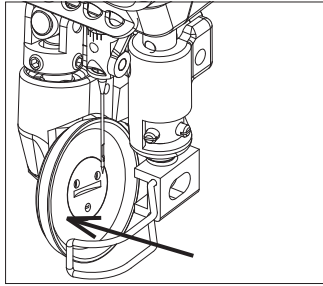
### **Caution!**

At the top roller lifting higher than 6 mm over the throat plate the machine may not operate, otherwise the needle bar with the needle holder hits the top roller, or the needle guides of the double needle machines.

### ***Top roller lifting with a pedal - automatically***

- The top roller lifting in the machines equipped with a positioning motor (drive) can be controlled by the pedal (4) treading in the position -1 (see chap. 6.13.1). The top roller is lifted to the upper dead point by means of pneumatic cylinder. After the pedal is released, the top roller is lowered.
- It is possible to pre-select the automatic top roller lifting at each machine stop without the necessity to tread the pedal in the position to the position -1.  
In this case, the top roller is lowered at the pedal treading in the position +1. After the finishing of the seam, the top roller remains lifted permanently (see chapter 8).

### Top roller folding

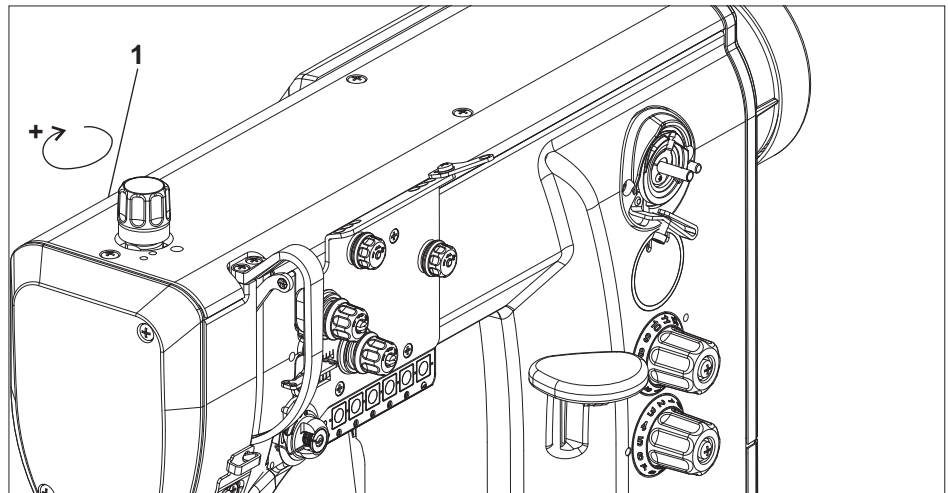


#### **Caution! Risk of injury!**

Top roller folding to be done at main switch off and standing motor.

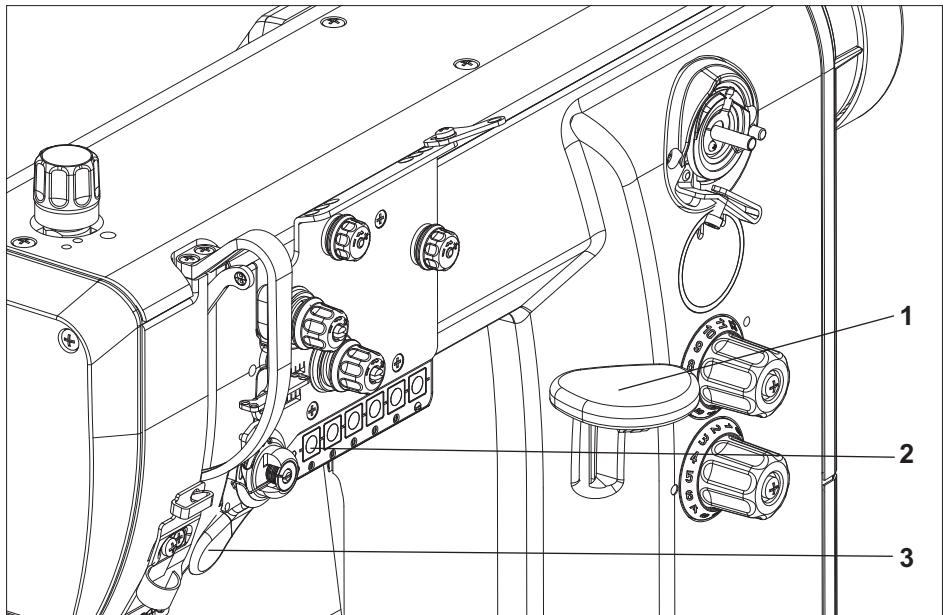
- Lift the top roller with the hand lever.
- Lift the top roller by pressing in the signed direction.

## **6.10 Sewing-foot pressure**



- The required sewing-foot (roller) pressure is set with the setting wheel (1).
- To increase the roller pressure = turn the setting wheel (1) clockwise.  
To decrease the roller pressure = turn the setting wheel (1) anti-clockwise.
- The roller pressure is to be as small as possible, but strong enough so that the top roller is not lifted by the needle friction in the material during the upward movement and that the feeding is reliable.
- The maximum top roller pressure is 100 N in the machine equipped with solenoid, and 160 N in the machine with the pneumatic cylinders.

## 6.11 Sewing backward (backtacking)



### ***Backtacking with the lever***

- Push the stitch regulator lever (1) downwards.  
The machine sews backward stitches as long as the stitch regulator lever (1) is being pushed.

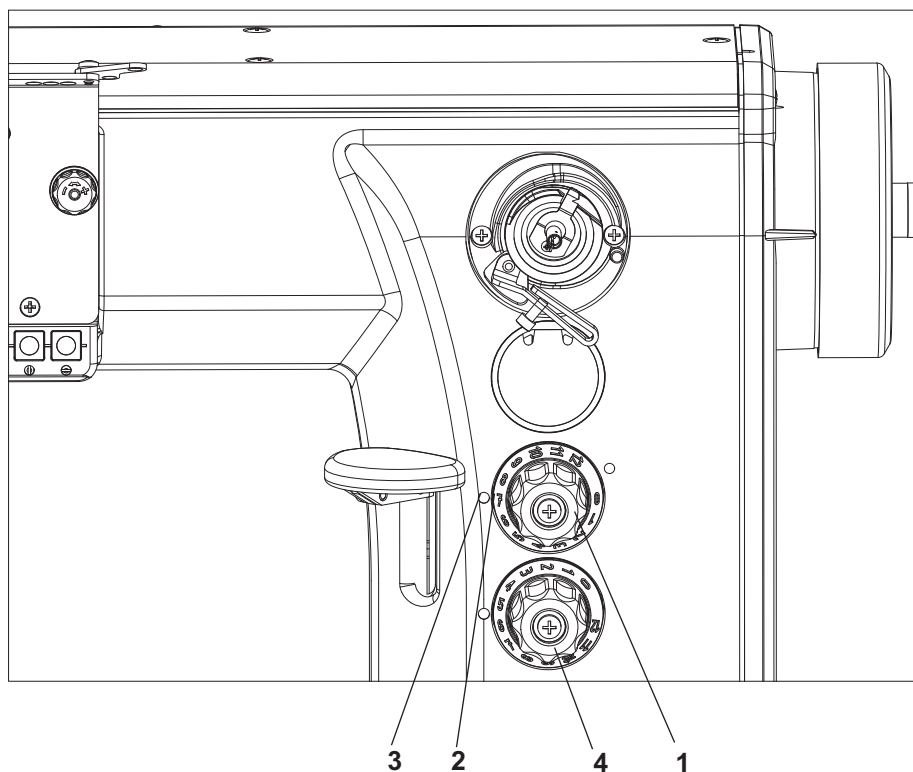
### ***Backtacking with the key***

- Press the key (2) or (3). The machine sews backward stitches as long as the key (2) or (3) is being pressed.

### ***Automatic backtacking (bartacking)***

In the machines equipped with the positioning motor it is possible to pre-select the backtacking by a pre-selected backstitches number both at the beginning and at the seam end. At the seam beginning (after the preceding thread trimming) after the pedal treading forwards the machine sews the pre-selected bartack entirely automatically. The same at the seam end after the pedal treading in the position –2 the machine sews the pre-selected end bartack and then trims the threads (see chapter 8).

## 6.12 Adjusting the stitch length



The special sewing machine 838 is equipped with two setting wheels. This allows you to sew with two different stitch lengths which can be activated during the sewing process by pressing a button.

The stitch lengths are set using the two setting wheels (1) and (4) found on the machine arm.

- Set the larger stitch length with the upper setting wheel (1). Turn the setting wheel until the desired number (the stitch length in mm) is marked (3).
- Set the smaller stitch length with the lower setting wheel (4). Turn the setting wheel until the desired number (the stitch length in mm) is marked (3).
- Stitch lengths are equal for both forward and reverse sewing.



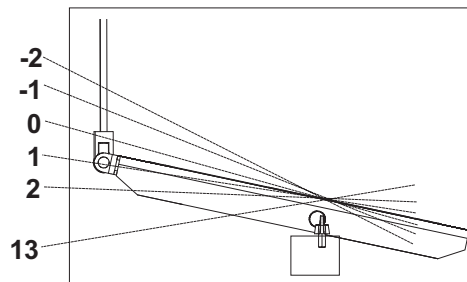
### **CAUTION Danger of breakage!**

Make sure that the stitch length set with the lower setting wheel (4) is not larger as the stitch length set by the upper setting wheel (1).

**Note:** In order to facilitate the process of adjusting the stitch lengths, the button (4) should be used to fix the stitch lengths so that they do not shift 6.13.2 (see chap. 6.13.2).

## 6.13 Controlling the machine equipped with the positioning motor

### 6.14.1 With the pedal



The pedal position is detected by a button with 16 different levels. Their meanings are listed in the table below:

Pedal position	Pedal movement	Meaning
-2	Fully backwards	Command for cutting the thread (end of seam)
-1	Half backwards	Command for raising the sewing foot
0	Neutral rest position	Refer to comment below
1	Slightly forwards	Command for lowering the sewing foot
2	More forwards	Sew with minimal speed (first level)
3	More forwards	Sew with more speed (second level)
:	:	:
13	Entirely forwards	Sew with maximal speed (twelfth level)

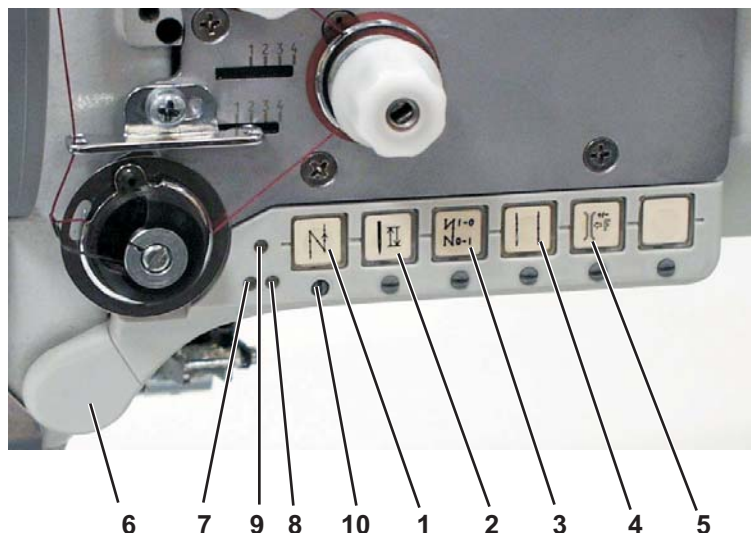
#### Comment:

The following functions can be programmed to correspond with the rest position:

- needle position (down/up) and sewing foot position (down/up) when stop in seam.
- sewing foot position (up/down) after end of seam. (Pedal fully backwards, then in rest position)

### 6.13.2 With the key panel

The function of the keys on the keypad depends on the type of the drive used and on the sewing machine equipment. Generally, the functions of the keys and the related symbols (pictograms) under the keys may be changed, but the particular drive must support the required function. Detailed information about the function setting is included in the Operating manual and Parameter sheets of the DAC/Efka drives.



The below table shows an example of typical factory-arranged key pads:

Key	Function
1	<b>Manual sewing backward</b> The machine sews backward stitches as long as the key is being pushed.
2	<b>Needle positioning to the upper or lower position</b> By parameter <b>F-242</b> (DA321) the following key functions can be defined: 1 = needle up/down 2 = needle up 3 = one stitch (factory setting is 1) The key function for a DAC drive is defined by parameter <b>t5122</b> .
3	<b>Calling out/cancellation of the start or end bartack</b> If the start and end bartack are switched on, the following bartack is switched off by pressing the pushbutton. If the start and end bartack are switched off, the following bartack is switched on by pressing the pushbutton.
4	<b>Switching the stitch length</b> The function of the key can be defined via parameter <b>F-250</b> (DA321). 1 = by pressing the key, the stitch length can be switched between two values set in advance 4 = by pressing the key, the stitch length can be changed in a smaller value, a stitch will be sewn and the machine will be switched over to its original (greater) stitch length. The key function for a DAC drive is defined by parameter <b>t5123</b> .
5	<b>Switching on/off the supplementary thread tension</b> (see chap. 6.5) If the key is lit up: Supplementary thread tension is switched on (tension discs closed). If the key is not lit up: Supplementary thread tension is switched off (tension discs closed).



LED	Function
<b>7 and 8</b>	Display empty bobbin for residual thread monitor (left/right bobbin)
<b>9</b>	LED display "Power On"
Example for adjusting a button (for example, 10):	<p>By adjusting the screw 10 (located under button 1), you can assign the function of button 1 to the lever (6).</p> <ul style="list-style-type: none"> <li>- Select the function (for example, 1 = sew backwards manually)</li> <li>- Turn screw 10 (located under button 1) clockwise 90° (the slot is then positioned vertically).</li> </ul> <p>The function can now be invoked by both button 1 and the lever (6).</p>

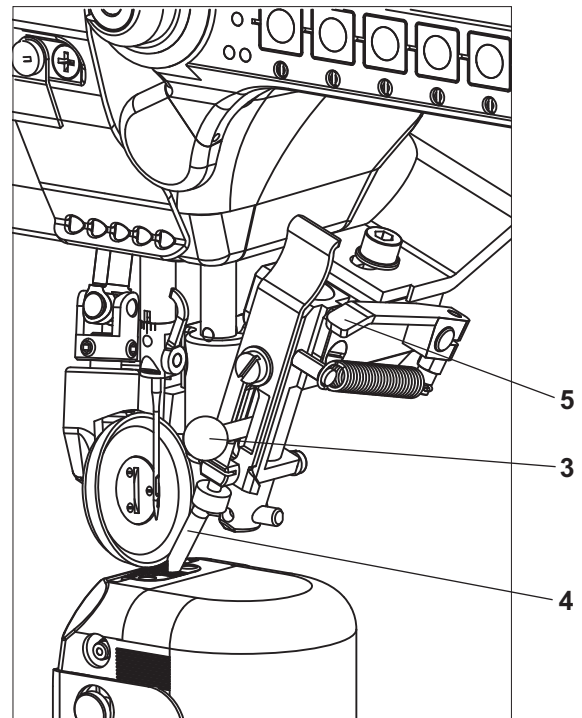
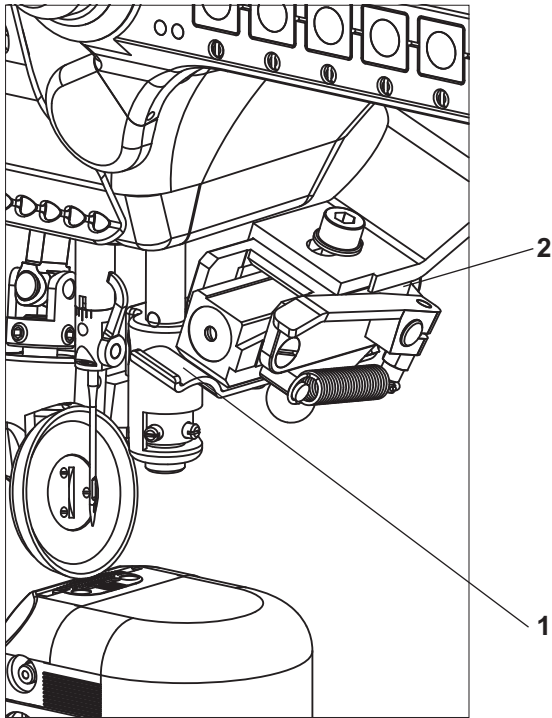


### Caution!

Be sure to deactivate the existing function before changing the function of lever 6.

## 6.14 Material guide

### 6.14.1 Switching on/off



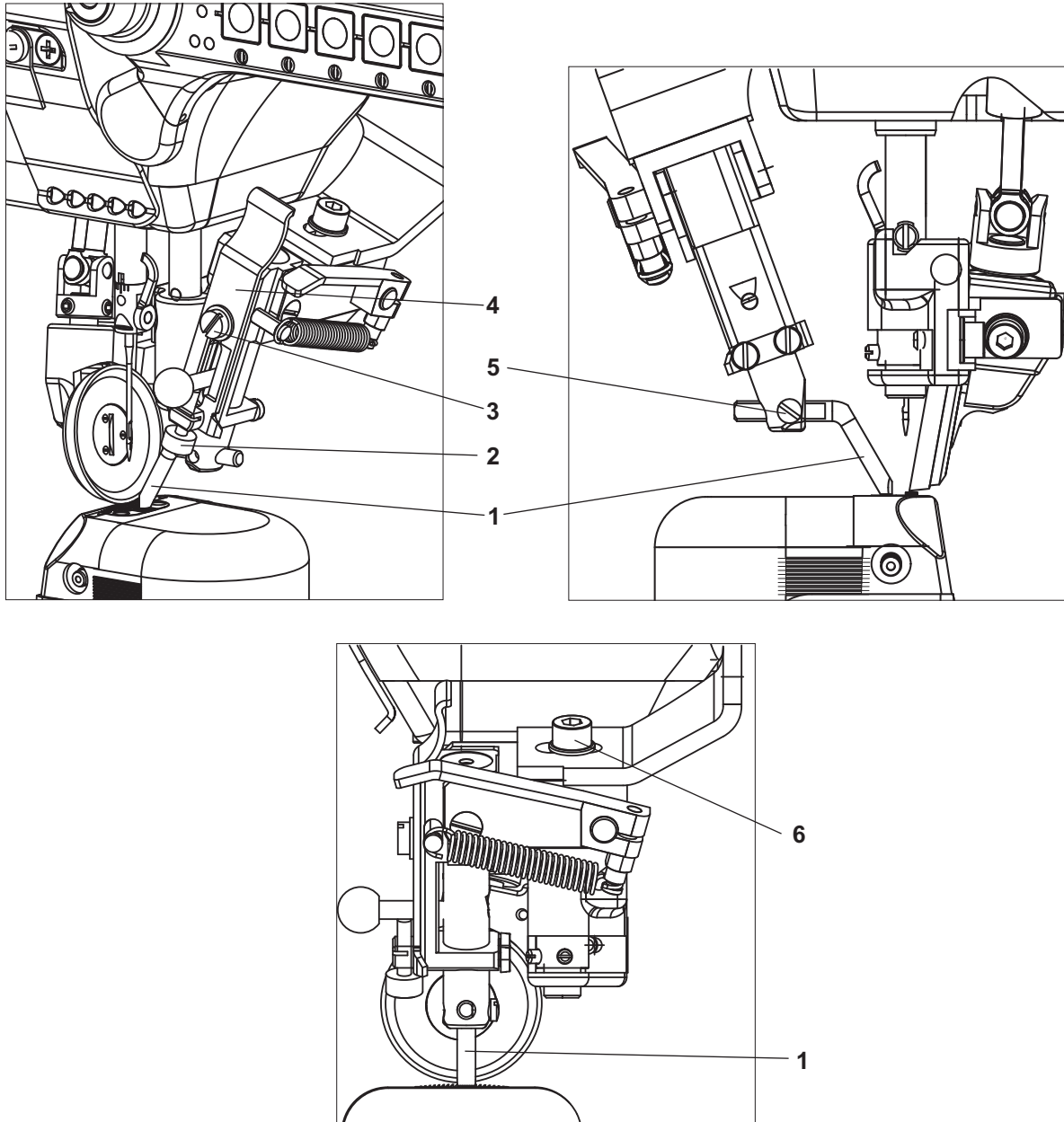
#### Switch on

- Put the guide in a working position by pushing the lever (1) upwards or by pulling the guide body (2) downwards.

#### Switch off

- Shift the ball (3) upwards and to the left. The guide element (4) lifts in a setting position. When returning the guide element (4) in the working position, proceed in a reverse order.
- Or push the lever (5) downwards and the spring will turn the whole guide in the setting position.

### 6.14.2 Material guide adjustment



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- Adjust the guide element (1) height with a bolt (2). The guide element is lifted, when tightening the bolt, and vice versa. If the bolt (2) strikes the end of the adjustment range, the latter can be widened by the bolt (3), loosening the plate (4) shifting to a different position and its repeated fixing.
- Adjust the lateral position of the guide element (1) by the bolt loosening (5), the element shifting, and its repeated fixing.
- Adjust the guide position in the sewing direction after loosening the bolt (6). The rear edge of the guide element (1) should be located in the needle hole center. After adjustment, tighten the bolt (6).

## 7. Overview of positioning drives

### 7.1 DAC basic/classic

DAC basic/classic control boxes are operated by means of the control panel OP1000, which is a part of the motor equipment. The difference between the basic and classic types of control boxes consists in the number of connectable peripherals. The software is updated by means of a separate DAC Dongle interface.

The control box can operate the minimotors M1-50 (500 W), M1-75 (750 W), or a direct drive installed on the sewing machine main shaft. For the variant with the minimotor it is possible to choose the installation on the sewing machine base plate and a toothed belt transmission, or the minimotor installation under the table top and a V-belt transmission. If the gear ratio is different from 1:1, an additional proximity switch should be used.

A detailed description of the control box is included in the "DAC basic/classic Operating manual" supplied by the motor manufacturer together with the sewing machine (see also [www.duerkopp-adler.com](http://www.duerkopp-adler.com)).

### 7.2 Efka DA321G/DC1550

The DA321G control box includes all necessary control elements for the function switching and the parameter setting. The operation is possible even without the control panel; then the programmed sewing cannot be used. The software is updated by means of a separate USB interface.

Control panels V810 and V820, which are available as optional equipment, can be connected to the control box. The sewing can be programmed by means of the control panel V820.

The minimotor DC1550 is joined with the sewing machine with a V-belt; it is possible to use a gear to achieve a higher torque (see Assembly instructions, Setting of positioning motor Efka). Then an additional proximity switch should be used.

A detailed description of the control system is included in the Operating manual by the manufacturer "Efka DA321G-DC1550" drive supplied together with the sewing machine (see also [www.efka.net](http://www.efka.net)).

## 8. Sewing with machine equipped with positioning motor

### 8.1 Machine automatic functions

The machine functions listed in the table below are dependent on the following factors which occur during the sewing process:

- Pre-selected setting
- Pedal position (according to the selection of the machine operation)
- The particular procedure in the seam preparation

Automatic function	Pre-selected setting
Needle positioning	<ul style="list-style-type: none"><li>• Needle is down when machine stops in the seam</li><li>• Needle is up when machine stops in the seam</li></ul> Note: After the seam end*, the machine always stops with the needle up.
Tacking	<ul style="list-style-type: none"><li>• Normal</li><li>• Decorative**</li></ul>
Start bartack	<ul style="list-style-type: none"><li>• Simple</li><li>• Double</li><li>• Stitch count of normal forward tacking</li><li>• Stitch count of decorative forward tacking</li><li>• Stitch count of normal backwards tacking</li><li>• Stitch count of decorative backwards tacking</li></ul>
Final bartack	<ul style="list-style-type: none"><li>• Simple</li><li>• Double</li><li>• Stitch count of normal backwards tacking</li><li>• Stitch count of decorative backwards tacking</li><li>• Stitch count of normal forward tacking</li><li>• Stitch count of decorative forward tacking</li></ul>
Thread trimming	<ul style="list-style-type: none"><li>• Turned on</li><li>• Turned off</li></ul>
Automatic sewing foot lift	<ul style="list-style-type: none"><li>• Lower sewing foot when stopped in seam</li><li>• Raise sewing foot when stopped in seam</li></ul>

\* For pedal position -2, the seam is ended. If the thread trimmer is activated, then after end of function: thread trimmer on.

\*\* The decorative bartack is a special case. This is because, from the beginning to the end of the tacking, the needle is in the same stitch insertion point as the previous stitch seam. When the sewing direction changes, the machine stands still for a moment

Pre-selections of automatic functions are described in the attached manual supplied by the drive manufacturer.

Every drive manufacturer supplies, together with the drive, a parameter sheet, by means of which other automatic functions can be set.

The parameter classification system is different with every drive manufacturer. To set the drive functions correctly, always study the manual supplied by the particular drive manufacturer. All instruction manuals and parameter sheets are available at the manufacturers' websites ([www.efka.net](http://www.efka.net), [www.duerkopp-adler.com](http://www.duerkopp-adler.com) etc.).

## 8.2 Example of machine operation at sewing

### Pre-selected setting:

- Needle is down when machine stops in the seam
- Normal tacking
- Start bartack is doubled
- Final bartack is doubled
- Thread trimming is turned on
- Lowered sewing foot when stopped in seam
- Raised sewing foot at seam end

Operation	Sewing step
	The machine is at standstill. The needle is up. The sewing foot is raised.
Load the workpiece.	
Press pedal to position +1.	The sewing foot goes down
Let up on pedal to position 0.	The sewing foot goes up
Correct the position of the workpiece.	
Press pedal to position +1.	The sewing foot goes down
Press pedal to position +3.	Sewing the normal double tacking (tack rotary speed is defined by manufacturer) and subsequent sewing at speed level +3.
Let up on pedal to position 0.	Machine stops with needle down.
Press pedal to position -1.	The sewing foot goes up
Turn workpiece in the needle.	
Press pedal to position +5.	Sewing foot lowers and you can sew at the speed level as determined by the pedal.
Press pedal to position -2.	Lower rotary speed. Sewing the normal double tacking. Trim thread and machine is at rest with the needle up. The sewing foot raises.
Let up on pedal.	The sewing foot remains raised.
Take out the workpiece.	

## 9. Maintenance

### 9.1 Cleaning and checking



#### Caution! Risk of injury!

Turn off the main switch.  
Maintenance may only be carried out with the machine switched off!



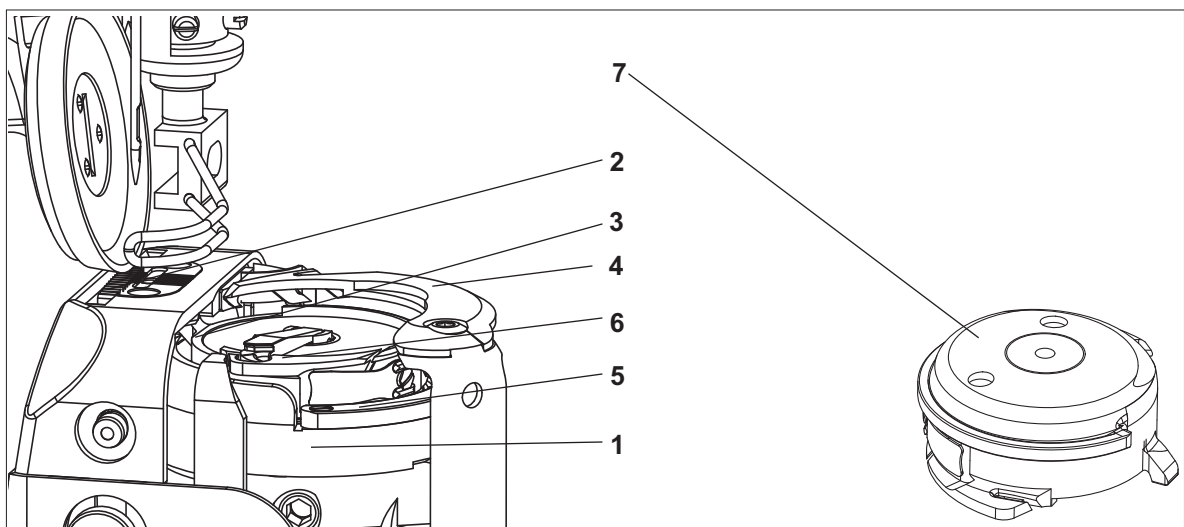
#### Caution!

The lacquered surfaces don't clear with organic solvent.  
For the cleaning are suitable detergents based on alcoholic.

Maintenance work must be carried out no less frequently than at the intervals given in the tables (see "operating hours" column).

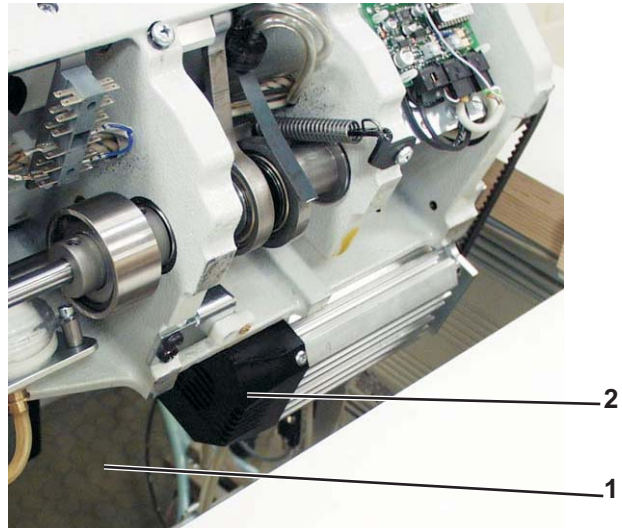
Maintenance intervals may need to be shorter when processing heavy-shedding materials.

A clean machine is a trouble-free machine.



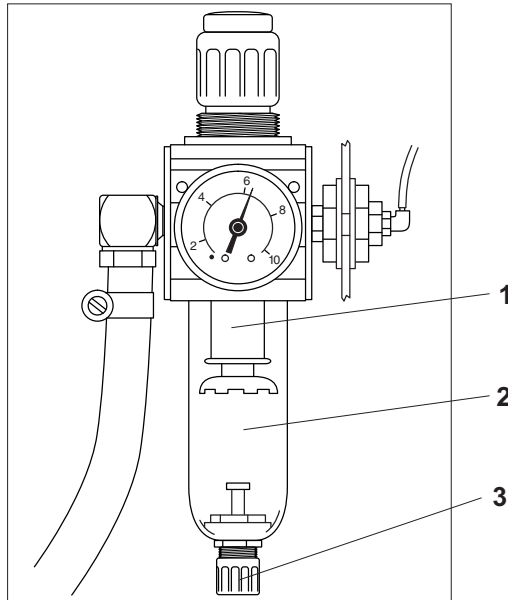
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Maintenance work to perform	Explanation	Operating interval (hours)
<b>Machine head</b>  - Remove sewing dust and residual thread. (for example, with compressed air)	Points to be particularly well cleaned: - Area below and around the stitch plate, feed dog (2), and top roller. - Area around the hook (7) - Bobbin housing (1) - Thread trimmer - Area around the needle  <b>CAUTION!</b> Be sure to hold the compressed air cleaner so that no sewing dust is blown into the oil collector.	8
- Remove sewing dust and residual thread. (for, example with compressed air)	Take off stitch plate, thread trim blade (4) and hook plunger ring (6). Remove the bobbin housing (5) from the hook. Clean the inner area of the hook. Clean the bobbin housing. In particular, look for residual adhesive on the surface (1).	20
- Check the hook.	Check the play on the track between bobbin housing (5) and the hook (7).	500



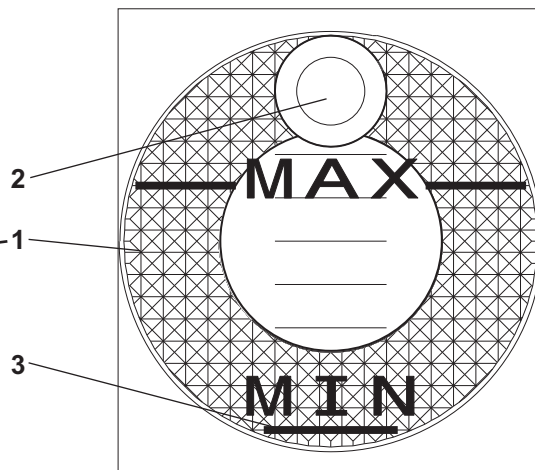
Maintenance work to be carried out	Explanation	Operating hours
- Clean the oil sump	Clean the oil sump (1) of dirt and contaminated oil. (you may use a special vacuum cleaner.)	20
- Clean fan grille	Remove lint and pieces of thread from air-intake openings (2) (e.g. with an air blow gun).	20





Maintenance work to be carried out	Explanation	Operating hours
<b>Pneumatic system</b>		
- Check water level in pressure regulator.	<p>The water level must not rise to the level of the filter cartridge (1).</p> <p>- After unscrewing the drain screw (3), the water under pressure will flow out of the water separator (2).</p>	40
- Clean filter cartridge.	<p>Dirt and condensation are separated out by the filter cartridge (1).</p> <p>- Disconnect the machine from the compressed-air supply.</p> <p>- Unscrew the drain screw (3). There must be no pressure in the machine's pneumatic system.</p> <p>- Unscrew water separator (2).</p> <p>- Unscrew filter cartridge (1). Wash the filter shell and cartridge with cleaning fluid (not solvent) and blast clean.</p> <p>- Re-assemble the maintenance unit.</p>	500
- Check the system for leaks.		500

## 9.2 Lubrication



### Caution! Risk of injury!

Oil can cause skin eruptions.  
Avoid protracted contact with the skin.  
In the event of contact, thoroughly wash the affected area.



### Caution!

The handling and disposal of mineral oils is subject to legal regulation.  
Deliver used oil to an authorised collection point.  
Protect your environment.  
Take care not to spill oil.

To lubricate the special sewing machine use only **DA-10** lubricating oil or an equivalent oil of the following specification:

- Viscosity at 40° C: 10 mm<sub>2</sub>/s
- Flashpoint: 150° C

**DA-10** is available from **DÜRKOPP ADLER AG** retail outlets under the following part numbers:

250-ml container:	9047 000011
1-litre container:	9047 000012
2-litre container:	9047 000013
5-litre container:	9047 000014

All points of the sewing machine head lubricated with oil are supplied from the central tank (1).

- If the oil volume drops to the level (3), supply the oil through the hole (2) to the "MAX" level.
- Check the oil level every day!



### Caution! Risk of failure!

The oil may be supplied only into the central tank or in the hook path.  
The other points must not be lubricated separately, so that the oil does not penetrate to the spots, which must not be lubricated.

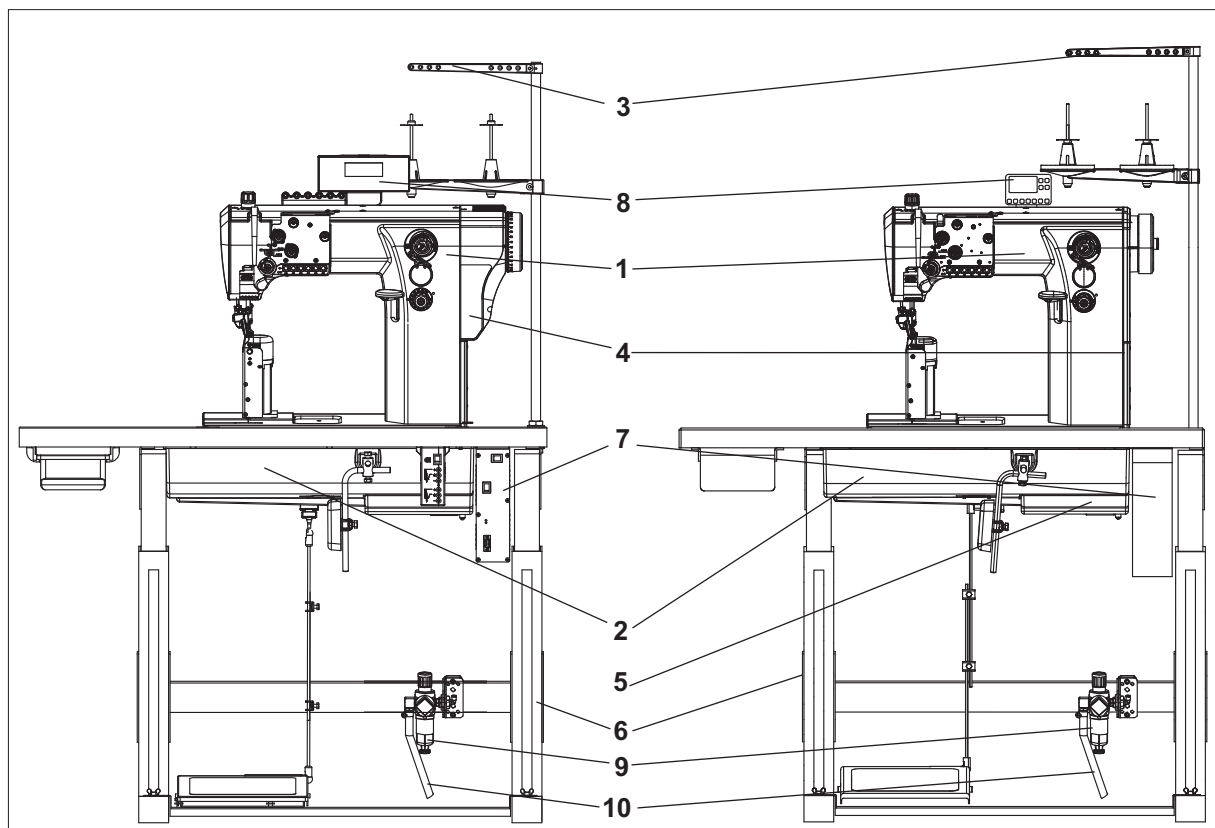
## Part 2: Assembly Instructions Class 838 - Original Instructions

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Notes:

# 1 Scope of delivery

The purchaser can order a complete machine, or some components only. Prior to setting up, please check that all the required parts are present. This description refers to a special sewing machine, of which all individual components can completely be delivered by **Dürkopp Adler AG**. A complete supply of the disassembled machine depends on the selected drive and consists of the following components:



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Machine with the direct drive	Machine with the minimotor
Obligatory components:	
Machine head with drive (1)	Machine head (1)
Accessories (includes oil tank (2), yarn stand (3), tools and other items)	Accessories (includes oil tank (2), yarn stand (3), tools and other items)
Set of parts for motor (includes guard (4), control unit (7), control panel (8) and other parts)	Set of parts with motor (includes minimotor (5), control unit (7), belt guard (4) and other parts)
Optional components:	
Stand (6)	Stand (6)
	Control panel (8)
Maintenance unit (9)*	Maintenance unit (9)*
Pneumatic connection package (10)*	Pneumatic connection package (10)*

\*only for subclasses with pneumatics

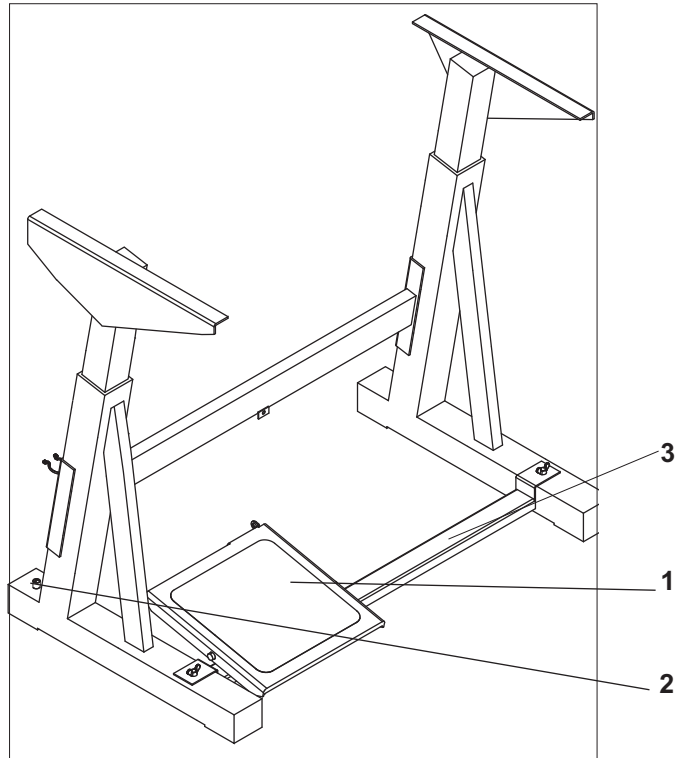
## 2 Transport packing of assembled machine

If the machine is supplied in assembled condition, the following transport packing must be removed:

- Safety straps and wooden battens on the machine head and stand.

## 3 Assembling the stand

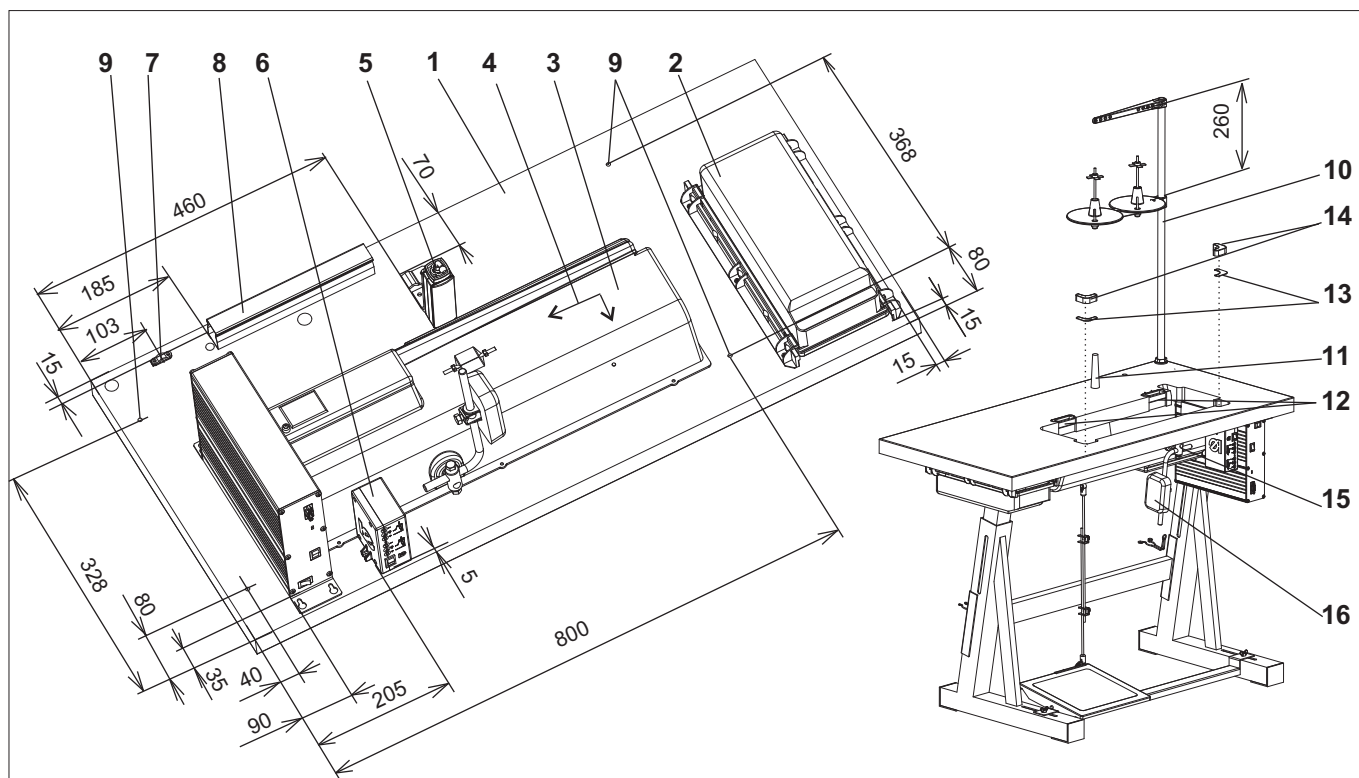
### 3.1 Assembling the stand components



- Mount the frame according to the picture. Mount the pedal (1) provisionally to the cross strut frame (3). Its position will be adjusted after the whole machine is complete.
- Adjust the screw (2) so that the stand is stable.

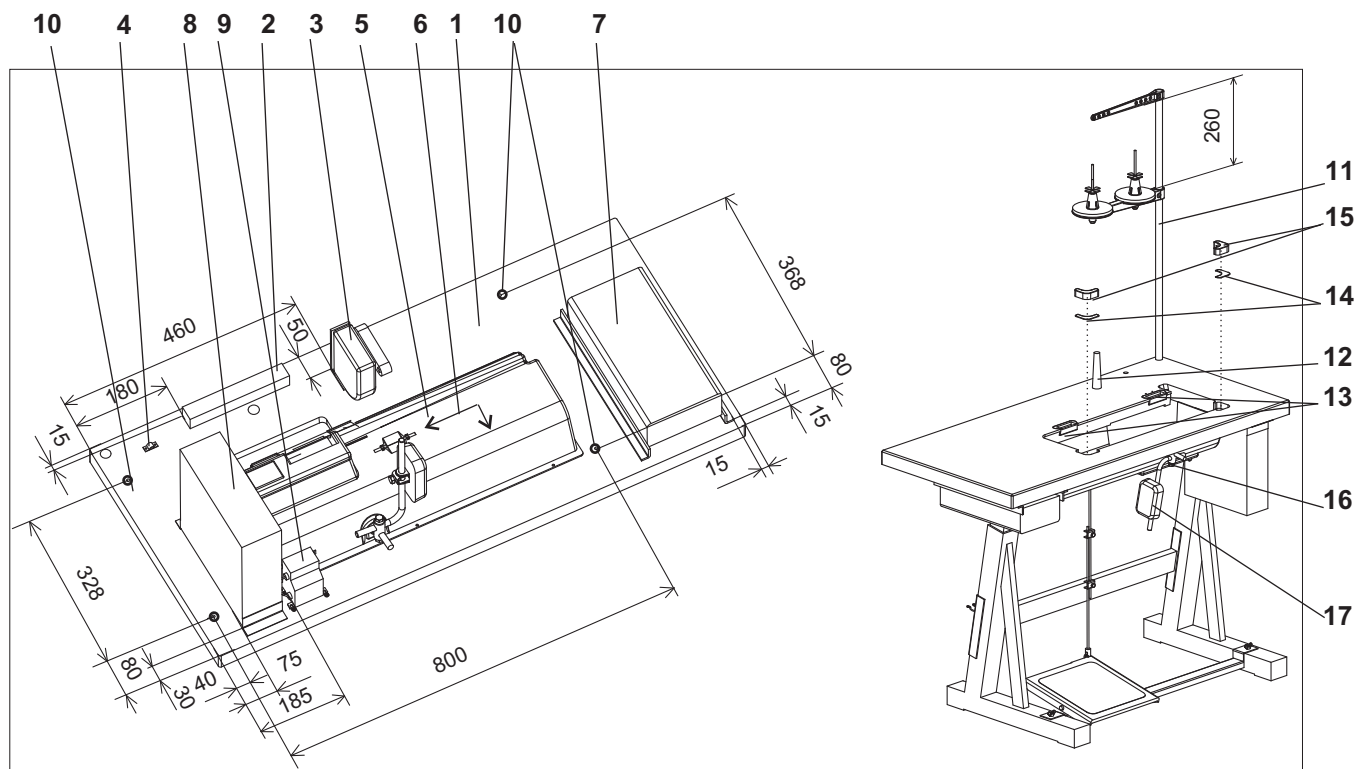
## 3.2 Assembling the table top

### 3.2.1 Assembling the table top in the machine with the direct drive



- Turn the table top (1) upside down.
- Screw the drawer (2).
- Put the oil sump (3) on the recess in the table top and slide it in the arrow direction (4) till the relevant protrusions of the oil sump are seated on the recess contour. Screw the oil sump.
- Screw the pedal position sensor (5).
- Screw the sewing lamp transformer (6) – if there is any.
- Screw the cable clip (7).
- Screw the electric cable channel (8).
- Mount electric cables according to par. 5 of this instruction.
- Pre-bore the holes (9) with a borer  $\varnothing$  3 mm. Attach the table plate (1) to the stand with woodscrews. Then turn the stand to normal position.
- Insert the yarn stand (10) in the hole in the table plate and secure it with the nuts and washers. Fit and align the yarn reel and unwinding holders.
- Insert the machine head support pin (11).
- Place the hinge bottoms (12) for the machine head into the cutout of the table plate (1) and tighten the screws.
- Insert the wedges (13) in the recess corners.
- Insert the rubber cushions (14).
- Remove the blinds from the bushing (15).
- Remove the knee lever (16) and guide through the opening, as shown in the illustration.

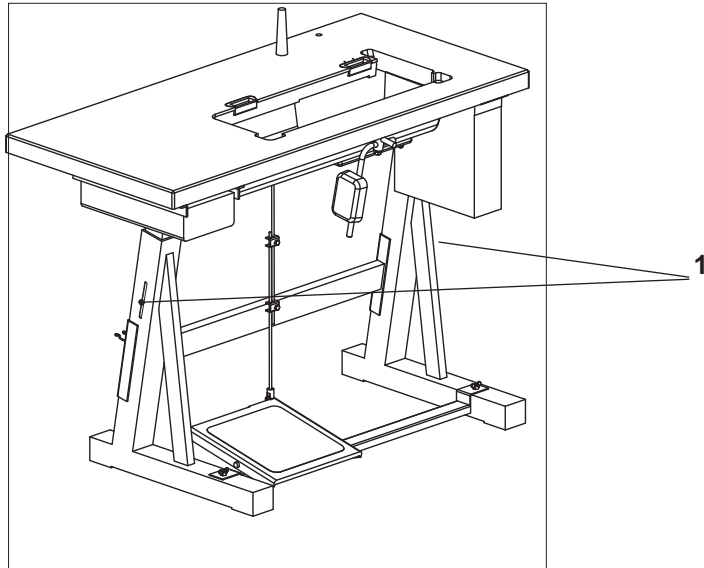
### 3.2.2 Assembling the table top with the minimotor



- Turn the table top (1) upside down.
- Screw the electric cable channel (2).
- Screw the pedal position sensor (3).
- Screw the electric cable clip (4).
- Put the oil sump on (5) and slide it in the arrow direction (6) till the relevant protrusions of the oil sump are seated on the recess contour. Screw the oil sump.
- Screw the drawer (7).
- Pre-bore the holes for wood screws and screw the drive control box (8).
- Screw the sewing lamp transformer (9) – if there is any.
- Mount electric cables according to the instructions in chapter 5.
- Pre-bore the holes (9) with a borer  $\varnothing 3$  mm. Attach the table plate (1) to the stand with woodscrews. Then turn the stand to normal position.
- Insert the yarn stand (11) in the hole in the table plate and secure it with the nuts and washers. Fit and align the yarn reel and unwinding holders.
- Insert the machine head support pin (12).
- Place the hinge bottoms (13) for the machine head into the cutout of the table plate (1) and tighten the screws.
- Insert the wedges (14) in the recess corners.
- Insert the rubber cushions (15).
- Remove the blind from the bushing (16).
- Remove the knee lever (17) and guide through the opening, as shown in the illustration.



### 3.3 Setting the working height



- The stand height is adjustable between 750 and 900 mm.
- Loosen the screws (1).
- Set the required table top height and make sure that it is identical on both sides. To do that, use the scale on the stand feet. Set the stand height so that it corresponds with the operator's body proportions.
- Tighten both screws (1).

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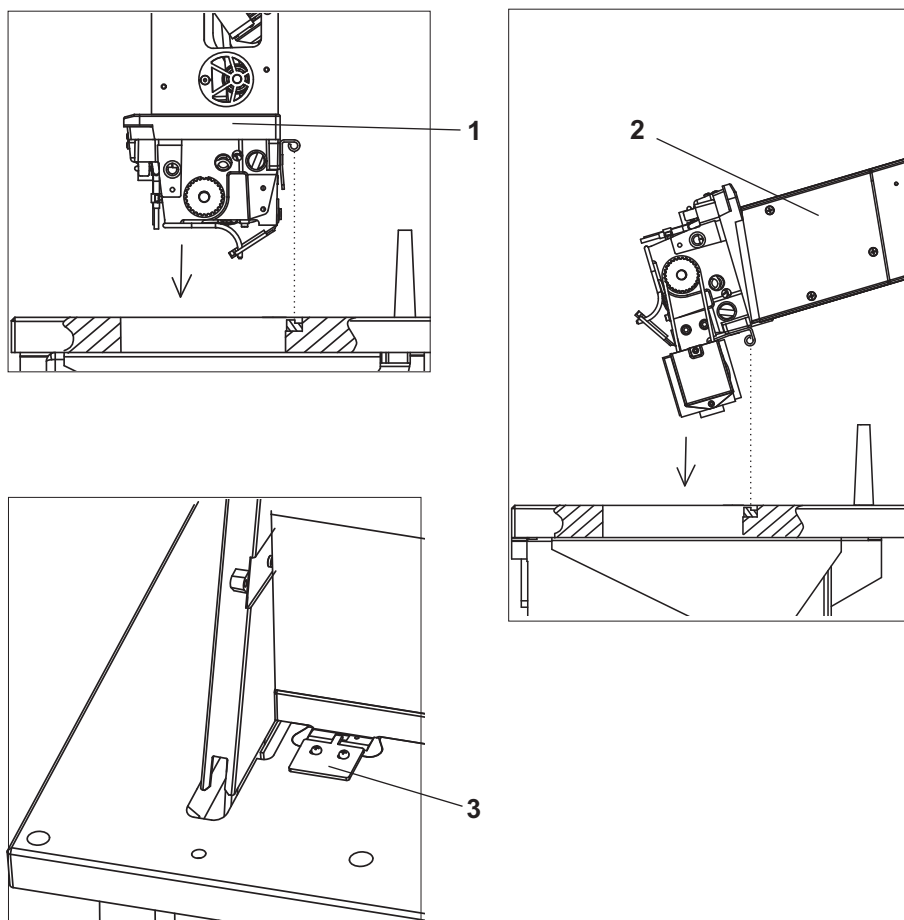


#### **Caution! Risk of injury!**

Failure to adjust the stand height to the operator's body proportions can cause damage to the operator's locomotion system.

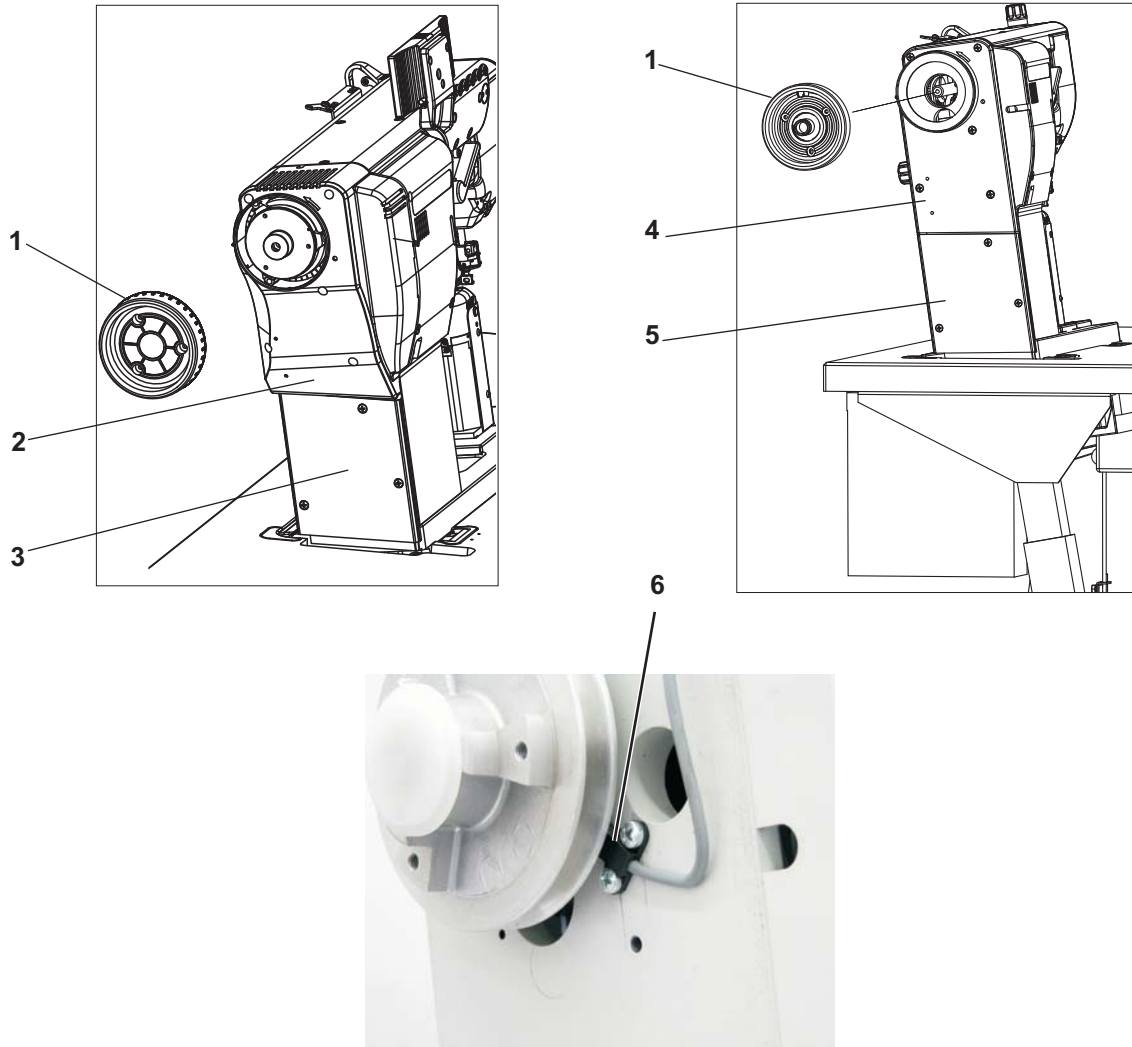
## 4 Assembling the machine head

### 4.1 Fitting the machine head



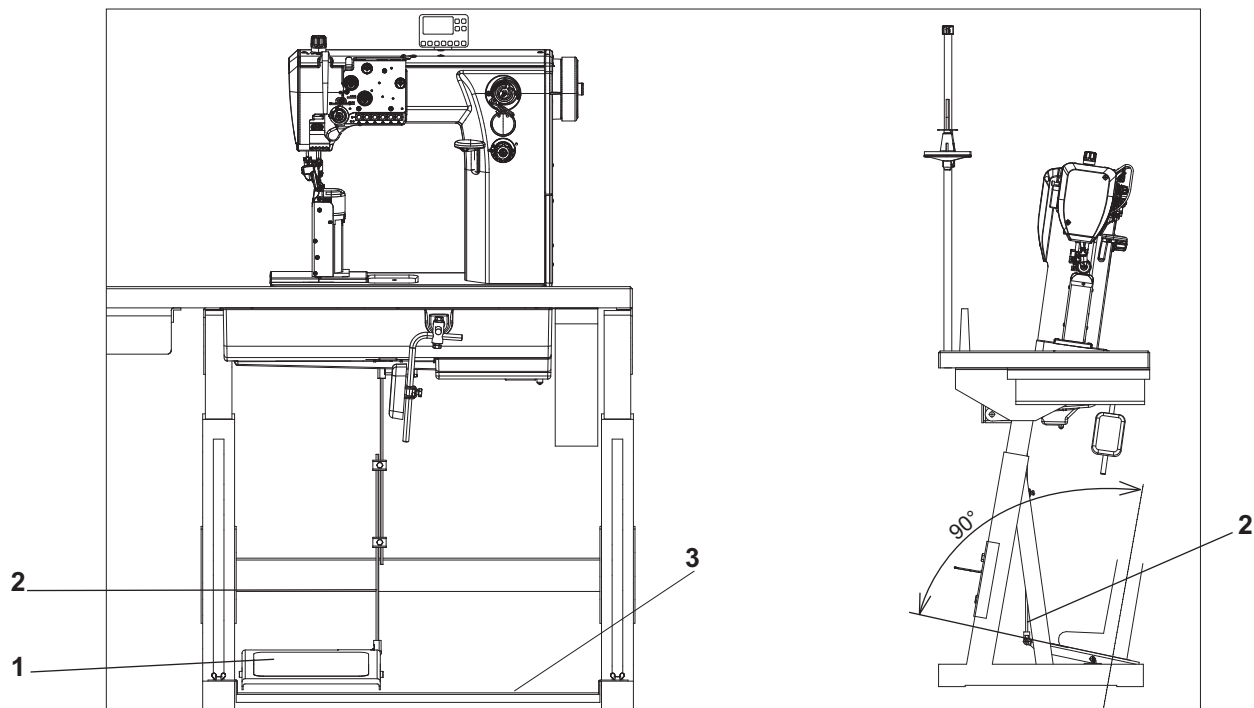
- If the sewing machine is equipped with a direct drive, insert the machine head (1) vertically in the recess in the table top.
- If the sewing machine is equipped with a minimotor, tilt the machine head (2) and insert it in the table top recess.
- After the head insertion, screw the locking plate (3) immediately to secure the machine head against falling out at its tilting. The locking plate is part of the machine head accessories.

## 4.2 Fitting the side guards



- Disassembly the hand wheel (1).
- In the machines with the direct drive mount the guards (2) and (3) on the machine head (the guard is included in of the motor part set).
- In the machines with the motor on the sewing head and with 1,55:1 toothed belt driving gear, mount the proximity switch (6). It is included in the “kit for motor”.
- In the all machines with the motor on the sewing head mount the guards (4) and (5) on the machine head (the guard is included in of the motor part set).
- Mount the hand wheel (1). Doing this, observe the correct angle position: if the needle is in the upper dead point, there should be the 0° value on the hand wheel scale.

### 4.3 Adjustment of pedal position



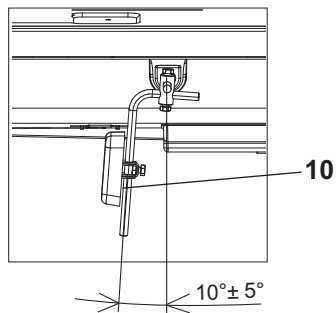
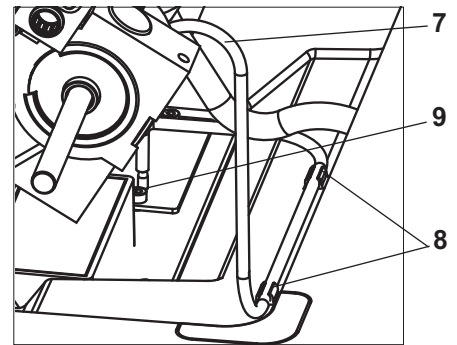
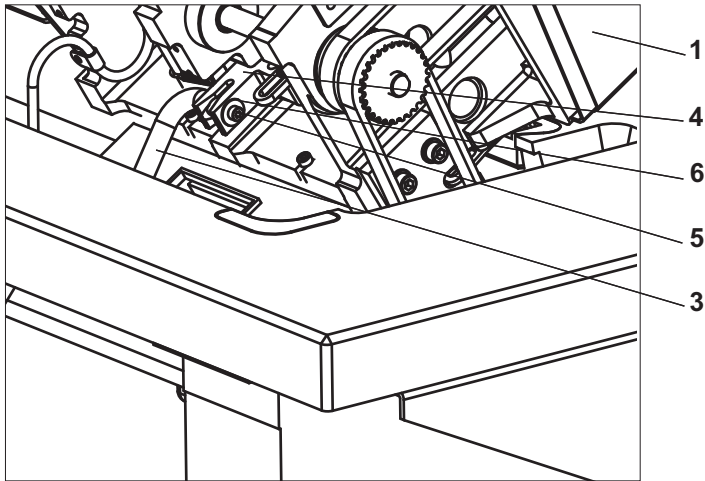
- For ergonomic reasons align the pedal (1) as follows:  
The center of the pedal must be approximately under the needle.  
There are slots in the cross strut frame (3) to help align pedal.
- Adjust the draw rod (2) so that the foot axis is perpendicular to the pedal surface.



#### **Caution! Risk of injury!**

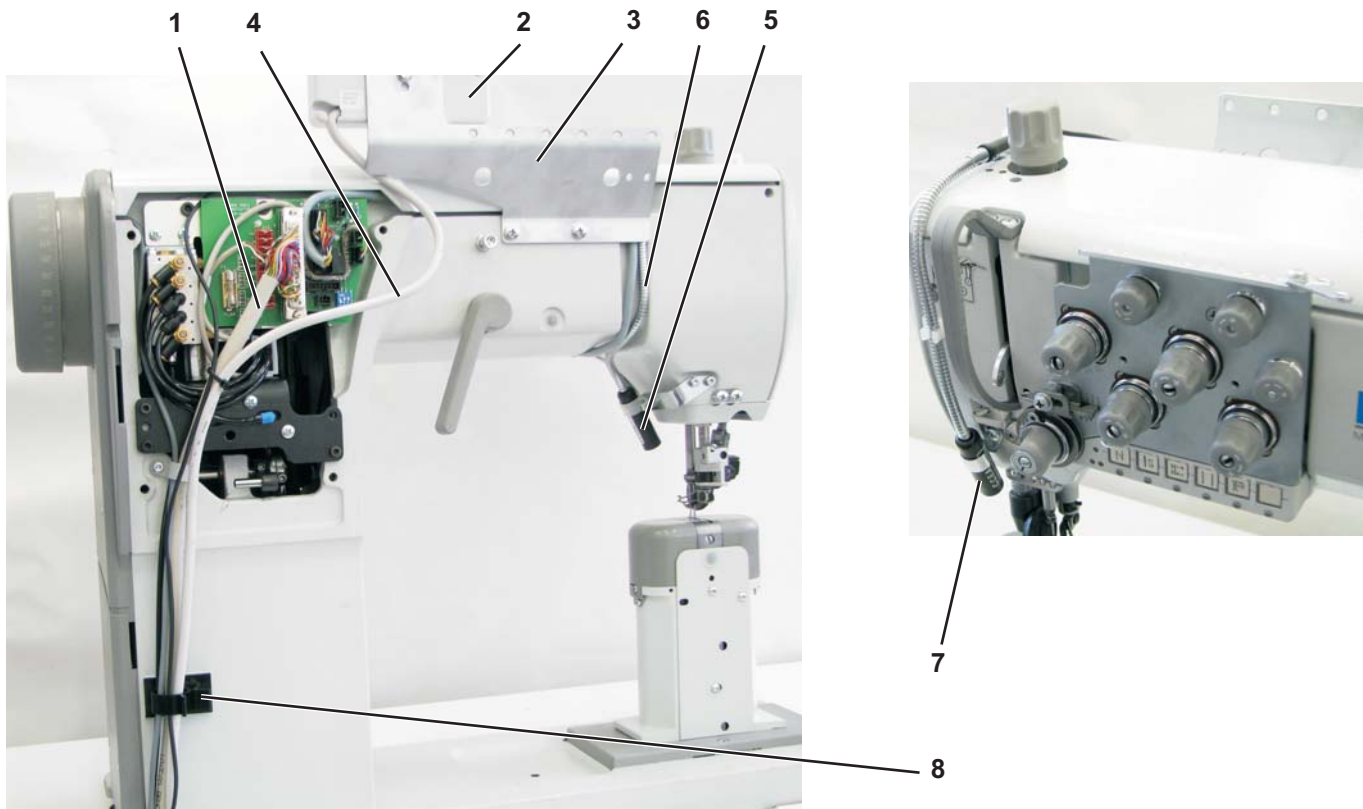
Failure to keep the determined pedal position can cause damage to the operator's locomotion system. .

#### 4.4 Fitting the knee lever and oil pump pipe



- Lift the sewing foot with the hand lever.
- Tilt the machine head (1).
- Slide the shaft (3) in the lever (4).
- Screw the screw (5) with the washer (6) in the shaft (3).
- Attach the pipe (7) with the clips (8) and install the suction basket (9).
- Tilt the machine head and adjust the knee lever (10) according to the picture.
- Adjust the knee pad.

#### 4.7 Fitting the connecting cable, control panel and sewing diode lamp on the machine head



- A 37 pole connecting cable (1) is supplied with every sewing machine equipped with a positioning motor.
- The control panel (2) is an optional item of the Efka drives. If ordered, it is always supplied with a holder (3). The control panel is always an integral part of the DAC basic/classic drives.
- A diode sewing lamp with a power LED-module (5) is an optional item. Two types of holders are supplied with the module enabling to mount the sewing lamp in two positions. The position (5) is basic. The position (7) is used if a sewn material guide or the material edge trimmer is installed on the machine.
- Dismantle the upper and rear cover of the sewing machine head.
- Install the connecting cable with the 37 pole connector (1) according to the picture. Fix the cable ends against pulling out with screws on the switchboard side and on the control box side.
- Mount the control panel (2) with the holder (3) on and install its cable (4) according to the picture.
- Mount the sewing lamp (5) on and install its cable (6) according to the picture. The power supply cable should be connected to the transformer, which is supplied either separately, or, in the variant with a direct drive, it can be a part of the switchboard.
- Push the cables through the table top and attach them with a self-sticking clip (8).

## 5 Electrical connection



### Caution!

All work on the electrical equipment of this special sewing machine may only be carried out by qualified electricians or other appropriately trained persons.

It is unconditionally necessary to study the instructions for the motor (drive) supplied by the producer!

### 5.1 Electric connection of machine to low voltage network

The control DAC classic or DAC basic is connected to a grounded alternating low voltage network with the rated voltage in scope 180V - 260V, 50/60Hz. For the Efka DA321G drive the supply voltage is 230 V  $\pm$  10%, 50/60 Hz.



### Caution!

The mains voltage must agree with the rated voltage specified on the model-identification plate.

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The connection may be realized only by means of a multipole socket with a protective contact. A fixed connection is inadmissible.

All instructions for the drive connection can be found in the Operating manual for the DAC basic/classic drives or for the Efka drive.



### Caution! Risk of electric current injury!

The drives may be operated only with a safety conductor connected to the functional protective system in accordance with the regulations and rules to avoid personal injuries by electric current or fire.

The drive operation will become dangerous if the safety conductor inside or outside the drive is disrupted. The protection must not be disrupted with e. g. an extension cord without the protective conductor.

## 5.2 Sewing lamp transformer connection to network voltage



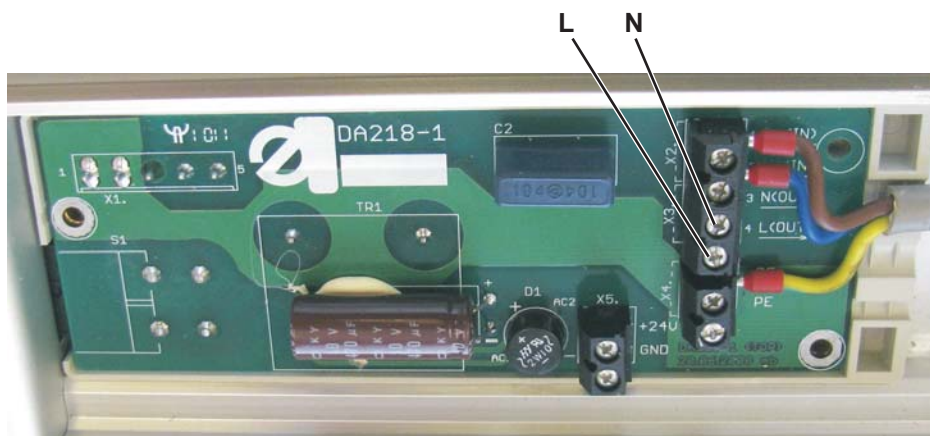
### Caution! Risk of electric current injury!

The sewing lamp transformer is not switched off by the main switch (EN 60 204-31)! At the sewing lamp installation and repair inside the transformer box, e.g. at a fuse replacement, the network plug must be disconnected from the network unconditionally.

The control boxes DAC basic/classic and Efka DA321G are equipped with a terminal box for the connection of a sewing lamp external transformer to the voltage 230V/AC or 24V/DC 1,5W (DAC).

A special adaptor 9870 001033 is supplied with the control box DAC eco for the connection of the sewing lamp transformer.

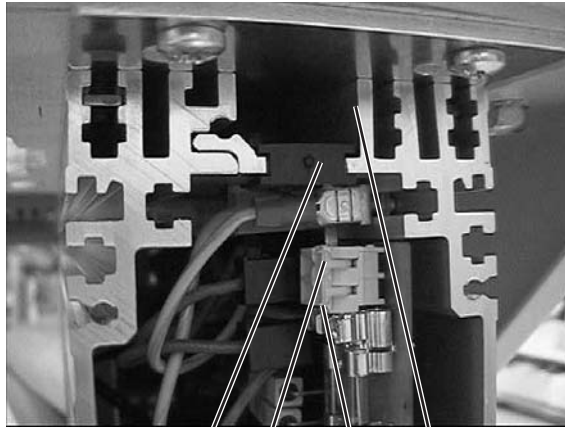
A. The machine is equipped with the DAC basic/classic drive



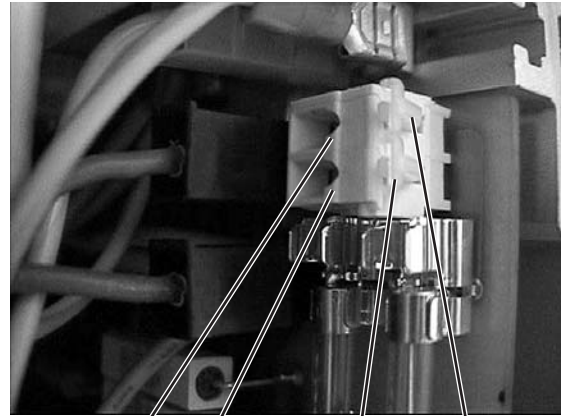
- Pull the plug out of the electric network socket!
- Dismantle the terminal box plastic cover on the control box.
- Connect the transformer cable of the sewing lamp according to the instructions included in the operating manual of the DAC drive (power supply terminals (L, N) for the transformer are parallel to the power supply).
- Before the back installation of the cover break the plastic blind with a suitable tool to run the cable out of the terminal box.



B. The machine is equipped with the Efka DA321G drive



2 6 5 1

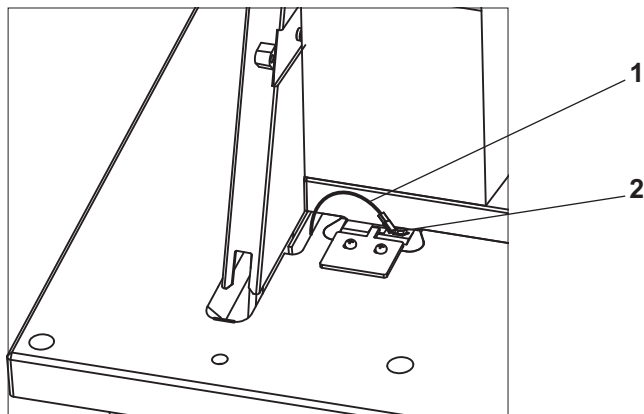


6 5 4 3

- Pull the network plug out of the socket.
- Screw out 4 screws on the front panel of the control box.
- Dismantle the front panel.
- Pull the transformer cable through the channel (1) in the control box.
- Remove the black rubber bushing (2).
- Pierce the bushing with a screwdriver.
- Pull the sewing lamp transformer cable through the arisen hole.
- Insert the rubber bushing back again.
- Press the clip openers (3) and (4) with a small screwdriver slightly until the clips (5) and (6) open.
- Connect the blue conductor to the terminal (6) and the brown conductor to the terminal (5).
- Screw the front panel back again.

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## 5.3 Earthing



- Mount the earthing cable (1) if it is included in the accessory package of the machine head.
- Connect the earthing cable (1) to the plug (2) (already screwed on the head hinge) and pull its opposite end under the table top.
- Screw the opposite end of the grounding conductor to the relevant grounding point of the drive.
- Attach the cable with a clip on the bottom side of the table top.



### **Caution!**

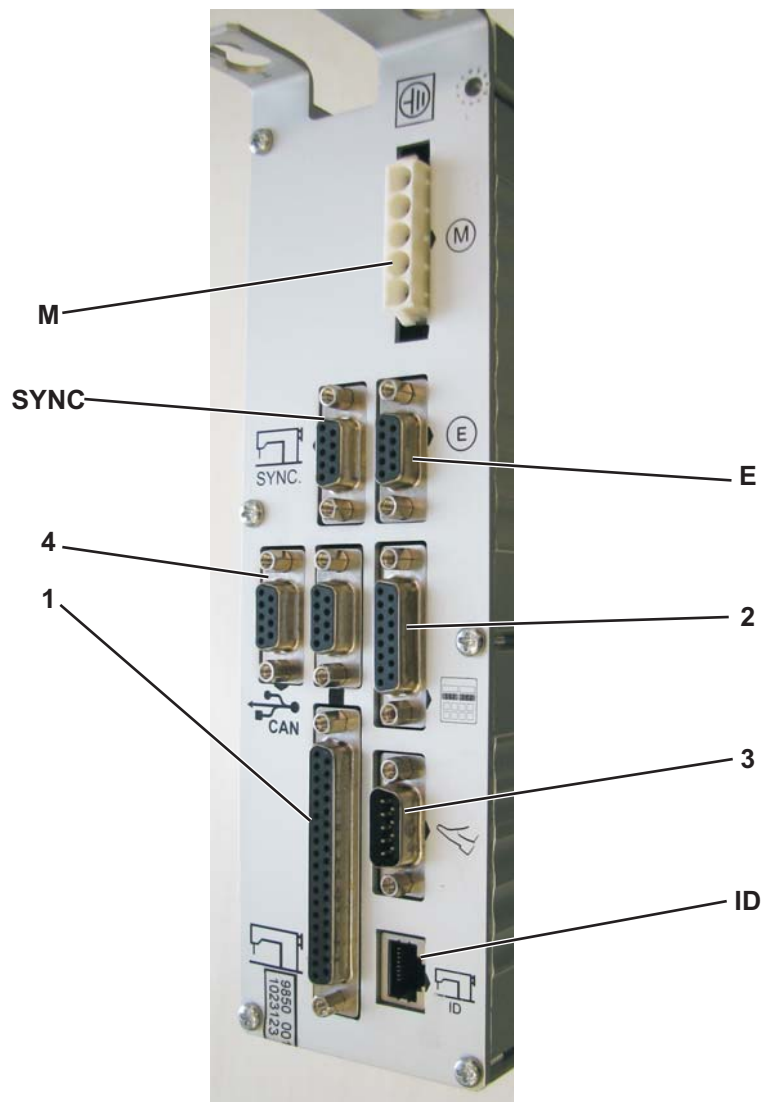
Make sure that the earthing cable (1) does not touch the driving V-belt (if there is any).

### **Note:**

You do not need to care for the earthing with machines having the sewing motor fit onto the machine head, since it is already established through the fitted motor.

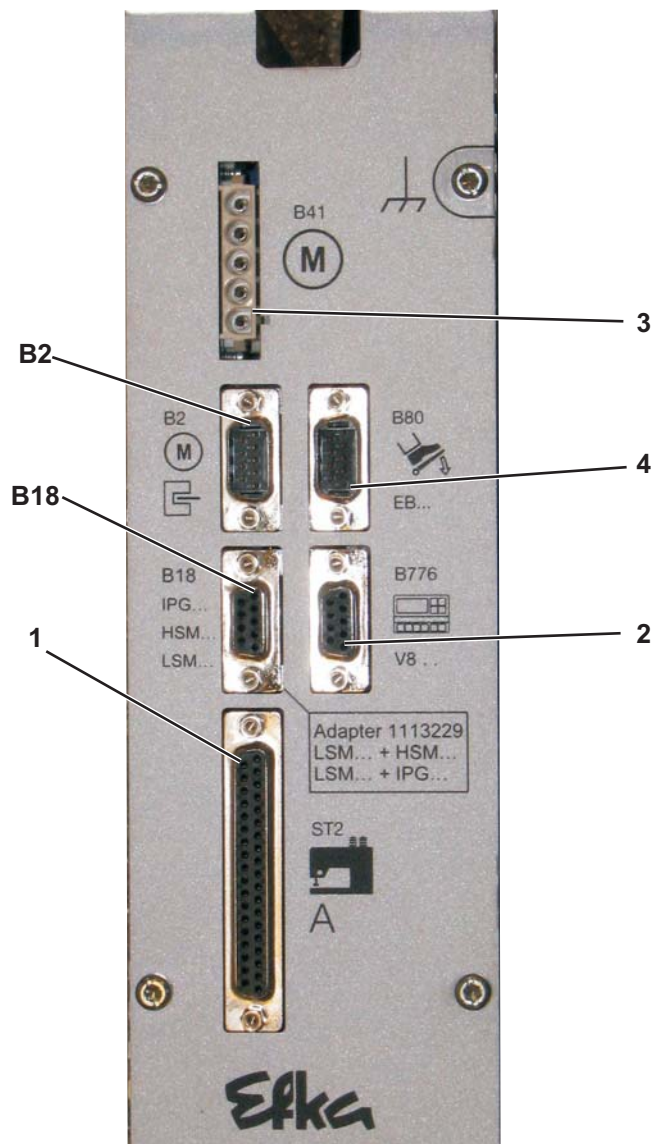
## 5.4 Connection of machine head electric equipment to drive

A. The machine is equipped with the DAC basic/classic drive



- Connect the sewing head connection cable into the connector (1) signed with the machine symbol.
- Connect the control panel into the connector (2) signed with the panel symbol.
- Connect the motor encoder connector into the connector (E).
- Connect the motor connector into the connector (M).
- Connect the pedal position sensor into the connector (3) signed with the pedal symbol.
- Connect “machine identification” into the connector ID.
- Connect the proximity switch to the connector (SYNC) if the sewing machine has a gear ratio different from 1:1.
- The connector (4) is used for the connection of other peripherals, e. g. a knee lever or an electric hand wheel.

B. The machine is equipped with the Efka DA321G drive



- Connect the machine head connecting cables to the connector (1).
- Connect the control panel to the connector (2).
- Connect the position sensor connector in the motor to the connector (B2).
- Connect the motor connector to the connector (3).
- Connect the pedal position sensor to the connector (4).
- Connect the proximity switch to the connector (B18).

## 6 Basic adjustment of the positioning drives

The function of the positioning motor is determined by its program, setting of the motor parameters and stop positions of the sewing machines. If the sewing machine is supplied in a disassembled condition, the motor should be set by the purchaser. If the sewing machine is supplied in an assembled condition, the motor has already been set by the sewing machine manufacturer.



### Attention!

The parameter value must be changed with consideration and responsibility. A wrong setting of the control can cause the damage of the sewing machine!

### 6.1 DAC basic/classic drive

The sub-class of this drive type has already been pre-set in the purchased control unit on condition that the sub-class is known to the manufacturer; i. e. a complete sewing machine and a drive have been purchased. This can be changed either by a new software installation by means of a DAC Dongle device and by a subsequent selection of the sub-class, which is done when a separate control unit DAC has been bought. Another possibility is the installation of the parameter set by connecting a so-called sewing machine identification (Masch.ID) with the existing parameter set of the particular sub-class to the DAC unit. This possibility can be made use of if the client has already owned the same sewing machine with the DAC drive, and when the client wants to copy the parameter set from that.

After the parameter set installation it is necessary to set the reference position for the correct positioning (usually, the needle tip at the level of the throat plate) at the parameter **t 08 10**, and then to adjust, if needed, the maximum sewing speed at the parameter **t 08 00**.

Detailed information and a detailed description of the parameter setting is included in the publication "Operating instructions DAC basic/classic" enclosed by the drive manufacturer, "Parameter sheet DAC basic/classic", which is specific for the particular sub-class, or at the website [www.duerkopp-adler.com](http://www.duerkopp-adler.com).

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## 6.2 Efka drive

The drive parameter setting is realized in two steps. As the first step, parameters are set for a group of sewing machine classes by means of the function "auto select". This is done automatically according to the connected cable or switchboard where the so-called auto select resistor is contained. As the second step, the particular sub-class is selected at the parameter <290>, by means of which the parameters specific for this sub-class are automatically uploaded.

Example:

For the auto select 680 W the following sewing machine sub-classes are available:

Parameter <290>:	Sub-class:
1	4180 (1:1)
2	4280 (1:1,4)
3	888, 887, 884 (1:1), solenoids
4	888, 887 (1:1,5), pneumatic
5	838, 887, 888 (1:1,5), pneumatic

Then the reference position is set at the parameter <170>, which is necessary for the correct positioning of the sewing machine (usually, the needle tip at the level of the throat plate), or it is adjusted, as needed, to the maximum sewing speed at the parameter <111>.

The software can be updated by means of a separate USB interface on the control box front panel.

Detailed information with a detailed description of the parameter setting is included in the publication "Operating instruction Efka DA321G" enclosed by the drive manufacturer, or at the website **[www.efka.net](http://www.efka.net)**.

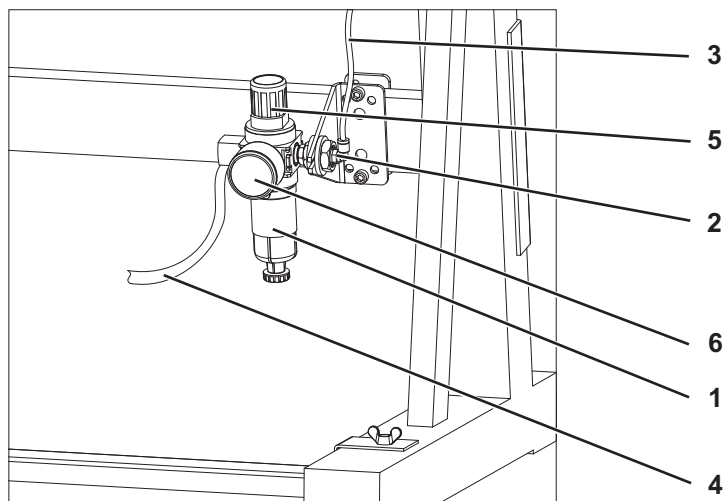
## 7 Pneumatic connection

CLASSIC machines with pneumatics.



### Attention!

The special sewing machine's operating pressure is 6 bar.



- Mount the maintenance unit (1) to the stand brace as shown in the illustration.
- Screw in the elbow fitting (2) (in the accessories) and connect the hose (3) from the machine head to the elbow fitting (2).
- Fix the connection hose (4) as shown in the illustration and connect the other end with the coupling to the compressed air supply system.
- Raise and turn the handle 5 to set the pressure to 6 bar on the manometer (6). Press the handle (5) again.
- If the machine is equipped with the pneumatic driven sewing foot with constant pressure, connect it to the maintenance unit as shown in the picture below.



## **8 Lubrication**

Before start, the machine must be lubricated properly with oil according to chapter 9.2 in the operating instructions.

## **9 Sewing test**

This test can be carried out only after the machine is set completely.

- Thread in the bobbin-winder thread. (see operating instructions).
- Turn on the main switch.
- Lock the sewing foot in the lifted position (see operating instructions).
- Fill the bobbin at low speed.
- Turn off the main switch .
- Thread in needle thread and bobbin thread (see operating instructions).
- Select the material to be sewn.
- Carry out the sewing test first at low speed and then gradually increase the speed.
- Check whether the seams are of the desired quality.
- If the quality requirements are not met change the thread tensions (see Operating instructions).