DÜRKOPP ADLER

868

Operating Instructions

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 immediatly 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 permanend 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.

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1 Product description

The **DÜRKOPP ADLER 868** is a special sewing machine for universal use.

- It is a flatbed double-lockstitch machine with bottom feed, needle feed and alternating upper foot feed.
- Depending on the subclass it comes as single or double needle automat, with or without electromagnetic thread cutter, with or without edge trimmer.
- Equipped with a large or oversized two-piece vertical hook.
- With a maximum of 20 mm fabric clearance when sewing feet are lifted.
- A safety clutch prevents a changing of the hook setting or a hook damage in the case of a thread deflection into the shuttle track.
- Automatic wick lubricating with an inspection glass on the arm for machine and hook lubrication.
- Integrated winder.

2 Designated use

The **868** class is a sewing machine designed for sewing light to medium-heavy material. Such material is generally made of textile fibers, but it may also be leather. It is used in the clothing industry and for domestic and motor-vehicle upholstery.

This special sewing machine can also be used to produce so-called technical seams. In this case, however, the operator must assess the possible dangers which may arise (with which **DÜRKOPP ADLER GmbH** would be happy to assist), since such applications are on the one hand relatively unusual and, on the other, so varied that no single set of criteria can cover them all. The outcome of this assessment may require appropriate safety measures to be taken.

Generally only dry material may be sewn with this machine. The material may be no thicker than 10 mm when compressed by the lowered sewing feet. The material may not contain any hard objects, since if it does the machine may not be operated without an eye-protection device. No such device is currently available.

The seam is generally produced with textile-fibre sewing thread of gauge up to 11/3 NeB (cotton), 11/3 Nm (synthetic) or 11/4 Nm (covering yarn).
Before using any other thread the possible dangers arising must be assessed and appropriate safety measures taken if necessary.

This special sewing machine may be set up and operated only in dry, well-maintained premises. If the sewing machine is used in premises which are not dry and well-maintained it may be necessary to take further precautions, which should be agreed upon 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

868-190020 Single-needle double-lockstitch post bed machine with bottom feed, needle feed, alternating upper foot feed and large hook.

867-290020 Double-needle double-lockstitch post bed machine with bottom feed, needle feed, alternating upper foot feed and large hook.

868-190322 Single-needle double-lockstitch post bed machine with bottom feed, needle feed, alternating upper foot feed, electro-pneumatic rapid stroke adjustment with automatic speed limitation, operated via knee lever, electro-magnetic thread cutter, electro-pneumatic seam bartacking, electro-pneumatic second stitch length and sewing foot lifting. With large hook, with integrated sewing lamp.
Function keys for: manually sewing backward, needle high/low/single stitch, switching on/off of the bartack, 2nd stitch length, switching on/off of the supplementary thread tension .

868-290322 Double-needle double-lockstitch post bed machine with bottom feed, needle feed, alternating upper foot feed, electro-pneumatic rapid stroke adjustment with automatic speed limitation, operated via knee lever, electro-magnetic thread cutter, electro-pneumatic seam bartacking, electro-pneumatic second stitch length and sewing foot lifting. With large hook, with integrated sewing lamp.
Function keys for: manually sewing backward, needle high/low /single stitch, switching on/off of the bartack, 2nd stitch length, switching on/off of the supplementary thread tension.

868-390322 Double-needle double-lockstitch post bed machine with bottom feed, needle feed, alternating upper foot feed, electro-pneumatic rapid stroke adjustment with automatic speed limitation, operated via knee lever, electro-magnetic thread cutter, electro-pneumatic seam bartacking, electro-pneumatic second stitch length and sewing foot lifting. With large hook, with integrated sewing lamp.
Left post.
Function keys for: manually sewing backward, needle high/low /single stitch, switching on/off of the bartack, 2nd stitch length, switching on/off of the supplementary thread tension.

4 Optional equipments

For the **868** the following optional equipments are available:

Order No.	Optional equipment	Subclasses														
		868-190020	868-290020	868-190322	868-290322	868-390322										
0867 590014	Electro-pneumatic needle cooler from the top			x												
0867 590064	Pneumatic connection	x	x	x	x	x										
9780 000108	WE-8 maintenance unit for pneumatic optional equipments	x	x	o	o	o										
9822 510003	Halogen sewing lamp	x	x	x	x	x										
9880 867100	Sewing lamp add-on kit	x	x	x	x	x										
0798 500088	Sewing lamp transformer	x	x	x	x	x										
9880 867103	Sewing lamp LED	x	x	x	x	x										
9880 867102	Integrated sewing lamp LEDs	x	x	o	o	o										
9850 001089	Power supply complete for integrated sewing lamp LEDs	x	x	o	o	o										
N800 080001	Edge guide, swivelling	x		x												
N800 080004	Roller stop	x		x												
N800 080021	Edge guide, swivelling	x		x												
N800 005650	Seam center guide		x		x											
N800 005655	Seam center guide, swivelling		x		x											
No. according to the band size	Tape guide with tape-reel bracket		x		x											
9805 791113	USB memory key for transferring data with the Efka control unit DA321G	x	x	x	x	x										
0797 003031	Pneumatic connection package	x	x	x	x											
0867 590354	Pneumatic sewing foot lifting	x	x													
Stands																
MG55 400364	Stand set MG 55-3 for motor fitting beneath the table, with pedal Table top size 1060 x 600 mm	x	x	x	x	x										
MG55 400374	Stand set MG 55-3 for motor fixed on machine head, with Pedal Table top size 1060 x 600 mm			x	x	x										

x = Optional equipment

o = Standard equipment

Please contact our Application Center (APC) for further optional equipment.

E-Mail: *marketing@duerkopp-adler.com*

Further available documents concerning the class 868:

0791 868801	Parts list
0791 868641	Service Instructions
0791 100700	Fitting Instructions for Sewing Lamp LED
0791 867701	Instructions for fitting seam center guide N800 005655 (mechanically) N800 005650 (pneumatically)
0791 867704	Instructions for fitting pneumatic sewing foot lift
0791 867705	Instructions for fitting for edge guide N800 080021

5 Technical data

Noise: Workplace-related emission value in accordance with DIN 45635-48-A-1-KL2

868-190020 **LC = _dB (A)**
Stitch length: _ mm Sewing foot stroke: mm Speed: ____ min^{-1}
Material:

868-290020 **LC = _dB (A)**
Stitch length: _ mm Sewing foot stroke: mm Speed: ____ min^{-1}
Material:

868-190322 **LC = _dB (A)**
Stitch length: _ mm Sewing foot stroke: mm Speed: ____ min^{-1}
Material:

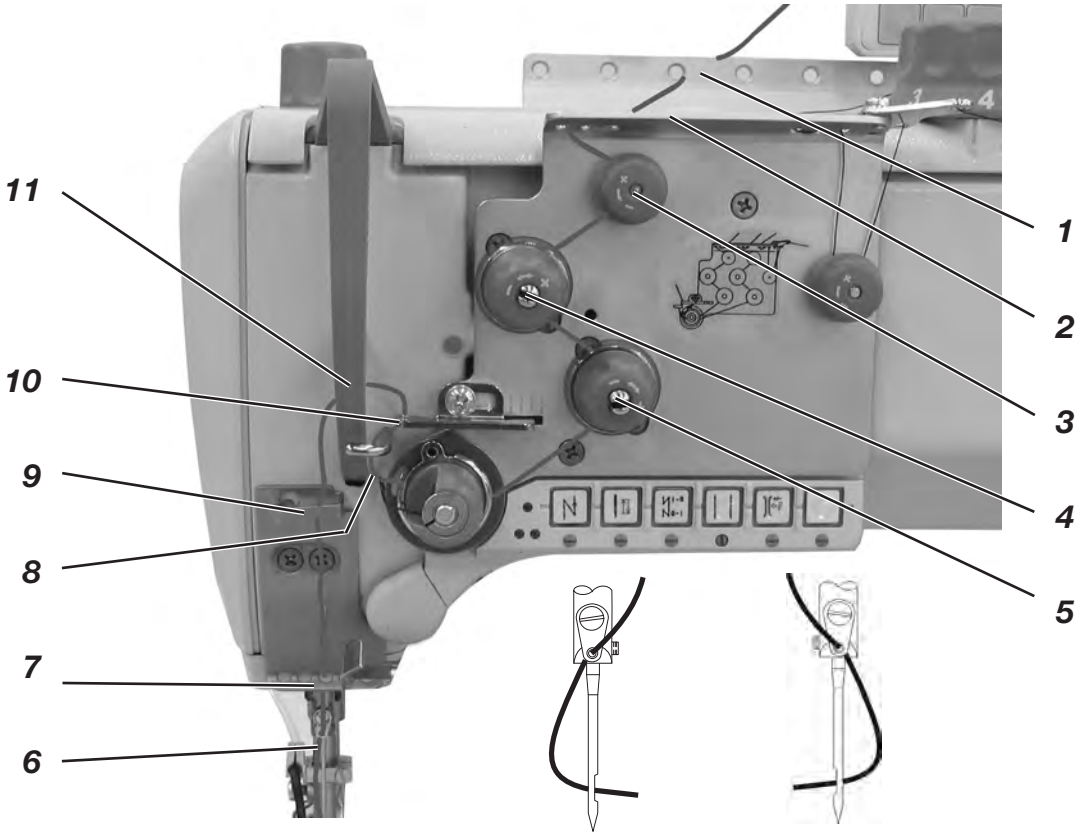
868-290322 **LC = _dB (A)**
Stitch length: _ mm Sewing foot stroke: mm Speed: ____ min^{-1}
Material:

868-390322 **LC = _dB (A)**
Stitch length: _ mm Sewing foot stroke: mm Speed: ____ min^{-1}
Material:

5.1 Technical data subclasses

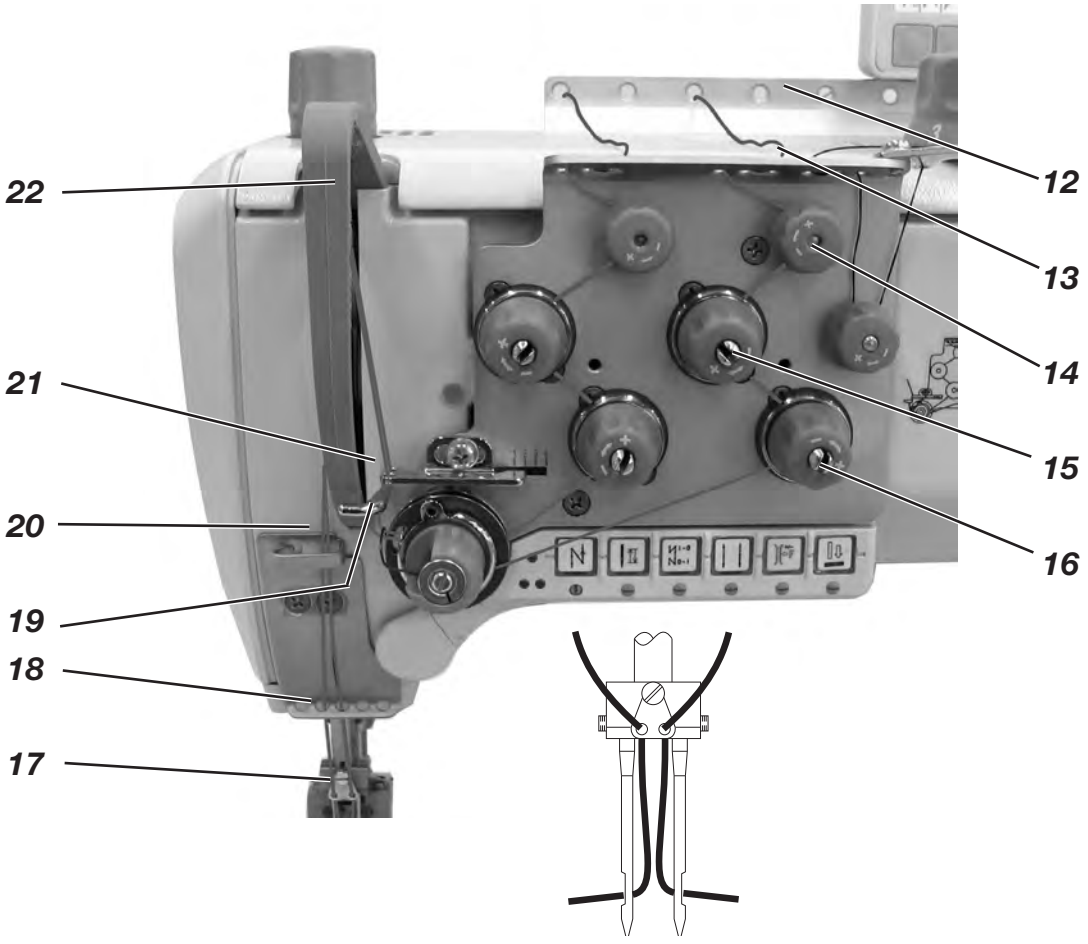
	868-190020	868-190322	868-290020	868-290322	868-390322				
Type of stitch	Lockstitch 301								
Hook type	large	large	large	large	large				
Number of needles	1	2	1	2	1				
Needle system	134-35								
Needle size (depending on E-No.) [Nm]	170								
Max. thread thickness [Nm]	10 / 3								
Stitch length [mm] - Forward - Backward	12 12								
Number adj. stitch lengths	1	2	1	2	2				
Max. speed [min]	2500	2500	2500	2500	2500				
Speed with factory setting [min]	2500	2500	2500	2500	2500				
Max. lifting height [mm] (*only with turn-back device)	20*	20*	20*	20*	20*				
Max. sewing foot stroke [mm]	9	9	9	9	9				
Operating pressure [bar]	-	6	-	6	6				
Air consumption per working cycle [NL]	-	0,7	-	0,7	0,7				
Dimensions (H x W x D) [mm]	690 / 220 / 640								
Weight with direct drive [kg]	68 -	68 72	70 -	70 74	68 72				

Threading scheme single-needle machine



0868 190xxx *0868 390xxx*

Threading scheme double-needle machine



6 Operation

6.1 Threading the needle thread

Caution: danger of injury !

Turn off the main switch.
The needle thread may only be threaded with the sewing machine switched off.

- Put the thread reel on the thread stand and lead the needle thread through the unwinder arm.
  The unwinder arm must be in vertical position above the thread reels.
- Thread in the thread through threading guide 1 and 2.
- Conduct the thread clockwise around the pre-tensioner wheel 3.
- Conduct the thread counter-clockwise around the supplementary tensioner wheel 4.
- Conduct the thread clockwise around the main tensioner wheel 5.
- Pull the thread underneath the thread take-up spring 8 and conduct it through the thread regulator 10 to the thread lever 11.
- Conduct the thread through the thread lever 11 and the threading guides 9, 7 and 6 on the needle bar.
- Thread the thread into the needle eye.

Threading in the needle thread with double-needle machines

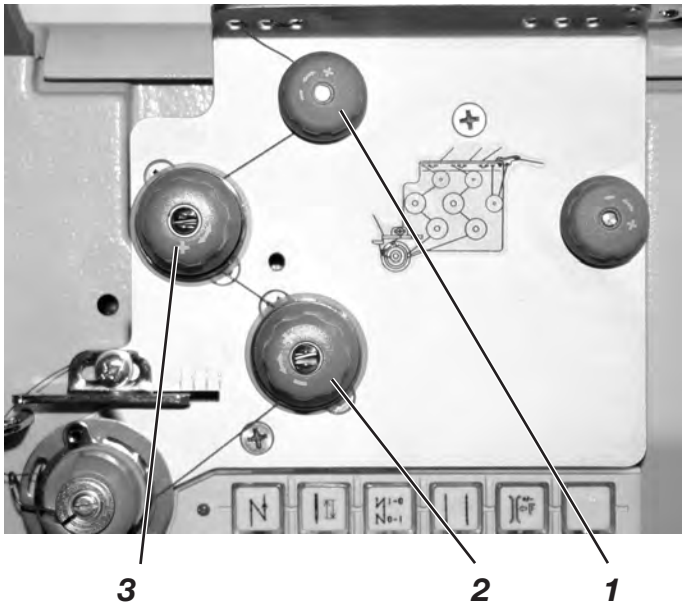
- Put the thread reels on the thread stand and lead the needle thread through the unwinder arm.
  The unwinder arm must be in vertical position above the thread reels.

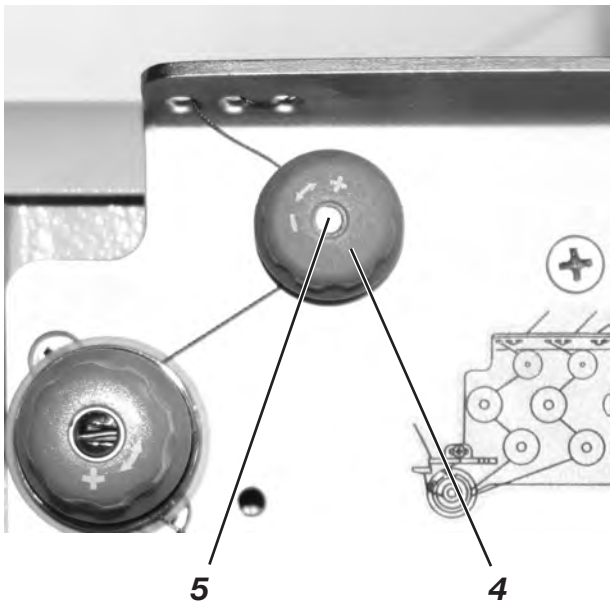
Thread for the left needle (as with single-needle machines)

- Thread in the thread through threading guide 1 and 2.
- Conduct the thread clockwise around the pre-tensioner 3.
- Conduct the thread counter-clockwise around the supplementary tensioner 4.
- Conduct the thread clockwise around the main tensioner 5.
- Pull the thread underneath the thread take-up spring 8 and conduct it through the thread regulator 10 to the thread lever 11.
- Conduct the tread through the upper bore hole of the thread lever 11 and the threading guides 9, 7 and 6 on the needle bar.
- Thread the thread into the needle eye.

Thread for the right needle

- Thread in the thread through threading guide 12 and 13.
- Conduct the thread clockwise around the pre-tensioner 14.
- Conduct the thread counter-clockwise around the supplementary tensioner 15.
- Conduct the thread clockwise around the main tensioner 16.
- Pull the thread underneath the thread take-up spring 19 and conduct it through the thread regulator 21 to the thread lever 22.
- Conduct the thread through the lower bore hole of the thread lever 22 and the threading guides 20, 18 and 17 on the needle bar.
- Thread the thread into the eye of the right needle.





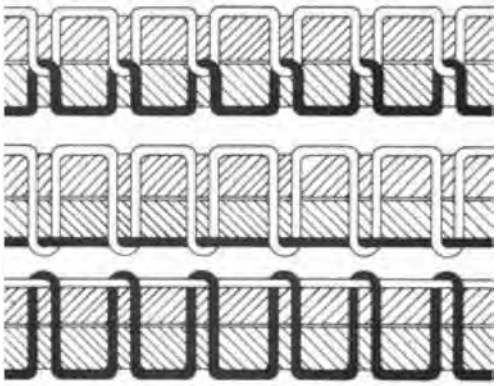


Fig. A: Correct thread interlacing in the center of the material

Fig. B: Needle-thread tension too low
or
hook-thread tension too high

Fig. C: Needle-thread tension too high
or
hook-thread tension too low

6.2 Adjusting the needle-thread tension

Pre-tensioner

When the main tensioner 2 and supplementary tensioner 3 are open (e.g. when the sewing feet are raised) the needle thread must be under slight residual tension. This residual tension is produced by the pre-tensioner 1.

The pre-tensioner 1 simultaneously affects the length of the end of the severed needle thread (the starting thread for the next seam).

– Basic setting:
  Turn knurled nut 4 until its front is flush with the bolt 5.
– To shorten the starting thread:
  Turn knurled nut 4 clockwise.
– To lengthen the starting thread:
  Turn knurled nut 4 counterclockwise.

Main tensioner

The main tensioner 2 should be set to the minimum possible tension.

The looping of the threads must be in the center of the material. With thin material excessive thread tension can cause unwanted gathering and thread breakage.

– Adjust the main tensioner 2 so that the stitches are uniform.
  To increase tension: turn the knurled nut clockwise
  To decrease tension: turn the knurled nut anti-clockwise

Supplementary tensioner

The supplementary tensioner 3 can be switched in to effect a rapid change in needle-thread tension during operation (e.g. with thickened seams).

– Set the supplementary tensioner 3 lower than the main tensioner 2.

6.2.1 Function of the thread main tension and the thread supplementary tension in relation to the sewing foot lifting

Only Efka DC 1550 DA 321G

The thread supplementary tension can, at any time, be switched on or off by actuating the switch key 1 (see chapter 6.17) on the key block of the machine. To this end, the parameter F-255 must be set on “7".

	Sewing foot lifting withing a seam		**Sewing foot lifting after thread trimming**	
Parameter setting	Thread main tension	Thread supplement. tension	Thread main tension	Thread supplement. tension
F-196=0	0	0	0	0
F-196=0	1	1	0	0
F-196=0	0	0	1	1
F-196=0	1	1	1	1

1 = Thread tension opened mechanically

0 = Thread tension closed mechanically

- If the thread’ s supplementary tension is opened, this condition will be maintained when lifting the sewing foot.
- When switching the machine off, the last setting of the thread’s supplementary tension will be maintained through the mains connection.

6.2.2 Reparation seam with thread tension always closed

Only Efka DC 1550 DA 321G

When executing a reparation seam, the thread tension is to stay closed during the lifting of the sewing foot. Then the setting of the parameter F-196 for the function of the thread main tension and the thread supplementary tension in relation to the sewing foot lifting is not active.

For a quick switching on and off of the reparation seam, a parameter setting first has to be carried out.

- Programming the reparation seam with key “A” of the Efka operating panel V810/V820: Set the parameter F-293 to 18.
- Programming the reparation seam with the key “B” of the Efka operating panel V810/V820: Set the parameter F-294 to 18.

By actuating the key “A” or “B” on the Efka operating panel V810 or V820, the reparation seam, with the thread tension being always closed, can be switched on and off quickly.

If the reparation seam mode was switched on, at the end of the reparation seam it has to be switched off by actuating the same key of the Efka operating panel, in order to activate the parameter F-196 again.

6.2.3 Function of the thread's supplementary tension in relation to the stroke adjustment and the Speedomat

Only Efka DC 1550 DA 321G

The thread's supplementary tension can, at any time, be switched on and off by actuating the key 1 (see chapter 6.17) of the machine's keypad. To that end, the parameter F-255 must be set to "7".

Parameter Setting	stroke adjustment max. via knee switch	stroke adjustments setting wheel Reaching of the HP-speed of parameter F-117 (Speedomat)
F-197 = 0	1	1
F-197 = 1	0	1
F-197 = 2	1 (*)	0
F-197 = 3	0	0

(*) If the stroke adjustment (max. via knee switch is switched on and the HP-speed of parameter F-117 is reached through the "Speedomat", the thread's supplementary tension will be switched on automatically.

0 = Thread's supplementary tension closed mechanically

1 = Thread's supplementary tension opened mechanically

- If the thread's supplementary tension is closed, the condition will be maintained when adjusting the stroke.
- When the machine is switched off, the last setting of the thread's supplementary tension will be maintained through the mains connection.

Basic control box setting for the automatic steps of the stitch-number-reduction (Speedomat) through the setting wheel for the height of the alternating transport stroke

Parameter 188

Step 01-21	total Speedomat range
Step 01-10	max. allowed number of stitches. parameter F-111 = 2,500min^{-1}
Step 11-18 of	linear stepwise reduction of the max. number stitches (Speedomat)
Step 19-21	max. allowed number of stitches, parameter F-117 = 1,600 min^{-1}

6.3 Opening the thread tension

Subclasses

868-190020, 868-290020

When lifting the sewing feet with the knee switch, main and supplementary tension are automatically opened.

Subclasses

868-190322, 868-290322, 0868-390322

The thread tension is automatically opened when trimming the thread.

6.4 Short stitch

The short stitch can be set mechanically forward as well as backward. The short stitch is set by turning the stop screw 2 with an Allen wrench (size 3):

Clockwise → forward.

Counterclockwise → backward.

6.4.1 Short stitch at the seam beginning

When sewing without initial bartack the reliability of the seam beginning can be increased by beginning the seam with a short stitch.

The function is switched on by setting the parameter F-136 to “4" while the “Soft-Start” parameter F-134 is set to "1".

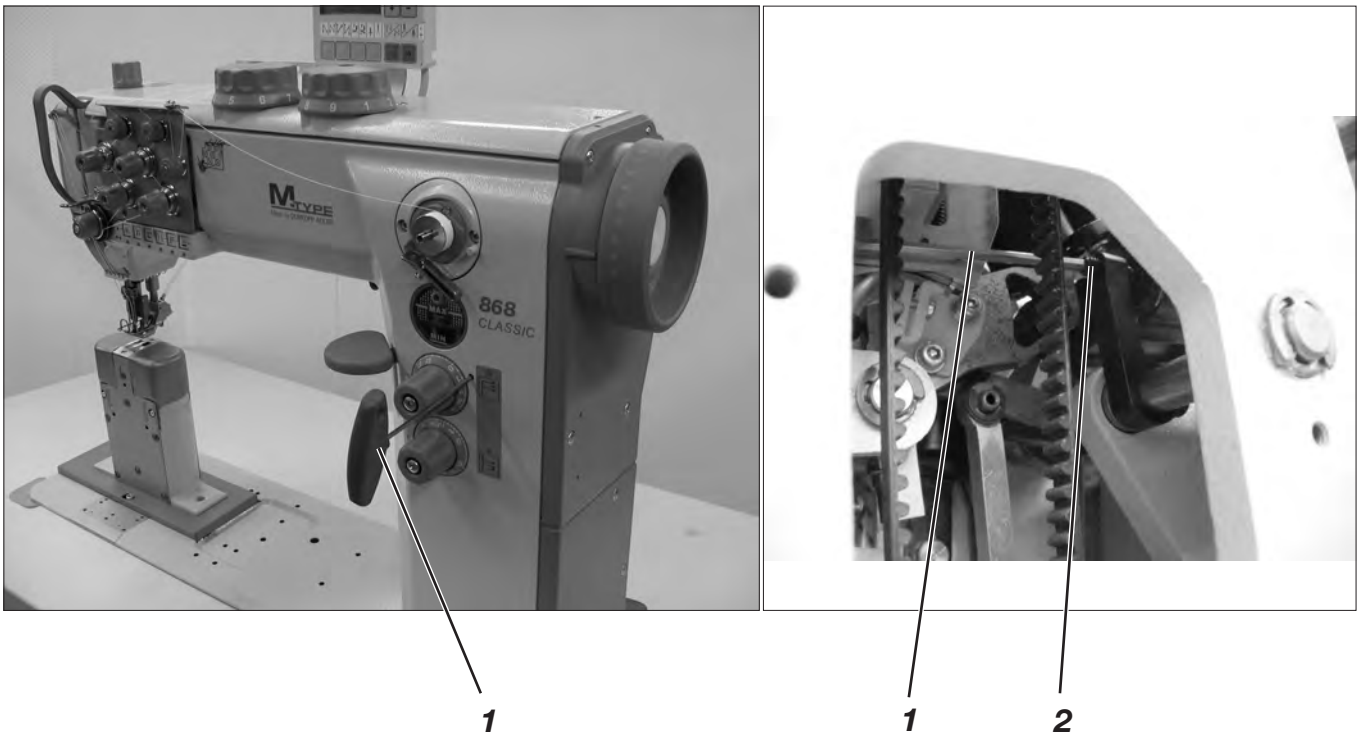
6.4.2 Short stitch at the end of a seam

At the end of a seam the function “Short Thread trimming” (FA-STL) can be switched on. This function guarantees a safe thread trimming with stitch lengths above 6 mm.

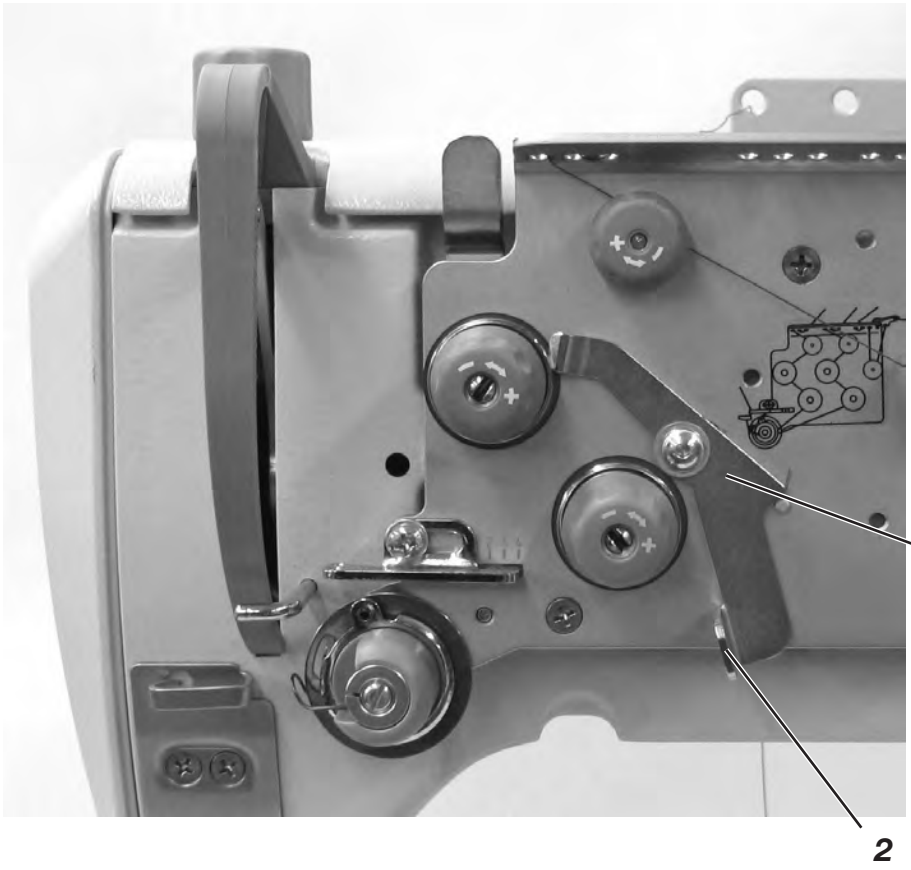
The function “Short Thread trimming” is switched on by setting the Parameter F-136 to "2" with the Efka control unit.

6.4.3 Short stitch at the seam beginning and seam end

This function is switched on by setting the parameter F-136 to "3" while the ”Soft-Start" parameter F-134 is set to "1".



6.5 Switching the supplementary tension on and off with machines without thread trimmer



The supplementary tension is being switched on and off with lever 1.

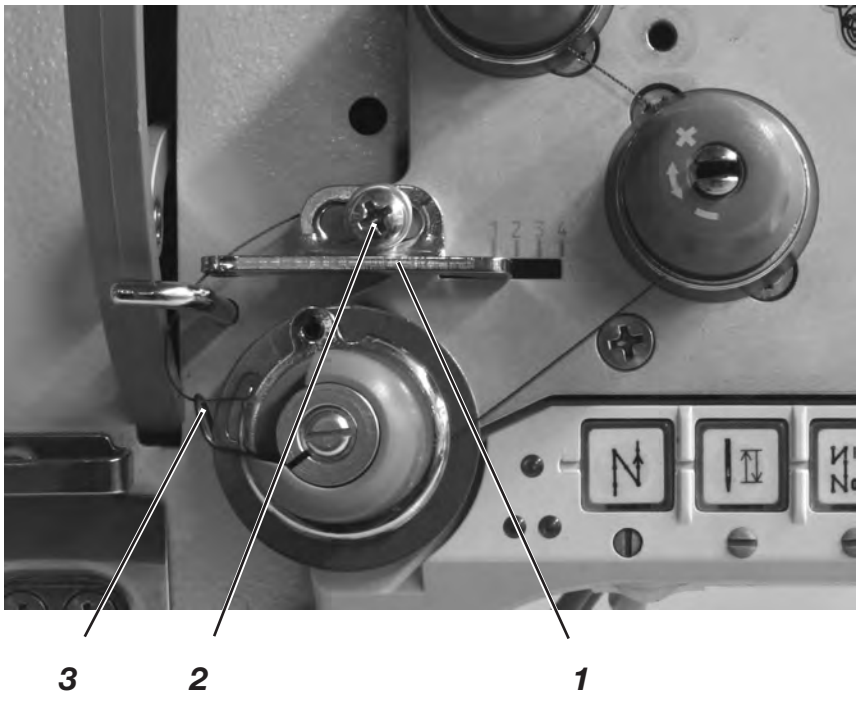
Switching on

– Push the handle 2 of lever 1 to the left.

Switching off

– Push the handle 2 of the lever 1 to the right.

6.6 Adjusting the thread regulator



Caution: danger of injury !

Turn off the main switch.

The thread regulator may only be adjusted with the sewing machine switched off.

The thread regulator 1 controls the quantity of needle thread required for stitch formation.
The thread regulator must be precisely adjusted for an optimum result.

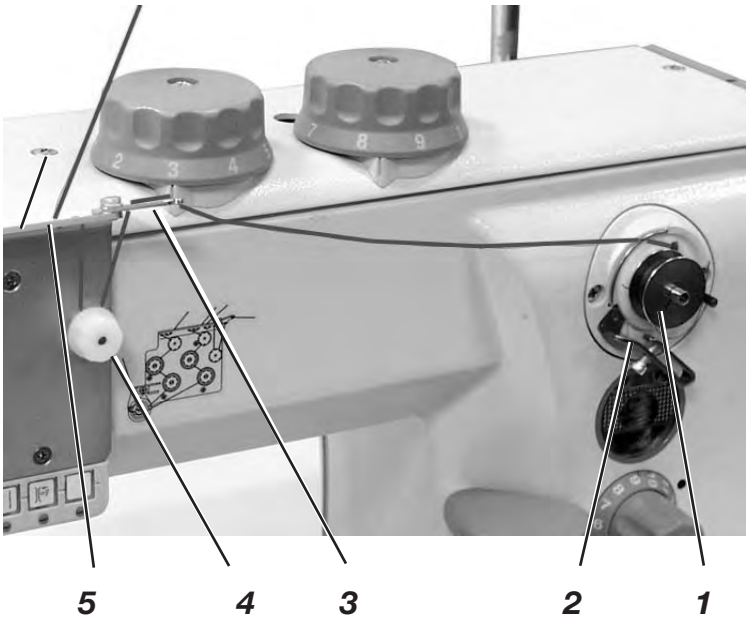
At the correct setting the needle-thread loop must slide at low tension over the thickest point of the hook.

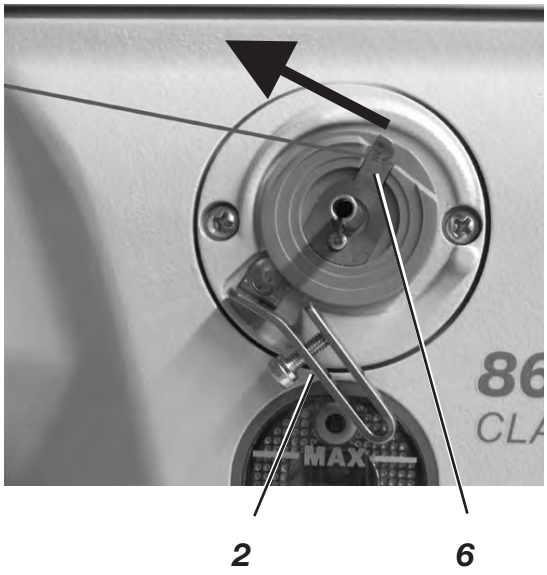
- Undo screw 2.
- Adjust the thread regulator 1.
  Thread regulator to the left = more thread.
  Thread regulator to the right = less thread.
- Tighten screw 2.

Adjustment information:

If the maximum quantity of thread is required the thread-tensioning spring 3 must be pulled upwards about 0.5 mm from its lower limit position. This is the case when the needle-thread loop passes the maximum hook diameter.

6.7 Winding on the hook thread



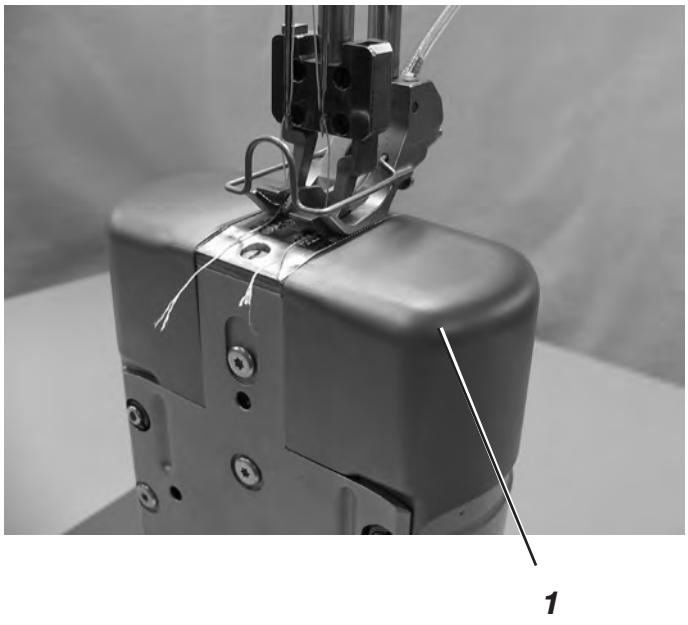


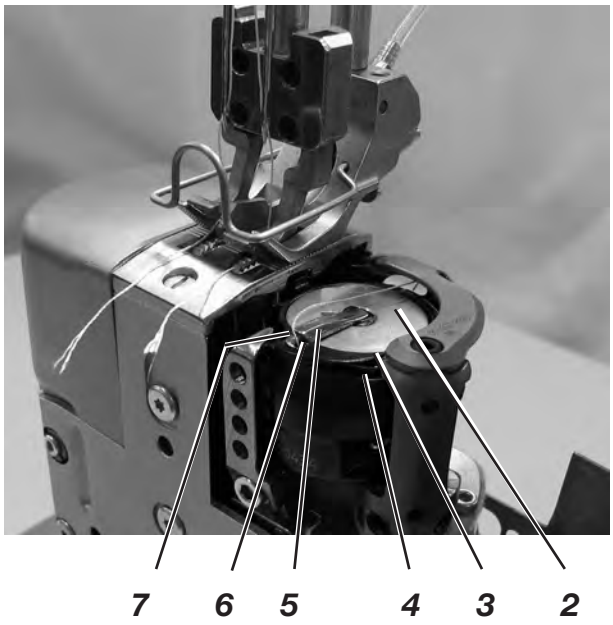
- Put the thread reel on the thread stand and conduct the needle thread through the unwinder arm.
- Conduct the thread through the thread guide 5, around the tensioner 4 and through the thread guide 3.
- Place the thread behind the blade 6 and sever it (in the arrow direction).
- Fit the bobbin 1 onto the bobbin winder.
  There is no need to wind the thread onto the bobbin by hand.
- Press the bobbin-winder lever 2 into the bobbin.
- Sewing
  The bobbin-winder lever terminates the process as soon as the bobbin is full.
  The bobbin winder always stops in such a position that the blade 6 is in the insertion position (see right-hand illustration).
- Remove the full bobbin 1, place the thread behind the blade 6 and sever it (in the arrow direction).
- Fit empty bobbin onto the bobbin winder for the next winding process and press the bobbin-winder lever 2 into the bobbin.

Caution Danger of breakage!

If the thread is not to be wound on during sewing, it is essential for the sewing foot to be locked in the raised position and to set the sewing-foot stroke to its smallest value.

6.8 Changing the hook-thread bobbin





Caution: danger of injury !

Turn off the main switch.

The hook-thread bobbin may only be changed with the machine switched off.

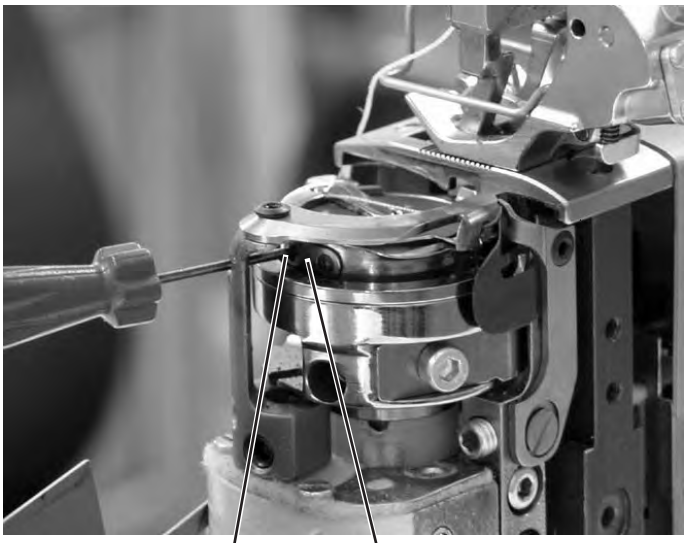
Removing the empty bobbin

– Raise the sewing foot.
– Pull the hook cover 1 upwards and open it.
– Lift the flap 5 and remove the empty bobbin 2.

Inserting a full bobbin

– Insert the full bobbin 2 so that it moves in the **opposite direction** of the hook when unwinding.
– Conduct the hook thread through the slot 3 and underneath the spring 4.
– Pull the hook thread through the slot 7 and continue pulling until it stands out about 4.5 cm.
– Close the flap 5 and pull the hook thread through the thread guide 6 of the flap.

6.9 Setting the hook thread tension



Caution: danger of injury !

Turn off the main switch.

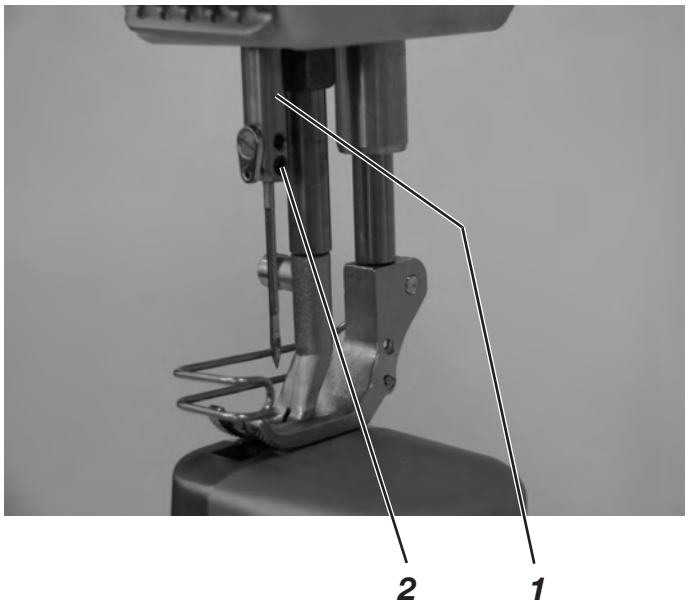
The hook-thread tension may only be adjusted with the machine switched off.

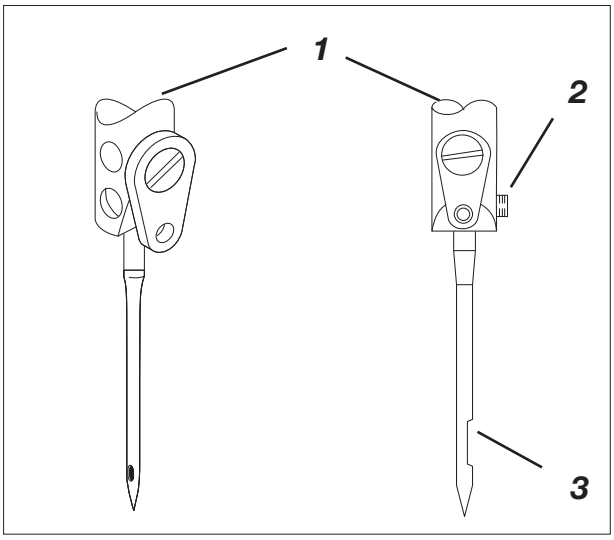
Setting the tension spring 2

– Set the tension spring 2 by turning the adjustment screw 1.
  Increase the hook thread tension = Turn screw 1 clockwise

  Decrease the hook thread tension = Turn screw 1 counterclockwise

6.10 Inserting and changing the needle with single-needle machines





Caution: danger of injury !

Turn off the main switch.

The needle may only be changed with the sewing machine switched off.

- Turn the hand wheel, until the needle bar **1** has reached its highest position.
- Loosen screw **2**.
- Pull the needle downwards out of the needle bar **1**.
- Push in the new needle into the hole of the needle bar **1** as far as it will go.
  Attention!
  The needle scarf **3** must point towards the hook.
- Tighten screw **2**.

CAUTION!

When changing to another needle size, the distance between hook and needle must be readjusted (see service instructions).

Ignoring the above mentioned hint can cause the following mistakes:

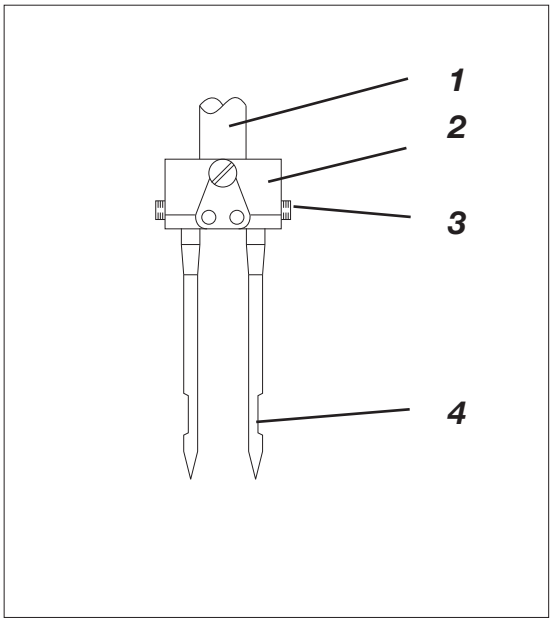
When inserting a thinner needle:

- Missed stitches
  Damage of the thread

When inserting a thicker needle:

- Damage of the hook tip
  Damage of the needle

6.11 Inserting and changing the needle with double-needle machines



Caution: danger of injury !

Turn off the main switch.
The needle may only be changed with the sewing machine switched off.

- Turn the hand wheel until the needle bar **1** has reached its highest position.
- Loosen screw **3**.
- Pull the needle downwards out of the needle holder **2**.
- Push the new needle into the hole of the needle holder **2** as far as it will go.
  Attention!
  Seen from the operating side, the needle scarf **4** of the right needle must point to the right side and the needle scarf of the left needle point to the left side (see drawing).
- Tighten screw **3**.

CAUTION!

When changing to another needle size, the distance between hook and needle must be readjusted (see service instructions).

Ignoring the above mentioned hint can cause the following mistakes:

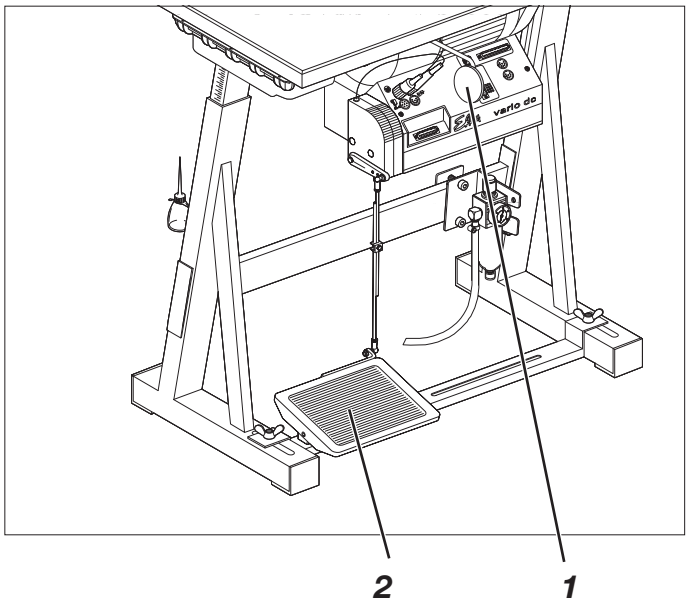
When inserting a thinner needle:

- Missed stitches
  Damage of the thread

When inserting a thicker needle:

- Damage of the hook tip
  Damage of the needle

6.12 Lifting the sewing foot



Subclasses

868-190020, 868-290020

The sewing feet can be lifted mechanically by actuating the knee lever **1**.

Subclasses

868-190322, 868-290322, 868-390322

The sewing feet can be lifted electro-pneumatically by actuating the pedal **2** or the knee lever **1**.

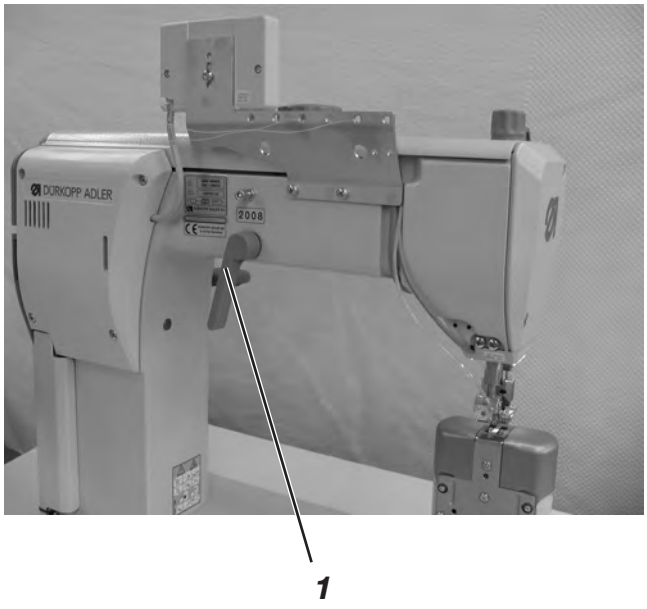
Raising the sewing foot mechanically (knee lever)

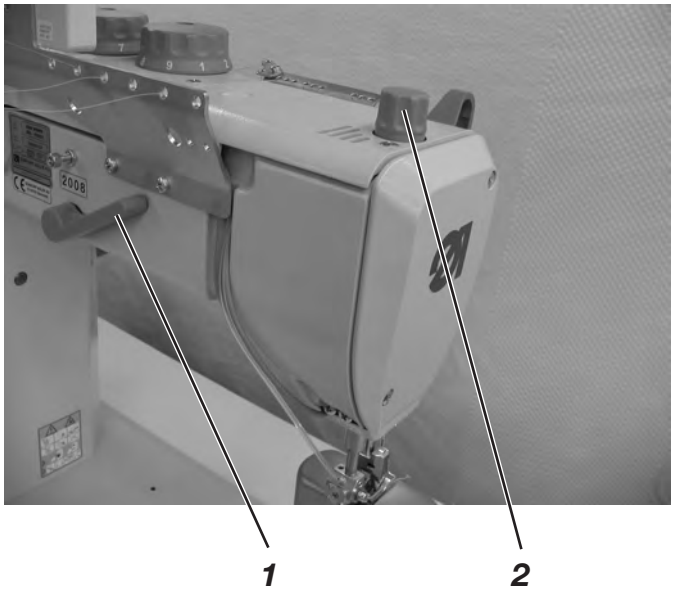
– To adjust the position of the material (e.g. for corrective purposes), push the knee lever **1** to the right.
The sewing foot stays in the up position as long as pressure is maintained on the knee lever **1**.

Raising the sewing foot electro-pneumatically (pedal)

– Press the pedal **2** half-way back.
The sewing feet are raised with the machine at a halt.
– Press the pedal **2** all the way back.
The thread is severed and the sewing foot raised.

6.13 Locking the sewing feet in lifted position





– Push the lever **1** downwards.
  The sewing feet are locked in lifted position.
– Push the lever **1** upward.
  The sewing feet's position is unlocked.

Or

– Lift the sewing feet pneumatically by pushing the knee switch.
  The lever **1** then moves back into its initial position.

6.14 Sewing-foot pressure

The required sewing-foot pressure is set with the setting wheel **2**.

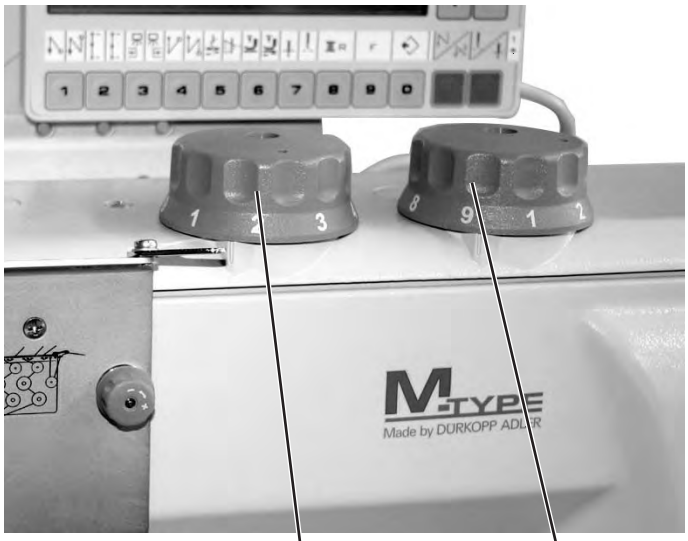
CAUTION !

The material must not "swim".

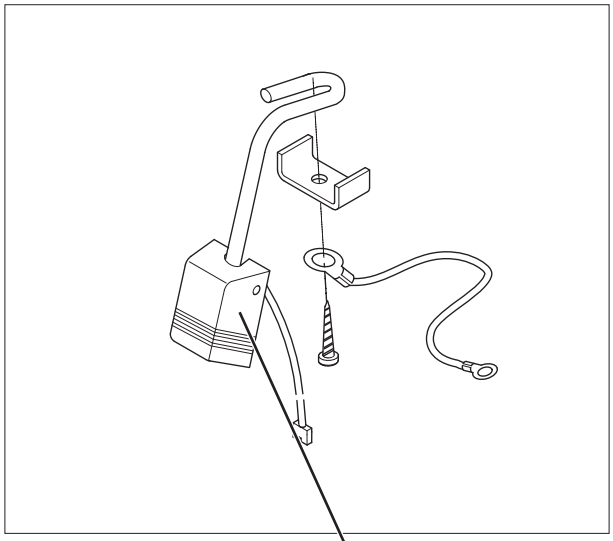
Do not set a higher pressure than is necessary.

– To increase the sewing-foot pressure = turn the setting wheel **2** clockwise.
– To decrease the sewing-foot pressure = turn the setting wheel **2** anti-clockwise.

6.15 Sewing-foot stroke



2 *1*



3

The special sewing machine 868 has, depending on the subclass, as standard equipment two setting wheels for the sewing foot stroke.

With the left setting wheel **2** the standard sewing foot stroke from 1 to 9 mm is selected.

With the right setting wheel **1** an increased sewing foot stroke from 1 to 9 mm is selected.

– Turn the setting wheel **1** and **2** (1 to 9)
  1 = minimal sewing foot stroke
  9 = maximal sewing foot stroke

Automatic speed limitation

Machines without thread trimmer

With these machines the speed is not controlled
Please take into consideration the hint and the chart on the next side.

Machines with thread trimmer

The sewing-foot stroke and speed are interdependent. A potentiometer is linked mechanically with the adjusting wheel. By means of this potentiometer the control unit detects what foot-stroke has been set and restricts the speed of rotation accordingly.

Machines with electro-pneumatic rapid stroke adjustment

With fabric parts that are thicker or in order to sew over cross seams, the increased sewing foot stroke (setting wheel **1**) can be switched on during the sewing process by actuating the knee switch **3** beneath the table top.
As with the machines that are equipped with a thread trimmer, the potentiometer is also available.

CAUTION Danger of breakage!

The standard sewing foot stroke that is set with the setting wheel **2** may never exceed the stroke set with the setting wheel **1**.

Operation mode of the quick stroke adjustment

The activation period of the maximum sewing foot stroke depends on the set operation mode. It is possible to choose between three operation modes.
The individual operation modes are determined by the adjustment of the parameters **F-138** and **F-184** at the control panel (see enclosed instructions of the motor manufacturer).

Operation mode	Operation / Explanation
Keystroke F-138 = off F-184 = 0	The maximum sewing foot stroke remains engaged as long as the knee switch **3** is actuated.
Push-lock F-138 = on	The maximum sewing foot stroke is engaged by actuating the knee switch **3**. By actuating the knee switch once again the maximum sewing foot stroke is disengaged.
Keystroke with minimum number of stitches **F-138 = off** **F-184 0 < 100**	The maximum sewing foot stroke remains engaged as long as knee switch **3** is actuated. After releasing the knee switch the machine sews with maximum sewing foot stroke until the set minimum number of stitches is reached (parameter F-184). Then the seam is continued with normal sewing foot stroke.

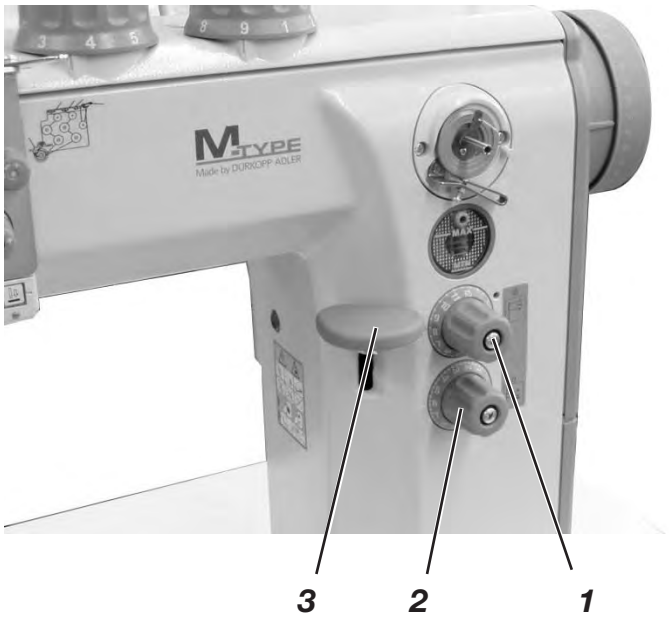
HINT !

In order to ensure an operation as safe as possible and a high durability, the max. speed as shown in the chart should not been exceeded.

Subclasses	Range of stitch lengths [mm]	Sewing foot stroke pos. of setting wheel	max. speed [min^{-1}]
0868-190322	0-8	1-2,5	2,500
		3	2,400
0868-290322		4	2,200
		5	2,000
0868-190020		6	1,800
		7-9	1,600
0868-290020	8-12	1-9	1,600

With double-needle machines having a needle distance of more than 20 mm, the max. speed may amount up to **2,000 min^{-1}**.

6.16 Setting the stitch length



The special sewing machines 868 are, depending on the subclass, equipped with two setting wheels. Thus, two different stitch lengths can be sewn, that are activated by actuating a key (see chapter 6.17).

The two stitch lengths are set with the setting wheels **1** and **2** on the machine arm.

– Set the higher stitch length with the upper setting wheel **1**.
  Setting 1 = min. stitch length
  Setting 12 = max. stitch length
– Set the smaller stitch length with the lower setting wheel **2**.
  Setting 1 = min. stitch length
  Setting 12 = max. stitch length

The stitch length are the same for both, forward and backward sewing.

– For the manual sewing of tacks, push the stitch regulator lever **3** downward.
  The machine sews backward stitches as long as the stitch regulator lever **3** is pressed down.

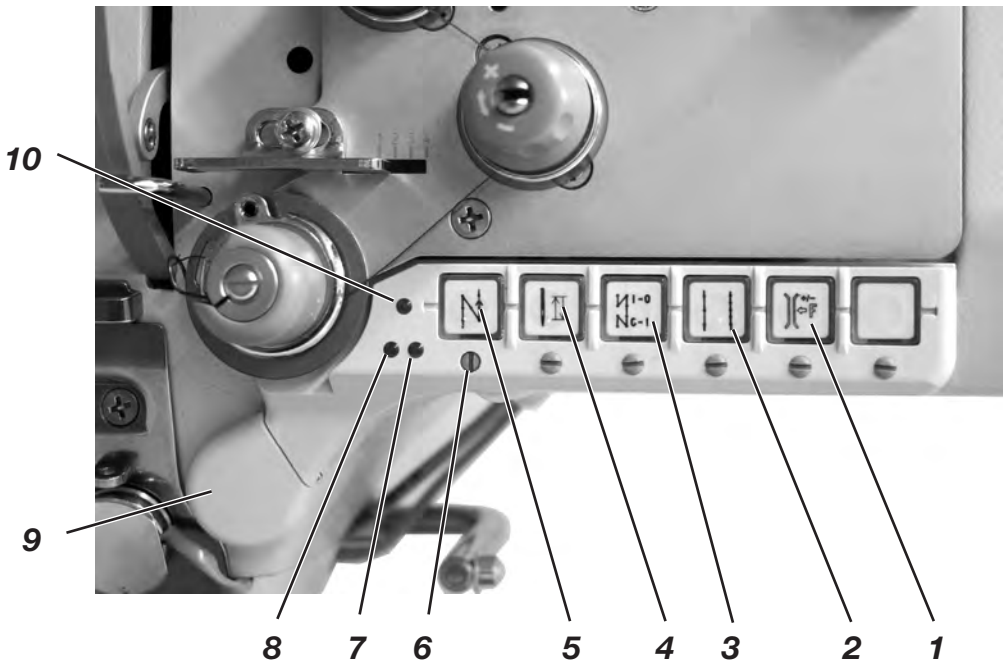
Hint

In order to facilitate the setting of stitch lengths, the stitch length that remains unchanged should be activated with key **2** (see chapter 6.17).

Caution Danger of breakage!

The stitch length set with the lower setting wheel **2** must not exceed the stitch length set with the upper setting wheel **1**.

6.17 Key pad on the machine arm



Key	Function
1	Supplementary thread tension If the key is lit up: Supplementary thread tension is switched on. If the key is not lit up: Supplementary thread tension is switched off.
2	2 stitch length If the key is lit up: Higher stitch length (upper setting wheel) is active If the key is not lit up: Smaller stitch length (lower setting wheel) is active
3	Recalling or suppressing the initial or final bartack. If the initial and final bartacks are generally switched on, the next bartack is switched off by actuating the key. If the initial and final bartacks are generally switched off, the next bartack is switched on by actuating the key.
4	Setting the needle in high or low position. The function of the key can be defined with the parameter F-140. 1 = Needle high 2 = Needle high/low 3 = Single stitch 4 = Single stitch with 2 stitch length/ short stitch 5 = Needle high, when outside position 2 The factory setting is 1 = Needle high.
5	Manually sewing backward. The machine sews backward stitches as long as the key is being pushed.

LED	Function
7 and 8	Display for empty bobbin with residual thread monitor (left/ right bobbin)
10	LED display “power on"

The function of key 9 can be selected with the screw 6 underneath the key 5.

– Select a function.
  Example: 5 = Manually sewing backward.
– Turn in the screw 6 underneath the key 5 and turn it 90° to the right (the slot stands vertically).
  The function can now be called via both keys 5 and 9.

CAUTION!

Before key 9 can be programmed with a new function, the former setting must be deactivated.

7 Sewing Drive and Operating Panel

For a detailed description of the sewing drive, please consult the current issue of the operating manual of the motor manufacturer.

8 Sewing

This description is based on the following assumptions:

– The machine is a single-needle machine equipped with a:
  - thread trimmer
  - electro-pneumatic seam bartacking and sewing foot lifting
  - electro-pneumatic rapid stroke adjustment

– The following functions are set at the operating panel:

  Initial bartack: ON

  Final bartack: ON

  Position of the sewing foot before and after the cutting: DOWN

  Needle position before the cutting: DOWN (Position 1)

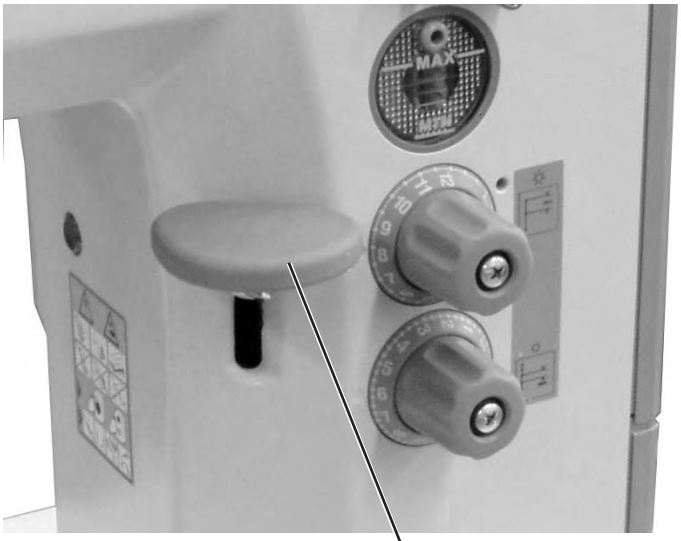
  Needle position after the cutting: UP

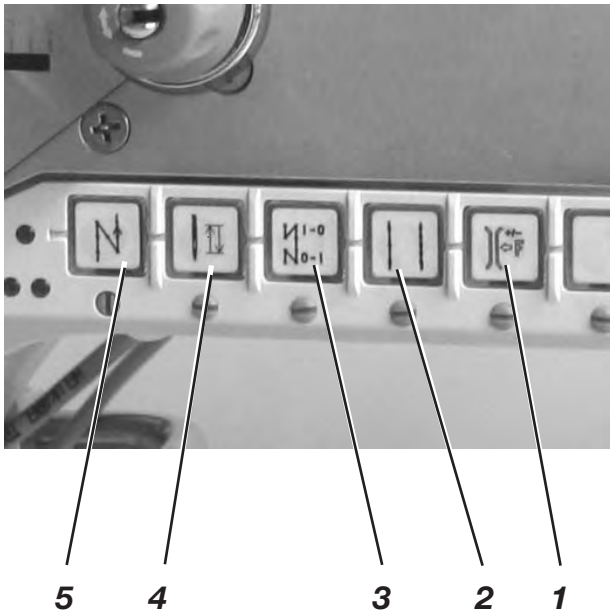
– Main switch on.

– The last sewing procedure was completed with a final bartack and thread trimming.

Operating and function sequence:

Sewing procedure	Operation / Explanation
Prior to sewing	
Starting position	- Pedal in rest position. The machine is at a halt. Needle up. The sewing feet are down..
Position material for starting the seam.	- Pull pedal half-way back. The sewing feet are raised. - Push material forward until it touches the needle.
Sewing	- Push pedal forwards and keep it pushed. Subsequently the machine will continue sewing with the rotation speed determined by the pedal.
In mid-seam	
Interrupt the sewing process	- Release pedal (rest position). The machine halts in the 1
Resume the sewing process (after releasing the pedal)	





Sewing an intermediate bartack	- Push down the stitch regulator lever **6**. The machine sews reverse stitches as long as the stitch regulator lever is pressed down. The rotation speed is determined through the pedal. or - Actuate key 5.
Sewing over a cross seam. (max. sewing foot stroke)	The max. sewing foot stroke is switched on. The rotation speed is limited to 1600 min . Operation modes of the max. sewing foot stroke: - Press briefly the knee switch to switch on the max. sewing foot stroke. - Actuate the knee switch again to switch off the max. sewing foot stroke.
Sewing the 2 stitch length during the sewing process (max. stitch length)	- Actuate key **2**.
Increase the thread tension during the sewing process	- Actuate key **1**.
At the seam end Remove the material	- Push the pedal all the way back and keep it pushed. The final bartack will be sewn (if activated). The thread will be trimmed. The machine halts in the 2 position. The needles are lifted (Turning back). The sewing feet are lifted. - Remove the material.

9 Maintenance

9.1 Cleaning and testing

Caution: danger of injury !

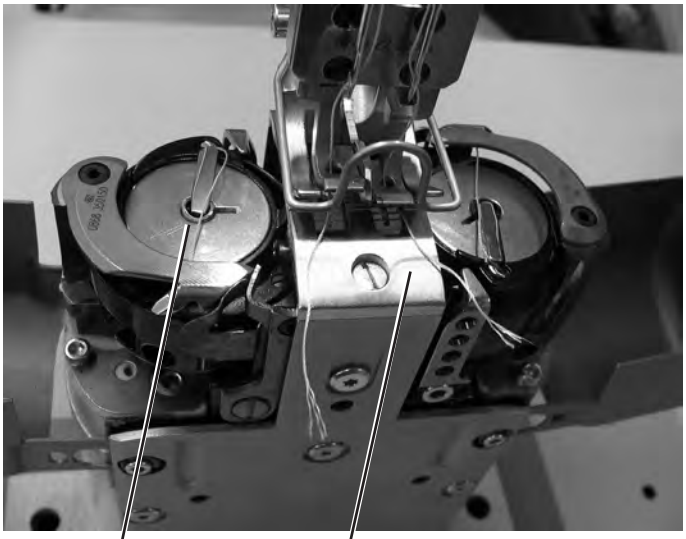
Turn off the main switch.

Maintenance may only be carried out with the machine switched off!

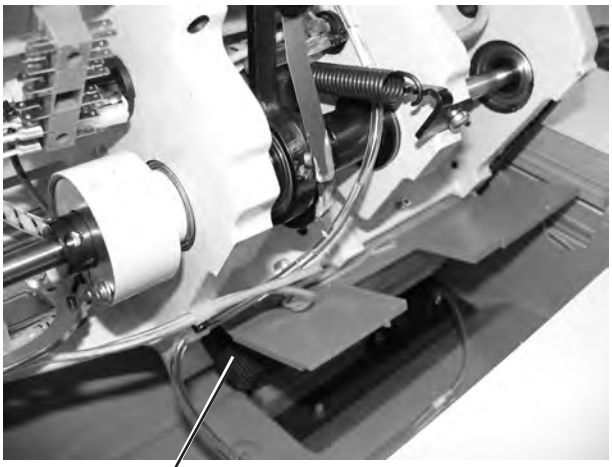
Maintenance work must be carried out no less frequently than at the intervals given in the tables (see ”operating hours” column).

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

A clean machine is a trouble-free machine.

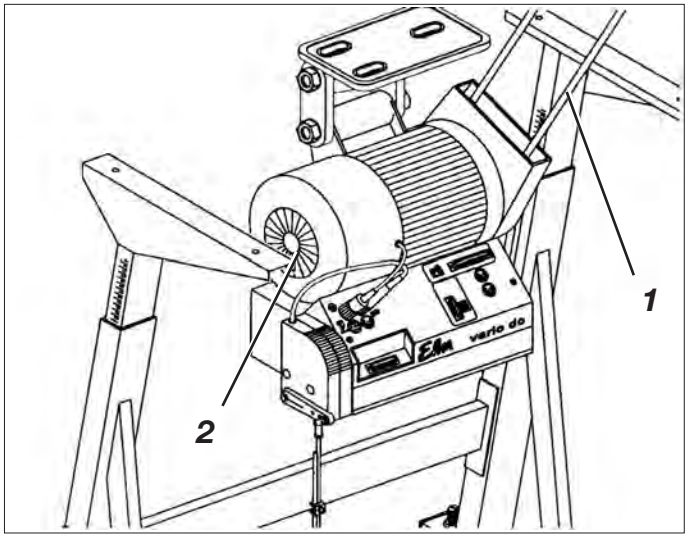


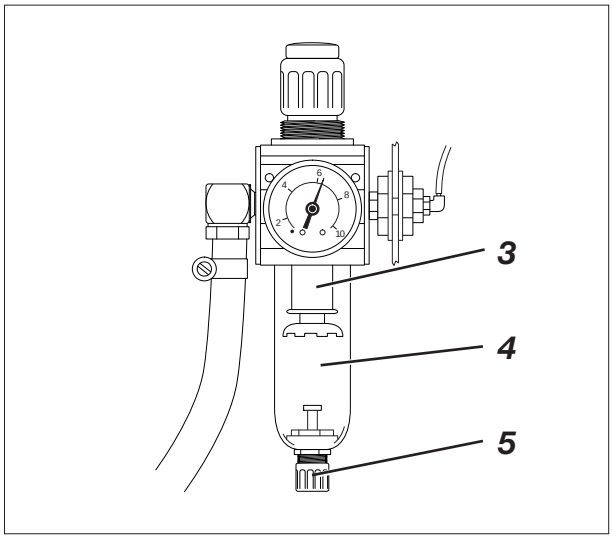
1 *2*



3

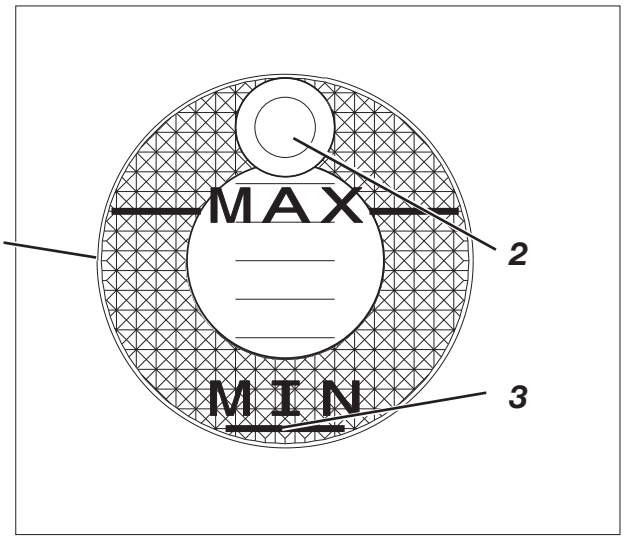
Maintenance work to be carried out	Explanation	Operating hours
Machine head		
- Remove lint, pieces of thread and other debris (e.g. with an air blow gun)	Places in special need of cleaning: - area under the throat plate **2** - feeders - area around the hook **1** - bobbin housing - thread trimmer - needle areal **CAUTION !** Hold the air blow gun in a way that the lint is not blown into the oil collector.	8
Direct drive		
Clean fan grille **3**. (e.g. with an air blow gun)	Remove lint and pieces of thread from air-intake openings.	8





Maintenance work to be carried out	Explanation	Operating hours
Sewing drive		
Clean fan grille **2**. (e.g. with an air blow gun)	Remove lint and pieces of thread from air-intake openings.	8
Check condition and tension of V-belt **1**.	It must be possible to depress the V-belt by about 10 mm by pressing it with a finger at its mid-point.	160
Pneumatic system		
Check water level in pressure regulator.	The water level must not rise to the level of the filter cartridge **3**. - After unscrewing the drain screw **5**, the water under pressure will flow out of the water separator **4**.	40
Clean filter cartridge.	Dirt and condensation are separated out by the filter cartridge **3**. - Disconnect the machine from the compressed-air supply. - Unscrew the drain screw **5**. There must be no pressure in the machine's pneumatic system. - Unscrew water separator **4**. - Unscrew filter cartridge **3**. Wash the filter shell and cartridge with cleaning fluid (not solvent) and blast clean. - Re-assemble the maintenance unit.	500
Check the system for leaks.		500

9.2 Lubrication



Caution: danger 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 mm²/s
- Flashpoint:150° C

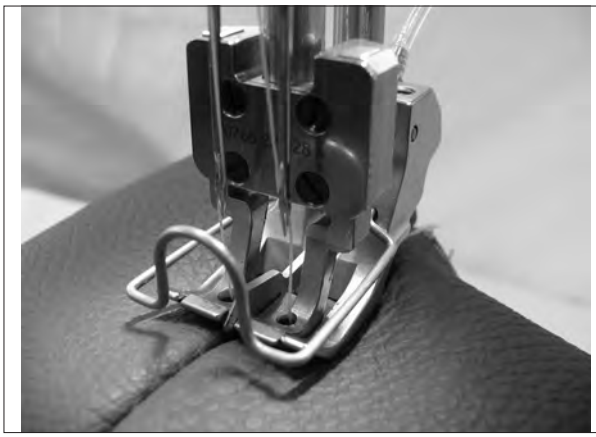
DA 10 is available from **DÜRKOPP ADLER GmbH** retail outlets under the following part numbers:

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

Maintenance work to be carried out	Explanation	Operating hours
Lubrication of the machine head	The machine head is fitted with a central oil-wick lubrication system. The bearings are supplied out of oil reservoir 1. - The oil level must not fall below the marking line 3 (MIN) of the oil reservoir. If the oil level falls below the marking line 3, the oil reservoir will be lit (only the CLASSIC version). - Fill in oil through the bore hole 2 up to the marking line “Max”.	8

10 Optional equipment

10.1 Seam center guide



General information

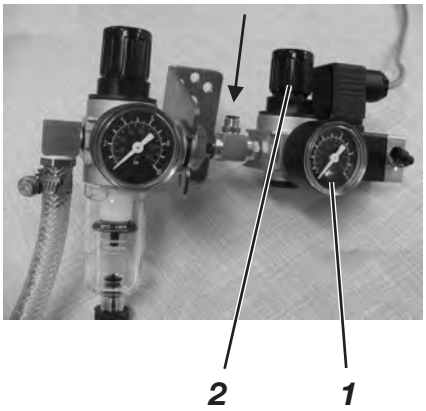
The seam center guide serves as guiding aid when topstitching.

It is used for guiding the center of two seams with equal distance so that the distance to the left and to the right needle is equal.

Attention!

The pressure for the seam center guide must not exceed 3 bar.

Check the pressure at the manometer 1 and set it using the turning handle 2.



– To set the contact pressure pull out the turning handle 2 of the pressure regulating valve of the seam center guide and turn it.

  In clockwise direction= to increase the contact pressure
  In counter-clockwise direction = to reduce the contact pressure

10.2 Repair

When the machine is damaged or parts are worn please

contact: DÜRKOPP ADLER GmbH

Potsdamer Str. 190

D-33719 Bielefeld
Phone: +49 (0) 180 5 383 756
Fax: +49 (0) 521 925 2594
E-mail: service@duerkopp-adler.com
Internet: www.duerkopp-adler.com

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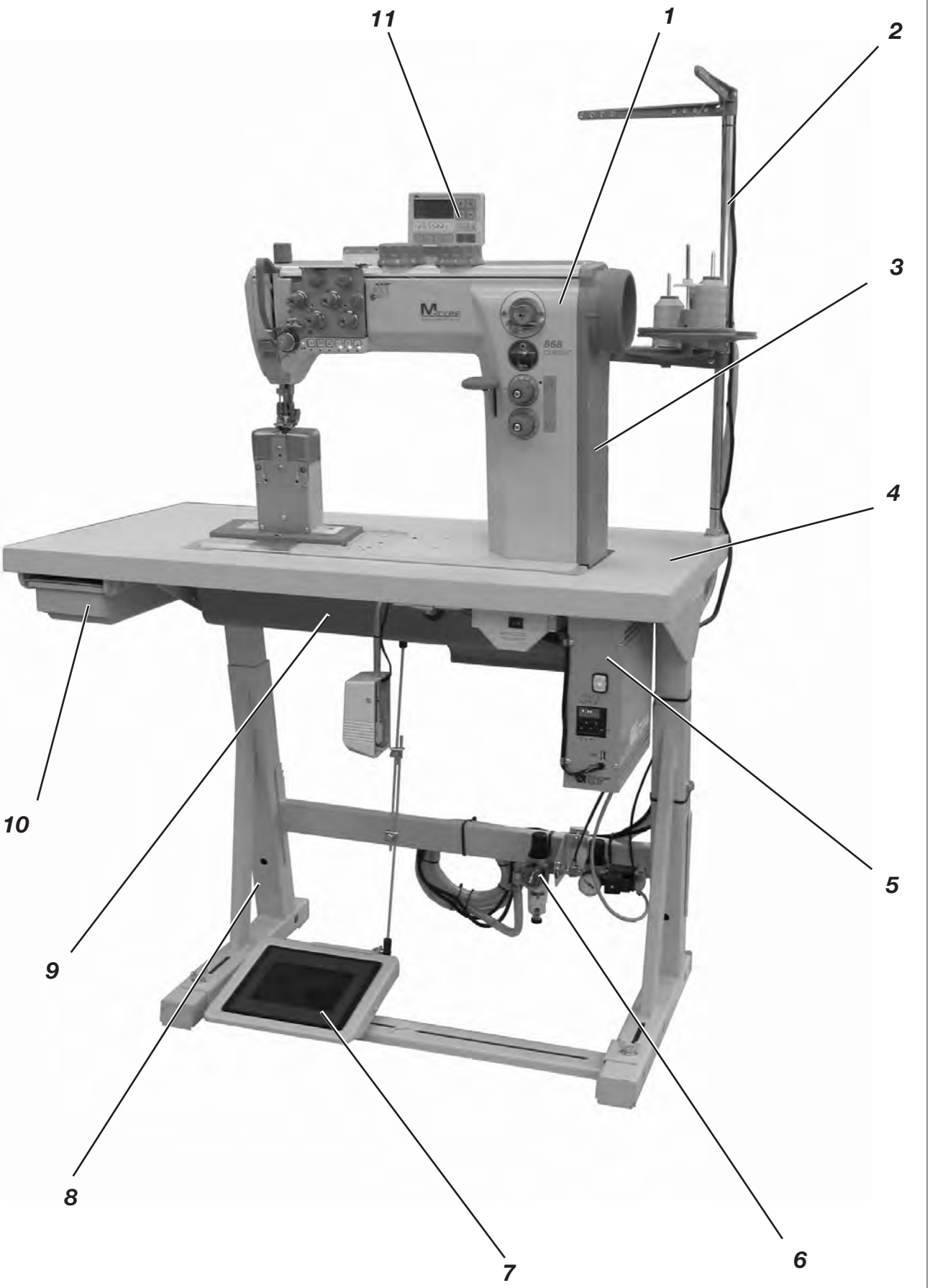
11
1
2
3
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10
9
5
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6

1 Scope of Delivery

What items are supplied **depends on your order**.

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 GmbH**.

– **1** Machine head

Dürkopp Adler accessory set box with:

– **2** Reel stand
– Protection cover (not represented)
– **9** Oil tray

Set of electronic parts, depending on the order, for:

Machines with Efka DC 1550 / DA321G actuator

– **5** Efka control unit
– **11** Operating panel
– **3** Cover

Machines with clutch motor

– Main switch
– Sewing-drive
– Belt guard

Optional equipment

– **8** Stand (optional)
– **7** Pedal and linkage (optional)
– **4** Table top (optional)
– **10** Drawer (optional)
– Knee lever
– Pneumatic sewing foot lifting

2 General and transport packing

Caution:

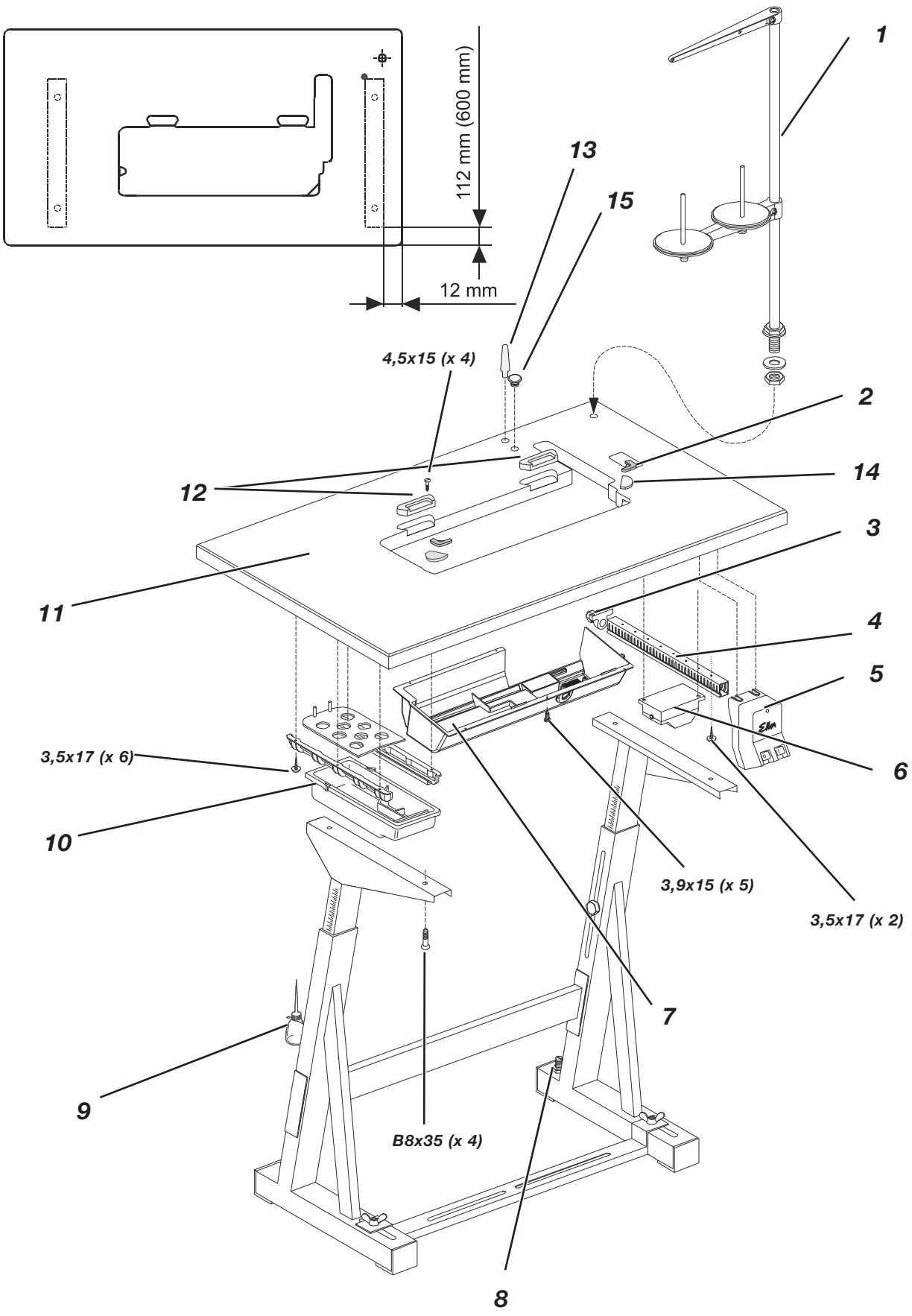
The special sewing machine must be set up by trained specialist personnel.

Transportation locks

If the special sewing machine you have bought is already set up, the following transport packing must be removed:

– Safety straps and battens on the machine head, table and stand.
– Safety block and straps on the sewing drive.

Observe the punch-marks of the table plate!



3 Assembling the stand

3.1 Assembling the stand components (Standard)

– Assemble the individual stand components as shown in the illustration.
– Adjust the set screws **8** to insure the stability of the stand. Make sure that the stand is safe by insuring that every single foot of the stand touches the ground.

3.2 Assembling the table plate

For an optimal arrangement, please respect the corresponding table top layout:

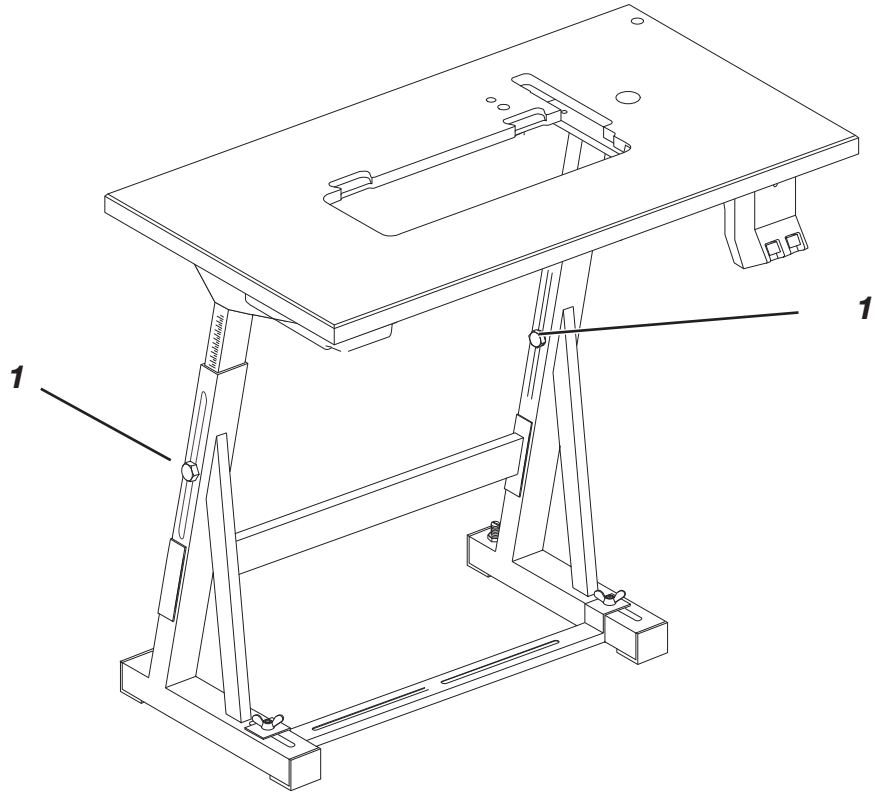
Stand	Table top layout
MG55 400364	0791 868710
MG55 400374	0791 868710

– Screw the **drawer 10** with its holders onto the left side underneath the table plate.
– Screw the **oil sump 7** under the table plate. The three stops of the oil sink should be fitted against the table opening.
– Screw the **main switch 5*** to the right side under the table plate.
– Screw the **cable duct 4*** behind the main switch 5 under the table plate.
– Screw the **holder 3** for the traction relief of the connecting cable behind cable duct 4 under the table plate.
– Screw the **sewing-lamp transformer 6** (optional equipment) under the table plate.
– Fit the **machine head support 13**** into the bore hole of the table top .
– Put the **cap 15**** into the bore hole of the table top.
– Place the **hinge bottoms 12** for the machine head into the cutout of the **table plate 11** and tighten the screws.
– Insert the **inclination support 14****.
– Insert the **rubber corners 2**.
– Attach the **table plate 11** to the stand with woodscrews (B8 x 35) (see sketch for position).
– Insert the **yarn stand 1** into the bore hole in the table plate and secure it with the nuts and washers. Fit and align the yarn reel and unwinding holders. The yarn reel holder and the unwinding arm must be vertically in line.
– Screw the **holder for the oil-can 9** onto the left-hand stand brace

* Not applicable with sewing machines with direct drive.

** If the machine's position in the stand should not be inclined but horizontally straight, exchange position 13 against 15. Do not use the inclination support 14.

3.3 Setting the working height



- The working height is adjustable between 750 and 900 mm (measured to the upper edge of the table plate).
- Undo screws **1** on the stand braces.
- Adjust the table plate horizontally to the required working height. To prevent tilting, pull the table plate out or push it in by the same distance on both sides.
- Tighten both screws **1**.

4 Sewing drives

4. 1 Drive category, type and use

The following sewing drives are available:

Subclass	Clutch motor	DC-positioning drive
868-190020	FIR 1147-F.752.3 *	Efka DC1550/DA321G
868-290020	FIR 1148-F.752.3	Efka DC1550/DA321G**
868-190322		Efka DC1550/DA321G
868-190341		Efka DC1550/DA321G**
868-290322		
868-290341		
868-390322		

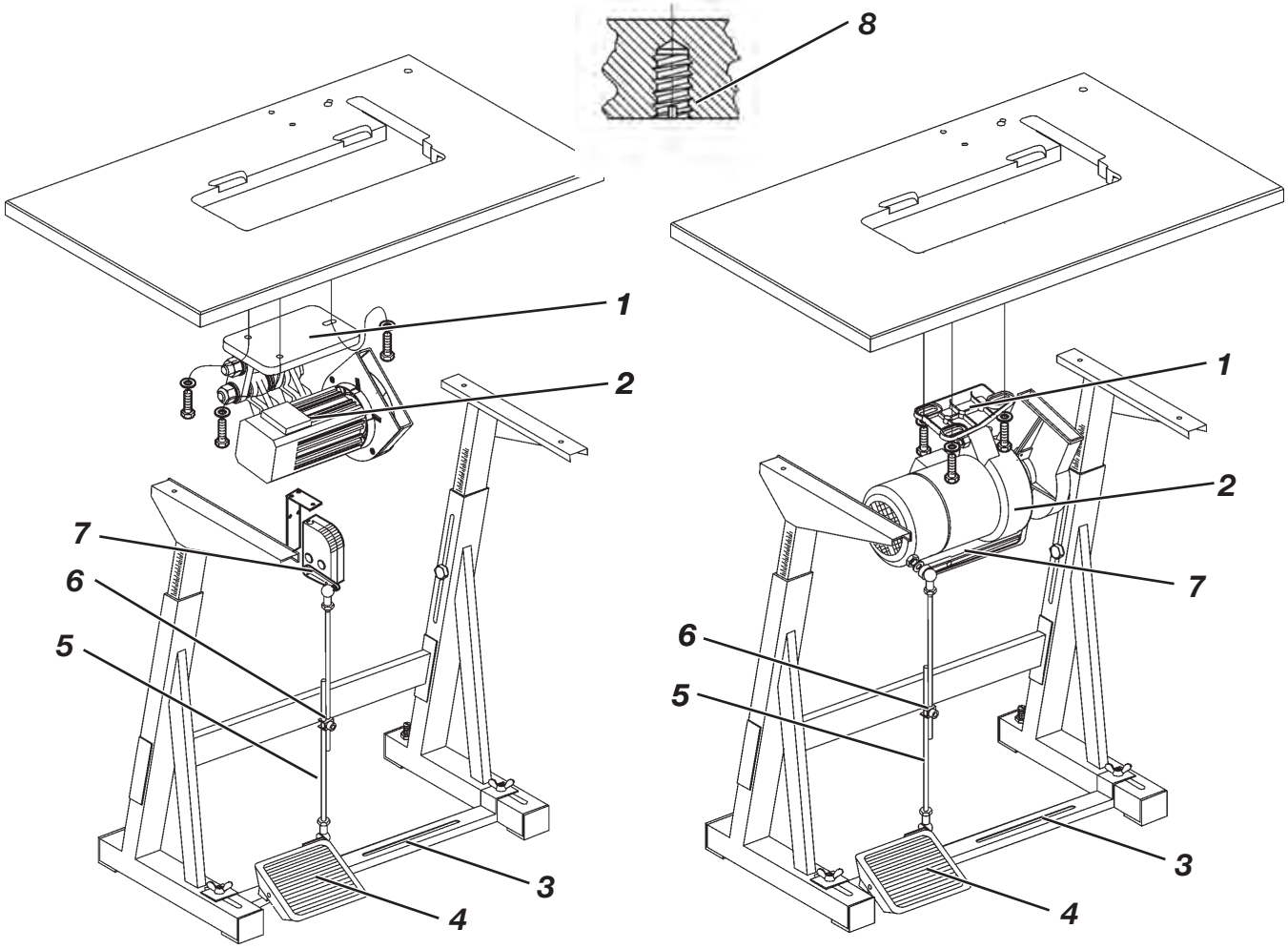
* This clutch motor incorporates an electromagnetic brake that rapidly stops the rotor when it runs on after the motor has been switched off. This prevents the sewing machine from starting up unintentionally if the pedal is operated shortly after switching off.

** For machines with the drive positioned under the table

4.2 Components of the drive sets

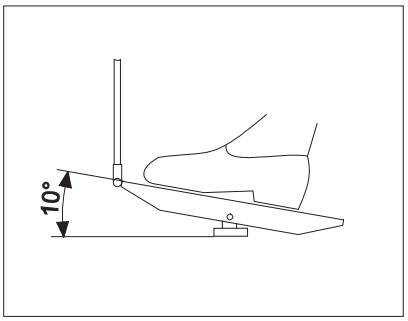
The desired drive is delivered as a “drive package” that, apart from the drive, also includes the belt pulley, the V-belt, connection cables, the pedal linkage, fixing material and diagrams.

4.3 Fitting the sewing drive



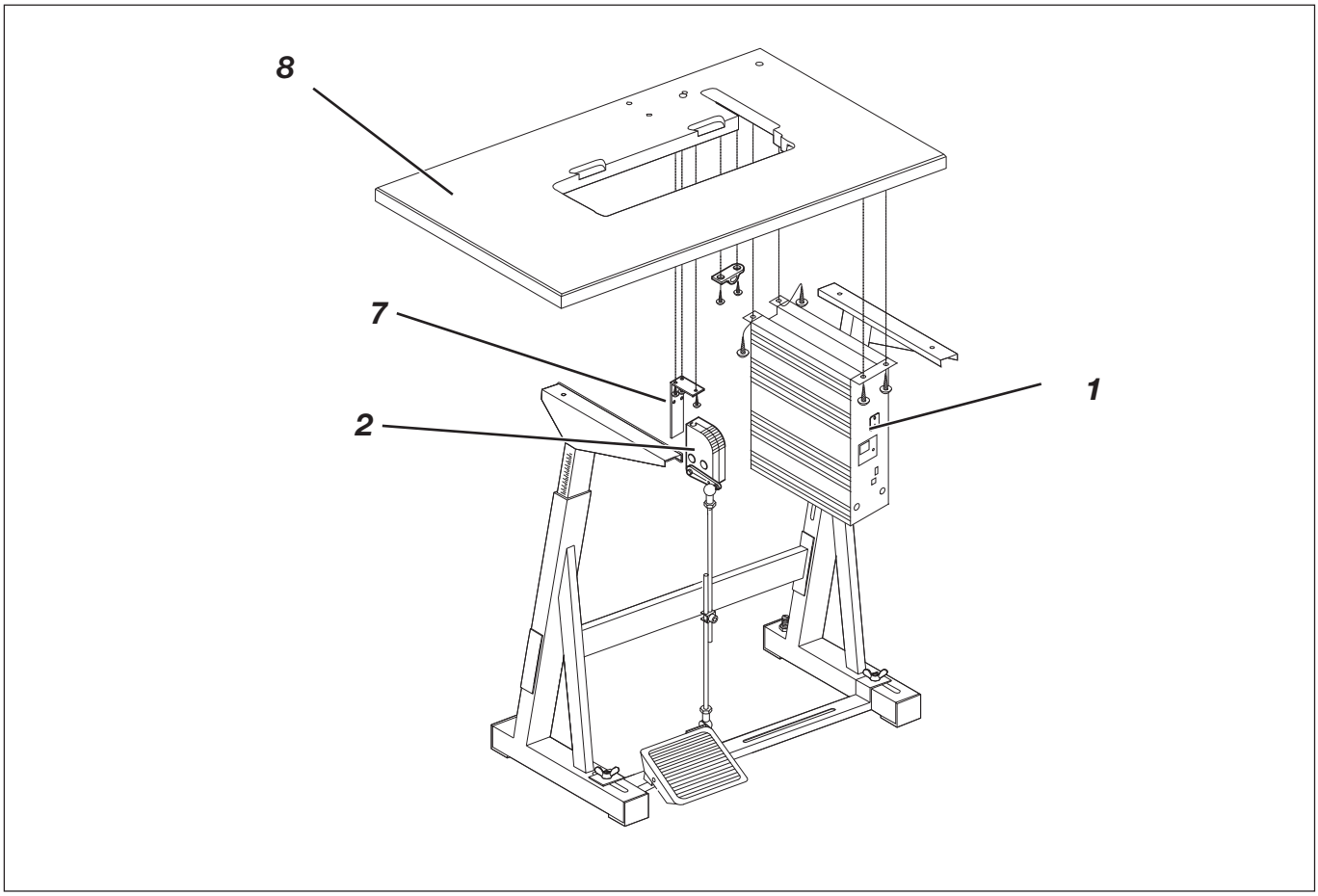
– Attach the sewing drive 2 with its base 1 on the bottom side of the table plate by screwing the three hexagonal screws (M8 x 15) with washers into the nuts 8 of the table plate bottom.

4.4 Fitting the pedal



– Attach the pedal 4 to the stand brace 3.
– For ergonomic reasons align the pedal 4 as follows:
The center of the pedal must be approximately under the needle.
There are slots in the stand brace 3 to help align the pedal.
– Attach the ball pins to the lever 7 as required by the drive.
– Hook in the pedal linkage 5.
– Slightly undo screw 6.
– Adjust the height of the pedal linkage 5 as follows:
when released the pedal 4 should be inclined about 10°.
– Tighten screw 6.

4.5 Fitting the sewing-drive control for machines with Efka DC 1550 / DA 321G



– Fix the sewing-drive control **1** with 4 screws underneath the table plate **2**.
– Fix the power supply cable of the sewing-drive control with the traction relief clip **3** underneath the table plate**.**

4.6 Fitting the set value initiator

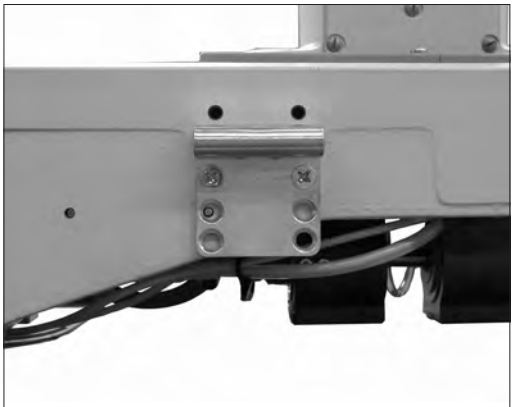
– Screw angle **7** under the table plate **8**.
– Screw the set value initiator **2** onto the angle **7**.

5 Assembling the machine head

The sewing machine heads of the class 868 can be fitted into the stand horizontally straight as well as inclined.

Therefore the positions of the hinges on the machine head and the fastening of the direct drive must be considered.

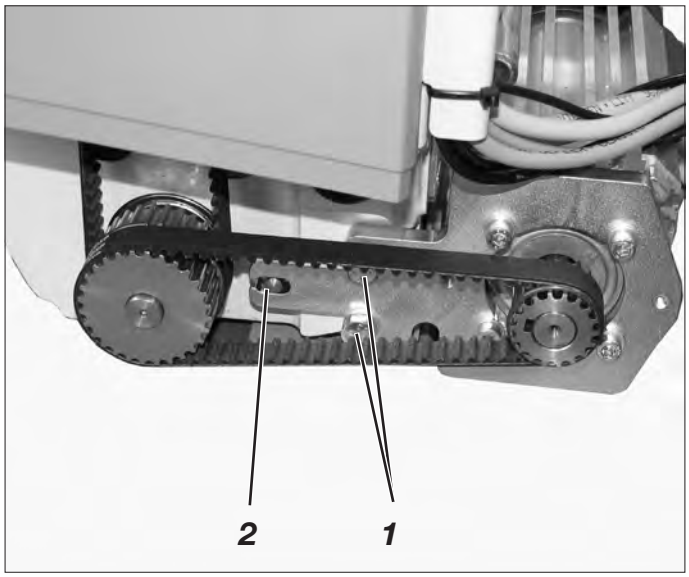
5.1 Fitting the hinges on the machine head

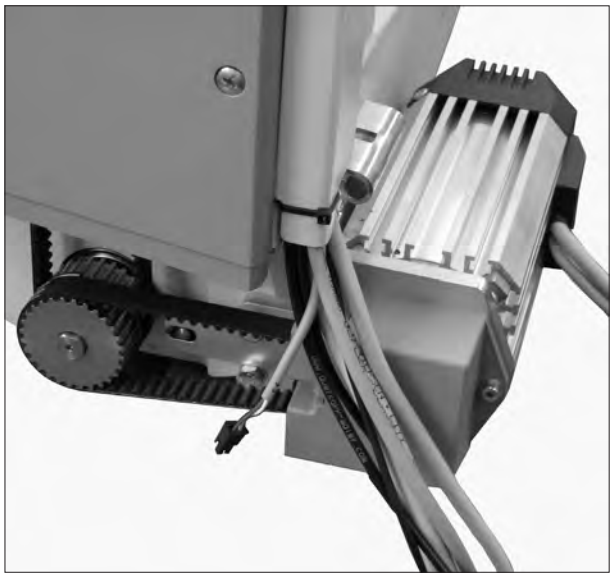


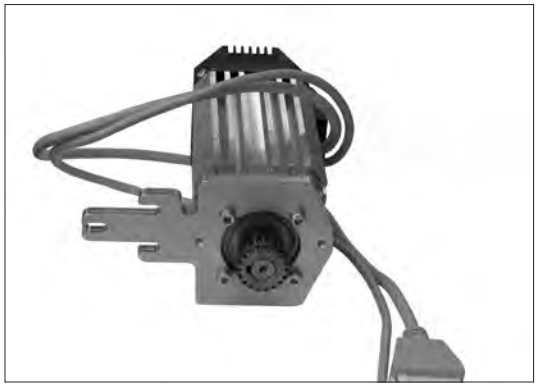
Position of the hinges for the inclined set-up of the machine

Position of the hinges for the straight set-up of the machine head

5.2 Fitting the direct drive







Position of the motor support for the inclined set-up of the machine

Position of the motor support for the straight set-up of the machine

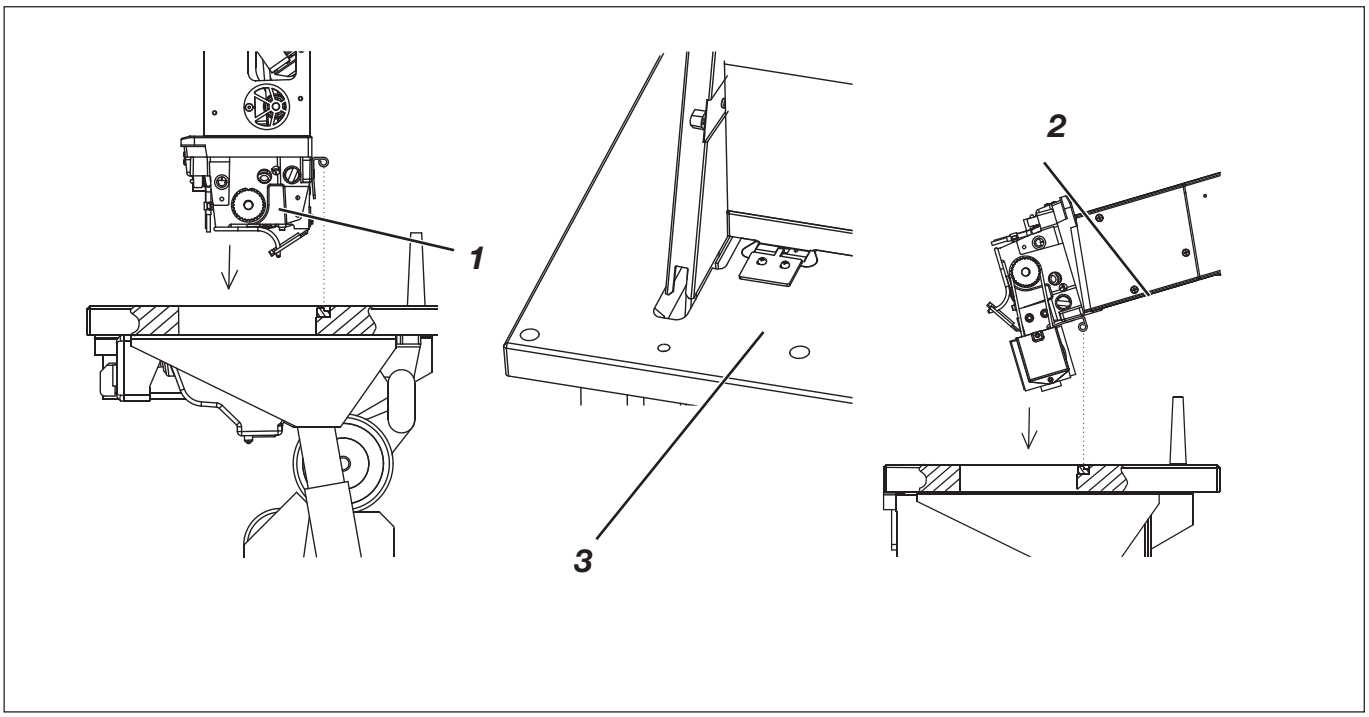
5.3 Tensioning the toothed belt of the direct drive

Loosen the screws **1** in order to tighten the toothed belt. The belt tension can be altered by shifting the motor with its support in the oblong hole **2**. Afterwards the screws **1** must be tightened again.

The toothed belt tension is to be set so that when a load of 20N is put on the belt center in the middle between the belt pulleys, the belt shows a bow of 4 mm. The measure is be taken exactly in the middle between the two belt pulleys.

When setting the belt tension with a measuring device the belt tension should be about 150 Hz.

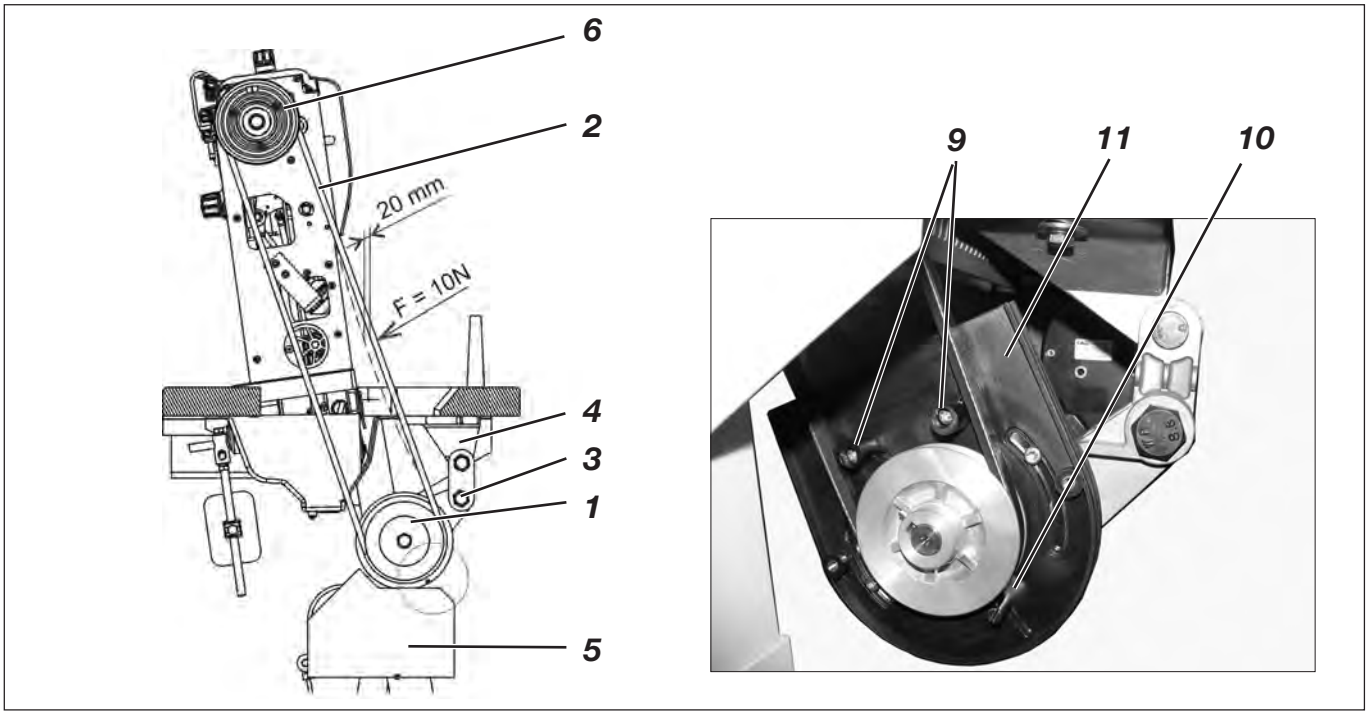
5.4 Placing the sewing machine head on the stand



– If the sewing machine is equipped with motor on the table plate bottom, place the machine head **1** vertically into the table plate's cutout.
– If the machine is equipped with motor on the machine head, incline the machine head **2** in order to place it into the table plate's cutout.
– After placing the machine head immediately fix the retaining plate that prevents the machine head from falling out when being tilted.
– The retaining plate **3** is part of the accessories that come with the machine head.

5.5 Fitting and tensioning the V-belt

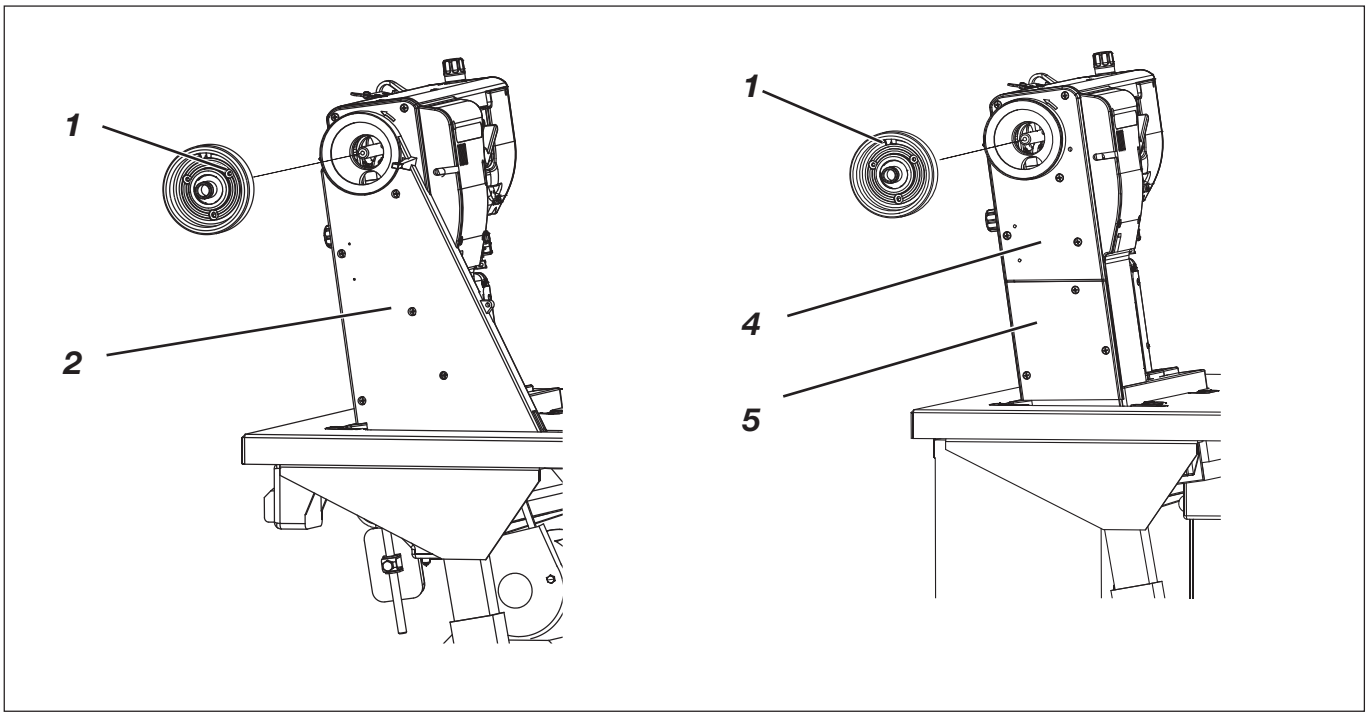
Only concerns machines with motor on the table plate bottom.



V-belt 2, V-belt pulley 1 and belt guard are part of the drive set

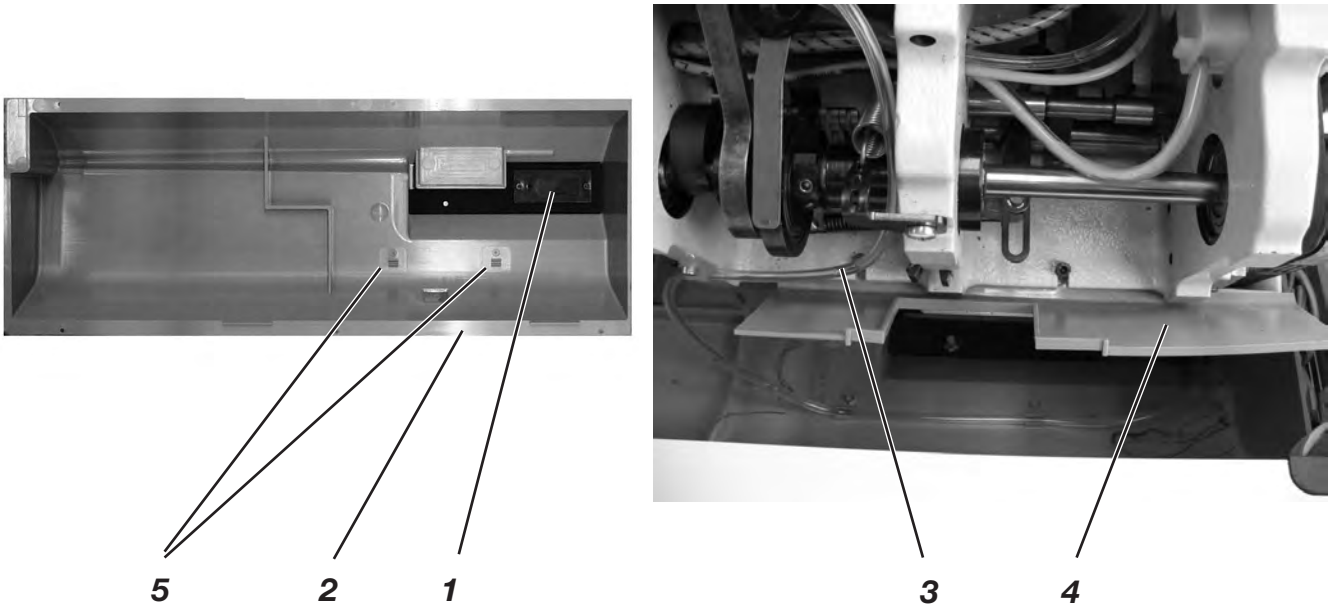
- Fix the V-belt pulley **1** on the shaft of the sewing drive.
- Put the V-belt on the belt pulley **6** on the machine head.
- Pass the V-belt **2** down through the cutout of the table plate.
- Tilt the sewing machine head to the back.
- Place the V-belt **2** on the V-belt pulley **1**.
- Tilt the machine head back to the front.
- Loosen the screw **3** on the socket **4** of the sewing drive.
- Tension the V-belt **2** by swivelling the sewing drive **5**.
  With the correct belt tension the V-belt **2** bows by about 20 mm at its mid-point under a load force of F =10 N (~1 kg).
- Tighten the screw **3**.
- Set the belt inlet protection **9** and the belt catch device **10** of the belt guard **11**. The V-belt **2** must remain on the belt pulleys when the sewing machine head is tilted backwards. See the motor manufacturers' operating instructions!
- Screw on the belt guard cover **11**.

5.6 Fitting the belt cover



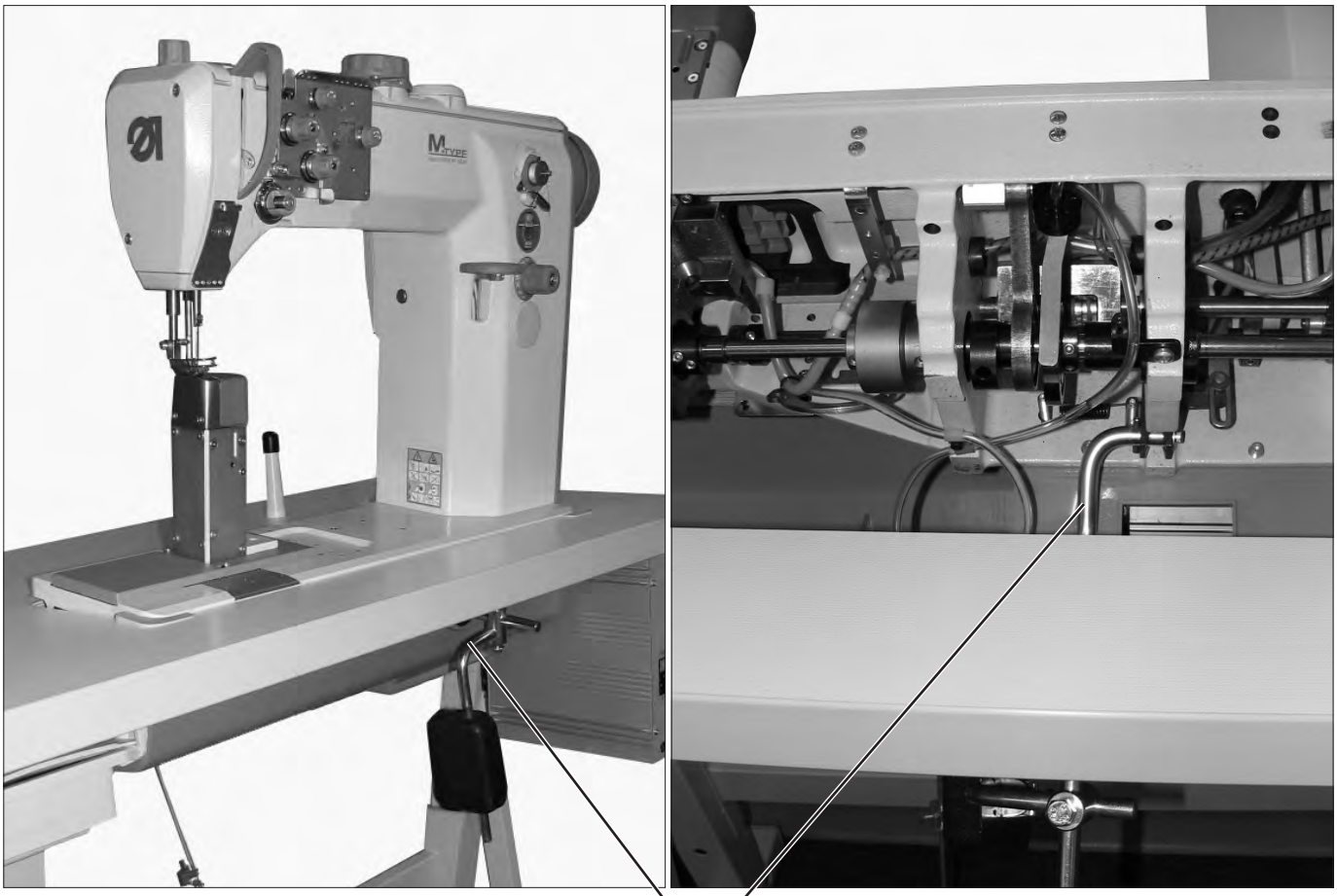
- Remove the handwheel **1**.
- When the machine's motor is situated underneath the table plate mount the belt cover **2** on the machine head .
  (The belt cover is part of the drive package)
- When the machine's motor is situated on the sewing machine head mount the belt cover **4** and **5** .
  (The belt guard is part of the drive package)
- Mount the handwheel **1**. Pay attention to the correct position:
  The position of the needle in its upper dead center must correspond to the value "0" on the handwheel's graduated scale.

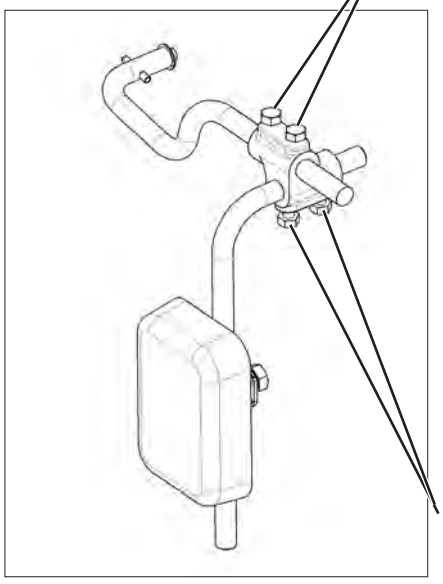
5.7 Fitting the oil suction tube



- Remove the cap from the end of the suction tube **3**.
- Put the end of the suction tube **3** into the fitting of the cover **1**.
- Snap the tube into the tube holder **5** in the oil sump **2**.
- Screw the cover **4** onto the base plate.

5.8 Attaching the knee lever

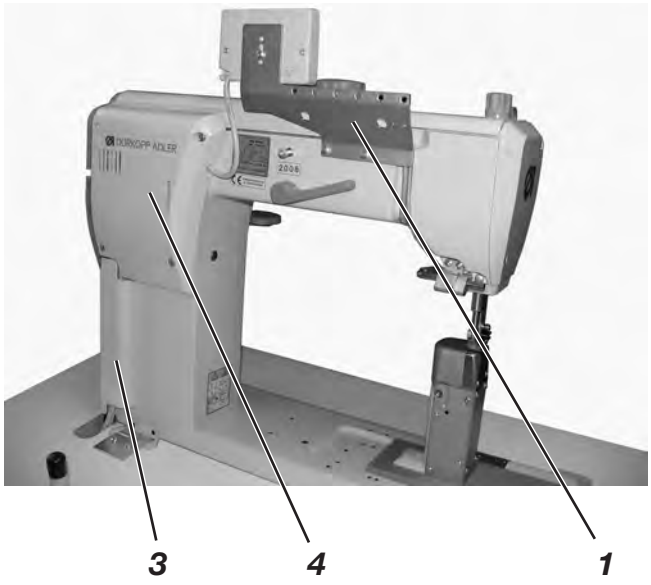


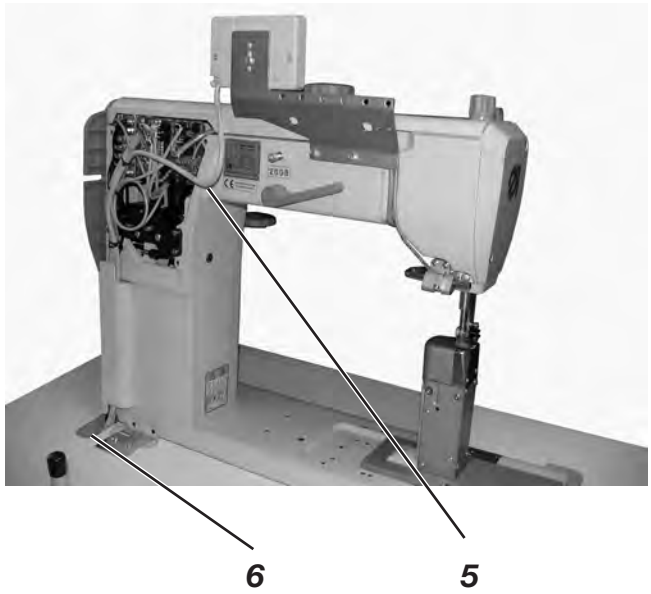


The knee lever **2** mechanically raises the sewing foot.

- Attach the knee lever **2**.
- Undo the screws on the joint **1**.
- Adjust the knee lever so that it can be conveniently operated with the right knee.
- Tighten the screws on joint **1** again.
- Undo screw **3**.
- Align the knee-pad.
- Tighten screw **3** again.

5.9 Fitting the operating panel





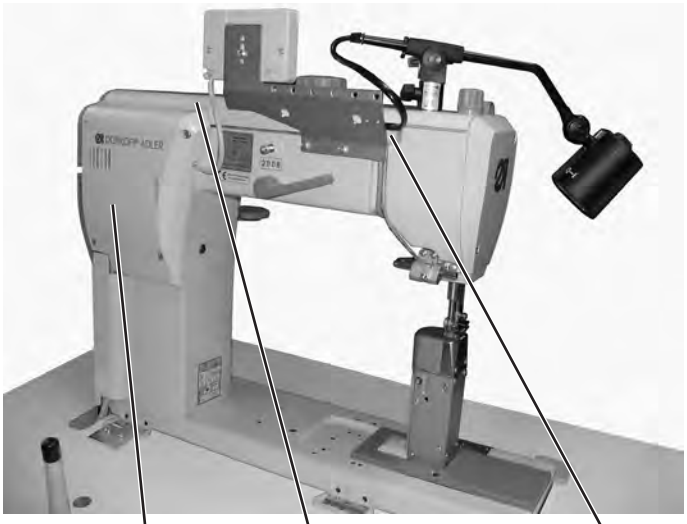
- Fix the control panel fixing angle **1** together with the thread guide **2**.
- Remove the valve cap **4**.
- Lay the power supply cable **5** of the operating panel as follows: Lay the power supply cable behind valve cap **4** and arm cover **3** in the machine arm and down through the table plate cutout **6**.
- Plug in the plug of the connection cable into the socket B776 of the drive control unit.
- Replace the arm cover 3 and the valve cap 4.

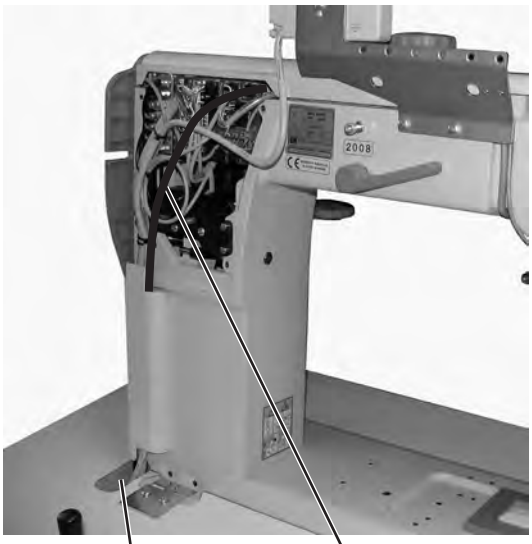
5.10 Fitting the sewing lamp (optional equipment)

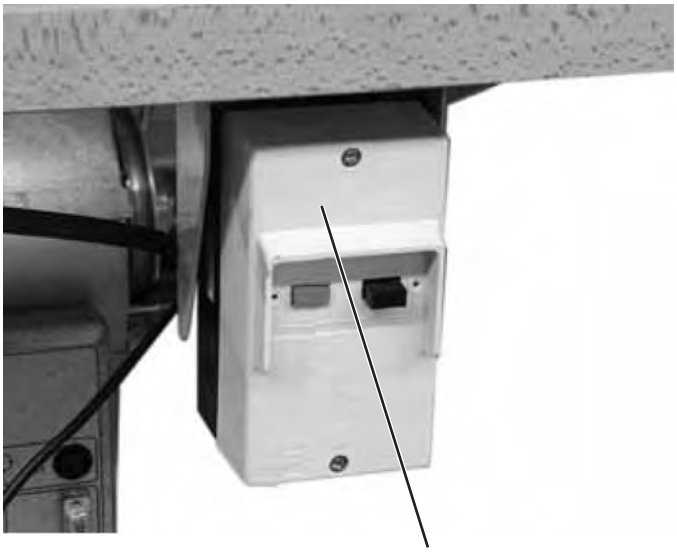
Caution !

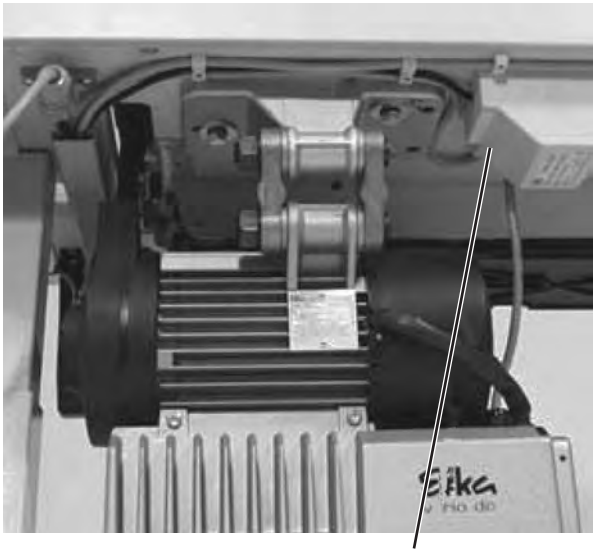
Turning off the main switch does not turn off the current for the sewing lamp.

Remove the mains plug before connecting.









The sewing lamp is mounted on the arm cover. In order to do so lift off the arm cover 3. Drill through the fastening holes with a 4,5 mm drill and fasten the holder.

– Stick the safety warning label on the front of the main switch 7.
– Fix the sewing light on the holder.
– Lift off the arm cover 3 and the valve cap 4.
– Lay the power supply cable in the cutout of the machine arm.
– Pass the power supply cable down through the hole in the table plate 6.
– Attach the sewing lamp transformer 8 underneath the table plate with chipboard screws.
– Attach the power supply cable underneath the table plate with cable ties.
– Plug in the sewing-light transformer connection.
– Fit the arm cover 1 and valve cap 4.

6 Electrical connection

6.1 General

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.

While working on the electrical equipment the mains plug must be removed!

6.2 Checking the mains voltage

Caution !

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

6.3 Connecting the sewing drive

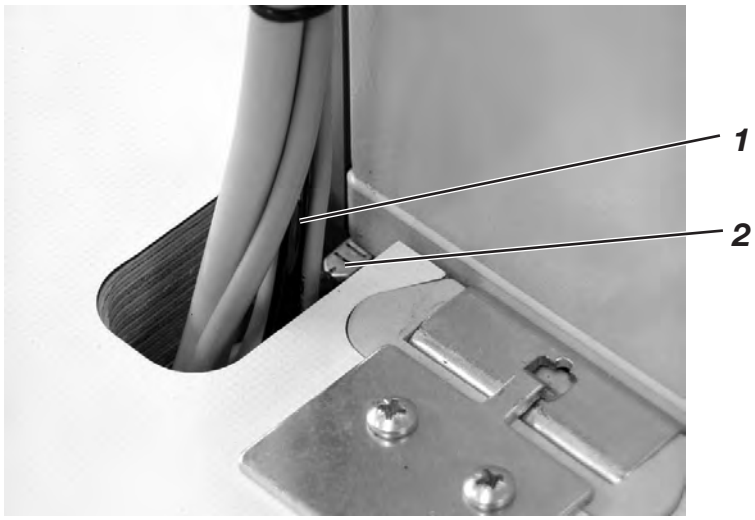
6.3.1 Connecting the clutch motor

- Lay the connection cable from the main switch through the cable duct to the sewing drive and connect it to the sewing drive. See connection diagram 9800 110002 A/ 9800 110002 D (in the connection pack) or the circuit diagram on the clutch motor.
- Lay the main cable from the main switch through the cable duct to the back and attach it to the stress-relief.

6.3.2 Connecting the direct-current positioning actuator

- Lay the connection cable from the main switch through the cable duct to the sewing drive and connect it to the sewing drive. See connection diagram 9800 130014 R (in the connection pack).
- Lay the main cable from the main switch through the cable duct to the back and attach it to the stress-relief.
  Plug the cable from the set-point generator into socket b80 of the drive control. See sketch on page 29.

6.4 Earthing



The earthing cable **1** is in the machine's accessory pack.

The earthing cable **1** takes static charges from the machine head to earth via the motor base.

– Connect the earthing cable **1** to the flat plug **2** (already screwed on the machine head) and lay it through the cable duct to the motor base.
– Screw the earthing cable **1** onto the motor base at the point provided.
– Additionally attach the earthing cable **1** under the table plate with the nail clamps.

Caution!

Please make sure that the earthing cable 1 does not touch the drive belt.

Hint

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.

6.5 Connecting the sewing drive to the mains

Caution:

The sewing machine must be connected to the mains with a plug.

Clutch motors must be connected to a 3 x 380 - 415V 50/60Hz or 3 x 220 - 240V 50/60Hz three-phase AC.

The connection is done according to the connection diagrams 9800 110002 A or 9800 120009 D.

The **direct-current positioning actuator** is operated with a single-phase alternating current of 190 - 240V 50/60 Hz. The connection is done according to the connection diagrams 9800 120009 A or 9800 130014 R.

If it is connected to a three-phase supply of 3 x 380V, 3 x 400V or 3 x 415V the sewing drive is connected to one phase and the neutral conductor.

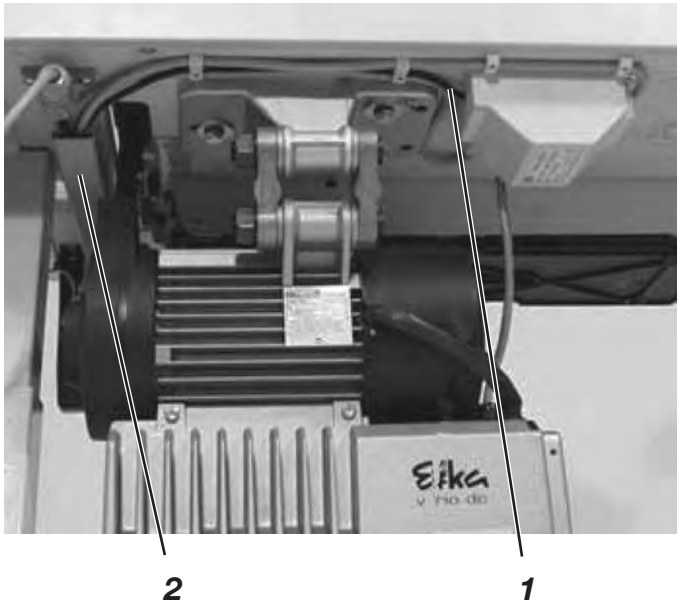
If the mains supply is three-phase 3 x 200V, 3 x 220V, 3 x 230V or 3 x 240V the sewing drive is connected to two phases.

If a number of direct-current positioning actuators are connected to a three-phase mains supply they should be equally distributed over all phases to avoid overloading one of the phases.

6.6 Connecting the sewing machine head

– The cable 9870 367004 or 9870 867000 is plugged on the distributor 9850 867000 in the machine head and is conducted downwards inside the machine head.
– Plug the 37-pin plug of the cable into bush A of the sewing drive and screw it tight.

6.7 Connecting the sewing light transformer (optional equipment)



- Remove the machine's mains plug.
- Pass the mains cable **1** of the sewing-lamp transformer through the cable duct **2** to the main switch.
- It is connected to the mains-connection side of the main switch (or motor-protection switch). See connection diagram 9800 120009 A or 9800 110002 A or 9800 130014 R.
- Stick the adhesive label with the safety instruction on the front of the main switch .
- If the sewing-lamp transformer is connected to a 3 x 380 - 415V three-phase supply it must have a neutral conductor.

Caution !

The sewing-light transformer is directly connected to the mains. It is therefore live even when the main switch is switched off. The mains plug must be removed before carrying out any work on the sewing-light transformer, e.g. changing the fuse.

6.8 Connecting the direct drive

6.8.1 Connecting the Hall-effect sensor (Optional Equipment)

Only with DC 1550 drive:

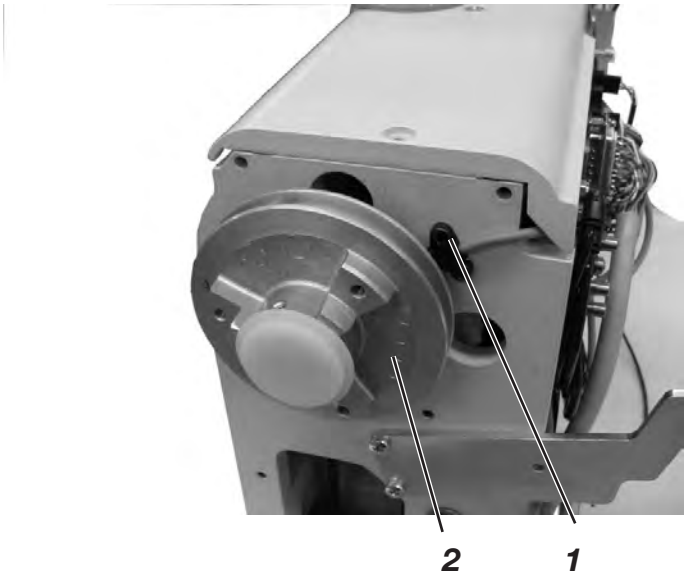
- Motor mounted under the table
- Gear reduction motor - machine 1,55:1

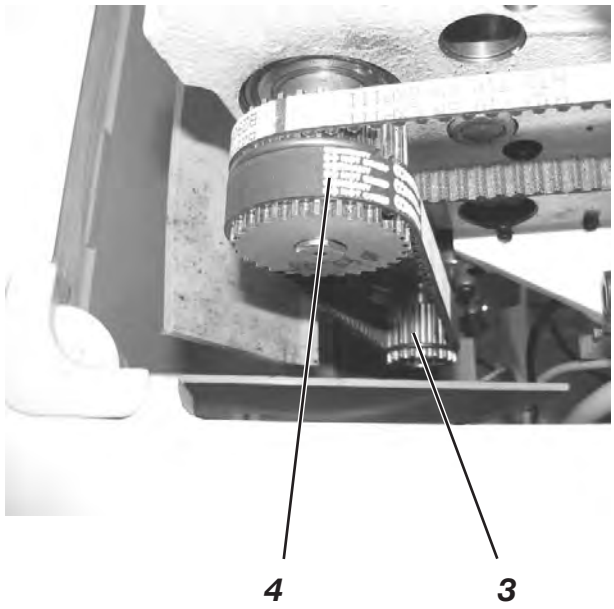
Attention !

Turn off the main switch.

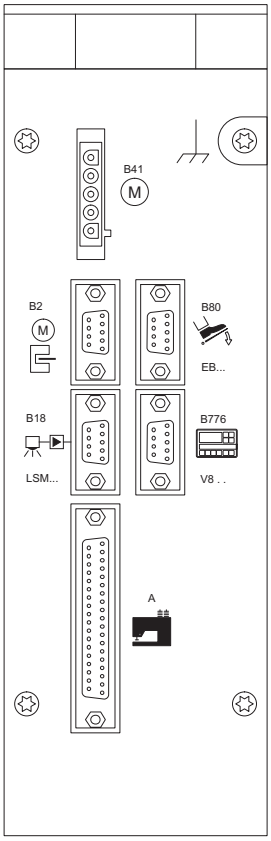
Connect the Hall-effect sensor only with the sewing machine switched off.

– Fit the Hall-effect sensor **1** onto the machine head.





– Check whether a magnet is fitted into the belt pulley **2** of the machine. The magnet is positioned on the inner side of the belt pulley towards the machine.
– If the belt pulley is fitted correctly, the magnet must be positioned above the Hall-effect sensor, when the tip of the needle penetrates the throat plate.



– Connect the 9-pole SuB-D plug of the Hall-effect sensor to the bushing “B18" (IPG / HSM / LSM) of the Efka control drive DA321G.
– Set the correct machine class with parameter F-290 according to the corresponding parameter sheet 9800 331104 PBXX.
– In order to position the machine correctly and to optimize all functions the following parameters must still be set:

Parameter F-111: set to 3.000 rpm or less.

Parameter F-270: set to 6 (selection according to the position sensor)

Parameter F-272: can be calculated according to the formula below:

$$\frac{\text{Motor pulley diameter (teeth)}}{\text{Machine pulley diameter (teeth)}} \times 1000$$

– **Inserted needle:** up to a thickness of 180.

Due to the gear reduction of 1,55:1 the maximum possible speed is 3.000 rpm.

Due to the new transmission ratio of 1,55:1 a higher torque and a higher penetration force of the needle of about 30% above a transmission rate of 1:1 is achieved.

In order to achieve an even higher penetration force, the parameter F-225 can be set from value “0" to value ”1".
It may happen, that the motor produces a snarling noise.
If this is the case, the toothed belt between motor and machine must be tightened.

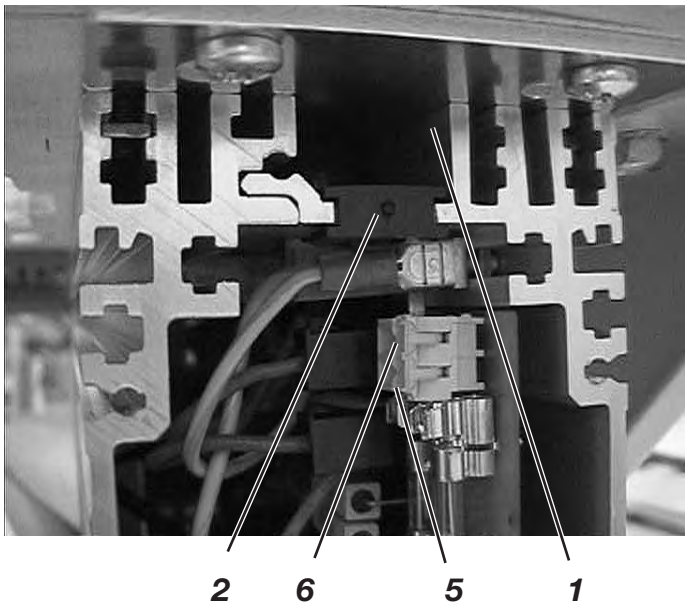
6.8.2 Attaching and connecting the sewing light transformer (optional equipment)

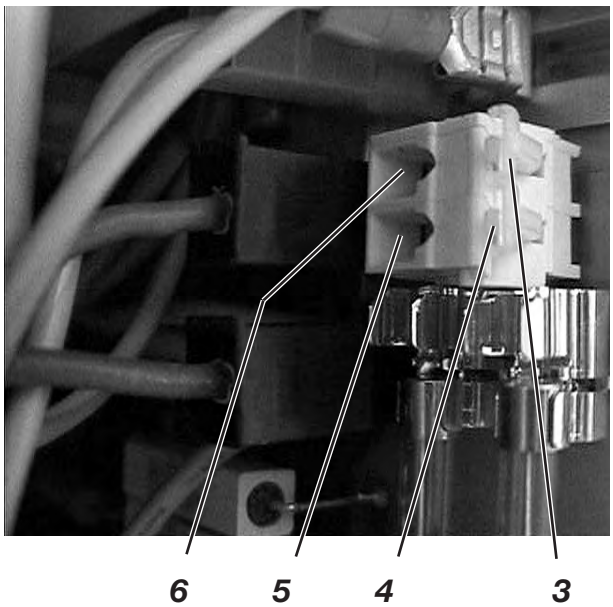
- Remove the machine's mains plug!
- Connect the mains cable of the sewing light transformer to the mains input side of the control unit.

Caution !

The sewing-light transformer is directly connected to the mains. It is therefore live even when the main switch is switched off. The mains plug must be removed before carrying out any work on the sewing-light transformer, e.g. changing the fuse.

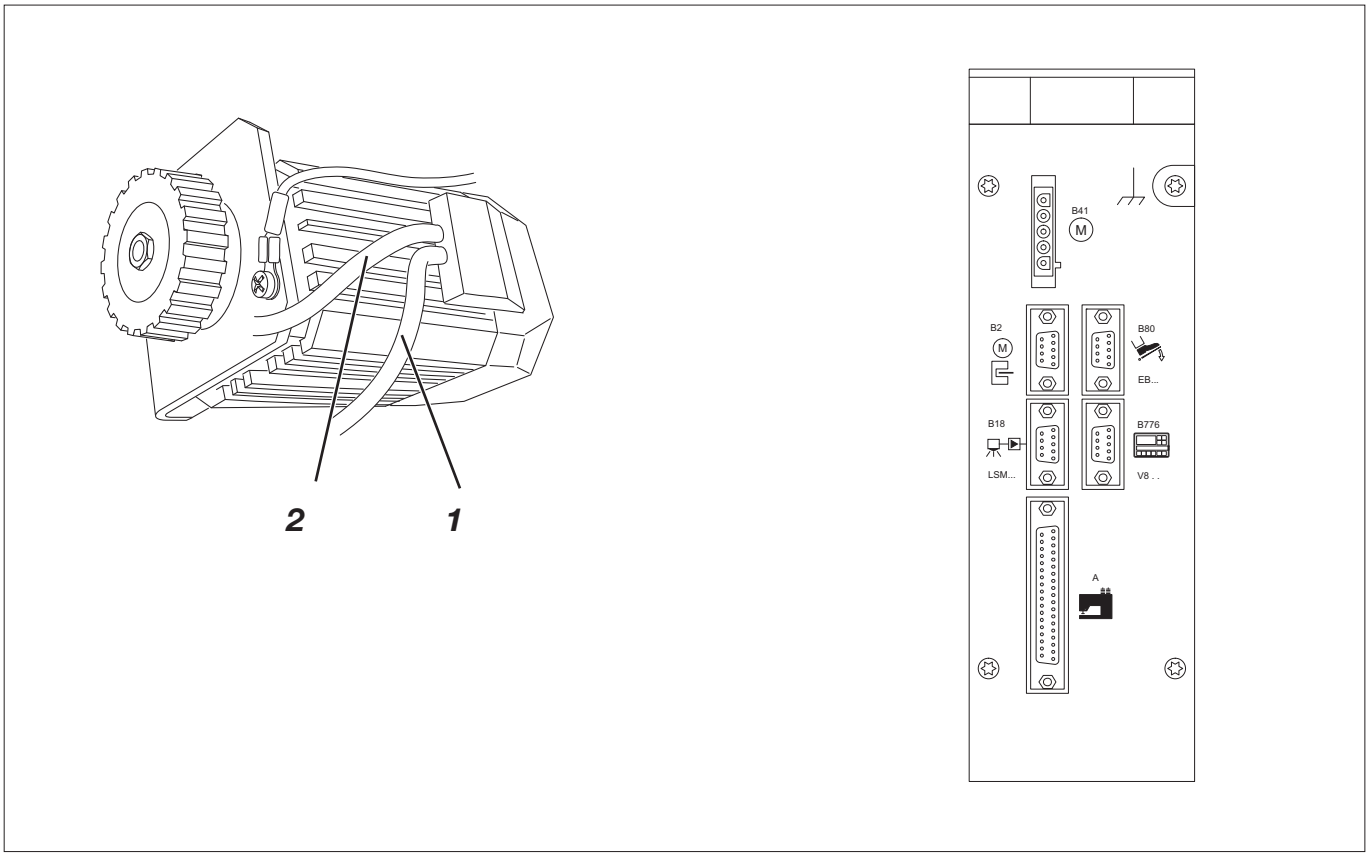
6.8.3 Connection to the DA321G control unit





- Loosen the 4 screws on the front plate of the controls.
- Remove the front plate.
- Push the cable from the back through the cable duct **1** into the control unit.
- Remove the black rubber grommet **2**.
- Push through the round opening of the rubber grommet with a screwdriver.
- Guide the cable of the sewing light transformer through the resulting opening in the rubber grommet.
- Insert the rubber grommet again.
- With a small screwdriver press on the terminal openings **4** and **3** to open the terminals **5** and **6**.
- Connect the blue cable to terminal **6** and the brown cable to terminal **5**.
- Fasten the front plate with the 4 screws again.

6.8.4 Connecting the sockets of the DA321G control unit



6.8.5 Connecting the DA321G control unit

- Plug the cable from the controller (pedal) into socket B80 of the controls.
- Plug the cable from the motor sensor 1 into socket B2 of the controls.
- Plug the cable 2 from the motor into socket B41 of the controls.
- Plug the cable to the sewing machine into socket A of the control unit.
- Lay all cables through the cable duct.
- Plug the cable from the control panel (if present) into socket B776.

6.8.6 Checking the direction of rotation of the sewing drive

Caution !

Before putting the special sewing machine into operation, the direction of rotation of the sewing drive must imperatively be checked.

Operating the special sewing machine in the wrong direction of rotation can lead to damages.

The arrow on the belt guard indicates the correct direction of rotation of the machine.

The direction of rotation of the direct-current positioning actuator is set by the preset value of the corresponding parameter to the anti-clockwise rotation of the handwheel. Nevertheless the direction of rotation must be checked first. In order to do so follow this procedure:

Preparation! Lock the sewing foot in lifted position. (see the operating instructions)

Control unit DA321G

- The plugs of the set value initiator, motor, motor sensor and operating panel (if existing) must be plugged in.
- Do **not** plug in the 37-pole plug of the sewing machine head.
- Switch on the main switch.
  The operating panel displays “Inf A5" or ”A5" which means that no valid autoselect resistance is recognized and therefore the maximum speed is limited.
- Push the pedal slightly to the front; the drive rotates; check the direction of rotation.
- If the direction of rotation is not correct, the parameter 161 in the “technician level” must be set to 1.
- Turn off the main switch.
- Plug in the 37-pole plug of the sewing machine head again

6.8.7 Checking the positioning

Upon delivery of the sewing machine the needle positions were set correctly. Nevertheless the needle positions should be checked before putting the machine into operation.

Prerequisite!

The sewing foot must be locked in lifted position. (see operating instructions).

The machine must position during an intermediary stop in position 1 (needle downwards).

Position 1

- Switch on the main switch.
- Briefly push the pedal to the front and bring it back to its initial position. The needle positions in position 1 (about 126° on the handwheel).
- Check the position of the needle.

Position 2

– First push the pedal forward and then completely backwards.
– The needle positions in position 2 (about 66° on the handwheel).
– Check the needle position.

If one or both needle positions are not correct then carry out the correction of the needle position. (see operating instructions)

6.8.8 Machine-specific parameters

6.8.8.1 General

The functions of the sewing-drive control are determined by the program and the parameter settings.

Prior to delivery all parameter values have been correctly preset for each particular class and subclass. For this purpose some preset values of the control unit have also been altered (for example the maximum speed). When exchanging the control unit the machine-specific parameters have to be reset correctly. (see operating instructions)

6.8.8.2 Autoselect

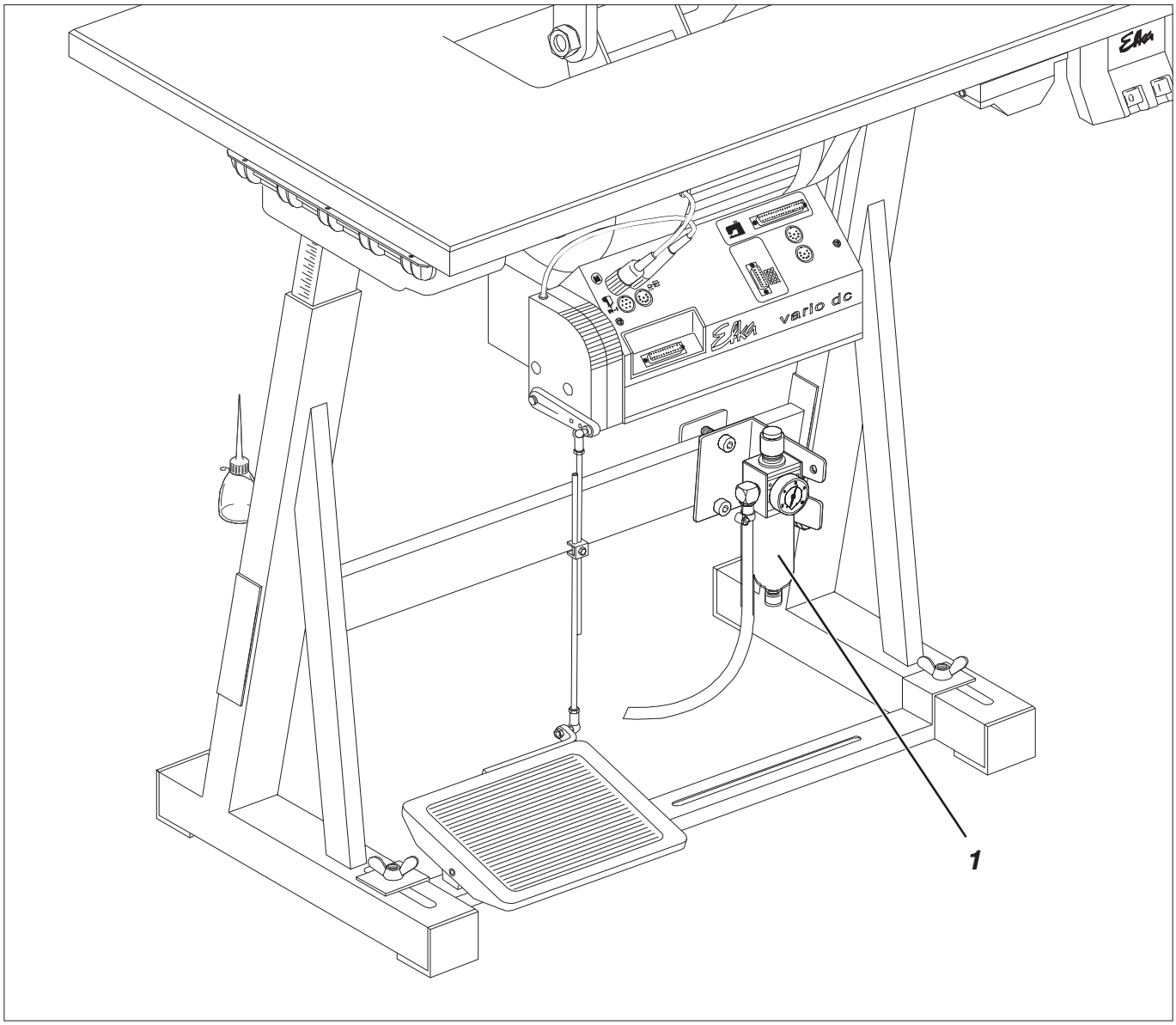
The control unit “recognizes” by measuring the Autoselect resistance in the machine which machine series has been connected. Autoselect selects the control functions and the pre-set parameter values.

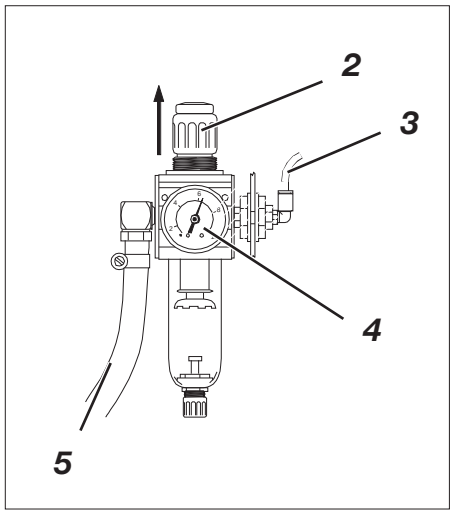
Caution !

If the control fails to recognize a valid Autoselect resistance (or any at all), the drive runs only with the so-called emergency operating functions to prevent machine damage

6.9 Masterreset

By effectuating a masterreset all parameter values are reset to the pre-set values. After a masterreset all machine-specific parameters have to be corrected again.


vario dc
1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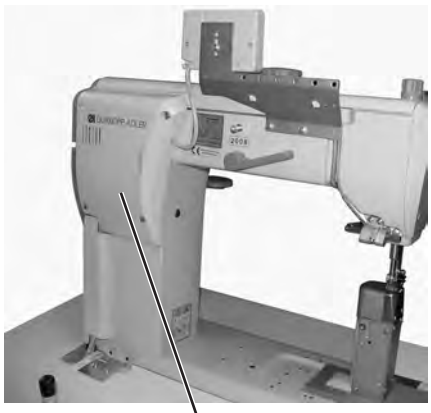
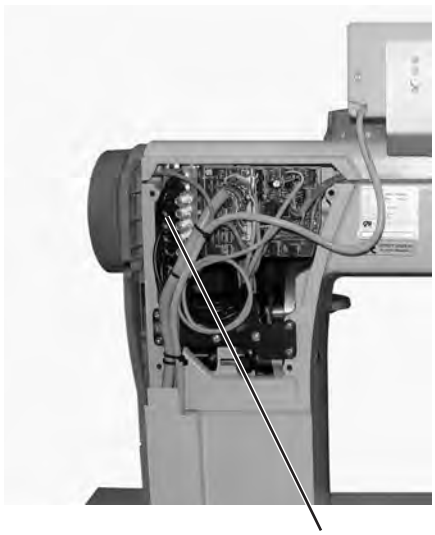

6


7

7 Pneumatic connection

Caution:

The pneumatic units will only operate properly at a supply pressure of 8 to 10 bar. The special sewing machine's operating pressure is 6 bar.

Pneumatic-connection pack

A pneumatic connection pack for stands with compressed-air maintenance unit is available under order no. 0797 003031.

It contains the following components:

- Connection hose, 5 m long (Ø = 9 mm)
- Hose nozzles and ties
- Plug-and-socket connector

Connecting the compressed-air maintenance unit

- Attach the compressed-air maintenance unit **1** with bracket, screws and strap to the stand-brace.
- Connect the unit to the compressed-air supply with the connection hose 5 (Ø = 9 mm) and connector R1/4".

Connecting the compressed-air maintenance unit to the upper part of the sewing machine

- Unscrew and remove the cover 6.
- Connect the hose 3 (in the accessory pack) to the distributor plate 7 on the machine head.
- Replace the cover 6.

Adjusting the operating pressure

The operating pressure is 6 bar.

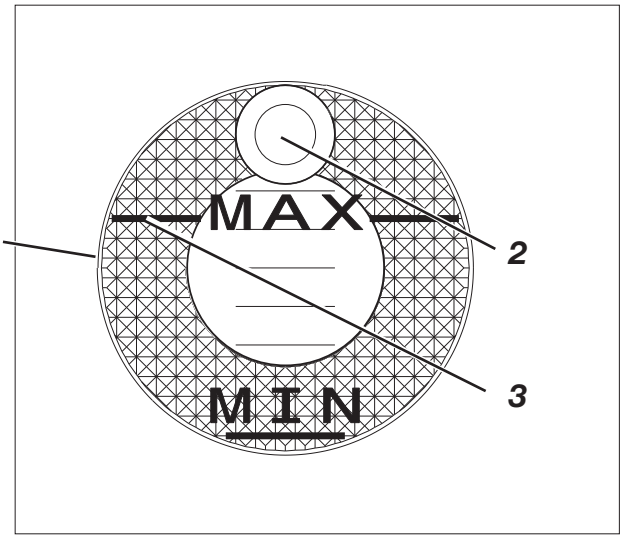
It can be read off at the pressure gauge 4.

- To adjust the operating pressure raise and turn handle 2:
  Clockwise to increase the pressure.
  Counter-clockwise to reduce the pressure.
- Press down the handle **2**.

7.1 Pneumatic sewing foot lifting

See Instructions 0791 867704.

8 Lubrication



Caution: danger 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 oil 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/s
- Flashpoint: 150 °C

DA 10 is available from **DÜRKOPP ADLER GmbH** 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

Lubricating the machine head (first filling)

NB:

All wicks and felts are saturated with oil prior to delivery. This oil is returned to the oil reservoir **1**, which should therefore not be overfilled.

– Top up the oil reservoir **1** through the hole **2** to the "**max.**" mark **3**.

9 Sewing test

A sewing test must be carried out when setting-up is complete.

– Insert the mains plug.

Caution: danger of injury !

Turn off the main switch.
The needle and looper threads may only be threaded with the sewing machine switched off.

– Thread the bobbin-winder thread (see operating instructions).
– Turn on the main switch.
– Lock the sewing feet in lifted position (see operating instructions).
– Fill the bobbin at low speed.
– Turn off the main switch.
– Thread the needle and looper threads (see operating instructions).
– Select the material to be processed.
– Carry out the sewing test, first at low speed and then gradually increasing it.
– Check that the seams are of the requisite quality.
If not, alter the thread tensions (see operating instructions).
If necessary the settings given in the servicing instructions should also be checked and corrected.

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