

171 • 173

Spezialnähmaschine

Betriebsanleitung

D

Instruction manual

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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.

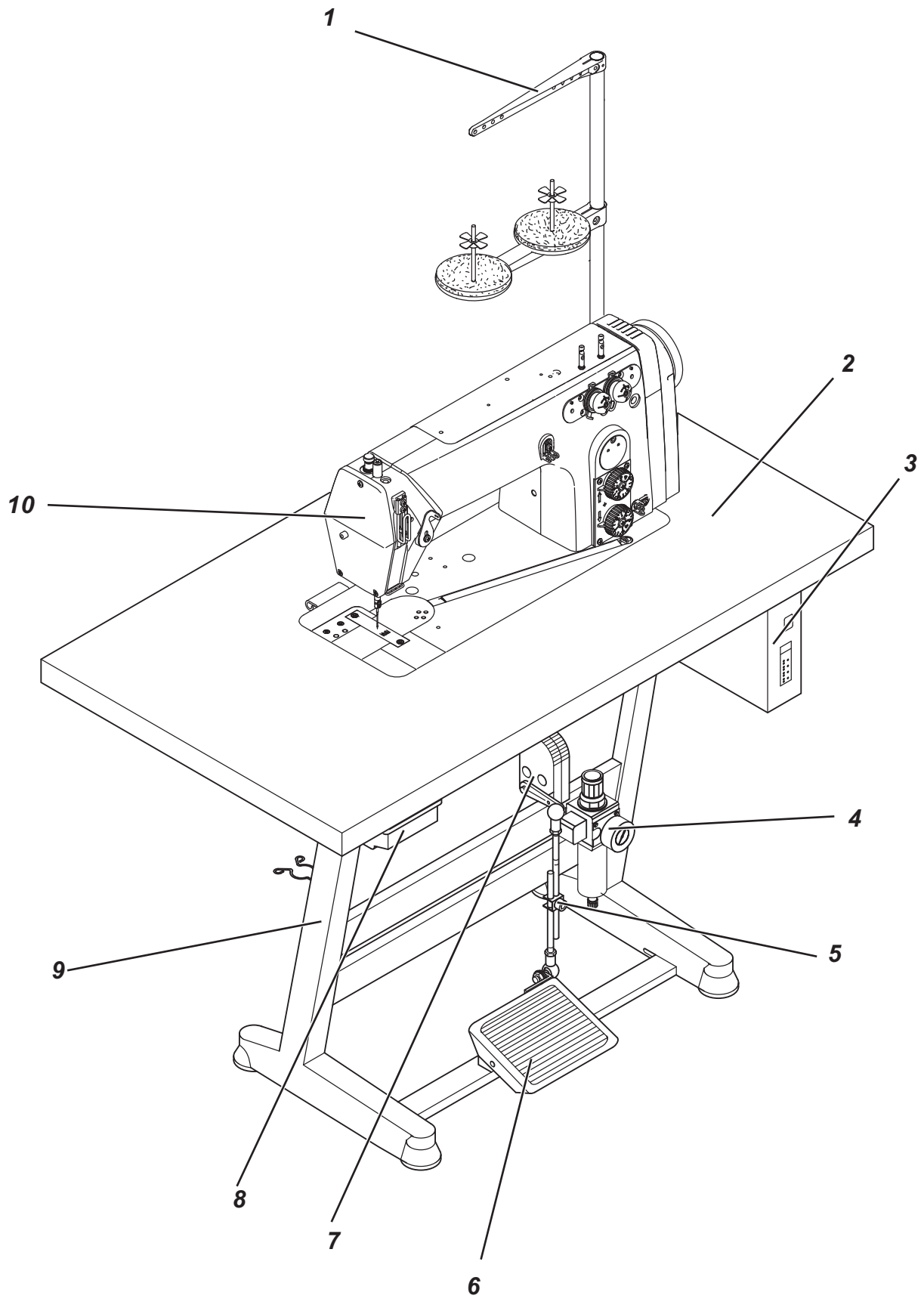
Danger of bodily injuries !

Please note also the general safety instructions.



Part 2: Installation instructions class 171 • 173

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1. Scope of delivery

The scope of delivery **is dependent on your order**.
Prior to setting up, please check that all required parts are present.
This description is valid for a special sewing machine the individual components of which are completely delivered by **Dürkopp Adler AG**.

Equipment (according to subclass):

- 1 Thread reel holder
- 2 Table top
- 3 Control with main switch
- 4 Maintenance unit
- 5 Pedal rods
- 6 Pedal
- 7 Set value initiator (packed with the control unit)
- 8 Drawer
- 9 Stand
- 10 Machine head with sewing drive

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2. General notes and securing devices



ATTENTION !

The special sewing machine must only be assembled by trained specialists.

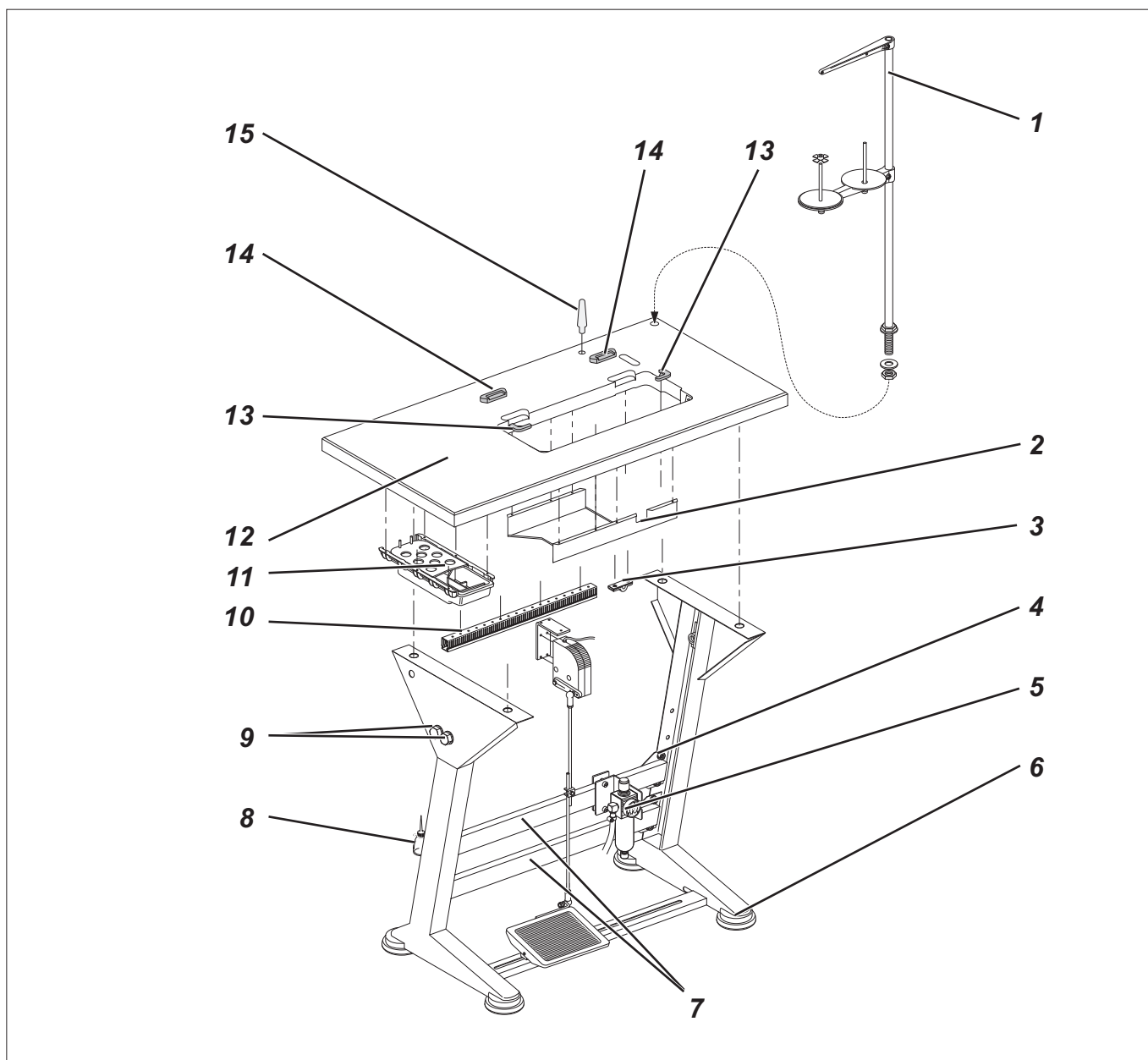
Securing devices

If you have bought an assembled special sewing machine, the following securing devices have to be removed:

- Tapes and battens at machine head, table and stand.

3. Assembling the stand

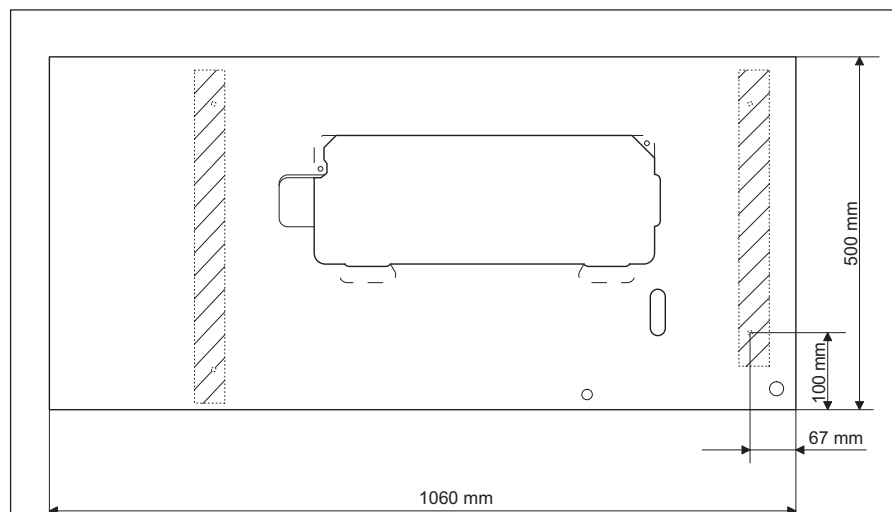
3.1 Assembling the stand components



- Mount the individual parts of the stand as shown in the illustration.
- Push the attached four stand feet 6 on.
- Slightly loosen the screws 4 on both sides of the cross struts 7 to ensure the stability of the stand.
The stand must rest on the floor with all four feet!
- Tighten the screws 4 again.
- Screw on holder 8 for the oil can at the left stand spar.

3.2 Completing the table top with the control and fastening it to the stand

- Insert the machine head support 15 into the bore of the table top (class 171 only).
- Insert the rubber supports 14 for the machine head into the recesses of the table top 12.
- Insert rubber corner 13.
- Screw drawer 11 with its holders underneath the table top on the left.
- Screw cable duct 10 underneath the table top at the back.
- Punch-mark the positions of the screw connections of the oil drip pan 2 and fasten it with wood screws under the cutout of the table top.
- Fasten the table top 12 with wood screws (B8 x 35) on top of the stand.
The alignment on the stand is specified by the measurements indicated in the sketch.
- Insert the thread reel holder 1 into the bore of the table top and fasten it with nuts and washers.
Mount and align thread reel holder and thread guiding arm.
The thread reel holder and the thread guiding arm must be positioned vertically on top of each other.

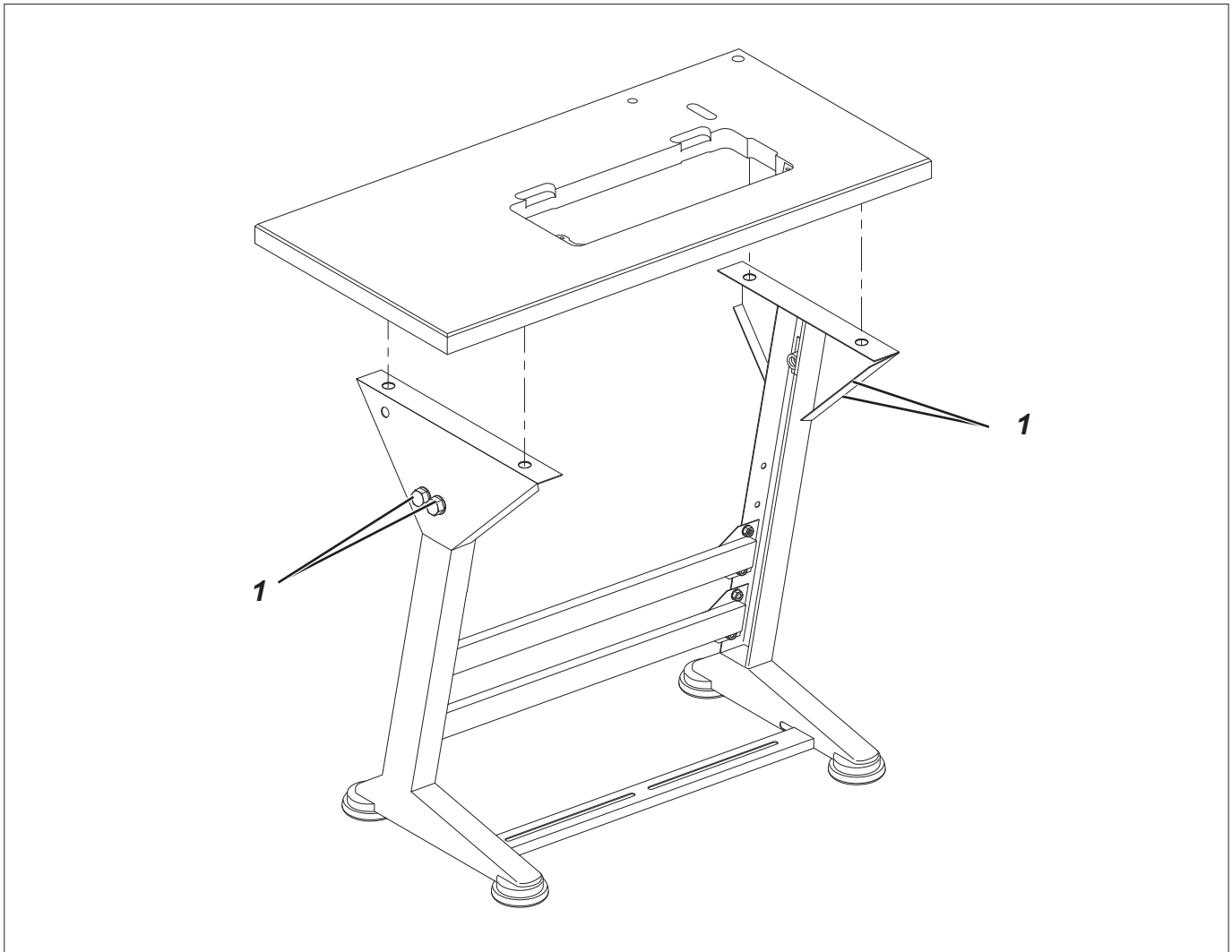


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3.3 Self-manufacture of the table top

If you manufacture the table top yourself, please take the measurements from the illustrations on page 20 and 21.

3.4 Setting the working height



- The working height can be adjusted between 750 and 900 mm (measured up to the top edge of the table top).
- Loosen screws 1 at the spars of the stand.
- Position the table top horizontally at the desired working height.
In order to avoid jamming pull out or push in both sides of the table top equally.
- Fasten both screws 1.

4. Sewing drives

4.1 Drive category, type and use

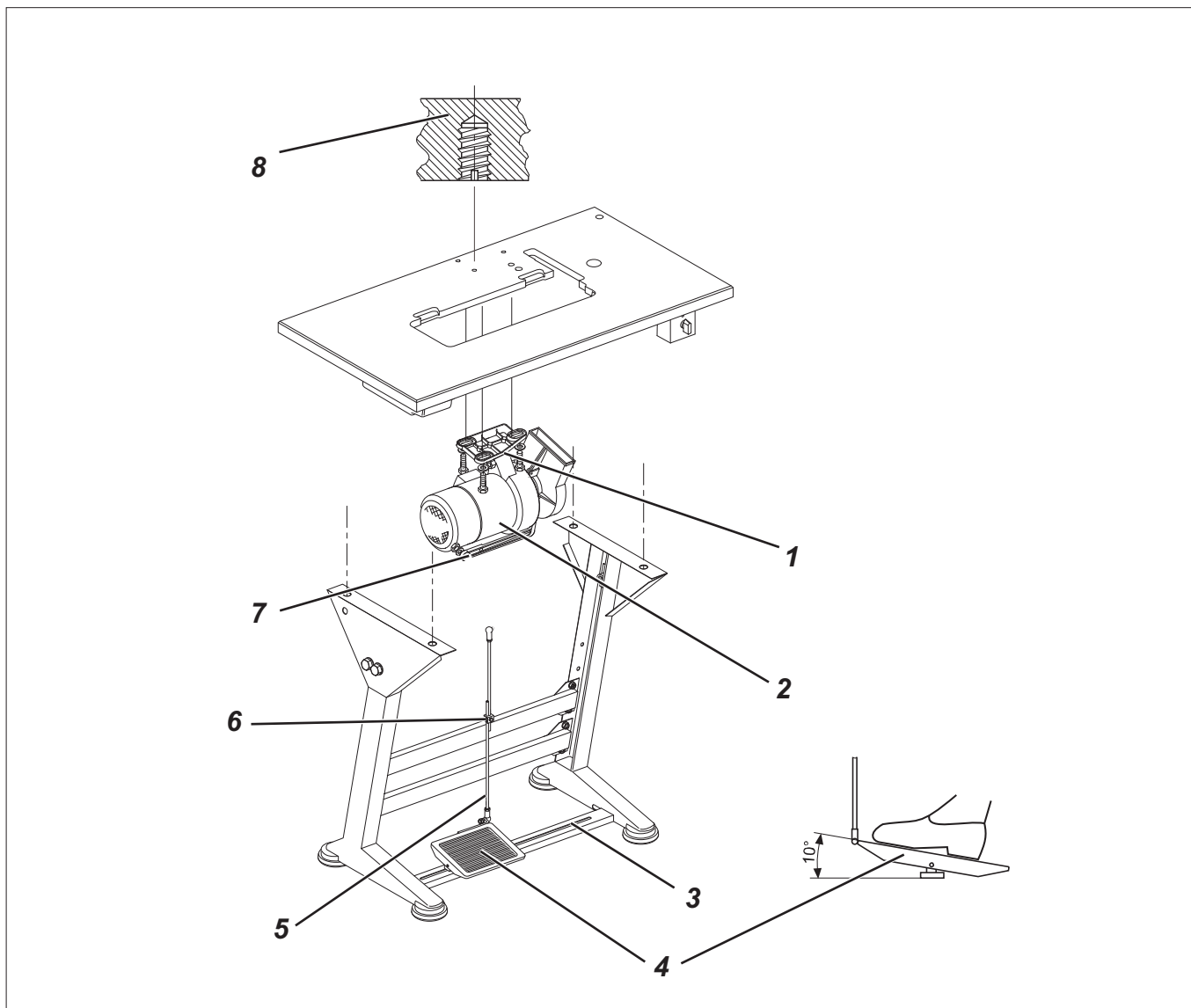
The following sewing drives are available:

Subclass	Clutch motor	Clutch positioning drive	DC positioning drive
0171-131110	FIR 1147-F.752.3 FIR 1148.552.3	9889 017101 1	
0171-141621			Efka DC1500/DA220C
0173-141110	FIR 1147-F.752.3 FIR 1148.552.3	9889 017101 1	
0173-141621			Efka DC1500/DA220C

4.2 Numbers of stitches for three-phase current drives depending on the average belt pulley diameter

	50 Hz	60 Hz
3800 stitches/min	80 mm	67 mm
4000 stitches/min	85 mm	71 mm
4200 stitches/min	90 mm	75 mm
4500 stitches/min	95 mm	80 mm
4800 stitches/min	100 mm	85 mm
5000 stitches/min	106 mm	90 mm
5500 stitches/min	112 mm	95 mm
6000 stitches/min	125 mm	118 mm
6600 stitches/min	140 mm	125 mm

4.3 Mounting the sewing drive

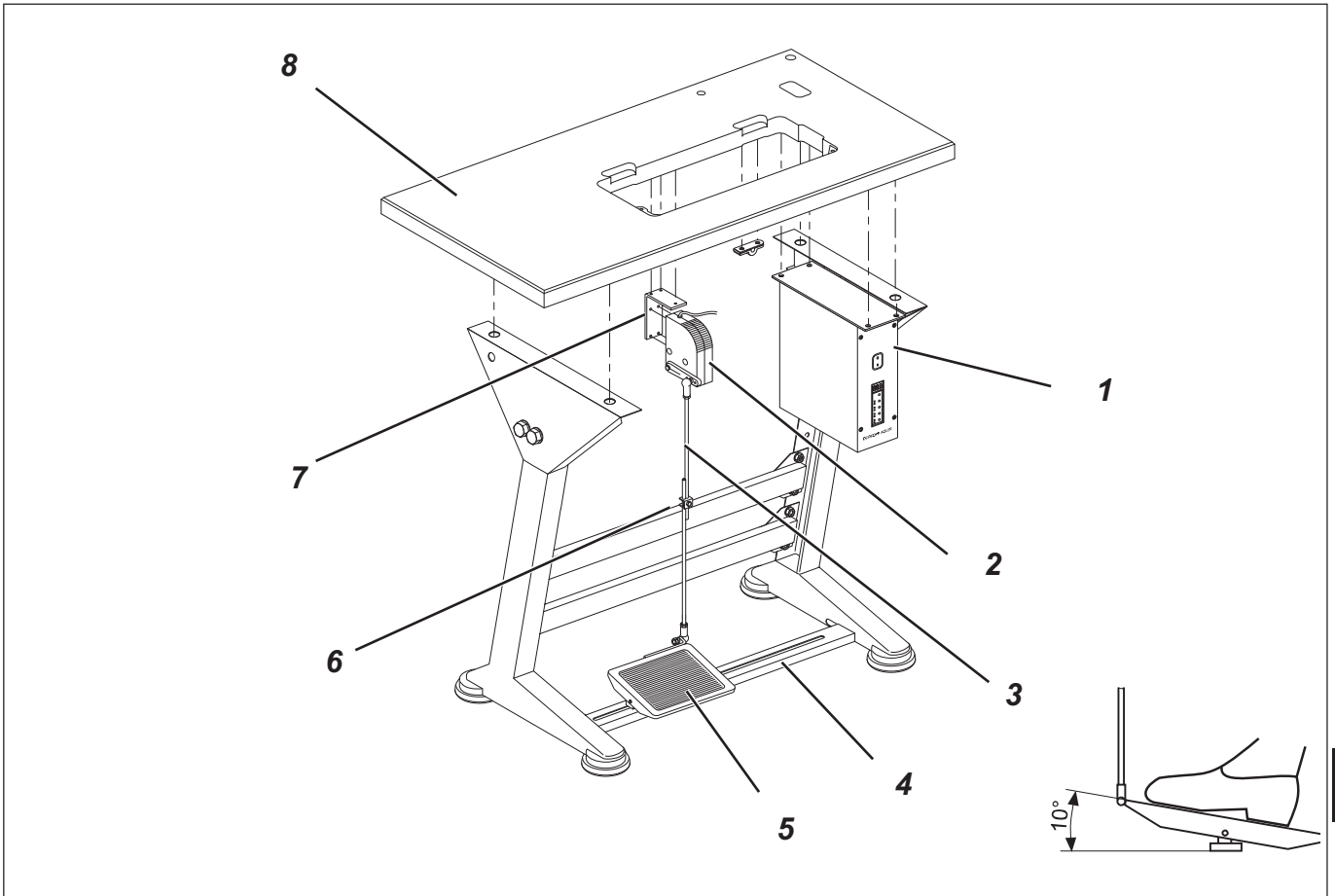


- Fasten the sewing drive 2 with its base 1 to the underside of the table top.
For this purpose screw the 3 hexagonal bolts (M8 x 15) with washers in the screwed inserts 8 of the table top.

4.4 Mounting the pedal

- Fasten pedal 4 on the stand strut 3.
- Align pedal 4 as follows for ergonomical reasons:
The center of the pedal has to be approximately under the needle.
The stand strut 3 is equipped with slotted holes for aligning the pedal.
- Screw the ball pin from the central bore into the front bore of lever 7.
- Hang in the pedal rods 5.
- Loosen screw 6 slightly.
- Adjust the height of the pedal rods 5 as follows:
The discharged pedal 4 should have an inclination of approx. 10°.
- Tighten screw 6.

4.5 Mounting the control for machines with direct drive



- Mount control 1 with 4 screws under the table top 8.
- **Fasten the power supply cable** of the control with the strain relief clamp under the table top.

4.6 Mounting the set value initiator

- Screw angle 7 under the table top 8.
- Screw the set value initiator 2 on angle 7.

5. Mounting the machine head

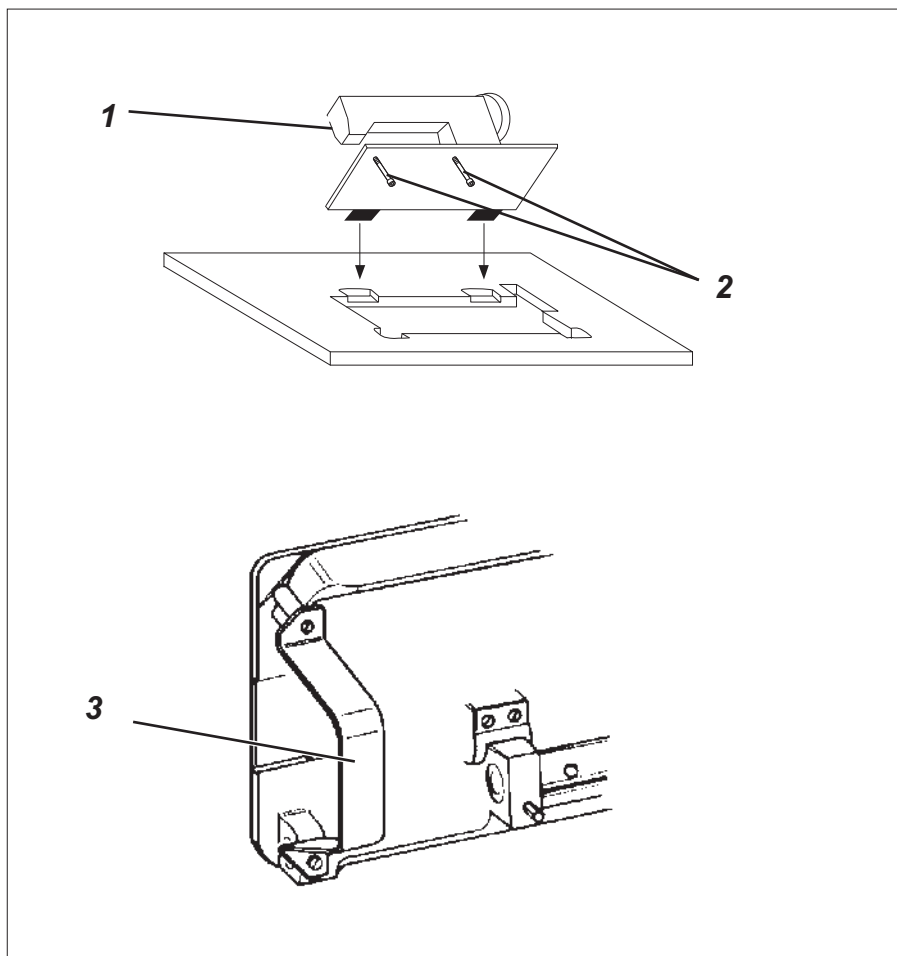
5.1 Fitting the machine head



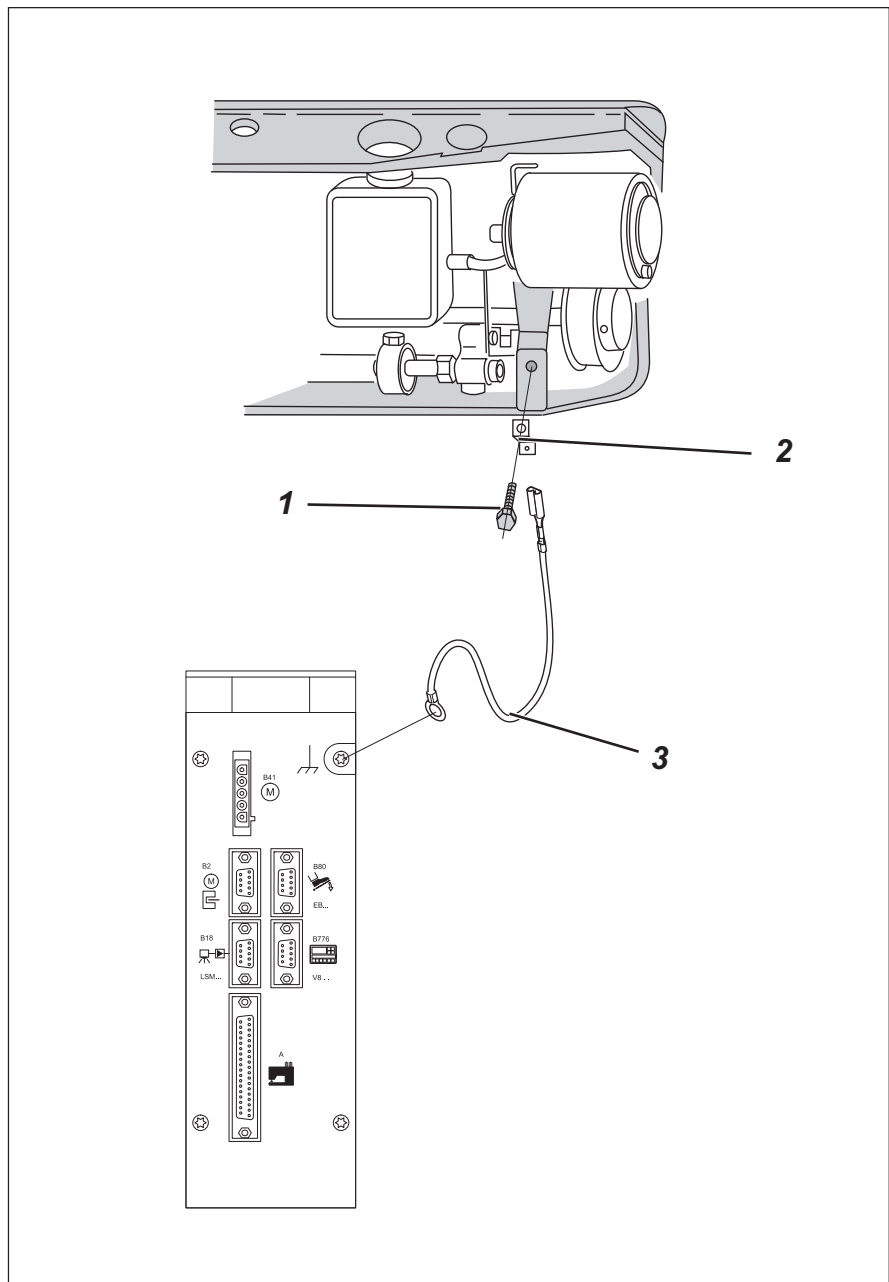
ATTENTION!

Remove the supporting screws at the front and in the center before tilting the machine head into the working position.

- Insert machine head 1 in tilted position into the cutout of the table top.
- Remove the support screws 2 at the front and in the center.
- Remove the safety bar 3.



5.2 Earthing (direct drive)

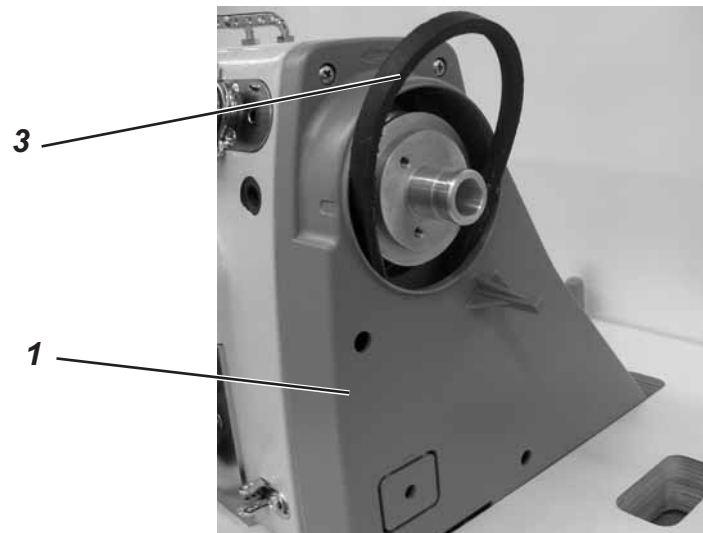
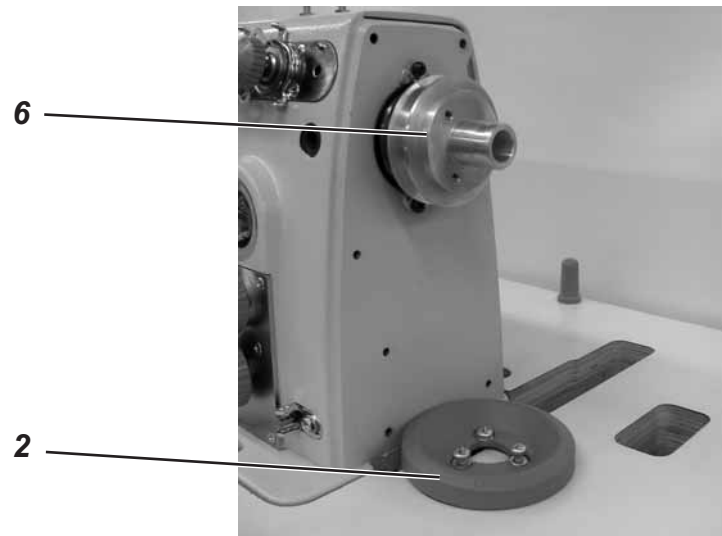


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The earthing wire on the sewing machine head bleeds off static charges of the machine head via the motor control unit to the mass.

- Fasten the earthing wire 3 to the provided connection at the control.
- Guide the earthing wire 3 upwards and fasten it with screw 1 and flat connection 2 to the base plate of the machine.

5.3 Fitting and tensioning the V-belt



Dismounting the protective devices

- Remove the handwheel 2.
- Remove the cover of the belt protection at the sewing drive.

Fitting the V-belt on and mounting the protective devices

- Guide the V-belt 3 through the belt protection 1 and place it on the belt pulley 6 of the machine head .
- Guide the V-belt 3 downward through the cutout of the table top .
- Tilt the machine head back.
- Put the V-belt 3 on the belt pulley 5 at the sewing drive.
- Move the machine head to the front again.
- Mount the handwheel 2.

Tensioning the V-belt

- Loosen screws 4 at the base of the sewing drive.
- Tension the V-belt by swivelling the sewing drive.
If the belt tension is correct, it must be possible to bend the V-belt 3 in the middle by approx. 10 mm to the inside at the touch of a finger (without much effort).
- Tighten the screws 4.

Mounting the belt protection at the sewing drive

- Adjust the slip-off protections (adjustable cams or angles according to the drive type) of the belt protection as follows:
When the machine head is tilted back, the V-belt 3 must rest on the belt pulleys.
See also the operating instructions of the motor manufacturers.
- Screw on the cover of the belt protection.

6. Connecting the sewing drive

6.1 Connecting the sewing drive to the mains



ATTENTION !

Work of every kind on the electric equipment of the special sewing machine must only be carried out by electricians or correspondingly trained personnel.

The mains plug has to be pulled out!

The manufacturer's operating instructions enclosed to the sewing drive have to be observed in any case!

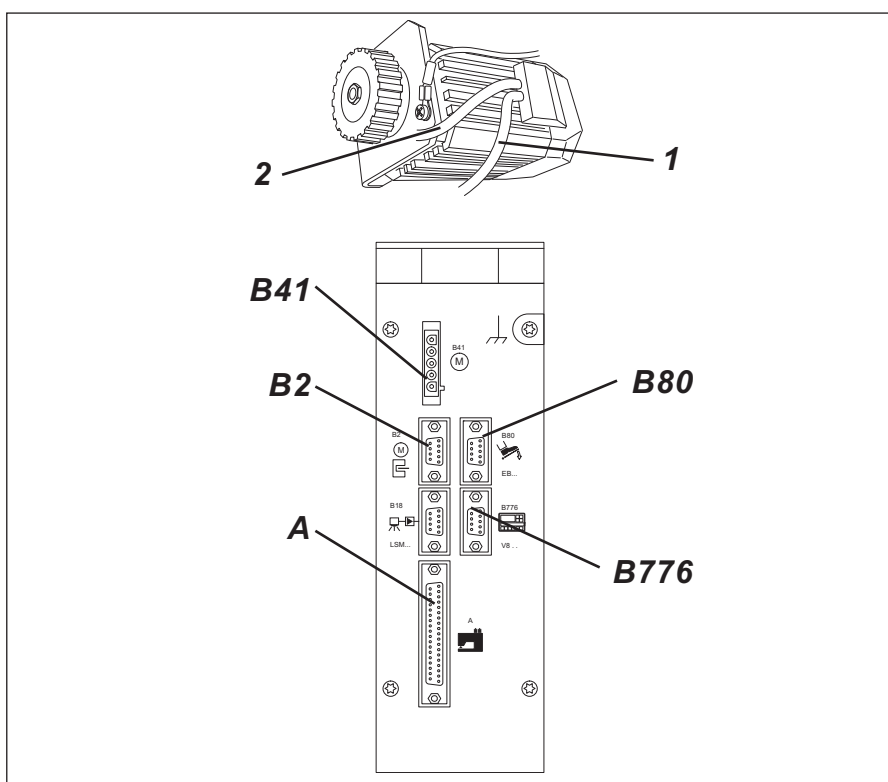
6.1.1 Connecting the clutch motor

- Run the connection cable from the main switch through the cable duct to the sewing drive and connect it to the sewing drive. See connecting diagram 9800 169002 B (in the connection package) or wiring diagram at the clutch motor.
- Run the mains cable from the main switch through the cable duct to the back and fasten it with the strain relief clamp.

6.2 Mounting the sewing lamp (optional equipment)

See instructions 0791 100700.

6.3 Connecting the control DA220C



- Plug the cable of the reference value transmitter (pedal) into bushing B80 of the control.
- Plug the cable of the motor sensor 1 into bushing B2 of the control.
- Plug the cable 2 of the motor into bushing B41 of the control.
- Plug the cable to the sewing machine into bushing A of the control.
- Run all cables through the cable duct.
- Cable of the control panel (optional equipment) into bushing B776.

6.4 Setting the machine-specific parameters

6.4.1 General notes

The functions of the sewing drive control are determined by the program and the setting of parameters.

Upon delivery of the sewing drives the parameter values are preset by Efka (preset values). For every class and subclass some parameters have to be changed in the „technician level" and some in the „supplier level" in order to optimally adapt the control to the machine. The parameters concerned are listed on the parameter sheet (in the accessories) .

The parameter **290** (selection of the machine class) has to be set to the value 1 (for cl. 171) / value 2 (for cl. 173) in the “supplier level”. Furthermore, the parameter **170** (setting of the reference position) has to be set in the “technician level”. The setting “position (EP)” is the penetration point of the needle into the throat plate.

Please take the detailed description of the control from the attached current operating instructions of the motor manufacturer (see also www.efka.net).

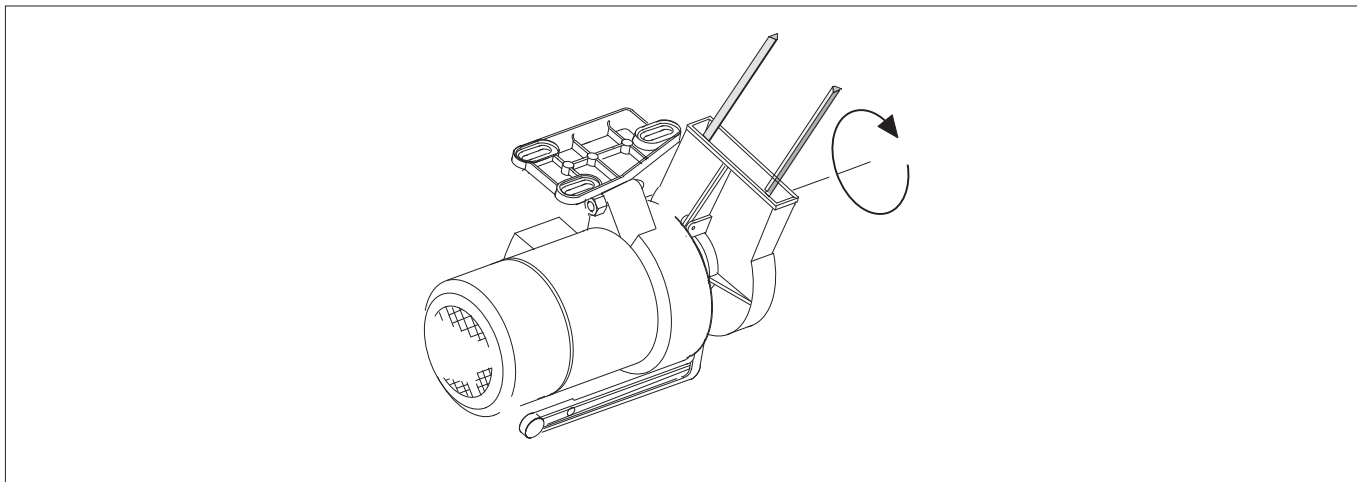
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6.4.2 Autoselect

By measuring the Autoselect resistance in the machine the control “recognizes” which machine series is connected. By means of Autoselect control functions and the preset values of the parameters are selected. If no Autoselect resistance or an invalid one is recognized by the control, the drive will run with the so-called emergency operation functions only in order to protect the machine from being damaged.

7. Adjusting the sewing drive

7.1 Rotation sense of the sewing drive



Attention!

Before putting the special sewing machine into operation check the rotation sense of the sewing drive by all means!
Operating the special sewing machine with a wrong rotation sense may cause damage.

7.1.1 Checking the rotation sense of clutch motors (to be mounted under the table top only)

The rotation sense of the clutch motor (three-phase a.c. motor) is dependent on the connection to the three-phase supply network. Before the start of operation the rotation sense has to be checked. Please proceed as follows:

- Connect the clutch motor, make the potential equalisation and connect the sewing drive to the mains.
(see chapter 6.1.1 and 5.3)
- Switch the main switch on.
- Actuate the pedal (or the clutch lever of the motor respectively), until the belt pulley rotates.
- The belt pulley must rotate counter-clockwise (view on the belt pulley).

7.1.2 Changing the rotation sense of clutch motors (to be mounted under the table top only)

If the rotation sense of the sewing drive is wrong, two phases have to be exchanged at the clamps of the mains connection of the sewing drive. Please proceed as follows:

- **Switch the main switch off and pull out the mains plug!**
- Exchange two of the three live power supply conductors at the mains connection of the sewing drive.
- Plug in the mains plug and switch the main switch on.
- Check the rotation sense (see chapter 7.1.1).

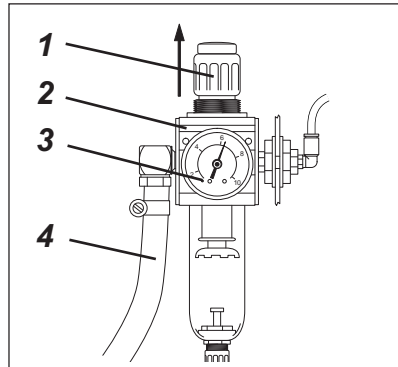
8. Pneumatic connection



ATTENTION !

The faultless function of the pneumatic aggregates is only guaranteed if the net pressure amounts to 8 to 10 bar.

The operating pressure of the sewing machine amounts to **6 bar**.



Pneumatic connection package

Under the order number 0797 003031 a pneumatic connection package for stands with compressed air maintenance unit is available.

It includes the following components:

- Connecting hose, 5 m long $\varnothing = 9$ mm
- Hose nozzles and hose clamps
- Coupling socket and connector plug
- Maintenance unit with manometer and pressure regulator

Connecting the compressed air maintenance unit

- Fasten the compressed air maintenance unit 2 to the stand strut with angle, screws and flap.
- Connect the compressed air maintenance unit to the compressed air supply with connecting hose 4 ($\varnothing = 9$ mm) and hose coupling R1/4".

Setting the operating pressure

The operating pressure is **6 bar**.

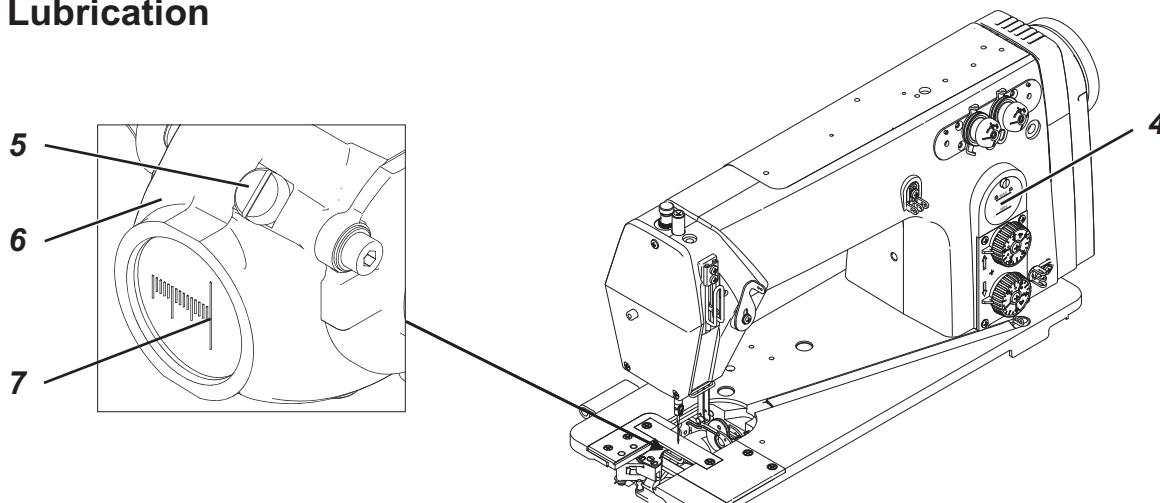
It can be read off at manometer 3.

For adjusting the operating pressure raise and turn handle 1.

Increase the pressure = Turn twist handle 1 in clockwise direction

Reduce the pressure = Turn twist handle 1 counter-clockwise

9. Lubrication



Caution: Risk of injury !

Oil may cause skin eruption.
Avoid a longer contact with the skin.
Wash yourself thoroughly after a contact.



ATTENTION !

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.

Oil the special sewing machine exclusively with lubricating oil **DA-10** or an equivalent oil with the following specification:

- Viscosity at 40° C: 10 mm²/s
- Ignition point: 150° C

DA-10 can be bought at the sales points of **DÜRKOPP ADLER AG** under the following parts numbers:

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

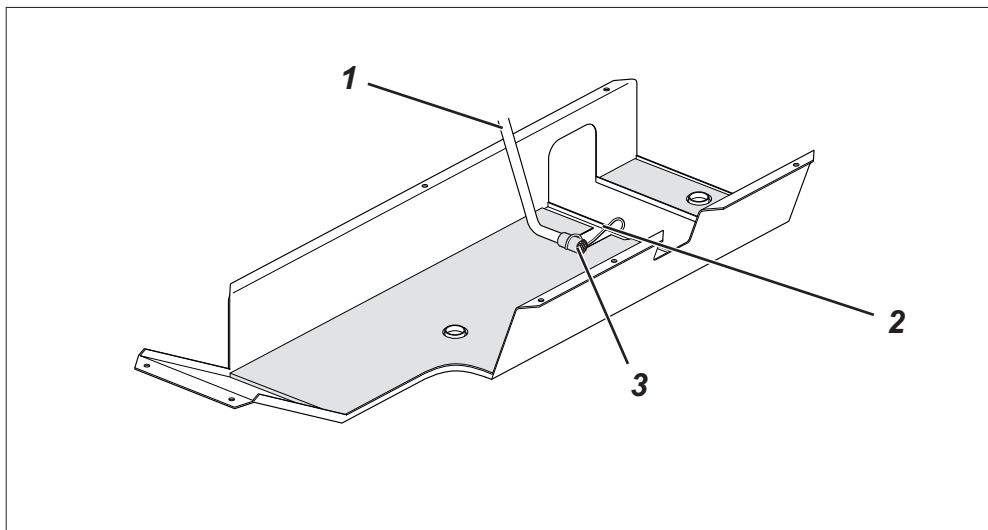
Maintenance work to be done	Explanation hours	Operating
Lubrication of the machine head	<p>The check of the oil supply is limited to the following items:</p> <ul style="list-style-type: none"> - Fill the oil reservoir 4 up to the marking "Max" with the machine standing upright. - Check the oil reservoir in the hook drive casing 6 and fill up oil, if necessary. For this purpose screw out screw 5. When the machine is tilted to the back, the oil level must not drop below the lower long marking 7 of the inspection glass. The oil level must not exceed the upper marking. 	8

9.1 Oil return

The oil return gathers the oil running into the oil pan and feeds it into the oil circulation via a pump.

Wrap the suction filter 3 of the oil return with the felt and fasten it to the oil sheet with clamp 2.

Guide and secure the oil hose 1 in such a way that it does not touch the moving parts.



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10. Sewing test

After finishing the assembly work a sewing test has to be made.

- Plug in the mains plug.



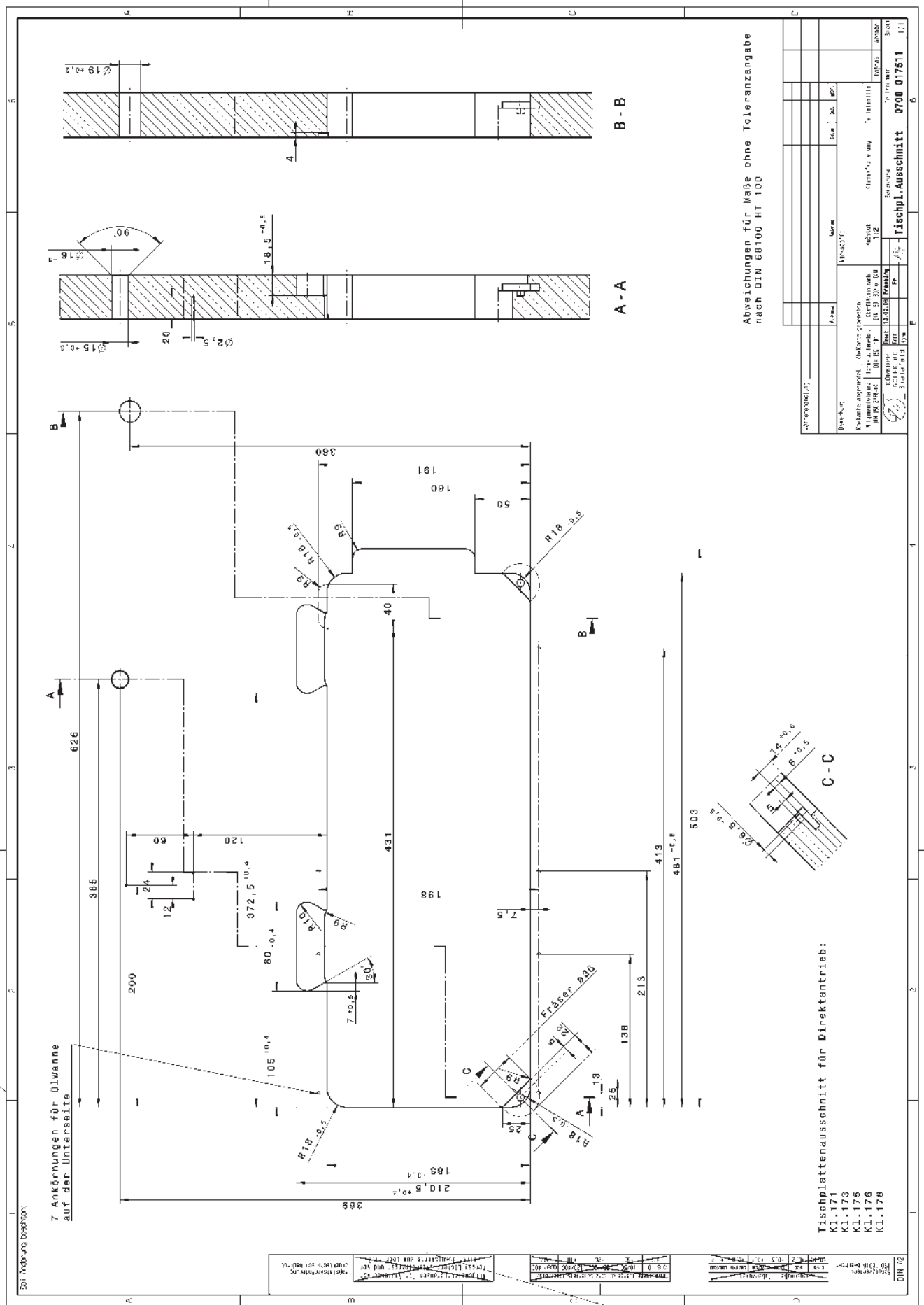
Caution: Risk of injury !

Switch the main switch off.

Thread in needle thread and looper thread only with the sewing machine switched off.

- Thread in needle thread and looper thread (see operating instructions).
- Switch the main switch on.
- Select the material to be processed.
- Make the sewing test first at low speed and then at continuously increasing speed.
- Check whether the seams correspond to the desired requirements.
- If the requirements are not met, alter the thread tensions (see operating instructions).
- If necessary, also check the adjustments indicated in the service instructions and correct them, if required.

Table top cutout (direct drive)



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For your own notes: