

**CNC Knopfannähsautomat
CNC Automat for Button Sewing**

Bedienanleitung / Operating Instructions

Aufstellanleitung / Installation Instructions

~~Serviceanleitung / Service Instructions~~**1****2****3**

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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.

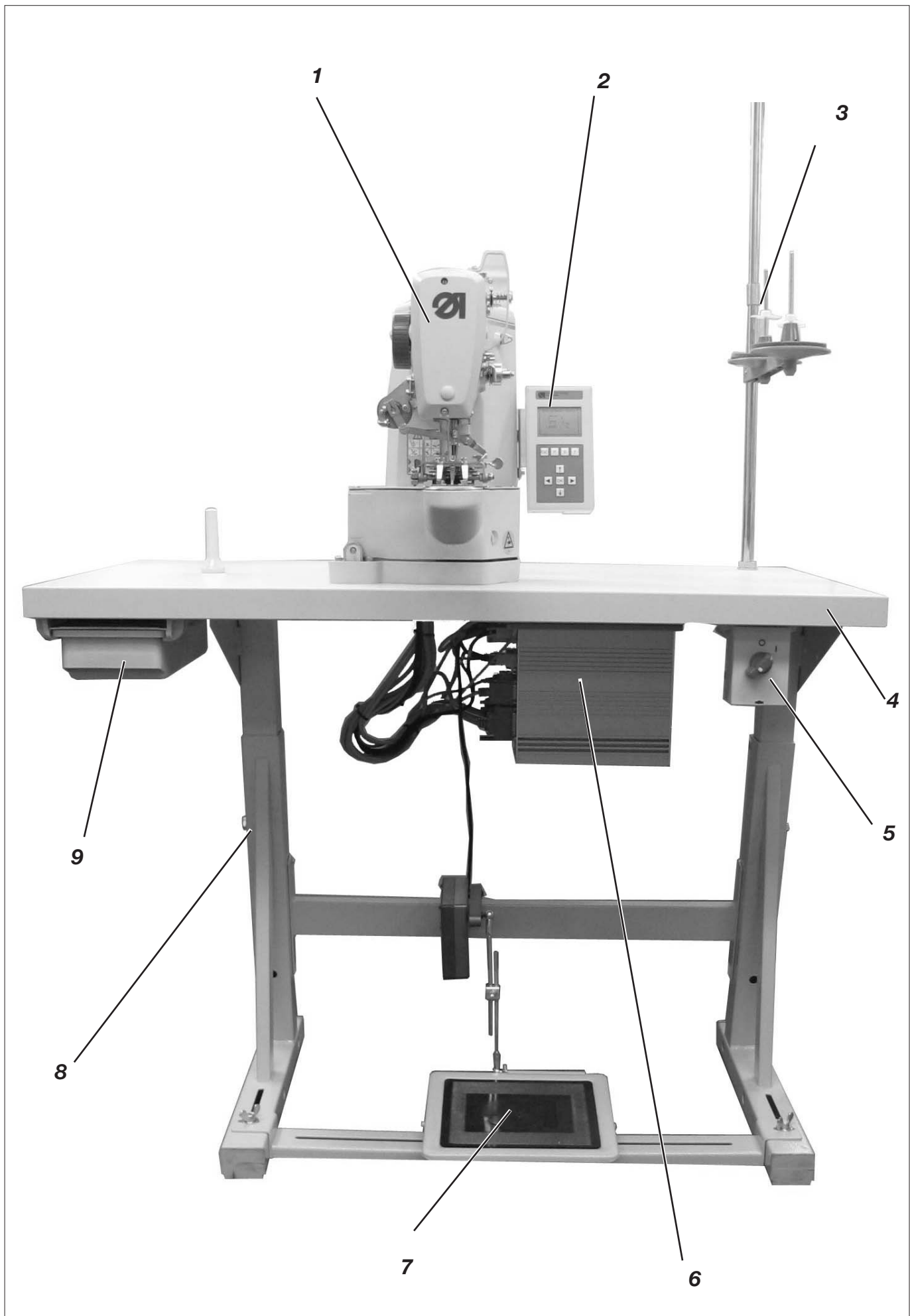
Danger of bodily injuries !

Please note also the general safety instructions.



Part 2: Installation Instructions Class 531 - Original instructions

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1 Scope of delivery

The scope of delivery **depends on your order**.
Please check that all necessary parts are there before installing.
This description applies to a button sewer whose individual components are supplied complete by **Dürkopp Adler AG**.

- **1** Top part including oil bath

Electrical parts set with:

- **2** Control panel
- **5** Mains switch
- **6** DAC control unit

Dürkopp-Adler accessories kit with:

- **3** Thread stand
- Protective cover (not illustrated)
- **8** Supporting frame (optional)
- **7** Pedal and connecting rod (optional)
- **4** Table plate (optional)
- **9** Drawer (optional)

2

2 General and transport safety devices



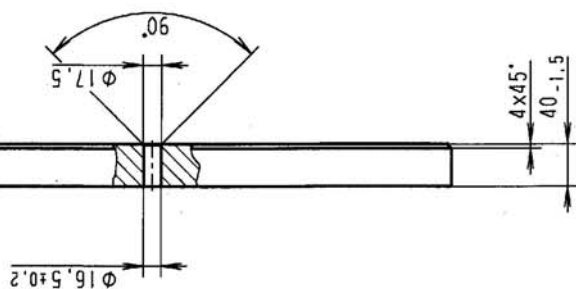
CAUTION!

The button sewer may only be operated by qualified staff.

Securing devices for transport

If you have bought a detachable button sewer the following transport safety devices must be removed:

- Retaining bands and wooden strips on the top of the machine, table and supporting frame.



3 Fitting the supporting frame and control cabinet

3.1 Table plates

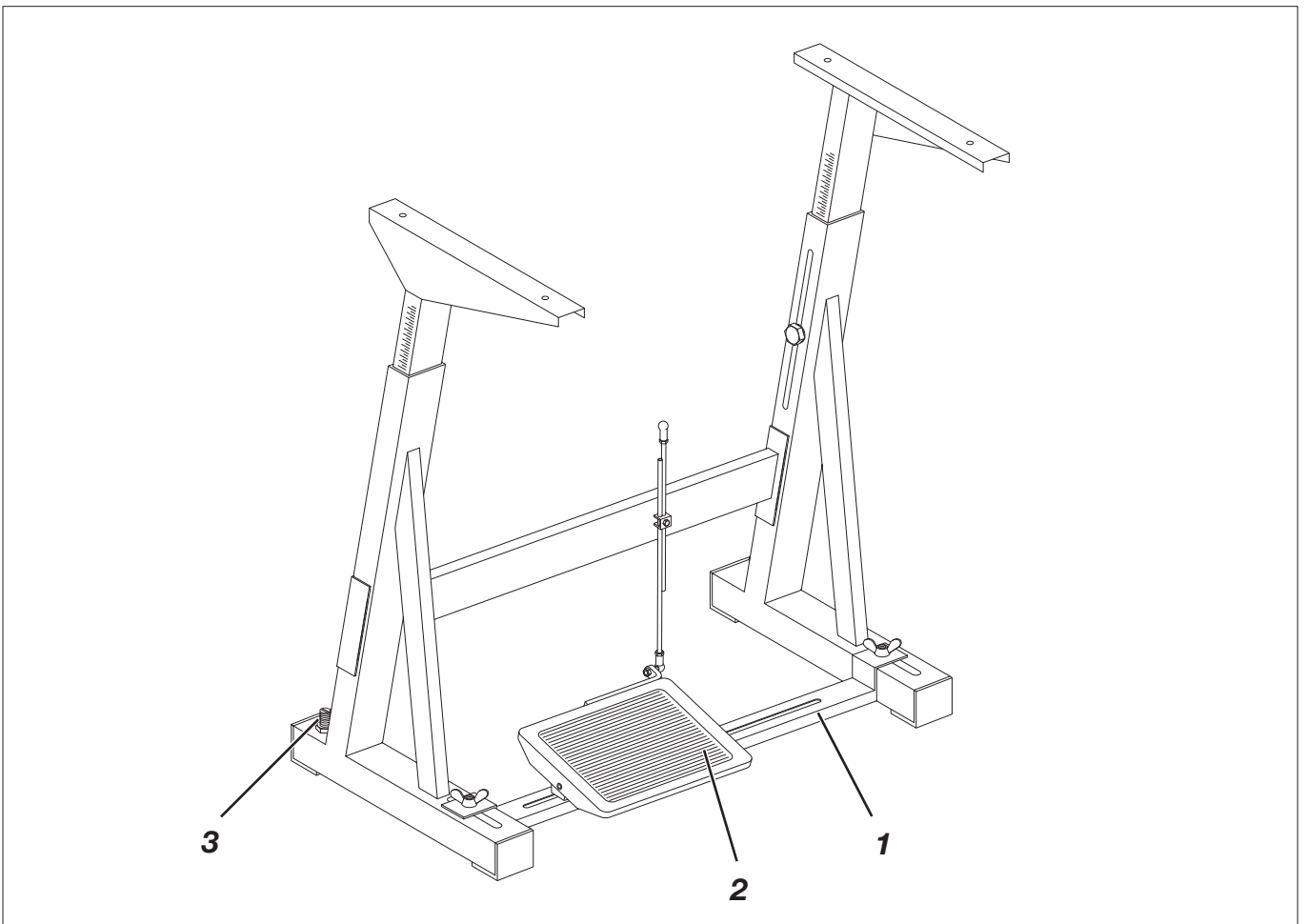
The cutouts on the table plates you have made yourself must be the size specified in the diagram.



Caution, danger of injury!

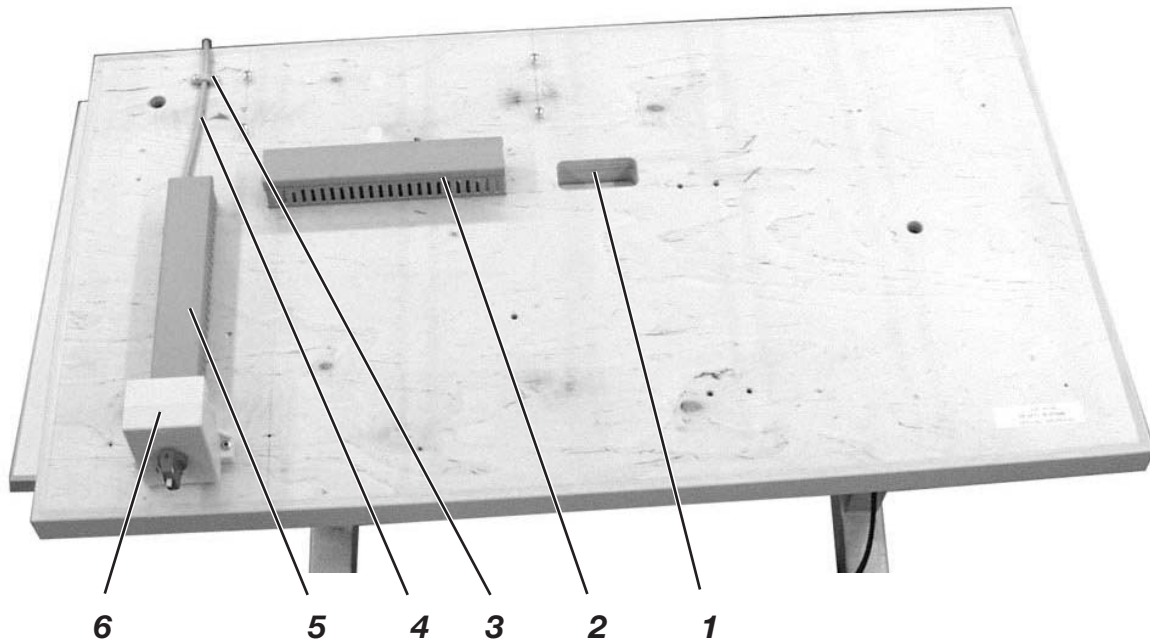
The table plates must have the necessary load capacity and strength.

3.2 Fitting the supporting frame parts

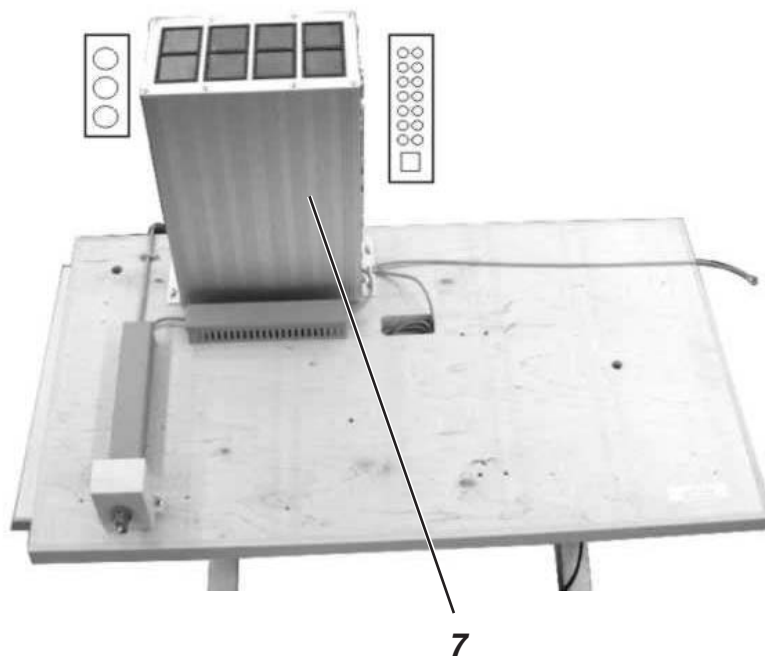


- Fit the individual support frame parts as seen on the illustration.
- Turn the adjusting screw 3 so that the frame is level. The frame must have all four feet on the floor.
- Screw pedal 2 onto the frame strut 1.
- Align the pedal to the side. Push the pedal to the side so that it is in the middle of the oil bath. The frame strut has slotted holes to align the pedal.

3.3 Completing the table plate



- Put the table plate upside down on a work surface.
- Screw the main switch 6 on the left onto the bottom of the table plate.
- Screw the cable channel 5 behind the main switch 6.
- Screw the cable channel 2 on the left next to the grommet.
- Put the connection cable 4 into the cable channel.
- Fix the connection cable 4 with the strain relief 3.



- Put the control box 7 onto the bottom of the table plate and turn it so that the connection side with the four sockets points to the left (in the direction of the thread stand pipe).
- Screw the control box onto the punched side on the bottom of the table plate with four screws.

3.4 Connecting the control box to the main switch



CAUTION!

Any work on the electrical fittings of the button sewer must only be done by qualified electricians or appropriately trained people. It must be unplugged.



2

1



4

3

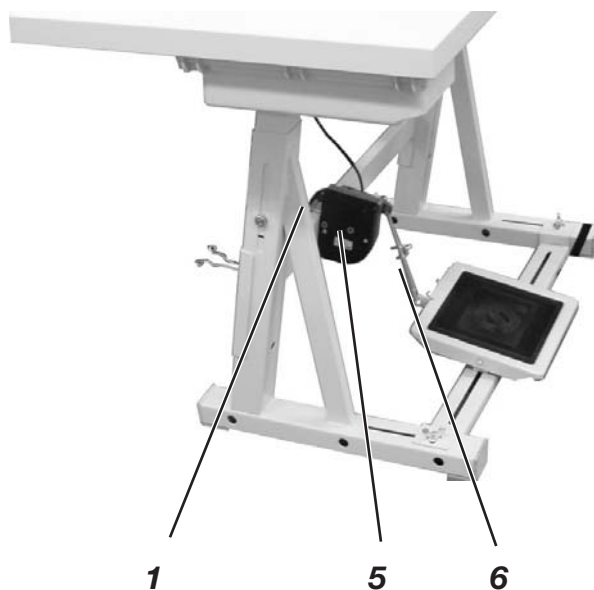
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5

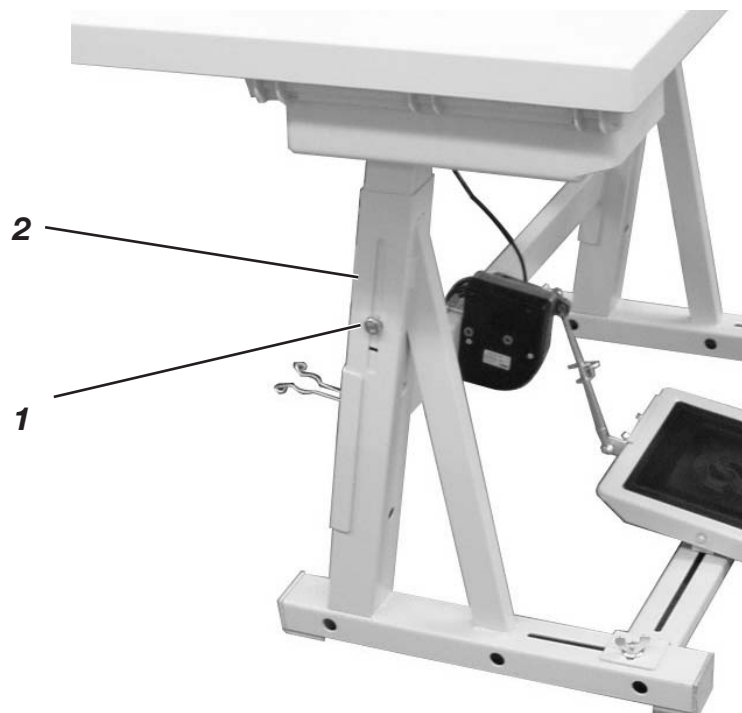
- Remove the switch knob 1.
To do this undo the screw 2 on the knob.
- Remove the cover 3 from the main switch.
To do this unlock the lock in the hole 4 with a screwdriver.
- Put the cable from the control box into the cable channel.
- Insert the cable into the main switch.
- Connect the cable wires of the control box to screws T1 and T2.
- Connect the control box protective earth to the main switch.
- Put the cover on the power switch again.
- Fit the switch knob and screw down,
- Put the cable channel cover onto the cable channel.

3.5 Fitting the reference value transmitter and the potential equaliser



- Screw the reference value transmitter 5 and the fixing loop 1 to the frame strut.
- Hook the pedal connecting rod 6 with the ball sockets onto the pedal and the reference value transmitter.
- Screw the voltage equalising cable 2 onto the fixing loop 1
-
- Screw the reference value transmitter voltage equalising cable 2 and the sewing unit voltage equalising cable 4 onto the control box with screw 3.

3.6 Adjusting the working height



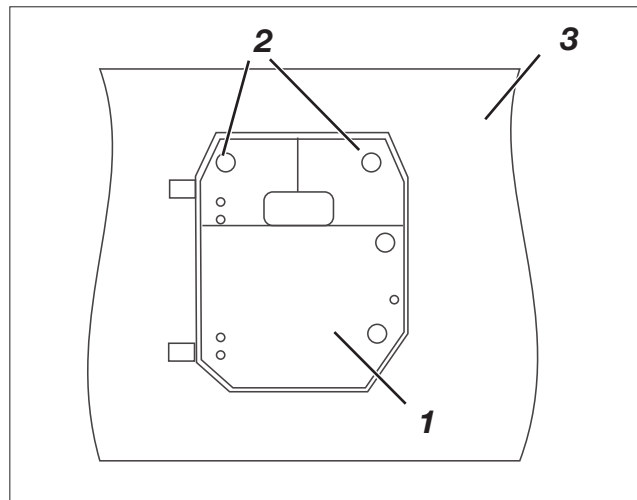
2

The working height can be set between 750 and 950 mm (measured up to the upper edge of the table plate).

- Undo the screws 1 on both struts of the frame.
In order to prevent tilting pull the table plate out or push it back in evenly on both sides.
The graduations 2 on the outer sides of the struts are used as an adjustment aid.
- Tighten the two screws 1.

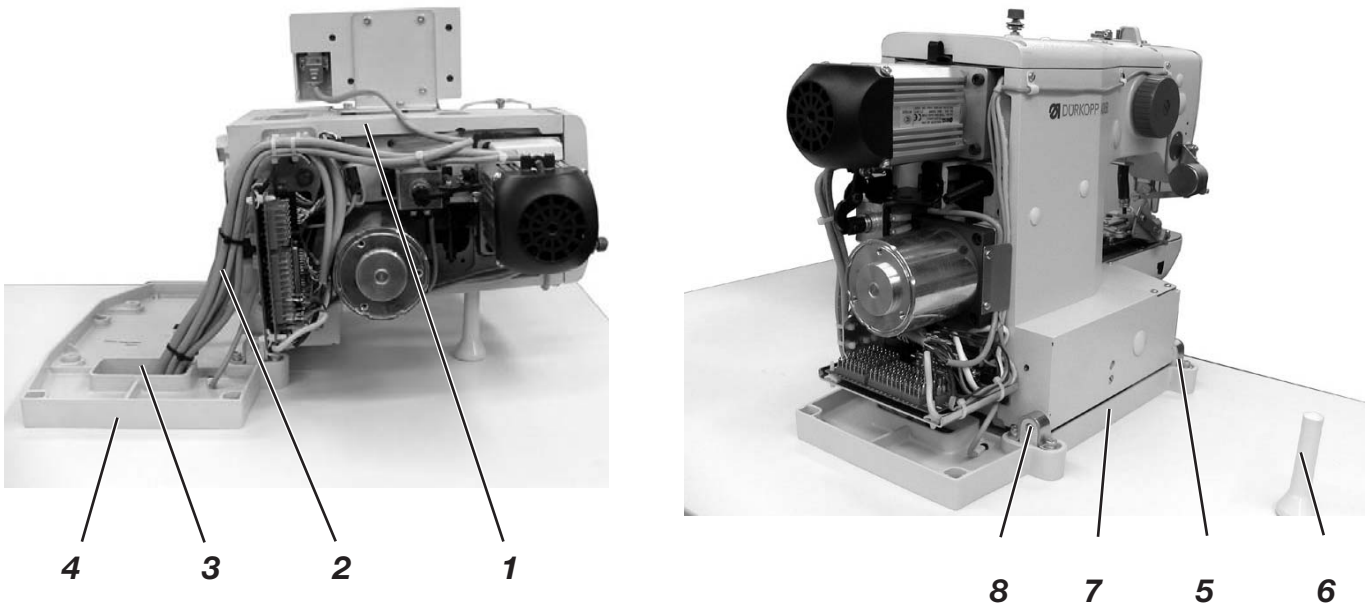
4 Fitting the button-operated sewing attachment

4.1 Fitting the oil sump



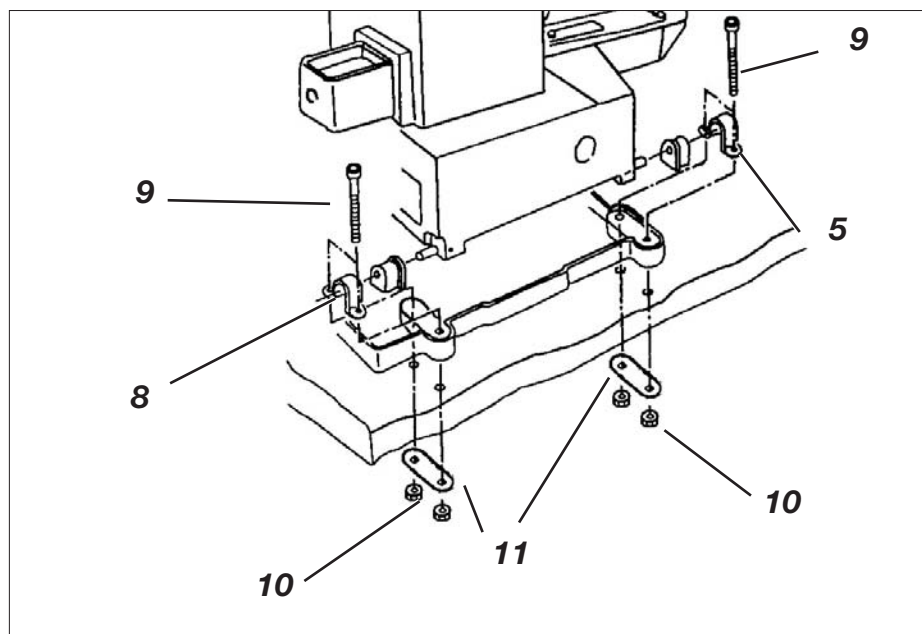
- Put the oil bath 1 onto the table plate, align it and screw it down with two wood screws through the two holes 2.
- Insert the thread stand 1 into the hole in the table plate and fix with nuts and washers.
Fit and align the thread retaining arms and the thread guides. The thread retaining arms and thread guides must be vertically above each other.

4.2 Attaching the button sewer

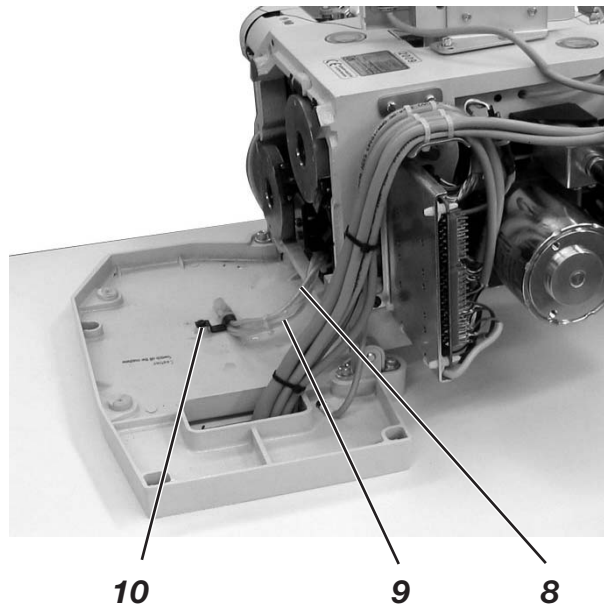


The small parts to put on the button sewer are in the accessories pack.

- Attach the button sewer 1 to the oil bath 4.
- Fix the button sewer on the left and right with the retainers 5 and 8.
To do this fix the retainers 5 and 8 with the screws 9, the plates 11 and the counternuts 10.
- Insert the upper support 6 into the hole on the table plate.
- Turn the button sewer to the side.
- Insert the connection leads 2 through the hole 3 under the table plate.
- Fold the button sewer back.

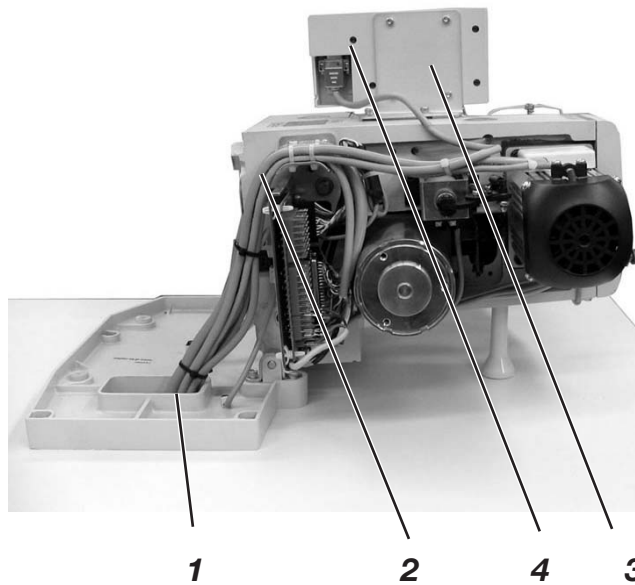


4.3 Fitting the oil lines



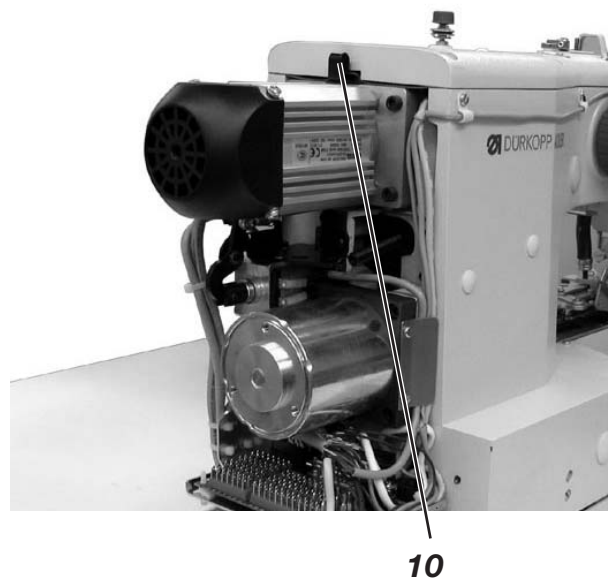
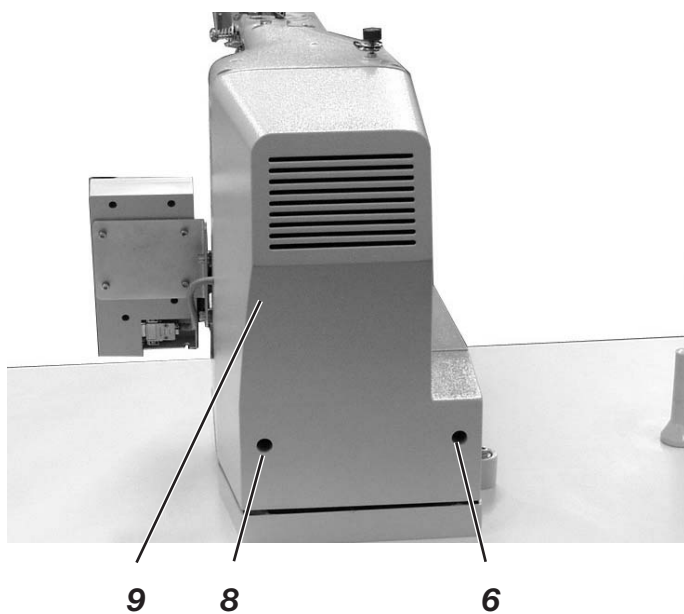
- Fix the oil lines 8 and 9 to the oil bath with the clamp 10. The oil filter must be completely enclosed by the felt.

4.4 Fitting the operating panel



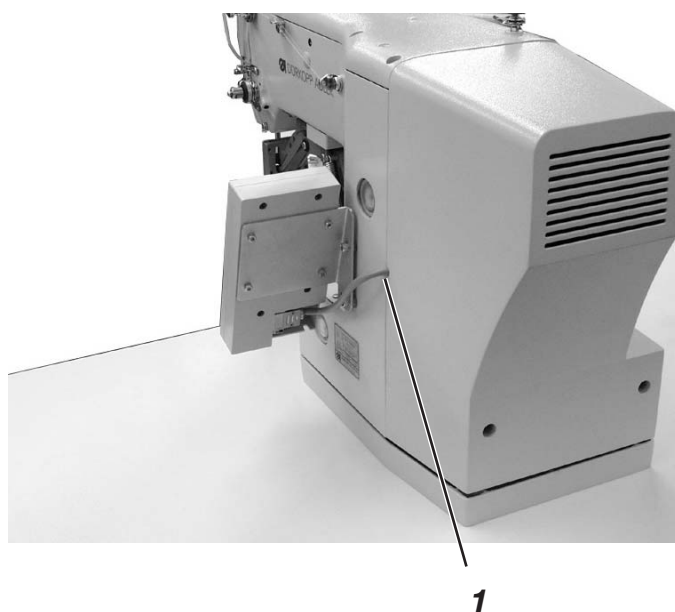
- Screw the control panel 4 with the bracket 3 onto the button sewer. Put the rubber discs between the operating panel bracket and the cast housing.
- Insert the connection lead 2 through the oil bath 1 under the table plate.

4.5 Fitting the protective cover



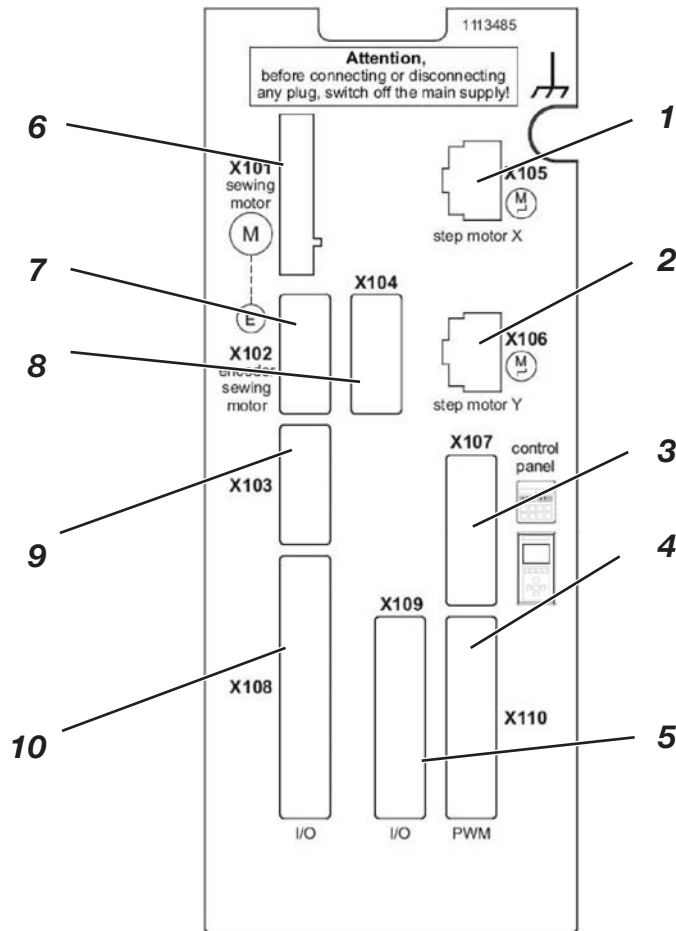
- Put the protective cover 9 onto the retaining spring from the top.
- Before you do this put the control panel cable into the cut out 1 on the protective cover.
- Fix the protective cover onto the button sewer with two screws through the holes 6 and 8.

2



5 Connect the plug connections to the control box

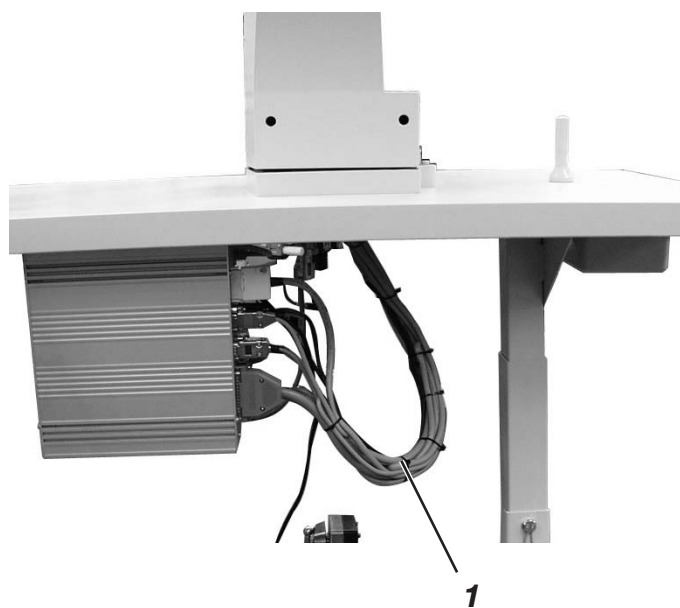
5.1 Plug connections on the control box



Connect the plug connections on the locking unit as follows:

- Plug connection 1 → X axis of the step motor
- Plug connection 2 → Y axis of the step motor
- Plug connection 3 → 15 pin plug for the operating panel BF3
- Plug connection 4 → 25 pin plug for the clamping foot magnet (thin connection lead)
- Plug connection 5 → 25 pin plug for I/O 21 – 28 (thick connection lead)
- Plug connection 6 → 5 pin plug for the sewing motor
- Plug connection 7 → 9 pin plug for the sewing motor incremental encoder
- Plug connection 8 → 9 pin plug for the pedal
- Plug connection 9 → 9 pin plug for the sewing motor reference switch
- Plug connection 10 → 37 pin plug for I/O 1 – 19

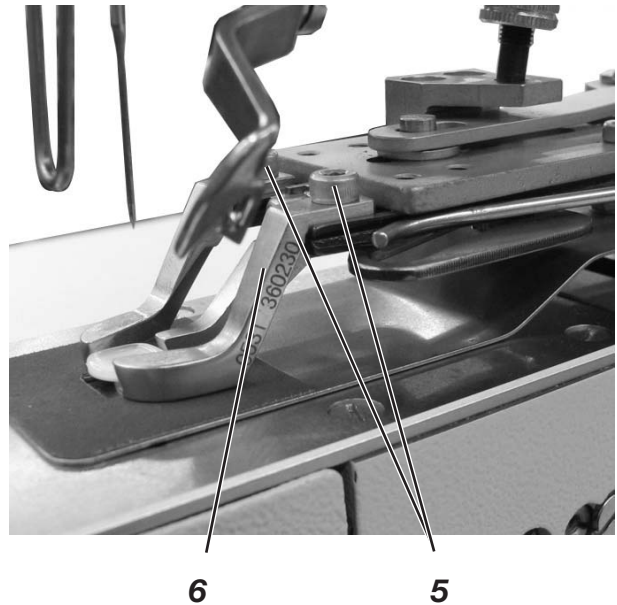
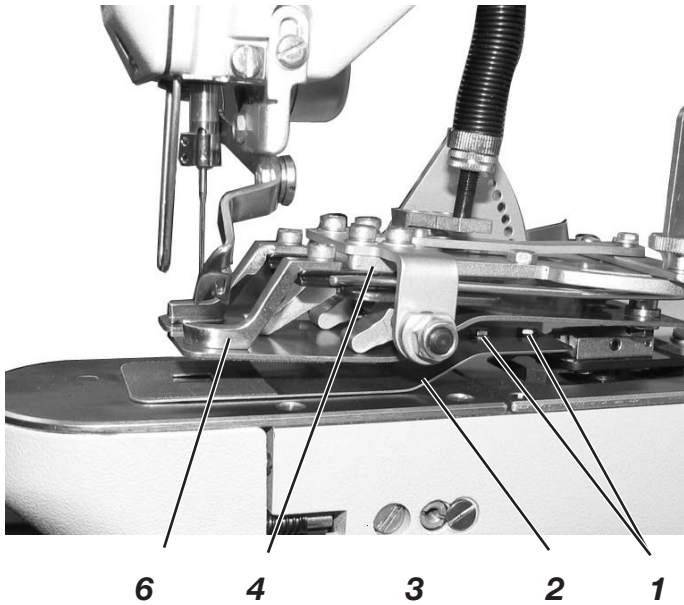
5.2 Laying cables



So that the top part of the machine can be folded back the leads coming from the top through the hole in the table plate either to the 15 gang multiple socket on the control box or to the cable channel must be long enough. To do this the leads must be laid in a large curve 1 using the cable ties.

2

6 Changing the sewing feet and material support plate



Caution, danger of injury!

Switch off the main switch.

Only change the sewing feet and material support plate when the button sewer is switched off.

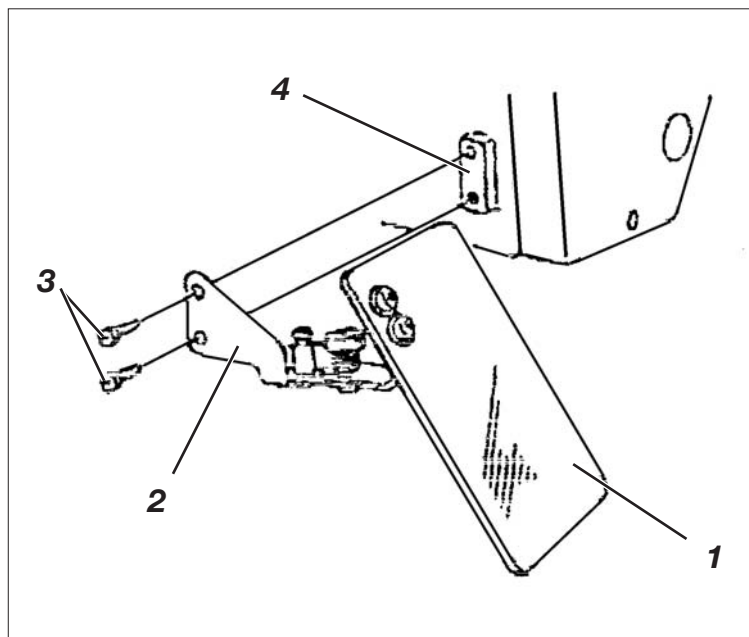
To change the sewing feet

- Remove screws 3 and remove the whole button clamp.
- Remove screws 5 and remove sewing feet 6.
- Insert new sewing feet and secure with screws 5. The sewing feet must still be able to move.
- Replace button clamp 4 and fix with screws 3.

To change the material support plate

- Remove screw 1.
- Change material support plate 2.
- Replace and tighten screw 1.

7 Fitting eye guard



Caution, danger of injury!

The button sewer must not be operated without an eye guard.

2

- Fix the eye guard 1 onto the button sewer 4 with the fixing bracket 2 and the two screws 3.

8 Oil lubrication



Caution, danger of injury!

Oil can cause skin rashes.
Avoid excessive contact with the skin.
Wash thoroughly after contact.



CAUTION!

Handling and disposing of mineral oils is subject to statutory regulations.
Take used oil to an authorised receiving centre.
Protect the environment.
Ensure that you do not spill any oil.

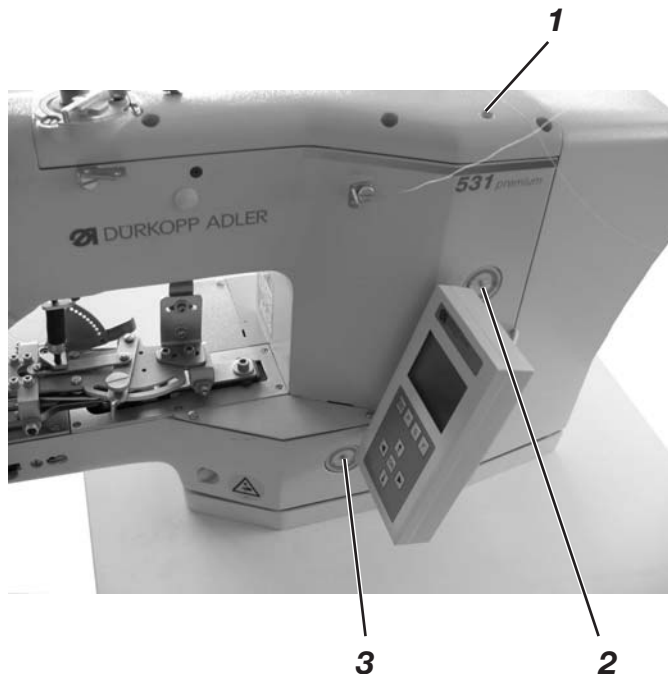
Only use lubrication oil **DA10** or a similar oil with the following specifications to fill the oil reservoir:

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

DA10 can be obtained from **DÜRKOPP ADLER AG** sales centres under the following part numbers:

| | |
|--------------------|-------------|
| 20 ml container: | 9047 000011 |
| 1 litre container: | 9047 000012 |
| 2 litre container: | 9047 000013 |
| 5 litre container: | 9047 000014 |

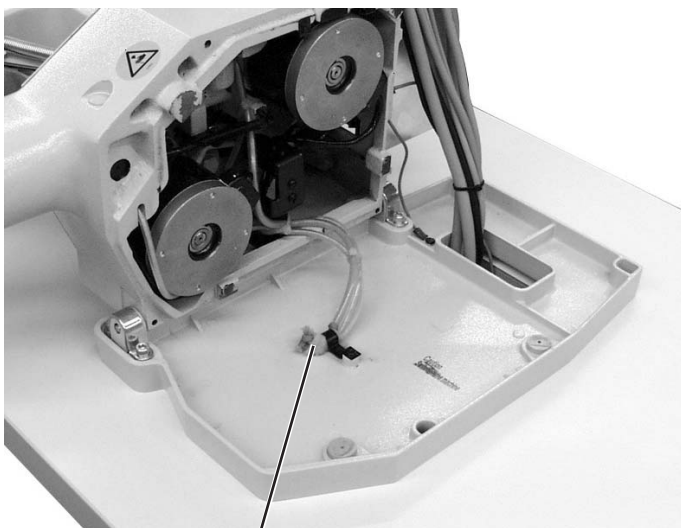
8.1 Filling with oil



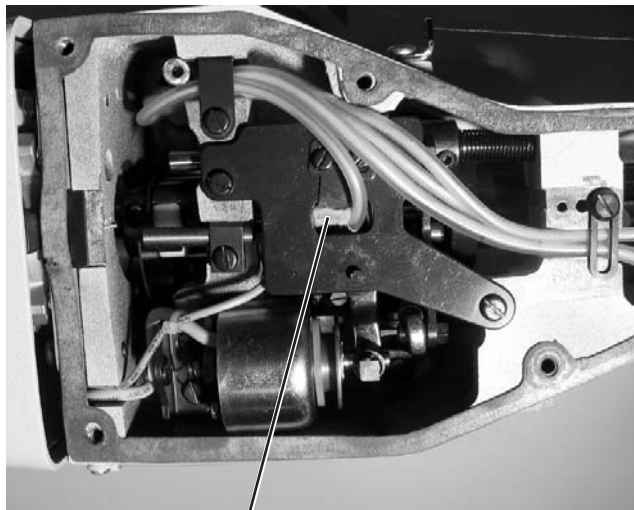
Oil reservoir for lubricating the button sewer

- Pour oil through the hole 1.
- Check the oil level in the two inspection glasses 2 and 3. The oil level must be above the red mark on both inspection glasses.

8.2 Lubricating the wicks and felt part (connecting rod)



1



2



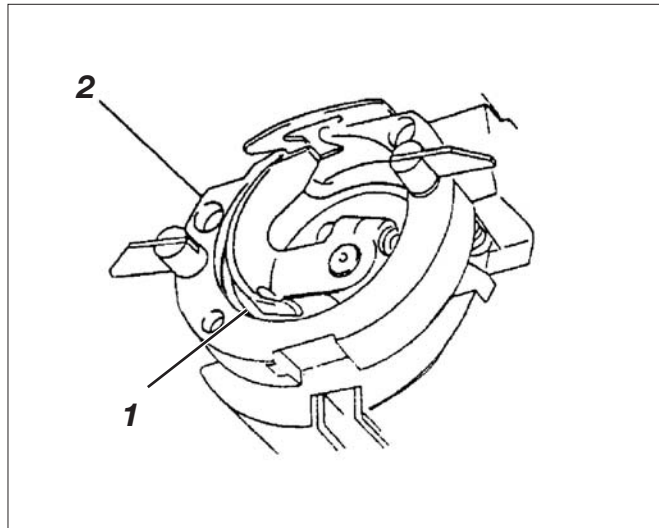
CAUTION!

When installing and if the machine has not been used for a long time the wicks and the felt parts 1 and 2 must be moistened with a little oil.

2

- Turn the button sewer to the side.
- Moisten felt 1 with oil.
- Turn the locking unit back.
- Unscrew the bobbin winder cover.
- Moisten felt 2 with oil.
- Replace the bobbin winder cover and screw down.

8.3 Lubricating the shuttle race



Lubricating the shuttle race

- Fold the shuttle race cover down.
- Put one drop of oil between the driver 2 and the track.
- Fold the shuttle race cover back.



CAUTION!

When installing and if the machine has not been used for a long time the shuttle race and the connecting rod must be lubricated.



Caution, danger of injury!

Switch the main switch off.
Only lubricate the button sewer when it is switched off.

9 Commissioning

9.1 Series delivery

The button sewer is fitted with a standard bracket.



CAUTION Risk of breaking!

If the standard clamping foot is changed the corresponding clamping foot number must be entered.

10 Installing the machine software

10.1 General

Using the “Dongles with program” a specific sewing software package can be loaded onto a DACIV control unit. The “Dongle with program” is characterised in that the machine class and the software version are reproduced on the label.

Such a loading procedure (booting) can be used, for example, to provide an individual DACIV control unit with sewing software (initial installation) or to update to a later sewing software version.

When an individual control unit is supplied, this only has test software on it that enables the sewing software to be loaded. No other functions are possible with the test software. If this test software is disrupted by an incorrect loading procedure it is no longer possible to load software with a dongle. In this case a PC with a loader cable must be used.



CAUTION!

Before connecting the dongle switch the main switch off.

10.2 Loading the program

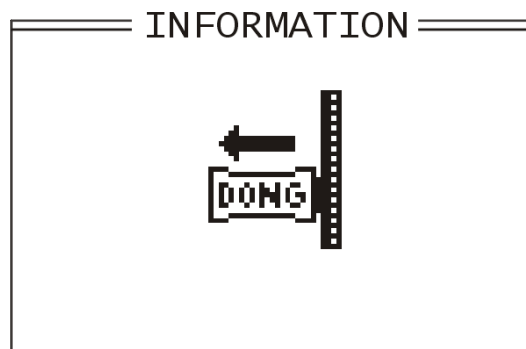
- Switch the main switch off.
- Insert the dongle into socket X111 on the control unit (see illustration)
- Turn main switch on The software is loaded. The loading procedure lasts less than 60 seconds.



CAUTION!

Do not remove the dongle during the loading procedure and do not switch the machine off (otherwise the software will be disrupted).

- After the software has been loaded the machine carries out a warm boot.
- The following screen appears:



- Now remove the dongle.
- If necessary confirm the software version by pressing **OK**.



CAUTION!

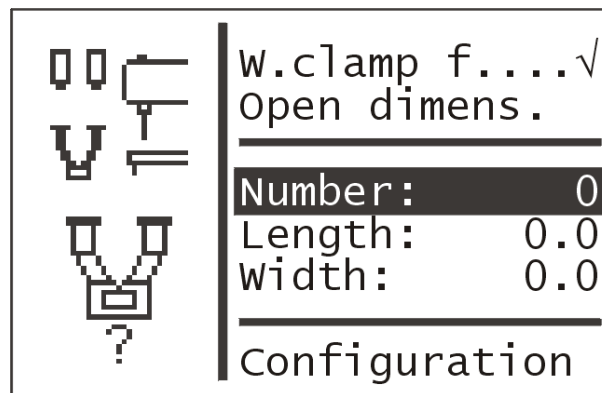
The software must be suitable for the machine class.
If the software version does not match the machine class do not confirm.

Switch the machine off and repeat the loading procedure with the correct software version.

Setting the control unit is described in the operating instructions Section 8 "Operating control unit 531".

When the locking unit is switched on for the first time the number of the clamping foot installed must be entered first.

- Plug in.
- Switch the main switch on.
The control unit is initialised.
The following menu appears:



- Press **OK**.
- Enter the corresponding number of the clamping foot by pressing \uparrow or \downarrow .
- Press **OK**.
- Press **ESC**.
The screen returns to the main menu.

Note

You can only exit the menu when the clamping foot number has been entered.

The configuration menu can only be called up when the clamping foot number has been entered.

Please refer to the operating instructions (Additional equipment section) for the additional equipment.

- The machine is ready for operation.

10.3 Dongle update via the Internet

The dongle can be updated via the Internet. To do this you must go to Dürkopp Adler AG's website "www.duerkopp-adler.com". Go to "*Download Area*" and "*Software*" where you will find the downloading tool and the corresponding machine software. The instructions also available on the site describe the exact procedure for updating the dongle.

11 Sewing test

After the installation work has been completed a sewing test should be carried out.

- Plug in.
- Wind the hook threads (see operating instructions Section 7.5).



Caution, danger of injury!

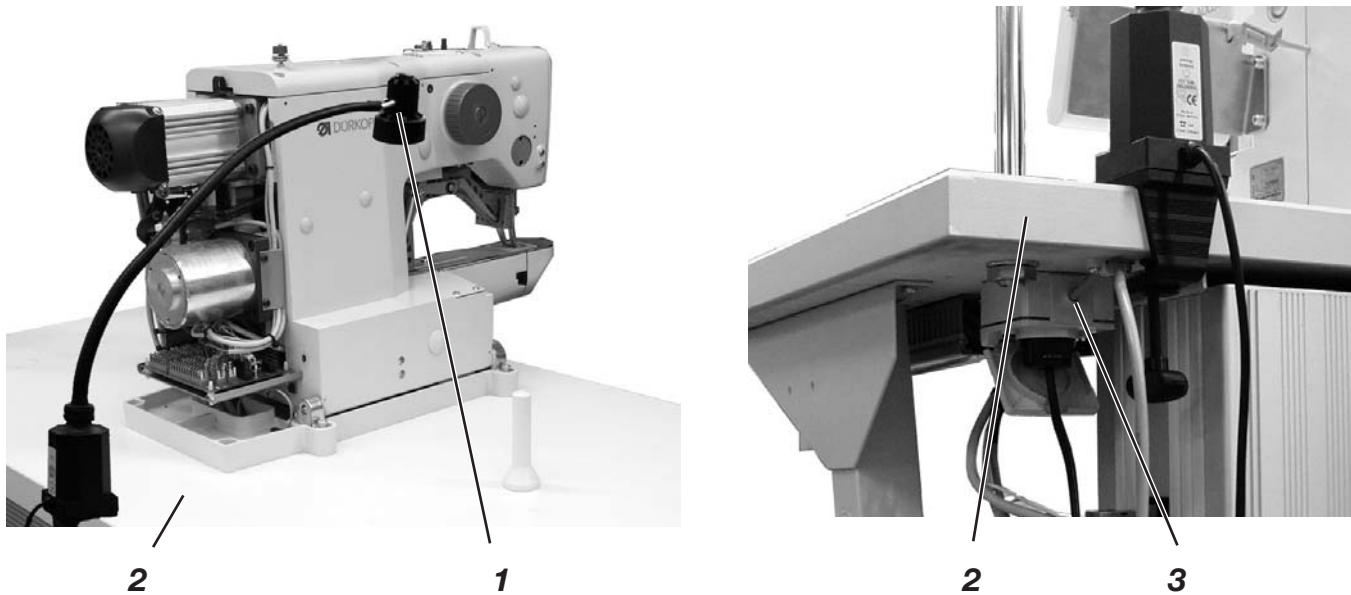
Switch the main switch off.

Only thread the needle and hook threads when the button sewer is switched off.

- Thread the needle threads (see operating instructions Section 7.1).
- Insert the hook thread bobbin (see operating instructions 7.6).
- Switch the main switch on.
The control unit is initialised.
- Select the material to be used.
- Perform the sewing test first at low speed and then with continuously increasing speed.
- Check whether the sewing pattern meets the desired requirements.
If the requirements are not met, change the thread tensions (see operating instructions Sections 7.2 and 7.7).
If necessary the settings specified in the service instructions must be checked and, if necessary, corrected.
- While operating the button sewer check the oil level in both inspection windows.

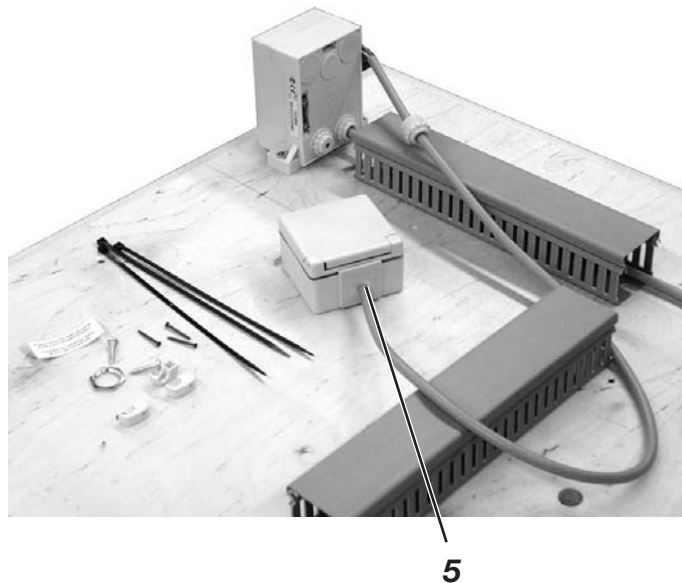
12 Additional equipment

12.1 Sewing light



The sewing light (Order no. 9822 510026) and the table clamp 3 (Order no. 9822 510027) are available for the button sewer 531.

- Fix the sewing light to the table plate 2.



- Fitting the socket adapter set 5 (Order no. 9870 001021).
- Connect cable wires in the power switch to terminals L1 and L2 (see also Section 3.4).
- Connect the protective earth in the power switch.
- Plug the plug into socket 3 under the table plate.