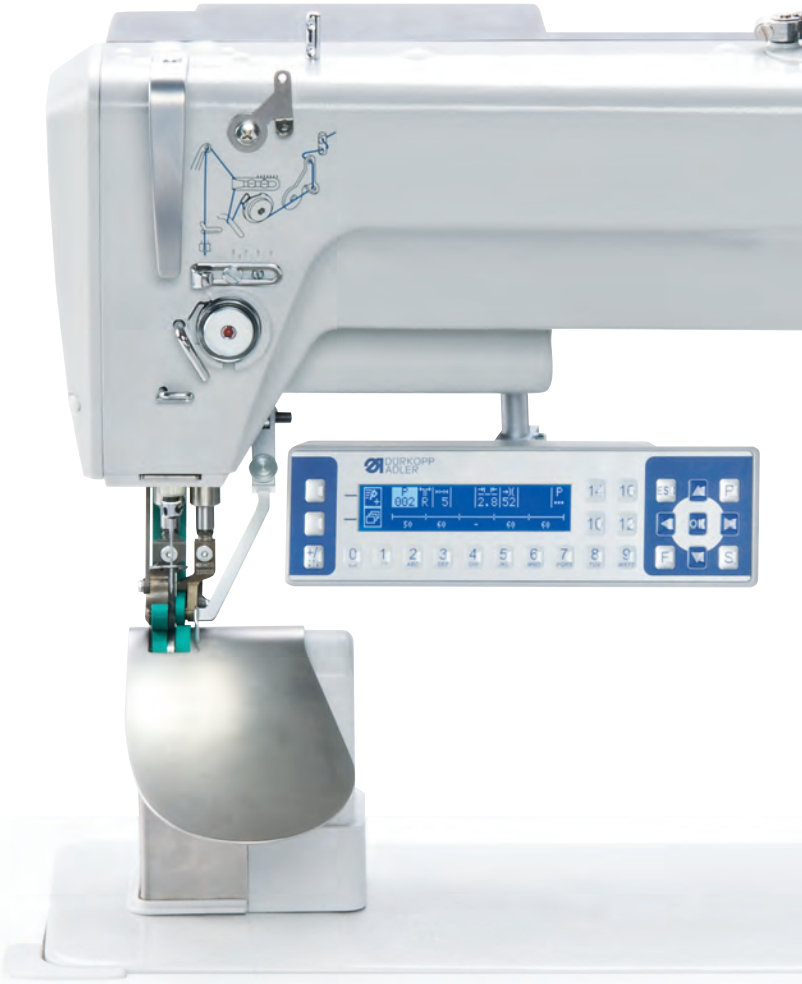
DÜRKOPP ADLER

650-16

Operating Instructions



IMPORTANT

READ CAREFULLY BEFORE USE

KEEP FOR FUTURE REFERENCE

1 About these instructions

These instructions have been prepared with utmost care.
They contain information and notes intended to ensure long-term and reliable operation.

Should you notice any discrepancies or if you have improvement requests, then we would be glad to receive your feedback through **Customer Service** (📖 *p. 137*).

Consider the instructions part of the product and store them in a place where they are readily available.

1.1 For whom are these instructions intended?

These instructions are intended for:

- Operators:
  This group is familiar with the machine and has access to the instructions. Specifically, chapter **Operation** (📖 *p. 19*) is important for the operators.
- Specialists:
  This group has the appropriate technical training for performing maintenance or repairing malfunctions. Specifically, the chapter **Setup** (📖 *p. 109*) is important for specialists.

Service Instructions are supplied separately.

With regard to minimum qualification and other requirements to be met by personnel, please also follow the chapter **Safety** (📖 *p. 9*).

1.2 Representation conventions – symbols and characters

Various information in these instructions is represented or highlighted by the following characters in order to facilitate easy and quick understanding:

☑ **Proper setting**

Specifies proper setting.

Disturbances

Specifies the disturbances that can occur due to an incorrect setting.

Cover

Specifies which covers must be removed in order to access the components to be set.

Steps to be performed when operating the machine (sewing and equipping)

Steps to be performed for service, maintenance, and installation

Steps to be performed via the software control panel

The individual steps are numbered:

1st First step

2nd Second step

etc. The steps must always be followed in the specified order.

• Lists are marked by bullet points.

Result of performing an operation

Change to the machine or on the display/control panel.

Important

Special attention must be paid to this point when performing a step.

Information

Additional information, e.g. on alternative operating options.

Order

Specifies the work to be performed before or after a setting.

References

📖 Reference to another section in these instructions.

Safety Important warnings for the machine users are specially designated. Since safety is of particular importance, hazard symbols, levels of danger and their signal words are described separately in the chapter **Safety** (📖 *p. 9*).

Orientation If no other clear location information is used in a figure, indications of **right** or **left** are always from the operator's point of view.

1.3 Other documents

The machine includes components from other manufacturers. Each manufacturer has performed a hazard assessment for these purchased parts and confirmed their design compliance with applicable European and national regulations. The proper use of these components is described in each manufacturer's instructions.

1.4 Liability

All information and notes in these instructions have been compiled in accordance with the latest technology and the applicable standards and regulations.

Dürkopp Adler cannot be held liable for any damage resulting from:

- Breakage and damage during transport
- Failure to observe these instructions
- Improper use
- Unauthorized modifications to the machine
- Use of untrained personnel
- Use of unapproved parts

Transport

Dürkopp Adler cannot be held liable for breakage and transport damages. Inspect the delivery immediately upon receiving it. Report any damage to the last transport manager. This applies even if the packaging is undamaged.

Leave machines, equipment and packaging material in the condition in which they were found when the damage was discovered. This will ensure any claims against the transport company.

Report all other complaints to Dürkopp Adler immediately after receiving the product.

2 Safety

This chapter contains basic information for your safety. Read the instructions carefully before setting up or operating the machine. Always follow the information included in the safety instructions. Failure to do so can result in serious injury and property damage.

2.1 Basic safety instructions

The machine may only be used as described in these instructions.

The instructions should be available at the machine's location at all times.

Work on live components and equipment is prohibited. Exceptions are defined in the DIN VDE 0105.

For the following work, switch off the machine at the main switch or disconnect the power plug:

- Replacing the needle or other sewing tools
- Leaving the workstation
- Performing maintenance work and repairs
- Threading

Missing or faulty spare parts could impair safety and damage the machine. Only use original parts from the manufacturer.

Transport Use a sturdy lifting carriage or forklift truck for transporting the machine. Raise the machine max. 20 mm and secure it to prevent it from slipping off.

Setup The power cable must have a plug that is authorized for use in the country in which the machine is being used. The power plug may only be assembled to the power cable by qualified specialists.

Obligations of the operator Follow the country-specific safety and accident prevention regulations and the legal regulations concerning industrial safety and the protection of the environment.

All the warnings and safety signs on the machine must always be in legible condition. Do not remove!
Missing or damaged warnings and safety signs must be replaced immediately.

Requirements to be met by the personnel

Only qualified specialists may:

- set up the machine
- carry out maintenance work and repairs
- carry out work on electrical equipment

Only authorized persons may work on the machine and they must first have understood these instructions.

Operation

Inspect the machine while in use for any externally visible damage. Stop working if you notice any changes to the machine. Report any changes to your supervisor. Do not use a damaged machine any further.

Safety equipment

Safety equipment should not be removed or deactivated. If it is essential to remove or deactivate safety equipment for a repair operation, it must be assembled and put back into service immediately afterward.

2.2 Signal words and symbols used in warnings

Warnings in the text are distinguished by color bars. The color scheme based on the severity of the danger. Signal words indicate the severity of the danger.

Signal words

Signal words and the hazard they describe:

Signal word	Meaning
DANGER	(with hazard symbol) If ignored, fatal or serious injury will result
WARNING	(with hazard symbol) If ignored, fatal or serious injury can result

CAUTION	(with hazard symbol) If ignored, moderate or minor injury can result
CAUTION	(with hazard symbol) If ignored, environmental damage can result
NOTICE	(without hazard symbol) If ignored, property damage can result

Symbols The following symbols indicate the type of danger to personnel:

Symbol	Type of danger
	General
	Electric shock
	Puncture
	Crushing
	Environmental damage

Examples Examples of the layout of warnings in the text:

DANGER

Type and source of danger!
Consequences of non-compliance.
Measures for avoiding the danger.

↳ This is what a warning looks like for a hazard that will result in serious injury or even death if ignored.

WARNING

Type and source of danger!
Consequences of non-compliance.
Measures for avoiding the danger.

↳ This is what a warning looks like for a hazard that could result in serious or even fatal injury if ignored.

CAUTION

Type and source of danger!
Consequences of non-compliance.
Measures for avoiding the danger.

↳ This is what a warning looks like for a hazard that could result in moderate or minor injury if the warning is ignored.

NOTICE

Type and source of danger!

Consequences of non-compliance.

Measures for avoiding the danger.

↳ This is what a warning looks like for a hazard that could result in property damage if ignored.

CAUTION

Type and source of danger!

Consequences of non-compliance.

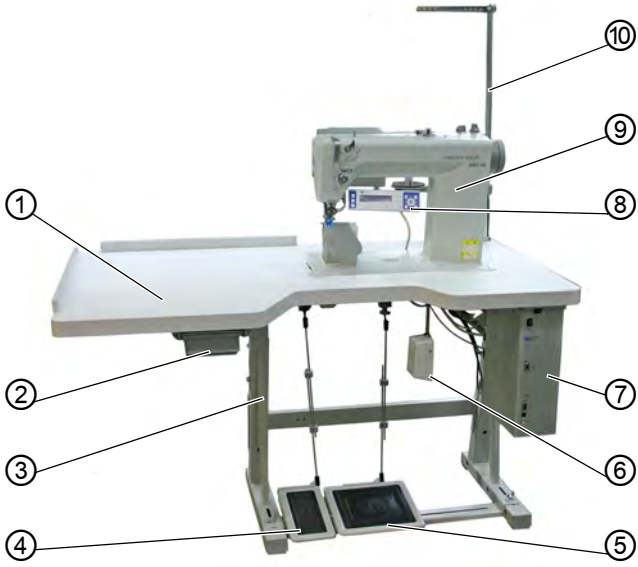
Measures for avoiding the danger.

↳ This is what a warning looks like for a hazard that could result in environmental damage if ignored.

3 Machine description

3.1 Overview of machine components

Fig. 1: Overviwe of machine components



(1) - Plate
(2) - Drawe
(3) - Frame
(4) - Additional pedal
(5) - Pedal
(6) - Knee switch
(7) - Control
(8) - Control panel
(9) - Machine
(10) - Thread reel holder

3.2 Declaration of Conformity

The machine complies with European regulations ensuring health, safety, and environmental protection as specified in the declaration of conformity or in the declaration of incorporation.

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3.3 Proper use

The machine is intended only for use with dry sewing material. The sewing material must not contain any hard objects.

The needle thicknesses permissible for the machine are listed in the **Technical Data** (📖 *p. 141*) chapter.

The seam must be completed with a thread that satisfies the requirements of the specific application at hand.

The machine is intended for industrial use.

The machine may only be set up and operated in dry conditions on well-maintained premises. If the machine is operated on premises that are not dry and well-maintained, then further measures may be required which must be compatible with DIN EN 60204-31.

Only authorized persons may work on the machine.

Dürkopp Adler cannot be held liable for damages resulting from improper use.

WARNING

Risk of injury from live, moving and cutting parts as well as from sharp parts!

Improper use can result in electric shock, crushing, cutting and punctures.

Follow all instructions provided.

NOTICE

Property damage from non-observance!

Improper use can result in material damage at the machine.

Follow all instructions provided.

4 Operation

4.1 Preparing the machine for operation

WARNING

Risk of injury from moving parts, cutting and sharp parts!

Crushing, cutting and punctures are possible.

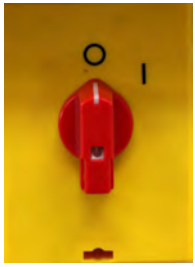
If possible, make preparations only when the machine is switched off.

Complete the following steps in preparation of sewing before starting to work:

- Changing the needle
- Threading the needle thread
- Threading the looper thread
- Adjusting the thread tension

4.2 Switching on and off the machine

Fig. 2: Switching on and off the machine



Switching on the machine

To switch on the machine:

1. Turn the main switch from position **0** to position **I**.

↳ The machine switches on.

Switching off the machine

To switch off the machine:

1. Turn the main switch from position **0** to position **I**.

↳ The machine switches off.

4.3 Changing the needle

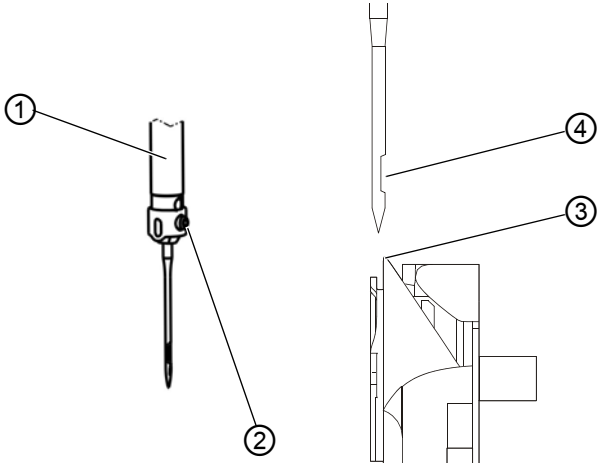
CAUTION

Risk of injury from sharp parts!

Punctures possible.

Switch off the machine before changing the needle.

Fig. 3: Changing the needle



(1) - Needle bar
(2) - Srew
(3) - Hook tip
(4) - Groove

To change the needle:

1. Loosen the screw (2) and remove the needle.
2. Insert the new needle into the hole in the needle bar (1) until it reaches the end stop.

Important

The groove (4) must face towards the hook tip (3).

3. Tighten the screw (2).

Order

After changing to a different needle thickness, always adjust the clearance between the hook and the needle (🕮 *Service instructions*).

Disturbance

An incorrect hook distance can cause the following malfunctions:

- Changing to a thinner needle:
  - Missing stitches
  - Thread damage
- Changing to a thicker needle:
  - Damage to the hook tip
  - Damage to the needle

4.4 Threading the needle thread

CAUTION

Risk of injuries from cutting parts!

Punctures possible.

Switch off the machine before threading the needle thread.

Fig. 4: Threading the needle thread

To thread the needle thread:

1. Plug the thread reels on to the thread reel holders and feed the needle and hook threads through the unwinding bracket.

Important

The unwinding bracket must be horizontal and be positioned above the thread reels.

2. Thread the needle thread as shown above.

Threads with high elasticity

Fig. 5: Threading the needle thread: Threads with high elasticity

To thread the needle thread when using threads with high elasticity:

1. Thread the needle thread as shwon above.

4.5 Winding the hook thread

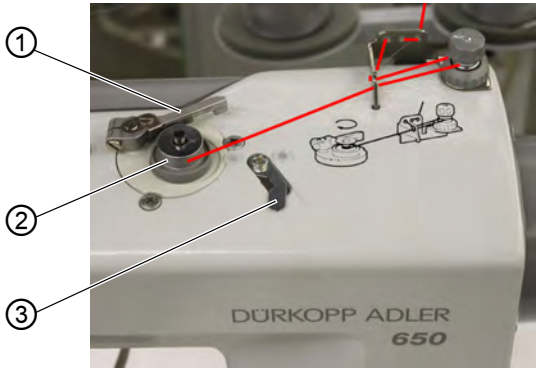
NOTICE

Property damage may occur!

Moving the bobbin without performing sewing can cause damage to the presser foot and the bobbin case in the hook.

Activate bobbin mode if you wish to wind the hook thread without performing sewing.

Fig. 6: Winding the hook thread



(1) - Winder flap
(2) - Bobbin
(3) - Cutter

To wind the hook thread:

1. Fit the bobbin (2) on the bobbin shaft.
2. Thread the hook thread as shown in the following figure.
3. Wind the hook thread clockwise on to the bobbin core.
4. Swing the bobbin winder flap (1) against the bobbin.
5. Switch the main switch on.
6. Start sewing.
7. Once the bobbin is full, the winder switches off automatically (🕮 *Service instructions*).
8. Pull off the bobbin, clamp the thread under the cutter (3) and tear it off.

4.6 Replacing the hook thread bobbin

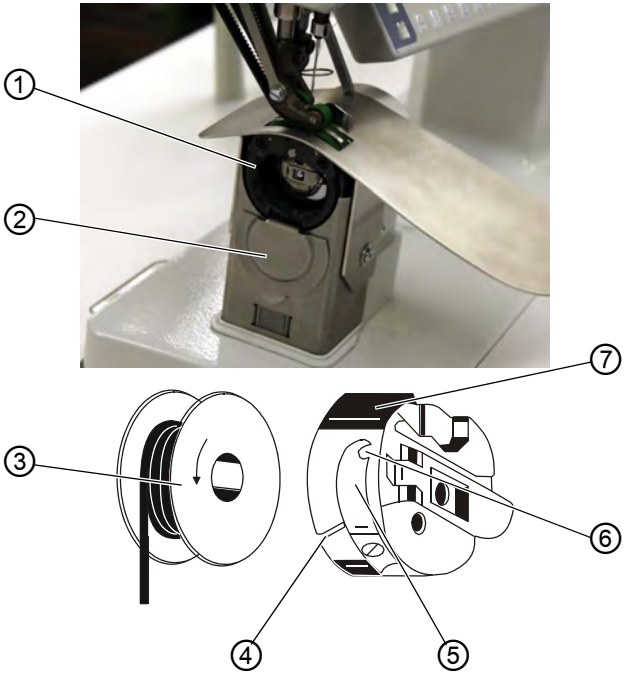
CAUTION

Risk of injury from sharp and moving parts!

Cutting or crushing possible.

Switch off the machine before replacing the hook thread bobbin.

Fig. 7: Replacing the hook thread bobbin



(1) - Bobbin housing flap
(2) - Hook cover
(3) - Bobbin
(4) - Slot
(5) - Tension spring
(6) - Hole
(7) - Bobbin housing upper section

To replace the hook thread bobin:

Removing an empty bobbin

1. Push the hook cover (2) downwards.
2. Move the needle to the up position.
3. Lift the bobbin housing flap (1).
4. Remove the bobbin housing upper section (7) with the bobbin (3).
5. Remove the empty bobbin (3) from the bobbin housing upper section (7).

Inserting a full bobbin

1. Insert the full bobbin (3) into the bobbin housing upper section (7).
2. Feed the hook thread through the slot (4) under the tensioning spring (5) into the hole (6).
3. Pull the hook thread approx. 5 cm out of the bobbin housing (7).
4. The bobbin must rotate in the direction of the arrow when pulling out the thread.
5. Insert the bobbin housing (7) again.
6. Push the hook cover (2) upwards.

4.7 Thread tension

Together with the bobbin thread tension, the needle thread tension influences the seam pattern.

The needle thread tension is defined by the pre-tensioner, the main tensioner and the additional tensioner.

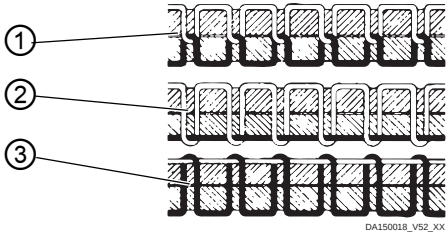
Proper Setting

The main tension (1) should be set as low as possible.

The thread interlacing should be exactly in the middle of the material being sewn.

With thin sewn material, excessive thread tension can lead to undesired gathering and thread breakages.

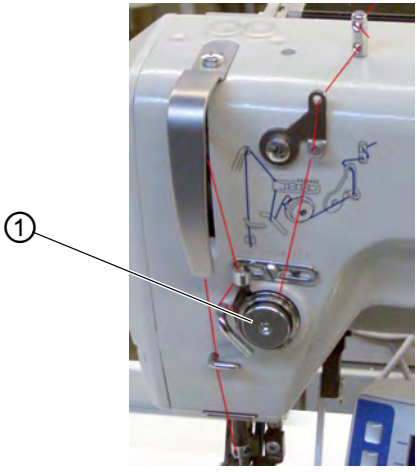
Fig. 8: Thread tension



(1) - Identical needle thread and bobbin thread tension
(2) - Bobbin thread tension higher than needle thread tension
(3) - Needle thread tension higher than bobbin thread tension

4.7.1 Setting the needle thread tension

Fig. 9: Setting the needle thread tension



(1) - Main tensioner

To set the needle thread tension:

1. Set the main tensioner (1) via the control panel so that a even stitch pattern is achieved.

↳ When the thread is cut, the main tensioner (1) is opened automatically.

4.7.2 Setting the hook thread tension

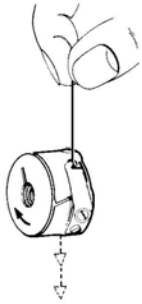
CAUTION

Risk of injury from sharp and moving parts!

Cutting or crushing possible.

Switch off the machine before setting the hook thread tension.

Fig. 10: Setting the hook thread tension (1)



Proper setting

The hook thread tension must be set so that the resulting stitch pattern looks like the figure in (📖 *p. 27*).

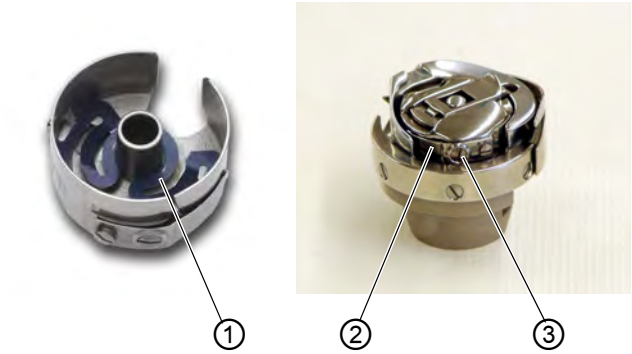
At the recommended hook thread tension of e.g. 25 g (measured with a full bobbin), 12.5 g should be generated by the braking spring and 12.5 g by the tensioning spring.

The basic setting for the tensioning spring is performed as follows:

- When the bobbin housing contains a full bobbin it must sink slowly under its own weight.

The braking spring prevents the bobbin running on when the thread has been cut.

Fig. 11: Setting the hook thread tension (2)



(1) - Braking spring
(2) - Tension spring
(3) - Regulating screw

To set the hokk thread tension:

1. Turn back the adjusting screw (3) so far that the tension on the tensioning spring (2) is completely removed.
2. Bend the braking spring (1) such that half the recommended hook thread tension value is applied through the braking spring.
3. Insert the bobbin into the bobbin housing upper section and thread in the hook thread (📖 *p. 32*).
4. Insert the bobbin housing together with the bobbin into the hook.
5. Hold the free thread end tightly with one hand.
6. Turn the handwheel until the sewing machine performs one stitch.
7. Pull the hook thread on to the upper side of the needle hole using the needle thread.
8. Remove the hook thread in the direction of sewing at an angle of 45°. About half the tension value should be evident.
9. Then tighten the adjusting screw (3) up to the recommended tension value.

4.8 Setting the needle thread regulator

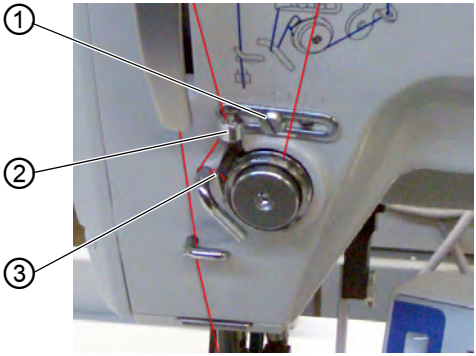
The needle thread regulator regulates the amount of needle thread required for forming the stitch. An optimum sewing result is possible only when the thread regulator is exactly adjusted.

Proper setting

With the correct setting the needle thread loop must slide over the thickest part of the hook at low tension.

When the largest thread quantity is required then the thread tension spring (3) must be pulled approx. 0.5 mm down from its upper end position. This occurs when the needle thread loop matches the maximum hook diameter.

Fig. 12: Setting the needle thread regulator



(1) - Screw
(2) - Needle thread regulator
(3) - Thread tensioning spring

To set the needle thread regulator:

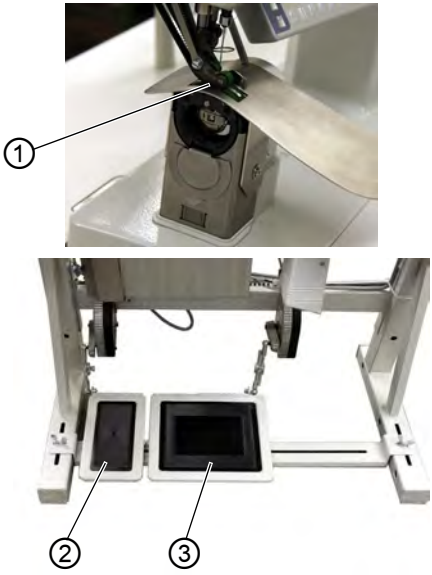
1. Loosen the screw (1).
2. Change the setting of the thread regulator (2).
3. Tighten the screw (1).

4.9 Raising the presser feet

CAUTION

Risk of injury from moving parts!
Crushing possible.
Do not reach under the raised presser feet.

Fig. 13: Raising the presser feet



(1) - Presser feet
(2) - Additional pedal (optional)
(3) - Pedal

The presser feet (1) can be raised by an electric motor, by depressing the pedal (3).

To raise the presser feet:

1. Push the pedal (3) halfway backwards.

↳ The presser feet (1) raise.

OR

1. Push the pedal (3) fully backwards.
2. Activate the thread cut-off and raise the presser feet (1).

Functions of the optional additional pedal

The left pedal (2) has a dual function. Depending on the setting of the technician level it either alters the fullness or the curve support (🕮 *Service instructions*).

- In automatic mode:
  The value for fullness or curve support is corrected for the current step.
- In manual mode:
  The value for fullness or curve support is selected.

To activate the functions of the optional additional pedal:

1. Push the additional pedal:
   - Push the pedal forwards: Increase the value
   - Push the pedal backwards: Decrease the value

4.10 Knee switch

The knee switch (1) is used to switch the seam programs from one step to the next, both in automatic mode and also in programming mode.

Fig. 14: Knee switch

(1) - Knee switch

To use the knee switch:

1. Depress the knee switch.

↳ The next step is called up.

4.11 Sewing

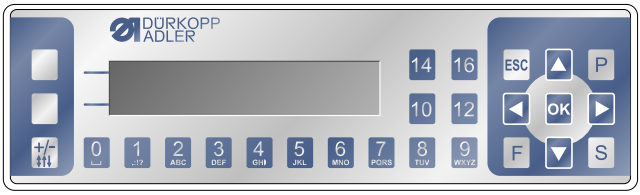
Before starting sewing	
Initial situation	• Pedal is in the rest position. Sewing machine is at a standstill. Needle is up. Presser foot is down.
Position material at the start of the seam	• Push the pedal half backwards. The presser foot rises. • Position the sewing material. • Release the pedal. The presser foot descends on to the sewing material.
At the start of the seam	

Starting bartack and sewing the seam	• Push the pedal forwards and keep it there. Starting bartack is sewn (if specified). Then the machine sews along the seam at the speed determined by the pedal.
In the middle of the seam	
Stopping sewing	• Release the pedal (position 0). The machine stops in the 1st position (needle down) or in the needle up position (depending on the setting chosen). The presser foot is down or raised (depending on the setting chosen).
Continue sewing (after releasing the pedal)	• Press the pedal forwards. The machine continues to sew at the specified speed.
Intermediate raising	• Push the pedal half backwards. The presser feet are raised. • Correct the material. • Release the pedal. The presser feet are lowered.
Altering the fullness	• Press the fullness button or the left pedal. The selected fullness value is activated.
At the end of the seam	
Remove the material to be sewn	• Push the pedal fully backwards and keep it there. The end bartack is sewn (if activated). The thread is cut off (if activated). The machine stops in the 2nd position. The needle is up. The presser feet are raised. • Remove the sewn material. • Release the pedal. The presser feet are lowered.

5 Control with the OP3000 control panel

5.1 OP3000 control panel

Fig. 15: OP3000 control panel



All settings in the control for the 650-16 are performed using the OP3000 control panel.

Key	Function
0 to 16	Setting the fullness Inputting the parameter value (if the field for the parameters is activated) Selection of a parameter that is shown in the display • Press the key under the desired symbol. The function is selected.
ESC	Cancel the function Exit the menu
OK	Confirm the settings Activate the input
P	Function is different for each menu
S	Function is different for each menu
F	Function is different for each menu
▶	Selection to the right
◀	Selection to the left Back one menu level
▲	Increase the value Scroll through the list (upwards)

Key	Function
▼	Decrease the value Scroll through the list (downwards)
A	Upper softkey - 1 Assignment is different for each menu
B	Upper softkey - 2 Assignment is different for each menu
+/-	Switch between increase and decrease the fullness

5.2 Switching on the machine

Fig. 16: Switching on the machine (1), Display of the firmware and Software version

To switch on the machine:

1. Switch on the main switch.

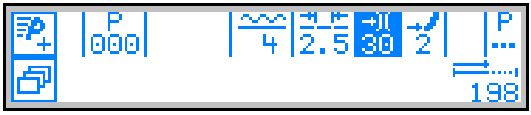
↳ The software version appears on the display:

- On the left of the screen the control panel firmware
- On the right of the screen the control software version

↳ The machine performs a reference run:
The display shows the program last used, or manual mode.

Fig. 17: Switching on the machine (2), Display of the program last used

Fig. 18: Switching on the machine (3), Display in manual mode



5.3 Control operating modes

The 650-16 control has 4 available operating modes:

- **Manual mode (program 000)**

  Manual mode is the simplest operating mode. There are no sewing programs and no inputs for individual sewing steps.

  Changes to the fullness, stitch length, thread tension, curve support and also the activation of other functions are always implemented immediately.

  Thus all the major sewing parameters can be changed manually during the sewing process.

- **Automatic mode (program 001 - 999)**

  Automatic mode allows sewing programs to be executed.

  The seams are divided into individual sections (steps) within the sewing programs. Each step is assigned its own individual sewing parameters such as fullness, curve support etc.

- **Quick programming**

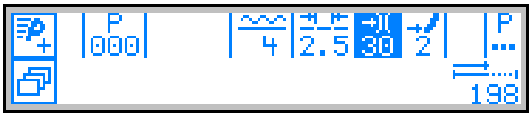
  Quick programming allows very quick and simple creation of new sewing programs.

- **Programming mode**

  Programming mode allows new sewing programs to be created, edited, deleted, copied, and mirrored (left sleeve / right sleeve).

5.4 Manual mode

Fig. 19: Manual mode



The following table shows the individual symbols (parameters) in the display and the functions of the keys on the control panel.

When a parameter is selected, its color on the display changes. When a parameter is changed, its new value is loaded immediately.

Symbol	Meaning
	(depending on the assignment) Quick programming • Press the upper softkey
	**Quick access function** (softkey menu) • Press the lower softkey, 📖 *p. 42*.
	**Program number** Value range: 000 to 999 Program 000 indicates that the control is in Manual mode. • Use ◀ / ▶ to select the `Program` parameter. • Use ▲ / ▼ to change the program number. Or: • Input the program number directly using the keys 0 to 9 and confirm with **OK** as required. This takes you into Automatic mode.
	**Fullness** Value range: Upper fullness: 0 to 16 Lower fullness: 0 to -6 • Use the keys 0 to 16 to select the desired value. • Use the **+/-** key to select upper or lower fullness. Or: • Use the second pedal to select the fullness, if fitted.

Symbol	Meaning
	**Stitch length** Value range: 1.0 to 5.5 mm • Use ◀ / ▶ to select the *Stitch length* parameter. • Use ▲ / ▼ to change the stitch length
	**Thread tension** Value range: 1 to 99 • Use ◀ / ▶ to select the *Thread tension* parameter. • Use ▲ / ▼ to change the thread tension
	**Curve support** Value range: 0 to 6 • Use ◀ / ▶ to select the *Curve support* parameter. • Use ▲ / ▼ to change the curve support
	**Other parameters** 🕮 *p. 43*
	**Seam length in mm** After the thread has been cut off, the display is retained. Measurement restarts when sewing starts again.
P	**Creating a program** 🕮 *p. 58*
+/-	**Switch between upper and lower fullness**
ESC, F and S	No function assigned
0 – 16	**Fullness values**
OK	No function assigned

5.4.1 Quick access function (softkey menu)

Here you have quick access to functions during the sewing process and can also assign a function to the upper softkey.

To use the quick access function:

1. Press the lower softkey .

↳ The following information is shown on the display:

Fig. 20: Quick access function (softkey-Menu)

2. **Call up a function:**
   - Press the numeric key under the designed function.

OR

Assigning a function to the upper softkey:

- Press the numeric key under the designed function and at the same time press the upper softkey.

↳ The function is assigned to the upper softkey and can be called up by pressing the key.

3. Press **ESC** to exit the menu.

Symbol	Meaning
	**Manual bartack** • Press the key **1** and keep it pressed for a manual bartack.
	**Bartack suppression on/off** • Press the key **2**. The bartacks are switched on or off.
	**Needle position up / down** • Press the key **3**. If sewing is stopped within the seam, the needle is positioned up or down.

Symbol	Meaning
	**Automatic step progression on/off** (available only in Automatic mode) • Press the key **4**. Automatic step progression is enabled/disabled whilst sewing a seam.
	**Quick programming** • Press the key **5**. Quick programming starts.
	**Bobbin mode** • Press the key **6**. • Push the pedal halfway backwards. Bobbin mode is ended.

5.4.2 Menu for other settings

To use the menu for other settings:

1. Use ◂ / ▸ to select the *Other parameters*.
2. Press the **OK** key.
3. Use ▲ / ▼ to select the desired parameter.
4. Select the parameter using the **OK** key.
5. Change values using the ▲ / ▼ keys.
6. Click on the **OK** button to confirm.
7. Press ◂ or **ESC** to exit the menu.

Symbol	Meaning
	**Alternate (foot alternation)** Value range: 0.0 to 2.5 mm
	**Foot Press. (presser foot pressure)** Value range: 1 – 15

Symbol	Meaning
	**Start Tack (bartack at the start of a seam)** Value range: on/off
	**End Tack (bartack at the end of a seam)** Value range: on/off
	**Thread Trim (thread cutoff)** Value range: on/off

5.4.3 Sewing process

Sewing without fullness

To sew without fullness:

1. Input values for stitch length, thread tension, curve support and foot alternation.
2. Push the pedal forwards and sew.

Sewing with fullness

To sew with fullness:

1. Change the fullness with the left pedal (optional) (if set at the technician level).

OR

2. Alter the fullness using the **0** to **16** and **+/-** keys.

Altering parameters whilst within the seam

To alter parameters whilst within the seam:

1. Move the pedal to the **0** position.
2. Change the desired parameter on the control panel.
3. Push the pedal forwards again and sew.

↳ The seam will be sewn using the altered parameter value.

5.5 Automatic mode

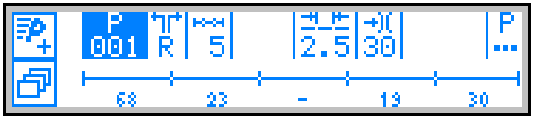
Program numbers 001 to 999.

To use the automatic mode:

1. Use ◀ / ▶ to select the *Program* parameter.
2. Use ▲ / ▼ to select the program number **1** or another one if available.

↳ The control switches to automatic mode and the following information appears in the display:

Fig. 21: Automatic mode



The following table shows the individual symbols in the display and the functions of the keys on the control panel.

5.5.1 Before starting sewing

Symbol	Meaning
	**Quick programming** (depending on the assignment) • Press the upper softkey
	**Quick access function** (softkey menu) • Press the lower softkey
	**Program number** Value range: 000 to 999 • Use ◀ / ▶ to select the *Program* parameter. • Use ▲ / ▼ to change the program number. Or: • Input the program number using the 0 - 9 keys and confirm with **OK** as required. If you select program 000, the control selects Manual mode
	**Right sleeve / left sleeve** The machine can sew only right sleeves, only left sleeves, or right and left sleeves alternately • Use ▲ / ▼ to select a right sleeve or a left sleeve (if programs exist for both).
	**Steps** Number of steps contained in the current program.
	**Stitch length** Value range: 1.0 to 5.5 mm The stitch length can be altered before starting sewing. The altered value applies throughout the entire sewing program. • Use ◀ / ▶ to select the *Stitch length* parameter. • Use ▲ / ▼ to adjust the stitch length.
	**Thread tension** Value range: 1 to 99 The thread tension can be altered before starting sewing. The altered value applies throughout the entire sewing program. Use ◀ / ▶ to select the *Thread tension* parameter. • Use ▲ / ▼ to change the thread tension

Symbol	Meaning
P ■■■	**Other parameters** Foot Press. (presser foot pressure) Fulln.Corr. (fullness correction) • Use ◀ / ▶ to select the *Other parameters* parameter. • Press the **OK** key. • Use ▲ / ▼ to select the fullness correction or the presser foot pressure. • Select the parameter using the **OK** key. • Change values using ▲ / ▼. • Click on the **OK** button to confirm. • Press ◀ or **ESC** to exit the menu.
Program bar Length per step in mm, or a dash (-) if no automatic step progression	
P	**Programming mode** Switches into programming mode.
ESC, F, S	No function assigned

1. Sew, press the knee switch or press the **OK** key.

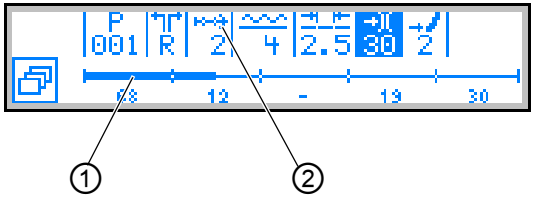
   ↳ The program switches to the 1st step.

5.5.2 Sewing

1. Push the pedal forwards and sew.

   ↳ The following information is shown on the display:

Fig. 22: Sewing (1)



(1) - Program bar *(2) - Current step*

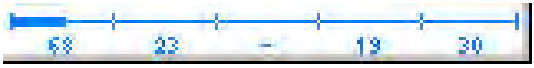
The parameter values for the current step are shown in the display.

The program bar (1) shows the progress of the seam.

The number under the current step shows the outstanding length of the step.

The program bar shows half the current step in bold.

Fig. 23: Sewing (2), Current step



Completed steps are shown fully in bold.

Fig. 24: Sewing (3), Completed step

The following table lists the functions that can be performed in the course of the seam.

Key/Pedal	**Function**
+/- and 0 - 16	**Temporary correction of the fullness value** (valid only for the current step)
2nd pedal (optional)	**Temporary correction of the fullness value or the curve support** (depending on the setting in the technician level) (valid only for the current step)
Knee switch	**Next program step**
◀ / ▶ 3	**Stop forward/back or to the start of the step** **Switch the sleeve side** (if programmed) in the 1st step at the start of the step
▲/▼	**Correction of the thread tension** The value is saved.
ESC, P, F, S, OK	No function assigned

Key/Pedal	Function
Pedal halfway back	**Raise the presser foot**
Pedal fully back	**Cut off the thread** The program remains stopped at the cutoff point.
Lower softkey	**Softkey menu** 📖 *p. 40*

5.5.3 Canceling the program

To cancel a program:

1. Cut off (push the pedal fully back).
2. Press the **ESC** key.
   Or:
   Push the pedal fully back

↳ The program is interrupted.

5.6 Quick programming

If  is assigned to the upper softkey:

1. Press the upper softkey  .

↳ The following display appears:

Fig. 25: Quick programming (1)

2. Continue with handling step 3.

If  is not assigned to the upper softkey:

1. Press the  key.

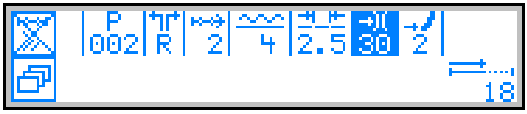
↳ The softkey menu appears.

Fig. 26: Quick programming (2)

2. Press the key **5**.
3. Use ▲/▼ or the keypad keys 0 – 9 to select a program number.
4. Press the **OK** key.

↳ The following information is shown on the display, the **P** in the program number field flashes:

Fig. 27: Quick programming (3)



The following table shows the individual symbols in the display and the functions of the keys on the control panel.

Symbol	Meaning
	**Automatic step progression on/off** • Press the upper softkey Activates / deactivates automatic step progression for the current step.
	**Current program to be created**
	**Current sleeve side to be created** (pre-set at the technician level)
	**Current step** • Use ◀ / ▶ to select the *Step* parameter. • Use ▲ / ▼ to switch to the next/previous step. • Press the **OK** key to edit other parameters for the step, 📖 *p. 54*.
	**Fullness** Value range: -6 to 16 • Use the keys 0 to 16 to select the desired value. Or: • Use the second pedal to select the fullness, if fitted. • Use the **+/-** key to select upper (+) or lower (-) fullness.
	**Stitch length for the current step** Value range: 1.0 to 5.5 mm • Use ◀ / ▶ to select the *Stitch length* parameter. • Use ▲ / ▼ to change the stitch length.

Symbol	Meaning
	**Thread tension** Value range: 0 to 99 • Use ◀ / ▶ to select the *Thread tension* parameter. • Use ▲ / ▼ to change the thread tension.
	**Curve support** Value range: 0 to 6 • Use ◀ / ▶ to select the *Curve support* parameter. • Use ▲ / to change the curve support.
	**Length of the current step in mm**

5.6.1 Creating a program by keyboard input

To create a program by keyboard input:

1. Set all the parameters for each step.
2. Step through to the next step using the knee switch.

Cancel with ESC
Before the **S** key is pressed, program creation can be canceled at any time by pressing the **ESC** key.

Once all steps are complete:

3. Press the **S** key.

↳ The program is saved.

Depending on the settings at the technician level

- The sleeve side that was created is mirrored
- The sleeve side that was created is not mirrored
- The teach-in for the 2nd sleeve side is opened
- The selection screen for the action of creating the 2nd sleeve side is opened

↳ The machine switches to Automatic mode.
The program that was just created is selected.

Fig. 28: Creating a program by keyboard input

5.6.2 Creating a program by sewing the seam (Teach-In)

To create a program by sewing the seam:

1. Insert the material to be sewn.
2. Input the parameters for the 1st step (fullness, stitch length, thread tension and curve support).
3. Sew the first step.
4. Operate the knee switch.

↳ The program switches to the next step.

Cancel with ESC
Before the **S** key is pressed, program creation can be canceled at any time by pressing the **ESC** key.

If a section of seam has already been sewn the program will have been saved and must if necessary be deleted (📖 *p. 61*).

Once all steps are complete:

5. Press the **S** key.

↳ The program is saved.
The following display appears:

Fig. 29: Creating a program by sewing the seam (Teach-In) (1)

6. Sew the overlap.
7. Push the pedal fully back.

↳ The sleeve that was created is mirrored, depending on the settings at the technician level.
The machine switches to Automatic mode.
The program that was just created is selected.

Fig. 30: Creating a program by sewing the seam (Teach-In) (2), Displaying the newly created program

5.7 Edit mode

Edit mode allows existing programs to be edited or deleted. Programming mode should be used to create new programs,
🕮 *5.8 Programming mode*, page 56.

To use the edit mode:

1. In Automatic mode, press the **P** key.

↳ The control switches to Edit mode.
The program previously selected can now be edited.
The following information is shown on the display,
the **P** in the program number field flashes:

Fig. 31: Edit mode

2. Use ◀ / ▶ to select the program to be edited, the sleeve side and the step; and use ▲/▼ to deselect them.

Information
The step to be edited can also be selected using the knee switch.

↳ The selected step is shown bold in the program bar.

3. Use ◀ / ▶ to select the parameter to the changed for the respective step, and use ▲/▼ to change it.

5.7.1 Changing further parameters for the current step

To change further parameters for the current step:

1. Use ◀ / ▶ to select the field 2.
2. Press the **OK** key.

↳ The submenu opens.

3. Use ▲/▼ to select the desired parameter.
4. Press the **OK** key to activate or deactivate the parameter, or use ▲/▼ to change its value and press **OK** to confirm it.

Symbol	Meaning
	**Step. Len. (step length)**
	**Auto Forward (automatic step progression)**
	**Alternate (sewing foot alternation)**
	**Foot Press (presser foot pressure)**

5. Exit the submenu using **ESC** or ◂

5.7.2 Changing further parameters for the selected program

This menu allows further parameters for the current sewing program to be changed.

Tochange further parameters for the selected program:

1. Use ◂ / ▸ to select the field P ▪▪▪ .
2. Press the **OK** key.

↳ The submenu opens.

3. Use ▲ / ▼ to select the desired parameter.
4. Press the **OK** key to activate or deactivate the parameter, or use ▲ / ▼ to change its value and press **OK** to confirm it.

Symbol	Meaning
	**Thr. Tens (thread tension)**
	**Stitchlen. (stitch length)**
	**Foot Press. (presser foot pressure)**
	**Fulln. Corr. (fullness correction)**
	**Start Tack (bartack at the start of a seam)**
	**End Tack (bartack at the end of a seam)**
	**Thread Trim (thread cutoff)**

5. Exit the submenu using **ESC** or ◂.

5.8 Programming mode

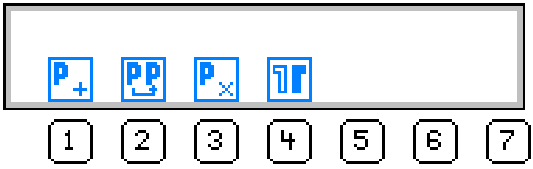
5.8.1 Creating a program

To create a program:

1. In Edit mode, press the key.

↳ The softkey menu appears.

Fig. 32: Creating a program (1)



2. Press the key.

↳ The following display appears:

Fig. 33: Creating a program (2)

The control displays the next free program number.

3. Press **OK** to load the program number.

   OR

   Select another program number using ▲/▼ or input a program number using the keypad keys 0 - 9 and then press **OK**.

↳ The program number is loaded.
The following display appears, with **P** flashing:

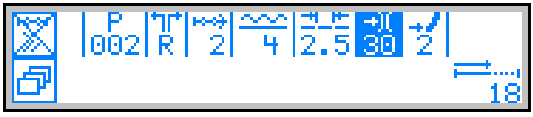
Fig. 34: Creating a program (3)

4. If necessary change the sleeve side or other parameters, 📖 *5.7 Edit mode*, page 52.

5. Press the  key.

↳ The following display appears, with **P** flashing:

Fig. 35: Creating a program (4)



The rest of the procedure is as described in the section **Quick programming** (📖 *p. 49*).

6. Select whether progression to the individual steps to be programmed should be by using the knee switch or by automatic progression.

7. Press the  key.

Once the creation of the program is complete and the “S” key has been pressed or after the thread cutoff has been entered, the following query window appears:

Fig. 36: Creating a program (5)

8. Select whether
   - the sleeve side that was programmed should be mirrored
   - the sleeve side that was programmed should not be mirrored
   - the teach-in for the 2nd sleeve side should be opened.

5.8.2 Copying the program

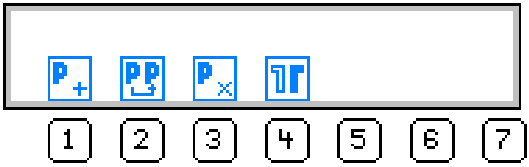
The selected program is copied into a new program number.

To copy the program:

1. Press the key.

↳ The softkey menu appears.

Fig. 37: Copying the program (1)



2. Press the key.

↳ The following display appears:

Fig. 38: Copying the program (2)

↳ The control displays the next free program number.

3. Press **OK** to load the program number.

   OR

   Select another program number using ▲/▼ or input a program number using the keypad keys 0 - 9 and then press **OK**.

↳ The program number is loaded.
The following display appears, with the program number flashing:

Fig. 39: Copying the program (3)

4. Load the desired changes into the new program.
5. Press the **ESC** key.

↳ The control exits Programming mode and reverts to Automatic mode.

5.8.3 Deleting a program

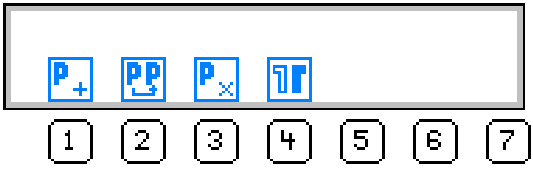
The selected program is deleted.

To delete a program:

1. Press the  key.

↳ The softkey menu appears.

Fig. 40: Deleting a program



2. Press the  key.
3. Press the **ESC** key.

↳ The control exits Programming mode and reverts to Automatic mode.

5.8.4 Mirroring the program

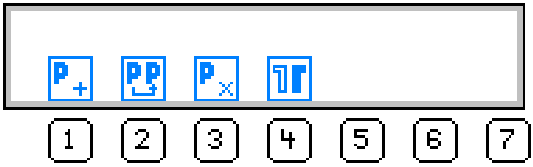
The sleeve side already programmed is mirrored over to the other sleeve side.

To mirror a program:

1. Press the key.

↳ The softkey menu appears.

Fig. 41: Mirroring a program



2. Press the key.
3. Press the **ESC** key.

↳ The control exits Programming mode and reverts to Automatic mode.

6 Control with the OP7000 control panel

6.1 OP7000 control panel

All settings for the 650 sewing machine are performed using the OP7000 control panel.

Fig. 42: OP7000 control panel

The activation of the sewing motor and the stepper motors is performed by the DAC3 control in conjunction with the OP7000 control panel with the user interface in symbolic representation.

The program automation permits either manual or automatic control of fullness, optionally upper or lower, curve support and also the programming of sewing steps with individual parameters.

Up to 999 sewing programs can be saved.

Each sewing program can contain up to 30 sewing steps.
Each sewing step can be assigned various parameters such as stitch length, fullness values, curve support, thread tension, segment length etc.

The seam programs are displayed continuously whilst sewing is in progress. Programs can be mirrored for the other side of the sewing material.

6.2 Switching on the machine

To switch on the machine:

1. Switch on the main switch.

↳ The OP7000 control panel is switched on.

- The machine class is shown on the left of the display, the firmware is shown on the right.
- The machine performs a reference run.
- The control panel starts in the mode that was active when it was switched off - **MAN** or **AUTO**.

6.3 Control operating modes

The control has four operating modes available:

- **Manual mode MAN**

  Manual mode is the simplest operating mode.

  There are no sewing programs and no inputs for individual sewing steps.

  Changes to the fullness, stitch length, thread tension, curve support and also the activation of other functions are implemented immediately.

  Thus all the major sewing parameters can be changed manually during the sewing process.

- **Automatic mode AUTO**

  Automatic mode allows sewing programs to be executed.

  The seams are divided into individual sections within the sewing programs. Each step is assigned its own individual sewing parameters such as fullness etc.

- **Programming mode**

  In Programming mode, new seam programs can be created (PROGRAMMING), existing seam programs can be edited, deleted, copied and mirrored (EDIT) and also optimized (Length Correction).

- **Service mode SERVICE**

  Service mode contains functions for use during service work.

  Service mode is password-protected, to avoid accidentally changing the machine settings.

6.4 General operation

Operation is performed using the control panel. All functions and inputs are triggered by touching the screen.

Numeric values for the individual parameters and text for the program names can be input in the individual operating modes.

The inputs are performed using separate user interfaces.

6.4.1 Inputting numeric values

Fig. 43: Inputting numeric values

The user interface for inputting numeric values consists of the following elements:

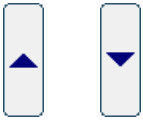
Header, consisting of:

- Symbol of the selected parameter
- Name of the parameter
- Value range of the parameter
- Symbol for exiting the user interface

Input line for the value

Keypad

Meaning of the buttons

Symbols/buttons	Meaning
	Value input
	Change of plus/minus sign
	Input of a decimal point for values that permit places of decimals
	Changing the value incrementally up or down
	Delete the input value
	Exit the user interface without inputting or saving any values
	Save the value that was input and exist the user interface

6.4.2 Entering text

Fig. 44: Entering text

The user interface for inputting text consists of the following elements:

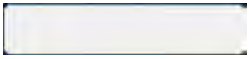
Header, consisting of:

- Symbol for a new seam program
- Symbol for exiting the user interface

Input line for the text

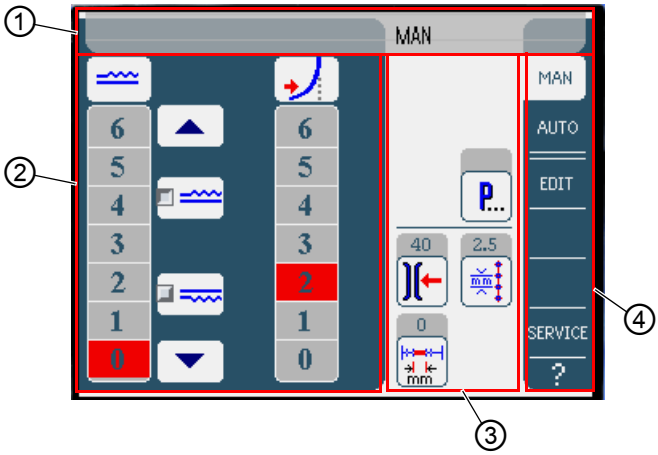
Keypad

Meaning of the buttons

Symbols/buttons	Meaning
	Input of numbers in the text
	Input of text
	Input of a hyphen
	Input of a underscore
	Exit the user interface without inputting or saving any text
	Input of a space
	Switching between upper case/lower case
	Delete letters/digits from the input line
	Save the value that was input and exist the user interface

6.5 Manual mode MAN

Fig. 45: Manual Mode MAN



(1) - Header
(2) - Left pane
(3) - Middle pane
(4) - Right pane

Header (1)

Operating mode **MAN** is displayed.

Left pane (2)

Buttons for manually inputting the fullness and the curve support are displayed here.

Middle pane (3)

The symbols for all the parameters that can be set are displayed here. The gray fields above the parameter symbols show the respective current values.

Right pane (4)

Another user interface or another operating mode can be selected here.

6.5.1 Parameters that can be set in MAN mode

The following table lists the parameters that can be set in **MAN** programming mode.

Symbols	Meaning
	Setting the fullness, 📖 *p. 71*
	Setting the curve support.
	Other program parameters in manual mode **MAN,** 📖 *p. 72*
	Inputting the needle thread tension
	Inputting the stitch length in mm

To set parameters in mode MAN:

1. Press the desired button.

↳ The user interface for setting the parameter is displayed.

For some parameters the setting is more than just a numerical value. These parameters are described below.

MAN mode Setting the fullness

The following table lists the symbols and buttons for manually setting the fullness.

Symbols/buttons	Meaning
	Inputting the fullness The fullness setting is displayed by a button highlighted in red.
	Select the type of fullness: • Upper (upper transport) • Lower (lower transport) The fullness selected is displayed in an activated control field.
	Display of further buttons for inputting the fullness. The buttons 0 to 16 are available for input.

To set the fullness:

1. Select the type of fullness.

   ↳ The type of fullness selected is displayed in an activated control field within the symbol.

2. If a higher or lower degree of fullness is required, use the arrow keys to display more buttons.
3. Input the fullness using the buttons **0** to **16**.

Setting the curve support

The following table lists the symbols and buttons for manually setting the curve support.
The default setting is a value of 2.

Symbols/buttons	Meaning
	Inputting the curve support The curve support is displayed by a button highlighted in red.

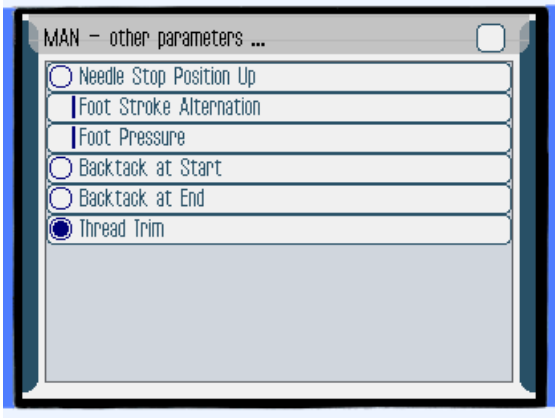
To set the curve support:

1. Input the curve support using the buttons **1** to **6**.

MAN mode **Other program parameters**

After the **Other program parameters** button has been pressed, an overview of all the available parameters is displayed.

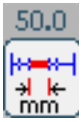
Fig. 46: Other program parameters



Parameters	Meaning
Needle Stop Position Up	When sewing stops the needle position is up (activated) or down (not activated)
Foot Stroke Alternation	Presser foot alternation whilst the needle is in the seam Value range: 0 ... 2.5 mm
Foot Pressure	Presser foot pressure Value range: 1 ... 10
Backtack at Start	Backtack at start of the seam on (activated) or off (not activated)
Backtack at End	Backtack at end of the seam on (activated) or off (not activated)
Thread Trim	Thread cutoff at end of the seam on (activated) or off (not activated)

6.5.2 Sewing process

1. Set the fullness (📖 *p. 71*).
2. Set the curve support.
3. Input the values for **needle thread tension** and **stitch length**.
4. Push the pedal forwards and sew.



↳ The length in mm sewn in the seam is displayed.
When the thread is cut off, the display is reset.

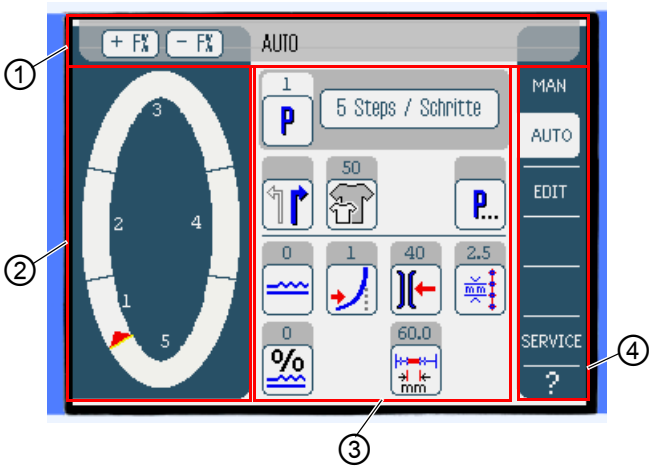
Changing parameters during the seam

1. Move the pedal to the 0 position.
2. Change the desired parameter on the control panel (📖 *p. 70*).
3. Push the pedal forwards and sew.

↳ The seam will be sewn using the altered parameter value.

6.6 Automatic mode AUTO

Fig. 47: Automatic mode AUTO



(1) - Header
(2) - Left pane
(3) - Middle pane
(4) - Right pane

Header (1)

The **AUTO** operating mode is displayed. The buttons **+ F%** and **- F%** offer quick access for setting the fullness values in %.

Left pane (2)

The graphical representation of the entire seam, divided into the number of programmed sewing steps, is displayed here. A red bar with an arrowhead indicates the direction of sewing and progress of the sewn seam.

Middle pane (3)

The number and the name of the selected seam program are displayed here, together with the symbols for all the parameters that can be set. The gray fields above the parameter symbols show the respective current values.

Right pane (4)

Another user interface or another operating mode can be selected here.

6.6.1 AUTO parameters that can be set

The following table lists the parameters that can be edited in **AUTO** programming mode.

Symbols	Meaning
	Program selection, 📖 *p. 76*
	Select the right or left piece to be sewn
	Set the sewing material size, 📖 *p. 77*
	Other program parameters in **AUTO** automatic mode, 📖 *p. 80*
	Temporarily setting the fullness value until the next sewing step, 📖 *p. 78*
	Applying a % correction to the fullness values of all sewing steps, 📖 *p. 79*
	Setting the needle thread tension. If the value is changed in AUTO Automatic mode it is permanently saved in the program.
	Setting the stitch length in mm. If the value is changed in AUTO Automatic mode it is permanently saved in the program.

To set parameters in the Automatic mode AUTO:

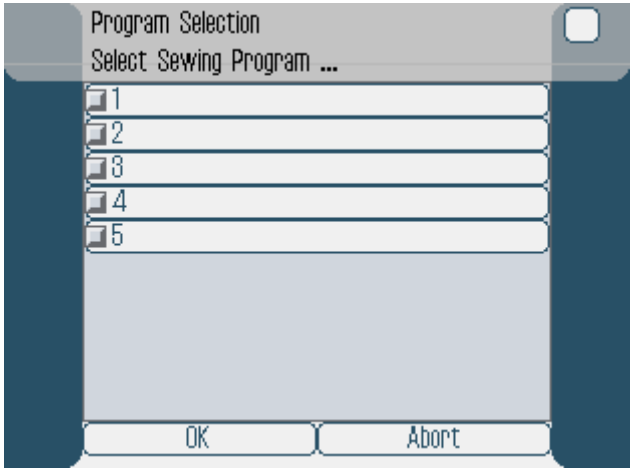
1. Press the desired button.

↳ The user interface for setting the desired parameter is displayed.

For some parameters the setting is more than just a numerical value. These extended parameters are described in detail below.

AUTO mode **Program selection**

Fig. 48: Program selection



To select a Program:

1. Press on the desired seam program.

↳ The seam program selected is displayed in an activated control field within the line.

2. Press the **OK** button.

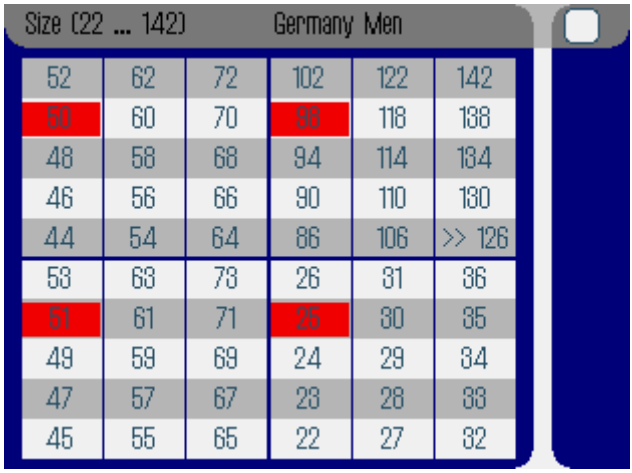
↳ The seam program selected is loaded in Automatic mode **AUTO**.

3. Press the **Abort** button to cancel the selection of the program.

↳ If necessary the seam program selected is discarded and the user interface for the Automatic mode **AUTO** is displayed.

AUTO mode Setting the sewing material size

Fig. 49: Setting the sewing material size



The following information is displayed:

- The currently selected size is indicated by a double arrow (>>).
- The sizes highlighted in red represent the reference sizes for the graduation logic.

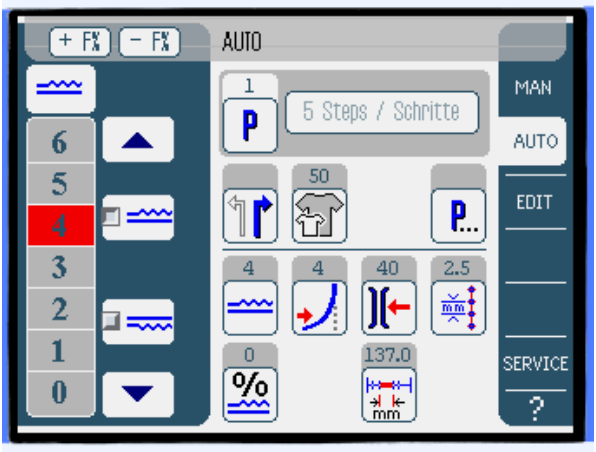
To set the sewing material size:

1. Press on the desired sewing material size.

↳ The user interface for the Automatic mode **AUTO** is displayed.

AUTO mode **Temporarily correcting the fullness value until the next sewing step**

Fig. 50: Temporarily correcting the fullness value until the next sewing step



Buttons for manually inputting the fullness are displayed in the left pane.

Symbols/buttons	Meaning
	Input the fullness The fullness setting is displayed by a button highlighted in red.
	Select the type of fullness: • Upper (upper transport) • Lower (lower transport) The fullness selected is displayed in an activated control field.
	Display of further buttons for inputting the fullness. The buttons 0 to 16 are available for input.

To correct the fullness temporarily until the next sewing step:

1. Select the type of fullness.

↳ The type of fullness selected is displayed in an activated control field within the symbol.

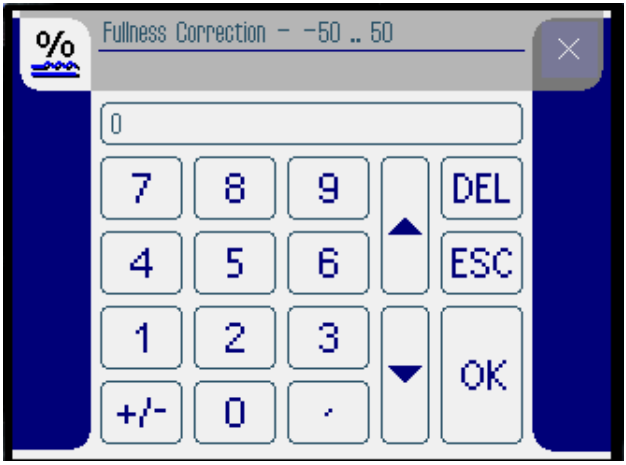
2. If a higher or lower degree of fullness is required, use the arrow keys to display more buttons.
3. Input the fullness using the buttons **0** to **16**.

Information
The fullness value remains active until the next sewing step.

AUTO mode **Correcting the fullness ratio**

The fullness ratio can be set either by the buttons **+ F%** and **- F%** or the fullness correction parameter.

Fig. 51: Correcrting the fullness ratio



To correct the fullness ratio:

1. Input the correction value for the fullness in percent.

Information for inputting numeric values: 📖 *p. 65*.

2. Press the **OK** button.

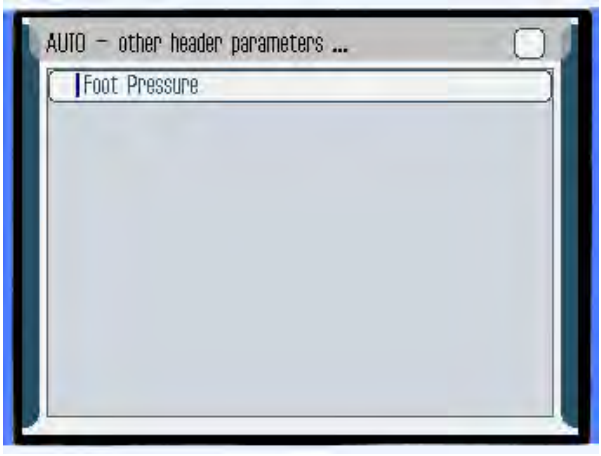
↳ The correction value is saved and the previous user interface is displayed.

Information
If the correction value is changed in AUTO Automatic mode it remains active until the control changes to the next program.

AUTO mode **Other program parameters**

After the **Other program parameters** button has been pressed, an overview of all the available parameters is displayed.

Fig. 52: Other program parameters



Parameters	Meaning
Foot Pressure	Presser foot pressure Value range: 1 ... 10

6.6.2 Sewing process

To start the sewing process:

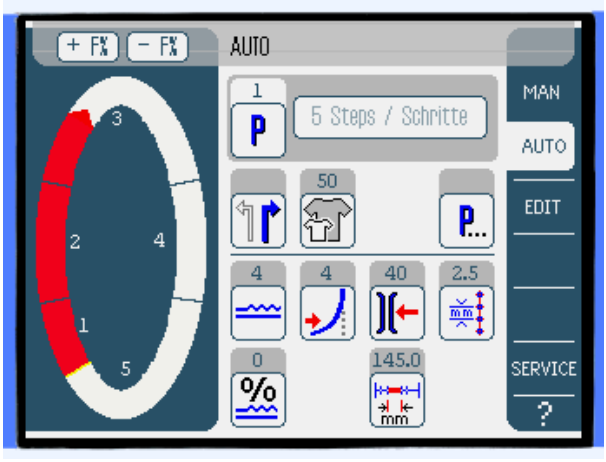
1. Select the seam program, 📖 *p. 76*.

↳ The program number and name of the seam program are displayed on the user interface. If no name has been saved for the seam program, <No Name> is displayed.

2. Select the right or left piece to be sewn.
3. Select the size of the piece to be sewn, 📖 *p. 77*.
4. Push the pedal forwards and sew the seam.

↳ The sewing progress is displayed graphically in the left pane as a red bar.

Fig. 53: Sewing process



↳ The remaining sewing length per sewing step is displayed.

Changing parameters during the seam

To change parameters during the seam:

1. Move the pedal to the **0 position**.
2. Change the desired parameter on the control panel.
3. Push the pedal forwards and sew.

↳ The seam will be sewn using the altered parameter value.

Correcting the fullness before or during the seam

To correct the fullness before or during the seam:

1. Move the pedal to the **0 position**.
2. Change the fullness correction using the buttons **+ F%** or **- F%**.
3. Push the pedal forwards and sew.

↳ The changed fullness value is applied and displayed.

Cancel the seam program

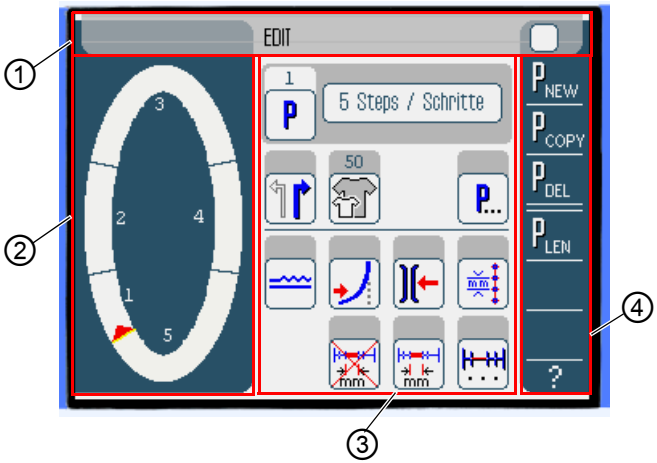
To cancel the seam program:

1. Push the pedal fully back.

↳ The seam program is canceled.

6.7 Programming mode

Fig. 54: Programming mode



(1) - Header
(2) - Left pane
(3) - Middle pane
(4) - Right pane

Header (1)

The **EDIT** operating mode is displayed.

Left pane (2)

The graphical representation of the entire seam, divided into the number of programmed sewing steps, is displayed here.

Middle pane (3)

Existing seam programs can be edited here (🕮 *p. 84*). The number and the name of the selected seam program are displayed, together with the symbols for all the parameters that can be set. The gray fields above the parameter symbols show the respective current values.

Right pane (4)

Here new seam programs can be created (🕮 *p. 90*), existing seam programs can be deleted (🕮 *p. 99*), copied (🕮 *p. 99*) and optimized (🕮 *p. 100*) (Length Correction).

6.7.1 Editing existing programs (EDIT)

The following table lists the parameters that can be edited in **EDIT** programming mode.

Symbols	Meaning
	Changing the program name
	There is only one display in the **EDIT** mode. A new program is automatically assigned the next free program slot.
	Select the right or left piece to be sewn
	Set the sewing material size, 📖 *p. 86*
	Other program parameters in **EDIT** programming mode, 📖 *p. 88*
	Set the fullness in the current sewing step, 📖 *p. 96*
	Set the curve support in the current sewing step
	Set the needle thread tension in the current sewing step

Symbols	Meaning
	Set the stitch length in mm in the current sewing step
	Switch the seam length measurement in the current sewing step on or off
	Other sewing step parameters in **EDIT** programming mode, 📖 *p. 89*

To edit an existing program:

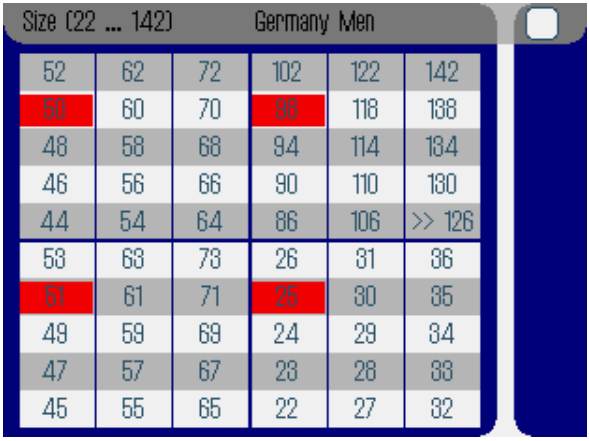
1. Press the desired button.

↳ The user interface for setting the desired parameter is displayed.

For some parameters the setting is more than just a numerical value. These extended parameters are described in detail below.

EDIT mode **Setting the sewing material size**

Fig. 55: Setting the sewing material size



The following information is displayed:

- The currently selected size is indicated by a double arrow (>>).
- The sizes highlighted in red represent the reference sizes for the graduation logic.

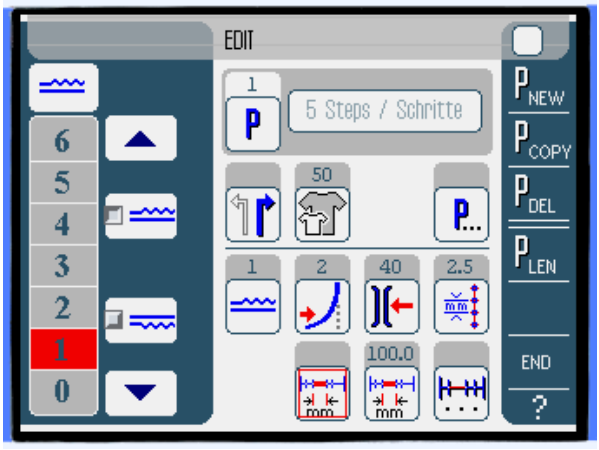
To set the sewing material size:

1. Press on the desired sewing material size.

↳ The **EDIT** user interface of the programming mode is displayed.

EDIT mode **Correcting the fullness in the current sewing step**

Fig. 56: Correcting the fullness in the current sewing step



Buttons for manually inputting the fullness are displayed in the left pane.

Symbols/buttons	Meaning
	Input the fullness. The fullness setting is displayed by a button highlighted in red.
	Select the type of fullness: • Upper (upper transport) • Lower (lower transport) The fullness selected is displayed in an activated control field.
	Display of further buttons for inputting the fullness. The buttons 0 to 16 are available for input.

To correct the fullness in the current sewing step:

1. Select the type of fullness.

↳ The type of fullness selected is displayed in an activated control field within the symbol.

2. If a higher or lower degree of fullness is required, use the arrow keys to display more buttons.
3. Input the fullness using the buttons **0** to **16**.

EDIT mode **Other program parameters**

After the **Other program parameters** button has been pressed, an overview of all the available parameters is displayed.

Fig. 57: Other program parameters

Parameters	Meaning
Backtack at Start	Backtack at start of the seam on/off Value range: 0, 1
Backtack at End	Backtack at end of the seam on/off Value range: 0, 1
Thread Trim	Thread cutoff on/off Value range: 0, 1

EDIT mode **Other sewing step parameters**

After the **Other sewing step parameters** button has been pressed, an overview of all the available parameters is displayed.

Fig. 58: Other sewing step parameters

Parameters	Meaning
Foot Stroke Alternation	Presser foot alternation whilst the needle is in the seam. Value range: 0 ... 2.5 mm
Foot Pressure	Presser foot pressure. Value range: 1 ... 10
Maximum Speed	Sewing speed/rotational speed. Value range: 100 ... 4000

6.7.2 Creating a new program (PROGRAMMING)

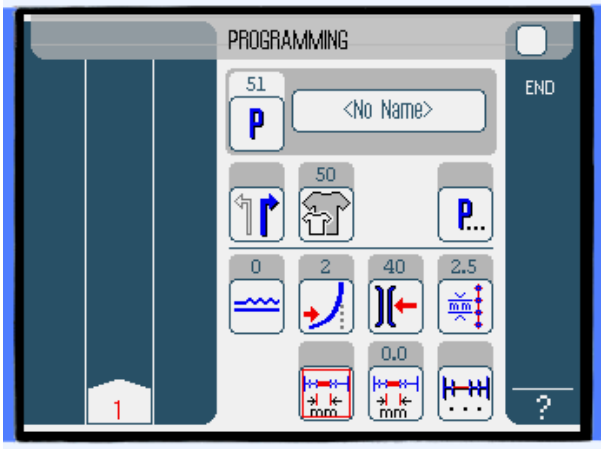
Prerequisite:

- Operating mode **EDIT** is displayed.

1. Press the **P_{NEW}** button.

↳ The **PROGRAMMING** user interface is displayed. Pressing the **P** button displays the number of the next free program slot.

Fig. 59: Creating a new program (PROGRAMMING) (1)



2. Press **<No Name>** and input a name.

   Information for inputting text: 📖 *p. 67*.

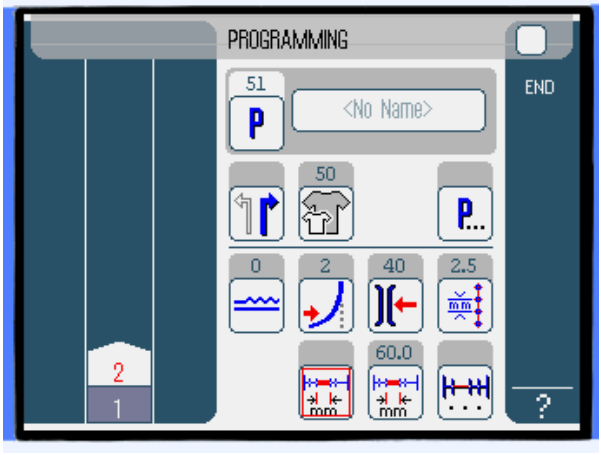
Information
If no name is input for the seam program, <No Name> continues to be displayed.

↳ The first sewing step is displayed with its number in the left pane.

3. Input all the parameters for the first sewing step.
4. Sew the first sewing step, or manually input the length of the sewing step using the seam length measurement parameter.
5. Select the next sewing step, either by pressing on the number of the first sewing steps or by using the knee switch.

↳ The second sewing step is displayed with its number in the left pane.

Fig. 60: Creating a new program (PROGRAMMING) (2)



6. Repeat step 2 until all the sewing steps have been programmed.

7. Press the **END** button or cut off the threads.

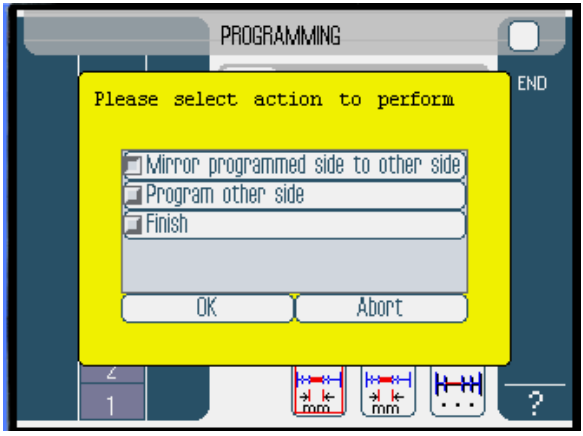
↳ There are three variants for the program response - depending on the user's input method:

Variant	Program display
The last programmed sewing step was sewn but not cut off, then ended with **END**.	continue with step 8
The last programmed sewing step was sewn and threads cut off.	continue with step 9
All sewing steps were input manually and ended with **END**.	continue with step 9

8. If the threads were not cut off after sewing, a message appears. Cut off the threads.

↳ The message is cleared.

Fig. 61: Creating a new program (PROGRAMMING) (3)



9. Select whether the new seam program should be mirrored for the other side of the sewing material (mirror programmed side to other side), the other side of the sewing material should be programmed (program other side) or the programming should be ended (finish).

10. Select the desired function.

↳ The selected function is indicated by an activated control field.

11. Press the **OK** button.

↳ The seam program is saved. Depending on which function is selected, different buttons are displayed:

Function	Button
Mirror programmed side to other side	AUTO mode
Program other side	PROGRAMMING-mode
Finish	AUTO mode

Important

Pressing the **Abort** button closes the window, the **AUTO** user interface is then displayed. All the data that were input are deleted by this!

Parameters that can be set

The following table describes the parameters that can be set in programming mode **PROGRAMMING**.

Symbols	Meaning
<No Name>	Input the program name.
P	There is only one display in the **PROGRAMMING** mode. A new program is automatically assigned the next free program slot.
	Select the right or left piece to be sewn
	Set the sewing material size, 📖 *p. 95*

Symbols	Meaning
	Other program parameters in programming mode **PROGRAMMING,** 📖 *p. 97*
	Set the fullness in the current sewing step, 📖 *p. 96*
	Set the curve support in the current sewing step
	Set the needle thread tension in the current sewing step
	Set the stitch length in mm in the current sewing step
	Switch the seam length measurement in the current sewing step on or off
	Other sewing step parameters in programming mode **PROGRAMMING**, 📖 *p. 98*

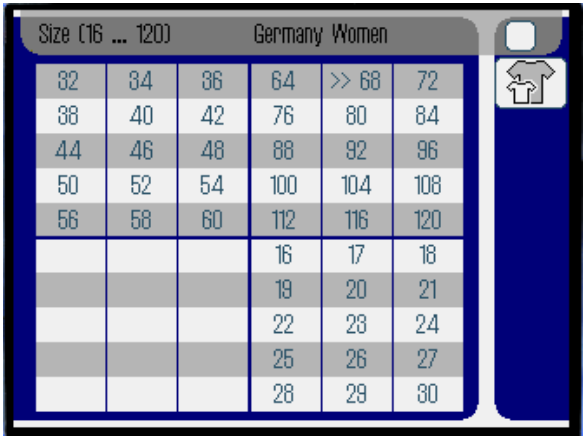
1. Press the desired button.

↳ The user interface for setting the desired parameter is displayed.

For some parameters the setting is more than just a numerical value. These extended parameters are described in detail below.

Mode PROGRAMMING **Setting the sewing material size**

Fig. 62: Setting the sewing material size



The following information is displayed:

- The currently selected size is indicated by a double arrow (>>).

To set the sewing material size:

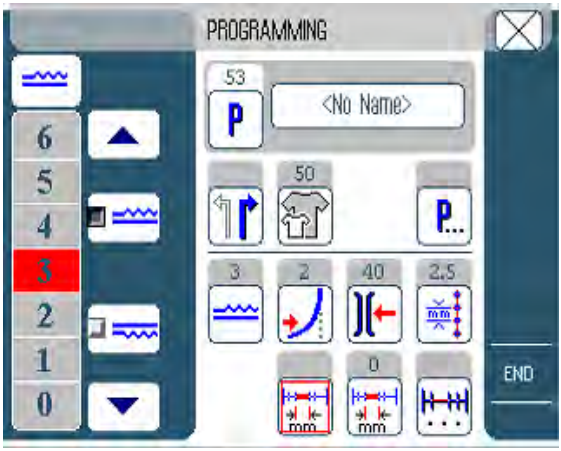
1. Select the size system in the right pane.
2. Press on the desired sewing material size.

↳ The **PROGRAMMING** user interface of the programming mode is displayed.

Mode
PROGRAMMING

Setting the fullness

Fig. 63: Setting the fullness



Buttons for manually inputting the fullness are displayed in the left pane.

Symbols/buttons	Meaning
	Input the fullness. The fullness setting is displayed by a button highlighted in red.
	Select the type of fullness: • Upper (upper transport) • Lower (lower transport) The fullness selected is displayed in an activated control field.
	Display of further buttons for inputting the fullness. The buttons 0 to 16 are available for input.

To set the fullness:

1. Select the type of fullness.

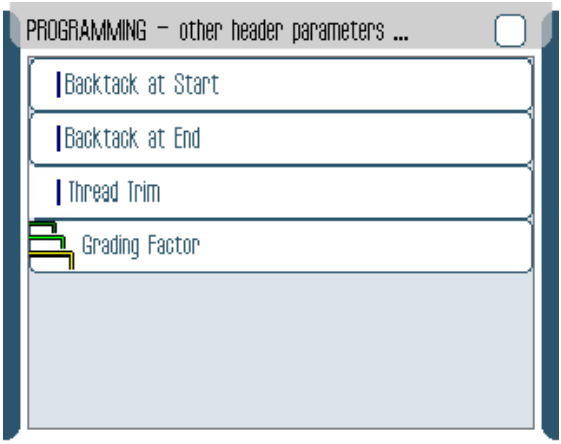
↳ The type of fullness selected is displayed in an activated control field within the symbol.

2. If a higher or lower degree of fullness is required, use the arrow keys to display more buttons.
3. Input the fullness using the buttons **0** to **16**.

Mode PROGRAMMING **Other program parameters**

After the **Other program parameters** button has been pressed, an overview of all the available parameters is displayed.

Fig. 64: Other program parameters



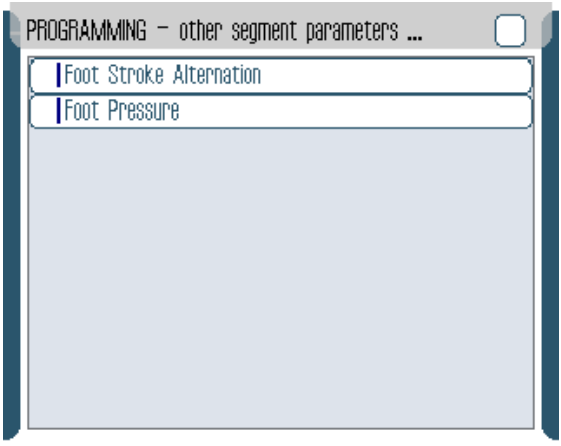
Parameters	Meaning
Backtack at Start	Backtack at start of the seam on/off Value range: 0, 1
Backtack at End	Backtack at end of the seam on/off Value range: 0, 1
Thread Trim	Thread cutoff on/off Value range: 0, 1
Grading Factor	Grading factor Value range: 0.0 ... 6.0 (% per size)

Mode PROGRAMMING

Other sewing step parameters

After the **Other sewing step parameters** button has been pressed, an overview of all the available parameters is displayed.

Fig. 65: Other sewing step parameters



Parameters	Meaning
Foot Stroke Alternation	Presser foot alternation whilst the needle is in the seam Value range: 0 ... 2.5 mm
Foot Pressure	Presser foot pressure Value range: 1 ... 10

6.7.3 Copying the seam program

Prerequisite:

- Operating mode **EDIT** is displayed.

To copy the seam program:

1. Select the seam program (📖 *p. 76*).
2. 

Press the **P_{COPY}** button.

↳ The seam program is copied and saved in the next free program slot. An appropriate message is displayed.

6.7.4 Deleting the seam program

Prerequisite:

- Operating mode **EDIT** is displayed.

To delete a seam program:

1. Select the seam program (📖 *p. 76*).
2. 

Press the **P_{DEL}** button.

↳ A message is displayed asking whether you really wish to delete the active seam program.

3. To delete the program, confirm by pressing the **Yes** button.

↳ The seam program is deleted. An appropriate message is displayed.

6.7.5 Length correction (LENGTH CORRECTION)

All the sewing steps are graded with the same factor.
In some sewing steps it is important for the quality of the result that the grading is greater or less than this.
You can use the length correction to achieve these local adjustments.

Prerequisite:

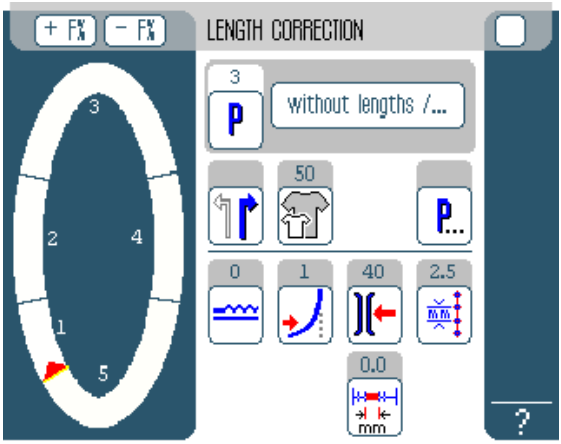
- Operating mode **EDIT** is displayed.

To correct the length:

1. Press the **P_{LEN}** button.

↳ The length correction user interface is displayed.

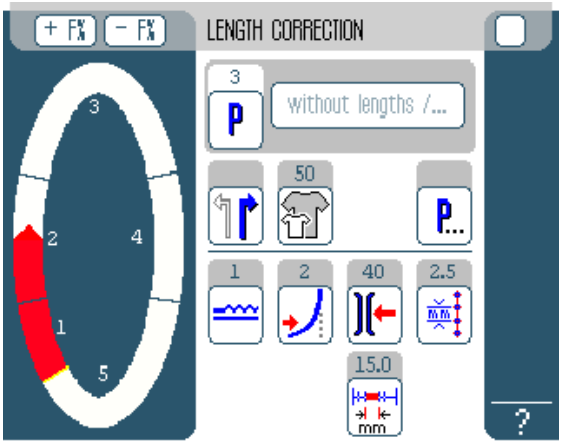
Fig. 66: Length correction (LENGHT CORRECTION) (1)



2. Sew the sewing step.
3. Switch to the next sewing step either manually at the control panel or using the knee switch.

↳ The sewing progress is displayed graphically.

Fig. 67: Length correction (LENGHT CORRECTION) (2)



4. Do the same with all further sewing steps.
5. After the last sewing step press the **END** button.

↳ This closes the length correction, **EDIT** programming mode then opens.

6.8 Service mode SERVICE

Service mode contains functions for use during service work.

Service mode is password-protected, to avoid accidentally changing the machine settings.

More information on the contents of Service mode can be found in the 🕮 *Service instructions*.

7 Maintenance

This chapter describes maintenance work that needs to be carried out on a regular basis to extend the service life of the machine and achieve the desired seam quality.

Advanced maintenance work may only be carried out by qualified specialists (📖 *Service Instructions)*.

WARNING

Risk of injury from sharp parts!

During maintenance work, the machine may start up unintentionally and cause puncture injuries.

Switch off the main switch.
Only perform maintenance work when the machine is switched off.

WARNING

Risk of injury from moving parts!

During maintenance work, the machine may start up unintentionally and cause crushing.

Switch off the main switch.
Only perform maintenance work when the machine is switched off.

Work to be carried out	Operating hours			
	8	40	160	500
Machine head				
Removing lint and thread remnants	●			
Clean engine fan filter	●			
Check the upper and lower conveyor belts for wear		●		
Check sewing foot for wear		●		
Lubricate the joints on the gear				●
Lubricating the needle bar				●

7.1 Cleaning

NOTICE

Property damage from soiling!

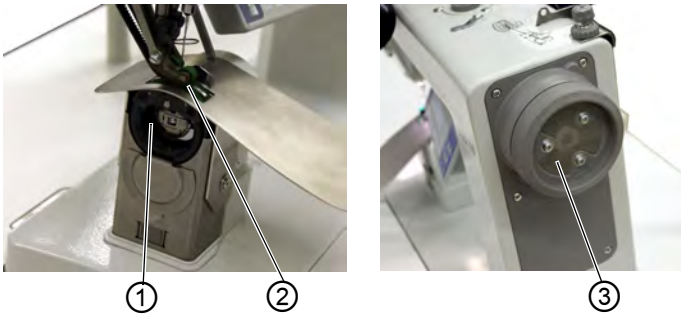
Lint and thread remnants can impair the operation of the machine.

Clean the machine as described.

The following areas must be cleaned with a compressed air pistol or a brush:

- Throat plate (2)
- Hook (1)
- Bobbin case and interior
- Thread trimmer
- Needle
- Engine fan filter (3)

Fig. 68: Areas that need to be cleaned particularly thouroughly



(1) - Area around the hook
(2) - Area around the throat plate
(3) - Engine fan filter on handwheel

NOTICE

Property damage from solvent-based cleaners!

Solvent-based cleaners may damage paintwork on the machine.

Only use solvent-free substances for wiping the machine.

Clean the machine as follows:

1. Remove any lint and thread remnants using a compressed air pistol or a brush.

7.2 Lubricating

CAUTION

Skin damage due to contact with oil!

Oil can cause a rash if it comes into contact with skin.

Avoid contact with oil residues.

Lubricate the machine as follows:

1. Lubricate the following areas on the machine head with lubricating grease:
   - Joints on the gear
   - Needle bar

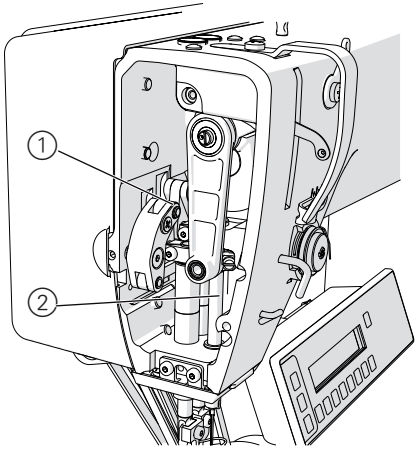
CAUTION

Risk of environmental damage from oil!

Oil is a pollutant and must not enter the sewage system or the soil.

Carefully collect up used oil.
Dispose of used oil and oily machine parts in accordance with the legal regulations.

Fig. 69: Lubricating



(1) - Joints on the gear *(2) - Needle bar*

7.3 Parts list

A parts list can be ordered from Dürkopp Adler. Or visit our website for further information at:

www.duerkopp-adler.com

8 Setup

WARNING

Risk of injury from cutting parts!

Cutting ist possible.

Only qualified personnel is allowed to set up the machine.
Wear safety gloves

WARNING

Risk of injury from moving parts!

Crushing is possible.

Only qualified personnel is allowed to set up the machine.
Wear safety gloves .

8.1 Check the scope of delivery

The scope of delivery depends on your specific order.

Check that all parts required are present before installing the machine.

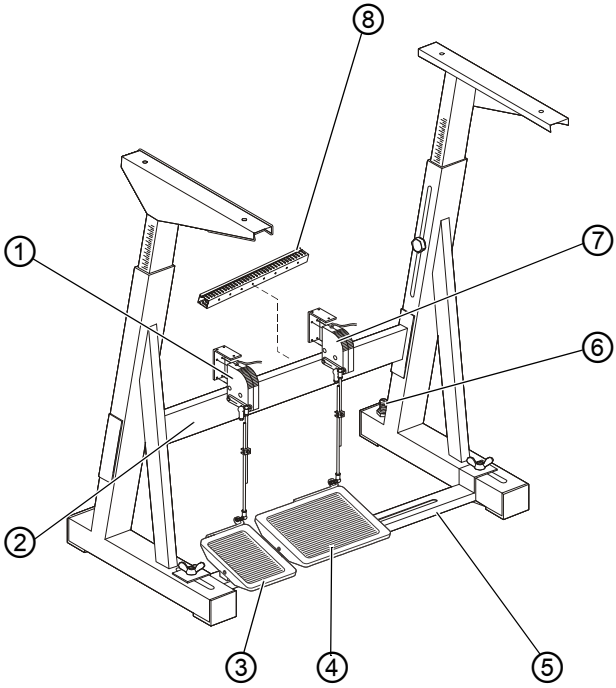
8.2 Removing the transport locks

When you have installed the special sewing machine which you bought, you must remove the following transport locks:

- Lashing straps and wooden blocks from the upper part of the machine, the table and the support frame
- Restrain block and lashing straps from the sewing head

8.3 Assembling the frame

Fig. 70: Assembling the frame



(1) - Setpoint transducer for the additional pedal
(2) - Frame brace
(3) - Additional pedal (optional)
(4) - Pedal
(5) - Cross strut
(6) - Adjusting screw
(7) - Setpoint transducer for the pedal
(8) - Cable duct

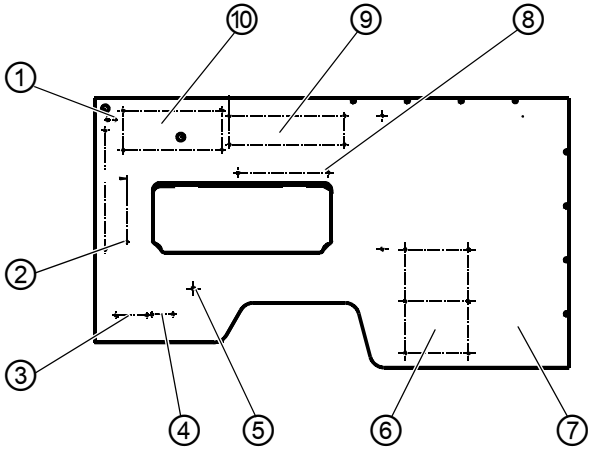
To asseble the frame:

1. Attach the pedal (4) to the cross strut (5).
2. Attach the additional pedal (3) (optional) to the cross strut (5).
3. Attach the cross strut (5) to the frame.
4. After the machine has been fully assembled, align the pedals, (📖 *p. 113*).

5. Screw the setpoint transducers (1) and (7) on to the frame brace (2). Distance between the floor and the upper edge of the frame brace (2): 290 mm.
6. Screw the cable duct (8) (30 x 30 x 250 mm) for the setpoint transducer cables on to the frame brace (2).
7. Turn the adjusting screw (6) to ensure that the frame stands securely. The frame must stand with all four feet on the floor.

8.4 Pre-assembling the table top

Fig. 71: Pre-assembling the table top



To pre-assemble the table top:

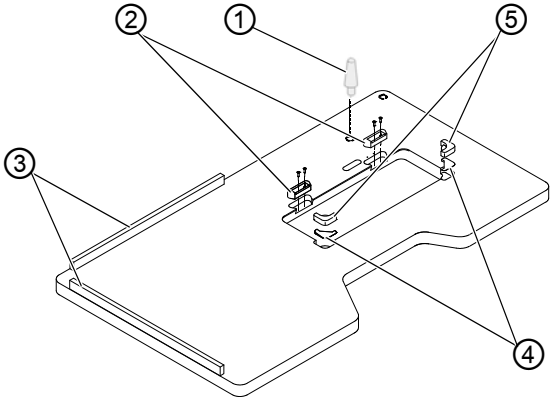
1. Turn the table top (1).
2. Screw on the drawer (2) and its brackets (chipboard screws 3.5 x 17).
3. Screw on the knee switch (3).
4. Screw on the sewing light transformer (4).
5. Screw on the main switch (5) (chipboard screws 5 x 30).
6. Screw on the cable duct (6) (40 x 40 x 200 mm long) (chipboard screws 3.5 x 17).

7. Screw on the strain relief (7) (chipboard screws 3.5 x 17).
8. Screw on the additional control (8) (chipboard screws 5 x 30).
9. Screw on the DAC motor control incl. protective plate (9) (chipboard screws 5 x 30).
10. Screw on the cable duct (40 x 40 x 250 mm long) (10) (chipboard screws 3.5 x 17).
11. Fit the electric cables (📖 *p. 118*).

Larger scale diagrams can be found in the **Appendix** (📖 *p. 143*).

8.5 Completing the table top

Fig. 72: Completing the table top



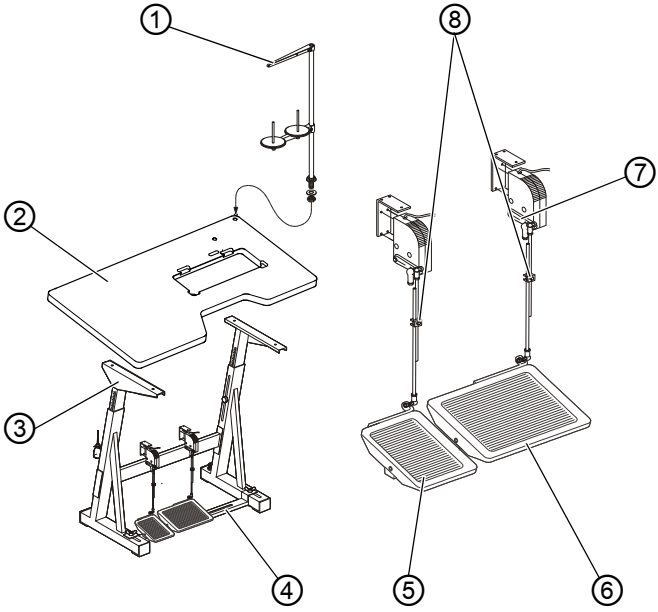
(1) - Upper part support
(2) - Hinge mountings
(3) - Edge strips
(4) - Oblique fittings
(5) - Rubber corners

To complete the table top:

1. Insert the oblique fittings (4).
2. Insert the rubber corners (5) into the table top.
3. Using 4.5 x 15 (4x) screws, screw on the hinge mountings (2).
4. Using 4.5 x 55 (8x) screws, screw the edge strips (3) to the table top.
5. Insert the upper part support (1).

8.6 Attaching the table top and pedals to the frame

Fig. 73: Attaching the table top and pedals to the frame



(1) - Thread reel holder
(2) - Table top
(3) - Frame
(4) - Frame brace
(5) - Additional pedal (optional)
(6) - Pedal
(7) - Lever
(8) - Screws

Steps

1. Using wood screws (6 x 30), attach the frame (3) to the table top (2). Drill pilot holes for the wood screws.
2. Use the center marks to position the pilot holes.
3. Turn the frame (3) the right way up.
4. Align the pedals (5) and (6).
5. For ergonomic reasons, align the pedals laterally so that the center of the main pedal (6) is directly beneath the needle.

Information
The frame brace (3) is provided with slotted holes to allow alignment of the pedal.

6. Loosen the screws (8).
7. Adjust the height of the pedal rodding so that in the home position the pedal slope is about 10°.
   The lever (5) on the setpoint transducer can be adjusted to suit.
8. Tighten the screws (8).
9. Insert the thread reel holder (1) into the hole in the table top, and secure it with a nut and washer.
10. Fit and align the thread reel holders and unwinding bracket.

Important

The unwinding bracket must be vertically above the thread reel holders.

8.7 Setting the working height

WARNING

Risk of injury from moving parts!

When loosening the screws at the frame braces the table top can sink down by its weight. Crushing is possible.

Take care not to crush your hands when loosening the screws.

CAUTION

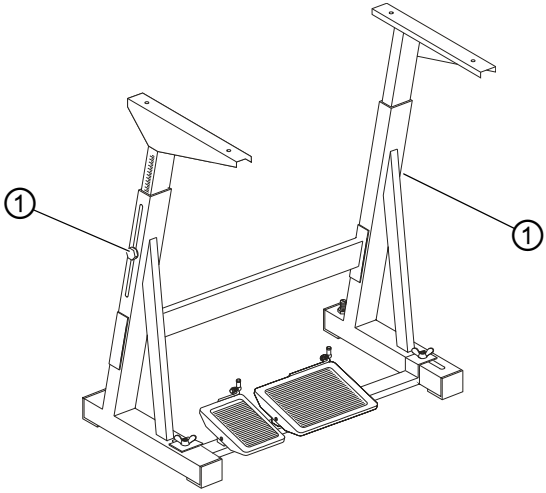
Risk of impairment of the musculoskeletal system from wrong adjustment!

The musculoskeletal system of the operator can be damaged by noncompliance of the ergonomic requirements.

Adjust the working height to the body dimension of the person who will operate the machine.

The working height can be adjusted between 780 and 900 mm (measured to the upper edge of the table plate).

Fig. 74: Setting the working height



(1) - Screws

To set the working height:

1. Slacken the screws (1) on the frame bars.
2. Set the table top to the desired working height.
3. To avoid jamming, slide the table top in or out evenly at both sides.
4. Tighten the screws (1).

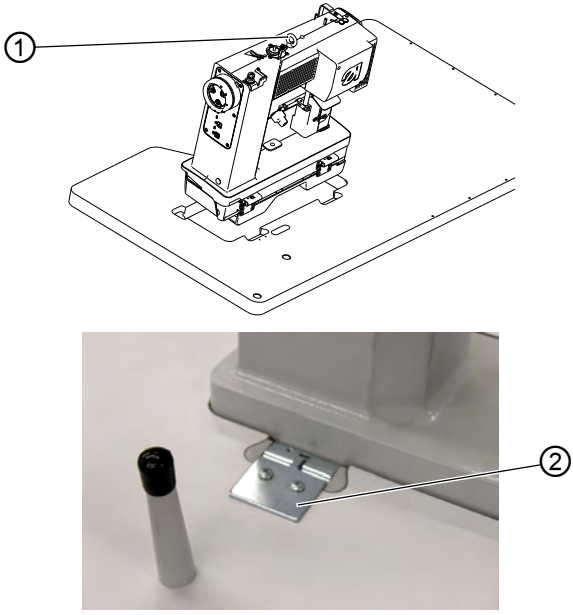
8.8 Inserting the machine upper part

WARNING

Risk of injury from tipping machine upper part!
Crushing is possible.

Secure the machine upper part against tipping when you transport the machine.

Fig. 75: Inserting the machine upper part



(1) - Transport eye *(2) - Clamping plate*

To insert the machine upper part:

1. Using the transport eye (1), lift the machine upper part and insert it into the cut-out on the table top.
2. After the upper part has been placed in position, immediately connect the bracket (2) which prevents the upper part coming loose if the table top is tipped.

The bracket is included in the accessories pack for the upper part.

If the machine is supplied ready assembled, the transport eye is included in the accessories pack.

8.9 Electrical connection

DANGER

Risk of injury from electricity!

Unprotected contact with electricity can result in serious injuries or death.

Work on the electrical system must ONLY be carried out by qualified electricians or appropriately trained and authorized personnel.

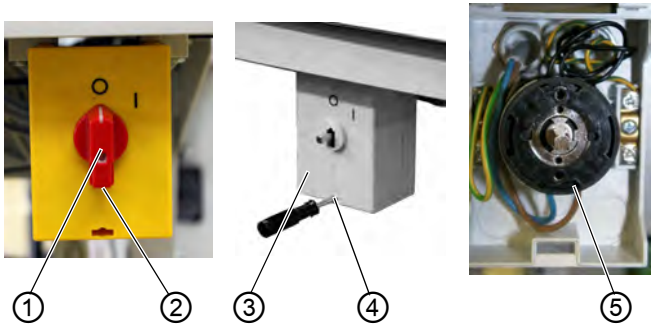
ALWAYS pull the power plug before working on the electrical equipment.

Important

The voltage on the type plate of the sewing drive must correspond to the mains voltage.

8.9.1 Connecting the mains power supply

Fig. 76: Connecting the mains power supply



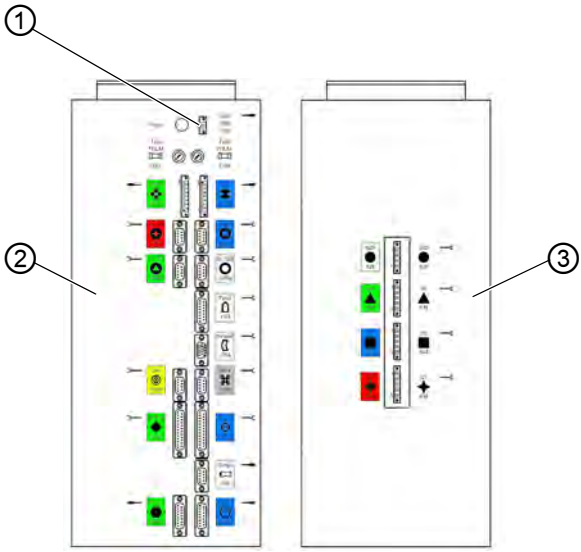
(1) - Switch knob
(2) - Screw
(3) - Bracket
(4) - Hole
(5) - Switch

To connect the mains power supply:

1. Undo the screw (2) in the knob and take off the switch knob (1).
2. Remove the cover (3) from the main switch. Unlock this, using a screwdriver to push the bar out of the hole (4).
3. Lay the cables for the control cabinet, the additional control and the LED transformer in cable duct.
4. Insert the cables into the main switch.
5. Connect the cable cores from the control cabinet to the screw terminals **T1** and **T2** on the switch (5).
6. In addition, connect the additional control to the screw terminals **T1** and **T2**.
7. Connect the LED transformer leads to **L1** and **L2** (in addition to the mains supply cable).
8. Connect the protective earth conductors of the control cabinet and the additional control to the main switch.
9. Replace the cover (3) on the main switch.
10. Fit the switch knob (1) and screw it tight.
11. Place the cable duct cover on the cable duct.

8.9.2 Connecting the cables to the upper part

Fig. 77: Connecting the cables to the upper part



(1) - Bridge plug (Teilenummer 9850 001208)
(2) - Connections, side 1
(3) - Connections, side 2

All cables are color coded.

Important

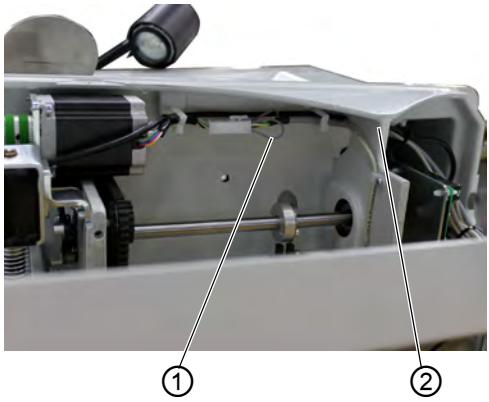
The bridge plug 9850 001208 (3) must be plugged into the control, otherwise the control will not work.

To coennect the cables to the upper part:

1. Lay the cables to the control cabinet and bundle them together with cable ties.
2. Plug the motor cables to the corresponding plugs on the connection side (2).
3. Plug the other cables to the corresponding plugs on the connection side (1).
4. Connect the LED light to the transformer (📖 *p. 131*).

8.9.3 Connecting the cables for the additional control

Fig. 78: Connecting the cables for the additional control



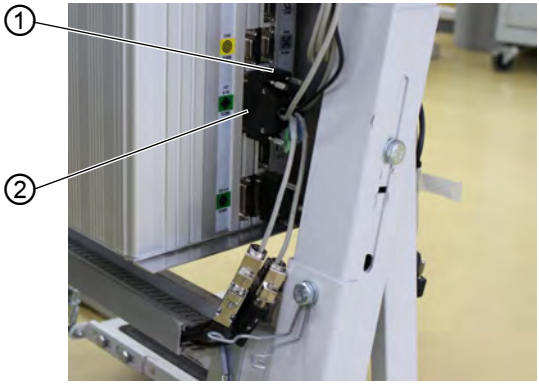
(1) - Cable *(2) - Underside of the casing*

To connect the cables for the addotional control:

1. Connect the 15-pin plug to the correspondingly marked connector on the side of the control cabinet (2), as shown in (📖 *p. 120*).
2. Lay the cable (1) for the stepper motor in the underside of the casing (2) and plug it into the connection plug.

8.9.4 Connecting the setpoint transducers to the control

Fig. 79: Connecting the setpoint transducers to the control



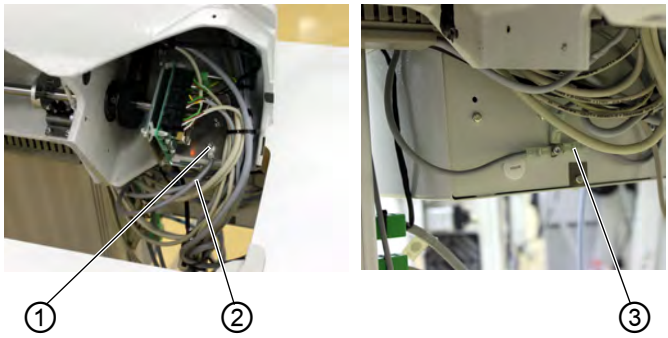
(1) - Speed plug *(2) - Fullness plug*

To connect the setpoint transducers to the control:

1. Connect the setpoint transducer for the main pedal to the *Speed* plug (1) (X120b).
2. Connect the setpoint transducer for the additional pedal to the *Fullness* plug (2) (X120t).

8.9.5 Connecting the equipotential bonding for the upper part

Fig. 80: Connecting the equipotential bonding for the upper part



(1) - Upper part attachment
(2) - Protective earth conductor
(3) - Flat plug

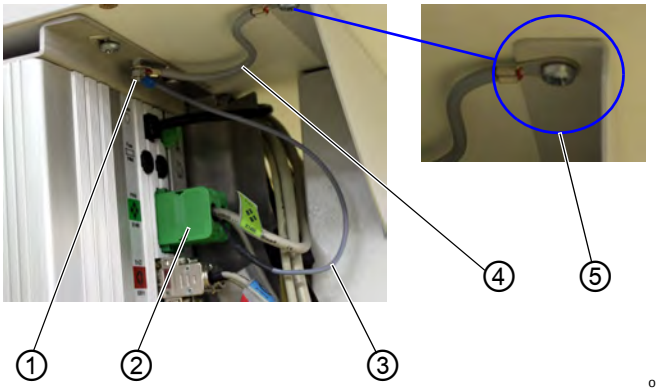
The protective earth conductor (2) (350 mm long) is included in the accessories pack for the machine. The protective earth conductor (2) dissipates static charges which build up on the upper part of the machine to earth via the additional control cabinet.

To connect the equipotential bonding for the upper part:

1. Screw the protective earth conductor (2) to the upper part (1).
2. Lay it to the additional control cabinet and plug it on the flat plug (3).

8.9.6 Connecting the equipotential bonding for the control

Fig. 81: Connecting the equipotential bonding for the control



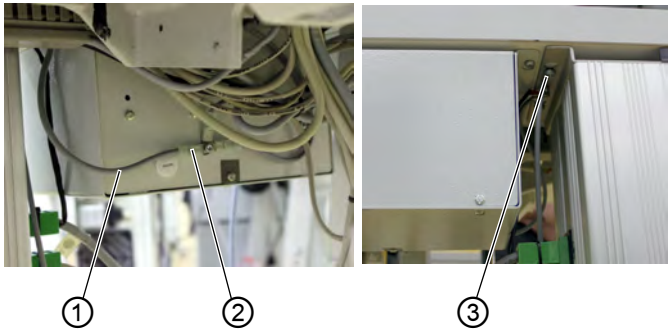
(1) - Attachment to control cabinet
(2) - Plug
(3) - Protective earth conductor
(4) - Protective earth conductor
(5) - Attachment to the frame

To connect the equipotential bonding for the control:

1. Screw the protective earth conductor (3) of the plug (2) on to the control cabinet (1).
2. Screw the protective earth conductor (4) (150 mm long) on to the frame (5) using a toothed shakeproof washer.

8.9.7 Connecting the equipotential bonding for the additional control

Fig. 82: Connecting the equipotential bonding for the additional control



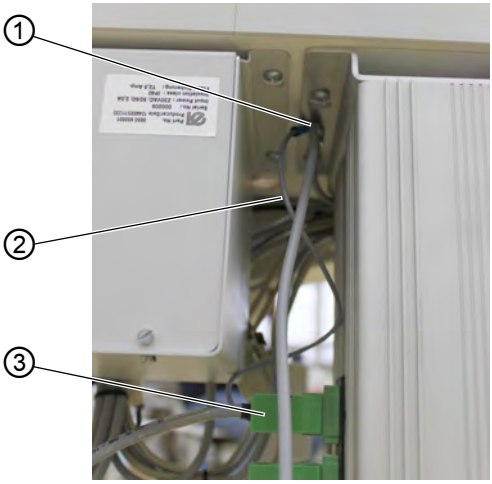
(1) - Protective earth conductor
(2) - Flat plug
(3) - Attachment to control cabinet

To connect the equipotential bonding for the additional control:

1. Plug the protective earth conductor (1) into the flat plug (2) on the additional control cabinet.
2. Lay the cable (2) (300 mm long) to the control cabinet (3) and screw it on.

8.9.8 Connecting the equipotential bonding for the sewing head motor

Fig. 83: Connecting the equipotential bonding for the sewing head motor



(1) - Earthing point on the control cabinet
(2) - Protective earth conductor
(3) - Plug for the sewing head drive

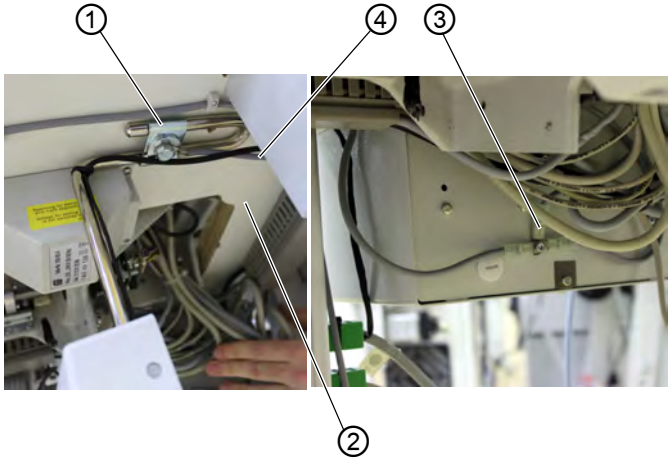
The protective earth conductor (2) for the sewing head motor is connected in the plug (3) for sewing head drive.

To cennect the equipotential bonding for the sewing head motor:

1. Screw the protective earth conductor (2) to the earthing point on the control cabinet (1).

8.9.9 Connecting the equipotential bonding for the knee switch

Fig. 84: Connecting the equipotential bonding for the knee switch



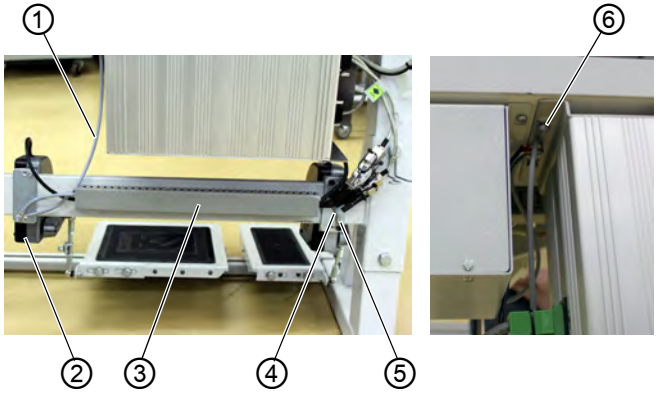
(1) - Mounting clip
(2) - Cable duct
(3) - Flat plug
(4) - Protective earth conductor

To connect the equipotential bonding for the knee switch:

1. Screw the protective earth conductor (4) (650 mm long) to the attachment clip (1) on the knee switch.
2. Lay the cable in the cable duct (2) and plug the additional control on to the flat plug (3).

8.9.10 Connecting the equipotential bonding for the setpoint transducers

Fig. 85: Connecting the equipotential bonding for the setpoint transducers



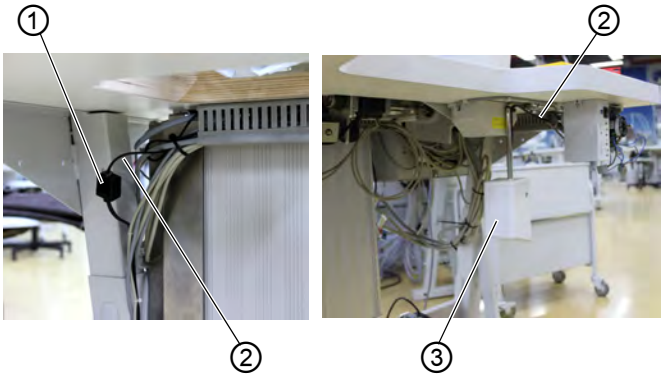
(1) - Protective earth conductor
(2) - Setpoint transducer connection (main pedal)
(3) - Cable duct
(4) - Protective earth conductor
(5) - Setpoint transducer connection (additional pedal)
(6) - Attachment to control cabinet

To connect the equipotential bonding for the setpoint transducers:

1. Screw the protective earth conductor (4) (500 mm long) on to the setpoint transducer (5) (optional).
2. Lay the cable (4) through the cable duct (3) to the setpoint transducer (2) and screw it on (optional).
3. Screw the protective earth conductor (1) (650 mm long) on to the setpoint transducer (2) and to the control cabinet (6).

8.9.11 Connecting the knee switch

Fig. 86: Connecting the knee switch



(1) - Plug
(2) - Cable
(3) - Knee switch

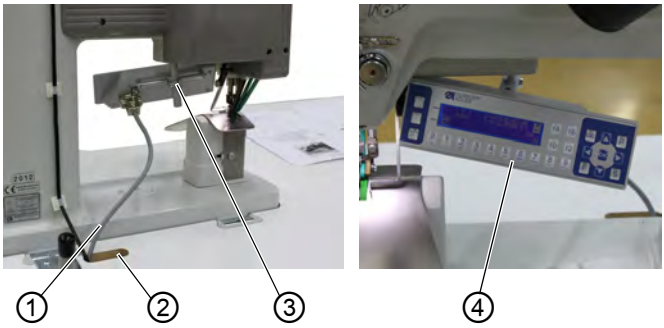
To connect the knee switch:

1. Lay the cable (2) for the knee switch (3) through the cable duct to the control and connect it to the plug (1).

8.9.12 Connecting the control panel

Connecting the control panel OP3000

Fig. 87: Connecting the control panel OP3000



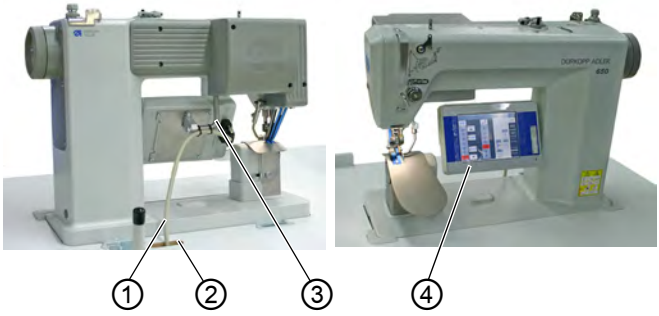
(1) - Cable
(2) - Table top opening
(3) - Retainer
(4) - Control panel

To connect the control panel **OP3000**:

1. Screw the control panel (4) on the bracket (3) and align it.
2. Plug the plug for the cable (1) on to the control panel, through the opening in the table top (2) to the control cabinet, and connect it to the socket (X170 Panel).

Connecting the control panel OP7000

Fig. 88: Connecting the control panel OP7000



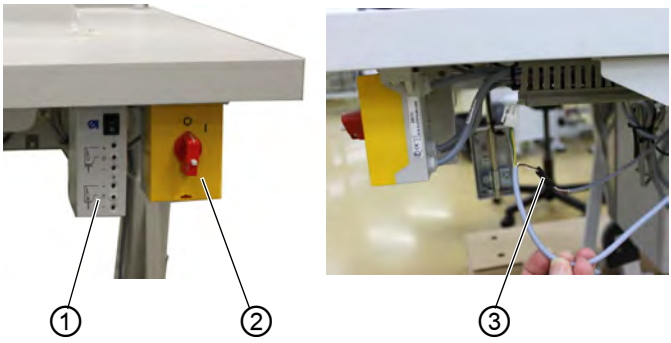
(1) - Cable
(2) - Table top opening
(3) - Retainer
(4) - Control panel

To connect the control panel **OP7000**:

1. Tighten the control panel (8) to the bracket (7) and align it.
2. Insert the plug for the cable (6) at the control panel, guide it through the opening in the tabletop (5) to the controller, and connect it to the socket (X170b).

8.9.13 Connecting the LED sewing light

Fig. 89: Connecting the LED sewing light



(1) - Sewing light control
(2) - Main switch
(3) - Plug

To connect the LED sewing light:

1. Fit the sewing light control (1) next to the main switch (2) (📖 *p. 111*).
2. Connect the supply cable for the sewing light control within the main switch (📖 *p. 119*).
3. Connect the plug (3) for the LED light to the black plug of the sewing light control output cable.

8.9.14 Connect the additional sewing light (Waldmann) (optional)

See the installation manual 0791 100702. This manual is supplied with the sewing light.

8.10 Sewing test

CAUTION

Risk of injury from sharp and moving parts!

Punctures or crushing possible.

Swtich off the machine before threading the needle thread or the hook thread.

Perform a sewing test after completing the installation work.

To perform a sewing test:

1. Insert the mains plug.
2. Wind on the hook thread (📖 *p. 32*).
3. Switch the main switch on.
4. Activate winder mode.
5. Fill the bobbin at medium speed.
6. Switch off the main switch.
7. Thread the needle and hook threads (📖 *p. 23*) and (📖 *p. 32*).
8. Switch the main switch on.
9. Select the material to be sewn.
10. Perform a sewing test, first at low speed and then at continually increasing speeds.
11. Check that the seams conform to the desired requirements.
12. If the requirements are not satisfied:
    Alter the thread tension (📖 *p. 27*) and (📖 *p. 32*).

If necessary, also check the settings listed in the Service instructions and correct them as required.

9 Decommissioning

You need to perform a number of activities if the machine is to be shut down for a longer period of time or completely decommissioned.

WARNING

Risk of injury from a lack of care!

Serious injuries may occur.

ONLY clean the machine when it is switched off.
Allow ONLY trained personnel to disconnect the machine.

CAUTION

Risk of injuries from contact with oil!

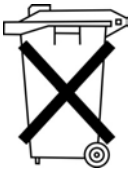
Oil can cause a rash if it comes into contact with skin.

Avoid skin contact with oil.
If oil has come into contact with your skin, wash the affected areas thoroughly.

To decommission the machine:

1. Switch off the machine.
2. Unplug the power plug.
3. If applicable, disconnect the machine from the compressed air supply.
4. Remove residual oil from the oil pan using a cloth.
5. Cover the control panel to protect it from contamination.
6. Cover the control to protect it from soiling.
7. Cover the entire machine if possible to protect it from contamination and damage.

10 Disposal



Do not dispose of the machine in the general household waste.

The machine must be disposed of in a suitable and proper manner and in accordance with all applicable national regulations.

CAUTION

Risk of environmental damage from improper disposal!

Improper disposal of the machine can result in serious environmental damage.

ALWAYS comply with the legal regulations regarding disposal.

When disposing of the machine, be aware that it consists of a range of different materials (steel, plastic, electronic components, etc.). Observe the applicable national regulations when disposing of these materials.

11 Troubleshooting

11.1 Customer service

Contact for repairs and issues with the machine:

Dürkopp Adler AG

Potsdamer Str. 190
33719 Bielefeld, Germany

Tel. +49 (0) 180 5 383 756
Fax +49 (0) 521 925 2594
Email: service@duerkopp-adler.com
Internet: www.duerkopp-adler.com

11.2 Errors in sewing process

Meaning	Possible causes	Remedial action
Thread breakage	• The needle and hook threads are not threaded correctly	• Check threading path 📖 *p. 23*
	• Needle is bent or sharp-edged • Needle is not inserted correctly into the needle bar	• Replace the needle • Insert the needle into the needle bar
	• The needle used is unsuitable	• Use recommended thread 📖 *p. 23*
	• Thread tensions are too tight for the thread used	• Check thread tensions 📖 *p. 23*
	• Thread-guiding parts such as thread tube, thread guide or thread-takeup disk are sharp-edged	• Check the thread path
	• Throat plate, hook or spread have been damaged by the needle	• Have parts reworked by qualified specialists

Meaning	Possible causes	Remedial action
Missing stitches	• The needle and hook threads are not threaded correctly	• Check threading path 🕮 *p. 23*
	• Needle is blunt or bent • Needle is not inserted correctly into the needle bar	• Replace the needle • Insert the needle into the needle bar
	• The needle thickness used is unsuitable	• Use recommended needle thickness 🕮 *p. 141*
	• The thread reel holder is installed incorrectly	• Check thread reel holder
	• Thread tensions are too tight	• Check thread tensions 🕮 *p. 23*
	• Sewing material is not held correctly	• Check clamping pressure (🕮 *Service Instructions)*
	• The loop stroke was not corrected when changing the zigzag stitch width	• Adjust the loop stroke (🕮 *Service Instructions)*
	• Incorrect parts used for the desired sewing equipment	• Check the parts based on the equipment sheet
	• Throat plate, hook or spread have been damaged by the needle	• Have parts reworked by qualified specialists

Meaning	Possible causes	Remedial action
Loose stitches	• Thread tensions are not adjusted to the sewing material, the sewing material thickness or the thread used	• Check thread tensions
	• The needle and hook threads are not threaded correctly	• Check threading path 📖 *p. 23*
Needle breakage	• Needle thickness is unsuitable for the sewing material or the thread	• Use recommended needle
Seam beginning not secure	• Residual tension is too tight for the needle thread	• Adjust residual tension

12 Technical Data

Noise emission

Workplace-specific emission value as per DIN EN ISO 10821:

LpA = 79 dB (A); KpA = 0,83 dB (A) at

- Stitch length: 3,0 mm
- Number of stitches: 2900 rpm
- Sewing material: 2-layer material G1 DIN 23328

Data and parameters

Technical data	Unit	650-16
Stitch type		301
Hook type		Horizontal hook, oil-free
Number of needles		1
Needle system		134-35
Needle thickness	[Nm]	70 - 120
Thread strength	[Nm]	max. 50/3
Stitch lenght	[mm]	1,0 - 4,0
Max. speed	[min^{-1}]	4000
Mains voltage	[V]	1x230
Mains frequency	[Hz]	50
Length	[mm]	750
Width	[mm]	1320
Height	[mm]	1300
Weight	[kg]	115

Characteristics

The sewing machine is equipped with an integral sewing head drive, with a stepper motor which drives upper and lower belt transport for gentle transport of the material, together with stepper motor-driven curve support and an inclined base of improved material handling.

The presser foot is powered by a stepper motor and the electro-magnetically controlled needle thread tension permit programming of these parameters.

For the operation of the machine either the OP3000 control panel or the OP7000 control panel must be selected.

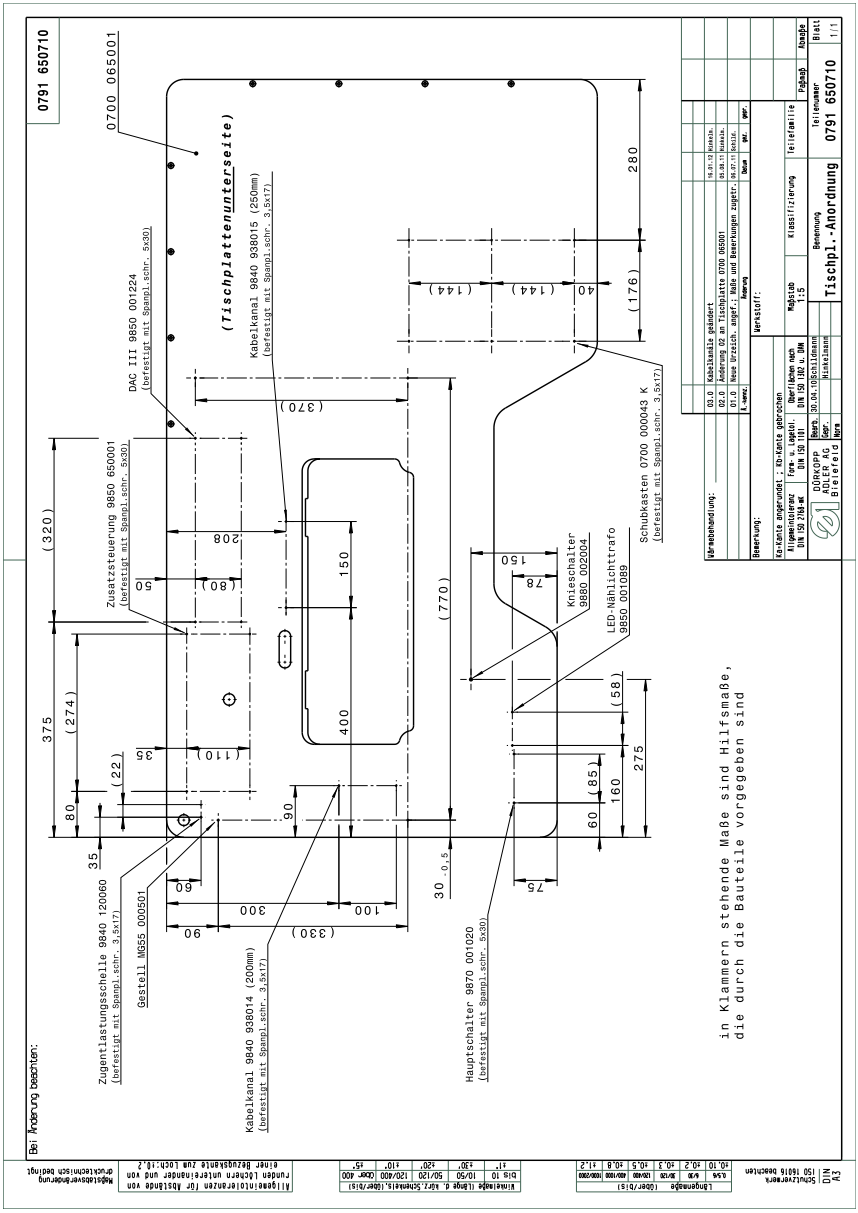
The OP3000 control panel with graphical display permits easy creation of programs and improved overview of the parameter settings and the programmed seam.

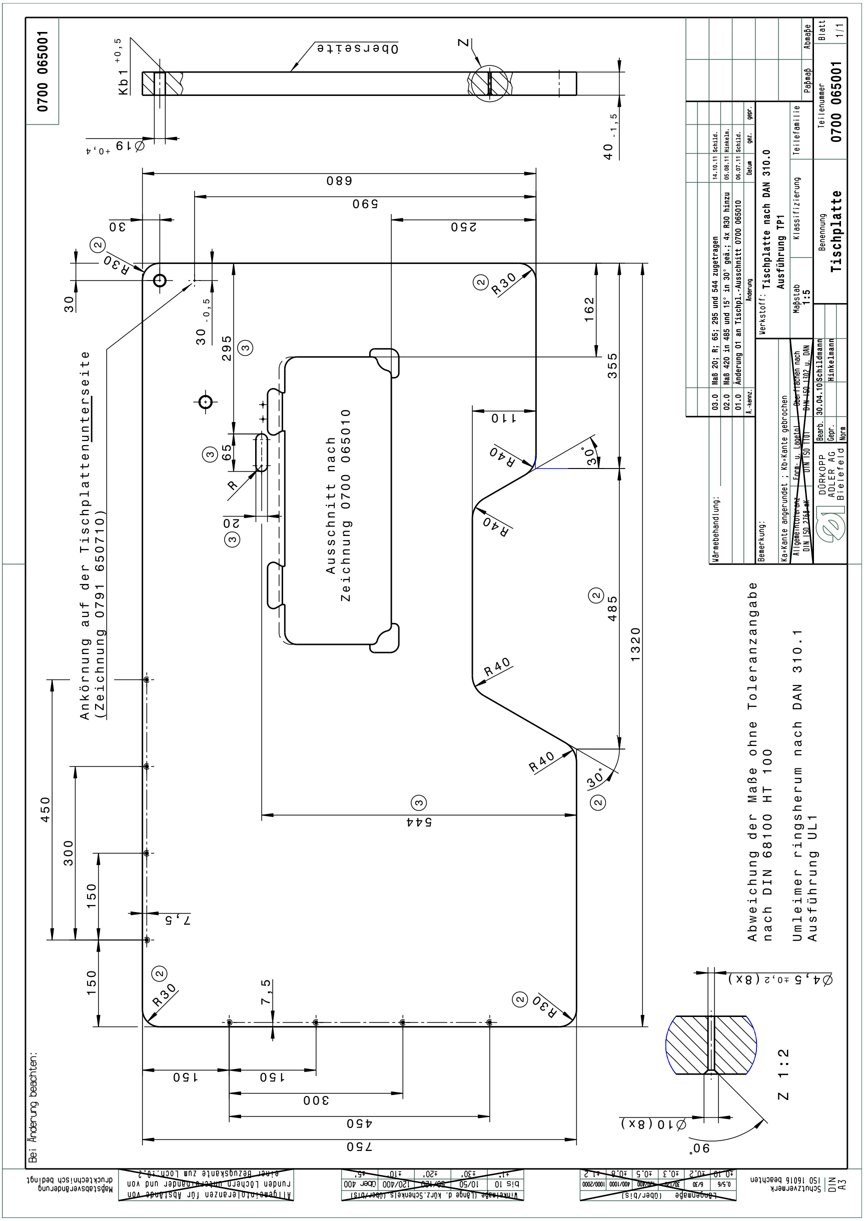
The OP7000 control panel with touch screen displays the contour to be sewn graphically and in color. In this mode the graduating function is available. On the basis of a programmed size this creates other sizes automatically and optimizes the programming of further sizes by graduating the program. Programs can be saved to a USB stick and transferred to other machines.

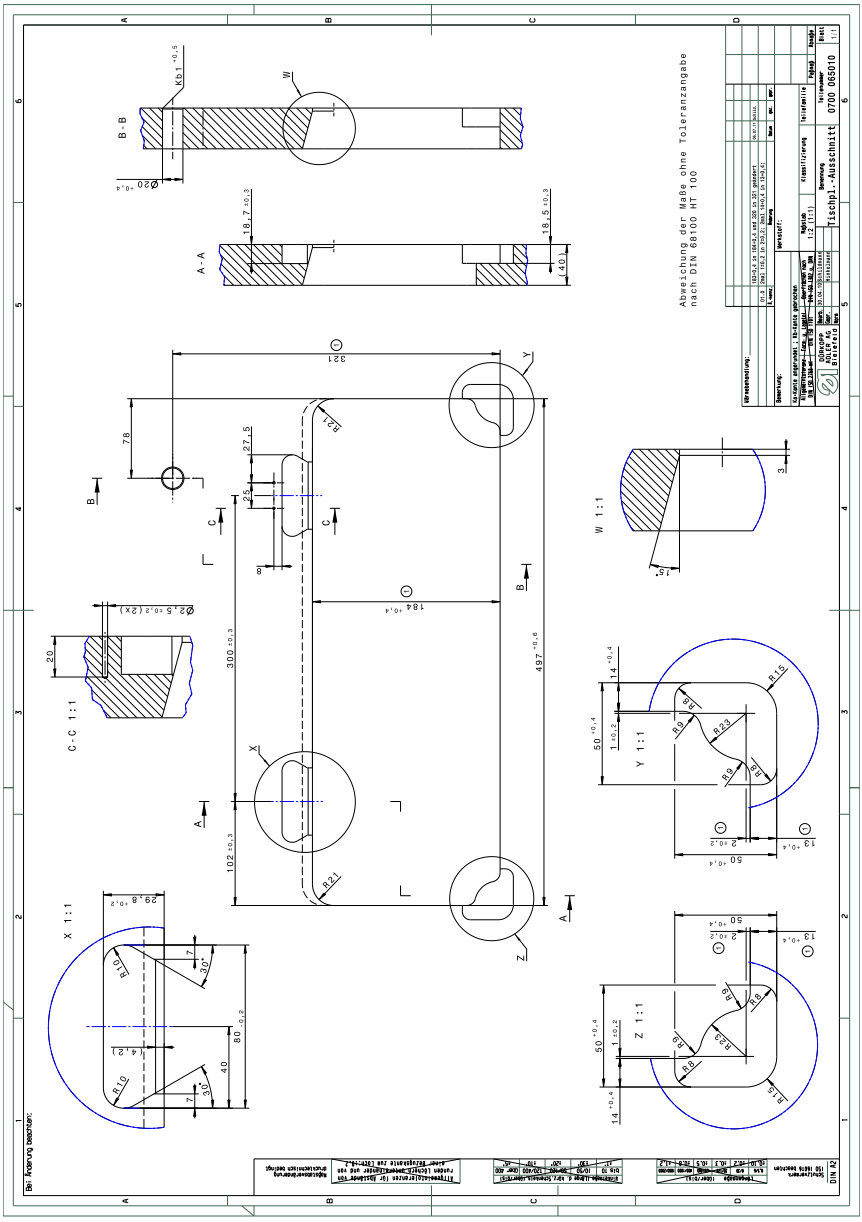
The optional, ergonomically shaped table top provides additional assistance to working.

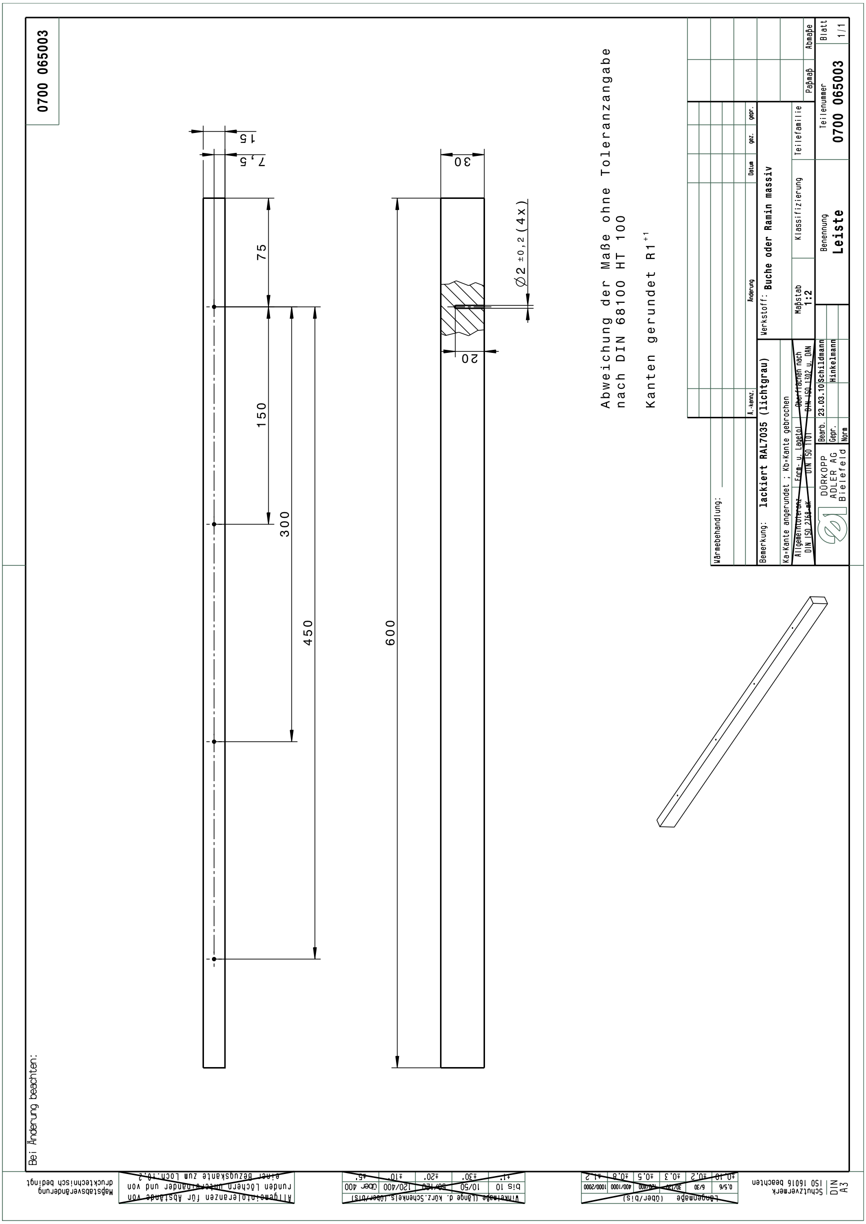
13 Appendix

Dimensions for manufacturing a table top




0700 065001
Oberseite
Ausschnitt nach Zeichnung 0700 065010
Ankörnung auf der Tischplattenunterseite (Zeichnung 0791 650710)
Abweichung der Maße ohne Toleranzangabe nach DIN 68100 HT 100
Umleimer ringsherum nach DAN 310.1 Ausführung UL1
Z 1:2
Tischplatte
Bei Änderung beachten:


Abweichung der Maße ohne Toleranzangabe
nach DIN 68100 HT 100
Tischpl.-Ausschnitt
0700 065010
B - B
A - A
C - C 1 : 1
W 1 : 1
X 1 : 1
Y 1 : 1
Z 1 : 1


0700 065003
15
7,5
30
75
150
300
450
600
20
⌀2 ±0,2 (4x)
Abweichung der Maße ohne Toleranzangabe nach DIN 68100 HT 100
Kanten gerundet R1
Wärmebehandlung:
Bemerkung: lackiert RAL7035 (lichtgrau)
Werkstoff: Buche oder Ramin massiv
Maßstab 1:2
Benennung
Leiste
Teilenummer
0700 065003
Blatt 1/1
DÜRKOPP ADLER AG Bielefeld
Bearb. 23.03.10 Schildmann
Gepr. Hinkelmann
Bei Änderung beachten:
DIN A3

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