



## Special Sewing Machine

Instruction manual

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## Preface and General Safety Instructions

### Part 1: Operating Instructions Class 667 – Original Operating Instructions

(Edition 12/2011)

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# 1 General safety

This instruction manual is intended to help familiarize the user with the machine and to enable correct utilisation.

The instruction manual contains important information on how to operate the machine safely, correctly and economically. Observation of the instructions eliminates danger, reduces costs for repair and downtime, and increases the reliability and service life of the machine.

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

The instruction manual should always be available where the machine/sewing unit is being used.

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

Operation, including equipping, troubleshooting during the work cycle, removing of fabric waste,

- Service (maintenance, inspection, repair) and/or
- Transport

The user must ensure that only authorised persons work with the machine.

The user is required to check the machine at least once per shift for visible damage and defects, and to report any changes which impair safety immediately (including operating performance).

The company using the machine must ensure it is only operated in perfect working order.

As a matter of principle, no safety equipment is to be removed or disabled.

If it is necessary to remove any safety equipment for preparation, repair, or maintenance work, the safety equipment must be reinstalled immediately upon completion of said work.

The manufacturer does not assume any liability for damages resulting from unauthorized modification of the machine.

Observe all of the safety signs and hazard warnings on the machine/unit! The yellow-and-black striped sections designate permanent hazard areas which are associated with, for example, risk of crushing, cutting, shearing or collision.

In addition to the information contained in this instruction manual you should also observe the applicable general safety and accident prevention regulations.

## General safety precautions

**Non-observance of the following safety precautions can result in bodily injury or damage to the machine.**

1. The machine should only be commissioned after reading the associated operating manual and it should only be operated by persons who have received the corresponding training.
2. Before starting to use the machine you should also read the safety precautions specified by the motor manufacturer.
3. The machine should only be used for the purpose intended and with the safety devices in place. Observe all of the applicable safety regulations.
4. The machine must be disconnected from the power supply by switching off the master switch or disconnecting the mains plug when exchanging sewing appliances (such as the needle, sewing foot, needle plate, feed dog and bobbin), when threading, when leaving the workplace unattended or when conducting service work.
5. Daily servicing procedures should only be conducted by appropriately trained persons.
6. Repairs and special maintenance work should only be conducted by specialist personnel or by persons who have received the corresponding training.
7. When conducting service or repair work on pneumatic systems the machine must be disconnected from the compressed air supply (max. 7 - 10 bar). Before disconnecting the machine the maintenance unit is to be depressurised. An exception to this rule is only permitted for adjustments and functional checks which are conducted by appropriately trained, specialist personnel.
8. Work on the electrical equipment should only be conducted by electricians or appropriately trained personnel.
9. Working on live parts and equipment is not permitted, except as specified in regulations DIN VDE 0105.
10. Conversions or modifications made to the machine should only be conducted in compliance with all of the applicable safety regulations.
11. Only those replacement parts approved by us are to be used for repairs.
12. Commissioning of the upper part is prohibited until such time as the entire sewing unit complies with the provisions of the EC directives.
13. The connecting cable must be equipped with a country-specific mains plug. The associated work must be conducted by an appropriately trained specialist (also refer to point 8).



These symbols designate safety precautions which must be observed at all times.

**Risk of injury!**

Please also observe the general safety precautions.



## 2 Product description

### 2.1 Product description

The **Dürkopp Adler 667** is a special sewing machine for first-class single-needle decorative seams in light to medium-heavy material.

- It is a single-needle flatbed double-backstitch machine with lower conveyor, needle transport and alternating upper foot conveyor.
- A safety coupling prevents the shuttle from being displaced or damaged if the thread jams in the shuttle track.
- Large horizontal shuttle or oversized shuttle.
- Automatic wick lubrication with viewing windows for the oil level.
- Integrated bobbin winder.

### 2.2 Proper Use, Designated use

The 667 is a sewing machine designed for sewing light to medium-heavy material. Such material generally consists of textile fibres, but can also include leather. It is used in the clothing industry and for domestic and vehicle upholstery.

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

Generally-speaking only dry material should be sewn with this machine. The material should be no thicker than 10 mm when compressed by the lowered sewing feet. The material should not contain any hard objects; if it does, the machine should only be operated with eye protection. No such eye protection can currently be provided.

The seam is generally produced with textile-fibre sewing thread of gauge up to 15/3 NeB (cotton), 15/3 Nm (synthetic) or 15/4 Nm (covering yarn). Before using any other thread the possible dangers arising must be assessed and appropriate safety measures implemented if necessary.

This special sewing machine should only be set up and operated in dry, well-maintained premises. If the sewing machine is used in premises which are not dry and well-maintained,

it may be necessary to implement further precautions (which should be agreed in advance - see EN 60204-31:1999).

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

### 2.3 Specifications

**Noise:** Workplace-related emission value in accordance with DIN EN ISO 10821

**667** LC = \_dB (A)

Stitch length: \_ mm, Sewing foot stroke: \_\_\_\_ mm, Stitch rate: \_\_\_\_ rpm

### 2.3.1 Technical data for subclasses

	Subclasses					
	667-180010	667-180030	667-180112	667-180132	667-180312	667-180332
Type of stitch	Backstitch 301					
Looper type horizontal, XL large, bobbin Ø 26 mm	X		X		X	
Looper type horizontal, XL oversized, bobbin Ø 32 mm		X		X		X
Electromagnetic thread trimmer			X	X	X	X
Electropneumatic seam bartacking and sewing foot lift			X	X	X	X
Switchable thread tension					X	X
2 stitch lengths, can be switched electropneumatically					X	X
2 stroke heights with knee switch, can be switched electropneumatically					X	X
Integrated sewing light					X	X
Number of needles	1					
Needle system	134-35					
Max. needle size [Nm] (depending on sewing mechanism)	80-150	100-170	80-150	100-170	80-150	100-170
Max. thread thickness [Nm]	80/3-15/3	80/3-10/3	80/3-15/3	80/3-10/3	80/3-15/3	80/3-10/3
Looper thickness [Nm]	100/3-20/3	100/3-15/3	100/3-20/3	100/3-15/3	100/3-20/3	100/3-15/3
Stitch length forwards/backwards [mm]	9 / 9					
Max. stitch rate [rpm]	3000					
Speed at factory setting [rpm]	3000					
Max. sewing-foot stroke: [mm]	9					
Max. height of lifted sewing feet [mm]	20					
Operating pressure [bar]			6	6	6	6
Air consumption [NL]			0.7	0.7	0.7	0.7
Dimensions [mm] length / width / height (with attached Efka DC 1550)	630/ 255/ 420(630/ 290/ 420)					
Weight [kg](with attached Efka DC 1550)	50(54)					
Rated voltage [V/Hz]	depending on motor package					
Rated voltage at factory setting [V/Hz]	depending on motor package					
Power rating [kVA]	depending on motor package					



## 2.4 Optional equipment

For the sewing machine 667 the following optional equipment is available:

Order no.	Optional equipment	Subclasses					
		667-180010	667-180030	667-180112	667-180132	667-180312	667-180332
9780 000108	WE-8 maintenance unit for optional pneumatic equipment	X	X	X	X	X	X
0797 003031	Pneumatic connection pack. For connecting stands to the maintenance unit	X	X	X	X	X	X
0867 490010	Control panel angle	X	X	o	o	o	o
9822 510003	Halogen sewing light for sewing machine head	X	X	X	X	X	X
9880 867100	Sewing light mounting kit	X	X	X	X	X	X
0798 500088	Sewing light transformer	X	X	X	X	X	X
9880 867103	Diode sewing light (one diode)	X	X	X	X	X	X
9880 867102	Integrated sewing light	X	X	X	X	o	o
9850 001089	Power supply unit for integrated and diode sewing light	X	X	X	X	o	o
9850 867001	PCB for oil monitoring			X	X	o	o
0867 590014	Electropneumatic needle cooler, from above			X	X	X	X
0687 590984	Mounting kit FK, thread clamp with thread wiper function			X	X	X	X
0367 595124	Mechanical sewing foot lift with pedal	X	X				
0687 590364	Pneumatic sewing foot lift (DC 1550)	X	X				
0687 590464	Manual seam tacking	o	o	X	X	o	o
N800 080001	Right edge guide, with roller, can be raised	X	X	X	X	X	X
N800 080004	Combined roller and straight guide, right, can be raised, height-adjustable	X	X	X	X	X	X
N800 080021	Right edge guide, can be raised	X	X	X	X	X	X
N800 080022	Guide, for attachment to the base plate	X	X	X	X	X	X
9805 791113	USB memory stick for data transfer with the Efka control unit DA321G	X	X	X	X	X	X

## 2.5 Stands

Order no.		Subclasses					
		667-180010	667-180030	667-180112	667-180132	667-180312	667-180332
MG55 400464	MG55-3 stand set. Table plate: 1060 x 500 mm with pedal	X	X	X	X	X	X



## 3 Operation

### 3.1 Threading the needle thread



#### Caution: Risk of injury!

Switch off the main switch!

The needle thread should only be threaded when the sewing machine is switched off.

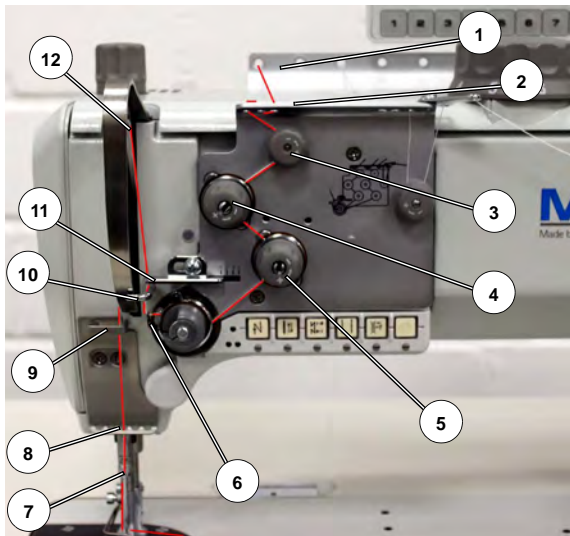


Fig. 1

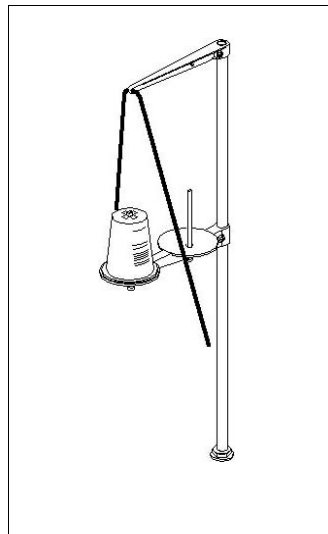


Fig. 2

- Place the thread reel on the thread stand and guide the needle thread through the unwinder arm.
- The unwinder arm must be in a vertical position above the thread reels.
- Thread in the thread through threading guides 1 and 2.
- Wind the thread clockwise around the pre-tensioner 3.
- Wind the thread counter-clockwise around the supplementary tensioner 4.
- Wind the thread clockwise around the main tensioner 5.
- Pull the thread underneath the thread take-up spring 6 and pass it through the guide 10 and thread regulator 11, up to the thread lever 12.
- Insert the thread through the thread lever 12 and the threading guides 9, 8 and 7 on the needle bar.
- Thread the thread into the needle eye.

3.2 Adjusting the needle-thread tension

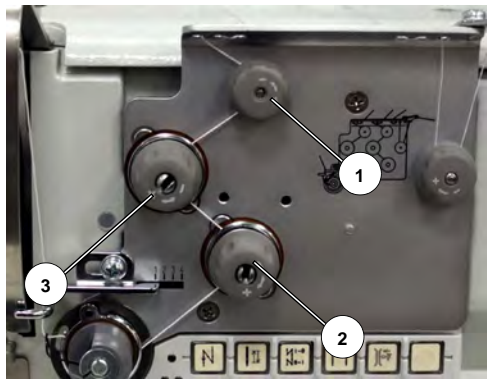


Fig. 3

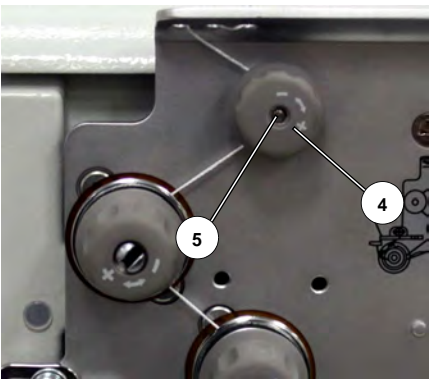
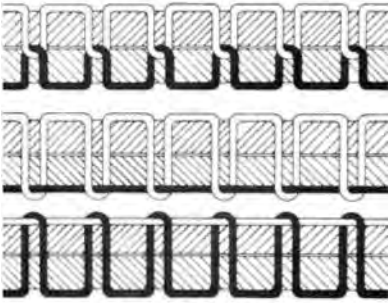


Fig. 4

	<p>Fig. a: Correct thread interlacing in the centre of the material</p> <p>Fig. b: Needle-thread tension too strong or hook-thread tension too weak</p> <p>Fig. c: Needle-thread tension too strong or hook-thread tension too weak</p>
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### Pre-tension

When the main tensioner 2 and supplementary tensioner 3 are open the needle thread must be under slight residual tension. This residual tension is produced by the pre-tensioner 1.

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

Basic setting:

- Turn adjusting knob 4 until its front is flush with bolt 5.

Shorter starting thread:

- Turn adjusting knob 4 clockwise.

Longer starting thread:

- Turn adjusting knob 4 counter-clockwise.

### Main tension

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

The cross-over point of the thread should be in the centre of the material.

When using thin material, excessive thread tension can cause unwanted gathering and thread breakage.

Adjust the main tensioner 2 so that an even stitch pattern is produced.

- Increase tension - turn the adjusting knob clockwise.
- Decrease tension - turn the adjusting knob counter-clockwise.

### Supplementary tension

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

Set the supplementary tensioner 3 to be lower than the main tensioner 2.

## 3.2.1 Function of the main thread tension and the supplementary thread tension in relation to the sewing foot lift for subclass 667-180312 and 667-180322

Button 1 (see chapter 3.15) on the machine's keypad can be used to activate or deactivate the supplementary thread tension at any time. Parameter F-299 must be set to "1" for this.

Sewing foot lift in the seam			Sewing foot lift afterthread trimming	
Parameter Setting	Main thread tensioner	Supplementary thread tensioner	Main thread tensioner	Supplementary thread tensioner
F-196=0	0	0	0	0
F-196=1	1	1	0	0
F-196=2	0	0	1	1
F-196=3	1	1	1	1

1 = Thread tensioner mechanically opened

0 = Thread tensioner mechanically closed

- If the supplementary thread tensioner is open, the status of the sewing foot lift does not change.
- If the machine is turned off, the supplementary thread tension remains at its previously set state.

### 3.2.2 Function of supplementary thread tension in relation to the sewing foot lift and the Speedomat for subclass 667-180312 and 667-180332

Button 1 (see chapter 3.15) on the machine's keypad can be used to activate or deactivate the supplementary thread tension at any time. Parameter F-255 must be set to "7" for this to work.

Parameter Adjustment	Max. stroke adjustment via knee switch	Stroke adjusted by the adjusting knob when reaching the HP speed of parameter F-117 (Speedomat)
F-197 = 0	1	1
F-197 = 1	0	1
F-197 = 2	1 (*)	0
F-197 = 3	0	0

(\*) When the max. stroke adjustment is switched on via the knee switch and the HP-speed of parameter F-117 is reached by the "Speedomat", the supplementary thread tension is switched on automatically.

0 = Supplementary thread tension mechanically closed

1 = Supplementary thread tension mechanically opened

- If the supplementary thread tensioner is closed, it remains closed during the stroke adjustment.
- If the machine is turned off, the supplementary thread tension remains at its previously set state.

Basic adjustment in the control box for automatic stepwise speed reduction (Speedomat) by the adjusting knob for the height of the alternating feeding stroke.

#### Parameter 188

Step 01-21	entire Speedomat range
Step 01-10	maximum permitted speed, parameter F-111 = 3000 rpm
Step 11-18 (Speedomat)	linear stepwise reduction of the maximum speed
Step 19-21	maximum permitted speed, parameter F-117 = 1800 rpm

### 3.3 Opening the thread tension

#### Subclasses

**667-180010, 667-180030**

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

#### Subclasses

**667-180112, 667-180132, 667-180312, 667-180332**

The thread tension is automatically opened when trimming the thread.

### 3.4 Turning the supplementary thread tension on and off for subclasses 667-180312 and 667-180332

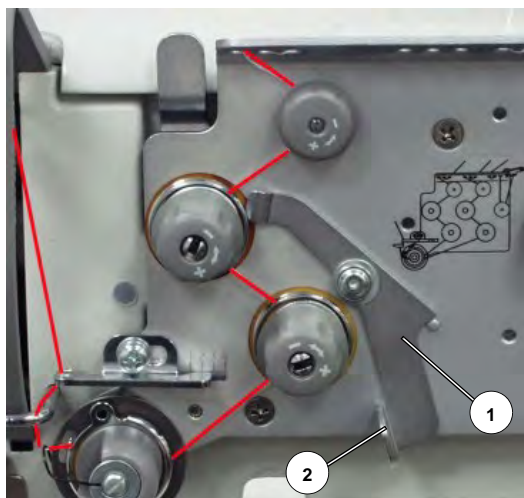


Fig. 5

The supplementary tension can be switched on and off with lever 1.

#### Switching on

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

#### Switching off

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

### 3.5 Adjusting the thread regulator

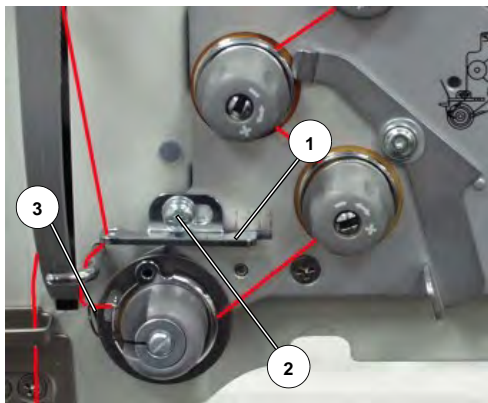


Fig. 6



**Caution: Risk of injury!**

Switch off the main switch.

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

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

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

- Loosen screw 2.
- Adjust the position of thread regulator 1: thread regulator to the left  
= more thread; thread regulator to the right = less thread
- Tighten screw 2.

**Adjustment information:**

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



### 3.6 Winding on the hook thread

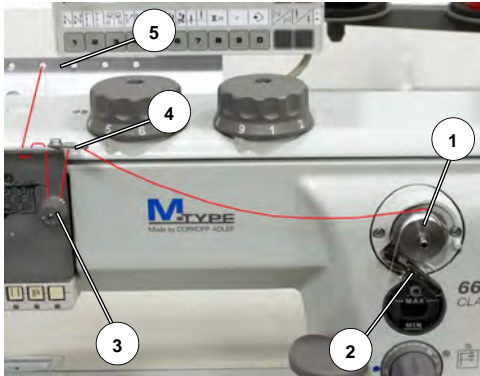


Fig. 7

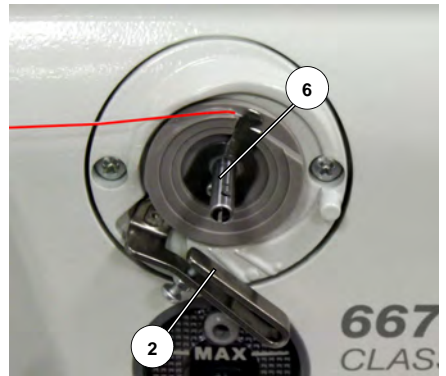


Fig. 8

- Put the thread reel on the thread stand and lead the hook thread through the unwinder arm.
- Pull the thread through guide 5, tensioner 3 and guide 4.
- Place the thread behind the blade 6 and sever it.
- Insert the bobbin 1 onto the bobbin winder. There is no need to wind the thread onto the bobbin by hand.
- Press the bobbin-winder lever 2 into the bobbin.
- Start sewing. The bobbin winder lever terminates the process as soon as the bobbin is full. The bobbin winder always stops in such a way that the blade 6 is in position.
- Remove the full bobbin 1, place the thread behind the blade 6 and sever it.
- Fit an empty bobbin onto the bobbin winder for the next winding process and press the bobbin-winder lever 2 into the bobbin.



#### **CAUTION: Risk of breakage!**

If the thread is not to be wound on during sewing, the sewing foot must be locked in an elevated position and the sewing-foot stroke set to the smallest value.

### 3.7 Changing the hook-thread bobbin

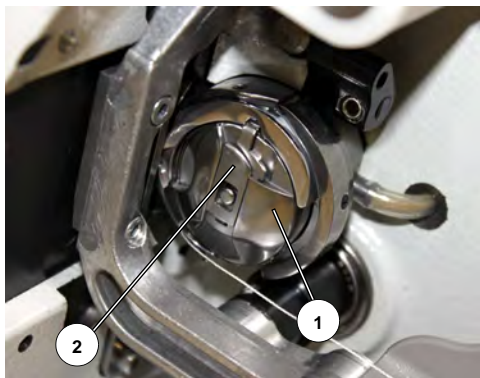


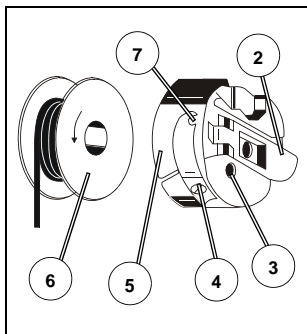
Fig. 9



**Caution: Risk of injury!**

Switch off the main switch.

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



**Remove the empty bobbin.**

- Set the needle bar at an elevated position.
- Lift the bobbin case flap 2.
- Remove the bobbin case 3 with bobbin 6.
- Remove the empty bobbin from the bobbin case 3.

**Insert a full bobbin.**

- Insert a full bobbin into the bobbin case 3.
- Observe the direction of rotation of the bobbin.
- The direction of rotation is correct when the bobbin rotates in an opposite direction to the drawing direction of the thread.
- Pull the hook thread through the slit 5 underneath the tension spring 4 into the hole 7.
- Pull approx. 5 cm of hook thread from the bobbin case 3.
- When pulling the thread, the bobbin should turn into the direction indicated by the arrow.
- Reinsert the bobbin case 3.
- Close the bobbin case flap 2.



**CAUTION: Risk of breakage!**

Press down firmly on the bobbin case and make sure it engages correctly.

### 3.8 Setting the hook thread tension

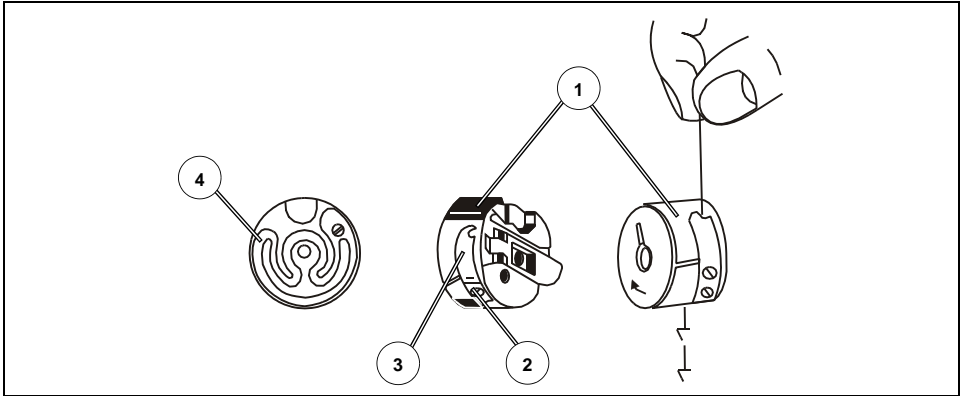


Fig. 10



**Caution: Risk of injury!**

Switch off the main switch.

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

**Brake spring**

The brake spring 1 is responsible for preventing a bobbin overrun when the machine stops and when the hook thread is being cut. It cannot be adjusted!

**Setting the tension spring**

- Adjust the tension spring 4 with the adjustment screw 3. Turn until the required tension force is present.

**Increasing the hook thread tension**

- Turn screw 3 clockwise.

**Decreasing the hook thread tension**

- Turn screw 3 counter-clockwise.

### 3.9 Changing the needle

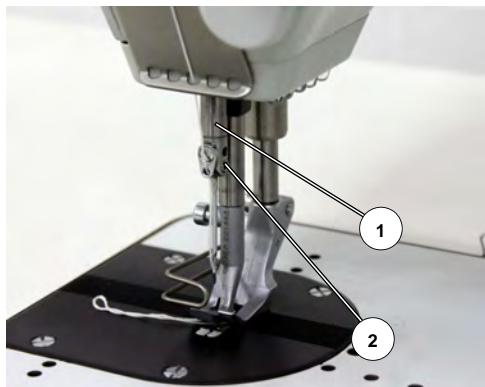


Fig. 11

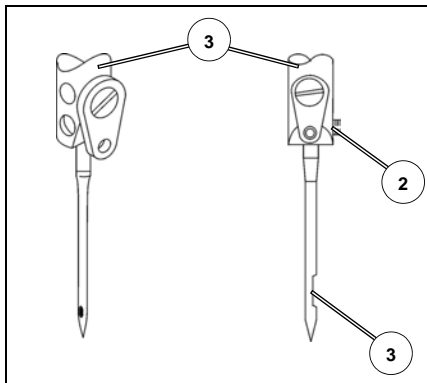


Fig. 12



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

Switch off the main switch.

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

- Turn the handwheel until the needle bar 1 reaches its highest position.
- Loosen screw 2.
- Pull the needle downwards out of the needle bar 1.
- Insert the new needle into the hole of the needle bar 1 and push it until it stops.  
**CAUTION!** The needle scarf 3 must be pointing towards the hook.
- Tighten screw 2.  
**CAUTION!** After changing to a needle with a different thickness the clearance gap between the hook and the needle must be adjusted (see service instructions).  
Non-compliance with this information can result in the following errors:  
Changing to a thinner needle:  
missing stitches  
thread damage  
Changing to a thicker needle:  
damage to the hook tip  
damage to the needle

### 3.10 Lifting the sewing foot

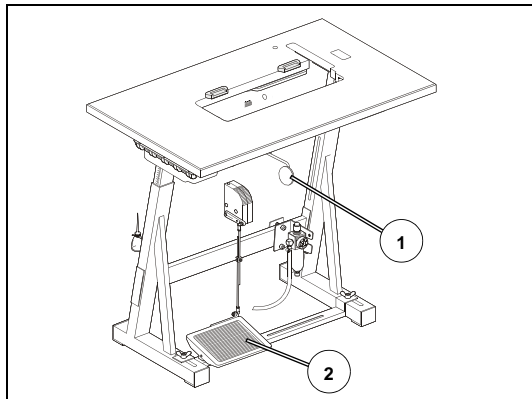


Fig. 13

#### **Subclass 667-180010, 667-180030**

- The sewing foot can be lifted mechanically by actuating the knee lever 1.

#### **Subclass 667-180112, 667-180312, 667-180312, 667-180322**

- The sewing foot can be lifted electropneumatically by actuating the pedal 2.

#### **Mechanical sewing foot lift (knee lever)**

- To insert or remove the material (e.g. for corrective purposes), push the knee lever to the right. The sewing feet remain in an elevated position for as long as pressure is maintained on the knee lever 1.

#### **Lifting the sewing foot electropneumatically (pedal)**

- Depress pedal 2 half-way. The sewing feet are raised when the machine is stopped.
- Depress pedal 2 all the way. The thread trimmer will then be activated and the sewing feet will be raised.

### 3.11 Locking the sewing feet in an elevated position

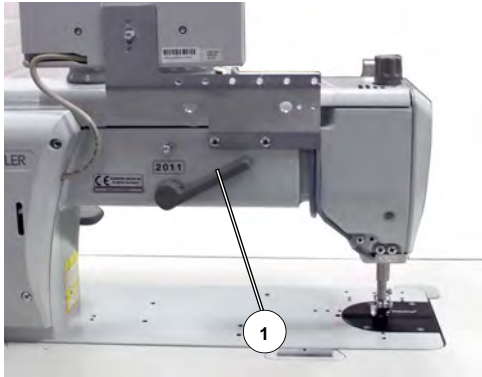


Fig. 14

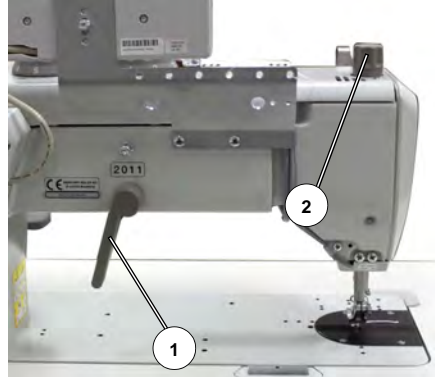


Fig. 15

- Swivel the lever 1 downwards. The sewing feet are locked in an elevated position.
  - Swivel the lever 1 upwards. The sewing feet are unlocked.
- or
- Lift the sewing feet pneumatically or by using the knee lever. The lever 1 then swivels back to its starting position.

### 3.12 Sewing foot pressure

The required sewing foot pressure is adjusted with rotary knob 2.



#### **CAUTION!**

The material should not "float".  
Do not set a higher pressure than is necessary.

- Increase the sewing foot pressure= turn the adjusting knob 2 clockwise
- Decrease the sewing foot pressure= turn the adjusting knob 2 counter-clockwise.

### 3.13 Sewing-foot stroke

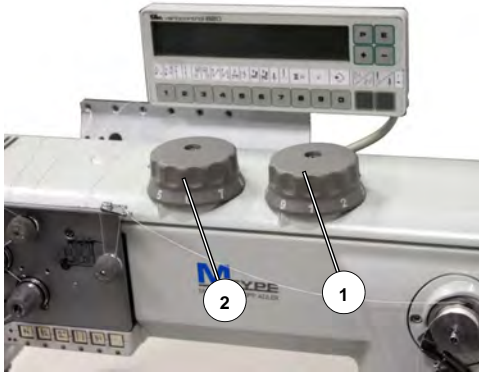


Fig. 16

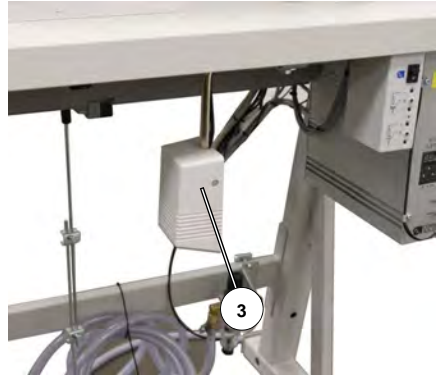


Fig. 17

Depending on the subclass, the 667 special sewing machine is equipped with two adjusting knobs as standard for adjusting the sewing-foot stroke.

Use the left adjusting knob 2 to select the standard sewing-foot stroke between 1 and 9 mm.

Use the right adjusting knob 1 to set a higher sewing-foot stroke between 1 and 9 mm.

- Turning adjusting knob 1 and 2 (1 to 9)  
1 = minimum sewing-foot stroke  
9 = maximum sewing-foot stroke

#### **Automatic stitch rate limit**

Machines without thread trimmer

The speed is not checked for these machines.

Please observe the information and table on the following page.

#### **Machines with thread trimmer**

The sewing-foot stroke and stitch count are interdependent. A potentiometer is mechanically connected to the adjusting knob. This potentiometer informs the control unit what foot-stroke has been set and automatically limits the sewing speed.

#### **Machines with electropneumatic rapid stroke adjustment**

When processing thick sections of material or when sewing over transversal seams, the higher sewing-foot stroke (adjusting knob 1) can be activated while sewing by using knee switch 3 underneath the table.

As is the case for machines with thread trimmers, a potentiometer is also used here.



#### **CAUTION: Risk of breakage!**

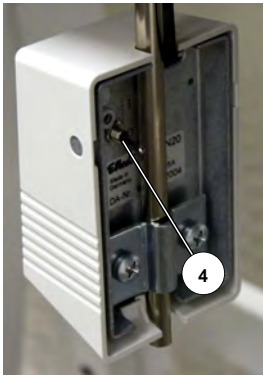
The standard sewing-foot stroke set with adjusting knob 2 should not be greater than the stroke set with adjusting knob 1.

**Operating mode for rapid stroke adjustment**

The activation time for the maximum sewing-foot stroke depends on which operating mode is set. You can select between three different operating modes.

The individual operating modes are determined by the setting of parameters F-138 and F-184 on the operating panel (see enclosed instructions from the motor manufacturer).

Operating mode	Operation / Explanation
<b>Spring return</b> F-138 = 0 F-184 = 0	The maximum sewing-foot stroke remains activate for as long as knee switch 3 is actuated.
<b>Toggle</b> F-138 = 1	The maximum sewing-foot stroke is activated when knee switch 3 is actuated. Actuating the knee switch again deactivates the maximum sewing-foot stroke.
<b>Spring return with minimum stitch count</b> F-138 = 0 F-184 0 < 100	The maximum sewing-foot stroke remains activate for as long as knee switch 3 is actuated. After releasing the knee switch, the machine continues to sew at the maximum sewing-foot stroke until the specified minimum stitch count (parameter F-184) is reached. Afterwards, sewing continues at the standard sewing-foot stroke.



**Note!**

The switch 4 on the rear of the knee switch 3 can also be used to switch between "toggle" and "spring return" modes.

**Note!**

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

Fig. 18

Subclass	Stitch range [mm]	Sewing-foot stroke Adjusting knob position	max. stitch count [rpm]
667-180010 667-180030 667-180112 667-180132 667-180312 667-180332	0 - 6	1 - 3 4 5 6 - 9	3000 2500 2100 1800
	6 - 9	1 - 4 5 6 - 9	2500 2100 1800



### 3.14 Adjusting the stitch length

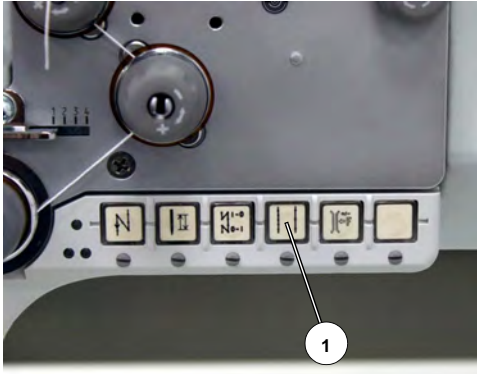


Fig. 19

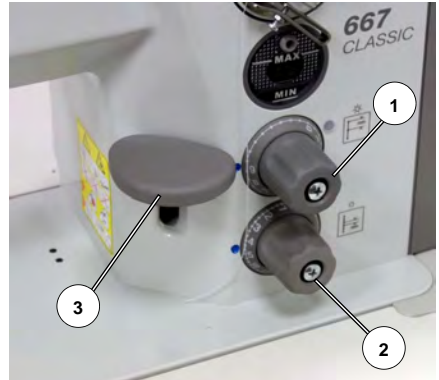


Fig. 20

Depending on the subclass, the 667 special sewing machines are equipped with two adjusting knobs. These allow two different stitch lengths to be used when sewing, which can be selected by using button 4 (see chapter 3.15).

The two adjusting knobs 1 and 2 on the machine arm are used to adjust the stitch lengths.

- Adjust the longer stitch length with the upper adjusting knob 1.  
Position 1 = min. stitch length Position 9 = max. stitch length
- Adjust the shorter stitch length with the lower adjusting knob 2.  
Position 1 = min. stitch length Position 9 = max. stitch length

The stitch lengths are equal for both forward and reverse sewing.

- Push the stitch regulator lever 3 down to manually sew bartacks.  
The machine will sew backwards for as long as the stitch regulator lever 3 is depressed.

#### Tip

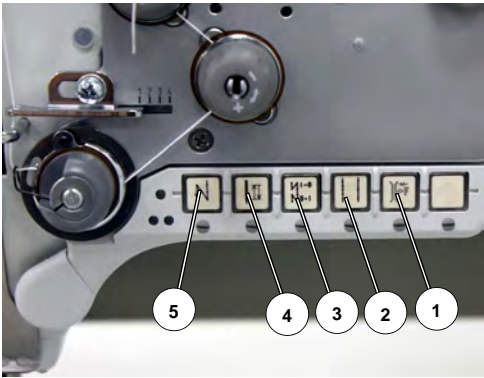
To adjust the stitch length more easily, the stitch length which is not to be adjusted should be activated by using button 2 (see chapter 3.15).



#### CAUTION: Risk of breakage!

The standard sewing-foot stroke set with adjusting knob 2 should not be greater than the stroke set with adjusting knob 1.

3.15 Key pad on the machine arm



Button	Function
1	Supplementary thread tension Illuminated button: Supplementary thread tension is activated. Non-illuminated button: Supplementary thread tension is not activated.
2	2nd stitch length Illuminated button: large stitch length (upper adjusting knob) is active Non-illuminated button: small stitch length (lower adjusting knob) is active
3	Invoke or suppress the start/final bartack. If the start and final bartacks are activated, then the next bartack is deactivated when the button is pressed. If the start and final bartacks are not activated, then the next bartack is activated when the button is pressed.
4	Move the needle to the upper or lower position. The function of the button can be set with parameter F-242. 1 = needle up/down 2 = needle up 3 = single stitch 4 = full stitch 5 = needle to position 2 The factory default setting is 1 (needle up/down).
5	Sew backwards manually. The machine sews backward stitches as long as the key 1 is being pushed.
8	LED display “power on”

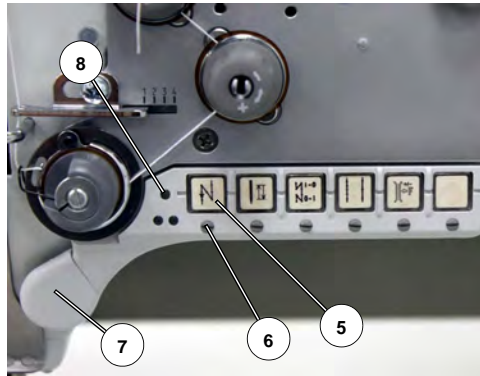


Fig. 21

Button 7 can be assigned a function by using the screws 6 located underneath the switches.

- Select a function. For example: 6 = sew backwards manually.
- Press in the screw underneath button 5 and turn 90° clockwise (the slot is vertical). This function can now be activated by using button 5 and button 7.

3.16 Sewing with machines using the Efka DC1550/DA321G positioning drive

The DA321G control unit contains all of the required operating elements for switching functions and setting parameters.  
It is possible to operate without an operating panel, however the seam programming function can no longer be used.  
The V810 and V820 operating panels can also be connected to the control unit and are available as optional equipment.  
Seam programming can be conducted with the V820 operating panel.  
For a more detailed description of the control unit please refer to the "Efka DC1550 – DA321G" operating manual (also visit [www.efka.net](http://www.efka.net)).

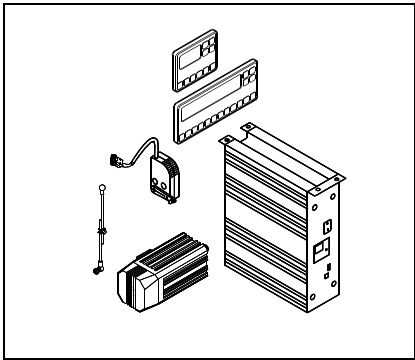


Fig. 22

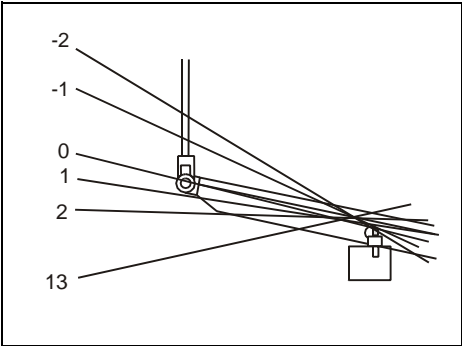


Fig. 23

**With pedal**

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

Pedal position	Pedal movement	Meaning
-2	Completely backwards	Command for cutting the thread (end of seam)
-1	Halfway back	Command for lifting the sewing foot
0	Rest position, inoperative position	Refer to the note below
1	Slightly forwards	Command for lowering the sewing foot
2	Further forwards	Sew with minimum speed (1st level)
3	Further forwards	Sew - 2nd speed level
:::		
13	All the way forwards	Sew with maximum speed (12th speed level)

**Note**

The following functions can be pre-programmed to correspond with the rest position of the pedal:

- Needle position (down/up) and sewing-foot position (down/up) when stopping in the seam.
- Sewing-foot position (up/down) after end of seam. (Pedal fully backwards, then in rest position).

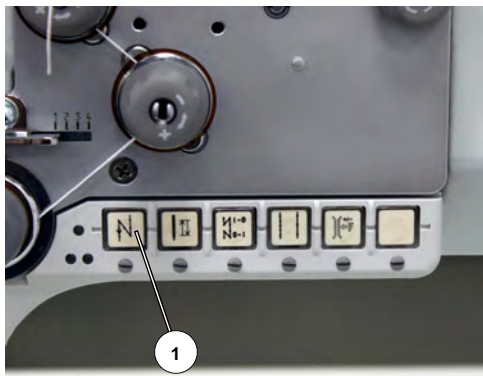


Fig. 24

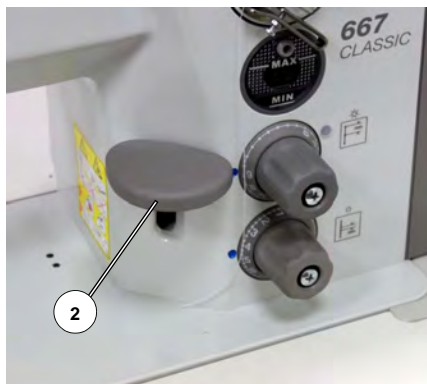


Fig. 25

Sewing operation, sewing action	Operation / Explanation
<b>Prior to sewing</b>	
Starting position	<ul style="list-style-type: none"> <li>– Pedal in rest position. The sewing machine is at a stop. Needle up. Sewing foot down.</li> </ul>
Position material at seam start.	<ul style="list-style-type: none"> <li>– Depress pedal halfway. The sewing foot raises.</li> <li>– Position the material.</li> <li>– Release pedal. The sewing foot lowers onto the material.</li> </ul>
<b>Sewing</b>	<ul style="list-style-type: none"> <li>– Press and hold the pedal in a forward position. The machine then continues to sew with the speed determined by the pedal.</li> </ul>
<b>In mid-seam</b>	
Interrupt sewing procedure	<ul style="list-style-type: none"> <li>– Release pedal (return to rest position). The machine stops in the 1st position (needle down). The sewing foot is down.</li> </ul>
Continue sewing procedure (after releasing the pedal)	<ul style="list-style-type: none"> <li>– Press and hold the pedal in a forward position. The machine then continues to sew with the speed determined by the pedal.</li> </ul>
Sewing an intermediate bartack	<ul style="list-style-type: none"> <li>– Press the stitch regulator lever 2 downwards. The machine sews in reverse for as long as the stitch regulator lever is depressed. The speed is determined by the pedal.</li> </ul> <p>or</p> <ul style="list-style-type: none"> <li>– Press button 1.</li> </ul>
Sewing over transverse seams (maximum sewing-foot stroke)	<p>The maximum sewing-foot stroke is activated. The speed is limited to 1600 rpm. Operating modes for the maximum sewing-foot stroke:</p> <ul style="list-style-type: none"> <li>– Briefly press the knee switch to activate the maximum sewing-foot stroke.</li> <li>– Briefly press the knee switch again to deactivate the maximum sewing-foot stroke.</li> </ul>

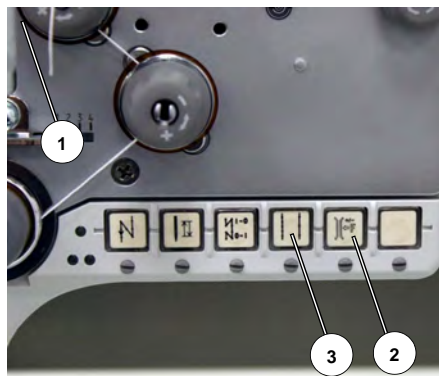


Fig. 26

Sewing operation, sewing action	Operation / Explanation
2nd stitch length during sewing (maximum stitch length)	– Press button 3.
Increase the thread tension during the sewing process	– Press button 2.
<b>At the seam end</b> Remove the material	– Fully depress and hold the pedal. The final bartack is sewn (if activated). The threads are cut (if activated)*. The machine stops in the 2nd position. The needle is up. The sewing foot is down. – Remove the material.

## 4 Maintenance

### 4.1 Cleaning and inspection



**Caution: Risk of injury!**

Switch off the main switch.

The maintenance of the sewing machine must only be done when the machine is switched off.

Maintenance work must be carried out no less frequently than the specified intervals (see "operating hours" column)

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

A clean sewing machine is a trouble-free sewing machine.

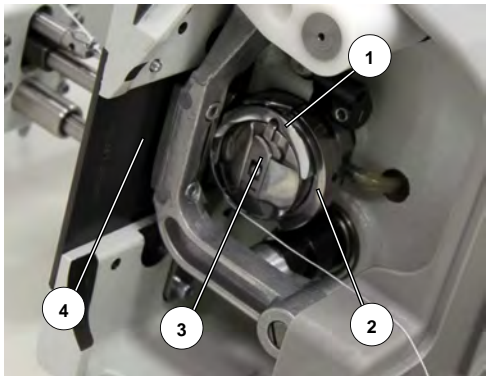


Fig. 27

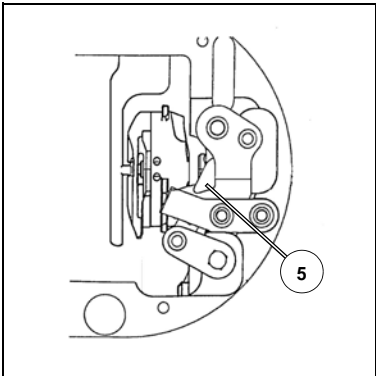


Fig. 28

Maintenance work to be conducted	Explanation	Operating hours
Machine head  – Remove any sewing dust and thread waste (e.g. with a compressed air gun)	Areas that particularly require cleaning: – Area underneath the needle plate 4 – Area around the hook 2 – Bobbin case 3 and interior – Thread trimmer 5 – Area around the needle	8



Fig. 29

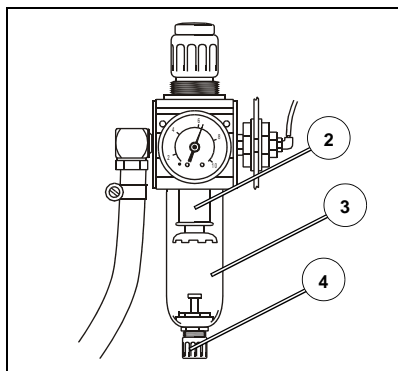


Fig. 30

Maintenance work to be conducted	Explanation	Operating hours
<b>Direct drive</b> <ul style="list-style-type: none"> <li>– Clean motor fan filter 1 (e.g. with a compressed air gun)</li> </ul>	<ul style="list-style-type: none"> <li>– Clean motor fan filter 1 of sewing dust.</li> <li>– Reinsert the basket and filter.</li> </ul>	8
<b>Pneumatic system</b> <ul style="list-style-type: none"> <li>– Check the water level in the pressure regulator.</li> <li>– Clean the filter insert.</li> </ul>	<p>The water level should not rise as far as filter insert 2.</p> <ul style="list-style-type: none"> <li>– Drain water from the water separator 3 under pressure after screwing in the drain screw 4.</li> </ul> <p>Dirt and condensed water are discharged through the filter insert 2.</p> <ul style="list-style-type: none"> <li>– Disconnect the machine from the compressed air supply.</li> <li>– Unscrew the bleed screw 4. The pneumatic system of the machine must be depressurised.</li> <li>– Unscrew the water separator 3.</li> <li>– Unscrew the filter insert 2. Wash out the contaminated filter pan and filter insert with benzene (not solvent!) and blow them clean.</li> <li>– Reassemble the maintenance unit.</li> </ul>	<p>40</p> <p>500</p>
<ul style="list-style-type: none"> <li>– Check the tightness of the system</li> </ul>		500



4.2 Oil lubrication

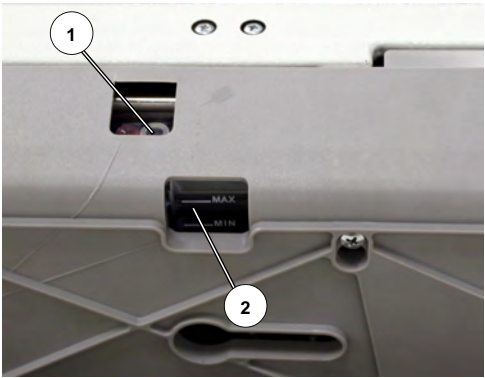


Fig. 31

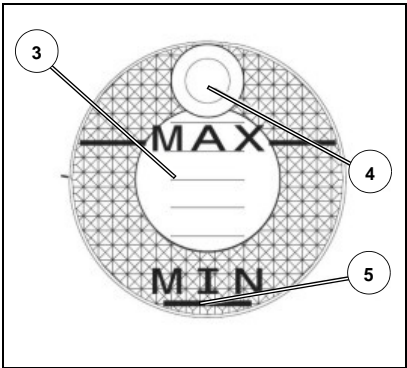


Fig. 32



**Caution: Risk of injury!**

Oil can cause skin rashes.  
Avoid prolonged contact with your skin.  
Wash thoroughly after contact.

**CAUTION!**

The handling and disposal of mineral oils is subject to legal regulations.  
Transfer used oil to an authorised collection point.  
Protect the environment.  
Take care not to spill any oil.

To lubricate the sewing machine only use the lubricating oil **DA-10** or an equivalent oil with the following specifications:

Viscosity at 40° C:10 mm²/s

Ignition point:150° C

**DA -10** can be purchased from **DÜRKOPP ADLER AG** retail outlets under the following part numbers:

250 ml container: 9047 000011

1 litre container: 9047 000012

2 litre container: 9047 000013

5 litre container: 9047 000014

Maintenance work to be conducted	Explanation	Operating hours
Lubrication of the machine head	The sewing machine is equipped with a central oil wick lubrication. All bearings (apart from the hook) are supplied by the oil reservoir 3. <ul style="list-style-type: none"><li>– The oil level must not drop below the "MIN" mark 5.</li><li>– Fill oil through the hole 4 in the inspection window up to the "MAX" mark.</li></ul>	40
Hook lubrication	<ul style="list-style-type: none"><li>– Swing up sewing machine head.</li><li>– Check the oil level through inspection window 2.</li><li>– Fill the oil reservoir with oil through plug 1.</li><li>– The necessary oil quantity for the correct lubrication of the hook is factory set by the manufacturer.</li></ul>	8



## Part 2: Installation Instructions Class 667

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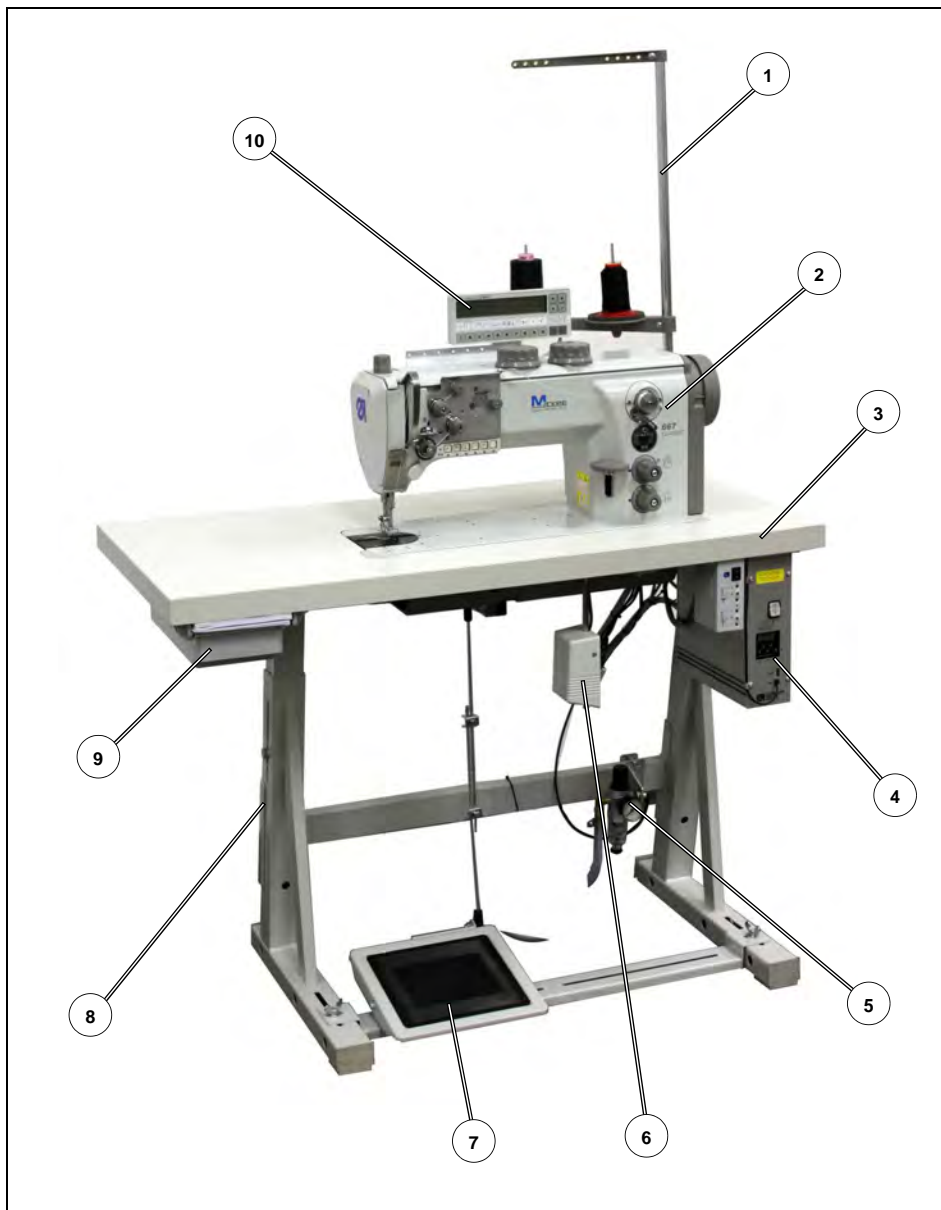


Abb. 1

## 1 Scope of delivery

The items supplied **depend on your order**.

Before setting up the machine please check to make sure all of the required parts are present.

This description refers to the special sewing machine whose individual components are delivered directly and completely from **Dürkopp Adler**.

- 2 Machine head

### **Dürkopp Adler accessory set with:**

- 1 Reel stand
- Protective cover (not shown)

### **Controller parts set, complete:**

- 4 Control unit
- 10 Control panel

### **Optional equipment**

- 8 Stand with table plate 3 and drawers 9
- 7 Pedal and pedal linkage
- 6 Knee switch
- 5 Maintenance unit with connection hose

## 2 General information and transport packaging



### **CAUTION!**

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

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

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

### 3 Assembling the stand and table plate

#### 3.1 Assembling stand MG 55-3

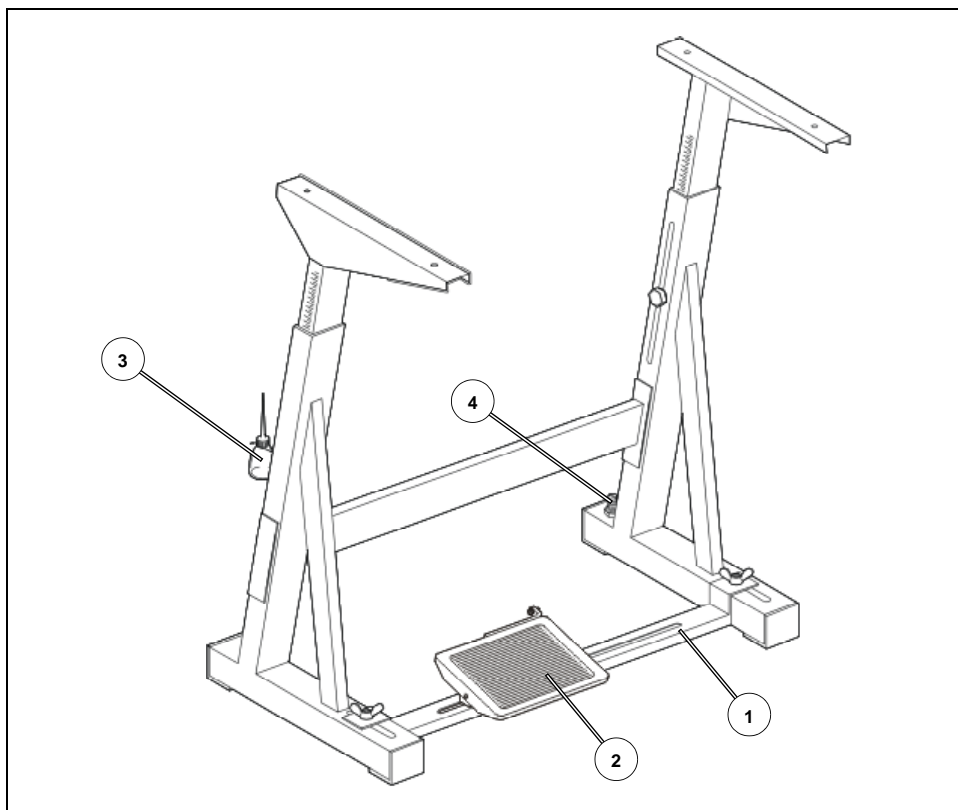


Fig. 2

- Assemble the stand in accordance with the illustration.
- Fasten the pedal 2 to the stand brace 1.
- Affix the stand brace 1 to the stand.
- Align the pedal after assembling the entire machine (see chapter 3.4).
- Screw on the holder for the oil can 3.
- Turn the adjusting screw 4 to ensure the stability of the stand. The stand must rest with all four feet on the floor.

### 3.2 Completing the table plate for the MG 55-3 stand with direct drive

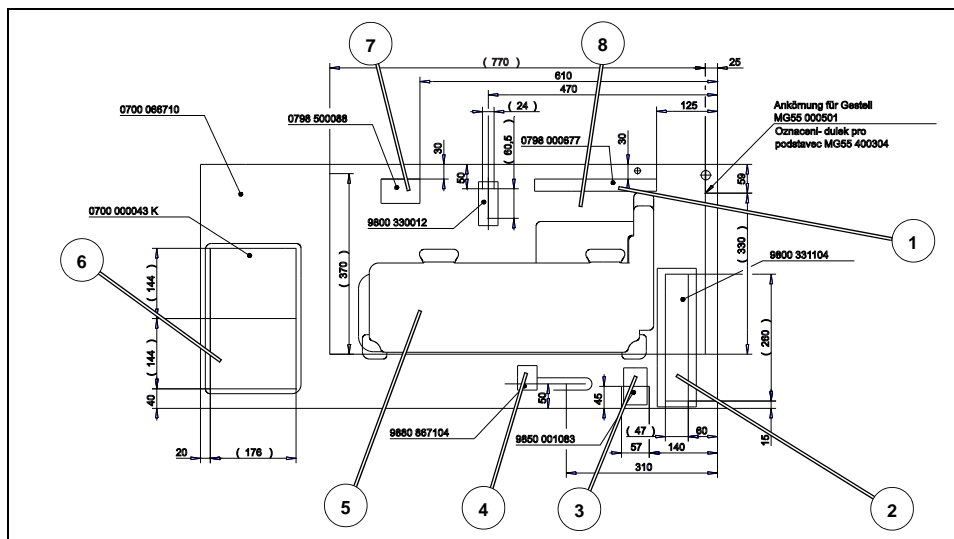


Fig. 3

- Turn over the table plate 8.
- Screw on the cable channel 1.
- Screw on the motor control unit 2.
- Screw on the power supply unit 3 (optional equipment).
- Screw on the knee switch 4 for the sewing-foot stroke.
- Screw on the set value initiator 5.
- Screw on the drawer 6 together with its fixtures.
- Screw on the sewing light transformer 7 (optional equipment).
- Assemble the electrical cable according to (see chapter 4) in these instructions.

A larger scale illustration is available at the end of the manual.

### 3.3 Creating the table plate

If you are creating the table plate yourself, please refer to the illustrations at the end of this manual for the measurements.

### 3.4 Fastening the table plate to the stand

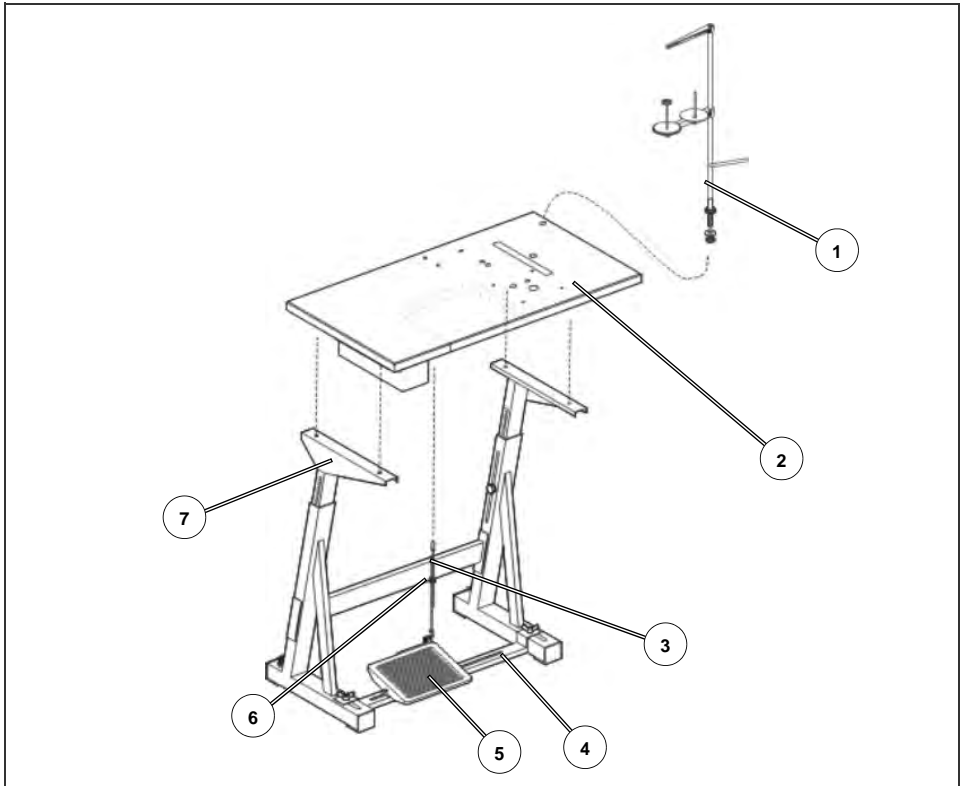


Fig. 4

- Fasten stand 7 to table plate 2 by using wood screws (6x30). Pre-drill the holes for the wood screws.
- Observe the centre mark for the stand (siehe Kapitel 3.2).
- Turn the stand 7 to its normal position.
- Attach the rod 3 to the pedal 5 and set value initiator.
- For ergonomic reasons align laterally the pedal 5 as follows: The centre of the pedal must be approximately under the needle. Slots are provided in the stand brace 4 to help align the pedal.
- Loosen screw 6.
- Adjust the height of the pedal linkage so that, when released, the pedal is at an angle of approx. 10°.
- Tighten screw 6.
- Insert the reel stand 1 into the drilled hole in the table plate and secure in place with a nut and washer.
- Mount and align the reel holder and unwinder arm.
- The reel holder and unwinder arm must be positioned on top of each other.



### 3.5 Adjusting the working height

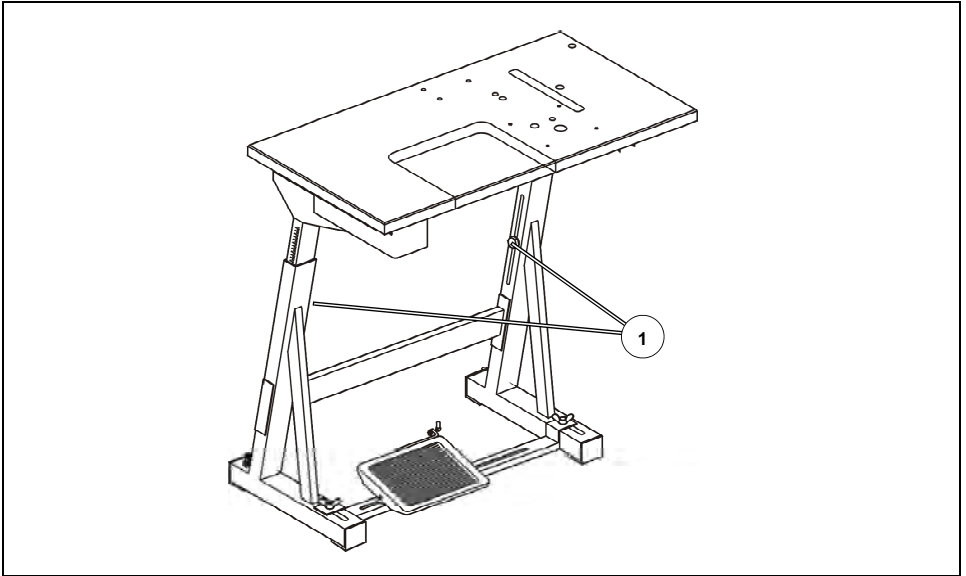


Fig. 5

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

### 3.6 Fitting the machine head

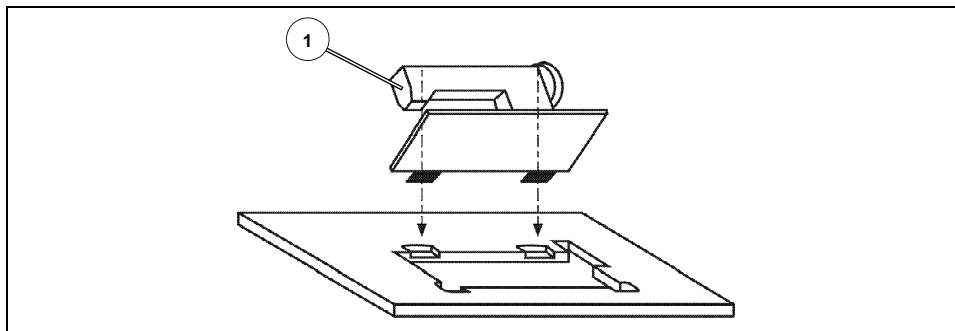


Fig. 6

- Fit the machine head 1 into the opening in the table plate.

### 3.7 Attaching the knee lever

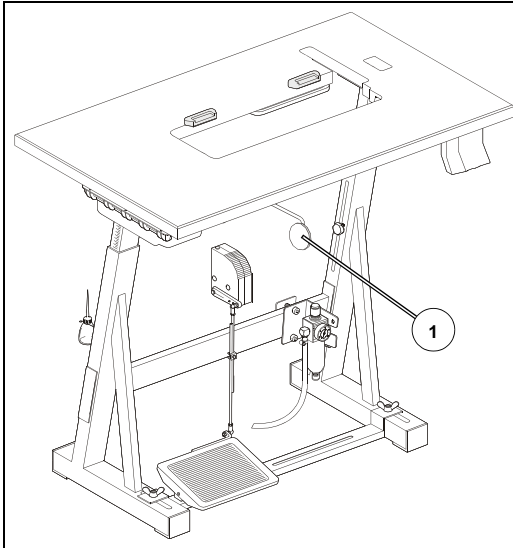


Fig. 7

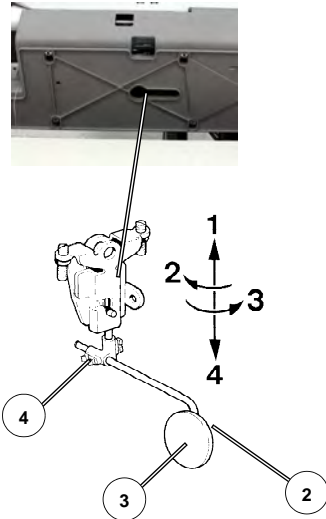


Fig. 8

The knee lever 1 mechanically raises the sewing foot.

- Attach the knee lever 1.
- Loosen the screws on the joint 4.
- Adjust the knee lever so that it can be conveniently operated with the right knee.
- Tighten the screws on joint 4 again.
- Loosen screw 2.
- Align the knee-pad 3.
- Tighten screw 2 again.



#### **Caution!**

Before turning the machine head first unhook the knee lever 1.

### 3.8 Mounting the control panel

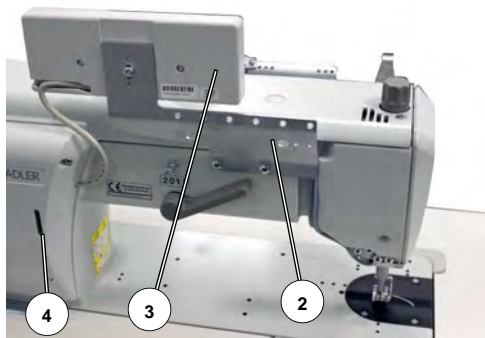


Fig. 9

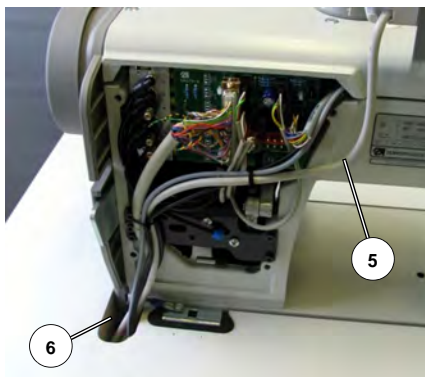


Fig. 10

- The machine arm is provided with two threaded holes for attaching the control panel.
- Secure the external control panel 3 to the arm by using the mounting bracket 2 and two screws.
- Remove the valve cap 4.
- Route the power supply cable 5 for the control panel along the arm and downwards through the opening in the table plate 6.
- Insert the connection plug into the B776 socket of the drive control.
- Mount the valve cap 4.

### 3.9 Fitting the sewing light and sewing light bracket (optional equipment)

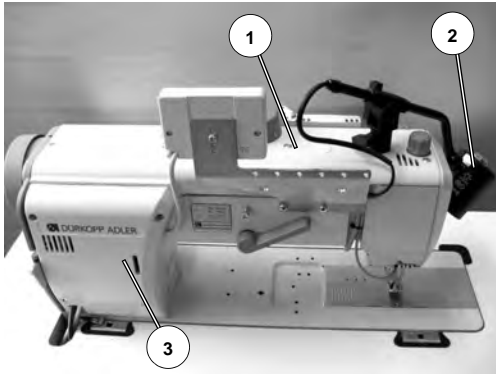


Fig. 11

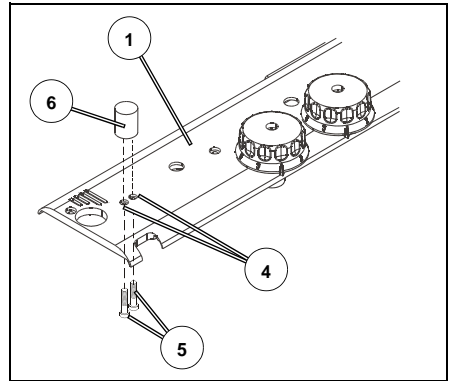


Fig. 12

The sewing light 2 is mounted on the arm cover 1.

- Unscrew the arm cover 1.
- Use a 4.5 mm Ø bit to drill the mounting holes 4.
- Screw the retainer piece 6 in place by using the screws 5.
- Screw the arm cover back on.
- Fix the sewing light 2 to the retainer piece 6.
- Remove the valve cap 4.
- Electrical connection (see chapter 4.5.2).

## 4 Electrical connection

### 4.1 General



#### Caution!

All work on the electrical equipment of this special sewing machine may only be carried out by qualified electricians or other appropriately trained persons. The mains plug must be removed during any work on the electric equipment!

### 4.2 Establishing equipotential bonding

#### 4.2.1 Machine head



Fig. 13

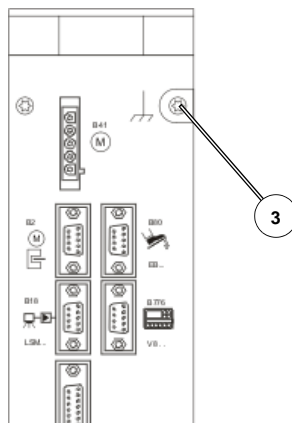


Fig. 14

The earthing cable 2 is included in the machine's accessory pack. The earthing cable 2 discharges static charge from the machine head to the earth via the control box.

- Connect the earthing cable 2 to the flat connector 1 (already screwed onto the machine head) and then route it through the cable duct to the control box.
- Screw the earthing cable 2 to the control box by using screw 3.
- The earthing cable 2 should also be fastened underneath the table plate with nail clips.

### 4.2.2 Knee switch

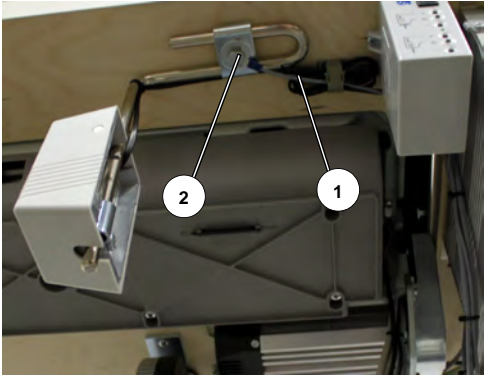


Fig. 15

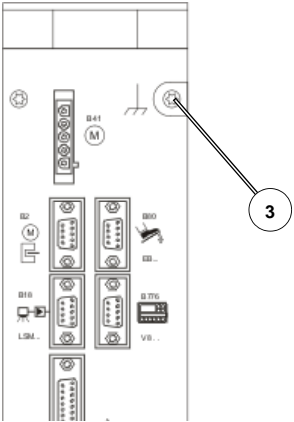


Fig. 16

- Secure the large eyelet on the earthing cable 1 to the knee switch by using screw 2.
- Screw the earthing cable 1 to the control box by using screw 3.

### 4.3 Connecting the DA321G control unit

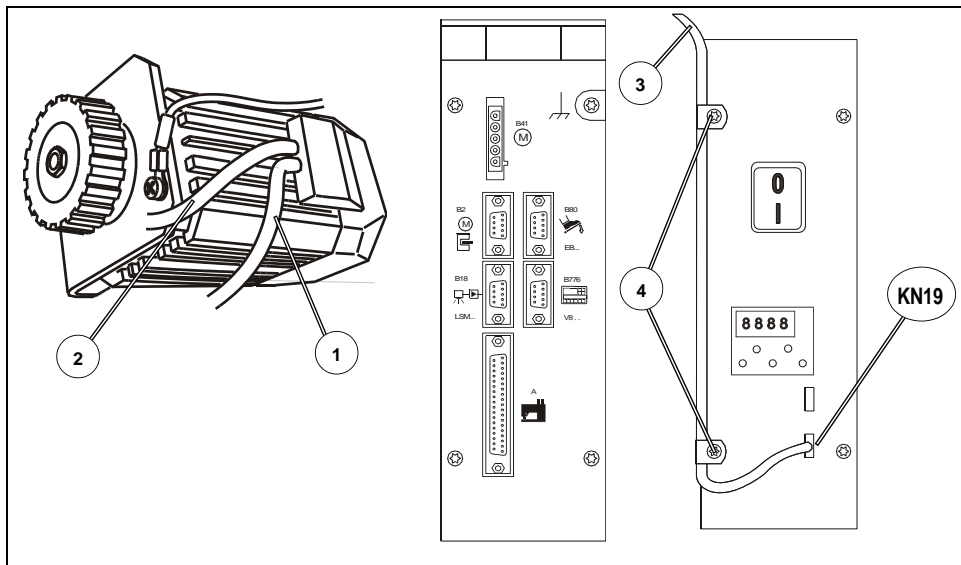


Fig. 17

Fig. 18

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

### 4.4 Connecting the knee switch

- Insert the knee switch cable 3 into the KN19 socket on the front.
- Use the clips 4 to secure the cable 3 in place (667-180312 and 667-180332 only).



#### 4.5 Attaching and connecting the sewing light transformer (optional equipment)



Fig. 19



##### **Caution!**

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

- Remove the special machine's mains plug!
- Route the mains cable 1 of the sewing light transformer 2 through the cable duct 3 and up to the main switch.

It is connected to the mains-connection side of the main switch (or motor-protection switch).

- See connecting diagram 9800 169002B.
- Stick the adhesive label with the safety instructions onto the front of the main switch.

#### 4.5.1 Connecting the sewing light transformer to the DA321G control unit

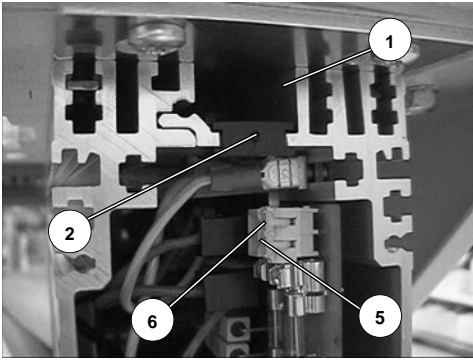


Fig. 20

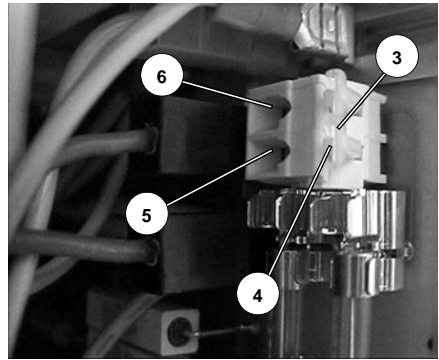


Fig. 21

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

#### 4.5.2 Connecting the sewing light to the transformer

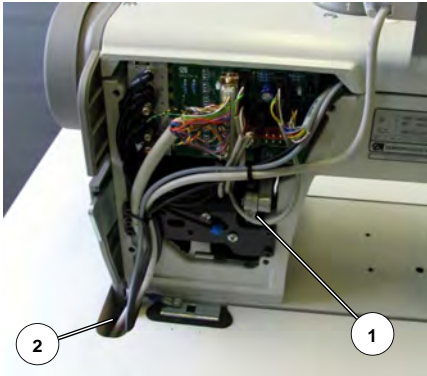


Fig. 22



Fig. 23

- Insert the sewing light's supply cable into machine arm 1.
- Pass the connecting cable downwards through the opening in the table plate 2.
- Reassemble the valve cap.
- Attach the sewing light's connecting cable underneath the table plate with cable clips.
- Establish a connection to the cable of the sewing-light transformer 3.

## 4.6 Setting machine-specific parameters

### 4.6.1 General information

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

### 4.6.2 Autoselect

The control unit detects which machine series is connected by measuring the Autoselect resistance in the machine. Autoselect selects control functions and the pre-set parameter values.



#### **Caution!**

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

- According to the corresponding parameter sheet (9800 331104 PB 53) the correct machine class is to be set with parameter F-290.

## 5 Pneumatic connection

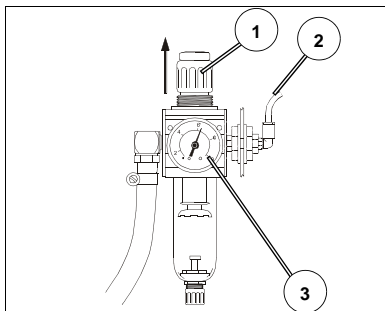


Fig. 24



Fig. 25

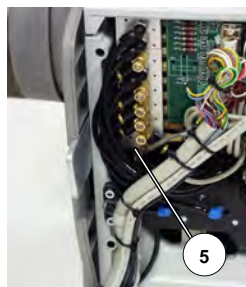


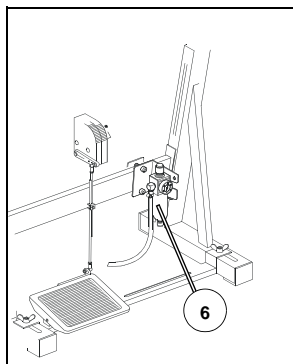
Fig. 26



### Caution!

The pneumatic units will only operate properly at a supply pressure of 8 to 10 bar.

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



### Pneumatic-connection pack

A pneumatic-connection pack for stands with compressed-air maintenance units is available under the Order No. 0797 003031.

It contains the following components:

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

### Connecting the compressed-air maintenance unit

- Attach the compressed-air maintenance unit 6 with bracket, screws and strap to the stand-brace.
- Connect the maintenance unit 6 to the compressed-air supply by using a connection hose 5 ( $\varnothing = 9$  mm) and hose coupling R1/4".

### Connecting the compressed-air maintenance unit to the machine head

- Unscrew the cover 4.
- Connect hose 2 (in the accessory pack) to the distributor plate 5 on the machine head.
- Fix the cover 4.

### Adjusting the operating pressure

- The operating pressure is 6 bar. It can be read by using the pressure gauge 3.
- To adjust the operating pressure lift and turn the handle 1.  
Increase pressure = turn handle 1 clockwise.  
Decrease pressure = turn handle 1 counter-clockwise
- Press the handle 1.

## 5.1 Pneumatic sewing foot lift

See Instructions 0791 867704.

## 6 Lubrication



Fig. 27

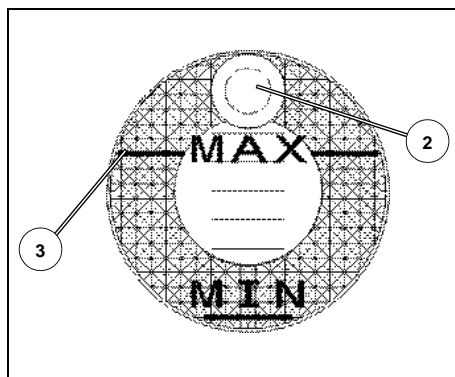


Fig. 28



### Caution: Risk of injury!

Oil can cause skin rashes.  
Avoid prolonged contact with your skin.  
Wash thoroughly after contact.



### CAUTION!

The handling and disposal of mineral oils is subject to legal regulations.  
Dispose of used oil at an authorised collection point.  
Protect the environment.  
Take care not to spill any oil.

To lubricate the sewing unit only use **DA 10** lubricating oil or an equivalent oil with the following specifications:

Viscosity at 40° C: 10 mm²/s

Ignition point: 150° C

**DA 10** can be purchased from **DÜRKOPP ADLER AG** retail outlets under the following part numbers:

250 ml container: 9047 000011

1 litre container: 9047 000012

2 litre container: 9047 000013

5 litre container: 9047 000014

### Lubrication of the machine head (first filling)

#### Tip

All wicks and felts are saturated with oil prior to delivery. This oil is returned to the oil reservoir 1.

Do not overfill the container.

- Top up the oil reservoir 1 through the hole 2 up to the "MAX" mark 3.

## 7 Sewing test

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

- Plug the mains cable into the socket.



**Caution: Risk of injury!**

Switch off the main switch.

The needle and hook threads may only be threaded with the sewing machine switched off.

- Thread in the bobbin thread.
- Turn on the main switch.
- Lock the sewing foot in an elevated position.
- Fill the bobbin at medium speed.
- Switch off the main switch.
- Thread in the needle and hook thread (see operating instructions).
- Select the material to be processed.
- Carry out the sewing test, first at low speed and then gradually increasing it.
- Check to make sure the seams are of the required quality. If not, alter the thread tensions (see the corresponding section in the operating instructions). If necessary, the settings specified in the service instructions should also be checked and corrected.

