

867

Spezialnähmaschine

Serviceanleitung

D

[Service instructions](#)

GB

General safety instructions

The non-observance of the following safety instructions can cause bodily injuries or damages to the machine.

1. The machine must only be commissioned in full knowledge of the instruction book and operated by persons with appropriate training.
2. Before putting into service also read the safety rules and instructions of the motor supplier.
3. The machine must be used only for the purpose intended. Use of the machine without the safety devices is not permitted. Observe all the relevant safety regulations.
4. When gauge parts are exchanged (e.g. needle, presser foot, needle plate, feed dog and bobbin) when threading, when the workplace is left, and during service work, the machine must be disconnected from the mains by switching off the master switch or disconnecting the mains plug.
5. Daily servicing work must be carried out only by appropriately trained persons.
6. Repairs, conversion and special maintenance work must only be carried out by technicians or persons with appropriate training.
7. For service or repair work on pneumatic systems, disconnect the machine from the compressed air supply system (max. 7-10 bar). Before disconnecting, reduce the pressure of the maintenance unit.
Exceptions to this are only adjustments and functions checks made by appropriately trained technicians.
8. Work on the electrical equipment must be carried out only by electricians or appropriately trained persons.
9. Work on parts and systems under electric current is not permitted, except as specified in regulations DIN VDE 0105.
10. Conversion or changes to the machine must be authorized by us and made only in adherence to all safety regulations.
11. For repairs, only replacement parts approved by us must be used.
12. Commissioning of the sewing head is prohibited until such time as the entire sewing unit is found to comply with EC directives.

Service instructions class 867

1. General notes	
1.1 Gauges	3
1.2 Description of the locking positions	4
1.3 Graduation on the handwheel	5
2. Sewing machine	
2.1 Position of the arm shaft crank on the arm shaft	6
2.2 Upper and lower toothed belt wheel / toothed belt	7
2.2.1 Position of the upper toothed belt wheel	7
2.2.2 Position of the lower toothed belt wheel	8
2.3 Bottom feed and stitch regulator gear.	9
2.3.1 Basic setting of stitch adjustment	9
2.3.2 Adjust the 2nd stitch length.	11
2.3.3 Position of the feed dog in the throat plate cutout	12
2.3.4 Feeding motion of the feed dog	14
2.3.5 Lifting motion of the feed dog.	15
2.3.6 Feed dog height	16
2.3.7 Balance weight	17
2.4 Transmission lever	18
2.5 Needle bar linkage	19
2.5.1 Align the needle bar linkage laterally	19
2.5.2 Needle penetration in feeding direction	20
2.6 Hook, looping stroke and needle bar height	21
2.6.1 Looping stroke	21
2.6.2 Needle bar height.	22
2.6.3 Distance between hook and needle	23
2.6.4 Needle guard	24
2.7 Bobbin case opening.	25
2.7.1 General.	25
2.7.2 Setting of the bobbin case opening	25
2.7.3 Timing of opening.	27
2.8 Feeding foot and fabric presser foot	28
2.8.1 Feeding foot and presser foot stroke	28
2.8.2 Stroke motion of the feeding foot	29
2.8.3 Sewing foot pressure	30
2.9 Stitch length limitation	31
2.10 Stitch equality of the forward and backward stitch	32
2.11 Sewing foot lifting.	33
2.11.1 Mechanical sewing foot lift	33
2.11.2 Height of the sewing feet arrested with hand lever	34
2.11.3 Height of the lifted sewing feet	35
2.12 Thread-guiding parts.	36
2.12.1 Thread regulator	36

2.12.2 Thread take-up spring	37
2.13 Bobbin winder	38
2.14 Thread trimmer	40
2.14.1 General.	40
2.14.2 Thread pulling knife	41
2.14.3 Counter-knife and lower thread clamp	42
2.14.4 Cutting position with machines having needle repositioning	44
2.14.5 Cutting position with machines without needle repositioning	45
2.15 Potentiometer in the arm	46
2.15.1 Basic setting without control panel	46
2.15.2 Basic setting with the control panel V810 or V820	47
2.15.3 Check the potentiometer adjustment	48
2.16 Oil lubrication	49
2.16.1 Hook lubrication	50
2.17 Maintenance.	51

1. General notes

The present service instructions describes the adjustment of the special sewing machine 867.



ATTENTION !

The operations described in the service instructions must only be executed by qualified staff or correspondingly instructed persons respectively!



Caution: Danger of injury !

In case of repair, alteration or maintenance work turn off the main switch and disconnect the machine from the pneumatic supply system. Carry out adjusting operations and functional tests of the running machine only under observation of all safety measures and with utmost caution.

The present service instructions describes the adjustment of the sewing machine in an appropriate sequence. Please observe in this connection that various setting positions are interdependent. Therefore it is absolutely necessary to do the adjustment following the described order.

GB

For all setting operations of parts involved in the stitch formation a new needle without damage has to be inserted.

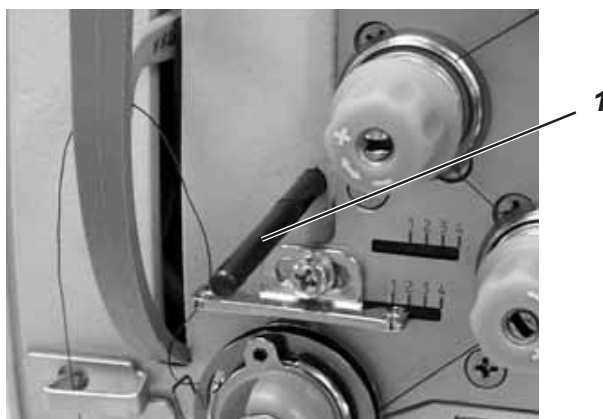
Machine covers having to be screwed off and on again for checking and adjusting operations are not mentioned in the text.

Hint:

Some of the shafts of the special sewing machine 867 are provided with flat spots. This facilitates the adjustment considerably.

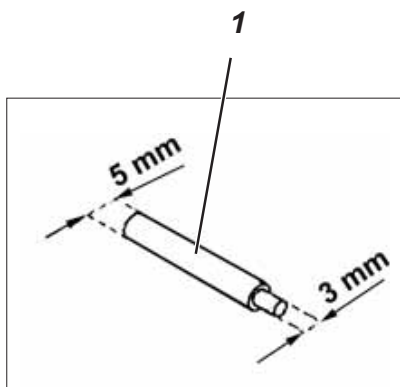
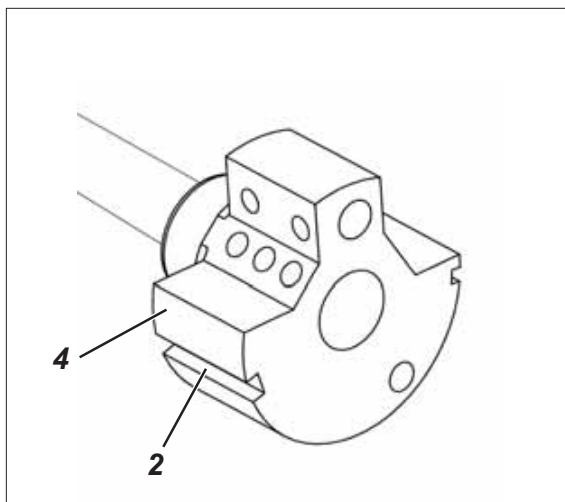
In case of all adjustments on flat spots the first screw in rotation direction is put on such a flat spot.

1.1 Gauges



The locking pin 1 required for adjusting the machine belongs to the serial equipment of the machine. It is in the accessories and can be put at the bottom side of the oil pan.

1.2 Description of the locking positions



With the locking pin 1 and the arresting grooves 2 and 3 in the arm shaft crank 4 the sewing machine can be arrested in two adjusting positions.

Position I = Locking pin \varnothing 5 mm for large groove
= Looping stroke, needle bar height

Position II = Locking pin \varnothing 3 mm for small groove
= Needle bar at its upper dead center, Graduation on the handwheel

1.3 Graduation on the handwheel



The handwheel 2 has graduation printed on it.

Certain settings shall be done following to the position of the handwheel.

- Turn the handwheel until the degree mark mentioned in this manual points to the index 3.
- Carry out the described adjustment.

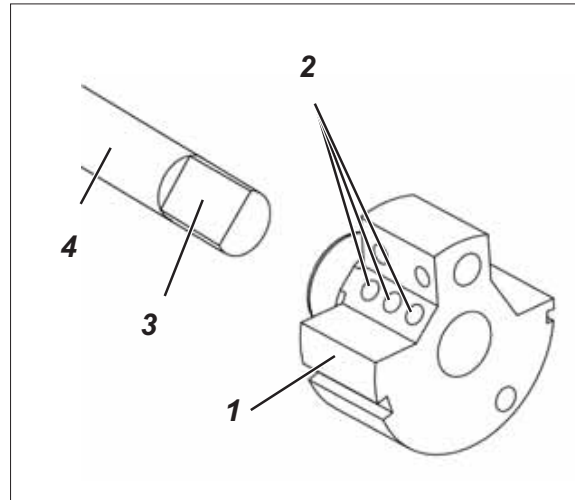
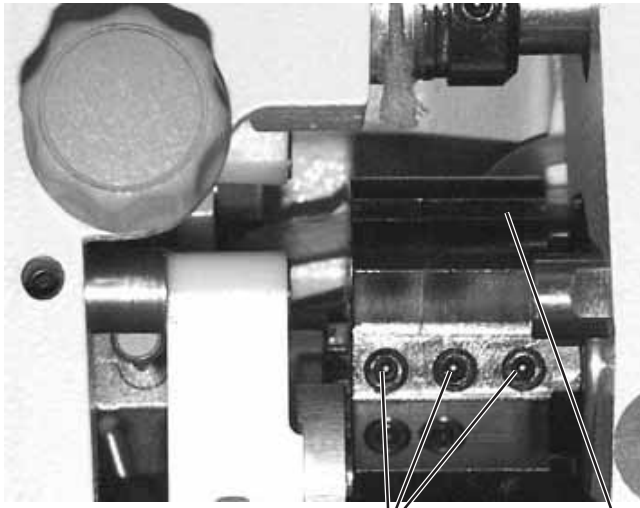
GB

Setting the Handwheel

- Arrest the machine in position II by using the locking pin \varnothing 3 mm.
- Loosen the fastening screw for the handwheel through opening 1.
- Turn the handwheel so that the degree mark "0" points to the index 3.
- Tighten the fastening screw again.
- Set the handwheel to 50° and tighten the second fastening screw.

2. Sewing machine

2.1 Position of the arm shaft crank on the arm shaft



2

1



Caution: Danger of injury !

Turn the main switch off !

Check and set the position of the arm shaft crank only when the machine is switched off.

Standard checking

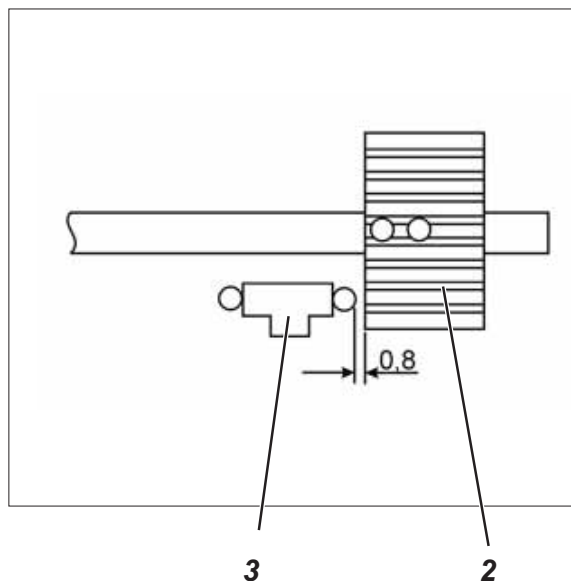
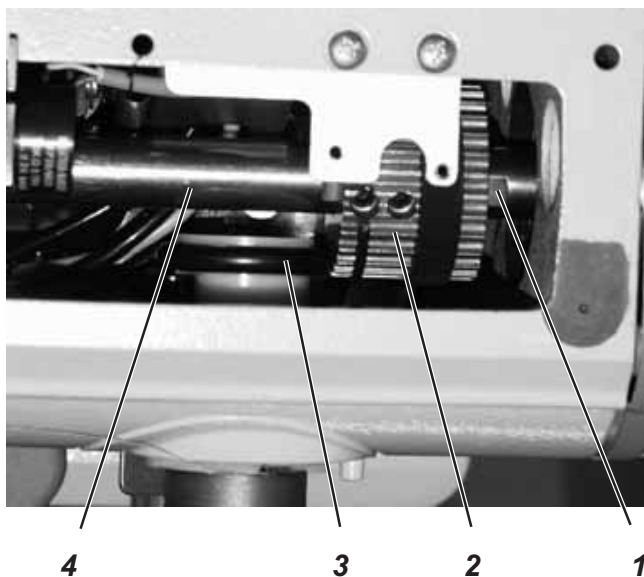
The arm shaft crank 1 is fastened on the arm shaft 4 with the three screws 2. The screws must sit on the flat spot 3.

Correction

- Loosen screws 2 at the arm shaft crank.
- Twist arm shaft crank 1 on the shaft in such a way that the screws 2 sit on the flat spot 3.
- Push arm shaft crank 1 axially to the right as far as it will go.
- Tighten screws 2.

2.2 Upper and lower toothed belt wheel / toothed belt

2.2.1 Position of the upper toothed belt wheel



Caution: Danger of injury !

Turn the main switch off !

Check and set the position of the upper toothed belt wheel only with the sewing machine switched off.

GB

Standard checking

The toothed belt wheel 2 is fastened on the arm shaft 4 with two screws. The screws must sit on the flat spot 1.

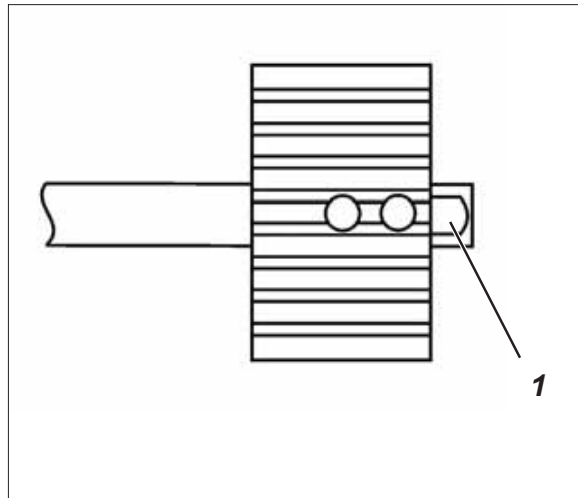
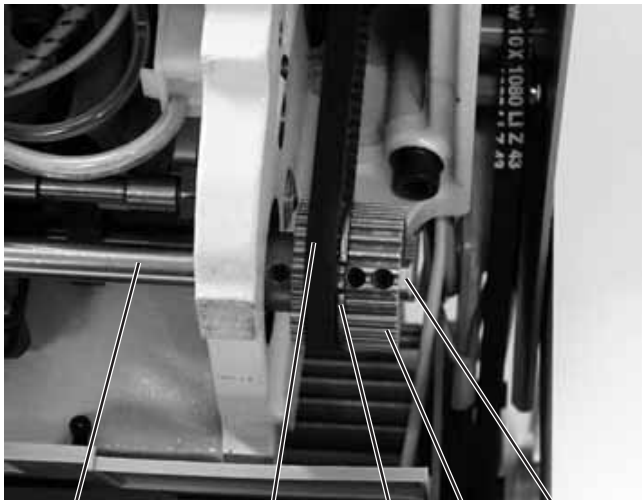
The distance between the toothed belt wheel 2 and the bobbin winder wheel 3 must amount to 0.8 mm when the bobbin winder is switched off.

- Check distance between toothed belt wheel 2 and bobbin winder wheel 3 by means of a thickness gauge.

Correction

- Loosen the threaded pin in the toothed belt wheel.
- Turn the toothed belt wheel, until the screws sit on the flat spot 1 of the arm shaft 4.
- Set lateral distance of 0.8 mm between toothed belt wheel 2 and bobbin winder wheel 3 using the thickness gauge.
- Tighten the threaded pin in the toothed belt wheel.

2.2.2 Position of the lower toothed belt wheel



Caution: Danger of injury !

Turn the main switch off !

Check and set the position of the lower toothed belt wheel only with the sewing machine switched off.

Standard checking

The screws in the toothed belt wheel 2 must sit on the flat spot 1 of the lower shaft 5.

The toothed belt wheel must be positioned in a way that the toothed belt 4 bears against the belt tensioner ring 3 without being dislocated.

- Check the position of the toothed belt wheel.

Correction

- Pull out the toothed belt from the lower toothed belt wheel.
- Loosen the threaded pin in the toothed belt wheel.
- Turn the toothed belt wheel 1, until the screws sit on the flat spot of the lower shaft 5.
- Tighten the threaded pin in the toothed belt wheel 1.
- Put the toothed belt on the toothed belt wheel again.
- Check the course of the toothed belt.

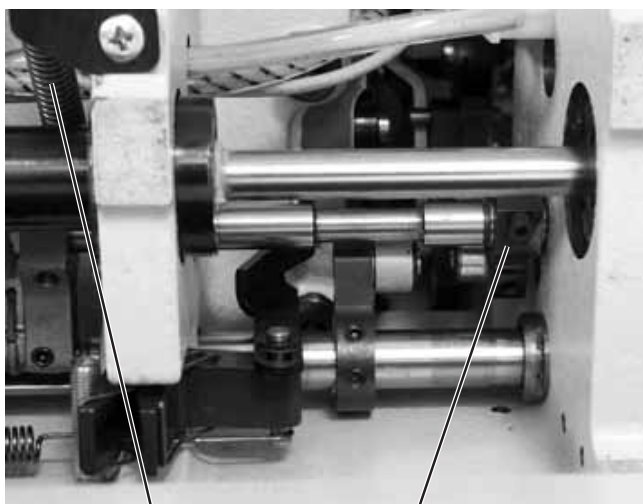


ATTENTION Danger of breakage !

After replacing the toothed belt, check the following: Hook adjustment (see chapter 2.6), feeding motion of the feed dog (see chapter 2.3.4) and lifting motion of the feed dog (see chapter 2.3.4).

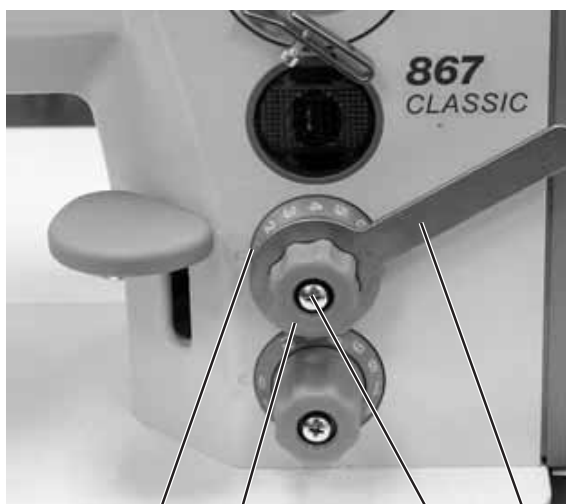
2.3 Bottom feed and stitch regulator gear

2.3.1 Basic setting of stitch adjustment



2

1



6

5

4

3

GB



Caution: Danger of injury !

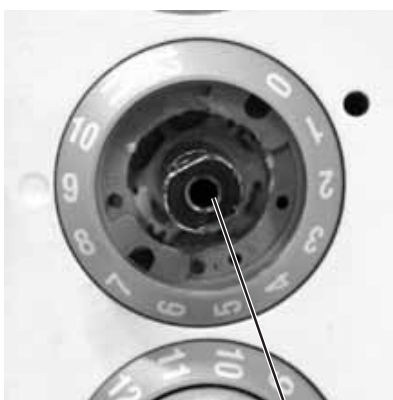
Turn the main switch off !

Set the basic setting of stitch adjustment only with the sewing machine switched off.

Standard checking

When the setting wheel 5 is in zero position, the stitch regulator gear should have the least clearance possible .

- Set stitch length "0" at the setting wheel 5.
- Check the clearance of the stitch regulator gear at the stitch regulator lever 1.



7

Correction

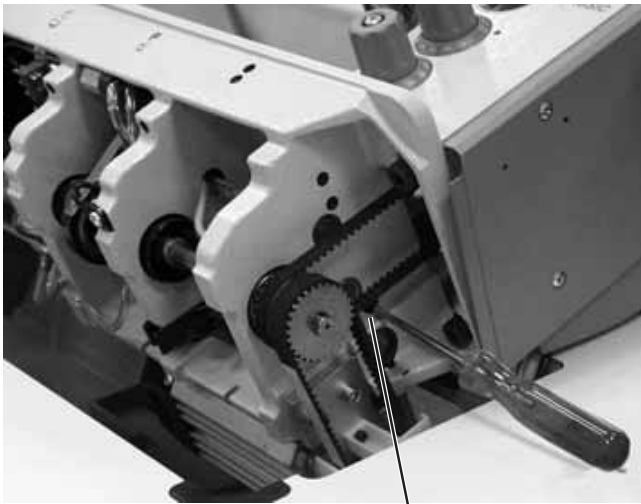
- Unhook the spring 2.
- Retain the setting wheel 5 using the wrench 3.
- Unscrew the screw 4 and remove the setting wheel 5.
- Turn shaft 7 to the right using a 10 mm wrench until the stitch regulator lever 1 has the least possible clearance.



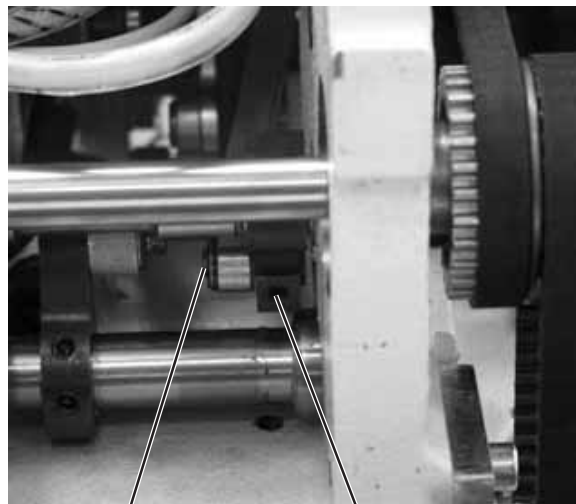
ATTENTION: Danger of breakage !

Do not turn the shaft too far to the right .
The stitch regulator parts may jam and the maximum stitch length of 8 mm and 6 mm can respectively no longer be achieved.

- Set scale 6 to "0".
- Put setting wheel 5 on again and tighten it with screw 4.
- Put the spring 2 again.
- Check the clearance of the stitch regulator lever 1.

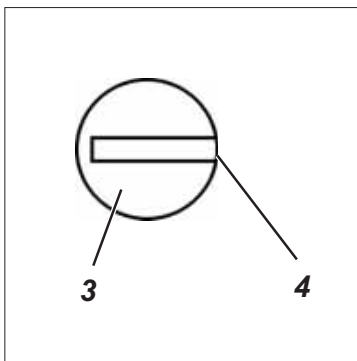


1



3

2

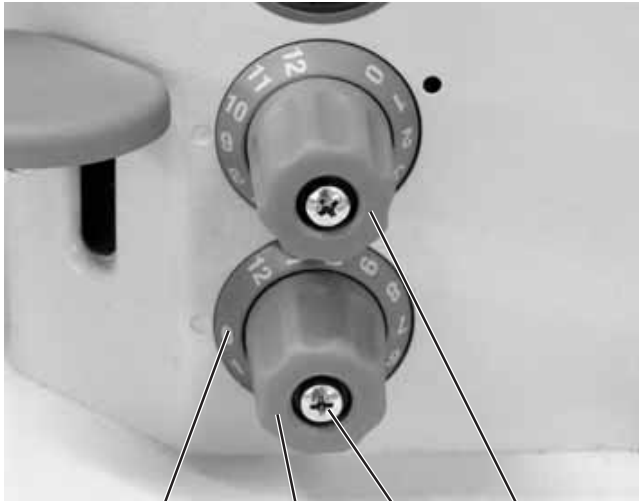


Adjust eccentric

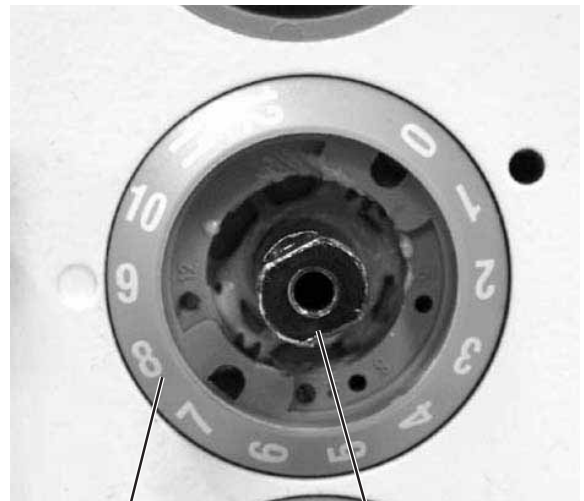
The eccentric 3 has to be adjusted in such a way that the open side 4 of the eccentric slot superimposes the screw 2.

- Loosen screw 2.
- Through the hole 1, turn the eccentric 3 in such a way that the open side 4 of the eccentric slot be oriented to the screw 2.
- Tighten the screw 2.

2.3.2 Adjust the 2nd stitch length



4 3 2 1



4 5



Caution: Danger of injury !

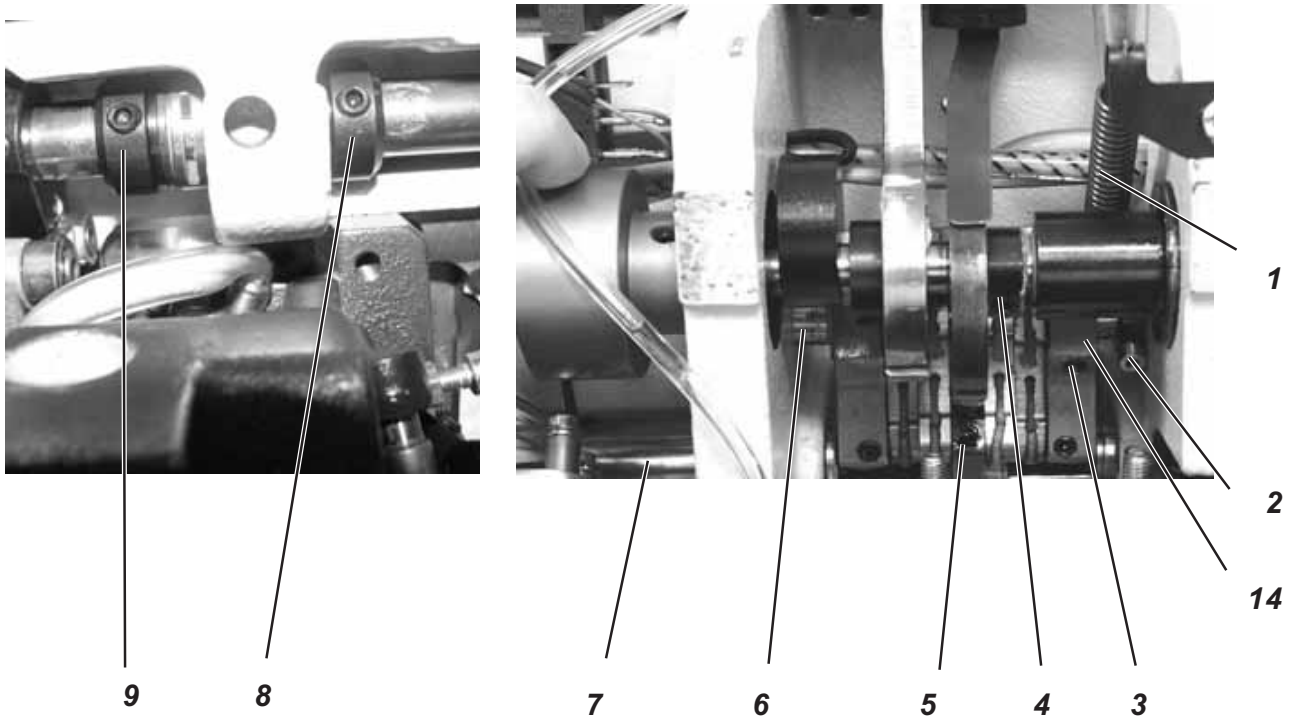
Turn the main switch off !

Set the basic stitch adjustment only with the sewing machine switched off.

GB

- Set the upper setting wheel 1 to "4".
- Loosen the screw 2 and remove the setting wheel 3.
- Using a 10 mm wrench, turn with caution the shaft 5 clockwise as far as it will go.
- Set scale 4 to "4".
- Put setting wheel 3 on again and tighten it with screw 2.

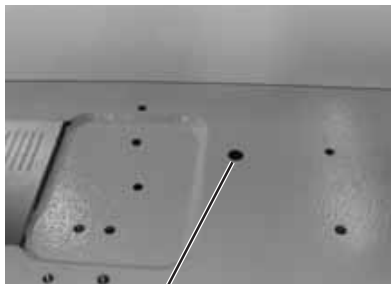
2.3.3 Position of the feed dog in the throat plate cutout



Caution: Danger of injury !

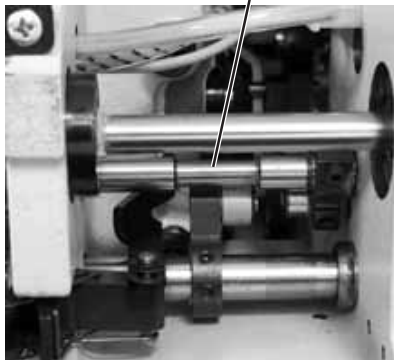
Turn the main switch off !

Set and check the feed dog and the stitch adjustment gear only with the sewing machine switched off.



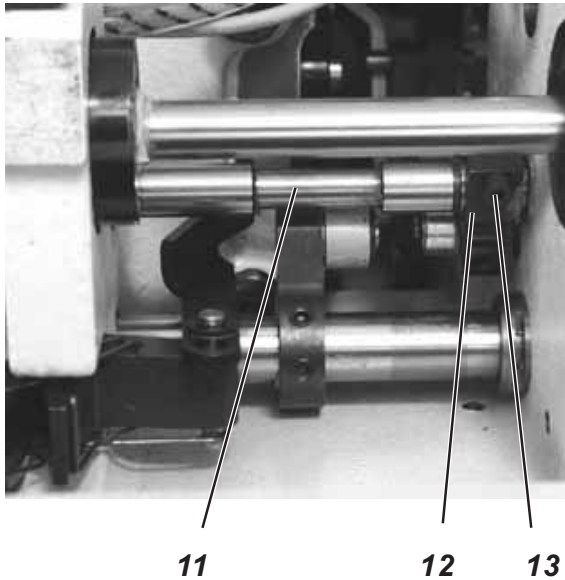
10

11



- Unhook the spring 1.
- Loosen the screws on the adjustment rings 8 and 9.
- Loosen screw 5.
- Align the feed dog in the center of the throat plate cutout.
- **Arrest** the shaft 7 with the adjustment rings 8 and 9 and tighten the screws.
- Loosen screw 10 and screw 2.
- Loosen the screws on the thrust eccentric 4.
- Align the positioning frame sides to sit in the center between the cutouts on the shaft 7.
- **Arrest** the positioning frame axially with the bearing bolt 6 (fixed with screw 10) and the adjustment ring 2.
- Tighten the screws on the thrust eccentric 4.

Note: The shaft 11 is fixed on surface in the positioning frame 14 at position 3 with two screws in series.



- Turn the stitch regulator handwheel to position "0".
- Set the gear to "0".
In order to do so turn the positioning frame 14 so that the tongues come parallel to each other
- Tighten the screw 13 on the block 12.
- Align the feed dog in longitudinal direction in the center of the throat plate cutout.
- Tighten the screw 5 (see picture on page 12).
- Fit in the spring 1 (see picture on page 12) on the positioning frame and the fastening bracket.

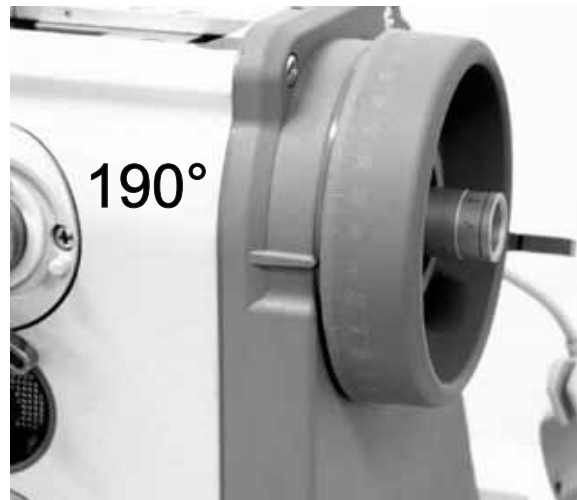
GB



ATTENTION: Danger of breakage !

The shaft 11 must **not** reach so far into the positioning frame 14 that the tongues are hindered in their movements.

2.3.4 Feeding motion of the feed dog



2

1



Caution: Danger of injury !

Turn the main switch off !

Adjust the feeding motion of the feed dog only with the sewing machine switched off.

Standard checking

When the machine is in position "190°" the feed dog must not move upon actuating the stitch regulator lever if the maximum stitch length is set.

- Set the maximum stitch length.
- Turn the machine to position "190°".
- Move the stitch regulator lever and check whether the feed dog stands still.

Correction

- Loosen the screws on the thrust eccentric 1.
- Adjust thrust eccentric 1.
- Tighten the screws on the thrust eccentric 1.
- Move the stitch regulator lever and check whether the feed dog stands still.

2.3.5 Lifting motion of the feed dog



1



Caution: Danger of injury !

Turn the main switch off !

Adjust the lifting motion of the feed dog only with the sewing machine switched off.

GB

Standard checking

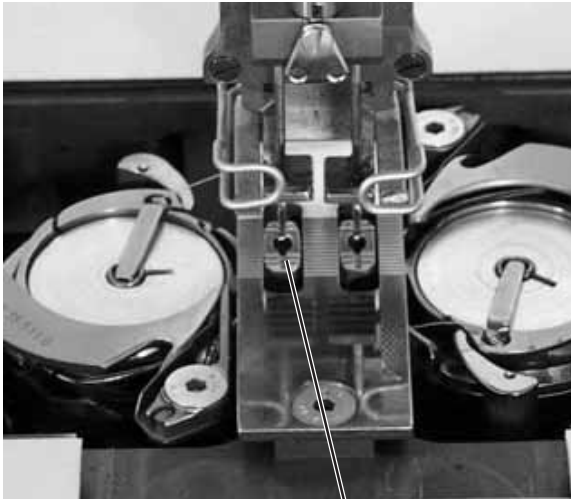
The feed dog is supposed to have the same distance to the throat plate at its front and backward dead center:

- Turn the handwheel and check the movement of the feed dog.

Correction

- Loosen the screws on the lifting cam 1.
- Turn the lifting cam.
- Tighten the screws on the lifting cam 1.
- Check the setting.

2.3.6 Feed dog height



2



1



Caution: Danger of injury !

Turn the main switch off !

Check and set the height of the feed dog only with the sewing machine switched off.

Standard checking

Machines without feed dog lifting device

The feed dog is supposed to be on the same level as the throat plate.

Machines with feed dog lifting device

For a safe forward movement of the material the feed dog 2 must in its highest position be 0,5 mm above the throat plate surface.

- Turn the handwheel until the feed dog 2 has reached its highest position.
- Check the height of the feed dog 2.

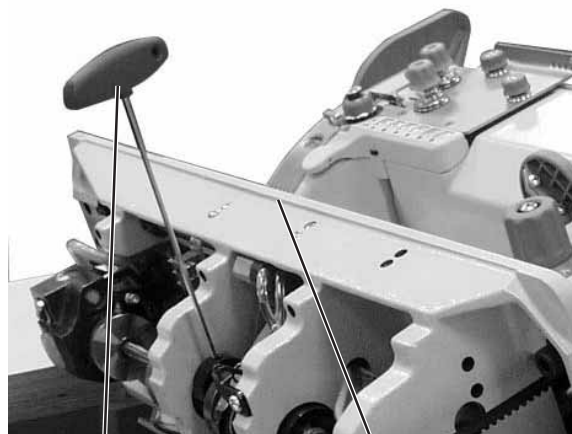
Correction

- Turn the handwheel until the feed dog 2 has reached its highest position.
- Loosen the screws on the lever 1.
- Turn the lever 1 so that the feed dog stands 0,5 mm above the throat plate surface.
- Tighten the screws on lever 1.

2.3.7 Balance weight



1



3

2



Caution: Danger of injury !

Turn the main switch off !

Check and set the balance weight only with the sewing machine switched off.

GB

Standard checking

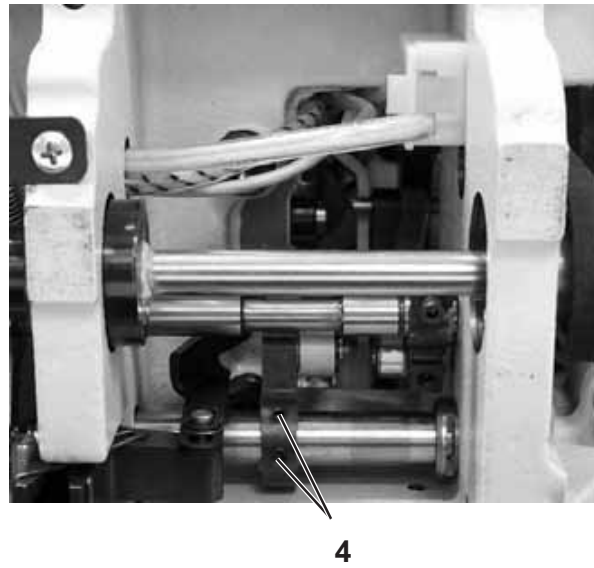
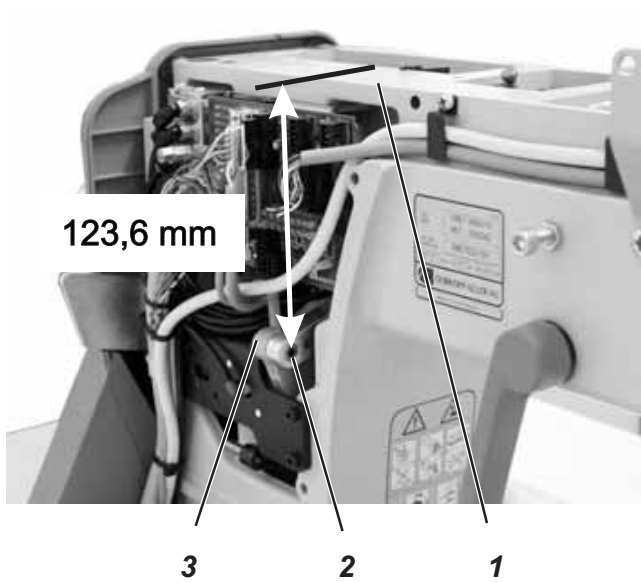
The balance weight 1 has to be positioned in a way that, with the handwheel in position "210°", an Allen key 3 stuck in stands parallel to the bed plate 2.

- Check the position of the balance weight.

Correction

- Loosen the screws on the balance weight 1.
- Turn the balance weight 1 accordingly.
- Tighten the screws on the balance weight 1.

2.4 Transmission lever



Caution: Danger of injury !

Turn the main switch off !

Check and set the transmission lever only with the sewing machine switched off.



Standard checking

The lever 3 transmits the movement of the advance shaft to the needle bar linkage.

The lever 3 must be positioned in a way the distance between the surface of the arm 1 and the center of the bolt 2 is 123,6 mm with the stitch length set to "0".

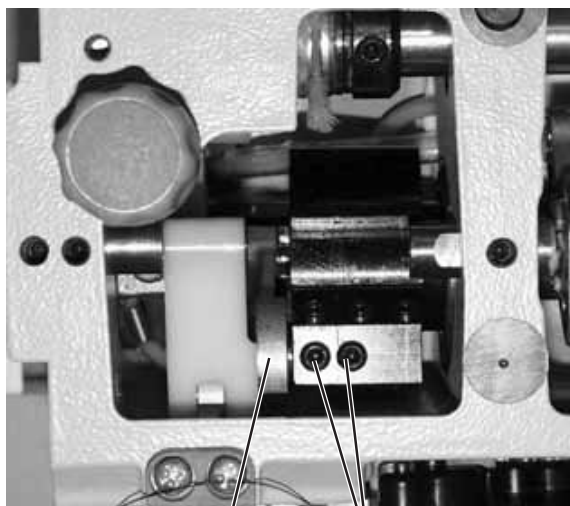
- Set the stitch length to "0".
- Check the distance between the top edge 1 and the bolt center 2.

Correction

- Loosen the screws 4 at the lower transmission lever.
- Loosen the screw 5 at the upper transmission lever.
- Adjust the lever 3 to fit the given dimension.
- Tighten the screws 4 and 5 again.

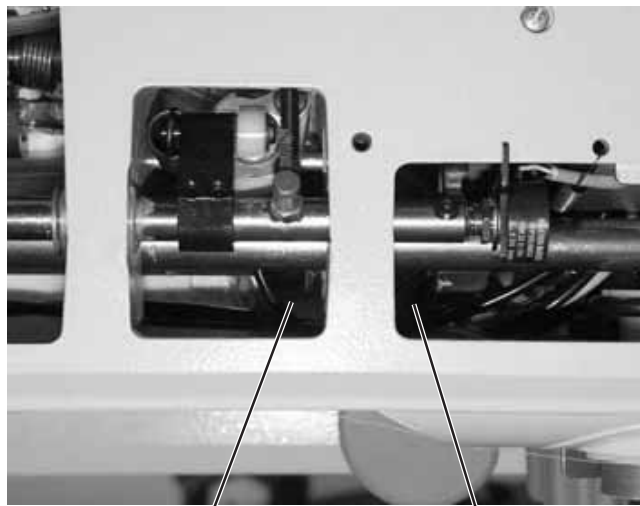
2.5 Needle bar linkage

2.5.1 Align the needle bar linkage laterally



2

1



4

3



Caution: Danger of injury !

Turn the main switch off !

Check and set the needle bar linkage only with the sewing machine switched off.

GB

Standard checking

The needle must penetrate the center of the feed dog's stitch hole.

- Insert a new needle.
- Turn down the needle bar with the handwheel.
- Check the lateral position of the needle in the stitch hole.

Correction

- Loosen the screws on the adjustment rings 3 and 4.
- Adjust the lateral position of the needle bar linkage in a way that the needle stands in the center of the stitch hole.
- Fix the adjustment rings 3 and 4 and tighten the screws.
- Loosen the screws 1.
- Adjust the thread lever laterally in a way that the clearance of the traction rod 2 on the cross head is identical to both sides.
- Tighten the screws 1.



ATTENTION: Danger of breakage !

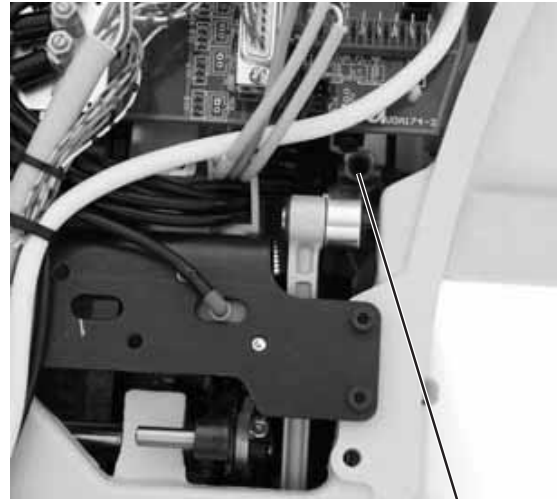
Check the distance between the hook tip and the needle after adjusting the lateral position of the needle bar linkage. If necessary, readjust the distance (see chapter 2.6.3).

2.5.2 Needle penetration in feeding direction



2

1



3



Caution: Danger of injury !

Turn the main switch off !

Check and set the needle penetration only with the sewing machine switched off.

Standard checking

The needle is supposed to penetrate the center of the feed dog's stitch hole with the stitch length set to "0".

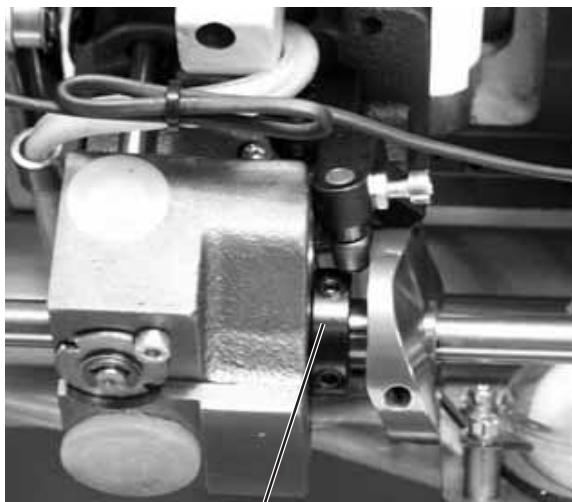
- Set the stitch length to "0".
- Insert a new needle.
- Turn down the needle bar with the handwheel.
- Check the needle's position in the stitch hole.

Correction

- Loosen the screw 3 on the upper transmission lever.
- Adjust the needle bar linkage 2 in a way that the needle 1 stands in the center of the stitch hole.
- Tighten the screw 3 again.

2.6 Hook, looping stroke and needle bar height

2.6.1 Looping stroke



3

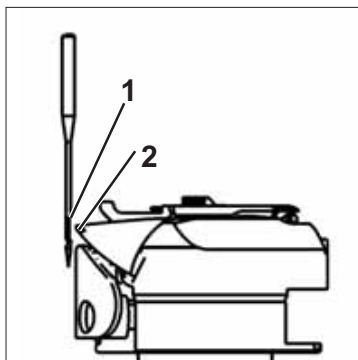


Caution: Danger of injury !

Turn the main switch off !

Check and set the looping stroke only with the sewing machine switched off.

GB



Standard checking

The looping stroke is the way of the needle bar from its bottom dead center to the point where the hook tip 2 is at the middle of the needle 1.

The looping stroke is 2 mm.

- Arrest the machine head in position I (Locking pin \varnothing 5 mm in the large groove).
- Set the stitch length setting wheel to "0".
- Check the position of the hook tip in relation to the needle.

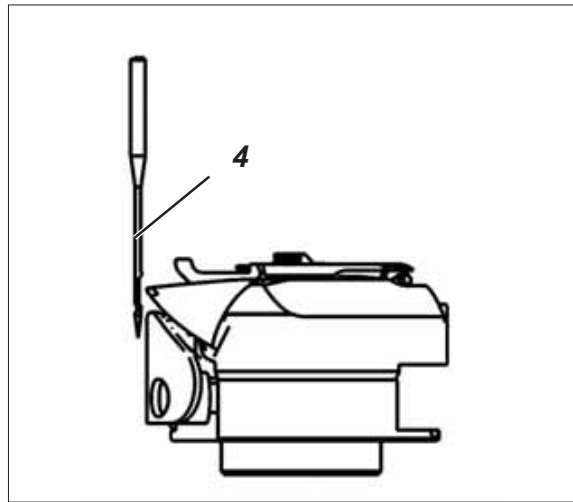
Correction

- Arrest the machine head in position I by putting the locking pin \varnothing 5 mm into the large groove.
- Set the stitch length setting wheel to "0".
- Loosen the screws on the clamping ring 3.
- Turn the hook in a way that the hook tip 2 stands in the middle of needle 1.
- Tighten the screws on the clamping ring 3.

ATTENTION !

After the hook's setting the position of the thread trimmer cam is to be checked (see chapter 2.14.4).

2.6.2 Needle bar height



3 2 1



Caution: Danger of injury !

Turn the main switch off !

Check and set the needle bar height only with the sewing machine switched off.

Standard checking

The needle bar's height is to be set in a way that the hook tip stands in the middle of the needle scarf with the stitch length set to "0" and in the looping stroke position.

- Set the stitch length handwheel to "0".
- Arrest the sewing machine in position I (looping stroke position).
- Check the position of the needle in relation to the hook tip.

Correction

- Set the stitch length handwheel to "0".
- Unscrew the thread guide 1.
- Loosen the needle fastening screw 3.
- Shift the needle bar 2 with needle 4.
Upon shifting the needle bar must not be turned.
The needle scarf must be directed to the hook tip.
- Tighten the needle bar fastening screw.
- Mount the thread guide 1 again.

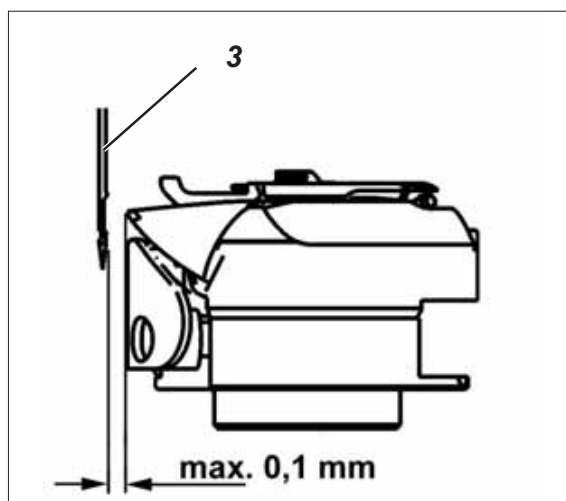
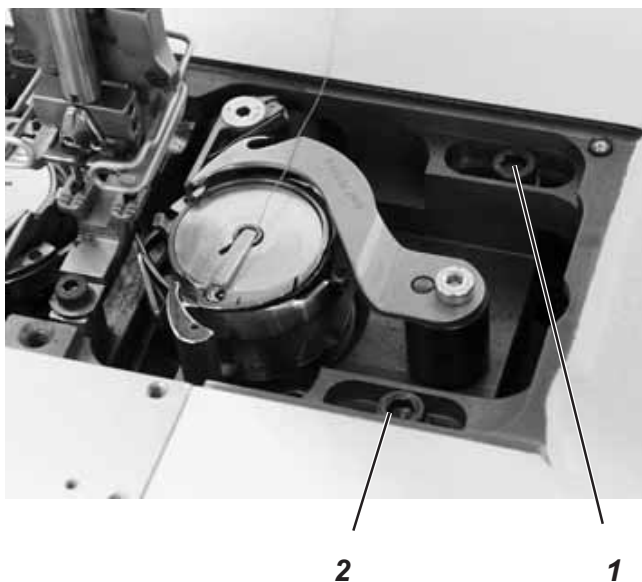
A wrong setting of the needle bar height can have the following consequences:

- Damage on the hook tip.
- Jamming of the needle thread between needle and needle guard.
- Missed stitches and thread breakage.

ATTENTION !

After a correction of the needle bar height the needle guard's position has to be checked (see chapter 2.6.4).

2.6.3 Distance between hook and needle

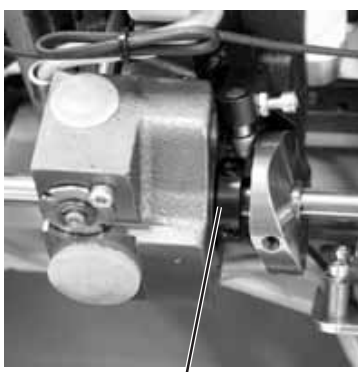


Caution: Danger of injury !

Turn the main switch off !

Check and set the hook distance only with the sewing machine switched off.

GB



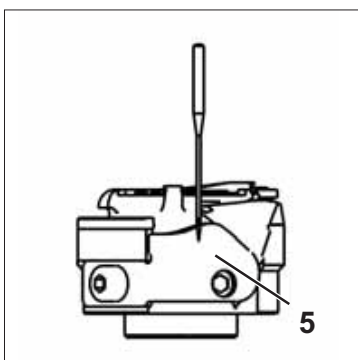
4

Standard checking

In looping stroke position the distance between the hook tip and the needle scarf is to be max. 0,1 mm.

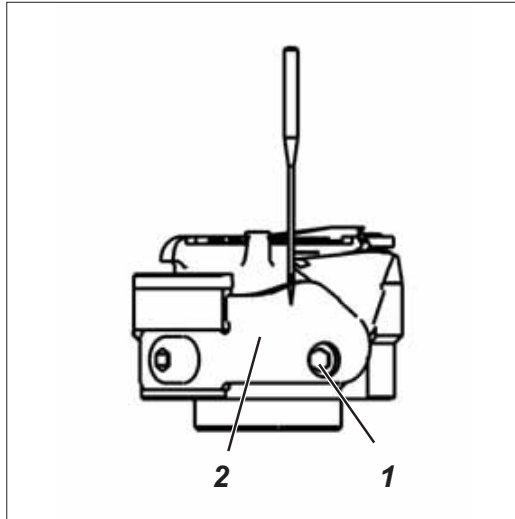
Correction

- Check whether the needle is dislocated by the hook guard 5 in looping stroke position. If this is the case, the hook guard 5 must be readjusted accordingly (see chapter 2.6.4).
- Check the distance.
The distance between the needle 3 and the hook should be max. 0,1 mm.
- Loosen the screws 1 and 2.
- Loosen the screws on the clamping ring 4.
- Shift the hook case laterally to fit.
- Tighten the screws 1 and 2 again.
- Set the looping stroke (see chapter 2.6.1).
- Tighten the screws on the clamping ring 4.



5

2.6.4 Needle guard



Caution: Danger of injury !

Turn the main switch off !

Check and set the needle guard only with the sewing machine switched off.

Standard checking

The needle guard 2 is to prevent a contact of the needle with the hook tip.

In looping stroke position the needle should be slightly dislocated.

- Check the needle guard.

Correction

- Turn the machine in looping stroke position.
- Adjust the needle guard by twisting the screw 1.



ATTENTION !

The needle guard must be adjusted after changing the needle bar height, correcting the looping stroke and changing the needle size.

2.7 Bobbin case opening

2.7.1 General

The thread lever has to pull the thread through between the bobbin case and its holder.

For the thread to slip through without any hindrance the bobbin case must be opened in this particular moment.

That way the desired seam pattern can be achieved with the lowest possible thread tension.

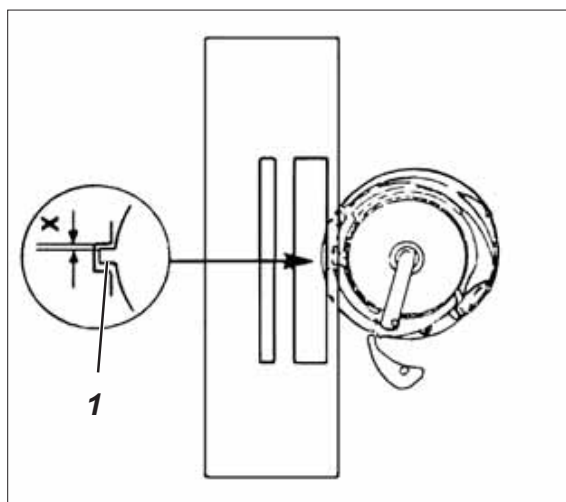
Wrong settings can have the following consequences:

- Thread rupture
- Eyes on the seam's bottom side
- Loud noises

2.7.2 Setting of the bobbin case opening



3 2 1



Caution: Danger of injury !

Turn the main switch off !

Check and set the bobbin case opening only with the sewing machine switched off.

Standard checking

The bobbin case opener 3 has to open the hook center 2 for the sewing thread to pass unimpededly between the bobbin case dog 1 and the pocket of the stitch plate. The opening gap X depends on the thickness of the sewing thread.

- Turn the handwheel and check, whether the bobbin case opener opens the hook center wide enough.



3 2 1



5 4

Correction

- Remove the plug on the hook housing 4.
- Loosen the screw 5.
- Adjust the bobbin case opener 3.
- Tighten screw 5 again.
- Reinsert the plug.

2.7.3 Timing of opening



3 2 1



6 5 4

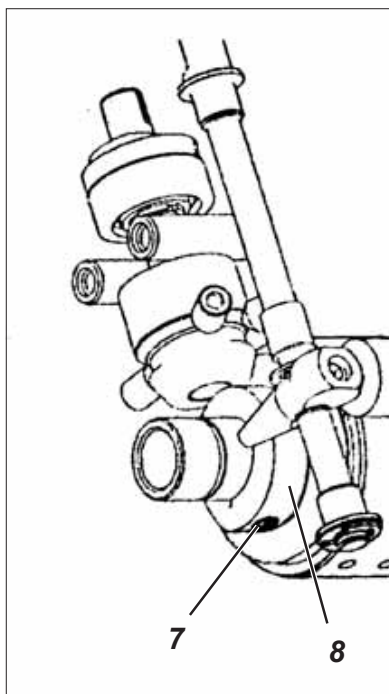


Caution: Danger of injury !

Turn the main switch off !

Check and set bobbin case opener only with the sewing machine switched off.

GB



Standard checking

After having taken up the loop, when the hook tip 2 is below the bobbin case opener (handwheel position 350°) the sewing thread should be able to slip through unimpededly between the bobbin case opening finger 3 and the bobbin case 1.

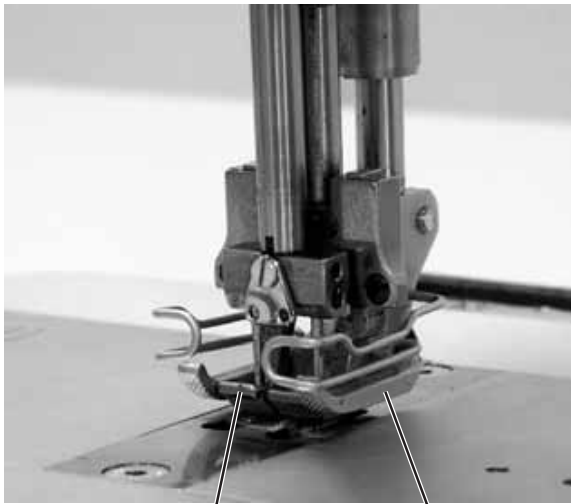
- Turn the handwheel into position 350°.
- Check whether the bobbin case opening finger has opened wide enough for the sewing thread to be pulled through unimpededly.

Correction

- Remove the plug 6 from off the hook housing 4.
- Loosen the screw 7 in the control cam 8 using the Allen key 5.
- Twist the control cam 8.
- Tighten the screw 7.
- Reinsert the plug 6.
- Adjust the setting.

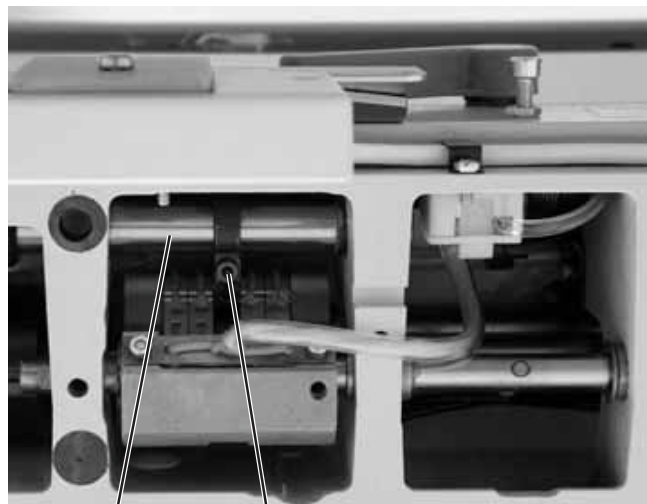
2.8 Feeding foot and presser foot

2.8.1 Feeding foot and presser foot stroke



2

1



4

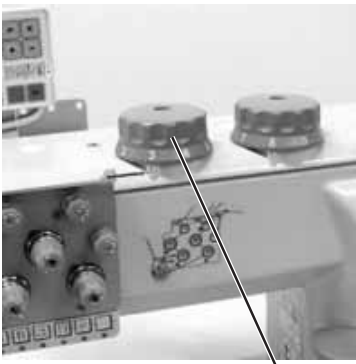
3



Caution: Danger of injury !

Turn the main switch off !

Check and set sewing feet stroke only with the sewing machine switched off.



5

Standard checking

The strokes of both sewing feet should be identical when the setting wheel 5 is set to "3".

- Set stitch length to "0".
- Set the medium sewing foot pressure.
- Set the sewing foot stroke on the setting wheel 5 to "3".
- Turn the handwheel and compare the strokes of the sewing feet 1 and 2.
The strokes of the presser foot 1 and the feeding foot 2 should be identical.

Correction

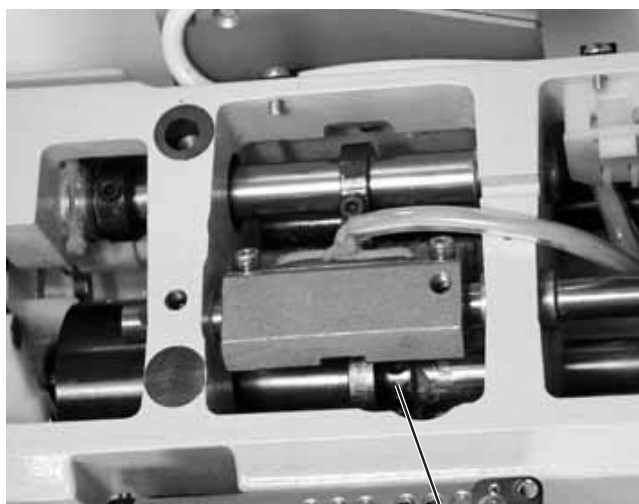
- Screw the arm cover off.
- Turn the handwheel to position 0 °.
- Loosen the screw 3.
- Push the feeding foot 2 completely onto the stitch plate.
- Tighten the screw 3.
- Fix the arm cover.
- Turn the setting wheel to position "3".
- Check whether both strokes are identical.
If not, readjust the setting.

2.8.2 Stroke motion of the feeding foot



2

1



3



Caution: Danger of injury !

Turn the main switch off !

Check and set the stroke motion of the feeding foot only with the sewing machine switched off.

GB

Prerequisite

- The strokes of the feeding foot and the presser foot must be identical (see chapter 2.8.1)
- Correct timing of the feeding dog's lifting motion (see chapter 2.3.3).

Standard

The descending feeding foot 2 is, with max. sewing foot stroke and max. stitch length, supposed to touch down on the feeding-dog, when the needle 1 is descending and the needle tip has reached the upper edge of the feeding-dog foot (95° on the handwheel).

- Set the maximum stitch length.
- Set the maximum sewing foot stroke.
- Turn the handwheel and check the stroke motion.

Correction

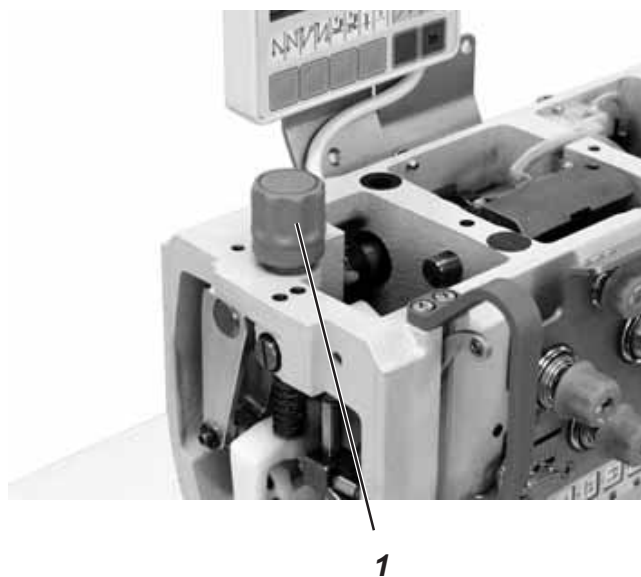
- Loosen the screws on the lifting cam 3 (2 pieces).
- Twist the cam accordingly.

ATTENTION !

The cam must not be shifted axially.

- Tighten the screws on the lifting cam 3.
- Check the setting.

2.8.3 Sewing foot pressure



Standard checking

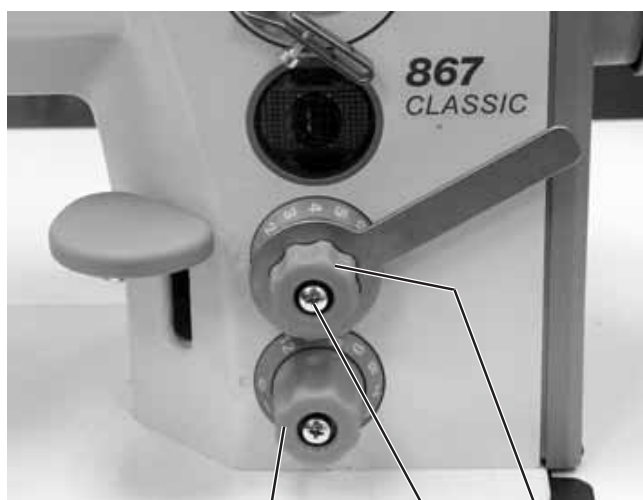
The material that is to be sewn must not “float”.

It should not be exerted more pressure than necessary.

Correction

- Set the sewing foot pressure by turning screw 1.
Increase the pressure = Turn screw 1 clockwise.
Decrease the pressure = Turn screw 1 counter-clockwise.

2.9 Stitch length limitation



3 2 1



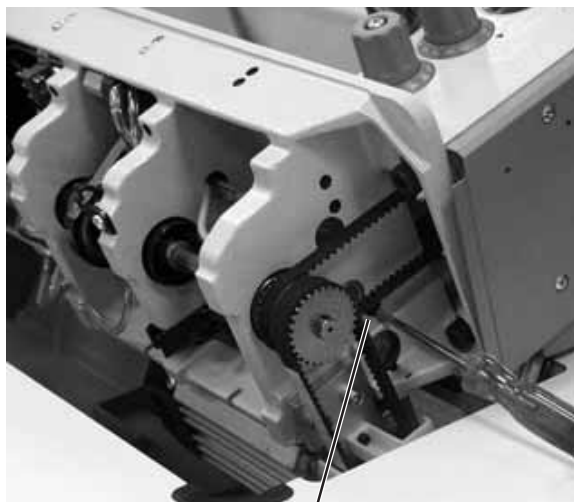
4

Depending on the sewing equipment used, the stitch length setting has to be limited to 6, 9 or 12 mm.

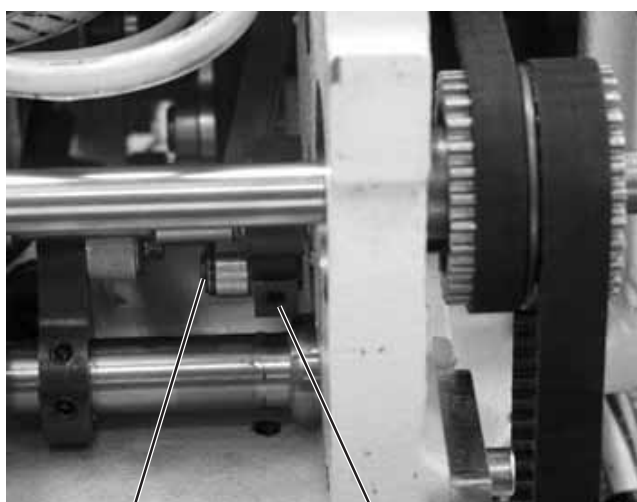
GB

- Unscrew the screw 2 on the stitch length setting wheel.
- Lift off the setting wheel 1.
- Unscrew the set screw 4 and screw it into the corresponding bore hole.
The bore holes are numbered.
- Carry out the setting according to chapter 2.3.1 "**Basic setting of stitch adjustment**".
- Reinsert the setting wheel and fix it with screw 2.

2.10 Stitch equality of the forward and backward stitch



1



3

2



Caution: Danger of injury !

Turn the main switch off !

Set the stitch equality only with the sewing machine switched off.

Standard checking

The stitch length of the forward and backward stitch should be identical.

- Sew the seam length forward.
- Sew the seam length backward.
- Compare the stitch lengths of both seams.

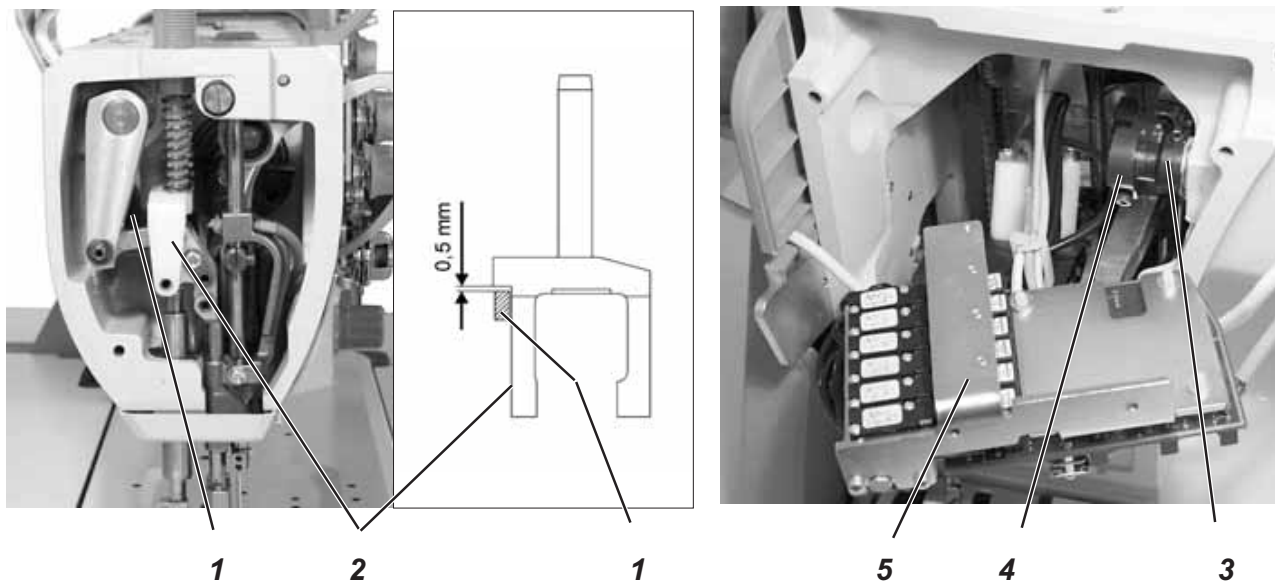
Correction

- Loosen screw 2.
- Turn the eccentric 3 through the bore hole 1 using a screw driver.
Clockwise =
Forward stitch larger, backward stitch smaller.

Counter-clockwise =
Backward stitch larger, forward stitch smaller.
- Tighten the screw 2.
- Sew the seam length forward.
- Sew the seam length backward.
- Compare the stitch lengths of both seams.

2.11 Sewing foot lifting

211.1 Mechanical sewing foot lifting

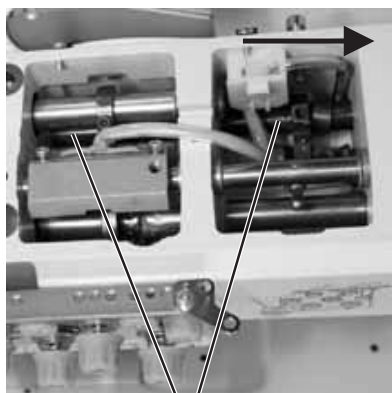


Caution: Danger of injury !

Turn the main switch off !

Check and set the clearance of the lifting mechanism only with the sewing machine switched off.

GB



6

Standard checking

The lifting shaft 6 is supposed to run softly but should have no end play.

The clearance in the lifting mechanism should be approx. 0,5 mm between the spring guide 2 and the lifting lever 1.

- Lower the sewing feet.
- Turn the handwheel until the presser foot touches down.
- Move the lifting shaft 6 and check its clearance.

Correction

Tightening the lifting shaft

- Unscrew the electric and pneumatic unit 5.
- Loosen the screw on the setting ring 3.
- Push the lifting shaft completely to the right (see the arrow), Push the setting ring 3 close to the bearing bush and tighten it.

ATTENTION !

The shaft must still run softly.

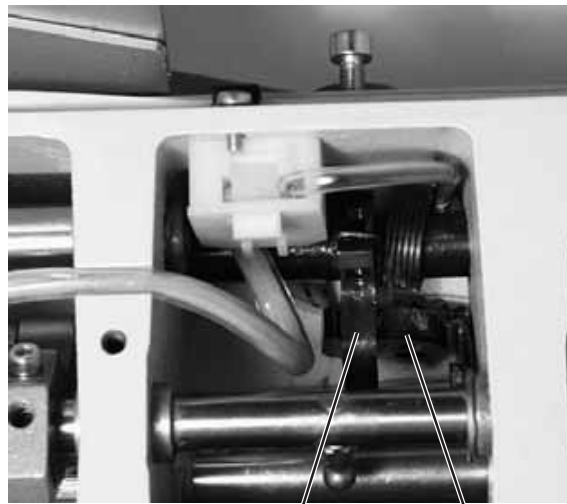
More clearance for the lifting shaft

- Loosen the screws on the lifter block 4.
- Twist the lifting shaft 6 until it has the necessary clearance.
- Tighten the screws on the lifting block 4.

2.11.2 Height of the sewing feet arrested with hand lever



1



3

2



Caution: Danger of injury !

Turn the main switch off !

Check and set the sewing foot lifting only with the sewing machine switched off.

Standard checking

The sewing feet 4 are arrested in lifted position with the hand lever 1 for example in order to exchange the sewing feet or to run the sewing machine without any material or to wind up the hook thread. When arrested in lifted position with the hand lever the sewing feet 4 are supposed to have a distance of 10 mm to the stitch plate.

- Bring both sewing feet to the same level.
- Lift the sewing feet with the hand lever and arrest them.
- Check the lifting height.

Correction

- Lift the sewing feet.
- Put a distance keeper (10 mm) under the sewing feet 4.
- Loosen the screws on the lifting lever 3.
- Push down the lifting lever 1.
- Press the lever 3 onto the eccentric cam 2.
- Tighten the screws on the lifting lever 3.



4

2.11.3 Height of the lifted sewing feet



2

1



3

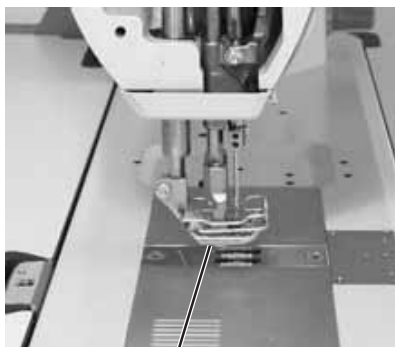


Caution: Danger of injury !

Turn the main switch off !

Check and set the height of the lifted sewing feet only with the sewing machine switched off.

GB



4

Standard checking

The pneumatically or via knee lever lifted sewing feet 4 are supposed to have a distance of 20 mm to the stitching plate when the needle bar is in its upper dead center.

The screw 2 limits the path of the lifting lever 3.

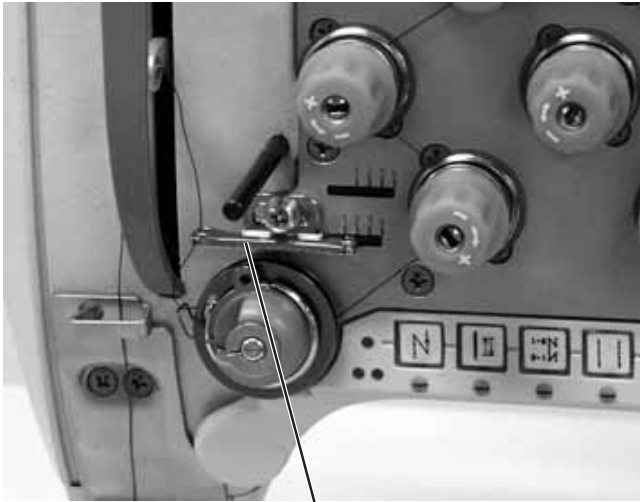
- Lower the sewing feet.
- Turn the handwheel until the needle bar is in its upper dead center.
- Lift the sewing feet pneumatically or via knee lever and check the lifting height.

Correction

- Loosen the lock nut 1.
- Twist the stop screw 2 accordingly.
- Fasten the lock nut 1.

2.12 Thread-guiding parts

2.12.1 Thread regulator



1



2



Caution: Danger of injury !

Turn the main switch off !

Check and set the thread regulator only with the sewing machine switched off.

Standard checking

The position of the thread regulator 1 depends on the thickness of the material to be sewn, the thread size and the chosen stitch length. It has to be set so that the thread is guided around the hook and kept under control.

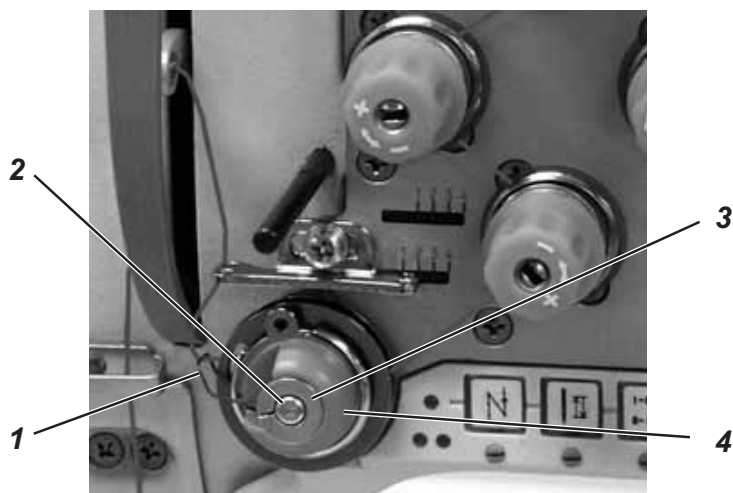
In position "1" occurs the highest thread output as needed with particularly large stitch lengths and thick sewing threads.

- Insert the material.
- Thread in the needle and hook thread.
- Open the stitch plate slide.
- Turn the handwheel slowly and observe how tight the thread is guided around the hook.

Correction

- Loosen screw 2.
- Shift the thread regulator.
Thread regulator to the left = more thread.
Thread regulator to the right = less thread.
- Tighten screw 2.

2.12.2 Thread take-up spring



Caution: Danger of injury !

Turn the main switch off !

Check and set the thread take-up spring only with the sewing machine switched off.

GB

Standard checking

The standard setting for the spring travel and spring tension only apply to usual thread sizes.

Very thick or very thin threads or sewing material may necessitate different settings.

Spring travel

The thread take-up spring 1 has to keep the needle thread from the moment of the thread lever lifting until the needle eye's penetrating of the material under a light tension. In order to achieve a regular seam with a low thread tension, the travel of the thread take-up spring may be increased. The thread take-up spring must only meet the stop when the needle eye has penetrated the material.

Spring tension

The spring tension should be lower than the thread tension.

Correction

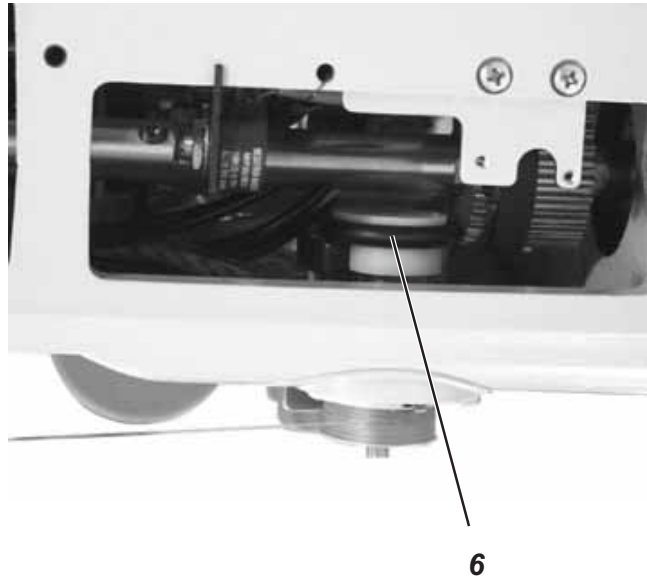
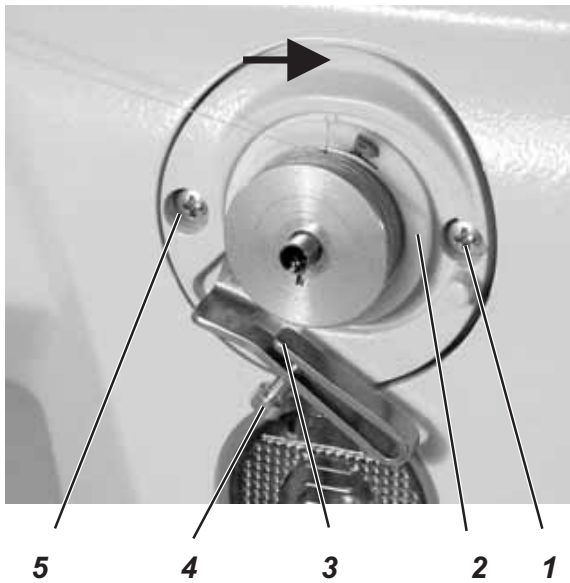
Spring travel

- Loosen screw 2.
- Turn the stopping collar 4.
Turning counter-clockwise = larger travel
Turning clockwise = smaller travel.
- Tighten screw 2.

Spring tension

- Loosen screw 2.
- Adjust the tensioner disc 3 without changing the stopping collar's 4 position.
Turning the disc clockwise = less spring tension
Turning the disc counter-clockwise = higher spring tension
- Tighten screw 2 without changing the positions of the stopping collar 4 and the tensioner disc 3.

2.13 Bobbin winder



Caution: Danger of injury !

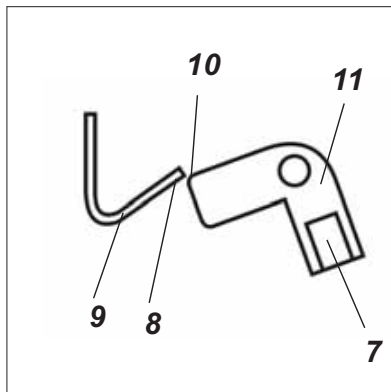
Turn the main switch off !

Check and set the bobbin winder only with the sewing machine switched off.

Standard checking

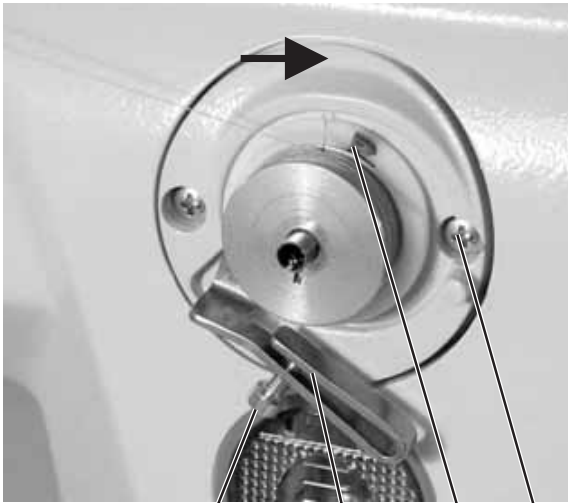
The bobbin winding operation must stop automatically when the bobbin is filled up to approx. 0.5 mm below the edge of the bobbin.

The winder wheel must not have end play but its moving should not be to sluggish either.

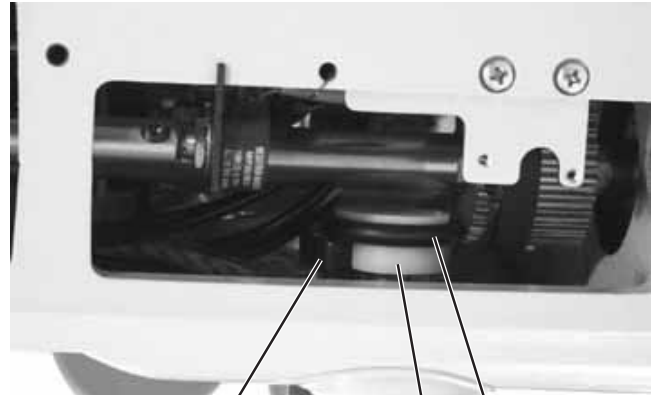


Basic setting

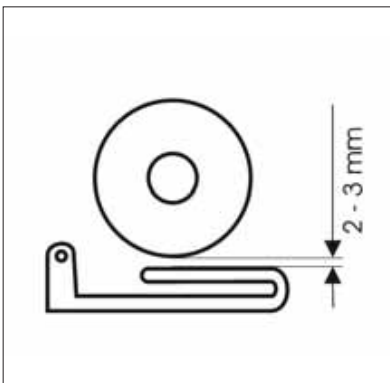
- Disassemble the winder.
In order to do so unscrew the two fastening screws 1 and 5 and pull the winder off.
- Screw in the screw 4 until the two arms of the winder flap 3 come parallel to each other.
- Insert a completely filled bobbin on the winder.
- Twist the winder flap 3 so that it bears against the thread on the bobbin.
- Loosen screw 7.
- Set the switching cam 11 so that the corner 10 of the switching cam and the corner 8 of the leaf spring 9 superpose (the spring is loaded) and the winder flap 3 has no end play.
- Tighten screw 7.



4 3 12 1



14 13 6



- Turn the winder bobbin so that the tear-off knife 12 points to the fastening screw 1 on the right side.
- Loosen the screw on the engagement block 14.
- Set the winder flap so that between the thread on the bobbin and the winder flap remains a distance of 2 - 3 mm (insert a distance keeper).
- Set the engagement block 14 so that it bears on the locking disc 13 and has an end play of 0,5 mm towards the winder wheel 6.
- Tighten the screw on the engagement block.
- Screw the winder on again.

GB

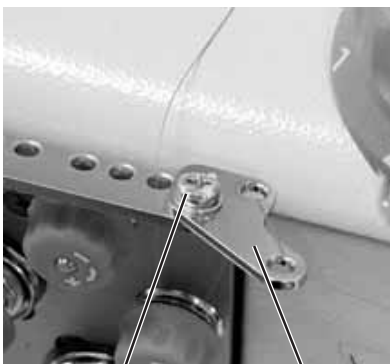
Small changes of the bobbin wind-on quantity

- Adjust the winder flap 3 with the screw 4.

Correction of the winder's pretension position

The guide must be set in a way that the bobbin is evenly filled with thread over its whole width.

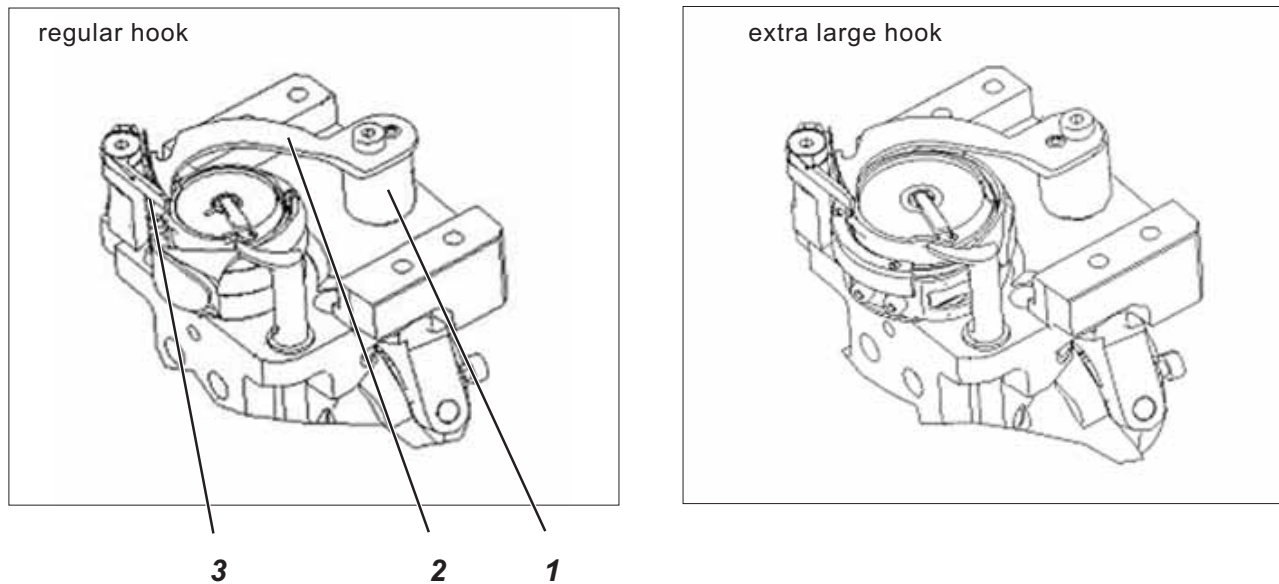
- Loosen screw 17.
- Adjust the guide 16.
- Tighten screw 17.



17 16

2.14 Thread trimmer

2.14.1 General



Thread-pulling knife height

The thread-pulling knife is supposed to swing past the bobbin as close as possible.

As standard a 0,1 mm thick disc is positioned between the hook housing and the knife carrier 1 in order to lower the thread-pulling knife 0,1 mm if necessary.

Position of the thread-pulling knife

The thread-pulling knife 2 cannot be shifted on the knife carrier 1. This allows to exchange the thread-pulling knife without having to reset the cutting pressure.

The thread-pulling knife carrier 1 can be mounted in two different positions for regular and extra large hooks. In order to change position the knife carrier 1 is rotated throughout 180°.

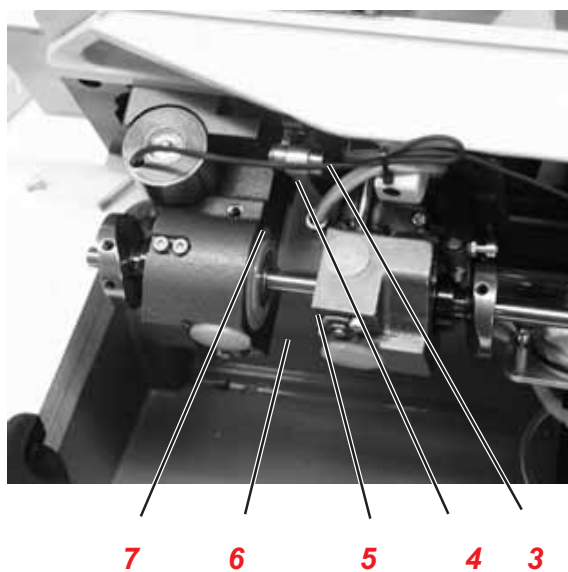
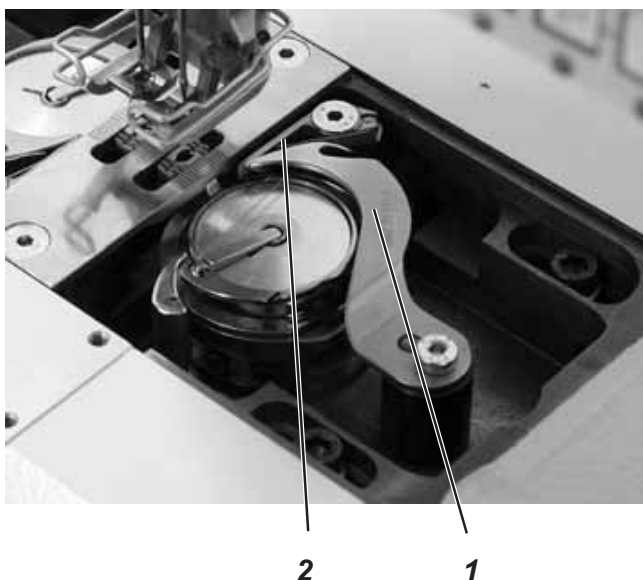
While in resting position the thread-pulling knife should come flush with the blade of the counter-knife 3.

The swing range of the thread-pulling knife measures 35° and is defined by the control cam's geometry.

Control cam

The control cam is designed to operate with regular and extra large hooks. It has a double-sided control function for the right and left hook bearing.

2.14.2 Thread-pulling knife

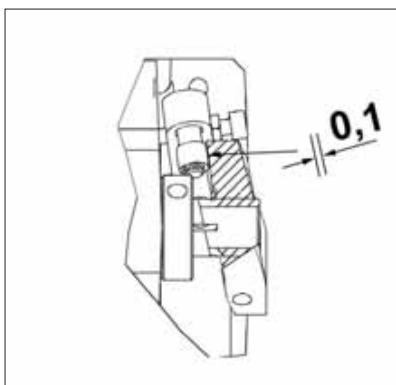


Caution: Danger of injury !

Turn the main switch off !

Check and set the thread-pulling knife only with the sewing machine turned off.

GB



Standard checking

In the thread-pulling knife's 1 resting position the distance between the control cam 5 (highest point) and the roller 7 should be 0,1 mm. At the same time the control cam has to bear on the circlip 6.

While in resting position the thread-pulling knife 1 should come flush with the blade of the counter-knife 3.

The thread-pulling knife carrier must not have any end play but should move freely.

- Check whether the control cam 5 bears on the circlip 6.
- Turn the machine until the control cam's 5 highest point is pointing to the roller 7.
- Check the distance between the control cam 5 and the roller 7.



Correction

- Loosen the screws on the control cam 5.
- Shift the control cam 5 completely to the circlip 6.
- Tighten the screws on the control cam 5 again.

- Loosen the lock nut 4.
- Set a distance of 0,1 mm between the control cam 5 and the roller 7 by turning screw 3.
- Tighten the lock nut 4.

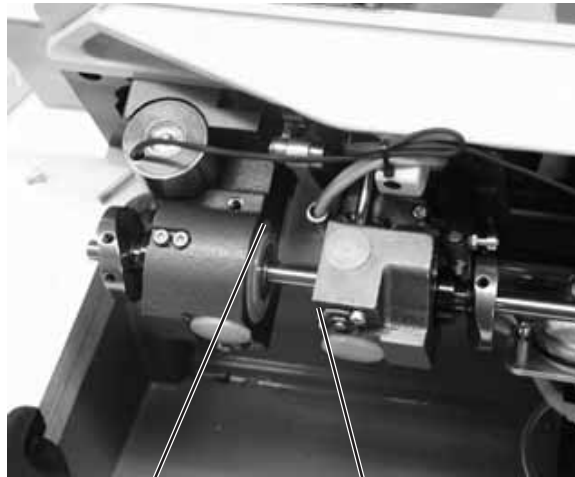
- Loosen screw 8 on the operating lever 9.
- Twist the thread-pulling knife 1 so that its blade comes flush with the counter-knife 2.
- Tighten screw 8.
- Make sure not to give any end play.

2.14.3 Counter-knife and lower thread clamp



2

1



4

3



Caution: Danger of injury !

Turn the main switch off !

Check and set the counter-knife and lower thread clamp only with the sewing machine turned off.

Standard checking

In the thread-pulling knife's "parking position" the thread clamp 1 is supposed to bear without any pressure on the thread-pulling knife.

The thread is to be trimmed safely with as little pressure as possible. A low trimming pressure keeps the knife wear low!

It must be possible to safely trim two of the thickest sewing threads simultaneously.

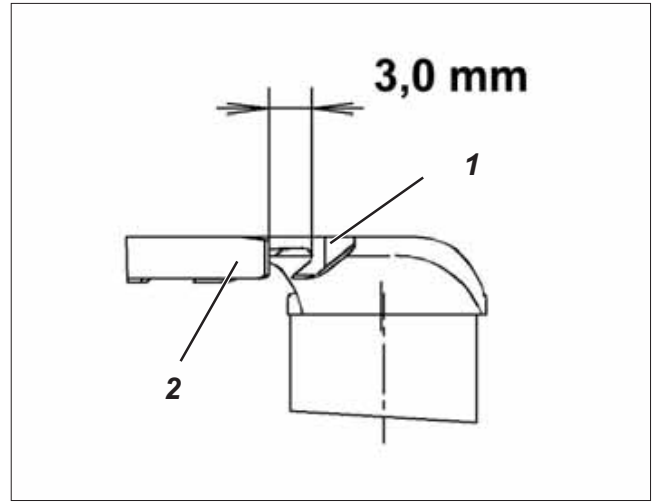
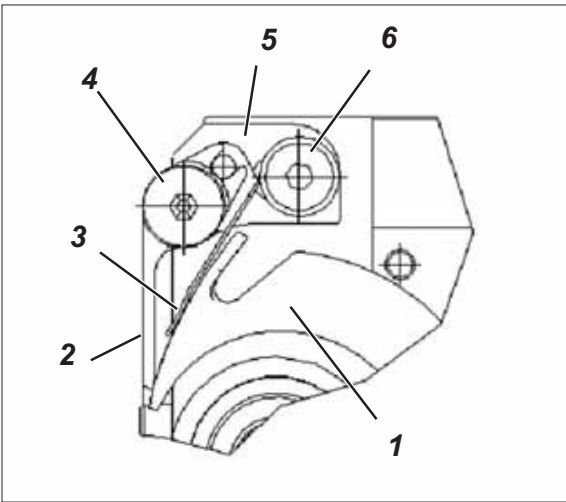
- Turn the handwheel until the thread-pulling knife can be swung out.
- Swing out the thread-pulling knife manually.
In order to do so push the block with the roller 4 to the right against the control cam 3.
- Insert two threads to be trimmed into the thread-pulling knife.
- Continue turning the handwheel until the knife has swung back.
- Check whether the sewing threads have been trimmed properly.
- Pull the threads out of the clamp and, in doing so, check the clamping effect.
If the clamping effect is too high or too low, the thread clamp must be reset again.



ATTENTION !

If the pressure of the counter-knife is set to high this leads to an excessive knife wear.

A wrong thread clamp setting can lead to problems with sewing start.



Correction lower thread clamp

- Loosen screw 4.
- Turn the lower thread clamp 3 to the thread-pulling knife 1.
- Fasten screw 4.

GB

Correction cutting pressure

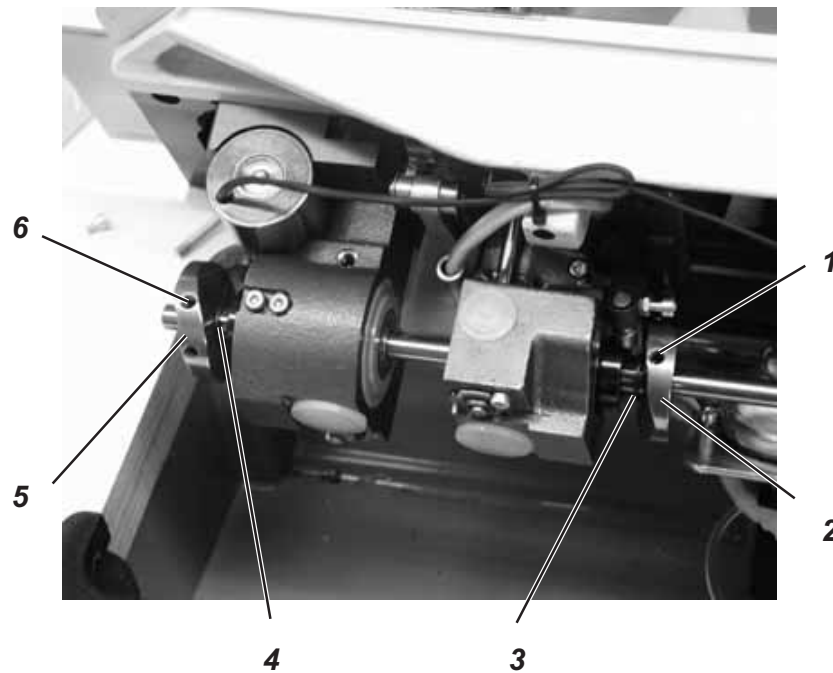


- Swing out the thread-pulling knife 1 far enough to have a distance of about 3 mm between the blades of the counter-knife 2 and the thread-pulling knife 1.
- Loosen screw 6.
- Turn the counter-knife 2 against the thread-pulling knife 1.
- Tighten screw 6.

Note

Through the eccentric cut of the thread-pulling knife 1 a cutting pressure is automatically exerted when the two blades superpose.

2.14.4 Cutting position with machines having needle repositioning



Caution: Danger of injury !

Turn the main switch off !

Check and set the cutting position only with the sewing machine switched off.

Standard checking

With the factory setting cutting position is the position “thread lever in its upper dead center”.

When the machine is in position 35° on the handwheel the control cam 2 resp. 5 is supposed to stand so that with:

Right-hand hook bearing

the **first** screw 1 points in sense of rotation vertically to the hook shaft.

Left-hand hook bearing

the **second** screw 6 points in sense of rotation vertically to the hook axis.

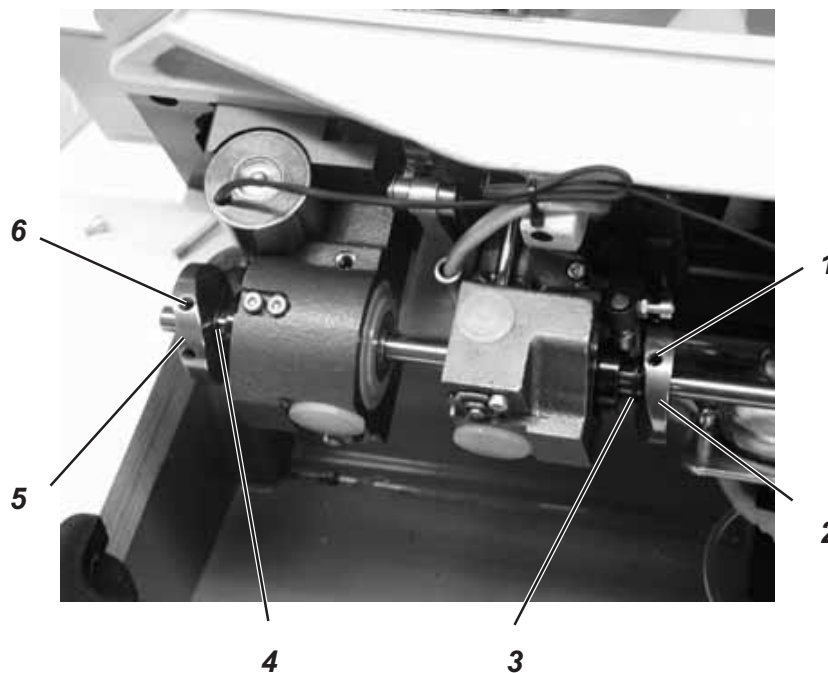
Correction

- Turn the handwheel to position 35°.
- Loosen the screws on the control cam 2 resp. 5.
- Turn the control cam accordingly.
- Tighten the screws on the control cam 2 resp. 5.

Note!

Make sure that the control cam bears on the circlips 3 resp. 4 and that the label on the control cam is legible.

2.14.5 Cutting position with machines without needle repositioning



Caution: Danger of injury !

Turn the main switch off !

Check and set the cutting position only with the sewing machine switched off.

GB

Standard checking

With the factory setting cutting position is the position "thread lever in its upper dead center".

When the machine is in position 20° on the handwheel the control cam 2 resp. 5 is supposed to stand so that with:

Right-hand hook bearing

the **first** screw 1 points in sense of rotation vertically to the hook shaft.

Left-hand hook bearing

the **second** screw 6 points in sense of rotation vertically to the hook axis.

Correction

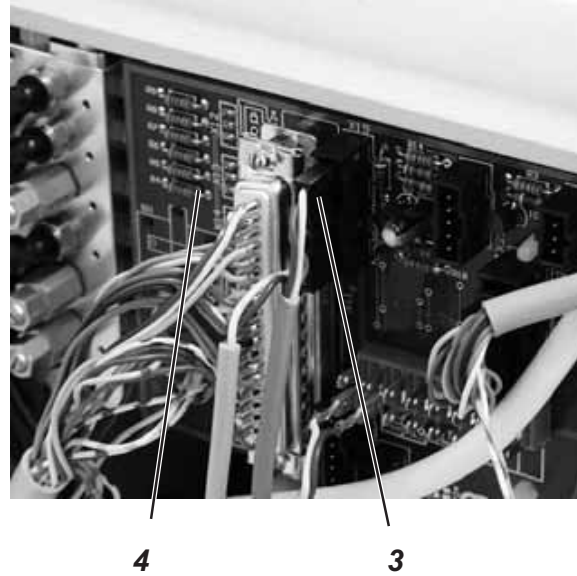
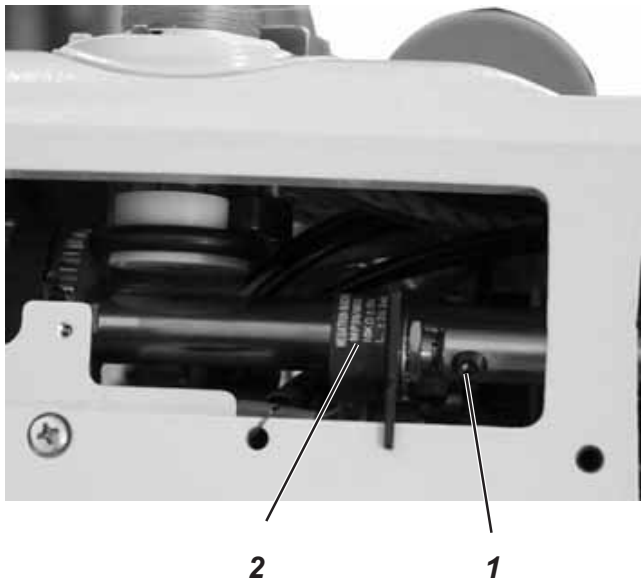
- Turn the handwheel to position 20°.
- Loosen the screws on the control cam 2 resp. 5.
- Turn the control cam accordingly.
- Tighten the screws on the control cam 2 resp. 5.

Note!

Make sure that the control cam bears on the circlips 3 resp. 4 and that the label on the control cam is legible.

2.15 Potentiometer in the arm

Sewing machines with thread trimmer are equipped with a potentiometer in order to limit the driving speed of higher sewing foot strokes. Through this potentiometer the control recognizes the sewing foot stroke and limits the driving speed.



2.15.1 Basic setting without control panel

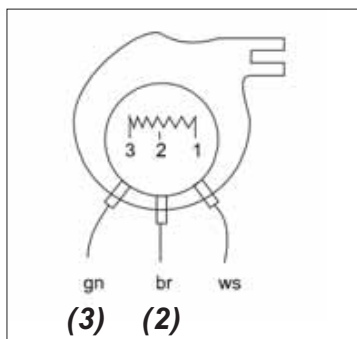
Set sewing machines without control panel according to the following description.



Caution: Danger of injury !

Turn the main switch off !

Set the potentiometer only with the sewing machine switched off.



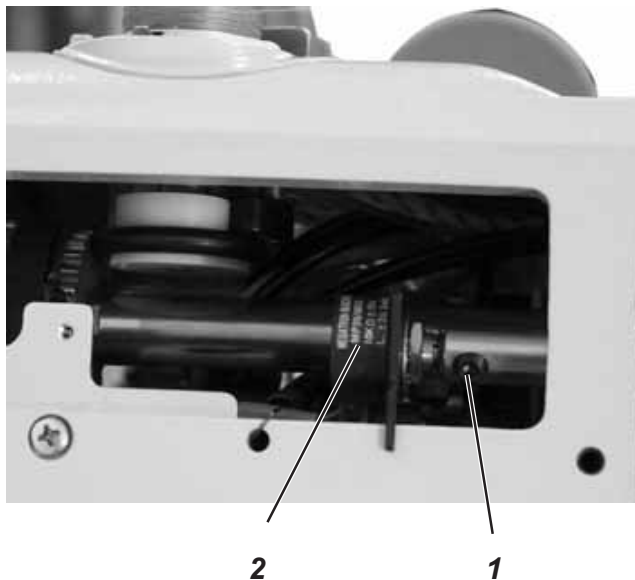
- Pull out the plug 3 of the potentiometer on the PCB 4.
- Check the resistance on the terminals (2) and (3) of the potentiometer with an ohmmeter.
Terminal (3) = green wire
Terminal (2) = brown wire

Measuring value: 7,1 to 7,3 kOhm

If the values mentioned are not correct the potentiometer's 2 position is to be adjusted.

- Loosen screw 1.
- Set the shaft of the potentiometer 2 to the corresponding value.
- Push the potentiometer completely into the bore hole of the setting shaft and tighten screw 1.
- Plug in plug 3 of the potentiometer on the PCB 4.

2.15.2 Basic setting with the control panel V810 or V820



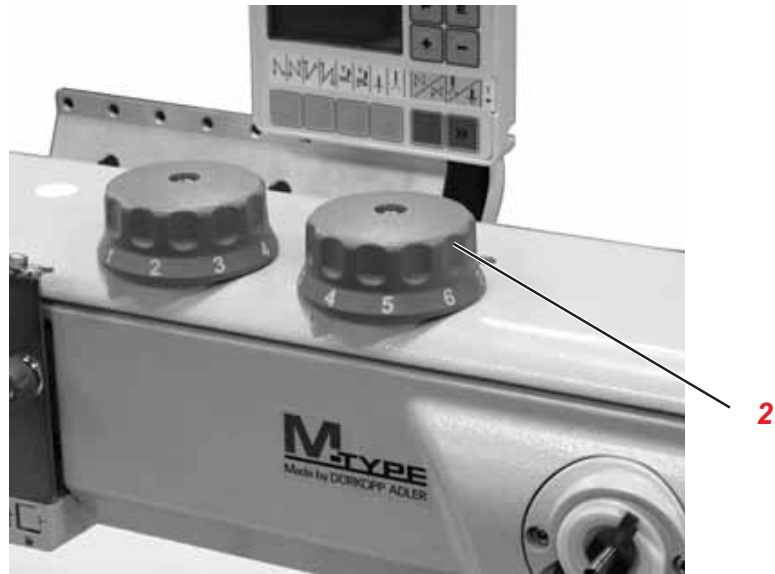
Caution: Danger of injury !

Adjust the potentiometer only with the main switch switched off.
Work with utmost caution.

GB

- Loosen the stop screw 1 for the potentiometer 2.
- Keep the key "P" pressed and switch on the main switch.
- Enter the technician level.
- Select the parameter "F-188".
- Actuate the key "E".
The current Speedomat grade (e.g. 11) and the corresponding driving speed limitation (e.g. 2860) are displayed.
- Turn the potentiometer shaft until the Speedomat grade "07" and the corresponding maximum driving speed of 3800 rpm resp. 3400 rpm (depending on the subclass) are indicated on the display.
- Tighten the stop screw 1.
- Check the setting.

2.15.3 Check the potentiometer adjustment



- Keep the key “P” pressed and switch on the main switch.
- Enter the technician level.
- Select the parameter “F-188”.
- Actuate the key “E”.
The current Speedomat grade and the corresponding driving speed limitation are displayed.
- Set the setting wheel 1 to “**lowest lift stroke**”.
The display should indicate the Speedomat grade “06”.
- Set the setting wheels 1 and 2 to “**maximum lift stroke**”.
The display has to indicate the Speedomat grade “21”.
For the driving speed the display indicates “EEEE”.

Note

If the Speedomat grades “07” and “21” cannot be attained the potentiometer must be readjusted.

2.16 Oil lubrication



Caution: Danger of injury !

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



ATTENTION !

The handling and disposal of mineral oils is subject to legal regulations.
Deliver used oil to an authorized collecting station.
Protect your environment.
Be careful not to spill any oil.

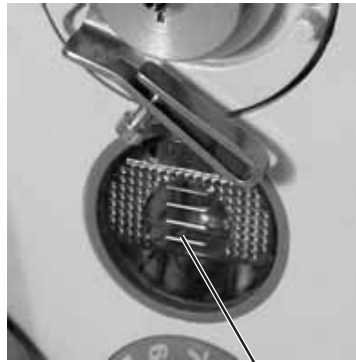
Oil the special sewing machine exclusively with the lubricating oil **DA-10** or an equivalent oil with the following specification:

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

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

250 ml-Container:	9047 000011
1-Litre-Container:	9047 000012
2-Litre-Container:	9047 000013
5-Litre-Container:	9047 000014

GB



1

Lubrication of the machine head

- The machine head is equipped with a central oil wick lubrication. All bearings are supplied by the oil reservoir 1.
- The oil level must not drop below the marking “**MIN**”.
- Fill up oil up to the marking “**MAX**” through the drill-holes in the inspection glass.

2.16.1 Hook lubrication



Caution: Danger of injury !

Turn the main switch off !

Adjust the hook lubrication only with the sewing machine switched off.

Make functional test with utmost caution when the sewing machine is running.

Standard checking

The necessary oil quantity for the correct lubrication of the hook has been adjusted by the manufacturer. It has to be altered, only in exceptional cases.

The required oil quantity depends on the sewing threads to be processed and on the fabric.

A piece of paper - preferably blotting paper - held below the hook has to be slightly sprayed with oil when sewing approx. 1 m of sewing thread and fabric .

Correction

- Adjust the oil quantity with the regulating screw 1.
Turn the screw counter-clockwise = increase the oil quantity
Turn the screw clockwise = reduce the oil quantity

ATTENTION !

The adjusted oil quantity only changes after a several minutes of operation.

2.17 Maintenance



Caution: Danger of injury !

Turn the main switch off !
The maintenance of the sewing machine must only be done when the machine is switched off.

The daily or weekly maintenance work (cleaning and oiling) to be carried out by the operators of the sewing machine is described in the operating instructions (part 1). It is only listed in the following table for the sake of completeness.

Maintenance work to be carried out	Operating hours			
	8	40	160	500
Sewing machine head				
- Remove sewing dust and thread waste	X			
- Check the oil level in the oil reservoir for the lubrication of the sewing machine head		X		
Sewing drive				
- Clean motor fan grill	X			
- Check status and tension of the V-belt			X	
Pneumatic system				
- Check water level in the pressure regulator		X		
- Clean filter element of the compressed air maintenance unit				X
- Check the tightness of the pneumatic system				X

GB

Notes: