

**PFAFF**<sup>®</sup> **5487**

# **Service Manual**

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**PFAFF INDUSTRIEMASCHINEN GMBH KAISERSLAUTERN**

# Service Manual for the Pfaff 5487

Please note:

The illustrations in this Manual show the Pfaff 5487-813/01 single-needle, two-thread chainstitch, high-speed sewing machine, whereas the adjusting instructions pertain to single- and double-needle machines.

Adjusting instructions for machines with -911/.. backtacking mechanism, which differ from the normal instructions, are included in the Appendix.

The machine version is indicated on the model plate on the arm standard.

Tools, gauges and other equipment needed for adjusting the Pfaff 5487:

1 set of screwdrivers with blades from 2 to 10 mm wide

1 set of hexagon allen keys ranging from 1.5 to 6.0 mm

1 set of spanners from 7 to 14 mm wide

1 spanner, 22 mm wide

1 metal rule

1 C-clamp, No. 08-880 137-00

1 adjustment pin, 5 mm dia., No. 13-030 341-05

1 gauge, No. 61-111 642-19

1 gauge, No. 61-111 643-06

1 wrapper with System 4463-35 needles or  
System 4463 KK needles for HO version or  
System 5463-35 needles for H version (subcl. -911/..)

Spacing washers: 0.3, 0.5, 0.8 or 1.2 mm thick

Spacers: 0.3 or 0.6 mm thick (for subcl. -911/..)

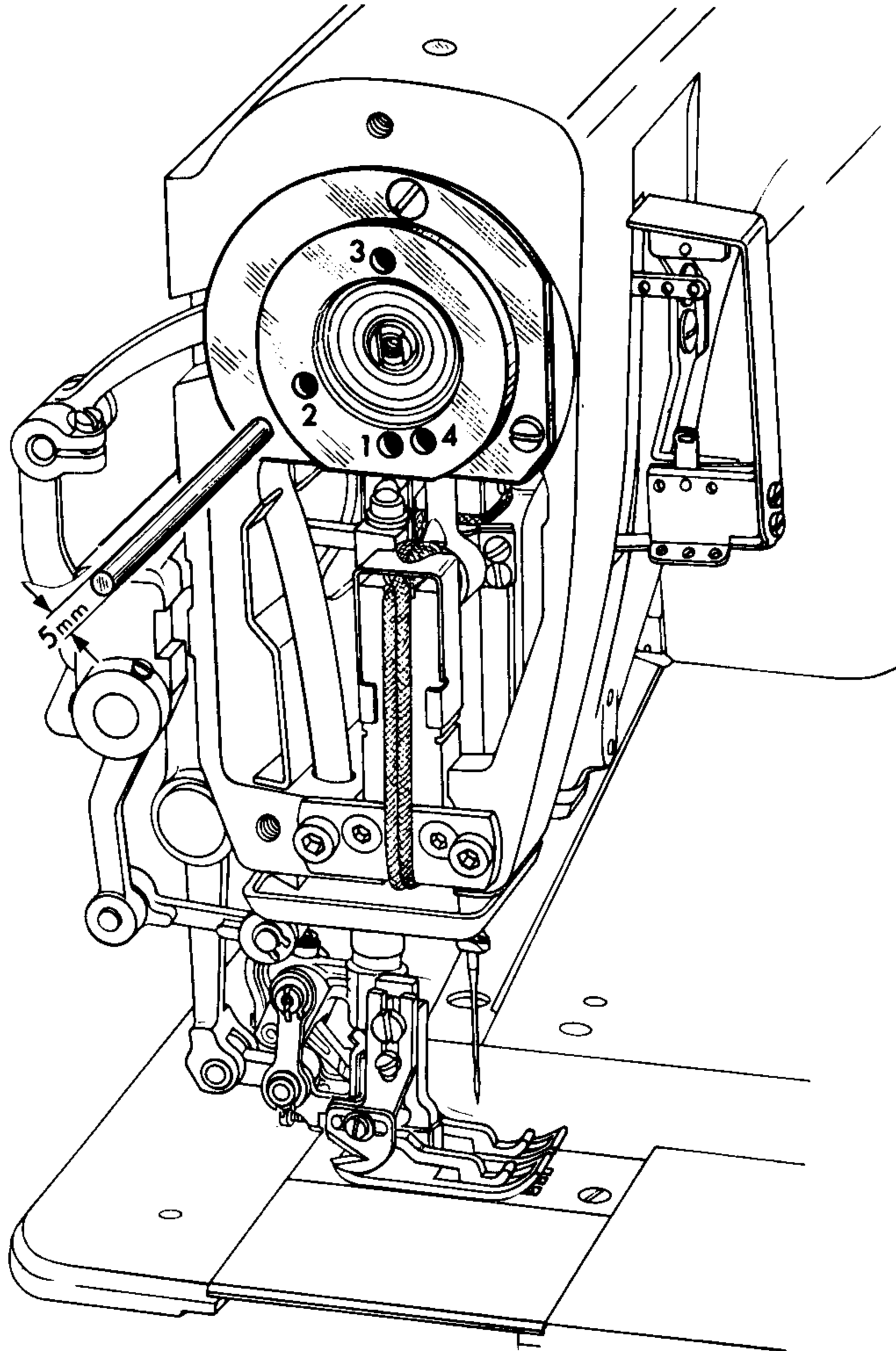
Thread and material for testing purposes

# 1

## Preparations for adjustment

Note:

This machine is equipped with a bearing plate (Fig. 1.0.1) with four holes in it. By inserting a pin in one of these holes and pushing it into a recess behind the bearing plate the machine can be blocked with the needle bar at a certain position.



1.0.1

1.1

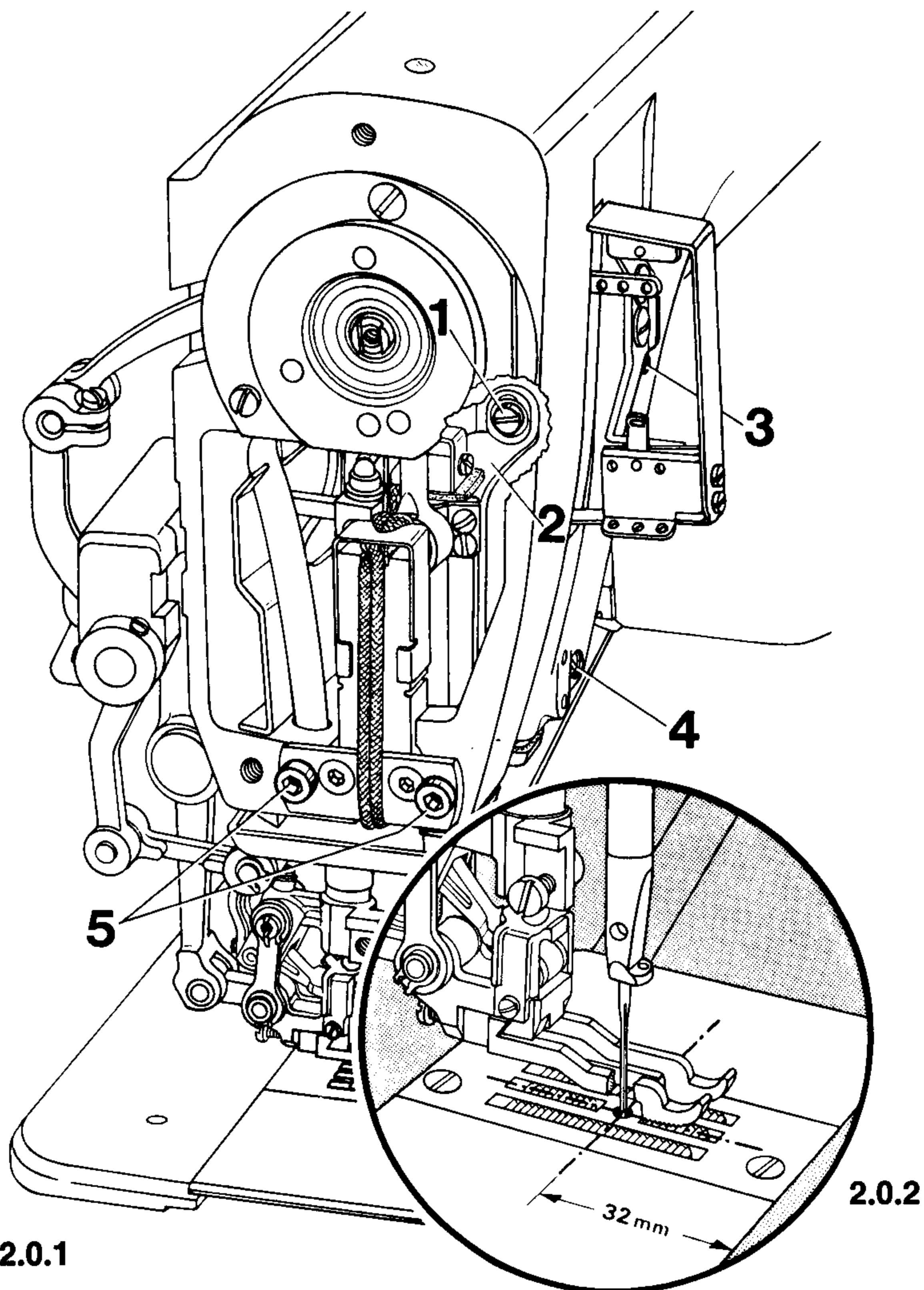
Remove the belt guard.

1.2

Take out the two face cover screws and remove the face cover.

Correct setting:

The needle should be centred in the needle hole in crosswise direction and its centre line should be 32 mm from the front edge of the needle plate (Fig. 2.0.2).



- 2.1 Bring the needle bar to its top dead centre and remove the presser foot.  
 2.2 Insert a new needle (see needle system on inside front cover) and push it into the needle bar as far as it will go, making sure its long groove faces towards you.  
 2.3 Remove screw 1 (Fig. 2.0.1) from the eye of needle bar frame 2.  
 2.4 Loosen screw 3 of the eccentric guide stud.  
 2.5 Loosen allen screw 4 of the lug on the needle bar frame.  
 2.6 Loosen both screws 5 of guide by two or three turns.

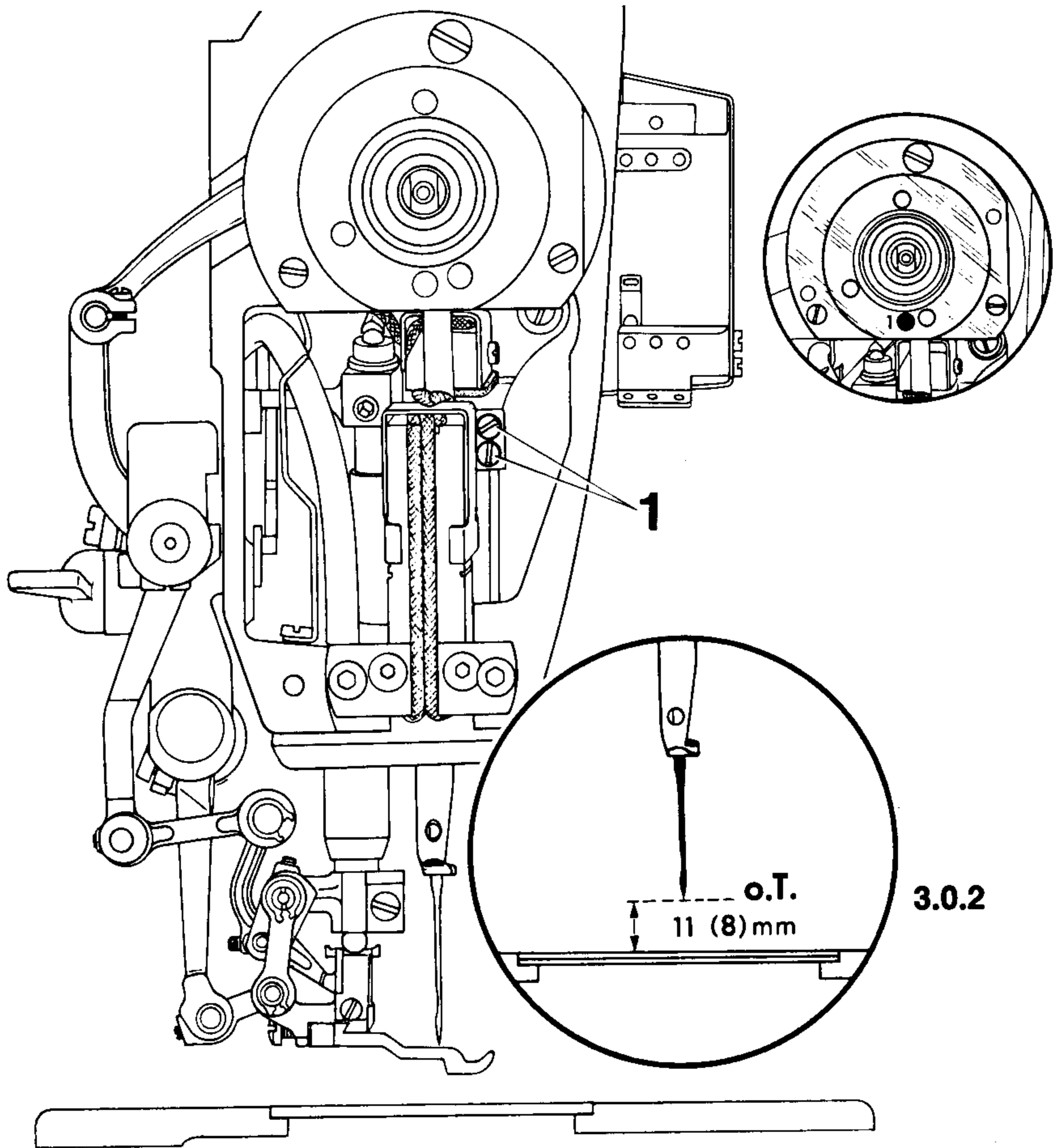
- 2.7 Turn the balance wheel until the needle point is immediately above the needle hole.
- 2.8 **Adjust the position of needle bar frame 2 so that the needle is centred in the needle hole in crosswise direction.**
- 2.9 Tighten allen screw 4 just lightly.
- 2.10 **Turn the eccentric guide stud in the eye of needle bar frame 2 so that there is a clearance of 32 mm between the centre line of the needle and the front edge of the needle plate (Fig. 2.0.2).**
- 2.11 In this position, also tighten screw 3 a little.
- 2.12 Now securely tighten allen screw 4.
- 2.13 Insert screw 1 together with its washer and turn it into the eccentric guide stud a few turns.
- 2.14 Pull screw 1 outwards to bring the eccentric guide stud into contact with the reverse side of needle bar frame 2. Then securely tighten screw 3.
- 2.15 Also tighten screw 1 securely.
- 2.16 Loosen screw 3 again, turn the balance wheel a few turns to make sure that no twist has occurred in the needle bar frame, then tighten screw 3 again.
- 2.17 Tighten both screws 5, making sure that guide is parallel to the needle bar.
- 2.18 Check this adjustment (see "Correct setting").

### 3

#### Preliminary adjustment of needle bar height

Correct setting:

With the needle bar at its top dead centre (pin in hole 1) the needle point should be positioned 11 mm (on version HO 8 mm) above the needle plate (Fig. 3.0.2).



**3.0.1**

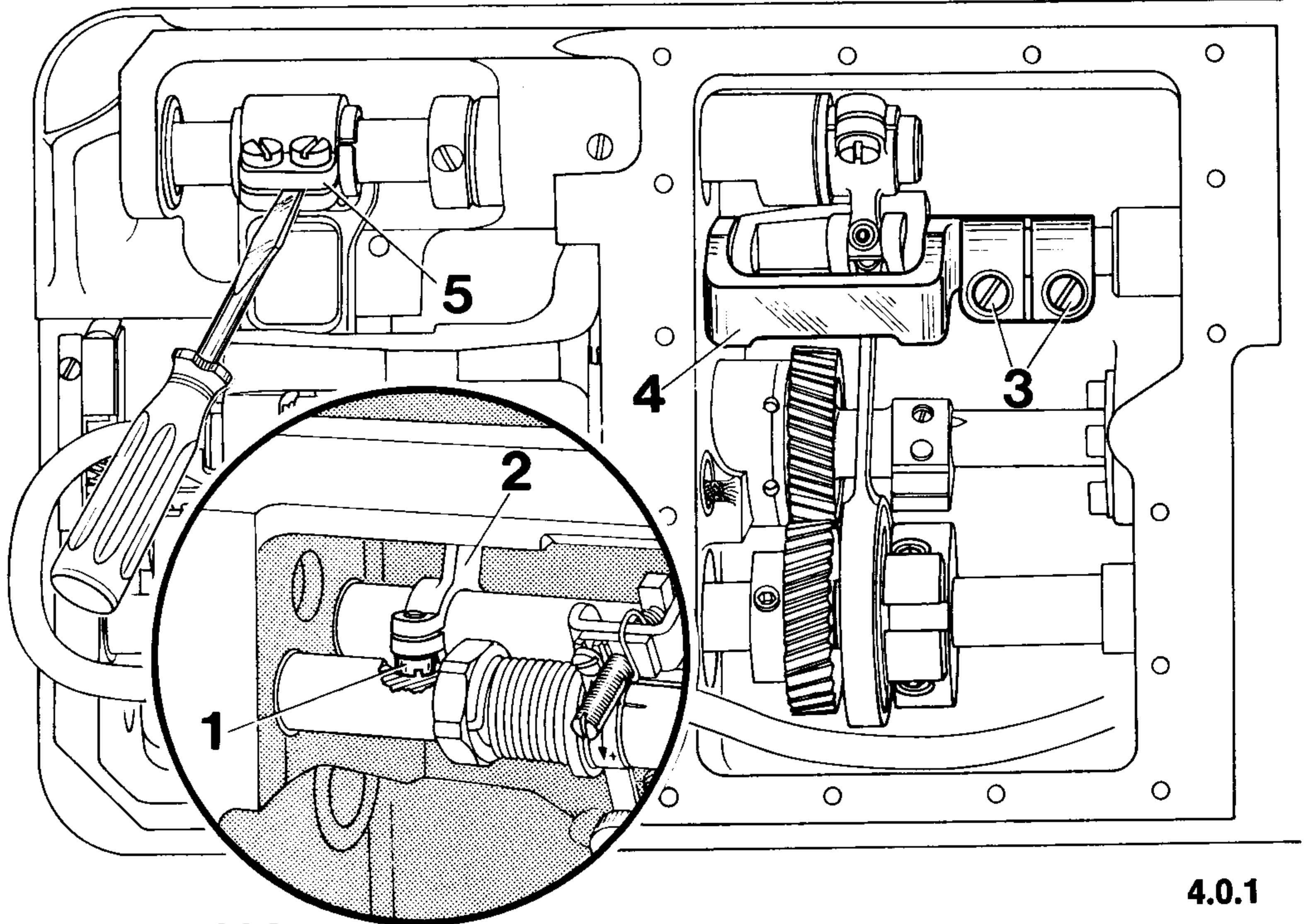
**3.0.2**

- 3.1 Bring the needle bar to its top dead centre.
- 3.2 Insert the pin in hole 1 of the bearing plate (to block the machine).
- 3.3 Loosen clamp screws 1 in the needle bar connecting stud (Fig. 3.0.1).
- 3.4 **Move the needle bar up or down until the needle point is positioned 11 mm above the needle plate (Fig. 3.0.2).**
- 3.5 Securely tighten both clamp screws 1.
- 3.6 Pull the pin out of the hole in the bearing plate.

## 4 Zeroing the bottom feed

Correct setting:

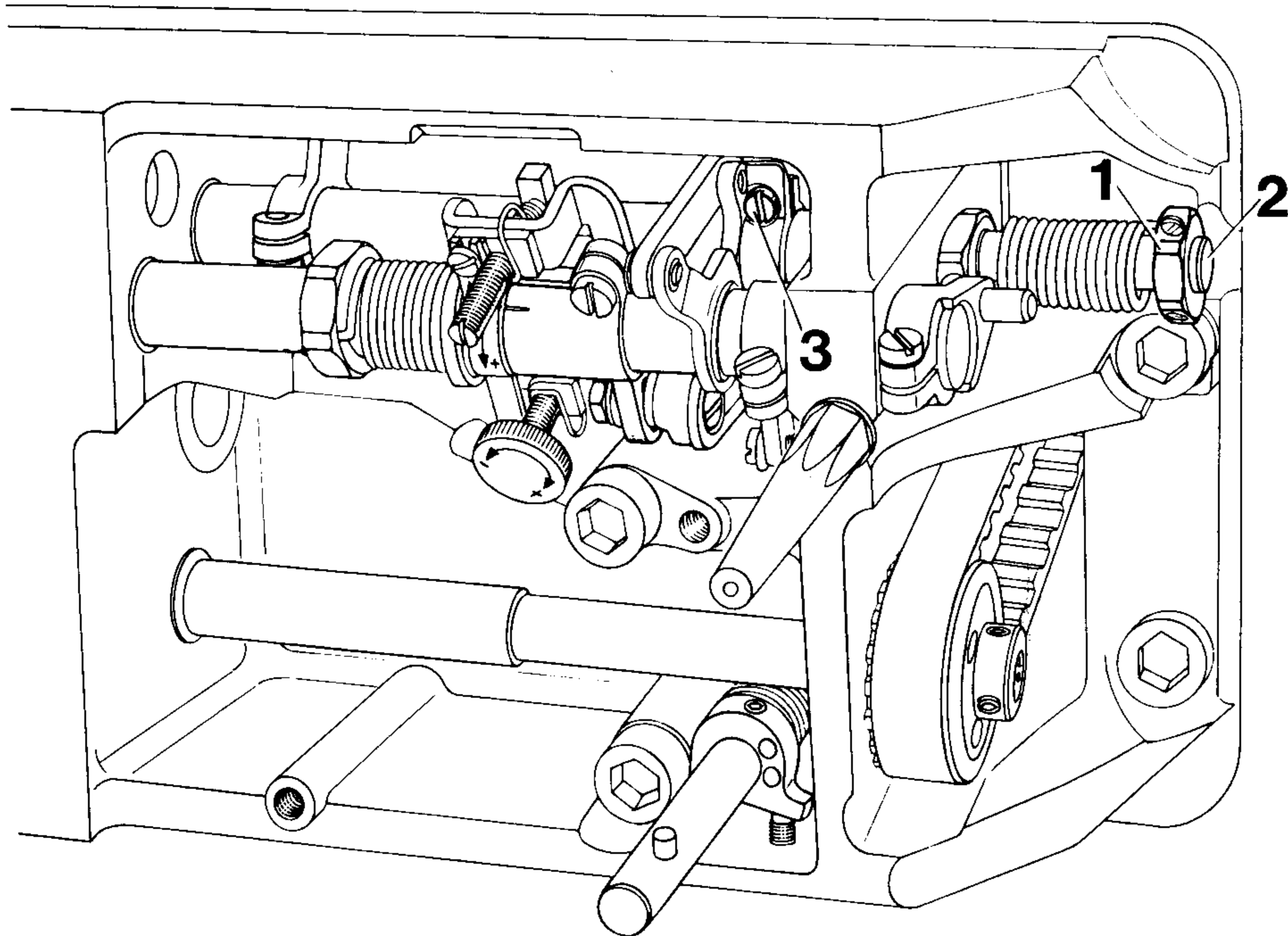
With the stitch length set at "0", the feed dog must not move when the balance wheel is turned.



4.0.1

4.0.2

- 4.1 Adjustment is to be made with the gearcase **open**.
- 4.1.1 Loosen clamp screw 1 of stop crank 2 (Fig. 4.0.2).
- 4.1.2 Turn the stitch length control to "0".
- 4.1.3 Remove the 16 screws of the gearcase cover and take off the cover with its gasket.
- 4.1.4 Remove the lubrication pad from the gearcase.
- 4.1.5 Loosen both clamp screws 3 of feed regulator crank 4 (Fig. 4.0.1) just sufficiently to allow the crank to be turned on its shaft.
- 4.1.6 In order to show the absence of feed motion more clearly, insert a screwdriver in the slot of feed driving crank 5.
- 4.1.7 **Rotate the balance wheel and simultaneously turn crank 4 on its shaft until the feed dog (i. e. the screwdriver in feed driving crank 5) no longer moves.**
- 4.1.8 Tighten both clamp screws 3.
- 4.1.9 Check this adjustment (see "Correct setting").
- 4.1.10 Clamp screw 1 is left loose for adjusting the stitch length limitation (Section 39).



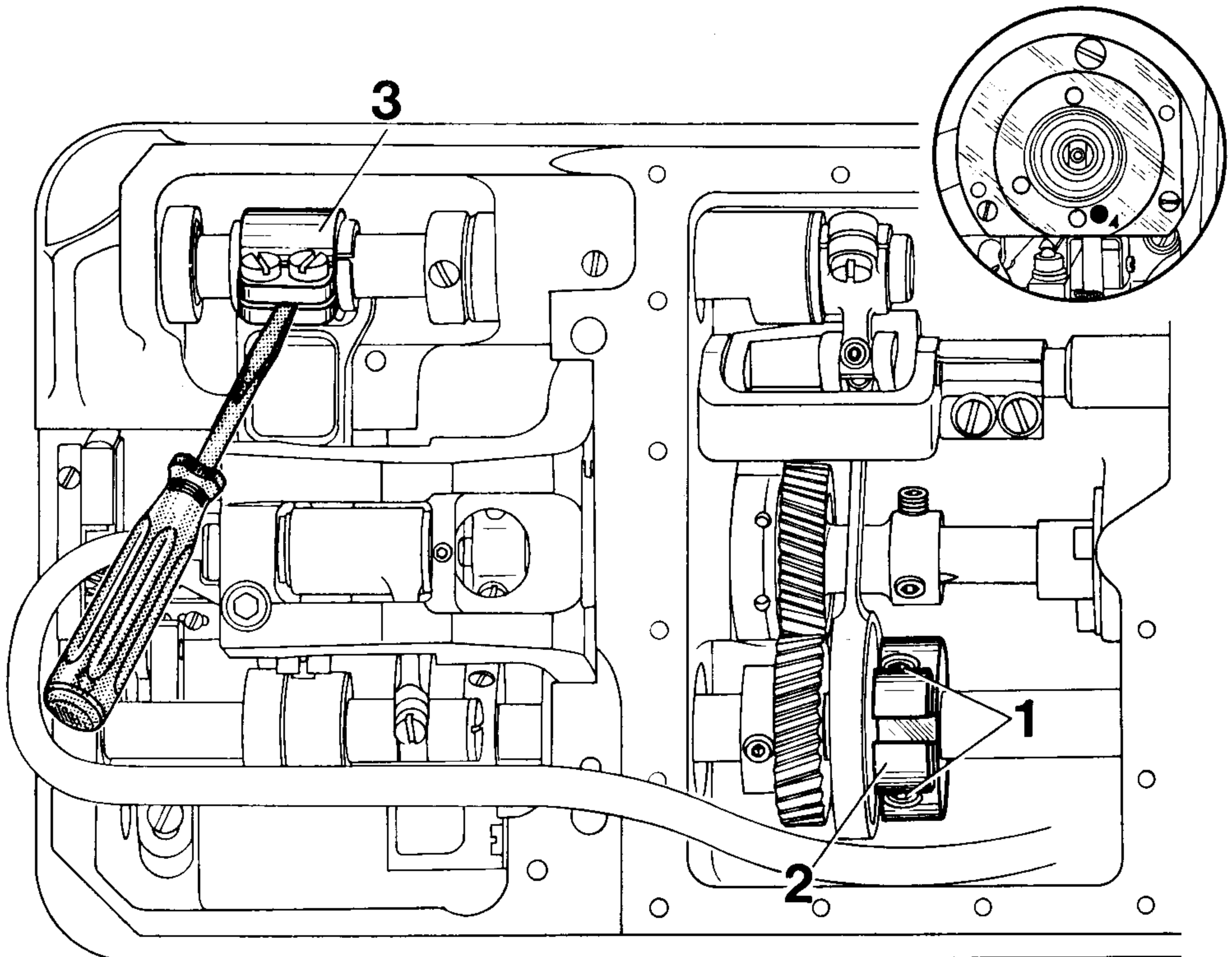
4.0.3

- 4.2.1 Check to make sure that clamp screw 1 of stop crank 5 (Fig. 4.0.2) is loose, then turn the stitch length control to "0".
- 4.2.2 Place a 22-mm open-ended spanner on hexagon tension nut 1 (Fig. 4.0.3) and use it to hold feed regulating shaft 2 fast.
- 4.2.3 Loosen clamp screw 3 of the feed regulating crank.
- 4.2.4 **Rotate the balance wheel and simultaneously turn the shaft with the open-ended spanner so that the feed dog no longer moves.**
- 4.2.5 Hold the spanner in this position and securely tighten clamp screw 3.
- 4.2.6 Check this adjustment (see "Correct setting").



Correct setting:

With the stitch length set at its maximum and the needle bar positioned 0.8 mm before its top dead centre (pin in hole 4) the feed dog must not move when the reverse-feed control is operated.



5.0.1

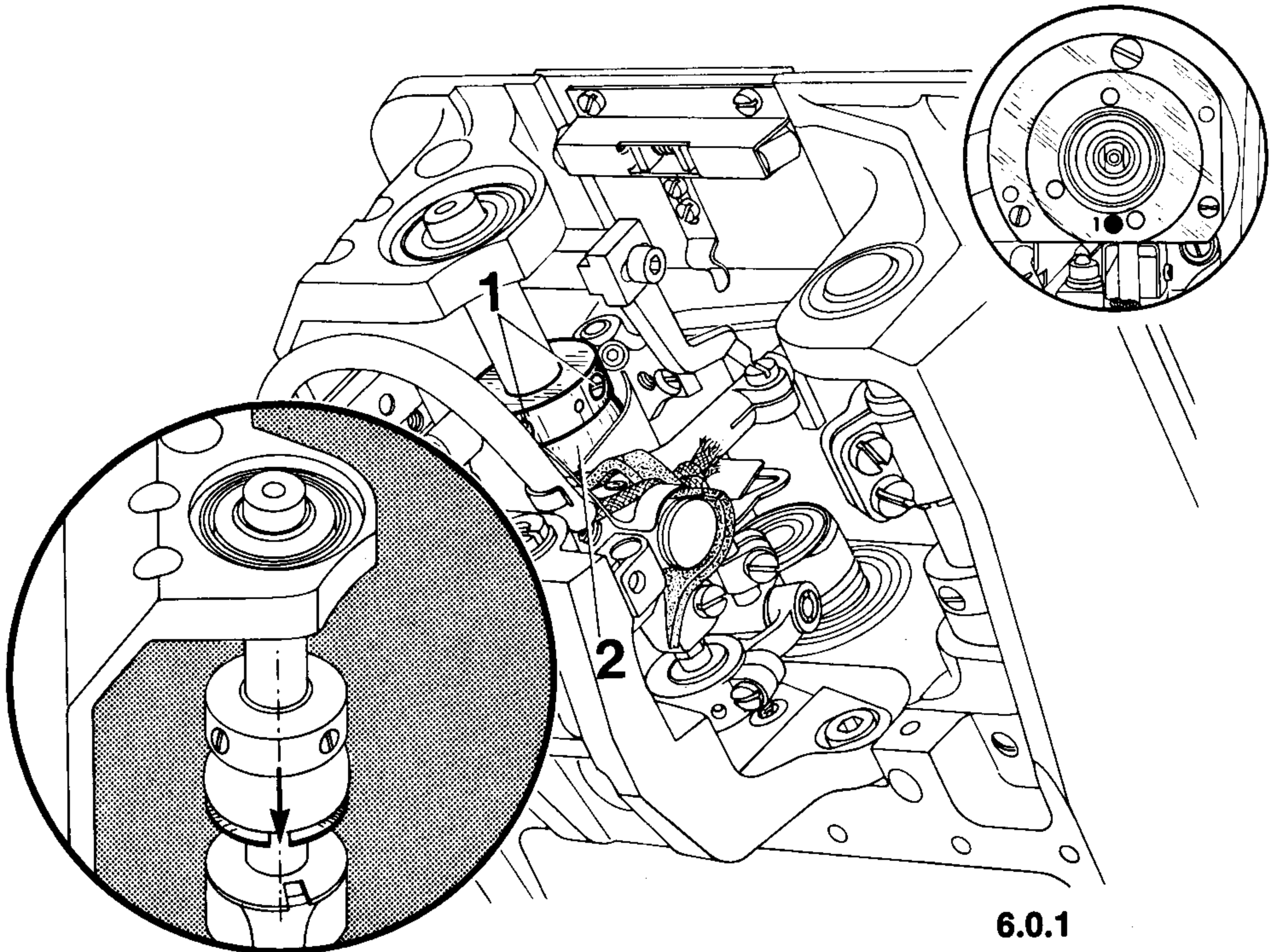
- 5.1 Turn the balance wheel until screws 1 of feed driving eccentric 2 (Fig. 5.0.1) are accessible.
- 5.2 Loosen both screws 1.
- 5.3 Turn the balance wheel to position the needle bar 0.8 mm before its top dead centre.
- 5.4 Insert the pin in hole 4 of the bearing plate (to block the machine).
- 5.5 Set the machine for its longest stitch.
- 5.6 In order to show the absence of feed motion more clearly, insert a screwdriver in the slot of feed driving crank 3.
- 5.7 **Turn feed driving eccentric 2 while operating the reverse-feed control until the slot in the eccentric is visible and the feed dog (i. e. the screwdriver) does not move.**
- 5.8 In this position, tighten the accessible screw 1.
- 5.9 Pull the pin out of the hole in the bearing plate.
- 5.10 Now tighten the second screw 1.
- 5.11 Check this adjustment (see "Correct setting").

**Feed lifting motion**

(for machines with backtacking mechanism -911/ . . see Appendix)

Correct setting:

When the needle bar is at its top dead centre (pin in hole 1) the slot in feed lifting eccentric 2 should face downwards (see arrow in Fig. 6.0.2).



6.0.2

6.0.1

- 6.1 Loosen screws 1 of feed lifting eccentric 2 (Fig. 6.0.1).
- 6.2 Turn the balance wheel to bring the needle bar to its top dead centre.
- 6.3 Insert the pin in hole 1 of the bearing plate (to block the machine).
- 6.4 **Turn feed lifting eccentric 2 so that its slot faces downwards** (see arrow in Fig. 6.0.2).
- 6.5 In this position, tighten the accessible screw 1.
- 6.6 Pull the pin out of the hole in the bearing plate.
- 6.7 Also tighten the second screw 1.
- 6.8 Check this adjustment (see "Correct setting").

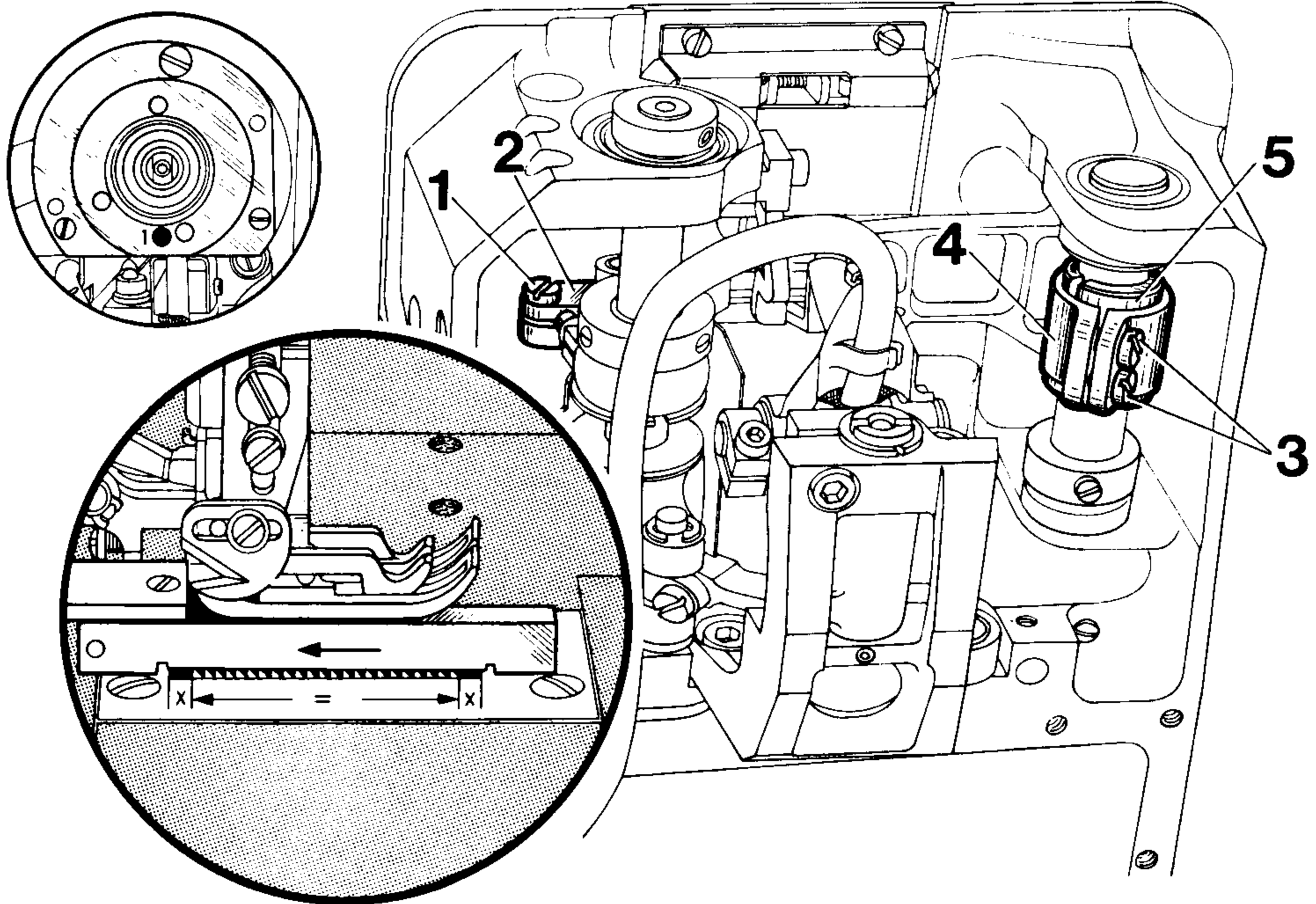
## 7

**Feed dog height**

(for machines with backtacking mechanism -911/ . . see Appendix)

Correct setting:

With the stitch length control set at "0" and the needle bar positioned at its top dead centre (pin in hole 1), the feed dog should be centred in its slot and contact the adjustment gauge throughout its length (Fig. 7.0.2).



7.0.2

7.0.1

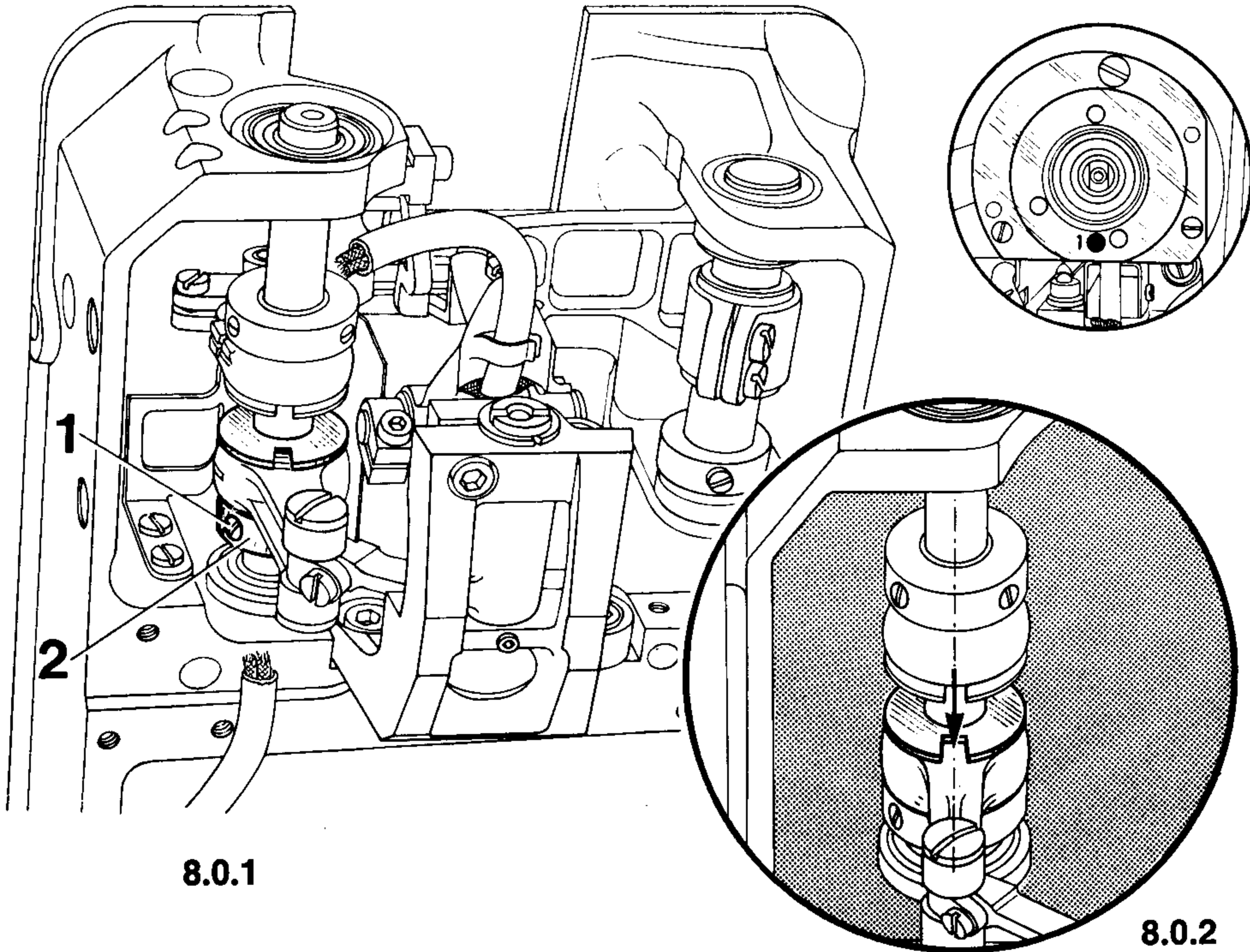
- 7.1 Turn the stitch length control to "0" and bring the needle bar to its top dead centre.
- 7.2 Insert the pin in hole 1 of the bearing plate (to block the machine).
- 7.3 Loosen clamp screw 1 of feed lifting crank 2 (Fig. 7.0.1).
- 7.4 Also loosen both clamp screws 3 of feed driving crank 4.
- 7.5 Unscrew the presser foot.
- 7.6 Place adjustment gauge No. 61-111642-19 on the needle plate so that its recess is centred above the feed slot and the arrow on the gauge points in feed direction (Fig. 7.0.2).
- 7.7 Lower presser foot onto the gauge.
- 7.8 **Centre the feed dog in its slot.**
- 7.9 Push the feed bar upwards until the feed dog contacts the gauge and hold it there.
- 7.10 **Turn eccentric sleeve 5 beneath the feed driving crank so that feed dog contacts the gauge throughout its length (Fig. 7.0.2).**
- 7.11 In this position, tighten clamp screws 1 and 3, making sure that the feed dog is still centred in the needle plate slot.
- 7.12 Raise the presser foot, remove the gauge and pull the pin out of the hole in the bearing plate.
- 7.13 Check this adjustment (see "Correct setting").

**Looper avoiding motion**

(for machines with backtacking mechanism -911 . . see Appendix)

Correct setting:

With the needle bar at its top dead centre (pin in hole 1) the slot in the avoiding motion eccentric should be positioned exactly below the centre line of the shaft (see arrow in Fig. 8.0.2).

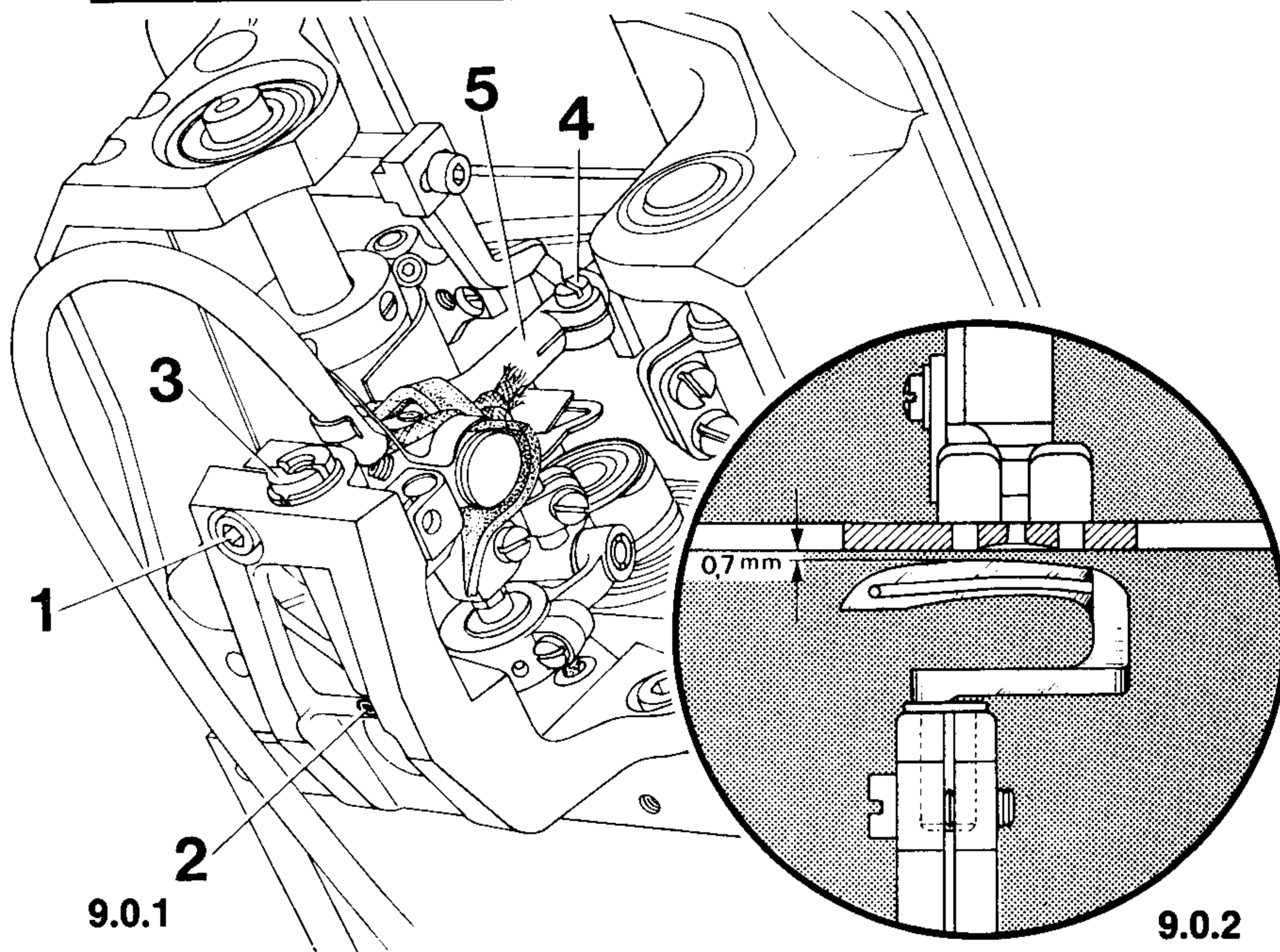


- 8.1 Loosen both screws 1 in the collar of avoiding motion eccentric 2 (Fig. 8.0.1).
- 8.2 Turn the balance wheel to bring the needle bar to its top dead centre.
- 8.3 Insert the pin in hole 1 of the bearing plate (to block the machine).
- 8.4 **Turn avoiding motion eccentric 2 so that its slot points vertically downwards (Fig. 8.0.2).**
- 8.5 In this position, tighten the accessible screw 1.
- 8.6 Pull the pin out of the hole in the bearing plate.
- 8.7 Also tighten the second screw 1.
- 8.8 Check this adjustment (see "Correct setting").

Correct  
setting:

When the looper holder is in its vertical position, there should be a clearance of **0.7 mm** between the highest point of the looper and the underside of the needle plate on single-needle machines (Fig. 9.0.2).

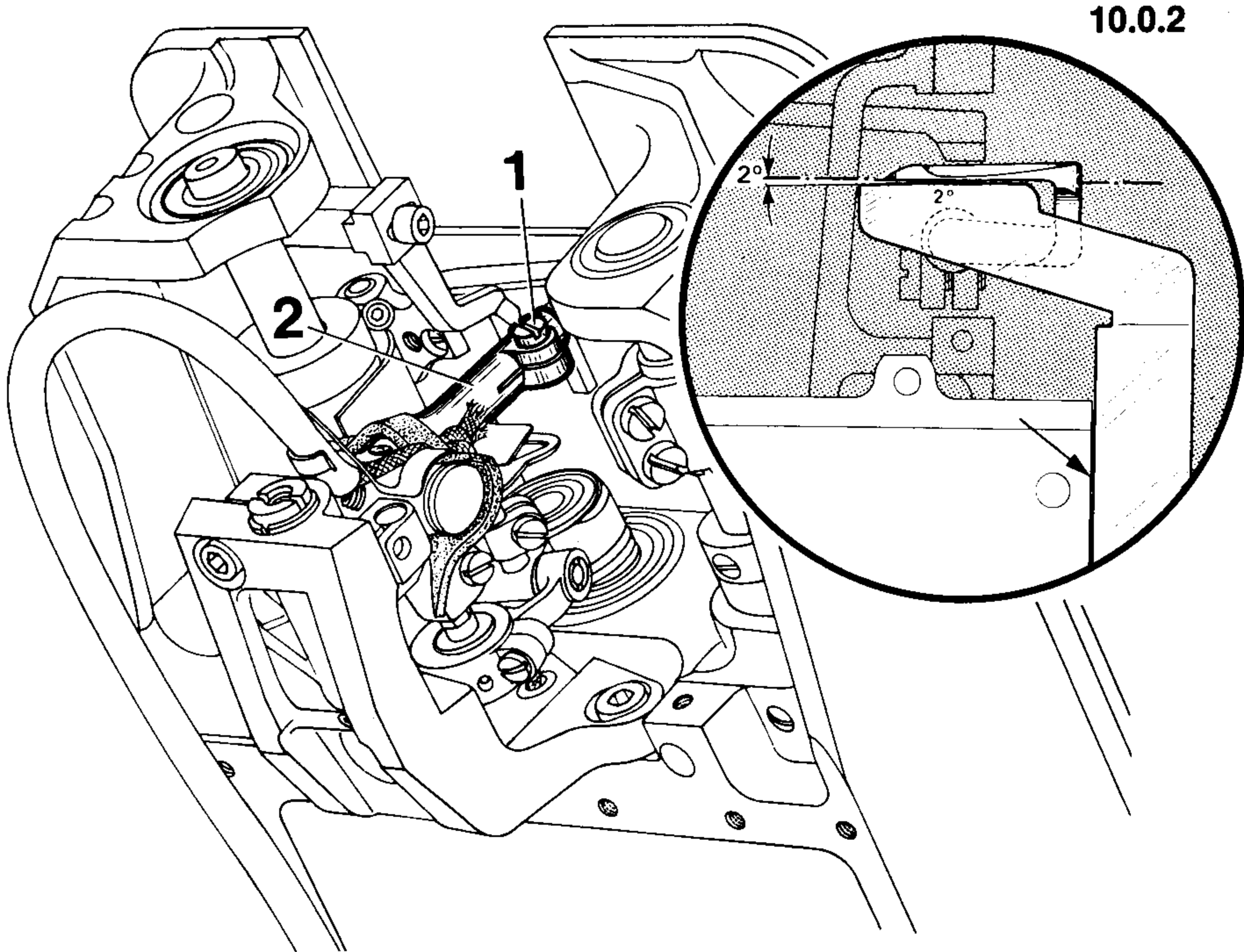
On two-needle machines, there should be a clearance of **1.0 mm** between the front looper and the needle plate.



- 9.1 Remove bed slide, cover plate, needle plate and feed dog.
- 9.2 Place the needle plate in position again and operate the presser bar lifter to lower the presser foot onto the needle plate.
- 9.3 Turn the balance wheel until the looper holder is vertical.
- 9.4 Loosen clamp screw 1 and screw 2 of eccentric bearing stud 3 (Fig. 9.0.1).
- 9.5 **Turn eccentric bearing stud 3 until there is a clearance of 0.7 mm between the highest point of the looper and the underside of the needle plate (Fig. 9.0.2), or a clearance of 1.0 mm between front looper and needle plate on two-needle machines.**
- 9.6 In this position, tighten clamp screw 1 and screw 2.
- 9.7 If a clearance of 0.7 mm (or 1.0 mm on two-needle machines) cannot be obtained, proceed as follows:
- 9.7.1 Raise the presser foot and remove the needle plate.
- 9.7.2 Loosen clamp screw 4 in looper holder 5 and take off the looper (do not lose spacing ring).
- 9.7.3 Fit an appropriate spacing ring (see inside front cover) on the looper neck and push the looper into looper holder 5 again as far as it will go.
- 9.7.4 Set the looper blade roughly parallel to the front edge of the bedplate (preliminary adjustment) and tighten clamp screw 4.
- 9.7.5 Replace the needle plate and operate the presser bar lifter to lower the presser foot onto the needle plate.
- 9.7.6 Check that there is a clearance of 0.7 mm (or 1.0 mm on two-needle machines) between the highest point of the looper and the underside of the needle plate when the looper holder is in its vertical position.
- 9.8 If necessary, repeat steps 9.3 to 9.6
- 9.9 Check this adjustment (see "Correct setting").

Correct  
setting:

The surface of the looper with the thread groove should be at an angle of  $2^\circ$  to the imaginary centre line of the bedplate (Fig. 10.0.2).



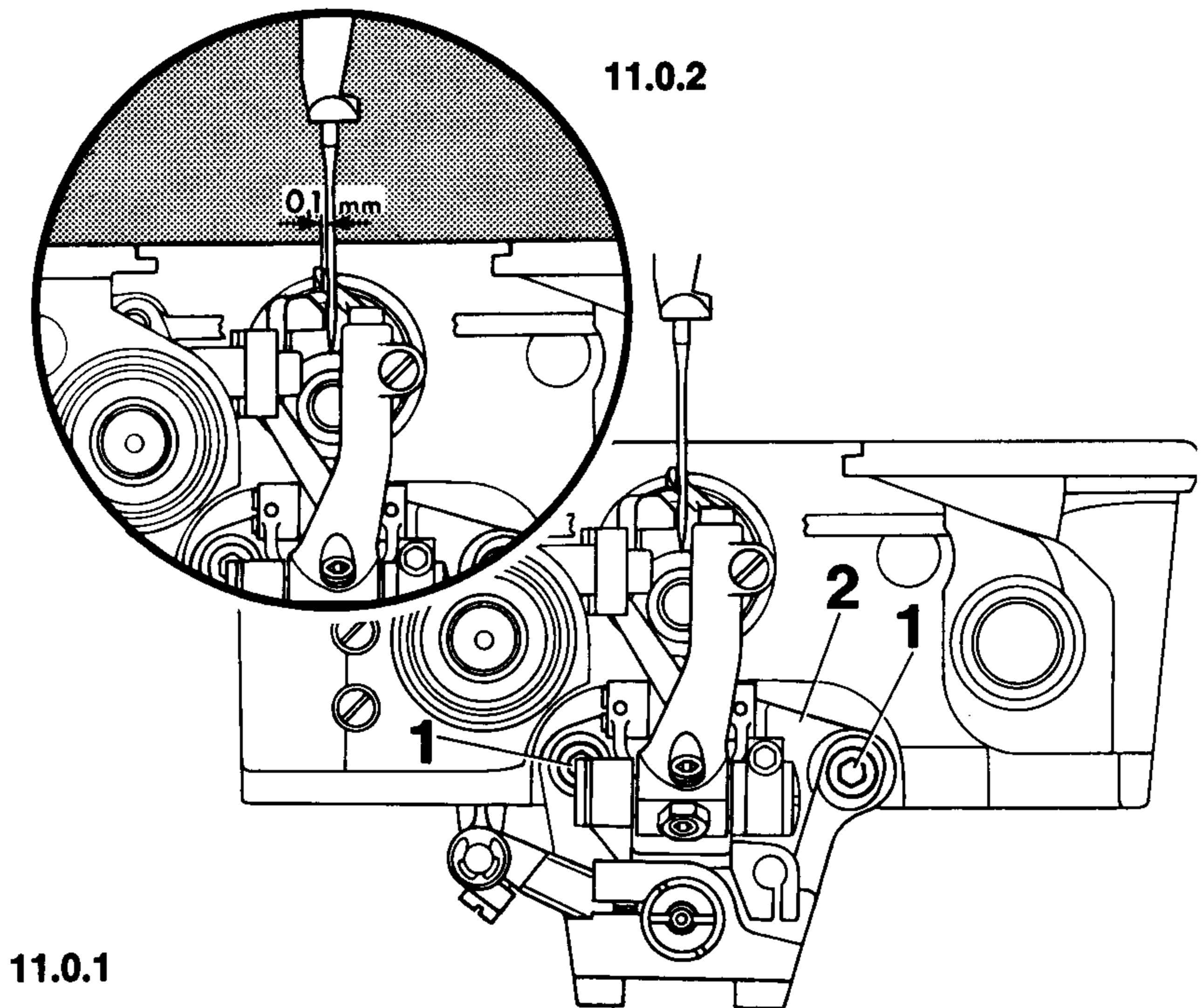
10.0.1

10.0.2

- 10.1 Raise the presser foot by means of the presser bar lifter.
- 10.2 Check to make sure that needle plate and feed dog are removed, then loosen clamp screw 1 in looper holder 2 (Fig. 10.0.1).
- 10.3 Turn the balance wheel to move looper holder 2 to its vertical position.
- 10.4 **Place adjustment gauge No. 61-111 643-06 against the left edge of the cover plate support (see arrow in Fig. 10.0.2), push it against the looper and bring the grooved looper surface into contact with the gauge.**
- 10.5 In this position, tighten clamp screw 1.
- 10.6 Remove the gauge.

Correct  
setting:

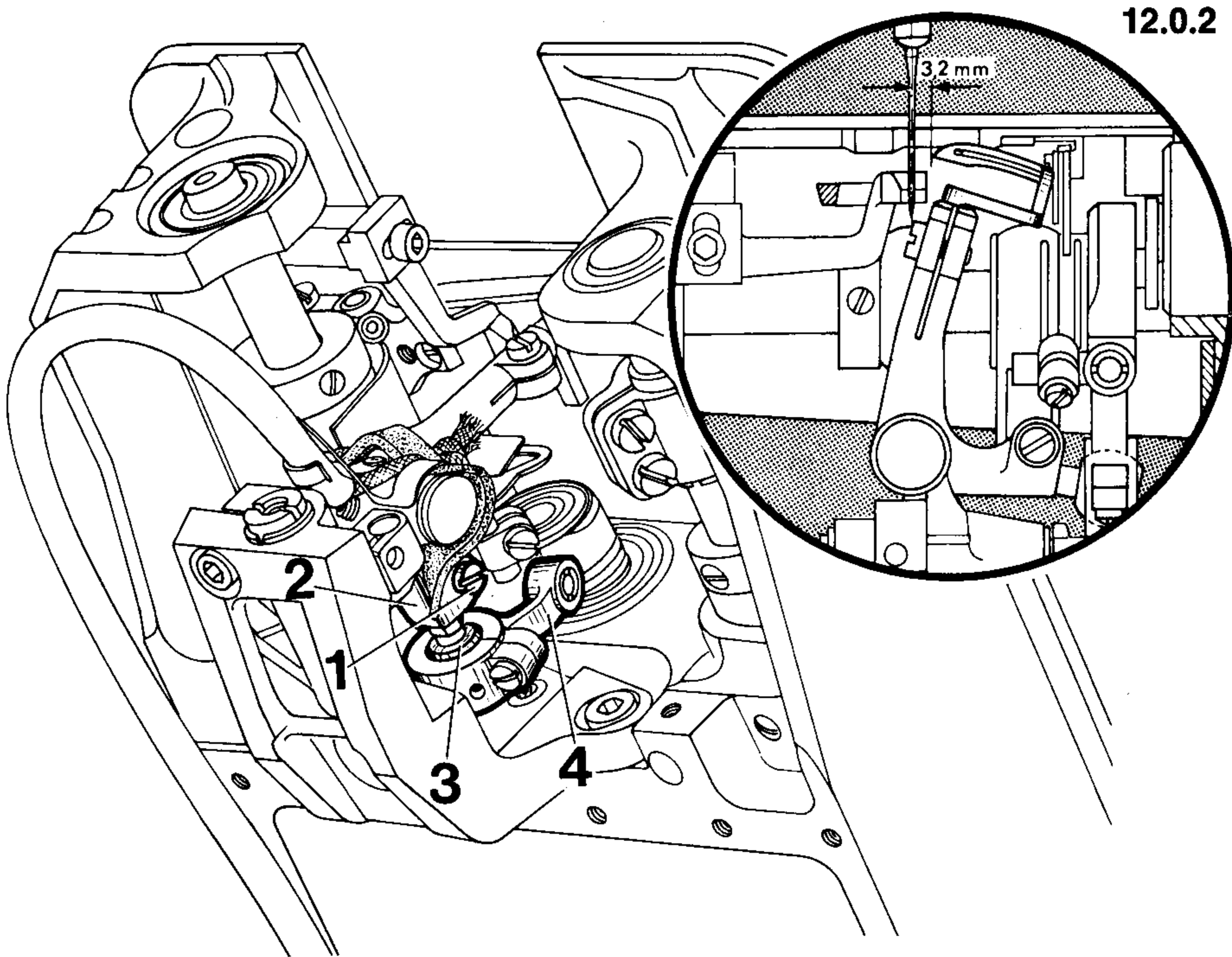
In sewing direction there should be a clearance of about 0.1 mm between looper point and needle (Fig. 11.0.2).



- 11.1 Turn the balance wheel until the point of the advancing looper is in line with the left side of the needle.
- 11.2 Slightly loosen both screws 1 of looper assembly 2 (Fig. 11.0.1).
- 11.3 **Adjust the position of the looper assembly so that there is a clearance of 0.1 mm between looper point and needle.**
- 11.4 In this position, tighten both screws 1.
- 11.5 If a clearance of 0.1 mm cannot be obtained, adjust by turning eccentric bearing stud 3 (Fig. 9.0.1). Repeat the adjustments described in Section 9.

Correct setting:

When the looper is at its right point of reversal, there should be a clearance of **3.2 mm (3.6 mm on version HO machines)** between looper point and centre line of needle (Fig. 12.0.2).



12.0.1

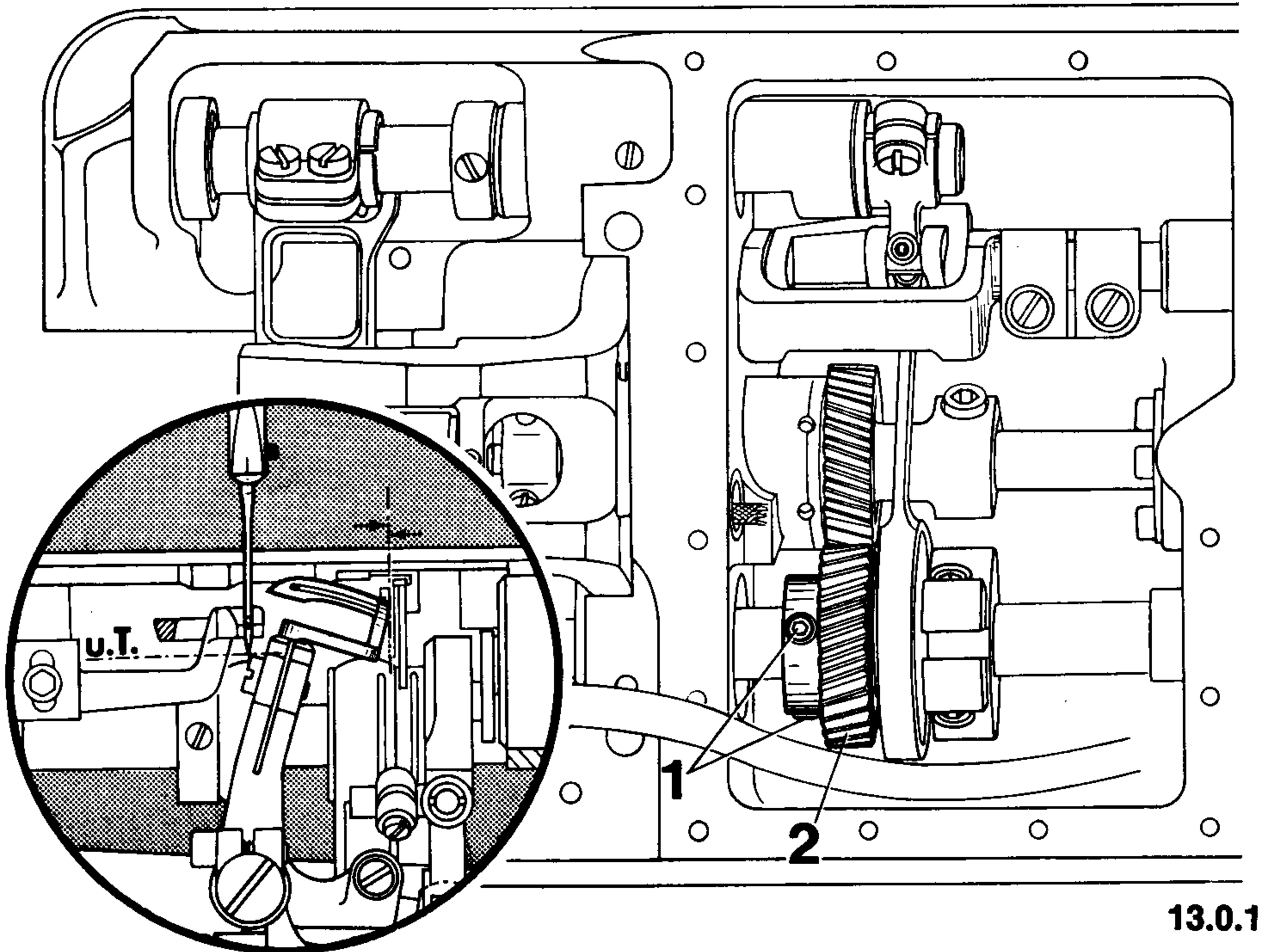
12.0.2

- 12.1 Turn the balance wheel to bring the looper to its right point of reversal.
- 12.2 Loosen clamp screw 1 in looper holder 2 (Fig. 12.0.1).
- 12.3 **Place the 3.2 mm blade (or 3.6 mm blade on version HO) of gauge No. 91-111 643-06 against the needle with its notch facing in the direction of feed (the number must be visible).**
- 12.4 **Make sure that driving link 4 is vertical and, with the aid of a 6-mm open-ended spanner, turn eccentric ball stud 3 until the looper point contacts the right side of the blade.**
- 12.5 Tighten clamp screw 1 securely.
- 12.6 Check this adjustment (see "Correct setting").



Correct  
setting:

When the needle bar reaches its bottom dead centre, the looper should be at its right point of reversal (Fig. 13.0.2).



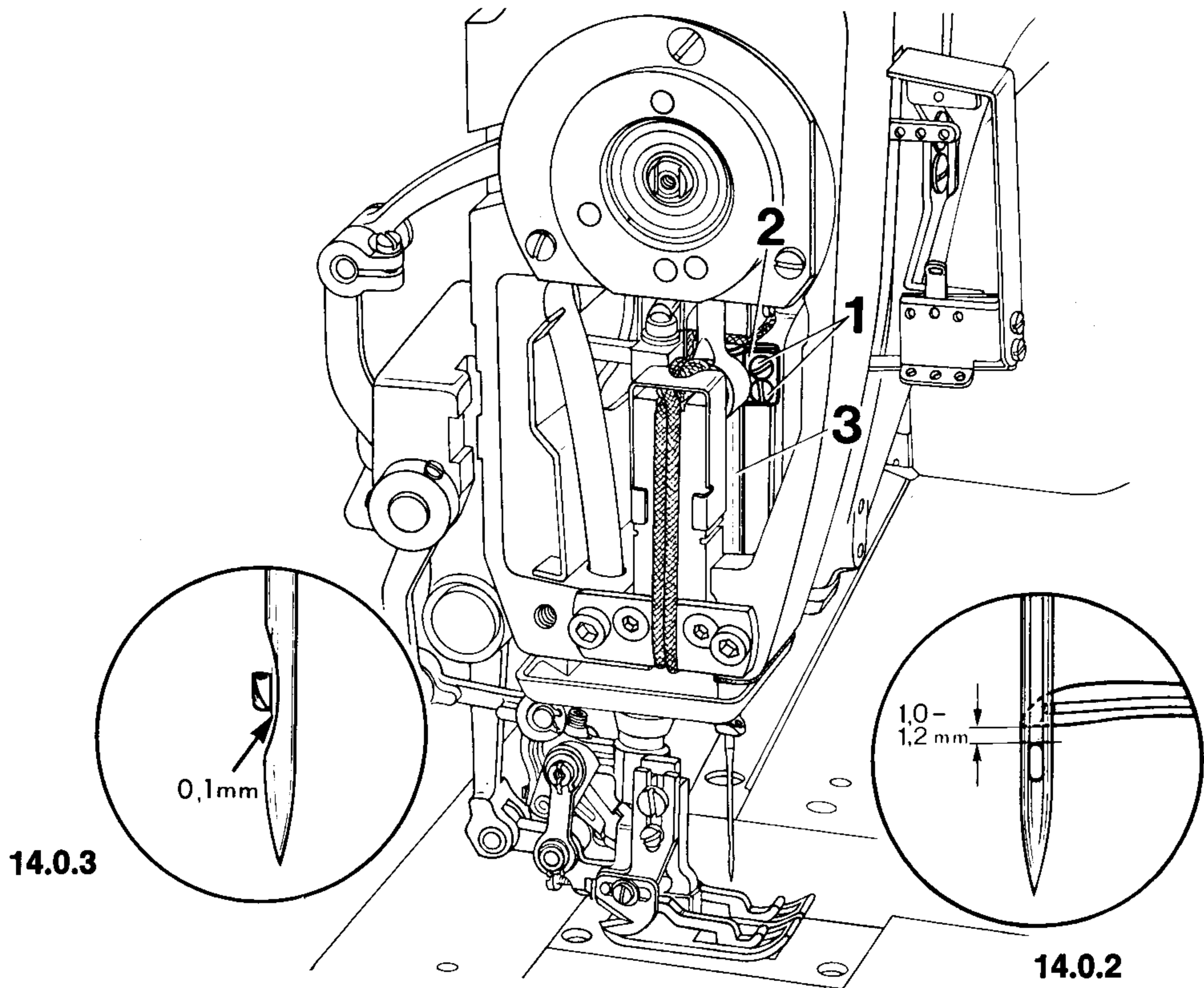
13.0.2

13.0.1

- 13.1 Turn the balance wheel in sewing direction until the point of the advancing looper is at the right-hand side of the needle.
- 13.2 In this position, attach C-clamp No. 08-880 137-00 on the needle bar so that it contacts the needle bar frame (thus blocking the upward motion of the needle bar).
- 13.3 Turn the balance wheel in the opposite direction until the C-clamp contacts the needle bar frame again.
- 13.4 In this position, the looper point should again be at the right-hand side of the needle.
- 13.5 If it is not, loosen both screws **1** in the gearcase (Fig. 13.0.1) so that gear **2** can just be turned by hand.
- 13.6 Remove the C-clamp and **turn gear 2 to the required position.**
- 13.7 Repeat steps 13.1 to 13.4 inclusive.
- 13.8 After these adjustments, remove the C-clamp again and tighten both screws **1**.
- 13.9 Check this adjustment (see "Correct setting").

Correct setting:

When the point of the advancing looper is in line with the left side of the needle, the bottom edge of the looper should be positioned **1.0 to 1.2 mm** above the top of the needle eye (Fig. 14.0.2). In this position, there should be a clearance of **0.1 mm** between looper and needle (Fig. 14.0.3).



### 14.0.1

- 14.1 Turn the balance wheel in sewing direction until the point of the advancing looper is in line with the left side of the needle.
- 14.2 In this position, loosen both clamp screws 1 in needle bar connecting stud 2 (Fig. 14.0.1).
- 14.3 **Move needle bar 3 up or down until there is a clearance of 1.0 to 1.2 mm between the top of the needle eye and the bottom edge of the looper (Fig. 14.0.2). Make sure the needle bar is not turned during the adjustment.**
- 14.4 In this position, tighten both clamp screws 1, and check whether there is a clearance of 0.1 mm between looper and needle (Fig. 14.0.3). For adjustment, refer to Section 11.2 to 11.4.
- 14.5 Check this adjustment (see "Correct setting").

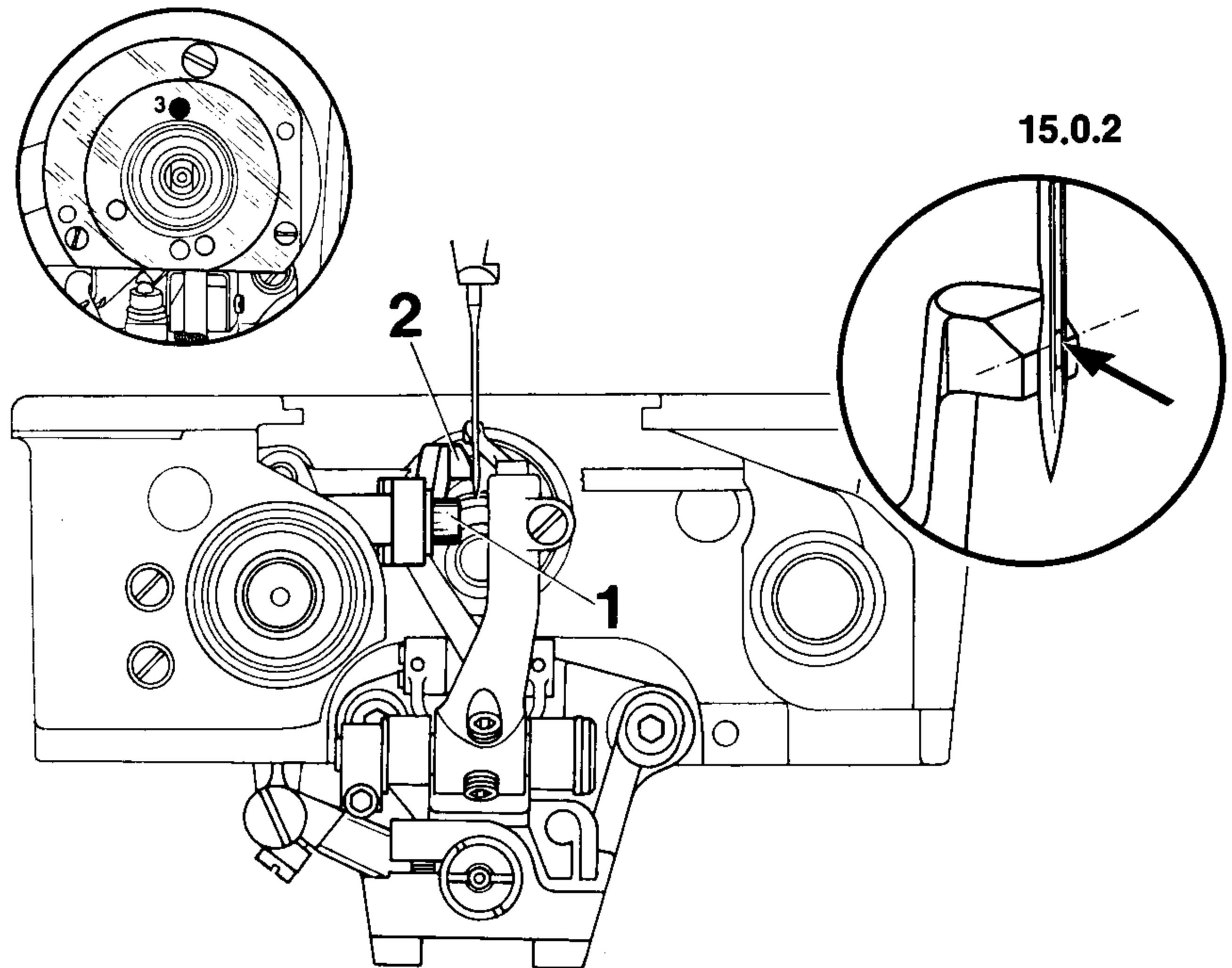
15

### Height of rear needle guard

(for machines with backtacking mechanism -911/ . . see Appendix)

Correct setting:

With the needle bar at its bottom dead centre (pin in hole 3), the vertical surface of the needle guard should cover the needle eye by roughly 2/3 (see arrow in Fig. 15.0.2).



15.0.1

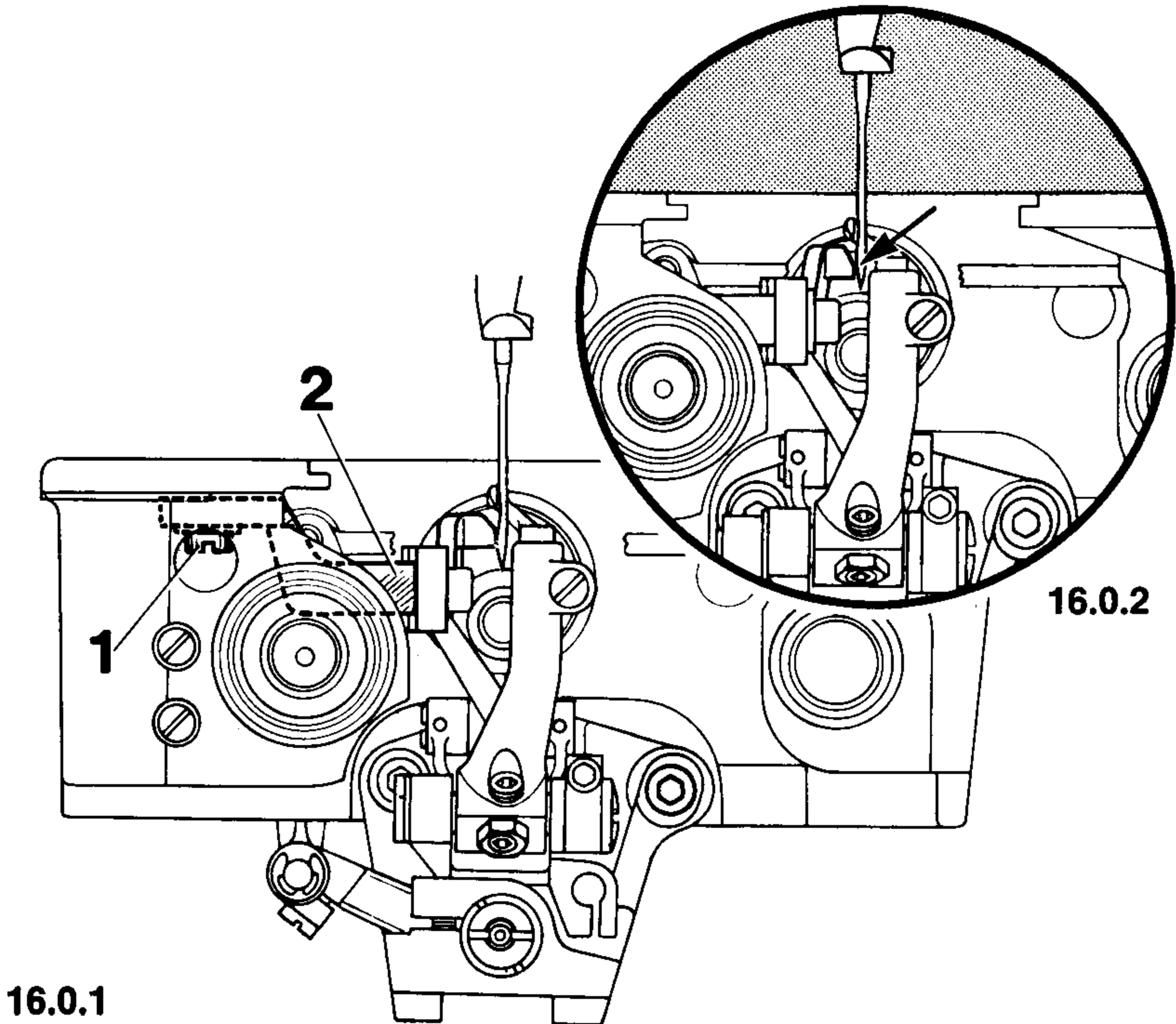
- 15.1 Turn the balance wheel to bring the needle bar to its bottom dead centre.
- 15.2 Insert the pin in hole 3 of the bearing plate (to block the machine).
- 15.3 Loosen screw 1 of rear needle guard 2 (Fig. 15.0.1).
- 15.4 **Adjust needle guard 2 so that its vertical surface covers roughly 2/3 of the needle eye (Fig. 15.0.2).**
- 15.5 In this position, tighten screw 1.
- 15.6 Pull the pin out of the hole in the bearing plate.
- 15.7 Check this adjustment (see "Correct setting").

**16 Clearance between rear needle guard and needle**

(for machines with backtacking mechanism -911/... see Appendix)

Correct setting:

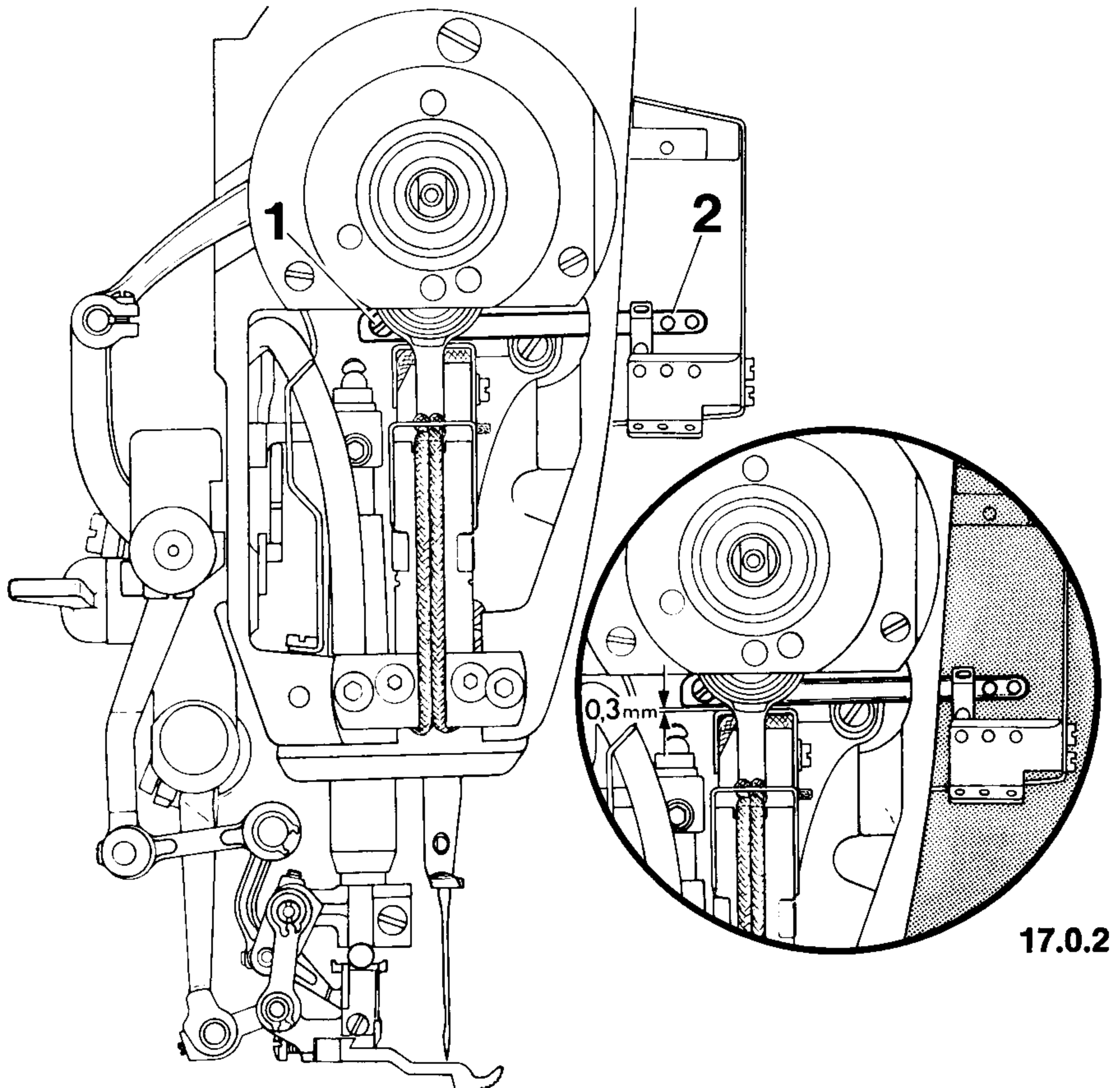
The needle should still contact the rear needle guard lightly when the point of the advancing looper is in line with the right side of the needle (see arrow in Fig. 16.0.2).



- 16.1 Turn the balance wheel until the point of the advancing looper is in line with the right side of the needle.
- 16.2 Loosen screw 1 of rear needle guard bracket 2 (Fig. 16.0.1).
- 16.3 **Position bracket 2 so that the needle guard contacts the needle without deflecting it.**
- 16.4 In this position, tighten screw 1.
- 16.5 Check this adjustment (see "Correct setting").

Correct setting:

The take-up lever should be positioned on the needle bar so that it moves freely in the middle of its slot and does not strike the top and bottom ends of this slot. Furthermore, with the needle bar at its bottom dead centre, there should be a clearance of **0.3 mm** between the bottom edge of the take-up lever and the top edge of the needle bar frame (Fig. 17.0.2).



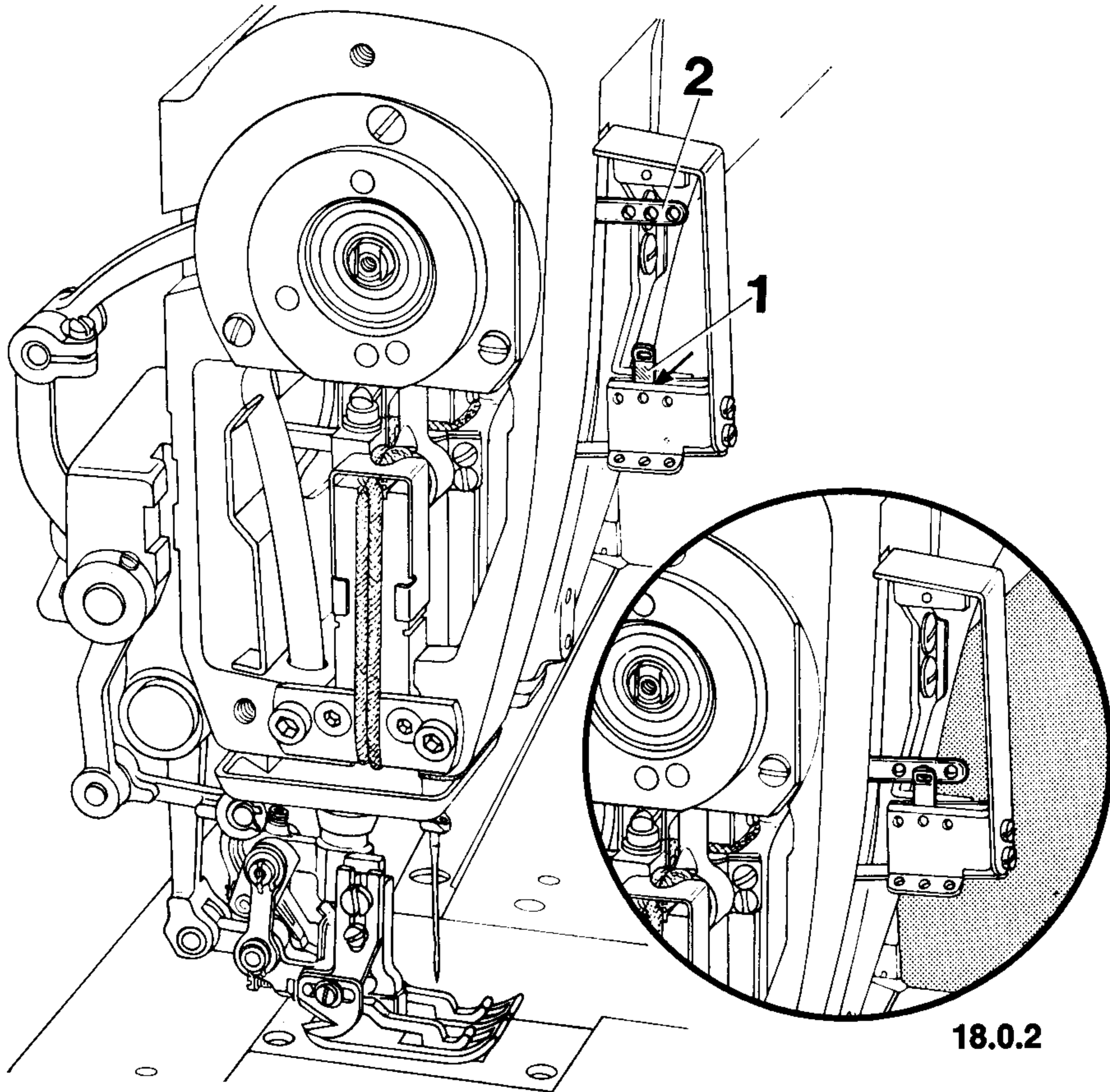
### 17.0.1

- 17.1 Turn the balance wheel until clamp screw 1 in take-up lever 2 (Fig. 17.0.1) is accessible.
- 17.2 Loosen clamp screw 1 a little.
- 17.3 Turn the balance wheel to bring the needle bar to its bottom dead centre.
- 17.4 **In this position there should be a clearance of 0.3 mm between the bottom edge of the take-up lever and the top edge of the needle bar frame (Fig. 17.0.2). Use a metal rule (3 mm thick) for this adjustment.**
- 17.5 **Make sure that take-up lever 2 is centred in its slot and tighten clamp screw 1.**

Correct setting:

With the needle bar at its bottom dead centre, the eye of the needle thread regulator 1 should be in line with the middle hole of take-up lever 2 (Fig. 18.0.2).

Note: This basic setting may have to be modified, depending on the type of material and thread used.



18.0.1

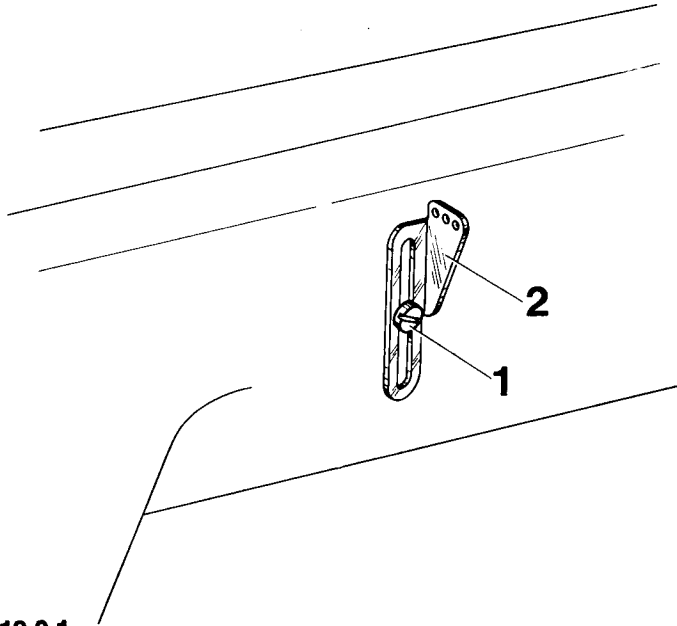
18.0.2

- 18.1 Turn the balance wheel to bring the needle bar to its bottom dead centre.
- 18.2 Loosen the screw (see arrow in Fig. 18.0.1) of needle thread regulator 1.
- 18.3 **Adjust needle thread regulator 1 so that its eye is level with the middle hole of take-up lever 2 (Fig. 18.0.2).**
- 18.4 In this position, tighten the screw (see arrow in Fig. 18.0.1).

Correct  
setting:

The adjustable thread guide should be fixed in the middle of its elongated hole.

Note: This basic setting may have to be modified, depending on the type of thread and the stitch length used.

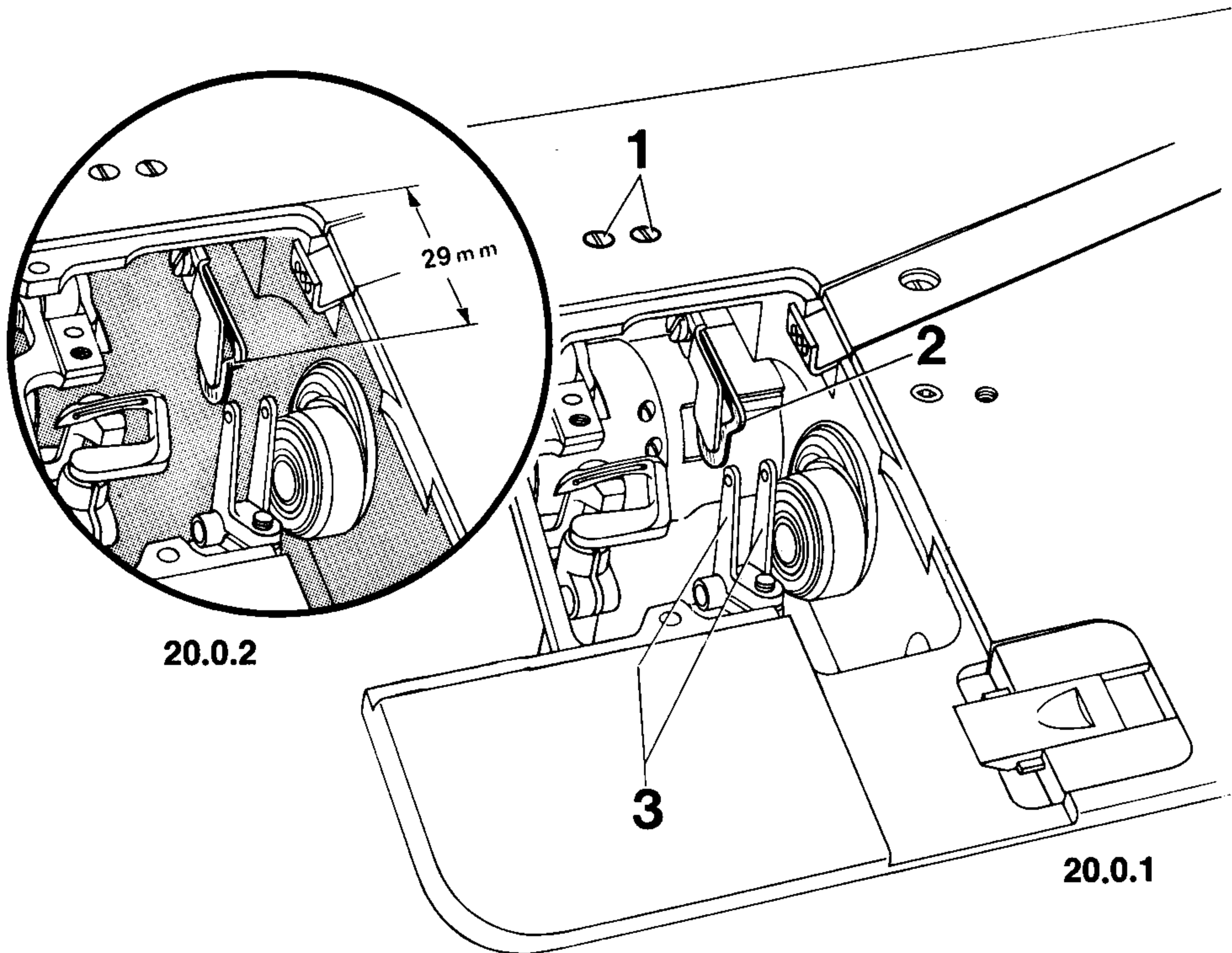


**19.0.1**

- 19.1 Loosen screw 1 of thread guide 2 (Fig. 19.0.1).
- 19.2 **Adjust thread guide 2 so that screw 1 is positioned in the middle of the elongated hole.**
- 19.3 Make sure that thread guide 2 is vertical and tighten screw 1.

Correct setting:

The distance between the front edge of primary looper thread regulator **2** and the rear edge of the needle plate cutout should be **29 mm** (Fig. 20.0.2).

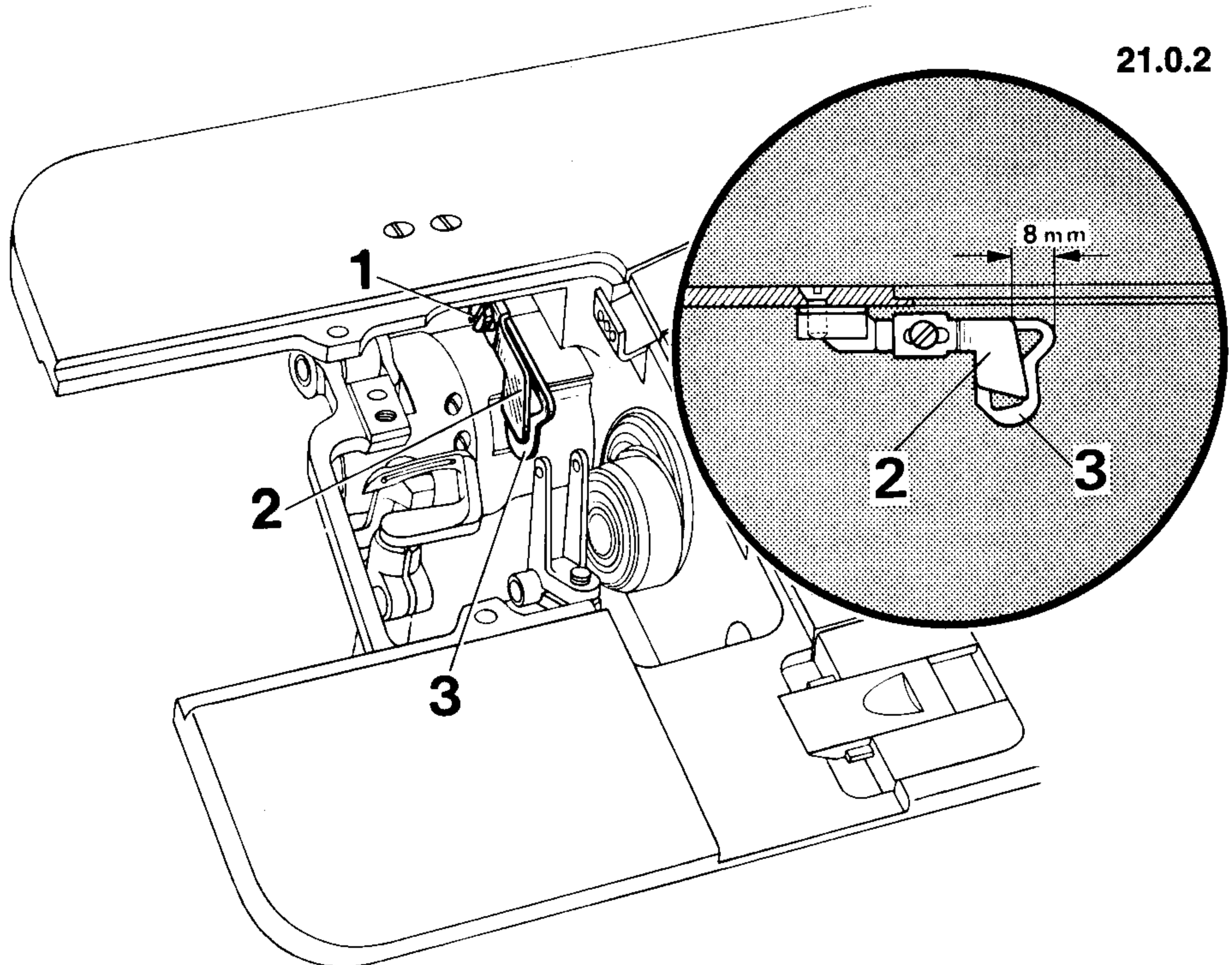


- 20.1 Loosen both screws **1** of thread regulator **2** (Fig. 20.0.2).
- 20.2 **Adjust thread regulator **2** lengthwise so that there is a distance of 29 mm between its front edge and the rear edge of the needle plate cutout.**
- 20.3 Make sure that thread regulator **2** is positioned roughly in the middle of thread puller fingers **3** and tighten both screws **1**.
- 20.4 Check this adjustment (see "Correct setting").



Correct  
setting:

The front edge of the secondary looper thread regulator **2** should be about **8.0 mm** from the front edge of primary looper thread regulator **3** (Fig. 21.0.2).



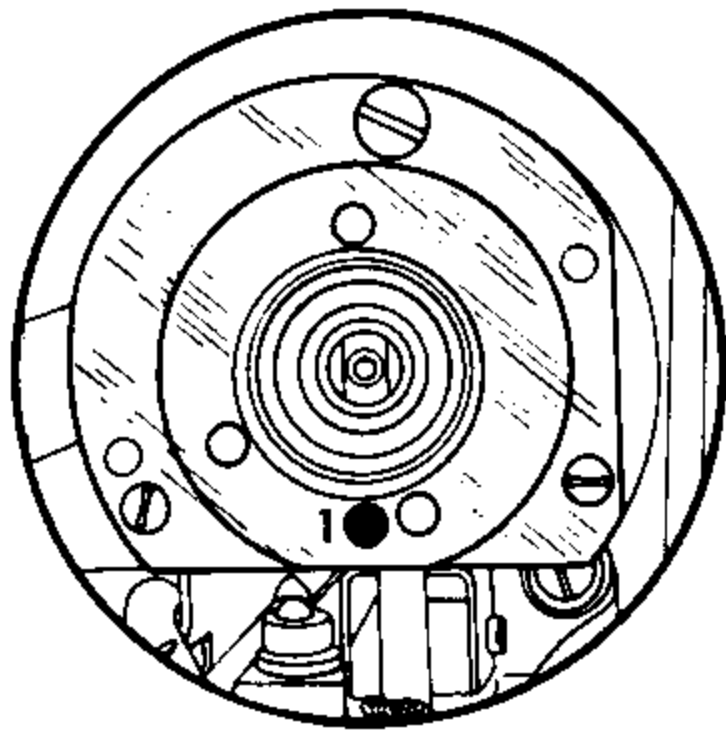
21.0.1

21.0.2

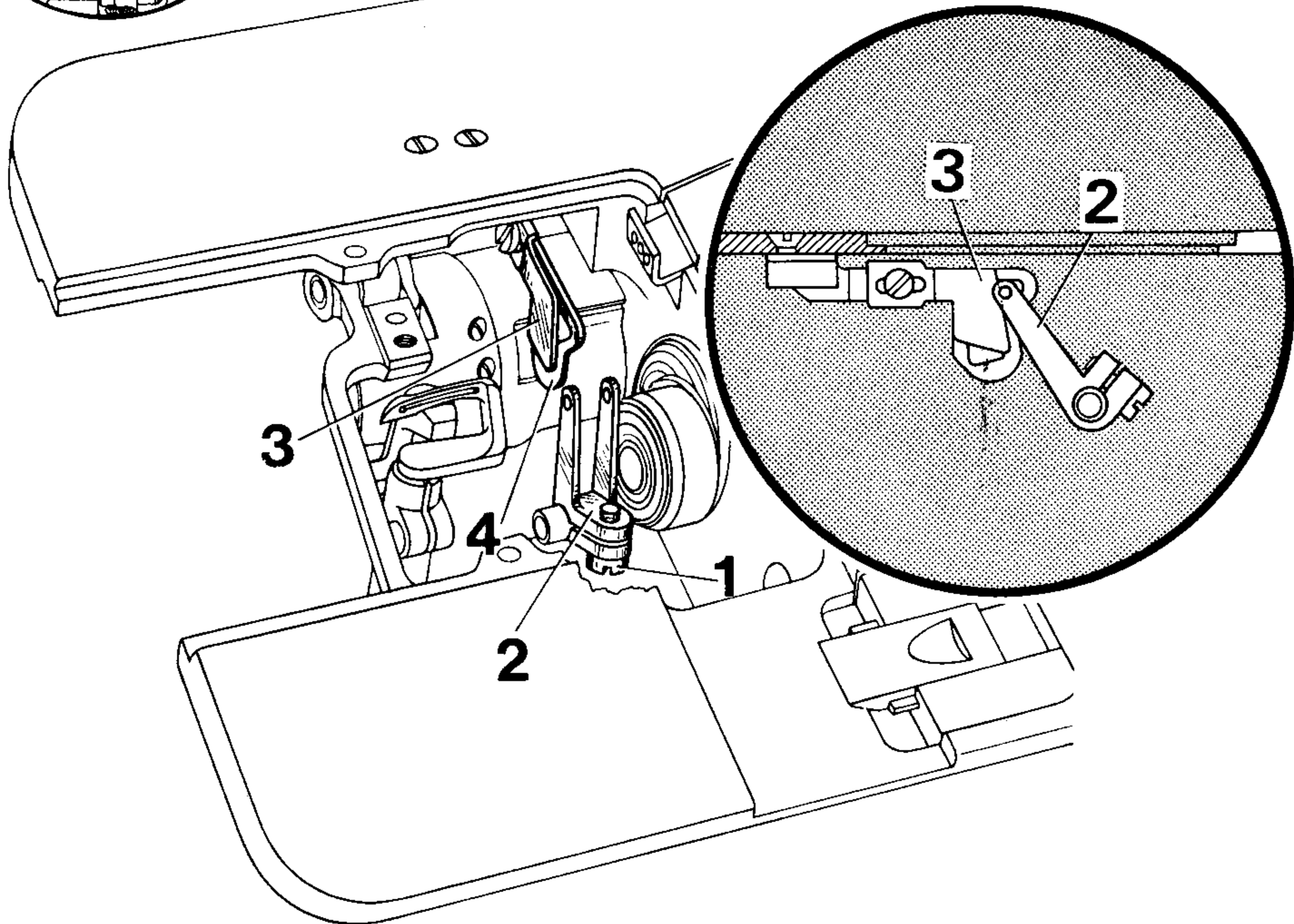
- 21.1 Loosen screw **1** of secondary looper thread regulator **2**.
- 21.2 **Adjust thread regulator **2** lengthwise (Fig. 21.0.1) so that its front edge is 8.0 mm from the front edge of thread regulator **3** (Fig. 21.0.2).**
- 21.3 In this position, tighten screw **1**.
- 21.4 Check this adjustment (see "Correct setting").

Correct  
setting:

With the needle bar at its top dead centre (pin in hole 1), both eyes of looper thread puller 2 should be exactly at the front edge of secondary looper thread regulator 3 (Fig. 22.0.2).



22.0.2

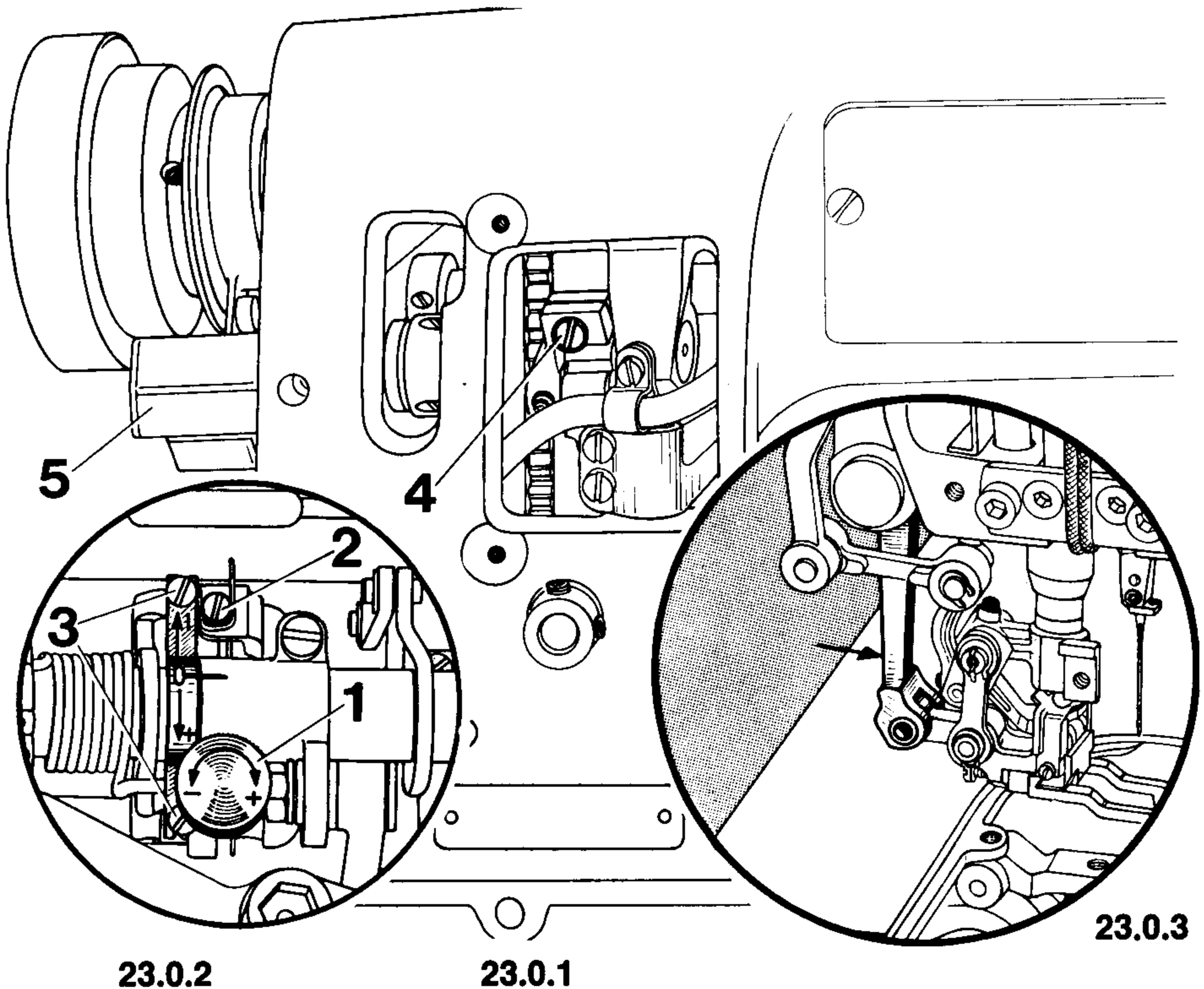


22.0.1

- 22.1 Loosen clamp screw 1 (Fig. 22.0.1) just enough to allow thread puller 2 to be turned on its stud by hand.
- 22.2 Turn the balance wheel to bring the needle bar to its top dead centre.
- 22.3 Insert the pin in hole 1 in the bearing plate (to block the machine).
- 22.4 **Turn thread puller 2 on its stud so that its two eyes are exactly at the front edge of thread regulator 3.**
- 22.5 Make sure that the fingers of thread puller 2 are equidistant from primary looper thread regulator 4, then tighten clamp screw 1.
- 22.6 Pull the pin out of the hole in the bearing plate.
- 22.7 Check this adjustment (see "Correct setting").

Correct setting:

With the machine set for its longest stitch (reverse-feed control in its upper position) the zero mark on the marking strip should be exactly opposite the mark on the top feed regulating crank. When the stitch length is set at "0" again, the vibrating presser (see arrow in Fig. 23.0.3) must not move when the balance wheel is turned.



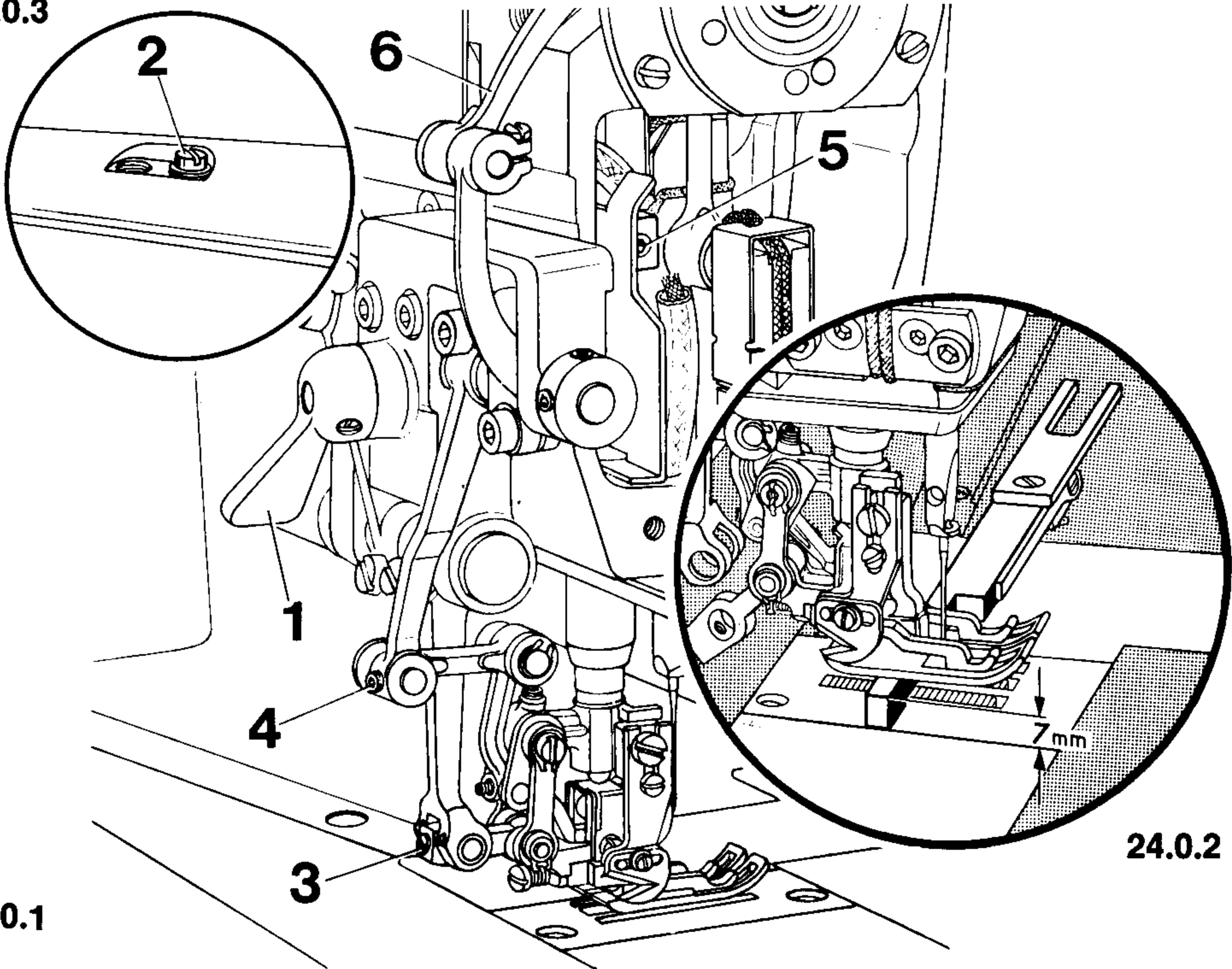
- 23.1 Turn regulating screw 1 (Fig. 23.0.2) out a few turns.  
 23.2 Also turn out stop screw 2 until a resistance is felt.  
 23.3 Make sure that the machine is set for its longest stitch and the reverse-feed control is in its **upper** position.  
 23.4 Turn in regulating screw 1 until the reverse-feed control begins to move downwards.  
 23.5 Turn regulating screw 1 back half a turn.  
 23.6 **Loosen both screws 3 of the marking strip and adjust the latter until the zero mark on the strip is in line with the mark on the top feed regulating crank.**  
 23.7 Then tighten both screws 3 of the marking strip securely.  
 23.8 Turn the stitch length control to "0".  
 23.9 Unscrew the belt guard and the cover at the back of the machine near the balance-wheel end.  
 23.10 Loosen clamp screw 4 (Fig. 23.0.1) of the top feed driving crank.  
 23.11 **Adjust crank 5 until the top feed driving lever (see arrow in Fig. 23.0.3) makes no motion when the balance wheel is turned.**  
 23.12 In this position, tighten clamp screw 4 securely.  
 23.13 Check this adjustment (see "Correct setting").

## 24 Clearance between presser foot and needle plate

Correct setting:

With the presser bar lifter raised, there should be a clearance of 7.0 mm between presser foot and needle plate (Fig. 24.0.2).

### 24.0.3

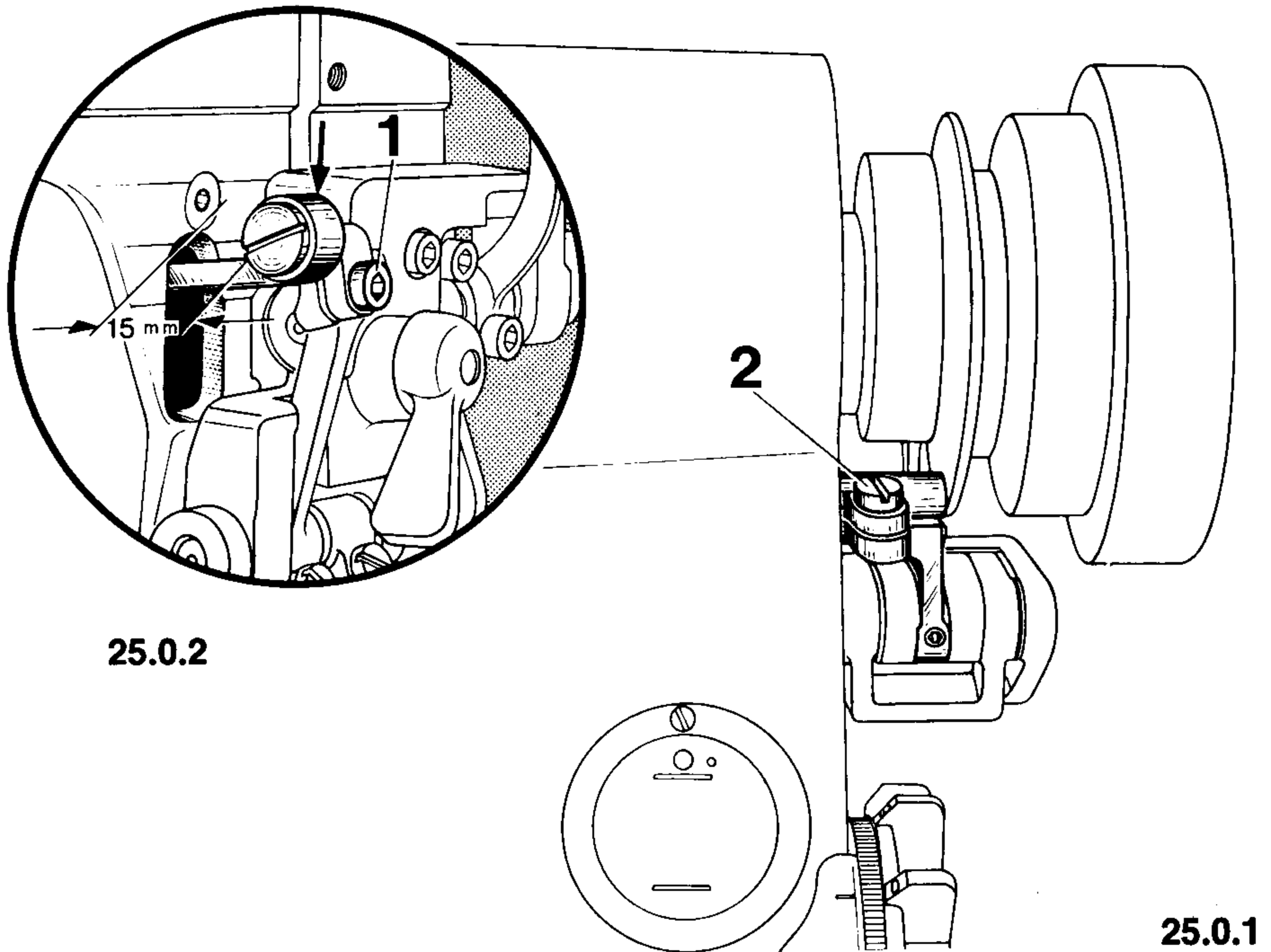


### 24.0.1

- 24.1 Screw on the feed dog and the needle plate, making sure the feed dog moves freely in its slots.
- 24.2 Screw on the presser foot and lower it onto the needle plate by means of presser bar lifter 1 (Fig. 24.0.1).
- 24.3 Turn out regulating screw 2 to reduce the pressure on the presser bar so that it is just sufficient to hold the presser foot down on the needle plate.
- 24.4 Loosen screw 3 of the lower fulcrum stud of the feed driving lever and push the stud out.
- 24.5 Swing the top feed connecting link out of the yoke of the feed driving lever (Fig. 24.0.2).
- 24.6 Turn the balance wheel to bring connecting rod 6 of the feed lifting eccentric stud to its top dead centre, and raise the presser bar lifter.
- 24.7 **Raise the presser bar and push the 7-mm-thick blade of the gauge under the presser foot from the rear until it is positioned under the presser foot fulcrum (Fig. 24.0.2).**
- 24.8 Loosen allen screws 4 of the fulcrum stud of the top feed connecting link and push the fulcrum stud out.
- 24.9 Loosen clamp screw 5 of the presser bar lifting bracket at the front end of the machine arm.
- 24.10 Adjust the presser foot laterally until the needle is centred in the slot of the presser foot.
- 24.11 Push presser bar lifting bracket 6 down as far as it will go and tighten clamp screw 5.
- 24.12 Leave the gauge under the presser foot for the next adjustment.

Correct  
setting:

When the lobe of the eccentric stud points up and the stitch length is set at "0", there should be a clearance of 15.0 mm between the eye of the top feed connecting rod and the arm casting (Fig. 25.0.2)



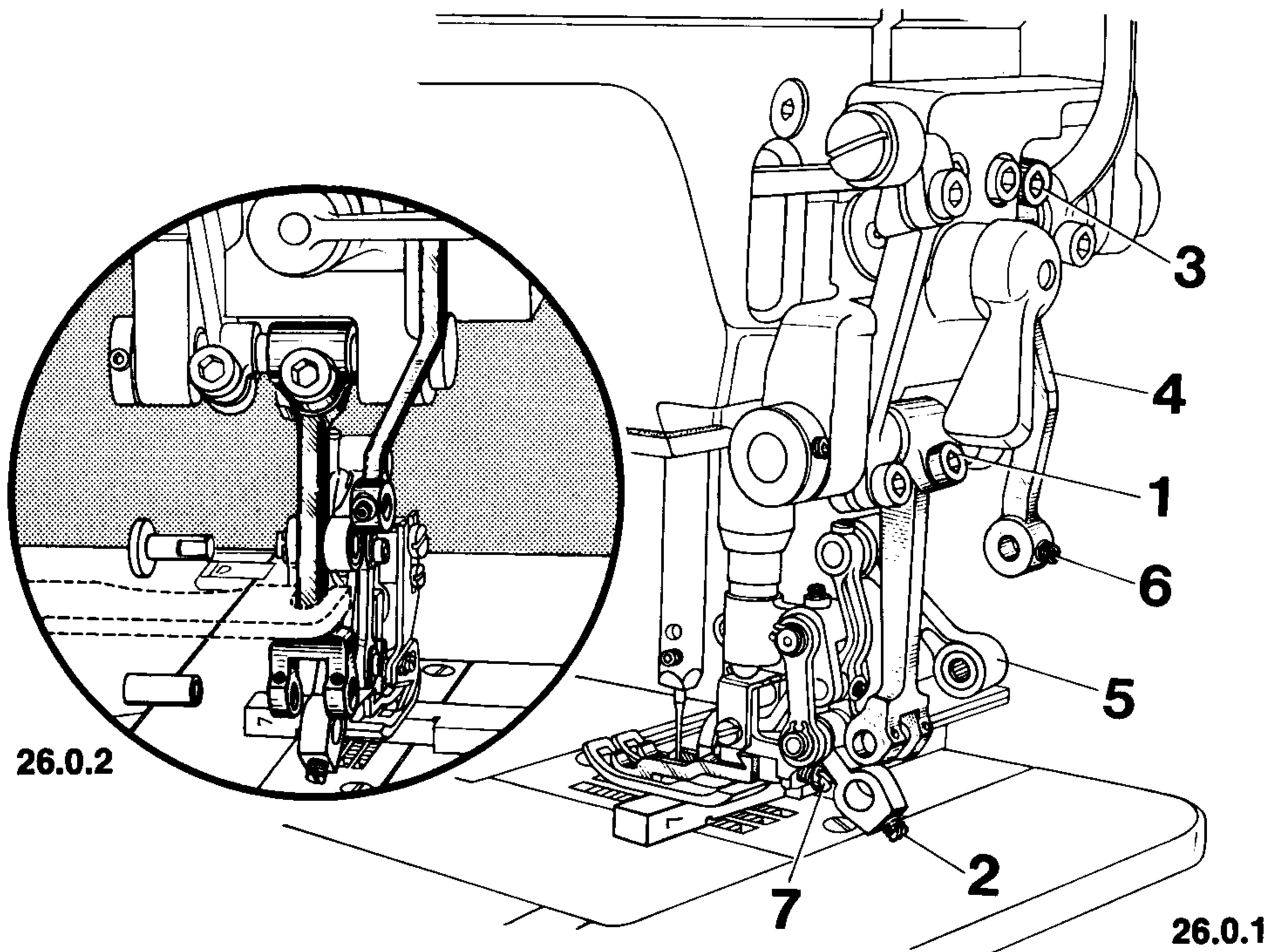
25.0.2

25.0.1

- 25.1 Make sure the gauge is still positioned under the presser foot and the stitch length control is turned to "0", then loosen clamp screw 1 of the connecting rod eccentric stud (Fig. 25.0.2).
- 25.2 Turn the eccentric stud until its lobe points up (see arrow in Fig. 25.0.2).
- 25.3 In this position, tighten clamp screw 1 securely.
- 25.4 Loosen clamp screw 2 of the top feed shaft driving crank (Fig. 25.0.1).
- 25.5 **Set a clearance of 15.0 mm between the eye of the connecting rod and the arm casting.**
- 25.6 In this position, tighten clamp screw 2.
- 25.7 Check this adjustment (see "Correct setting").
- 25.8 Leave the adjustment gauge under the presser foot.

Correct  
setting:

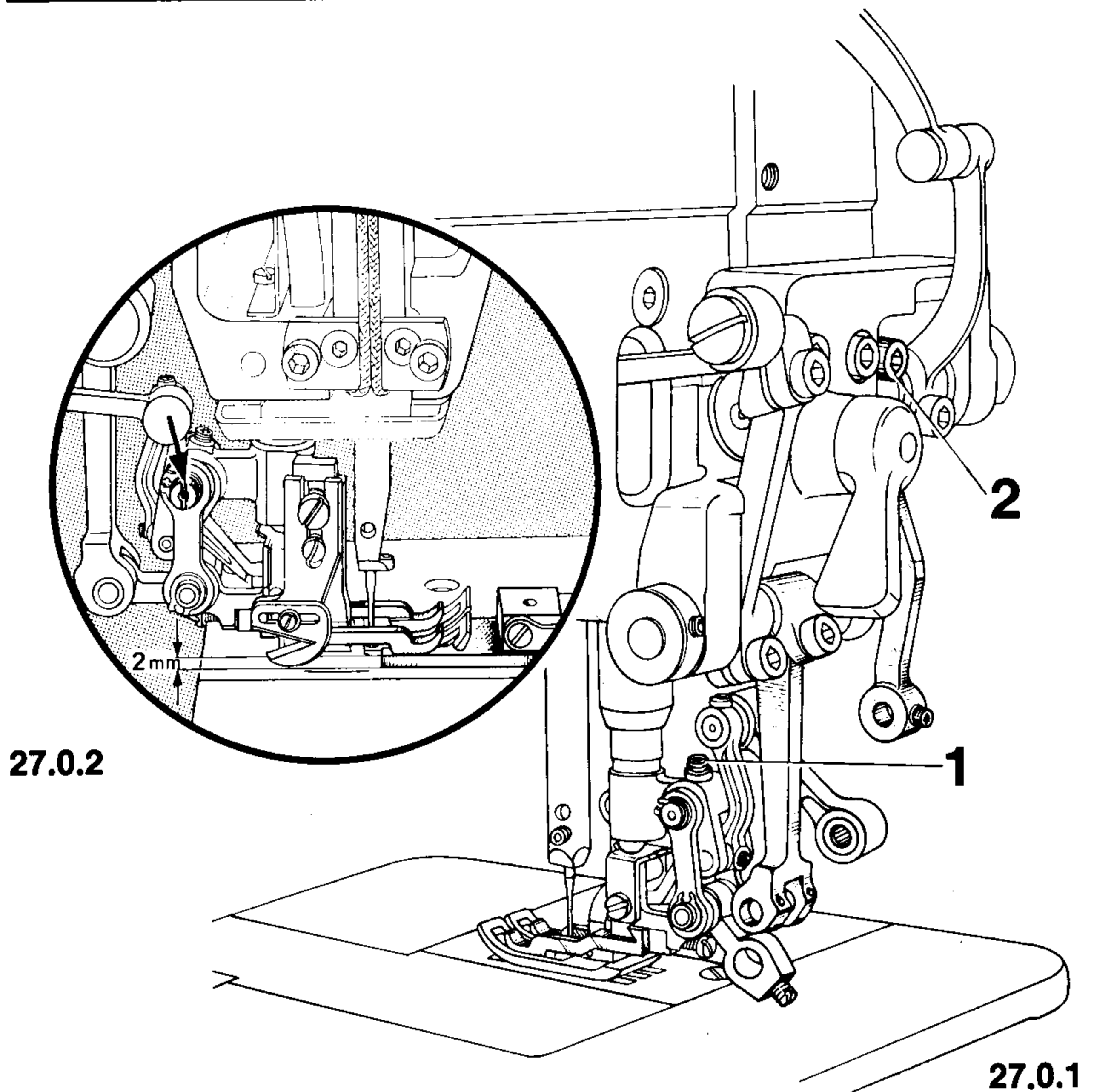
All moving parts of the top feed should move freely and have no play.



- 26.1 Loosen clamp screw 1 of the top feed driving lever (Fig. 26.0.1).
- 26.2 Swing the horizontal connecting link into the yoke of the top feed driving lever so that the holes of both parts are properly aligned. If necessary, re-align the top feed driving lever (Fig. 26.0.2).
- 26.3 Insert the fulcrum stud in the holes of the top feed driving lever and the connecting link.
- 26.4 Position the vibrating presser in sewing direction so that it is centred in the slot of the presser foot and hold it there, then tighten clamp screw 1.
- 26.5 Loosen clamp screw 3 of the connecting lever for the top feed lifting motion.
- 26.6 Bring the hole of connecting lever 4 in line with the hole of the horizontal connecting link 5. If necessary, re-align the connecting lever.
- 26.7 Insert the fulcrum stud in both the hole of connecting lever 4 and the needle bearing of the horizontal connecting link 5 so that allen screw 6 engages the flat spot of the fulcrum stud.
- 26.8 In this position, tighten allen screw 6.
- 26.9 Turn the balance wheel to bring the connecting rod of the top feed lifting eccentric stud to its top dead centre.
- 26.10 Push connecting lever 4 for the top feed lifting motion toward the rear as far it will go, and tighten clamp screw 3 of the connecting lever.
- 26.11 Remove the gauge and lower the presser foot onto the needle plate.
- 26.12 Tighten screw 2 of the fulcrum stud of the top feed driving lever.
- 26.13 Loosen screw 7 of the vibrating presser.
- 26.14 Adjust the vibrating presser laterally so that it does not contact the presser foot, then tighten screw 7.

Correct setting:

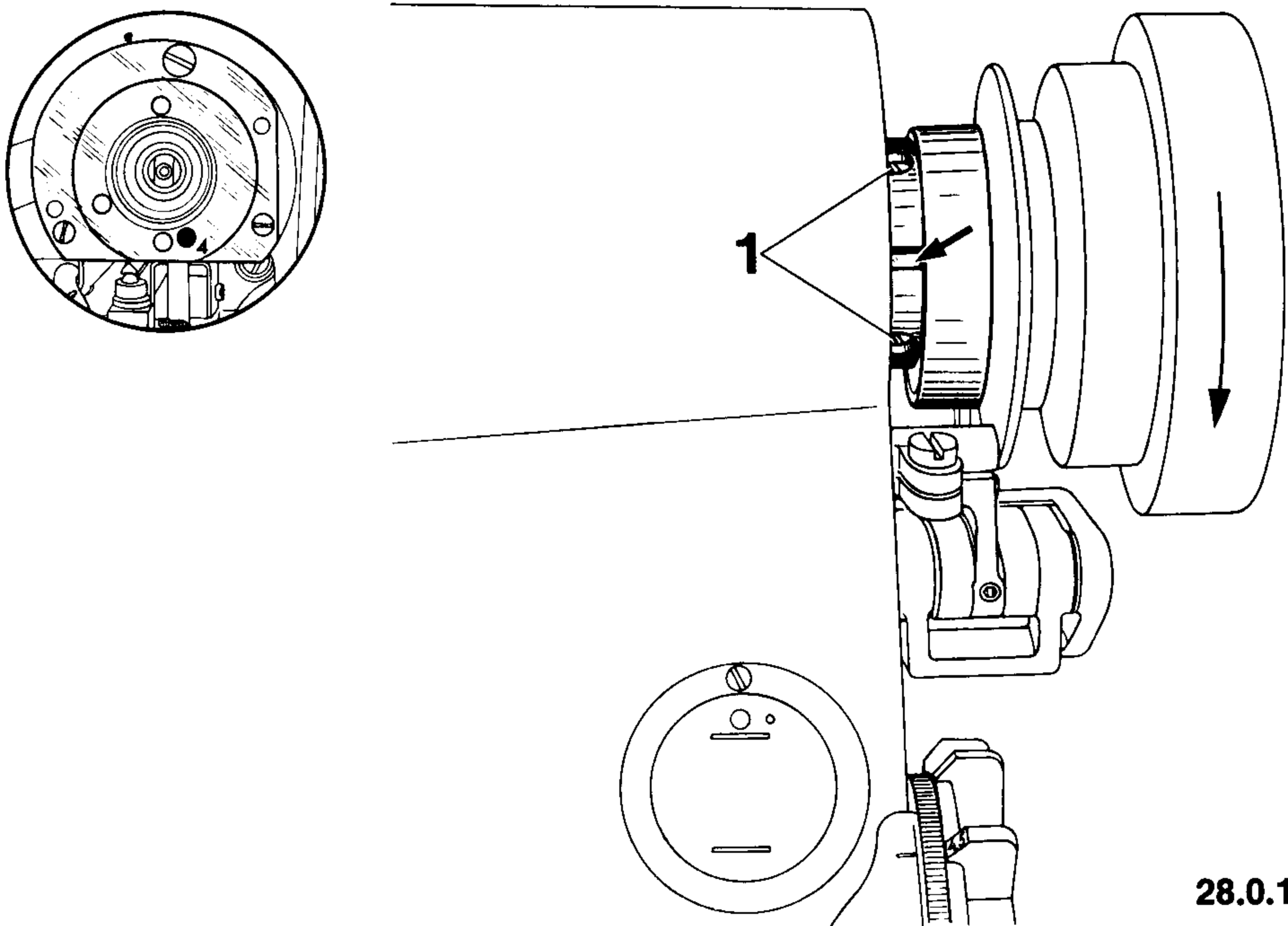
With the presser foot resting on the needle plate, the vibrating presser positioned at its top dead centre and the lobe of the top feed eccentric stud pointing up, there should be a clearance of 1.3 mm between needle plate and vibrating presser if the latter works behind the needle (or of 2.0 mm if the latter works in front of the needle). (Fig. 27.0.2).



- 27.1 Check to make sure the presser foot is still resting on the needle plate.
- 27.2 Loosen allen screw 1 in the bracket located behind the presser bar (Fig. 27.0.1).
- 27.3 Turn the top feed eccentric stud so that its lobe is up (see arrow in Fig. 27.0.2).
- 27.4 In this position, tighten allen screw 1 again.
- 27.5 Turn the balance wheel to bring the vibrating presser to its highest point.
- 27.6 On machines having a vibrating presser which works **behind** the needle, push the **1.3-mm-thick** blade of the gauge under the vibrating presser from the rear; on machines where this foot works **in front** of the needle, push the **2.0-mm-thick** blade of this gauge under the vibrating presser from the front, and hold it fast in this position.
- 27.7 **Slowly** loosen clamp screw 2 for the top feed lifting motion so that the vibrating presser rests lightly on the gauge blade.
- 27.8 In this position, securely tighten clamp screw 2 and remove the gauge from under the vibrating presser.
- 27.9 Check this adjustment (see "Correct setting").

Correct setting:

With the needle bar positioned **0.8 mm** before its top dead centre (pin in hole **4**), the vibrating presser should make no perceptible motion when the reverse-feed control is moved up and down.

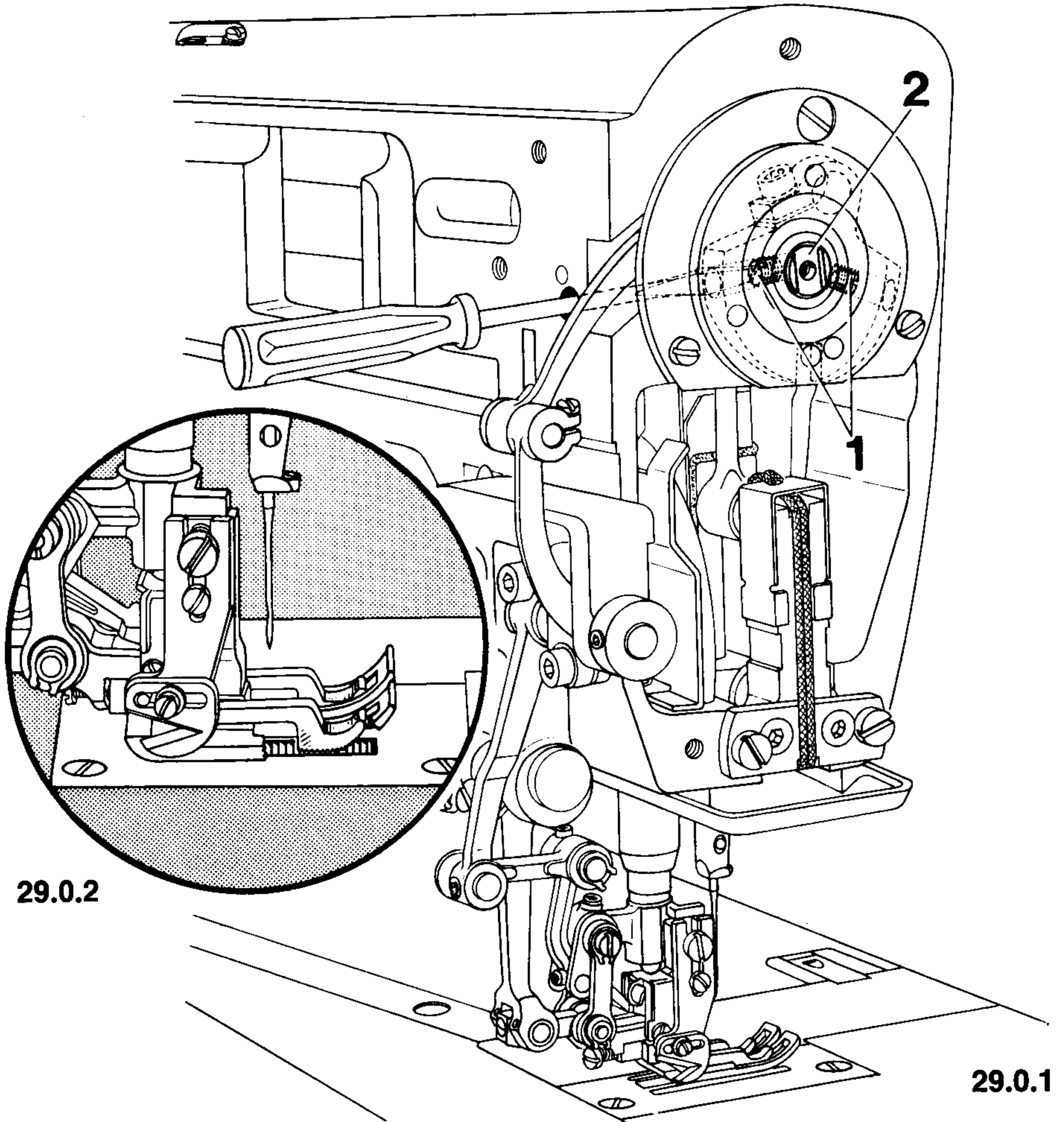


- 28.1 Raise the presser foot by means of the presser bar lifter.
- 28.2 Set the machine for its longest stitch.
- 28.3 Increase the pressure on the presser bar by turning in regulating screw **6** somewhat (Fig. 24.0.3).
- 28.4 Loosen both screws **1** (Fig. 28.0.1) in the top feed driving eccentric.
- 28.5 Turn the balance wheel to bring the needle bar to a position 0.8 mm before its top dead centre.
- 28.6 Insert the pin in hole **4** of the bearing plate (to block the machine).
- 28.7 Turn the top feed driving eccentric so that its slot points toward you (see arrow in Fig. 28.0.1).
- 28.8 **Move the reverse-feed control up and down while simultaneously turning the eccentric in its normal direction of rotation until the vibrating presser remains still.**
- 28.9 In this position, tighten the accessible screw **1**.
- 28.10 Pull the pin out of the hole in the bearing plate and tighten the second screw **1**.
- 28.11 Check this adjustment (see "Correct setting").



Correct setting:

With the machine set at stitch length 2, the vibrating presser should contact the ascending feed dog when the latter is flush with the top surface of the needle plate (Fig. 29.0.2).

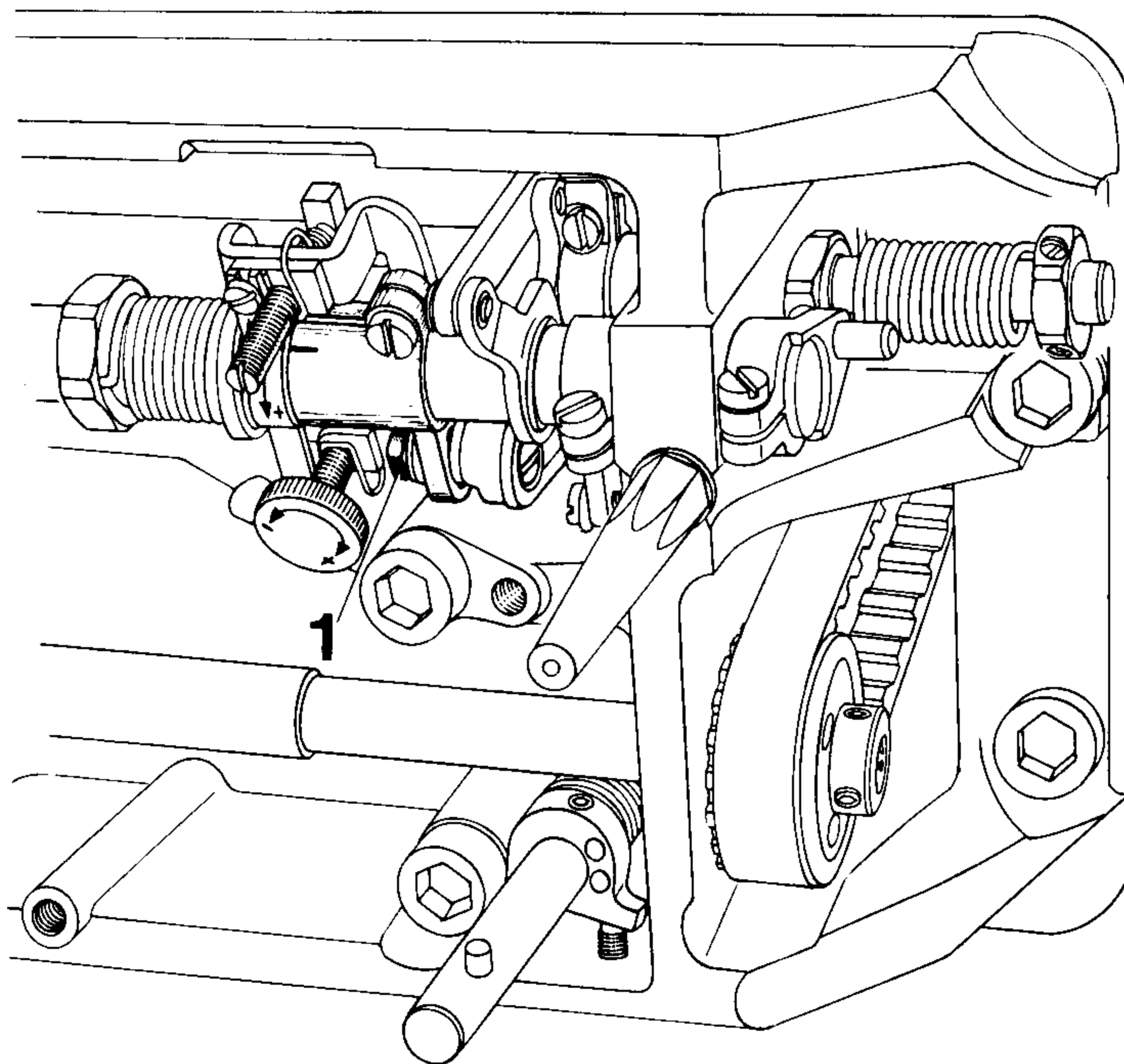


- 29.1 Turn the stitch length control to 2.
- 29.2 Lower the presser foot onto the needle plate.
- 29.3 Insert a screwdriver through the hole on the back of the machine arm and loosen screws 1 in the adjusting disc which secure the eccentric stud in position.
- 29.4 Turn eccentric stud 2 so that, when you turn the balance wheel, the vibrating presser contacts the ascending feed dog when the latter is flush with the top surface of the needle plate (Fig. 29.0.2).
- 29.5 In this position, tighten both screws 1.
- 29.6 Check this adjustment (see "Correct setting").

## 30 Eliminating differences in the feed stroke length

Correct setting:

With the machine set for its longest stitch and the mark of the regulating crank set at "0", the feed strokes of the vibrating presser and the feed dog should be the same length when the balance wheel is turned.



### 30.0.1

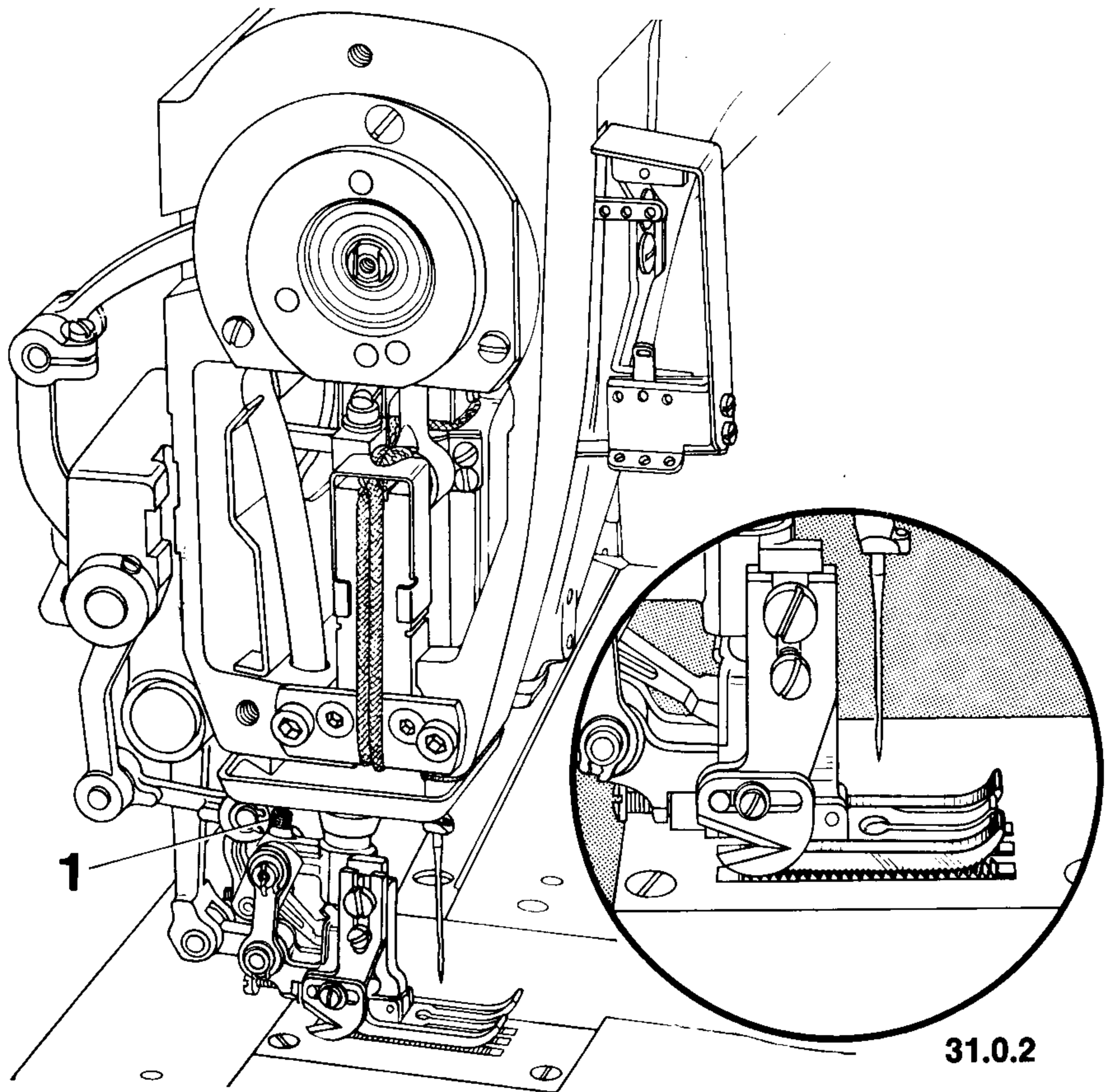
- 30.1 Make sure the mark of the regulating crank is still at "0" (see Section 23, Fig. 23.0.2), and turn the stitch length control to the longest stitch.
- 30.2 Operate the reverse-feed control to make connecting rod hinge nut 1 accessible. Loosen this nut and re-position it in the elongated hole of the differential top feed regulating crank, as appropriate.
- 30.3 In this position, tighten nut 1 securely again.
- 30.4 Check this adjustment (see "Correct setting").

**Position of vibrating presser**

(On machines having an extra-long vibrating presser)

Correct setting:

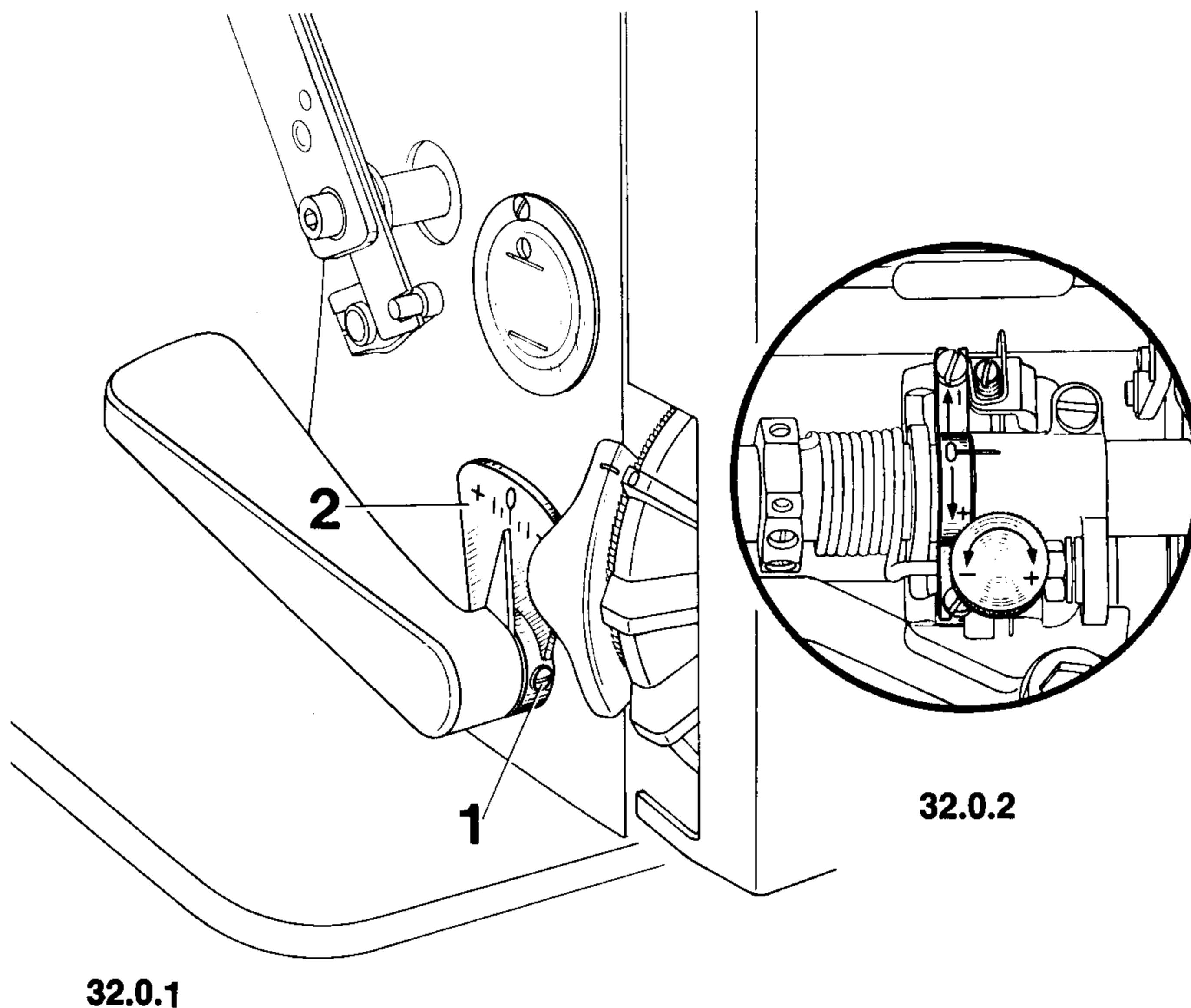
The vibrating presser should be set parallel to the feed dog.
---

**31.0.1****31.0.2**

- 31.1 Make sure the presser foot is still down on the needle plate, then loosen allen screw 1 in the bracket behind the presser bar (Fig. 31.0.1).
- 31.2 Turn the balance wheel to bring the feed dog to its highest point.
- 31.3 **Turn the eccentric stud so that the vibrating presser is in contact with the feed dog over its entire length (Fig. 31.0.2).**
- 31.4 In this position, tighten allen screw 1.
- 31.5 Check this adjustment (see "Correct setting").
- 31.6 Check the vibrating presser lift, i. e. its height above the needle plate (see Section 27) and adjust, if necessary.

Correct setting:

When the mark of the regulating crank and the stitch length control are both at "0", the zero mark on the scale should be positioned above the tip of the pointer.

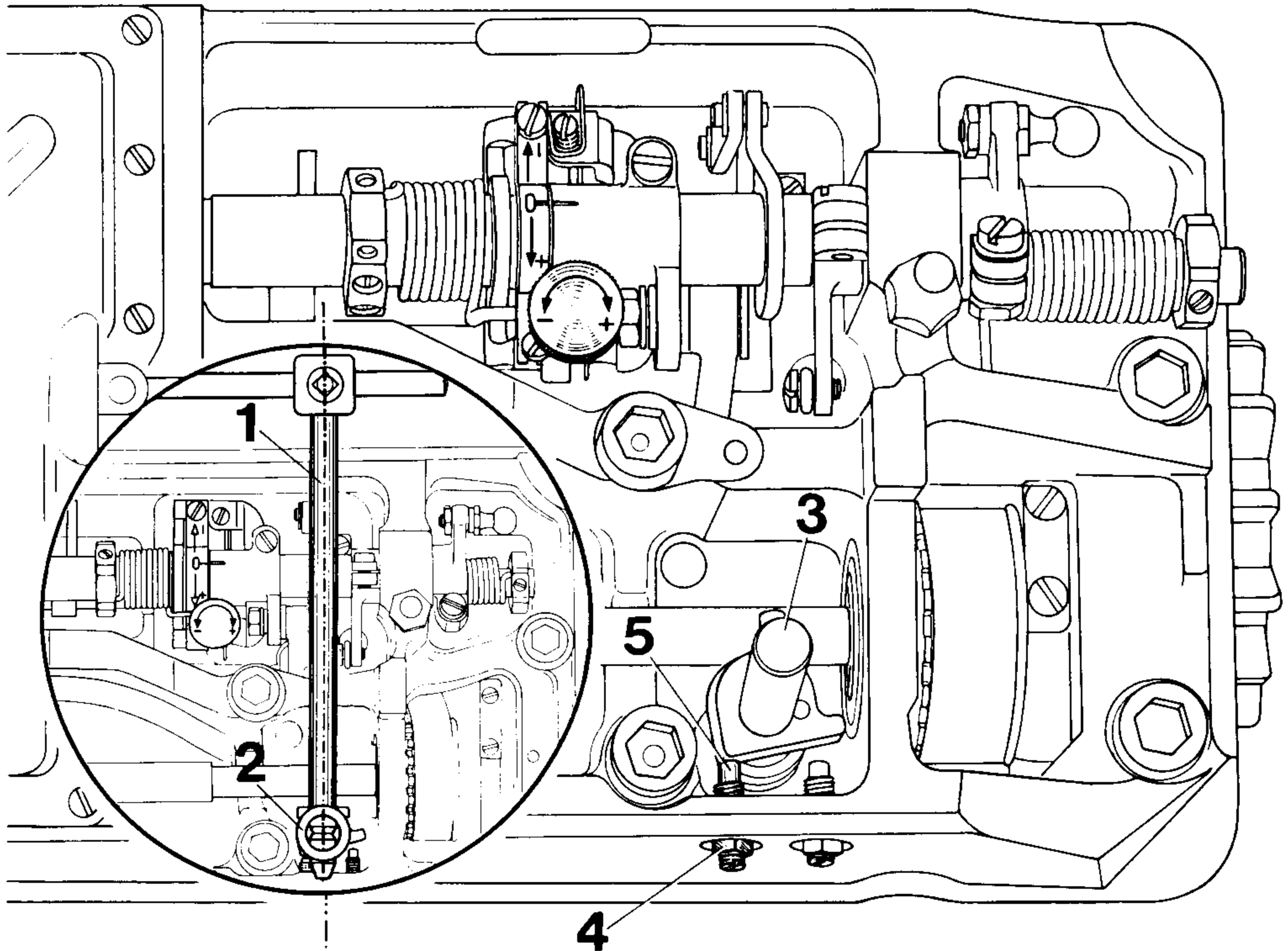


- 32.1 Make sure the mark on the regulating crank is still at "0", and turn the stitch length control to "0", too.
- 32.2 Loosen screw 1 in the collar of the scale plate (Fig. 32.0.1).
- 32.3 **Adjust the position of scale plate 2 so that the zero mark is exactly above the tip of the pointer.**
- 32.4 In this position, tighten screw 1 again.

Correct  
setting:

When in its rest position, knee lever connecting rod 1 should be roughly at right angles to the front edge of the bedplate (Fig. 33.0.2).

## 33.0.1

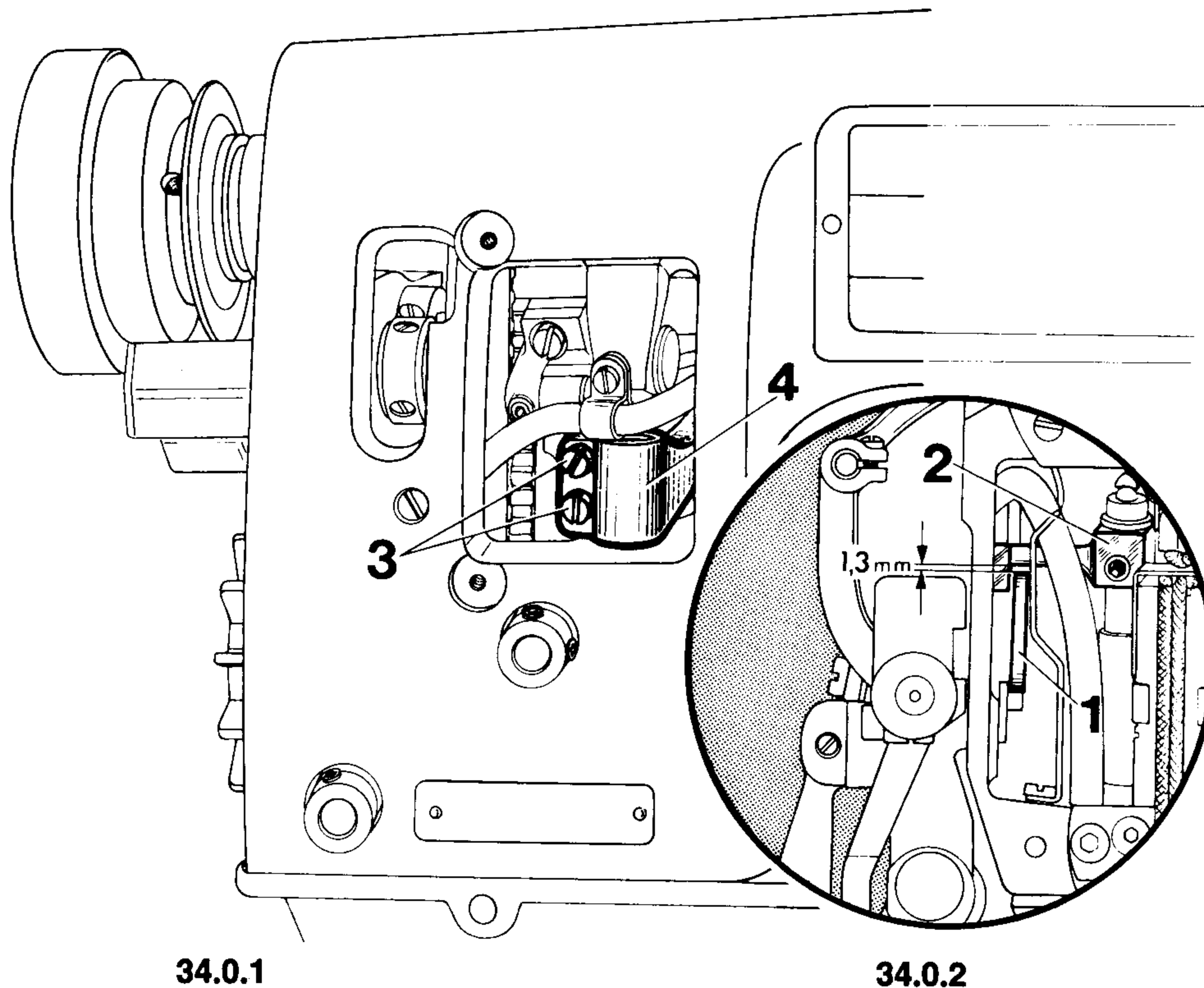


## 33.0.2

- 33.1 Raise the presser foot by means of the presser bar lifter.
- 33.2 Push knee lever connecting rod 1 (Fig. 33.0.2) into coupling sleeve 2 on knee lever shaft 3 (Fig. 33.0.1) and turn it until it snaps into position.
- 33.3 Loosen locknut 4 of stop screw 5.
- 33.4 **Turn stop screw 5 until knee lever connecting rod 1 is roughly at right angles to the front edge of the bedplate.**
- 33.5 In this position, lock stop screw 5 in place by nut 4.
- 33.6 Pull knee lever connecting rod 1 out of coupling sleeve 2 again.

Correct setting:

When the presser foot is resting on the needle plate and the feed dog is beneath the needle plate, there should be a clearance of about 1.3 mm between lifting lever 1 and lifting collar 2 (Fig. 34.0.2).



34.0.1

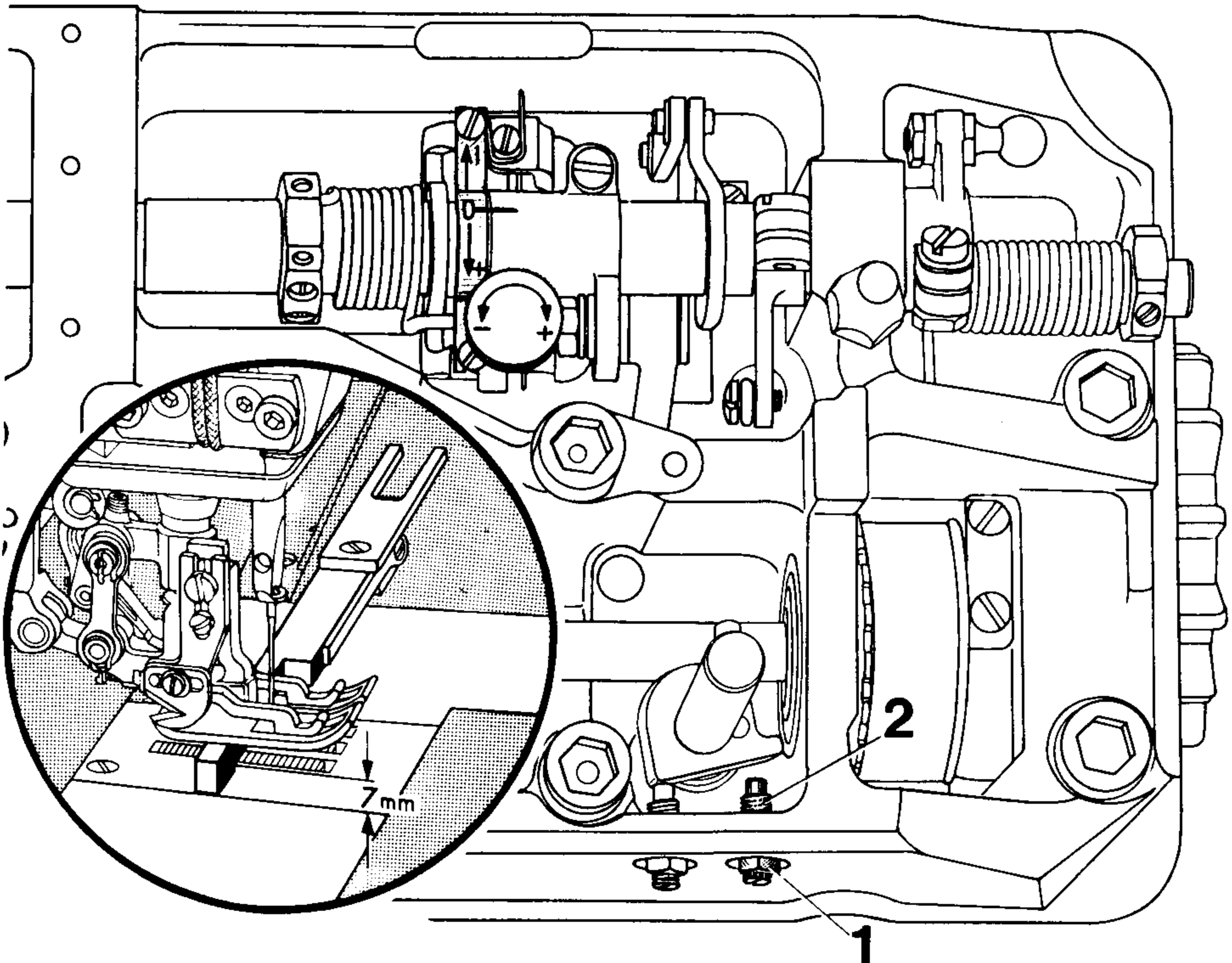
34.0.2

- 34.1 Turn the balance wheel to bring the feed dog below needle plate level, and lower the presser foot onto the needle plate.
- 34.2 Take out the two screws of the rear standard cover and remove the latter.
- 34.3 Loosen both clamp screws 3 of crank 4 of the knee lever shaft (Fig. 34.0.1).
- 34.4 **Adjust crank 4 so that there is a clearance of about 1.3 mm between lifting lever 1 and lifting collar 2 (use adjustment gauge).**
- 34.5 In this position, tighten both clamp screws 3, making sure that the vertical knee lever shaft has no vertical play.
- 34.6 Remove the gauge and insert the knee lever.
- 34.7 Check this adjustment (see "Correct setting").
- 34.8 Remove the knee lever again.

Correct setting:

When the knee lever is fully operated, the presser foot should be lifted from the needle plate by a little more than 7 mm, and the presser bar lifter should drop by its own weight.

## 35.0.1

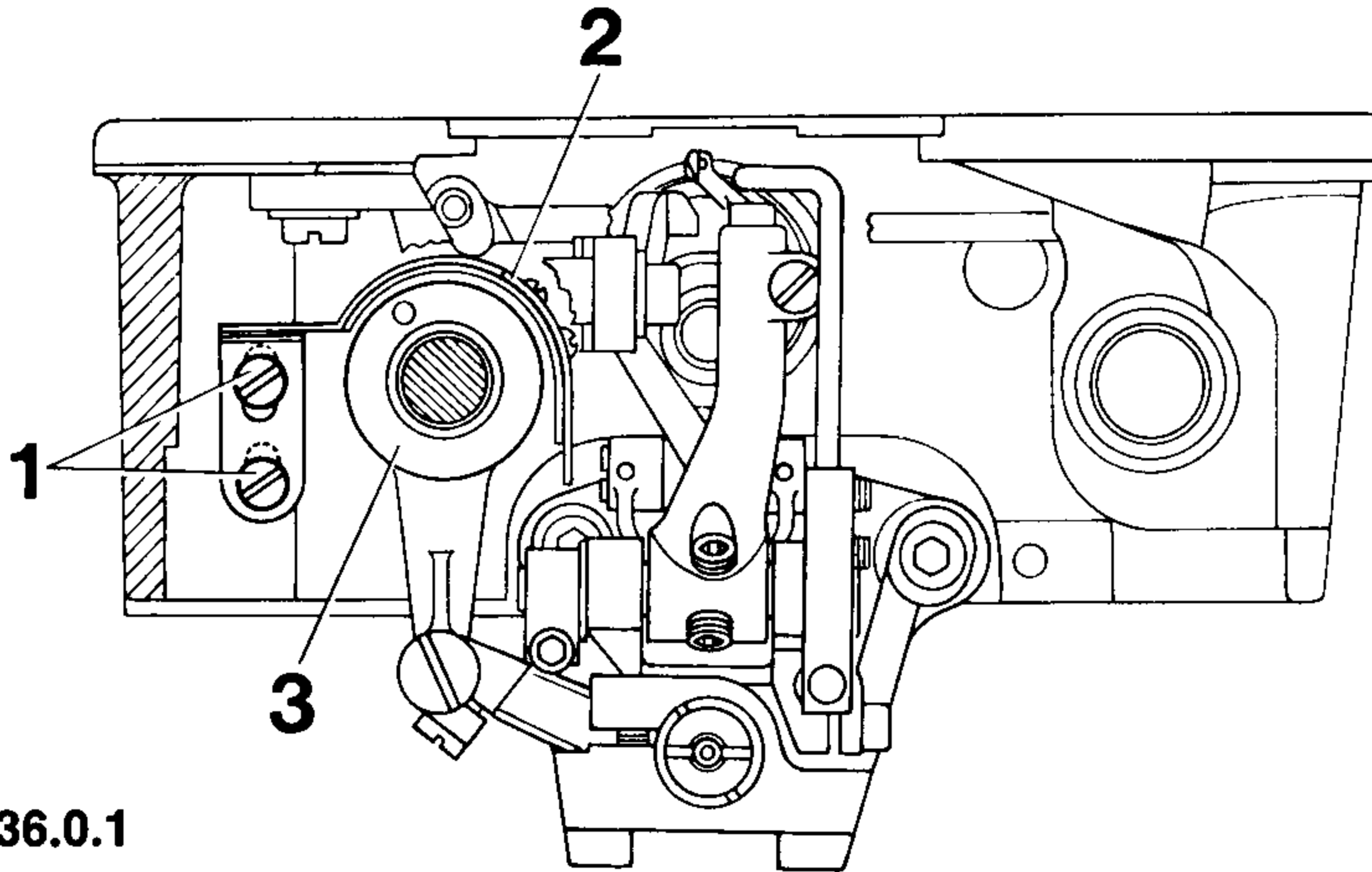


## 35.0.2

- 35.1 Insert the knee lever.
- 35.2 Loosen locknut 1 of stop screw 2 (Fig. 35.0.1).
- 35.3 Turn stop screw 2 out a few turns.
- 35.4 Raise the presser foot by means of the presser bar lifter.
- 35.5 Place the 7-mm-thick blade of the gauge under the presser foot and release the presser bar lifter (Fig. 35.0.2).
- 35.6 Move the knee lever to the right until a noticeable resistance is felt; however the presser foot must not be lifted off the gauge.
- 35.7 Hold the knee lever at this position and turn stop screw 2 in as far as it will go, then back out by half a turn, and lock it in place with locknut 1.
- 35.8 Remove the gauge from under the presser foot and check this adjustment (see "Correct setting").

Correct  
setting:

Looper-avoiding-motion eccentric **3** must not touch guard **2** during any phase of its motion (Fig. 36.0.1).



**36.0.1**

- 36.1 Loosen both screws **1** which are accessible through the access window (Fig. 36.0.1).
- 36.2 **Adjust the position of guard **2** so that looper-avoiding-motion eccentric **3** does not touch it during any phase of its motion.**
- 36.3 In this position, tighten screws **1**.



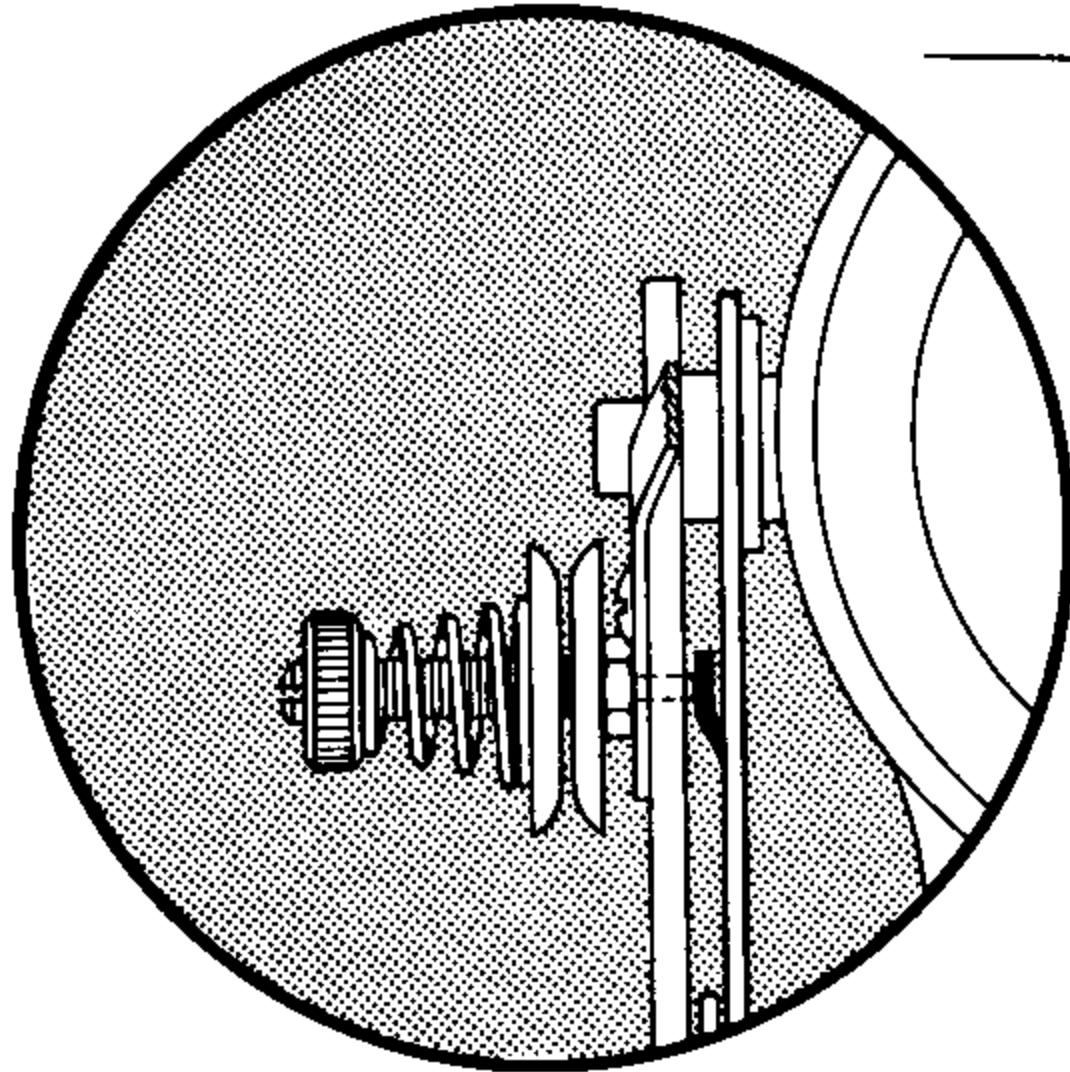
37

### Tension release

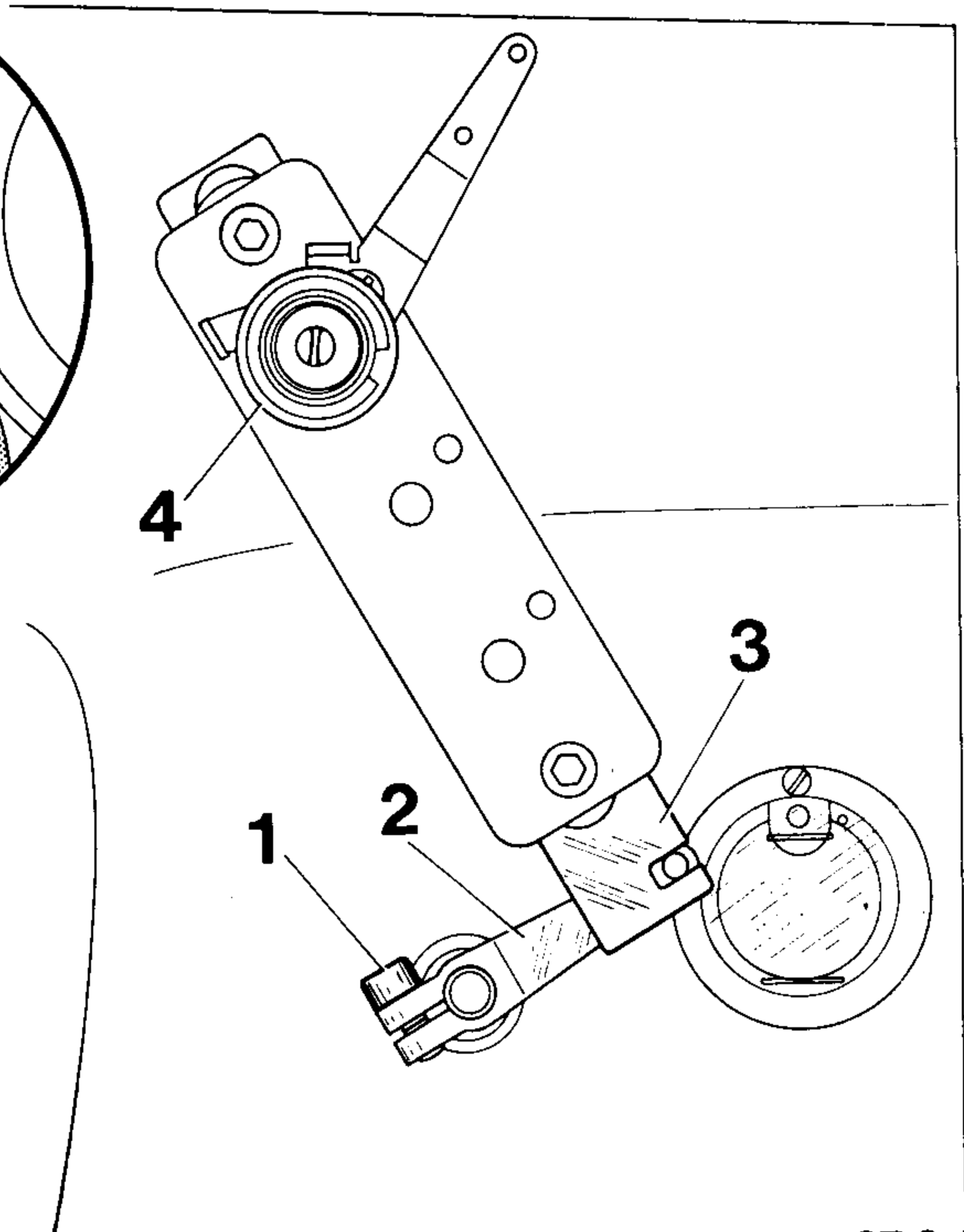
on machines without subcl. -900/ . .

Correct  
setting:

When the presser foot is raised by means of the knee lever by about 5 mm thread tension 4 must be released (Fig. 37.0.2).



37.0.2



37.0.1

37.1

Loosen clamp screw 1 of tension release lever 2 (Fig. 37.0.1).

37.2

**Raise the presser foot by about 5 mm and adjust the position of tension release bracket 3 so that thread tension 4 is released.**

37.3

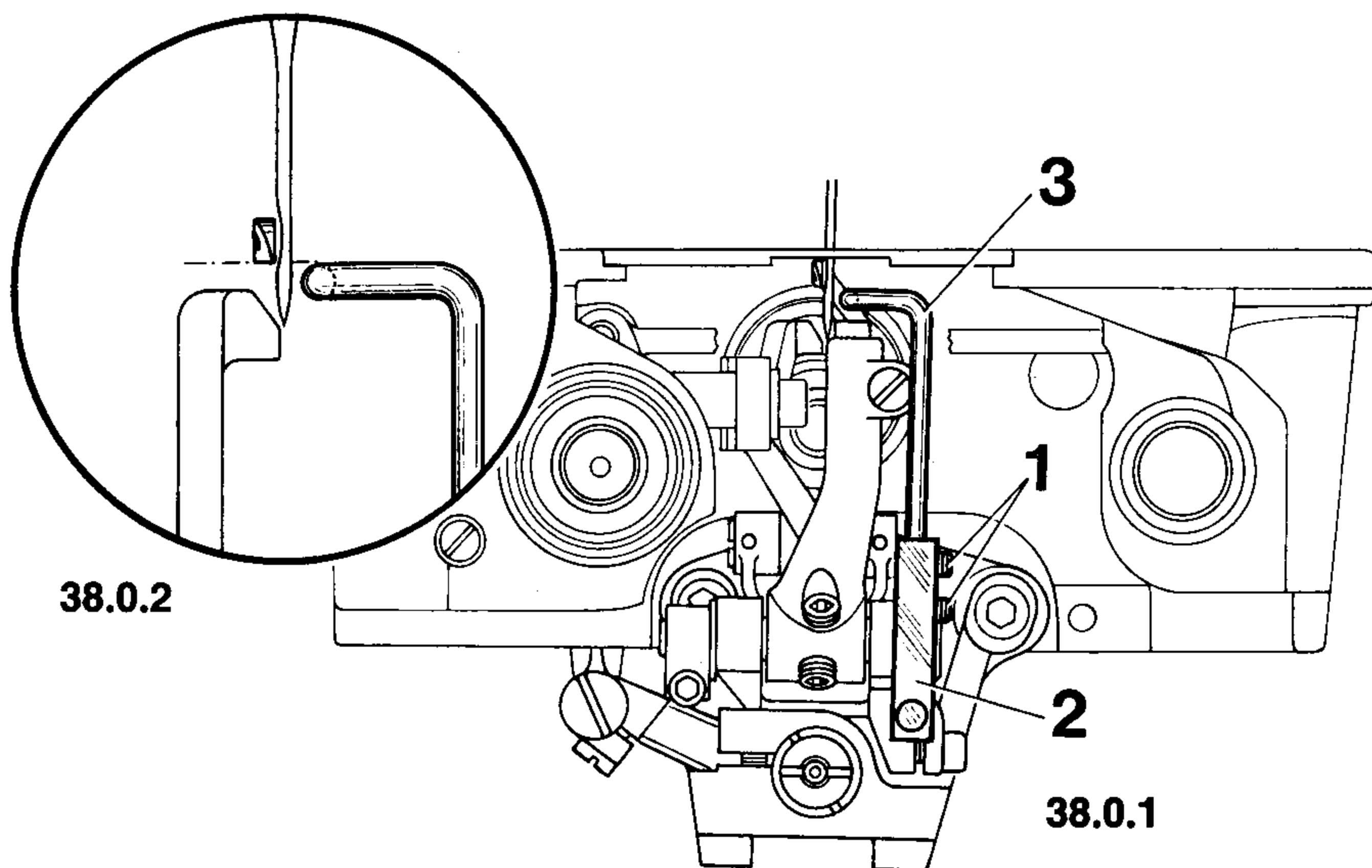
In this position, tighten clamp screw 1.

## 38 Front needle guard

### 38.1 Vertical adjustment

Correct setting:

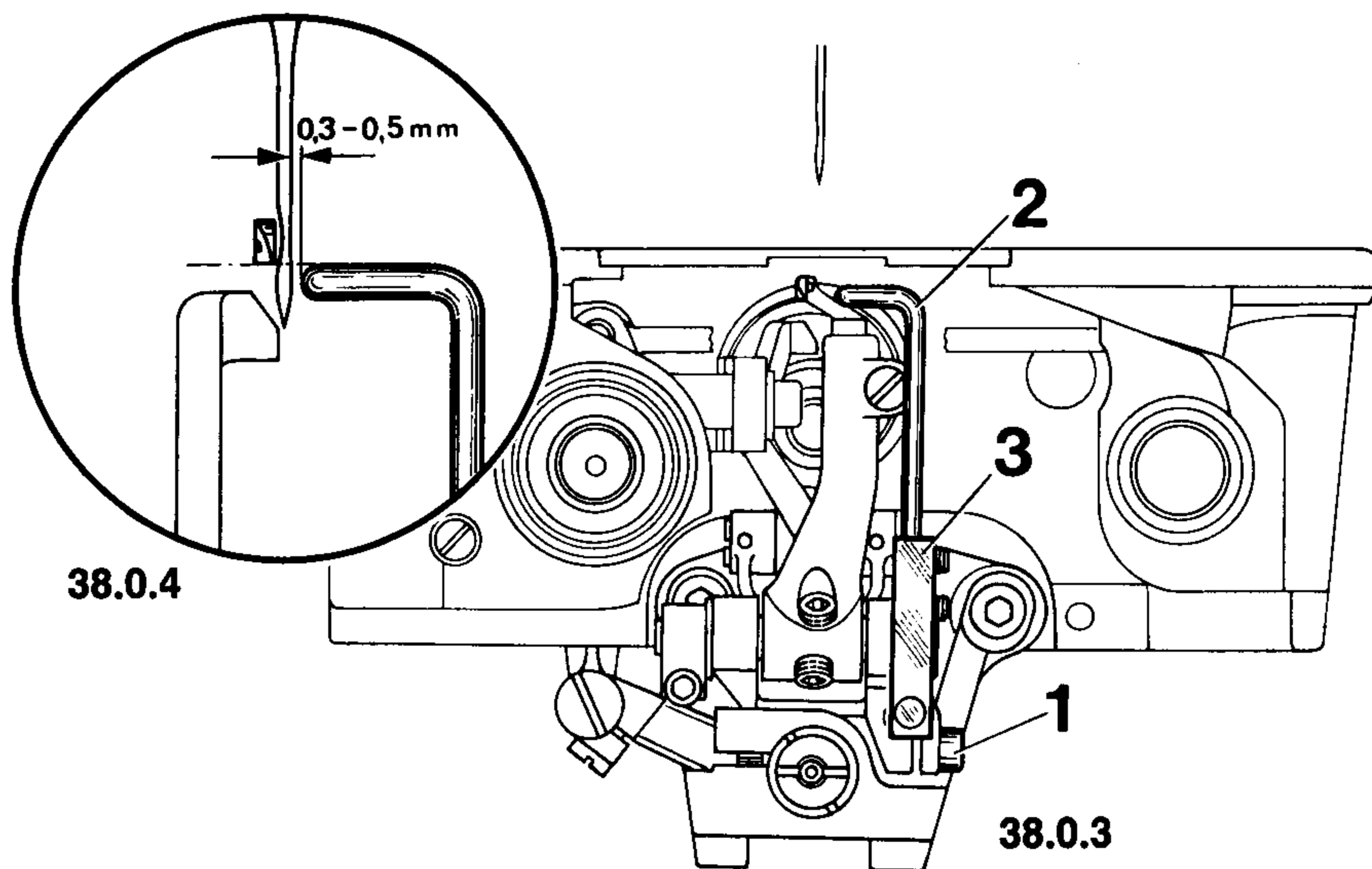
When the point of the advancing looper is opposite the centre line of the needle, the top edge of front needle guard **3** should be in line with the bottom edge of the looper point (Fig. 38.0.2).



- 38.1.1 Turn the balance wheel until the point of the advancing looper is opposite the centre line of the needle.
- 38.1.2 Loosen both screws **1** of needle guard bracket **2** (Fig. 38.0.1).
- 38.1.3 **Adjust front needle guard **3** vertically so that its top edge is flush with the bottom edge of the looper point (Fig. 38.0.2).**
- 38.1.4 In this position, tighten both screws **1**, making sure that front needle guard **3** is parallel to the looper blade.
- 38.1.5 Check this adjustment (see "Correct setting").

Correct setting:

When the looper point is opposite the centre line of the needle, there should be a clearance of **0.3 mm to 0.5 mm** between front needle guard **2** and the needle (Fig. 38.0.4).



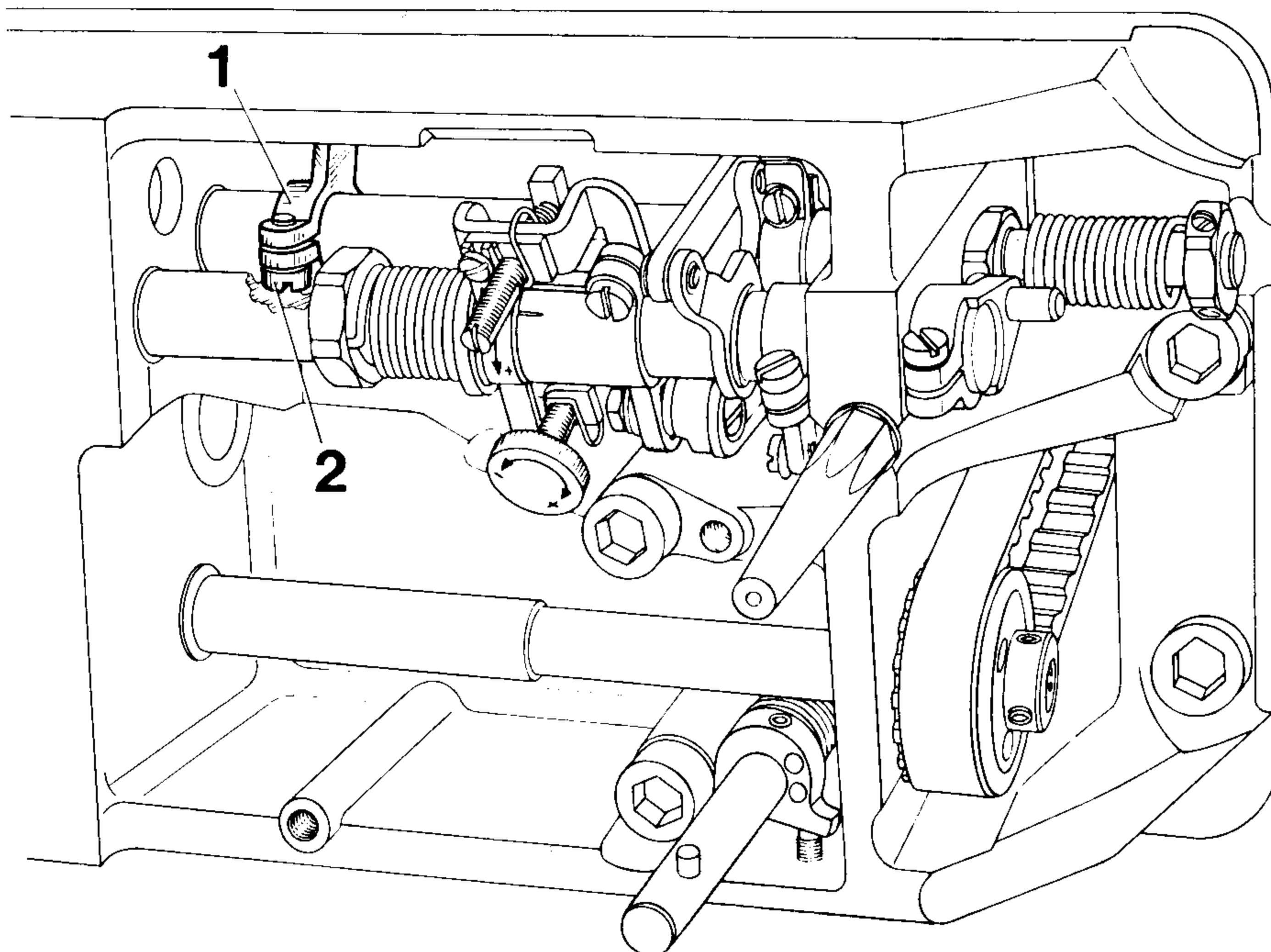
- 38.2.1 Turn the balance wheel to bring the looper to its left point of reversal.
- 38.2.2 Loosen clamp screw 1 (Fig. 38.0.3).
- 38.2.3 **Adjust the position of needle guard bracket 3 so that front needle guard 2 does not touch the neck of the looper when the latter is at its left point of reversal.**
- 38.2.4 In this position, tighten clamp screw 1 just lightly.
- 38.2.5 Turn the balance wheel further until the looper point is opposite the centre line of the needle.
- 38.2.6 **Turn needle guard bracket 3 so that there is a clearance of 0.3 to 0.5 mm between needle guard and needle (Fig. 38.0.4).**
- 38.2.7 In this position, tighten clamp screw 1.
- 38.2.8 Check this adjustment (see "Correct setting").

**Stitch length limitation**

(This adjustment does not apply to machines fitted with backtacking mechanism -911/...)

Correct setting:

When the reverse-feed control is fully pressed, the stitch length should be **1.5 mm.**



**39.0.1**

- 39.1 Set the stitch length at "1.5".
- 39.2 **Turn stop crank 1 until it contacts the bedplate and tighten clamp screw 2 in this position (Fig. 39.0.1).**
- 39.3 Set the machine for its longest stitch and check this adjustment (see "Correct setting").

**40 Final worksteps**

- 40.1 Replace the oil-soaked lubrication pad in the gearcase (large cutout to left, downwards).
- 40.2 Clean the gasket surface of the gearcase and the gasket of the gearcase cover.
- 40.3 Screw on the gearcase cover together with the machine-head supports, tightening the cover screws crosswise.
- 40.4 Replace and screw on the face cover, the rear housing cover with thread tension and the belt guard.
- 40.5 Thread the machine.
- 40.6 Replace the bed slide and the cover plate.
- 40.7 Place fabric under the presser foot and lower the foot onto it.
- 40.8 **Make a sewing test and, while doing so, adjust the presser foot pressure by means of regulating screw 2 (Fig. 24.0.1) so that the fabric is fed properly, even at top speed.**



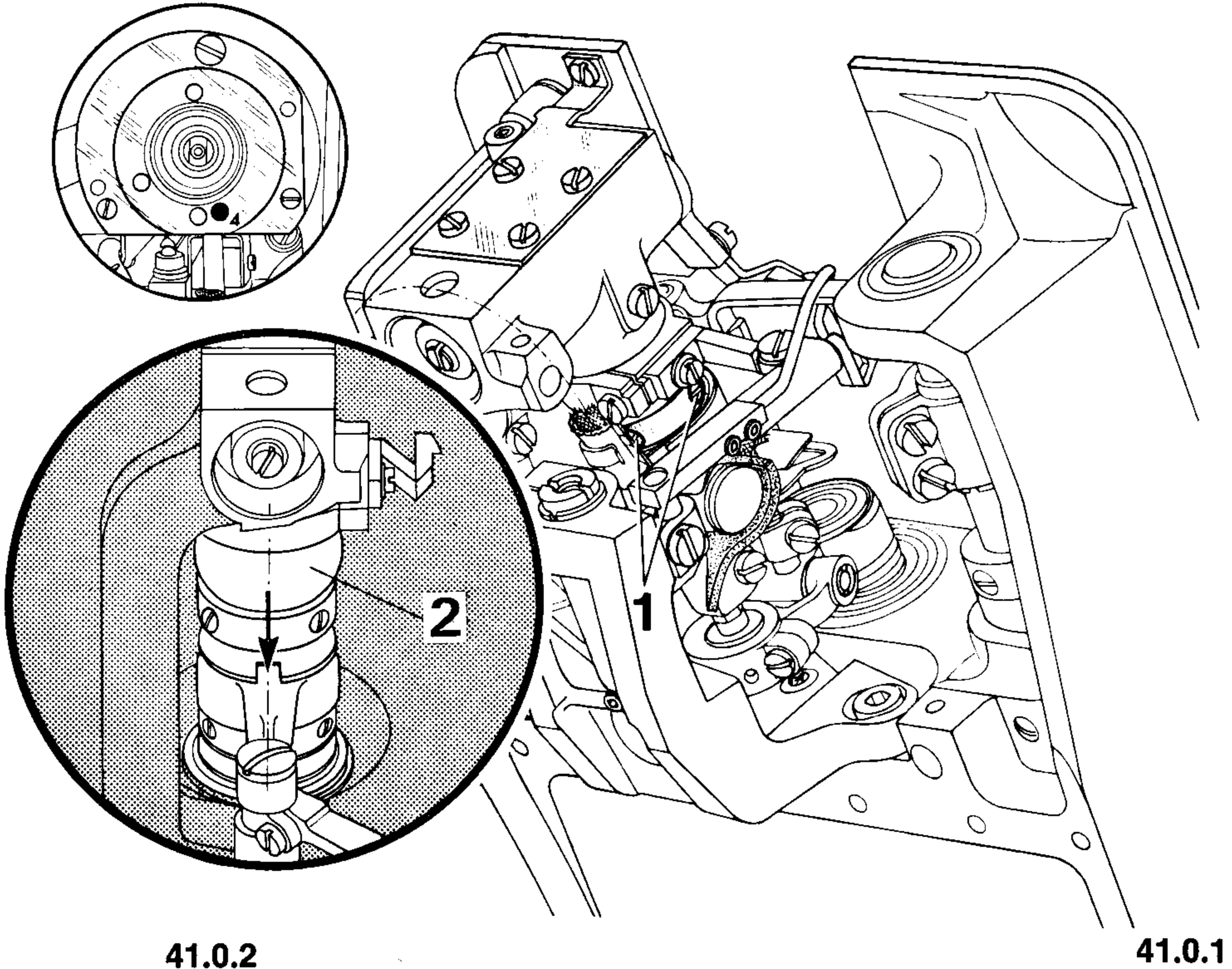
# Appendix

**for machines with backtacking mechanism -911/ . .**

The following contains differing adjustment procedures for machines fitted with backtacking mechanism -911/ . . All other adjustments can be found in the preceding sections of this Service Manual.

Correct setting:

With the needle bar at a position 0.8 mm before its top dead centre (pin in hole 4) the slot in feed lifting eccentric 2 should face downwards (see arrow in Fig. 41.0.2).



41.0.2

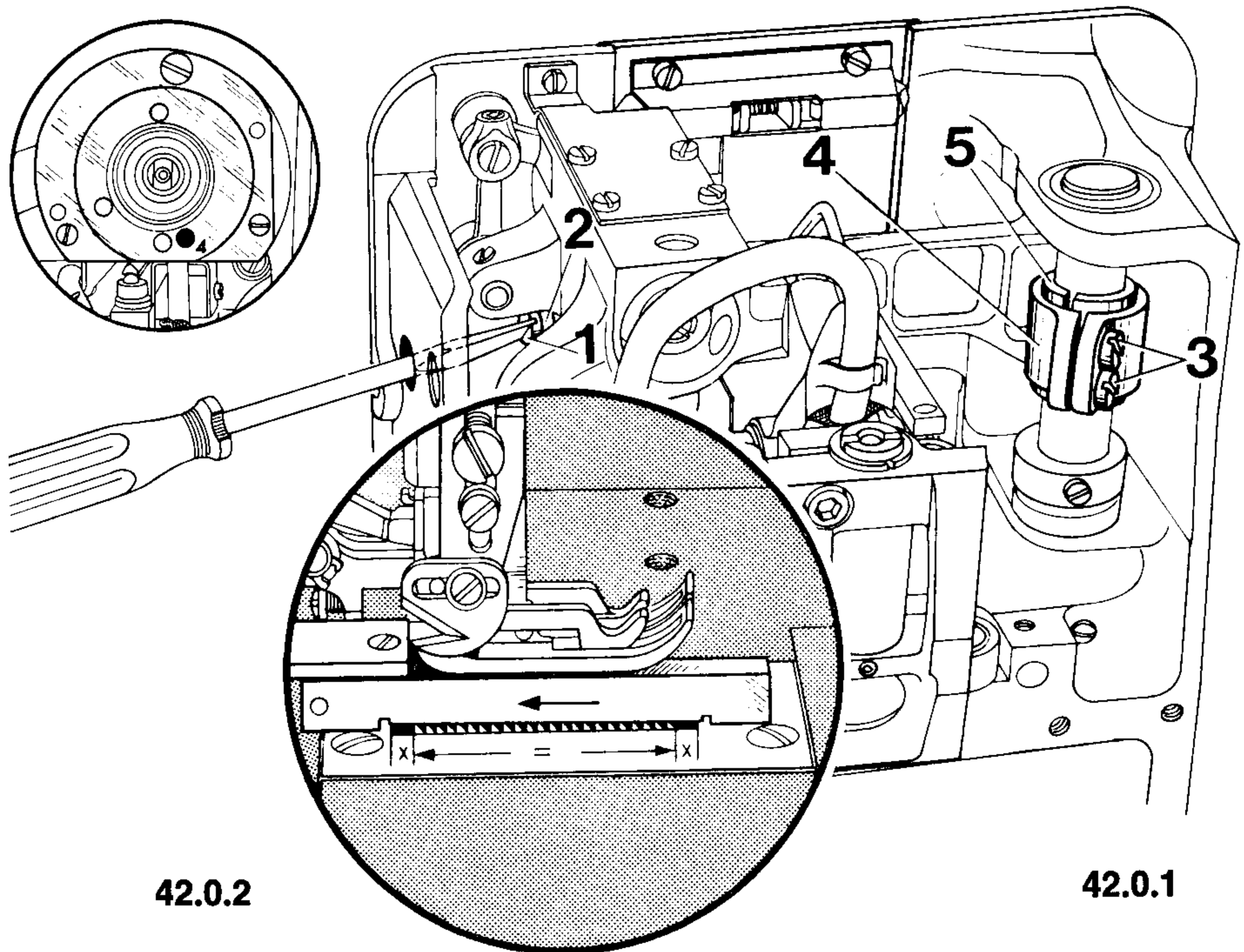
41.0.1

- 41.1 Loosen screws 1 of feed lifting eccentric 2 (Fig. 41.0.1).
- 41.2 Turn the balance wheel to bring the needle bar to a position 0.8 mm before its top dead centre.
- 41.3 Insert the pin in hole 4 of the bearing plate (to block the machine).
- 41.4 **Turn feed lifting eccentric 2 so that its slot faces downwards** (see arrow in Fig. 41.0.2).
- 41.5 In this position, tighten the accessible screw 1.
- 41.6 Pull the pin out of the hole in the bearing plate.
- 41.7 Also tighten the second screw 1.
- 41.8 Check this adjustment (see "Correct setting").



Correct setting:

With the stitch length control set at "0" and the needle bar positioned 0.8 mm before its top dead centre (pin in hole 4), the feed dog should be centred in its slot and contact the adjustment gauge throughout its length (Fig. 42.0.2).



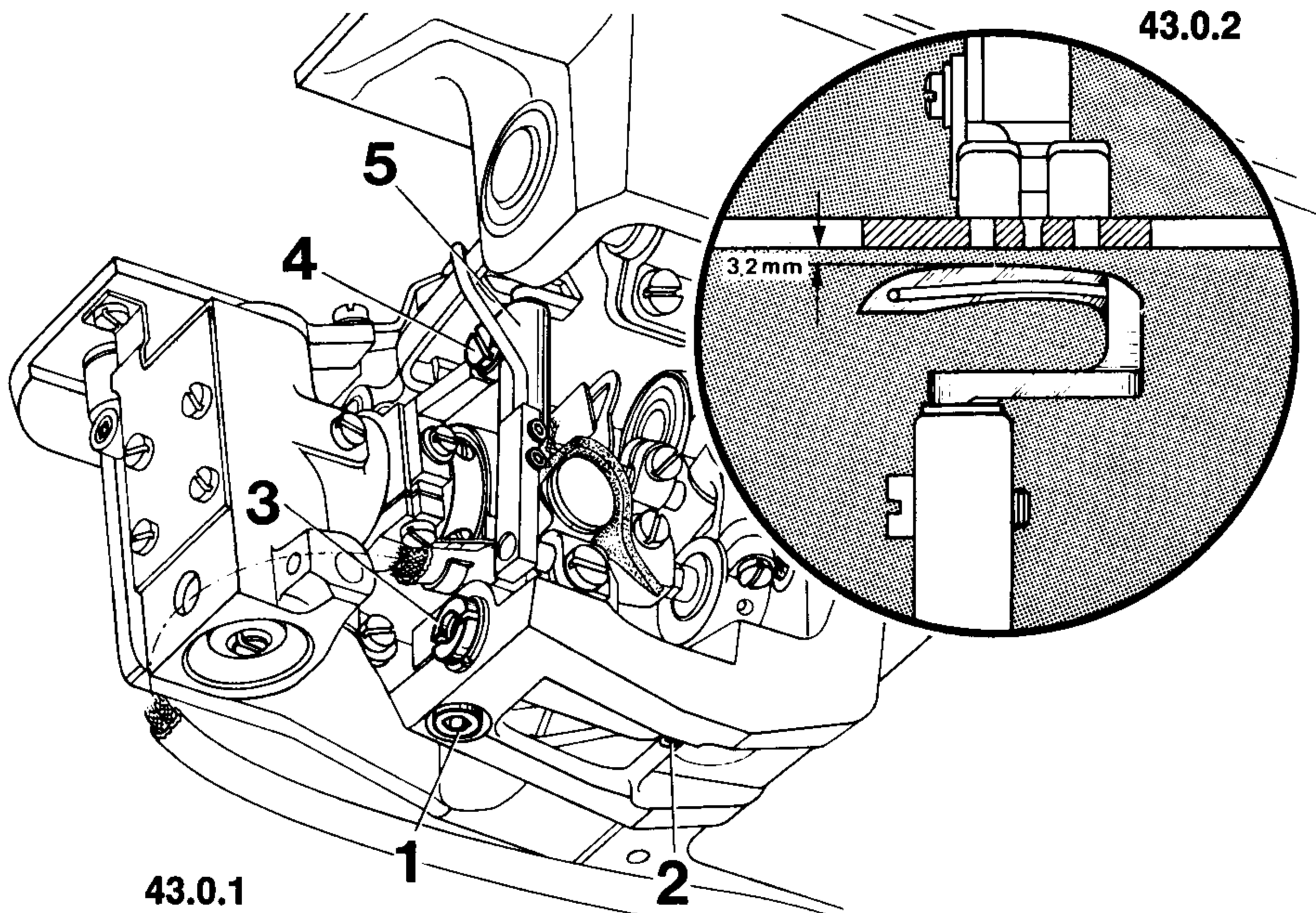
42.0.2

42.0.1

- 42.1 Turn the stitch length control to "0".
- 42.2 Bring the needle bar to a position 0.8 mm before its top dead centre.
- 42.3 Insert the pin in hole 4 of the bearing plate (to block the machine).
- 42.4 Loosen clamp screw 1 of feed lifting crank 2 (Fig. 42.0.1).
- 42.5 Also loosen both clamp screws 3 of feed driving crank 4.
- 42.6 Unscrew the presser foot.
- 42.7 Place adjustment gauge No. 61-111 642-19 on the needle plate so that its recess is centred above the feed slot and the arrow on the gauge points in feed direction (Fig. 42.0.2).
- 42.8 Lower the presser foot onto the gauge.
- 42.9 **Centre the feed dog in its slot.**
- 42.10 Push the feed bar upwards until the feed dog contacts the gauge and hold it there.
- 42.11 **Turn eccentric sleeve 5 beneath the feed driving crank so that the feed dog contacts the gauge throughout its length** (Fig. 42.0.2).
- 42.12 In this position tighten clamp screws 1 and 3, making sure that the feed dog is still centred in the needle plate slot.
- 42.13 Raise the presser foot, remove the gauge and pull the pin out of the hole in the bearing plate.
- 42.14 Check this adjustment (see "Correct setting").

Correct setting:

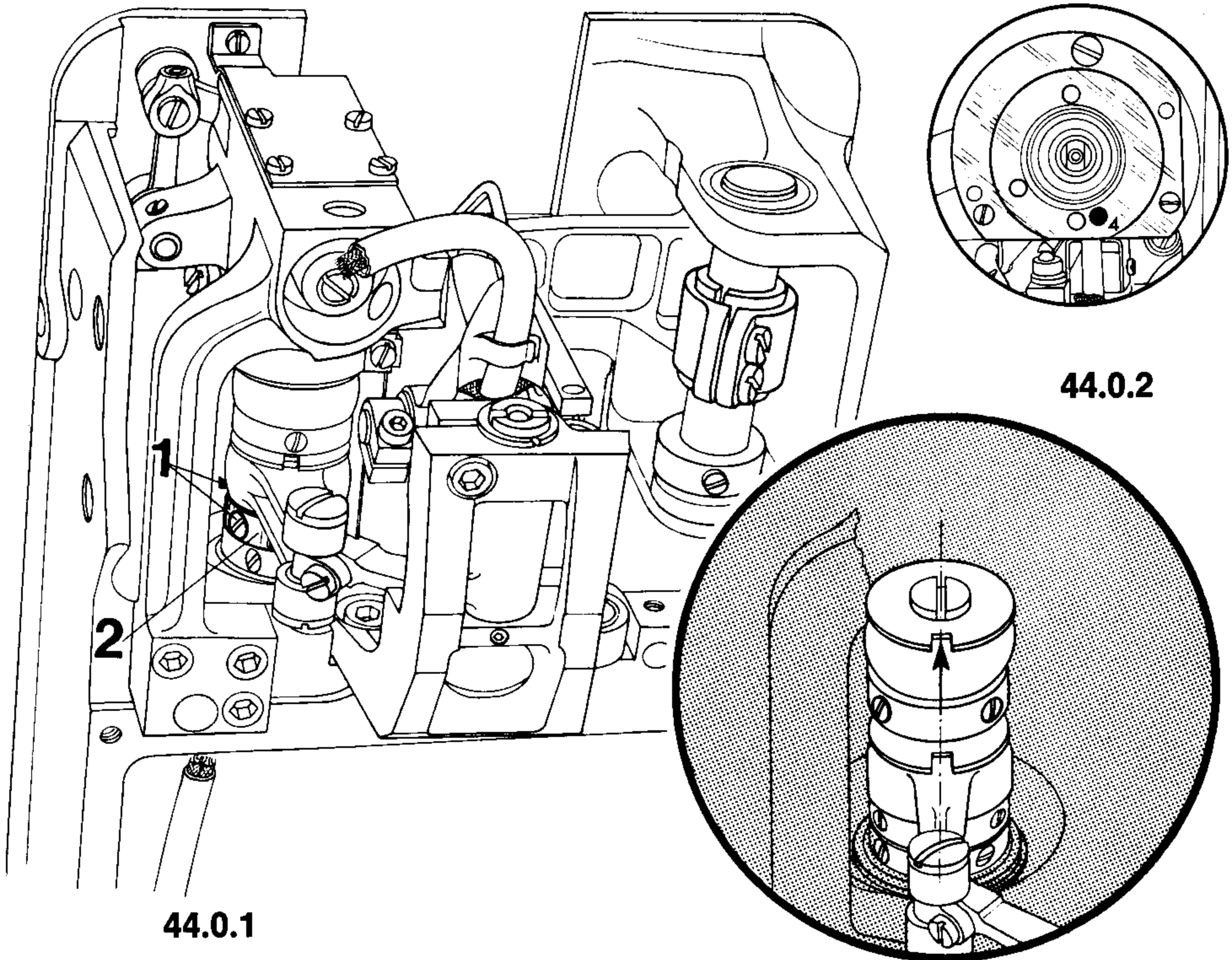
When the looper holder is in its vertical position, there should be a clearance of **3.2 mm** between the highest point of the looper and the underside of the needle plate (Fig. 43.0.2).



- 43.1 Remove bed slide, cover plate, needle plate and feed dog.
- 43.2 Place the needle plate in position again and operate the presser bar lifter to lower the presser foot onto the needle plate.
- 43.3 Turn the balance wheel until the looper holder is vertical.
- 43.4 Loosen clamp screw 1 and screw 2 of eccentric bearing stud 3 (Fig. 43.0.1).
- 43.5 **Turn eccentric bearing stud 3 until there is a clearance of 3.2 mm between the highest point of the looper and the underside of the needle plate (Fig. 43.0.2).**
- 43.6 In this position, tighten clamp screw 1 and screw 2.
- 43.7 If a clearance of 3.2 mm cannot be obtained, proceed as follows:
- 43.7.1 Raise the presser foot and remove the needle plate.
- 43.7.2 Loosen clamp screw 4 in looper holder 5 and take off the looper (do not lose spacing ring).
- 43.7.3 Fit an appropriate spacing ring (see inside front cover) on the looper neck and push the looper into looper holder 5 again as far as it will go.
- 43.7.4 Set the looper blade roughly parallel to the front edge of the bedplate (preliminary adjustment) and tighten clamp screw 4.
- 43.7.5 Replace the needle plate and operate the presser bar lifter to lower the presser foot onto the needle plate.
- 43.7.6 Check that there is a clearance of 3.2 mm between the highest point of the looper and the underside of the needle plate when the looper holder is in its vertical position.
- 43.8 If necessary, repeat steps 43.3 to 43.6
- 43.9 Check this adjustment (see "Correct setting").

Correct setting:

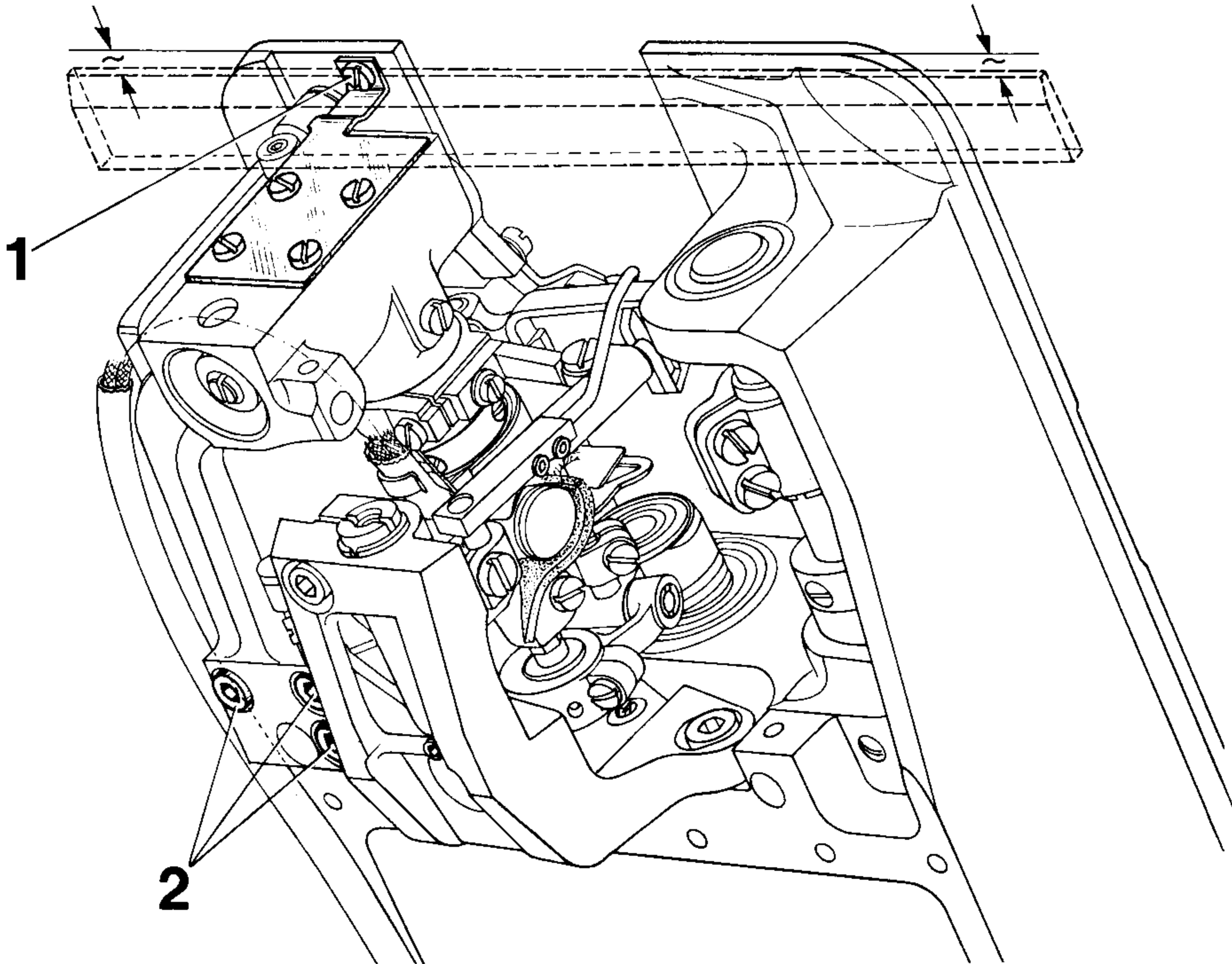
With the needle bar positioned 0.8 mm before its top dead centre (pin in hole 4) the slot in the avoiding motion eccentric should be positioned exactly below the centre line of the shaft (see arrow in Fig. 44.0.2).



- 44.1 Loosen both screws **1** in the collar of avoiding motion eccentric **2** (Fig. 44.0.1).
- 44.2 Turn the balance wheel to bring the needle bar to a position 0.8 mm before its top dead centre.
- 44.3 Insert the pin in hole **4** of the bearing plate (to block the machine).
- 44.4 **Turn avoiding motion eccentric **2** so that its slot points vertically downwards** (Fig. 44.0.2).
- 44.5 In this position, tighten the accessible screw **1**.
- 44.6 Pull the pin out of the hole in the bearing plate.
- 44.7 Also tighten the second screw **1**.
- 44.8 Check this adjustment (see "Correct setting").

Correct  
setting:

The face side of the backtacking mechanism should be exactly parallel to the front edge of the bedplate (Fig. 45.0.1).

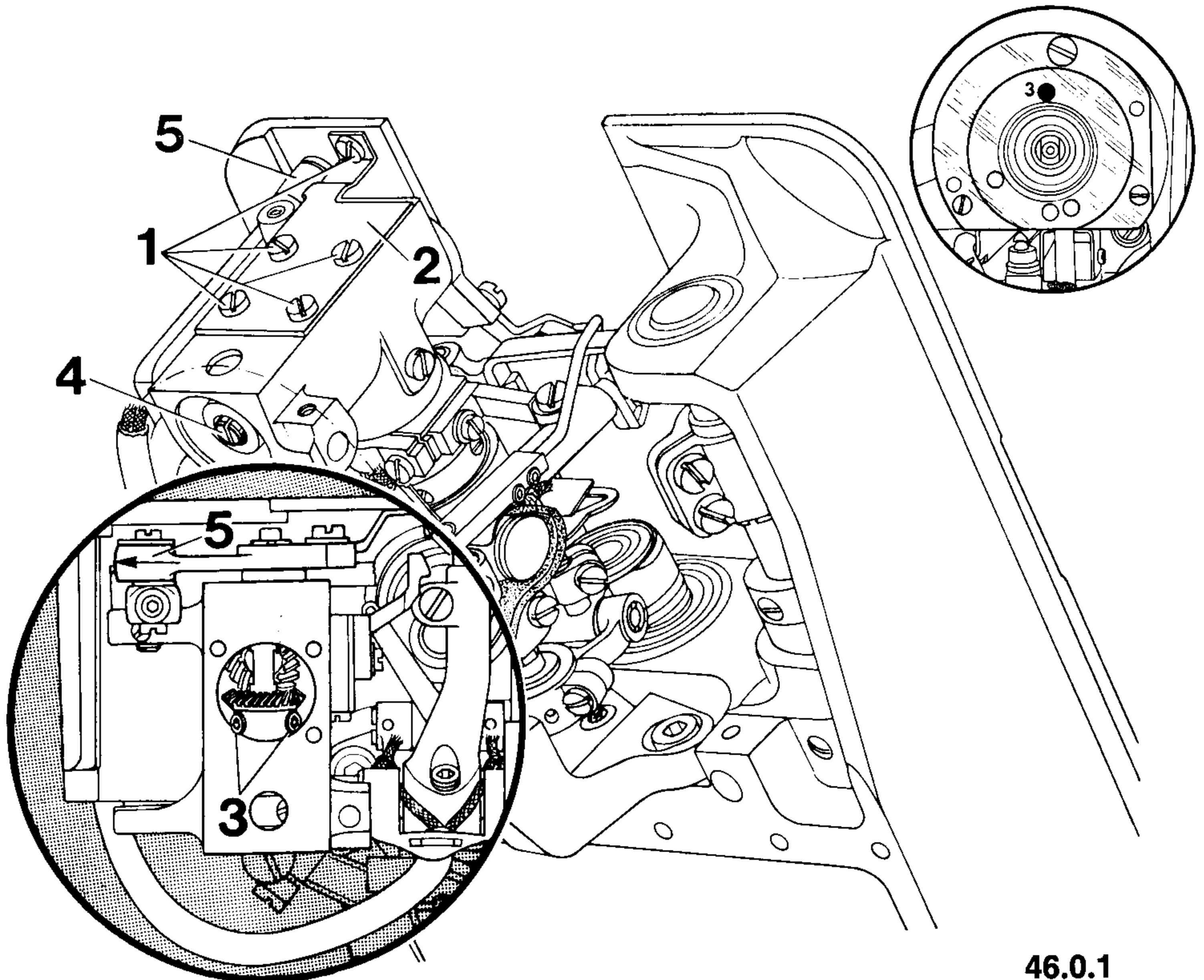


**45.0.1**

- 45.1 Loosen screw **1** (Fig. 45.0.1).
- 45.2 Also loosen the three screws **2** and re-tighten them a little.
- 45.3 Position the backtacking mechanism with the aid of a ruler so that its face side is exactly parallel to the front edge of the bedplate.
- 45.4 In this position, tighten the three screws **2**.
- 45.5 Leave screw **1** loose for the next adjustment.

Correct  
setting:

With the needle bar at its bottom dead centre (pin in hole **3**), spreader link **5** should be at its rear point of reversal – as seen in sewing direction (see arrow in Fig. 46.0.2).



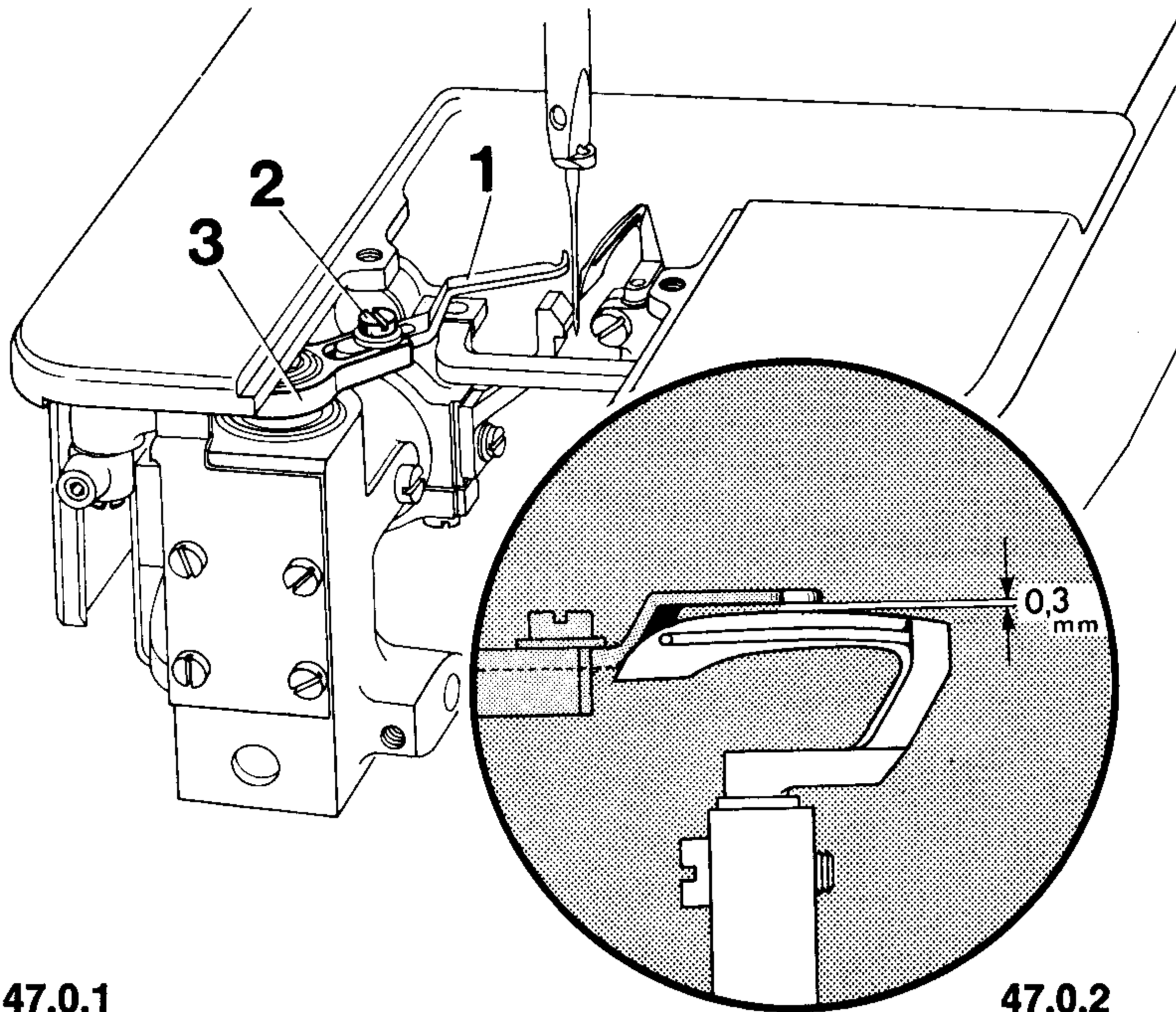
46.0.2

46.0.1

- 46.1 Take out the five screws **1** and remove cover **2** (Fig. 46.0.1).
- 46.2 Turn the balance wheel until the two screws **3** are accessible (Fig. 46.0.2). Loosen these screws so that eccentric shaft **4** can be turned.
- 46.3 Bring the needle bar to its bottom dead centre.
- 46.4 Insert the pin in hole **3** of the bearing plate (to block the machine).
- 46.5 **Turn eccentric shaft **4** so that spreader link **5** is at its rear point of reversal – as seen in sewing direction** (see arrow in Fig. 46.0.2).
- 46.6 In this position, tighten the accessible screw **3**, making sure the bevel gears have sufficient play.
- 46.7 Pull the pin out of the hole in the bearing plate and tighten the second screw **3**.
- 46.8 Check this adjustment (see "Correct setting").
- 46.9 Replace and screw on cover **2**.

Correct setting:

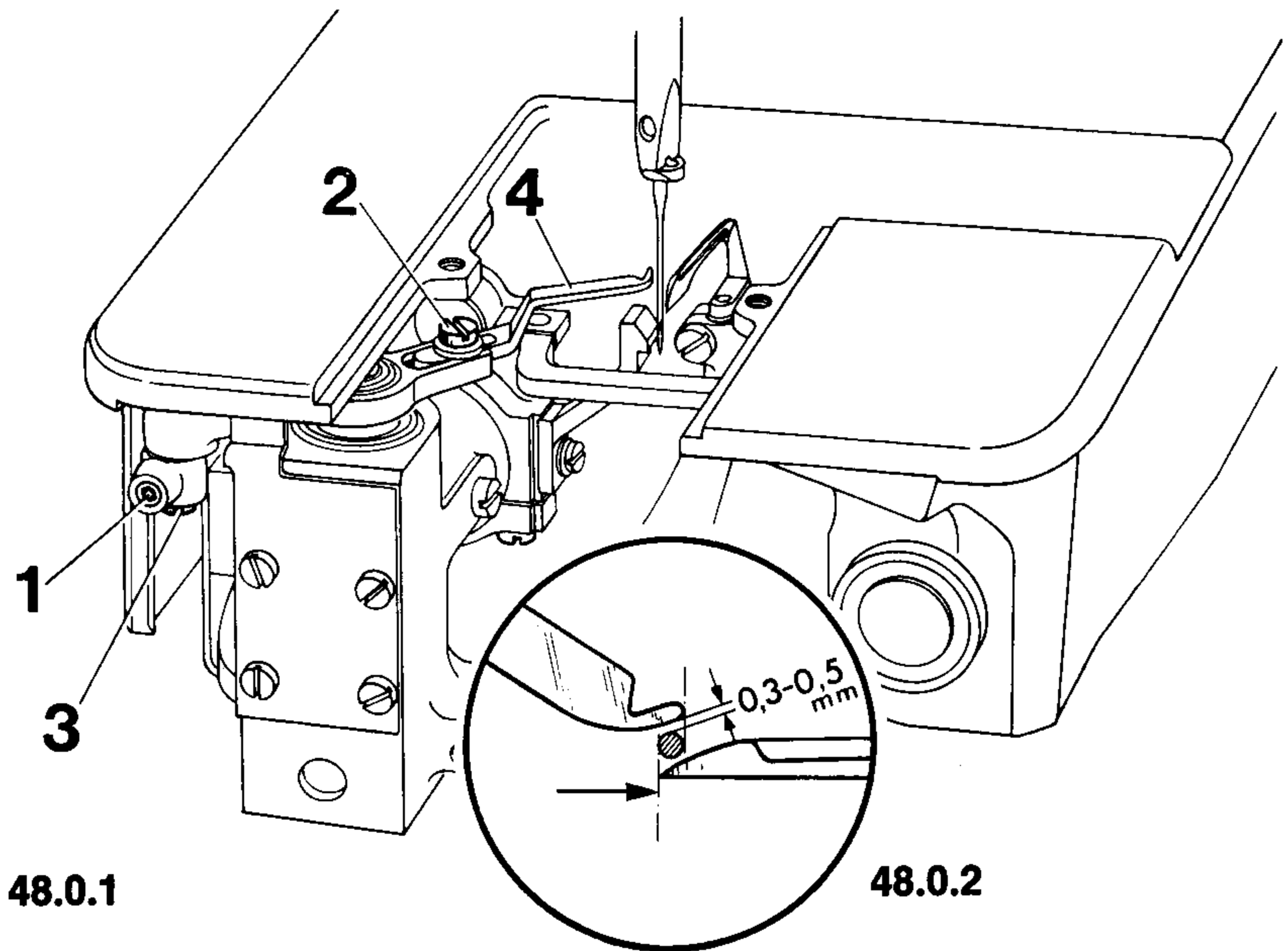
When the spreader tip is exactly above the looper there should be a clearance of about 0.3 mm between the highest point of the looper and the underside of the spreader (Fig. 47.0.2).



- 47.1 Turn the balance wheel until the tip of spreader 1 is exactly above the looper (Fig. 47.0.1).
- 47.2 Take out screw 2 of spreader holder 3 and remove spreader 1 with the spacer.
- 47.3 **Insert an appropriate spacer (see inside front cover), replace the spreader and secure it in position with screw 2.**
- 47.4 Check this adjustment (see "Correct setting").

Correct setting:

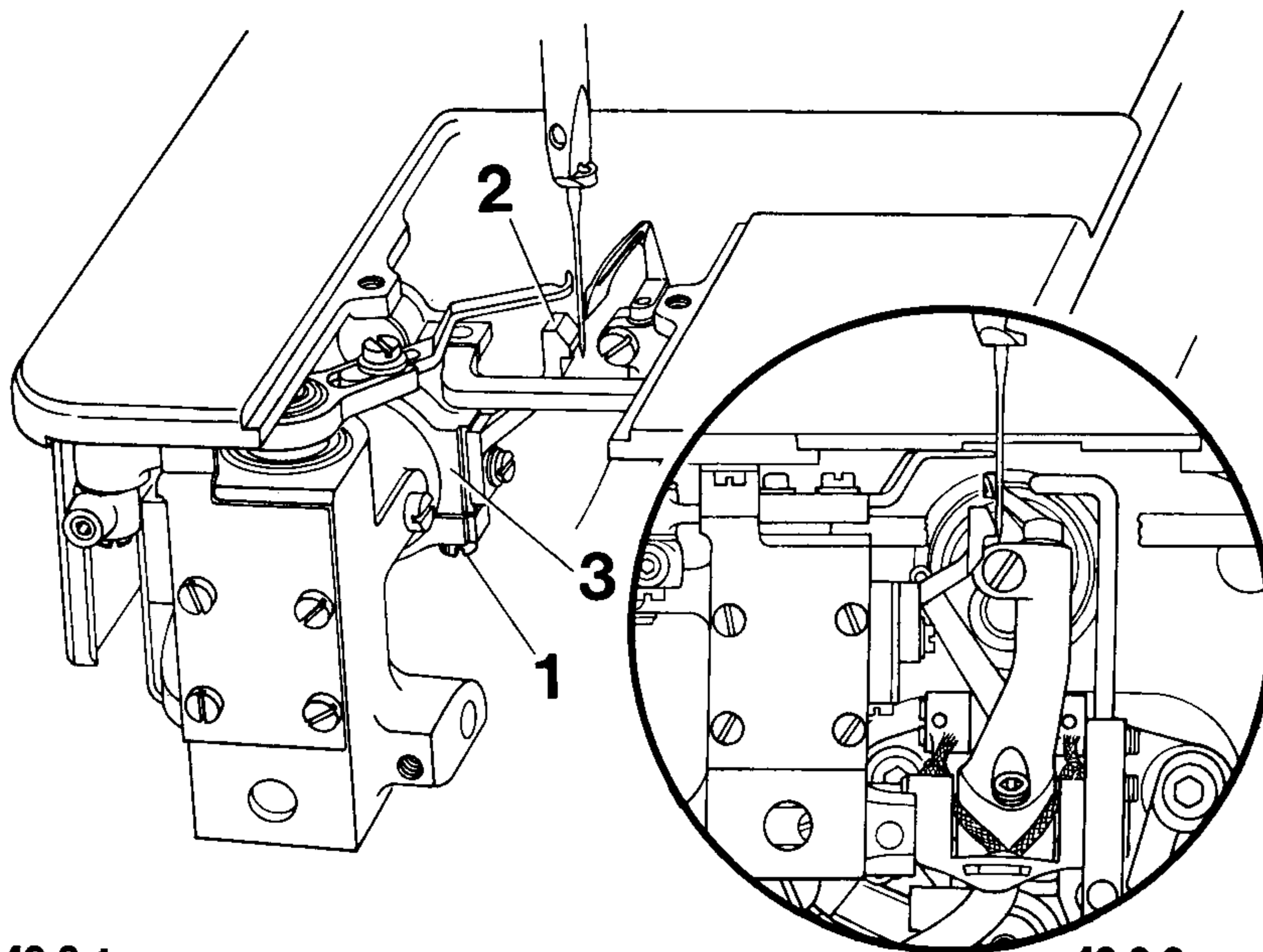
When the point of the reversing looper reaches the left side of the descending needle, the spreader tip should be at the right side of the needle and clear the latter in sewing direction at a distance of **0.3 mm to 0.5 mm** (Fig. 48.0.2).



- 48.1 Turn the balance wheel until the point of the reversing looper reaches the left side of the needle.
- 48.2 Loosen screws 1 and 2 a little (Fig. 48.0.1).
- 48.3 Turn eccentric stud 3 so that its lobe faces in sewing direction.
- 48.4 **Set a clearance of 0.3 to 0.5 mm between spreader tip and needle by turning eccentric stud 3 and simultaneously moving spreader 4 in its elongated hole.**
- 48.5 In this position, tighten screws 1 and 2.
- 48.6 Check this adjustment (see "Correct setting").

Correct  
setting:

The needle should still contact the rear needle guard lightly when the point of the advancing looper is in line with the right side of the needle (Fig. 49.0.2).



49.0.1

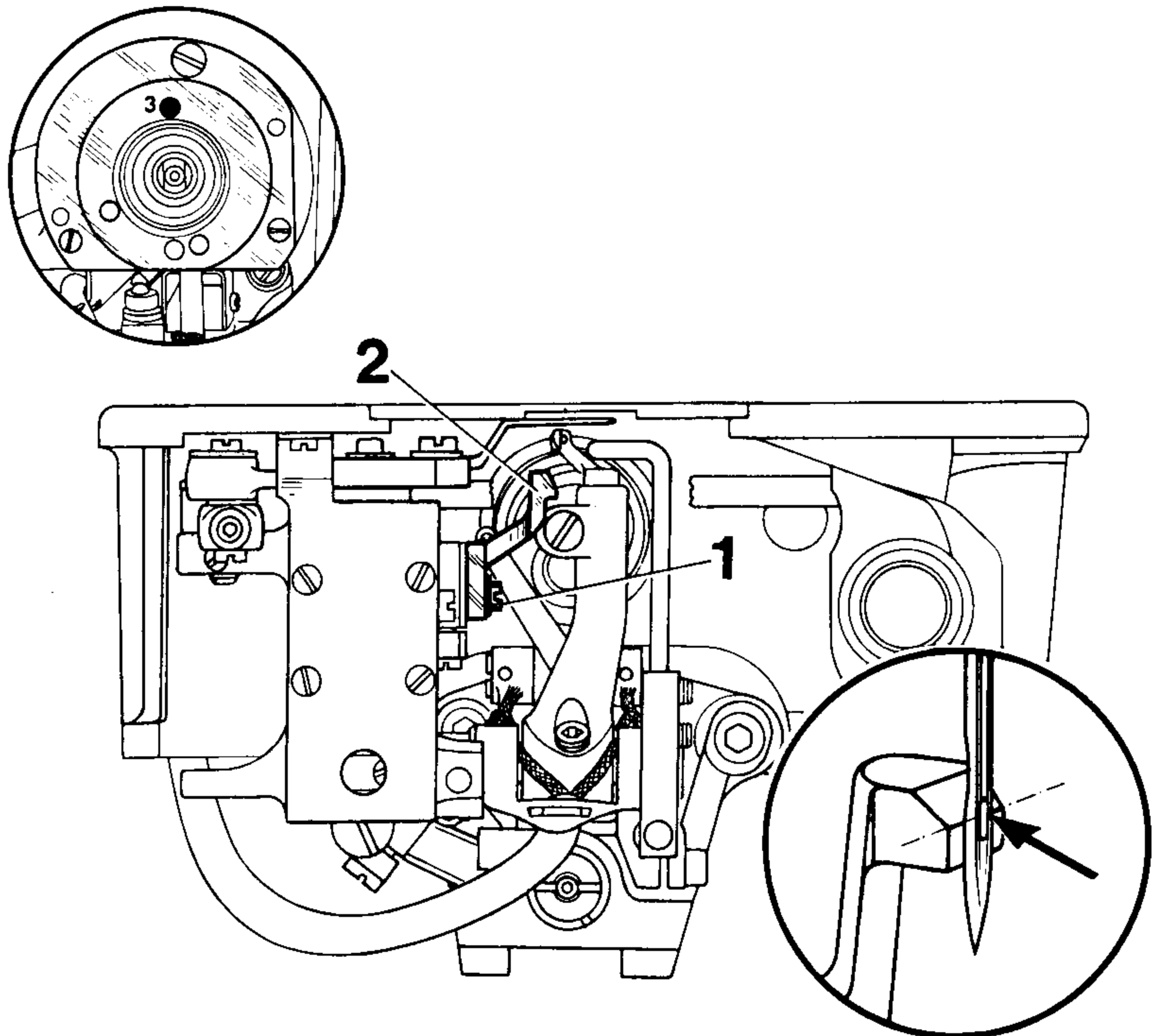
49.0.2

- 49.1 Turn the balance wheel until the point of the advancing looper is in line with the right side of the needle.
- 49.2 Loosen screw 1 of rear needle guard 2 (Fig. 49.0.1).
- 49.3 **Turn bracket 3 so that the needle guard contacts the needle without deflecting it.**
- 49.4 In this position, tighten screw 1.
- 49.5 Check this adjustment (see "Correct setting").



Correct setting:

With the needle bar at its bottom dead centre (pin in hole **3**), the vertical surface of the needle guard should cover the needle eye by roughly  $\frac{2}{3}$  (see arrow in Fig. 50.0.2).



50.0.1

50.0.2

- 50.1 Turn the balance wheel to bring the needle bar to its bottom dead centre.
- 50.2 Insert the pin in hole **3** of the bearing plate (to block the machine).
- 50.3 Loosen screw **1** of rear needle guard **2** (Fig. 50.0.1).
- 50.4 **Adjust needle guard **2** so that its vertical surface covers roughly  $\frac{2}{3}$  of the needle eye (Fig. 50.0.2).**
- 50.5 In this position, tighten screw **1**.
- 50.6 Pull the pin out of the hole in the bearing plate.
- 50.7 Check this adjustment (see "Correct setting").
- 50.8 Replace and screw on feed dog, needle plate and presser foot.

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