



**463;
463 H**

Service Manual

Instructions for adjusting the Pfaff 463 and 463 H

Important note

On machines which are put into operation for the first time or which have been idle for a longer period of time (1 or 2 months), make absolutely sure to check the hook lubrication system (Section 14). For topping up we recommend using Pfaff sewing machine oil No. 280-1-120 144 with a viscosity of 15 mm²/s at 50°C and a density of 0.865 g/cm³ at 15°C.

Tools, gauges and other equipment needed for adjustment:

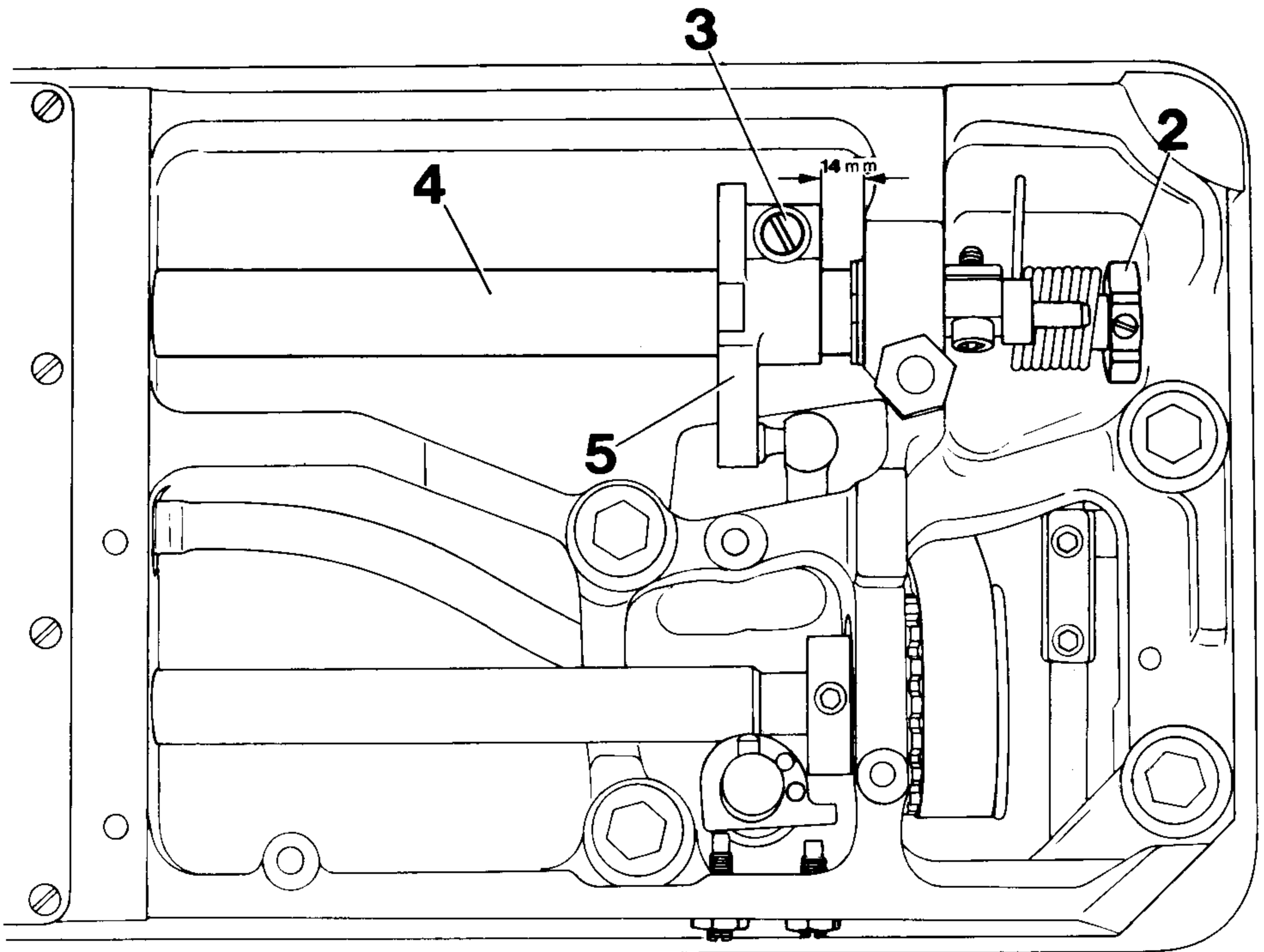
- 1 set of screwdrivers with blades from 2 to 10 mm wide
- 1 set of allen keys ranging from 1.5 to 6.0 mm
- 1 set of spanners from 7 to 14 mm wide
- 1 22-mm spanner
- 1 metal rule
- 1 C-clamp (No. 08-880 137-00)
- 1 gauge (No. 61-111 639-49)
- 1 pack of needles
- A strip of white paper, sewing thread and material for testing purposes

1 Zeroing the feed motion

Correct setting:

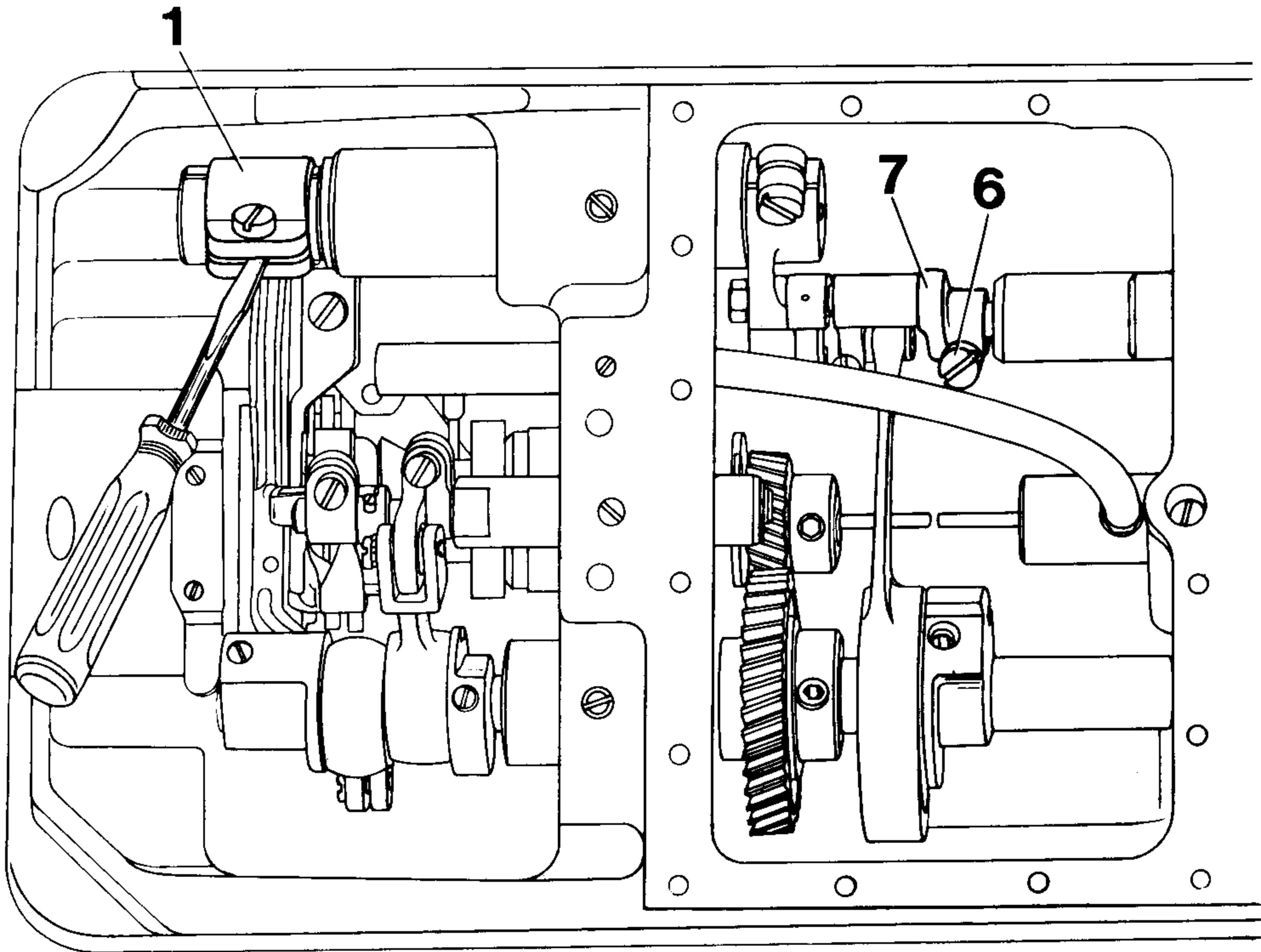
With the stitch length control set at "0" the feed dog must not move when the balance wheel is turned.

1.1 Adjustment procedure to be applied when the gearcase cover is **closed**.



1.0.1

- 1.1.1 Remove the needle from the needle holder.
- 1.1.2 Remove the knee lever.
- 1.1.3 Raise the presser foot/roller presser and turn the stitch length control to "0".
- 1.1.4 To facilitate adjustment, insert a screwdriver in the slot of feed rock shaft crank 1 (Fig. 1.0.2).
- 1.1.5 Push a 22-mm spanner over tension nut 2 (Fig. 1.0.1) and hold it fast.
- 1.1.6 **Loosen screw 3 and, while rotating the balance wheel, turn feed regulator shaft 4 with the aid of the spanner until the feed dog (or rather the screwdriver in feed rock shaft crank 1 - Fig. 1.0.2) remains absolutely still.**
- 1.1.7 In this position, hold the spanner fast and tighten screw 3, making sure there is a clearance of abt. 14 mm between crank 5 and the casting.
- 1.1.8 Check this adjustment (see "Correct setting").
- 1.1.9 Pull the screwdriver out of the slot of feed rock shaft crank 1 (Fig. 1.0.2).



1.0.2

- 1.2.1 Remove the needle from the needle holder, remove the knee lever and raise the presser foot/roller presser.
- 1.2.2 Take out the 16 screws of the gearcase cover and remove the cover with its gasket, making sure that the oil, if any, is drained off into a container.
- 1.2.3 Take the oil sponge out of the gearcase.
- 1.2.4 Turn the stitch length control to "0".
- 1.2.5 To facilitate adjustment, insert a screwdriver in the slot of feed rock shaft crank 1.
- 1.2.6 Loosen clamp screw 6 (Fig. 1.0.2) in the gearcase just sufficiently to allow crank 7 to be turned on its shaft against resistance.
- 1.2.7 **Adjust crank 7 while rotating the balance wheel until the feed dog (or rather the screwdriver in feed rock shaft crank 1) no longer moves.**
- 1.2.8 In this position, tighten clamp screw 6
- 1.2.9 Check this adjustment (see "Correct setting").
- 1.2.10 Pull the screwdriver out of the slot of feed rock shaft crank 1.

2

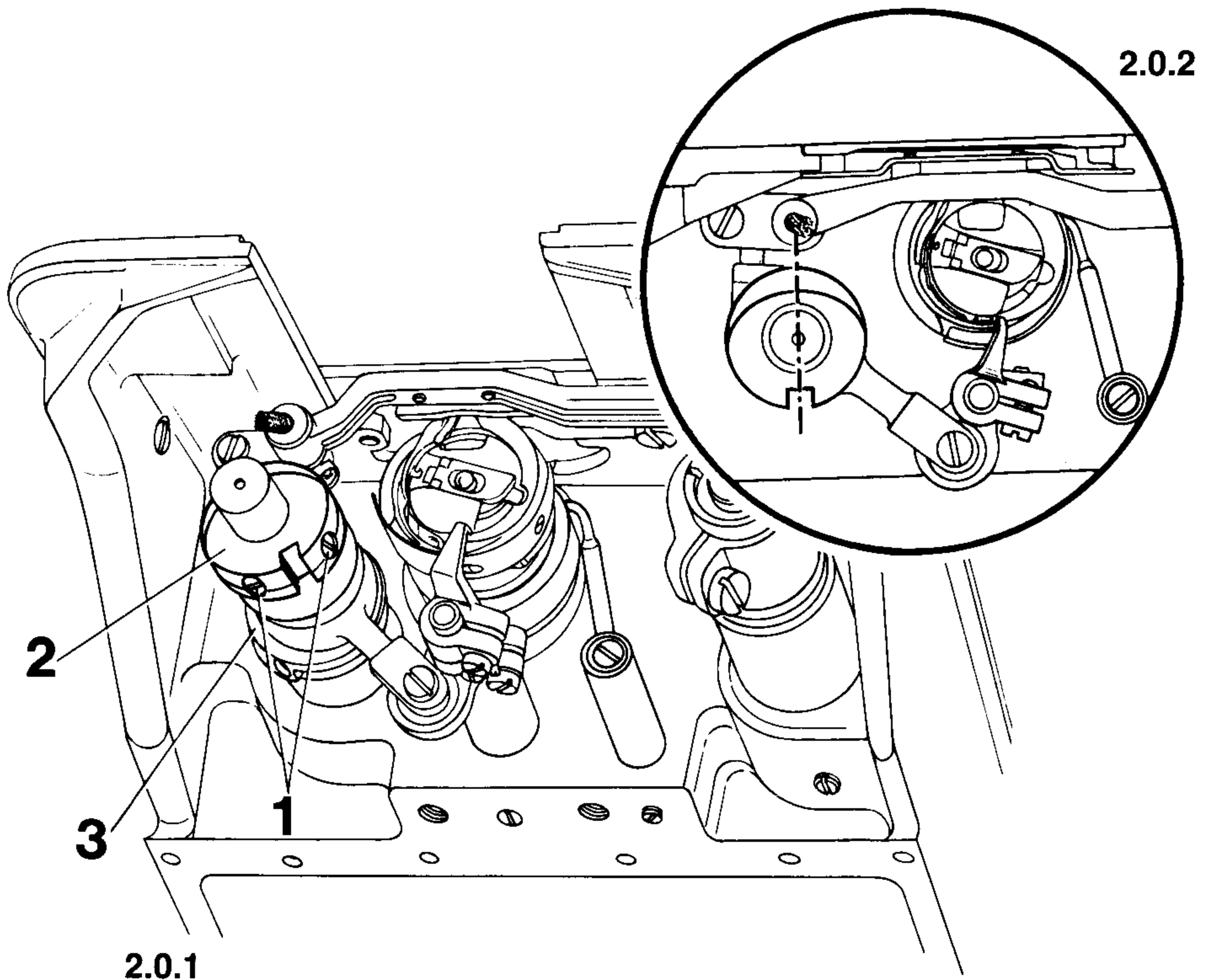
Feed lifting motion

Correct setting:

With the stitch length control set at "0" and the needle bar positioned at top dead center (t.d.c.), the feed dog should be at its highest point. In this position, the notch in feed lifting eccentric 2 should be positioned perpendicularly below the center of the shaft (Fig. 2.0.2).

Note:

On machines with roller presser (944/01) this adjustment should be made 0.6 mm past t.d.c., and on machine version H at 0.4 mm before t.d.c. of the needle bar.



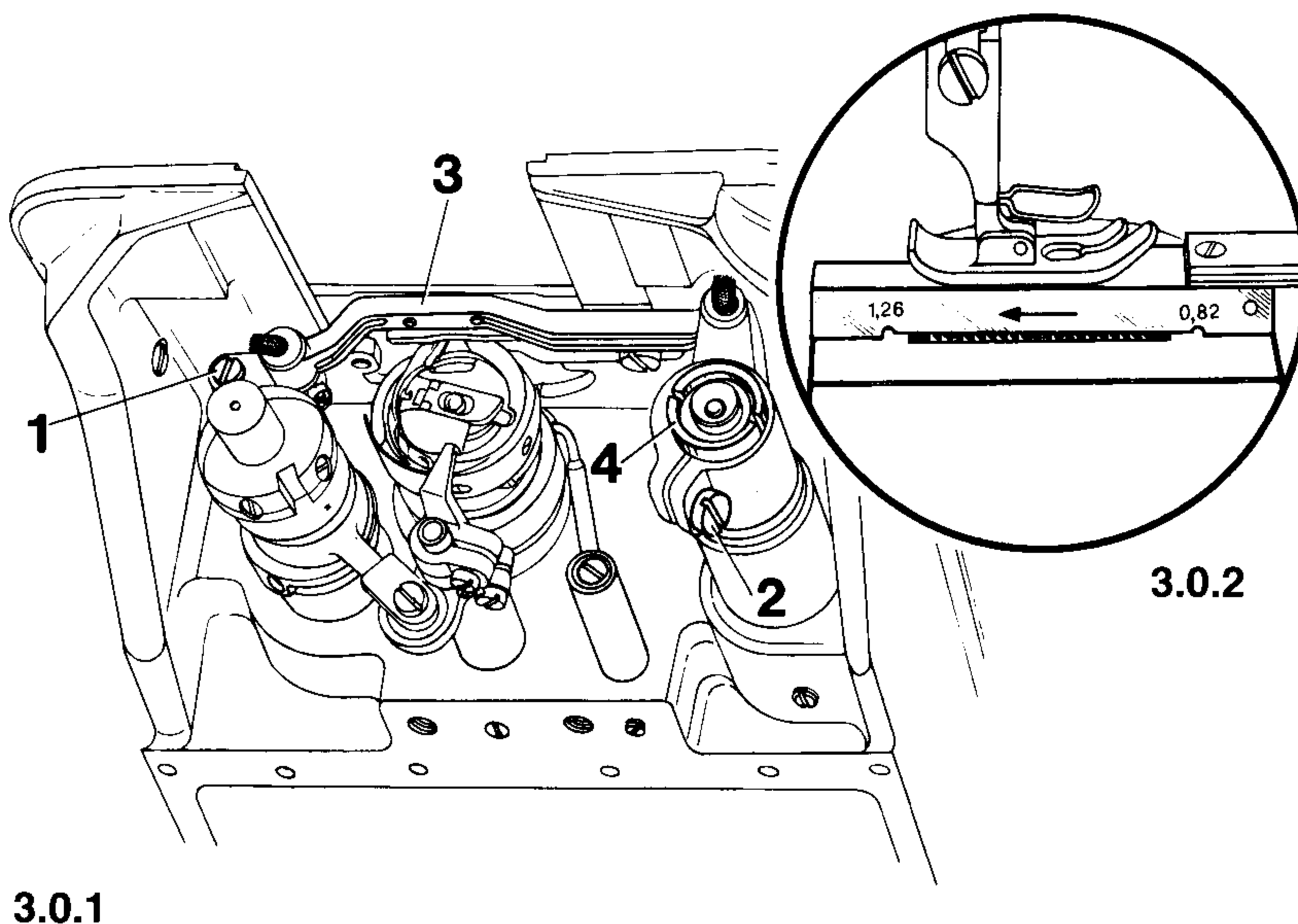
- 2.1 Turn the stitch length control to "0".
- 2.2 Loosen the two screws 1.
- 2.3 Bring the needle bar to t.d.c. (on machines in either H- or roller presser version, observe note).
- 2.4 **In this position, turn feed lifting eccentric 2 until the feed dog is at its highest point.** The notch in feed lifting eccentric 2 is now positioned perpendicularly below the center of the shaft (Fig. 2.0.2), i.e. above the centre of the shaft on machines with roller presser or machine versions.
- 2.5 In this position, tighten both screws 1, making sure there is a small amount of play between feed lifting eccentric 2 and bobbin case opener eccentric 3.
- 2.6 Check this adjustment (see "Correct setting").

3

Feed dog height

Correct setting:

With the stitch length control set at "0" and the needle bar positioned at t.d.c., the feed dog should be positioned in the middle of its slots and contact the gauge throughout its length (Fig. 3.0.2).



- 3.1 Check to make sure the stitch length control is set at "0" and turn the balance wheel until the feed dog is at its highest point.
- 3.2 Loosen clamp screws 1 and 2.
- 3.3 Place the gauge under the presser foot/roller presser so that its front edge is flush with the needle plate and number 1.26 on the gauge is positioned at the end of the feed slot (the arrow in Fig. 3.0.2 indicates the direction of feed).
- 3.4 Lower the presser bar lifter to rest the presser foot/roller presser on the gauge.
- 3.5 Position the feed dog in the middle of its slots (Fig. 3.0.2) and tighten clamp screw 2 just lightly.
- 3.6 Push feed bar 3 upwards until the feed dog contacts the gauge and tighten clamp screw 1 lightly.
- 3.7 **Turn eccentric bushing 4 until the feed dog is in contact with the gauge throughout its entire length.**
- 3.8 In this position, tighten clamp screws 1 and 2, making sure the feed dog is centered in its slots both sideways and lengthwise.
- 3.9 Check this adjustment (see "Correct setting").
- 3.10 Raise the presser bar lifter and remove the gauge from under the presser foot/roller presser.

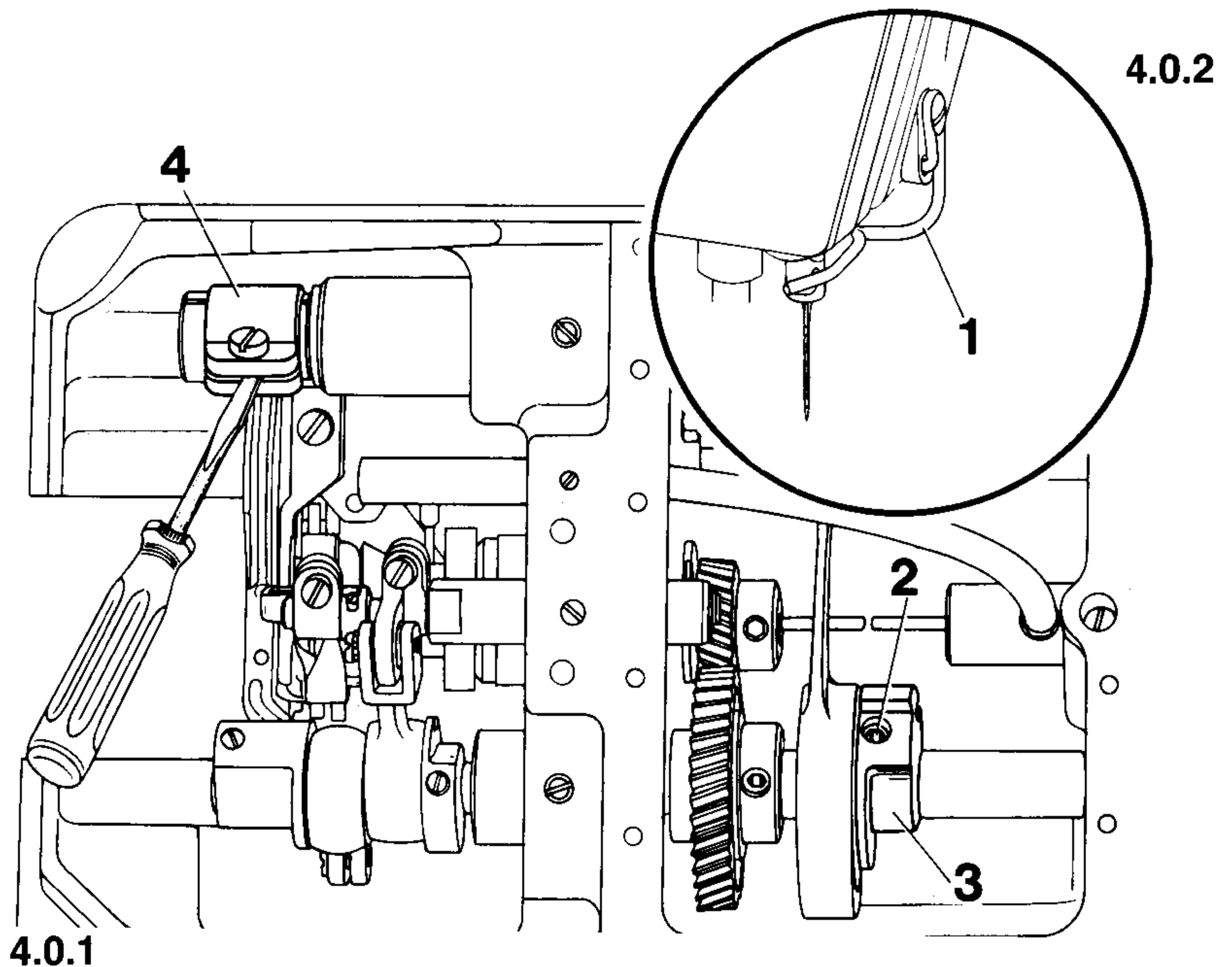
4 Feed advancing motion

Correct setting:

With the machine set for its longest stitch and the needle bar positioned 0.6 mm past top dead center (t.d.c.) the feed dog should not move when the reverse-feed control is operated.

Note:

On machine version H the feed dog should be absolutely motionless when the needle bar is positioned at t.d.c. Please observe the following adjustment instructions accordingly.

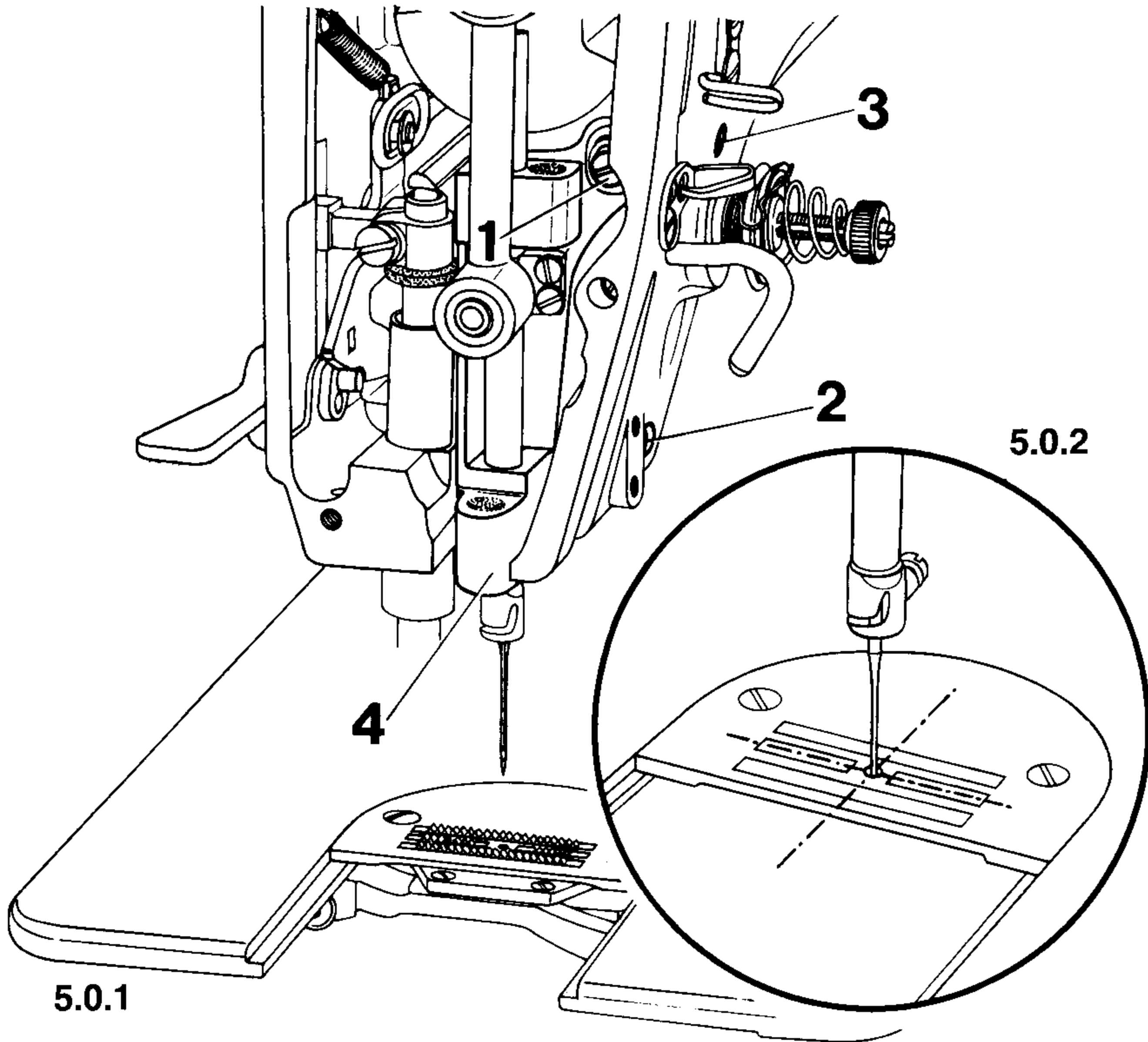


- 4.1 Set the machine for its longest stitch.
- 4.2 Unscrew thread guide 1 on the machine head.
- 4.3 Loosen the two screws 2 just sufficiently to allow feed eccentric 3 to be turned on its shaft against resistance.
- 4.4 To facilitate adjustment, insert a screwdriver in the slot of feed rock shaft crank 4.
- 4.5 Turn the balance wheel to bring the needle bar 0.6 mm past t.d.c.
- 4.6 **In this position, turn feed eccentric 3 until the feed dog (or rather the screwdriver) is completely motionless while moving the reverse-feed control up and down.**
- 4.7 In this position, firmly tighten screws 2.
- 4.8 Check this adjustment, (see "Correct setting").

5 Centering the needle in the needle hole

Correct setting:

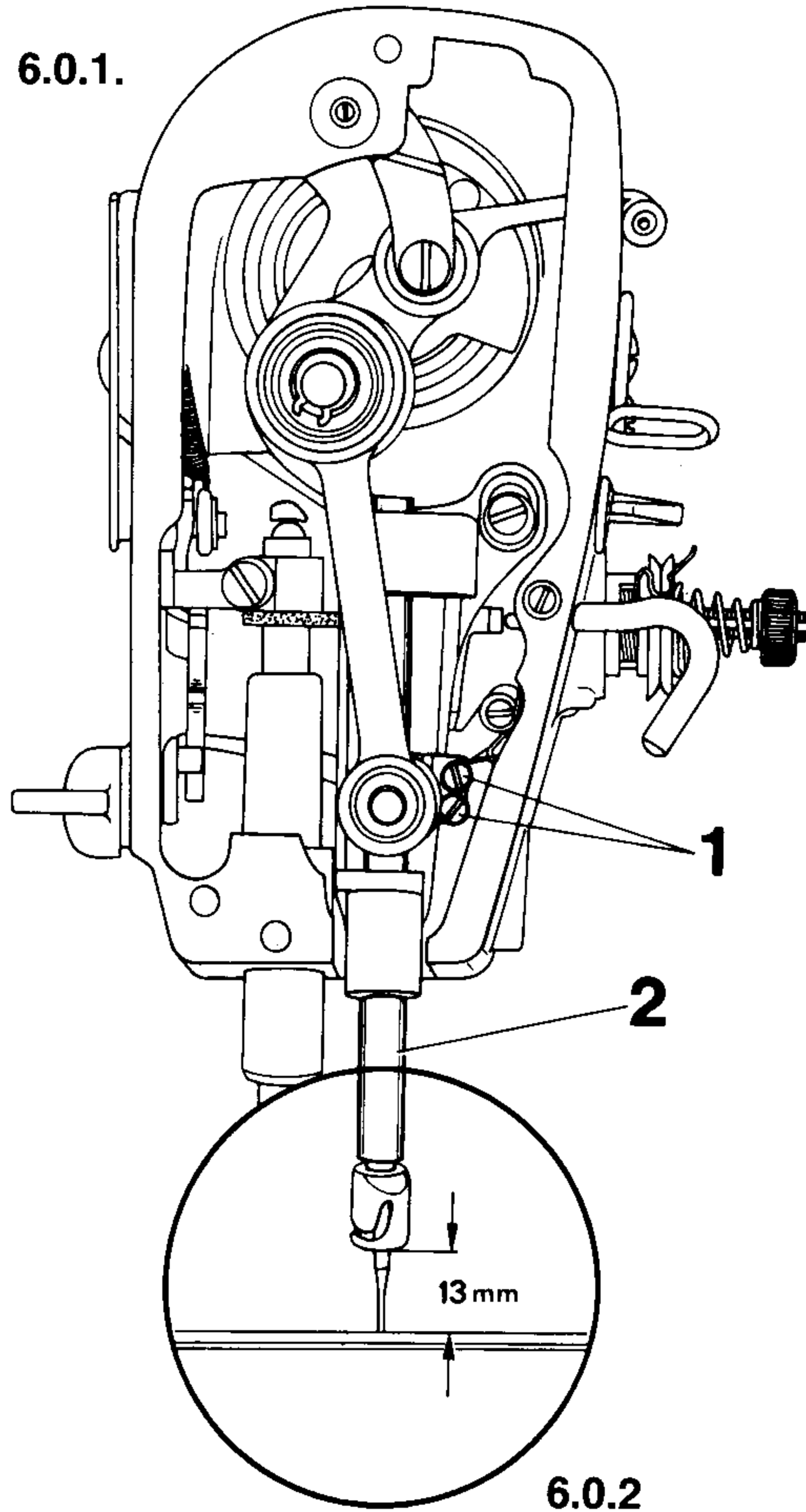
A straight needle should be positioned in the middle of the needle hole (Fig. 5.0.2).



- 5.1 Bring the needle bar to t.d.c.
- 5.2 Remove the presser foot and the face cover.
- 5.3 Insert a new needle into the needle holder.
- 5.4 Loosen screws 1, 2 and 3.
- 5.5 Turn the balance wheel until the needle is positioned above the needle holder.
- 5.6 **Adjust the position of needle bar frame 4 sideways and lengthwise until the needle is centered in the needle hole.**
- 5.7 In this position, tighten screws 2 and 3.
- 5.8 Also tighten screw 1 in the guide stud.
- 5.9 To make sure the needle bar frame is not under stress, loosen screw 3, turn the balance wheel a few turns, then tighten screw 3 securely again.
- 5.10 Check this adjustment (see "Correct setting").

Rough
setting:

With the needle bar at b.d.c. there should be a clearance of abt. **13 mm** between needle holder and needle plate.



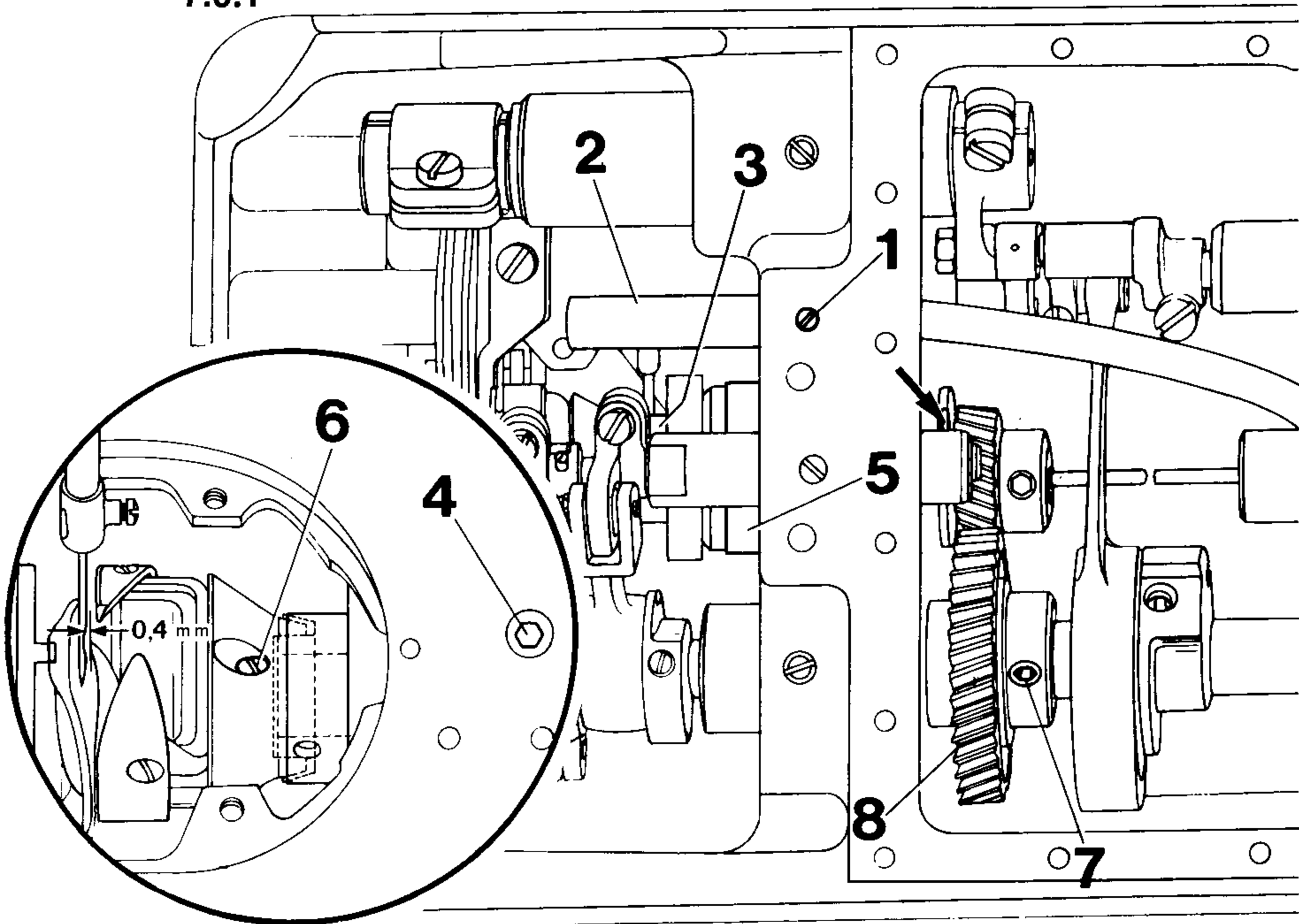
- 6.1 Turn the balance wheel to bring the needle bar to b.d.c., making sure the needle does not hit the sewing hook.
- 6.2 Loosen the two clamp screws 1.
- 6.3 **Adjust needle bar 2 vertically until there is a clearance of abt. 13 mm between needle holder and needle plate.**
- 6.4 In this position, tighten clamp screws 1, making sure the needle set screw points toward the right.

*) For final adjustment see Section 8.

Correct setting:

There should be a clearance of 0.4 mm between the hook point and the middle of the clearance cut of the needle when the sewing hook is up against oil distributor ring 3 (Fig. 7.0.2). Also there should be a minimum amount of play between the gears.

7.0.1

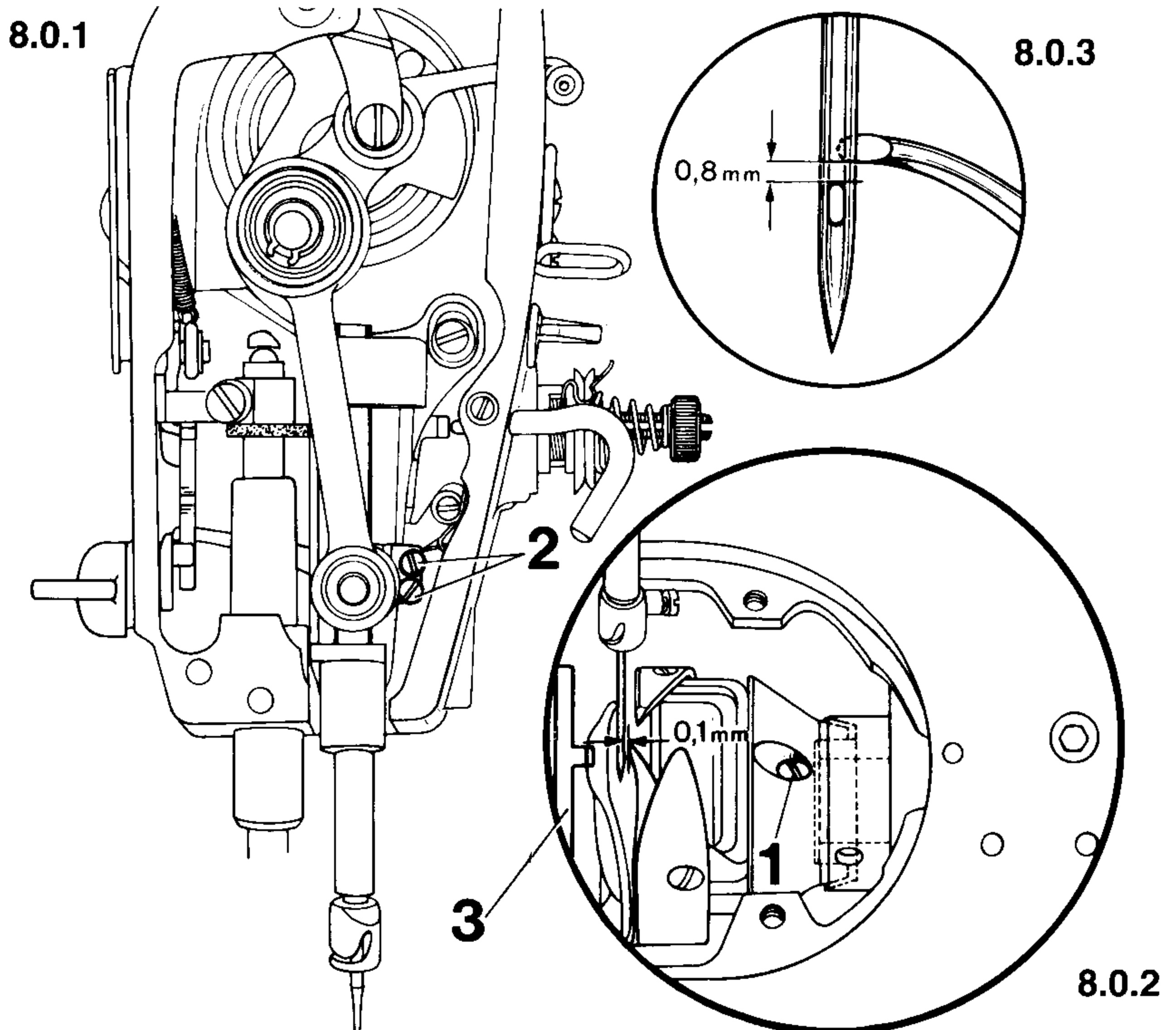


7.0.2

- 7.1 Remove the needle plate and the feed dog.
- 7.2 Loosen screw 1 of oil regulating valve 2 and swivel the oil tube out of oil distributor ring 3.
- 7.3 Loosen screw 4 on the surface of the bedplate.
- 7.4 **Turn the eccentric hook shaft bearing 5 so that its recess (see arrow in Fig. 7.0.1) is visible from below and the two gears neither have too much play nor stand too close together.**
- 7.5 Loosen both screws 6.
- 7.6 Push the sewing hook up against oil distributor ring 3.
- 7.7 Turn the sewing hook and reposition the needle bar until the hook point is positioned in the middle of the clearance cut of the needle.
- 7.8 **Reposition hook shaft bearing 5 until there is a clearance of 0.4 mm between the hook point and the middle of the clearance cut of the needle, making sure however that the bearing is not turned and the hook remains in contact with oil distributor ring 3.**
- 7.9 In this position, tighten screw 4 securely, making sure the gears have the correct amount of play.
- 7.10 Loosen both screws 7.
- 7.11 Reposition gear 8 on its shaft until it is exactly in line with the pinion.
- 7.12 Tighten screws 7 securely.
- 7.13 Do not tighten screws 6 as yet and leave the oil tube swivelled away for the following adjustment.

Correct setting:

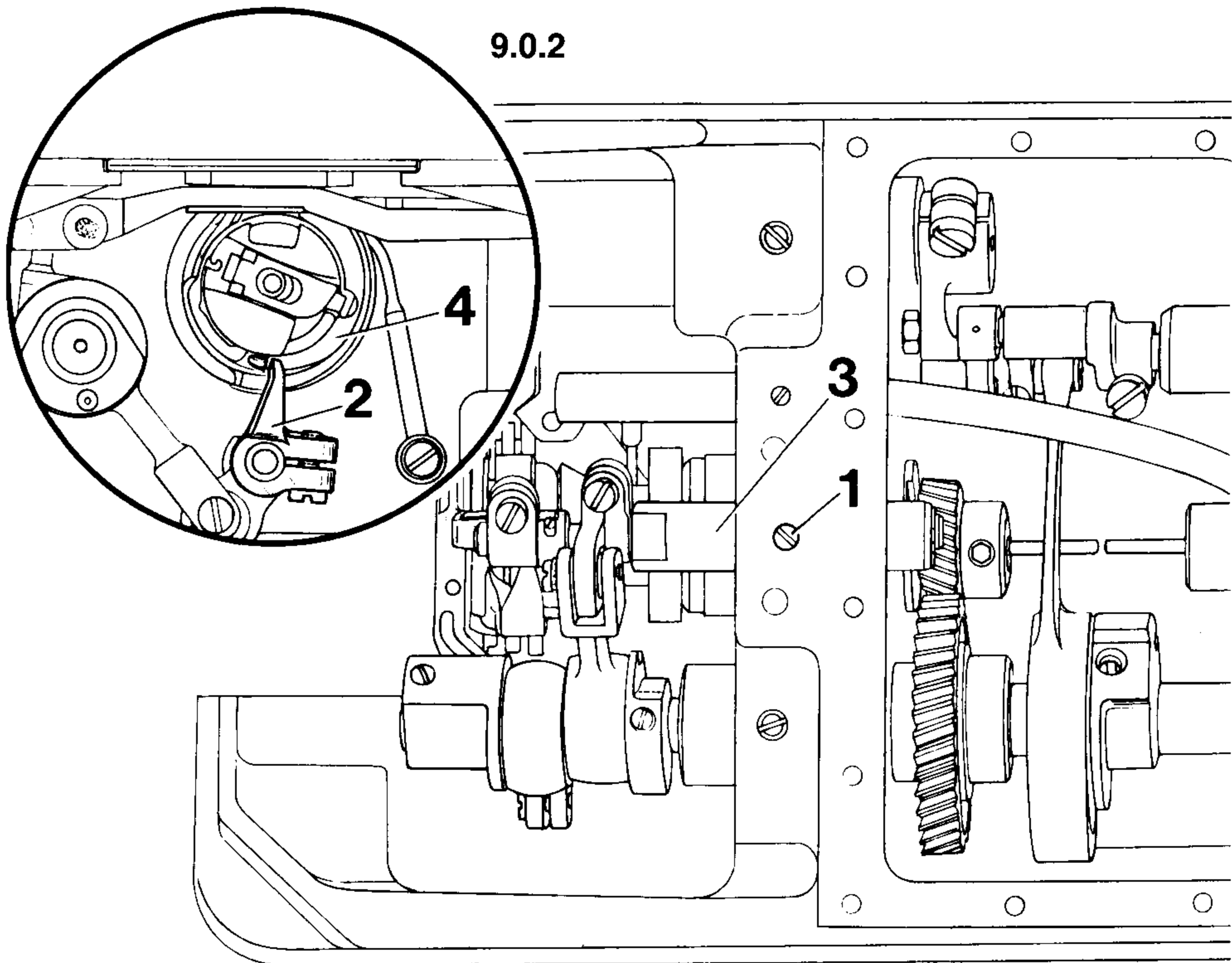
When the needle bar is positioned 1.8 mm past b.d.c. the top edge of the needle eye should be positioned **0.8 mm** below the bottom edge of the hook point (Fig. 8.0.3). In this position, there should be a clearance of up to **0.1 mm** between hook point and needle (Fig. 8.0.2).



- 8.1 Bring the needle to b.d.c., making sure the two screws **1** are loose and the needle does not strike the sewing hook.
- 8.2 Push the 1.8-mm-thick gauge blade with its cutout onto the needle bar immediately below its lower bushing.
- 8.3 Push the C-clamp onto the needle bar below the gauge, push it up against the gauge and tighten its screw.
- 8.4 Pull out the gauge blade and turn the balance wheel in its normal direction of rotation until the C-clamp contacts the lower needle bar bushing.
- 8.5 **Check to make sure the top edge of the needle eye is positioned 0.8 mm below the bottom edge of the hook point.**
- 8.6 **If adjustment is required, loosen screws **2** and move the needle bar up or down as appropriate, however without turning it.**
- 8.7 **Adjust the sewing hook laterally until there is a clearance of 0.1 mm between its point and the needle (center of scarf) when the hook is positioned opposite the center line of the needle.**
- 8.8 In this position, tighten the accessible screw **1**, making sure position finger **3** is in the slot of the bobbin case.
- 8.9 Remove the C-clamp from the needle bar.
- 8.10 Tighten the second screw **1** and possibly also screws **2**.
- 8.11 Check this adjustment (see "Correct setting").

Correct
setting:

When at its left point of reversal bobbin case opener finger 2 should be exactly opposite the lug of bobbin case base 4.



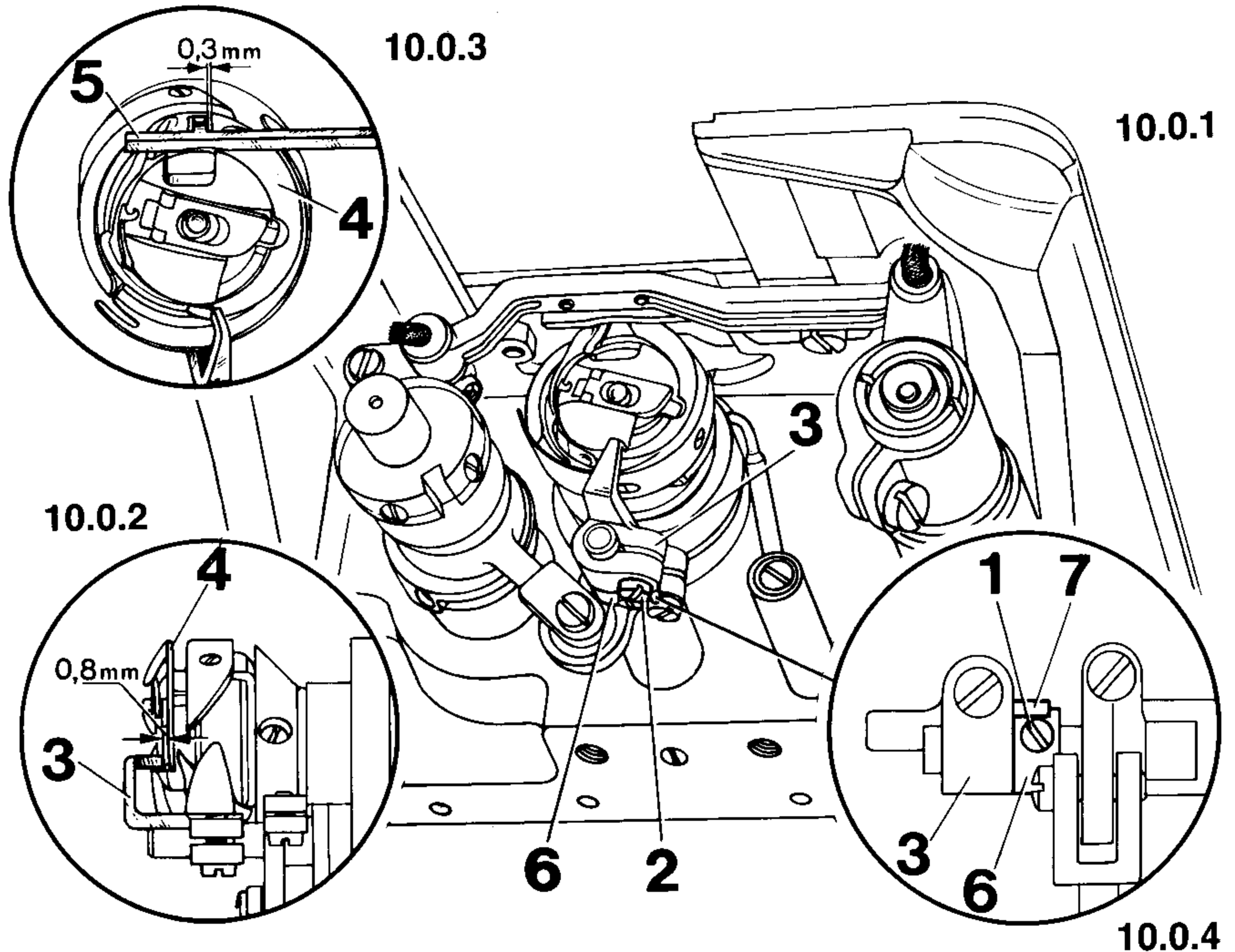
9.0.1

9.0.2

- 9.1 Loosen screw 1.
- 9.2 Turn the balance wheel to bring opener finger 2 to its left point of reversal.
- 9.3 **Turn eccentric bushing 3 until opener finger 2 is exactly opposite the lug of bobbin case base 4.** (Make sure the bobbin case can be easily removed from the sewing hook.)
- 9.4 In this position, tighten screw 1.
- 9.5 Check this adjustment (see "Correct setting").

Correct setting:

There should be a clearance of 0.8 mm between bobbin case opener finger 3 and bobbin case base 4 (Fig. 10.0.2). When opener finger 3 is at its left point of reversal, there should be a clearance of abt. 0.3 mm between bobbin case base 4 and position finger 5 (Fig. 10.0.3). In this position, screw 1 should contact stop pin 7 (Fig. 10.0.4).

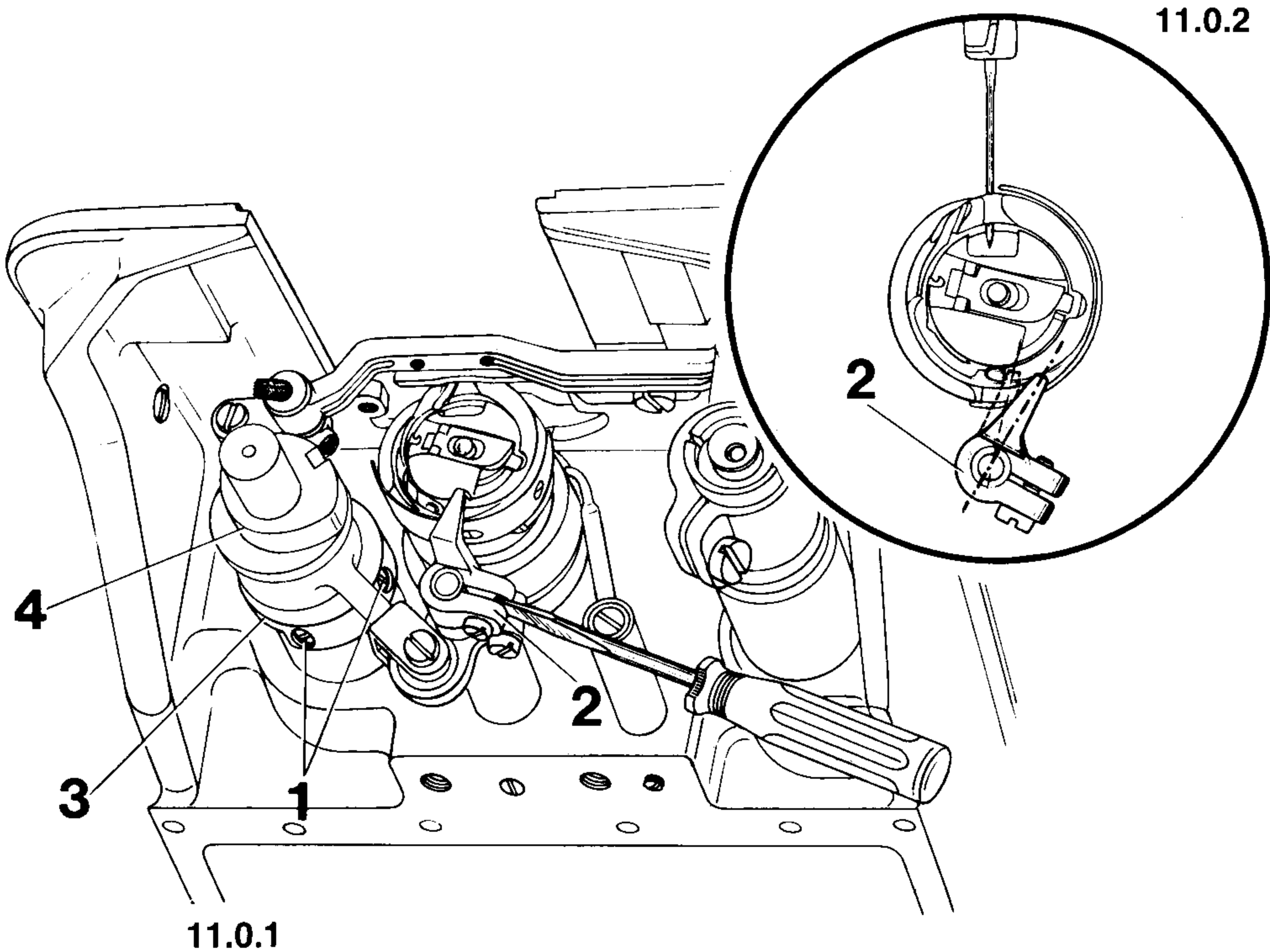


- 10.1 Loosen screw 1.
- 10.2 Loosen clamp screw 2 of opener finger 3 just sufficiently to allow it to be turned on its shaft against resistance.
- 10.3 **Reposition opener finger 3 on its shaft until there is a clearance of abt. 0.8 mm between it and bobbin case 4.**
- 10.4 Rotate the balance wheel until opener finger 3 is at its left point of reversal.
- 10.5 **Turn opener finger 3 until there is a thread clearance of abt. 0.3 mm between position finger 5 and the right wall of the position slot in bobbin case base 4 when opener finger 3 contacts the lug of bobbin case base 4.**
- 10.6 In this position, tighten clamp screw 2.
- 10.7 Push collar 6 up against opener finger 3 and turn it so that the screw 1 contacts stop pin 7.
- 10.8 In this position, tighten screw 1.
- 10.9 Check this adjustment (see "Correct setting").

11 Timing the bobbin case opener

Correct setting:

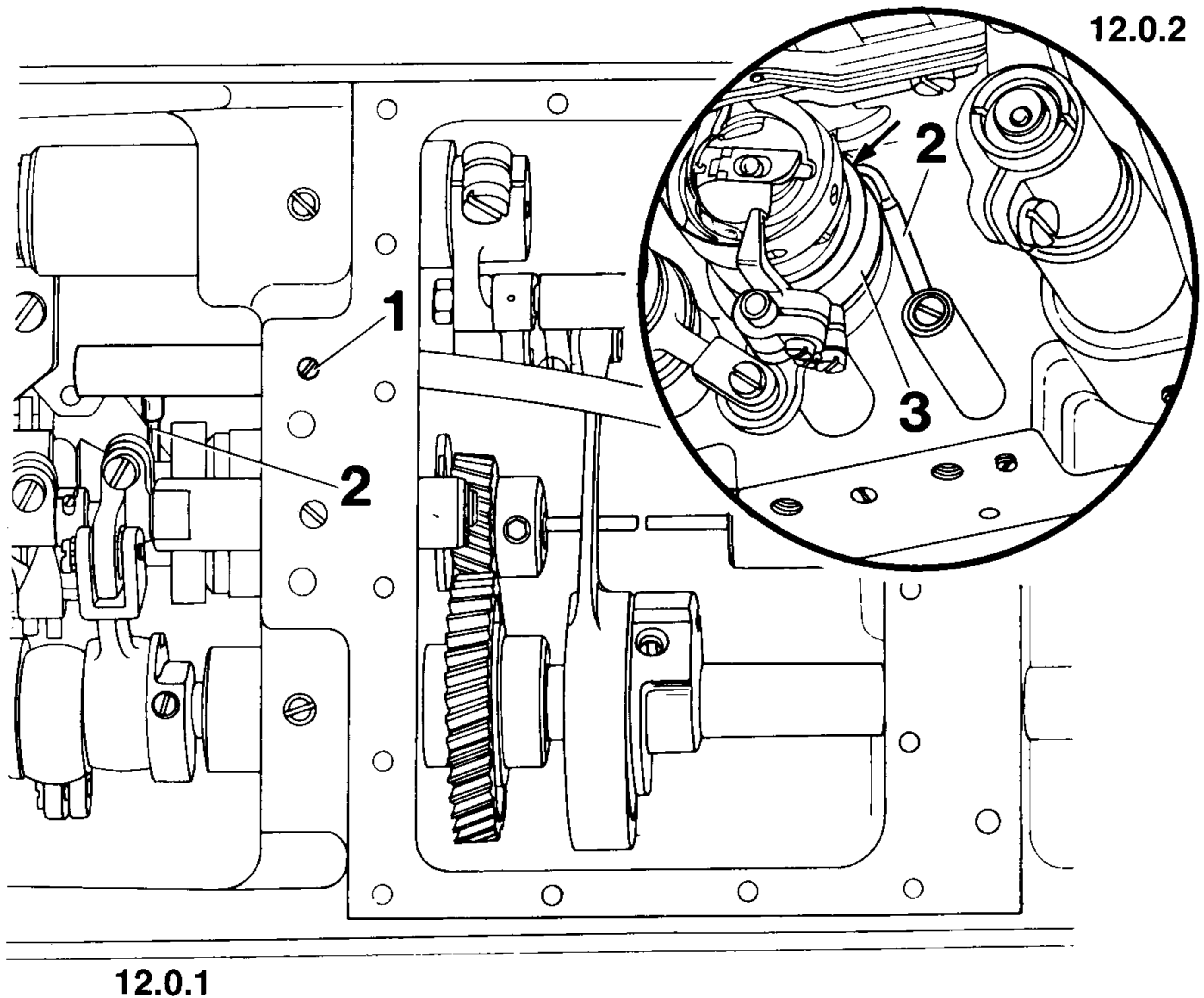
When the needle bar is positioned 1.8 mm past b.d.c. opener finger 2 should be at its right point of reversal.



- 11.1 Loosen both screws 1.
- 11.2 Turn the balance wheel until the needle bar is at b.d.c.
- 11.3 Push the 1.8-mm-thick gauge blade with its cutout onto the needle bar immediately below its lower bushing.
- 11.4 Push the C-clamp onto the needle bar below the gauge, push it up against the gauge and tighten its screw.
- 11.5 Pull out the gauge blade and turn the balance wheel in its normal direction of rotation until the C-clamp contacts the lower needle bar bushing.
- 11.6 To facilitate adjustment, insert a small screwdriver in the slot of the clamp of opener finger 2.
- 11.7 **Turn opener eccentric 3 until opener finger 2 is at its right point of reversal.**
- 11.8 In this position, tighten the accessible screw 1, making sure there is a small clearance between eccentrics 3 and 4.
- 11.9 Remove the C-clamp from the needle bar and tighten the second screw 1, too.
- 11.10 Check this adjustment (see "Correct setting") and pull the screwdriver out of the clamp slot.

Correct
setting:

Oil tube **2** should be positioned in the hole of oil distributor ring **3** (Fig. 12.0.2).



- 12.1 **Loosen screw 1 and insert oil tube 2 into the hole of oil distributor ring 3 (see arrow in Fig. 12.0.2). If necessary, turn oil distributor ring 3 accordingly.**
- 12.1.1 On subcl. -900/. . machines the oil distributor ring can only be turned after loosening its screws.
- 12.2 Tighten screw 1.
- 12.3 Check this adjustment (see "Correct setting").

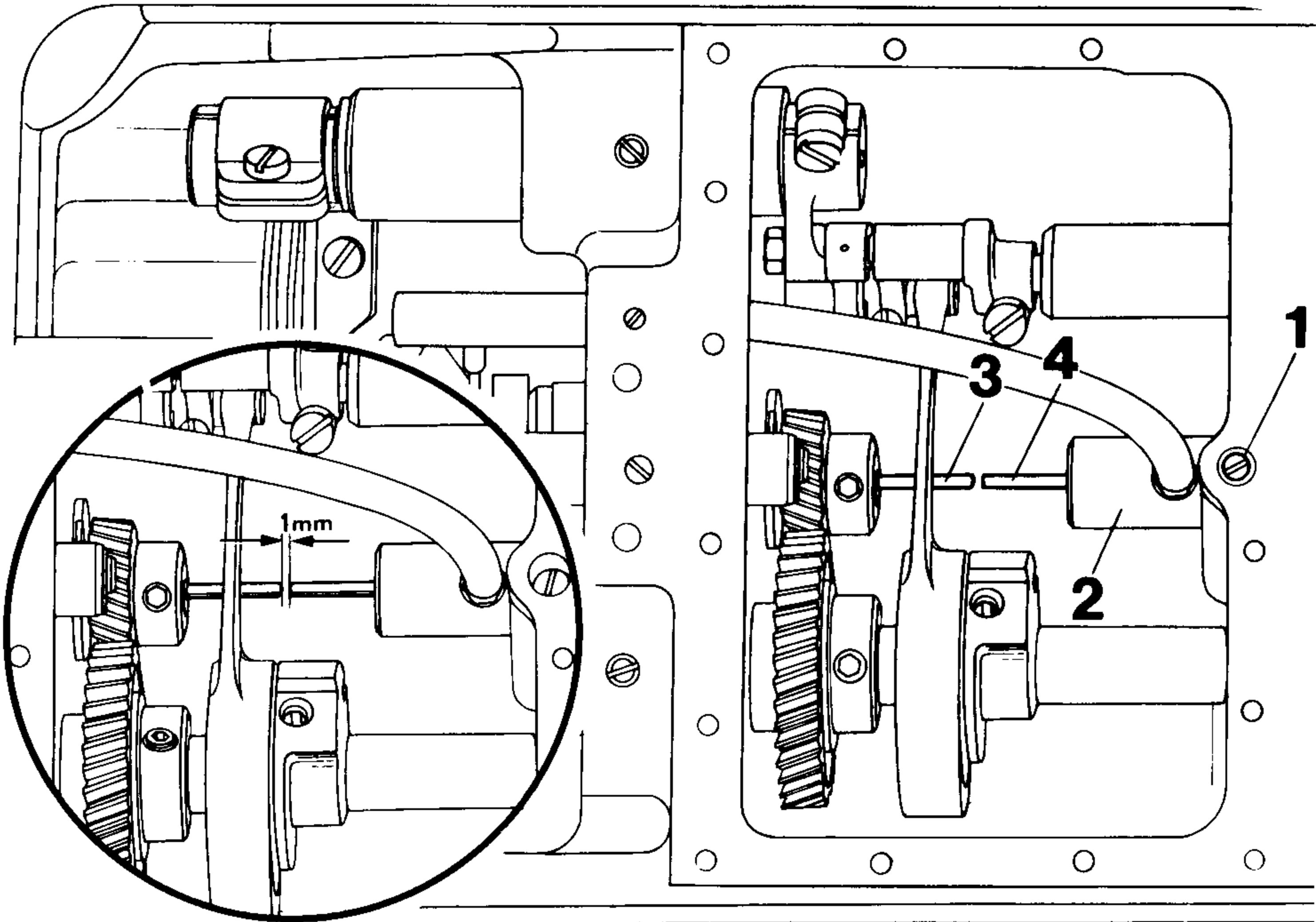
13 Oil check valve

Correct setting:

There should be a clearance of **1.0 mm** between actuating rod **3** and valve rod **4**.

Note: On machines which have been in operation for a longer time it is recommended to replace the oil pad (No. 91-171 951-05) and fill in abt. 120 c.c. of fresh oil (No. 280-1-120 144) before the gearcase is closed.

13.0.1

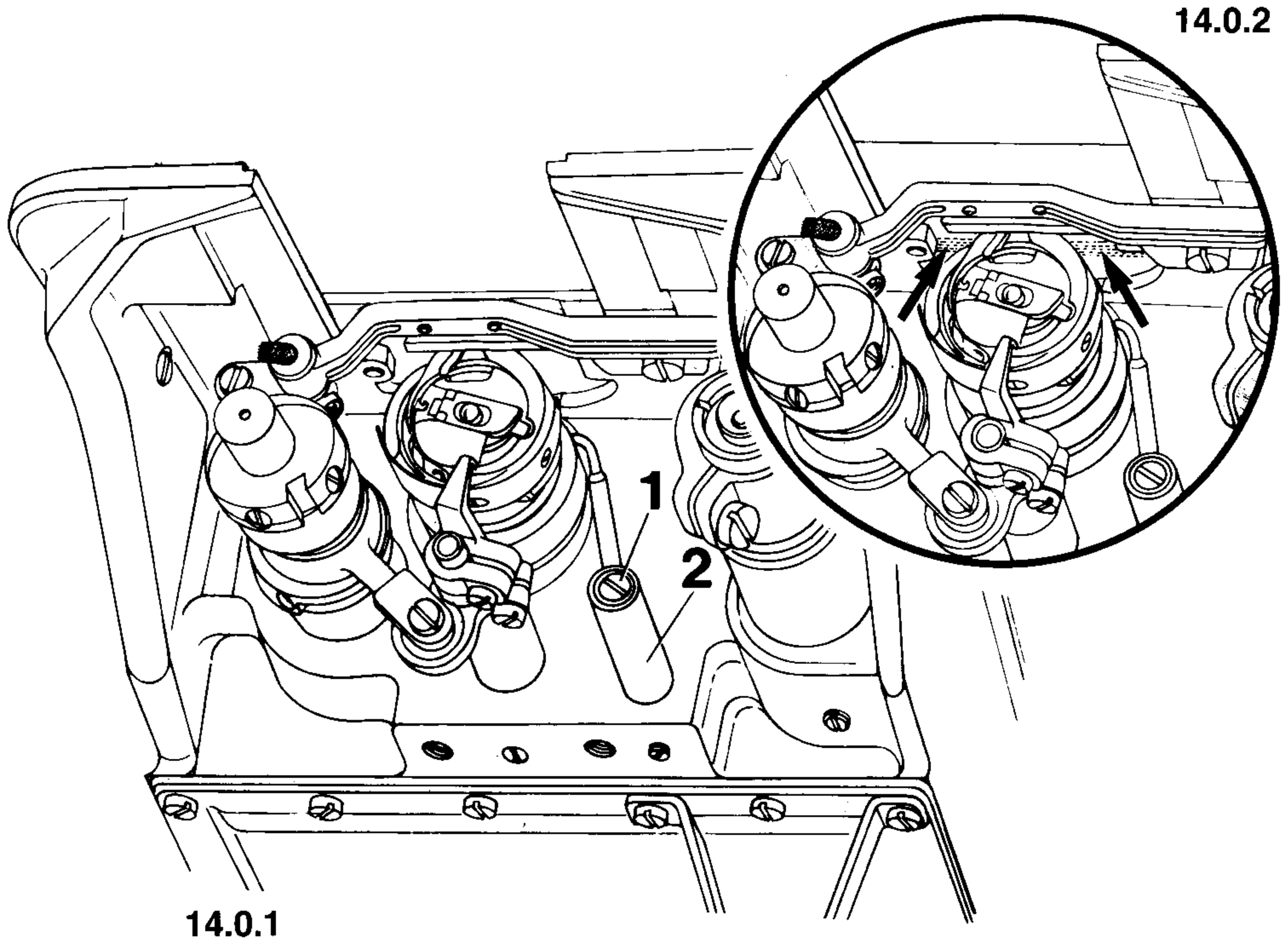


13.0.2

- 13.1 Loosen screw **1** of oil check valve **2**.
- 13.2 Push actuating rod **3** into the centrifugal governor as far as it will go.
- 13.3 Push valve rod **4** into oil check valve **2** until a resistance is felt.
- 13.4 **Reposition oil check valve 2 until there is a clearance of 1.0 mm between actuating rod 3 and valve rod 4.**
- 13.5 In this position, tighten screw **1**.
- 13.6 Check this adjustment (see "Correct setting").
- 13.7 Place the oil pad between oil tube and gears.
- 13.8 Clean the gasket face on the gearcase and the gasket of the gearcase cover.
- 13.9 Replace the gearcase cover and simultaneously screw on the two machine legs, tightening the screws of the cover crosswise.

Correct setting:

After the machine has run at full speed for about ten seconds, a fine trace of oil should appear on a piece of paper placed over the needle plate cutout above the hook raceway (see arrows in Fig. 14.0.2).



- 14.1 Check the oil level in the oil sight glass and, if necessary, top up the reservoir until the oil level is in line with the upper mark. Use oil No. 280-1-120 144.
- 14.2 Turn in regulating screw 1 of oil regulating valve 2 as far as it will go, and then back about three turns.
- 14.3 Start the machine and run it until the sewing hook starts emitting oil.
- 14.4 Turn regulating screw 1 in completely and then out 1/4 turn.
- 14.5 Let the machine run about 1 minute.
- 14.6 Place a piece of white paper over the needle plate cutout.
- 14.7 **Let the machine run about ten seconds. Then check to see if a fine trace of oil has appeared on the paper opposite the hook raceway (see arrows in Fig. 14 0.2).**
- 14.8 If too much oil is emitted, turn regulating screw 1 in a little; or if too little oil is emitted, turn it out somewhat.
- 14.9 Check this adjustment (see "Correct setting").

15

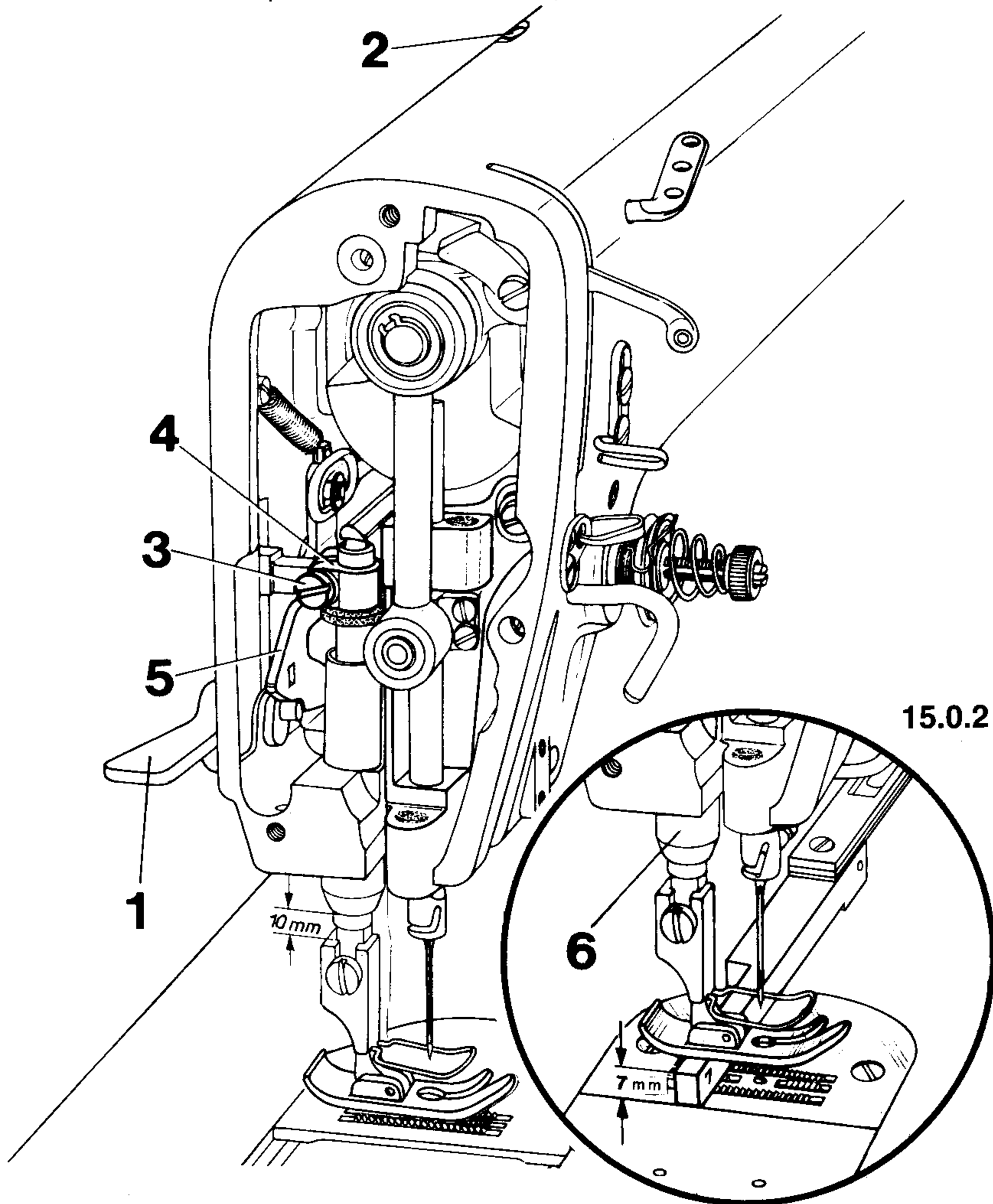
Clearance between presser foot and needle plate

Correct setting:

With hand lever 1 raised, there should be a clearance of 7 mm between presser foot/roller presser and needle plate. When the presser foot/roller presser is down on the needle plate there should be a clearance of appr. 10 mm between presser foot/roller presser mounting and presser bar bush 6.

Note:

By either fully operating the knee lever or by means of automatic presser foot lifter 910/... set the presser foot/roller presser at its highest position; the presser foot/roller presser should not contact presser bar bush 6 in this position.



15.0.1

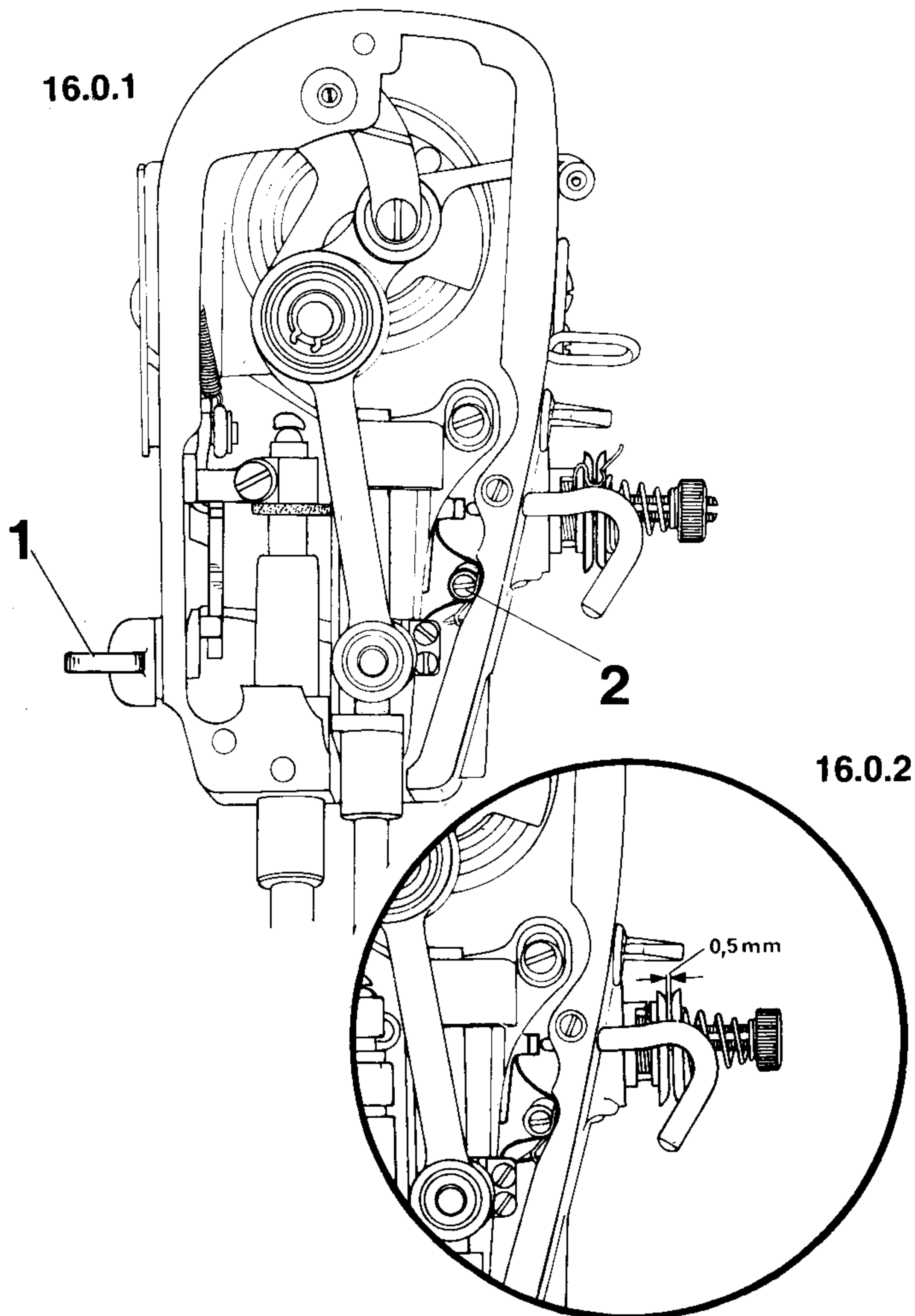
- 15.1 Screw on feed dog and needle plate, making sure the feed dog moves freely in its slots.
- 15.2 Screw on the presser foot/roller presser and lower presser bar lifter 1 to rest the presser foot on the needle plate.
- 15.3 Reduce the pressure on the presser bar turning out regulating screw 2 so that it is just sufficient to hold the presser foot/roller presser down on the needle plate.
- 15.4 Push the 7-mm-thick blade of the gauge under the presser foot fulcrum, or under the roller presser.
- 15.5 Loosen clamp screw 3 of presser bar lifting bracket 4.
- 15.6 Raise presser bar lifter 1.
- 15.7 On machines with presser foot turn the balance wheel until the needle is down in the needle hole of the presser foot.
- 15.8 Adjust the presser foot so that the needle is centered exactly in the needle hole or position the roller presser as closely as possible to the needle and parallel to the feed dog tooth rows.
- 15.9 **With the presser foot in this position, push presser bar lifting bracket 4 downwards onto the raised lifting lever 5 and tighten clamp screw 3 securely.**
- 15.10 Remove the gauge from under the presser foot/roller presser and lower it onto the needle plate.
- 15.11 Loosen the retaining screw of presser bar bush 6 (accessible through the hole below hand lever 1).
- 15.12 **Adjust height of presser bar bush 6 in such a way that there is a clearance of roughly 10 mm between its lower edge and the presser foot/roller presser mounting.**
- 15.13 In this position tighten the retaining screw of presser bar bush 6.
- 15.14 Check this adjustment (see "Correct setting").

Correct
setting:

With presser bar lifter 1 raised, both tension discs should be at least **0.5 mm** apart.

Note:

When using thicker threads, the tension discs must be more far apart.



- 16.1 Raise the presser foot/roller presser by means of presser bar lifter 1.
- 16.2 In this position loosen the lock screw of eccentric stud 2 (accessible through the hole on the opposite side of the machine head) and turn 2 so that there is a clearance of at least **0.5 mm** between both tension discs.
- 16.3 In this position tighten the lock screw of eccentric stud 2.
- 16.4 Lower the presser foot/roller presser onto the needle plate and check to make sure the tension is fully activated.
- 16.5 Check this adjustment (see "Correct setting").

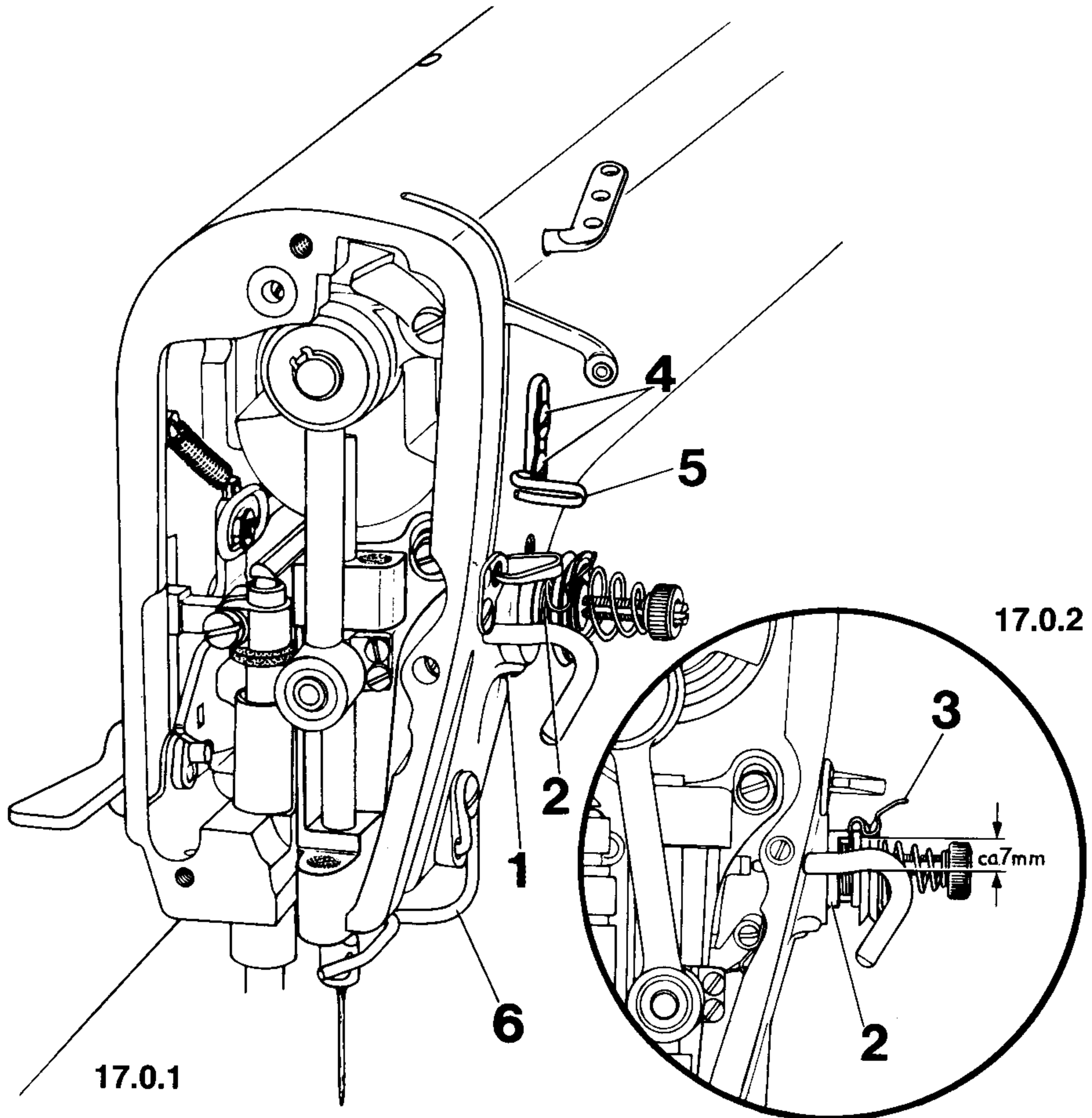
17 Thread check spring and thread regulator

Correct setting:

The stroke of thread check spring 3 should be 5 - 7 mm.

Note:

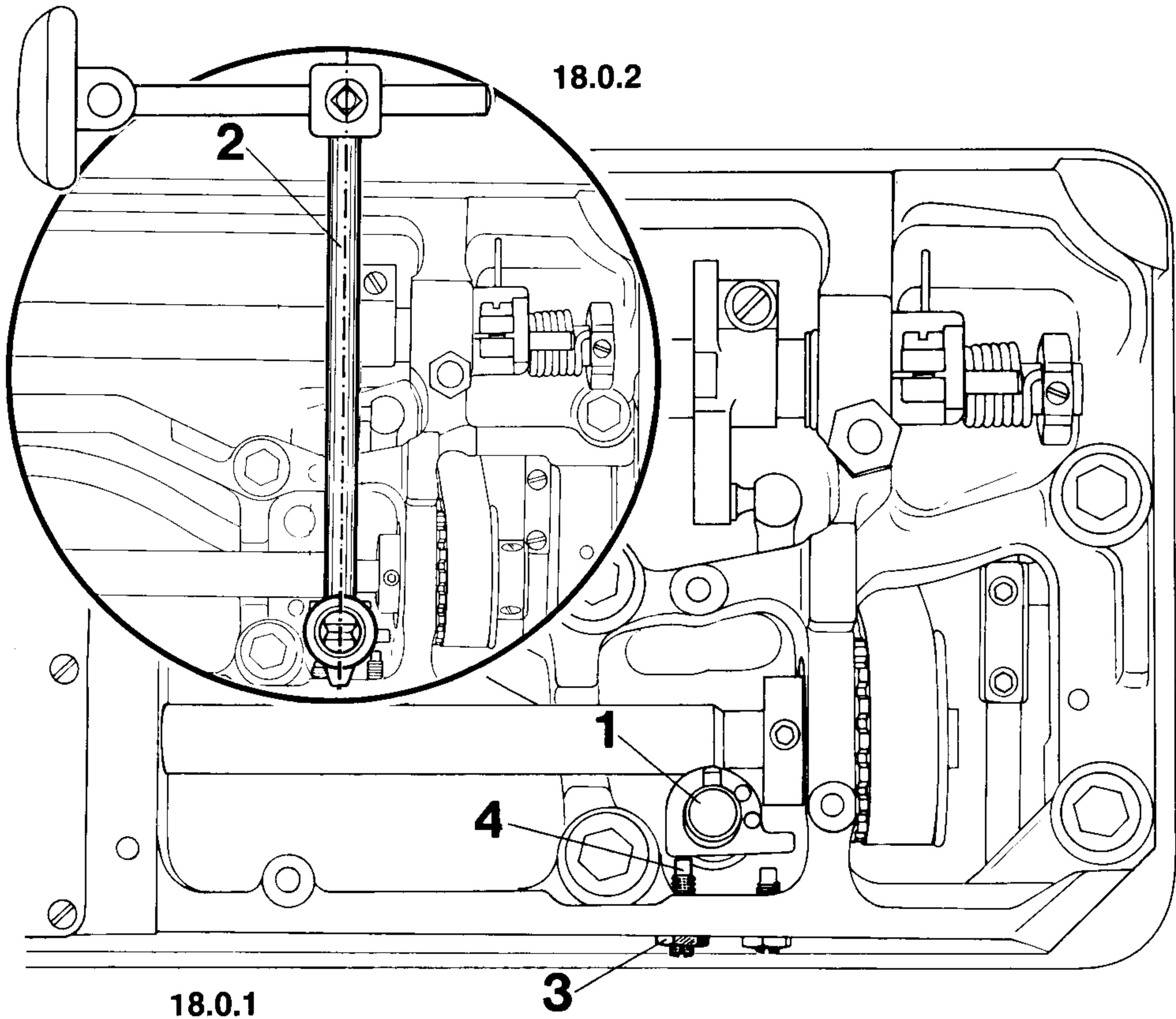
The stroke of thread check spring 3 and the position of thread regulator 5 are dependent on the type of thread and material used and should be adjusted according to the appearance of the seam.



- 17.1 Loosen screw 1.
- 17.2 **Turn tension barrel 2 until the stroke of thread check spring 3 amounts to abt. 7.0 mm.**
(Special sewing operations may make it necessary to set the thread check spring for a shorter or longer stroke.)
- 17.3 In this position, tighten screw 1.
- 17.4 Check this adjustment (see "Correct setting").
- 17.5 Loosen screws 4, push thread regulator 5 up as far as it will go, and tighten screws 4 again.
- 17.6 Screw on thread guide 6.

Correct
setting:

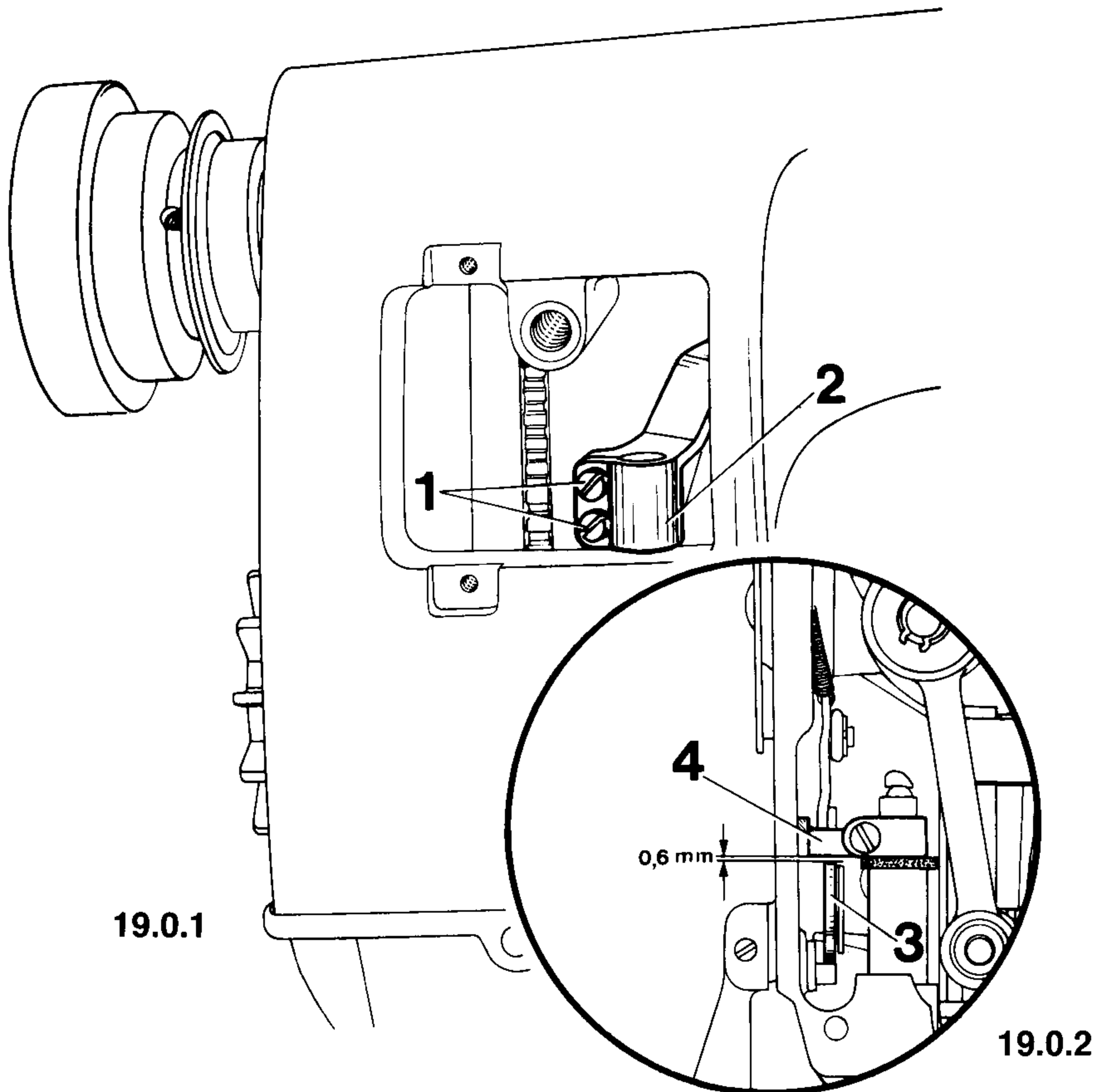
When at rest, knee lever connecting rod **2** should be roughly at right angles to the front edge of the bedplate.



- 18.1 Raise the presser foot/roller presser by means of the presser bar lifter.
- 18.2 Push the knee lever joint onto knee lever shaft **1** and let connecting rod **2** snap in place in the joint.
- 18.3 Loosen locknut **3**.
- 18.4 **Turn stop screw **4** until connecting rod **2** extends roughly at right angles to the front edge of the bedplate.**
- 18.5 In this position, lock stop screw **4** by tightening nut **3**.
- 18.6 Remove the knee lever.

Correct setting:

When the presser foot/roller presser is down on the needle plate, there should be a clearance of abt. **0.6 mm** between lifting lever **3** and lifting bracket **4**.



- 19.1 Bring the needle bar to b.d.c. and let the presser foot/roller presser down on the needle plate.
- 19.2 Take out the two screws of the rear arm cover and remove the cover.
- 19.3 Loosen clamp screws 1.
- 19.4 **Adjust crank 2 so that there is a clearance of abt. 0.6 mm between lifting lever 3 and lifting bracket 4 (use a gauge for this adjustment).**
- 19.5 In this position, tighten clamp screws 1, making sure the vertical knee lever shaft has no end play.
- 19.6 Remove the gauge.
- 19.7 Check this adjustment (see "Correct setting").

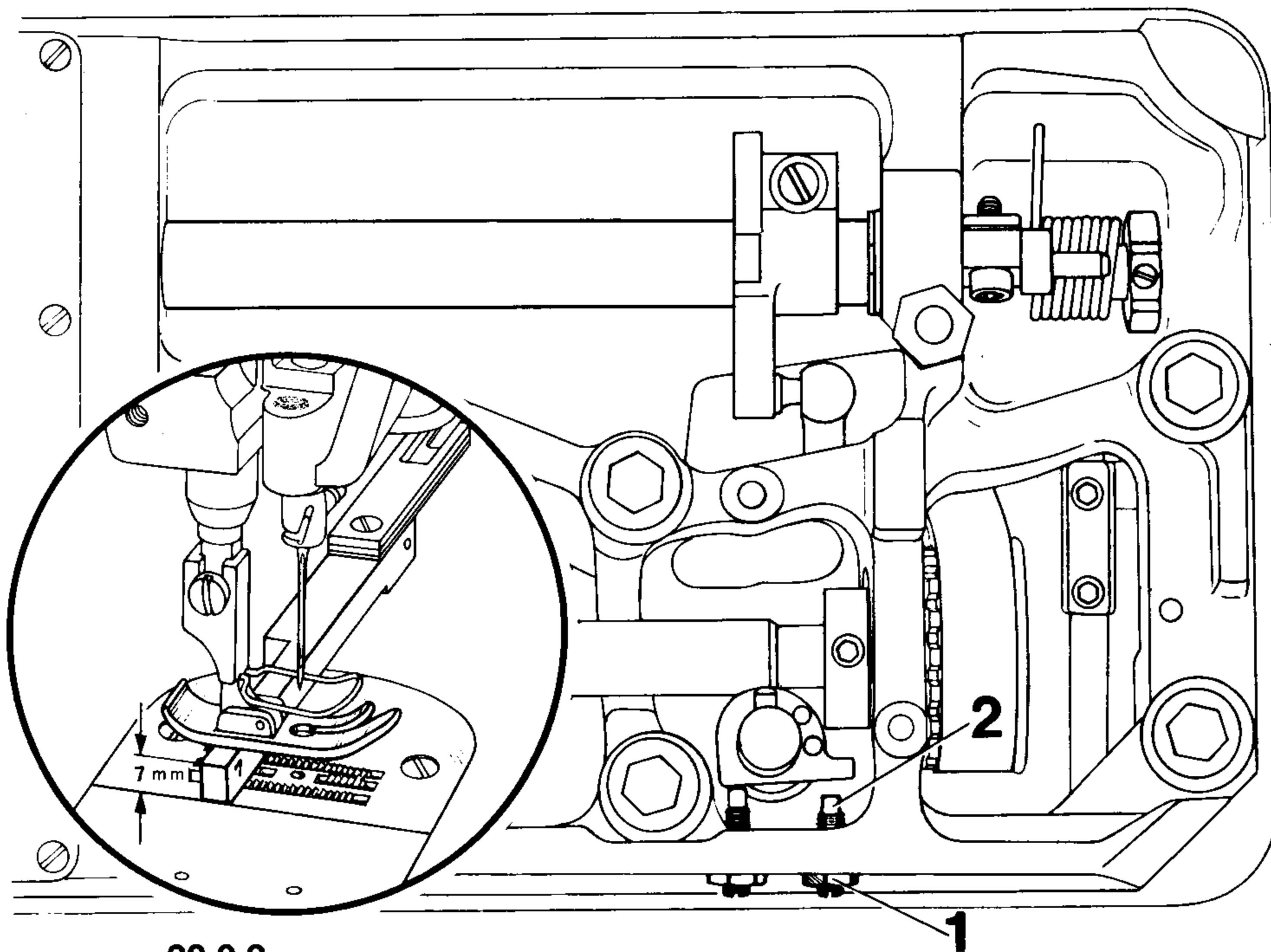
20 Knee lever stroke limitation

Requirement: The presser foot must be raised.

Correct setting:

When the knee lever is fully operated, the presser foot/roller presser should be lifted from the needle plate by a little more than 7 mm, or 9 mm on "H" machine versions, and the presser bar lifter should drop by its own weight.

20.0.1

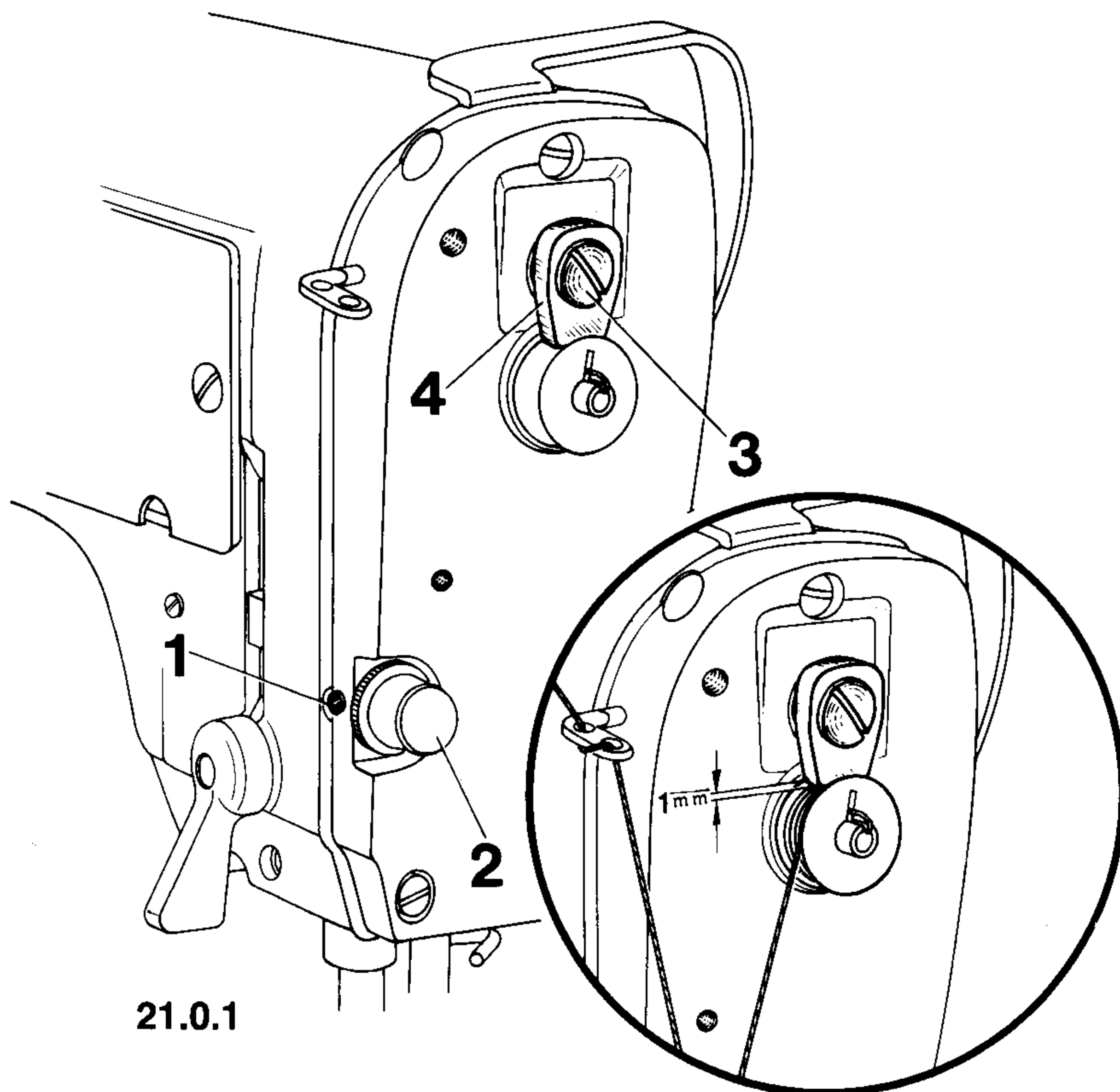


20.0.2

- 20.1 Loosen locknut 1.
- 20.2 Turn stop screw 2 out a few turns.
- 20.3 Raise the presser bar lifter and insert the knee lever.
- 20.4 Place the 7-mm-thick blade of the gauge, or a 9-mm-thick blade on "H" version under the presser foot/roller presser and lower the presser bar lifter again.
- 20.5 Push the knee lever to the right until a resistance is felt; during this motion, however, the presser foot must not be lifted off the gauge.
- 20.6 **Hold the knee lever in this position and turn in stop screw 2 as far as it will go, then out again by half a turn. Lock stop screw 2 by tightening nut 1.**
- 20.7 Remove the gauge from under the presser foot/roller presser.
- 20.8 Check this adjustment (see "Correct setting").
- 20.9 Screw on the face cover.

Correct setting:

The bobbin winder should wind the thread evenly on the bobbin and should stop automatically when the thread has reached a point abt. **1.0 mm** below its rim.



21.0.1

- 21.1 Place a bobbin on the winder spindle, thread the machine for bobbin winding, engage the bobbin winder and start the machine.
- 21.2 Loosen screw **1**.
- 21.3 Adjust the position of thread retainer stud **2** until the thread is wound evenly on the bobbin.
- 21.4 Tighten screw **1**.
- 21.5 Loosen screw **3**.
- 21.6 If the bobbin is not full enough, push stop latch **4** upwards, if the bobbin is too full, push it downwards.
- 21.7 Tighten screw **3**.
- 21.8 Check this adjustment (see "Correct setting").

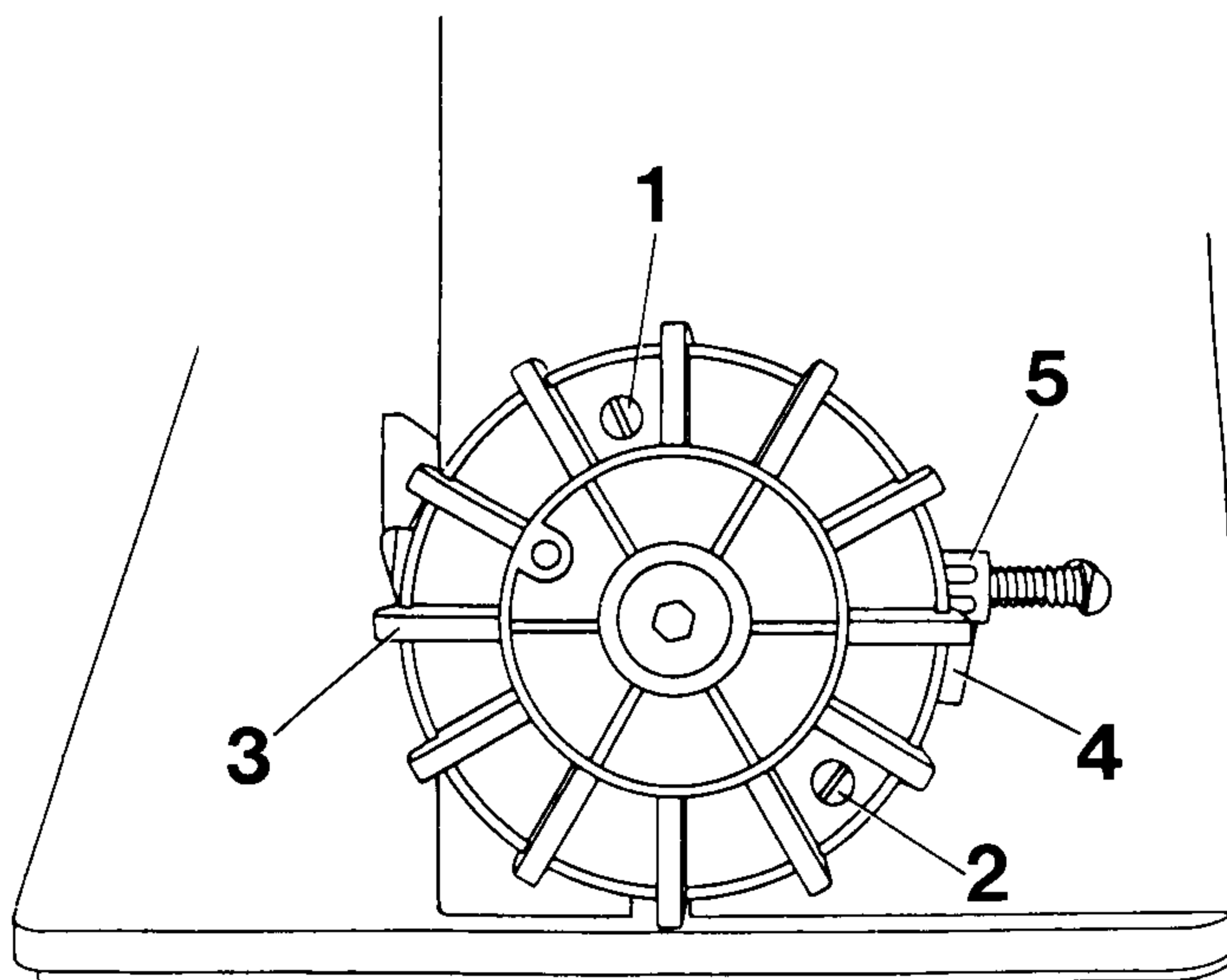
22 **Stitch length limitation**

22.1 Loosen screws **1** and **2**.

22.2 Set required maximum value at stitch length control.

22.3 **Turn the limiting ring in such a way that its nose rests on stop latch **5** from below.**

22.4 In this position tighten screws **1** and **2** firmly.



23 **Final worksteps**

23.1 Screw on the rear arm cover and the belt guard.

23.2 Replace the bed slide and insert the knee lever in its joint.

23.3 Thread the machine, place a piece of fabric under the presser foot and lower the presser foot onto it.

23.4 Adjust the presser foot pressure by turning in regulating screw **2** (Fig. 15.0.1) so that the fabric is fed properly even at top speed.

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