PFAFF® 487

Service Manual

PFAFF INDUSTRIEMASCHINEN GMBH KAISERSLAUTERN

Instructions for adjusting the Pfaff 487

Important note

Never use a C-clamp on the needle bar of Pfaff 480 series machines because this would damage its special coating.

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).

Important note for version N machines

All adjustments described in this book also apply to version N machines (6.0 mm maximum stitch length). An exception are machines supplied earlier whose stitch length control is knurled all the way around.

If on these machines the reverse-feed control can be moved when the stitch length control is set at "0", all adjustments which are carried out with the stitch length set at "0" must be made with the reverse-feed control depressed.

If on machines having a stitch length control which is knurled all the way around the reverse-feed control cannot be moved, all adjustments which have to be carried out with the stitch length set at "0" must be made with the stitch length set at "1.5" and the reverse-feed control depressed.

Tools, gauges and other equipment needed for adjusting the Pfaff 487:

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

1 set of spanners from 7 to 14 mm wide

1 22-mm spanner

1 set of allen keys ranging from 1.5 to 6.0 mm

1 metal rule

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

1 gauge, No. 61-111 642-19
(gauge foot No. 61-111 639-20)

1 wrapper with System 134 needles

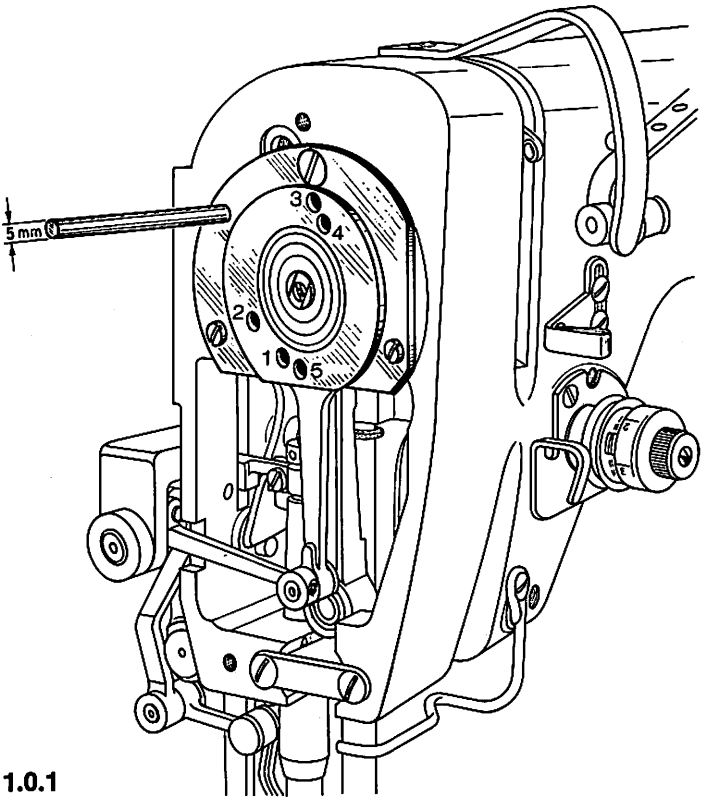
1 strip of white paper, sewing thread and material for testing purposes.

1 **Preparations for adjustment**

1.1 Take out both screws of the face cover and remove the cover.

Note:

> The machine can be blocked with the needle bar at different positions by inserting a pin in one of the five holes of the bearing plate (Fig. 1.0.1). After positioning the needle bar, push the pin into the appropriate hole until it enters the recess behind the bearing plate, thus blocking the machine.



1.0.1

The function of each of the five holes is as follows:

Hole 1 (0.6 n.o.T.) = 0.6 mm past the top of the needle bar stroke. This hole is used for timing the feed eccentrics and adjusting the feed dog height.

Hole 2 (o.T.F.) = top of take-up lever stroke. (On subcl. -900 machines, this hole is used for timing the synchronizer.)

Hole 3 (0.6 n.u.T.) = 0.6 mm past the bottom of the needle bar stroke. (This hole is needed on Pfaff 481 and 485 machines.)

Hole 4 (Schl-H 1.8) = 1.8 mm past the bottom of the needle bar stroke. This hole serves to time the sewing hook and the bobbin case opener.

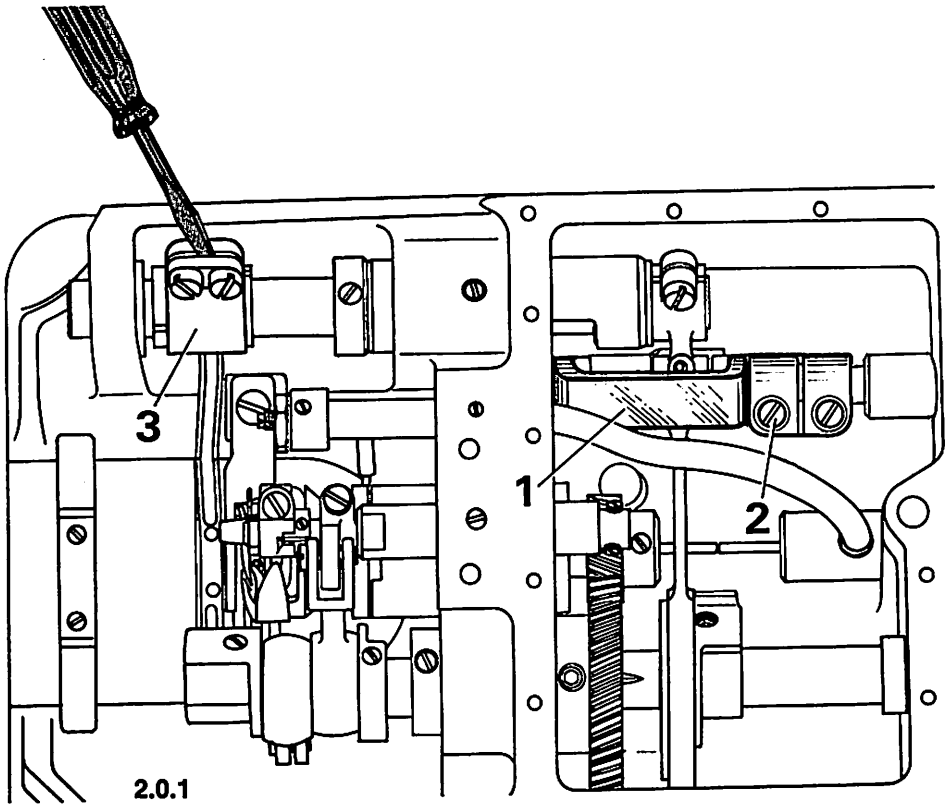
Hole 5 (o.T.N.) = top of needle bar stroke.

Zeroing the bottom feed motion

Correct setting:

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

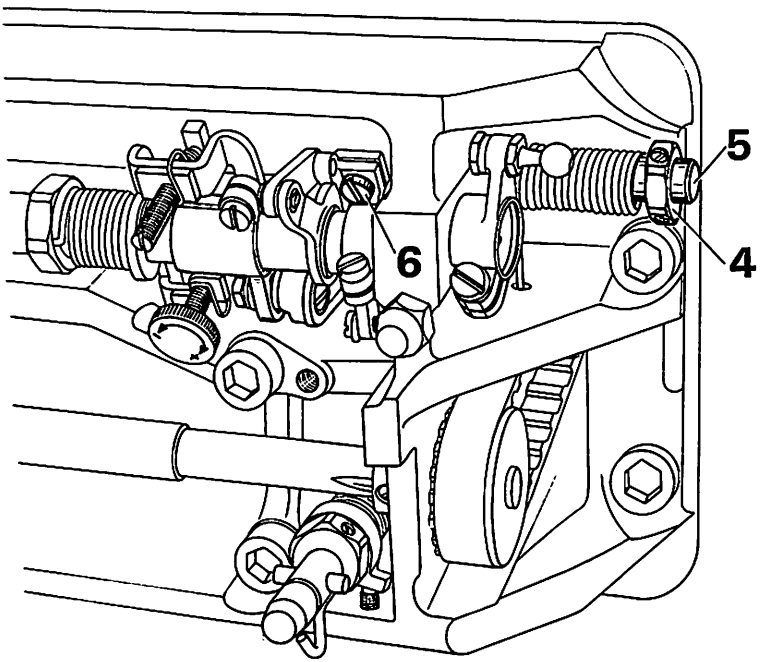
Note: The bottom feed motion can also be zeroed with the gearcase closed (see Fig. 2.0.2).



2.0.1

2.1 Remove the needle from the needle holder.
2.2 Raise the presser bar lifter.
2.3 Remove the knee lever together with its joint and tilt the machine back.
2.4 Adjustment procedure to be applied when the gearcase is **open.**
2.4.1 Turn the stitch length control to "0".
2.4.2 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.
2.4.3 Take the oil sponge out of the gearcase.
2.4.4 Loosen screw **2** of feed crank **1** just sufficiently to allow the crank to be turned on its shaft against resistance.
2.4.5 To facilitate adjustment, insert a screwdriver in the slot of feed rock shaft crank **3.**
2.4.6 **Rotate the balance wheel and at the same time adjust feed crank 1 on its shaft until the feed dog (or rather the screwdriver in feed rock shaft crank 3) no longer moves.**
2.4.7 In this position, tighten screw **2** of feed crank **1.**
2.4.8 Check this adjustment (see "Correct setting").

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



2.0.2

2.5.1 Turn the stitch length control to "0".

2.5.2 Loosen screw **6** of the feed regulator crank.

2.5.3 To facilitate adjustment, insert a screwdriver in the slot of feed rock shaft crank **3** (Fig. 2.0.1).

2.5.4 **With the aid of a spanner pushed over hexagon tension nut 4 turn feed regulator shaft 5 until the feed dog (or rather the screwdriver in the feed rock shaft crank) remains absolutely still when the balance wheel is turned.**

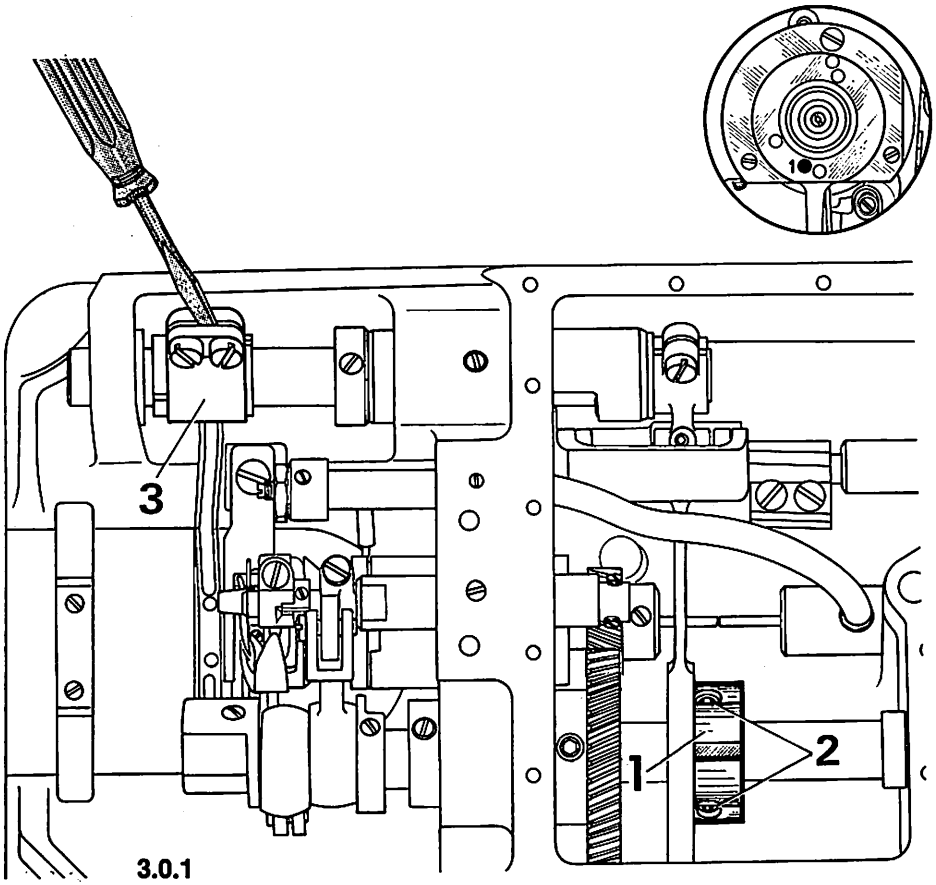
2.5.5 In this position, hold the feed regulator shaft fast with the spanner and tighten screw **6.**

2.5.6 Check this adjustment (see "Correct setting").

Bottom feed driving motion

Correct setting:

With the machine set for its longest stitch and the needle bar positioned 0.6 mm past top dead center (pin in hole 1), the feed dog should not move when the reverse-feed control is operated.



3.0.1

3.1 Loosen both screws **2** in feed driving eccentric **1.**

3.2 Bring the needle bar to a position 0.6 mm past top dead center and block the machine in this position by inserting the pin in hole **1.**

3.3 Set the machine for its longest stitch.

3.4 To facilitate adjustment, insert the screwdriver in the slot of feed rock shaft crank **3.**

3.5 **Move the reverse-feed control up and down and simultaneously turn feed driving eccentric 1 until its notch is visible and the feed dog (or rather the screwdriver in feed rock shaft crank 3) is completely motionless.**

3.6 In this position, tighten the accessible screw **2** in feed driving eccentric **1.**

3.7 Pull the pin out of the hole in the bearing plate and tighten the second screw **2** in feed driving eccentric **1.**

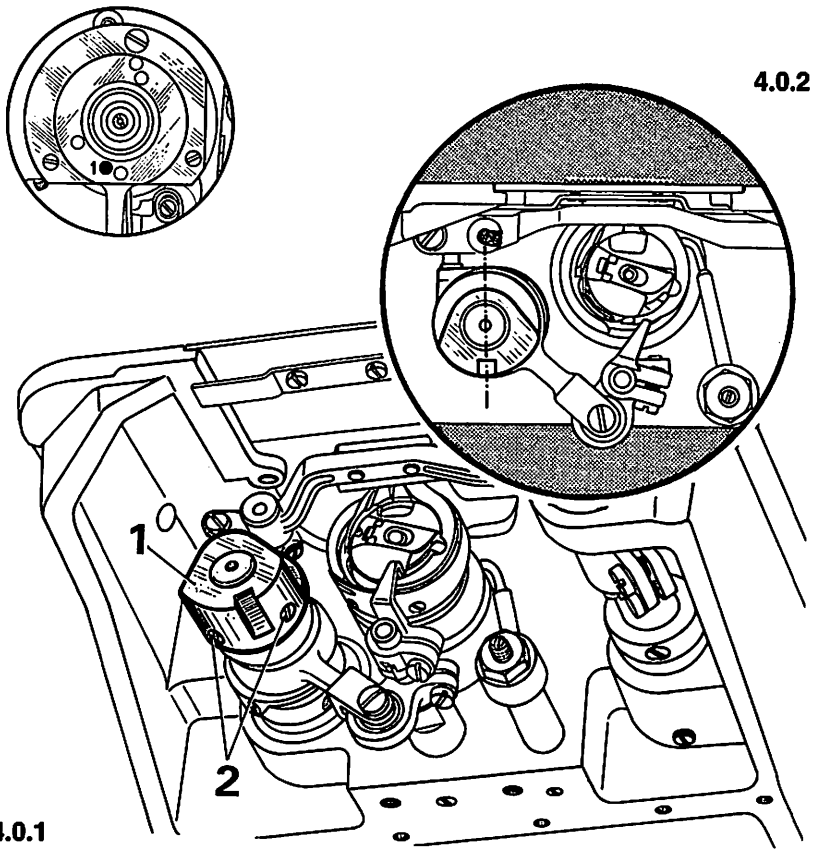
3.8 Check this adjustment (see "Correct setting").

3.9 Pull the screwdriver out of the slot in feed rock shaft crank **3.**

Bottom feed lifting motion

Correct setting:

With the stitch length control set at "0" and the needle bar positioned 0.6 mm past top dead center (pin hole 1), the feed dog should be at its highest point. The notch in feed lifting eccentric 1 should then be positioned perpendicularly below the center of the shaft (Fig. 4.0.2).



4.0.2

4.0.1

4.1 Turn the stitch length control to "0" and remove the bedplate cover.

4.2 Loosen both screws **2** in feed lifting eccentric **1** (Fig. 4.0.1).

4.3 Bring the needle bar to a position 0.6 mm past top dead center and block the machine in this position by inserting the pin in hole **1**.

4.4 **Turn feed lifting eccentric 1 until the feed dog is at its highest point and the notch in feed lifting eccentric 1 is positioned perpendicularly below the center of the shaft (Fig. 4.0.2).**

4.5 In this position, tighten the accessible screw **2**, making sure there is a small amount of play between feed lifting eccentric **1** and the bearing.

4.6 Pull the pin out of the hole in the bearing plate and tighten the second screw **2** too.

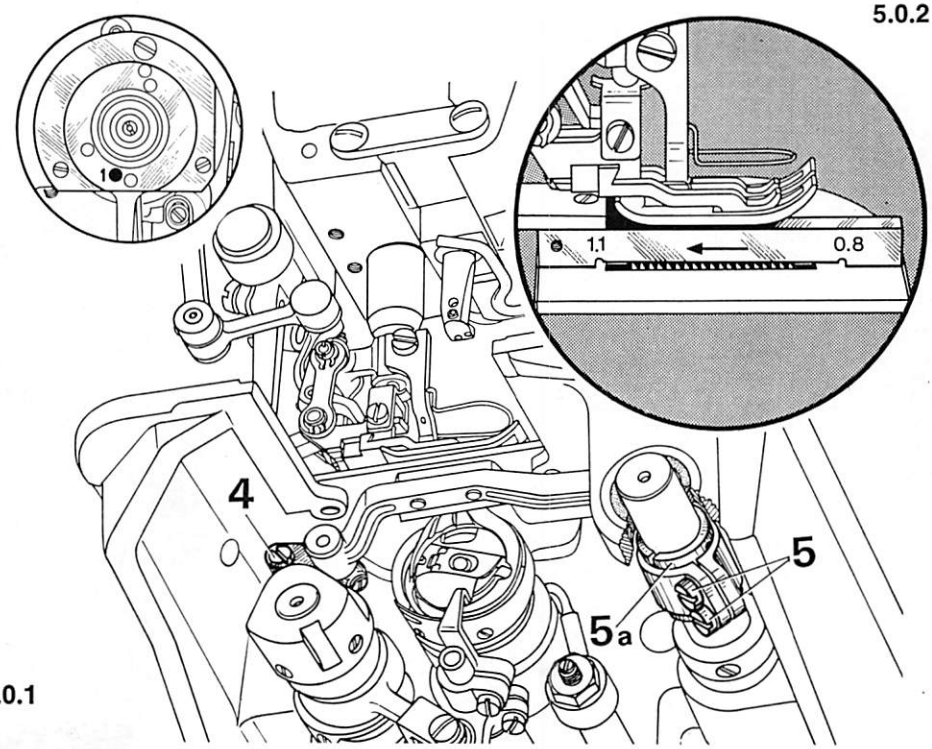
4.7 Check this adjustment (see "Correct setting").

5 Feed dog height

Correct setting:

With the stitch length control set at "0" and the needle bar positioned 0.6 mm past top dead center (pin in hole 1), the feed dog should be centered in its slots and contact the gauge throughout its entire length (Fig. 5.0.2).

5.0.2



5.0.1

5.1 Bring the needle bar to a position 0.6 mm past top dead center and block the machine in this position by inserting the pin in hole 1.

5.2 Turn the stitch length control to "0".

5.3 Loosen screw **4** and both screws **5** (Fig. 5.0.1).

5.4 Place the gauge under the presser foot so that its front edge is flush with the front edge of the needle plate (Fig. 5.0.2).

5.5 Lower the presser bar lifter to rest the presser foot on the gauge.

5.6 **Center the feed dog in its slots.**

5.7 Push the feed bar upwards until the feed dog contacts the gauge. Then tighten screw **4** lightly.

5.8 **Turn eccentric bushing 5 a until the feed dog is in contact with the gauge throughout its entire length.**

5.9 Tighten both screws **5** and screw **4,** making sure the feed dog moves freely in its slots.

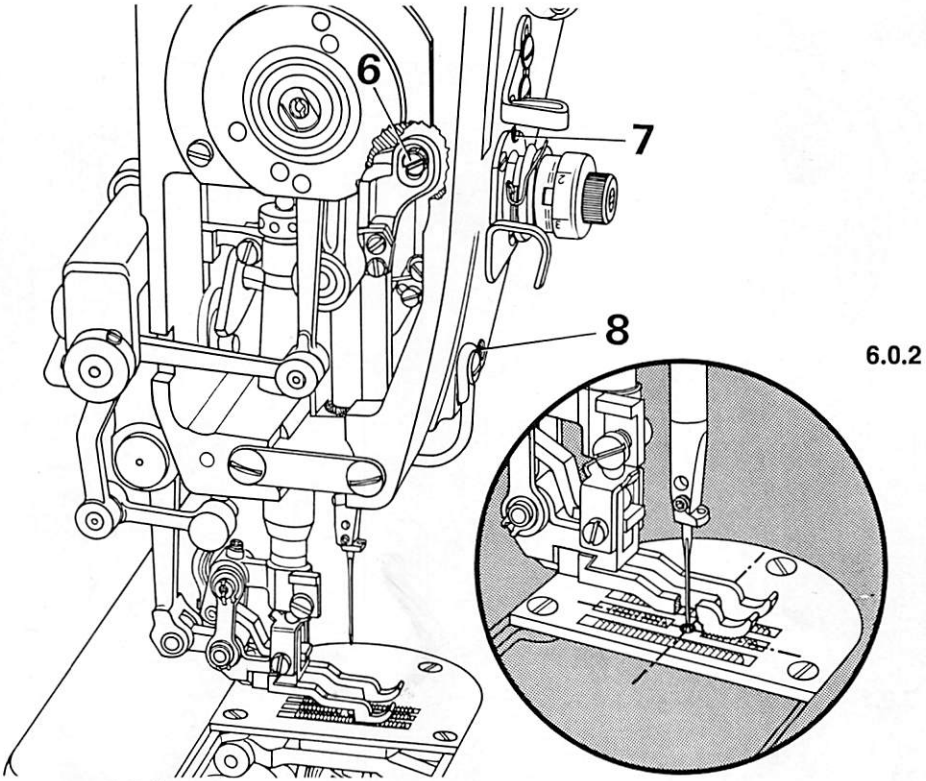
5.10 Raise the presser foot lifter, remove the gauge from under the presser foot and pull the pin out of the hole in the bearing plate.

5.11 Check this adjustment (see "Correct setting").

6 **Centering the needle in the needle hole**

Correct setting:

A straight needle should be positioned exactly in the middle of the needle hole (Fig. 6.0.2).



6.0.1

6.0.2

6.1 Bring the needle bar to its highest point and remove the presser foot.

6.2 Insert a new needle (system 134 kk) into the needle bar.

6.3 Take out screw **6** in the eye of the needle bar frame (Fig. 6.0.1).

6.4 Loosen screw **7** of the eccentric stud.

6.5 Loosen screw **8** of the needle bar frame hinge stud.

6.6 **Turn the balance wheel while moving the needle bar frame sideways, and turn the eccentric stud until the needle is centered in the needle hole (Fig. 6.0.2).**

6.7 In this position, tighten screw **8.**

6.8 Pull out the eccentric stud until it contacts the needle bar frame and tighten screw **7.**

6.9 Replace screw **6** with its washer on the eccentric stud and tighten the screw.

6.10 Loosen screw **7** again and turn the balance wheel a few turns to ensure that the needle bar frame is not under stress. Then tighten screw **7** securely again.

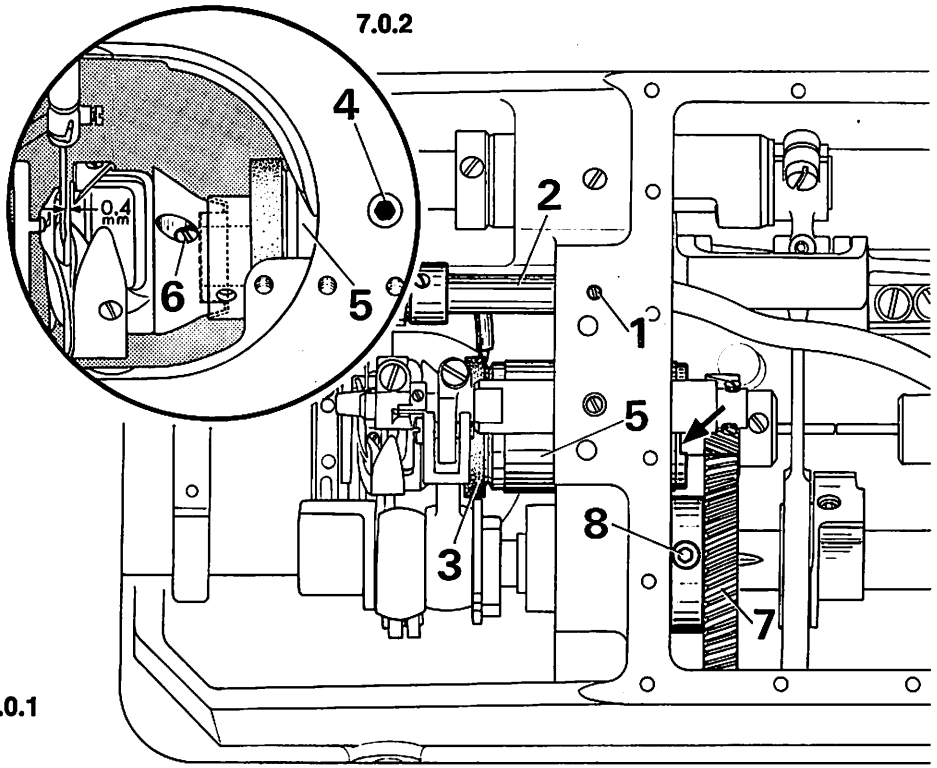
6.11 Check this adjustment (see "Correct setting").

7 Eccentric hook shaft bearing

Correct setting:

There should be a clearance of 0.4 mm between 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.

7.0.2



7.0.1

7.1 Remove the needle plate and the feed dog.

7.2 Loose 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 (Fig. 7.0.2).

7.4 **Turn eccentric hook shaft bearing 5 so that the recess is visible from below (see arrow in Fig. 7.0.1) and the two spur gears have neither too much play nor stand too close together.**

7.5 Loosen both screws **6** of the sewing hook.

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 hook point and the middle of the clearance cut of the needle, making sure however that the bearing is not turned and that the hook remains in contact with oil distributor ring 3.**

7.9 In this position, securely tighten screw **4.**

7.10 Loosen both screws **8.**

7.11 Reposition gear **7** on its shaft until it is exactly in line with the small gear.

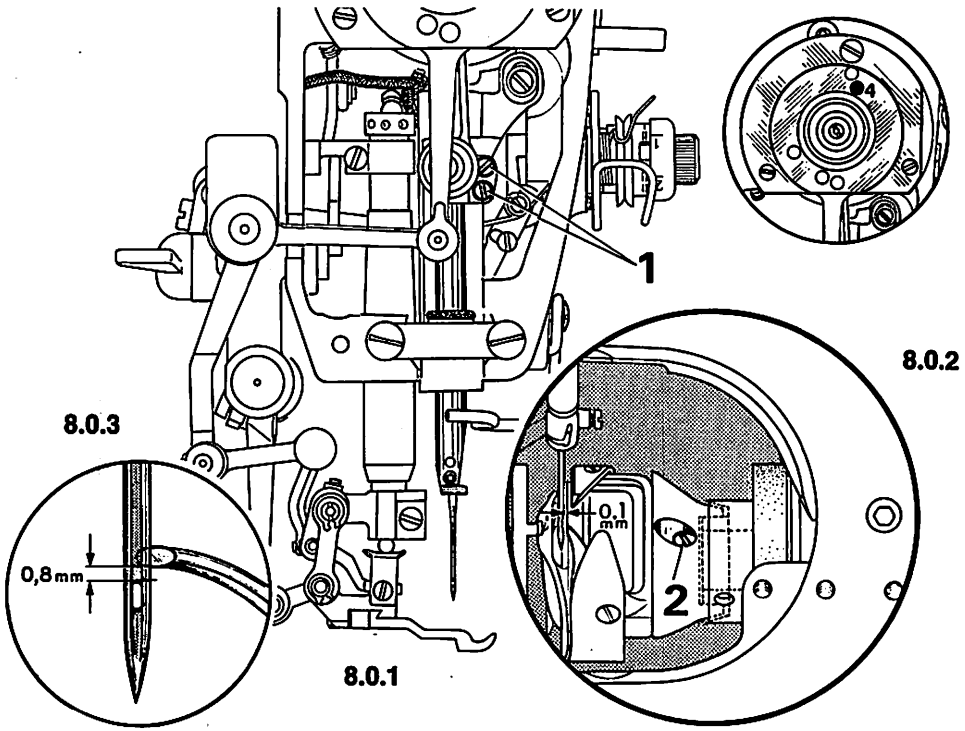
7.12 Tighten both screws **8** securely, making sure that the second screw of spur gear **7** — as seen in its direction of rotation — is positioned in the groove of the shaft and both gears have enough play.

7.13 Do not tighten screws **6** as yet and leave the oil tube swivelled away for the following adjustment.

Needle bar height, hook timing and hook-to-needle clearance

Correct setting:

When the needle bar is positioned 1.8 mm past bottom dead center (pin in hole 4), 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 0.1 mm between hook point and needle (Fig. 8.0.2).



8.1 Bring the needle bar to a point 1.8 mm past bottom dead center, making sure that the needle does not strike the sewing hook. Block the machine in this position by inserting the pin in hole 4.

8.2 Loosen both screws **1** in the needle bar connection stud (Fig. 8.0.1).

8.3 Turn the sewing hook on its shaft until its point is exactly opposite the center line of the needle.

8.4 **Move the needle bar up or down until there is a clearance of 0.8 mm between the top edge of the needle eye and the bottom edge of the sewing hook (Fig. 8.0.3).**

8.5 In this position, tighten both screws **1**, making sure that the needle bar is not turned (Fig. 8.0.1).

8.6 **Adjust the sewing hook laterally until there is a clearance of 0.1 mm between its point and the needle (center of scarf), making sure the hook point is opposite the center line of the needle and the position finger is in the slot of the bobbin case.**

8.7 In this position, tighten the accessible screw **2.**

8.8 Pull the pin out of the hole in the bearing plate and tighten the second screw **2.**

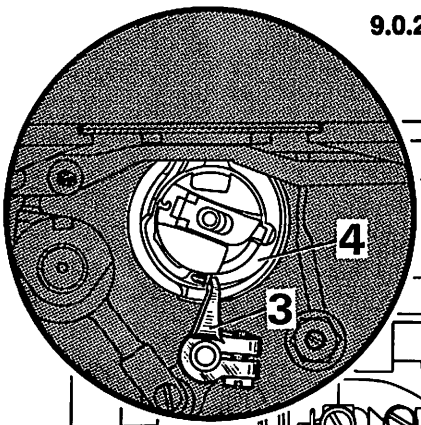
8.9 Check this adjustment (see "Correct setting").

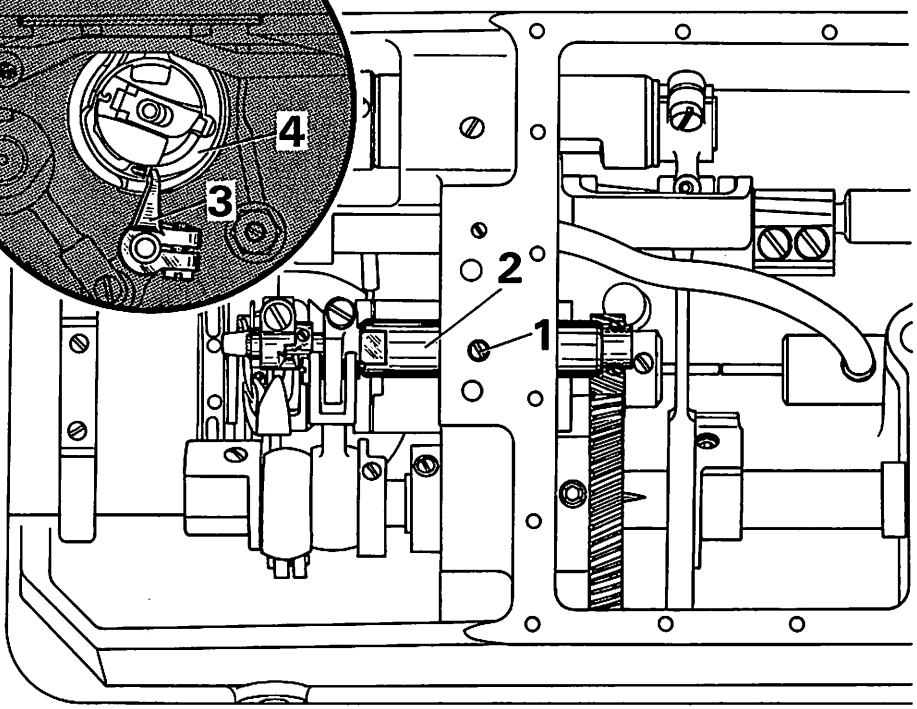
9 Eccentric bobbin case opener shaft bushing

Correct setting:

When at its left point of reversal, bobbin case opener finger **3** should be positioned vertically so that it is exactly opposite the lug of bobbin case base **4** (Fig. 9.0.2).

9.0.2





9.0.1

9.1 Loosen screw **1** of eccentric bobbin case opener shaft bushing **2** (Fig. 9.0.1).

9.2 Turn the balance wheel to bring the opener finger to its left point of reversal.

9.3 **Turn bushing 2 until opener finger 3 is exactly opposite the lug of bobbin case base 4. (Fig. 9.0.2). Make sure the bobbin case can be easily removed from the sewing hook .**

9.4 In this position, tighten screw **1.**

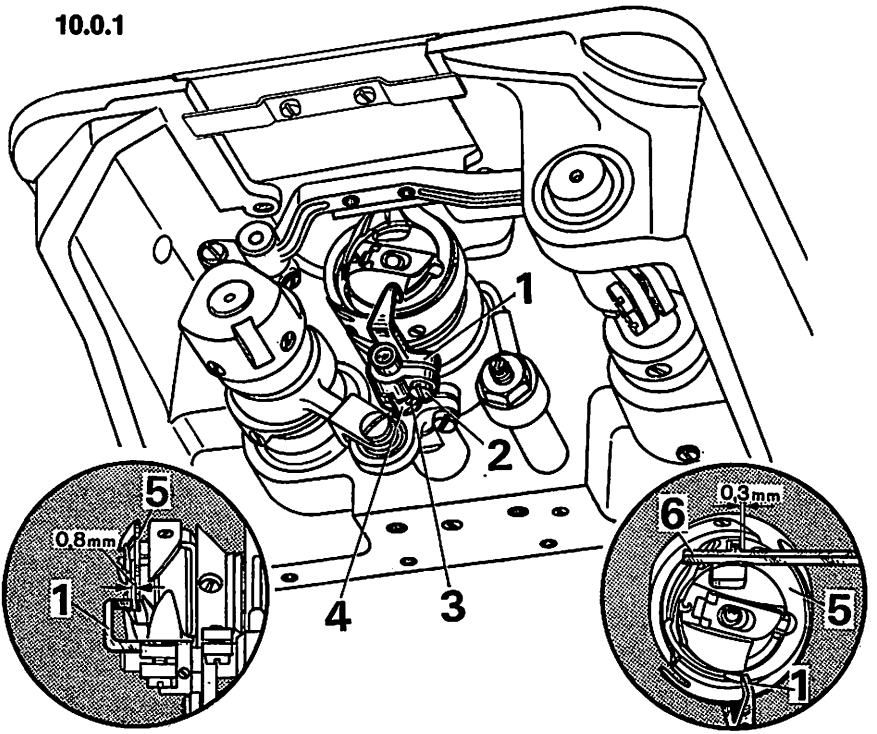
9.5 Check this adjustment (see "Correct setting").

10 Position of bobbin case opener

Correct setting:

There should be a clearance of abt. 0.8 mm between bobbin case opener finger **1** and bobbin case base **5** (Fig. 10.0.2). When opener finger **1** is on the left of its stroke, there should be a clearance of abt. 0.3 mm between bobbin case base **5** and position finger **6** (Fig. 10.0.3). In this position, the lug on collar **4** should be up against the stop of opener finger **1** (Fig. 10.0.1).

10.0.1



10.0.2 **10.0.3**

10.1 Loosen screw **3** of collar **4**.

10.2 Loosen clamp screw **2** of opener finger **1** just sufficiently to allow it to be turned on its shaft against resistance.

10.3 **Reposition opener finger 1 on its shaft until there is a clearance of 0.8 mm between it and bobbin case base 5 (Fig. 10.0.2).**

10.4 Rotate the balance wheel until opener finger **1** is on the left of its stroke.

10.5 **Turn opener finger 1 until there is a thread clearance of 0.3 mm between position finger 6 and the right wall of the position slot in the bobbin case base when opener finger 1 contacts the lug of bobbin case base 5 (Fig. 10.0.3).**

10.6 In this position, securely tighten screw **2**.

10.7 **Push collar 4 up against opener finger 1 and turn it so that its lug is up against the stop of opener finger 1.**

10.8 In this position, tighten screw **3**.

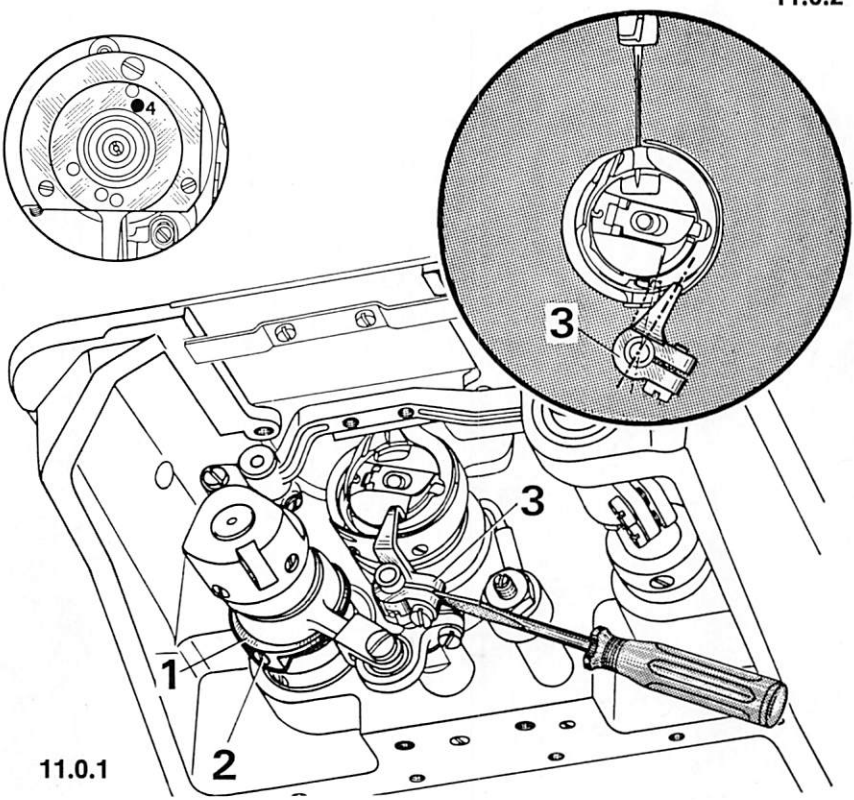
10.9 Check this adjustment (see "Correct setting").

11 Timing the bobbin case opener

Correct setting:

When the needle bar is positioned 1.8 mm past bottom dead center (pin in hole 4), opener finger **3** should be at its right point of reversal (Fig. 11.0.2).

11.0.2



11.0.1

11.1 Loosen booth screws **2** (Fig. 11.0.1).

11.2 Bring the needle bar to a point 1.8 mm past bottom dead center and block the machine in this position by inserting the pin in hole 4.

11.3 To facilitate determining the exact point of reversal insert a small screwdriver in the slot of the clamp of opener finger **3**.

11.4 **Turn opener eccentric 1 until opener finger 3 is at its right point of reversal (Fig. 11.0.2).**

11.5 In this position, tighten the accessible screw **2** of opener eccentric **1** (Fig. 11.0.1), making sure there is sufficient play between opener eccentric **1** and the lifting eccentric.

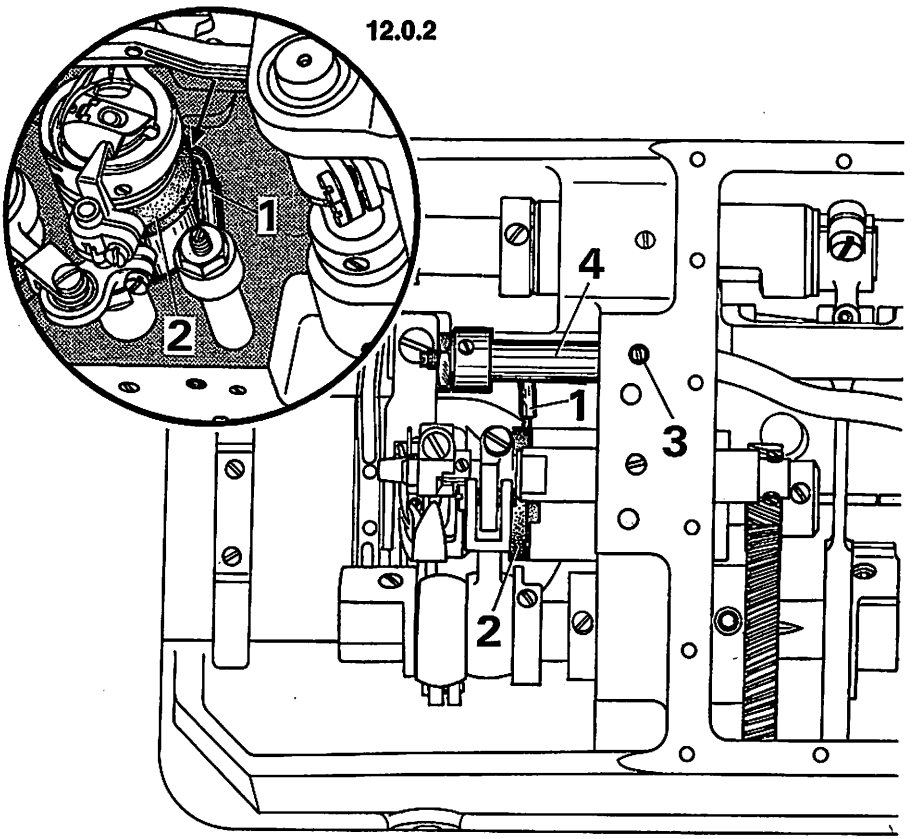
11.6 Pull the pin out of the hole in the bearing plate and tighten the second screw **2** also.

11.7 Pull the screwdriver out of the clamp slot and check this adjustment (see "Correct setting").

12 **Oil tube in oil distributor ring**

Correct setting:

Oil tube **1** should be positioned in the hole of oil distributor ring **2** (Fig. 12.0.2).



12.0.2

12.0.1

12.1 **Insert oil tube 1 into the hole of oil distributor ring 2 (see arrow in Fig. 12.0.2); if necessary, turn oil distributor ring 2 accordingly.**

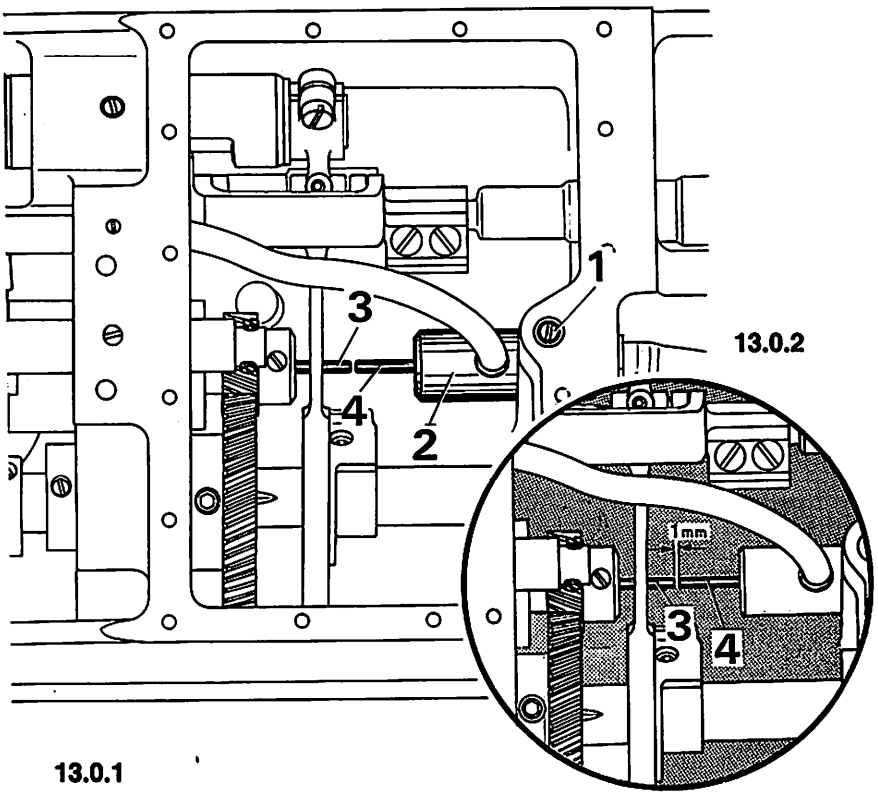
Note: On subcl. -900 machines the oil distributor ring cannot be turned until you have loosened the three screws on the front side of the hook shaft bearing.

12.2 Tighten screw **3** of oil regulating valve **4** (Fig. 12.0.1).

13 **Oil check valve**

Correct setting:

There should be a clearance of 1.0 mm between actuating rod **3** of the centrifugal governor and push rod **4** of the oil check valve (Fig. 13.0.2).



13.0.2

13.0.1

13.1 Loosen screw **1** of oil check valve **2** (Fig. 13.0.1).

13.2 Push actuating rod **3** into the centrifugal governor.

13.3 Press push rod **4** into oil check valve **2** until a noticeable resistance is felt.

13.4 **Reposition oil check valve 2 until there is a clearance of 1.0 mm between actuating rod 3 and push rod 4 (Fig. 13.0.2).**

13.5 In this position, tighten screw **1**.

13.6 Check this adjustment (see "Correct setting").

13.7 Soak the oil sponge with oil and replace it in the gearcase so that its large recess is at the bottom left and the oil tube is placed on top of it.

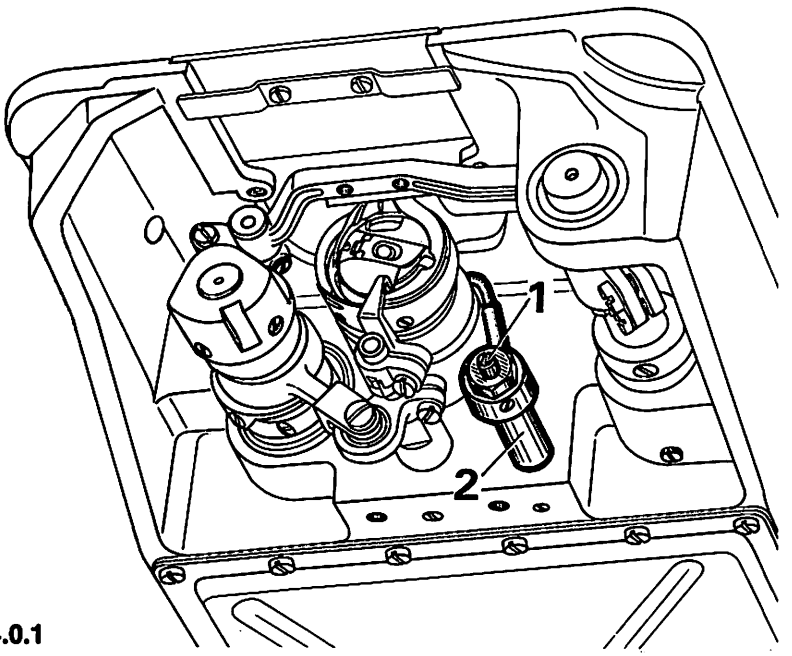
13.8 Clean the gasket face on the gearcase and the gasket of the gearcase cover.

13.9 Replace the gearcase cover and simultaneously screw on the two machine legs, tightening the screws of the cover crosswise.

14 Hook lubrication

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.



14.0.1

14.1 Check the oil level 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 half a 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.

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.**

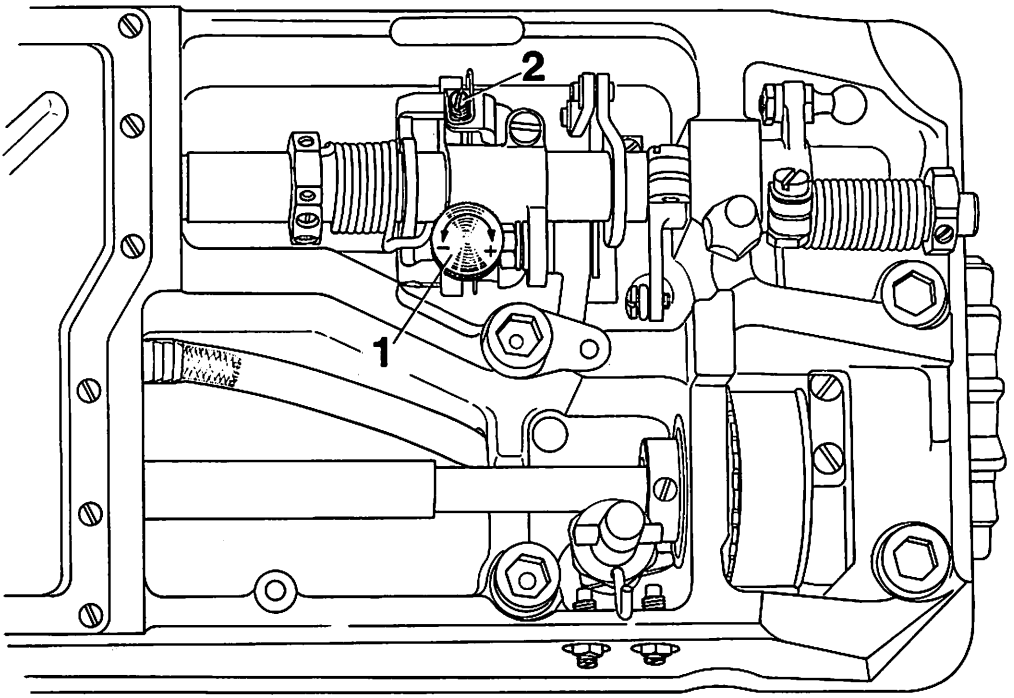
14.9 Check this adjustment (see "Correct setting").

15 **Zeroing the top feed motion**

To determine whether the following setting is correct, adjustments 15.1 to 15.5 must be carried out first.

Correct setting:

With the stitch length set at "0", feed driving lever **7** (Fig. 15.0.4) must not move when the balance wheel is turned.



15.0.1

15.1 Turn regulating screw **1** out a few turns.

15.2 Turn out stop screw **2** until a resistance is felt.

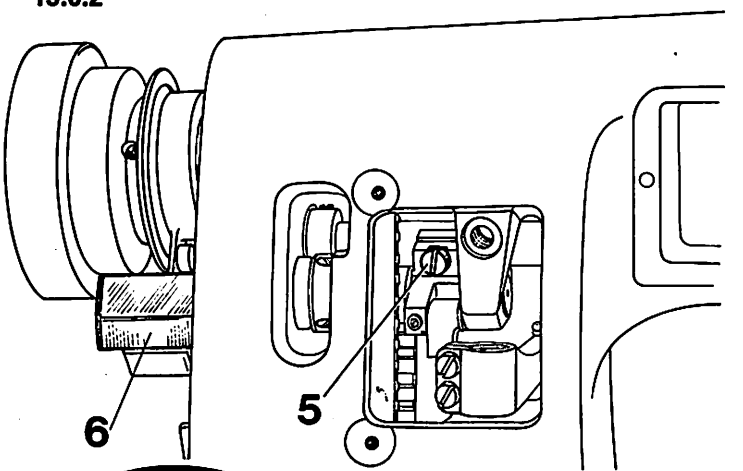
15.3 Set the machine for its longest stitch and move the reverse-feed control to its upper position.

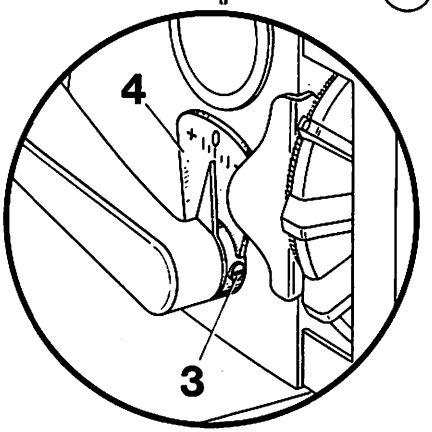
15.4 Turn in regulating screw **1** until the reverse-feed control begins to move downwards.

15.5 Turn regulating screw **1** back half a turn.

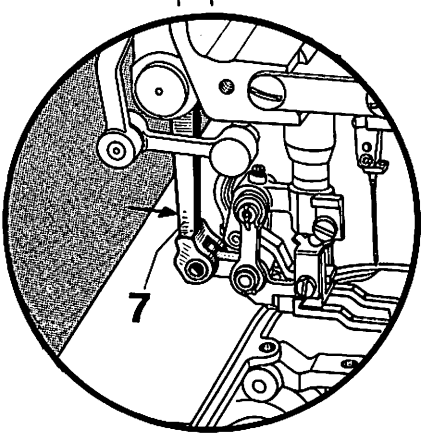
Note: For information on version N machines supplied earlier see inside front cover.

15.0.2





15.0.3



15.0.4

15.6 Turn the stitch length control to "0" and loosen screw **3.**

15.7 Adjust scale **4** so that the zero mark is positioned above the tip of the pointer.

15.8 Retain the scale in this position and tighten screw **3.**

15.9 Replace and screw on the belt guard and the rear arm cover.

15.10 Loosen screw. **5.**

15.11 Adjust crank **6** so that feed driving lever **7** does not move when the balance wheel is turned.

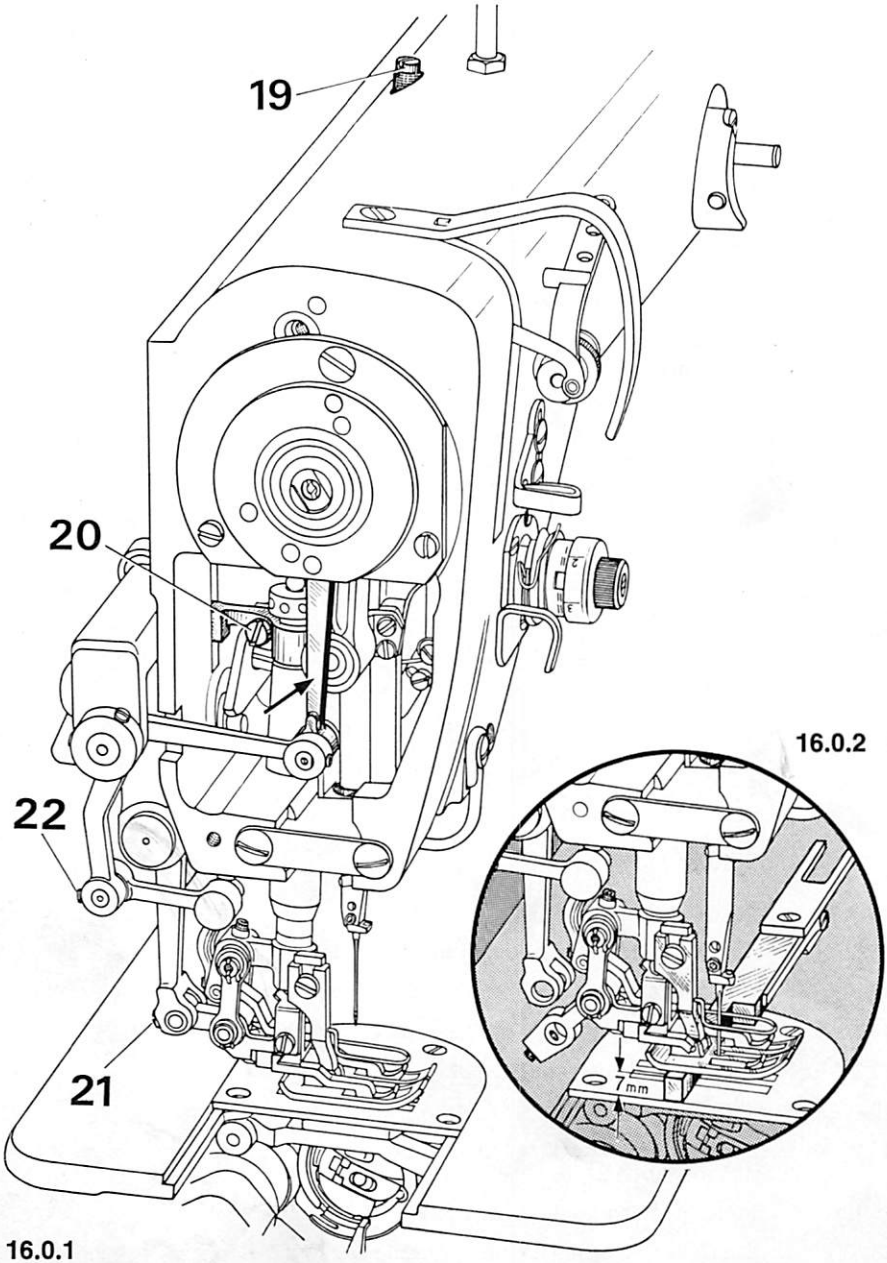
15.12 In this position tighten screw **5.**

15.13 Check this adjustment (see "Correct setting").

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. 16.0.2).



16.0.2

16.0.1

16.1 Screw on the feed dog and the needle plate, making sure the feed dog moves freely in its slots.

16.2 Screw on the presser foot and lower it onto the needle plate by means of the presser bar lifter.

16.3 Turn out regulating screw **19** (Fig. 16.0.1) to reduce the pressure on the presser bar so that it is just sufficient to hold the presser foot down on the needle plate.

16.4 Loose screw **21** and push the fulcrum stud out.

16.5 Swing the top feed connecting link out of the yoke of the feed driving lever (Fig. 16.0.2).

16.6 Turn the balance wheel to bring the connecting rod of the feed lifting eccentric (see arrow in Fig. 16.0.1) to top dead center, and raise the presser bar lifter.

16.7 **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. 16.0.2).**

16.8 Loosen screw **22** of the fulcrum stud of the top feed connecting link (Fig. 16.0.1) and push the stud out.

16.9 Loosen screw **20** of the presser bar lifting bracket.

16.10 Adjust the presser foot laterally until the needle is centered in its slot.

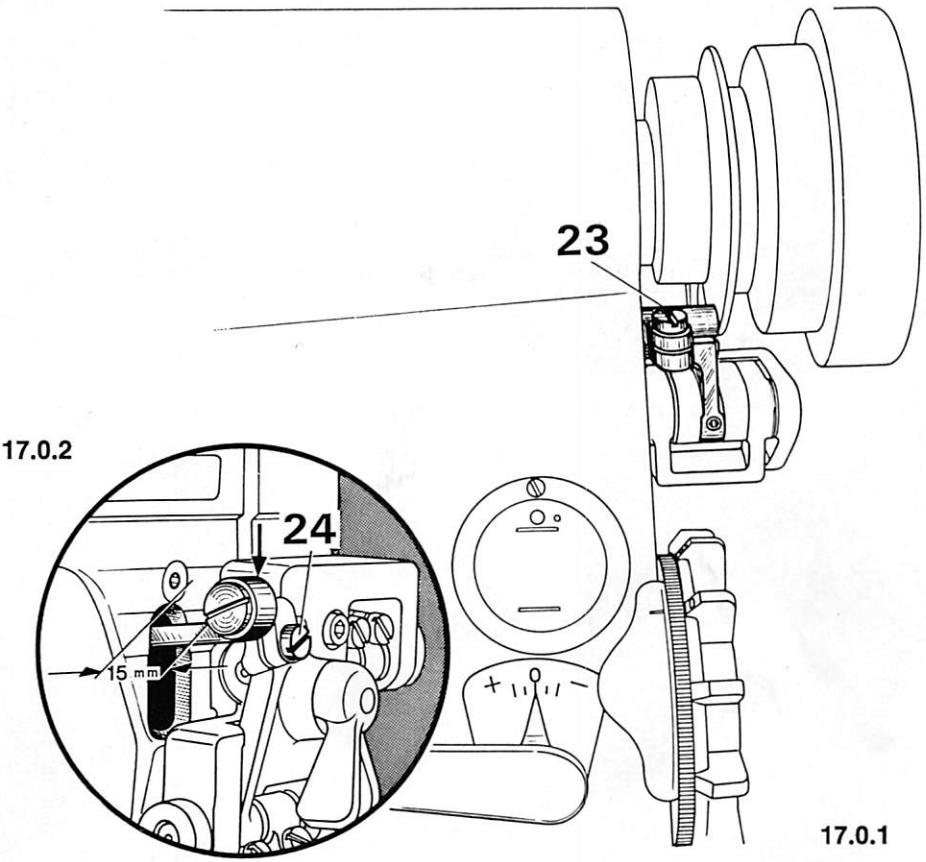
16.11 Push the presser bar lifting bracket down as far as it will go and tighten screw **20.**

16.12 Leave the gauge under the presser foot for the next adjustment.

17 Top feed connecting rod

Correct setting:

When the lobe of the eccentric stud points up (see arrow in Fig. 17.0.2) and the stitch length control 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. 17.0.2).



17.0.2

17.0.1

17.1 Make sure the gauge is still positioned under the presser foot and the stitch length control is set at "0".

17.2 Loosen screw **24** of the connecting rod eccentric stud.

17.3 Turn the eccentric stud until its lobe points up (see arrow in Fig. 17.0.2).

17.4 In this position, tighten screw **24** securely.

17.5 Loosen screw **23** of the top feed shaft driving crank (Fig. 17.0.1).

17.6 **Set a clearance of 15.0 mm between the eye of the connecting rod and the arm casting.**

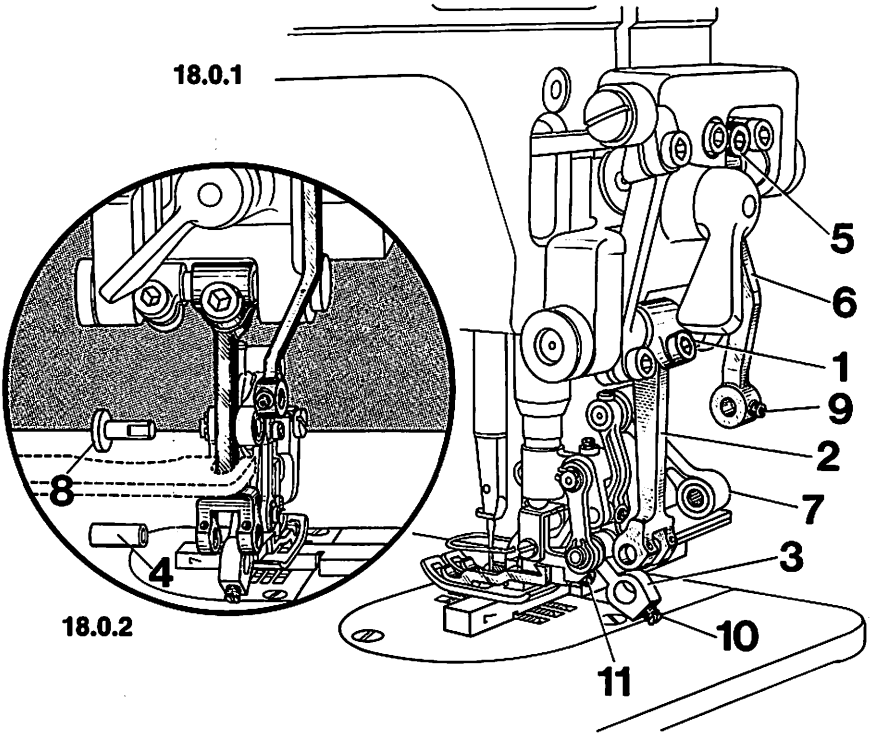
17.7 In this position, tighten screw **23.**

17.8 Check this adjustment (see "Correct setting").

17.9 Leave the adjustment gauge under the presser foot.

Correct setting:

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

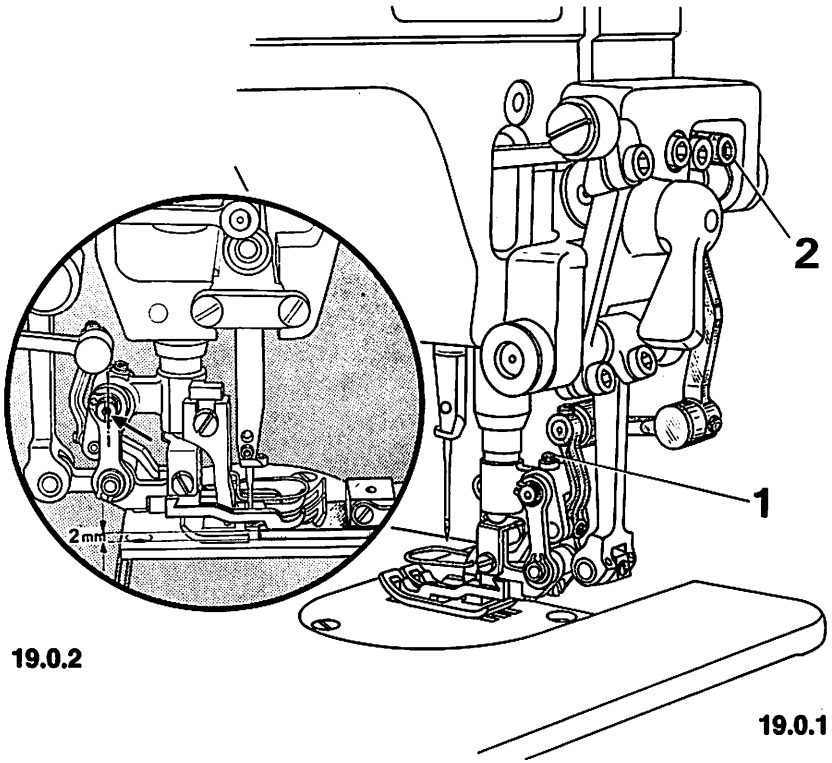


18.1 Loosen screw **1** of driving lever **2**.
18.2 Swing connecting link **3** into the yoke of driving lever **2** so that the holes of both parts are properly aligned.
18.3 Insert fulcrum stud **4** in the holes of driving lever **2** and connecting link **3**, making sure both parts turn freely. If necessary, bend driving lever **2**.
18.4 Position the vibrating presser in sewing direction so that it is centered in the cutout of the presser foot and hold it there, then tighten screw **1**.
18.5 Loosen screw **5**.
18.6 Bring the hole of connecting lever **6** exactly in line with the hole of connecting link **7**. If necessary, bend connecting lever **6**.
18.7 Insert fulcrum stud **8** in the needle bearing of connecting link **7** and the hole of connecting lever **6** so that screw **9** engages the flat spot of fulcrum stud **8**.
18.8 In this position, tighten screw **9**.
18.9 Turn the balance wheel to bring the connecting rod (see arrow in Fig. 16.0.1) of the top feed lifting eccentric stud to top dead center.
18.10 Push connecting lever **6** toward the rear (direction of feed) until a resistance is felt, then tighten screw **5**.
18.11 Remove the gauge and lower the presser foot onto the needle plate.
18.12 Tighten screw **10** of fulcrum stud **4**.
18.13 Loosen screw **11** of the vibrating presser.
18.14 Adjust the vibrating presser laterally so that it does not contact the presser foot and, in this position, tighten screw **11**.

19 Vibrating presser height

Correct setting:

With the presser foot resting on the needle plate and the vibrating presser positioned at top dead center, 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. 19.0.2).



19.0.2

19.0.1

Note: Use gauge foot No. 61-111 639-20, if possible.

19.1 Increase the pressure on the presser bar by turning in regulating screw **19** (Fig. 16.0.1).

19.2 Check to make sure the presser foot is still resting on the needle plate.

19.3 Loosen screw **1** in the bracket located behind the presser bar (Fig. 19.0.1).

19.4 Turn the top feed eccentric stud so that its lobe is up (see arrow in Fig. 19.0.2).

19.5 In this position, tighten screw **1** again.

19.6 Turn the balance wheel to bring the vibrating presser to its highest point.

19.7 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.

19.8 **Slowly loosen screw 2 of the connecting lever so that the vibrating presser rests lightly on the gauge blade.**

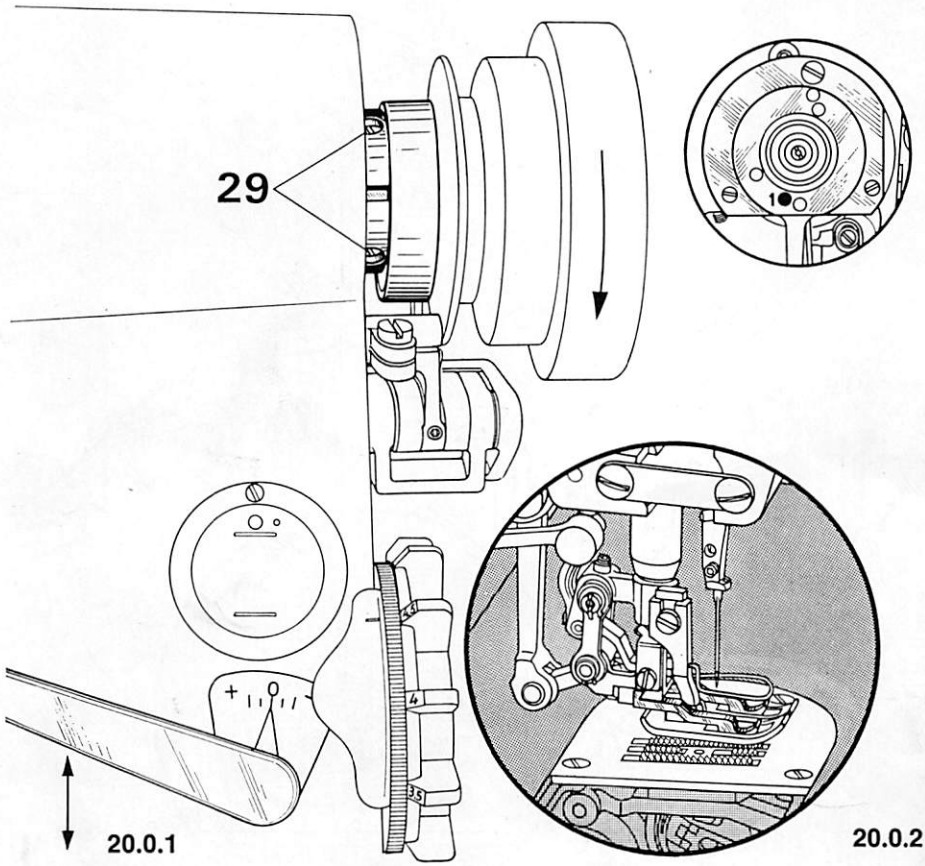
19.9 In this position, securely tighten screw **2** and remove the gauge from under the vibrating presser.

19.10 Check this adjustment (see "Correct setting").

20. Vibrating presser advancing motion

Correct setting:

With the machine set for its longest stitch and the needle bar positioned 0.6 mm past top dead center (pin in hole 1), the vibrating presser should make no perceptible motion when the reverse-feed control is moved up and down.



20.1 Raise the presser foot and set the machine for its longest stitch.

20.2 Loosen both screws **29** in the top feed driving eccentric (Fig. 20.0.1).

20.3 Bring the needle bar to a point 0.6 mm past top dead center and block the machine by inserting the pin in hole 1.

20.4 Turn the top feed driving eccentric so that its slot points toward you.

20.5 **Move the reverse-feed control up and down while simultaneously turning the eccentric a little further until the vibrating presser remains still.**

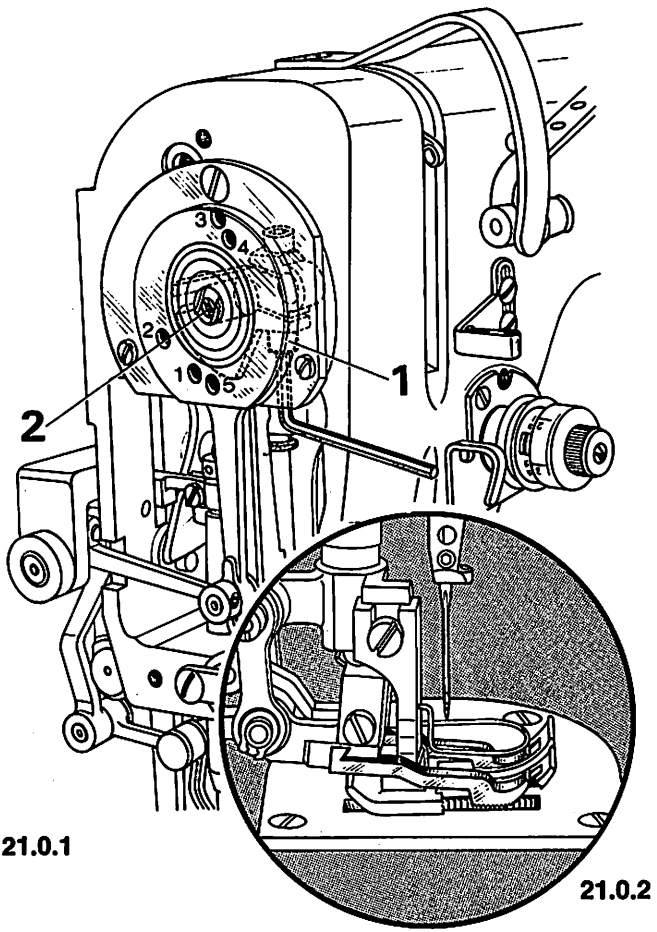
20.6 In this position, tighten the accessible screw **29.**

20.7 Pull the pin out of the hole in the bearing plate and tighten the second screw **29.** Check this adjustment (see "Correct setting").

21 Vibrating presser lifting motion

Correct setting:

With the machine set at stitch length "2" (or "5" on version N machines), the vibrating presser should contact the ascending feed dog when the latter is flush with the top surface of the needle plate (Fig. 21.0.2).



21.0.1

21.0.2

21.1 Turn the stitch length control to "2" (or "5" on version N machines).

21.2 Lower the presser foot onto the needle plate.

21.3 Bring the take-up lever to its highest point and, in this position, loosen screw **1** which is accessible from below (Fig. 21.0.1).

21.4 **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. 21.0.2).**

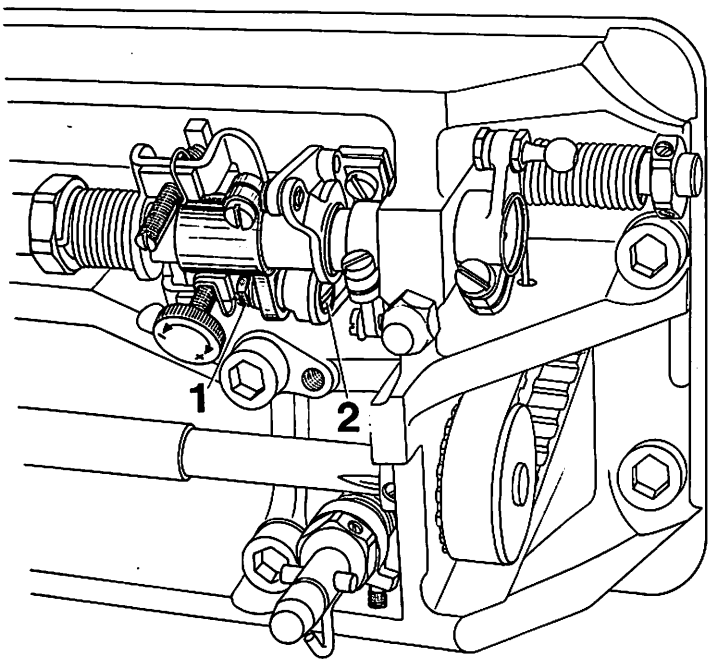
21.5 In this position, tighten screw **1**.

21.6 Check this adjustment (see "Correct setting").

22 Eliminating differences in the feed stroke lengths

Correct setting:

With the machine set for its longest stitch and the top feed 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.



22.0.1

22.1 Set the machine for its longest stitch and set the top feed at "0".

22.2 Operate the reverse-feed control to make connecting rod hinge nut **1** accessible and loosen this nut.

22.3 **Reposition hinge screw 2 in its elongated hole until the feed strokes of the vibrating presser and the feed dog are the same length when you turn the balance wheel.**

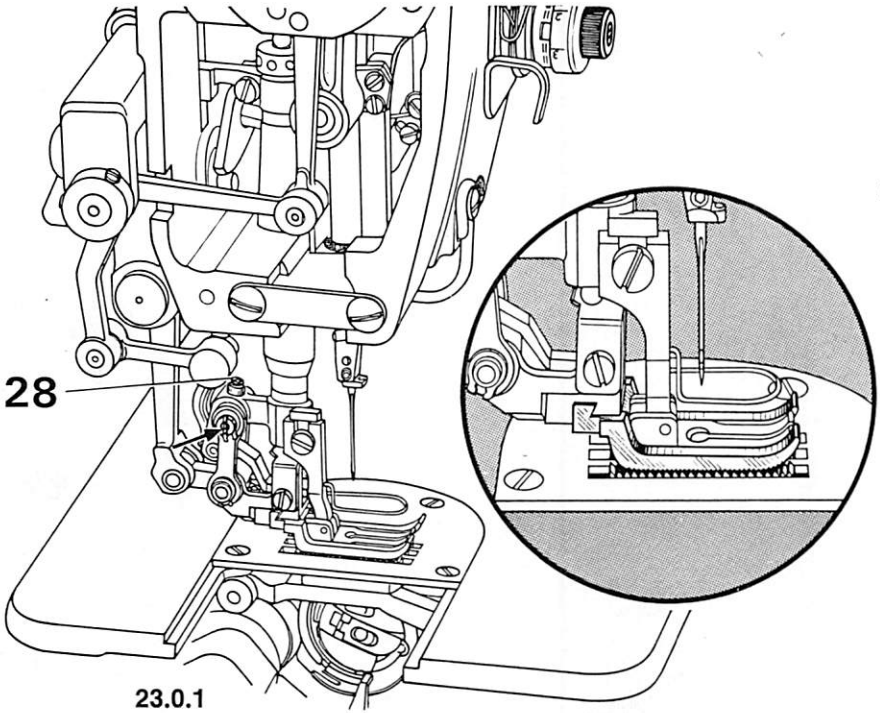
22.4 In this position, tighten nut **1** on hinge screw **2.**

22.5 Check this adjustment (see "Correct setting").

23 **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 (Fig. 23.0.2).



23.0.1

23.0.2

23.1 Make sure the presser foot is still down on the needle plate, then loosen screw **28** in the bracket behind the presser bar (Fig. 23.0.1).

23.2 Turn the balance wheel to bring the feed dog to its highest point.

23.3 **Turn the eccentric stud (see arrow in Fig. 23.0.1) so that the vibrating presser is in contact with the feed dog over its entire length (Fig. 23.0.2).**

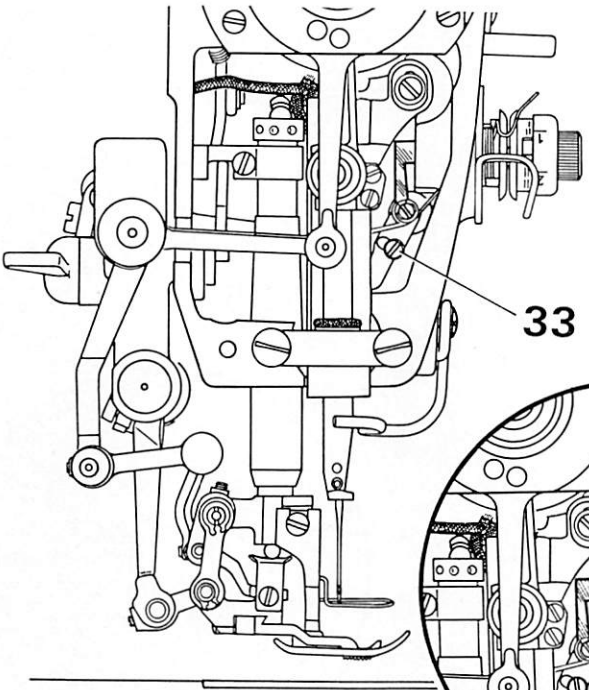
23.4 In this position, tighten screw **28.**

23.5 Check this adjustment (see "Correct setting").

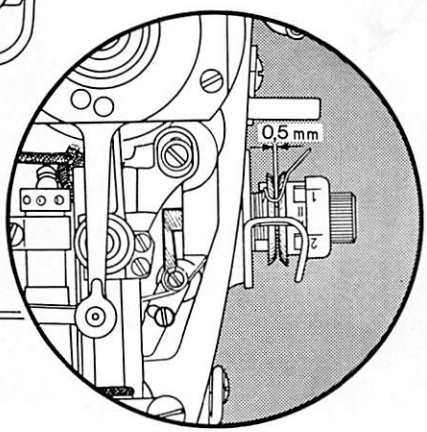
23.6 Check the vibrating presser height and adjust, if necessary (Section 19).

Correct setting:

When the presser bar lifter is raised, both tension discs should be at least 0.5 mm apart (Fig. 24.0.2).



24.0.1



24.0.2

24.1 Raise the presser foot by means of the presser bar lifter.

24.2 Loosen screw **33** of the tension release lever (Fig. 24.0.1).

24.3 **Adjust the tension release lever so that there is a clearance of at least 0.5 mm between both tension discs when the presser bar lifter is raised (Fig. 24.0.2).**

24.4 In this position, tighten screw **33** securely.

24.5 When the presser foot is lowered onto the needle plate, the tension should be **fully** activated.

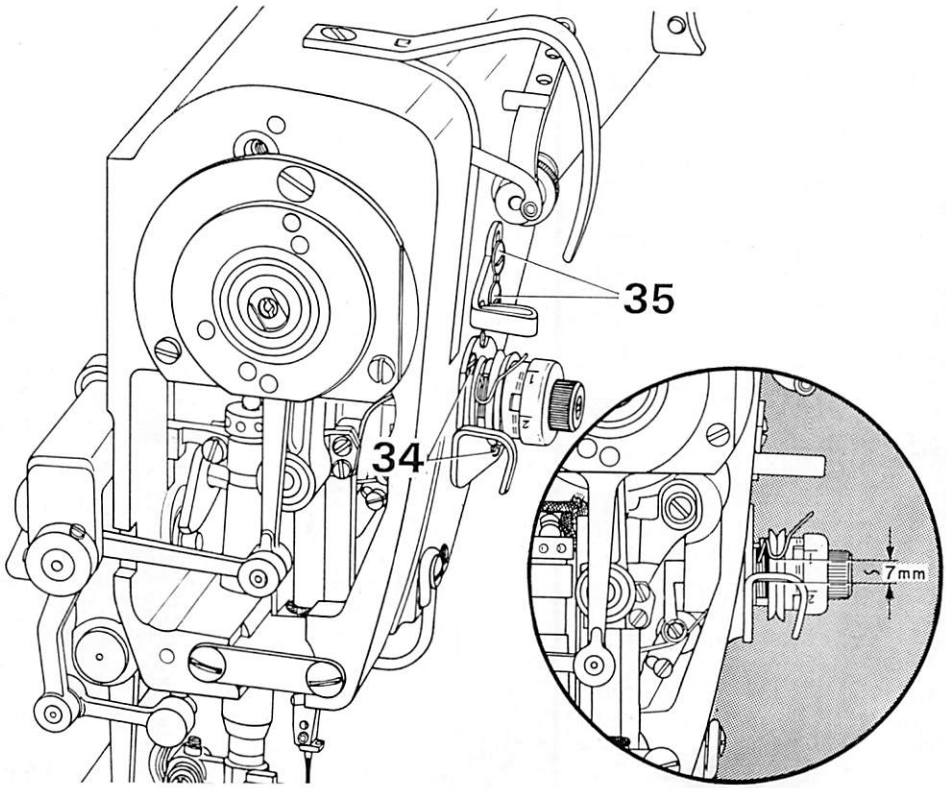
24.6 Check this adjustment (see "Correct setting").

25 Thread check spring and thread regulator

Correct setting:

The stroke of the thread check spring should be abt. 7.0 mm (Fig. 25.0.2).

Note: The position of the thread regulator is dependent on the type of thread and material used and should be adjusted according to the appearance of the seam.



25.0.1 25.0.2

25.1 Loosen both screws **34** (Fig. 25.0.1) of the thread tension flange just sufficiently to allow the tension barrel to be turned in the tension flange.

25.2 **Turn the tension barrel until the stroke of the thread check spring amounts to abt. 7.0 mm (Fig. 25.0.2).**

25.3 In this position, tighten both screws **34** of the thread tension flange evenly (by tightening them alternately). Special sewing operations may make it necessary to set the thread check spring for a shorter or longer stroke.

25.4 Check this adjustment (see "Correct setting").

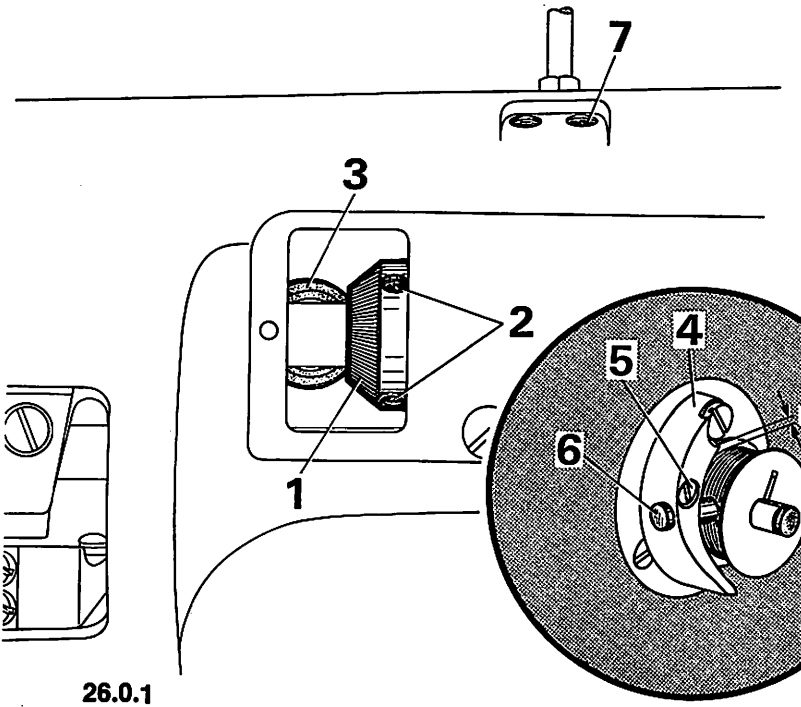
25.5 Loosen booth screws **35** of the thread regulator.

25.6 **Push the thread regulator up as far it will go.**

25.7 In this position, tighten both screws **35.**

Correct setting:

When the bobbin winder is engaged, the winder spindle should be driven reliably; when the bobbin winder is disengaged, however, friction wheel 3 must not contact drive wheel 1.
The bobbin winder should stop automatically when the thread wound on the bobbin has reached a point abt. 1.0 mm below its rim (Fig. 26.0.2).



26.0.2

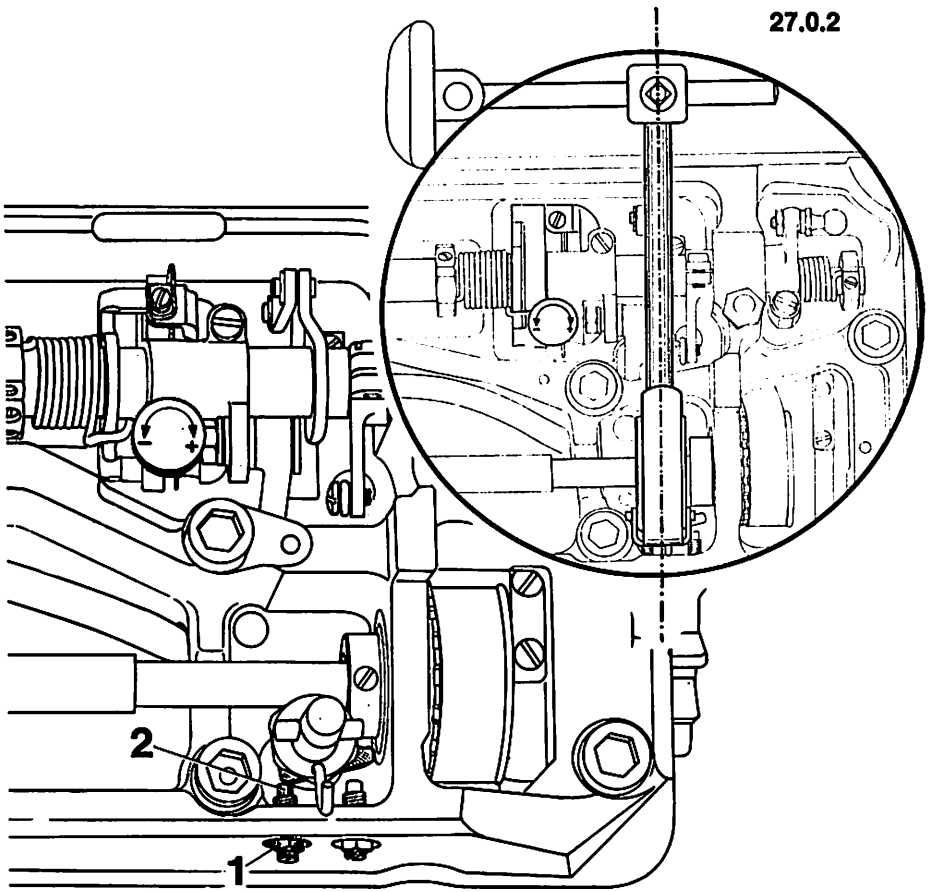
26.0.1

26.1 Take out the three screws retaining the rear arm cover and remove the latter.
26.2 Raise the presser bar lifter and engage the bobbin winder.
26.3 Loosen both screws **2**.
26.4 **Set drive wheel 1 so close to friction wheel 3 that friction wheel 3 will be driven reliably when the bobbin winder is engaged, but will not be driven, when the bobbin winder is disengaged.**
26.5 Tighten both screws **2**.
26.6 Place a bobbin on the winder spindle, thread the machine for bobbin winding and engage the bobbin winder by pushing against its spindle. Then start the machine.
26.7 The bobbin winder should stop when the thread wound on the bobbin has reached a point abt. 1.0 mm below its rim.
26.8 If the bobbin winder stops too early or not at all, loosen screw **5** of regulating screw **6** in stop latch **4**.
26.9 **If the bobbin is too full, push regulating stud 6 toward the bobbin; if it is not full enough, push it away from the bobbin. Then tighten screw 5.**
26.10 If the thread piles up on one side of the bobbin, adjust the thread guide on the machine arm accordingly.
26.11 Check this adjustment (see "Correct setting").

27 Knee lever rest position

Correct setting:

When at rest, the knee lever connecting rod should be roughly at right angles to the front edge of the bedplate (Fig. 27.0.2).



27.0.1

27.1 Raise the presser foot by means of the presser bar lifter.

27.2 Push the knee lever connecting rod with its joint on the knee lever shaft and turn it until it snaps in place.

27.3 Loosen the locknut **1** of stop screw **2** (Fig. 27.0.1).

27.4 Turn stop screw **2** until the knee lever connecting rod extends at right angles to the front edge of the bedplate (Fig. 27.0.2).

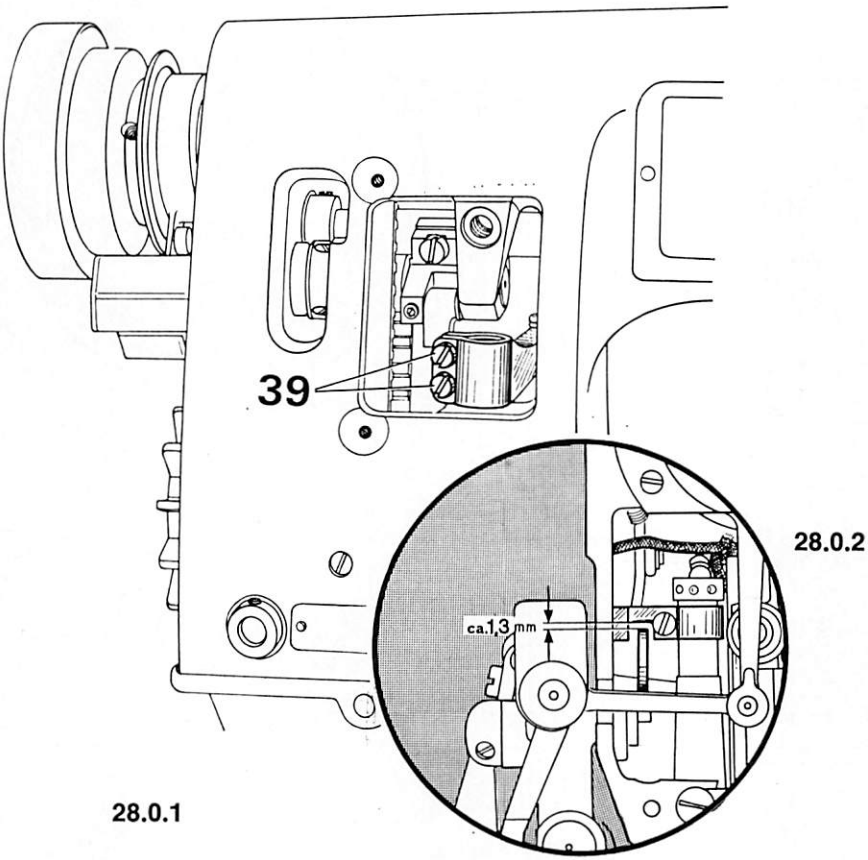
27.5 In this position, lock stop screw **2** by tightening nut **1**.

27.6 Pull the knee lever connecting rod out of its joint.

28 **Knee lever play**

Correct setting:

When the presser foot is down on the needle plate and the feed dog is positioned below the needle plate, there should be a clearance of abt. **1.3 mm** between the lifting lever and the lifting bracket (Fig. 28.0.2).



28.0.2

28.0.1

28.1 Lower the feed dog below the needle plate and let the presser foot down on the needle plate.

28.2 Take out the two screws of the rear arm cover and remove the cover.

28.3 Loosen both screws **39** (Fig. 28.0.1) of the crank on the vertical knee lever shaft.

28.4 **Adjust the crank so that there is a clearance of abt. 1.3 mm between the lifting lever and the lifting bracket.** (Use a gauge for this adjustment.)

29.5 In this position, tighten both screws **39,** making sure the vertical knee lever shaft has no end play.

28.6 Pull out the gauge and insert the knee lever connecting rod into its joint.

28.7 Check this adjustment (see "Correct setting").

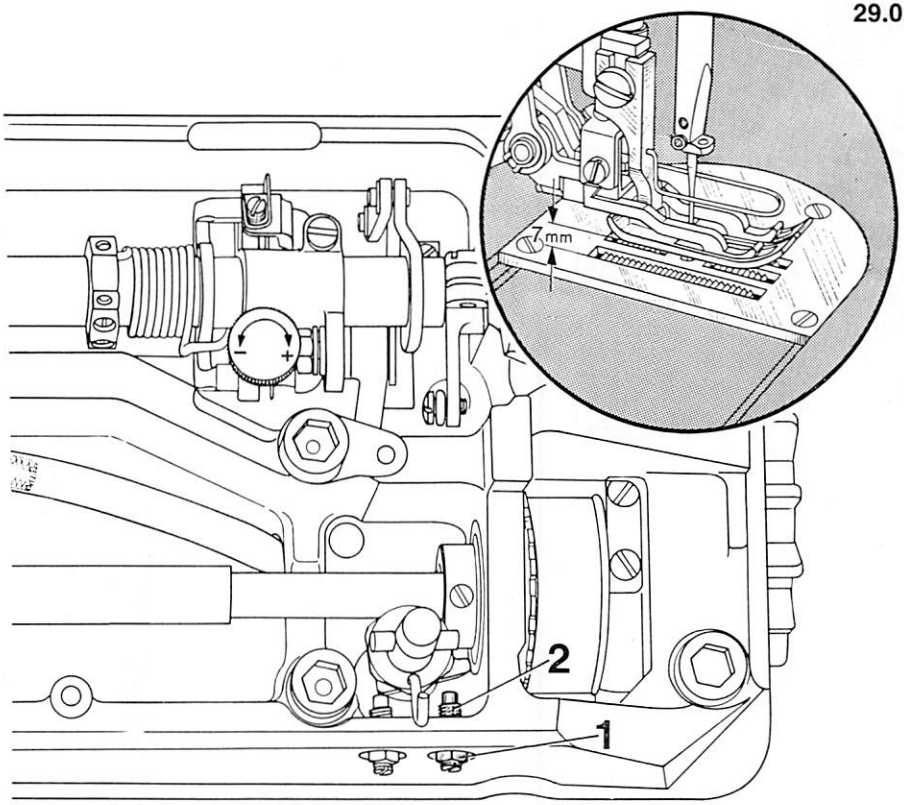
28.8 Pull the knee lever connecting rod out of its joint.

29 Knee lever stroke limitation

Correct setting:

When the knee lever is fully operated, the presser foot should be lifted from the needle plate by a little more than **7.0 mm,** and the presser bar lifter should drop by its own weight.

29.0.2



29.0.1

29.1 Insert the knee lever connecting rod.

29.2 Loosen locknut **1** of stop screw **2** (Fig. 29.0.1).

29.3 Turn stop screw **2** out a few turns.

29.4 Raise the presser bar lifter, place the 7-mm-thick blade of the gauge under the presser foot and lower the presser bar lifter again.

29.5 Move the knee lever to the right until a noticeable resistance is felt; however the presser foot must not be lifted of the gauge.

29.6 **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.**

29.7 Remove the gauge from under the presser foot and draw the knee lever connecting rod out of its joint.

29.8 Let the machine down again, replace the knee lever connecting rod and check this adjustment (see "Correct setting").

30 Final worksteps

30.1 Replace and screw on the bed slide.

30.2 Replace and screw on the face cover.

30.3 Screw on the belt guard.

30.4 Replace and screw on the rear arm cover.

30.5 Adjust the presser foot pressure by turning in regulating screw **19** (Fig. 16.0.1) so that the fabric is fed properly even at top speed.

Contents

		Page
1	Preparations for adjustment	1
2	Zeroing the bottom feed motion	2
3	Bottom feed driving motion	4
4	Bottom feed lifting motion	5
5	Feed dog height	6
6	Centering the needle in the needle hole	7
7	Eccentric hook shaft bearing	8
8	Needle bar height, hook timing and hook-to-needle clearance	9
9	Eccentric bobbin case opener shaft bushing	10
10	Position of bobbin case opener	11
11	Timing the bobbin case opener	12
12	Oil tube in oil distributor ring	13
13	Oil check valve	14
14	Hook lubrication	15
15	Zeroing the top feed motion	16
16	Clearance between presser foot and needle plate	18
17	Top feed connecting rod	20
18	Feed driving and connecting levers	21
19	Vibrating presser height	22
20	Vibrating presser advancing motion	23
21	Vibrating presser lifting motion	24
22	Eliminating differences in the feed stroke lengths	25
23	Position of vibrating presser	26
24	Tension release mechanism	27
25	Thread check spring and thread regulator	28
26	Bobbin winder	29
27	Knee lever rest position	30
28	Knee lever play	31
29	Knee lever stroke limitation	32
30	Final worksteps	32

PFAFF®

Nr. 296-12-13 033/1178 Pf

Printed in West Germany