

PFAFF

918

938

838

Service Manual

From the library of Diamond Needle Corp

Notes on Safety

- The machine must only be commissioned in full knowledge of the instruction book and operated by persons with appropriate training.
- The machine must only be used for the purpose intended. It must not be operated without the safety devices it is equipped with; all valid safety regulations must be adhered to.
- When gauge parts are exchanged (i.e. needle, presser foot, needle plate, feed dog and bobbin), during threading, when the workplace is left, and during service work, the machine must be isolated from the mains by switching off the main switch or disconnecting the mains plug.
- On mechanically operated clutch motors without start inhibitor it is necessary to wait until the motor has stopped.
- Daily service work must only be carried out by persons with appropriate training.
- Repairs and special maintenance work must only be carried out by trained technicians or persons with appropriate training.
- For service and repair work on pneumatic systems the machine must be disconnected from the compressed air supply system. The only exceptions to this are adjustments and function checks carried out by appropriately trained technicians.
- Work on the electrical equipment must only be carried out by electrical engineers or other appropriately trained technicians.
- It is not permitted to work on live parts. For exceptions please see DIN VDE 0105.
- Conversions or changes to the machine must only be authorized by us and only be made on adherence to all safety regulations.
- For repairs, only replacement parts approved by us must be used.
- The sewing head must not be operated until it is ascertained that the whole sewing unit corresponds to EC regulations.

Important notes!

No adjustable clamp must be attached to the needle bar of PFAFF 838, 918 and 938 since the fastening of the adjustable clamp would damage the special coating of the needle bar.

Tools, gauges and other accessories required for adjusting the machines

1 set of screw drivers with 2 to 10 mm wide blades
1 set of wrenches with openings from 7 to 14 mm wide
1 set of hexagonal allen keys from 1.5 to 6 mm
1 open-ended wrench with 27-mm-wide opening
1 metal ruler, No. 08-880 218-00
1 cylindrical pin (5 mm in diameter), No. 13-030 341-05
1 feed dog gauge, No. 91-129 995-05
1 hook bearing bracket gauge, No. 91-129 996-01
1 roll of adhesive tape
needles, system 438
sewing thread, testing material

Notes on the service manual

All adjustments of this service manual refer to a completely assembled machine. Machine covers which must be screwed off and on for control and repair works are not mentioned in the text.

Screws and nuts in brackets () are fixings for machine parts that must be unscrewed before and screwed on after adjusting the machine.

Abbreviations

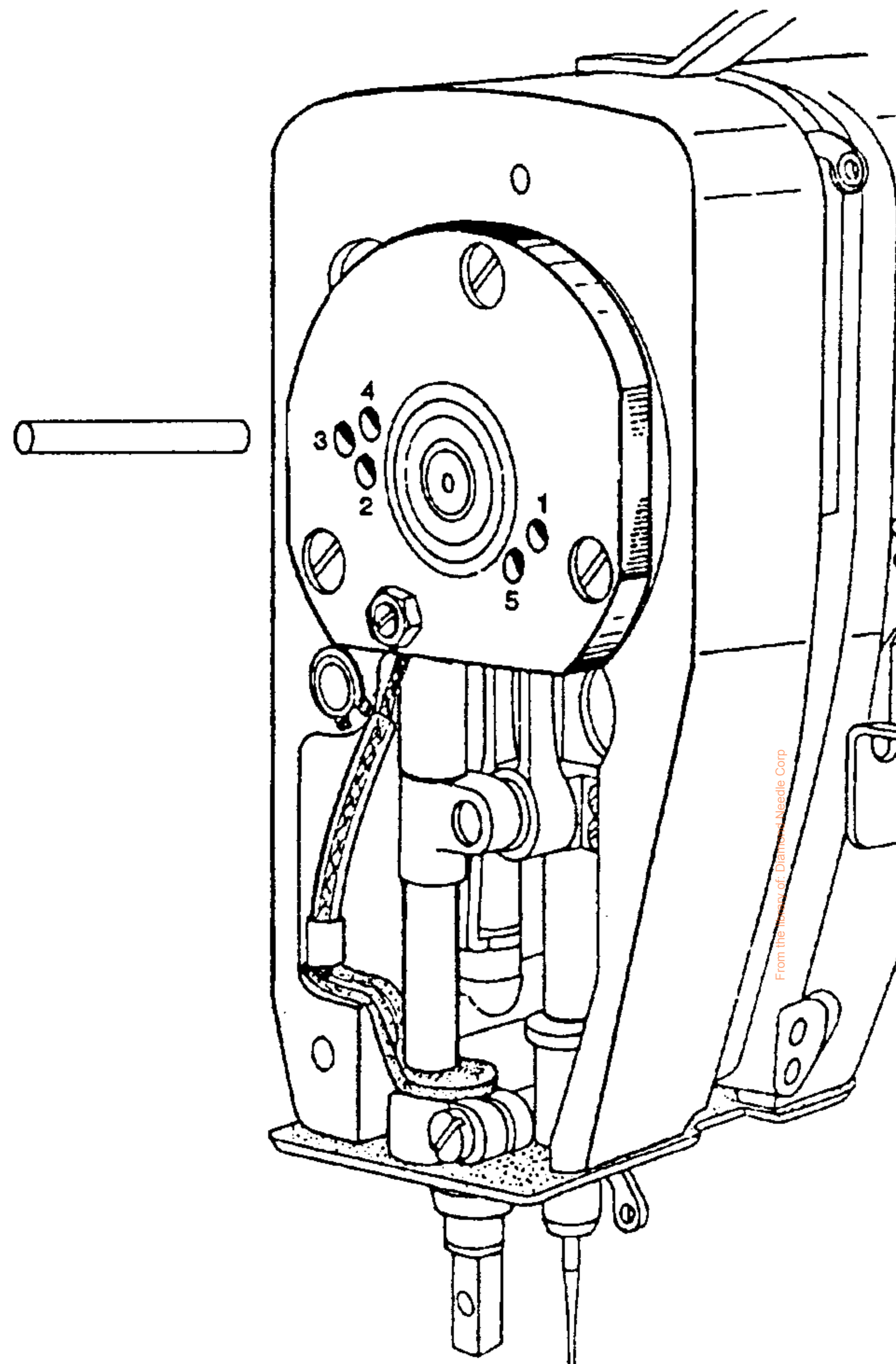
t.d.c = top dead center
b.d.c. = bottom dead center
ZZ = zigzag

Subject to technical alterations

1 Control and adjustment aid

By pushing the pin into the holes 1-5 the required positions of the needle bar can be fixed precisely.

- 1.1 Turn the balance wheel until the needle bar has reached more or less the required position.
- .2 Push the 5-mm-thick cylindrical pin into the appropriate hole and compress it.
- .3 Turn the balance wheel slightly to and fro until the cylindrical pin enters the recess behind the bearing plate, thus blocking the machine.

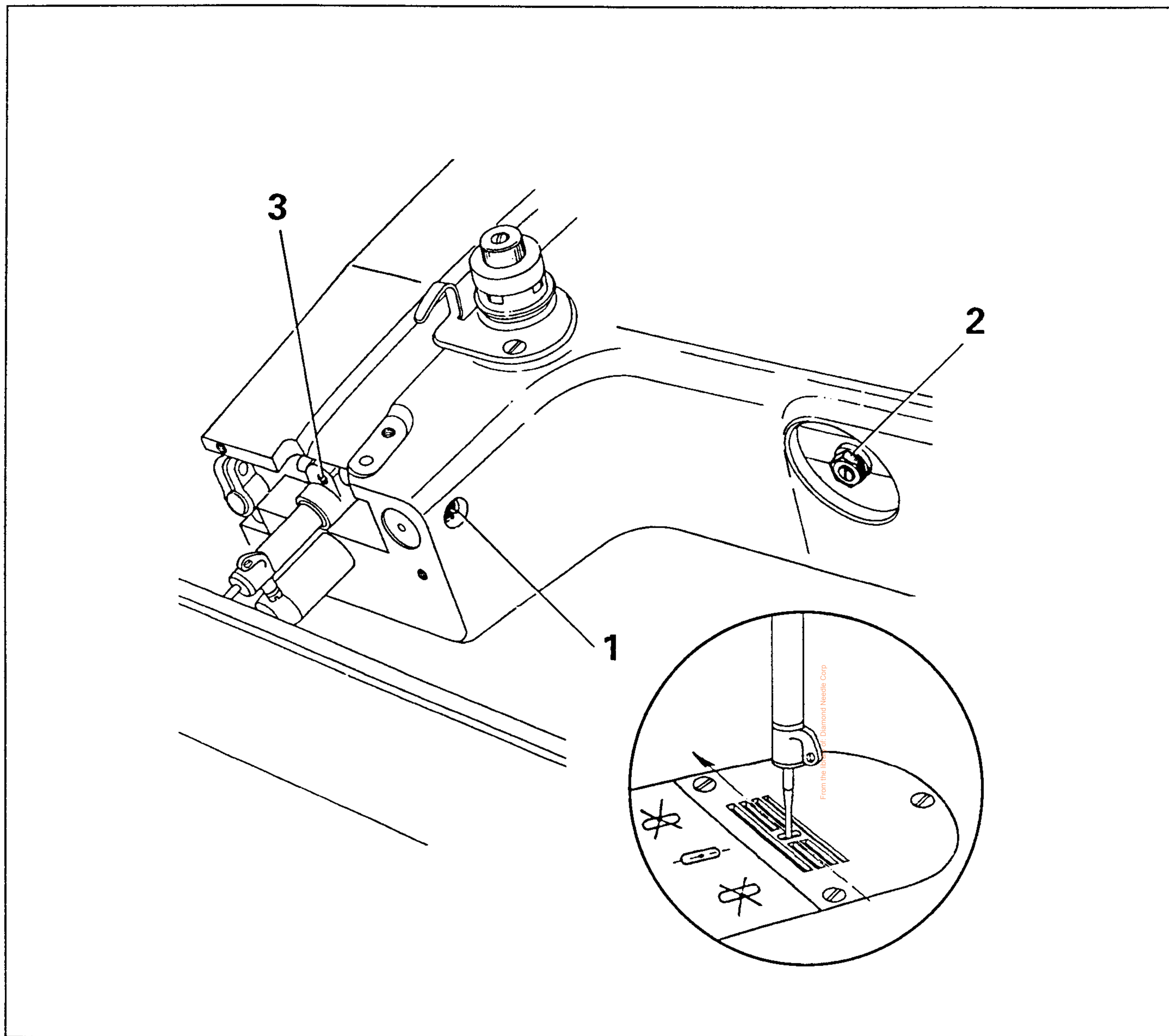


Adjustment holes:

- 1 = 2.0 mm after b.d.c of needle bar
- 2 = t.d.c of needle bar
- 3 = 0.25 mm after t.d.c of needle bar
- 4 = 1.0 mm after t.d.c of needle bar
- 5 = 4.0 mm after b.d.c. of needle bar

2 Centring the needle in the needle hole (in sewing direction)

Setting: When the stitch width is set at "0" and the needle position lever is in its central position the needle must enter the needle hole exactly in the middle (in sewing direction).



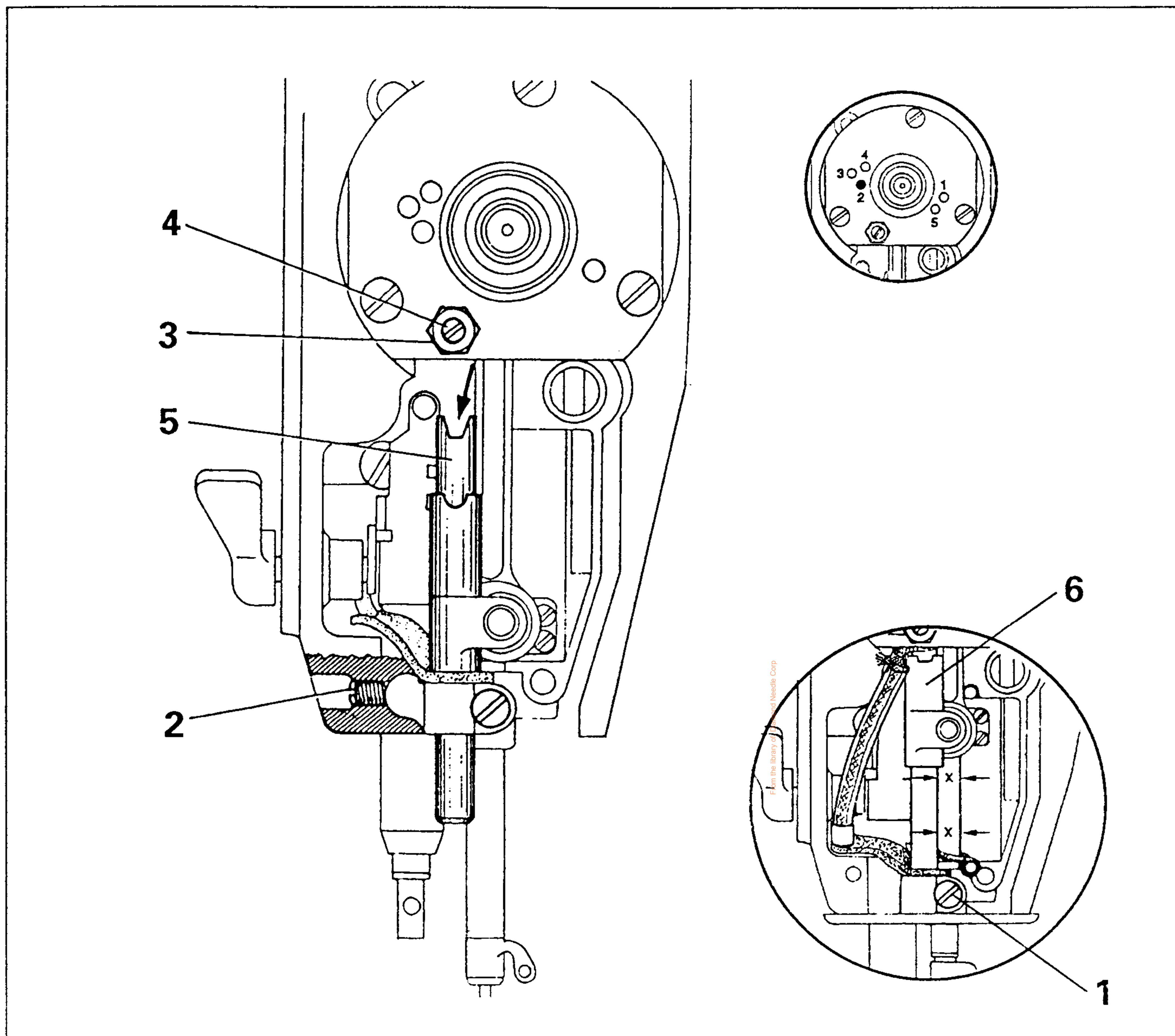
Adjustment:

- 2.1 Set the needle position lever at "centre" and the stitch width lever at "0".
- .2 Bring the needle bar to b.d.c and turn eccentric stud 1 (nut 2, screw 3) according to the setting.

3 Setting the stabilizing rod parallel to the needle bar

Setting: The stabilizing rod 5 must be parallel to the needle bar.

Note: The lobe of eccentric stud 4 must always point downwards.



Adjustment:

- 3.1 Bring the needle bar to t.d.c. and insert pin in hole "2" of the bearing plate (to block the machine).
- .2 Loosen screws 1, 2 and nut 3.
- .3 Make sure that the lobe of eccentric stud 4 points downwards.
- .4 Position the stabilizing rod 5 so that the recess at its top end (see arrow) touches eccentric stud 4. Turn eccentric stud 4 according to the setting and tighten it with nut 3.

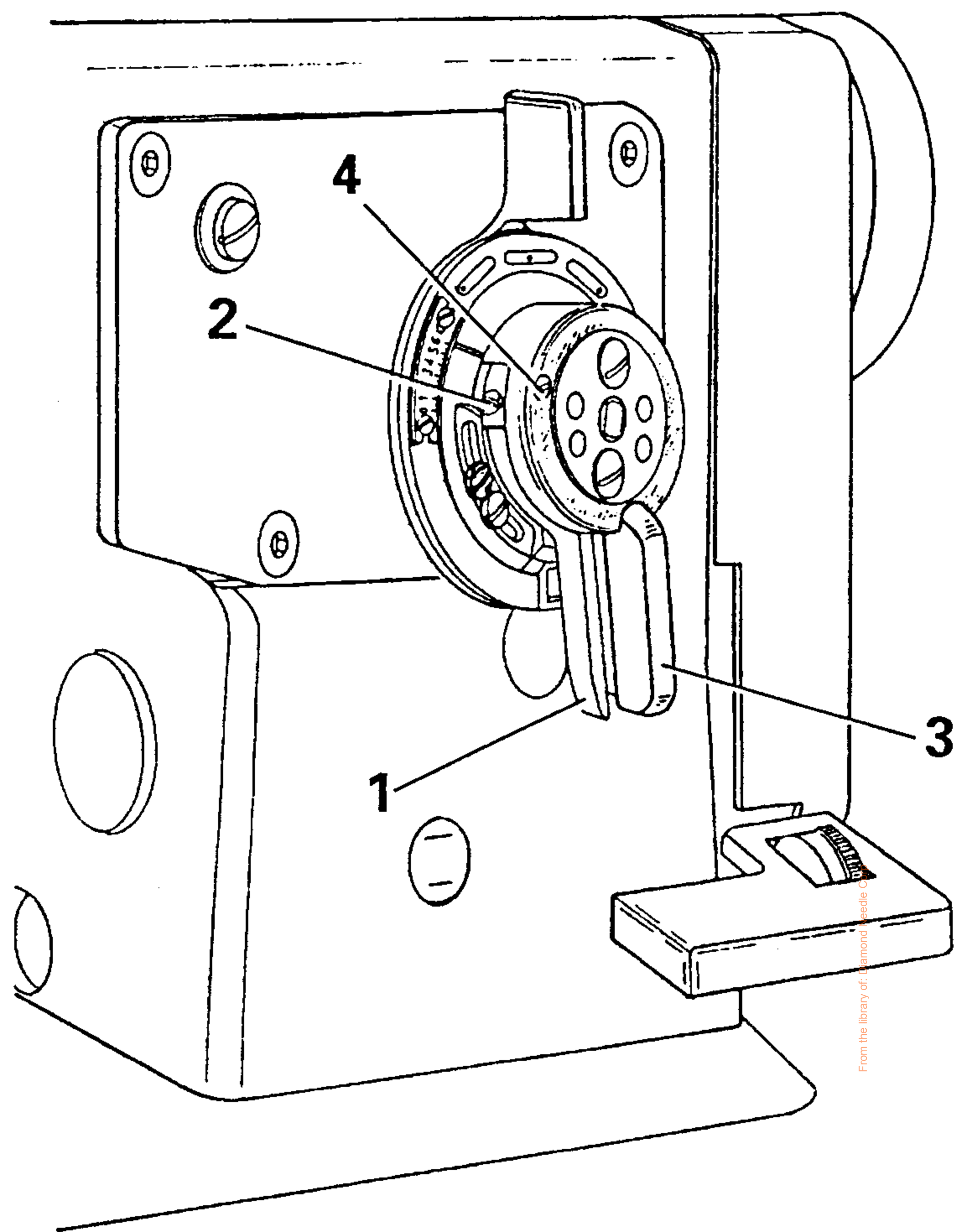
Check:

- .5 Pull stabilizing rod 5 down and then push it up again as far as it will go, making sure that guide 6 does not move to the side (if necessary readjust eccentric stud 4 accordingly).
- .6 Position stabilizing rod 5 so that it touches eccentric stud and tighten screw 1 securely.
- .7 Remove the cylindrical pin from the hole in the bearing plate and tighten screw 2.

4 Stitch width control

4.1 Adjusting the locking lever

Setting: The stitch width lever 3 can be locked in any position.

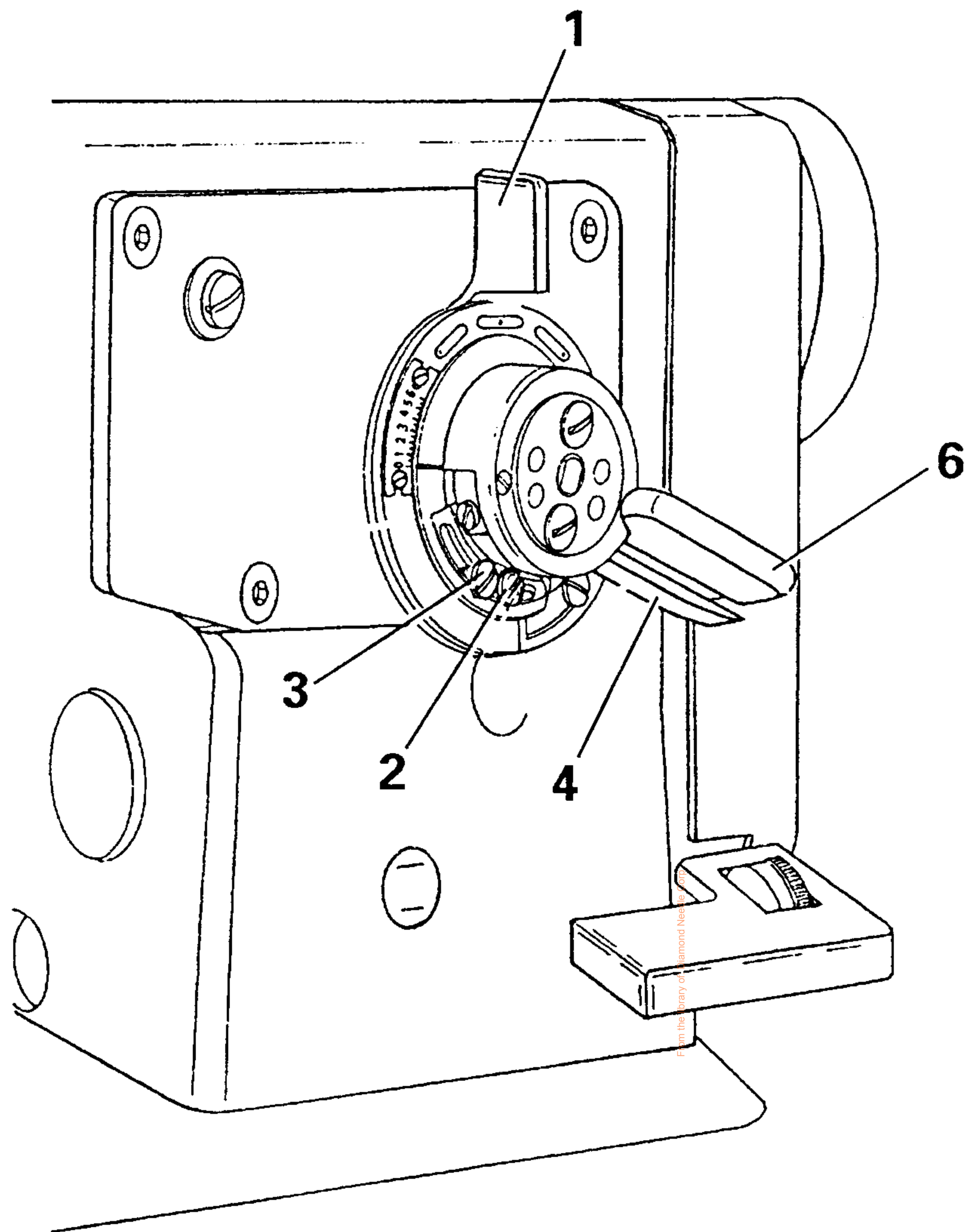


Adjustment:

- 4.1.1 Push locking lever 1 (screw 2) forward until it presses against stitch width lever 3. Use a screwdriver to turn hinge stud 4 until the locking lever has the right amount of play . (The locking lever 1 must be more or less parallel to stitch width lever 3.)

4.2 Zeroing the needle for straight stitching

Setting: With the zigzag control set at "0" the needle bar must not move to the side when turning the balance wheel.

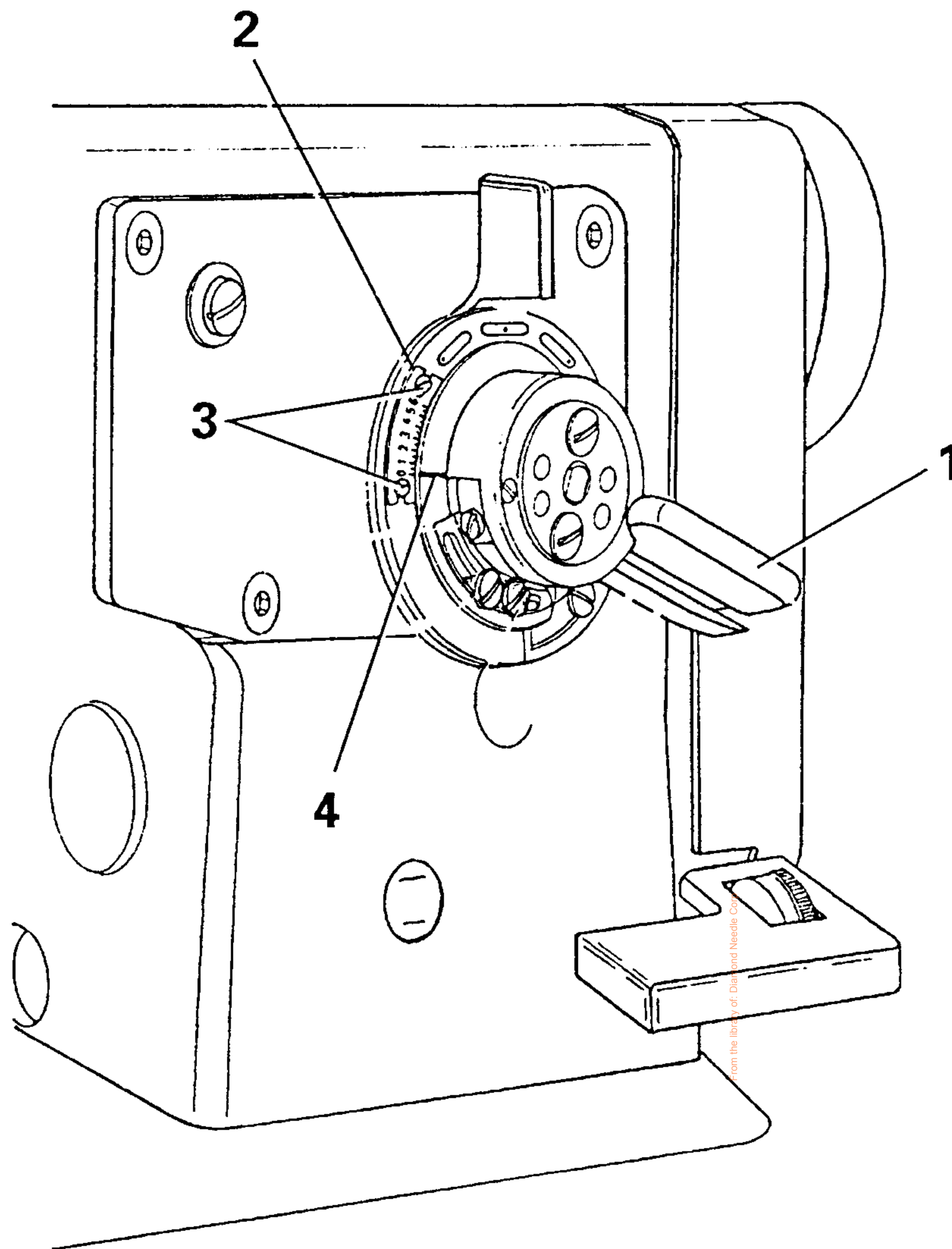


Adjustment:

- 4.2.1 Set needle position lever at its central position.
- .2 Loosen screws 2 and 3.
- .3 Move stitch width lever 6 as far as it will go towards "0".
- .4 Let the machine run, press locking lever 4 as far as it will go towards the stitch width lever 6 and move it together with the stitch width lever 6 that much towards the maximum position that the needle bar stops swinging sideways.
- .5 Switch off machine and tighten screw 2.
- .6 Screw 3 remains loose until the adjustment in chapter 4.4 is carried out.

4.3 Stitch width scale

Setting: When the zigzag control is set at "0" the zero mark on the stitch width scale 2 must be opposite mark 4.

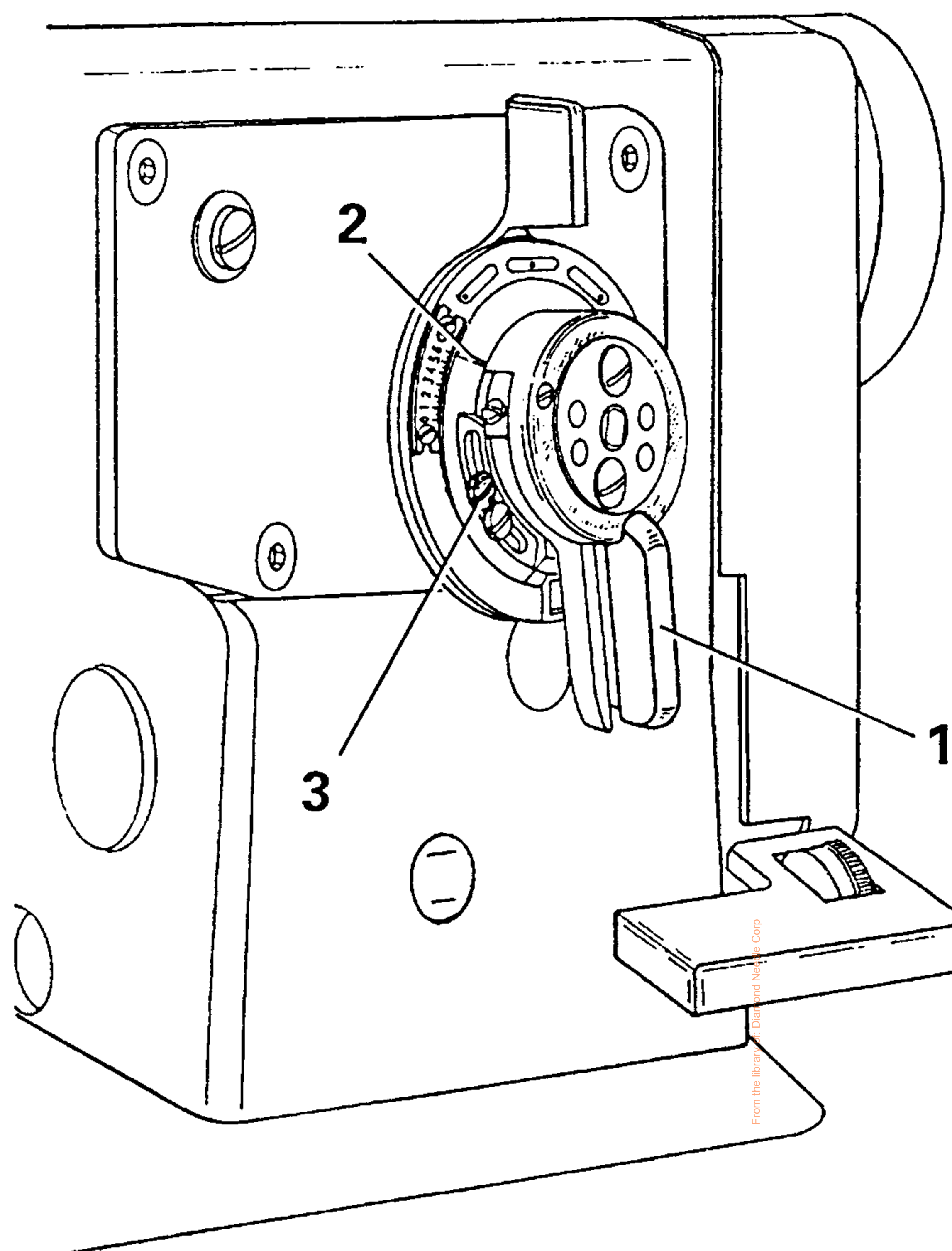


Adjustment:

- 4.3.1 Move stitch width lever 1 as far as it will go towards "0".
- .2 Move stitch width scale 2 (screws 3) according to the setting.

4.4 Limiting the maximum stitch width

Setting: When the maximum stitch width is set, mark 2 of the stitch width lever must be opposite the maximum stitch width mark on the stitch width scale.



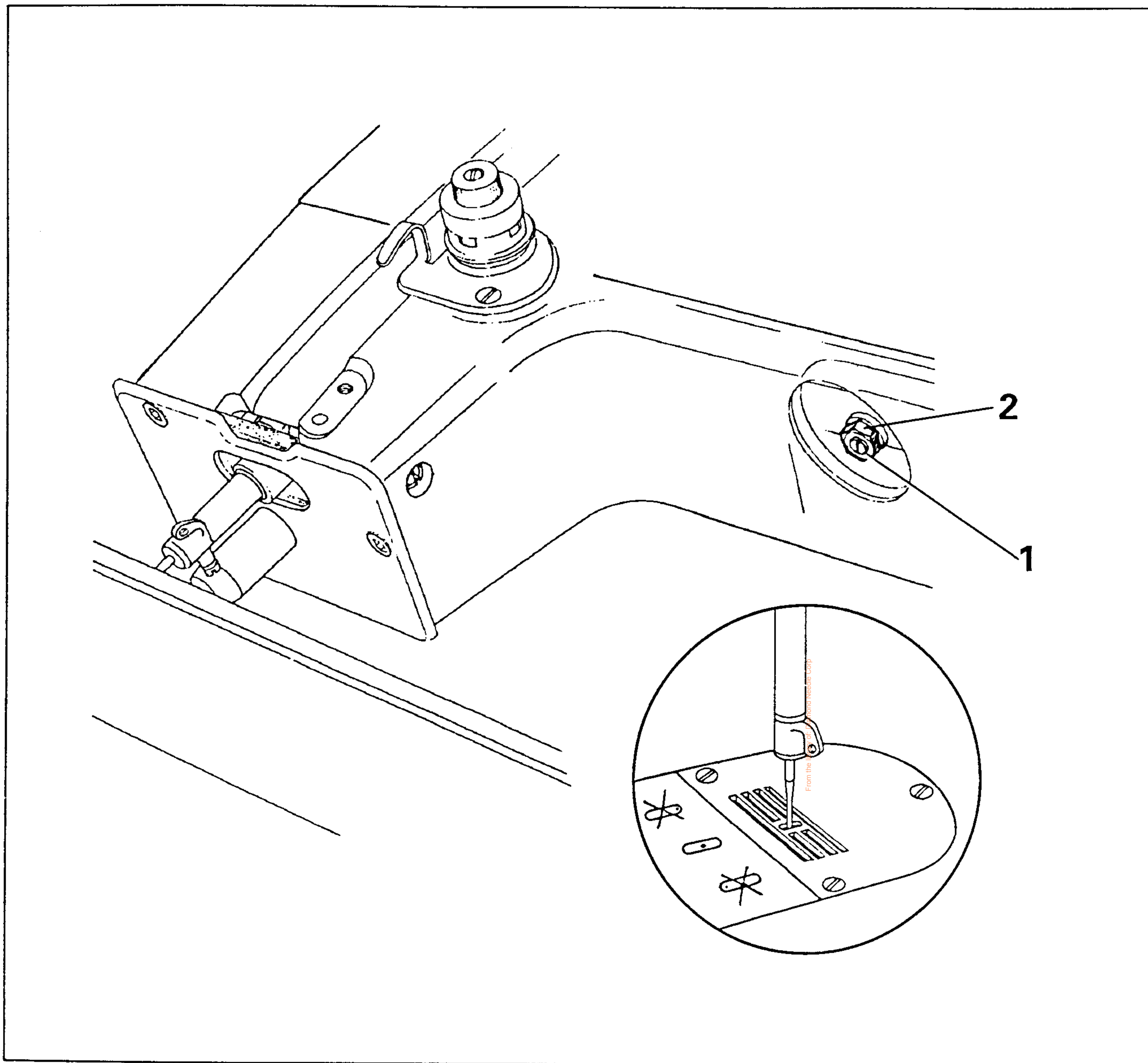
Adjustment:

- 4.4.1 Move stitch width lever 1 (screw 3) according to the setting towards the maximum position.

Note: If the machine is equipped with a needle plate whose hole is smaller than the widest stitch width indicated on the scale, limit the stitch width according to the width of the needle hole rather than the graduation mark on the stitch width scale.

5 Centring the needle in the needle hole (sideways)

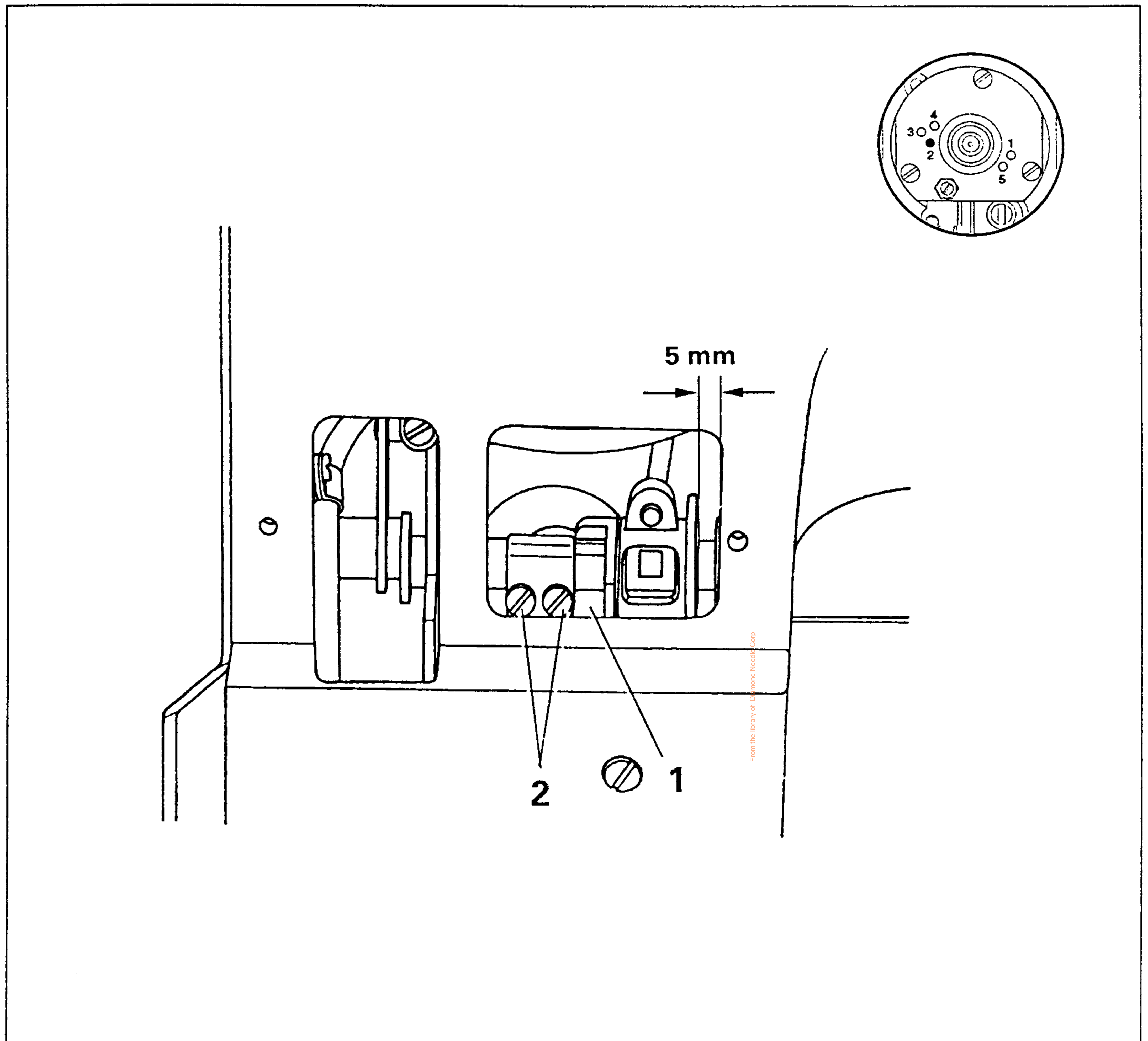
Setting: When the stitch width lever is turned to "0" and the needle position lever is in its central position the needle should enter the needle hole exactly in the middle (sideways).



Adjustment:

- 5.1 Turn eccentric stud 1 (nut 2) according to the setting.

Setting: When the needle bar rises from the bottom position on the right of its throw to t.d.c. (pin in hole 2) it must not move to the side when the stitch width lever is moved to and fro.

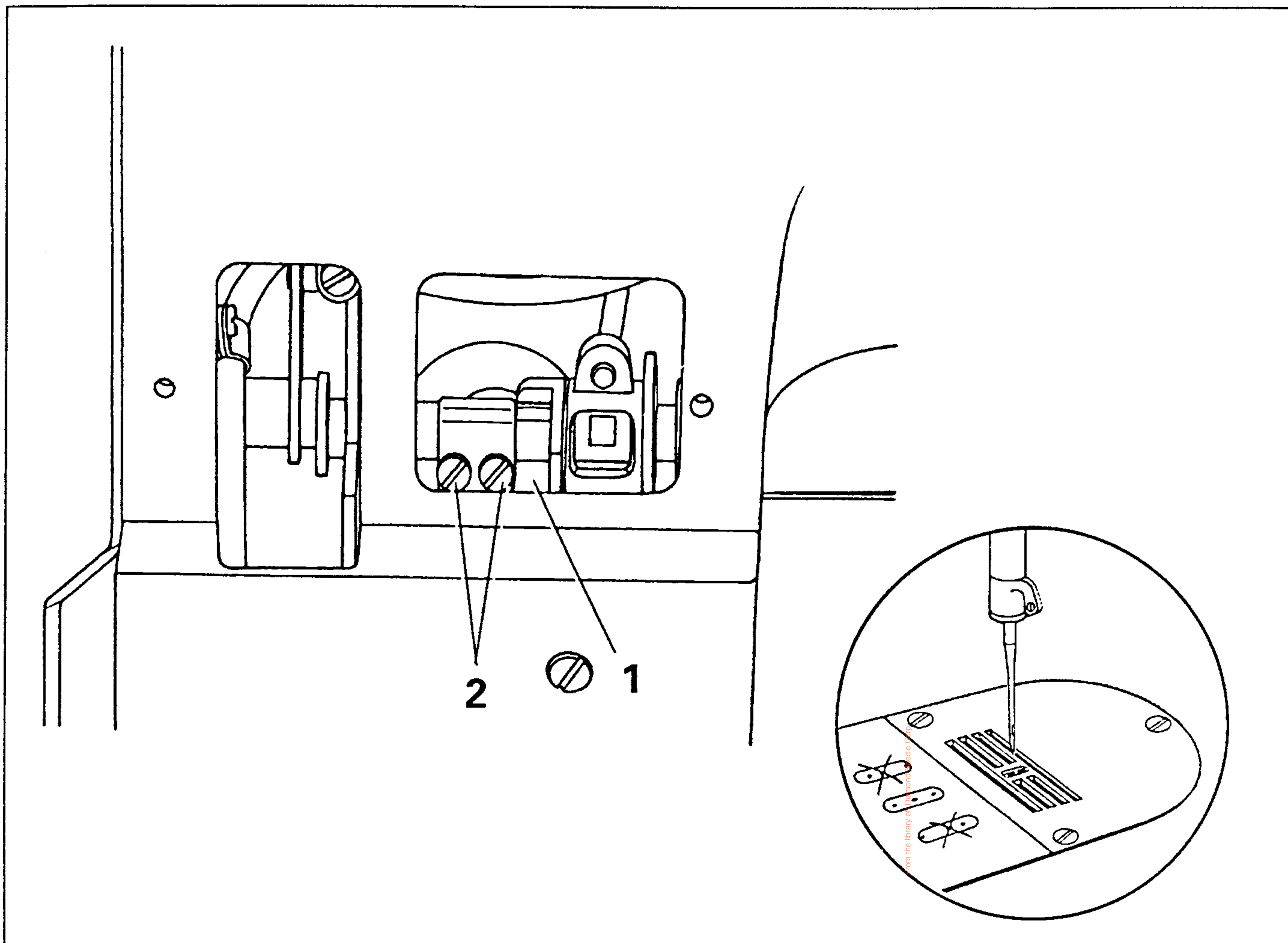


Adjustment:

- 6.1 Bring the needle bar from the bottom position on the right of its throw to t.d.c. Insert cylindrical pin in hole "2" of the bearing plate (to block the machine).
- .2 Turn needle vibrating eccentric 1 (screws 2) according to the setting. Make sure that there is a clearance of abt. 5.0 mm between it and the right wall of the casting.
- .3 Remove cylindrical pin from the bearing plate.

Note: On machines equipped with zigzag control -716/..., see page 37.

Setting: When the stitch width lever is set at "0" the needle must enter the needle hole in the centre. When the maximum stitch width is set the right and left positions of the needle in the needle hole should be equidistant from the centre.



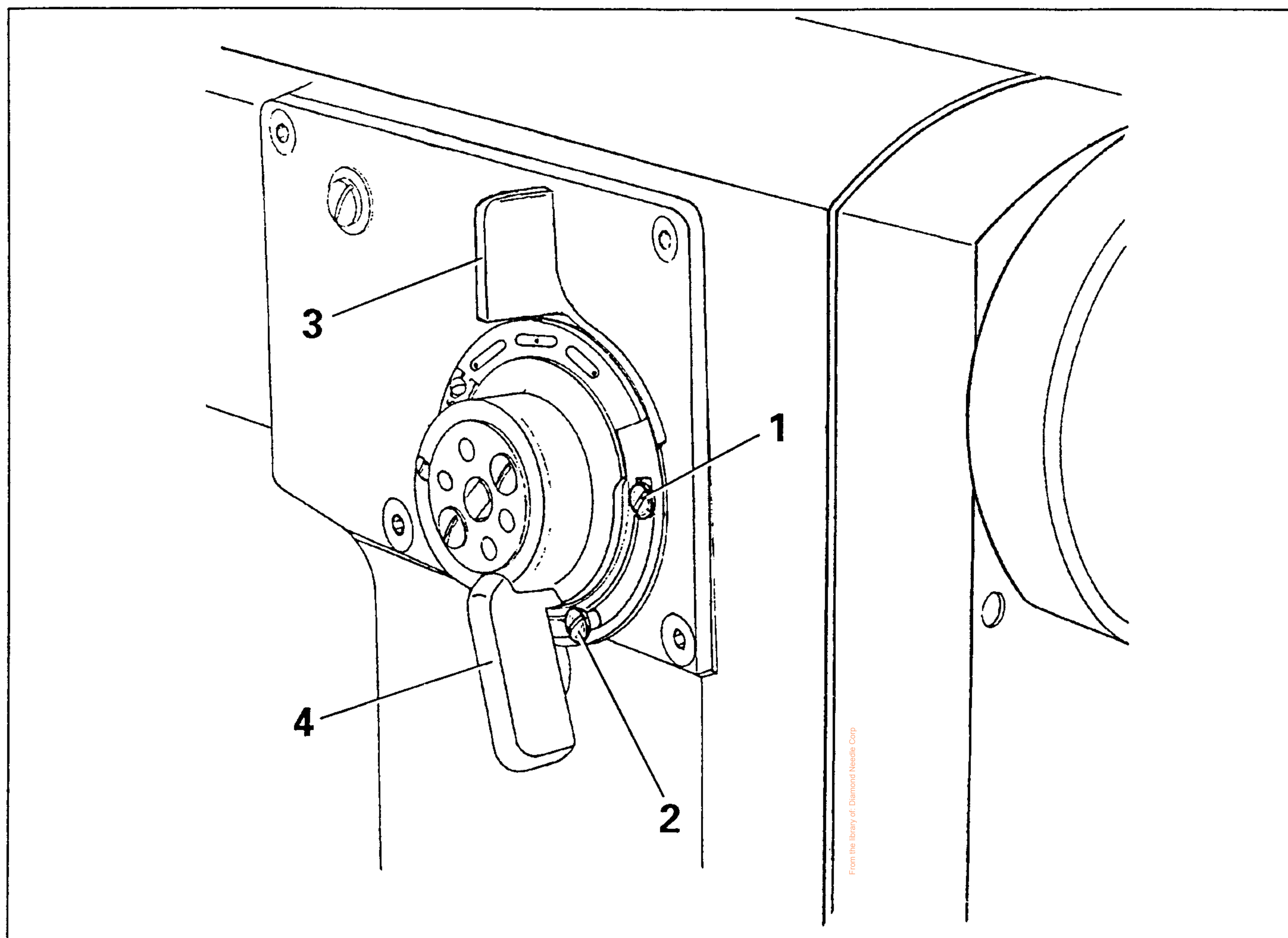
Adjustment:

- 7.1 Turn the stitch width lever to the required stitch width and let the needle pierce a piece of paper.
- .2 Move needle vibrating eccentric 1 according to the setting (screws 2); making sure that the eccentric is not rotated in the process.

Note: On machines equipped with zigzag control -716/.., see page 38.

8 Adjusting the needle position lever

Setting: The left and right throws of the needle must be the same both at the widest stitch setting and at the left and right needle positions.

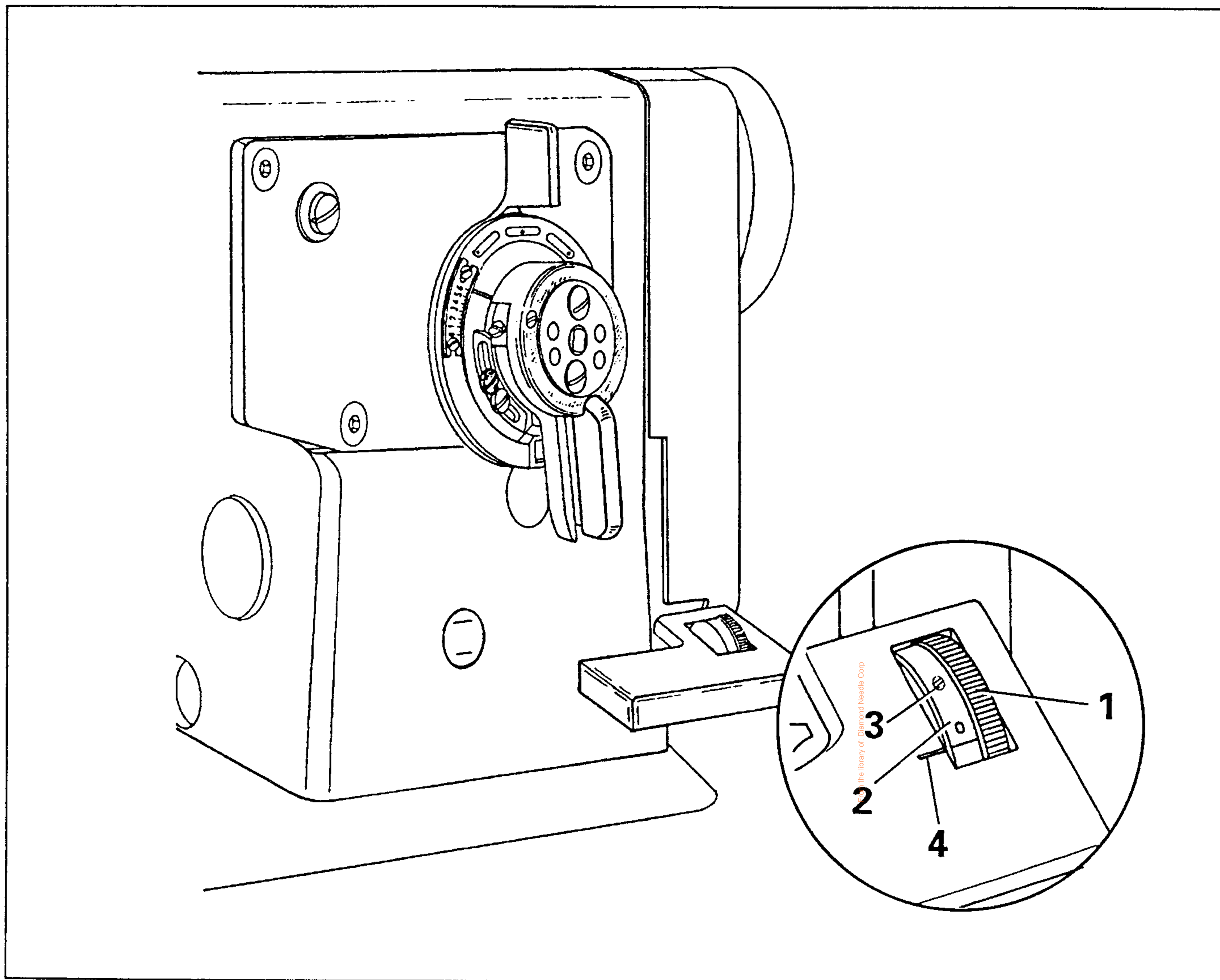


Adjustment:

- 8.1 Loosen screws 1 and 2.
- .2 Turn needle position lever 3 to its central position and stitch width lever 4 to the maximum stitch width.
- .3 Turn the balance wheel in its normal direction of rotation until the descending needle is positioned above the left end of the needle hole.
- .4 Fix a piece of paper over the needle hole. Turn the balance wheel in its normal direction of rotation and let thus the needle pierce the paper.
- .5 Turn the balance wheel in the opposite direction and let the needle pierce the paper again.
- .6 Turn stitch width lever 4 to "0" and push needle position lever 3 to the right until the point of the needle is positioned exactly above the hole last made in the paper.
- .7 Push screw 2 against its stop and tighten it firmly.
- .8 Push needle position lever 3 to the left until the point of the needle is positioned exactly above the left hole in the paper.
- .9 Push screw 1 against its stop and tighten it firmly.

Note: On machines equipped with zigzag control -716/.., see page 40.

Setting: When the stitch length is set at "0" the "0" mark must be in line with graduation mark 4.



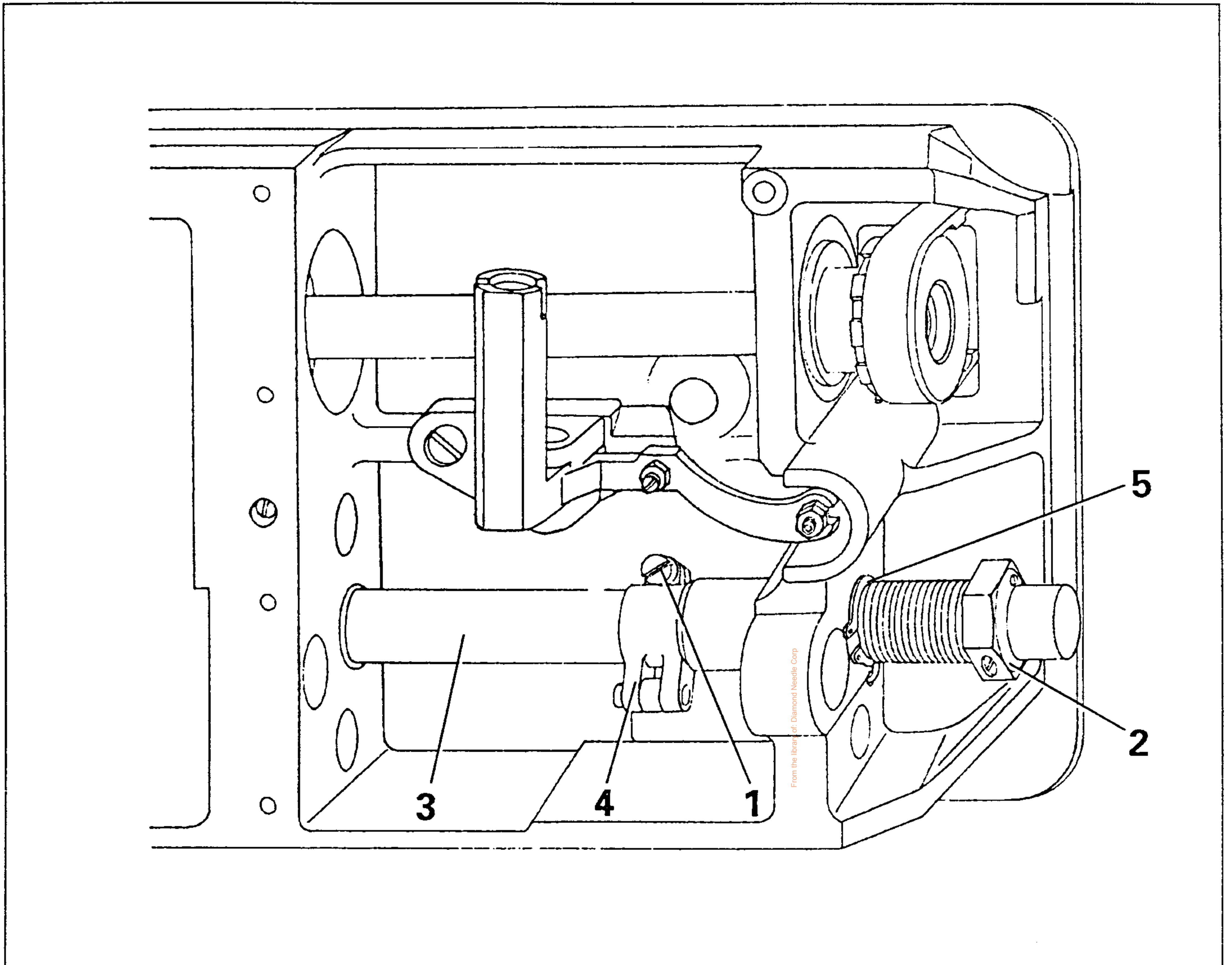
Adjustment:

- 9.1 Turn milled wheel 1 as far as it will go in the direction in which the reverse-feed control moves downwards.
- .2 Turn scale ring 2 (screw 3) according to the setting.

10 Zeroing the bottom feed

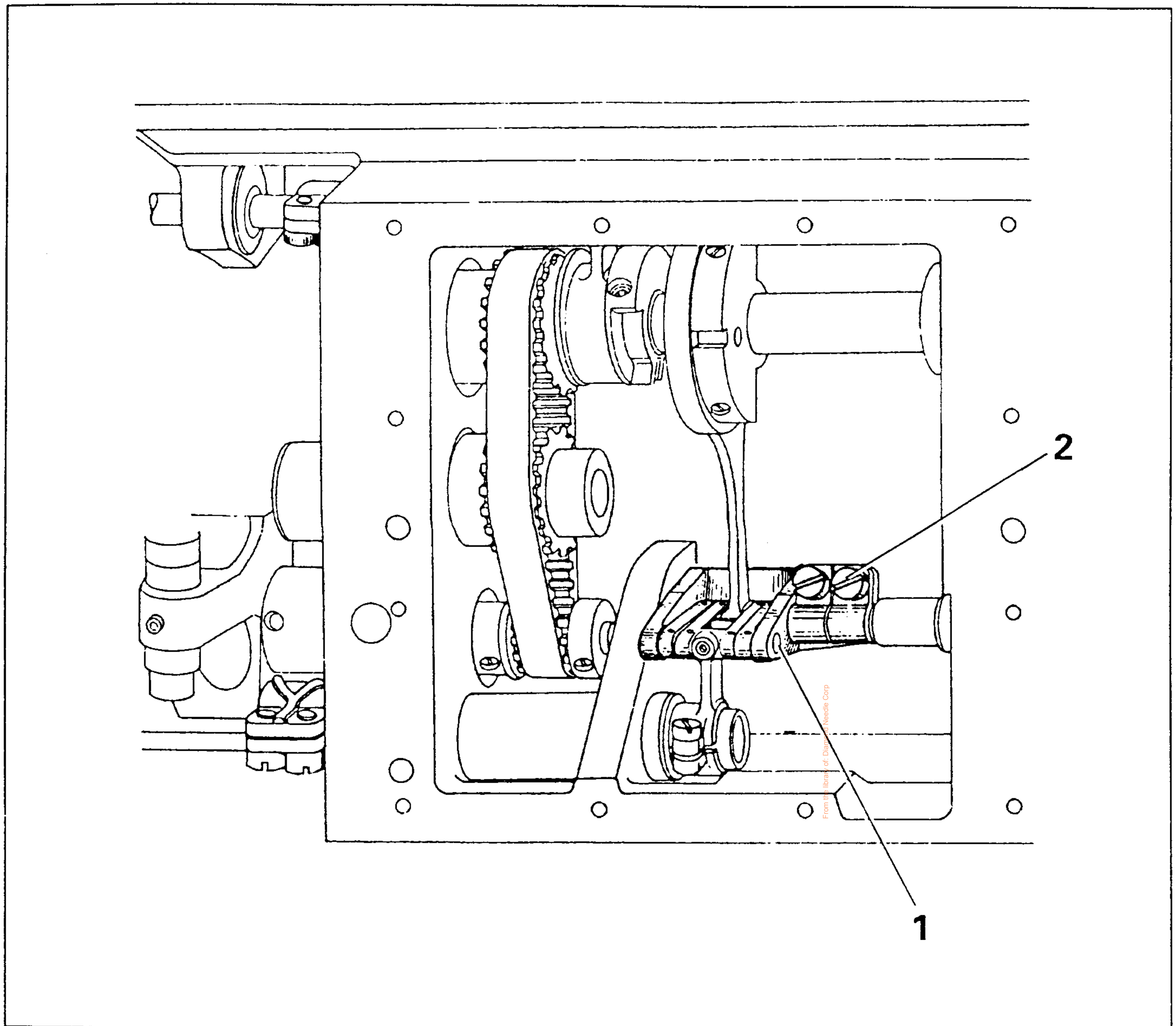
Setting: When the stitch length is set at "0" the feed dog must not move forward when the balance wheel is turned.

10.1 Adjustment with closed gearcase



Adjustment:

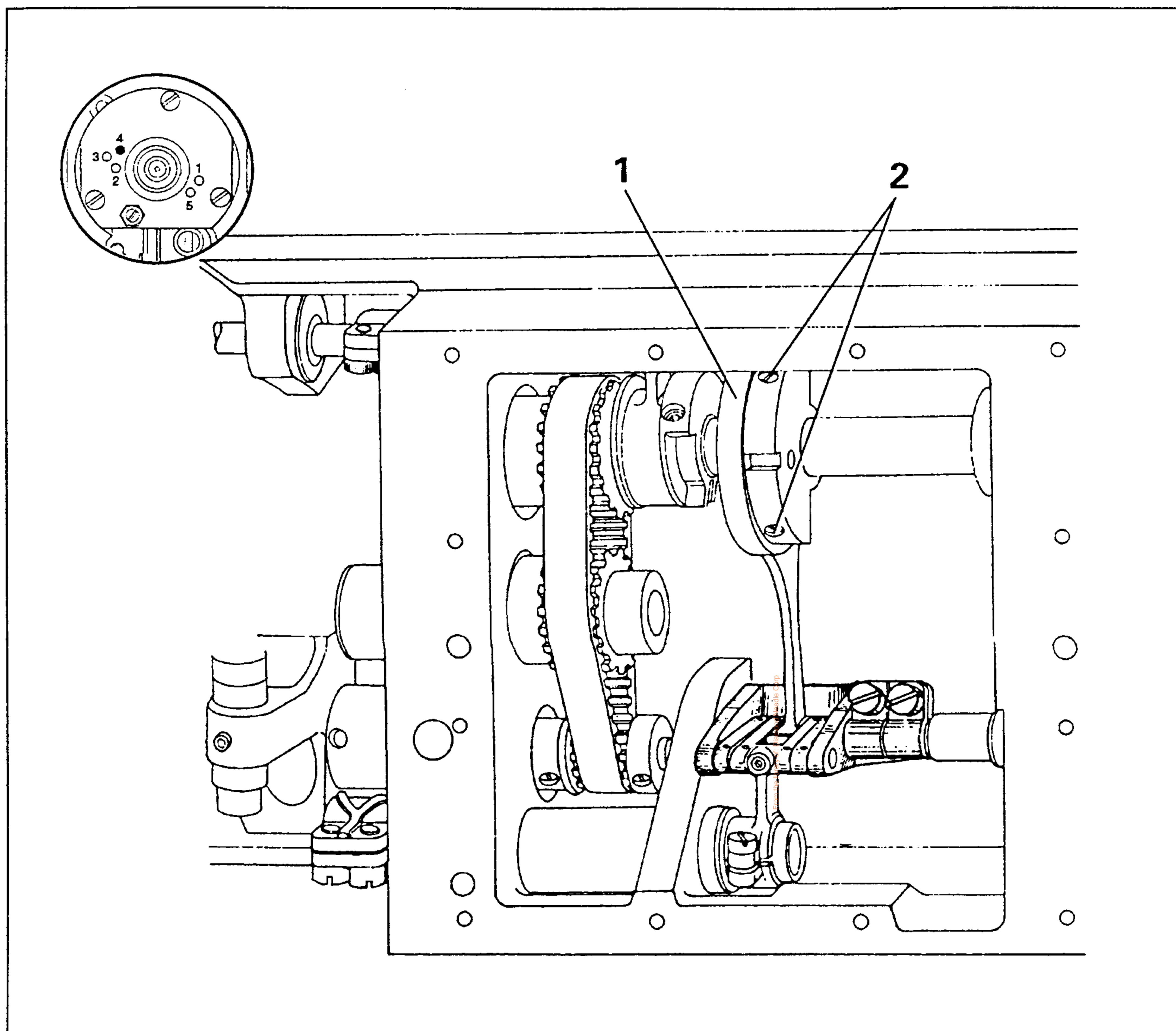
- 10.1.1 Loosen screw 1.
- .2 Place a 27-mm wrench on the torsion nut 2 and thus hold actuating shaft 3 firmly in position.
- .3 Keep rotating the balance wheel and turn the wrench on the torsion nut according to the setting.
- .4 Position actuating crank 4 and circlip 5 so that they touch casting and tighten screw 1.



Adjustment:

- 10.2.1 Set stitch length at "0".
- .2 Turn the balance wheel and at the same time turn feed shaft crank 1 (screw 2) according to the setting.

Setting: When the machine is set for its longest stitch and the needle bar is positioned 1.0 mm beyond its t.d.c. (pin in hole 4) the feed dog must not move when the reverse-feed control is operated.



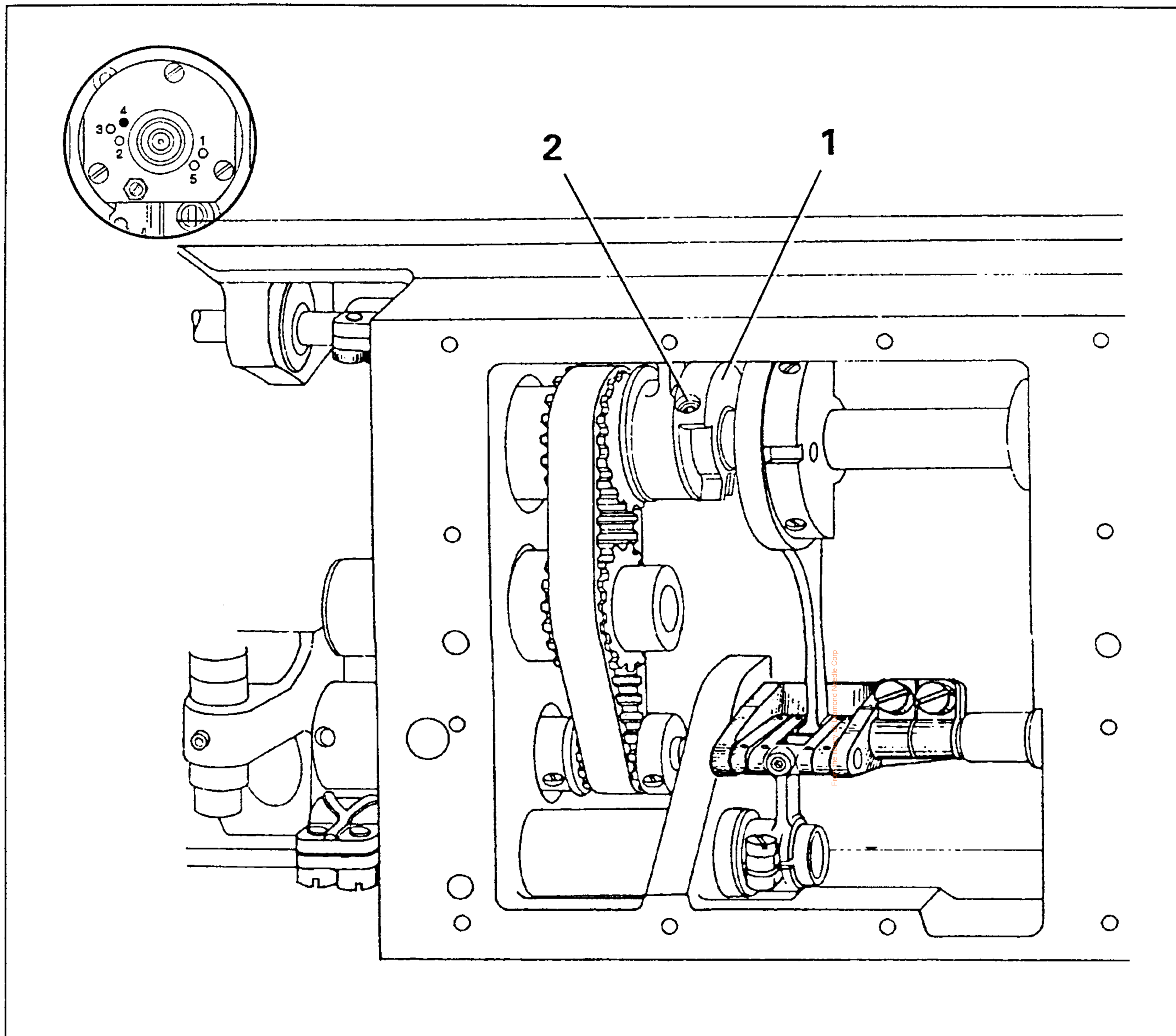
Adjustment:

- 11.1 Position needle bar 1.0 mm beyond its t.d.c. and insert cylindrical pin in hole 4 of the bearing plate (to block the machine).
- .2 Set the machine for its longest stitch.
- .3 Move the reverse-feed control up and down and turn feed driving eccentric 1 (screws 2) according to the setting - without moving it along the shaft.
Make sure that the notch on the eccentric is visible.
- .4 Remove the cylindrical pin from the bearing plate.

12 Bottom feed lifting motion

12.1 On PFAFF 918 and 938

Setting: When the stitch length is set at "0" and the needle bar is positioned 1.0 mm beyond its t.d.c. (cylindrical pin in hole 4) the feed dog must be at its t.d.c.

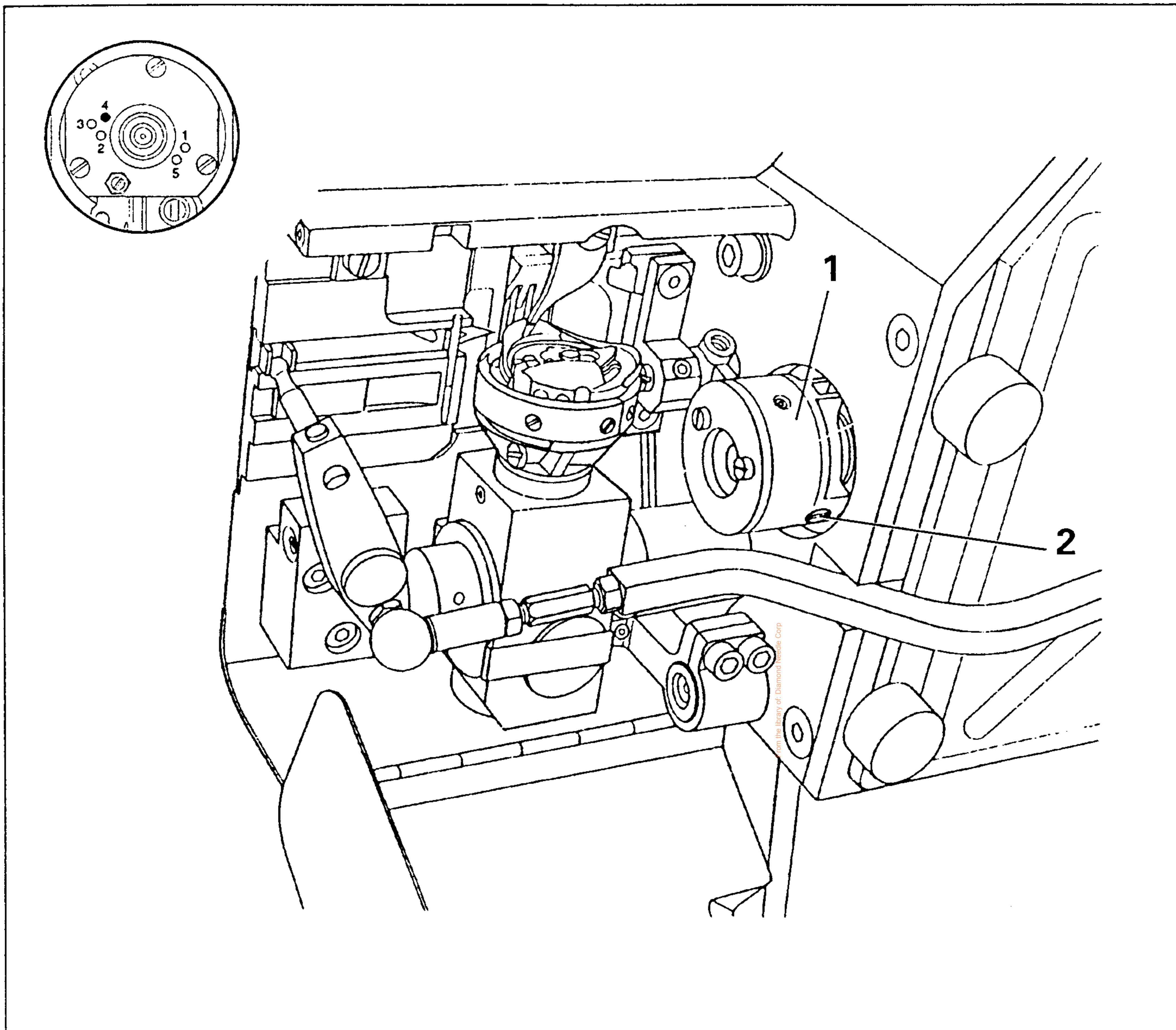


Adjustment:

- 12.1.1 Set the stitch length at "0".
- .2 Position needle bar 1.0 mm beyond its t.d.c. and insert cylindrical pin in hole "4" of the bearing plate (to block the machine).
- .3 Turn feed lifting eccentric 1 (screws 2) according to the setting making sure that it does not move along the shaft.
- .4 Remove the cylindrical pin from the bearing plate.

12.2 On PFAFF 838

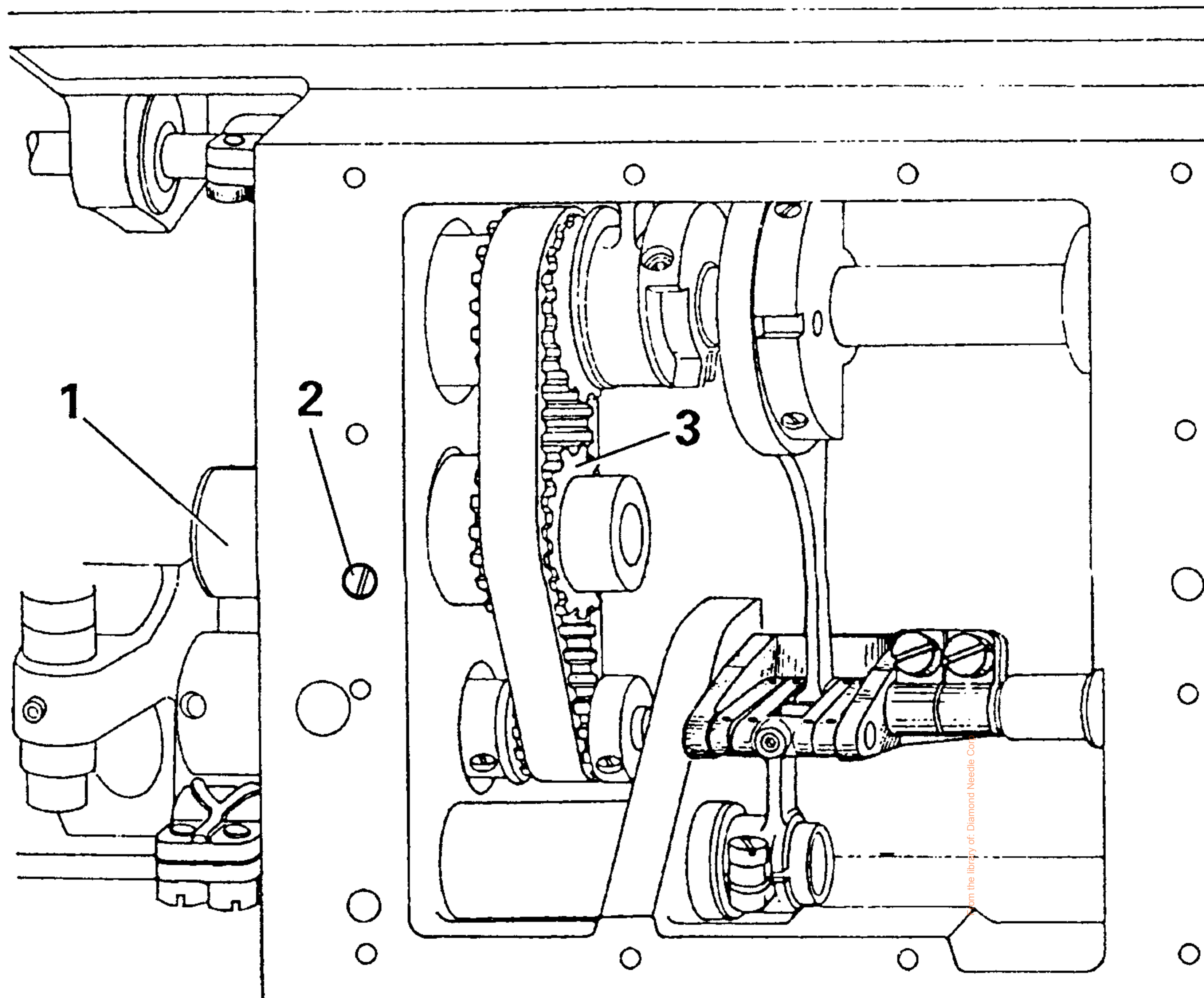
Setting: When the stitch length is set at "0" and the needle bar is positioned 1.0 mm beyond its t.d.c. (pin in hole 4) the feed dog must be at its t.d.c.



Adjustment:

- 12.2.1 Set the stitch length at "0".
- .2 Position needle bar 1.0 mm beyond its t.d.c and insert cylindrical pin in hole "4" of the bearing plate (to block the machine).
- .3 Turn feed lifting eccentric 1 (screws 2) according to the setting making sure that it does not move along the shaft.
- .4 Remove the cylindrical pin from the bearing plate.

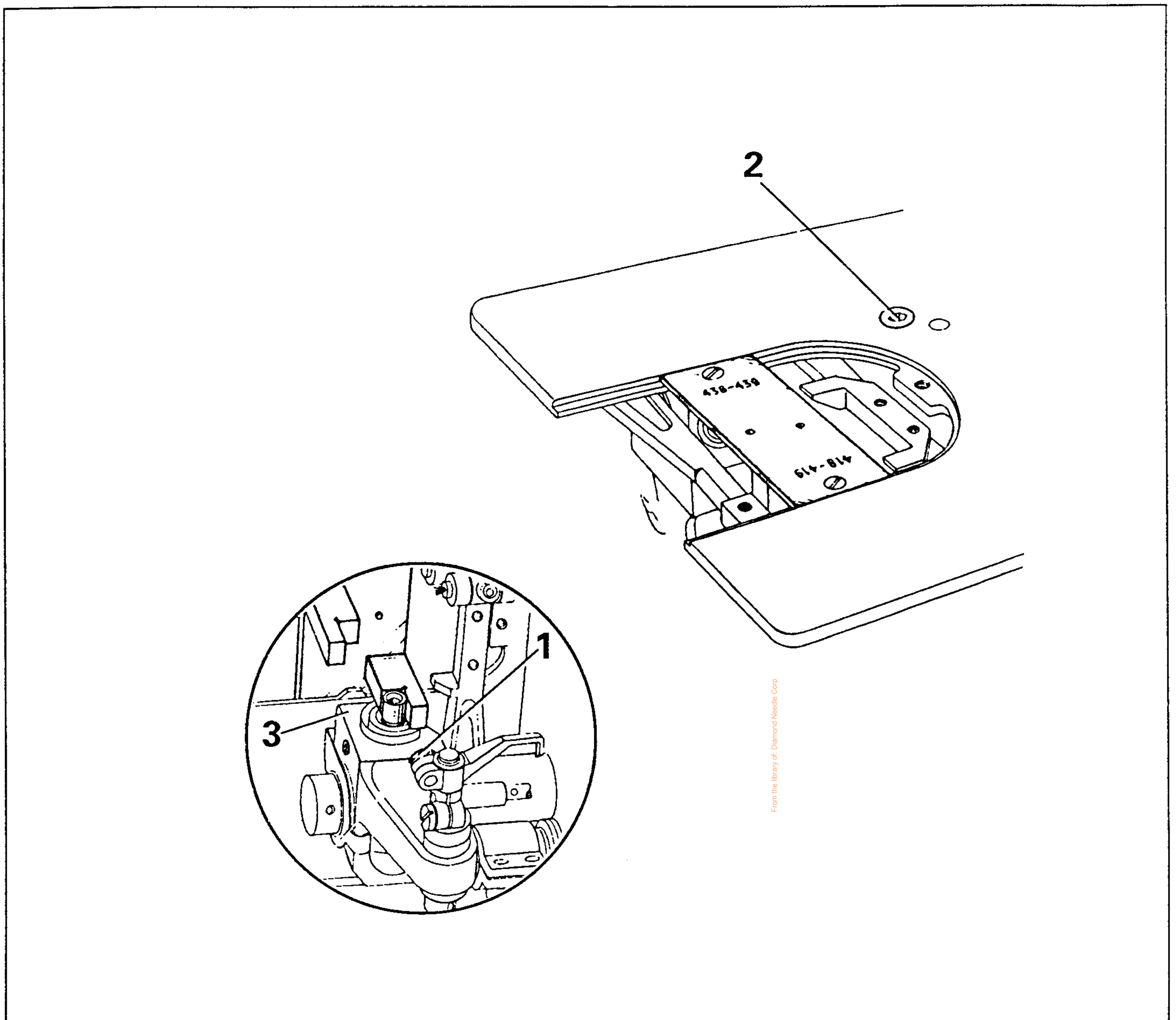
Setting: The driving belt must be tensioned so that the gears have no backlash, but the machine does not bind.



Adjustment:

- 13.1 Move eccentric bushing 1 (screws 2) until the driving belt is positioned in the middle of the bobbin case opener driving gear 3.
- .2 Making sure that the bushing 1 is not moved, turn it according to the setting (screw 2).

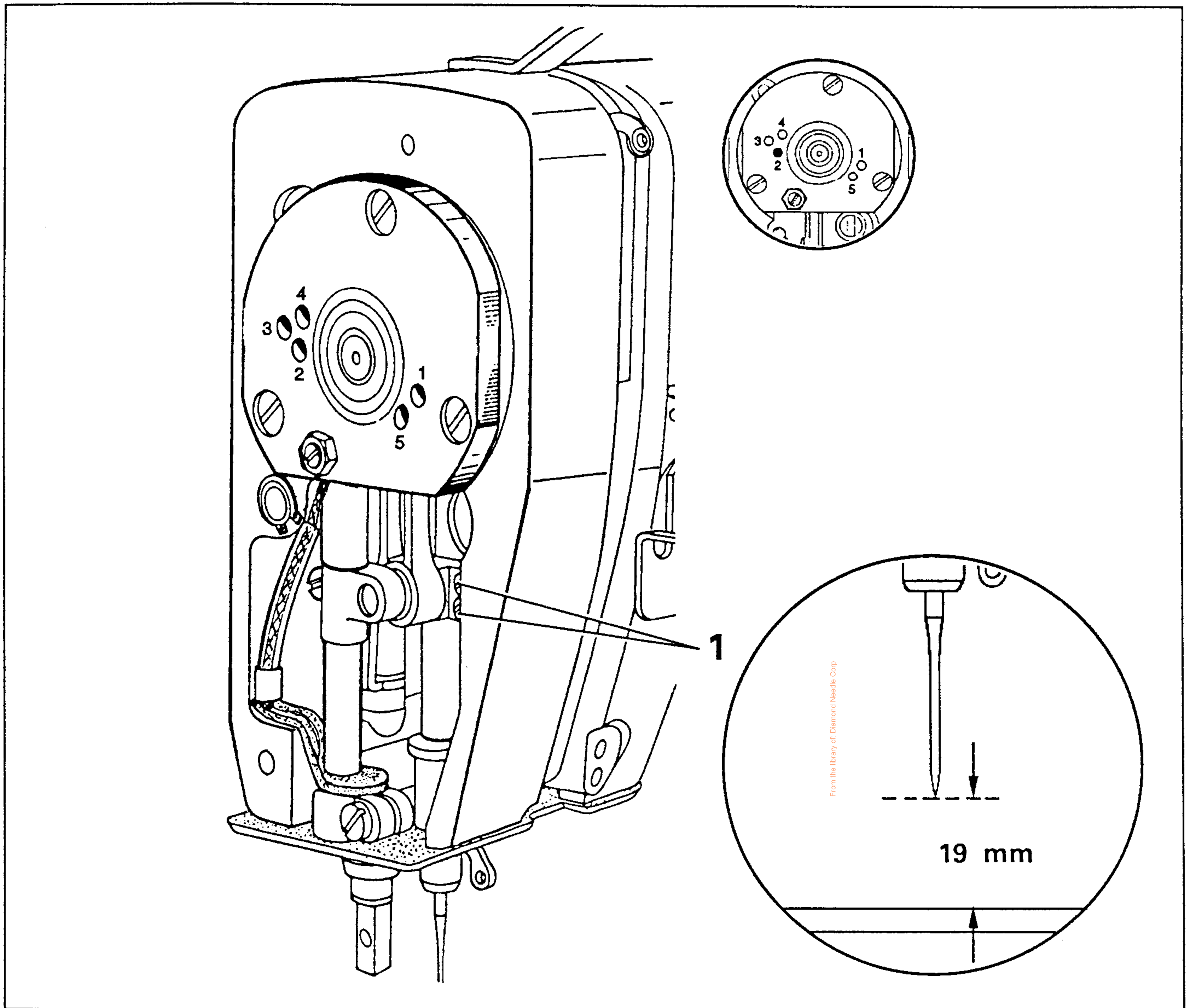
Setting: The hook shaft must contact both the vertical and horizontal surfaces of the hook bearing bracket gauge.



Adjustment:

- 14.1 Swing the bobbin case opener to the right (screw 1) and remove the sewing hook.
- .2 Loosen screw 2 and release the taper key underneath this screw by tapping the head of the screw lightly with a hammer.
- .3 Screw on hook bearing bracket gauge.
Make sure that on **PFAFF 938** machines numbers "438-439" and on **PFAFF 918** machines numbers 418-419 can be read from the front.
- .4 Move and turn the hook bearing bracket 3 according to the setting and tighten screw 2.
- .5 Unscrew hook bearing bracket gauge.

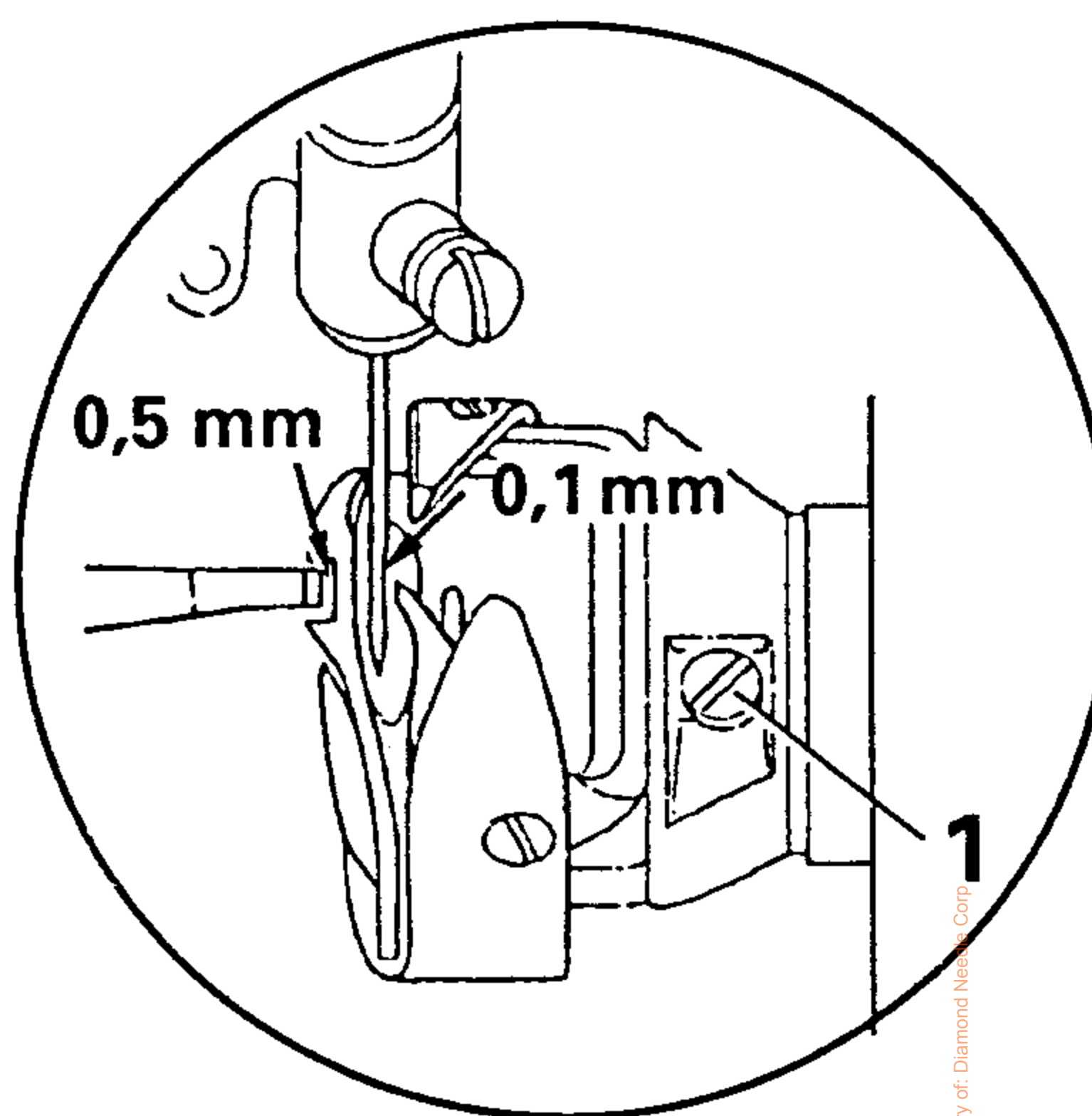
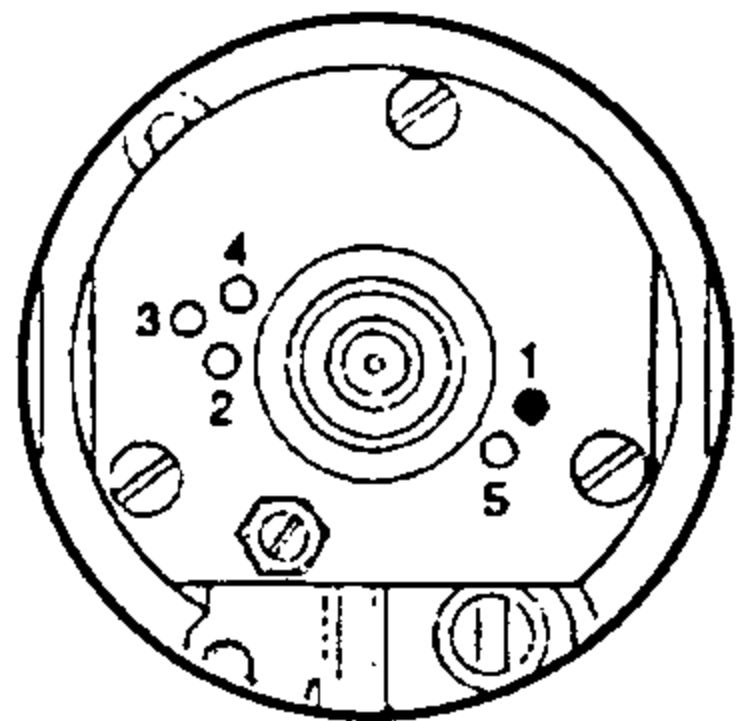
Setting: When the needle bar is set at t.d.c. (pin in hole "2") there must be a clearance of **19 mm** between needle point and needle plate.



Adjustment:

- 15.1 Bring the needle bar to t.d.c. and insert the cylindrical pin in hole "2" of the bearing plate (to block the machine).
- .2 Adjust the needle bar (screws 1) according to the setting without turning it.

Setting: With the needle position lever in its central position, the stitch width lever at "0" and the needle bar at a position **2 mm beyond b.d.c.** (pin in hole 1) the hook point must be exactly opposite the centre line of the needle. Also, in this position, there should be a clearance of **less than 0.1 mm** between the hook point and the needle.

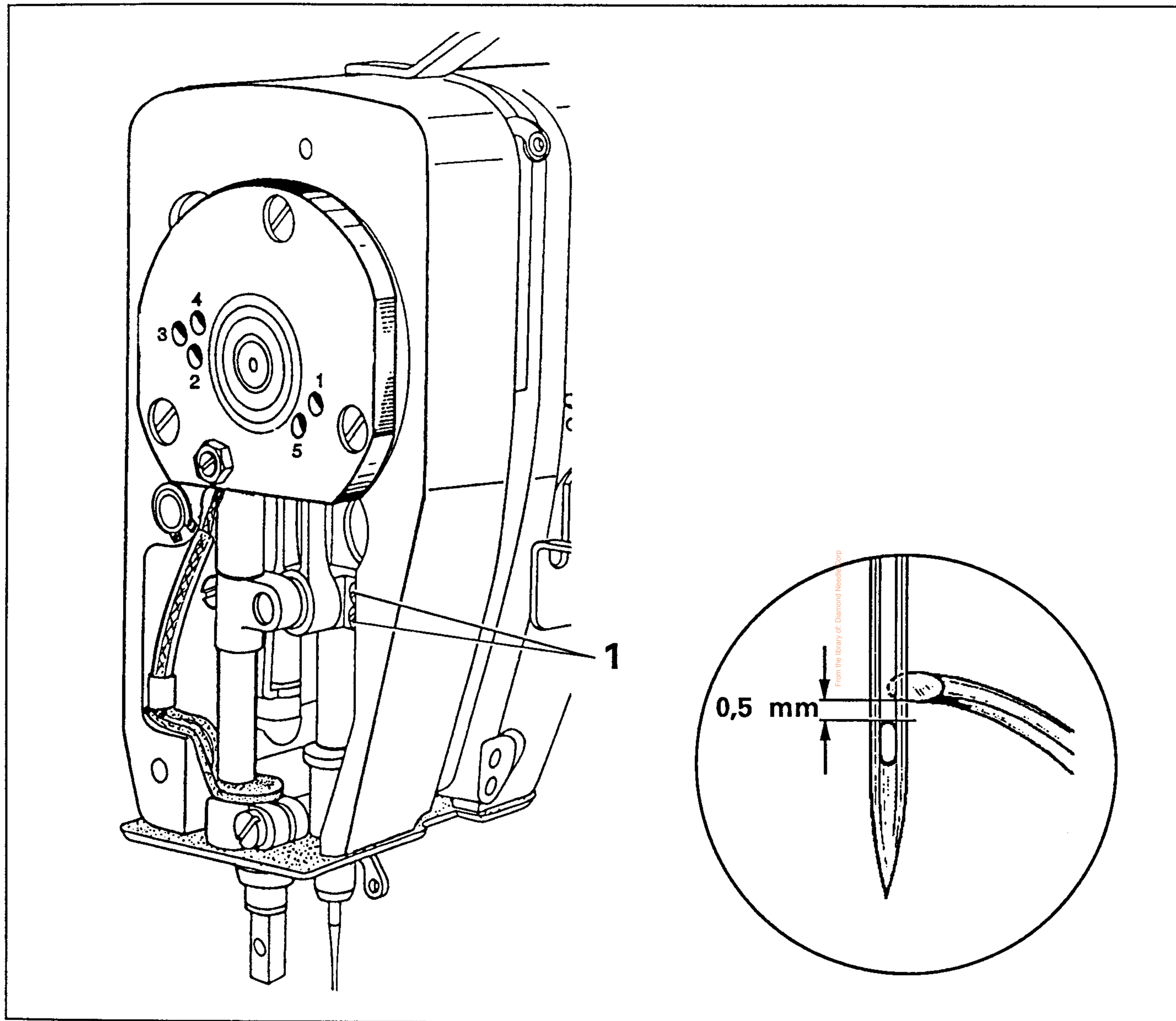


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Adjustment:

- 16.1 Bring the needle bar to a position 2.0 mm beyond b.d.c. and insert the cylindrical pin in hole "1" of the bearing plate (to block the machine).
- .2 Set the stitch width lever at "0" and the needle position lever at its central position.
- .3 Position the point of the sewing hook (screws 1) opposite the centre line of the needle and adjust the hook according to the setting.
- .4 Screw on the bobbin case position finger so that it is positioned in the slot of the bobbin case base and that there is a clearance of **0.5 mm** between its front edge and the bobbin case base.
- .5 Remove the cylindrical pin from the bearing plate.

Setting: With the stitch width lever at "0", the needle position lever at its left position, and the hook point positioned exactly opposite the centre line of the needle, the top of the needle eye must be positioned 0.5 mm underneath the bottom edge of the hook point.



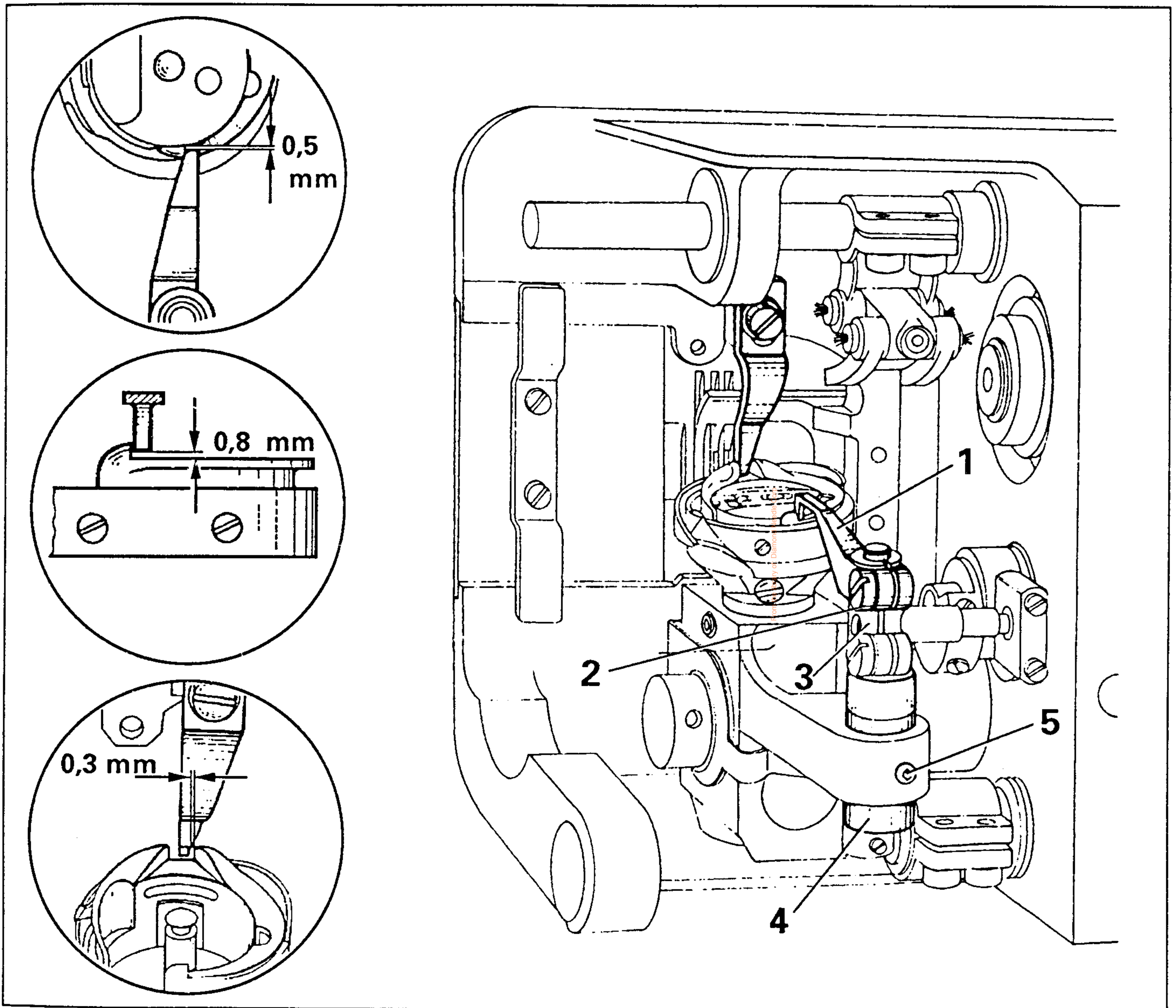
Adjustment:

- 17.1 Set the needle position lever to its left position and the stitch width lever at "0".
- .2 Position the hook point opposite the centre line of the needle.
- .3 Move the needle bar (screws 1) according to the setting without turning it.

18 Bobbin case opener (not on PFAFF 838)

18.1 Position of bobbin case opener

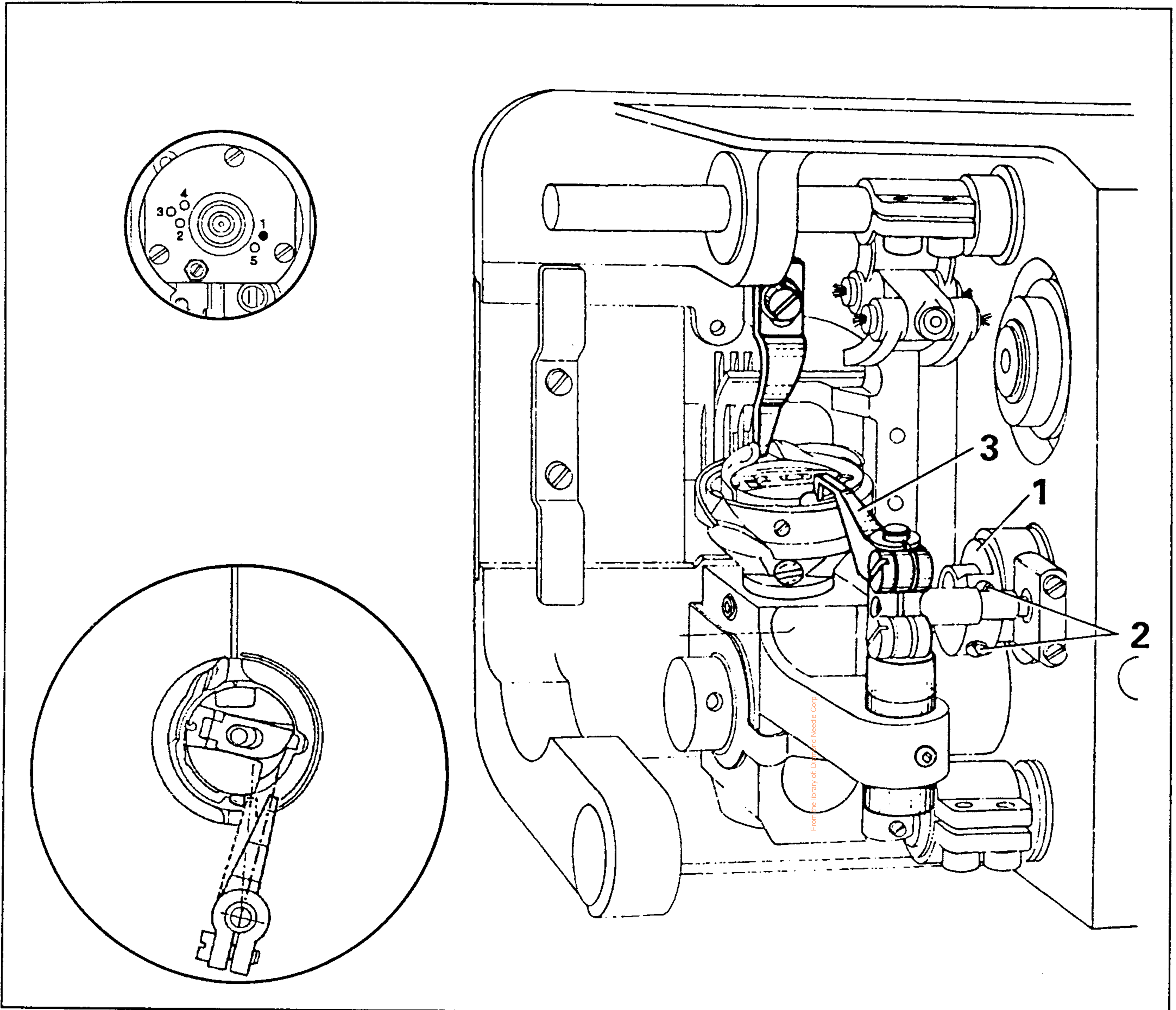
- Setting 1:** There must be a clearance of **0.8 mm** between the bobbin case opener finger and the bobbin case base.
- Setting 2:** There must be a clearance of **0.5 mm** between the top of the bobbin case position finger and the inner edge of the bobbin case base.
- Setting 3:** When the bobbin case opener is at its left point of reversal there must be a clearance of **0.3 mm** between the right side of the slot in the bobbin case base and the bobbin case position finger.



Adjustment:

- 18.1.1 Turn bobbin case opener finger 1 (screw 2) so that it contacts the right side of the bobbin case base. Then push it against the clamp crank 3 located underneath and tighten screw 2 lightly.
- .2 Turn the eccentric bushing 4 (screw 5) according to setting 2 and adjust it in height according to setting 1.
- .3 Turn bobbin case opener 1 according to setting 3 and tighten screw 2. Make sure that bobbin case opener 1 contacts the bobbin case base.

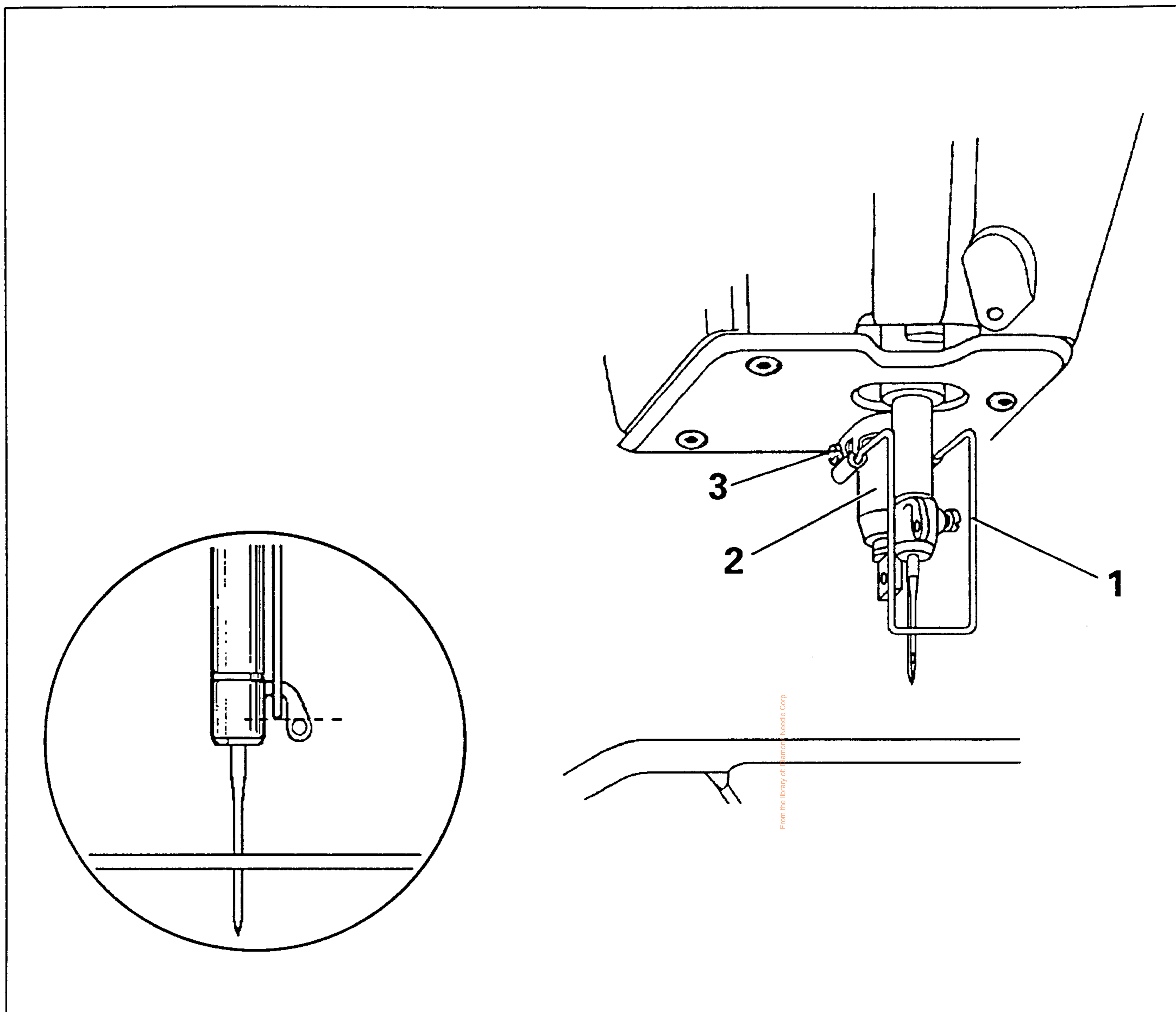
Setting: With the needle bar positioned at 2.0 mm beyond b.d.c. (pin in hole "1") bobbin case opener 3 must be at its right point of reversal.



Adjustment:

- 18.2.1 Bring the needle bar to a position 2.0 mm beyond b.d.c and insert the pin in hole "1" (to block the machine).
- .2 Turn opener eccentric 1 (screw 2) according to the setting.
- .3 Remove the pin from the bearing plate.

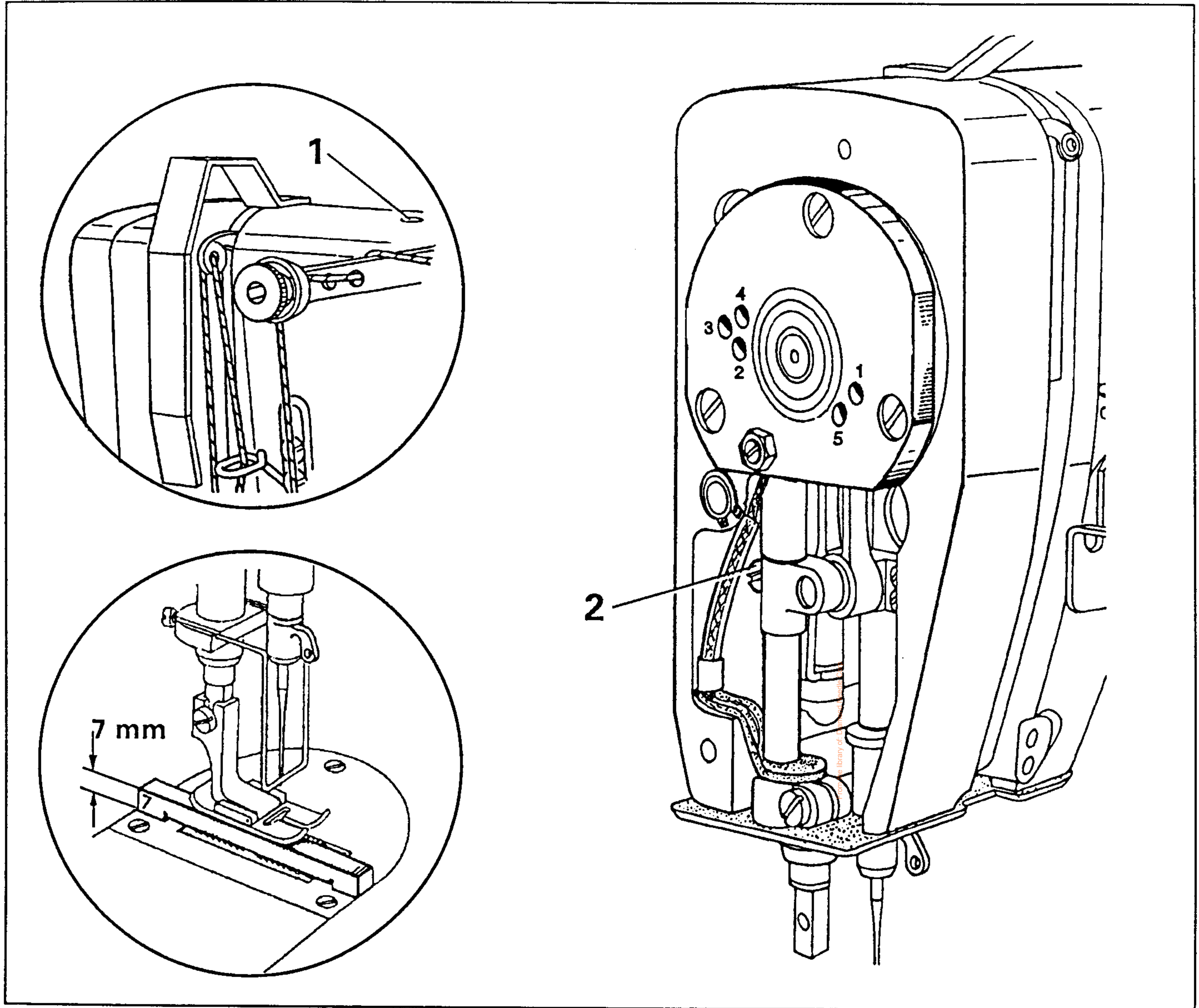
Setting: When the needle bar is at b.d.c. the bottom edge of the slack thread control wire must be in line with the top edge of the hole in the thread guide.



Adjustment:

- 19.1 Push slack thread control wire **1** on bushing **2** and hold it in position.
- .2 Bring the needle bar to b.d.c.
- .3 Adjust the slack thread control wire **1** (screw **3**) according to the setting, making sure that it is set parallel to the bedplate.

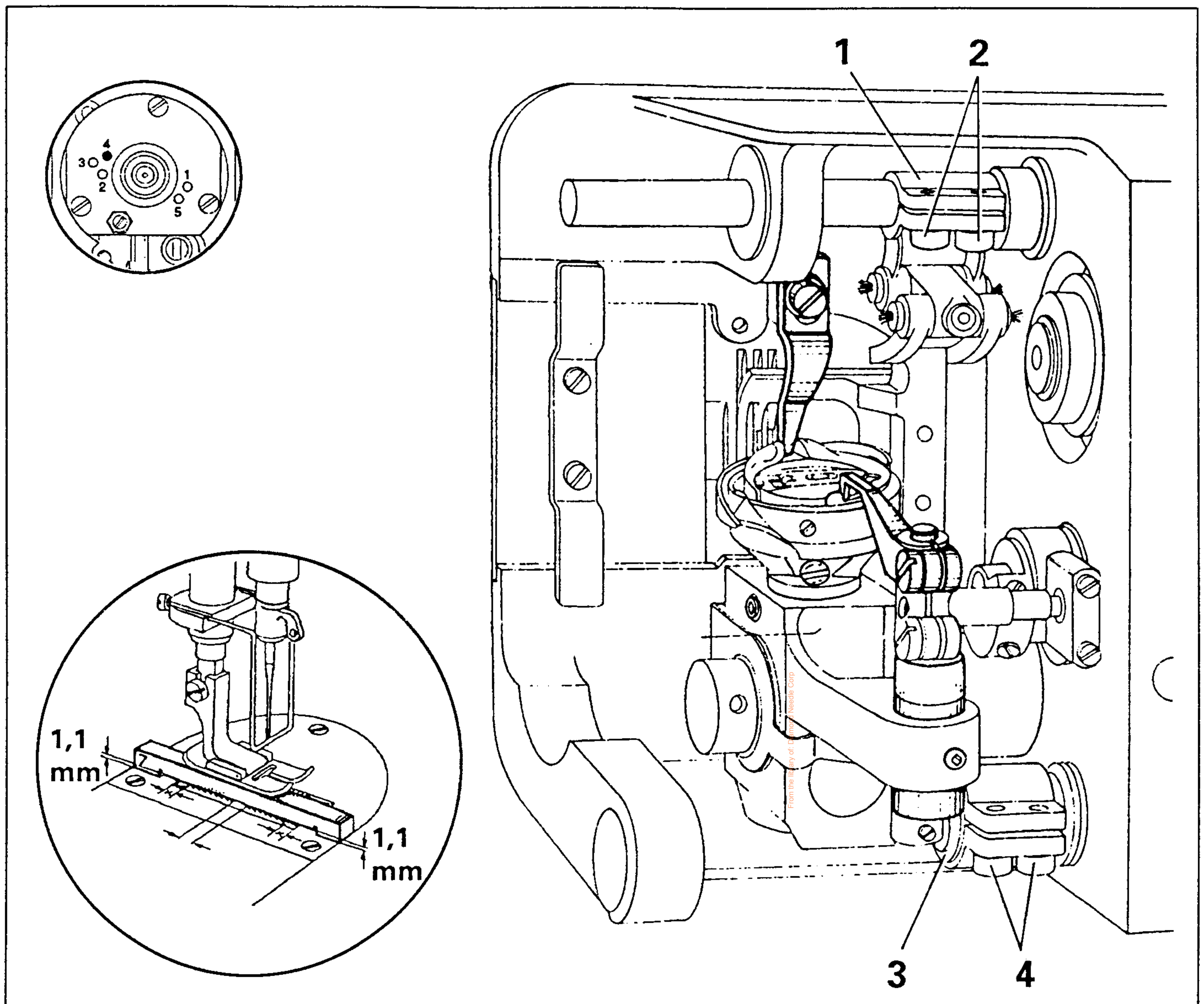
Setting: When the presser bar lifter is raised there must be a clearance of 7.0 mm between presser foot and needle plate.



Adjustment:

- 20.1 Set stitch width lever at "0" and needle position lever at its central position.
- .2 Lower presser foot onto the needle plate and reduce the pressure on the presser bar (screw 1).
- .3 Push the 7-mm-thick part of the gauge from behind under the presser foot.
- .4 Loosen screw 2 and raise the presser bar lifter.
- .5 Lower needle down into the needle hole of the presser foot and adjust the presser foot so that the needle is centred exactly in the hole of the presser foot.
- .6 Push the lifting bracket down as far as it will go and tighten screw 2.

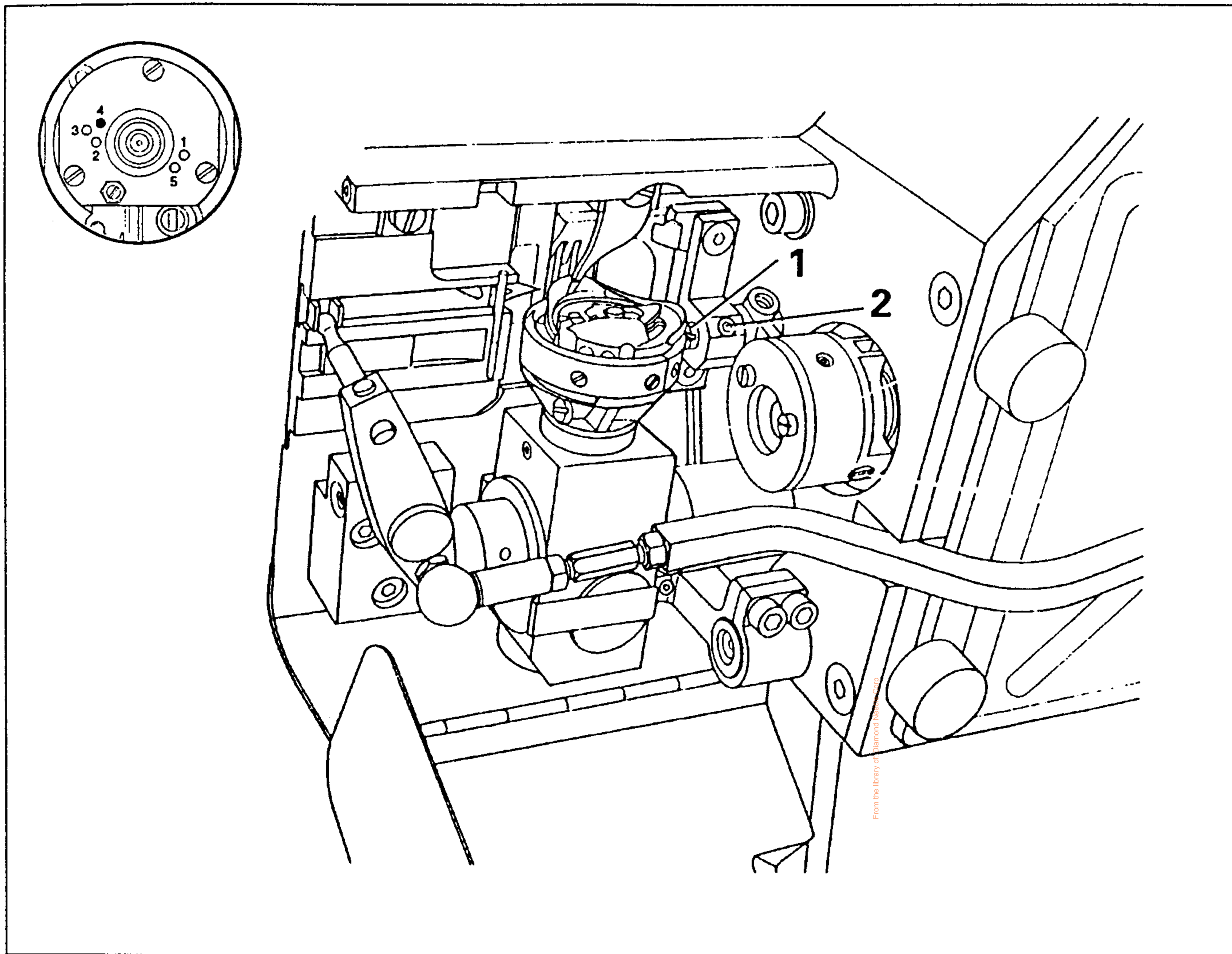
Setting: With the stitch length set at "0" and the needle bar at a position 1.0 mm beyond t.d.c. (pin in hole "4") the feed dog must be centred in its slots and contact the gauge throughout its entire length.



Adjustment:

- 21.1 Bring the needle bar to a position 1.0 mm beyond t.d.c. and insert the pin in hole "4" of the bearing plate (to block the machine).
- .2 Place the gauge under the presser foot so that its recess faces downwards and its front edge is flush with the edge of the needle plate.
- .3 Lower the presser foot until it rests on the gauge.
- .4 Push the feed bar upwards, centre the feed dog in the needle plate slots and hold it in this position.
- .5 Turn foot lifting crank 1 (screws 2) until the feed dog contacts the gauge.
- .6 Turn eccentric bushing 3 (screws 4) according to the setting.
- .7 Remove the pin from the bearing plate.

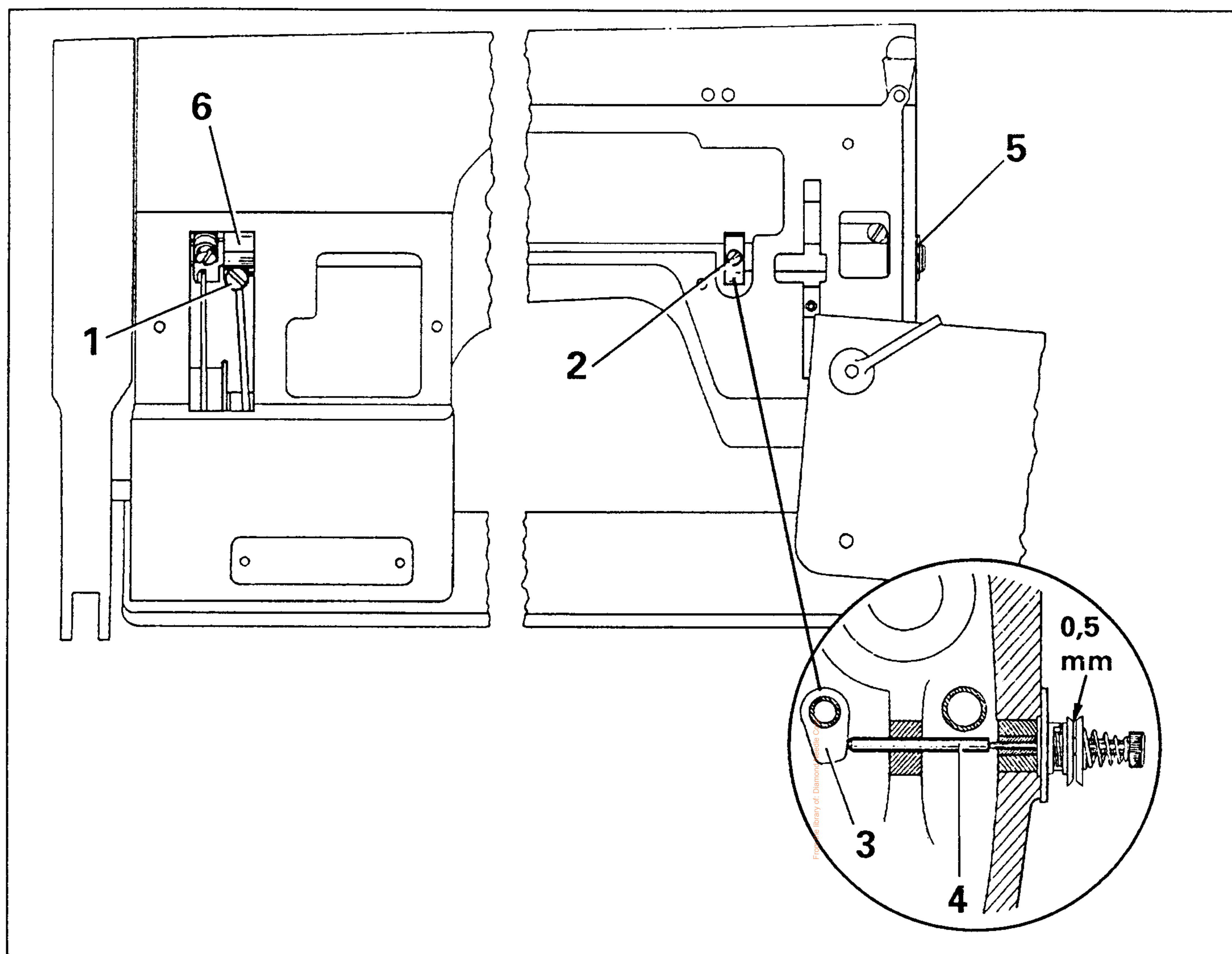
Setting: With the stitch length set at "0" and the needle bar at a position 1.0 mm beyond t.d.c. (pin in hole "4") the teeth of the feed dog must be 1.0 mm above the needle plate.



Adjustment:

- 22.1 Bring the needle bar to a position 1.0 mm beyond t.d.c and insert the pin in hole "4" of the bearing plate (to block the machine).
- .2 Lift presser foot by means of the lifting lever.
- .3 Turn eccentric 1 (screw 2) according to the setting.

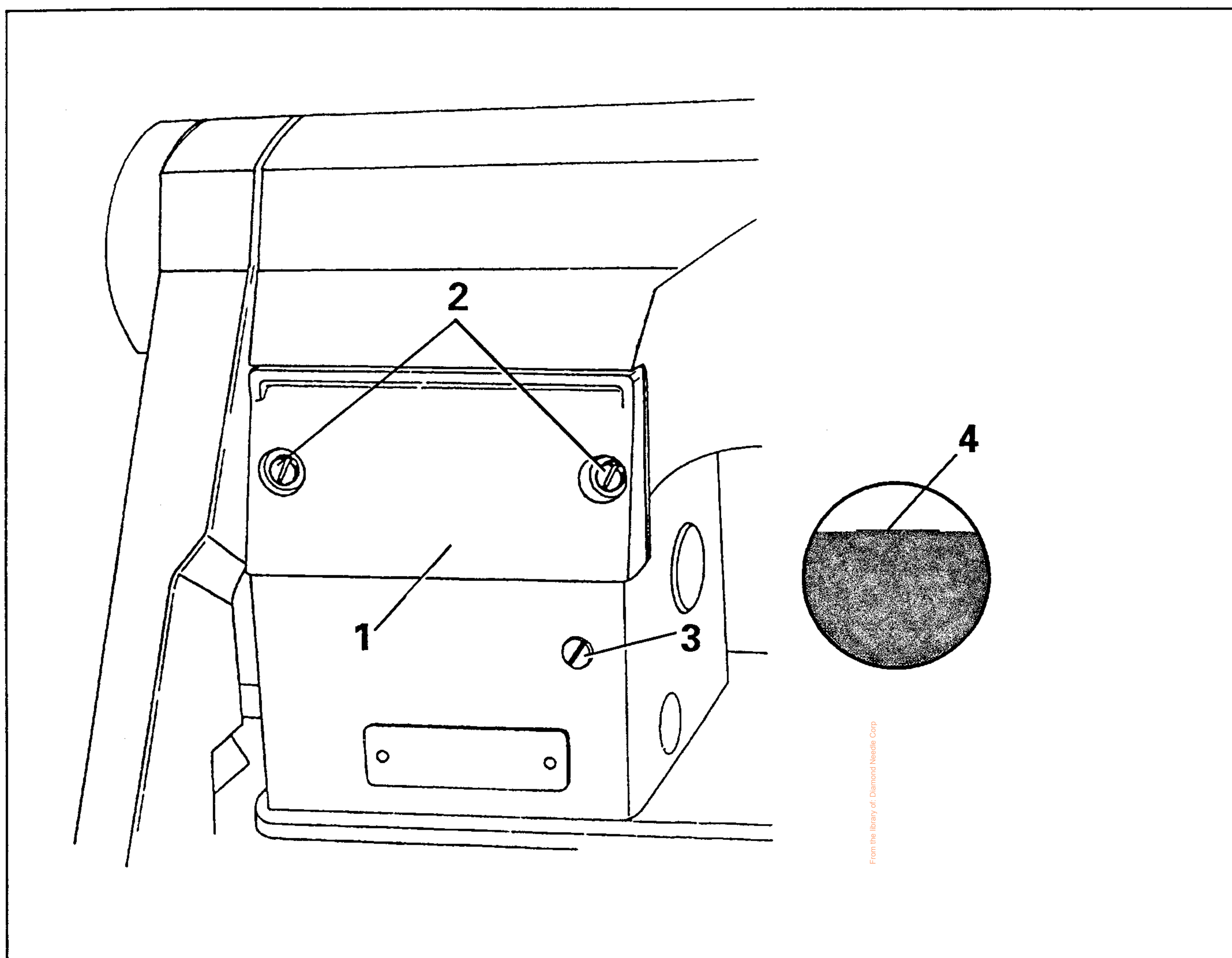
Setting: When the presser bar lifter is raised both tension disks must be at least 0.5 mm apart.



Adjustment:

- 23.1 Loosen screw 1 and push the connecting rod down as far as it will go.
- .2 Bring the needle bar to b.d.c.
- .3 Raise the presser foot and place the feed dog gauge under the foot with its recess up.
- .4 Lower the presser foot into the recess of the gauge.
- .5 Loosen screw 2.
- .6 Position cam 3 exactly opposite pin 4 and hold it in this position.
- .7 Swing up the presser bar lifter until a resistance is felt.
- .8 Push cam 3 up against pin 4 and tighten screw 2.
- .9 Remove the gauge from under the presser foot and lower the presser foot onto the needle plate.
- .10 Tighten screw 1, making sure that retaining ring 5 contacts the face side of the machine and crank 6 contacts the casting.

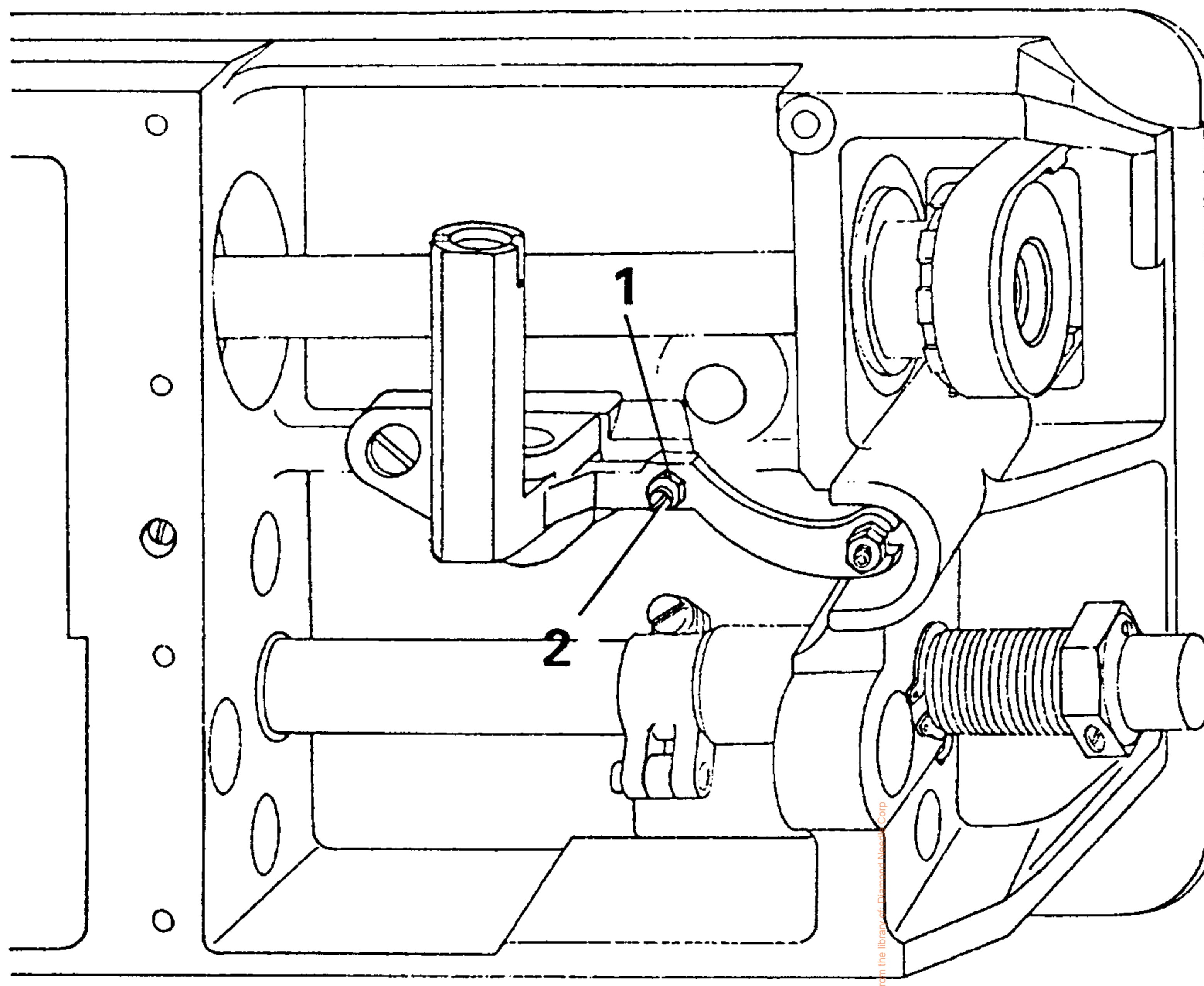
Note: Only use Pfaff sewing machine oil having a mean viscosity of 22.0 mm²/s at 40°C and a density of 0.865 g/cm³ (No. 280-1-120 144).



Supply:

- 24.1 When the supply in the housing is finished, remove cover 1 (screws 2) and fill in 75 cm³ of oil. Clean the gasket face on cover 1, the housing and its gasket!
- .2 To refill unscrew screw 3 and fill in the oil until the oil level has reached mark 4.

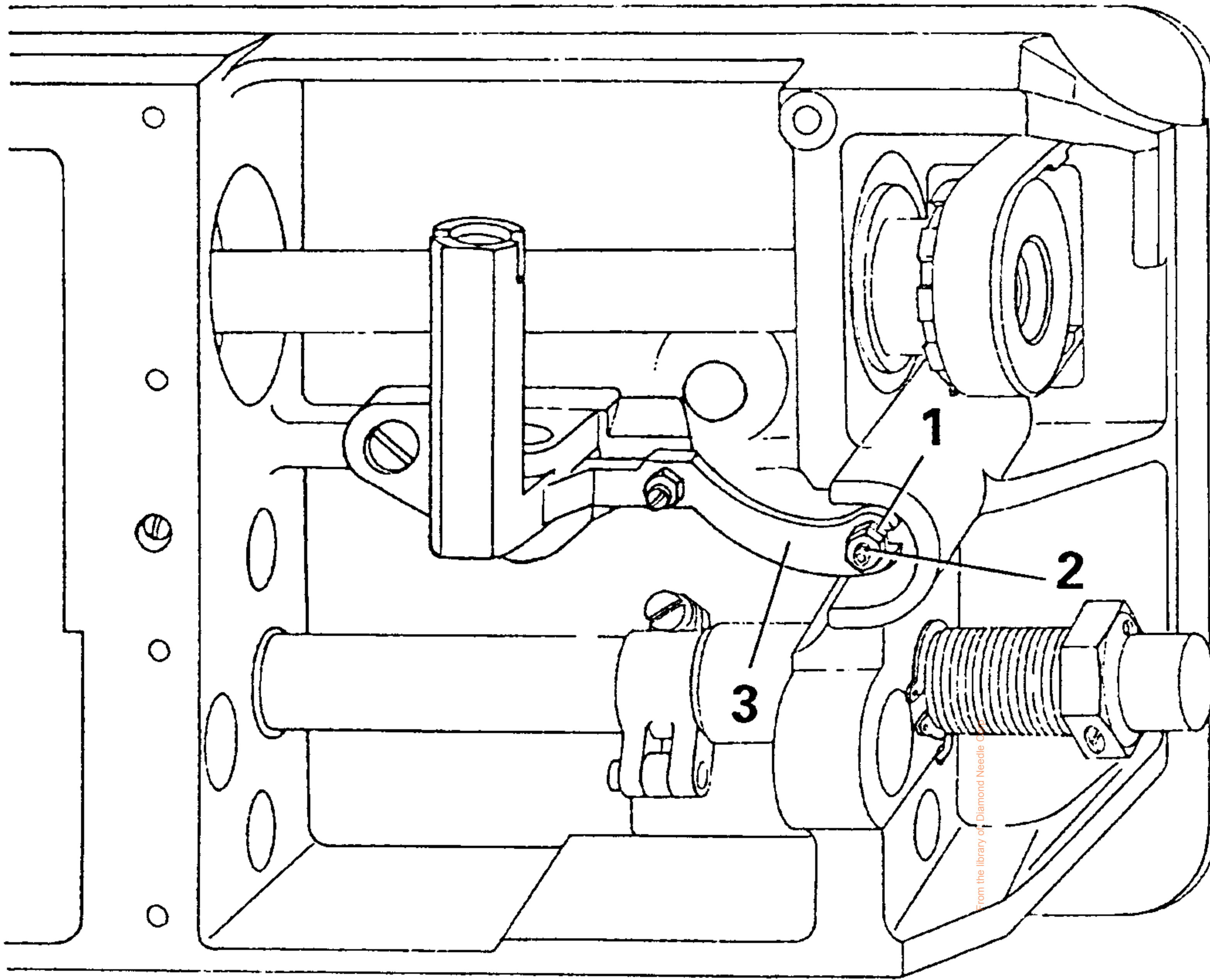
Setting: When the knee lever is fully operated, the presser bar lifter must drop by its own weight and the presser foot must be lifted from the needle plate by a little more than 7.0 mm.



Adjustment:

- 25.1 Place the feed dog gauge under the presser foot with its recess facing downwards.
- .2 Lower the presser foot onto the gauge.
- .3 Loosen nut 1 and turn screw 2 out a few turns.
- .4 Move the knee lever to the right until a noticeable resistance is felt, making sure that the presser foot is not lifted off the gauge, and hold it at this position.
- .5 Turn screw 2 in as far as it will go, then back out by one turn, and lock it in place with nut 1.

Setting: There must be a noticeable amount of play between nut **1** and forked connection **3** when the knee lever is operated just lightly.

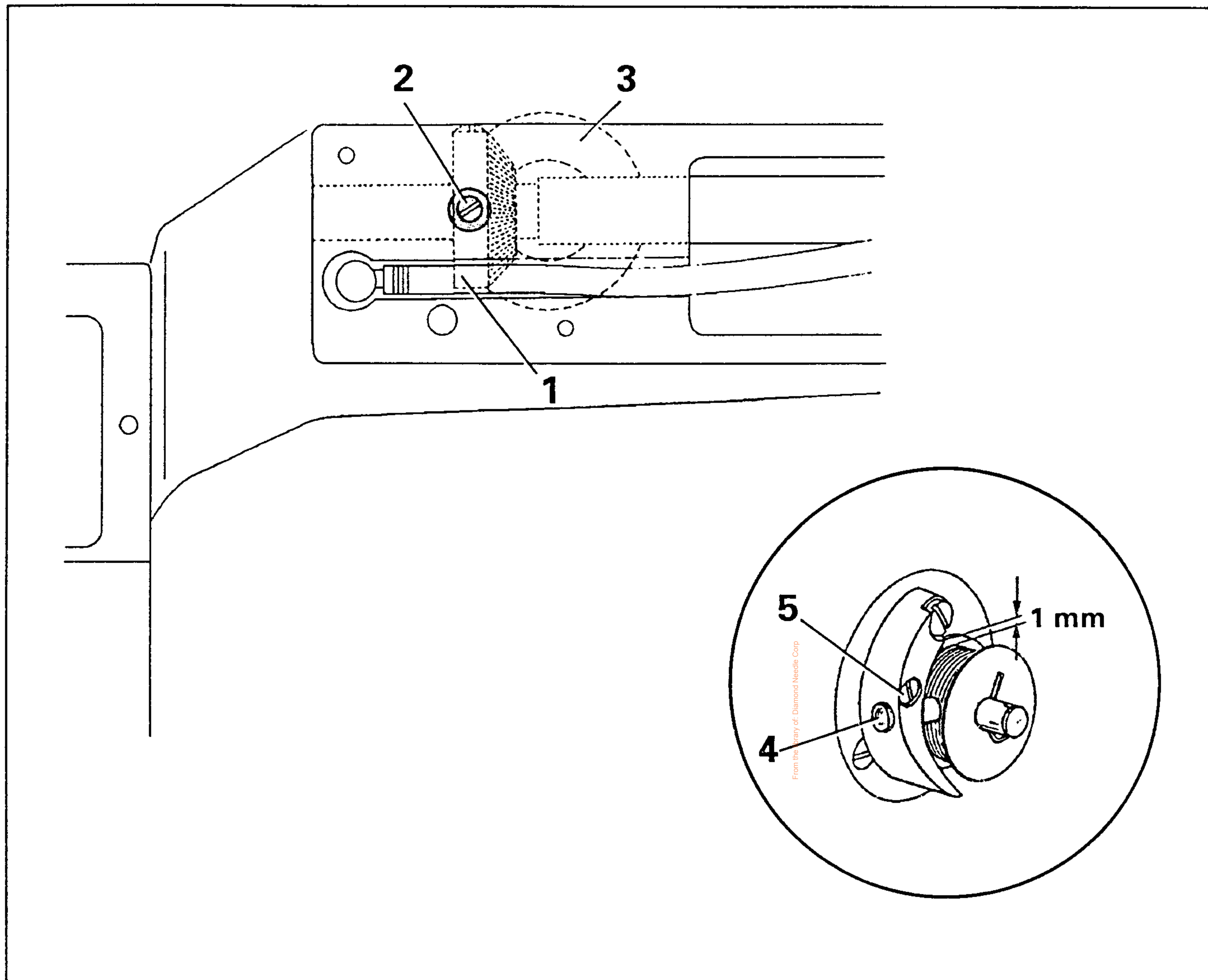


Adjustment:

- 26.1 Turn in nut **1** (nut **2**) according to the setting.

Setting1: When the bobbin winder is engaged the winder spindle must be driven reliably; when the bobbin winder is disengaged friction wheel 3 must not contact drive wheel 1.

Setting2: The bobbin winder must stop automatically when the thread wound on the bobbin has reached a point abt. 1.0 mm below its rim.

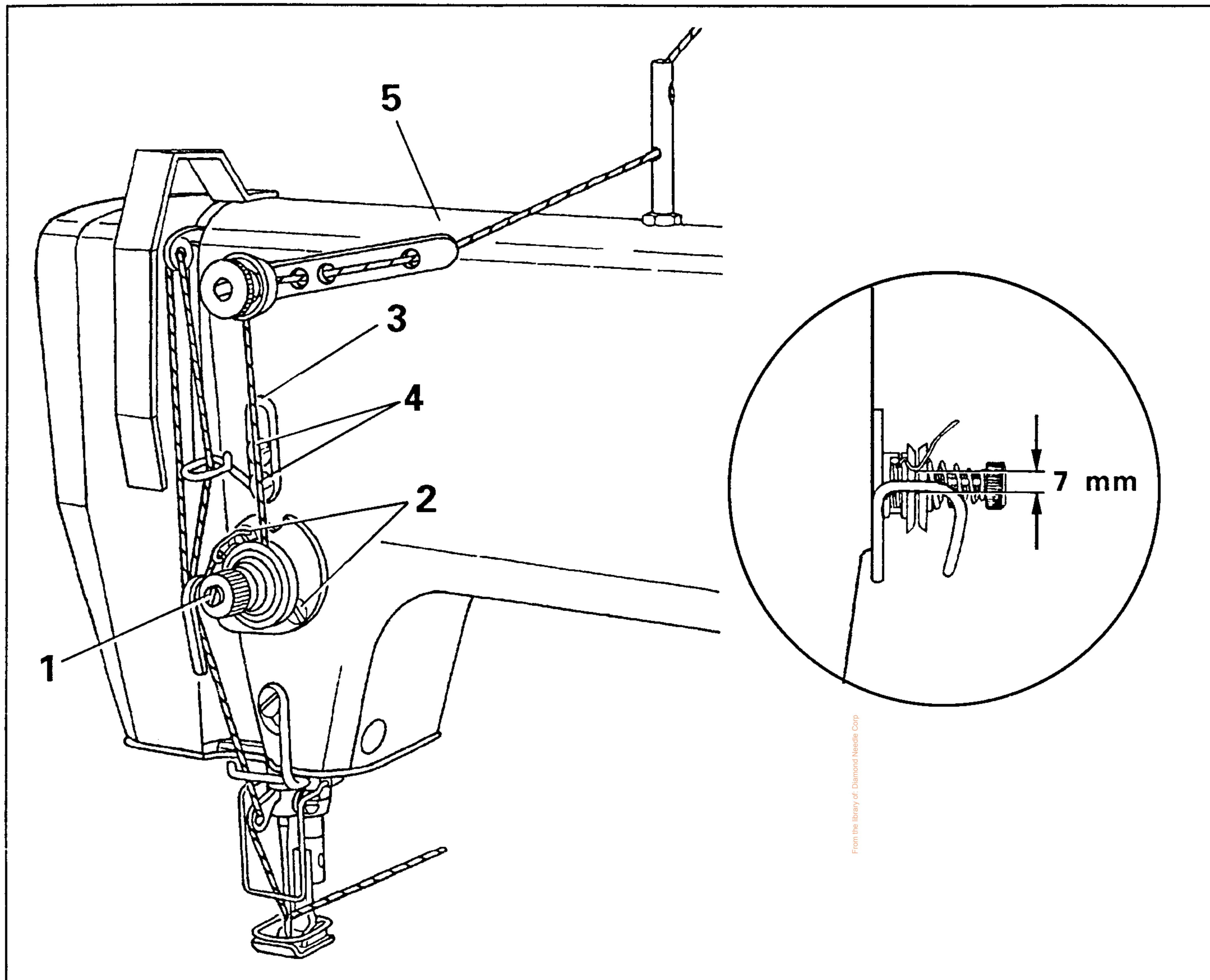


Adjustment:

- 27.1 Raise the presser bar lifter and engage the bobbin winder.
- .2 Position drive wheel 1 (screw 2) against friction wheel 3 according to setting 1.
- .3 Position regulating stud 4 (screw 5) according to setting 2.

Note: If the thread piles up on one side of the bobbin, adjust the thread guide on the machine accordingly.

Setting: The stroke of the thread check spring must be completed when the point of the needle reaches the material.



Adjustment:

- 28.1 Turn adjusting screw 1 (screws 2) until the stroke of the thread check spring amounts to abt. 7.0 mm.
- .2 Push the thread regulator 3 (screws 4) up as far as it will go.

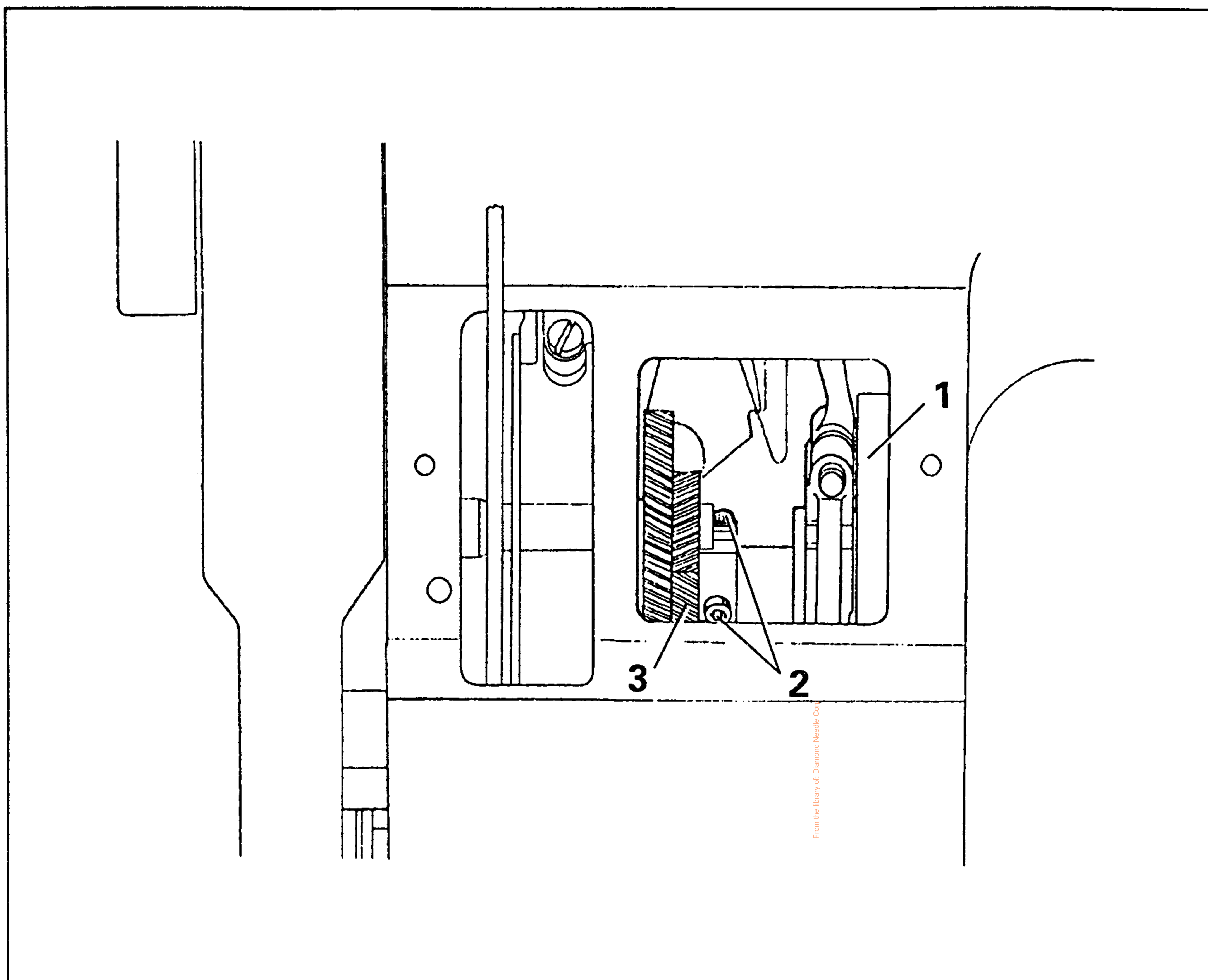
Note: The correct adjustment of the thread regulator 3 depends on the thread and on the material that is being used, thus it may be necessary to set it lower.

29 Presser foot pressure

Adjustment:

- 29.1 Turn in regulating screw 5 thus regulating the pressure on the presser bar until proper feeding of the material is ensured even at top speed.

Setting: The sideways motion of the needle bar should cease when the needle enters the material.
(Check with the machine set at its widest zigzag stitch).



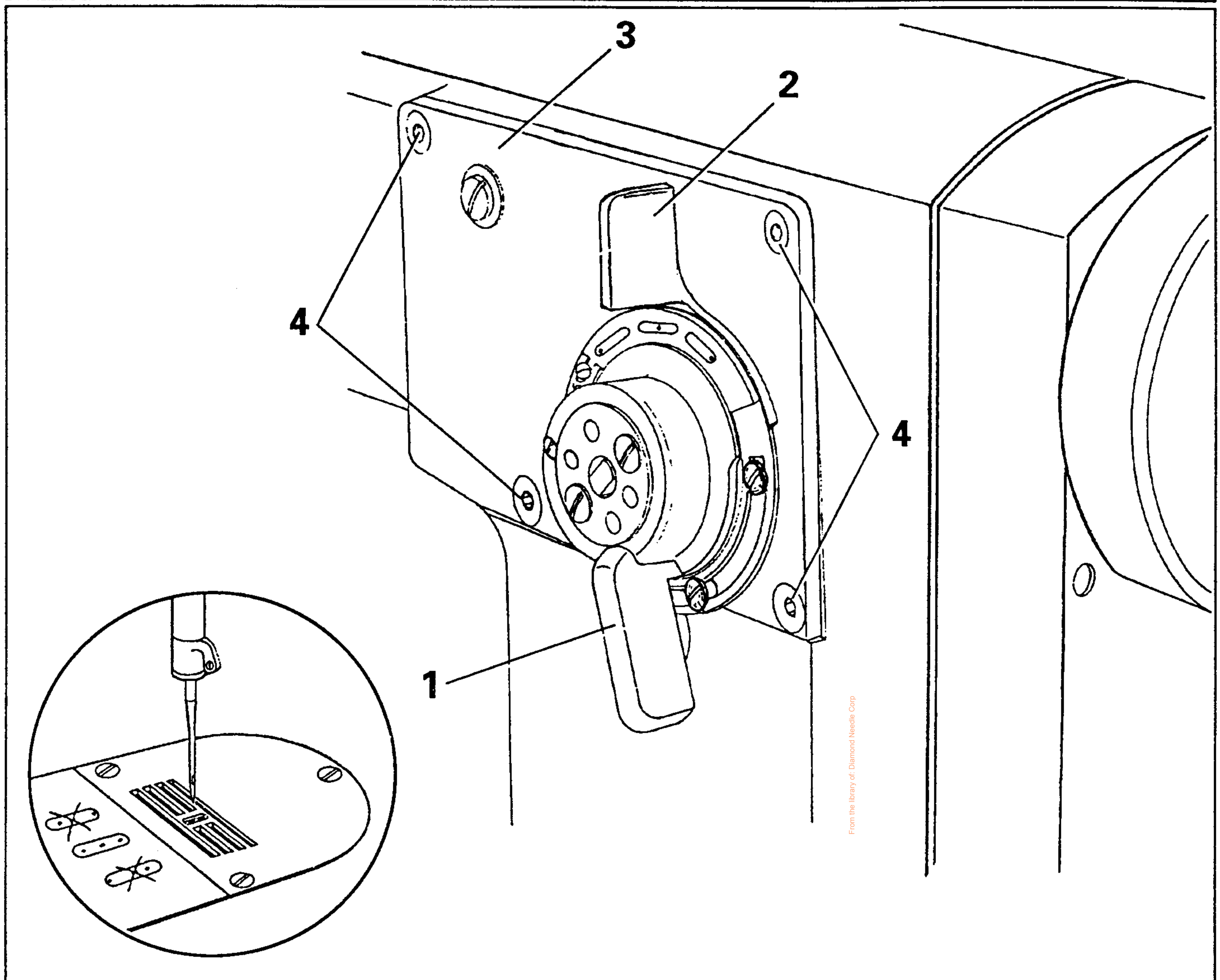
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Adjustment:

- 30.1 Set the stitch width lever at the widest zigzag stitch.
- .2 Turn needle vibration cam 1 (screws 2) according to the setting. Make sure that gear 3 contacts the left inner wall and needle vibrating cam 1 the right inner wall.

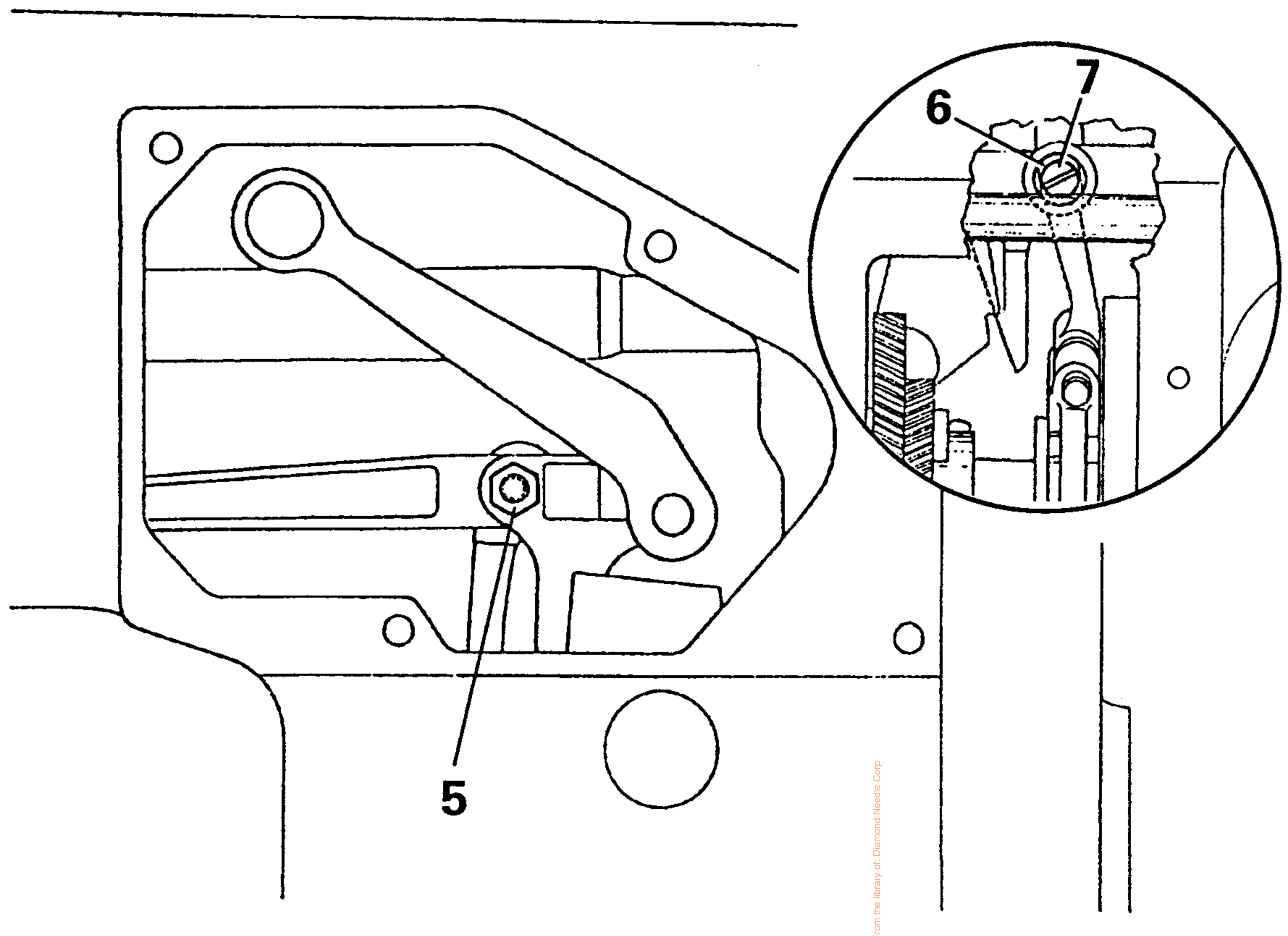
31 Left, centre and right needle positions on machines equipped with zigzag control -716/..

Setting: With the machine set at its widest zigzag stitch, the right and left needle punctures should be equidistant from the central needle puncture.



Adjustment:

- 31.1 Move stitch width lever to the widest zigzag stitch.
- .2 Let the needle stitch all stitches of a complete pattern into a piece of paper and hold the paper in this position.
- .3 Position the needle, ascending from b.d.c., a little above the paper.
- .4 Set needle position lever 2 at its central position and stitch width lever 1 at "0".
- .5 Let the needle point pierce the paper again. This needle puncture should be centered between the two outer punctures.
- .6 If it is not, remove plate 3 (screws 4) by pulling it forward.

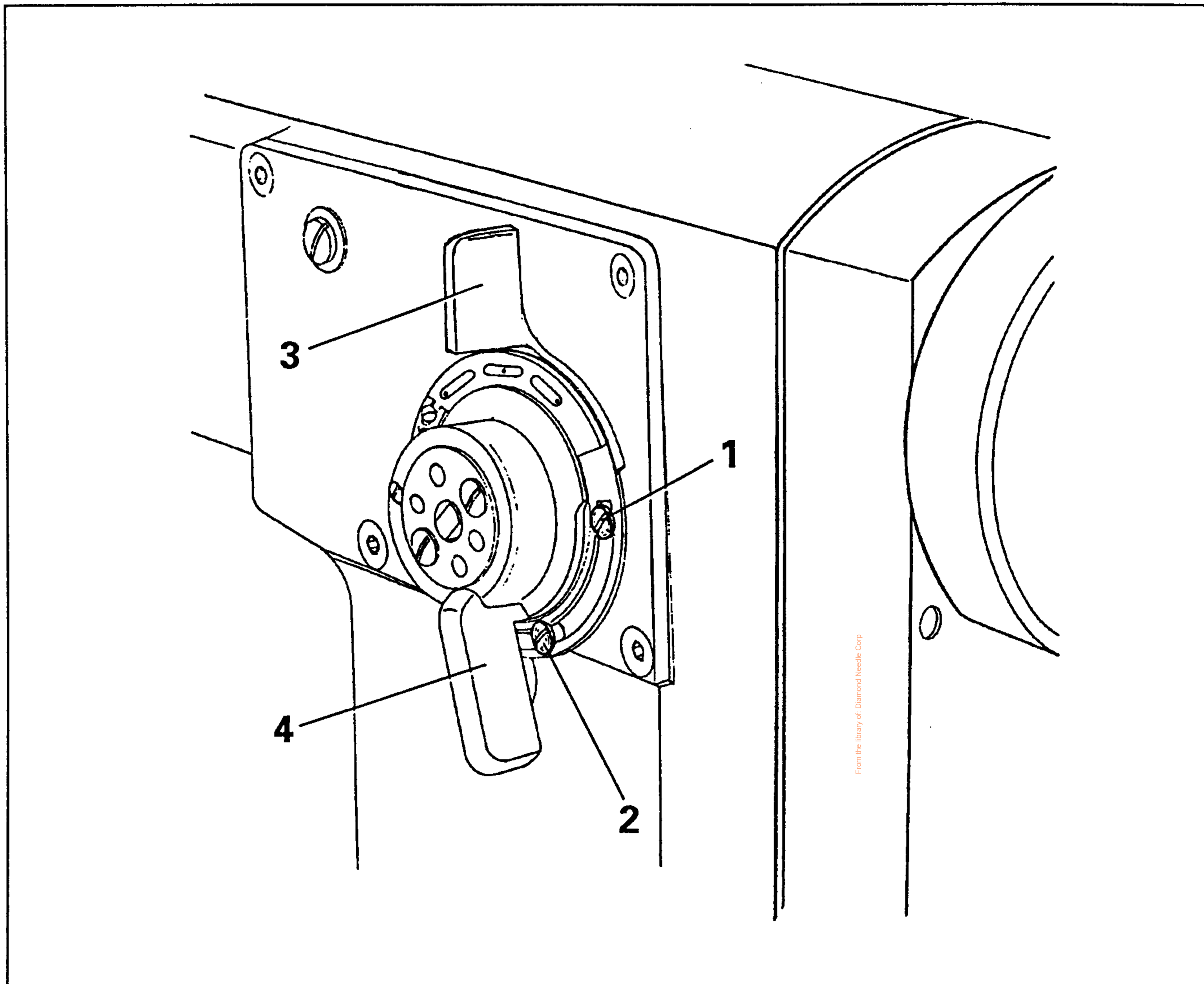


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- 31.7 Loosen nut **5** and secure plate **3** in position with two screws **4** only.
- .8 Turn eccentric bushing **6** (screw **7**) according to the setting.
- .9 Again unscrew plate **3**, tighten nut **5** while retaining screw **7** with a screwdriver.
- .10 Clean the surface of plate **3**, apply sealing compound and screw plate **3** down.

Setting 1: The straight-stitch punctures in the left needle position (zigzag stitch set at "0") should coincide with the left needle puncture made at maximum stitch width.

Setting 2: The straight-sticht punctures in the right needle position (zigzag stitch set at "0") should coincide with the right needle puncture made at maximum stitch width.



Adjustment:

- 32.1 Loosen screws **1** and **2**.
- .2 Set needle position lever **3** at its central position and stitch width lever **4** at the widest zigzag stitch.
- .3 Turn the balance wheel until the needle is at the extreme left of its throw and at b.d.c.
- .4 Move needle position lever **3** gradually toward the left while constantly actuating stitch width lever **4** until the needle does not move any more.
- .5 Push screw **1** up as far as it will go and tighten it securely.
- .3 Turn the balance wheel until the needle is at the extreme right of its throw and at b.d.c.
- .4 Move needle position lever **3** gradually toward the right while constantly actuating stitch width lever **4** until the needle does not move any more.
- .5 Push screw **2** to the left as far as it will go and tighten it securely.

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