

3538^{-20/02}
^{-30/02}

ADJUSTMENT MANUAL

This adjustment manual applies to machines from the following serial numbers onwards:

2 804 345 →

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13 Adjustment



Observe and comply with all instructions in the operating manual's **chapter 1 Safety!** In particular make sure that all safety covers are installed again correctly after making adjustments, see **chapter 1.06 Operating manual** hazard information!



Unless otherwise stated, the machine must be disconnected from the power supply before all adjustment work!

Risk of injury due to accidental machine start-up!

13.01 Notes on adjustment

All adjustments in this manual are based on a fully assembled machine and may only be carried out by technical staff trained for this purpose. Machine covers, which have to be removed and replaced to carry out checks and adjustments, are not mentioned in the text. The order of the following chapters corresponds to the most logical work sequence for machines that have to be completely adjusted. Both the preceding and following chapters must be observed if only specific individual work steps are carried out. Screws and nuts indicated in brackets () are fastenings for machine parts, which must be loosened before any adjustment and tightened again afterwards.

13.02 Tools, gauges and other accessories

- 1 set of screwdrivers with knife widths of 2 to 10 mm
- 1 set of wrenches with jaw widths from 6 to 22 mm
- 1 set of Allen keys of 1.5 to 6 mm
- 1 metal ruler (order no. 08-880 218-00)
- Needle rise gauge (order no. 61-111 600-01)
- Screw clamp (order no. 61-111 600-35)
- Adjustment pin (order no. 61-111 643-55)
- Needles, system (62-57)
- Thread and testing material

13.03 Abbreviations

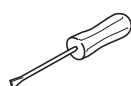
t.d.c. = top dead centre
b.d.c. = bottom dead centre

13.04 Explanation of symbols

Activities to be performed or important information in this adjustment manual are emphasised by symbols. The symbols used have the following meaning:



Note, information



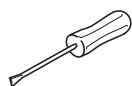
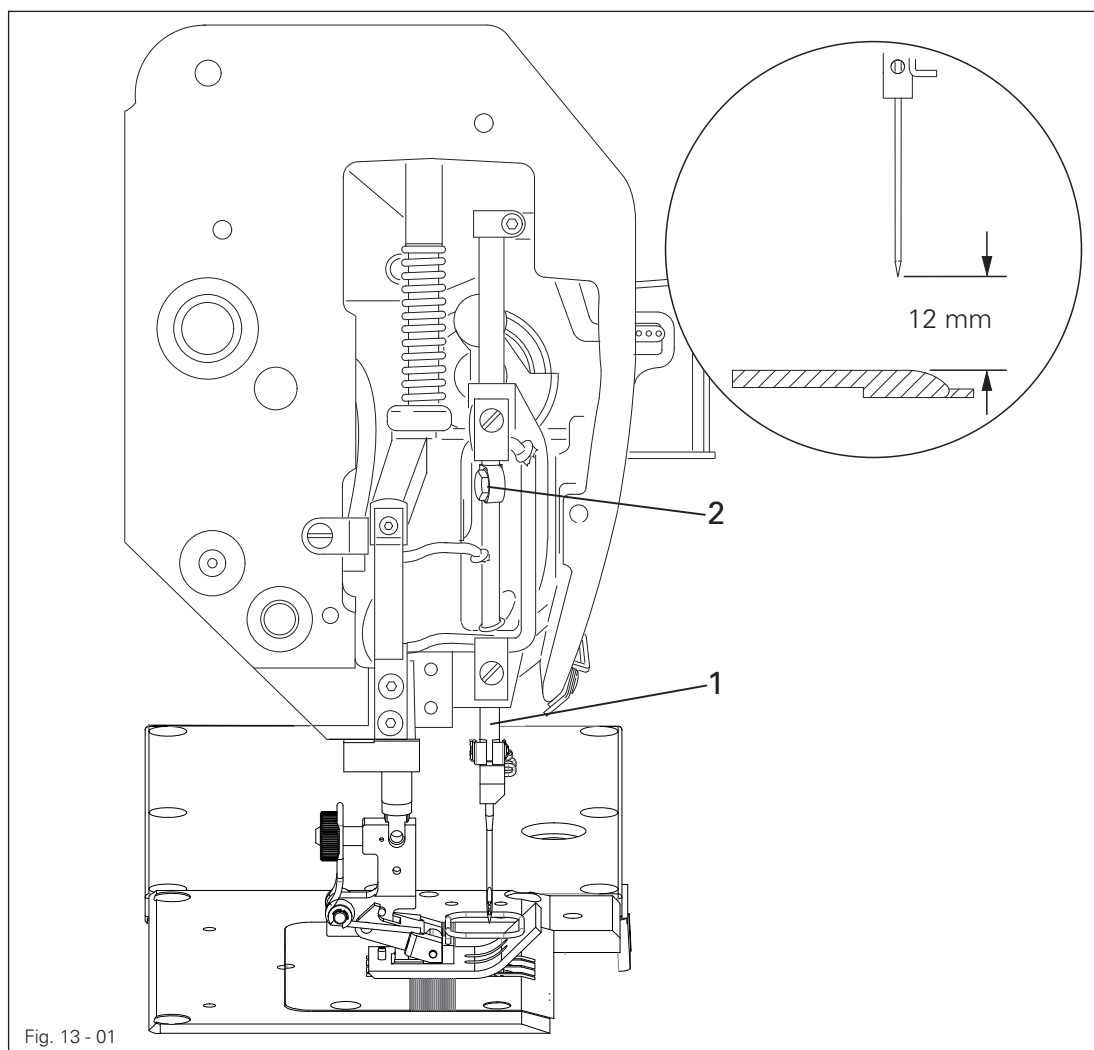
Maintenance, repairs, adjustment, service work
(only to be carried out by technical staff)

13.05 Adjusting basic machine

13.05.01 Needle height (pre-calibrating)

Rule

When the **needle bar is in t.d.c.**, the clearance between the needle point and needle plate should be approx. **12 mm** with a needle bar stroke of **36 mm**.



- Adjust the needle bar 1 (screw 2) without twisting according to the rule.

Adjustment

13.05.02 Hook driving eccentric (pre-calibrating)

Rule

When the **needle bar is in b.d.c.**, the round side of the adjustment pin 1 should engage in the groove 5.

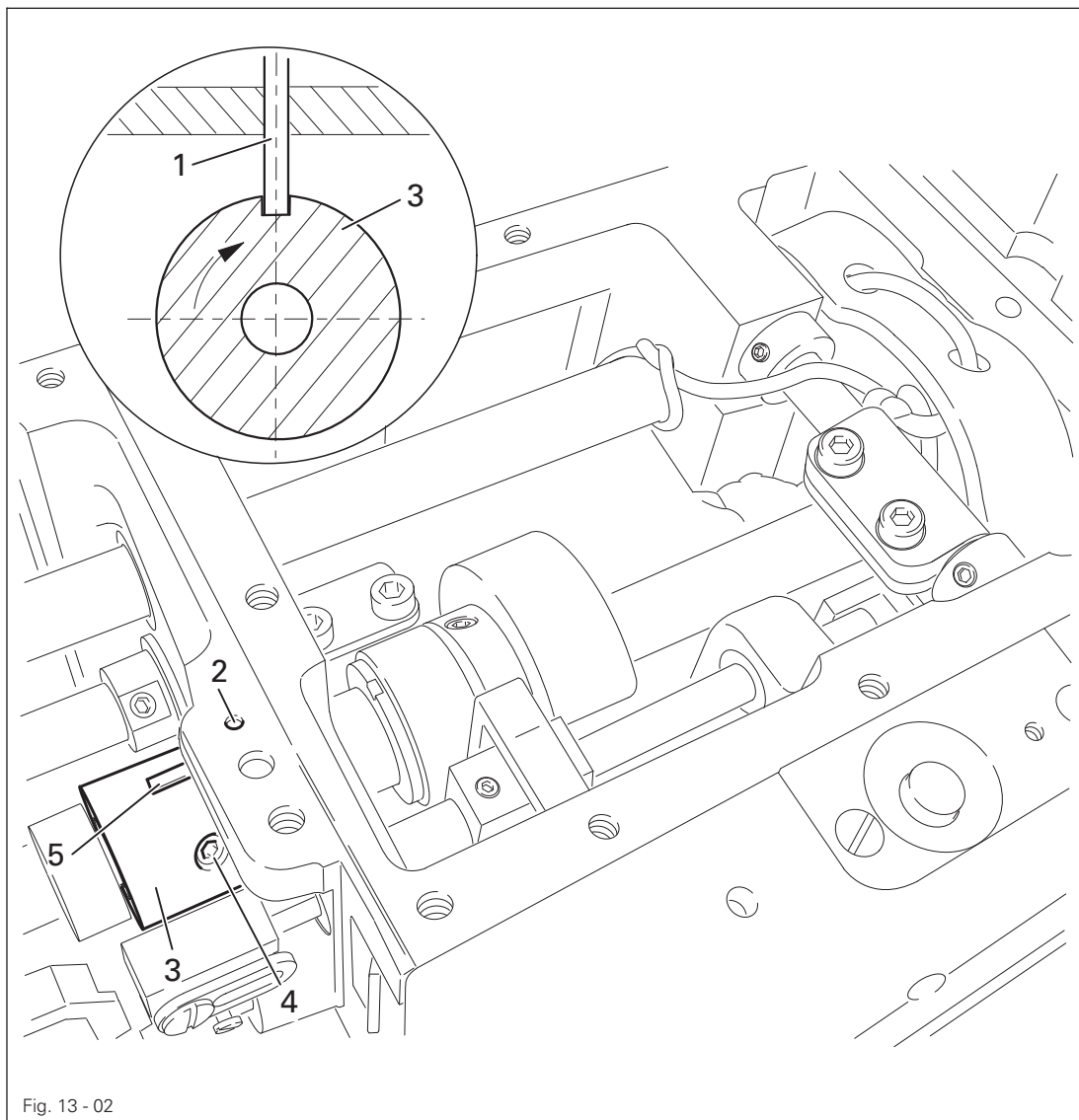
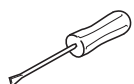


Fig. 13 - 02

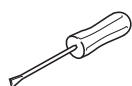
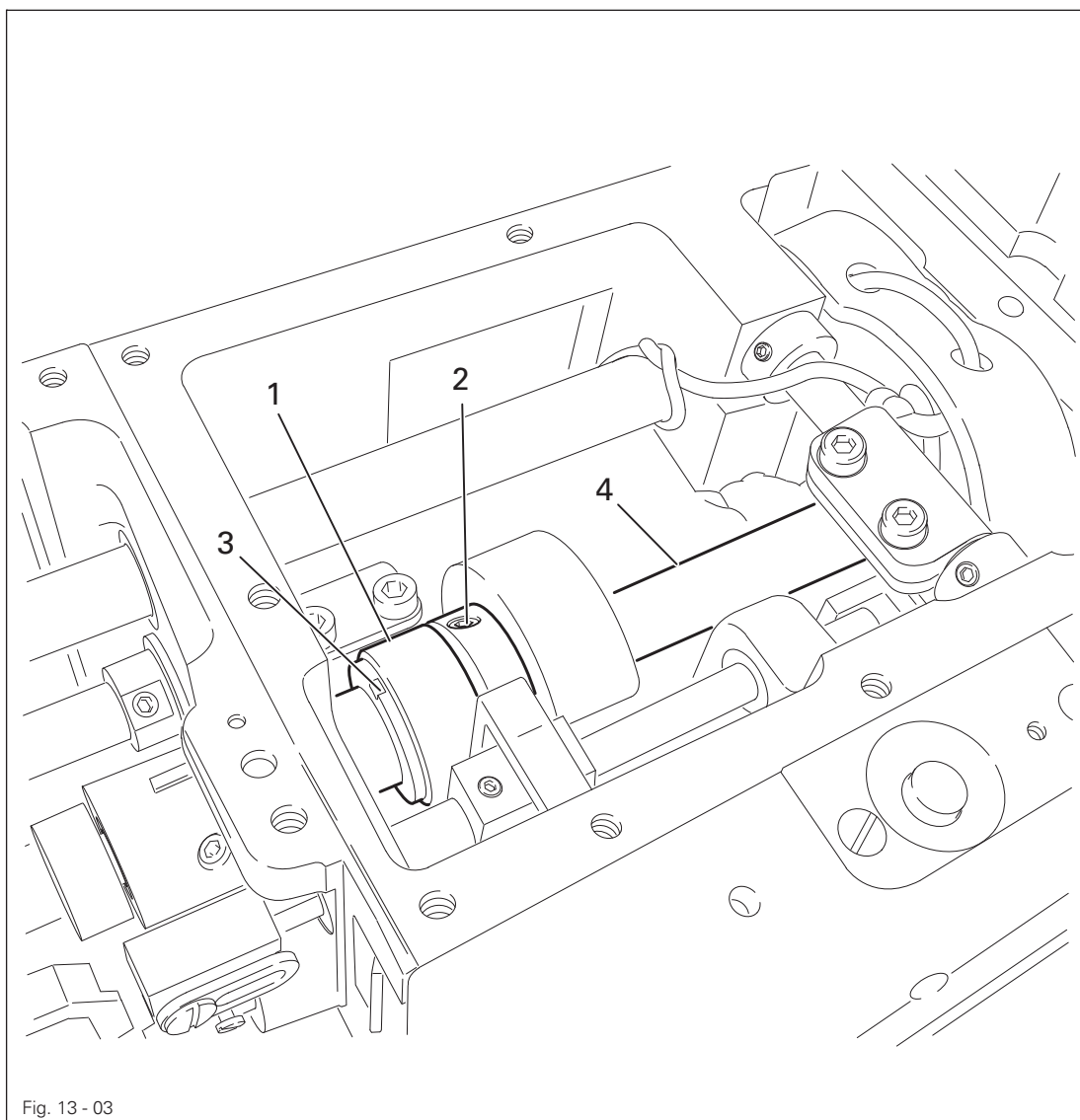


- Insert the adjustment pin 1 in the hole 2.
- Turn the eccentric 3 (screws 4) according to the rule.
- Remove the adjustment pin 1.

13.05.03 Feed lifting eccentric

Rule

When the needle bar is in **b.d.c.**, the groove **3** should be positioned vertically above the shaft **4**.

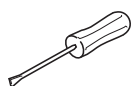
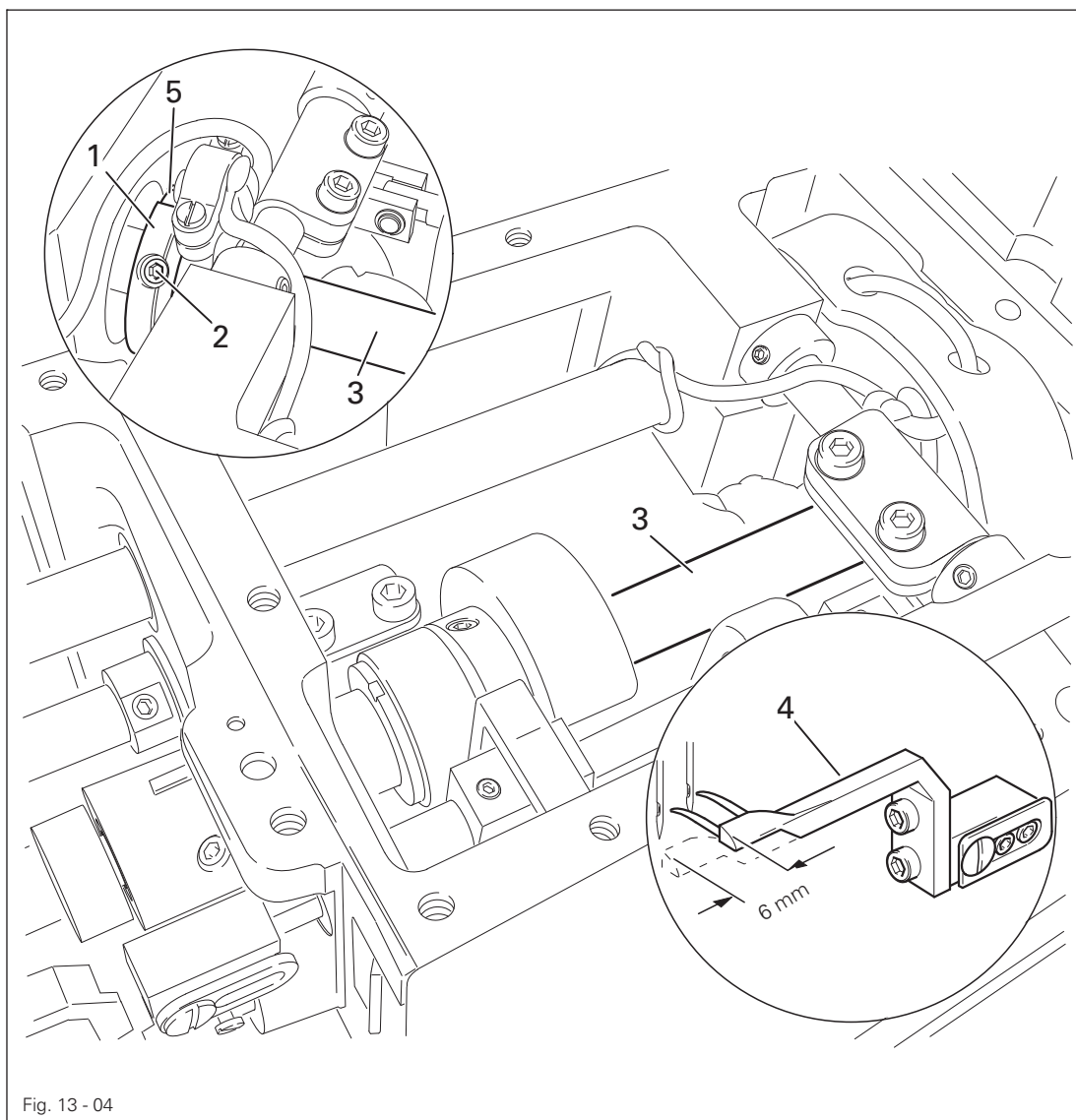


- Turn the eccentric **1** (screws **2**) according to the rule.

13.05.04 Spreader driving eccentric

Rule

1. When the needle bar is positioned **1 mm** after **b.d.c.**, the groove **5** of the eccentric **1** should be positioned vertically above the shaft **3**.
2. The spreader holder **4** should move **6 mm**.



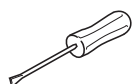
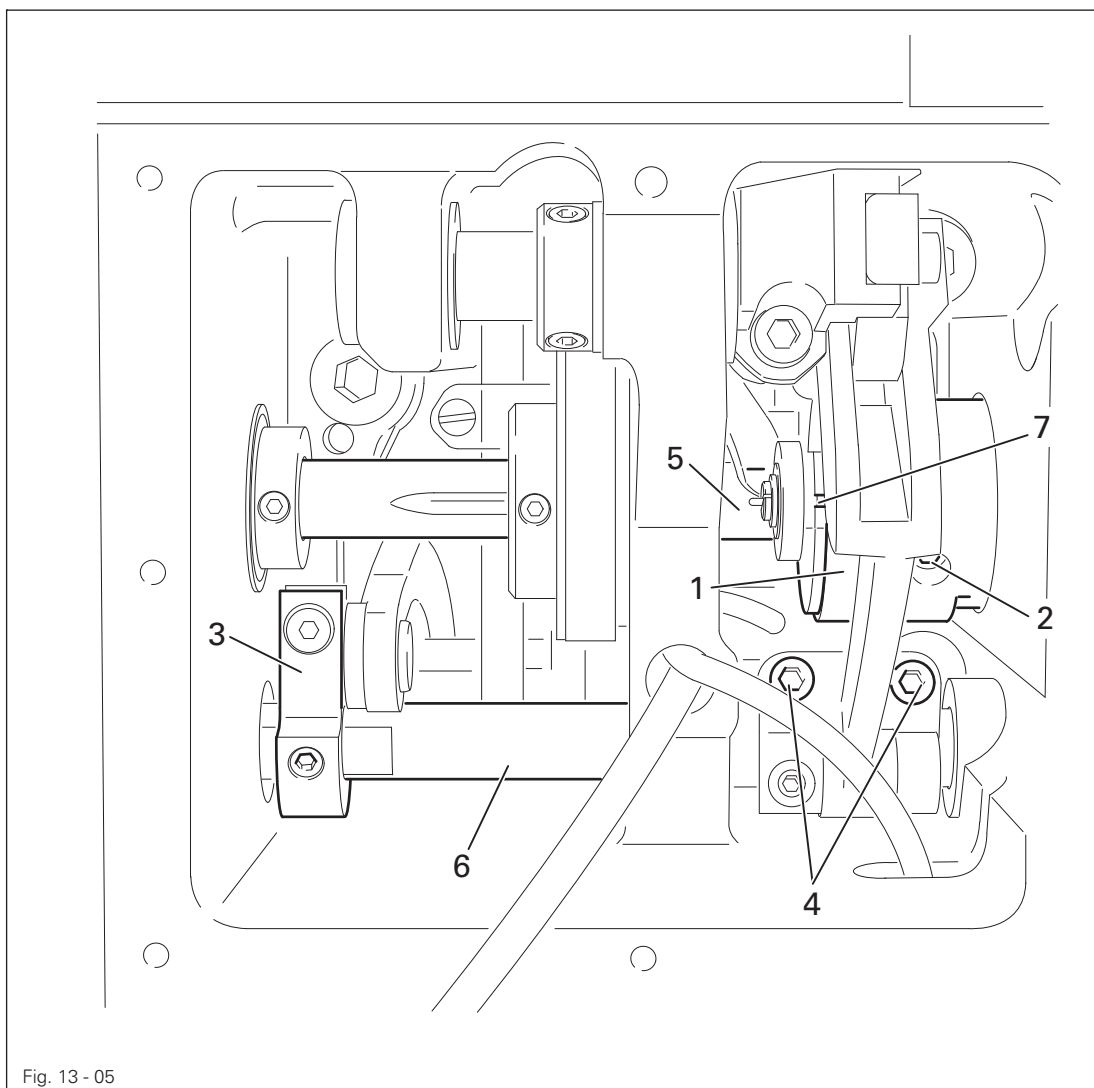
- Turn the eccentric **1** (screws **2**) according to **rule 1** or adjust (axially) according to **rule 2**.

13.05.05 Feed driving eccentric and drive to needle bar frame

Rule

When the needle bar is in **b.d.c.**,

1. the groove **7** of the eccentric **1** should be positioned vertically above the shaft **5** and
2. the crank **3** should be positioned vertically to the shaft **6**



- Turn the eccentric **1** (screws **2**) according to rule 1.
- Turn the crank **3** (screw **4**) according to rule 2.

Adjustment

13.05.06 Feed dog position

Rule

The feed dog 4 should move laterally and longitudinally in the centre of the needle plate recess at maximum stitch length.

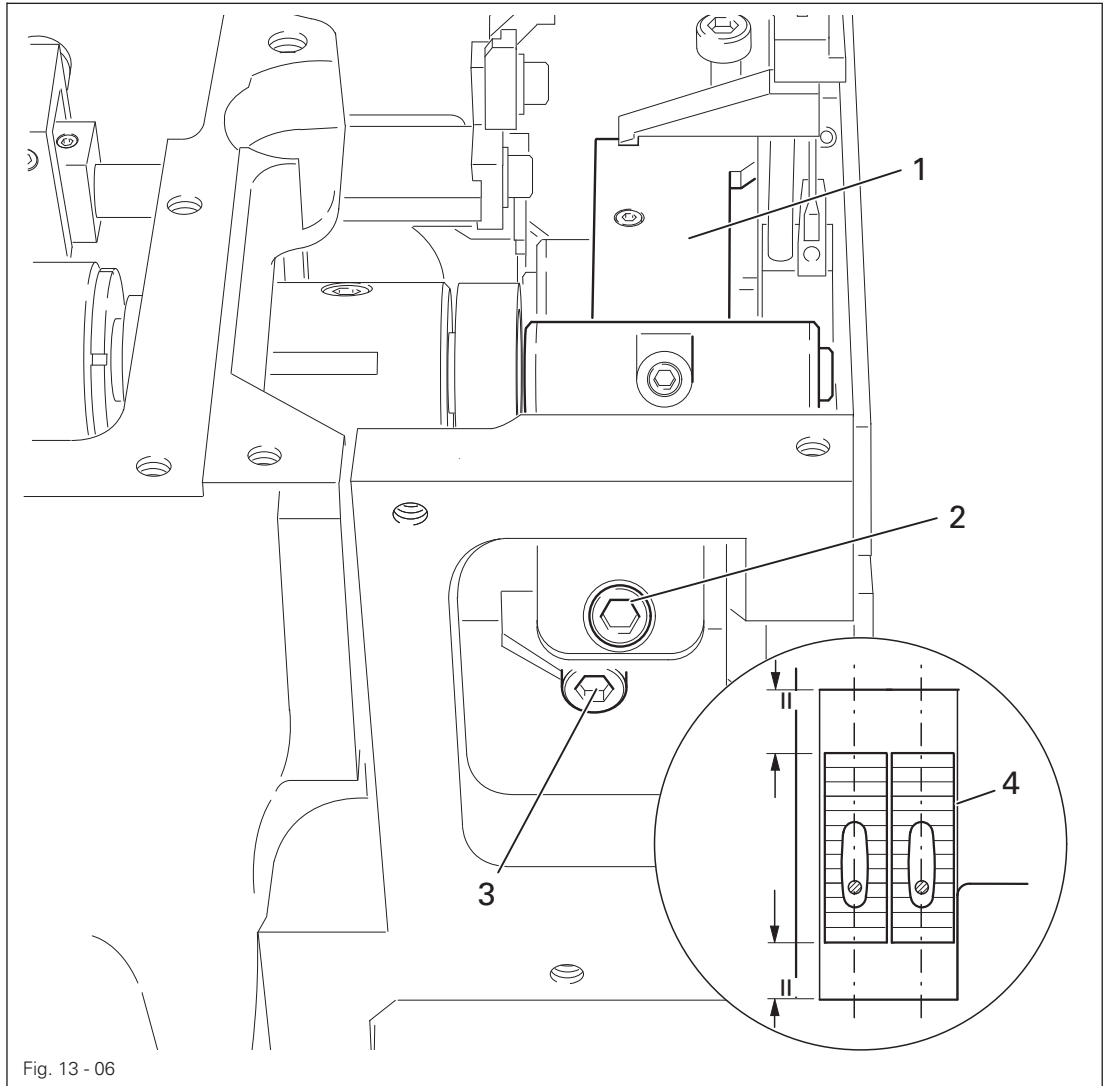
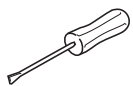


Fig. 13 - 06



- Align the attachment 1 (screws 2 and 3) according to the rule.

13.05.07 Feed dog height

Rule

When the needle bar is in **b.d.c.** and with maximum stitch length regulation, the front teeth of the feed dog **2** should be positioned **0.9 mm** and the back teeth **1.2 mm** above the needle plate.

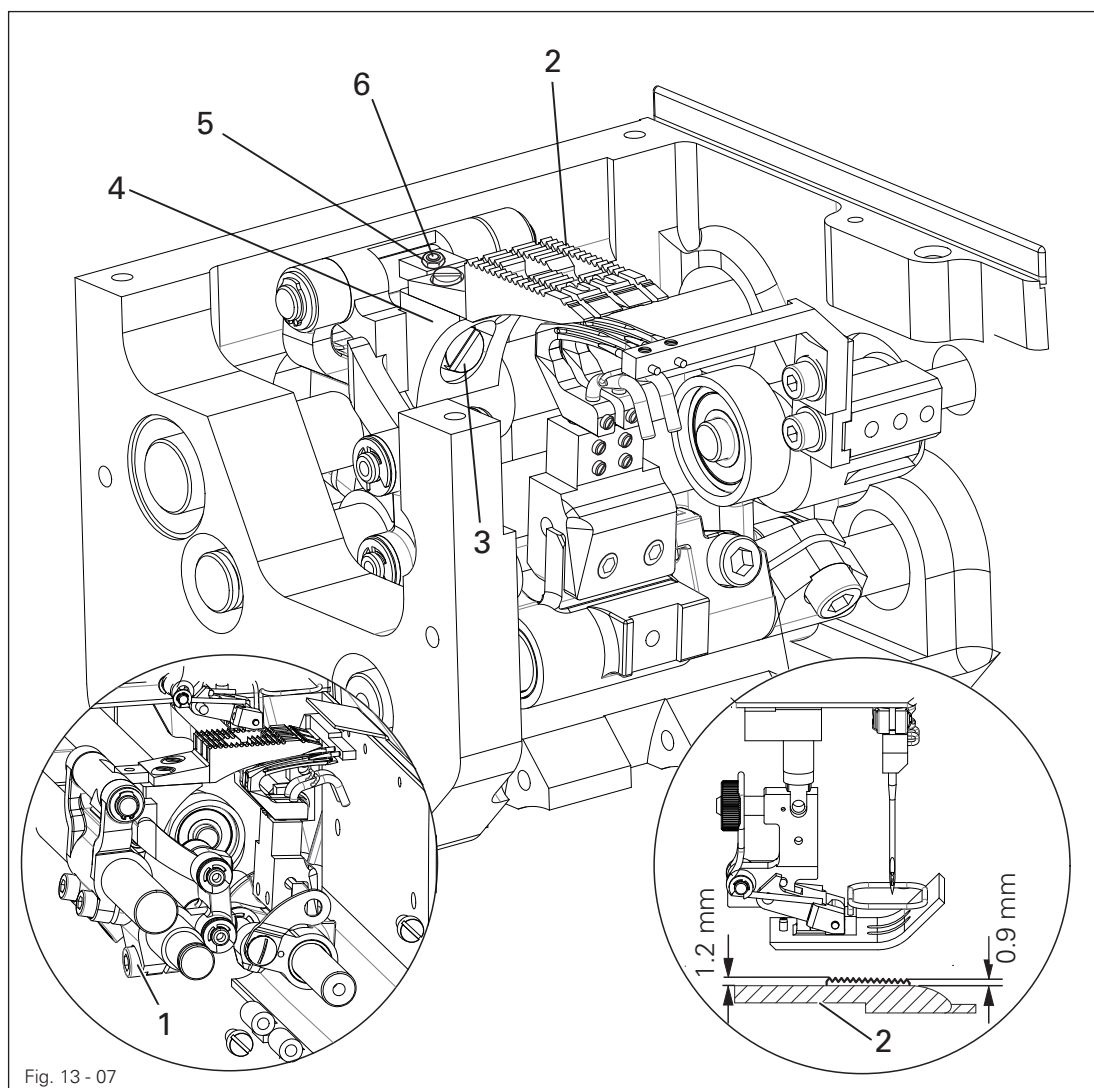
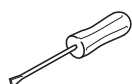


Fig. 13 - 07



- Loosen the screw 1
- Move the feed dog 2 into an inclined position 0.3 mm to the back teeth.
- Tighten the screw 1
- Loosen the screw 3
- Adjust the feed bar 4 according to the rule.
- Loosen the nut 5 on the stop screw 6.
- Screw in the stop screw 6 up to the stop and secure it with the nut 5.

13.05.08 Needle position to needle hole

Rule

1. The needle should pierce the middle of the needle hole crossways to the sewing direction.
2. When the needle bar is in **b.d.c.**, there should be a clearance of **0.4 mm** between the needle and the front edge of the needle hole.

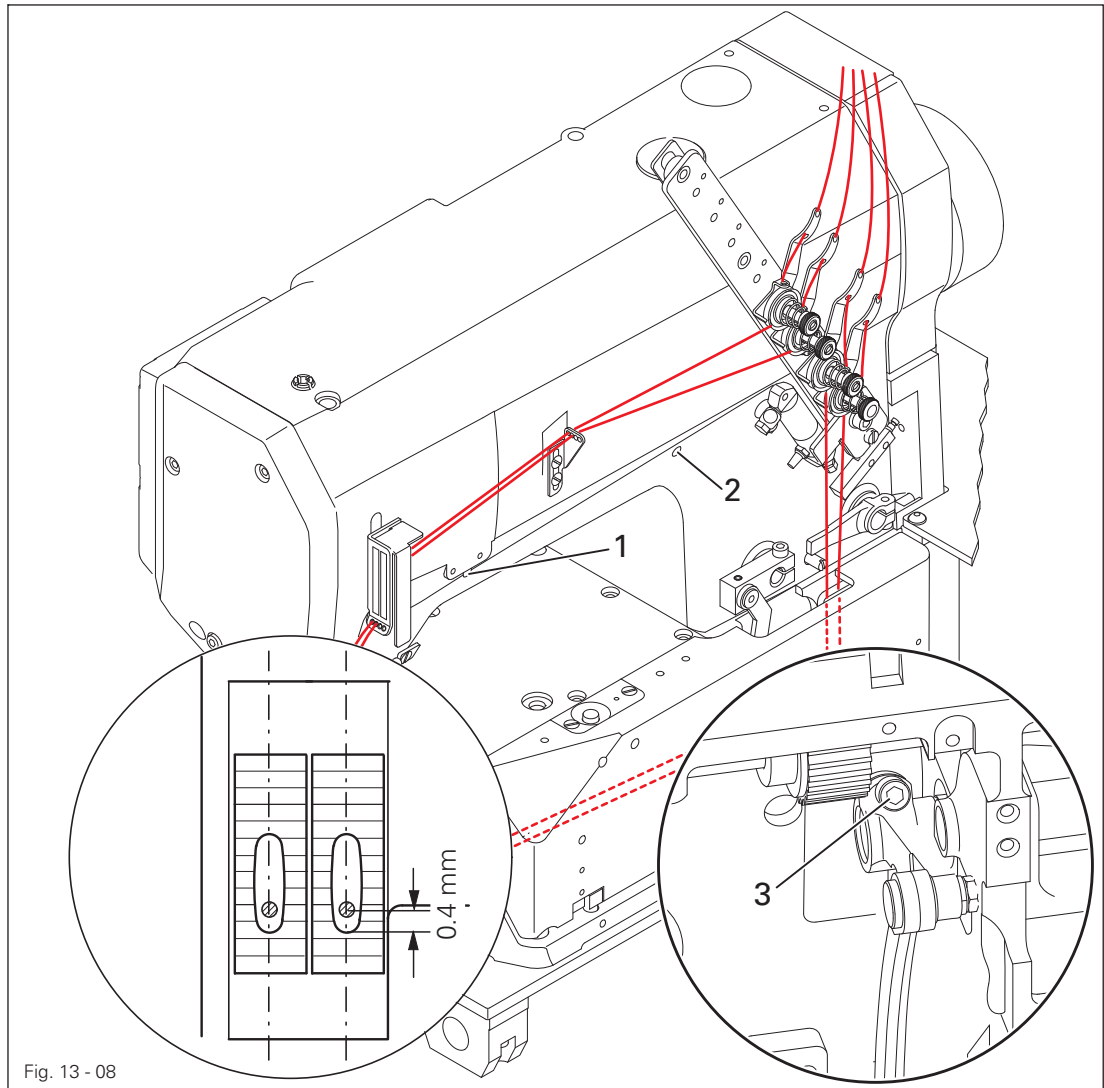
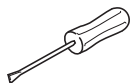


Fig. 13 - 08



- Align the needle bar frame (screws 1, 2 and 3) according to rule 1.
- Adjust the needle bar (screw 3) according to rule 2.

13.05.09 Hook position crossways to sewing direction

Rule

The hooks **1** should be parallel to the needle plate recess.

1. If the hook points are at the needle midpoint,
2. there should be a clearance of **0.1 mm** between the hook point and the needle.

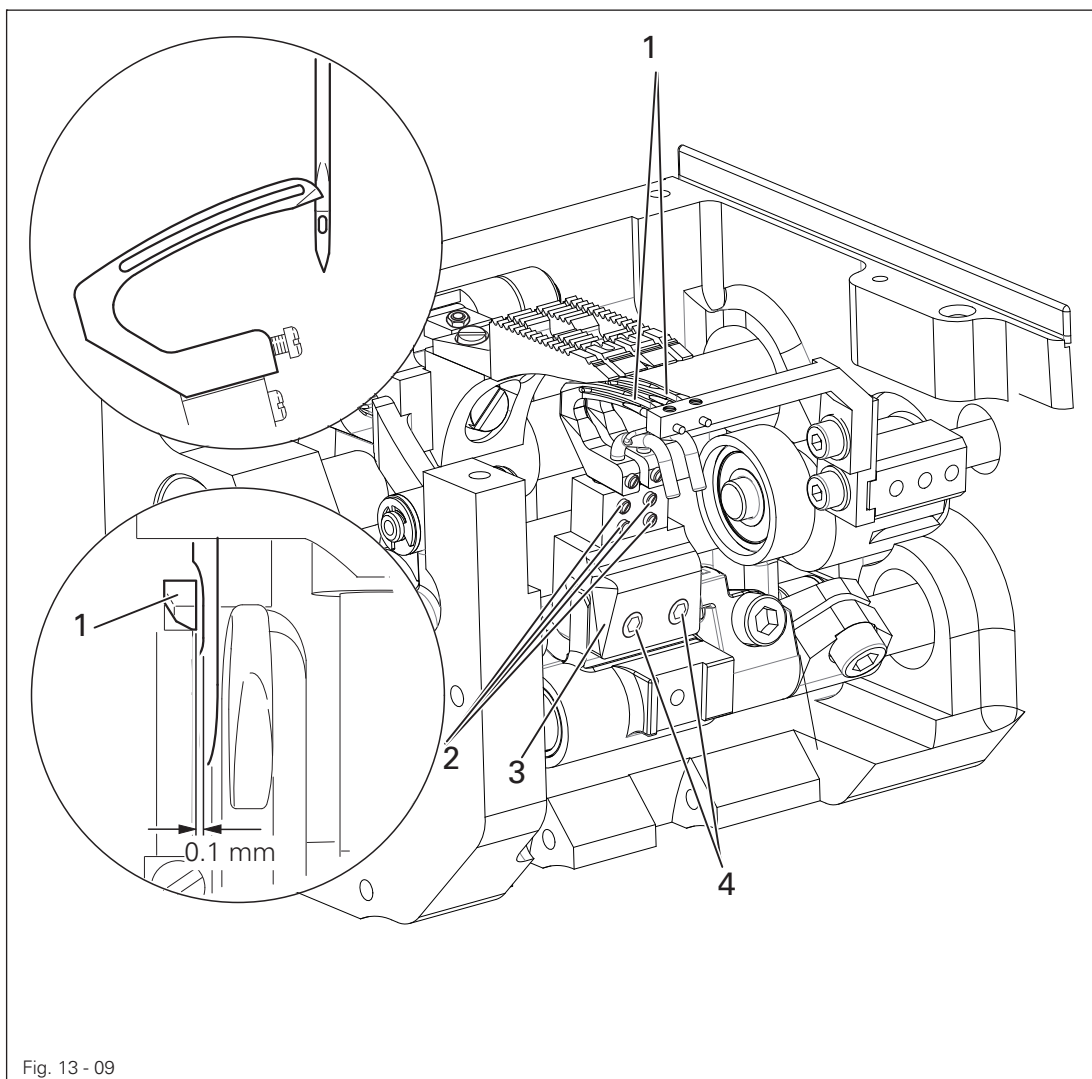
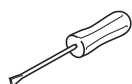


Fig. 13 - 09

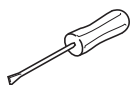
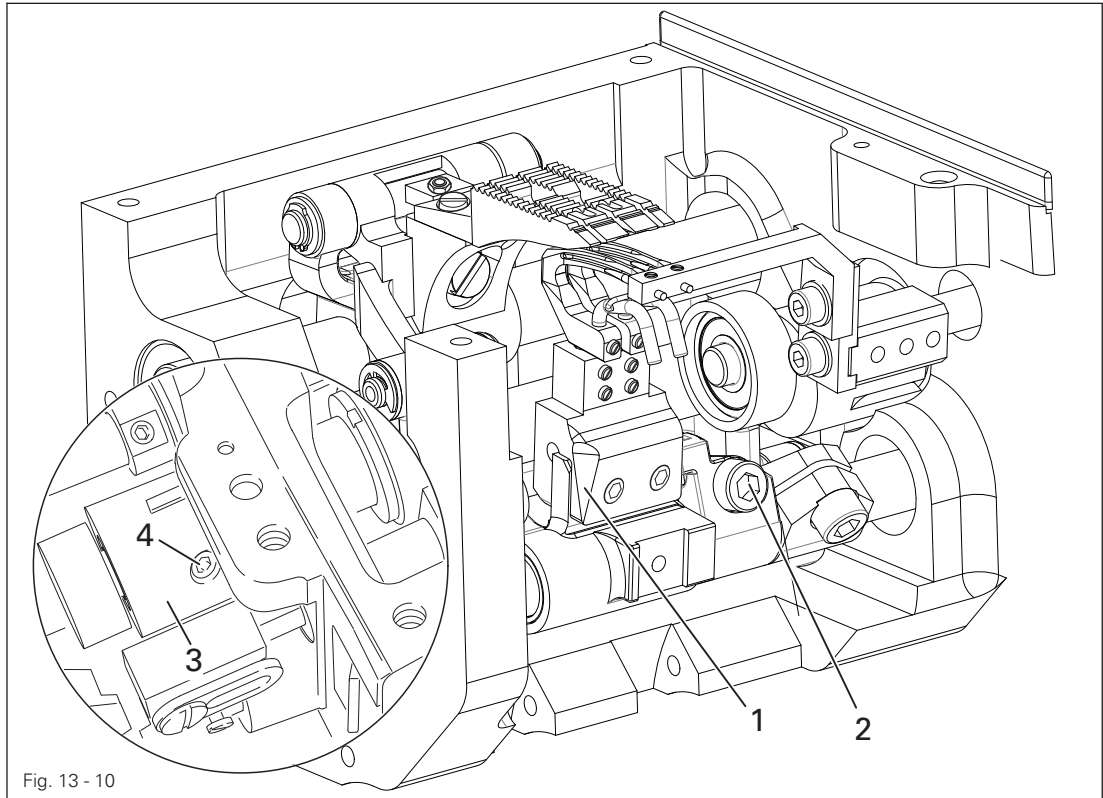


- Set the hook point at the needle midpoint by turning the handwheel.
- Align the hook **1** (screws **2**) according to **rule 1**.
- Adjust the bracket **3** (screws **4**) according to **rule 2**.

13.05.10 Readjusting hook position to sewing direction / hook eccentric

Rule

When the needle bar is positioned **4.2 mm after b.d.c.** and stitch length regulation is **4.5 mm**, the hook point should be at the needle midpoint.



Adjusting the maximum stitch length

- Move the needle bar to a position **4.2 mm after b.d.c.** by turning the handwheel.
- Secure the c-clamp to the needle bar in this position so that the upward movement of the needle bar is blocked.
- Adjust the bracket **1** (screw **2**) according to the **rule**.

Checking the hook driving eccentric

- Turn the handwheel against the direction of rotation until the c-clamp lays flat again.
- Measure the clearance between the hook point and the edge of the needle - the clearance should be **3.3 mm**.
- In the event that this differs, turn the handwheel in the direction of rotation until the c-clamp lays flat again and make the following adjustment:
- Measured value is larger than **3.3 mm**, turn the eccentric **3** (screw **4**) so that the hook moves to the left by half the value of the measured difference.
- Measured value is smaller than **3.3 mm**, turn the eccentric **3** (screw **4**) so that the hook moves to the right by half the value of the measured difference.
- Restore the setting indicated in the **rule** after a correction has been made to the eccentric **3**.



Maintain stitch length regulation for the next setting.

13.05.11 Readjusting needle height

Rule

If the hook point aligns with the front of the needle at maximum stitch length coming from behind, the lower edge of the hook should be positioned 1.5 – 2 mm above the needle eye.

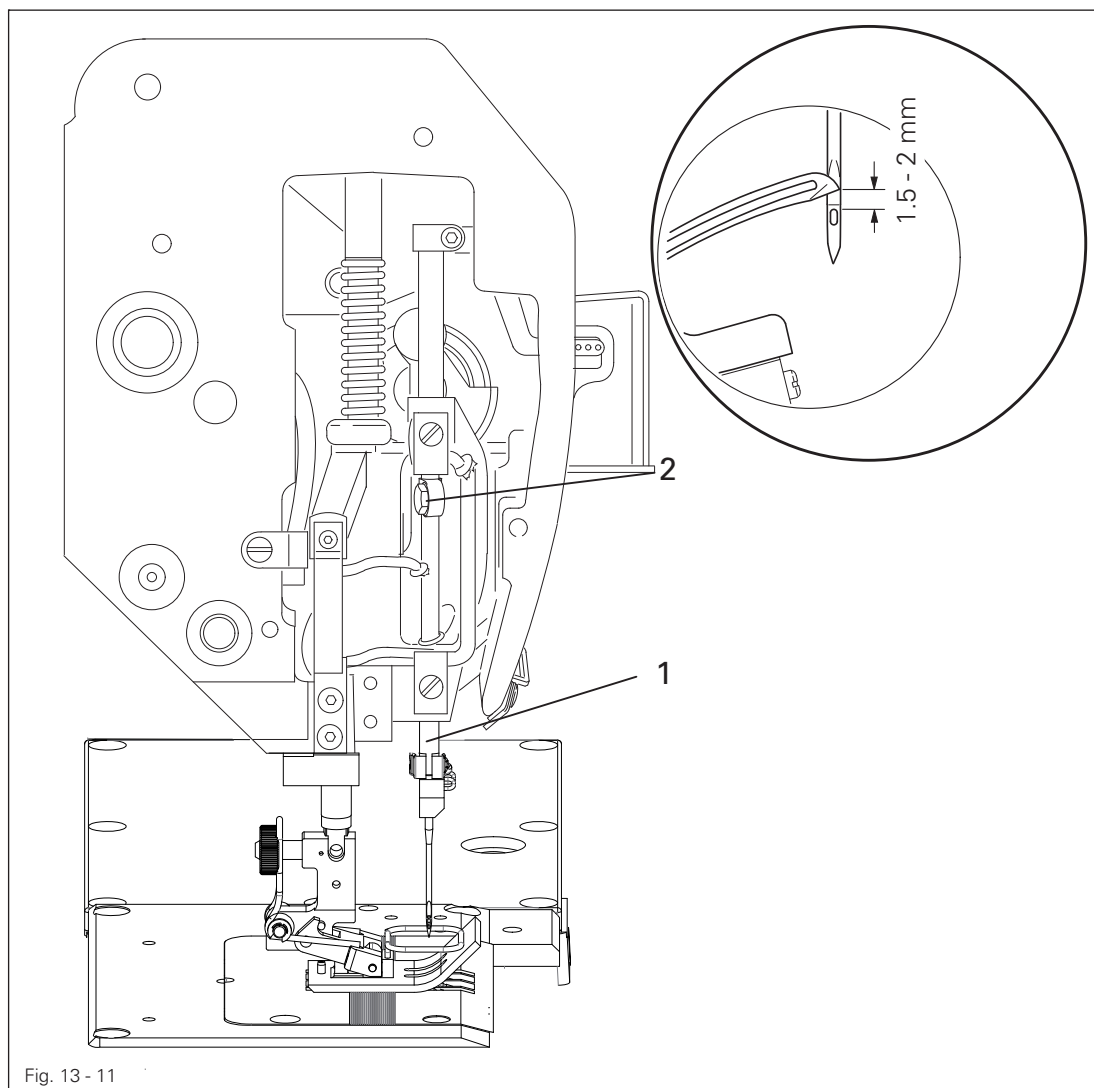
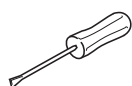


Fig. 13 - 11

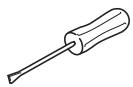
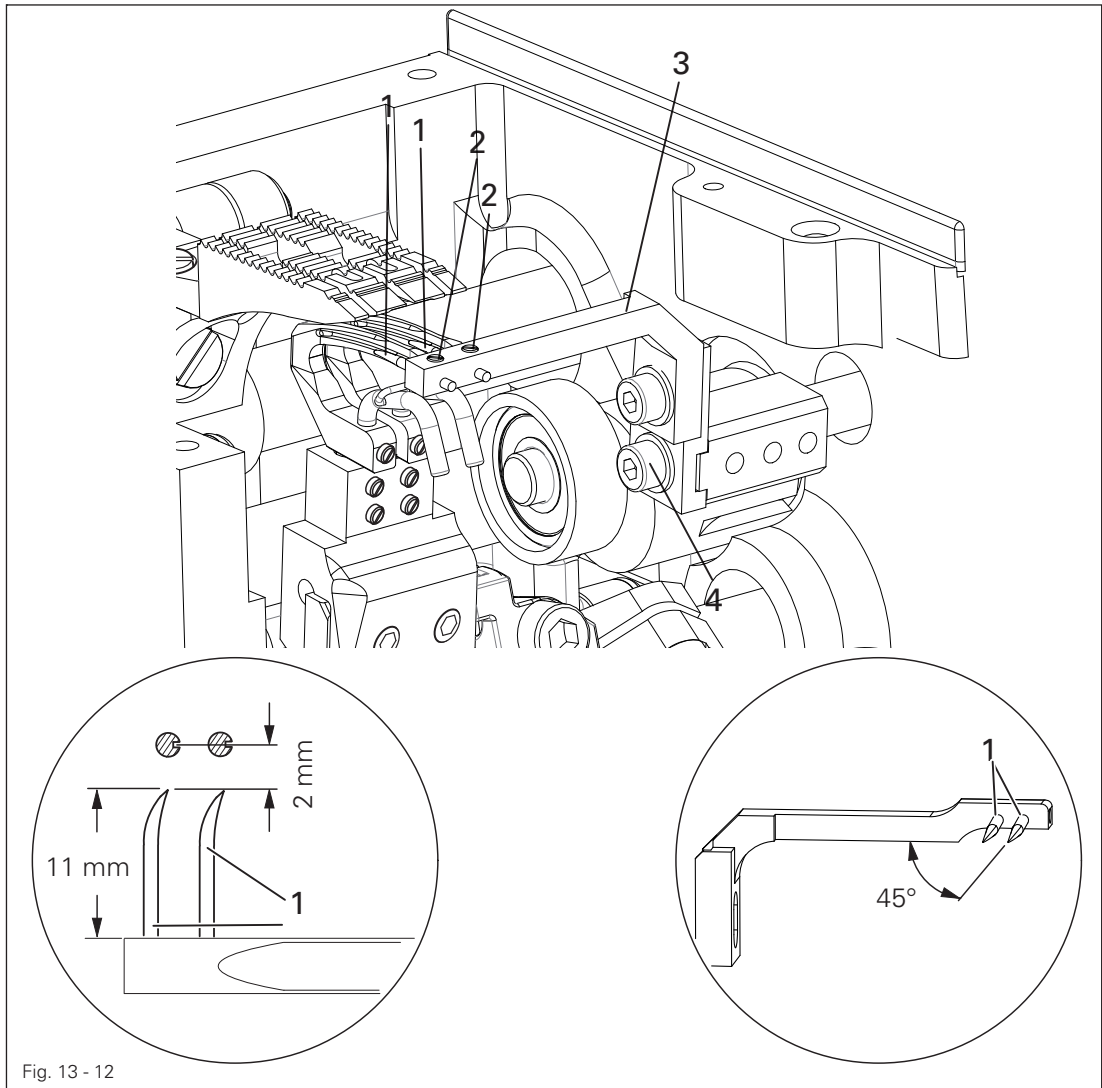


- Adjust the needle bar 1 (screw 2) according to the rule.
- Check the hook position in the sewing direction, see chapter 12.05.10 Hook position in sewing direction.

13.05.12 Spreader position in sewing direction

Rule

1. The spreader tip should be inclined approx. **45° downwards** and be **11 mm** away from the spreader holder.
2. The clearance between the tip of spreader **1** and the needle should be **2 mm** with maximum stitch length regulation and the needle bar positioned in b.d.c.

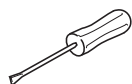
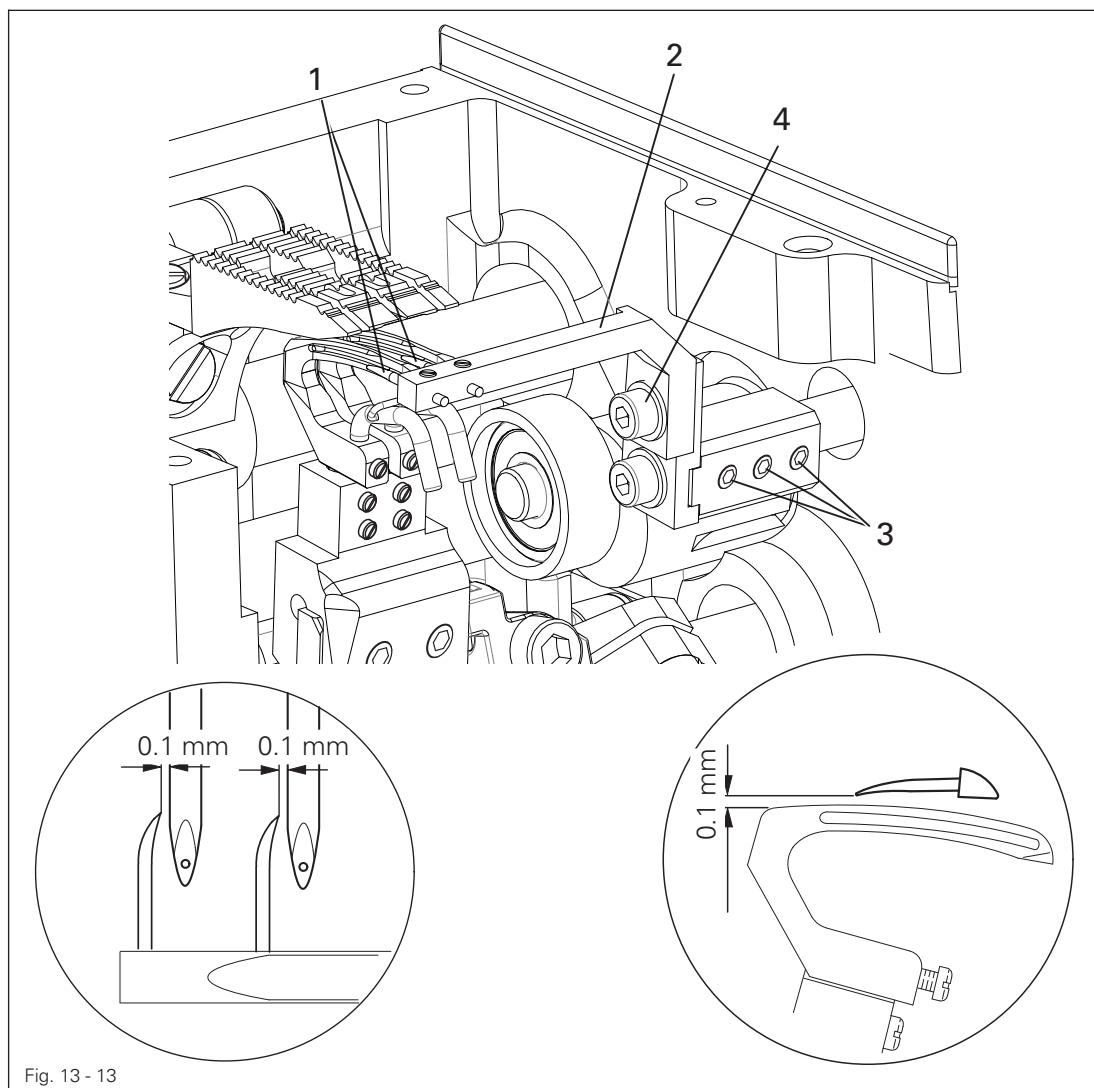


- Adjust the spreader **1** (screws **2**) according to **rule 1**.
- Adjust the bracket **3** (screw **4**) according to **rule 2**.

13.05.13 Spreader position crossways to sewing direction

Rule

1. The tips of the spreader **1** should be **0.1 mm** away from the hook at the side.
2. The tips of the spreader **1** should be positioned **0.1 mm** above the back of the hook.

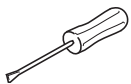
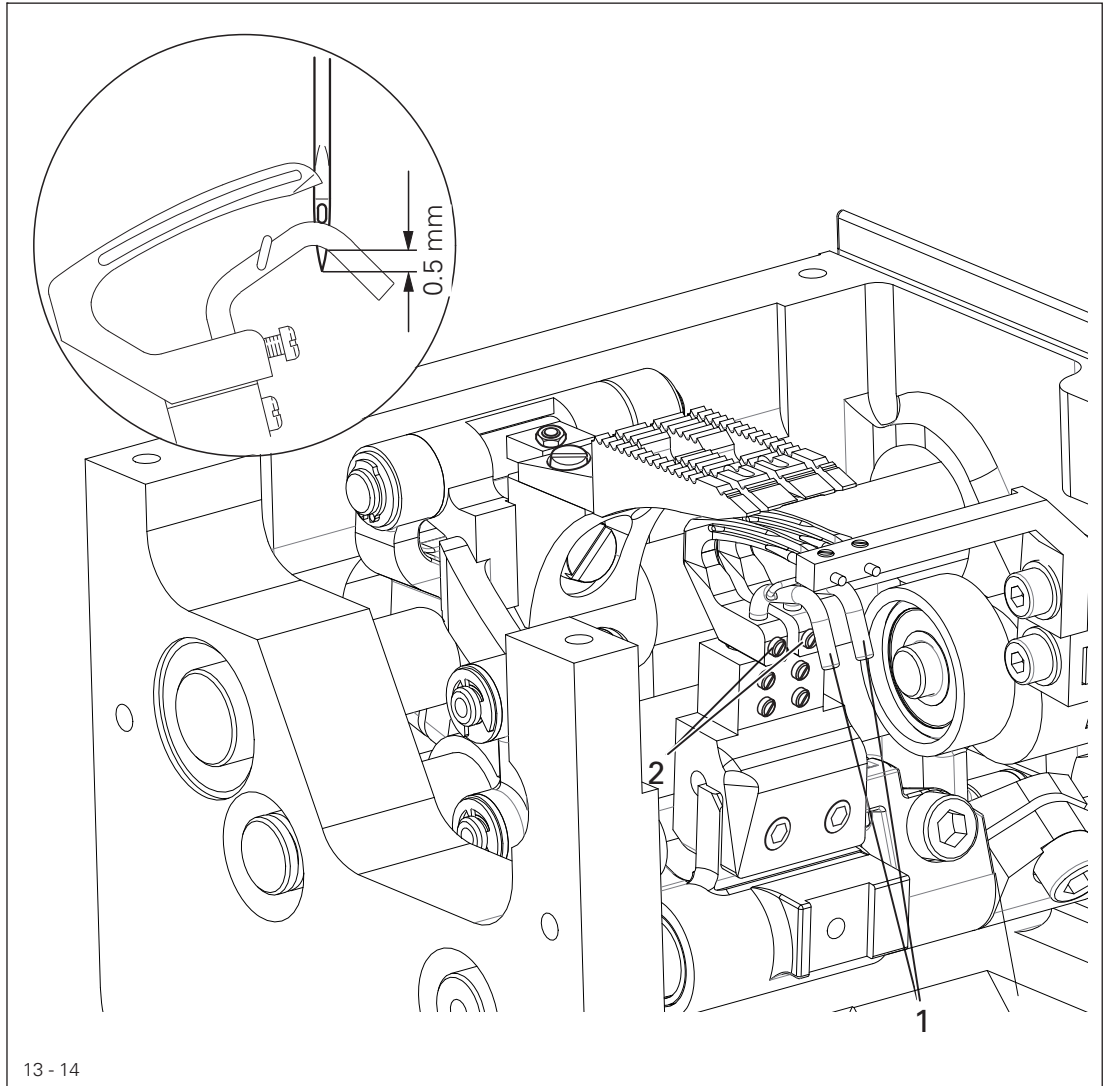


- Place the hook eye next to the tips of the spreader **1** by turning the handwheel.
- Adjust the bracket **2** (screws **3**) according to **rule 1**.
- Turn the handwheel until the tips of the spreader **1** are positioned above the back of the hook.
- Adjust the bracket **2** (screw **4**) according to **rule 2**.

13.05.14 Needle guard and thread-loop support

Rule

If the hook point is positioned at the needle midpoint coming from behind, the
1. guard **1** should rest gently on the needle and the lower edge of it should be positioned **0.5 mm** above the needle point.

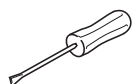
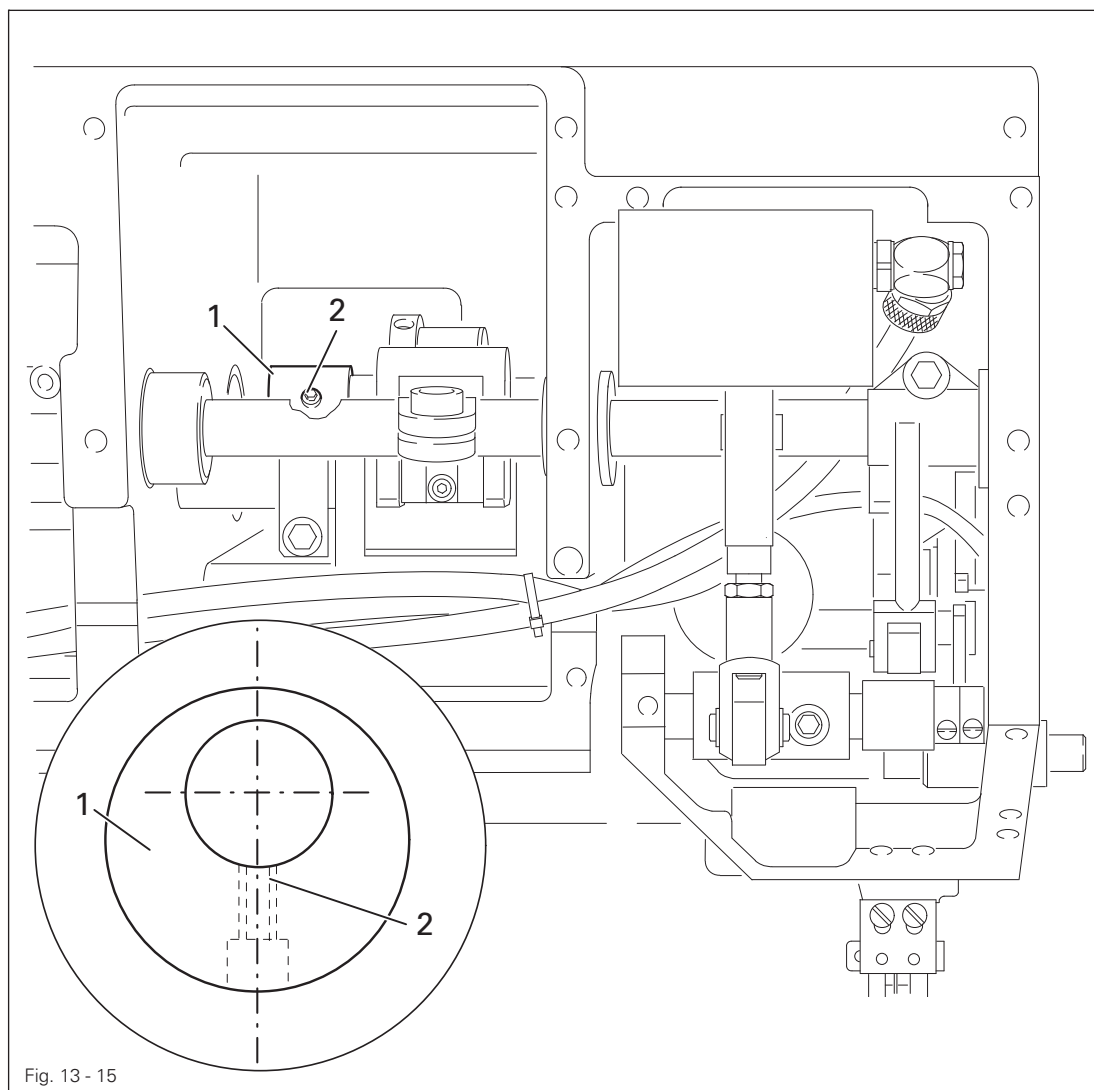


- Align the guard **1** (screws **2**) according to rule 1.

13.05.15 Compensation weight

Rule

When the **needle bar is in t.d.c.**, the largest eccentricity of the compensation weight **1** should be in the bottom position.



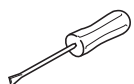
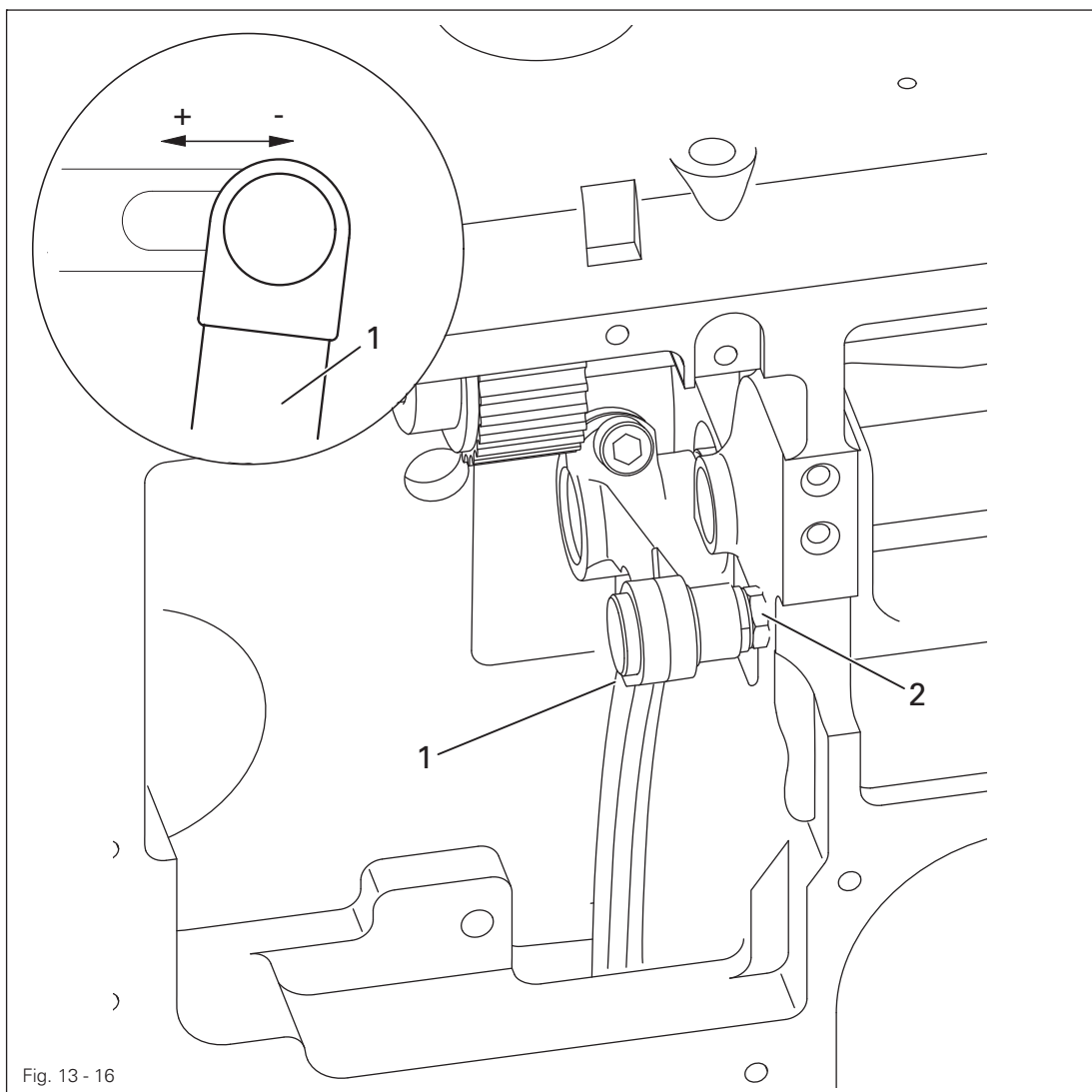
- Turn the compensation weight **1** (screw **2**) according to the rule.

Adjustment

13.05.16 Feed difference

Rule

The needle and bottom transporter should feed in the same way with maximum stitch length regulation and when turning the handwheel.



- Adjust the connecting rod 1 (nut 2) according to the rule.
- Connecting rod by " + " = larger needle feed or
by " - " = smaller needle feed.

13.05.17 Clearance between presser foot and needle plate

Rule

There should be a clearance of approx. **11 mm** between the presser foot **1** and needle plate when the presser foot **1** is raised.

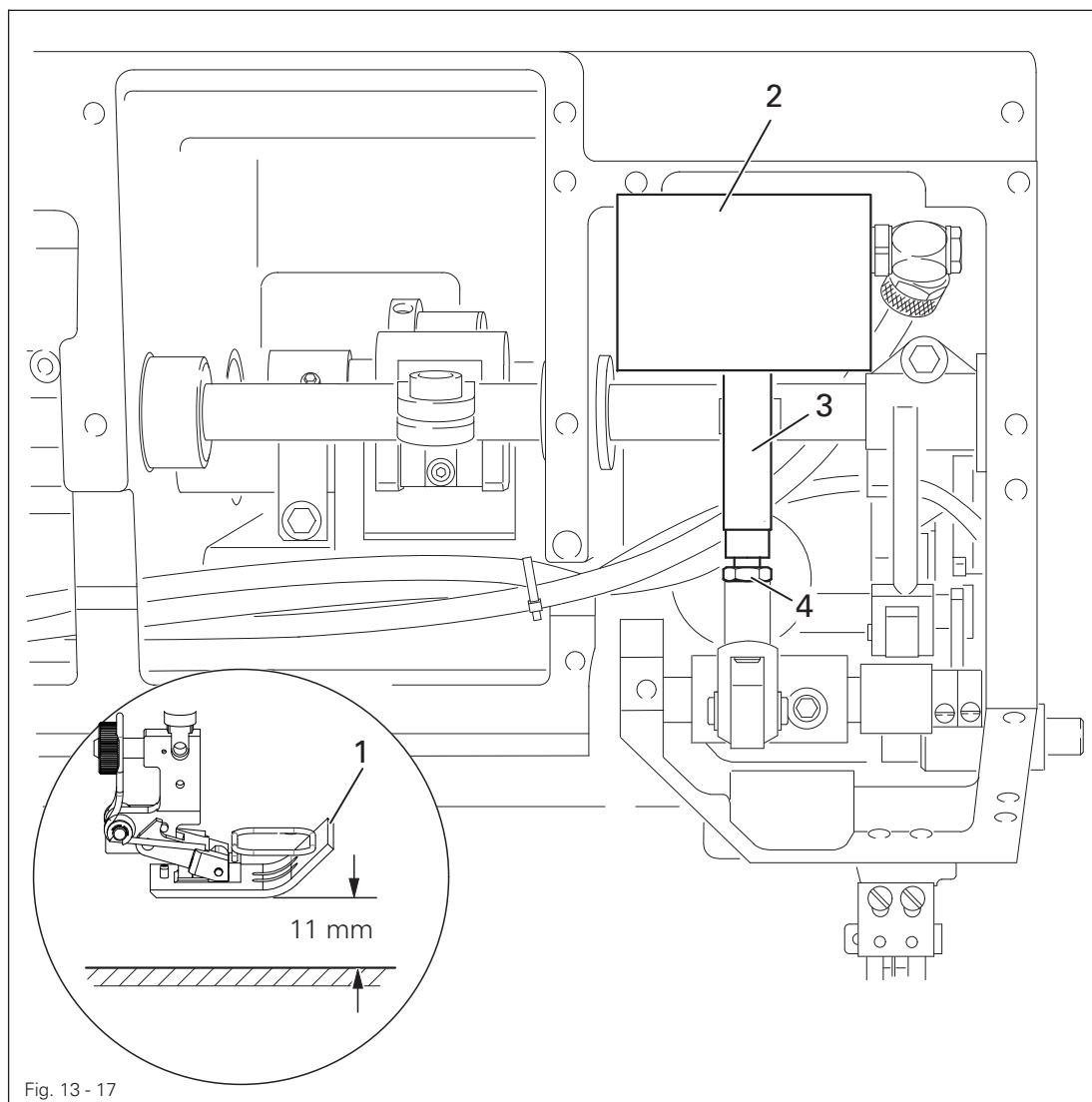
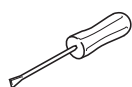


Fig. 13 - 17

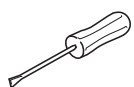
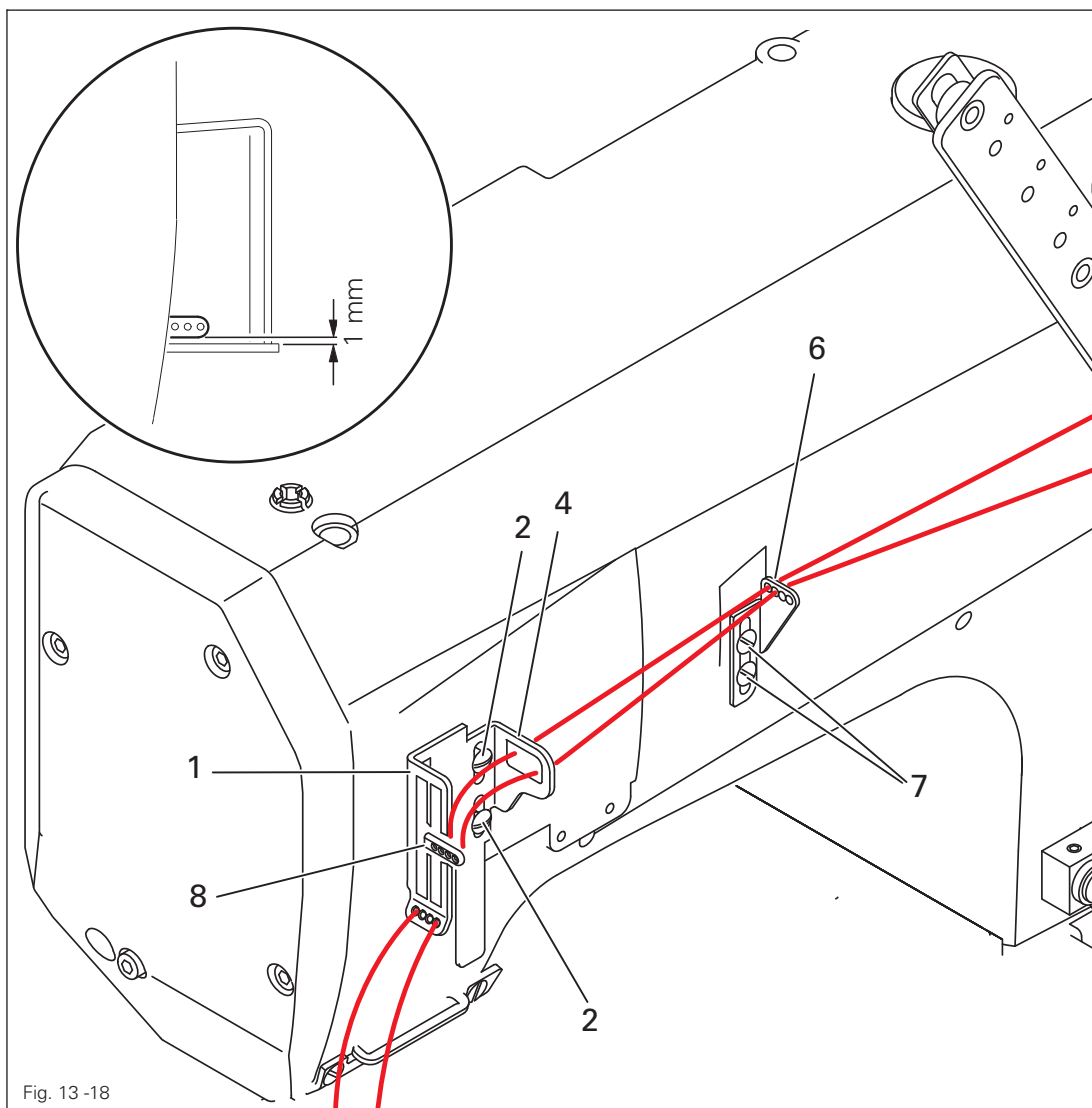


- Raise the presser foot **1** above the cylinder **2**.
- Turn the piston rod **3** (nut **4**) according to the **rule**.

13.05.18 Needle thread regulation and take-up lever guard

Rule

1. When the needle bar is in b.d.c., there should be a clearance of approx. **1 mm** between the thread lever **8** and the take-up lever guard **1**.
2. The thread lever **8** should be positioned centrally to the take-up lever guard **1** looking from the side.
3. The screws in the elongated holes of the slack thread regulator **4** and thread guides **6** should be centred.

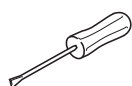
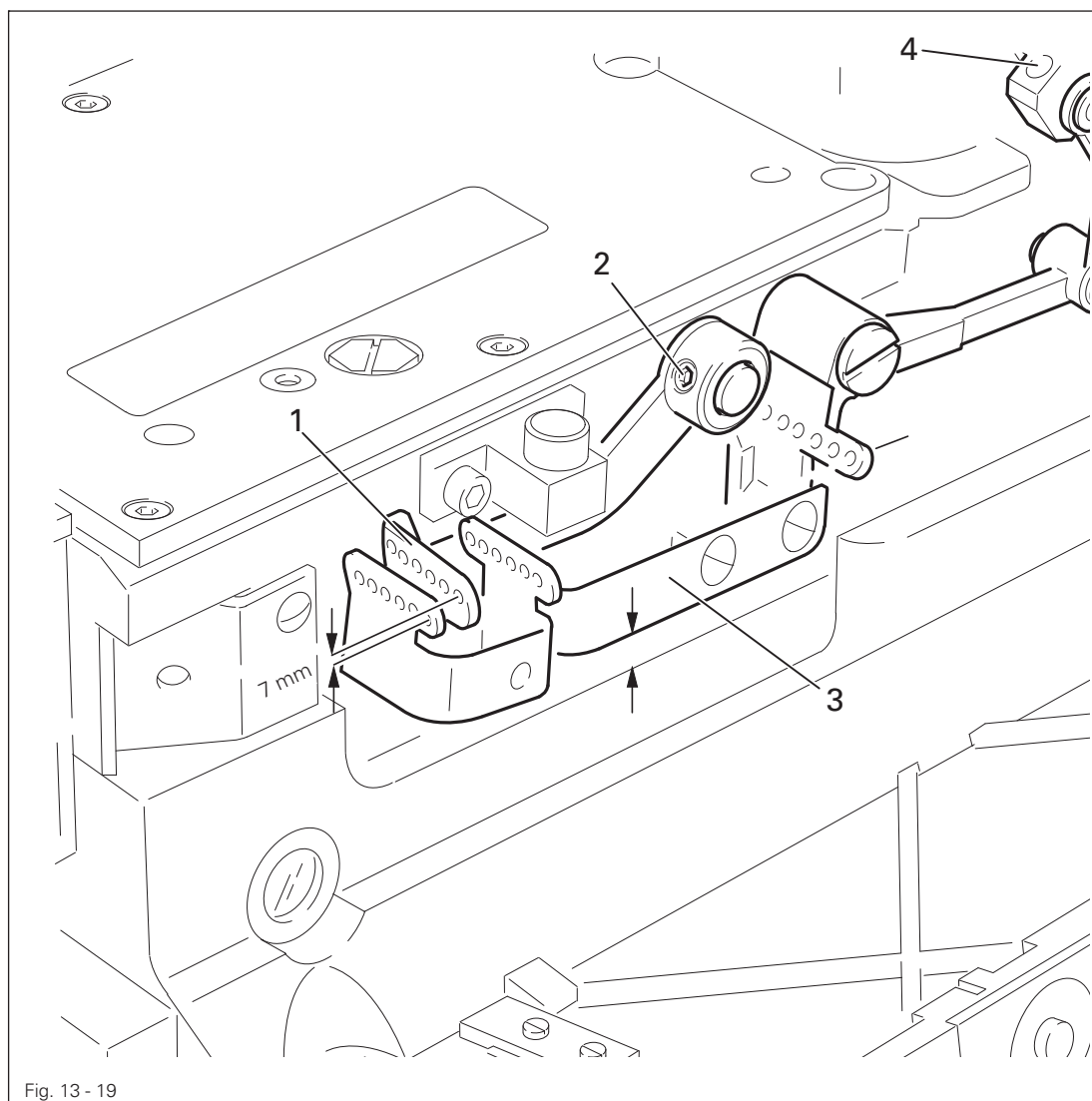


- Adjust the take-up lever guard **1** (screws **2**) according to **rules 1** and **2**.
- Adjust the thread regulator **4** (screws **2**) and the thread guide **6** (screws **7**) according to **rule 3**.

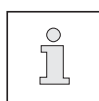
13.05.19 Looper thread regulation

Rule

1. The row of eyes on the thread puller **1** should be at a higher level (**7 mm**) than the row of eyes on the thread puller **3** in t.d.c.
2. The lower material edge of the thread puller **3** should be parallel to the edge of the moulding of the bed plate at a stitch length of **4.5 mm**.



- Adjust the thread puller **1** (screws **2**) according to **rule 1**.
- Adjust the thread puller **3** (screw **4**) according to **rule 2**.

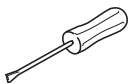
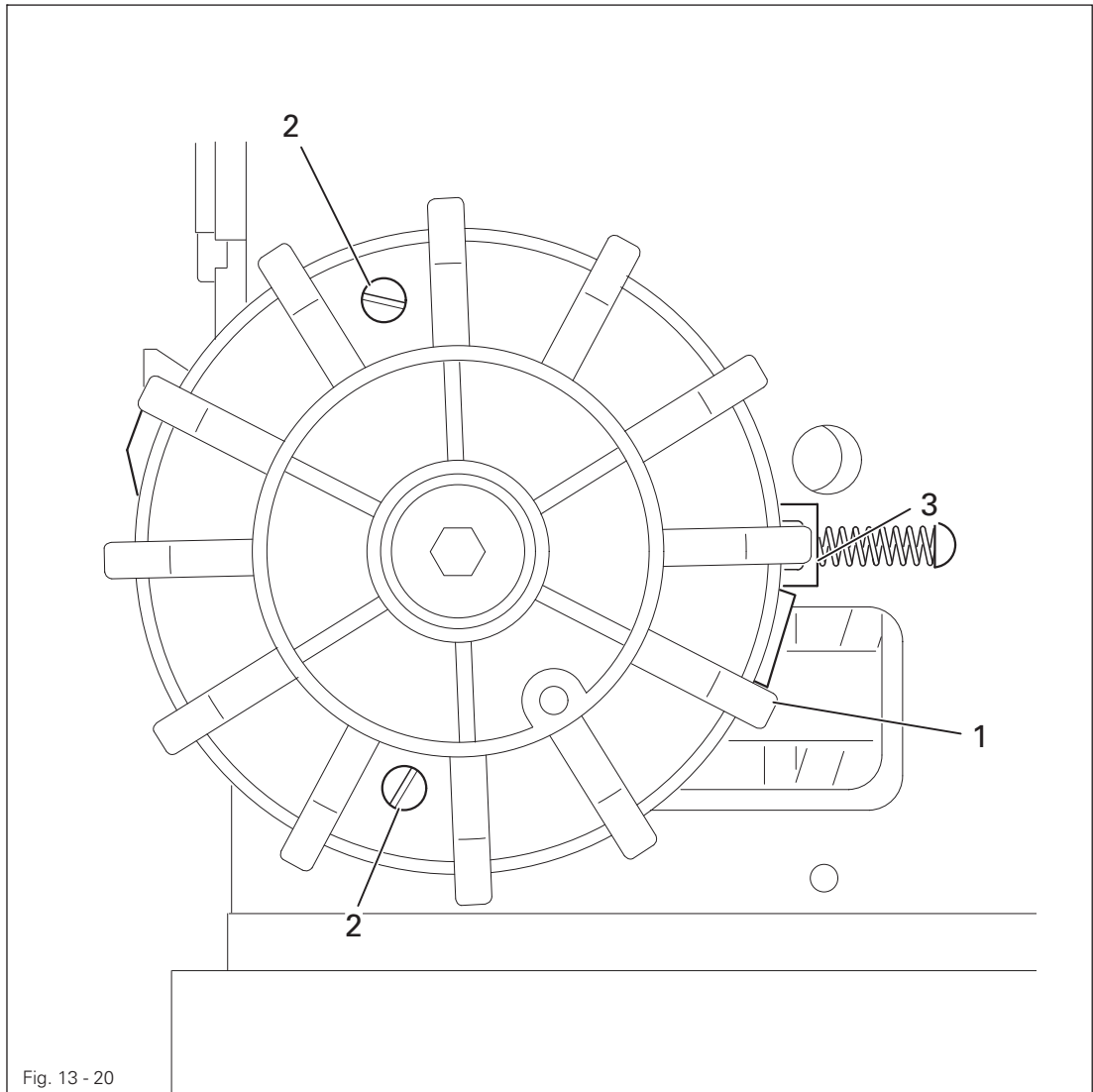


The setting of the thread puller **3** is dependent on the sewing conditions. More or less thread can be pulled if required depending on the corresponding setting.

13.05.20 Stitch length limitation

Rule

The stop element 1 should rest on the stop 3 at the desired maximum stitch length.

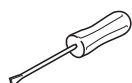
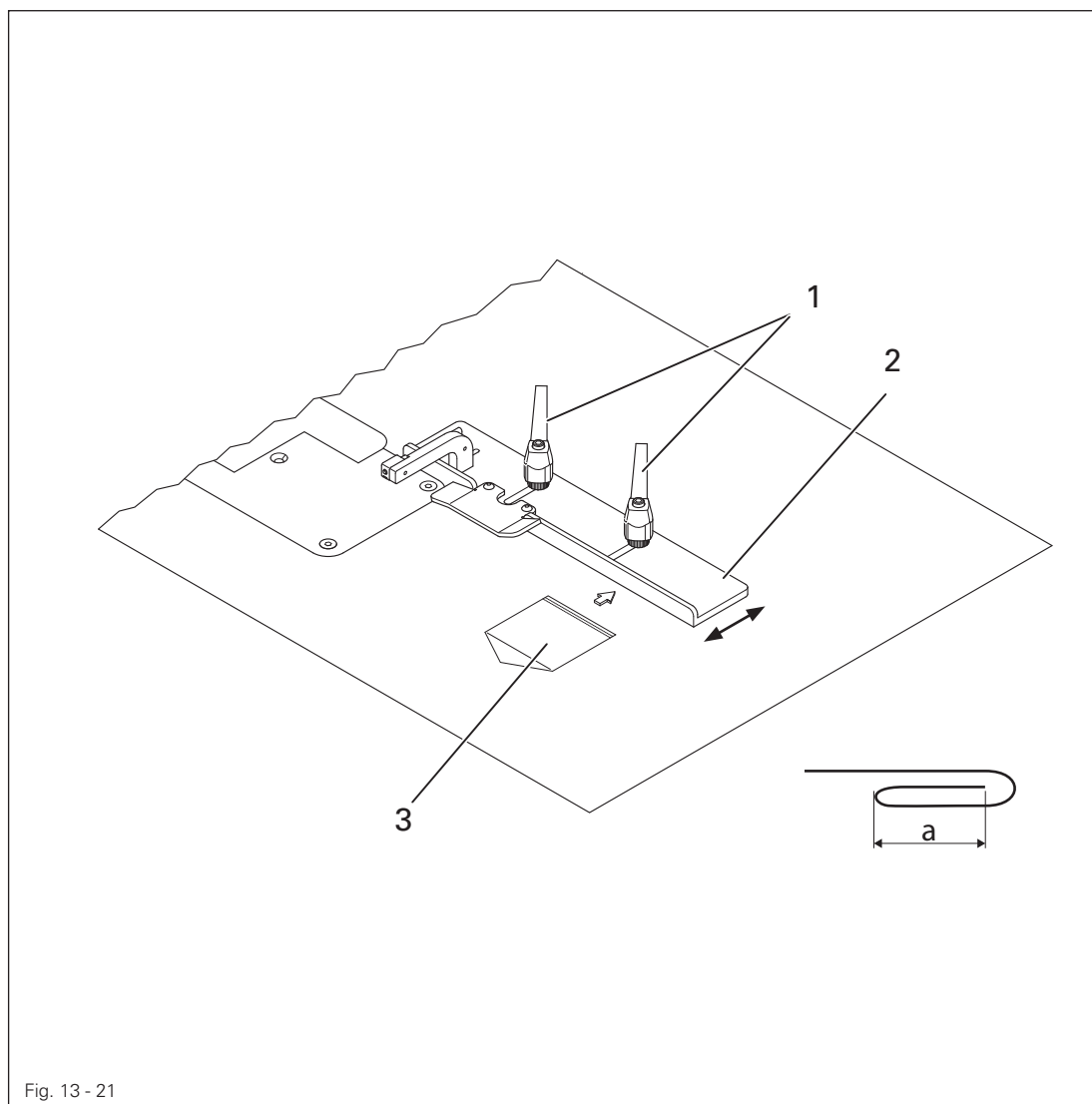


- Turn the stop element 1 (screws 2) according to the rule.

13.05.21 Adjusting workpiece infeed and stop

Rule

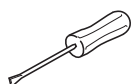
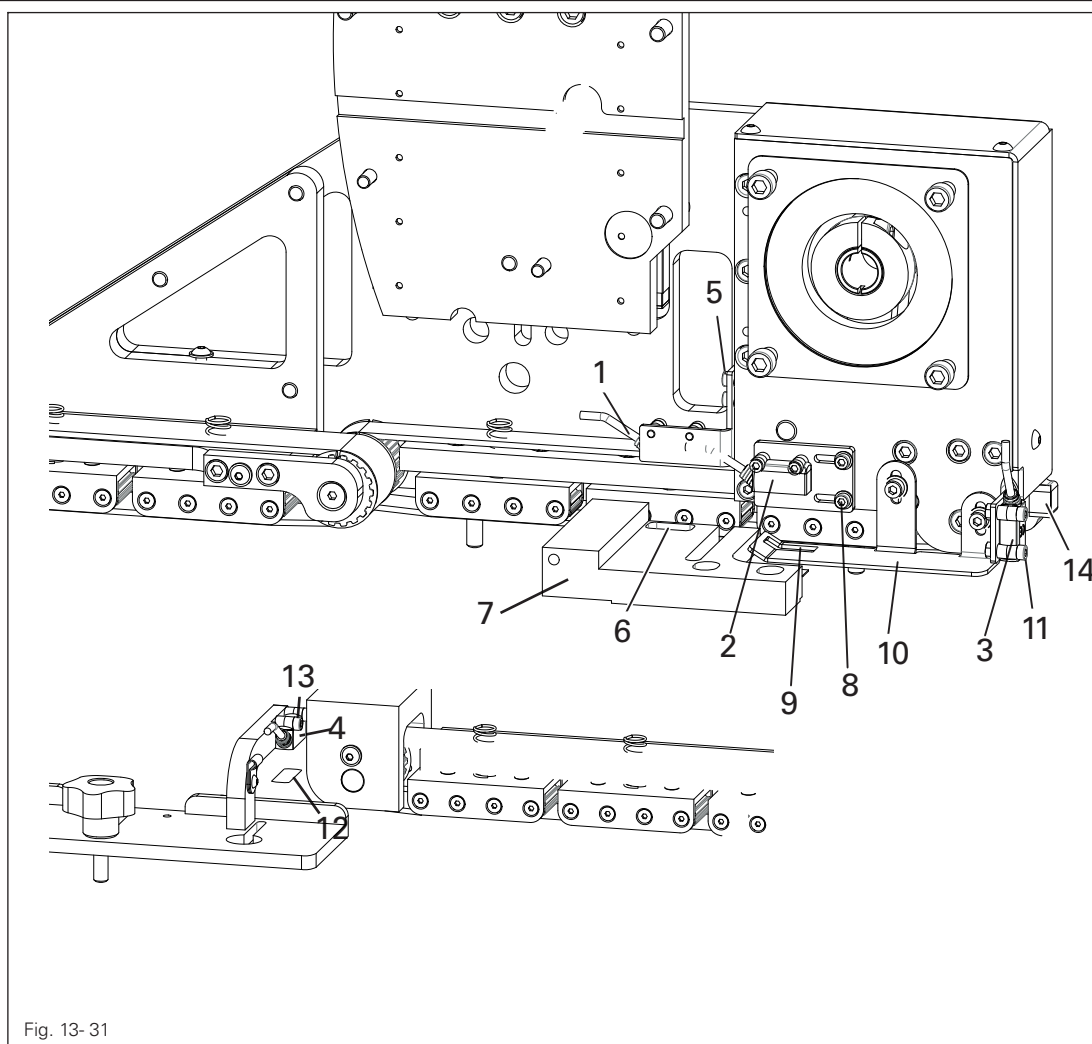
The position of the stop bar 2 is determined by the position of the seam on the pocket blank 3. Adjustments are made by creating a sewing sample. Adjusting the stop bar determines dimension "a" of the pocket.



- Loosen both tensioning levers 1. Adjust the stop bar 2 according to the rule.
- Tighten both tensioning levers 1.

Rule

1. Adjust the sensor **1** so that the beam of light shines through the opening **6** in the knife guard **7** onto the sensor film.
2. Adjust the sensor **2** so that the beam of light shines through the opening **9** in the fabric guide **10** onto the sensor film.
3. Adjust the sensor **3** so that the light beam **14** shines on the opposite sensor film.
4. Adjust the sensor **4** so that the beam of light shines **12** onto the sensor film.



- Loosen the screws **4** and adjust the sensor **1** according to rule 1.
- Loosen the screws **8** and adjust the sensor **2** according to rule 2.
- Loosen the screws **11** and adjust the sensor **3** according to rule 3.
- Loosen the screws **13** and adjust the sensor **4** according to rule 4.

13.05.23 Adjusting feed band on right, belt tension and belt height

Rule

1. Align the feed mechanism parallel to the table top.
2. Adjust the height of the feed mechanism so that there is a clearance of **0.5 mm** between the table top and the toothed belt wheel **4** and a clearance of **0.3 mm** between the table top and the toothed belt wheels **5**.
3. Adjust the tension of the belt by moving the tensioning bearing **2**.

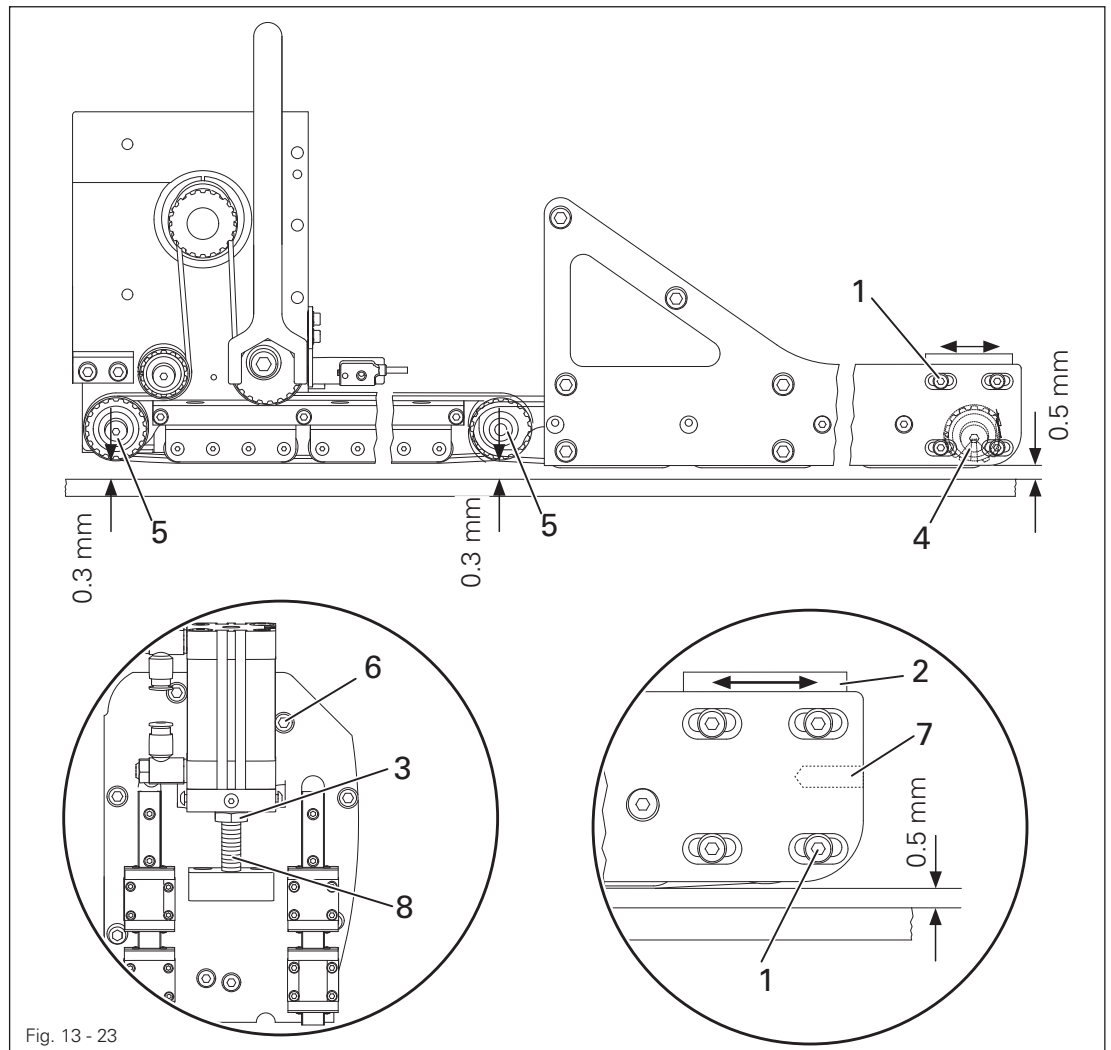
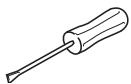


Fig. 13 - 23



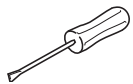
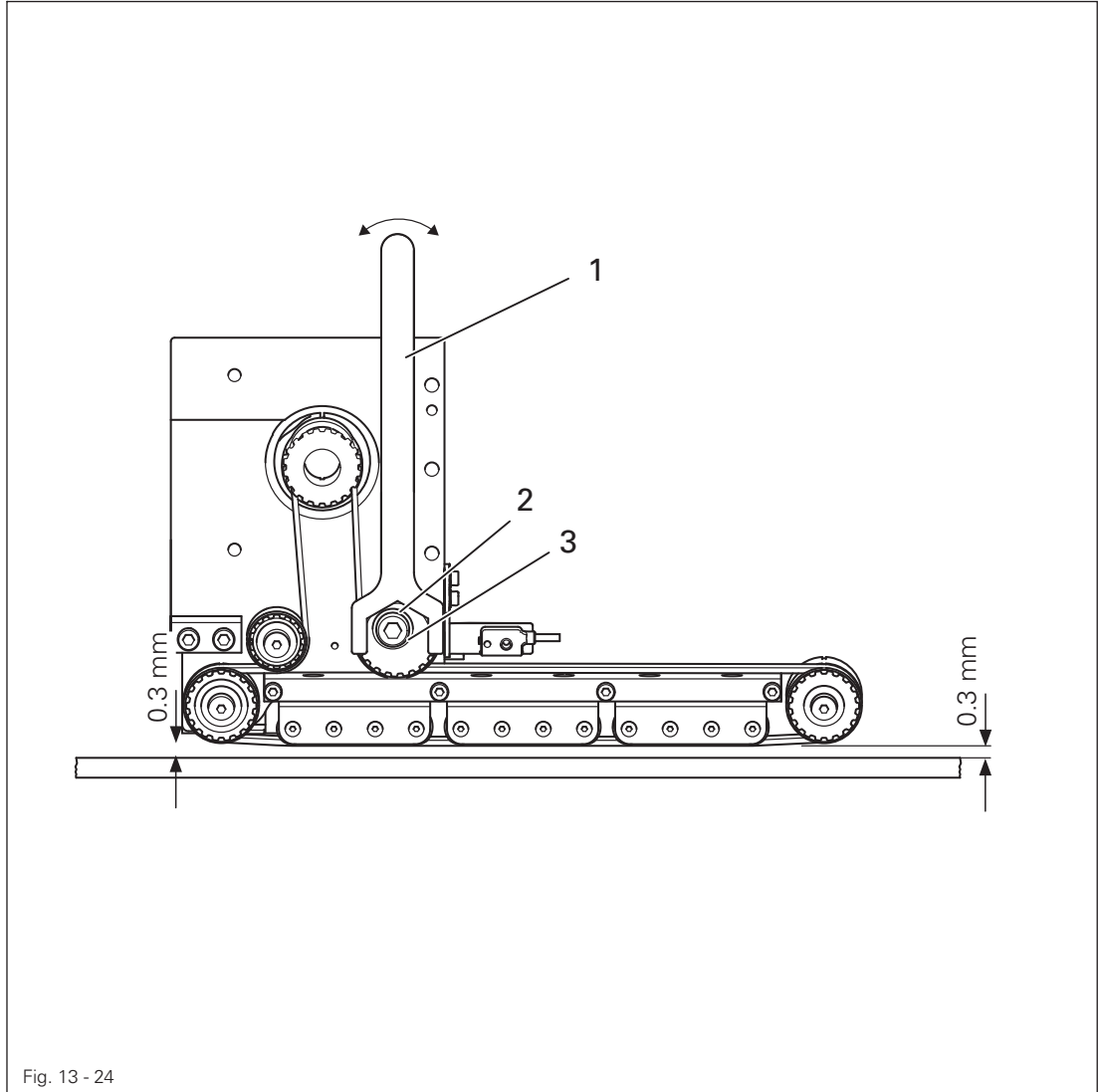
- Loosen the screws **6** and align the feed mechanism according to rule 1. Then tighten the screws.
- Adjust the belt height by loosening the lock nut **3** and turning the piston rod **8** according to rule 2. Then tighten the lock nut **3**.
- Loosen the screws **1** and the tensioning bearing **2** by turning the tensioning screw **7** in the direction of the arrow according to rule 3. Then tighten the screws **1**.

Adjustment

13.05.24 Adjusting feed band on left, belt tension and belt height

Rule

Adjust the tension of the belt by moving the eccentric roller 3.



- Loosen the screw 2 and adjust the eccentric roller with the open-ended spanner 1 in the direction of the arrow according to the rule. Then tighten the screw 2.

13.05.25 Chain cutter, settings

Rule

1. Adjust the chain cutter knife 1 so that there is no ridge / edge to the table top in the upper position (home position).
2. Adjust the knife pressure through via adjustment pin 5 to ensure the cutting operation over the entire knife edge.

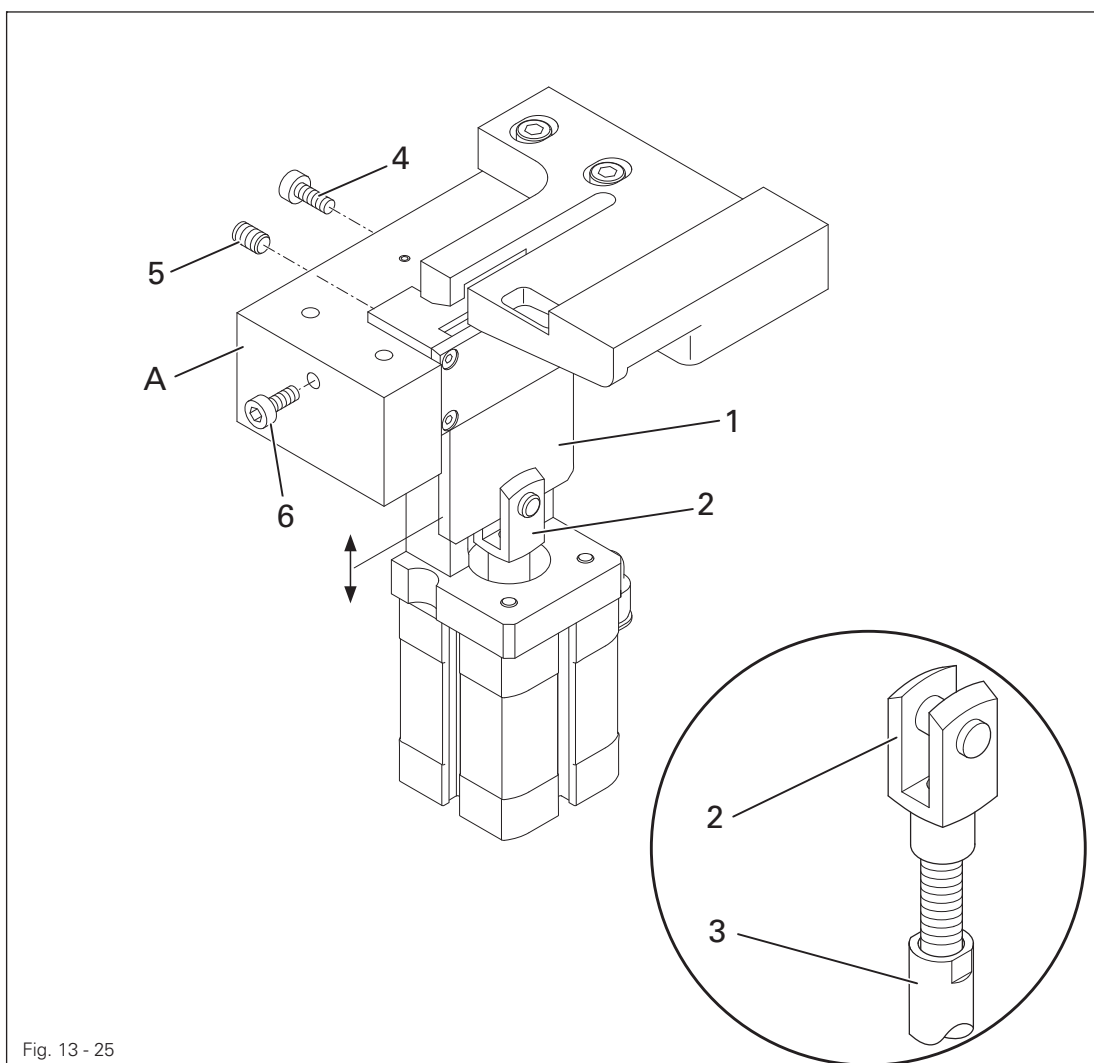
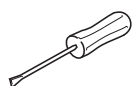


Fig. 13 - 25



- Turn the piston rod 3 against the yoke head 2 according to rule 1.
- Loosen the screws 4 and 6, remove component A.
- Adjust the screw 5 according to rule 2 and secure it with low strength with a screw locking device.
- Mount component A with the screws 4 and 6. There must be no ridge to the table top.

13.05.26 Feed mechanism: taking over pocket

Rule

1. Adjust the height of the feed mechanism **1** so that the pocket is transported safely.

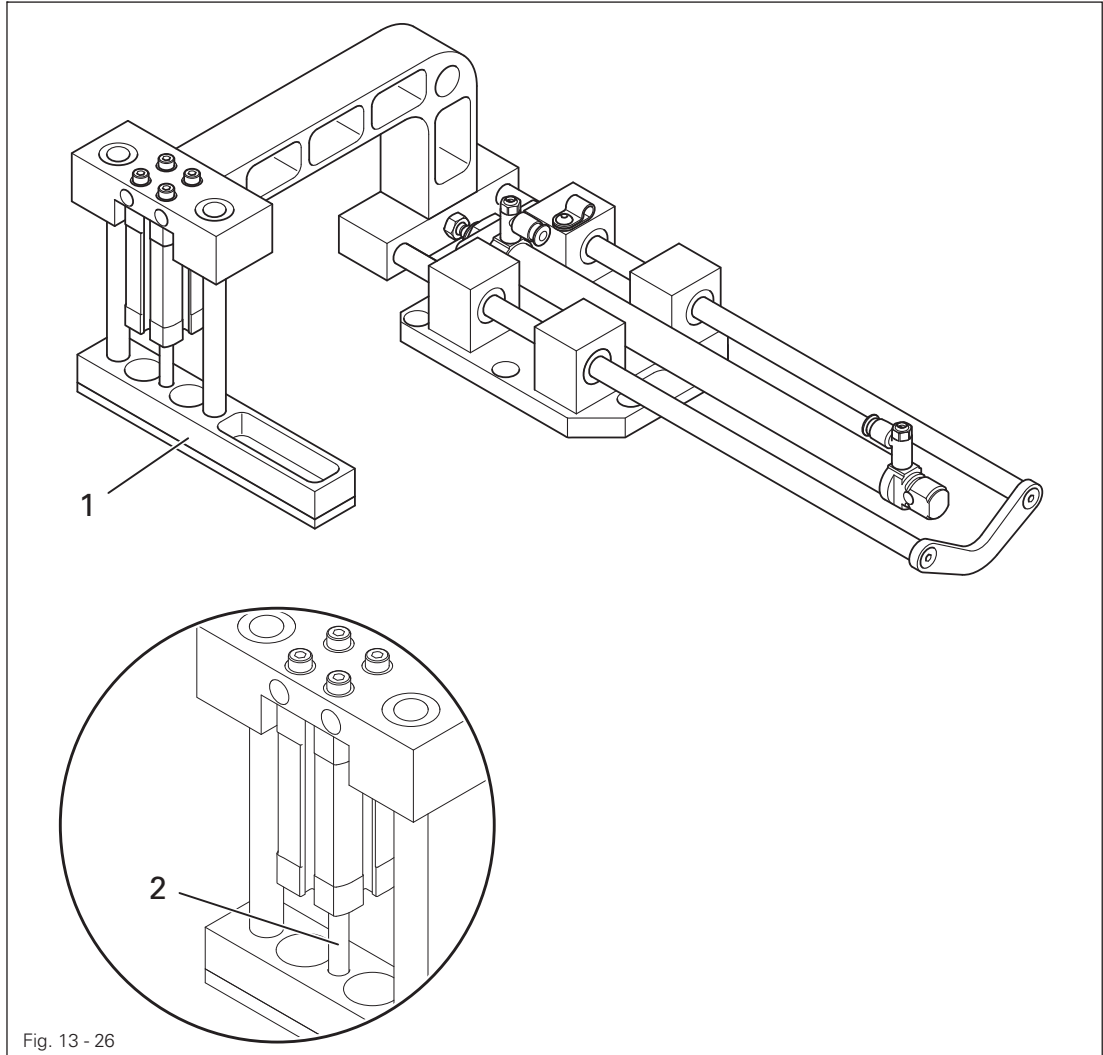
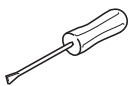


Fig. 13 - 26

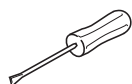
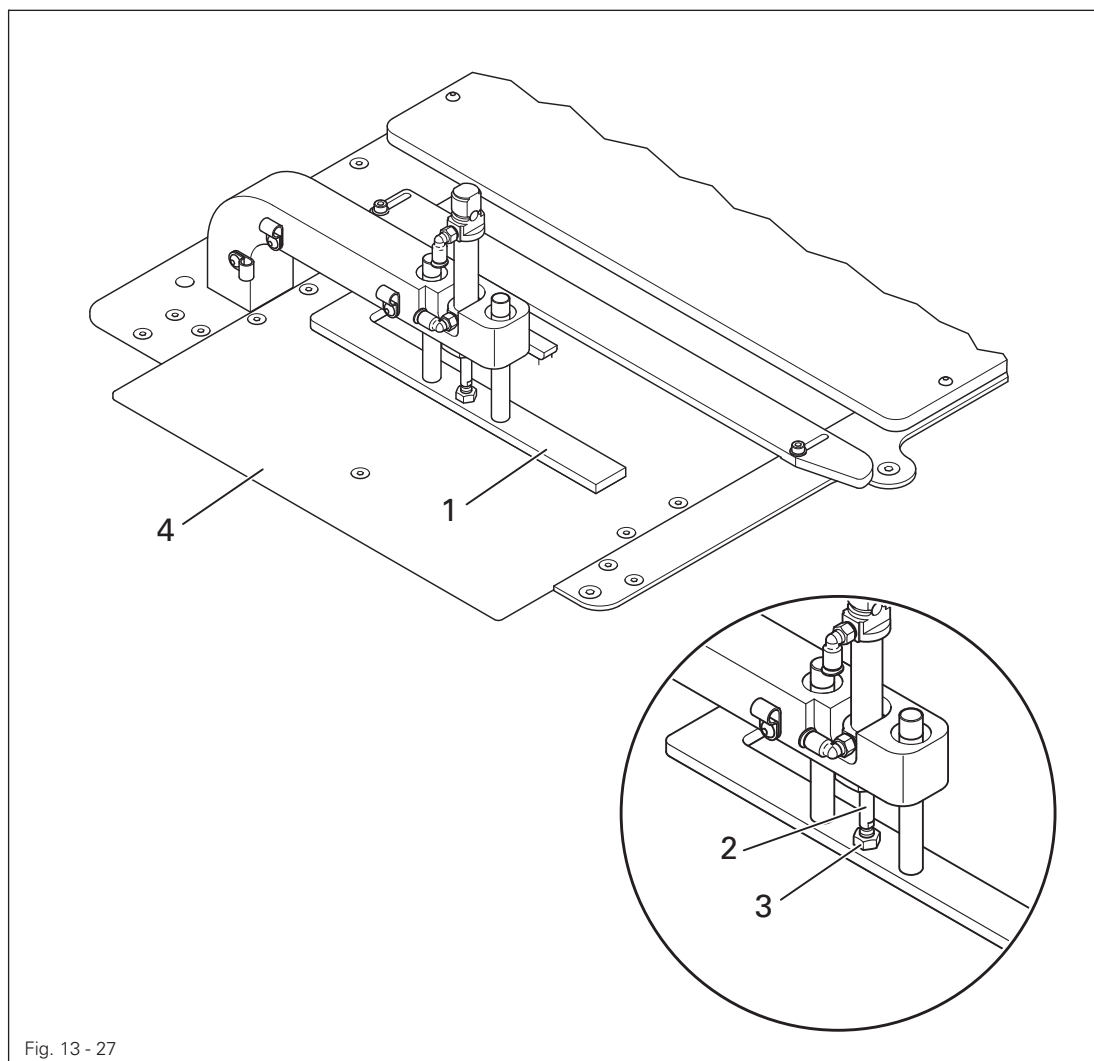


- Adjust the piston rod **2** by turning it according to the rule.

13.05.27 Feed mechanism: holding pocket

Rule

1. Adjust the height of the feed mechanism **1** so that the pocket is transported safely and held securely when the flap **4** is opened.



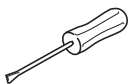
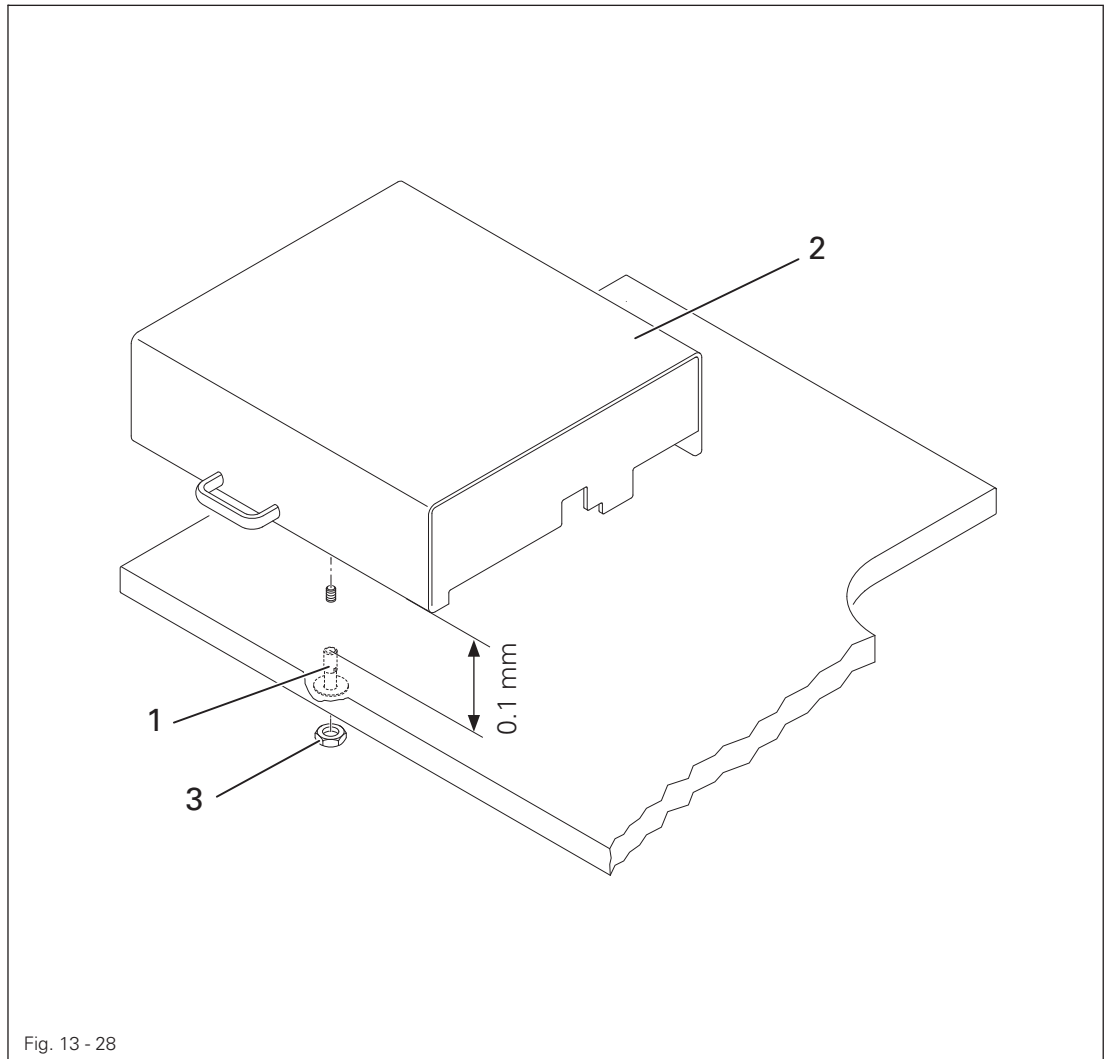
- Loosen the lock nut **3** on the piston rod **2** and adjust the height of the holding device according to the rule. Tighten the lock nut again.

Adjustment

13.05.28 Adjusting protective cover on stacker and sensor

Rule

1. The clearance between the sensor **1** and the protective cover **2** should be set to **0.1 mm**.



- Adjust the sensor **1** by turning it up or down according to the rule.
- Observe the lock nut **3**. Loosen and tighten.

13.05.29 Round table, lift adjustment

Rule

1. The switching lift of the round table must be adapted to the requirements of the pocket blanks. The right setting is determined by creating a work sample.

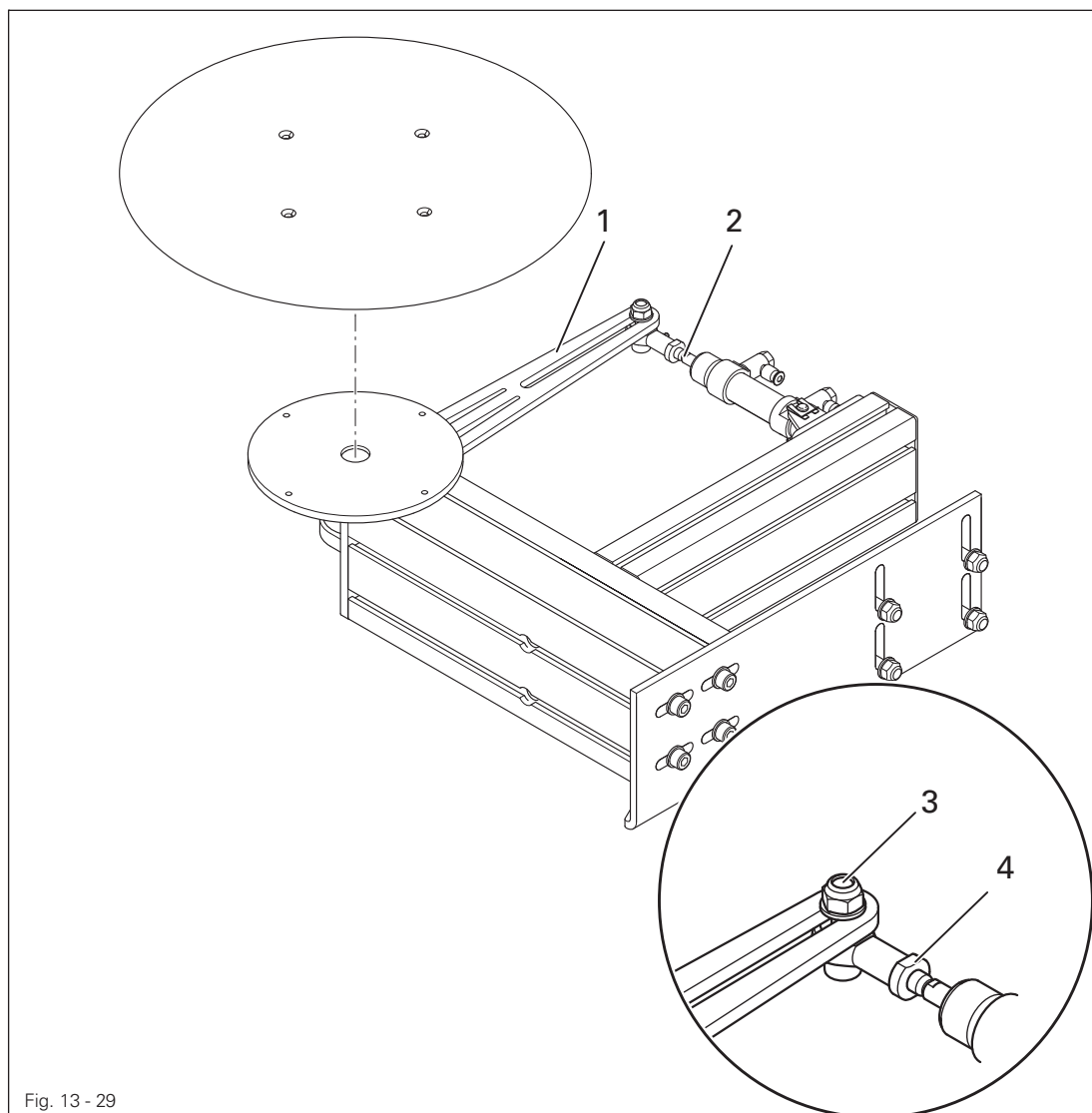
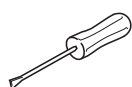


Fig. 13 - 29



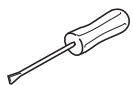
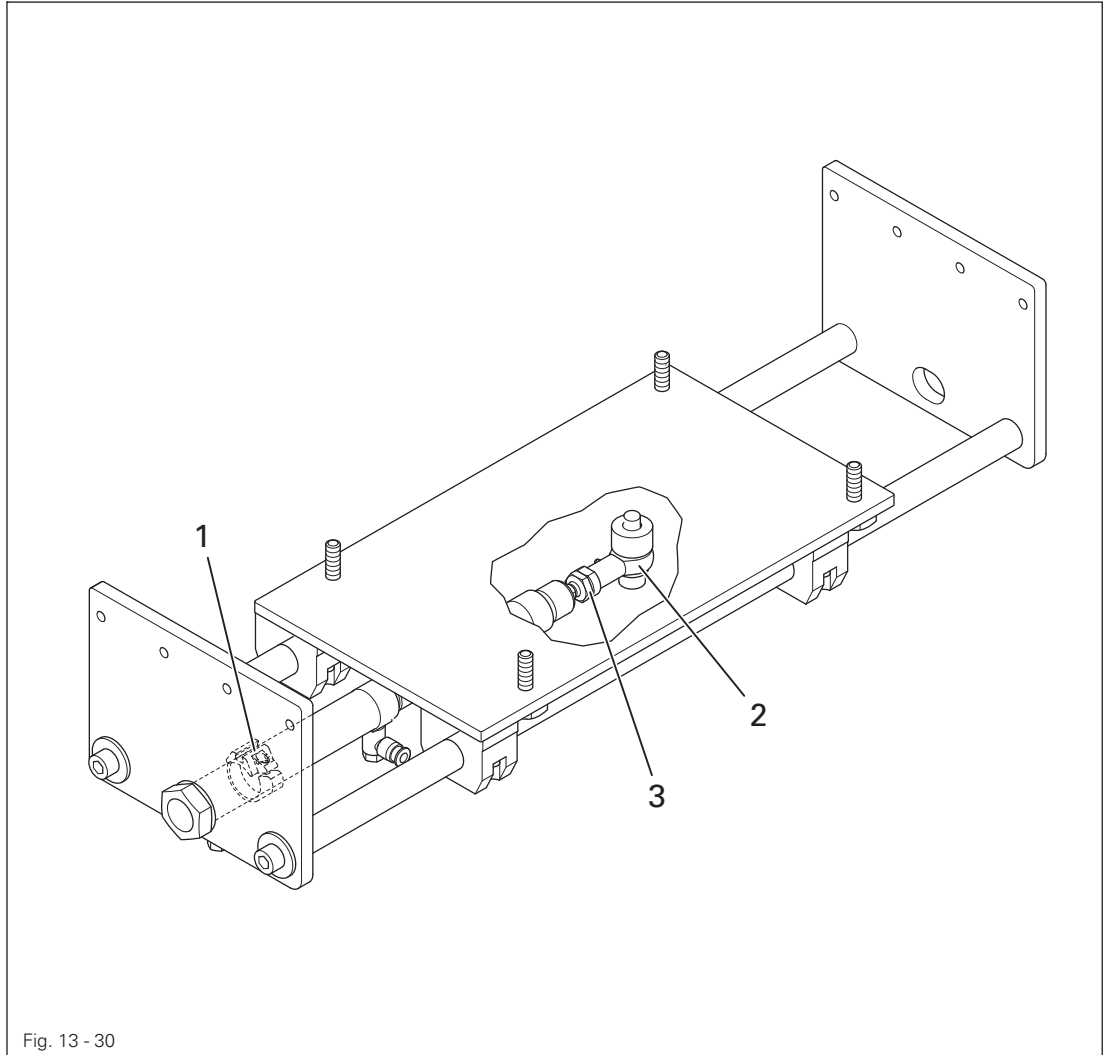
- Loosen the screw 3 on the lever 1 and the lock nut 4 on the linkage joint.
- Adjust the lift by moving the linkage joint 4 in the elongated hole.
- Tighten the screw 3 and the lock nut 4.

Adjustment

13.05.30 Traversing unit

Rule

1. Adjust the position of the seam to the hem.



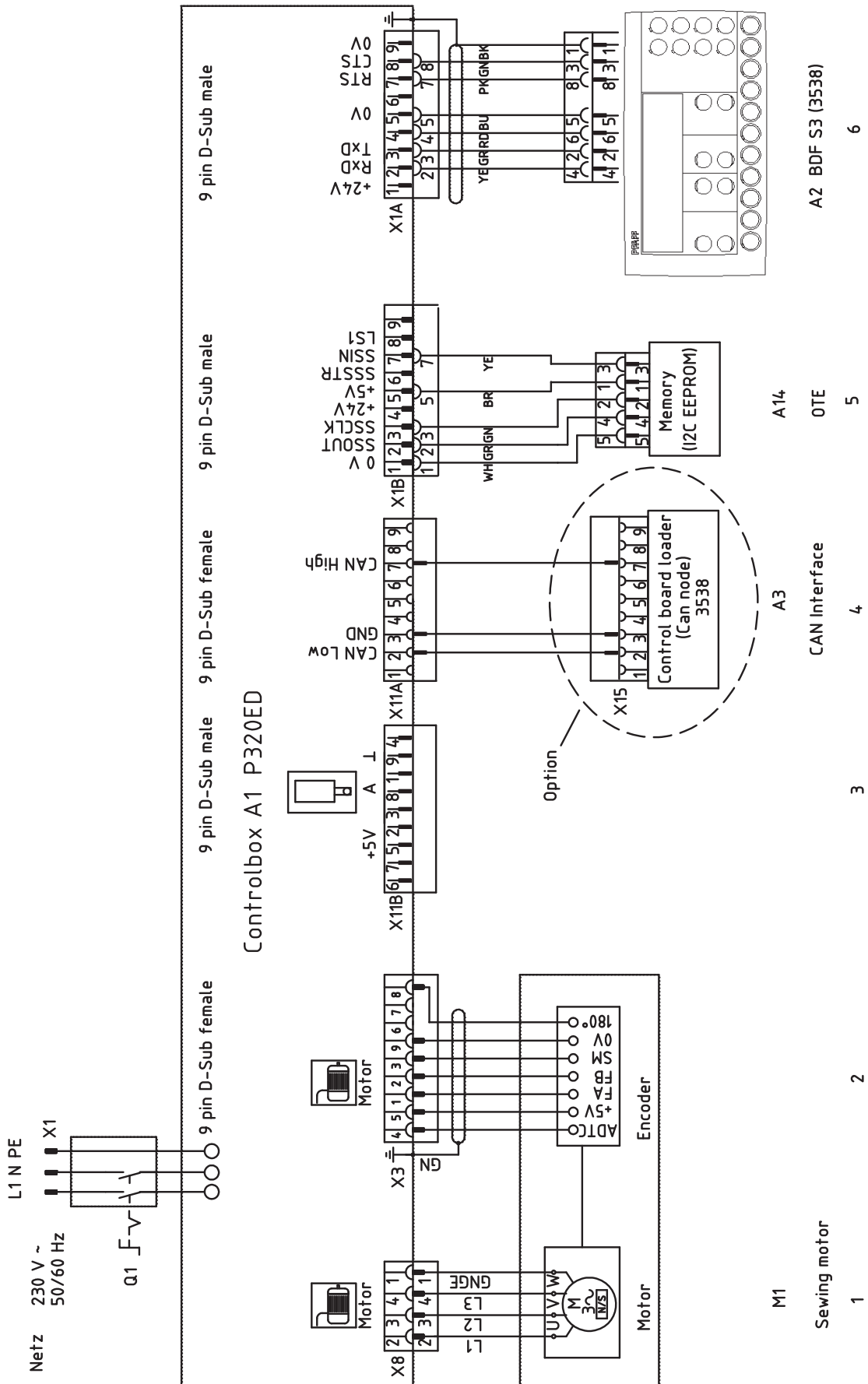
- Adjust the end position of the machine sewing head to the sewing position by loosening the lock nut **3** and turning the linkage joint **2** according to the role. Tighten the lock nut **3** again. The position scanning of the end position is done by the sensor **1**.

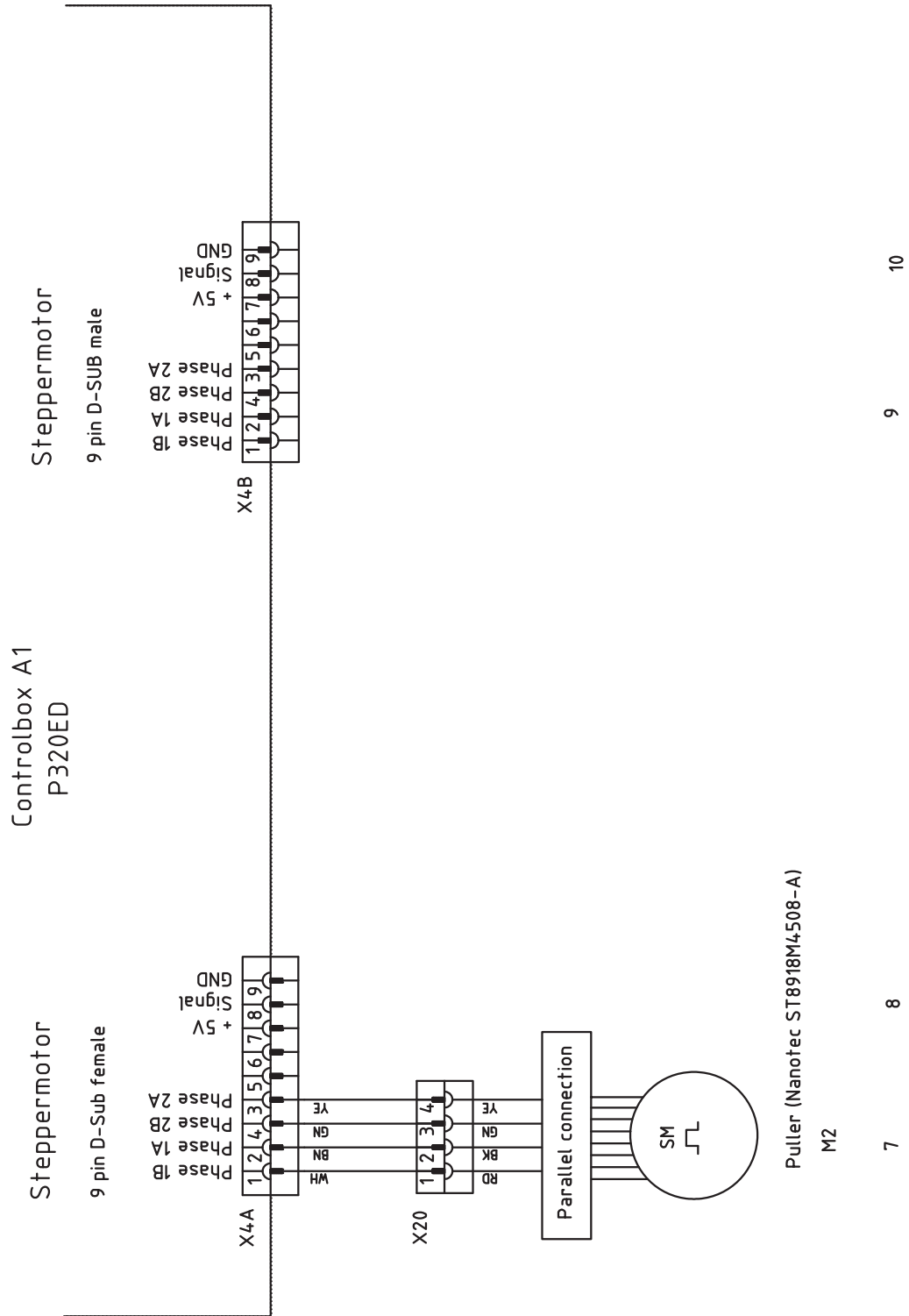
14 Circuit Diagrams

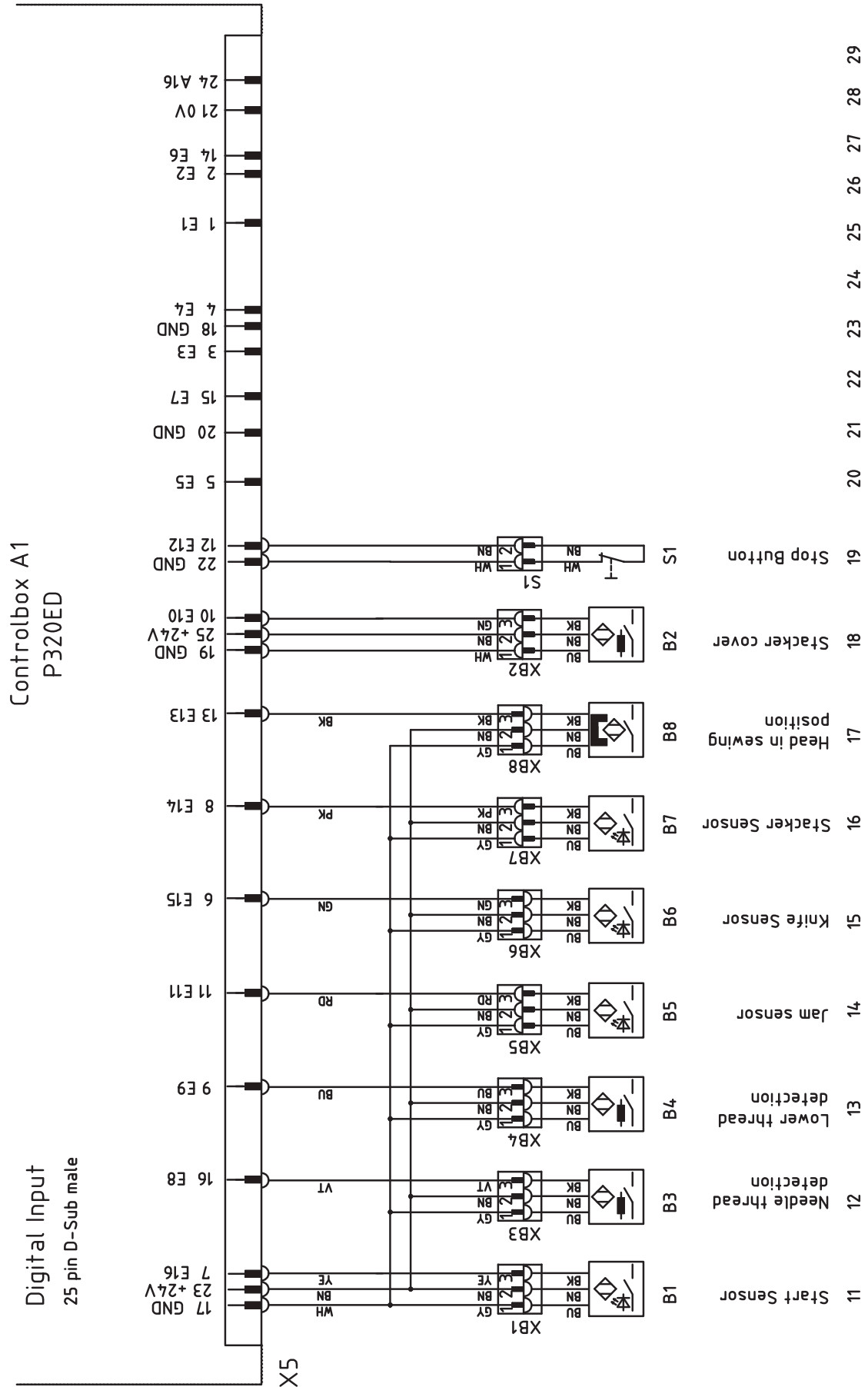
14.01 Circuit diagrams

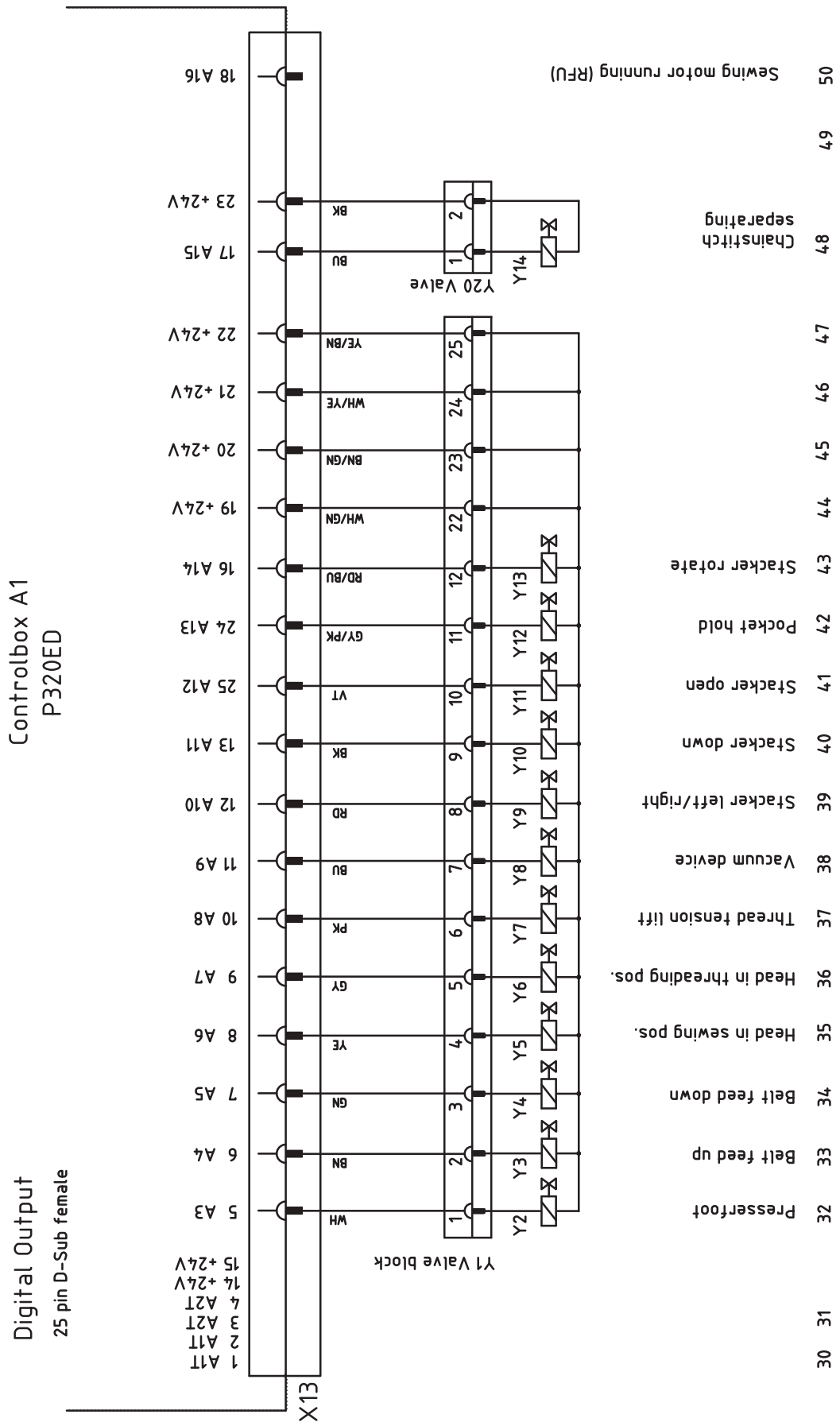
Reference list for the circuit diagrams 91-191 596-95

A1	Controlbox P320ED
A2	Control panel BDF- S3
A3	Control board (CAN node)
A14	OTE Sewing head recognition system
B1	Start Light barrier
B2	Stacker cover
B3	Needle thread detection
B4	Lower thread detection
B5	Transport stop (Jam sensor)
B6	Chainstitch separating light barrier
B7	Stacker Sensor
B8	Head in Bobbin change position
H1	Sewing lamp
M1	Sewing motor
M2	Stepping motor Puller
Q1	Main Switch
S1	Stop Button
X1	Mains plug
X1A	Control panel BDF S3
X1B	Sewing head recognition system (OTE)
X3	Incremental transmitter (sewing motor)
X4A	Stepping motor
X4B	Stepping motor
X5	Inputs
X8	Sewing motor)
X11A	CAN Interface
X11B	Pedal speed control unit
X13	Outputs
X20	Intermediate connector Steppermotor Puller
XBxx	Intermediate connector for the appropriate sensor xx
Outputs of the Controlbox P320 (A1)	
Y2	Presserfoot
Y3	Belt feed up
Y4	Belt feed down
Y5	Head in sewing position.
Y6	Head in threading position
Y7	Thread tension lift
Y8	Vacuum device
Y9	Stacker left/right
Y10	Stacker down
Y11	Stacker open
Y12	Pocket hold
Y13	Stacker rotate
Y14	Chainstitch separating











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