PFAFF® Industrial

333-712/02

ADJUSTMENT MANUAL

This Adjustment Manual is valid for machines from the following serial numbers onwards:
7 250 050 →

296-12-19 229/002
Justieranleitung engl. 01.14

PFAFF Industriesysteme
und Maschinen AG

Hans-Geiger-Str. 12 - IG Nord
D-67661 Kaiserslautern

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14 Adjustment

Please observe all notes from Chapter **1 Safety** of the instruction manual!
In particular care must be taken to see that all protective devices are refitted properly after adjustment, see Chapter **1.06 Danger warnings** of the instruction manual!

If not otherwise stated, the machine must be disconnected from the electrical power supply. Danger of injury due to unintentional starting of the machine!

Notes on adjustment

All following adjustments are based on a fully assembled machine and may only be carried out by expert 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 which have to be completely adjusted. If only specific individual work steps are carried out, both the preceding and following chapters must be observed.
Screws, nuts indicated in brackets ( ) are fastenings for machine parts, which must be loosened before adjustment and tightened again afterwards.

14.01 Tools, gauges and other accessories for adjusting

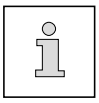
- Screwdrivers with blade width from **2** to **10 mm**
- Spanners (wrenches) with jaw width from **7** to **14 mm**
- Allan keys from **2** to **6 mm**
- Metal rule (part No. 08-880 218-00)
- Needle-rise gauge (part No. 61-111 600-01)
- Screw clamp (part No. 61-111 600-35)

14.02 Abbreviations

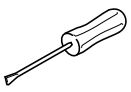
t.d.c. = top dead centre
b.d.c. = bottom dead centre

14.03 Explanation of the symbols

In this adjustment manual, symbols emphasize operations to be carried out or important information. The symbols used have the following meaning:



Note, information



Service, repair, adjustment, maintenance
(work to be carried out by qualified staff only)

14.04 Adjustment of the basic machine

14.04.01 Needle position in needle hole

Requirement
The needle must be exactly centred in the needle hole.

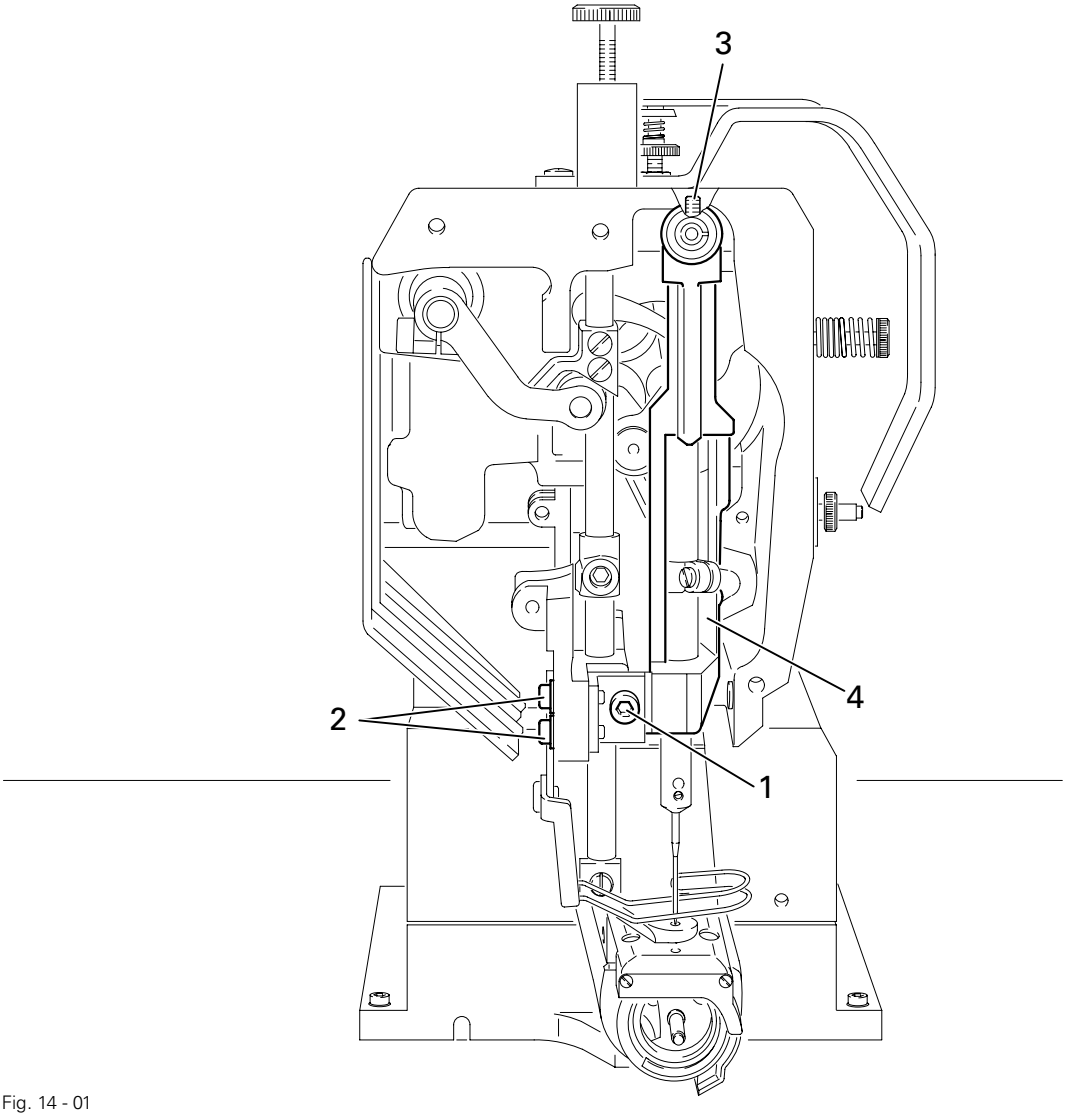
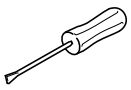


Fig. 14 - 01



- Loosen screws **1, 2** and **3.**
- Turn the balance wheel to set the needle just above the needle hole.
- Re-position needle bar frame **4** according to **Requirement**.
- Tighten screws **1, 2** and **3.**

14.04.02 Needle height (preliminary adjustment)

Requirement
With the needle bar at b.d.c. the clearance between needle bar and needle plate must be **23 mm** .

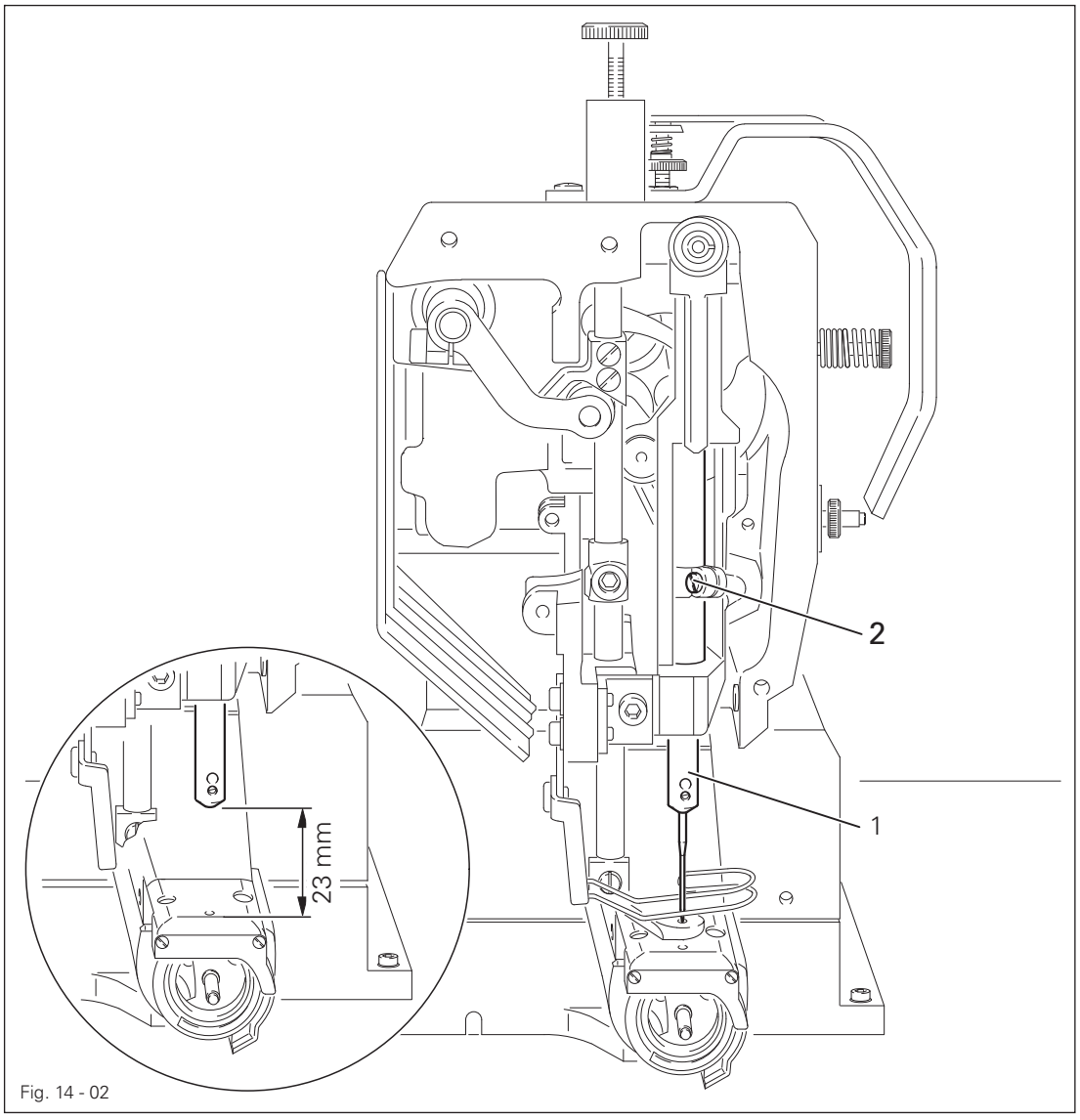


Fig. 14 - 02

- Position the height of needle bar **1** (screws **2**) according to **Requirement**, but do not turn it.

14.04.03 Hook clearance, needle rise and needle height

Requirement
In the needle-rise position (= **1.8 mm** past b.d.c. of the needle bar)
1. The hook point must be at "needle centre" and the clearance between hook and needle **0.05** to **0.1 mm**, and
2. the top of the needle eye must be **0.8 mm** below the hook point.

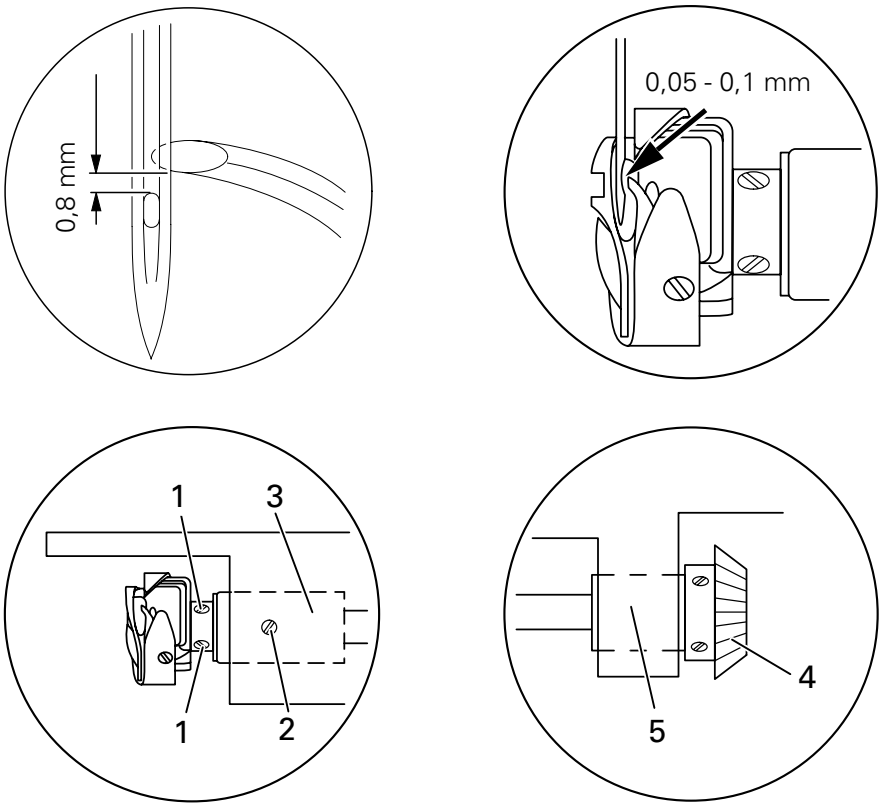
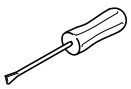


Fig. 14 - 03



- Loosen screws **1** and **2** (screw **2** is on the rear side of the machine).
- Set the needle bar at b.d.c. and place the **1.8 mm** thick feeler gauge with its cutout close under the lower needle bar bearing.
- Place the screw clamp up against the feeler gauge and tighten it.
- Remove the feeler gauge and turn the balance wheel until the screw clamp is resting against the needle bar bearing.
- Adjust the hook according to **Requirements**.
- If necessary adjust the needle height, see Chapter **14.04.02** Needle height (preliminary adjustment).
- Move hook shaft bearing **3** against the hook and tighten screw **2.**
- Move bevel gear **4** against bearing **5** and tighten screws **1.**

On machines with thread trimmer **-900/51,** adjustment of the axial play of the hook shaft and hook-shaft bearing **3** does not apply.

14.04.04 Top feed lifting motion

Requirement
When the balance wheel is turned, lifting presser **3** and needle point **6** must reach the needle plate at the same time.

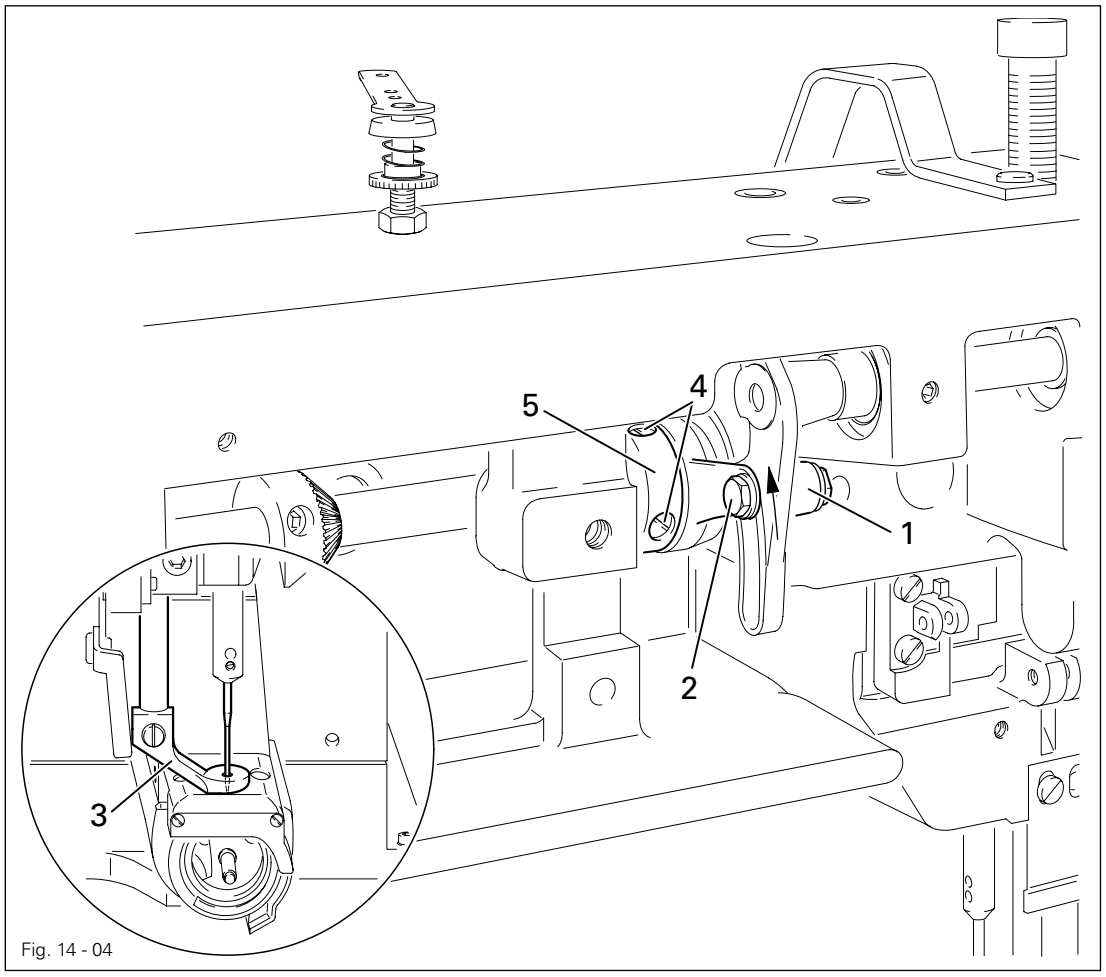


Fig. 14 - 04

- Push lever **1** (screw **2**) fully up in its slot.
- Lower lifting presser **3** onto the needle plate.
- Loosen screws **4** just enough to allow eccentric **5** to be turned on its shaft.
- Turn eccentric **5** according to **Requirement**.
- Tighten screws **4.**

14.04.05 Top feed stroke

Requirement

1. When the needle bar is at b.d.c. actuator **1** must be at a distance of **172 mm** from the needle plate.
2. At the longest stroke setting, lifting presser **5** must be **20 mm** from the needle plate when at t.d.c.

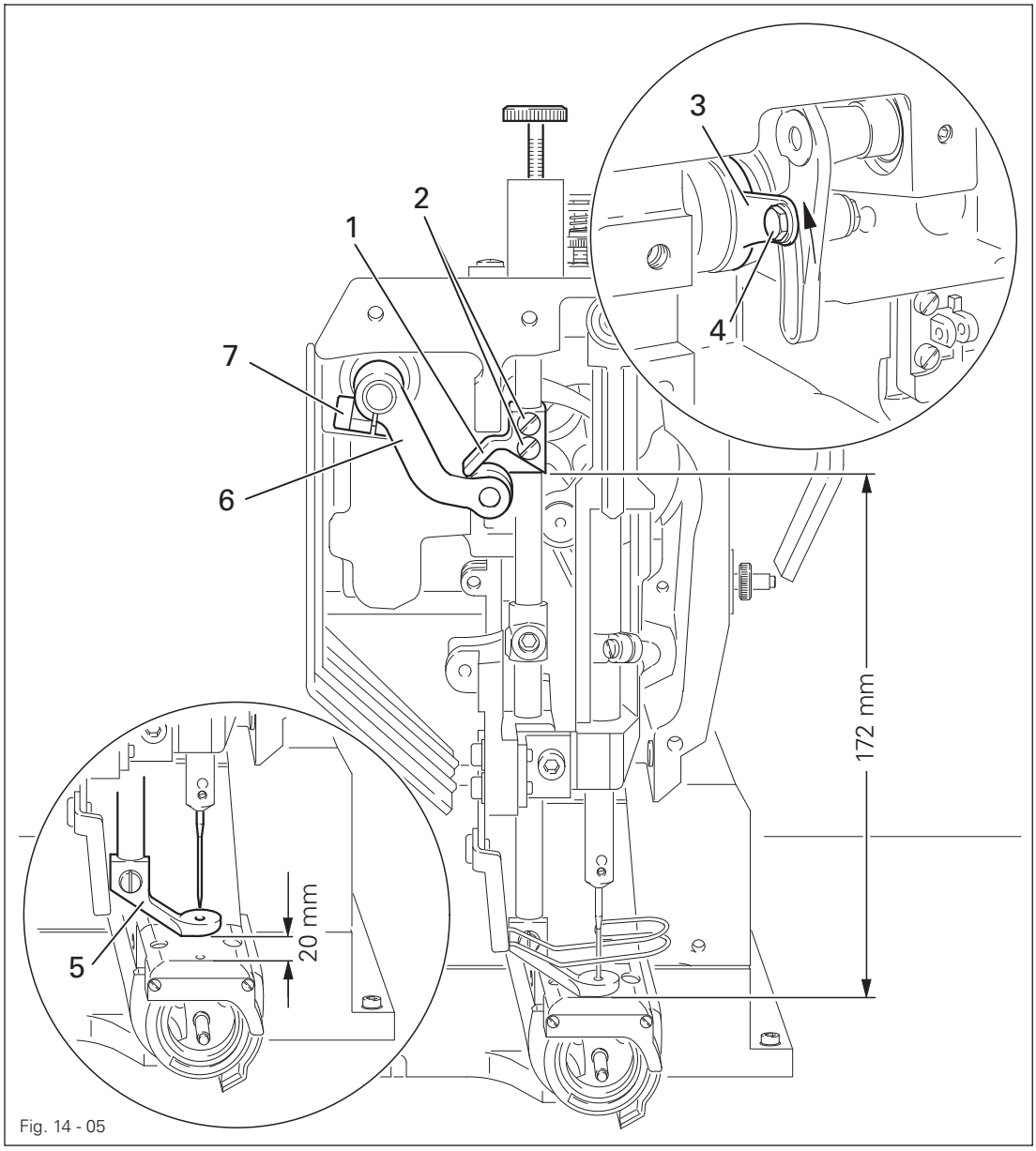


Fig. 14 - 05

- Set needle bar at b.d.c.
- Re-position actuator **1** (screws **2**) according to **Requirement 1.**
- Push lever **3** (screw **4**) to the top end of its linkage slot.
- Turn balance wheel to set lifting presser **4** at t.d.c.
- Turn crank **6** (screw **7**) according to **Requirement 2.**

14.04.06 Needle thread tension release

Requirement

1. In the position **10 mm** before t.d.c. take-up lever, the tension disks should start opening.
2. When the take-up lever is at t.d.c., there should be a distance of **1.0 mm** between the tension disks.

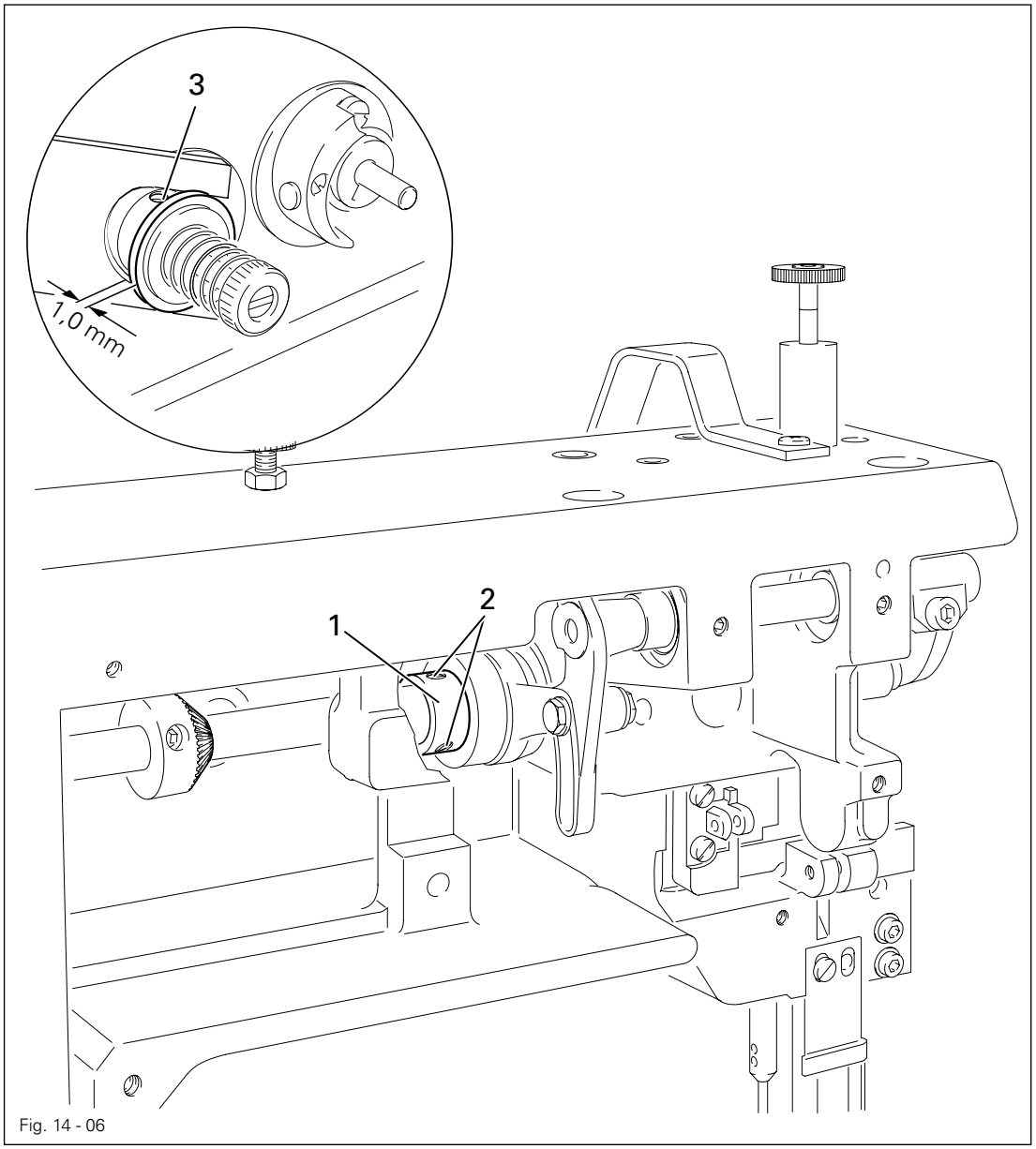
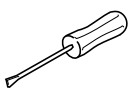


Fig. 14 - 06



- Position the take-up lever at **10 mm** before t.d.c.
- Adjust eccentric **1** (screws **2)** in accordance with **requirement 1.**
- Turn the balance wheel until the tension disks are as far apart as possible.
- Adjust the thread tension (screw **3)** in accordance with **requirement 2.**

14.04.07 Switching off the needle thread tension

Requirement

1. When the tension disks are closed, there should be a distance of ca. **0.5 mm** between lever **1** and tension disk **4.**
2. When solenoids **7** are in their basic position, nuts **5** should be touching stop **2.**

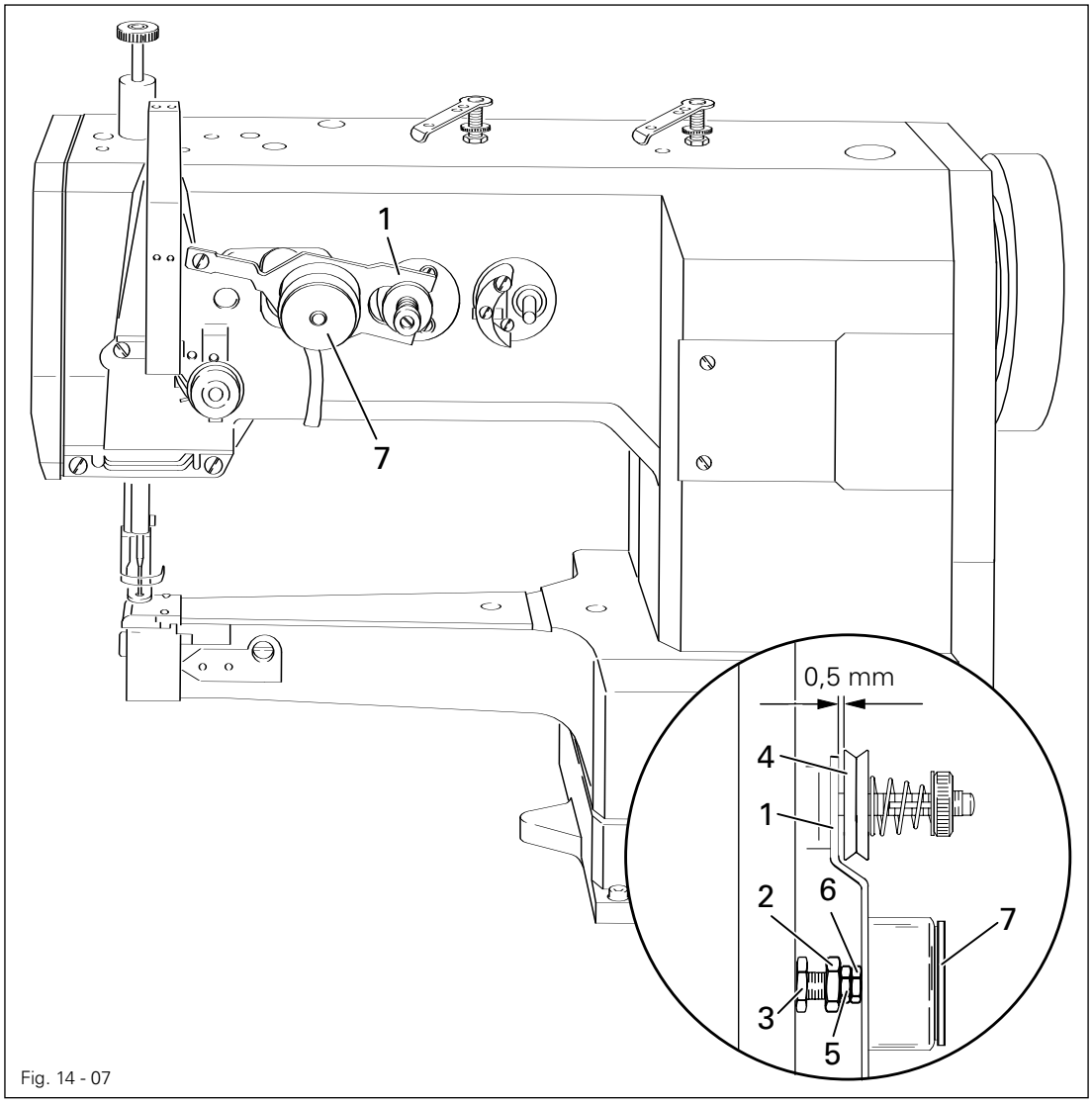
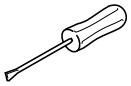


Fig. 14 - 07



- Turn the balance wheel until the tension disks are closed.
- Align lever **1** in accordance with **requirement 1.**
- Adjust stop **2** (nut **3)** in accordance with **requirement 2.**

The solenoid stroke is pre-set at **1 mm**.
Use nut **5** (locknut **6)** to adjust it.

14.04.08 Thread check spring

Requirement
The movement of thread check spring **5** must be finished when the needle point enters the material (= spring stroke of about **7 mm**).

For technical reasons the length of the thread check spring stroke may vary upwards or downwards a little.

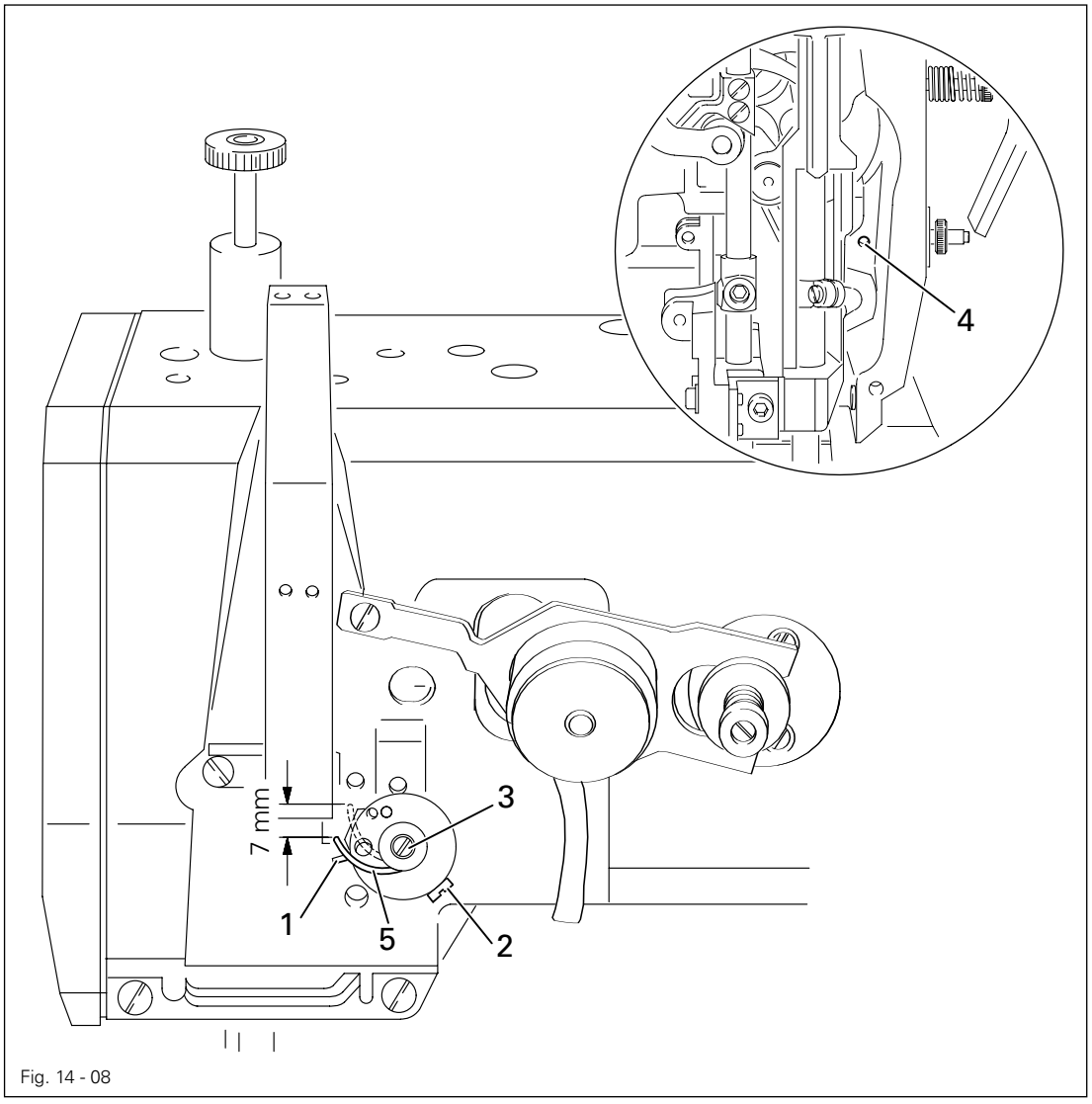


Fig. 14 - 08

- Adjust stop **1** (screw **2**) according to **Requirement**.
- To adjust the pressure of the spring, turn screw **3** (screw **4**).

14.04.09 Bobbin winder

Requirement

1. With the bobbin winder engaged, friction wheel **5** must be driven reliably; with the bobbin winder disengaged, friction wheel **5** must not run against drive wheel **1.**
2. The bobbin winder must switch itself off when the filled thread is about **1 mm** from the rim of the bobbin.

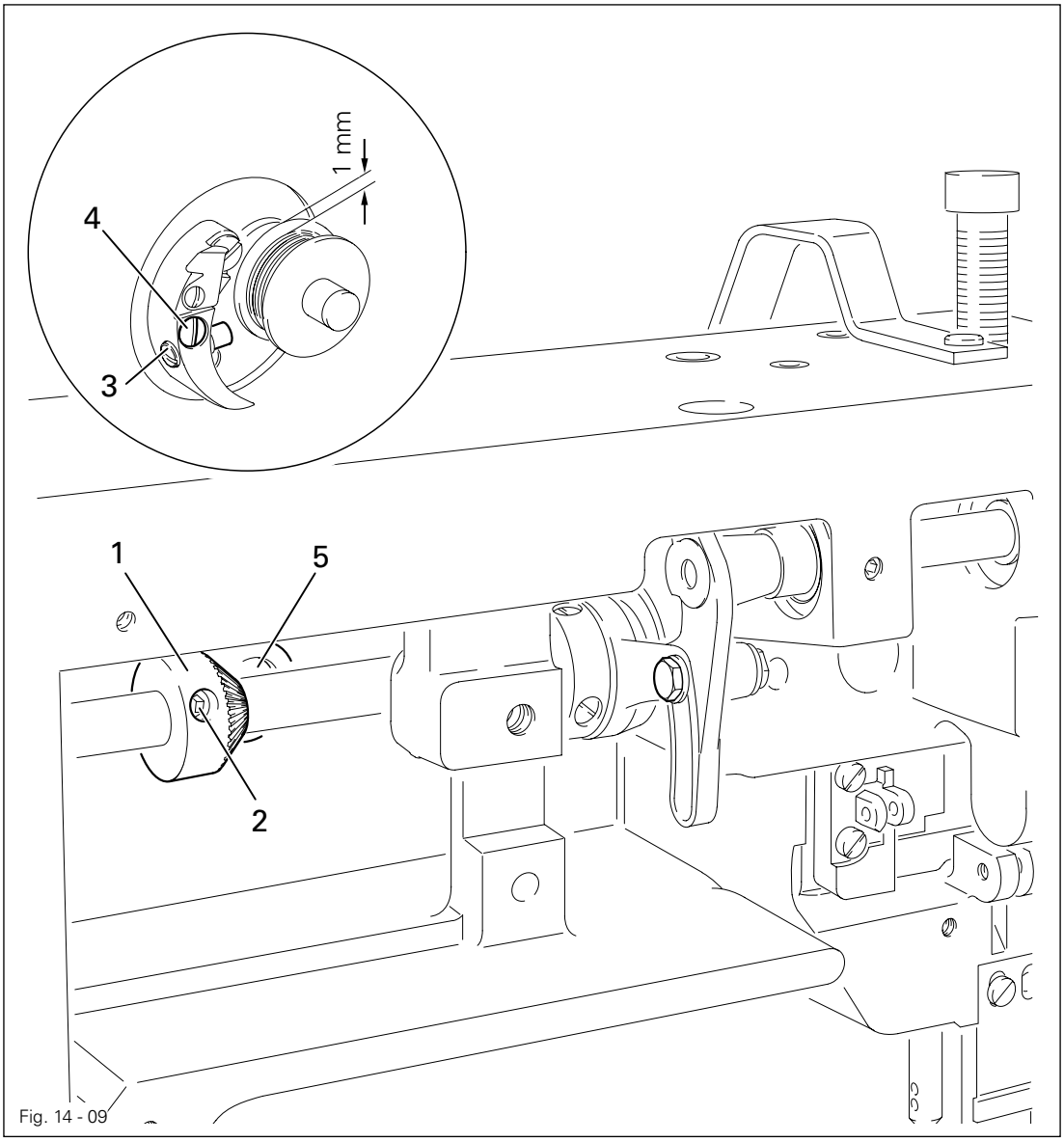


Fig. 14 - 09

- Position drive wheel **1** (screws **2)** according to **Requirements 1** and **2.**
- Position pin **3** (screw **4)** according to **Requirement 3.**

14.04.10 Pressure of the lifting presser

Requirement
The material must be reliably held, even at the highest sewing speed.

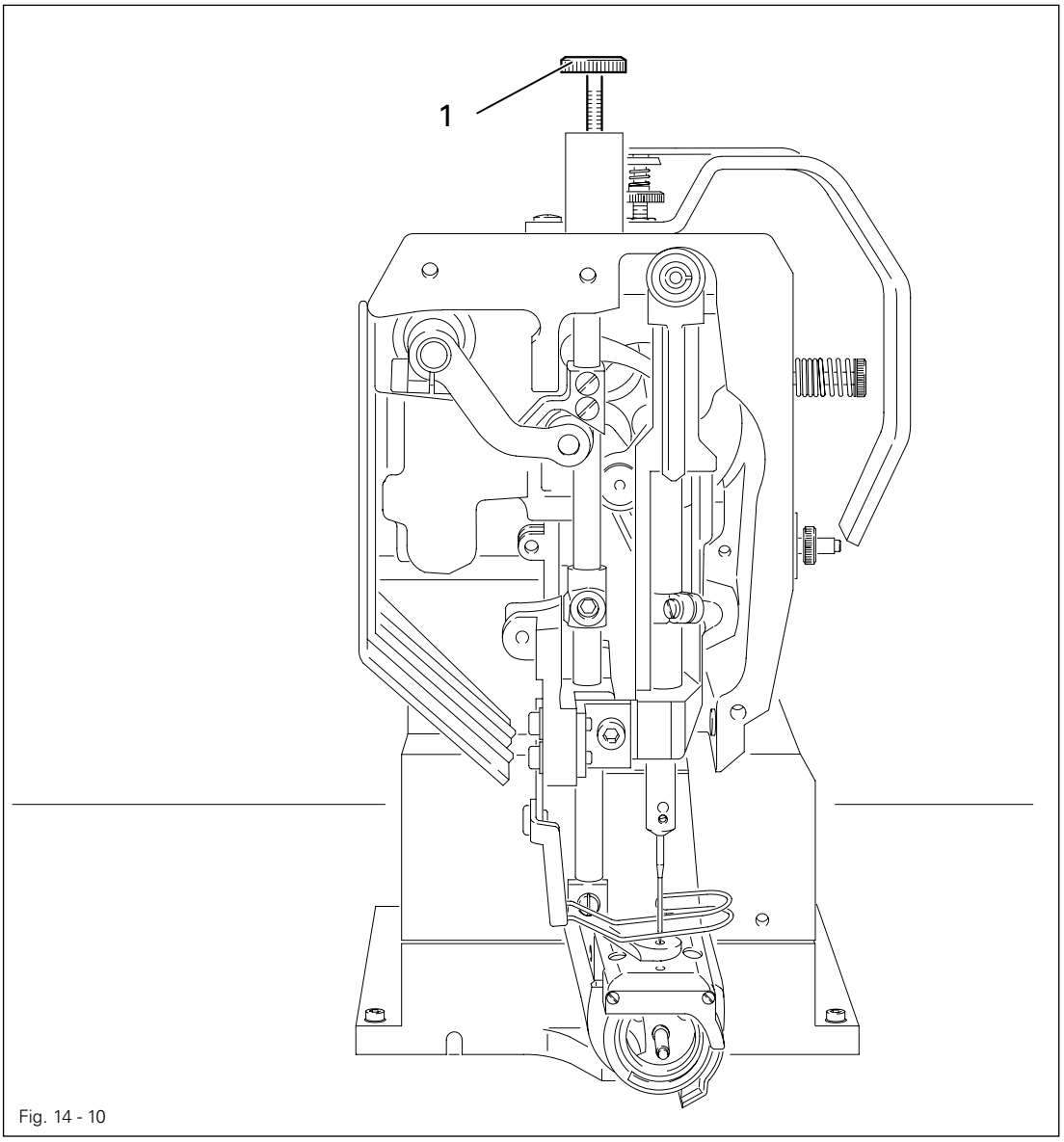
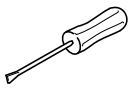


Fig. 14 - 10



- Turn screw **1** according to **Requirement**.

14.05 Adjusting the thread trimmer -900/51

14.05.01 Control cam (preliminary adjustment)

Requirement
With the needle bar at b.d.c., groove **4** of control cam **2** must be vertically below control pin **5.**

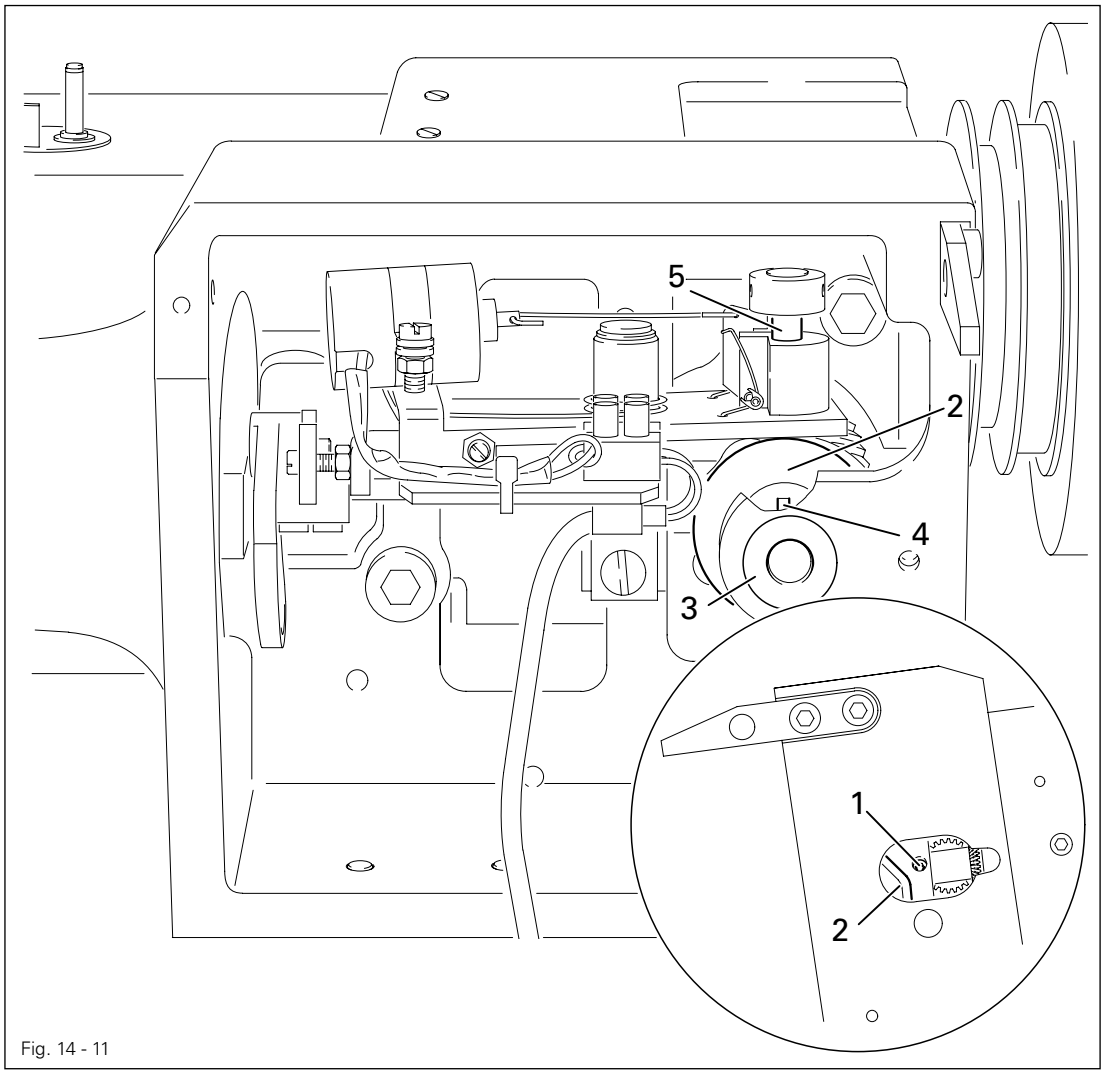
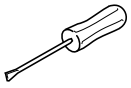


Fig. 14 - 11



- Loosen screws **1** through the hole in the machine housing.
- Set the take-up lever at b.d.c.
- Turn control cam **2** according to **Requirement**.
- Move control cam **2** down against bearing **3** and tighten the accessible screw **1.**
- Make the second screw **1** accessible and tighten it also.

14.05.02 Control lever height

Requirement
With the needle bar at b.d.c. there must be a clearance of **1.0 mm** between control lever **3** and control cam **4.**

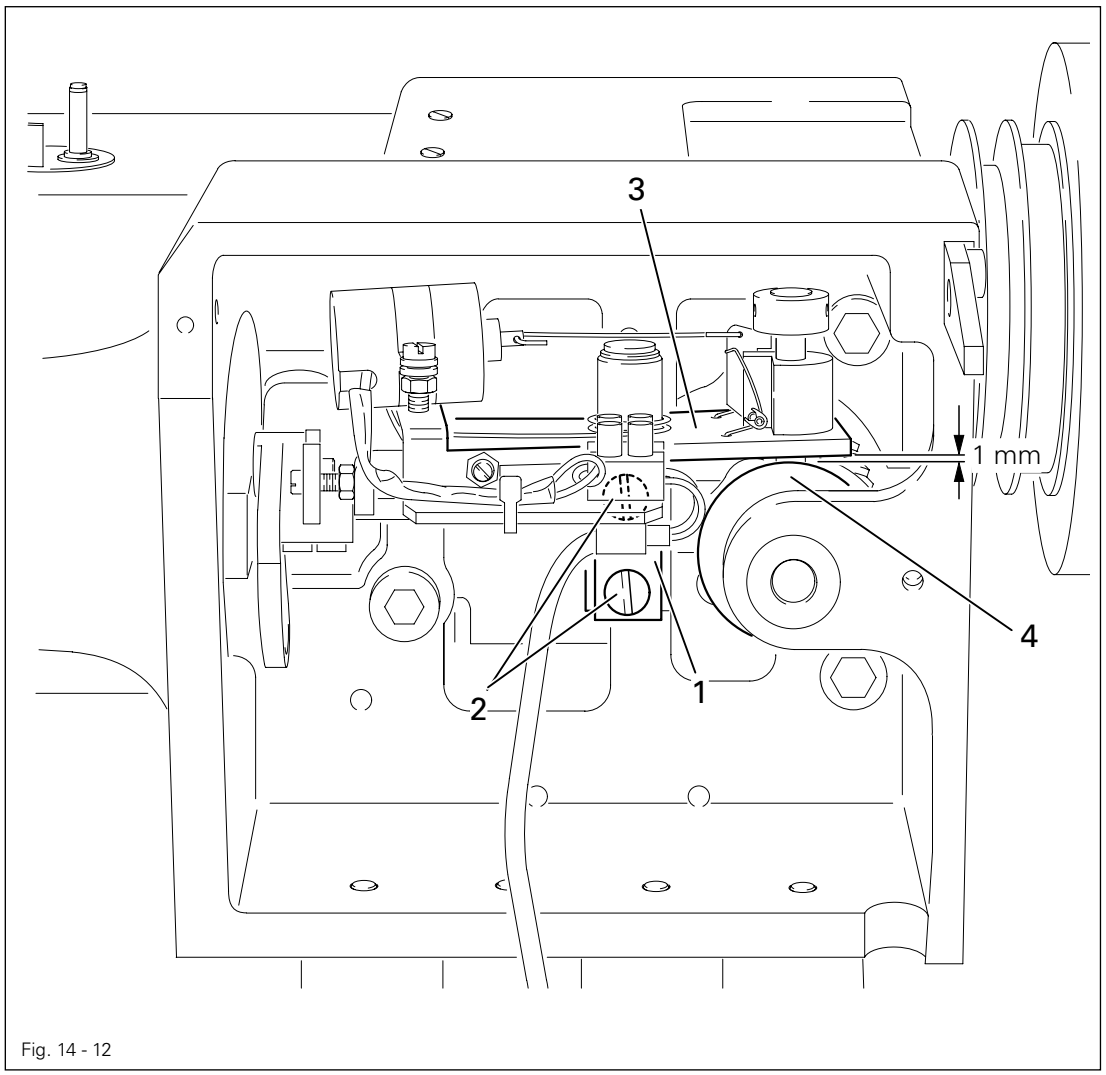
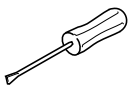


Fig. 14 - 12



- Set the needle bar at b.d.c.
- Position bracket **1** (screws **2**) of control lever **3** in the elongated hole according to **Requirement**.

14.05.03 Control pin

Requirement
With the needle bar at b.d.c. control pin **5** must drop easily into the track of control cam **7** when engaging solenoid **6** is operated.

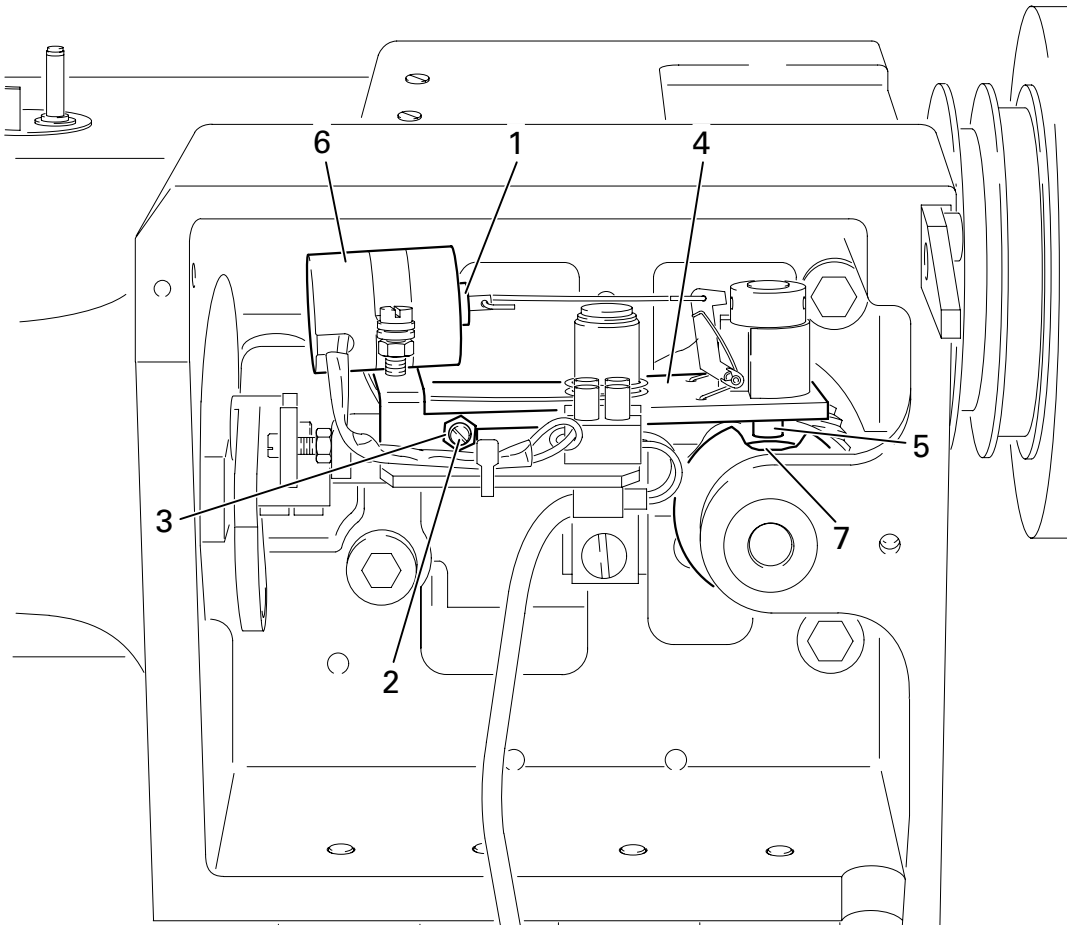
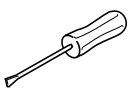


Fig. 14 - 13



- Set the needle bar at b.d.c.
- Operate the solenoid core by hand.
- Turn screw **2** (nut **3)** inwards until it is resting lightly against control lever **4.**
- Turn screw **2** back again by about half a turn until the movement of control pin **5** corresponds with the **Requirement**.

14.05.04 Engaging solenoid

Requirement
With the needle bar at b.d.c. and solenoid core **1** fully operated there must be a clearance of approx. **0.5 mm** between locking pawl **4** and fixing collar **5.**

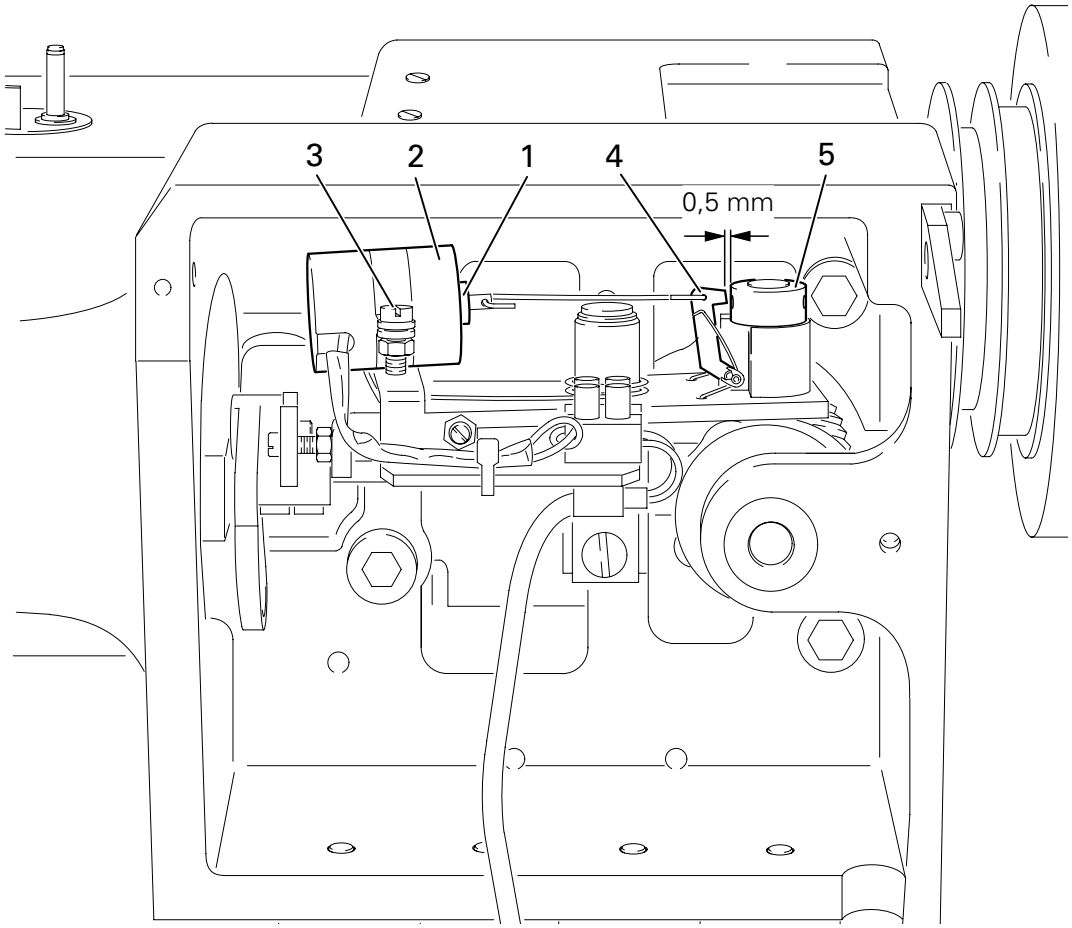
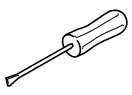


Fig. 14 - 14



- Set the needle bar at b.d.c.
- Push solenoid core **1** fully in.
- Position solenoid housing **2** (screw **3)** according to **Requirement**.

14.05.05 Control pin height

Requirement
With the thread trimmer in its resting position and locking pawl **4** engaged there must be a clearance of **0.3 mm** between the highest point of control cam **5** and control pin **6.**

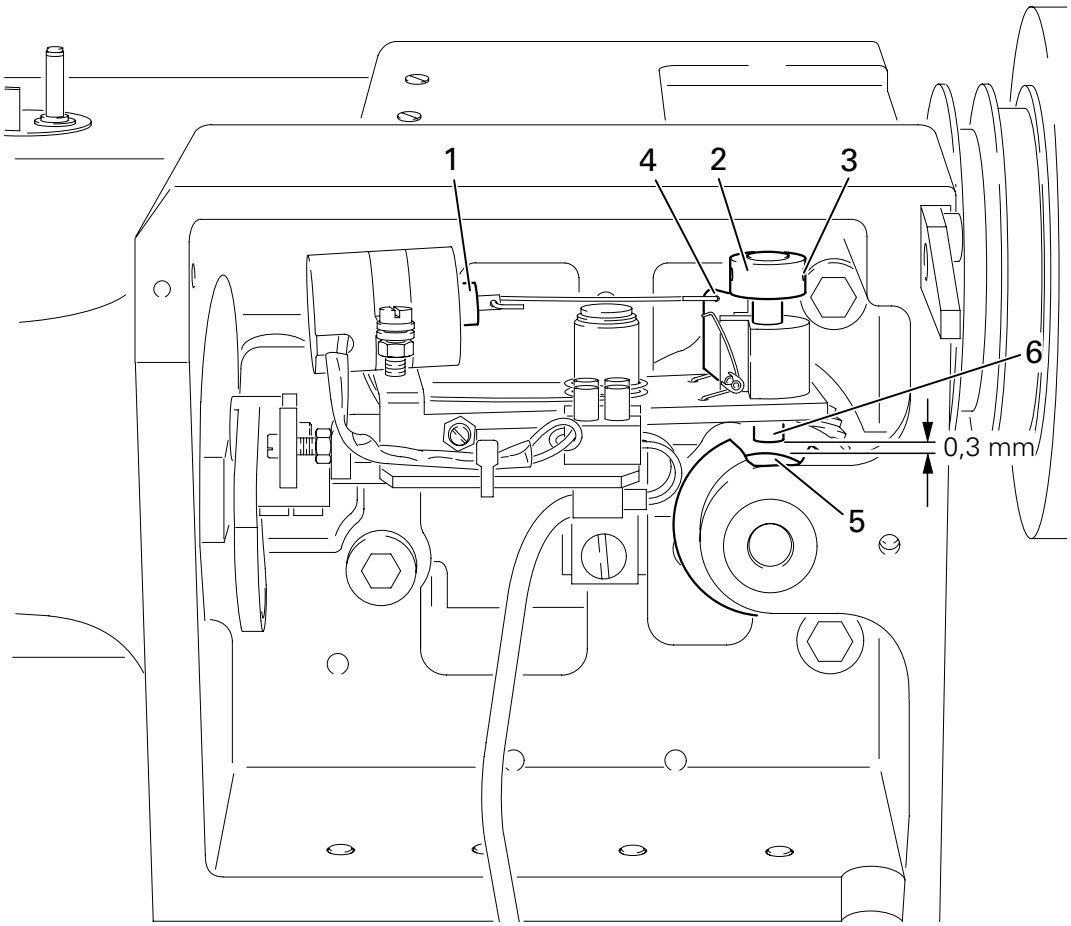
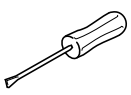


Fig. 14 - 15



- Set the needle bar at t.d.c.
- Operate the solenoid core **1.**
- Position fixing collar **2** (screws **3)** according to **Requirement**.

14.05.06 Front position of thread catcher

Requirement
With thread catcher **3** at its front position the back edge of the thread catcher cutout must be **1 mm** beyond the front edge of bobbin case position stop **6.**

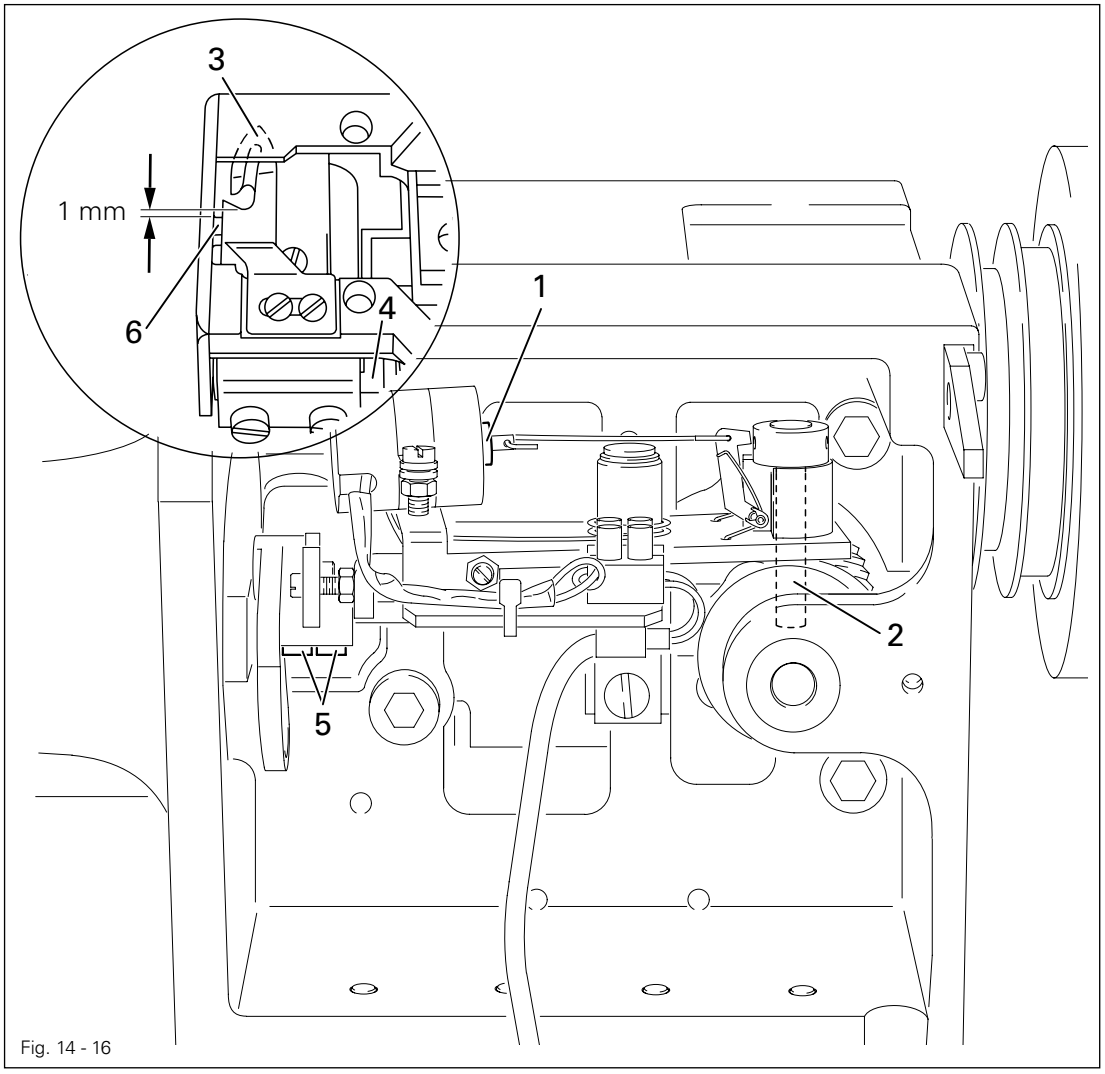
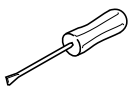


Fig. 14 - 16



- Set the needle bar at b.d.c.
- Operate solenoid core **1** so that control pin **2** drops into the cam track.
- Turn the balance wheel in sewing direction to set thread catcher **3** at its front position.
- Turn thread catcher **4** (screws **5)** to set thread catcher **3** according to **Requirement**.

14.05.07 Lateral position of thread catcher

Requirement
With the needle bar at b.d.c. the point of thread catcher **4** must be at the centre of the needle.

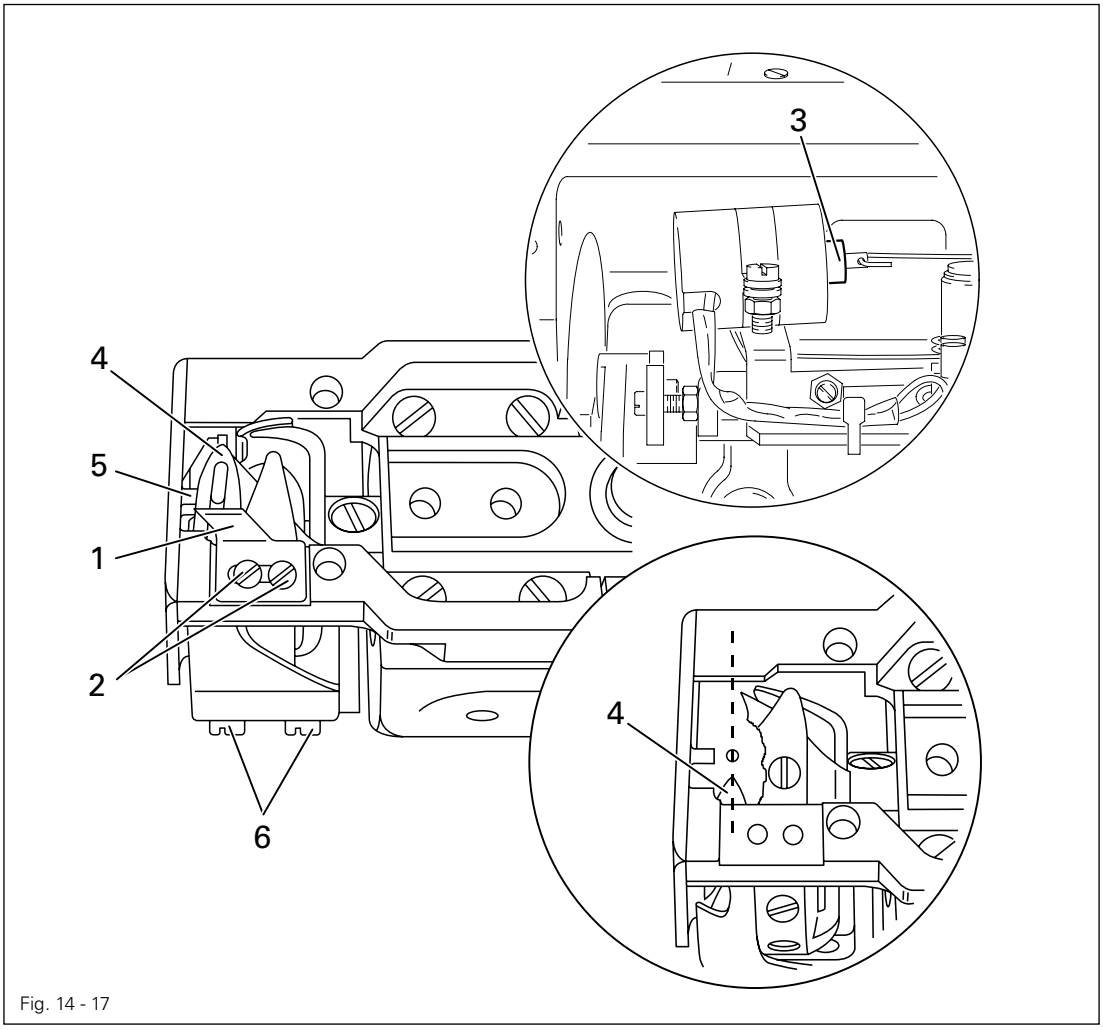
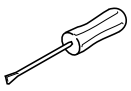


Fig. 14 - 17



- Remove knife **1** (screws **2**).
- Set the needle bar at b.d.c.
- Operate solenoid core **3** by hand and turn the balance wheel until the needle bar is at t.d.c. In doing so, make sure that thread catcher **4** does not strike bobbin case position stop **5** during its motion.
- Set lateral position of thread catcher **4** (screws **6**) according to **Requirement**.

For further adjustments do not yet refit knife **1**.

14.05.08 Control cam (final adjustment)

Requirement
When the end of hook gib **2** is **2 mm** behind the centre of bobbin-case position finger **3,** as viewed in feeding direction, there must be a clearance of approx. **4 mm** between catcher point **4** and hook gib **2**.

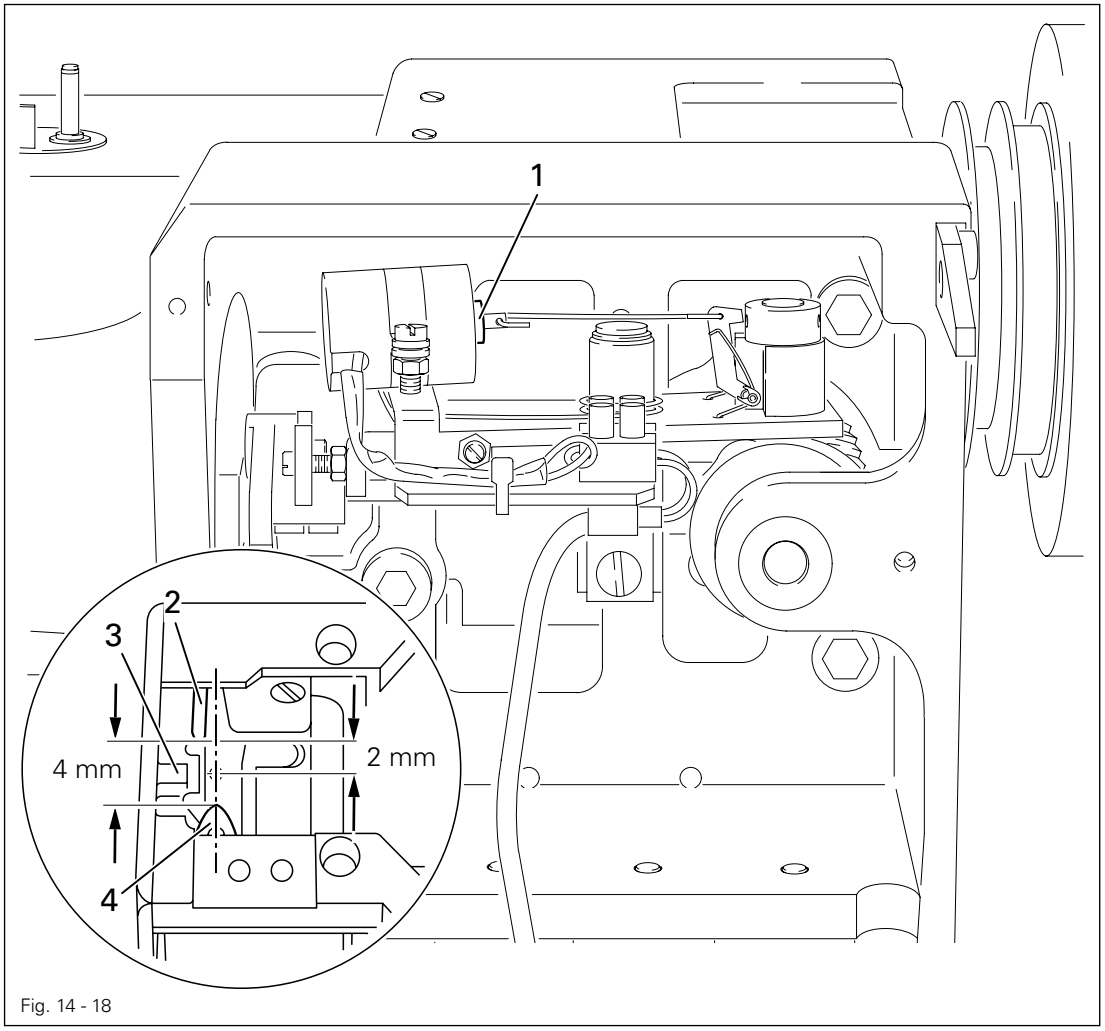


Fig. 14 - 18

- Set the needle bar at b.d.c.
- Operate solenoid core **1** by hand.
- Turn the balance wheel farther (sewing direction) until the end of hook gib **2,** viewed in sewing direction, is **2 mm** behind the centre of bobbin case position finger **3.**
- Check according to **requirement** and re-adjust control cam if necessary, see Chapter **14.05.01 Control cam** (preliminary adjustment).

14.05.09 Knife

Requirement
When the back edge of the thread catcher cutout is **1 mm** in front of the knife edge, the left knife edge must be flush with the edge of the thread catcher.

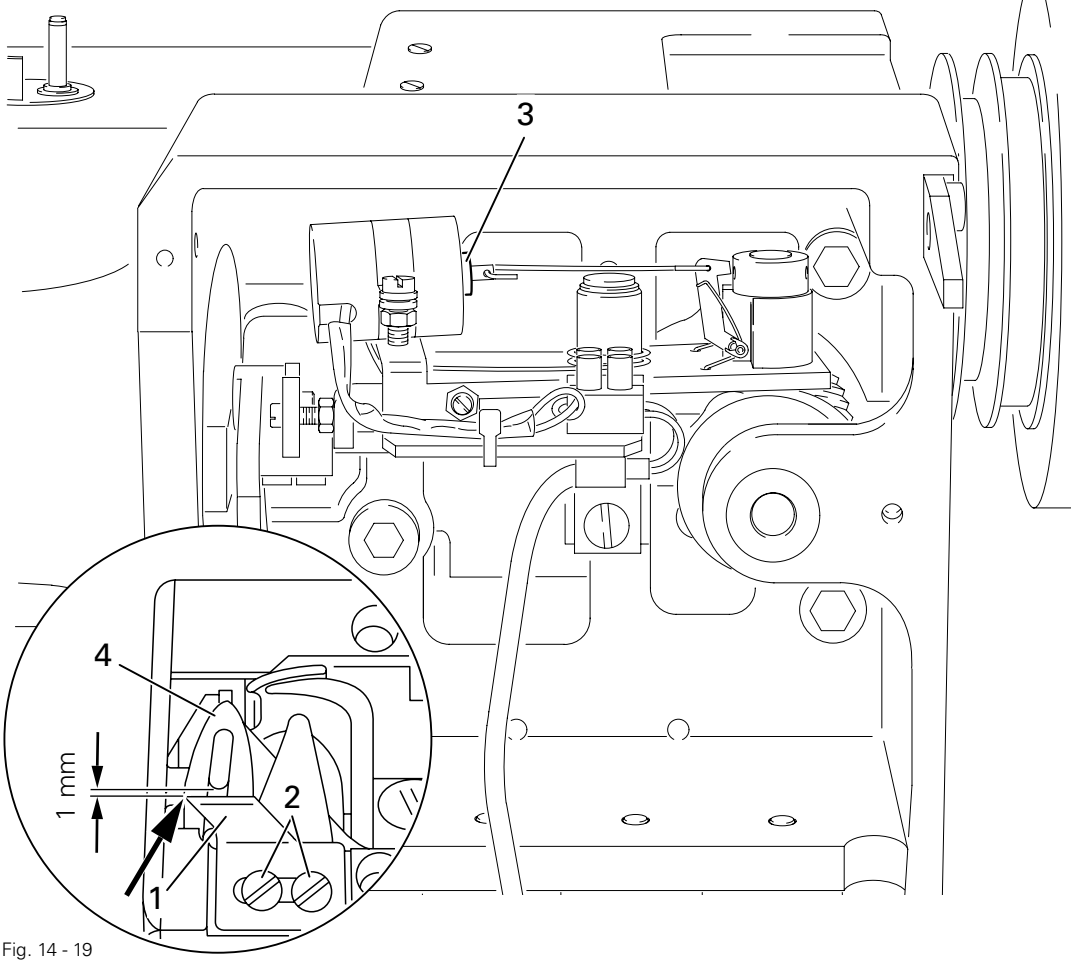
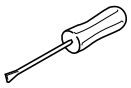


Fig. 14 - 19



- Screw on knife **1** (screws **2)** finger-tight.
- Set the needle bar at b.d.c. and operate solenoid core **3.**
- Turn the balance wheel (sewing direction) until the short point of thread catcher **4** is aligned with the knife edge.
- Set the lateral position of knife **1** according to **Requirement** (see arrow).
- Tighten screws **2.**
- Turn the balance wheel to check whether the back of the thread catcher is not twisted in relation to the knife edge.
- If necessary re-adjust thread catcher **4,** see Chapter **14.05.07 Lateral position of the thread catcher.**

14.05.10 Cutting test

Requirement
The knife must stand parallel to the thread catcher and both threads must be reliably cut.

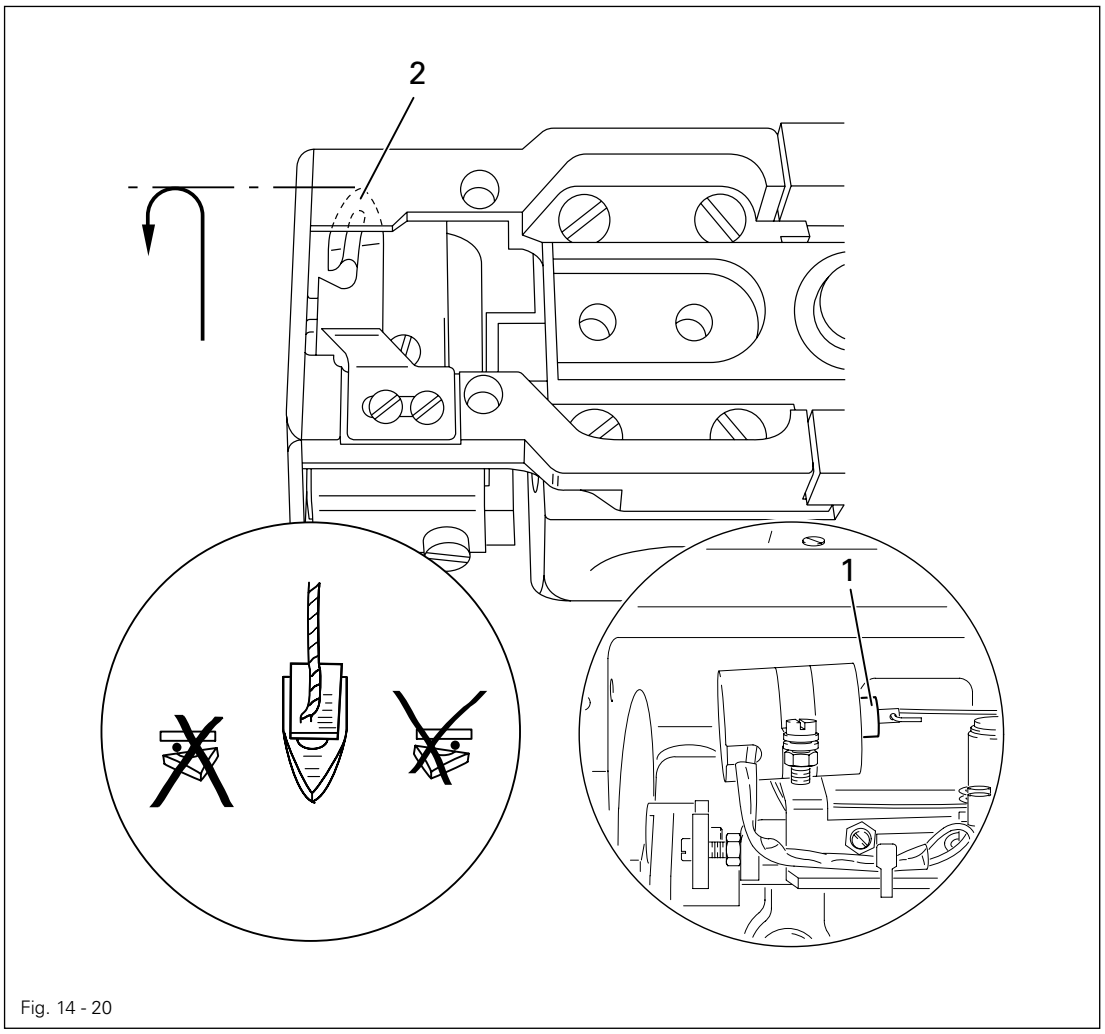
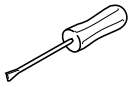


Fig. 14 - 20



- Set the needle bar at b.d.c. and operate solenoid core **1.**
- Turn balance wheel (sewing direction) until thread catcher **2** is in its front position.
- Take a double piece of thread, pull it into the cutout of thread catcher **2** and turn the balance wheel farther to make a cutting test.
- Check that both threads are reliably cut.
- If necessary, re-adjust thread catcher **2,** see Chapter **14.05.07 Lateral position of the thread catcher**.

14.06 Parameter settings

(only on machines with EcoDrive and control unit P40ED)

- The selection of the user level and the alteration of parameters is described in the separate instruction manual for the drive unit.

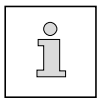
14.06.01 Parameter list

Group	Parameter	Description	User lever	Setting range	Set value
3	391	Speed for single stitch with pedal	B, C	200 - 700	450
	392	Change-over to single stitch with pedal	B, C	ON - OFF	ON
	393	Thread tension release after seam end	B, C	ON - OFF	OFF
4	470	Number of stitches at beginning of seam (with closed tension) The same number of stitches entered must also be set for the single start backtack.	A,.B,C	0 -20	3
6	607	Speed max.	B, C	300 - 1500	▲
	609	Cutting speed 1	B, C	60 - 300	180
	660	Bobbin thread control 0 = off, 2 = reverse counter	A, B, C	0 - 2	0
7	700	Needle position 0 (needle reference position)	B, C	0 - 255	*
	702	Needle position 1 (needle lowered)	B, C	0 - 255	80
	703	Needle position 2 (take-up lever raised)	B, C	0 - 255	226
	705	Needle position 5 (end of cutting signal 1)	B, C	0 - 255	100
	706	Needle position 6 (start of cutting signal 2)	B, C	0 - 255	80
	707	Needle position 9 (start thread tension release/start thread catcher)	B, C	0 - 255	164
	710	Needle position 3 (Needle up)	B, C	0 - 255	212
	718	Rest brake (start thread tension release)	B, C	0 - 100	7

▲ See Chapter **3 Specifications** (in the machine instruction manual).

* Adjustment see Chapter **8.05 Basic position of the machine drive unit** (in the machine instruction manual).

Group	Parameter	Description	User lever	Setting range	Set value
7	760	Multiplier for the fixed value (200) stitch count	A,B, C	0 - 250	5
	799	Selected machine class	C	1 - 8	4
8	800	Rotating direction of the motor	C	0 - 1	1

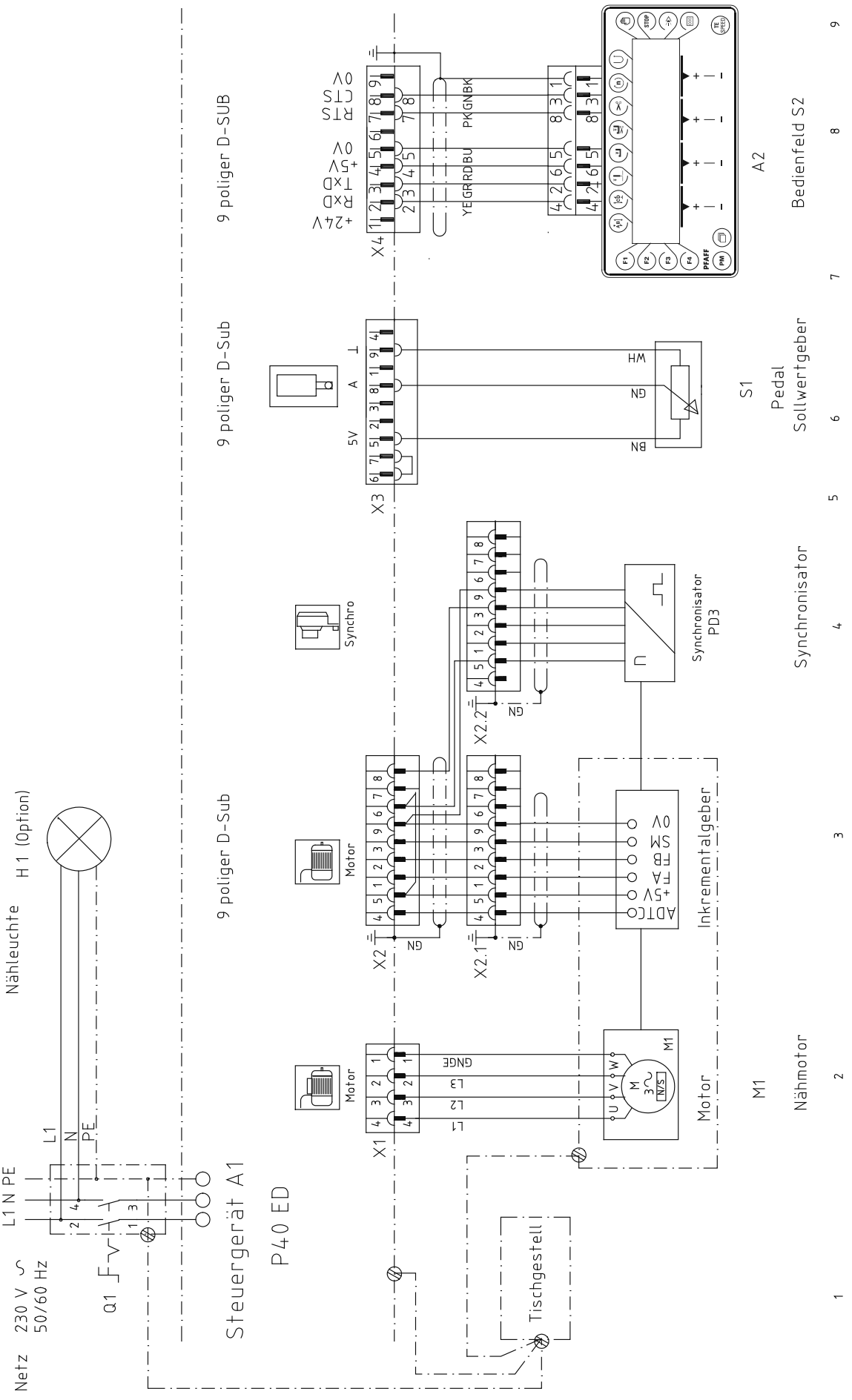


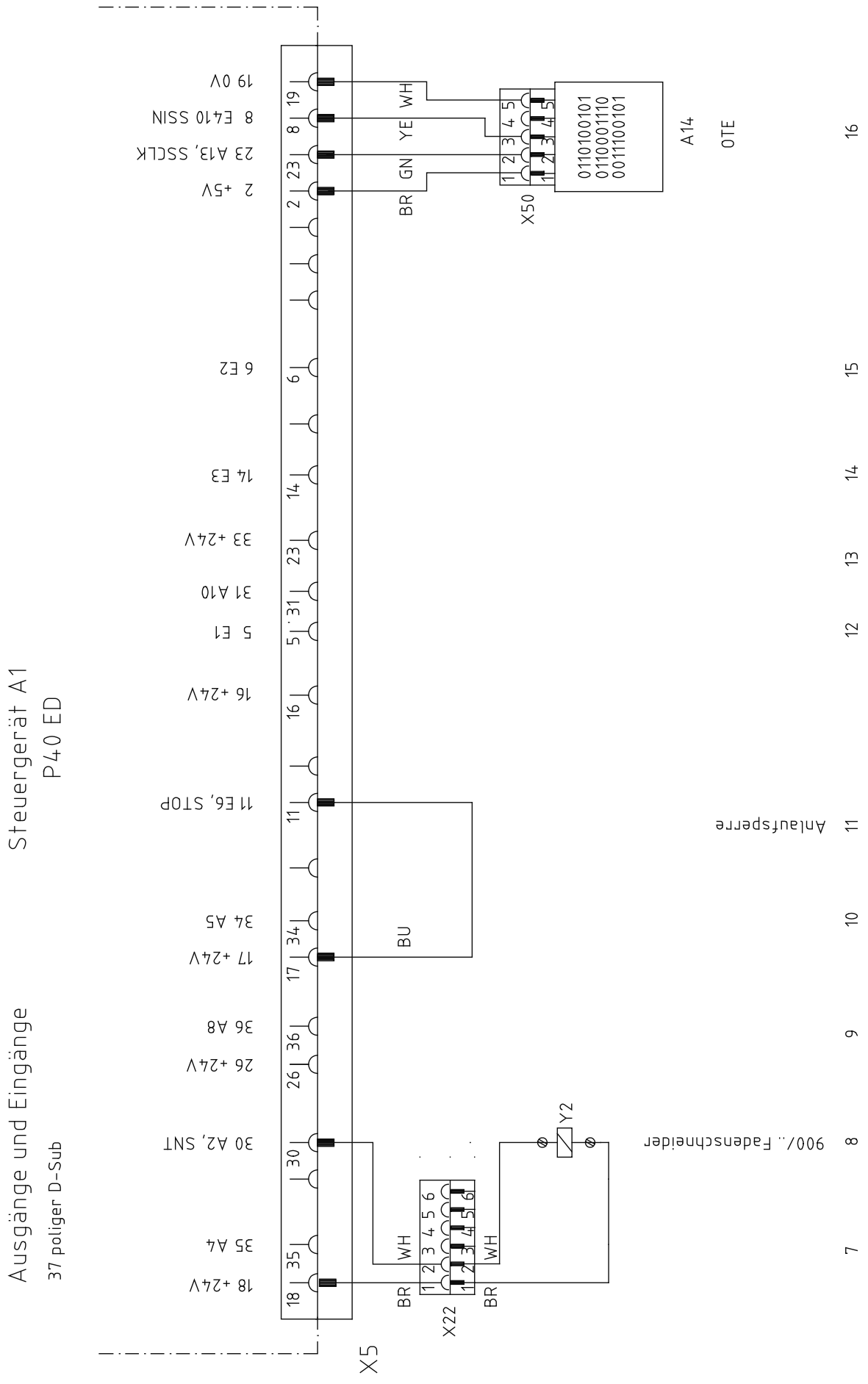
Further parameters and the description for an internet update of the machine software and reset /cold start of the machine can be found in the **instruction manual for the control panel.**

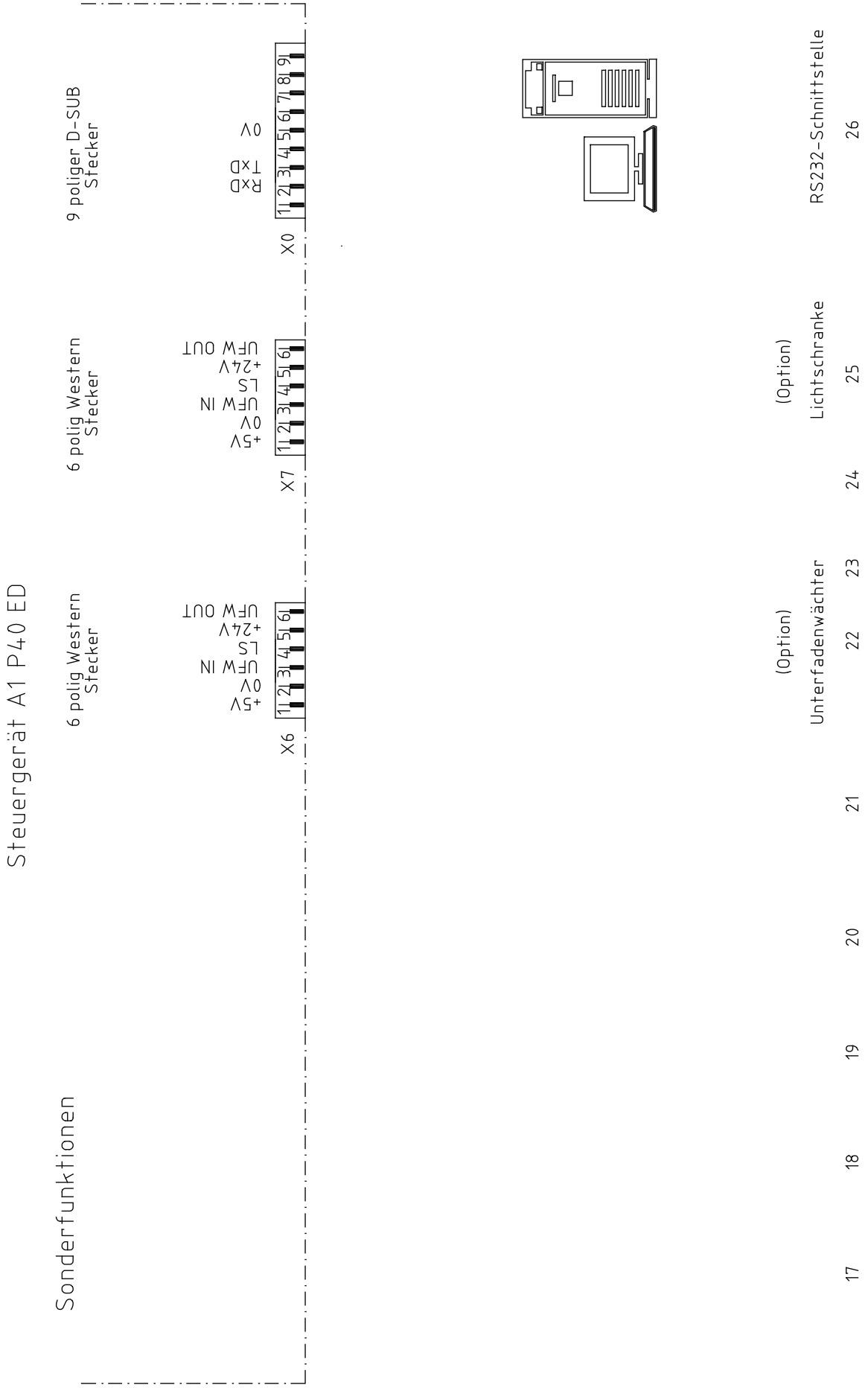
15 Circuit diagrams

Reference list for the Circuit diagrams

A1	Control unit P40 ED
A2	Control panel BDF S2
A14	Sewing head recognition system (OTE)
H1	Sewing lamp
M1	Sewing motor
Q1	Main switch
S1	Pedal speed control unit
S6	Start inhibitor
X0	PC-interface (RS 232)
X1	Motor
X2	Incremental transducer and Synchronizer PD3
X2.1	Incremental transducer
X2.2	Synchronizer PD3
X3	Speed control unit
X4	Control panel
X5	Out-/input
X6	Bobbin thread monitor (optional)
X7	Photoelectric barrier (optional)
X22	-900/.. thread trimmer
X50	Sewing head recognition system (OTE)
Y2	-900/.. thread trimmer


Netz 230 V ~ 50/60 Hz
L1 N PE
Q1
Steuergerät A1
P40 ED
Tischgestell
Nähleuchte H1 (Option)
L1 N PE
9 poliger D-Sub
9 poliger D-Sub
9 poliger D-SUB
X1
X2
X2.1
X2.2
X3
X4
Motor
Motor
Synchro
Motor
Inkrementalgeber
Synchronisator PD3
Synchronisator
S1 Pedal Sollwertgeber
A2 Bedienfeld S2
M1 Nähmotor
1
2
3
4
5
6
7
8
9


Steuergerät A1
P40 ED
Ausgänge und Eingänge
37 poliger D-Sub
X5
19 0V
8 E410 SSIN
23 A13, SSCLK
2 +5V
6 E2
14 E3
33 +24V
31 A10
5 E1
16 +24V
11 E6, STOP
34 A5
17 +24V
36 A8
26 +24V
30 A2, SNT
35 A4
18 +24V
BU
WH
YE
GN
BR
X50
A14
OTE
0110100101
0110001110
0011100101
X22
Y2
900/.. Fadenschneider
Anlaufsperre


Steuergerät A1 P40 ED
Sonderfunktionen
6 polig Western Stecker
X6
+5V
0V
UFW IN
LS
+24V
UFW OUT
6 polig Western Stecker
X7
+5V
0V
UFW IN
LS
+24V
UFW OUT
9 poliger D-SUB Stecker
X0
RxD
TxD
0V
(Option)
Unterfadenwächter
(Option)
Lichtschranke
RS232-Schnittstelle
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