PFAFF

creative 7550

Service Manual

Foreword

This service and repair manual is intended to assist you in carrying out all repairs to the machines quickly and correctly. Adjustment should only be carried out if you find the actual settings deviating from the requirements described here.

When checking or adjusting a machine, please always proceed in the sequence specified.

For easier reference every workstep is marked with a dot. Differing worksteps are marked with a circle or square.

The indications „right", „left", „top", „bottom", „front" or „rear" always refer to the upright machine with its controls facing the operator.

When assembling dismantled machines, make approximate adjustments right in the course of work. This facilitate subsequent precise adjustments. If not specified otherwise, the handwheel must always be turned to the front.

Always pull out the mains plug before making repairs at live parts or in their vicinity.

An electrical safety test must be carried out after every repair, including mechanical ones.

According to the German law on safe machine operation of June 24, 1958, VDE regulations apply as official rules in electrical engineering and as such are basic to electrical safety tests of technical devices.

The required electrical tests for appliances are set forth in Para. 3 of the Regulations for Repair, Modification and Testing of Used Electrical Devices (VDE 0701, edition 9.71). After every repair of electrical devices we manufacture, a test in accordance with VDE 0701 is obligatory.

Outside Germany, there are similar regulations in force, which are largely identical with the requirements of VDE 0701. For repairs of electrical devices, it is therefore by all means required to consult an expert.

For correct adjustment of the machines, the following gauges and tools are required:

Needle rise gauge	00-870136-01
Needle rise clamp	00-870137-01
Spacer	63-102600-18
Adjustment gauge for bobbin case position finger	00-880133-01
Sewing foot gauge	63-114690-39
Pointer gauge	63-114690-23
Pin gauge	63-114690-09
Combination spanner (wrench) 5.5 mm	43-111010-04
Combination spanner (wrench) 6.0 mm	07-433007-50
Torx screwdriver TX 10	07-434008-44
Torx screwdriver TX 15	07-434008-45
Torx screwdriver TX 20	07-434008-46
Torx screwdriver TX 25	07-434008-47
Torx offset screwdriver TX 15	07-434008-74
Torx offset screwdriver TX 20	07-434008-75
Circlip fitting tool 2.3 kz	07-437003-20
Circlip fitting tool 3.2 kz	07-437003-30
Circlip fitting tool 4.0 kz	07-437003-40
Circlip fitting tool 5.0 kz	07-437003-50
Circlip fitting tool 6.0 kz	07-437003-60
Circlip fitting tool 10.0 kz	07-437003-86
Spring hook	07-437006-00
Motor extension cable	29-924800-84

Subject to alterations in design and dimensions.

Notes on the sewing machine with regard to ambient conditions, treatment, cleaning and safety

Ambient conditions:

The recommended ranges are:

Ambient temperature	10° to 40°C (50° to 104°F)
Air humidity	20 % to 80 %

This machine is a high-quality electro-mechanical device. It is designed for household purposes and should always be supervised when in use. Make sure that it is not subjected to:

dust, severe dampness, direct sunlight, static electricity, heat-producing objects, corrosive chemicals or liquids.

The machine must be used on a free surface, for ventilation purposes, which is both firm and even.

Treatment:

Always protect the machine against damage by hitting or dropping.

Cleaning:

Housing:

To clean the housing, use a dry, clean and soft cloth which is free of fluff. To remove any stubborn dirt, use a soft cloth with a neutral cleansing agent for plastic materials.

Please note!

Do not use any insecticides or chemical products such as petrol (gas) or thin chemicals for cleaning the housing.

Display:

If necessary, clean display with a soft cloth moistened with a little water.

Safety:

1. The machine must be put into operation according to the indications on the specification plate.
2. Do not place any objects in openings on the machine.
3. Do not use the sewing machine if:
   - there is a visible damage,
   - its function is disturbed,
   - it is wet, e.g. with condensation.
4. Do not pull the mains plug out of the socket by its cord.
5. If this appliance is used for another purpose than that intended or if it is wrongly operated, we will not accept any liability for any damage caused.
6. To avoid the risk of electric shock, do not open the machine. There are no parts inside the machine which the user can repair. This is solely the responsibility of our qualified service staff.
7. Be sure to use only original PFAFF parts.

Specification of the PFAFF 7550 CD

- Electronic free-arm utility and fancy stitch machine
- Electronic stitch pattern storage
- Pattern sequence memory (M-memory) M0 to M 31
  There are 32 M-memories for pattern sequences.
  In each of the pattern sequences a maximum of 85 patterns or programs can be stored.
- Program memory (P-memory)
  There are 30 P-memories for freely programmable patterns (P0 to P29)
  A maximum of 999 stitches can be stored in each of the 30 P-memories. A maximum of 20350 stitches can be programmed, distributed over all 30 P-memories.
- 8 bit processor with 256 byte RAM and 4 Kbyte ROM.
- 8 bit processor with 256 byte RAM and two external memories.
- Memory I with 512 Kbyte ROM.
- Memory II with 32 Kbyte RAM with battery back-up
  Memory II retains its data when the machine is switched off.
- Zigzag stitch width = 0 to 9 mm with 27 full steps or 54 half steps.
- Stitch length = 0 to 6 mm forwards and 0 to 6 mm reverse with a total of 36 full steps or 72 half steps.
- A full step is 0.33 mm and a half step 0.166 mm.
- 19 different needle positions can be set.
- One 7.5° stepping motor for needle zigzag motion (contact current switching controller).
- One 7.5° stepping motor for feed control (contact current switching controller).
- Transverse feed amount of 1 mm each to the right and left, with 30 full steps each.
- One full step has 0.033 mm.
- One 7.5° stepping motor for transverse feed motion (contact current controller).
- 3-track synchronizer.
- Electronically controlled take-up lever "up" (needle "up" positioning) or needle "down" position with LED display.
- Key with LED indicator for half speed (540 r.p.m.)
- Key with LED indicator for tying off stitch patterns or for determining buttonhole lengths.
- Key with LED indicator for permanent or, without indicator light, for brief reverse sewing.
- Bobbin thread monitor with LED indicator.
- Digital motor control with 950 r.p.m. max. speed.
- Several pattern-dependent reduced speeds in addition.
- Graphic LC display with 240x64 pixels.
- When machine is blocked, the motor is switched off automatically after 2 to 3 s by an anti-blocking device.
- High-ohm foot control (cold) with automatic-rewind cable.
- Motor fuse 2 A/F.
- Automatic indication for battery change when machine is switched on.
- 2 batteries (2 Mignon cells, 1.5 V type L.R. 6).
- FM radio and TV screened, approval marking, suppression degree B.
- Safety-class II with GS test marking.
- Master switch for motor, electronics and indicator lamps.
- Glare-free built-in sewing lamp (indicator lamp) 220 V or 110 V 15 W.
- Bobbin winding possible during sewing.
- Pendulum-type needle bar frame.
- Transmission of drive from arm shaft to lower shaft by toothed belt, transmission ratio 1:1.
- Automatic switchover to bobbin winding (computer-controlled).
- Power input rating: 110 W when sewing at 950 r.p.m.; 50 W when stationary.

- Lockstitch of types 301, 302, 303, 304, 305, 308 and all other variants obtainable by sideways needle movement or forwards and reverse control of the machine feed.
- PFAFF transverse double-rotating hook.
- Link take-up.
- Slide lever feed regulator for forwards and reverse stitch lengths.
- Dual fabric feed.
- Disengageable feed dog.
- Drive from motor to handwheel by flat toothed belt.
- 0 to 950 stitches per minute.
- Sintered metal bearings.
- Oil for sintered metal bearings: BP Energol HLP 46 or HLP 80 No. 28-036550-09.
- Oil for sewing hook No. 91-129452-91.
- Clear workspace: 173, 113, 203 mm.
- Machine height: 277 mm.
- Base plate dimensions: 386, 153 mm.
- Free-arm dimensions: 76, 49, 196 mm.
- Housing material: aluminium alloy.
- Weight of sewing head: 8.640 Kg.
- Needle system 130/705

- Additional needle system classifications:

Twin needle	Suffix = Zwi
Wing needle	Suffix = Wing
Twin hem stitching needle	Suffix = Zwi-Ho
Long needle eye	Suffix = N
Stretch needle	Suffix = PS
Jeans needle	Suffix = J

- Possible needle points:

Small ball point	Suffix = SES
Medium ball point	Suffix = SUK
Large ball point	Suffix = SKF
Pointed cloth point	Suffix = J
Leather point right hand	Suffix = LR

Specifications and versions of built-in motors for the PFAFF 7550 CD

Type	UUS 390 No. 902-1039-001 Radioscreened according to EN 55014	220-240V 37W Safety class II	50/60Hz 6600 r.p.m.
Type	UUS 393 No. 902-1039-003 Radioscreened according to EN 55014	110-120V 39W Safety class II	50/60Hz 6600 r.p.m.

Notes

Feeding system

1. Adjustment of toothed belt tension

Requirement:
The toothed belt must be so taut that the sewing hook has no play in its rotating direction, but it must be possible to turn the machine easily.

Adjustment:
- Loosen screw 1 (fig. 1).
- Re-position tensioning roller 2 with a screwdriver accordingly.
- Tighten screw 1.

Check:
- Check adjustment according to the „Requirement".
- Press lightly against middle of toothed belt (250 g).
  The belt must move 1 to 3 mm inwards (fig. 1).

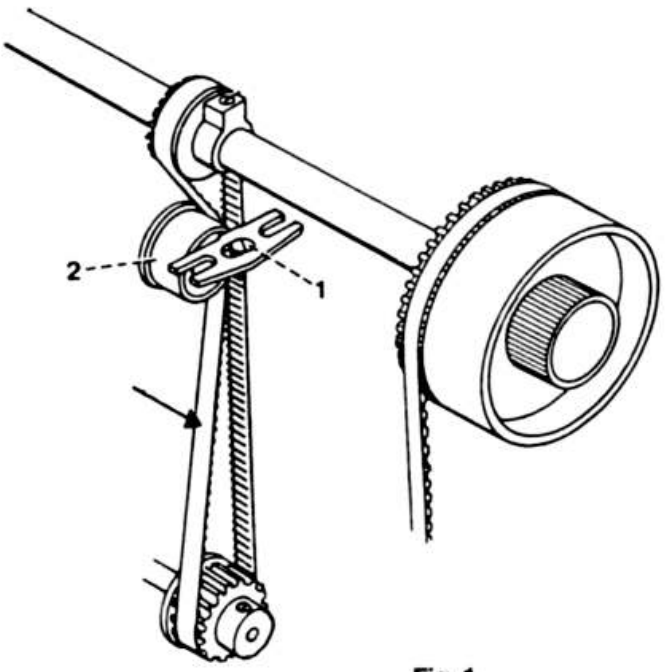


Fig. 1

2. Adjustment of feed dog driving shaft in sideways direction

Requirement: The clearance between driving-shaft bush 4a and left housing edge 3a must be 3.0 mm (fig. 2a).

Check: It must be possible to insert adjustment gauge 00-880133-01 easily, but without play, between the feed-dog driving shaft and the left housing edge.

Note: This adjustment must only be carried out when compelling reasons exist.

Adjustment:

- Disconnect mains plug from mains socket.
- Remove needle and sewing foot.
- Tilt the machine over backwards.
- Remove the baseplate and the bobbin thread monitor.
- Remove five-wire flat cable 126 complete with the buttonhole sensor.
- Take seven-wire flat cable 200 of the transverse-drive stepping motor out of the cable duct.
- Dismantle transverse-drive stepping motor according to section 38.
- Disconnect spring 14 (fig. 2b).
- Screw out screw 18.
- Turn the handwheel until the lobe of driving eccentric 20 faces rear.
- Fold cam lever 9 down and remove it with link 10 to the left, pulling them off the connecting bar rod.
- Remove slide block 12 with spring to the right.
- Loosen screw 5a (fig. 2a).
- Pull out pin 5c to the right.
- Loosen screws 3 and 7.
- Re-position driving shaft 5 together with the two cylindrical pins 4 and 6 sideways without play until there is a clearance of 3.0 mm at the left side, as described in "Requirement" (fig. 2a).
- Tighten screw 3.
- The pressure of the right cylindrical pin must be 1 kg.
- Tighten screw 7.
- Fit pin 5c without any play and tighten screw 5a.
- Disconnect spring 8.
- Remove the needle plate.
- Use your finger to pull the feed dog to the front, then release it.
- The complete feed driving shaft 5 must slide slowly to the rear.
- Loosen screw 172 (fig. 2c).
- Move the top feed lever assembly to the front and rear.
- The complete top feed lever assembly must move easily and without binding (if necessary remove cause of binding).
- Re-position crank pin 173 with pull rod 171 sideways until the complete top and bottom feed moves easily.
- Tighten screw 172 and check again wheter the feed system moves freely.
- Loosen screw 16 (fig. 2b).
- Push slide lever shaft 15 complete with stepping motor 17 about 1 mm to the right.
- Push slide block 12 with spring onto the pin and install it in slide way 13 in the correct curve radius.
- Check whether slide block 12 can be moved easily, but without play or binding, within the slide way.
- Push slide lever shaft 15 with stepping motor 17 carefully to the left until there is a clearance of 0.05 mm between slide block 12 and connecting bar 11.
- Tighten screw 16 and check whether the slide block moves easily and without play.
- Push link 10 complete with cam lever 9 to the right onto the connecting bar pin.
- Push cam lever 9 to the rear, and then upwards over feed eccentric 20.
- Insert screw 18 in stud 19 and tighten it a little.
- Move stud 19 sideways until link 10 and connecting rod 11 still have a slight play and move easily.
- Tighten screw 18.
- Connect the two springs 8 and 14 (fig. 2a and 2b).

- Check whether pull spring 199 of the transverse-drive stepping motor is engaged at the feed dog.
- Connect pull spring 199 to the transverse-drive stepping motor and fit the motor.
- Tighten the three Philips screws 201 a little (fig. 2a).
- Insert five-wire flat cable 126 complete with sensor.
- Place seven-wire flat cable 200 in the cable duct.
- Fit the needle plate.

Note: Adjust transverse-drive stepping motor according to section 4.

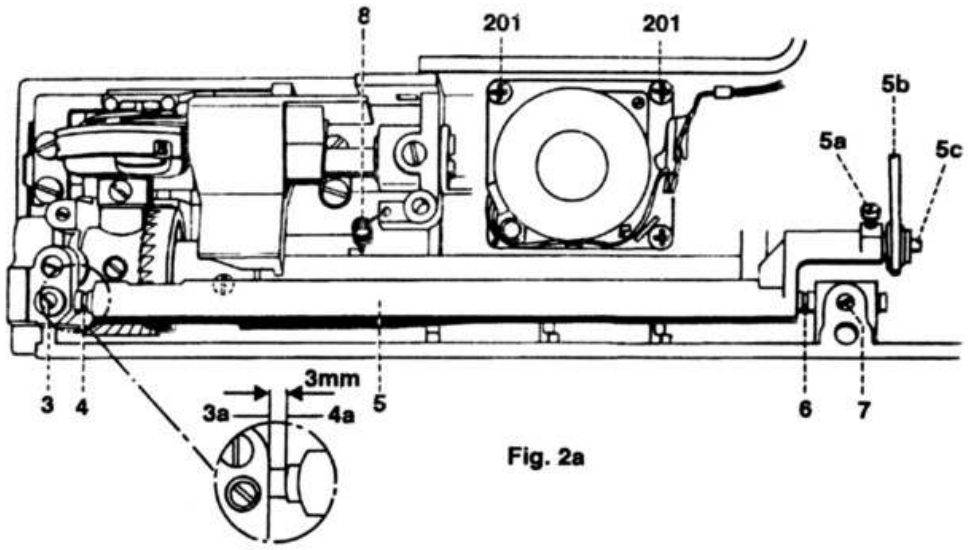


Fig. 2a

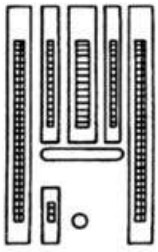


Fig. 2

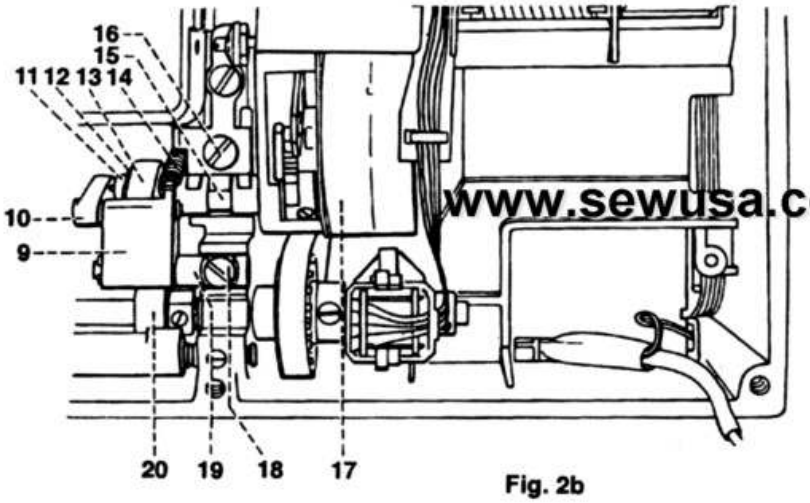


Fig. 2b

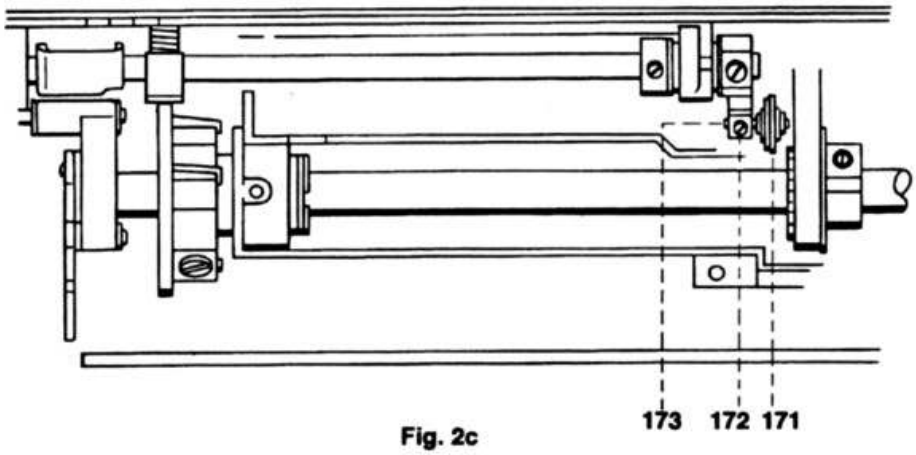


Fig. 2c

3. Timing of feed motion

Operating sequence:
When the rising needle has left the fabric, the feed dog moves up above the needle plate.

The risen feed dog pushes the fabric to the rear. Shortly before the end of the feeding motion, the take-up lever is in its highest position (t.d.c.).

At a stitch length setting of 6 mm the feed dog now pushes 0.7 mm more to the rear (after-feed movement).

After completing the feeding movement, the feed dog moves down under the needle plate surface and the needle enters the fabric.

Underneath the needle plate the feed dog moves back to its basic position.

Whenever the stepping motor changes the sewing direction from forward to reverse sewing, the feed dog must be positioned 0.3 mm below the needle plate surface on its way downwards.

Requirement:
When the needle bar has moved 2 mm up from its lowest position (b.d.c.), it must be possible to insert the two pins of pin gauge 63-114 690-09 simultaneously in the holes of the feeding eccentric and the stud (fig. 3).

Check:
- Remove the needle.
- Turn the handwheel to set the needle bar at its lowest position.
- Set the spacer (63-102 600-18) onto the needle bar and push it up against the needle bar frame.
- Push the needle-rise clamp (00-870 137-01) on the needle bar and tighten it lightly.
- Push the 2 mm feeler gauge (00-870 136-01) with its cutout on the needle bar above the needle-rise clamp.
- Loosen the needle-rise clamp and push the 2 mm feeler gauge up against the spacer.
- Tighten the milled screw of the needle-rise clamp (fig. 3a).
- Turn the handwheel to and fro a little.
- If there is play at the feeler gauge, repeat this procedure.
- Remove the 2 mm feeler gauge.
- Turn the handwheel in sewing direction until the needle-rise clamp is up against the spacer (fig. 3b).
- Tilt the machine over backwards.
- Hold the handwheel in this position while at the same time inserting the pin gauge in the holes of feeding eccentric 20 and stud 22 (fig. 3).

Timing:
- If the adjustment is not correct, remove the needle-rise clamp.
- Loosen the three screws 23 in the lower toothed-belt sprocket.
- Re-fit the needle-rise clamp and repeat the procedure as described in „Check" until the needle bar has moved upwards by 2 mm and the clamp is in contact with the spacer (fig. 3b).
- Turn the long drive shaft 21 in sewing direction until it is possible to insert the pin gauge in both holes (fig. 3).
- Insert the pin gauge and tighten screw 23.

Cross-check:
- Remove the pin gauge.
- Tighten all three screws 23 very firmly.
- Check again with the needle-rise gauge and the pin gauge as described under „Check".

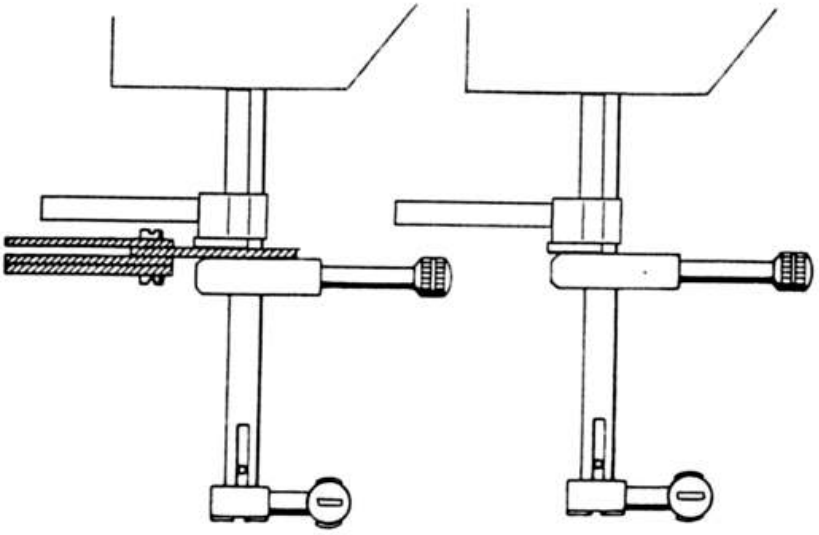


Fig. 3a

Fig. 3b

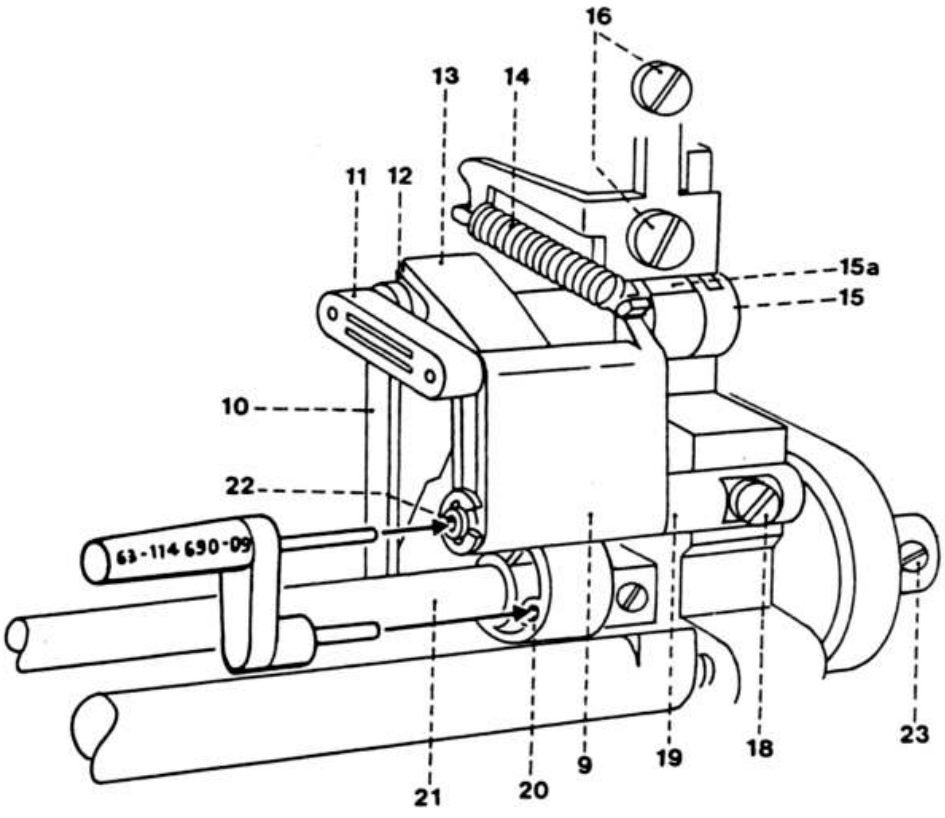


Fig. 3

4. Adjustment of feed dog in sideways direction

Requirement:
In stitch program "00", the distance of the feed dog to the right and left edges of the feed slot must be equal (fig. 4).

Check:
In stitch program "00", carry out visual check of the feed dog position.

Note:
This adjustment must only be carried out when compelling reasons exist.

Adjustment:
- Remove needle and sewing foot.
- Unscrew baseplate and bobbin thread monitor, but leave all electrical connections in place.
- Switch on master switch.
- Set 6 mm stitch length in stitch program "00".
- Turn handwheel by a complete turn.
- Loosen the three Philips screws 201 (fig. 4a) and turn the transverse-drive stepping motor until the feed dog is centered in the feed slots (fig. 4).
- Lightly tighten the three Philips screws 201 (fig. 4a).

Cross-check:
- Press the staggered-stitch key.
- Press key "3" for maximum feed.
- Turn handwheel and check the distance of the feed dog to the left and right edges of the feed slot.
- If the adjustment is correct, tighten Philips screws 201 (fig. 4a).
- Fit bobbin thread monitor and baseplate.

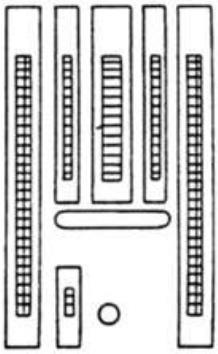


Fig. 4

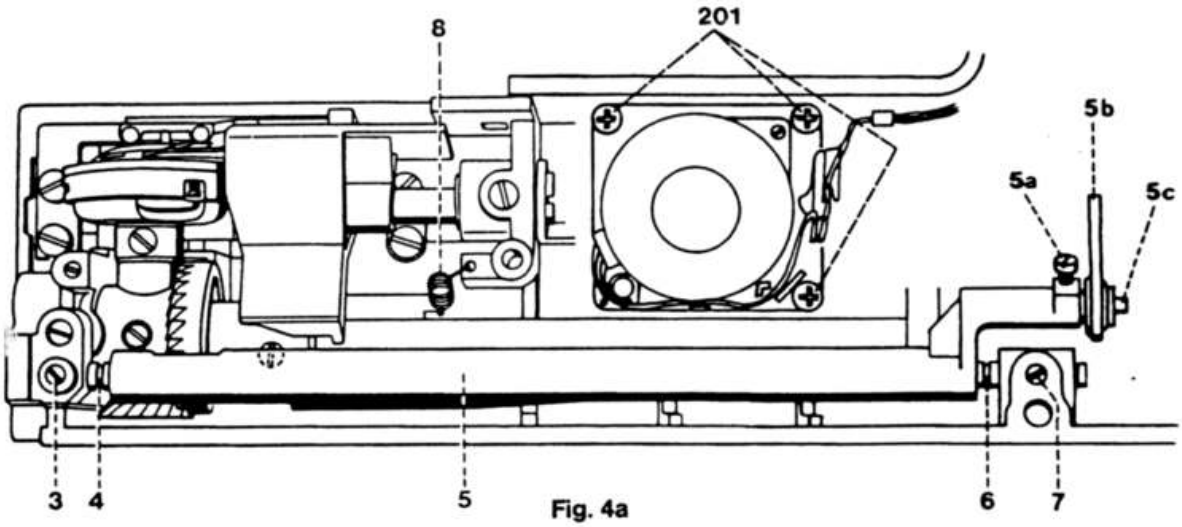


Fig. 4a

4a. Feed dog height

Requirement:

In the highest position of the feed dog, the points of its teeth must protrude above the needle plate surface by 0.85 to 0.9 mm (fig. 4).
The tolerance must not remain under or exceed 0.85 to 0.9 mm.

Check:

- Remove the needle.
- Remove the sewing foot.
- Switch on the master switch.
- Set stitch pattern "00" and stitch length "6.0".
- Place pointer gauge 63-114690-23 on the needle plate so that feeler lever 27 rests on the needle plate just right of the cutout (fig. 4a).
- Turn the hexagon with a 6 mm spanner (wrench) slightly until pointer 26 is exactly at "0".
- Move the gauge to the left to set feeler lever 27 on the feed dog (fig. 4b).
- Turn the handwheel until pointer 26 has moved up to its highest position.
  The pointer must now point exactly at mark 0.9.

Adjustment:

- Leave the pointer gauge on the needle plate.
- Remove baseplate and bobbin thread monitor, but leave all electrical connections in place.
- Turn the handwheel until the feed dog is in its highest working position.
- Loosen screw 24 by just 1/8 of a turn (fig. 4c).
- Turn eccentric stud 25 until the eccentric is facing the rear part of the housing (basic position).
- Turn eccentric stud 25 counter-clockwise until pointer 26 is exactly at mark 0.9 (fig. 4b).
- Tighten screw 24 (fig. 4c).

Cross-check:

- Turn the handwheel until pointer 26 is in its highest position again. The pointer must now be at mark 0.9. (fig. 4b).
- Lower the feed dog and check the function.

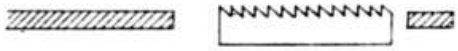


Fig. 4

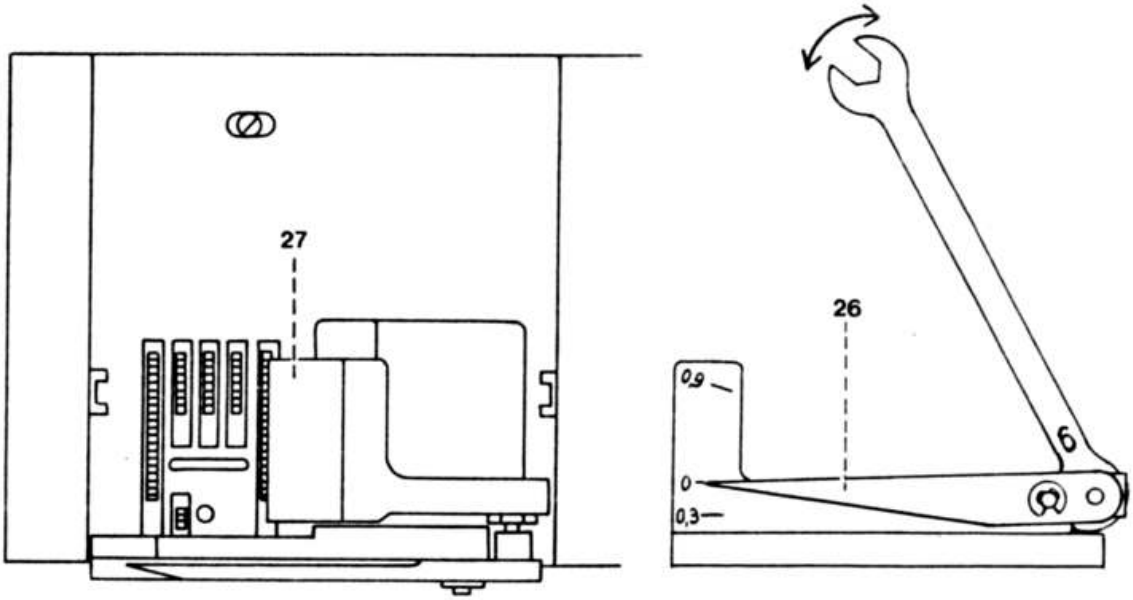


Fig. 4a

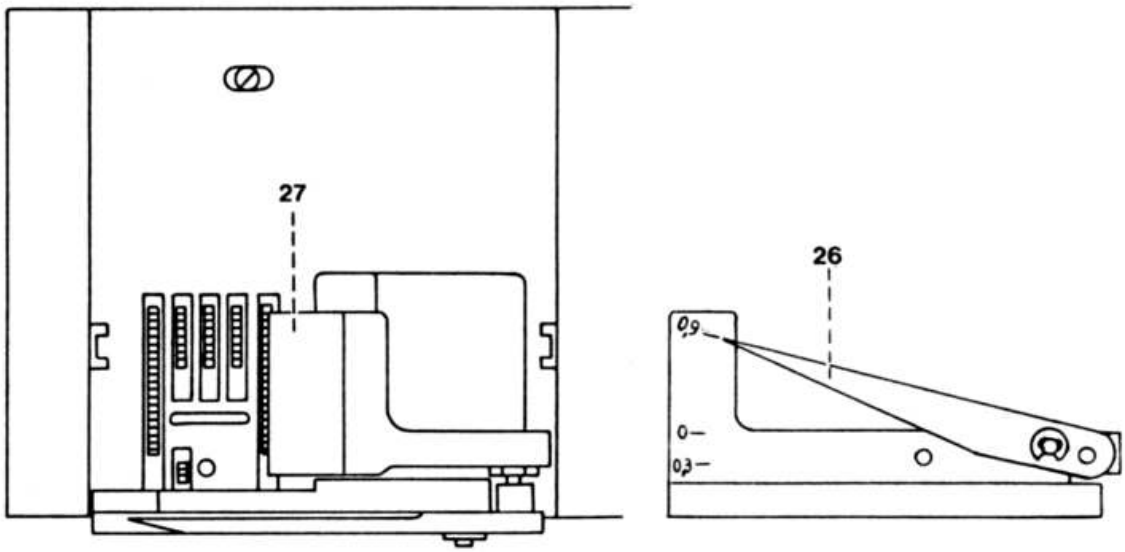


Fig. 4b

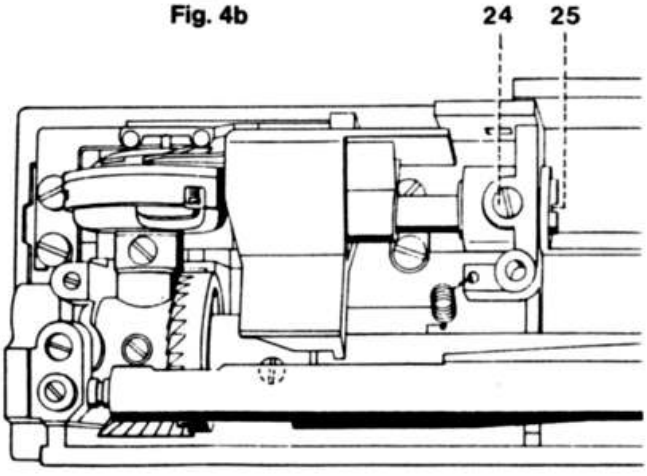


Fig. 4c

5. Adjustment of synchronizer

Note:

The following machine positions or functions are controlled by the synchronizer:

1. A change of feeding direction and change of stitch length
2. Sideways needle bar movement
3. Take-up lever/needle "up" positioning
4. Needle "down" positioning

This adjustment must only be carried out when compelling reasons exist! It must be performed with maximum accuracy.

Requirement:

A change of feeding direction or stitch length must take place when the feed dog has moved below the needle plate surface by 0.3 +/– 0.02 mm (fig. 5).

Check:

- Remove the needle.
- Remove the sewing foot.
- Switch on the master switch.
- Set stitch pattern "00" and stitch length "0.5".
- Set pointer gauge 63-114690-23 on the needle plate so that feeler lever 27 rests on the needle plate just right of the feed slots (fig. 5a).
- Turn the hexagon with a 6 mm spanner (wrench) until pointer 26 is exactly at "0".
- Turn the handwheel a full rotation forwards, then keep on turning it until the feed dog (needle bar) is in its top position.
- Change the stitch lenght.
- Set the pointer gauge with feeler lever 27 to the left on the feed dog (fig. 5d).
- Turn the handwheel very slowly forwards until pointer 26 is at 0.3 (fig. 5e). In this position the feed dog must make a visible and audible (switching) movement.

Fig. 5

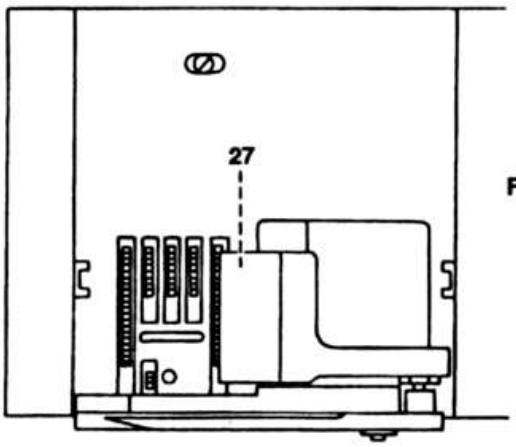
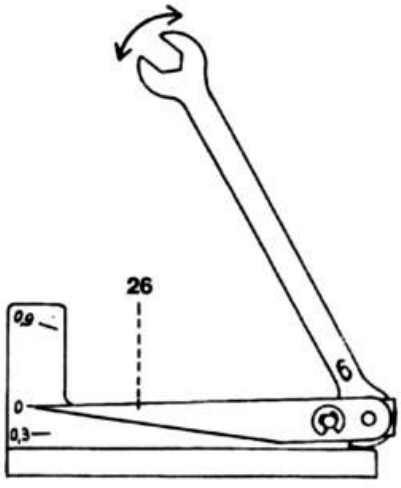


Fig. 5a



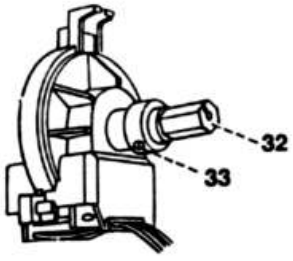


Fig. 5b

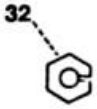


Fig. 5c

Adjustment:

Leave the pointer gauge on the needle plate.

- Unscrew the baseplate, but leave all electrical connections in place.
- Loosen fixing collar screw 33 by just 1/8 of a turn (fig. 5b and 5f).
- Set the stitch length at "0.5".
- Turn the handwheel a full rotation forwards, then keep on turning it until pointer 26 is at 0.3 (fig. 5e).
- Turn short plastic shaft 32 with a 5.5 mm spanner (wrench) in sewing direction until the mark faces the rear side of the machine (fig. 5c).
- Set the stitch length at "00".
- Keep on turning short plastic shaft 32 very slowly until the stepping motor switches.
- Tighten fixing collar screw 33 and remove the spanner (wrench).

Check:

- Set the stitch length at "0.5".
- Turn the handwheel a full rotation forwards, then keep on turning until the feed dog (needle bar) is in its top position.
- Set the stitch length at "00".
- Turn the handwheel very slowly forwards until the pointer is at 0.3 (fig. 5e). In this position the feed dog must make a visible and audible movement (switching).
- Screw on the baseplate.

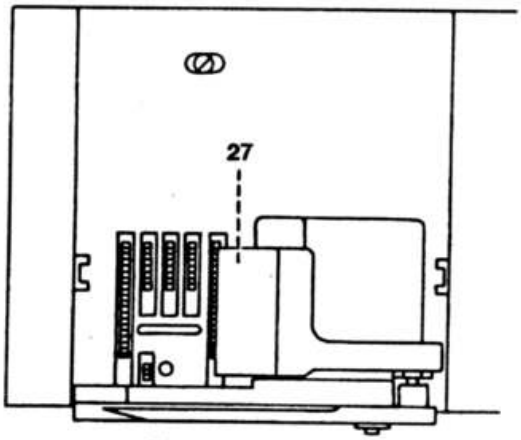


Fig. 5d

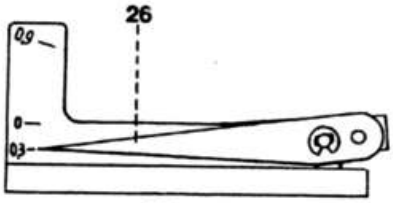


Fig. 5e

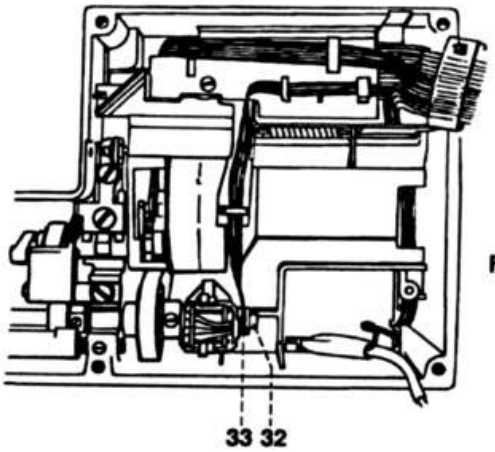


Fig. 5f

6. Adjusting the presser bar height

Requirement:

With the presser bar lifter raised there must be a clearance of 8 mm between the needle plate and the sole of the zigzag foot.

Check:

- Raise the presser bar lifter.
- Fit the zigzag sewing foot.
- Lower the feed dog.
- Fully raise the presser bar lifter and hold it in this position.
- Insert sewing foot gauge No. 63-114690-39 from behind under the zigzag foot and into the cutouts of the needle plate (fig. 6).
- Lower the presser bar lifter to its normal position again. The zigzag foot must rest parallel and without play on the sewing foot gauge. However, the sewing foot gauge must not lift the zigzag foot, and the needle thread tension release must be without play (fig. 6a).

Adjustment:

- Loosen the three screws 183, 184 and 188.
- Turn the zigzag foot with the presser bar lifter raised until it is parallel with the sides of the sewing foot gauge.
- Use a screwdriver to press presser bar guide 185 firmly downward.
- At the same time firmly tighten screw 184.

Check:

- Press the presser bar lifter further upward and release it again.
  The zigzag foot must rest parallel and without play on the sewing foot gauge.
  Needle thread tension release 181 must be without play. The presser bar lifter must be in its raised position.

Note:

- The two screws 183 and 188 are not tightened until later when the top feed height is set.

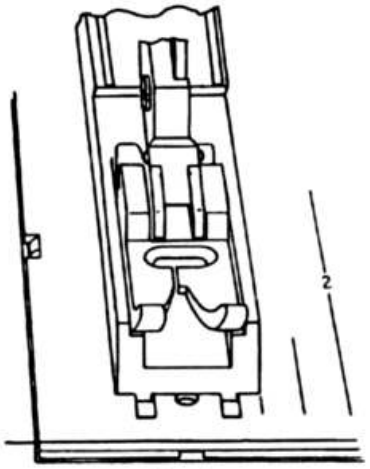


Fig. 6

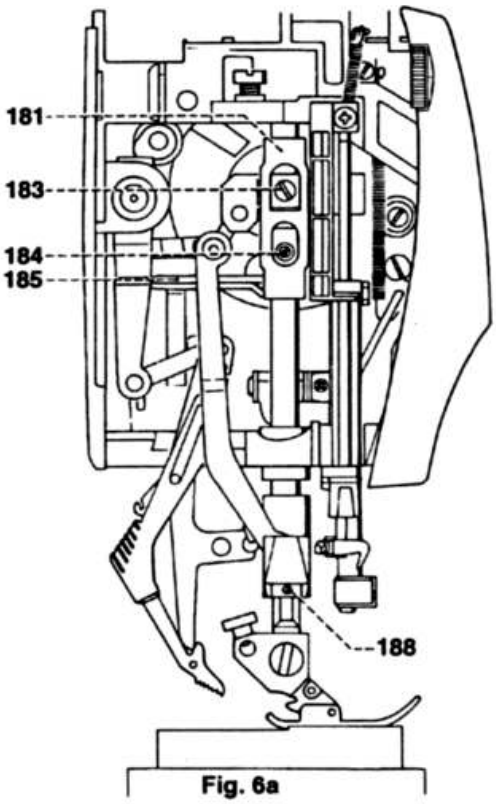


Fig. 6a

7. Adjustment of top feed foot in sewing direction

Requirement:

The front edge of the top feed foot must be between the first and second tooth point of the center tooth row of the feed dog (fig. 7).

Check:

- Raise the presser bar lifter.
- Remove the complete sewing foot.
- Set the stitch length at "6".
- Engage the top feed foot.
- Turn the handwheel until the rising feed dog is flush with the needle plate surface.
- Lower the presser bar lifter.
- Carry out a visual check (fig. 7).

Adjustment:

- Loosen screw 176 (fig. 7a).
- Raise the presser bar lifter until the top feed foot is just resting on top of the feed dog.
- At the same time push the top feed dog to the front or to the rear until its front edge is between the first and second tooth point of the center tooth row.
- Lower the presser bar lifter.
- Tighten screw 176.
- Make sure that driving shaft 175 has no play.

Cross-check:

- Check as described under "Check".

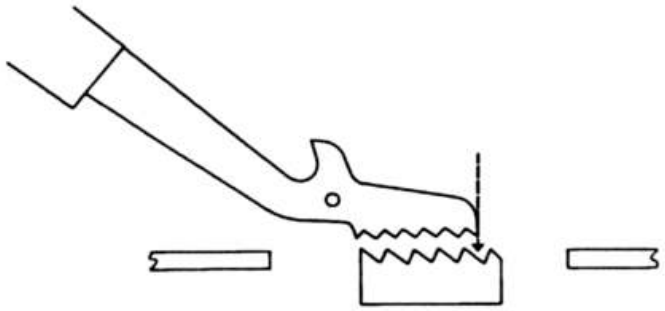


Fig. 7

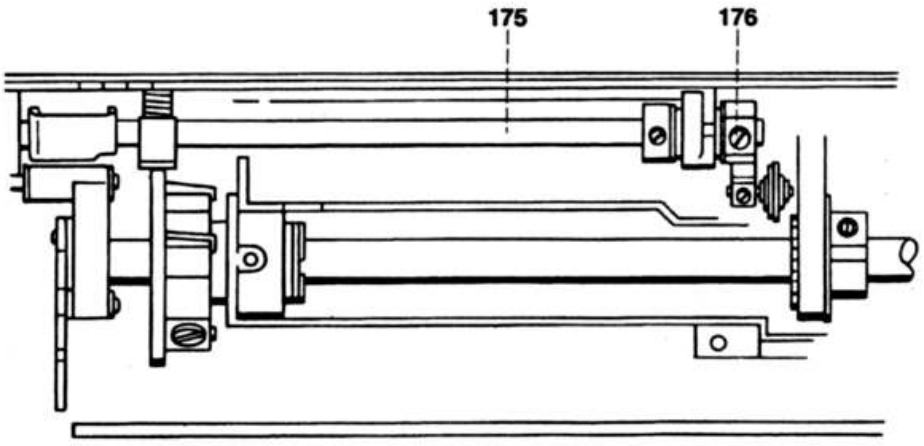


Fig. 7a

8. Adjustment of top feed foot in sewing direction

Requirement:

- In its highest working position the top feed foot must be 2 mm higher than the lower edge of the zigzag foot sole (fig. 8).

Note:

This adjustment must only be carried out when the height of the presser bar is set correctly!

Check:

- Raise the presser bar lifter.
- Insert the zigzag foot sole.
- Engage the top feed.
- Turn the handwheel until the needle bar is in its lowest position.

Caution: The handwheel must now no longer be turned!

- Lower the feed dog.
- Fully raise the presser bar lifter and hold it in this position.
- At the same time insert sewing foot gauge No. 63-114690-35 from behind under the zigzag foot and into the cutouts of the needle plate.
- Lower the presser bar to its normal raised position.
- Raise top feed foot 189 by about 2 mm against its spring pressure and then release it.
- Press the top feed foot lightly downwards.
- Check that the top feed foot rests only lightly on the sewing foot gauge and has no play.

Adjustment:

- Loosen screws 183 and 188.
- Push counter bearing 182 lightly downward until top feed foot 189 rests lightly on the sewing foot gauge.
- Tighten screw 183 in this position.

Cross-check:

- Check for light resting and freedom of play of the top feed foot on the sewing foot gauge as described under "Check".

Adjusting the guide piece

- Fully raise the presser bar lifter and hold it in this position.
- Remove the sewing foot gauge.
- Lower the presser bar lifter down to its raised position.
- Turn the handwheel until needle bar 190 is in its top position.
- Set guide piece 187 at a clearance of 0.2 mm from cross head 185 (fig. 8a).
- Tighten screw 188.

Check:

- Turn the handwheel and check for clearance of 0.2 mm.

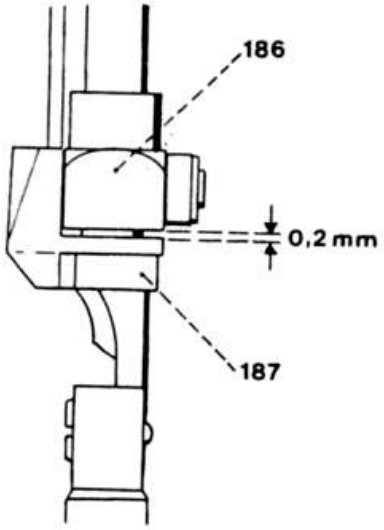


Fig. 8a

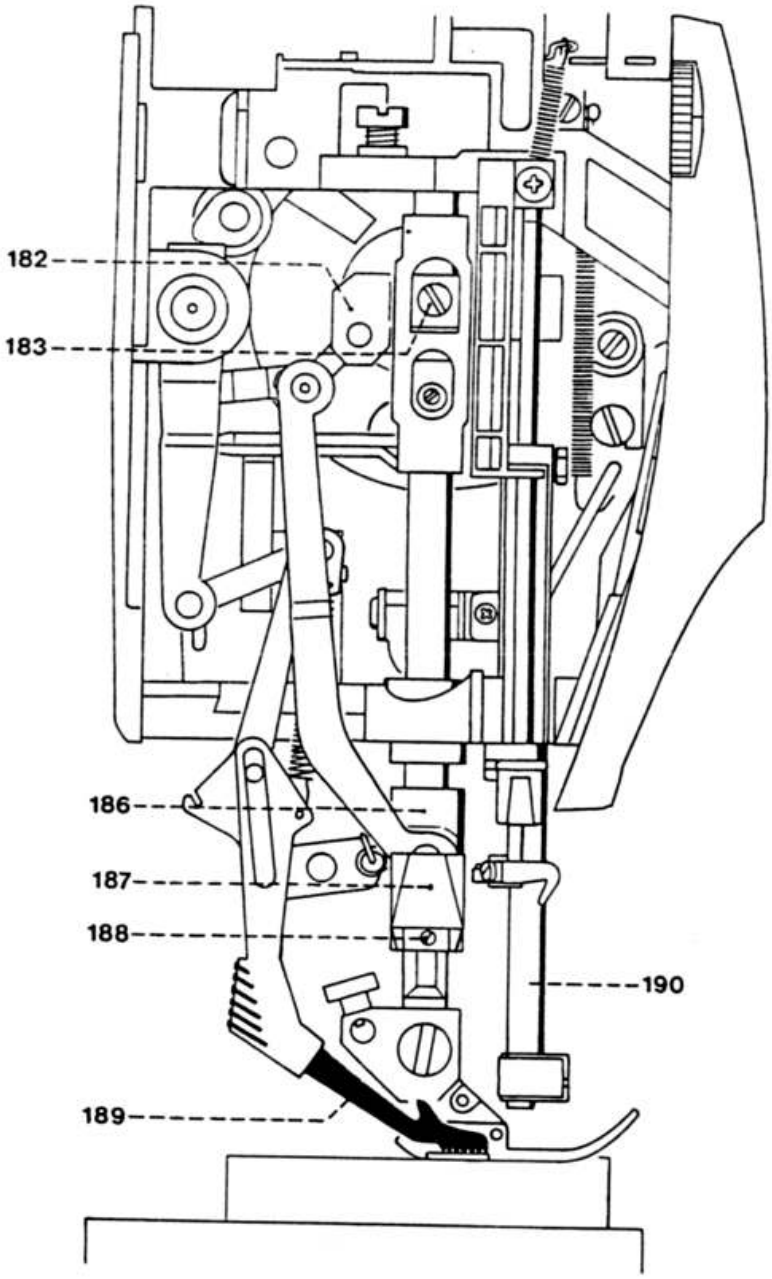


Fig. 8

Zigzag mechanism

9. Adjustment of needle in needle hole

Requirement:

At the straight stitch setting, the needle must be in the center of the needle hole (fig. 9). The widest zigzag stitches must be the same distance from the left and right needle hole edges (fig. 9a).

Check:

- Remove the sewing foot.
- Insert a new needle.
- Select stitch pattern "00" for straight stitch.
- Turn the handwheel until the needle is in the needle hole.
- Make a visual check.
- Select adjusting program "248" and a zigzag width of 9 mm.
- Turn the handwheel and check the left and right distance.

Adjustment:

- Select stitch pattern "00" for straight stitch.
- Loosen screws 39 just a little (fig. 9b).
- Push the complete stepping motor 38 to the left or to the right until the needle is centered (fig. 9).
- Tighten the two screws 3.

Cross-check:

- Carry out as described under "Check".

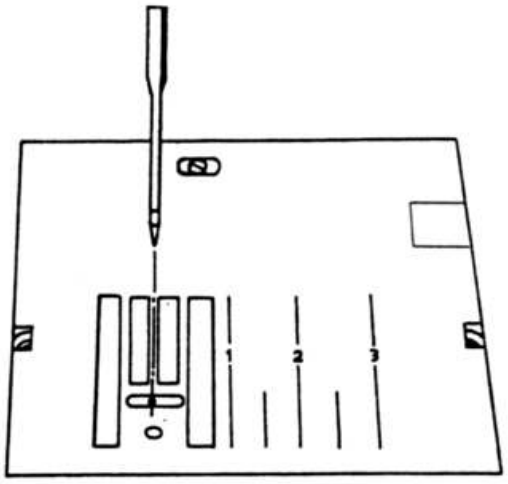


Fig. 9

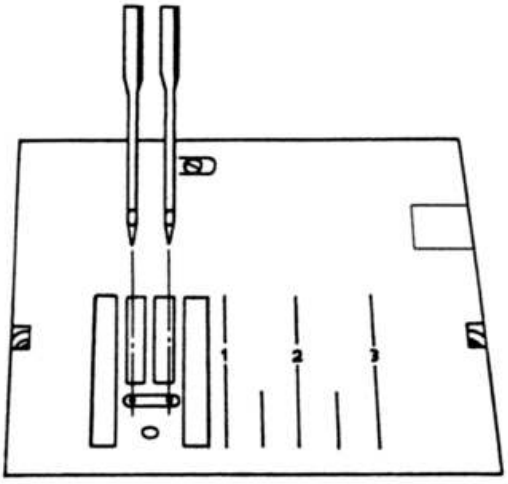


Fig. 9a

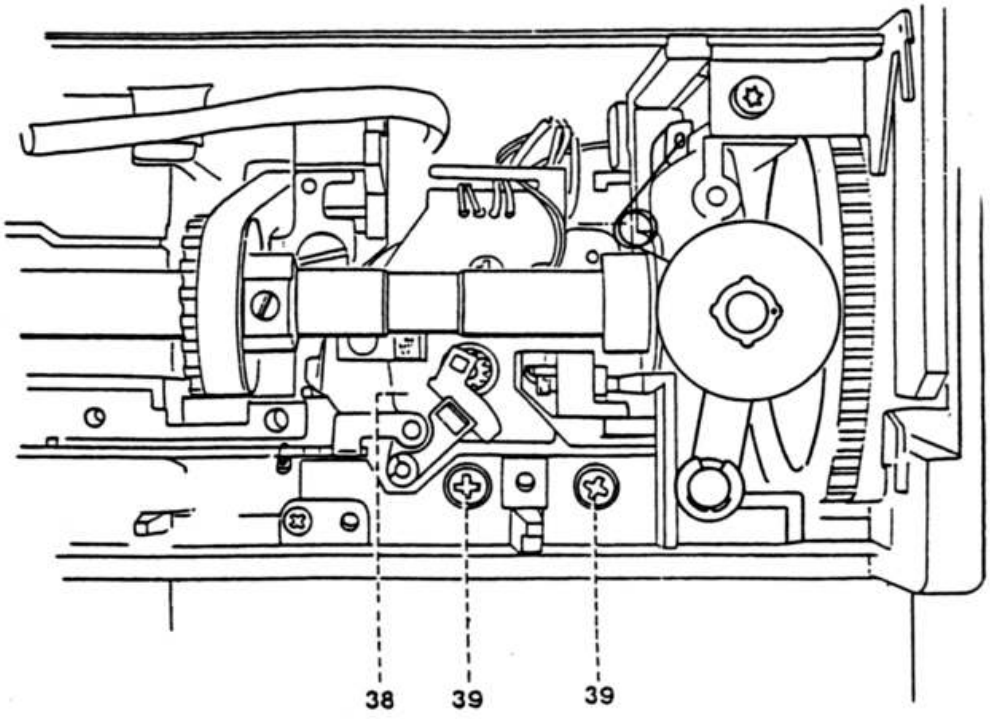


Fig. 9b

Stitch forming parts

Foreword:
The sewing hook adjustment consists basically of the three following adjustments:

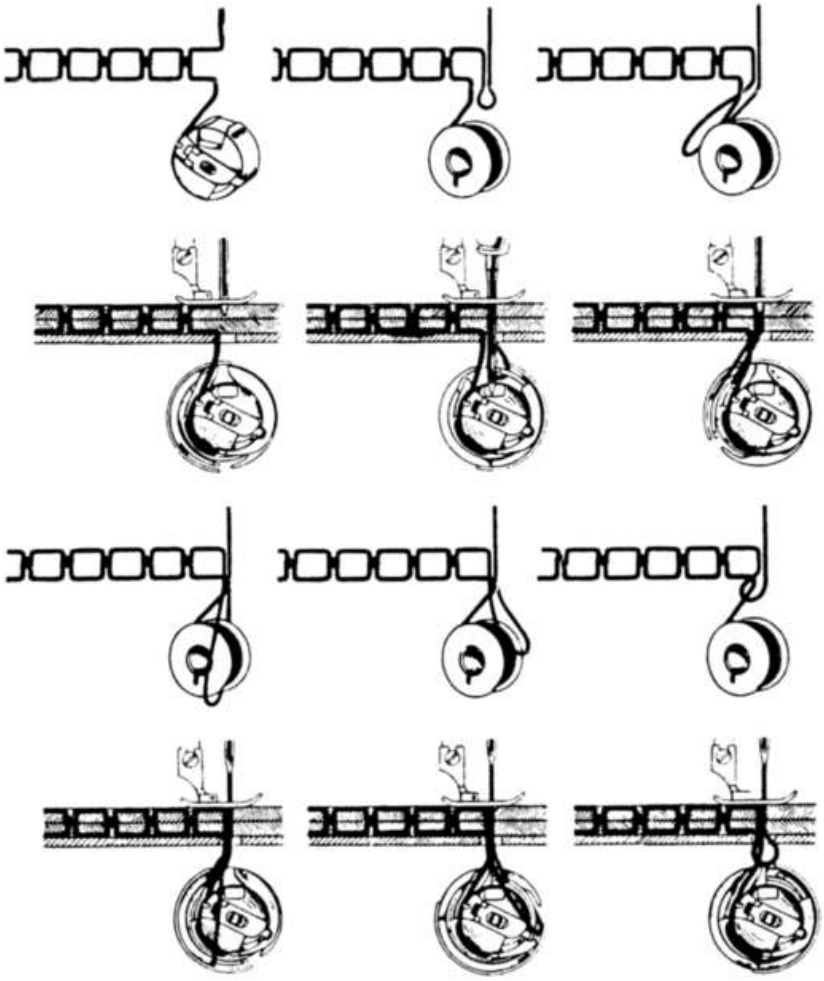
Needle rise
Needle bar height
Hook-to-needle clearance

Needle rise:
The needle rise is the movement by which the needle must rise from its lowest position until a thread loop has formed on the side of the needle on which the scarf is located.

Needle bar height:
The needle bar heigth must be set in such a way that the sewing hook point can easily enter the thread loop above the needle eye at straight stitch and zigzag stitch settings.

Hook-to-needle clearance:
The distance of the sewing hook point from the needle must be as small as possible, so that the sewing hook point does not miss the thread loop.

The sequence of sewing hook adjustments is as follows:
1. Hook-to-needle clearance
2. Bevel gear setting
3. Needle rise
4. Needle bar height



10. Position of needle in needle hole in sewing direction

Requirement:
There must be a clearance of 0.2 mm between the back edge of the needle shank and the back edge of the needle hole in the needle plate (fig. 10).

Note:
Since system 130/705 H needles increase in size at the needle front side only, the point of an Nm 100 needle is positioned exactly in the middle of the needle hole (as seen in feeding direction), while the point of an Nm 80 needle is positioned slightly closer to the back edge of the hole.

Check:
- Insert a new needle of sysem 130/705 H in size Nm 100.
- Select stitch pattern "00" for straight stitch.
- Engage the zigzag foot.
- Lower the zigzag foot.
- Turn the handwheel until the needle is in its lowest position.
  The needle must now have the same distance to the front and rear edges of the needle hole in the foot and the needle plate.

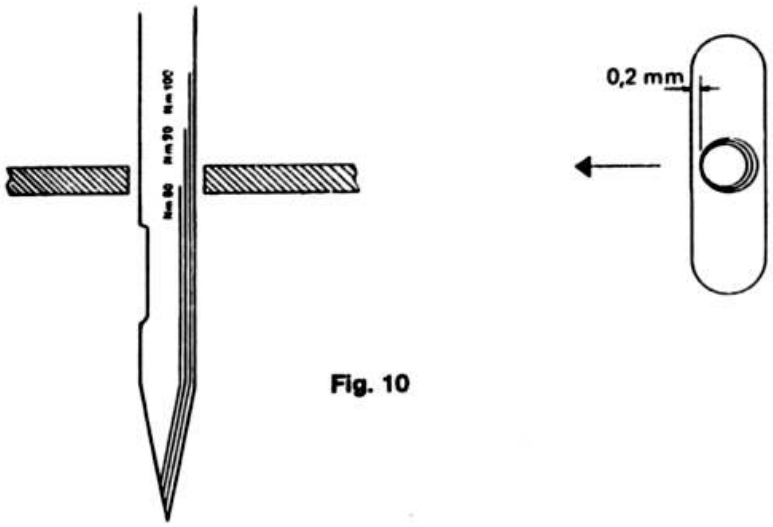


Fig. 10

Adjustment in relation to the sewing foot:

- Loosen screw 41 (fig. 10b).
- Move pin 43 together with collar and needle bar frame 42 to the front or the rear until the needle is exactly in the middle of the needle hole in the sewing foot (fig. 10b).
- Tighten screw 41.

Check:

- Turn the handwheel and raise the needle.
- Place a piece of paper underneath the sewing foot and lower the foot.
- Turn the handwheel and bring the needle to its lowest position.
- Its distance from the front and rear edges of the needle hole in the foot must be equal.
- Disconnect spring 35 at the top with a spring hook and let it hang on the latter (fig. 10a).
- Disconnect connecting rod 34 at pin 36 by lifting it up.
- Move the needle bar frame and the connecting rod to the left and right.

Important:

The needle bar frame must move easily and without binding. If this is not the case any binding must be removed.

- Re-insert pin 36 of connecting rod 34.
- Mount spring 35 on connecting rod 34.

Adjusting the needle plate:

- Turn the handwheel and bring the needle to its top position.
- Remove the zigzag foot.
- Turn the handwheel and bring the needle to its lowest position.
- Turn adjustment eccentric 44 until the distance from the front and rear [illegible] f the needle hole is equal (fig. 10c).

Cross-check:

- Carry out a visual check at straight stitch and zigzag stitch se[illegible]

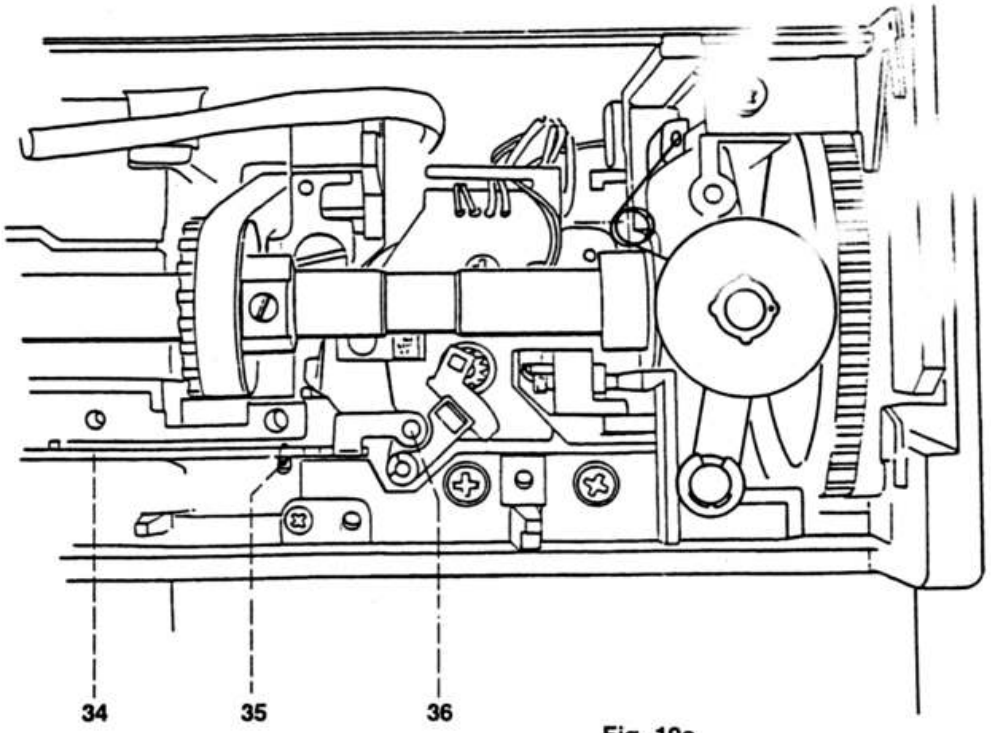


Fig. 10a

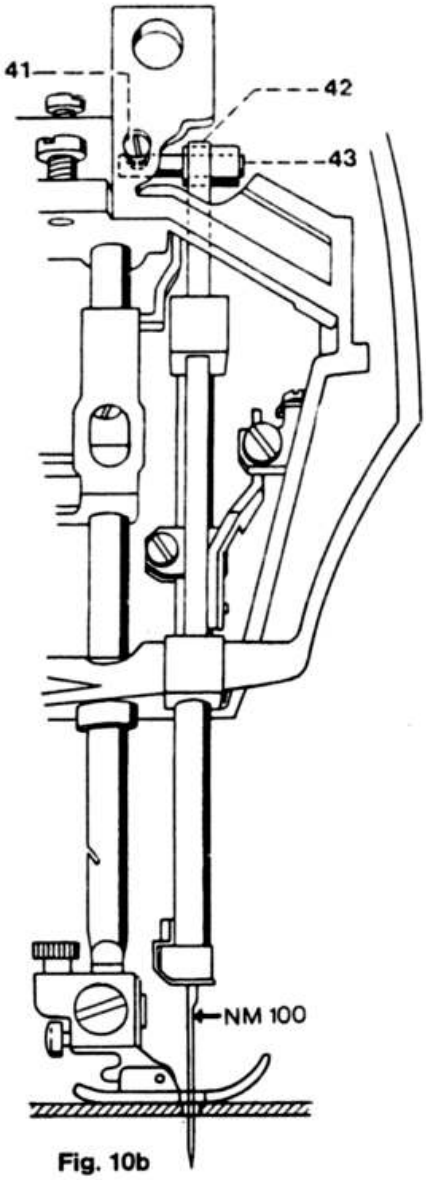


Fig. 10b

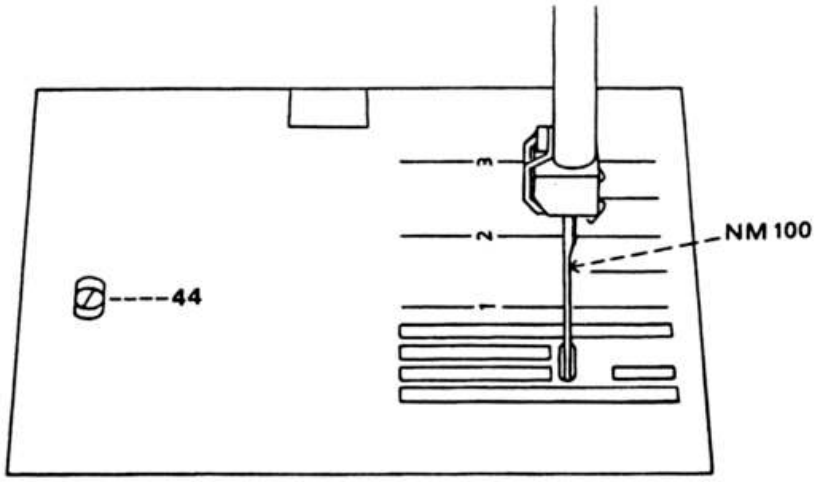


Fig. 10c

11. Adjustment of hook-to-needle clearance

Requirement:

At the straight stitch setting the distance of the sewing hook point from the bottom of the scarf in the needle must be 0.05 mm (see fig. 11). In the widest zigzag stitch, the sewing hook point must almost touch the needle.

Check:

- Remove baseplate and thread monitor, but leave all electrical connections in place.
- Remove the needle.
- Remove sewing foot and needle plate.
- Remove the bobbin case.
- Unscrew the bobbin case position finger.
- Remove the sewing hook gib with bobbin case base by unscrewing the three screws.
- Insert a new needle of system 130/705 H in size Nm 80.
- Select stitch pattern "00" for straight stitch.
- Turn the handwheel until the hook point is opposite the center line of the needle.
- Check the distance between hook point and needle scarf.
- Check the axial play of hook 50 to hook shaft bush 48.

Adjustment:

- If the hook shaft has axial play, loosen the two screws 49 (fig. 11a).
- Press bevel gear 46 with the shaft to the front and push sewing hook 50 to the rear.
- Tighten the two screws 49.
- Loosen screw 45 in the lifting eccentric by 2 to 3 turns.
- Loosen screw 47 just a little.
- Turn handwheel and sewing hook until the hook point is opposite the middle of the needle scarf.
- Shift the sewing hook complete with hook shaft bush 48 until the distance of the sewing hook point to the bottom of the scarf in the needle is 0.05 mm.
- Tighten screw 47 on the narrow flat of the hook bush.

Note:

The large flat of the hook shaft bush must face right.

Cross-check:

- Check for free movement of hook shaft.
- Check again the distance between the sewing hook point and the bottom of the needle scarf.

11a. Adjustment of bevel gears

Requirement:

The bevel gears must move freely and without play.

Adjustment:

- Push the bevel gear with the lifting eccentric to the left until it is in contact with bevel gear 46 and has no play.
- Tighten screw 45 on the surface of the drive shaft.

Check:

- As described under "Requirement".

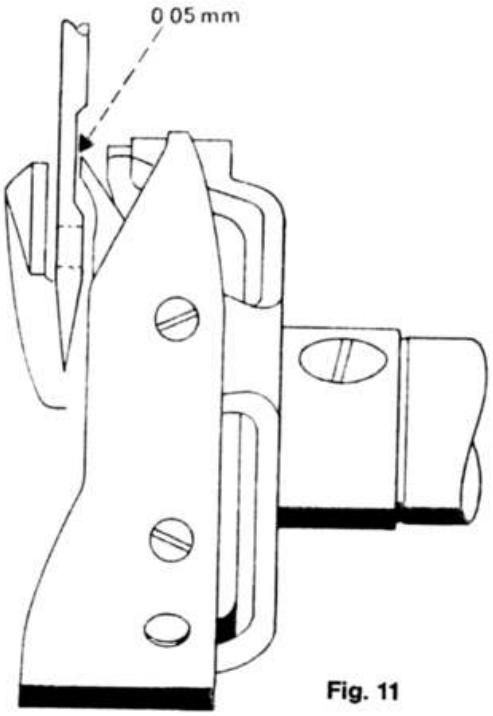


Fig. 11

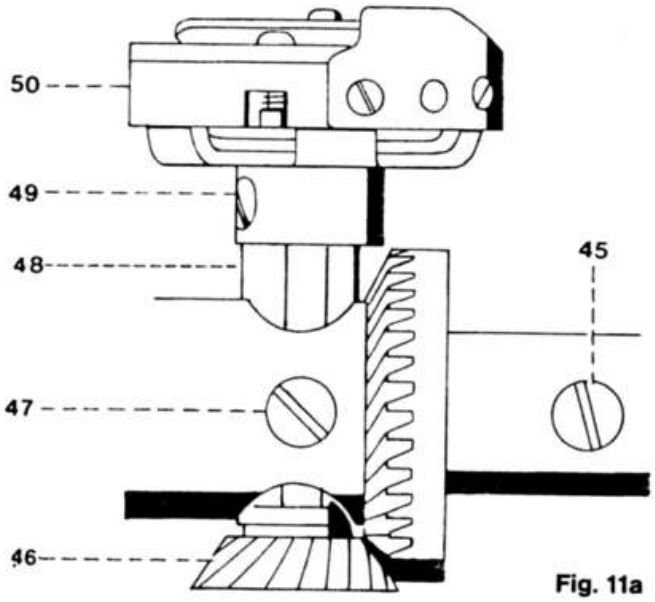


Fig. 11a

12. Hook timing

Requirement:

When the needle bar has moved 2.3 mm upwards from its lowest position (with the machine set for straigth stitch and center needle position), the sewing hook point must be exactly opposite the center line of the needle (fig. 12a).

Check:

- Unscrew baseplate and thread monitor, but leave all electrical connections in place.
- Remove sewing foot and needle plate.
- Select stitch pattern "00" for straight stitch.
- Bring the needle bar to its lowest position by turning the handwheel.
- Set the spacer (63-102 600-18) on top of the needle bar and push it upwards against the needle bar frame.
- Push the needle-rise clamp (00-870 137-01) on the needle bar and tighten it lightly.
- Push the 2.3 mm feeler gauge (00-870 136-01) with its cutout on the needle bar above the needle-rise clamp.
- Loosen the needle-rise clamp and push the 2.3 mm feeler gauge upwards against the spacer.
- Tighten the milled screw on the needle-rise clamp.
- Turn the handwheel backwards and forwards a little.
- If there is any play on the feeler gauge, repeat this procedure.
- Remove the 2.3 mm feeler gauge.
- Turn the handwheel in sewing direction until the needle rise clamp comes in contact with the spacer (fig. 12a).
  By this means the needle has moved upwards to the needle rise position 2.3 mm.
  The hook point must now be exactly behind the center line of the needle.

Adjustment:

- If the setting is not correct, remove the needle-rise clamp.
- Loosen the two screws 49 (fig. 12b).
- Re-fit the needle-rise clamp and repeat the operation as described under „Check: needle bar has moved 2.3 mm upwards and the needle-rise clamp is in contact with the spacer.
- Turn the hook until the hook point is exactly behind the center line of the needle.
- Press sewing hook 50 and bevel gear 46 together so that there is no play between them and tighten one screw 49.

Check:

- Turn the handwheel a little backwards and then forwards until the needle-rise clamp is in contact with the spacer (fig. 12a).
  The hook point must be exactly behind the center line of the needle.
- Remove the needle-rise clamp.
- Verify that the hook shaft has no axial play.
- Tighten the two screws 49 very firmly.

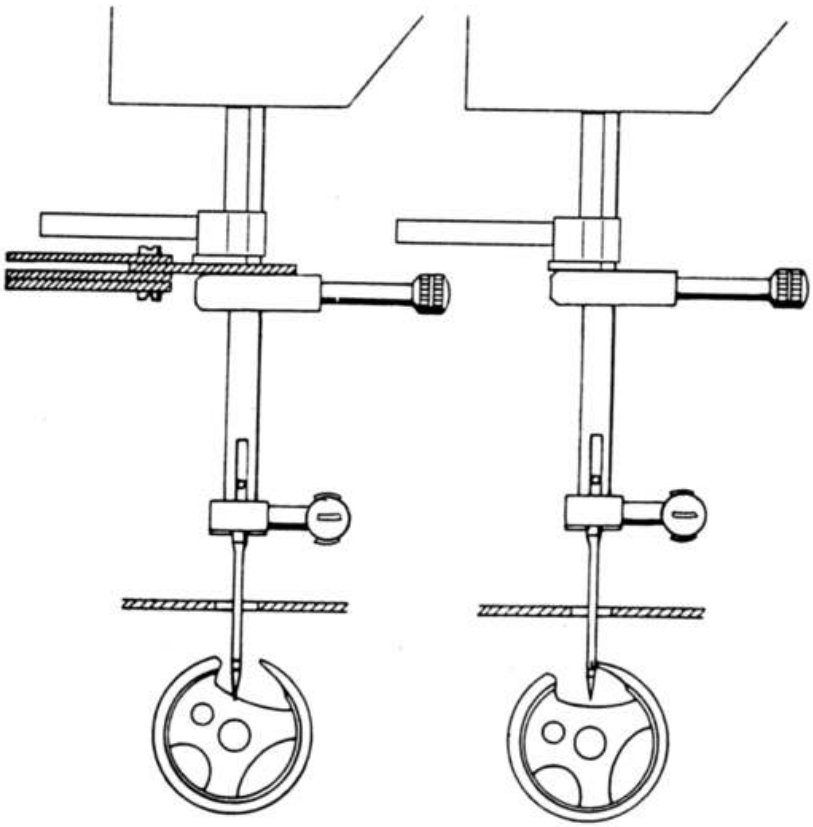


Fig. 12

Fig. 12 a

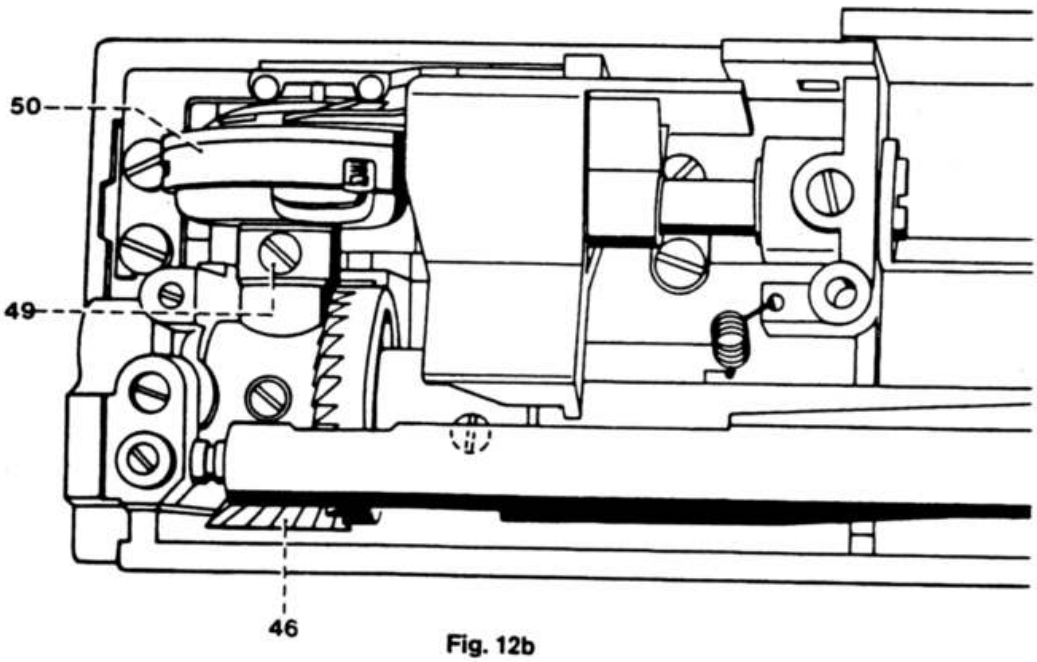


Fig. 12b

13. Adjustment of needle bar height

This machine has a transverse double-rotating hook. On the right zigzag penetration, the sewing hook reaches the needle a little earlier and at the left penetration a little later than at the center penetration (fig. 13).

Requirement:
The distance between the top edge of the needle eye and the lower edge of the sewing hook point must be 0.5 mm at the widest left zigzag penetration (fig. 13a).

Check:
- Select adjusting program "248" and a zigzag width of 9 mm.
- Turn the handwheel until the needle rises at the left zigzag stitch and the sewing hook point is exactly behind the needle center line of the needle. The distance between the top edge of the needle eye and the bottom edge of the hook point must be 0.5 mm.

Adjustment:
- Loosen screw 192 just a little (fig. 13b).
- Shift needle bar 190 in height, without twisting it, until the clearance of 0.5 mm is set.
- Tighten screw 192 securely.

Cross-check:
- Check the clearance of 0.5 mm. The needle holder must face exactly square to the right.

Fig. 13

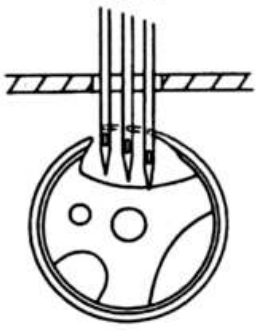


Fig. 13a

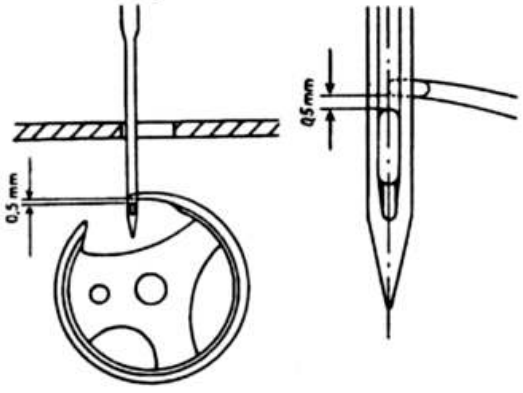
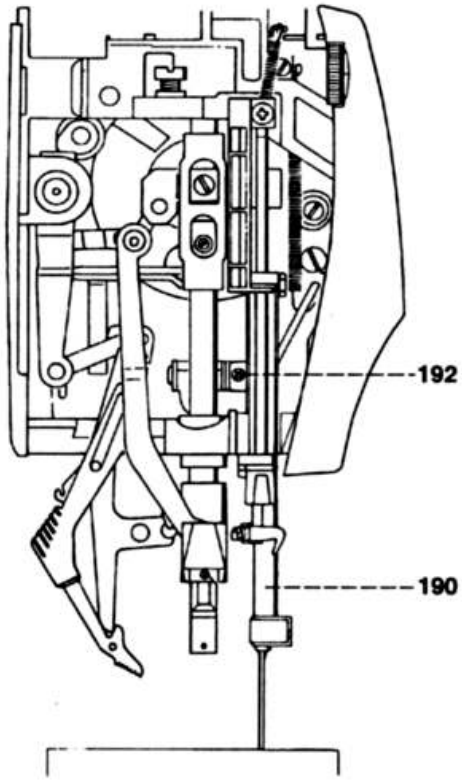


Fig. 13b



14. Adjustment of bobbin case position finger

Requirement:
The clearance between the position finger and the bottom of the groove in the bobbin case base must be 0.7 mm.

Check:
- It must be possible to insert the clearance gauge 00-880133-01 with ease but without play between the position finger and the bottom of the groove in the bobbin case base (fig. 14).

Adjustment:
- Loosen the two screws 54.
- Insert the clearance gauge.
- Press position finger bracket 53 against the clearance gauge at an angle of 90 degrees.
- Tighten the two screws 54.

Cross-check:
- Same as "Check".

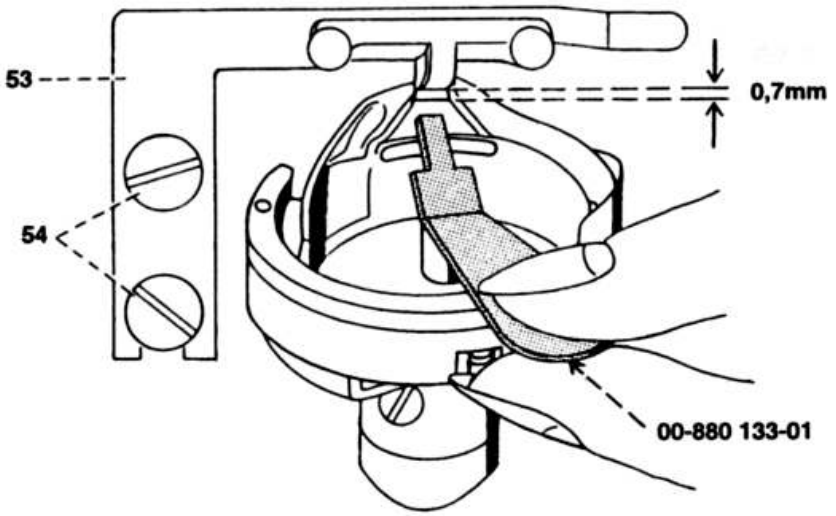


Fig. 14

Stitching off

15. Adjustment of needle threader

Requirement:

With the threader key pushed fully down, prong 194a must pass through in the center between the top and bottom edge of the needle eye of a needle of size Nm 70 (fig. 15).

Check:

- Insert a new needle, system 130/705 H, size Nm 70.
- Set the machine at top needle position by briefly pressing the foot control.
- Push threader 191 fully down and swing it to the front.
- Carry out a visual check.

Height adjustment:

- Disconnect pull-spring 195 at the top (fig. 15b).
- Press threader bar mounting 193 down and hold it in this position.
- Loosen Philips screw 194 by only 1/4 of a turn.
- Push threader upward or downward until prong 194a is the same distance form the top and bottom edge of the needle (fig. 15).
- Tighten screw 194 in this position.

Cross-check 1:

- Use key 191 to move the threader prong to the rear and to the front again. Carry out a visual check of the prong height.

Lateral adjustment:

- Use key 191 to turn the threader prong to the front into the needle eye.
- Loosen screw 192 by just 1/8 of a turn (fig. 15a).
- Move the prong bracket 193a laterally until prong 194a is precisely centred in the needle eye.
- Tighten the screw.

Cross-check 2:

- Use the key to move the threader prong backwards and to the front again. Carry out a visual check of the lateral position of the prong.
- Turn pull-spring 195 by two full turns counter-clockwise and engage it in hook 196 so that the spring is positioned towards the left. (fig 15b).
  This ensures that the threader is swung automatically backwards.
- Actuate the threader key, and perform a visual and a functional check.

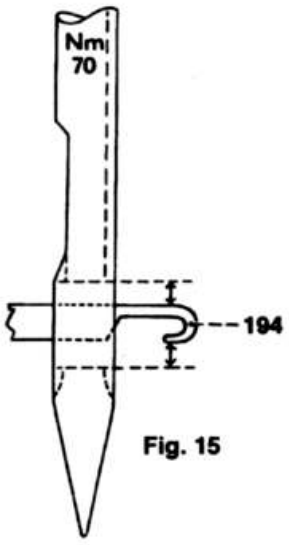


Fig. 15

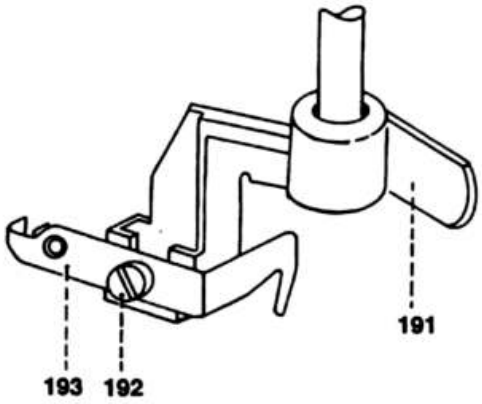


Fig. 15a

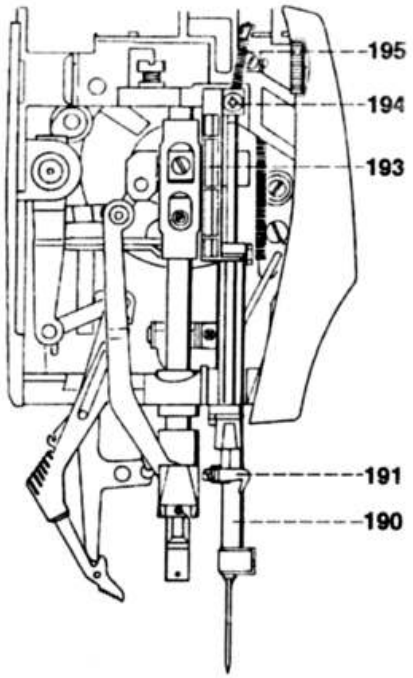


Fig. 15b

16. Adjustment of bobbin winder stop

Requirement:
The bobbin winder must stop when the thread has reached a level of 1 mm below the bobbin rim.

Check:
- Wind a bobbin and check that the winder stops as desired.

Adjustment:
- Loosen screw 55 (fig. 16).
- Position stop 56 to the left for less thread and to right for more thread.
- Tighten screw 55.

Cross-check:
- Wind a bobbin and check that the winder stops as required.

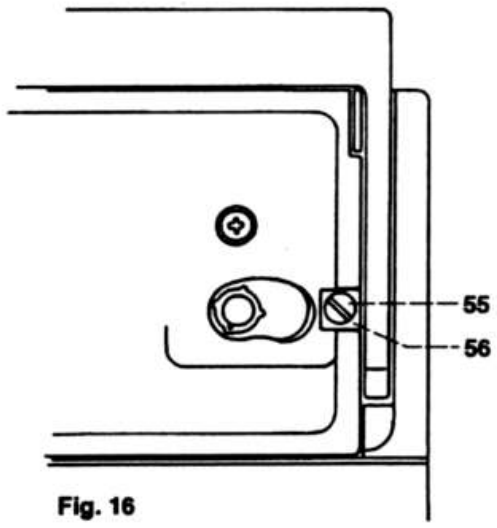


Fig. 16

17. Adjustment of bobbin thread tension

Requirement:
The force required for pulling cotton thread 50/2 or synthetic fibre thread 100/3 off the bobbin must be approximately 20 to 25 g.

Check:
- When a threaded bobbin case hangs on its thread, it must not slide downwards by its own weight.
- Upon sharp upward movements of the hand, the thread must run off gradually (fig. 17).
- There must not be any thread waste under the tension spring.
- The tension spring must rest evenly and parallel on the bobbin case.

Adjustment:
Loosen the knurled screw a little and turn it in again until a resistance is felt when the thread is pulled off.

Check:
- Carry out as described under "Check"

Note:
- Once the bobbin thread tension has been set correctly, tension adjustments must be made only at the needle thread tension.

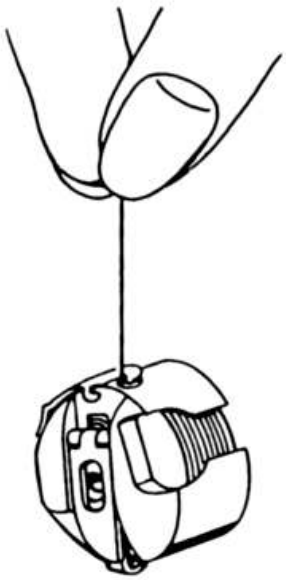


Fig. 17

18. Adjustment of needle thread tension

Requirement:
Within the adjusting range from 3 to 5, the interlacing of the needle thread and the bottom thread (cotton thread 50/2 or synthetic fibre thread 100/3) must take place approximately in the middle of the fabric in straight and zigzag stitch setting (fig. 18 and fig. 18c).

Check:
- Set the needle thread tension at "5".
- Set stitch pattern "10" for zigzag and the stitch width at "6.0".
- Set the stitch length at "2.0".
- Place a piece of fabric under the zigzag foot and sew.
- Select stitch pattern "00" for straight stitch and set the stitch length at "2.5".
- Sew with straight stitch.

Adjustment:

- First turn milled nut 57 fully to the left (fig. 18d).
- Set zigzag stitch "10", stitch width "6.0", and stitch length "2.0".
- Sew with zigzag stitch.
- At the same time turn the milled nut gradually in clockwise direction, until the knot is formed in the center of the fabric (fig. 18).

Cross-check:

- Sew with straight stitch and zigzag stitch as described under "Check".

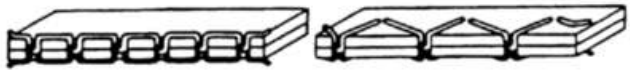


Fig. 18

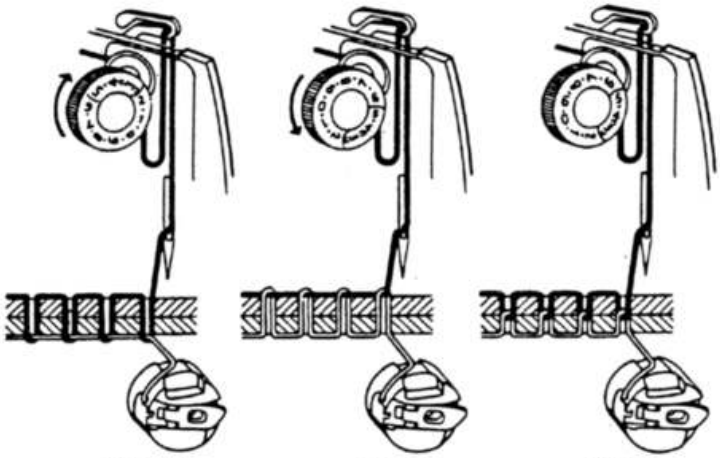


Fig. 18a Fig. 18b Fig. 18c

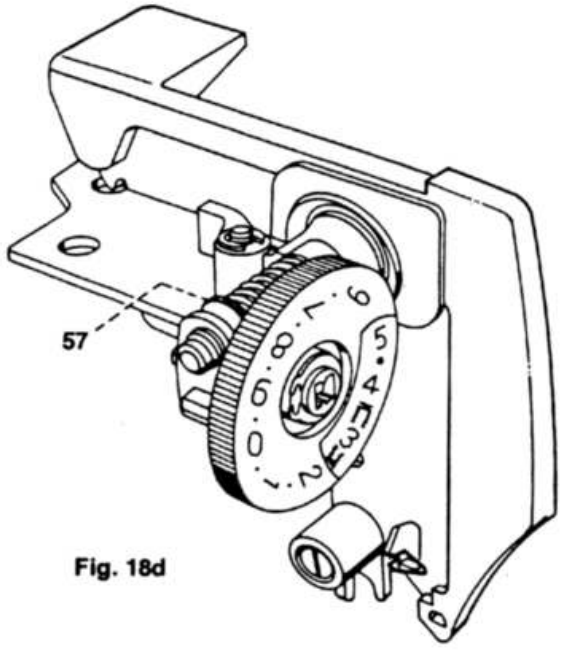


Fig. 18d

19. Adjustment of thread check spring stroke

The thread check spring prevents the descending needle from piercing the slack needle thread. The needle thread is slackened by the descending take-up lever.

Requirement:

Thread check spring 60 must keep the needle thread taut at least until the needle point enters the fabric (fig. 19). The thread check spring must release the needle thread as soon as the lower edge of the needle eye enters the fabric.

Check:

- Select stitch pattern "00" for straight stitch.
- Set the stitch length at "6.0".
- Place two plies of linen fabric under the sewing foot.
- Sew a few stitches.
- Turn the handwheel and determine the end of the thread check spring stroke. Correct slackening of the needle thread takes place when it enters the needle eye not tautly but in a loose curve.

Adjustment:

- Loosen screw 58.
- Turn thread check spring stop sleeve 59 until thread check spring 60 is in the correct position.
- Tighten screw 58.

Cross-check:

- Sew a few stitches and check as described under "Check".

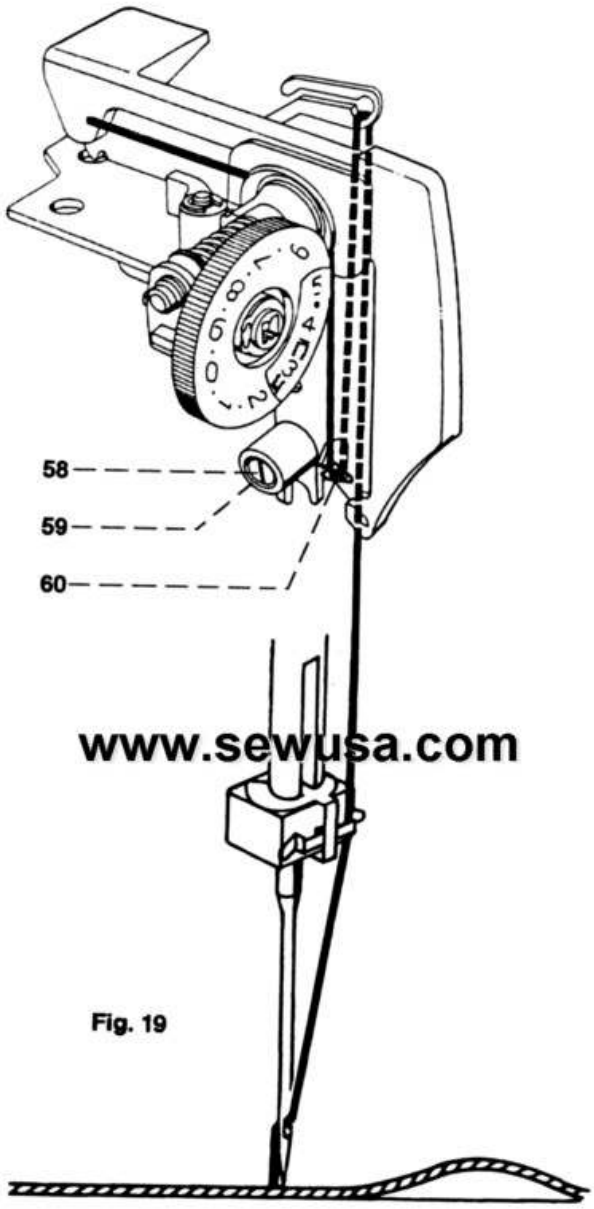


Fig. 19

20. Adjustment of equal forward and reverse stitch length
(for all forward and reverse controlled stitch patterns)

Requirement:
Letters B, D, G, H sewn in succession must measure 34.5 +/- 1.5 mm and must not be distorted (fig. 20c). To this end the machine must be at operating temperature, switch-on time 10 to 15 minutes. The darning program must be sewn as an exact rectangular (fig. 20) and not as a rhombus (fig. 20a and 20b).

Check:
- Switch off the machine.
- Press key "menu" and the master switch simultaneously (machine switched on).
- The display shows adjusting program "248".
- Now press the "esc"-key.
- Now the display shows the adjusting programs.
- Select the darning program (key 3).
- Place a piece of fabric underneath fancy stitch foot "2A".
- Sew the darning program (fig. 20).

Preliminary adjustment:
- If a rhombus was sewn according to fig. 20a, turn the adjusting eccentric just 2 to 4 degrees in direction "A". If a rhombus was sewn according to fig. 20b, turn the adjusting eccentric just 2 to 4 degrees in direction "B".

Cross-check:
- Sew the darning program and check.
- Select adjusting program "B, D, G, H" and sew (fig. 20c).
- Check for length of 34.5 +/- 0.5 mm.

Precise adjustment:
- If the letters are distorted and longer than 35 mm, turn the adjusting eccentric with a screwdriver only one degree in direction "B" according to fig. 20f. If the letters are distorted and shorter than 34 mm, turn the adjusting eccentric with a screwdriver only one degree in direction "A" according to fig. 20f.

Check:
- Select the eyelet buttonhole.
- Place a piece of fabric underneath bottonhole foot "5a".
- Sew the eyelet buttonhole.
  The wedge tack of the eyelet buttonhole must be sewn evenly (fig. 20d).

Note:
If very different sewing threads or difficult fabrics are used, buttonholes, utility stitches or fancy stitches may be sewn with shifts in the pattern design.
To correct this, the customer can adjust the balance. Always correct only the reverse stitch length.

Fig. 20 Fig. 20a Fig. 20b

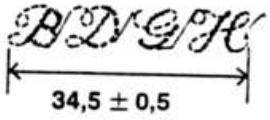


Fig. 20c

Fig. 20d

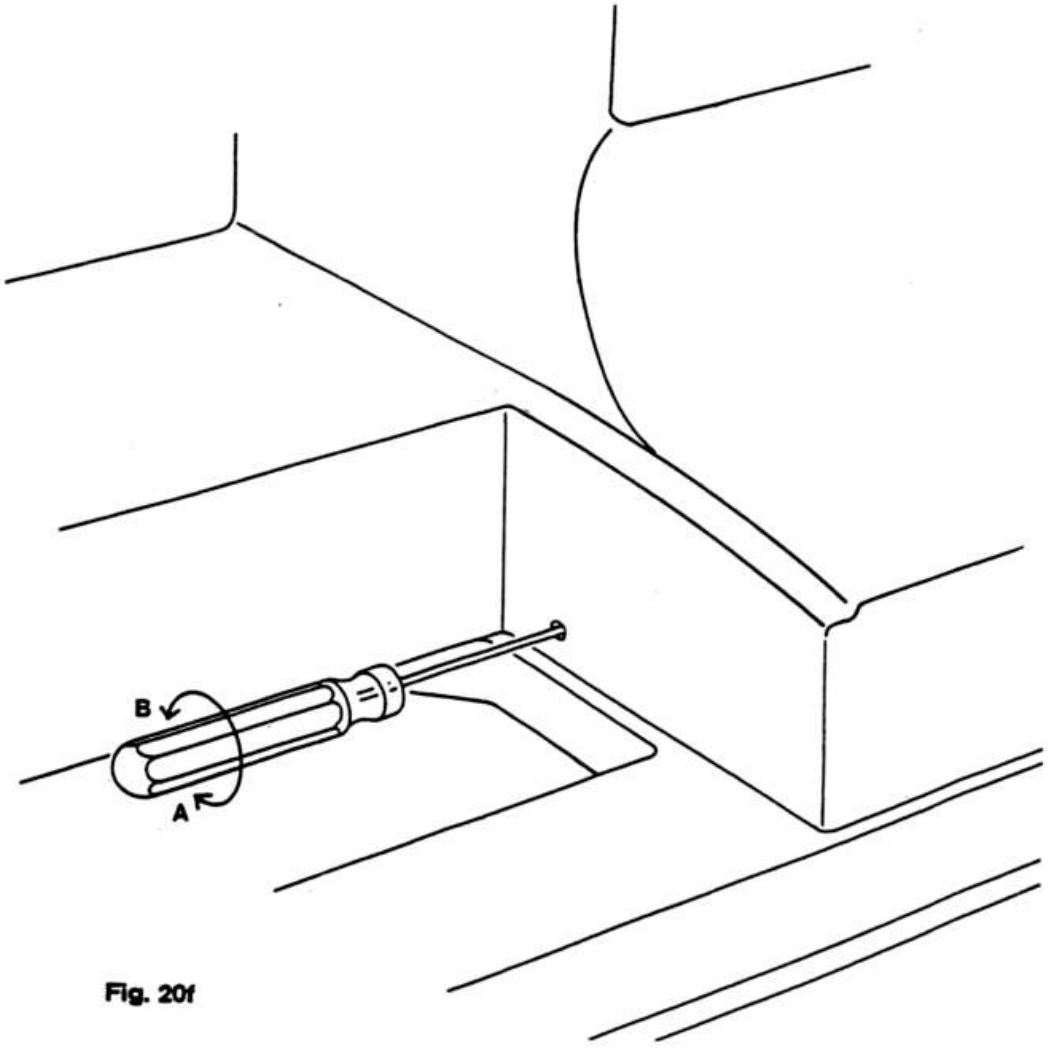


Fig. 20f

21. Making up a sewing sample

When all sewing checks are completed and the machine sews perfectly, a sewing sample is to be made.
This sewing sample should contain the most important stitch patterns which can be sewn on a repaired machine (fig. 21).
If the customer has special requirements, these should appear on a separate sewing sample.

The following is a sewing sample made on the PFAFF

Stitch pattern	No.	Stitch width	Stitch length or pattern length	Sewing foot no.
1 Straigth stitch	00		2.5	Zigzag foot "0A"
2 Zigzag stitch	10	6.0	2.0	Zigzag foot "0A"
3 Darning stitch	09	6.0	1.5	Fancy stitch foot "2A"
4 Honeycomb stitch	24	6.0	2.0	Zigzag foot "0A"
5 Lingerie buttonhole	40	4.5	22	Buttonhole foot "5A"
6 Eyelet buttonhole	46	6.0	0.35	Buttonhole foot "5A"
7 Fancy stitch	71	9.0	0.35	Fancy stitch foot "2A"

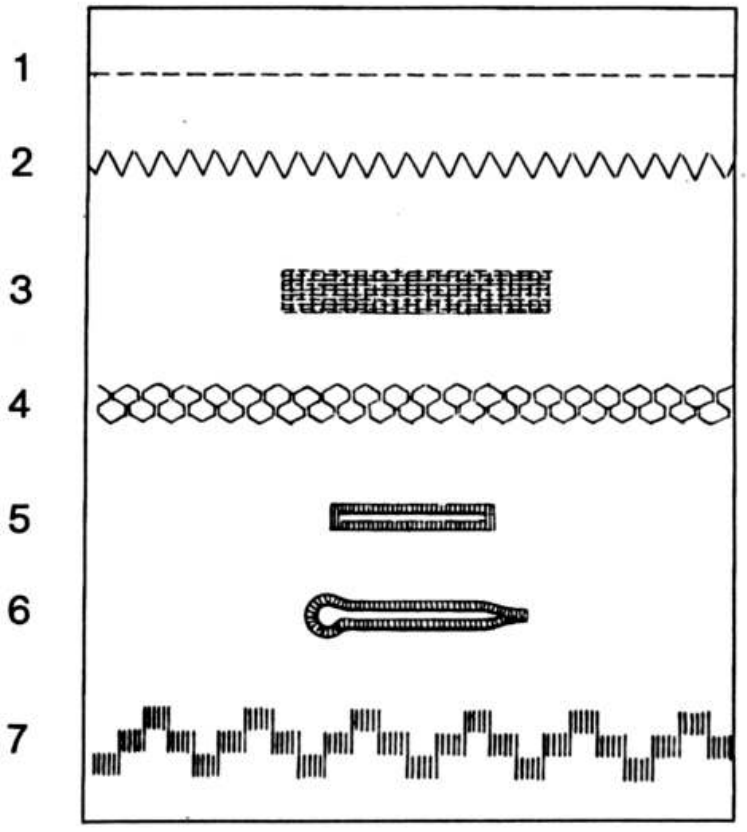


Fig. 21

Repair Instructions

22. Dismantling and assembling the needle thread tension

Removal:

- Remove the needle thread tension.
- Remove circlip 86 (fig. 22).
- Remove spring washer 87 and tension dial 88.
- Unscrew adjusting screw 92 from guide 93.
- Remove guide 93.
- Pull off the adjusting screw and pressure spring 91.
- Pull out or knock out cemented stud 97 complete with pressure piece and the three tension discs 94, 95 and 96.

Fitting:

- Insert tension stud 97 with the three tension discs and the pressure piece.
- Cement tension stud 97 into the mounting plate with Omnivit-Rapid.
- Push pressure spring 91 and adjusting screw 92 onto tension stud 97.
- Insert guide 93 with its right side and fully screw in screw 92 at the left.
- Push on tension dial 88 and make sure the guide pin engages with the worm.
- Insert spring washer 87.
- Push on circlip 86.
- Install the needle thread tension.
- Set the needle thread tension according to section 18.

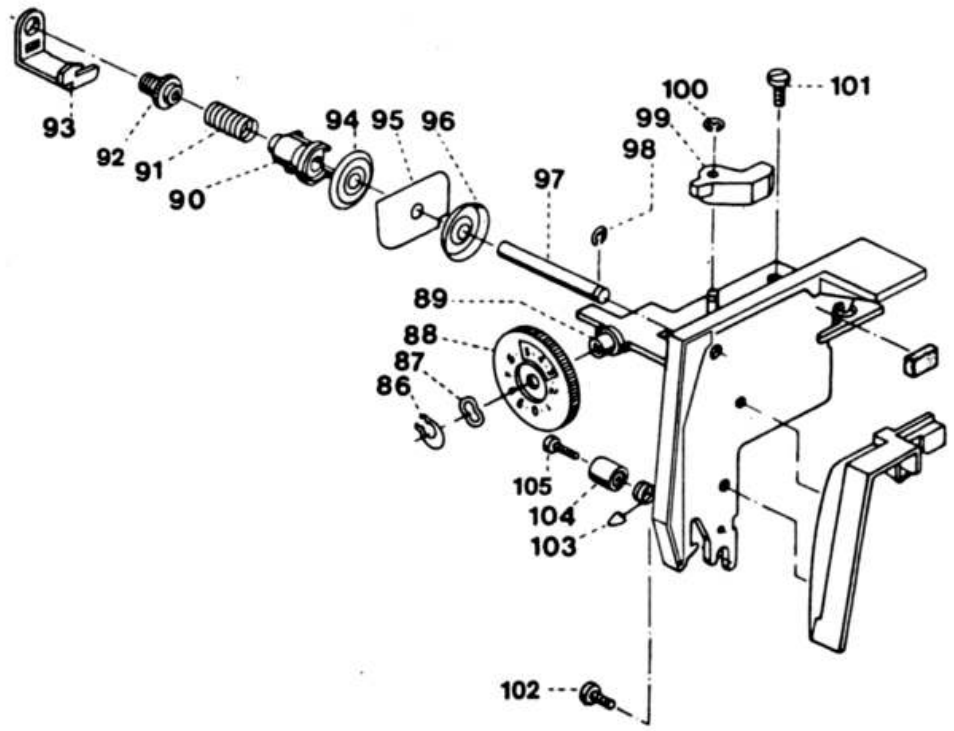


Fig. 22

23. Changing the pressure spring in the handwheel release

Removing the handwheel release

- Remove plastic cap 119 with clearance gauge 00-880 133-01 (fig. 23).
- Unscrew metal screw 107.
- Pull out handwheel-release disc 110 and pawl 111 and remove clutch piece 113 and pressure spring 114.

Fitting the handwheel release

- Turn handwheel 115 and clutch disc 116 until the square hole and cutout 117 are facing down.
- Place pressure spring 114 onto the handwheel boss so that its rear side fits into the guide groove (fig. 23b).
- First place clutch piece 113 over the boss of the handwheel, then press it towards the back. The pressure spring is thus placed vertical and clutch piece is positioned as shown in fig. 23c.
- Push the pin of pawl 111 (fig. 23d) into the hole in such a way that it is positioned as shown in fig. 23d.
- Push handwheel-release disc 110 with its square mark 118 facing up into the handwheel (fig. 23e).
- Handwheel-release disc 110 must be turned about 5 mm back and forth in order to snap in properly.
- Fit metal screw 107 with washer 108.
- Hold handwheel 115 firmly and turn handwheel-release disc 110 in sewing direction until you hear it snap in place.
- Fit the plastic cap.
- Check the handwheel release by engaging and disengaging it.

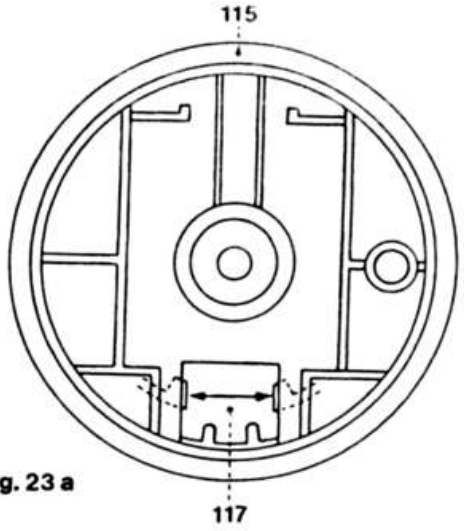


Fig. 23 a

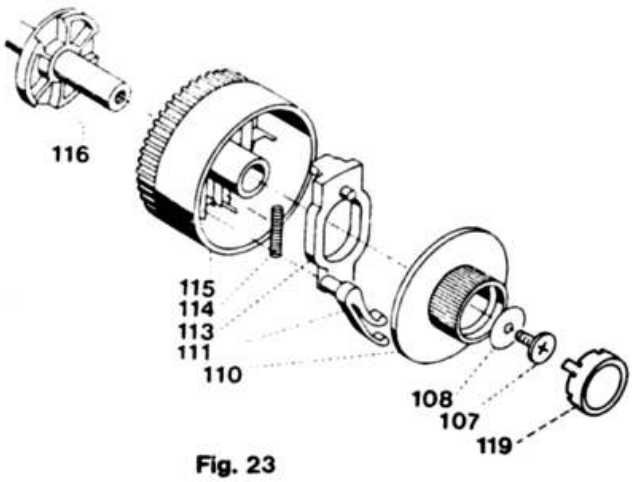


Fig. 23

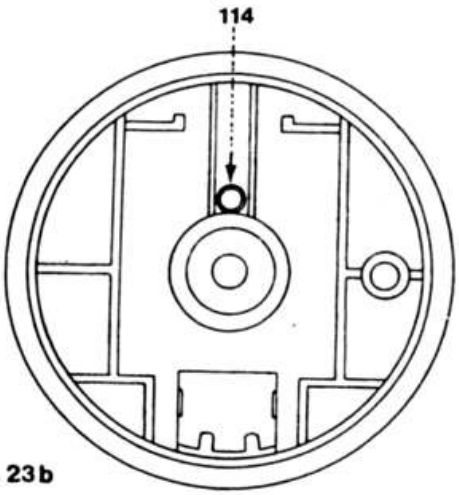


Fig. 23 b

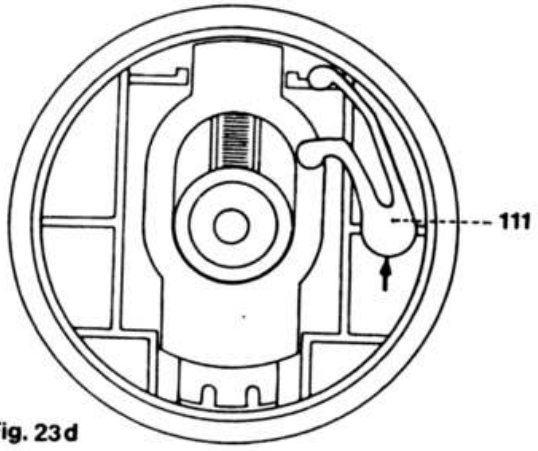


Fig. 23 d

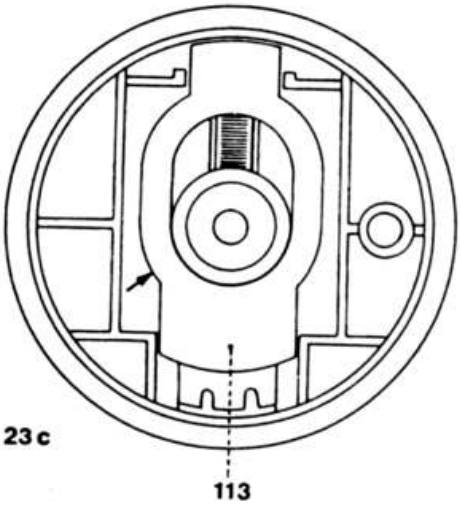


Fig. 23 c

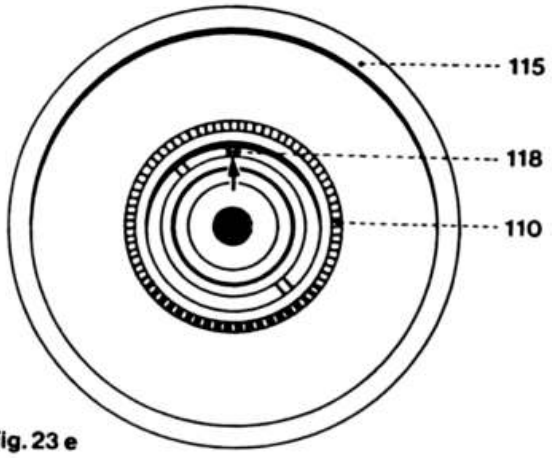


Fig. 23 e

24. Dismantling and assembling the sewing hook

Removal:

- Remove the needle.
- Unscrew the sewing foot.
- Remove the bobbin case.
- Unscrew the bobbin case position finger.
- Take out the three screws with springs from behind (fig. 24).
- Remove the bobbin case base with sewing hook gib (fig. 24a).
- Turn the sewing hook gib to the left or to the right out of the bobbin case base (fig. 24b).
- Clean the sewing hook, bobbin case base and hook gib.

Fitting:

- Turn the handwheel until the opening of the sewing hook faces to the left (fig. 24c).
- Turn the sewing hook gib to the left into the bobbin case base (fig. 24d).
- Insert the bobbin case base complete with sewing hook gib into the sewing hook (24e).
- Fasten the sewing hook gib from behind with three screws with springs (fig. 24).
- Screw on and adjust the bobbin case position finger.

25. Cleaning and oiling the machine

Note:

The machine is equipped with sintered bearings and parts and is therefore maintenance-free for the user.
Only the sewing hook should be lubricated once in a while with normal sewing machine oil.
After repair work, the mechanic should oil the machine with BP Energol HLP 46 or HLP 80 and the sewing hook with normal sewing machine oil.
Sintered bearings or parts must not be cleaned with gasoline, petroleum, kerosene, thinners, trichlorethylene etc.
Dirty or clogged sinter bearings or parts may only be cleaned mechanically by brushing them off. They are then oiled with BP Energol HLP 46 or HLP 80.

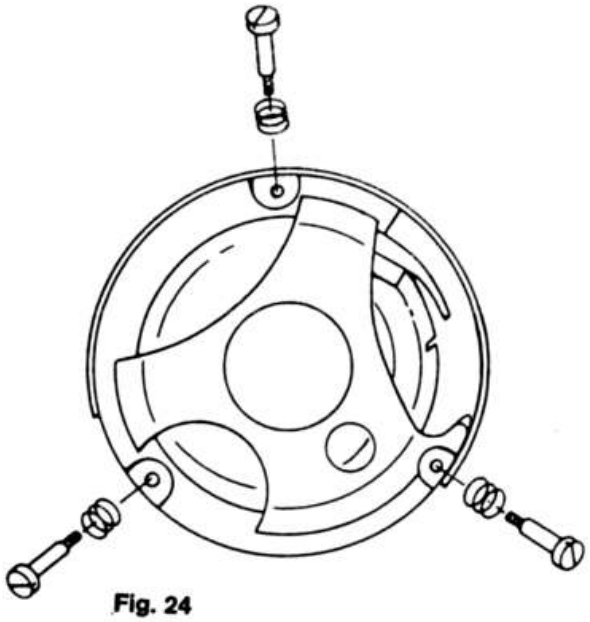


Fig. 24

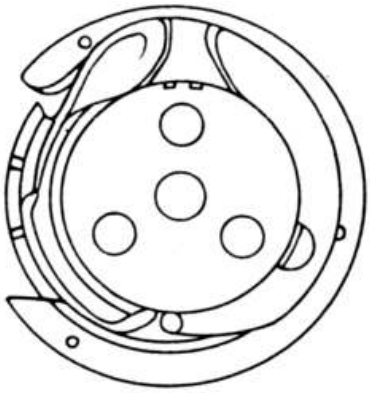


Fig. 24a

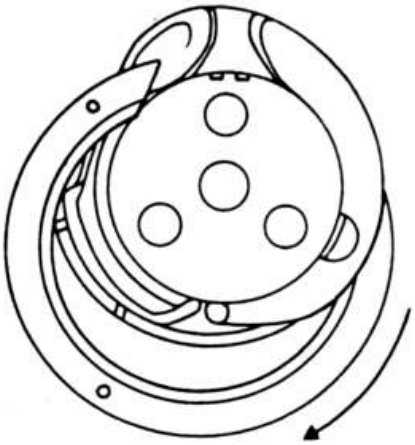


Fig. 24b

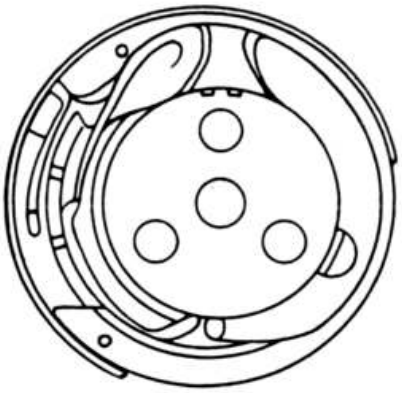


Fig. 24c

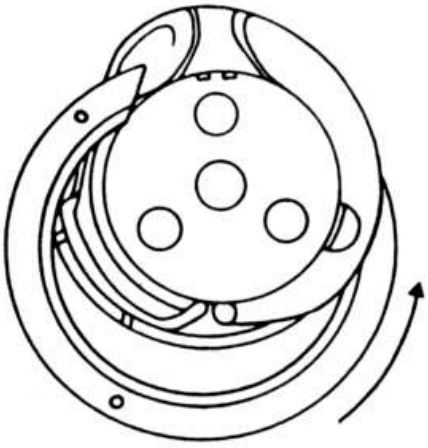


Fig. 24d

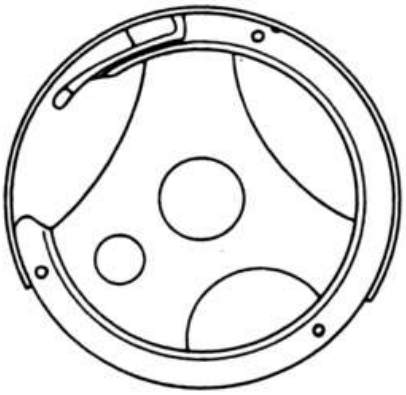


Fig. 24e

26. Changing the toothed belt

Removal:

- Remove needle, sewing foot and needle plate.
- Remove the top cover, the housing insert and the face cover.
- Turn the machine upside down.
- Unscrew the four screws of the baseplate.
- Turn the baseplate upside down.
- Remove the eight flat wires with their plugs 122 from the circuit board (fig. 26).
- Press both catches 117 of motor plug 116 together and remove the motor plug upward.
- Place the complete baseplate aside.
- Open both cable clips 119 at catch 120 and remove the cables from clips 119.
- Loosen fixing collar screw 33 of the synchronizer (fig. 26b).
- Remove the synchronizer to the right from the shaft.
- Remove the free-arm cover.
- Remove the complete buttonhole sensor.
- Loosen screw 130 in arm shaft crank 131 (fig. 26a).
- Loosen screw 1 of tensioning roll 137.
- Unscrew screw 134.
- Remove circlip 132 from the arm shaft.
- Pull arm shaft 133 to the right and release toothed belts 136 and 135.
- Remove toothed belt 136.

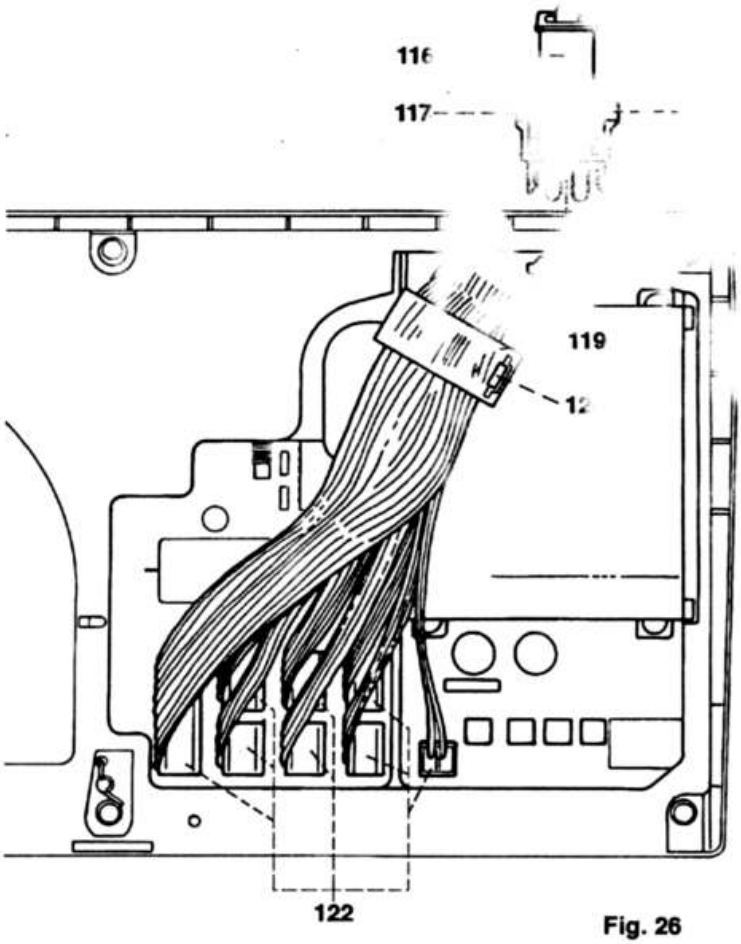


Fig. 26

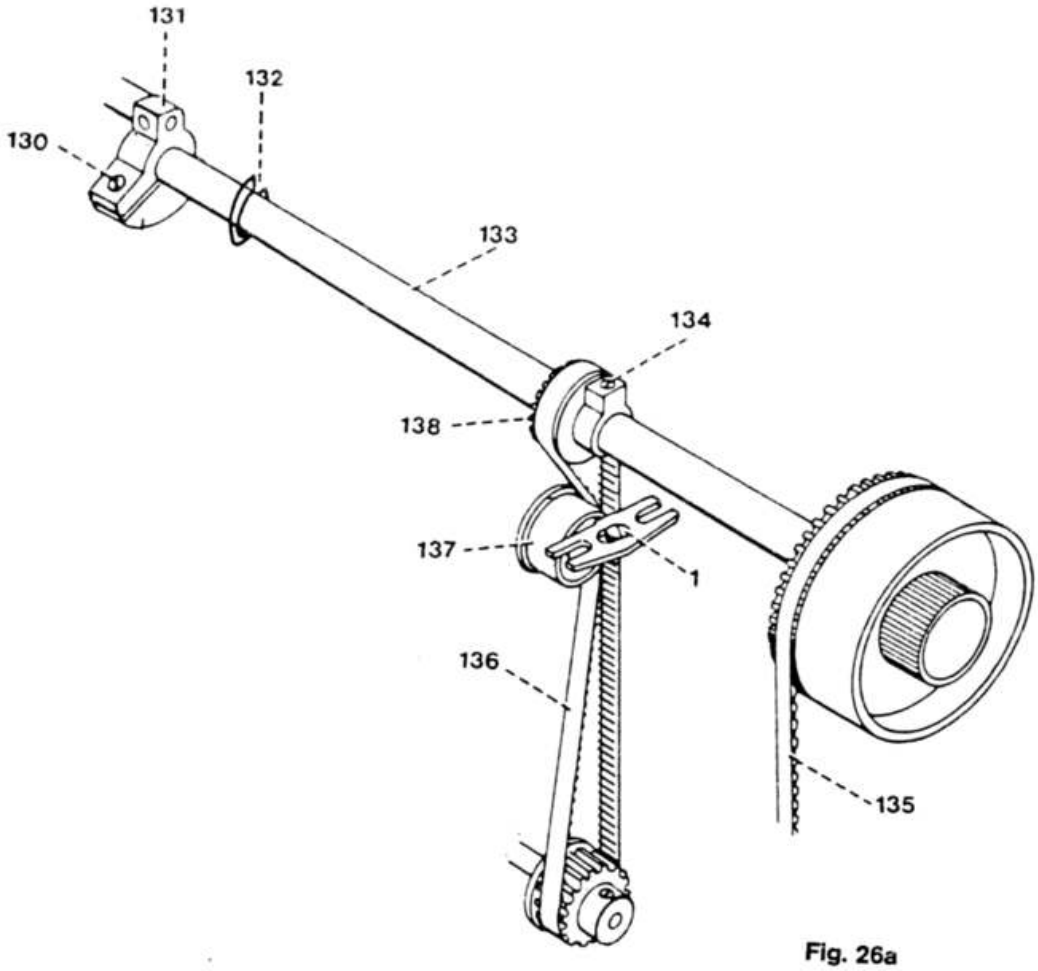


Fig. 26a

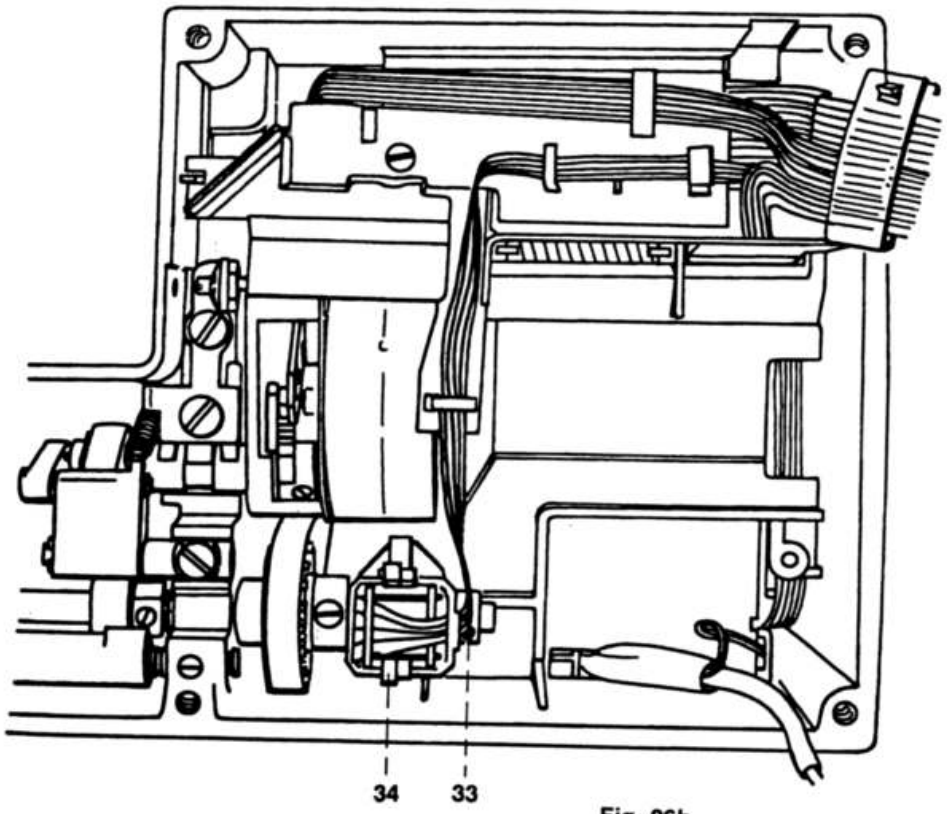


Fig. 26b

Fitting:

- Insert new toothed belt 136 and pull it upward (fig. 26c).
- Push arm shaft 133 to the left through toothed belt 136 into the left bearing and into arm shaft crank 131.
- Fit circlip 132 on the arm shaft.
- Remove lengthwise play in the arm shaft and tighten screw 130 in the arm shaft crank.
- Push toothed belt 136 onto upper sprocket 138.
- Insert and tighten screw 134 in upper sprocket 138.
- Set the tensioning roller according to section 1.
- Place motor belt 135 on the handwheel.
- Push synchronizer 34 onto the shaft (fig. 26d). Make sure that the housing rib is between guide clamps.
- Place five-wire cable 127 in cable clip 119.
- Place seven-wire cable 200 in the cable guide (fig. 26d).
- Place the complete baseplate against the machine. Now the flat cables are connected to the baseplate as follows (fig. 26e).
- Insert motor plug 116 in motor socket 118 (both catches 117 must engage).
- The two-connection plug 123 to the two-pin base.
- The plug of five-wire cable 127 to the black pin base.
- The plug of seven-wire cable 200 to the pink pin base.
- The plug of seven-wire cable 128 to the blue pin base.
- The plug of seven-wire cable 125 to the black pin base.
- The plug of twelve-wire cable 121 to the black pin base.
- Insert the mains lead in the machine socket and connect it with the mains.

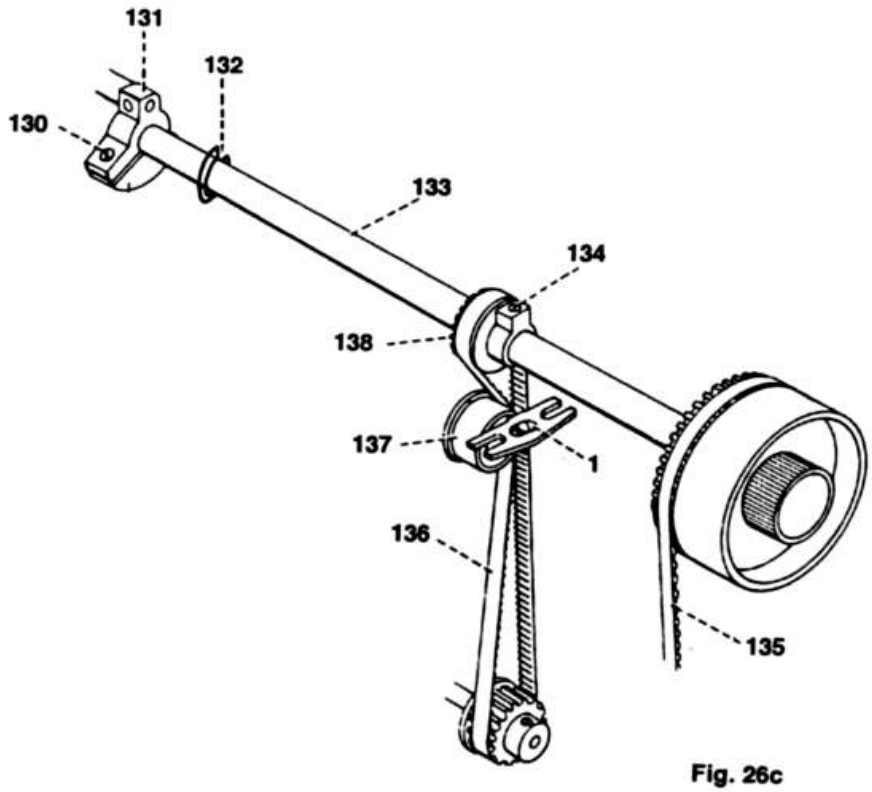


Fig. 26c

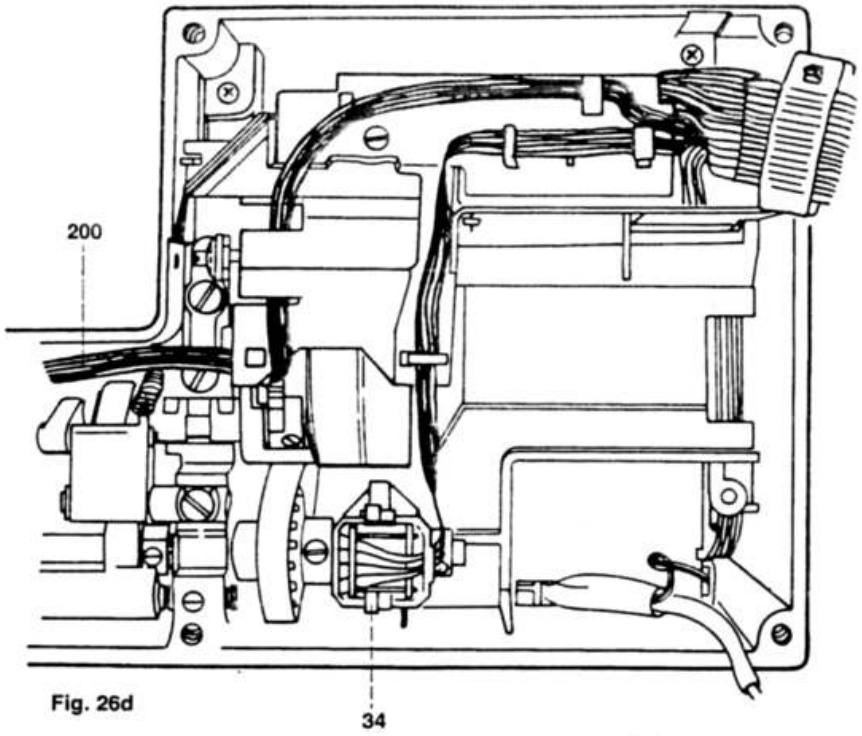


Fig. 26d

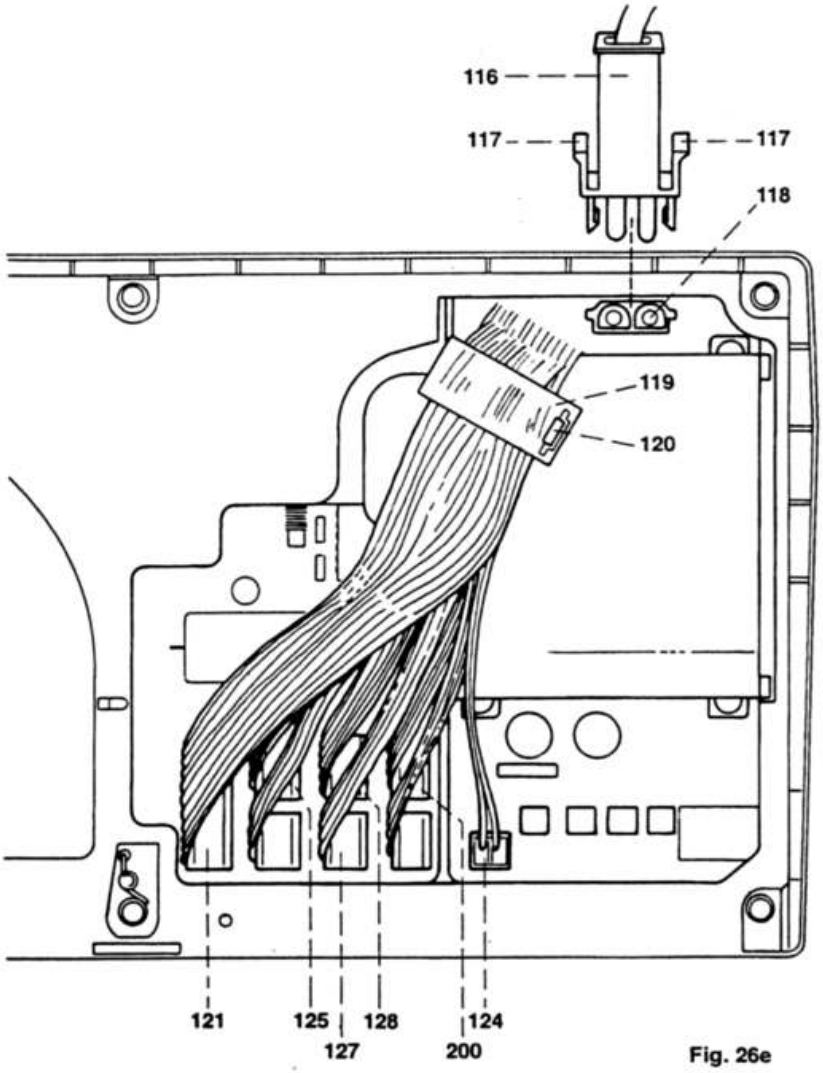


Fig. 26e

Adjusting the arm shaft crank

- Set stitch pattern "00" for straight stitch.
- Loosen screw 130 in arm shaft crank 131 just enough to allow the arm shaft crank to be turned on its shaft (fig. 26h).
- Raise the needle bar and insert the needle.
- Hold arm shaft crank 131 with your left hand.
- Turn the handwheel with your right hand until the feed dog is at the bottom and the sewing hook point is centered between the feed dog rows.
- Now hold the handwheel while at the same time turning arm shaft crank 131 until the needle bar is in its lowest position.
- Fit spacer 63-102600-18 on the needle bar.
- Push needle-rise clamp 00-870137-01 on the needle bar and tighten it just a little (fig. 26f).
- Push the 2.3-mm feeler gauge 00-870136-01 with its cutout on the needle bar above the needle-rise clamp.
- Push the needle-rise clamp and the 2.3-mm feeler gauge up against the spacer.
- Tighten the milled screw of the needle-rise clamp.
- If there is play at the feeler gauge, repeat this procedure.
- Remove the 2.3-mm feeler gauge.
- Hold the handwheel and turn arm shaft crank 131 in sewing direction until the needle-rise clamp is in contact with the spacer.
- The sewing hook point must now be exactly opposite the center line of the needle (fig. 26g).
- If this is not the case, turn simultaneously handwheel and arm shaft crank 131, until the sewing hook is exactly opposite the center line of the needle with the clamp resting against the spacer.
- Remove the needle-rise clamp.
- Tighten screw 130 in arm shaft crank 131 in such a way that the latter has no play and the needle rise is correct.
- To this end re-attach the needle-rise clamp and check.
- Set synchronizer according to section 5.
- Insert the complete buttonhole sensor.
- Fasten the free-arm cover with two screws.
- Place the five-wire and the four-wire cable in the cable guides (fig. 26i).
- Set the baseplate complete against the machine.
- Place cable according to fig. 26i and fit the two cable clips.
- Connect the plug of five-wire flat cable 126 to the blue pin base.
- Connect the plug of four-wire flat cable 123 to the black pin base.
- Fold the baseplate against the machine and fasten it with the four screws.
- Then the following adjustments must be checked and carried out:
- Adjustment of bobbin thread tension, section 17
- Adjustment of needle thread tension, section 18
- Adjustment of thread check spring, section 19
- Adjustment of equal forward and reverse stitch length, section 20
- Use testing appliance ABB Metrawatt M 5013 to carry out an electrical safety test according to VDE 0701.

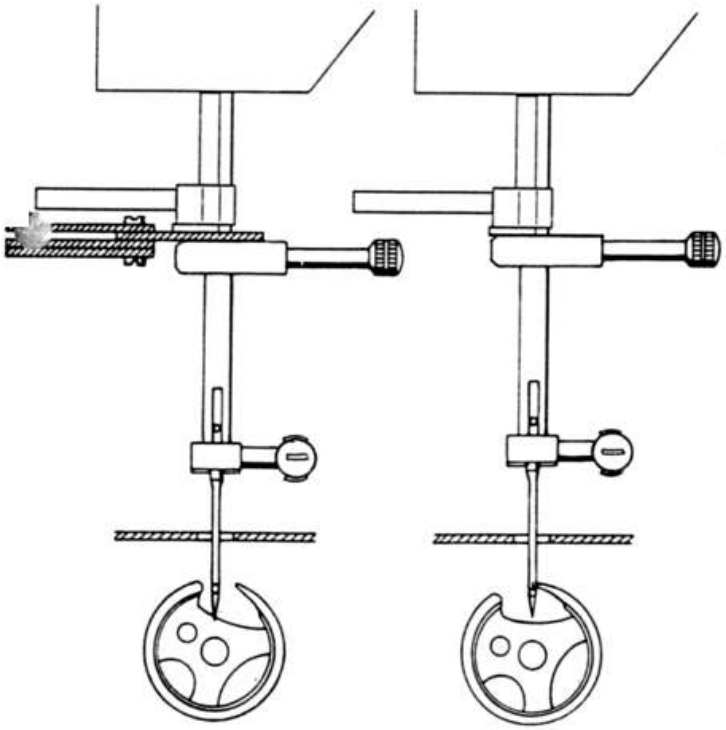


Fig. 26f

Fig. 26g

Fig. 26h

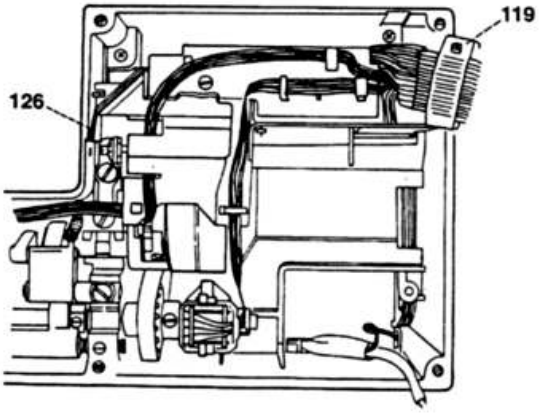


Fig. 26i

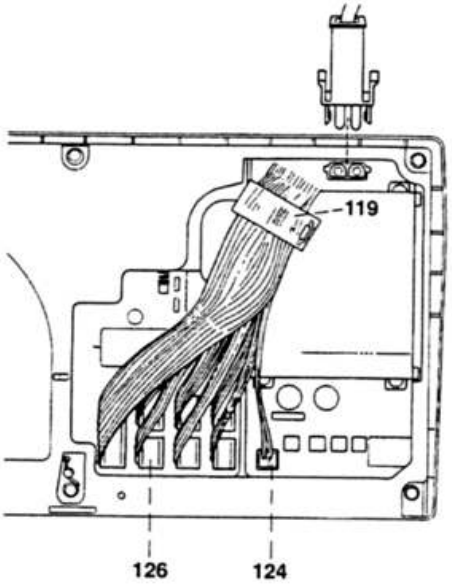


Fig. 26j

27. Changing the bevel gears

Note:
Always change bevel gears in pairs.

Removal:
- Remove the needle, the sewing foot and the needle plate.
- Remove the top cover, the housing insert and the face cover.
- Turn the machine upside down.
- Unscrew the four screws of the baseplate.
- Turn the baseplate upside down.
- Disconnect plugs 122 of the eight flat wires from the circuit board (fig. 27).
- Press both catches 117 of motor plug 116 together and pull the plug off upwards.
- Place the complete baseplate aside.
- Open both cable clips 119 at catch 120 and remove the flat cables from the clips.
- Loosen fixing collar screw 33 of the synchronizer (fig. 27a).
- Remove the synchronizer to the right from the shaft.
- Remove the free-arm cover.
- Remove the complete buttonhole sensor.
- Disconnect pull-spring 14.
- Unscrew screw 18.
- Turn the handwheel until feeding eccentric 20 faces the rear of the machine.
- Fold cam lever 9 downward and remove it with link 10 to the left from the slide block pin.
- Remove slide block 12 with the spring to the right.

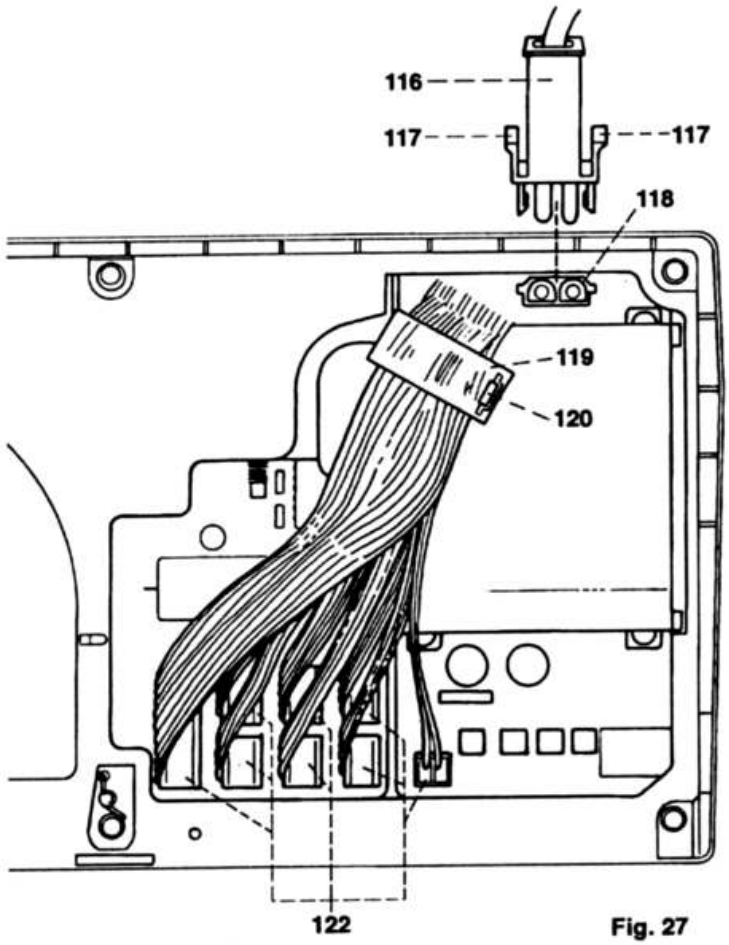


Fig. 27

- Disconnect pull-spring 63 (fig. 27b).
- Loosen screw 64.
- Remove transverse-drive stepping motor according to section 38.
- Remove feed-dog lowering mechanism 65.
- Unscrew the two screws 54 of bobbin case position finger.
- Place bobbin case position finger 53 and the leaf spring aside.
- Loosen the two screws 49 at the sewing hook.
- Remove the complete sewing hook towards the top.
- Unscrew dog-point screw 19a of feeding eccentric 20 (fig. 27a).
- Push feeding eccentric to the right as far as it will go.
- Remove the circlip with a screwdriver.
- Push the plastic washer a little to the left.
- Loosen screw 45 of the lifting eccentric by approx. 3 turns (fig. 27b).
- Loosen the 3 screws 35 of the lower toothed belt sprocket (fig. 27a).
- Push the hook driving shaft fully to the right.
- Remove lifting eccentric 62 from the hook driving shaft (fig. 27b).
- Remove the needle plate to the top.
- Loosen screw 5a (fig. 27c).
- Pull out pin 5c to the right.
- Loosen the two screws 3 and 7 of the cylindrical pins.
- Remove the cylindrical pins and the plastic washers.
- Remove the connecting bar.
- Remove screw 61 at the sewing hook bearing and push the latter fully to the left.
- Remove complete feed-dog driving shaft 5.
- Remove complete sewing hook bearing 60 to the right.

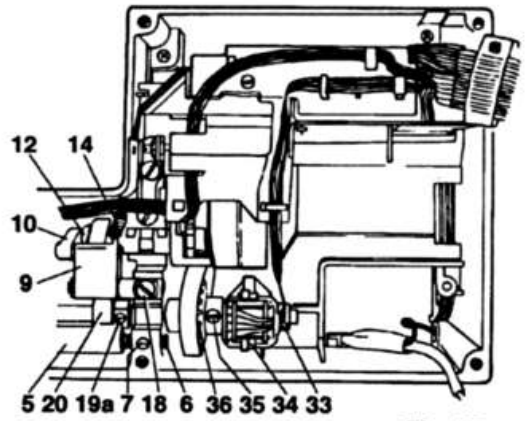


Fig. 27a

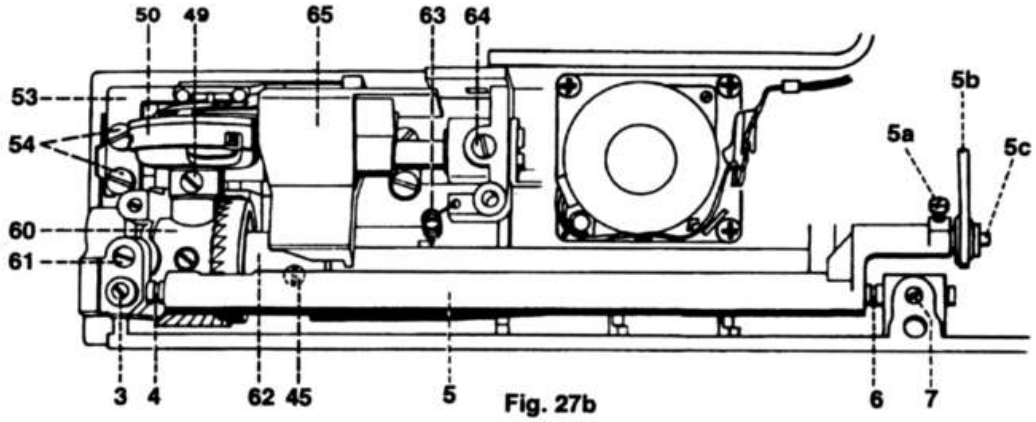


Fig. 27b

Fitting:

- Insert the new bevel gear complete with sewing hook bearing 60 in the machine (fig. 27c).
- Insert feed driving shaft 5.
- Insert the two cylindrical pins 4 and 6 with the plastic washers.
- Fit bobbin case position finger 53 and the leaf spring.
- Fit the needle plate.
- Adjust the feed driving shaft according to section 2.
- Turn in screw 61 and fasten the hook bearing.
- Insert the connecting bar in the feed driving shaft.
- Fit pin 5c with the washer situated to the left of pull rod 5b without any play.
- Tighten screw 5a.
- Pull the feed dog to the front.

Important:

The complete feed driving shaft with top feed must slide slowly to the rear.

- Push lifting eccentric 62 with its hole to the right onto the hook driving shaft.
- Push the hook driving shaft to the left.
- Tighten screw 45 in the bevel gear on the flat of the hook driving shaft.
- Attach the circlip making sure that the plastic washer is located between bearing and circlip.
- Pull the hook driving shaft fully to the right and set the shaft without any play, using one of screws 35 of the toothed-belt sprocket (fig. 27d).
- Screw dog-point screw 19a in feed eccentric 20 and in the hook driving shaft.

Note:

Dog-point screw 19a must always protrude from feed eccentric 20 on the opposite side of screw 45 in lifting eccentric 62.

- Fit the feed dog lowering mechanism.
- Fit slide block 12 with the spring on the pin and insert into the slide way in the correct curve radius. Check that the slide block can be moved easily without play or binding in the slide way.
- Push link 10 complete with cam lever 9 to the right onto the connecting bar pin.
- Turn cam lever 9 to the rear and then over feed eccentric 20 from the top.
- Insert screw 18 into stud 19 and tighten a little.
- Shift stud 19 laterally until link 10 and the connecting bar have only a slight play and are freely movable.
- Tighten screw 18.
- Fit the two springs 14 and 63 (fig. 27c and 27d).
- Install transverse-drive stepping motor according to section 38.
- Push synchronizer 34 onto the shaft. When doing so, make sure that the housing rib is between both guide clamps.
- Place five-wire flat cable 127 in cable guide 119 (fig. 27d).
- Place seven-wire flat cable 200 in the cable guide.
- Insert complete buttonhole sensor.
- Fasten the free-arm cover with two screws.
- Place the five-wire and the four-wire flat cables in the cable guides.
- Set the baseplate complete against the machine.

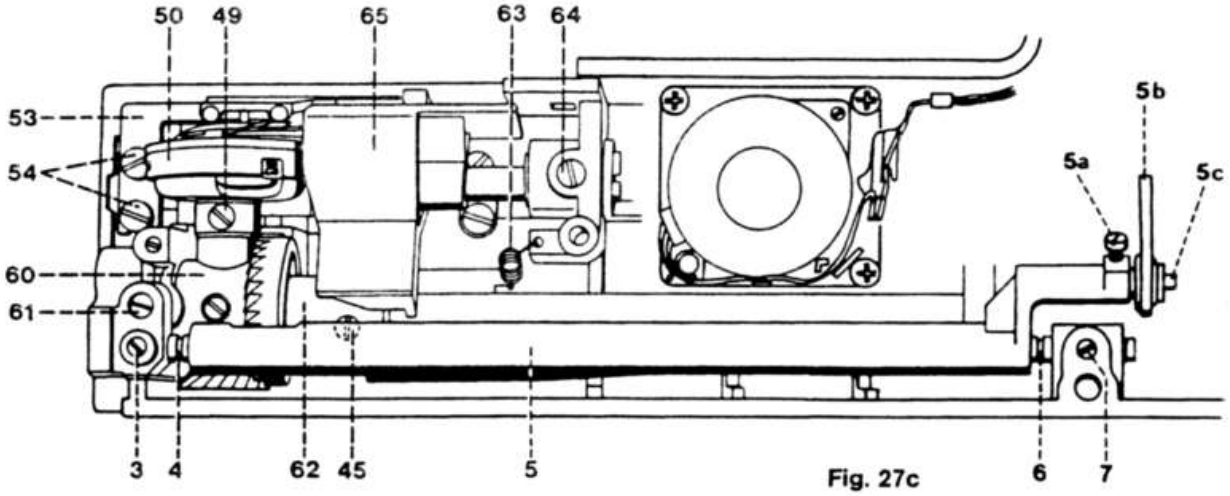


Fig. 27c

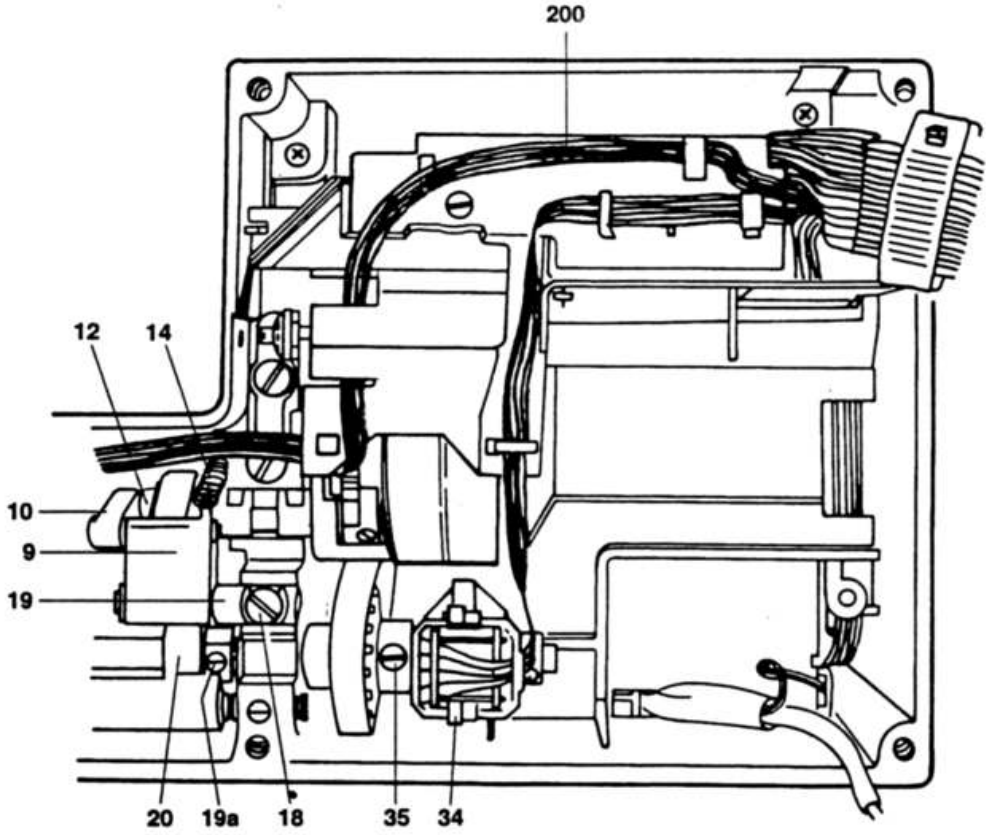


Fig. 27d

- Now the flat cables are connected to the circuit board as follows:
- Motor plug 116 to motor socket 118 (both catches 117 must engage).
- Two-connection plug 124 to the two-pin base.
- The plug of five-wire flat cable 127 to the black pin base.
- The plug of seven-wire flat cable 200 to the pink pin base.
- The plug of seven-wire flat cable 128 to the blue pin base.
- The plug of seven-wire flat cable 125 to the black pin base.
- The plug of twelve-wire flat cable 121 to the black pin base.
- The plug of five-wire flat cable 126 to the blue pin base.
- The plug of four-wire flat cable 123 to the black pin base.
- Fold the baseplate against the machine and fasten it with the four screws.
- Connect the mains lead to the machine socket and the mains. Now the following adjustments must be carried out:
- Section 3: Timing of feed motion
- Section 4: Adjustment of feed dog in sideways direction
- Section 4a: Adjustment of feed dog height
- Section 5: Adjustment of synchronizer
- Section 11: Adjustment of hook-to-needle clearance
- Section 12: Hook timing
- Section 13: Adjustment of needle bar height
- Section 14: Adjustment of bobbin case position finger
- Section 17: Adjustment of bobbin thread tension
- Section 18: Adjustment of needle thread tension
- Section 20: Adjustment of equal forward and reverse stitch length
- Section 21: Making up a sewing sample
- Use testing appliance ABB Metrawatt M 5013 to carry out an electrical safety test according to VDE 0701.

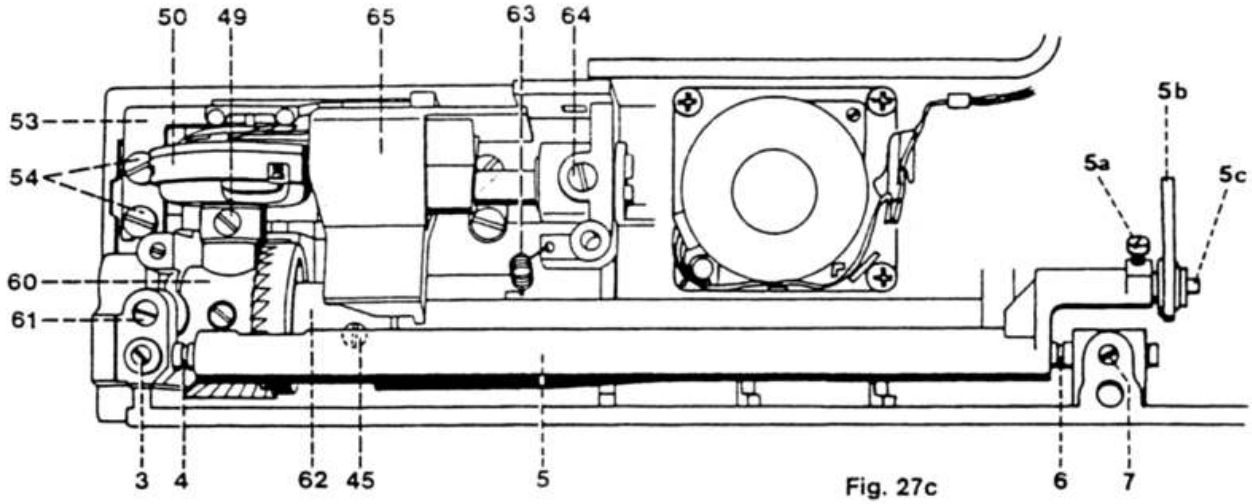


Fig. 27c

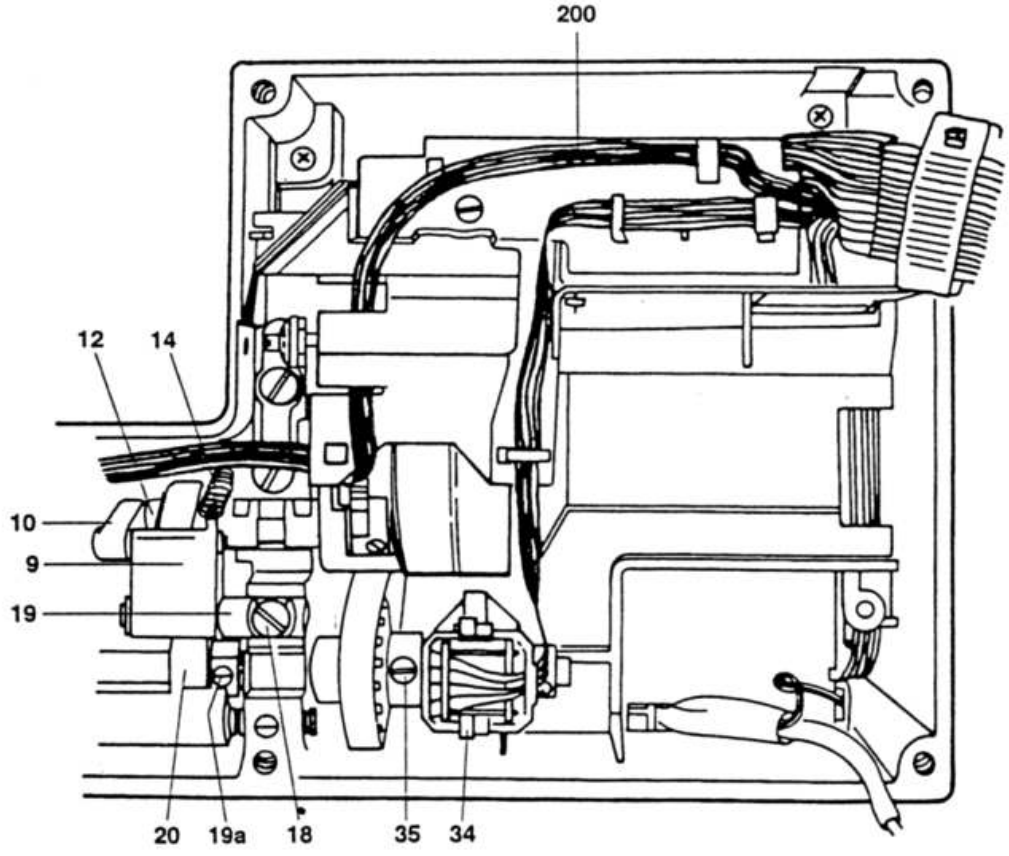


Fig. 27d

28. Changing the bottom circuit board

Note:
The bottom circuit board is only exchanged as a complete unit.

Removal:
- Remove the mains lead from the mains socket and from the machine.
- Turn the machine upside down.
- Unscrew the four screws of the baseplate.
- Turn the baseplate around.
- Disconnect plugs 122 of the eight flat cables from the circuit board (fig. 28).
- Press the two catches 117 of motor plug 116 together and pull it off upwards.
- Place the complete baseplate aside.

Fitting:
- Set the new baseplate complete against the machine.
- Insert motor plug 116 in motor socket 118 (both catches 117 must engage).
  Now the flat cables are connected to the new circuit board as follows:
- Two-connection plug 124 to the two-pin base.
- The plug of five-wire flat cable 127 to the black pin base.
- The plug of seven-wire flat cable 200 to the pink pin base.
- The plug of seven-wire flat cable 128 to the blue pin base.
- The plug of seven-wire flat cable 125 to the black pin base.
- The plug of twelve-wire flat cable 121 to the black pin base.
- The plug of five-wire flat cable 126 to the blue pin base.
- The plug of four-wire flat cable 123 to the black pin base.
- Fold the baseplate against the machine and fasten it with the four screws.
- Use testing appliance ABB Metrawatt M 5013 to carry out an electrical safety test according to VDE 0701.

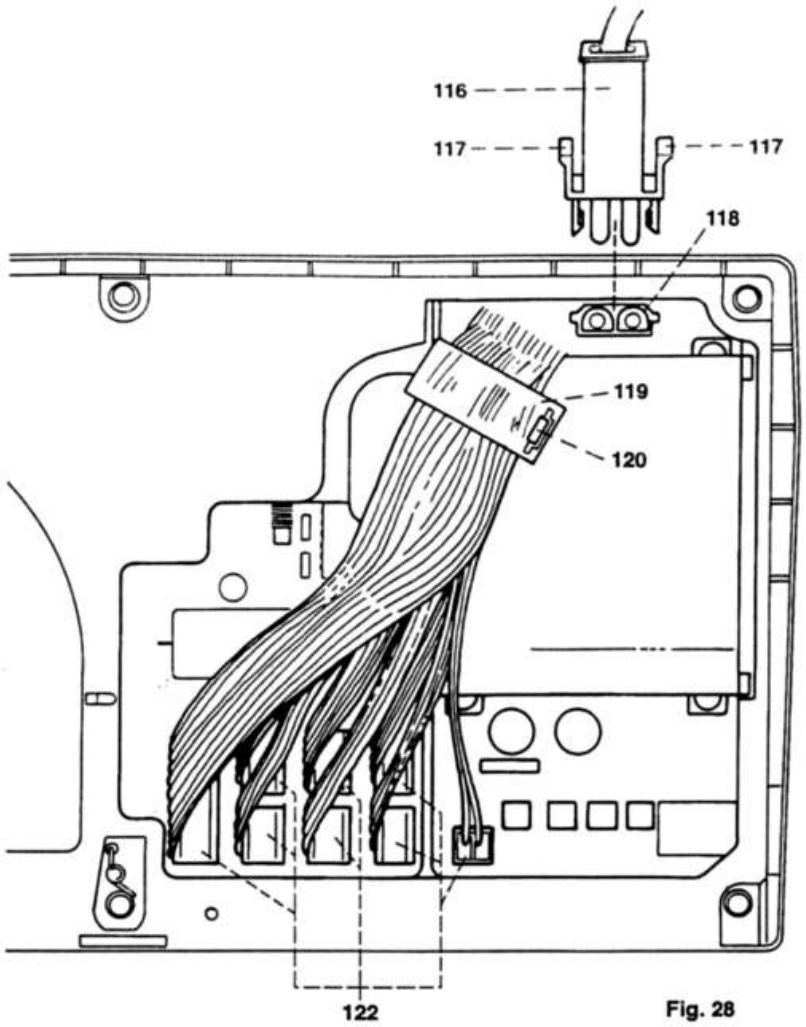


Fig. 28

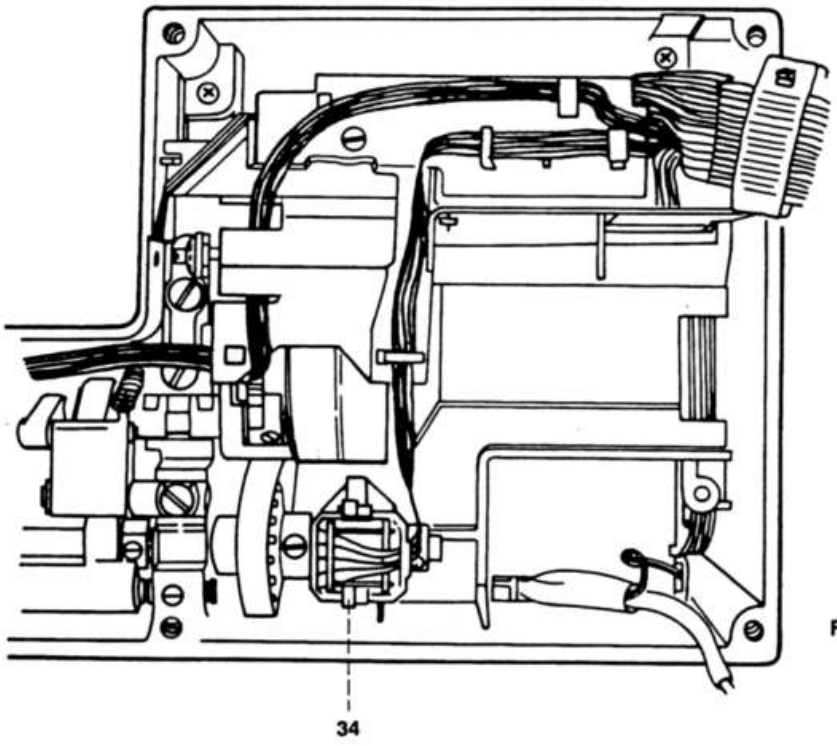


Fig. 28a

29. Changing the thread monitor with the free-arm cover

Note:
The thread monitor is only exchanged complete with the free-arm cover.

Removal:
- Remove mains lead from mains socket and machine.
- Turn the machine upside down.
- Unscrew the four screws of the baseplate.
- Turn the baseplate around.
- Remove the plug of four-wire flat cable 123 from the circuit board (fig. 29a).
- Open the two cable clips 119 at catch 120 and remove the four-wire cable from the cable guides 119.
- Unscrew both screws 153 of the free-arm cover (fig. 29b).
- Remove the free-arm cover.

Fitting:
- Secure the new free-arm cover 154 with both screws 153.
- Place four-wire flat cable 123 in the cable guides.
- Install all cables according to fig. 29 and fit the cable clips 120.
- Insert plug of four-wire flat cable 123 in the black pin base (fig. 29a).
- Fold the baseplate against the machine and secure it with the four screws.

Check:
- Insert the mains plug.
- Check thread monitor function with the bobbin full and empty.
- Use testing appliance ABB Metrawatt M 5013 to perform an electrical safety test according to VDE 0701.

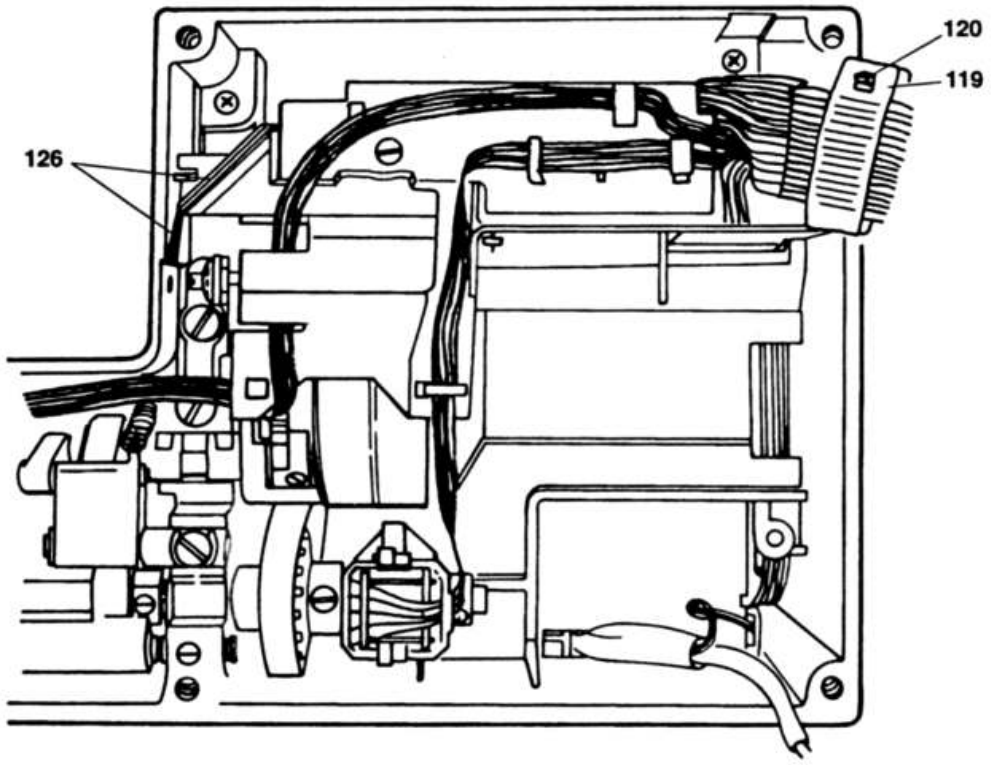


Fig. 29

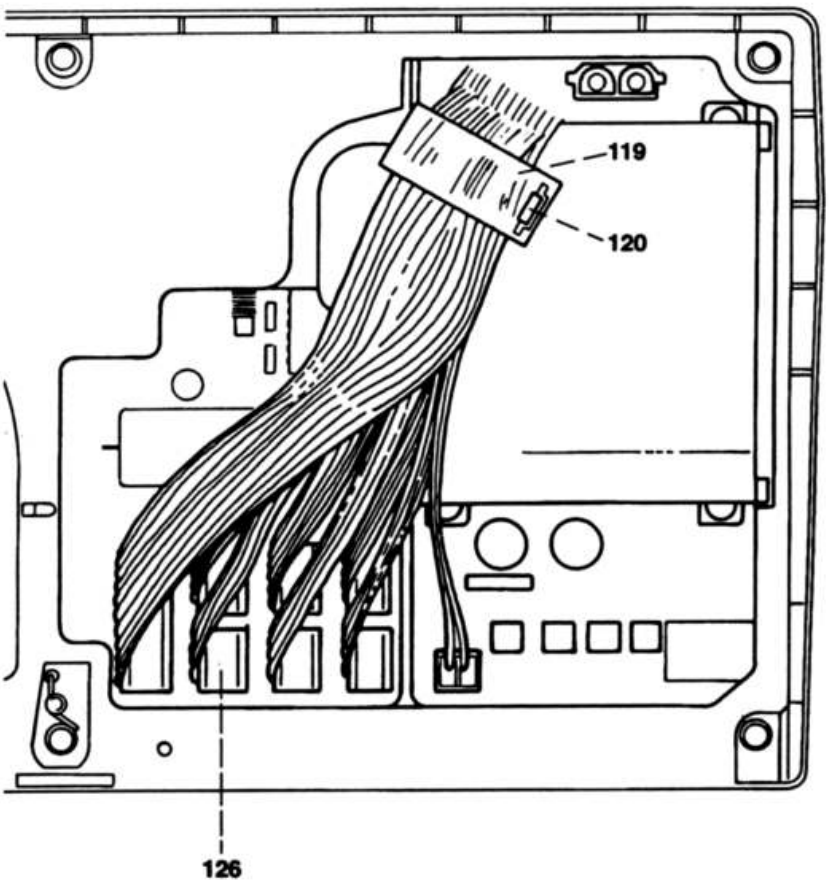


Fig. 29a

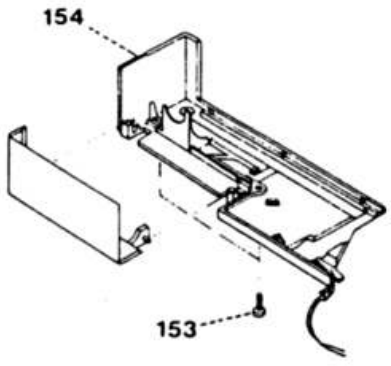


Fig. 29b

30. Changing the control panel

Note:
The programming panel is only exchanged complete with the front housing cover.

Removal:
- Remove mains lead from mains socket and machine.
- Remove top cover, housing insert and face cover.
- Remove the circlip of the retaining pin (fig. 30b).
- Remove the retaining pin.
- Remove the handle to the left.
- Unscrew Torx screw and remove the angle (fig. 30).
- Remove the right cap of the housing.
- Unscrew the five screws 40 (fig. 30 and 30b).
- Loosen screw 128.
- Turn the machine upside down.
- Unscrew the four screws of the baseplate.
- Turn the baseplate around.
- Disconnect plugs 122 of the eight flat wires from the circuit board (fig. 30c).
- Press the two catches 117 of motor plug 116 together and pull the motor plug off upwards.
- Place the complete baseplate aside.
- Open the two cable clamps 119 at catch 120 and remove the cables from cable guides 119.
- Unscrew both screws 68 (fig. 30a).
- Remove the complete programming panel.

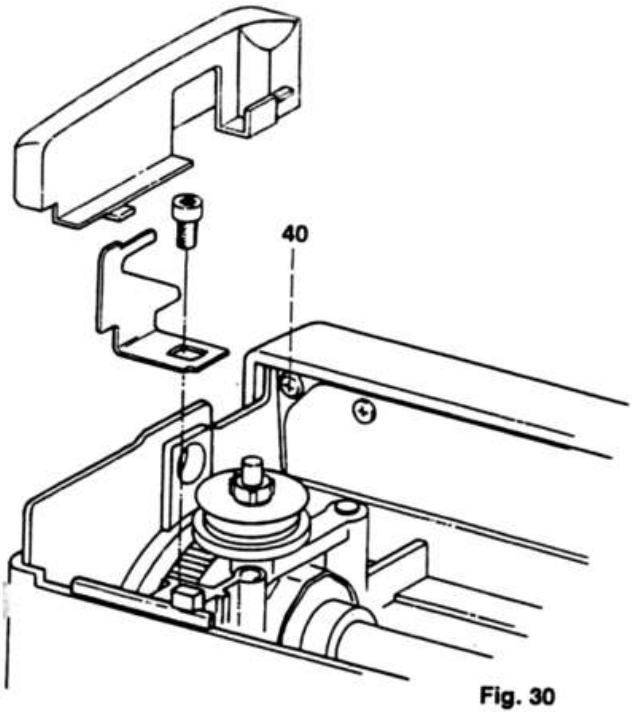


Fig. 30

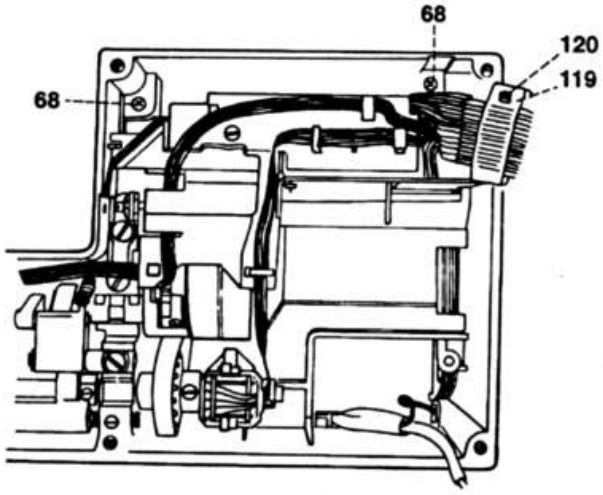


Fig. 30a

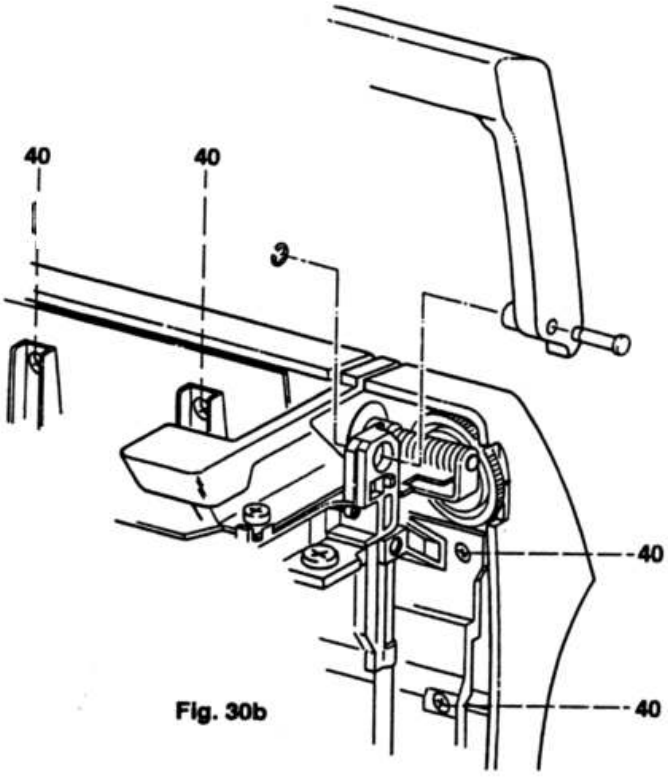


Fig. 30b

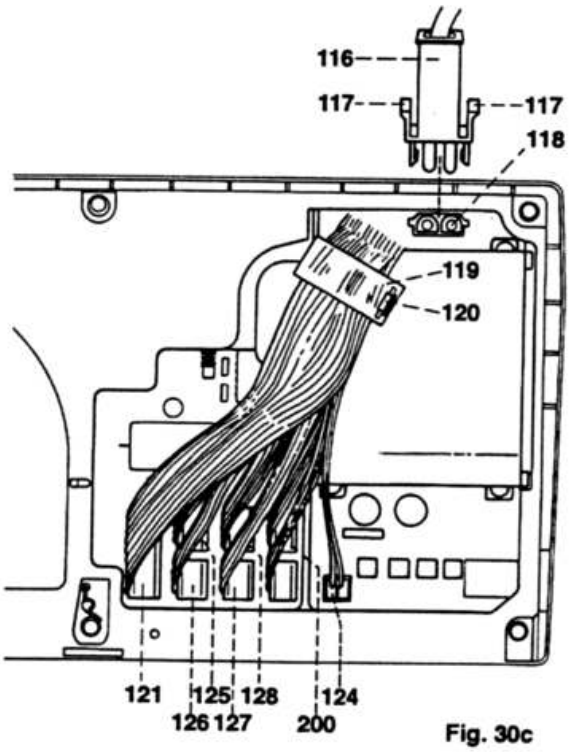


Fig. 30c

Fitting:

- Introduce the twelve-wire flat cable 121 from below into the machine.
- Place the new programming panel correctly on the machine housing.
- Insert the two screws 68, press the programming panel against the machine and screw on the screws (fig. 30a).
- Install all cables according to fig. 30a and fit the two cable clamps.
- Set the baseplate complete against the machine.
- Insert the motor plug 116 in the motor socket 118 (both catches 117 must engage).
  Now the flat cables are connected to the circuit board as follows (fig. 30c):
- Two-connection plug 124 to the two pin base.
- The plug of five-wire cable 127 to the black pin base.
- The plug of seven-wire flat cable 200 to the pink pin base.
- The plug of seven-wire flat cable 128 to the blue pin base.
- The plug of seven-wire flat cable 125 to the black pin base.
- The plug of twelve-wire flat cable 121 to the black pin base.
- The plug of five-wire flat cable 126 to the blue pin base.
- The plug of four-wire flat cable 123 to the black pin base.
- Fold the baseplate against the machine and fasten it with the four screws.
- Turn the machine in working position.
- Insert the five screws 40 and tighten them (fig. 30a).
- Tighten screw 128.
- Put the cap on the machine cover.
- Fit the angle, insert the Torx screw, and set the angle by means of the top cover.
- Fit the handle with the retaining pin and the circlip.
- Fit the face cover and screw it on.
- Insert the housing insert and secure it with both screws.
- Fit the top cover.
- Use testing appliance ABB Metrawatt M 5013 to carry out an electrical safety test according to VDE 0701.

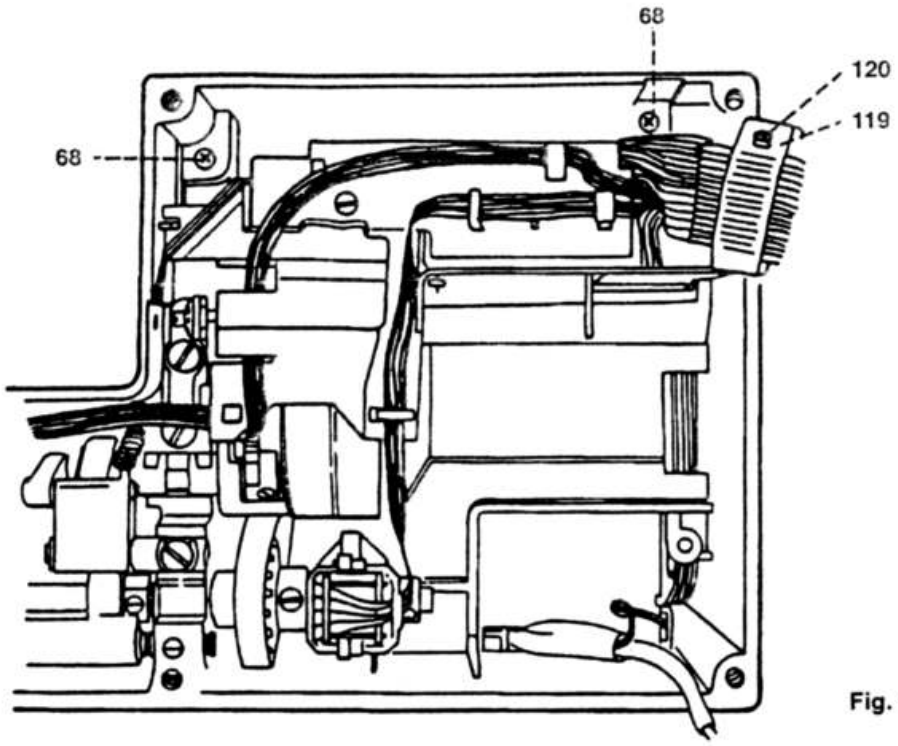


Fig. 30a

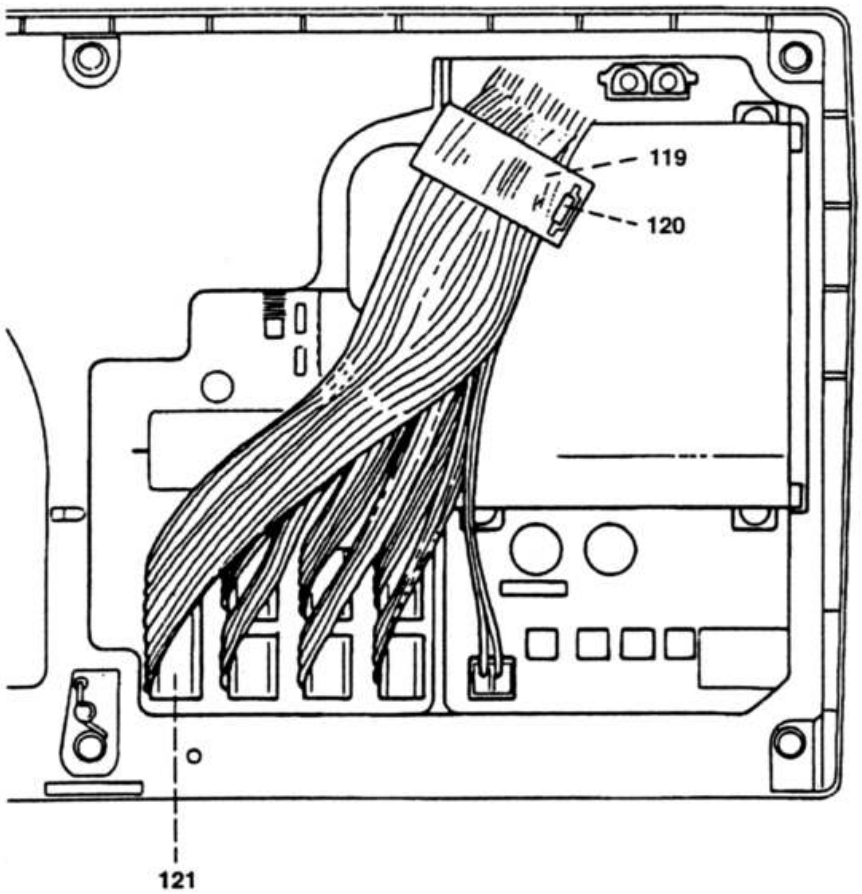


Fig. 30c

31. Changing the synchronizer

Note:
The synchronizer is only exchanged as a complete unit.

Removal:
- Remove mains plug from mains socket.
- Turn the machine upside down.
- Unscrew the four screws of the baseplate.
- Turn the baseplate around.
- Pull off the plug of five-wire flat cable 127 (fig. 31).
- Open both cable clips 119 at catch 120 and remove the five-wire flat cable from the cable guide (fig. 31a).
- Loosen fixing collar screw 33 of synchronizer 34.
- Remove the synchronizer to the right from the shaft.

Fitting:
- Push new synchronizer 34 onto the shaft. When doing so, make sure that the housing rib is between both guide clamps.
- Place the five-wire flat cable 127 in the cable guides.
- Connect the plug to the circuit board (fig. 31).
- Adjust synchronizer according to section 5.
- Fold the baseplate against the machine and fasten it with the four screws.
- Use testing appliance ABB Metrawatt M 5013 to carry out an electrical safety test according to VDE 0701.

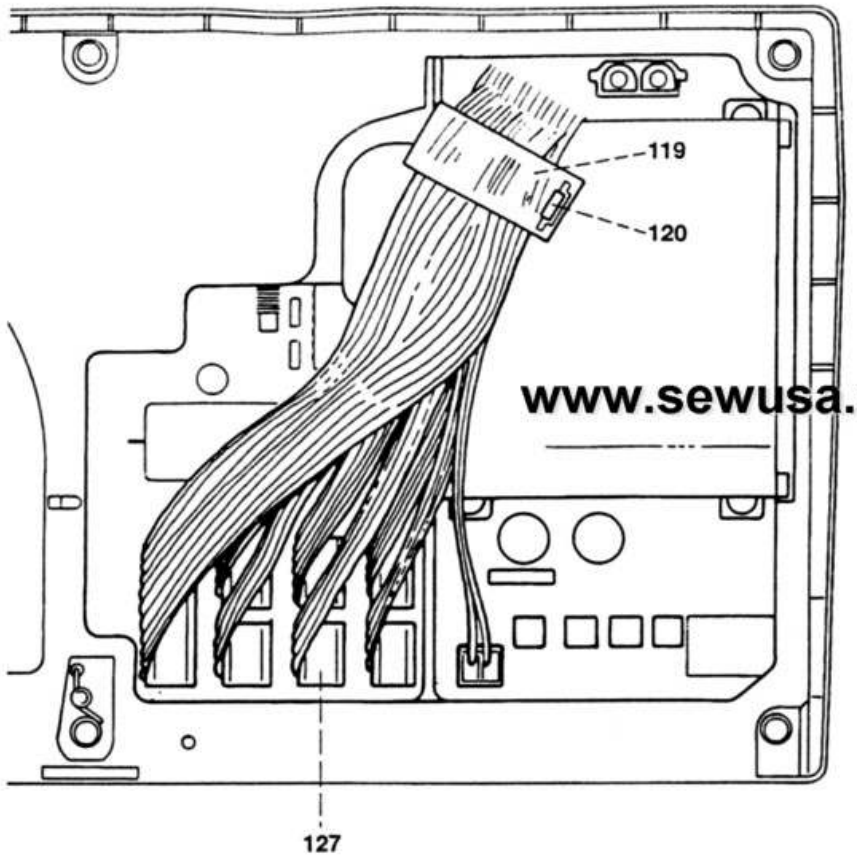


Fig. 31

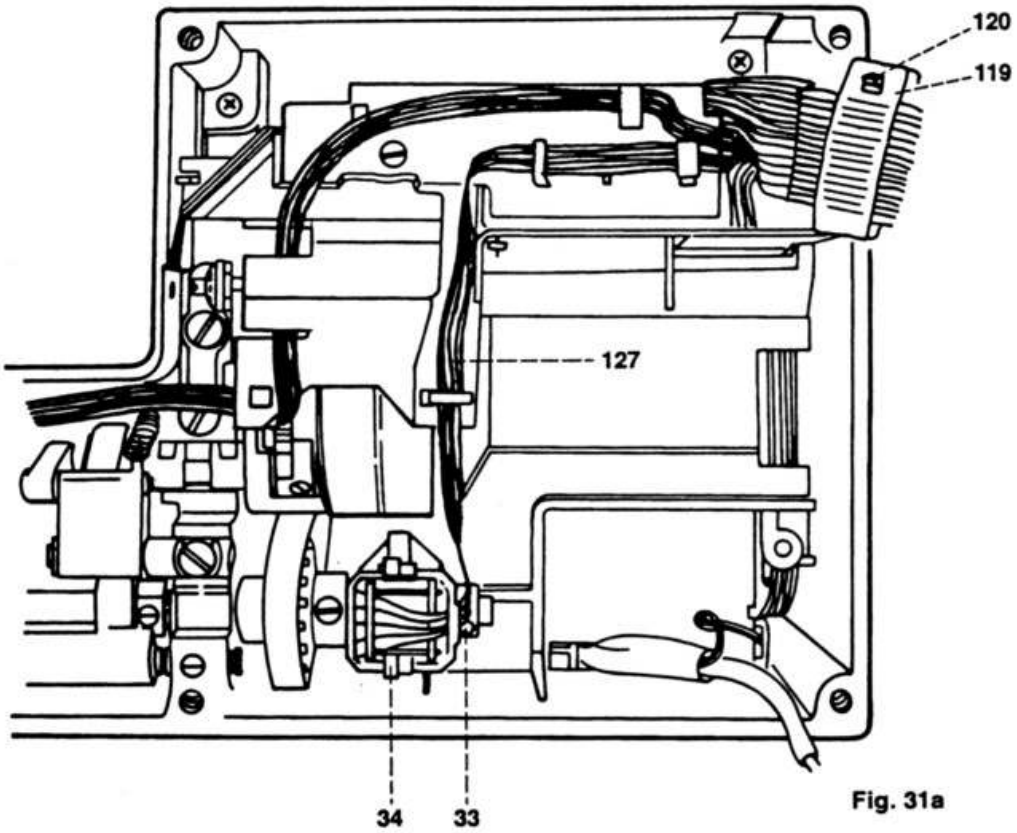


Fig. 31a

32. Changing the motor

Note:
The motor is only exchanged complete.

Removal:
- Remove the mains lead from mains socket and machine.
- Remove top cover, housing insert and face cover.
- Remove programming panel according to section 30.
- Unscrew the right-hand motor retaining screw 144 (fig. 32).
- Lift motor cover 143 on the right-hand side slightly with a screwdriver and remove it.
- Pull off light plug 146.
- Unscrew the two motor retaining screws 140.
- Lift motor sprocket 142 out of toothed belt 141 and remove the motor to the front.

Fitting:
- Before refitting the motor, the leakage current must be measured (see section 49 of the repair instructions).
- Insert the motor and place motor sprocket in toothed belt 141 (fig. 32).
- Place the two-connection plug down.
- Install sewing lamp wire 147 at the motor and attach plug 146.
- Insert and slightly tighten upper motor retaining screw 140.
- Insert motor cover 143.
- Insert and slightly tighten the right-hand motor retaining screw 144.
- Tauten toothed belt 141 and tighten the two motor retaining screws.
- Insert the two-connection plug 124 from below into the machine.
- Fit the programming panel according to section 30.
- Use testing appliance ABB Metrawatt M 5013 to carry out an electrical safety test according to VDE 0701.

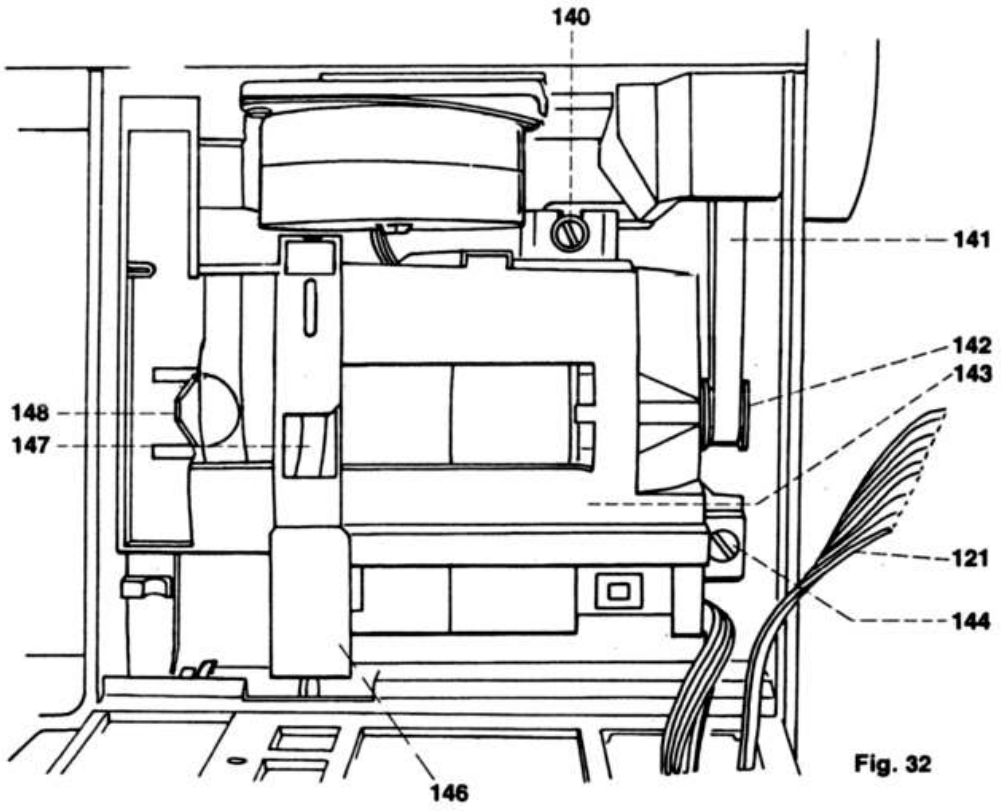


Fig. 32

33. Changing the motor circuit board

Note:
The circuit board is only exchanged complete.
In Germany the motor must be exchanged along with the circuit board.

Removal:
- Remove the motor according to section 32 of the adjustment and repair instructions.
- Raise the two locking tabs 155 just a little and remove cover 156 (fig. 33).
- Unscrew the two groove nuts 157.
- Open the motor cover and remove end shield 158.
- Unsolder the four cables 159.
- Raise the plastic guide of contact pins 161 by about 3 mm.
- Lift circuit board 160 at the side of the master switch and remove it.

Fitting:
- First insert new circuit board 160 with contact pins 161, then install it at the side of the master switch.
- Solder the four cables at points 159.
- Push on end shield 158 and fasten it with both groove nuts 157.
- Push cover 156 onto the one side and allow it to engage on the other.
- Measure the stray current according to section 49.
- Fit the motor according to section 32.
- Use testing appliance ABB Metrawatt M 5013 to carry out an electrical safety test according to VDE 0701.

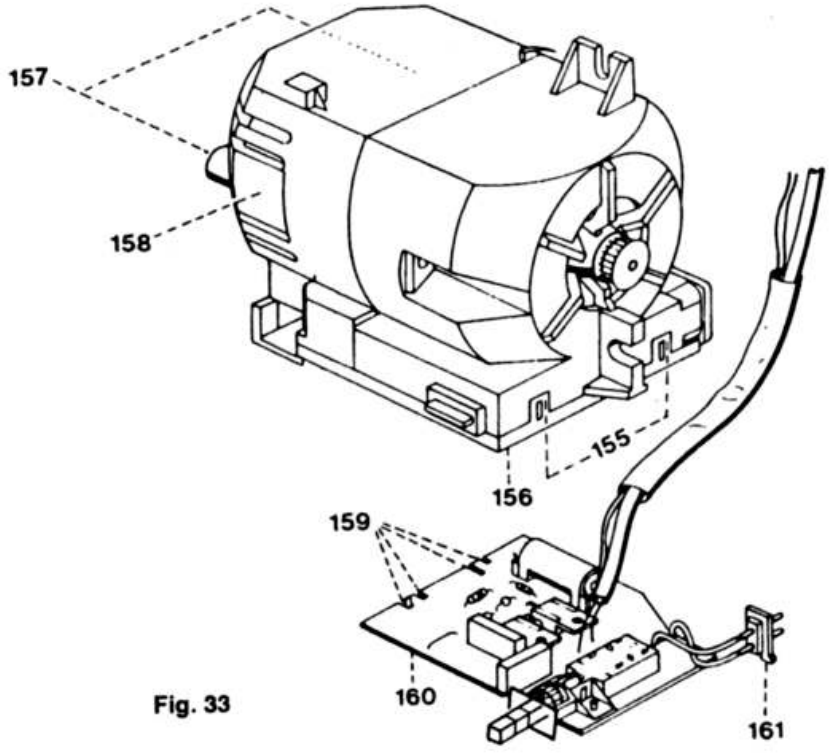


Fig. 33

34. Changing the motor pinion

Note:
The motor pinion is only removed when a rotor is exchanged.

Removal:

- Remove the motor according to section 32 of the adjustment and repair instructions.
- Insert two screwdrivers of the same width between pinion 142 and the motor bearing (fig. 34).
- Turn the screwdrivers, thus prizing pinion 142 off its shaft.

Note:
The old pinion is no longer usable.

Fitting:

- Support the rotor shaft at the opposite end and push on the new motor pinion.
- Before installing the motor, measure the stray current according to section 49.
- Install the motor according to section 32.
- Use testing appliance ABB Metrawatt M 5013 to perform an electrical safety test according to VDE 0701.

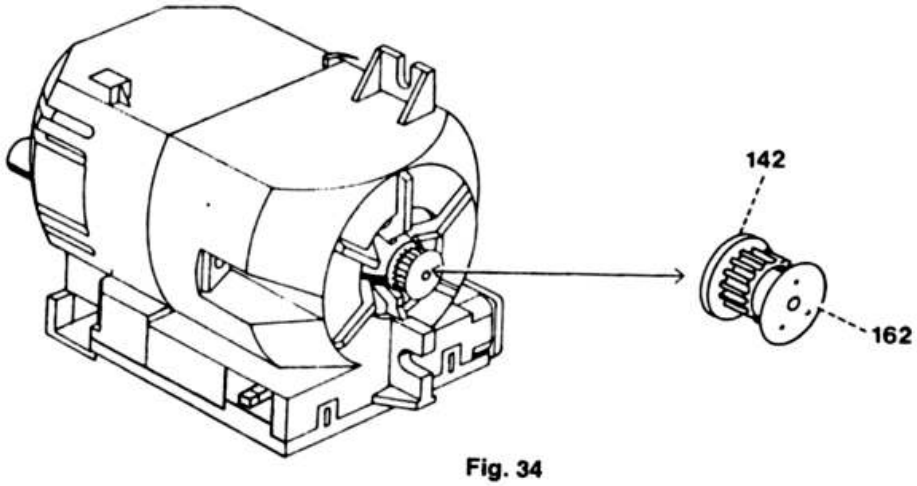


Fig. 34

35. Changing the cable reel in the foot control

Note:
In Germany the foot control must be exchanged along with the cable reel.

Removal of the cable reel:

- Lift rubber strip 167 and pull it out with its three feet (fig. 35).
- Pull out the two plugs 165.
- Unscrew the four Philips screws 168.
- Remove housing cover 166.
- Remove the rectangular pedal 169 with guide 170 and take out contact spring 179.
- Disconnect the right pressure spring 178.
- Disconnect the right cable 177 with the contact eyelet (fig. 35a).
- Press out or pull out cemented resistor track 172 (20-KΩ-potentiometer) upwards with a screwdriver or a pair of pliers.
- Remove cable reel 176.

Fitting:

- Pull out the cable by approximately 10 cm and insert cable reel 176 into the housing.
- Insert the soldered resistor track 172 fully downwards into the guide and secure it with some adhesive.
- Push the soldered contact eyelet 177 onto the right guide pin.
- Place both cables in the respective guide grooves.
- Place contact spring 179 on the guide pin in the larger right section of pedal 169.
- Push pressure spring 178 onto the same guide pin.
- Turn pedal 169 around and push the right spring 178 on the right guide pin of the housing and the left spring 171 on the left guide pin in pedal 169.
- First press the pedal a little to the right and then downwards in such a way that contact spring 179 is on the right-hand side of resistor track 172 and is not bent.
- Press the pedal further down, as far as it will go; at the same time insert guide 170 in its two open bearings.
- Hold pedal 169 in this position; at the same time replace housing cover 166 and press it firmly on the housing (fig. 35).
- Insert and tighten the four Philips screws.
- Insert rubber strip 167 and the two plugs 165.
- Carry out a performance test.
- Use testing appliance ABB Metrawatt M 5013 to carry out an electrical safety test according to VDE 0701.

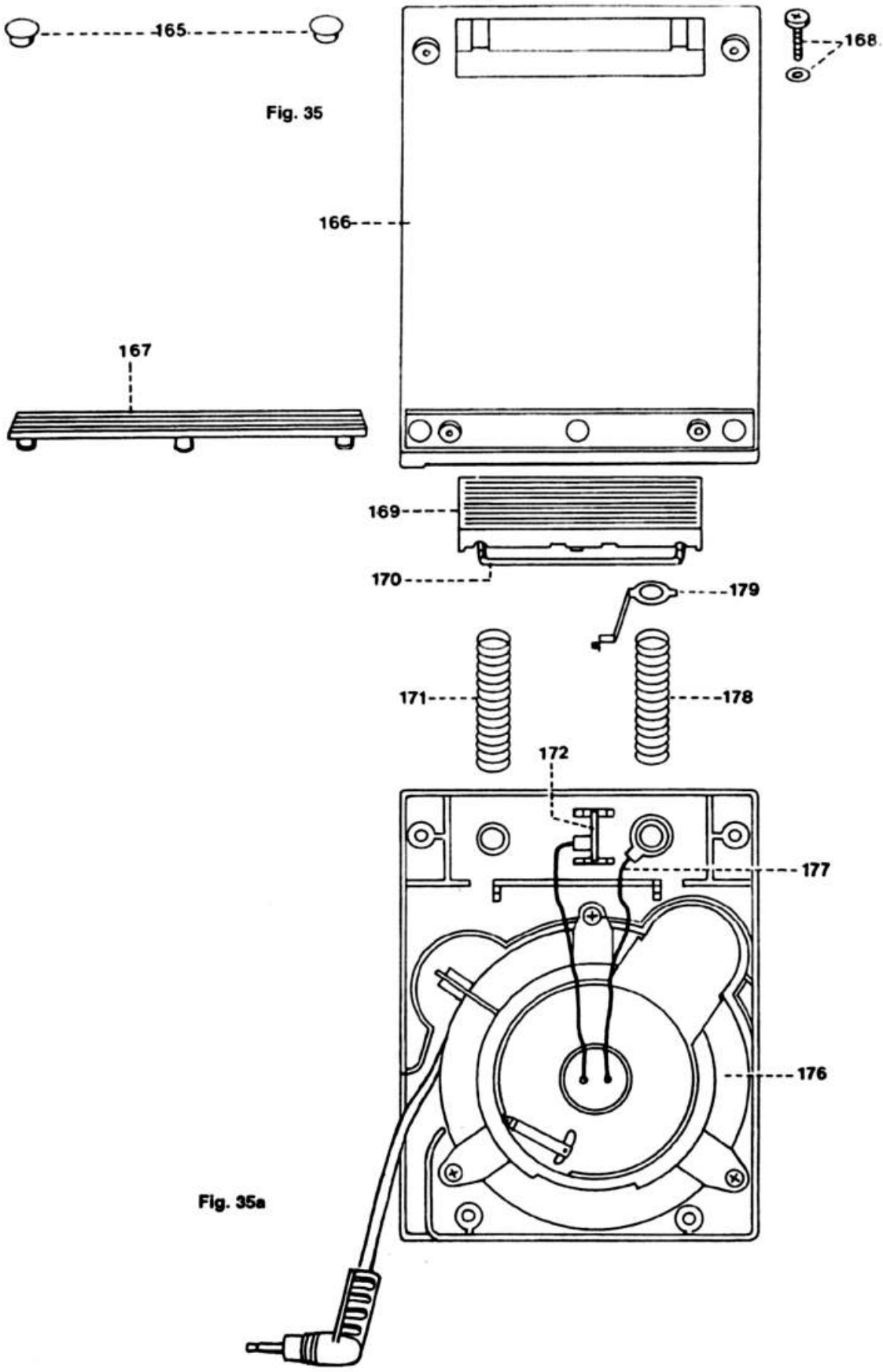


Fig. 35

Fig. 35a

36. Changing the top stepping motor for sideways needle bar movement

Note:
The stepping motor for sideways needle bar movement is only exchanged complete.

Removal:
- Remove mains lead from mains socket.
- Remove detachable work support.
- Remove top cover.
- Switch on bobbin winder.
- Unscrew the two Philips screws of the housing insert.
- Take out housing insert.
- Remove face cover after having loosened the Philips screw.
- Remove the circlip of the retaining pin (fig. 36).
- Remove the retaining pin.
- Remove the handle to the left.
- Unscrew the Torx screw and remove the angle (fig. 36a).
- Remove the right cap from the housing.
- Unscrew the five screws 40 (fig. 36).
- Loosen screw 128.
- Turn the machine upside down.
- Unscrew the four screws of the baseplate.
- Turn the baseplate around.
- Disconnect plugs 122 of the eight flat cables from the circuit bo ig. 36b).
- Press the two catches 117 of motor plug 116 together and pull wards.
- Place the complete baseplate aside.
- Open the two cable clips 119 at catch 120 and remove the cables fr the cabl .
- Unscrew the two screws 68 (fig. 30c).
- Remove the complete programming panel.

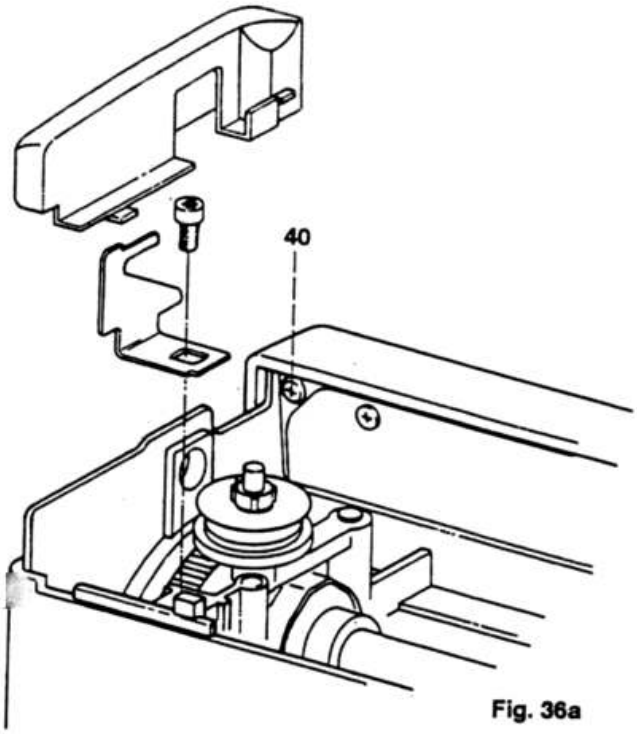


Fig. 36a

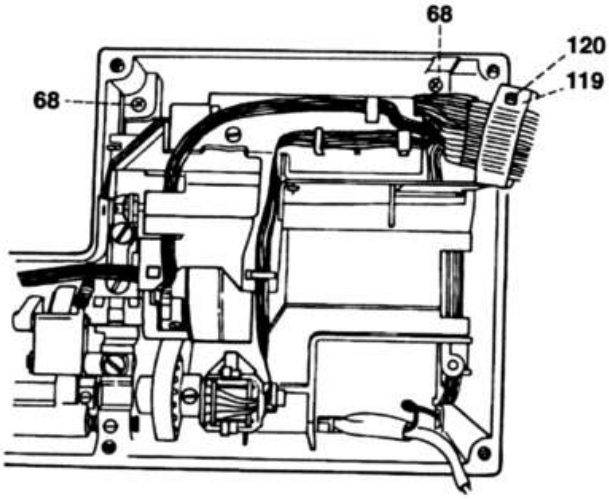


Fig. 36c

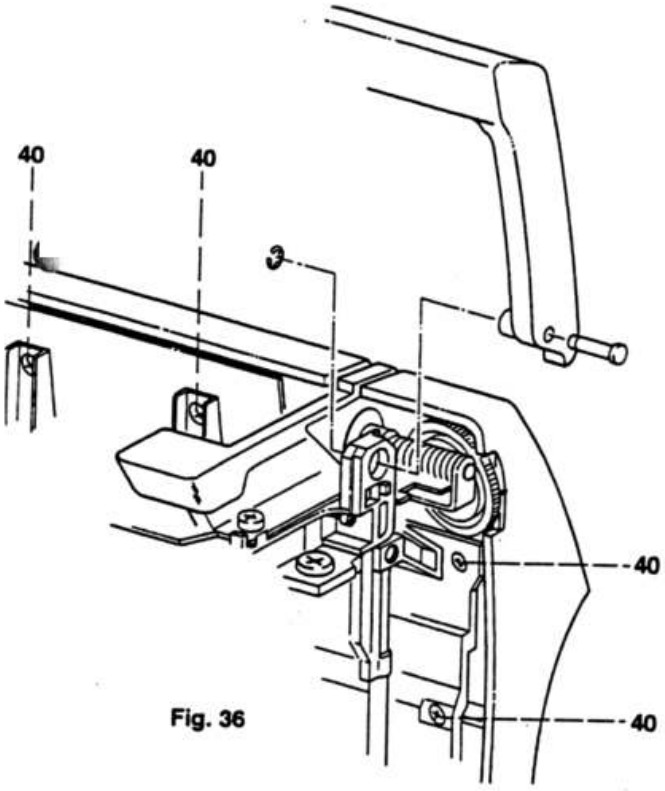


Fig. 36

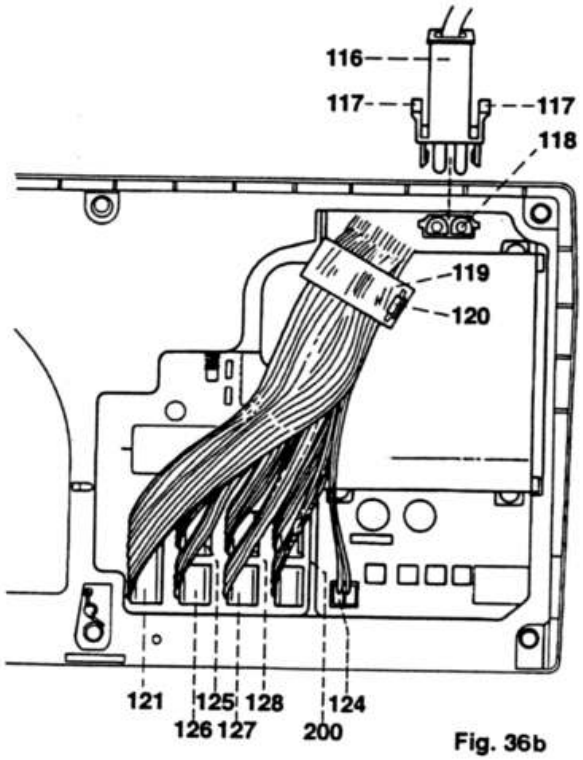


Fig. 36b

- Unscrew the right-hand motor retaining screw 144 (fig. 36d).
- Use a screwdriver to lift motor cover 143 at the right-hand side and remove it.
- Disconnect light plug 146.
- Unscrew the second motor retaining screw 140.
- Lift motor sprocket 142 out of toothed belt 141 and remove the motor to the front.
- Turn the machine in its normal position.
- Turn out both screws 39 (fig. 36e).
- Remove complete stepping motor.

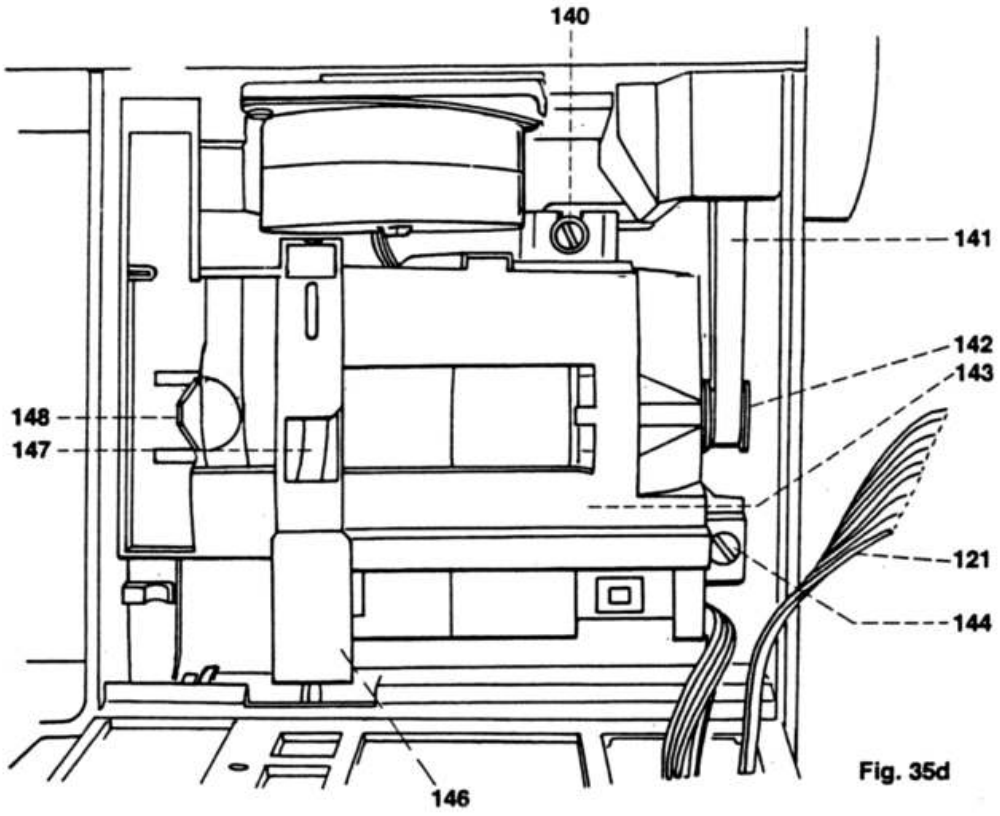


Fig. 35d

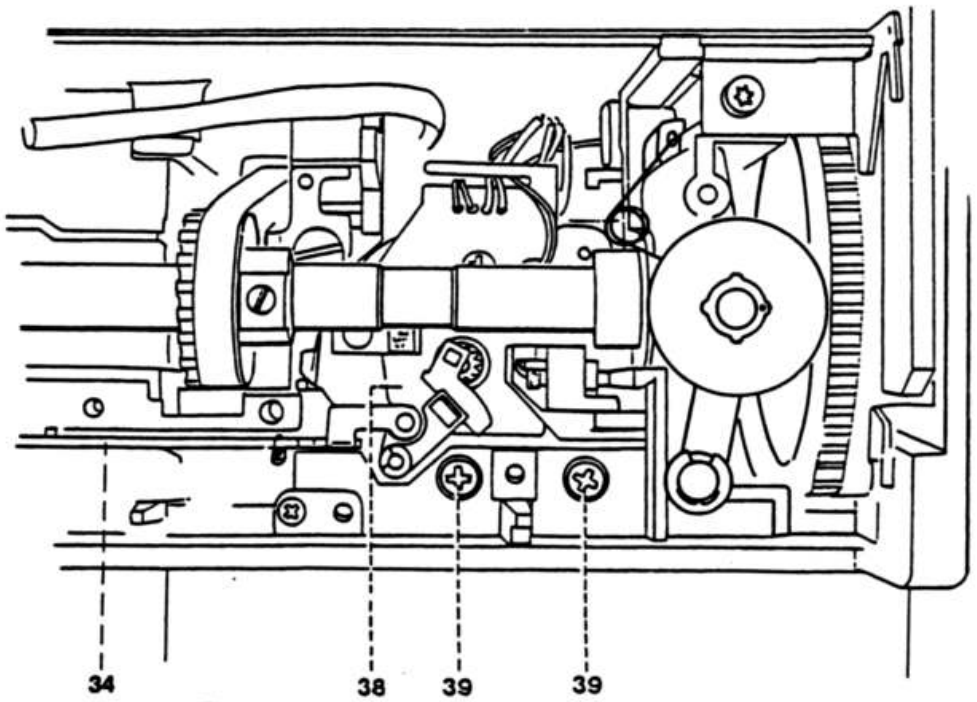


Fig. 35e

Fitting:

- Install the new stepping motor (fig. 36e). When doing so, make sure that bolt 36 of connecting rod 34 enters the hole of the tooth segment.
- Place seven-wire flat cable 125 downward and install the cable at the right side in the corner of the housing.
- Tighten both screws 39 just a little.
- Turn the machine upside down.
- Insert the motor and place motor sprocket 142 in toothed belt 141 (fig. 36f).
- Insert the two-connection plug downward.
- Mount sewing lamp cable 147 at the motor and attach plug 146.
- Insert the upper motor retaining screw 140 and tighten it just a little.
- Insert motor cover 143.
- Insert and slightly tighten right-hand motor retaining screw 144.
- Tauten toothed belt 141 and tighten both motor retaining screws.

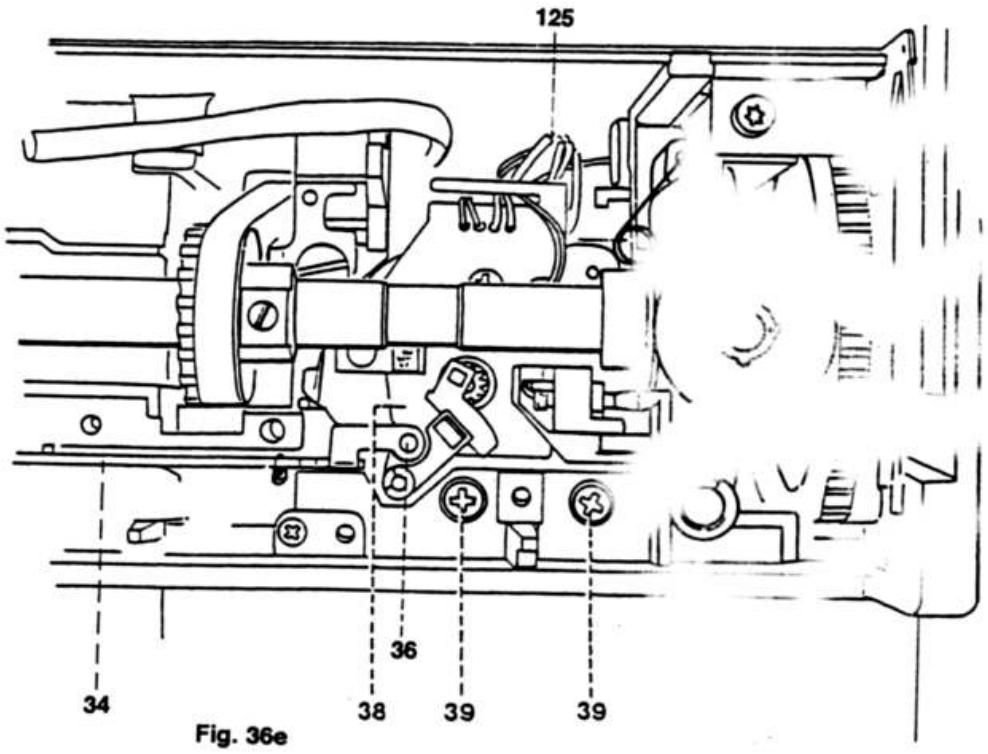


Fig. 36e

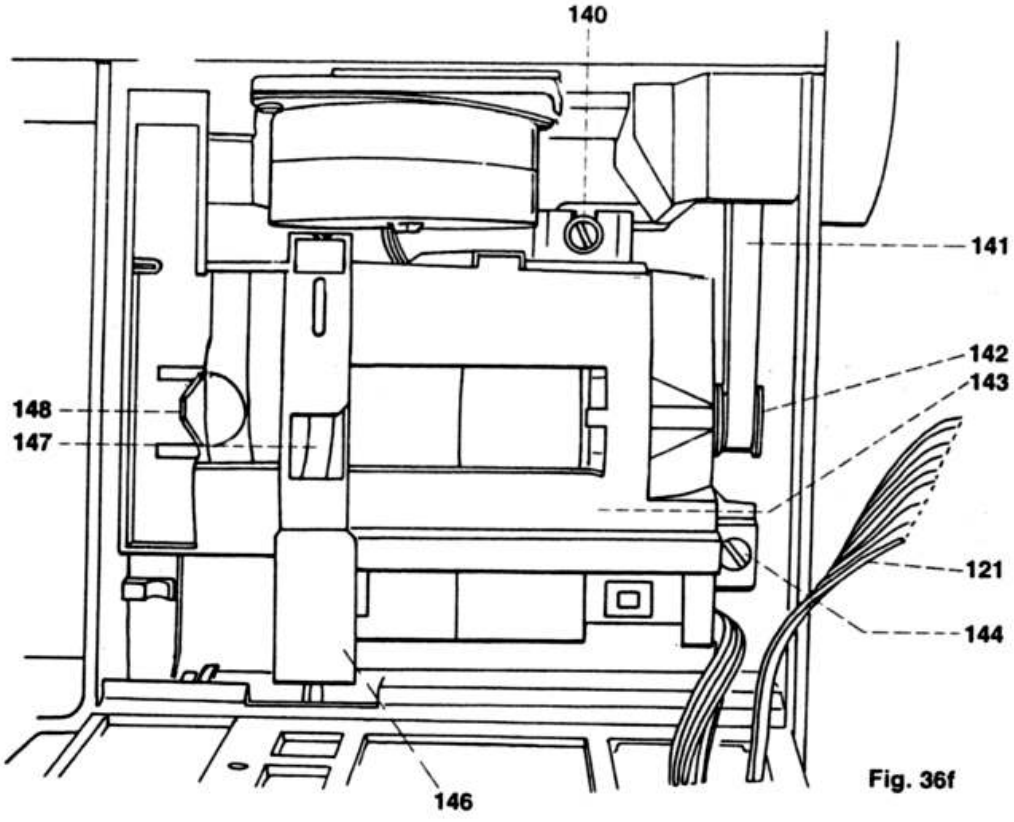


Fig. 36f

- Insert the twelve-wire flat cable 121 downwards in the machine.
- Fit the complete programming panel correctly on the machine housing.
- Insert the two screws 68, press the programming panel against the machine housing, and tighten the screws (fig. 36c).
- Install all cables according to the figure and fit both cable clips.
- Set the complete baseplate against the machine.
- Insert motor plug 116 in motor socket 118 (both catches 117 must engage (fig. 36b)). Now the flat cables are connected as follows to the circuit board:
- Two-connection plug 124 to the two pin base.
- The plug of five-wire flat cable 127 to the black pin base.
- The plug of seven-wire flat cable 200 to the pink pin base.
- The plug of seven-wire flat cable 128 to the blue pin base.
- The plug of seven-wire flat cable 125 to the black pin base.
- The plug of twelve-wire flat cable 121 to the black pin base.
- The plug of five-wire flat cable 126 to the blue pin base.
- The plug of four-wire flat cable 123 to the black pin base.
- Fold the baseplate against the machine and fasten it with the four screws.
- Turn the machine in working position.
- Insert the five screws 40 and tighten them (fig. 36).
- Tighten screw 128.
- Put the cap on the machine cover (fig. 36a).
- Fit the angle, insert the Torx screw, and set the angle by means of the top cover.
- Fit the handle with the retaining pin and the circlip (fig. 36).

Note:
Having exchanged the stepping motor for sideways needle movement, adjustment of the needle in the needle hole, section 9, must be repeated.

- Fit the face cover and tighten it.
- Insert the housing insert and fasten it with both screws.
- Fit the arm cover.
- Use testing appliance ABB Metrawatt M 5013 to carry out an electrical safety test according to VDE 0701.

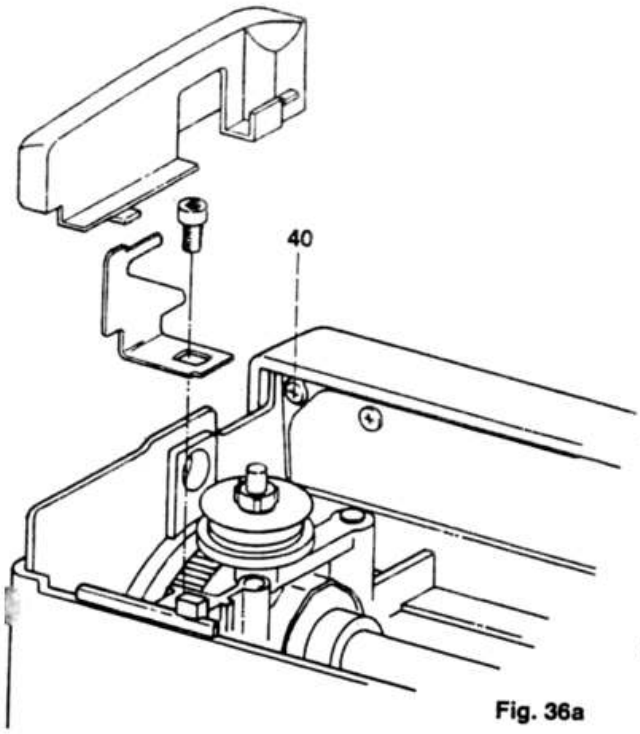


Fig. 36a

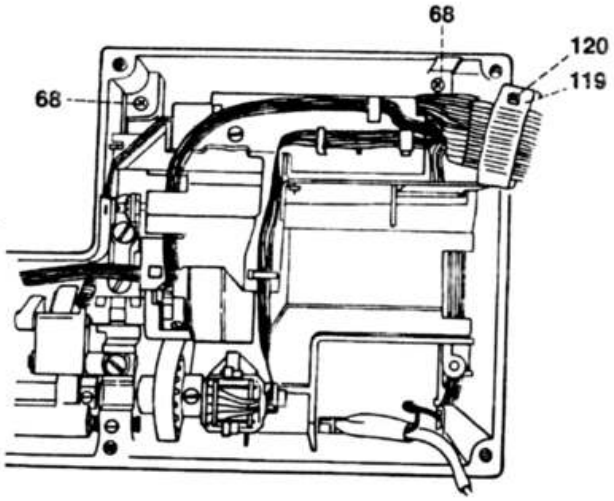


Fig. 36c

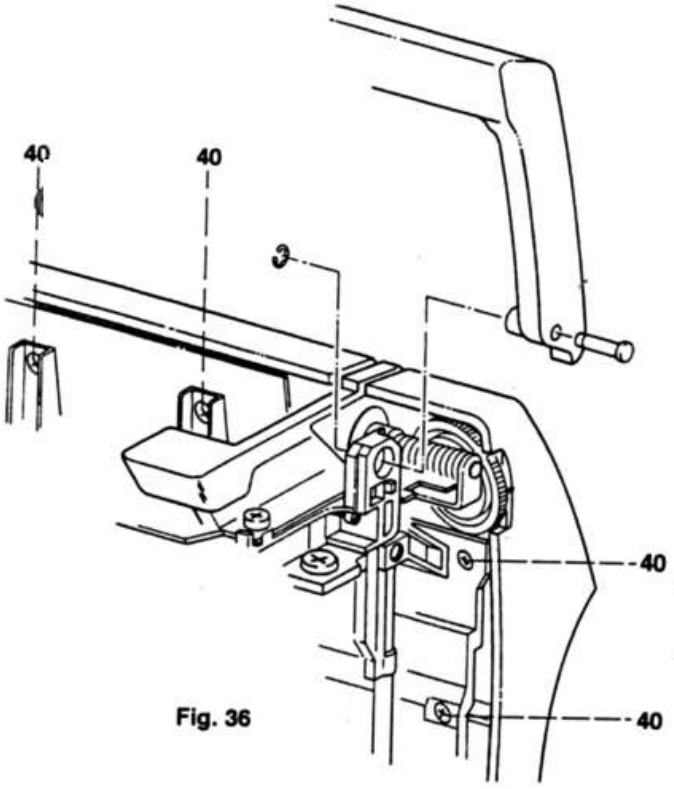


Fig. 36

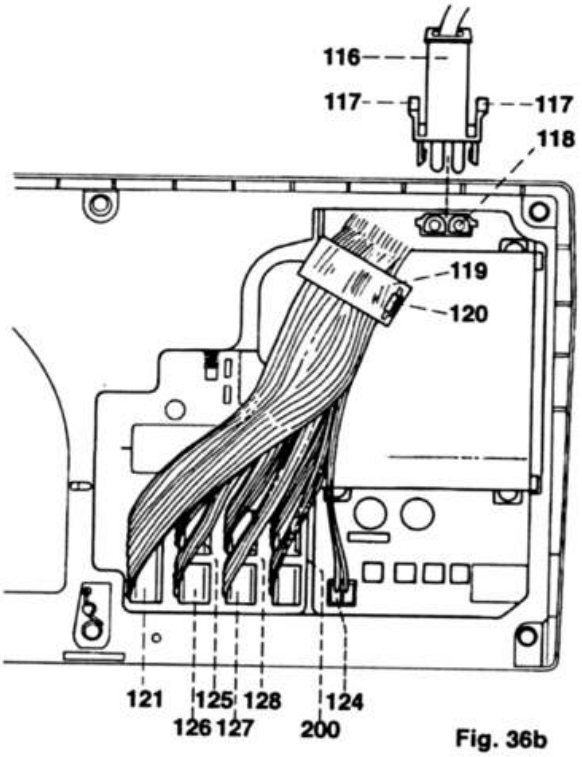


Fig. 36b

37. Exchanging the lower stepping motor for the feed movement

Note:
The feed stepping motor is only exchanged complete.

Removal:
- Remove the needle, the sewing foot and the needle plate.
- Remove the top cover, the housing insert and the face cover.
- Turn the machine upside down.
- Unscrew the four screws of the baseplate.
- Turn the baseplate around.
- Disconnect plugs 122 of the eight flat cables from the circuit board (fig. 37).
- Press the two catches 117 of motor plug 116 together and pull it off upwards.
- Place the complete baseplate aside.
- Open the two cable clips 119 at catch 120 and remove the cables form the cable clips.
- Loosen fixing collar screw 33 of the synchronizer.
- Remove the synchronizer to the right from the shaft.
- Remove the free-arm cover.
- Remove the complete buttonhole sensor.
- Remove the transverse-drive stepping motor according to section 38.
- Unscrew screw 181 of cable guide 180 (fig. 37a).
- Remove the cable guide 180 to the front.
- Disconnect pull-spring 14 (fig. 37b).
- Unscrew screw 18.
- Turn the handwheel until feeding eccentric 20 faces the back of the machine.
- Remove cam lever 9, folding it downwards, and pull it to the left off the slide block pin along with link 10.
- Remove slide block 12 to the right.
- Unscrew both screws 16 of the stepping motor.
- Remove the complete feed stepping motor.

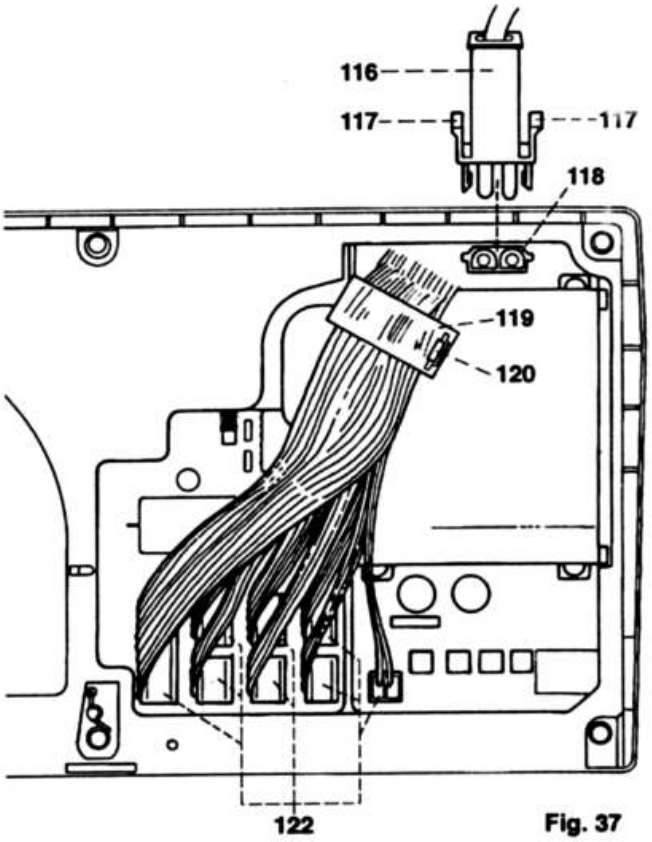


Fig. 37

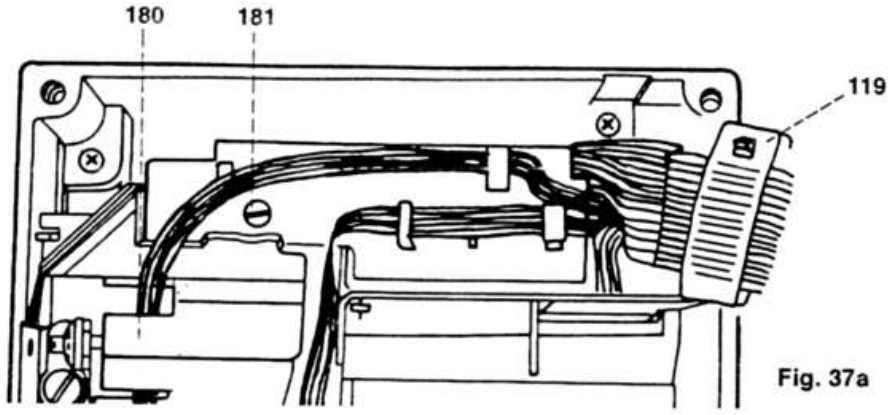


Fig. 37a

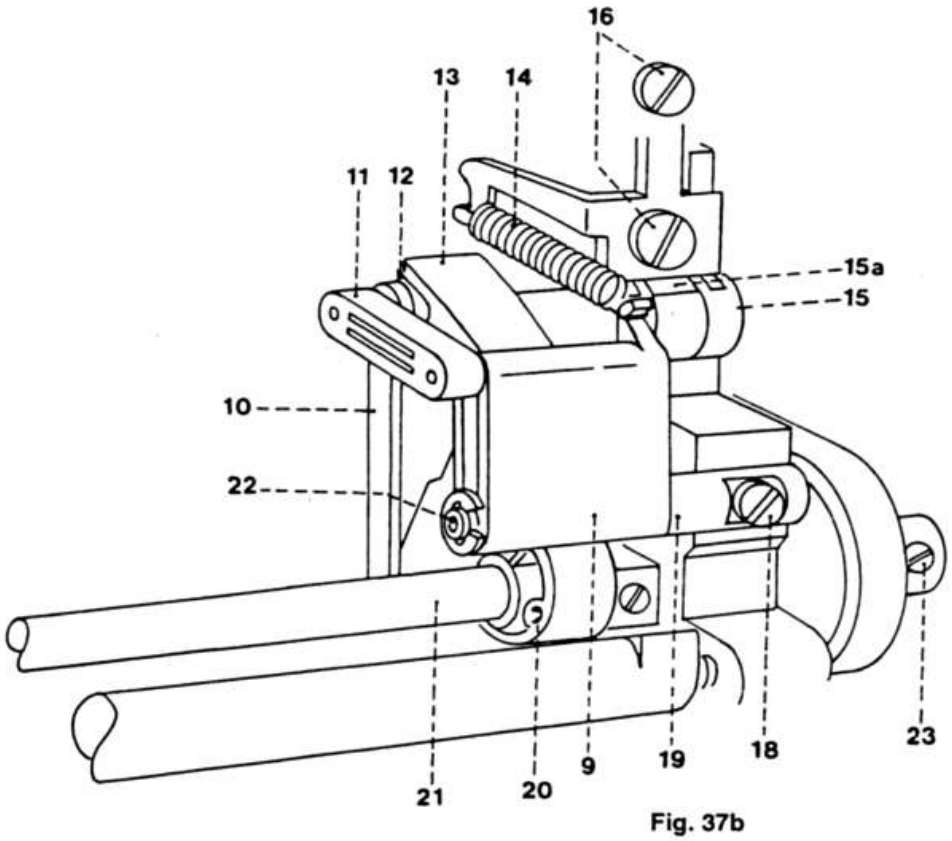


Fig. 37b

Fitting:

- Insert the new feed stepping motor complete with bracket (fig. 37b).
- Insert and lightly tighten upper retaining screw 16.
- Insert and lightly tighten clamp spring 15a with screw 16.
- Push slide block 12 with spring onto the bolt and set it in the guide slot in the correct curve radius. Check that the slide block moves freely, but without play or binding, in the guide slot.
- Push guide lever 15 complete with the stepping motor carefully to the left, until there is a clearance of 0.05 mm between the slide block and the connecting bar.
- Tighten screws 16 and check that the slide block moves freely, but without play.
- Push link 10 complete with cam lever 9 to the right onto the connecting bar pin.
- Fold cam lever 9 to the rear and then over feeding eccentric 20.
- Insert screw 18 in fulcrum stud 19 and tighten it a little.
- Shift fulcrum stud 19 laterally so that link 10 and the connecting bar still have a slight play and can move freely.
- Tighten screw 18.
- Connect spring 14.
- Insert cable guide 180 and secure it with screw 181 (fig. 37a).
- Install transverse-drive stepping motor according to section 38.
- Push synchronizer 34 onto the shaft making sure that the housing rib is between the two guide clamps.
- Place five-wire flat cable 127 in cable guide 119.
- Place seven-wire flat cable 200 in the cable guide.
- Insert the complete buttonhole sensor.
- Secure the free-arm cover with two screws.
- Place the five-wire and the four-wire flat cables in the cable guides.
- Set the complete baseplate against the machine.

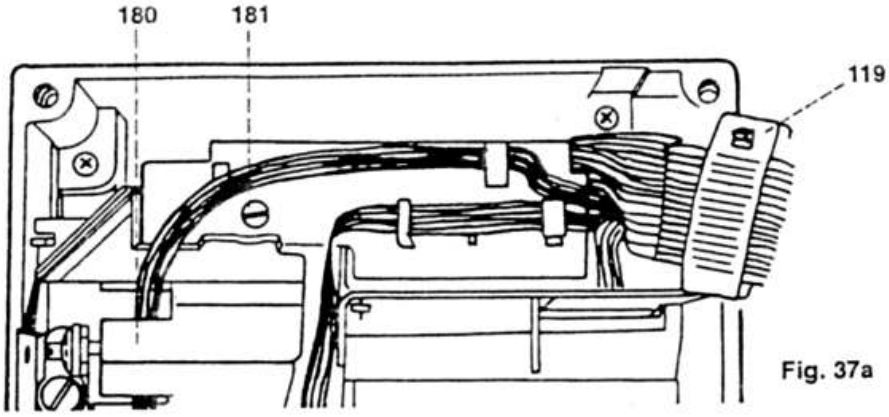


Fig. 37a

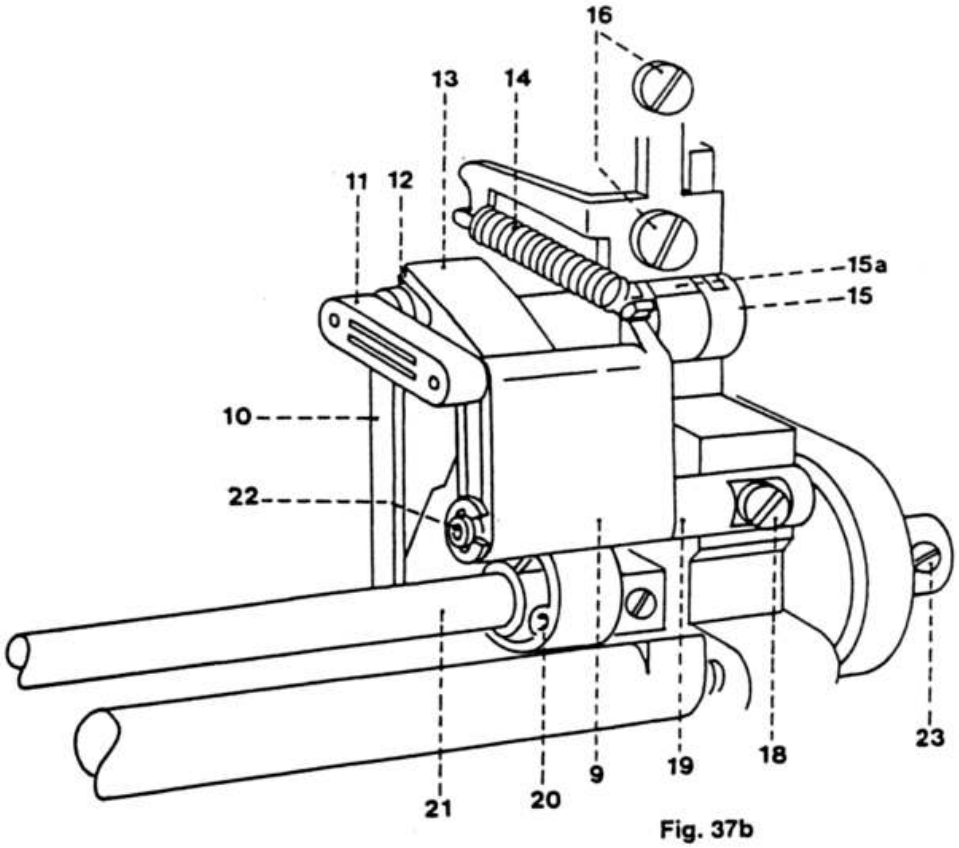


Fig. 37b

- Now the flat cables are connected to the circuit board as follows (fig. 37a):
- Motor plug 116 to motor socket 118 (both catches 117 must engage).
- Two-connection plug 124 to the two pin base.
- The plug of five-wire flat cable 127 to the black pin base.
- The plug of seven-wire flat cable 200 to the pink pin base.
- The plug of seven-wire flat cable 128 to the blue pin base.
- The plug of seven-wire flat cable 125 to the black pin base.
- The plug of twelve-wire flat cable 121 to the black pin base.
- The plug of five-wire flat cable 126 to the blue pin base.
- The plug of four-wire flat cable 123 to the black pin base.
- Fold the baseplate against the machine and fasten it with the four screws.
- Connect the mains lead to the mains socket on the machine and to the mains.
  Now the following adjustments must be carried out:
- Timing of feed motion, section 3
- Adjustment of feed dog in sideways direction, section 4
- Adjustment of synchronizer, section 5
- Adjustment of equal forward and reverse stitch length, section 20
- Making up a sewing sample, section 21
- Use testing device ABB Metrawatt M 5013 to carry out an electrical safety test according to VDE 0701.

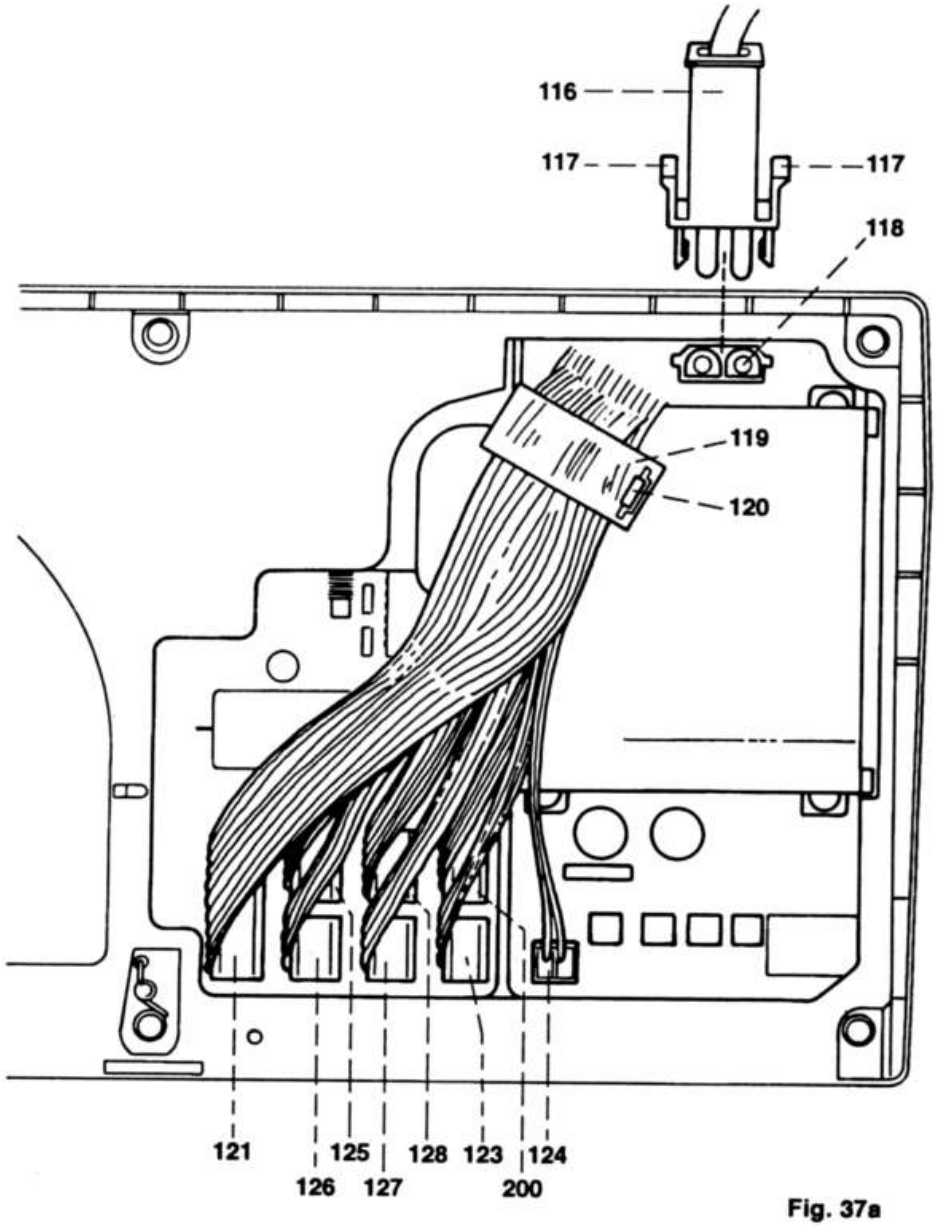


Fig. 37a

38. Changing the stepping motor for transverse-drive

Note:

The transverse-drive stepping motor is only exchanged complete.

Removal:

- Remove mains lead from mains socket and machine.
- Remove the needle, the sewing foot and the needle plate.
- Turn the machine upside down.
- Unscrew the four screws of the baseplate.
- Turn the baseplate around.
- Disconnect the plugs of the eight flat cables from the circuit board (fig. 38).
- Press the two catches 117 of motor plug 116 together and remove the motor plug upwards.
- Place the complete baseplate aside.
- Open the two cable clips 119 at catch 120 and remove the cables form cable clips 119.
- Unscrew both screws 153 of bobbin thread monitor 154 (fig. 38a).
- Remove the bobbin thread monitor.
- Remove the complete buttonhole sensor.
- Remove seven-wire flat cable 200 of the transverse-drive stepping motor from the cable duct.
- Unscrew the three Philips screws 201 (fig. 38b).
- Disconnect pull-spring 199 at the transverse-drive stepping motor (fig. 38c).
- Take out the complete transverse-drive stepping motor.

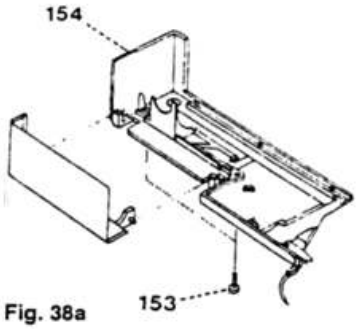


Fig. 38a

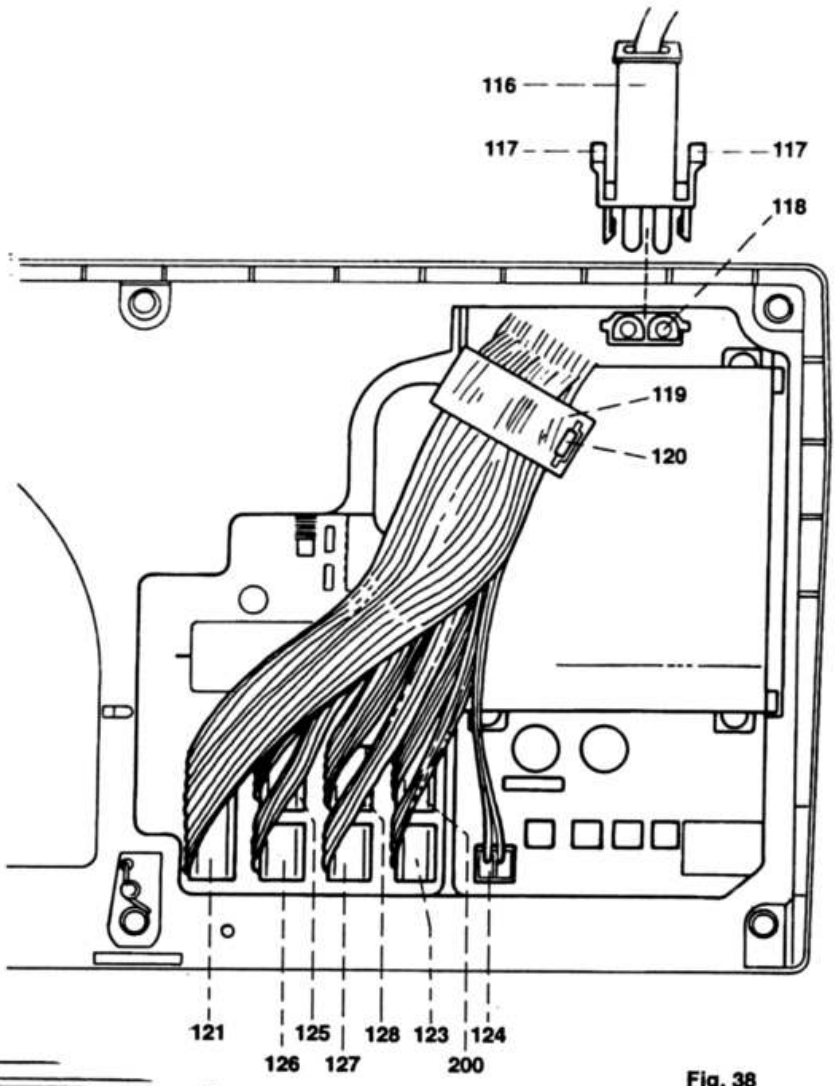


Fig. 38

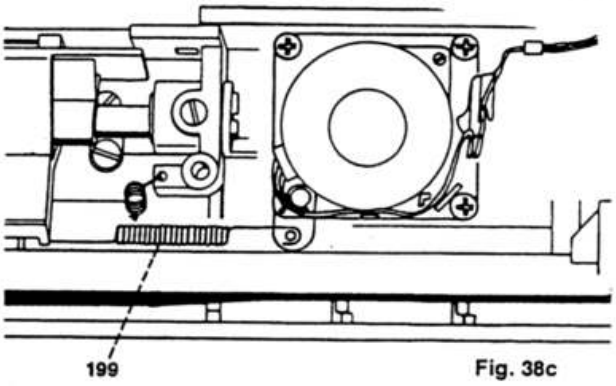


Fig. 38c

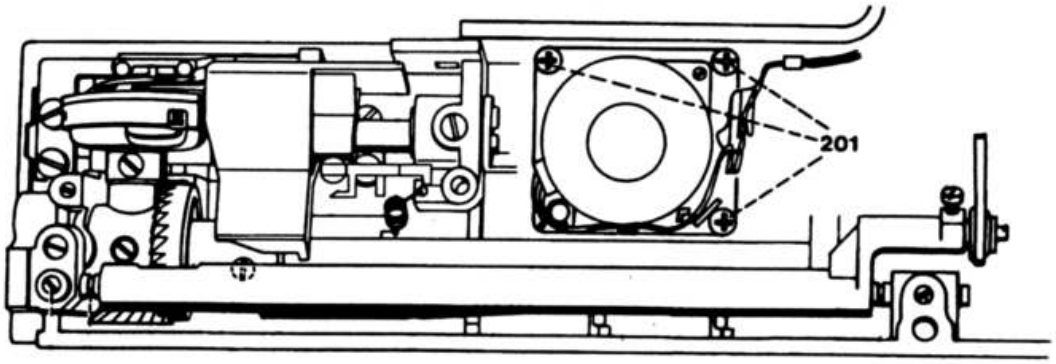


Fig. 38b

Fitting:

Note:

Make sure that pull-spring 199 of the transverse-drive stepping motor is hooked on at the feed dog.

- Hook pull-spring 199 on at the transverse-drive stepping motor and install the transverse-drive stepping motor.
- Insert and lightly tighten the three Philips screws 201 (fig. 38b).
- Place seven-lead flat cable 200 in the cable duct.
- Carry out adjustment of feed dog in sideways direction according to section 4 of the adjustment and repair instructions.
- Insert the complete buttonhole sensor.
- Insert the bobbin thread monitor and fasten it with screws 153 (fig. 38a).
- Place five-wire and four-wire flat cable in the cable guides.
- Set the complete baseplate against the machine.
- Now the flat cables are connected to the machine as follows (fig. 38):
- Motor plug 116 to motor socket 118 (both catches 117 must engage).
- Two-connection plug 124 to the two pin base.
- The plug of five-wire flat cable 127 to the black pin base.
- The plug of seven-wire flat cable 200 to the pink pin base.
- The plug of seven-wire flat cable 129 to the blue pin base.
- The plug of seven-wire flat cable 125 to the black pin base.
- The plug of twelve-wire flat cable 121 to the black pin base.
- The plug of five-wire flat cable 126 to the blue pin base.
- The plug of four-wire flat cable 123 to the black pin base.
- Fold the baseplate against the machine and fasten it with the four screws.
- Use testing appliance ABB Metrawatt M 503 to carry out an electrical safety test according to VDE 0701.

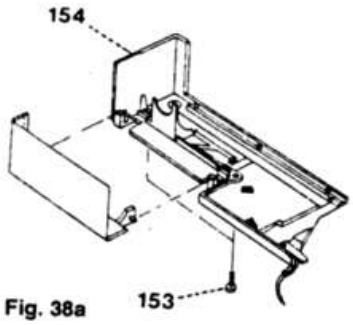


Fig. 38a

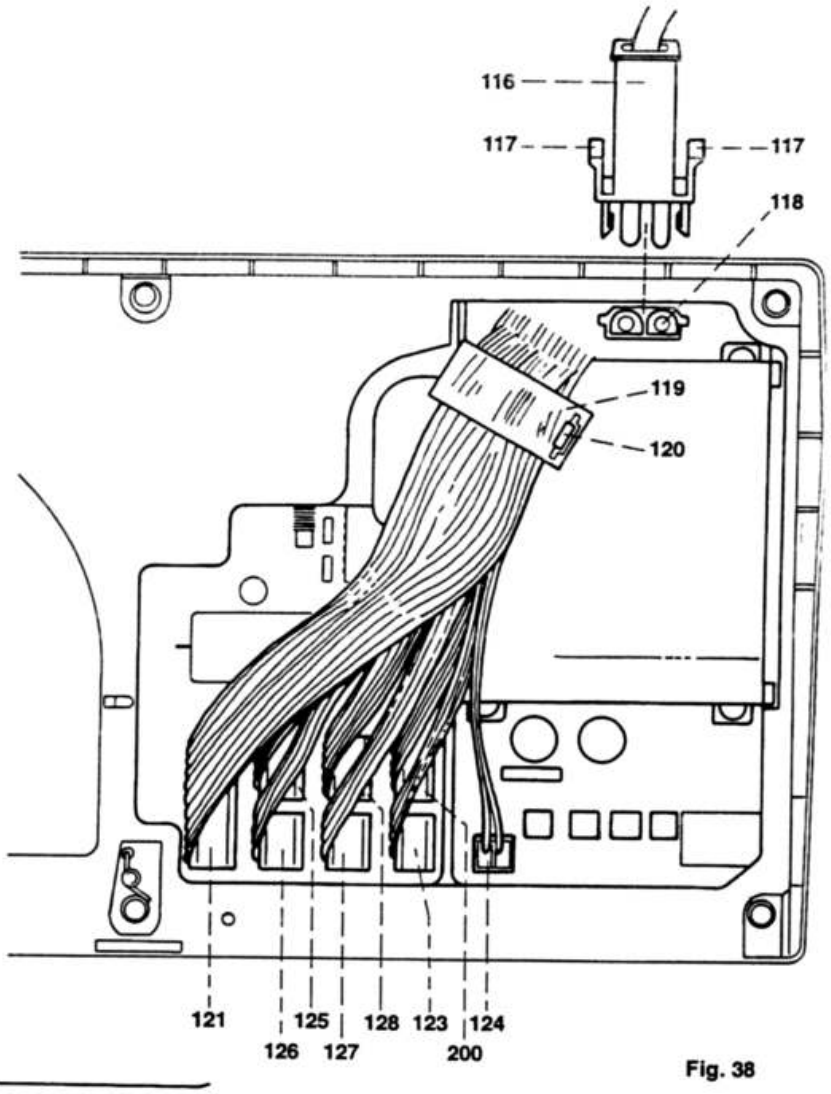


Fig. 38

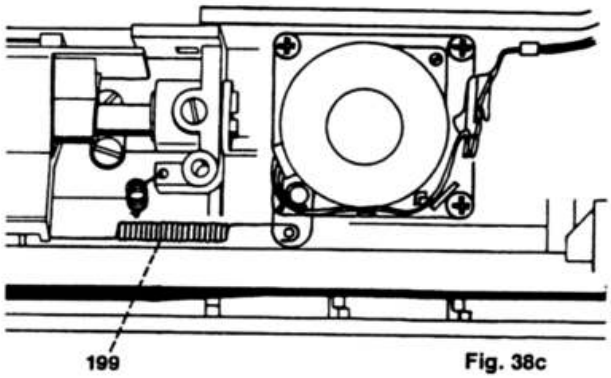


Fig. 38c

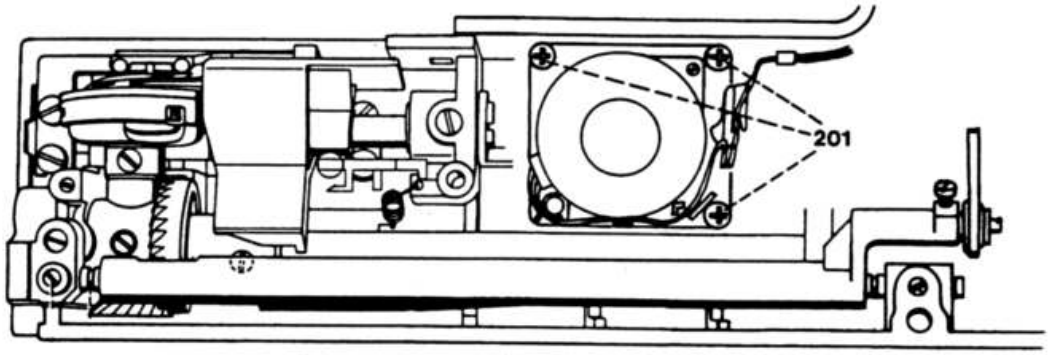


Fig. 38b

39. Changing the buttonhole sensor

Note:

The buttonhole sensor is only exchanged complete.

Removal:

- Remove mains lead from mains socket and machine.
- Remove the needle, the sewing foot and the needle plate.
- Turn the machine upside down.
- Unscrew the four screws of the baseplate.
- Turn the baseplate around.
- Disconnect the plugs of the eight flat cables from the circuit board (fig. 39).
- Press both catches 117 of motor plug 116 together and pull the plug out upwards.
- Place the complete baseplate aside.
- Open both cable clips 119 at catch 120 and remove the cables from cable clips 119.
- Unscrew both screws 153 of bobbin thread monitor 154 (fig. 39a).
- Remove the bobbin thread monitor.
- Take out the complete buttonhole sensor together with the pressure spring.

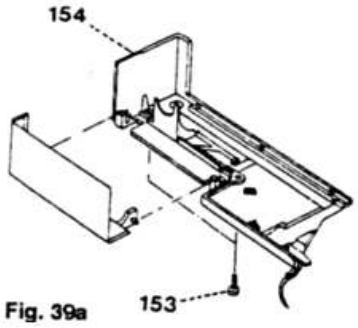


Fig. 39a

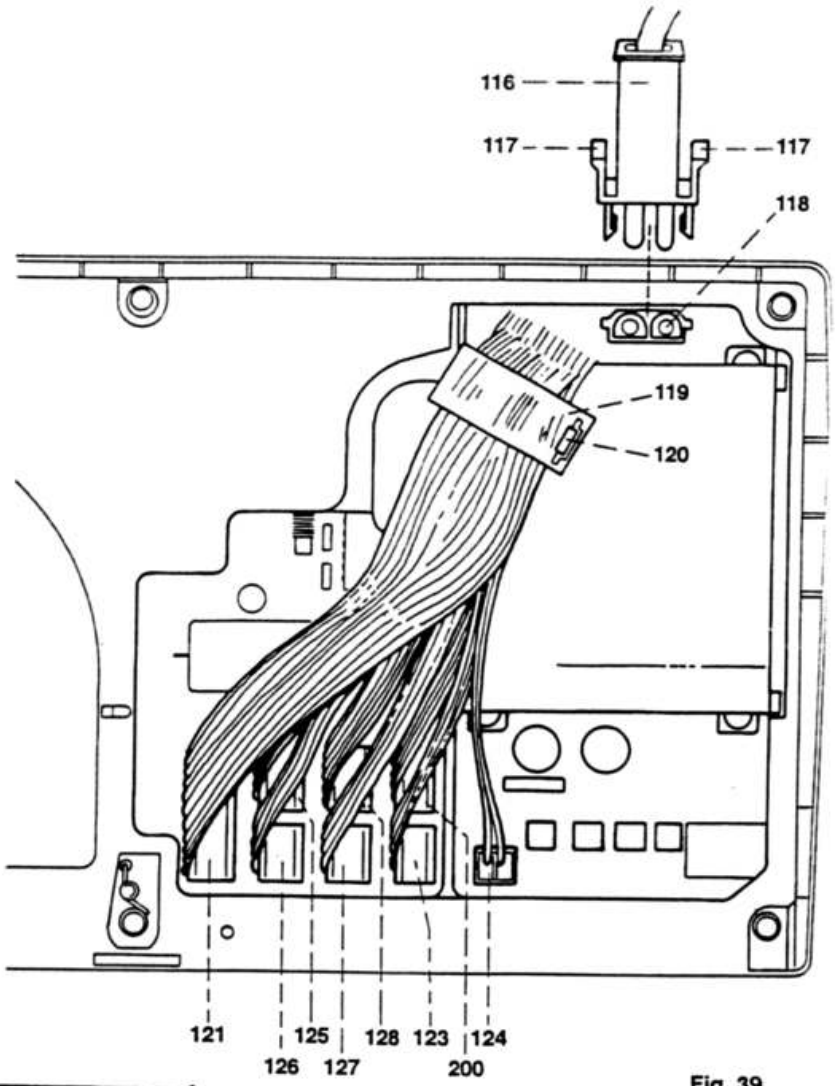


Fig. 39

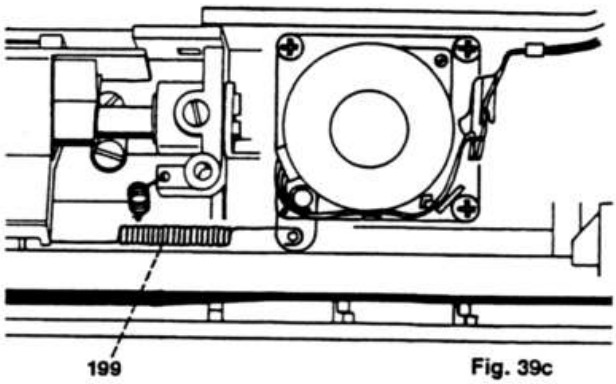


Fig. 39c

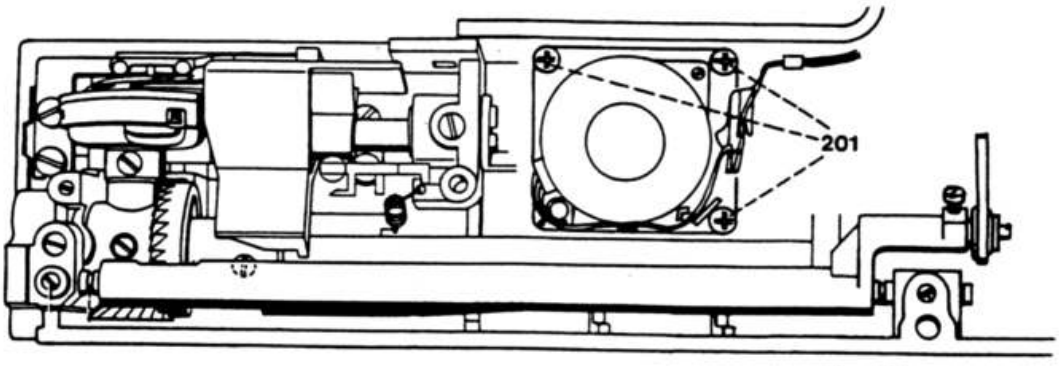


Fig. 39b

Fitting:

- Insert the complete buttonhole sensor with the pressure spring (fig. 39b).
- Insert the bobbin thread monitor 154 and secure it with screws 153 (fig. 39a).
- Place the five-wire and the four-wire flat cables in the cable guides.
- Set the complete baseplate against the machine.
- Now the flat cables are connected as follows to the circuit board (fig. 39):
- Motor plug 116 to motor socket 118 (both catches 117 must engage).
- Two-connection plug 124 to the two pin base.
- The plug of five-wire flat cable 127 to the black pin base.
- The plug of seven-wire flat cable 200 to the pink pin base.
- The plug of seven-wire flat cable 128 to the blue pin base.
- The plug of seven-wire flat cable 125 to the black pin base.
- The plug of twelve-wire flat cable 121 to the black pin base.
- The plug of five-wire flat cable 126 to the blue pin base.
- The plug of four-wire flat cable 123 to the black pin base.
- Fold the baseplate against the machine and fasten it with the four screws.
- Use testing appliance ABB Metrawatt M 5013 to carry out an electrical safety test according to VDE 0701.

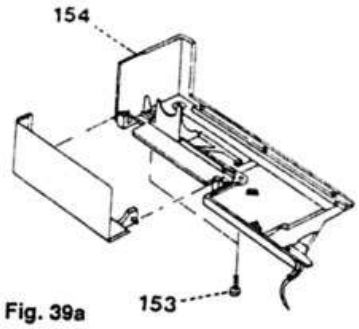


Fig. 39a

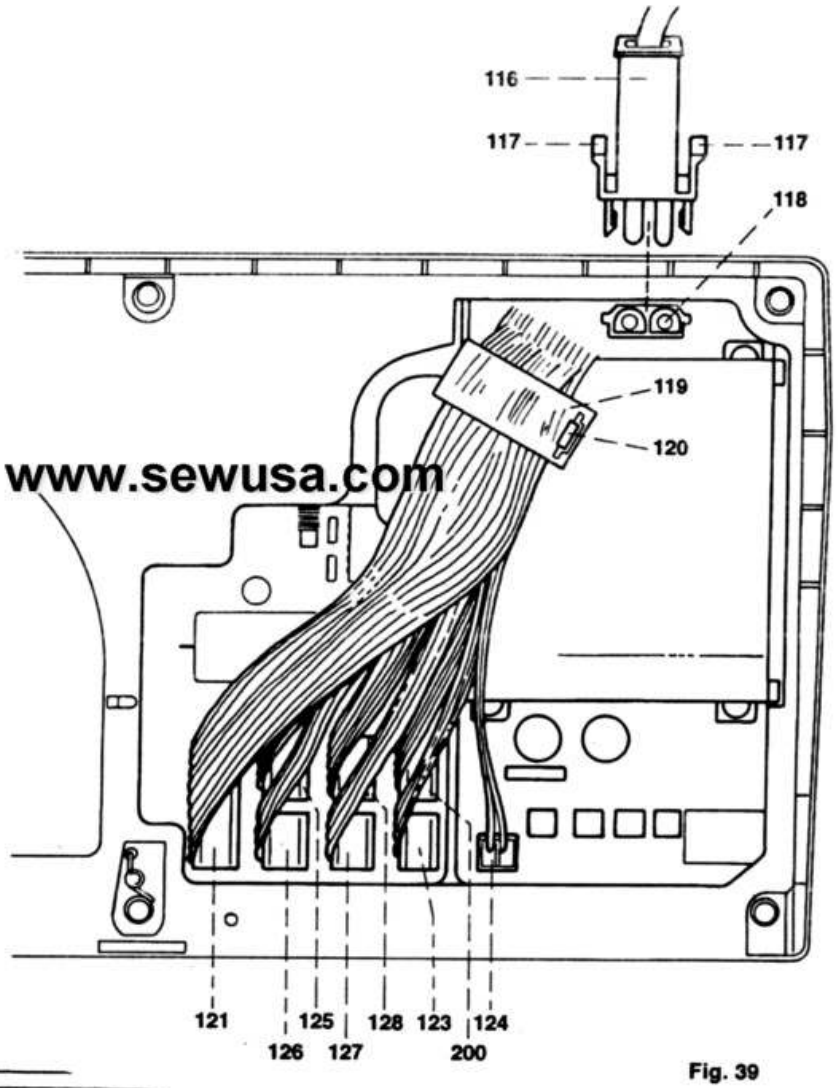


Fig. 39

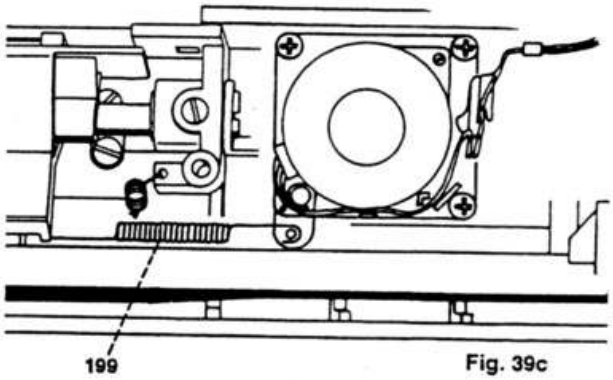


Fig. 39c

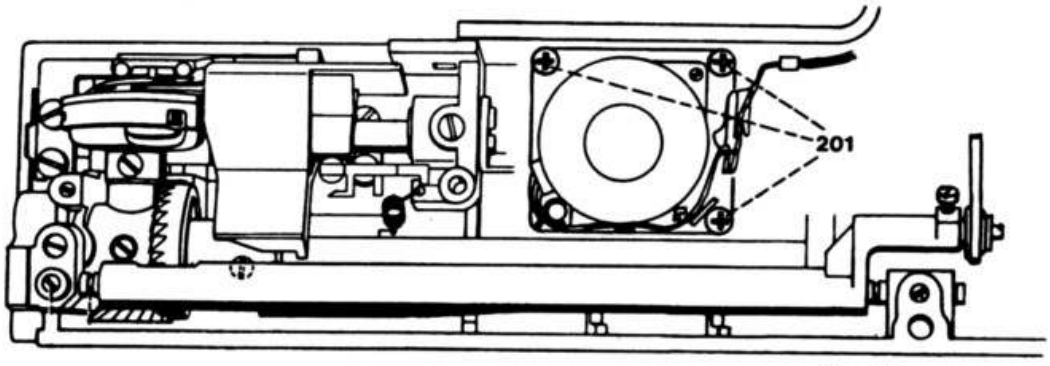


Fig. 39b

40. Important key functions of class 7550

Self-test:	**Press key "sew slow" and master switch.**
Find code:	**Press key "sew slow" and master switch, then press key "pattern start".**
Cycle track:	**Press key "sew slow" and master switch, then press key "needle down".**
Date:	**Press key "sew slow" and master switch, then press key "clear".**
Buttonhole:	**Press key "sew slow" and master switch" then press key "tie off".**
Adjustment pattern:	**press key "menu" and master switch, then "escape".**
Input code:	**Press key "info" and master switch.**
Select language:	**Press key "1" and master switch.**

41. Self-test table for cl. 7550				
Pt Nr	Function	Visual check action at machine	Machine display	Remarks
1		Connect foot control, run machine. Master switch off. Have buttonhole gauge and full bobbin ready.		Needle bar up.
2		Press key "sew slow" and actuate master switch	PFAFF	
3	P F A F F	after 3 s	P F A F F self-test	
4	LEDs and Display are flashing.			
		Visual check: all LEDs are flashing with a dark display. Display becomes bright while LEDs are still on. Display switches over to matrix display. LEDs go out. Matrix display is inverted.	(LEDs and display are flashing three times in the rythm of the display. Red LED is flashing a few times).	Visual check negative, exchange respective subassemby. tauschen. Readings in brackets are not displayed.
5	Key test			
	All the 31 keys must be pressed.	Within 12 s for each key every key must be pressed once. All keys pressed.	Key test (Every key specified by its name). Keys off – „OK"	In case of key error repeat test or exchange.
6	Foot control test			
6	Foot control test Press foot control release press release	The foot control must be pressed within 12 s The foot control must be released within 12 s. The foot control must be pressed within 12 s. The foot control must be released within 12 s.	Press foot control Release foot control Press foot control Release foot control "OK"	In case of foot control error repeat test.

7	Stepping motor test			
		Feed dog and needle bar are moved a few times.	Stepping motor	In case of stepping motor error repeat test. Needle bar pos. up.
8	Buttonhole sensor test			
		Fully insert buttonhole gauge. You have 12 s. Remove buttonhole gauge. You have 12 s.	Buttonhole sensor test. 126 "OK"	 max. value.
9	Synchronizer test			
		Turn handwheel by 2 turns. You have 12 s. Turn handwheel by 1 turn. You have 12 s.	Synchronisizer test "OK"	
10	Cycle track test			
			Cycle track test "OK"	
11	Drive motor test			
		Press foot control. Release foot control.	Motortest (sewing machine runs, stands still.) "OK"	Readings in brackets are not displayed.
		Needle stops „down", press foot control. Release foot control. Needle stops „up".	(Sewing machine runs at low speed.) (Sewing machine stands still, needle stops down.) "OK"	Readings in brackets are not displayed.

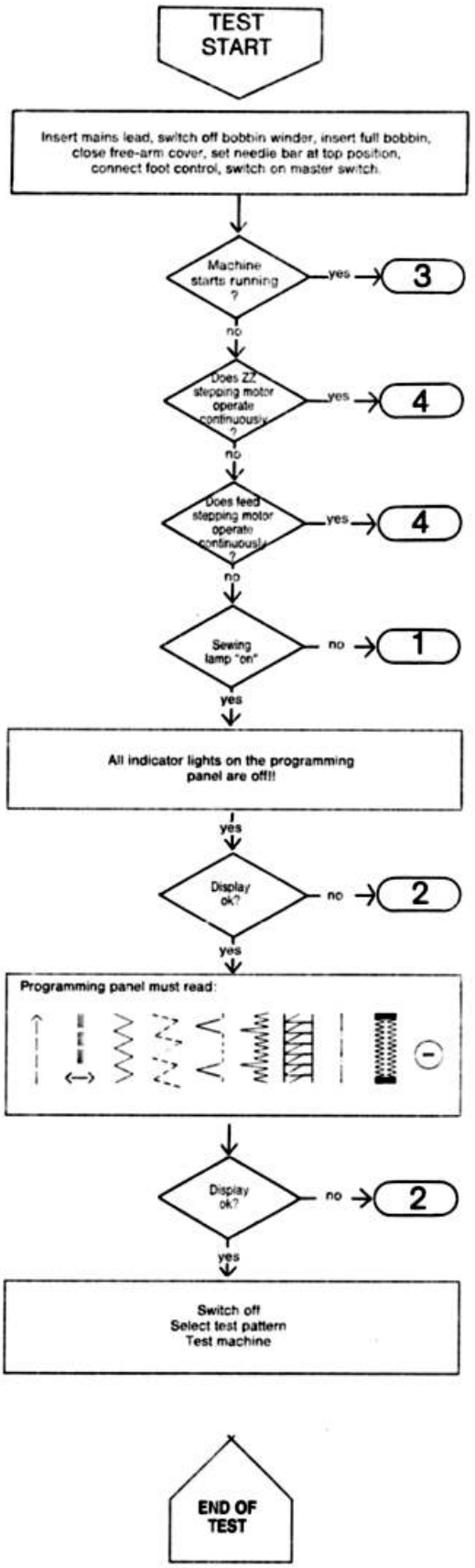
12	Thread monitor test			
		Insert full lower bobbin. Test (Close free-arm lid). Press foot control. Insert empty lower bottom. (Close free-arm lid). Press foot control. Release foot control.	Thread monitor (Sewing machine runs at low speed, stands still.) (Sewing machine runs at low speed, stands still.) "OK"	same display
13	(End of test)		End of test "OK"	After 5 s machine switches over to patttern 00, needle in center position.

42. Separate buttonhole sensor test for Cl. 7550				
Pt Nr	Function	Visual check/ Action at machine	Machine display	Remarks
1		Press key "sew slow" and actuate master switch.	P F A F F	
2		Press key "tie off" drücken.	Buttonhole sensor test 0	
3	Count cycles	Insert buttonhole gauge.	Buttonhole sensor test (Display of cycles counted) 126	In case of readings between 127 and 254 the buttonhole gauge was not inserted correctly.
4	Count cycles	Remove buttonhole gauge.	Buttonhole sensor test (Display of cycles conted) 126	In case of readings between 0 and 125 the buttonhole gauge was not inserted correctly.
5	Counted cycles, readings.	"Clear" key	Buttonhole sensor test 0	"Clear" may by pressed more than once.
6	Switching off sewing machine	Actuate master switch.		

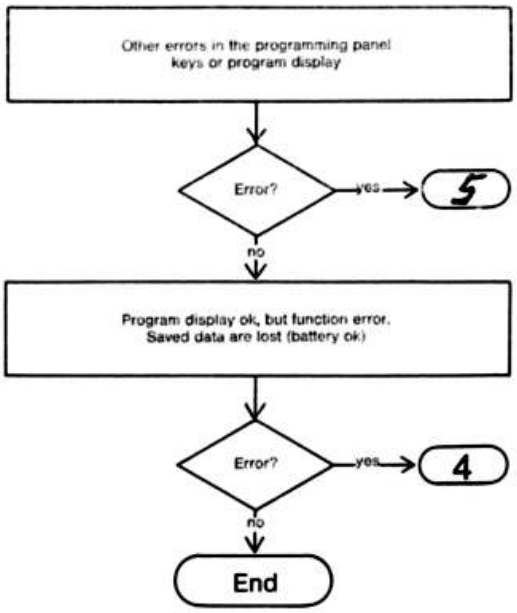
43. Replacement list: self-test 7550

Displayed error message	1st replacement part	2nd replacement part
Zigzag stepping motor error	Zigzag stepping motor	Control board
Maxi feed stepping motor error (transverse-drive stepping motor)	transverse-drive	Control board
Feed stepping motor error	Feed stepping motor	Control board
Synchronizer error	Synchronizer	Control board
Thread monitor error	Thread monitor with free-arm lid	Control board
Sewing motor error	Motor	Control board
? = Key error	Programming panel	
Foot control error	Foot control	Control board
Buttonhole sensor error	Forked buttonhole photocell barrier	Control board

44. Fault-finding chart for the electronics of Pfaff Creative 7550 CD



If the test has been performed in correct sequence right to the end of test and the error still exists, then carry out this short test program.



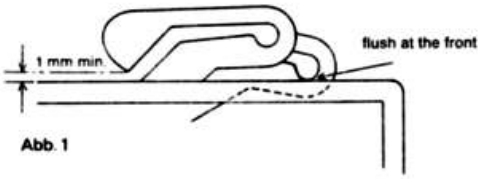


Abb. 1

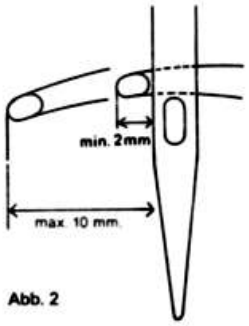
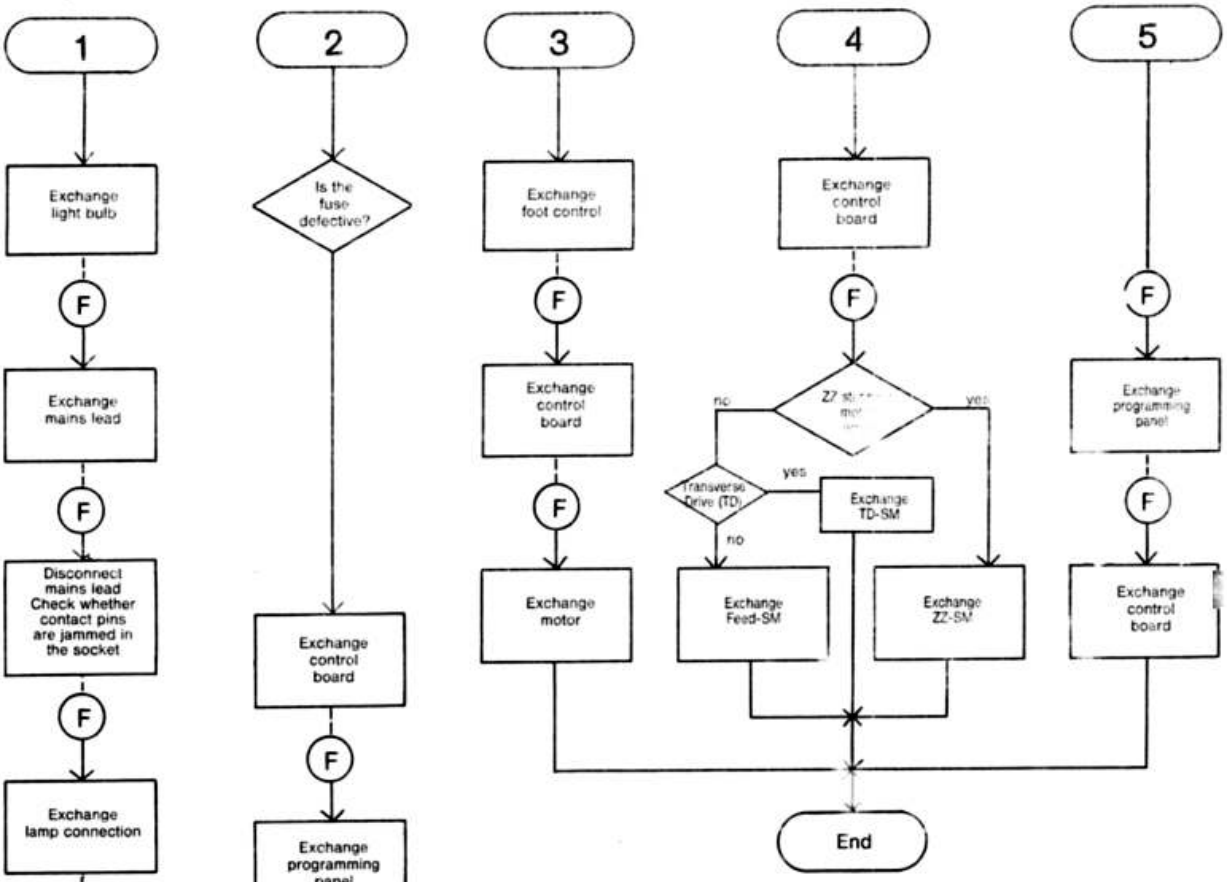


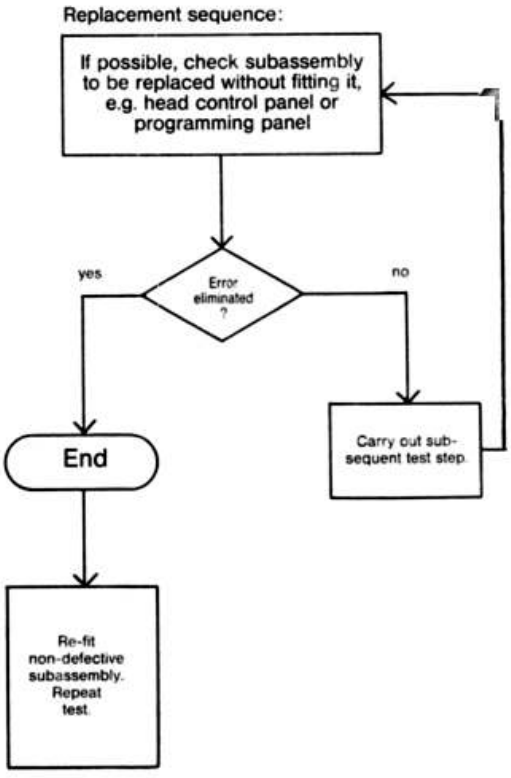
Abb. 2

- Carry out test according to the specified sequence.
- If error occours, search corresponding error number in the replacement chart and eliminate errors by systematic exchange in specified sequence.

- Repeat test right to the end of test.
- If necessary, eliminate further errors as above and repeat test until all errors are eliminated.

Replacement chart for fault-finding chart Pfaff Creative 7550 CD





45. Fault table for the electronic parts

Fault	1 st replacement pt.	2nd replacement pt.	3rd replacement pt.	4th replacament pt.	5th replacement pt.
Machine is switched on, but does not run when foot control is actuated	mains lead	foot control	master switch	master switch with motor circuit board, motor	programming paneel
Machine runs continuously on its own after a brief switch-on time	foot control	circuit board			
Alphanumerical characters in display do not light up, or flutter	programming panel	circuit board	zigzag stepping motor	motor circuit board motor	
LED display on programming panel does not light up	programming panel	circuit board			
Zigzag stepping motor runs continously or needle bar moves continously to and fro	circuit board	zigzag stepping motor			
Feed stepping motor runs continuously or the feed dog moves continuously to and fro	circuit board	feed stepping motor			
machine starts running at top speed, then stops again	Exchange synchronisizer and adjust ist	circuit board			
Transverse-drive stepping motor runs continuously, or the feed dog moves continuously	circuit board	transverse-drive stepping motor			

Fault table for the electronic parts

Fault	1st replacement pt.	2nd replacement pt.	3rd replacement pt.	4th replacement pt.
No signal on thread monitor	Clean sewing hook arm, hook mirror, bobbin case and the two sensors	Thread monitor	Circuit board	Programming panel
Feed out of step, straight stitch sewn with wrong stitch lenghts forward or reverse	Check: top or bottom feed jams or is loose	Slide block jams or has too much play	Feed stepping motor	Circuit board
Zigzag needle movement out of step, pattern shifted sideways or needle hits plate	needle bar frame jams or is loose	Zigzag stepping motor	Circuit board	
Take-up lever top position and neddle down position	Adjust synchronizer	Exchange synchronizer	Control board	
Speed control (faster or slower)	Foot control	Circuit board	Synchronizer	
Half or full speed at key "sew slow"	Circuit board	Programming panel		
Battery	Exchange battery	Control board		
Transverse drive out of step (hits needle plate or pattern only 99 mm wide)	Transverse drive mechanism binds or is loose	Transverse drive circuit board, stepping motor		

46. Testtable for CREATIVE-DESIGNER

Test arrangement: Machine of Cl. 7550 CD in functioning order, test adapter type F, and Creative to be tested

Step No.	Action at machine/ Visual check sewing machine Cl. 7550 CD	Operation Creative Designer	Visual check test adapter F	Remarks
1	Connect sewing machine to mains, switch off. Plug cable of test adapter into 5-pin DIN-socket at left side of machine baseplate and plug cable of Creative Designer into test-module socket. Switch on machine.	–	LED lights up.	LED does not light up: sewing machine defective.
2	Select empty-P-pattern, press „num"-key. 	Move coordinates slide slowly to the left bottom corner (coordinates 0.0)	–	–
3	Display counts until: 	Move coordinates slide slowly to the top edge.		
4	Display shows: 	Press "mem + F"	–	Display does not show final value: Creative Designer defective
5	Display counts until: 	Move coordinates slide slowly to the right edge	–	Display does not show final value: Creative designer defective

6	Display shows:  		Press key "mem +"	–	Display does not show final value: Creative Designer defective
7	Display shows:  	Press key 1 once	Move coordinates slide slowly to the top left corner	–	Display does not show the final value: Creative designer defective
8	Display shows:  	and top left	Press "memory" key	–	Display does not show the final value: Creative designer defective

Note: When the test is finished, erase the "P" memory used!

Safety test

47. Electrical safety test

According to the German law on safe machine operation of 24-6-86, the VDE-regulations are regarded as the official rules in electronics and are the basis for the regulations for testing electrical safety of technical devices. The required electrical tests are established in the regulations for repair, modification and testing of used electrical appliances (VDE 0701 issue 10.86) par. 4.

We are obliged to perform a test in accordance with VDE 0701 on every electrical appliance after repair. In European foreign countries, there are similar regulations in force which are largely identical with the requirements of the 0701.

48. Electrical safety test with ABB Metrawatt M 5013

I) Mains voltage test: Volt = V

- For all following tests insert plug of ABB Metrawatt M 5013 in the grounded mains socket.
- Set knob for measuring range at "250 V" (fig. 48). If there is mains voltage, the LCD display shows the respective value (230 V +/- 10%).
- Touch contact field, which is located a bit to the right just below the knob for the measuring range, with your finger, thus checking the ground lead of the mains. Signal lamp "PE" just above the contact field will light up only in case the ground lead is out of order.
- Insert plug of sewing machine into the mains socket of ABB Metrawatt M 5013.
- Run the machine.
- Meter reading: 230 V +/- 10%
- Measuring appliance M 5013 can only be used with mains voltages from 207 V to 253 V (230 V +/- 10%).

II) Appliance current test: Ampere = A

- Plug of sewing machine remains in mains socket.
- Set knob for the measuring range at 16 A (fig. 48a).
- Run the machine.
- Meter reading: 0.5 A maximum.

III) Insulation resistance: M Ohm = M

- Insert plug of sewing machine in tester socket.
- Use clamp to attach test lead of testing appliance M 5013 to presser bar.
- Set knob for measuring range at "20 M Ohm" (fig. 48b).
- Meter reading: minimum 2 M Ohm
- With meter readings higher than 20 M Ohm, appliance M 5013 displays the figure 1! In these cases, the remark "Insulation resistance higher than 20 M Ohm" must be recorded in the testing certificate.

IV) Stray current: Milliampere = mA

- Sewing machine plug remains in tester socket.
- Use clamp to attach test lead of testing appliance M 5013 to presser bar.
- Set knob for measuring range at "20 mA" (fig. 48c).
- Meter reading: maximum 0.50 mA.

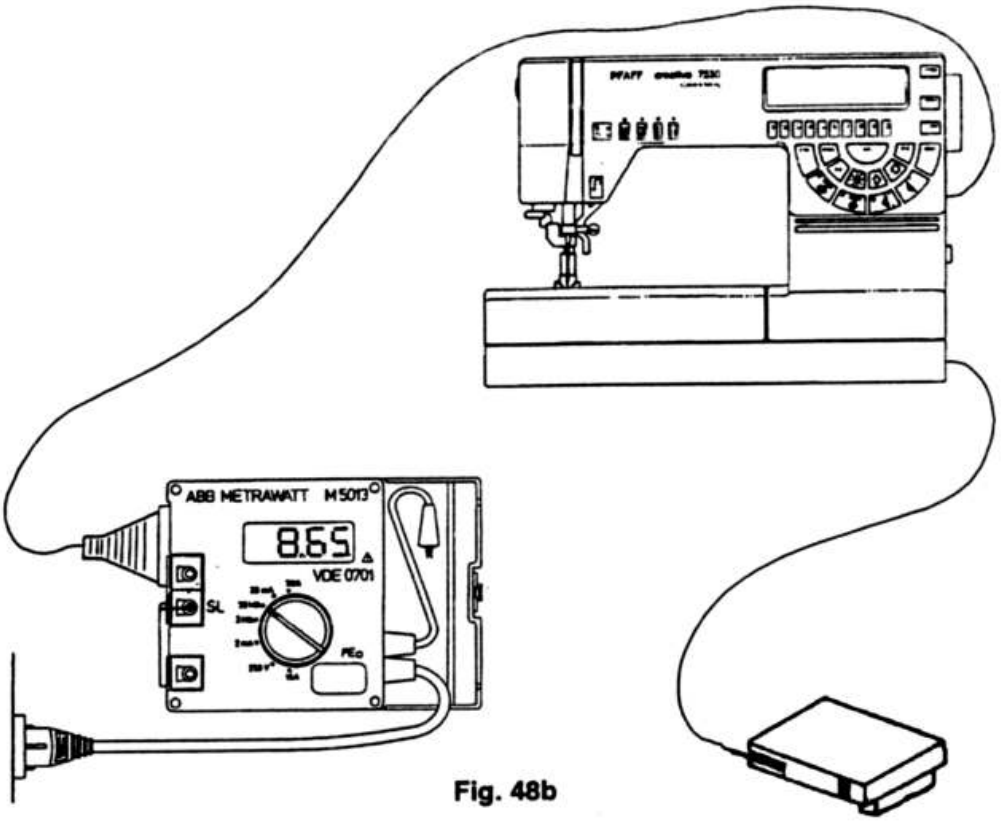


Fig. 48b

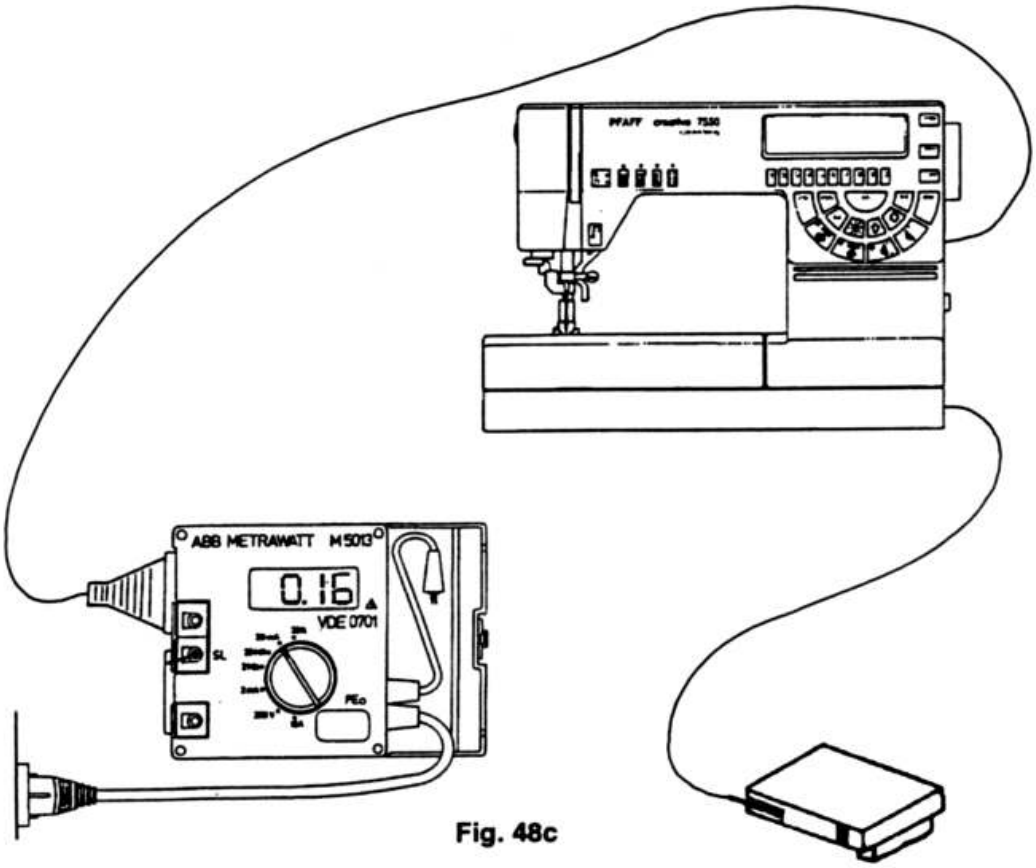


Fig. 48c

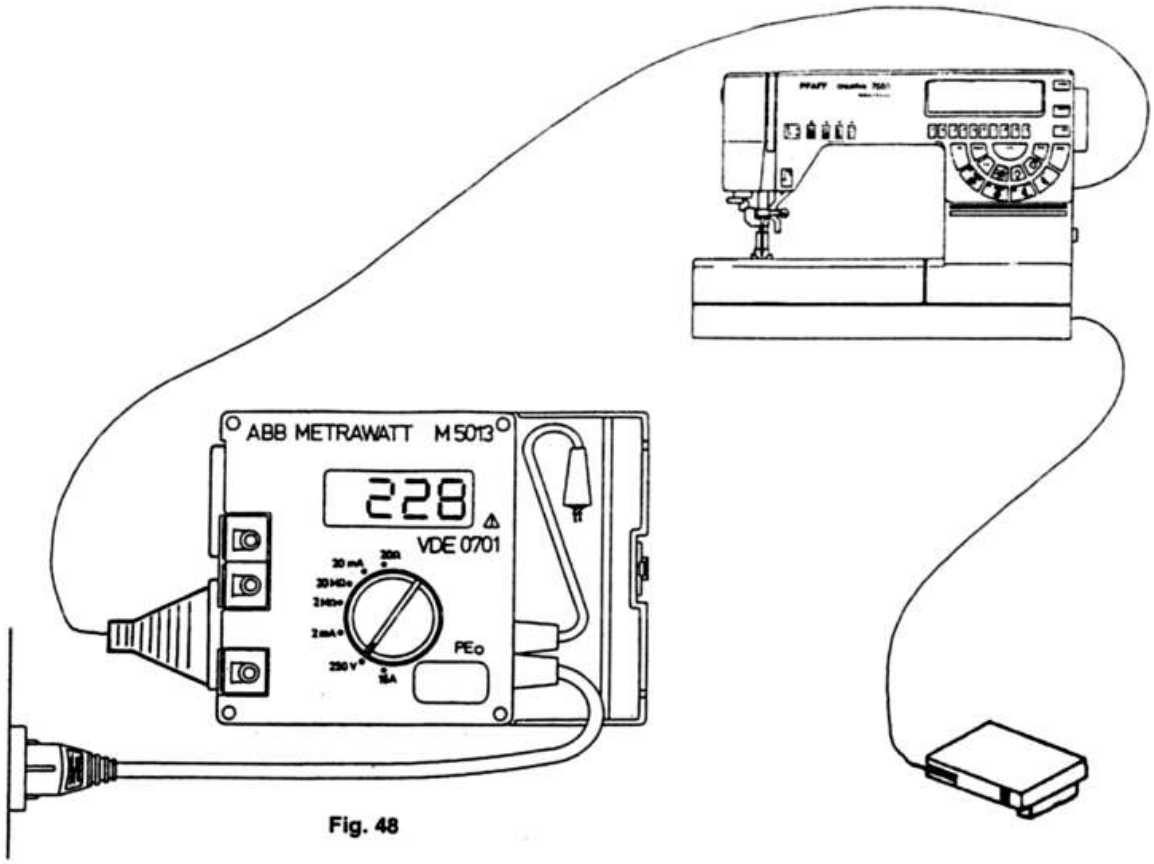


Fig. 48

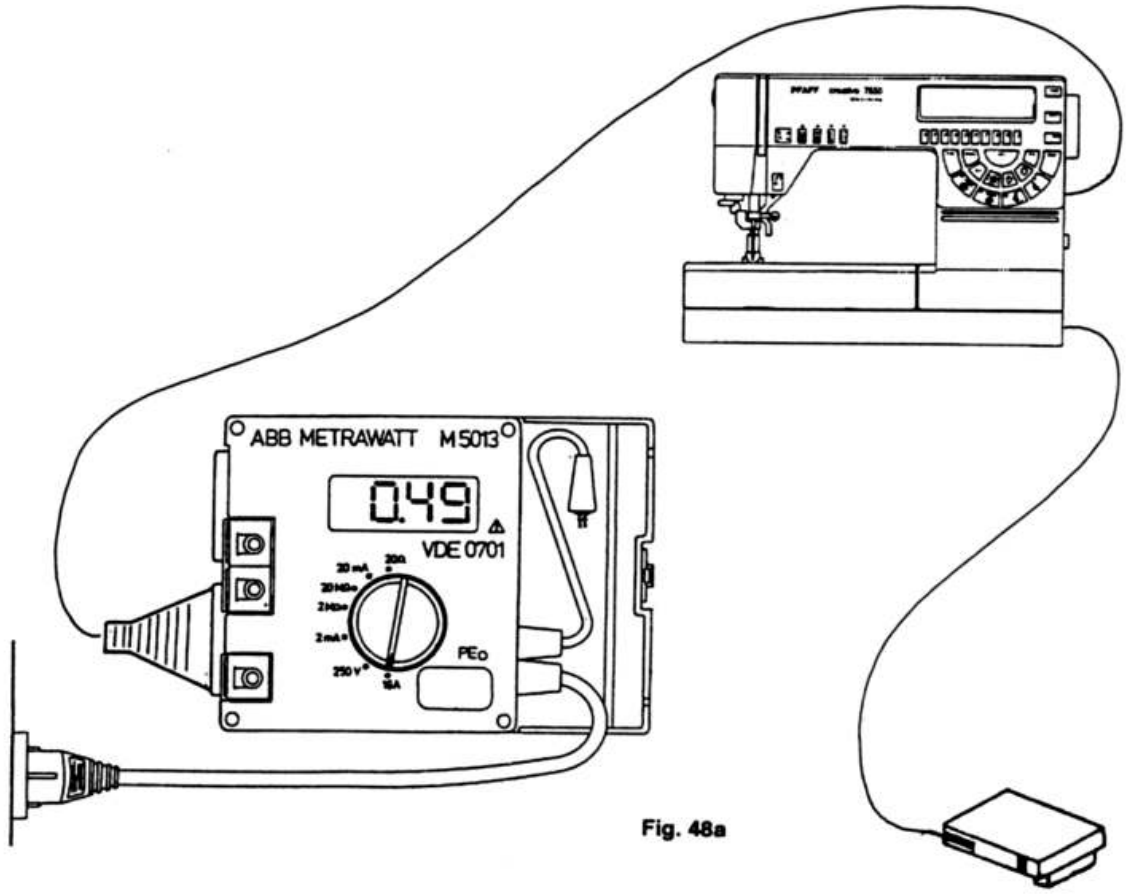


Fig. 48a

49. Stray current test of complete motors with ABB Metrawatt M 5013

V) Stray current test of complete motors

- When exchanging complete motors or motor parts (windings, rotors or capacitors), the complete motor must be measured for stray current before fitting in the machine.
- Set knob for measuring range at "20 mA" (fig. 49).
- Screw on nut (part No. 92-320 068-05) at the motor.
- Push auxiliary angle plug (part No. 29-924 800-04) onto the motor plug.
- Attach the two test leads as shown in fig. 49.
- Meter reading: maximum 0.75 mA.

50. Measures required in case of inadmissible test values

As to I) If one of the 4 test functions is a failure, the ground mains socket is defective. Inform the landlord.

As to II) If the current consumption deviates considerably from the indicated value, although the machine does not bind, the motor is defective and must be exchanged or repaired.

As to III) If the insulation resistance drops below the required value, the defective components must be found by systematic checking and must be repaired or replaced.

As to IV) Here, the components with inadmissably high leakage current must also be found by systematic checking and must be repaired.

As to V) Send the motor to the factory.

Karlsruhe, 8 March, 1994

PH/HTSC

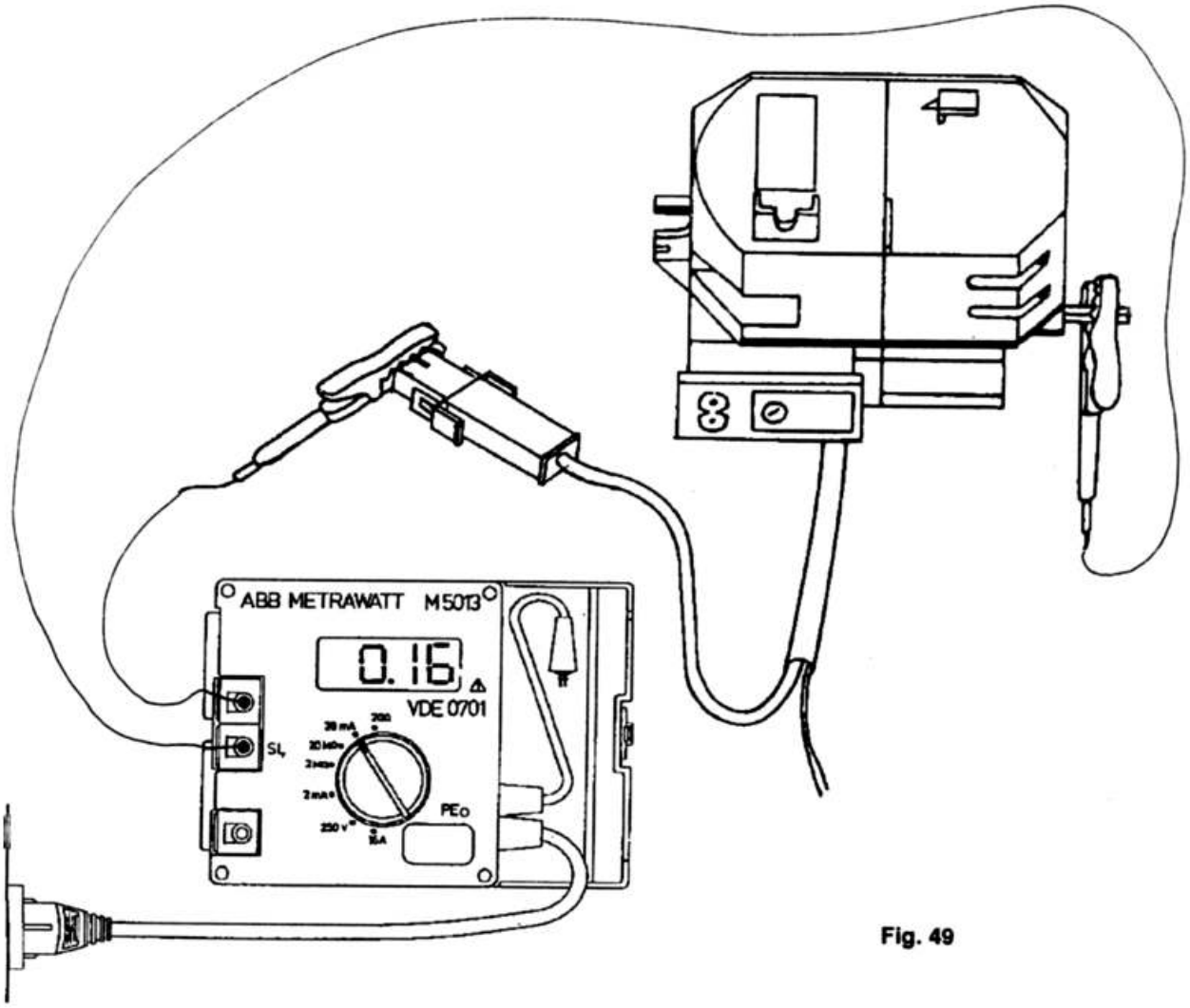


Fig. 49