This Adjustment Manual is valid for machines from the following serial numbers onwards:

#  6001000

1181
1183

Adjustment Manual

1181-D
1183-D
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13 Adjustment

On the PFAFF 1181 and 1183 do not use a screw clamp on the needle bar! The special coating of the needle bar could be damaged.

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

If not otherwise stated, the machine must be disconnected from the electrical power supply.

All following adjustments are based on a fully assembled machine and may only be carried out by expert staff trained for this purpose.

Machine covers, which have to be removed and replaced to carry out checks and adjustments, are not mentioned in the text.

The order of the following chapters corresponds to the most logical work sequence for machines which have to be completely adjusted. If only specific individual work steps are carried out, both the preceding and following chapters must be observed.

Screws, nuts indicated in brackets ( ) are fastenings for machine parts, which must be loosened before adjustment and tightened again afterwards.

13.01 Tools, gauges and other accessories for adjusting

- 1 set of screwdrivers with blade widths from 2 to 10 mm
- 1 set of wrenches with jaw widths from 7 to 14 mm
- 1 set of Allan keys from 1.5 to 6 mm
- 1 metal rule, (Part No. 08-880 218-00)
- 1 feed dog adjustment gauge, Part No. 61-111 639-71
- 1 adjustment pin (5 mm dia.), Part No. 13-033 346-05
- Adjustment gauge, part No. 61-111 639-70
- 1 adjustment gauge for tightening the hook drive belt, Part-No. 61-111 639-76
- Sewing thread and test material

13.02 Abbreviations

TDC = top dead center
BDC = bottom dead center

13.03 Explanation of the symbols

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

- Note, information

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

### 13.04 Checking and adjusting aids

With the aid of blocking pin 1 (part No. 13-033346-05) and if necessary adjustment gauge 3 (part No. 61-111 639-70) the machine can be blocked in the following positions for adjustment:

#### Needle bar position 1.8 mm past b.d.c.
- Turn balance wheel until needle bar is roughly in required position
- Insert blocking pin 1 in hole
- Turn balance wheel slightly back and forth until blocking pin engages crank 2

#### Needle bar position 0.6 mm past t.d.c.
- Set needle bar roughly at required position
- Place adjustment gauge 3 onto pins 4 and 5, making sure right side is used (for 30 or 36 mm needle bar stroke)

#### Needle bar position 0.6 mm past b.d.c.
- Set needle bar roughly at required position
- Place adjustment gauge 3 onto pins 4 and 5, making sure right side is used (for 30 or 36 mm needle bar stroke)
13.05 Adjusting the basic machine

13.05.01 Basic position of the machine drive

---

This adjustment is only required if toothed belt 2 has been removed.

**Requirement**

When the needle bar position is 0.6 mm above the BDC, the marks on the machine housing 3 and toothed belt wheel 1 must be flush with each other.

---

- Set needle bar at 0.6 mm past b.d.c.
- Turn toothed belt sprocket 1 according to **Requirement** and push on toothed belt 2.

---

*Fig. 13 - 02*
13.05.02 Preadjusting the needle height

**Requirement**
When the needle bar is positioned 1.8 mm above BDC, the mark on the needle bar must be flush with the bottom edge of the needle bar frame.

- Set needle bar at 1.8 mm past b.d.c. and block machine with blocking pin, see Chapter 13.04 Checking and adjusting aids.
- Move needle bar (screw), without turning it, according to the requirement.
13.05.03 Bottom feed neutral position

**Requirement**
At stitch length setting "0", cranks 1 and 3 must be flush and the feed dog must not make any feeding motion when the balance wheel is turned.

- [Fig. 13-04](#)

- Raise the presser foot and set the stitch length to "0".
- Turn crank 1 (screw 2) according to the requirement.
Adjustment

13.05.04 Neutral position of the needle feed (only on PFAFF 1181)

**Requirement**
At stitch length setting "0" the needle bar must not make any feeding motion when the balance wheel is turned.

- Set stitch length "0".
- Turn crank 1 (screw 2) according to Requirement.
13.05.05 Bottom feed lifting motion

**Requirement**
At stitch length setting "0" and needle bar position 0.6 past b.d.c. on the PFAFF 1181 and at needle bar position t.d.c. on the PFAFF 1183,
1. the bottom feed dog must be at its highest position,
2. control cam 3 must rest on lifting eccentric 1.

- Set stitch length "0" and set needle bar at required position
- Turn eccentric 1 (screws 2) according to Requirement 1.
- Adjust control cam 3 (screws 4) according to Requirement 2.
Bottom feed dog height

**Requirement**
When feed dog 1 is at its highest point at stitch length setting "0" it must
1. be centred in the feed slot crosswise and in feeding direction
2. Rest on feed dog adjustment gauge 2 over its entire length.

- Set stitch length at "0" and feed dog 1 at its highest position
- Raise the presser foot.
- Place feed dog adjustment gauge 2 on the needle plate cutout with the arrow in sewing direction so that it is flush with the front edge, and lower the presser foot onto it.
- Adjust feed bar 3 (screws 4) according to Requirement 1.
- Loosen screws 5 and 6.
- Adjust feed bar 3 or eccentric 7 according to Requirement 2.
- Tighten screws 5 and 6 firmly.
13.05.07 Feed dog motion of bottom feed dog

**Requirement**
With the needle bar at a position 0.6 past b.d.c. on the PFAFF 1181 or in position 0.6 past t.d.c. on the PFAFF 1183 the feed dog must not make any feeding motion when reverse-feed lever 3 is operated at the longest stitch length setting.

- Set the longest stitch and the needle bar at the corresponding position.
- Adjust eccentric 1 (loosen screws 2 a little) according to Requirement, but make sure it is not moved sideways.
**Requirement**
When the longest stitch length is set and the needle bar is positioned 0.6 mm past b.d.c., the needle should not move when the reverse-feed key 4 is operated.

- Bring the needle bar into the position 0.6 mm past t.d.c.
- Turn eccentric 1 (screws 2) until the adjustment pin 3 locks into place.
13.05.09 Needle in needle hole center (only on PFAFF 1183)

**Requirement**
The needle must penetrate the needle hole exactly in the middle.

- Set the needle in the needle hole.
- Loosen screws 1, 2 and 3.
- Move the needle bar frame 4 according to the requirement.
- Tighten screw 2 and turn screw 3 slightly.
- Via screw 1, bring the retracted guide bolt to the eye of the needle bar frame 4 and tighten it.
- Turn the handwheel a few times to prevent distortion to the needle bar frame 4.
- Tighten screw 3.
Adjustment

13.05.10 Needle to needle hole centre (on PFAFF 1181)

Requirement
The needle must enter exactly in the centre of the needle hole.

- Set stitch length "0".
- Set the needle in the needle hole by turning the balance wheel.
- Turn needle bar frame 1 (screws 2 and 3) according to Requirement.
Synchronous strokes of needle- and drop feed (only on PFAFF 1181)

**Requirement**
At the longest stitch length setting the needle and feed dog must move by the same stroke when the balance wheel is turned.

- Set the longest stitch.
- Turn eccentric 1 (nut 2) according to Requirement.
13.05.12 Hook shaft bearing and toothed belt tension

Requirement
1. The front edge of the hook shaft 6 must be at a distance of 14.5 mm to the needle center. At the same time, the slot in the hook shaft bearing 1 (see arrow) must be parallel to the bedplate and pointing opposite to the direction of sewing.
2. The toothed belt should be tightened in such a way that, when the gauge is pushed onto the toothed belt, the marking in the gauge window corresponds to the marking on the bushing.

- Align hook shaft bearing 1 (screw 2) according to requirement 1.
- Push the gauge (Part-No. 61-111 639-76) onto the toothed belt so that it is centred to the toothed belt and touching the bearing of the sliding shaft. The gauge window must be facing the hook.
- Eccentric 3 (screw 4) clockwise in accordance with requirement 2, taking care that the axial position of eccentric 3 is not altered.
The adjustment is only necessary if the wick has been replaced.

When replacing the wick, make sure that the new wick is impregnated with oil.

- Move the centrifugal disk 1 (screw 2) according to requirement 1.
- Check requirement 2. If necessary, move centrifugal disk 1.
**Adjustment**

13.05.14 Needle rise, hook-to-needle clearance, needle height and bobbin case position finger

<table>
<thead>
<tr>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>With the needle at 1.8 mm after BDC,</td>
</tr>
</tbody>
</table>

1. the hook point 6 must point to the middle of the needle and be at a distance of **0.05 mm - 0.1 mm** to the clearance cut of the needle, and

2. the top edge of the needle eye must be **0.8 mm** below the hook point.

3. Between the projection of the bobbin case position finger 4 and the bottom of the retaining groove there should be a distance of **0.5 mm**.

- Using the adjustment pin, position the needle bar at 1.8 mm after BDC.
- Adjust the hook according to **requirement 1**.
- Tighten screw 1.
- Move needle bar 2 (screw 3) without turning it according to **requirement 2**.
- Align bobbin case position finger 4 (screw 5) according to **requirement 3**.
13.05.15 Thread check spring and slack thread regulator

**Requirement**
1. The motion of the thread check spring must be completed when the needle point enters the material (spring stroke approx. **7 mm**).
2. When the thread loop is at its largest when going around the hook, the thread check spring must have moved by approx. **1 mm**.

- Turn thread tension 1 (screw 2) according to requirement 1.
- Turn thread tension 3 (screw 4) according to requirement 2.

Due to technical sewing reasons it may be necessary to deviate from the spring stroke indicated above.

Move the slack thread regulator 3 (screw 4) toward the ‘+’ (= more thread) or toward the ‘-’ (= less thread)
13.05.16 Position of knee lever

Requirement
1. When the knee lever is in its resting position, the axle 5 must be parallel to the bedplate.
2. When the presser foot is resting on the needle plate, the presser bar lifting lever 6 must be touching the circlip 8 lightly and be at a distance of approx. 1 mm from lifting piece 7.

- Lower the presser foot onto the needle plate.
- Turn shaft 1 (screws 2) according to Requirement 1.
- Turn screw 3 (nut 4) according to Requirement 2.
Knee lever stop

**Requirement**
When the knee lever is fully actuated,

1. the presser foot must be raised approx. 9 mm (or approx. 13 mm for a large needle bar stroke) above the needle plate, and
2. lever 3 must swing down automatically.

- Loosen nut 1 and unscrew screw 2 a few turns.
- Raise the presser foot and slide a 9 mm (for small needle bar stroke) or 13 mm (for large needle bar stroke) thick spacer under the presser foot.
- Swing down lever 3
- Move the knee lever until it is fully actuated. The presser foot must remain on the spacer.
- Now turn screw 2 as far as it will go.
- Turn screw 2 a half turn back and tighten nut 1.
Requirement
1. With the bobbin winder on, the drive wheel 1 must engage reliably.
2. With the bobbin winder off, the friction wheel 5 must not be driven by the drive wheel 1.
3. The bobbin winder must turn off automatically when the thread level is approx. 1 mm from the edge of the bobbin.

Move drive wheel 1 (screws 2) in accordance with requirement 1 and 2.
Move bolt 3 (screw 4) in accordance with requirement 3.
13.05.19  Limiting the stitch length

The maximum stitch length which can be selected can be limited mechanically.

When using Version A and B part sets, the maximum adjustable stitch length must **not** be larger than 3.0 or 4.5 mm (see chapter 3 Specifications)!

- Set the desired maximum stitch length with regulator disk 1.
- Move crank 2 (screws 3) down against stop 4.
**Adjustment**

13.05.20  Stitch length adaptation

**Requirement**
Forward and reverse stitches should have the same length.

- Turn eccentric 1 (screw 2) according to **Requirement**.

Fig. 13-20a
13.05.21 Presser foot pressure

**Requirement**
The material must be fed reliably. In the process, pressure marks on the material must not be made.

- Turn screw 1 in accordance with the requirement.
13.05.22 Modifying the needle bar stroke

The needle bar stroke is preset in the factory according to requirement. The needle bar stroke can be modified later if specific operating conditions make it necessary to do so.

When the needle bar stroke is altered, it is absolutely necessary to readjust the needle height! With a 36 mm needle bar stroke, the maximum speed must be limited to 3800 spm.

- Via the hand wheel, turn crank 1 until the screws 2 can be accessed from the side opening of the housing.
- Turn eccentric 3 (screws 2) as far as possible toward '+' (= large needle bar stroke) or toward '-' (= small needle bar stroke).
- Adjust needle height (see chapter 13.05.02 Preadjusting the needle height and/or chapter 13.05.14 Needle rise, hook-to-needle clearance, needle height and bobbin case position finger).
13.06 Adjusting the edge trimmer –731/01

13.06.01 Zero position of the knife

Requirement
With the edge trimmer switched off, the knife should not move when the balance wheel is turned.

- Turn crank 1 (screw 2) according to the requirement.
Requirement

With the edge trimmer switched on and the needle bar at its t.d.c. on the PFAFF 1183, or at its b.d.c. on the PFAFF 1181, the knife should be at the top of its stroke.

- Switch on the edge trimmer and bring the needle bar to t.d.c. or b.d.c. (see requirement).
- Turn eccentric 1 (two screws 2) according to the requirement.
13.06.03 Knife height

**Requirement**
When the knife is at the bottom of its stroke, the front edge of the knife blade should be approx. 0.5 mm below the top edge of the stationary knife.

- Switch on the edge trimmer and bring the knife to the bottom of its stroke.
- Adjust knife 1 (screws 2) according to the requirement.
13.06.04 Knife position in sewing direction

Requirement
When the needle is at its b.d.c., the centre of the knife blade should be positioned at "needle centre".

- Adjust knife bracket 1 (screw 2) according to the requirement.
13.06.05  Knife position crosswise to sewing direction

Requirement
The knife should be resting on the stationary knife 3 with light pressure.

Fig. 13 - 27

- Adjust knife bracket 1 (screw 2) according to the requirement.
13.07 Adjusting the thread trimming device -900/24

13.0.01 Adjusting the solenoid / preliminary adjustment of the control cam

**Requirement**

1. When solenoid 3 is completely extended, roller lever 4 should be at the lowest point of the control cam.
2. When the needle bar is positioned at 1.8 mm after b.d.c. (needle rise position), roller lever 4 should engage in the appropriate recess of the control cam.

- Adjust solenoid holder 1 (screws 2) in accordance with requirement 1.
- Adjust control cam 5 (screws 6) in accordance with requirement 2.
Lateral alignment of the thread catcher

**Requirement**
1. The tip of the thread catcher 5 must point exactly to the center of the needle.
2. The thread catcher 5 must be horizontal. It must not graze anything when it is operating.

- Remove knife 1 (screw 2).
- Move needle bar to its BDC.
- Loosen stop 3 (screws 4).
- Position thread catcher 5 (screw 6) manually in front of the needle.
- Align thread catcher 5 (screws 7) according to the requirements.

For further adjustments, leave knife 1 removed and stop 3 loosened.
Adjustment

Knife position

**Requirement**

1. There must be a distance of **4 mm** between the cutting edge of the knife and the needle.
2. The right edge of the knife 1 must not extend beyond the right edge of the thread catcher (see arrow).

- Bring the needle bar to BDC.
- Slide knife 1 under the locking tab and align according to **requirement 1**.
- Tighten screw 2 lightly.
- Adjust thread catcher carrier 3 by hand until the wedge point in the thread catcher is positioned just in front of the cutting edge of the knife.
- Align knife 1 according to **requirement 2** and tighten screw 2.
13.07.04 Front point of reversal of the thread catcher

**Requirement**
At the front point of reversal of thread catcher 4, the tip of the thread catcher cutout should be **1 mm** in front of the bobbin case position finger 5.

- Position roller lever 1 at the lowest point of the control cam.
- Adjust bush 2 (screws 3) according to the requirement.

Fig. 13 - 31
**Adjustment**

13.07.05 Manual trimming check

**Requirement**
Two threads must be cut perfectly both left and right in the cutout of thread catcher 1.

- Move thread catcher 1 by hand to its front point of reversal.
- Double the thread and insert into catcher cutout.
- Carry out trimming operation manually.
- If the threads are not cut according to the requirement, align thread catcher 1 (screws 2) with knife 3 accordingly.
- Move stop 4 against thread catcher 1 and tighten screws 5.
- Check chapter 13.07.02 Lateral alignment of the thread catcher, and readjust if necessary.
13.07.06 Needle thread tension release

Requirement
1. The magnet lift should be 1.5 mm.
2. When the magnet 5 is operated by hand, there should be a distance of at least 0.5 mm between the tension discs 6.

- Adjust disc 1 (nuts 2) according to the requirement.
- Adjust screw 3 (nut 4) according to the requirement.
Adjustment

13.07.07 Readjusting the control cam

**Requirement**
When the take-up lever is in its t.d.c., control cam 1 should have moved thread catcher 3.

- Adjust control cam 1 (screws 2) according to the requirement.
Adjustment

13.08 Adjusting the thread wiper -909/04

13.08.01 Thread wiper movement

Requirement
1. The thread wiper 5 must not strike against anything when it is moving.
2. When the take-up lever is at TDC, the thread wiper 5 is to move under the needle point and clear it by approx. 1 mm when the engaging solenoid 2 is operated.

- Bring the take-up lever to TDC.
- Loosen screws 1.
- Push thread wiper 2 parallel to the bedplate to the very top and tighten screws 1 slightly.
- Turn bracket 3 (screw 4) according to requirement 1.
- Move thread wiper 2 parallel to the bedplate according to requirement 2.
- Tighten screws 1.
Requirement

Seen from the direction of sewing

1. The point of the thread wiper 5 must be approx. 1 - 1.5 mm to the right of the needle, and
2. The thread wiper 5 must be approx. 2 mm in front of the needle in its foremost position.

Fig. 13 - 36

- Slide bracket 1 (screw 2), without turning it, on the shaft according to requirement 1.
- Turn rod 3 (nut 4) according to requirement 2.
13.09 Adjusting the automatic presser foot lift -910/06

**Requirement**
When the automatic presser foot lift is operated, the clearance between the presser foot and the needle plate must be 9 mm for a small needle bar stroke and 13 mm for a large needle bar stroke.

- Move magnet 1 (screw 2) according to the requirement.
13.10 Adjusting the back-tacking mechanism –911/37

Regel
When the longest stitch length is set, the reverse-feed control switch 3 operated and the plunger extended, lever 1 should not touch the bed-plate.

- Adjust lever 1 (screw 2) according to the requirement.
13.11 Parameter settings

13.11.01 Selecting the user level

● Switch on the machine.

2 x TE/Speed ● Press the TE/Speed key twice to call up the input mode.

● By pressing the corresponding +/- key select the parameter group “798”.

● By pressing the corresponding +/- key select the desired user level:

"0" = operator level A
"1" = technician level B
"11" = service level C

The selected user level is displayed on the screen. (see arrow)
13.11.02 Example of a parameter input

- Switch on the machine.
- Press the TE/Speed key twice to select the input mode.

- By pressing the corresponding plus/minus key select parameter "798" and the desired user level, see Chapter 13.11.01 Selecting the user level.

- Select parameter "607" by pressing the corresponding +/- key.

- Select the required value for the maximum speed by pressing the corresponding +/- key.
- By pressing the TE/Speed key the selected value is taken over and the machine switches to the sewing mode.
## Liste der Parameter

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<th>Gruppe</th>
<th>Parameter</th>
<th>Bedeutung</th>
<th>Nutzer-ebene</th>
<th>Einstell-bereich</th>
<th>Einstell-wert</th>
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<td>1</td>
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<td>Speed display</td>
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<td>4000</td>
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<td>700</td>
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<td></td>
<td>702</td>
<td>Needle position 1 (needle lowered)</td>
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<td>703</td>
<td>Needle position 2 (take-up lever raised)</td>
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<td></td>
<td>798</td>
<td>User level</td>
<td>A, B, C</td>
<td>0, 1, 11</td>
<td>0</td>
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<td></td>
<td>799</td>
<td>Selected machine class</td>
<td>C</td>
<td>1 - 3</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>800</td>
<td>Rotating direction of the motor</td>
<td>C</td>
<td>0 - 1</td>
<td>0</td>
</tr>
</tbody>
</table>

Further parameters are listed in the **Motor Instruction Manual**.
13.11.04 Reset / Cold start

After selecting the reset menu, by pressing the corresponding key it is possible to delete seam parameters, delete seam programs and to carry out a cold start.

Press and hold "+" on keys A and D and switch on the machine, see Chapter 7.01 Main switch.

---

Resetting the seam parameters

Press "+" on key "A".

All parameters are deleted, the display "—rE—" appears for a short time on the screen.

Resetting the seam programs

Press "+" on key "B".

All seam programs are deleted, the display "—rE—nA" appears for a short time on the screen.

Cold start

Press "+" on key "D".

With the exception of the value for the machine class, the values of the machine control unit are set back to their basic values, the display "—COLd—" appears for a short time on the screen.

After the cold start all programmed values are set back to their status at the time of delivery. For this reason after a cold start it is necessary to re-enter first the parameter "799" and then the parameter "700".
13.12 Internet update of the machine software

The machine software can be updated with PFAFF flash programming. For this purpose the PFP boot program and the appropriate control software for the machine type must be installed on a PC. To transfer the data to the machine, the PC and the machine control unit must be connected with an appropriate null modem cable (part no. 91-291 998-91).

The PFP boot program and the control software of the machine type can be downloaded from the PFAFF-homepage using the following path:

www.pfaff-industrial.com/de/service/download/steuerungssoftware.html

To update the machine software carry out the following steps:

- Switch off the machine.
- Connect the PC (serial interface or appropriate USB-adapter) and the machine control unit (RS232).
- Switch on the PC and start the PFP boot program.
- Select the machine type.
- Press the "programming" button.
- An extra program (quick loader) is started.
- Switch on the machine within 60 seconds.
- The software update is carried out, the update progress is shown on the bar display.
- When the update has been completed, the message "software update successfully completed" appears.

If this message does not appear, the entire procedure must be repeated!

The machine is not safe for operation until the programming has been completed successfully and without faults.

- Switch off the machine and end the quick loader and PFP boot program.
- End the connection between the PC and the machine control unit.
- Switch on the machine.
- A plausibility control is carried out and, if necessary, a cold start.

More information and assistance is at your disposal in the file "PFPHILFE.TXT", which can be called up from the PFP boot program by pressing the "help" button.
13.13 Explanation of the error signals

<table>
<thead>
<tr>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>E001</td>
<td>Pedal not in neutral position</td>
</tr>
<tr>
<td>E009</td>
<td>Start inhibitor during standstill</td>
</tr>
<tr>
<td>E010</td>
<td>Incorrect machine class</td>
</tr>
<tr>
<td>E062</td>
<td>Short circuit 24V</td>
</tr>
<tr>
<td>E063</td>
<td>Overload mains supply circuit</td>
</tr>
<tr>
<td>E064</td>
<td>Network monitoring</td>
</tr>
<tr>
<td>E065</td>
<td>Extint low in operation</td>
</tr>
<tr>
<td>E066</td>
<td>Short circuit</td>
</tr>
<tr>
<td>E067</td>
<td>Network off</td>
</tr>
<tr>
<td>E068</td>
<td>Extint low in operation</td>
</tr>
<tr>
<td>E069</td>
<td>No increments</td>
</tr>
<tr>
<td>E070</td>
<td>Motor blocking</td>
</tr>
<tr>
<td>E071</td>
<td>No incremental connector</td>
</tr>
<tr>
<td>E074</td>
<td>External transmitter for synchronisation marker missing</td>
</tr>
<tr>
<td>E088</td>
<td>RAM defective</td>
</tr>
<tr>
<td>E092</td>
<td>Start inhibitor when motor running</td>
</tr>
<tr>
<td>E173</td>
<td>Start error</td>
</tr>
</tbody>
</table>
Circuit diagrams

Circuit diagram reference list

A1  Controller Quick P40 ED  
A2  Keyboard on machine head  
A3  Sewing head recognition system  
A4  Control panel S1  

H1  Sewing lamp  

M1  Sewing motor  

Q1  Main switch  

S1  Pedal speed control unit  

A2/S1  Bartack key on  
A2/S2  Needle position change key  
A2/S3  Bartack suppression key  
S4  Suction OFF key  
S6  Start inhibitor key  

X1  Motor  
X2  Increment transmitter  
X3  Speed control unit  
X4  Control panel S1  
X5  Outputs-inputs  
X6  Photoelectric barrier (optional)  
X7  Bobbin thread monitor (optional)  

Y1  Motor running signal or suction  
Y2  -900/. Thread trimmer  
Y3  -909/. Thread wiper  
Y4  -910/. Automatic presser foot lift  
Y5  -911. Backtacking mechanism  
Y8  Thread tension release
Ausgänge = [A1, ...]
Eingänge = [E1, ...]
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