

**adler**

**120**

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**Information**  
**Function**  
**Adjustment**  
**Trouble shooting leads**

**Informations**  
**Fonctions**  
**Réglages**  
**Indications en cas de panne**

**Informaciones**  
**Funciones**  
**Ajustes**  
**Eliminar perturbaciones**



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This booklet is written in three languages. The sequence is English, French and Spanish. Only the illustrations are to be found once at the end of the booklet. In order to facilitate finding the desired language, the first page of each language is marked at the top as follows:

E = at the beginning of the English text (Page E 1 – E 12)

F = at the beginning of the French text (Page F 1 – F 13)

S = at the beginning of the Spanish text (Page S 1 – S 13)

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Ce livre est rédigé en trois langues, dans l'ordre suivant. Anglais, Français, Espagnol. Les illustrations pour le trois langues se trouvent représentées une seule fois à la fin de ce livre. Pour que vous puissiez trouver facilement le texte dans le langue qui vous interesse, nous avons mentionné à la première page de celui-ci la designations suivante:

E = Anglais (Page E 1 – E 12)

F = Français (Page F 1 – F 13)

S = Espagnol (Page S 1 – S 13)

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Este libro es escrito en tres idiomas y en la sucesión. inglés, francés, español. Solamente las ilustraciones se hallan una vez al fin de este libro. Para facilitar hallar el idioma deseada, hemos marcado la primera página de cada lengua como sigue:

E = al principio del texto inglés (Páginas E 1 – E 12)

F = al principio del texto francés (Páginas F 1 – F 13)

S = al principio del texto español (Páginas S 1 – S 13)

This compendious Book serves for quick information of the sewing machine mechanic when carrying out repairs. We assume standard installations, disassemblies etc. to belong undoubtedly to the technical education of a sewing machine mechanic.

They are not mentioned herein.

Therefore this book contains a brief survey on the main functions, the necessary adjustments and their values.

It also refers to the elimination of faults.

The values and hints for practical use are classified in four main groups:

- technical information
- survey on functional cycles
- adjustments
- indications to faults

The first two items serve the purpose to carry out better and faster the adjustments and hints explained thereafter by the knowledge of data and mechanical functions they render.

These specifications were based on a machine being wrongly adjusted.

Therefore please also check the adjustments previously explained when carrying out a single setting.

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## Technical information

### Technical equipment:

|                                              |                                                                           |
|----------------------------------------------|---------------------------------------------------------------------------|
| type:                                        | heavy flat bed sewing machine                                             |
| number of needles:                           | single needle                                                             |
| type of stitch:                              | double lock - straight stitch (stitch type 301)                           |
| type of feed:                                | bottom feed                                                               |
| shuttle:                                     | 1 medium barrel shuttle                                                   |
| thread take up:                              | curved thread take up                                                     |
| devices (for the corresponding sub-classes): | gear, circle sewing device, movable presser foot, comprising presser foot |

| Technical data:        |            | -2              | -7A                | -8A             |
|------------------------|------------|-----------------|--------------------|-----------------|
| stitches/min           | max:       | 600             | 260/400 or 350/550 | 350/550         |
| max. stitch length     | mm:        | 16              | 12                 | 12              |
| max. presser foot lift | mm:        | 20              | 40                 | 40              |
| passage space          | mm:        | 470x200         | 470x200            | 470x200         |
| size of basic plate    | mm:        | 730x250         | 730x250            | 730x250         |
| needle system          | :          | 704             | 100 1eO            | 1001            |
| no.                    | :          | 160-250         | 200-280            | 200-280         |
| yarn                   | linen:     | 25/3-18/4 times | 25/3-18/4 times    | 25/3-18/4 times |
|                        | synthetic: | 20/3-11/3 times | 20/3-11/3 times    | 20/3-11/3 times |
| revolutions of motor   | :          | 1400            | 1400               | 1400            |
| motor disc Ø           | mm:        | 80              | 80                 | 80              |
| driving wheel disc Ø   | mm:        | 186             | 100/153            | 100/153         |
| power demand           | W:         | 370             | 370                | 370             |
| weight                 | kg:        | 80              | 105                | 90              |
|                        |            | -17B            | -20                |                 |
| stitches/min           | max:       | 350/550         | 600                |                 |
| max. stitch length     | mm:        | 12              | 12                 |                 |
| max. presser foot lift | mm:        | 30              | 16                 |                 |
| passage space          | mm:        | 470x200         | 470x200            |                 |
| size of basic plate    | mm:        | 730x250         | 730x250            |                 |
| needle system          | :          | 1000 L          | 794                |                 |
| no.                    | :          | 200-280         | 100-250            |                 |
| yarn                   | linen:     | 25/3-18/4 times | 25/3-18/4 times    |                 |
|                        | synthetic: | 20/3-11/3 times | 20/3-11/3 times    |                 |
| revolutions of motor   | :          | 1400            | 1400               |                 |
| motor disc Ø           | mm:        | 80              | 80                 |                 |
| driving wheel disc Ø   | mm:        | 100/153         | 186                |                 |
| power demand           | W:         | 370             | 370                |                 |
| weight                 | kg:        | 80              | 80                 |                 |

## Survey on functional cycles

### Needle drive

Up and down movement of the needle bar is effected: from hand-wheel 1, page 200, to the arm shaft 2, the curve 3, the needle bar connecting link 4 (with bolt), the needle bar clutch 5 and thus to the needle bar 6.

### Shuttle

The shuttle movement of the barrel shuttle is effected: from hand-wheel 1 to the arm shaft 2, the connecting bar 7, the rocking shaft 8 with bolt which produces the to and fro movement, the slide block 9 (with bolt), the shuttle crank 10, the driving shaft 11 and the barrel shuttle 12 being led in the shuttle basket 13.

### Feeding

The feed movement results from the co-operation of two moving mechanics:

the feed dog traverse and  
the feed dog lift.

The feed dog traverse is effected:

from handwheel 1 to the arm shaft 2, the excenter 14, the fork 15 (with bolt), the feed movement of the same (stitch length) now depends on the position of the stitch regulator connecting link 16 at the angle 17 which is influenced (displaced) by swivelling the handle 18 up and down, the feed crank 19, the feed shaft 20, the beam 21 (with bolt), and to the feed dog 22.

The feed dog lift is effected:

from handwheel 1 to the arm shaft 2, the pull rod 7, the rocking shaft 8 (with lift excenter), the fork 23, the lift shaft 24, the crank 25, the beam 21, and the feed dog 22.

## Adjustments

### Adjustments of sub-classes 120-2; -7A; -8A; -17B; -20

Prior to every adjustment make sure that all screws of the operating mechanism are well tightened (and sit on the corresponding surface or groove).

### Adjust barrel shuttle (loop lift, needle space, needle height)

Necessary adjusting gauges:

loop lifting gauge 7 mm

component no. 981 15 001 8 for sub-classes 120-7; -20.

loop lifting gauge 8 mm

component no. 981 15 001 9 for sub-classes 120-7A; -8A; -17B

block

component no. 981 15 000 2

1. Needle system 794 no. 200 (for sub-classes 120-2; -20)  
1001 no. 200 (for sub-classes 120-7A; -8A) and  
1000 L no. 200 (for sub-class 120-17B)  
to be used.
2. Turn handwheel (towards the operator) until the needle has reached the lowest position.
3. In this position the space between needle and shuttle point has to be 0,1 mm. Fig. 1, page 201. Correct it in the following way:
4. slacken screw 31, fig. 3, and remove the shuttle basket 32 accordingly.  
Now the space between needle and hook has been adjusted.
5. The adjustment of the needle protection specified hereafter has to be effected only if a new driving shaft will be installed, since normally the needle is always protected by pinning the driving shaft.
6. Turn handwheel (towards the operator) until the needle eye 33, fig. 4, matches with upper edge of shuttle driver 34. In this position has to be 0,2 mm space between needle and righthand driver wall. Correct it as follows:

7. Screw off shuttle race.
8. Knock out the pin of the (old) driver shaft.
9. Slacken set ring screws 35, fig. 4.
10. Pull out driver shaft 36.
11. Fit in new driver shaft and displace it to the extent until the necessary space is given between needle and righthand driver wall.
12. Fasten the collars with screws 35, fig. 4, page 201, but not yet pin the shaft.  
Now the needle protection has been set.
13. Turn the handwheel (towards the operator) until the needle has reached the lowest position.
14. Place loop lifting gauge 37, fig. 1, Page 202, (depending on subclass either 7 or 8 mm) on block 38, fig. 2, and move them both on the needle bar upwards until the loop lifting gauge touches the top, fig. 3.
15. Tighten the block through screw 39.
16. Pull away loop lifting gauge 37.
17. Turn handwheel (towards the operator) until the block stumbles against the top.
18. Press barrel shuttle with nose 40 to the driver wall 41, fig. 4.
19. In this position the upper edge of the needle eye has to match with the lower edge of the shuttle point, fig. 5. Correct it in the following manner:
20. Slacken screws 42, fig. 6.
21. Displace the needle bar accordingly.
22. Tighten screws 42.
23. Only if the driver shaft has been newly installed and not yet pinned:  
turn driver shaft 36, fig. 4, page 201, until the point of the shuttle matches with the righthand edge of the needle, fig. 5.
24. The new driver shaft can now be fixed with a pin.  
Thus the loop lifting is adjusted.

### Adjust free motion of feed dog in the needle plate

1. Set stitch regulator lever to longest stitch.
2. Turn handwheel (towards the operator) and check whether feed dog strikes at the edge of the needle plate in the rear. Distance 43 of fig. 1, page 203. Correct in the following way:
3. Slacken screw 44, fig. 3.
4. Adjust the feed dog accordingly.
5. Tighten screw 44.
6. Set stitch regulator lever to „0“.
7. Turn handwheel (towards the operator) and check whether feed dog strikes at the edge of the needle plate in the front.  
For correction refer to points 3–5.

### Adjust subsequent movement of feed dog

1. Turn handwheel (towards the operator) until the thread lever is in the highest position and the feed dog in the hindmost one. When turning the handwheel further, the feed dog has to push behind one further tooth in this position before sinking underneath the needle plate. Fig. 2 (shows feed dog with normal toothing).
2. Unscrew the rear arm cover.
3. Slacken screws 45, fig. 4.
4. Turn excenter 46 accordingly.
5. Tighten screws 45 again.

### Adjust the feed dog lift

This is not necessary, since the setting excenter is firmly connected with the oscillating rocker and therefore exactly indicates the lift and/or movement all the time.

### Adjust the feed dog height

1. Turn the handwheel (towards the operator) until the feed dog has reached the highest position. In this position the feed dog has to be above the top edge of the needle plate at a distance of one tooth height, fig. 2.  
Correct in the following way:

2. Slacken screw 47, fig. 3, page 204.
3. Vertically adjust the feed dog beam 48.
4. Tighten screw 47 again.

#### Adjust height of presser bar

Setting gauge required:

log of measurement for sub-class:

120-2; -20 = 16 mm

120-7A; -8A = 40 mm

120-17B = 30 mm

1. Tuck up the lifter lever.
2. Fasten the presser foot.
3. Place gauge 49 (height depending on sub-class) underneath the sole of the presser foot on the needle plate, fig. 1.
4. Slacken screw 50.
5. Push the presser bar 51 down to the log of measurement.
6. Tighten screws 50. Remove log of measurement.

#### Adjust thread check spring

1. Slacken screw 52, fig. 4.
2. Put spring 53 abt. 8 mm to the right of screw hole 54.
3. Tighten screw 52 without displacing the spring.  
Now the thread check spring is set to tension.
4. The regulator 55 now has to be adjusted according to the thickness of the fabric.
5. Slacken screw 56 and displace regulator in the long hole.  
Screw set in the middle of long hole = medium fabric.  
Screw set to the right in long hole = thicker fabric.  
Take care that spring will contact stop 57.
6. Bend the eye of check spring 58 until middle of eye will match with middle of thread roll, fig. 5.

#### Indication to faults

Faults can have various reasons. We have therefore picked up the most frequent faults and have given indications for their elimination.

At all events it will be necessary to check the machine for proper adjustment (see under "adjustments"). In most cases the faults can thus be eliminated.

#### 1. Tearing of thread

1. The thread ways are jagged:  
check all thread guiding parts and polish them; observe the course of thread according to operator's guide.
2. Wrong threading:  
follow the course of thread according to the operator's guide.
3. Tossed, curved or wrong needle:  
insert new needle.
4. Needle is too high:
5. Needle is too deep:  
insert needle until it reaches the stop.
6. Wrong proportion from needle to thread:  
follow the instructions. Only use trade-marked threads of thickness and twist as indicated. Do not use threads having been stored too long and dry.
7. Needle threaded from the wrong side:  
Always thread the needle from the long-grooved side. Follow the instructions of the operator's guide.
8. Stitch hole pierced:  
slightly crack the edges, polish the stitch hole. If necessary screw on new needle plate and/or feed dog.
9. Stitch hole too small and/or needle thread too thick:  
insert needle plate and/or feed dog with larger hole or refinish the stitch hole. Use needle thread as indicated. Observe the right proportion from needle to thread.
10. Barrel shuttle heavily worn out. Sharp edges:  
insert new barrel shuttle and adjust it according to pages 6—9.
11. The screw of the bobbin case tensioning spring is too high, the thread gets caught:  
screw in the screw sufficiently. If — owing to this — the tension is too heavy, slightly rebend the tension spring.

12. The barrel shuttle seizes the needle thread loop either too late or too early:  
adjust the barrel shuttle and/or loop lift.
13. Tension too heavy:  
adjust the tension according to the fabric to be sewn.
14. Knotty and cracked thread:  
only use trade-marked threads of the thickness and twist as indicated.

## 2. Breaking of needle

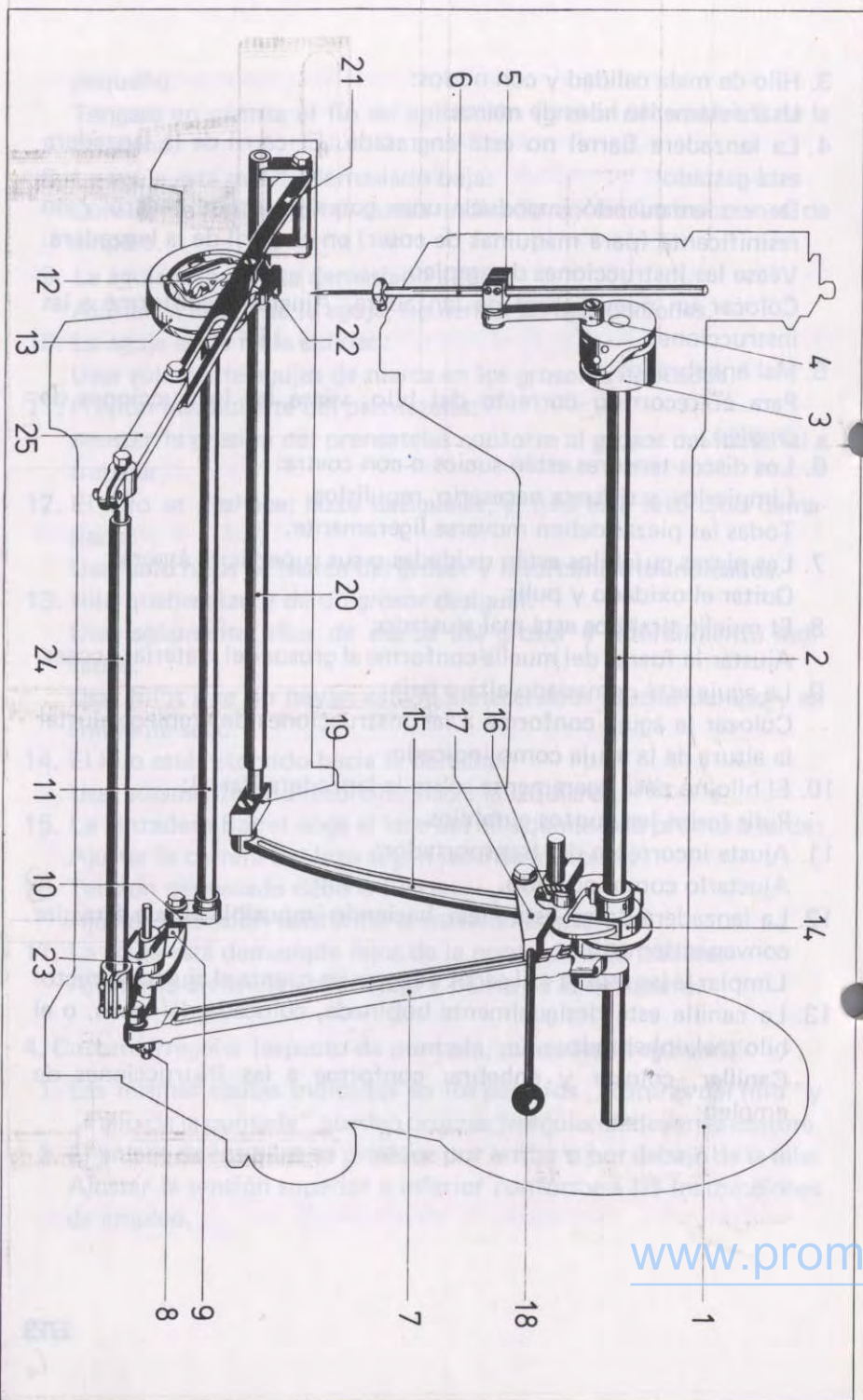
1. Barrel shuttle adjusted wrong:  
adjust barrel shuttle.
2. Needle bent, is seized by point of barrel shuttle:  
insert new needle according to page 3.
3. Needle too thin for stitch hole or fabric:  
use needle system and thickness employed as indicated. When sewing with thick needles, use needle plate and/or feed dog with larger stitch hole.
4. Proportion from needle to yarn is wrong:  
follow the specifications.
5. Knotty or uneven thread:  
only use trade-marked yarns of the thickness and twist as indicated. Do not use yarns having been stored too long and dry.
6. Needle breaks when entering the fabric and/or subsequent feed and needle position do not match:  
adjust as indicated.
7. Bobbin case (bell) not properly swivelled in:  
press bobbin case once again until snap shutting is heard.
8. Shuttle race run out:  
insert a new shuttle race.
9. Needle drops out while sewing. Set screw clamps the needle no longer:  
check the set screw and insert a new one, if necessary.
10. Needle bar completely worn out:  
install a new needle bar.
11. Thread tension too strong, needle bends or is seized by the shuttle point:  
set the right tension according to the sewing fabric.

## 3. Skipped stitches

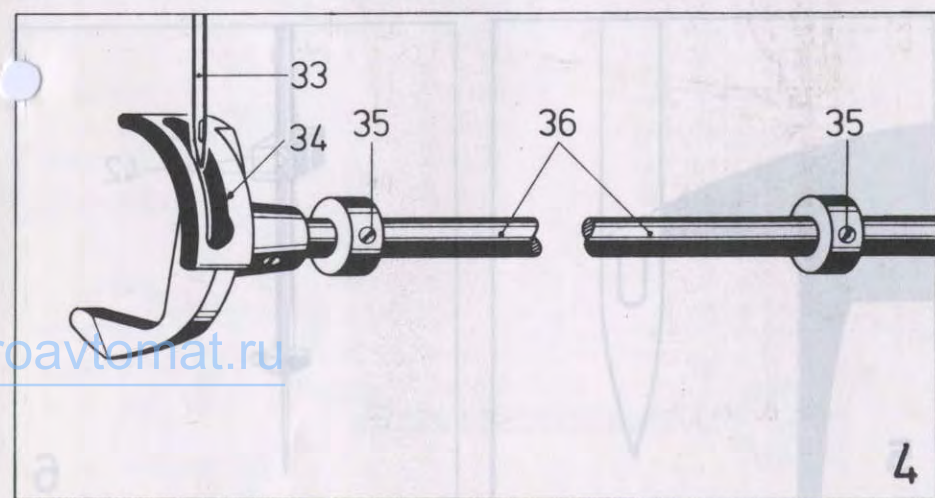
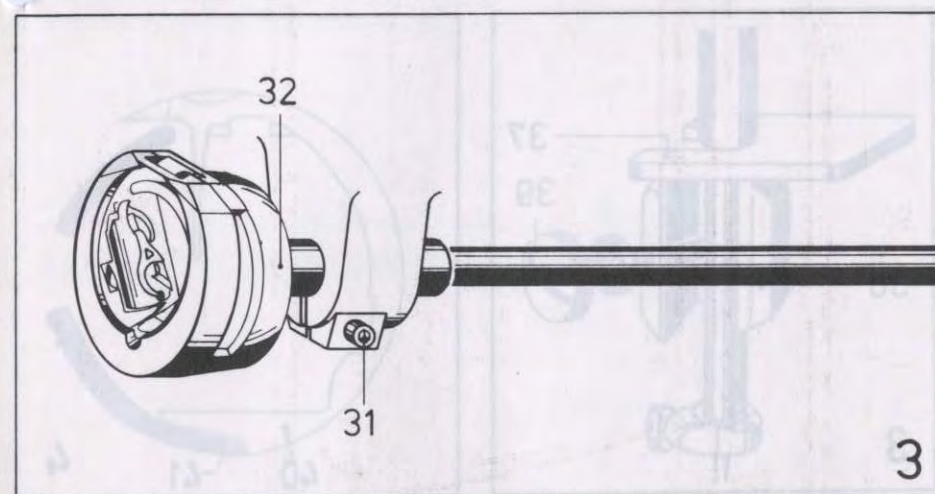
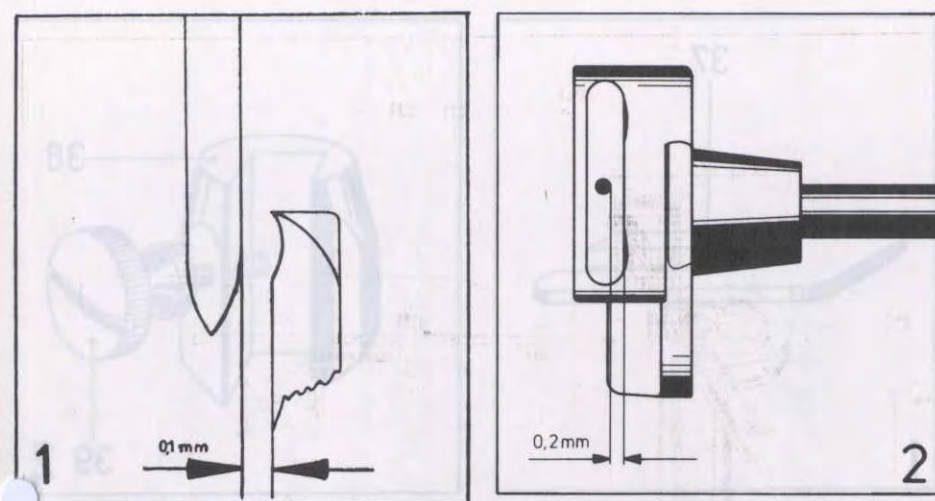
1. Needle wrong, bent or not inserted properly:  
insert new needle, for needle system and needle number as referred. Correct insertion specified in operator's guide.
2. Wrong threading:  
follow the course of thread according to the operator's guide.
3. The taking-up of thread is not correct:  
adjust the thread check-spring.
4. Barrel shuttle adjusted wrong:  
follow the correct adjustment.
5. Proportion from needle to yarn is not right:  
observe the needle system, number and thickness of yarn.
6. Barrel shuttle damaged:  
tool and polish the point of the barrel shuttle. Possibly insert new barrel shuttle.
7. Stitch hole too big. Fabric is pulled in:  
use needle plate and/or feed dog with smaller stitch hole. Observe applicability (thickness of material) of machine.
8. Needle is set too deep:  
insert needle according to operator's guide.
9. Needle is set too high:  
adjust needle height.
10. Bad needle quality:  
only use brand-marked needles of widths as indicated.
11. Insufficient pressure of presser foot:  
adjust the pressure of the presser foot according to the thickness of the fabric to be sewn.
12. Thread twists, uneven loop formation, thread is twined too much:  
only use brand-marked yarns of thickness and twist as indicated.
13. Thread is uneven and cracked:  
do not use yarns which have been stored too long and dry: only use brand-marked yarns of thickness and twist as indicated.
14. The thread is twisted clockwise:  
only use threads being twisted anti-clockwise.
15. Barrel shuttle takes thread loop too early or too late:  
adjust loop lifting.
16. Tension too loose or tight:  
adjust the tension according to the material to be sewn.
17. Needle is too far off the hook point:  
adjust the needle space to the hook point.

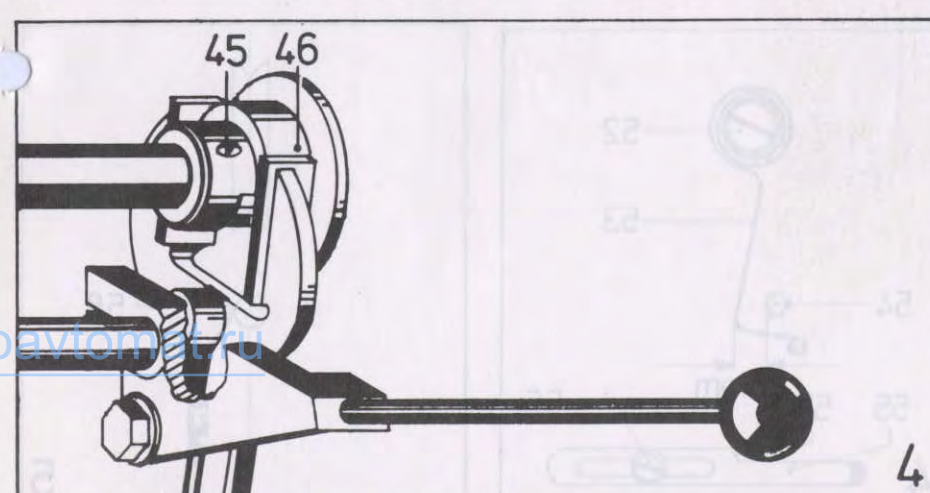
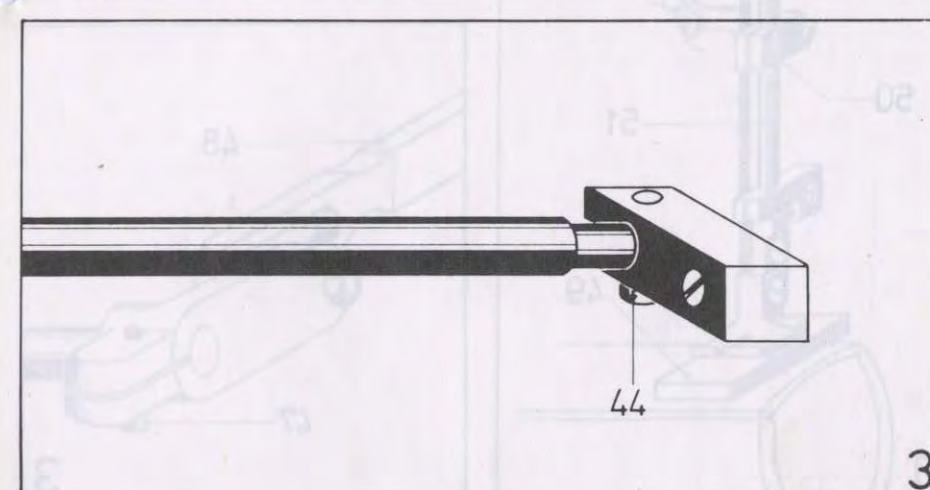
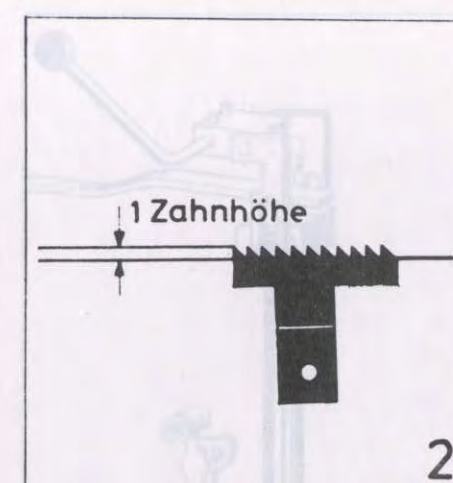
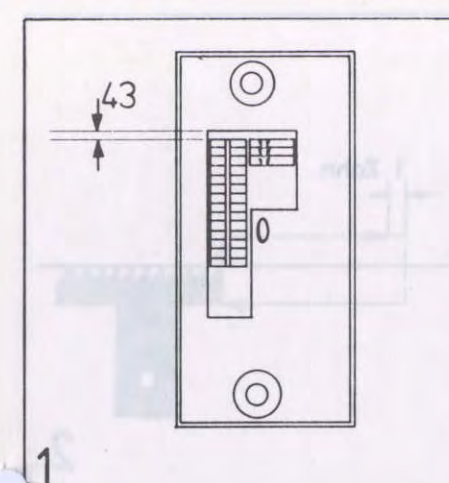
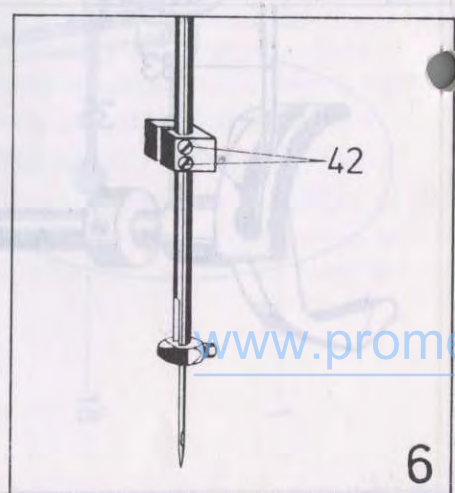
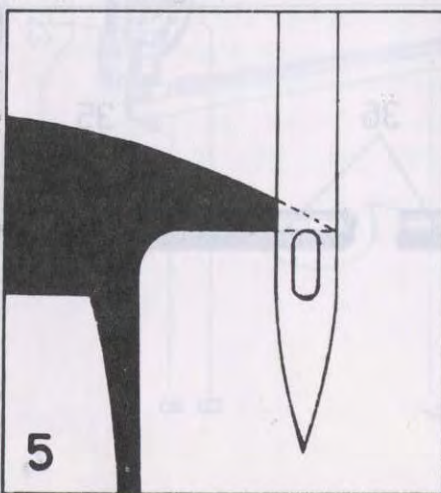
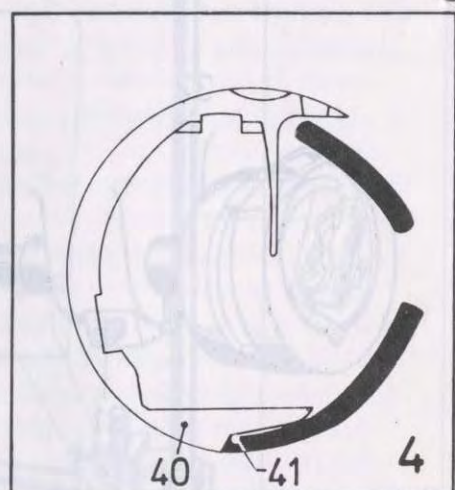
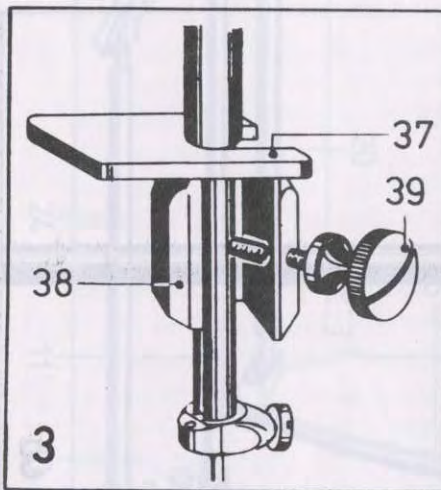
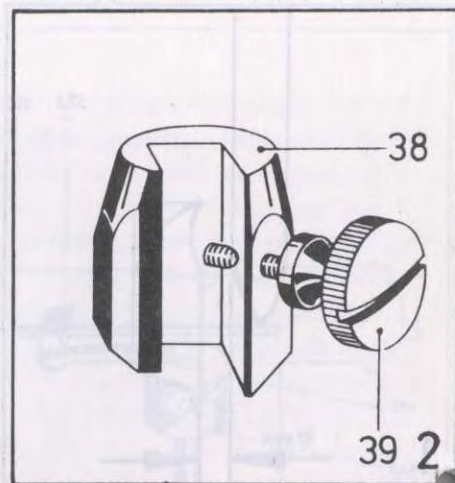
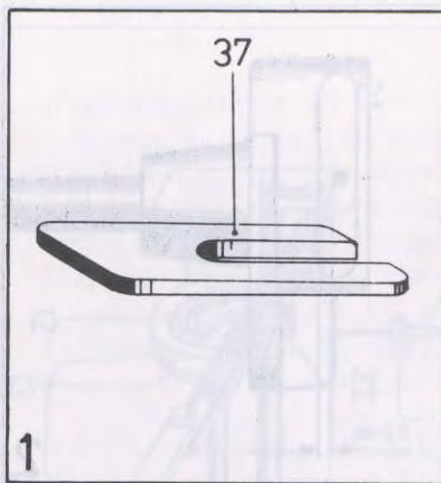
#### 4. Uneven seam (uneven stitches)

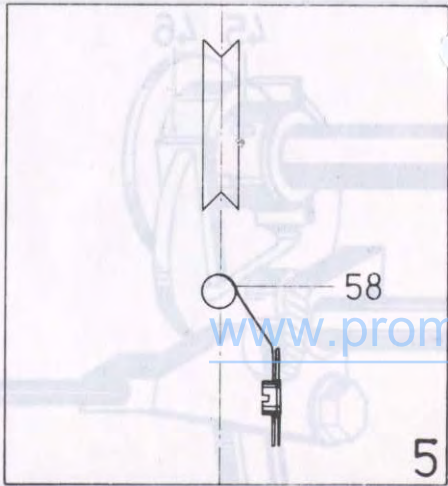
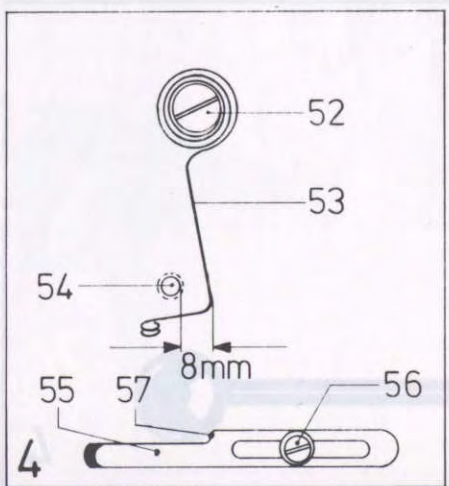
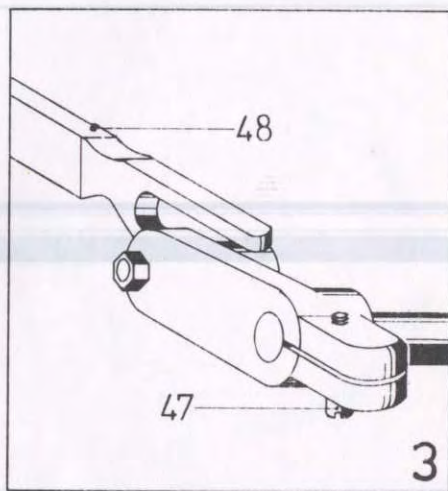
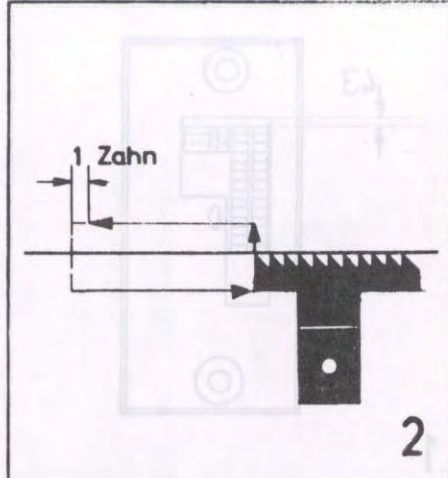
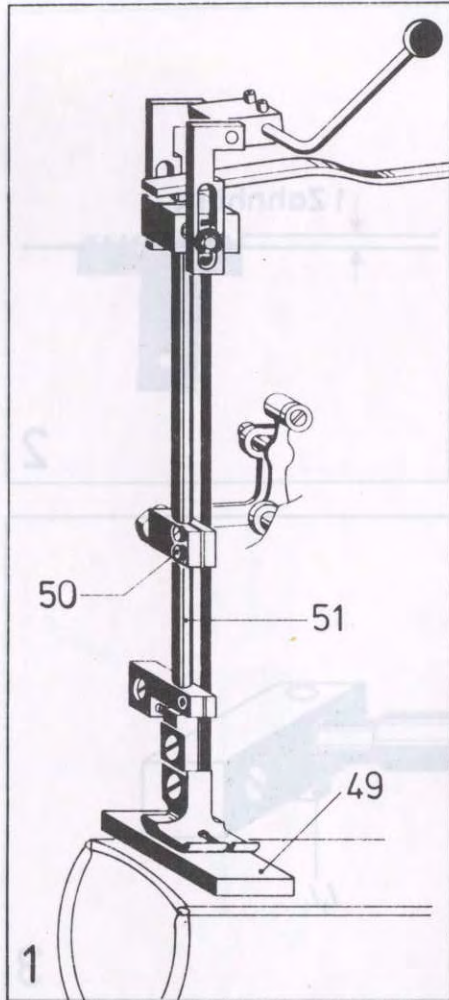
1. These faults can have the same causes which are responsible for the breaking of threads and skipped stitches.
2. Entangling of threads above and below the material:  
adjust the bobbin and needle thread tension according to the operator's guide.
3. Bad and knotty yarn:  
only use brand-marked yarns.
4. Barrel shuttle no oil. Shuttle race leaked:  
provide the shuttle race with some drops of sewing machine oil being free from resin and acid, once in a while. Follow operator's guide.  
Install new shuttle race and adjust barrel.
5. Wrong threading:  
follow the course of thread according to the operator's guide.
6. Tension discs either soiled, luted or resinified:  
clean parts and, if necessary, repolish them. All parts have to be easily movable.
7. Thread guiding parts either rusty or rough:  
remove rust and repolish.
8. Thread take-up incorrect:  
adjust the thread check spring. Set the spring force according to the width of fabric.
9. Needle is either too high or too deep:  
insert needle in accordance with the operator's guide and/or adjust the needle height.
10. Thread does not slide smoothly across the barrel shuttle:  
carefully polish all thread guiding points.
11. Setting of feed dog is not correct:  
adjust the feed dog values.
12. Soiled barrel shuttle. Barrel shuttle cannot rotate evenly:  
clean the barrel shuttle and the race. Observe the adjustment.
13. Bobbin wound irregularly, inserted wrong, threaded incorrectly:  
wind, insert, and thread the bobbin as indicated in the operator's guide.



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