DÜRKOPP

DÜRKOPP

211, 212 and 219

Instructions for Operators and Mechanics

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Contents

Page

1. Raising the cloth presser foot 8
2. Maintenance 9
2.1. Checking and replenishing the oil supply for the hook lubrication 9
2.2. Filling the two oil cups in the arm cover 9
3. Needles and threads 9
4. Removing bobbin case top with bobbin 12
5. Winding the bobbin 12
6. Threading 12
6.1. Threading the hook thread 13
6.2. Inserting the bobbin case top with bobbin 13
6.3. Threading the needle thread 14
7. Drawing up the hook thread 14
8. Regulating the thread tensions 14
8.1. Needle thread 14
8.2. Hook thread 15
9. Regulating the pressure of the cloth presser foot 15
10. Adjusting the feed length and changing over to reverse feed 16
10.1. On DÜRKOPP 211 and 212, except sub-classes -10000 and -19000 16
10.2. On DÜRKOPP 211-10000 and 211-19000 16
10.3. On DÜRKOPP 211-15255 and 211-115255 17
11. Sewing 18

Instructions for mechanics

12. Lubrication 20
12.1. Adjusting the oil supply to the hook 21
12.2. Lubricating the hook driving gears 22
13. Adjusting the presser foot stroke and puller stroke (lifting stroke) 22
13.1. Limiting the lifting movement of the cloth presser bar 22
13.2. Adjusting the height of the cloth presser bar for the presser foot lifting stroke (except 211-10000 and -19000) 24
13.3. Adjusting the cloth presser bar height for the puller stroke on 211-10000 and -19000 25
13.4. Adjusting the presser foot lifting stroke for 211-10000 and -19000 26
13.5. Eliminating the play in the knee lever action 26
13.6. Adjusting the transmission lever for lifting the puller when sewing backwards (valid only for 211-10000 and -19000) 27
14. Adjusting the feed dog motion 27
14.1. Adjusting the drop feed on DÜRKOPP 211 27
14.2. Adjusting the feed zero point and the equal feed length for forward and reverse feed 27
14.3. Adjusting the final feeding motion 28
15. Adjusting the drop feed and the needle feed on DÜRKOPP 212 29
16. Adjusting the feed dog 32
16.1. Adjusting the height of the feed dog 32
16.2. Longitudinal adjustment of the feed dog 32
17. Adjusting the hook and the height of the needle bar 33

17.1. Setting the needle bar at the correct height by means of a setting gauge 34
17.2. Adjusting the loop stroke by means of a setting gauge 35
17.3. Adjusting the lateral distance between the hook and the needle and aligning the hook case 37
18. Adjusting the lateral distance between the bobbin case retaining lug and the base of the bobbin case 37
19. The bobbin case lifter 38
19.1. Purpose of the bobbin case lifter 38
19.2. Adjusting the lateral distance between the bobbin case lifter finger and the bobbin case base 39
19.3. Adjusting the movement of the bobbin case lifter 40
20. Changing the sewing hook 41
21. Stripping the sewing hook 42
22. Changing the driving belt 43
23. Changing and adjusting the thread tension spring 44
23.1. Changing the thread tension spring 44
23.2. Adjusting the thread tension spring 44
24. Adjusting the bobbin winder 47

Instructions for DÜRKOPP 211-7105, -6103, -6105, -6123, -6125, -22123, -22125, -24123, -24125, 212-6103, -6105, -6123, -6125, -22123, -22125, -24123, -24125, -124123 and -124125

25. Speed 48
26. Needles 48
27. Stitch length 48
28. Knife stroke 48
29. Installing the machine 48
30. Connecting and disconnecting the upper knife 48
31. Maintenance of the machine 50
32. Adjusting the seam margin 50
33. Changing the knives 51
33.1. Upper knife 51
33.2. Lower knife 52
34. Adjusting the lifting movement for the upper knife 52
34.1. Lifting height 52
34.2. Zero position of the fork lever 53
34.3. Positioning the guiding block 53
35. Device avoiding involuntary engagement of the knife 54

Instructions for DÜRKOPP 212-6145, -22145, -24125 and -124145

36. Needles 55
37. Stitch length 55
38. Seam margins 55
39. Knife stroke 55
40. Speed 55

41. Switching over the cloth guide 55
42. Cloth edge guide 56
43. Regulating the cloth guide 57

Instructions for DÜRKOPP 219

44. Stitch length 58
45. Speed 58
46. Pedal rods and pedal for the S and SK equipment 58
47. Oiling 61
48. Regulating the pressure of the feeding foot and of the presser foot 61
49. Needles 61
50. Adjusting the feed length and changing over to reverse feed 61
50.1. Adjusting lower feed length 61
50.2. Adjusting upper feed length 61
50.3. Switching over for reverse feed 64
51. Adjusting the lower and the upper feed 64
51.1. Timing the pushing movement of the lower and of the upper feed 64
51.2. Adjusting the feed zero point 64
51.3. Adjusting the final feed movement 65
51.4. Adjusting the feeding foot in the feeding direction 65
51.5. Adjusting the lifting movement of the feeding foot 66
51.6. Adjusting the angular support 67
51.7. Adjusting the pop feed on 219-106, -15106, -15156, -115106 and -115156 ... 68
51.8. Adjusting the feed lengths in 219-156, -15156 and -115156 74
52. Adjustment possibilities for lower and upper feed 74
52.1. Application example 74
52.2. Application example 75
52.3. Application example 76

Instructions for DÜRKOPP 219-9103

53. Needles 78
54. Speed 79
55. Feed length 79
56. Installing the machine 79
57. Maintenance 79
58. Operation 80
58.1. Adjusting the pinking depth 80
58.2. Adjusting the cloth edge guide 80
58.3. Adjusting the cloth holder 80
58.4. Connecting and disconnecting the pinker 81
58.5. Removing the pinker 81
59. Adjusting the pinker 81
59.1. Changing the knives 81
59.2. Adjusting the knives 81
59.3. Adjusting the cutting stroke 82
59.4. Timing the knife movement 83

Instructions for DÜRKOPP 211-34105 and 219-35105

60. Speed 83
61. Needles 83
62. Lubrication 83
63. Adjusting the transversal cutter 84
63.1. Changing the cam 84
63.2. Adjusting the counter knife (cut depth) 85
63.3. Adjusting the knife stroke 85
63.4. Timing the knife movement 86
63.5. Adjusting the cutting pressure 86

Instructions for DÜRKOPP 211-15000, -19000, -24000, -34000, 212-15000, -24000, 219-15000, -24000, -34000 and -35000 in their different sub-classes

64. Needles, speed and feed length 88
65. Motor 89
65.1. Adjusting the positioner 89
66. Operation 92
67. Adjusting the thread cutter 93
67.1. Timing the knife movement 93
67.2. Adjusting the roller bolt 94
67.3. Adjusting the tension release 95
67.4. Adjusting the safety pin 96
67.5. Adjusting the connecting stroke 96
67.6. Adjusting the hook-shaped knife and the counter-knife 96

Instructions for DÜRKOPP 211, 212 and 219 above -100000

68. Motor 103
69. Initial backtacking 104
69.1. Backtacking speed 104
69.2. Adjusting the seam pattern for double backtacking 105
70. Final backtacking 106
70.1. Backtacking speed 106
70.2. Cutting stitch 106
71. Operation 106

Instructions for DÜRKOPP 211, 212 and 219 with Z 133

72. Sticking-on the reflecting band 108
73. Adjusting the compensating stitches 109
74. Operation 109
75. Thread regulator 110

Brief instructions for DÜRKOPP 211, 212 and 219 with incorporated setting gauge

Operating Instructions for DÜRKOPP 211, 212 and 219

DÜRKOPP 211, 212 and 219 are high speed lockstitch machines with central oil wick lubrication and an individual lubrication of the hook.

According to their use, the machines are divided into sub-classes. The sub-class designation is indicated on the sign plate on the standard.

The sub-class designation of the machines for special purposes can be obtained from DÜRKOPP agents.

DÜRKOPP 211	with drop feed, except
DÜRKOPP 211-15255 and 211-115255	with differential drop feed
DÜRKOPP 211-7000	with vertical edge trimmer and tape binder
DÜRKOPP 211-10000	with intermittent upper puller feed
DÜRKOPP 211-15000	with electromechanical upper and lower thread cutter
DÜRKOPP 211-19000	with intermittent upper puller feed and electromechanical upper and lower thread cutter
DÜRKOPP 211-24000	with vertical edge trimmer and electromechanical upper and lower thread cutter
DÜRKOPP 211-34000	with transversal cutter and electromechanical upper and lower thread cutter
DÜRKOPP 211-115000	with electromechanical thread cutter, electromechanical presser foot lifter and automatic backtacking equipment
DÜRKOPP 211-119000	with intermittent upper puller feed, electromechanical thread cutter, electropneumatic presser foot lifter and automatic backtacking equipment

DÜRKOPP 212	with drop feed and needle feed
DÜRKOPP 212-6000	with vertical edge trimmer
DÜRKOPP 212-15000	with electromechanical upper and lower thread cutter
DÜRKOPP 212-24000	with vertical edge trimmer and electromechanical upper and lower thread cutter
DÜRKOPP 212-115000	with electromechanical thread cutter, electropneumatic presser foot lifter and automatic backtacking equipment
DÜRKOPP 212-124000	with vertical edge trimmer, electromechanical thread cutter, electropneumatic presser foot lifter and automatic backtacking equipment

DÜRKOPP 219	with top and bottom feed
DÜRKOPP 219-9000	with edge pinker
DÜRKOPP 219-15000	with electromechanical upper and lower thread cutter
DÜRKOPP 219-24000	with vertical edge trimmer and electromechanical upper and lower thread cutter
DÜRKOPP 219-35000	with vertical edge trimmer, transversal cutter and electromechanical upper and lower thread cutter
DÜRKOPP 219-115000	with electromechanical thread cutter, electropneumatic presser foot lifter and automatic backtacking equipment
DÜRKOPP 219-124000	with vertical edge trimmer, electromechanical thread cutter and automatic backtacking equipment

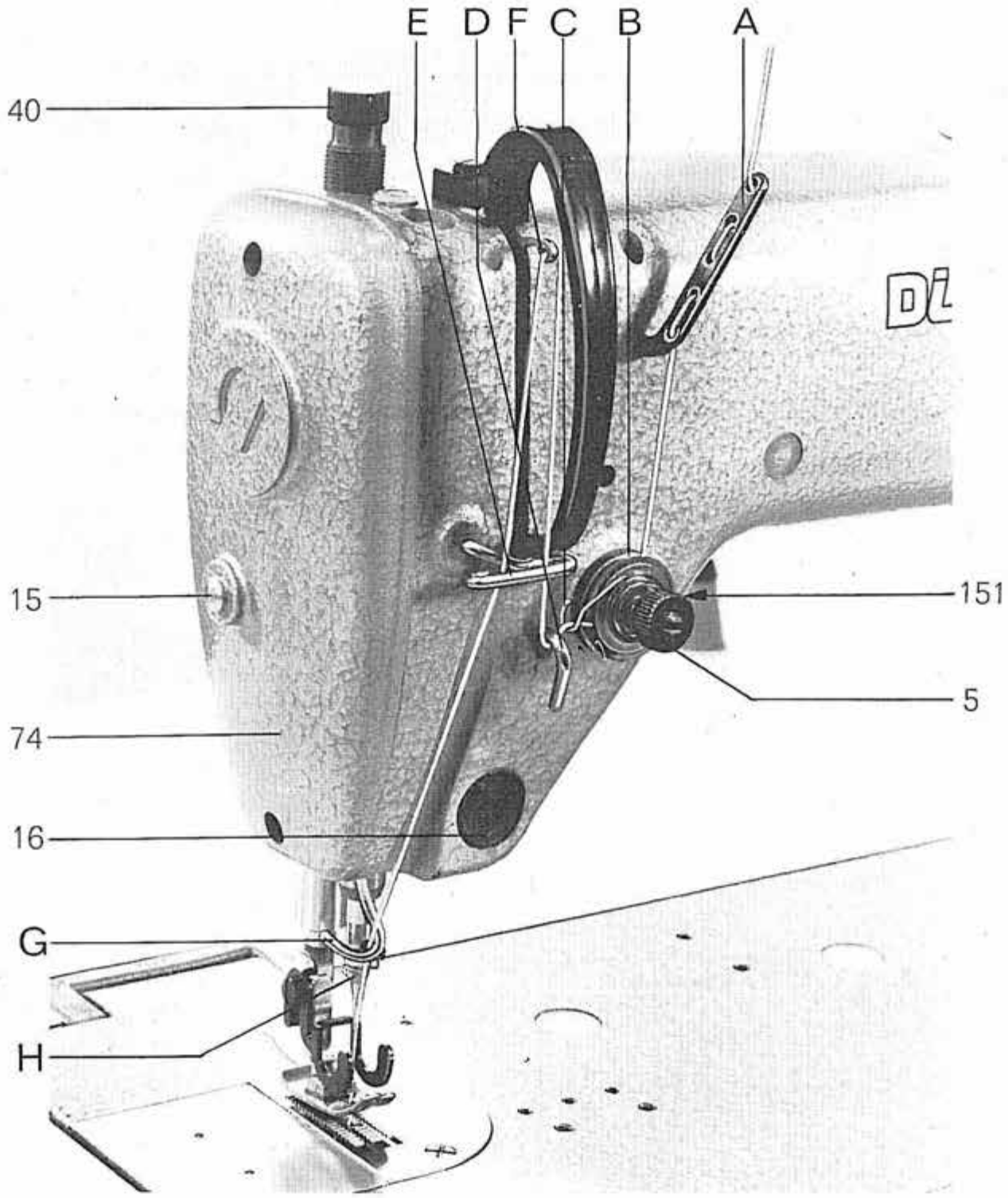


Fig. 1

1. **Raising the cloth presser foot** (fig. 1)

To retain the presser foot in the raised position, the knob 15 on the face plate should be depressed while actuating the knee lever which, in turn, locks the presser bar.

Slight pressure against the knee lever will cause the knob 15 to jump back, thus releasing the locking position.

2. Maintenance

Cleaning and Oiling

A machine which is kept clean is unlikely to give any trouble. Therefore, the vicinity of the hook and of the thread cutter and the space under the throat plate must be cleaned regularly.

For cleaning the parts under the base plate tilt the machine head backwards. At the same time the oil, accumulated behind the sight glass 16 (fig. 1) will flow back to the machine arm. Therefore, if the cleaning is done regularly, there will never be too much oil in the arm head of the machine.

For lubricating, use **Spinesso 10** oil or an oil of an equivalent quality. The Spinesso 10 oil can be obtained from DÜRKOPP sales centers.

The machine lubrication is confined to two points:

2.1. **Checking and replenishing the oil supply for the hook lubrication**

Proceed as follows:

Remove the knee lever, tilt machine head backwards and fill the container 1 (fig. 2) with oil up to the max. level mark.

2.2. **Fill the cups 2 (fig. 3) with oil almost up to the top while machine head is upright.**

The oil should be allowed to soak into the wick underneath the cups before tilting the machine backwards.

Normally it is sufficient to replenish these cups when proceeding to the weekly cleaning.

For machines with vertical cutter see also chapter 31.

3. Needles and threads

Proper operation of the machine and the quality of the seam depend to a large extent on the needles and threads used.

The size of the needles is determined. The eye of the needle should be wide enough for the thread to pass through tightly and easily. This is very important when using rough and uneven threads.
The machine being suitable for a great variety of operations, it is impossible to suggest with any degree of accuracy what threads and needles should be used together.

But following specifications can serve of reference:

Thread type	**Needle size**
30/3:	Nm 110–130
80/3 or 50/2:	Nm 90–100
100/3:	Nm 80– 90
120/3 or 80/2:	Nm 70– 80

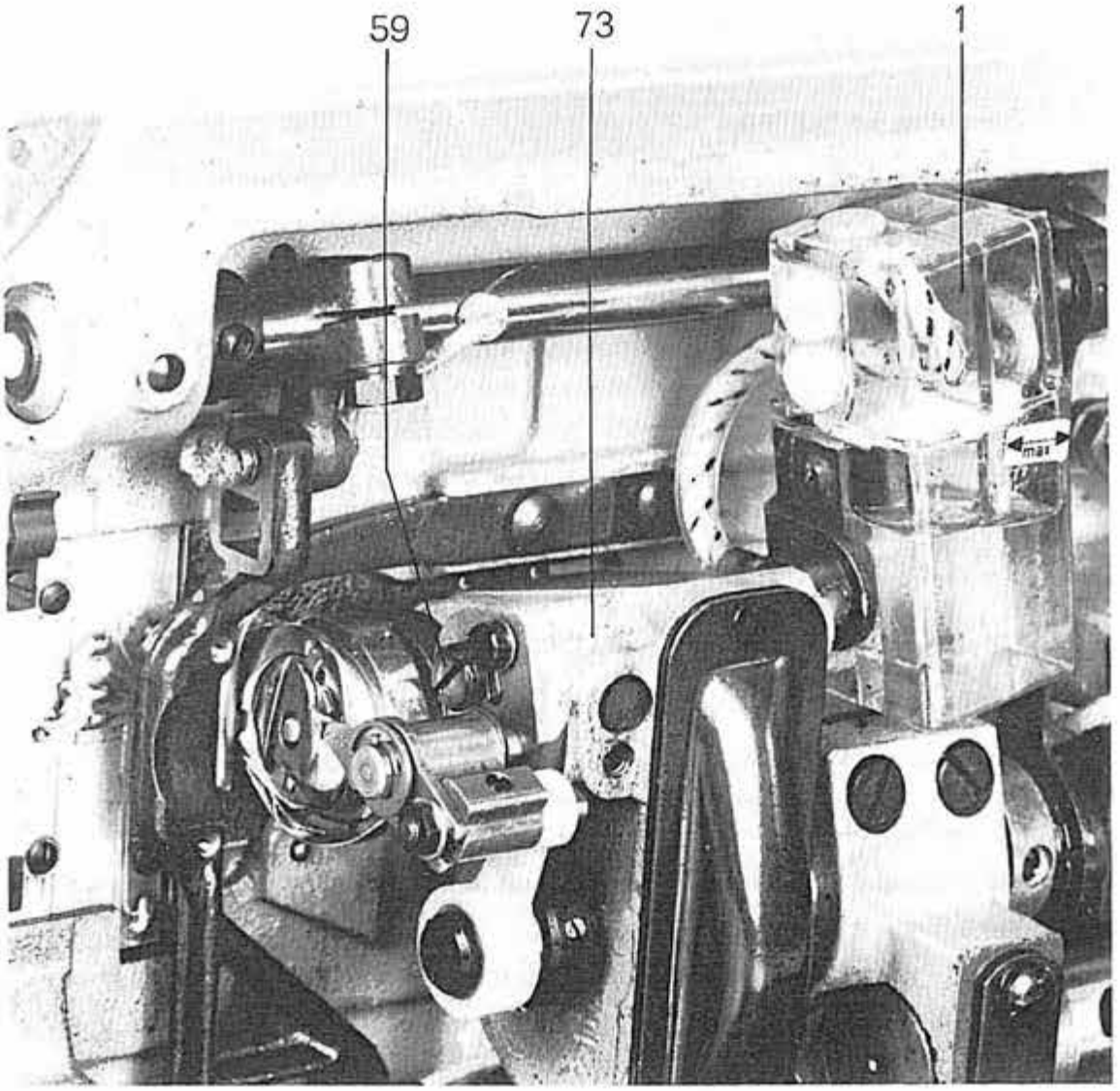


Fig. 2

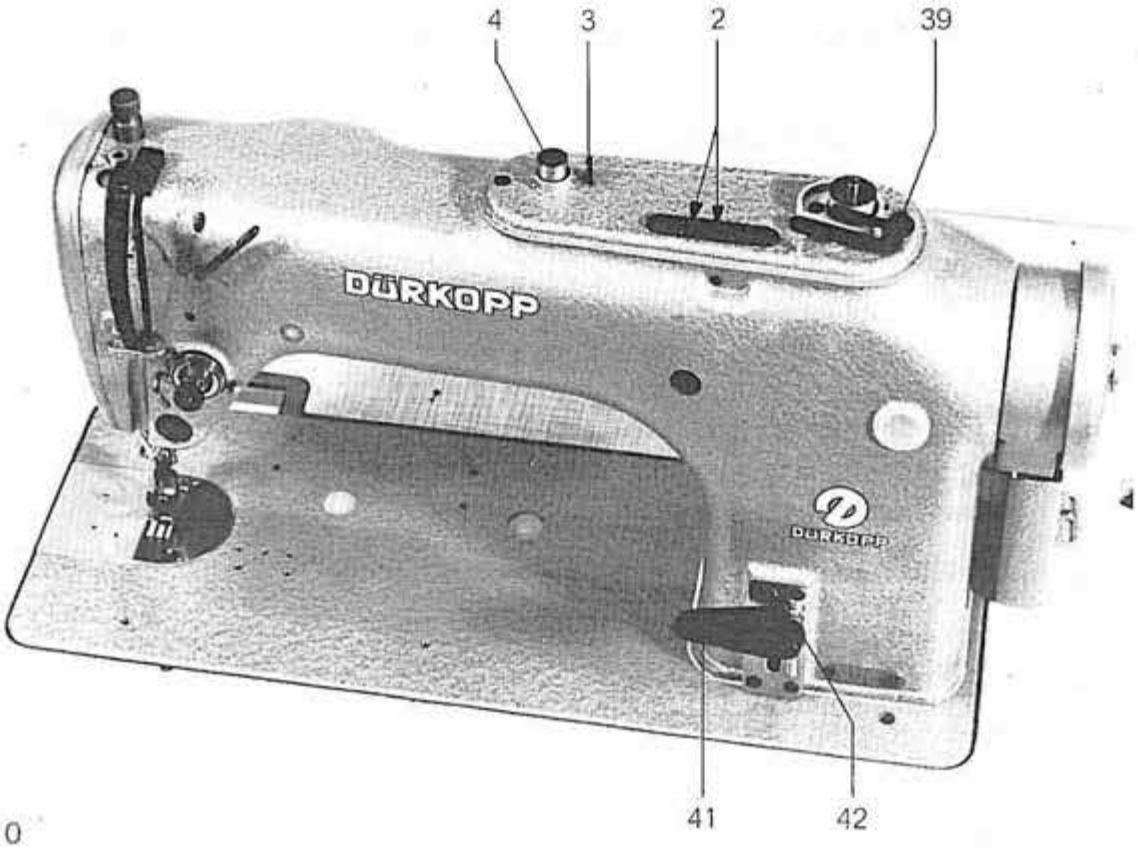


Fig. 3

The needle system to be used depends on the basic model of the machine.

The following needles are normally used:

Machine type	Needle system
211-1; 211-501; 211-10101; 211.10501	5620 or Sy 1451 (135 x 1) (see note)
211-15101; 212-101; 212-101 K	Sy 1451 (135 x 1)
211-3; 211-5; 211-6; 211-7; 211-6103; 211-6105; 211-6123; 211-6125; 211-7105; 211-10103; 211-10105; 211-10503; 211-15103; 211-15105; 211-15255; 211-19105; 211-24125; 211-34105; 211-115103; 211-115105; 211-115255; 211-119105	797 or Sy 1901 (135 x 5)
219-106; 219-155; 219-9103; 219-15105; 219-15106; 219-15115; 219-15155; 219-15156; 219-24175; 219-35105; 219-115105; 219-115106; 219-115155; 219-115156; 219-124175	797 kK
211 R-5; 212 R-105; 211 R-12105; 211 R-13105	797 Lr
211-15; 211-10115	2134-35
212-115; 212-117	
212-103; 212-105; 212-6103; 212-6105; 212-6123; 212-6125; 212-6145; 212-15103; 212-15105; 212-24123; 212-24125; 212-24145; 212-115103; 212-115105; 212-115155; 212-124123; 212-124125; 212-124145	Sy 1968 (135 x 25)

Note: The needle 5620 has a longer shaft than the needle Sy 1451 (135 x 1) and is, therefore, less apt to vibrate. This is important in case of thin needles. Needle systems will have an additional designation if the points of the needles are different from those mentioned above.

When inserting a new needle ensure that the long groove face the operator and that the needle is pushed into the bore of the needle bar as far as possible.

For the needle, a thread with left-hand twist is generally used. If, however, much reverse sewing is required, than it is better to use a double core thread or a double twisted r/h torsion thread. In case of monofilament threads, best results are obtained with the sizes of 130 to 180 deniers. The torsion of the hook thread is immaterial.

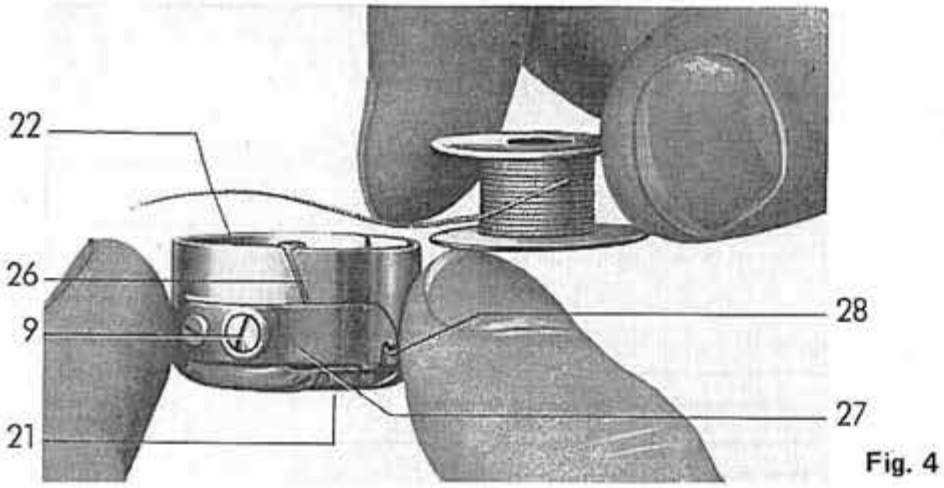


Fig. 4

To determine the torsion of the thread, hold it horizontally with both hands and twist it between the thumb and the forefinger of your right hand from the top towards you. If the threads tightens, it has a left hand torsion (Z torsion), if it untwists, it has a right hand torsion (S torsion).

4. **Removing bobbin case top with bobbin** (fig. 4)

Set thread take-up lever to its topmost position. Lift than the latch 21 and take out at the same time the bobbin case top 22 together with the bobbin.

As long as the latch 21 is kept lifted, the bobbin will be held in the case. Having released the latch, and by holding the open side of the case downwards, the bobbin will fall out of the case.

5. **Winding the bobbin**

The bobbin winder is positioned inside the arm plate and is driven by the upper belt pulley via a friction disc.

When winding the lower thread, the latter extends from the thread unwinder through the hole in the guide sheet 3 (fig. 3), round the spindle of thread tension 4 to the bobbin winding device. Wind the end of the thread clockwise several times around the bobbin and press the bobbin winder flap 39 against the bobbin. The winding process takes place while the machine is in operation.

The winder will be cut out automatically as soon as the bobbin is fully wound.

6. **Threading**

When threading, the motor should be fully stopped and braked.

6.1. **Threading the hook thread** (figs. 4 and 4a)

Hold the bobbin between the finger tips of the right hand so that the free end of the thread extends from the front to the left into bobbin case 22.

Pull then the thread through slot 26 and underneath thread tension spring 27 until it reaches the little notch 28 at the end of the tension spring.

In machines with thread cutter, using monofilament threads, in class 212 also all other threads, pass the lower thread through the hole 30 (fig. 4a) of the bobbin case top.

6.2. **Inserting the bobbin case top with bobbin**

For inserting the bobbin case top, the same as for removing, the thread take-up lever must be set to its topmost position.

With thumb and index finger of the left hand seize the latch 21 (fig. 4) so that the bobbin is held in the case by the latch, push the case onto the centre pin of the bobbin case base so that the end of the latch faces the operator. Press the bobbin case firmly onto the base with the thumb. If the bobbin case is not closed properly, this might result in damage to the case or to the needle.

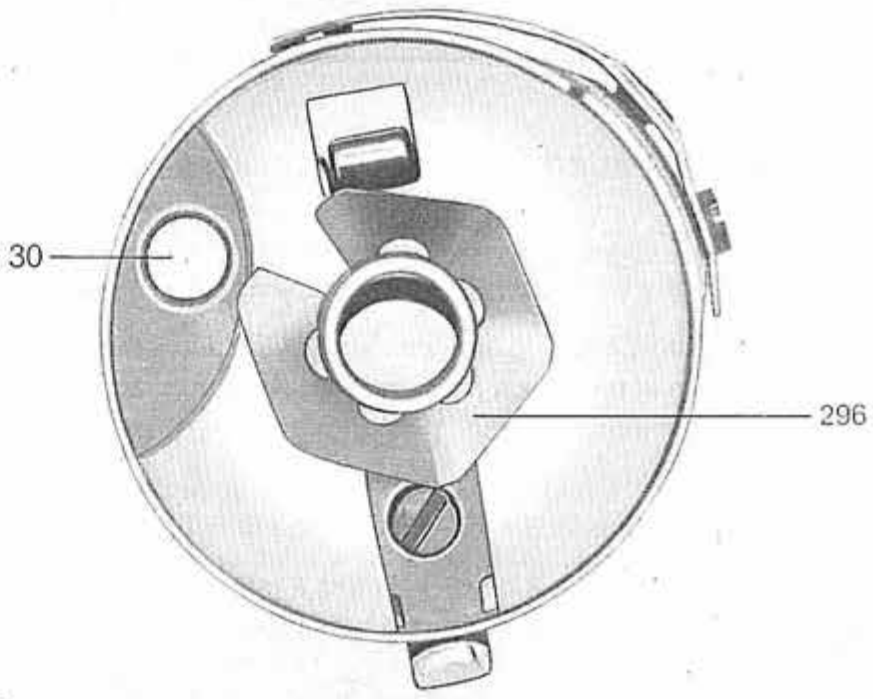


Fig. 4a

6.3. Threading the needle thread

The path of the needle thread is visible from fig. 1. Before threading the needle, set thread take-up lever to its topmost point.

Then pass the thread:

1. through the thread guide in the thread unwinder arm,
2. alternately through the holes of the thread guide A,
3. from right between main tension discs B,
4. over thread pulling spring C,
5. below bow D,
6. upwards through thread guide E,
7. from right to left through the eye of thread take-up lever F,
8. downwards and through thread guide E,
9. behind thread guide G,
10. through thread guide H, and
11. from left to right through the eye of the needle.

7. Drawing up the hook thread

Having threaded the needle thread, hold its free end loosely between the fingers of the left hand and make a so-called empty stitch by turning the handwheel clockwise with the right hand in order to bring the thread take-up lever to its topmost point. With the left hand, draw up the needle thread which, in turn, will pull up the bobbin thread looped round it. Pass some suitable object underneath the raised presser foot, bringing both threads under the foot to the rear.

If at the seam beginning the needle thread is to be passed to the reverse side, do not clamp it under the presser foot.

This applies particularly to machines with thread cutter.

8. Regulating the thread tensions

Both upper and lower threads are properly tensioned if the stitches lock exactly in the centre of the material.

If the interlocking of stitches is visible on the surface of the material, then there is too much tension on the upper thread or insufficient tension on the lower thread.

If the interlocking is visible on the underside of the work, then there is too much tension on the lower thread or insufficient on the upper thread.

Thick and hard fabric requires a stronger thread tension than light and soft material. Too tight thread tensions may cause undesirable puckering of the material or thread breaking. The tension should always be adjusted as to allow for an adequate formation of stitches. Upper and lower thread tensions can be regulated.

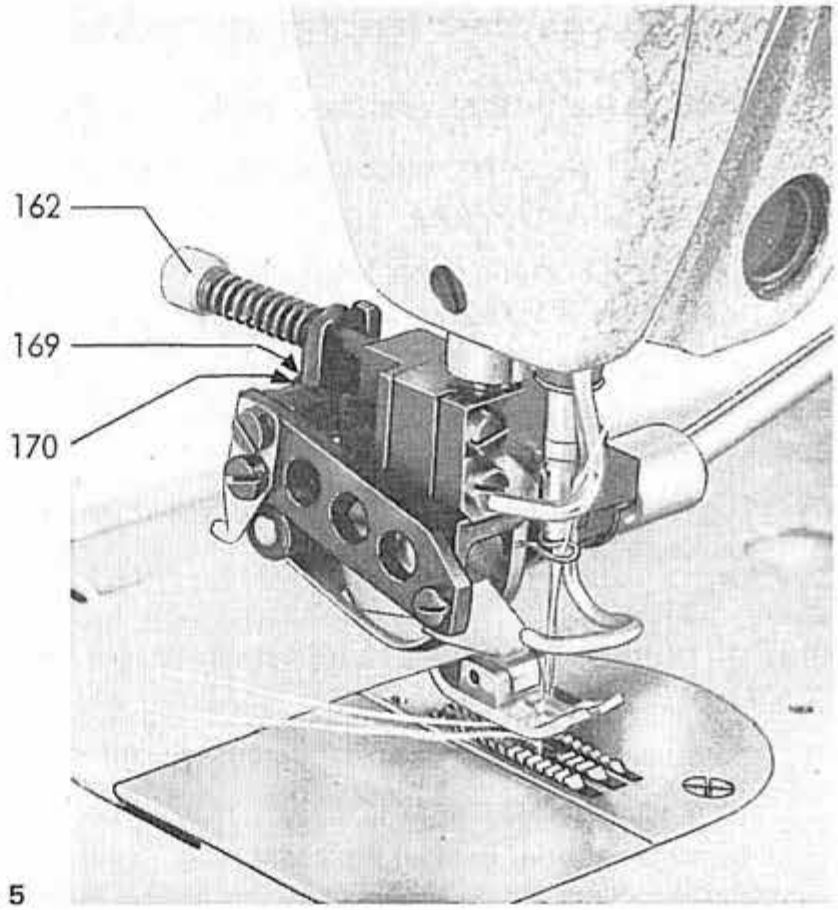


Fig. 5

8.1. **Needle thread.** The tension of the needle thread is regulated by turning knurled nut 5 (fig. 1). Turn clockwise to increase and counter-clockwise to reduce the tension.

8.2. **Hook thread.** The tension of the hook thread is regulated by tension spring regulating screw 9 (fig. 4) on the bobbin case. Turn the screw clockwise to increase the tension and counter-clockwise to reduce it.

Note:

The bobbin case contains a braking disc 296 (fig. 4a) stopping the bobbin when cutting the threads. The braking effect of this disc on the bobbin must be taken into account when adjusting the hook thread tension.

9. Regulating the pressure of the cloth presser foot (fig. 1)

The pressure exerted by the presser foot must be adapted to the kind of work. Thick and rough materials require a higher pressure than those of thin and soft structure. The foot pressure should be such as to ensure even feeding of the material without damaging same on the underside by the feed dog. Increase the pressure by screwing down the screw 40 and viceversa.

On machines with intermittent upper puller feed (211-10000 and -19000) the foot pressure is adjusted by the knurled nut 162 (fig. 5). The pressure of the puller on the material sewn is adjusted by threaded sleeve 40 (fig. 1).

10. Adjusting the feed length and changing over to reverse feed

DÜRKOPP 212-15155 and 212-115155

These machines are factory-adjusted for the maximum stitch length of 6 mm at 4000 stitches/minute.

When reducing the stitch length to 4 mm or less it is also possible to sew 5000 stitches/minute.

For limiting the stitch length to the maximum of 4 mm use for 212-15155 a limiting sheet, supplied with the acessories of the machine. Place said sheet under the scale sheet.

In 212-115155 the stitch length can be limited by respective adjustment of the knurled stop screw in the scale sheet.

10.1. **On DÜRKOPP 211 and 212,** except sub-classes -10000 and -19000.

The stitch length is regulated by stitch regulator lever 41 (fig. 3). A spring pulls said lever upwards up o the stop, adjustable by knurled nut 42.

By moving the lever from its topmost to its center position, the forward stitch becomes shorter until, at the position "0", feeding of the work ceases altogether. When the lever is pushed downwards below "0", the machine sews reverse.

By lowering the lever as far as it will go, the machine will produce stitches of the same length in reverse as adjusted for forward feed.

The change over from forward to reverse stitch can be made when the machine is either stationary or operating at any speed. When switching over while sewing, the lever must be moved very quickly past the "0" position, as otherwise the needle might cut the thread.

On machines fitted with a **special equipment** (S-equipment), the changing from forward to reverse stitches can be done not only by hand but also by a treadle actuated by the left foot. When using this equipment, both hands are free for guiding the work.

10.2. **On DÜRKOPP 211-10000 and 211-19000**

The drop feed and the intermittent upper puller feed of these machines are individually adjustable.

The two feeds can be adjusted reciprocally so that the two plies of fabric are fed at the same rate or the lower one faster.

Adjusting the stitch length of the upper puller feed (fig. 6)

The feeding length of the upper puller feed is adjusted by shifting traction bar 163 in crank 164. For setting, swing cover 165 to the right, loosen nut 166 and shift traction bar 163 as required.

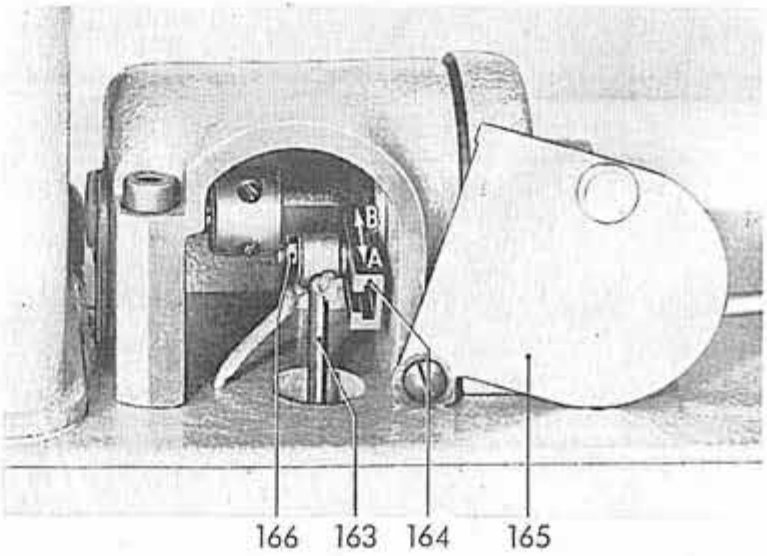


Fig. 6

Displace traction bar 163 in the direction of the arrow "A" to reduce the feeding length and in the direction of the arrow "B" to increase the length.

Following the adjustment, retighten firmly nut 166.

Adjusting the stitch length of the drop feed (fig. 3)

The feeding length of the drop feed is adjusted by the stitch length regulating lever 41. A spring pulls said lever upwards up to the stop, adjustable by knurled nut 42. Turn this nut to modify the length of the forward feed.

By moving the lever from its topmost to its center position, the forward stitch becomes shorter until, at the mark "0", the feeding of the work ceases altogether. When the lever is pushed downwards below "0", the machine sews reverse. When lowering the stitch length regulating lever the puller is lifted so far that it does not impede the reverse feed.

For adjusting the feed length on DÜRKOPP 219 see chapter 50.

10.3. On DÜRKOPP 211-15255 and 211-115255

These machines are fitted with differential bottom feed. The main and the differential feed are individually adjustable. The main feed dog is mounted on the right hand carrier and the differential feed dog is mounted on the left hand carrier.

In case of equipment for ruffling the differential feed dog stands in front of the needle and in case of equipment for stretching it stands behind the needle.

Maximum forward feed length 6 mm

Maximum reverse feed length 2 mm

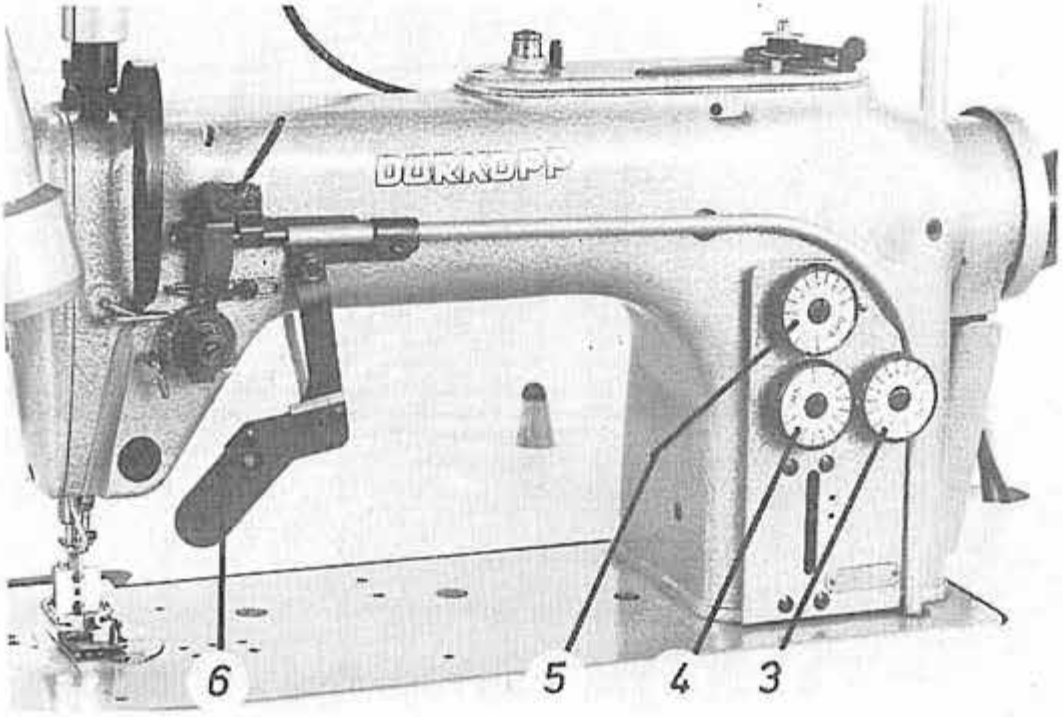


Fig. 6a

By régulating the two wheels 3 and 4 (fig. 6a) with scales and catches it is possible to set the machine for smooth sewing or ruffling and for smooth sewing or stretching, depending on the equipment.

The stitch length of the main feed (r/h feed dog carrier) is determined by the main feed dog. It is adjustable by the wheel 3 (fig. 6a).

The additional advance value of the differential feed (l/h carrier), required for ruffling or stretching, is adjustable by the wheel 4.

After switching over to reverse feed, in 211-15255 by stitch regulator lever and in 211-115255 by an automatic tacking device, the feed difference set becomes ineffective.

The wheel 5 (fig. 6a) serves for pre-adjusting a greater advance of the differential feed dog with respect to its basic adjustment.

When used in conjunction with the additional equipment "Mechanical SK equipment, pedal-controlled" or with the "Electropneumatic KR equipment, operated by button 6 (fig. 6a), the resetting from smooth sewing to ruffling can be done at any point of the seam.

11. Sewing

Before inserting the material or starting to sew a new seam and when removing the work the thread take-up lever must be at its topmost point.

The machine should be operated with the presser foot down only when the material is inserted.

Take care that the handwheel always rotates in the proper direction, as otherwise the thread will break or jam the hook race.

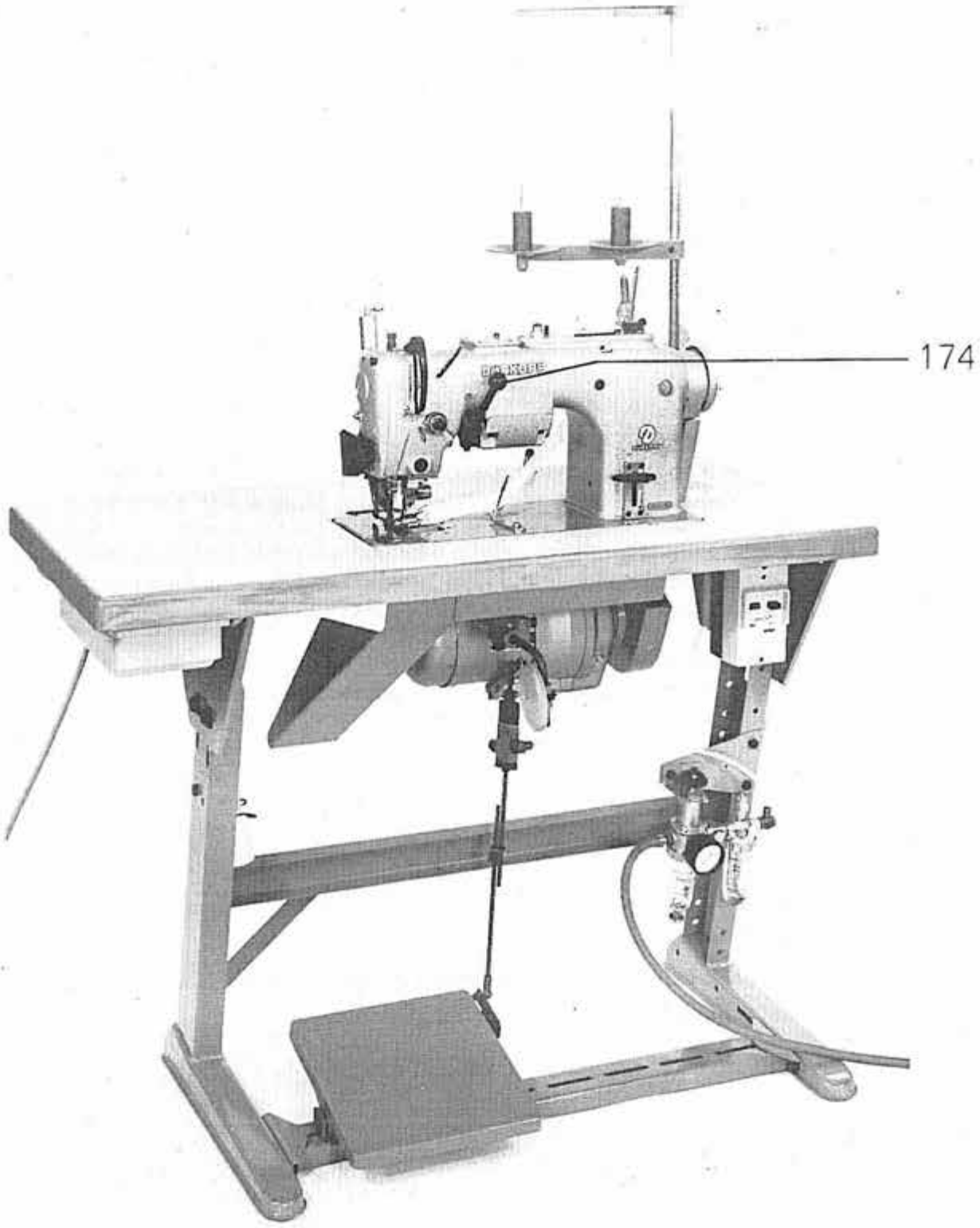


Fig. 6b

Since the machine runs at a relatively high speed, it is advisible first to practise guiding the work without threading the machine. Only after having attained sufficient practice in guiding the work, the real sewing can be started.,

Now thread the needle, insert the bobbin with its case and draw up the bobbin thread. Place the work in position and lower the presser foot by means of knee lever.

Place the free ends of the upper and lower threads backwards under the presser foot ot hold them loosely in the hand while sewing first stitches. If the lower thread is covered by the work, then it is only necessary to hold the upper thread.

If at the seam beginning the needle thread is to be pulled through on the reverse side, do not clamp it under the presser foot.

The work should be fed by the feed dog only. Do not pull it while sewing forwards or backwards, as this is liable to break the needle or damage the throat plate. Adapt the sewing speed to the type of work and the nature of operation. Reduce the speed when sewing over thick and hard spots.

To sew sharp corners, let the needle descend almost to its lowest position, lift the presser foot and turn the work around the needle as far as required. Then lower the foot again and continue sewing in the desired direction.

To remove the work, set the thread take-up lever to its topmost position, raise the presser foot and pull the work out towards the rear.

Instructions for Mechanics

The following chapters describe the function and the adjustment of main components.

For machines with incorporated setting gauge see also the instructions at the end of this Manual.

12. **Lubrication** (cf. chapter 2)

All working parts of the machine, except the hook, are centrally lubricated from two oiling points in the arm cover, containing enough oil for approx. 50 service hours. From the l/h point the oil is supplied to the parts inside the arm head and to the front and medium arm shaft bearings. From the right point the oil is supplied to the parts underneath the base plate.

The sewing hook is lubricated by oil which flows from an oil chamber 1 (fig. 7) beside the hook, ensuring thus a constant supply of perfectly clean oil to the hook. Here also, one filling will normally be sufficient for at least 50 hours of operation.

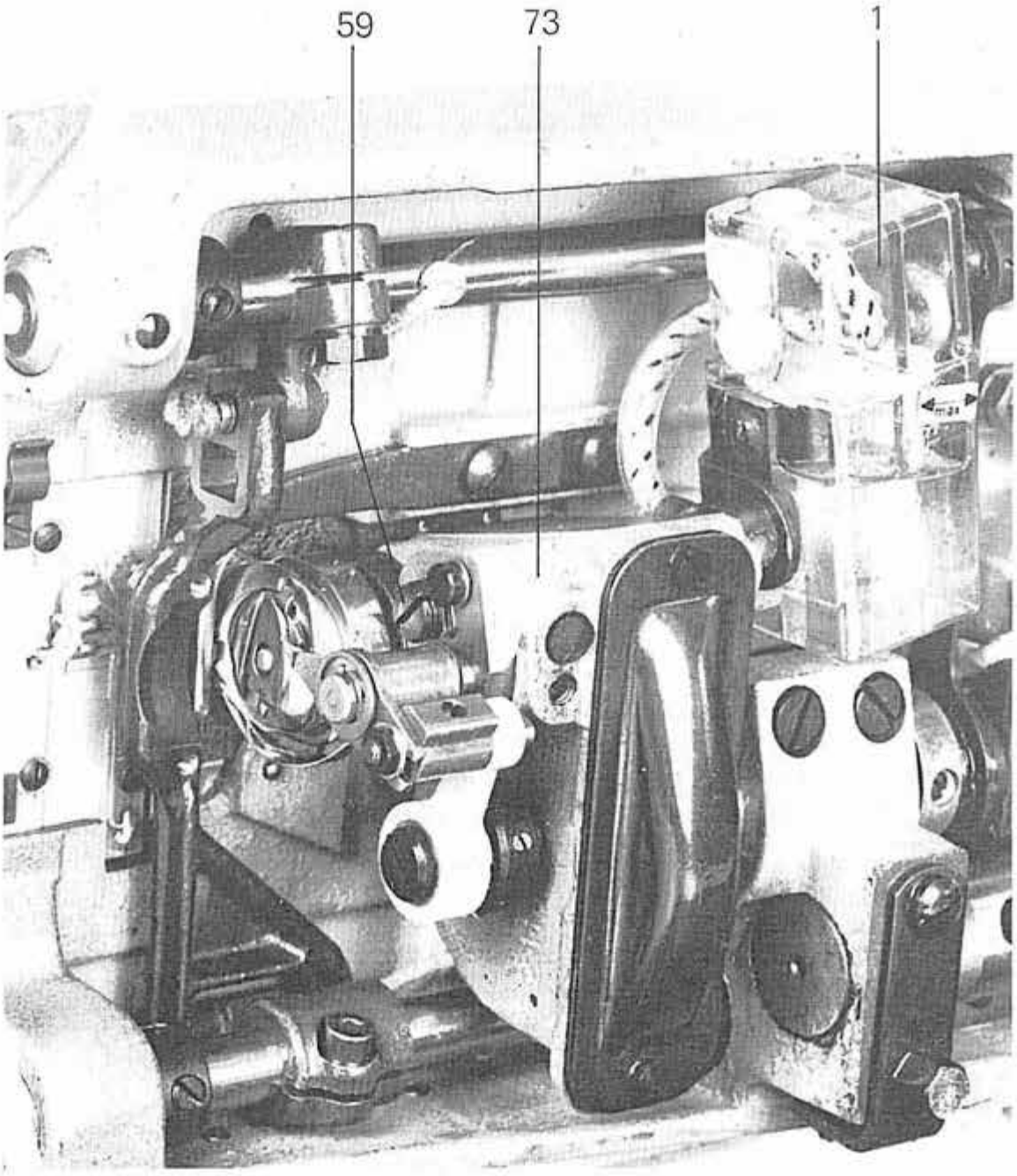


Fig. 7

12.1. **Adjusting the oil supply to the hook** (fig. 7)

The amount of oil required for lubricating the hook depends on the type of material and thread used. The oil supply should, therefore, be adjusted as required. If the hook gets very worm, runs noisily or breaks the thread, it is not receiving enough oil.

For checking the proper oil supply, proceed as follows:

Sew at full speed a distance of about 100 cms, using the fabric and the thread to be used later.

During the sewing operation keep a small mirror under the hook. The adjustment is correct if the mirror is slightly sprinkled by oil.

The adjustment of the proper quantity of oil is done by the regulating screw 59.

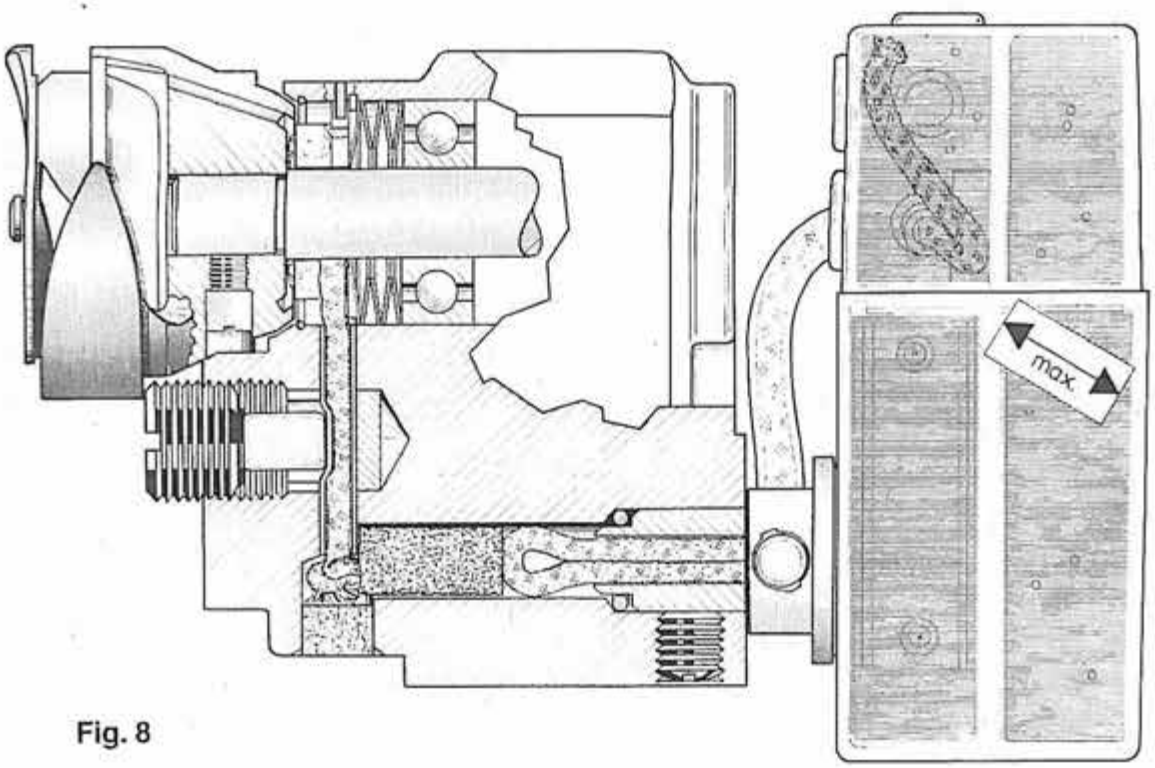


Fig. 8

Note: for more oil, turn the regulating screw to the left
for less oil, turn the regulating screw to the right.

After regulating the screw 59 sew for about 15 minutes, because only then the result will be reliable.

If after the adjustment, which is meant to be correct, and after a permanent service of more than 1 hour there is no change, the oil supply is correct.

Figure 8 shows the structure of the hook lubrication.

12.2. Lubricating the hook driving gears

After about one year's operation, i.e. after 2500 hours of service, the interior of the gear housing 73 (fig. 7) must be cleaned and filled with fresh grease. Gauge the filling by means of the trough in the housing cover.

A special gear grease (order No. 211693) in tubes of 30 g, obtainable from DÜRKOPP agents, must be used.

13. Adjusting the presser foot stroke and puller stroke (lifting stroke)

13.1. Limiting the lifting movement of the cloth presser bar

The movement of the knee lever to the right and lifting movement of the presser bar should be limited by adjusting stop screw 78 (fig. 9) so that the presser bar, arrested in the upper position, cannot be raised higher than is necessary for disengaging the supporting spring 79 (fig. 10) and releasing the tension of the upper thread.

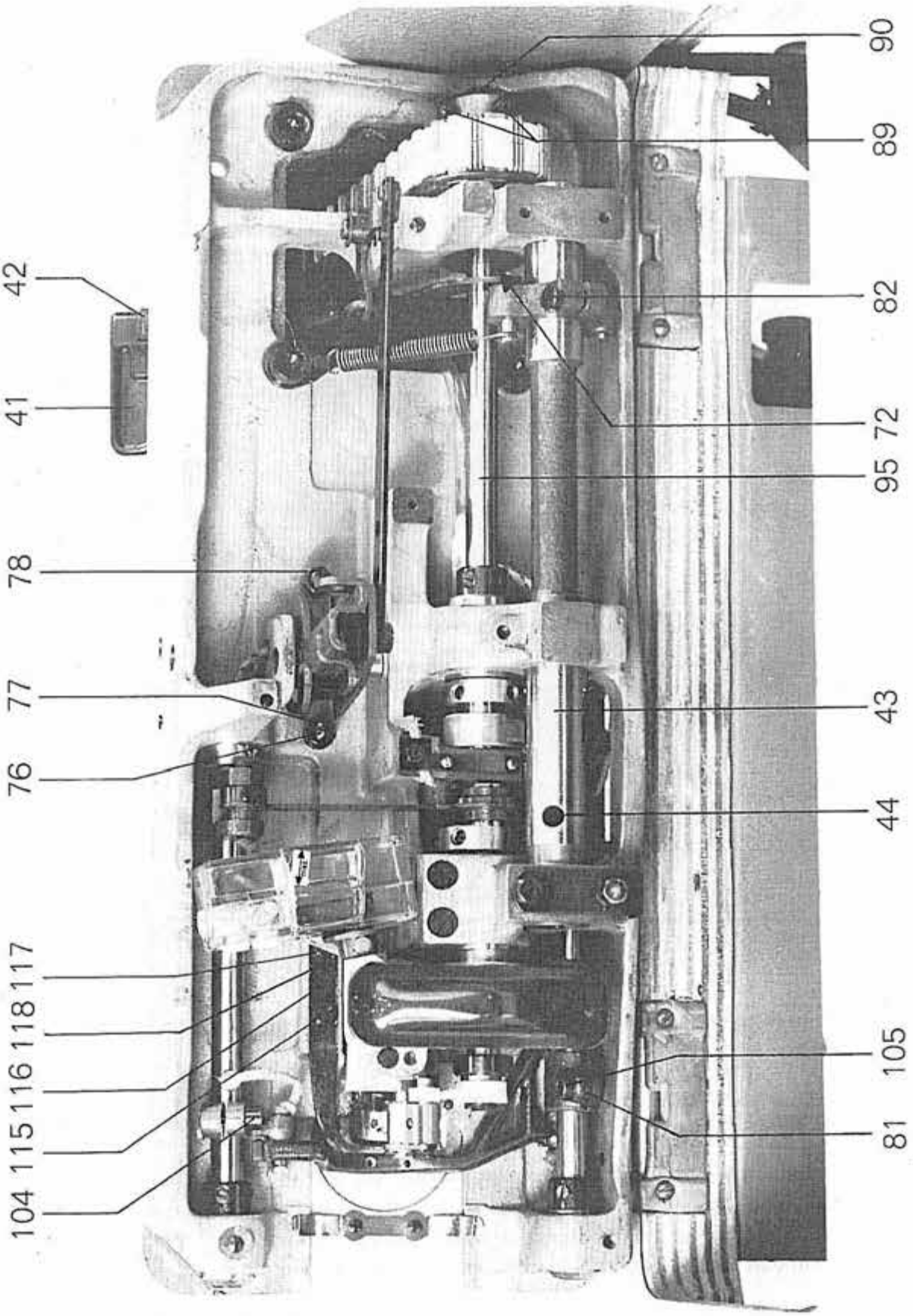


Fig. 9

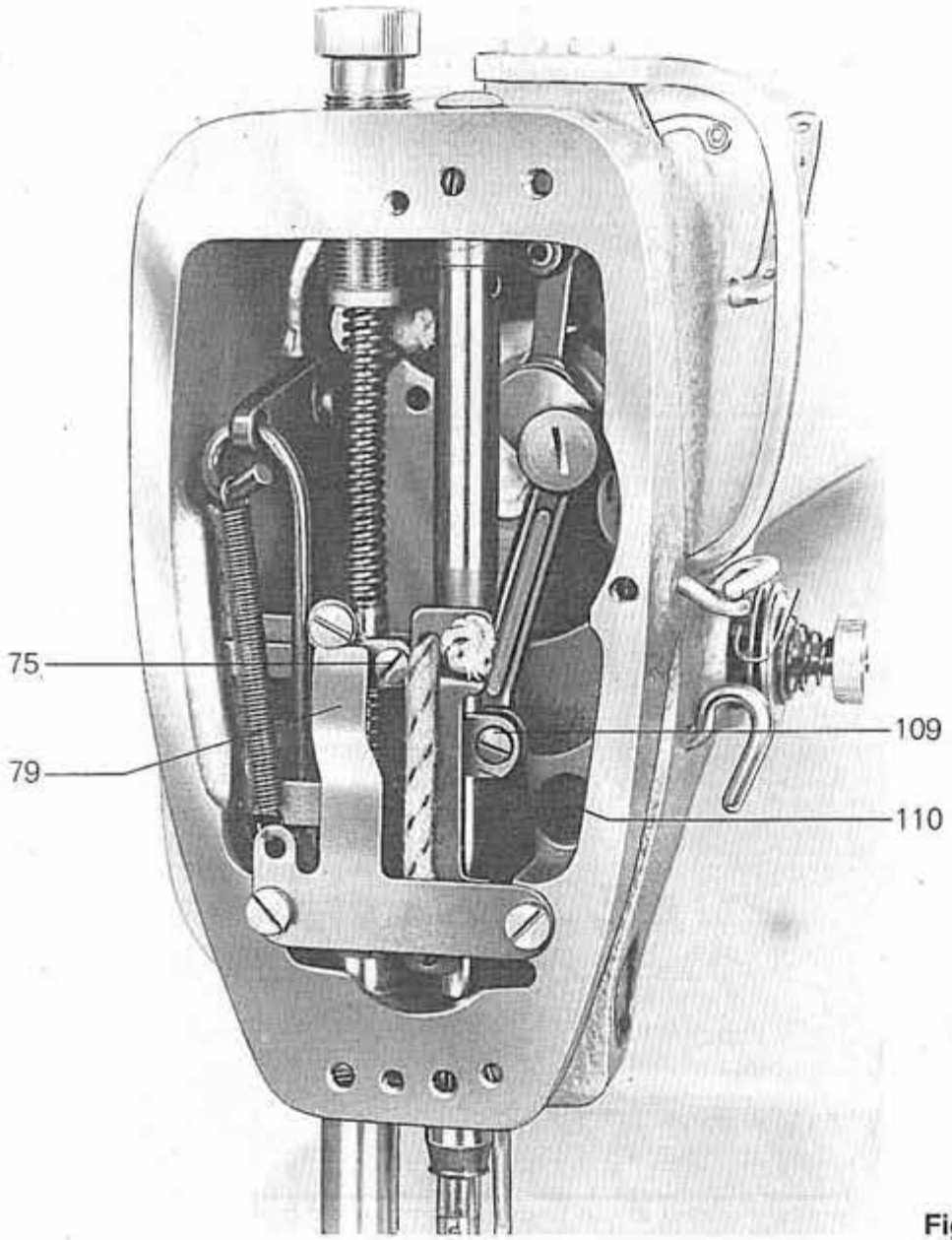


Fig. 10

13.2. **Adjusting the height of the cloth presser bar for the presser foot lifting stroke (except 211-10000 and -19000)**

For adjusting the presser foot stroke, the height of the presser bar must be modified accordingly.

Unscrew face plate, loosen screw 75 (fig. 10) and set the presser bar a bit higher or lower. On no account should the stroke of the presser foot be adjusted so that the needle bar or needle clamp can strike against the presser foot, raised to its topmost position by the knee lever.

Before re-tightening the screw 75, adjust the presser foot laterally to ensure that the needle will pass through the middle of the stitch hole in the presser foot.
When hemming thin materials, such as handkerchiefs etc., and for ensuring that the material passes smoothly through the hemmer, it may be necessary to reduce the pressure of the presser foot to the minimum.

13.3. **Adjusting the cloth presser bar height for the puller stroke on 211-10000 and 211-19000**

For adjusting the puller stroke on these machines, reset cloth presser bar as described in the preceding item 13.2. If the machines are fitted with a **puller of Vulkollan,** the stroke, i.e. the distance between the surface of the throat plate and the puller should amount (with the knee lever pushed entirely to the right) to about 5 mm for the sub-classes -10101 and to about 7 mm for the sub-classes -10103 and -10105.

On the machines with **steel puller,** the puller stroke depends on the position in which the puller has been arrested.

Said position can be obtained as follows: The steel puller should be arrested above the throat plate by the sheet 167 (fig. 11) so that the distance between the teeth tips of the puller and the surface of the throat plate amounts to 0.1–0.2 mm.

For setting, loosen screw 75 (fig. 11) and displace the cloth presser bar with respect to the block 168.

In order to ensure the proper stroke, it is necessary to use the plate 211-5647 for the machines 211-10101 (stroke about 5 mm) and the plate 211-5943, which is 2 mm shorter, for the machines 211-10103 and -10105 (stroke about 7 mm).

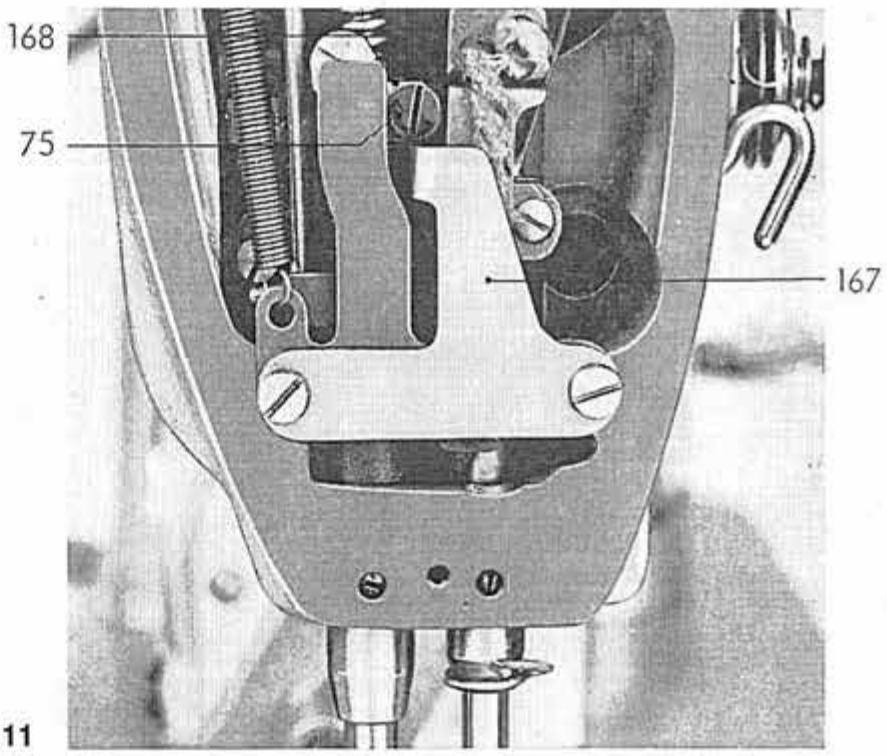


Fig. 11

13.4. **Adjusting the presser foot lifting stroke for 211-10000 and 211-19000**

Adjust the presser foot stroke for these machines so that when lifting, the presser foot is not lifted before puller is about 2 mm above the throat plate.

This adjustment can be obtained by turning the stop screw 170 after having loosened counter nut 169 (fig. 5). The above adjustment should be modified if items of different thicknesses and with transversal seams must be sewn.

Adjust then the presser foot stroke with respect to the puller stroke so that the presser foot still holds down the work when the puller is on a transversal seam.

13.5. **Eliminating the play in the knee lever action**

An excessive play in the knee lever action can be eliminated by turning the screw 76 (fig. 9) under the base plate. This screw has been adjusted in the factory for a normal presser foot stroke. Any subsequent alteration of the stroke requires readjustment of this screw.

Proceed to the adjustment as follows:

1. Set the feed dog to its lowest position by turning the hand wheel.
2. Loosen counter nut 77 (fig. 9).

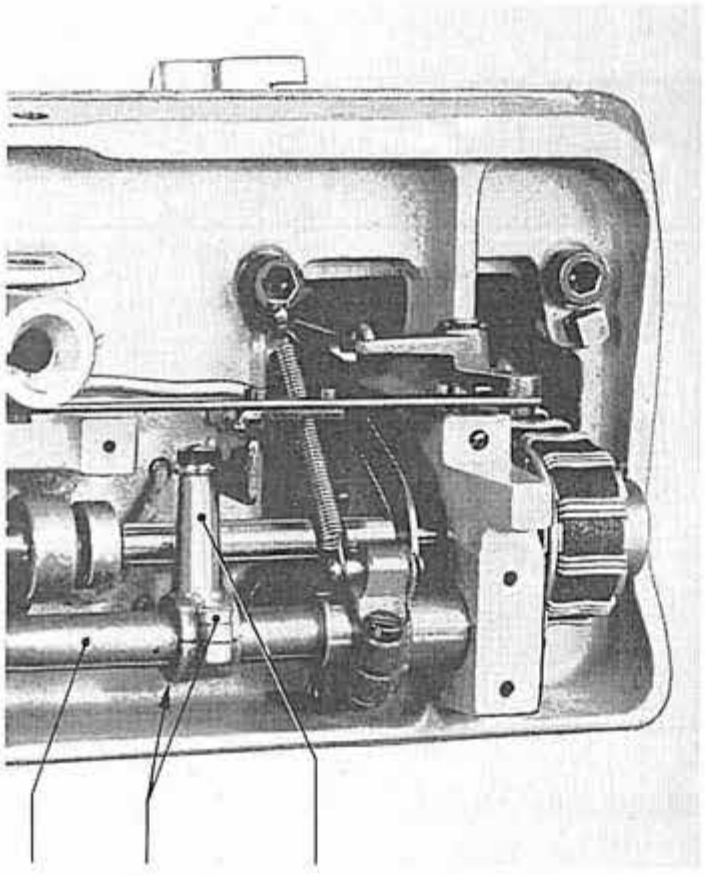


Fig. 12

3. Tighten or loosen the screw 76, as required, until the presser foot rests on the throat plate and only a slight play in the knee lever action is perceptible. This reduced play ensures that the finest material is properly held between the throat plate and the foot when the feed dog is underneath the throat plate.

4. Retighten counter nut 77.

13.6. **Adjusting the transmission lever for lifting the puller when sewing backwards** (valid only for 211-10000 and 211-19000)

When the stitch regulator lever, lowered in order to change the feeding direction, coincides with the mark "0", i.e. when no feeding takes place, the puller must have risen enough to allow the material to pass freely between the puller and the throat plate.

The height of the puller depends on the location of the transmission lever 171 (fig. 12) on the crank 43. Said height should be adapted to the thickness of the material involved. Transmission lever 171 can be set as required after having loosened screws 172.

14. Adjusting the feed dog motion

Adjust the feed dog motion by turning the lifting and pushing eccentrics on the lower shaft as follows:
When the thread take-up lever is at its topmost point, the reciprocal position of the lifting and pushing eccentrics should be such that the first screw of the lifting eccentric (l/h eccentric) and the second screw of the pushing eccentric (in direction of rotation) are exactly in alignment with the middle lower shaft bearing.

14.1. **Adjusting the drop feed on DÜRKOPP 211**

14.2. **Adjusting the feed zero point and the equal feed length for forward and reverse feed**

To adjust the drop feed, set it first on its zero point. Turn for this purpose the handwheel in the direction of rotation until stitch regulator lever 41 (fig. 9) stands on "0" and the lever 81 (fig. 9) has the minimum adjustable side movement, i.e. until there is no feed.

Should it be necessary to correct this adjustment, proceed as follows:

Set stitch regulator lever 41 (fig. 9) on "0" by turning knurled nut 42 and loosen clamp screw 82. While turning the handwheel in the direction of rotation, revolve crank 43 so that feed lever 81 has its minimum adjustable side movement (zero point). Having effected the adjustment, re-tighten clamp screw 82. To revolve crank 43 use a pin introducint it into bore 44.

In case of feed length differences when sewing forwards and backwards, balance this difference as follows:

Set the stitch regulator lever 41 (fig. 9) for a certain forward feed length (preferably for about 2 mm) and fit a perfect, straight needle. Place a piece of rigid paper under the presser foot and make 10 forward stitches by turning the handwheel in the direction of rotation. Invert the feed by fully lowering

the stitch regulator lever and sew again 10 stitches. The distance covered by 10 reverse stitches should be the same as that covered by 10 forward stitches. Should there be any difference, loosen the clamp screw 82 and turn the crank 43 accordingly.

Following the adjustment, retighten the clamp screws.

14.3. Adjusting the final feeding motion

The final feeding movement is the distance covered by the feed dog from the moment when the thread take-up lever is at its topmost position up to the moment when said dog performing advance movement has reached its final position.

In case of coarse toothing this distance should amount to approx. 1/2 gap between two teeth; in case of fine toothing it should amount to approx. 3/4 of gap between two teeth. To check this distance, set stitch length for about 4 mm.

To rectify the distance, loosen the two fastening screws 89 and turn pulley 90 on the lower main shaft 95. Before retightening the two fastening screws ensure that the lower pulley is in line with the upper one.

Having effected this adjustment, verify and, if necessary, rectify, the position of the hook according to the section 17.2. and the position of the bobbin case lifter according to the section 19.

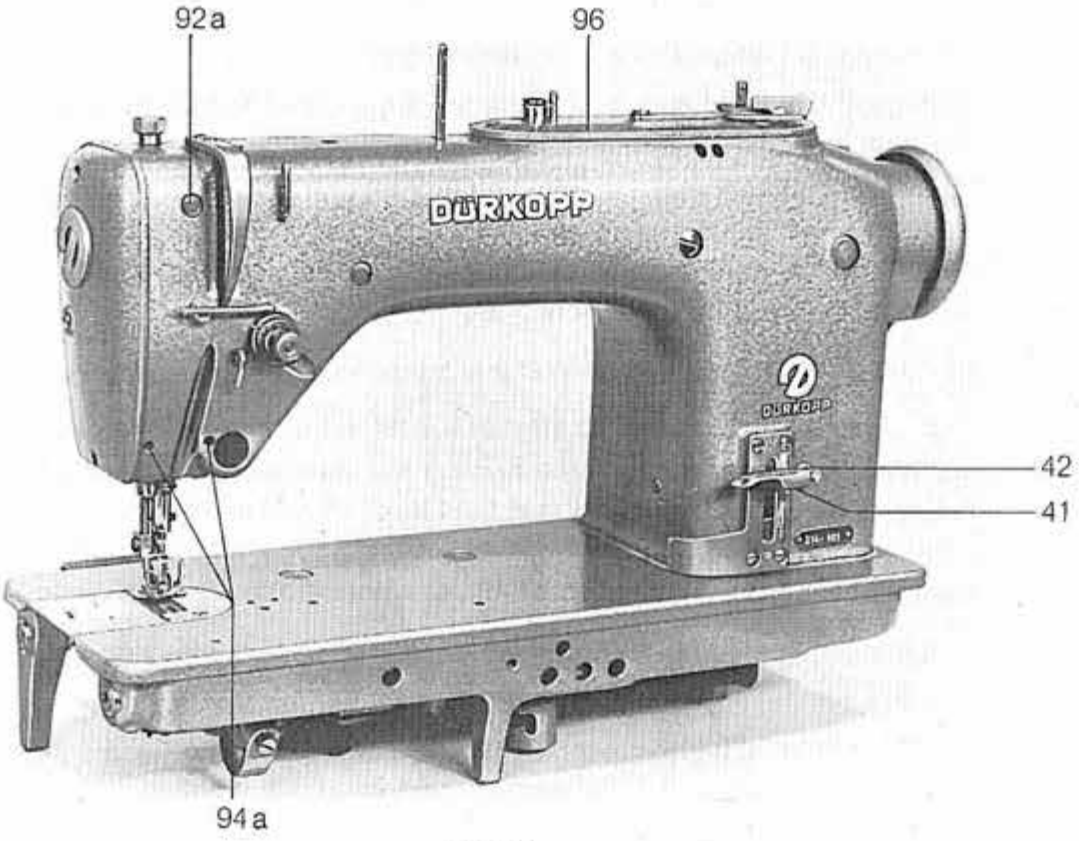


Fig. 13

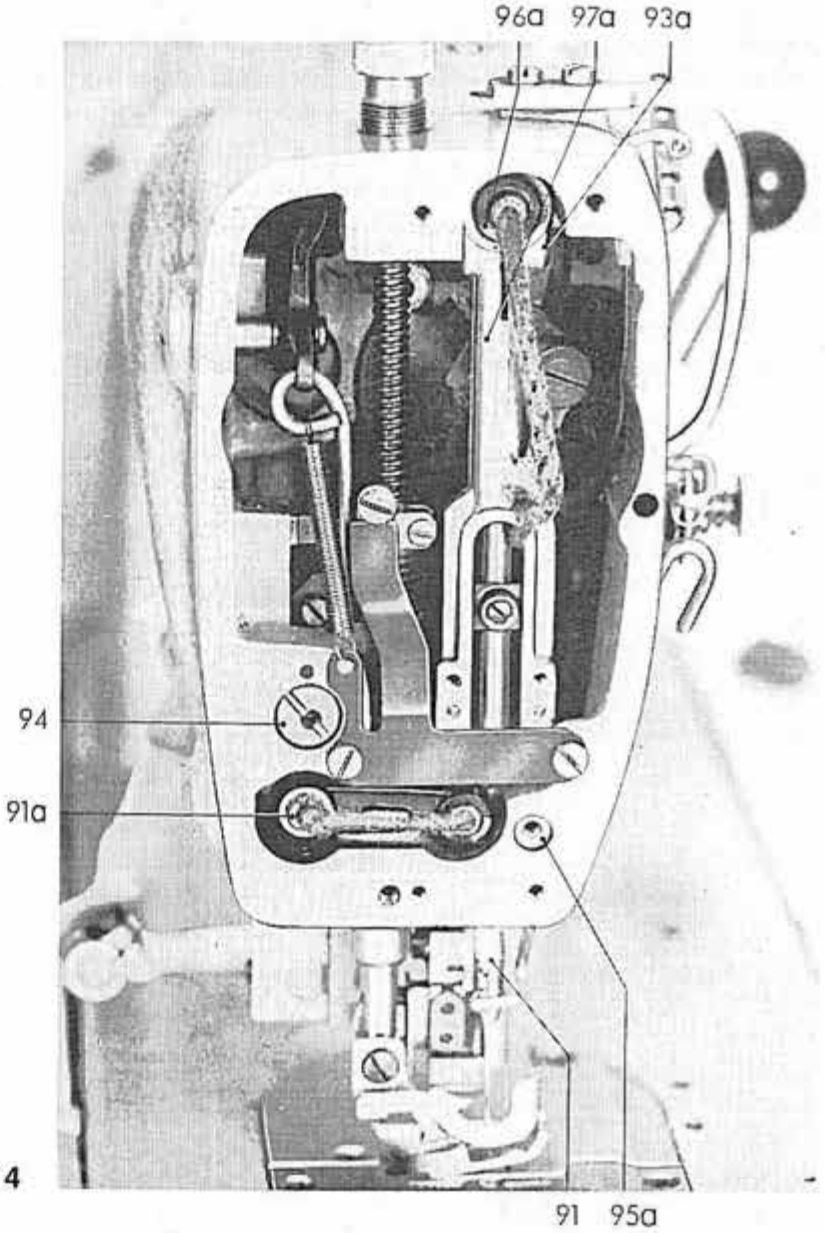


Fig. 14

15. **Adjusting thr drop feed and the needle feed on DÜRKOPP 212** (figs. 13, 14, 15, 16)

The drop feed and the needle feed must be synchronized. To verify this adjustment proceed as follows:

1. Conduct needle bar 91 (fig. 14) to its lowest point by turning the handwheel. In machines with incorporated setting gauge arrest in the position "E". In this position an when moving stitch regulator lever 41 (fig. 13) from maximum forward stitch to minimum reverse stitch, needle bar 91 and feed lever 81 (fig. 9) must have their minimum side movement.

This side movement of the needle can be regulated by turning the eccentric bearing shaft 94 (fig. 14) after loosening the clamp screws 92 and 93 (fig. 15) and that of the feed lever by turning the lower main shaft 95. When turning the eccentric bearing shaft 94 ensure that the longer part of the groove shows upwards (towards the reference point). The bearing shaft should in no case

be positioned in such a way that the longer part of the groove shows downwards. When turning the lower shaft make sure that the needle bar stops at its lower dead centre and the pulley 90 is not shifted along the lower main shaft.

2. Set stitch regulator lever 41 (fig. 13) on "0" by turning knurled nut 42 counter clockwise.

With stitch regulator lever in this position and when revolving the machine, needle bar and feed lever 81 (fig. 9) must have their minimum oscillation.

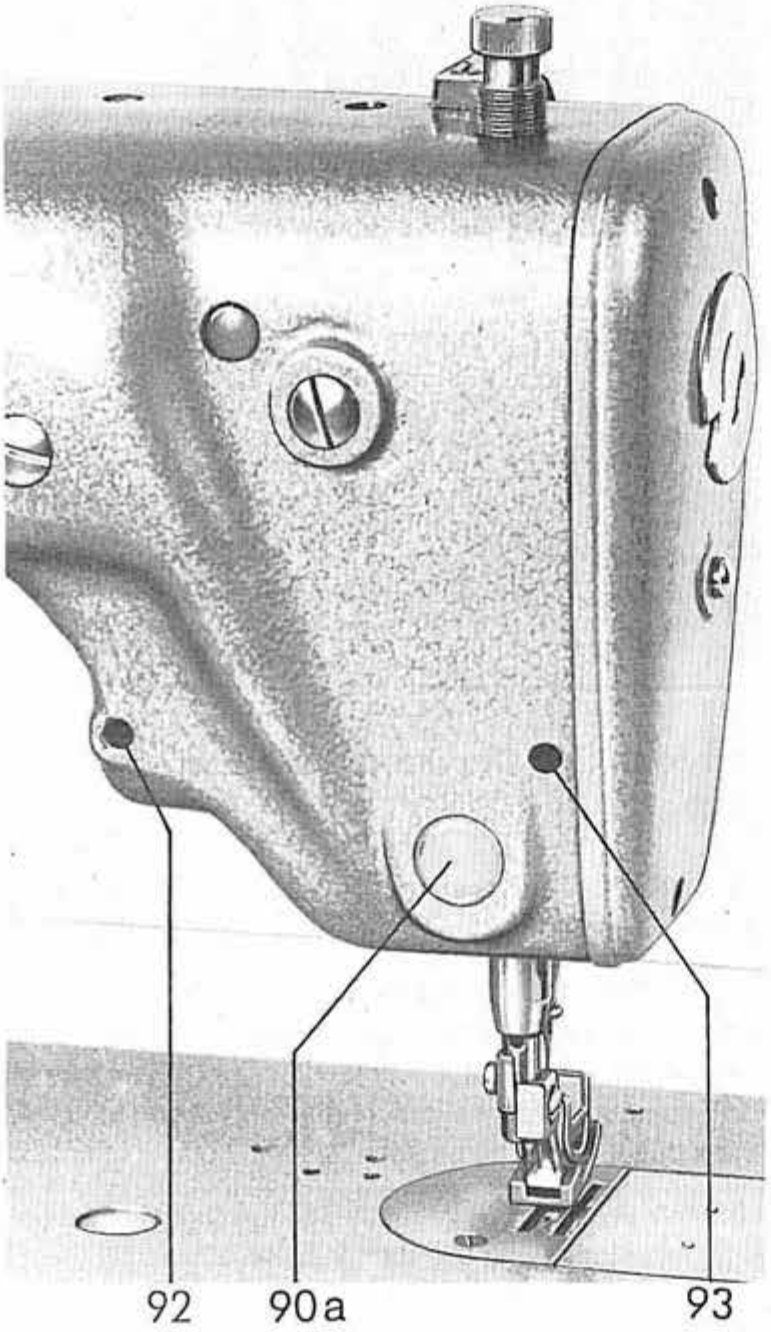


Fig. 15

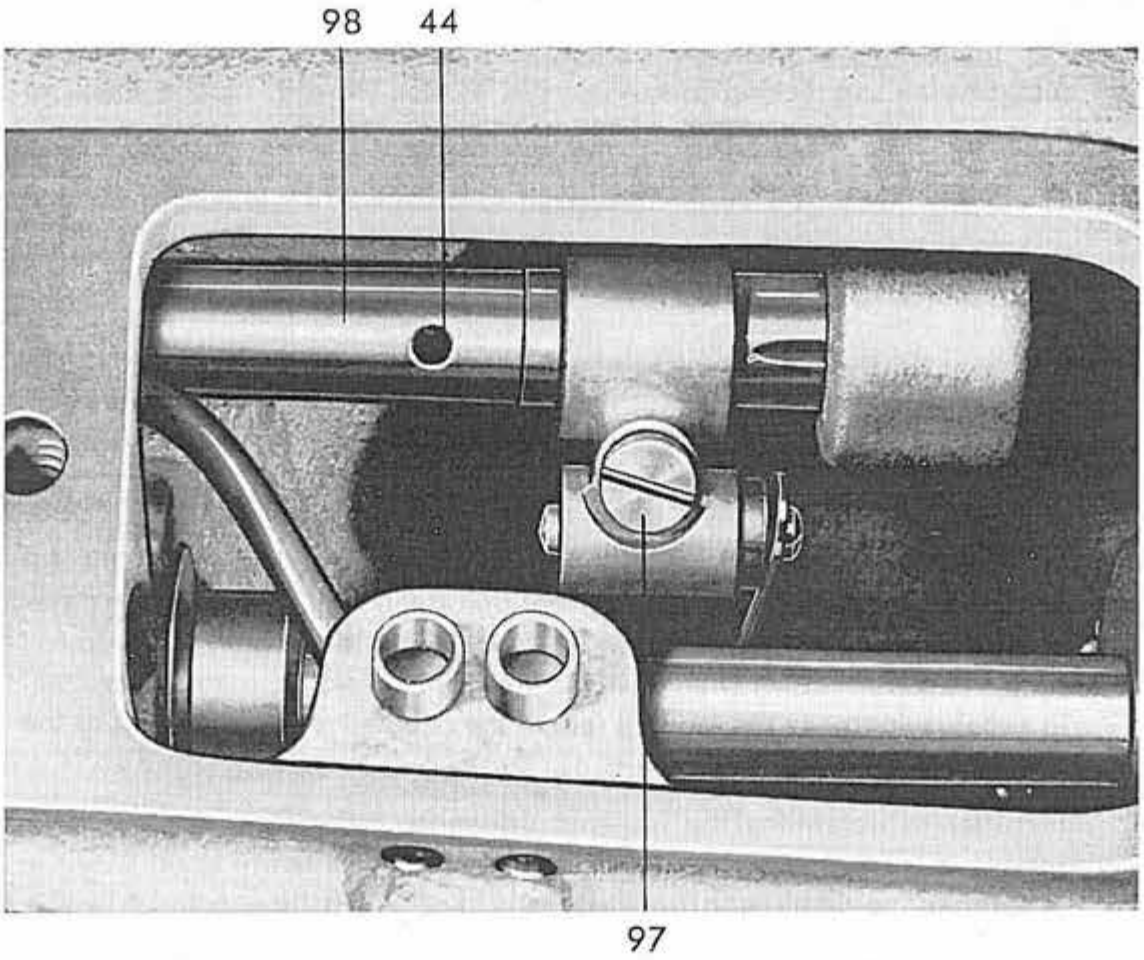


Fig. 16

To adjust the oscillation of the needle bar, remove arm cover 96 (fig. 13). Loosen screw 97 (fig. 16) and turn the shaft 98 accordingly. For regulating the oscillation of the feed lever, loosen the screw 82 (fig. 9) and turn accordingly the shaft 43. To turn said shafts, use a pin, introducing it into the bore 44 of the respective shaft.

3. Remove the throat plate, the presser foot and the feed dog, fit a throat plate with a small round needle hole (e.g. 2041391) of a DÜRKOPP 207 or 211 and insert in the needle bar an impeccable straight needle.

Set then stitch regulator lever 41 on "0" and check whether the needle passes through the middle of the needle hole. If there is no throat plate, the distance between the needle bar and the cloth presser bar should amount to 14.8 mm.

In the negative, remove plug 90a (fig. 15), loosen the locking screw, which is then accessible, and adjust the needle bar in the sewing direction by turning the eccentric 91a (fig. 14). (The eccentric lug of the eccentric 91a should always face **downwards**).

For adjusting the needle bar transversally to the sewing direction, remove plug 92a, loosen locking screws 93a (fig. 14) and 94a (fig. 13) and displace, as required, the guides 95a and the cam 97a on the bearing bush 96a.

The position of the feed dog carrier arccording to chapter 16.2. should be checked and rectified, if required.

Note:

In DÜRKOPP 212-103, which has been designed mainly for sewing synthetic and blended tissues, the needle feed should be adjusted to advance faster than the drop feed, so as to avoid intershifting of plies of the material sewn.

Proceed to the adjustment of this difference in the feeding lengths as follows:

After having adjusted the needle feed and the drop feed as specified, set first stitch regulator lever 41 for the required stitch length, remove arm cover and loosen slightly thumb screw 97 (fig. 16). Introduce then a mandrel in hole 44 and turn crank shaft 98 in the direction of rotation of the handwheel in order to increase the feeding rate of the needle feed with respect to the drop feed.

In order to determine the required difference between the two feeding means, make some test seams in the material to be sewn. In no case the difference should be such that the needle touches the throat plate.

16. Adjusting the feed dog

16.1. Adjusting the height of the feed dog

The extent to which the feed dog should project above the surface of the throat plate when being at its topmost position depends on the thickness and the type of the material to be sewn.

On white goods machines the feed dog should narmally project by 0.9 mm and on outerwear machines by 1.2 mm.

To adjust the height of the feed dog, loosen clamp screw 104 (fig. 9) and set the feed dog at proper height. This can be done with the help of a setting bridge 107, ref. No. 2161066, according to fig. 17. Said bridge has two steps: 0.9 and 1.2 mm.

Following the adjustment retighten firmly the screw 104 (fig. 9).

16.2. Longitudinal adjustment of the feed dog

On DÜRKOPP 211 the feed dog should be adjusted in the longitudinal direction so that it does not strike against the table top when the machine is set for the maximum stitch length.

On DÜRKOPP 212 the feed dog should be adjusted in accordance with the needle, which should stand against the midele of the hole in the feed dog.

The adjustment can be effected after having loosened screw 105 (fig. 9).

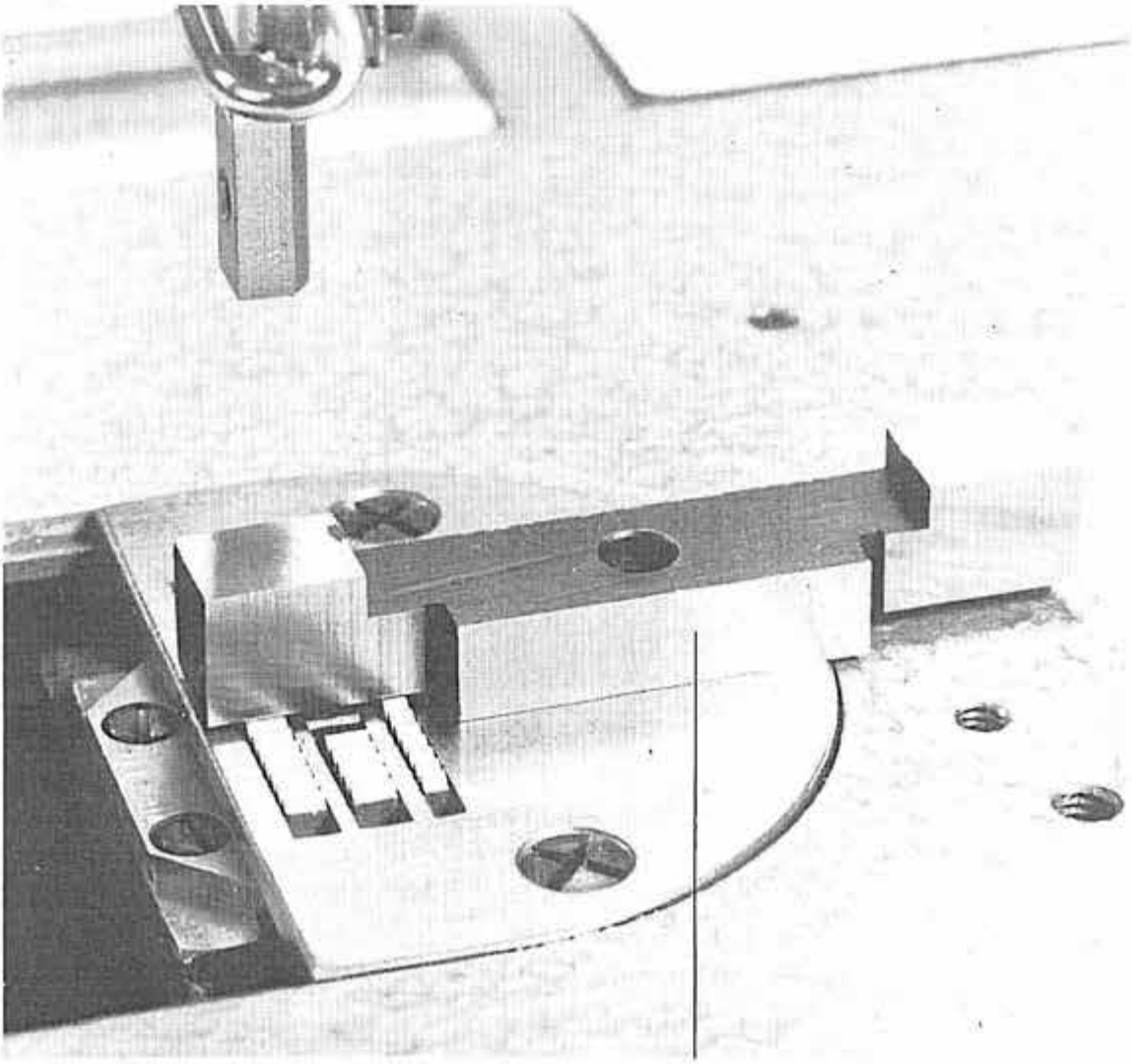


Fig. 17

17. Adjusting the hook and the height of the needle bar

The loop stroke amounts to 1.8 mm.

This means that when, by turning the handwheel in the direction of rotation, the needle has risen 1.8 mm from its lowest point, the hook tip should be opposite the centre of the needle and the lower edge of the hook should be flush the top of the needle eye.

For precise adjustment use the needle bar setting gauge (ref. No. 2161065), including the bridge 107 (fig. 18) (ref. No. 2161066) and the three following setting pins 106. For adjusting the loop stroke, arrest the machine in the "A" position.

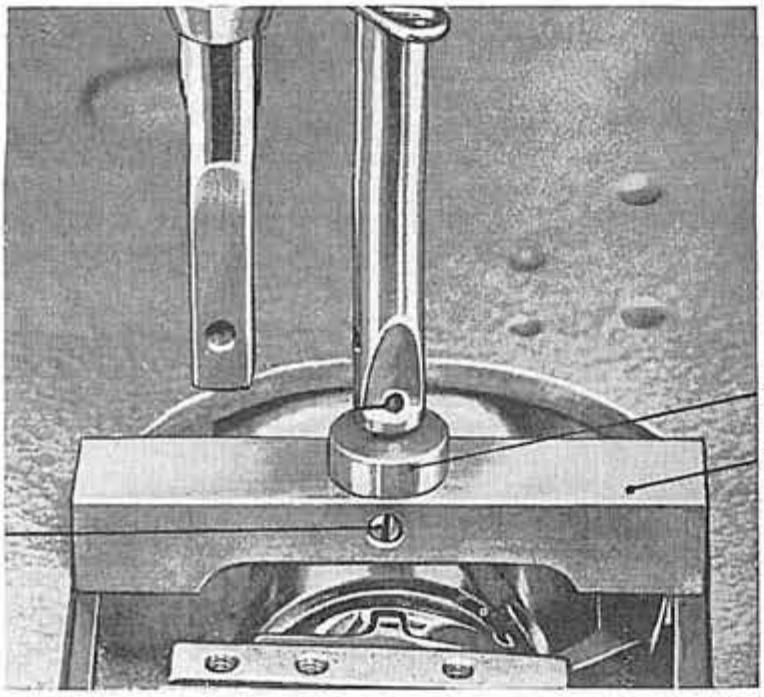


Fig. 18

For machines with vertical cutter use the longer bridge, No. 2124942 instead of the bridge 2161066. The hook setting gauge can also be used for adjusting the bobbin case lifter (section 19). The needle bar setting gauge is supplied with four interchangeable adjusting pins of different lengths, corresponding to those of the different needle systems.

Needle system	Adjusting pin (ref. No.)
5620 or Sy 1451 (135 x 1)	2161068
797 or Sy 1901	2161069
2134-35	2161070
Sy 1968 (135 x 25)	2161069

The adjusting pins are marked with the corresponding part number.

Note:

For adjusting the needle bar height and the loop stroke on DÜRKOPP 212, stitch regulator lever must be set on "0".

17.1. **Setting the needle bar at the correct height by means of a setting gauge** (figs. 10 and 18)

1. Introduce the adjusting pin 106 (fig. 18), corresponding to the needle system used, into bridge 107 of the gauge.
2. Remove throat plate slide and unscrew throat plate and face plate.
3. Loosen needle bar fastening screw 109 (fig. 10).
4. Place needle bar setting gauge on the throat plate support of base plate.
5. Set needle bar crosshead 110 at its lowest position by turning the hand-wheel.

6. Push the disconnected needle bar downwards until it rests with the end of the needle duct on the adjusting pin, then retighten needle bar fastening screw. Make sure that the needle fastening screw faces to the right.

17.2. **Adjusting the loop stroke by means of a setting gauge** (figs. 19 and 20)

For machines with incorporated setting gauge see the instructions at the end of this Manual.

The hook setting gauge consists of an adjusting clamp 111 (ref. No. 223531) and of a lift measuring gauge 112 (ref. No. 223536b). The latter is 1.8 mm thick. This value corresponds to the value of the loop stroke. To adjust the loop stroke, proceed as follows:

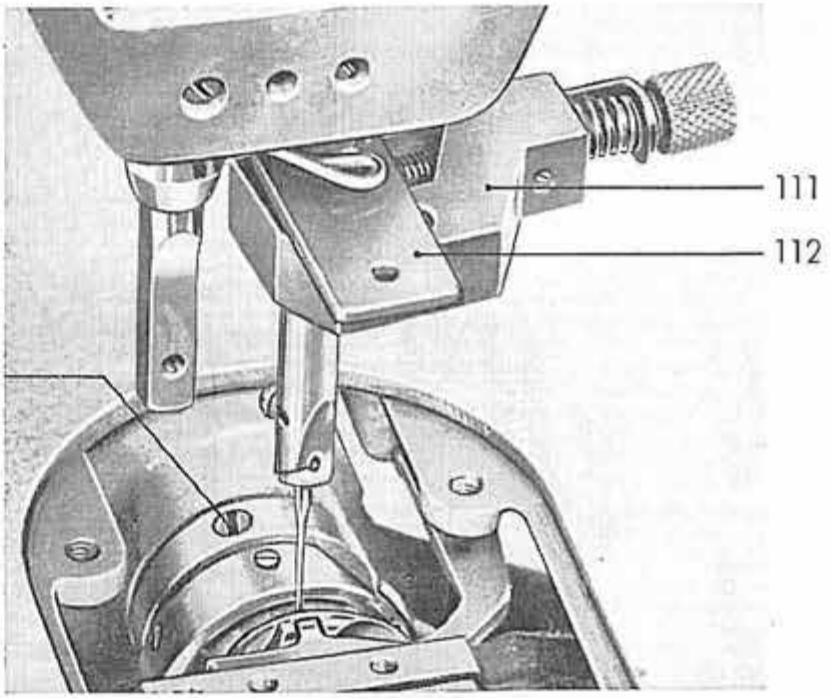


Fig. 19

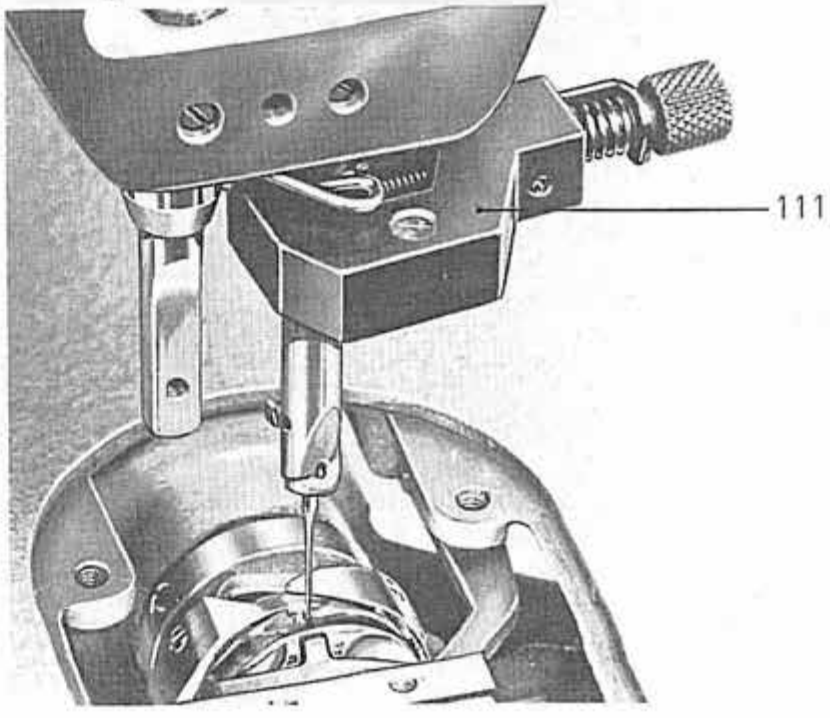


Fig. 20

7. Loosen the fastening screw 113.

8. Conduct needle bar to its lowest position by turning the handwheel.

9. Slip adjusting clamp 111 onto the needle bar and push lift measuring gauge 112 by means of the clamp against the needle bar bush. Tighten the clamp and remove the lift measuring gauge.

10. By turning the handwheel clockwise, allow the needle bar to travel upwards until the adjusting clamp touches the surface of the needle bar bush.

11. Set the point of the hook opposite the centre of the needle and tighten both hook fastening screws, making sure that the hook has been pushed up to the shoulder of the hook shaft (this is important for the hook lubrication).

12. Replace face plate with gasket, throat plate and throat plate slide.

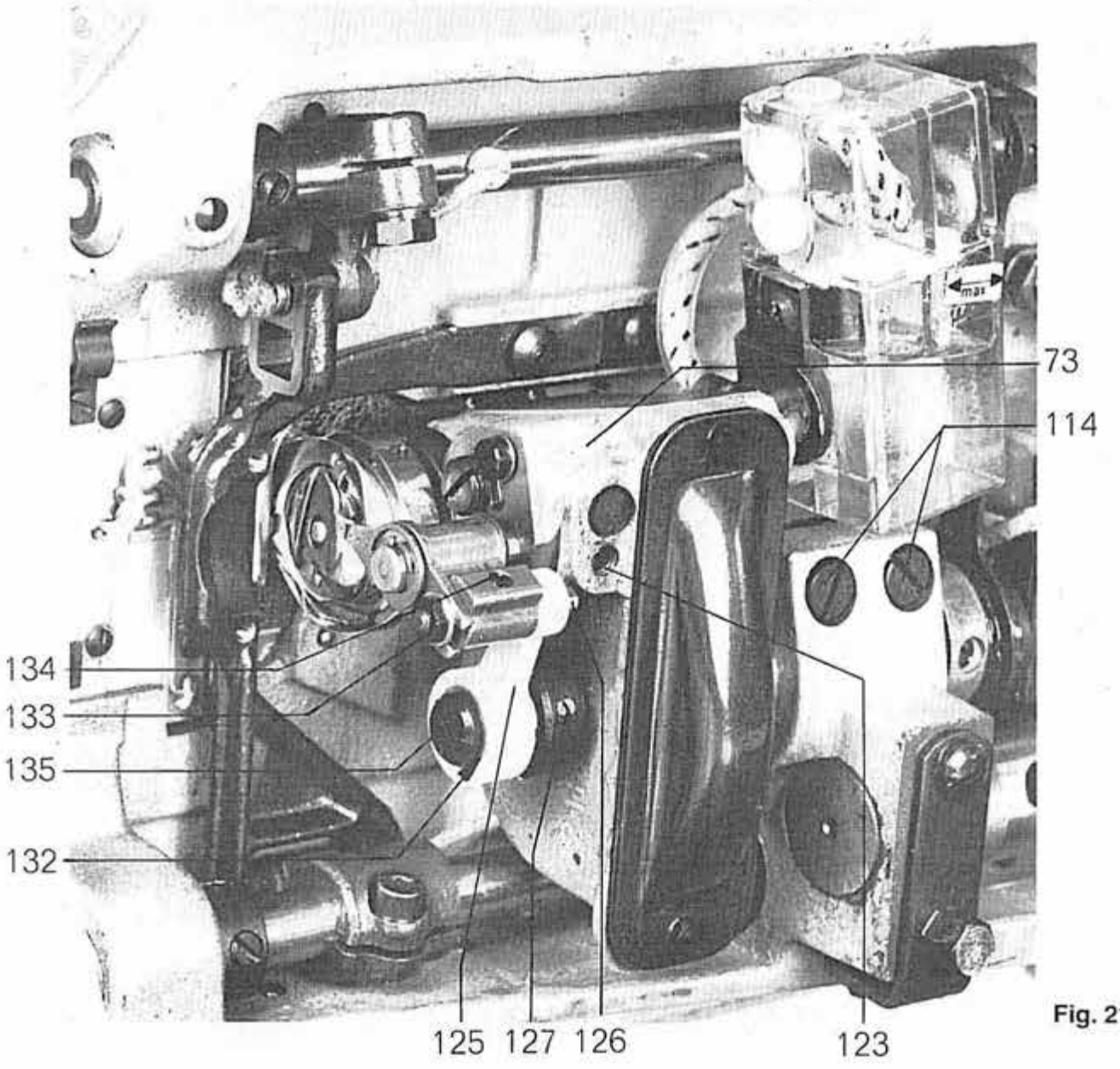


Fig. 21

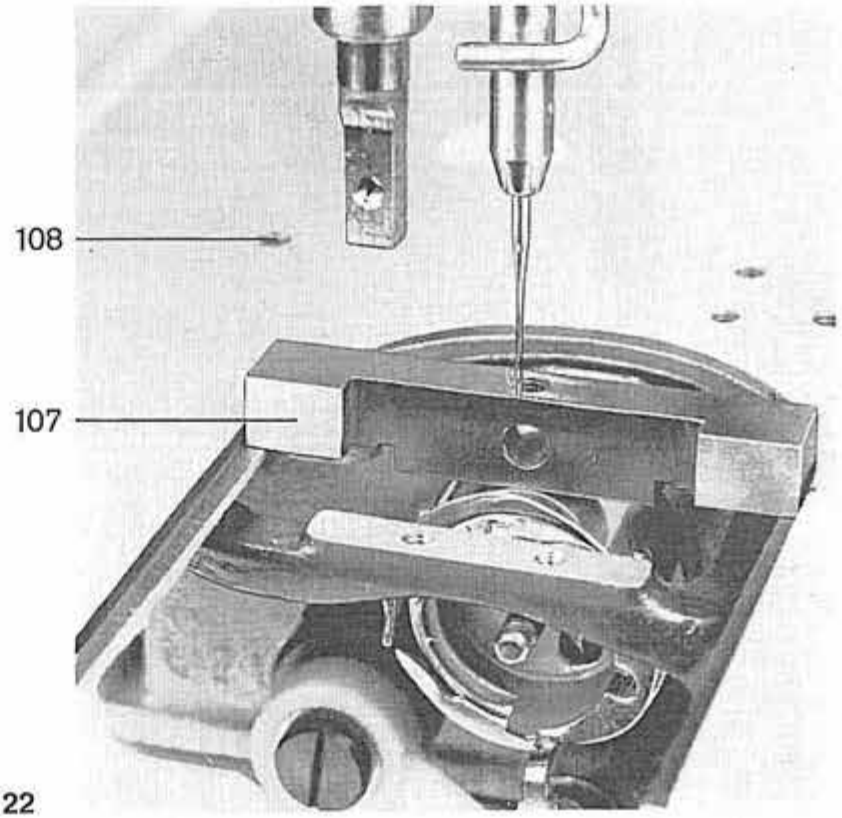


Fig. 22

17.3. **Adjusting the lateral distance between the hook and the needle and aligning the hook case** (fig. 21)

The lateral distance between the hook and the needle should amount to 0.1 mm. For adjusting the proper distance, loosen both screws 114 and shift the entire hook case 73 slightly to the left or to the right. When tightening the two screws 114 make sure that the joining surface of the hook case touches the stop screw, locked by threaded pin 108 (fig. 22).

Adjust said stop screw so that when it is in contact with the housing, the distance between the thread pulling sheet and the throat plate rest amounts to 3 mm.

For measuring this distance, use the bridge 107 (fig. 22) (ref. No. 2161066) of the needle bar setting gauge. Apply said bridge 107 as shown in fig. 22.

For machines with vertical cutter use the longer bridge (ref. No. 2124942) for adjusting this distance.

18. Adjusting the lateral distance between the bobbin case retaining lug and the base of the bobbin case (fig. 26)

Seen in the sewing direction, the lateral distance between the retaining lug of the bobbin case and the base of the bobbin case should be 0.5 mm. In case of DÜRKOPP 212 and 219 with 6 mm stitch length the distance should amount to 0.7 mm, because these machines require generally thicker

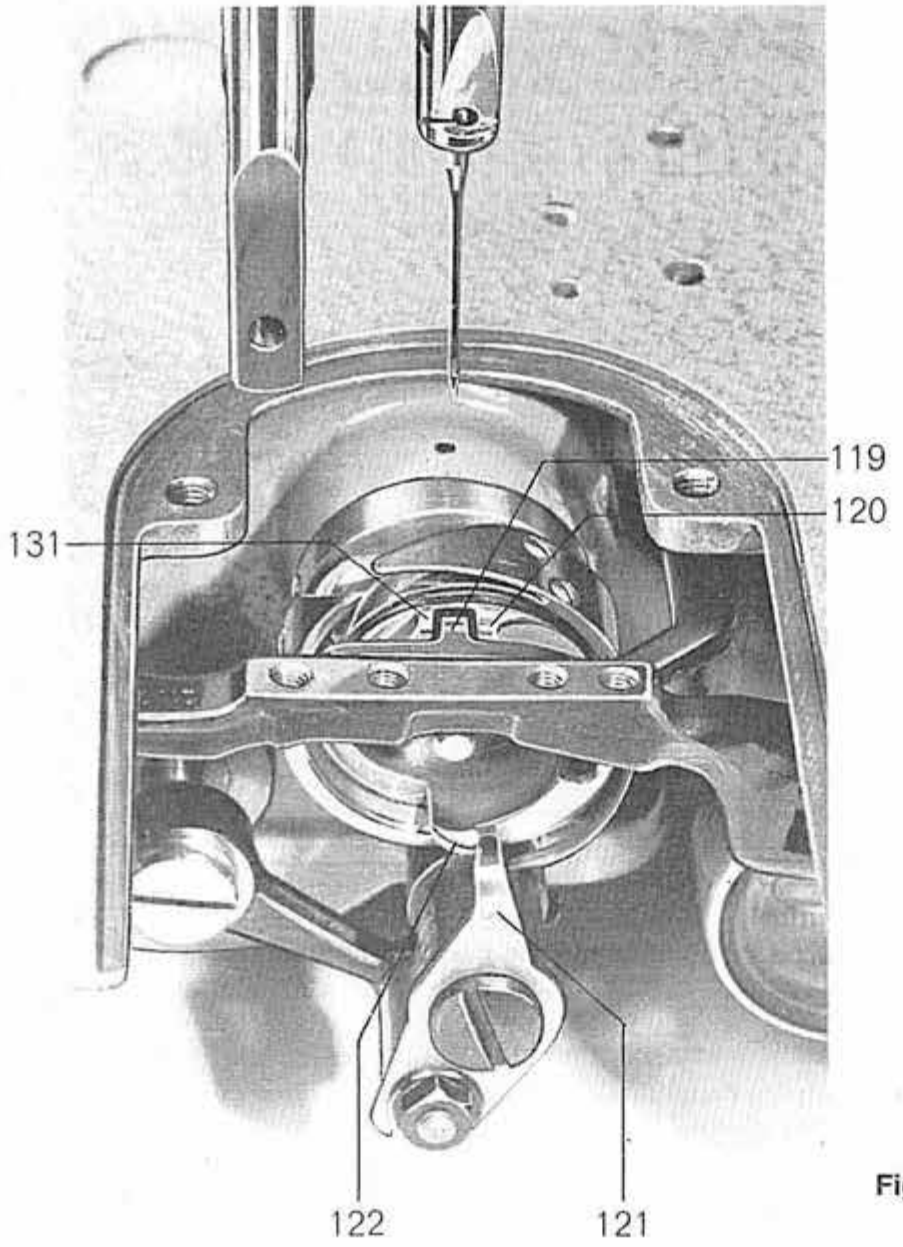


Fig. 23

threads. To adjust this distance, loosen fastening screw 115 of bobbin case holder 116 and stop fastening screw 117. Having effected lateral adjustment of the bobbin case holder, tighten screw 115. Set then stop 118 close to bobbin case holder 116 and tighten stop fastening screw 117.

The stop 118 will retain the bobbin case holder 116 in the correct position should subsequent adjustment be necessary.

19. **The bobbin case lifter** (fig. 23)

19.1. **Purpose of the bobbin case lifter**

The high rotational speed of the sewing hook produces a considerable friction between the race of the hook and that of the bobbin base and, consequently, in case of machines without this device, a certain degree of pressure at the thread exit between the bobbin case retaining lug 119 and the joining surface 120 of the bobbin base. The purpose of this lifter is to pull

the bobbin case slightly contrary to the direction of rotation of the hook at the moment when the upper thread loop passes the retaining lug 119, in order to allow the thread to slide past this point unhindered.

19.2. **Adjusting the lateral distance between the bobbin case lifter finger and the bobbin case** (figs. 13, 24, 25)

The lateral distance between the lug of lifter finger 121 (fig. 23) and the base of the bobbin case should amount to 0.8 mm, corresponding approx. half the height of the part 122.

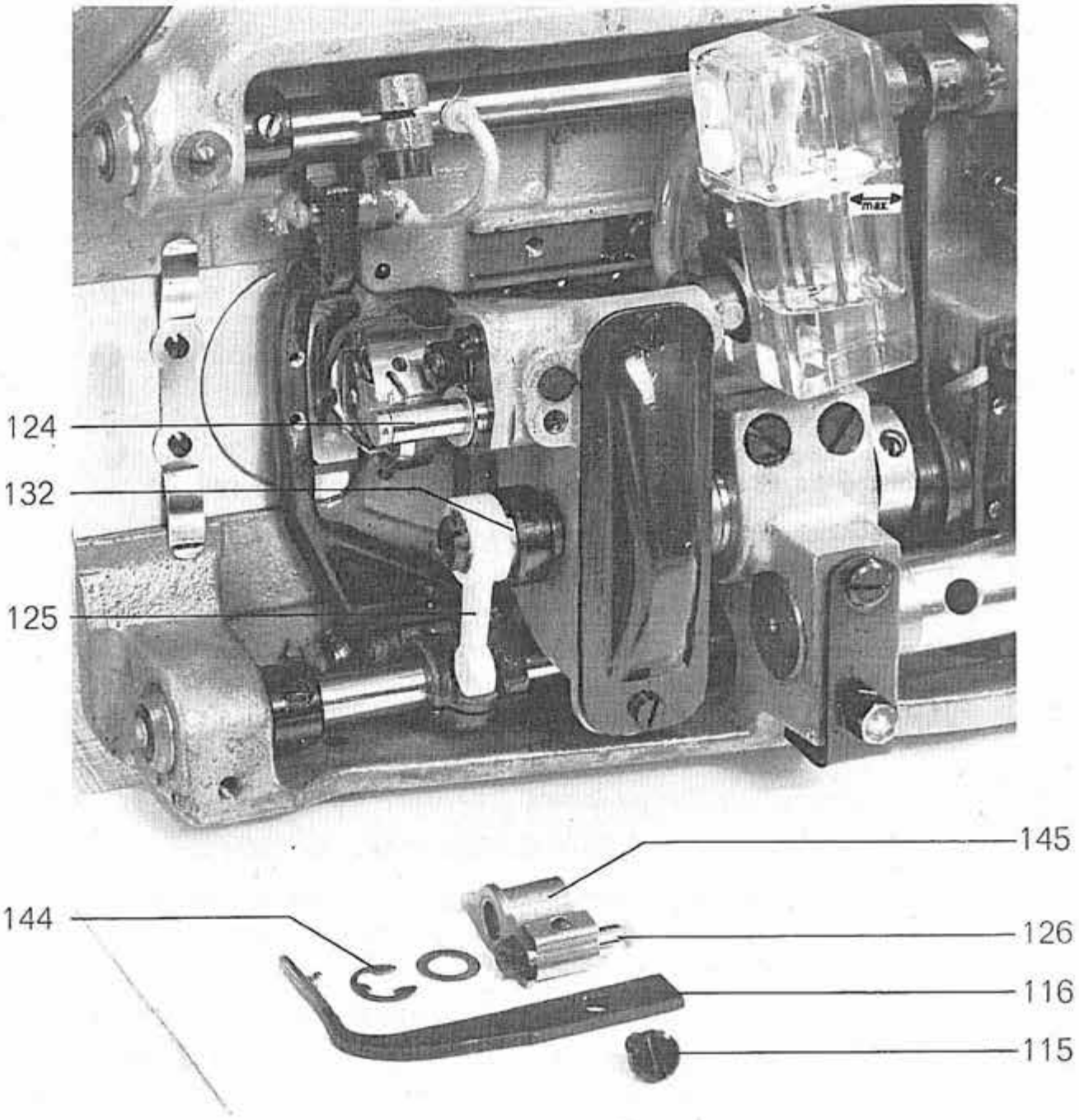


Fig. 24

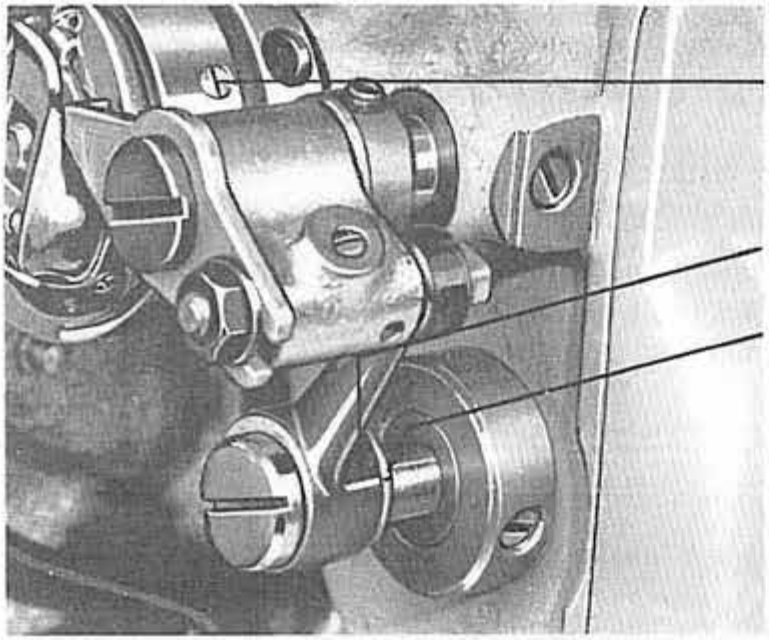


Fig. 25

To effect a correct adjustment, loosen screw 123 (fig. 21) and displace the pin 124 (fig. 24) axially. Make sure that, after this adjustment, the small eye of draw bar 125 (fig. 21) travels approximately through the centre of the bearing surface of the eccentric pin 126. Otherwise screw 127 must be loosened and the eccentric bearing pin 132 must be shifted axially. Adjust, if required according to section 19.3. of the present chapter.

19.3. **Adjusting the movement of the bobbin case lifter** (figs. 21, 23, 24, 25)

For machines with incorporated setting gauge see the instructions at the end of this Manual.

The movement of the lifter must be adjusted with the utmost accuracy. However, this is very easy to effect by making use of the adjustment reference marks on the eccentric, which causes the movement, and of the hook setting gauge, described under section 17.2. Two adjustment moments must be taken into account:

1. The timing of the lifter movement,

2. The extent to which the bobbin case should be pulled back.

Both of these adjusting moments are correct if, by turning the handwheel in the direction of rotation, the needle bar has travelled 2 mm beyond its culminating point and

1. the mark 129 (fig. 25) on the boss of draw bar 125 (fig. 24) coincides with the adjusting mark (groove) 130 and

2. the base of the bobbin case has been pulled back far enough by the lifter finger 121 (fig. 23) so that, when the bobbin case is pushed in the direction of rotation of the sewing hook, the retaining lug 119 remains equidistant between the joining surfaces 131 and 120 of the bobbin case base.

To effect an accurate adjustment of the bobbin case lifter, use hook setting gauge 223531 with 1.8 mm thick lift measuring gauge 223536b and proceed as follows:

1. Conduct the needle bar to its topmost point and fix adjusting clamp 111 (fig. 20) on the needle bar so that it rests against the lower surface of the needle bar socket.

2. By turning the handwheel **in the direction of rotation** lower the needle bar sufficiently to insert the 1.8 mm lift measuring gauge 112 (fig. 19) between needle bar socket and adjusting clamp. While maintaining the machine in this position, make the adjustments described under 3–9.

3. Loosen screw 127 (fig. 21) and turn eccentric bearing pin 132 until the two reference marks 129 and 130 (fig. 25) coincide. (Do not alter the lateral position; see section 19.2. of this chapter.)

4. Tighten screw 127 (fig. 21),

5. Loosen nut 133,

6. Loosen screw 134,

7. Turn eccentric pin 126 so that, when the bobbin case is pushed in the direction of rotation of the hook, the retaining lug 119 (fig. 23) remains equidistant from the joining surfaces 131 and 120 of the bobbin case base.

8. Tighten screw 134 (fig. 21),

9. Tighten nut 133 while holding eccentric pin 126 in position.

Checking the adjustment:

If the bobbin case is pushed in the direction of rotation of the hook; while turning the machine by hand, the upper thread loop should slide easily past the lifter finger 121 (fig. 23) and the bobbin case retaining finger 119.

Note:

Should it be necessary to take out the draw bar 125 (fig. 21) it is important to remember that screw 135 has a left-hand thread.

20. **Changing the sewing hook** (figs. 23, 24, 26)

Before changing the hook, remove the bobbin case lifter and the bobbin case holder 116. Fig. 24 shows the removed parts.

For removing the bobbin case lifter it is only necessary to remove the safety ring 144. The part 145 can then be dismounted from the pin 124 and from the draw bar 125. Since the eccentric pin 126 and the bearing pin 132 need not be loosened, there is no need to re-adjust the lifter when replacing this part.

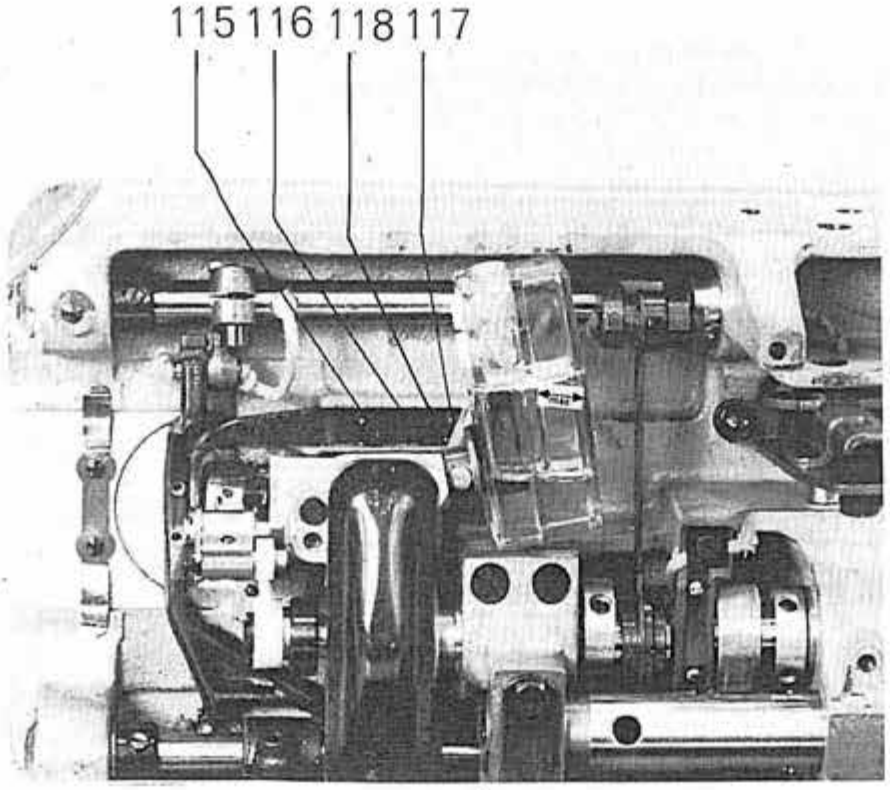


Fig. 26

For taking out the bobbin case holder, simply loosen the screw 115 (fig. 26). Do not loosen the screw 117 which holds the stop 118 in position.

After setting the feed dog at its topmost position and loosening the two hook fastening screws, the hook can be pulled off the hook shaft and replaced by a new hook. When replacing the bobbin case holder, make sure that the retaining lug 119 (fig. 23) fits into the groove of the bobbin base. The distance between the two parts is correct if the bobbin case holder is resting against the stop 118 (see chapter 18).

Adjust the sewing hook according to section 17.2. and replace the bobbin case lifter.

21. **Stripping the sewing hook** (fig. 21)

It is not necessary to take the hook out of the machine for removing the bobbin case base from the hook.

Proceed as follows:

1. Remove the bobbin case top.

2. Loosen the screw 144 and remove bobbin case lifter as described under chapter 20.

3. Remove the three screws of the hook cover 146 (fig. 25) and take off the latter.

4. Set the hook so that its tip is just a little over 45° beyond its culmination point.

5. With the hook in this position, and while turning the handwheel gently to and fro, take out the bobbin case base.

For reassembling the hook, proceed in the reverse order to that given above. In doing so make sure that the lug of the bobbin case holder fits into the notch in the bobbin case base.

22. **Changing a belt** (fig. 27)

For changing the belt, proceed as follows:

1. Remove the positioner (if any), the handwheel, the belt guard, the arm cover, the head cover, the needle and the throat plate.

2. Take off the V-belt, remove the two springs 211 (fig. 27) and refasten the handwheel.

3. Pull the belt from the upper pulley to the left. Loosen the screws 212 and 213. The screw 213 (first screw in the direction of rotation) presses on the surface of the arm shaft. Therefore, loosen it sufficiently.

Note:

When carrying out the work described under the items 4., 5., 6. and 7. do not exert an excessive pressure on the arm shaft in the axial direction of the arm head, the same applying also to a displacement, because this could cause damage to the driving parts in the arm head area. Thus, if there is an axial pressure on the arm shaft this must be neutralized by a corresponding counter-pressure on the arm crank.

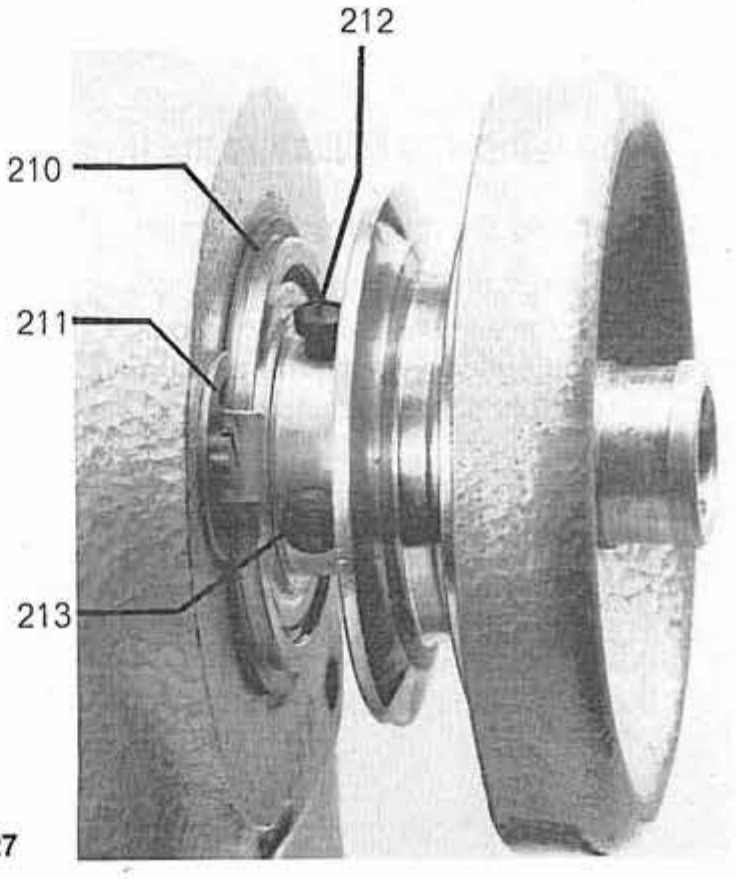


Fig. 27

4. By giving the handwheel a short sharp jerk, pull the entire rear arm shaft bearing (ball bearing) out of the machine. If impossible, place two thick screwdrivers between the machine and the belt pulley and pull our the arm shaft bearing.

5. Remove the belt from the lower pulley and take it out through the opening of the arm shaft bearing.

6. Introduce the new belt through the opening of the bearing in the machine. Make sure that the open side of the belt sprockets are pointing to the outer side and the ends of the threads of which the belt is made are showing in the direction of rotation. Place the belt on the arm shaft on the left of the upper pulley.

7. Replace the arm shaft bearing and ensure that the safety ring touches the machine arm. Refasten the springs 211.

8. Retighten the two handwheel screws 212 and 213 (first screw 213 in the direction of rotation must press against the surface of the shaft). **Press against the arm shaft crank in order to ensure that the arm shaft operates without any play.**

9. Arrest the machine (arm shaft in position A by the adjusting ring. Place the belt around the lower pulley and, by turning the lower shaft, situate the hook tip against the middle of the needle (loop stroke position).

While maintaining the loop stroke position, turn the handwheel and slip the belt **slowly** from the left on the upper belt. Remove for this purpose the setting pin.

10. Remove the handwheel, replace the previously removed parts, replace the V-belt and fit again the handwheel.

Fit and adjust the positioner, if any.

23. Changing and adjusting the thread tension spring (fig. 28)

23.1. Changing the thread tension spring

To change thread tension spring "C" (fig. 28) loosen screw 151 and take the entire thread tensioning device out of the machine. Having changed the tension spring, replace the thread tensioning device in the machine, ensuring that the rear clamping device rests against the edge of the tension sleeve.

23.2. Adjusting the thread tension spring

The thread tension spring should exert slight tension on the upper thread until the needle penetrates in the fabric. If, at this moment, the thread is too slack, the descending needle might pierce its own thread. Both the deflection and the tension of the thread tension spring are adjustable.

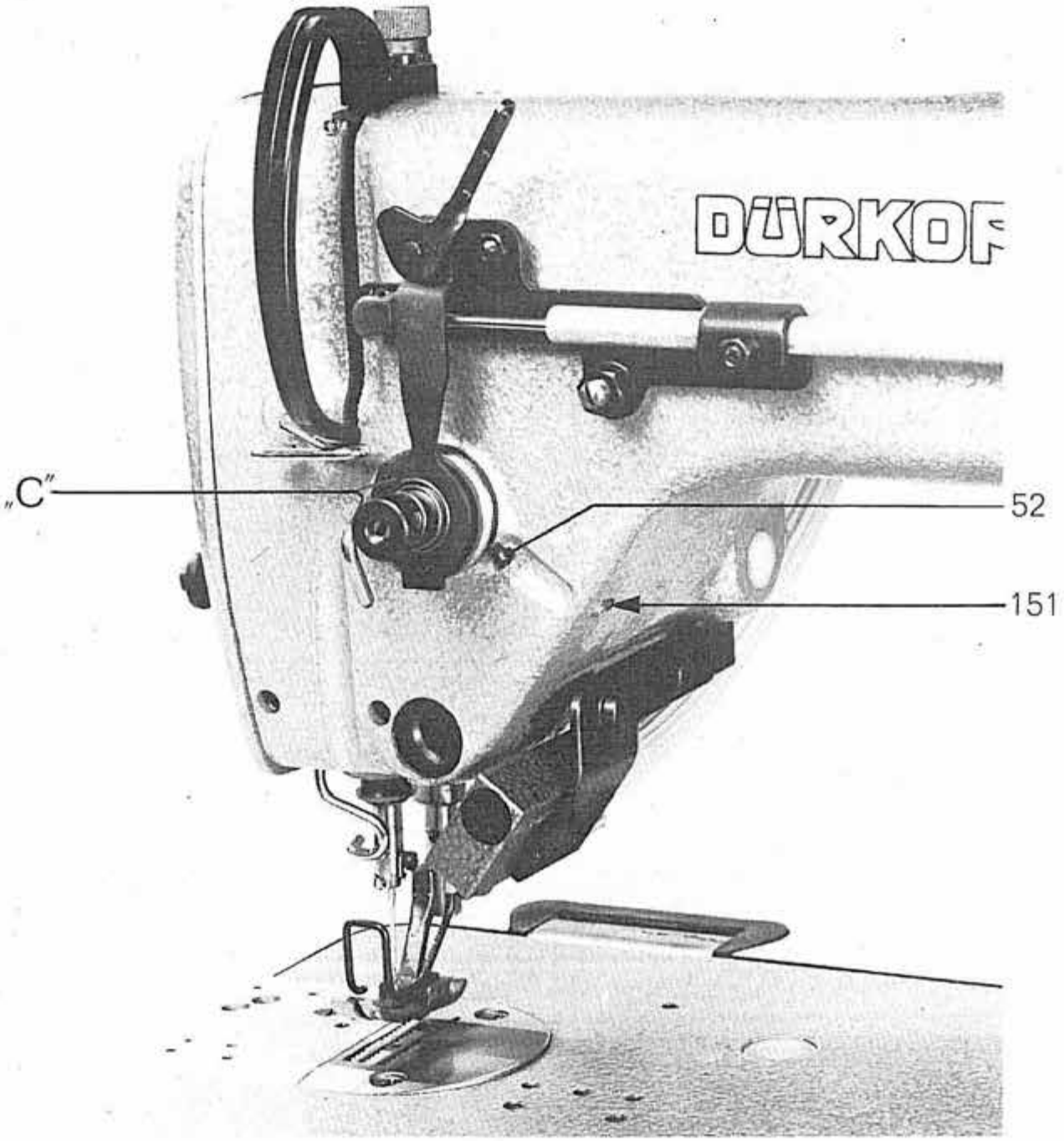


Fig. 28

To **adjust the deflection** of the thread tension spring, loosen screw 52 (fig. 28) and turn accordingly the tension sleeve behind the thread tension disks.

To **adjust the tension** of the thread tension spring, loosen screw 151 (fig. 28) and turn accordingly the tension spindle. Turn to the right to increase the tension and to the left to decrease it.

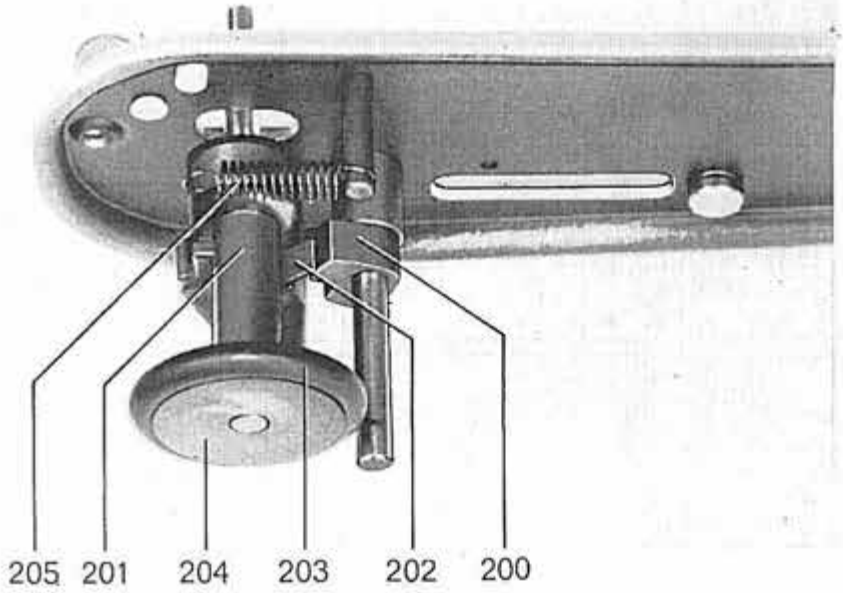


Fig. 29

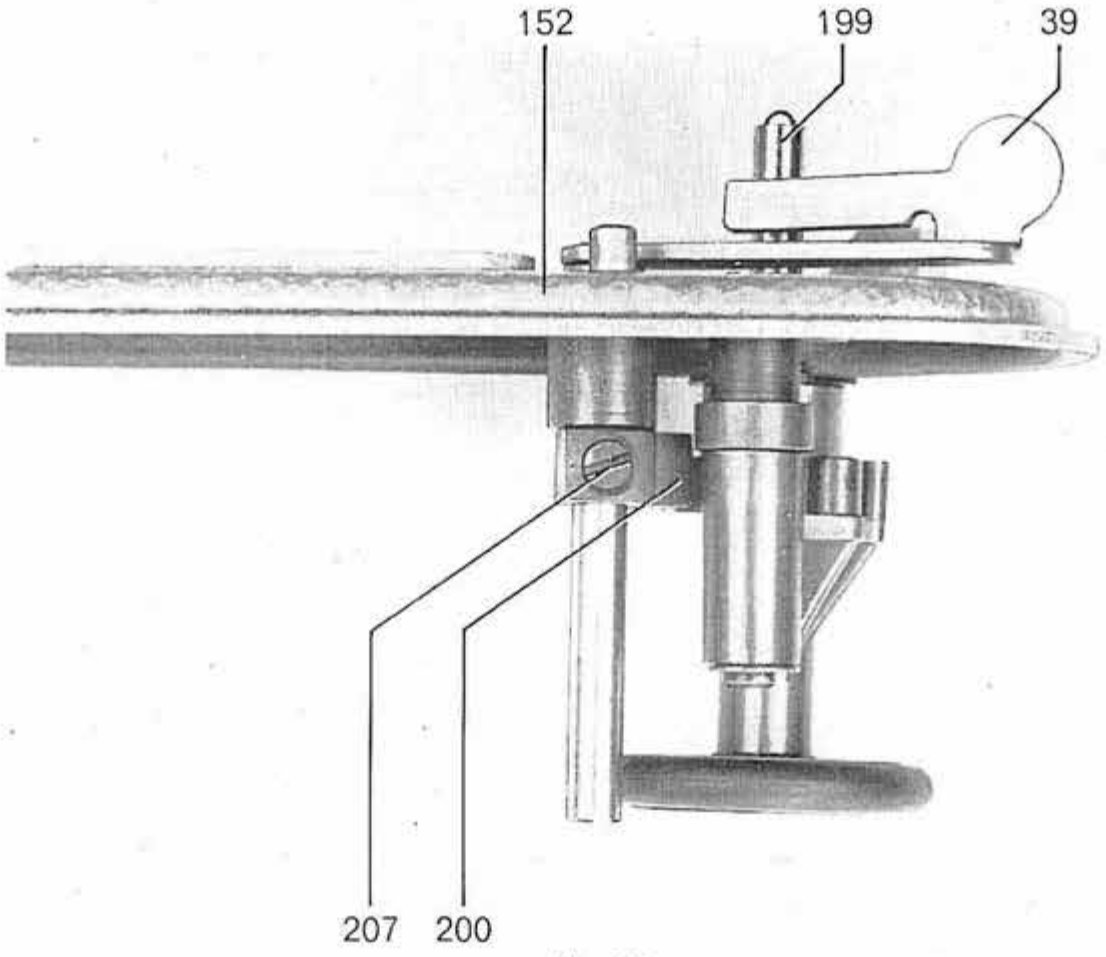


Fig. 30

24. **Adjusting the bobbin winder** (figs. 29 and 30)

To adjust the bobbin winder, which is inside the arm cover 152, the latter must be removed from the machine.

The bobbin winder operates as follows:

Push the flap 39 against the bobbin winder spindle 199. At the same time the trip cam 200, fixed to the bobbin winder spindle, lifts the leaf spring 202, connected to the spring bearing 155, and forces the bobbin winder spindle wheel 204 which is fitted with a friction ring 203 up against the upper belt pulley.

As the bobbin is being wound, it gradually forces back the flap 39. Simultaneously, the back of trip cam 200 advances under the leaf spring 202 until the bobbin is fully wound. At this moment, the leaf spring 202 should slip off the trip cam 200, so that the traction spring 205 can pull the wheel 204 off the upper belt pulley. To prevent the bobbin winder from running on further, it is braked.

The moment at which the bobbin winder should be cut out can be adjusted by turning the trip cam 200 after loosening the screw 207.

When the bobbin winder is in operation, the rubber ring 203 should only slightly press against the belt pulley. This adjustment can be made by moving the upper belt pulley laterally on the arm shaft.

In order to avoid that the thread drops from the bobbin and gets wound around the bobbin winder spindle when turning the handwheel contrary to the proper direction of rotation, the bobbin winder is fitted with a clamp roller for preventing the reverse operation.

Instructions for DÜRKOPP 211-7105, -6103, -6105, -6123, -6125, -22123, -22125, -24123, -24125, 212-6103, -6105, -6123, -6125, -22123, -22125, -24123, -24125, -124123 and -124125

These machines are single-needle lockstitch machines with drop feed and needle feed (class 212), fitted with a disconnectable vertical edge trimmer, operating beside the needle. They are equipped as follows:

DÜRKOPP 211-7105

With vertical edge trimmer in front of the binder. With waste removal system. For seam margins of 3.2 to 9.6 mm, depending on the equipment. The machine is suitable for sewing rather thick white goods and light weight clothing it trimms and binds the edges while stitching.

DÜRKOPP 211-6103 and -6105
DÜRKOPP 212-6103 and -6105

With waste removal system. For seam margins of 3.2 to 6.4 mm, depending on the equipment. -6103 for white goods and light weight outerwear, -6105 for medium weight material.

DÜRKOPP 211-6123 and -6125
DÜRKOPP 212-6123 and -6125

Without waste removal system. For seam margins of 3.2 to 9.6 mm. -6123 for white goods and light weight clothing; -6125 for medium weight material.

DÜRKOPP 211-22123, -22125, -24123 and -24125
DÜRKOPP 212-22123, -22125, -24123, -24125, -124123 and -124125

Without waste removal system. For seam margins of 3.2 to 9.6 mm, depending on the equipment. With upper and lower thread chopper. -22123 and -24123 for white goods and light weight outerwear, -22125 and -24125 for medium weight material.

For adjusting the thread cutter of these machines, see the instructions for DÜRKOPP 211-150000, 212-150000 etc.

In addition to the preceding instructions for DÜRKOPP 211 and 212 note also following instructions:

25. Speed

The maximum speed amounts to 5000 stitches/minute.

26. Needles

Needle system to be used: Class 211 = 797 or Sy 1901
Class 212 = Sy 1968

27. Stitch length

Forwards and backwards up to 4 mm, except 211-22123, -22125, 212-22123 and -22125 = forwards up to 4 mm, backwards up to 2 mm.

28. Knife stroke

5.7 mm, on request 3.8 mm (except 211-7105). For 211-7105 = 6.5 mm.

29. Installing the machine

In case of machines with waste removal system, install the latter according to figure 31.

30. Connecting and disconnecting the upper knife

The upper knife can be connected and disconnected by the lever 174 (fig. 31). Lower said lever for connecting and lift it for disconnecting. The lever should be moved quickly.

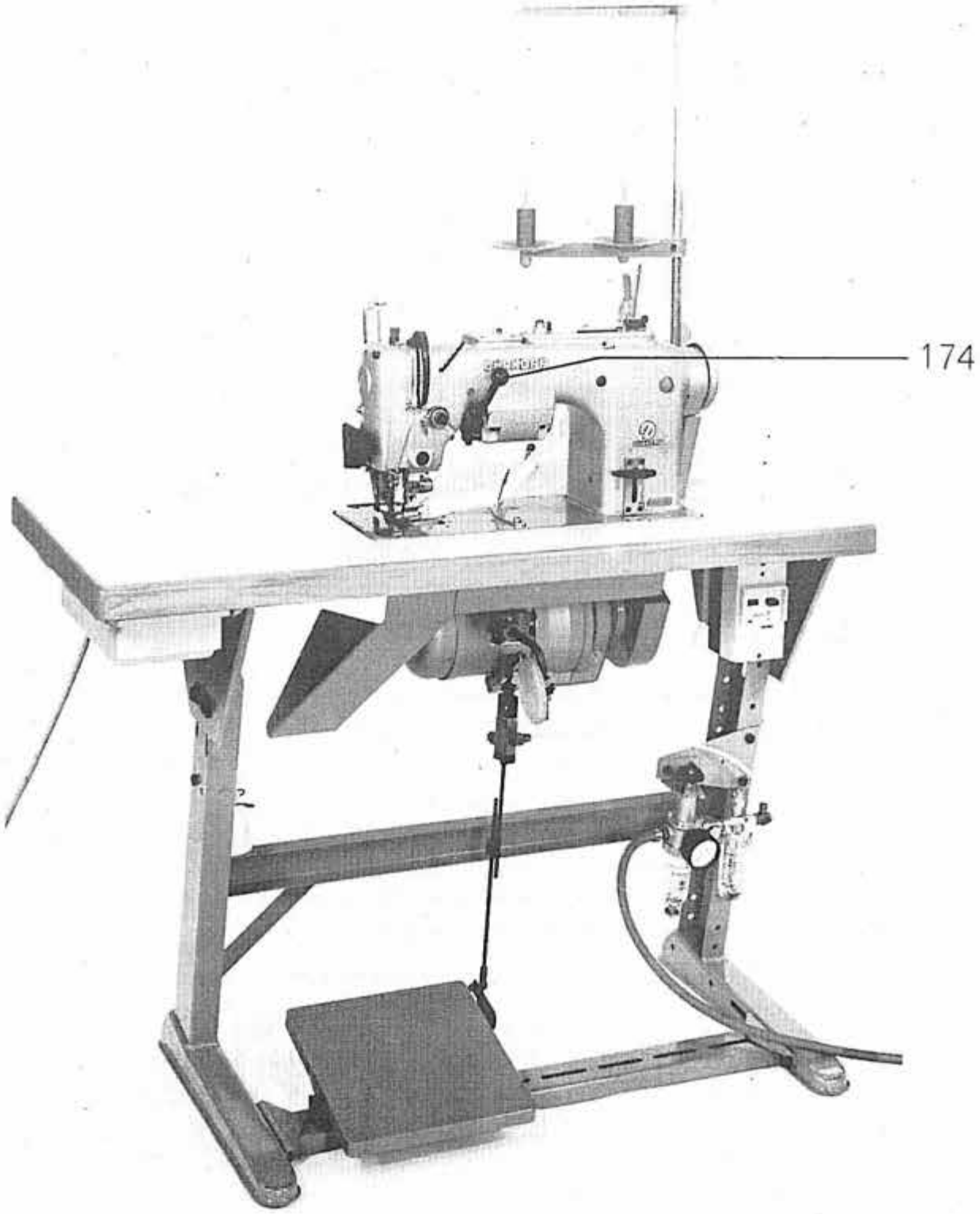


Fig. 31

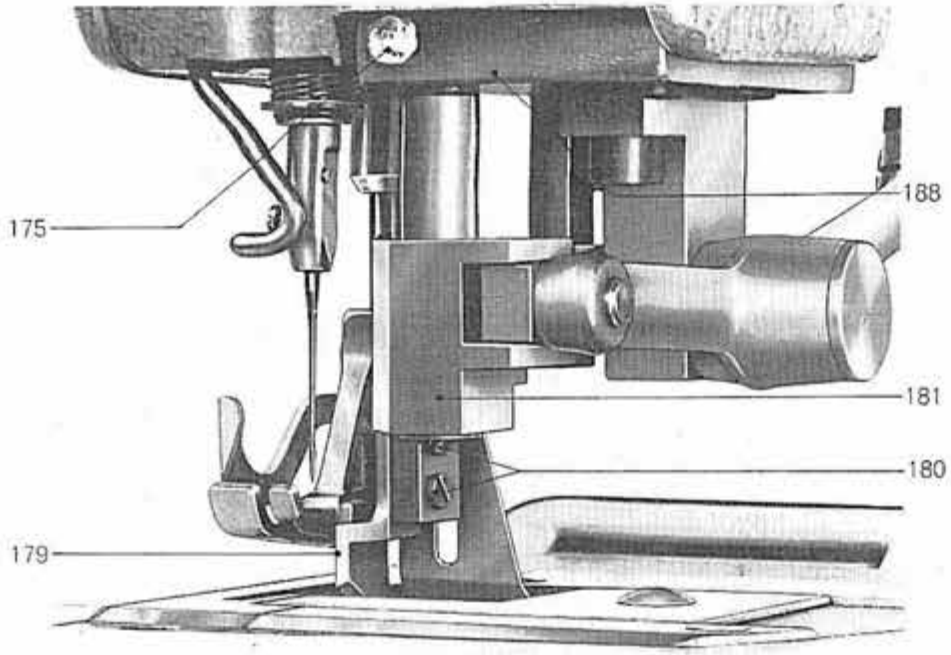


Fig. 32

31. Maintenance of the machine

The housing of the edge trimmer driving mechanism has been filled with oil in the factory. However, due to a certain position, it can lose some oil on transit.

In order to ensure a perfect lubrication, fill the housing with about 25 ccm of oil (Spinesso 10) before taking it into service for the first time. This oil quantity corresponds to about 1/4 of the contents of the oil can, included in the accessories of the machine. Fill the oil through the hole in the arm which is free after removing the small arm cover.

Lubricate the point 175 (fig. 32) with some drops of oil when proceeding to the weekly cleaning.

For further instructions regarding the maintenance of the machine see the chapter 2 of the present instructions.

32. Adjusting the seam margin

Since the lower knife is fitted in the carrier 176 (fig. 33), which is independant from the throat plate, the cut width can be increased ba about 1 mm beyond the nominal value, without having to change the sewing equipment.

For adjusting, proceed as follows:

1. Loosen the fastening screw 177 (fig. 34) of the upper knife carrier.
2. Loosen the fastening screws 178 (fig. 33) of the lower knife carrier 176.
3. Set upper and lower knife carriers for the required seam margin.

4. Retighten the fastening screws 178. Ensure that the knives cut perfectly (thread test).

If required, the upper knife can be reset by shifting the base plate 188 (fig. 32) in the feeding direction. For doing that, loosen the fastening screws of the base plate 188.

If for modifying the seam margin a complete sewing equipment is changed, proceed also according to the preceding description.

33. Changing the knives

31.1. Upper knife

The upper knife 179 (fig. 32) can be changed after loosening the screws 180. When fitting a new knife ensure that the cutting edge of the upper knife is level with the cutting edge of the lower knife when the guiding block 181 is in its lowest position.

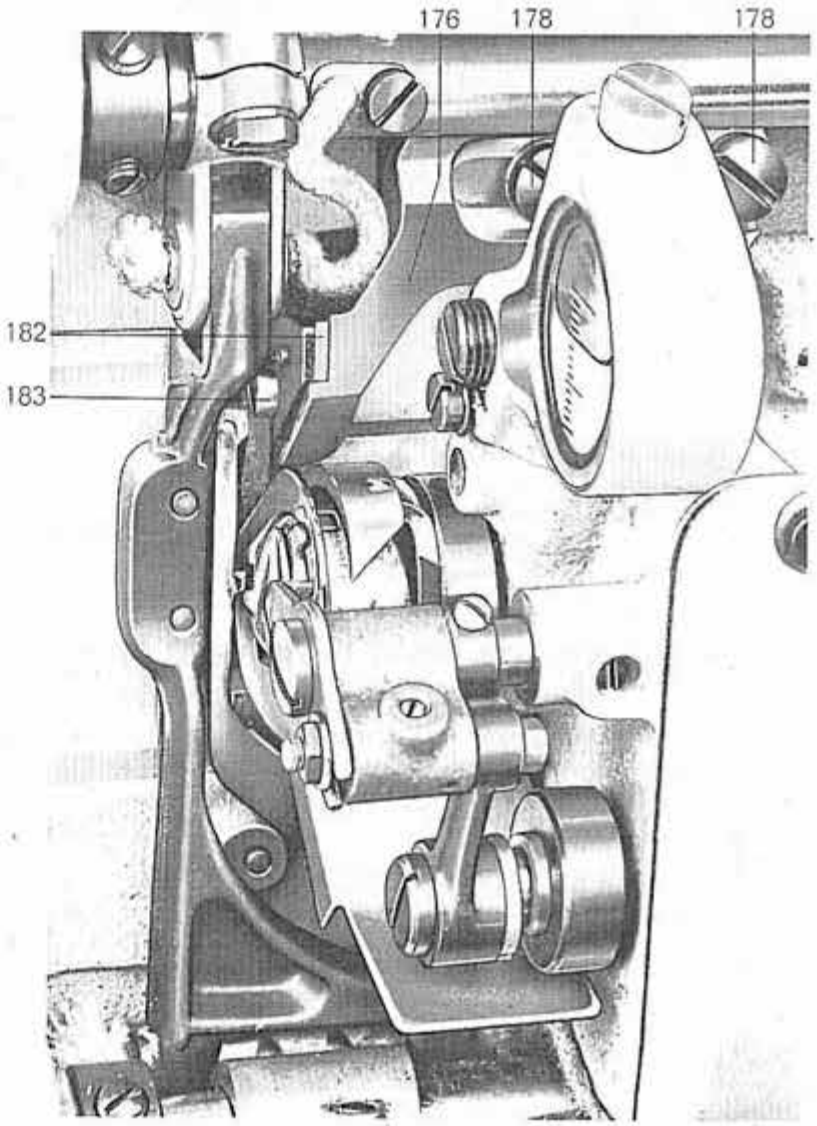


Fig. 33

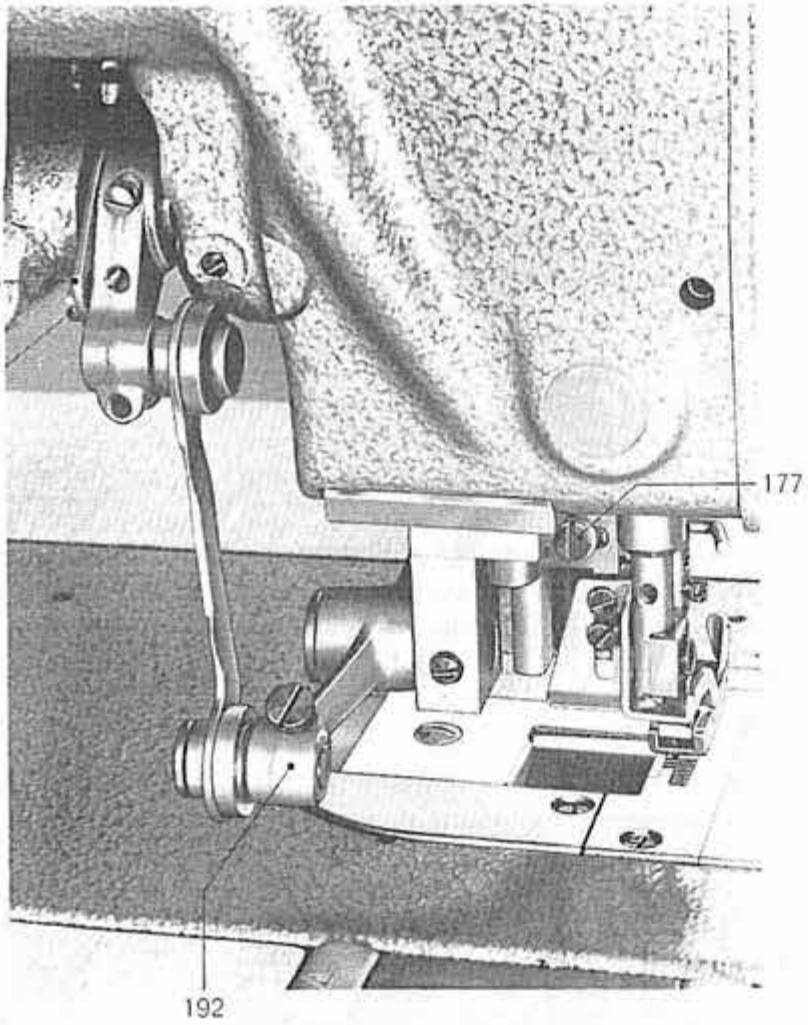


Fig. 34

33.2. **Lower knife**

The lower knife 182 (fig. 33) can be removed from its carrier 176 after having removed the screw 183 and the tension plate. Fit the new lower knife into the carrier so that the cutting edge is about 0.5 mm above the surface of the throat plate. Fasten the lower knife by the tension plate and the screw 183.

34. Adjusting the lifting movement for the upper knife

For adjusting the lifting movement for the upper knife it is necessary to determine

a) the lifting height,
b) the zero position of the fork lever and
c) the position of the guiding block.

Proceed to the adjustment as follows:

34.1. **Lifting height**

The machine is normally fitted for the knife stroke of 6.5, 5.7 or 3.8 mm.

34.2. **Zero position of the fork lever**

The fork lever 184 (fig. 35) is in its zero position if it does not move when, with the cutting device disconnected and the pin 186 resting on the stop 185, the handwheel is turned in the direction of rotation. If it is necessary to correct this adjustment, loosen the screw 187 and adjust the stop 185 accordingly.

34.3. **Positioning the guiding block**

Adjust the guiding block 181 (fig. 32) so that when it is in its highest position, the distance between its upper face and the lower side of the base plate 188 amounts to about 0.5 mm. For adjusting this distance, loosen the thumb screw 189 (fig. 36), turn or loosen the screws 190 or 191, as required, and tighten the opposite screw 191 or 190.

Following the adjustment, retighten the thumb screw 189.

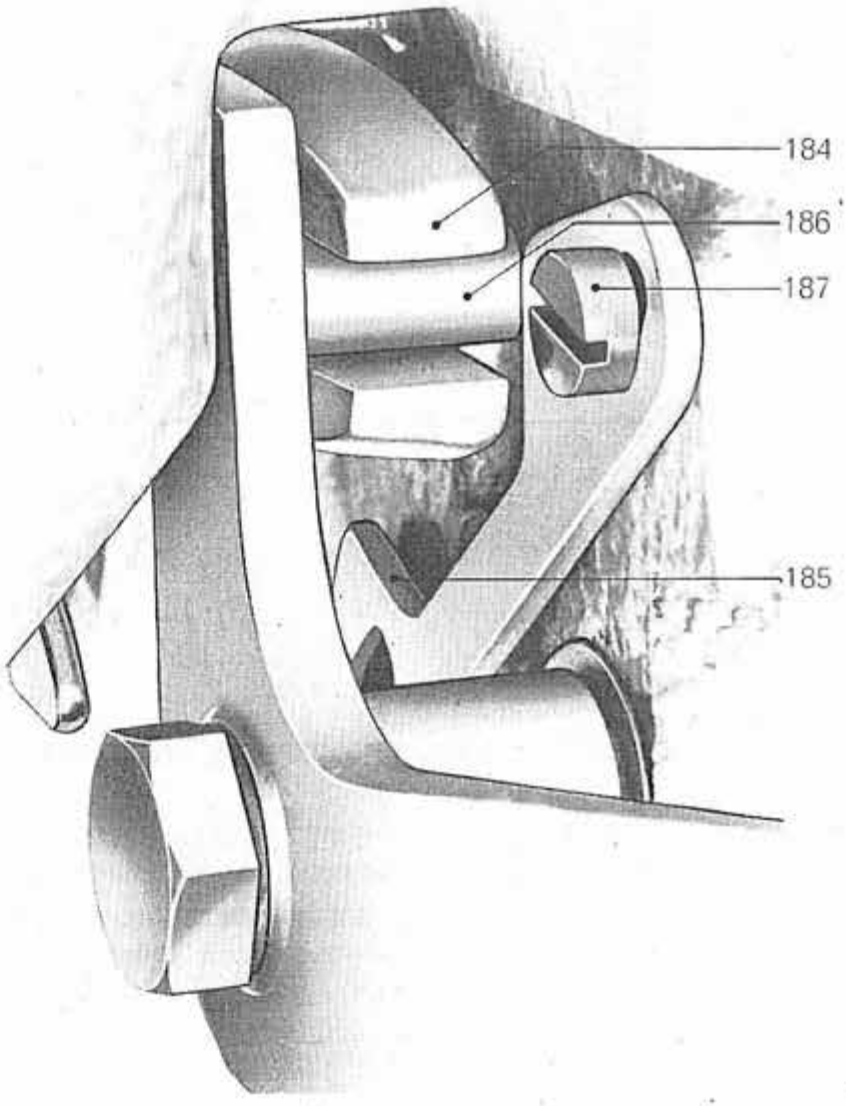


Fig. 35

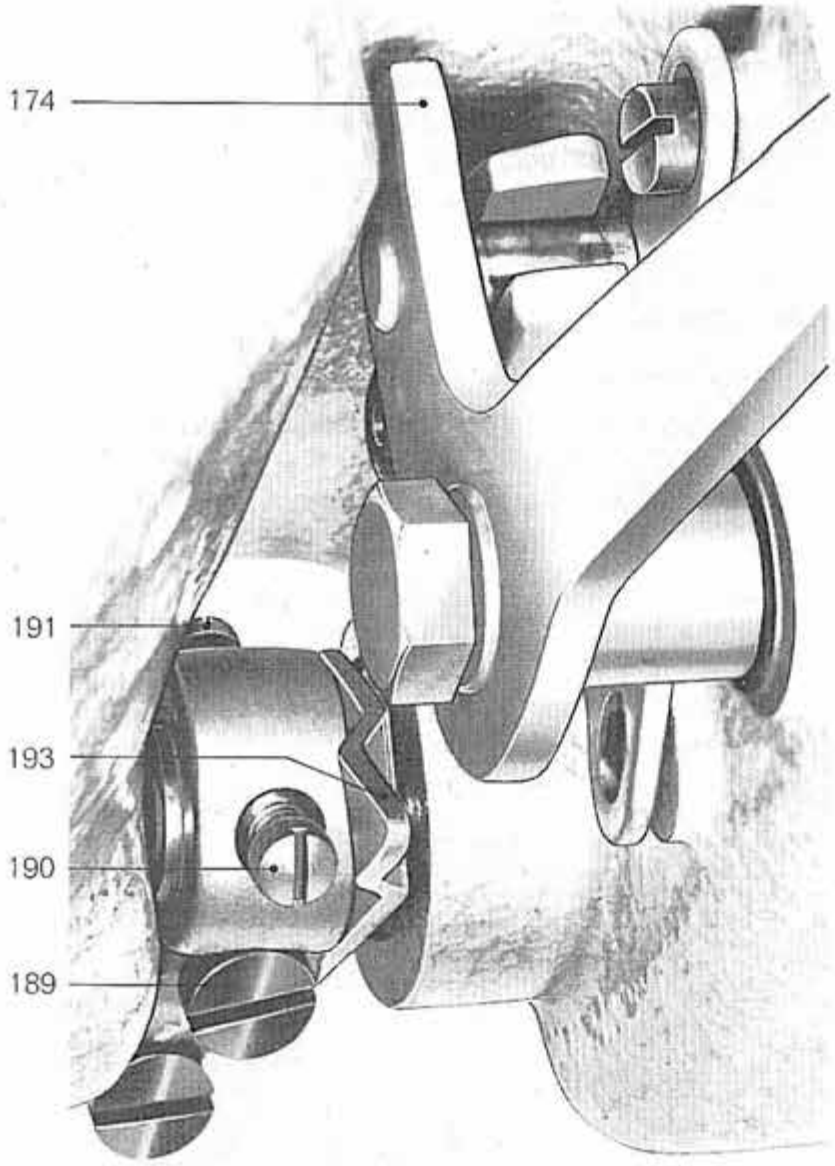


Fig. 36

35. Device avoiding involuntary engagement of the knife

In order to avoid an involuntary engagement of the knife when shifting the double lever 192 (fig. 34) upwards, the machine is fitted with a locking lever 193 (figs. 34 and 36). If said lever is set properly, it presses against the hand lever 174 (fig. 36) when the double lever 192 is being pushed upwards, avoiding thus involuntary engagement of the knife. The locking lever 193 can be set after having loosened the screw 194 (fig. 34).

Instructions for DÜRKOPP 212-6145, 212-22145, 212-24145 and 212-124145

DÜRKOPP 212-6145, 212-22145, 212-24145 and 212-124145 are single needle lockstitch machines with drop feed and needle feed. They include a special device for sewing and simultaneous stepped trimming of front edges in jackets, overcoats, etc. DÜRKOPP 212-22145, 212-24145 and 212-124145 are also fitted with upper and lower thread cutter. In addition to the preceding instructions, note for DÜRKOPP 212 the following:

36. Needles

Use needles of the system Sy 1968.

37. Stitch length

DÜRKOPP 212-6145, 212-24145 and 212-124145 = forwards and backwards up to 4 mm.

DÜRKOPP 212-22145 = forwards up to 4 mm, backwards up to 2 mm.

38. Seam margins

Standard: 4 mm and 7 mm (up to about 1 mm fabric thickness)
On request 5.6 mm and 8.5 mm (up to about 1 mm fabric thickness)

39. Knife stroke

Standard 5.7 mm
On request 3.8 mm

40. Speed

The maximum speed amounts to 5000 st/min. For the special work to perform by this machine we recommend the speed of 4000 st/min.

41. Switching over the cloth guide

By means of the lever 276 the cloth guide 275 (fig. 37) can be set for its upper or lower working position.

For cutting back the lower cloth ply, the lever must be in its upper position, for cutting back the upper cloth ply, the lever be in its lower position.

The switching can be done while sewing and with the machine stopped. The cloth guide can be displaced under the presser foot in the direction of the arrow.

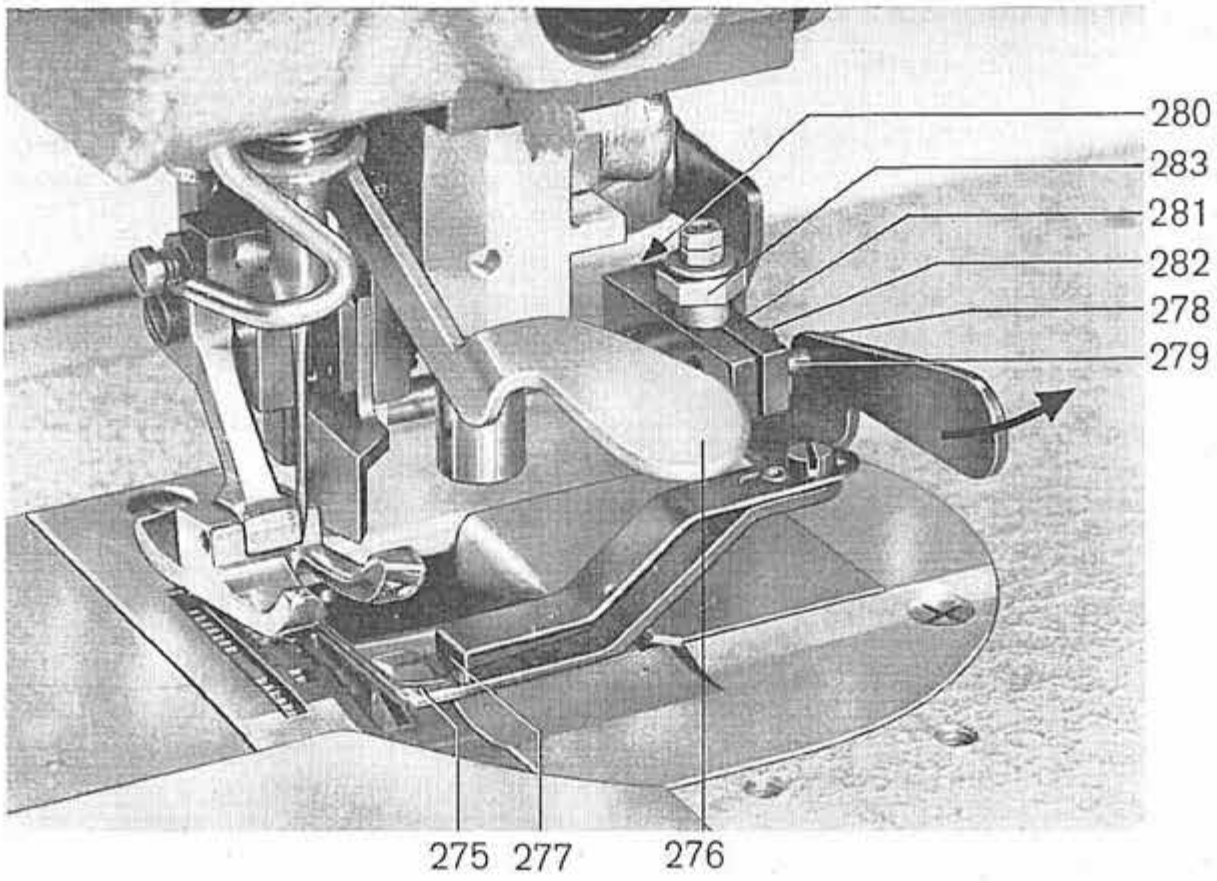
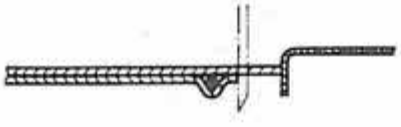


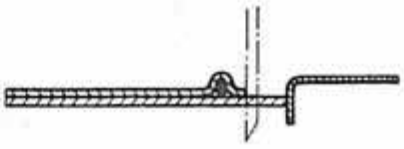
Fig. 37

42. Cloth edge guide

In order to obtain stepped edges in fronts having already their final shape, guide the edge to be cut back along the guide 277. See the sketches. Adjust the guide 277 so that the cloth ply, pushed upwards or downwards by the plate 275, passes immediately on the left of the vertical knife. The knife should not cut back the fabric. It should only remove its fluff.



Cutting back the upper cloth ply



Cutting back the lower cloth ply

43. Regulating the cloth guide

The part of the cloth plate, located between the throat plate and the presser foot,

a) should be parallel to the throat plate surface,
b) should show exactly in the sewing direction, i.e. be parallel to the cutting edges of the knives,
c) should be, in the lateral direction, in the centre, i.e. it should be at the same distance from the left edge of the lower knife as from the r/h edge of the feed dog (in the zone of the stitch hole).

In order to adjust the cloth guide in the sewing direction, i.e. parallel to the cutting edges of the knives, loosen the counter-nut 278 and regulate the stop screw 279.

d) For vertical adjustment of the cloth guide 275, proceed as follows:

The cloth guide 275 has been adjusted in the factory so that the plate 275 rests in the range of the throat plate when the lever 276 is in its **lower position** and the spacer between the throat plate and the presser foot is 1 mm thick (ancient design) for a 3.4 mm thick throat plate and 0.5 mm thick for a 4 mm thick throat plate (latest design).

This adjustment of the cloth guide 275 is proper for the majority of applications.

Particularly thick paddings can, however, require a deviation from the above adjustment, if equal graduations are desired in either position of the lever 276.

Vertical adjustment of the cloth guide 275 is effected by turning setting screw 283 after having loosened thumb screw 282.

Instruction for DÜRKOPP 219

DÜRKOPP 219 is a single-needle lockstitch sewing machine with individually adjustable top and bottom feed, permitting to feed at a different rate. The machine has central oil wick lubrication and a separate lubrication of the hook. In addition to the following special instructions for DÜRKOPP 219 note also the preceding instructions for DÜRKOPP 211 and 212.

44. Stitch length

Forwards = top feed up to 5 mm
bottom feed up to 4 mm

Backwards = top feed / bottom feed up to 2.5 mm

Except 219-155, -156, -15155, -15156, -24175, -115155, -115156 and -124175

These machines are set in the factory for the maximum stitch length of 6 mm at the top speed of 4000 st/min.

After reducing the stitch length to 4 mm and the upper feed length to 5 mm it is possible to operate the machine also at 5000 st/min.

Limiting of the stitch length or of the length of the top feed can be done as follows:

The bottom feed (stitch length) by the adjustable pin 450 (fig. 40) in the crank 310 in conjunction with the stop screw 296.

The top feed in machines with stitch regulator lever by the limiting sheet (supplied with the accessories), which should be placed under the scale sheet.

In machines without stitch regulating lever by the knurled stop nut in the scale sheet.

For sewing with the maximum forward stitch length with the machines having an automatic tacking device (-10000), chose the backtack type where the short reverse stitches begin at a respective distance from the fabric edge.

If it is necessary to start by forward stitches at the fabric, adapt the forward stitch length to the reverse stitch length.

Forward stitch length = reverse stitch length
Forward stitch length up to 2.5 mm.

45. Speed

The maximum speed amounts to 5000 st/min., except 219-155, -15155, -156, -15156, -24175, -115155, -115156 and -124175 above 4 mm stitch length. The maximum speed of these machines amounts to 4000 st/min.

46. Peda rods and pedal for the S and SK equipment

The fig. 38 shows the way of fitting the pedal rods for the additional mechanical SK equipment, serving to increase the top feed length while sewing and to invert the feed in DÜRKOPP 219-155, -15115, -24175 and -35105.

By lowering the additional pedal 28 to the front in the A arrow direction, the top feed length will be increased beyond the basic adjustment. See in this connection also chapter 50.2.

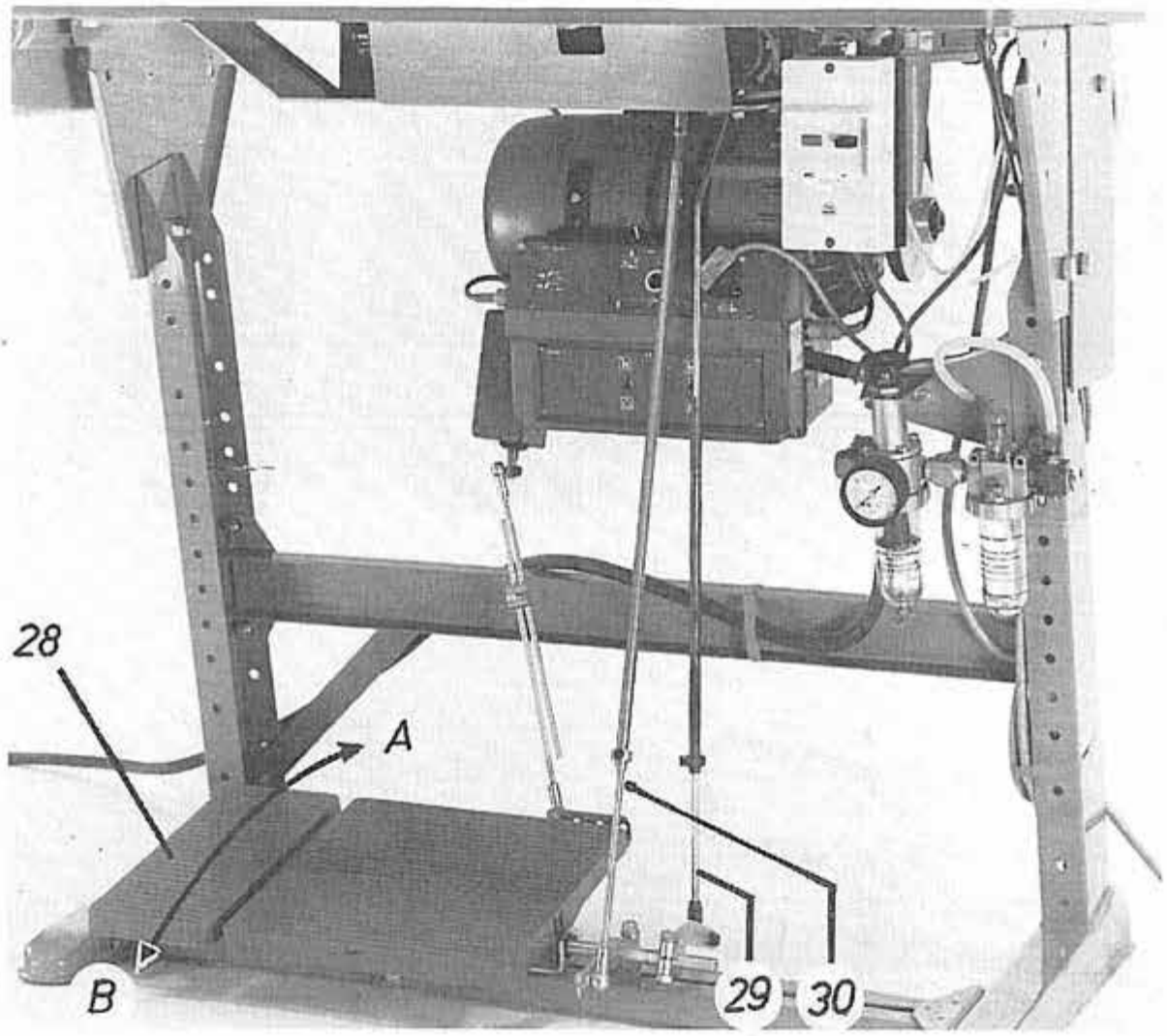


Fig. 38

If the additional pedal 28 is heeled down in the B arrow direction, the machine will be switched from forward to reverse feed.

If the machine is fitted with an S-equipment serving exclusively to invert the feed, there is only the pedal 28 and the rods 29.

Fig. 38a shows the way of suspending the rods 29 (reverse feed) and 30 (top feed) on the stitch regulator block 31.

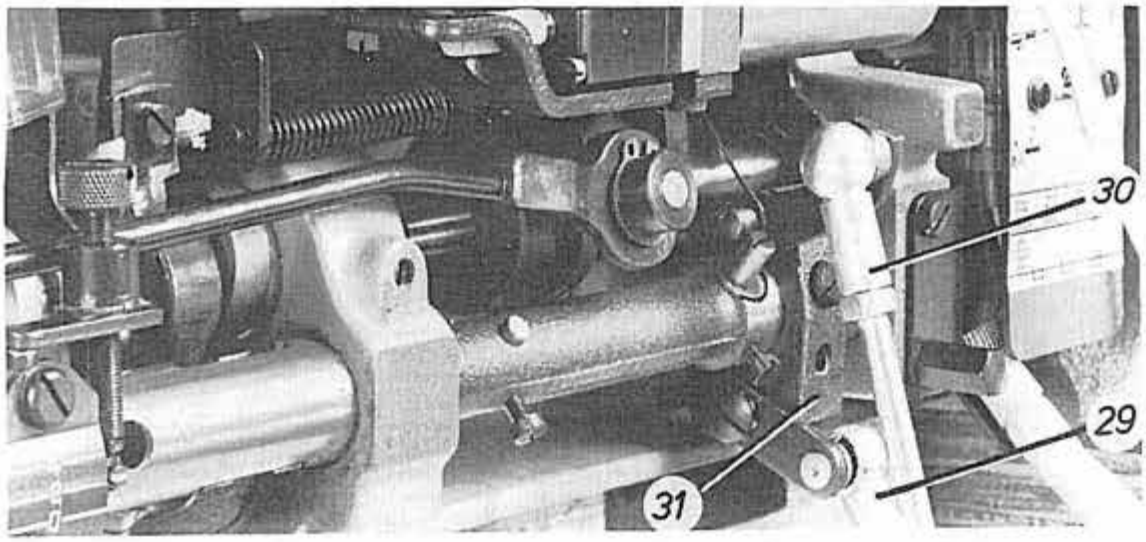


Fig. 38a

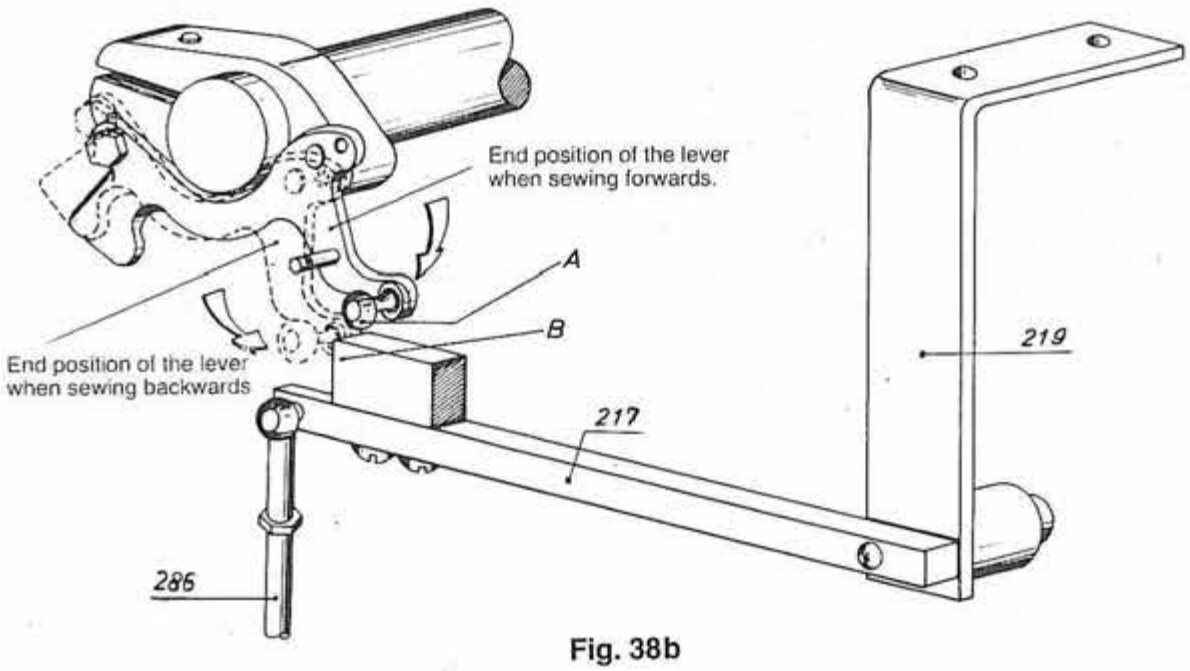


Fig. 38b

In order to avoid in case of machines of the series 219-115000 with SK equipment that the pedal 285 gets a blow when switching automatically from forward to reverse feed, the SK equipment must be fitted according to fig. 38b.

For this purpose, interconnect the rods 286, the lever 217 and the square 219. Screw the square 219 under the table so that during the automatic change from forward to reverse stitches the spherical bolt A can freely pass along the pressure piece B.

47. Oiling

In addition to the lubricating points mentioned under chapters 2 and 12, lubricate also the felt 291 (fig. 39) with some drops of oil when proceeding the the weekly cleaning of DÜRKOPP 219.

48. Regulating the pressure of the feeding foot and of the presser foot

The pressure of the feeding foot 292 (fig. 39) and of the presser foot 293 must be adapted to the work involved.

The pressure of the feeding foot 292 is regulated by the screw 292a and that of the presser foot by the screw-bush 295.

Turn clockwise to increase the pressure and counter-clockwise to decrease it.

49. Needles

Use needles of the system 797 kK.

50. Adjusting the feed length and changing over to reverse feed

The top feed and the bottom feed are individually adjustable. The adjustment of the top feed with respect to the bottom feed can be such that the two plies of material are fed at the same rate or that the upper ply is fed faster than the lower one.

50.1. Adjusting lower feed length

The stitch length is determined by the feed length of the lower feed. The maximum feed length amounts to 4 and 6 mm respectively. It is adjusted by means of stop screw 296 (fig. 40) located below base plate. The feed length set is shown by the scale 297 in conjunction with the division mark on the stop pin 298.

50.2. Adjusting upper feed length

The feed length of the upper feed is set by the stitch regulating lever 41 (fig. 40).

When increasing the feed length by the stitch regulator lever, take care not to block the stop screw 300 (fig. 40) underneath the base plate.

If the machine has, in addition, a pedal with rods (SK equipment), the feed length of the upper feed can be increased beyond the feed length, set by the stitch regulator lever, by depressing said pedal forwards while sewing.

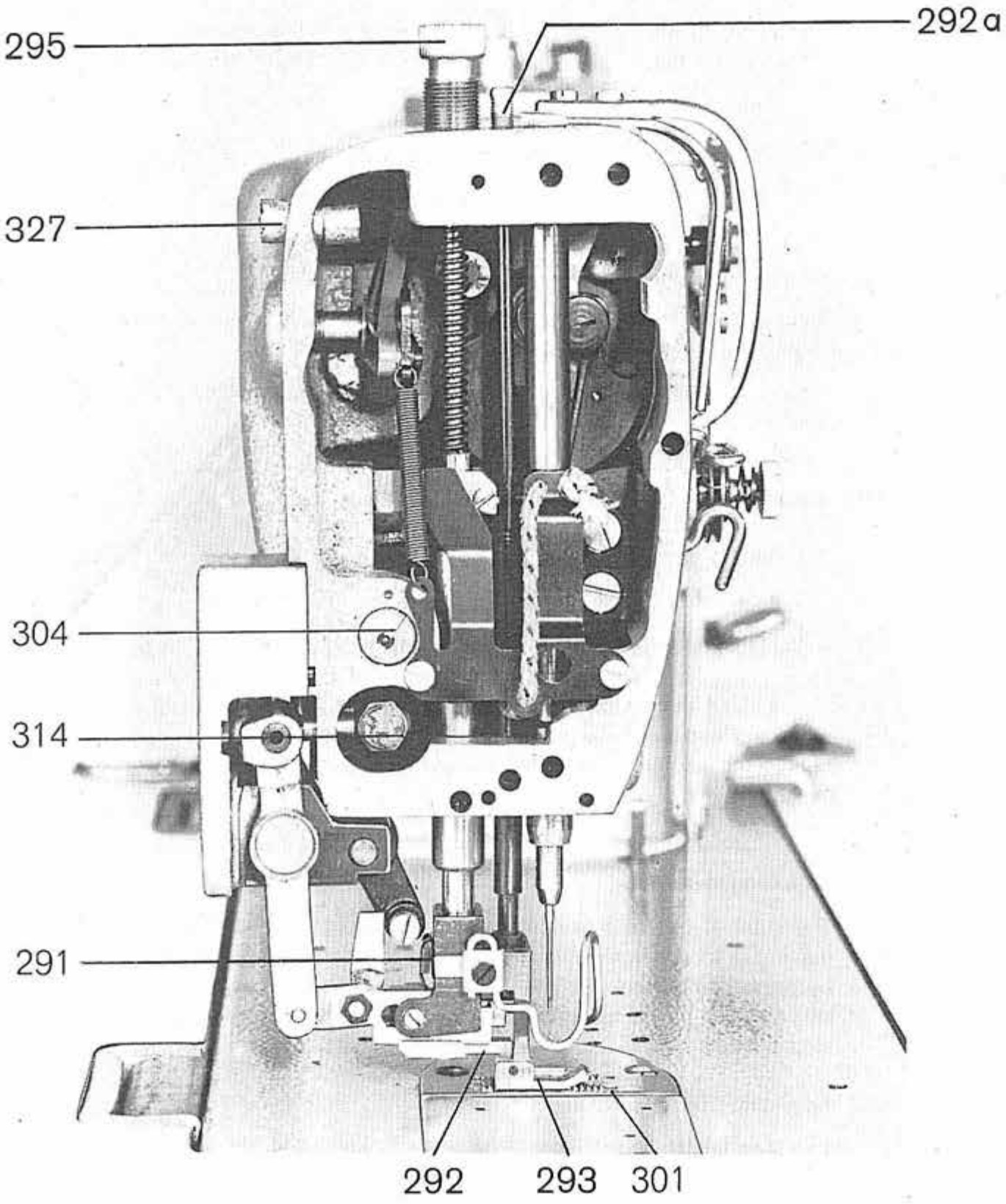


Fig. 39

The feed length to be obtained while sewing by operating the pedal is adjusted by stop screw 300.

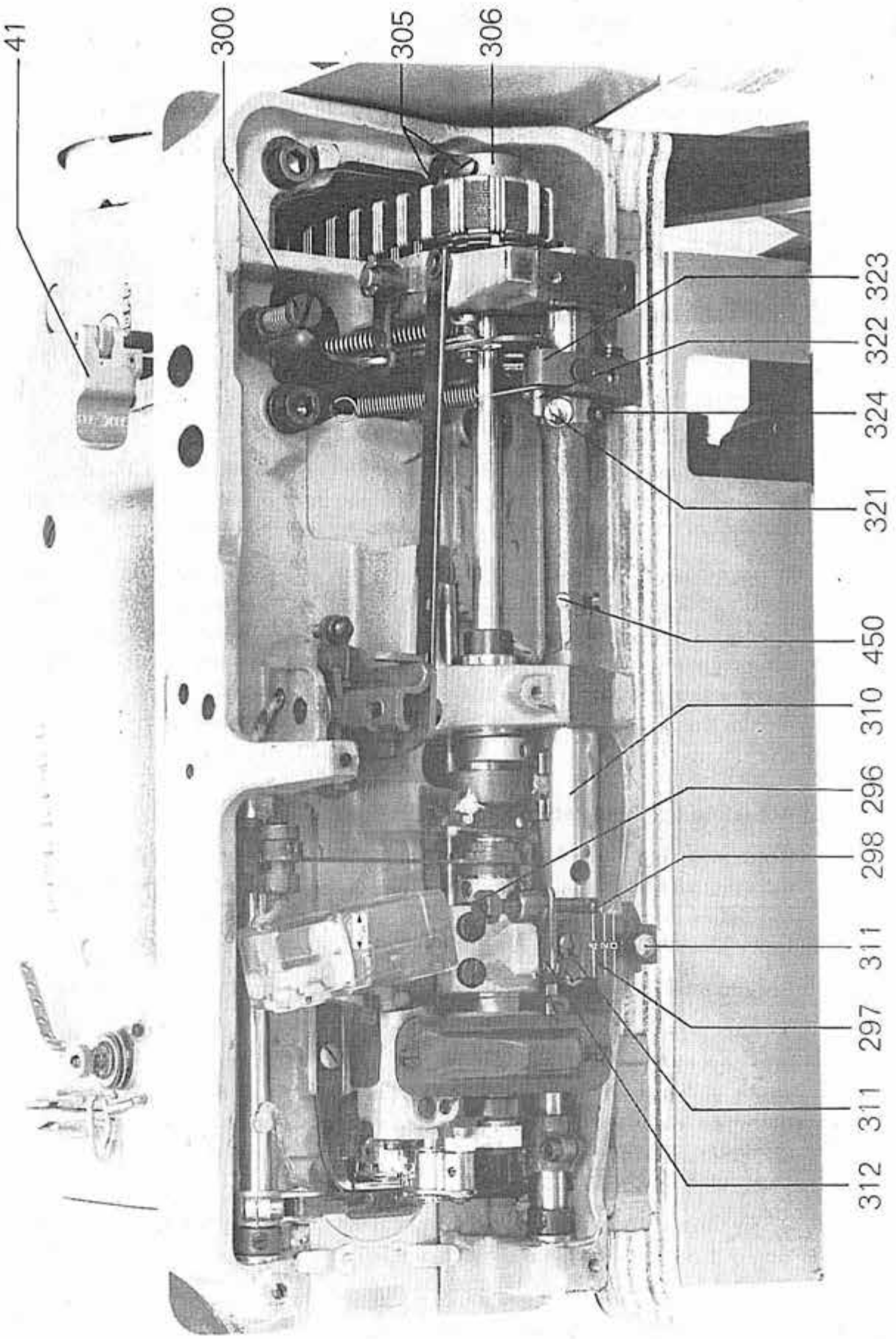


Fig. 40

50.3. Switching over for reverse feed

The reverse feed is obtained by lowering stitch regulator lever 41 (fig. 40).

If the machine is fitted with "SK equipment" or "S equipment", the reverse feed can be obtained also by heeling down the l/h pedal 285 (fig. 38). The feed length of the reverse feed is limited to about 2 mm.

51. Adjusting the lower and the upper feed

51.1. Timing the pushing movement of the lower and of the upper feed

The two feeds must be synchronized, i.e. they should move at the same time.

For adjusting, proceed as follows:

Set the lower feed by the stop screw 296 (fig. 40) and the upper feed by the stitch regulating lever 41 for the maximum feed length. Lower the needle bar from its topmost point by 2 mm by turning the handwheel in the direction of rotation. Position "C" in machines with incorporated setting gauge.

In this position, the feeding foot 292 (fig. 39) and the feed dog 301 should present the minimum movement when the stitch regulating lever 41 is being displaced between its extreme positions. In order to adjust the feeding foot for its minimum movement, loosen the screws 302 and 303 (fig. 41) and turn the eccentric bearing shaft 304 (fig. 39). For adjusting the feed dog 301, loosen the screws 305 (fig. 40) and turn the lower pulley 306 on the lower shaft.

51.2. Adjusting the feed zero position

Both lower and upper feed must be set for their zero point, i.e. when turning the handwheel in the proper direction of rotation, and when the stitch regulating lever 41 (fig. 40) and the stop pin 298 stand on "0", the feeding foot 292 and the feed dog 301 (fig. 39) should move as little as possible.

Should it be necessary to correct this adjustment, proceed as follows:

1. Set stitch regulating lever on "0" by turning the knurled nut, remove the arm cover and loosen the thumb screw 307 (fig. 42). While turning the handwheel in the direction of rotation, revolve the crank shaft 308 by means of a mandrel, introduced in the bore 309, so that the feeding foot shows the minimum possible movement. Following the adjustment, retighten firmly the thumb screw 307.

2. By turning the stop screw 296 (fig. 40) set the crank shaft so that the feed dog 301 (fig. 39) has the minimum possible movement when the handwheel is turned in the direction of rotation.

In this position of the crank, the reference mark of the stop pin should coincide with the reference mark "0" of the scale 297 (fig. 40). In the negative, loosen the screws 311 and adjust the scale accordingly. Do not reset the angular stop 312.

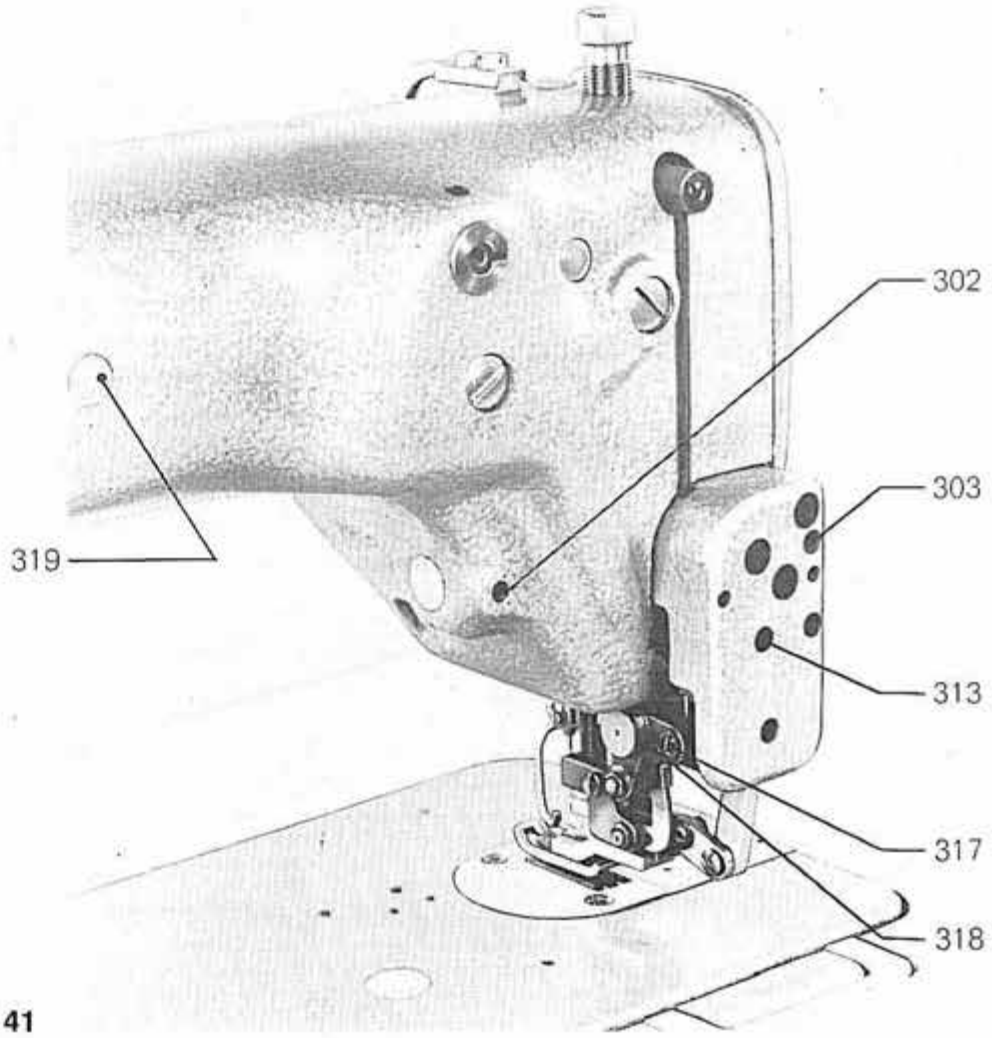


Fig. 41

51.3. **Adjusting the final feed movement**

The final feed movement is the distance covered by the feed dog from the moment when the thread take-up lever is at its topmost position up to the moment when said feed dog performing advance movement has reached its final position. If the adjustments under 51.1. and 51.2. are correct, the final feed movement will be of 0.5 to 0.7 mm.

In case of any other values check the adjustments under 51.1. and 51.2.

51.4. **Adjusting the feeding foot in the feeding direction**

With the top feed set for the maximum feed length and the feeding foot being in its hind or front position, the distance between the feeding foot and the presser foot at the points, where they could touch each other, should amount to 0.8 mm.

For obtaining this adjustment, take off the head cover, loosen the screw which is accessible through the hole 313 (fig. 41) and turn the eccentric 314 (fig. 39).

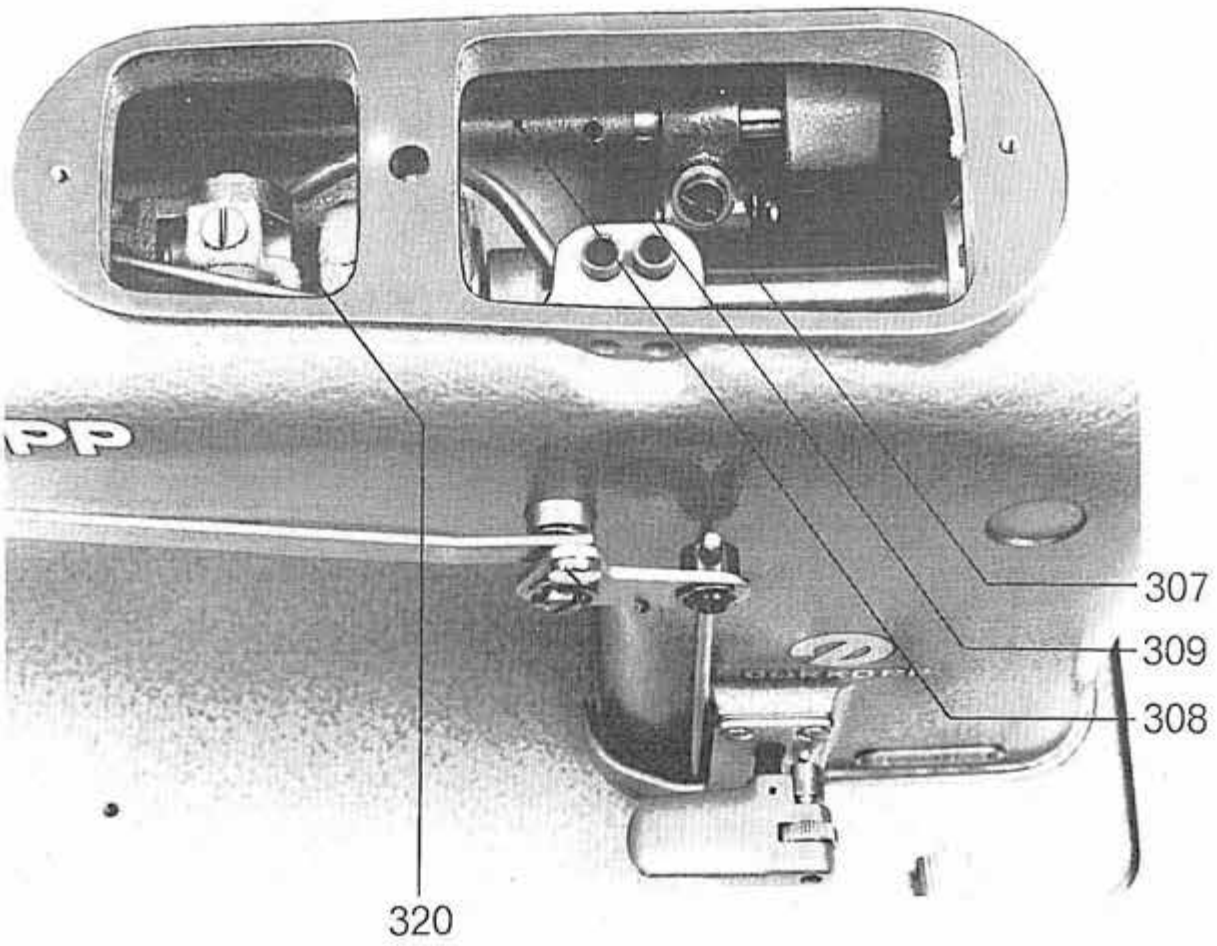


Fig. 42

51.5. **Adjusting the lifting movement of the feeding foot**

With the feeding foot lowered and the feed dog being in its topmost position, adjust the distance between the roller 315 (fig. 43) and the leg of the guide 316 for a certain value.

In machines with an eccentric for **low** feeding foot stroke (1.2 mm stroke, measured at the transmission lever 327, fig. 39) this distance should amount to about 0.3 mm.

In machines with an eccentric for high feeding foot stroke (2.2 mm stroke, measured at the transmission lever 327) this distance should amount to about 1 mm.

For obtaining this adjustment, loosen the screw 317 (fig. 41) and displace the angular lever 318.

Following the adjustment retighten firmly the screw 317.

If the feeding foot stroke is too high for certain operations, it can be reduced by increasing the distance between the roller 315 (fig. 43) and the leg of the guide 316.

Time then the lifting movement of the feeding foot.

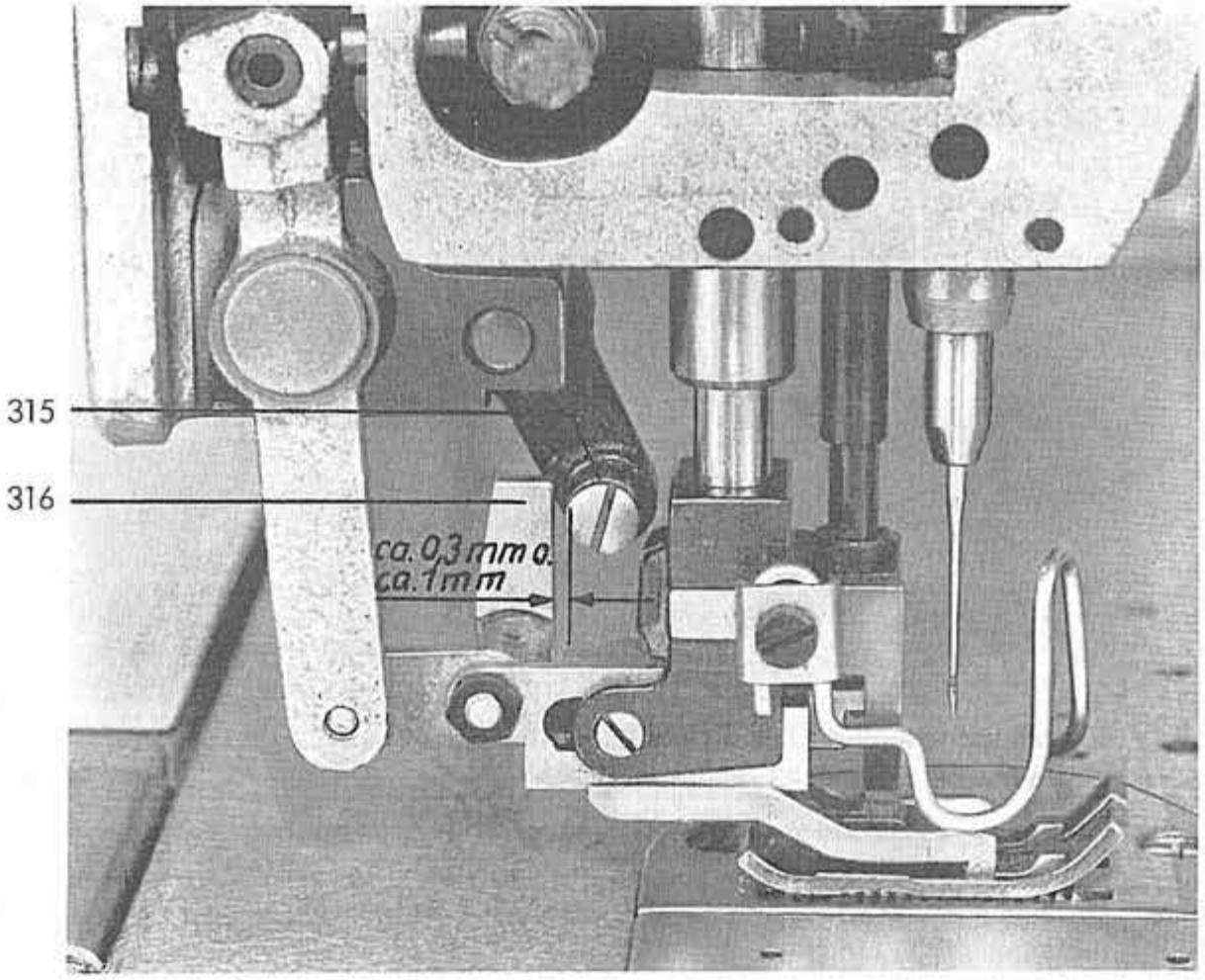


Fig. 43

Note:

For timing the lifting movement of the feeding foot, the height of the needle bar must be adjusted according to the chapter 17.

The feeding foot should start rising when the point of the descending needle is level with the throat plate surface, i.e. when it stitches into the fabric. For timing, remove plug 319 (fig. 41), loosen the two eccentric fastening screws, accessible through the now free bore, and turn the eccentric 320 (fig. 42) accordingly.

Following the adjustment, retighten firmly the eccentric fastening screws.

51.6. Adjusting the angular support

While the feed dog is at its topmost point and the presser foot is resting on the feed dog, adjust the distance between the angular support 325 (fig. 44) and the bottom of the guide 316 for about 0.2 mm.

The angular holder 325 can be set accordingly after loosening the screw 326.

Before proceeding to this adjustment, adjust the feed dog at the proper height according to chapter 16.1.

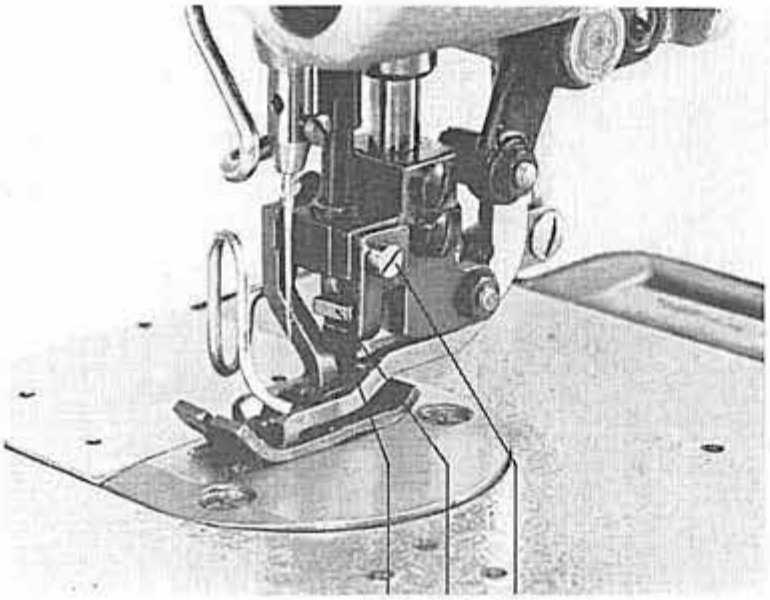


Fig. 44

51.7. **Adjusting the top feed in DÜRKOPP 219-106, -15106, -15156, -115106 and -115156**

The above sub-classes are fitted with the so-called "easy-lift" top feed. The feeding foot and the sewing foot have individual suspensions and springs. Whatever is the pressure of the feeding foot, the sewing foot can be set for the desired lower resting pressure.

Note:
Before adjusting the top feed, set properly the drop feed.

Height of the feeding foot

In the topmost position of the feed dog 1 (fig. 44a) the lowered feeding foot 2 should rest **parallel** on the feed dog.

Furthermore, note the following:

If, with the sewing foot being adjusted as described above, the feed dog is moved to its lowest point, the **sewing foot** 3 (fig. 44b) should rest on the throat plate and the distance between the block 4 and the bottom of the sewing foot holder 5 should amount to at least 0,2 mm.

For adjusting, loosen the screw 6 (fig. 44c) and displace the cloth presser bar accordingly.

The guide block 7 should rest on the angular support 8.
Retighten the screw 6.

Lifting motion of the feeding foot

With the feeding foot being lowered and with the **feed dog being in its topmost position,** set the distance between the roller 9 (fig. 44d) and the leg of the guide for 1 mm. For adjusting, loosen the screw 11 (fig. 44) and set the lever 12 accordingly. Retighten the screw 11.

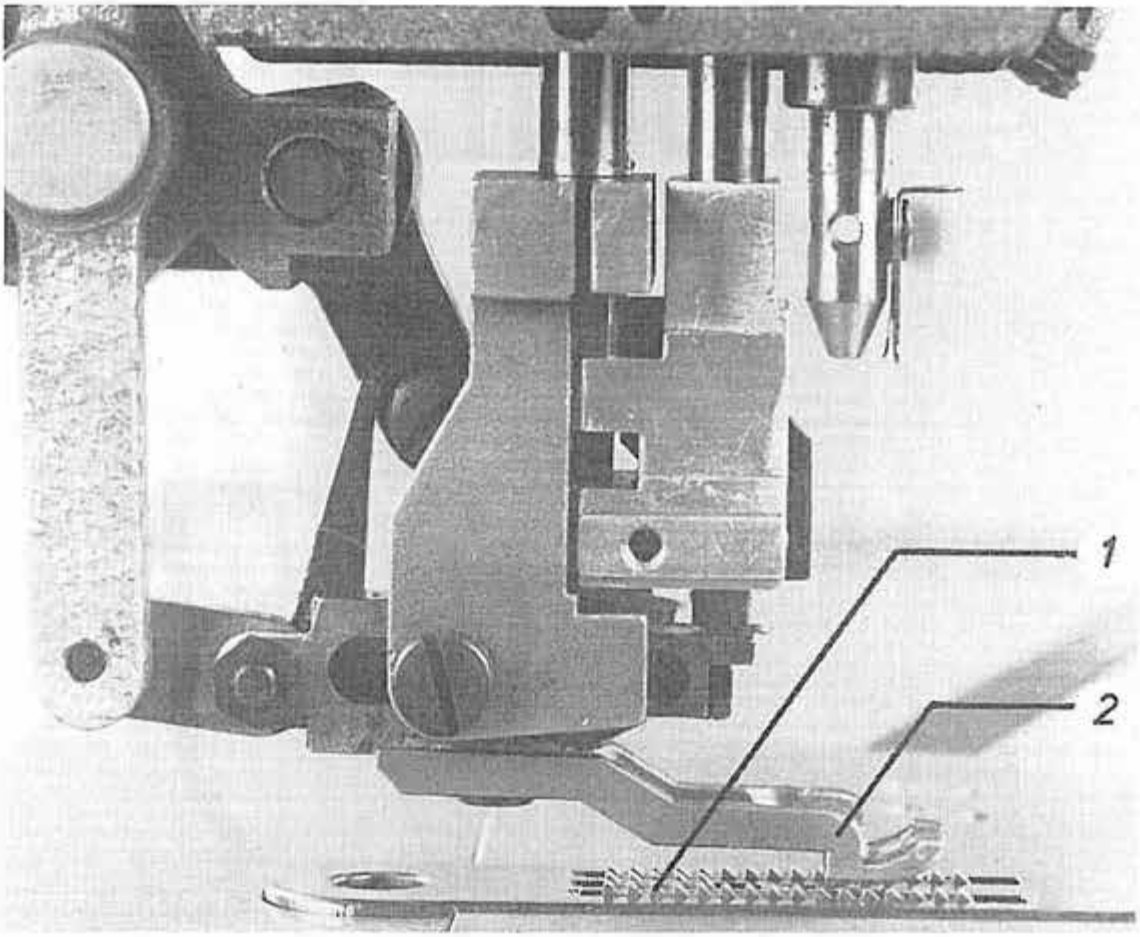


Fig. 44a

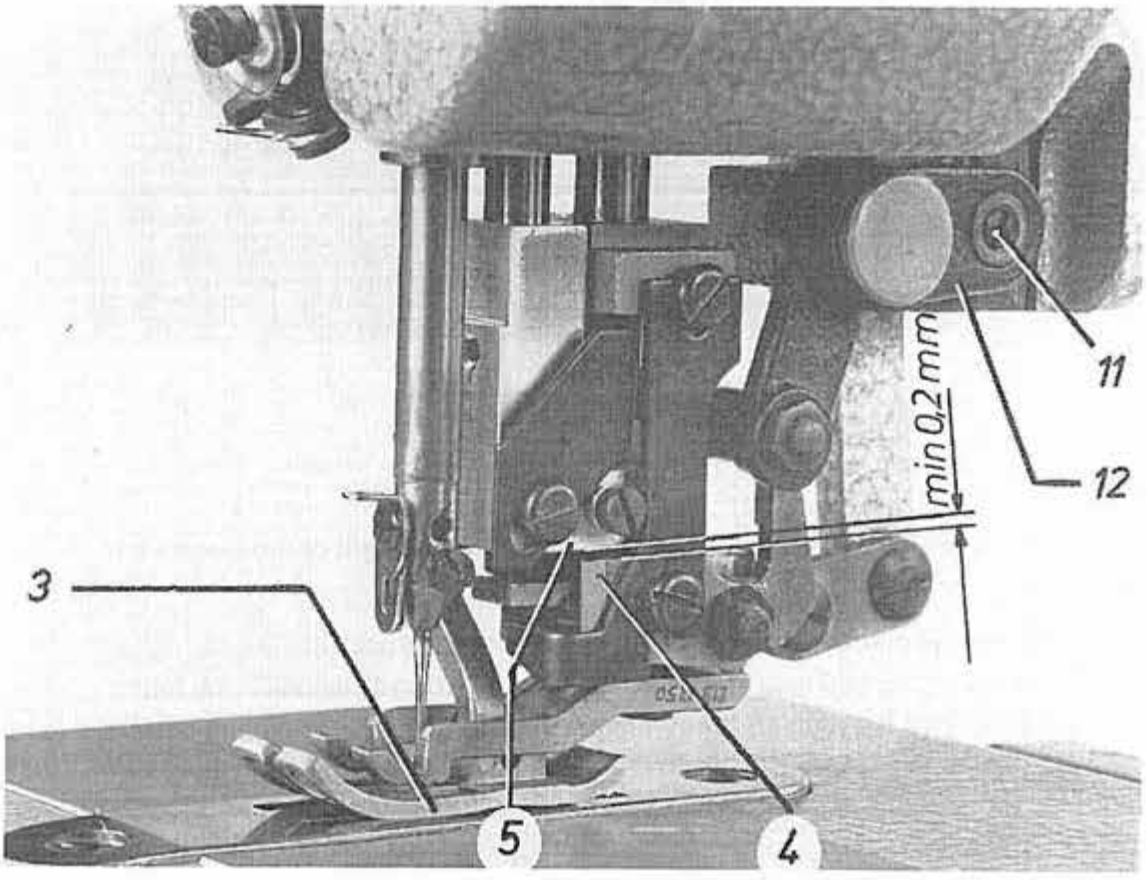


Fig. 44b

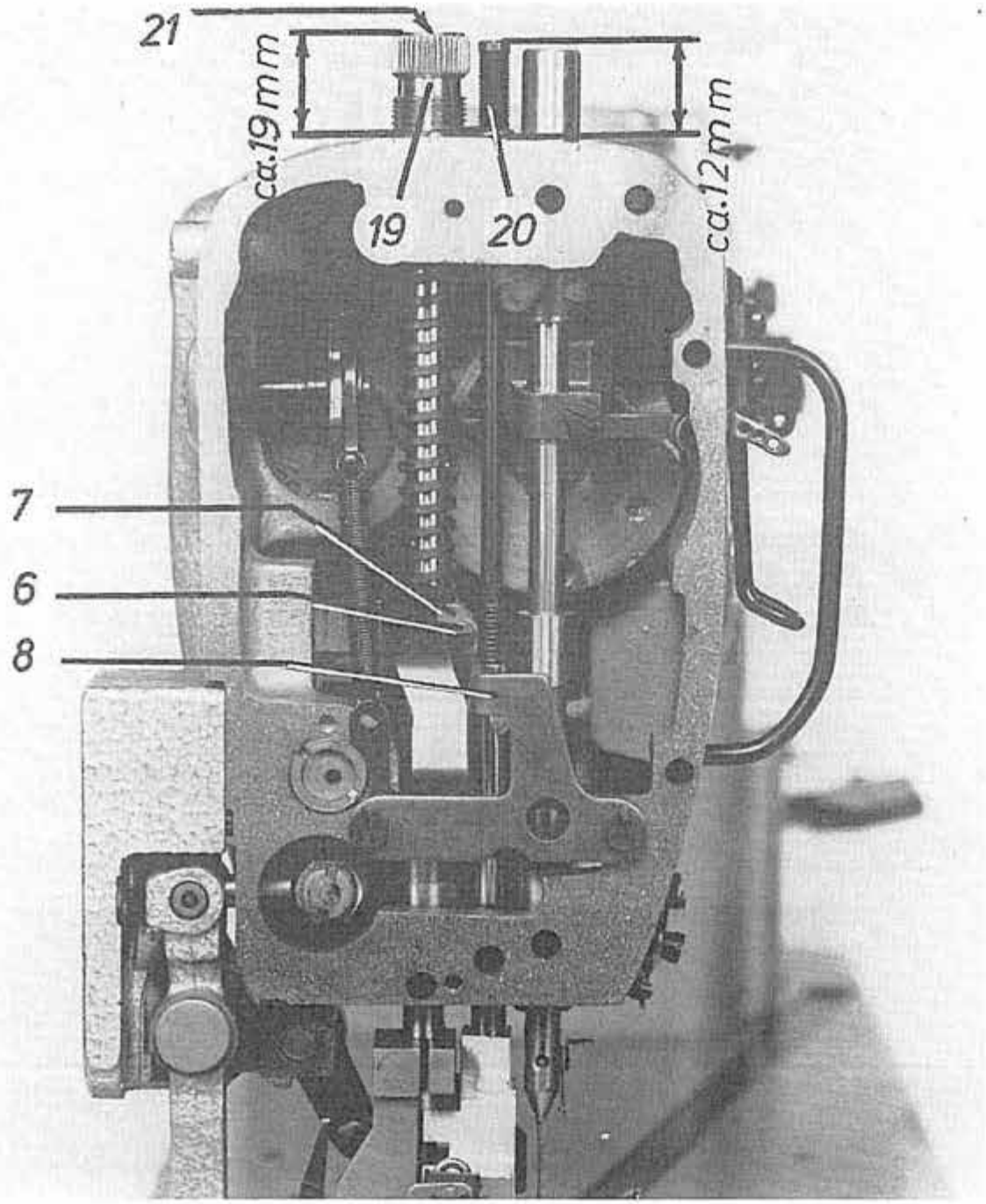


Fig. 44c

Time then the lifting motion. This calls for a proper adjustment of the needle bar height.

The feeding foot should begin with its lifting motion when the point of the descending needle is level with the surface of the throat plate, i. e. when it stitches in the fabric. For timing, remove the plug 13 (44e), loosen the two eccentric fastening screws that are accessible through the hole and turn the eccentric.
Following the adjustment, retighten the eccentric fastening screws.

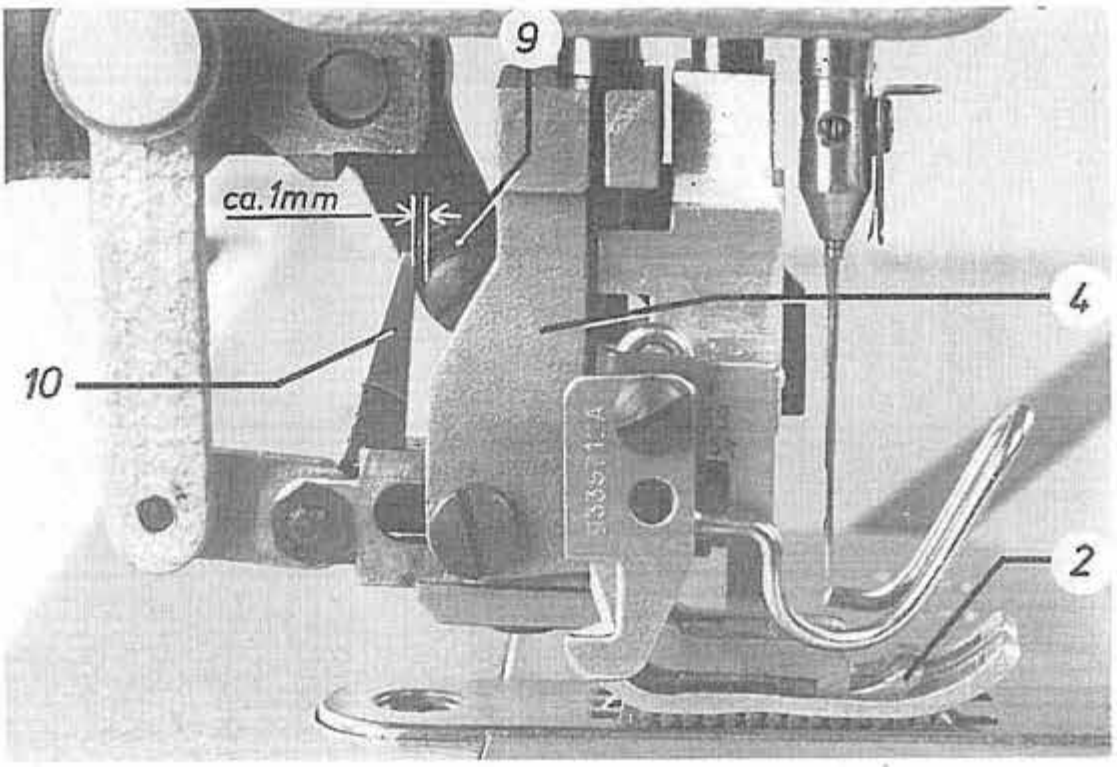


Fig. 44d

Easy lift of the sewing foot

The so-called "easy lift" of the sewing foot is the upwards motion of the sewing foot under weak pressure, before it is exposed to the additional pressure by the feeding foot.

Adjust as follows:

With the **feed dog being in its upper position** and with the sewing foot resting on the feed dog, the distance between the supporting sheet 15 (fig. 44) and the bottom of the block 4 should amount to 1 mm.

For adjusting the supporting sheet 15, loosen the screw 16.

If in case of thick material and in case of equipment where the feeding foot is behind the needle the feeding foot stroke is not sufficient with this easy lift adjustment then, with the feed dog being in its **lower position** and with the sewing foot resting on the throat plate, set the supporting sheet 15 against the block 4. This will neutralize the easy lift. The entire pressure will be exerted on the sewing foot and the maximum feeding foot stroke will be obtained.

Note:

With this adjustment the maximum speed should not exceed 4000 st/min.

Angular support for the feeding foot

The angular support 17 (fig. 44f) limits the lowest position of the feeding foot and lifts the feeding foot when the sewing foot is being lifted. After loosening the screws 18 set the angular holder so that the distance between the teeth and the throat plate surface amounts to 0.05 mm when the feeding foot is in its lowest position.
If the feeding foot is too low, the sewing equipment and the fabric will be damaged.

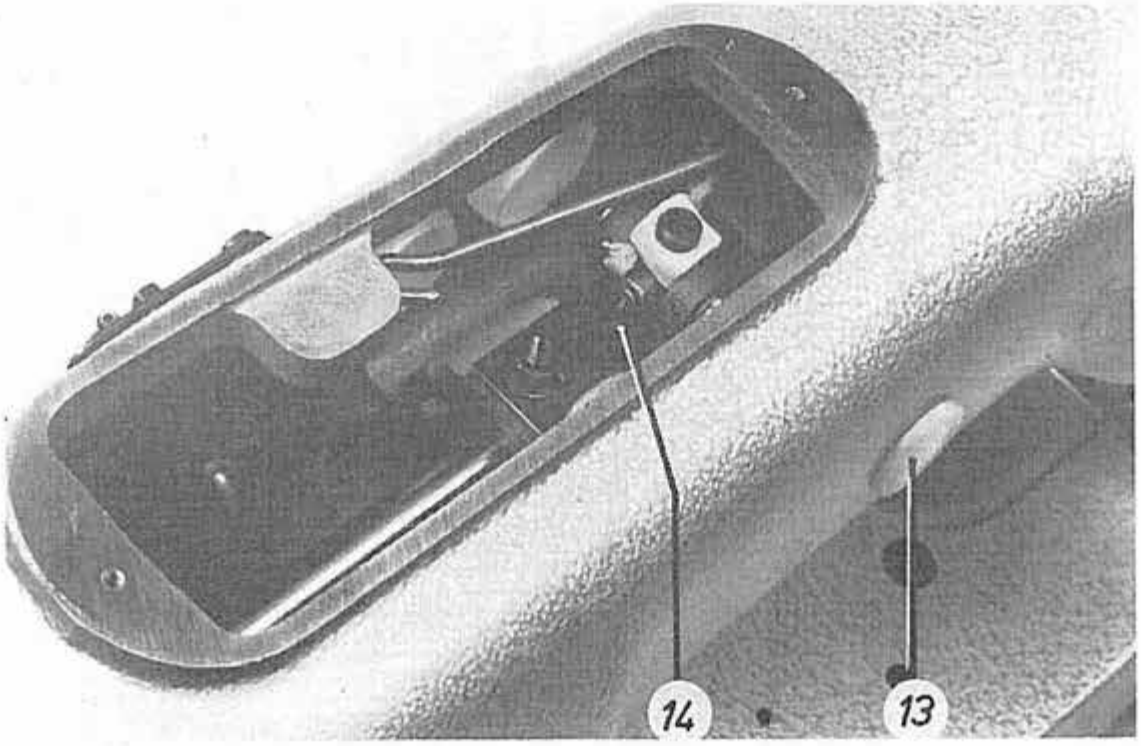


Fig. 44e

Spring pressure on the block 4 (fig. 44d)

By the spring pressure and by the resting of the guide block 7 (fig. 44c) on the angular support 8, the block 4 and consequently the feeding foot 2 (44d) are kept in the lower position. In case of cross seams or thick fabric plies it is possible to escape upwards. The spring pressure is correct if the distance between the top of the regulating screw 19 (fig. 44c) and the top of the machine arm amounts to about 19 mm.

Spring pressure of the feding foot

For an optimum fabric feed it is necessary to adjust properly the spring pressure acting on the feeding foot.
It must be adapted to the work and to the material involved.

An excessive pressure can damage delicate fabrics.

The pressure is correct if the distance between the top of the regulating screw 20 (fig 44c) and the machine arm amounts to about 12 mm.

Spring pressure of the sewing foot

Adjust the spring pressure in the so-called "easy lift" sector by the knurled screw 25 (fig. 44g) so that the sewing footcan follow the upwards and downwards motion of the bottom feed also at the top sewing speed.
An excessive pressure will the distribution of fullness.
For an intensive distribution of the fullness, for instance with intermediary sheet, the spring pressure can be reduced.

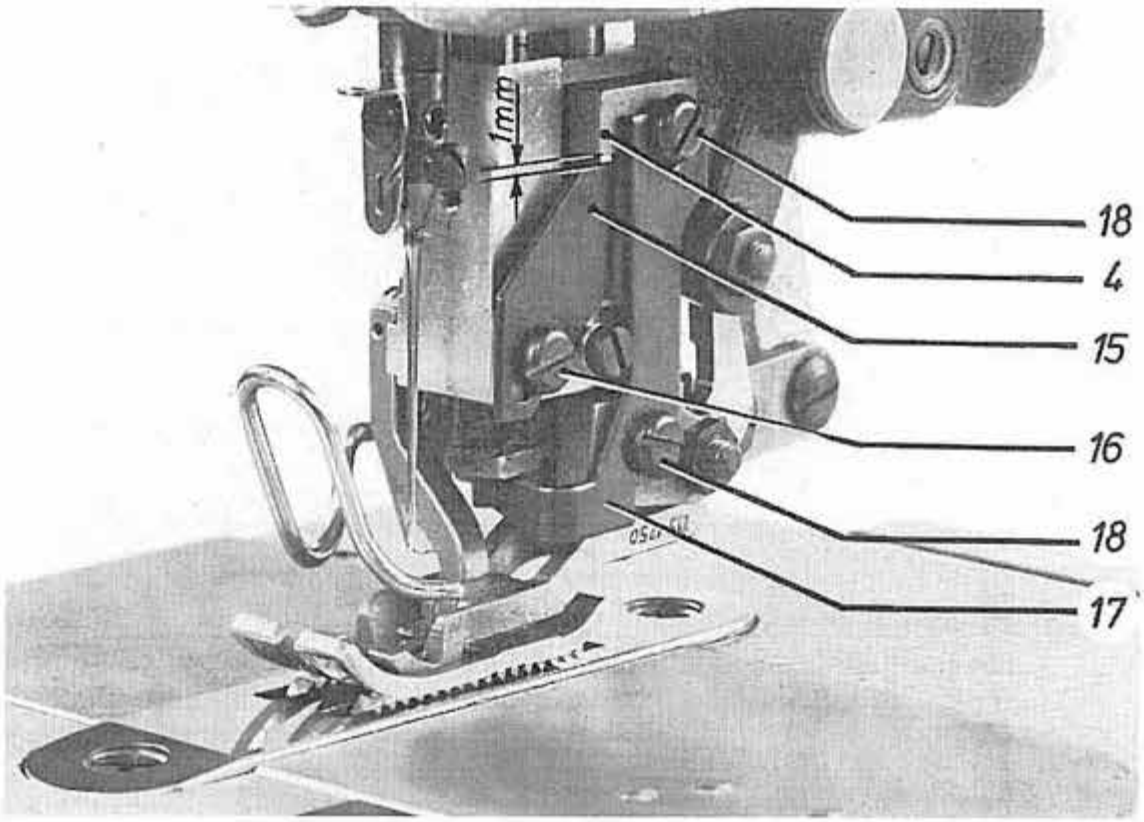


Fig. 44f

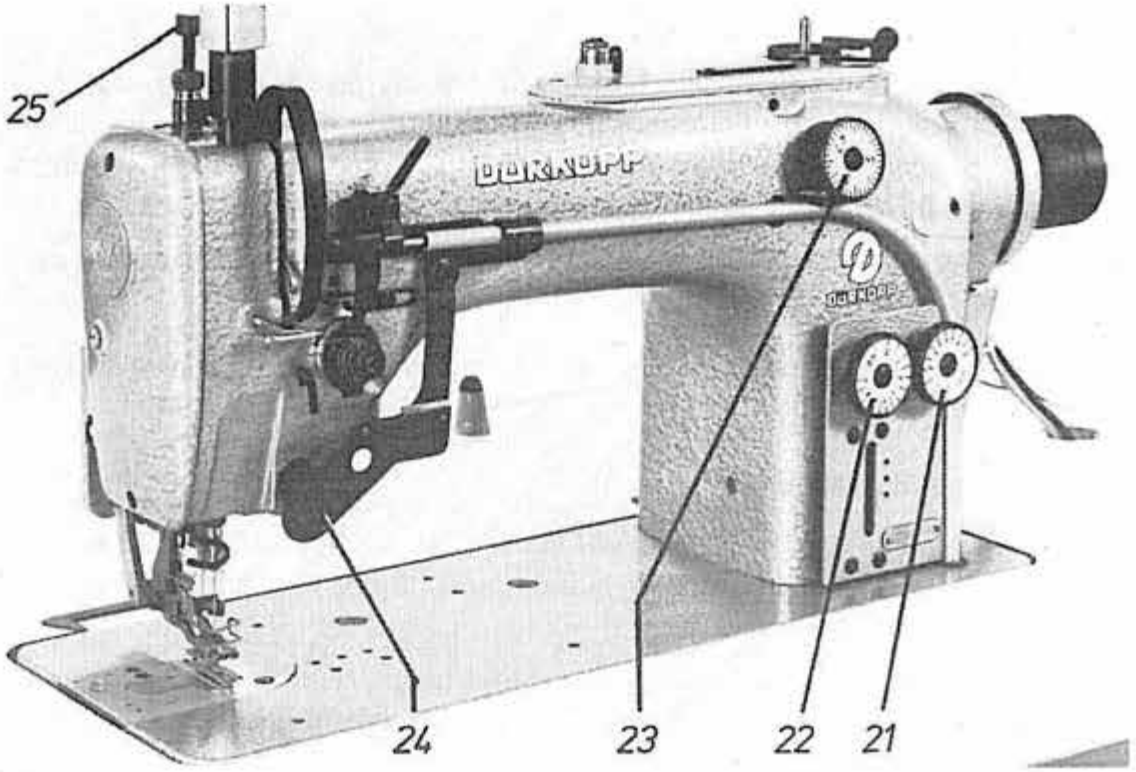


Fig. 44g

51.8. Adjusting the feed lengths in 219-156, -15156 and -115156

The top and bottom feed lengths are adjustable by the setting wheels on the machine arm.

Setting wheel 22 (fig. 44g): top feed
21 bottom feed

Maximum top feed length 7 mm, bottom feed length 6 mm.

The setting wheels have scales and stop points, enabling an accurate adjustment of the feed lengtts.

The additional setting wheel 23 (fig. 44g) serves for preadjusting a longer top feed with respect to its basic adjustment.

The additional feed (the ruffling) can be engaged by the following additional equipment

a) Mechanical SK equipment for 219-156 and -15156
Lower the additional pedal forwards = for increasing the top feed
Lower the additional pedal backwards = for reverse feed, the additional feed will be neutralized

b) Mechanical KR equipment for 219-115156.
Lower the additional pedal forwards = for increasing the top feed

c) Electropneumatic KR equipment for 219-15156 and -115156.
Operate the button 24 (fig. 44g) = for increasing the top feed

52. Adjusting possibilities for lower and upper feed (fig. 40)

The following instructions show together with the application examples the adjustment possibilities for lower and upper feed of DÜRKOPP 219.

The sketches show what results can be obtained by the different adjustments.

Lower and upper feed are jointly adjustable by the stitch regulator lever 41 without changing the feeding ratio-equal or different feeding rate.

52.1. Application examples

Displacement-free joining of parts with frequent stitch length change, e.g. 2.5 mm long stitches for the side seam and 1.5 mm long stitches for darts (see sketch I).

Joining two fabric plies with frequent stitch length change, ruffling regularly the upper **or** the lower ply on the entire seam length, e.g. shoulder seams in jackets, tailour made jackets etc. (see sketch II and III).

Basic adjustment of the stitch regulator

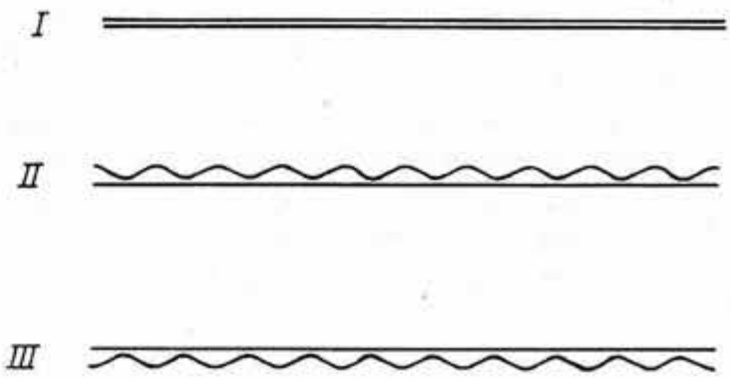
Set bottom feed for the desired basic stitch length by the stop screw 296 (fig. 40). Loosen the eccentric fastening screw 324 and adjust the top feed

for the desired result according to the sketches I, II or III by the stitch regulator lever 41.

Set the eccentric 321 against the pin 322 of the block 323 so that it has no play and tighten the screw 324. Turn back the stop screw 296 for the maximum stitch length.

Since the springy eccentric 321 touches the pin 322, the top and bottom feed are coupled together for the forward and for the reverse feed and, therefore, they can be jointly controlled by the stitch regulator lever. The adjusted feeding difference is maintained also when sewing backwards.

In machines with SK equipment, by controlling the pedal while sewing, the top feed can be increased up to the value set by the stop screw 300, depassing thus the value of the hand lever and permitting to obtain the result according to the sketch IV.



Bottom and top feed are individually adjustable. The bottom feed must be adjusted during the standstill of the machine while the top feed can be modified by the stitch regulator lever during the sewing operation.

52.2. Application example

Displacement-free joining of fabrics which, on account of their properties, must be sewn with differential feed. This is required for instance when sewing velvet in either direction (see sketch I).

Basic adjustment of the stitch regulator

Set bottom feed for the desired basic stitch length by the stop screw 296. Loosen eccentric fastening screw 324 and, by means of the stitch regulator lever 41, set the top feed to advance at the same rate as the bottom feed.

Set and fasten the eccentric 321 at the pin 322 of the block 323. The top feed can be adjusted by the lever 41 according to the requirements without influencing the bottom feed. When lowering the lever for backtacking, the feeding difference, set by the lever, will be cancelled, so that both feeding

means will advance at the same rate, from the basic stitch length till the reverse feed. This is important, because it avaoids damages to the machine when sewing Jersey.

In machines with SK equipment, by controlling the pedal while sewing, the top feed can be increased up to the value set by the stop screw 300, depassing thus the value of the hand lever and permitting to obtain the result according to the sketches IV and V.

IV 

V 

Bottom and top feed are individually adjustable. The bottom feed must be adjusted during the standstill of the machine. The basic feed length of the top feed is adjusted by the hand lever. The top feed can be increased or reduced by controlling the pedal while sewing, so that it is possible to advance the upper ply faster, to advance the lower ply faster or to advance both plies are equal rate.

52.3. **Application example**

Intermittent ruffling of the upper or lower ply of fabric when stitching on edges of jackets, tailour made jackets and light weight overcoats (see sketch VI).

VI 

Basic adjustment of the stitch regulator

Effect the basic adjustment according to the following example. The values specified can be modified within certain limits.

Adjustment example:

Stitch length 3 mm. Bottom feed 1 mm, additional feed of the top feed 2 mm.

Loosen eccentric fastening screw 324 (fig. 40).
Set the bottom and the top feed for the equal stitch length of 3 mm.
Set stitch regulator lever 41 on the 2 mm mark.
Set eccentric 321 against the pin 322 of the block 323 and tighten the screw 324.

Set the hand lever again for 3 mm feed.
Limit the top feed to 5 mm by the stop screw 300.

By means of the SK-equipment, the top feed

a) can be increased up to the value, set by stop screw 300, by lowering forwards the pedal, depassing thus the hand lever value,

b) can be reduced by heeling down the pedal or by lowering the hand lever until the pin 322 touches the eccentric 321. This means: under
   a) the top feed is greater than the bottom feed, and under
   b) the top feed is shorter than the bottom feed.

As soon as the pedal or the hand lever are released, the feed difference is cancelled. For backtacking the seam, lower fully the hand lever or heel down fully the pedal, except -115000 (with automatic backtacking equipment).

The machine can be fitted with the quick adjustment device 330 (fig. 45) for a quick and simple adjustment of the top feed.

Ref. No. for machines with automatic backtacking equipment: 21954311
Ref. No. for all other sub-classes: 2191001

Fasten the quick adjustment device by the two fastening screws of the scale plate. Lower the hand lever 331 to increase the top feed and lift it to decrease the top feed. The adjustment ranges between 2 and 5.5 mm. By means of the two stops 332 and 333 the adjustment range can be reduced.

If it is necessary to have between the two final positions a further stop position, finish the respective stop so that the stop point is well perceivable.

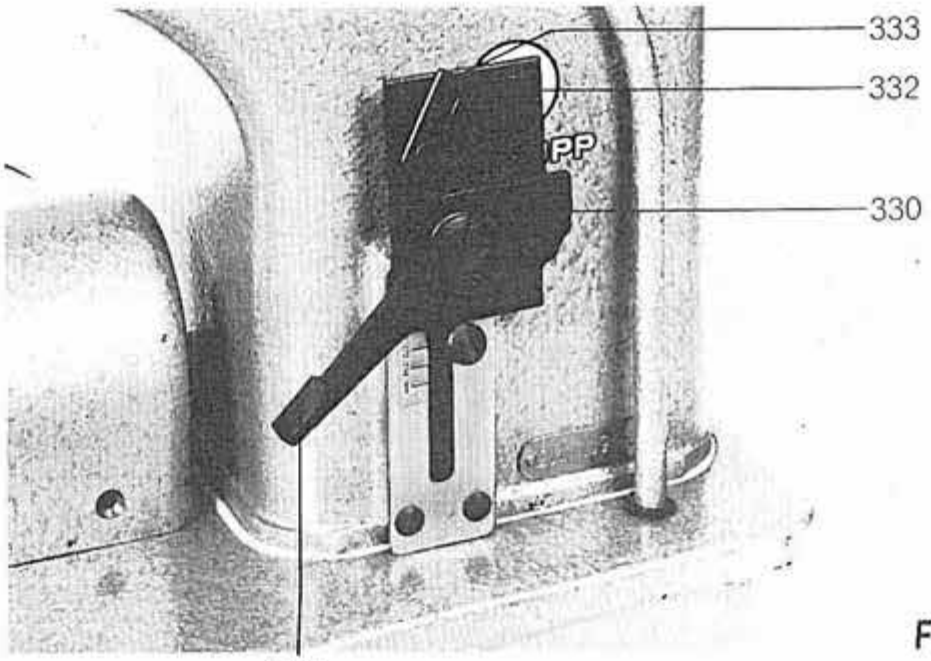


Fig. 45

Application of the quick adjustment device for the aforementioned adjustment examples.

Re: 52.1.

The stitch lengths are limited by the stops between 1.5 and 2.5 mm.

For the darts with the stitch length of 1.5 mm lift the lever and for the side seam with the seam length of 2.5 mm lower said lever.

Re: 52.2.

The two top feeds, adjustable by the hand lever, are limited by the stops 332 and 333. When stitching on velvet, the lever 331 must be lifted or lowered, according to the sewing direction.

Re: 52.3.

First possibility, the machine has SK-equipment

Limit the top feet to 3 mm by the stop 333.
Lower the lever 331 for equal feeding rate of bottom and top feed.

Limit the top feed to 2 mm by the stop 332.
Lower the lever 331 for ruffling the lower fabric ply.

Lower the pedal forwards for increasing the top feed beyond the hand lever value, i.e. for ruffling the upper fabric ply.

Second possibility, the machine has no SK-equipment

Set top and bottom feed for the equal feeding rate of 3 mm and fix it in a notch. Make the notch concave for a well perceivable engagement.

Limit the additional top feed by the stop 333.

Limit the minimum top feed (example = 2 mm feed length) by the stop 332.

Instructions for DÜRKOPP 219-9103

DÜRKOPP 219-9103 is a single-needle lockstitch machine with top and bottom feed. It is fitted with a pinker for pinking the fabric edges while sewing.

53. Needles

Needle systems to be used: 797 kK.

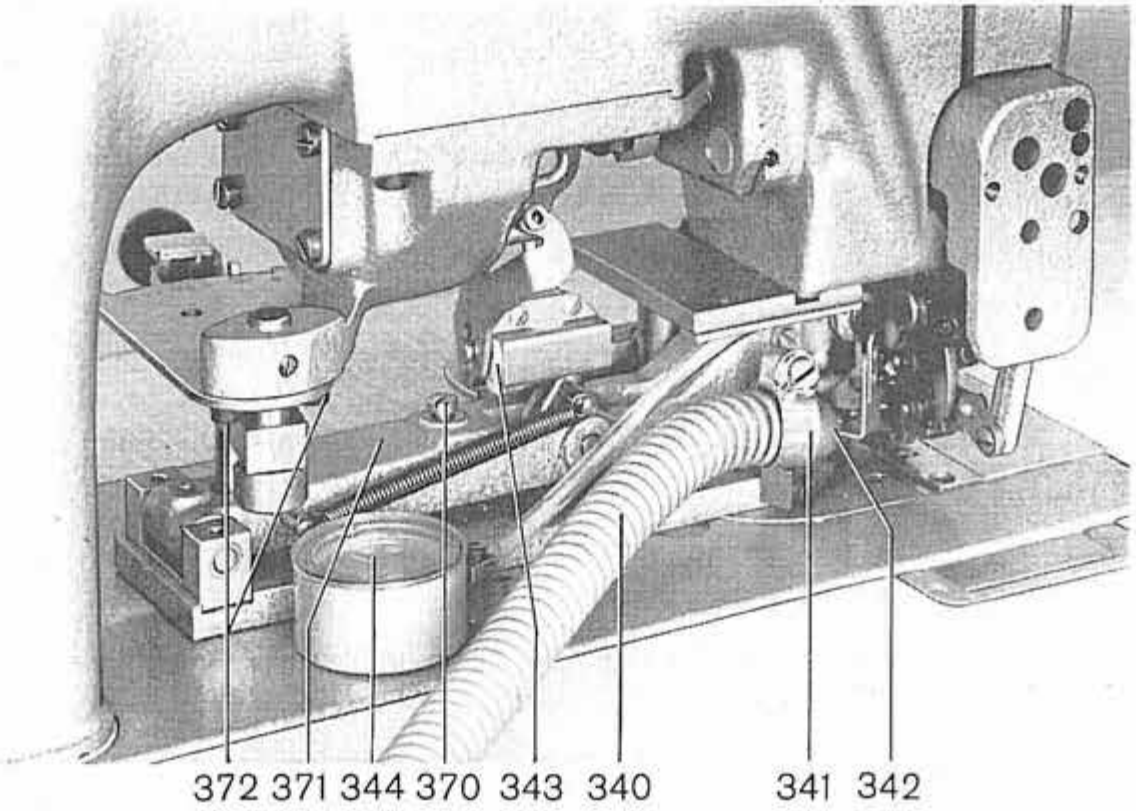


Fig. 46

54. Speed

The maximum speed amounts to 5000 st/min.

55. Feed length

Forwards: top feed uo to 5 mm, bottom feed up to 4 mm.
Backwards: top and bottom feed up to 2.5 mm.

56. Setting up the machine

Fasten the motor protective switch of the vacuum unit under the table top and secure the suction hose 340 (fig. 46) by means of the clip 341 to the suction nozzle 342. Note also the preceding chapters regarding the installation of DÜRKOPP 211.

57. Maintenance

In addition to the preceding lubrication and maintenance instructions, note the following:

Lubricate the oil felt regularly with some drops of oil (Spinesso 10).

The oil container 344 should always be filled with oil.

Remove regularly the pinking waste from the waste collecting box.

If, after a certain time of operation, the knives are blunt they can be sent to the factory for grinding. In order to avoid any confusion, the knives should be sent joined in pairs.

The complete set of knives, consisting of the upper knife and two lower knives, is supplied by the factory under the ref. No. 93370171K.

58. Operation

58.1. Adjusting the pinking depth

The pinking depth, i.e. the distance between the seam and the tooth valley is adjustable by the hand lever 346 in graduations, shown on the scale of the notch plate 345 (fig. 47). For unlocking, lower the stop lever 347.

58.2. Adjusting the cloth edge guide

The cloth edge guide 348 (fig. 47) can be reset in its oblong holes after loosening the fastening screws 349.

58.3. Adjusting the cloth holder

The cloth holder 350 (fig. 47) is coupled with the pinker. When modifying the pinking depth, the cloth holder is reset automatically. After swinging the pinker to the rear ensure when returning the pinker to its initial position that the lever of the cloth holder is located in the notch 351 (fig. 48) of the fork 352.

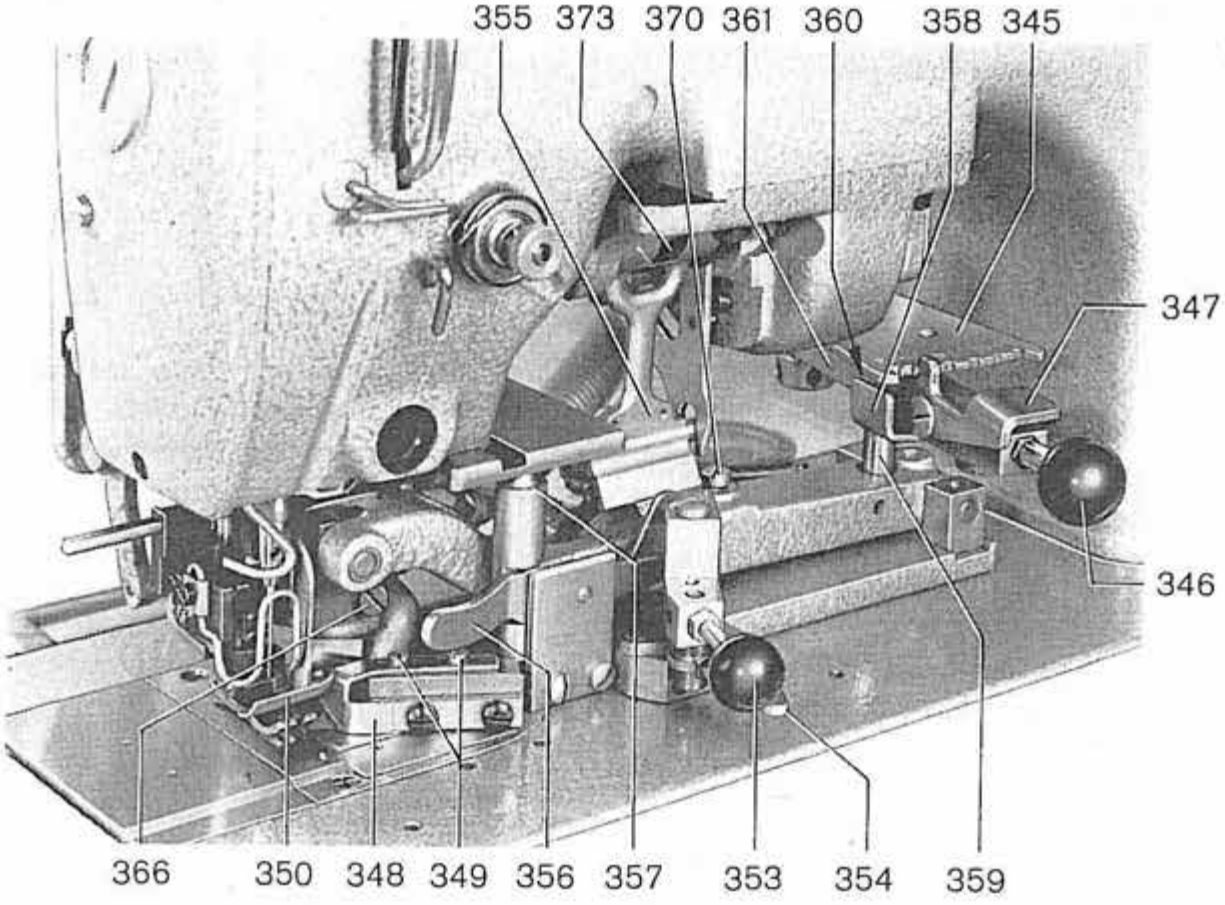


Fig. 47

58.4. Connecting and disconnecting the pinker

For disconnecting the pinker, move hand lever 353 (fig. 47) to the right. Thus it is possible to interrupt the pinking while sewing. The locking lever 354 will snap. For connecting the pinker push said lever to the left.

58.5. Removing the pinker

After unlocking, the edge pinker can be removed from the machine. Proceed as follows:

1. The pinker being connected, conduct the lifter rod to its topmost position by turning the handwheel and set the maximum pinking depth.

2. Submerge the locking bolt 357 by lowering the lever 356, move the pinker backwards and push the cloth holder 350 to left up to the stop.

3. Push back the locking lever 358 and pull the bolt 359 through the cut out 360 of the guide 361.

4. Swing the pinker so that the spherical head 362 (fig. 48) of the control cam 363 can be pushed out of the guide of the lifter rod 355 (fig. 47) to the right.

5. Submerge again the locking bolt 357, push back the locking lever 358 and remove the pinker to the front.

For fitting the pinker, proceed in inverse order, ensuring that the cloth holder is again coupled with the pinker.

59. Adjusting the edge pinker

59.1. Changing the knives

First remove the lower knife 364 (fig. 48) by tacking out the fastening screws, then loosen the locking screw 366 (fig. 47) and pull the upper knife 367 (fig. 48) out of the guide.

For fitting the knives, proceed in inverse order.

59.2. Adjusting the knives

Adjust the lower knifes so that their cutting edges meet and their front edges are in alignment.

Adjust the upper knife 367 so that, when being lifted for cutting, it touches uniformly the cutting edges of the lower knife and that its point coincide with the point of the lower knife.

The cutting pressure of the upper knife can be regulated by turning the screw 369 after loosening the nut 368. It should not be higher than required for the proper pinking of the fabric edge.

If the presser is excessive, the knives will soon become blunt. Tighten again the nut 368.

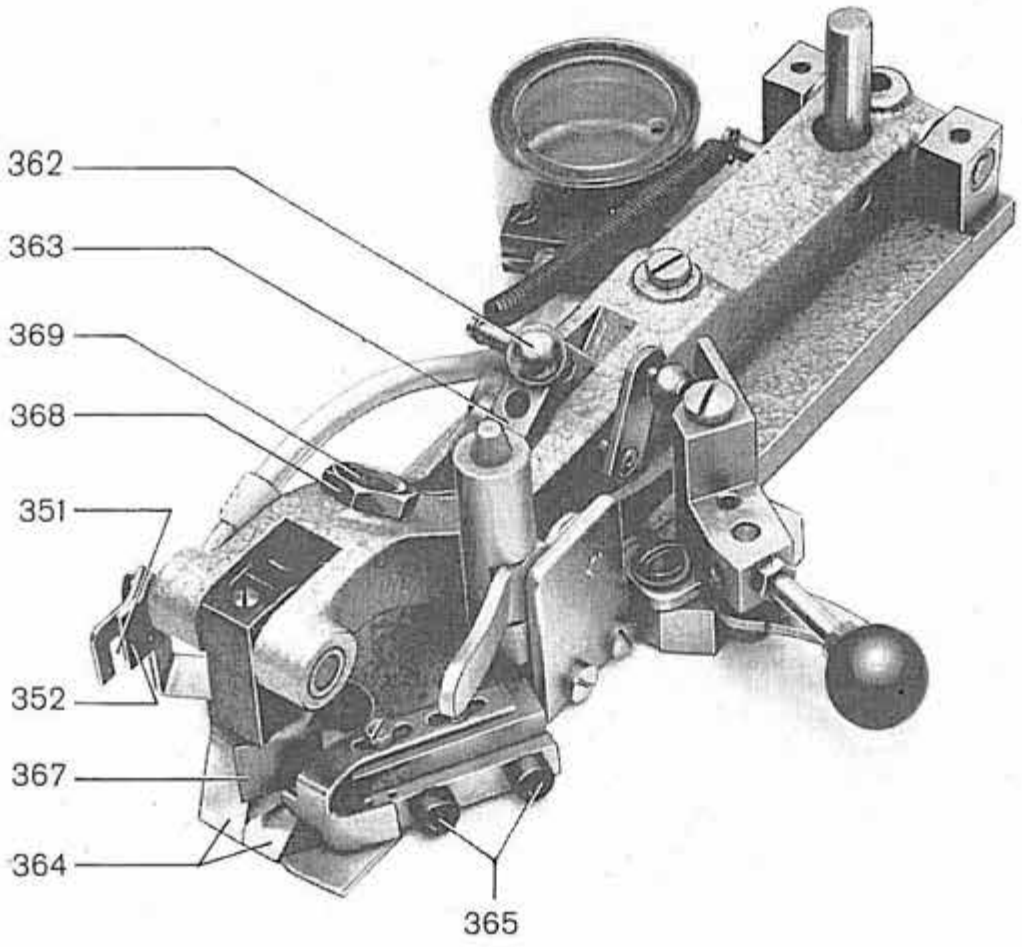


Fig. 48

59.3. **Adjusting the cutting stroke**

Lowest point of the lifter rod 355 (fig. 47).

The lower edge of the upper knife 367 should be located at least 1 mm above the lower edge of the lower knife, since otherwise the upper knife could knock against the covering plate.

Topmost point of the lifter rod.

There should be no play between the spherical head 362 (fig. 48) of the control cam 363 and the lifter rod 355 (fig. 47). The spherical head should press under the guide.

This setting can be obtained by the reciprocal adjustment of the upper knife level (loosen locking screw 366, fig. 47) and of the position of the control cam 363 (fig. 48) (the regulating screw of the cam is accessible from the bottom of the pinker). Set the control cam 363 at such a level that also with the minimum distance between the pinker and the needle (5 mm) the spherical head is still fully in the guide of the lifter rod.

After loosening the locking nut, adjust the stop screw 370 (figs. 46 and 47) so that there is a slight play between the screw head 370 and the lever 371 when the lifter rod is at its topmost point.

The distance between the knife point and the middle of the needle should agree with the value set on the scale of the notched sheet 345 (fig. 46 and 47). For setting this distance, loosen the screw 372 (fig. 46) and reset the notched sheet accordingly.

59.4. **Timing the knife movement**

Varying with the fabric thickness time the knife movement so that the knives begin to cut when the feeding of the fabric has been terminated.

This adjustment can be made by turning the eccentric 373 (fig. 47) after loosening its fastening screw.

Instructions für DÜRKOPP 211-34105 and 219-35105

DÜRKOPP 211-34105 and 219-35105 are single-needle lockstitch machines with transversal cutter. This cutter makes after each 6th stitch (on request after each 4th stitch) a transversal incision. The incision depth is adjustable up to about 1 mm from the seam.

The machines are fitted with an electromechanical thread cutter. The class 219-35105 has in addition a vertical edge trimmer.

60. Speed

The maximum speed amounts to 5000 st/min.

61. Needles

Needles system to be used: DÜRKOPP 211-34105 = 797 or 1901
DÜRKOPP 219-35105 = 797 kK

62. Lubrication

When proceeding to the weekly cleaning, lubricate the oil felt 374 (fig. 49), the oil point 375 of the cam shaft and the oil point 376 of the knife lever shaft with some drops of oil.

Lubricate at certain intervals also the oil points 377 (fig. 49) of the articulated bar heads with a drop of oil.

The worm 378 (fig. 50) is lubricated by the oil felt 379 that is connected to the central lubrication.

For further instructions concerning the lubrication and the maintenance of the machine see the chapters 2, 12 and 31.

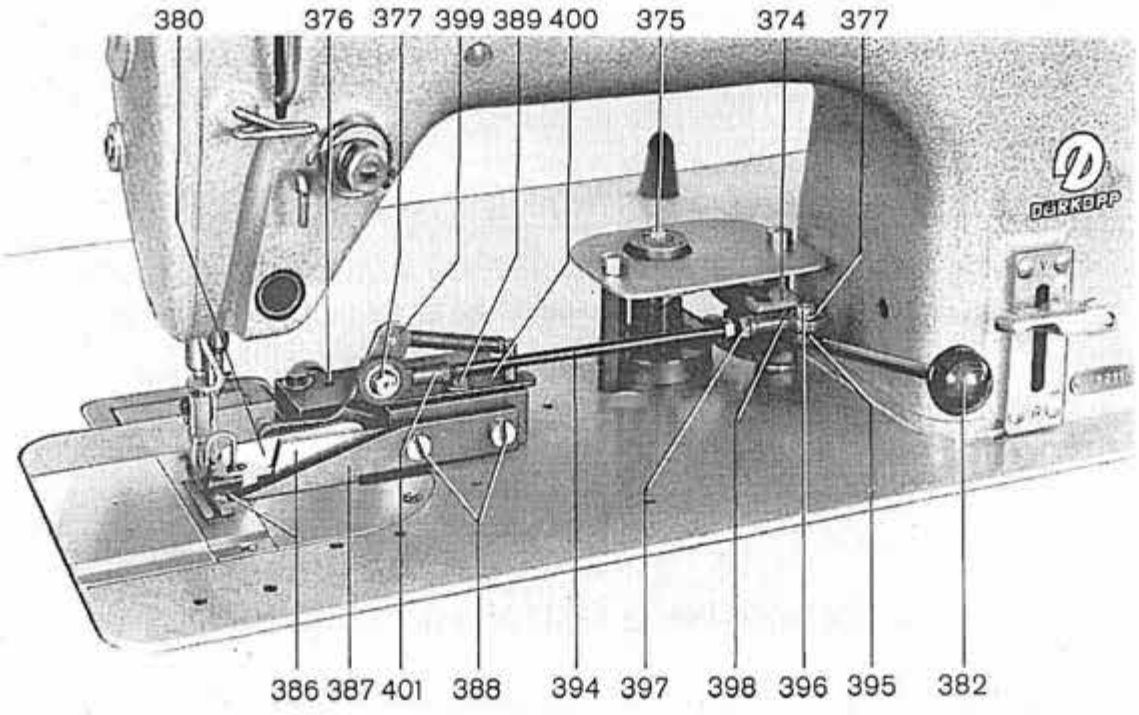


Fig. 49

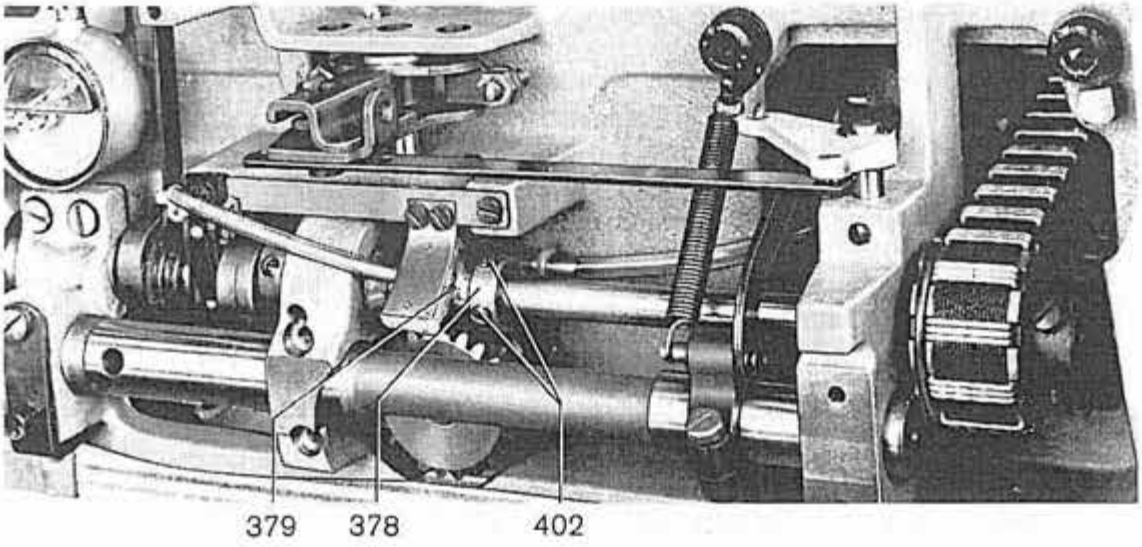


Fig. 50

63. Adjusting the transversal cutter

63.1. Changing the cam

The knife 380 (fig. 51) is driven by the cam 381. The machine is normally fitted with the cam No. 2196301 for making an incision after each 6th stitch.

At request we can supply the cam No. 2196305 for making an incision after each 4th stitch.

For changing the can 381 (fig. 51) proceed as follows:

1. Move the switch lever 382 in the disconnecting position (arrow direction A).

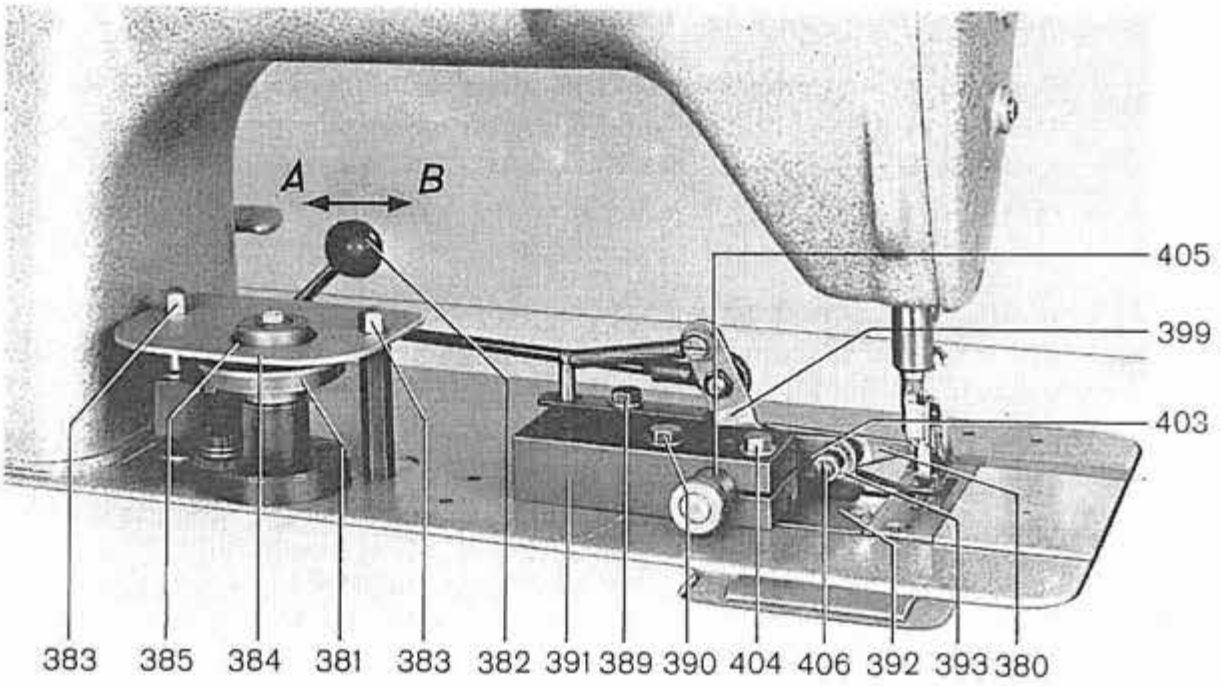


Fig. 51

2. Remove the two screws 383 and the covering plate 384.

3. After loosening the threaded pin 385 the cam disk 381 can be removed upwards and replaced by an other cam disk.

4. Slip the new cam disk on the shaft uo to the stop. Ensure that the threaded pin 385 presses on the surface of the shaft. This will properly time the knife movement.

63.2. **Adjusting the counter knife (cutting depth)**

Set the counter knife 386 (fig. 49) and the thrust piece 387 at such a height that the point of the counter knife 386 and the point of the thrust piece 387 are level with the surface of the throat plate. This adjustment can be made after loosening the screw 388.

Seen in the direction of the operator, the face of the counter knife 386 should be in touch with the troat plate. In the tranversal direction, the point of the travelling knife 380, when performing the cutting movement, should pass along the cloth presser foot and along the throat plate at the minimum possible distance.

This adjustment can be obtained by turning the pillow block 391 after loosening the screws 389 and 390 (fig. 51).

Following the adjustment, the rear edge of the pillow block 391 must again be parallel to the rear edge of the base plate.

The maximum cutting depth is obtained by this adjustment transversal to the feeding direction. For reducing the cutting depth, displace the pillow block 391 to the right accordingly.

63.3. Adjusting the knife stroke

When the switch lever 382 (fig. 51) is engaged and the handwheel is turned in the direction of rotation until the roller has reached the topmost point on the cam disk 381, the distance between the covering plate 392 and the locking nut 393 should amount to about 1 mm. This adjustment can be obtained by extending or shortening the push rod 394 (fig. 49).

After this adjustment and with the switch lever 382 being in engaged position turn the handwheel in the direction of rotation until the roller has fully left the cam, i.e. until the travelling knife 380 it in its topmost position.

In this position the distance between the lever 399 (fig. 49) and the stop 400 should amount to about 0.5 mm. The stop 400 can be set accordingly after having loosened the screw 389.

Note: The push rod 394 (fig. 49) should be screwed in the articulated rod head up to the stop.

63.4. Timing the knife movement

Varying with the fabric thickness time the cutting movement of the travelling knife 380 (figs. 49 and 51) so that the knife does not touch the fabric before the feeding movement is stopped.

The timing can be done by turning the worm 378 on the lower shaft after loosening the screws 402 (fig. 50).

63.5. Adjusting the cutting pressure

Before setting the cutting pressure check whether the pin 403 (fig. 51) of the knife lever 399 slightly touches the counter knife 386 (fig. 49) (oil gap).

This adjustment can be done by resetting the bearing bush 405 after loosening the locking screw 404 (fig. 51).

The proper cutting pressure can be adjusted by turning the screw 406 after loosening the locking nut 393.

The cutting pressure should not be excessive.

Heavy cutting pressure = quick knife wear.

Instructions for DÜRKOPP 211-15000, -19000, -24000, -34000, 212-15000 ,-24000, 219-15000, -24000, -34000 and -35000 in their different sub-classes

These single-needle lockstitch machines are fitted with electromechanical thread cutter, cutting off the needle and the bobbin thread on the reverse side of the fabric. The threads can be cut in the fabric and at the end of the fabric.

Note:

In order to obtained the maximum safety of stitching and cutting, note the following:

a) Use bobbin case top with the brake disk 296 (fig. 52). In case of a sudden unwinding of the lower thread this brake disk avoids an excessive rotation of the bobbin. But its braking effect on the bobbin must be considered when adjusting the bobbin thread tension, i.e. the tension spring 298 must be regulated carefully, in order to avoid an ecessive tension of the bobbin thread.

Use aluminium bobbins for the lower thread. Ref. No. 204230a.

b) Before introducing the 6 pole plug in the motor control check the position of the positioner. Operate the machine only if the positioner has been set according to chapter 65.

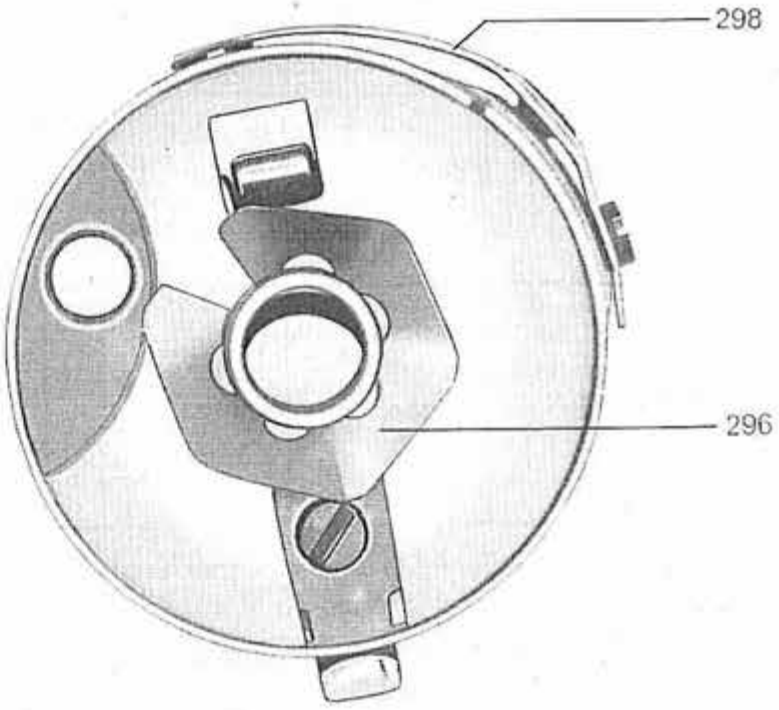


Fig. 52

64. Needles, speed and feed length

Sub-class	Needle system	Max. speed stitches/min.	Max. feed length
211-15101	5620 or Sy 1451 see note	5000	forwards 4 mm backwards 4 mm
211-15103 211-15105 211-24123 211-24125 211-34105	797 or Sy 1901	5000	forwards 4 mm backwards 4 mm
211-19105	797 or Sy 1901	5000	forwards 4 mm backwards 2 mm
212-15103 212-15105 212-24123 212-24125 212-24145*	Sy 1968	5000	forwards 4 mm backwards 4 mm
212-15155	Sy 1968	4000**	forwards 6 mm backwards 3 mm
219-1503 219-15105 219-24125 219-27103 219-34103 219-35103 219-35105	797 kK	5000	forwards: top feed 5 mm bottom feed 4 mm backwards: top and bottom feed 2.5 mm
219-15155 219-24175	797 kK	4000**	forwards: top feed 6.5 mm bottom feed 6 mm backwards: top and bottom feed 2.5 mm
219-15156	797 kK	4000**	forwards: top feed 7 mm bottom feed 6 mm backwards: top and bottom feed 2.5 mm

Note: The needle 5620 has a longer shaft than the needle Sy 1451 and, therefore, it is less inclined to vibrate. Important in case of thin needles.

* For the special work to be performed by this machines we recommend the speed of 3800 st/min.

** In case of the maximum feed length of 4 mm the machine can sew at a maximum speed of 5000 st/min.

65. Motor

Use a positioning motor for driving the machine and controlling the thread cutter, arresting the needle in its lower position when stopping the machine and in its upper position after cutting off the threads.

At the time of printing the present instructions following motors are available:

Quick Elektronic Stopmotor DQ 71-2A;
Efka Variostop motor VD 552/6F31D.

These motors produce impulses for the presser foot lifter and for the thread wiper.

Quick Electronic Stopmotor DQ 58-2A and
Efka Variostop motor VD 552/6F30
without impulses for presser foot lifter and thread wiper.

Note:
The modification of the maximum speed should be done solely by changing the belt pulley.

Quick Electronic Stopmotor

This is an electronically controlled and continuously adjustable positioning motor with an electromagnetically controlled clutch. Normally it is wired for 3-phase a.c. 220/380 V, 50/60 Hz. The speed of DQ 71-2A and DQ-2A amounts to 2800 rpm in case of 50 Hz and to 3400 rpm in case of 60 Hz.

The cutting speed of 150 rpm should not be modified. See also the motor operating instructions.

Efka Variostop motor

This positioning motor, with different stitch number groups, has an electromagnetically operated clutch. A modification of the speed within a stitch number group can be quickly done according to the motor operating instructions.

The cutting speed = the positioning speed (1st stitch number group) should not be modified.

Normally, the motor is wired for 3-phase a.c. 220/380 V 50/60 Hz. The speed amounts to 2800 rpm at 50 Hz and to 3400 rpm at 60 Hz.

Motors for other voltages at request.

Motor protective switch

Depending on the motor type, set the motor protective switch as follows.

Motor type	Mains voltage	
	220V	380V
DQ . . .– 2	3,3A	1,9A
VD552/. . .	4,2A	2,5A

65.1. **Setting the positioner**

Fasten the positioner on the handwheel flange and secure it against distorsion by a pin.

First needle position

When the machine positions, the needle bar should stand at its lower dead point. (Position "E" of the built-in setting gauge).

If with this adjustment the presser foot is not sufficiently lifted, i.e. when sewing a corner in thick material, then modify the adjustment so that the machine positions already **before** the lower dead point of the needle bar.

This positioning can be selected for any point, but the needle should stand in the throat plate at least up to its eye.

For adjusting, move the machine in the desired position by turning the handwheel and remove the cover cap of the positioner.

Then, depending on the motor type, proceed as follows:

In Quick Electronic Stopmotor loosen the screw 88 (fig. 53) and set the tripping edge 89 of the groove screen 90 to the tripping point 91.

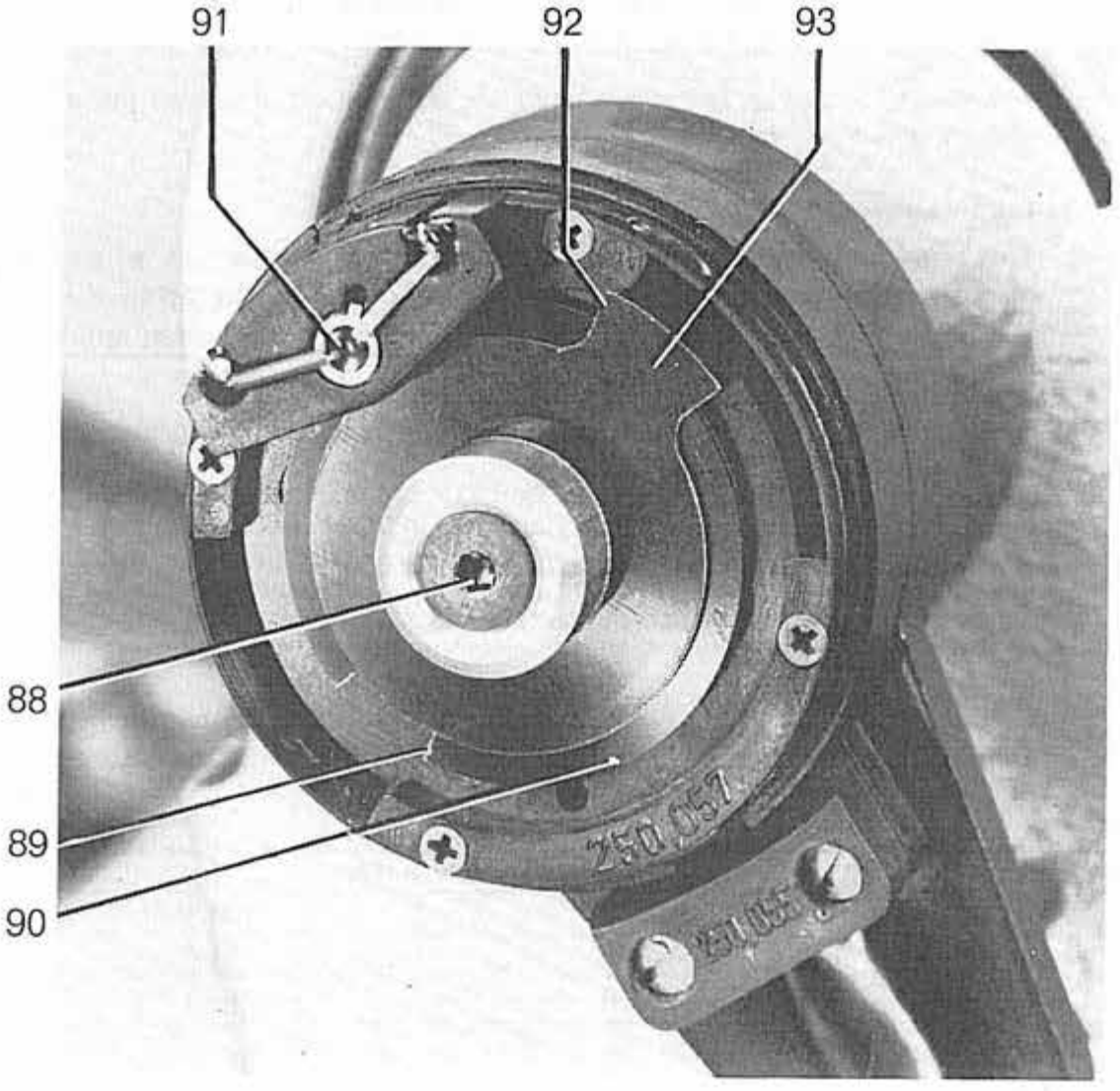


Fig. 53

In Efka Variostop motor set the control cam 119 (fig. 54) so that the control slit 120 stands behind the light screen 121 (fig. 54a) and that the two white points 122 on the right and on the left of the screen are visible.

Second needle position:

When the threads at the seam end have been cut off by heeling down the pedal and when the machine has positioned then, in this position, the distance between the throat plate slide and the bottom edge of the descending needle bar should correspond to the "A" value.

For setting this distance use the available gauge according to fig. 55. Machines with built-in setting gauge should stand in "D" position.

For setting the second needle position proceed as follows:

Place the needle bar by means of a gauge in the specified position.

In Quick Electronic Stopmotor set the tripping edge 92 (fig. 53) of the screen 93 on the tripping point 91.

In Efka Variostop motor set the control cam 123 (fig. 54a) so that the control slit 124 (fig. 54) stands behind the light screen 125 and that the two white points 126 on the right and on the left of the screen are visible.

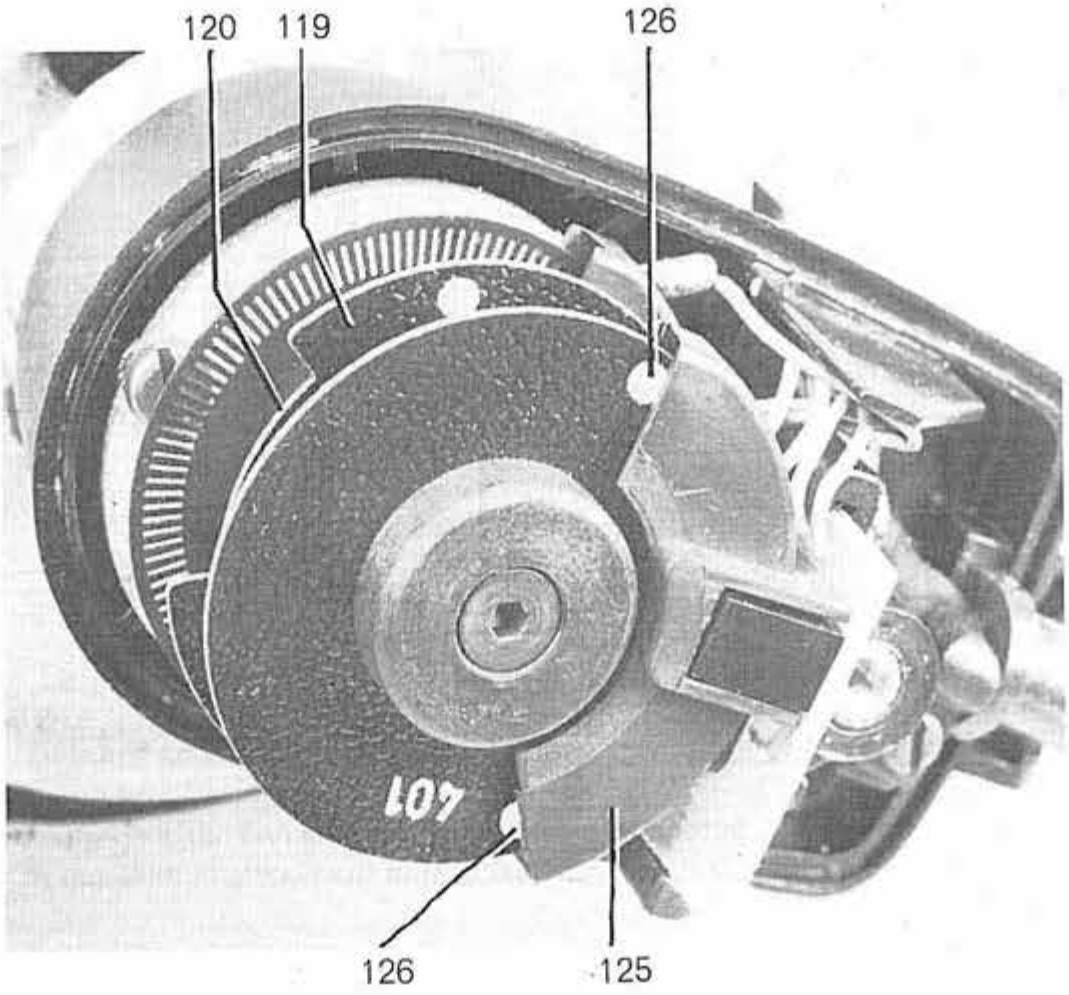


Fig. 54

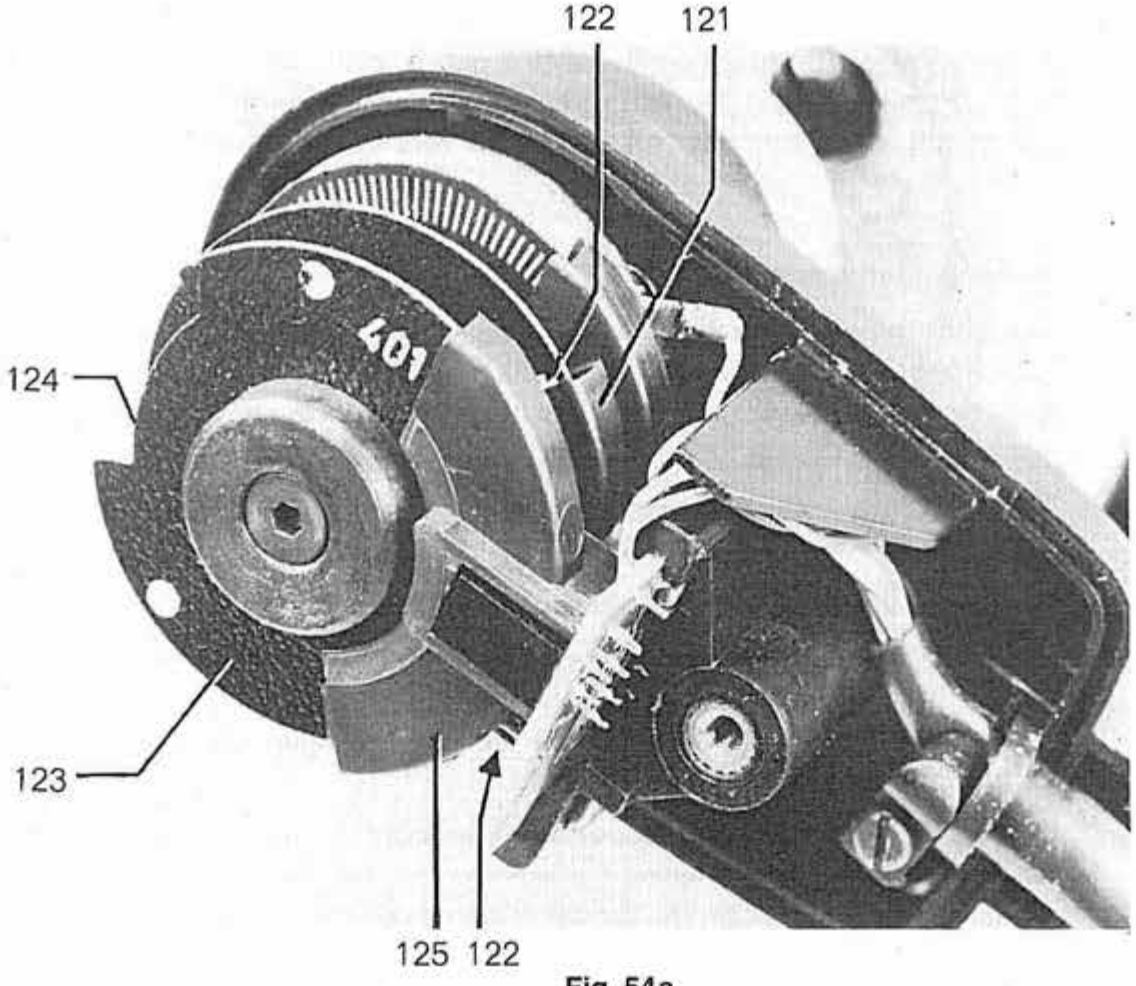


Fig. 54a

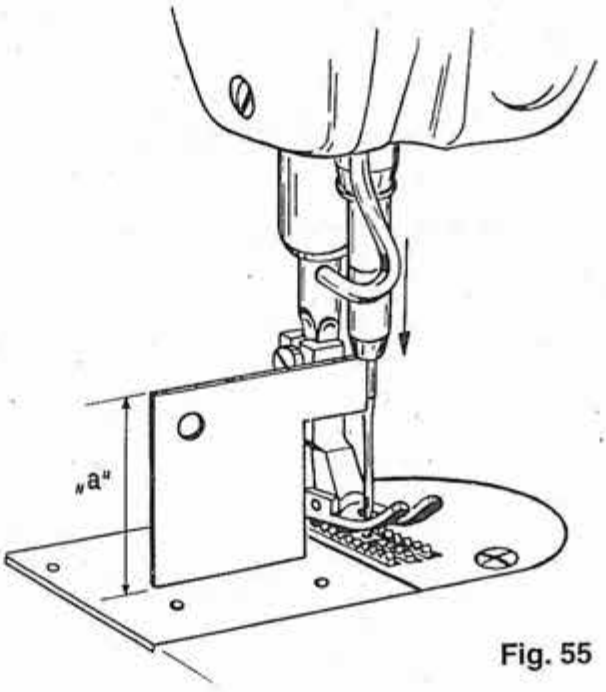


Fig. 55

Note:

In case of motors with automatic presser foot lifter, the first needle position is reversible, i.e. the machine can be set to stop the needle in its upper or lower position.

The respective switch is located on the control box.

66. Operation

The sewing motor and the thread cutter are controlled by a single pedal. This extremely facilitates the operation of the machine.

Following machine functions are obtained by operating said pedal:

1. The position, in which the pedal is in no way operated, is the neutral position.

2. Move the pedal from its neutral position slightly forwards = the machine will sew at slow speed.

3. Lower the pedal forwards still further = the machine will run faster and will attain its full speed.

4. Return the pedal to its neutral position = the machine will stop

5. Operate the pedal backwards beyond the neutral position, up to the stop = the needle will be lifted to its topmost point and the threads will be cut off. The cutting cannot be repeated before the machine has performed a revolution.

For cutting off the threads, the pedal can be heeled down at any time, no matter whether the machine is arrested or in operation. The needle arrested in the fabric when stopping the machine can be lifted to its topmost point by turning the handwheel without cutting off the threads.

Note:

If at the beginning of a new seam the end of the needle thread must be pulled through the fabric, ensure that it is not clamped between the pressure foot and the fabric. It must loosely hang out of the needle's eye. This can be obtained by respectively removing or inserting the work or by fitting DÜRKOPP thread wiper.

67. Adjusting the thread cutter

Adjusting the thread cutter in following sequence.

For this purpose it is necessary that the machine, having a loop stroke of 1.8 mm, is ready for sewing. In case of DÜRKOPP 212 the stitch regulator lever must be located on zero.

67.1. **Timing the knife movement** (adjust control cam)

The moment of the beginning of the knife movement is determined by the position of the control cam 26 (fig. 56) on the lower shaft.

Set first the control cam 26 in longitudinal direction on the lower shaft so that the roller bolt 54 can be freely pressed in the straight part o the cam race while the tripping sheet is touching the stop 53a.

Time then the knife motion as follows: Loosen the stud 54a and lower the roller bolt 54 so that it is still safely kept when the stud 54a is being tightened. By turning the handwheel and lowering the trippint sheet 53 lock the roller bolt 54 in the borehole of the control cam 26 and continue turning the handwheel until the **hook point stands against the middle of the needle.** With the control cam being in this position, tighten the fastening screws 49 crosswise.

Note:

In machines of the class 211 the above timing of the knife motion applies only to machines with particularly merked control cams 26 (fig. 56).

The control cam should bear the part no. 21110625.

Adjust non marked cams so that the roller bolt 54 snaps in the hole when **the hook point stands 5 mm before the middle of the needle.**

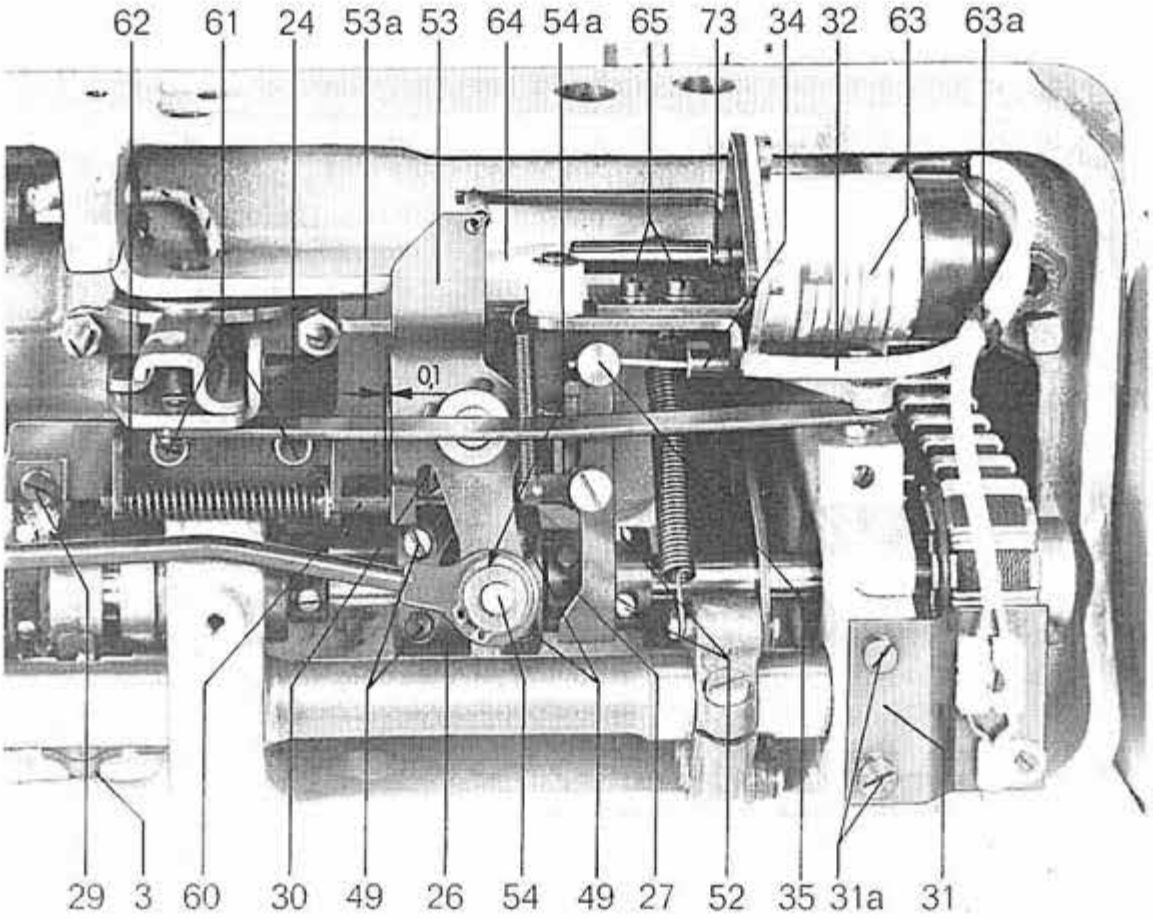


Fig. 56

67.2. **Adjusting the roller bolt 54** (fig. 59)

Loosen the threaded pin 54 (fig. 59) and set the roller bolt 54 (fig. 59) so that with the tripping sheet 53 being engaged the distance between the face of the roller bolt 54 and the base surface of the cam race amounts to about 0.5 mm. When the tripping sheet is not operated the roller bolt 54 should be out of the cam race.

67.3. **Adjusting the tension release**

The tip of the stationary clamping piece 55 (fig. 57) should be in alignment of the front edge of the releasing sheet 44. Introduce the Bowden cable 32 (fig. 56) far enough in the clamping piece 35.

Set the distance between the clamping piece 55 and the releasing sheet 44 for about 0.1 mm by turning the screw 57 (fig. 57) (without threading). Tighten finally the nut 58.

The thread guide 43 (fig. 58) should be so deep in the reception hole of the arm that the distance between the front edge of the bolding plate 38 and the rear edge of the releasing sheet 44, pulled by hand up to the thread guide 43, amounts to about 9 mm. See fig. 58.

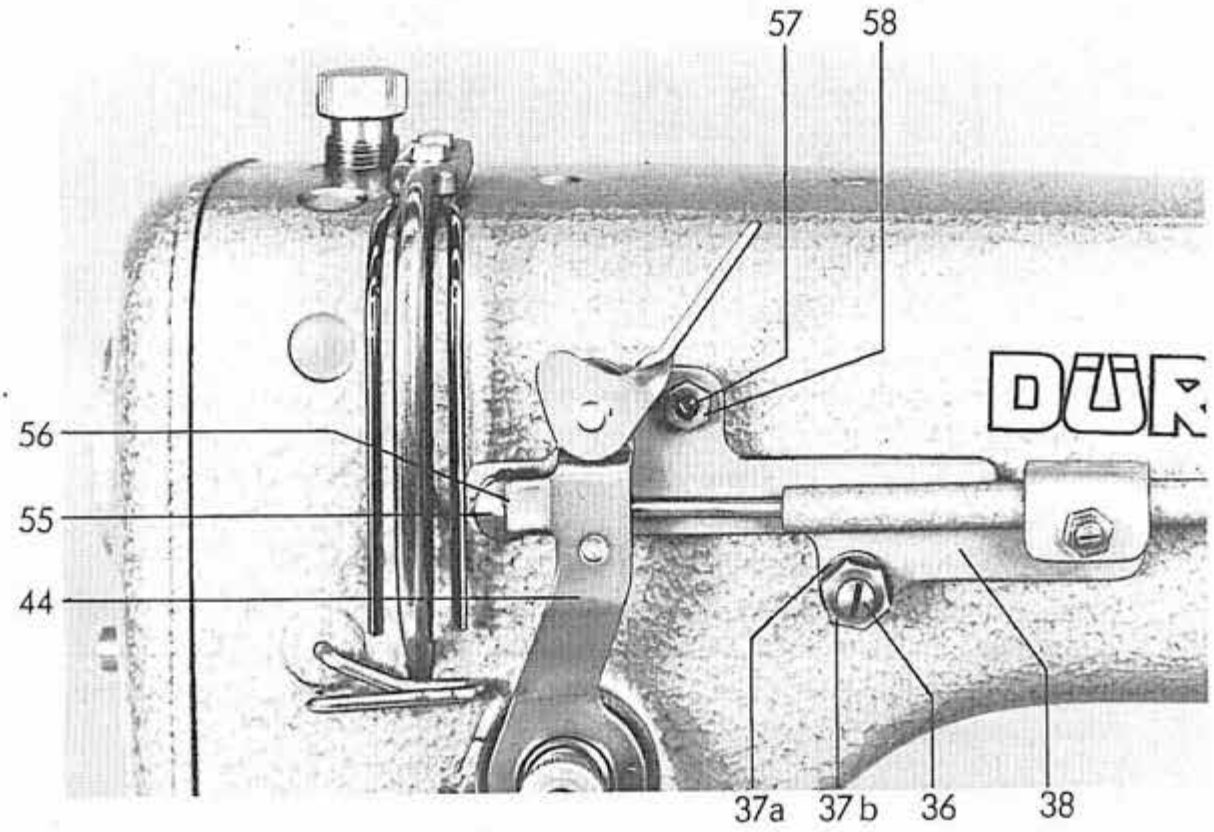


Fig. 57

Timing the tension release

When the needle bar has descended 1.8 mm from its topmost point the thread tensioner should be quite open.

This can be obtained by adjusting the releasing bush 27 (fig. 59) on the lower shaft.

The adjustment marks 129 and 130 (fig. 60) on the traction bar and on the eccentric collar of the bobbin case lifter serve as reference for this adjustment. If they coincide, the needle bar has descended 1.8 mm from its topmost point. For this purpose, the bobbin case lifting movement must have been adjusted according to chapter 19.3.

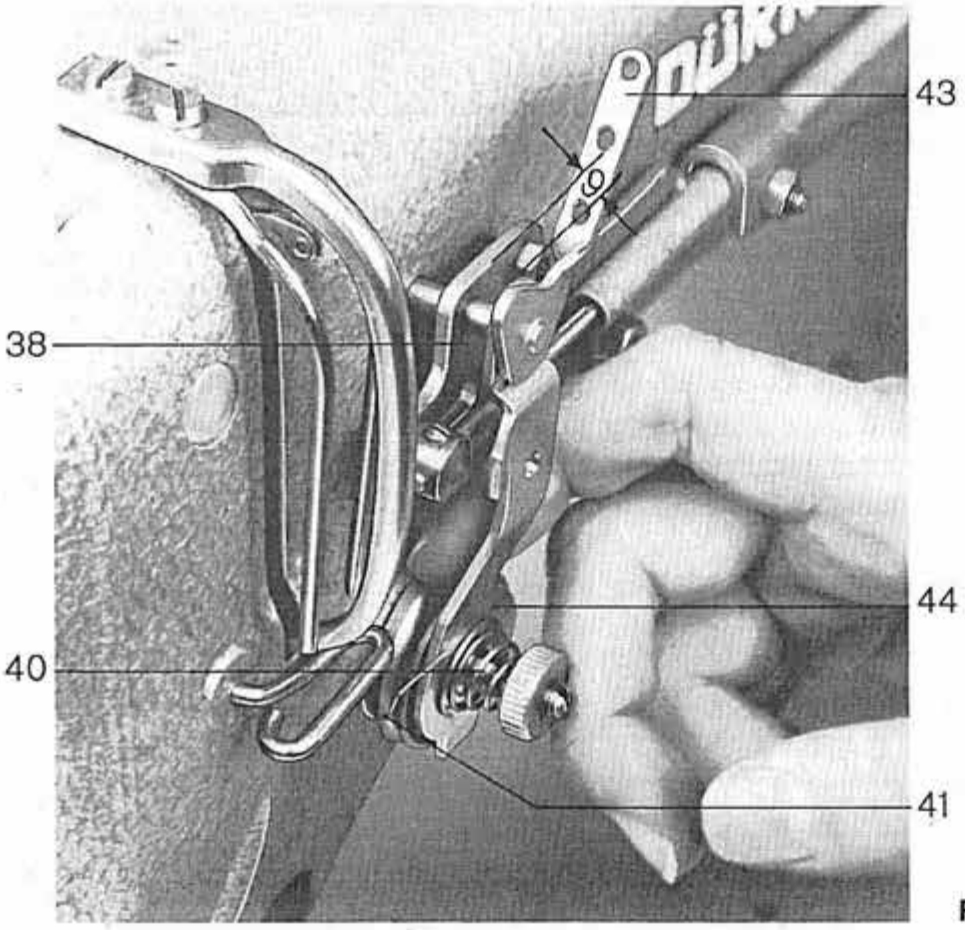


Fig. 58

In machines with built-in setting gauge, set for "B" position, adjust the releasing bush 27 (fig. 59) so that with the releasing lever 59 being lowered the pin 27a stands immediately before the inclined surface of the lever 59. See fig. 59.

67.4. **Adjusting the safety pin 60** (fig. 56)

When the tripping sheet 53 is touching the stop 53a (fig. 56), the distance between the tripping sheet 53 and the safety pin 60 should amount to about 0.1 mm. This adjustment can be obtained by turning the pin guide 62 after having loosened the fastening screws 61.

67.5. **Adjusting the connecting stroke**

Push the roller bolt 54 (fig. 56) up to the stop in the cam race. If the tappet 73 of the magnet 63 is now pushed manually by the rubber cap to the left up to the stop, it should move the angular part 64 to the left so that it touches the tripping sheet 53. Loosen for that purpose the fastening screws 65 of the magnet and set the carrier accordingly.

In machines with incorporated setting gauge, regulate in "B" position the releasing bush 27 (fig. 59) so that with the releasing lever 59 being lowered, the pin 27a stands immediately before the contact point of the releasing lever 59.

67.6. **Adjusting the hook-shaped knife 66 (fig. 61) and the counter knife 68**

The adjustment of the knifes can be done by the gauge 72 (fig. 64) after removing the knife block, except in machines with vertical cutter where the afjustment must be done with the knife block in the machine.

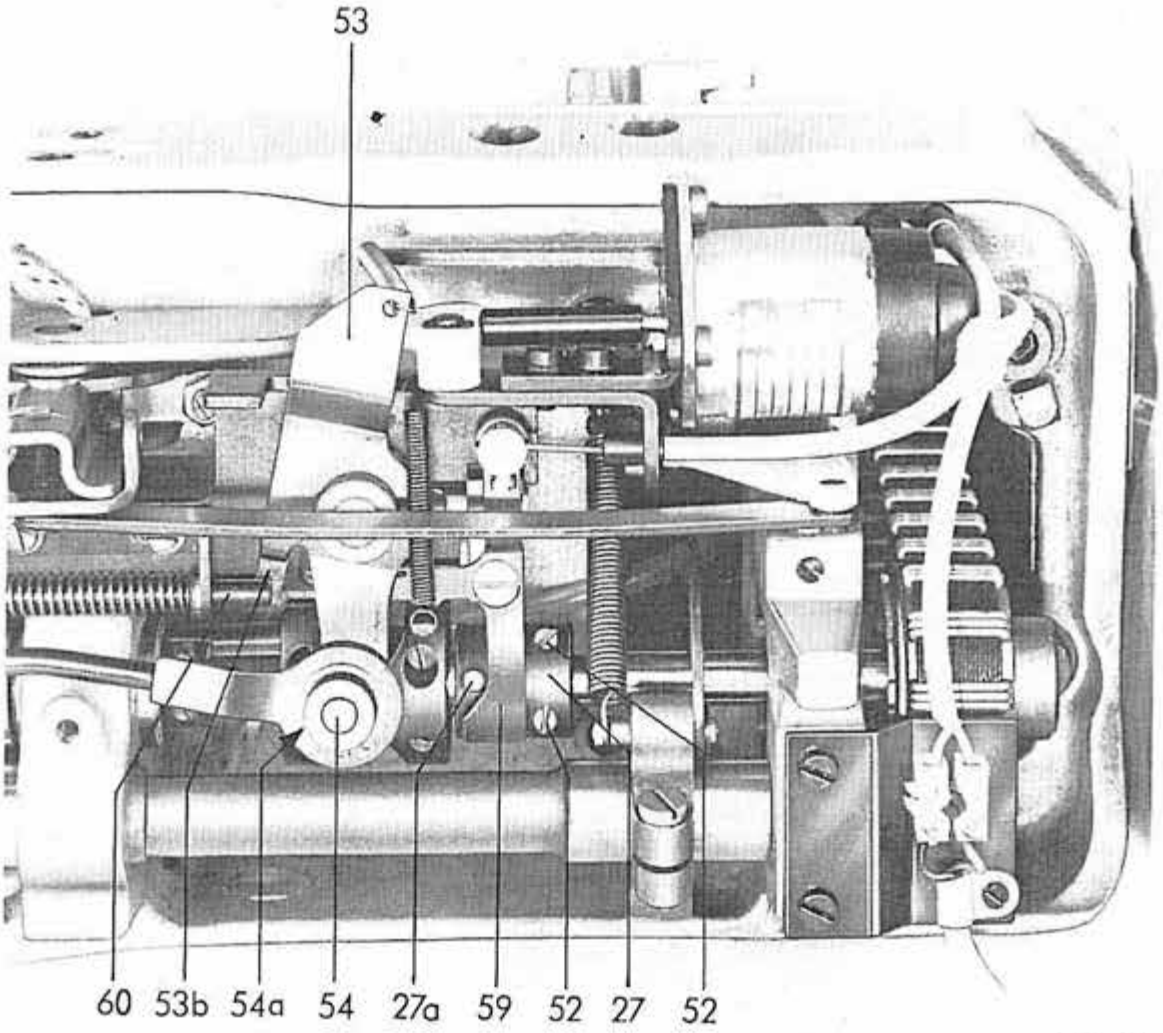


Fig. 59

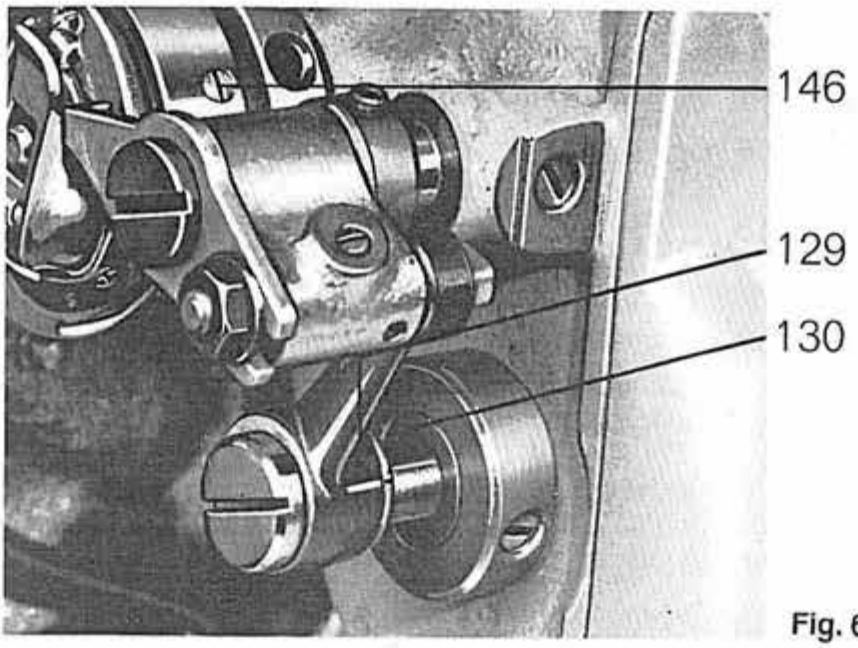


Fig. 60

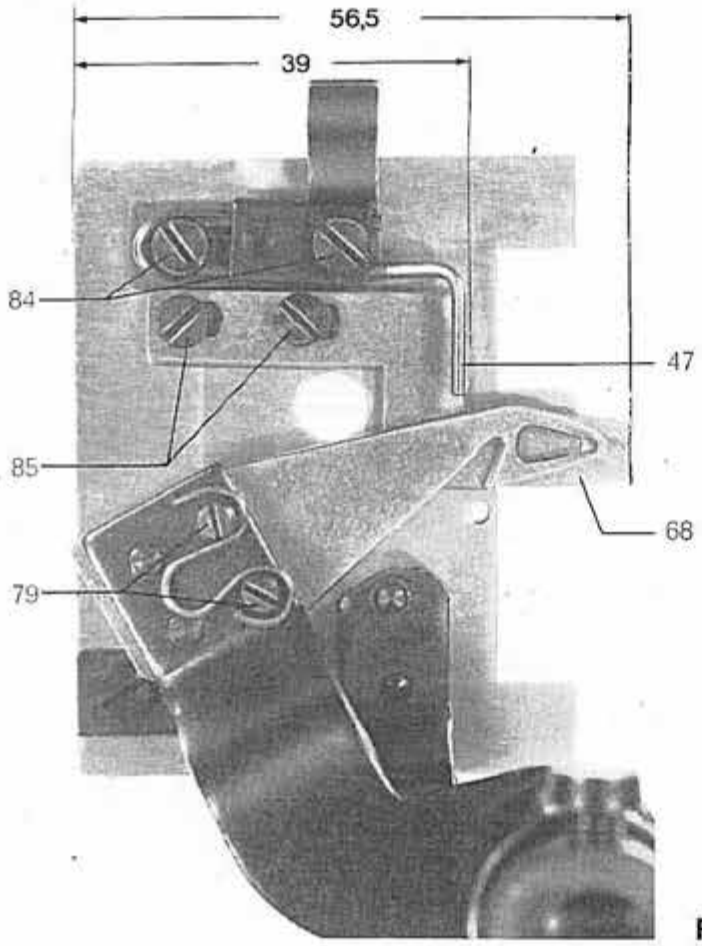


Fig. 61

For adjusting, proceed as follows:

1. Loosen the screws 85 (fig. 61) and set the counter knife 68 for 56.5 mm.

2. Loosen the screws 84 and set the stop spring 47 (2.5 mm thick) for 39 mm. See fig 61. In old machines with 1.8 mm thick stop spring set it for 38.4 mm.

3. Introduce the knife block in the gauge 72 (fig. 64) and, depending on the machine type, set it against the edge marked 211 and 219 or 212.

4. Adjust the hook shaped knife 66 with respect to the gauge according to fig. 64.

The knife being in this position, its carrier 45 should be in contact with the stop spring 47.

5. Set the counter knife 68 (fig. 65) so that the cutting edge of the hook shaped knife 66 stands against the middle of the cutting edge of the counter knife. See fig 65. Do not modify the measure of 56.5 mm.

6. Adjust the cutting pressure by means of the studs 79 (fig. 61) so that the hook shaped knife is parallel to the cutting edge of the counter knife and rests against it under slight pressure.

7. Set the sheet 66a (fig. 65) as to insure safe thread clamping.

8. Introduce the knife block in the machine and press the ball cup of the traction rod 48 (fig. 63) on the spherical bolt of the knife carrier.

Start the cutting process by lowering the tripping sheet 53 (fig. 59), turn the machine by hand and move the hook shaped knife into its r/h final position.

In this position the knife carrier 45 (fig. 64) should slightly touch the stop spring 47.

For rectifying, loosen the screws 82 (fig. 63) and set the block 83 on the traction rod 48 accordingly.

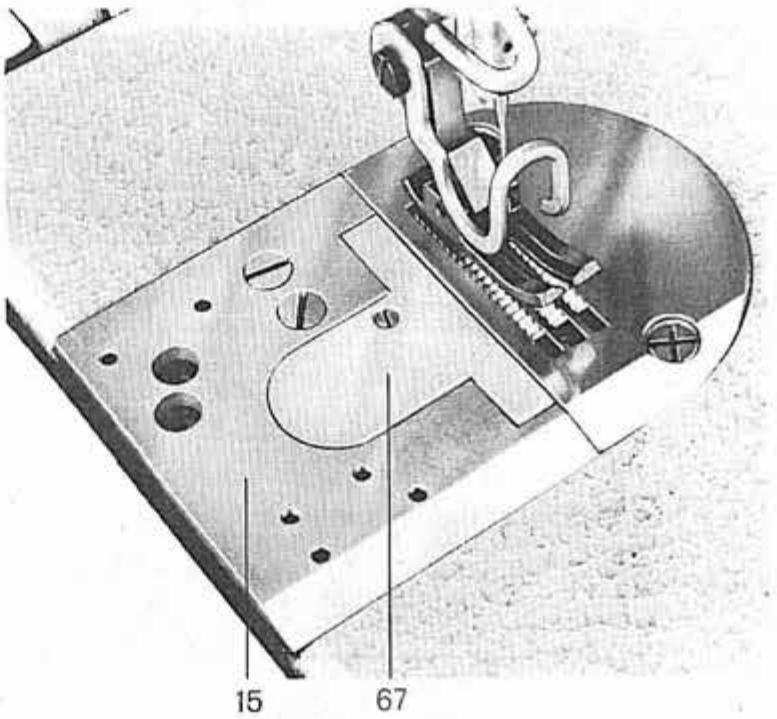


Fig. 62

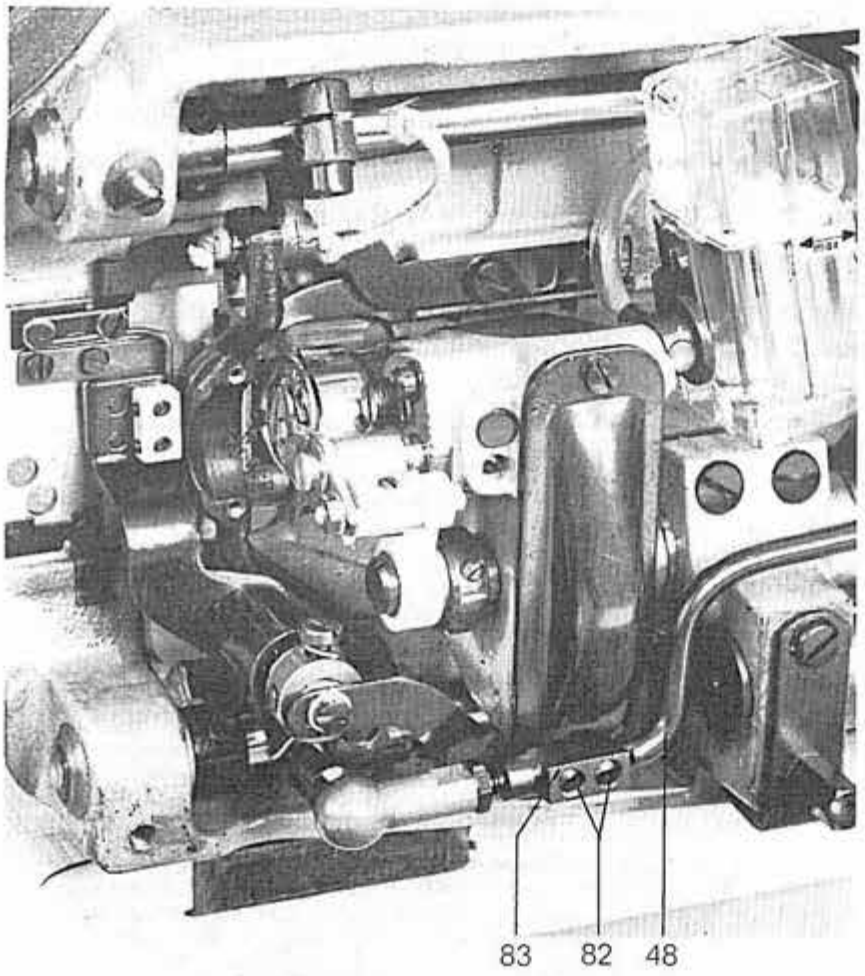


Fig. 63

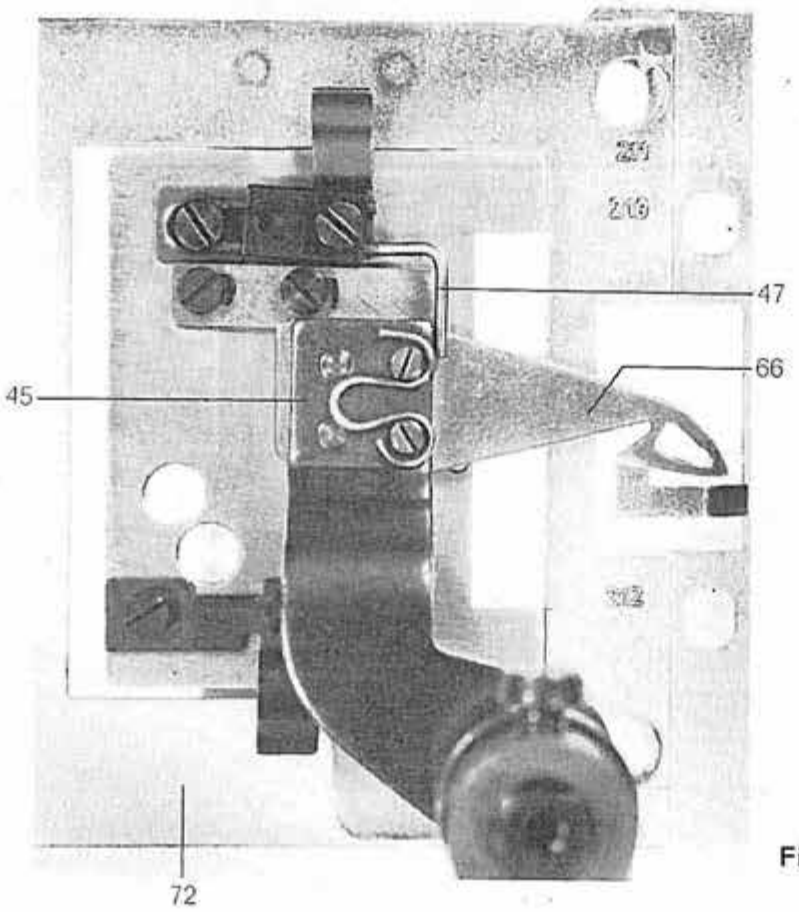


Fig. 64

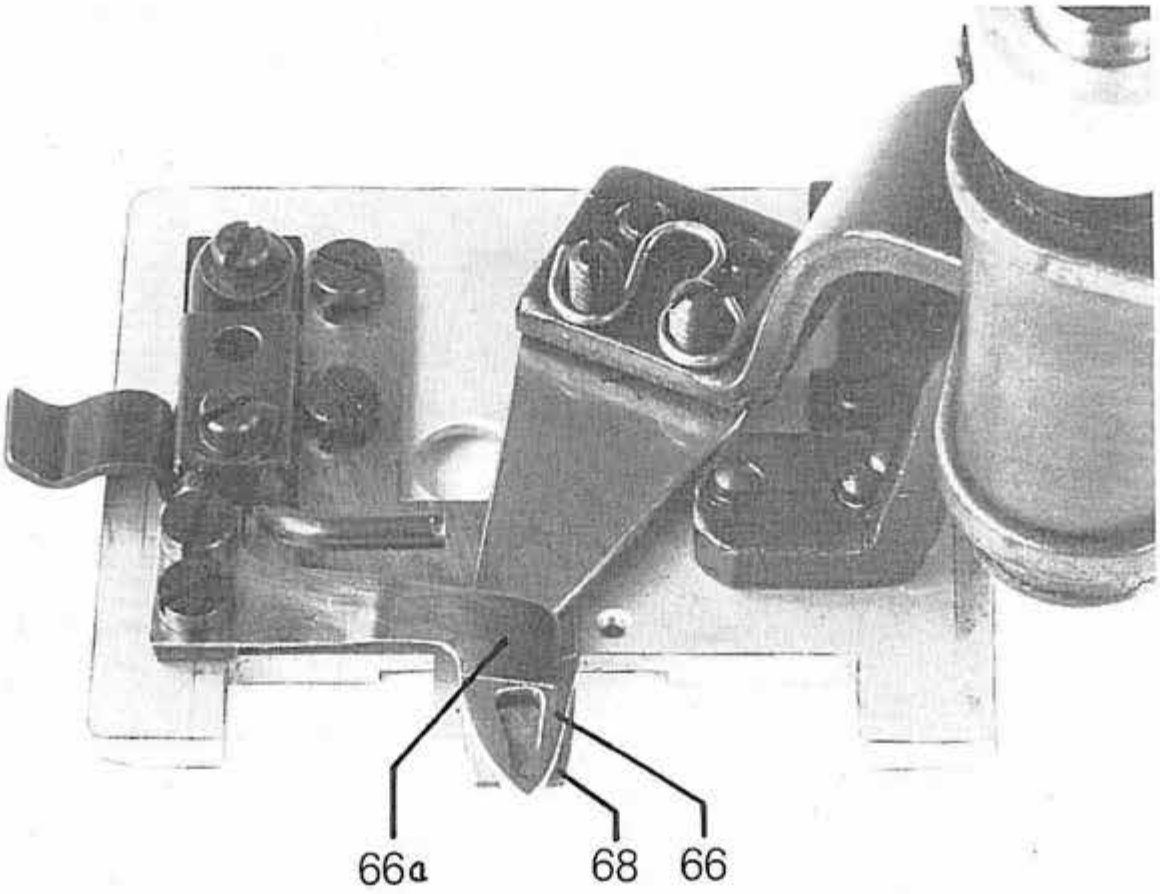


Fig. 65

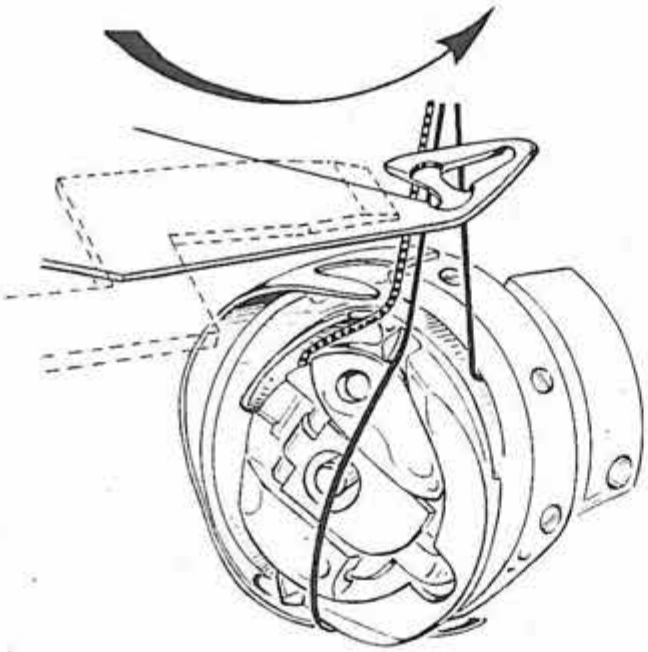


Fig. 66

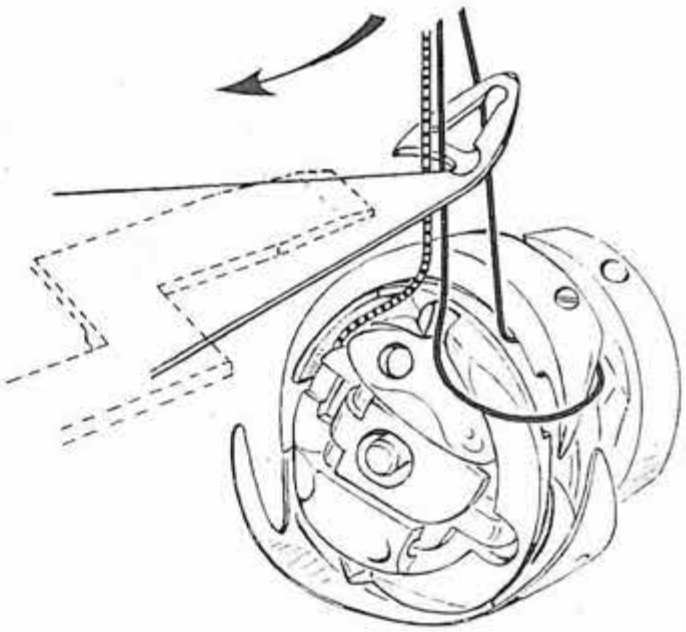


Fig. 67

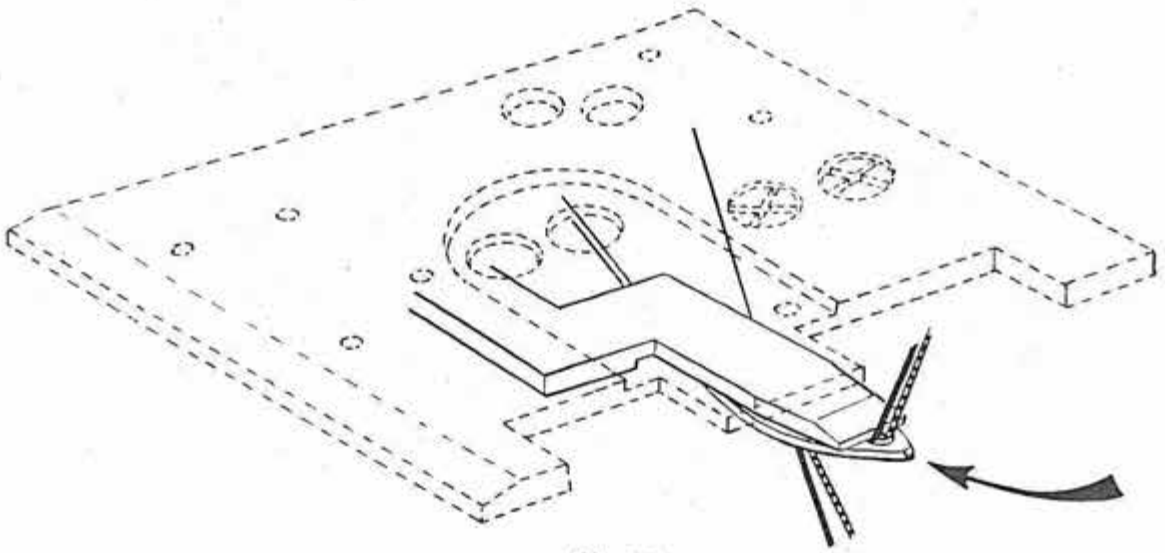


Fig. 68

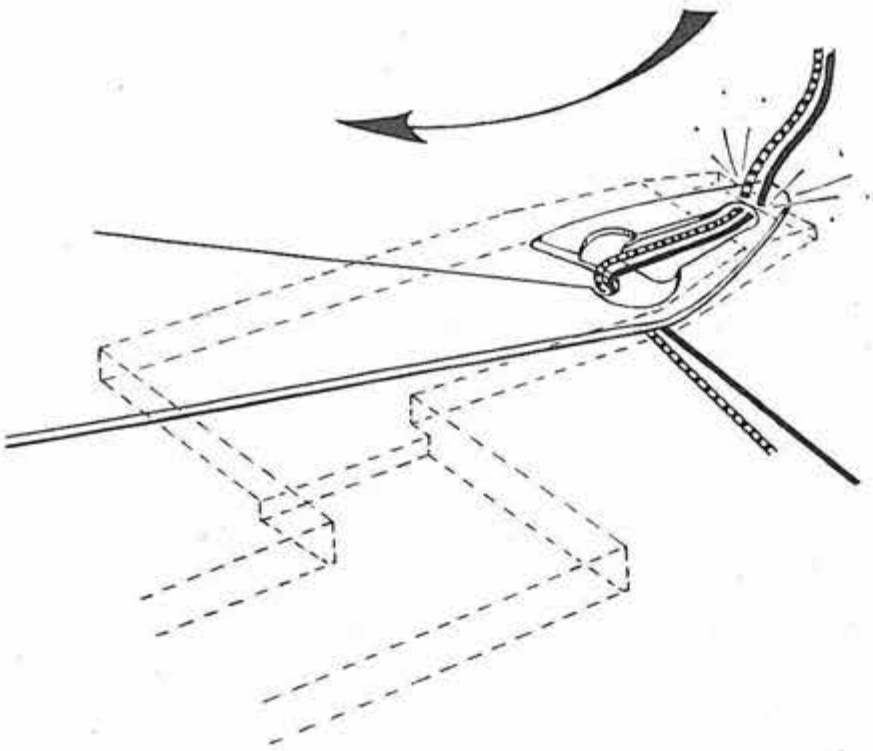


Fig. 69

Instructions for DÜRKOPP 211, 212 and 219 above -100000

DÜRKOPP 211, 212 and 219 above -100000 are single-needle lockstitch machines with electropneumatic automatic equipment, operated by clutch pedal and performing following functions:

Lowering the clotch presser foot, backtacking the seam beginning, backtacking the seam end, cutting off the upper and the lower thread, lifting the cloth presser foot.

The seam length is determined by the operator by the respective pedal control.

In addition to the following special instructions for the sub-classes above -100000 note also the preceding instructions regarding the thread cutter.

Note:
Before introducing the 10-pole plug in the motor control, check the position of the positioner. Operate the machine only if the positioner has been set according to the chapter 65.1.

68. Motor

The machines can be driven by the Efka Variostop motor VD 552/6F32D or by the Quick Electronic Stopmotor DQ 72–2A.

These motors are normally wired for 3-phase a.c. 220/380 V 50/60 Hz. The speed amounts to 2800 rpm at 50 Hz and to 3400 rpm at 60 Hz. Motors for other voltages at request.

Note:
The modification of the maximum speed should be done solely by changing the belt pulley.

The Efka Variostop motor, with different stitch number groups, has an electromagnetically controlled clutch. A modification of the speed with in a stitch number group can be quickly done according to the motor operating instructions.

The cutting speed = positioning speed (1st stitch number group) of 150 rpm should not be modified.

The Quick Electronic Stopmotor is an electronically controlled and continuously adjustable motor with electromagnetically controlled clutch.

The cutting speed of 150 rpm should not be modified. See also the motor operating instructions.

When connecting the machines ensure that the service voltage indicated on the motor type plate agrees with the mains voltage. For changing to any other voltage, see the attached motor instructions and the diagram in the motor terminal box.

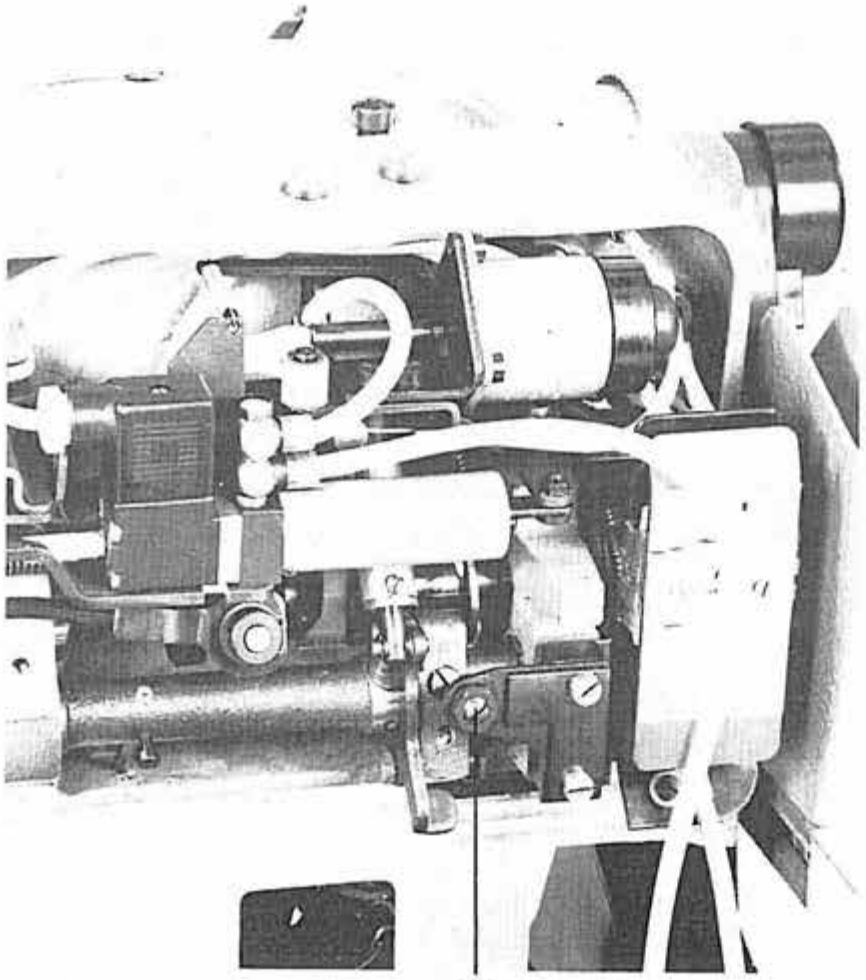


Fig. 70

Backtacking instructions

69. Initial backtacking

The initial backtacking is effected automatically. The backtacking can be simple or double.

The initial simple backtacking begins by 3 reverse stitches. Then the machine is switched over for forward feed. The three reverse stitches can be set so short that they are covered by the first long forward stitch. This can be set by the screw 90 (fig. 70) after loosening its locking nut.

The double backtacking beginns by there forward stitches, followed by three reverse stitches. Then the machine is switched over for forward feed.

A switch of the motor control permits to cancel the backtacking.

69.1. Backtacking speed

After lowering the pedal the backtacking process takes place automatically at constant speed. It is only after finishing the backtacking that the sewing speed can be influenced by the pedal.

The speed depends on the stitch length and can be set by a potentiometer in the motor control. The feeding speed of 6 m/min. should not be exceeded considerably.

Following stitch length and speed figures can serve as reference.

Stitch length		Backtacking speed
2.5 mm	—	2500 rpm
3 mm	—	2000 rpm
4 mm	—	1500 rpm
6 mm	—	1000 rpm

The backtacking speed is factory-set for 2500 rpm. In case of machines with longer stitches it can, therefore, be necessary to reduce the backtacking speed accordingly.

See the instructions of the motor manufacturer.

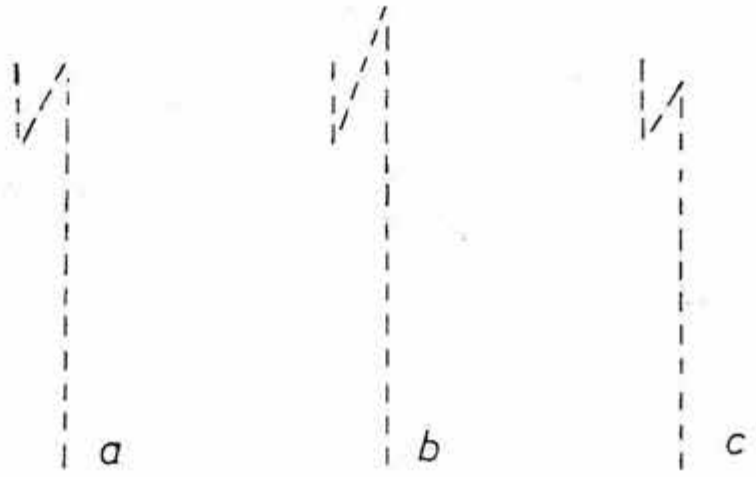
69.2. **Adjusting the seam pattern for double backtacking**

For obtaining a proper initial double backtacking, the first three forward stitches should be covered by the following reverse stitches, the last reverse stitch ending at the first forward stitch. See fig. a.

The moment of switching from reverse to forward feed can be set by a potentiometer. The adjustment of said potentiometer depends on the backtacking speed. When modifying the backtacking speed check, therefore, the seam pattern and rectify, if necessary.

In case of a seam pattern according to fig. b the speed or the potentiometer value is too high.

If the seam pattern looks like that of the fig. c then the potentiometer value is too low.



70. Final backtacking

The final backtacking will be engaged by heeling down the pedal up to the second step. Like the initial backtacking, the final backtacking is effected automatically and at constat speed.

By a switch of the motor control he final backtacking can be neutralized.

70.1. Backtacking speed

The factory-set backtacking speed of 1700 rpm should not be modified. But in case of need it can be rectified by a potentiometer, located in the motor control.

The machine sews at the seam end three backtacking stitches. Varying with the motor type this number can be modified by changing the wire position in the motor control. See the respective instructions of the motor manufacturer.

70.2. Cutting stitch

The backtacking stitches are followed by the so-called cutting stitch, at which the threads are cut off.

This stitch is a backstitch.

With both motor types double backtacking is possible also at the seam end. For this purpose the motors must be modified according to the motor instructions.

With certain motor types double backtacking is possible also at the seam end. For this purpose the motors must be modified according to the motor instructions.

71. Operations

The sewing motor and the automatic equipment for lifting and lowering the cloth presser foot, for backtacking the seam extremeties, for cutting off the needle thread and the bobbin thread and for lifting the cloth presser foot again is controlled by a single pedal. This extremely simplifies the operation of the machine.

Following machine functions are obtained by operating said pedal:

1. The position, in which the pedal is in no way operated, is the neutral position. The needle stands at its topmost point and the presser foot is lowered.

2. By heeling down the pedal from its neutral position to the first point of resistance the presser foot will be lifted. It can again be lowered by returning the pedal to its neutral position. This can be repeated as often as required.

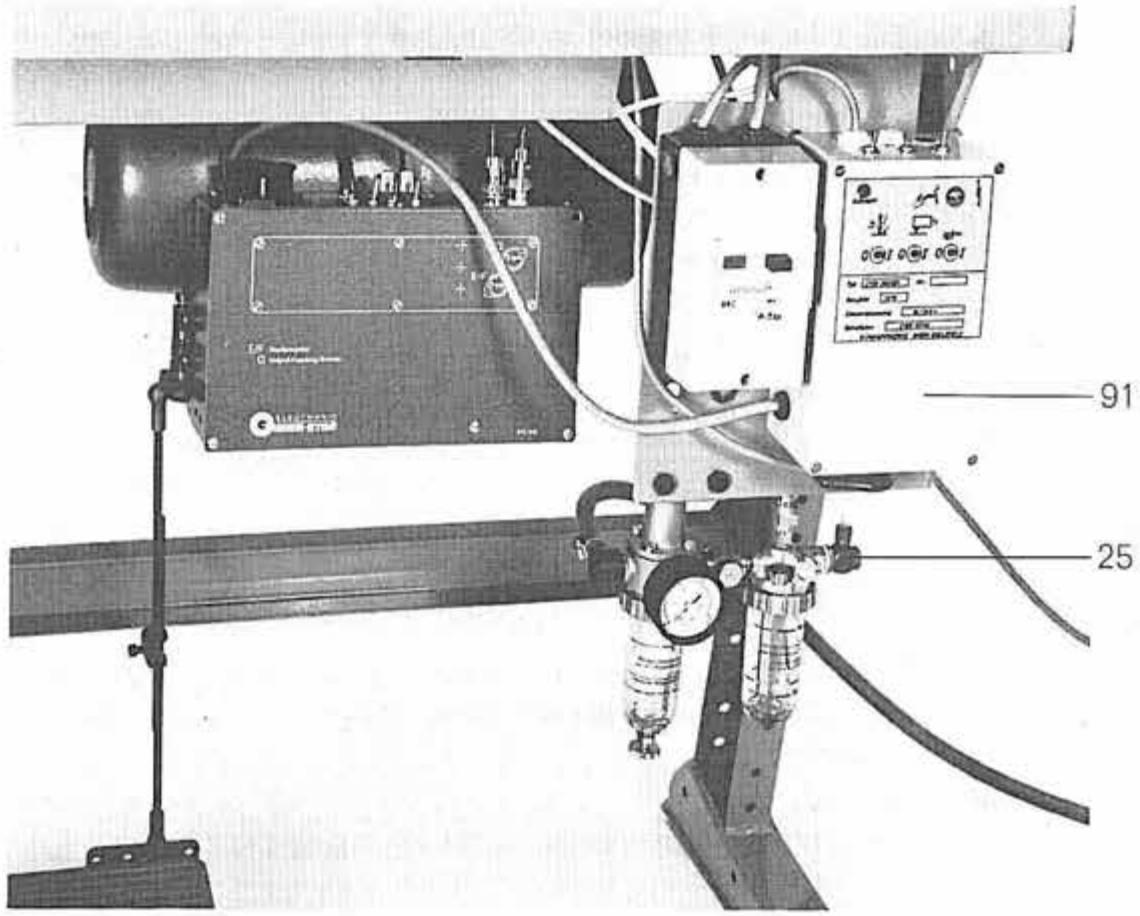


Fig. 71

3. By lowering the pedal forwards, the sewing motor will be cut in with delay, so that at the beginning of the seam the presser foot rests safely on the fabric. After the initial backtacking the machine will sew forwards as long as the pedal is kept lowered.

4. When the pedal returns to its neutral position, the machine will position the needle is behind its lower dead point. Position "E" in machines with incorporated setting gauge. The cloth presser foot will remain lowered. If it must be lifted without cutting the threads, for instance for sewing corners, heel down the pedal from its neutral position until it reaches the first point of resistance.

5. If the pedal is heeled down until it reaches the stop, the seam end will be bartacked and the threads will be cut off. The presser foot will remain lifted as long as the pedal is kept in this position. For lifting the presser foot, return the pedal to its neutral position.

For bartacking the seam and for cutting off the threads the pedal can be heeled down at any time, no matter whether the machine is in operation or arrested.

Note:
If at the beginning of a new seam the needle thread end must be passed to the lower side of the fabric, ensure that this thread end is not clamped between the presser foot and the fabric. It should hang loose out of the eye of the needle. This can be obtained by removing and introducing the fabric or by fitting a DÜRKOPP thread wiper Z 120.

After cutting action the magnet of the thread wiper is operated and the needle thread end is pulled out of the fabric. When the wiper wire returns to its final position, the presser foot is lifted.

In addition, the machines can be fitted with a momentary-contact switch or with a knee-switch for controlling the reverse feed. This enables to sew within the seam any length backwards.

Instructions for DÜRKOPP 211, 212 and 219 with Z 133

Z 133 is an infrared light barrier for automatic control of the seam length. It can be mounted both on the left and on the right of the needle. See figs. 72 and 73.

Suitable motors:
Efka-Variostop VD 552/6F32DV or Quick Electronik Stop DQ 73-2A.

Since the light barrier sender operates with invisible infrared light, the counter state is shown by a luminous diode in the housing of the light barrier

Reflector covered = luminous diode dark
Reflector not covered = luminous diode bright

72. Sticking-on the reflecting band

The distance of the reflecting band 92 (fig. 72 and 73) to the needle depends on the stitch length adjusted.

It amounts to about 36–48 mm for 6 mm stitch length
30–40 mm for 5 mm stitch length
24–32 mm for 4 mm stitch length
18–24 mm for 3 mm stitch length
12–16 mm for 2 mm stitch length

For precise alignment of the reflector band proceed as follows:

Push a band of paper first in the sewing direction and then, slowly, from the side, under the light barrier until the switching point of the luminous diode is found.

In this position, slip the reflector band on the throat plate.

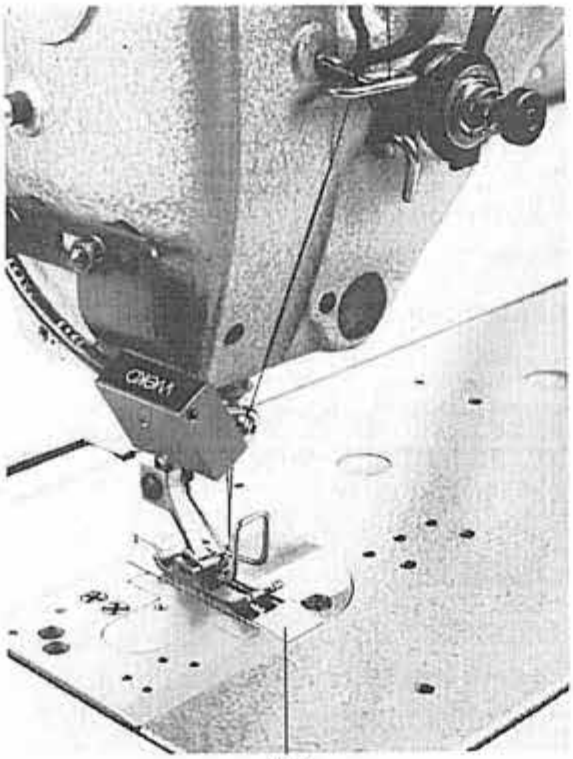


Fig. 72

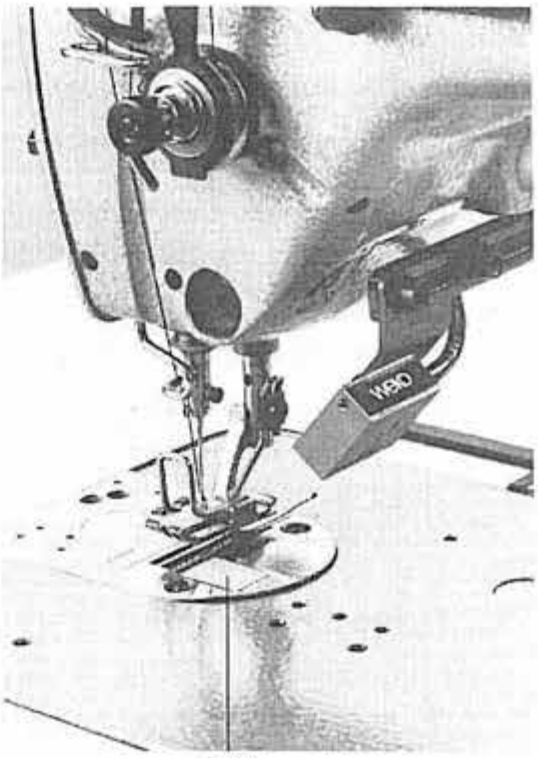


Fig. 73

73. Adjusting the compensating stitches

In order to ensure that the final bar is always at the same distance from the fabric edge, the drive is switched for a constant speed as soon as the light barrier meets the fabric end.

For obtaining this speed, corresponding to about the speed of the final bartacking, the drive requires 6 to 8 stitches. These so-called compensating stitches can be set by rotary switch on the motor control.

The position of the bar with respect to the fabric edge can be modified by displacing the light barrier 93 (fig. 72) in the sewing direction.

74. Operation

The sewing motor can only be cut in if the path of the rays has been interrupted, i.e. if the fabric rests on the reflecting band.

The seam begins as deseribed under chapter 71. As soon as the light barrier meets the fabric edge, following functions are released automatically.

1. Engagement of the constant speed. Counting of the compensating stitches.

2. The number of the compensating stitches is reached and the final bartacking is engaged.

3. The final bartacking is finished and the thread cutter is engaged.

4. The thread wiper is operated.

5. The presser foot is lifted.

If during these functions the pedal is kept lowered, the presser foot will remain lifted for positioning the next part.

For sewing, the pedal must be returned to its initial position and again lowered forwards.

If the seam does not end on the fabric edge, the light barrier can be switched off and, by heeling down the pedal, it is possible to engage the final bartacking, the thread cutter and the presser foot lifter.

75. Thread regulator

DÜRKOPP 211, 212 and 219 are fitted with thread regulator 95 (fig. 74) of the latest version. The needle thread quantity required for a perfect stitch formation can be adjusted exactly by displacing the regulator to the right or to the left.

Displace the regulator to the right - less thread for thin material.
Displace the regulator to the left - more thread for thick material.

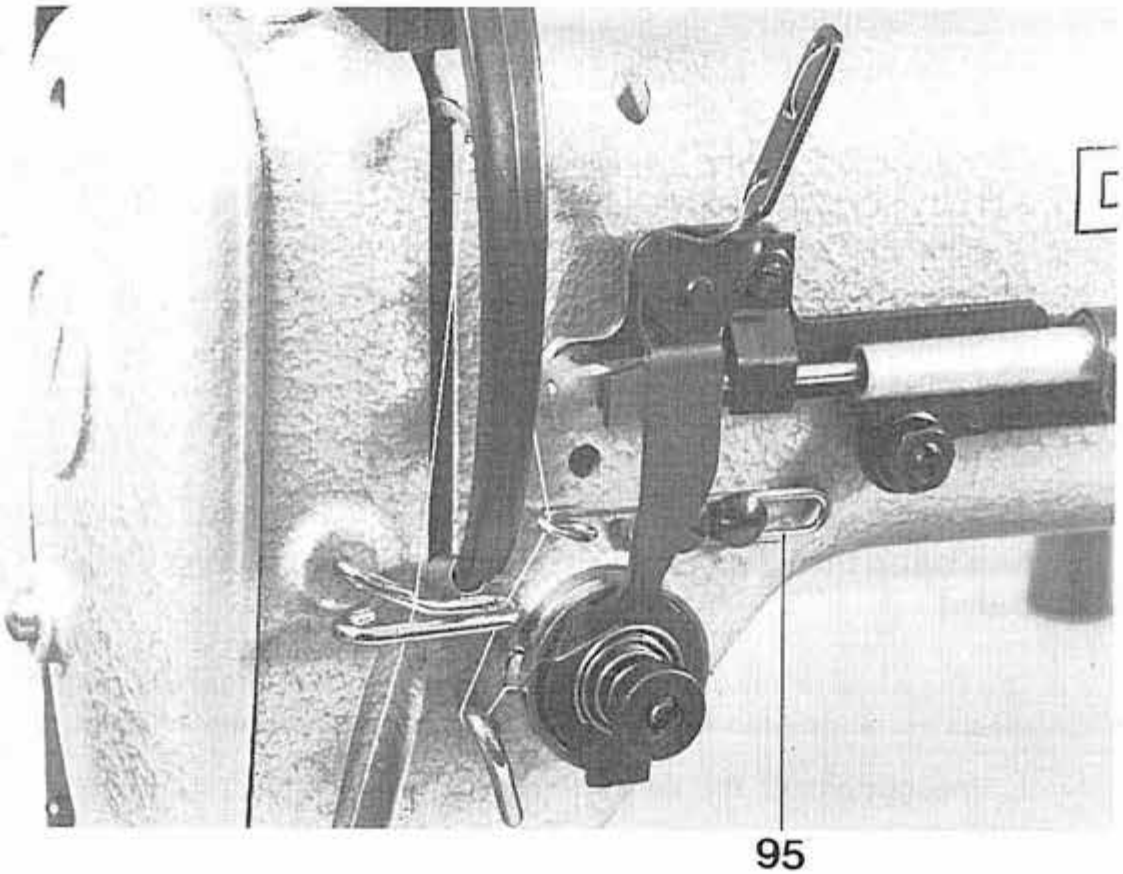


Fig. 74

Supplementary instructions for DÜRKOPP 211, 212 and 219

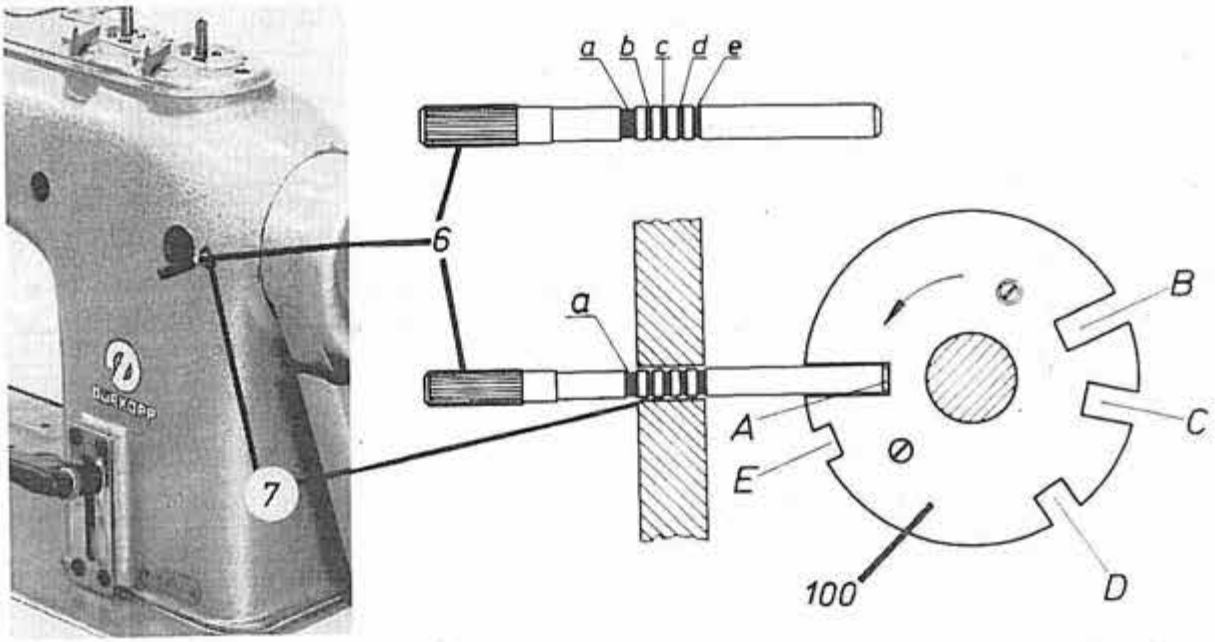
with built-in setting gauge.

General Instructions

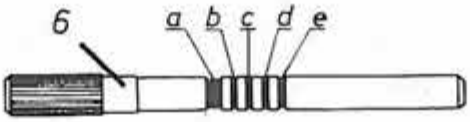
DÜRKOPP 211, 212 and 219 are fitted with adjustment aids for quick and simple adjustment of the machines.

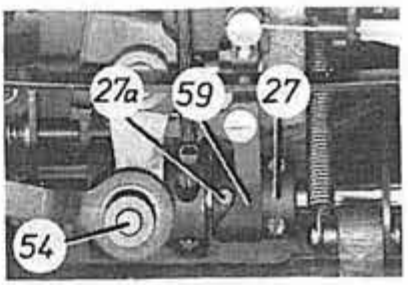
An adjustment ring 100, screwed on the pulley of the arm shaft, has five incisions where the machine, whatever its adjustment, can be arrested by introducing the setting pin 6 in the bore 7. The depth of the five incisions of the adjustment ring 100 is different. In the figures they are marked by A, B, C, D and E. The spacings of the positioning notches a, b, c, d, e of the setting pin 6 correspond to the depth differences of the five positioning incisions of the adjustment ring. When the setting pin is introduced down to the bottom of an incision, the respective positioning notch on the rim of the bore 7 is still visible. See the sketch with the example of the position A. Instead of a setting pin, ref. No. 211700, it is also possible to use a 5 mm thick pin, e. g. a 5 mm thick twist drill.

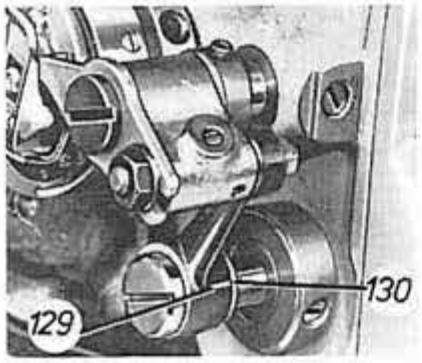
See also page 4, chapter 3 of the present instructions.

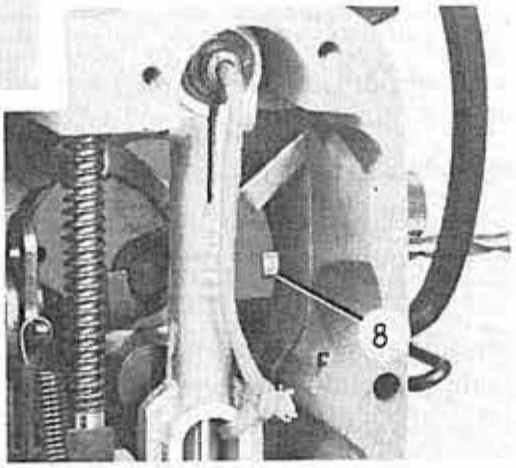


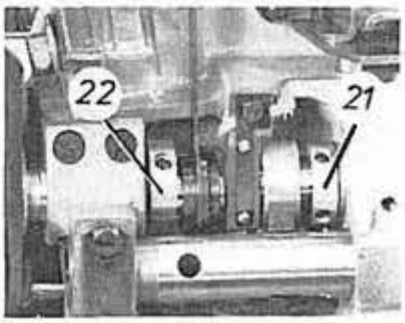
Adjustment Object	Adjustment Manner	Pos.	CLASS			see note
			211	212	219	
1	2	3		4		5
1. Adjusting ring	Make coincide the incision Pos. A of the adjusting ring 100 and the groove 8 of the arm shaft crank.	A	●	●	●	R 1
2. Loop stroke	Set the hook tip against the middle of the needle. In class 212 at „0" stitch length.		●	●	●	M 17.2.
3. Thread cutting curve	Fix the control cam hole by the roller 54		●	●	●	M 67.1.
1. Tension release in machines with thread cutter	Set releasing ring 27 so that with the releasing ring 59 being lowered, the releasing pin is located in front of the inclined surface of the releasing lever 59.	B	●	●	●	M 67.3.
2. Upper lifting eccentric for cl. 219	Set the lower reversing point of the feeding dog by turning the lifting eccentric on the arm shaft.				●	M 51.5.
1. Bobbin case lifter	Place the mark 130 of the eccentric bolt in the lower shaft on the mark of the lifter drive lever 129.	C	●	●	●	M 19.3.
2. Pushing eccentric cl. 211, 219	Set pushing eccentric 21 so that the feed dog does not move when the stitch length regulator is being operated.		●		●	R 2
3. Eccentric bolt for top feed, cl. 219	Set the eccentric bolt 94 with the setting slit showing up so that the feed dog does not move when the stitch length regulator is being operated.				●	M 51.5.
4. Lower lifting eccentric for cl. 211, 219	Set the upper reversing point of the feeding dog by turning the lifting eccentric 22 on the lower shaft.		●		●	–
1. Second needle position with thread cutter	Adjust positioner: In case of „EFKA" set r/h disk 16 and in case of „Quick" adjust the nose screen 17.	D	●	●	●	M 65.3.
1. Pushing eccentric, cl. 212	Set pushing eccentric 21 so that the feed dog does not move when stitch length regulator is being operated.	E		●		M 15
2. Eccentric bolt for needle feed cl. 212	Turn the eccentric bolt 94 with the slit showing up so that the needle does not move when the stitch length regulator is being operated.			●		M 15
3. 14.8 mm between fabric bar and needle bar	Set the distance of 14.8 mm by turning the eccentric bolt 91a. The eccentric lug should be located below.			●		M 15
4. Lifting eccentric cl. 212	Set the upper reversing point of the feed dog by turning the lifting eccentric 22.			●		–
5. First needle position with thread cutter	Adjust the positioner: In case of „EFKA" adjust the l/h disk 13 and in case of „Quick" adjust the groove screen 14.		●	●	●	M 65







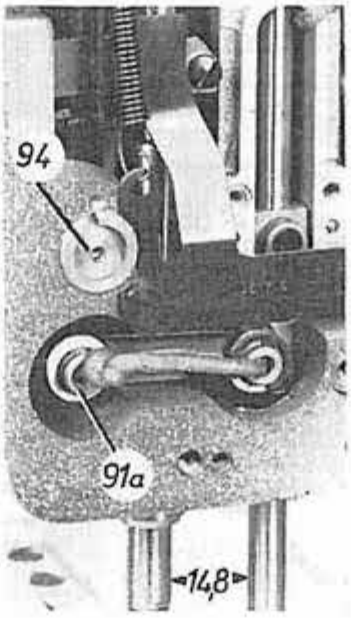


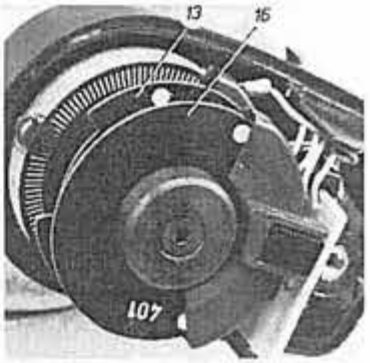


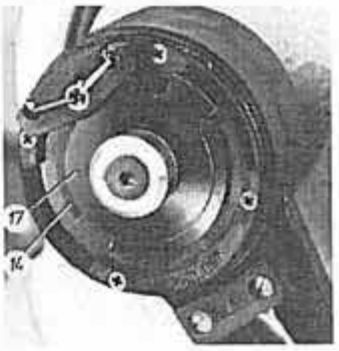
* **Note:**
The column 5 shows supplements to column 7

M = Chapter of the Basic Instructions edition 1983

R = Explaned on page 4 of these instructions.







R 1 **Re: A 1**

1.1. Remove bobbin winder cover.

1.2. Displace the belt on the upper belt wheel to the left and loosen belt wheel screws from the hole 10.

1.3. Lock adjustment ring 100 by setting pin 6.

1.4. Swing away the thread tensioning equipment 22 after loosening the lower fastening screw and introduce a 5 mm thick pin in the fixing groove 8 through the hole 21.

1.5. Press belt wheel slightly against setting pin 6 and tighten belt wheel screws. This will also determine the axial position of the belt wheel for the bobbin winder function.

1.6. Shift the belt on the middle of its wheel, fasten the thread tensioning equipment and the bobbin winder cover.

---

3. Reference points for finding quickly the adjustment incisions in the adjustment disk 100 by the setting pin 6.

Pos.	Reference point
A	The needle 1.8 mm behind lower dead point.
B	The needle about at upper dead point.
C	The needle about 2 mm behind upper dead point.
D	The thread take-up lever about at upper dead point.
E	The needle at lower dead point.

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