

# **697**

## **Special sewing machine**

Instructions for operating

**GB**

Instructions for service

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# Foreword

This instruction manual is intended to help the user to become familiar with the machine and take advantage of its application possibilities in accordance with the recommendations.

The instruction manual contains important information on how to operate the machine securely, properly and economically. Observation of the instructions eliminates danger, reduces costs for repair and down-times, and increases the reliability and life of the machine.

The instruction manual is intended to complement existing national accident prevention and environment protection regulations.

The instruction manual must always be available at the machine/sewing unit.

The instruction manual must be read and applied by any person that is authorized to work on the machine/sewing unit. This means:

- Operation, including equipping, troubleshooting during the work cycle, removing of fabric waste,
- Service (maintenance, inspection, repair and/or
- Transport.

The user also has to assure that only authorized personnel work on the machine.

The user is obliged to check the machine at least once per shift for apparent damages and to immediately report any changes (including the performance in service), which impair the safety.

The user company must ensure that the machine is only operated in perfect working order.

Never remove or disable any safety devices.

If safety devices need to be removed for equipping, repairing or maintaining, the safety devices must be remounted directly after completion of the maintenance and repair work.

Unauthorized modification of the machine rules out liability of the manufacturer for damage resulting from this.

Observe all safety and danger recommendations on the machine/unit! The yellow-and-black striped surfaces designate permanent danger areas, eg danger of squashing, cutting, shearing or collision.

Besides the recommendations in this instruction manual also observe the general safety and accident prevention regulations!

# General safety instructions

**The non-observance of the following safety instructions can cause bodily injuries or damages to the machine.**

1. The machine must only be commissioned in full knowledge of the instruction book and operated by persons with appropriate training.
2. Before putting into service also read the safety rules and instructions of the motor supplier.
3. The machine must be used only for the purpose intended. Use of the machine without the safety devices is not permitted. Observe all the relevant safety regulations.
4. When gauge parts are exchanged (e.g. needle, presser foot, needle plate, feed dog and bobbin) when threading, when the workplace is left, and during service work, the machine must be disconnected from the mains by switching off the master switch or disconnecting the mains plug.
5. Daily servicing work must be carried out only by appropriately trained persons.
6. Repairs, conversion and special maintenance work must only be carried out by technicians or persons with appropriate training.
7. For service or repair work on pneumatic systems, disconnect the machine from the compressed air supply system (max. 7-10 bar). Before disconnecting, reduce the pressure of the maintenance unit. Exceptions to this are only adjustments and functions checks made by appropriately trained technicians.
8. Work on the electrical equipment must be carried out only by electricians or appropriately trained persons.
9. Work on parts and systems under electric current is not permitted, except as specified in regulations DIN VDE 0105.
10. Conversion or changes to the machine must be authorized by us and made only in adherence to all safety regulations.
11. For repairs, only replacement parts approved by us must be used.
12. Commissioning of the sewing head is prohibited until such time as the entire sewing unit is found to comply with EC directives.



It is absolutely necessary to respect the safety instructions marked by these signs.

**Danger of bodily injuries !**

Please note also the general safety instructions.



## Description of proper use or proper application:

The **697** is a sewing head which can be used for sewing light to medium heavy sewing material. In general, such sewing material is made up of textile fibres but also leather. Such sewing materials are used by the clothing and upholstery industry. It would also be possible to make so called technical seams with these sewing machines. However, for this application the operator of the machine(s) must have the possible dangers assessed (cooperation with Dürkopp Adler would be welcomed), as such applications are, on the one hand, relatively rare and, on the other hand, have an immensely wide range of possibilities. Depending on the results of this assessment suitable safety measures might have to be implemented.

In general, only dry sewing material may be used on this machine. The material must not exceed 12 mm in thickness when compressed by the lowered needle butt. The material must not contain any hard objects as eye shields would otherwise have to be worn when operating the machine. However, such eye shields are currently not available.

In general, the seam will be sewn with sewing threads made of textile fibres in sizes of up to 60/3 NeB (cotton threads), 65/2 Nm (synthetic thread), or 65/2 Nm (covering twists). Using other threads would also require an assessment of the related possible dangers and risks in advance, and the implementation, where necessary, of suitable safety measures.

This sewing machine may only be put up and used in dry and clean rooms. Should the machine be used in other rooms which are not dry and clean, further measures may have to be taken which have to be agreed (see EN 60204-31: 1999).

As a manufacturer of industrial sewing machines we assume that operators who are at least semi-skilled will work at our products, so that it can be assumed that all standard operations and, where applicable, the dangers are known.

## Noise level Lc

Workstation related emission according to DIN 45635-48-A-I-KL2

Number of stitches: 1000 min-1

Sewing material: 2-play fabric 400 g/m<sup>2</sup>

**Lc = 75 dB (A)**



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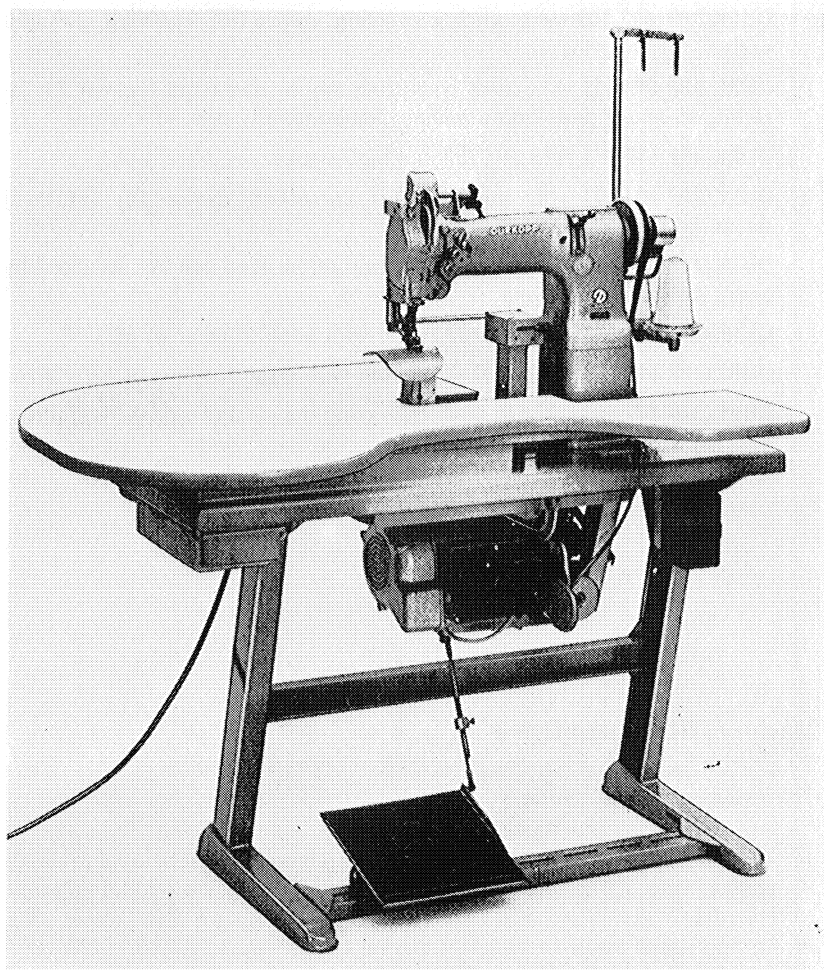


Fig. 1

## **DÜRKOPP 697**

is a postbed single-needle lockstitch machine with combined top, bottom and needle feed. Usually, all feeding means transport the material at the same rate. It is, however possible to adjust the top and the needle feed to transport at a different rate with respect to the drop feed.

**DURKOPP 697-103** with stitch correcting device for inserting shoulder pads.

**DURKOPP 697-153** with stitch correcting device and edge trimmer for inserting shoulder pads and trimming simultaneously arm-hole edges.

**DURKOPP 697-153 H** as 697-153, but high stroke.

**DURKOPP 697-203** with special stitch correcting device for attaching sleeve lining.

**DURKOPP 697-403 P** as 697-203, but the bottom feed can be increased by pedal action while sewing.

**DURKOPP 697-453 P** as 697-403 P, but with edge trimmer of 697-153.

**DURKOPP 697-453 HP** as 697-403 P, but with edge trimmer of 697-153 H.

**DURKOPP 697-503** without stitch correcting device and without edge trimmer, for basting up the arm-holes.

Stitch length up to 7.5 mm.

**DURKOPP 697-803** as 697-503, but stitch length up to 10 mm.

## **Machine, Stand and Drive**

### **1. Installing the machine**

The machine must be set on a stand, complete with an additional table, as shown in fig. 1. The sub-classes 697-503 and -803 have no additional table.

#### **a) Sewing speed and size of motor driving pulley**

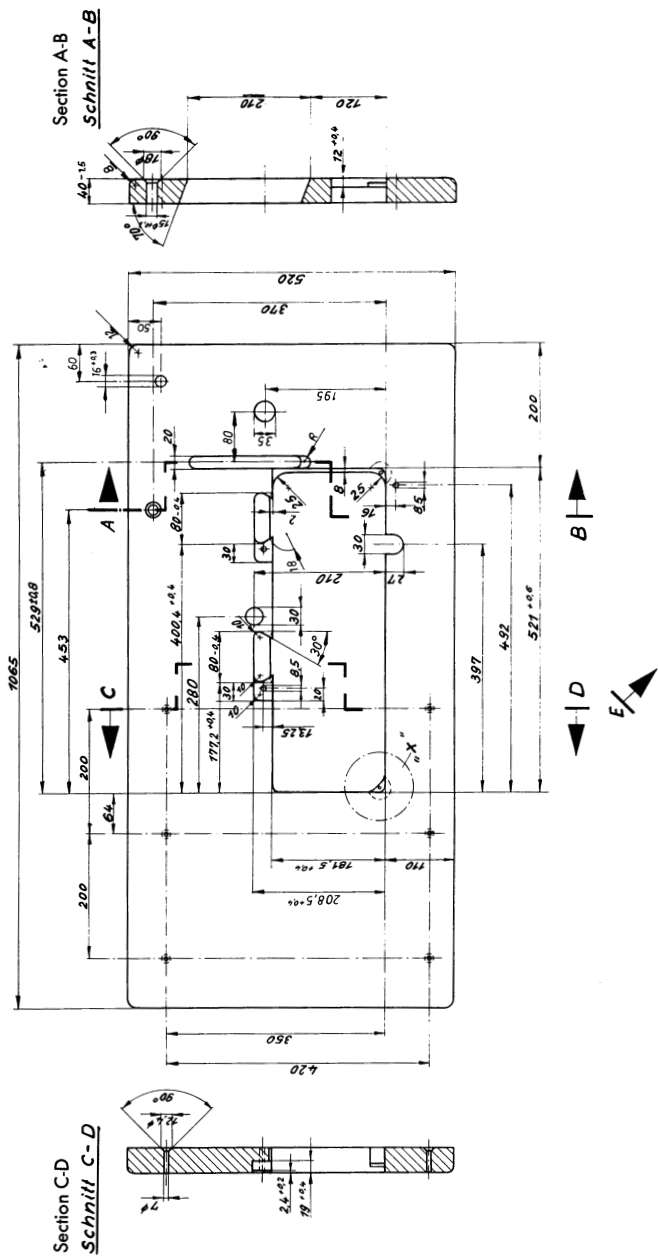
The max. speed for the classes 697-103, -153, -153 H, -203, -503, and -803 amounts to 2000 stitches/minute.

Recommended sewing speed 800 stitches/minute.\*

For the sub-classes 697-403 P, -453 P, and -453 HP the maximum speed amounts to 2000 stitches/.

Recommended sewing speed 1100 stitches/minute.\*

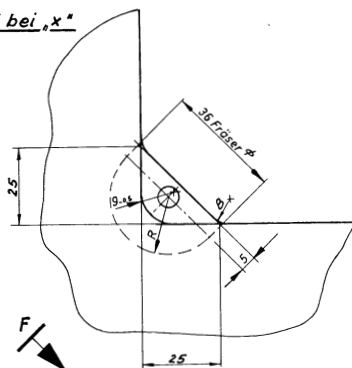
\* In case of special operations it is advised not to exceed the speed recommended. In order to obtain the required sewing speed with a motor



Detail X

Einzelheit bei „x“

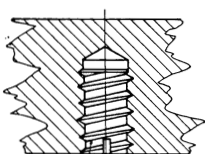
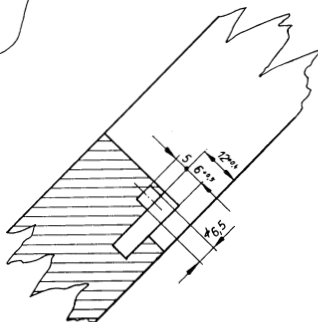
Maßstab 1:1



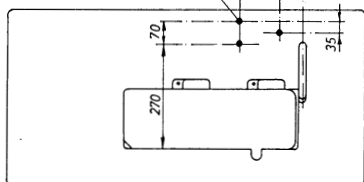
Section E-F

Schnitt E-F

Maßstab 1:1



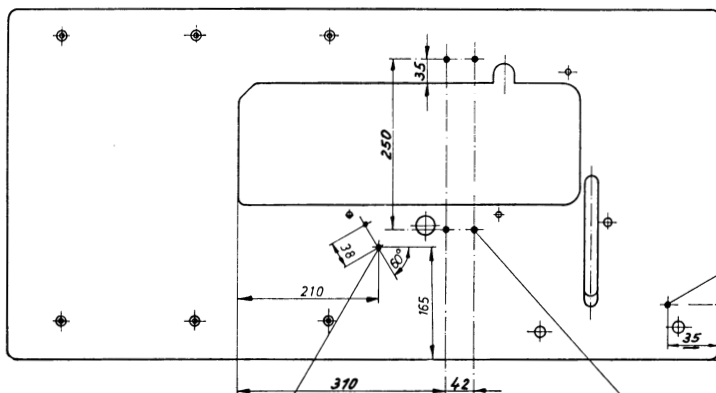
700 4011



Top view  
Ansicht von oben

Bottom view

Ansicht von unten



Ref. mark for  
the stand

Ankörung  
für Gestell

2 Ankörungen  
für Übertragungshebel

2 ref. marks for the  
transmission lever

4 Ankörungen  
für Kniehebel

4 ref. marks for  
the knee lever

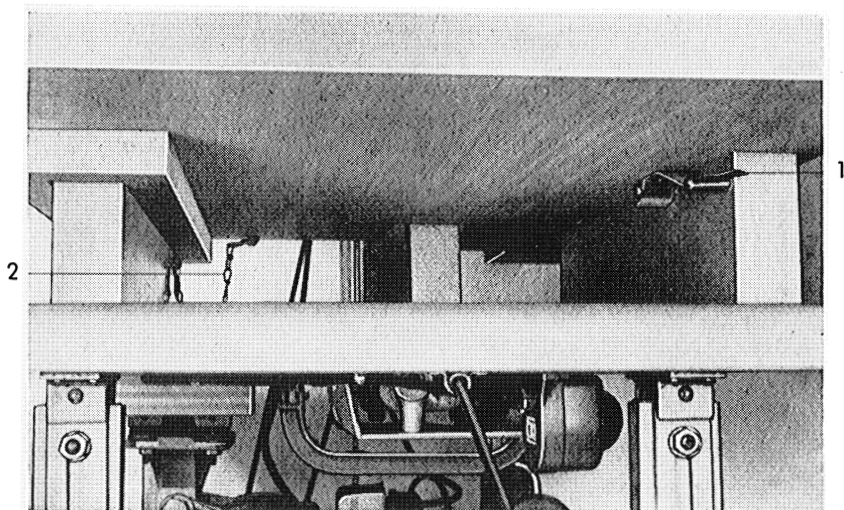


Fig. 3

of 1400 rpm, driving pulleys with following medium diameters should be used:

1100 stitches/minute = 80 mm;  
 1000 stitches/minute = 74 mm; 900 stitches/minute = 69 mm;  
 850 stitches/minute = 64 mm; 750 stitches/minute = 59 mm;  
 850 stitches/minute = 64 mm; 750 stitches/minute = 59 mm;  
 800 stitches/minute = 58 mm;  
 700 stitches/minute = 54 mm

#### b) Table top and fitting the rubber supports into the table top

The shape and size of the table top cut-out as well as the location of the opening for the belt and the bores for the support etc. must correspond to the measurements indicated in the table top sketch (fig. 2). Spring 1 and chain 2 should be fastened as shown in fig. 3.

Fit the two rubber supports for the hinges and the two front supports, all supplied with the accessories, into the openings provided in the table top for this purpose.

Fit the oil drip pan in the table top cut-out by using wood screws so that it completely covers the entire base plate.

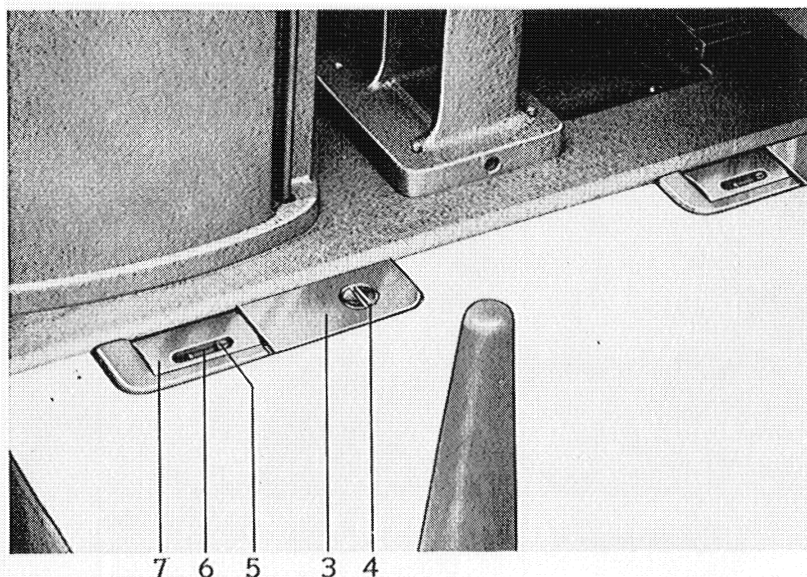


Fig. 5

### c) **Motor**

Fasten the motor to the screw-in nuts (DIN 7965) in the table top by hexagon screws M8 x 35 and washers.

In the motors where the foot has longitudinal holes place washers also between the motor foot and the table top.

The size of the motor foot and the distance between the motor suspension and the belt pulley center should correspond to DIN 42706.

Normally, the motors are wired for 220/380 V 3~ 50/60 Hz a.c. Motors for other voltage on request.

Connect the electrical supply cable of the motor according to the motor rate plate and according to the available mains voltage.

### Motor protective switch

| Motor type   | Mains voltage |       |
|--------------|---------------|-------|
|              | 220 V         | 380 V |
| NDK 600 V/24 | 2,4 A         | 1,6 A |
| KOKD 32      | 1,7 A         | 1,0 A |
| DQ ...-4A    | 3,3 A         | 1,9 A |
| VD 374       | 3,5 A         | 2,2 A |

#### d) **Installing the machine head**

Place the machine head in the table top. Ensure that there is no contact with the wood.

Fit the safety sheets 3 (fig. 5).

After placing the V-belt tension it by swinging the motor so that in its middle it easily yields about 10 mm. Ensure an exact alignment of the belt pulleys.

Fasten the belt guards. When fastening the lower belt guard ensure that the cutout in the table top is fully covered and that the V-belt does not touch its guard.

Align the driving wheel of the bobbin winder with the V-belt and fasten the winder on the table top so that, when engaged it is well driven by the V-belt and that in the disengaged position it is not touched by the V-belt.

#### **Note:**

The fastening holes for the belt guard and for the winder in the table tops coated with plastic material must be predrilled so that the wood screws have free passage.

#### e) **Fitting the knee lever**

The knee lever must be fastened to the lower side of the table top by four wood screws. Note that the knee lever must have free movement in the cut-out of the oil drip pan.

After having loosened screws 18 and 19, knee lever plate 20 and knee lever angle 21 can be moved in any direction and adjusted to suit the operator.

Loosen screws 23 and set part 22 so with the knee lever in its l/h final position that there is a slight play between the knee lever and the lifting bar.

Fig. 6

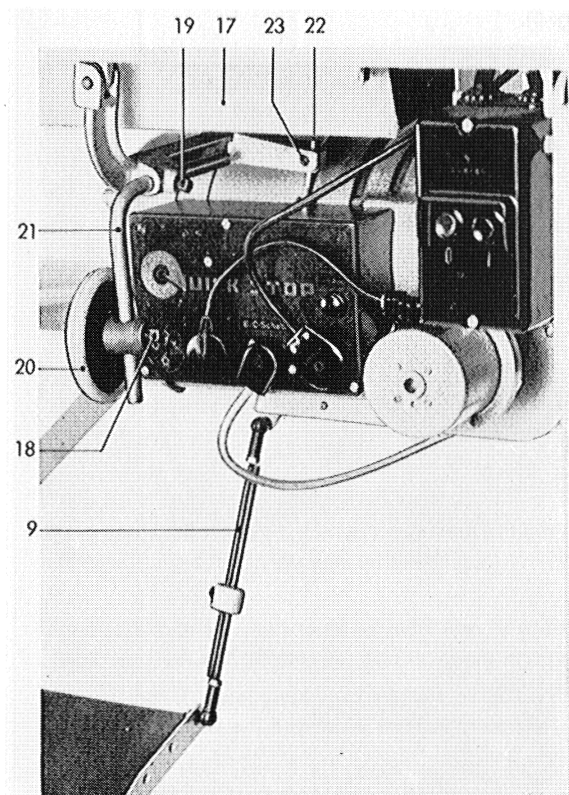
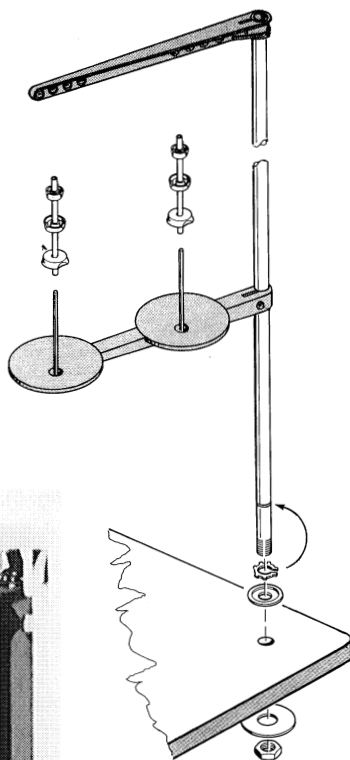


Fig. 7

f) **Fasten the thread unwinder**

Fasten the thread unwinder to the table top according to the sketch (fig. 6).

g) **Position transmitter**

In case of positioning motors adjust the position transmitter according to the supplementary instructions for DÜRKOPP 697-155, -6155, -15155 and -24155.

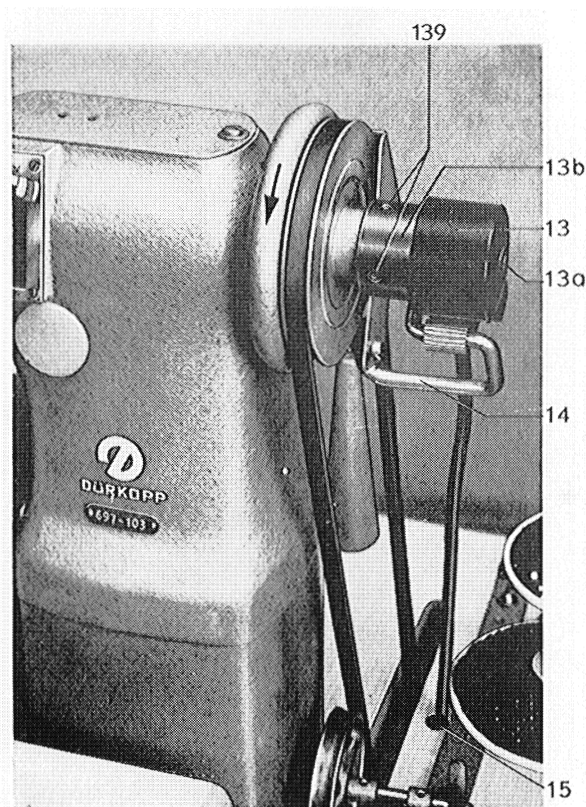


Fig. 8

#### h) Test run

##### Note:

Machines with thread cutter should be operated only with the positioner being adjusted.

Oil and lubricate the machine. Use "SP-NK 10" oil or an oil of similar quality. See chapter 2. of the Instructions for Operators.

Operate the machine for some minutes at reduced speed before sewing at top speed. There should be fabric under the sewing foot or the latter must be lifted.

The arrow in the illustration 8 shows the proper direction of rotation. If required, re-pole the motor.

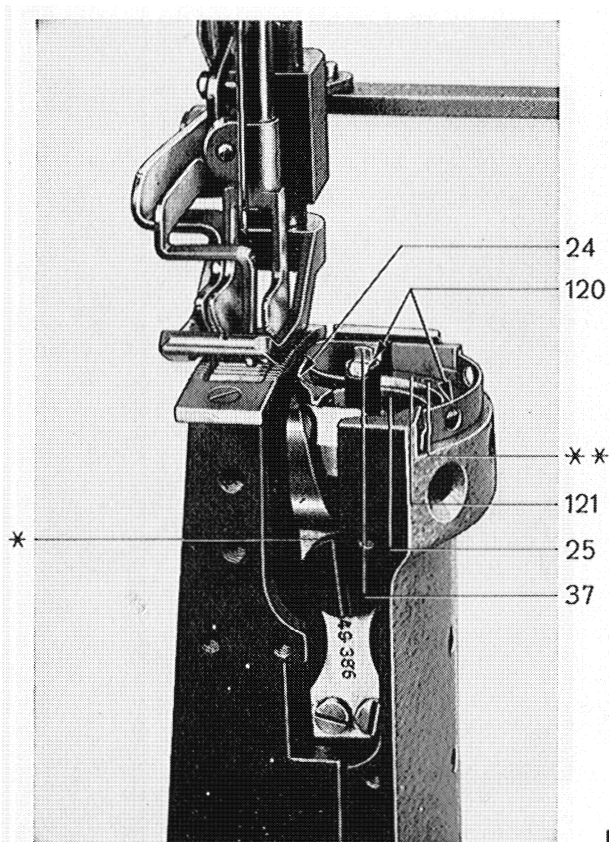


Fig. 9

# Instructions for Operators

## 2. Maintenance of the machine

### a) Cleaning

A machine which is kept clean is unlikely to give any trouble. The parts in the vicinity of the hook and underneath the throat plate must be cleaned once a week. For cleaning the underside of the throat plate and the longitudinal grooves of the feed dog, the throat plate must be removed. When

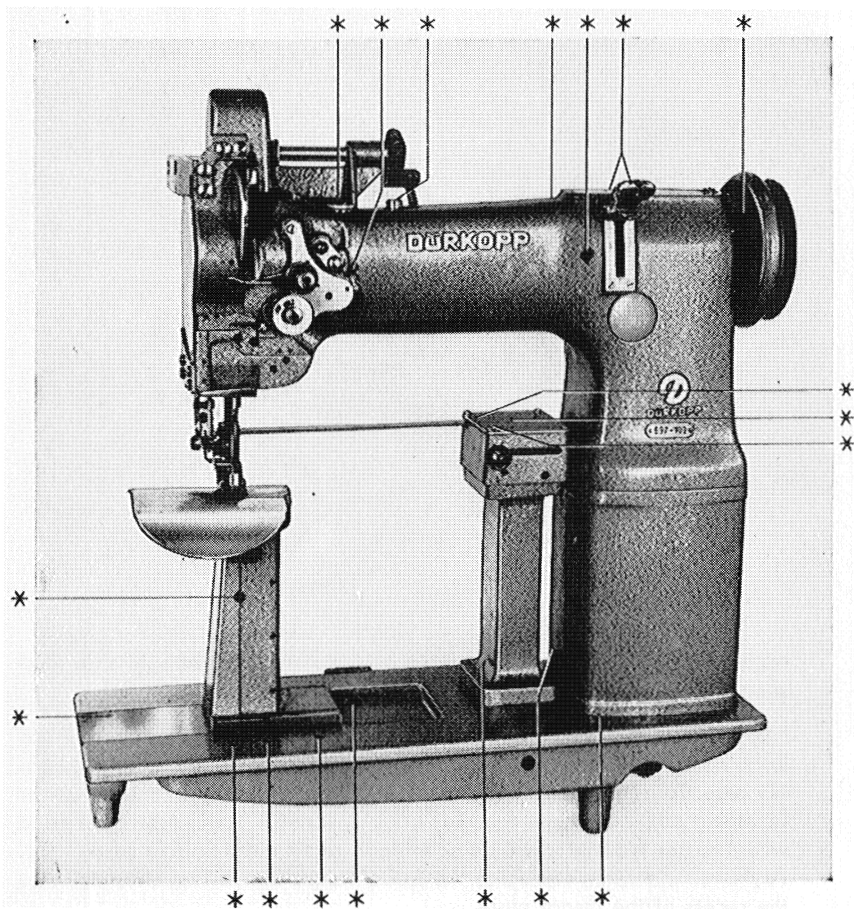


Fig. 10

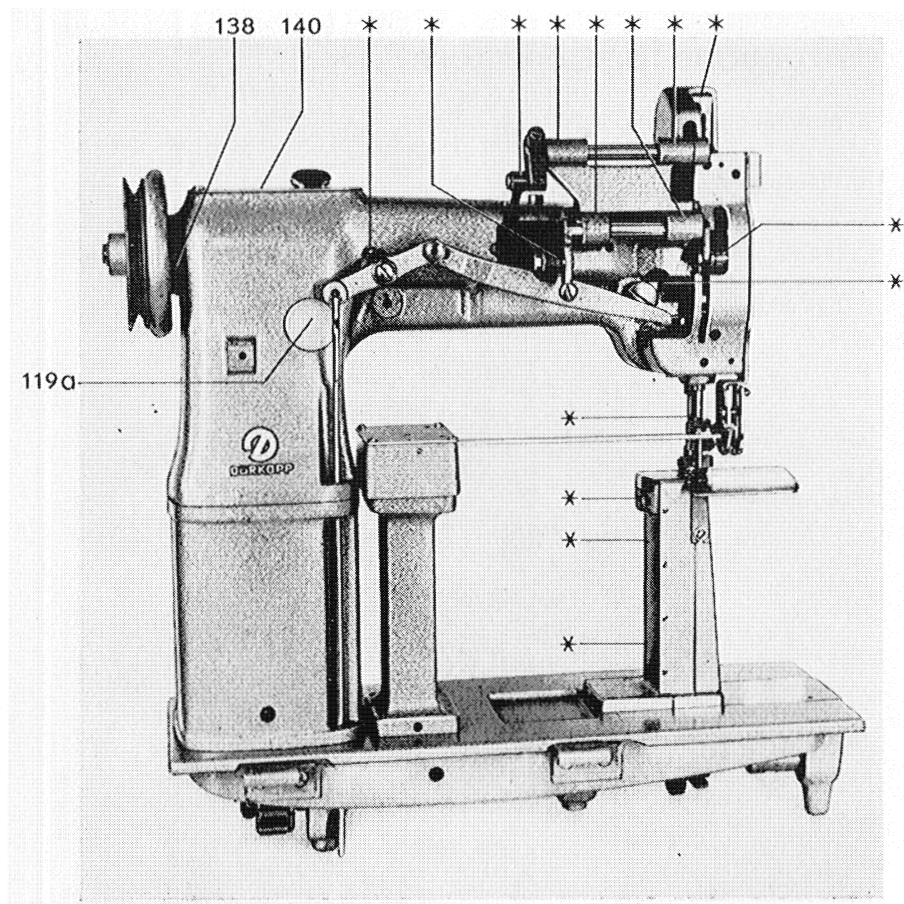


Fig. 11

replacing the throat plate note that lug 24 (fig. 9) of the bobbin case must snap into the recess of the throat plate.

For cleaning the hook it is necessary to take off the upper part of the bobbin case and to remove from the hook the base 25 (fig. 9) of the bobbin case. To do this, lift thread take-up lever, remove the two hook cover fastening screws 120 and take off hook cover 121. Turn slightly the hand wheel to and fro and it will be possible to remove the bobbin case easily. Pay attention when replacing the bobbin case that its lug 24 snaps into the recess of the throat plate.

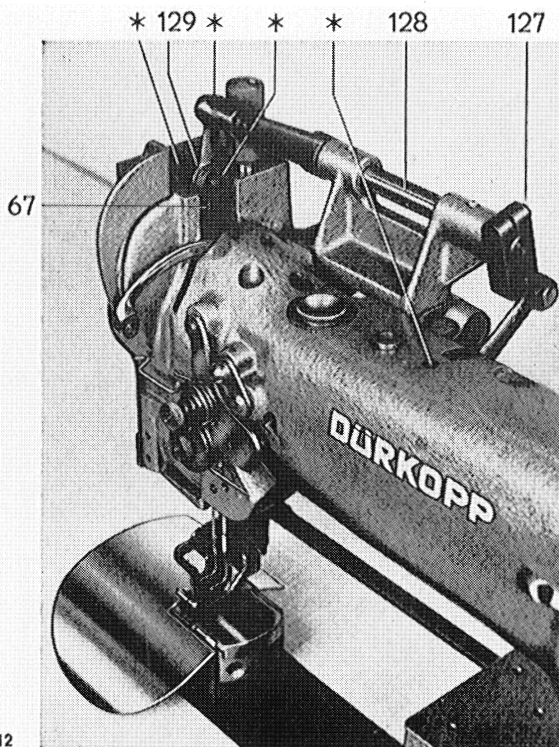


Fig. 12

#### b) Oiling

For lubricating the machine use only pure white oil of the best quality. In the figs. 9, 10, 11, 12, 20, 21 and 22 the oil points are marked by asterisks. It is sufficient to lubricate the oil points marked by one asterisk once a day while that of the hook race (fig. 9), marked by two asterisks (\*\*) should be lubricated several times a day. All oil points which are accessible from the outside are marked by red colour. Oil points marked in fig. 20 are accessible after slightly lifting the lower part of the face plate and swinging it upwards.

Note that the felt 114, which is positioned in oil drip pan 111 (fig. 22) must always be sufficiently saturated with oil and be in contact with the large wheel 116. When fastening the oil drip pan said felt must be clamped between the oil drip pan and the hook bracket.

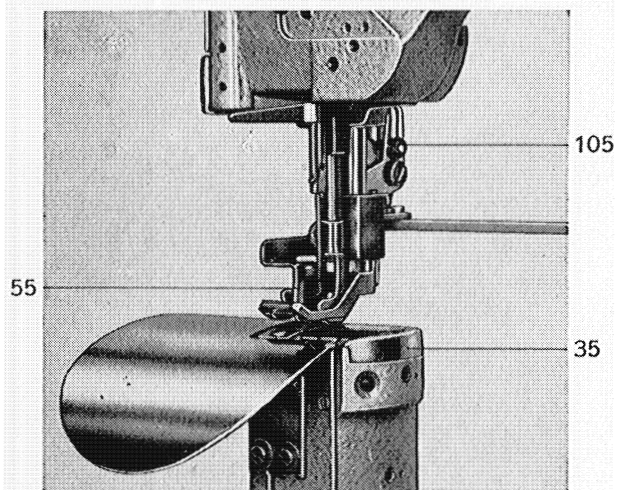


Fig. 13

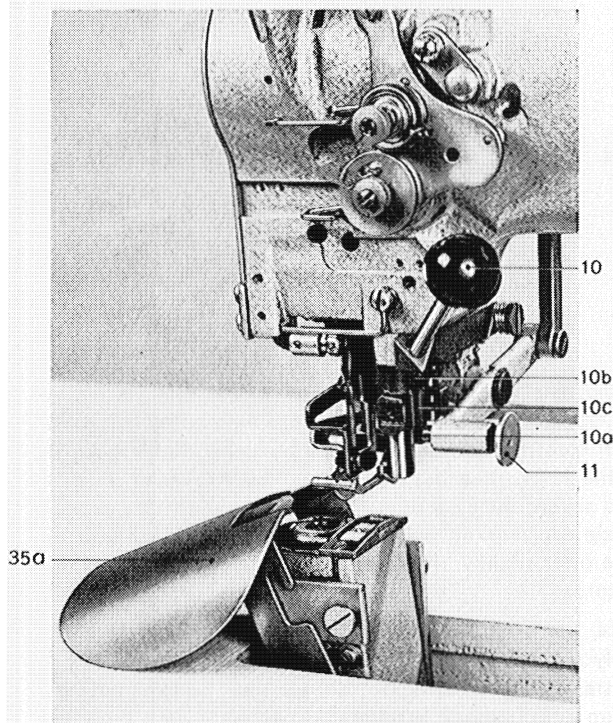


Fig. 14

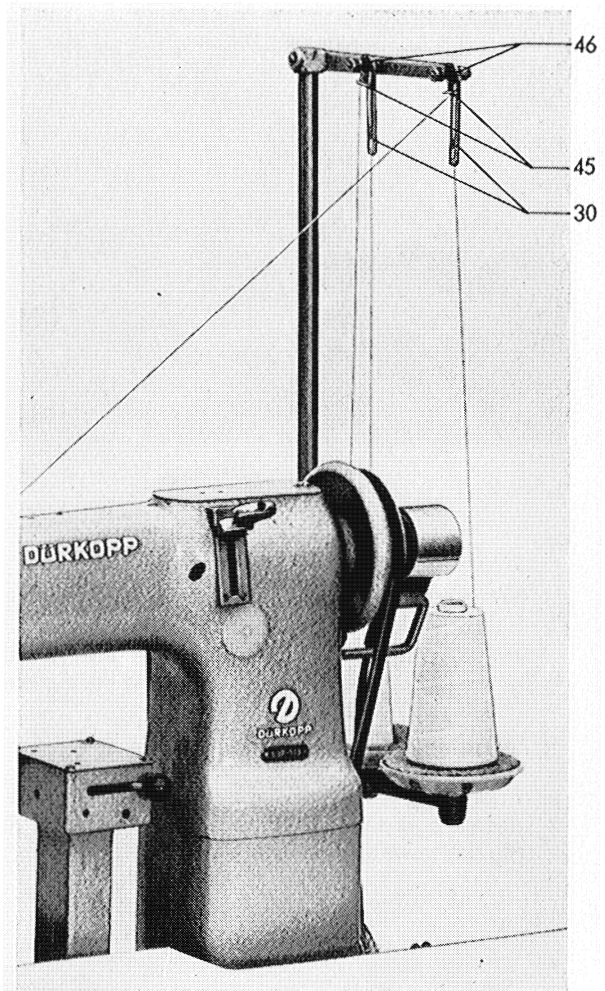


Fig. 15

### 3. Needles and threads

The proper selection of needles and threads is of decisive importance for accurate operation of the machine and for the quality of the seam. The size of the needle depends on the thread thickness. The needle eye must be wide enough to permit a close but also easy passage of the thread. This should be particularly observed when using rough yarns or threads of uneven thickness.

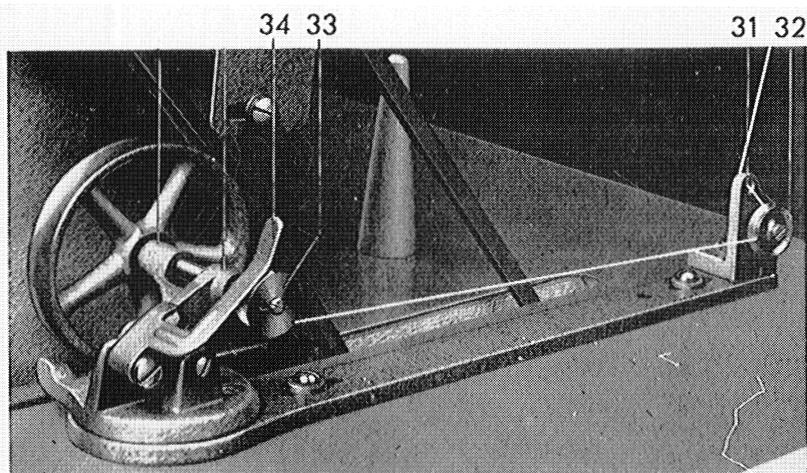


Fig. 16

For DÜRKOPP 697 use **needle system 190 R**.

When inserting a new needle, ensure that the long groove of the needle is directed to the left. The short groove, located on the opposite side, must consequently point to the hook. Make also sure that the needle is pushed as far as possible into the bore of the needle bar.

#### 4. Winding the bobbin

In order to save time, the bobbin thread can be wound while sewing. It passes from the rear thread reel through the holes of thread guide 30 (fig. 15) upwards, through r/h hole of guide 45, between thread tension

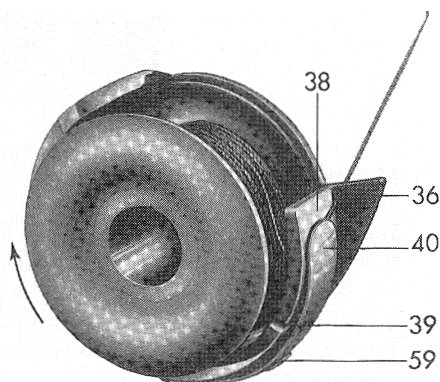


Fig. 17

disks 46, and downwards through l/h hole in thread guide 45, downwards, from left to right through hole 31 (fig. 16) between tension disks 32 and forwards to the winding device.

To wind the bobbin, first push it onto the winder spindle as far as it will go, wind the end of the thread clockwise a few times around the bobbin and press bobbin winder flap 34 against the bobbin hub. The winding process takes place while the machine is in operation, the winding device cutting out automatically as soon as the bobbin is fully wound. If a fully wound bobbin is not required, the winding device can be cut out prematurely by pulling back flap 34.

## 5. Changing the bobbin and threading the lower thread

For changing the bobbin in machines **without** edge trimmer pull out slide 35 (fig. 13) to the right and in machines **with** edge trimmer swing cloth plate 35a (fig. 14) to the left. Lifting lug 36 (fig. 17) on the upper part of the bobbin case will simultaneously lift flap 37 (fig. 9) of the bobbin case, so that the upper part of the bobbin case can be removed. Insert the fully wound bobbin in the upper part of the bobbin case so that when pulling the thread it turns in the direction shown by the arrow in fig. 17. Pull the thread below thread tension spring 40 by passing it through slit 39.

## 6. Threading the needle

Slip then the bobbin with its upper part on the centre pin of the base of the bobbin case and close bobbin case flap 37 (fig. 9).

The path of the needle thread is shown in figs. 15 and 18. Set thread take-up lever to its topmost position and pass the thread:

1. From the front reel upwards through holes in guide 30 (fig. 15), through r/h hole in guide 45, between tension disks 46 and downwards through l/h hole in guide 45,
2. through thread guide 47 (fig. 18),
3. from left above between main tension disks 48,
4. from right between the disks of thread regulator 49,
5. hold the thread near thread guide 47 and pass its end, threaded according to item 4, vertically upwards, so that the thread comes out behind lug 50,
6. upwards behind guide wire 51,
7. from right to left through hole in thread take-up lever 52,
8. downwards behind guide wire 53, further downwards behind guide wires 53 and 53a, from front into thread clamp 54 and
9. from left to right through the eye of the needle.

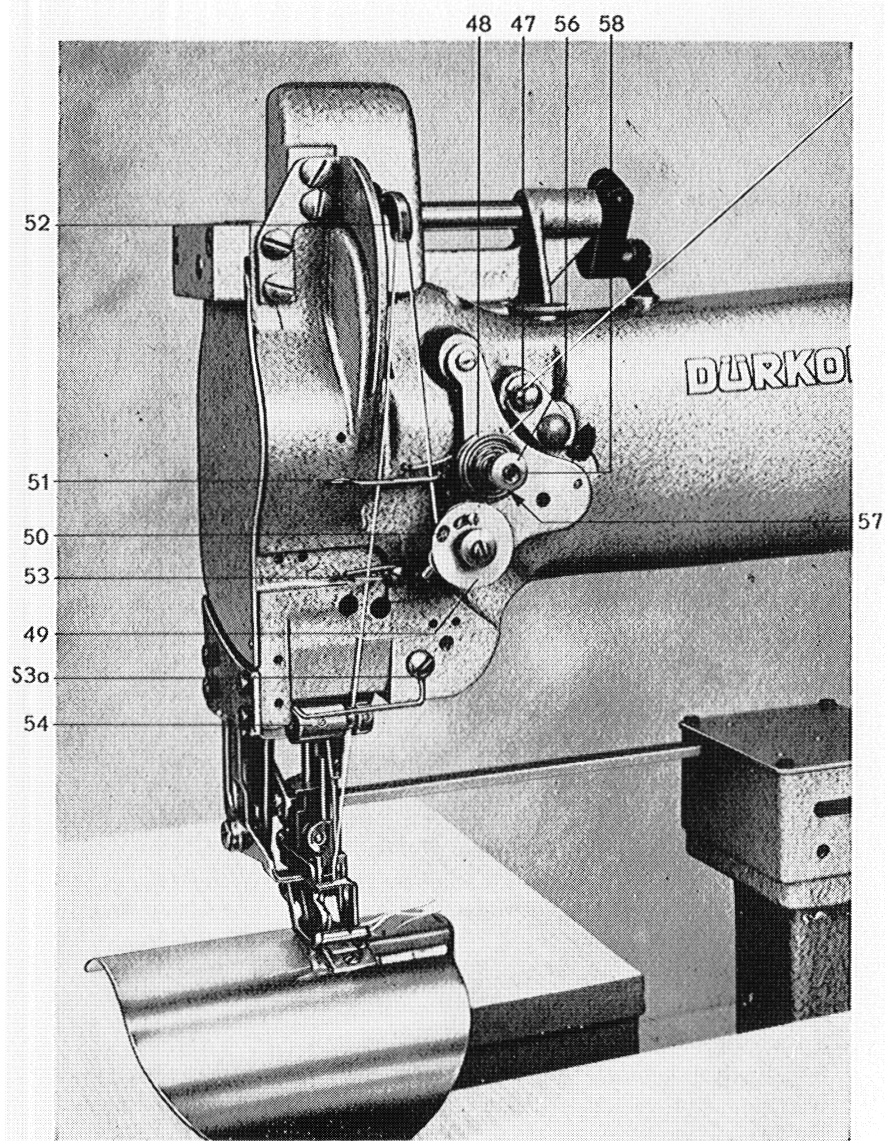


Fig. 18

## 7. Drawing up the thread

Having threaded the needle thread, hold its free end loosely between the finger tips of the left hand and make a so-called empty stitch by turning the hand wheel clockwise in order to raise the take-up lever to its topmost position. 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 and push both threads under the foot backwards.

## 8. Regulating the thread tensions

Both upper and lower threads are properly tensioned if the stitches lock exactly in the centre of the material. The tension of both threads should be as low as possible. For regulating the tensions, switch off stitch correcting device 55 (fig. 13) and place under presser foot two or three plies of material.

The **upper thread tension** is regulated by turning nut 56 (fig. 18). Turn said nut clockwise to increase and counter clockwise to decrease the tension.

To prevent nut 56 from being turned in excess, it is secured by screw 57. The latter should be adjusted only in exceptional cases. To avoid a compression of tension shaft 58, screw 57 should press only into the slit of the tension shaft.

The **lower thread tension** is adjusted by screw 59 (fig. 17) located on the upper part 38 of the bobbin case. Turn said screw clockwise to increase and counter clockwise to decrease the tension.

## 9. Regulating the foot pressure

The pressure exerted by the presser foot must be adapted to the kind of work involved. It should not be higher than is required to feed the work equally and securely.

Tighten screw bush 60 (fig. 20) to increase and loosen it to decrease the pressure.

## 10. Adjusting the stitch length and changing over to reverse stitch

The stitch length is adjusted by stitch length setting lever 61 (fig. 19). A tension spring pulls said setting lever constantly upwards, up to a stop, the position of which can be adjusted by a knurled nut 62.

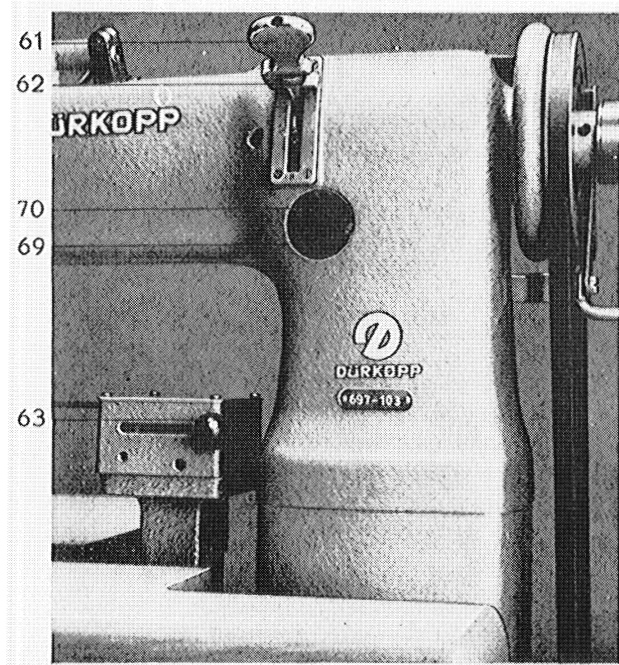


Fig. 19

If the stitch length setting lever is moved from its upper position to the centre, the forward stitch becomes shorter until, at the position "0", feeding of work ceases altogether. When the lever is pushed downwards below "0", the machine will sew 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 the forward feed.

**The change over from forward to reverse feed should only be done when stitch correcting device 55 (fig. 13) is switched off.**

With the stitch correcting device switched off, the change over from forward to reverse feed can be effected irrespective of the fact whether the machine is 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.

## **11. Connecting and disconnecting the stitch correcting device**

In compliance with the requirement of the seam, i. e. to obtain loose or tight stitches, stitch correcting device 55 (fig.13) can be connected and disconnected.

By swinging lever 63 (fig. 19) to the left, the switch correcting device will be connected, by swinging it to the left, said device will be disconnected.

Connecting and disconnecting is possible irrespective of the fact whether the machine is stationary or operating at any speed.

## **12. Engaging and disengaging the edge trimmer**

(applies only to 697-153)

For engaging the upper knife of the edge trimmer, move lever 10 (fig. 14) downwards until tappet 10a drops into groove 10b of block 10c.

For disengaging the upper knife, pull button 11 of the tappet to the right.

## **13. Sewing**

For inserting shoulder pads we recommend to proceed as follows:

Turn the sleeve so that the plies of material placed below the presser foot have the following sequence:

Loosely woven intermediate lining (not always used)

Sleeve

Front and back

Canvas or padding of the front

Shoulder pad

Lining (after some training can be inserted simultaneously)

Throat plate - clutch support.

When sewing, the sleeve-head should be pressed down against the cloth supporting plate, so that it gets the appropriate shape. The pad inserting seam should extend closely by the sleeve setting seam.

### **Left hand sleeve**

Sew from the end of the back shoulder pad to the beginning of the front shoulder pad with loose stitches. Disconnect the stitch correcting device and continue sewing up to the beginning of the seam with tight stitches.

### **Right hand sleeve**

Start sewing at the beginning of the front pad and continue sewing with loose stitches up to the end of the shoulder pad. Disconnect then the stitch correcting device and sew up to the beginning of the seam with tight stitches.

## Instructions for Mechanics

### 14. Adjusting the correct distance between needle bar frame and cloth presser bar

With the stitch length setting lever 61 (fig. 19) in the zero position, the distance between the outer edge of cloth presser bar 66 (fig. 20) and the outer edge of needle bar 67 should amount to 29.8 mm ( $697-803 = 30.8$  mm). If there is any difference, adjust said distance as follows:

1. Set stitch length regulating lever 61 on zero, so that no feed will occur when the hand wheel is being turned.
2. Remove the covering cap and loosen screw 70 which is accessible through bore 69 (fig. 19).
3. Shift needle bar frame 71 (fig. 20) until said distance amounts exactly to 29.8 mm (30.8 mm).
4. Maintain this position and retighten screw 70 accessible through bore 69.

**Note:** After this adjustment the feed dog must be regulated according to chapter 19, item a).

### 15. Adjusting the feeding foot and the presser foot for equal lifting height

The alternately rising feeding and presser foot should have equal lifting height.

Make the adjustment as follows: Loosen screws 72 (fig. 21) and set part 73 (fig. 20) on cloth presser bar 66 so that with the presser foot lowered to the throat plate, the distance between surface 74 and the lower edge of angular lever 75 amounts to about 1 mm ( $\frac{5}{128}$ "). Loosen then screw 76 (fig. 21) and adjust the lifting height by turning lever 77.

Following the adjustment, retighten firmly screws 72 and 76.

### 16. Adjusting the foot lift and the knife lift

#### Foot lift

For adjusting the lift of the presser foot (the movement of the alternately rising feet), loosen nut 78 (fig. 21) and displace according to the adjustment to be made traction bar 79 in part 80. To increase the lift of the

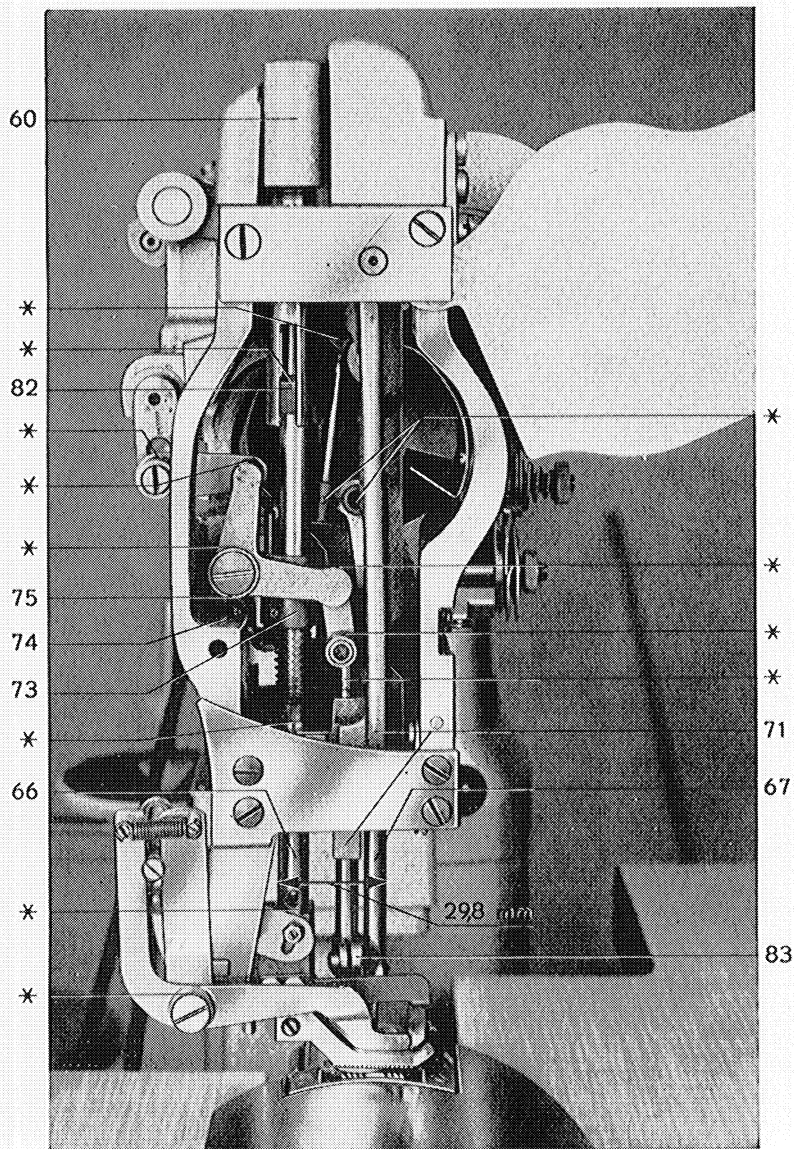


Fig. 20

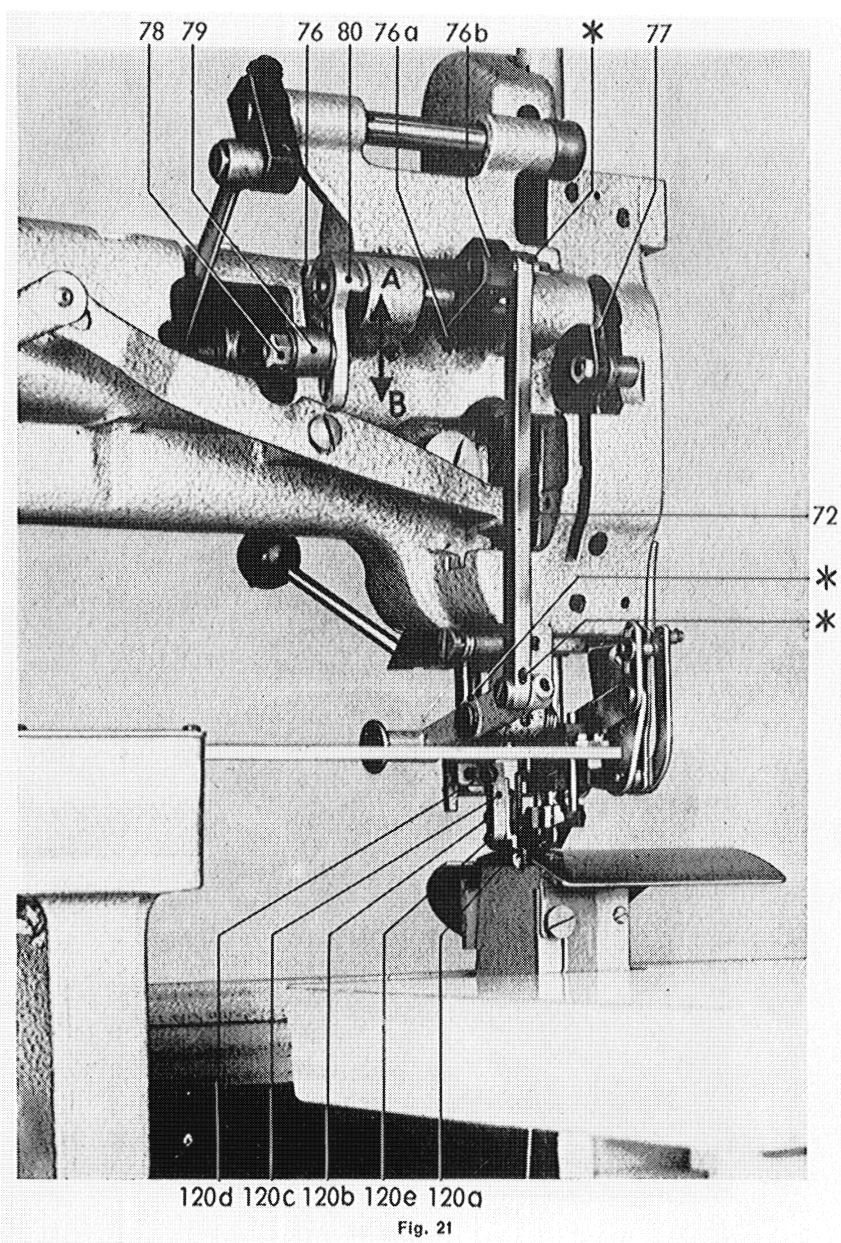


Fig. 21

presser foot, shift traction bar 79 in the direction of the arrow "A", to reduce it shift said bar in the direction of the arrow "B". Following the adjustment, retighten firmly nut 78.

### **Knife lift**

The lift of the upper knife changes automatically with the resetting of the presser foot lift. If the presser foot lift is increased or reduced, the knife lift will be increased or reduced accordingly. Set both lifts so that with the trimmer engaged and with the upper knife in its topmost position, the guide lug of the latter is still in contact with the lower knife. If the two lifts have been changed, check with the trimmer engaged and with the upper knife in its lowest position whether the cutting edge end of the upper knife is level with the cutting edge of the lower knife or whether it is about 0.5 mm lower. The adjustment can be obtained by turning block 76b after loosening thumb screw 76a (fig. 21).

## **17. Adjusting the passage under the presser foot**

For adjusting the passage under the presser foot, loosen screw 81 (fig. 23) and shift part 82 (fig. 20) on the cloth presser bar so that with the knee lever in its extreme r/h position and with the feeding foot 83 at its topmost point, the distance between feeding foot 83 and the throat plate amounts to about 20 mm ( $\frac{3}{4}$ " ).

## **18. Adjusting the stitch correcting device**

### **a) Adjusting the correct position in relation to the presser foot**

When stitch correcting device 55 (fig. 24) is engaged, it should in no case touch feeding foot 83. In the position where the stitch correcting device is parallel to the feeding foot it must be located above the centre of the needle penetrating hole.

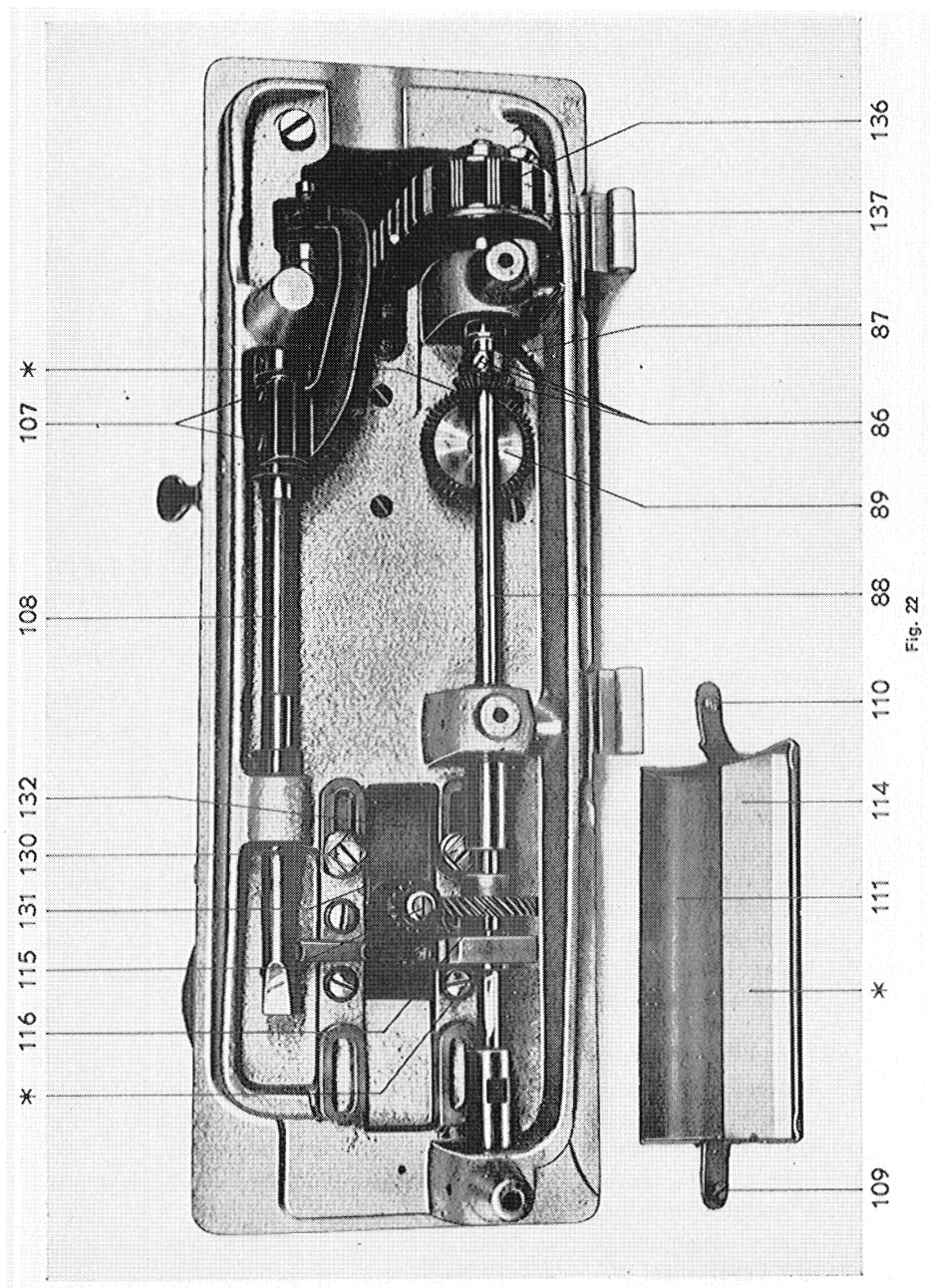
The position of the stitch correcting device 55 can be modified by turning part 85 after having loosened screws 82 (fig. 23).

### **b) Timing the stitch correcting device**

The engaged stitch correcting device 55 (lever 63 (fig. 19) to the left) should move from right to left and from left to right when the needle is above it, i. e. the stitch correcting device should not touch the needle.

For timing this movement, loosen screws 86 (fig. 22) and turn bevel wheel 87 on the lower shaft 88.

Prior to retightening screws 86 ensure that bevel wheel 87 is well meshed with bevel wheel 89.



**c) Adjusting the catch in these which box**

Adjust catch 90 (fig. 25) so that with lever 91 in its extreme left hand position, it can be slightly moved into recess 93 of pin 94 when lever 63 is displaced from left to right.

When lever 63 is moved to the left, catch 90 must be moved to the front by spring action. The surface of the catch must pass along the surface of the pin as close as possible.

To adjust catch 90 loosen screw 96 which is accessible through hole 95 and turn correspondingly eccentric bolt 97.

**d) Adjusting the initial position of the stitch correcting device and of the key lever**

Adjust the initial position of the stitch correcting device 55 (fig. 24) and of key lever 98 so that with the feed dog in its topmost position the stitch

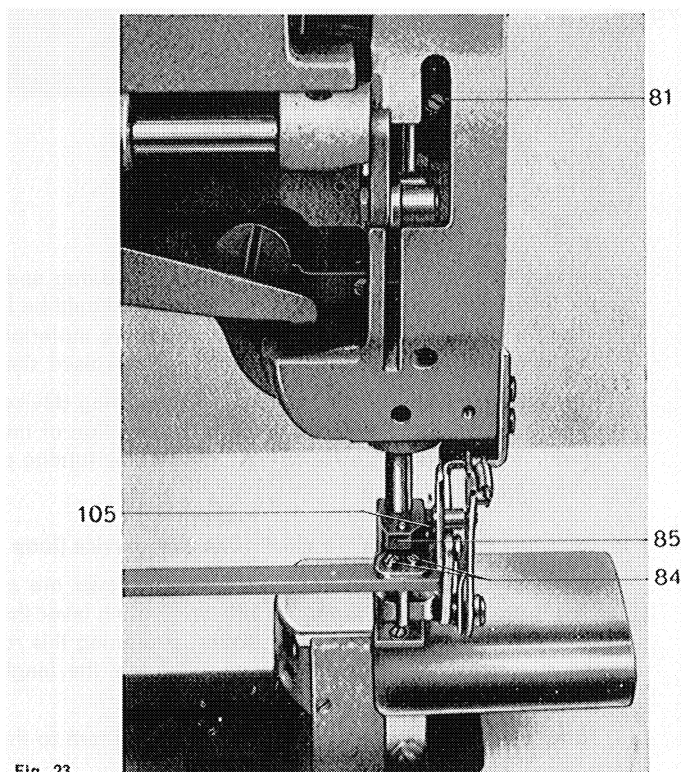


Fig. 23

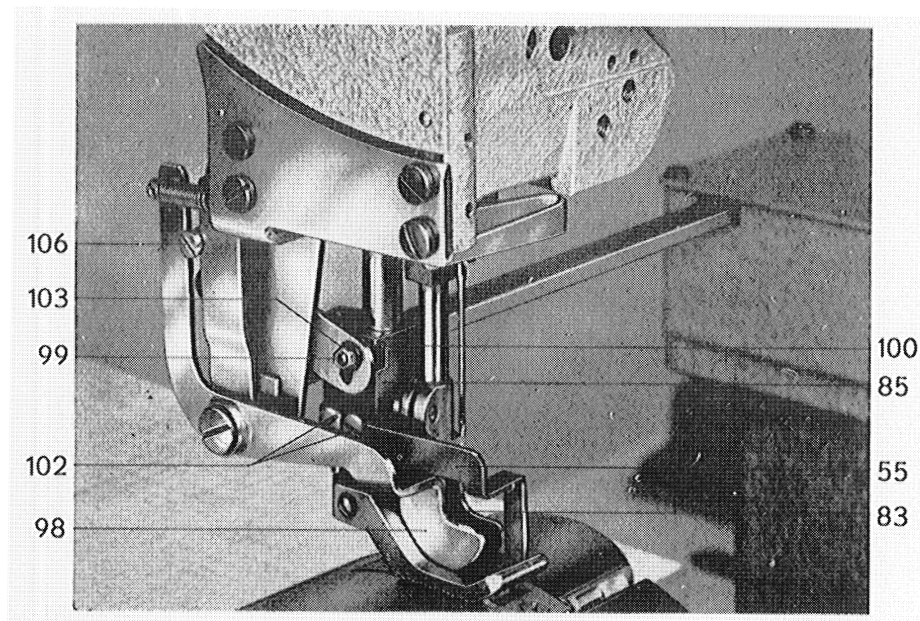


Fig. 24

correcting device rests horizontally on the feed dog and the key lever on the throat plate. In this position pin screws 99 should be located below the edge of driver 100 of part 28. Thus when the material sewn raises the key lever, the stitch correcting device will be raised simultaneously.

The horizontal adjustment of the stitch correcting device can be effected after loosening screws 102, and the initial position of the stitch correcting device and of the key lever can be adjusted by turning pin screw 99 after loosening nut 103.

#### e) **Adjusting the height of the stitch correcting device (loop length)**

The stitch correcting device and the sensing lever are synchronized. This means that as soon as the fabric lifts the sensing lever the stitch correcting device is also lifted at a certain ratio. By altering this ratio the height of the stitch correcting device and consequently the length of the loop is altered correspondingly.

To adjust the ratio, loosen nut 105 (fig. 23) and turn to the required extent screw 106 (fig. 24).

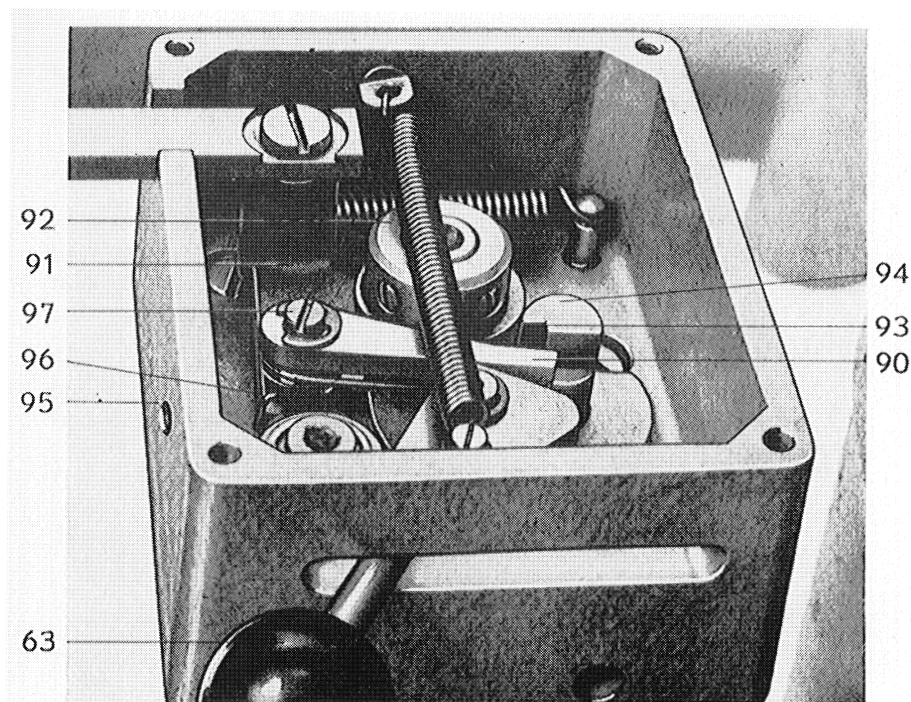


Fig 25

By lowering screw 106, stitch correcting device will be lifted and the length of the loop increased, by raising screw 106, stitch correcting device will be lowered and the loop length reduced. After completion of the adjustment, nut 105 must be firmly retightened.

## 19. Adjusting the feed dog

### a) Longitudinal adjustment of the feed dog

Adjusting the feed dog in the longitudinal direction according to the needle. (Adjust first the needle as described under 14). The needle should stitch in the centre of the feed dog stitch hole. To effect the adjustment loosen screws 107 (fig. 22) and turn shaft 108.

### b) Adjusting the height of the feed dog

To assure an impeccable feeding of the fabric, the feed dog in its topmost position should project above the surface of the front plate by 1.2 mm ( $\frac{3}{64}$ " ).

To adjust the height of the feed dog, proceed as follows:

1. Remove screws 109 and 110 (fig. 22) and take off oil drip pan 111.
2. Loosen fastening scw 112 (fig. 26) and adjust the height of the feed dog by vertically displacing eccentric fork 113. Supporting screw 117 must be regulated according to the displacement of eccentric fork 113.

This screws should support said eccentric fork.

3. Retighten firmly fastening screw 112. Replace oil drip pan 111 and fasten it by screws 109 and 110 so that screw 115 of the hook support clamps oil felt 114 and is in contact with tooth wheel 116.

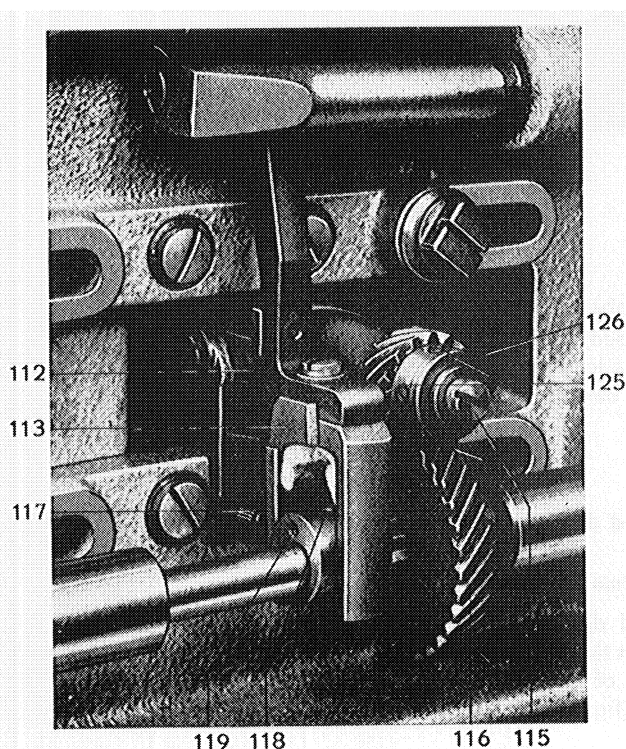


Fig. 26

## **20. Setting the feeding movement of the feed and the needle feed in relation to the feeding movement of the dop feed**

The top and the bottom feed of this machine are usually synchronized, i. e. they are feeding at the same rate. In the machines of the latest design, however, it is possible to set the top feed so that it feeds faster or slower than the bottom feed. This adjustment possibility is of great advantage when inserting shoulder pads and attaching simultaneously the jacket lining, because the latter can be attached to the sleeve with certain fullness.

For adjusting the feeding difference, remove cap 119a (fig. 11), loosen nut 119b (fig. 27) through the hole which is now free and reset bar 119c in lever 119d accordingly.

Displace bar 119c in the arrow direction "B" to increase the feeding length of the top feed and in the arrow direction "A" to decrease it.

Following the adjustment, retighten firmly nut 119b.

## **21. Changing the knives**

### **a) Upper knife**

Upper knife 120a (fig. 21) can be changed after loosening screw 120b.

When fitting a new upper knife secure it to the angular holder 120c so that the end of the knife slit is in contact with the fastening screw 120b.

Furthermore, after loosening screw 120d, resetting the angular holder 120c and readjusting screw 120e, set upper knife in relation to the lower knife so that the knives cut perfectly (thread test). See also chapter 16.

### **b) Lower knife**

The lower knife blade can be changed after removing the two fastening screws.

In machines of old design, the lower knife blade is soldered to the throat plate. Therefore it can only be changed together with the throat plate.

## **22. Changing the hook**

For changing the hook remove the two screws 120 (fig. 28), take off hook cover 121 and take out the complete bobbin case. Loosen then screw 122 (fig. 29) located in the centre of the hook bottom and remove the hook from its shaft.

Place the new hook in its shaft so that the point of the hook is located in the middle of the needle (compare section 23) when the loop lift has been completed.

### 23. Adjusting the hook and the height of the needle bar

The loop stroke amounts to 2,4 mm (Cl. 697-15155 = 2 mm). This means that when, by turning the hand wheel in the direction of rotation, the needle has risen 2,4 mm from its lowest position, the hook tip should be opposite the centre of the needle and 1,5 mm above the upper edge of the needle eye.

Ensure then that an impeccable needle is introduced into the needle bar as deep possible and proceed as follows:

Pull out slide 35 (fig. 13) to the right, remove screws 124 and take off throat plate 123 (fig. 28).

Set needle bar to its lowest position by turning hand wheel in the direction of rotation.

Continue turning the hand wheel in the direction of rotation until the needle has risen 2,4 mm from its lowest position.

This position is attained, when the arresting pin, included in the accessories, drops into the machine arm and is locked in the groove in the arm shaft crank.

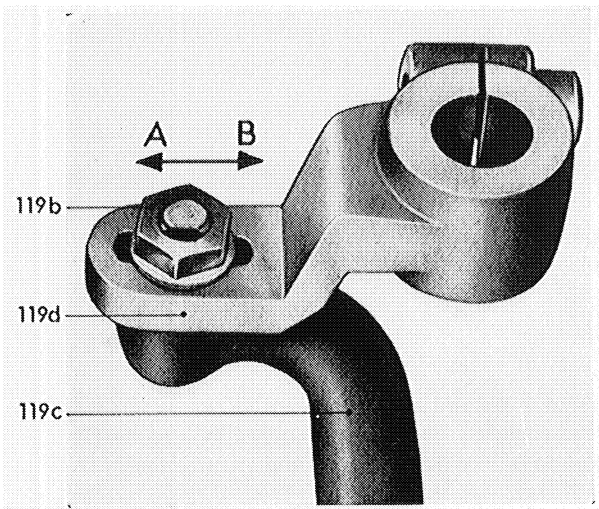


Fig. 27

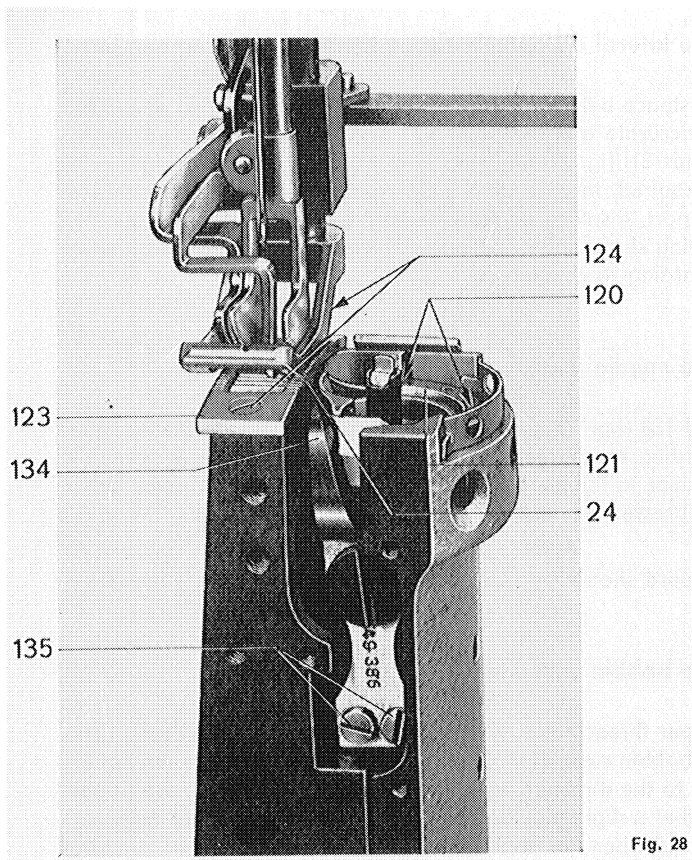


Fig. 28

In this position, the tip of the hook should be located exactly against the centre of the needle. To effect an adjustment loosen fastening screws 125 (fig. 26) of screw wheel 126 and rectify the position of the hook as required. Following the adjustment, retighten firmly fastening screws 125.

The tip of the hook, located against the centre of the needle, should now be situated 1.5 mm above the upper edge of the needle eye. If an adjustment is required, loosen thumb screw 127 (fig.12) and rest accordingly the needle bar in its height by turning lever 128.

When retightening the thumb screw ensure that lever 128 has no lateral play and that the needle bar its situated as deep as possible in traction bar 129 without, however, touching the wall of the drilled hole.

## **24. Adjusting the lateral distance between the hook and the needle**

The lateral distance between the hook and the needle should amount to 0.1 mm. For accurate adjustment of this distance loosen both fastening screws 130 and 131 (fig. 22) and shift hook support 132 to the right or to the left, as required. In case of a major rectification of the position of the hook support, displace correspondingly gear wheel 116 located on the hook driving shaft. Following this adjustment, rectify the position of the hook according to chapter 23.

## **25. Adjusting the needle guard**

Needle guard 133 (fig. 29) should be so adjusted that with the hook regulated according to chapter 24, the needle guard has approximately the same distance to the needle as to the hook tip (about 0.1 mm). When the needle is pressed against its guard it should not touch the tip of the hook.

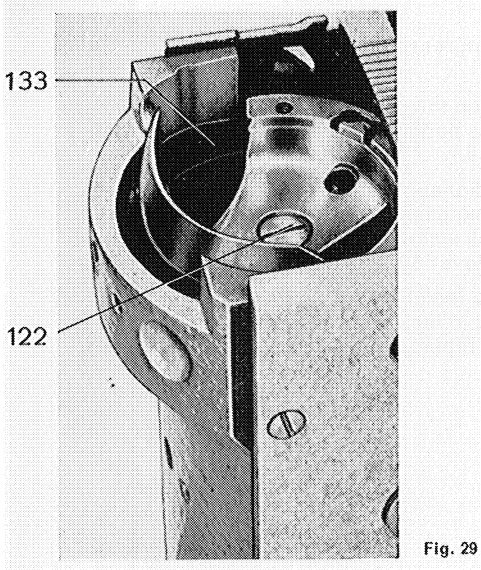
The needle guard should be rectified with care, because it is hardened.

## **26. Adjusting the bobbin case lifter**

When the upper thread loop which has to cross the bobbin case passes along lug 24, bobbin case lifter 134 (fig. 28) should slightly turn the bobbin case contrary to the direction of rotation of the hook. Adjust the bobbin case lifter so that a slight play between the bobbin case and its finger can still be preceived when the finger with the hook situated on the right has completed its movement to the right and viceversa. The bobbin case finger can be adjusted after having loosened screws 135.

## **27. Changing the belt for the hook driving shaft**

1. Slip belt 136 (fig. 22) off the lower belt pulley 137 to the right.
2. Remove the hand wheel (removing first, if any, synchronizer after having loosened screws 139 (fig. 8).
3. Loosen fastening screw 138 (fig. 11) for the rear arm shaft bearing and remove the latter towards the rear by pulling it out through the opening of the upper arm cover 140.
4. Remove the belt by pulling it out through the opening for the rear arm shaft bearing.



5. Insert the new belt through the opening for the rear arm shaft bearing and place it first only on the upper belt pulley. Make sure that the open side of the belt sprockets are pointing upwards and the ends of the threads of which the belt is made show to the rear, i. e. in the direction of rotation.
6. Replace rear arm shaft bearing and retighten firmly its fastening screws 138.
7. Slip the hand wheel on the arm shaft and fasten it slightly. Ensure that, seen in the direction of rotation, the first hand wheel fastening screw (pointed screw) presses in the groove of the arm shaft.
8. Replace hand wheel end screw and tighten it so that the arm shaft has **no longitudinal** play and that it can be turned with ease. Retighten then **firmly** the two hand wheel fastening screws.

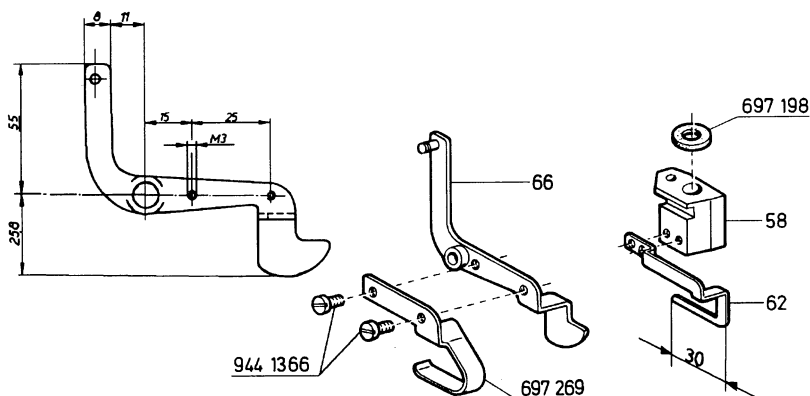
## 28. Feeding Sufficient Needle Thread when Working Very Loose Padding

Very loose padding is significantly compressed by the pressure feet during the sewing procedure.

Since the feeler lever 66 works between the pressure feet, it does not find sufficient thickness differentials by this padding in order to control the loop holder for the actual padding thickness.

We have therefore developed an additional glide lever 697 269 which makes possible a precise padding thickness definition outside the transport area. It will be introduced as of 3/90, is included in the machine accessories pack and to be attached to the feeler lever 66 with the two screws 944 1366.

In order to attach the glide lever to the feeler lever 66 on older machines two M3 threaded holes must be drilled in the feeler lever 66 as per the illustration or the feeler lever must be replaced by a newer version with the threaded holes.



In order to avoid having the loop holder bracket 58 strike under the arm during maximum stroke of the loop holder 62, a Vulkolan washer 697 198 has been inserted between the bracket 58 and the arm on the presser bar.

Also by older machines, the longer loop holder 697 201 must be shortened from 31 to 30 mm so that it does not strike the transport foot.

For a maximum stroke it is also necessary that the thread guide on the needle bar be removed.

**Instructions for DÜRKOPP 697 with Z 116-697, ref.  
No. Z 1161601 or with Z 116-12-697, ref. No. Z 1161701  
ref. No. Z 1161630**

1. By means of the **Z 116-697** the fulling can be modified. For this purpose serves a rod system and an additional pedal.

By modifying the angular lever 3 ( fig. 2) it is possible to reset the fulling from the upper ply to the lower one and viceversa. See figs. 1,2 and 3. Fig. 1: fulling above, Fig. 2: fulling below.

In order to maintain the synchronized motion of the upper and lower feed, loosen the knurled screw 4 ( fig. 1) and adjust the bars accordingly.

The desired fulling can be adjusted by the stop 5 ( fig. 2) .

2. The **Z116-12-697** enables an automatic electro magnetic control of the required fulling and the slackening of stitches at the desired points.

The interdependant initiators 1 and 2 ( fig. 5) are scanning at every stitch the fabric thickness under the presser foot.

As soon as the presser foot 6 slightly rises, e. g. at the beginning of a pad, the automatic device is engaged.

Depending on the position of the switches a 1e and a 2 ( fig. 6) , four different functions can be obtained:

**a) Both switches in the upper „automatic” position**

Fulling control and slackening of stitches are engaged and dis-engaged automatically according to the fabric thickness.

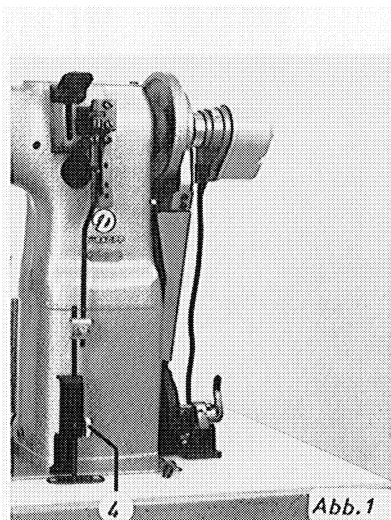


Abb.1

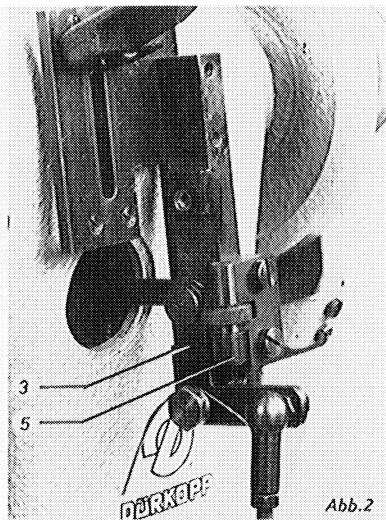


Abb.2

- b) **Upper switch in lower „manual” position. Lower switch in upper „automatic” position.**

Manual fulling control by the button 7 (fig.5) and automatic stitch slackening.

- c) **Upper switch in the upper „automatic” position. Lower switch in the lower „manual” position.**

Automatic fulling control, manual stitch slackening by the button 7.

- d) **Both switches in lower „manual” position**

Without automatic fulling control and without stitch slackening. You must connect and disconnect manually by the switch 7.

### **Timing the engagement of the automatic fulling and stitch slackening control**

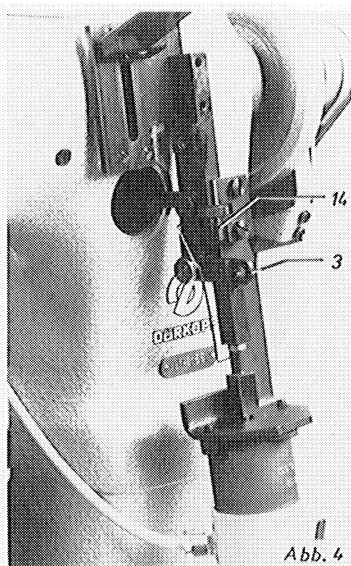
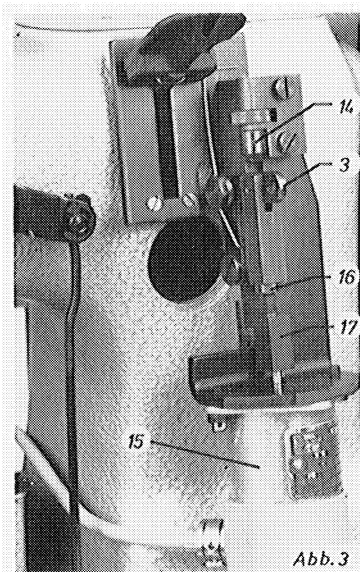
For timing the engagement of the automatic system turn the knurled screw 8 (fig. 5), i. e. lift or lower the initiator 1.

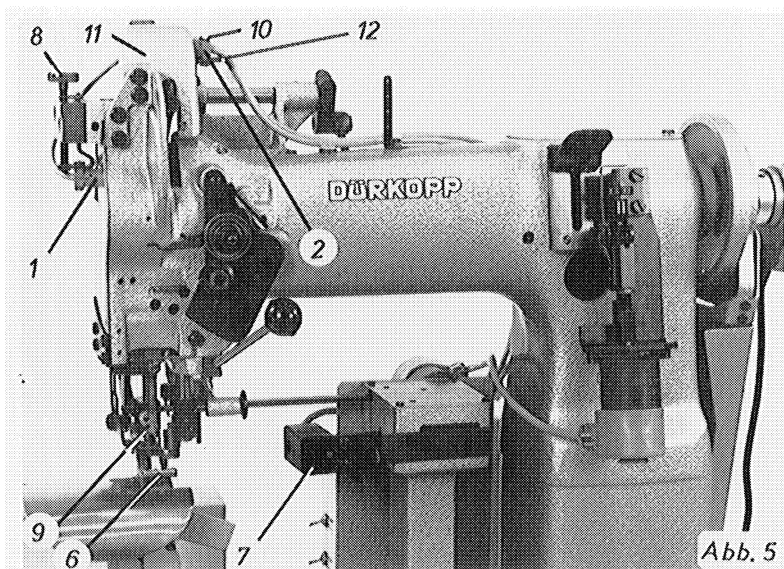
The moment of engagement depends on the thickness of fabric involved.

The condition for the adjustment is the proper basic adjustment of the initiators according to the following chapter.

For adjusting proceed as follows:

1. Place the fabric plies under the presser foot 6 (fig. 5).
2. Turn the handwheel until the feeding foot is at its topmost point.





3. Both switches a 1 and a 2 (fig. 6) in the upper „automatic” position.
4. By means of the knurled screw 8 (fig. 5) lower the initiator 1 so that the automatic system is engaged, i. e. so that the solenoids, the stitch correcting finger and the top feed length for the pulling are engaged.
5. By means of the knurled screw 8 lift the initiator until the automatic system is switched off.
6. Turn the machine by hand until the beginning of the pad is reached. The presser foot 6 will be lifted and the automatic system will be engaged.  
Check the timing and, if required, rectify it. Check also while sewing.

### **Basic adjustment of the initiators 1 and 2**

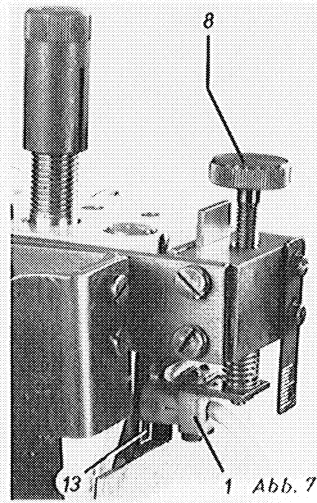
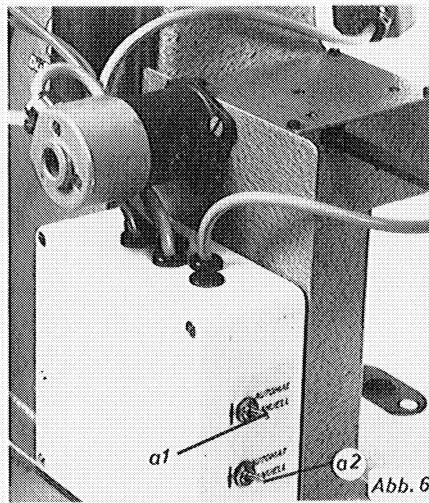
Connect main switch. Both switches in the upper „automatic” position.

Loosen the screws 10 and set the initiator 2 (fig. 5) to the right as far as possible.

Turn the handwheel until the feeding foot 9 is at its topmost point and consequently the articulation of the thread take up level, located under the housing 11, also is in its upper position.

Set the square 12 at such a level that the initiator 2 stands approximately in the middle of the lateral hole of the housing 11.

By means of the knurled screw 8 set the initiator 1 (fig. 7) so that it stands in front of the lifting block 13, i. e. in front of the metal. Adjust the distance to the lifting block for about 1 mm.



Push the initiator 2 (fig. 5) slowly against the joint of the thread take up lever until the automatic device is engaged.

If the engagement test must be repeated in this way, set the initiator 1 first higher and then screw it lower.

The distance of about 1 mm with respect to said joint must exist.

**Note:**

When changing the feet stroke correct the position of the initiators.

**Fulling above or below, at choice**

By modifying the angular lever 3 (fig. 3) with the stop 14 it is possible to reset the fulling from the upper ply to the lower one and viceversa.

When the magnet 15 is in its neutral position the top and bottom feed should advance at the same rate.

Turn for this purpose the blot 17 after having loosened the counter nut 16. the required fulling can be set by the stop 14.