

# MAUSER SPEZIAL

Serie 40

Adjustment  
instructions

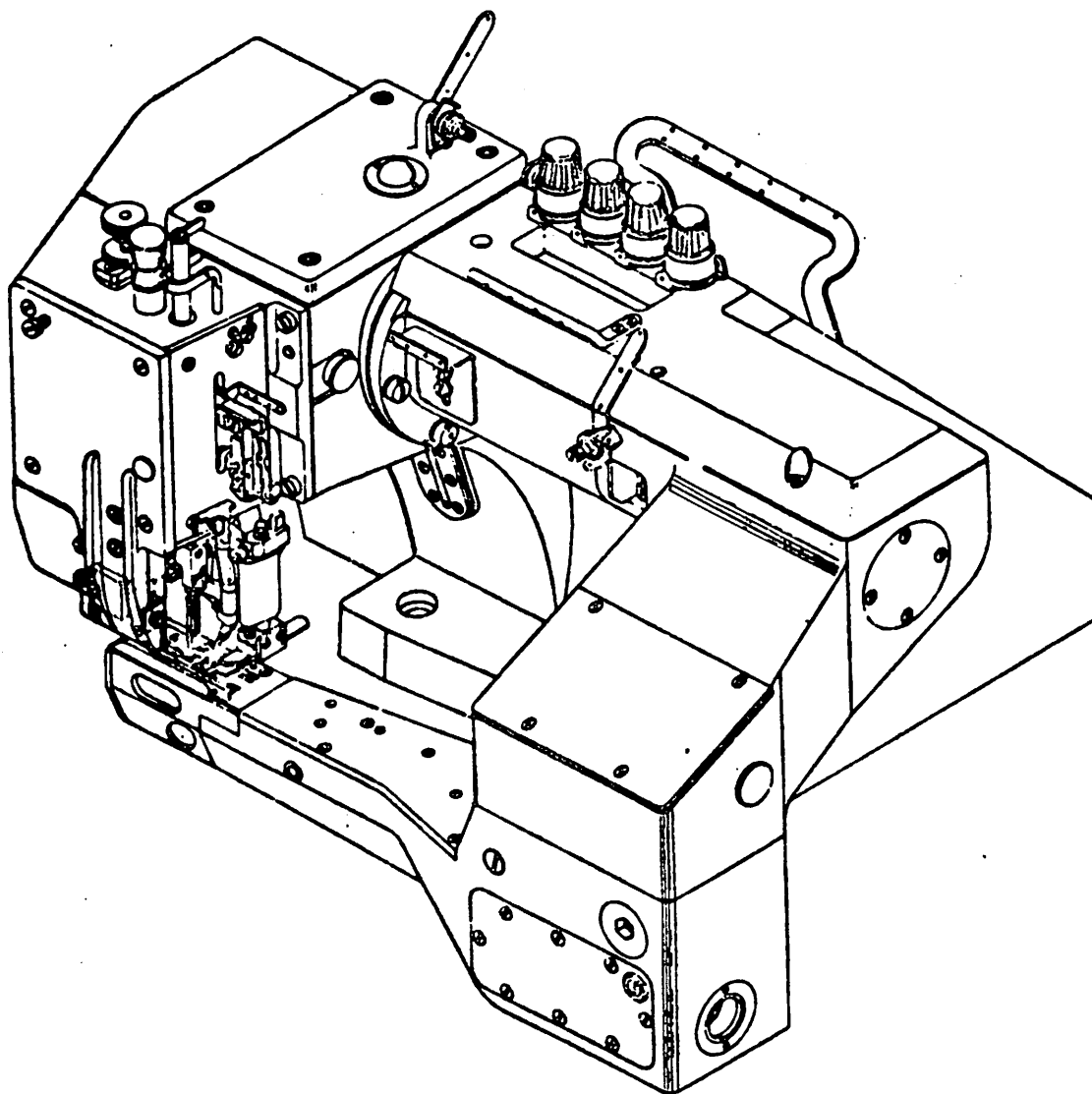


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**675 Kaiserslautern**  
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# MAUSER SPEZIAL®

## SETTING INSTRUCTIONS FOR MECHANICS



Supplement to the service manual for Mauser C1. 40,  
for machines with low needle-bar link

needle stroke 29.5 mm, looper  
stroke 20.4 mm)

1. Needle bar height: Preliminary adjustment:  
Clearance between top surface of  
needle plate and point of the  
fourth needle: 9.3 mm
2. Looper clearance: From looper tip to middle  
of first needle: 4.4 mm
3. Needle rise: 2.4 mm to middle of first needle.
4. Looper avoiding motion: 1.8 to 2 mm, depending on fabric.
5. Elliptical movement: Forwards:  
from first needle to fourth  
needle: 0.15 mm
6. Check:
  1. The looper point should pick  
up at a position 1 mm above the  
eye of the fourth needle.
  2. When the looper is between the  
third and fourth needle the tip  
of the third needle should be  
0.3 mm below the underside of  
the looper.

## SETTING INSTRUCTIONS

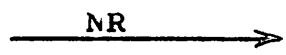
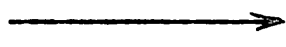


for MAUSER SPECIAL Series 40 Down Arm Sewing Machines  
(for machines with 28.5 mm needle stroke)  
(29,5 mm)\*

These instructions are mainly intended for mechanics.  
The basic setting of MAUSER LOCK Machines of the 40 Series is described in this manual in a practical operation sequence.

### Note:

The letters or numbers used in the illustrations accompanying this manual, which indicate the machine components, do not correspond to the spare parts numbers but are merely intended to simplify the explanations.

In addition, the illustrations contain symbols which illustrate the interaction of the individual movements; the meanings of these symbols are as follows:

	= direction of sewing
	= direction of feed indicated by arrow
	= reversing point of a feed or pendulum movement indicated by arrow ( horizontal or vertical )
	= direction of rotation or movement of rotating parts

### Setting gauges required:

For direction of sewing hook = "CS-LG" gauge

For direction of needle bar = "CS-LN" gauge

Needle hook spacer gauge 4.8 mm (4,4 mm)\*

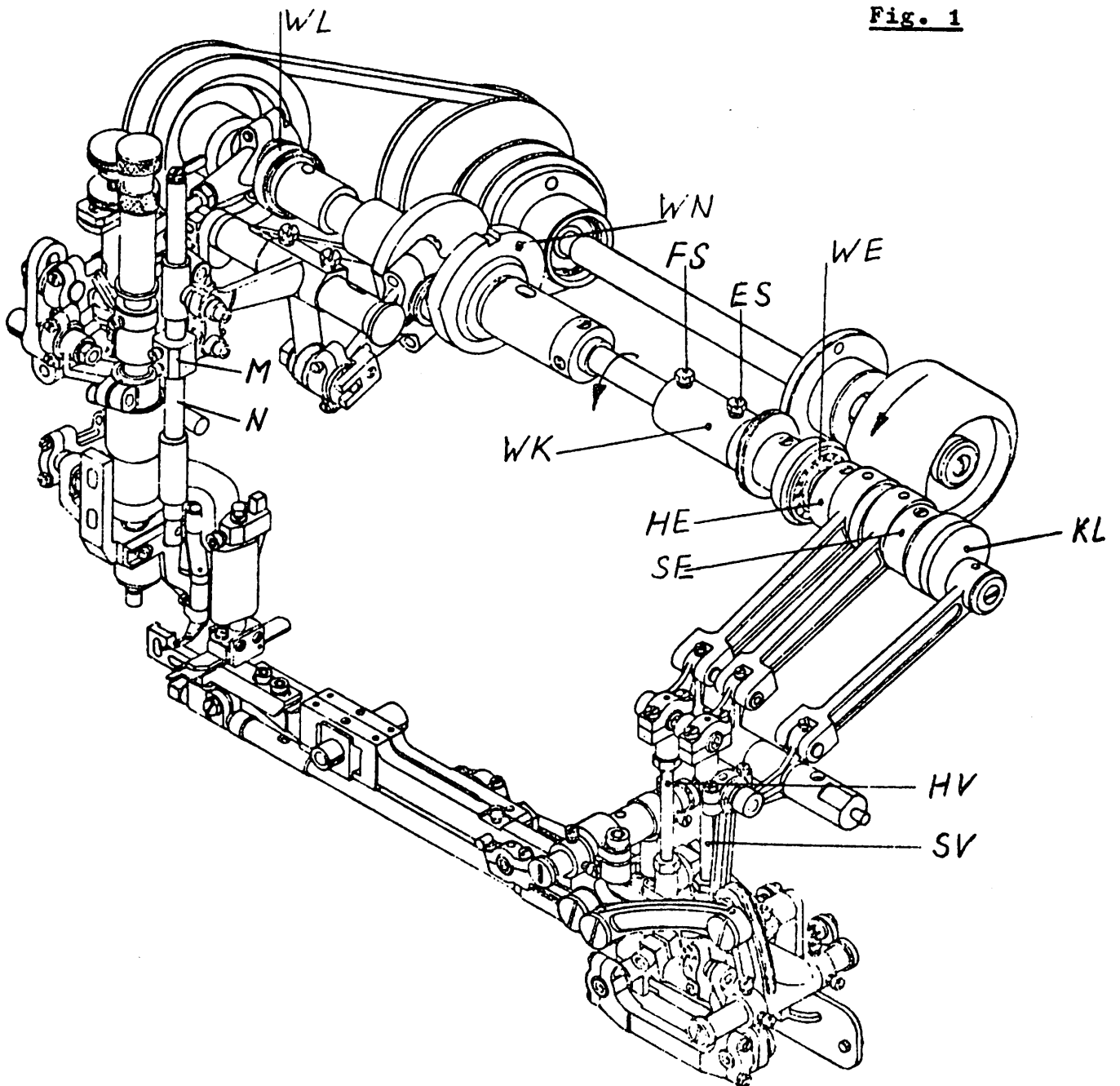
\*) for machines with 29.5 mm needle bar stroke

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Exposed view of the entire mechanical assembly  
of a Series 40 MAUSER LOCK machine

Fig. 1



1. The necessary needle system:

My 1014 B for machine class 41-46411-01

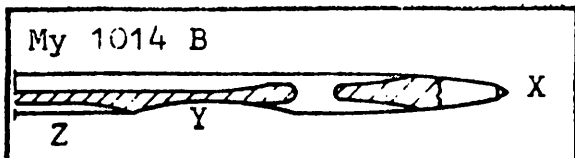
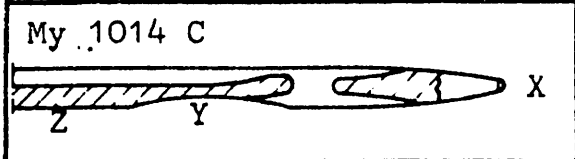
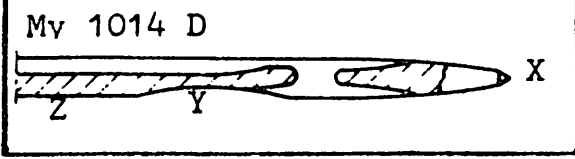
" 47-45410-01

My 1014 C for machine class 41-46411-15, -14

" 41-46401-21, -22, -23, -24, -25

My 1014 D for machine class 41-46411-11, -12

The needle systems listed above correspond to a special round shank design with a shank diameter of 1.5 mm.

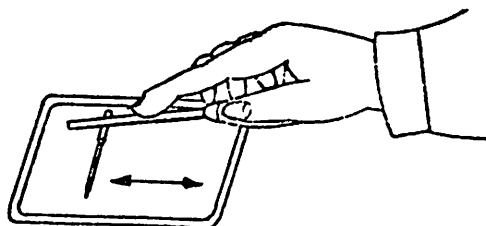
Needle system	Characteristics of the needle system
	X = Normal round point
	Y = With groove
	Z = With thread channel in the rear of the needle
	X = Medium ball point
	Y = With groove
	Z = Without thread channel in the rear of the needle
	X = Normal round point
	Y = With groove
	Z = Without thread channel in the rear of the needle

Use of the needle systems:

Needle system	Used for:
My 1014 B	Knitted fabrics in general
My 1014 C	Thread in cotton or similar in the needles
My 1014 D	Ladie's tights, foundation garments with elastomer
	Thread in Helanca or similar in the needles

### 3. Needle check

Only new needles must be used for setting up the machine. To avoid all risks, the needles must be checked for straight running before use by rolling them on a flat surface (fig. 3).



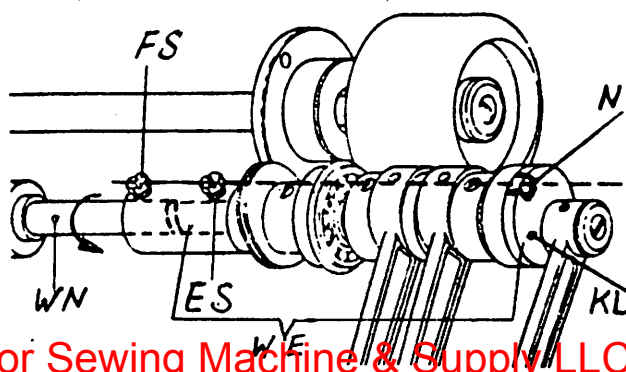
### 4. Temporary synchronization of needle and longitudinal hook movement

The mechanism for the feeder and longitudinal hook movement situated in the support arm of the machine is controlled by the drive shaft "WE", which is adjustably connected to the needle drive shaft "WN" by means of the shaft coupling "WK" (fig. 1).

The crank "KL" (for the drive of the longitudinal hook movement) is firmly connected to the drive shaft "WE" (fig. 1).

The synchronization of the needle and longitudinal hook movement can therefore only be set at the shaft coupling! The basic adjustment of a, for example, completely unadjusted machine starts first with the temporary synchronization of the needle movement with the longitudinal hook movement.

Fig. 4





Setting:

Release pair of screws "ES". Align the groove "N" with the fixing screw "FS" by a corresponding rotation of the shaft "WE" (fig. 4).

Note:

The fixing screw "FS" (1st screw in the direction of rotation) is located on a surface of the shaft "WN" (fig. 4). Final setting: (see Point 11).

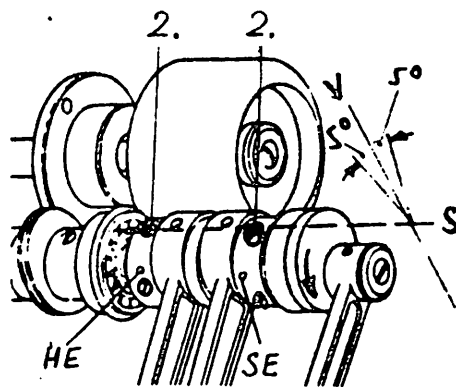
5. Temporary setting of feeder and transverse hook movement

Fig. 5

The stroke cam "HE" (for the feeder movement "Raising and lowering") and the feed cam "SE" (for the forward feed and transverse hook movement) must also be temporarily synchronized with the needle movement.

Setting:

At the t.d.c. of the needle bar the second fixing screw of the stroke cam "HE" must be located at about  $5^{\circ}$  in front of the peak "S" or the vertical line "V". On the other hand, the second fixing screw of the feed cam "SE" must have passed the peak by about  $5^{\circ}$  (fig. 5). If required, the cams must be set accordingly.



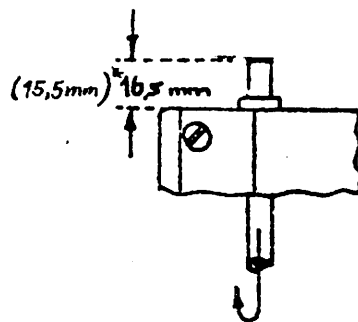
6. Temporary setting of the needle bar height

Fig. 6

To facilitate the further setting of the machine, the needle bar is set to its approximate height at the very beginning.

The attachment of the needle bar is released when the latter is in the b.d.c. position and the measurement of 16.5 mm is set (fig. 6).  $\uparrow (15.5 \text{ mm})^*$

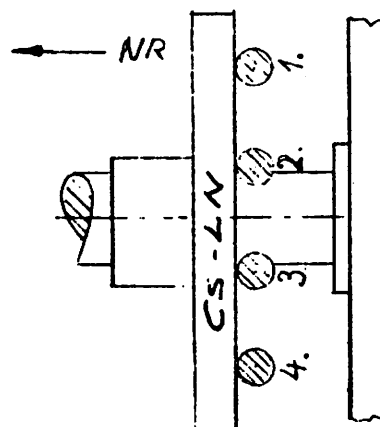
Final setting: (see Point 12).



7. Radial adjustment of the needle bar

To do this, proceed as follows:

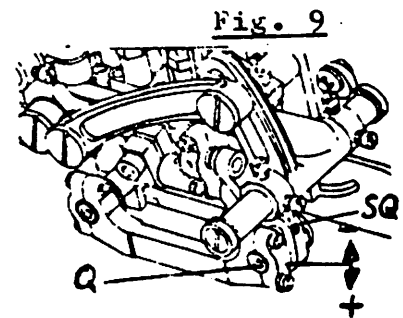
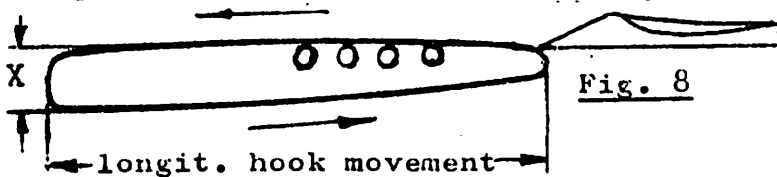
- a) Take off support arm extension (end cap).
- b) Check fixing screw of the needle holder to make sure it is firm.
- c) Push needles up to the stop into the bores of the needle holder, the long thread channel always having to point towards the operator.
- d) Push the setting gauge "CS-LN" onto the hook axle and bring all the needles into contact with the gauge by rotating the needle bar (fig. 7).



## 8. Setting the stroke of the hook deflection movement

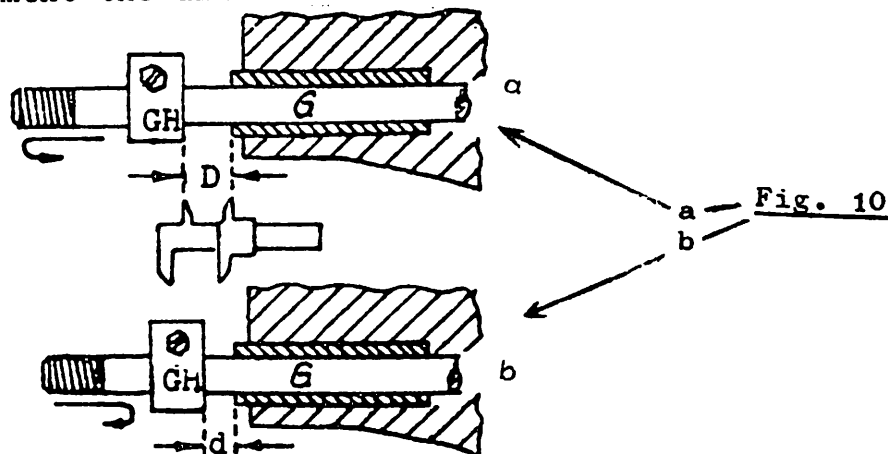
The hook passes around the needles in an elliptical path which is brought about by the longitudinal hook movement (crank "KL") and the hook deflection movement (cam "ES") (fig. 1). Whereas the longitudinal hook movement (length of the ellipse) is determined in the supplier's works, the deflection movement of the hook (width of the ellipse) must be set to a value "X" of:

1.8 mm for machines with Helanca threads in the needles or  
2.0 mm for machines with cotton threads in the needles  
 (fig. 8).



### Setting:

The stroke "X" is set by regulating the ball joint "Q" on the segment lever "SQ". If the ball joint is adjusted upwards, the dimension "X" decreases, with downward adjustment the dimension "X" increases (fig. 9).



Measure dimension "X" as follows:

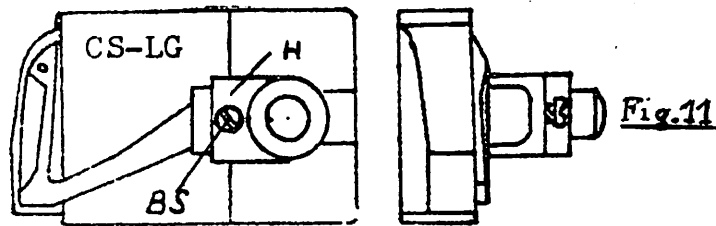
Mount hook holder "GH" temporarily onto the hook shaft "G".

At the front d.c. position of the hook shaft measure the distance "D" between the hook holder "GH" and the bearing bush (fig. 10a).

At the opposite d.c. position of the hook shaft measure the distance "d". The difference of the measured values "D" and "d" provides the dimension "X" if the ball joint "Q" has been correctly adjusted.

9. Setting the hook inclination with the "CS-LG" gauge

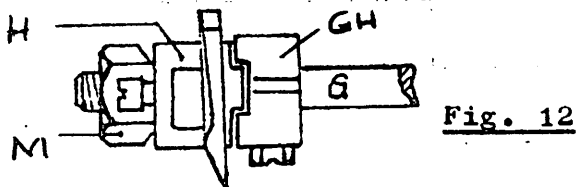
Insert the hook into the hook lever "H" and push "H" onto the pin of the hook inclination gauge "CS-LG". Apply the hook blade parallel against the gauge and tighten the hook fixing screw "BS". Check again, to ensure that the hook blade is parallel to the gauge (fig. 11).



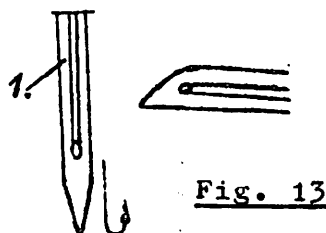
10. Setting the hook spacing

To do this, proceed as follows:

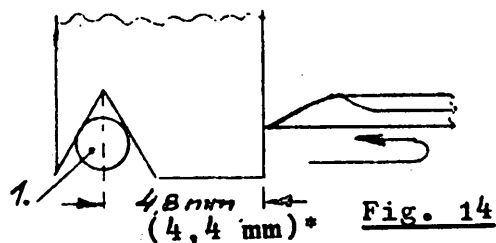
- a) Push the hook holder "GH" and the hook lever "H" onto the hook shaft "G". Engage "H" in "GH" and apply nut "M". Tighten the clamping screw "K" until the combination of "H" and "GH" can still be moved by hand (fig. 12).



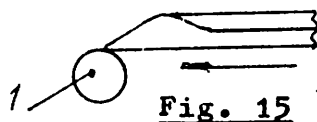
- b) Turn the machine balance wheel in the direction of feed until the hook has reached its initial position (dead centre) (fig. 13).



- c) The distance between the centre of the first needle and the tip of the hook represents the hook spacing.



The hook spacing gauge (4.8 mm)  $\sqrt{(4,4\text{mm})^*}$  is applied to the first needle. By shifting the combination of "H" and "GH", the hook tip is brought into contact with the gauge (fig. 14). This adjustment incorporates the axial setting of the hook tip to the rear of the first needle.

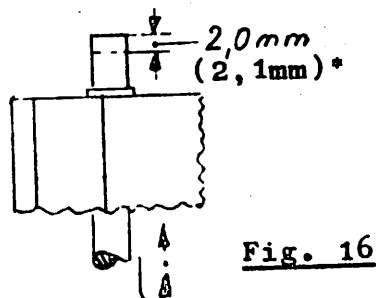


When the hook passes behind the needles, the first needle must be lightly touched by the tip of the hook, without causing any deflection of the needle! (fig. 15).

# 11. Final synchronization of needle and longitudinal hook movement

To do this, proceed as follows:

- a) Lift the needle bar by 2.0 mm  $\sqrt{(2,1\text{mm})^*}$  from its d.c. position by turning the balance wheel (fig. 16).



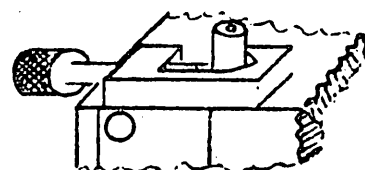
Measure this with a vernier.

The needle bar position obtained must be fixed (fig. 18) with a clamp (fig. 17).

Fig. 17

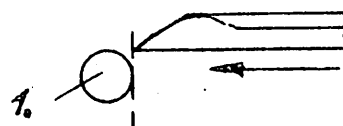


Fig. 18



At the position of the needle bar indicated before, the tip of the hook must have reached the first needle (fig. 19).

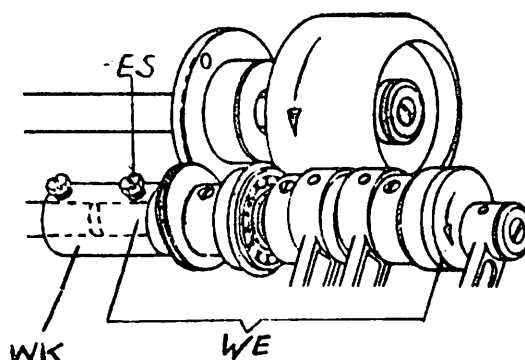
Fig. 19



- b) The timing of the longitudinal hook movement is in principle set by a radial adjustment of the drive shaft "WE" (fig. 1).

Release the screws "ES" at the shaft coupling "WK". By rotation of the shaft "WE" in the feed direction the hook, for example, will reach the first needle earlier, if set in the opposite direction the hook will reach the first needle later! (fig. 20).

Fig. 20



## 12. Final setting of the needle bar height

Move the hook up to the left-hand edge of the fourth needle by turning the balance wheel in the feed direction (fig. 21). The distance between the upper edge of the needle eye and the lower edge of the hook blade must be 1.2 mm (fig. 21).  $\sqrt{(1,0mm)} \times$

The distance must be determined by estimating. To simplify this, one uses the needle diameter as a reference or comparative dimension.

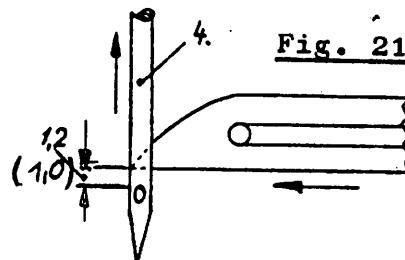
Example:

$1.5 \sqrt{(1,25)} \times$  the needle diameter of 0.8 mm = 1.2 mm distance.

The height of the needle bar "N" can be adjusted after releasing the fixing screws on the driver "M" (fig. 1).

Note:

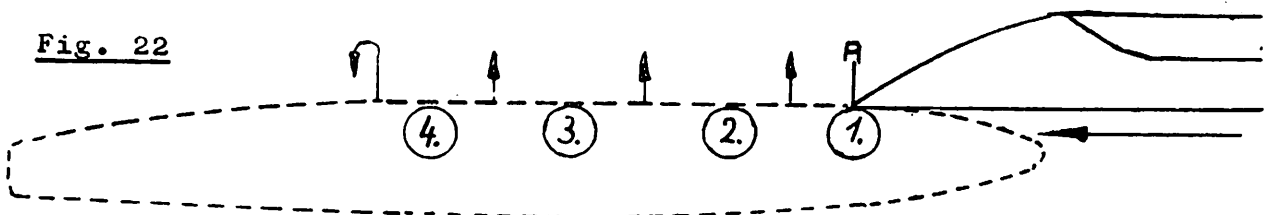
The setting of the needle bar height must be carried out with care, so that the direction of the needle bar adjusted under Point 7 is maintained!



## 13. Final setting of the hook deflection movement

The hook runs through an elliptical path around the needles. The feed cam "SE" on the drive shaft "WE" (fig. 5) produces the deflection movement of the hook and determines the direction of the hook movement with its radial position.

Fig. 22



If the feed cam "SE" has been correctly set, the drift of the hook track up to the reversing point (d.c.) of the hook deflection stroke must be 0.15mm when the hook tip passes behind the needles (starting from position "A") (fig. 22).

The moment of reversal of the hook deflection stroke must be set as follows:

- a) Turn the balance wheel in the feed direction until the tip of the hook has reached the first needle (fig. 23).

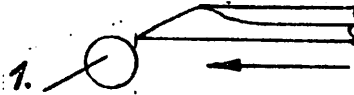


Fig. 23

Now measure the distance "d" between the hook holder "GH" and the bearing bush (fig. 24a).

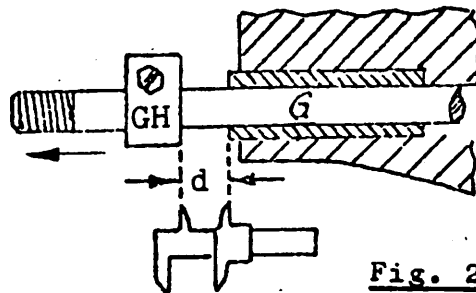


Fig. 24a

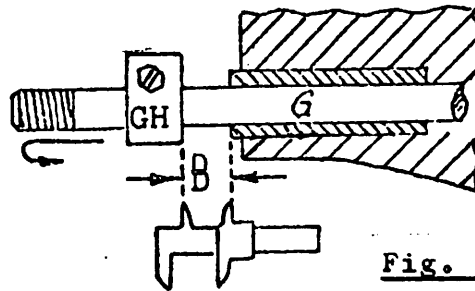


Fig. 24b

- b) Continue to turn the balance wheel in the feed direction until the hook shaft "G" has reached its front reversing point (d.c.). Now measure the distance "D", which must be 0.15mm more than the distance "d" (fig. 24b).

Note:

With the adjustment described above, the timing of the feeder motion has been set at the same time!

- c) Check the position of the hook tip in relation to the first needle acc. to fig. 15 and correct if necessary.

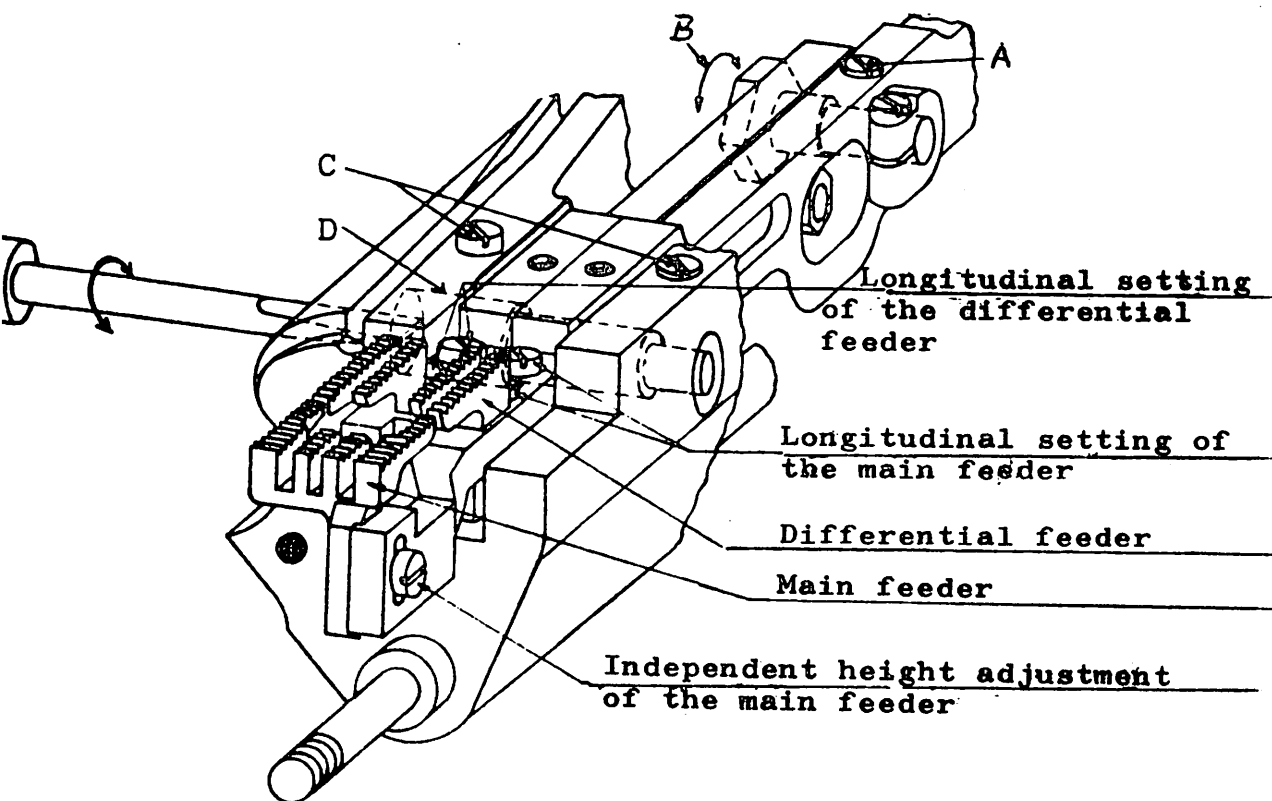


14. Alignment of main and differential feeder

To do this, proceed as follows:

- a) Attach the support arm extension (end cap) and fix feeders. Position needle plate and fix.
- b) Align the differential feeder horizontally to the main feeder. Release screw "A" and turn eccentric bolt "B" accordingly (fig. 25).
- c) The height adjustment of the differential feeder is carried out on the eccentric bolt "D" (release screws "C" first). The main feeder can be adjusted independently. The feeders should at the highest position project by a complete tooth height out of the needle plate (fig. 25).

Fig. 25



15. Final setting of the "raising and lowering" feeder movement

The "raising and lowering" feeder movements are produced by the feed cam "HE" (fig. 26).

At the correct setting of the feed cam "HE", the eye of the rising second needle becomes visible at the top edge of the needle plate when the rising feeders have also reached the top edge of the needle plate (fig. 27a). Alternatively, the same situation must occur when the needle descends.

Note:

If the feed cam "HE" is adjusted in the direction of movement, the feeders will lift earlier, if adjusted in the opposite direction, they will lift later.

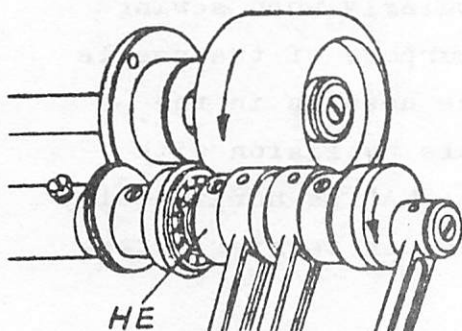


Fig. 26

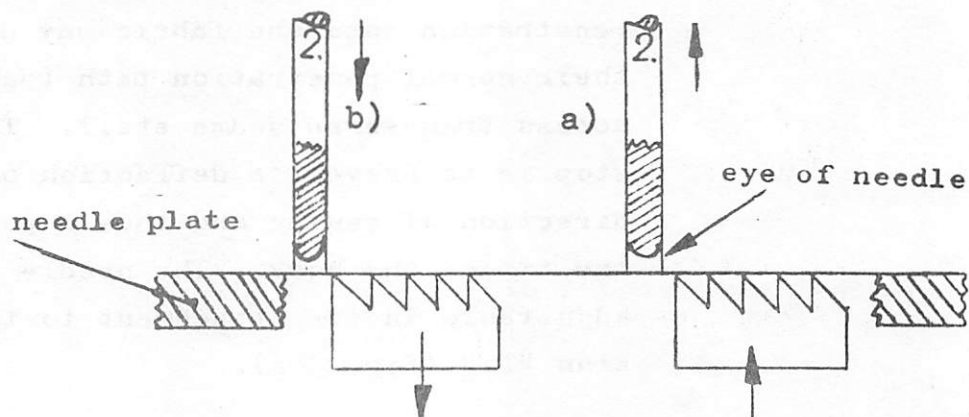


Fig. 27

16. Stitch length and differential regulation

- a) The stitch length is regulated by a corresponding adjustment of the feeder movement connection "TS" at the rocker arm "TK" (fig. 28). Depending on the material being sewn, the usual stitch length varies between about 5 to 6 stitches per 10 mm seam length.

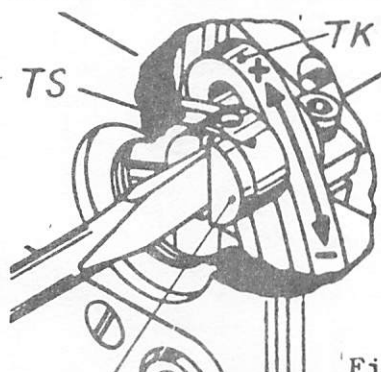
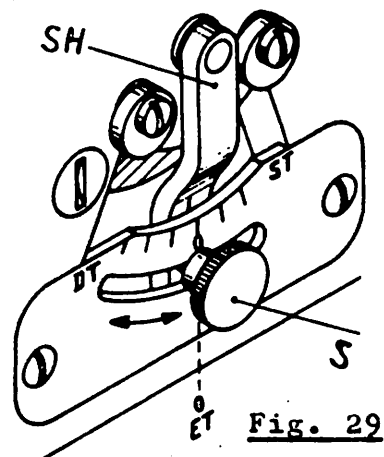


Fig. 28

- b) The quick-action scale adjustment for ordinary, differential and stretch feed is situated at the inside of the support arm. The required type of feed can be selected by releasing the safety locking arrangement "S" and adjusting the control lever "SH" (fig. 29).



Waviness of the sewn material is counteracted by a corresponding selection of the differential feed "DT".

Gathering (in the case of extremely fine fabric) is avoided by selecting the stretch feed "ST".

The neutral position of the control lever represents the ordinary feed mode (fig. 29).

#### 17. Setting the needle stop

Penetration into the fabric may deflect the needles from their normal penetration path (particularly when sewing across transverse seams etc.). The purpose of the needle stop is to prevent a deflection of the needles in the direction of sewing and thus a possible collision with the tip of the hook. The needle stop "NA" is horizontally adjustable in its attachment to the feeder carrier extension "TV" (fig. 30a).

##### Setting:

During the return movement of the feeders, the needle stop swings towards the needles. At the reversing point (d.c.) of the stop, the latter must be at a distance of about 0.1 mm from the needles. The needles must under no circumstances be pushed aside by the needle stop, so that the tip of the hook always passes closely behind the first needle (fig. 30b).

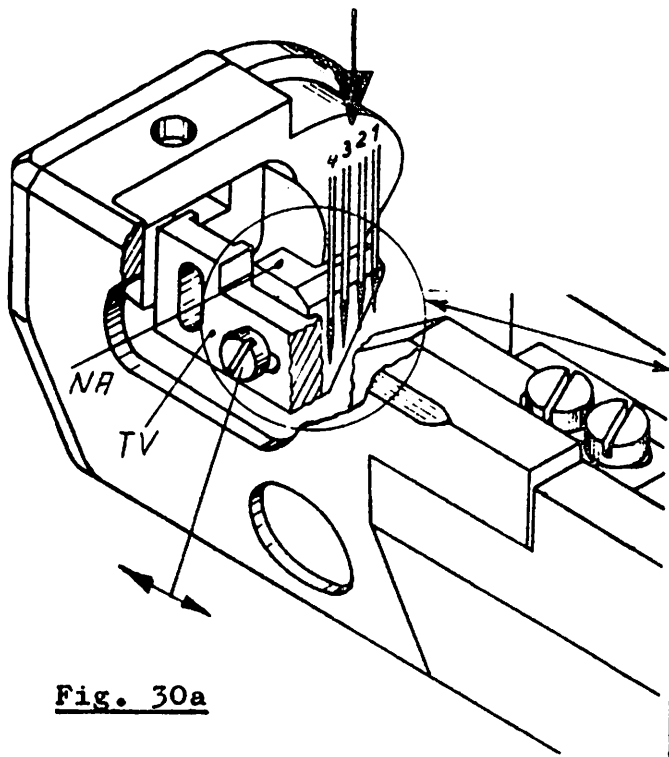
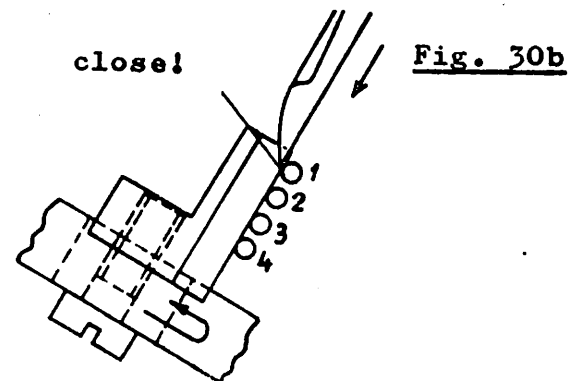


Fig. 30a



Note:

Adjustment of the stitch length does not change the position of the needle stop in relation to the needles!

### 18. Setting the take-up lever movement

The take-up lever movement is produced by the crankshaft "KL", which is adjustably connected to the needle drive shaft "WN" at the connection point "SY". The synchronism of the needle and the take-up lever movements can therefore only be adjusted at the connection "SY" (fig. 31).

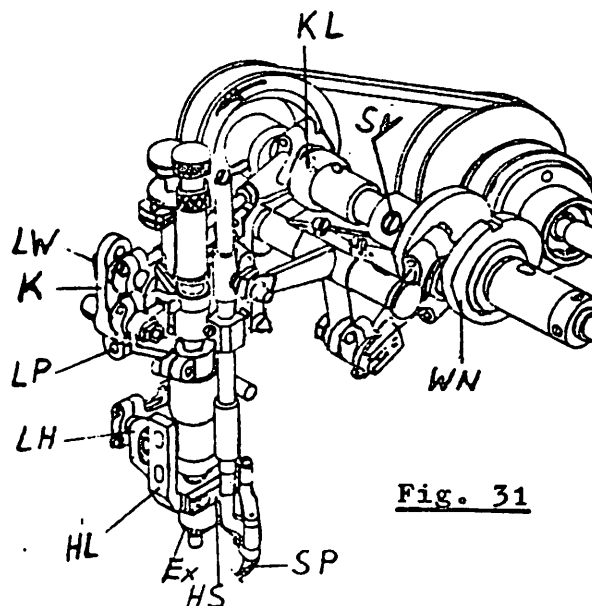


Fig. 31

Description of the components:

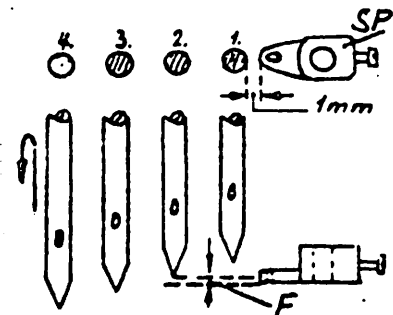
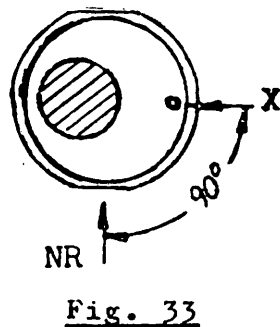
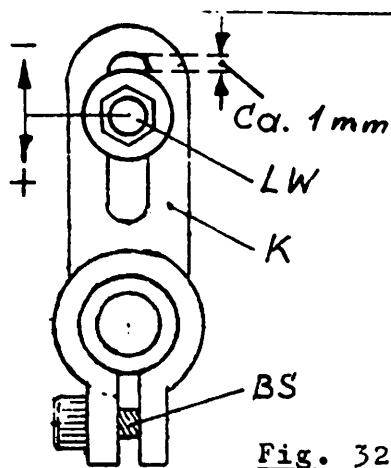
- K = Rocker arm for adjusting the length of the take-up lever path.
- LW = Ball joint adjustably arranged on the rocker arm to adjust the length of the take-up lever path.
- LP = Claw element for adjusting the take-up lever movement position.
- HL = Vertically adjustable holder for movable thread guide "SP"
- EX = Cam for setting the direction of the take-up lever path.
- HS = Support for the horizontal setting of the movable thread guide "SP"

When setting the take-up lever motion, proceed as follows:

- a) Set the length of the take-up lever movement at the rocker arm "K" as shown in fig. 32.

Note:

If the ball joint "LW" is adjusted upwards, the lever movement is reduced. When adjusted downwards, it is increased.



- b) Set eccentric bush "EX" as shown in fig. 33. The highest point "X" of the eccentric motion in this case varies by 90° from the direction of sewing "NR" (see also fig. 31).

c) Set the movable thread guide.

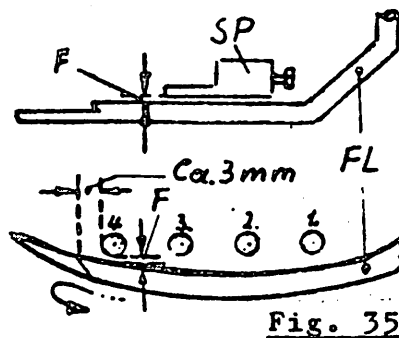
\*Set distance of 1 mm between the first needle and the movable thread guide "SP" by horizontal displacement of the support "HS" (figs. 34 and 31).

\*The height of the movable thread guide "SP" is set by a vertical displacement of the support "HL" (fig. 31). The lower edge of "SP" must be lower than the point of the second needle (at the latter's t.d.c.) by about the thread thickness "F", so that the cover thread can slide freely between the second and the third needle (fig. 34).

d) Setting the take-up lever

Place the take-up lever into its support and adjust it vertically to thread thickness "F" in relation to the movable thread guide "SP" (fig. 35).

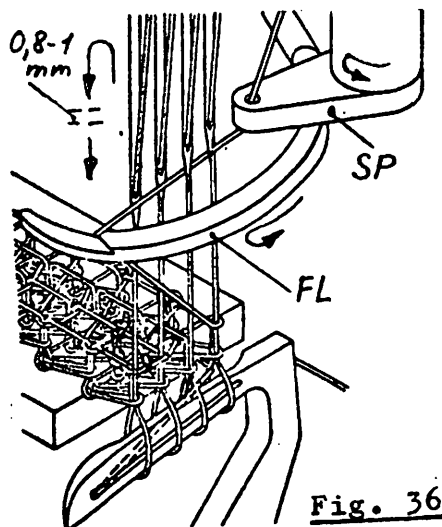
Release screw "BS" on the rocker arm "K" (see fig. 32) and, by swivelling the lever (the take-up lever must have reached its left-hand d.c. position), set the spacing of about 3 mm between the tip of the hook and the fourth needle (figs. 31 and 35). At the same time, a thread-thickness distance to the fourth needle must be set by rotating the take-up lever (fig. 35).



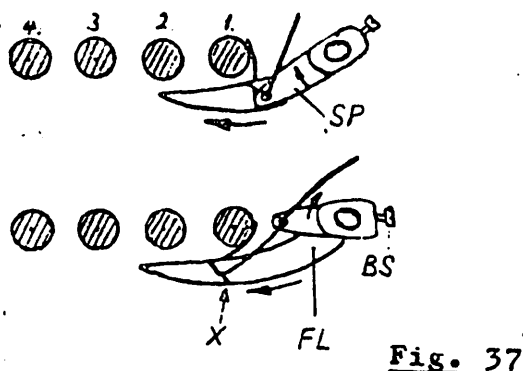
- e) Set the moment of the take-up lever movement. The crankshaft "KL" (for the drive of the take-up lever movement) is, as already described, connected to the needle drive shaft "WN" at the joint "SY" in a way which makes this connection adjustable (fig. 31).



At the rear of the machine body take off the round cover plate (for presser foot lifting linkage) and release both fixing screws of the shaft connection "SY" with a 7 mm hex. box spanner. If the shafts "KL" and "WN" have been correctly adjusted in relation to each other, the take-up lever commences its return movement after the needle bar has already descended by about 0.8 to 1.0 mm from its t.d.c. position (fig. 36).



- f) Carry out the radial setting of the movable thread guide "SP". The task of the movable thread guide is on the one hand to place the cover thread onto the hook of the take-up lever and on the other hand to position the cover thread behind the first and the second needle (figs. 36 and 37).



The pendulum movement of the thread guide "SP" is fixed by the design, but its radial amplitude must be adjusted. The cover thread from the movable thread guide "SP" must be placed onto the take-up lever "FL" running to the left, until near the edge "X". The adjustment is carried out at the screw "BS" (fig. 37).

### 19 Setting the looper thread puller

The purpose of the looper thread puller is to control the quantity of the moved looper thread at each phase of the looper (or sewing hook) movement. Unchecked release of thread and consequent inadequate stitch formation are avoided by accurate adjustment.

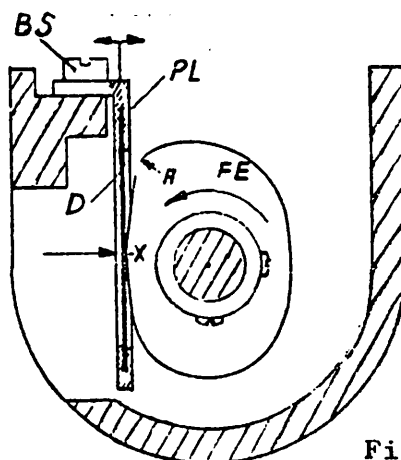


Fig. 38

#### Setting:

- a) Turn the balance wheel in the forward direction until the edge marked "X" of the thread pick-up cam "FE" assumes the position shown in fig. 38a. Release the fixing screws "BS" and move the horizontally adjustable thread pick-up plate "PL" towards the cam "FE" until the wiper wire "D" forms a tangent of the edge "X" (fig. 38).
- b) For the radial adjustment of the thread pick-up cam first turn the balance wheel in the forward direction until the point of the descending fourth needle reaches the plane "Y" of the sewing hook eye (fig. 39 = illustration of the rear of the hook). The thread pick-up cam must now shed the looper thread "G" at the peak of its release edge "A" (fig. 40). The radial adjustment is fixed with the screws "S", taking care that the looper thread can slide freely sideways between the cam "FE" and the pick-up plate "PL" or the presser spring.

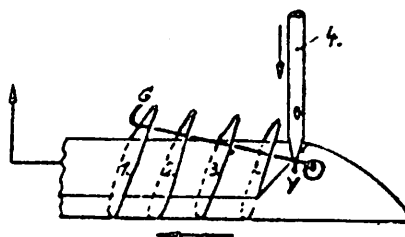


Fig. 39



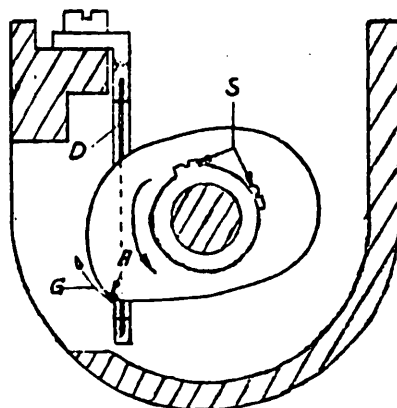
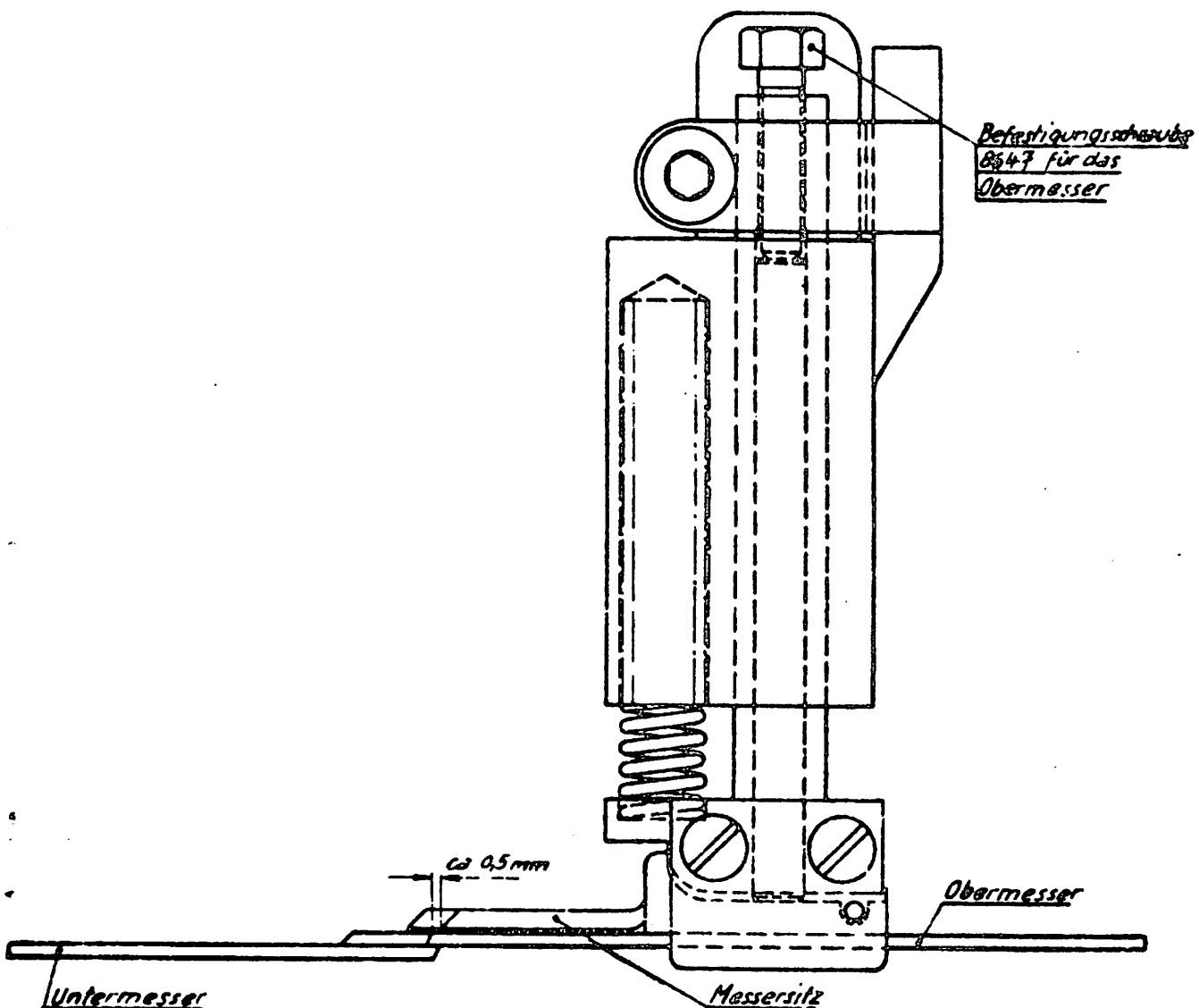


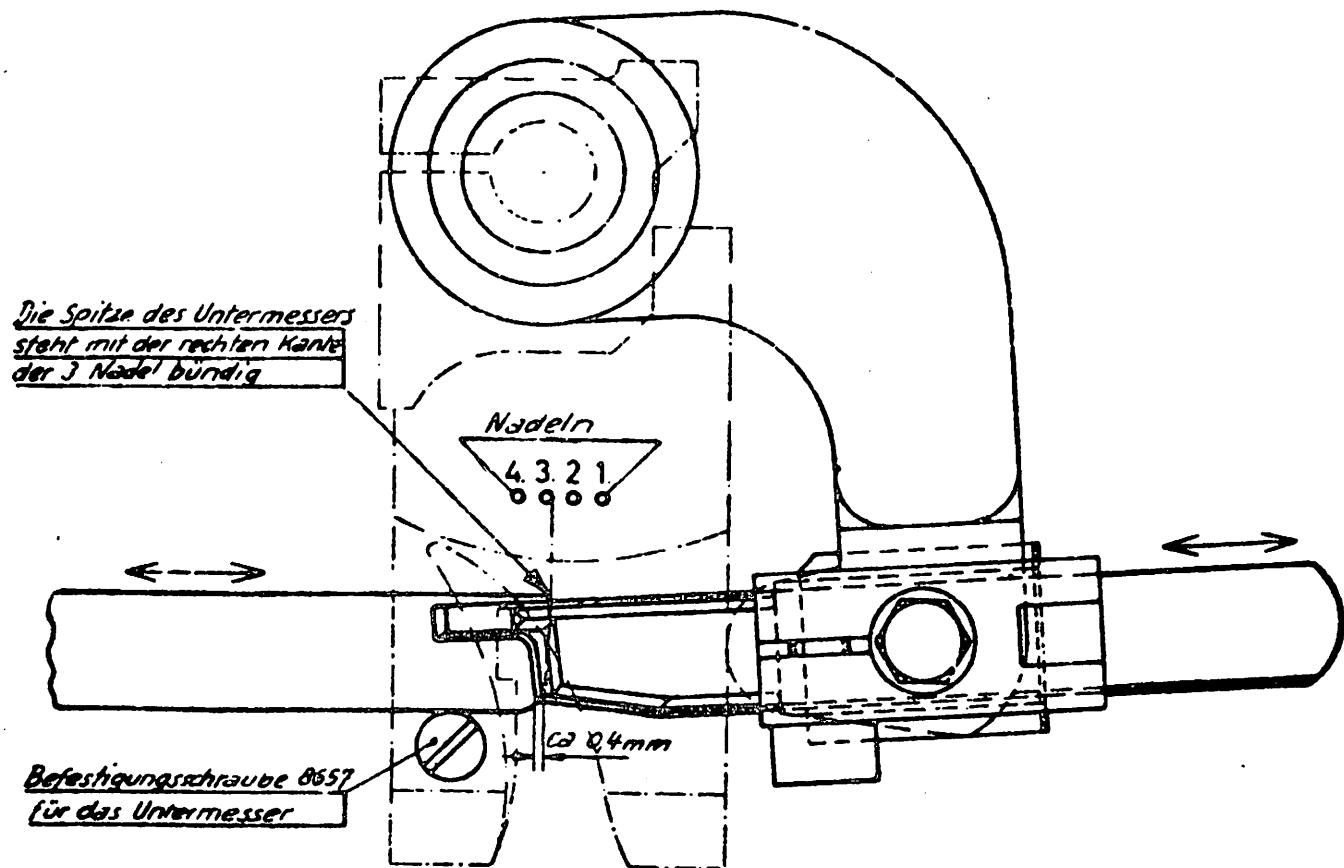
Fig. 40

20. Fitting and setting the trimmer blades

1. Lower (fixed) blade. The lower blade is fixed in the presser foot. If the blade has to be sharpened, the machine screw 8657 must be released. The blade is now pulled out of the presser foot and must be ground to our trimmer grinding template, since a neat and reliable cut can otherwise not be guaranteed. After grinding, the blade is pushed into the presser foot, the tip of the blade being flush with the right-hand edge of the 3rd needle. After this adjustment has been completed, the machine screw 8657 must be tightened again (see illustration).
2. Upper (moving) blades. The upper blade is fixed in the trimmer shaft. If the blade has to be sharpened, the hex. screw 8647 situated in the top of the trimmer shaft must be released. The blade is now pulled out of the trimmer support and must be ground with our trimmer grinding template. After grinding, the blade is pushed into the trimmer support until the distance from the lower edge of the blade seat to the upper edge of the blade is about 0.5 mm. The blade lever is now brought into the extreme left-hand position by rotation of the balance wheel until the upper blade overlaps the lower blade by about 0.4 mm. After this adjustment has been made, the hex. screw 8647 must be tightened again. The relative position of the trimming blades is now correct (see illustration).

Befestigungsschraube 8647 für das Obermesser	=	Fixing screw 8647 for the upper blade
Obermesser	=	upper blade
Untermesser	=	lower blade
Messersitz	=	blade seat
ca. 0,5 mm	=	0.5 mm approx.
Die Spitze .....	=	The tip of the lower blade is now flush with the right-hand edge of the 3rd needle
Nadeln	=	needles
Befestigungsschraube 8657 für das Untermesser	=	Fixing screw 8657 for the lower blade
ca. 0,4 mm	=	0.4 mm approx.





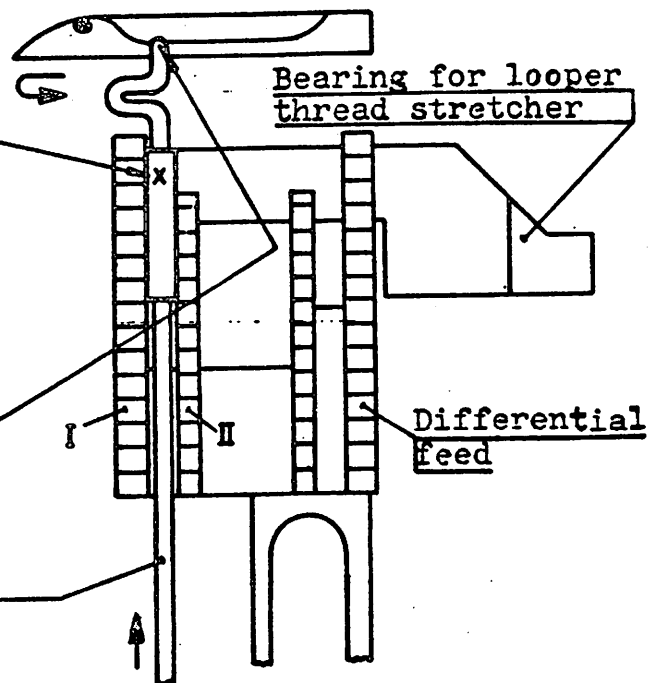
### Adjustment of the looper thread stretcher

1. The stretcher guiding "X" of the bearing is horizontally outcentred between the feeder path I and II.

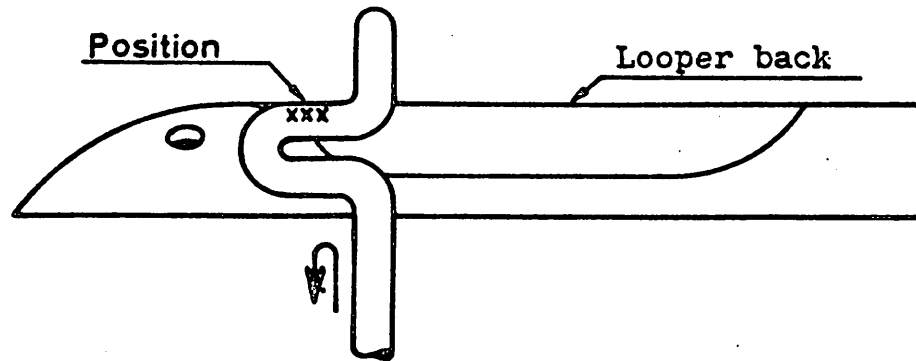
2. Height adjustment of the looper thread stretcher.

The point of the looper thread stretcher must run over the looper back in a distance of 0,1 mm

Looper thread stretcher

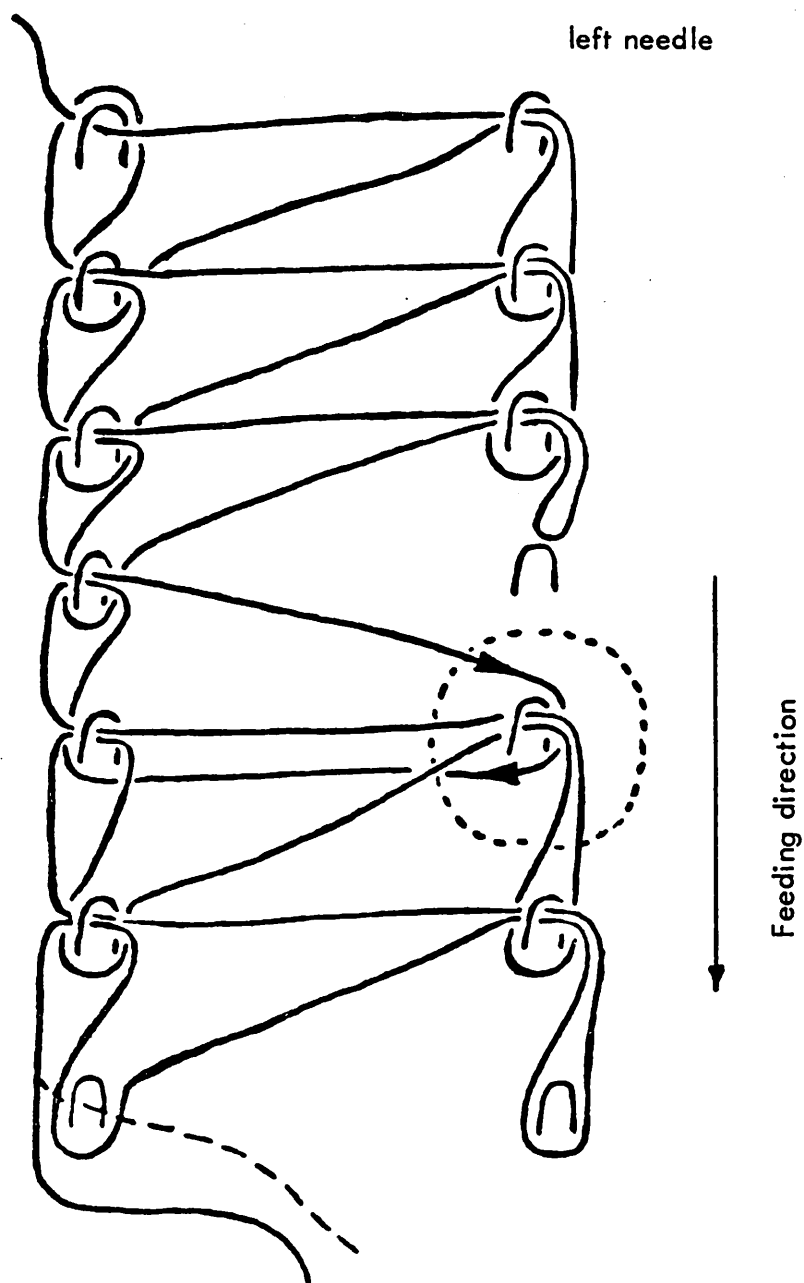


3. Position of the looper thread stretcher at its front dead centre.



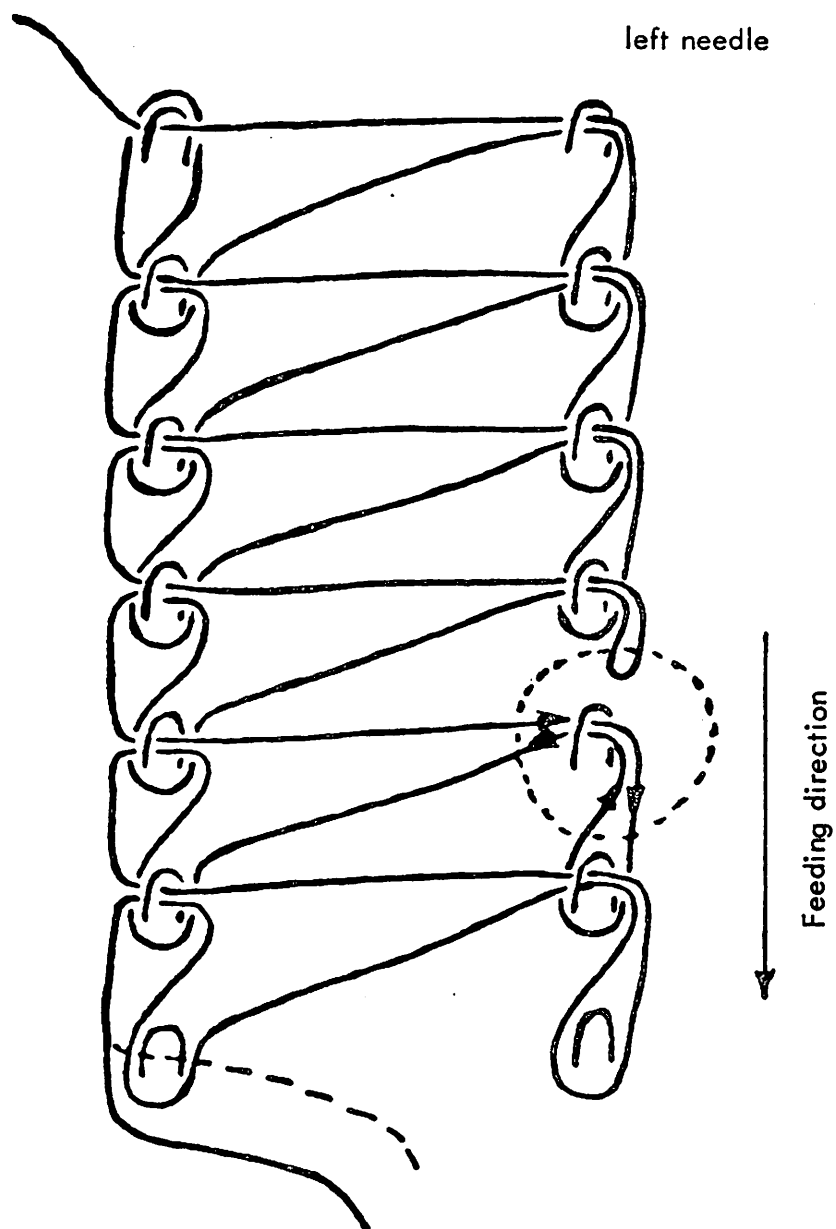
- a) When the looper thread stretcher has reached its front dead centre, the edge marked xxx must lock flush with the back of the looper.
- b) The final position of the looper thread stretcher, however, will only result when sewing. When the looper reaches its starting point (right dead centre), the point of the looper thread stretcher must release the looper thread.
- 4. After an extreme change of the stitch length, the position of the looper thread stretcher must be corrected, because the longitudinal travel of the main feeder carrier determines the longitudinal travel of the looper thread stretcher.
  - a) When the stitch length is reduced, the looper thread will be released too late from the point of the looper thread stretcher.
  - b) When the stitch length is extended, the looper thread will be released too soon from the point of the looper thread stretcher.

Looper pick-up fault



When a looper pick-up fault occurs, the looper thread lays itself around the needle-thread loop.

Needle pick-up fault



When a needle pick-up fault occurs, the looper-thread loop passes through the needle-thread loop.

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