BERNINA

ADJUSTMENT OF BERNINA SEWING MACHINES MODELS 840, 841, 842

FRITZ GEGAUF LTD. BERNINA SEWING MACHINES
STECKBORN TG/Schweiz

Contents

BERNINA favorite model 840 Zig-zag, utility seam and fancy stitch machine, 20 built-in cams and automatic buttenholer.

BERNINA model 841 Zig-zag and utility seam machine with automatic buttenholer.

BERNINA model 842 Zig-zag machine with automatic buttonholer.

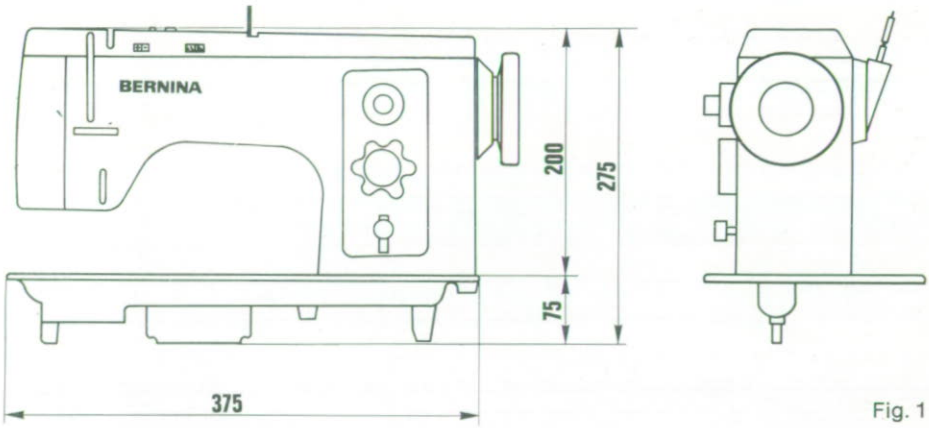


Fig. 1

Max. zig-zag width	4.5 mm
Needle position	left—center—right
Max. forward stitch length	4.5 mm
Max. reverse stitch length	2 mm
Presser foot lift	7.5 mm
Passage space	110 x 200 mm
Size of baseplate	373 x 178 mm
Hook system	non-jamming rotary hook 107 W
Bobbin capacity	75 m cotton yarn
Needle system	130
Needle movement	swinging needle bar
Thread feed	hinged take-up lever
Thread tension	upper thread tensioning incorporated in frame cover
Winder	self-releasing
Sewing lamp (built-in)	15 watts
Number of stitches	1500 stitches/min.
Weight of machine, upper section	approx. 12.25 kg

Sewing-in needle	system 130/705 H — No. 80
Needle displacement:	
with lifting bar suspension	3
needle plate upper edge	4.5
at tip of hook	1.63
Needle bar lift	33.73
Loop lift: left	2.2
Lifting crank radius	17.3
Take-up lever travel	61
Darner lift	2.92
Speed:	
Motor	7500 rpm
Step pulley	2405 rpm
Frame shaft	1137 rpm
Gear ratios:	
Overall	6.6 : 1
Motor: step pulley	3.12 : 1
Step pulley: frame shaft	2.12 : 1
Machine dimensions:	
Overall length	388 mm
Overall width	182 mm
Height over scanner adjusting lever at highest position	315 mm

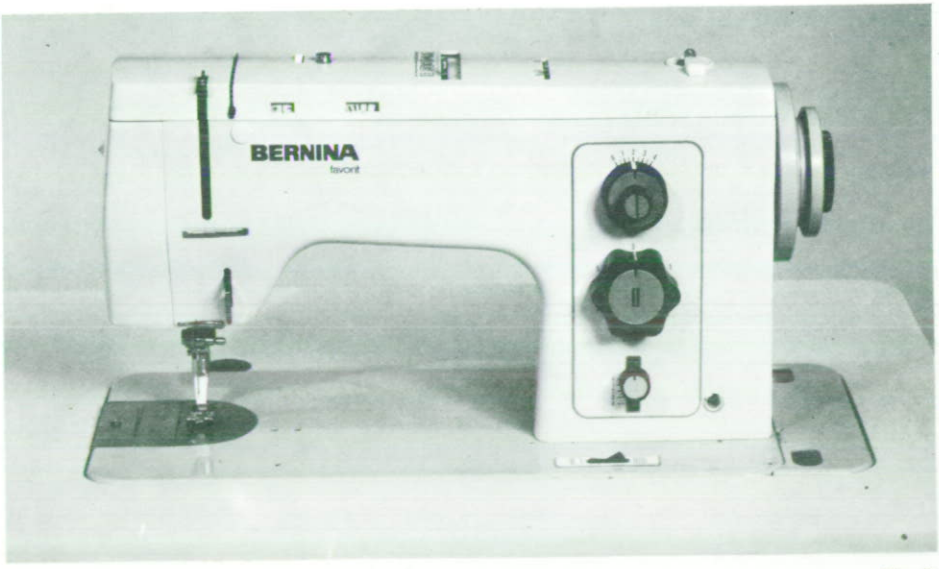


Fig. 2

These instructions are designed to help you carry out minor repairs and adjustments to the BERNINA Model 840 sewing machine.

The booklet lays no claim to completeness. The instructions are not suitable for an overall mechanical assembly or dismantling procedure.

IMPORTANT: To enable the following points to be performed correctly, the sewing machine must be in **good mechanical condition** (running smoothly, properly oiled, etc.) If the sequence of adjustments is observed the machine will operate fully satisfactorily.

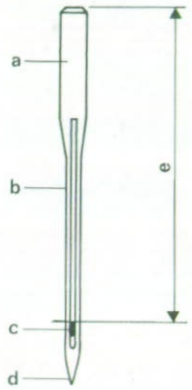


Fig. 3

The needle

The needle is one of the most important sewing items. It has the task of piercing the work and of taking the upper thread to the hook for linking with the lower thread and of forming the loop for acceptance by the hook.

The loop is formed after the needle has pierced the work and has reached its lowest point. The thread is drawn tight and lies in the long groove at the front. At the rear it lies in the short groove and higher up between the needle stem and the hole pierced in the fabric. If the needle rises slightly, the so-called loop-lift, a loop is produced at the eye of the needle on the short groove side which the tip of the shuttle can enter, as a result of the friction between the work and the needle stem where the thread is retarded.

Besically, the sewing machine needle has the following features:

a) the **plunger** for securing the needle in the needle bar,

b) the **stem** with a short and a long groove for guiding the thread and forming the loop,

c) the **eye of the needle**

d) the **point of the needle**

e) the **needle length.**

IMPORTANT: Always use a needle No. 80 for all adjustments unless otherwise stated. (System 130/705 H).

Check the needle before every adjustment to the machine. It must **always be straight.**

The needle plate

The needle plate is used to take the material to be worked and has a longitudinal slot, the stitch hole, to allow the needle to pass. It is hardened and polished to allow upper and lower threads to slide through smoothly. In addition, it is perforated in the shape of the feed dog which feeds the material.

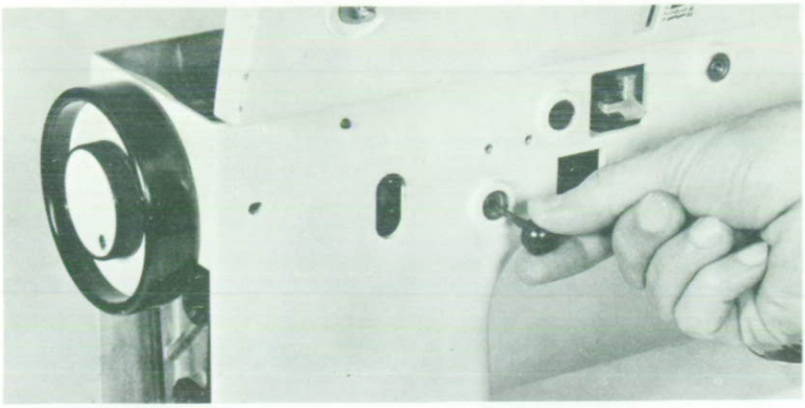


Fig. 4

Adjustment of link and stitch position

L—C—R (left—center—right)

Dismantle rear frame cover with reel holder and twin lever if necessary (from lifter). The front of the link spindle is then accessible.

Place the special tool No. 398 001 04 through the hollow link spindle, while at the same time turning the L—C—R knob backwards and forwards until the conical tip of the tool engages with the hole of the link.

This ensures that the link in its normal position pivots around the center of the link spindle.

The L—C—R knob is fixed at the desired center position (zero position). In this position the black line on the front of the knob must be exactly vertical.

In the event of inaccuracy the socket head screw (9) with locknut should be loosened and the L—C—R knob set to its correct position.

Retighten socket head screw (9) and remove the tool.

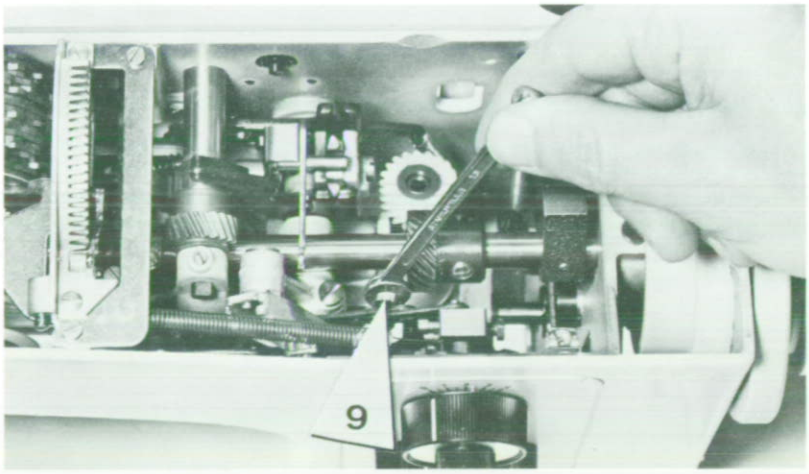


Fig. 5

Rest position of needle

Turn zig-zag knob fully to left — up to stop (position «0») Start machine. The needle swivel support must not make any lateral movement.

It must remain stationary.

If this is not the case, correction is made as follows: screw (10) or (13) with conical locknut (11) in the guide fork (12) is loosened with the aid of special spanner No. 398 035 03 (or with a screwdriver for slotted nuts). Then adjust screw (10) up or down until the swivel support, and therefore the needle, remains absolutely still while the machine is running. Retighten locknut (11).

On later models this adjustment only requires a normal screwdriver since the locknut is replaced by a helical spring under screw (13).

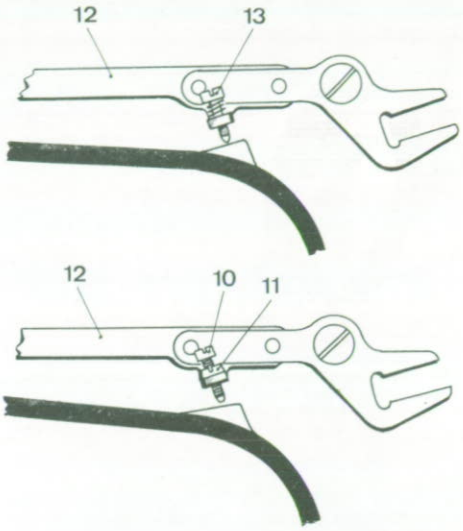


Fig. 6

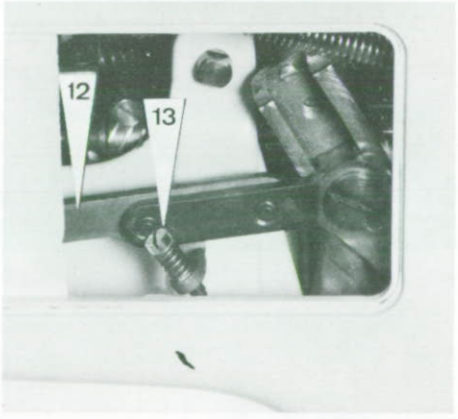


Fig. 7

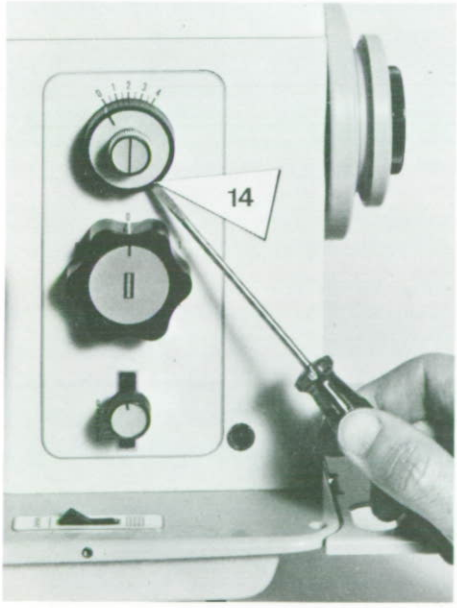


Fig. 8

When the rest position of the needle is corrected, check whether the white marking line of the zig-zag knob coincides with the «0» on the scale.

If not set exactly, loosen screw (14) on the zig-zag knob and set the two marks (knob and scale) in alignment.

Retighten screw (14).

Lateral needle movement, transverse to material direction

The needle must pierce through the center of the stitch hole if the black mark on the LCR head is exactly vertical. This can easily be checked if the needle is observed while turning the LCR knob from the left to the right hand position.

The distance from the edge of the stitch hole must be the same in each case.

If not, it should be corrected as follows:

Loosen screw (15). Place special fork key No. 398 063 03 on the knurled screw head (16). This screw (16) is formed as a small eccentric. By turning slightly to the right or left the lateral position of the needle can then be brought to the desired position. Screw (15) should be retightened folowing this correction.

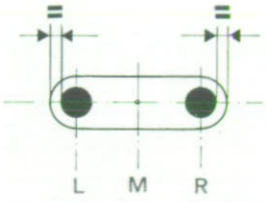


Fig. 9

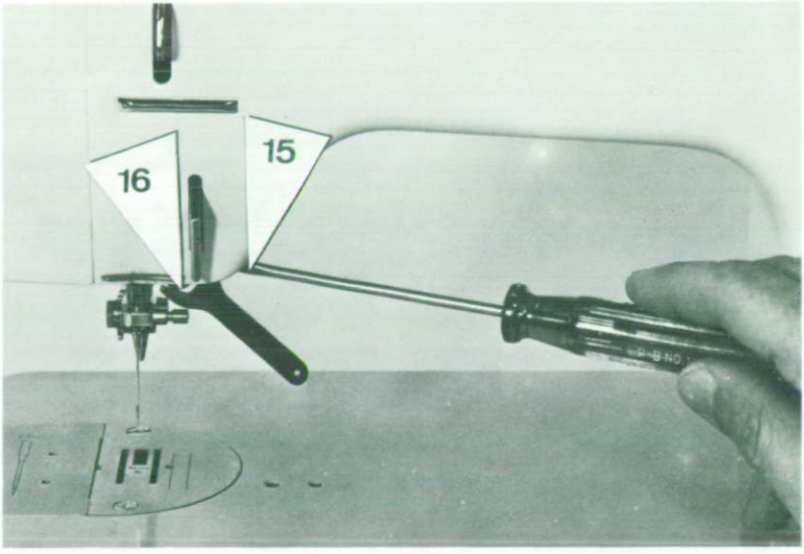


Fig. 10

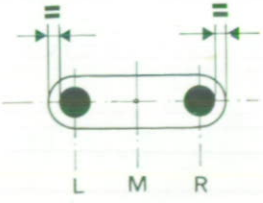


Fig. 11

Stitch position on zig-zag

Set the zig-zag knob to position 4 and observe while turning the handwheel whether the left and right hand penetration is equidistant from the edge of the stitch hole.

If this is not the case, loosen clamping screw (17) of the rocking lever (18) on which the zig-zag link is suspended and set the needle to the correct position.

IMPORTANT: Ensure when moving the rocker lever (18) that no play results between bearing and lever.

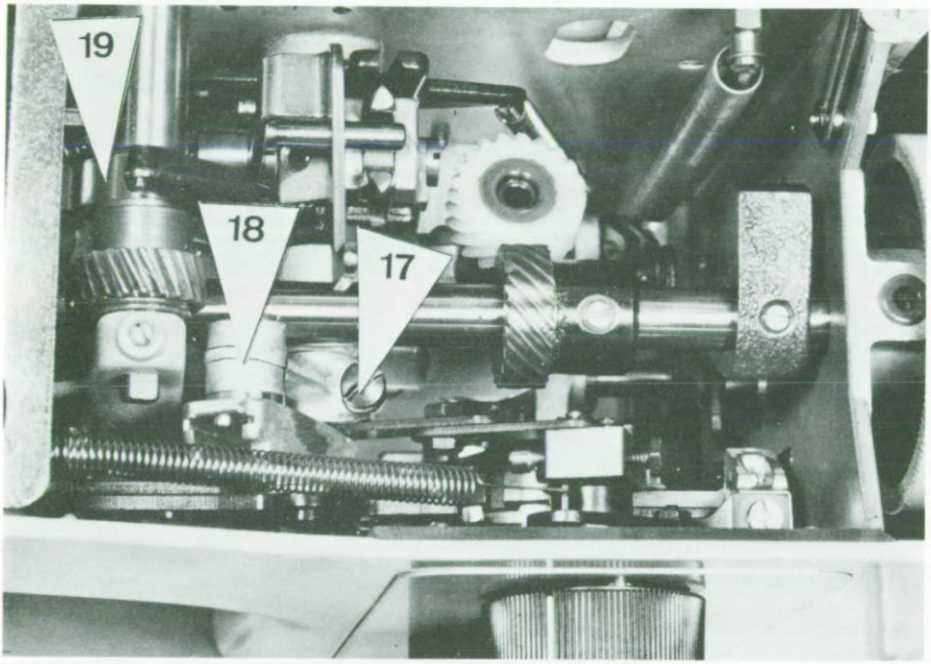


Fig. 12

Lateral motion of needle during zig-zag sewing

The lateral movement of the needle (parabola) must be exactly matched to the up and down motion. It may only begin when the needle has left the work and must cease when the needle pierces the work. The motion is derived from the zig-zag eccentric (19) running at half-speed.

Check:

Set LCR knob to center position.
Set needle to uppermost position by turning handwheel. If the zig-zag knob is then turned backwards and forwards between «0» and «4» **the needle must remain stationary.**

If not, a correction must be made.

Loosen the two screws on worm wheel (20). Then, using the screwdriver, secure the worm wheel (20) which is loose on the spindle while pressing the setting ring (21) and turning the handwheel until the correct setting is found (Fig. 13).

Tighten the two screws on the worm wheel.

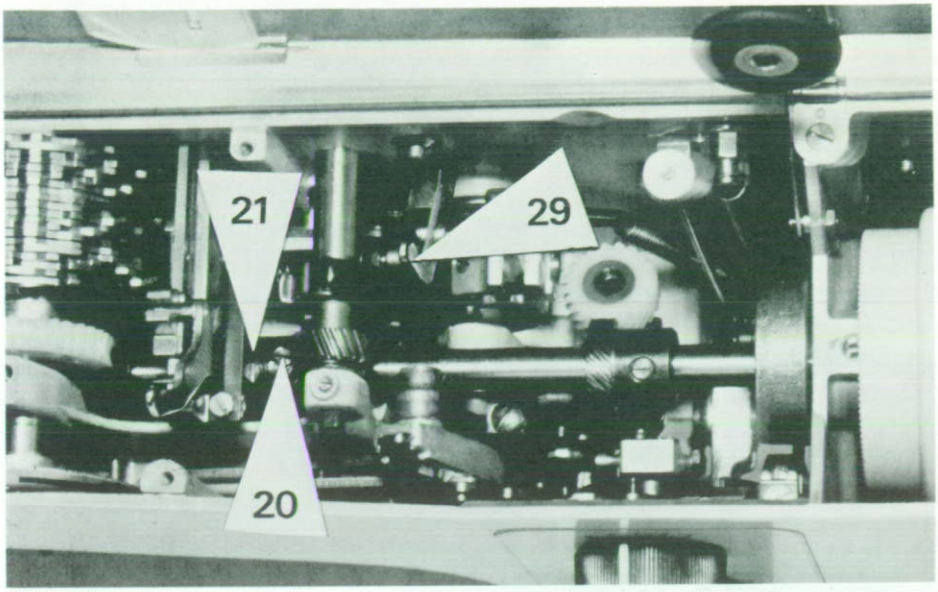


Fig. 13

Stitch distribution in the needle plate with cam control (automatic)

Set fancy stitch coupling lever (29) to the rear — on scale «1—20». The zig-zag or fancy stitch control is then obtained from the cam. To check the stitch distribution use fancy stitch pattern 17 and turn the handwheel until the cam set fixing screw (25) points vertically upwards. The lateral needle displacement is greatest in this position (set zig-zag knob to position 4). The lateral spacing from the stitch hole should then be the same to right and left.

If the stitch distribution has to be corrected the procedure is as follows: dismantle frame cover with reel pins (possibly also the knee lever suspension bearing underneath). The cam control lever is in 2 parts connected by screw (26). Insert special spanner No. 398 067 03 in the existing hole next to the screw (26).

Then loosen screw (26) slightly. By turning the spanner to right or left the correct needle position can be set. Retighten screw (26).

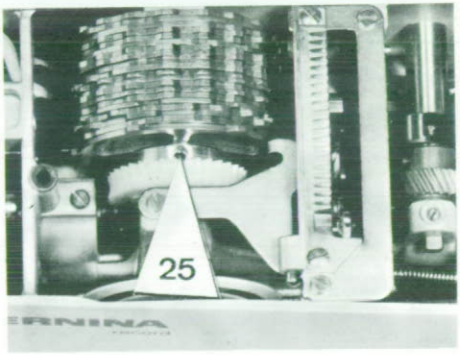


Fig. 14

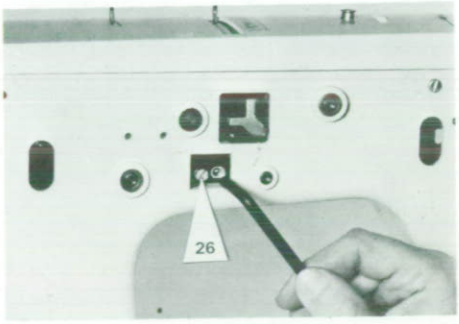


Fig. 15

Lateral motion of needle during fancy stitch sewing (automatic)

When sewing fancy stitch with cams the lateral needle swivel motion (parabola) must be exactly the same as for zig-zag sewing.

Check:

LCR knob in center position, coupling lever (29) to position «1—20», fancy stitch selection lever (31) to symbol 17.

Turn handwheel until screw (25) points vertically upwards and the needle is exactly at the uppermost position.

If then the zig-zag knob is turned to-and-fro between «0» and «4» the **needle must remain stationary.**

If not, it should be corrected as follows: loosen the two screws (27) on the worm wheel. Secure worm wheel with screwdriver and turn handwheel forwards or backwards until the correct setting is found. (possibly several times).

Retighten screw (27).

Ensure that there is no play between worm wheel and setting ring (28).

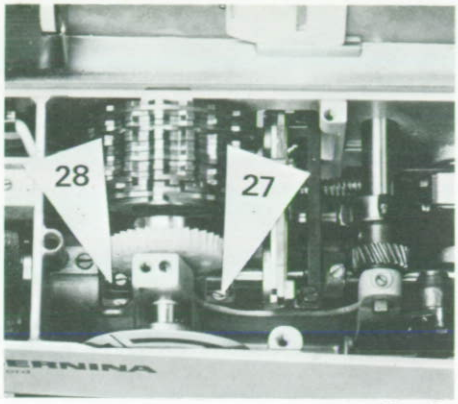


Fig. 16

IMPORTANT: When the drive wheel is turned the ratchet carrier (48) and toggle lever (45) — coupled by ratchet (46) — swing to and fro in synchronism with the zig-zag fork (47). If it happens that the zig-zag fork (47) swings in the opposite direction, the worm wheel (20) must be turned through one complete revolution (360 °). For this purpose loosen the two screws on the worm wheel (20) and check again the correct stitch distribution. Ensure that there is no play between the worm wheel (20) and setting ring (21).

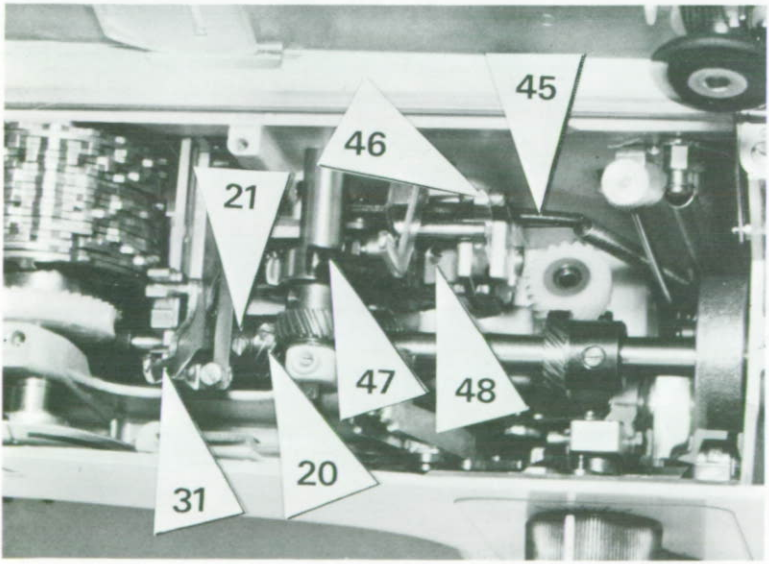


Fig. 17

Setting notched segment

The notched segment (30) is designed to hold the selector lever (31) in the selected position.

The notches must be set laterally so that they coincide with the cams and the scanner on one side and the black mark on the selector lever and the scale on the frame cover on the other.

In order to achieve this it is necessary to move the notched segment sideways, forwards or backwards (depending on deviation). Best check for coincidence: fancy seam selector lever on No. 2 and 19. If there is a discrepancy, the two fixing screws (32 + 33) must be loosened and the notched segment (30) moved to the desired position. Retighten screws.

Set notched carrier

When selecting the individual fancy stitch pattern the selector lever (31) with scanner (34) is moved from one fancy stitch cam to another. Displacement takes place in two movements:

1. Raising of the scanner.
2. Lateral displacement of the scanner.

The scanner must be raised far enough from the cam that it cannot under any circumstances contact a cam when moved sideways. Plate (35) raises the scanner.

If this lifting distance has to be altered, loosen the two screws (36 and 37). Plate (35) can then be set to the desired position.

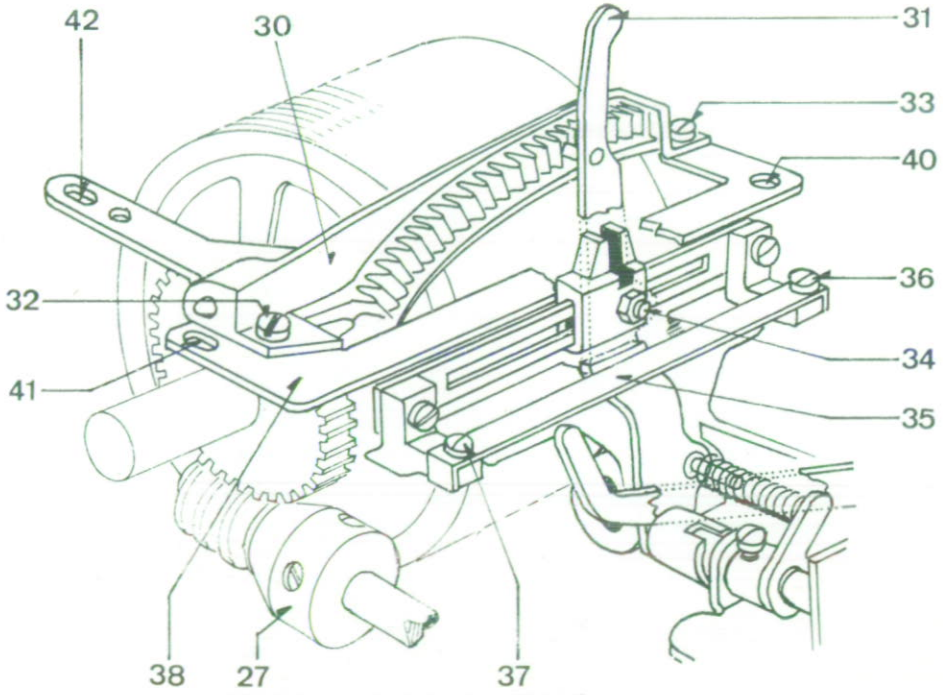


Fig. 18

The notched carrier (38) limits the needle deflection in such a way that when the scanner is raised the needle cannot pierce anywhere outside the stitch hole.

The notched carrier must be attached so that when the fancy stitch selector lever is moved from cam 1 to cam 20 the needle always pierces at the same distance from the left-hand stitch hole edge (zig-zag knob at position 4).

The three screws (40, 41, 42) must be loosened to make any adjustment. (See Fig. 18).

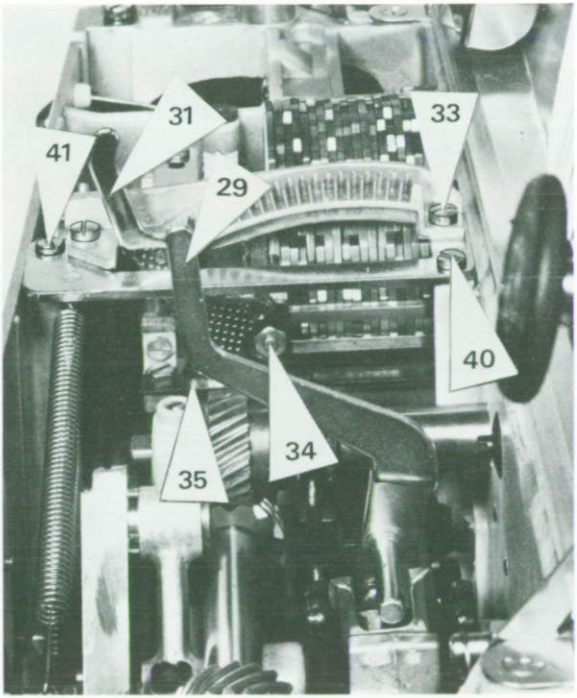


Fig. 19

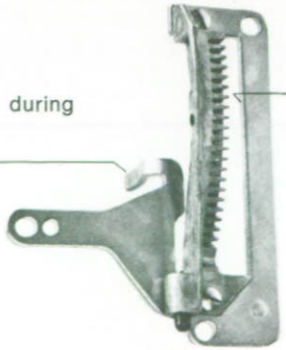


Fig. 20

Setting fancy stitch indicator

If the red mark of the indicator no longer coincides with that on the inspection window, the following re-adjustment must be made:

Set fancy stitch selector lever (31) to stitch pattern 13. Coupling lever (29) to 1—20.

Stitch width «4» (no presser foot or thread).

Make a pencil mark as guide below the notch on the inspection window of the **frame.** Raise frame cover. Start machine and observe needle motion. The exact position of the red indicator mark is reached when the needle has made the jump from the righthand side fully to the left.

Set needle with the handwheel to the left-hand position so that the tip is exactly at the level of the needle plate. Loosen screw (50) on the indicator, align the red line with the guide mark on the frame. Retighten screw (50).

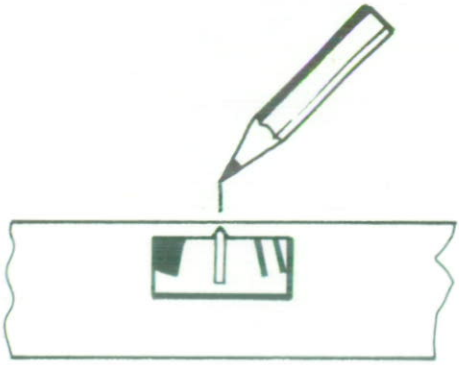


Fig. 21

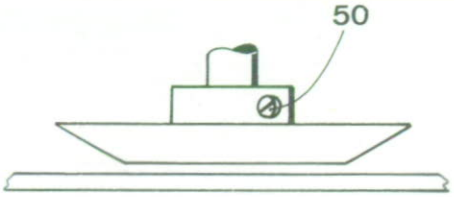


Fig. 22

WARNING: Note the distance between indicator disk and frame wall.

The bobbin hook

Fig. 23

BERNINA models 840, 841 and 842 are provided with the non-jamming bobbin hook. The hook is dismantled as follows:

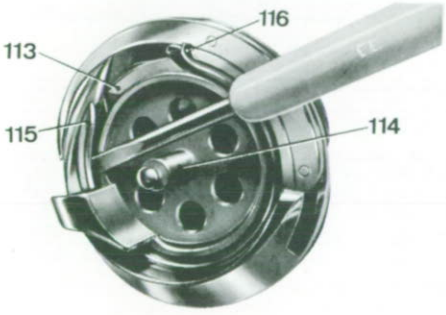


Fig. 24

After withdrawing the bobbin case with bobbin from the hook, the latter should be turned so that the tip of the thread picker (113) of the bobbin case holder (114) lies beneath the tip of the sprung race ring (115).

Then insert screwdriver 398 054 03 under the sprung ring (115) and tilt it while moving sideways until the sprung race ring (115) is ejected from its guide.

Assembly is performed by suspending the sprung race ring with its retention lug (116) in the groove provided and pressing the race ring into its V-shaped slot. The bobbin case holder should first be placed in its race so that the retention piece is located between tip and retention lug of the sprung race ring. It should be ensured that the race ring lies in its proper position and that the bobbin case holder runs smoothly in the track. The dismantled hook is illustrated in Fig. 25.

The hook is designed to accept the upper thread from the needle, to enlarge the loop and to guide it round the bobbin case holder (with bobbin case and lower thread bobbin).

All sliding surfaces coming into contact with the thread are given a mirror finish.

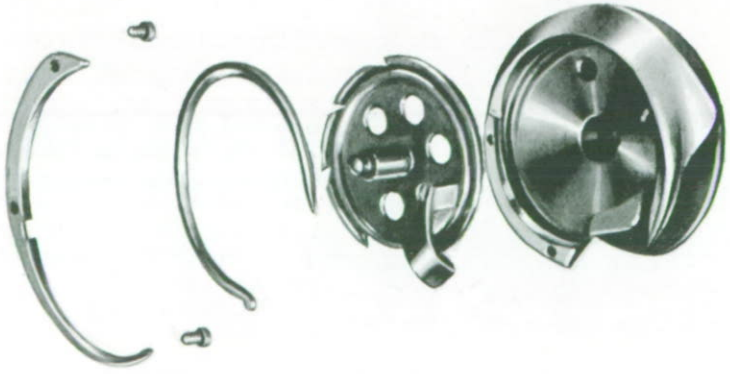


Fig. 25

Adjustment of hook

Loop lift 2.6 mm

The loop lift is the distance travelled by the needle from its lowest point until the tip of the hook intercepts the needle. Thus, after completion of this movement, the tip of the hook is behind the needle to accept the loop. The tip should intercept the front edge of the needle. The position of the tip with respect to the eye, or the final height of the needle, is adjusted after setting the loop lift.

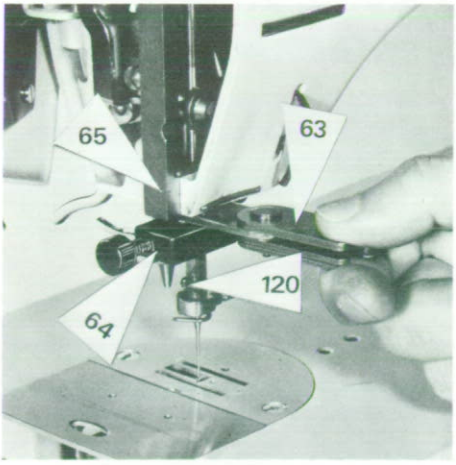


Fig. 26

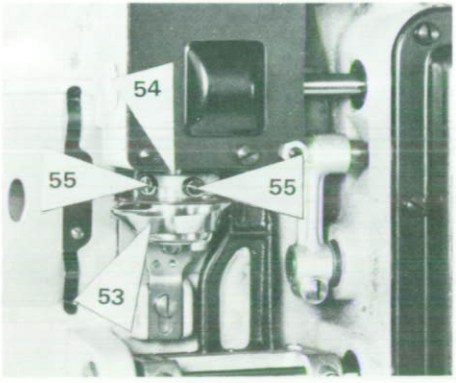


Fig. 27

The loop lift is set on left-hand stitch with the aid of the loop gauge 398 008 04.

A clamping piece (64) 398 005 04 is fixed to the needle bar (120) in its lowest position, so as to allow the distance gauge (63) to be inserted between the lower edge of the frame and upper edge of clamping piece (64), i. e. 2.6 mm. (Fig. 26). The distance gauge is then removed and the handwheel turned in the direction of motion until the clamping piece (64) strikes the lower edge of the frame. In this position the tip of the hook must intercept the left outside edge of the needle. (Fig. 28).

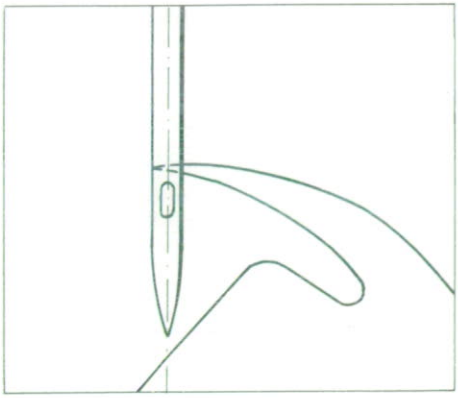
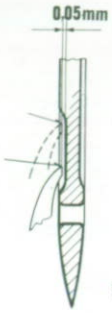


Fig. 28

To achieve this setting, the hook (53) must first be brought to the correct position. After loosening the two fixing screws (55) and twisting the hook spindle (54), it can be brought to the required position (see Fig. 27). It should be noted that the lateral distance of tip of hook from needle must be 0.05 mm. The hook securing screws are then re-tightened. The clamping piece (64) can be removed from the needle bar and the needle height adjusted.



HOOK TIP
Penetration on right

HOOK TIP
Penetration on left

Fig. 29

Needle height

The height of the needle should be set so that the tip of the hook lies in the groove of the needle for both right and left-hand penetration.

Setting is made by releasing hex. screw (147) on the needle bar feed dog (71). The needle bar (120) can then be adjusted in height. After correct adjustment as described above, screw (147) should be re-tightened (Fig. 30).

In addition, the front edge of the case stopper (149) must be flush with the front edge of the holder finger on the bobbin case holder (114). When correctly adjusted, the case stopper should be tightened with screw (144).

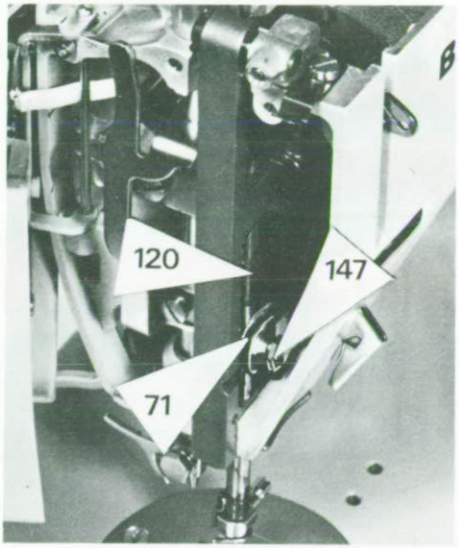


Fig. 30

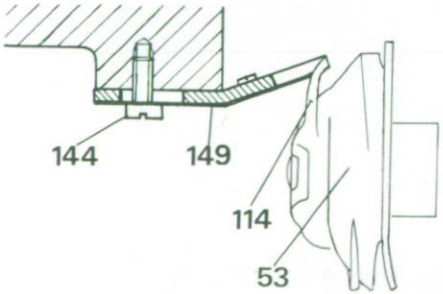


Fig. 31

It should be ensured that the needle bar is not twisted. Check with a Duo-needle (double-needle). Following adjustment of needle and hook, the case stopper (149) for the bobbin case holder (114) should be secured on the machine and moved forwards until the lower edge of the bobbin case stopper of the bobbin case holder intercepts on both sides (Fig. 31).

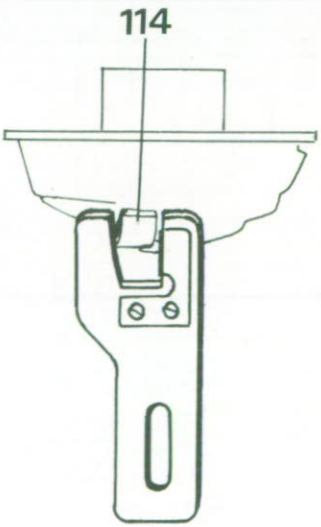


Fig. 32

Height of feed dog (Fig. 33)

The feed dog (72) is set to the highest working position by turning the handwheel. In this position the feed dog teeth must be 0.9 to 1 mm above the needle plate (69).

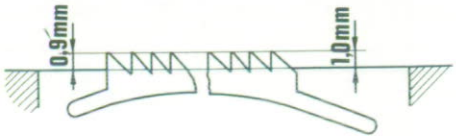


Fig. 33

Adjustment

Loosen screw (125) (Fig. 35) slightly and set feed dog to the prescribed value by turning the lifting lever (124).
Gauge No. 398 024 03.

Warning: only loosen screw on lifter lever slightly to avoid axial play in the spindle.

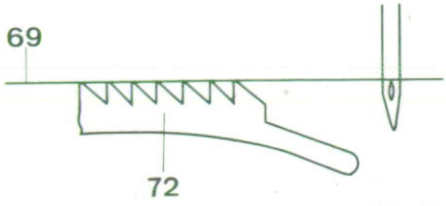


Fig. 34

Feed dog lifter (Fig. 34)

The needle bar is moved downwards in the direction of motion until the upper edges of the needle eye and the needle plate are at the same height. In this position the rear teeth must be at least 0.1 to max. 0.3 mm above the needle plate.

Adjustment (Fig. 35)

Remove oil pan cover on lower side of baseplate. Set needle bar to uppermost position by turning handwheel.

The feed dog lift is properly set when the first screw (122) of the lift eccentric (123) is vertical at the centre of the plate shaft (127) as seen from the direction of motion.

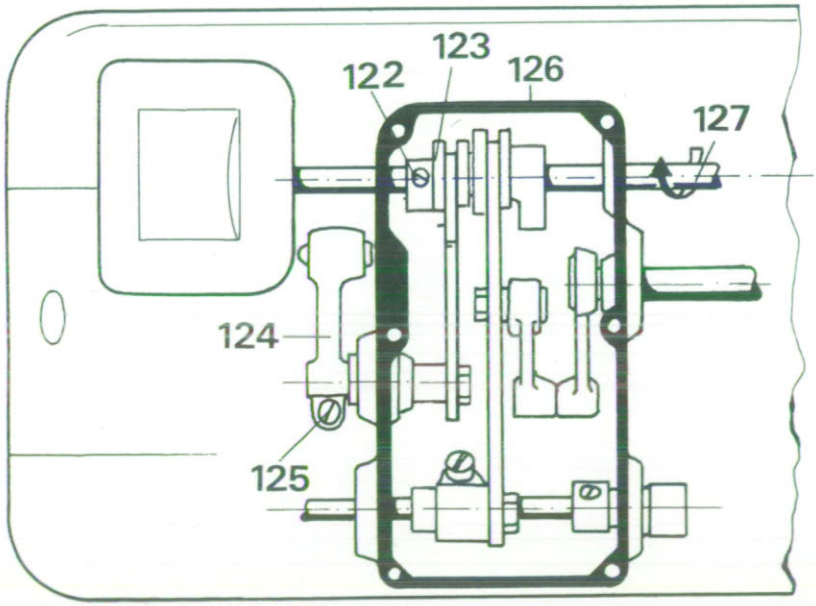


Fig. 35

Feed dog advance

The take-up lever is set to the highest point (upper reversal point). The stitch setting lever must be set to position 4. When the handwheel is turned further in the direction of motion, the feed dog must advance slightly. The amount of advance should be between half and threequarters of the spacing of two teeth tips.

Adjustment

The feed dog advance is properly set when the first screw (128) of the advance eccentric (129), seen from the direction of motion, is half a screw diameter in front of the second advance eccentric screw (123). (Fig. 36).

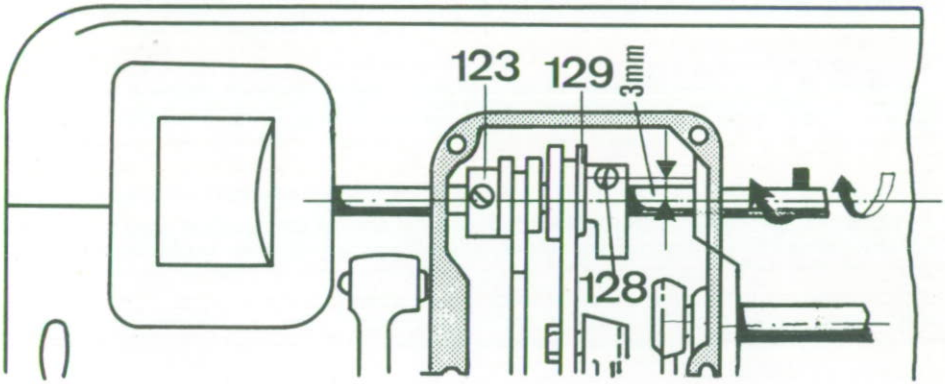


Fig. 36

WARNING: the lift and advance eccentrics must not be displaced laterally when tightening, or the lift and advance fork could jam.

Presser foot bar

a) Adjustment of presser foot fixing piece

The height of the clamp (80) should be set so that the tension cam (81) of the presser foot is approximately at the center of the tension surface of lever (82).

To set correctly loosen screw (83) and set clamp to the corresponding position.

Caution: The clamp must not be twisted.

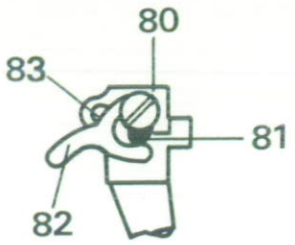


Fig. 37

b) Presser foot adjustment

Lower feed dog, raise lifter lever (86) and attach normal presser foot. Place feeler gauge 398 031 13 (height 7.3 mm) under the presser foot on the needle plate. In this position (spacing 7.3 mm) the material bar guide (84) must lie on the lifter lever (86). If correction is necessary, loosen screw (85) and set the material bar guide to the required position. Finally check whether the presser foot sole runs parallel to the needle plate slot.

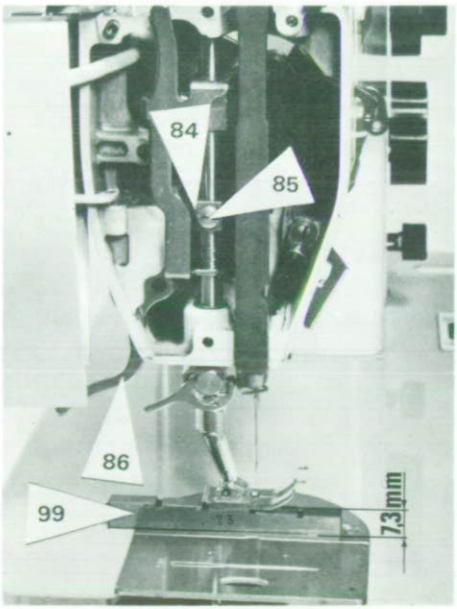


Fig. 38

c) Setting the darning device

Remove presser foot and attach darning foot. Lower feed dog. Place a spacer (10 mm) under the darning foot and lower the presser foot bar. Turn handwheel and set the swivel piece (88) so that the screw (89) points vertically upwards.

Then the presser foot bar dog (90) above the presser foot bar guide is released. This is moved downwards until it lies on the darning lever.

Retighten screw (91) ensuring that the presser foot bar dog does not twist.

When set correctly the distance between darning foot sole and needle plate is 0.5 mm.

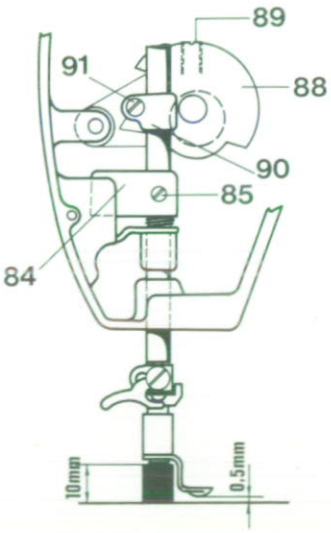


Fig. 39

Adjustment of automatic buttonholer Models 840/841

First make the following two adjustments: Turn buttonhole knob (3) to position «0». Rotate stitch length adjusting knob (4) up to stop.

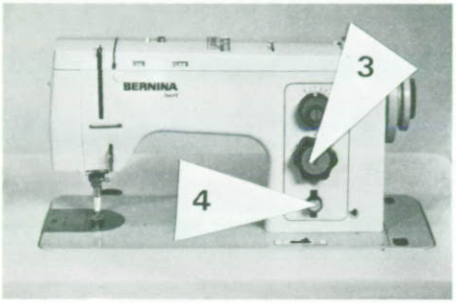


Fig. 40

1. a) Position of stitch length adjustment knob

The black mark on the front of the knob (4) must point vertically upwards. In the event of discrepancy the hex. nut (5) behind the knob should be loosened and the knob turned to the prescribed position.

Warning: the stitch length adjusting screw must not turn out of the zero position.

b) Zero position of stitch length stop

The mark on the pointer bush (6) must coincide with the figure «0» on the stitch length scale. In the event of discrepancy the hex. nut (92) on the gearing carrier must be loosened (remove belt cover). The stitch length adjustment knob with pointer bush can then be made to coincide with the figure «0» on the scale. Retighten screw (92).

c) Zero position of stitch setting link

Needle: System 130/705 H No. 80 (neither blunt nor bent).

Sewing-in material: raw cotton-cretonne, 2-ply, place under buttonhole foot (without thread). Select a medium sewing speed. Observe material — it must not move. If the material is fed forwards, screw (93) must be loosened and the advance lever (94) moved upwards (in direction of handwheel).

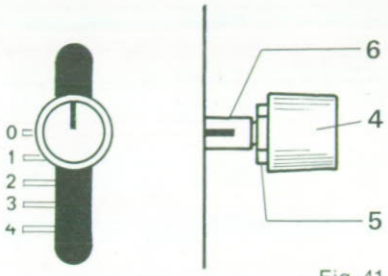


Fig. 41

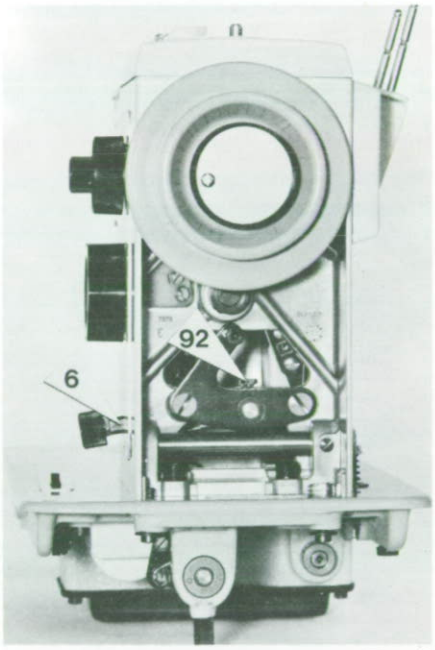


Fig. 42

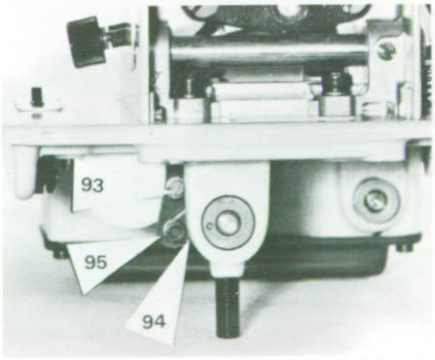


Fig. 43

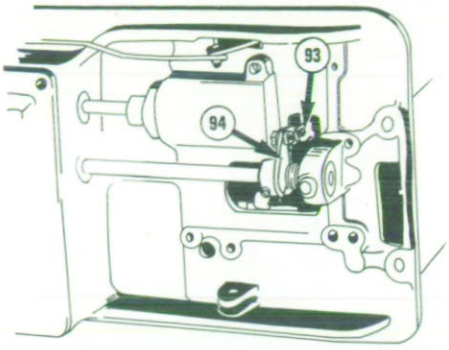


Fig. 44

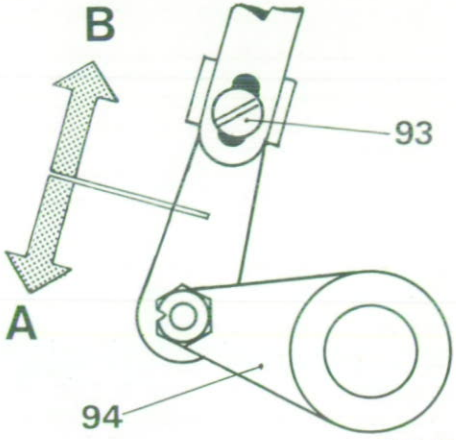


Fig. 45

If the material is fed backwards, screw (93) should be loosened and the advance lever (94) moved downwards (away from handwheel).

A Material is fed **backwards** = correct **downwards**

B Material is fed **forwards** = correct **upwards.**

2. Setting the bar tack

Turn buttonhole knob (3) to position «2». The material feed for the bar tack stitches should be ZERO, with a minimum feed in the reverse stitch direction considered tolerable.

If material is still fed, adjustment is made from the drive side (remove cover).

Slightly loosen lower clamping screw (7) on the plastic plate. Turn eccentric screw (8) until there is no more feed. Re-tighten clamping screw (7). Set buttonhole knob (3) to position «4». (2nd bar tack). Check whether there is any material feed in this position. If there is, correct as described above.

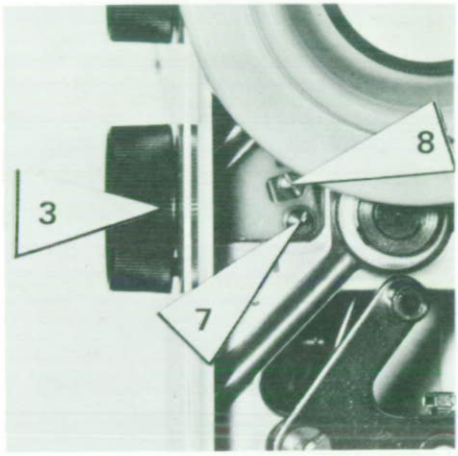


Fig. 46

3. Setting the forward bead

Turn buttonhole knob (3) to position «1». Turn stitch length adjusting knob (4) half a rotation, i. e. the mark must point vertically downwards.

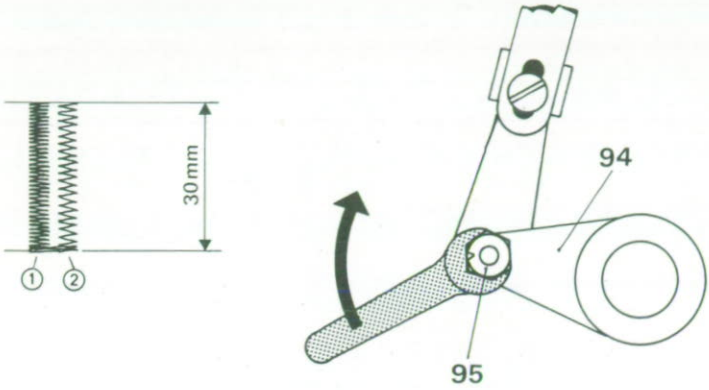


Fig. 47

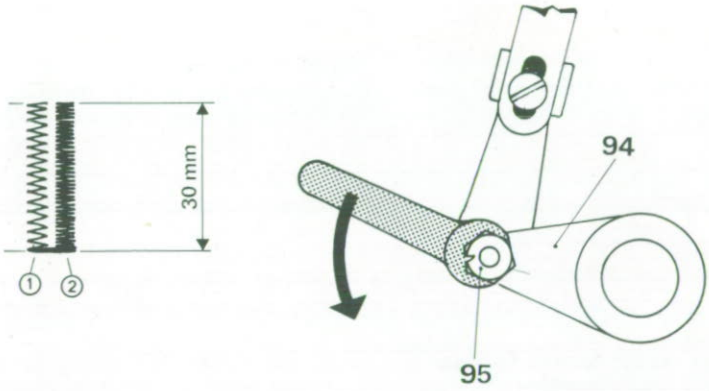


Fig. 48

Sewing-in thread: No. 60, 3-ply, left-hand twist.

Sewing-in material: raw cotton-cretonne, 2-ply.

Buttonhole foot — bobbin case thread in auxiliary tension.

Sew the 1st bead with a length of about 30 mm.

Sew 1st bar tack.

Sew 2nd bead (same length as 1st bead).

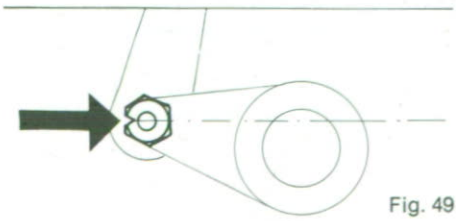


Fig. 49

Compare the two beads with respect to satin stitch spacing. If correction has to be made, i. e. if the 2nd bead is not of the same spacing as the 1st, adjust as follows:

Screw (52) is designed as an eccentric. Correct with a wrench (width over flats 7 mm) as shown in Figs. 47 and 48.

Check the bar tack spacing (section 2) again after correcting.

Basic position of eccentric screw: marking notch horizontal.

(Fig. 49).

Upper thread tension

Check and adjust the upper thread tension with the setting weight No. 398 099 40 for model 840.

The bobbin case yarn contained in a brand new machine should be used as test yarn.

The bobbin with sewing thread No. 60, 3-ply, white, left-twist, is placed on the front reel pin and threaded as far as the take-up lever in its highest position.

Warning: lay the thread to the right of the intermediate disc.

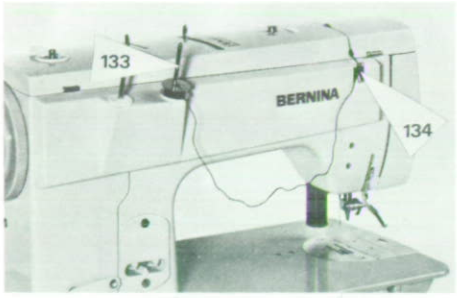


Fig. 50

Approx. 30 cm thread is drawn off the bobbin so that when checking the take-off speed the thread hangs **loosely** between reel pin (133) and diverting eye (134).

The weight is then suspended on the thread and the speed of take-off noted.

The thread is correctly tensioned when the weight draws the thread **very slowly.**

The permissible take-off speed is 30 ± 10 secs. for a length of 55 mm (length of take-up lever slot, see Fig. 51).

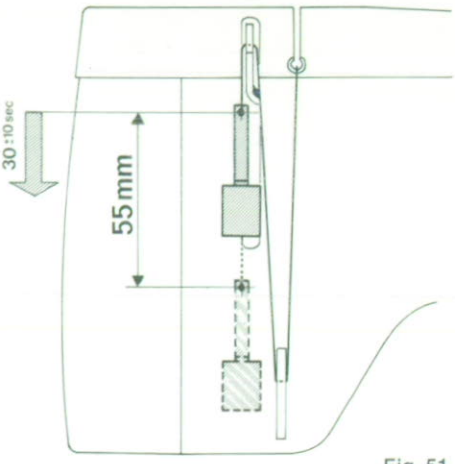


Fig. 51

If the thread tension is set inaccurately, correction should be made as follows:

1. Turn the thread tension nut towards the scale window (reduction of tension) until the weight moves well. The thread betweeen reel pin and diverting eye must be slack.
2. Turn the thread tension nut away from the scale window until the take-off speed reaches the value specified above of 55 mm in 30 ± 10 secs.
3. Adjust the thread tension scale to the mark on the frame cover.

   The scale must be as close as possible to the wall but must not touch it. (Fig. 52).

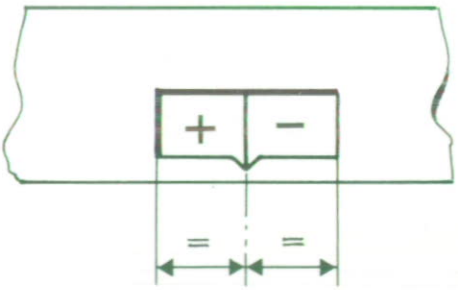


Fig. 52

Lower thread tension

The correct setting of the lower thread tension is made with the aid of various test weights:

107 W-hook:
darning yarn 120/2
draw-off weight = 18 grams
(gauge No. 398 046 04)

Sewing yarn 60/3:
draw-off weight = 24.5 grams
(gauge No. 398 047 04).

To check the lower thread tension the take-off weight is placed in the bobbin case. The free end of the thread is held and the case allowed to run with the weight attached.

Tighten the screw (138) more or less firmly to regulate.

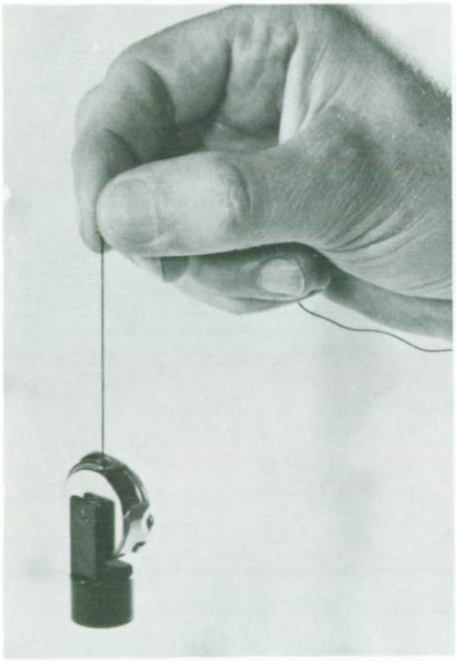


Fig. 53

Setting the thread regulator

The thread regulator spring (150) should lie on the limiter (151) at the instant when the eye of the needle enters the work. The stop (151) can be set to the correct position by turning screw (152) (Fig. 55).

The tension of the regulator spring (150) is also important. This must neither be too loose nor too tight. The correct setting is obtained when the spring (150) takes off the thread with the necessary «liveliness». The tension can be made stonger or weaker by turning screw (153) to left or right.

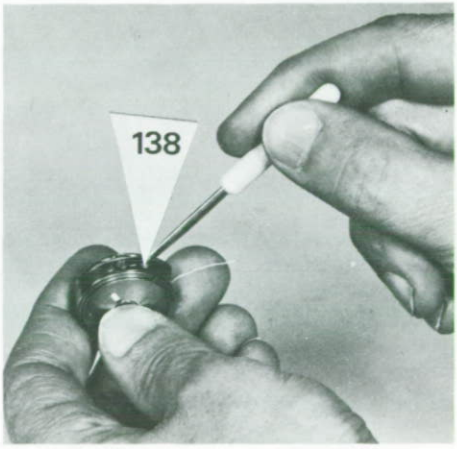
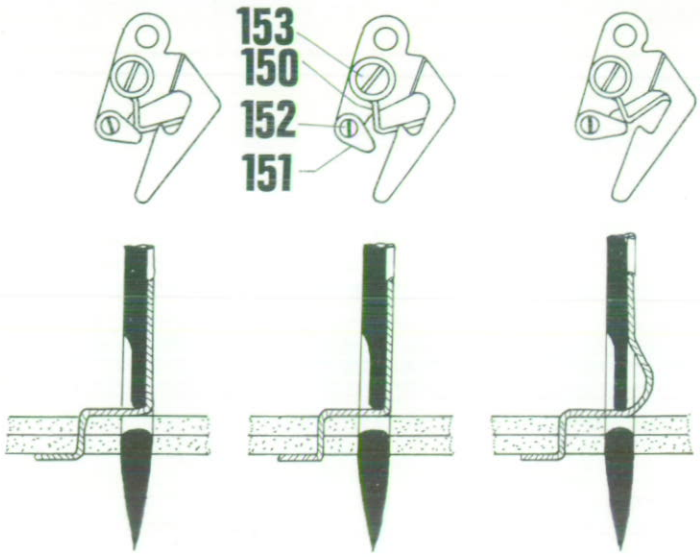


Fig. 54



a)
correct

b)
wrong
too low
stop (140)

c)
wrong
too high
stop (140)

Fig. 55

Regulation of foot pressure.
If necessary the presser foot pressure can be regulated with screw (143).
Factory setting = 1200 grms.

Fig. 56

Fault avoidance

1. Basic principles

In the great majority of cases faults can be attributed to improper handling of the machine. Should other causes be suspected, however, the machine must be examined as to whether:

a) The needle is properly fitted. The long groove must always be at the front from where the machine is threaded.

b) The right needle size is being used, needle No. 70 for fine darning work and No. 80 or 90 for other sewing work.

c) The hook is lubricated with a few drops of oil,

d) There are no remnants of material between the thread tensioning discs,

e) There are no remnants of material stuck underneath the bobbin case tensioning spring.

f) The machine can be turned easily with the handwheel.

2. Thread breakage at the upper thread can be caused by the following:

a) Use of poor quality, badly polished needles. Needles should always be bought from the BERNINA dealer.

b) Needle wrongly fitted. Long groove must be at front,

c) The needle is blunt or bent,

d) The relationship of thread thickness to needle is not correct,

e) The tension of the upper thread is too great,

f) Poor yarn or yarn with knots. Yarn has dried during long storage. It should never be stored in heated rooms,

g) The needle plate hole has been struck by the needle and must be re-polished,

h) The hook tip is damaged.

3. Lower thread breakage

can be caused by the following:

a) The lower thread tension is too great,

b) The lower thread is badly wound,

c) The bobbin is crushed and jammed in the case.

d) The needle plate hole has been struck by the needle and must be re-polished.

4. Faulty stitches

can be caused as follows:

a) Use of wrong needle. Use only needle system 130/705 H.

b) Needle is bent.

The following wrong adjustments on the machine can be the cause of missing stitches:

1. Lateral spacing between needle and hook is not right. It must be 0.05 mm (see page 15).
2. Loop lift and return motion are not correct (see page 14).
3. The needle bar height is not correctly set (see page 15).

In general: always use perfect needles and first-class thread. Also ensure that the needle size matches the thread thickness.

5. Needle breakage

can be caused by the following:

a) The needle fixing screw is not tightened sufficiently,

b) The upper thread tension is too great,

c) The work is drawn out at front from under the presser foot which bends the needle. It should only be drawn out at the rear beneath the presser foot sole.

d) Needle size and fabric thickness are not properly matched.
Very often needles which are too thin are used with thick yarn which causes the needle to bend.

e) Use of cheap yarn, unevenly twisted or knotted,

f) The work should not be drawn too strongly to the rear during sewing.

6. Seam faults

a) Poor, uneven seams are produced:

1. When there are remnants of thread between the thread tension discs.
2. There are remnants of thread under the bobbin case tension spring,
3. The bobbin is crushed and jams in the bobbin case,
4. The sewing yarn is of uneven thickness,
5. The hook is not lubricated.

b) When sewing Tricot it should be noted that:

1. Tricot should always be basted with darning thread, not with basting thread,
2. Use perfect needles, size 70 or 80.

When sewing with new, synthetic threads it can occur that the normal needle plate must be exchanged for a special needle plate. The BERNINA Sewing Machine Factory is willing to lend you every assistance in solving your particular sewing problem.

Subject to changes in design
from those shown in text and illustrations.

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