## 1- INTRODUCTION

This hand stitch machine is being manufactured by the Italia Stitch Manufacturing Inc. of Osaka, Japan, which specializes in making decorative hand-stitch for many years. Usage is applicable to men's suit, jacket, fashions, overcoat, leather coat, trousers and etc.

## 2- ASSEMBLY OF MACHINE

(a) Fix the thread carrier in the work platen by the screws; load the thread in the thread carrier. Then turn the thread carrier to the fit position.

(b) Switch on the power and insert the main plug of the machine in the socket of the power supply, and then turn on the lamp. This machine uses A.C. 220V power for the Lamp.

(c) Mount the machine needle, and make its groove face to the operator. Mount the eye-cover tongue (18), and make the tip of the tongue below the groove of the needle about 0.8-1.2mm. FIG. 2.

(d) Hold the end of the thread by hand and make it through the thread-braking tension unit and then the thread cutter as shown in FIG. 3. Press the pedal slightly backward with the heel, the tongue will lift and the groove of the needle will open. Put the thread in the groove of the needle. Fig. 2.

## 3- TESTING THE MACHINE

The machine is driven by a motor with an electronic control that allows it to be operated at a lower speed by pushing the pedal (6) slightly forward; with increased pressure on the pedal the machine will operate at the pre-established speed. Speed can be adjusted by pressing the key on the servomotor.

Insert the compressed air tube as well, making sure that the operating pressure indicated on the gauge is 5.5 atmospheres. Operate the machine by pressing down the pedal (6), checking that the hand-wheel turns in the anti-clockwise direction. Allowing the pedal to return to its starting position, the needle will position itself with in the fabric on both the 1st and the 2nd cycle, making it possible to turn the garment when stitching the corners. Pushing down on the pedal with the heel (so that it moves backward), the needle will move into position for threading. Run the machine for several minutes at the low speed before operating it at the maximum speed.

## 4- CHOICE OF THREAD

In order for the machine to operate perfectly with perfect quality, we recommend you to use high quality thread with 2 or 3 ply of yarns.

## 5- PATH OF THREAD, NEEDLE THREADING, AND THREAD LENGTH

(a) The thread should emerge from the tension spring (8) and pass through the cutter (9) situated under the head, as shown in FIG. 2. Pull it to the left to a maximum of 90 cm. Each threading should never exceed this length.

(b) With stepping on the pedal backward, the eye of the needle can be opened automatically for threading.

(c) Threading with manual movement machine without tongue-lifting mechanism. Bring the machine into the threading position by pressing down on the pedal (6) with the heel. In this position, use the right hand to raise the adjustable cap (10) so as to free the eye of the needle from the tongue. Introduce the thread into the groove will close the groove in the eye of the needle. FIG. 3.

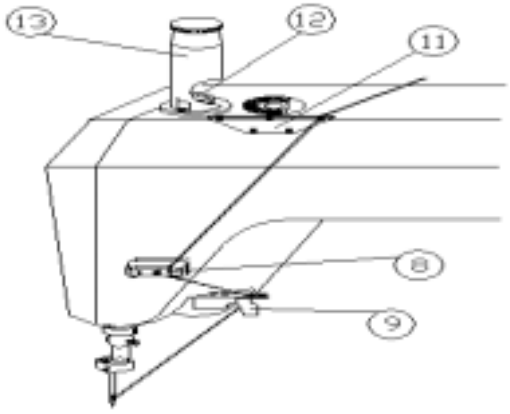


FIG.2

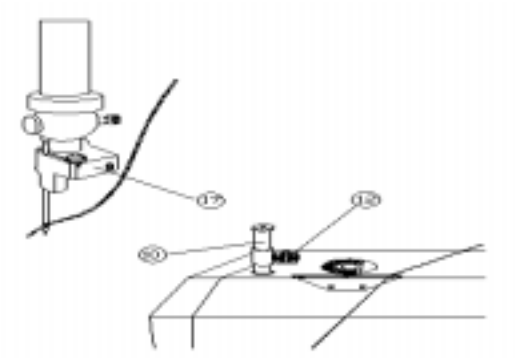

FIG.3

## 6- ADJUSTMENT OF STITCH LENGTH

The stitch length is adjusted by means of the graduated "stitch length adjustment" dial (14). If the dial is set at the number "0" the stitch will be of minimum length. Turning the dial clockwise as far as the number "8" will adjust the stitch to its maximum length. FIG. 4.

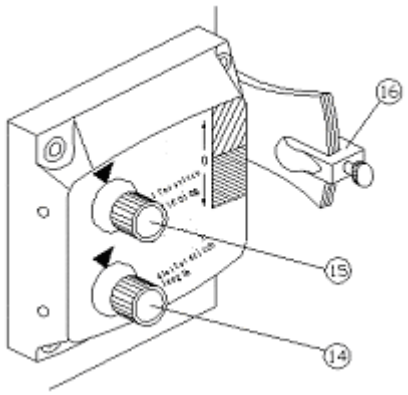


FIG.4

## 7- ADJUSTMENT OF LONG-SHORT STITCH

The length of the long-short stitch or the short-long stitch is adjusted by means of the graduated stitch correction dial (15). To obtain the maximum correction of the stitch the dial should be set at the number "6". Turning the dial clockwise toward the number "0" will reduce the correction to nothing. FIG. 4.

## 8- REVERSAL OF LONG-SHORT STITCH TO SHORT-LONG STITCH

In order to reverse the correction of the stitch while sewing, adjust the compressed air valve (11) located at the front left-hand end of the head. With the lever down the following type of stitch will be obtained: the long stitch on the visible part of the fabric and the short (corrected) stitch underneath. FIG. 4C. To carry out the correction of the stitch on the upper part of the fabric (FIG. 4B), move the compressed air valve upward (11) without turning dials (14) and (15). Turning dial (15) to the setting "0" the reversal lever (16) will move to the central position on the "0" of the plate. In this position the stitches will be exactly the same on each side of the fabric (saddle stitch). FIG. 4A. The two regulators located on the micro-cylinder of reversal adjust the speed of stroke in the cylinder that controls the inversion.

FIG.4A

FIG.4B

FIG.4C

## 9- ADJUSTMENT OF FOOT PRESSURE

The pressure of the presser foot can be adjusted to suit the fabric. This pressure should be adjusted so as to ensure the uniform and safe transport of the fabric without damage. Turning the regulator clockwise increases the pressure, while turning it anti-clockwise reduces it. FIG. 2.

## 10- THE TWO WORKING CYCLES

The formation of the complete stitch takes place in two working cycles:

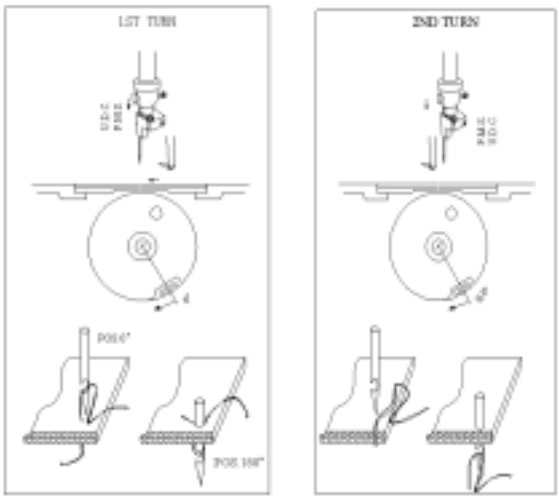


FIG.5,6

1st cycle: Formation of the stitch on the upper part of the fabric The first cycle begins with the threaded needle that descends from the U.D.C. (Upper Dead Center) with the upper hook (46), beginning the stroke in which it picks up he thread on the needle, and finishes with the needle back at the U.D.C. without the thread while the upper hook is in a resting position behind the needle. FIG. 5

2nd cycle: Formation of the stitch on the lower part of the fabric. The second cycle begins with the needle without the thread descending from the U.D.C., while the upper hook is located in the starting position of the stroke in which it picks up the thread on the needle.

The needle bar makes two forward and backward strokes. The upper hook (46) makes a single forward and backward stroke. The rotary hook (47) makes two complete turns of 360 ° to complete the two working cycles the needle bar, the upper hook, and the rotary hook (47).

## 11- ADJUSTMENT OF TONGUE HOLDER

Take the fabric clip (17) off the internal bar and the needle off the needle bar. Choose the appropriate gauge of the needle and the corresponding fabric clip. For assembly use a new tongue (18) and insert it in the fabric clip. Then install a new needle of matching gauge into the needle guide. FIG. 7.

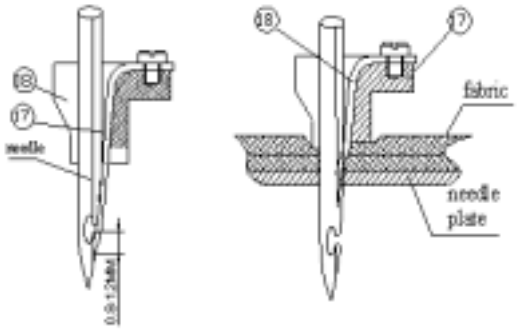


FIG.7

The tongue should be placed in the longest groove of the needle and then fixed with the clamping screw (19) in such a way that the tip exerts a slight pressure on the needle. FIG.7 After tightening the clamping screw of the tongue, checks that the fabric clip is positioned straight and runs smoothly along the needle.

## 12- ALIGNMENT OF NEEDLE BAR AND ADJUSTMENT OF ITS HEIGHT

Unscrew completely the screw (20) of the guide clamp. Check that the inner rod (21) of the needle bar slides freely inside the outer bar (22) and if necessary realign the boss (23) so that there is no friction. FIG.9

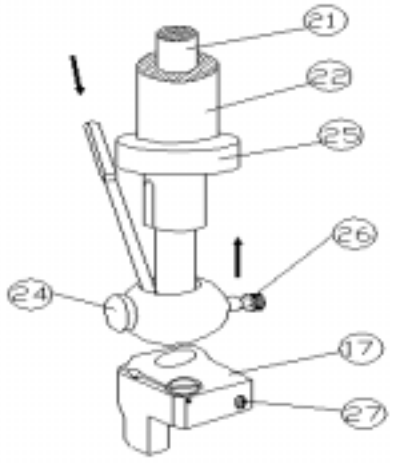


FIG.8

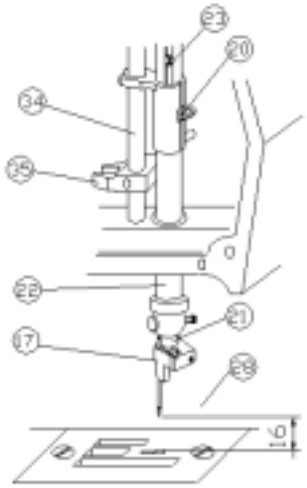


FIG.9

Next re-mount the clamp (24) of the needle and the fabric clip (17) on their respective bars, inserting the double-hooked needle through the upper part of the clamp, as illustrated in FIG. 8. Make sure that the clamping surface on the tang of the needle is on the left of the machine and that upper end of the needle touches the stop collar (25). Tighten the screw (26). Pull the inner rod all the way up, adjusting the fabric clip so that it rests simultaneously against the clamp and the shoulder of the inner rod, and then tighten the screw (27). When these operations have been completed raise the inner rod and check that nothing impedes its movement so that the tip of the needle does not move. Turn the hand-wheel until the clamp of the needle bar (20) reaches its U.D.C. (Upper Dead Center). At this point adjust the height of the needle bar so that there is a distance of 16mm between the tip of the needle and the throat plate. Tighten the clamp of the guide (20), be careful not to deform the inner part of the needle bar. When making these adjustments, it is recommended that the needle bar be turned slightly to the left. With the needle bar at the L.D.C. (Lower Dead Center), line up the reference notch (31) on the arm, then lock the hand-wheel. FIG. 10.


FIG.10

## 13- ADJUSTMENT OF TONGUE HEIGHT

The height of the tip of the tongue (18) should be set in relation to the needle. The height is correct when the tip of the tongue closes the space between the two hooks of the needle, extending 0.8-1.2 mm (depending on the gauge of the needle) beyond the tip of the lower hook, and the bar is at its U.D.C. FIG. 11.

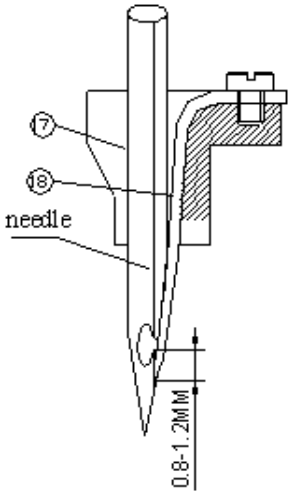


FIG.11

By turning the aluminum cap (10) clockwise raises the tongue and turning it anti-clockwise will lower it. Once the adjustment has been made, fix the setting by tightening the screw (36) inside the cap. FIG. 12.


FIG.12

## 14- ADJUSTMENT THREAD CATCHER

The thread catcher (37) should be mounted in such a way that its tip projects 0.3 mm in front of its shank. FIG. 13.

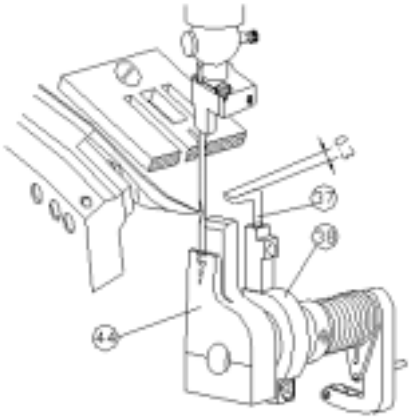


FIG.13

Turn the hand-wheel until the thread catcher reaches the top of its stroke, and then adjust its height so that there is a distance of 0.3mm between the lower part freed from the throat plate and the highest point of the thread catcher. FIG. 14.

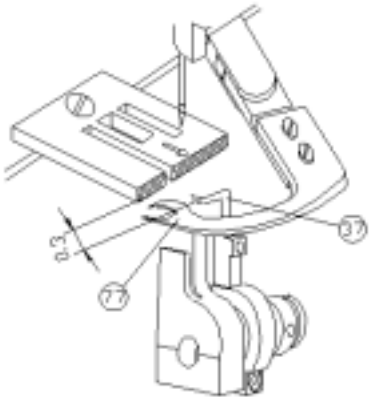


FIG.14

Bring the thread catcher to the end of its stroke behind the needle and adjust lever (38) so that the thread catcher is at a distance of 2.5mm from the needle and its tip projects 0.3mm to the left of the needle. FIG. 15. The position is correct if the tip of the needle descends to the height of the tip of the thread catcher at the same time as thread catcher comes to the end of its stroke behind the needle. The cam (39) that controls the movement of the thread catcher is connected to the cam (40) that controls the tension unit. FIG. 16.

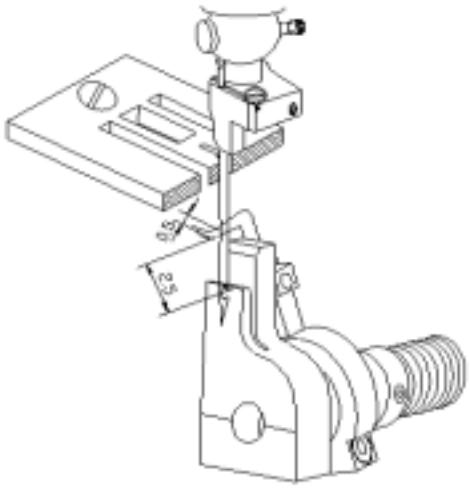

FIG.15

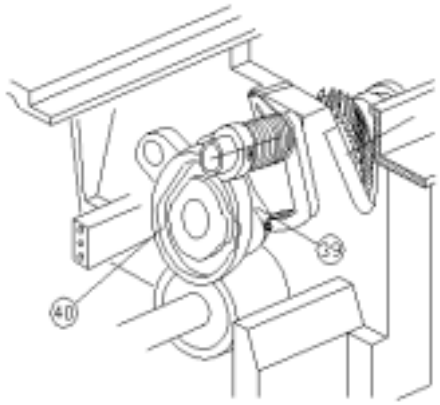


FIG.16

## 15- ADJUSTMENT OF THE NEEDLE GUARD

Check that the thread catcher lever unit (42) does not have too much endplay. To eliminate any play push the internal pin (43) toward the base of the machine in such away that the unit is still free to turn on the pin. FIG. 17.

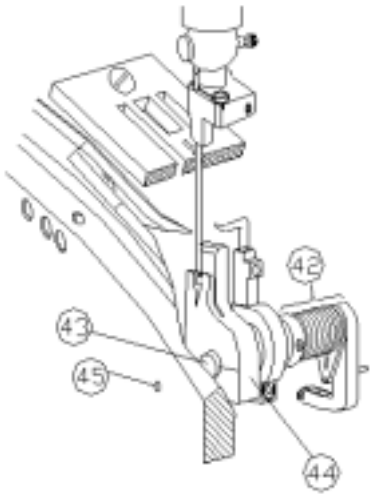


FIG.17

The needle guard (44) serves to stop any bending of the needle during the sewing of very thick pieces of fabric. The part of the needle guard that performs this function is the inner side of the shortest tooth.FIG.18.

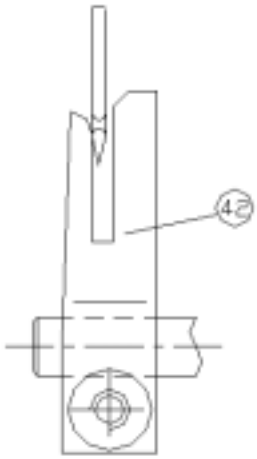


FIG.18

Consequently adjust the needle guard so that when the needle has risen 2mm above its L.D.C. it is still in contact (and slightly bent) with the inner side of the shortest tooth of the needle guard. When the needle bar has risen 3mm above its L.D.C., the needle should no longer be in contact with needle guard. After clamping the needle guard check that the adjustment is correct.

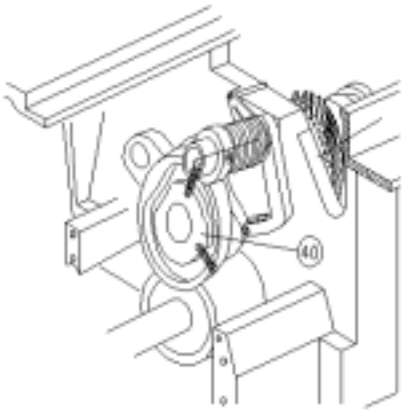


FIG.19

## 16- ADJUSTMENT PHASE OF UPPER HOOK

Turn the hand-wheel so that it moves the second dowel pin of the tension cam (40, FIG. 19), in the direction of rotation, after previously fixing the cam in a vertical position with respect to the plane of the machine. With the cam (40) in this position bring the second dowel pin, in the direction of rotation, of the arm. Temporarily block the dowel pin in this position as this adjustment serves as preparation for synchronizing. Mount the upper hook (46), positioning its tip about 16.3mm from the level of the throat

plate. The tip of the hook should be inclined at an angle of about 5 ° to the needle in the order to avoid any possibility of the needle breaking during its return stroke. FIG. 21. This is done by rotating the hook in its holder (48). FIG. 22. The upper hook returns to its staring position at the second cycle. Remaining in the second cycle, turn the hand wheel so as to bring the back of the fabric clip. This is done by moving the hook holder (48) forward and backward in its support (49). FIG. 22.

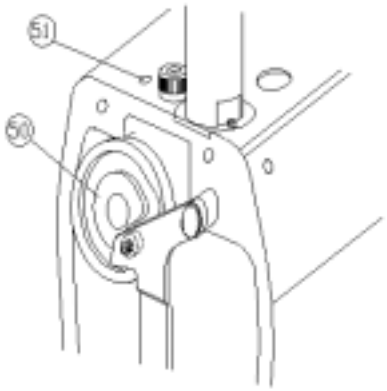


FIG.20

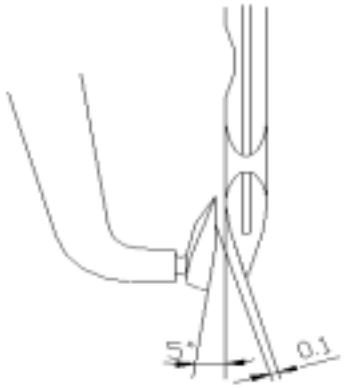


FIG.21

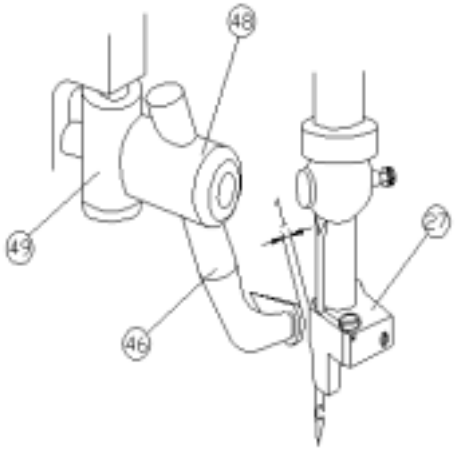


FIG.22

## 17- SYNCHRONIZING

Bring the needle bar to the beginning of the first cycle. Use the 15-mm-long side of the gauge (29) and set the needle bar at 1 mm from its U.D.C.; the distance between throat plate and the tip of the needle should be 15 mm. FIG. 23.

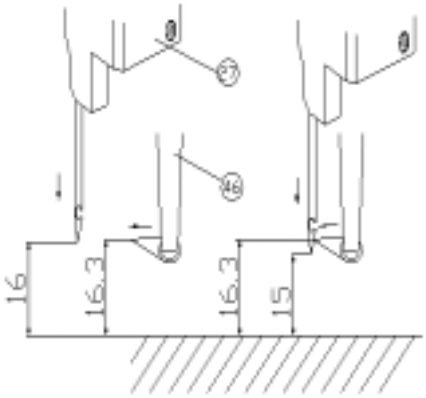


FIG.23

Keeping the needle bar in the position described above, turn the control cam (50) on its own axis in the direction of rotation of the machine until the tip of the hook is 1 mm higher than the tip of the needle. The clamping screws are accessible from the hole (51) in the upper part of the arm. FIG. 20. Before fully tightening the cam controlling the movement of the hook, bit into contact with the roller and then move bottom of the cam track.

## 18- ADJUSTMENT OF THE FEED DOG

### (i) Preparation

FIG. 24 illustrates the assembly of the stitch adjustment box. The figures show three fundamental levels of setting. Before beginning adjustment of the transport check the levels and restore them to normal, though this will only be necessary if the machine has been tampered with. In fact it is difficult for these levels to change, even if the machine goes out of phase for accidental reasons.

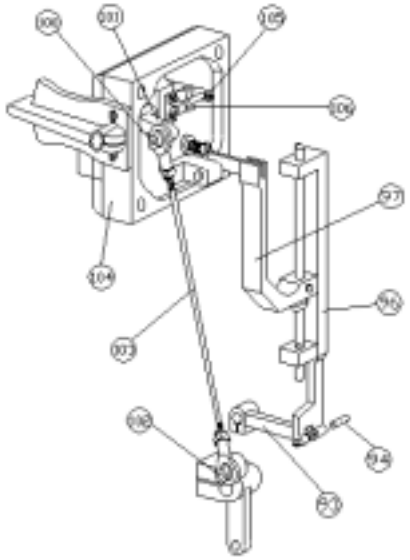


FIG.24

To dismantle the stitch adjustment box, proceed as follows:

(a) Remove the screw (100) from the ball and socket joint mounted on the correction drive levels (101).

(b) Remove the screw (102) from the lower ball and socket joint and remove the rod with the joints (103).

(c) Remove the upper stop register (99) for maximum length of stitch.

(d) Release the spring (141) of the stitch length unit. FIG. 27.

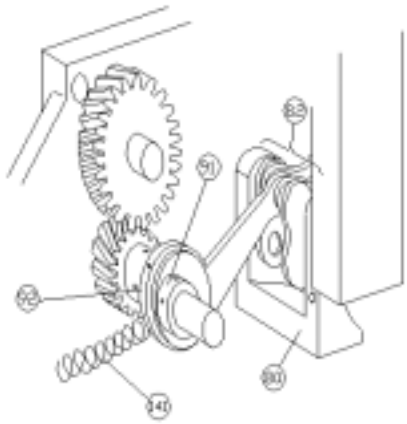


FIG.27

(e) Remove the connecting pin (94) of the stitch lengthening lever (96) and the stitch adjustment drive lever (93). FIG. 28.

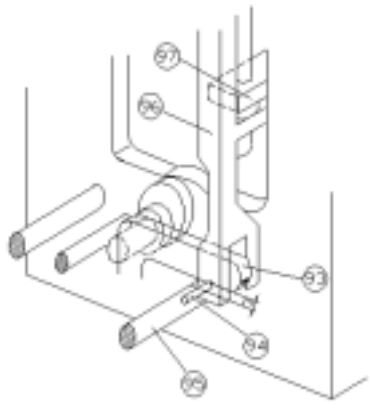


FIG.28

(f) Remove the four screws that hold on the stitch adjustment box (104) and take it off. After having checked and if necessary adjusted the three main levels, reinstall the box by following the instructions for dismantling in reverse order, inserting the connecting pin (94) in the assembled box before attaching the spring of the stitch lengthener. Attention: level A must be checked with the graduated dial (15) for correction of the stitch turned as far as it will go in an anti-clockwise direction so that the pin (105) is at the bottom of the reverser (106). Before commencing adjustment of the transport, set the stitch correction to zero and the stitch length to maximum. These setting are made by means of the appropriate graduated dials (14-15). FIG. 4.

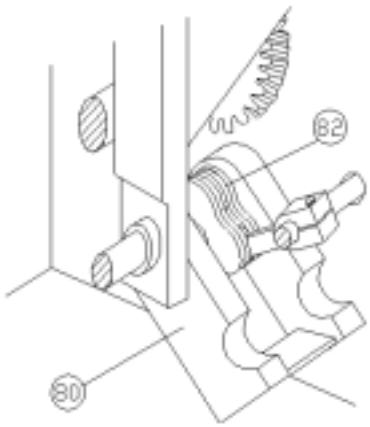


FIG.29

**(ii) Adjustments**

(a) Check that there is a distance of 3mm between the stitch adjustment control lever (93) and the lower main shaft (95). With the lever in this position the four shackles should be in line. FIGS. 28-29.

(b) Loosen the screws of the feed dog lift eccentric (83) and the screws of the stitch-lengthening fork. Precisely true up the needle hole of the throat plate (28) with the needle, making sure that the throat plate is in an orthogonal position. FIG. 25.

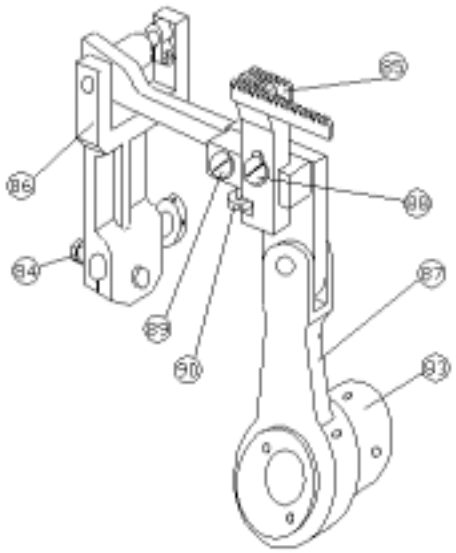

FIG.25

(c) Center the feed dog (85) in the throat plate which should be fixed beforehand, so that at the ends of its traverse the two ends of the feed dog are equidistant from the inner parts of the slots in the throat plate; to do this adjust the stitch-lengthening fork (86) and if necessary move the feed dog lift eccentric (83) along its axis so as to avoid off-center positions that could cause distortions in the movement. Tighten the screws of the feed dog lift eccentric and the stitch-lengthening fork. FIG. 25.

(d) Loosen the clamping screws of the stitch-lengthener eccentric (91). Turn the hand-wheel to bring the needle bar to its L.C.D. Move the stitch lengthener eccentric radially to the position in which the feed dog does not move when the stitch lengthener support is moved by hand (80). Tighten the screws of the eccentric while keeping the connecting rod in line (92).

(e) Turn the hand-wheel to bring the feed dog (85) to its highest point above the throat plate and adjust the two screws (88-89) to position the feed dog parallel to the throat plate.

(f) It is possible to tell whether the feed dog is exactly in phase by checking the needle should be at the same height above the throat plate both in the phase in which the feed dog begins to rise above the throat plate and in the phase in which the feed dog sinks below the throat plate.

(g) The maximum height of the feed dog above the throat plate should be 0.8mm when the needle bar is at its U.D.C. FIG. 26.

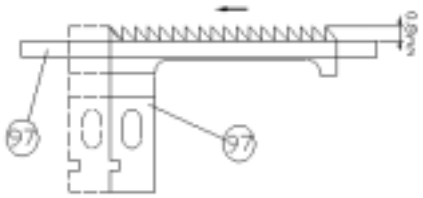

FIG.26

The phase may be adjusted by means of the feed dog lift eccentric (83) for the timing and the adjusting screws (90) for the height. Loosen screw (88) before turning the adjusting screw (90). Make sure that the adjustments do not cause the feed dog to come into collision with the throat plate and that the whole movement is free from strains due to poor alignments.

## 19- ADJUSTMENT LOWER ROTARY HOOK

Remove the thread-loading wheel (52) and the fixed wheel; making sure that the shaft has no end play. Remove the rotary hook (47) from the thread-loading wheel. Take care that the small pulleys (2 ball bearing) (53) do not fall off when the rotary hook is removed from the wheel. Remove the pin (54) of the pulleys and clean everything carefully. Check the rotary hook and remove any marks or notches. Polish the surface that come into contact with the thread. FIG.30

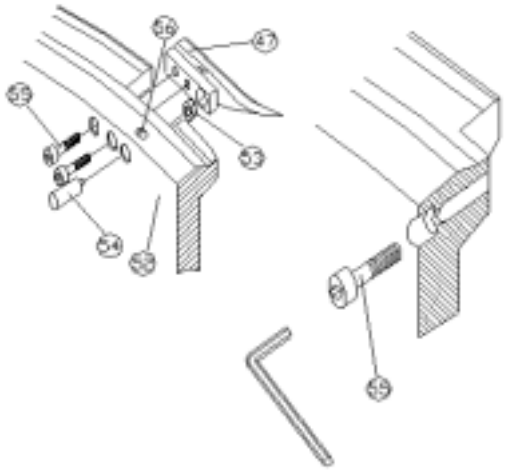

FIG.30

To eliminate marks and burrs it is advisable to clean and polish the pieces with a buffer .if this is not available use a very fine-grained whetstone. Insert the pulley in its hole on the rotary

hook, mount the rotary hook in its seat in the thread-loading wheel, and tighten the screws (55). The pin (54) of the pulley should be pushed into its hole in the rotary hook and clamped the screws (56).

Check that the pulley turns freely by running it along a thread. The tang of the pin is tongue than the thickness of the pulley and so it is possible to pusher in completely without blocking the pulley. Check the thread-loading wheel and make sure that it is perfectly smooth, especially at those points where the thread passes. The thread-loading wheel and the fixed wheel should be carefully cleaned of any residues of grease, oil, ect. Loosen the reference ring of the thread-loading wheel and move it to the left along the axis of the shaft. Tighten the screws so that the ring just rubs against the shaft. The reference notch of the ring should be on the left. The fixed wheel and thread-loading wheel can be mounted, making sure that the pin on the thread-loading wheel coincides with the notch on the ring. Then bring the tip of the rotary hook close to the left side of the needle. Use the gauge (29) to establish the exact L.D.C. with the needle bar fixed the L.D.C., move the thread-loading wheel so that the needle is visibly centered in the reference hole of the same wheel (45), FIG. 17. This ensures that, when the machine is turned by hand in the direction of operation, the needle bar rises 1.3 mm above its L.D.C. the tip of the rotary hook is at the same time positioned at the center of the needle. FIG.31. (With the needle shaft threaded in this exact position the thread will form the loop. FIG.32).

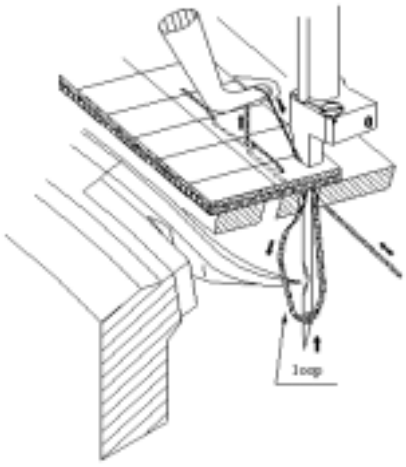


FIG.32

Note: on machines from the first series there is no reference hole for the L.D.C. on the wheel. In this case it will be necessary to take the measurement. After adjusting the lift of the needle bar to 1.3 mm, place the tip of the rotary hook exactly in the center of the hollow in the needle. FIG. 31. The tip of the rotary hook should touch the needle without pushing it away from the needle guard. FIG. 17. Then tighten the screw of the hub of the thread-loading wheel. The adjustment can be made easier by means of the two headless adjusting screws (57) located in the seat of the clamping screws of the rotary hook (47). These screws can be turned with a 3 mm Allen key after the remove of the screws (55). FIG. 30. Take care that, during this adjustment, the rotary hook remains parallel to the bearing surface of the wheel on which it is mounted. Setting with the adjustment screws can be carried out only when the distance between needle and hook is less than 0.20 mm. Otherwise it is always advisable to move the whole wheel. If this adjustment is carried out it is necessary to check the pin (54) and the pulley (53). After adjusting perfectly the height of the needle bar, carefully lock the rotary hook onto the thread-loading wheel. Tighten the locking screws, thread-loading wheel and reference ring. Check the phase again.

## 20- ADJUSTMENT THREAD LIFTS

To distinguish the two thread lifts, the one closest to the operator will be called the front (72) and the one closest to the needle the rear (73). The front thread lift should be at a distance of 3.5 - 4.5 mm from the edge of the thread-loading wheel and the rear one at a distance of 5.5 - 8 mm. The support (140) should be positioned in such a way that the two thread lifts reach the circumference of the thread loading wheel simultaneously. FIG. 33. It is correct if in the first cycle (72) the tip of the upper hook (46) arrives at the center of the needle at the moment when the thread lifts are at the lowest point of their stroke. To synchronize the thread lifts adjust the cam (74) at the highest point of its stroke, the tip of the front thread lift should be 5 mm above the outer circumference of the thread-loading wheel. FIG. 34.

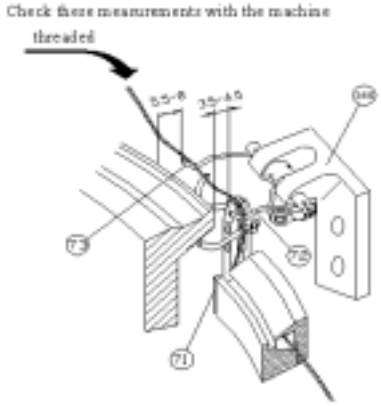


FIG.33

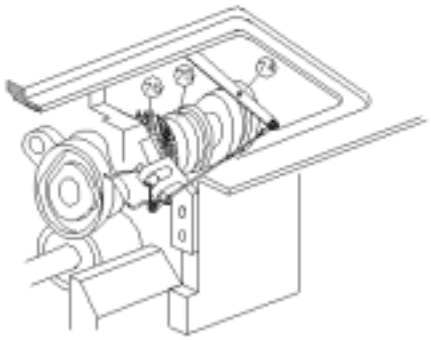

FIG.34

The transverse position of the thread lifts is adjusted by moving the pivot that supports them along its axis, positioning the front thread lift 3.5 mm from the small plate (71). N.B. - After the thread lifts have been brought into phase, position the cam (75) of the thread loader as explained in section 21 on the synchronizing of the thread loader and then mount the fixed wheel.

## 21- ADJUSTMENT OF TENSION UNIT

Remove the thread-loading wheel (52). Dismount the tension unit (58) by removing the nut of the lower joint of the tie rod (59) and the two screws (60) by which the unit is attached. FIGS. 35-36. The spring of the levers (62-63) is adjusted by means of the ring nut (64) after the screws (65) have been loosened. FIG. 36. The pressure exerted by the spring of the levers that hold back the thread (62-63) should be greater than that exerted by the spring of the thread catcher (61). Maintaining this relationship, adjust the two springs so that both exert the minimum necessary pressure, checking that there is a rapid and reliable return of all the moving parts.

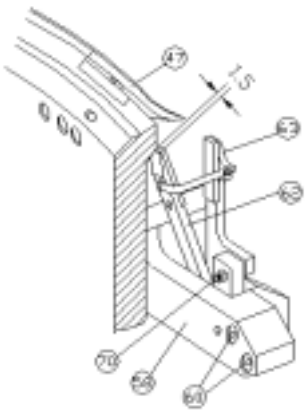

FIG.35

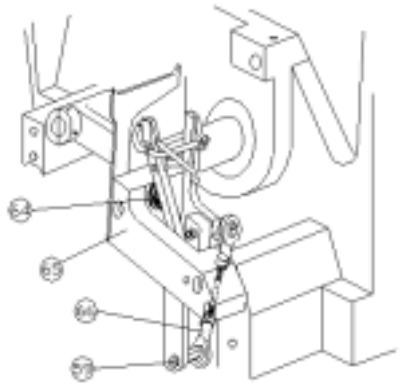

FIG.36

After adjustment reinstall the tension unit, tightening the two screws (60) and the screw (59) and paying attention to the two reference bushes. Position the thread guide (67) so that there is a gap of 0.2 mm between it and the small plate (71,FIG.33) mounted on the fixed wheel. Reinstall the thread-loading wheel without locking it. Attention: since the tension has not yet been brought into phase, the machine must be operated with extreme caution to avoid possible collisions between the rotary hook (47) and tension unit (58)

Operate the machine by hand and bring the closed tension to the end of its traverse to the right, the distance between the right-hand edge of the thread-loading wheel and center of the closed tension should be 18 mm. Setting it at this distance by adjusting the tie rod (66) between the two joints. FIG. 36. The tension cam (40,FIG.16) mounted on the upper shaft should be brought into phase so that the left-hand lever (62) is in the middle of the axis of the reference hole (45,Fig. 17) for the needle when the upper side of the thread clamp is in the vertical line with the outer edge of the thread-loading wheel. Dismount the thread-loading wheel. The phase of the cam (40.FIG.16) is correct if in the 1st cycle the tail of the upper hook (46.FIG.39) arrives at the center of the needle and at same time the tension closes again, after opening for the formation of the upper loop. The opening of the tension in this phase should be 1.5 mm. To carry out this adjustment turn the screw (70) after loosening the lock nut. FIG. 35. The thread guide (67), still in the previous phase, should be positioned slightly to the left of the left-hand tip of the thread guide plate (71, FIG.33). Mounted on the clamping screw of the thread-loading wheel.

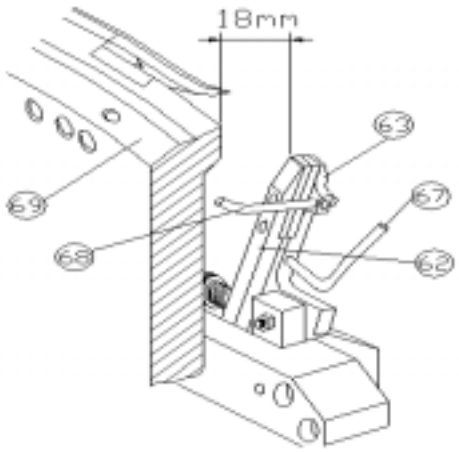


FIG.37

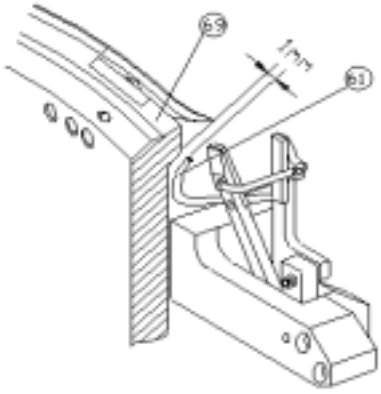


FIG.38

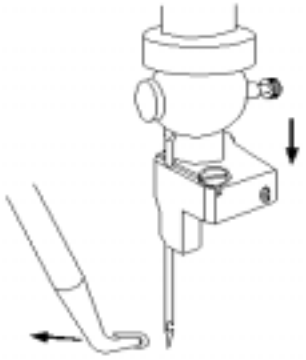

FIG.39

## 22- ADJUSTMENT OF THREAD LOADER

The thread loader (77) serves to load the thread into the needle. The rear part (A) of the tip, when in its position closest to the needle, should graze the needle without bending it. The position can be adjusted by moving the thread loader on its support after loosening the two screws (78). FIG.40. When the thread loader is at the end of its traverse to the right, the distance between the rear part (A) and the right-hand edge of the thread-loading wheel (52) should be 1.5 - 2 mm. FIG. 41.

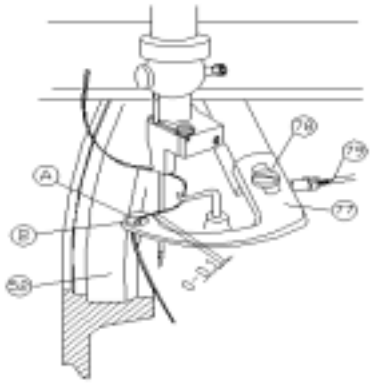


FIG.40

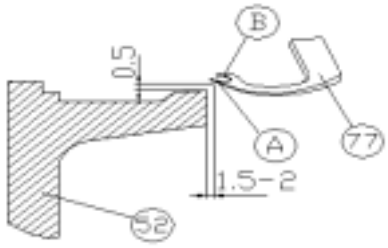


FIG.41

The correct distance is obtained by adjusting the tie rod (79) between the two joints. The height is adjusted by bending the thread loader. FIG. 41. Check that there is a gap of about 0.2-0.3mm between the thread loader and the lower part of the feed dog. FIG. 42.

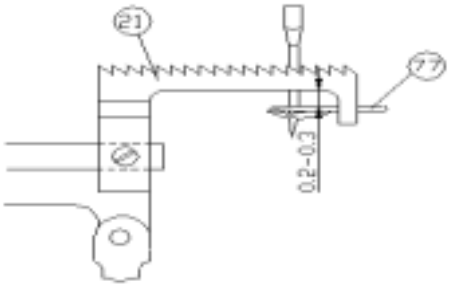


FIG.42

The movement is brought into phase by means of the cam (75). FIG.34. To check that the cycle is correct the two cams (74) and (75) must be positioned as follows: the second dowel bolt in the direction of the rotation of the thread loader cam (75) must be in line with the first dowel bolt of the thread lift cam (74). It is a good idea to check this operation when the machine is ready for sewing, by making sure that, with the throat plate pass open, the thread carried by the thread loader begins to touch the needle at a distance of about 3 mm above the upper hook of the needle. Once this has been done the throat plate can be mounted.

## 23-ADJUSTMENT OF UPPER TRANSPORT

Insert the mechanically actuated pressure foot (107) in its bar, in a cycle of the machine in which feet dog is below the throat plate. FIG. 43. Adjust the elbow joint to obtain a distance of about 0.3 mm between the guide and the pressure foot transport support (108). Once this has been done, block the foot, which should rest on the throat plate and be set parallel to it. Insert the stitch mechanism (see sec.26) and the jointed pressure foot (109) in there bar. Turn the hand-wheel to bring the feet dog to the lowest point of its stroke. Fix the pressure foot (109) by pushing it onto the throat plate and check that it is parallel to the mechanically actuated pressure foot and the throat plate. Check that the two pressure feet (107 - 109) rise the same distance above the throat plate. This distance can be adjusted by the screw (141). FIG. 43.

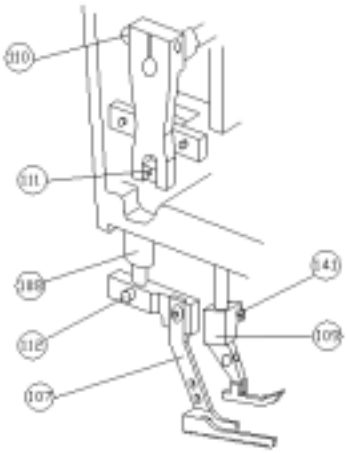


FIG.43

The movement of the feet must be coordinated and centered with respect to the feed dog by means of the fork-shaped transport lever (110) and by varying the position of the joint (110) in the slot of the pressure foot movement lever (113). The screw for adjusting the position of the joint (114) is accessible from the hole in the right-hand side of the bench. FIG. 44.

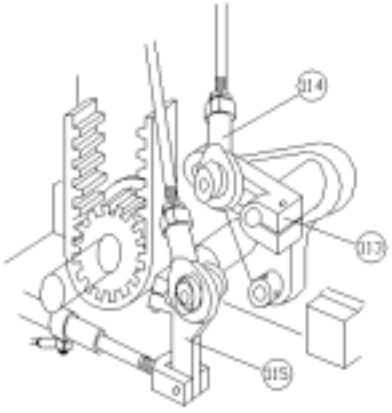


FIG.44

Make certain, by blocking the fork-shaped transport lever (110), that the tension washer of the boss (111) skims the lever itself without blocking its movement. Turn the hand-wheel to check that there is no collision between the moving parts when the stitch length is set at maximum. Synchronize the pressure foot lift eccentric so that the mechanically actuated presser foot descends onto the feet dog at the same time as the feet dog begins to emerge from the throat plate. Make sure that the eccentric and the connecting rod are in line when the screws of the eccentric are tightened. The clamping screws of the eccentric can be reached by removing the cover on the upper part of the arm. Turn the hand-wheel to bring the upper hook (46) into the 1st cycle. Use the elbow joint to raise the pressure feet to their maximum height, turning the hand-wheel so that the upper hook meets the jointed pressure foot (109). In this phase the upper hook should skim vertically the jointed pressure foot, at the minimum possible distance.

This adjustment is carried out by means of the pressure foot lift drive lever, which can be reached by removing the cover on the rear part of the arm. Place a piece of card or folded paper underneath the pressure feet. With the graduated dial for the adjustment of the length turned completely in an anti-clockwise direction, make 11 holes with a distance of 16 mm between the first and eleventh hole. Fix the lower stop register (98) for the minimum stitch length against the connecting lever (97). Then set the dial at “0” and tighten the dial clamping screw. FIG. 28 & FIG.46. Turn the dial clockwise until the vernier is at position 81/2. Never set the dial beyond this position. Fix the upper stop register (99) for the maximum stitch length against the connecting lever. FIG. 28. In this way the main transport is adjusted. The machine can sew with a saddle stitch and the length of the stitch can be altered at will between a minimum of 1.6 mm and a maximum of 6.3 mm. N.B. - Further adjustments can be made so that the machine can be put to different uses in relation to the multitude of possible applications.

**Attention: The maximum available lift is fixed at the time of assembly. It is therefore not advisable to tamper with the adjustment screws (116 and 117). FIG. 45.**

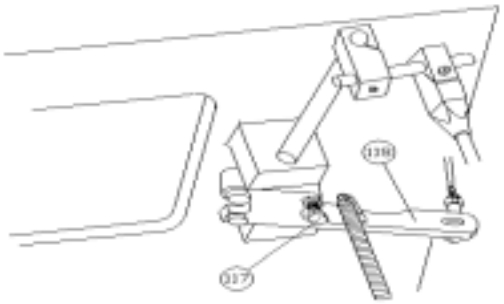

FIG.45

## 24- ADJUSTMENT OF STITCH CORRECTION

Turn the graduated stitch correction dial (15) as far as it will go in a clockwise direction. Set the vernier on ((0)), fix it in this position, and then turn the dial as far as it will go in an anti-clockwise direction. FIG. 46. Turn the graduated stitch length dial (14) in a clockwise direction and set it at the maximum length. Tighten the screws of the stitch correction lever (120) so that can be placed by hand at a distance from the correction register (121). FIG. 47. Turn the hand-wheel until the needle bar reaches its L.D.C. in the second cycle. With the needle bar at its L.D.C. place the stitch correction eccentric (122) in the position in which the point correction lever (120) does not move when the position of the reversal lever (16) on the adjustment box is repeatedly reversed.

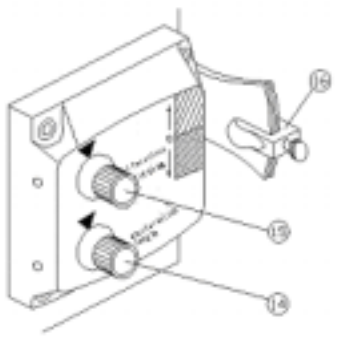

FIG.46

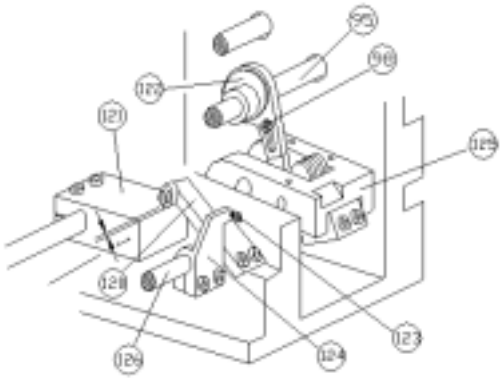

FIG.47

Check that the eccentric (122) and the connecting rod are still in line before tightening the screws of the eccentric. Fix the reversing lever (16) in the lowest position by means of the screw with the knurled head. FIG. 46. Loosen the clamping screws of the point correction lever (120) and the correction register (121). With the needle bar still at its L.D.C. in the second cycle, position the bearing of the point correction lever (120) so that the line of contact with the correction register block (121) is 1 mm from the front edge of the register itself, and then tighten fully the screws of the correction register block. FIG. 47. Turn the adjustment screw (123) in the counter lever until the end of its shank project about 1 mm from the counter lever (124). Block the screw with its lock nut. With the needle bar at its L.D.C. in the 2nd cycle, and keeping the adjustment screw (123) of the counter lever resting against the stitch correction lever (120), move both levers and tighten the clamping screws of the counter lever in the position in which there is a distance of 1.5 mm between the bearing and the correction register (121). Now make holes in a piece of card. Make this row of stitches with a ((B)). In this case (B) the short corrected stitch would be visible on the lower part of a sample of fabric, since the reversing lever (16) on the adjustment box was in the bottom position. Turn the hand-wheel to bring the needle bar to its L.D.C. and loosen the screw with the knurled head (119) of the reversing lever. Move the lever to the top position and fix it with screw. Make a new row of holes and mark it with ((T)). This sequence would show the short corrected stitch on the upper part of a sample of fabric because the reversing lever (16) was in the top position. Now compare the two sequence. Normally they should be the same. The machine works with the soft-point mechanism, and so the length of short corrected stitch in the sequence marked ((T)) should be adjusted to be slightly shorter than in the sequence marked ((B)). This adjustment is necessary in order for the short corrected stitch to look the same on both the front of the jacket and on the lapel. To correct this apparent difference on sewn garments please proceed as follows:

(a) Compare the two rows of perforations to determine the correction necessary.

(b) Turn the hand-wheel to bring the stitch correction lever (120) into the position of maximum intervention, with the bearing in contact with the correction register block (121), and loosen the two screws of the reversal drive lever (115). FIG. 44.

(c) Moving the correction support (125) toward the lower main shaft (95) produces the longest short corrected stitch in the ((B)) sequence and the shortest one in the ((T)) sequence.

(d) Moving the correction support (125) toward the spindle (126) of correction lever produces the shortest short corrected stitch in the ((B)) sequence and the longest one in the ((T)) sequence. The effect of these adjustments can easily be seen by observing the variations they cause in the position of the stitch-lengthening lever (96) connected with the stitch adjustment drive lever (93). FIG. 28.

(e) After making the necessary correction tighten the two screws of the reversal drive lever (155). FIG. 44. The last adjustment to be made is the minimum length of the short corrected stitch.

(f) Turn the hand-wheel to bring the stitch correction lever (120) into the most forward position in the bearing against the correction register block (121).

(g) Loosen the locking nut of the adjustment screw (123) and the two clamping screws of the stitch correction lever (120).

(h) Turning the adjustment screw (123) in a clockwise direction shortens the short corrected point, while turning it in anti-clockwise direction lengthens the short corrected point.

(i) Make certain that the adjustment screw (123) is turned with the bearing of the correction lever (120) pushed up against the correction register block (121). After adjusting, fix the adjustment screw with its block nut and block the screws of the stitch correction lever (120) while this rests against the correction register block (121). FIG. 47.

## 25- ADJUSTMENT OF THREAD BREAKING TENSION UNIT

The thread-breaking tension unit (135) serves to hold back the thread during the first stitches before it is cut. The tension unit is adjusted by adjusting the height of the cam (136) mounted on the inside of the arm, on the pressure foot lift shackle (137), or by moving the whole unit (135) along its axis after loosening the clamping screw (138). Make sure that the tension opens before the pressure feet are raised when the elbow joint is activated. FIG. 48.

## 26- ADJUSTMENT SOFT STITCH MECHANISM

Turn the hand-wheel to bring the machine into the position in which the upper hook (46) is at the end of its stroke behind the needle in the 1st cycle. Adjust the height and the orthogonal position of the drive lever clamp (127). The height should be set so that there is a distance of 1.5mm between the drive lever and the tong of the upper hook. The orthogonal position should be adjusted by setting the spindle that is integral with the drive lever parallel to the longitudinal axis of the clamp screw (127). FIG.50. Adjust the torsion of the spring by rotating the ring nut (128). The torsion should be adjusted to the maximum, taking care that is not compressed when the spike (129) of the soft stitch is at the maximum of its travel toward the operator. Tighten the clamping screw of the thread take-up lever (130) so that the lever can be used for subsequent adjustments. Pull the spike (129) up so that there is a gap of 1.5mm between it and the throat plate. Tilt the spike slightly by turning its point in the direction of the transport, and then tighten the screw that clamps the spike. The operator in relation to his or her particular requirements will determine the soft-stitch effect. The soft-stitch movement is brought into phase by adjusting the thread take-up lever (130). Turn the hand-wheel to bring the needle bar to its U.D.C. in the phase in which the upper hook begins its traverse to bring the thread toward the needle. In this position the opposing ends of the spike and the upper hook are separated by a vertical gap of 3mm. FIG.50. The longitudinal position of the spike is adjusted in the following way: The adjustable stop (131) serves to set the extreme position, behind the point of the spike. Adjust the stop so that there is sufficient distance between the spike and the jointed pressure foot for the thread to pass easily when the spike comes to a stop behind the needle. The soft stitch mechanism can be disconnected by means of the handle located on the lever that moves the upper hook (139). FIG. 50.

## 27- LUBRICATION AND CLEANING

Lubrication and cleaning of the machine must be carried out periodically at least once a month. The tracks of the cams and gears should be lubricated with special gear grease, while all the other moving parts should be lubricated with industrial sewing machine oil if medium density.

**SPECIFICATION**

| | |
|---|---|
| **Motor Type** | Servo Motor revs 3400 |
| **Sewing Speed** | Up to 500 s.p.m. |
| **Needle Type** | 780C (Size: 16.18.20.23) |
| **Stitch Length** | Stitch Length from 0.6mm to 6mm |
| **Thread Length** | Maximum 90cm |
| **Air Pressure** | 0.6 Mpa. |
| **Lubrication Oil** | Spindle Oil |
| **Lamp** | 1PH 220 Volts AC. |
| **Appearance Size** | 128cm X 96cm X 85cm |
| **Measurement** | 133cm X 113cm X 133cm |
| **Net Weight** | 150 Kgs. |
| **Gross Weight** | 260 Kgs. |