



QUALITY RECOGNIZED WORLDWIDE AT VERY COMPETITIVE PRICES

# ORION

617-627-637-647-657

620-629-639-640-649

MAINTENANCE HANDBOOK

N 352





## WARNINGS

For general warnings on the subject of safety, see the INSTRUCTION BOOKLET. The installation and adjustment as well as maintenance operations shown in this booklet must only be carried out by specialist technical staff.

### WARNING

**BEFORE CARRYING OUT MAINTENANCE OPERATIONS, DISCONNECT THE EQUIPMENT AND MOTOR FROM THE MAIN ELECTRIC AND PNEUMATIC CIRCUITS, AND MAKE SURE THE MACHINE DOES NOT START WHEN THE PEDAL IS PUSHED.**

**BEFORE RECONNECTING TO THE MAIN ELECTRIC AND PNEUMATIC CIRCUITS, MAKE SURE ALL COVERS HAVE BEEN CLOSED AGAIN AND ALL PROTECTION WHICH MAY HAVE BEEN REMOVED HAS BEEN REPLACED.**

**NONCOMPLIANCE WITH THESE SAFETY RULES MAY PUT PEOPLE AT RISK.**

### CONDITIONS OF GUARANTEE

Rimoldi Necchi guarantees that all Rimoldi Necchi machines (hereafter defined as "the products") will be free from defects in material or workmanship for one shift per day for twelve months from the date the invoice is issued to the end user (client).

During the guarantee period, RIM, the AGENT or the RETAILER of the Rimoldi Necchi machine (hereafter defined as the "Seller"), will repair or replace any defective parts of the products covered by this guarantee and sold by them on behalf of Rimoldi Necchi free of charge. The repaired or replaced parts are only guaranteed for the remaining period of the product guarantee. Any maintenance operations and repairs carried out during the guarantee period do not modify the expiry date of the guarantee itself.

The guarantee operations are carried out on the client's premises, or, if necessary, at the sellers. In this case, the client must assume all transport costs and risks. Any replaced parts removed from the product become property of Rimoldi Necchi. Final decisions regarding the validity of the guarantee service requests and/or technical methods involved are taken by the Rimoldi Necchi Quality Management.

This guarantee does not cover breakdowns due to normal wear, unauthorized operations or modification, improper or inexpert use of the product, lack of, incorrect or insufficient maintenance and/or lubrication, inadequate supply systems (electric and pneumatic), use of non-original spare parts and/or accessories and, finally, it does not cover damage to electronic parts caused by natural atmospheric events. Therefore, components which are worn due to normal use of the machine are not replaced under guarantee, such as needles, feed dogs, plates, presser feets, knives, loopers, etc

This guarantee only ensures the client for the repair and replacement of defective parts. All other claims and requests are excluded, including those related to loss of production or damage to things or people due to the use of a Rimoldi Necchi machine, even if due to the breakdown of the machine itself. Requests to replace the product itself are also excluded. This guarantee replaces any other guarantee or condition, either explicit or implicit, including therein any guarantee that the product is suitable for particular purposes.

This is the unique and complete agreement which regulates the relationship between the client, the seller, and Rimoldi Necchi, relating to the guarantee. No employee or organization of the seller is authorized to modify it on behalf of the seller or Rimoldi Necchi.

In the case of dispute regarding the contents, limits of application and anything else concerning the guarantee, the Italian version of these regulations will apply, since translations into other languages are only provided out of courtesy.

The competent law court is Milan, Italy.

*Rimoldi Necchi S.r.l. reserves the right to modify or vary, for technical or commercial reasons, the information printed in this brochure.*

## INDEX

- 1 - TECHNICAL FEATURES
- 2 - TYPE OF STITCHES
- 3 - MACHINE SPEED AND MOTOR PULLEY TABLE
- 4 - GENERAL INSTRUCTIONS
- 5 - INSTALLATION
  - 5.1 - ELECTRIC SYSTEM
  - 5.2 - LAMP CONNECTION
  - 5.3 - CONNECTION DIAGRAMS
- 6 - LUBRICATION
  - 6.1 - FILLING WITH OIL
  - 6.2 - DISPOSAL OF USED OIL
  - 6.3 - OIL CHANGE
- 7 - MAINTENANCE
- 8 - TRANSPORT
- 9 - REPLACING THE NEEDLE
- 10 - PRESSER FOOT PRESSURE
- 11 - FITTING AND ADJUSTING TRIMMING KNIVES
  - 11.1 - BOTTOM KNIFE
  - 11.2 - TOP KNIFE
  - 11.3 - SHARPENING THE KNIVES
- 12 - VARIATION OF BIGHT WIDTH
- 13 - ADJUSTING THREAD TENSION AND THREADING
  - 13.1 - ADJUSTING THREAD TENSIONS
  - 13.2 - THREADING
  - 13.3 - THREADING OF THE CHAIN STITCH THREAD TAKE UP  
(MACHINES CLASS 620, 629, 639, 640, 649)
- 14 - ADJUSTING FEED DOG HEIGHT
- 15 - ADJUSTING STITCH LENGTH
- 16 - ADJUSTING DIFFERENTIAL FEED RATIO
- 17 - NEEDLE GUARD ADJUSTMENTS FOR OVEREDGE STITCH
  - 17.1 - SINGLE NEEDLE MACHINES 617, 627, 637, 647
    - CHECK STANDARD SETTING
    - ADJUSTMENT OF FRONT NEEDLE GUARD
    - ADJUSTMENT OF REAR NEEDLE GUARD
  - 17.2 - TWIN NEEDLE MACHINES CLASS 617, 627, 637, 647, 657
    - CHECK STANDARD SETTING
    - FIXED REAR NEEDLE GUARD
  - 17.3 - MACHINES CLASS 620, 629, 639, 640, 649
    - CHECK STANDARD SETTING
- 18 - NEEDLE GUARD ADJUSTMENTS FOR THE CHAIN STITCH
  - 18.1 - MACHINES CLASS 620, 629, 639, 640, 649
    - CHECK STANDARD SETTING
    - ADJUSTMENT OF FRONT NEEDLE GUARD (FOR ALL THE MACHINES)
    - ADJUSTMENT OF REAR NEEDLE GUARD (ONLY FOR 639 AND 649 MACHINES)
- 19 - PULLER FEED (MACHINES CLASS 627 AND 629)
- 20 - ELASTIC METERING DEVICE WITH ELECTRONIC CONTROL
  - 20.1 - CONTROL BOX DESCRIPTION
  - 20.2 - PRESETTING OF THE ELASTIC FEEDING
  - 20.3 - EXAMPLES
- 21 - MACHINES WITH VARIABLE TOP FEED CLASS 640, 647 AND 649, 657
  - 21.1 - ADJUSTING THE TOP FEED
  - 21.2 - ADJUSTING THE HEIGHT OF THE TOP FEED DOG
  - 21.3 - ADJUSTING THE HEIGHT POSITION OF THE TOP FEED DOG
  - 21.4 - ADJUSTING THE TOP FEED DOG'S VERTICAL STROKE
  - 21.5 - POSITIONING THE TOP FEED DOG IN THE PRESSER FOOT SLOTS
  - 21.6 - LIMITING THE TOP FEED DOG'S LONGITUDINAL STROKE (FEED STROKE)
  - 21.7 - GATHERING PLATEN ADJUSTMENT - HEADS TUYPE 647/649-22
  - 21.8 - PRESSER FOOT ADJUSTMENT - HEADS 649-22....
- 22 - TROUBLE SHOOTING CHART

## **1 - TECHNICAL FEATURES**

- 617** Ultra high speed overlock machine equipped with a small arm instead of the standard work plate, which permits serging, welting operations, attaching of elastics, on tubular or already closed into a ring articles, even on those of little diameter.
- 620** Ultra high speed double locked chain stitch machine Type 401 for assembly seams, binding operations etc.  
The machine is available in 1 needle and 2 needle models.
- 627** Ultra high speed overlock machine for assembly seams, serging and welting operation of elastics, lace tapes, etc.  
The machine is available in the following models:  
1 needle for making type 503, two threads overedging stitch and type 504 3 threads overedging stitch.  
2 needle for making type 509, three threads overedging stitch and type 512 and 514 four threads overedging stitches.
- 629** Ultra high speed safety stitch machine for assembly seams, binding operations, zipper applications etc.  
The machine is available in the following models:  
2 needle for making type 515, four threads safety stitch (2+2) and type 516 five threads safety stitch (2+3).  
3 needle for making type 401, 504, 514, 516 and 401+514 stitches. The different stitch combinations can be obtained using only the necessary needles.
- 637** Overlock machine, particularly suitable for sewing operations on heavy and very heavy weight fabrics or for seams which require a wide overedge bight. Fitted with long needle bar stroke.
- 639** Safety stitch machine, particularly suitable for sewing operations on heavy and very heavy weight fabrics. Fitted with long needle bar stroke.
- 640** Double chain stitch machine Type 401 fitted with variable top feed behind the needles. Highly recommended for a perfectly paired transportation of the upper and lower plies.
- 647** Overlock machine fitted with variable top feed. Particularly suitable for sewing operations on difficult to feed fabrics, for straight-hanging seams without ply shifting and for operations which require gathering in one of the ply or in both top and bottom ply.
- 649** Safety stitch machine fitted with variable top feed. Particularly suitable for sewing operations on difficult to feed fabrics, for straight-hanging seams without ply shifting and for operations which require gathering in one of the ply or in both top and bottom ply.
- 657** Overedge stitch type machine fitted with top feed, with removable small arm replacing the traditional work plate for assembling seams on tubular or closed into ring garments even of small diameter.

## **2 - TYPE OF STITCHES (FIG. 1)**

All the Orion machines can be fitted, on request, with mechanic, pneumatic, electric or electronic devices for mechanizing and automating certain manual operations improving output and alleviating operator fatigue.

Ask the Rimoldi Necchi Service personnel for more detailed information about machine uses and special devices applications, or request the descriptive leaflets from Rimoldi Necchi S.r.l.

## **3 - MACHINE SPEED AND MOTOR PULLEY TABLE (Fig.2)**

The part symbol and the size of outside diameter (D) are printed on each pulley (fig. 3).

### **WARNING**

Run the machine at reduced speed for the first three months of use. It is suggested to use the machine at a speed of 500/600 revolutions per minute lower than the maximum speed indicated on the technical documentation furnished with the machine.

To obtain the maximum machine performance, the speed must always correspond to the operator's skill level and to the difficulty of the sewing operation.

*Rimoldi Necchi S.r.l. does not guarantee the machine if the same is used at a speed higher than the maximum indicated or if the machine is employed for operations different than those described in the technical documentation.*

## 4 - GENERAL INSTRUCTIONS

Before connecting the motor to the electric network:

- Check that the connection of the terminal board inside the motor is suited to the rated voltage
- Check that the overload cut-out switch is calibrated to the same voltage as above and to the power of the installed motor
- Check that the earthing connections are all efficient

If, after connecting the motor to the electric line, the direction of rotation of the machine is opposite to the one prescribed, the direction of rotation of the motor can be reversed just transposing between them any of the three polarities in the connecting plug, without touching the yellow-green earthing cable.

## 5 - INSTALLATION

### 5.1 - ELECTRIC SYSTEM

The electric system includes the motor cutout switch (fig. 4), the motor connecting cable and a cable without plug. The allowed connections to the electric grid are those laid down **by the laws in force**.

The power cable (the blue one only) is considered to be double insulated, and therefore can be used for overhead connections by fixing it to a suitable vertical column (e.g. the bobbin holder).

**N.B.- The cable must not be threaded through the bobbin holder tube or any other tubes which could cause abrasions and cuts in the wire protecting sheath, which may lead to the risk of hidden contacts.**

With every type of connection, it is necessary to connect the electric system to an **officially acknowledged** earth using the yellow-green conductor (fig. 5).

### 5.2 - LAMP CONNECTION

For a self-contained light input, the RIMOLDI 019-90 is to be used. It is to be connected to the input terminals of the overload cut-out switch.

Input E = 125/160/220/240/380/415 V. 50/60 Hz

Adjustable output U = from 5 to 12 V. 20 VA

### 5.3 - CONNECTION DIAGRAMS FOR SEWING UNITS FITTED WITH SINGLE-PHASE DEVICES (for example: SARA, RITA, SONIA, etc.)

The connections of the devices which make up the Rimoldi Necchi sewing units or sewing systems must comply with the diagrams in figures 6 and 7 set out for the cases of five-wire (distributed neutral) 380 V three-phase and four-wire 380 V (NON-distributed neutral) electric lines respectively.

In the case of connection to lines with NON-distributed neutral (fig. 7), it is necessary to place an approved single-phase transformer for input voltages of 380-415V and output voltages of 220-240V 200VA between the motor cut-out and single-phase devices, or request Rimoldi transformer n. P910054-0.

**Always, either check the setting of the motor cutout switch or have it checked by competent staff.**

The value of the motor cutout switch setting (in amperes) must be equal to the value shown on the table attached to the switch box itself, according to the voltage and power of the motor used. In order to check and adjust the setting, remove the switch cover, and turn the special screw (or move the cursor index) until the index points to the required value.

**Warning: disconnect from the mains before removing the cover.**

Rimoldi heads can be fitted to common stands in the majority of cases, provided the stands have the following characteristics:

- 40 mm thick plywood wooden table.
- adjustable feet to ensure stability.
- ability to support a weight of at least 200 kg. stably (head + motor, and any other devices).
- for Gemini and feed-off-the-arm heads, it is advisable to use original Rimoldi stands.
- It can be installed in two ways on the table:
- normal: work surface raised above the table (Fig. 8 - 8a - 8b).
- submerged: work surface on exactly the same level as the table (Fig. 9 - 9a - 9b).

N.B. If it is wished to install the machine on a stand which the client already has, it is necessary to carry out the following operations:

- cut the table, or modify the cut if the stand already has a table, bearing in mind that:
  - normal positioning - Encl. B
  - submerged positioning - Encl. C
- replace the machine holding plate fixed to the table with the one supplied with the new head.

#### **A) NORMAL POSITIONING** (Fig. 8 - 8a - 8b)

##### a) Level stand

- b) Fit the machine holding plate by proceeding as follows:
  - place the 2 long bolts E and 2 short bolts E1 into the four 10 mm. diam. holes in the tables (fig. 8a)
- c) Place rubber bushes G and spacers H into the 2 holes (one back and one front) on the right of machine holding plate F Fig. 8a). This should be done by observing the plate placed on the stand from the operator's point of view.
- d) Connect the 2 crosspieces F1 to plate F with two bolts P (which should be fitted into the holes in the left of plate F), two washers Q and two nuts M (do not screw nuts M right down - Fig. 8a)
- e) Place rubber bushes G and spacers H in the remaining holes in crosspieces F1
- f) Place washers I onto rubber bushes G
- g) Slip two spacers R1 and two washers S onto short bolts E1 (Fig. 8a)
- h) Positioning machine holding plate F, prepared as above, by fitting it onto the 4 bolts E and E1 using rubber bushes G (Fig.8a)
- i) Slit the four washers L which should rest on rubber bush G onto the four nuts E and E1 (Fig. 8a)
- l) Slip on 2 long bolts E 2 washers L and 2 spacers R (Fig. 8a)
- m) After fitting washers L onto nuts E and E1, tighten nuts M completely (Fig. 8a)
- n) Fit the 4 support C with respective nuts D onto the machine holding plate F (without locking them) and the washers (Fig. 8 and 8b)
- o) Insert the 4 rubber pads A on the 4 pins C (Fig. 8 and 8b)
- p) Take hold of the head as shown in enclosures A and A1 and place it on the 4 rubber pads A (Fig. 8)
- q) By adjusting support pins C, set the height of the head, making sure that it protrudes from the plane of the table Level the head by adjusting pins C  
N.B. This operation is always carried out with the trapezoidal drive belt detached.
- r) Connect the drive belt (10x6 mm. cross section) to the motor and head pulleys (handwheel). Only use the motor pulley supplied with the head. In any case, never exceed the maximum speed shown in the characteristics of the head. Check that the drive belt is on a plane at right angles to the pulley axes (vertical plane).  
Adjust the belt tension: the tension is correct when a camber of about 10-15 mm. is created by placing a load of about 1-2 kg. in the position shown in the figure 10.
- s) Connect tie-rod B to the machine presser foot lift lever N of the holding plate F and stand pedal (Fig. 8b).

#### **B) SUBMERGED POSITIONING** (Fig.9 - 9a -9b)

##### a) Level stand

- b) Fit the machine holding plate by proceeding as follows:
  - place the 2 long bolts E and 2 short bolts E1 into the four 10 mm. diam. holes in the tables (Fig. 9a)
- c) Place rubber bushes G and spacers H into the 2 holes (one back and one front) on the right of machine holding plate F (fig. 9a). This should be done by observing the plate placed on the stand from the operator's point of view.
- d) Connect the 2 crosspieces F1 (upside down compared to the normal positioning - Fig. 8a) to plate F with two bolts P (which should be fitted into the holes in the left of plate F) two washers Q and two nuts M, which should not be screwed right down (Fig. 9a)

N.B. The bolt P, respect to fig. 9b, will be assembled on its own head under the plate F.

- e) Place rubber bushes G and spacers H in the remaining holes in crosspieces F1
  - f) Slip washers I onto bolts E and E1 (Fig. 9a)
  - g) Slip spacer R onto bolts E, and spacer R1 onto bolts E1. Place four washer I onto rubber bushes G (Fig. 9a)
  - h) Positioning machine holding plate F, prepared as above, by fitting it into the 4 bolts E and E1 using rubber bushes G (Fig.9a)
  - ) Slip the four washers L, which should rest on rubber bushes G, onto the four bolts E and E1 (Fig.9a)
  - l) Tighten nuts M on the 4 bolts E and E1 and lock them down. At this point, lock down the two nuts M on the bolts P (Fig.9a)
  - m) Fit the 4 support C with respective nuts D onto the machine holding plate F (without locking them) and the washers (Fig. 9 and 9b)
  - n) Insert the 4 rubber pads A on the 4 pins C (Fig. 9 and 9b)
  - o) Take hold of the head as shown in enclosures A and A1 and place it on the 4 rubber pads A (Fig. 9)
  - p) By adjusting support pins C, set the height of the head so that work surface T (Fig. 9) is aligned with the table. Level the head by adjusting pin C
- N.B. This operation is always carried out with the trapezoidal drive belt detached
- q) Connect the drive belt (10x6 mm. cross section ) to the motor and head pulleys (handwheel). Only use the motor pulley supplied with the head. In any case, never exceed the maximum speed shown in the characteristics of the head. Check that the drive belt is on a plane at right angles to the pulley axes (vertical plane). Adjust the belt tension: the tension is correct when a camber of about 10-15 mm. is created by placing a load of about 1-2 kg. in the position shown in the figure 10.
  - r) Connect tie-rod B to the machine presser foot lift lever N of the jolding plate F and stand pedal (Fig. 9b).

**N.B. Incorrect installation of the machine on the stand can lead to more noise and vibrations than stated by the manufacturer.**

In particular, noise and vibrations can increase when:

- Non-original rubber pads are used.
- Non-original spare parts are used.
- The belt is not adjusted correctly (too slack).
- Non-original or unsuitable supports are used.
- Bobbin holders which are not firmly fixed to the support are used.
- Guards and work surface have been tampered with or not fixed correctly.

**NOTE: the packing material should be disposed of properly.**

## 6 - LUBRIFICATION

### 6.1 - FILLING WITH OIL

**Warning: the machine is supplied without lubricant, therefore, before starting the machine, it is necessary to fill it using the special oil for industrial sewing machines - RIM 32M - provided with the machine itself.**

In order to fill it or later top it up, proceed as follows:

- Unscrew transparent cap A (Fig. 11).
- Pour in the contents of the RIM 32M oil tin supplied with the machine.
- Check the amount poured in through sight glass D (Fig. 11). The oil level must never exceed the upper line (MAX) or fall below the lower one (MIN).
- Screw cap A back on.

**WARNING: always use RIM 32M both when the oil is changed and when it is topped up. It is not advisable to mix oils of different types. The use of lubricating oils of a different type to the oil recommended or the addition of additives can lead to irreparable machine damage and the forfeiture of the guarantee.**

Only in special situations, it is possible to use one of the following types of oil as an alternative to the RIM 32M oil recommended by the manufacturer:

- AGIP OTE 32
- MOBIL DTE LIGHT
- TEXACO REGAL OIL 32

## 6.2 - DISPOSAL OF USED OIL

Incorrect disposal of used oil causes serious pollution problems for man, animals, and the environment. It is therefore necessary to dispose of the oil by carefully following the instructions below:

- 1) RIM32M lubrication oil is totally mineral, therefore after use it is categorized among the "RECLAIMABLE USED MINERAL OILS"
- 2) The used oil must be collected in a suitable container used exclusively for this purpose.
- 3) The oil should be delivered to a legally authorized body.

## 6.3 - OIL CHANGE (Fig.12)

To empty the oil out of the sump, unscrew the drain plug A on the lower part of the sump.

Dismount the sump from the base of the machine unscrewing the 5 screw that fix it and change or clean with gasoline or petroleum the filters C, D, E and F.

Blow the filters with low pressure air before remounting.

Check the drain plug gasket and replace with a new one, if it is damaged.

Remount the drain plug with gasket on the sump.

## 7 - MAINTENANCE

### WARNING

**BEFORE CARRYING OUT MAINTENANCE OPERATIONS, DISCONNECT THE EQUIPMENT AND MOTOR FROM THE MAIN ELECTRIC AND PNEUMATIC CIRCUITS, AND MAKE SURE THE MACHINE DOES NOT START WHEN THE PEDAL IS PUSHED.**

**BEFORE RECONNECTING TO THE MAIN ELECTRIC AND PNEUMATIC CIRCUITS, MAKE SURE ALL COVERS HAVE BEEN CLOSED AGAIN AND ALL PROTECTION WHICH MAY HAVE BEEN REMOVED HAS BEEN REPLACED.**

**NONCOMPLIANCE WITH THESE SAFETY RULES MAY PUT PEOPLE AT RISK.**

The periodic maintenance operations to be carried out in order to keep the machine constantly in perfect working order are:

### Every day.

- Clean all the moving machine parts related to feed and stitch formation with a brush.
- Check the needle point and needles.
- **Check the oil level and, if necessary, top up before starting the daily activity.**
- To clean the machines sewing area, remove the work plate.

For the 627, 637 and 647 class machines this is done by inserting the tweezers A or a screwdriver under the workplate B as shown in figure 13 and then lifting the tweezers as shown in figure 13 until the work plate is separated from the magnet.

For machines class 620, 629, 639, 640 and 649, the work plate is removed by opening the front cover N (Fig.14), and lifting it until it is separated from the magnet.

If the machine is equipped with 135 or 235 chain cutting device, in order to remove the work plate it is necessary to slide it toward the rear part of the machine.

### Every Week.

- Remove the needle plate and clean the feed dogs and looper with a brush.

### Each month.

- Check the wear of the belt.
- Check the wear of the needle guard.

### Every three months

If the machine is equipped with subsidiary filter, unscrew the transparent cap A (Fig.11) and remove the filter. Clean it with gasoline or petroleum and blow it with low pressure air before remounting.

### **Every six months**

- Replace the oil and clean the filter (see "Every three months"). N.B. - If RIM 32M oil is not used, replace it every three months.

IMPORTANT If the machine is employed for sewing fabrics which produces a lot of dust, the change of oil and of filters must be more frequent.

### **Every two years**

Replace the oil filters of the sump when using oil RIM 32M.

For this operation, dismount the sump from the base of the machine unscrewing the 5 screw that fix it. Unscrew the screw B, remove the filters C, D, E and F and replace with new ones (fig.12).

When using a type of oil different than RIM32M, it is necessary to replace oil every year.

### **After a long period without use**

If the machine is not used for a long time, it is necessary to cover it with the cover provided.

### **Before starting to use it again, carry out the following operations:**

- Check the oil level and, if necessary, top it up.
- Check that all the accident-prevention guards are in place and perfectly operative.
- Connect the machine to the main electric and pneumatic circuits.
- Oil the needle bar with RIM 32M oil.
- Run the machine at low speed ~3000 rpm for about 10 seconds and check that oil flows under the transparent filling cap.

## **8 - TRANSPORT**

The machine weighs is 36 Kg.

## **TAKE HOLD OF THE HEAD AS SHOWN IN ENCLOSURES A and A1 (INSTALLATION)**

### **9 - REPLACING THE NEEDLE (FIG. 11)**

The needle is inserted into the hole of the needle clamp and is fixed by the allen screw F (Fig. 9).

To replace the needle, **switch off the motor** and make sure that the machine has stopped completely by pressing the pedal:

- 1) Turn the handwheel manually to raise the needle to its top position.
- 2) Lower lever L and turn the presser foot towards the left side of the machine.
- 3) Slaken needle-locking screw F, remove the needle and replace it with a new one, which must be of the same system as indicated in the label of the machine.

Take into consideration that the looper passage groove must be turned towards the rear part of the machine.

- 4) Tighten screw F without forcing it, taking care not to alter the needle orientation.
- 5) Bring the presser foot back to its normal working position.

After replacing the needle, remember to position the finger protection plate correctly namely in a position so that the finger tips cannot reach the needle points neither upward nor downward.

### **10 - PRESSER FOOT PRESSURE (FIG. 11)**

To adjust the pressure of the presser foot, loosen screw I and turn the knob M: turn the knob in clockwise direction to increase the pressure and in counterclockwise direction to decrease it.

ATTENTION: THE NEW "LOW INERTIA" PRESSER FOOT REQUIRES A VERY LIGHT PRESSURE ACTION IN ORDER TO FEED THE FABRICS PROPERLY.

### **11 - FITTING AND ADJUSTING TRIMMING KNIVES**

#### **11.1 - Bottom knife**

To fit and adjust the bottom knife proceed as follows:

- 1) insert knife in the seat on knife holder D (Fig.15), taking care that the cutting edge does not project above the work plate, then tighten screw A
- 2) make sure that the knife holder D moves freely in its seat and then position it to suit the bight width required
- 3) lightly tighten screw B
- 4) position the top knife touching the bottom one and slacken screw B so that spring C creates the right pressure between the two knives
- 5) tighten screw B.

### 11.2 - Top knife

The machine can be equipped with one of the top knife assemblies represented in Fig.16a and 16b.

To fit the top knife (fig. 16a) proceed as follows :

- 1) position the knife in the seat on knife holder E and lock with screw F
- 2) turn the handwheel till the top knife assembly reaches its bottom dead point and check that the cutting edge is 0,8 mm below the cutting edge of the bottom knife.

If the knives are not in the exact position, loosen screw F and move the top knife assembly towards right to lower the top knife edge or towards left to raise the top knife edge.

Slide the top knife in its oblique seat to maintain the correct contact between the two knives.

To fit the top knife (fig. 16b) proceed as follows :

- 1) position the knife on knife holder E and lock with screw F
- 2) turn the handwheel till the top knife assembly reaches its bottom dead point and check that the cutting edge is 0,8 mm below the cutting edge of the bottom knife.

If the knives are not in the exact position, loosen screw F and move the top knife up or down.

To maintain the correct contact between the two knives loosen screw G and properly move the knife assembly.

### 11.3 - Sharpening the knives

The knives should be sharpened periodically using the Rimoldi Necchi RASA S001-02 (50/60Hz 220V) and Rimoldi Necchi RASA S002-02 (50/60Hz 110V) and the special block 990322-0-10 (supplied on request) which ensures the correct sharpening angle.

## 12 - VARIATION OF BIGHT WIDTH

The needle bight width A (fig. 17) is measured between the needle and the right edge of the needle plate finger.

The bight width can be varied slightly by adjusting the position of the trimming knives.

For varying it beyond certain limits the needle plate must be changed.

See needle plate on request on Technical Documentation.

## 13 - ADJUSTING THREAD TENSION AND THREADING

### 13.1 - Adjusting thread tensions (fig. 11)

The threads coming from thread guide bracket B are pressed between two tension discs.

Therefore to obtain the correct stitch formation the pressure of the spring must be adjusted by turning tension knob C.

Be careful not to screw it down too tightly as this could cause thread breakage.

### 13.2 - Threading

For the correct threading of the machine, see the threading chart or the threading sketch glued inside the loopers cover.

The various ways of threading the "tension plates" to suit the kind of thread used are illustrated in Fig.18.

A- cotton threads

B- woolen, helanca, dralon threads and all soft threads generally

C- very twisted threads

### **13.3 - Threading of the chain stitch thread take up (machines class 620, 629, 639, 640 and 649)**

For threading the chain stitch thread take up operate as follows:

- 1) Open the front cover N (Fig.14) and pull out the sliding thread guide (fig.19)
- 2) Thread the chainstitch looper thread through the small tube B with its threading wire (to be threaded from the front of the machine)
- 3) Take the thread which has come out of tube B, threading it in sequence:  
from hole on thread guide C to holes on thread guides D and E through slit F, then thread guide G and continue to thread the chainstitch looper.  
When the threading is finished, push back the sliding thread guide A and mount the work plate.  
When pushing back the sliding thread guide, make sure that the portion of the thread in tension between holes D and E is securely inserted in the cut out between the thread guides H and K.

Also make sure that the high point on the lower take-up cam L begins to take-up thread from the looper at the same time as the needle reaches top dead point.

### **14 - ADJUSTING FEED DOG HEIGHT**

With the feed dogs in their highest position, the distance they project from the needle plate must be equal to the value indicated in the Technical Documentation.

To obtain this setting loosen the fixing screw A for main feed dog and B for differential feed dog (Fig.20) and move the feed dog up or down.

If the machine is equipped with chain feed dog with one row of teeth (Fig.21a), this must not project from the needle plate surface when the feed dogs are in their highest position.

If the machine is equipped with chain feed dog with two rows of teeth (Fig.21b), this must be 0,2 mm lower than the feed dogs.

### **15 - ADJUSTING STITCH LENGTH (\*)**

To adjust the stitch length proceed as follows (fig.11):

- 1) turn the handwheel and press the push button E until it is completely inserted in the notch of stitch adjustment eccentric.  
ATTENTION: For machines class 620, 629, 639, 640 and 649 open the front cover N (fig.14) in order to push the pushbutton E.
- 2) turn the handwheel:
  - in clockwise direction (as shown by the arrow in the drawing) to lengthen the stitch.
  - in counter clockwise direction to shorten the stitch.
- 3) release the push button E.

Make some sewing tests to verify if the stitch length is the desired one.

### **16 - ADJUSTING DIFFERENTIAL FEED RATIO (\*)**

The differential feed ratio is the ratio between differential feed dog stroke and main feed dog stroke.

When the differential feed dog stroke is greater than main feed dog stroke, the fabric will be gathered during sewing (positive differential feed).

This differential feed ratio is particularly suitable for obtaining perfectly straight-hanging seams on weft knit and elastic fabrics and for gathered seams in general.

When the differential feed dog stroke is less than main feed dog stroke, the fabric will be stretched during sewing (negative differential feed).

This differential feed ratio is particularly suitable for seaming woven and warpknit fabrics.

To adjust the differential feed ratio proceed as follows (fig. 11):

- 1) loosen button G and slide it up for gathering the fabric (positive differential feed)
- 2) slide button G down for stretching the fabric (negative differential feed).

The stop H is preset at the factory according to the application characteristics of the machine and its position must not be modified.

(\*) The maximum stitch length and the minimum and maximum differential feed ratio, indicated for each subclass in the Technical Documentation, refer to the standard sampling of the machine and can be obtained as indicated in chapter 15 and 16. Different values can be obtained by the proper adjustment of mechanical part inside the machine.

## 17 - NEEDLE GUARD ADJUSTMENTS FOR OVEREDGE STITCH

Adjustment of the needle guards must be done, when the needle plate and differential feed dog have been taken off the machine.

### 17.1 - Single needle machines 617, 627, 637 and 647.

#### Check standard setting.

Turn the handwheel until the lower looper point is in the centre of the needle scalf (Fig.22), as the needle is moving towards top dead centre and check:

Distance between looper point and needle

- 1) With needle size 80 and smaller, the lower looper point must brush the scalf of the needle without touching it (fig. 23).
- 2) With needle size 90 and larger, the lower looper point must be 3 - 5 hundredths of a millimetre (0,03 - 0,05 mm) from the scalf of the needle (fig. 24)

#### Adjustment of front needle guard

##### Height

The height of the bevel of the front needle guard A (figs. 23-24) in respect to the upper part of the needle eye B (figs. 23-24) depends on the thickness of the needle plate.

- 1) On machines with 3 mm thick needle plates the front needle guard A must be pushed down in its holder (fig.25)
- 2) On machines with 4,25 mm thick needle plates, the front needle guard A must be 1.3 mm above the sleeve of the looper holder C (fig.26).

To obtain this, loosen screw D (Fig.27) and adjust front needle guard as specified above .

##### Distance from the needle

- 1) With needle size 80 or smaller, the front needle guard A must flex the needle B slightly (figs. 23-24). To achieve this it is advisable to set the machine up with a needle which is 1/10 of a millimetre (0,1 mm) smaller than the size to be used on the machine. (example: with an 80's needle, use a 70's needle etc.) therefore loosen screw E (fig.27) and push the front needle guard till it touches the needle without flexing it (Fig.28a).

Replace the original needle that had been removed and which is slightly flexed (Fig.28b).

- 2) With needle size 90 and larger, the front needle guard must brush the needle without flexing it (Fig.28c).

#### Adjustment of rear needle guard

##### Height

The bevel on the rear needle guard F (Figs. 27 and 29) must be slightly lower than the needle eye B. To achieve this, loosen screws G and H (Fig. 27) and properly set the rear needle guard .

##### Distance from the needle

With any size needles, the rear needle guard F must brush the needle without flexing it. (see fig. 29a for needle size 80 or smaller and fig.29b for needle size 90 or larger). To achieve this, loosen screws G and H (Fig. 27) and set as above.

#### WARNING

After every adjustment, make sure that the thread passes freely even when the needle is in contact with the rear needle guard.

### 17.2 - Twin needle machines 617, 627, 637, 647 and 657.

#### Check standard setting

The setting and possible adjustment of the rear needle guard is carried out always with lower looper point in the centre of the needle scalf (Fig.30), as the needle is moving towards top dead centre, firstly on the left hand needle (Fig.31a) and subsequently on the right hand needle (Fig.31b), following the instructions given for single needle machines.

To adjust the position of the front needle guard A so that it is parallel with both needles, loosen screw D (Fig. 27) taking care not to vary the height of the needle guard.

When the front needle guard A and the rear needle guard F are in their correct position push the needle against the rear needle guard and move the lower looper to the right: the point of the looper must not touch the scalf of the needle.

#### **Fixed rear needle guard (on request)**

The movable rear needle guard can be substituted on request for a fixed rear needle guard L (fig. 32). The correct adjustment of the front needle guard A and rear needle guard L corresponds to those described in previous paragraphs.

On the twin needle machines, to adjust the position of the needle guards so that they are parallel with both needles (fig. 33), loosen screws D and M (fig. 32) taking care not to vary the height of the needle guards.

### **17.3 - Machines class 620, 629, 639, 640 and 649.**

#### **Check standard setting**

To check the position of the overedge stitch needle guards, see instructions as per 627 single or two needle machines.

To adjust front needle guard N, loosen screws O (fig.34).

## **18 - NEEDLE GUARD ADJUSTMENTS FOR THE CHAIN STITCH**

### **18.1 - Machines class 620, 629, 639, 640 and 649.**

#### **Check standard setting**

Turn the handwheel until the chain stitch looper point is in the centre of the needle scalf, as the needle is moving towards top dead point and check that the looper point brushes the scalf of the needle without touching it.

#### **Adjustment of front needle guard (for all the machines)**

##### **Distance from the needle**

- 1) With needle size 80 or smaller, the front needle guard A (fig. 35) must flex the needle slightly.
  - 2) With needles size 90 and larger, the front needle guard A must brush the needle without flexing it.
- To flex the needle to eliminate play between the looper point and the needle scalf proceed as follows: For machines class **620, 629 and 640** loosen screw P, and push front needle guard Q towards needle (fig.36).  
For machines class **639 and 649** loosen screw B, and push front needle guard towards needle (fig.35).

#### **Adjustment of rear needle guard (only for 639 and 649 machines)**

##### **Distance from the needle (Fig.35)**

With any size needles the rear needle guard C must brush the needle without flexing it.  
To achieve this loosen screw D and set as above.

## **19 - PULLER FEED**

### **Machines class 627 and 629**

The auxiliary top roller feed in the presser foot, in front of the needles, works in conjunction with the main drop feed.

The roller movement is synchronized with the feed dog movement but can be regulated separately by means of the adjustable cam set on the main shaft .

To make the adjustment turn screw A (fig.37): in counter clockwise direction, towards the plus sign (+) to increase the rotation speed of the roller in clockwise direction, towards the minus sign (-) to decrease it.

NOTE - To facilitate needle threading, bring the needles to their top position, move lever B (fig. 37) towards the right and turn the roller arm until the first stop release point is reached

The arm can be made to turn to the second stop release point, by pulling pin C downwards.

**IN THIS POSITION DO NOT START THE MACHINE OR TURN THE HANDWHEEL MANUALLY!**

Bear in mind that when the machine is not running and without fabric, there must always be a distance of 0.1 - 0.2 mm. between the toothed roller and the needle plate. this distance is obtained by adjusting screw J.

The puller lift device D is supplied with three interchangeable cams that permit different roller lift distances from the needle plate to be obtained as indicated in the following table:

CAM	PULLER LIFT
0.6	da 0 a 0.9mm
1	da 0 a 1.5mm
2	da 0 a 3mm

Intermediate lift distances are obtained by moving lever E on quadrant F (fig. 37).

When fitting on one of the cams supplied, remember that lever E must be in position "0" and that slider H must be in its right position, touching the right stop plate.

This condition is obtained by turning screw J.

Roller pressure on the fabrics is adjusted by screw G.

## 20 - ELASTIC METERING DEVICE WITH ELECTRONIC CONTROL

The metering roller are actuated by a D.C. motor controlled by a microprocessor.

The desired amount of elastic to be fed is obtained by adjusting the counters of the control box.

It is advisable to use the 013-51 device so as to avoid uneven elastic tensioning that may arise between the roll of elastic and the metering rollers.

### 20.1 - Control box description (Fig. 38)

**Counters " A " and " B "** for presetting two different feeds of the elastic tape.

**Counter " G "** for presetting a secondary feed of the elastic tape by which, when required, the feeding values A or B can be varied during the seam. To obtain this feed it is necessary to press the right knee press control.

**Counters " A ", " B ", " G ,"** for presetting the decimals of feeding values "A" "B" "G".

**Counters " H "** for presetting the length of elastic tape to insert under the presser foot at the beginning of the next seam by heel-pressure on the threadle (used only on machines fitted with 351 and 352 special device).

**Counters " K "** used only with 351 and 352 special device, to get a gathering action at the beginning of the seam. The desired gathering action is obtained by automatically stopping the elastic rollers for the number of stitches preset on the counters K (x 10 = ten x 1 = unit).

**Selector "B/A"** for the choice of the preset elastic A or B.

**Lever " M "** it is used for running the rollers when the machine is off, to facilitate the insertion of the elastic tape between the roller .

**Switch " P "** ON/OFF switch for the electronic control box.

### 20.2 - Presetting of the elastic feeding

The presetters A B G are adjusted by a number wich can be calculated through the following formula:

$$V = L : (0.2 \times N)$$

**V** = number to be set

**L** = requested final length of the fabric (in millimeters) after application of the elastic tape

**N** = total number of the stitches included in the length L of the fabric

**0.2** = specific corrector value of the device

The value **N** is obtained by dividing the initial length of the fabric (in millimeters) for the stitch length used in the seam (in millimeters).

### 20.3 - Examples:

MAKING-UP LADIES' PANTIES:

#### A) Attaching elastic tape to legs openings without gathering

Length of the fabric before seam = 410 mm

Stitch Length = 2.2 mm

$$N = \frac{410}{2.2} = 186$$

Required length of the fabric after the seam 410 mm L = 410

$$V = 410 : (0.2 \times 186) = 410 : 37.2 = 11.0$$

**The number to be preset is 11.**

#### B) Attaching elastic tape to waist with gathering

Length of the fabric before seam = 680 mm

Stitch length = 2.2 mm

$$N = \frac{680}{2.2} = 309$$

Required length of the fabric after the seam 540 mm L = 540

$$V = 540 : (0.2 \times 309) = 540 : 61.8 = 8.7$$

**The number to be preset is 8.7**

NOTICE : carry out a few sewing tests and adjust the preset theoretical numbers which may vary to the thickness or the elasticity of the fabric and of the elastic tape

**Never preset a number that exceed 30.**

## 21 - MACHINES WITH VARIABLE TOP FEED CLASS 640, 647 AND 649, 657

Feed with a top feed dog serves to cooperate with the bottom feed dogs in order to obtain a perfect feed for any type of fabric.

Machines with top feed make it possible to:

- Perform "drop seams" perfectly without fabric slippage
- Perform seams that require a constant or variable abundance of fabric on the top or bottom fabric ply
- Perform seams with gathering on the top or on the bottom ply, with the possibility of eliminating the gathering with the machine running (647-22/23 and subclasse).

The top feed and the bottom feed can be set independently of each other so that gathering or fullness can be added to the lower or top ply.

### 21.1 - Adjusting the top feed

To vary the top feed with respect to the bottom feed it is necessary to loosen screw A in fig.39 and to act on lever B pushing it downwards to increase the top feed and pulling it upwards to reduce the top feed. The machines belonging to the 647-22/23 and 649-22/23 (gathering) subclasses are equipped with a knee press operated device for varying the top feed with the machine running so that a gathering effect on the top fabric ply is obtained (see fig. 40).

To pre-set the top feed's range of variation it is necessary to loosen the nuts blocking screws C and D fig.40 and to shift the screws upward in order to increase the top feed or to shift them downward in order to decrease it.

The minimum top feed is obtained by placing screw C in its lowermost position, while the minimum value (which may vary between subclasses according to the machines usage characteristics) is established in the factory through the positioning of a block inside the machine. (See quota X in the chapter "Limiting

the top feed dog's longitudinal stroke").

To avoid needlessly straining the internal block when moving screw D upward, it is advisable to position this screw in the following manner:

- Loosen the nut that blocks screw D and shift it to uppermost position
- Press the knee press as far as it goes, move screw D until it is against lever B and tighten the nut
- Makes sure screw D locks in place for lever B intervening before the internal block

NOTE: The obtain gathering effects in the top fabric ply with the machine running the machine must be equipped with device 115-12 for activating the differential with the machine running (available on request at extra cost).

### **21.2 - Adjusting the height of the top feed dog**

NOTE: The top feed dog's teeth, when it is in its lowermost position and when the bottom feed dog is in its uppermost position, SHOULD NEVER TOUCH THE BOTTOM FEED DOG'S TEETH.

The minimum distance "M" (fig. 41) between the two feed dogs with the needle in its uppermost position must correspond to the distance indicated on the setting chart included with every machine.

According to the fabric's characteristics or thickness it may be necessary to change this distance.

To perform this essential change it is necessary to loosen screw A in fig. 41 and to rotate eccentric pin B clockwise to reduce distance "M" and counter-clockwise to increase it.

Once the adjustment is made check that the top feed dog does not touch the bottom ones and tighten screw A completely.

NOTE: The factory setting conditions make it possible to obtain a difference in the top feed dog of +/- 0.7 mm. by acting on eccentric pin B.

If a larger variation should be necessary request the help of the mechanic to perform the adjustment explained in the next chapter.

### **21.3 - Adjusting the height position of the top feed dog**

The height position of the top feed dog can be varied for sewing fabrics of thicknesses different from the standard sampling norms of available subclasses (see fig. 42a for light and medium heavy fabrics and fig. 42b for heavy and very heavy fabrics).

To perform this variation proceed as follows:

- Position the needle at its uppermost point
- Remove top cover L in fig. 43
- Loosen screw E in fig. 43 and introduce a spacer between the top and bottom feed dogs equal to the quota "M" desired.
- Rotate pin K until the top feed dog touches the spacer placed between the feed dogs.
- Rotate the clamp F until rubber pad H is against the extension G of sector C.
- Tighten screw E
- Loosen screw Q (fig. 44) and rotate feed dog lift lever P until its end is 0,5 mm. from lever N.
- Move the presser foot lift lever R (fig. 44) against the base and tighten screw Q completely.

### **21.4 - Adjusting the top feed dog's vertical stroke**

Variation of the top feed dog's vertical stroke may be necessary to perform seams that encounter different thicknesses (intersections with cross seams or seams of semi-finished pieces with parts attached) (see fig. 45a).

For gathering sewing machine classes 647-22/23 and 649-22/23 the top feed dog's vertical stroke must be spacious (see fig. 45b) and the feed dog must also be height positioned so that during the whole feeding phase it is always in contact with the plate that separates it from the bottom feed dogs.

To adjust the top feed dog's vertical stroke proceed as follows:

- Position the needle at its lowermost point
- Remove top cover L (fig. 43)
- Loosen nut B in fig. 43 and slide pin A inside the opening in sector C, moving it in the direction shown by the arrow to increase the feed dog stroke's height and in the opposite direction to reduce it.
- Tighten nut B completely.

### **21.5 - Positioning the top feed dog in the presser foot slots**

To center the feed dog in the feed dog slots it is necessary to loosen the damper rings D in fig. 43 and to move the feed dog lift pin K as necessary.

### **21.6 - Limiting the top feed dog's longitudinal stroke (Feed stroke)**

NOTE: These instructions pertain to adjustments to be made only in the case that the machine has been disassembled to replace parts or to be overhauled.

Before proceeding with these regulations read the instructions carefully in order to return to the original setting conditions.

- Set the stitch length at the maximum, acting on the stitch regulation button as indicated in the chapter "REGULATION OF THE STITCH LENGTH".
- Rotate the handwheel manually bringing the lower feed dog to the end of the feed stroke (opposite side the operator).
- Loosen screw A (figs. 39 and 46).
- Remove cap B (fig.46) located on the back of the machine and the top cover L (figs.43 and 46).
- Loosen screw C (fig.46) and rotate arm D until it is in the position illustrated. The arm must be in vertical position.
- Tighten screw C.
- Loosen the screw of clamp E.
- Position clamp E so that quota "X" in the setting chart is obtained.
- Tighten clamp E. This operation prevents the operator from setting the feed dog stroke beyond the recommended maximum for the machine, damaging the presser foot and the feed dog.
- Tighten threaded pin F along its axis by means of screw A (figs.39 and 46) in order to prevent untrained personnel from varying the top feed dog's stroke, modifying the feed conditions set by the technician or by the operator.

### **21.7 - Gathering platen adjustment - heads type 647/649-22**

Make sure that the eccentric pin E is positioned in the figs. 47 and 48. The plate D must be:

- above platen A for heads type 647-22.....
- below platen A for heads type 649-22....

Loosen screws B and adjust the longitudinal position of platen A to about 11 mm from the needles as indicated in the figures. Loosen screws C and turn platen A with its mounting on the eccentric pin E until the gap between the plate itself and the needle stop is about 0.5 mm. Tighten screw C. With these adjustments and using triacetate fabric, a gathering ratio of about 50% both in gathering the upper and in the lower edge is obtained.

By slightly increasing the gap of 0.5 mm between needle stop and platen, a higher gathering ratio is obtained in the upper edge but with a consequent reduction in the gathering of the lower edge.

On the other hand, by reducing the 0.5 mm gap between needle stop and platen, the opposite effect is obtained.

### **21.8 - Presser foot adjustment - heads 649-22....**

Loosen screw A and, with a screwdriver, turn eccentric pin B so as to free it from the plates on the rear slide C, making sure that the rear slide rests flat on the needle stop; then turn eccentric B anticlockwise until the front slide D presses on platen E.

Tighten screw A.

## 22 - TROUBLE SHOOTING CHART

### FAULT: UNEVEN STITCHES

<b>Probable cause</b>	<b>Solution</b>
1 Wrong threading	1 Rethreading correctly
2 Thread thicker than needle eye	2 Use proper needle
3 Threads irregular thickness	3 Use good quality threads
4 Thread stand wrongly installed	4 Reset thread stand
5 Lower knife wrongly positioned	5 Readjust lower knife
6 Knives do not trim because are wrongly positioned	6 Readjust knives
7 Knives do not trim neatly because are worn-out	7 Sharpen or replace with new knives
8 Needle blunt	8 Replace needle
9 Inadequate thread tension	9 Readjust thread disc pressure or thread guides position
10 Inadequate feed dog height	10 Readjust feed dog height

---

### FAULT: HOLES IN FABRIC

<b>Probable cause</b>	<b>Solution</b>
1 Needle blunt	1 Replace needle
2 Needle size unsuitable for needle plate slot	2 Replace needle or needle plate
3 Unproper needle point	3 Use proper type of needle point

---

### FAULT: THREAD BREAKING

<b>Probable cause</b>	<b>Solution</b>
1 Poor quality of thread	1 Use good quality thread
2 Thread thicker than needle eye	2 Use proper needle for fabric and thread
3 Wrong threading	3 Rethreading correctly
4 Thread tension too tight	4 Readjust thread disc pressure
5 Needle wrongly installed	5 Reset needle correctly
6 Needle blunt	6 Replace needle
7 Thread stand wrongly installed	7 Reset thread stand
8 Overheating of needle	8 Use needle cooler device or thread lubricator device
9 Needle guards badly adjusted	9 Readjust needle guards
10 Wrong setting of needle and loopers	10 Readjust needle and looper settings
11 Needle, looper, needle plate and thread guides worn-out	11 Grind off, polish or replace with new ones
12 Loopers blunt	12 Replace loopers

## 22 - TROUBLE SHOOTING CHART

### FAULT: SKIPPED STITCHES

Probable cause	Solution
1 Wrong threading	1 Rethreading correctly
2 Needle wrongly installed	2 Reset needle correctly
3 Needle bent or blunt	3 Replace needle
4 Inadequate thread tension	4 Readjust thread tension or thread guides position
5 Loopers blunt	5 Replace loopers
6 Needle guards badly adjusted	6 Readjust needle guards
7 Wrong setting of needle and loopers	7 Readjust needle/ loopers setting

---

### FAULT: NEEDLE BREAKING

Probable cause	Solution
1 Too strong fabric pulling by operator	1 More care in fabric handling
2 Wrong needle size	2 Use proper needle for fabric and thread
3 Needle wrongly installed	3 Reset needle correctly
4 Needle guards badly adjusted	4 Readjust needle guards
5 Needle bent or blunt	5 Replace needle

---

### FAULT: IRREGULAR SEAM

Probable cause	Solution
1 Thread tension badly adjusted	1 Readjust thread disc pressure
2 Inadequate pressure of presser foot	2 Readjust presser foot pressure
3 Inadequate height of feed dogs	3 Readjust feed dogs height
4 Knives do not trim neatly	4 Readjust knives or sharpen knives
5 Wrong setting of differential feed ratio	5 Readjust differential feed ratio
6 Needle too thick	6 Use proper needle size for fabric and thread
7 Seam width is too narrow in relation to the chain-off finger of needle plate	7 Readjust seam width or replace needle plate

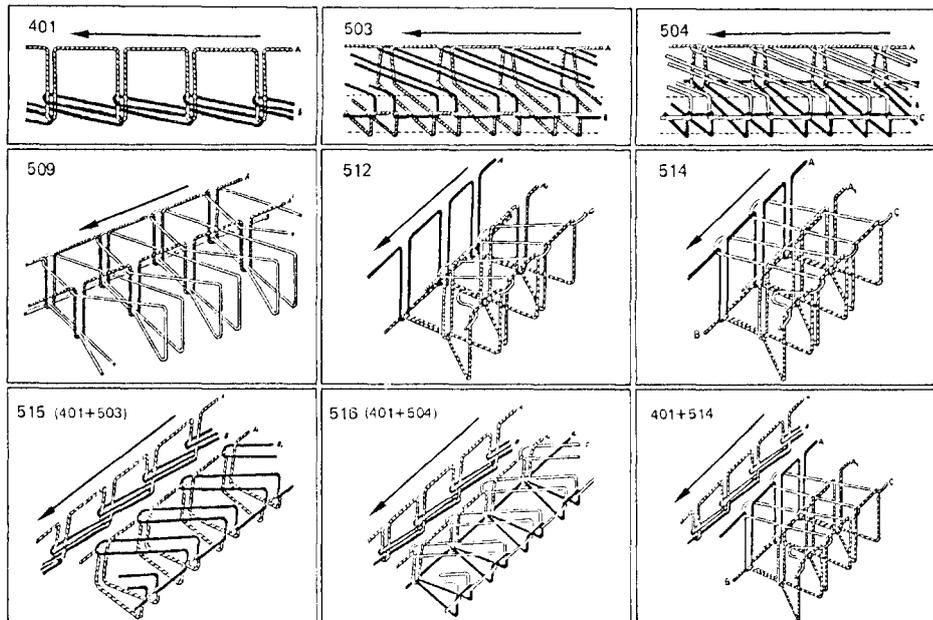
---

### FAULT: OIL LEAKING

Probable cause	Solution
1 Screws between base and sump badly tightened	1 Tighten the screws
2 Oil drain plug not completely screwed in	2 Screws in the plug
3 Oil drain plug gasket damaged	3 Replace the gasket

**FIGURE  
FIGURES  
FIGURES  
ABBILDINGEN  
FIGURAS**

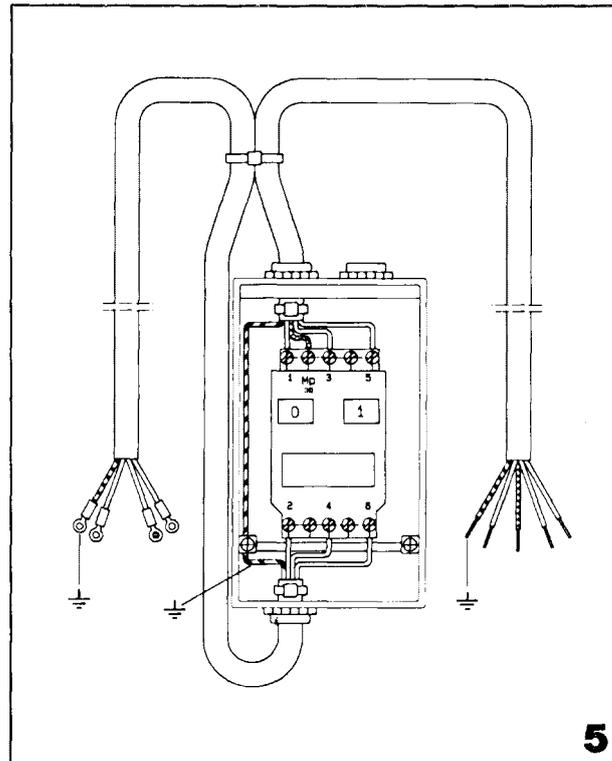
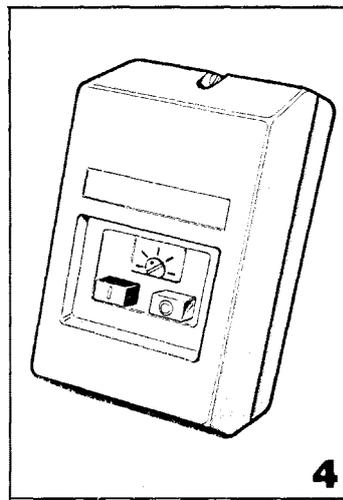
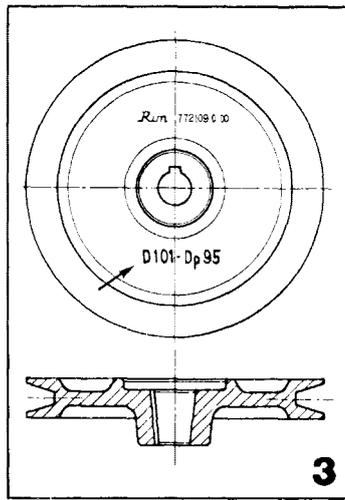




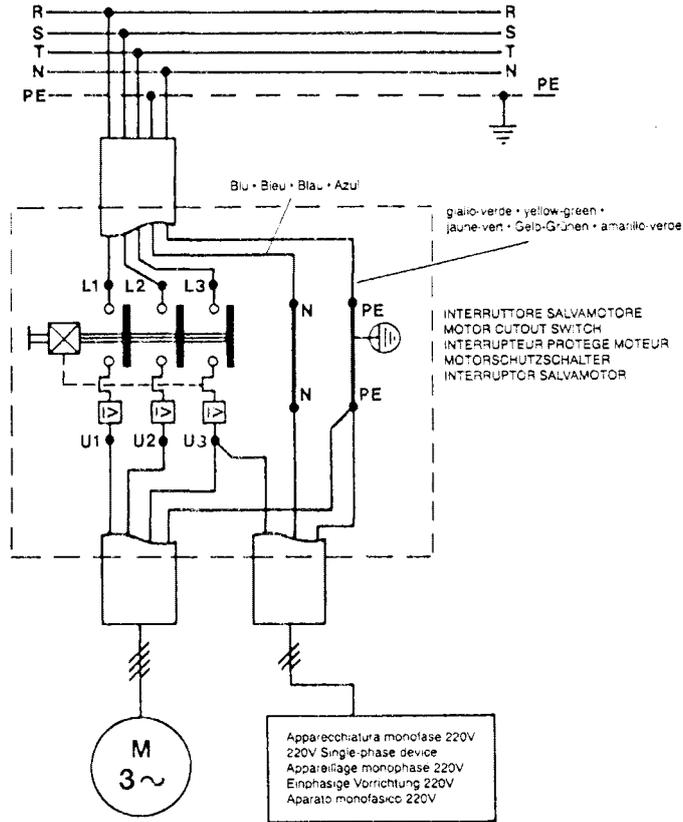
1

TABELLA DELLE VELOCITA' E DELLE PULEGGE DEL MOTORE TABLE OF MACHINE SPEED AND TYPE OF PULLEY TABLEAU DES VITESSES DES MACHINES ET DES POULIES DU MOTEUR TAFEL DER MASCHINEN UND MOTORSCHIBEN-GESCHWINDIGKEITEN TABLA DE LAS VELOCIDADES DE LAS MAQUINAS Y DE LAS POLEAS DEL MOTOR			
motore/motor Motor/moteur 50 Hz - 2800 RPM		motore/motor Motor/moteur 60 Hz - 3360 RPM	
RMP macchina/ machine/ Maschine/ machine/ maquina	pulegge motore motor pulley Reimenscheibe poulies du moteur poleas del motor	RMP macchina/ machine/ Maschine/ machine/ maquina	pulegge motore motor pulley Reimenscheibe poulies du moteur poleas del motor
4000	772105-0	4000	772102-0
4500	772107-0	4500	772104-0
5200	772109-0	5200	772106-0
5500	772110-0	5500	772107-0
5700	772111-0	5700	772108-0
6000	772112-0	6000	772109-0
6500	772114-0	6500	772110-0
7000	772116-0	7200	772112-0
7500	772118-0	7500	772113-0
8000	772120-0	8000	772115-0
8500	772122-0	8500	772116-0
9000	772124-0	9000	772117-0

2

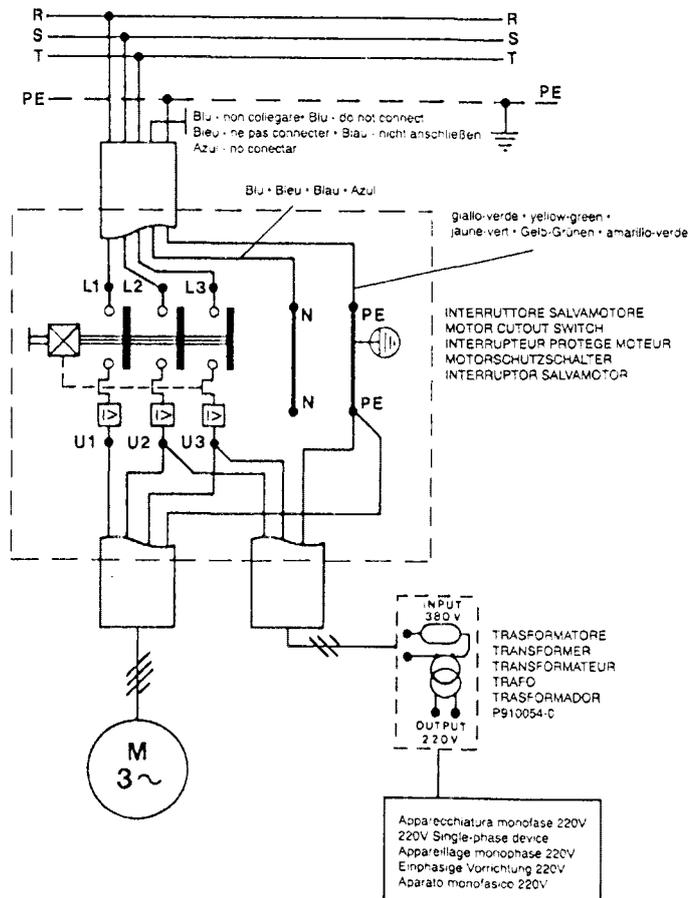


Impianto elettrico utente a 5 fili (Neutro distribuito) • Electric system for 5 wires user (distributed neutral) • Installation électrique utilisateur à 5 fils (neutre distribué) • Elektrische Anlage Benutzer, fünfpolig (neutralen Pol) • Instalación eléctrica usuario a 5 cables (Neutro distribuido)

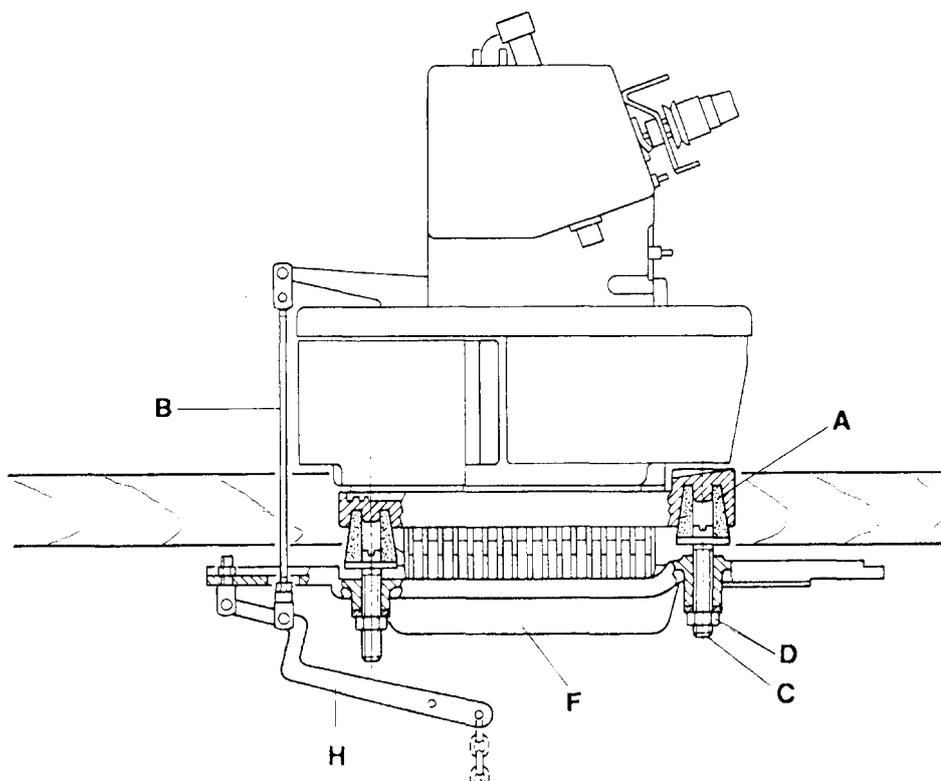
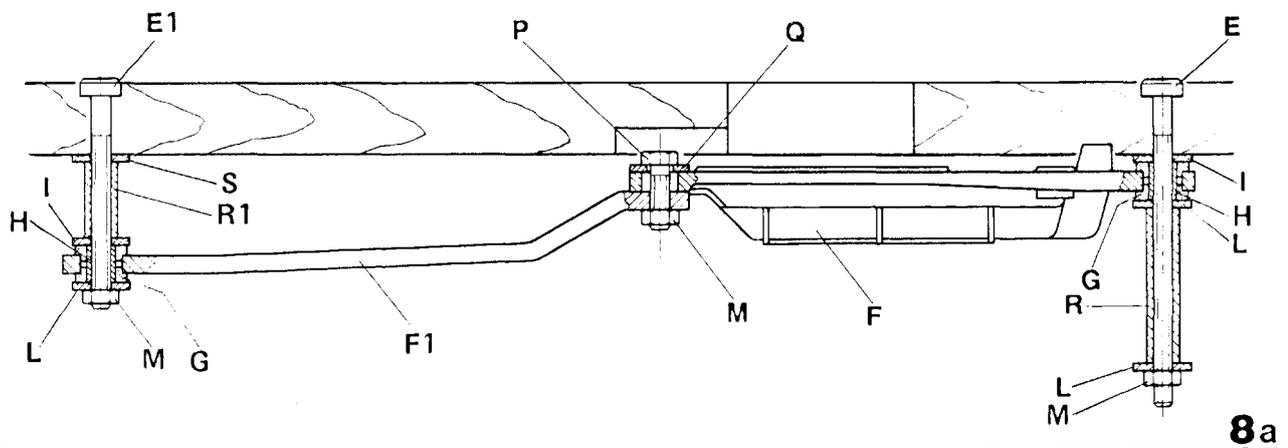
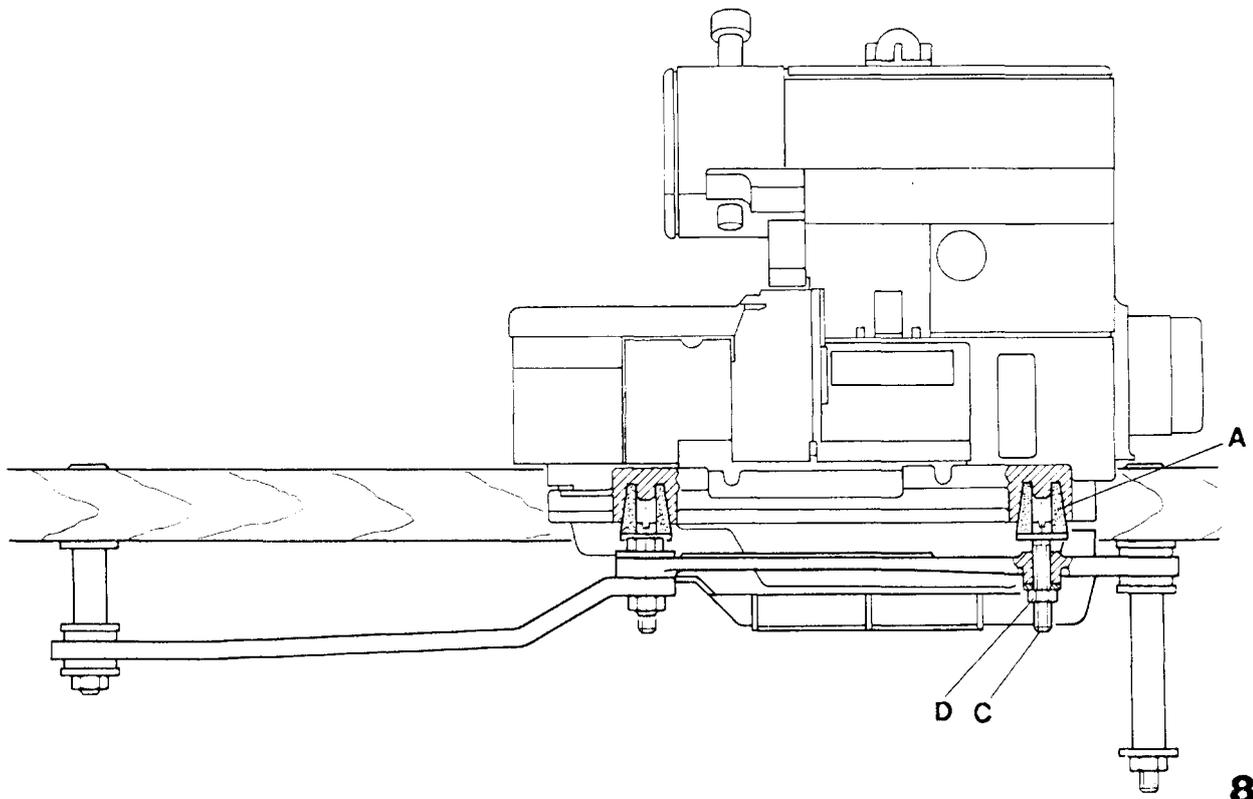


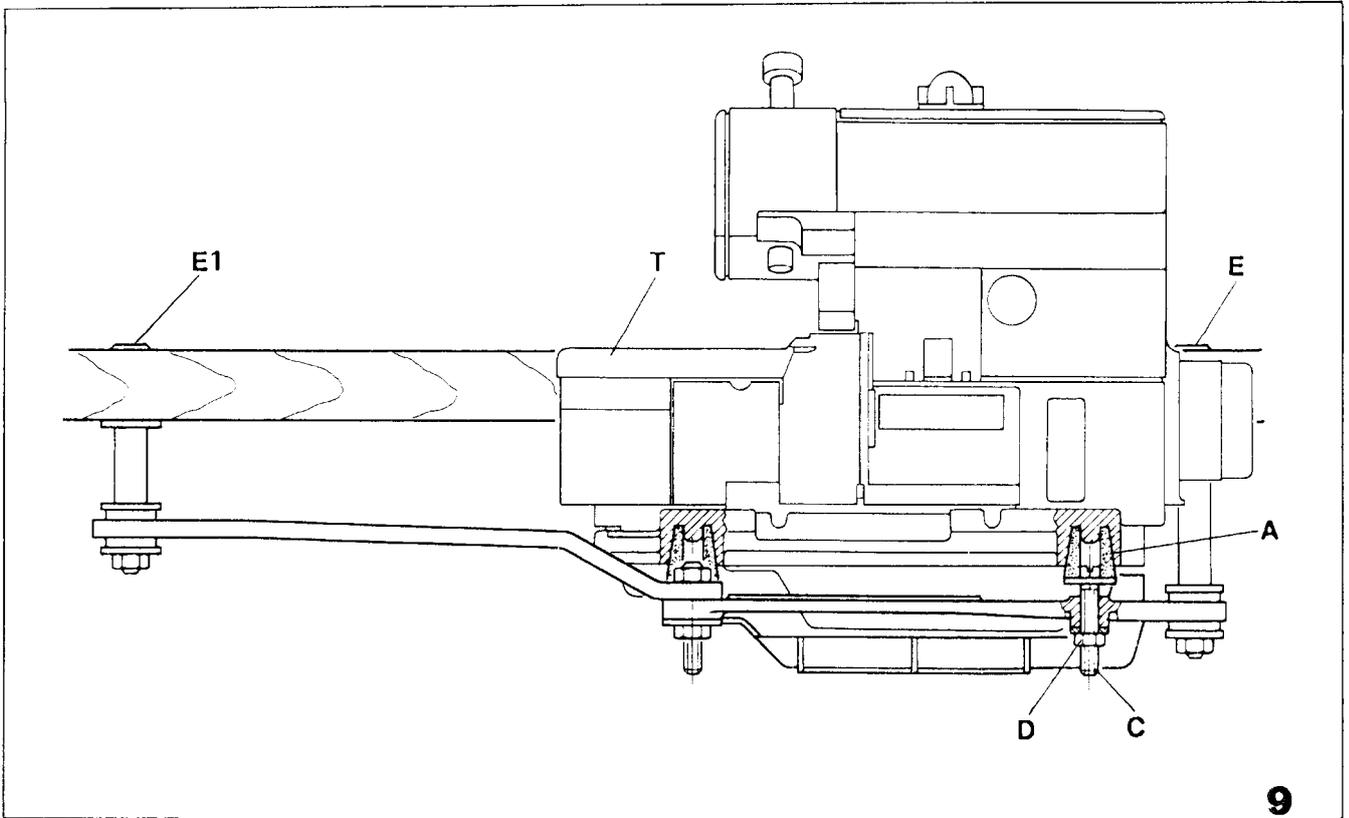
6

Impianto elettrico utente a 4 fili (Neutro NON distribuito) • Electric system for 4 wires user (NON distributed neutral) • Installation électrique utilisateur à 4 fils (neutre NON distribué) • Elektrische Anlage Benutzer, vierpolig (OHNE neutralen Pol) • Instalación eléctrica usuario a 4 cables (Neutro NO distribuido)

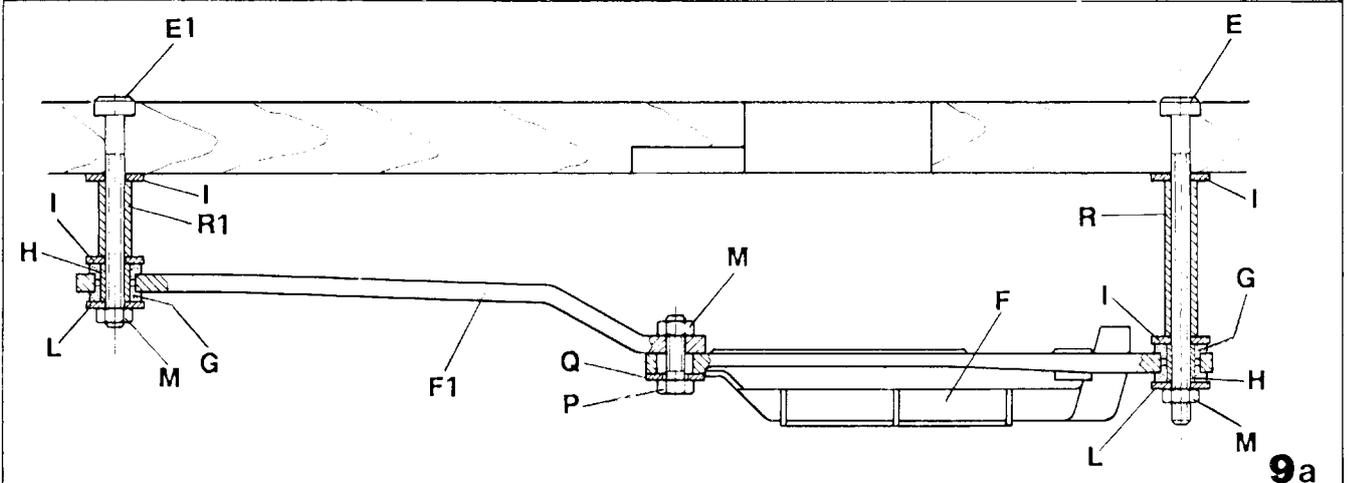


7

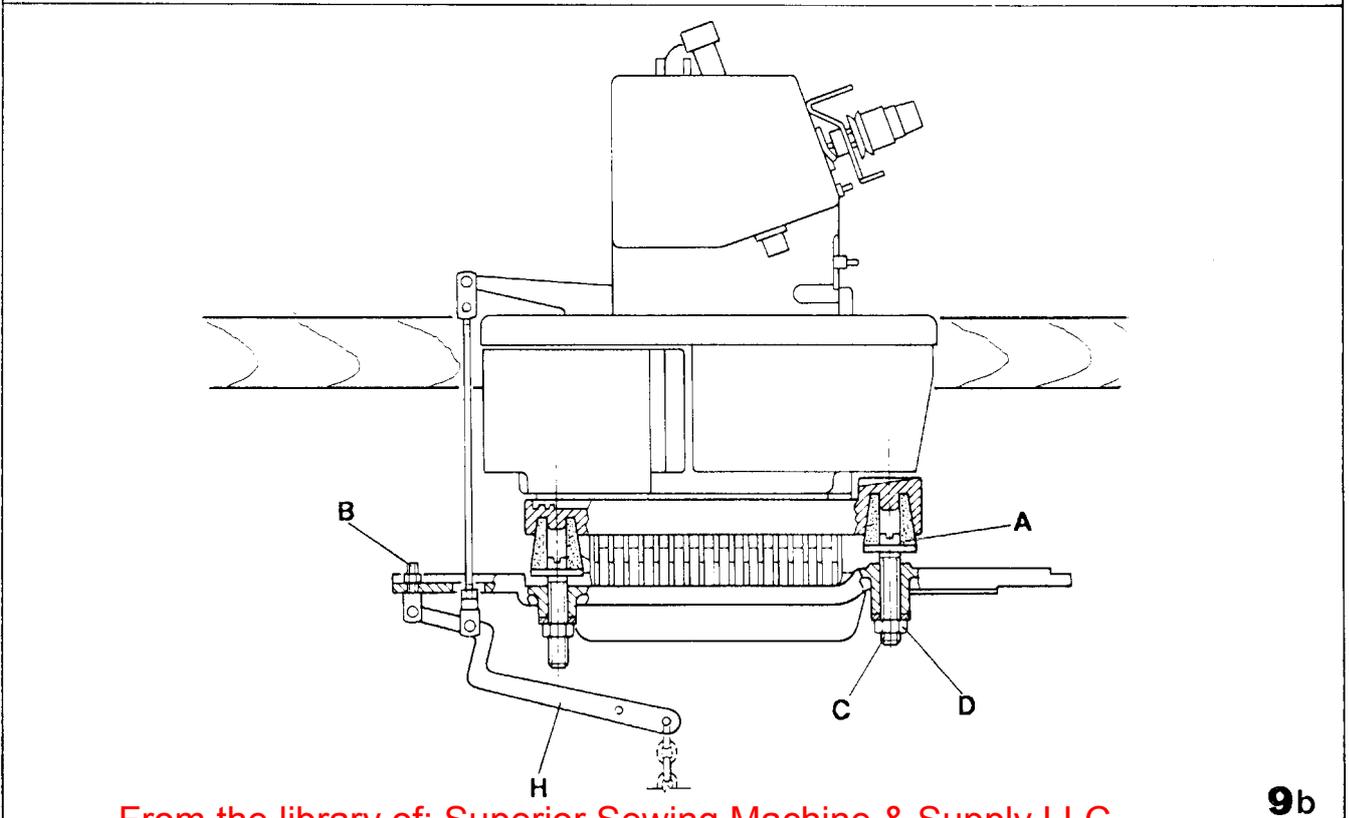




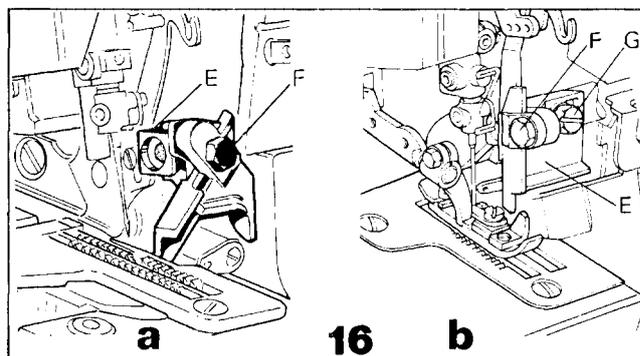
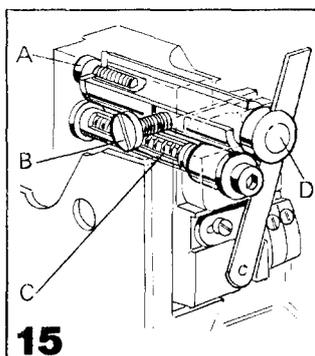
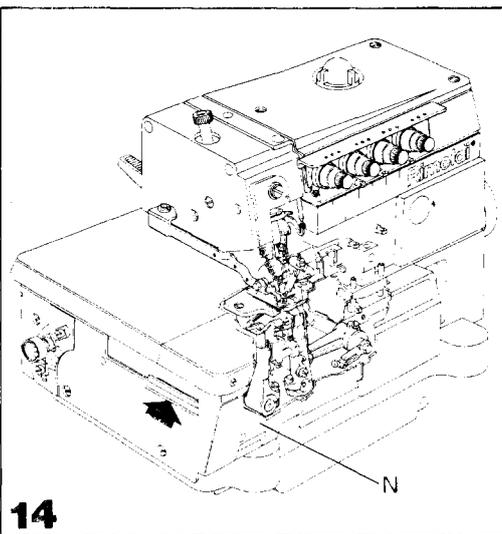
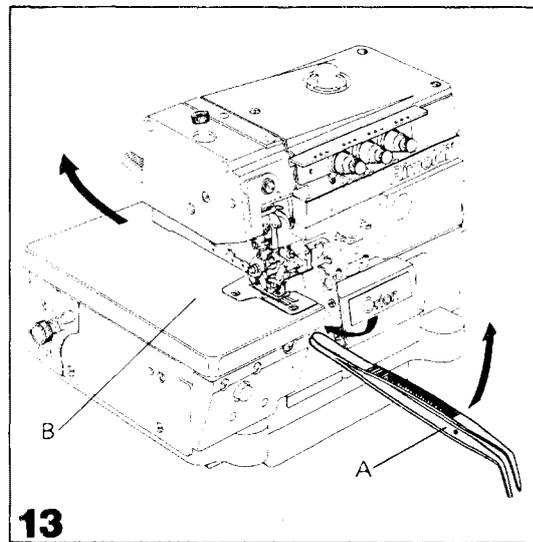
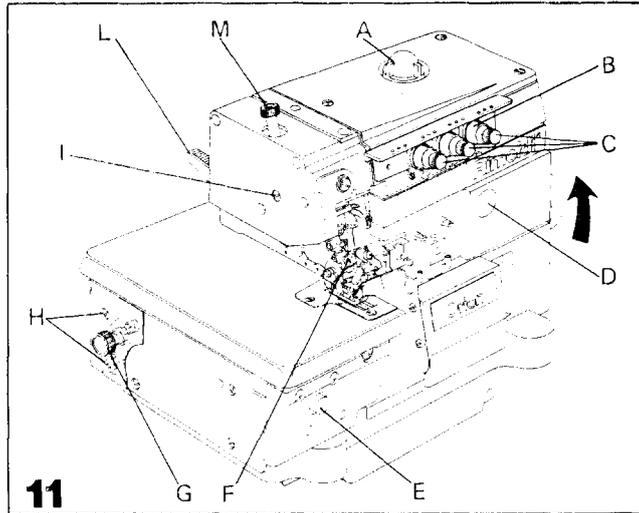
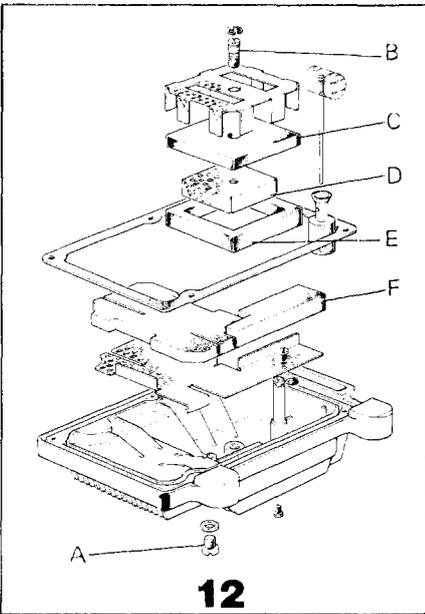
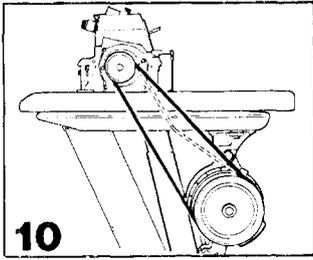
9

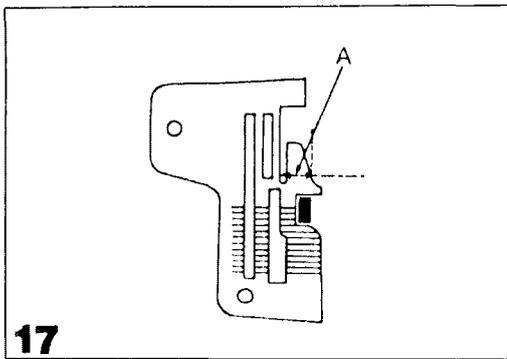


9a

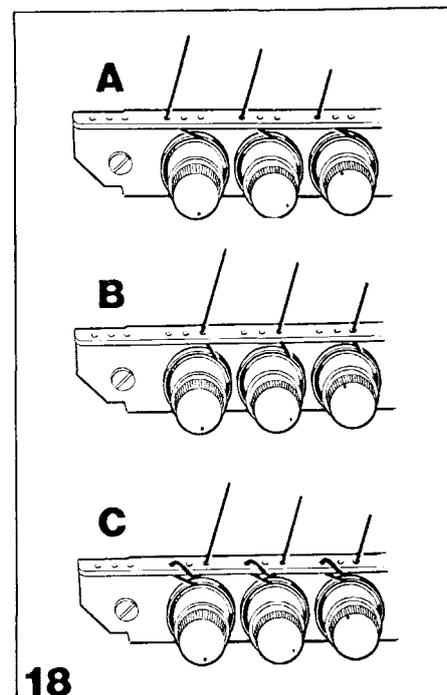


9b

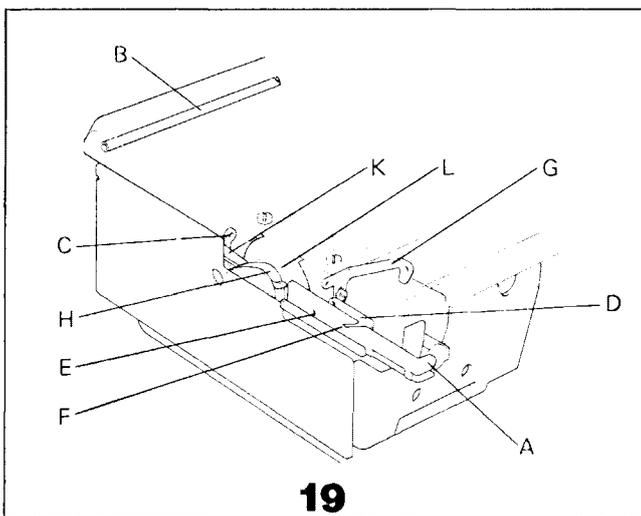




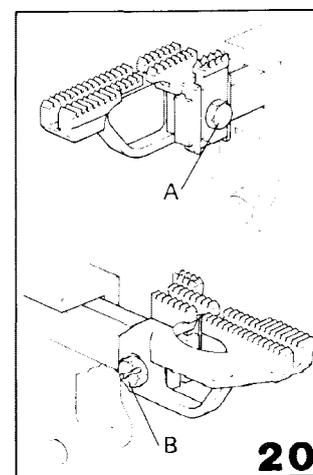
**17**



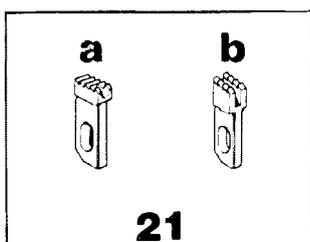
**18**



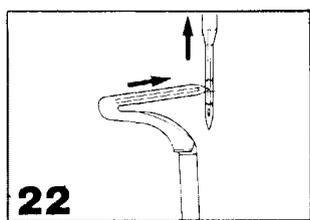
**19**



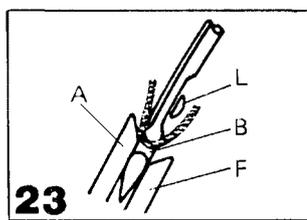
**20**



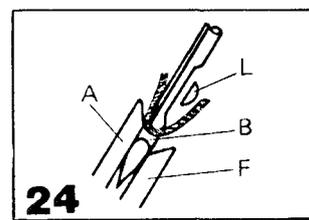
**21**



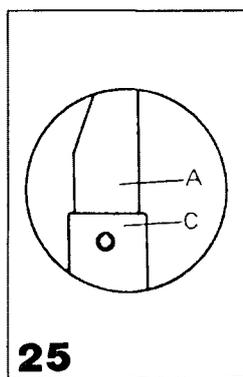
**22**



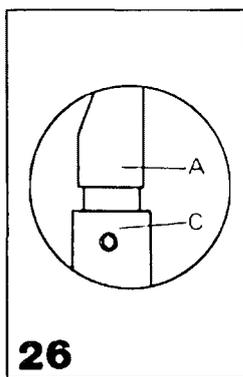
**23**



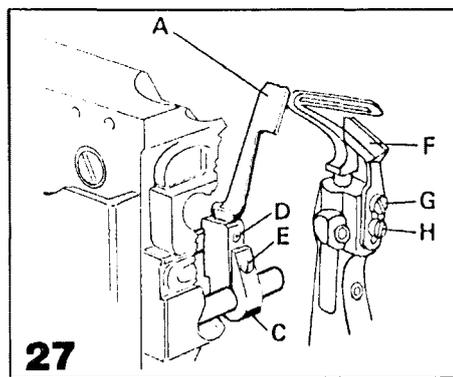
**24**



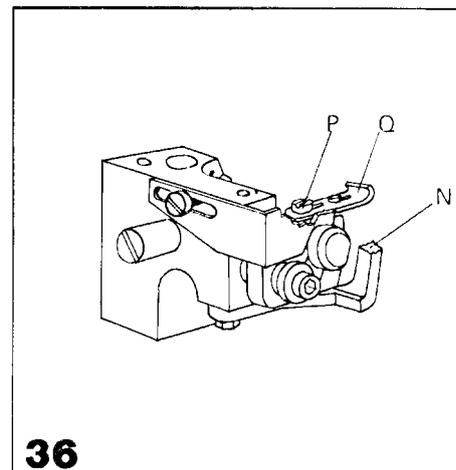
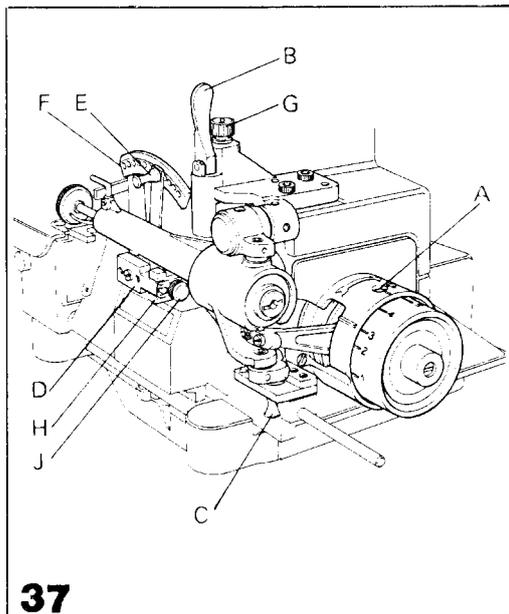
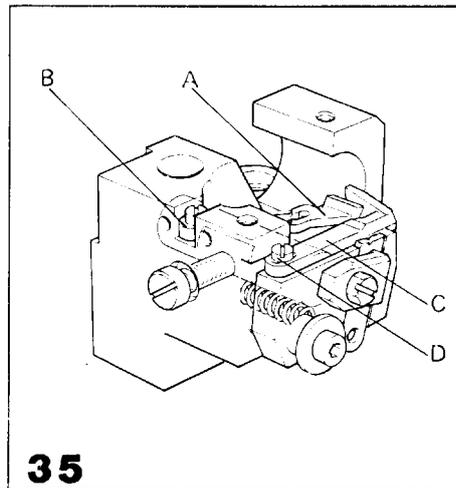
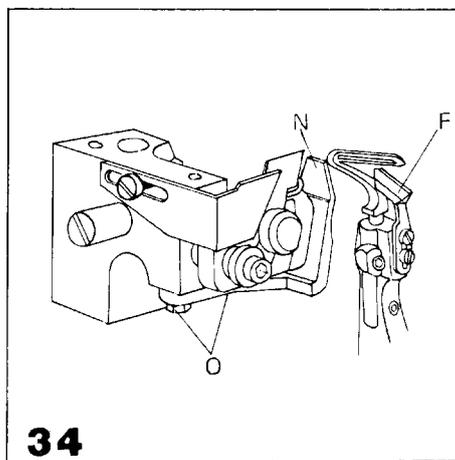
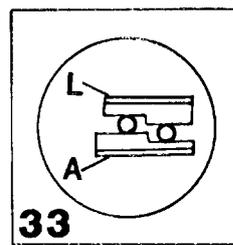
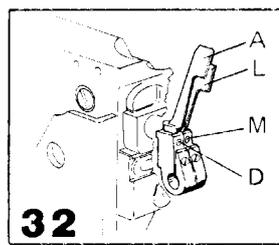
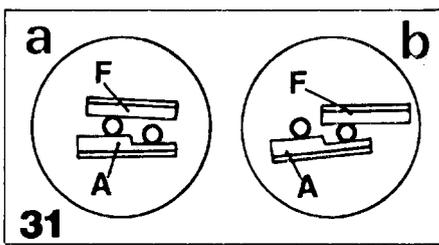
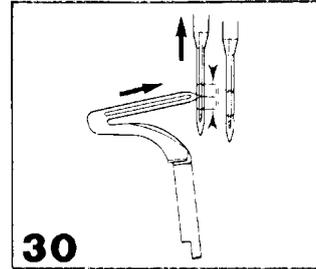
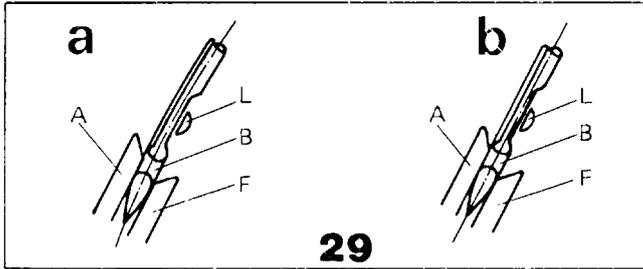
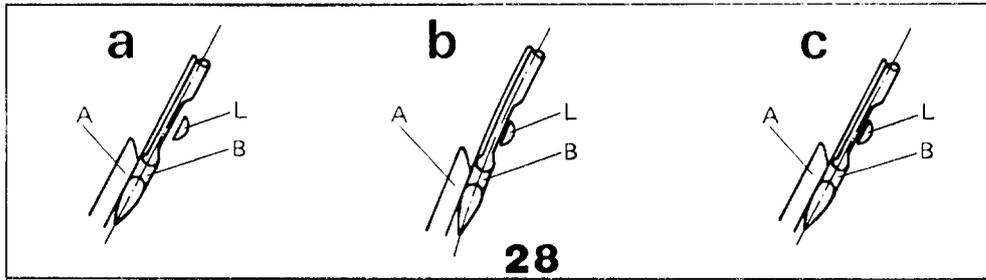
**25**

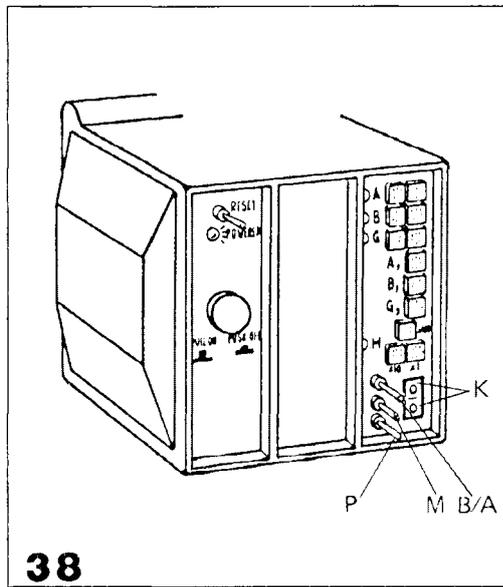


**26**

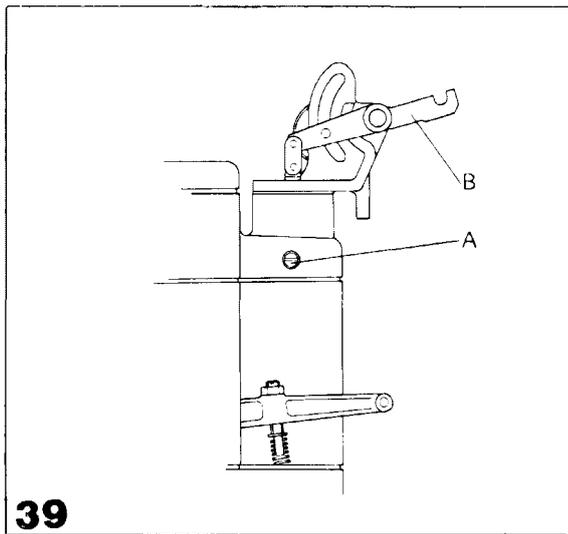


**27**

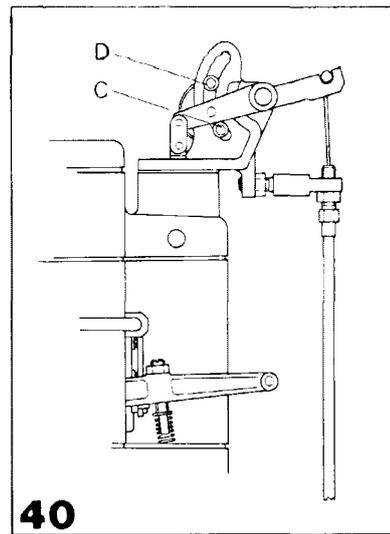




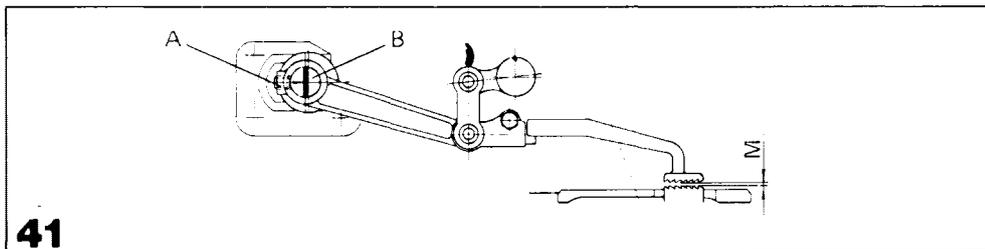
**38**



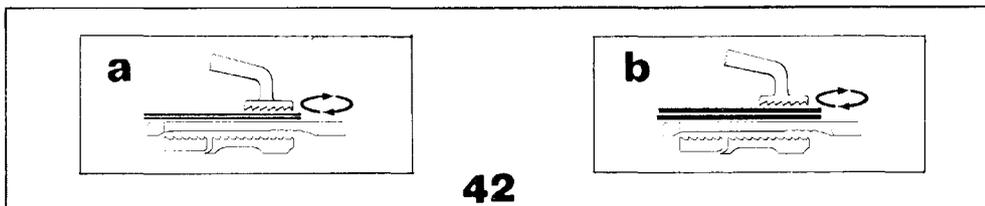
**39**



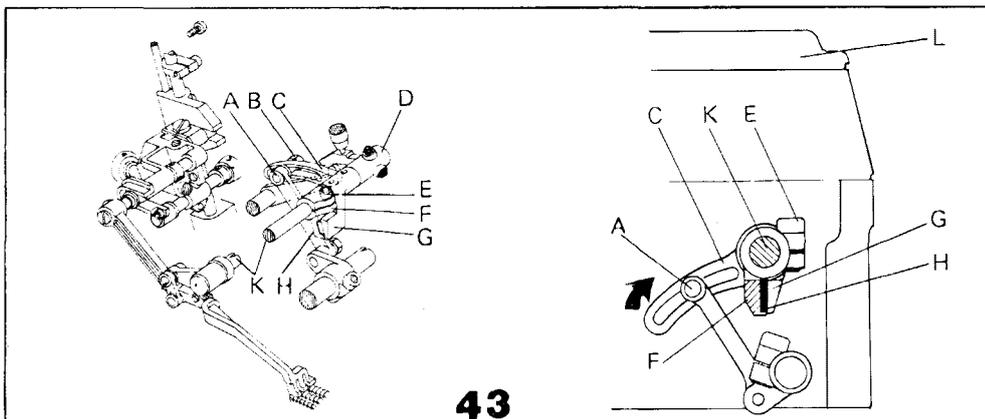
**40**



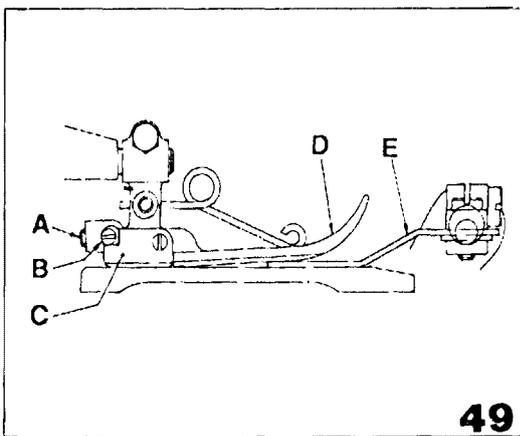
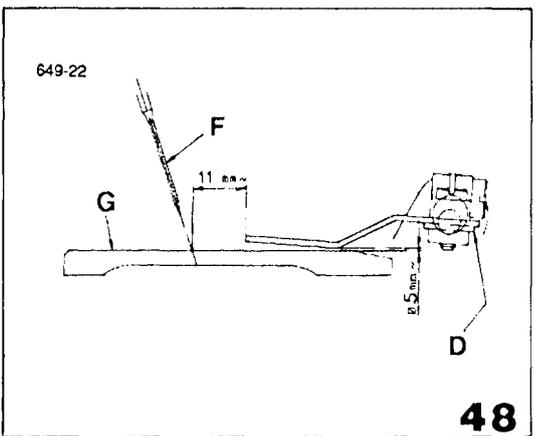
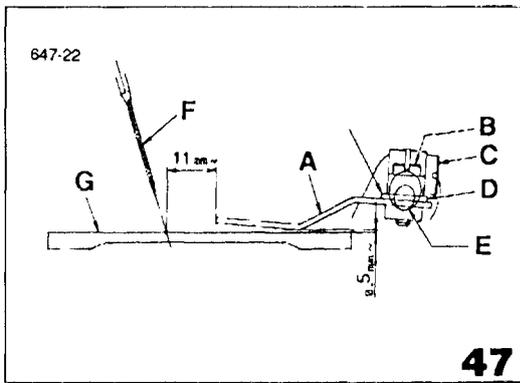
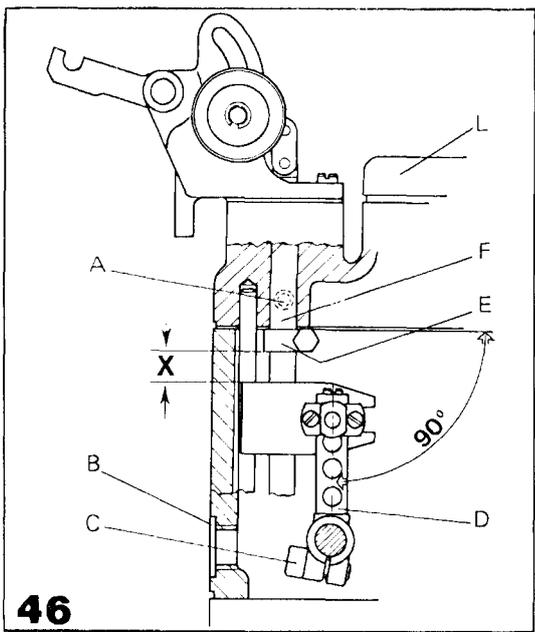
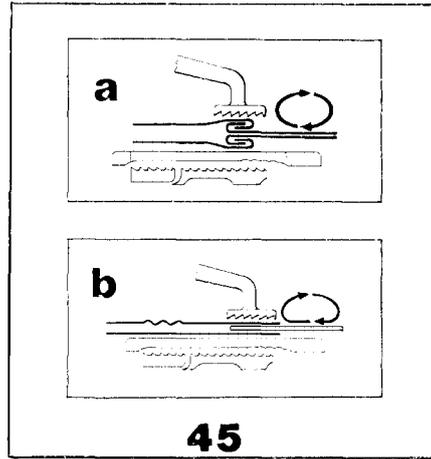
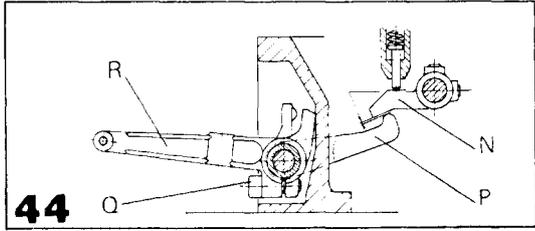
**41**



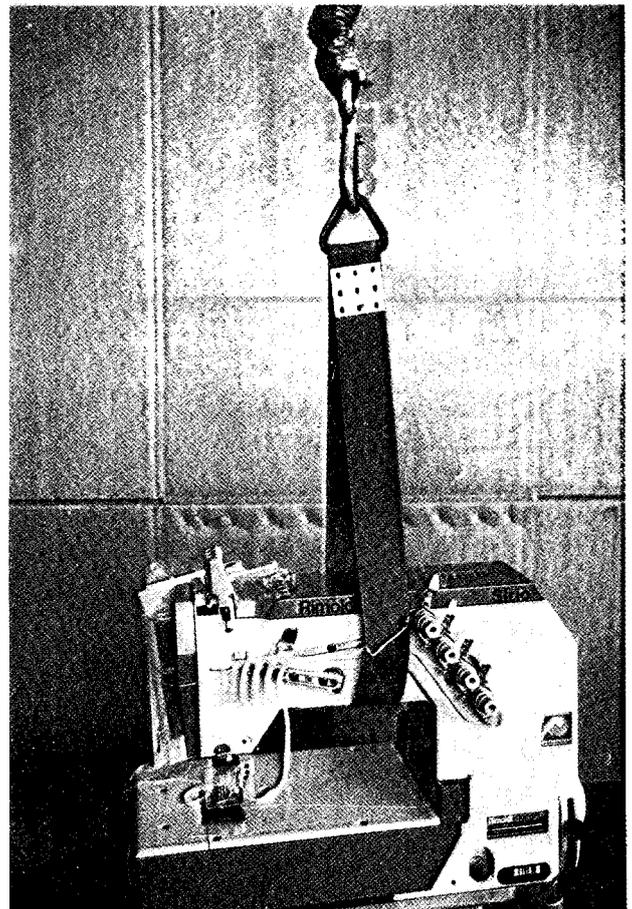
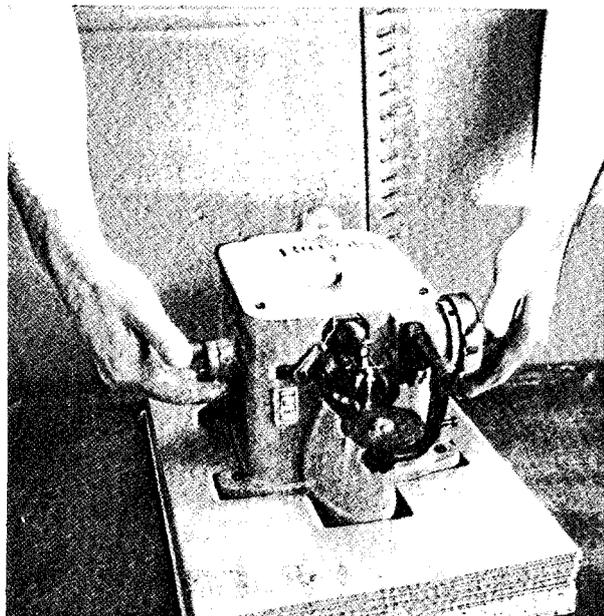
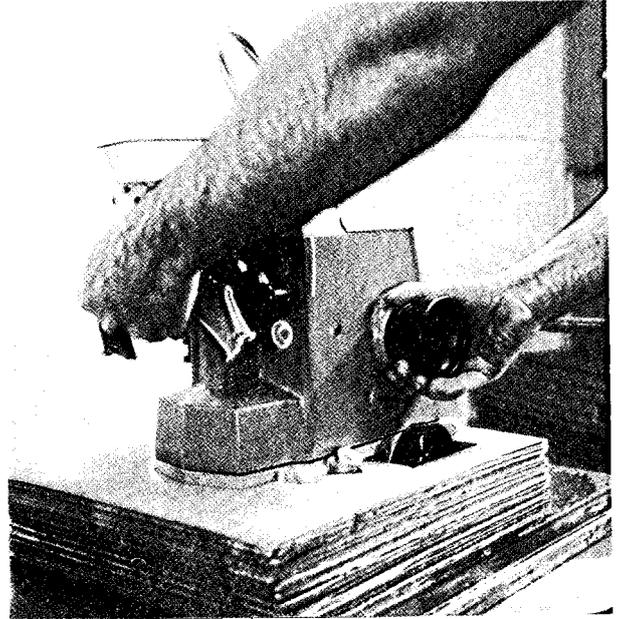
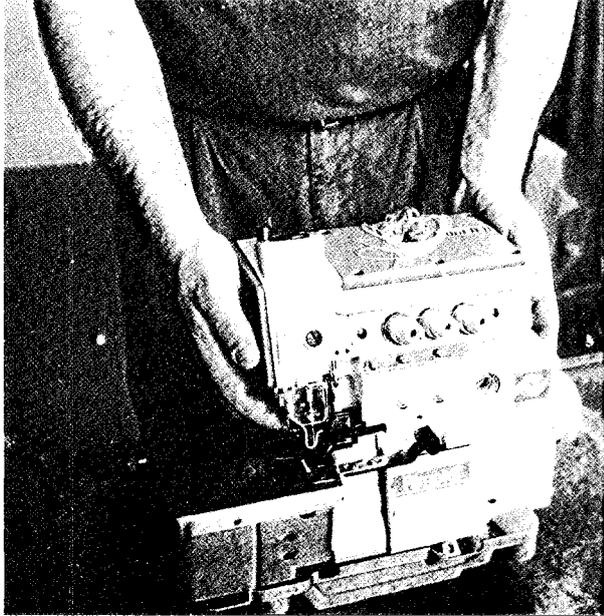
**42**



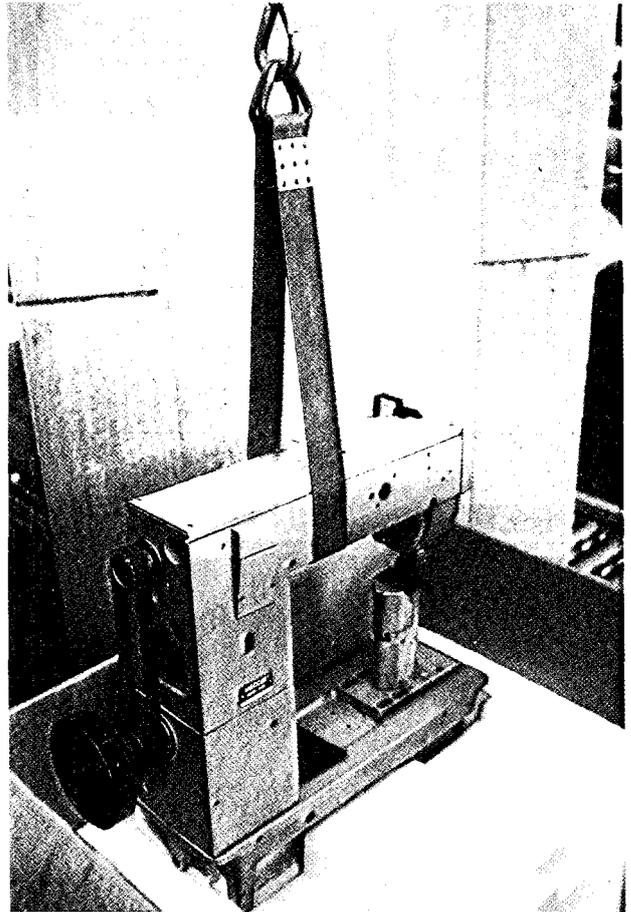
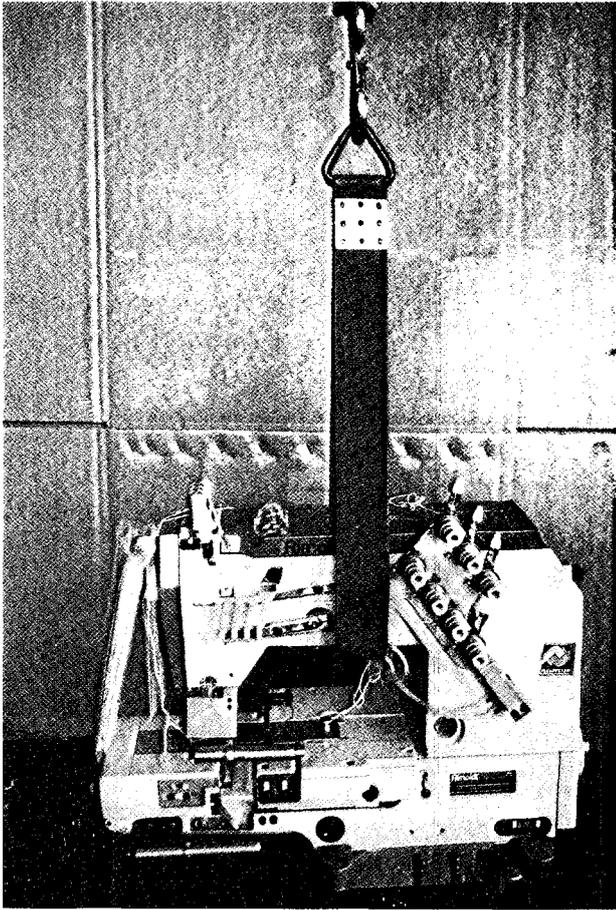
**43**



A



# A1



**ATTENZIONE:**

NON AFFERRARE LA TESTA IMPUGNANDO QUESTO BRACCIO.

**WARNING:**

DO NOT TAKE HOLD OF THE HEAD BY THIS ARM.

**ATTENTION:**

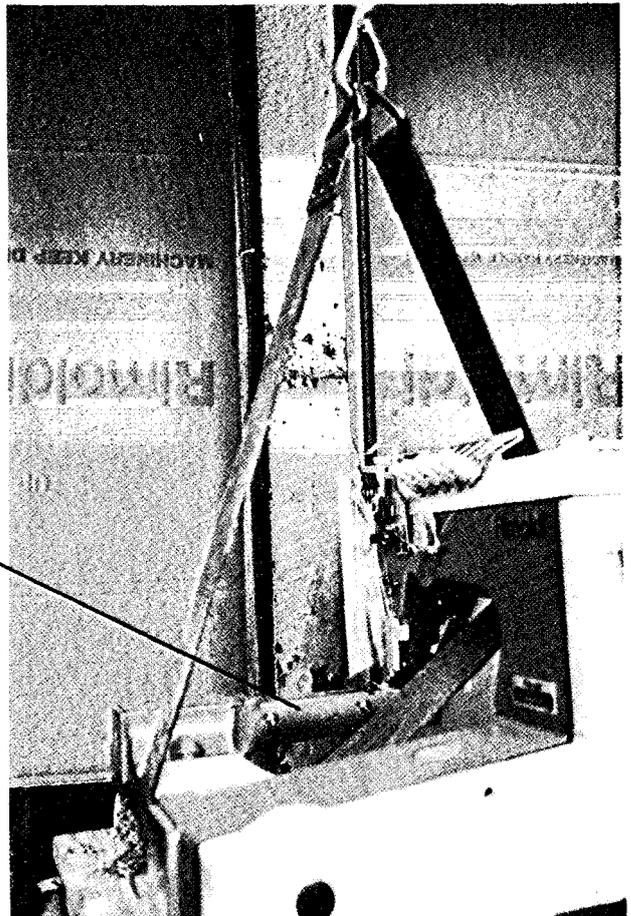
NE PAS SAISIR LA TÊTE EN EMPLOIGNANT CE BRAS.

**ACHTUNG:**

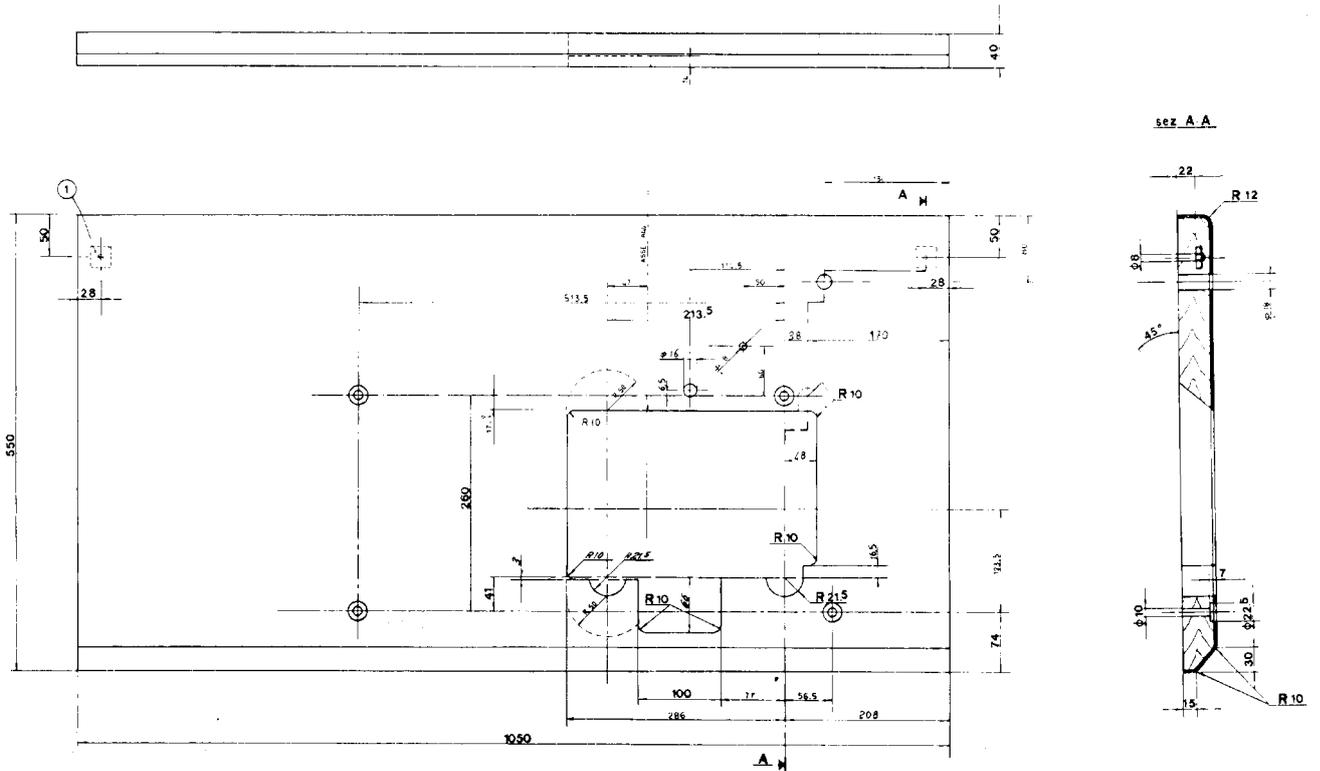
DAS OBERTEIL NICHT MIT HILFE DIESES ARMES FASSEN.

**ATENCION:**

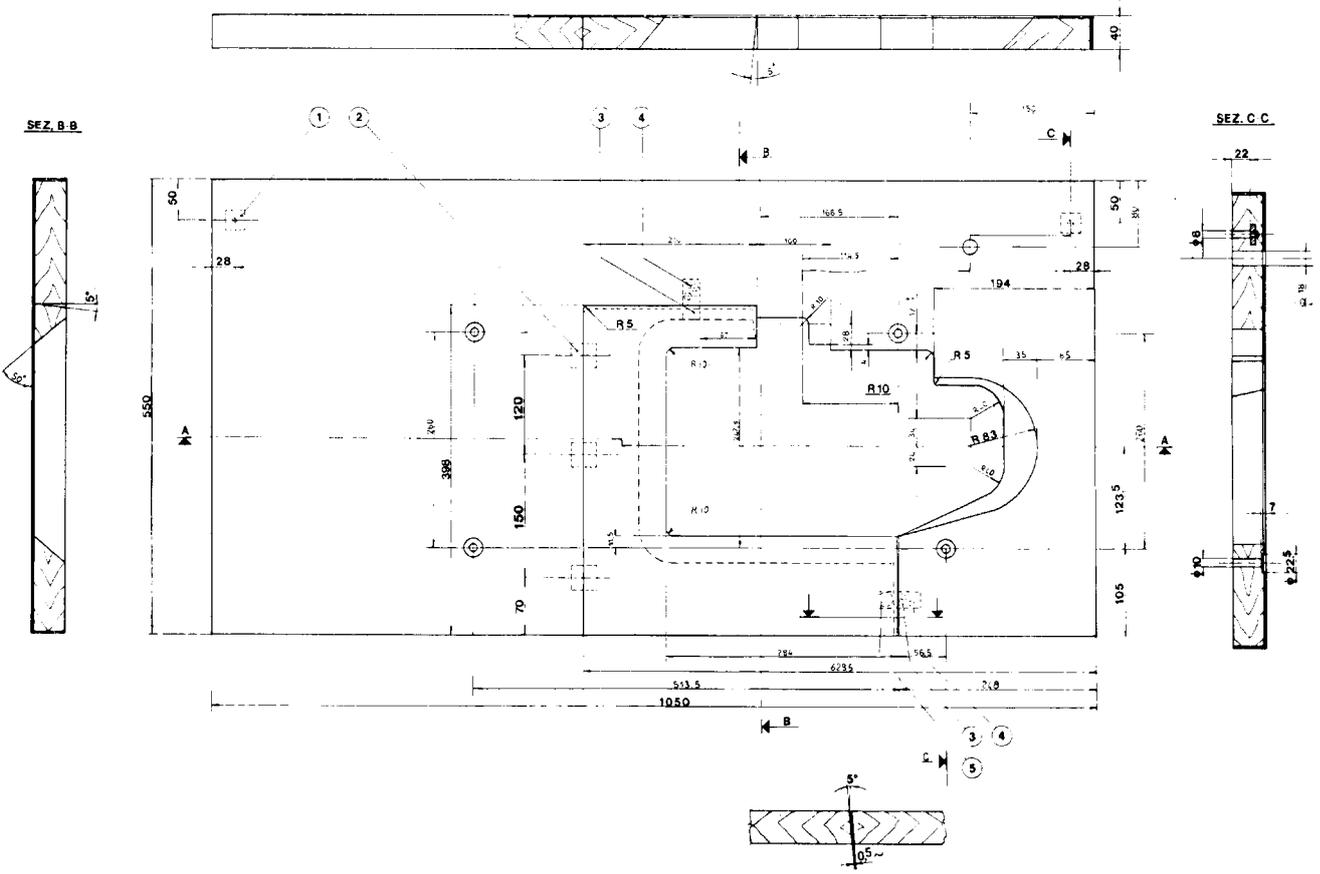
NO TOMEN EL CABEZAL AGARRANDO ESTE BRAZO.



**B**



**C**





CF Italia srl Corso Colombo, 46 21013 Gallarate (VA) Italia Tel. +39 0331 75071 [www.cfrimoldi.com](http://www.cfrimoldi.com) / [info@cfrimoldi.com](mailto:info@cfrimoldi.com)  
Rimoldi Of America, 2315 N.W. 107 Avenue-Suite M43 33172 Miami, FL USA Ph: ++1 305 477 9943 [lmelocchi@rimoldiusa.com](mailto:lmelocchi@rimoldiusa.com)

CF Italia srl reserves the right to modify or vary, for technical or commercial reasons, the information printed in this brochure. 06/2007

**From the library of: Superior Sewing Machine & Supply LLC**