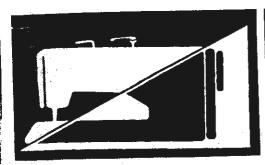
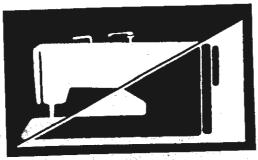
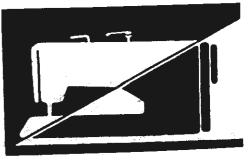


GLOBAL® ZZ 565 TD





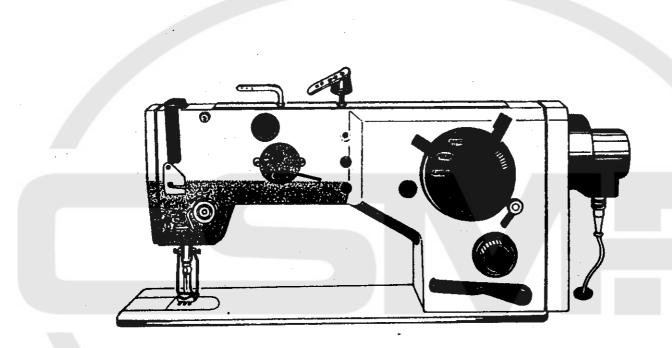


INSTRUCTIONS FOR ADJUSTMENT AND SERVICING AND LIST OF PARTS FOR SINGLE NEEDLE FLAT BED ZIGZAG INDUSTRIAL SEWING MACHINE WITH TRIMMER DEVICE FOR UPPER AND LOWER THREADS

ZZ 565 TD

SINGLE NEEDLE FLAT BED ZIGZAG INDUSTRIAL SEWING MACHINE WITH TRIM-MER DEVICE FOR UPPER AND LOWER THREADS

ZZ 565TD



Use of Machine

The machine is used for attaching laces and ribbons and for joining operations, for decorative zigzag stitching on ladies' underwear, as well as for sewing ladies' clothes made of cotton fabrics, flannel, barchant, tricotine, poplin, cashmere, etc.

Specifications

Machine speed up to 5,000 stitches per min., depending on threads, sewn work, and

zigzag width

Stitch length up to 5 mm, forward and reverse

Zigzag stitch width up to 6 mm

Zigzag stitch position median, left-side, right-side

Length of trimmed thread ends 22 mm or less

Needle 134 R Nos. 80 - 110

134 R chromium plated Nos. 80 - 110

135 x 5 M Nos. 100 - 110

Schmetz 797 CF CF Nos. 80 - 110

Hook rotary hook 522 980 008 235 (R 235)

Thickness of sewn work up to 4 mm

Threads cotton threads: 12 tex x 2 x 2 to 7,4tex x 2 x 2

synthetic threads: PES 14.5 tex x 3, 10 tex x 3

core-spun threads: 12 tex x 2

Presser foot stroke 5 mm with hand lever

7 mm with left-side treadle

Clear work space 265 x 120 mm

Machine drive electronic stop motor

Machine stand modern, angular-profile stand

Weight of machine head 37.5 kg

Weight of machine stand with the stop motor 75 kg

Technical description

The machine is a flat bed single needle two-thread zigzag lockstitch sewing machine with trimmer device for upper and lower threads. The drive is transmitted, from the upper shaft to the lower one by means of a drive belt, and from the lower shaft to the horizontal rotary hook by a gearing seated in gear box. The reverse stitching is controlled by a hand lever, the stitch length, width, and position, by levers situated on the front part of the machine arm column, and the presser foot lifting, by a hand lever or by the left-side treadle. The trimmer device for trimming the two threads on the underside of sewn work is situated under the throat plate. The stop motor, providing for stopping the machine in a predetermined needle position, is equipped with a contactless sensor of the angular position of the machine upper shaft and with an electronic control circuit, thus ensuring long service life and high reliability while requiring only moderate maintenance. The principal parts of mechanisms exposed to increased strain are seated in rolling-contact bearings. The machine is fitted with a group wick lubrication and with an automatic hook lubrication. In its basic version, it is supplied without lighting, but is adapted to receive a suspension-type lighting

Equipments and their Use

Commercial designation	Ordering No.	Name			
201 202 206 295	522 792 112 010 522 791 947 001 522 791 149 001 522 791 995 014	Incorparated bobbin winder, complete Adjusting set Overedging equipment Covering plug for bobbin winder mounting hole			

The Equipments are supplied on special order only.



I. INSTRUCTIONS FOR SERVICING OF MACHINE

A. GENERAL INSTRUCTIONS

- 1. Read the instructions of the manual carefully and adhere to them.
- 2. During transport and while unpacking the machine, proceed in accordance with the instructions and marks on the packing.
- Report any damage which has occurred during transport to the railway authorities or to the forwarding agents at
 once. Immediately after unpacking, check the contents against the order and report any discrepancies to us. We
 cannot recognize claims submitted at a later date.
- 4. Having transported the machine to its work site, remove the preserving grease coating and all impurities from the machine head. Make sure that no machine part has become loose and that its mechanism is free of any foreign body.
- 5. Lubricate the machine daily. Before lubrication, always check whether the lubrication places are clean. It is advisable to lubricate frequently in small quantities rather than contrariwise. Those parts of the machine which are exposed to increased friction or strain should be lubricated several times a day, as needed. Refill oil into the hook lubrication tank as required.
- Clean the machine daily, in particular the parts which become choked by impurities from the sewn material. During the cleaning, carefully check whether no machine part has become loose.
- 7. Once a week, during thorough cleaning, carefully check the whole machine to see that no parts are damaged and that all machine mechanisms operate correctly. Any faults ascertained must be repaired immediately. Once a year, general overhaul should be carried out. The machine should be dismantled, thoroughly cleaned, individual pieces as well as the parts of the electrical equipment inspected, faulty or worn out pieces repaired or exchanged.
- 8. Adhere to the safety regulations. Never clean the machine or repair defects until the machine is at rest. Do not remove covers or other safety devices. Each time you adjust the machine in its tilted position, uncouple the feed connector of the clutch and brake on the control box of the electronic stop motor. The connector is marked by its graphic symbol (see the Operating instructions of the stop motor).
- 9. The electrical equipment of the machine should be kept in a good and faultless state, in accordance with the electrotechnical and safety regulations. If the machine is provided with a plug make sure always before plugging in that all switches are off.
 The lead-in cable, supplied as a part of the amchine, has a cross section of 4 x 1 mm² and must be safeguarded accordingly in each phase. Never try to repair any defects of the electrical equipment yourself but call in an expert electrician.
- 10. The forces required for controlling the treadles should be 40 to 90 N, those required for the hand control levers of the machine, 10 to 60 N. The control mechanisms and the required forces have been chosen in view of the frequency of their use during the usual technological machine operation.
- 11. We cannot assume any responsibility for the consequences resulting from the non-observance of these instructions.

B. PACKING, UNPACKING, CLEANING AND LUBRICATION OF MACHINE

1. Packing of machine

The machine head is scated in a separate case, the stand either in crating or in another case (for severe climate conditions).

2. Unpacking of machine

When taking over the machine from the railway authorities or in the works ascertain whether it has arrived in good order. Report any damage which has occured during the transport to the railway authorities or to the forwarding agents immediately. Unpacking should be carried out carefully so as to prevent damage to machine parts. Further check the accessories of the machine against the order and report any discrepancy immediately, as we cannot consider belated claims.

3. To set the machine on stand

After the machine has been brought to its work site, set it on the rubber washers of the stand. When seated properly, a gap of approximately 1.5 mm will appear between the bed plate and the rim of the stand plate on the whole of its circumference. Check the lifting of the presser foot by means of the left-side treadle. Insert the connector of the synchronizer cable into the synchronizer socket and secure it by the coupling nut. Pass the cable with the connector from the electric motor through the machine tank, insert it into the socket provided on the machine bed plate, and also secure it by the coupling nut. As for the rest, the machine is supplied in a mounted and ready-to-work state.

To observe:

When assembling the machine head with the stand be sure that the original composition is maintained, i.e., that the machine is mounted on the stand with which it was sewn off. The correct stand No. is indicated on the check slip attached to the machine head.

4. To mont the belt guard and the synchronizer

When the machine head has been set on the stand take the belt guard out of the transport cage and mount it on the machine head, then take out of the transport cage also the synchronizer, and set it on the flange screwed onto the hand wheel. Be sure that the pin of the belt guard has entered the fork provided in the lower part of the synchronizer, and adjust the angular position of the synchronizer shaft with respect to the handwheel so that the colour signs on the handwheel and on the synchronizer shaft are aligned. Then carefully retighten the two screws of the synchronizer to ensure that the operator runs no risk while attending to the machine. Pass the lead-in cable through the table plate, and insert the connector into the synchronizer-marked socket on the stop motor box.

To observe:

The synchronizers have been adjusted individually and are, therefore, not interchangeable. Only the synchronizer attached in the same box as the machine can be mounted on it.

5. To set and fix the machine

Fix the machine using the levelling foot of the stand fitted with adjusting screw. Otherwise, the machine is designed as a stable unit with the stand, requiring no fixing to the floor.

6. To clean and lubricate the machine (Fig. 1)

Before putting the unpacked machine into operation, remove the protective grease coating and clean the machine thoroughly. For lubrication of all machine mechanisms and hook it is recommended oil with viscosity 50 at 20 °C mm².s⁻¹. With an oil can, drip oil into marked holes of the machine arm once a daybefore the beginning of the work shift. Check also the oil level at the indicator

of the hook oil tank. The gear wheels of the hook gear box receive oil from the felt inlay situated on the gear box bottom. The hook and its mechanism should be cleaned several times a day. Apply two or three drops of kerosene to all soiled parts of the hook and of the surrounding mechanism, let the machine run at high speed, then stop it, wipe off flushed-out dirt, and oil the hook with its mechanism with oil. This cleaning should be carried out daily, in particular after the end of the work shift, in order to prevent dirt from drying on the hook and its mechanism. From time to time, use grease nipple to refill the shafts 345.065 and 345.067 with lubrication grease V1 or V2 (see Table 15). Before proceeding to clean the machine, unthread it, and take the bobbin out of the hook. Once a week, the machine should be thoroughly freed of settled oil and of all impurities.

7. To adjust hook lubrication (Fig. 2)

To adjust the oil flow to the hook turn with a screwdriver the adjusting pin (346.053), located on the right side wall of the oil tank under the bed plate, from zero to maximum, (to the left, anticlockwise). Adjusted at zero, the regulation still provides for a minimum oil flow to the hook preventing it from seizing. After the machine has been put into service, check at regular intervals the oil level both in the hook oil tank and in the oil tank situated on the machine arm.

To observe:

At the beginning of the work after a relatively long interval, e.g., at the beginning of the morning shift, it is advisable to remove first the gathered superfluous oil from the hook, either letting the machine run idly for a short period or by producing a few stitches (about 20 cm) on a test material, to prevent the sewn work from getting soiled by oil.

C. PREPARING MACHINE FOR SEWING

1. General inspection

Inspect the machine thoroughly for loose parts as well as for the presence of foreign bodies. Rotating the handwheel by hand, first check whether it revolves freely and whether the machine is adjusted correctly. Further check for correct working the mechanism controlling the lifting of the presser foot by means of the left-side treadle, and the reverse stitching by means of the hand lever.

2. Sense of rotation

The correct sense of rotation of the machine handwheel is anticlockwise, viewing the machine from the side of the handwheel.

3. Electrical equipment

An electrician connects the machine to the mains. Switch on the electric motor and check whether the pulley turns in the correct direction, i.e., to the left. If this is not the case, the plug of the lead-in cable must be taken out and the cable must be switched over on the plug or on the terminal board of the electric motor. An incorrect sense of rotation of the pulley is inadmissible.

4. Needle position check

Disconnect the trimmer connector on the switch box of the stop motor, and set the needle position lever switch on the switch box to the "needle down" position marked by the symbol under the switch. Toe (depress forwards) the control treadle for a short time and release it. The machine shall start and stop in the needle down position. Then heel (depress backwards) the control treadle. The machine shall make about a half-turn and stop between 0 and 5° after the upper dead point of the thread take-up lever. If the machine stops in other than these positions, adjust the positions as specified in the Instructions of servicing of the stop motor Quick.

5. V-belt and its tension (Fig. 10)

The V-belt tension can be adjusted by tilting the stop motor around the axis of the screw fixing the stop motor to the holder. The correct belt tension ensures transmission of full power with losses reduced to minimum. To check the tension of the V-belt, depress it lightly in the middle part between the hand wheel and the pulley, if the belt tension is correct, the pressed-on part will yield some 20 mm sideways. Excessive tension of the V-belt reduces machine

output and increases both the power consumption and the wear of the bearings. To remove the V-belt, proceed as follows:

Screw out the screws of the synchronizer flange and remove the synchronizer from the shaft, then screw out the screws (120.346), remove the upper belt guard (041.162) and then the lower one. Tilt the machine head and remove the V-belt. To mount it, proceed inversely. To ensure the correct needle stop positions, be sure to maintain the correct angular position of the shaft with respect to that of the handwheel.

Before proceeding to carry out any adjustment of the machine, be sure that the machine has been switched off.

6. To lift presser foot (Fig. 8)

The lifting and sinking of the presser foot is controlled by the left-side treadle. To lift the presser foot and to lock it in the lifted position, the hand lifting lever (615.024) situated at the rear side of the machine arm can also be used. To sink the presser foot onto the sewn work, first slightly depress the left-side treadle thus disengaging the locking of the lifted presser foot by tilting the hand lever, and then release the treadle to let the presser foot sink onto the sewn work.

Never start the machine if the presser foot has been sunk onto the throat plate directly, with no material interposed between them.

7. Needles and threads

The machine requires the use of needles 134 R and 135 x 5 of current sizes or of needles Schmetz 797 CF CF Nos. 80 - 110. Considering the high machine performance and the resulting needle heating, it is advised to use chromium plated needles. The size of the needle depends on the size of the thread, since it must pass freely through the needle eye. It is advisable to choose a relatively thin needle, just permitting the free passage of the thread through the needle eye but helping to prevent the upper thread from being threaded out of the needle eye at the beginning of stitching after the previous thread trimming. The needle size should be adequate to the thickness of sewn work. A needle too thin with respect to the thickness of sewn work is subject to excessive strain (impacts at the needle punches into the sewn work, upper thread tension, heat generated by friction between the needle and the sewn work, etc.) and exposed to the risk of being deviated from its correct course with the ensuing irregular formation of the upper thread loops and skipped stitches. Only high-class threads should be used. Especially suitable are conical cross-wound bobbins. S-twist thread should be used for the needle, while both S-twist and Z-twist thread is suitable as lower thread. A coarse thread or one which has to overcome considerable resistance while passing through the needle eye reduces the machine performance and increases its trouble incidence.

8. To insert needle (Fig. 8)

To facilitate the needle insertion, sink the presser foot onto a bit of material and rotate the handwheel toward you until the needle bar has reached its top position, i.e., until the greatest possible distance between the needle bar and the throat plate has been obtained. Loosen the screw (135.029) on the lower part of the needle bar and insert the needle up to the stop. Be sure that the long groove of the needle is directed toward the operator. Looking through the cross slot provided in the needle bar check whether the needle shaft has arrived up to the bottom of the needle channel, and fix the needle by tightening the screw. Each time you insert a new needle check whether it is straight and whether it passes through the centre of the needle aperture of the throat plate. Never use a needle chosen haphazardly but choose it with respect to the character of sewn work and to the thread size.

9. To thread the upper thread (Fig. 3)

Put the bobbin on the bobbin stand, unwind a sufficient portion of it, and pass it, and pass it through the thread guide of the bobbin stand, then through the thread guide (313.204) and the ancillary thread tensioner (025.160) between the tensioner disks (828.079), then lead it through the adjusting spring (264.294) and the thread guides (271.184, 821.077) into the thread take-up lever (A), then downwards through the thread guide (821.077) and the lower thread guide (821.115) to the thread guide (627.170) situated on the needle bar, and from there to the needle. Insert it into the needle eye from the front side (i.e., from the operator) to the rear side.

To observe:

For stitching edges, attaching curtains, and for stitching thin materials with Equipment No. 206, the upper thread should be threaded into the lower aperture of the thread guide (627.170) provided on the needle bar. For current stitching operations, it should be threaded into the upper aperture of the thread guide.

10. To wind the hook bobbin (Fig. 4)

To wind the lower thread onto the hook bobbin, a built-in bobbin winder, supplied separately as Equipment No. 201, can be mounted onto the front side of the machine arm. Lead the thread from the bobbin stand through the guide (025.248) to the bobbin mounted on the winder shaft, wind it a few times anticlockwise on the bobbin, lead the thread end to the spring (260.483), insert it between the spring coils, and apply a mild pressure so as to cut it by the knife located inside the spring. When mounting the bobbin on the winder shaft be sure that the carrier spring enters the notch of the bobbin front. By swinging the on-off lever (613.468) between the bobbin fronts you render the bobbin winder operative. Switching on the electric motor and depressing the right-side treadle, you start the machine and the winder as well. During the winding, the thread is evenly distributed along the whole of the bobbin width. As soon as the bobbin is fully wound, the on-off lever springs off thus disconnecting the winder drive and braking the winder shaft. The winding is now completed. Using the knife located in the spring (260.483) cut off the thread end. For timing the winding stop loosen the screw (124.050) of the on-off lever (613.468) mounted on the disconnecting pin (049.830), hold the disconnecting pin by means of a screwdriver in its position and change the angular position of the on-off lever on the disconnecting pin as required.

To observe:

In machines equipped with upper and lower thread trimmer, increase the tensioner disc (828.051) pressure during the winding and pay special attention to the winding uniformity by setting the thread guide to adequate position.

11. To take out the hook bobbin

Rotate the handwheel until the thread take-up lever has reached its top position. With your left hand, open the lock of the bobbin case under the bed plate and take the bobbin case out. Release the lock and take the bobbin out of the bobbin case. As long as the bobbin case lock is open, the bobbin is held in the bobbin case. Loosen the lock, turn the bobbin case upside down, and the bobbin will fall out.

To observe:

When taking the bobbin case out of the hook, hold your feet away from the stand treadles in order to avoid an incidental start of the machine.

12. To thread the lower thread

Insert the fully wound bobbin into the bobbin case, and the thread end first the notch of the bobbin case and then under the pressure spring of the bobbin case. Insert the bobbin case into the hook. To prevent the bobbin from falling out of the case, while being inserted into the hook, tilt the lock fixing the bobbin in the case. With your thumb, push the bobbin case in until you hear a click sound. The correct position of the bobbin case in the hook signalled by this sound is very important because otherwise the needle rupture or another breakdown could occur at the following machine start.

To observe:

In machines equipped with trimmer device for upper and lower threads, the lower thread tension should be somewhat reduced to ensure reliable operation of the trimmer device, but remain high enough to provide for high quality stitch formation.

13. To catch the lower thread

With your left hand, hold lightly the end of the upper thread without stretching it. With your right hand revovle the handwheel towards you until the threaded needle reaches subsequently its bottom and top positions, thereby, catching the lower thread. Draw then lightly the upper thread until the lower thread shows through the aperture of the throat plate, and lay the two thread ends in the direction behind the needle. While threaded, the machine may be started only after a bit of material has been inserted under the presser foot. If the trimmer device is switched off, the thread take-up lever should be placed in its top position both when starting and when finishing the sewing to avoid the risk of threading out the upper thread and possibly catching it in the hook course.

14. Sewing - work proper

Insert the material to be sewn under the presser foot, switch on the stop motor, and start the machine by gradually depressing the right-side treadle. The sewing speed increases up to the maximum obtained when the treadle has reached its lowest position. By releasing the treadle, the clutch of the stop motor is disengaged, the drive pulley braked, and the machine stopped in the lower dead position of the needle. During the sewing, avoid pulling the material but guide it only. By pulling the material, you bend the needle with the risk of breaking it in case of a collision with the edge of the needle aperture provided in the throat plate. Repeated collisions of this kind burr the needle aperture which, in its turn, causes thread ruptures. After the stitching operation is completed, heel the right-side treadle to start the automatic thread trimming operation that will take place during the needle movement from its bottom to its top position. For removing the sewn work, lift the presser foot only after the machine stop in the needle top position to obtain correctly cut threads and the machine ready for next stitching. A premature presser foot lifting can result in thread trimming failure or in threading the upper thread out of the needle eye.

To observe:

After the new machine has been put in use do not charge it fully from the very beginning. During the first two or four weeks, when the machine is running-in, increase its speed gradually from about 3,500 stitches per min. and check carefully its running. Throughout this time, pay special attention to the machine lubrication. By keeping to these rules you will obtain a long service life and perfect precision of the machine even at its full performance.

II. INSTRUCTIONS FOR ADJUSTMENT OF MACHINE MECHANISMS

The adjustments described in this section can be carried out on the work site. Larger adjustments, requiring more time, should be carried out by a skilled sewing machine mechanician.

1. Stitch length adjustment (Fig. 5)

The stitch length can be steplessly adjusted by turning the knob (233.031) provided on the vertical part of the machine arm, in a range between 0 and 5 mm. By turning it in the sense of the arrow "A" (i.e., to the right), you increase the stitch length, whereas by turning it in the sense of the arrow "B"(i.e., to the left), you decrease it. For reverse stitching, displace the lever (044.714) downwards. When released, the lever automatically resumes its previous position and the machine restarts forward stitching.

2. To adjust the zigzag stitch width and position (Fig. 5)

Before any adjustment of the zigzag stitch width or position, the machine must be stopped with the needle outside the sewn work. The locking lever (612.342) must be turned to the left (anticlockwise) and held there until the adjustment is carried out, since its original position (i.e., turned to the right) serves to lock the adjusted stitch width and position.

The stitch width can be steplessly adjusted from 0 to 10 mm by means of the lever (044.753) protruding over the cover of the zigzag stitch mechanism. By displacing the lever to the right, i.e., towards the handwheel, you increase the zigzag stitch width up to the maximum, by displacing it to the left, you decrease the stitch width down to zero. The zigzag stitch position is controlled by the lever (044.740) protruding on the side of the cover (954.044) of the zigzag stitch mechanism. The basic, i.e., the median position, is adjusted by the central position of the lever (044.740),

i.e., on the mark in which the lever enters the fixing notch. To change the adjustment, slightly depress the lever in the direction away from the operator and displace it either to the mark to obtain the right, or to the mark to obtain the left, zigzag stitch position. After the adjustment, turn the locking lever (612.342) to the right to lock the chosen stitch position. When used with straight stitch, the machine should be set to the median stitch position, i.e., to the mark

3. Thread tension adjustment

The tension of the upper and the lower thread must be so interrelated that the stitch interlacing takes place in the middle layer of the sewn material. To adjust the upper thread tension, turn the tensioner nut either to the right, i.e., clockwise, to increase the tension, or inversely, to decrease it. To adjust the lower thread tension, use the screw located in the middle part of the pressure spring on the bobbin case. By turning the screw to the right you increase the pressure of the spring on the bobbin case (between which the thread passes) and, consequently, the lower thread tension, and inversely. If the lower thread tension has been originally adjusted correctly, the adjustment of the upper thread tension by means of the tensioner nut will be sufficient, as a rule, to restore the desired quality of stitching. To ensure correct thread trimming operation, special care should be paid to the above described thread tension adjustment. Also adjust the upper thread tension on the ancillary thread tensioner whose influence on the stitching proper and on the stitch formation is negligible but which affects the length of the upper thread end reaching out of the needle eye after the trimming operation. By increasing its tension you shorten the end and increase the quality of the subsequent stitching beginning, however, with increased risk of threading out of the needle eye in that phase. On the other hand, too small tension of the ancillary tensioner means too long thread ends and impairs the stitch quality on the underside of sewn work at the beginning of the next stitching. Therefore, due care should be paid to the correct tension adjustment on the ancillary thread tensioner.

4. To adjust the feed-dog height above the throat plate (Fig. 7)

The feed-dog (A) height should be adjusted so that its teeth slow up the throat plate (B) (0.8 to 1.2 mm, according to the kind of sewn material. To adjust it, loosen the screw (120.229) of the lifting lever (613.195) on the shaft (345.065), adjust the required height of the feed-dog teeth, and retighten the screw thoroughly with a screwdriver. To adjust the teeth horizontally, loosen the screw (124.050) of the lever (613.495) on the shaft (345.067) and adjust the rear part of the teeth by correspondingly adjusting the angular position of the eccentric pin (338.069), then retighten the screw (124.050) thoroughly.

5. To adjust the movement of needle with respect to feed-dog

Loosen the two screws of the lower belt wheel and turn the handwheel by hand so as to set the feed-dog to a position in which the feeding movement ends and the feed-dog teeth are at a level with the throat plate, then rotate the handwheel to position the needle point, during its downward movement, about 5 mm above the throat plate, and retighten the screws of the belt wheel.

6. To adjust the throat plate (Fig. 7)

The throat plate (B) must be properly seated and fixed by screws (123.117) in a position ensuring that the needle passes through the centre of the needle aperture. The needle aperture must no be burred or otherwised damaged since it would unfavourably affect the quality of stitching.

7. To adjust the presser bar pressure

The presser bar pressure is actuated by the adjusting screw located under the upper cover of the machine arm and accessible through a hole provided in the latter. By turning the adjusting screw to the right increase the pressure, by turning it to the left, decrease it. The pressure of the presser foot must be sufficient to ensure reliable and continuous feeding even at the top speed. On the correct adjustment of the presser bar depends the uniformity of damage-free feeding as well as that of the stitch length.

8. To adjust in height the needle bar (Fig. 8)

The hook must be so interrelated with the needle that at the moment when the hook point begins to take up the upper thread loop, the upper edge of the needle eye is approximately 1 mm under the hook point, at the maximum stitch width and in the right-side position of the needle bar. If the needle bar height is not adequate to this requirement, loosen the screws of the front plate, remove it, loosen the screw (124.050) of the carrier (035.499) of the needle bar (391.153), adjust the needle bar correctly, and mount the front plate.

9. To adjust the hook course

Adjust the stitch width to zero and turn the handwheel towards you until the needle bar reaches its bottom position and reascends by 2.1 + 0.3 mm. In this position, the hook point must lie in the needle axis, the distance between the needle and the hook being 0.1 mm or less. If it is not the case remove the throat plate, loosen the screws, adjust the angular position of the hook on the hook shaft, retighten the screws, and mount the throat plate.

10. To adjust the hook holder

After the hook course adjustment, loosen the fixing screw and adjust the hook holder by means of the gauge so as to obtain a gap of approximately 0.7 mm between the holder lug and the bottom of the groove of the inner part of the hook.

11. To adjust the elliptical path of the feed-dog movement (Fig. 7)

If the machine is adjusted correctly the feed-dog describes an elliptical path both with forward and with reverse stitching. The adjustable eccentric is positioned by means of a pin in the aperture of the lower shaft and commands the length of feeding. Another eccentric, stationary and situated in front of the adjustable one, commands the correct interrelation between the major and the minor axe of the ellipse. The stationary eccentric is secured by two screws located in its collar. The eccentricity of the stationary eccentric is constant so that the height of the ellipse remains the same regardless of the height adjustment of the feed-dog teeth.

The adjustment is to be carried out as follows:

When the eccentricity of the adjustable eccentric equals zero (so that no feeding takes place) adjust the feed-dog holder with the feed-dog to the centre of the slot provided in the throat plate, having first loosened the screws of the lever (613.495) on the feed shaft (345.067). Ensure that the feed-dog reaches its top height about the middle of its feed stroke.

12. To adjust the length of feeding

Loosen the screw of the lever (613.373) on the pin of the reverse stitching hand lever, set the stitch length regulation knob to its zero position, adjust the traversable sleeve of the adjustable eccentric to a position corresponding to zero, retighten the screw of the lever, and check whether the feeding is equally long for both forward and reverse stitching.

13. To adjust the hook opening (Fig. 9)

During the stitching, the gap between the sides of the groove provided in the inner part of the hook and the hook holder (686.020) is positively periodically opened by means of the opening lever (825.743) and eccentric (671.153) for easier lower thread movement out of the hook. The eccentric is situated on the hook box at the end of the lower shaft. Adjust first the gap between the lug of the hook holder and the recess provided in the inner part of the hook, and simultaneously, the opening lever, i.e., the axial play between the lug of the opening lever (825.743) and the surface of the inner part of the hook. Loosen the screw (111.094) fixing the position of the bobbin case (410.530) contacted by the pin (323.155) with the opening lever and adjust a gap of 0.8 mm between the lug of the opening lever and the lower surface of the inner part of the hook by lightly tapping on the opening lever. At the same time, set the opening lever so as to produce a gap of 0.5 mm between the recess of the inner part and the hook holder required to let the thread pass. After the adjustment, retighten the screw (111.094). Before proceeding to carry out the adjustment, remove the throat plate. The timing of the opening lever with respect to the hook is best carried out only during the sewing off of the machine.

First screw out the four screws (120.246) on the cover (827.179) of the hook box, remove the cover, take out the lubrication inlay, loosen the two screws (112.013) of the eccentric (671.153) and set its angular position on the lower shaft so as to time the opening of the inner part of the hook to begin prior to the moment the upper thread begins to pass across the recess of the inner part of the hook and the lug of the hook holder. Check also the correct passage around the hook bottom, when the opening lever approaches the opening lug to open the passage around the inner part of the hook for the upper thread. The correct adjustment is best checked on the adjusting spring on the upper thread tensioner that must only slightly move while the thread passes freely. After the adjustment of the eccentric, retighten its screws, insert the lubrication inlay, and mount the cover of the hook box.

14. To exchange the presser foot (Fig. 8)

To exchange the presser foot (031.586), first lift the presser bar (392.105) to its top position and lock it by the hand lever (615.024). List also the needle to its top position, then loosen the attachment screw (120.239) of the presser foot together with the washer (190.554), and remove first the finger guard (271.393) and then the presser foot from the presser bar. To insert the presser foot, proceed inversely. Having fixed a new presser foot check, in its top position, whether the needle bar, during its movement, does not collide with the presser foot.

15. To take off and mount the drive belt (Fig. 10)

Remove first the synchronizer (A). Mark the position of the hub with respect to the handwheel if it has not been marked already. Screw out the screws (120.346), remove the upper belt guard (041.162), then the V-belt from the handwheel, and afterwards after loosening the two screws (120.006), take the handwheel with the bearing (045.301) out of the machine arm and from the upper shaft (349.147). Pass the drive belt (272 213 011 015) through the aperture thus created in the machine arm around the upper shaft, set it on the two belt wheels, and mount the handwheel with the bearing back on the upper shaft in such a position that the first screw, considered in the sense of rotation of the hadnwheel, comes to sit on the small flat surface of the upper shaft, when tightened. Secure the handwheel by tightening the screws (120.006), put the V-belt on the handwheel, mount the belt guard, and then the synchronizer in the marked angular position.

To observe:

After each mounting or exchange of the drive belt, adjust the hook course and the feeding, as described in the preceding paragraphs of this Manual. If this adjustment is not carried out by an experienced mechanician it is advisable to take the needle out of the needle bar before proceeding to the adjustment

16. To adjust the needle punches into the centre of the throat plate groove in longitudinal direction (Fig. 8)

Adjust the zigzag stitch to the median position and to the zero width, and turn the handwheel until the needle bar with the needle reaches its bottom position. The needle should be both longitudinally and transversely in the centre of the throat plate. In case of longitudinal deviation (i.e., in the feed direction of sewn work) screw out the two screws of the front plate, remove the latter, loosen the securing screws (111.229, 111.248), and finely adjust the angular position of the screws (113.115) both on the front and on the rear side of the machine so as to set the needle longitudinally into the centre of the throat plate slot. Retighten the screws (111.229, 111.248) and mount the front plate.

To observe:

Do not tighten the adjustment screws (113.115) completely but leave a minimum play between them and the needle bar holder in order to let proceed unimpeded the transverse movement of the needle bar holder required for the zigzag stitch.

17. To adjust the needle punches into the centre of the slot of the throat plate in transverse direction (Fig. 4, Tab. 13)

Adjust the zigzag stitch to the median position and to the zero width, and turn the handwheel until the needle bar with the needle reaches its bottom position. In case of transverse deviation from the central needle position screw out the four attachment screws, remove the upper cover (813.904) take the plug (321 161 001 000) out of the by the plug machine arm, loosen the screw (120.289(situated under the upper cover, insert a screwdriver into the hole created removal, adjust the angular position of the eccentric pin (338.187) so as to set the needle transversely to the slot the slot centre, retighten the screw (120.289), insert the plug into its hole, and mount the upper cover. Check the needle punch position at the maximum stitch width and be sure that there is a play between the needle and the slot side in each lateral position of the needle. With zigzag stitch width adjusted at zero, the needle bar with the needle should react with no lateral movement to the hand wheel rotation. If it does react, the basic zero position of the zigzag stitch drive mechanism should be adjusted by an experienced sewing machine mechanician since such ajdustment is rather extensive.

18. To adjust the zigzag stitch mechanism to pisitions: right side - left side (Fig. 6)

After the adjustment of the median position and maximum width of the zigzag stitch can be adjusted the lest and the right zigzag stitch position. Screw out the two attachment screws, remove the cover of the zigzag stitch mechanism, loosen the locking lever (612.342) and set the stitch width to zero by means of the lever (044.753). Rotating the handwheel, set the needle bar with the needle to its bottom position. Displace the lever (044.740) upwards, i.e., for the right side stitch position, and observe the simultaneously proceeding movement of the needle in the throat plate slot to its extreme right position. Loosen the screw (A) and adjust the stop (825.858) so as to let enter its notch into the recess provided in the lever (044.740), then retighten the screw (A).

Proceed analogically for adjusting the left-side needle position. Displace the lever (044.740) downwards, towards the bed plate, loosen the screw (B), set the stop (825.857) correctly, and retighten the screw (B). Having adjusted the right side and the left side position mount the cover of the zigzag stitch mechanism.

19. To adjust the needle bar lateral movement

If the machine is adjusted properly the needle bar begins to carry out its lateral movement, even at the maximum width of the zigzag stitch, only after the needle, during its upward movement, comes to lie about 4 mm above the throat plate. For correct adjustment, loosen the screws (111.343) of the gear wheel (045.330) on the upper shaft (349.147) and adjust the angular position of the handwheel accordingly, then retighten the screws (111.343) thoroughly.

20. To adjust the force required for stepless adjustment of zigzag stitch width

For stepless tilting of the zigzag stitch bracket, the inlay (A, Table 12) contains a braking roller (314.058) with a spring (260.139) and an adjustment screw (111.099). Turning the screw to the right increases the pressure exerted on the roller and, consequently, the force required to adjust the stitch width. A lever (612.342, Fig. 6) actuated mechanism serves to fix the adjusted stitch width. Before any stitch width adjustment, the lever must be turned to the left. The adjustment proper is carried out by the lever (044.753, Fig. 6) whose extreme left position (up to the zero) produces the zero zigzag stitch width, and whose extreme right position produces 10 mm wide zigzag stitch. The number marking on the cover (954.044, Table 12) shows the approximative stitch width values at the respective lever positions. To adjust the control force, first take the complete zigzag stitch mechanism out of the vertical part of the machine arm, screw the screw (120.221, Table 13) out of the pin (335.101), and take the pin out of the guiding (646.027). Loosen the fixing lever (612.342) and take the screw (152.099) out of engagement, thus releasing the body of the zigzag stitch mechanism that can be then taken out of the machine arm. During the assembly, proceed inversely.

21. To adjust the force required for stepless adjustment of the zigzag stitch position

For adjusting steplessly the zigzag stich position (and, to some extent, the zigzag stitch width as well), the nut (174.066, Fig. 6) and the locking nut (161.229, Fig. 6) are screwed on the guiding (646.027). The adequate position of the nut (174.066), fixed by the locking nut (161.229), will provide for the required displacement force and define the force holding the adjusted zigzag stitch position. Any adjustment of the zigzag stitch position can be carried out only with the locking lever (612.342) released.

22. To adjust the tooth play of the zigzag transmission mechanism

The tooth play of the zigzag stitch transmission mechanism is actuated by the eccentric pin (335.105, Fig. 6). To adjust the tooth play, first screw out the four attachment screws (123.117), remove the upper cover (813.904), and loosen the screw (120.233) situated in the lug of the machine arm. By turning then the eccentric pin (335.105), adjust the tooth play of the zigzag transmission mechanism, i.e., between the complete cam (035430) and the gear wheel (045.330) mounted on the upper shaft (349.147), then lock the adjusted position by thoroughly tightening the screw (120.233).

23. To adjust the position of the needle bar with respect to that of the hook shaft

After a substantial adjustment of machine mechanisms should be checked the median (vertical) needle bar position with respect to that of the hook shaft. The hook shaft axis is displaced to the left of the needle bar axis. For adjustment, loosen the two screws (120.235) ensuring the locking joint between the bed plate and the hook gear box. In its correct position, the hook gear box is in direct contact with the lug of the bed plate. The stop pin on the front side of the gear box is inserted into the split section of the bed plate lug and is in contact with the upper part of the split lug. Lock the gear box position by tightening the two screws (120.235).

24. To adjust the operation of the adjusting spring

Loosen the screw (120.360, see Table 8) and take the complete upper thread tensioner (025.245, Table 8) out of the machine arm. To adjust the tension of the adjusting spring, loosen the screw (111.227) on the bushing (416.131) and adjust the angular position of the pin (118.039) with a screwdriver. By turning the pin to the left, decrease the spring tension, and inversely. In the same manner is adjusted the value of the spring arm stroke. Sew a few stitches and check the adjustment of the adjusting spring. Displace the right-side slide plate and check the thread for correct passage around the hook bottom. At this phase, the thread should remain unstretched but should make the adjusting spring slightly move.

25. To time the trimmer actuating cam (Tables, 4,9)

The correct and trouble-free function of the thread trimmer device requires the correct setting of the trimmer ac tuating cam mounted on the lower shaft and commanding the movement of the moving cutter which serves also to catch and draw out the threads prior to their trimming, as well as the mechanism for loosening the thread tensioner. With the machine switched off, rotate the handwheel until the thread take-up lever reaches its top position. Mark this position on the handwheel and on the machine arm (on the belt guard) by provisional signs, then tilt the machine and rotate the handwheel until the two provisional signs are aligned. Loosen the two screws (120.500) of the cam (672.166) and set the cam thus loosened so that its index line (marked in red) coincides with the axis of the pin (322.231), then lock the cam by tightening the screws (120.500). This is the basic position of the cam which, however, can require some adjustment depending on the kind of the threads, sewn work, etc. The timing of the drawing hook movement is governed by the angular position of the cam on the lower shaft. Tilt the machine head and insert the pin (322.231) into the straight section of the cam groove by depressing the lever transmitting motion from the electromagnet. Turning then the handwheel towards the operator (anticlockwise) you can time the beginning of the drawing hook movement from its initial to rear position.

If adjusted correctly, the point of the drawing hook comes to lie in immediate vicinity of the throw-away section of the hook at the moment when the lower thread leaves the latter, thus forming the typical triangle. During the subsequent rotation of the handwheel, the drawing hook point shall pass through the triangle, one arm of the upper together with the lower thread lying on one side, the other arm of the upper thread on the other side, of the drawing hook. The threads lying on the notched side of the drawing hook shall enter the notch. For adjustment, loosen the two screws (120.500) on the cam (672.166) and turn the cam either in the sense of the lower shaft rotation, to speed up the beginning of the drawing hook movement, or inversely. After the adjustment check whether the pin (322.231) enters freely the straight section of the cam (672.166) upon depression of the lever (625.132), press the carrier ring (436.346) onto the cam thus adjusted, and retighten it by screws (112.013) on the lower shaft.

26. To adjust the starting position of the drawing hook (Table 10)

In the starting position of the drawing hook there shall be a distance of 2 to 3 mm between its outer edge adn the outer edge of the removable slide plate (647.222) (aligned with the outer edge of the bed plate). The slide plate should be attached to the bed plate in a position leaving no gap between the slide plate and the throat plate (811.701). To adjust the drawing hook position, loosen the locking nuts (161.144, 161.227) and turn the connecting tie-rod (334.093) so as to obtain its length required for fixing the correct position of the drawing hook, then retighten the locking position.

27. To adjust the stroke of the drawing hook (Tables 4,9)

Insert the pin (322.231) into the cam (672.158) and rotate the handwheel towards you until the lower thread and one arm of the upper thrad enter the notch provided on the side of the drawing hook. If they do not enter, loosen the nut (161.144) on the swinging lever (646.105) and displace the lever (632.147) in the groove of the lever (646.105). To increase the drawing hook stroke, increase the length of the lever arm, and inversely. Fix the adjusted position by retightening the nut (161.144)-

28. To adjust the stationary knife for correct thread trimming

The correct trimming operation depends among others on the pressure force of the stationary knife (870.140). The pressure force can be increased by screwing in the screw (111.328) in the slide plate (647.222), and decreased by screwing it out. The pressure force should be just sufficient for proper trimming to avoid excessive wear of both the stationary knife and the drawing hook (moving knife). If in spite of this adjustment the trimming operation remains unsatisfactory, check the cutting blade of the stationary knife and improve it, or exchange the knife.

29. To adjust the loosening of the upper thread tensioner (Table 8)

For correct operation, the main upper thread tensioner must be loosened during the thread trimming cycle. This loosening is actuated automatically in due phase of thread trimming operation, via bowden and a lever system during the activation of the trimmer device. If the loosening fails to take place use the displaceable bushing (410.511) to adjust the mutual position of the two bowden ends and, consequently, the stroke value, having first loosened the screw (111.245) in the machine arm. The gap between the disks of the tensioner when loosened must ensure free passage of the upper thread.

30. To adjust the machine stop in the needle up position

The principle of it is described in detail in the instructions for the drive unit. Before leaving the producer's works, the machine was tested and sewn-off at predetermined values, i.e., in the "needle up" position lying between 0° and 5° after the upper dead position of the thread take-up lever.

31. Available length of upper thread

The available upper thread length depends on the following factors:

a) Tension of the ancillary thread tensioner:

The available upper thread length increases with decreasing tension of the ancillary thread tensioner, and inversely.

b) Machine stop with respect to thread take-up position:

The sooner (before the upper dead point of the thread take-up lever) the machine is stopped, the smaller is the available upper thread length, and inversely.

32. To remove and insert the slide plate (Table 10)

If it is necessary to remove the slide plate (647.222) it must be borne in mind that it carries the trimmer mechanism. First loosen the screw (120.218) and disconnect the drive of the trimmer mechanism by taking the pin (338.190) out of the lever (635.171), then loosen the screws (123.117) fixing the slide plate to the machine bed plate, and take the slide plate out. Proceed inversely to insert the slide plate.

33. To remove and to mount the moving trimmer knife (the drawing hook) (Table 10)

Tilt the machine head onto the support pin located on the stand plate, loosen the screw (120.218) and disconnect the drive of the trimmer mechanism by taking the pin (338.190) out of the lever (635.171). Tilt the lever (635.171) together with the trimmer knife to the left (away from the hook) thus taking the cylindrical end of the lever (635.171) out of the aperture provided in the trimmer knife (870.167), and take the knife out of the slide plate. For assembly, proceed inversely.

34. Electrical equipment of machine

The machine is equipped with the electronic stop motor QUICK NDK 880 Micro M 12, situated in the machine stand. The electrical equipment of the machine should be kept in good state according to the electrotechnical and security regulations. To change the sense of rotation of the electric motor change over the lead-in cable either at the plug or at the terminal board of the stop motor. In the latter case, be sure first to take the plug of the lead-in cable out of the socket.

To observe:

Any failure of the electrical eqiupment of the machine should be repaired by a skilled electrician.

III. MAINTENANCE

1. Machine cleaning

Plain machine lines help to keep clean outer machine parts. From time to time, it is necessary to remove the waste between the feed-dog and the throat plate. Otherwise, the machine should be cleaned daily.

2. General overhaul and repair of machine

Should be carried out once a year. The machine should be set out of operation, cleaned, dismantled, faulty pieces exchanged and due repairs carried out. The machine should be then assembled and tested. The electric motor and the electrical equipment should be inspected and tested. The general overhaul should be carried out so thoroughly as to enable the machine to run without major defects for another year.

3. To store the machine

After the machine has been set out of operation, it should be cleaned, inspected, and faulty pieces exchanged, if any. The machine should be then tested, coated with protective grease, and stored with all the tools and accessories.

IV. FAULTS AND HOW TO REMOVE THEM

Fault	Cause	Remedy
1. General faults		
a) Heavy machine run	The machine has been out of use for considerable time: dried oil and important rities deposited in the bearings	
b) Slow machine start	Insufficient tension of belt connection machine to electric motor	ng Increase the belt tension by tilting the electric motor
c) Upper thread breakage	 Slashed thread guides Too sharp hook point Faulty feeding Faulty thread guiding or faul needle threading Incorrect upper thread tension Bad needle quality or bent need 	(see par. 9, page 7) 5. Adjust it (see par. 3, page 10)
	7. Thread size is inadequate to the thickness of sewn material 8. Machine considerably soiled	7) he 7. Use adequate thread 8. Unscrew the throat plate, clean the
		mechanism, and reset the throat plate (see par. 6, page 10) 9. Remove the thread
	9. Thread wound on the hook 10. Thread is too thin or not stro- enough	ng 10. Use adequate thread
d) Lower thread breakage	 Thread is incorrectly threaded in the bobbin case Thread is too thin or not stroenough Thread is wound incorrectly and both in the bobbin 	7) ong 2. Use adequate thread
	 the bobbin Damaged bobbin Too sharp pressure spring on t bobbin case 	4. Exchange it the 5. Exchange the spring
e) Skipped stitches	 Needle inserted incorrectly Blunt or bent needle Slashed or broken hook point Excessive needle aperture in throat plate Broken adjusting spring for aper thread tension Needle bar positioned too h 	the 4. Exchange the throat plate and set it correctly (see par. 6, page 10) up- 5. Exchange the spring and adjust the upper thread tension (see par. 3, page 10)

or too low

Fault	Cause	Remedy
	7. Overturned hook, incorrect hook course8. Soiled hook mechanism	7. Adjust the hook course (see par. 9, page 11)8. Clean it with kerosene and oil it
f) Needle breakage g) Heavy and irregular feeding	 Feed-dog positioned too high Faulty attendance - pulling the material Needle too thin with respect to material Needle inserted incorrectly Loosened throat plate Excessive upper thread tension Feed-dog positioned too low 	 Adjust it in height (see par. 4, page 10) Let the material pass freely Exchange the needle (see par. 8, page 7) Insert it correctly (see par. 8, page 7) Set the throat plate correctly (see par. 6, page 10) and fix it by screws Adjust it (see par. 3, page 10) Adjust it in height (see par. 4, page 10)
	 Worn-out feed-dog Clogged or blunt teeth of feed-dog Insufficient pressure of presser foot 	 10) 2. Exchange it 3. Clean or exchange the feed-dog 4. Increase the pressure (see par. 7, page 10)
h) Stitch forming below sewn material	 Tensioner discs slashed by upper thread Thread fails to pass smoothly around the hook or catches the bobbin case Upper thread is not threaded between the tensioner discs Thread broken and caught between the tensioner discs Incorrect proportion between the upper and lower thread 	 Exchange them and adjust the upper thread tension (see par. 3, page 10) Clean the hook and adjust the bobbin case Thread is correctly (see par. 9, page 7) Clean the thread tensioner and adjust it (see par. 3, page 10) Correct the proportion (see par. 3, page 10) and check it from time to time
i) Stitch forming above sewn material	 Damaged spring on the bobbin case, lower thread is braked insufficiently Lower thread is not threaded under the spring of the bobbin case Lower thread broken and caught under the spring of the bobbin case Incorrect proportion between the upper and lower thread tensions Premature feeding 	2. Thread it correctly (see par. 12, page 8) 3. Remove the thread 4. Correct the proportion (see par. 3

Fault	Cause	Remedy
j) Locked hook	Thread rests caught in the hook	Rotate the handwheel in each direction regardless of the considerable resistance until the caught thread rests are cut to pieces. Remove them and start the unthreaded machine. Let it run for a period, then drip two or three drops of oil on to the hook.
2. Basic faults referring to thread trimmer device		
a) Insufficient length of upper thread available resulting in	Excessive tension of ancillary thread tensioner	1. Reduce the tension
threading out of upper thread out of the needle eye at the ma- chine start: the machine fails	 Premature timing of the cam The machine stops before reaching the top dead position 	2. Adjust the timing 3. Adjust it correctly
to start stitching	4. The electromagnet serving to release the main thread tensioner	4. Ascertain the cause and repair the trouble
	fails to operate 5. Incorrect upper thread unwinding 6. The edge of the active section of the drawing hook is too sharp and tends to cut the thread	5. Repair it 6. Polish the edge
	7. Too sharp hook edge	7. Polish it
b) Insufficient amount of lower thread, the machine fails to start stitching	 The lower thread end is drawn into the bobbin case Excessive speed prior to machine 	1. Increase the lower thread tension while being wound on the bobbin2. Set it at 140 r.p.m. or less
	3. Excessive lower thread tension 4. Burrs on the cover sheet of the hook	3. Reduce it 4. Polish it
c) Thread ends are poorly cut or are not cut at all	Maladjusted (insufficient) pressure of stationary knife	1. Repair (adjust) it
	2. The stationary or the moving knife (the drawing hook) is blunt	2.Sharpen it
d) Poor seam beginning at the un- derside of sewn work	Too long upper thread end	1.Increase the tension of the ancillary thread tensioner 2.Adjust the cam timing
e) The upper or the lower thread fails to be cut	1. Incorrect cam timing 2. Skipped stitches at reduced speed 3. Poor thread separation by the drawing book	1. Time it correctly2. Adjust the mechanism3. Adjust or exchange the drawing hook
	ing hook 4. Insufficient stroke of drawing hook	4. Adjust it (see par. 27, page 14)

Fault	Cause	Remedy
f) Neither thread is cut but the needle movement from the low- er to the upper position does	Incorrect cam timing The electromagnet controlling the thread cutting fails to operate correctly (gets stuck)	1. Time it correctly 2. Check the wiring of the electromagnet or exchange it
take place	3. Insufficient stroke of drawing hook	3. Adjust it (see par. 27, page 14)
g) Stitching begins only after a few skipped stitches	1. Insufficient supply of upper thread 2. Insufficient supply of lower thread	1.Increase it (see par. 31, page 15) 2.Re-polish the drawing hook and the hook
h) At the seam beginning, the upp- er thread end protrudes above sewn work	Excessive supply of upper thread	 Increase the tension of the ancillary thread tensioner Adjust the cam timing Adjust the machine stop in the needle up position

V. HOW TO ORDER SPARE PARTS

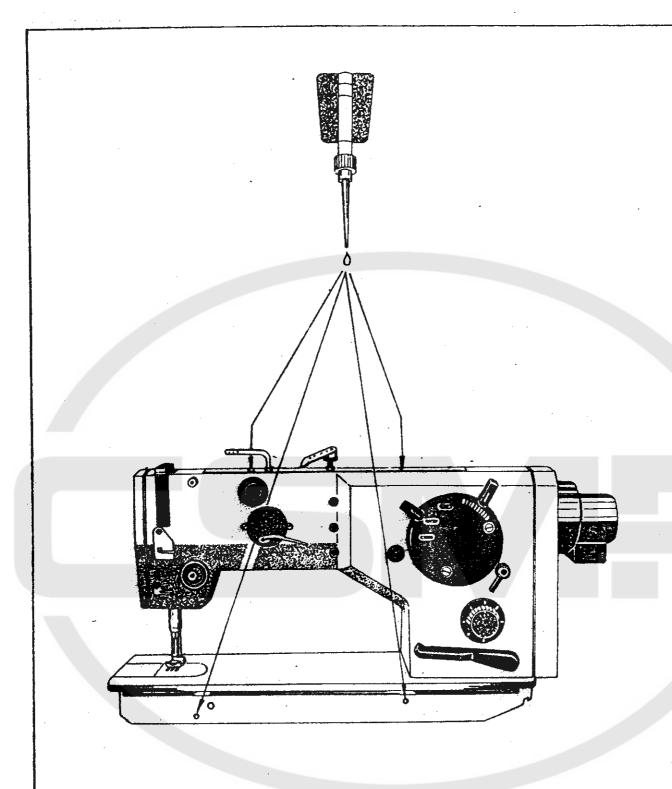
Please, specify in each order:

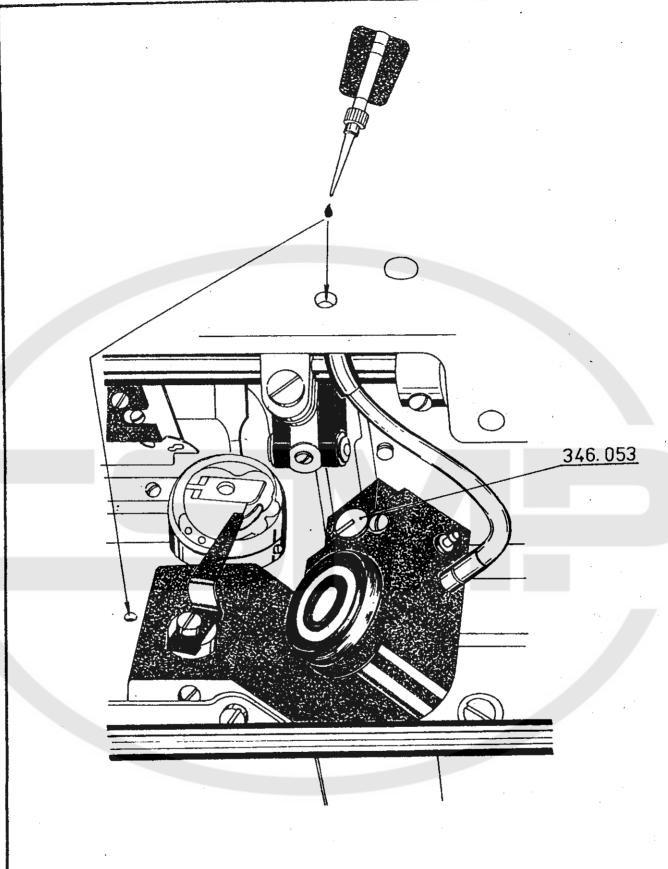
- 1) Marking of the piece (a six-digit number for pieces produced at our factory, a twelve-digit number for pieces purchased from other suppliers)
- 2) Number of pieces

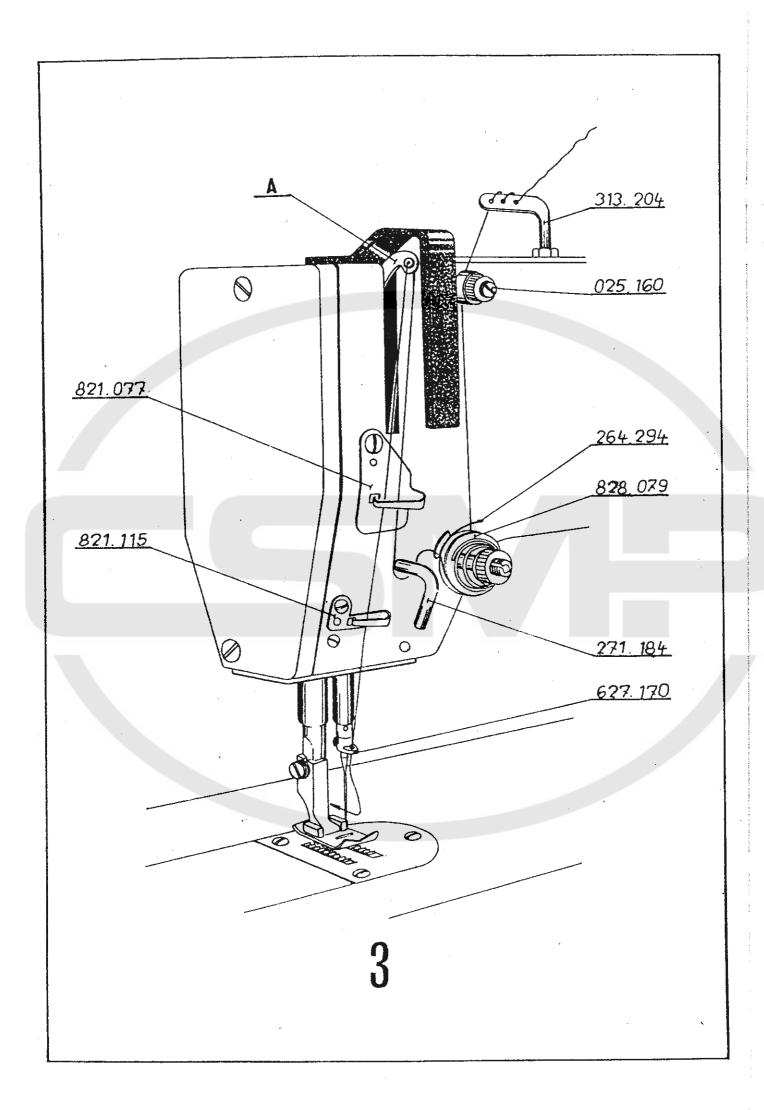
Example of an order:	021.243	2 pieces
	828.079	4 pieces
	272 213 017 015	1 piece
	323 114 618 117	1 piece

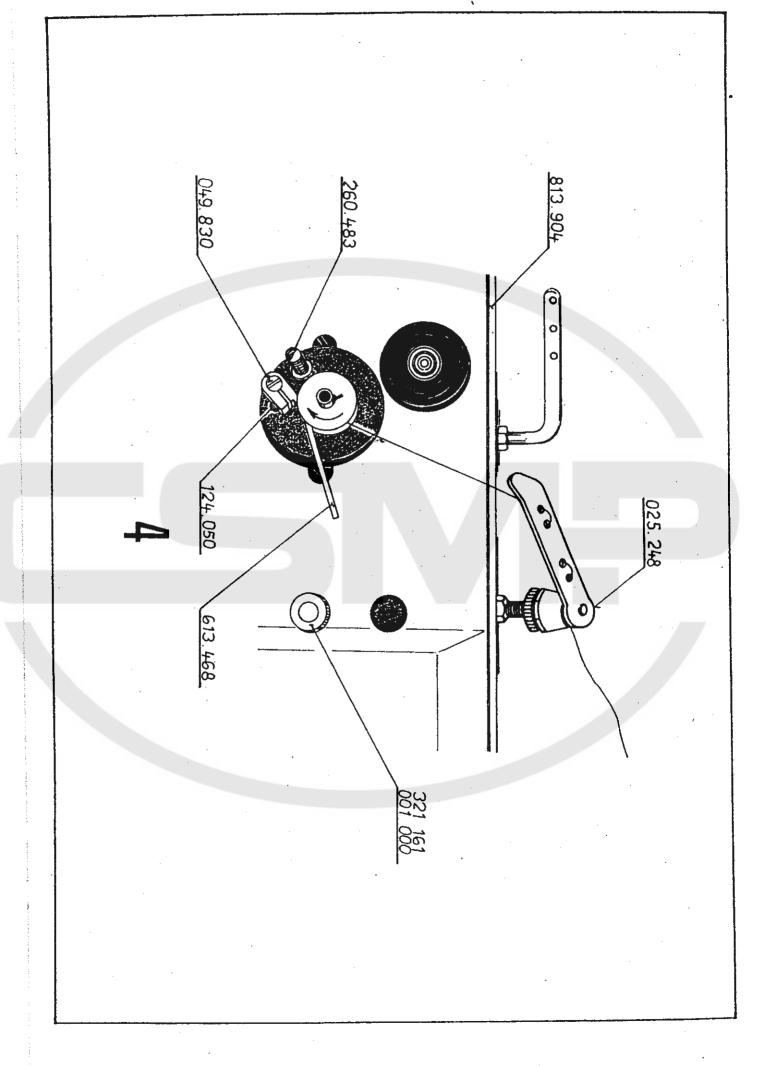
As we are continually endeavouring to improve our machines we amend also the accompanying technical documentation accordingly. It is, therefore, strongly recommended to order spare parts exclusively on the basis of the catalogue attached to the machine in question.

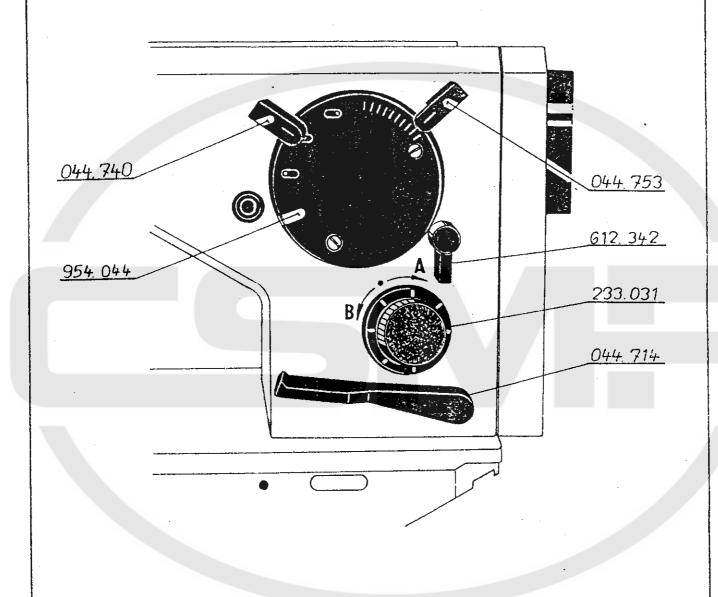
We wish you much success in your work.

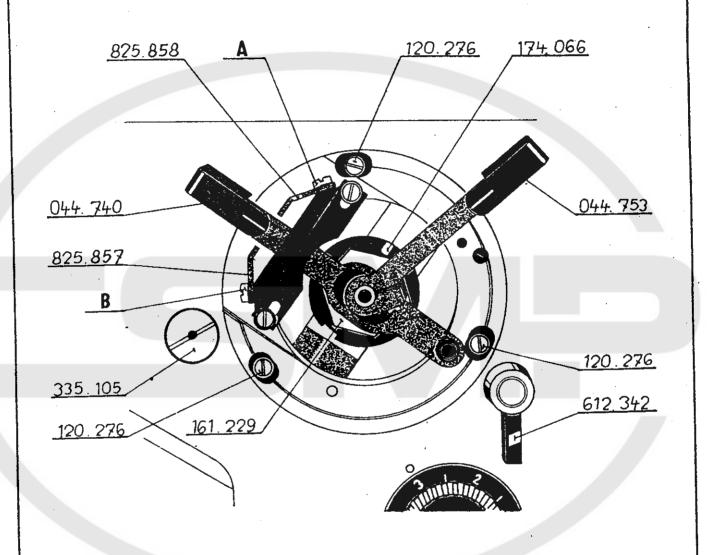


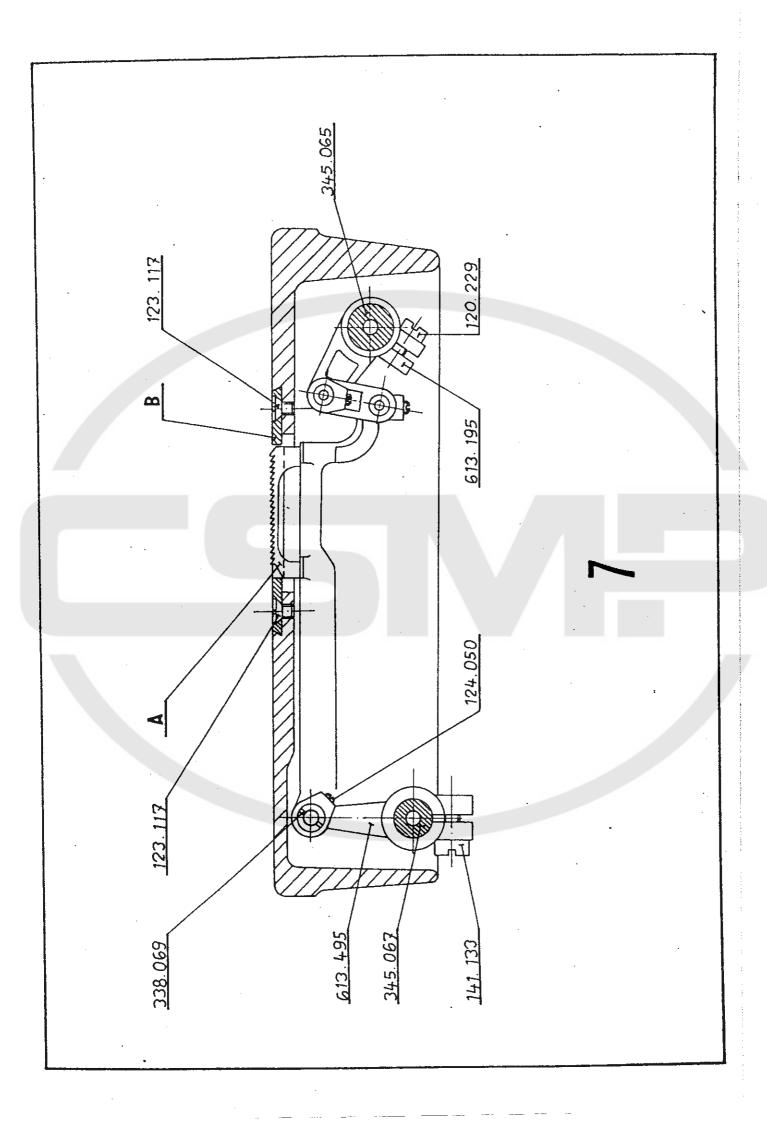


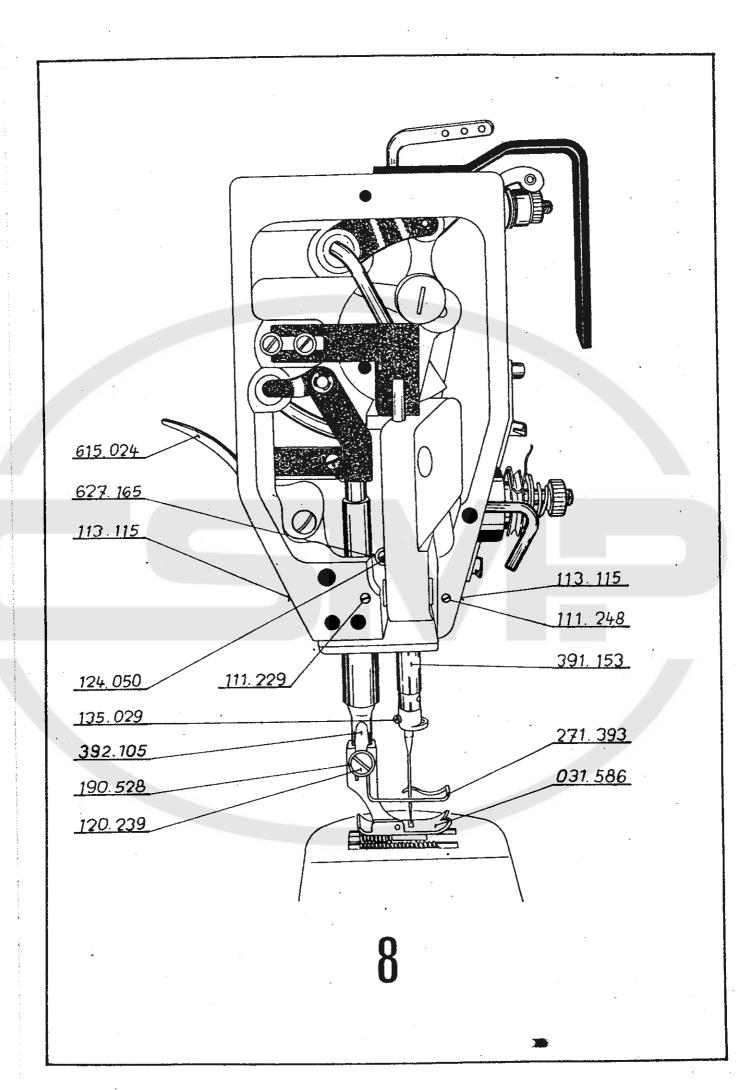




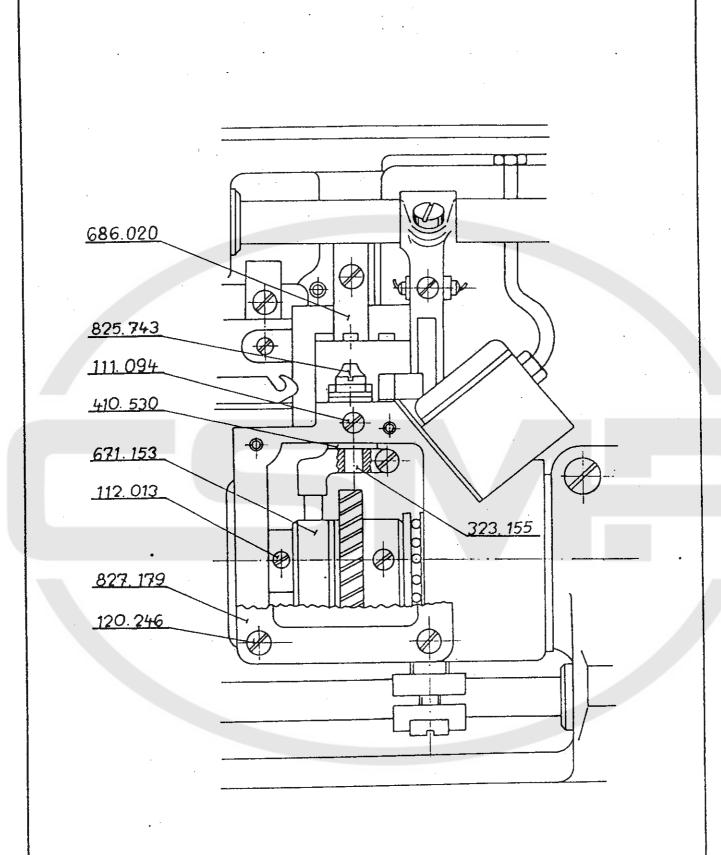


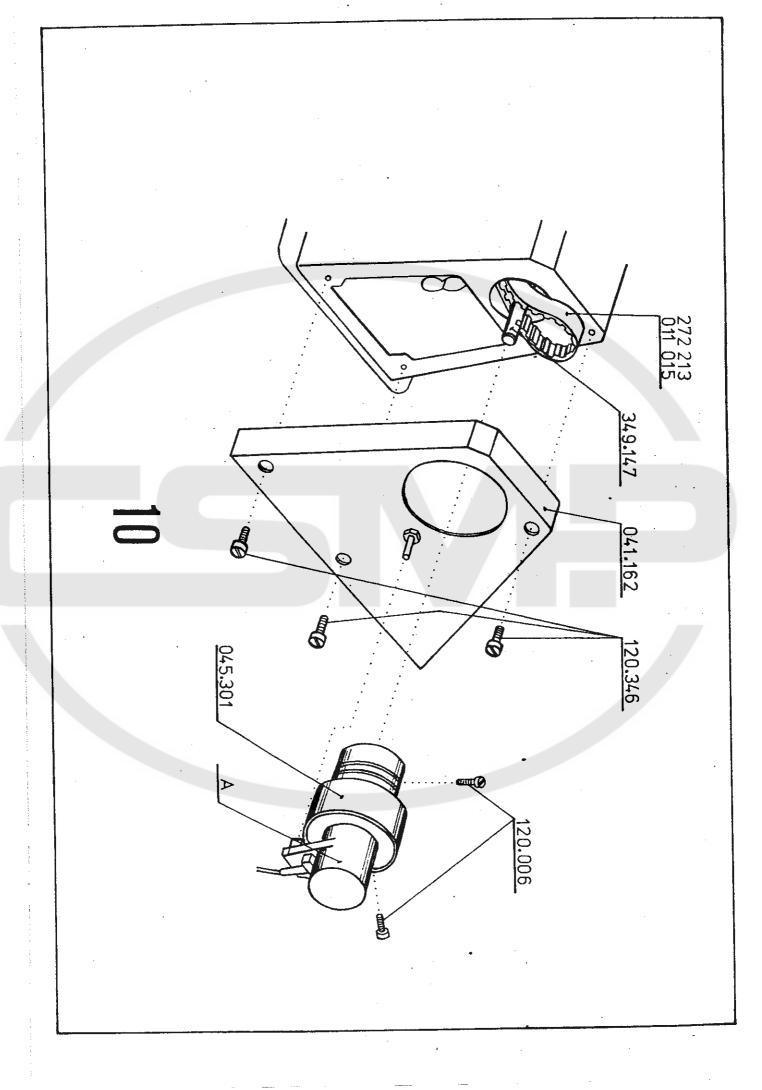






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Marking of the F	^o iece	Pieces per 1 Mach.	Name	III in Table	N	Α	
		5	PARTS PRODUCED				
			PARIS PRODUCED	i,			
522 980		1	Hook R 235	5	N	1	
	020.403.	10 1	Machine arm with bed plate 1				
	021.315	1	Needle bar holder, complete	3			
	025.245	1	Complete thread tensioner	8			
	025.160	1	Complete thread tensioner	8 14	N	1	
	031.304	1	Complete presser foot Complete slide	14	14		
	035.330	1	Complete cam	13	N ·	1	
	035.430 035.499	1	Complete carrier	3	• • •	·	
	035.505	1	Complete body	12			
	035.526	1	Complete tube	6			
	035.527	1	Complete oil tank	5			
	041.162	1	Complete cover	2			
	041.176	1	Complete cover	4			
	043.024	1	Complete lever	16			
	044.045	1	Complete connecting rod	4,15			
	044.714	1	Complete lever	16	4		
	044.711	1	Complete crank	3 .	N	1	
	045.314	1	Complete wheel	4			
	045.330	1	Complete gear wheel	4			•
	049.782	1	Complete guiding	3,8			
	049.785	1	Complete guiding	16 8,9			
	049.786	1	Complete bowden Complete lever	8			
	049.806	1	Complète right-side eccentric	10			
	049.810	1	Complete left-side eccentric	10			
	049.811 049.832	1	Complete shaft	13			
	091.219		Complete core of electromage				
	091.219		Complete coil of electromagne				
	091.422		Complete guide	13			
522 080	111.094		Screw	5			
	111.097		Screw	16			
	111.099		Screw	12			
	111.214		Screw	3			
	111.219	2	Screw	5			
	111.222		Screw M 6 x 8	3			
	111.225	2	Screw M 6 x 6	4			
	111.227			,10,15			
	111.229		Screw M 4 x 5	3			
	111.233		Screw	6			
	111.238		Screw M 5 x 10	3			
	111.245		Screw M 4 x 8	7,8 3			
	111.248	1	Screw M 3 x 4	3			
			•				
Leaend	N = spa	re part					
3	A		equired for one machine for one y	loor			

List of Parts for Single Needle Flat Bed Industrial Sewing Machine with Trimmer Device for Upper and Lower Threads

Page 2

ZZ 565 TD

500.000	444.050	4	Screw	6		
522 080	111.252	1 2	Screw M 2,5 x 3	3,13		
	111.273	1	Screw M 4 x 12	3		
	111.275	1	Screw	3	•	
		1	Screw	10		
	111.328	2	Screw	4	N	2
	111.343	23	Screw	4,5,13,15,16	N	10
	112.013 112.014	. 23	Screw	3,14	N	2
•	112.014	1	Screw	3		
	112.015	i	Screw M 4 x 8	13		
	113.115	3	Screw	3,4		
	113.113	1	Screw	14		
	113.122	1	Screw	14		
	118.027	1	Thread tensioner pin	8		
		1	Thread tensioner pin	8	N	1
	118.039	3	Screw	3,4		
	120.006 120.050	ა 2	Screw M 4 x 0,5	14		
		1	Screw	3	. N	1
	120.062 120.215	2	Screw	10		
	120.215	3	Screw M 3 x 5	7,8,9		
,	120.216	9	Screw M 4 x 6	10,12-14		
	120.217	4	Screw M 4 x 8	9,12		
	120.218	3	Screw M 5 x 10	8,11		
	120.220	8	Screw M 5 x 12	3,8,9,13,14,16		
	120.221	1	Screw M 5 x 30	4		
	120.222	1	Screw M 6 x 10	13		
	120.225	2	Screw M 4 x 10	5		
	120.226	1	Screw M 4 x 12	16		
	120.227	4	Screw M 5 x 10	10,15		
	120.229	1	Screw M 5 x 12	16		
	120.230	2	Screw M 5 x 14	15		
	120.233	1	Screw M 6 x 12	13		
	120.235	4	Screw M 6 x 18	5,13		
	120.239	1	Screw M 3,5 x 10	14	N	1
	120.239	1	Screw M 3 x 6	7		
	120.245	7	Screw M 4 x 8	5,9,16		
	120.248	2	Screw	1		
	120.248	7	Screw M 3 x 8	4,11		
	120.252	1	Screw M 5 x 8	4		
	120.255	2	Screw M 3 x 5	3,13		
	120.269	1	Screw	5		
	120.276	3	Screw M 4 x 14	3,12		
	120.289	1	Screw	13		
	120.203	1	Screw M 2 x 4	13		
	120.293	3	Screw	10		
	120.233	2	Screw	9		
	120.322	5	Screw M 5 x 16	9,11		
1	120.324	2	Screw M 12 x 14	12		•
	120.324	2	Screw M 4 x 4	10	-	
	120.346	3	Screw	2		
	120.360	1	Screw	8		
	120.430	8	Screw	4		
		_				

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522 080	120.500	2	Screw	4		
322 000	120.543	2	Screw	12,14		
	120.601	1	Screw	5		
	121.157	2	Screw	. 15	N	4
	122.007	2	Screw	5		
	122.008	1	Screw	3	N	1
	122.029	4	Screw	4	N	4
	122.023	1	Screw	4		
	123.117	. 12	Screw	1,10	N	6
	123.117	1	Screw M 3 x 8	1		
	123.122	2	Screw M 4 x 18	12		
	124.050	5	Screw	1,3	N	2
	126.078	· 5	Screw	11		
	126.101	4	Screw M 3 x 12	12		
	131.027	1	Screw	8		
	131.378	1	Screw	9		
	131.376	1	Screw	13		
	132.112	2	Screw	1		
	132.112	2	Screw	10		
	132.133	1	Screw	10		
		1	Screw	3	N	1
	135.029		Screw	14	, ,	
	136.023	1	Screw	3		
	138.009	1	Screw	4		
	141.088	1	Screw M 4 x 6	4,16		
	141.102	2	Screw M 4 X 0	15		·
	141.139	1	Screw	9		
	141.142	1		9		
	141.204	1	Screw Screw	13		
	141.223	1	Clutch	11		
	152.096	1	Screw	13		
	152.099	1	Nut M 5	1		
	161.138	1		16		
	161.140	1 '	Nut Nut M.6	16		
	161.142	2	Nut M 6	5,11,16		
	161.143	1	Nut M 5	9,10		
	161.144	4	Nut M 4			
	161.146	1	Nut M 5	13 10		
	161.227	1	Left-side nut M4	12		
	161.229	1	Nut	13		
	161.233	2	Nut			
	161.237	1	Nut	13		
	163.093	1	Nut	13		
	171.030	1	Nut	8		
	171.037	1	Nut	8		
	174.066	1	Nut	12		
	190.346	2	Washer 6,4	13,14		
	190.353	5	Washer 4,3	3,9,12		
	190.358	2	Washer 3,2	13		
	190.359	3	Washer 5,3	4,9,13		
	190.483	1	Washer 3,2	10		
			Manhae	13		
	190.526	1	Washer			
	190.526 190.554 191.110	1 1 1	Washer 3,7 Washer 5,1	14		

		,			ZZ 565 TD
522 080	191.118	2	Washer	10	
322 000	192.061	2	Washer 6,4	12,16	,
	195.041	-1	Washer	8	•
	220.011	1	Nail 2 x 6	1	
	233.031	1	Knob	16	
		1	Spring	12	. **
	260.139		Spring	16	
	260.383	1		9	
	260.434	1	Spring	3	
	260.458	1	Spring	4,13	
	260.467	2	Spring		N 2
	262.073	1	Spring	8 ^ 8	N 2
	262.065	1	Spring		,N 2
	263.103	2	Spring	8,9	
	264.294	1 1	Spring	8	N 5
	264.274	1	Spring	8	
	264.288	1	Spring	14	
	271.062	1	Ring	4	
	271.184	i	Thread guide	1	
	271.337	1	Split pin 1.6 x 12	14	
	271.393	1	Guard	14	
		1	Holding wire	10	
	271.414	_		9,15	
. /	274.083	5	Ring 5	14	
	274.084	1	Ring 6.		
	274.090	1	Ring 4	10,12	
	274.093	1.	Ring 9	10	
	274.104	4	Ring 3,2	8,9,11	· ·
	278.009	1	Boweden tube	8,9	
	283.142	1	Lifting spring	14	
	310.190	1	Pin	12	•
	310.364	1	Pin	9	
	310.428	1	Disengaging pin	8	
	313.204	1	Pin	· 1	
	313.322	. 2	Pin	3,8	
	314.058	1	Pin	12	*
	314.150	1	Pin	14	
			Pin	10	
	314.165	1		10	
	314.166	1	Pin	9,11	
	314.167	2.	Pin	16	
	316.038	1	Pin		
	316.096	1	Pin	2	
	318.103	1	Pin	. 4	
	318.144	2	Pin	15	
	318.171	1	Pin	.10	
	318.191	1	Pin	3,13	
	318.192	1	Pin	3,13	
	320.255	1	Pin	13	
	320.257	1	Pin	9	
	320.258	1	Pin	9	
			Disengaging pin	9	N 1
	322.231	1		12,13	
	322.247	1	Pin		
	323.155	1	Pin	5	
	326.213	1	Pin	14	
	328.005	1	Pin	3	
		_		^	
	331.135	3	Pin	2 9	· ·

			Pin	9	-			
522 080		1	Tie rod	10				
	334.093	1		13				
	334.097	1	Safety pin	13				. 1
	33 5.101	1	Pin	13				
	335 .105	1	Eccentric pin	4,16				1
	337.033	1	Carrier	4,10 15				
	338.069	1	Eccentric pin					
	33 8.187	1	Pin	13				
	338.190	1	Pin	10				
	340.166	1	Shaft	16				
	341.202	1	Shaft	9				
	342.243	1	Shaft	4				
	342.258	1	Shaft	16				
	344.035	2	Shaft	15				
	345.065	1.	Shaft	15				
	345.067	1	Shaft	. 15				
	346.053	ì	Pin	6				
	349.147	1	Shaft	3,4				
	383.168	1	Tie rod	14				
	391.153	1	Needle bar	3				
	392.105		Presser bar	14				
	410.481	1	Bushing	10				
	410.401	1	Bushing	8				
		1	Bushing	5				
	410.530		Bushing	15				
	410.532	1	Bushing	13				
	410.559	2		15				
	412.193	1	Bushing	15				
	413.251	1	Bushing	15				
	413.252	2	Bushing	3				
	413.311	1	Bushing	13				
	413.314	1	Bushing					
	413.315	1	Bushing	13				
	413.328	1	Inlay	11				
	416.077	1	Bushing	8				
	421.122	1	Bushing	4				
	421.321	1	Bushing	3				
	421.330	1	Bushing	14				
	421.341	. 1	Bushing •	3				
	422.154	1	Bushing	11				
	422.155	1	Core of the electromagnet	11				
	422.184	1	Bushing	13				
	424.051	5	End piece	3,5,6,13				
	424.055	1	Ring	4				
	424.060	2	Inlay	5				
	424.068	1	Ring	4				
		4	Ring	13,15				
	436.000			14				
	436.331	1	Ring	4				
	436.338	1	Ring	4				
	436.346	1	Ring	16				
	441.187	1	Bushing	5				
	441.278	1	Plug	7				
	441.313	1	Oil tank			N	1	
	441.541	1	Wheel	4			•	
	442.548	1	Flange	4				
	445.045		Ring					

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						ZZ 565 TD
500.000	44E 04E	1	Body of eccentric	4		
522 080	445.045	-	Handwheel	4		
	511.082	1	Gear wheel	5	N	1
	552.165	1		5	N	1
	552.166	1	Gear wheel	4	14	•
	554.077	1	Belt wheel			
	611.101	1	Crank head	3		
	612.109	2	Lever	15		
	612.342	1	Lever	13		
	613.125	1	Lever	15		
	613.152	1	Lever	15		
	613.216	1	Lever	15		
	613.328	1	Lever	16		
	613.373	1	Lever	16		
	613.420	1	Lever	9		
	613.421	1	Lever	9		
	613.466	1	Lever	5		
	613.469	1	Lever	3,13		
	613.472	1	Lever	12		
	613.495	1	Lever	15		
	613.503	1	Lever	16		
	615.024	1	Lifting lever	14		
	622.092	•	Feed-dog holder	15		
		1	Guiding	14		
	623.249	•	Latch	9		
	625.132	1		4,15		
	627.023		Guiding		N	1
	627.170	1	Sleeve	3	14	•
	630.248	1	Connecting rod	4,15		
	630.272	1	Lever	9,11		
	632.147	1	Lever	9,10		
	633.194	1 .	Lever	12		
	633.1 96	1	Lever	14		
	635.152	. 1	Lever	14	•	
	635.171	1	Lever of trimmer device	10		
	636.243	1	Lever	10		
	636. 25 1	1	Lever	13		
	646.027	1	Guid ing	2,13		
	646.104	1	Guiding	3		
	646.145	1	Bracket,	9		
	647.220	1	Bridge	12		
	647.222	1	Plate	10		
	651.473	1	Feed-dog	15.	N	1
			Eccentric	4	,,	-
	671.152	1		5		
	671.153	1	Eccentric Eccentric	5 5		
	671.155	1	Eccentric			
	672.166	1	Cam	4		
	672.167	1	Cam	5	k I	
	685.017	1	Bobbin	5	N	4
	685.047	1	Bobbin	5	N	4
	- 686.020	1	Holder	5	N	1
	721.173	1	Cover	1		
	724.132	1	Case	5		
	724.134	1	Case	4,5		
	725.023	1	Oil tank	6	•	

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522 080	744.380	1	Bracket	9,11		
522 000	765.090	i	Holder	10		•
	810.419	1	Lever	3,13		-
	811.701	1	Throat plate	10	N	1
	813.904	1	Cover	1		
	813.969	1	Packing piece	13		
	814.014	1	Packing piece	14		
	814.338	1	Washer	4		
	821.077	1	Thread guide	1		
	821.115		Guide	1		
	822.409	1.	Lever	9		
	822.424	1	Lever	8		
	822.424 822.446	1	Tie rod	9		
	822.446	2	Clip	7		
		1	Holder	13		
	825.425	1	Clip	9		
	825.586		Holder	. 9		
	825.587	1	Holder-	11		
	825.590	1	Holder	11		
	825.591	l 4	Release member	5	N	1
	825.743	1		12		_
	825.857	1	Stop	12		
	825.858	1	Stop	10		
	825.868	2	Guiding			
	826.039	1	Packing piece	10 8		
	827.174	1	Disc of thread tensioner			
	827.179	1	Cover	5		
	827.180	1	Cover	1		
	828.051	1	Disc	8	N	2
	828.079	2	Tensioner disc	8	IN	2
	828.080	1	Releaser disc	8		
	829.963	1	Lifting member	14		
	829.998	1	Shutter	13		
	831.342	1	Cover	1		
	839.010	1	Stop	12		
	839.058	1	Guiding	10		
	840.073	1	Lubrication tube	1		
	870.140	1	Stationary knife	10	N	1
	870.167	1 -	Cutting knife	10	N	2
	945.077	1	Inlay .	6		
	945.100	1	Inlay	8		
i	945.170	1	Inlay	6		
	945.180	1	Inlay	7		
	945.185	i	Lubrication inlay	6		
	945.188	1	Inlay	8		
	945.281	1	Washer	3		
	945.283	1	Lubrication inlay	5		
	945.285	1	Lubrication inlay	5		
	945.285	1	Lubrication inlay	7		
		1	Inlay	10		
	945.315	1	Inlay	7		
	945.316	-	Inlay	14		
	945.317			13		
	945.326		Inlay	3		
	951.281	1	Plug	13	-	
	951.327		Plug	13		
Í	952.220	. 1	Plate	. 11		
		-			<u></u>	

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522 080 952.235	1	Cover	11
952.251	2	Knob	12
953.139	1	Inlay	3
953.159	1	Inlay	3,8
954.044	1	Cover	12
990.134	1	Packing	5

PURCHASED PARTS

272 213	011 015	1	Drive belt 024.058	4	
	222 000	1	V-belt 10 x 1120	4	
	001 000	2	Ring 6 x 2 ČSN 02 9281	6,13	
	007 000	1	Ring 18 x 14 ČSN 02 9281	13	
	005 000	3	Inlay 940.029	2	
	003 000	1	Tube PVC 5 x 0,6	2	
	002 000	1	Tube ø 3,5/4,8 x 60	7	
	002 000	1	Tube ø 3,5/4,8 x 70	3	
	002 000	1	Tube ø 3,5/4,8 x 75	7	
	002 000	1	Tube ø 3,5/4,8 x 90	4,7	
	002 000	2	Tube ø 3,5/4,8 x 100	5,6,7,13	
	002 000	1	Tube ø 3,5/4,8 x 150	7	
	002 000	1	Tube ø 3,5/4,8 x 170	5	
	002 000	1	Tube ø 3,5/4,8 x 190	3	
	002 000	1	Tube ø 3,5/4,8 x 200	7	
	002 000	1	Tube ø 3,5/4,8 x 210	7,13	
283 366	002 000	1	Tube ø 3,5/4,8 x 250	7	
	002 006	1	Pin 2 x 6 ČSN 02 2150.1	3	
	003 008	1	Pin ø 3 x 8 ČSN 02 2150	5	
311 515	006 014	1	Pin ø 6 x 14 ČSN 02 2150	16	
311 515	006 025	1	Pin ø 6 x 25	16	
311 728	502 537	1	Parallel key 2,5 E 7 x 3,7	16	
311 732	910 040	4	Ring 4	9,10,14	
311 732	910 070	2	Ring 7	16	
311 733	000 180	1	Ring 18 ČSN 02 2930	4	
311 733	000 300	1	Ring 30 ČSN 02 2930	4	
311 733	100 240	1	Ring 22 ČSN 02 2931	5	
311 733	100 260	1	Ring 26 ČSN 02 2931	5	
311 733	100 620	1	Ring 62 ČSN 02 2931	2	
321 161	001 000	5	Plug PE 12,5	1.	
321 891	001 000	2	Oil level indicator M 24 x 1,		
			ČSN 02 7488	6,7	
323 232	000 066	2	Bearing SM 6	10	
323 251	914 064	1	Bushing KU 1815	11	
324 155	917 796	2	Bearing UR 608 B 2Z/C6	_	
			ČŠN 02 4640	5	
324 155	920 086	2	Bearing 609 2ZC6		
			ČSN 02 4640	5	
324 162	068 396	1	Bearing UR 6206 2Z/C6	•	
			ČSN 02 4640	4	

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			_	Daniel III 0000 07/01	e		
	324 165 (028 396	2	Bearing UR 6002 2Z/C ČSN 02 4640	6 4		
	324 165 (ሀሪሀ ሀሀድ	1	Bearing 6003 C 6			
				_	ČSN 02 4640	4	
	324 165	038 396	2	Bearing UR 6003 2Z/C	6 ČSN 02 4640	3,4	
	324 311	010 000	2	Bearing 51101	ČSN 02 4730	5,13	
	324 592	510 900	1	Bearing K 18 x 22 x 13		4	
		040 545	•		ČSN 02 4696 :30 mm = 11	4	
	341 412	บาช 012	2	Conductor SY ø 0,35 × (black)	осиви П		
	341 412	205 010	1	Conductor SY ø 0,35 x	:30 mm 11		
	541 412	030 012	'	(green)	**		
	374 523	059 099	1	Connector 6 AF 895 99			
	425 111		1	Plug 01 400	13		
	425 111	041 000	2	Lubrication head			
,				M 6 x 1 01 412	15		
	425 111	061 000	1	Lubrication head			
	1440 111	J.J. 000		M 8 x 1 01 378	15		
	523 081		1	Washer 8			
	548 300		1	Needle 134 No. 100	. 3		
		030 002	1	Lubrication wick Ø 2 x			
		030 002	1	Lubrication wick ø 2 x			
		030 002	. 1	Lubrication wick Ø 2 x			
		030 002	1	Lubrication wick Ø 2 X			
		030 002	2	Lubrication wick Ø 2 X			
		030 002	1	Lubrication wick ø 2 x		•	
		030 002	1	Lubrication wick Ø 2 x Lubrication wick Ø 2 x			
		030 002	1	Lubrication wick Ø 2 X Lubrication wick Ø 2 X			
		030 002	1	Lubrication wick Ø 2 X	•		
		030 002	1	Lubrication wick Ø 2 X			
		030 002 030 003	1	Lubrication wick Ø 3 X			
		030 003	1	Lubrication wick Ø 3 x			
		030 003	1	Lubrication wick Ø 3 x			
		030 003	1	Lubrication wick Ø 3 x			
		030 003	1	Lubrication wick ø 3 x			
		030 004	1	Lubrication wick ø 4 x	300 7		
		030 005	1	Lubrication wick ø 5 x	50 13		
		030 005	1	Lubrication wick ø 5 x	300 5		
		110 000	1	Fiber packing	1		

ZZ 565 TD

EQUIPMENT 201 522 792 112 010

Incorporated bobbin winder, complete

522 980	025.248	1	Complete thread guide	17
	025.249	1	Thread guide	17
	035.654	1	Complete body	17
	036.122	1	Friction-type winder, complete	17
	049.830	1	Complete lever	17
522 080	111.094	1	Screw	17
•	112.115	1	Screw	17
	124.050	1	Screw	17
	161.138	1	Nut M 5 ČSN 02 1401.28	17
	163.106	1	Nut	17
	260.483	1	Spring	17
	260.510	1	Spring	17
	264.281	1	Spring	17
	265.037	1	Spring	17
	310.377	1	Pin	17
	343.074	1	Shaft	17
	422.198	1	Bushing	17
	441.308	1	Body	17
	441.310	1	Body	17
	441.560	1	Wheel	17
	613.468	1	Lever	17
	827.194	1	Disc	17
	870.170	1	Knife	17
	945.296	1	Lubrication inlay	17
273 111	025 410	1	Ring	17
311 732	910 040	1	Ring 4 ČSN 02 2929.02	17
321 861	953 200	1	Plug	17

EQUIPMENT 202 522 791 947 001

Adjusting set

1	Adjusting set	18
1	Screw	18
1	Screw	18
1	Washer 6,4 ČSN 02 1733.02	18
1	Block piece	18
2	Packing piece	18
1	Packing piece	18
1	Cover	18
	1 1 1 1 2 1	1 Screw 1 Screw 1 Washer 6,4 ČSN 02 1733.02 1 Block piece 2 Packing piece 1 Packing piece

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EQUIPMENT 206 522 791 149 001

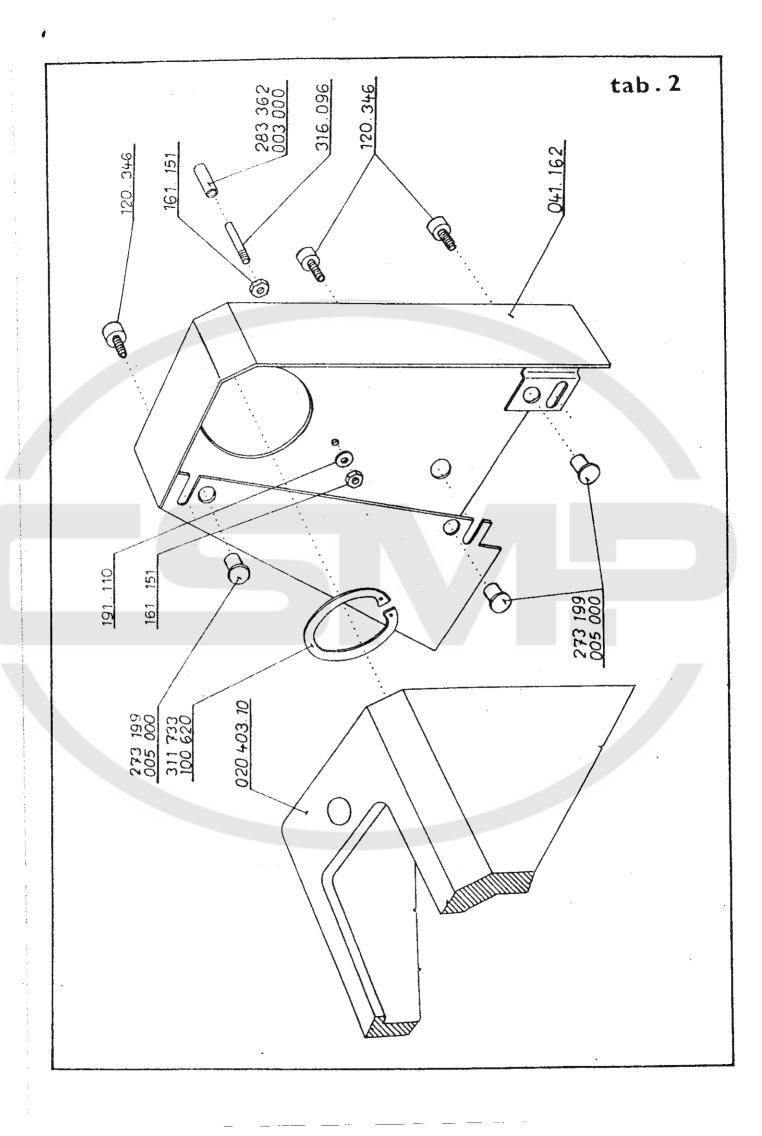
Overedging equipment

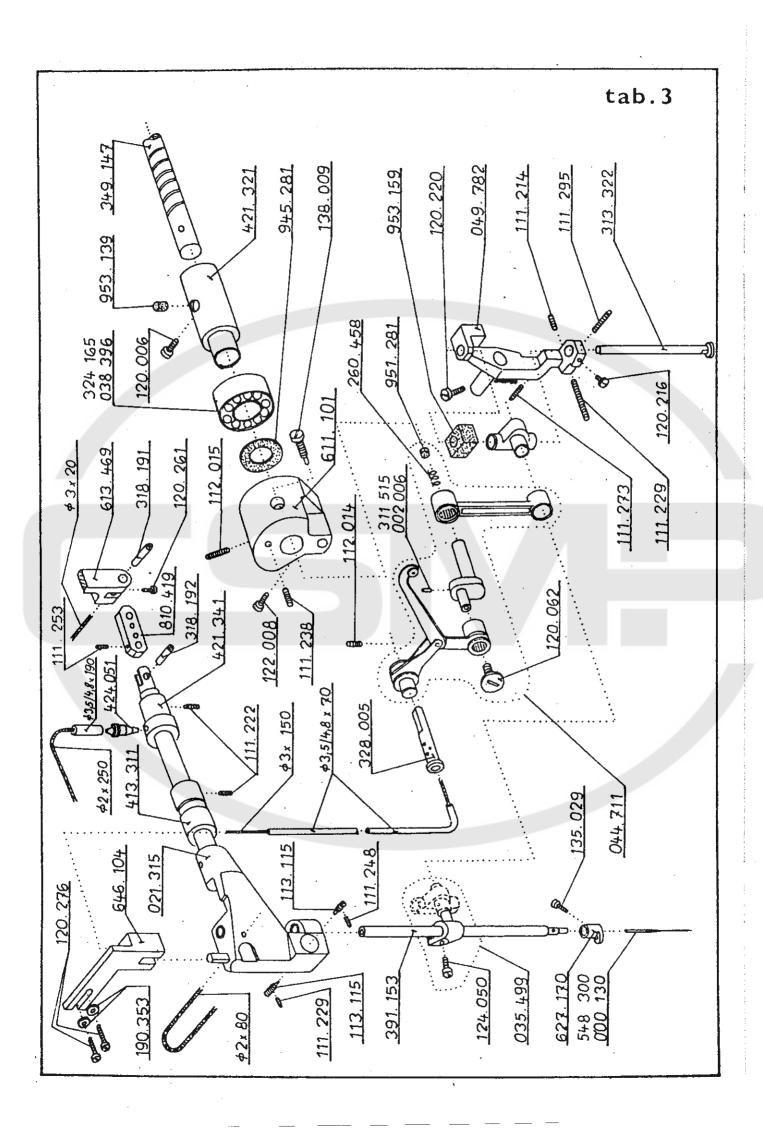
522 080	120.037	2	Screw	19
	121.157	1	Screw	19
	271.201	1	Thread guide	19
	627.037	1	Thread guide	19
	646.136	1	Sleeve	19

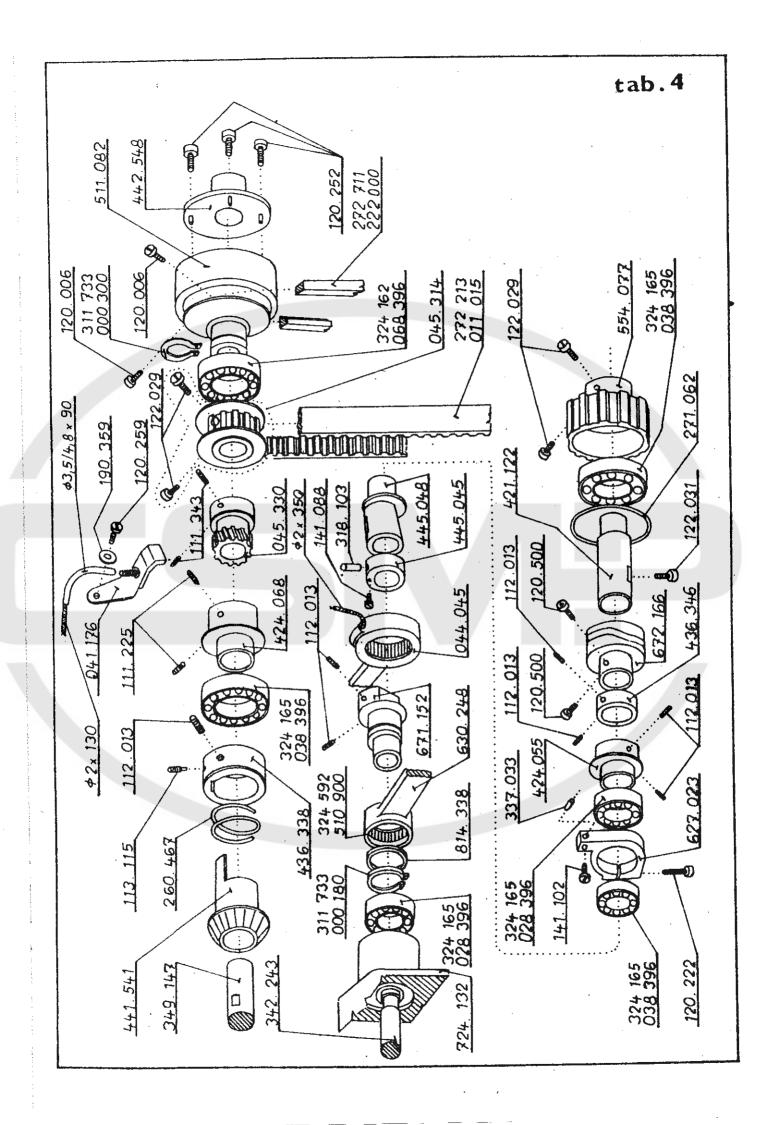
EQUIPMENT 295 522 791 995 014

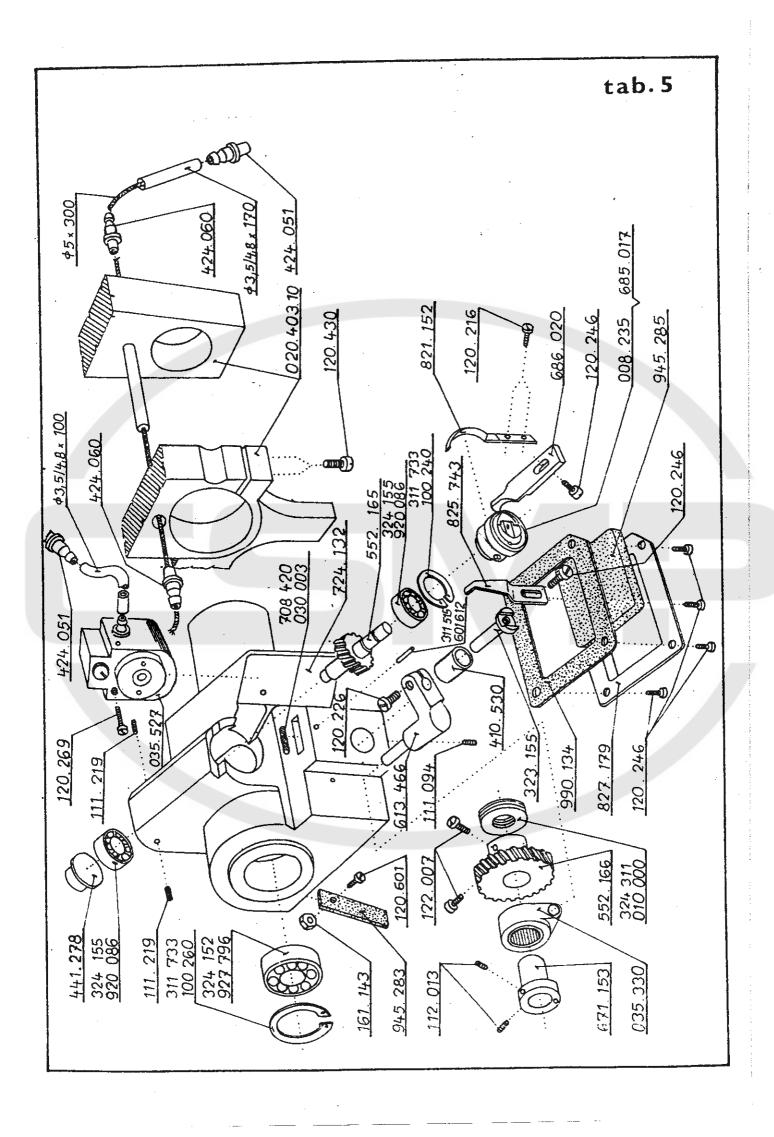
Covering plug for bobbin winder mounting hole

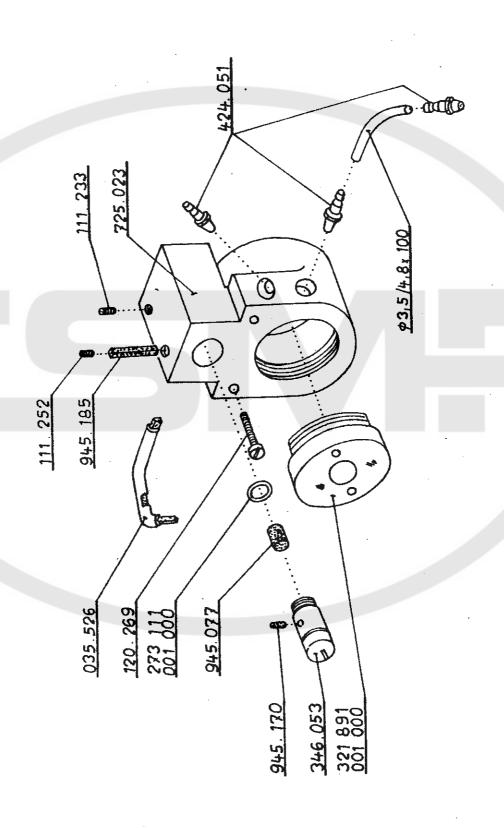
522 080 814.355 1 Plug 20

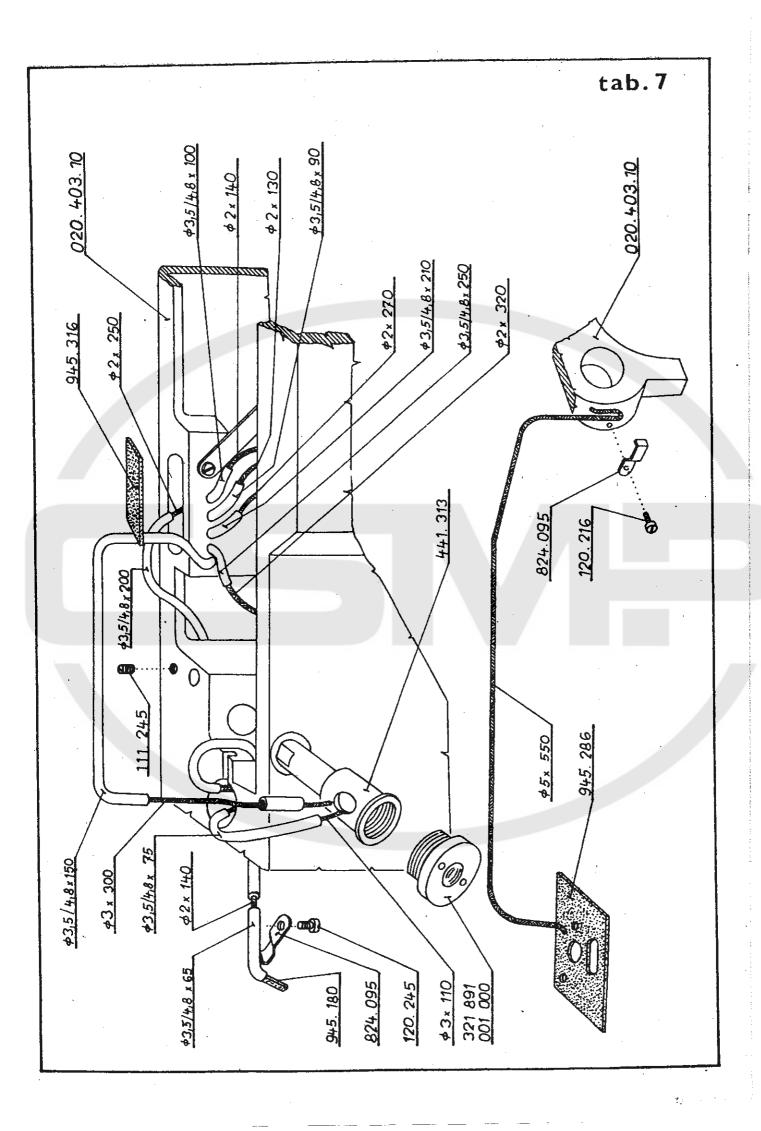


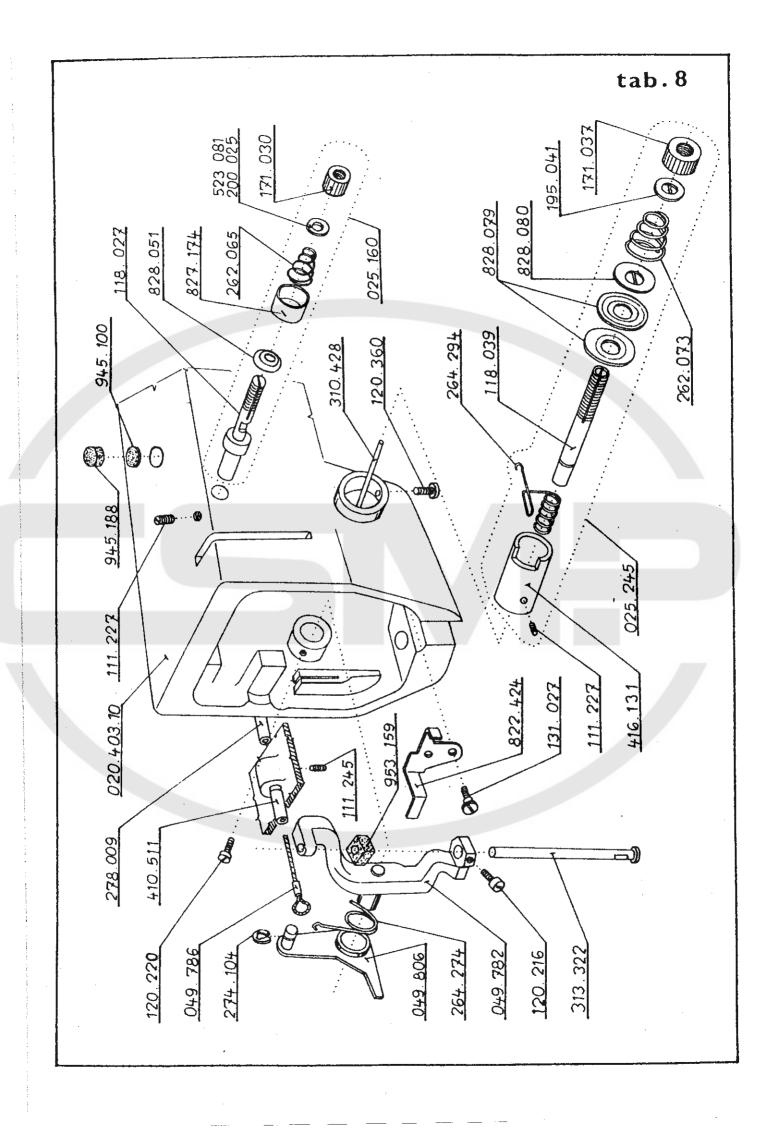








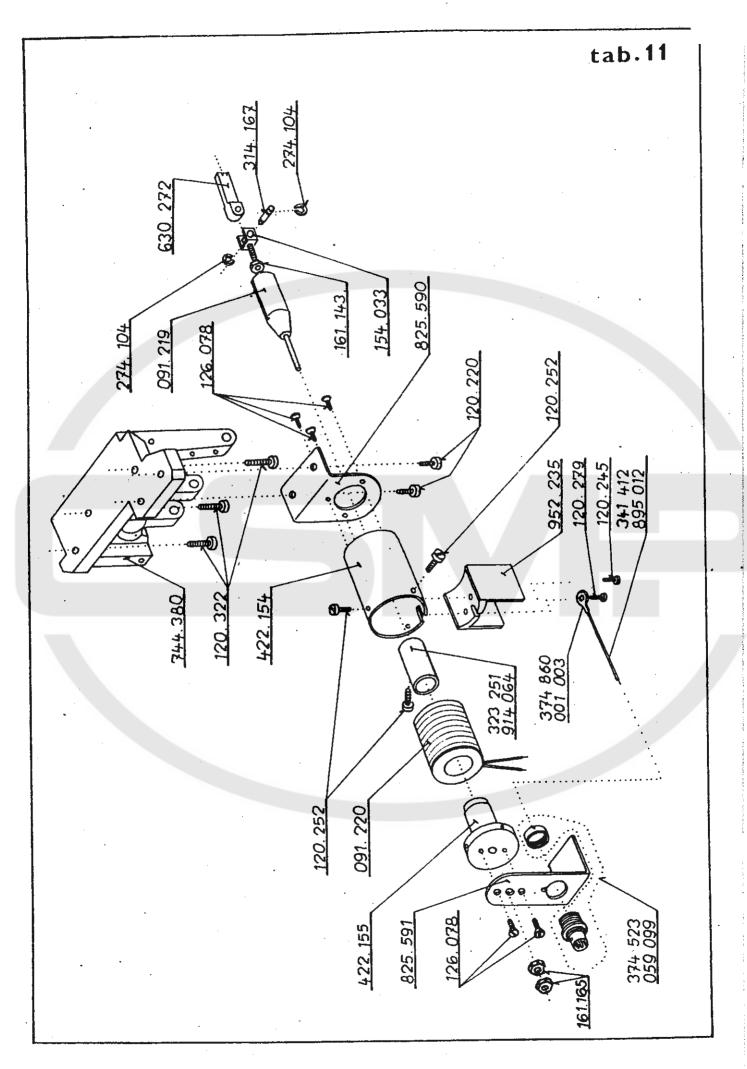


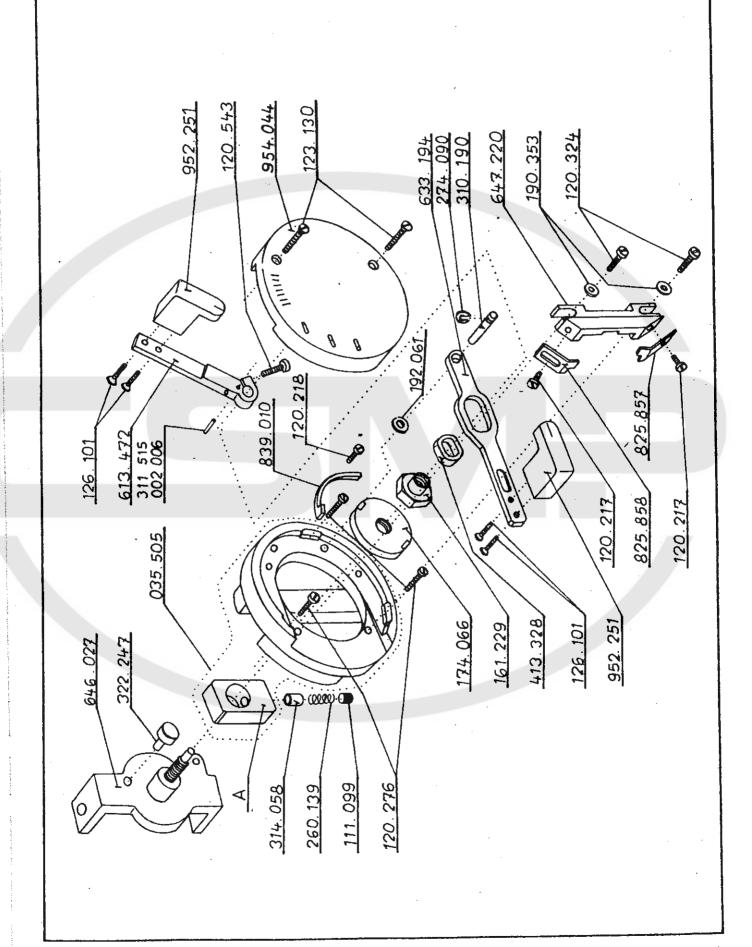


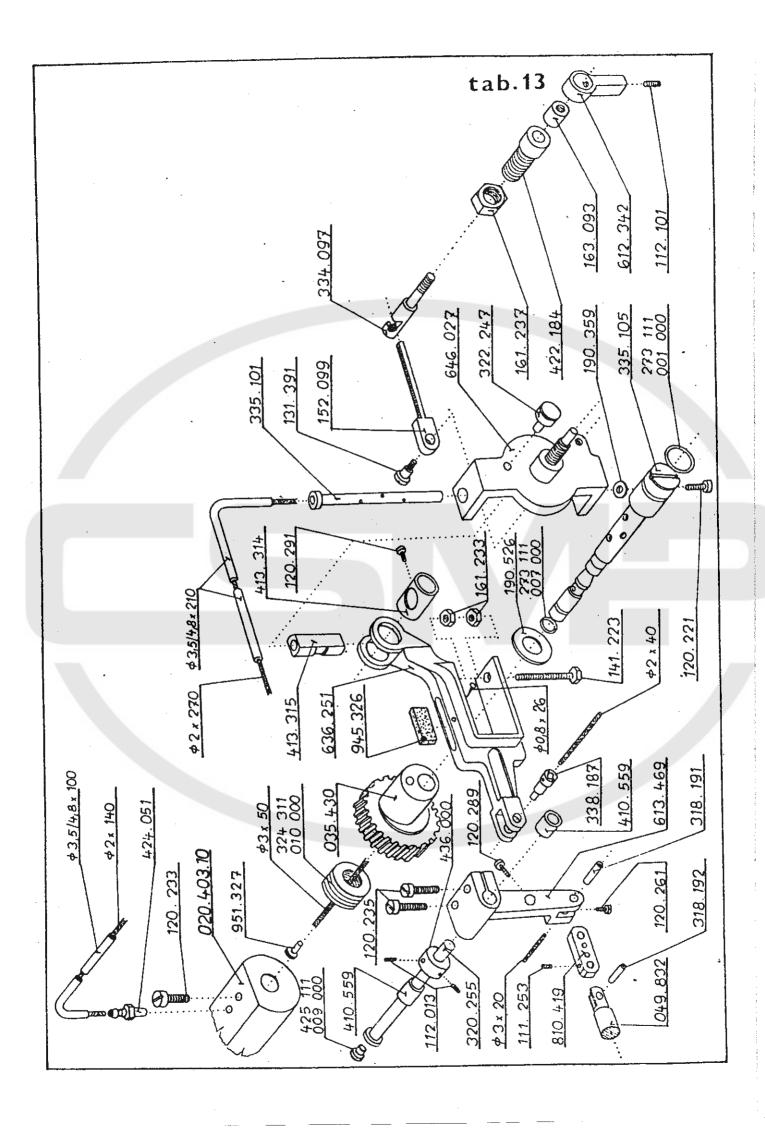
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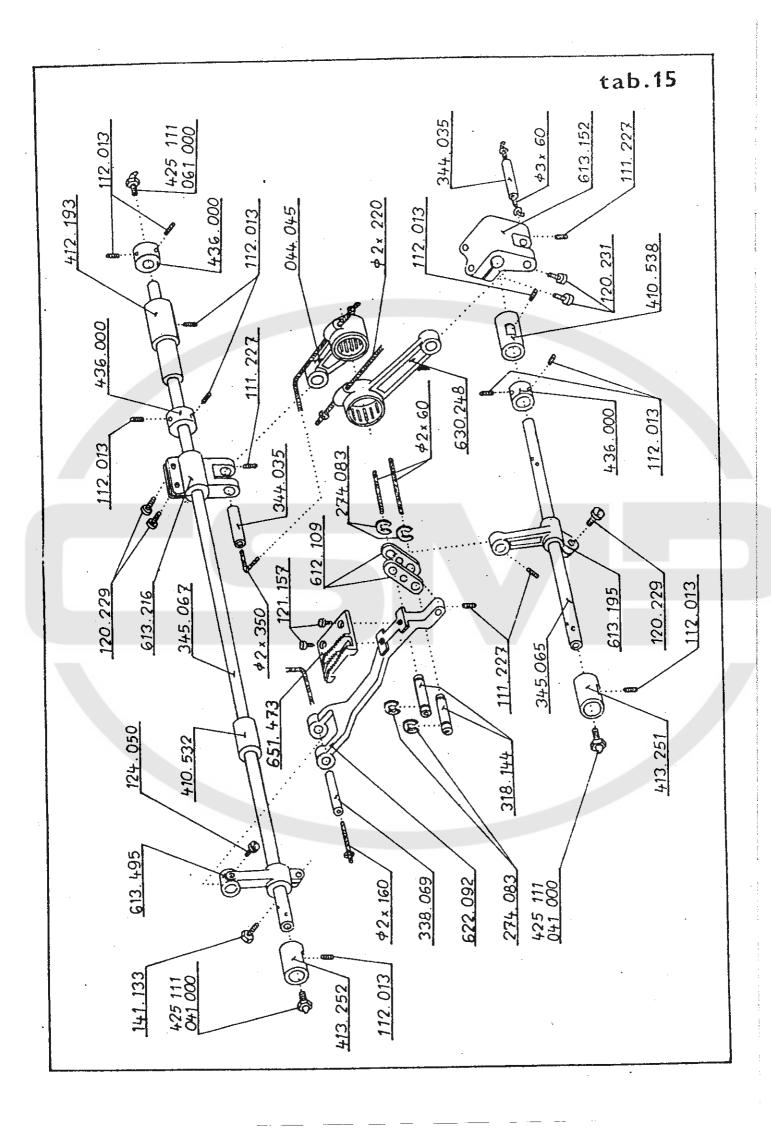
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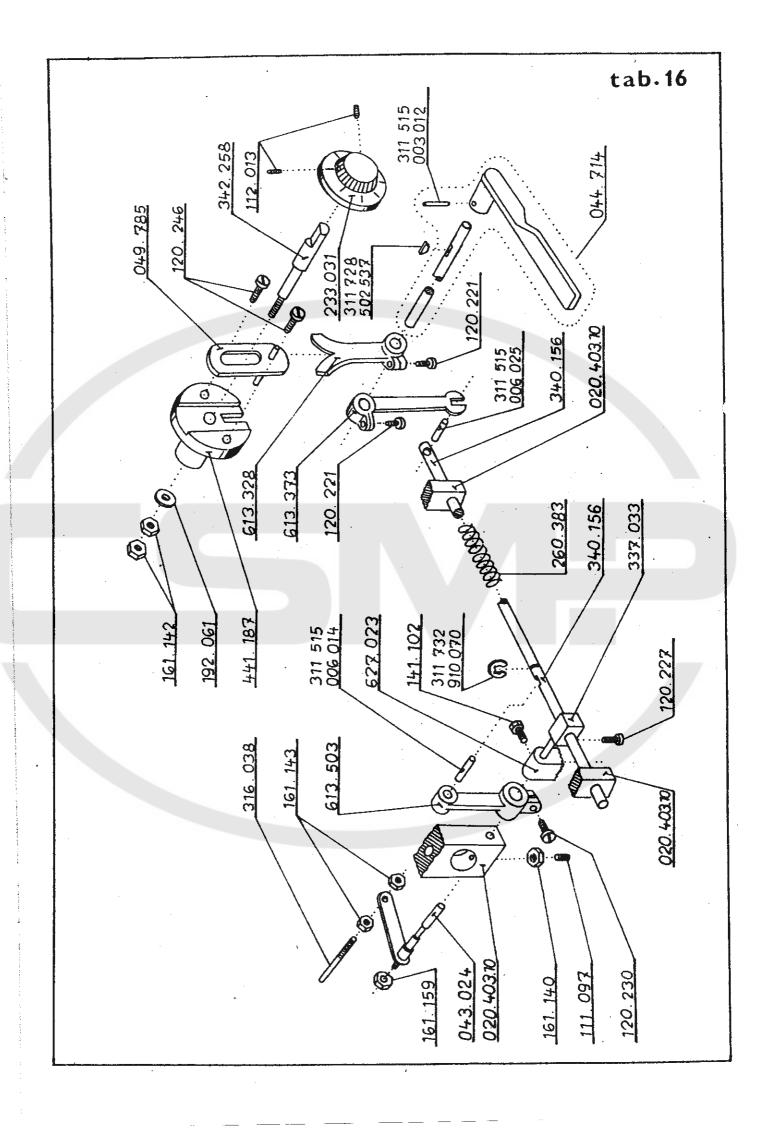
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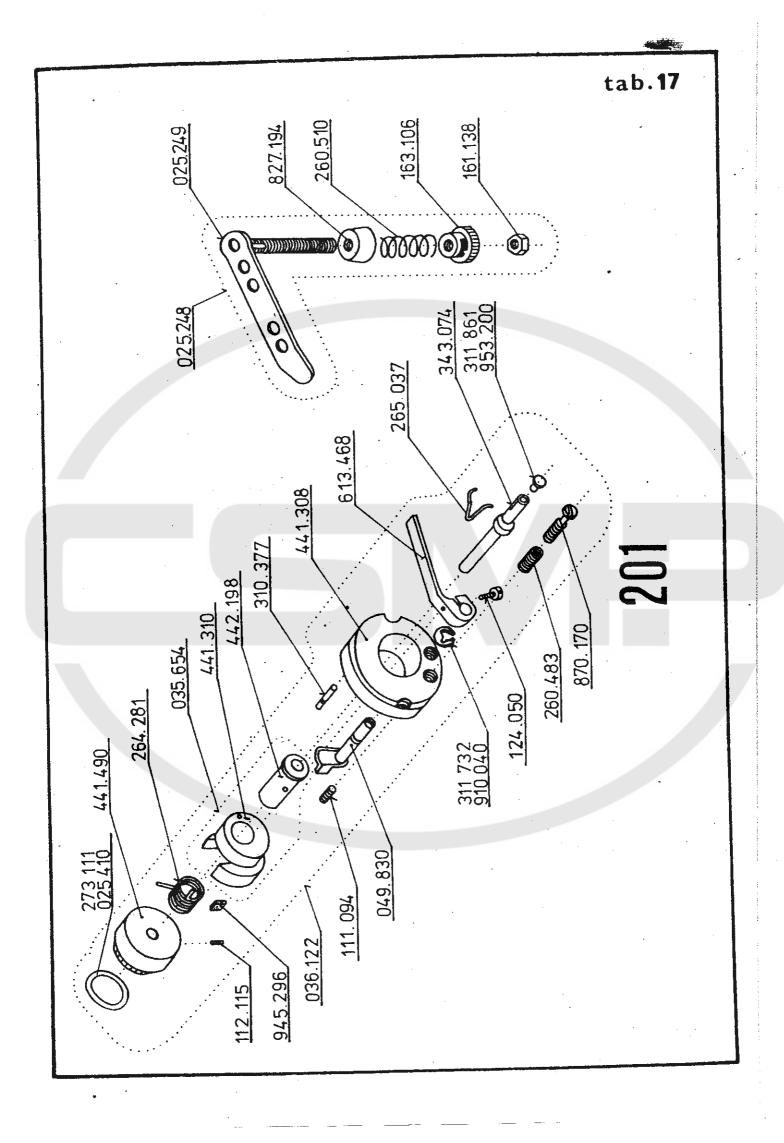


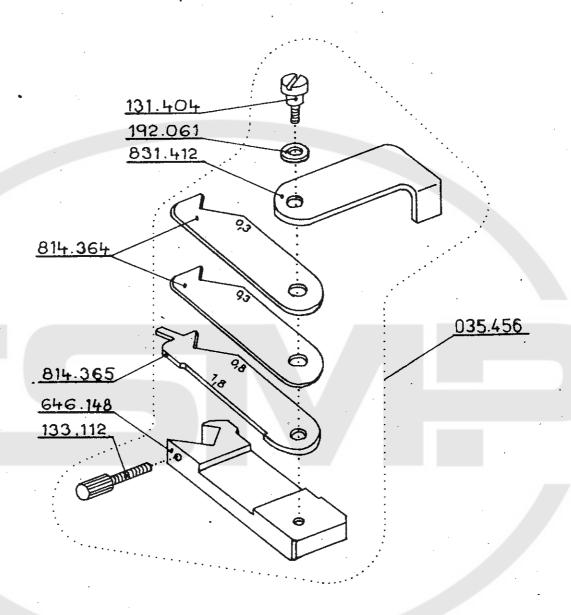




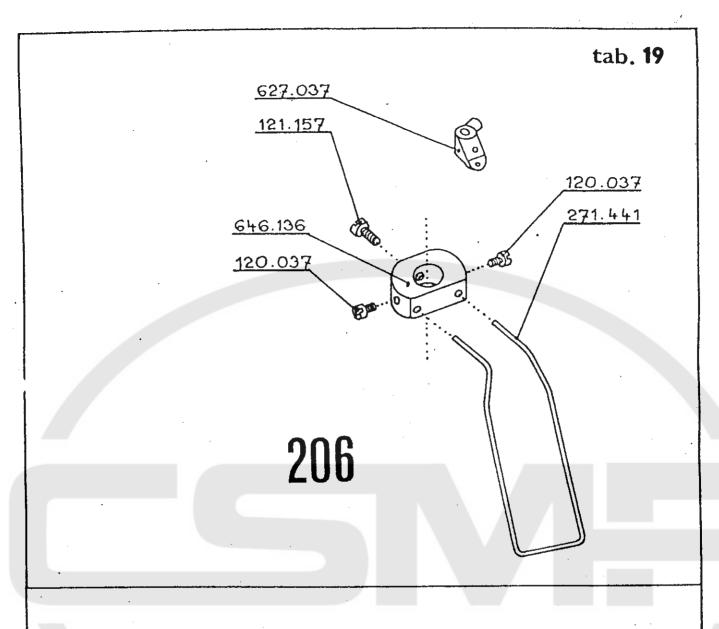


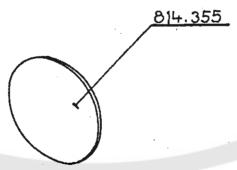






202





295

