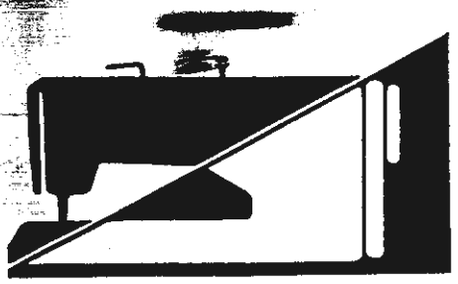
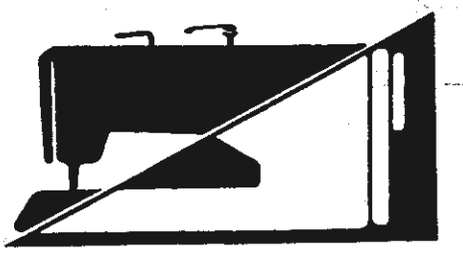
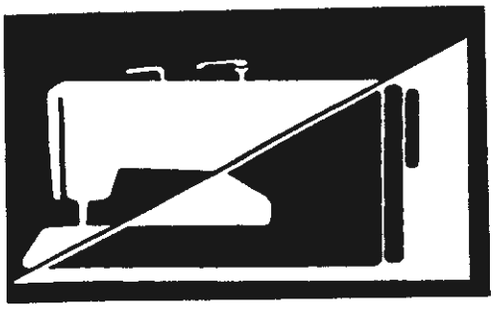
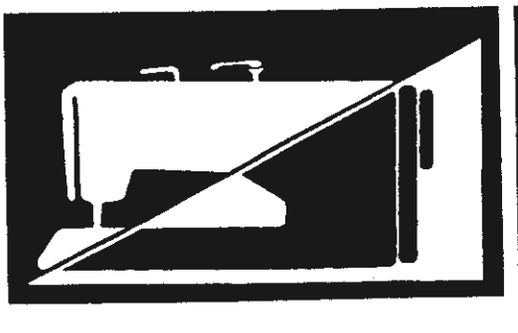
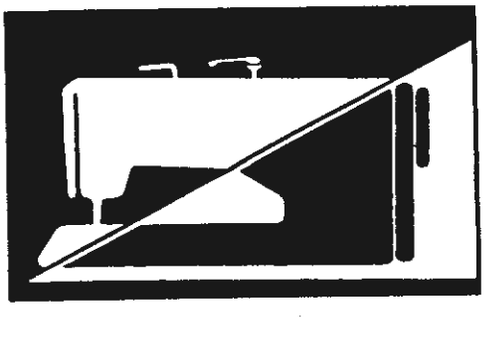




LOBAL® ZZ 568

INSTRUCTIONS FOR ADJUSTMENT AND SERVICING AND LIST OF PARTS FOR SINGLE NEEDLE FLAT BED ZIGZAG INDUSTRIAL SEWING MACHINE

ZZ 568

522 741 410 104.10

SINGLE NEEDLE FLAT BED ZIGZAG INDUSTRIAL SEWING MACHINE

ZZ 568

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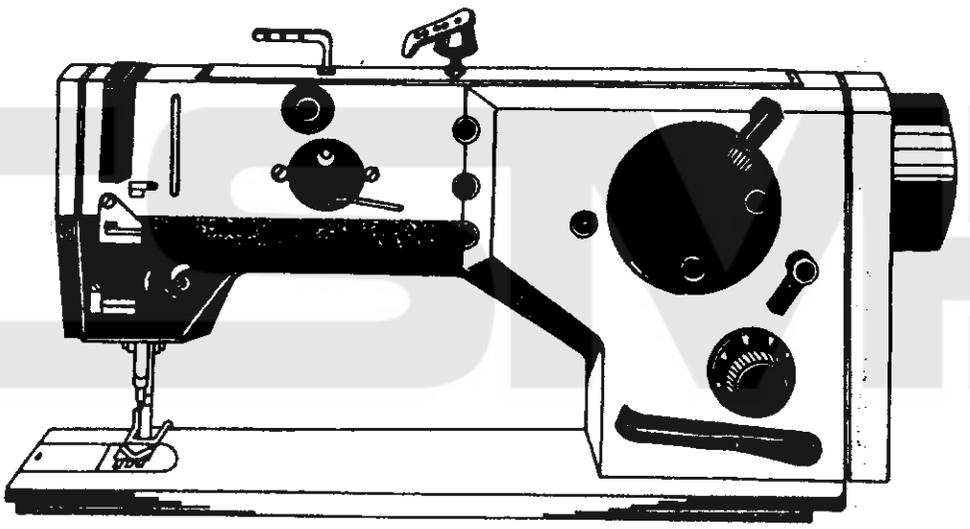

Use of Machine

The machine is used primarily in the boot-and-shoe industry for joining shoe backs, quarters, and lining, for stitching tongues and slippers, for decorative stitching on shoes, etc. It is also suitable for joining various leather and textile pieces used in the fancy goods industry.

Specifications

Machine speed	up to 3 400 stitches per min., according to the sewn work, threads, and stitch width. With synthetic threads, use Equipment No. 203 for adequate speed reduction
Stitch length	up to 5 mm, forward and reverse
Stitch windth	up to 10 mm
Zigzag stitch width position	median
Needle	134, 134 LR Nos. 100 - 130 Schmetz 797 CF CF Nos. 100 - 130
Hook	R 251
Thickness of sewn material	up to 3 mm for leather up to 5 mm for shoe textile
Threads	cotton threads 50 tex x 3; 35,5 tex x 3; 29,5 tex x 3; 25 tex x 3; 20 tex x 3 synthetic threads 25 tex x 1 x 2
Presser foot stroke	5 mm with hand lever 7 mm with knee lever
Clear work space	265 x 120 mm
Weight of machine head	36 kg

Technical description

The machine ZZ 568 is a single needle flat bed zigzag industrial sewing machine for joining leather and textile materials, producing two-thread lockstitch. The drive is transmitted, from the upper shaft to the lower one by a drive belt, from the lower shaft to the horizontal rotary hook, by a gearing seated in the hook box. The reverse stitching can be actuated either by a hand lever or by the left-hand treadle. The zigzag stitch width can be adjusted by a lever situated on the front side of the column of the machine arm, the stitch length is steplessly adjustable by a revolving knob. A hand lever or a knee lever can be used to lift the presser foot. The principal parts of mechanisms exposed to increased strain are seated in rolling-contact hearings. The machine has a group wick lubrication with automatic additional lubrication of the hook.

Machine equipments and threir Use

Equipment No.	Ordering No.	Name
201	522 792 112 010	Incorporated bobbin winder, complete
204	522 791 947 001	Adjusting set
205	522 791 149 001	Equipment for overedging operations
207	522 791 400 023	Guiding for stitching pieces together
295	522 791 995 014	Plug for the hole provided for mounting the winder

The Equipments are supplied on special order only.

Technological use of machine ZZ 568
(recommended combination of sewn material, needles and threads)

operation sewn material	material	threads	needles 134, 134 LR 797 CFCF	stitch width	r. p. m.	remarks
joining pieces with zig-zag stitching	fine leather, side leather, calf leather, goat leather 0,6 to 2 mm thick	cotton 20 tex x 3 25 tex x 3	No. 100	up to 6 mm	up to 3 400	
	medium-hard leather, box sides 0,9 to 2,5 mm thick	cotton 25 tex x 3 29,5 tex x 3	No. 110	up to 10 mm	up to 3 000	
leather	medium-hard leather, hog skin leather	cotton 35,5 tex x 3	No. 120 130	up to 6 mm	up to 2 500	in case of decreased quality of stitch binding prodeed to use lower thread by one No. thinner
textile used in boot-and-shoe industry	corduroy, twill, molleton, up to 3,5 mm thick	cotton 20 tex x 3 25 tex x 3 29,5 tex x 3	No. 100 110	up to 10 mm	up to 3 400	
	materials for shoe uppers, felt, molleton, up to 5 mm thick	cotton 35,5 tex x 3 50 tex x 3	No. 120 130	up to 10 mm	up to 2 500	in case of decreased quality of stitch binding proceed to use lower thread by one No. thinner
synthetic materials	synthetic leather, Colaten (plastic material) up to 2 mm thick	PES 25 tex x 1 x 2	No. 100	up to 10 mm	up to 2 500	
	synthetic leather, Colaten (plastic material) up to 3 mm thick	PES 25 tex x 1 x 3	No. 110	up to 6 mm	up to 2 500	
	synthetic textile, Colaten, up to 5 mm thick	PES 25 tex x 1 x 3	No. 120	up to 6 mm	up to 2 500	

High speed stitching with synthetic threads damages them by high needle temperature, makes them break, or leads to skipped stitches. Several measures can be taken to improve the stitching, either by reducing the sewing speed by applying chromium plated needles, or - especially for stitching of synthetic materials with synthetic threads - by applying lubricant to synthetic threads in order to reduce the friction between the needle, the sewn work, and the threads. The lubricant is intended, not to cool the needle, but to protect it from deposition of melted particles or of glue. Pastes, oils, and emulsions supplied to the stitching place by means of sewing thread are used as lubricant, and the silicone emulsions or oils have proved to be remarkably efficient in this respect. The oil is applied either by dipping the thread spool into it or by guiding the thread through a left guide soaked with silicone oil or emulsion. A drawback of this method consists in the risk of staining the sewn material. With synthetic sewing threads, the upper thread tension should be so small as possible, i. e., just sufficient to provide for reliable thread binding. The quality of stitching depends, however, above all, on the sewing threads. Adequate thread construction and its perfect make permit the stitching even without the above mentioned measures that, on the other hand, may result ineffectual when applied to threads of inferior quality. The preceding table shows the combinations of the machine parameters and the technological conditions suitable to obtain the maximum stitching reliability.

I. INSTRUCTIONS FOR SERVICING OF MACHINE

A. GENERAL INSTRUCTIONS

1. Read these instructions carefully and adhere to them.

2. During the transport and while unpacking the machine, proceed in accordance with the instructions and marks on the packing.

3. Report any damage which has occurred during the 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. 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 should be lubricated several times a day, as needed. Refill oil into the hook lubrication tank as required.

6. Clean the machine daily, especially the parts which become choked by impurities from the sewn material. During the cleaning, carefully check whether no machine parts have become loose.

7. Once a week, during through cleaning, carefully check the whole machine to see that no parts are damaged and that all machine machanisms operate correctly. Any faults ascertained must be repaired immediately. Once a year, genaral 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.

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 machine, has a cross section of 4 x 1 mm^2 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. Unless adjustable in height, the stand plate is situated at a standard height of 780 mm above the floor. The working area has been designed so as to permit all operating movements of the operatior, including her way to and from the work site, to be carried out unobstructed. The working position of the operator, chosen suitably with respect to the needle axis, permits easy access to all controll and function elements.

11. We cannot assume any responsiblity 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 seated 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 occurred 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. Futher 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.

4. **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.

5. **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 is recommended oil with a viscosity of 18 - 21 at 20° C $mm^2 . s^{-1}$. For the hook is suitable oil with a viscosity of 5 - 9 at 50° C $mm^2 . s^{-1}$. With an oil can, drip oil into the marked holes of the machine arm once a day, before the beginning of the work shift. Check also the level of oil 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 botton. 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, especially 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 (5 and 31, see Table 12) with lubrication grease V1 or V2 . Before proceeding to clean the machine, unthread the upper thread and take the hook bobbin out of the hook. Once a week, the machine should be thoroughly freed of settled oil and of all impurities.

6. **To adjust the hook lubrication (Fig. 2)**
To adjust the oil flow to the hook, turn with a screwdriver the adjusting pin (1), located on the front side of the oil tank under the bed plate, from zero to maximum (to the left, anticlock-

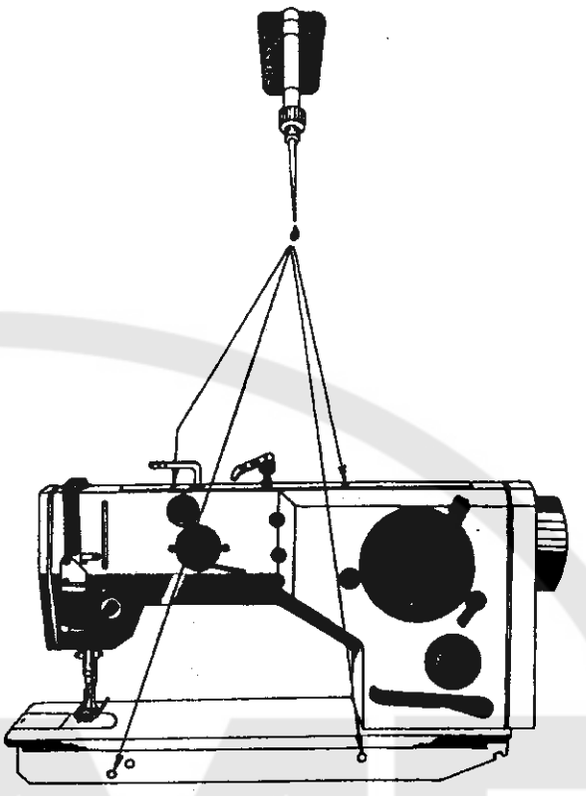

Figure 1

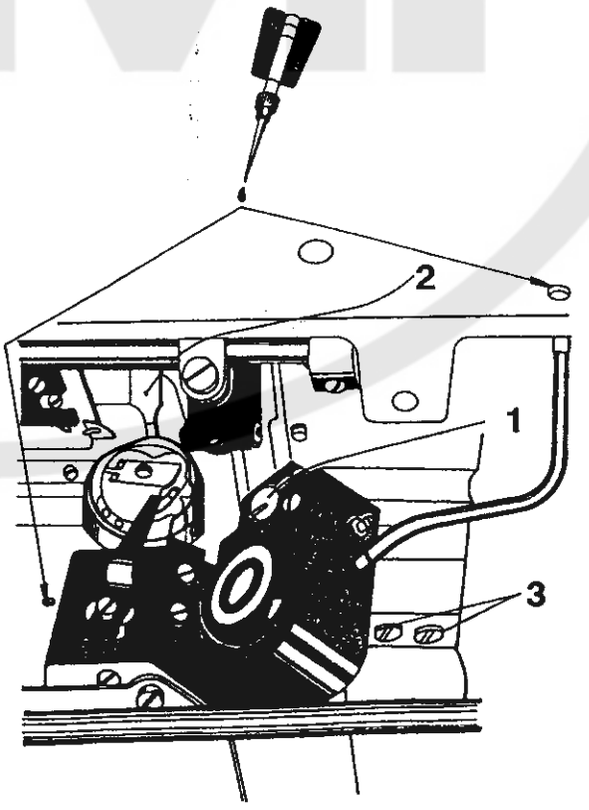

Figure 2

wise). 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 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 (approximately 20 cm) on a test material, to prevent the sewn work from getting soiled by oil.

C. TO PREPARE THE MACHINE FOR SEWING

1. **General inspection**
Inspect the machine thoroughly for loose parts as well as for the presence of foreign bodies. Rotating the hand wheel by hand, check first whether it revolves freely and whether the machine is adjusted correctly. Further check the correct working of the the mechanism controlling the lifting and sinking of the presser foot by means of the knee lever, and the reverse stitching by means of the hand lever or of the left treadle.

2. **Sense of rotation**
The correct sense of rotation of the machine hand wheel is anticlockwise, viewing the machine from the side of the hand wheel.

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 sense, 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 electromotor. An incorrect sense of rotation of the pulley is inadmissible.

4. **V-belt and its tension (Fig. 3)**
The V-belt can be easily tensioned by means of the electromotor that can be displaced in the guiding of its holder after the loosening of two screws. 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 the machine output and increases both the power consumption and the wear of bearings. To remove the V-belt, proceed as follows: Tilt the machine head, screw out the screws (4), remove the upper belt guard (1), and from the lower belt guard the sheet piece fixed by screws to the stand plate and protecting the V-belt from falling out the groove of the pulley, remove the V - belt, mount a new one onto the pulley of the electromotor, fix it by attaching back the sheet piece, pass it between the tank and stand plate, and insert it into the hand wheel groove. Lift the machine to its operational position, check the V - belt for correct tension, and mount the upper belt guard.

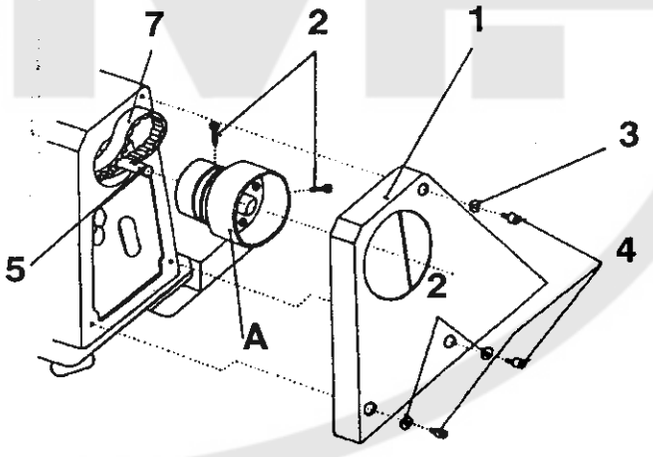

Figure 3

5. **To lift the presser foot (Fig. 4)**
The lifting and sinking of the presser foot is controlled by the knee lever mechanism. To lift the presser foot and to lock it in the lifted position, the hand lifting lever (12) situated at the rear side of the machine arm also can be used. To sink the presser foot onto the sewn work, first slightly depress the knee lever thus disengaging the locking of the lifted presser foot by tilting the hand lever, and then release the knee lever

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.

6. **Needles and threads**
The machine requires the use of needles 134 and 134 LR of current sizes or of needles Schmetz 797 CF CF Nos.100 - 130. Considering the high machine performace 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 ear. It is advisa-ble to choose a rather thin needle, just permitt-ing the free passage of the thread through the needle ear but helping to prevent the upper thread from being threaded out of the needle ear at the beginning of stitching after the previous thead 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 work, upper thread tension, heat generated by friction between the needle and the sewn work, etc.) and exposed to the risk of deviations from the correct needle course follwed by irregular formation of the upper thread loops and resulting in skipped stitches. Only high-class threads should be used. Especially suitable are conical cross-wound bobbins. S-twist threads should be used for the needle, white both S-twist and Z-twist thread is suitable as lower thread. A coarse thread or one which has to overcome considerable resistance when passing through the needle ear reduces the machine performance and incerases its trouble incidence. With synthetic threads, the sewing speed should be reduced accordingly, to prevent the threads from melting.

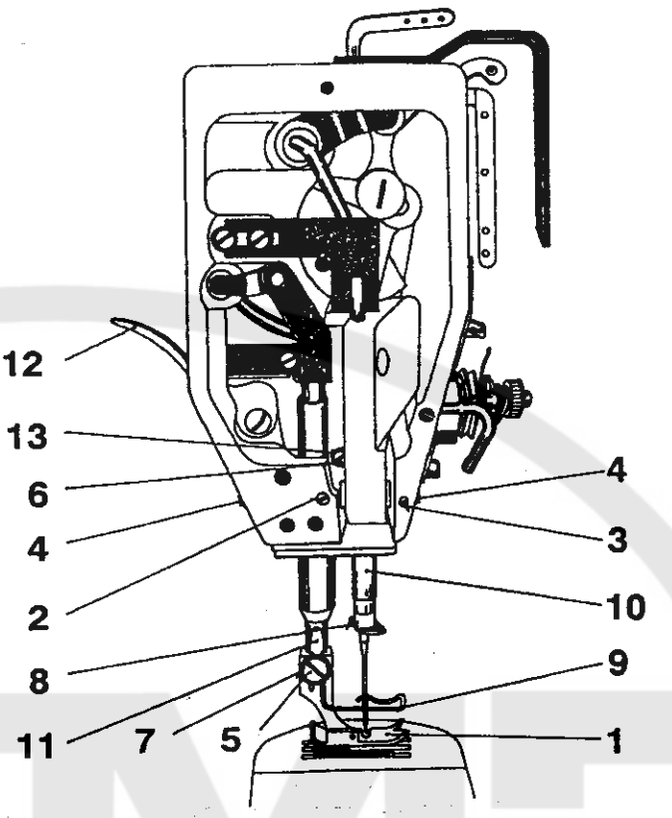

Figure 4

7. **To insert the needle (Fig. 4)**
To facilitate the needle insertion, sink the presser foot onto a bit of material and rotate the hand wheel 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 (8) 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 reached 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 provided in the throat plate. Never use a needle chosen haphazardly but choose it with respect to the character of the sewn work and to the thread size.

8. **To thread the upper thread (Fig. 5)**
Put the bobbin on the bobbin stand, unwind a sufficient portion of it, and pass it through the thread guide of the bobbin stand, then through the thread guides (4) and (1) between the tensioner disks (8), then lead it through the adjusting spring (2) and the thread guides (3 and 6) into the thread take-up lever (A), then downwards through the thread guide (6) and the lower thread guide (7) to the thread guide (5) on the needle bar, and from there to the needle. Insert it into the needle ear from the front side (i. e., from the side of the operator) to the rear side.

9. **To wind the hook bobbin (Fig. 6)**
To wind the lower thread on the hook bobbin, a built-in bobbin winder, supplied separately as Equipment

201, can be mounted onto the front side of the machine arm. Lead the thread from the bobbin stand through the apertures provided on the arm of the bobbin stand and in the thread guide (6) to the bobbin mounted on the winder shaft, wind it a few times anticlockwise on the bobbin, lead the thread end to the spring (2), insert it between the spring coils, and apply mild pressure so as to cut it by the knife situated inside the spring. When mounting the bobbin on the winder shaft be sure that the carrier spring enters the notch of the bobbin front. Swinging the control lever (5) between the bobbin fronts will render the bobbin winder operative. Switch on the electric motor and deprese the right treadle to start the machine and by this 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 control lever springs off thus disconnecting the winder drive and braking the winder shaft. The winding is completed. Using the knife mounted in the spring (2) cut off the threads end. For timing the winding stop, loosen the screw (4) of the control lever (5) mounted on the disconnecting pin (3), hold the disconnecting pin in its position with a screwdriver and adjust the angular position of the control lever on the disconnecting pin as required.

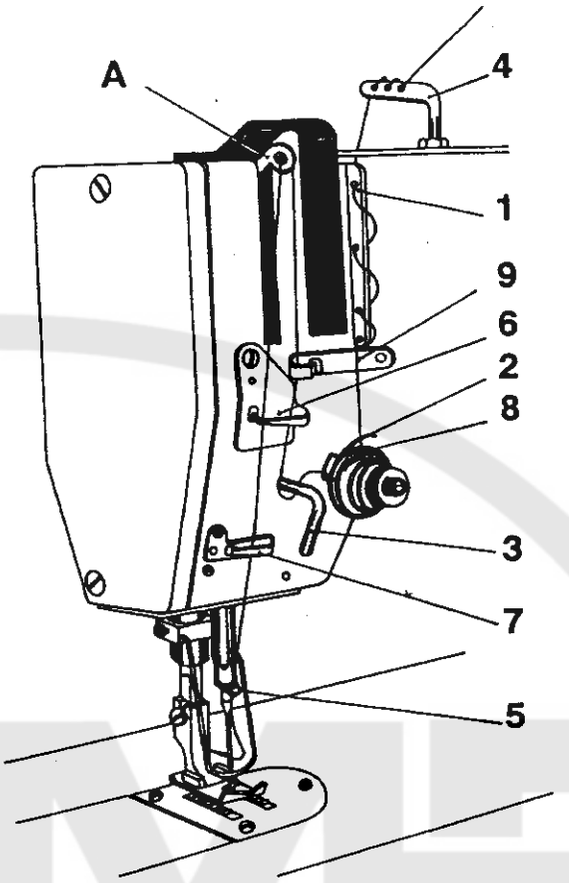

Figure 5

10. To take out the hook bobbin

Rotate the hand wheel until the thread take-up lever has reached its top position. With your left hand, open the lock of the bobbin case and take the bobbin case out. As long as the bobbin case lock is open the bobbin is held in the bobbin case. Release the lock and take the bobbin out of 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 tradles in order to avoid an in idental start of the machine.

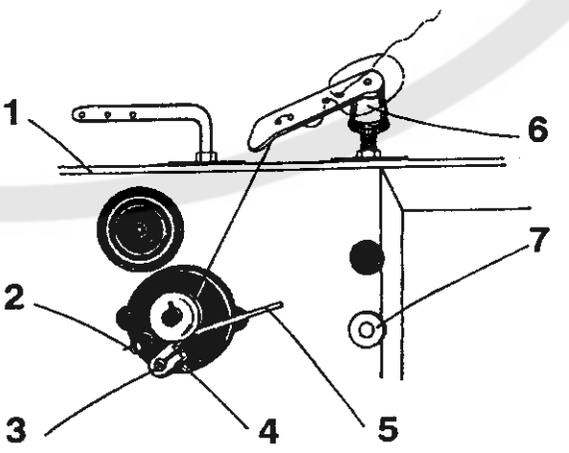

Figure 6

11. To thread the lower thread

Insert the fully wound bobbin into the bobbin case and the thread end first into the notch of the bobbin case and then under the pressure spring of the bobbin case. Insert the bobbin case with the bobbin into the hook. To prevent the bobbin from falling out of the case, while beimg 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 short distinct sound. The correct position of the bobbin case in the hook signalled by this sound is very important, because otherwise a needle rupture or another breakdown could occur at the following machine start.

12. To catch the lower thread

Grasp lightly with your left hand the end of the upper thread without stretching it. With your right hand revolve the hand wheel 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 provided in the throat plate. 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. Both when starting and when finishing the sewing, the thread take-up lever should be placed in its top position to avoid the risk that the upper thread in its top position to avoid the risk than the upper thread will thread out and possibly catch in the hook course.

13. Sewing - work proper

Insert the material to be sewn under the presser foot and switch on the electromotor. Start the machine by gradually depressing the right 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 electromotor is disengaged, the electromotor braked, and the machine stopped. 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 collisions 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 machine stop, set the needle to its top position, lift the presser foot, remove the sewn work from under it, and cut the two threads with scissors. After that, the machine is ready for stitching another seam.

To observe:

Having put the new machine 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 3 000 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

This section of the Manual describes adjustments of the type that 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. 7)

The stitch length can be steplessly adjusted by turning the knob (4) provided on the column of the machine arm, from zero to 5 mm. By turning it in the sense of the arrow "A" (i. e., to the right), you increase the stitch length, by turning it in the sense of the arrow "B" (i. e., to the left), you decrease it. For reverse stitching, depress either the left treadle, or the hand lever (1) towards the machine bed plate. When released, the lever automatically resumes its previous position and the machine restarts forward stitching.

2. To adjust the zigzag stitch width (Fig. 7)

Before any adjustment of the zigzag stitch width, the machine must be stopped with the needle outside the sewn work. The locking lever (5) must be turned to the left (anticlockwise) and held there until the adjustment is carried out, because its normal

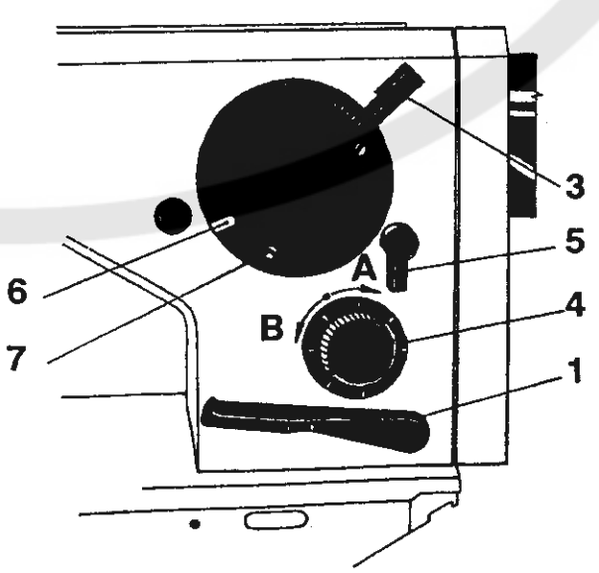

Figure 7

position, i. e., turned to the right, serves to lock the adjusted stitch width. The stitch width can be adjusted steplessly from zero to 10 mm by means of the lever (3) protruding over the cover of the zigzag stitch mechanism. By displacing thellever to the right, i. e., towards the hand wheel, you increase the zigzag stitch width up to the maximum, by displacing it to the left, you decrease it down to zero. Lock the adjusted stitch width by displacing the locking lever (5) to the right.

3. **Thread tension adjustment**
The tension of the upper and the lower thread must be so interrelated that the stitch binding 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 situated 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 and, consequently, the tension of the lower thread that passes between the spring and the bobbin case, 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 resorte the desired quality of stitching.

4. **To adjust the feed-dog height above the throat plate (Fig. 8)**
The height of the teeth of the feed-dog (A) should be adjusted to 0.8 - 1.2 mm, according to the kind of sewn material. To adjust it, loosen the screw (2) of the lifting lever (8) on the shaft (6), 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 (1) of the feed lever (9) on the shaft (7) and adjust the rear part of the teeth by correspondingly adjusting the angular position of the eccentric pin (5), then retighten the screw (1). For adjusting the feed-dog height, use one of the gauges (6 or 5) belonging to the Equipment No. 204.

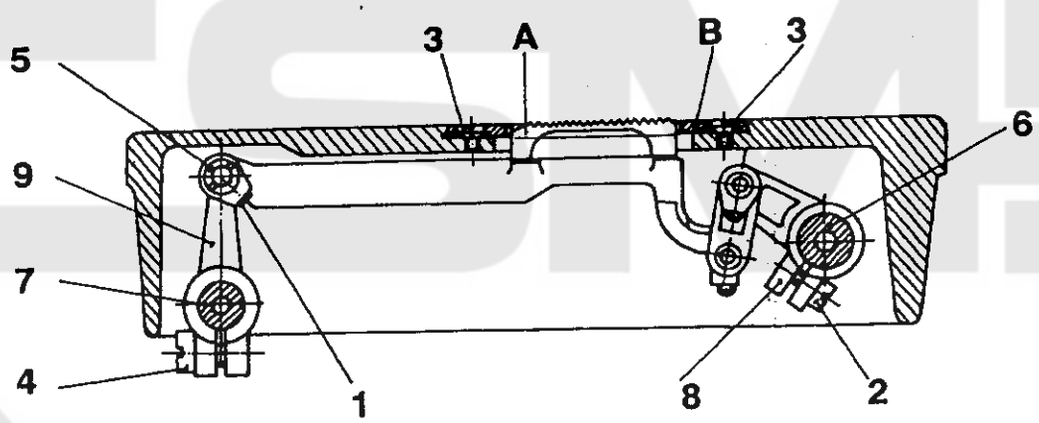

Figure 8

5. **To adjust the movement of the needle with respect to the feed-dog**
Loosen the two screws of the lower belt wheel and turn by hand the hand wheel 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 hand wheel so as to position the needle point, during its downward movement, approximately 5 mm above the throat plate, and retighten the screws of the belt wheel.

6. **To adjust the throat plate (Fig. 8)**
The throat plate must be properly seated and fixed by screws (3) in a position ensuring that the needle passes through the centre of the needle aperture. The needle aperture must not be burred or otherwise 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 pressure depends the uniformity of damage-free feeding as well as that of the stitch length.

8. **To adjust in height the needle bar (Fig. 4)**
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 ear is approximately 0.6 mm under the hook point, at the maximum stitch width and in the left position of the needle bar. If the needle bar height is not adequate to this requirement, loosen the respective screws, remove the front plate, loosen the screw (6) of the carrier (13) of the needle bar (10), 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 hand wheel towards you until the needle bar reaches its bottom position and reascends by 2.8 $\pm$ 0.2 mm. In this position the hook point must lie in the needle axis, and the distance between the needle and hook must be 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. The gauges (6,4 and 5) of Equipment 204 can be used for the hook course adjustment.

10. **To adjust the hook holder (Fig. 2)**
After the hook course adjustment, loosen the fixing screw and adjust the hook holder (2) so as to obtain a gap of approximately 0.7 mm between the holder lug and the bottom of the inner part of the hook. Gauge No. 5 of Equipment No. 204 is suitable for adjustment of the above gap.

11. **To adjust the elliptical path of the feed-dog movement (Fig. 8)**
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 height of the ellipse remains the same regardless of the height adjustment of the feed-dog teeth. The adjustment should 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 (9) on the feed shaft (7). Ensure that the feed-dog reaches its top height about the middle of the feed-dog movement.

12. **To adjust the length of feeding**
Loosen the screw of the lever 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 at 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 (7) is positively periodically opened by means of the opening lever (8) and of eccentric (6) to facilitate the movement of upper thread when leaving 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 and the face of the inner part of the hook.

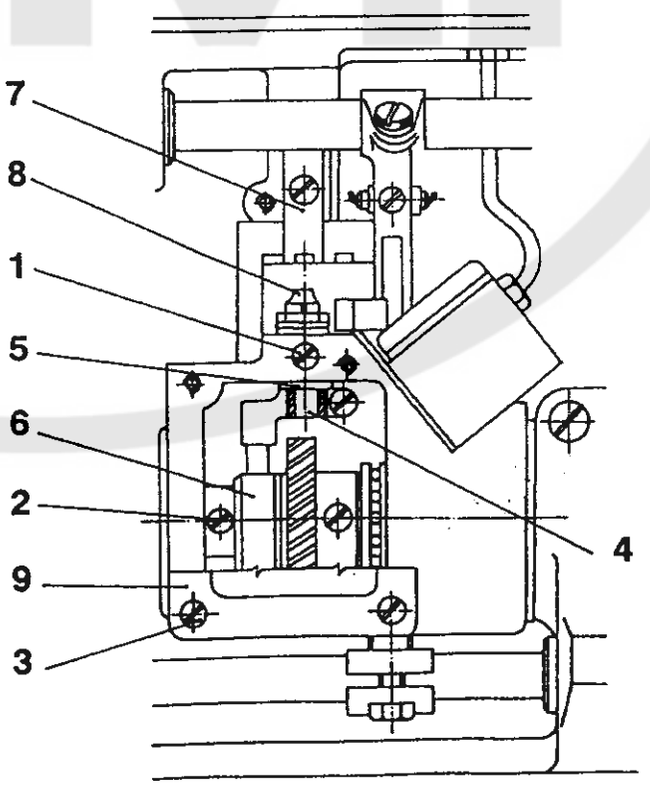

Figure 9

Screw out first the four screws (3) of the hook box cover (9), remove the cover, and take the lubrication inlay out of it. For adjustment, loosen the screw (1) fixing the position of the bobbin case (5) contacted by the pin (4) 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 hook by tapping lightly on the opening lever. The gauge (5) of Equipment No. 204 is suitable for this adjustment. 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. Having adjusted the opening lever, retighten the screw (1). Before proceeding to carry out the adjustment, remove the throat plate. The timing of the opening lever with respect to the looper is best carried uot only while the machine is being sewn off. Loosen the two screws (2) of the eccentric (6) 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 when 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 of the upper thread 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 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. 4)

To exchange the presser foot (1), first lift the presser bar (11) to its top position and lock it by the hand lifting lever (12). Lift also the needle to its top position, then loosen the attachment screw (5) of the presser foot together with the washer (7), and remove first the finger guard (9) 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. The gauge No. 6 of the Equipment No. 204 is suitable for adjusting the presser foot stroke.

15. To dismantle and mount the drive belt (Fig. 3)

Screw out the three screws (4) with the washers (3), remove the belt guard (1) from the machine arm, tilt the machine head onto the suppoting pin situated on the bed plate, take the V-belt out of the hand wheel groove, loosen the two screws (2), and remove the hand wheel from the machine arm and from the upper shaft (5). Pass the drive belt (7) through the aperture thus created in the machine arm, set it on the two belt wheels, and mount the complete hand wheel back on the upper shaft in such a position that the first screw (2), considered in the sense of rotation of the hand wheel, comes to sit on the small surface of the upper shaft, when tightened. Retighten the screws (2) of the hand wheel, tilt the machine back to its operational position, i. e., into the rim of the stand plate, and mount the belt guard.

16. To adjust the needle punches longitudinally into the centre of the slot of the throat plate (Fig. 4)

Adjust the zigzag stitch to the zero width and turn the hand wheel until the needle bar with the needle reaches its bottom position. The needle should be in the centre of the throat plate slot both longitudinally and transversely. 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 (2 and 3), and finely adjust the angular position of the screws (4) both on the front and on the rear side of the machine arm so as to set the needle longitudinally into the centre of the front plate slot. Retighten the screws (2 and 3) and mount the front plate.

To observe:
When tightening the adjustment screws (4) for adjusting the needle position, do not tighten them completely but leave a minimum play between them and the needle bar holder in order not to obstruct the transverse movement of the needle bar holder required for the zigzag stitch.

17. To adjust the needle punches transversely into the centre of the slot of the throat plate (Table 10)

Adjust the zigzag stitch to the zero width and turn the hand wheel 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 (1, Fig. 6), take the plug (7, Fig. 6) out of the machine arm, loosen the screw (29) located under the upper cover of the machine arm, insert a screwdrive into the hole created by the plug removal, adjust the angular position of the eccentric pin (32) so as to set the needle transversely to the slot centre, retighten the screw (29), 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 adjustment is rather extensive.

18. To adjust the needle bar lateral movement (Table 4)

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 reascends by about 4 mm above the throat plate. Ror correct adjustment, loosen the screws (32) of the gear wheel (13) on the upper shaft (1), adjust the angular position of the hand the upper shaft (1), adjust the angular position of the hand wheel accordingly, and retighten the screws (32) throughly.

19. To adjust the sontrol force required for stepless adjustment of the zigzag stitch width (Table 9)

For the stepless tilting of the zigzag stitch bracket, the inlay (4) of the body of the zigzag stitch mechanism contains the braking roller (5) with the spring (6) and with the adjustment screw (7). Turning the screw to the right increases the pressure exerted on the roller and, consequently, the force required to adjust the stitch windth. A mechanism actuated by the lever (7, Fig. 10) serving to fix the adjusted stitch width must be torned to the left prior to proceeding to the stitch width adjustment which is carried out by the lever (2, Fig. 10) whose extreme left position, defined by a stop, produces the zero zigzag stitch width that can be increased up to 10 mm by displacing the lever to the right. The number marking on the cover (6, Fig. 7) shows the approximative stitch width value at each lever position. To adjust the control force, first take the complete zigzag stitch mechanism out of the machine arm column. For this purpose, screw out the two screws (7, Fig. 7) from the body of the mechanism, remove the cover (6, Fig. 7), screw out the three attachment screws (3, Fig. 10) from the body of the zigzag stitch mechanism, then screw out the securing screw (37, Table 10) on the pin (40), remove the pin from the guiding (43), loosen the fixing lever (51) and take the pin (42) out of engagement, thus releasing the body of the zigzag stitch mechanism that can be then taken out of the machine arm. For the assembly, proceed inversely.

20. 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 (6, Fig. 11). To adjust the tooth play, first screw out the four attachment screws (2, Table 1), remove the upper cover (1, Fig. 6), and loosen the screw (4, Table 10) located in the lug of the machine arm. By turning then the eccentric pin (6, Fig. 11) adjust the tooth play of the zigzag transmission mechanism, i. e., between the complete cam (9, Table 10) and the gear wheel (13, Table 4) mounted on the upper shaft (1, Table 4), then lock the adjusted position by throughly tightening the screw (4, Table 10).

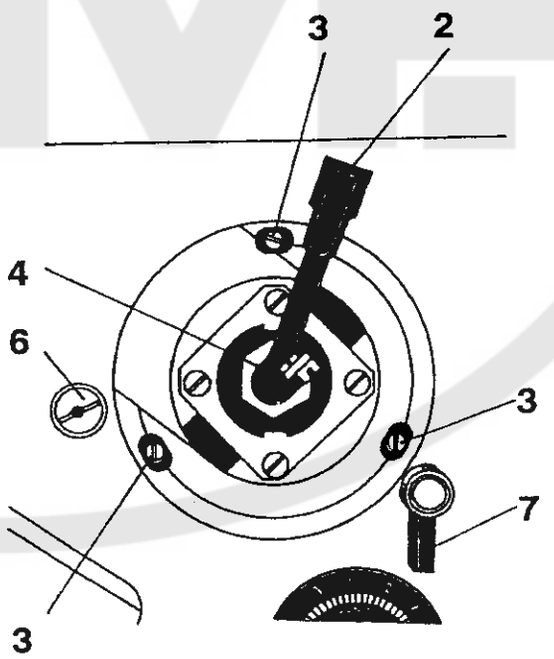

Figure 10

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

After a substantial adjustment of machine mechanism 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 (24, Table 5) ensuring the locking joint between the bed plate and the hook gear box. In 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 (24, Table 5).

22. To adjust the operation of the adjusting spring (Table 8)

Loosen the screw (21) and take the complete upper thread tensioner (14) out of the machine arm. To adjust

the tension of the adjusting spring (13), loosen the screw (3) on the bushing (12) and adjust the angular position of the pin (15). Turning the pin to the left will desrease the spring tension, and inversely. By this adjustment is adjusted the spring arm stroke as well. Displace the right-side sliding plate, sew a few stitches, and check the adjustment of the adjusting spring. With correct adjustment, the thread passing around the hook bottom shall produce a slight movement of the adjusting spring without being stretched.

23. Electrical equipment of machine

The machine is fitted with an electromotor mounted 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 electromotor change over the lead-in cable either at the plug or at the terminal board of the electromotor. In the latter case, do not omit first to take the plug of the lead-in cable out of the socket.

To observe:

Any failure of the electrical equipment of the machine should be repaired by a skilled mechanician.

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 sould be cleaned daily.

2. **General overhaul and repair of the machine**

   Should be carried out once a year. The machine should be set out of operation, cleaned, dismantled, faulty pieces exchanged and due repairs cerried out. The machine should be then assembled and tested. The electromotor and the electrical equipment should be inspected and tested. The general overhaul of the machine 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	Removal
a) Heavy machine run	The machine has been out of use for considerable time, dried oil and impurities deposited in the bearings.	Inject some drops of kerosene into all lubrication holes and on sliding surfaces and let the machine run rapidly so as to clean the lubrication holes in the bearings. Then oil the machine carefully (see par. 5, page 8).
b) Slow machine start	Insufficient belt tension.	Increase the belt tension by tilting the electromotor.
c) Upper thread breakage	1. Slashed thread guides. 2. Too sharp hook point. 3. Faulty feeding. 4. Faulty upper thread guiding or needle threading. 5. Incorrect upper thread tension. 6. Bad needle quality or bent needle. 7. Thread size is inadequate to the thickness of sewn material. 8. Machine considerably soiled. 9. Thread wound on the hook. 10. Thread is too thin or not strong enough.	1. Ascertain and exchange them. 2. Repair it. 3. Adjust it see par. 5, page 13. 4. Thread the upper thread correctly see par. 8, page 10. 5. Adjust it see par. 3, page 13. 6. Exchange the needle see par. 7, page 10. 7. Use adequate thread. 8. Unscrew the throat plate, clean the mechanism, and set the throat plate see par. 6, page 13. 9. Remove the thread. 10. Use adequate thread.
d) Lower thread breakage	1. The thread is incorrectly threaded into the bobbin case. 2. Thread is too thin or not stroung enough. 3. Thread is wound incorrectly on the bobbin. 4. Damaged bobbin. 5. Too sharp pressure spring on the bobbin case.	1. Thread it correctly see par. 11, page 11. 2. Use adequate thread. 3. Wind it on the bobbin correctly. 4. Exchange it. 5. Exchange the spring.
e) Skipped stitches	1. Needle inserted incorrectly. 2. Blunt or bent needle. 3. Slashed or broken hook point. 4. Excessive needle aperture in the throat plate. 5. Broken adjusting spring for upper thread tension. 6. Needle bar positioned too high or too low.	1. Insert it correctly see par. 7, page 10. 2. Exchange it see par. 7, page 10. 3. Exchange the hook. 4. Exchange the throat plate and set it correctly. 5. Exchange the spring and adjust the upper thread tension see par. 3, page 13. 6. Adjust it see par. 8, page 14.

Fault	Cause	Removal
	7. Overturned hook , incorrect hook course.	7. Adjust the hook course see par. 9, page 14.
	8. Soiled hook mechanism.	8. Clean it with kerosene and oil it with oil.
f) Needle breakage	1. Feed-dog positioned too high.	1. Adjust it in height see par. 4, page 13.
	2. Faulty attendance - pulling the material.	2. Let the material pass freely.
	3. Needle too thin with respect to material.	3. Exchange the needle see par. 7, page 10.
	4. Needle inserted incorrectly.	4. Insert it correctly see par. 7, page 10.
	5. Loosened throat plate.	5. Set the throat plate correctly see par. 6, page 13 and fix it by screws.
	6. Excesive upper thread tension.	6. Adjust it see par. 3, page 13.
g) Heavy and irregular feeding	1. Feed-dog positioned too low.	1. Adjust it in height see par. 4, page 13.
	2. Worn-out feed-dog.	2. Exchange it.
	3. Clogged or blunt teeth of feed-dog.	3. Clean or exchange the feed-dog.
	4. Insufficient pressure of presser foot.	4. Increase the pressure see par. 7, page 13.
h) Stitch forming below sewn material	1. Tensioner discks slashed by upper thread.	1. Exchange them and adjust the upper thread tension see par. 3, page 13.
	2. The thread does not pass smoothly around the hook or catches the bobin case.	2. Clean the hook and adjust the bobbin case.
	3. The upper thread is not thread between the tensioner disc.	3. Thread it correctly.
	4. Thread broken and caught between the tensioner disks.	4. Clean the thread tensioner and adjust it see par. 3, page 13.
	5. Incorrect proportion between the upper and lower thread tensions.	5. Correct the proportion see par. 3, page 13 and check it from time to time.
i) Stitch forming above sewn material	1. Damaged spring on the bobbin case, the lower thread is braked insufficiently.	1. Exchange the spring.
	2. Lower thread is not threaded under the spring of the bobbin case.	2. Tread it correctly.
	3. Lower thread broken and caught under the spring of the bobbin case.	3. Remove the thread.
	4. Incorrect proportion between the upper and lower thread tensions.	4. Correct the proportion see par. 3, page 13.
	5. Premature feeding.	5. Adjust it see par. 5, page 13.

Fault	Cause	Removal
j) Locked hook	Thread rests caught in the hook.	Rotate the hand wheel in each diresction 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 recommended in par. 5, page 8 onto the hook.

V. HOW TO USE THE CATALOGUE AND ORDER SPARE PARTS

Please, study carefully the following information. The catalogue is divided into three sections:

1. The basic section, comprising the technical specifications and the instructions for servicing with due illustrations.
2. The List of Parts with a heading comprising the Type No. of the machine, the letter A, and the serial No. of each sheet. Column 1 gives the respective position Nos., arranged from the lowest one upwards, column 2 gives a twelve-digit No. of the piece (purchased or produced at our factory), and the mark + before the twelve-digit No. refers to spare parts comprised in the Standard set of spare parts.

   Example of designation: Global ZZ 568 A 1

3. Section with drawings of the machine parts, each part accompanied by its one- or two-digit position No., including the tables of accessories and equipments. The heading comprises the Type. No. of the machine, the letter B, and the serial No. of each Table.

   Example of designation: Global ZZ 568 B 1

A twelve-digit No. of each machine part, whether purchased or produced, in the List of Parts, is related to the respective one- or two-digit No. of the machine part given in the Table.

When ordering spare parts, please, specify:

1. The twelve-digit No. of the part, in question (purchased or produced).
2. Number of pieces.

Example of an order:

272 213 011 015	2 pcs
522 980 021.318	1 piece
522 080 828.079	1 piece

ZZ 568 A 1

1	2
	TAB. 1
1	522 080 647.228
2	+ 123.117
3	321 161 001 000
4	522 080 840.073
5	313.204
6	161.138
7	161.146
8	813.904
9	+ 811.634
10	813.342
11	120.248
12	721.173
13	827.180
14	123.122
15	111.227
16	271.184
17	821.115
18	821.077
19	821.113
20	190.368
21	120.361
22	124.062
23	722 923 110 000
24	522 080 132.112
25	220.011
26	522 980 020.347 .10
	TAB. 2
1	522 980 020.347 .10
2	311 733 100 620
3	273 199 005 000
4	522 980 041.162
5	522 080 190.346
6	120.346
	TAB. 3
1	522 080 646.104
2	522 980 021.318
3	522 080 413.311
4	421.341
5	810.419
6	111.253
7	708 420 030 003
	l = 20 mm
8	522 080 120.276
9	708 420 030 002
	l = 80 mm
10	522 080 190.353
11	111.229
12	113.115
13	111.248
14	708 420 030 003
	l = 300 mm
15	283 366 002 000
	ø 3,5/4,8 x 147
16	522 080 328.005
17	111.222
18	+ 112.014
19	122.008
20	522 080 318.192
21	111.238
22	120.261
23	112.015
24	318.191
25	611.104
26	613.469
27	945.281
28	324 165 038 396
29	522 080 120.006
30	953.139
31	+ 124.050
32	522 980 035.499
33	522 080 391.153
34	+ 135.029
35	+ 627.170
36	548 300 000 130
37	311 515 002 006
38	522 080 260.458
39	951.281
40	138.009
41	421.321
42	349.147
43	953.159
44	120.221
45	522 980 049.782
46	522 080 111.214
47	111.295
48	313.322
49	+ 522 980 044.835
50	+ 522 080 120.062
51	120.216
52	111.126
53	111.273
54	+ 324 591 810 110
	TAB. 4
1	522 080 349.147
2	+ 522 980 039.047
3	522 080 260.467
4	522 080 436.338
5	113.115
6	324 165 038 306
7	522 080 424.068
8	111.225
9	708 420 030 002
	l = 130 mm
10	522 980 041.176
11	283 366 002 000
	ø 3,5/4,8 x 90
12	522 080 120.259
13	522 980 045.330
14	522 080 190.359
15	+ 122.029
16	120.006
17	311 733 000 300
18	522 080 511.082
19	342.243
20	724.147
21	324 165 028 396
22	311 733 000 180
23	522 080 814.338
24	324 592 510 900
25	522 080 630.248
26	671.152
27	+ 112.013
28	522 980 044.045
29	708 420 030 002
	l = 350 mm
30	522 080 141.088
31	318.103
32	+ 111.343
33	445.048
34	324 162 068 396
35	522 980 045.314
36	+ 272 213 011 015
37	324 165 038 396
38	522 080 141.102
39	627.023
40	324 165 028 396
41	522 080 337.033
42	424.055
43	421.122
44	445.045
45	271.062
46	324 165 038 396
47	522 080 120.222
48	554.077
49	122.031
50	+ 324 592 512 900
51	272 711 221 000
52	522 080 442 548
53	120 252

ZZ 568 A 2

1	2
	TAB. 5
1	311 733 100 260
2	324 152 927 796
3	522 080 724.134
4	441.278
5	324 155 920 020
6	522 080 111.219 *
7	120.269
8	522 980 035.527
9	283 366 0020000 Ø3,5/4,8 x 100
10	522 080 424.060
11	424.051
12	522 980 020.347
13	+ 522 080 112.013
14	522 080 161.143
15	945.283
16	+ 122.007
17	120.106
18	708 420 030 003 l = 40 mm
19	522 080 120.226
21	+ 522 080 552.168
22	311 515 601 612
23	311 733 100 220
24	522 080 120.235
25	708 420 030 005 l = 300 mm
26	283 366 002 000 Ø3,5/4,8 x 170
27	522 080 111.094
28	410.530
29	323.155
30	671.155
31	522 980 035.330
32	+ 522 080 552.167
33	324 311 010 000
34	522 080 120.246
35	827.179
36	613.466
37	990.134
38	945.285
39	+ 825.740
40	+ 522 980 008.251
41	+ 522 080 825.744
42	+ 685.051
	TAB. 6
1	522 980 035.526
2	522 080 945.185
3	522 080 111.252
4	111.233
5	424.051
6	945.170
7	346.053
8	273 111 001 000
9	321 891 001 000
10	120.269
11	725.023
12	283 366 002 000 Ø 3,5/4,8 x 100
13	522 080 945.077
	TAB. 7
1	522 080 111.245
2	283 366 002 000 Ø 3,5/4,8 x 200
3	522 080 945.316
4	708 420 030 002 l = 250 mm
5	283 366 002 000 Ø 3,5/4,8 x 210
6	283 366 002 000 Ø 3,5/4,8 x 90
7	283 366 002 000 Ø 3,5/4,8 x 100
8	522 980 020.347
9	283 366 002 000 Ø 3,5/4,8 x 150
10	522 080 945.180
11	824.095
12	120.245
13	283 366 002 000 Ø 3,5/4,8 x 65
14	283 366 002 000 Ø 3,5/4,8 x 75
15	708 420 030 003 l = 110 mm
16	522 080 945.286
17	321 891 001 000
18	522 080 441.313
19	708 420 030 003 l = 300 mm
20	708 420 030 005 l = 640 mm
21	708 420 030 002 l = 320 mm
22	283 366 002 000 Ø 3,5/4,8 x 250
23	708 420 030 002 l = 270 mm
24	708 420 030 002 l = 130 mm
25	708 420 030 002 l = 140 mm
26	522 080 120.216
	TAB. 8
1	522 080 120.221
2	522 980 020.347
3	522 080 111.227
4	945.100
5	945.188
6	522 980 049.782
7	522 080 120.216
8	313.322
9	953.159
10	131.027
11	822.424
12	416.131
13	+ 264.294
14	522 980 025.244
15	+ 522 080 118.039
16	+ 828.079
17	828.080
18	+ 262.074
19	195.041
20	171.037
21	120.360
22	310.270
23	522 080 272.039
	TAB. 9
1	522 080 646.027
2	322.247
3	120.276
4	646.120
5	314.058
6	260.139
7	111.099
8	174.066
9	161.236
10	442.530
11	839.010
12	120.219
13	126.101
14	522 080 613.472
15	952.251
16	120.543
17	954.048

1	2
18	522 080 123.130
	TAB. 10
1	522 080 424.051
2	283 366 002 000
	Ø 3,5/4,8 x 100
3	708 420 030 002
	l = 140 mm
4	522 080 120.233
5	522 980 020.347
6	522 080 111.224
7	708 420 030 003
	l = 50 mm
8	522 080 120.235
9	+ 522 980 035.598
10	708 420 030 005
	l = 35 mm
11	522 080 313.315
12	413 314
13	161.233
14	120.291
15	425 111 009 000
16	522 080 320 255
17	324 311 010 000
18	522 080 436.000
19	613.469
20	410.559
21	+ 112.013
22	111.253
23	708 420 030 003
	l = 20 mm
24	522 980 021.318
25	522 080 318.192
26	810.419
27	120.261
28	318.191
29	120.289
30	141.223
31	273 111 007 000
32	522 080 338.187
33	636.251
34	708 420 030 002
	l = 40 mm
35	522 080 190.526
36	335.105
37	120.221
38	283 366 002 000
	Ø 3,5/4,8 x 210
39	708 420 030 002
	l = 270 mm
40	522 080 335.101
41	131.391
42	522 080 152.099
43	646.027
44	334.097
45	322.247
46	161.237
47	190.359
48	273 111 001 000
49	522 080 422.184
50	522 080 163.093
51	612.342
52	112.101
	TAB. 11
1	522 080 623.249
2	326.191
3	283.152
4	113.122
5	113.123
6	945.317
7	120.543
8	311 732 910 043
9	522 080 829.963
10	136.023
11	615.024
12	421.330
13	+ 112.014
14	392.105
15	190.554
16	+ 120.239
17	+ 522 980 031.603
18	522 080 314.150
19	311 732 910 060
20	635.152
21	120.221
22	633.196
23	271.337
24	190.346
25	264.288
26	522 080 383.178
27	814.014
28	120.217
29	436.331
30	120.050
	TAB. 12
1	522 080 141.141
2	613.495
3	120.246
4	120.246
5	522 080 345.067
6	120.229
7	613.216
8	436.000
9	+ 112.013
10	413.252
11	425 111 041 000
12	708 420 030 002
	l = 160 mm
13	522 080 338.069
14	274.083
15	+ 121.157
16	+ 651.428
17	622.092
18	708 420 030 002
	l = 350 mm
19	522 080 344.035
20	630.248
21	708 420 030 002
	l = 220 mm
22	522 080 111.227
23	522 980 044.045
24	522 080 412.193
25	425 111 061 000
26	522 080 413.251
27	318.144
28	612.109
29	708 420 030 002
	l = 60 mm
30	522 080 613.195
31	345.065
32	410.538
33	120.231
34	613.152
35	708 420 030 003
	l = 60 mm
36	522 080 344.035
	TAB. 13
1	522 080 161.142
2	192.061
3	441.187
4	522 980 049.875
5	522 080 613.328
6	120.246
7	342.258
8	211.050
9	522 080 233.029
10	+ 112.013
11	274.085
12	522 080 627.023
13	141.102

1	2
14	522 980 020.347
15	522 080 120.227
16	337.033
17	340.156
18	260.383
19	314.186
20	613.373
21	522 980 044.714
22	522 080 120.221
23	120.230
24	111.097
25	161.140
26	342.096
27	161.159
28	316.038
29	632.019
30	161.143
31	613.503
32	311 515 006 014
33	522 080 342.198
34	522 980 044.376
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	TAB. 14
	201
	522 792 112 010
1	522 080 112.115
2	522 980 036.122
3	522 080 111.094
4	522 980 049.830
5	522 080 274.090
6	124.050
7	260.483
8	870.170
9	441.490
10	264.281
11	522 980 035.654
12	522 080 310.377
13	441.308
14	613.468
15	265.037
16	343.074
17	953.200
18	522 980 025.248
19	025.249
20	522 080 827.194
21	260.510
22	163.106
23	161.138

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	TAB. 15
	205
	522 791 149 001
1	522 080 646.136
2	120.225
3	120.037
4	271.441
	295
	522 791 995 014
1	522 080 814.355
	204
	522 791 947 001
	522 080 131.404
2	192.061
3	831.412
4	814.364
5	814.365
6	646.148
7	133.112
	TAB. 16
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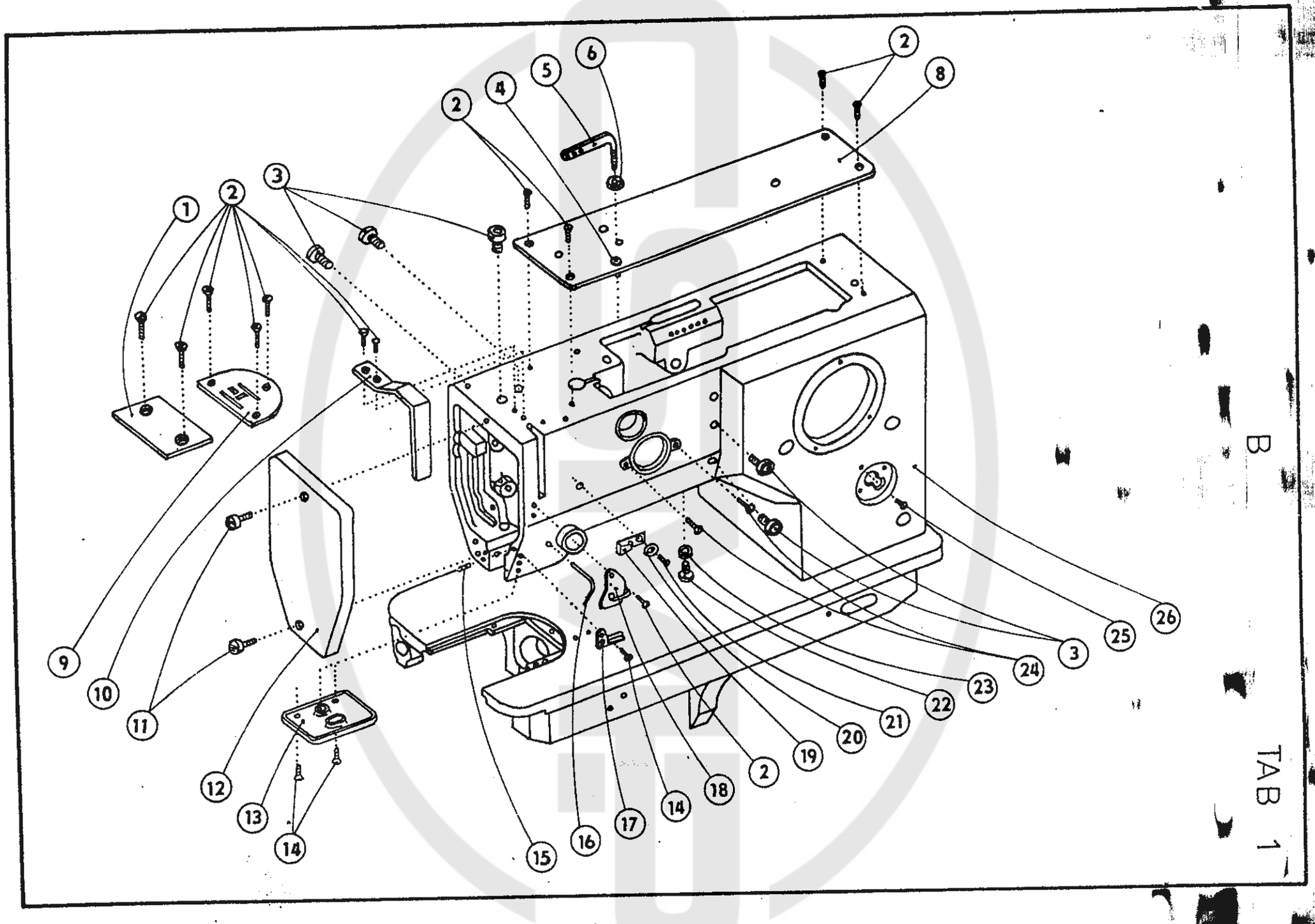
	522 791 400 023
1	522 980 031.604
2	522 080 124.061
3	522 980 049.443
4	522 080 811.633



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TAB 1

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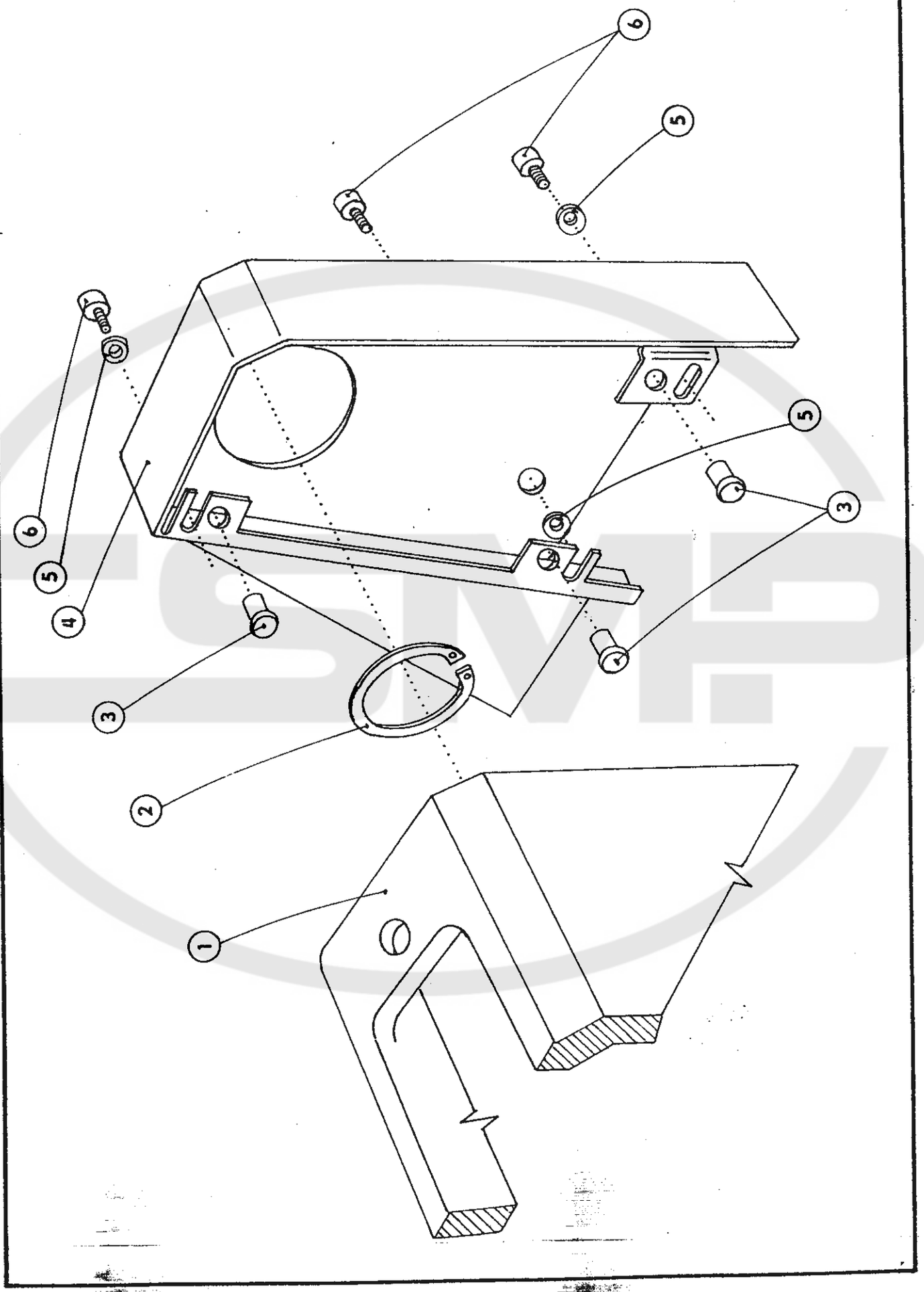
TAB 2



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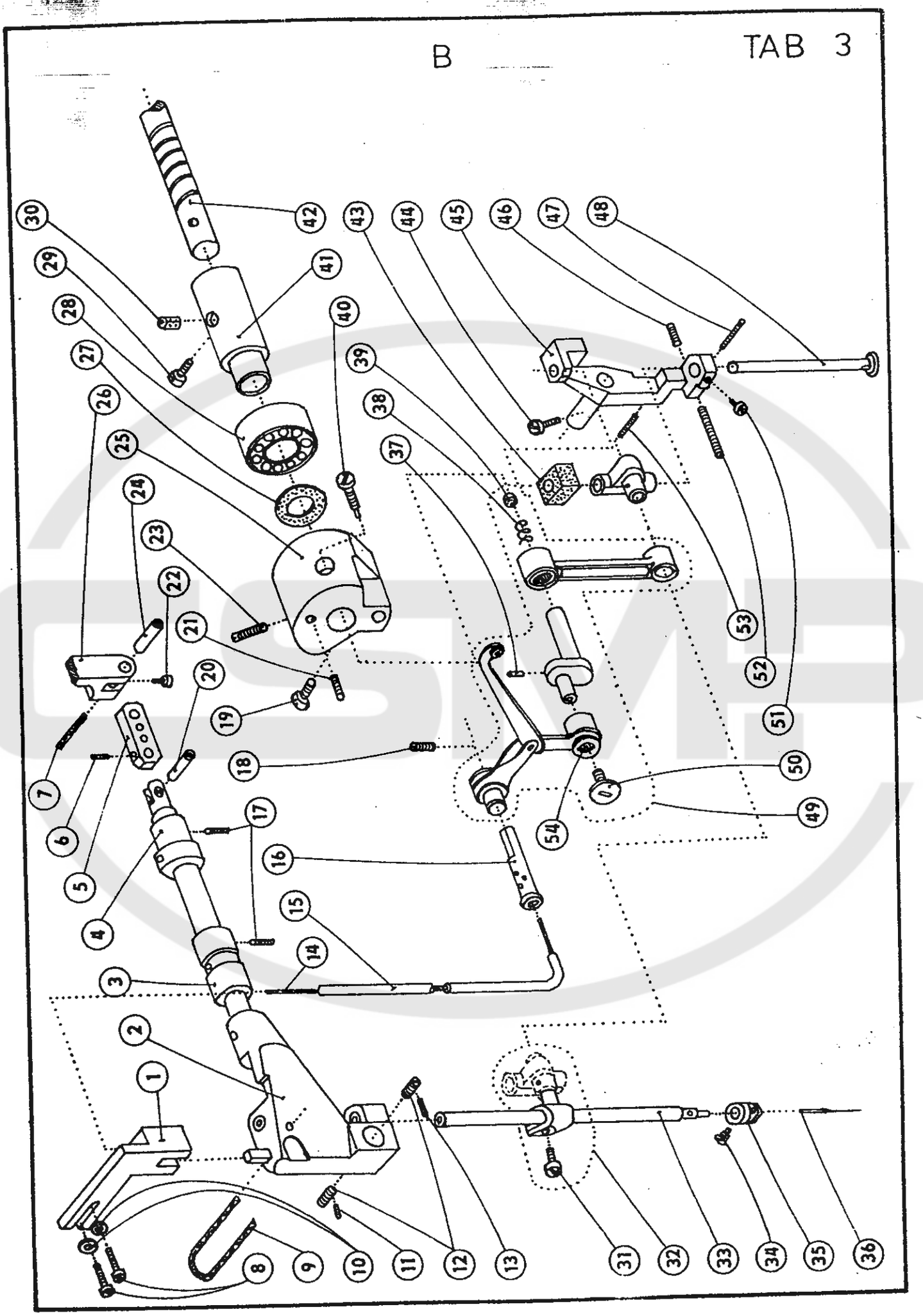
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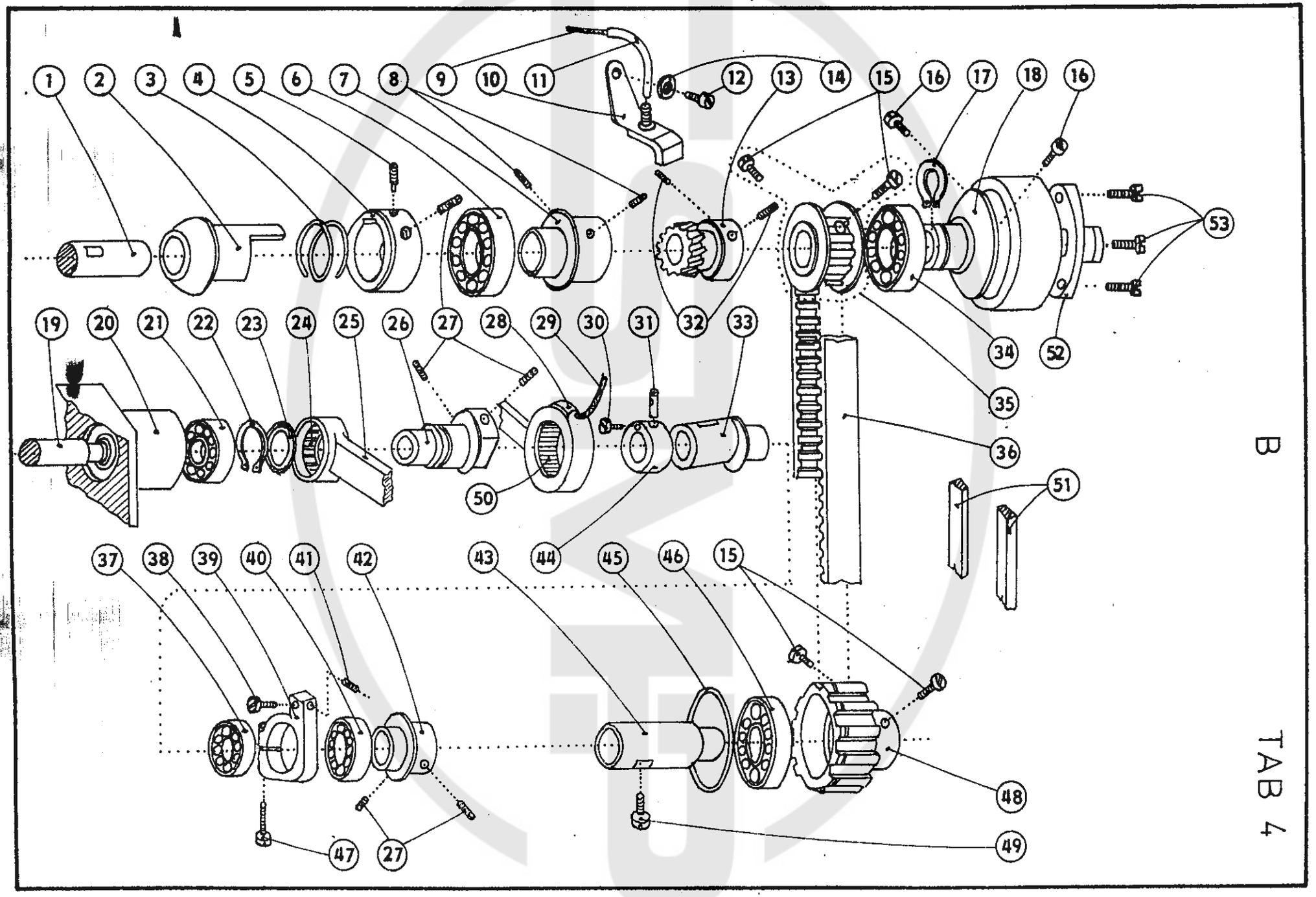
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TAB 4

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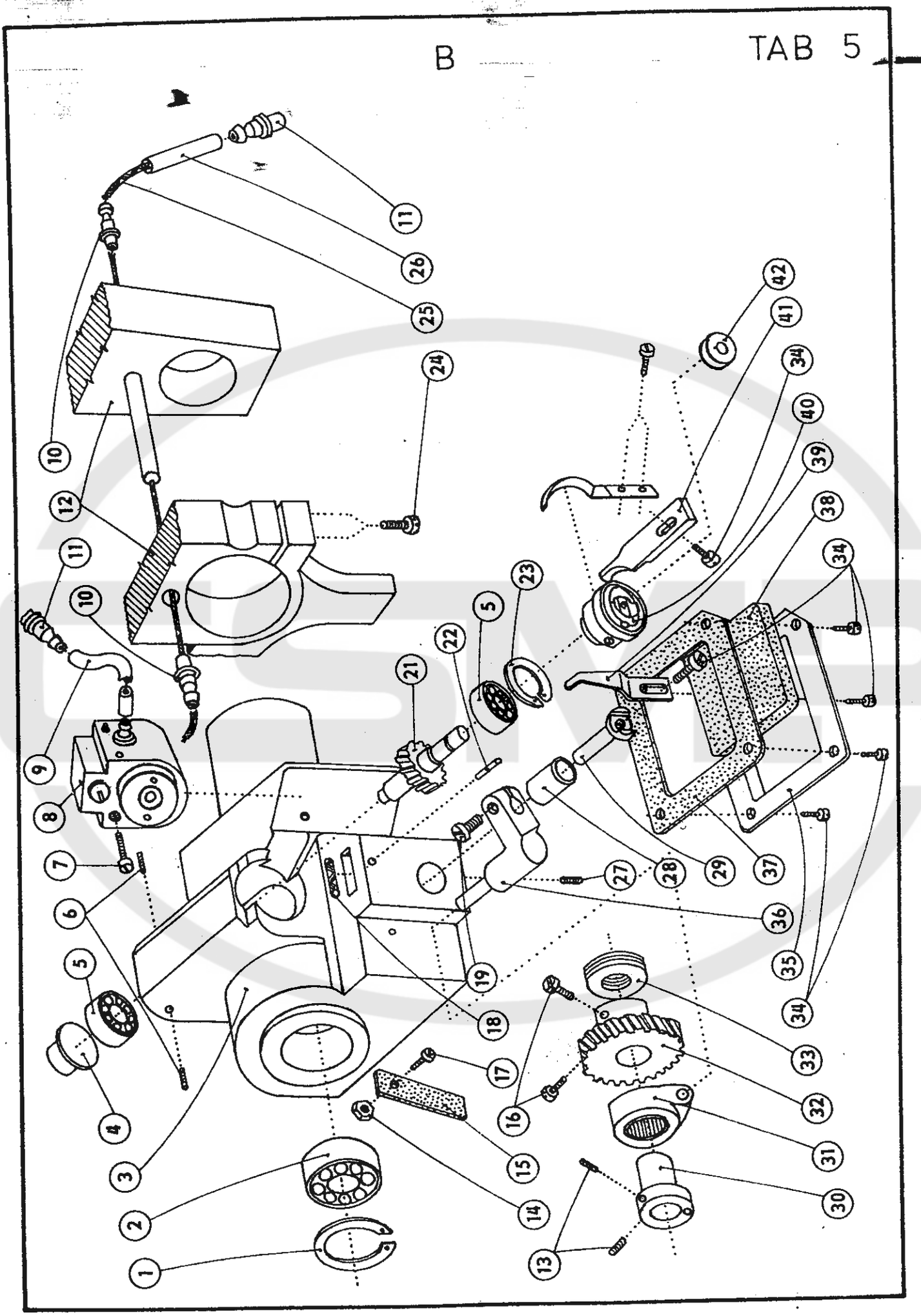
TAB 5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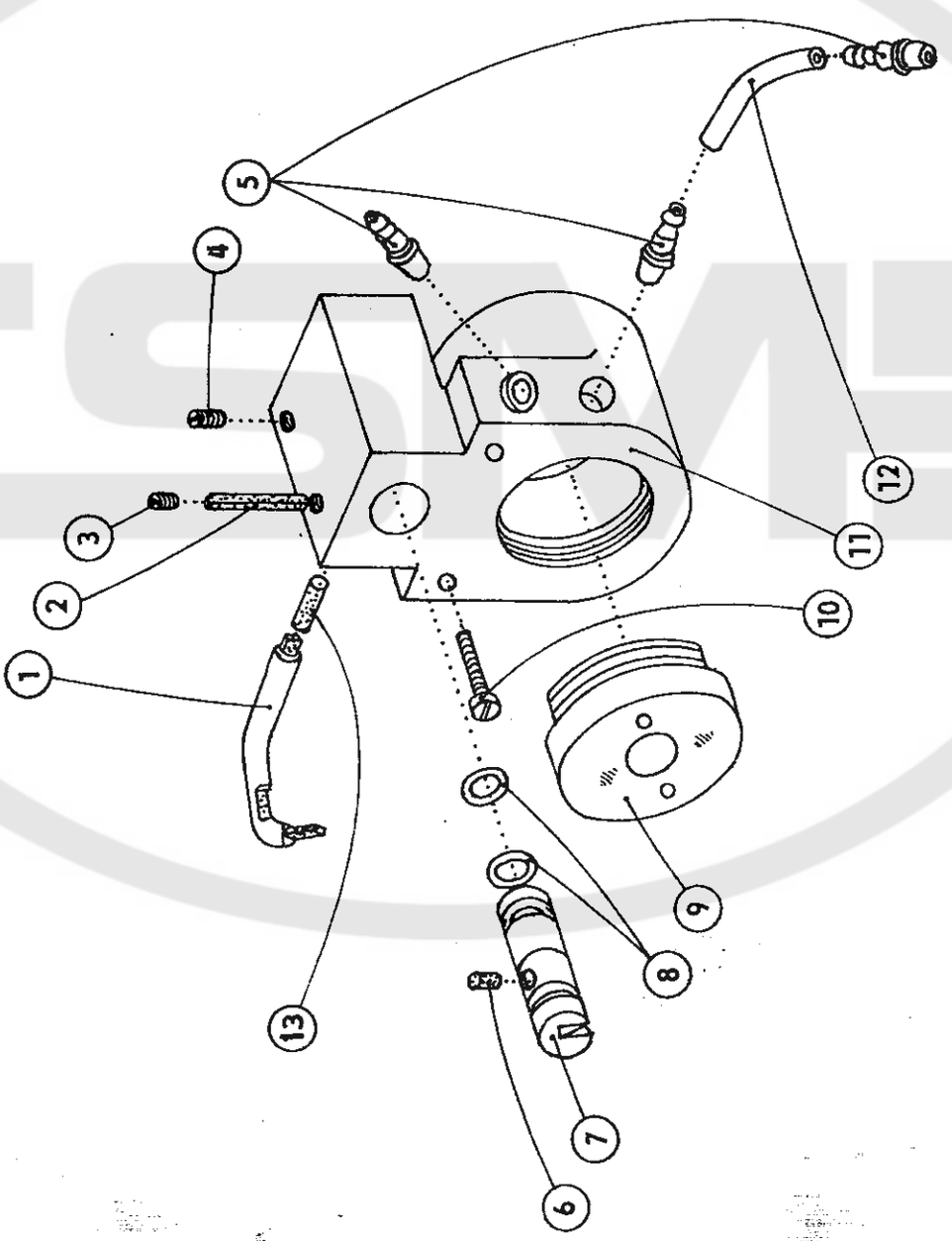
TAB 6



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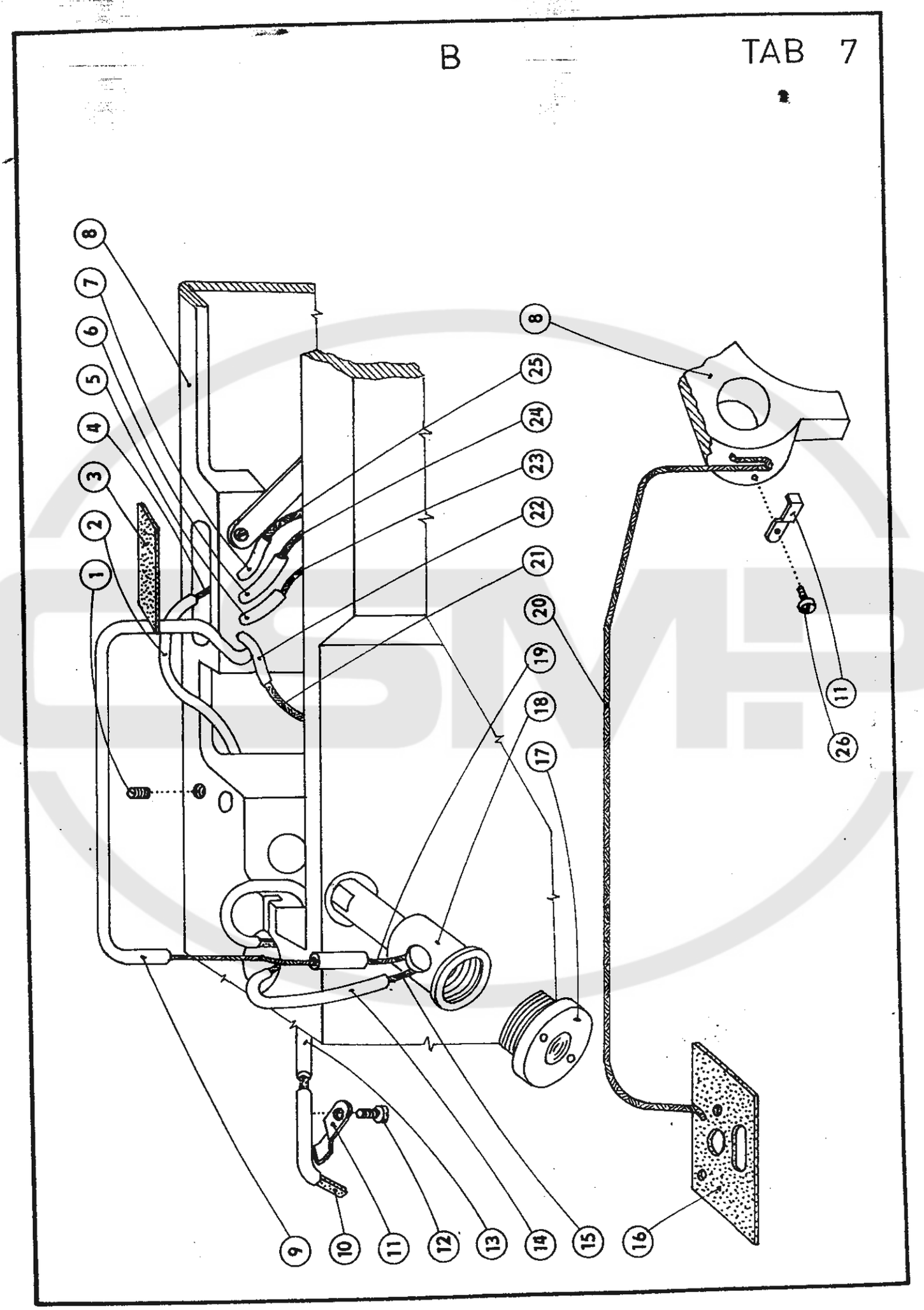

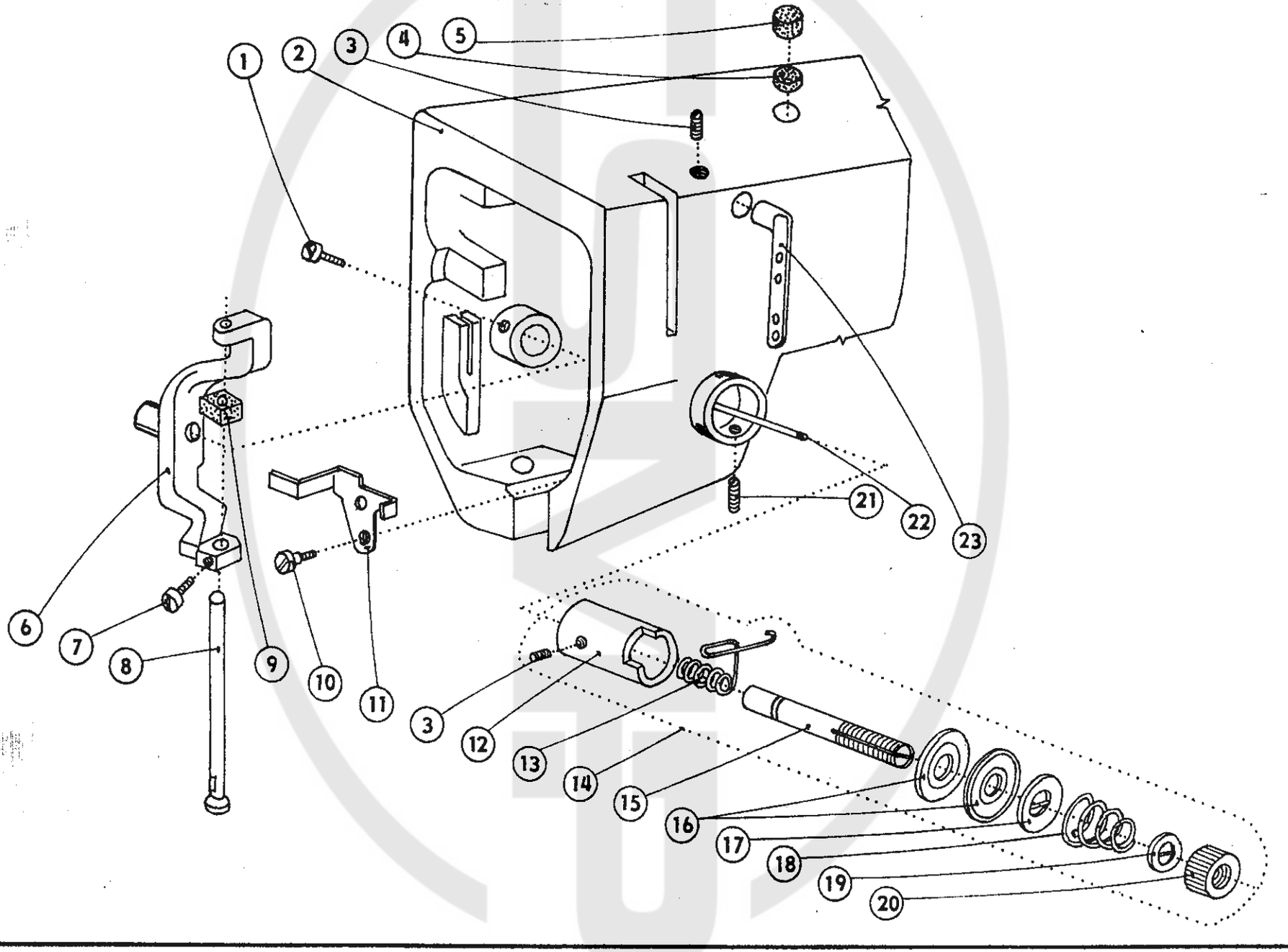

TAB 8

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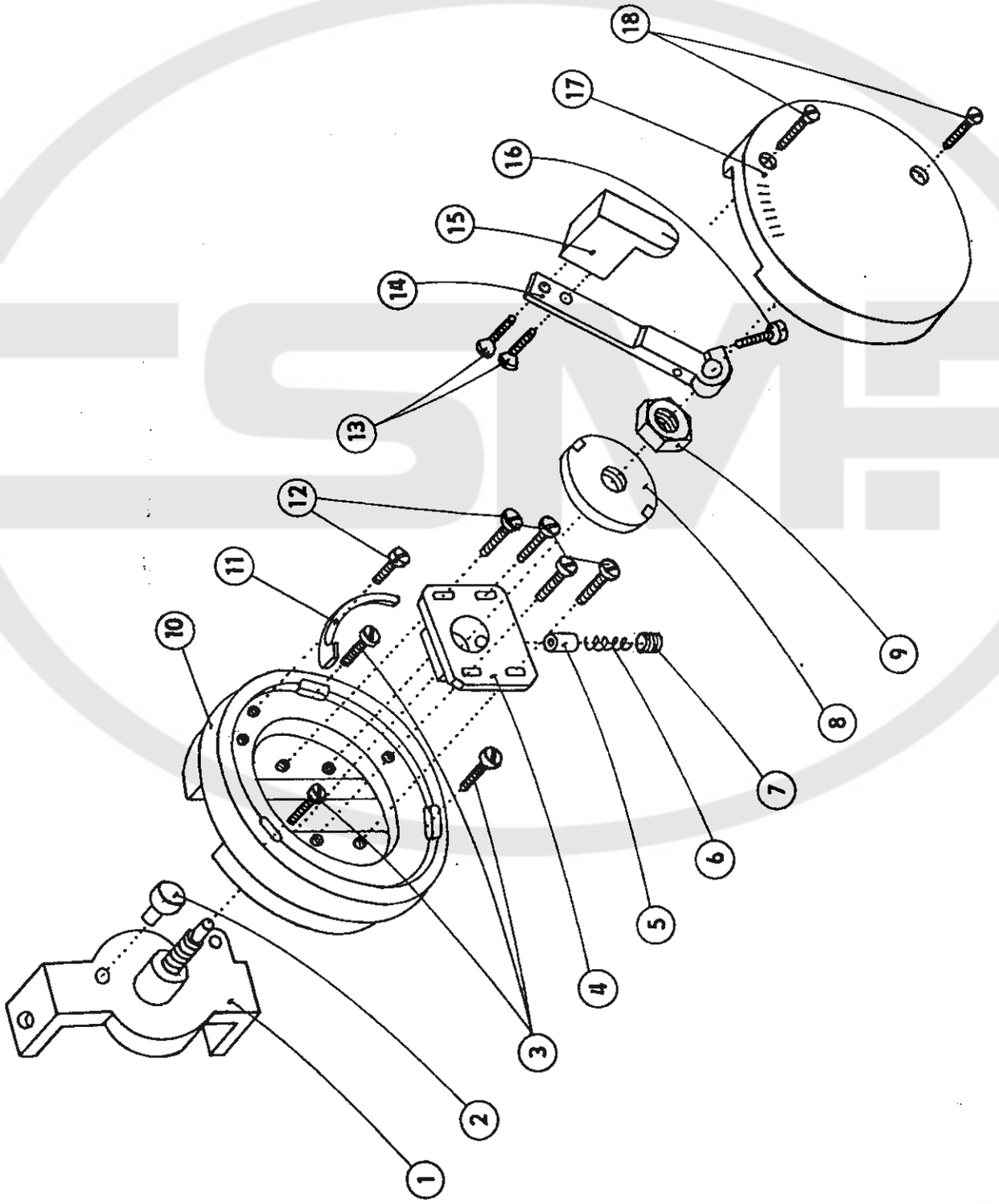
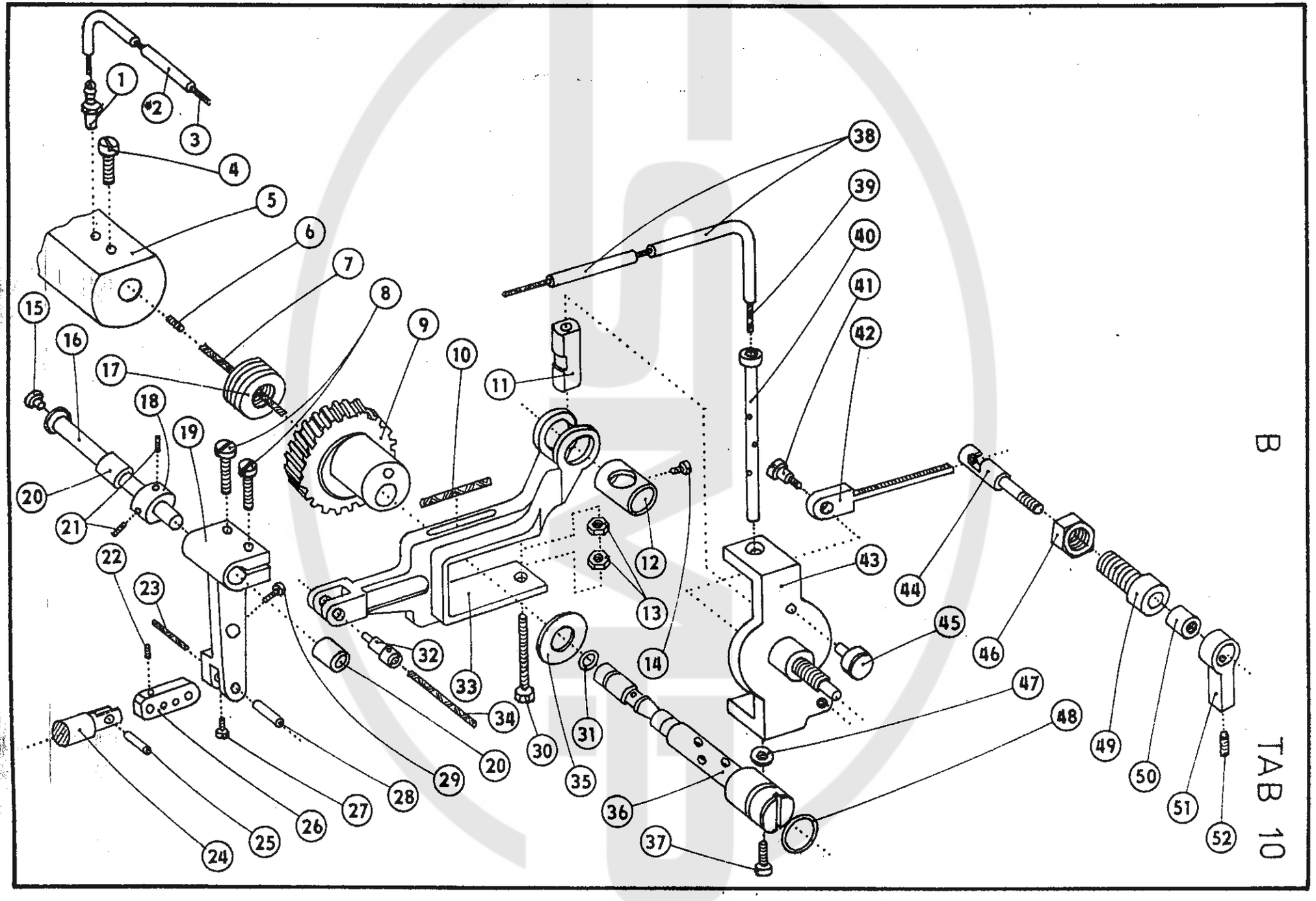
TAB 9

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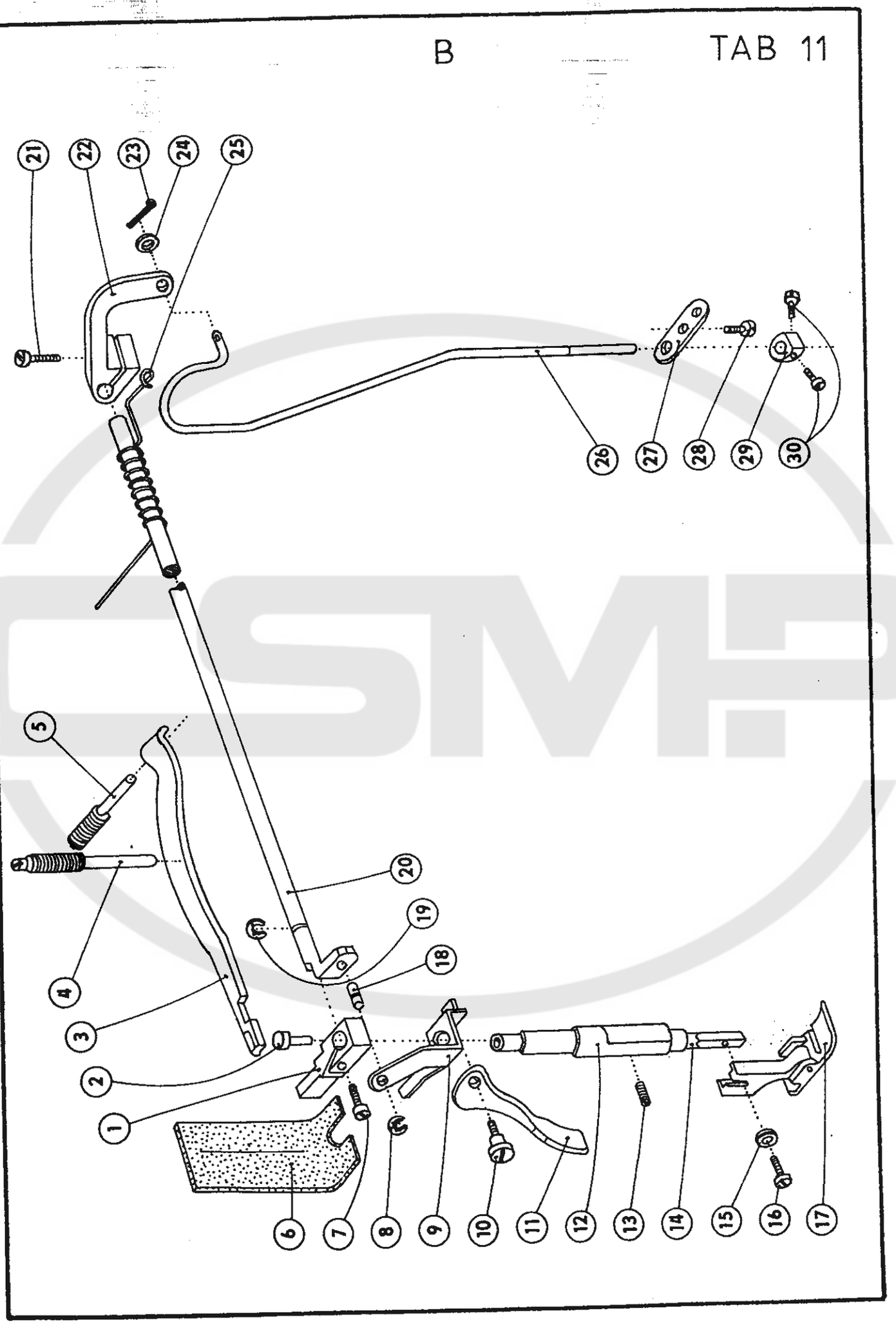
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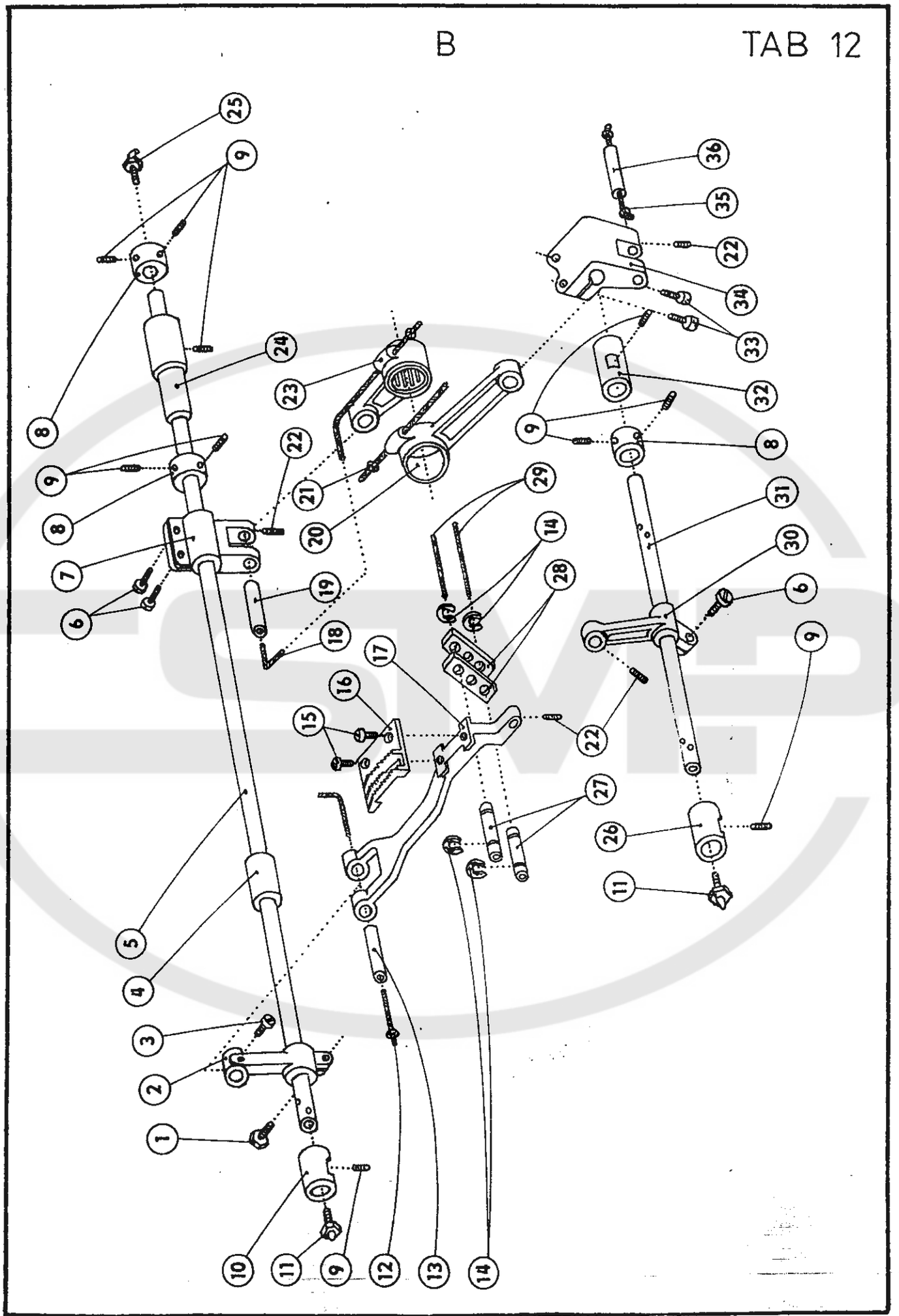
TAB 12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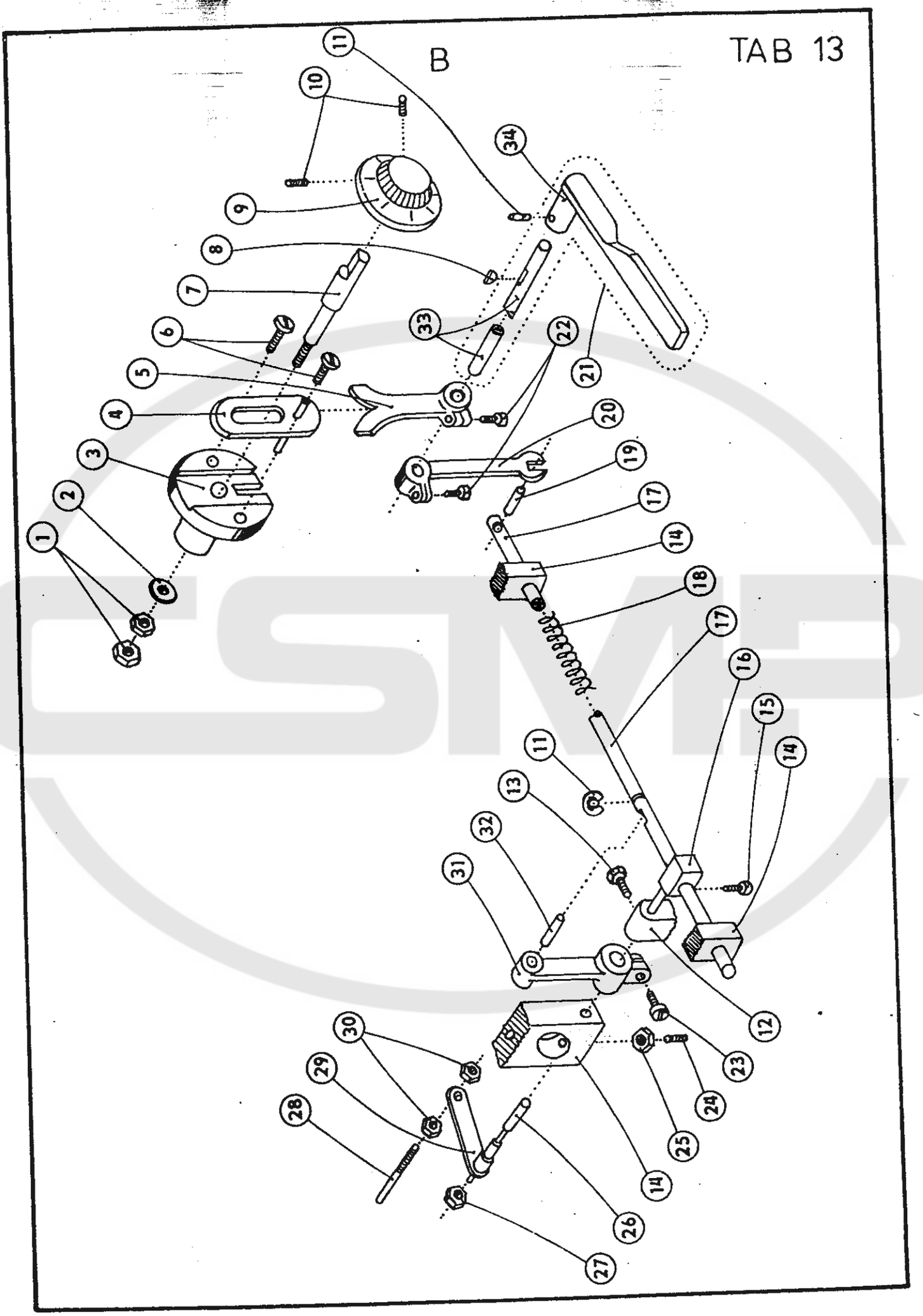
TAB 13
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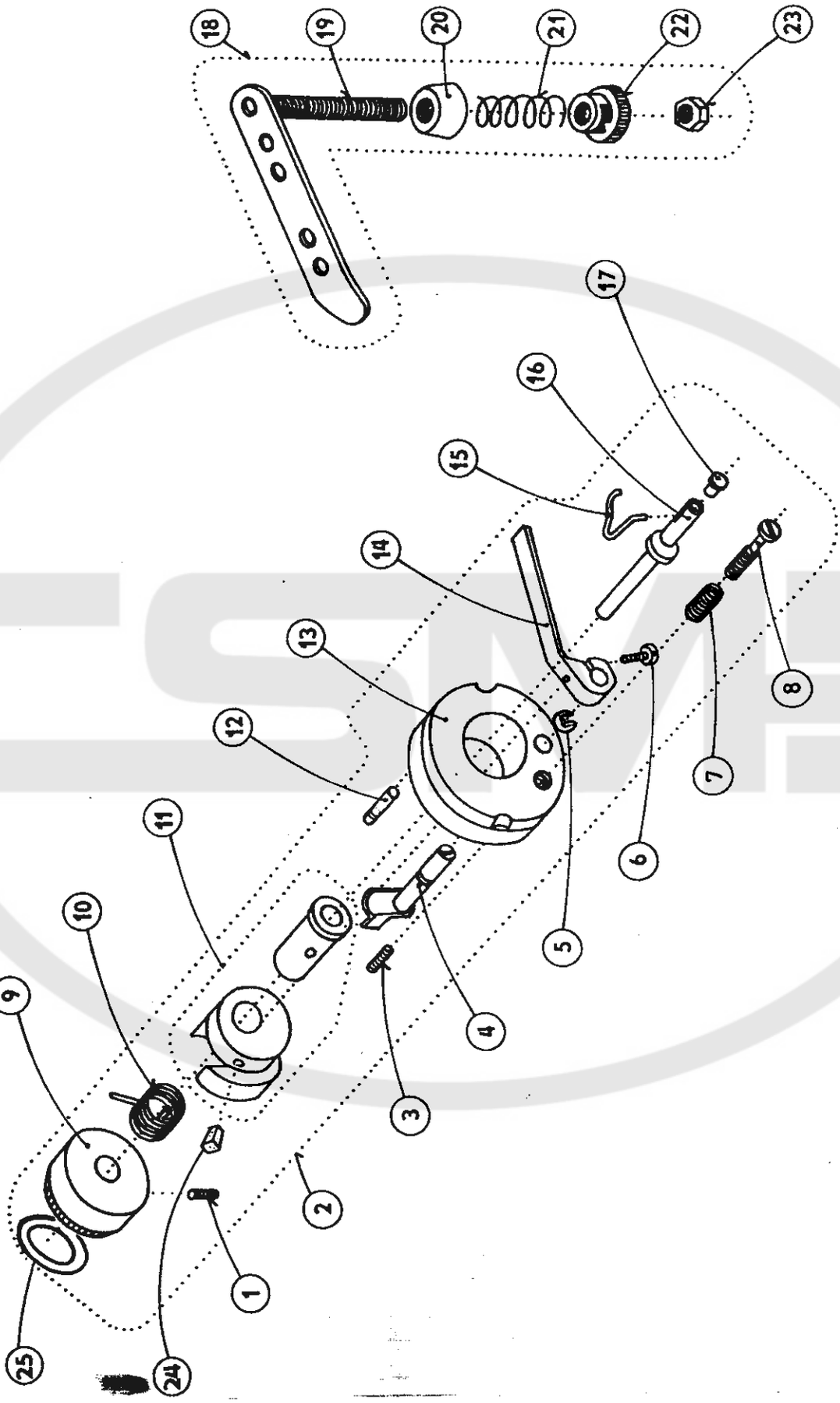
TAB. 14



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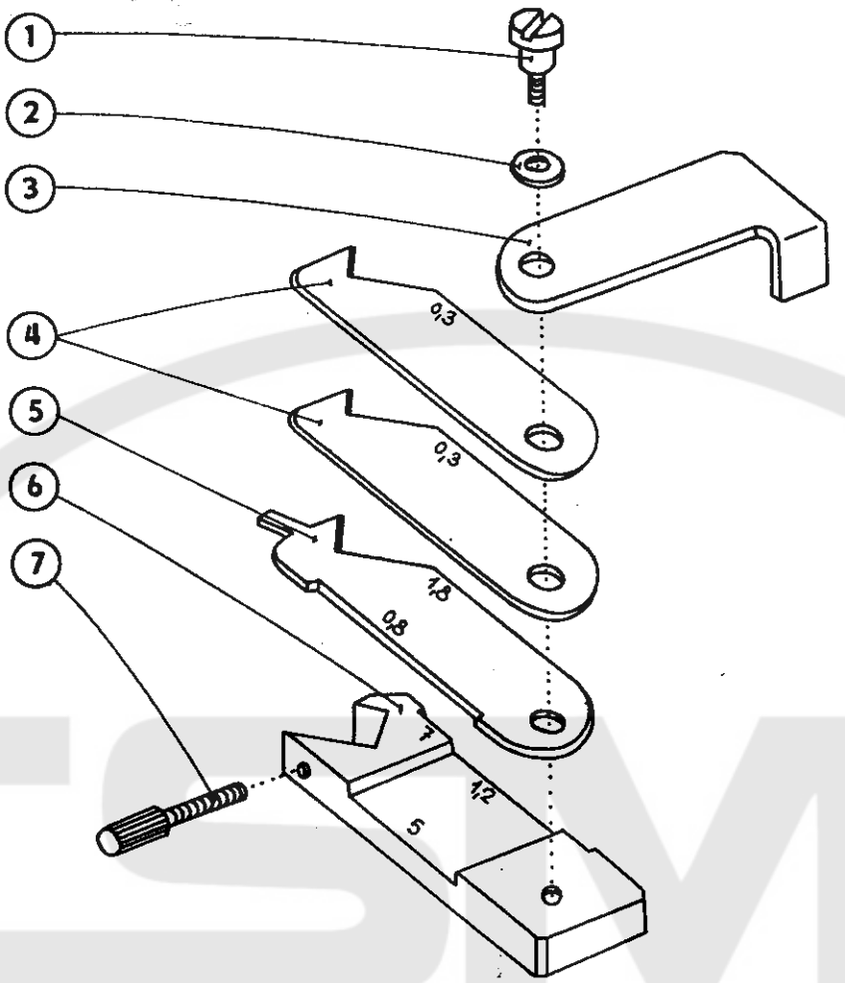

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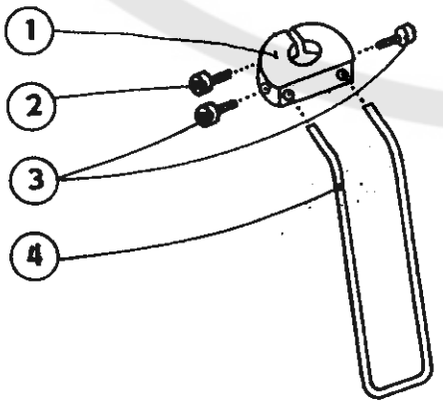

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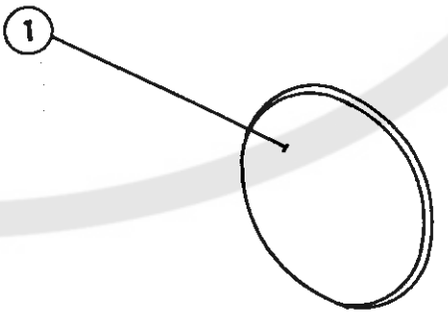

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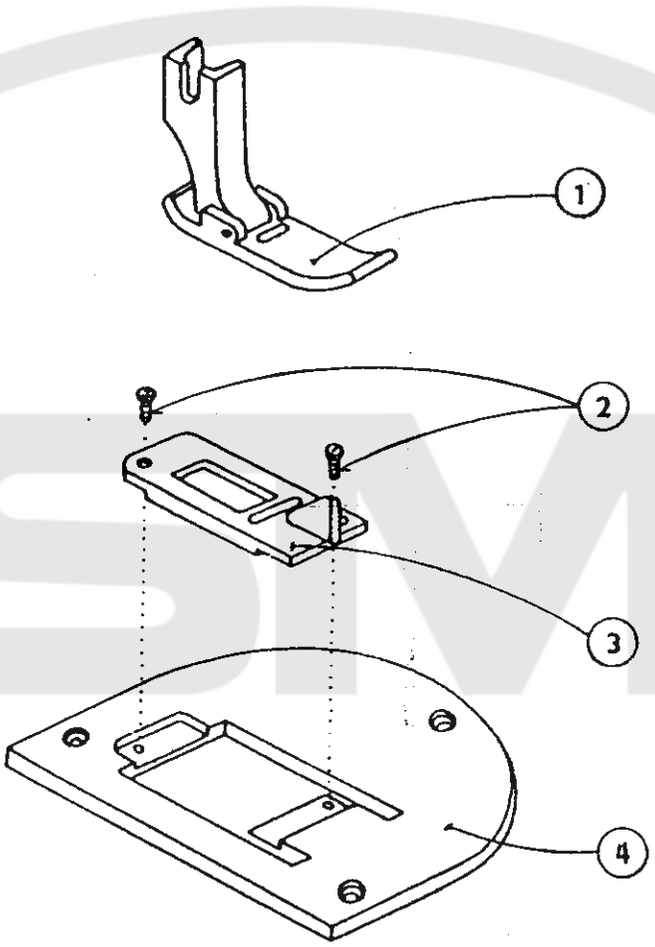

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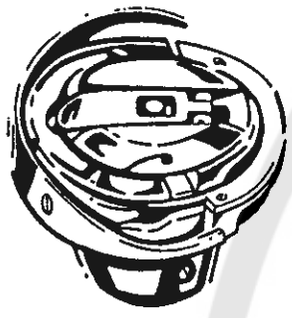
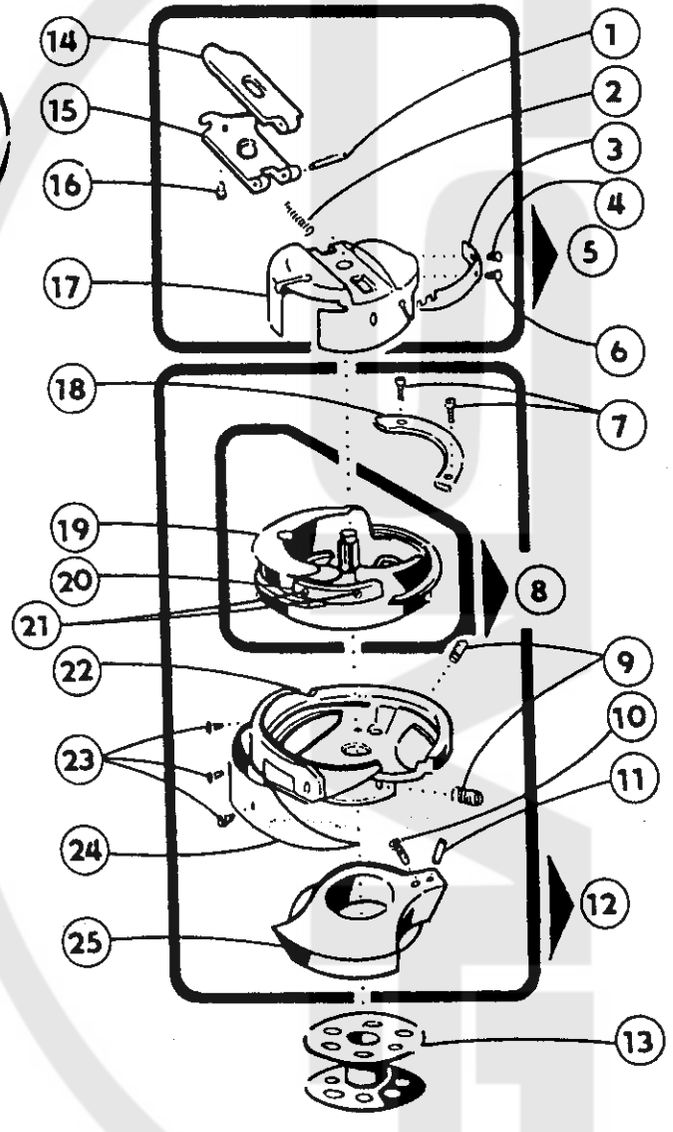
522 980 008 251



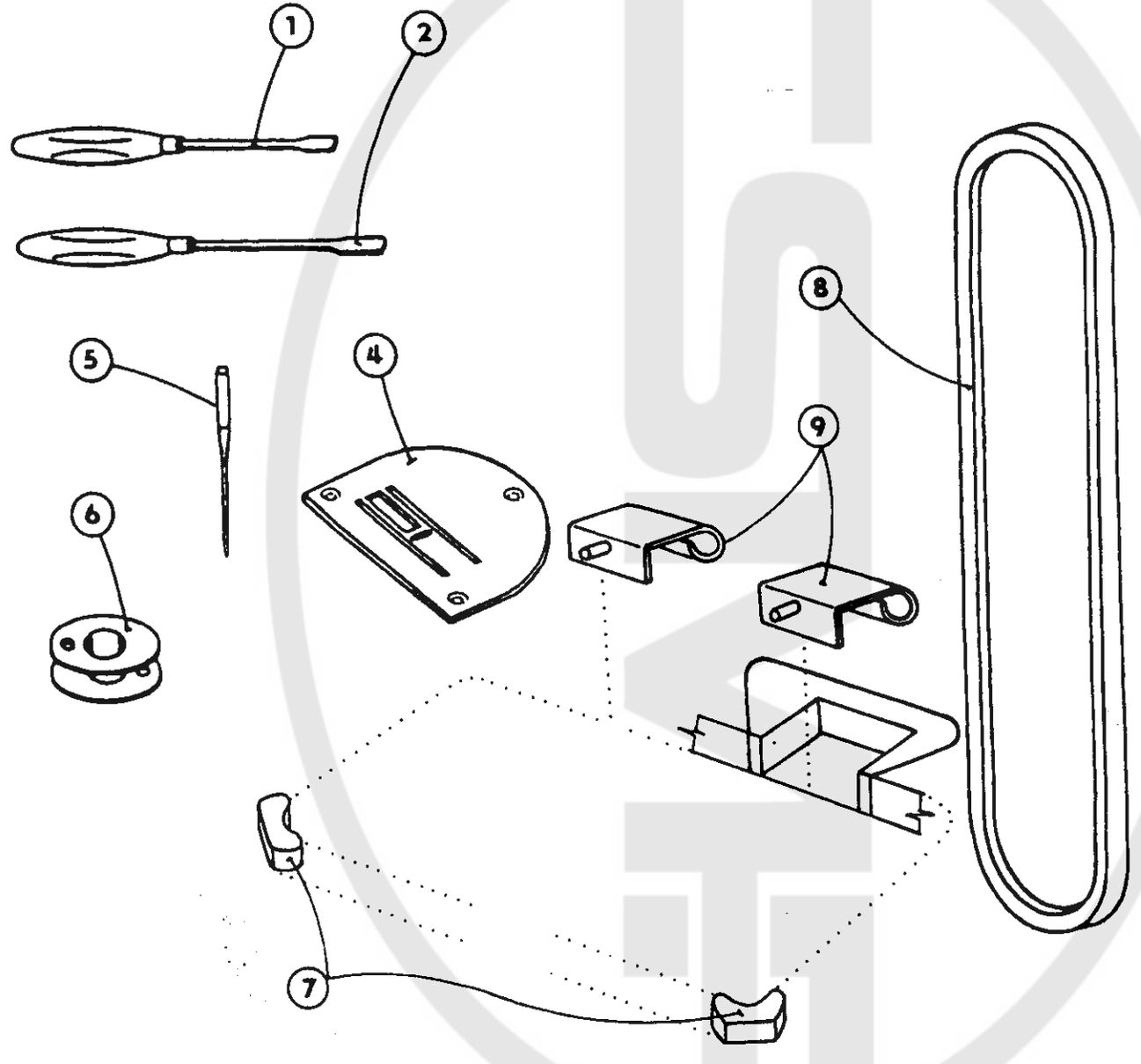


1	522 080	682 017
2	315 231	689 009
3	522 080	690 029
4	522 080	683 053
5	522 980	081 122
6	522 080	683 063
7	522 080	683 064
8	522 980	081 138
9	522 080	683 067
10	522 080	683 073
11	522 080	688 020
12	522 980	081 139
13	522 080	685 051
14	522 080	687 021
15	522 080	687 024
16	522 080	683 052
17	522 080	678 040
18	522 080	681 032
19	522 080	677 026
20	522 080	681 031
21	522 080	683 078
22	522 080	676 054
23	522 080	683 083
24	522 080	680 023
25	522 080	688 022

522 980 099 075

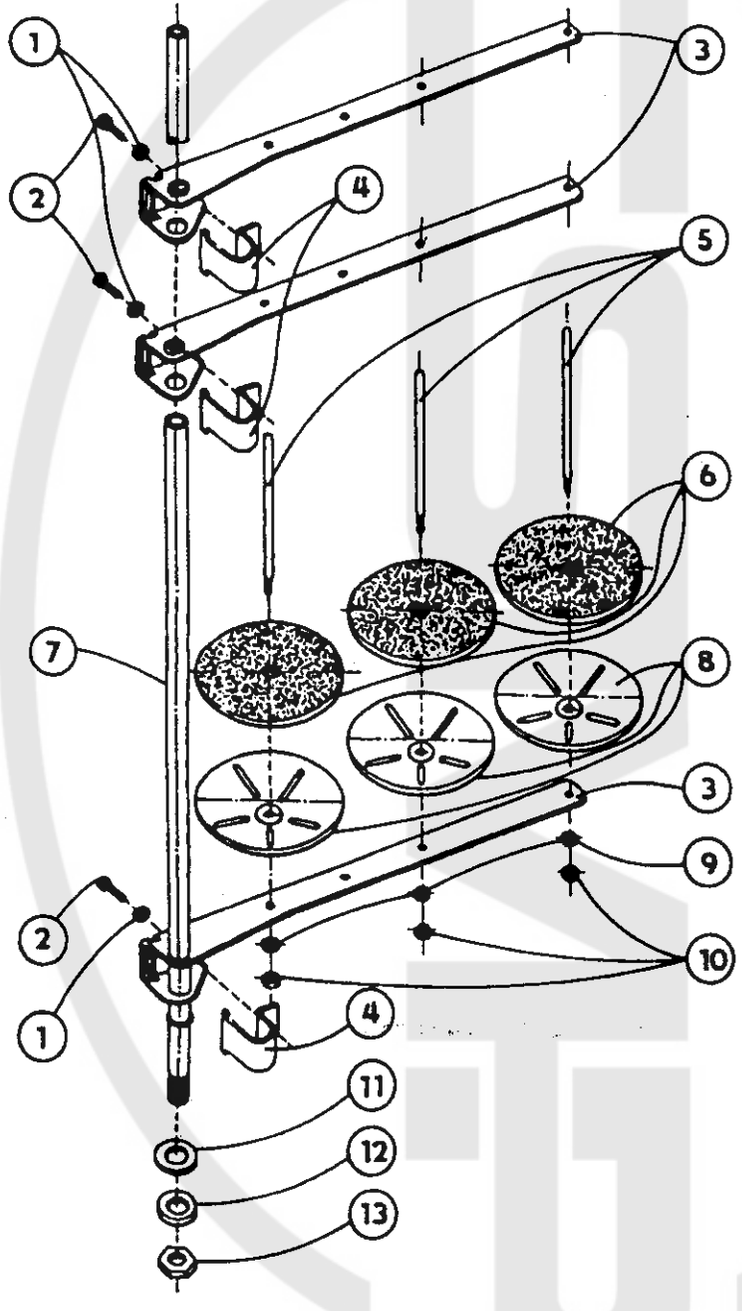
ACCESSORIES

522 980 099 075 1



1	413 621 731 023
2	413 624 310 002
4	522 080 811 634
5	548 300 000 130 - 10 x
6	522 080 685 051 - 5 x
7	273 141 940 141 - 2 x
8	272 711 221 000 10 x 1060 mm
9	549 458 100 000 - 2 x

522 980 099 075 **2**



1	523 081	200 025
2	522 080	120 283
3	522 080	826 162
4	522 080	826 159
5	522 080	313 277
6	522 080	953 042
7	522 980	044 969
8	522 080	839 031
9	522 080	191 107
10	522 080	161 137
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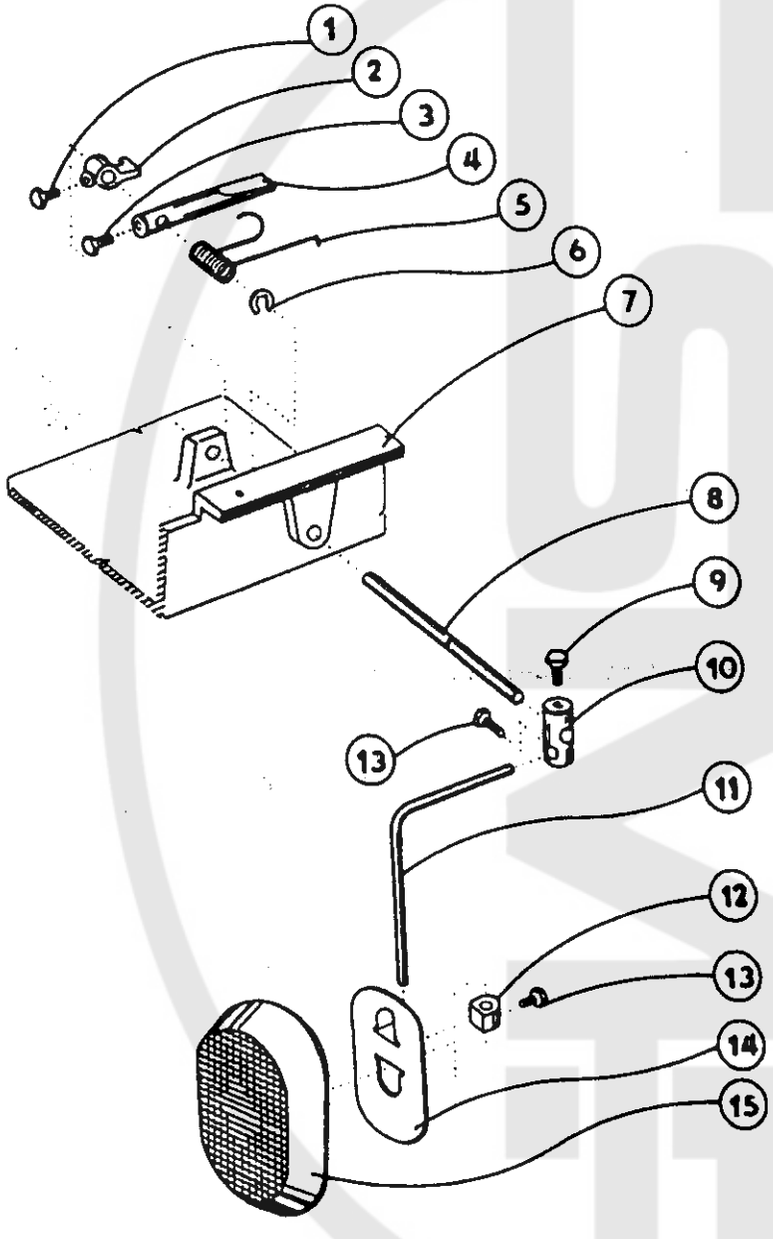
522 980 099 075 3



1	522 080	141 141
2	522 080	625 022
3	522 080	141 108
4	522 080	384 052
5	522 080	264 168
6	311 732	910 070
7	522 080	725 074
8	522 080	314 065
9	522 080	141 123
10	522 080	318 069
11	522 080	383 022
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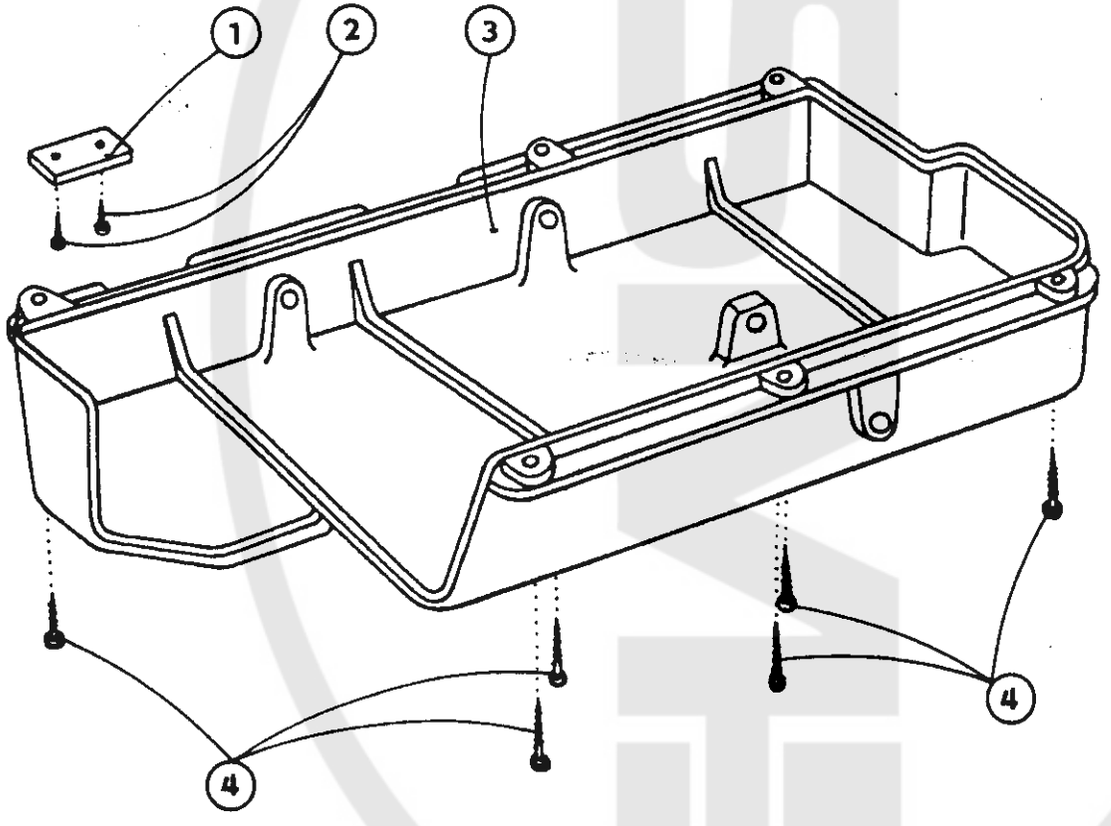
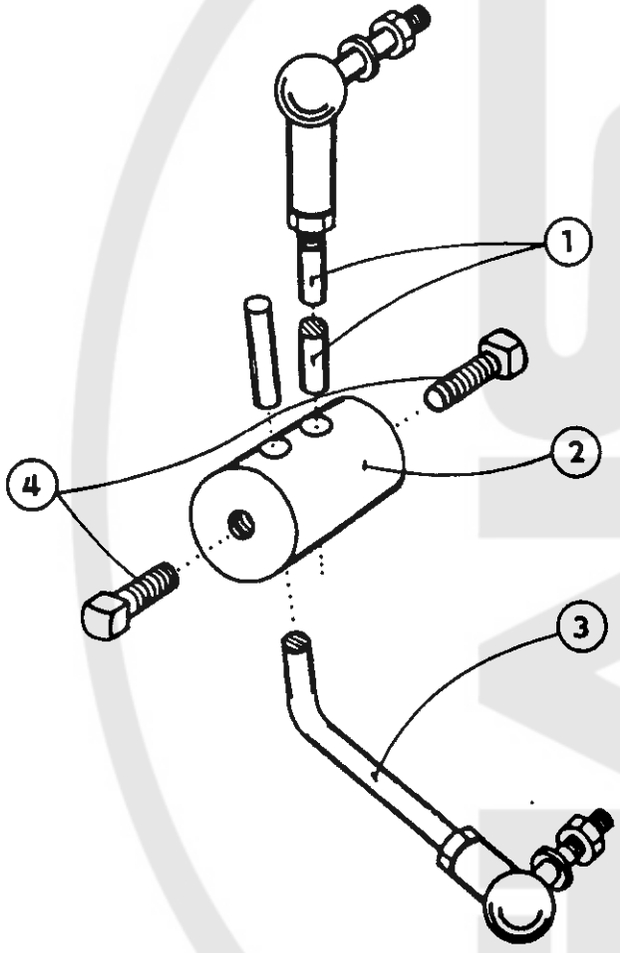
14	522 080	827 173
15	522 412	001 000

522 980 099 075 **4**



1	522 080 941 091
2	314 140 016 020
3	522 080 725 074
4	522 080 225 031

522 980 099 075 5



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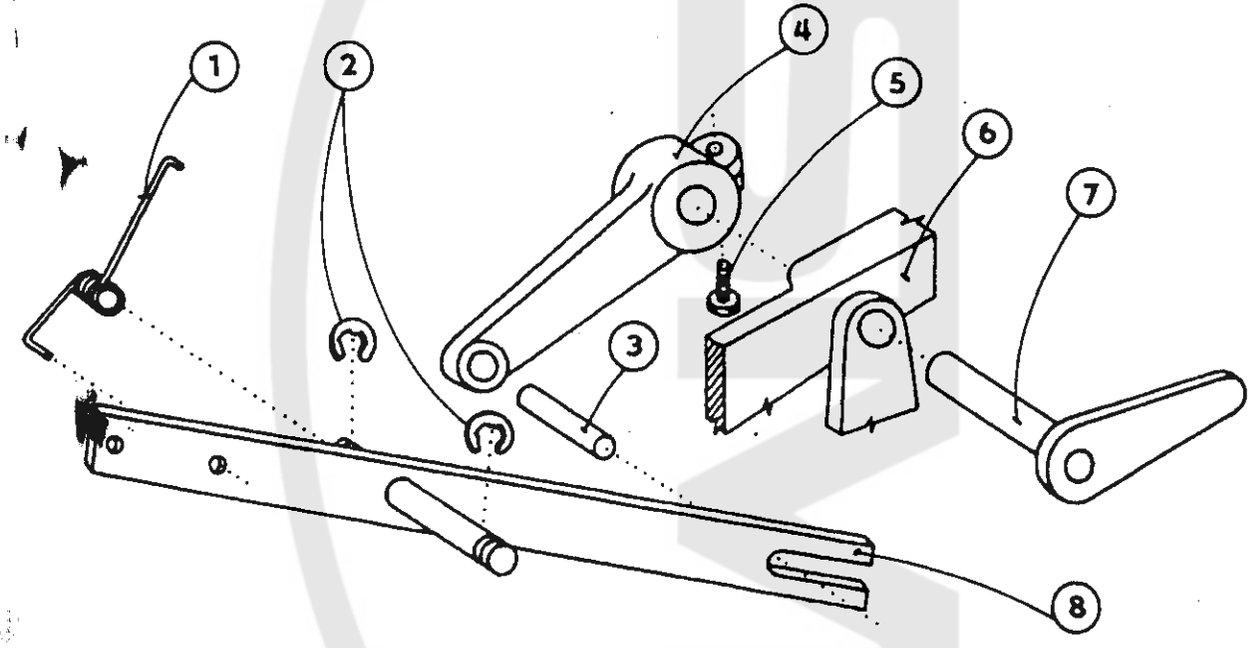
3	522 980 044 761
4	522 080 144 035

522 980 099 075 **6**



1	522 080 264 290
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3	311 515 006 016
4	522 080 613 480
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6	522 080 725 074
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8	522 980 049 109