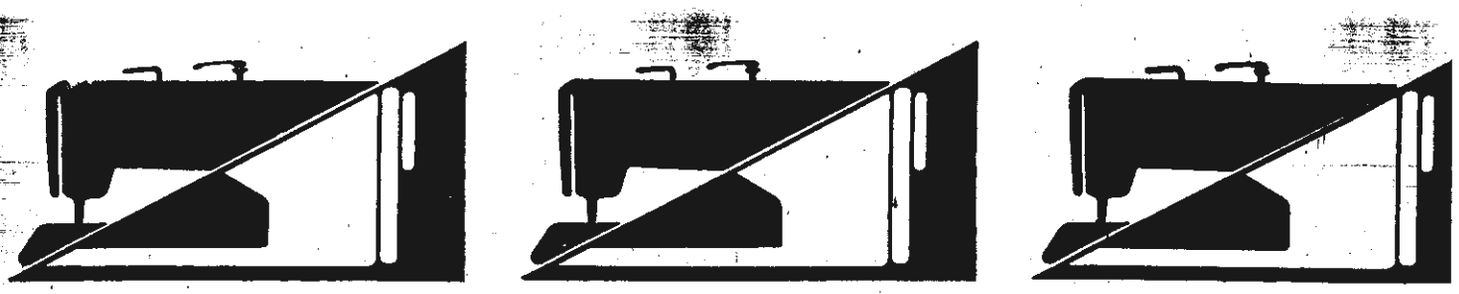
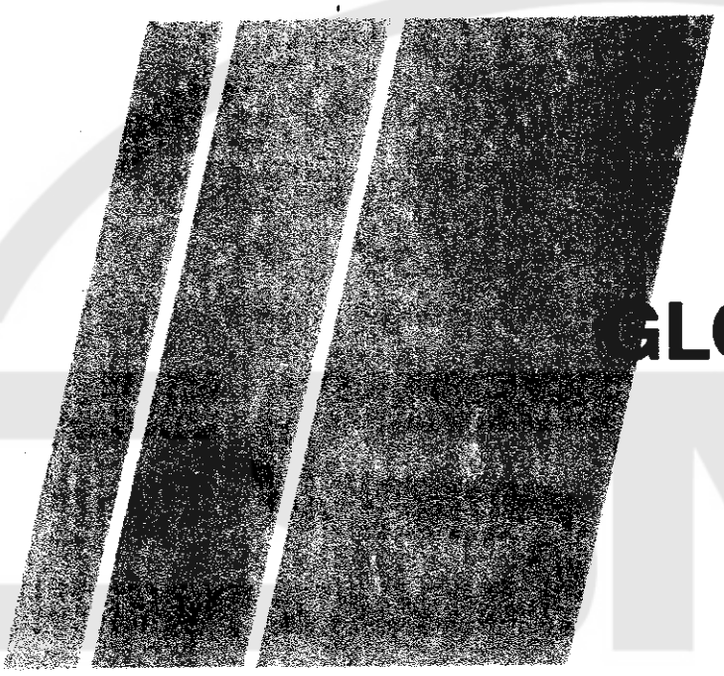
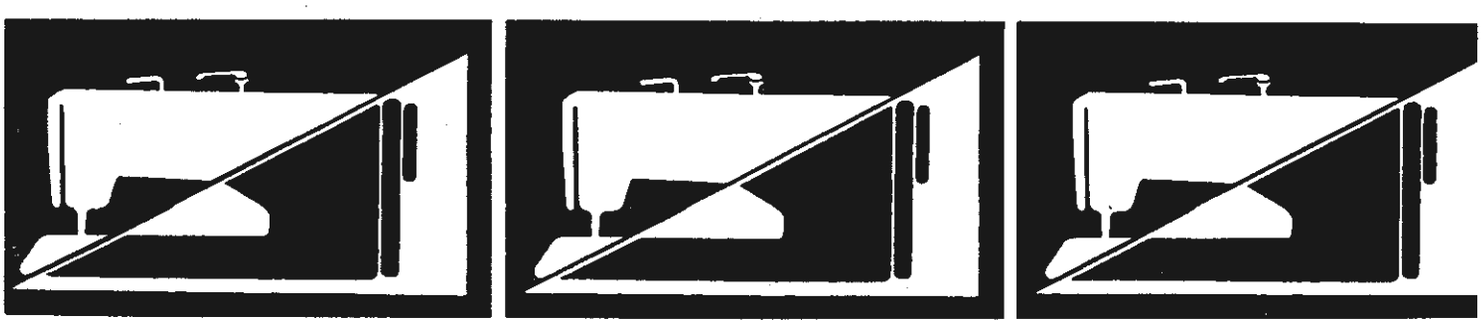


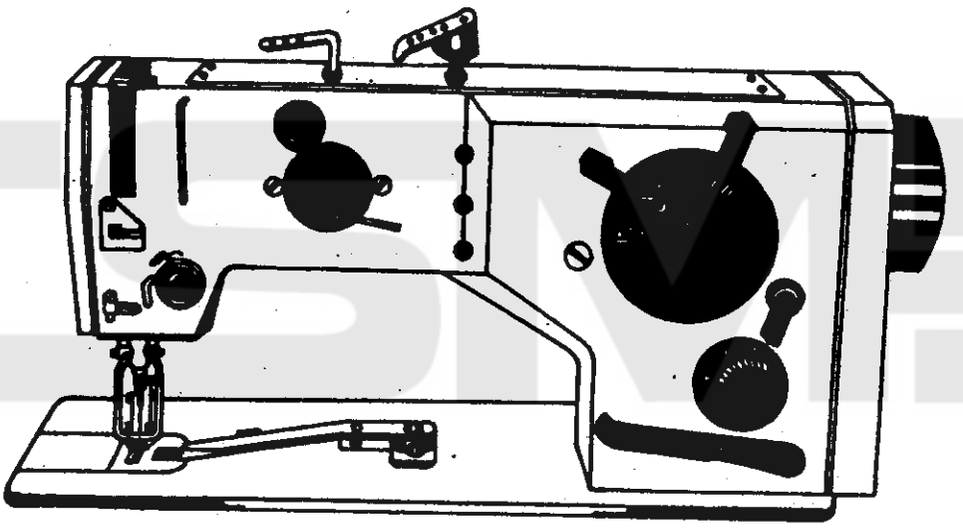


GLOBAL® ZZ 564



SINGLE NEEDLE FLAT BED ZIGZAG INDUSTRIAL SEWING MACHINE FOR ATTACHING LACES WITH SIMULTANEOUS CUTTING OF WORK UNDER THE LACE

ZZ 564



Use of Machine

The machine is used in the linen industry for attaching laces to fine materials, e.g., to silon, dederon lace cloth, batiste, etc., in the production of ladies', girls' and children's linen, as well as for fine tablecloth adorned with lace.

INSTRUCTIONS FOR ADJUSTMENT AND SERVICING AND LIST OF PARTS FOR SINGLE NEEDLE FLAT BED ZIGZAG INDUSTRIAL SEWING MACHINE FOR ATTACHING LACES WITH SIMULTANEOUS CUTTING OF WORK UNDER THE LACE

ZZ 564

Specifications

Speed	up to 4,400 stitches per min., according to the threads and sewn work applied
Stitch	two-thread zigzag lockstitch
Stitch length	steplessly adjustable between 0 and 3 mm
Stitching	forward stitching; reverse stitching for bar tacking is possible
Stitch width	0 to 4 mm
Zigzag stitch position	median, left, right
Needle	134 Nos. 80-100 Schmetz 797 CF CF Nos. 80 to 100
Threads	cotton threads 10 tex x 2 x 2; 7.4 tex x 2 x 2 6 tex x 2 x 2
	+) synthetic threads Betes 10 tex x 3 Belux 10 tex x 3
Hook	rotary hook R 235
Presser foot stroke	5 mm with hand lever 7 mm with knee lever
Distance between the needle axis in the right end position of needle and the work cut line	1.7 mm
Thickness of sewn work	up to 2 mm
Thickness of cut work	up to 1 mm
Clear work space	120 mm x 265 mm
Bed plate dimensions	476 x 178 mm
Power consumption of machine	650 W or less
Weight of machine head	39 kg or less
Spontaneous increase of stitch length when adjusted at 3 mm	15% or less
Accustic power level	LPA 97 (dBPA)

+) With cotton threads 6 tex x 2 x 2 and with synthetic threads, the stitching speed should be adequately reduced by applying the pulley available as Equipment No. 205.

Technical description

The type is a single needle flat bed zigzag industrial sewing machine with stitch width up to 4 mm, with two thread lockstitch, equipped with a device for cutting the work under the lace. The zigzag stitch width is adjustable from 0 to 4 mm by means of a lever situated on the front face of the vertical column of the machine head. Also located there are the adjusting member for choosing the median, right, or left, position of the zigzag stitch and the revolving knob for steplessly adjusting the stitch length from 0 to 3 mm. The machine is designed for forward stitching with the possibility of using reverse stitching for bartacking and is fitted with a built-in non-disconnectable automatic work cutting device consisting of a moving knife located on a spring-biased holder adapted for vertical reverse oscillating motion, and cooperating with a stationery knife located in the throat plate for cutting the sewn work. The main functional movement of the moving knife is derived from the lifting eccentric of the feed mechanism and is positively timed with it.

The cutting plane is located at a distance of 1.7 mm from the right-side needle punch, and the centre of the cutting edge lies 2.5 mm (approximately, depending on the adjustment carried out) behind the throad plate aperture axis.

Reverse stitching can be actuated by the hand lever located on the front face of the vertical part of the machine arm or by the left treadle while the lifting of the presser foot is controlled by a knee lever or by another hand lever located on the machine arm.

The drive is transmitted, from the electric motor to the upper shaft of the machine by a V-belt, from the upper to the lower shaft by an indented belt, and from the lower to the hook shaft by a gearing seated in the hook box. The horizontal rotary hook R 235, seated in the machine bed plate, is equipped with positive bobbin case opening for easier thread passage. The machine has a group wick lubrication with automatic additional lubrication of the hook

The main parts of the machine mechanisms are seated in rolling-contact bearings. To protect the operator from accidents, the machine is fitted with a finger guard near the needle, and with a thread take-up lever guard. A belt guard is situated both above and below the bed plate. The machine is supplied without a lighting unit but fitted with a screw and washer for fixing suspension-type lighting onto the machine arm.

Machine equipments and their use

Equipment No.	Ordering No.	Designation
201	522 792 112 010	Incorporated bobbin winder
202	522 791 947 001	Adjusting set
203	522 791 224 047	Equipment for zigzag stitching without work cutting, stitch width up to 4 mm
204	522 791 224 048	Equipment for stitching small radii
205	522 791 995 025	Pulley for reduced speed, for stitching with synthetic threads
207	522 791 995 032	Cover for work cutting device
295	522 791 995 014	Plug covering the mounting hole for bobbin winder
299	522 794 224 006	Suspension-type lighting for work area
	522 791 224 050	Equipment for stitch length 2 mm

This equipment is 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 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 or strain 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 cleaning, carefully check whether no machine parts have become loose.
7. Once a week, during thorough cleaning, carefully check the whole machine to ensure that no parts are damaged and that all machine mechanisms operate correctly. Any faults ascertained must be repaired immediately. Once a year, a general overhaul should be carried out. The machine should be dismantled, thoroughly cleaned, and individual pieces as well as the parts of the electrical equipment inspected, and faulty or worn out pieces re-

paired 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 always make sure 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 located 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 operator, including her way to and from, the work site, to be carried out unobstructed. The working position of the operator, chosen adequately with respect to the needle axis, permits easy access to all control and function elements.
11. We cannot assume any responsibility for consequences resulting from 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 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. Setting the machine on its stand

When taking the machine out of the case and when transporting it, always hold it by the machine arm. Remove the preserving grease coating as well as possible impurities and check whether no machine part has become loose and whether the machine is free of any foreign body. 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. Before tilting the machine into the rim of the stand plate, set the left side treadle to its upper position in order to ensure, during the tilting, that the pin of the foot actuated reverse stitching, situated in the machine bed plate, is under the lever mounted in the oil tank of the stand. Check the correct operation of the lever and of the treadles, i.e., presser foot lifting by means of the knee lever, reverse stitching for bartacking by means of the left treadle, and the control of the clutch of the electric motor by means of the right treadle.

Screw out the screws (4), remove the belt guard (1, Fig. 10), insert the V-belt into the groove of the hand wheel, mount the belt guard (1), and fix it with the screws. Mount the V-belt onto the hand wheel, tilt the machine head somewhat away from the operator, and mount the V-belt onto the pulley of the electric motor. Before proceeding to take the machine out of the stand, do not omit to disconnect the two connectors.

Caution:

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

4. Setting and fixing 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. Cleaning and lubricating the machine (Fig. 1)

Before putting the unpacked machine into operation, remove the protective grease coating and clean the machine thoroughly. For the lubrication of all machine mechanisms and hook it is recommended to use oil PND 26-251-78. With an oil can, drip oil into the marked holes on the machine arm once a day, before the beginning of the work shift. Check also the level of oil J1 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 J1. 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 the grease nipple to refill the shafts (4 and 5) with lubrication grease V1 or V2 (see Table 15). 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. Adjusting hook lubrication

To adjust the oil flow to the hook turn with a screwdriver the adjusting pin (1), 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 located on the machine arm.

Caution:

At the beginning of work, after a relatively long interval, e.g., at the beginning of the morning shift, it is advisable first to remove 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 test material, to prevent the sewn work from getting soiled with oil.

C. PREPARING THE MACHINE FOR SEWING

1. General inspections

Inspect the machine thoroughly for loose parts as well as for the presence of foreign bodies. Rotating the hand wheel by hand, first check whether it revolves freely and whether the machine is adjusted correctly. Further check the correct working of 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 electric motor. An incorrect sense of rotation of the pulley is inadmissible.

4. V-belt and its tension

The V-belt can be easily tensioned by means of the electric motor that can be displaced in the guiding of its holder after the loosening of two screws.Correct belt tension ensures transmission of full power with losses reduced to a 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 power consumption and the wear of the bearings. To remove

the V-belt, proceed as follows: 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 of the groove of the pulley, then tilt the machine, remove the V-belt, mount a new one onto the pulley of the electric motor, fix it by reattaching the sheet piece (825.803), pass it between the tank and the machine plate, and insert it into the hand wheel groove. Lift the machine head to its operational position, check the V-belt for correct tension, and mount the upper belt guard. Any adjustment of the machine may be carried out only in the switched-off state of the machine.

5. Lifting the presser foot (Fig. 8)

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 its lifted position, the hand lifting lever (12) located 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 knee lever thus disengaging the locking of the lifted presser foot by tilting the hand lever (12), 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 Nos. 80-100 or needles Schmetz 797 CF CF Nos. 80-100. Considering the high machine performance and the resulting needle heating, it is advisable to use chromium plated needles. The size of the needle depends on the size of the thread, since it must past freely through the needle eye. It is advisable to choose a rather thin needle,

just permitting the free passage of the thread through the needle eye but cooperating in preventing the upper thread from being threaded out of the needle eye at the beginning of stitching after previous thread trimming. The needle size should be adequate to the thickness of the sewn work. Too thin a needle with respect to the thickness of the 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 followed 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 thread should be used for the needle, while both S-twist and Z-twist thread is suitable as the lower thread. A coarse thread or one which has to overcome considerable resistance when passing through the needle eye reduces the machine performance and increases its trouble incidence. With synthetic threads, the sewing speed should be reduced accordingly.

7. Inserting the needle (Fig.8)

To facilitate the needle inserting, sink the presser foot onto a bit of material and rotate the hand wheel toward yourself 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 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 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. Threading the upper thread (Fig. 3)

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 guide (4) and the ancillary thread tensioner (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 eye from the front side (i.e., from the side of the operator) to the rear side.

Caution:

For stitching edges, attaching curtains, and for stitching thin materials, the upper thread should be threaded into the lower aperture of the thread guide (5) provided on the needle bar. For normal stitching operations, it should be threaded into the upper aperture of the thread guide (5).

9. Winding 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 apertures provided on the arm of the bobbin stand and in the thread guide (4) between the tensioner disks (8) of the thread guide, then through the thread guide (5) apertures to the bobbin mounted on the winder shaft, wind it a few times anticlockwise on the bobbin, lead the thread end to the spring (3), 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 (6) between the bobbin fronts will put the bobbin winder into operation. Switch on the electric motor and depress the right treadle to start the machine as well as the winder. 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 (3), cut off the thread end.

For timing the winding stop, loosen the screw (4) of the control lever (6) mounted on the disconnecting pin (1), hold the disconnecting pin in its position with a screwdriver and change the angular position of the control lever on the disconnecting pin, as required.

10. Taking 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. 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.

Caution

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

11. Threading 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 being inserted into the **hook** , tilt the lock fixing the bobbin in the case. With your thumb, push the bobbin case until your hear a short distinct sound. The correct position of the bobbin case in

the **hook** , signalled by this sound is very important, because otherwise needle rupture or another breakdown could occur when starting the machine.

12. Catching the lower thread

Hold lightly with your left hand, the end of the upper thread without stretching it. With your right hand revolve the hand wheel towards youself until the threaded needle reaches subsequently its bottom and top positions, thereby catching the lower thread. Then draw lightly the upper threed 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 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 electric motor. 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 electric motor is disengaged, the electric motor braked, and the machine stopped. During the sewing, avoid pulling the material but only guide it. 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 turn, causes thread ruptures. After the machine has stopped, 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. The machine is then ready for stitching another seam.

Caution

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 4,000 stitches per min. and carefully check its running. Throughout this time, pay special attention to 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 kind that can be carried out on the work site. More extensive adjustments, requiring more time, should be carried out by a skilled sewing machine mechanic.

1. Stitch length adjustment (Fig. 5)

The stitch length can be steplessly adjusted by turning the knob (4) provided on the vertical part of the machine arm, in the 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, 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. Adjusting 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 (5) 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 zero to 4 mm by means of the lever (3) protruding over the cover of the zigzag stitch mechanism. By displacing the lever 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 the stitch width down to zero. The zigzag stitch position is controlled by the lever (2) protruding from the side of the cover (5) of the zigzag stitch mechanism. The basic, i.e., the median position, is adjusted by the central position of the lever (2), i.e., on the mark ⊂•⊃ in which the lever is engaged in 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 has been carried out, turn the locking lever (5) to the right to lock the selected 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 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 restore the desired quality of stitching.

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

The feed-dog (A) height should be adjusted so that its teeth show up the throat plate 0.8 to 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).

To adjust the feed-dog height, use one of the gauges (6 and 5) belonging to Equipment No. 202.

5. Adjusting 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 on 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. Adjusting the throat plate (Fig. 7)

The throat plate (B) 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. Adjusting 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. Adjusting the height of 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 position of the needle bar. If the needle bar height is not adequate to this requirement, loosen the screw (6) of the carrier (13) of the needle bar (10), adjust the needle bar correctly, and mount the front plate.

9. Adjusting the hook course

Adjust the stitch width to zero and turn the hand wheel towards youself 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 this 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 (4, 5 and 6) of Equipment 202 can be used for the hook course adjustment.

10. Adjusting 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. 202 is suitable for adjustment of the above gap.

11. Adjusting 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 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. Adjusting the length of feeding

Loosen the screw (22, Table 10) of the lever (20) 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. Adjusting 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 eccentric (6) for easier lower thread movement out of the hook. The eccentric is situated on the hook box at the end of the lower shaft. First adjust 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 (8) with respect to the face of the inner part of the hook. 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 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. 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 hook is best carried out only while the machine is being sewn off.

First screw out the four screws (3) on the cover (9) of the hook box, remove the cover, take out the lubrication inlay, 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 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 move slightly while the thread passes freely. After the adjustment of the eccentric, re-tighten its screws, insert the lubrication inlay, and mount the cover of the hook box.

14. <u>Exchanging the presser foot</u> (Fig. 8)

To exchange the presser foot (1), first lift the presser bar (11) to its top position and lock it by the hand 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 (a part of Equipment No. 202) is suitable for adjusting the presser foot stroke.

15. Dismantling and mounting the drive belt (Fig. 10)

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 supporting 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, seats 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.

Caution

After each insertion or exchange of the drive belt, adjust the hook course and the feeding, as described in the preceding paragraphs of this Manual. It is advisable to take the needle out of the needle bar before proceeding to the adjustment.

16. Adjusting the needle punches longitudinally into the centre of the slot of the throat plate (Fig. 8)

Adjust the zigzag stitch to the median position and 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 transversaly. 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 throat plate slot. Retighten the screws (2 and 3) and mount the front plate.

Caution

When tightening the adjustment screws (4) for adjusting the

needle position, do not tighten them completely but leave minimum play between them and the needle bar holder in order not to obstruct the transverse movement of the needle bar holder required for zigzag stitch.

17. Adjusting the needle punches transversely into the centre of the slot of the throat plate (Table 13)

Adjust the zigzag stitch to the median position and 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 (7, Fig. 4), take the plug (9, Fig. 4) out of the machine arm, loosen the screw (29) located under the upper cover of the machine arm, insert a screwdriver 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 the 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 mechanic since such adjustment is rather extensive.

18. Adjusting the zigzag stitch mechanism to positions: right side - left side (Fig. 6)

After the adjustment of the median position and maximum width, of the zigzag stitch, the left and the right zigzag stitch position can be adjusted. Screw out the two attachment screws fixing the cover of the zigzag stitch mechanism, remove the cover, loosen the locking lever (7) and set the zero stitch width by means of the lever (2). Rotating the hand wheel, set the needle bar with the needle to its bottom position. Displace the lever (1) 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 (9) so as to enter its notch into the recess provided in the lever (1), then retighten the screw (A). Proceed analogically for adjusting the left side needle position, i.e., displace the lever (1) downwards, towards the bed plate, loosen the screw (B), set the stop (8) correctly, and retighten the screw (B). Having thus adjusted the right side and the left side position, mount the cover of the zigzag stitch mechanism.

19. Adjusting 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. For correct adjustment, loosen the screws (32) of the gear wheel (13) on the upper shaft (1) and adjust the angular position of the hand wheel accordingly, then retighten the screws (32) thoroughly.

20. Adjusting the control force required for stepless adjustment of the zigzag stitch width (Table 3)

For the stepless tilting of the zigzag stitch bracket, the cube of the body of the zigzag stitch mechanism contains the braking roller (3) with the spring (2) and with the adjustment screw (5). 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 (7) actuated mechanism (Fig. 6) serving to fix the adjusted stitch width must be turned to the left prior to proceeding to the stitch width adjustment to be carried out by the lever (2, Fig. 6) whose extreme left position, defined by a stop, produces the zero zigzag stitch width that can be increased up to 4 mm by shifting the lever to the right. The number marking on the cover (6, Fig. 5) 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 vertical part of the machine arm. First screw out two screws (7, Fig. 5) on this mechanism and take off the cover (6, Fig.5). For

this purpose screw out the three attachment screws (3, Fig. 6) from the body of the zigzag stitch mechanism, then screw out the securing screw (37, Table 13) 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 then be taken out of the machine arm. For assembly, proceed inversely.

21. Adjusting the control force required for stepless adjustment of the zigzag stitch position

For adjusting steplessly the zigzag stitch position (and, to some extent, the zigzag stitch width as well), the nut (5, Fig. 6) and the locking nut (4, Fig. 6) are screwed onto the guiding (1, Table 12). The adequate position of the nut (5, Fig. 6), fixed by the locking nut (4, Fig. 6) will provide for the required displacement (control) force and at the same time define the force maintaining the adjusted zigzag stitch position. Any adjustment of the zigzag stitch position can be carried out only in a released state of the locking lever (5, Fig. 5).

22. Adjusting 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. 6).
To adjust the tooth play, first screw out the four attachment screws (2), remove the cover (8, Table 1), and loosen the screw (4, Table 13) located in the lug of the machine arm. By then turning the eccentric pin (6, Fig. 6), adjust the tooth play of the zigzag transmission mechanism, i.e., between the complete cam (9, Fig. 13) and the gear wheel (13, Table 4) mounted on the upper shaft (1, Table 4), then lock the adjusted position by thoroughly tightening the screw.

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

After a substantial adjustment of the machine mechanisms the median (vertical) needle bar position should be checked 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 ensuring the locking joint between the bed plate and the hook gear box. In the 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. Adjusting 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 decrease the spring tension, and inversely. By this adjustment, the spring arm stroke is also adjusted. Sew a few stitches and check the adjustment of the adjusting spring, having first displaced the right-side sliding plate. With correct adjustment, the thread passing around the hook bottom will produce a slight movement of the adjusting spring without being stretched.

25. Electrical equipment of machine

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

Caution

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

26. Adjusting the work cutting mechanism

The movement of the work cutting knife is derived from the lifting eccentric of the feed mechanism. The basic adjustment elements of the cutting mechanism, i.e., the cutter stroke (2.3 mm), its timing with the feed mechanism, and the position of the cutting knife axis with respect to that of the needle bar, are constant. The other elements are adjustable in the following way:

Cutting knife adjustment in regard to height (with respect to the cutting plane of the throat plate) should be carried out with loosened screw (20, Table 15) of the joint of the lever (25, Table 15) so as to ensure that the cutting edges overlap by approximately 0.3 mm in the bottom dead point of the knife.

For improved quality of cutting, the moving knife can be adjusted for slight crossing with the stationary knife. To adjust the incline of the moving knife and its pressure on the stationary one, screw out the screw (13, Table 1) located in the bed plate, use the aperture thus created to loosen the screw (20, Table 15), and adjust the knife incline so that the front part of its edge is slightly raised. To increase the knife pressure, displace the guiding (25, Table 15) to the right. Retighten the screw (20, Table 15) and check the pressure which should be between 16 and 22 N.

III. MAINTENANCE

1. Cleaning of machine

Plain machine lines help to keep clean the external 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, dismantles, faulty pieces exchanged and due repairs carried out. The machine should then be assembled and tested. The electric motor 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. Storing 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 its tools and accessories.

IV. FAULTS AND HOW TO REMOVE THEM

a) Heavy machine run	The machine has been out of use for a considerable time:	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 with sewing machine oil (see par. 5, page 8)
b) Slow machine start	Insufficient belt tension	Increase the belt tension by displacing the electric motor
c)Upper thread breakage	1.Slashed thread guides	1.Ascertain and exchange them
	2.Too sharp hook point	2.Repair it
	3.Faulty feeding	3.Adjust it (see par. 5, page 18)
	4.Faulty thread guiding or faulty needle threading	4.Thread the upper thread correctly (see par. 8,page 13)
	5.Incorrect upper thread tension	5.Adjust it (see par. 3, page 17)
	6.Bad needle quality or bent needle	6.Exchange the needle (see par. 7,page 12)
	7.The thread size is inadequate to the thickness of the sewn material	7.Use adequate thread
	8.Machine considerably soiled	8.Unscrew the throat plate, clean the mechanism, and set the throat plate (see par. 6,page 18)
	9.Thread wound on the hook	9.Remove the thread
	10.The thread is too thin or not strong enough	10.Use adequate thread
d)Lower thread breakage	1.The thread is incorrectly threaded into the bobbin case	1.Thread it correctly (see par. 11, page 14)
	2.The thread is too thin or not strong enough	2.Use adequate thread

	3.The thread is wound incorrectly on the bobbin	3.Wind it on the bobbin correctly
	4.Damaged bobbin	4.Exchange it
	5.Too sharp a pressure spring on the bobbin case	5.Exchange the spring
e)Skipped stitches	1.Needle inserted incorrectly	1.Insert it correctly (see par.7,page 12)
	2.Blunt or bent needle	2.Exchange it (see par.7, page 12)
	3.Slashed or broken hook point	3.Exchange the hook
	4.Excessive needle aperture in the throat plate	4.Exchange the throat plate and set it correctly
	5.Broken adjusting spring for upper thread tension	5.Exchange the spring and adjust the upper thread tension (see par.3,page 17)
	6.Needle bar positioned too high or too low	6.Adjust it (see par.8, page 19)
	7.Overturned hook incorrect hook course	7.Adjust the hook course (see par.9, page 19)
	8.Soiled hook mechanism	8.Clean it with kerosene and oil it with oil J1
f)Needle breakage	1.Feed-dog positioned too high	1.Adjust it in regard to height (see par. 4, page 17)
	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 12)
	4.Needle inserted incorrectly	4.Insert it correctly (see par.7,page 12)
	5.Loosened throat plate	5.Set the throat plate correctly (see par. 6,page 18) and fix it with screws
	6.Excessive upper thread tension	6.Adjust it (see par.3, page 17)

g)Heavy and irregular feeding	1.Feed-dog positioned too low	1.Adjust it in height (see par.4,page 17)
	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 18)
h)Stitch forming below sewn material	1.Tensioner disks slashed by upper thread	1.Exchange them and adjust the upper thread tension (see par.3,page 17)
	2.The thread does not pass smoothly around the hook or catches the bobbin case	2.Clean the hook and adjust the bobbin case
	3.The upper thread is not threaded between the tensioner disks	3.Thread it correctly (see par.8,page 13)
	4.Thread broken and caught between the tensioner disks	4.Clean the thread tensioner and adjust it (see par.3,page 17)
	5.Incorrect proportion between the upper and lower thread tensions	5.Correct the proportion (see par. 3, page 17) 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.The lower thread is not threaded under the spring of the bobbin case	2.Thread 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 17)
	5.Premature feeding	5.Adjust it (see par. 5, page 18)
j)Locked hook	Thread rests caught in the hook	Rotate the hand wheel 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 J1 onto the hook .

V. HOW TO USE THE CATALOGUE AND ORDER SPARE PARTS

Carefully study the following information.

The catalogue is divided into three sections, as follows:

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: Machine type ZZ 564 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: Machine type ZZ 564 B 1

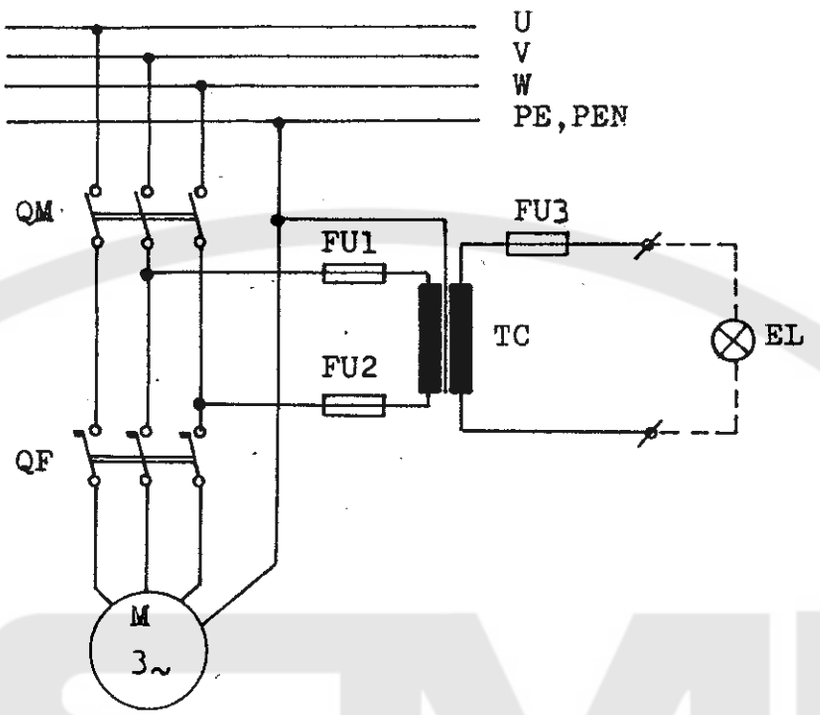
A twelve-digit No. of each machine part, whether purchased or produced, in the List of Parts, is related to the respective one- or two-digit position No. of the machine part given in the Table.

When ordering spare parts, please, specify:

1. The twelve-digit No. of the part concerned (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

Wiring diagram of the machine



Legend:

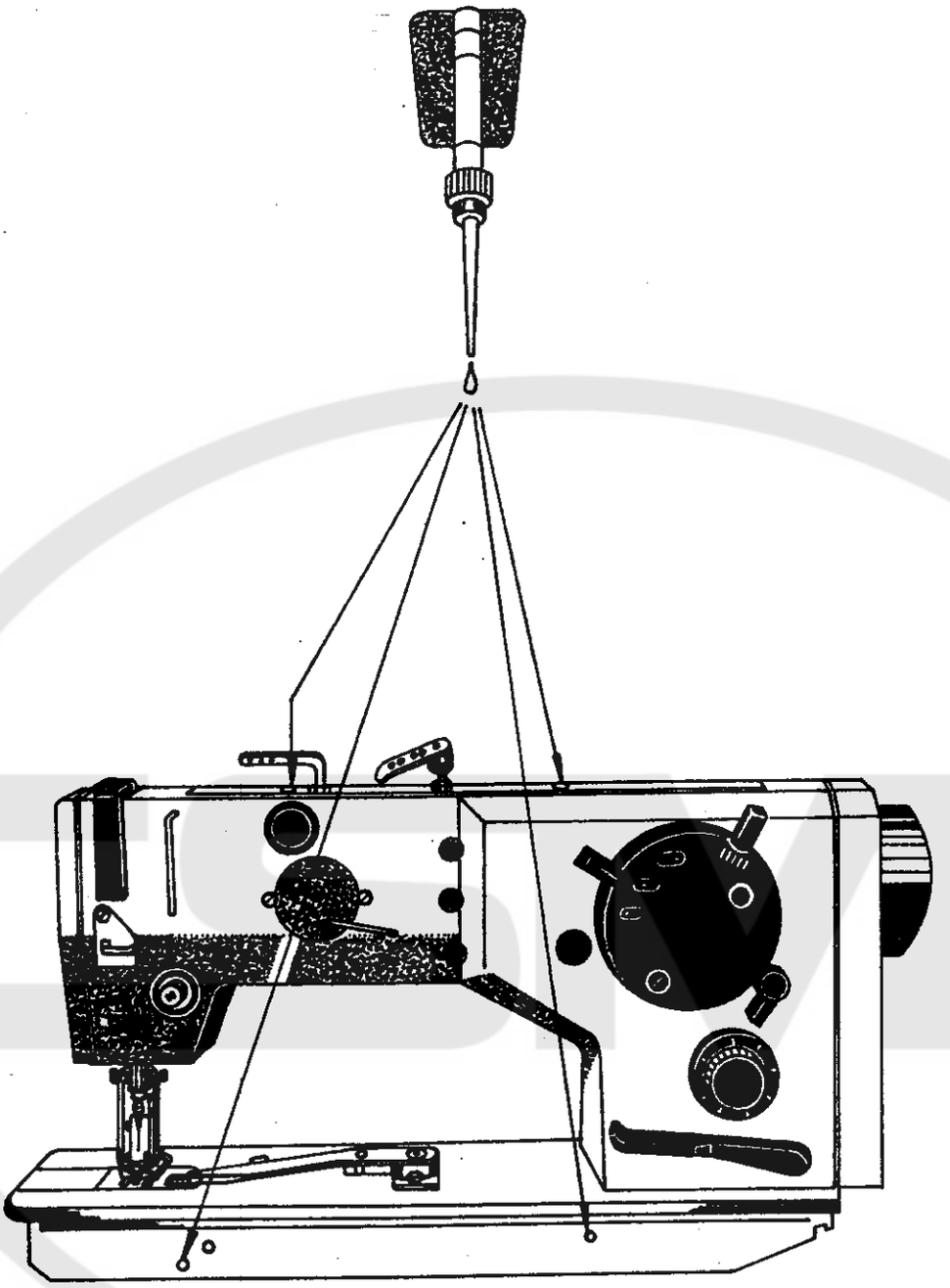
QM	switch	S 25, VS 16A, 500V
QF	circuit brraker	ITM 500V
M	electric motor	DNK 130/2 3x380/220V
TC	transformer	JBC E 2532, 380/220V, 24V,40VA
FU1,FU2	fuses	048 B 1A/500V
FU3	fus	048 A 2A/250V
EL	lighting	see instruction manual

To observe:

Once a year, the electrical equipment of the machine should be checked, the clamps tightened, and faults removed, if any.

Any defect of the electrical equipment should be repaired by an expert electrician.

The machine operator is obliged to switch off the main switch any time he leaves the working site.



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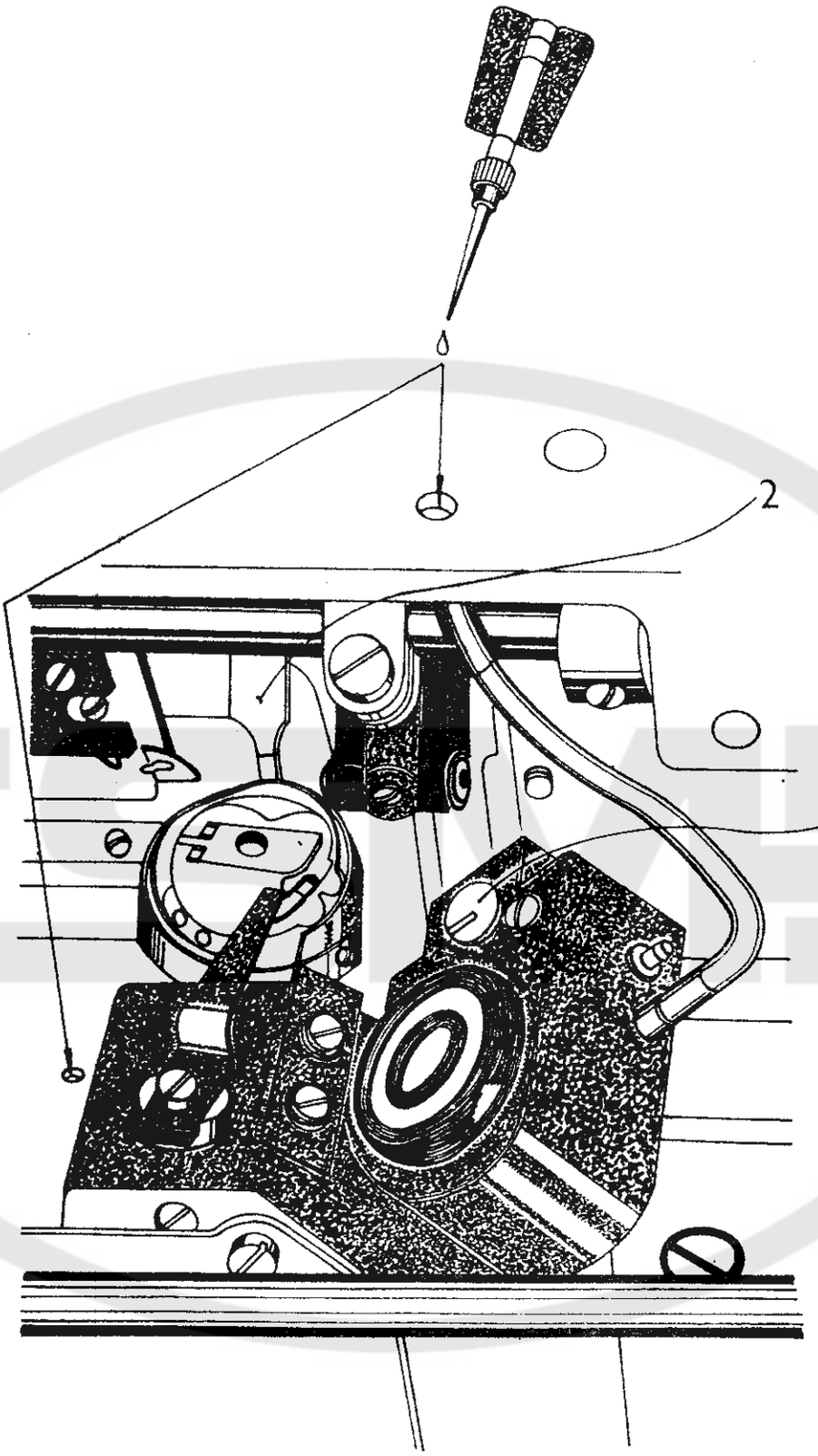

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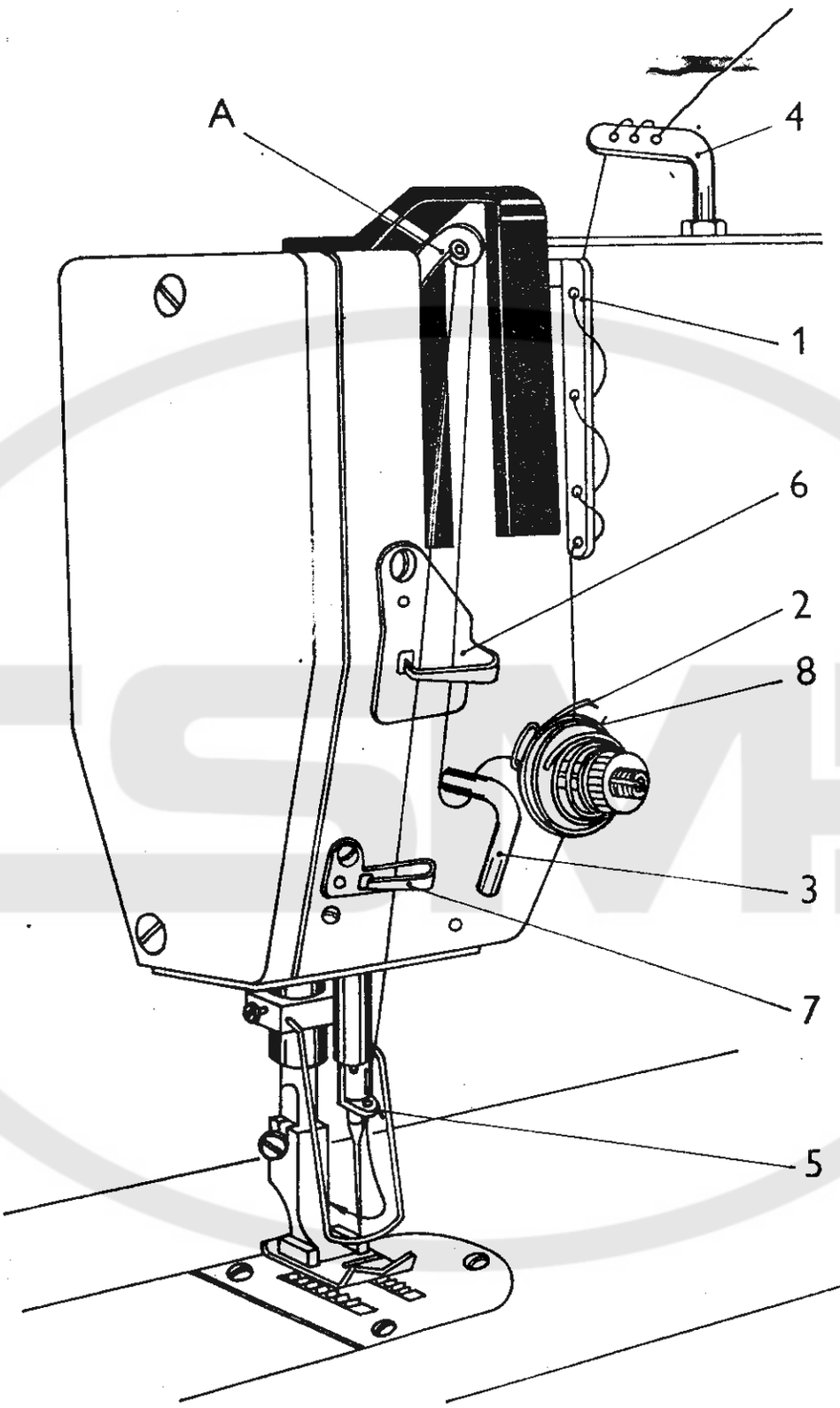

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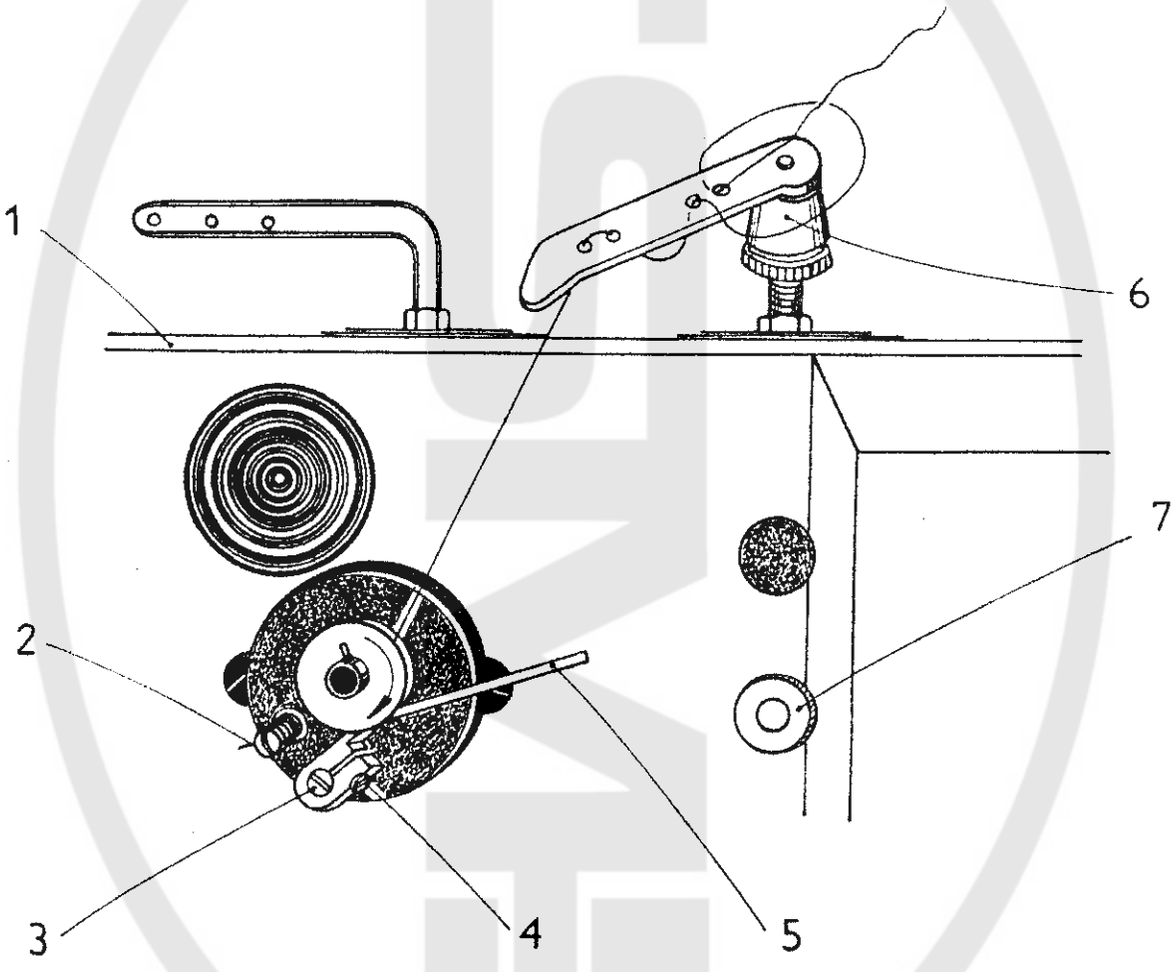

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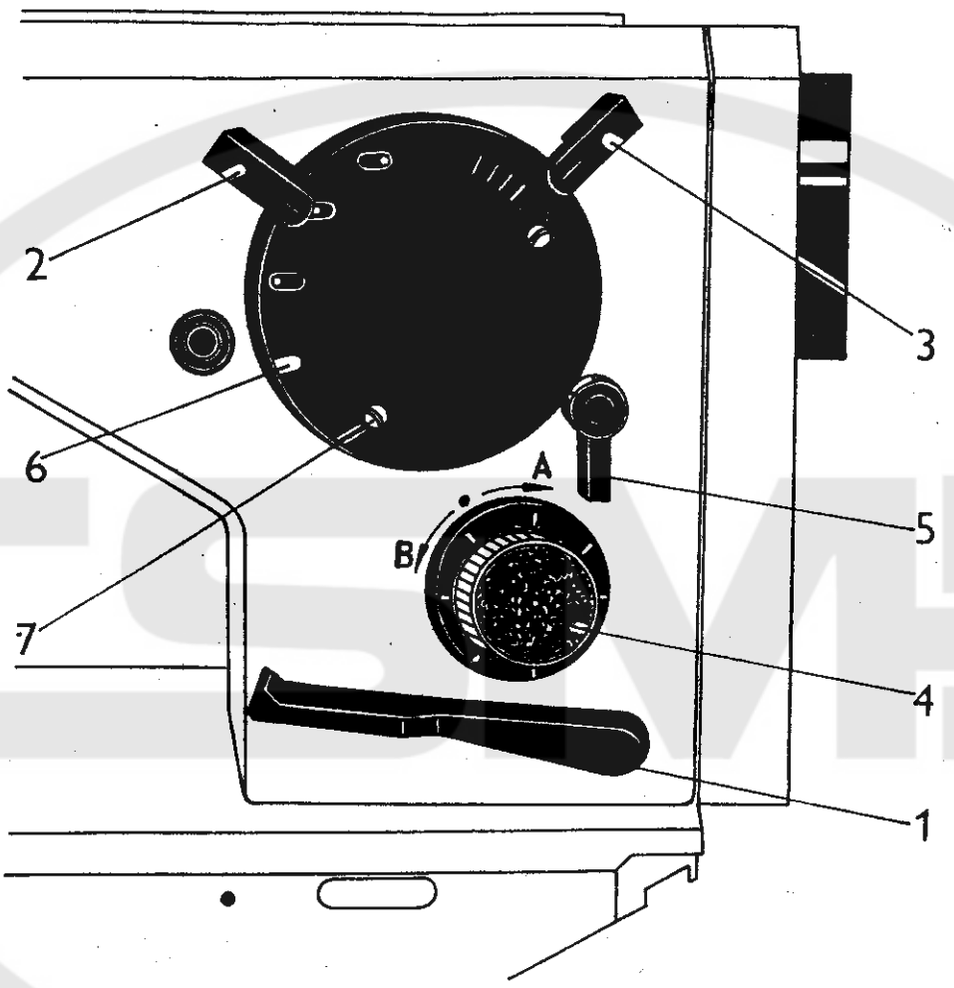
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A
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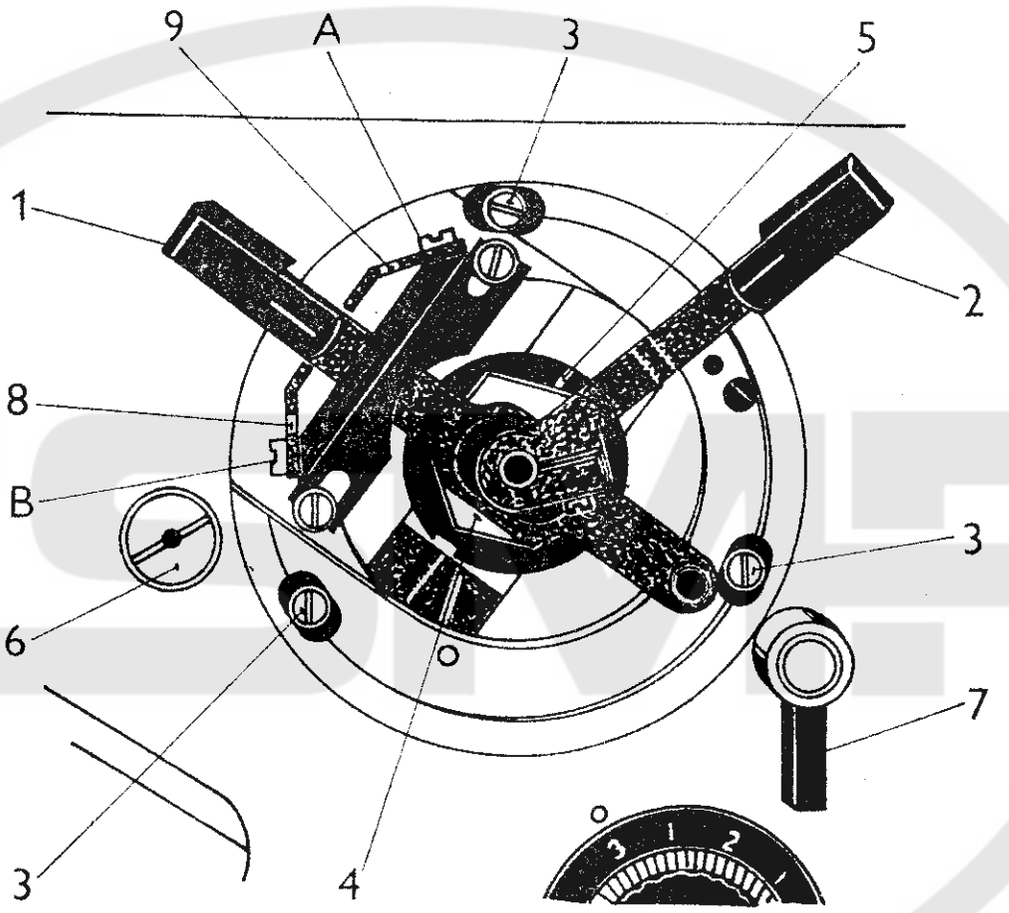

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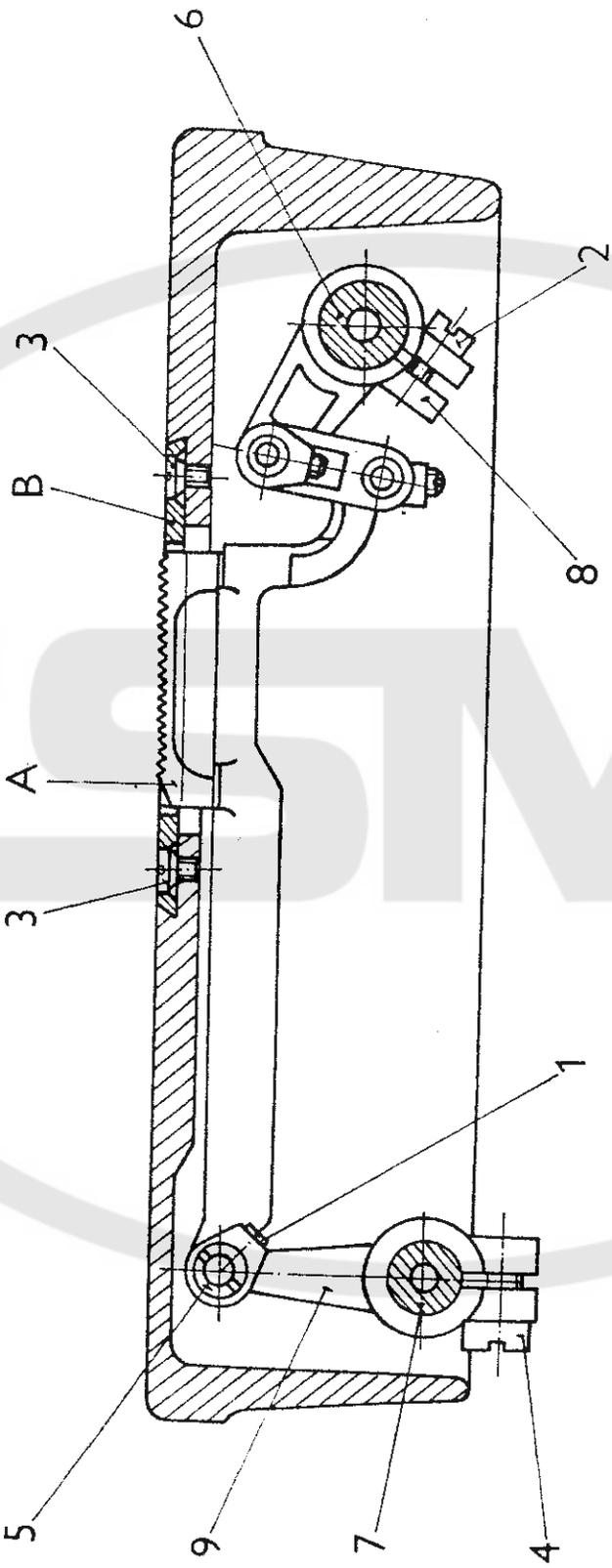

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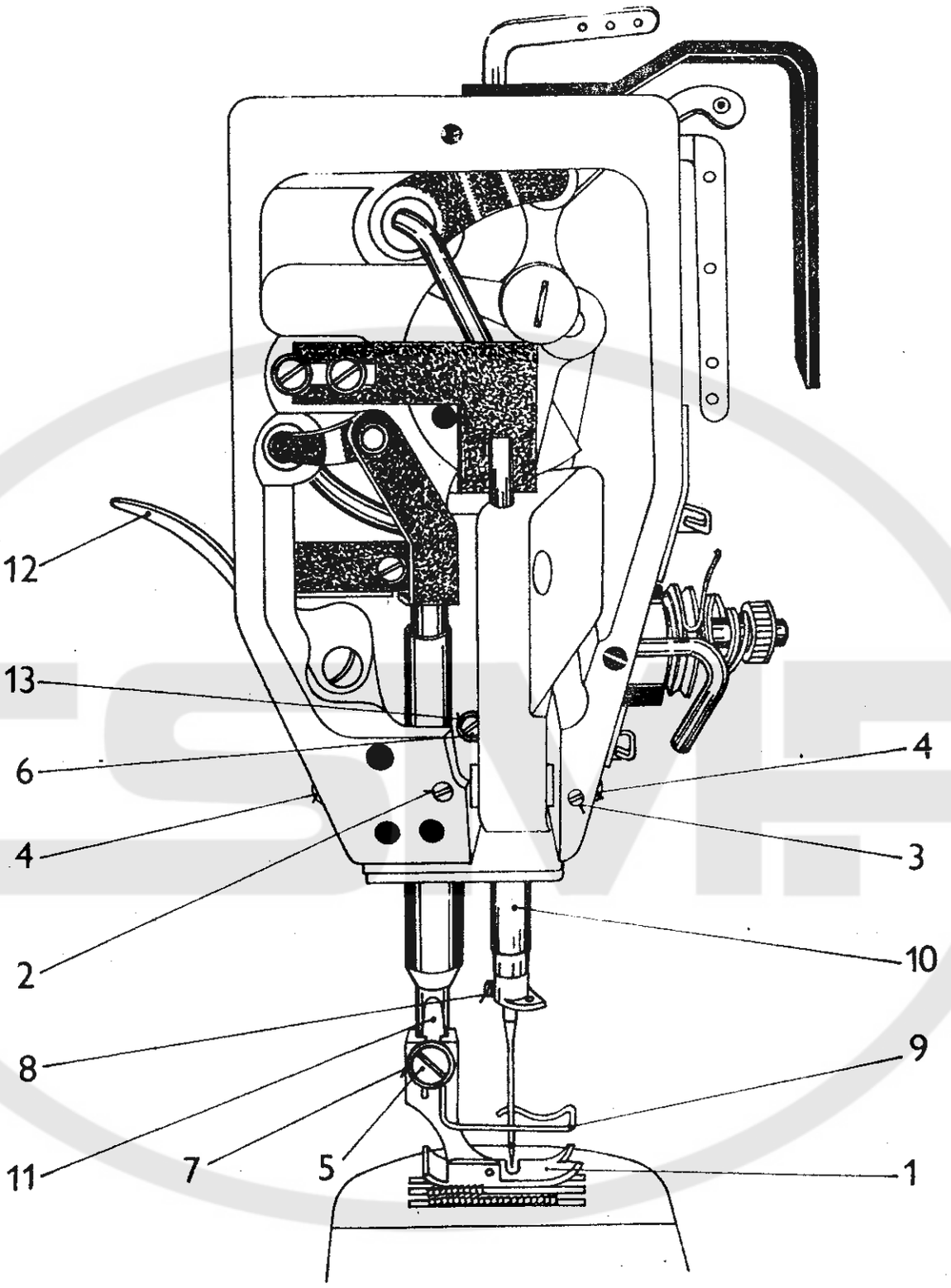
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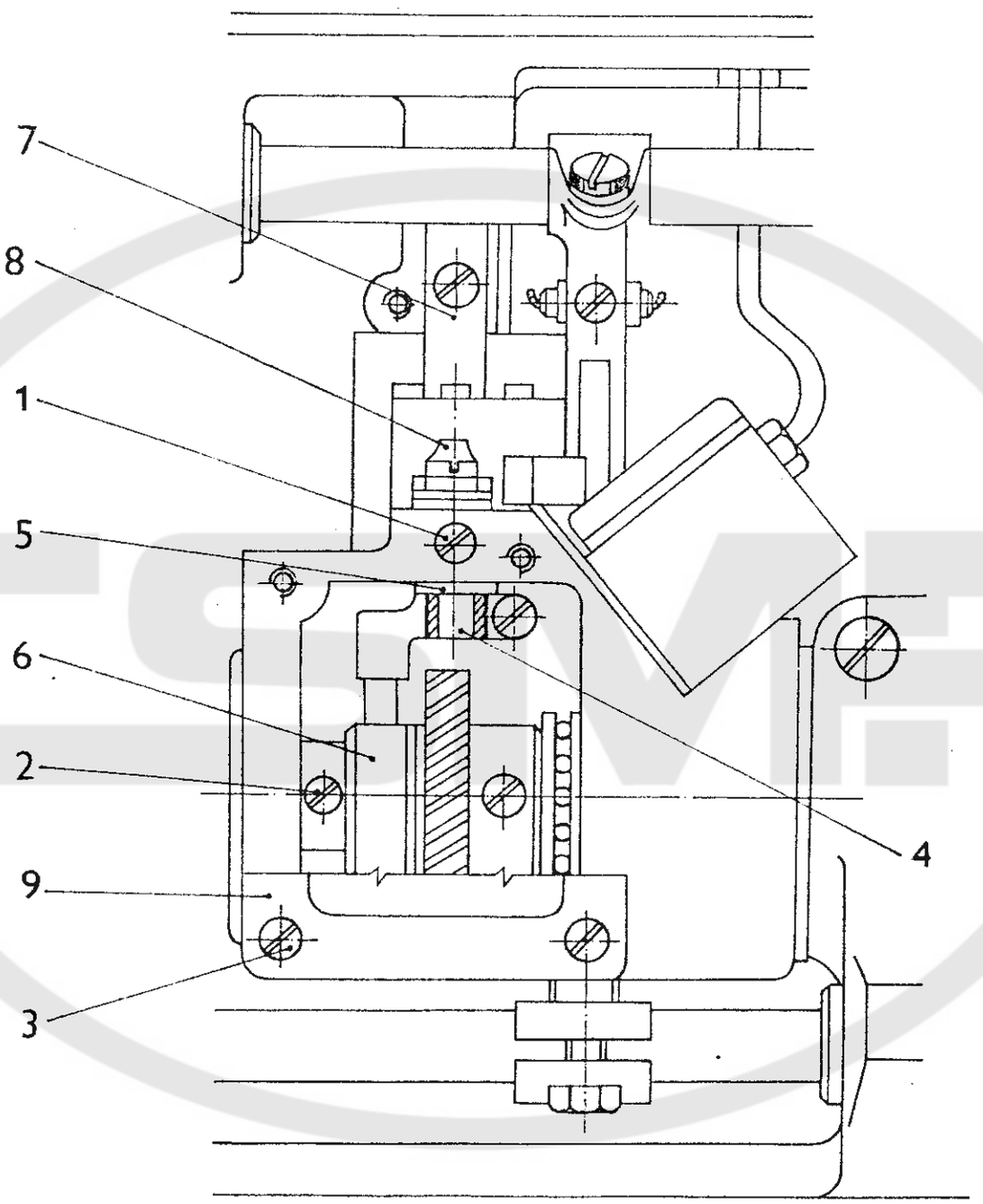
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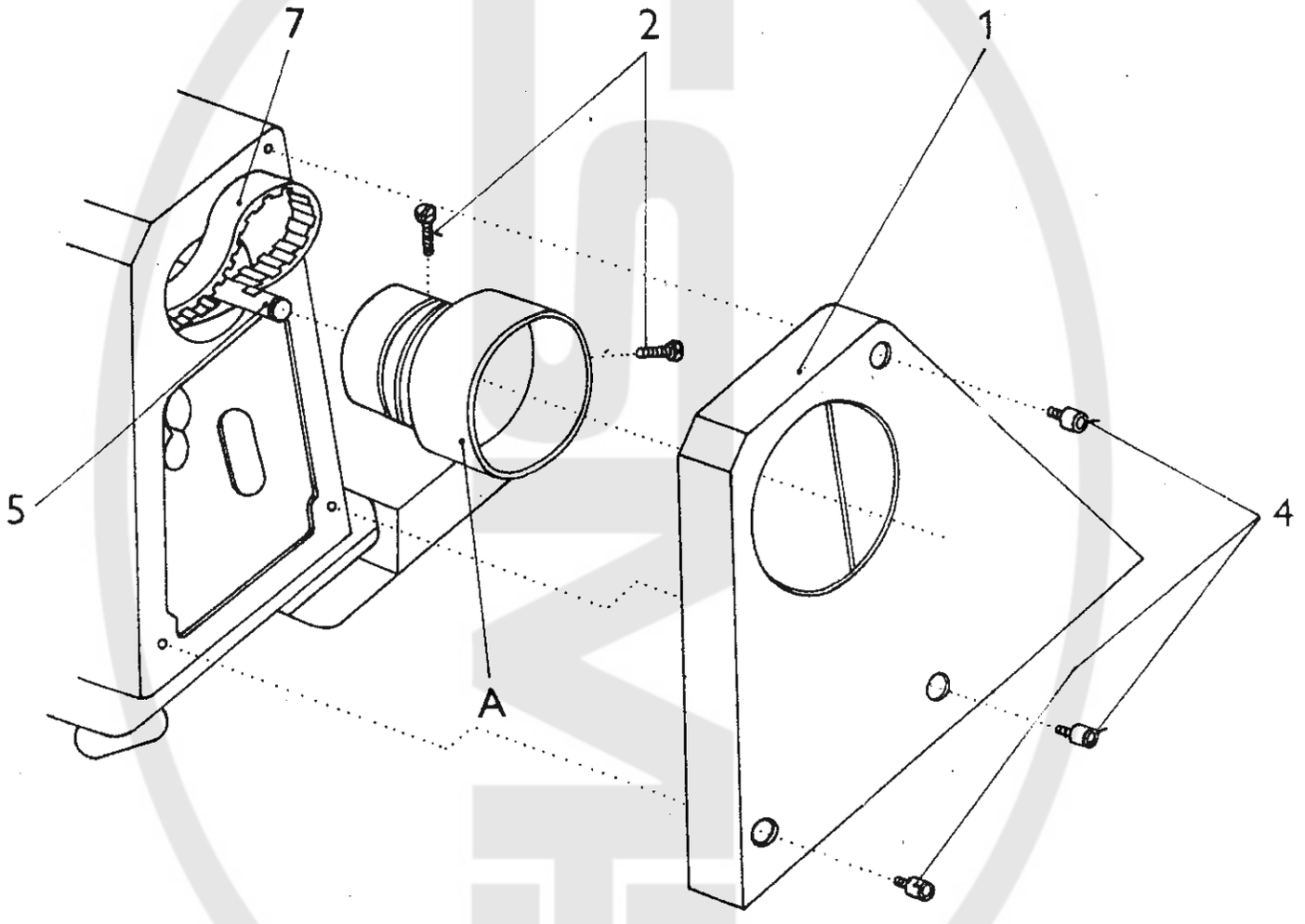

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A 1

1	2
	TAB.1
1	522 080 831.342
2	+ 123.117
3	321 161 001 000
4	522 080 840.073
5	313.204
6	161.138
8	813.904
9	120.248
10	721.173
11	827.180
12	123.122
13	124.160
14	123.159
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	522 980 020.339.10
	TAB.2
1	522 980 020.339.10
2	311 733 100 620
3	273 199 005 000

1	2
4	522 980 041.162
6	522 080 120.346
	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
	1 = 20 mm
8	522 080 120.276
9	708 420 030 002
	1 = 80 mm
10	522 080 190 353
11	111.229
12	113.115
13	111.248
14	708 420 030 003
	1 = 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	318.192
21	111.238
22	120.261
23	112.015
24	318.191

1	2
25	522 080 611.101
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	+ 627.037
36	548 300 000 110
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	+522 980 044.711
50	+522 080 120.062
51	120.216
52	111.126
53	111.273
	TAB.4
1	522 080 349.147
2	+ 522 980 441.541

1	2
3	522 080 260.467
4	436.338
5	113.115
6	324 165 038 306
7	522 080 424.068
8	111.225
9	708 420 030 002
	1 = 130 mm
10	522 980 041.176
11	283 366 002 000
12	ø 3,5/4,8 x 90
	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
	1 = 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

TAB.5

1	2
1	311 733 100 260
2	324 152 927 796
3	522 080 724.132
4	441.278
5	324 155 920 020
6	522 080 111.219
7	120.269
8	522 980 035.527
9	283 366 002 000
	ø 3,5/4,8 x 100
10	522 080 424.060
11	424.051
12	522 980 020.339.10
13	+ 522 080 112.013
14	161.143
15	945.283
16	122.007
17	120.106
18	708 420 030 003
	1 = 40 mm
19	522 080 120.226
21	+ 522 080 552.165
22	311 515 601 612
23	311 733 100 240
24	522 080 120.430
25	708 420 030 005
	1 = 300 mm
26	283 366 002 000
	ø 3,5/4,8 x 170
27	522 080 111.094
28	410.530
29	323.155
30	671.153
31	522 980 035.330
32	+ 522 080 552.166
33	324 311 010 000
34	522 080 120.246
35	827.179
36	613.466
37	990.134
38	945.285
39	+ 825.743
40	+ 522 980 008.235
41	+ 522 080 686.020
42	+ 685.017

1	2
	TAB.6
1	522 980 035.526
2	522 080 945.185
3	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
	1 = 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. 339.10

1	2
9	283 366 002 000
	ø 3,5 / 4,8x150
10	522 080 945.180
11	824.095
12	120.245
13	283 366 002 000
	ø 3,5 / 4,8 x65
14	283 366 002 000
	ø 3,5 / 4,8 x75
15	708 420 030 003
	1 = 110 mm
16	522 080 945.286
17	321 891 001 000
18	522 080 441.313
19	708 420 030 004
	1 = 300 mm
20	708 420 030 005
	1 = 640 mm
21	708 420 030 002
	1 = 320 mm
22	283 366 002 000
	ø 3,5/4,8 x 250
23	708 420 030 002
	1 = 270 mm
24	708 420 030 002
	1 = 130 mm
25	708 420 030 002
	1 = 140 mm
26	522 080 120.216

1	2
	TAB.8
1	522 080 120.221
2	522 980 020.339.10
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	522 980 025.245
15	+522 080 118.039
16	+ 828.079
17	828.080
18	+ 262.073
19	195.041
20	171.037
21	111.229
22	310.428
23	522 080 272.039

1	2
	TAB.9
1	522 080 647.228
2	123.117
3	+ 811.618
4	831.329
5	+ 870.168
6	+ 120.552
	TAB.10
1	522 080 646.027
2	322.247
3	314.058
4	260.139
5	111.099
6	120.276
7	174.066
8	161.229
9	413.328
10	126.101
11	633.194
12	952.251
13	120.217
14	522 080 825.858
15	825.857
16	522 980 035.505
17	522 080 613.472
18	111.245
19	839.010
20	120.218
21	192.061
22	120.543
23	123.130
24	954.045
25	320.260
26	647.223
27	190.353
28	120.324
	TAB.11
1	522 080 424.051
2	283 366 002 000 ø 3,5/4,8 x 100
3	708 420 030 002 1 = 140 mm
4	522 080 120.233
5	522 980 020 339 10
6	522 080 111.224
7	708 420 030 003 1 = 50 mm
8	522 080 120.235
9	+ 522 980 035.433
10	708 420 030 005 1 = 35 mm
11	522 080 413.315
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 1 = 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 1 = 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 1 = 270 mm

1	2
40	522 080 335.101
41	131.391
42	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.12

1	2
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	522 080 839.215
10	136.023
11	615.024
12	421.330
13	+ 112.014
14	392.114
15	190.554
16	+ 120.239
17	522 980 031.585
18	522 080 314.150
19	311 732 910 060
20	522 080 120.225
21	120.037
22	635.152
23	190.369
24	120.410
25	264.296
26	328.175
27	192.060
28	522 980 049.857
29	522 080 383.168
30	174.069
31	522 080 141.114
32	190.347
33	522 980 048.899
34	522 080 126.096
35	814.014
36	120.217
37	436.331
38	120.050
39	271.201
40	646.136
41	120.221
42	613.453
43	271.337
44	190.346

TAB.13

1	2
1	522 080 141.141
2	613.495
3	120.246
4	410.532
5	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
	1 = 160 mm
13	522 080 338.069
14	274.083
15	120.216
16	+ 121.157
17	+ 870.143
18	331.154
19	522 980 049.856
20	522 080 120.225
21	190.358
22	814.374
23	111.227
24	123.159
25	624.014
26	260.124
27	436.306
28	120.296
29	708 420 030 002
	1 = 220 mm
30	522 080 630.248
31	708 420 030 002
	1 = 350 mm
32	522 080 344.035
33	522 980 044.045
34	522 080 412.193
35	425 111 061 000
36	708 420 030 002
37	1 = 60 mm
37	522 080 318.144
38	+ 651.436

1	2
39	522 080 622.091
40	612.109
41	522 980 044.813
42	522 080 613.485
43	345.065
44	708 420 030 002
	1 = 120 mm
45	522 080 413.251
46	613.195
47	413.252
48	120.231
49	613.152
50	708 420 030 003
	1 = 60 mm
51	522 080 344.035

TAB.14

1	2
1	522 080 161.142
2	192.061
3	441.187
4	522 980 049.785
5	522 080 613.328
6	120.246
7	342.258
8	311 728 502 537
9	233.029
10	+ 112.013
11	274.085
12	522 080 627.023
13	141.102
14	522 980 020.339.10
15	522 080 120.227

1	2
16	522 080 337.033
17	340.156
18	260.383
19	311 515 006 025
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

Přídavný aparát
Оборудование
Ausstattung
Equipment

TAB. 15

201

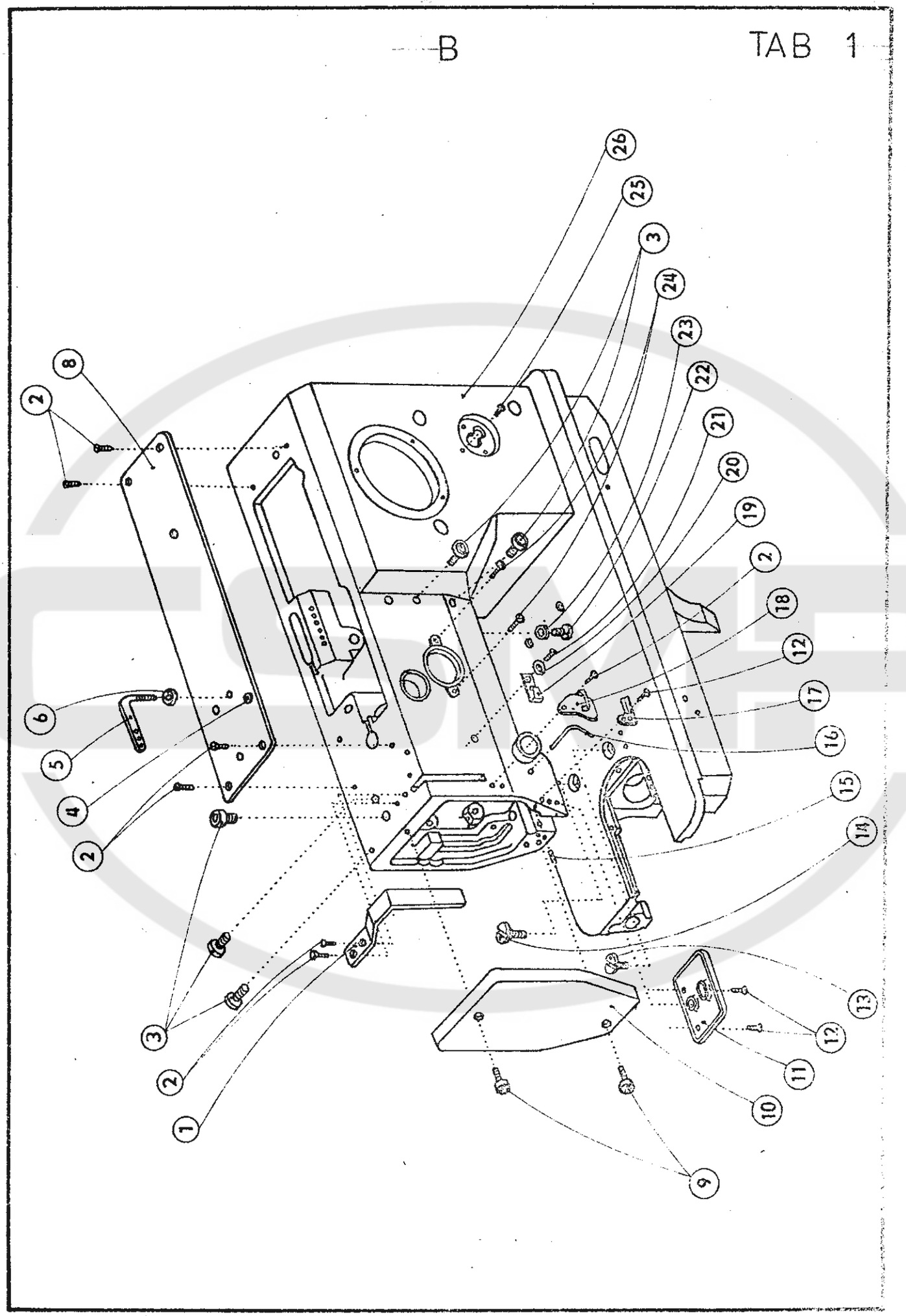
522 792 112 010

1	2
1	522 080 112.115
2	522 980 036.122
3	522 080 111.094
4	522 980 049.830
5	311 732 910 040
6	124.050
7	260.483
8	870.170
9	441.560
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	321 861 953.200
18	522 980 025.248
19	522 980 025.249
20	522 080 827.194
21	260.510
22	163.106
23	161.138
24	945.296
25	273 111 025 410
26	522 080 441.310
27	422.198

1	2
	TAB. 16
	202
	522 791 947 001
1	522 080 131.404
2	522 080 192.061
3	831.412
4	814.364
5	814.365
6	646.148
7	133.112
	TAB. 17
	203
	522 791 224 047
1	522 080 668.092
2	261.009
3	662.350
4	311 515 001 616
5	522 080 811.622
6	651.434
7	522 980 031 522
	TAB. 18
	204
	522 791 224 048
1	522 080 668.088
2	261.009
3	662.334
4	311 515 001 612
5	522 080 651.400
6	522 980 031 492
	TAB. 18
	205
	522 791 995 025
1	522 080 520.182
	TAB. 19
	207
	522 791 995 032
1	522 080 831.433
	TAB. 19
	295
	522 792 995 014
1	522 080 814.355
	TAB. 20
	208
	522 791 224 050
1	522 080 668.088
2	522 980 049.886
3	522 080 261.009
4	662.365
5	311 515 001 612
6	522 080 870.174
7	811.647
8	651.441
9	522 980 031.549
	TAB. 21
	299
	522 794 222 006
1	522 080 831.506
2	120.279
3	522 980 057.091
4	341 414 028 052
5	321 161 001 000
6	345 111 008 000
7	347 170 002 000
8	522 080 441.501
10	126.071
11	441.502
12	839.170
13	141.265
14	522 980 091.660
15	522 080 171.056
16	120.261
17	824.095
18	141.253
19	330.088
20	522 980 020.339.10
21	522 080 161.163
22	839.169
23	841.541

B

TAB 1



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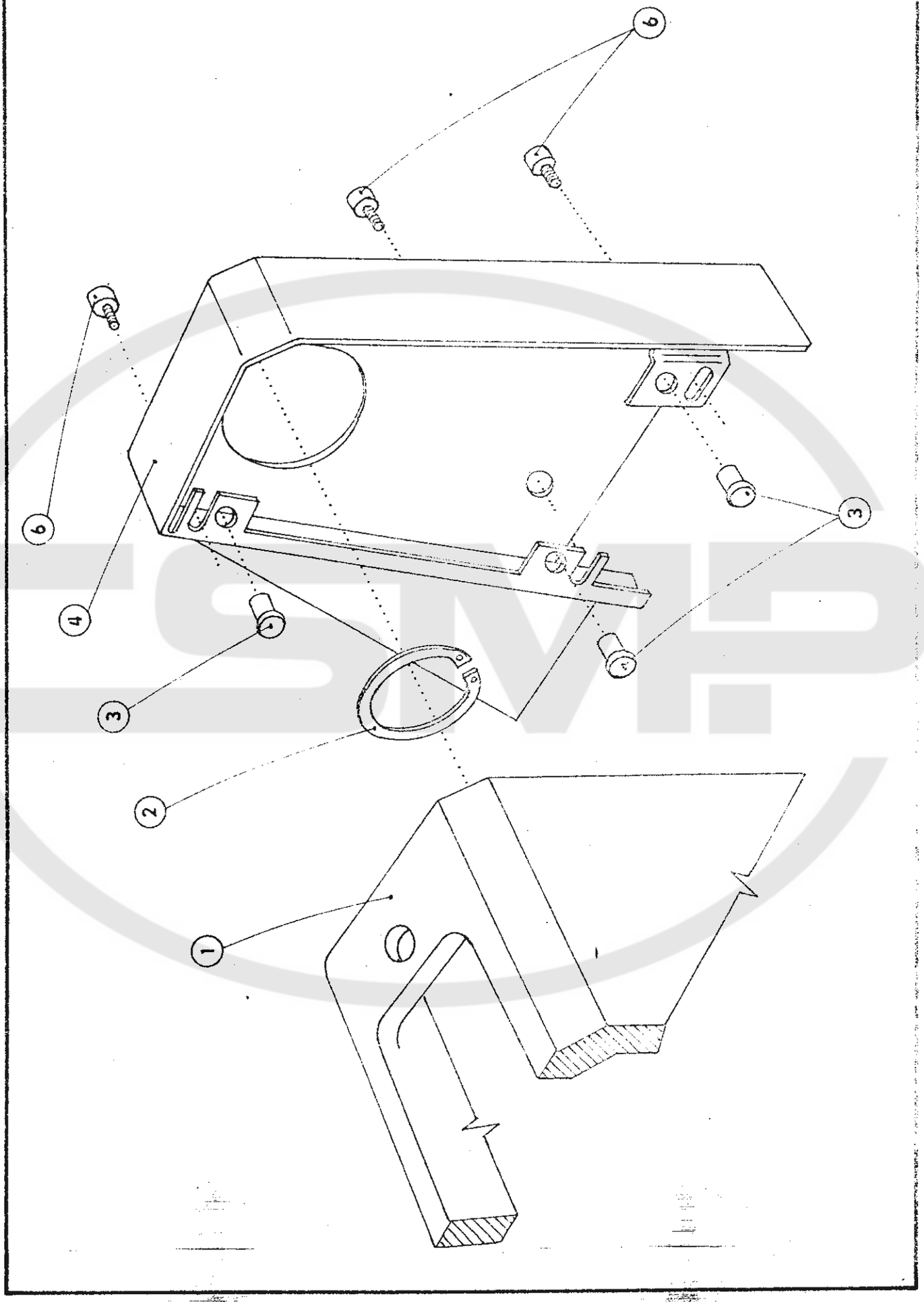
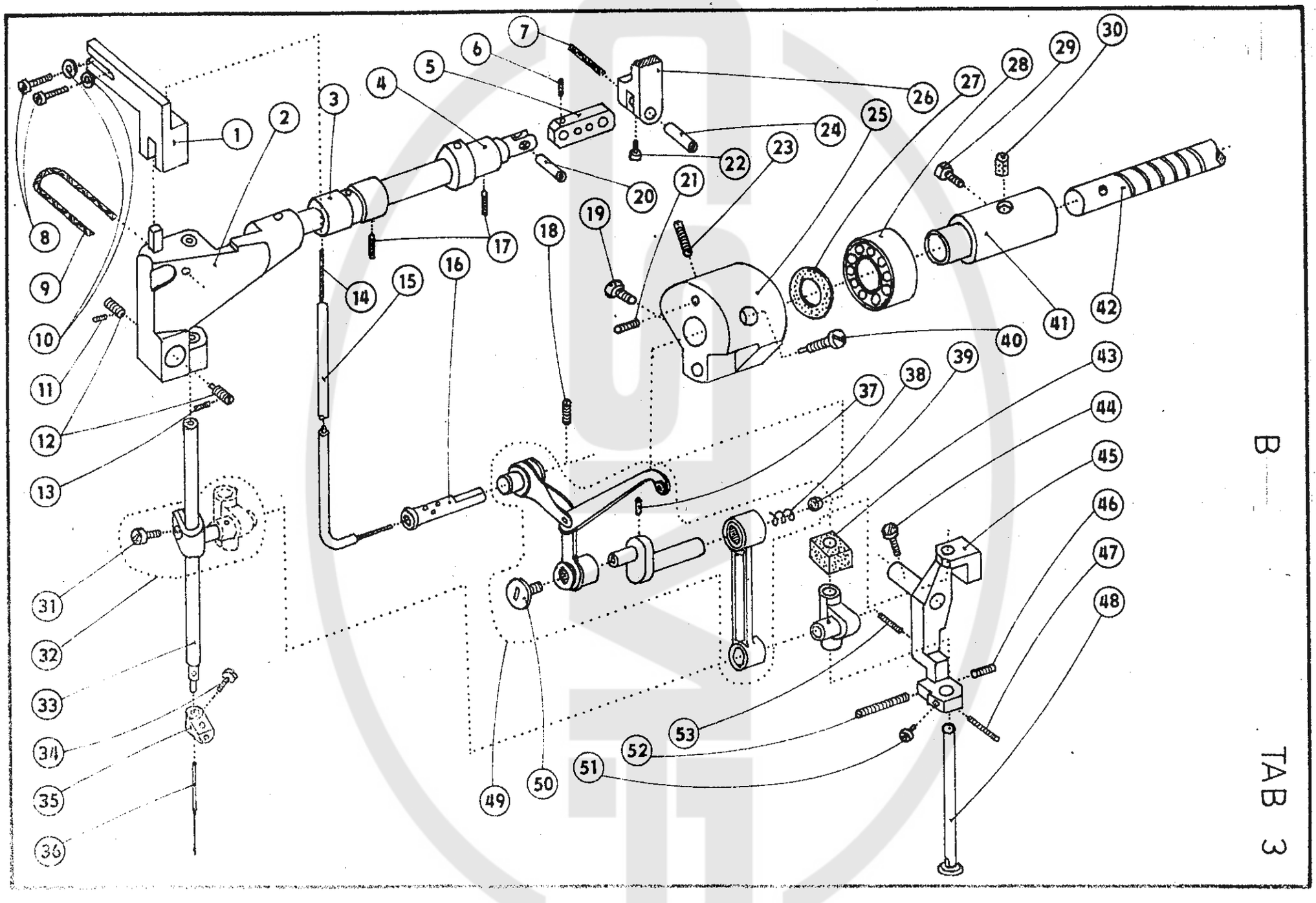
TAB 2

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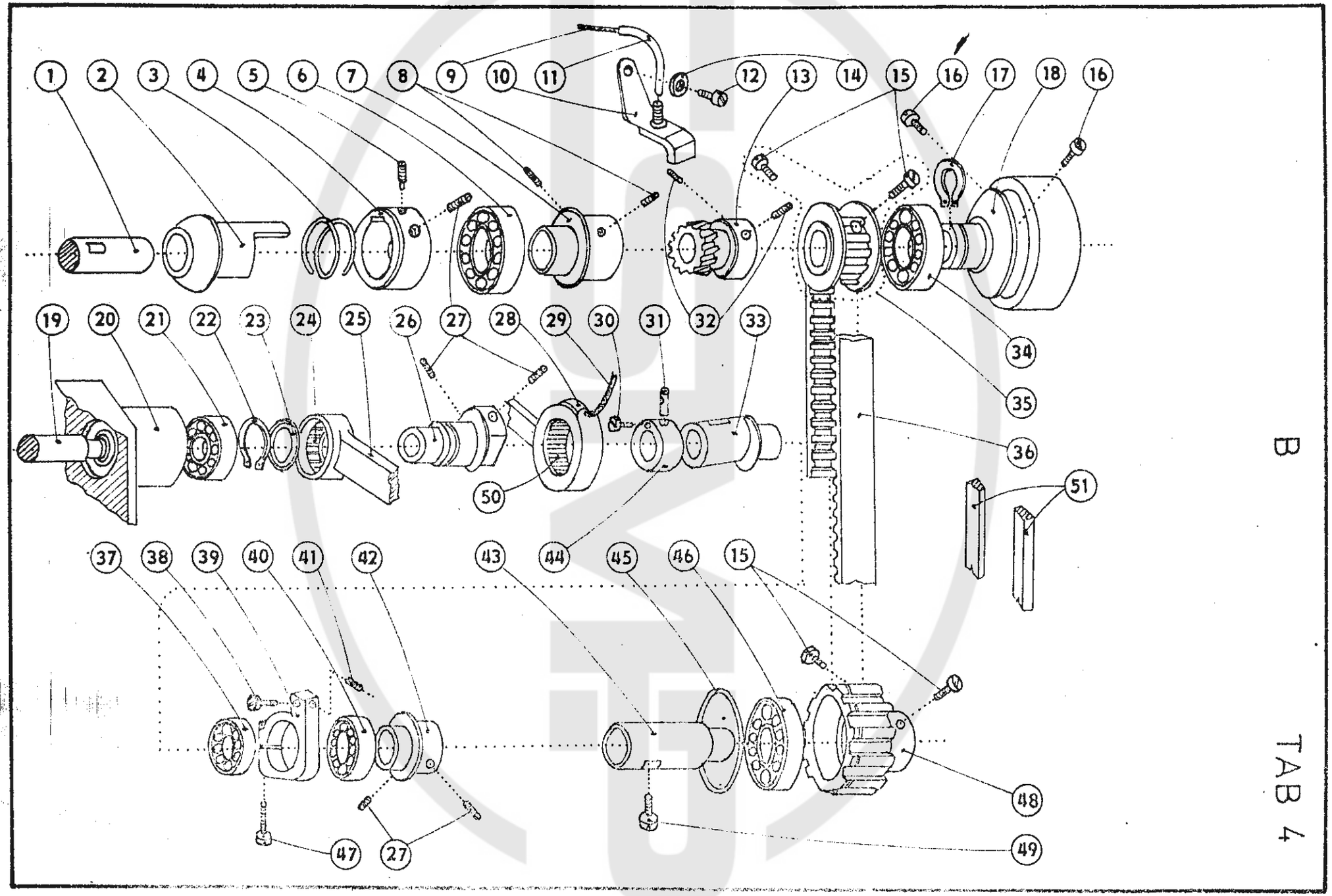
B
TAB 3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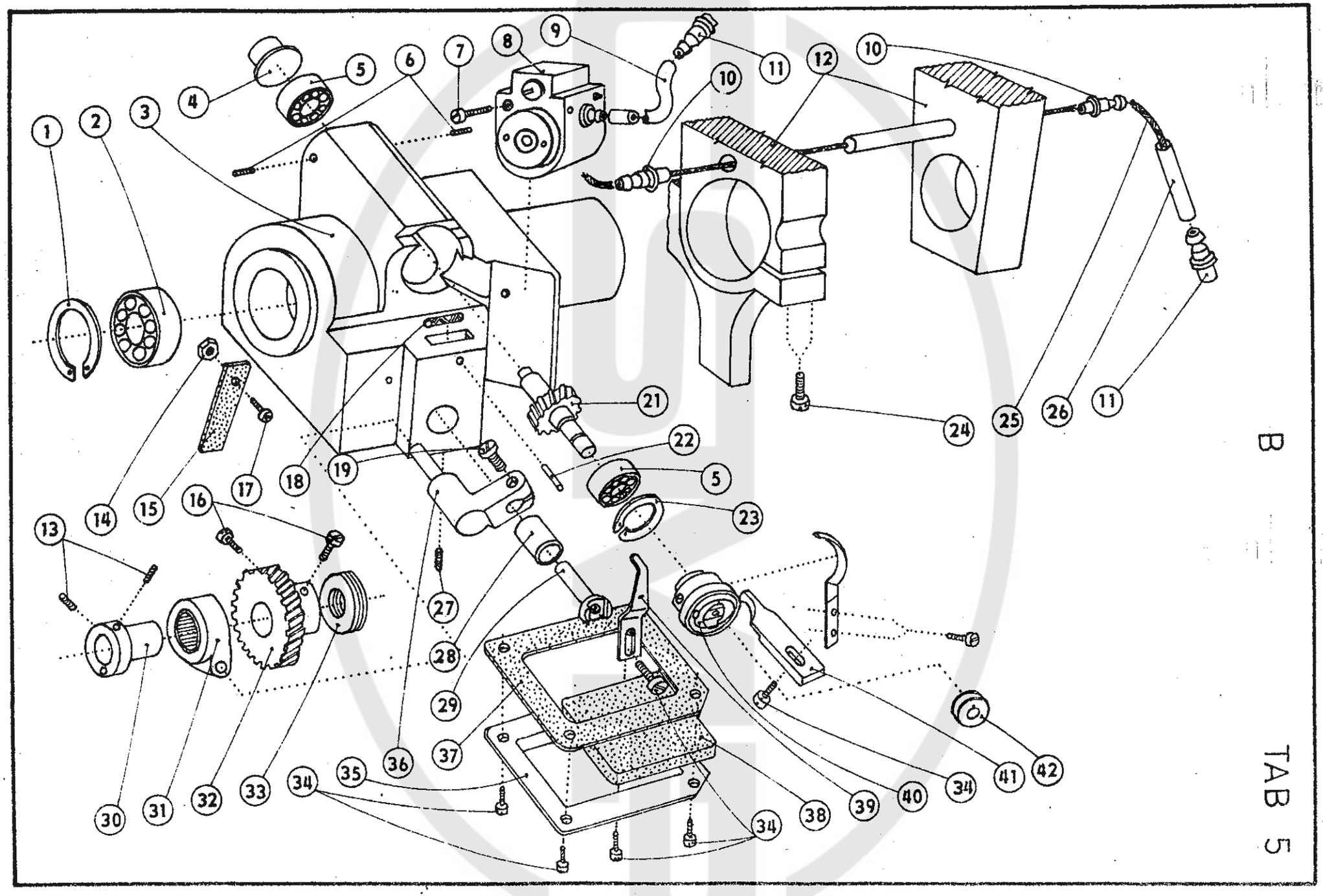
TAB 4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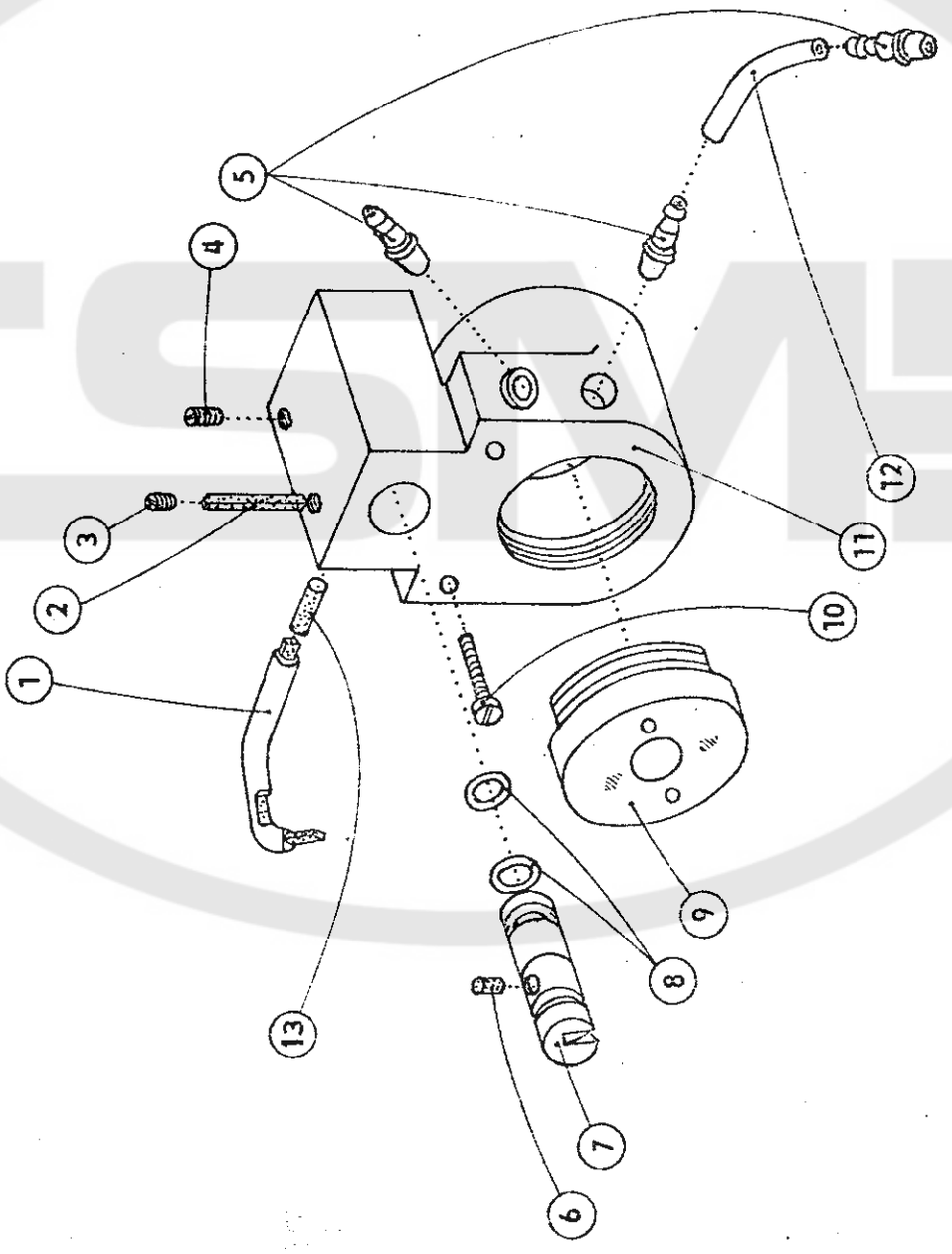
TAB 5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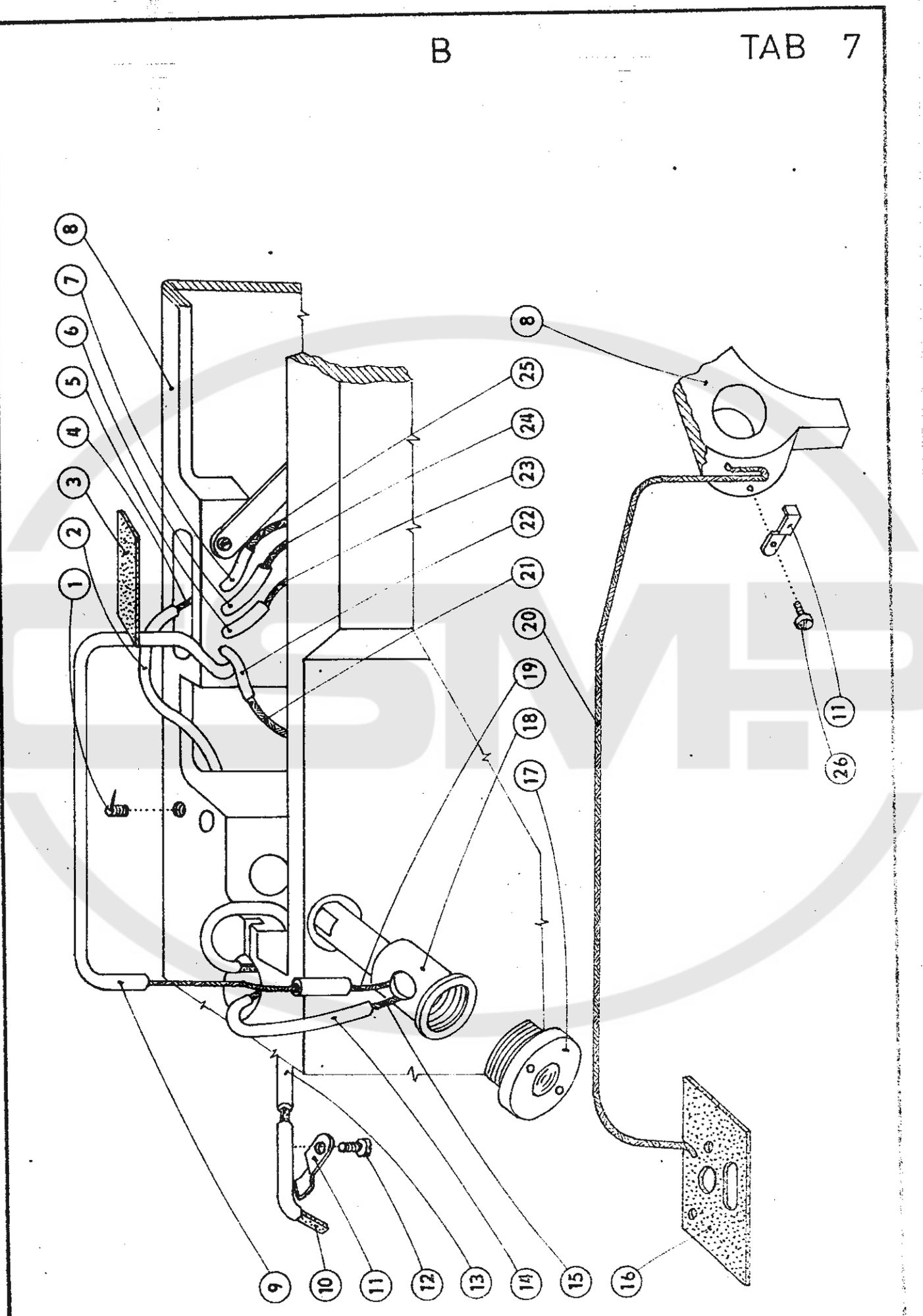
TAB 7



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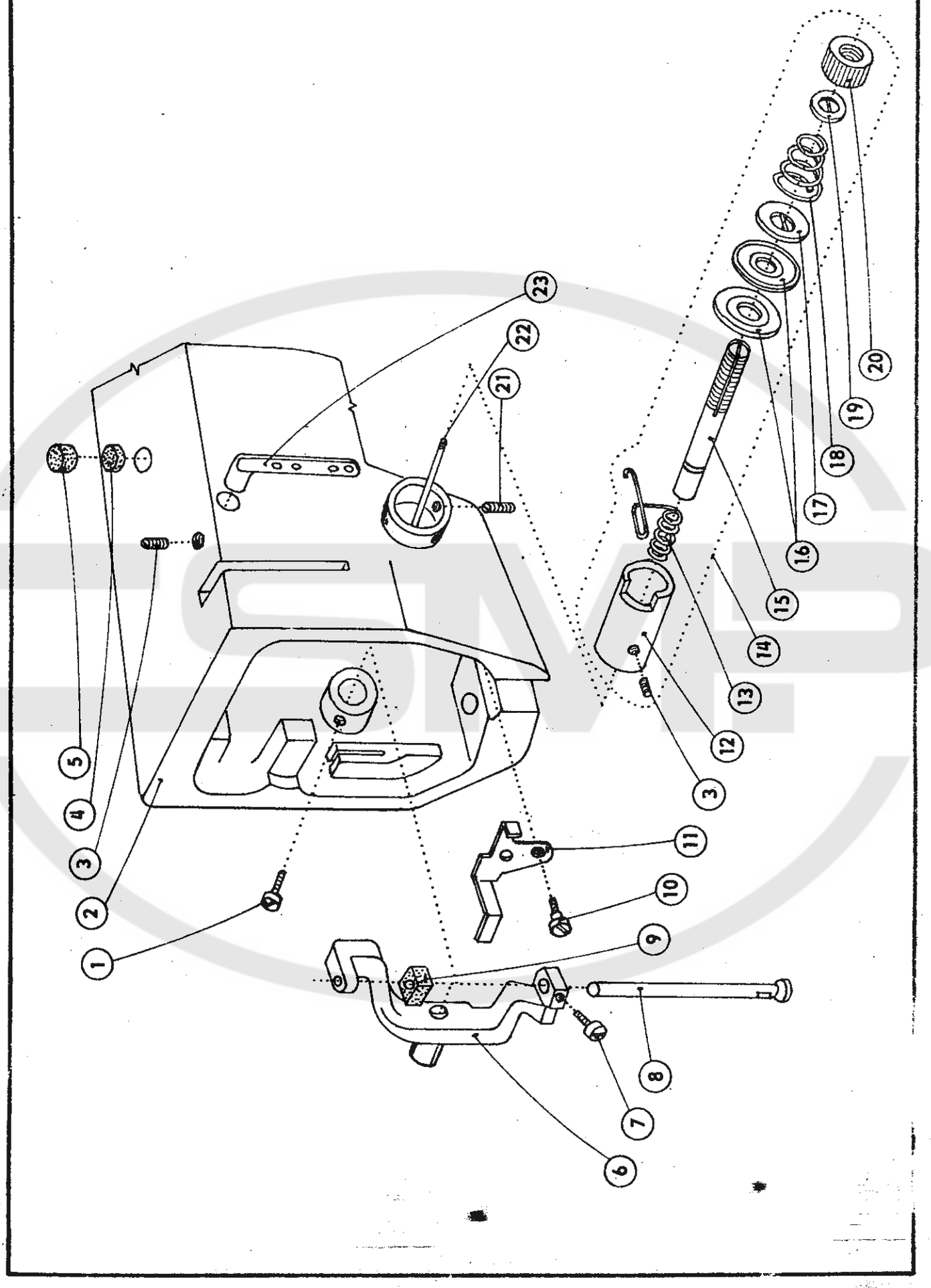
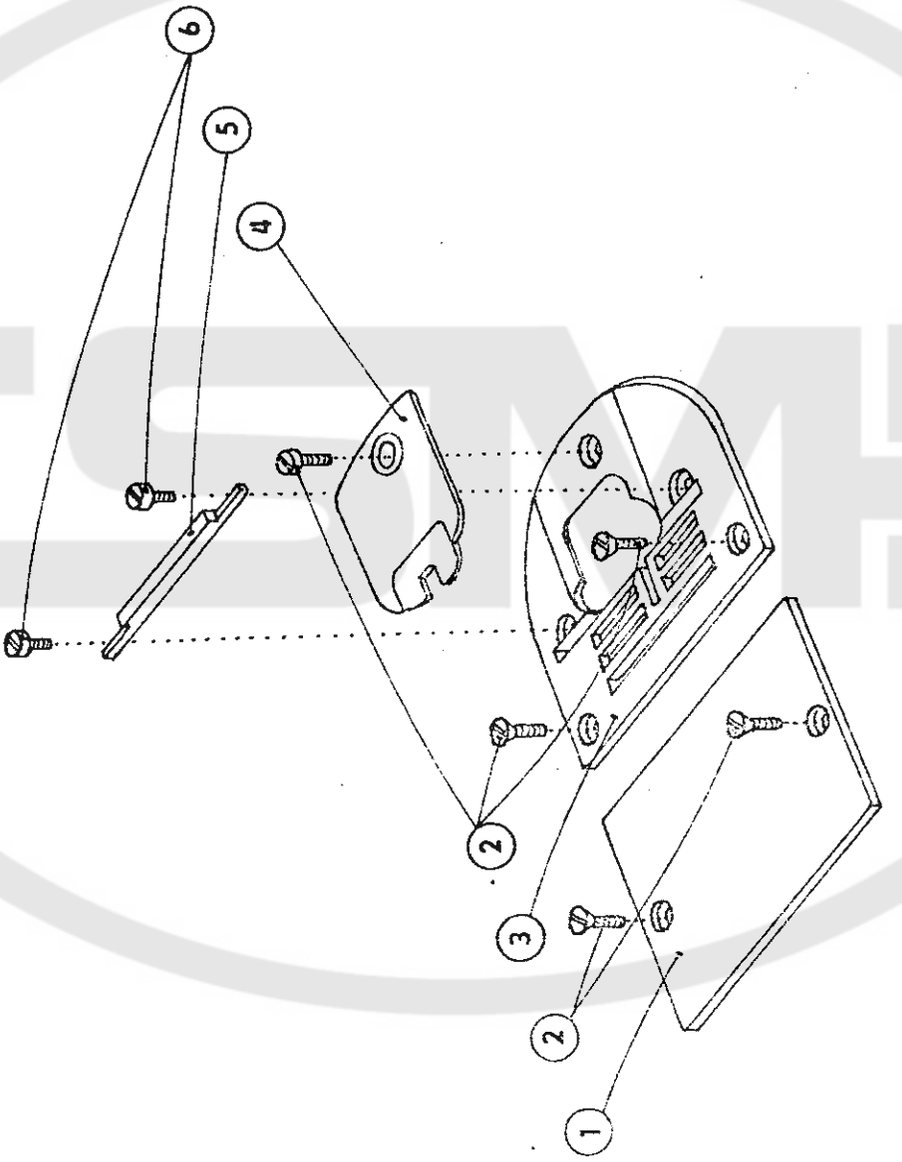
TAB 8

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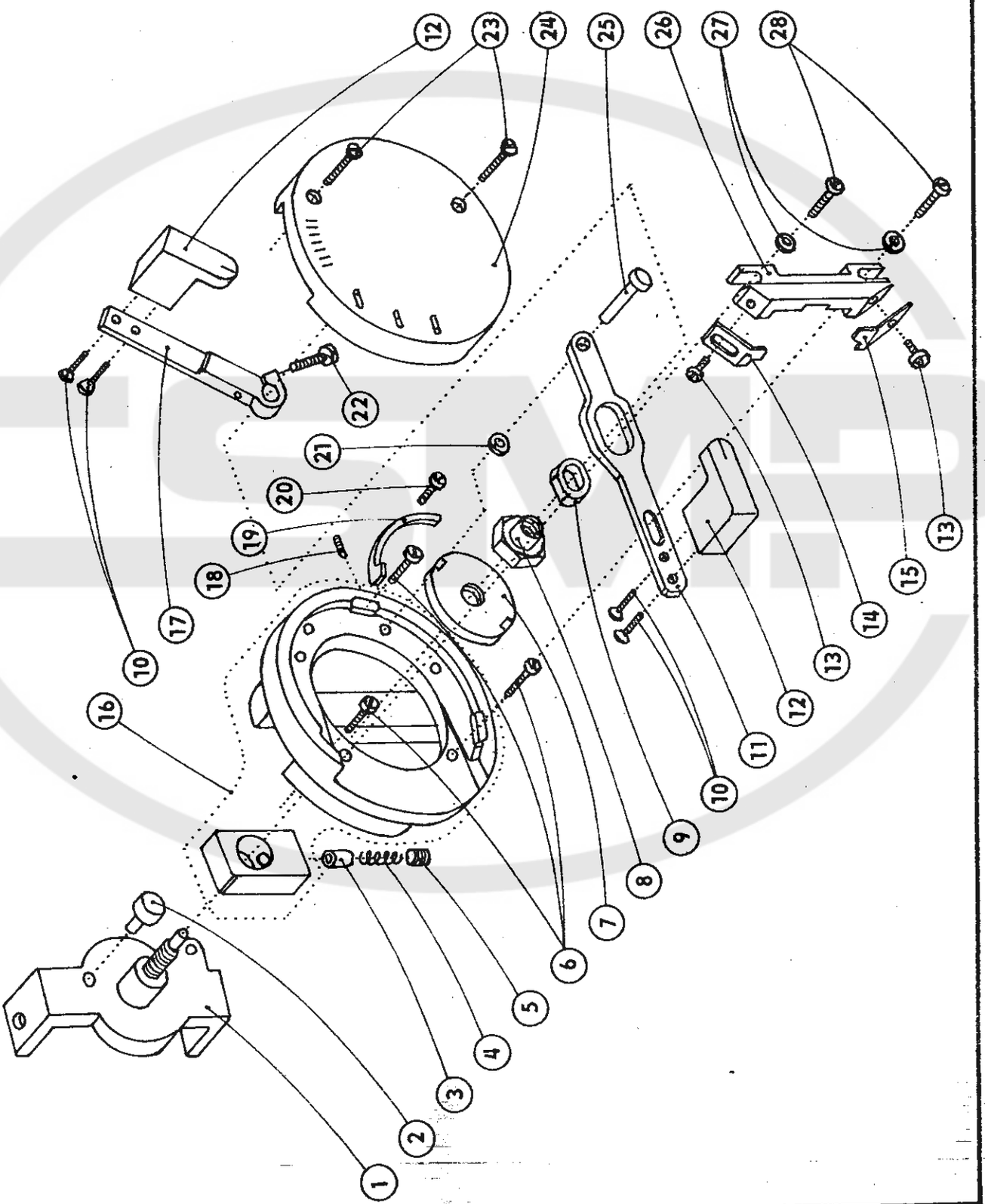
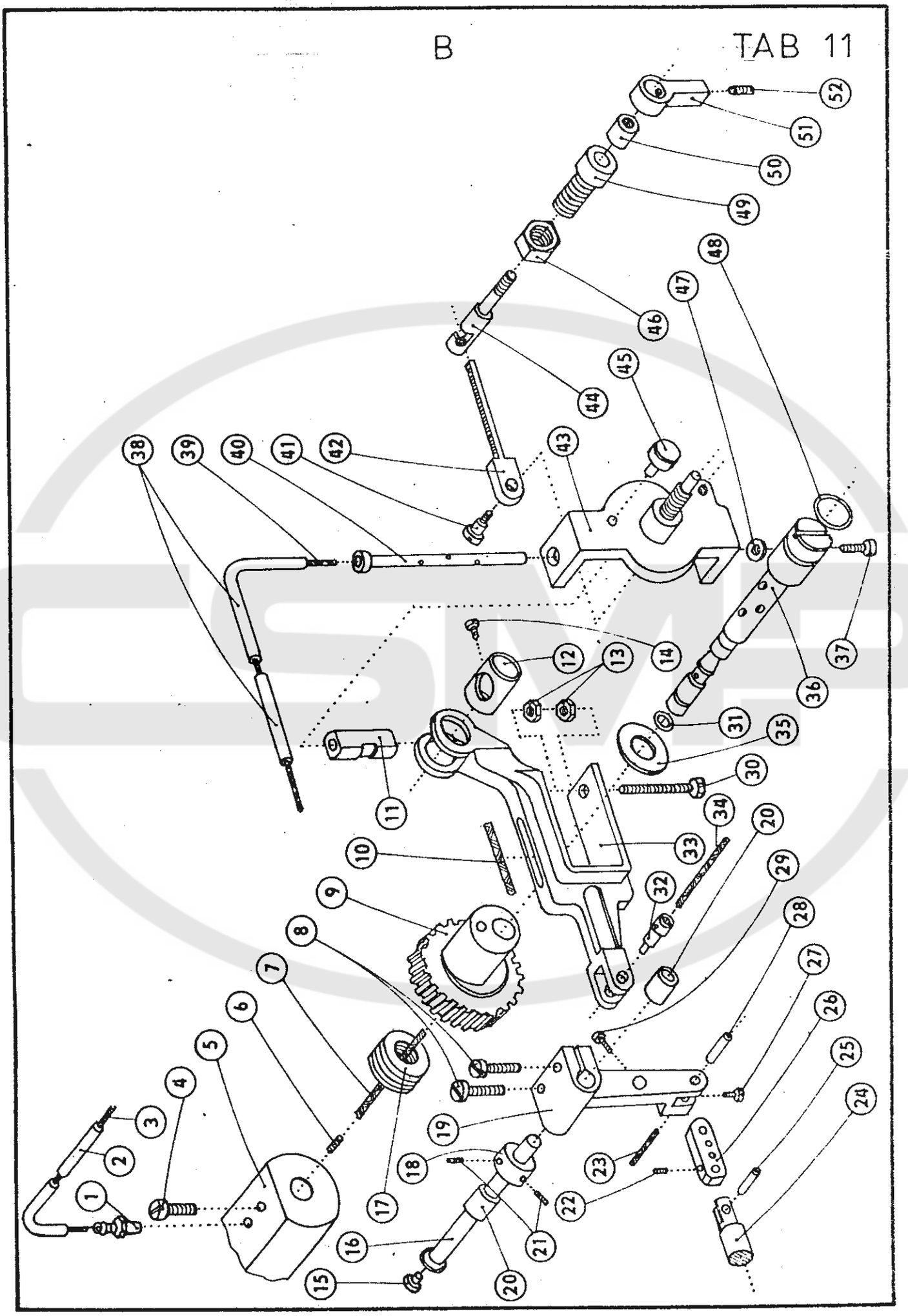
TAB 10

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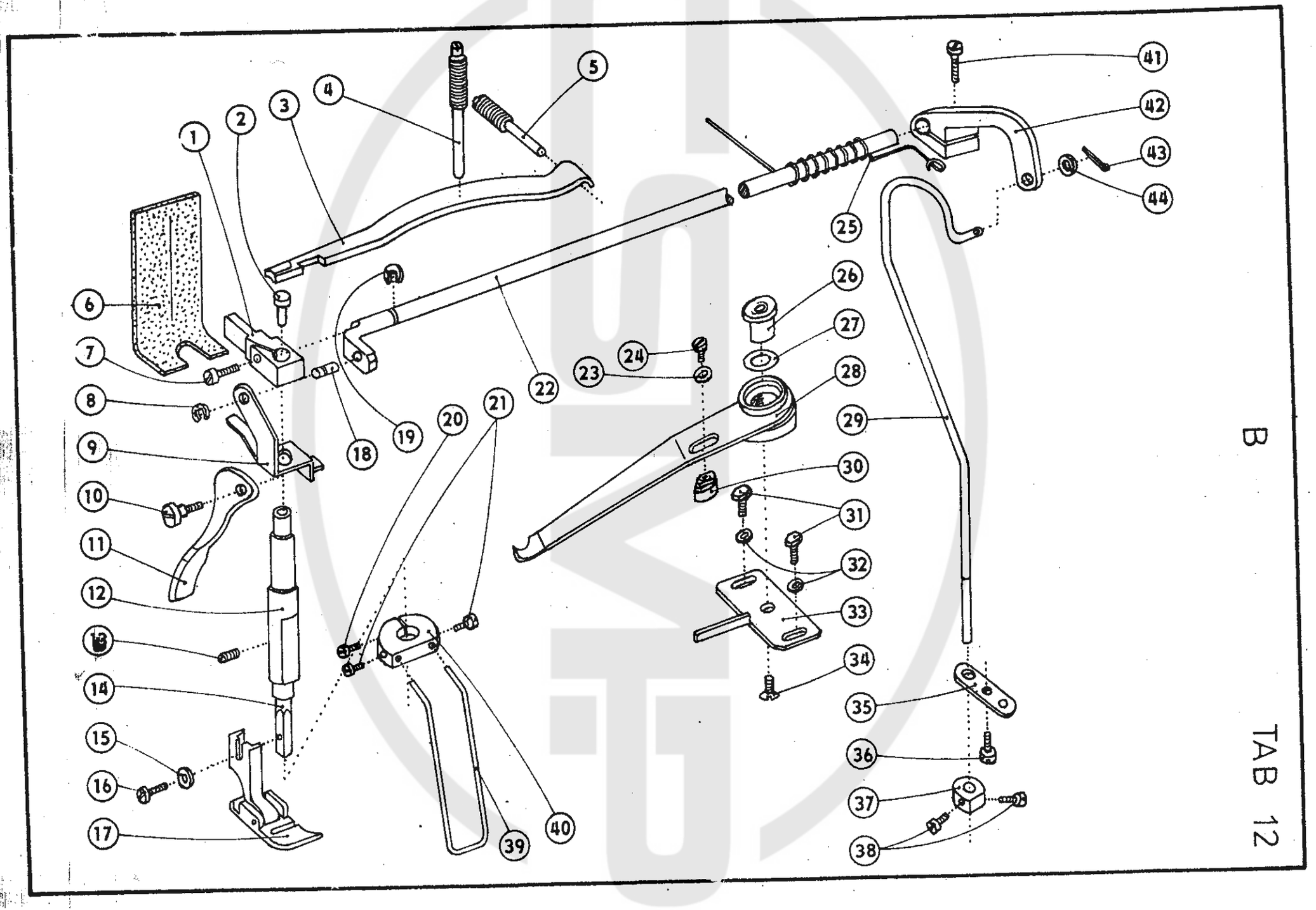
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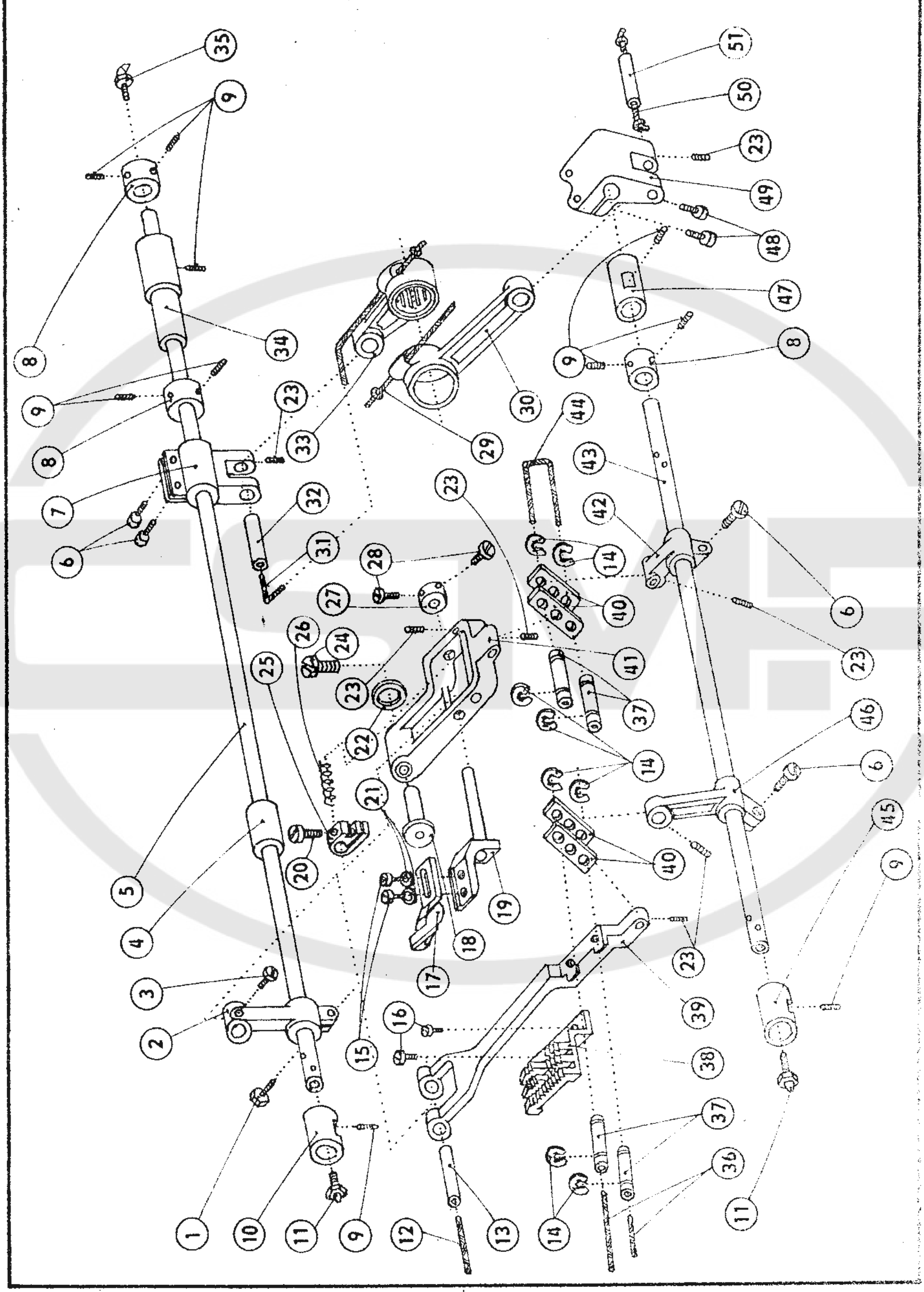
TAB 12

B TAB 13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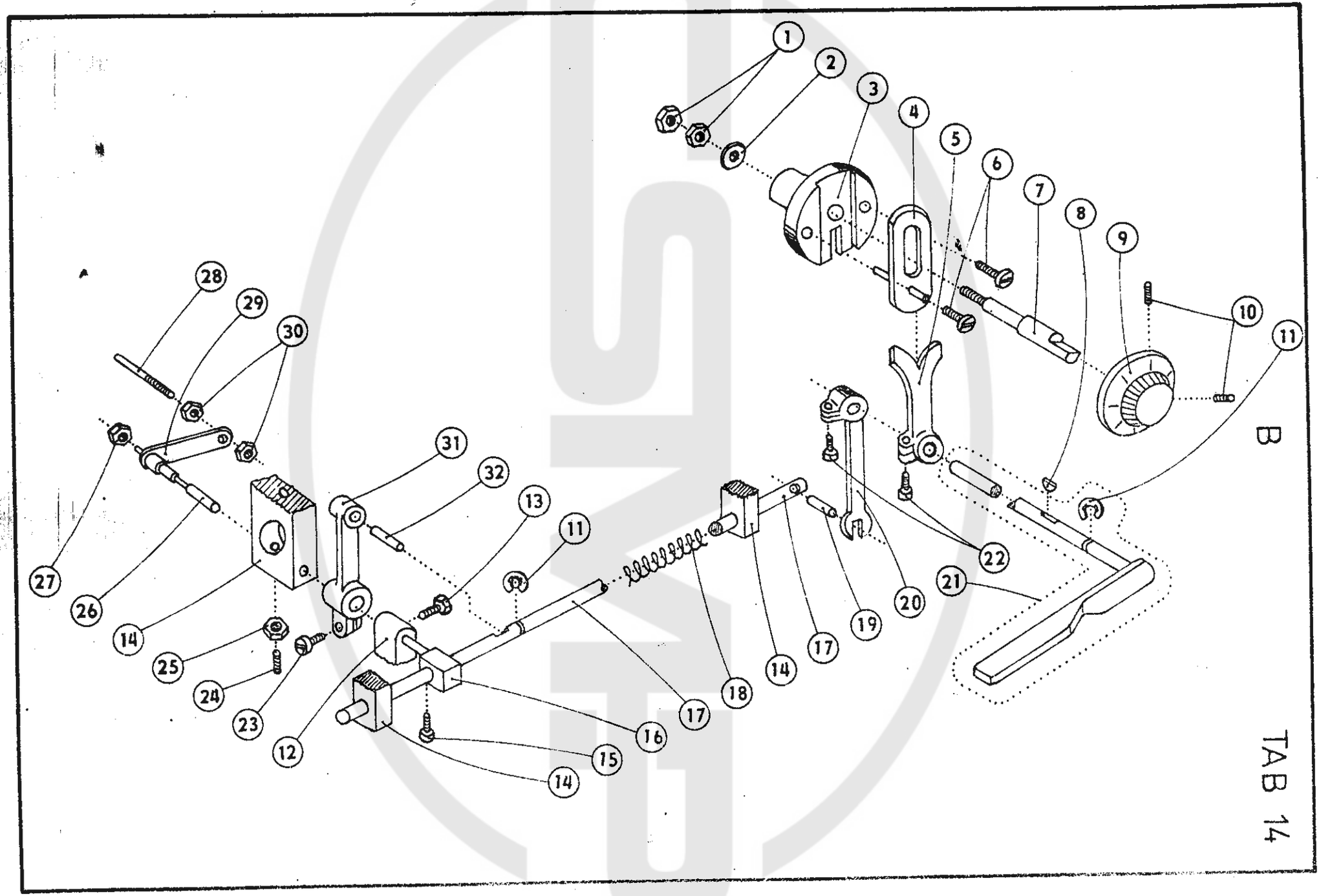
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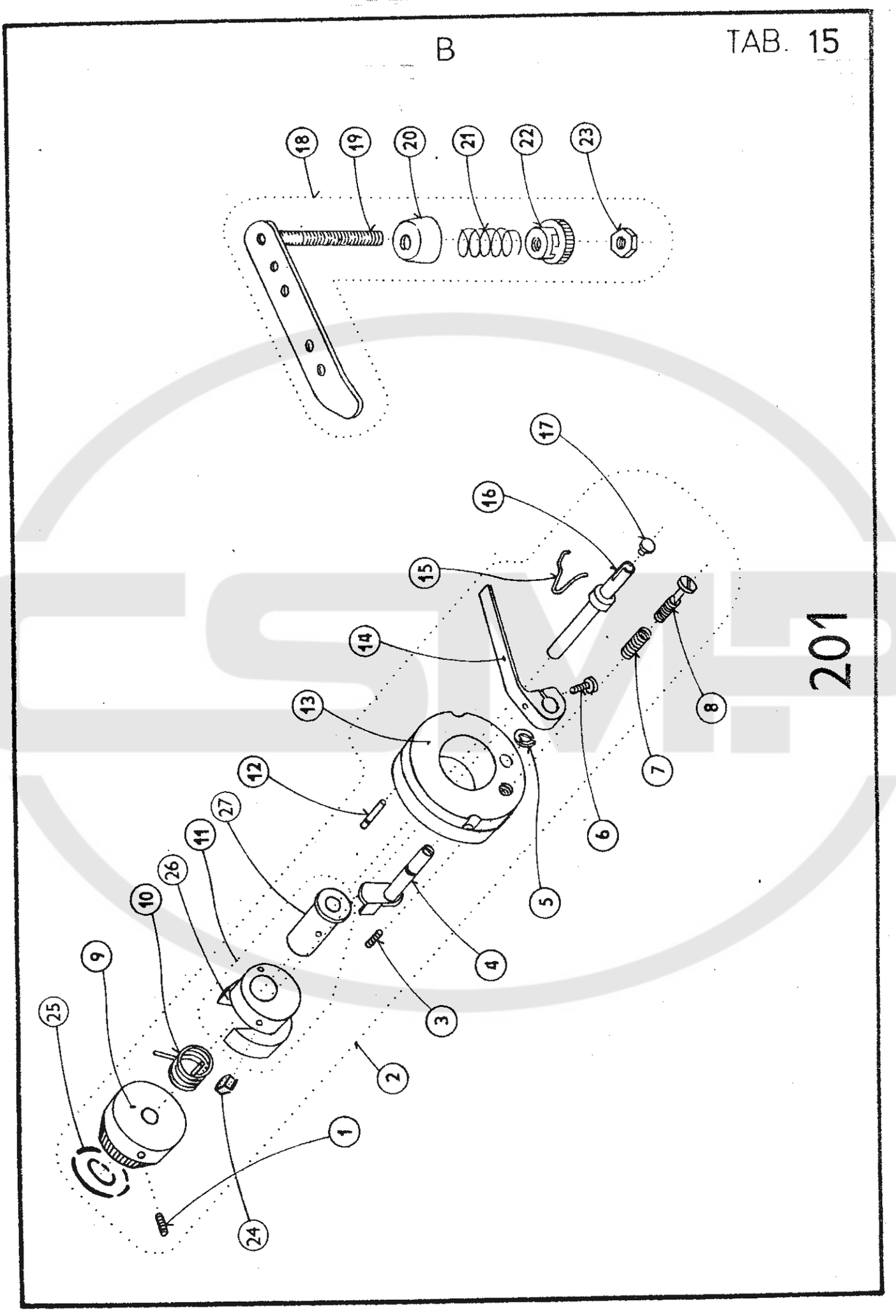
TAB 14

B

TAB. 15



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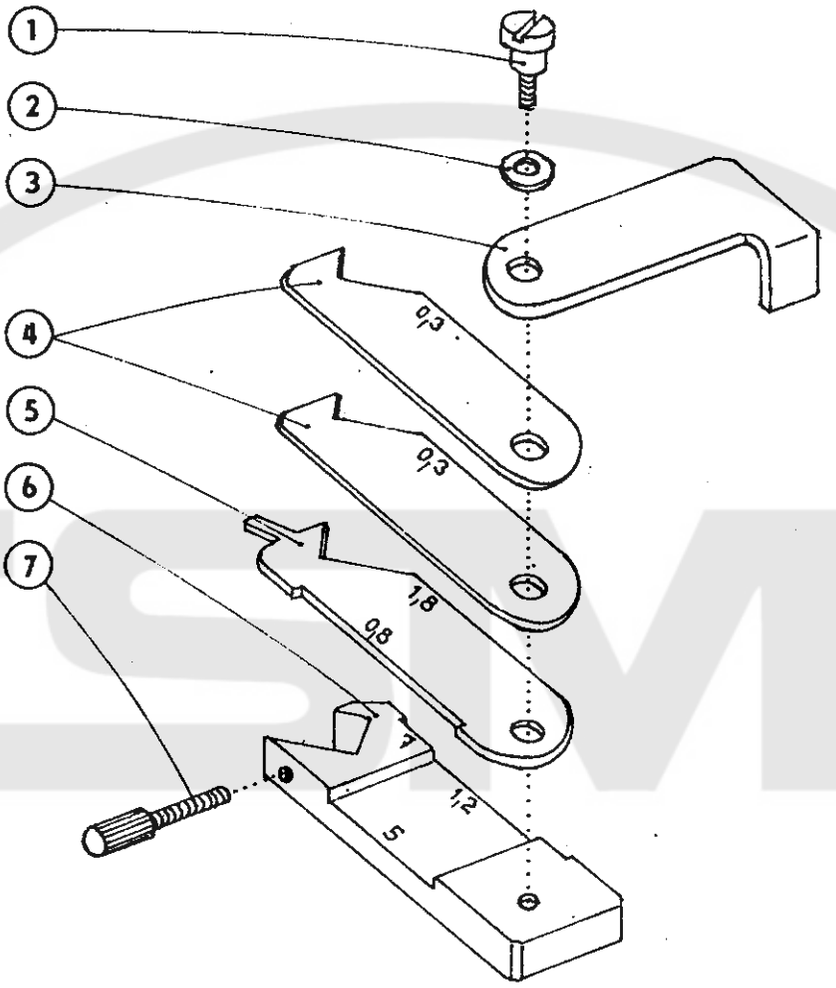
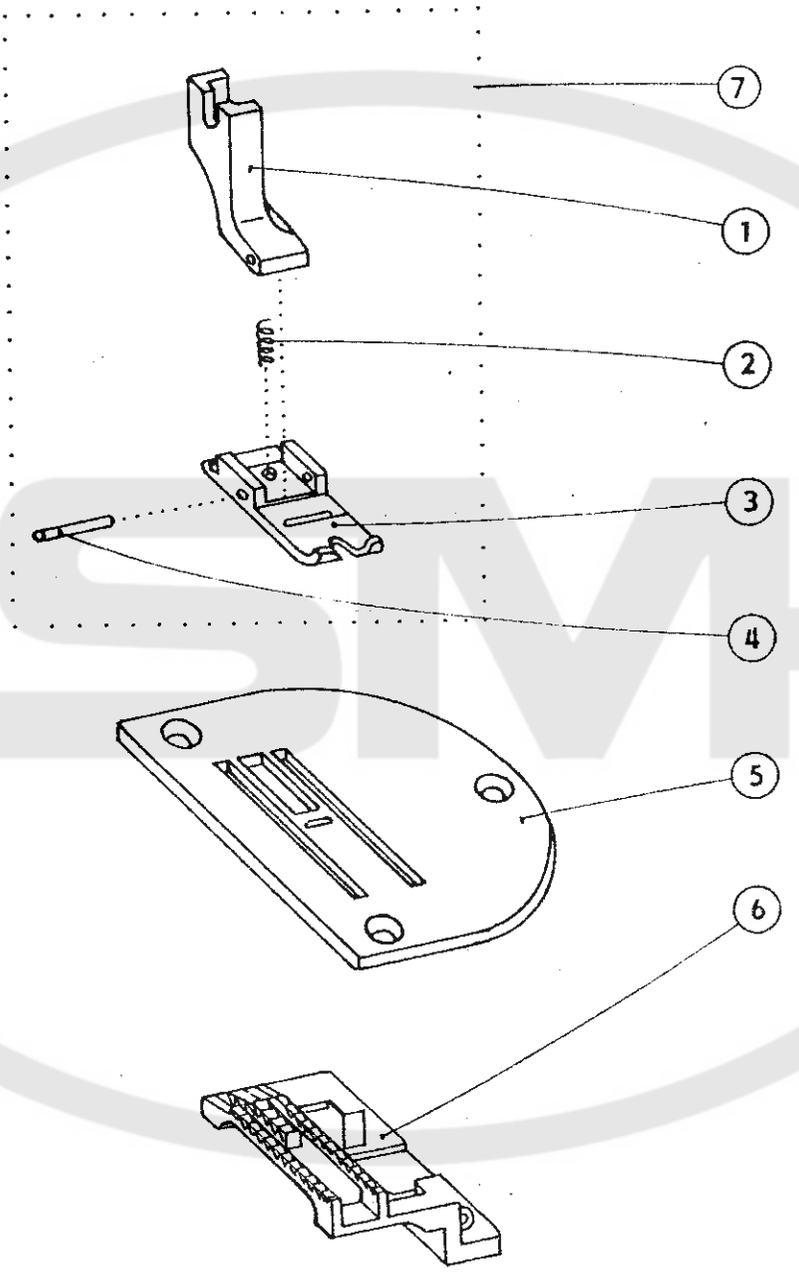


202

B

TAB 17



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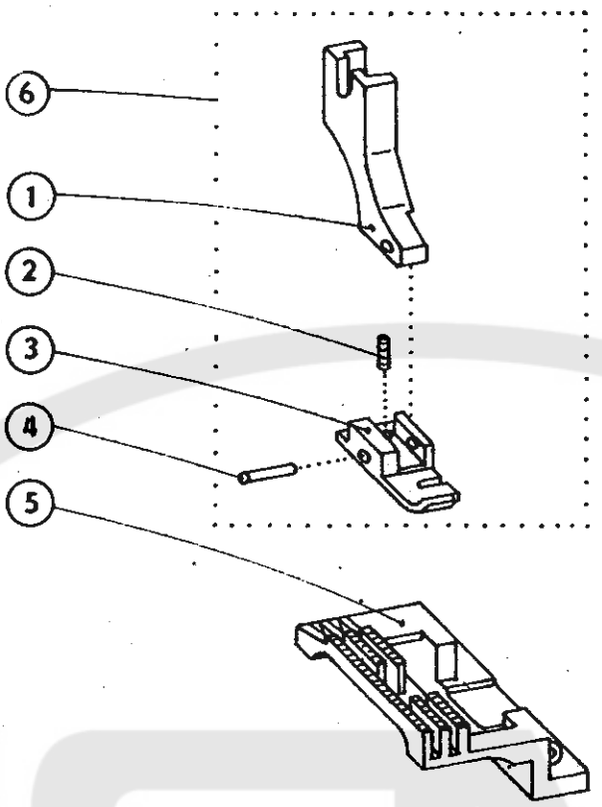

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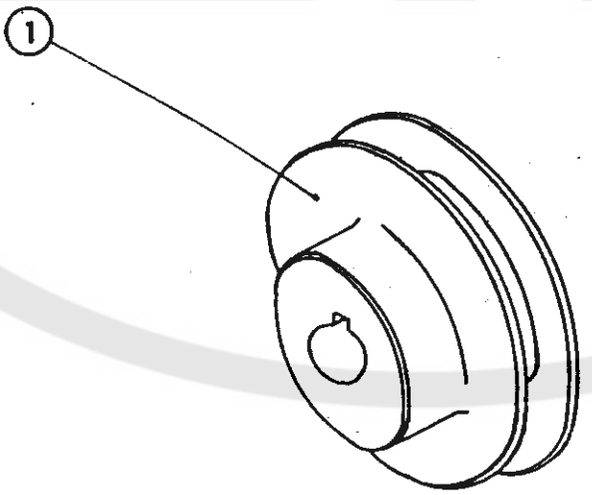

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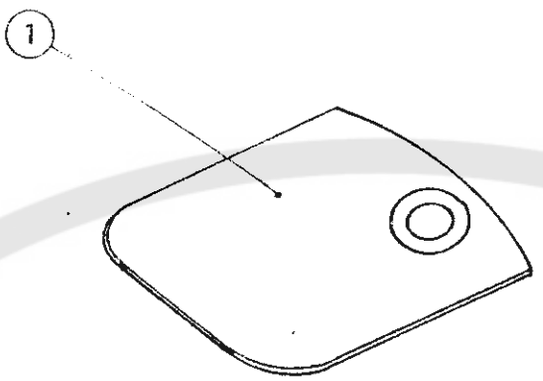

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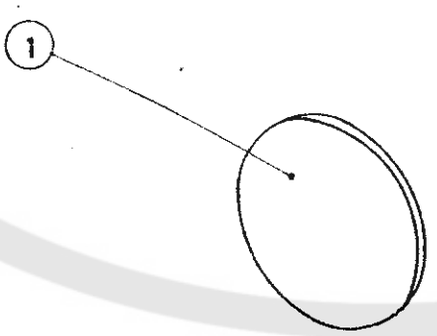

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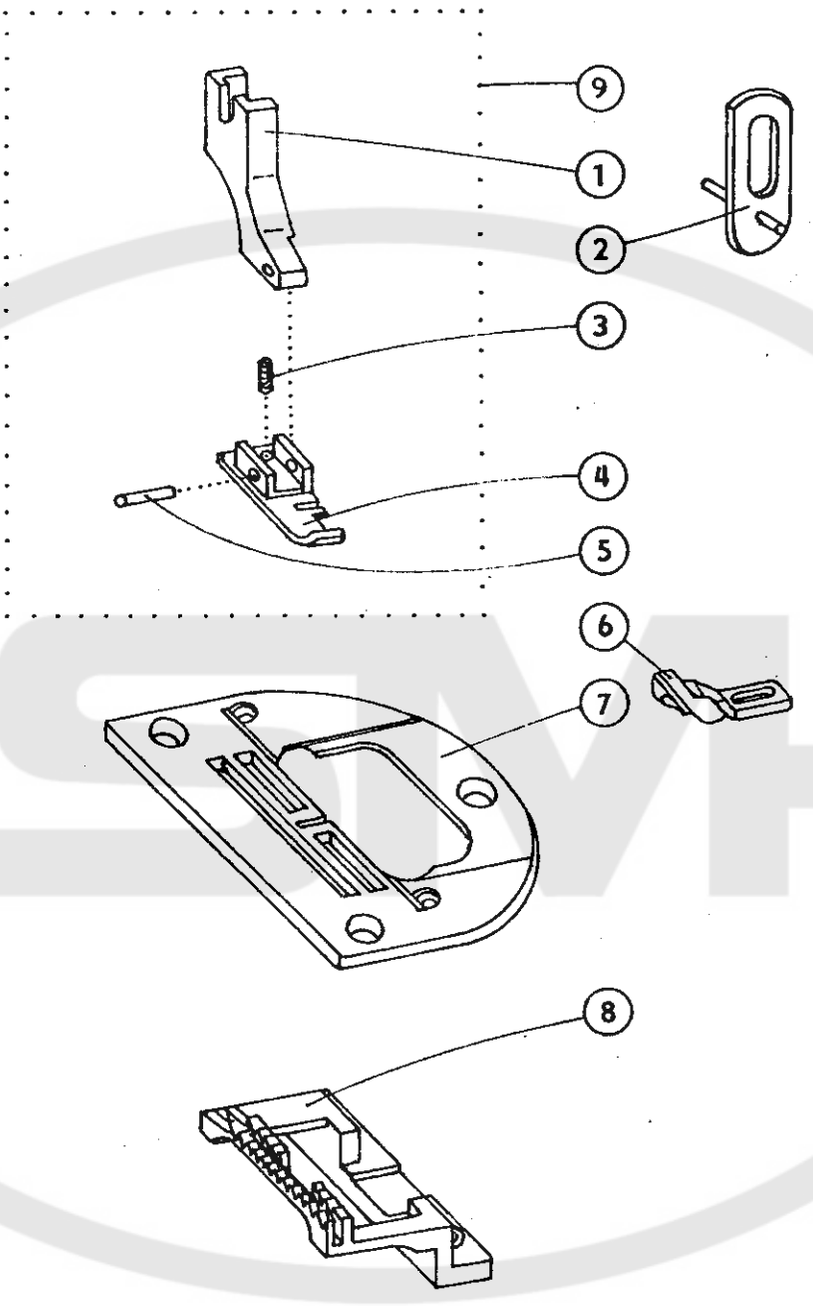
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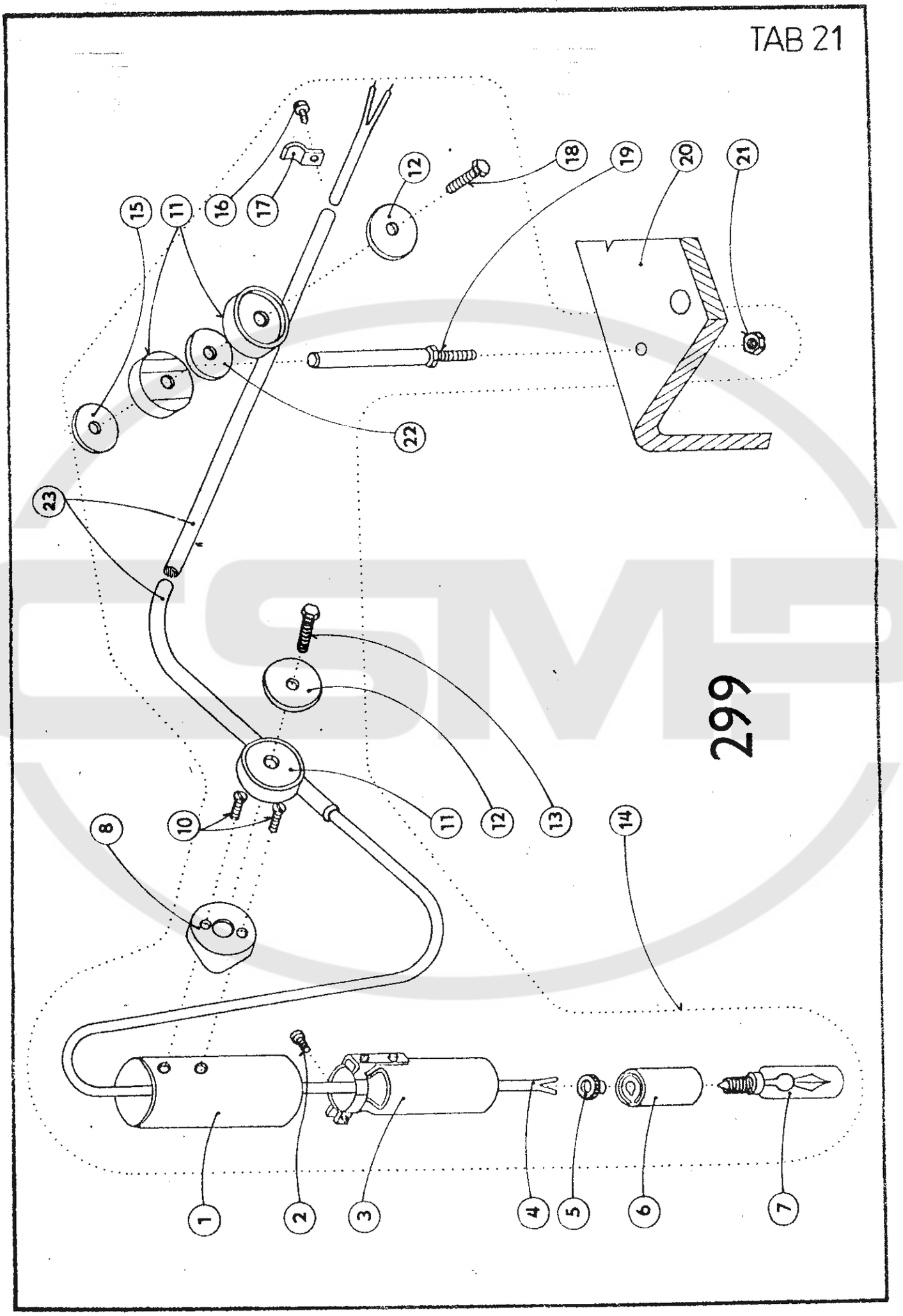
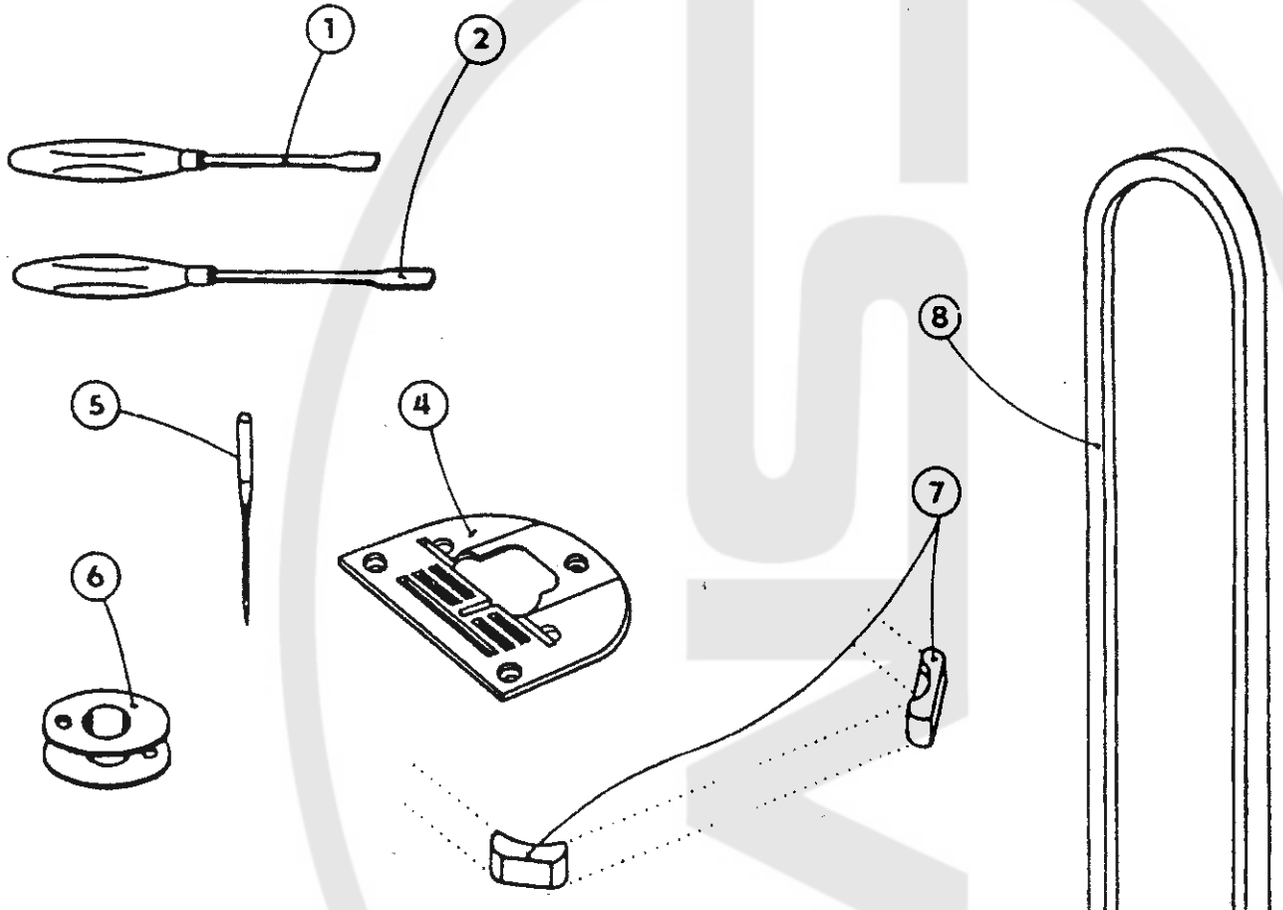
TAB 21



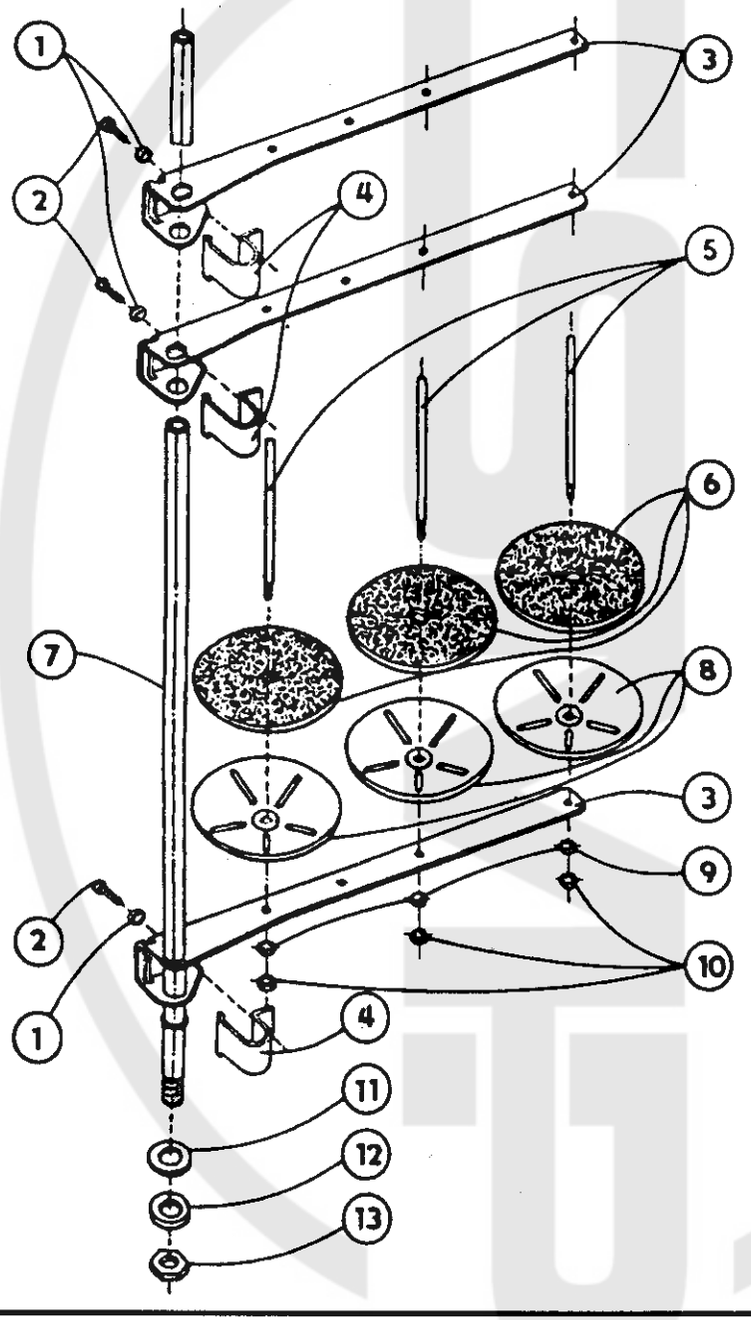
522 980 099 048

ACCESSORIES

522 980 099 048 1

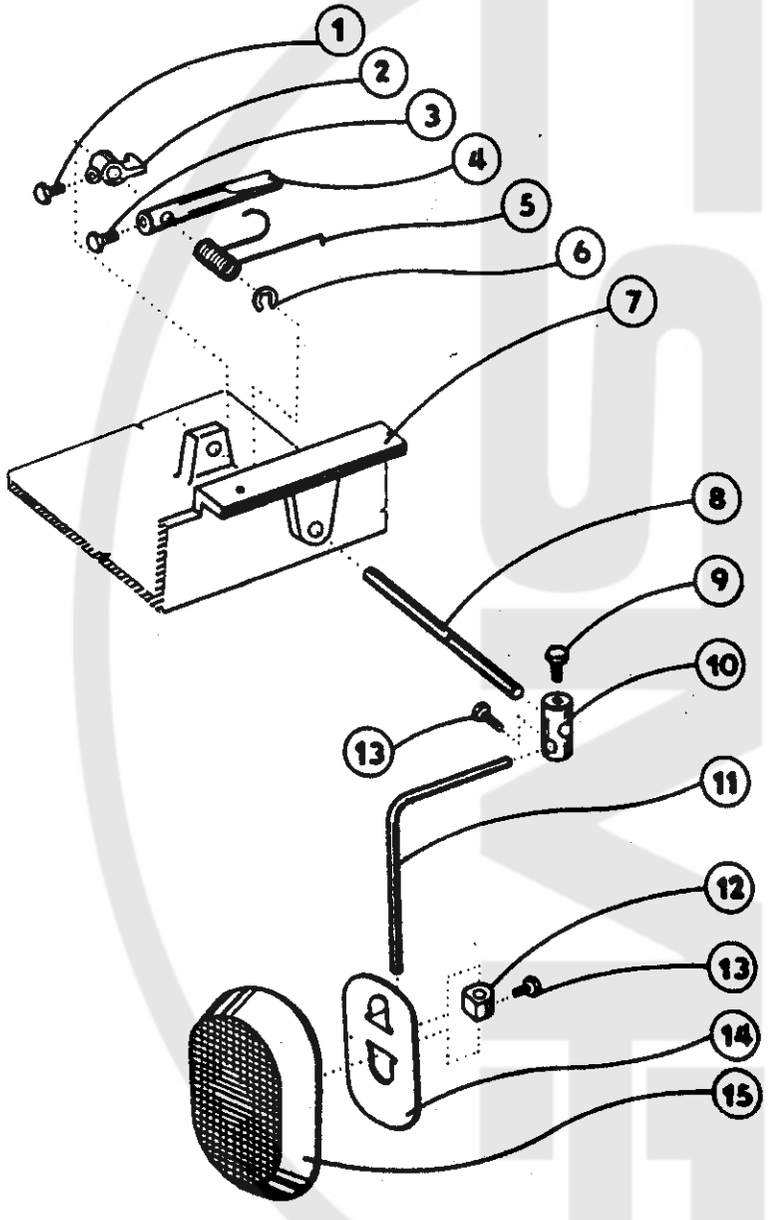


1	413 621 731 023	
2	413 624 310 002	
4	522 080 811 618	
5	548 300 000 110	- 10x
6	522 080 685 017	- 5x
7	273 141 940 141	
8	272 711 222 000 10x1120 mm	



522 980 099 048 **2**

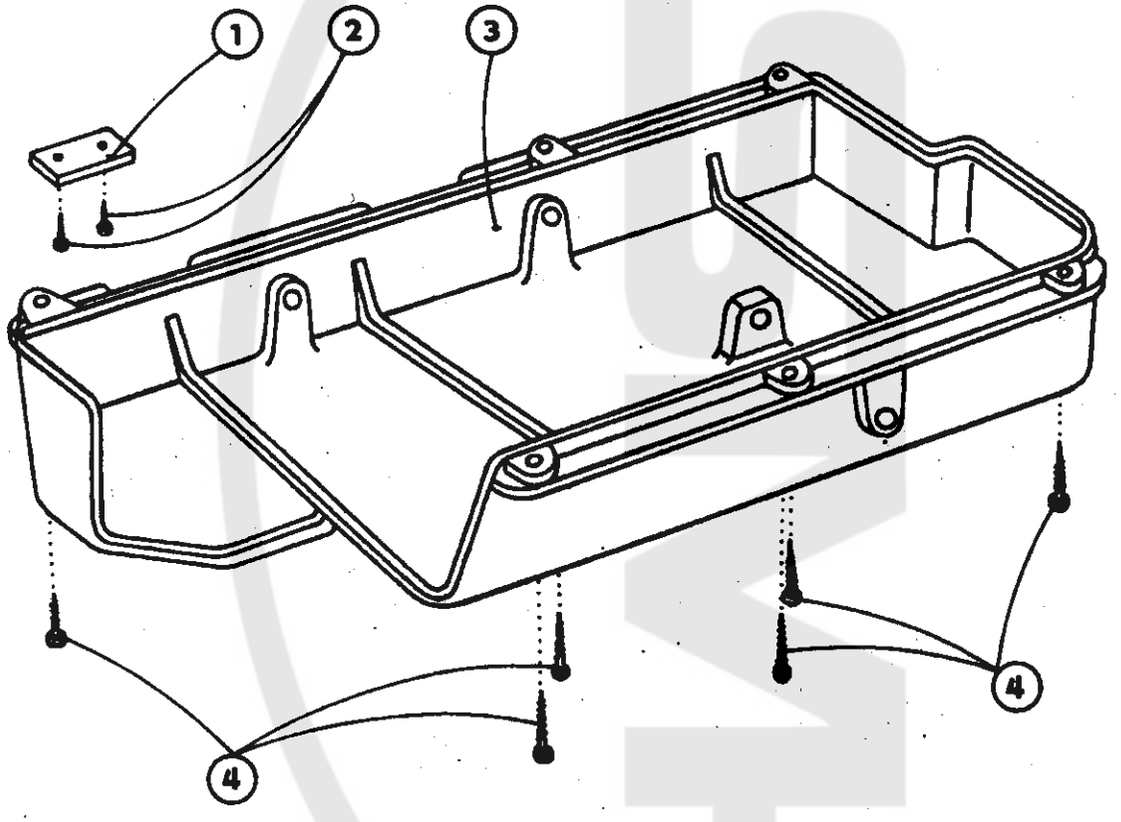
1	523 081	200 025
2	522 080	120 283
3	522 080	826 162
4	522 080	826 159
5	522 080	313 277
6	522 080	953 042
7	522 980	044 969
8	522 080	839 031
9	522 080	191 107
10	522 080	161 137
11	522 080	441 509
12	522 080	190 585
13	522 080	161 255



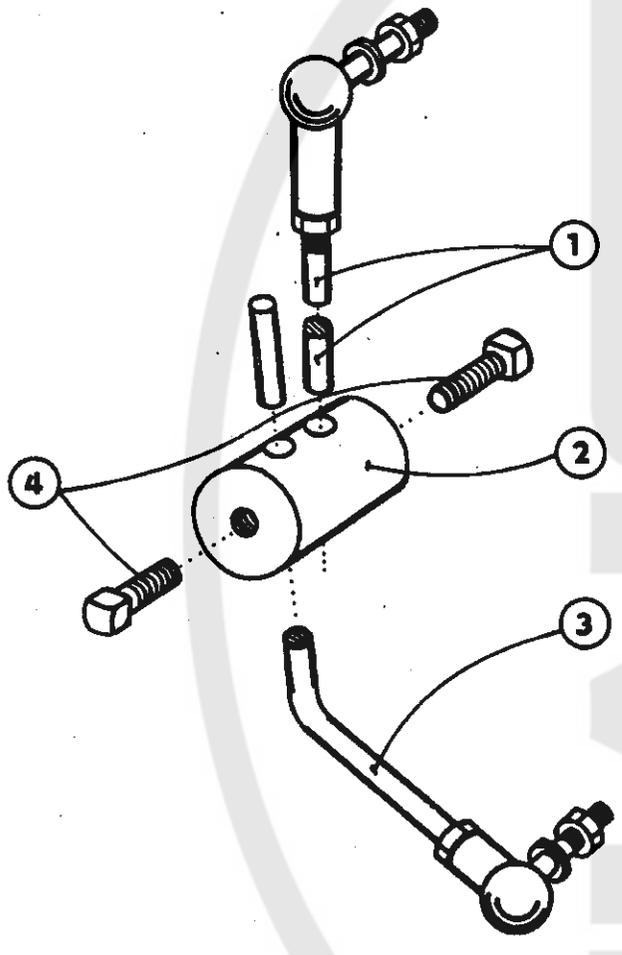
522 080 099 048 3

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	522 080 141 121
10	522 080 318 069
11	522 080 383 022
12	522 080 436 271
13	522 080 141 112
14	522 080 827 173
15	522 080 941 076

522 989 099 048 **4**

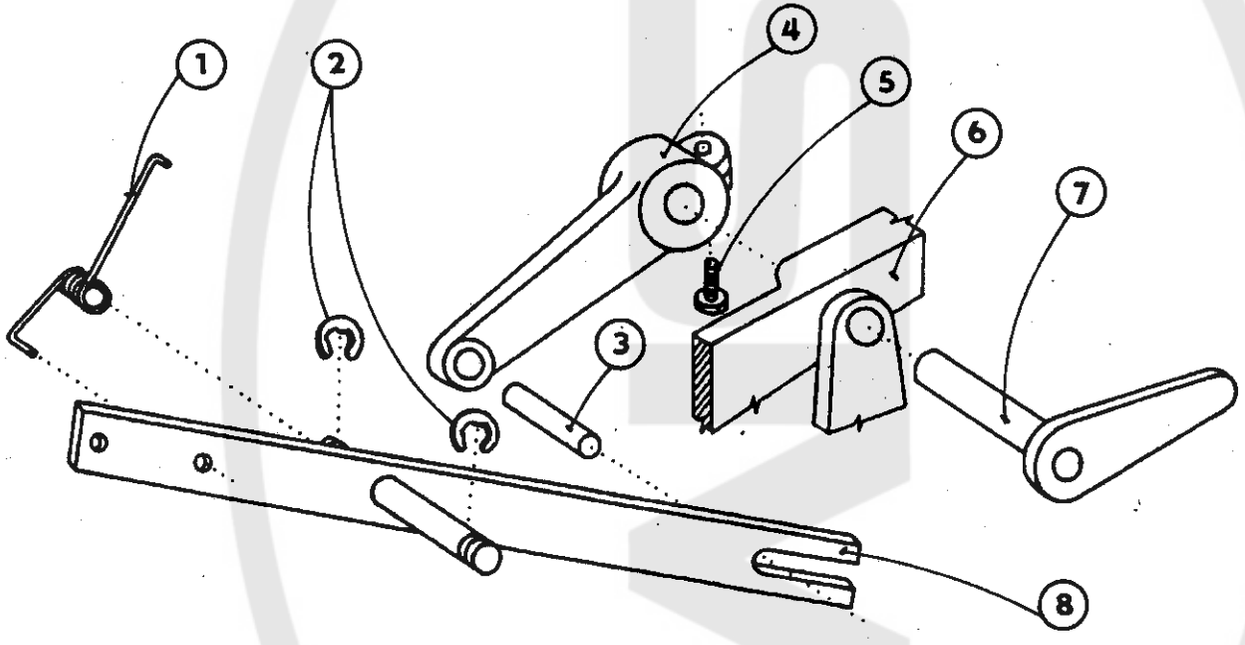


1	522 080 941 091
2	314 140 016 020
3	522 080 725 074
4	522 080 225 031



1	522 980 044 704
2	522 080 336 074
3	522 980 044 761
4	522 080 144 035

522 980 099 048 6



1	522 080 264 290
2	311 732 910 070
3	311 515 006 016
4	522 080 613 235
5	522 080 141 109
6	522 080 725 074
7	522 980 044 142
8	522 980 049 109