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

ZZ 568 H - TD

522 741 410 505 35

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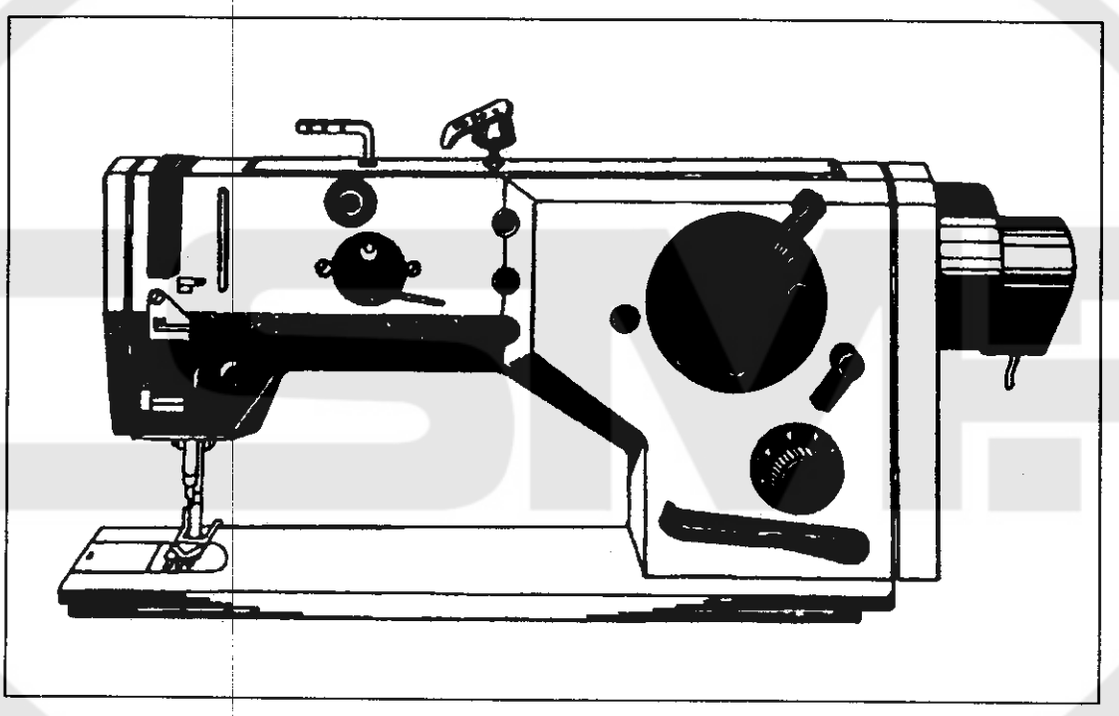


Use of Machine

The machine is used chiefly for upper garment production such as attaching the upper collar to the lower collar fall, stitching collar points, inserting the collar into the neckline, and for other operations involving the stitching together of relatively thick materials.

Specifications

Machine speed	up to 3,800 stitches per minute for up to 4.5 mm thick sewn work up to 2,800 stitches per minute for up to 8 mm thick sewn work up to 2,000 stitches per minute for up to 8 mm thick sewn work with synthetic threads
Stitch type	two-thread zigzag lockstitch
Stitch length	up to 5 mm, forward and reverse
Stitch windth	up to 10 mm
Zigzag stitch width position	median
Needle	134 - 35 Nos. 110 - 130
Hook	R 253
Thickness of sewn material	up to 8 mm
Threads	cotton threads: 14.5 tex x 3 - 35.5 tex x 3 + synthetic threads: PES 25 tex x 1 x 2 25 tex x 1 x 3
Presser foot stroke	8 mm with hand lever 10 mm with knee lever
Clear work space	265 x 120 mm
Machine stand	standard steel profile stand
Weight of machine head	35 kg

+ With synthetic threads, be sure adequately to reduce the machine speed.

Technical description

The machine is a single needle flat bed zigzag industrial sewing machine for joining 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 stop motor, providing for stopping the machine in a predetermined needle position, is equipped with a contactless sensor of the angular position of the machine upper shaft and with an electronic control circuit, thus ensuring long service life and high reliability while requiring only moderate maintenance. The principal parts of mechanisms exposed to increased strain are seated in rolling-contact hearings. The machine has a group wick lubrication with automatic additional lubrication of the hook.

Machine Equipments and their Use

Ordering No.	Equipment No.	Name
+ 522 791 124 027 35		Stitching set - throat plate with needle aperture 1.8 mm; needle 134 - 35 No. 120
+ 522 792 112 010 00		Built-in frictional bobbin winder
522 791 149 001 00	E 116	Overedging equipment
522 791 151 017 00	E 002	Open presser foot
522 791 400 023 00	E 200	Equipments for joining parts
522 791 995 145 00		Presser foot lifting with electromagnet
522 794 222 011 00	E 900	Suspension-type lighting of work area

+ the equipment is supplied with the machine - the other equipments on special order only

Technological use of machine ZZ 568 H - TD

(recommended combination of sewn material, needles and threads)

Example of application	Thickness of sewn work	Needle 134 - 35	Threads	RPM
zigzag stitch, width up to 10 mm	cotton 4 mm	Nos. 100 - 110	cotton 14.5 tex x 2 x 2	3,800
zigzag stitch, width up to 8 mm	cotton 5 mm	Nos. 100 - 110	cotton 20 tex x 3	3,400
zigzag stitch, width 6 to 10 mm	cotton 4 mm with seam crossing up to 8 mm	Nos. 130	cotton 20 tex x 3 35.5 tex x 3	3,000
zigzag stitch, width up to 10 mm	cotton up to 8 mm	Nos. 110 - 130	cotton 20 tex x 3 35.5 tex x 3	2,500
zigzag stitch, width up to 8 mm	blend materials up to 5 mm	Nos. 110	PES 14.35 tex x 3	3,400
zigzag stitch, width up to 10 mm	blend materials up to 8 mm	Nos. 110 - 130	PES 25 tex x 1 x 2 25 tex x 1 x 3	2,500

With blend materials, high sewing speed makes the material melt and stitch onto the needle, thus causing thread ruptures and skipped stitches. To prevent it, the machine speed should be adequately reduced.

I. INSTRUCTIONS FOR SERVICING OF MACHINE

A. GENERAL INSTRUCTIONS

1. Read the instructions of the manual carefully and adhere to them.

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

3. Report any damage which may have occurred during transport to the railway authorities or to the forwarding agents at once. Immediately after unpacking, check the contents against the order and report any discrepancies to us. We cannot recognise delayed claims.

4. Having transported the machine to its work site, remove the preserving grease coating and all dirt. Make sure that no machine part has become loose and that its mechanism is free of any foreign bodies.

5. Lubricate the machine daily!
   Before lubrication, always check whether the lubrication places are clean. It is advisable to lubricate frequently in small quantities. Those parts of the machine which are subjected to increased friction or strain should be lubricated several times a day as needed. Top up the oil tank of the hook as needed.

6. Clean the machine daily, especially the parts which become choked by impurities from the sewn material. During the cleaning, carefully check that the machine parts have not 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, a general overhaul should be carried out, i.e., the whole machine should be dismantled, thoroughly cleaned, all individual pieces and parts of electrical equipment inspected, and faulty or worn out pieces repaired or replaced.

8. Adhere to the safety regulations. Never clean the machine or repair defects while the machine is in operation. Do not remove covers or other safety devices.

9. Electrical equipment of the machine should be kept in a good and safe 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. Never try to repair any defects of the electrical equipment by yourself but call in an expert electrician.

10. We cannot assume any responsiblity for faults 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 a separate 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. Check the lifting of the presser foot by means of the left-side treadle. Insert the connector of the synchronizer cable into the synchronizer socket and secure it by the coupling nut. Pass the cable with the connector from the electric motor through the machine tank, insert it into the socket provided on the machine bed plate, and also secure it by the coupling nut. As for the rest, the machine is supplied in a mounted and ready-to-work state.

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; Tabs. 17, 20)

Before putting the unpacked machine into operation, remove the protective grease coating and clean the machine thoroughly. For oiling all machine mechanisms and the hook is recommended heavy white vaseline oil with viscosity of 50 $mm^2.s^{-1}$ at 20°C. 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 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 flushedout 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 (6, Tab. 17) and (7, Tab. 20) with lubrication grease. Before proceeding to clean the machine, thread and take the hook bobbin out of the hook.

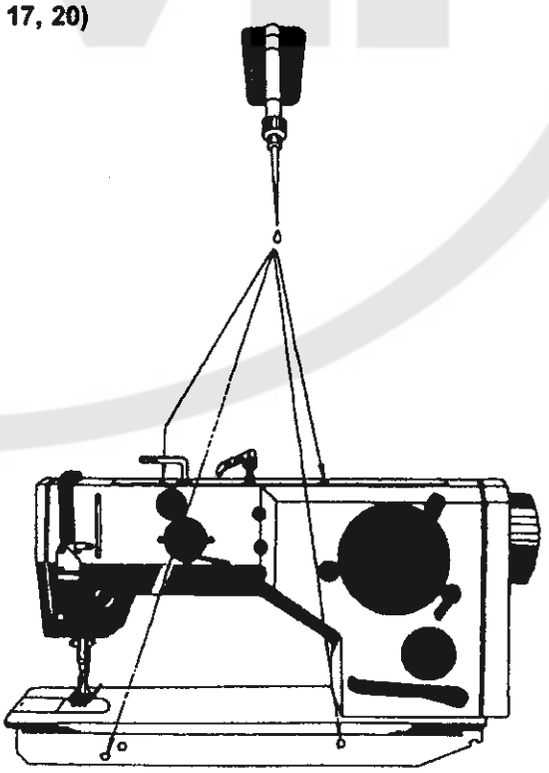


Fig. 1

Once a week, the machine should be thoroughly freed of settled oil and of all impurities.

Warning !
Before proceeding to clean and lubricate the machine, be sure to switch off the main switch and hold your feet away from the machine stand treadles in order to avoid accidental machine start by treadle actuation.

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, anticlockwise). Adjusted at zero, the regulation still provides for a minimum oil flow to the hook preventing it from seizing. After the machine has been put into service, check at regular intervals the oil level both in the hook oil tank and in the oil tank situated on the machine arm.

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

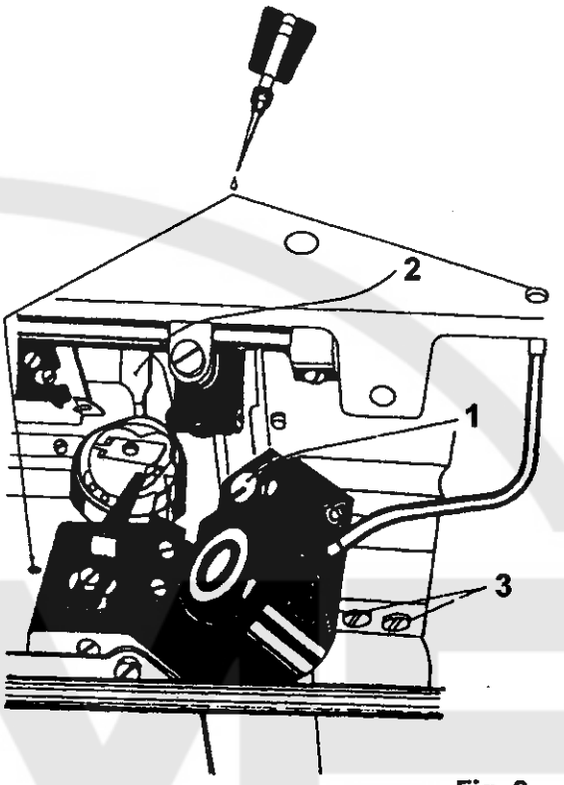


Fig. 2

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 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 handwheel must turn in the direction of the red arrow on the belt guard.

3. Electrical equipment

An electrician connects the machine to the mains. Switch on the electric motor and check whether the pulley turns in the correct direction, i.e., to the left. It this is not the case, the plug of the lead-in cable must 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.

Warning !
Avoid any intervention into the electrical equipment of the machine but call in an electrician. Unqualified intervention involves the risk of accident by electric shock.

4. Needle position check

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

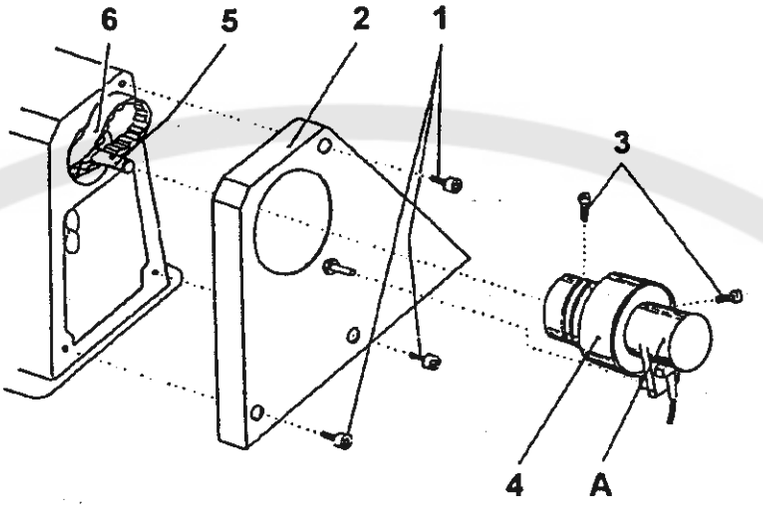


Fig. 3

5. 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: Screw the screws of the synchronizer flange and remove the synchronizer from the shaft, then screw out the screws (4), remove the upper belt guard (1) and then the lower one. Tilt the machine head and remove the V-belt. To mount it, proceed inversely. To ensure the correct needle stop positions, be sure to maintain the correct angular position of the shaft with respect to that of the handwheel. Before proceeding to carry out any adjustment of the machine, be sure that the machine has been switched off.

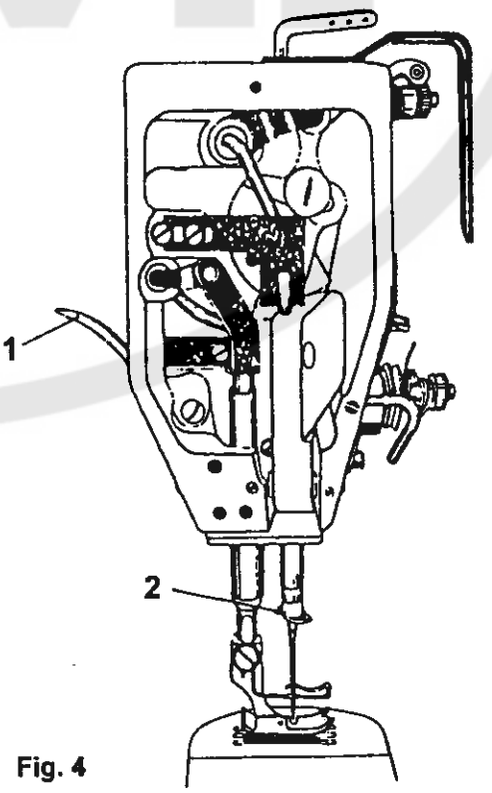


Fig. 4

6. 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.

7. Needles and threads

The machine requires the use of needles Schmetz 134 - 35 of current sizes (see the Table on page 4). 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 advisable to choose a rather thin needle, just permitting 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 thread trimming. The needle size should be adequate to the thickness of sewn work. A needle too thin with respect to the thickness of sewn work is subject to excessive strain (impacts at the needle punches into the 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 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 increases its trouble incidence. With synthetic threads, the sewing speed should be reduced accordingly, to prevent the threads from melting.

8. 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 (2) 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.

Warning !
Before proceeding to exchange the needle, be sure to switch off the main switch and hold your feet away from the machine stand treadles in order to avoid accidental machine start by treadle actuation.

9. 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), the thread guides (3 and 6), and the auxiliary thread guide (9) into the thread take-up lever (10), 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.

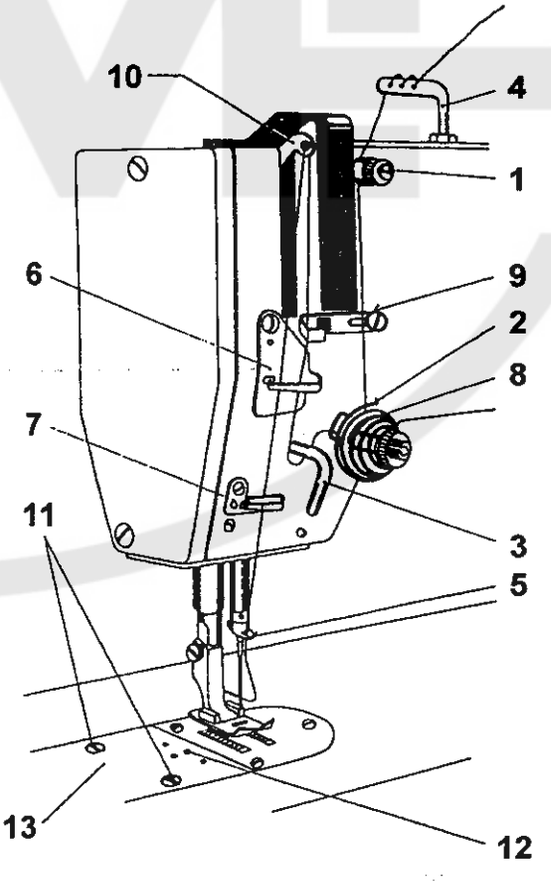


Fig. 5

Warning !
Before proceeding to thread the machine, be sure to switch off the main switch and hold your feet away from the machine stand treadles in order to avoid accidental machine start by treadle actuation.

10. To wind the hook bobbin (Fig. 6)

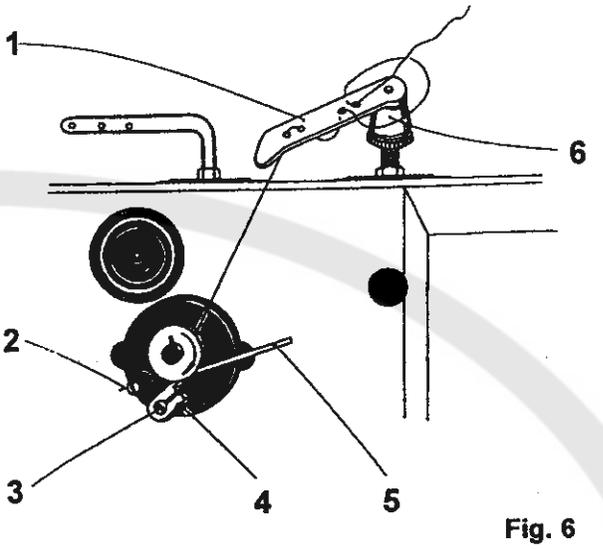


Fig. 6

To wind the lower thread on the hook bobbin, a built-in bobbin winder, supplied separately as Equipment No. 522 792 112 010 00, 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 (1) 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.

To observe:
In machines equipped with upper and lower thread trimmer, increase the tensioner disc (6) pressure during the winding and pay special attention to the winding uniformity by setting the thread guide (8) to adequate position.

11. 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.

Warning !
Before proceeding to exchange the bobbin of the hook, be sure to switch off the main switch and hold your feet away from the machine stand treadles in order to avoid accidental machine start by treadle actuation.

12. 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 being inserted into the hook, tilt the lock fixing the bobbin in the case. With your thumb, push the bobbin case in until you hear a 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.

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

13. 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 by 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.

14. Sewing - work proper

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

To observe:
After the new machine has been put in use do not charge it fully from the very beginning. During the first two or four weeks, when the machine is running-in, increase its speed gradually from about 3,000 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 lengh, 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 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.

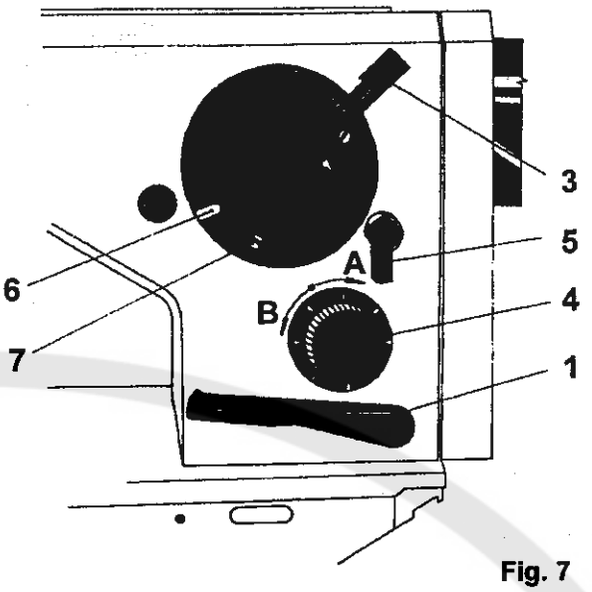


Fig. 7

3. Thread tension adjustment

The tension of the upper and the lower thread must be so interrelated that the stitch binding 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.

To ensure correct thread trimming operation, special care should be paid to the above described thread tension adjustment. Also adjust the upper thread tension on the ancillary thread tensioner whose influence on the stitching proper and on the stitch formation is negligible but which affects the length of the upper thread end reaching out of the needle eye after the trimming operation. By increasing its tension you shorten the end and increase the quality of the subsequent stitching beginning, however, with increased risk of the thread end getting threaded out of the needle eye in that phase. On the other hand, too small tension of the ancillary tensioner means too long thread ends and impairs the stitch quality on the underside of sewn work at the beginning of the next stitching. Therefore, due care should be paid to the correct tension adjustment on the ancillary thread tensioner.

4. To adjust the feed-dog height above the throat plate (Fig. 8)

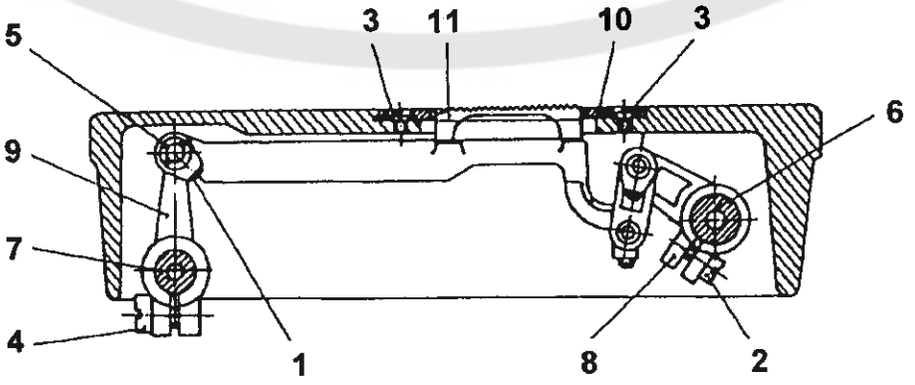


Fig. 8

The height of the teeth of the feed-dog (11) above the throat plate (10) 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).

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 4 mm above the throat plate, and retighten the screws of the belt wheel.

6. To adjust the throat plate (Fig. 8)

The throat plate (10) must be properly seated and fixed by screws (3) in a position ensuring that the needle passes throught 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. 9)

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 + 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 0.05 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.

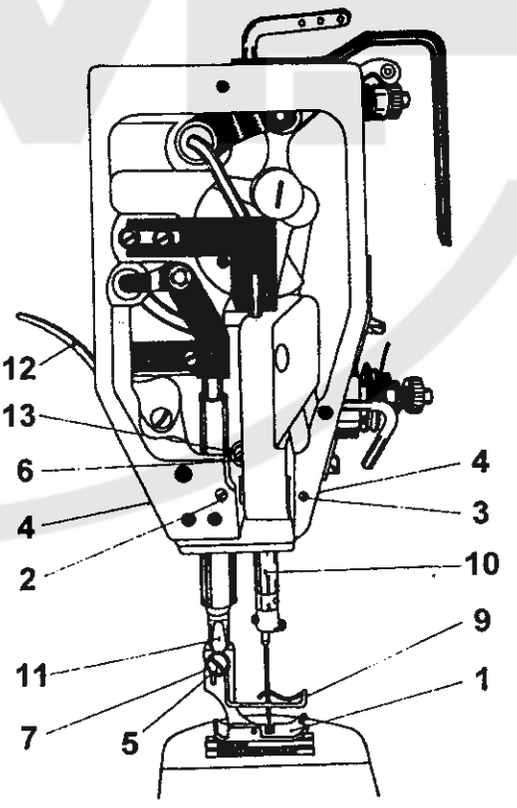


Fig. 9

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.

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 (Fig. 7)

Loosen the screw of the lever on the pin (1) of the reverse stitching hand lever, set the stitch length regulation knob (4) 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. 10)

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.

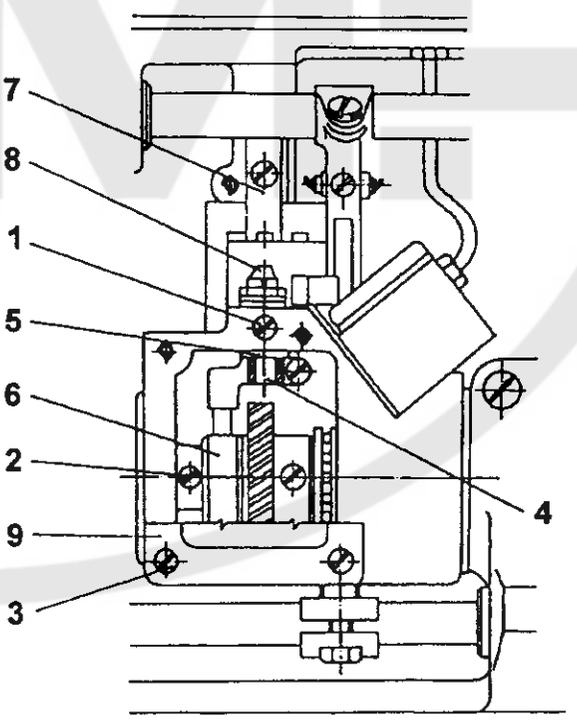


Fig. 10

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. 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. 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. 9)

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.

15. To take off mount the drive belt (Fig. 3)

Remove first the synchronizer (A). Mark the position of the hub with respect to the handwheel if it has not been marked already. Screw out the screws (1), remove the upper belt guard (2), then the V-belt from the handwheel, and afterwards after loosening the two screws (3), take the handwheel with the bearing (4) out of the machine arm and from the upper shaft (5). Pass the drive belt (6) through the aperture thus created in the machine arm around the upper shaft, set it on the two belt wheels, and mount the handwheel with the bearing back on the upper shaft in such a position that the first screw, considered in the sense of rotation of the handwheel, comes to sit on the small flat surface of the upper shaft, when tightened. Secure the handwheel by tightening the screws (3), put the V-belt on the handwheel, mount the belt guard, and then the synchronizer in the marked angular position.

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

16. To adjust the needle punches longitudinally into the centre of the slot of the throat plate (Fig. 9)

Adjust the zigzag stitch to the zero width and turn the handwheel 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.
Absence of play between the adjusting screws (4) and the needle bar holder involves the risk of damages to the needle bar mechanism.

17. To adjust the needle punches transversely into the centre of the slot of the throat plate (Tabs. 1, 3)

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 this position, the needle should be at the centre of the groove both in the transverse and in the longitudinal direction.

If this is not the case, screw out the screw (26) and take the cover (25, Tab. 1) out of the front part of the machine arm, and the opposite plug, out of its rear part. Then loosen with a screwdriver the two screws (27, Tab. 3) and adjust the complete needle bar holder (4) so as to set the needle at the centre of the throat plate groove, and reinsert the cover and the plug. 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 (Fig. 11)

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, screw out the four screws (6), remove the upper cover (1), loosen the screws (2) of the gear wheel (3) on the upper shaft (4), adjust the angular position of the handwheel accordingly, retighten the screws (2) thoroughly, and mount the upper cover (1) by screwing in the four screws (6).

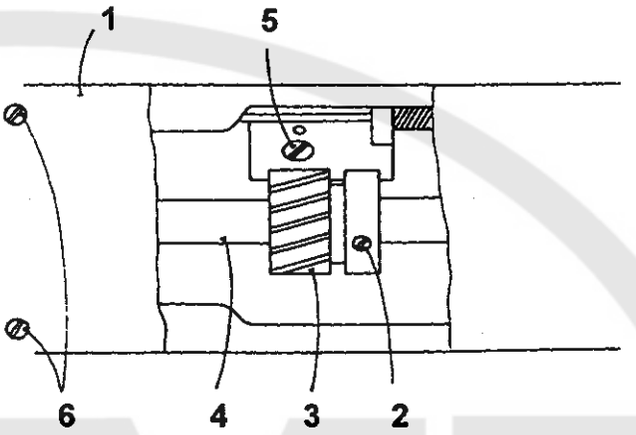


Fig. 11

19. To adjust the control force required for stepless adjustment of the zigzag stitch width (Fig. 12, 13)

For the stepless tilting of the zigzag stitch bracket, the inlay (10, Fig. 12) of the body of the zigzag stitch mechanism contains the braking roller (1) with the spring (5) and with the adjustment screw (8). Turning the screw to the right increases the pressure exerted on the roller and, consequently, the force required to adjust the stitch width. A mechanism actuated by the lever (7) serving to fix the adjusted stitch width must be turned to the left prior to proceeding to the stitch width adjustment which is carried out by the lever (2) 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 (1, Fig. 13) shows the approximative stitch width value at each lever position.

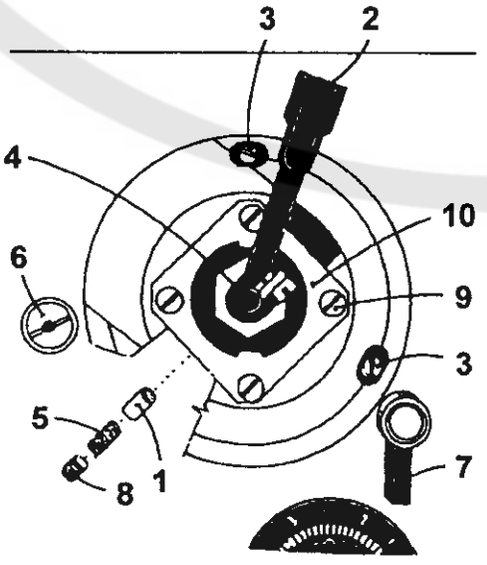


Fig. 12

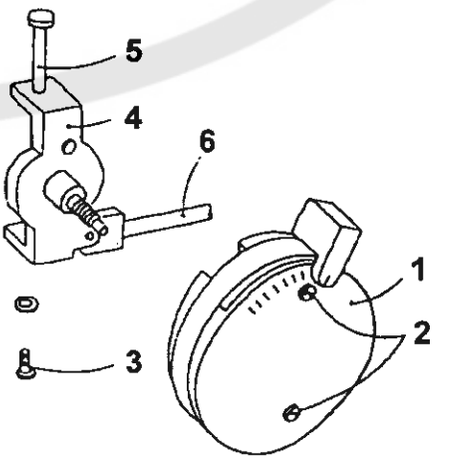


Fig. 13

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 (2) from the body of the mechanism, remove the cover (1), screw out the three attachment screws (3, Fig. 12) from the body of the zigzag stitch mechanism, then screw out the securing screw (3, Fig. 13) on the pin (5), remove the pin from the guiding (4), loosen the fixing lever (7, Fig. 12) and take the pin (6, Fig. 13) 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 (Figs. 11, 12)

The tooth play of the zigzag stitch transmission mechanism is actuated by the eccentric pin (6, Fig. 12). To adjust the tooth play, first screw out the four attachment screws (6, Fig. 11), remove the upper cover (1), and loosen the screw (5) located in the lug of the machine arm. By turning then the eccentric pin (6, Fig. 12) adjust the tooth play of the zigzag transmission mechanism, i. e., between the complete cam and the gear wheel (3, Fig. 11) mounted on the upper shaft (4), then lock the adjusted position by throughly tightening the screw (5).

21. To adjust the position of the needle bar with respect to that of the hook shaft (Figs. 2, 14)

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 (3, Fig. 2) 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. Lock the gear box position by tightening the two screws (3).

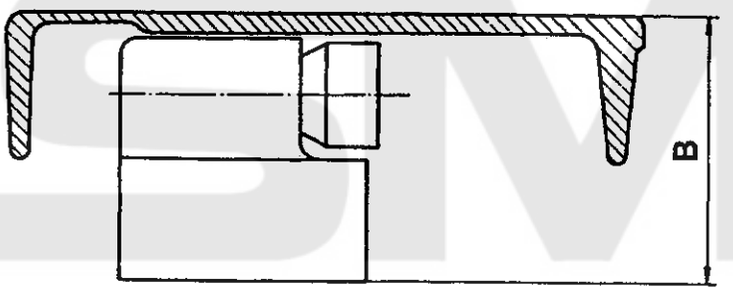


Fig. 14

To observe:
If the gear box of the hook has been removed be sure to reinstall it so as to ensure the parallelism of the hook shaft axis with the bed plate plane. Check the parallelism for instance by means of two shafts laid onto the upper surface of the bed plate and onto the worked surface of the gear box, and measure the value (B, Fig. 14).

22. To adjust the operation of the adjusting spring (Fig. 15)

Loosen the screw (1) and take the complete upper thread tensioner out of the machine arm. To adjust the tension of the adjusting spring (2), loosen the screw (3) on the bushing (4) and adjust the angular position of the pin (5). Turning the pin to the left will decrease 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.

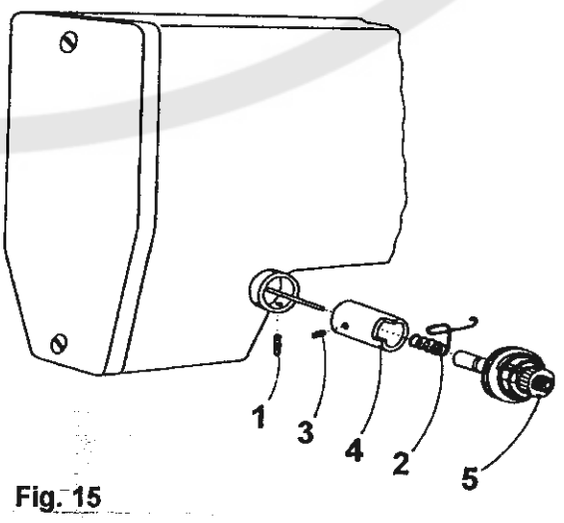


Fig. 15

23. To time the trimmer actuating cam (Fig. 16)

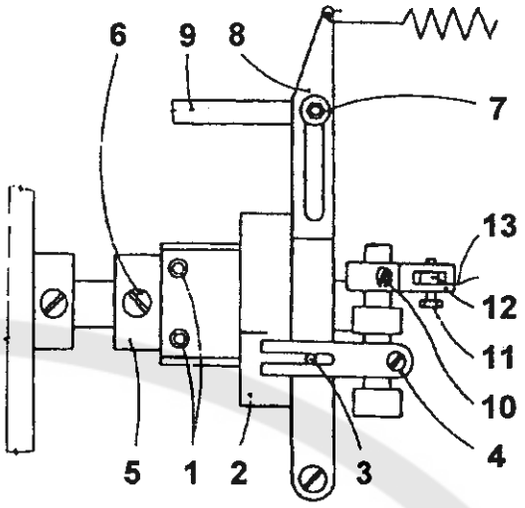


Fig. 16

The correct and trouble-free function of the thread trimmer device requires the correct setting of the trimmer actuating cam mounted on the lower shaft and commanding the movement of the moving cutter which serves also to catch and draw out the threads prior to their trimming, as well as the mechanism for loosening the thread tensioner. With the machine switched off, rotate the handwheel until the thread take-up lever reaches its top position. Mark this position on the handwheel and on the machine arm (on the belt guard) by provisional signs, then tilt the machine and rotate the handwheel until the two provisional signs are aligned. Loosen the two screw (1) of the cam (2) and set the cam thus loosened so that its index line (marked in red) coincides with the axis of the pin (3), then lock the cam by tightening the screws (1).This is the basic position of the cam which, however, can require some adjustment depending on the kind of the threads, sewn work, etc. The triming of the drawing hook movement is governed by the angular position of the cam on the lower shaft. Tilt the machine head and insert the pin (3) into the straight section of the cam groove by depressing the lever transmitting motion from the electromagnet. Turning then the handwheel towards the operator (anticlockwise) you can time the beginning of the drawing hook movement from its initial to rear position. If adjusted correctly, the point of the drawing hook comes to lie in immediate vicinity of the throwaway section of the hook at the moment when the lower thread leaves the latter, thus forming the typical triangle. During the subsequent rotation of the handwheel, the drawing hook point shall pass through the triangle, one arm of the upper together with the lower thread lying on one side, the other arm of the upper thread on the other side, of the drawing hook. The threads lying on the notched side of the drawing hook shall enter the notch. For adjustment, loosen the two screws (1) on the cam (2) and turn the cam either in the sense of the lower shaft rotation, to speed up the beginning of the drawing hook movement, or inversely. After the adjustment check whether the pin (3) enters freely the straight section of the cam (2) upon depression of the lever (4), press the carrier ring (5) onto the cam thus adjusted, and retighten it by screws (6) on the lower shaft.

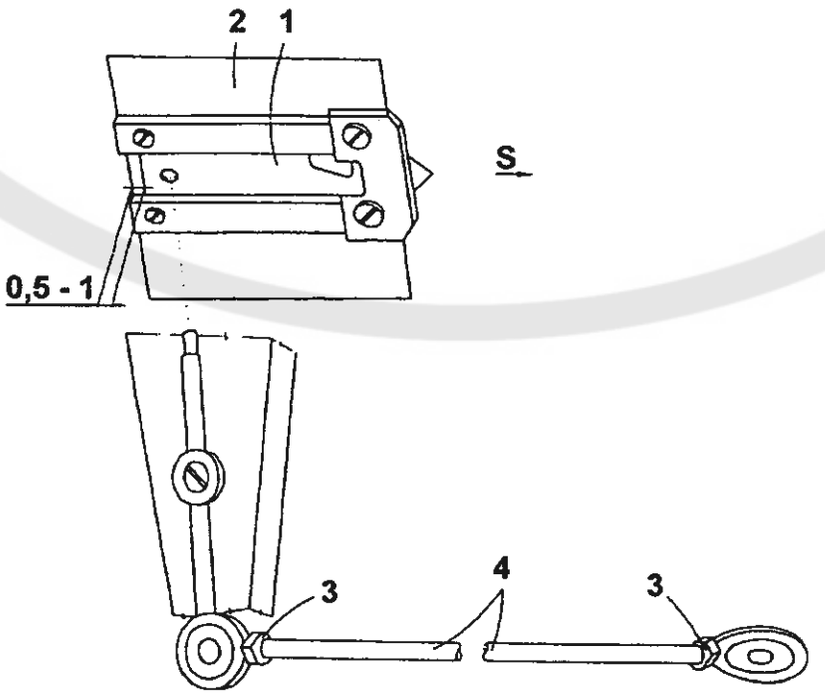


Fig. 17

24. To adjust the starting position of the drawing hook (Fig. 17)

In the starting position of the drawing hook (1) there shall be a distance of 0,5 to 1 mm between its outer edge and the outer edge of the removable slide plate (2) (aligned with the outer edge of the bed plate). The slide plate should be attached to the bed plate in a position leaving no gap between the slide plate and the throat plate. To adjust the drawing hook position, loosen the locking nuts (3) and turn the connecting tie-rod (4) so as to obtain its length required for fixing the correct position of the drawing hook, then retighten the locking position.

25. To adjust the stroke of the drawing hook (Fig. 16)

Insert the pin (3) into the cam (2) and rotate the handwheel towards you until the lower thread and one arm of the upper thread enter the notch provided on the side of the drawing hook. If they do not enter, loosen the nut (7) on the swinging lever (8) and displace the lever (9) in the groove of the lever (8). To increase the drawing hook stroke, increase the length of the lever arm, and inversely. Fix the adjusted position by retightening the nut (7).

26. To adjust the stationary knife for correct thread trimming (Fig. 5)

The correct trimming operation depends among others on the pressure force of the stationary knife. The pressure force can be increased by screwing in the screw (12) in the slide plate (13), and decreased by screwing it out. The pressure force should be just sufficient for proper trimming to avoid excessive wear of both the stationary knife and the drawing hook (moving knife). If in spite of this adjustment the trimming operation remains unsatisfactory, check the cutting blade of the stationary knife and improve it, or exchange the knife.

27. To adjust the loosening of the upper thread tensioner (Fig. 16)

For correct operation, the main upper thread tensioner must be loosened during the thread trimming cycle. This loosening is actuated automatically in due phase of thread trimming operation, via bowden (13) and a lever system during the activation of the trimmer device. If the loosening fails to take place adjust the bowden tension after loosening the screw (11) of the lever (12) or by loosening the screw (10) and swinging the whole lever (12) as needed.

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

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

29. Available length of upper thread

The available upper thread length depends on the following factors:

a) Tension of the ancillary thread tensioner:
   The available upper thread length increases with decreasing tension of the ancillary thread tensioner, and inversely.
b) Machine stop with respect to thread take-up position:
   The sooner (before the upper dead point of the thread take-up lever) the machine is stopped, the smaller is the available upper thread length, and inversely.

30. To remove and insert the slide plate (Fig. 5)

If it is necessary to remove the slide plate (13) we loosen the screws (11) fixing the slide plate to the machine bed plate, and take the slide plate out. Proceed inversely to insert the slide plate.

31. To remove and to mount trimmer knife (the drawing hook) (Fig. 17)

Remove the slide plate (2) (see par. 30) and take the knife (1) out of the guiding by moving it in the direction of the arrow "S".

32. 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.

Warning !
Avoid any intervention into the electrical equipment of the machine but call in an electrician. Unqualified intervention involves the risk of accident by electric shock.

III. MAINTENANCE

1. Machine cleaning

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

Warning !
Before proceeding to clean and lubricate the machine, be sure to switch off the main switch and hold your feet away from the machine stand treadles in order to avoid accidental machine start by treadle actuation.

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 carried 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 6).
b) Slow machine start	Insufficient belt tension.	Increase the belt tension by tilting the electromotor.
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 13.
	4. Faulty upper thread guiding or needle threading.	4. Thread the upper thread correctly see par. 9, page 9.
	5. Incorrect upper thread tension.	5. Adjust it see par. 3, page 12.
	6. Bad needle quality or bent needle.	6. Exchange the needle see par. 8, page 9.
	7. Thread size is inadequate to the thickness of 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 13.
	9. Thread wound on the hook.	9. Remove the thread.
	10. 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. 12, page 10.
	2. Thread is too thin or not stroung enough.	2. Use adequate thread.
	3. Thread is wound incorrectly on the bobbin.	3. Wind it on the bobbin correctly.
	4. Damaged bobbin.	4. Exchange it.
	5. Too sharp pressure spring on the bobbin case.	5. Exchange the spring.
e) Skipped stitches	1. Needle inserted incorrectly.	1. Insert it correctly see par. 8, page 9.
	2. Blunt or bent needle.	2. Exchange it see par. 8, page 9.
	3. Slashed or broken hook point.	3. Exchange the hook.

Fault	Cause	Removal
	4. Excessive needle aperture in the throat plate.	4. Exchange the throat plate and set it correctly see par. 6, page 13.
	5. Broken adjusting spring for upper thread tension.	5. Exchange the spring and adjust the upper thread tension see par. 3, page 12.
	6. Needle bar positioned too high or too low.	6. Adjust it see par. 8, page 13.
	7. Overturned hook, incorrect hook course.	7. Adjust the hook course see par. 9, page 13.
	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 12.
	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. 8, page 9.
	4. Needle inserted incorrectly.	4. Insert it correctly see par. 8, page 9.
	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 12.
g) Heavy and irregular feeding	1. Feed-dog positioned too low.	1. Adjust it in height see par. 4, page 12.
	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 disks slashed by upper thread.	1. Exchange them and adjust the upper thread tension see par. 3, page 12.
	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 see par 9, page 9.
	4. Thread broken and caught between the tensioner disks.	4. Clean the thread tensioner and adjust it see par. 3, page 12.
	5. Incorrect proportion between the upper and lower thread tensions.	5. Correct the proportion see par. 3, page 12 and check it from time to time.

Fault	Cause	Removal
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. Thread it correctly see par. 12, page 10.
	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 12.
	5. Premature feeding.	5. Adjust it see par. 5, page 13.
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 recommended in par. 5, page 6 onto the hook.
2. Basic faults referring to thread trimmer device		
a) Insufficient length of upper thread available resulting in threading out of upper thread out of the needle eye at the machine start: the machine fails to start stitching	1. Excessive tension of ancillary thread tensioner.	1. Reduce the tension.
	2. Premature timing of the cam.	2. Adjust the timing.
	3. The machine stops before reaching the top dead position.	3. Adjust it correctly.
	4. The electromagnet serving to release the main thread tensioner fails to operate.	4. Ascertain the cause and repair the trouble.
	5. Incorrect upper thread unwinding.	5. Repair it.
	6. The edge of the active section of the drawing hook is too sharp and tends to cut the thread.	6. Polish the edge.
	7. Too sharp hook edge.	7. Polish it.
b) Insufficient amount of lower thread, the machine fails to start stitching	1. The lower thread end is drawn into the bobbin case.	1. Increase the lower thread tension while being wound on the bobbin.
	2. Excessive speed prior to machine stop.	2. Set it at 140 r.p.m. or less.

Fault	Cause	Removal
	3. Excessive lower thread tension.	3. Reduce it.
	4. Burrs on the cover sheet not he hook.	4. Polish it.
c) Thread ends are poorly cut or are not cut at all	1. Maladjusted (insufficient) pressure of stationary knife.	1. Increase the tension of the ancillary thread tensioner.
	2. The stationary or the moving knife (the drawing hook) is blunt.	2. Adjust the cam timing.
e) The upper or the lower thread fails to be cut	1. Incorrect cam timing.	1. Time it correctly.
	2. Skipped stitches at reduced speed.	2. Adjust the mechanism.
	3. Poor thread separation by the drawing hook.	3. Adjust or exchange the drawing hook.
	4. Insufficient stroke of drawing hook.	4. Adjust it see par. 24, page 19.
f) Neither thread is cut but the needle movement from the lower to the upper position does take place	1. Incorrect cam timing.	1. Time it correctly.
	2. The electromagnet controlling the thread cutting fails to operate correctly (gets stuck).	2. Check the wiring of the electromagnet or exchange it.
	3. Insufficient stroke of drawing hook.	3. Adjust it see par. 24, page 19.
g) Stitching begins only after a few skipped stitches	1. Insufficient supply of upper thread.	1. Increase it see par. 29, page 19.
	2. Insufficient supply of lower thread.	2. Repolish the drawing hook and the hook.
h) At the seam beginning, the upper thread end protrudes above sewn work	Excessive supply of upper thread.	1. Increase the tension of the ancillary thread tensioner. 2. Adjust the cam timing. 3. Adjust the machine stop in the needle up position.

V. HOW TO ORDER SPARE PARTS

Please specify in each order:

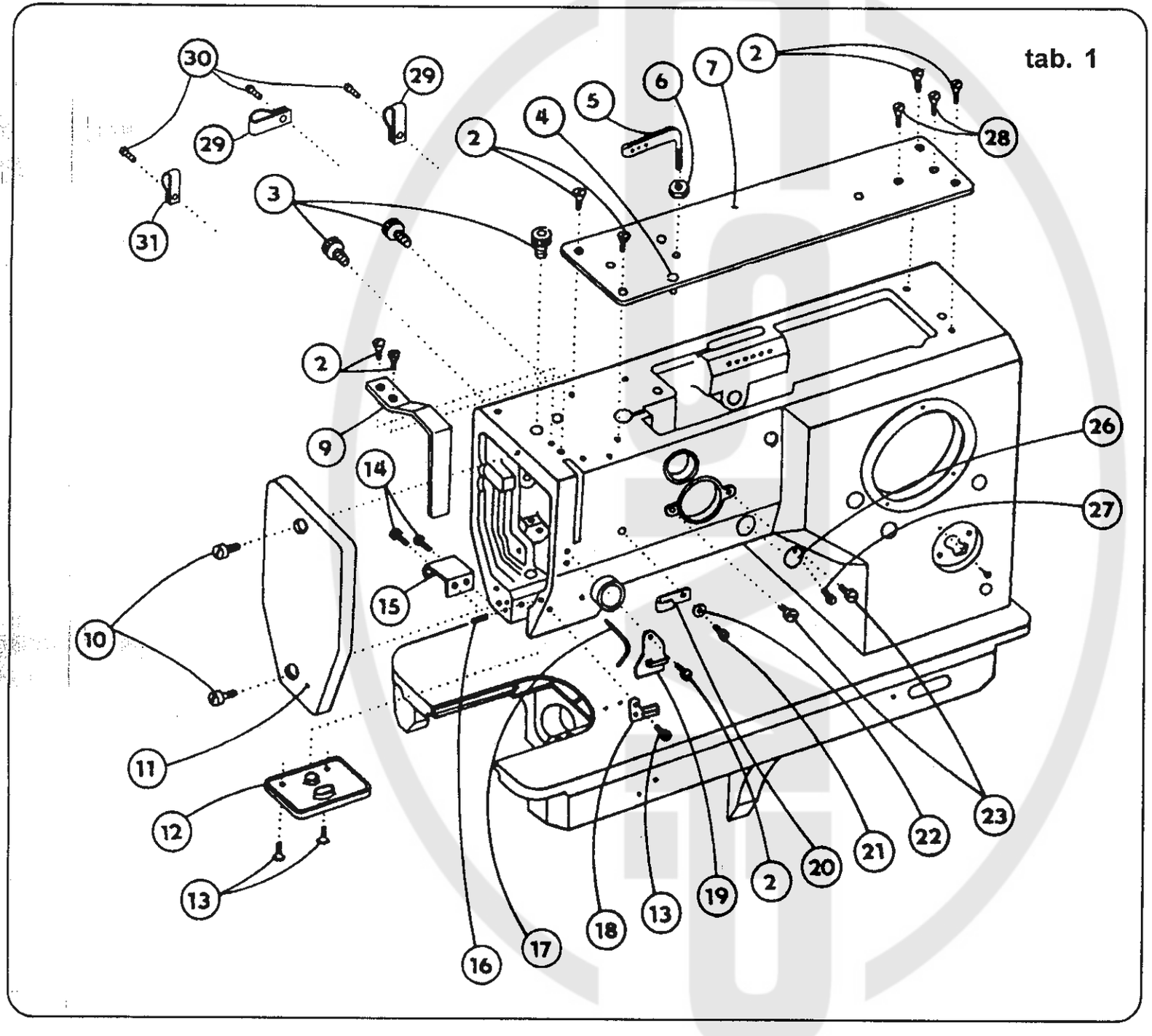
1) Machine type and its production No.
2) Designation of part (a six digit number for parts produced at our factory, and a twelve digit number for parts bought from our sub-contractors)
3) Number of parts required

For instance:

ZZ 568 H - TD, No. 205		
	021.243	2 parts
	828.079	4 parts
272213	017015	1 part
323114	618117	1 part

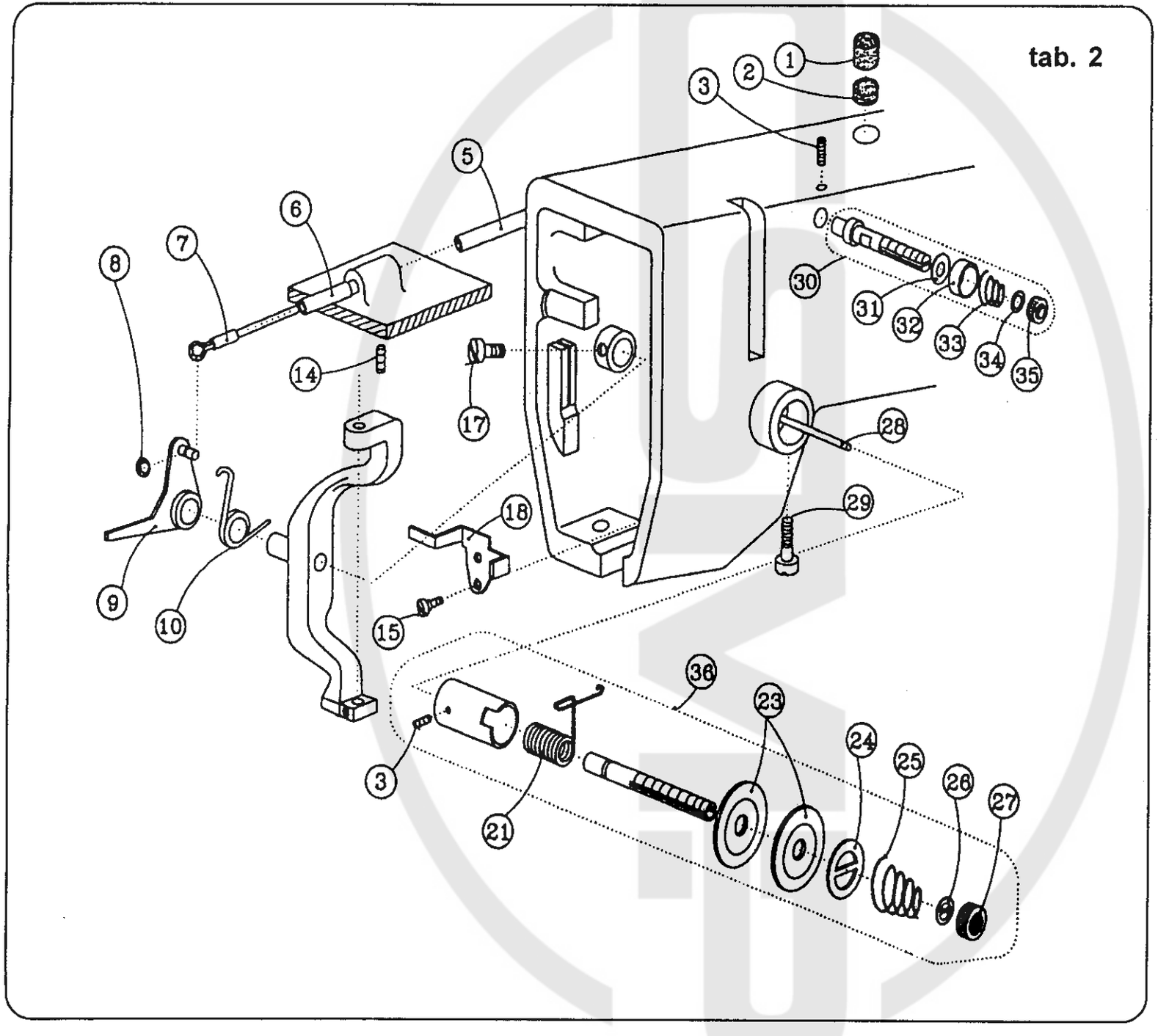
As we are continually endeavouring to improve our machines, we amend also the accompanying technical documentation accordingly. It is, therefore, strongly recommended to order spare parts exclusively on the basis of catalogued attached to the machine in question.

We wish you much success in your work.



ZZ 568 H - TD

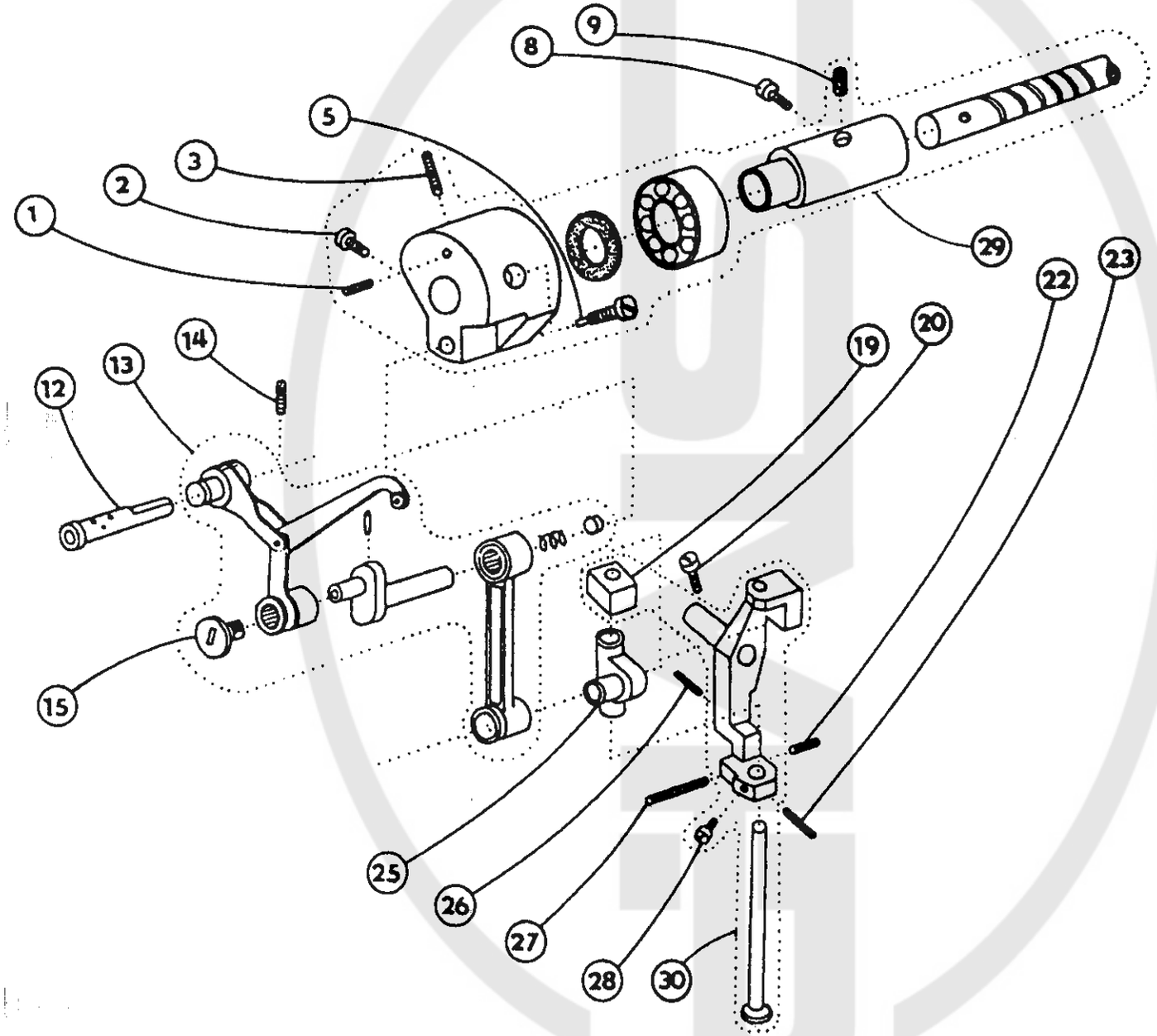
2	S080	123117
3	S321	001000
4	S080	840073
5	S080	313204
6	S080	161138
7	S080	815007
9	S080	831348
10	S080	120248
11	S080	721173
12	S080	827180
13	S080	123122
14	S080	126063
15	S080	823149
16	S080	111227
17	S080	271184
18	S080	821115
19	S080	821077
20	S080	821113
21	S080	120361
22	S080	190368
23	S080	132112
26	S080	831494
27	S080	123166
28	S080	132153
29	9840	120030
30	S080	120331
31	9840	120028



ZZ 568 H - TD

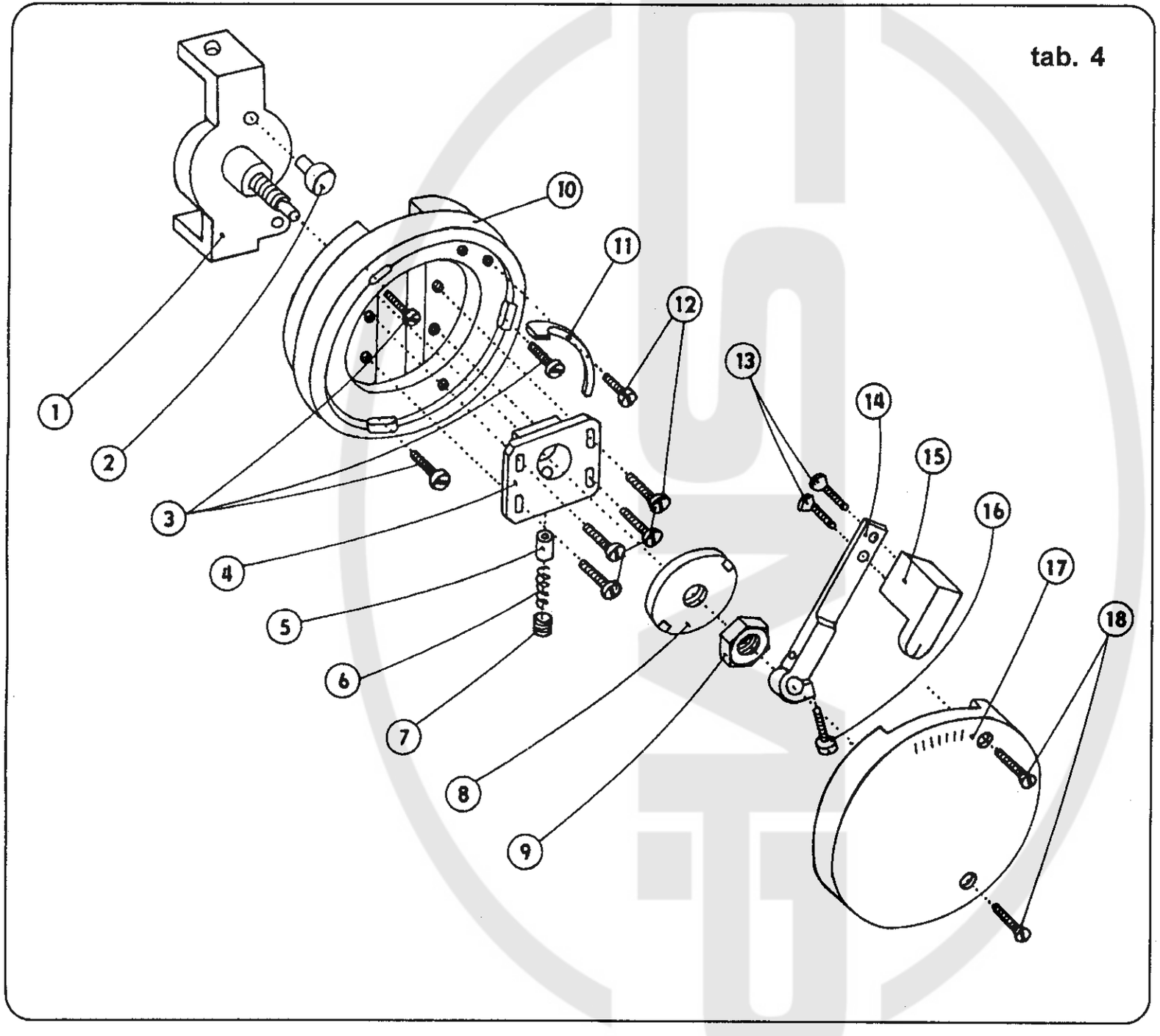
1	S080	945188
2	S080	945100
3	S080	111227
5	S080	278009
6	S080	410511
7	S980	049786
8	S080	274104
9	S980	049806
10	S080	264274
14	S080	111245
15	S080	131027
17	S080	120248
18	S080	822424
21	S315	264294
23	S080	828079
24	S080	828080
25	S080	262074
26	S080	195041
27	S080	171037
28	S080	310428
29	S080	120246
30	S980	025160
31	S080	828051
32	S080	827174
33	S080	262065
34	S081	200025
35	S080	171030
36	S980	025244

tab. 3



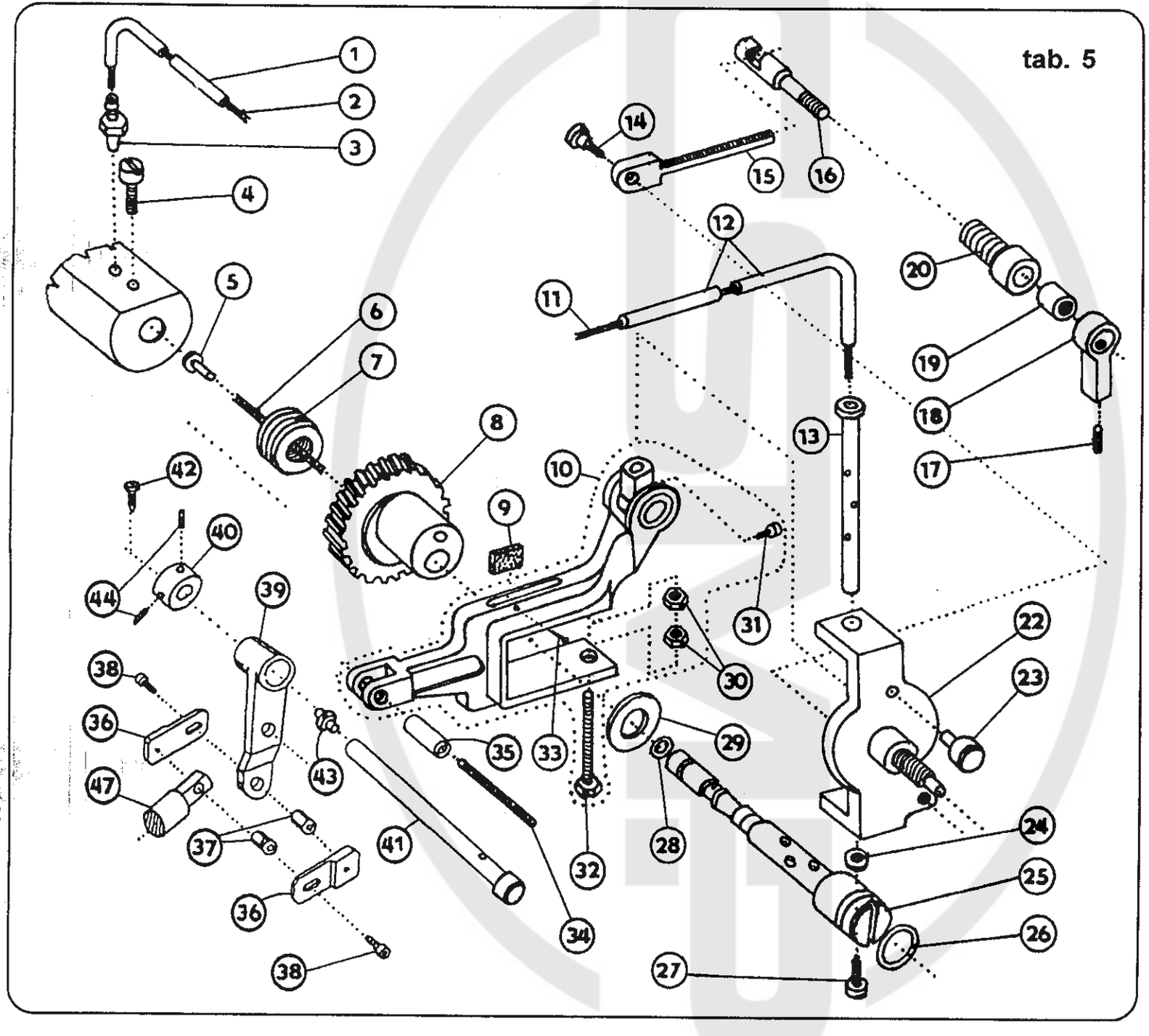
ZZ 568 H - TD

1	S080	111238
2	S080	122007
3	S080	112015
5	S080	138009
8	S080	120006
9	S080	953139
12	S080	328005
13	S980	044727
14	S080	112014
15	S080	120062
19	S080	953159
20	S080	120248
22	S080	111214
23	S080	111295
25	S080	452047
26	S080	111273
27	S080	111126
28	S080	120216
29	S980	043343
30	S980	035318



ZZ 568 H - TD

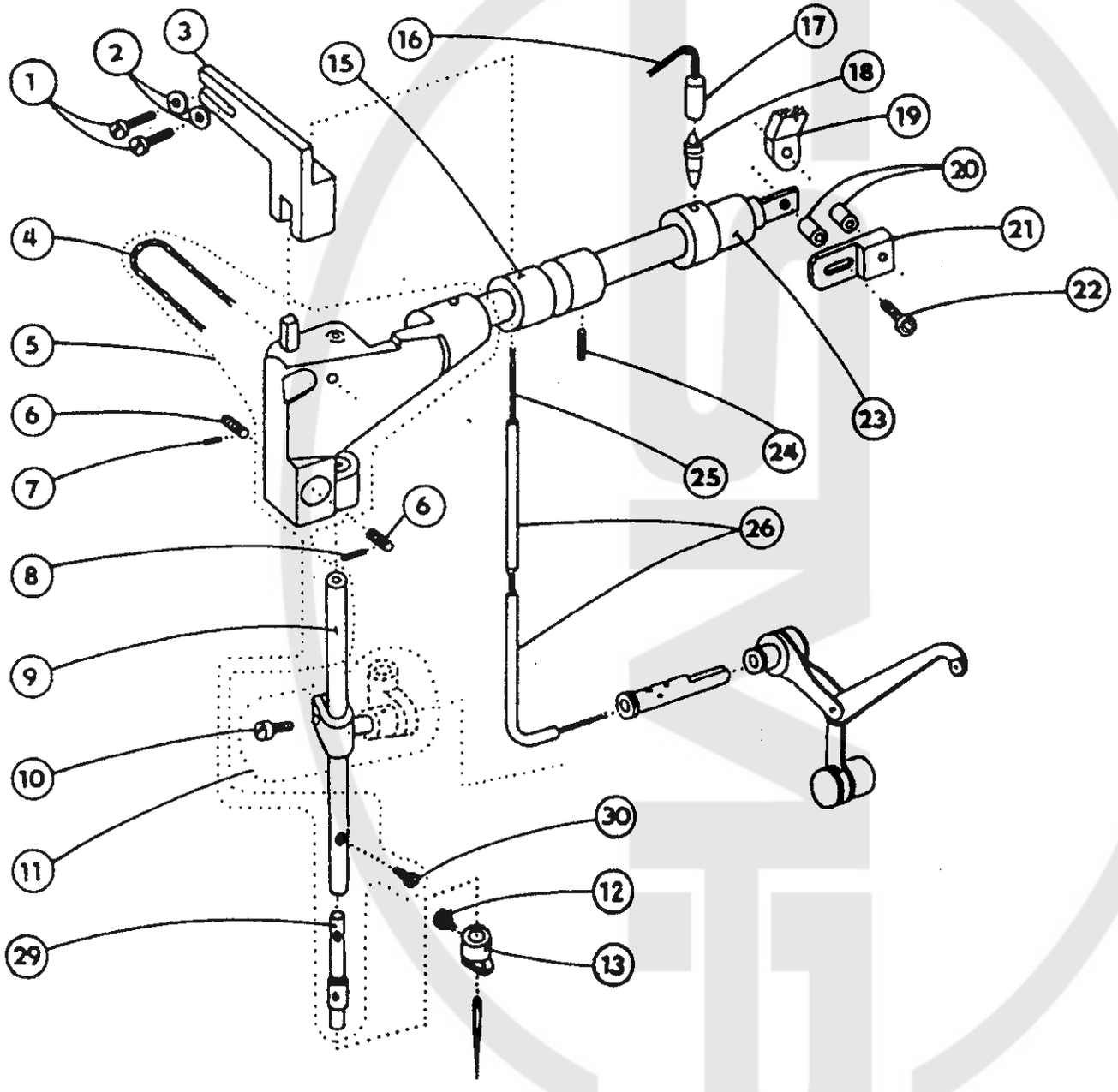
1	S080	646027
2	S080	322247
3	S080	120276
4	S080	646120
5	S321	020000
6	S080	260139
7	S080	111099
8	S080	174066
9	S080	161236
10	S080	442530
11	S080	839010
12	S080	120219
13	S080	126101
14	S080	613472
15	S080	952251
16	S080	120543
17	S080	945048
18	S080	123130



ZZ 568 H - TD

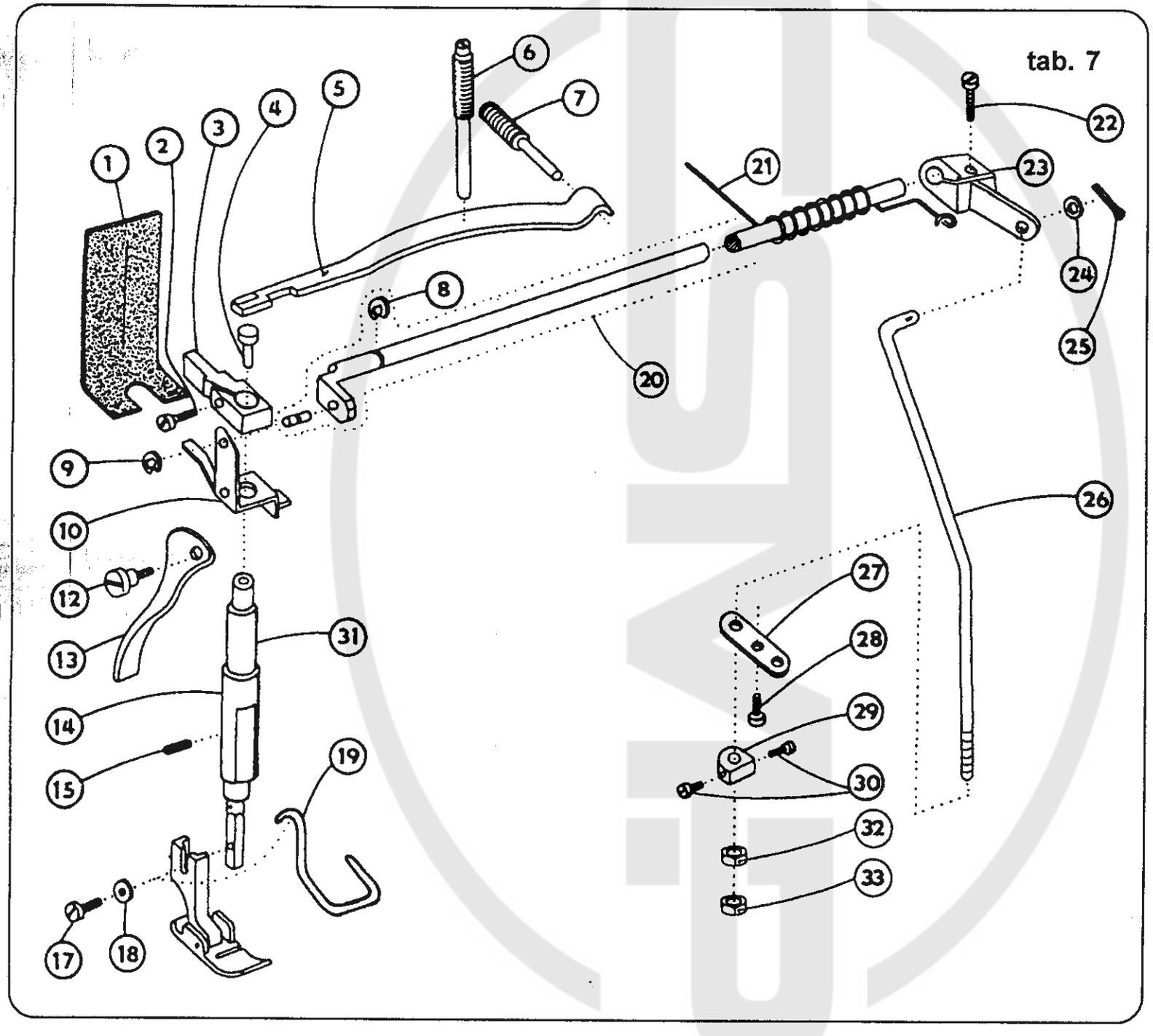
1	S283	002005
	ø 3,5/ø 4,8 x 100 mm	
2	S708	130002
	ø 2 x 140 mm	
3	S080	424051
4	S080	120233
5	S080	951327
6	S708	002105
	ø 1,5 x 50 mm	
7	S324	010000
8	S980	035598
9	S080	945326
10	S980	024263
11	S708	130002
	ø 2 x 270 mm	
12	S283	002005
	ø 3,5/ø 4,8 x 210 mm	
13	S080	335101
14	S080	131391
15	S080	152099
16	S080	334097
17	S080	112101
18	S080	612342
19	S080	163093
20	S080	422184
22	S080	646027
23	S080	322247
24	S080	190359
25	S080	335105
26	S273	007000
27	S080	120221
28	S273	001001
29	S080	190526
30	S080	161233
31	S080	120291
32	S080	141223
33	S738	002000
34	S708	130002
	ø 2 x 150 mm	
35	S080	318210
36	S080	648132
37	S080	410595
38	S080	120589
39	S080	613519
40	S080	436000
41	S080	320289
42	S080	132203
43	S425	041000
44	S080	112013
47	S980	021395

tab. 6



ZZ 568 H - TD

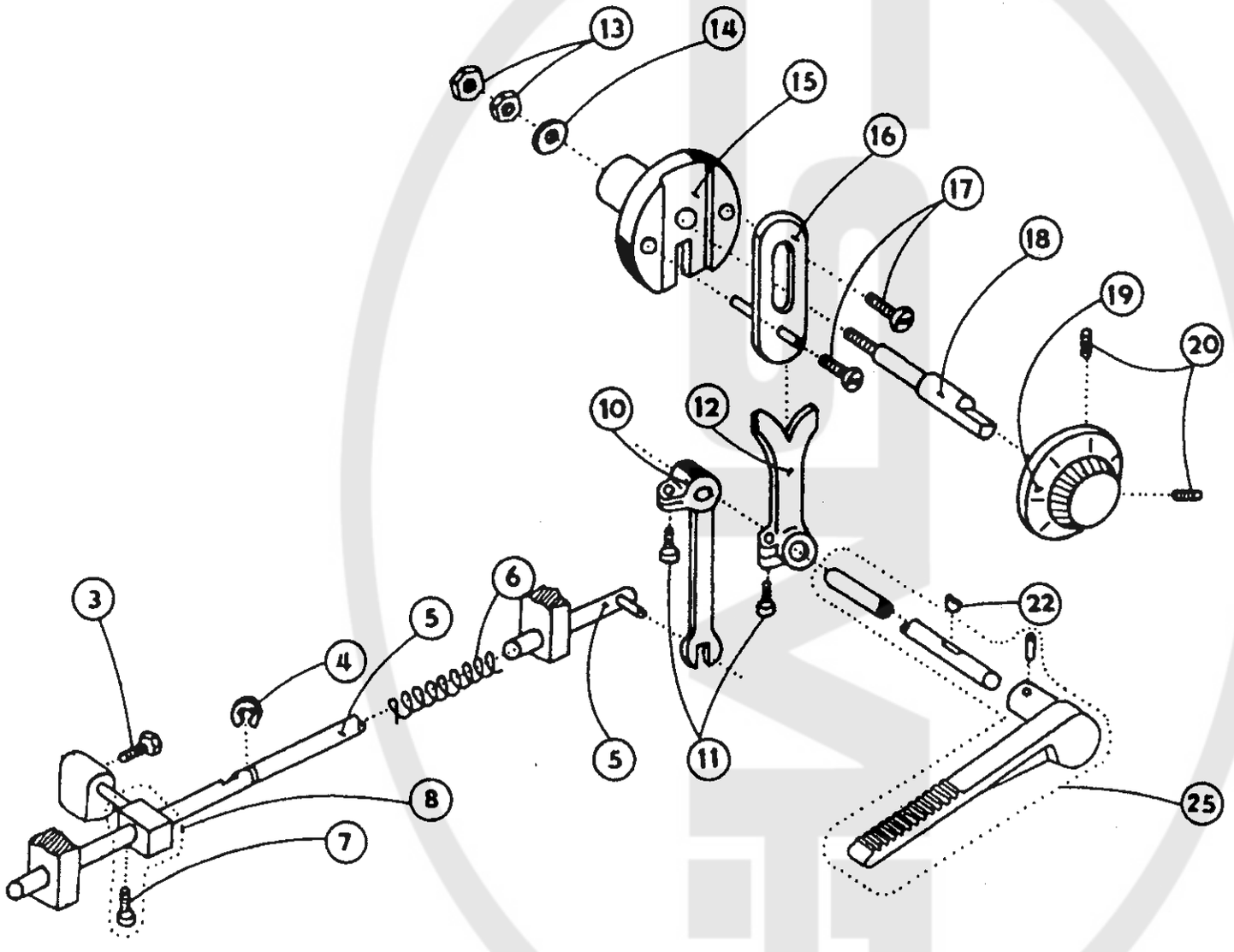
1	S080	120276
2	S080	190353
3	S080	646104
4	S708	002105
	ø 1,5 x 80 mm	
5	S980	021394
6	S080	113115
7	S080	111229
8	S080	111248
9	S080	391176
10	S080	124050
11	S980	035499
12	S080	135029
13	S080	627170
15	S080	413311
16	S708	002105
	ø 1,5x 250 mm	
17	S283	002005
	ø 3,5/ø 4,8 x 190 mm	
18	S080	424051
19	S080	613519
20	S080	410595
21	S080	648132
22	S080	120589
23	S080	421341
24	S080	111222
25	S708	002105
	ø 1,5 x 150 mm	
26	S283	002005
	ø 3,5/ø 4,8 x 70 mm	
29	S080	394167
30	S080	136082



ZZ 568 H - TD

1	S080	945317
2	S080	120543
3	S080	623249
4	S080	326213
5	S080	283152
6	S080	113122
7	S080	113123
8	S311	732060
9	S311	732040
10	S080	839215
12	S080	136023
13	S080	615021
14	S080	421330
15	S080	112014
17	S080	120239
18	S080	190554
19	S080	271393
20	S980	060209
21	S080	264296
22	S080	120221
23	S080	613453
24	S080	190346
25	S080	271337
26	S080	382102
27	S080	814014
28	S080	120217
29	S080	436331
30	S080	120050
31	S080	392105
32	S080	161139
33	S080	161333

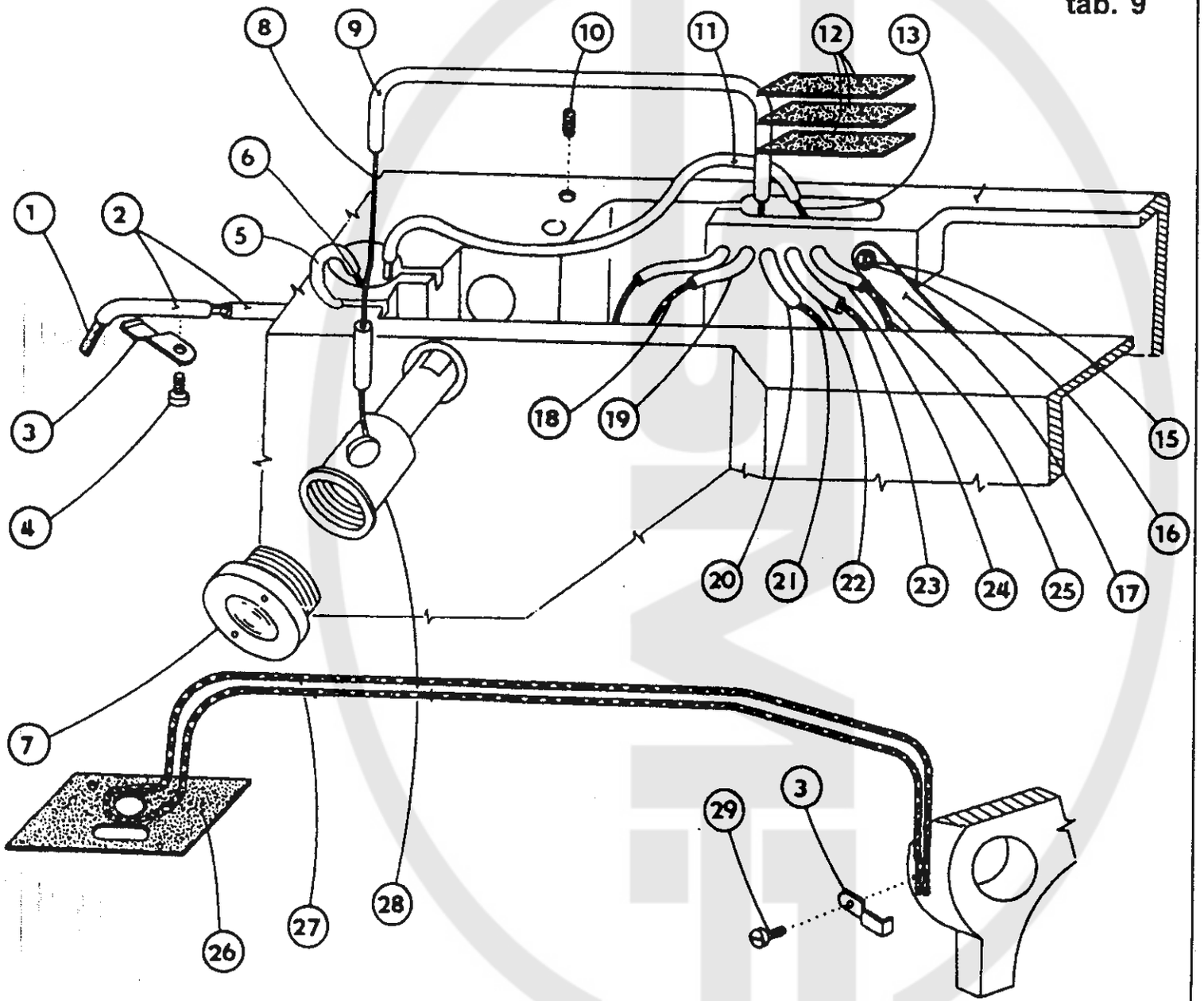
tab. 8



ZZ 568 H - TD

3	S080	141102
4	S311	732070
5	S980	043301
6	S080	260547
7	S080	120227
8	S980	022126
10	S080	613373
11	S080	120221
12	S080	613328
13	S080	161142
14	S080	192061
15	S080	441187
16	S980	049785
17	S080	120246
18	S080	342258
19	S980	233031
20	S080	112013
22	S311	728537
25	S980	044714

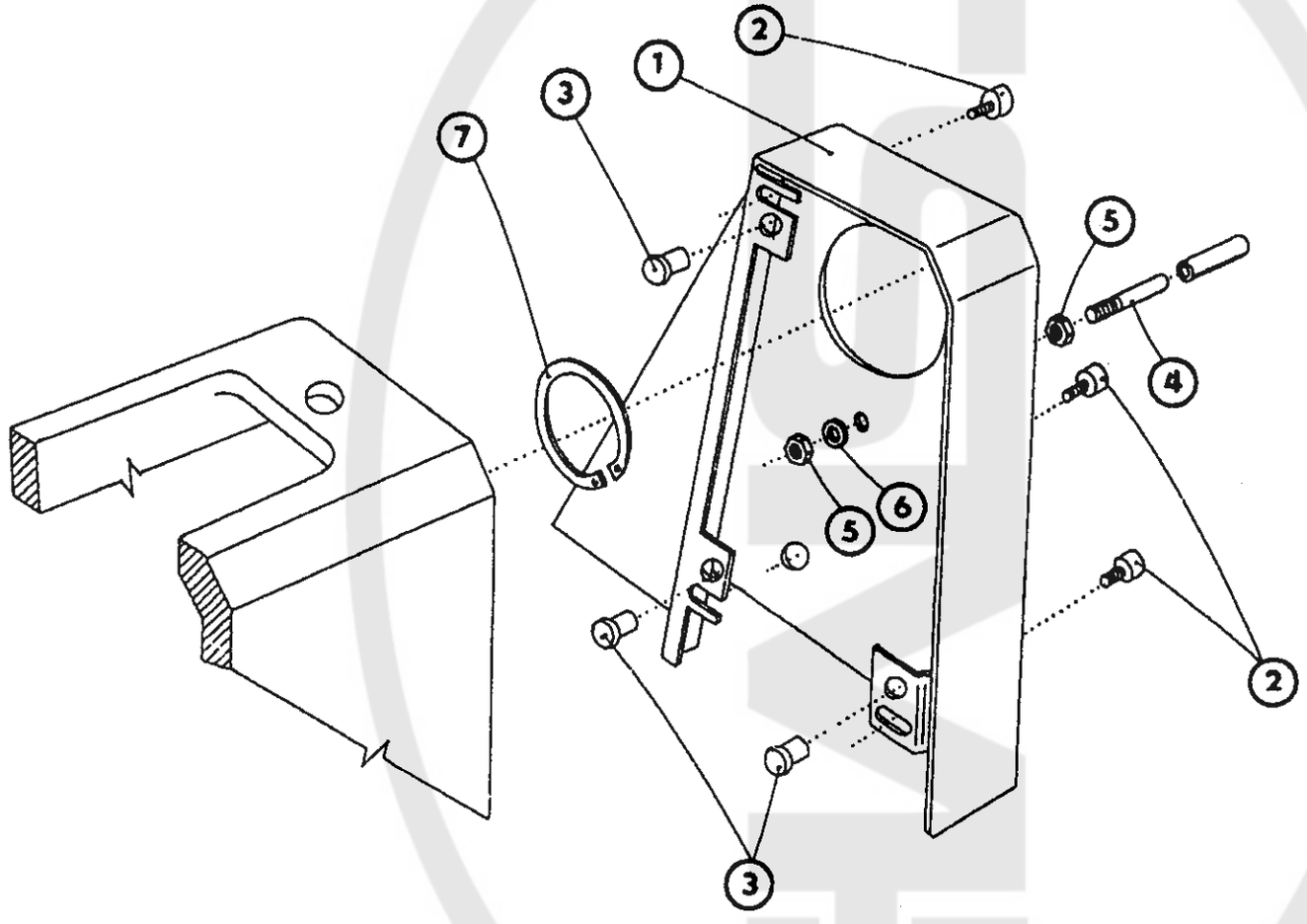
tab. 9



ZZ 568 H - TD

1	S080	945180
2	S283	002001
	ø 3,5/ø 4,8 x 65 mm	
3	S080	824095
4	S080	120245
5	S283	002001
	ø 3,5/ø 4,8 x 80 mm	
6	S708	130002
	ø 2 x 140 mm	
7	S321	001000
8	S708	002105
	ø 1,5 x 380 mm	
9	S283	002005
	ø 3,5/ø 4,8 x 150 mm	
10	S080	111245
11	S283	002005
	ø 3,5/ø 4,8 x 150 mm	
12	S080	945316
13	S708	002105
	ø 1,5 x 380 mm	
15	S080	120259
16	S080	190359
17	S980	041176
18	S708	130002
	ø 2 x 320 mm	
19	S283	002005
	ø 3,5/ø 4,8 x 250 mm	
20	S283	002005
	ø 3,5/ø 4,8 x 210 mm	
21	S708	130002
	ø 2 x 270 mm	
22	S283	002005
	ø 3,5/ø 4,8 x 90 mm	
23	S708	130002
	ø 2 x 130 mm	
24	S283	002005
	ø 3,5/ø 4,8 x 100 mm	
25	S708	130002
	ø 2 x 140 mm	
26	S080	945286
27	S708	130004
	ø 4 x 1120 mm	
28	S080	441313
29	S080	120216

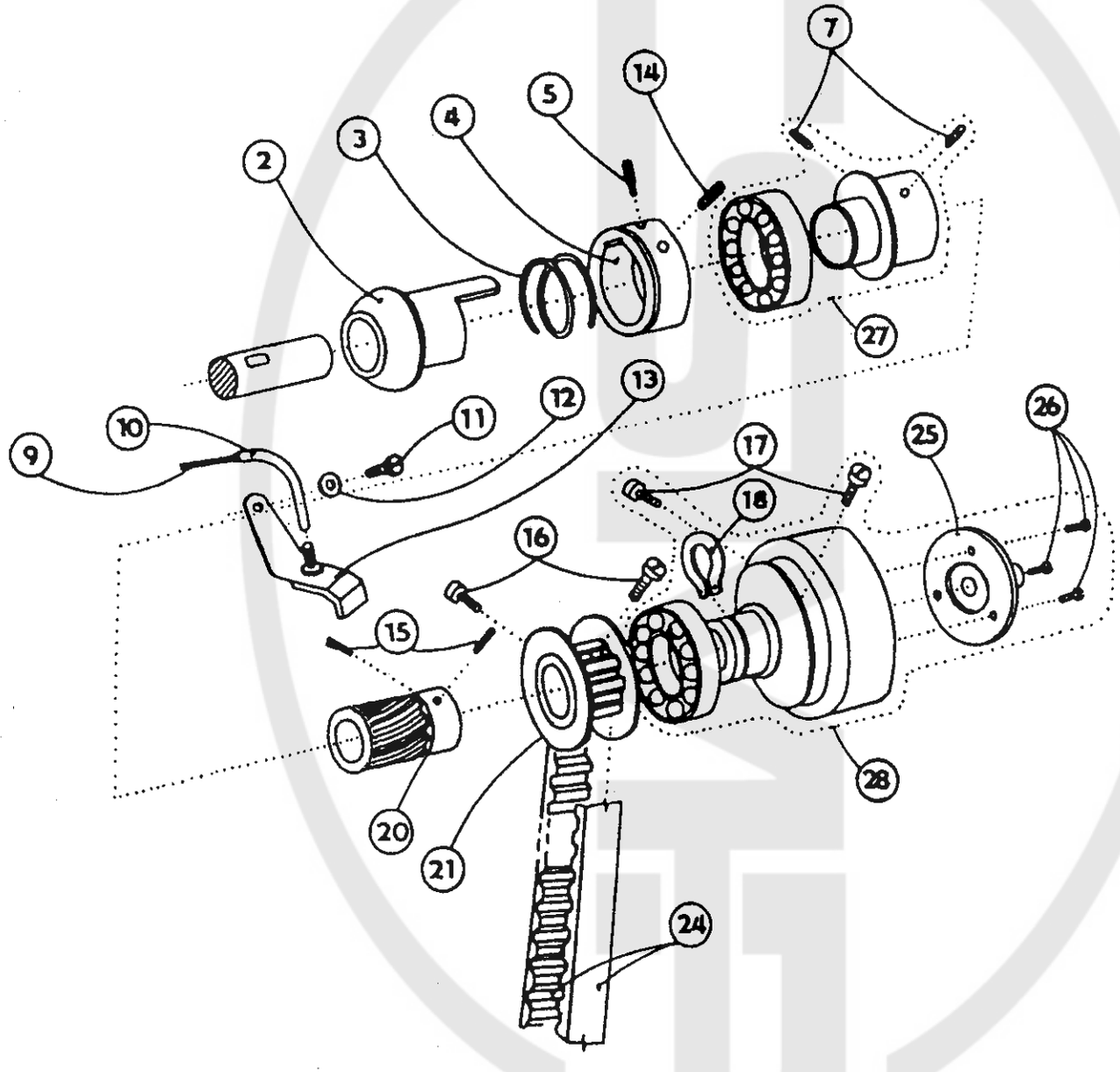
tab. 10



ZZ 568 H - TD

1	S980	041162
2	S080	120346
3	S273	005001
4	S080	316096
5	S080	161151
6	S080	191112
7	S311	733620

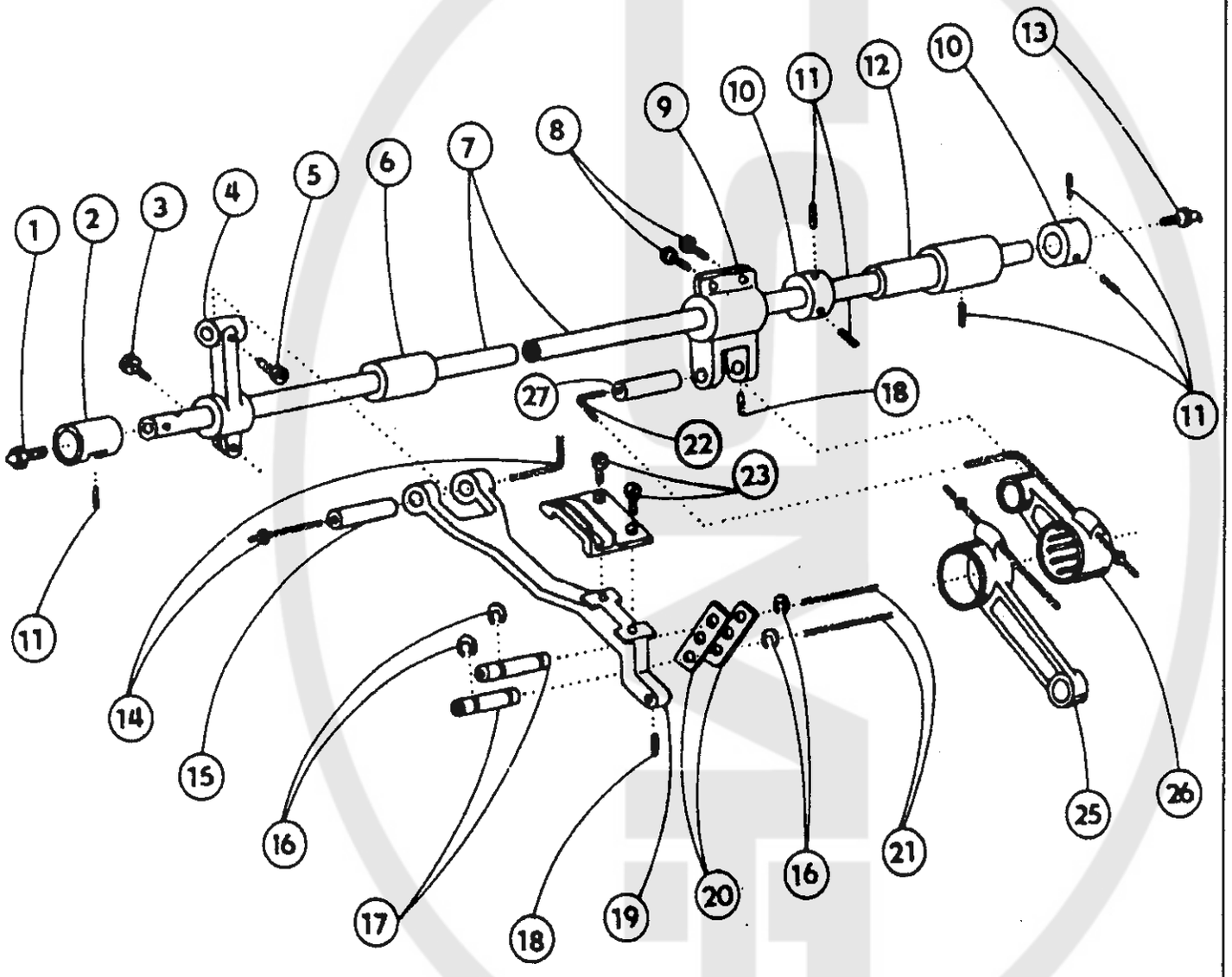
tab. 11



ZZ 568 H - TD

2	S080	441541
3	S080	260467
4	S080	436338
5	S080	113115
7	S080	111225
9	S708	130002
	ø 2 x 130 mm	
10	S283	002001
	ø 3,5/ø 4,8 x 90 mm	
11	S080	120259
12	S080	190359
13	S980	041176
14	S080	112013
15	S080	111343
16	S080	122029
17	S080	120006
18	S311	733300
20	S980	045330
21	S980	045315
24	S272	011015
25	S080	442548
26	S080	120252
27	S980	035849
28	S980	045301

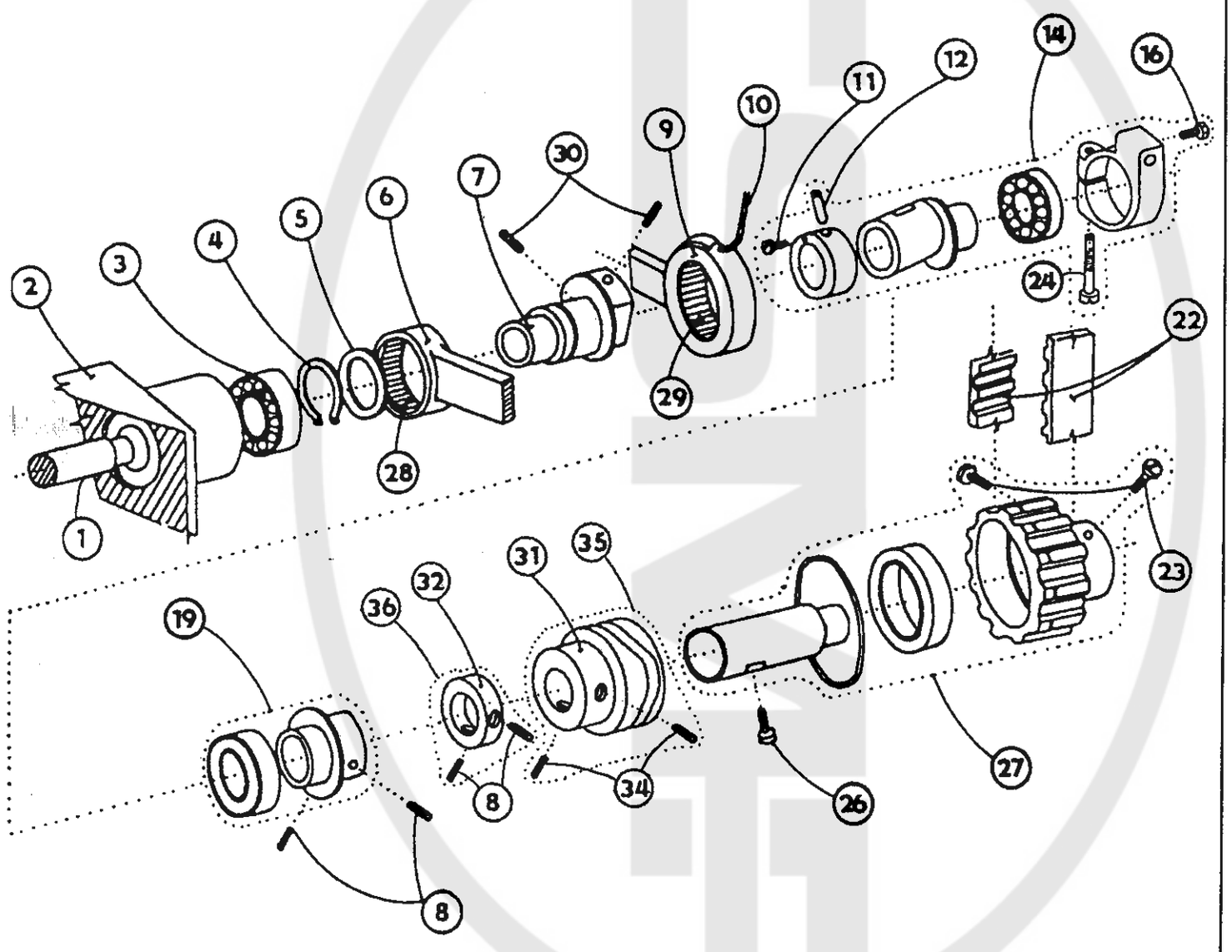
tab. 12



ZZ 568 H - TD

1	S425	041000
2	S080	413252
3	S080	141133
4	S080	613495
5	S080	124050
6	S080	410532
7	S080	345067
8	S080	120229
9	S080	613216
10	S080	436000
11	S080	112013
12	S080	412193
13	S425	061000
14	S708	002105
	ø 1,5 x 160 mm	
15	S080	338069
16	S311	732050
17	S080	318144
18	S080	111227
19	S080	622092
20	S080	612109
21	S708	002105
	ø 1,5 x 60 mm	
22	S708	002105
	ø 1,5 x 350 mm	
23	S080	121157
25	S080	630248
26	S980	044045
27	S080	344035

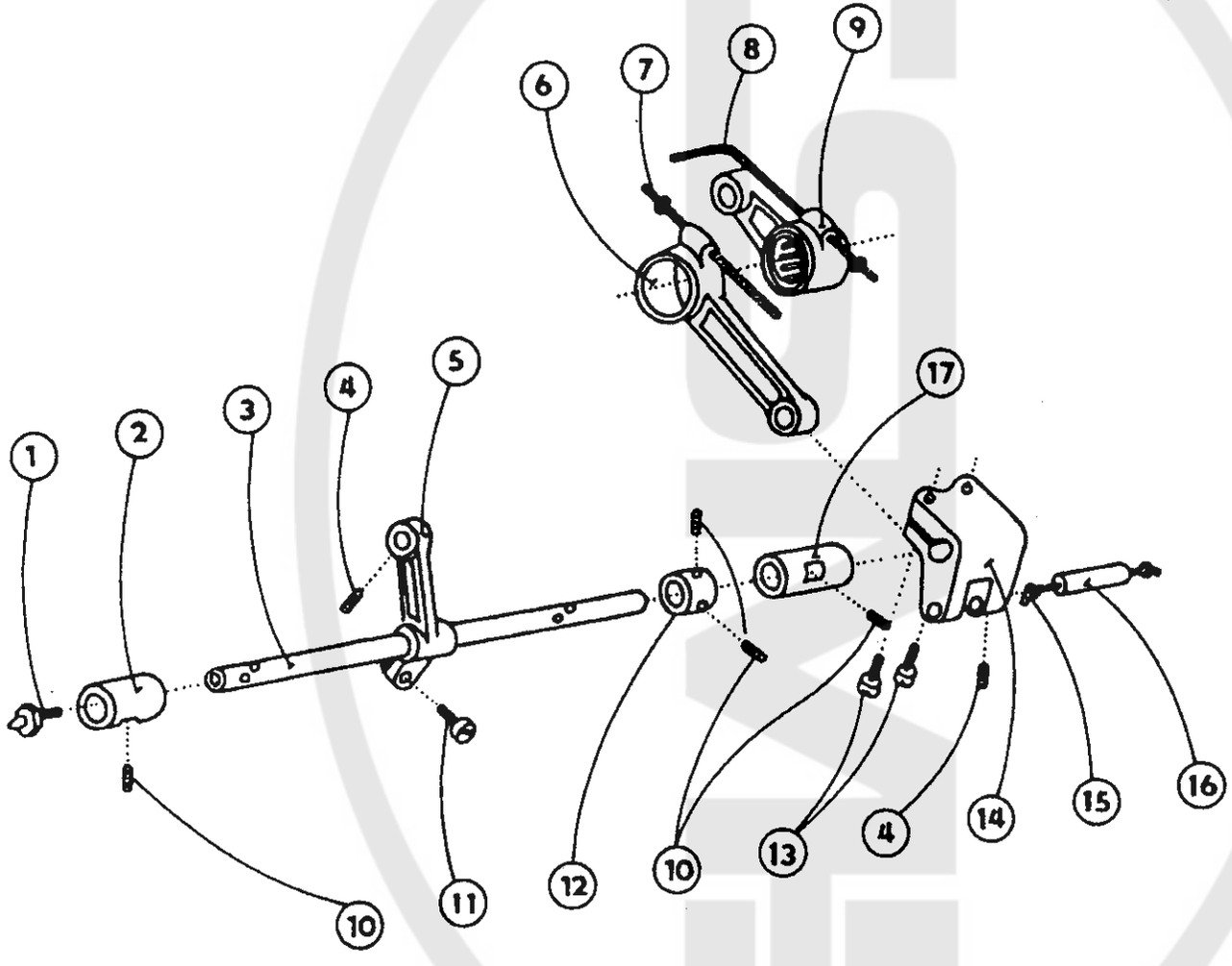
tab. 13



ZZ 568 H - TD

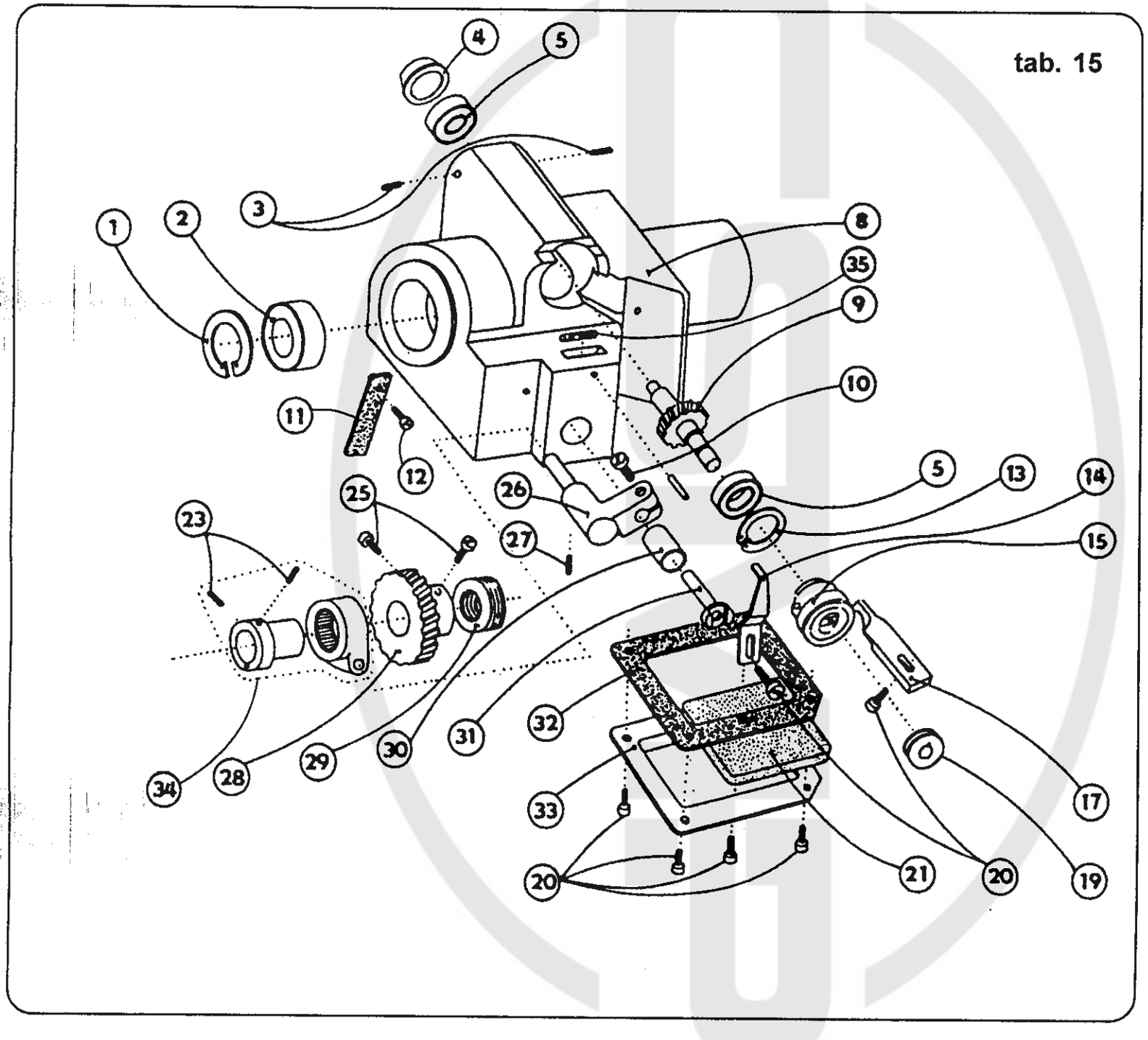
1	S080	342243
2	S080	724134
3	S324	020093
4	S311	733180
5	S080	814338
6	S080	630248
7	S080	671152
8	S080	112013
9	S980	044045
10	S708	002105
	ø 1,5 x 350 mm	
11	S080	141088
12	S080	318103
14	S980	035422
16	S080	141102
19	S980	035420
22	S272	011015
23	S080	122029
24	S080	120222
26	S080	122031
27	S980	045231
28	S324	510900
29	S324	512900
30	S080	111343
31	S080	672166
32	S080	436346
34	S080	120468
35	S980	035570
36	S980	035441

tab. 14



ZZ 568 H - TD

1	S425	041000
2	S080	413251
3	S080	345065
4	S080	111227
5	S080	613195
6	S080	630248
7	S708	002105
	ø 1,5 x 220 mm	
8	S708	002105
	ø 1,5 x 350 mm	
9	S980	044045
10	S080	112013
11	S080	120229
12	S080	436000
13	S080	120231
14	S080	613152
15	S708	130002
	ø 2 x 60 mm	
16	S080	344035
17	S080	410538

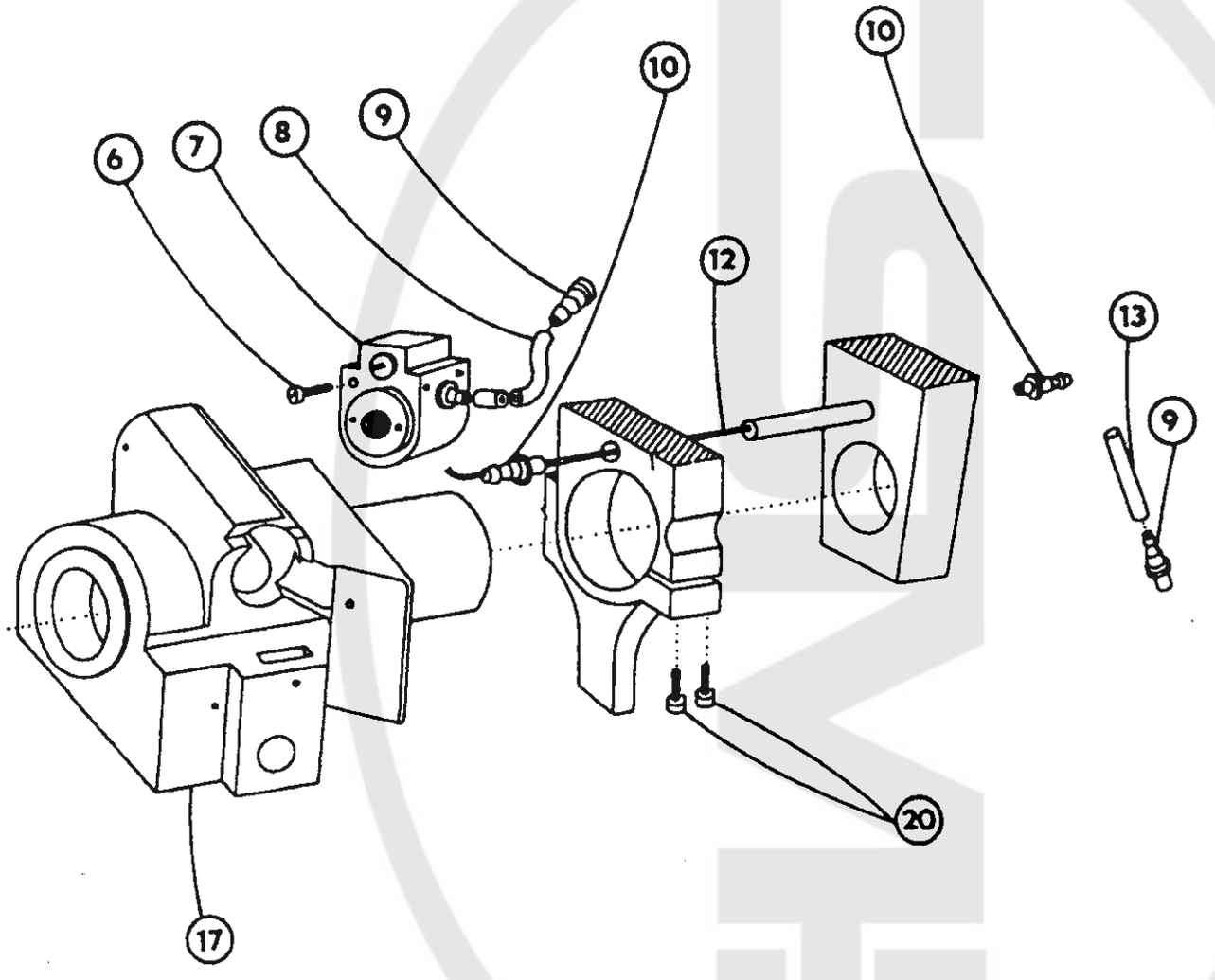


ZZ 568 H - TD

1	S311	733261
2	S324	920796
3	S080	111219
4	S080	441287
5	S324	910093
8	S080	724134
9	S080	552168
10	S080	120226
11	S080	945283
12	S080	120601
13	S311	733221
14	S080	825740
15	S980	008253
17	S080	825744
19	S080	685051
20	S080	120246
21	S080	945285
23	S080	111343
25	S080	122007
26	S080	613466
27	S080	111094
28	S080	552167
29	S324	010000
30	S080	410530
31	S080	323155
32	S080	990134
33	S080	827179
34	S980	035406
35	S708	130002

ø 2 x 40 mm

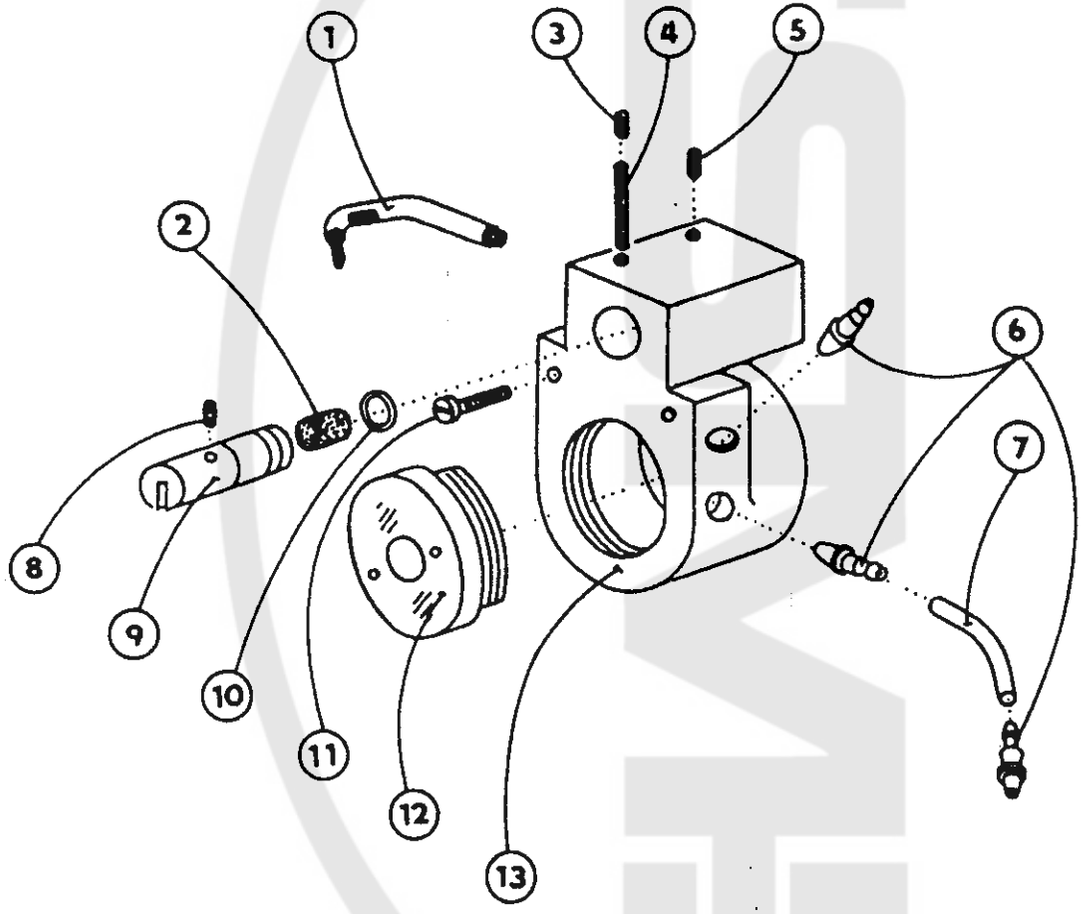
tab. 16



ZZ 568 H - TD

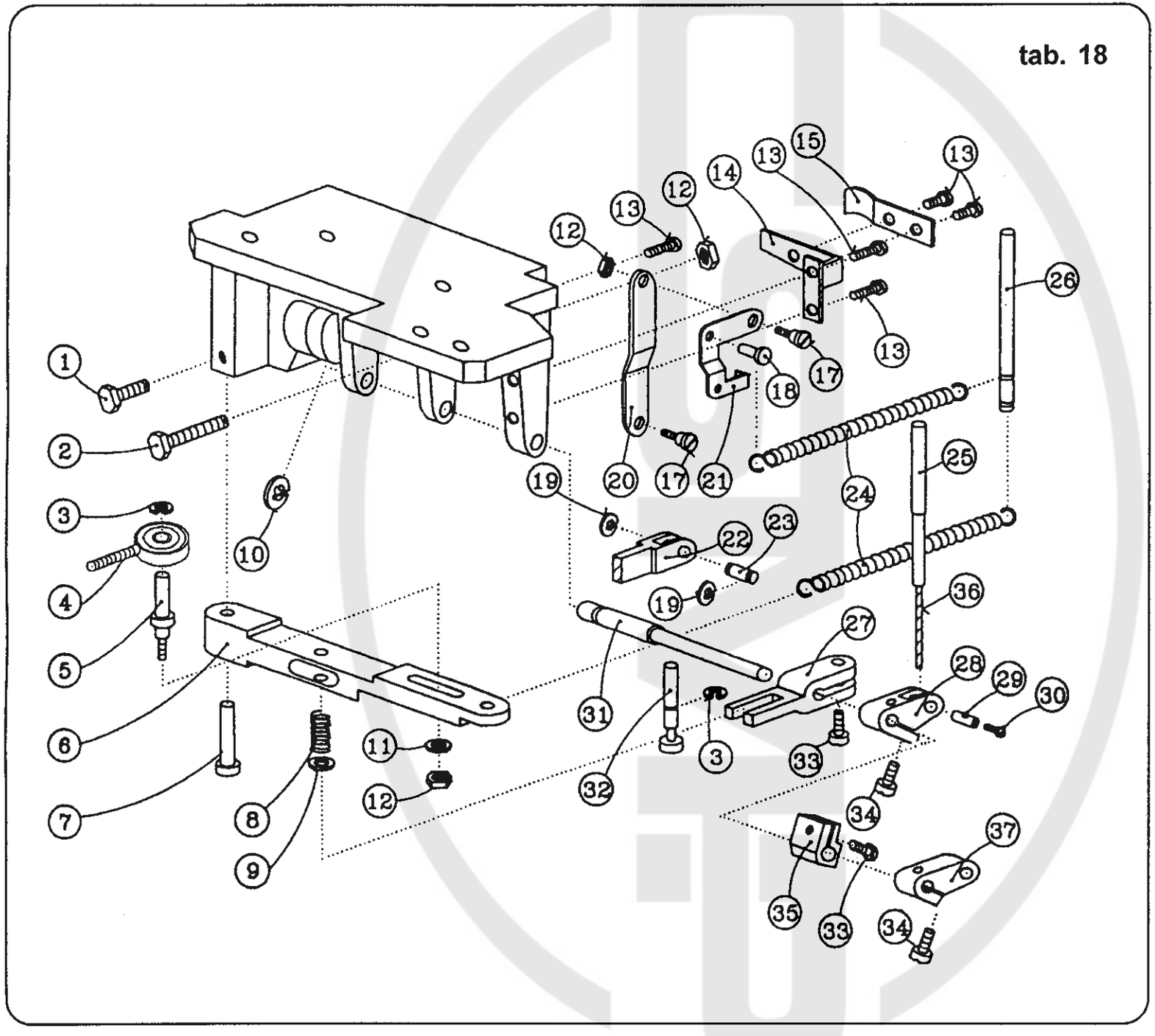
6	S080	120269
7	S980	035528
8	S283	002001
	ø 3,5/ø 4,8 x 100 mm	
9	S080	424051
10	S080	424060
12	S708	130005
	ø 5 x 300 mm	
13	S283	002005
	ø 3,5/ø 4,8 x 170 mm	
17	S080	724134
20	S080	120425

tab. 17



ZZ 568 H - TD

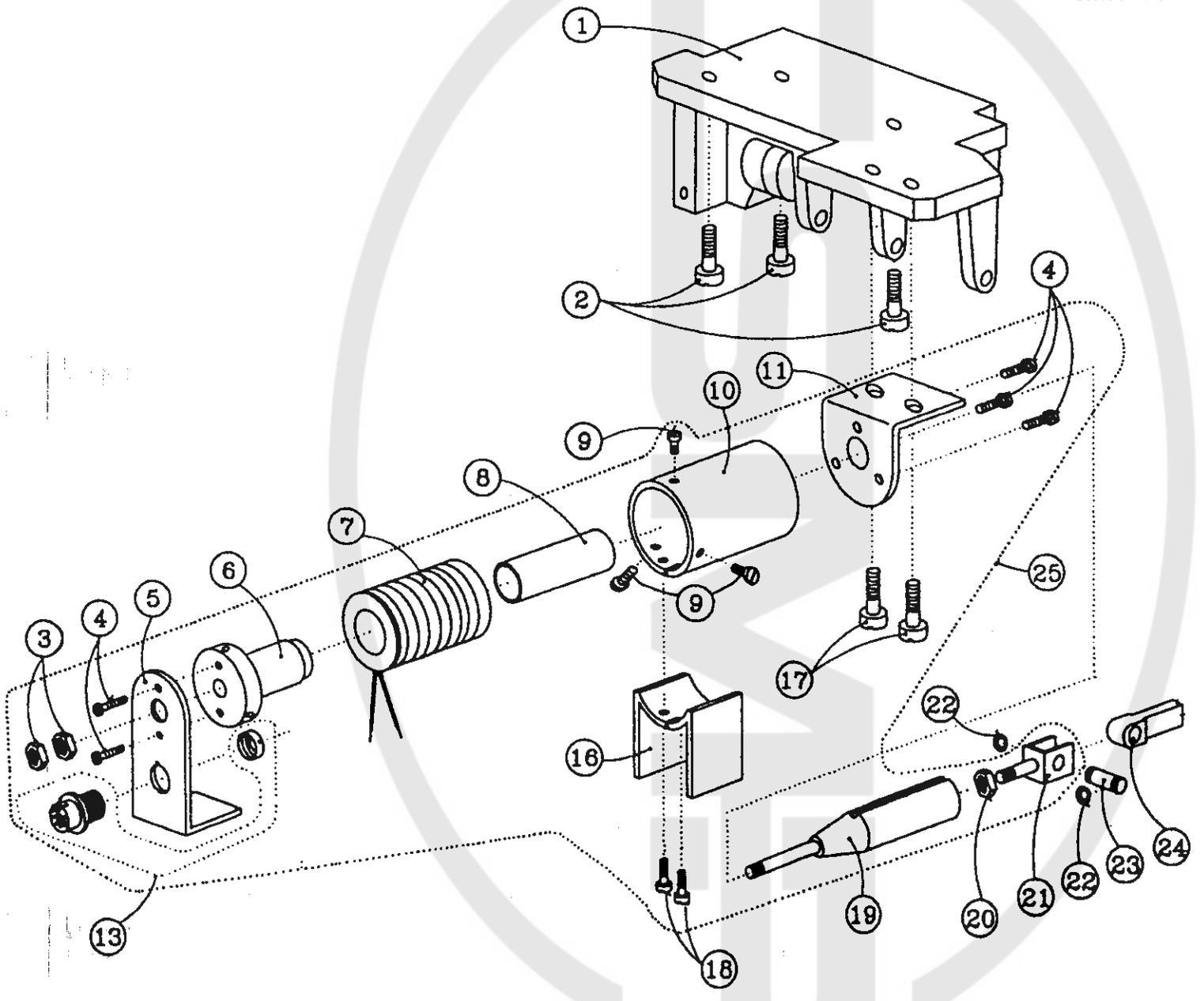
1	S980	035525
2	S080	945077
3	S080	111252
4	S080	945185
5	S080	111233
6	S080	424051
7	S283	002005
	ø 3,5/ø 4,8 x 100 mm	
8	S080	945170
9	S080	346053
10	S273	001001
11	S080	120269
12	S321	001002
13	S080	725023



ZZ 568 H - TD

1	S080	141142
2	S080	141204
3	S311	732040
4	S980	049810
5	S080	333121
6	S080	646145
7	S080	320257
8	S080	260434
9	S080	190359
10	S311	732050
11	S080	190353
12	S080	161144
13	S080	120218
14	S080	825856
15	S080	825586
17	S080	131378
18	S080	320258
19	S080	274104
20	S080	822446
21	S080	822409
22	S080	630272
23	S080	314167
24	S080	263103
25	S080	278009
26	S080	310364
27	S080	625132
28	S080	613482
29	S080	334090
30	S080	120246
31	S080	341202
32	S080	322231
33	S080	120220
34	S080	120221
35	S080	627142
36	S080	049786
37	S080	613420

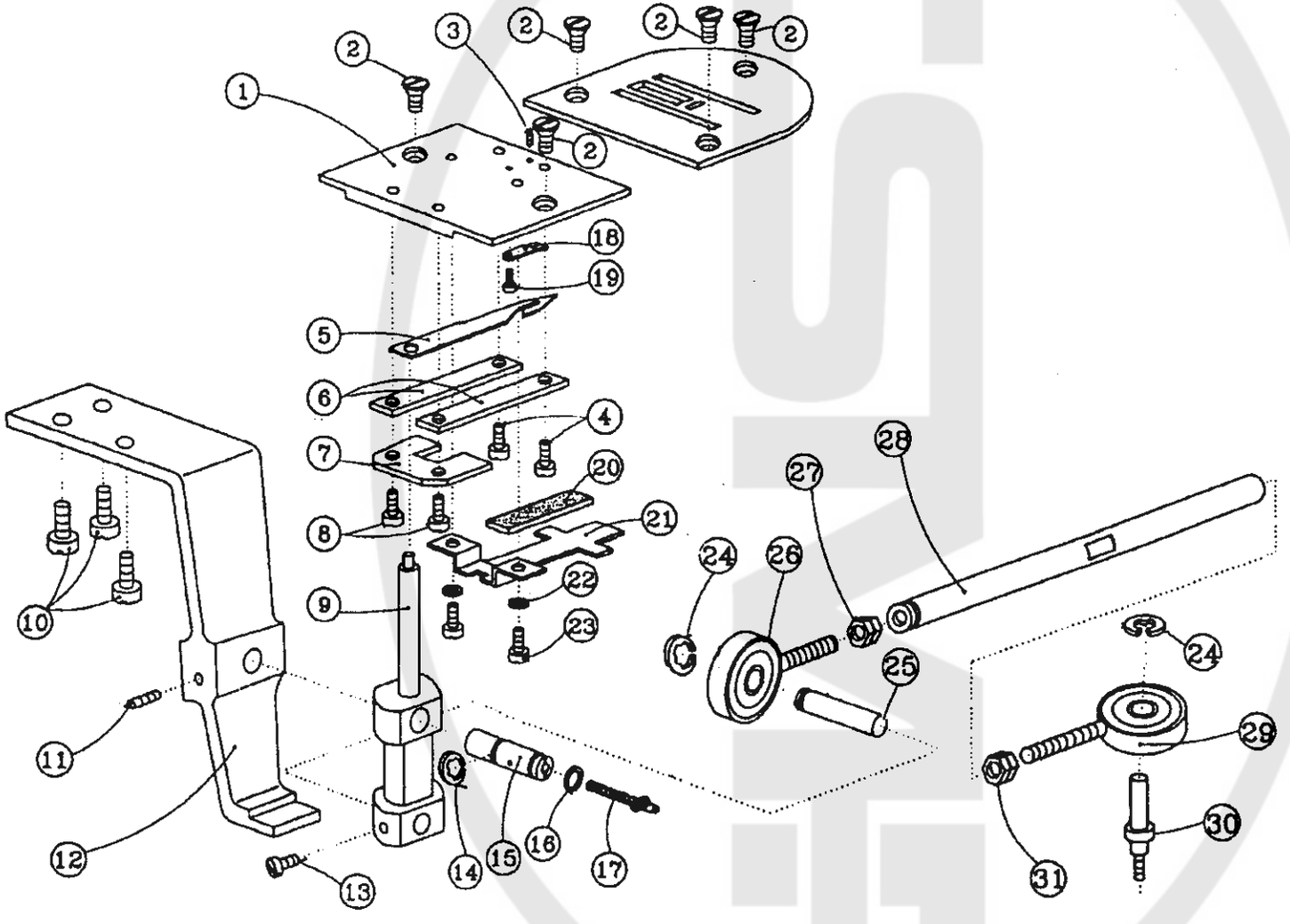
tab. 19



ZZ 568 H - TD

1	S080	744380
2	S080	120322
3	S080	161165
4	S080	126078
5	S080	825591
6	S080	422155
7	S980	091220
8	S323	914064
9	S080	120252
10	S080	422154
11	S080	825590
13	S374	059099
16	S080	952235
17	S080	120220
18	S080	120245
19	S980	091219
20	S080	161143
21	S080	154033
22	S080	274104
23	S080	314167
24	S080	630272
25	S980	091446

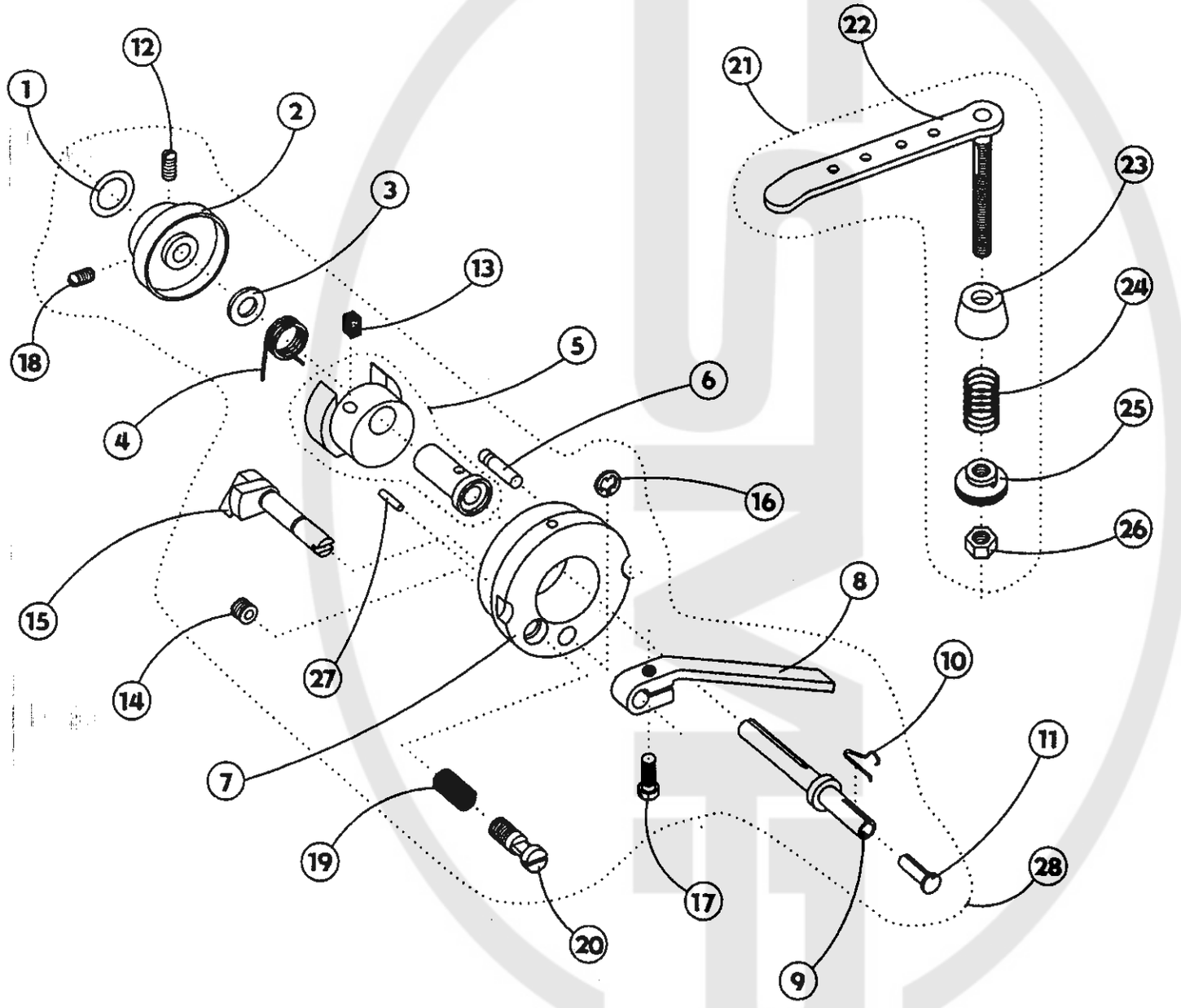
tab. 20



ZZ 568 H - TD

1	S080	647222
2	S080	123117
3	S080	111328
4	S080	120332
5	S080	870167
6	S080	825868
7	S080	826039
8	S080	132153
9	S080	635171
10	S080	120293
11	S080	111244
12	S080	765090
13	S080	120218
14	S080	274093
15	S080	338190
16	S080	190483
17	S708	130003
	ø 3 x 80mm	
18	S080	870140
19	S080	132216
20	S080	945315
21	S080	839058
22	S080	191118
23	S080	120215
24	S311	732040
25	S080	314165
26	S980	049811
27	S080	161227
28	S080	334093
29	S980	049810
30	S080	333121
31	S080	161144

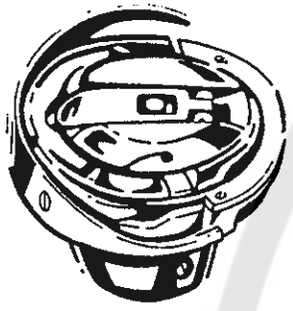
tab. 21

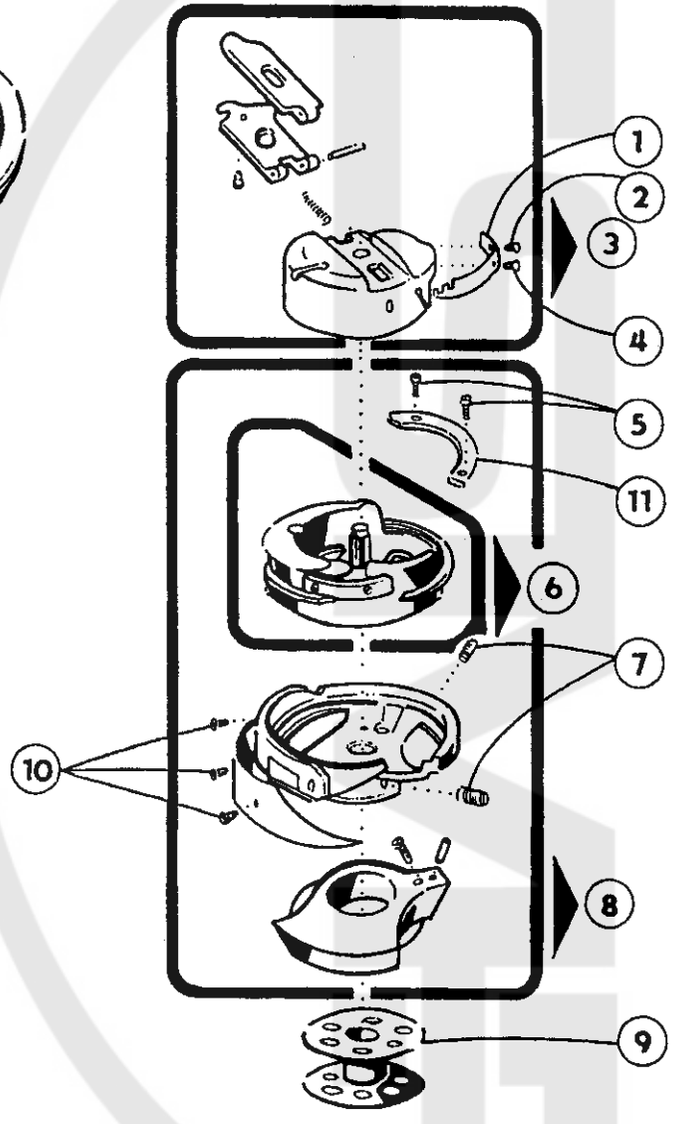


ZZ 568 H - TD

1	S273	025410
2	S080	441560
3	S080	190593
4	S080	264281
5	S980	035654
6	S080	310377
7	S080	441308
8	S080	613468
9	S080	343074
10	S080	265037
11	S321	953200
12	S080	112115
13	S080	945296
14	S080	111094
15	S080	672174
16	S311	732040
17	S080	124050
18	S080	111230
19	S080	260483
20	S080	870170
21	S980	025248
22	S980	025249
23	S080	827194
24	S080	260510
25	S080	163106
26	S080	161138
27	S311	515091
28	S980	036122

tab. 22

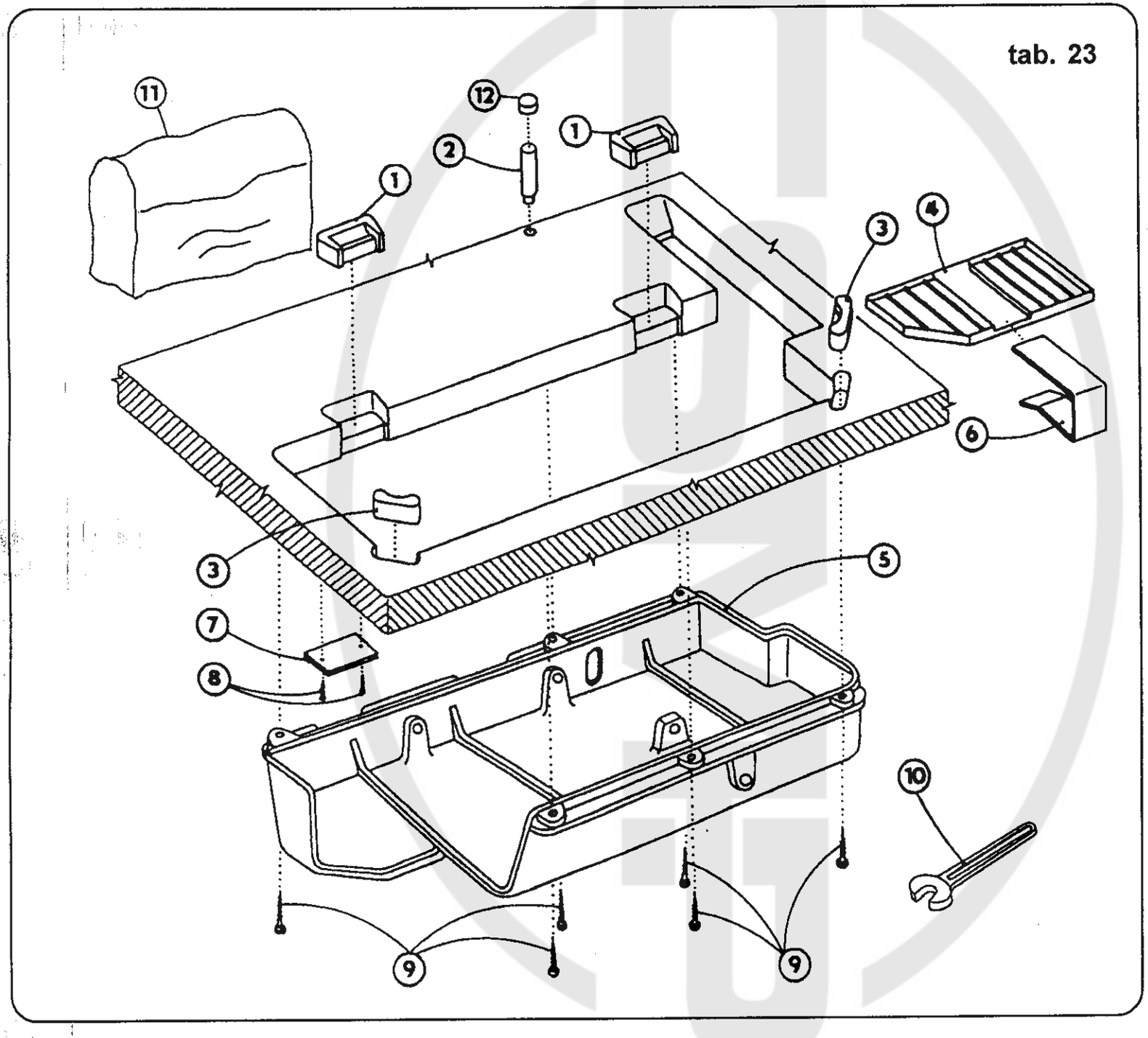




ZZ 568 H - TD

S980 008253

1	S080 690029
2	S080 683063
3	S980 081122
4	S080 683053
5	S080 683064
6	S980 081161
7	S080 683067
8	S980 081160
9	S080 685051
10	S080 683083
11	S080 681029

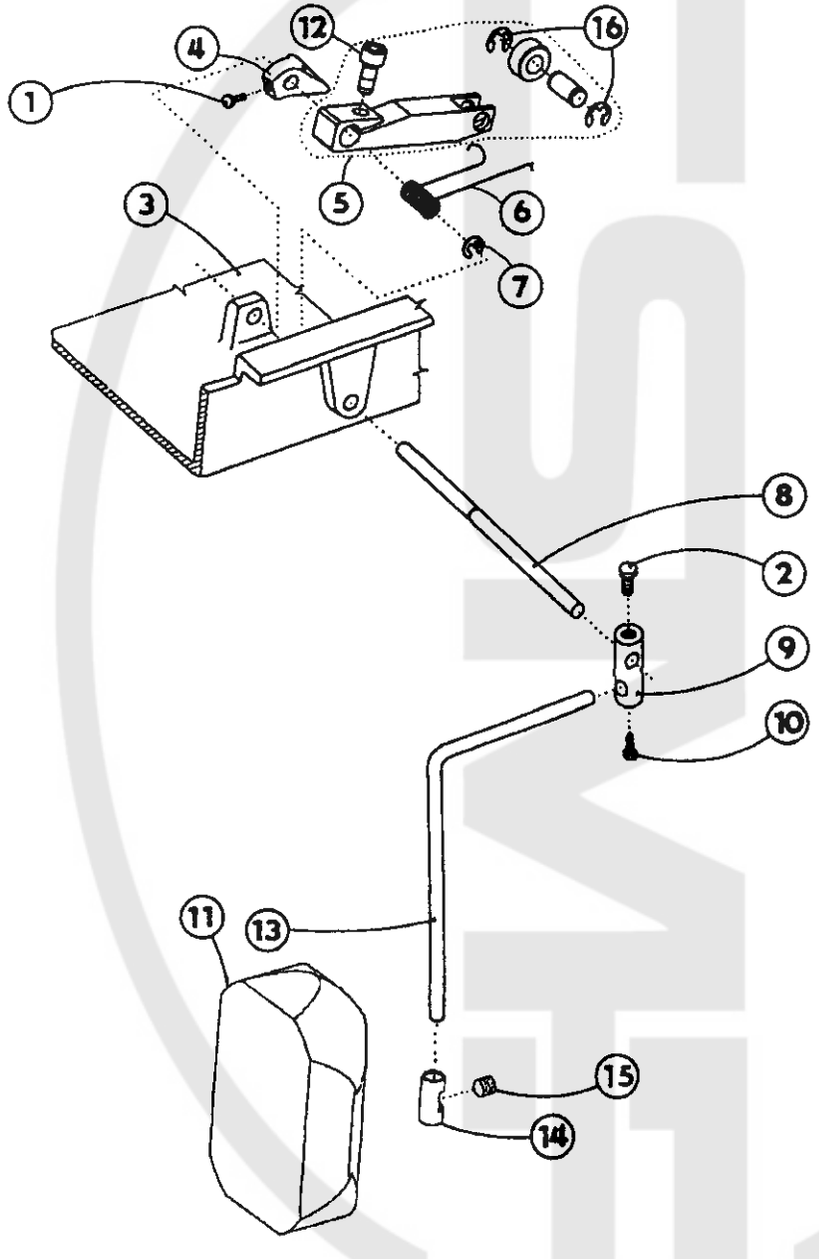


ZZ 568 H - TD

S980 099038 /1

1	S273	940127
2	S615	932046
3	S273	940141
4	S321	953251
5	S080	725050
6	S080	826387
7	S080	941091
8	S314	016020
9	S080	225031
10	S413	100130
11	0APP	000301
12	S321	026000

tab. 24

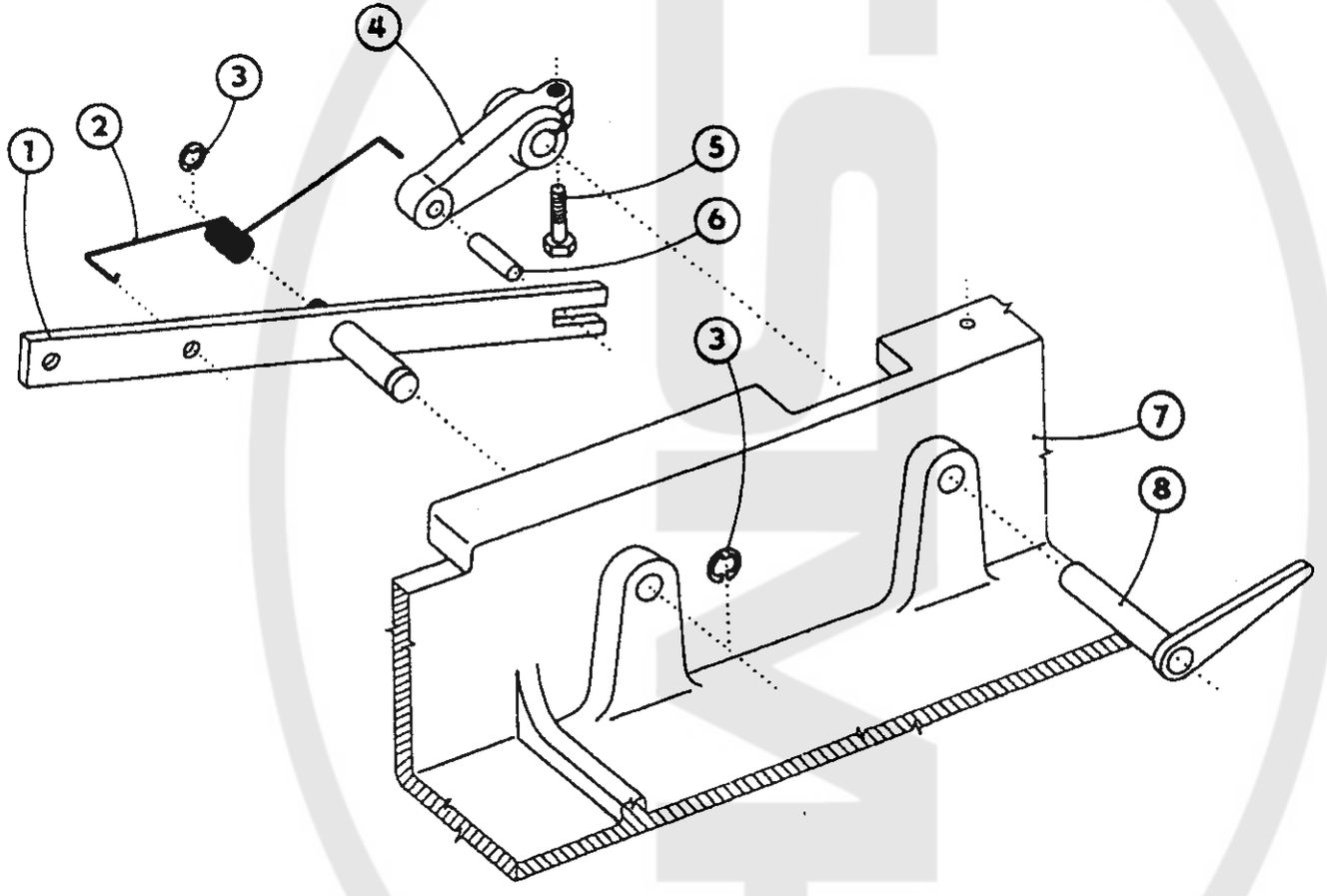


ZZ 568 H - TD

S980 099038 /2

1	S080	141141
2	S080	141121
3	S080	725050
4	S080	625022
5	S980	027603
6	S080	264168
7	S311	732070
8	S080	314065
9	S080	318069
10	S080	141112
11	0396	130013
12	S080	120295
13	S080	383022
14	S080	416146
15	9205	102788
16	S311	732060

tab. 25

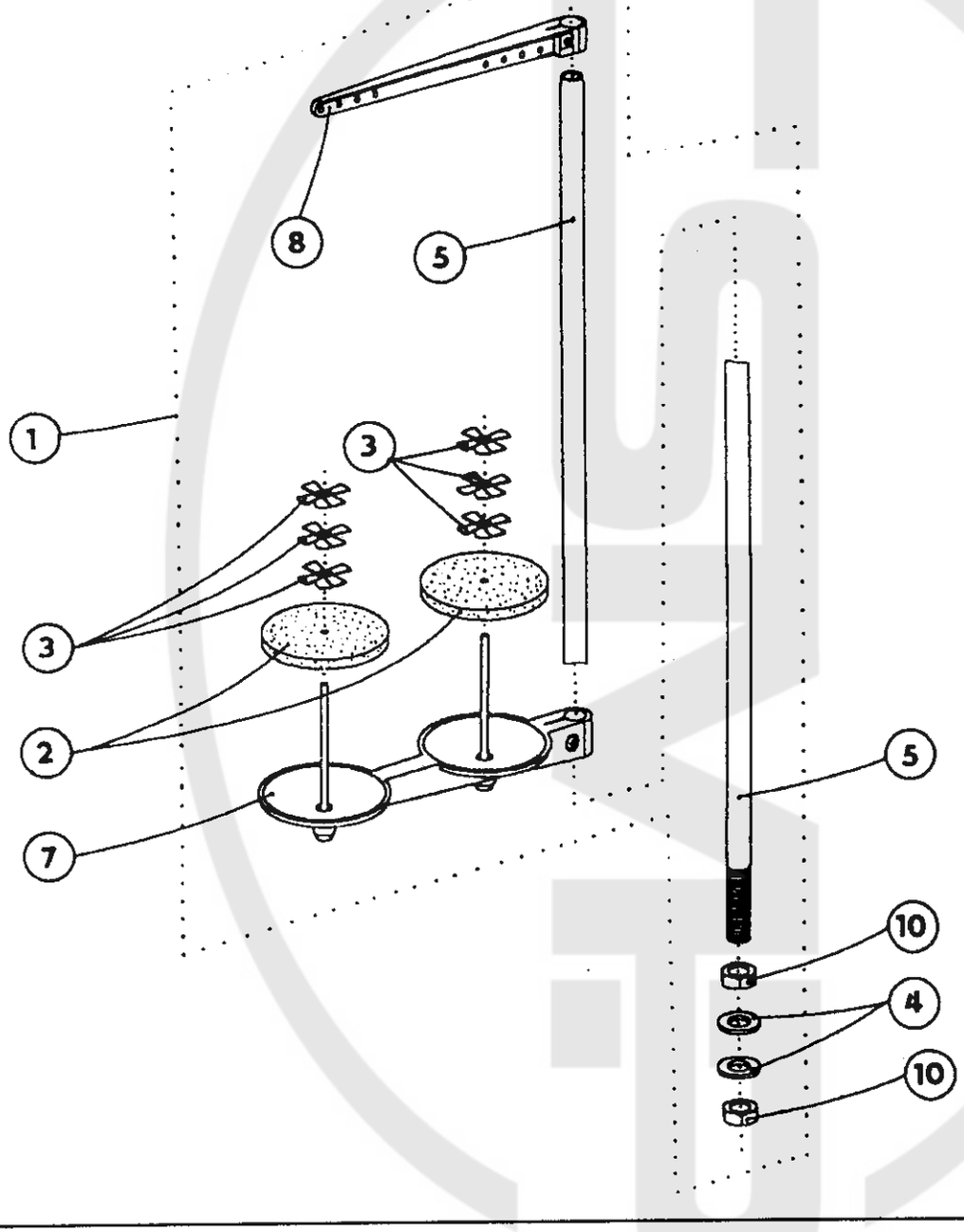


ZZ 568 H - TD

S980 099038 /3

1	S980	049109
2	S080	264290
3	S311	732070
4	S080	613480
5	S080	141109
6	S311	515041
7	S080	725050
8	S980	044142

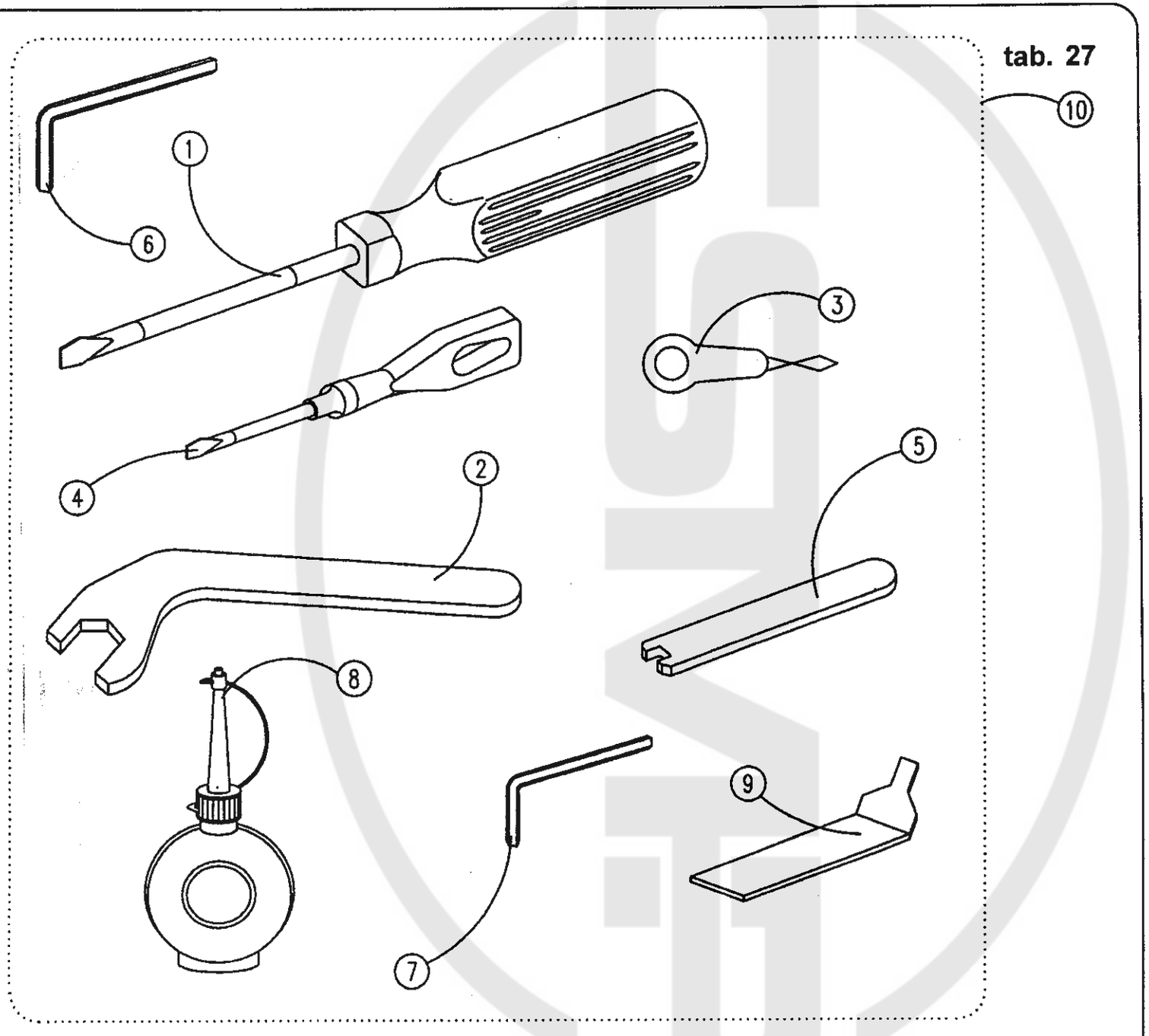
tab. 26



ZZ 568 H - TD

S980 099038 /4

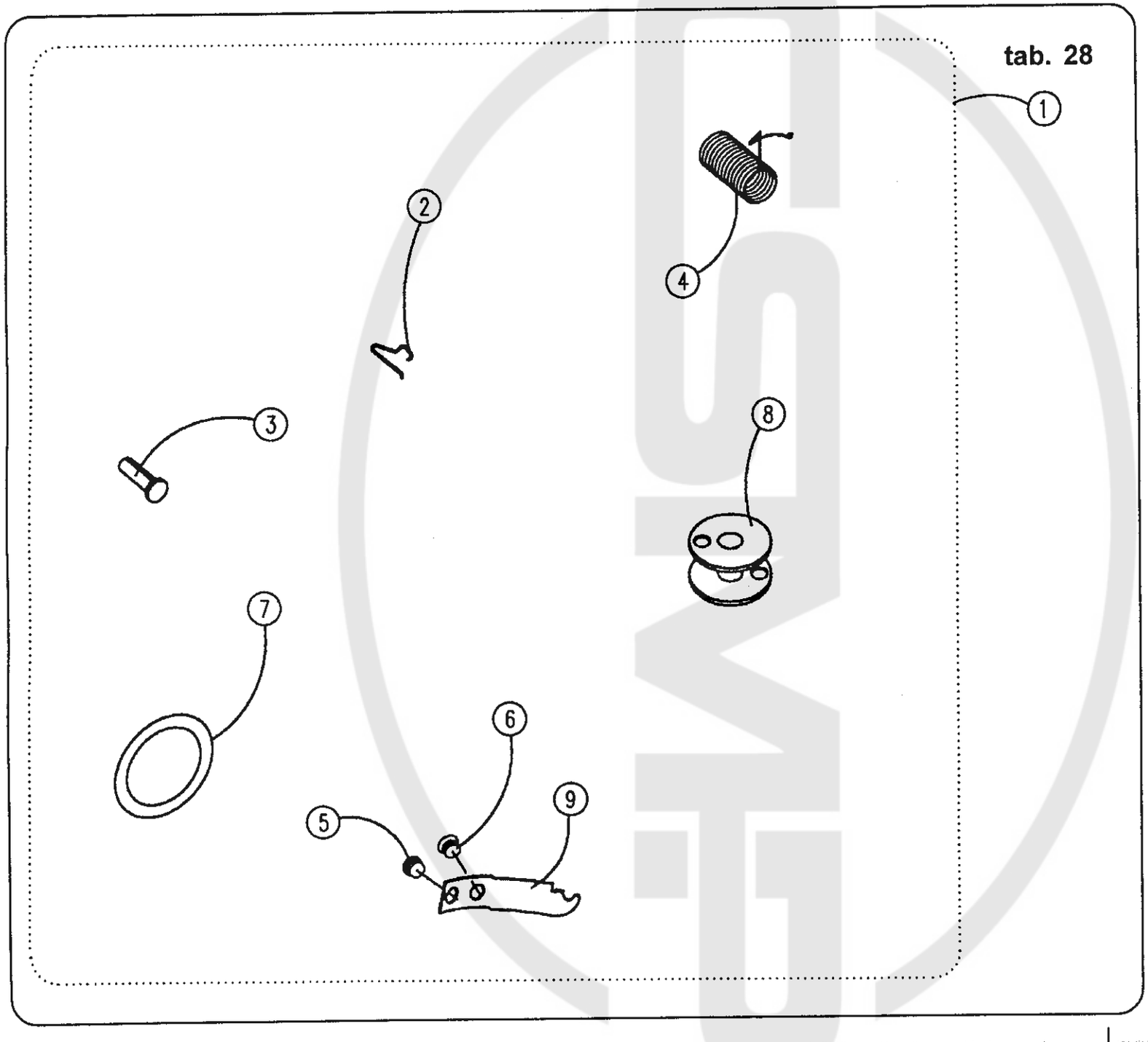
1	S981	036163	
2	0077	110220	4 x
3	0077	110230	12 x
4	9330	000177	
5	0791	001081	
7	0791	001091	2 x
8	0791	001096	2 x
10	0995	340617	



ZZ 568 H - TD

S980 099038 /5

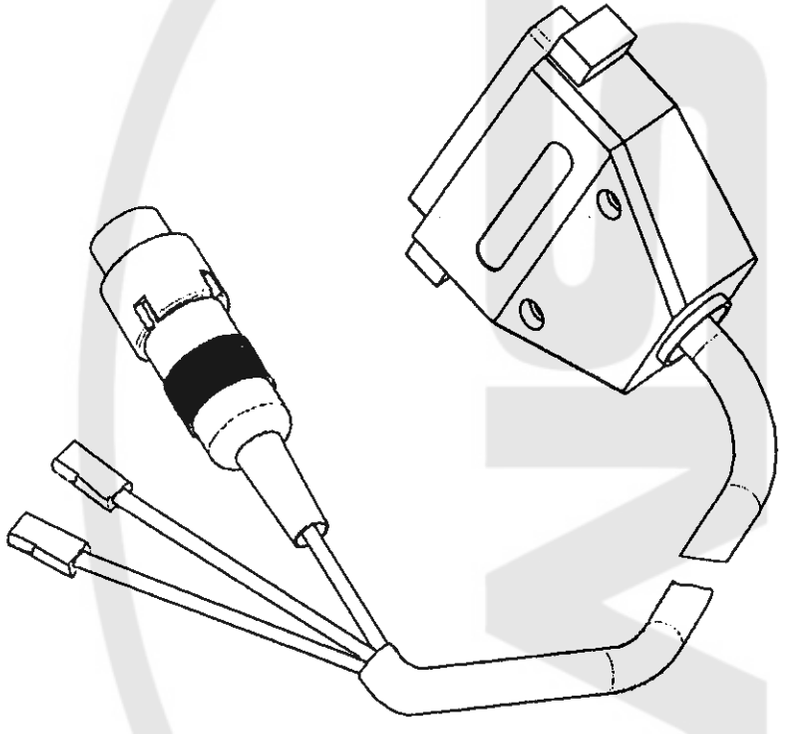
1	S413	731023
2	S080	818273
3	S548	001000
4	S413	310002
5	S080	813481
6	S413	000500
7	S413	000400
8	S562	002000
9	S080	829796
10	**S980**	**092220**



ZZ 568 H - TD

1	**S980**	**092229**	
2	S080	265037	4 x
3	S321	953200	2 x
4	S315	264294	4 x
5	S080	683063	4 x
6	S080	683053	4 x
7	S273	025410	4 x
8	S080	685051	10 x
9	S080	690029	4 x

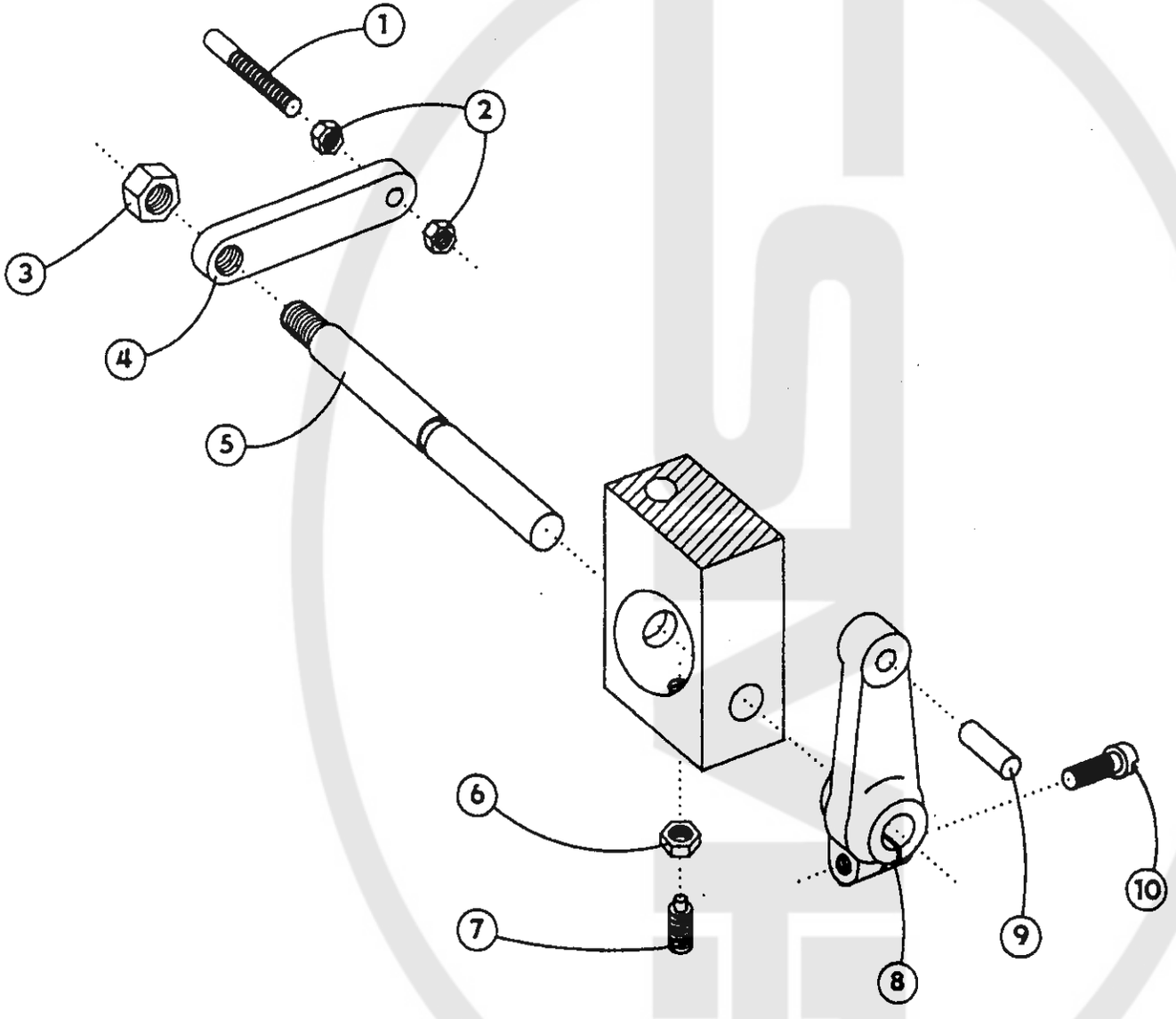
tab. 29



ZZ 568 H - TD

S980 094051

tab. 30

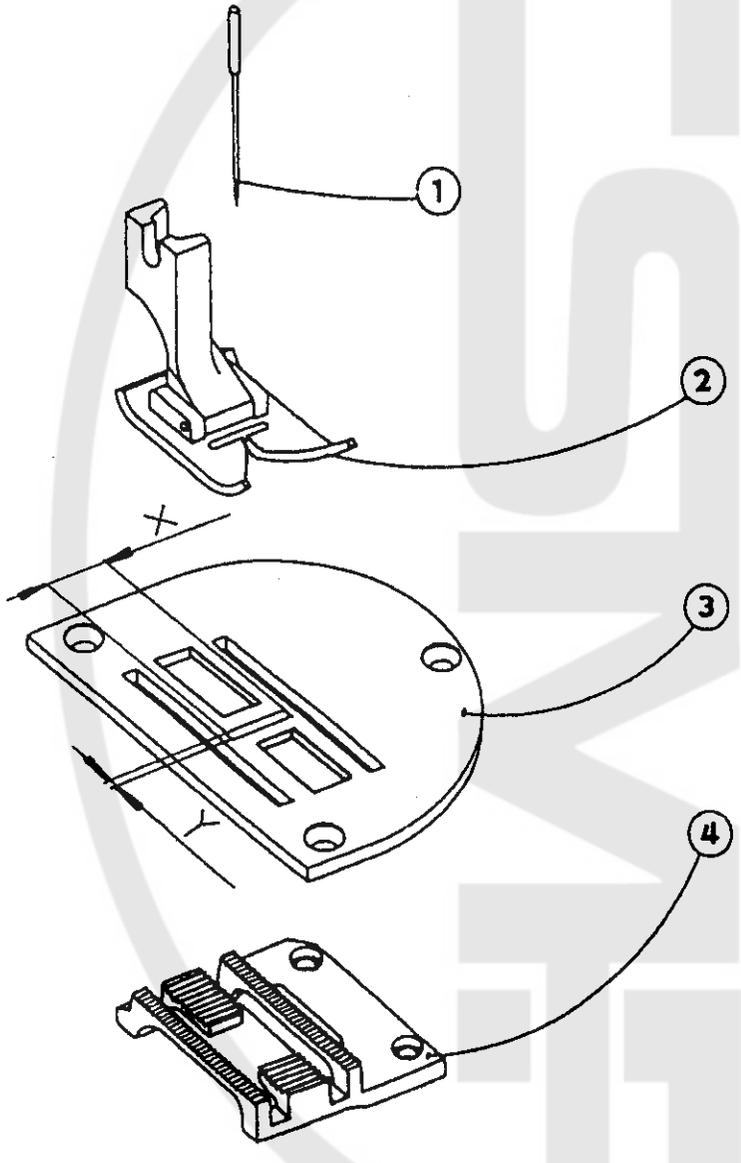


ZZ 568 H - TD

S791 995068

1	S080	316038
2	S080	161143
3	S080	161159
4	S080	632019
5	S080	342096
6	S080	161140
7	S080	111097
8	S080	613480
9	S311	515035
10	S080	120230

tab. 31



ZZ 568 H - TD

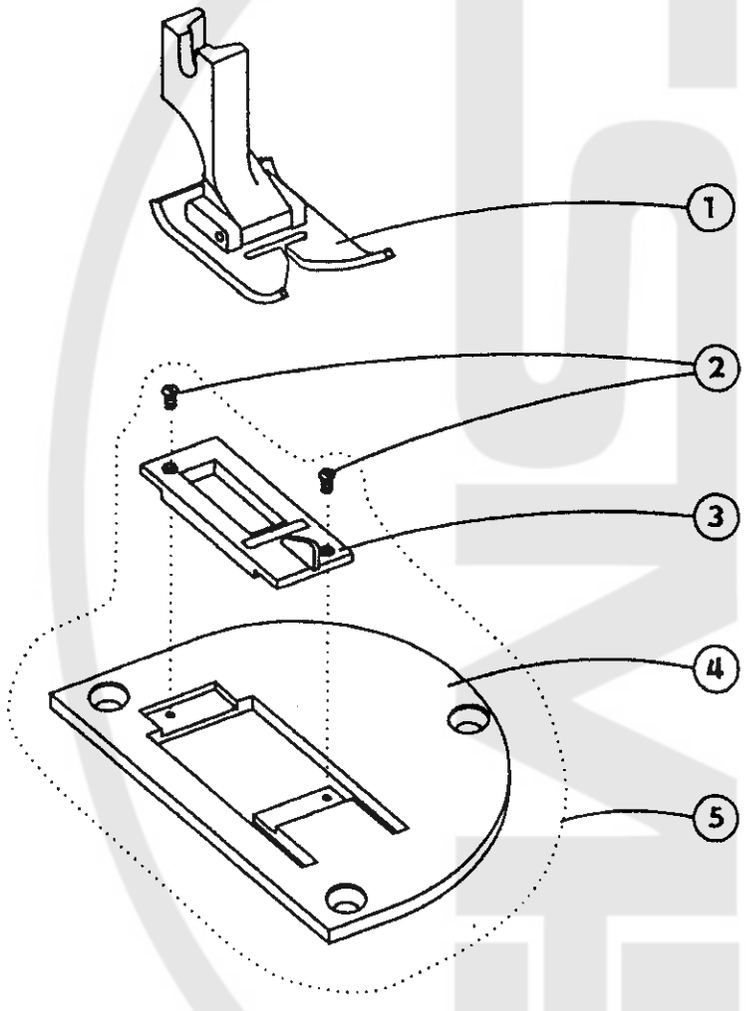
528 E 027

S791 124027 35

1	134-35 No. 120 - 11 x	
2	S980	031602
3	S080	811557
4	S080	651336

X = 11,8 mm Y = 1,8 mm

tab. 32



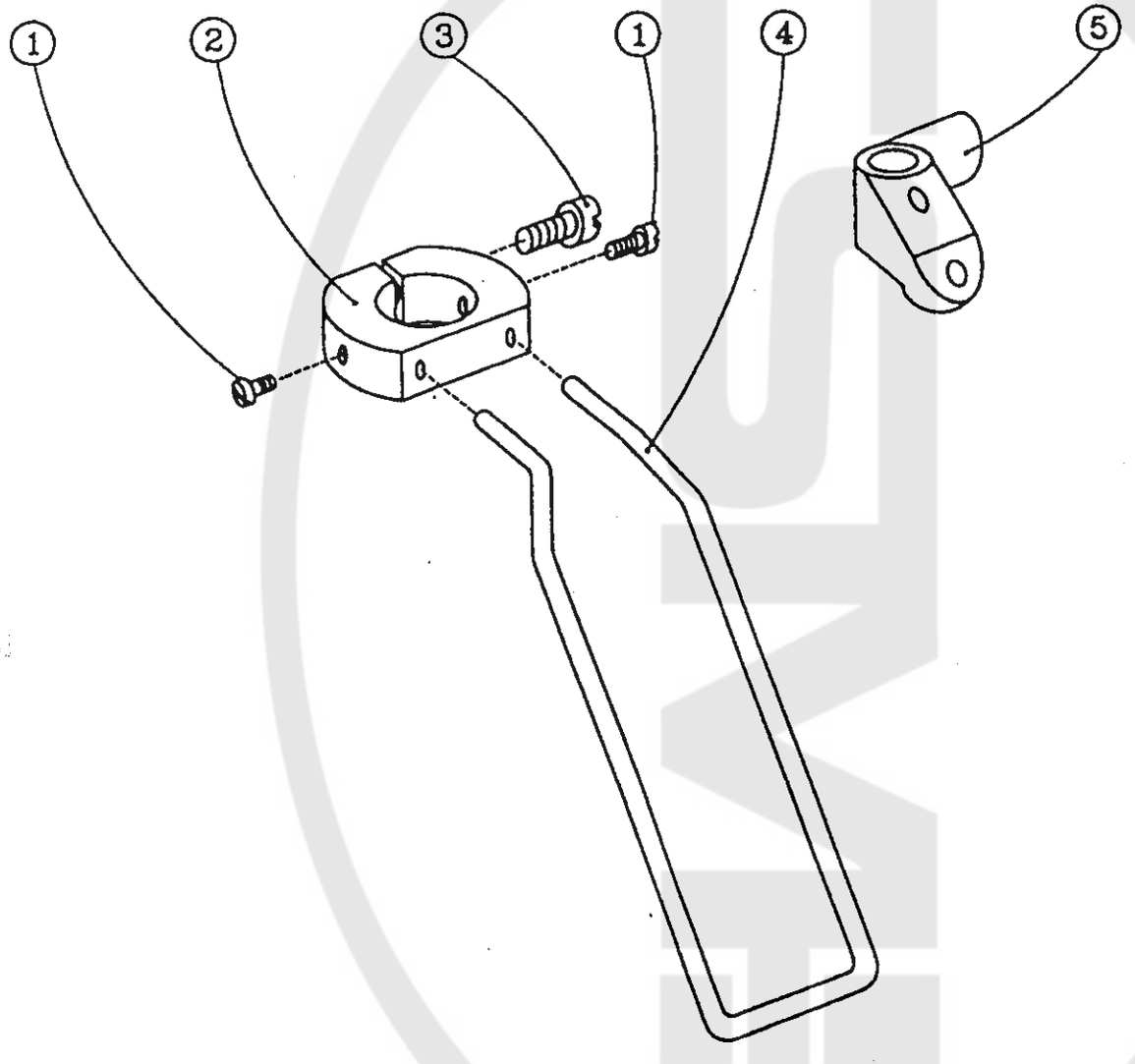
ZZ 568 H - TD

527 E 023

S791 400023

1	S980	031604
2	S080	124061
3	S080	049443
4	S080	811633
5	S980	022282

tab. 33



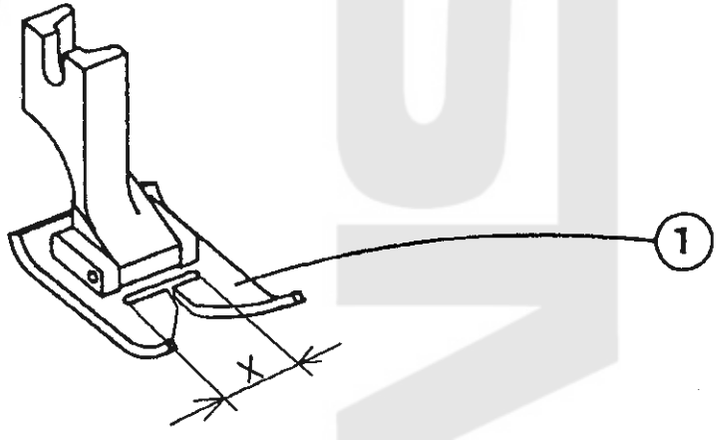
ZZ 568 H - TD

527 N 001

S791 149001

1	S080	120 037
2	S080	646 136
3	S080	120 225
4	S080	271 441
5	S080	627 037

tab. 34



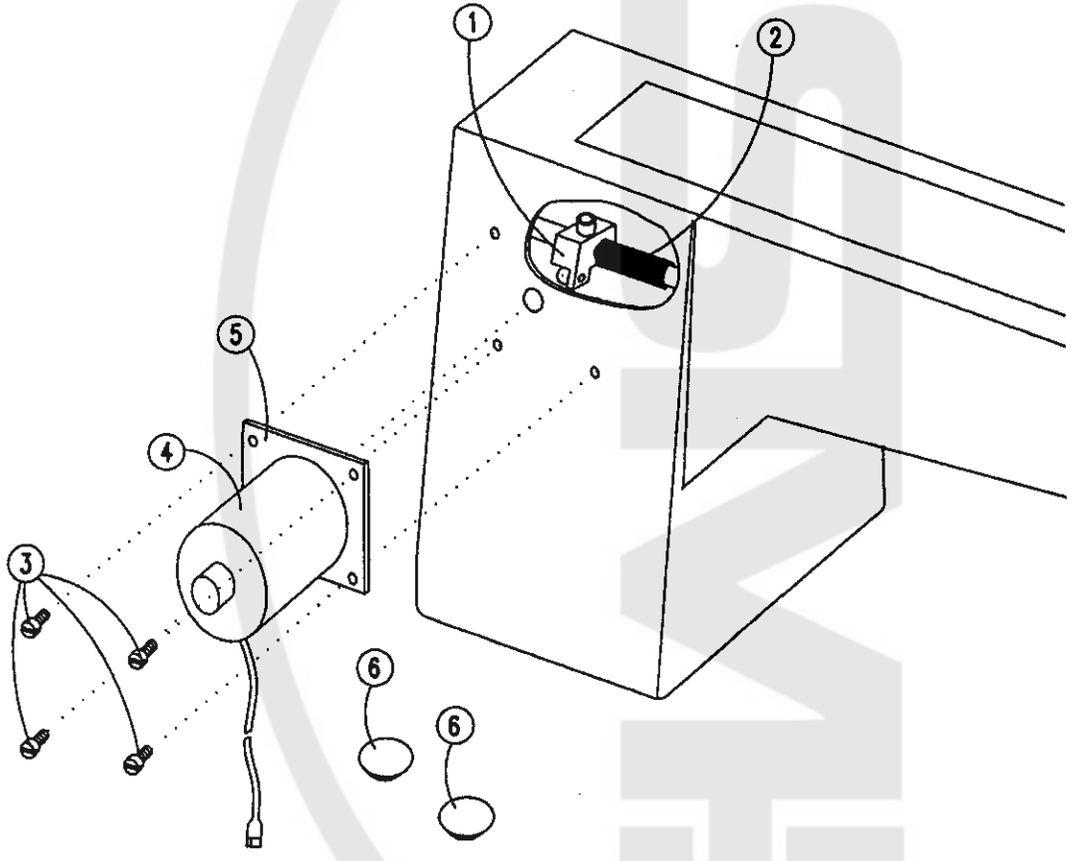
ZZ 568 H - TD

525 E 017
S791 151017

1 S980 031652

X = 10 mm

tab. 35

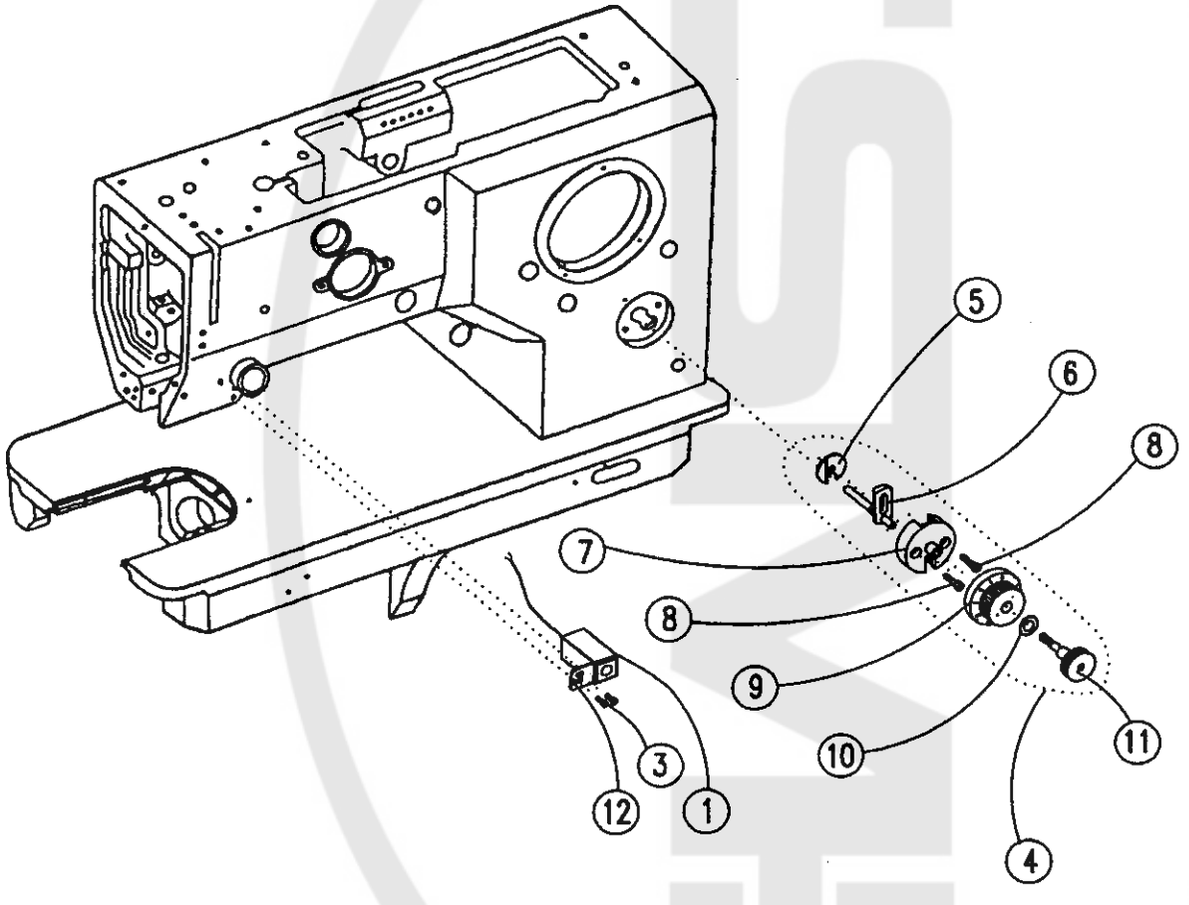


ZZ 568 H - TD

S791995153

1	S980	060208
2	S080	260610
3	S080	120354
4	S981	094041
5	S080	831699
6	S321	000000

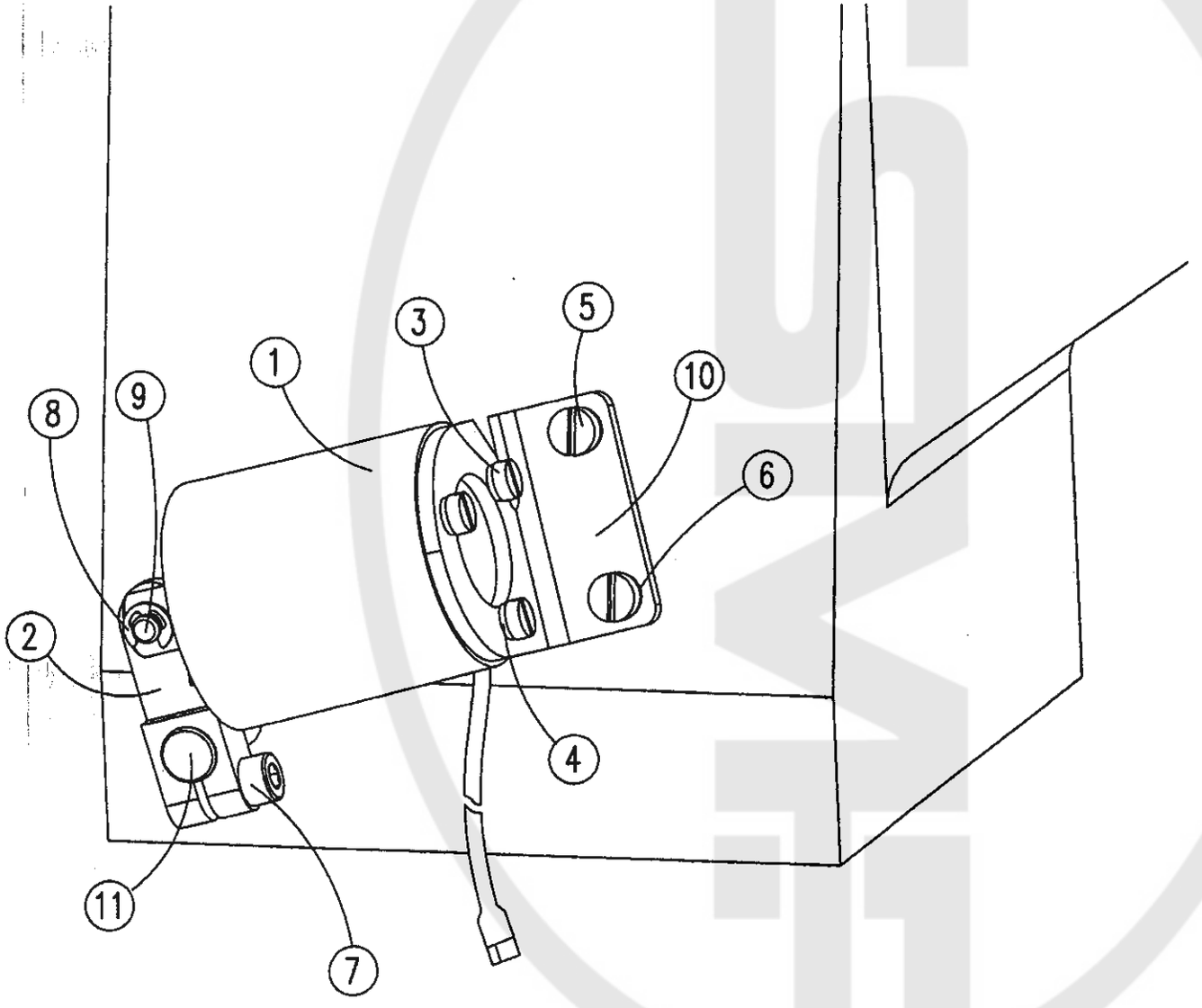
tab. 36



ZZ 568 H - TD

1	**S980 094057**	
1	**S980 094060**	
	S791 995154 /1	
3	S080	132153
4	S980	044895
5	S080	441550
6	S980	043369
7	S080	441475
8	S080	120219
9	S980	233053
10	S080	190483
11	S080	342270
12	S980	035914

tab. 37

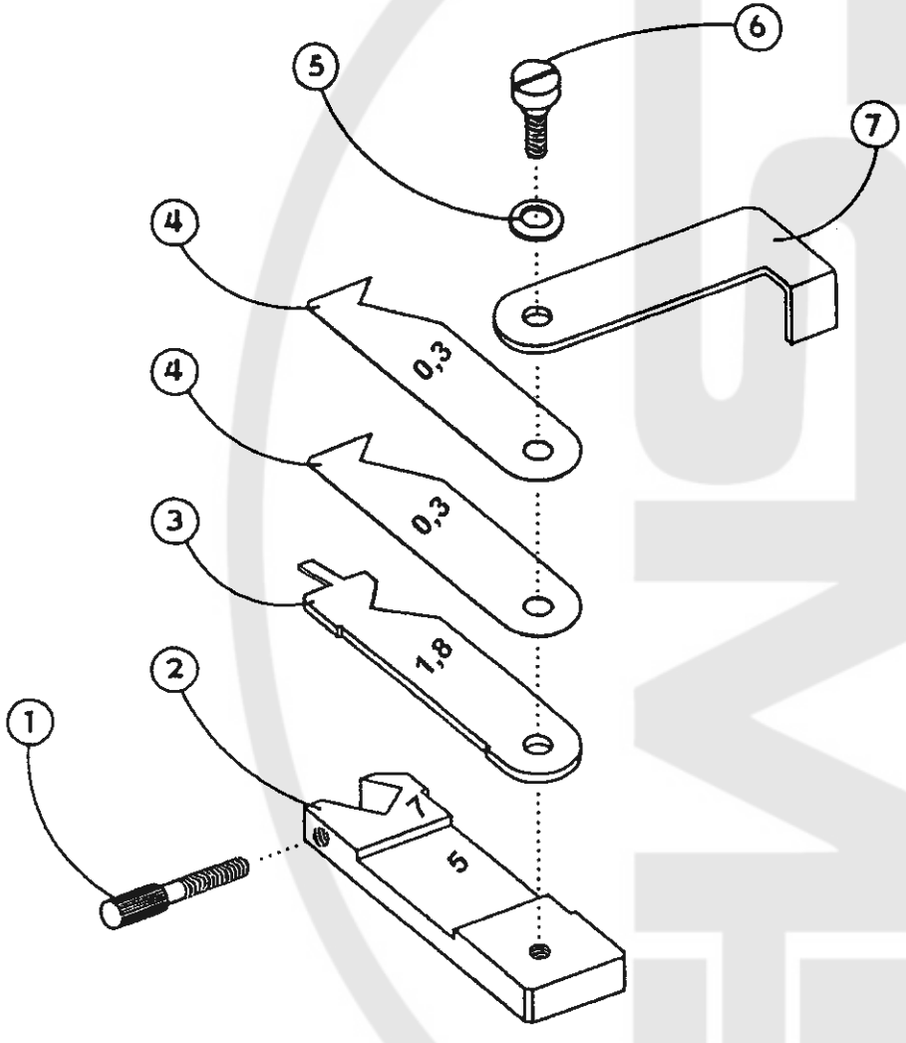


ZZ 568 H - TD

S791 995154 /2

1	S980	094047
2	S080	613594
3	S080	120331
4	S080	191135
5	S080	120354
6	S080	191136
7	S080	120364
8	S311	732040
9	S080	314231
10	S080	826396
11	S080	342342

tab. 38



ZZ 568 H - TD

Z 001

S791 947001

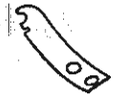
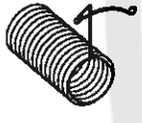
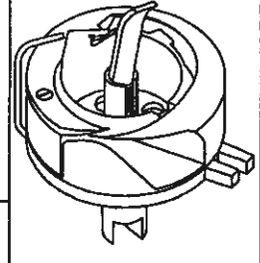
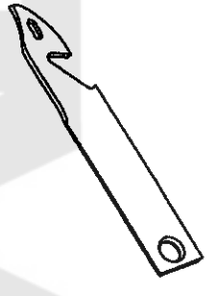
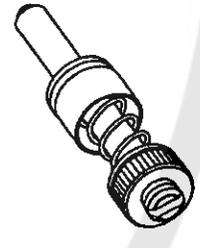
1	S080	133112
2	S080	646148
3	S080	814365
4	S080	814364
5	S080	192061
6	S080	131404
7	S080	831412

tab. 39

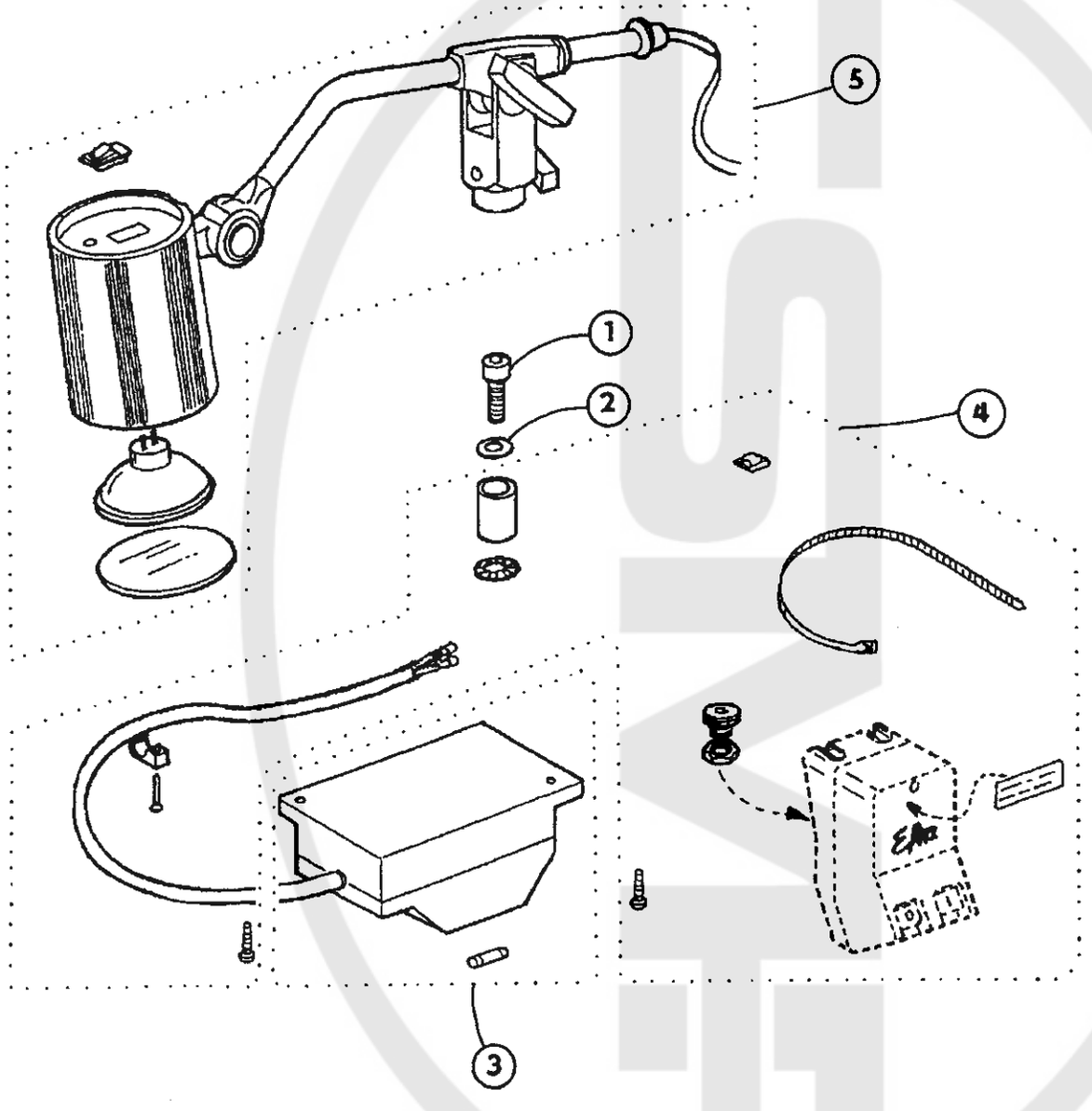
ZZ 568 H - TD

528Z 505

S741 41050540

3x  S080 111109	3x  S080 141088	5x  S080 683063	5x  S080 683053	3x  S080 135029	3x  S080 120239
5x  S080 123117	3x  S080 265037	1x  S080 627170	3x  S080 136082	3x  S080 124050	5x  S080 112013
3x  S080 690029	5x  S315 264294	1x  S980 008253	1x  S980 025244	1x  S080 870167	3x  S273 025410
3x  S080 132216					1x  S980 025160
3x  S080 122029	1x  S080 264281	1x  S080 870140			

tab. 40



ZZ 568 H - TD

Z 012

S794 222012

1	S080	120692
2	S080	190346
3	0798	500088
4	0907	487519
5	9822	510001