

User manual and  
Spare Parts List

Instrucoes para uso e lista de  
peças

Návod k používání a katalog  
náhradních dílů

**GARUDAN**®

**GZ-527- 447**



ANITA B, s.r.o.

Hliníky 2068

680 01 Boskovice

Czech Republic

tel: +420 516454774, 516453496

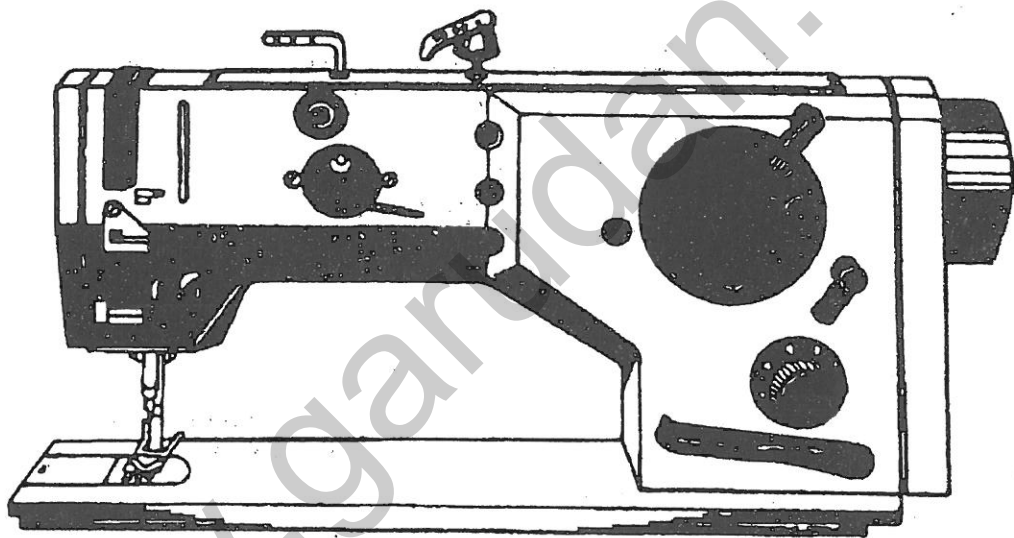
fax: +420 516452751

e-mail: [info@anita.cz](mailto:info@anita.cz)

[www.garudan.cz](http://www.garudan.cz)

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**SINGLE NEEDLE FLAT BED ZIGZAG INDUSTRIAL  
SEWING MACHINE AND LOWER THREADS**



**Use of Machine**

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

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## Specifications

Machine speed	up to 3 400 stitches per min., according to the sewn work, threads, and stitch width.
Stitch length	up to 5 mm, forward and reverse
Stitch width	up to 10 mm
Zigzag stitch width position	median
Needle	Schmetz 134, 134 LR Nos. 100 - 130 797 CFCF Nos. 100 - 130
Hook	R 251
Thickness of sewn material	up to 3 mm for leather up to 5 mm for shoe textile
Threads	cotton threads 50 tex x 3; 35,5 tex x 3; 29,5 tex x 3; 25 tex x 3; 20 tex x 3 synthetic threads PES 25 tex x 1 x 2; 25 tex x 1 x 3
Presser foot stroke	5 mm with hand lever 7 mm with knee lever
Clear work space	265 x 120 mm
Weight of machine head	38 kg
Machine drive	stop motor
Machine stand	modern, angular-profile stand
Weight of machine stand	39 kg

## Technical description

The machine 72527 - 105 I is a single needle flat bed zigzag industrial sewing machine for joining leather and textile materials, producing two-thread lockstitch. The drive is transmitted, from the upper shaft to the lower one by a drive belt, from the lower shaft to the horizontal rotary hook, by a gearing seated in the hook box. The reverse stitching can be actuated either by a hand lever or by the left-hand treadle. The zigzag stitch width can be adjusted by a lever situated on the front side of the column of the machine arm, the stitch length is steplessly adjustable by a revolving knob. A hand lever or a knee lever can be used to lift the presser foot. The stop motor, providing for stopping the machine in a predetermined needle position, is equipped with a contactless sensor of the angular position of the machine upper shaft and with an electronic control circuit, thus ensuring long service life and high reliability while requiring only moderate maintenance. The principal parts of mechanisms exposed to increased strain are seated in rolling-contact bearings. The machine has a group wick lubrication with automatic additional lubrication of the hook.

## Machine Equipments and their Use

Ordering No.	Name
522 791 124 061 35	Stitching set-needle Schmetz 797 CFCF No. 100
522 791 149 001 00	Equipment for overedging operations
522 791 400 023 00	Equipment for joining parts
522 791 430 048 35	Attaching of leather decorations (beadings); maximum diameter of the reinforcement thread 2.8 mm; needle distance 7 mm
522 791 430 055 35	Hook R 253 for needles Nos. 140 to 160
522 791 947 001 00	Adjusting set
522 791 995 014 00	Plug for the hole provided for mounting the winder
522 791 995 068 00	Equipment for treadle-actuated reverse stitching
522 792 112 010 00	Incorporated bobbin winder, complete
522 794 222 010 00	Suspension-type lighting of work area

The Equipments are supplied on special order only.

**Technological use of machine 72527 - 105 I**  
**(recommended combination of sewn material, needles and threads)**

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

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

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## I. INSTRUCTIONS FOR SERVICING OF MACHINE

### A. GENERAL INSTRUCTIONS

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

### B. PACKING, UNPACKING, CLEANING AND LUBRICATION OF MACHINE

#### 1. Packing of machine

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

#### 2. Unpacking of machine

When taking over the machine from the railway authorities or in the works ascertain whether it has arrived

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

### 3. To set the machine on stand

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

### 4. To set and fix the machine

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

### 5. To clean and lubricate the machine (Fig. 1)

Before putting the unpacked machine into operation, remove the protective grease coating and clean the machine thoroughly. For oiling all machine mechanisms and the hook is recommended heavy white vaseline oil with viscosity of  $50 \text{ mm}^2 \cdot \text{s}^{-1}$  at  $20^\circ\text{C}$ . 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 flushed-out dirt, and oil the hook with its mechanism with oil. This cleaning should be carried out daily, especially after the end of the work shift, in order to prevent dirt from drying on the hook and its mechanism. From time to time, use grease nipple to refill the shafts (6, see tab. 19 and 7, see tab. 20) with lubrication grease. 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.



#### 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.

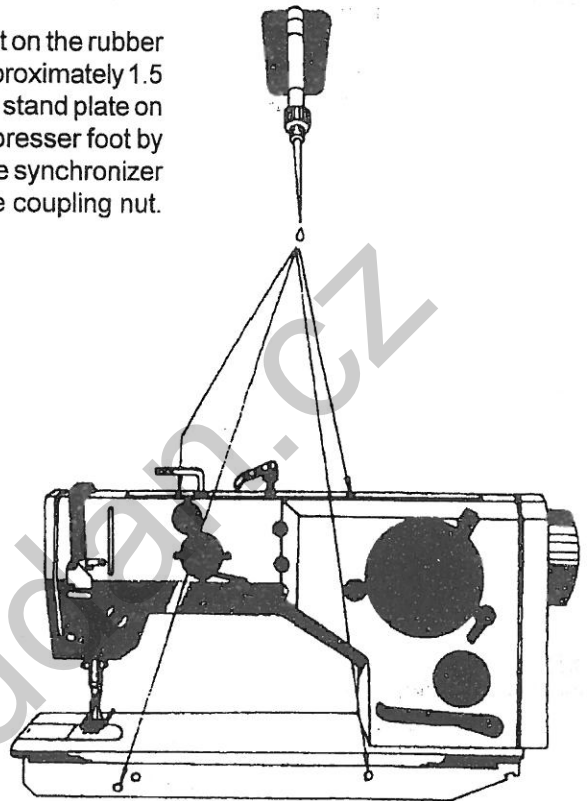


Fig. 1

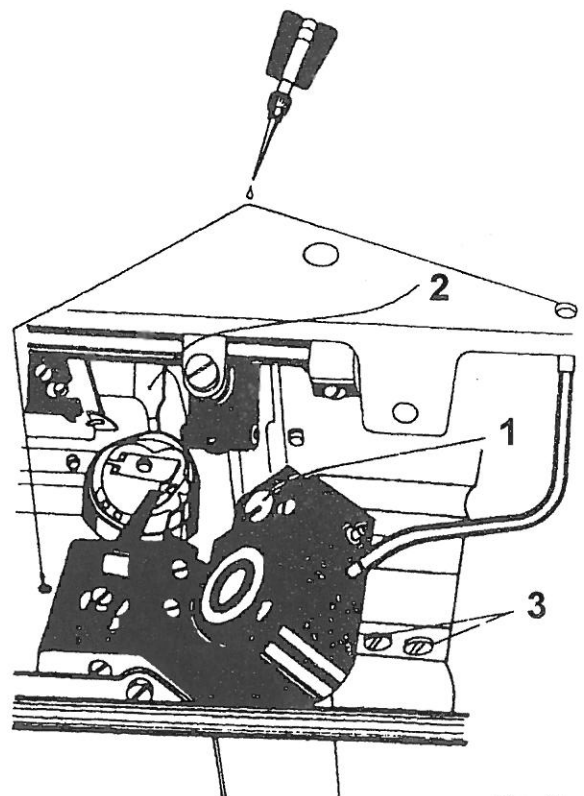


Fig. 2



## 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.

### To observe:

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

## C. TO PREPARE THE MACHINE FOR SEWING

### 1. General inspection

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

### 2. Sense of rotation

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

### 3. Electrical equipment

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



### 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.

### 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 side-ways. 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

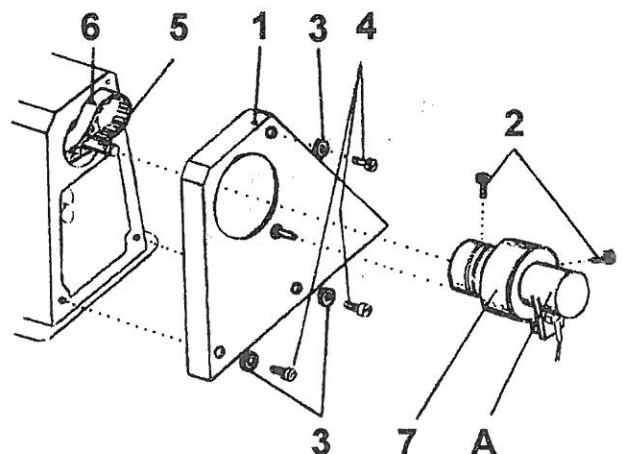


Fig. 3

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.

#### 6. To lift the presser foot (Fig. 4)

The lifting and sinking of the presser foot is controlled by the left-side treadle or 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.

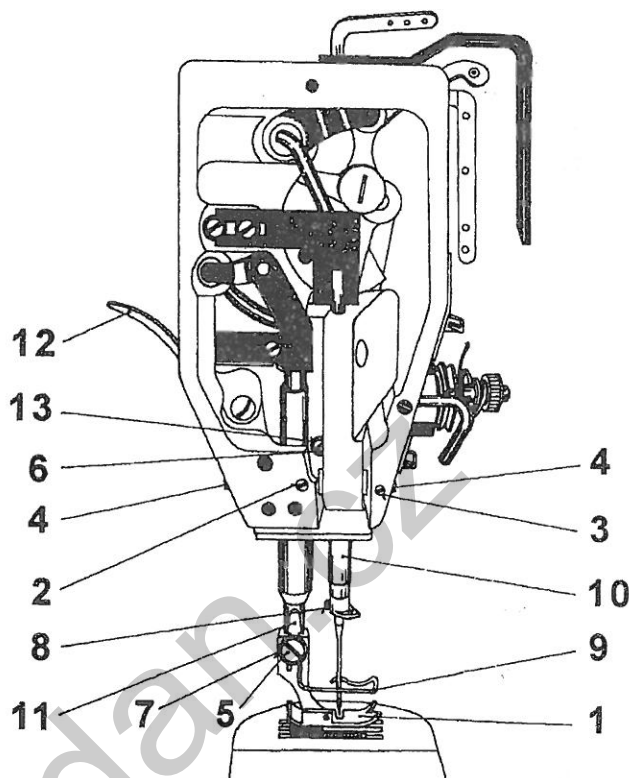


Fig. 4

#### 7. Needles and threads

The machine requires the use of needles Schmetz 134, 134 LR and 797 CFCF Nos. 100 - 130. Considering the high machine performance and the resulting needle heating, it is advised to use chromium plated needles. The size of the needle depends on the size of the thread, since it must pass freely through the needle 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, while 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 (8) on the lower part of the needle bar and insert the needle up to the stop. Be sure that the long groove of the needle is directed toward the operator. Looking through the cross slot provided in the needle bar check whether the needle shaft has reached the bottom of the needle channel, and fix the needle by tightening the screw. Each time you insert a new needle check whether it is straight and whether it passes through the centre of the needle aperture provided in the throat plate. Never use a needle chosen haphazardly but choose it with respect to the character of the sewn work and to the thread size.



#### 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) and the thread guides (3 and 6) into the thread take-up lever (A), then downwards through the thread guide (6) and the lower thread guide (7) to the thread guide (5) on the needle bar, and from there to the needle. Insert it into the needle ear from the front side (i. e., from the side of the operator) to the rear side.



#### 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)

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 (6) to the bobbin mounted on the winder shaft, wind it a few times anticlockwise on the bobbin, lead the thread end to the spring (2), insert it between the spring coils, and apply mild pressure so as to cut it by the knife situated inside the spring. When mounting the bobbin on the winder shaft be sure that the carrier spring enters the notch of the bobbin front. Swinging the control lever (5) between the bobbin fronts will render the bobbin winder operative. Switch on the electric motor and depress 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.

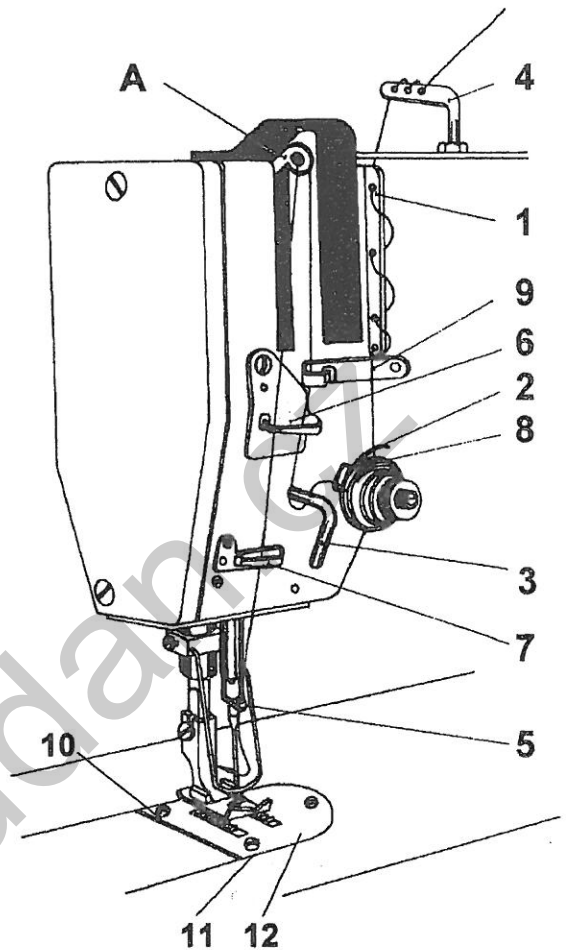


Fig. 5

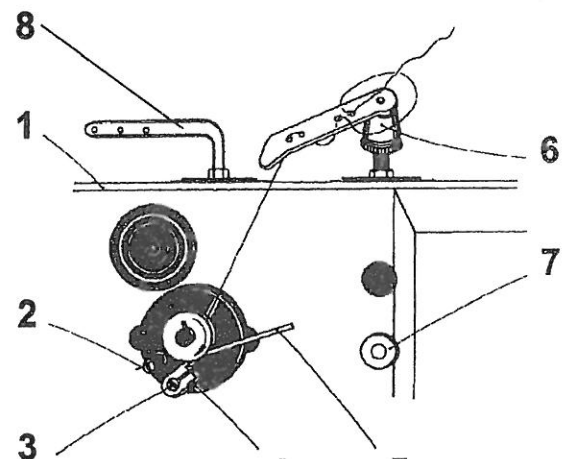


Fig. 6



### 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.

### 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 be started only after a bit of material has been inserted under the presser foot. Both when starting and when finishing the sewing, the thread take-up lever should be placed in its top position to avoid the risk that the upper thread in its top position to avoid the risk that 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 and switch on the electromotor. Start the machine by gradually depressing the right treadle. The sewing speed increases up to the maximum obtained with the treadle has reached its lowest position. By releasing the treadle, the clutch of the electromotor is disengaged, the electromotor braked, and the machine stopped. During the sewing, avoid pulling the material but guide it only. By pulling the material, you bend the needle with the risk of breaking it in case of a collisions with the edge of the needle aperture provided in the throat plate. Repeated collisions of this kind burr the needle aperture which, in its turn, causes thread ruptures. After the machine stop, set the needle to its top position, lift the presser foot, remove the sewn work from under it, and cut the two threads with scissors. After that, the machine is ready for stitching another seam.

#### To observe:

Having put the new machine in use do not charge it fully from the very beginning. During the first two or four weeks, when the machine is running-in, increase its speed gradually from about 3 000 stitches per min. and check carefully its running. Throughout this time, pay special attention to the machine lubrication. By keeping to these rules you will obtain a long service life and perfect precision of the machine even at its full performance.

## II. INSTRUCTIONS FOR ADJUSTMENT OF MACHINE MECHANISMS

This section of the Manual describes adjustments of the type that can be carried out on the work site. Larger adjustments, requiring more time, should be carried out by a skilled sewing machine mechanician.

### 1. Stitch length adjustment (Fig. 7)

The stitch length can be steplessly adjusted by turning the knob (4) provided on the column of the machine arm, from zero to 5 mm. By turning it in the sense of the arrow "A" (i. e., to the right), you increase the stitch length, by turning it in the sense of the arrow "B" (i. e., to the left), you decrease it. For reverse stitching,

depress either the left treadle, or the hand lever (1) towards the machine bed plate. When released, the lever automatically resumes its previous position and the machine restarts forward stitching.

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

Before any adjustment of the zigzag stitch width, the machine must be stopped with the needle outside the sewn work. The locking lever (5) must be turned to the left (anti-clockwise) 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 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 it down to zero. Lock the adjusted stitch width by displacing the locking lever (5) to the right.

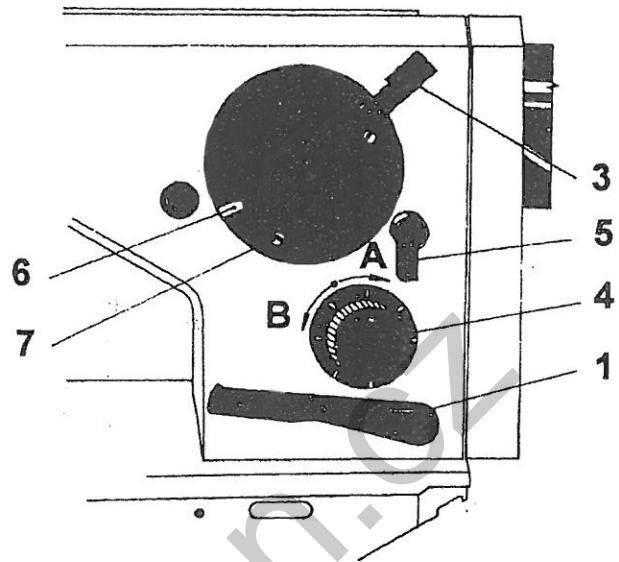


Fig. 7

**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 resort the desired quality of stitching.

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

The height of the teeth of the feed-dog (A) should be adjusted to 0.8 - 1.2 mm, according to the kind of sewn material. To adjust it, loosen the screw (2) of the lifting lever (8) on the shaft (6), adjust the required height of the feed-dog teeth, and retighten the screw thoroughly with a screwdriver. To adjust the teeth

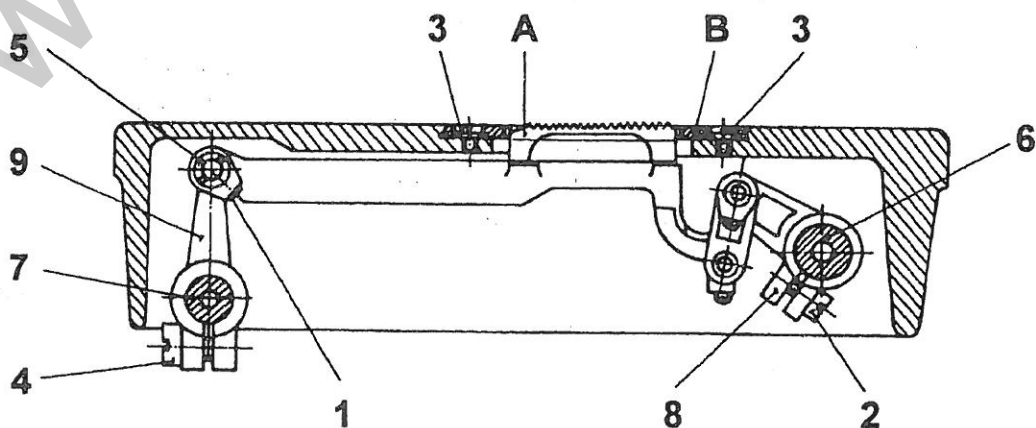


Fig. 8

horizontally, loosen the screw (1) of the feed lever (9) on the shaft (7) and adjust the rear part of the teeth by correspondingly adjusting the angular position of the eccentric pin (5), then retighten the screw (1). For adjusting the feed-dog height, use one of the gauges (2 or 3) belonging to the Equipment No. 522 791 947 001 00.

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

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

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

The throat plate (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. To adjust the presser bar pressure**

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

**8. To adjust in height the needle bar (Fig. 4)**

The hook must be so interrelated with the needle that at the moment when the hook point begins to take up the upper thread loop, the upper edge of the needle ear is approximately 0.6 mm under the hook point, at the maximum stitch width and in the left position of the needle bar. If the needle bar height is not adequate to this requirement, loosen the respective screws, remove the front plate, loosen the screw (6) of the carrier (13) of the needle bar (10), adjust the needle bar correctly, and mount the front plate.

**9. To adjust the hook course**

Adjust the stitch width to zero and turn the hand wheel towards you until the needle bar reaches its bottom position and reascends by  $2.8 + 0.2$  mm. In this position the hook point must lie in the needle axis, and the distance between the needle and hook must be 0.1 mm or less. If it is not the case remove the throat plate, loosen the screws, adjust the angular position of the hook on the hook shaft, retighten the screws, and mount the throat plate. The gauges (2; 3 and 4) of Equipment 522 791 947 001 00 can be used for the hook course adjustment.

**10. To adjust the hook holder (Fig. 2)**

After the hook course adjustment, loosen the fixing screw and adjust the hook holder (2) so as to obtain a gap of approximately 0.7 mm between the holder lug and the bottom of the inner part of the hook. Gauge (3) of Equipment No. 522 791 947 001 00 is suitable for adjustment of the above gap.

**11. To adjust the elliptical path of the feed-dog movement (Fig. 8)**

If the machine is adjusted correctly the feed-dog describes an elliptical path both with forward and with reverse stitching. The adjustable eccentric is positioned by means of a pin

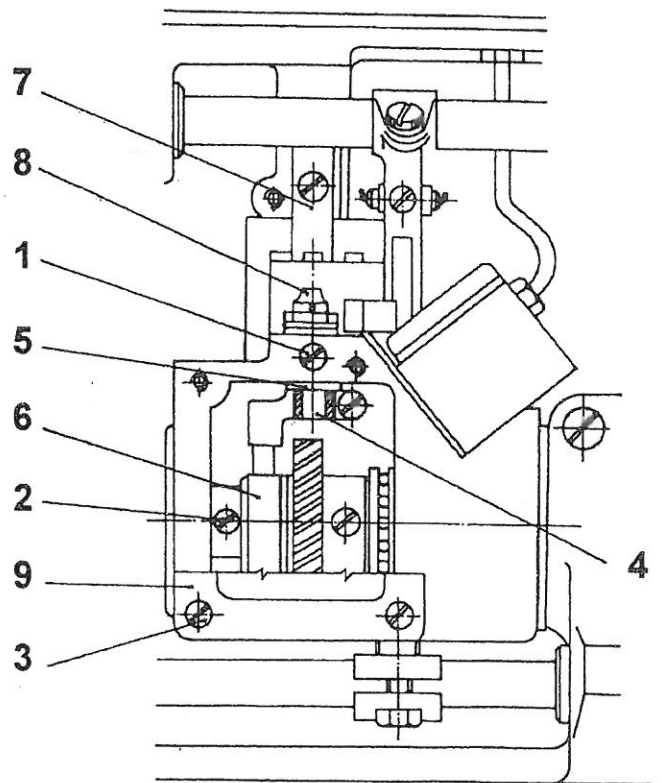


Fig. 9

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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 axis 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. 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. 9)**

During the stitching, the gap between the sides of the groove provided in the inner part of the hook and the hook holder (7) is positively periodically opened by means of the opening lever (8) and of eccentric (6) to facilitate the movement of upper thread when leaving the hook. The eccentric is situated on the hook box at the end of the lower shaft. Adjust first the gap between the lug of the hook holder and the recess provided in the inner part of the hook, and simultaneously, the opening lever, i. e., the axial play between the lug of the opening lever and the face of the inner part of the hook.

Screw out first the four screws (3) of the hook box cover (9), remove the cover, and take the lubrication inlay out of it. For adjustment, loosen the screw (1) fixing the position of the bobbin case (5) contacted by the pin (4) with the opening lever and adjust a gap of 0.8 mm between the lug of the opening lever and the lower surface of the hook by tapping lightly on the opening lever. The gauge (3) of Equipment No. 522 791 947 001 00 is suitable for this adjustment. At the same time, set the opening lever so as to produce a gap of 0.5 mm between the recess of the inner part and the hook holder required to let the thread pass. Having adjusted the opening lever, retighten the screw (1). Before proceeding to carry out the adjustment, remove the throat plate. The timing of the opening lever with respect to the looper is best carried 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. 4)**

To exchange the presser foot (1), first lift the presser bar (11) to its top position and lock it by the hand lifting lever (12). Lift also the needle to its top position, then loosen the attachment screw (5) of the presser foot together with the washer (7), and remove first the finger guard (9) and then the presser foot from the presser bar. To insert the presser foot, proceed inversely. Having fixed a new presser foot check, in its top position, whether the needle bar, during its movement, does not collide with the presser foot. The gauge (2) of the Equipment No. 522 791 947 001 00 is suitable for adjusting the presser foot stroke.

**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 (4), remove the upper belt guard (1), then the V-belt from the handwheel, and afterwards after loosening the two screws (2), take the handwheel with the bearing (7) 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 (2), put the V-belt on the handwheel, mount the belt guard, and then the synchronizer in the marked angular position.



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

Adjust the zigzag stitch to the zero width and turn the 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.

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

Adjust the zigzag stitch to the zero width and turn the hand wheel until the needle bar with the needle reaches its bottom position. In case of transverse deviation from the central needle position screw out the four attachment screws, remove the upper cover (1), take the plug out of (2) the machine arm, loosen the screw (3) 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 (4) so as to set the needle transversely to the slot centre, retighten the screw (3), insert the plug (2) into its hole, and mount the upper cover. Check the needle punch position at the maximum stitch width and be sure that there is a play between the needle and the slot side in each lateral position of the needle. With zigzag stitch width adjusted at zero, the needle bar with the needle should react with no lateral movement to the hand wheel rotation. If it does react, the basic zero position of the zigzag stitch drive mechanism should be adjusted by an experienced sewing machine mechanic since such adjustment is rather extensive.

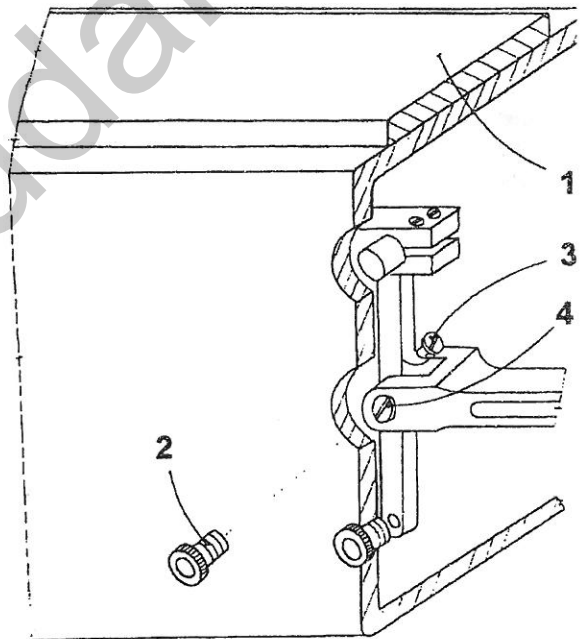


Fig. 10

**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 after 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 hand the upper shaft (4), adjust the angular position of the hand wheel accordingly, and retighten the screws (2) throughly.

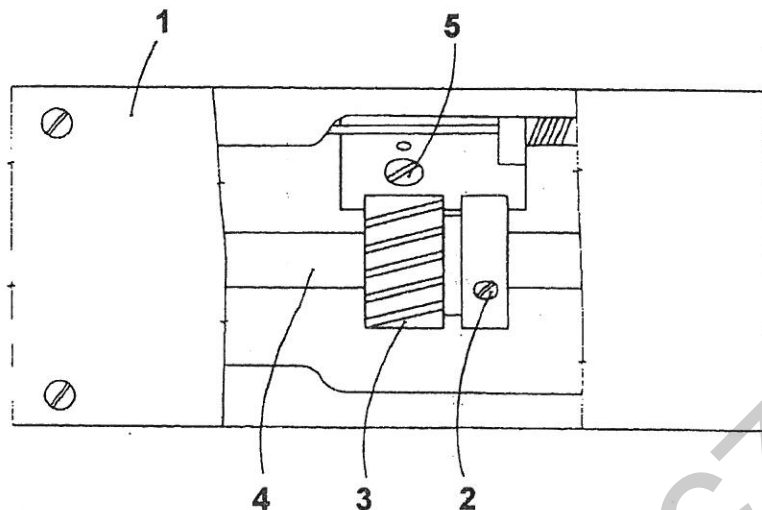


Fig. 11

**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) 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 (11) shows the approximative stitch width value at each lever position. To adjust the control force, first take the complete zigzag stitch mechanism out of the machine arm column. For this purpose, screw out the two screws (12) from the body of the mechanism, remove the cover (11), screw out the three attachment screws (3) from the body of the zigzag stitch mechanism, then screw out the securing screw (13) on the pin (15), remove the pin from the guiding (14), loosen the fixing lever (7) and take the pin (16) 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.

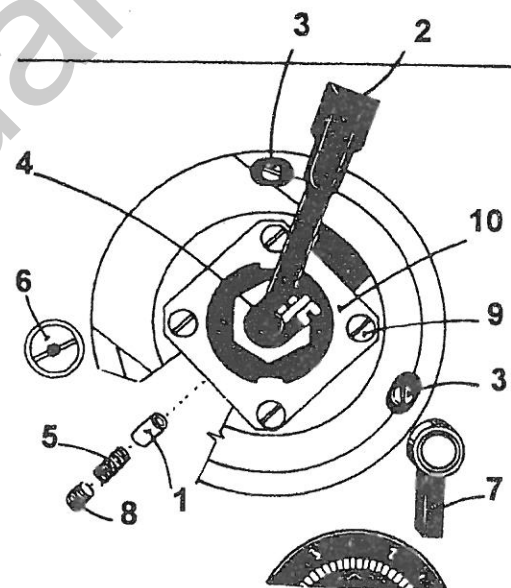


Fig. 12

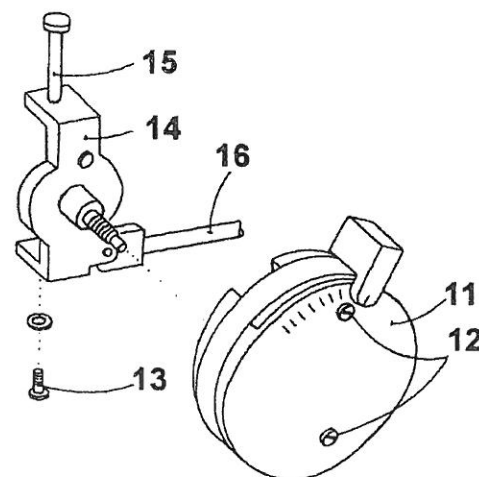


Fig. 13

**20. To adjust the tooth play of the zigzag transmission mechanism (Fig. 6, 11; Tab. 1, 10)**

The tooth play of the zigzag stitch transmission mechanism is actuated by the eccentric pin (6). To adjust the tooth play, first screw out the four attachment screws (2, Table 1), remove the upper cover (1, Fig. 6), and loosen the screw (5, Fig 11) located in the lug of the machine arm. By turning then the eccentric pin (6) adjust the tooth play of the zigzag transmission mechanism, i. e., between the complete cam (9, Table 10) and the gear wheel (3, Fig. 11) mounted on the upper shaft (4, Fig. 11), then lock the adjusted position by throughly tightening the screw (5, Fig. 11).

**21. To adjust the position of the needle bar with respect to that of the hook shaft (Fig. 2)**

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) ensuring the locking joint between the bed plate and the hook gear box. In correct position, the hook gear box is in direct contact with the lug of the bed plate. The stop pin on the front side of the gear box is inserted into the split section of the bed plate lug and is in contact with the upper part of the split lug. Lock the gear box position by tightening the two screws (3).

**22. To adjust the operation of the adjusting spring (Fig. 14)**

Loosen the screw (1) and take the complete upper thread tensioner out of the machine arm. To adjust the tension of the adjusting spring (4), loosen the screw (2) on the bushing (3) 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.

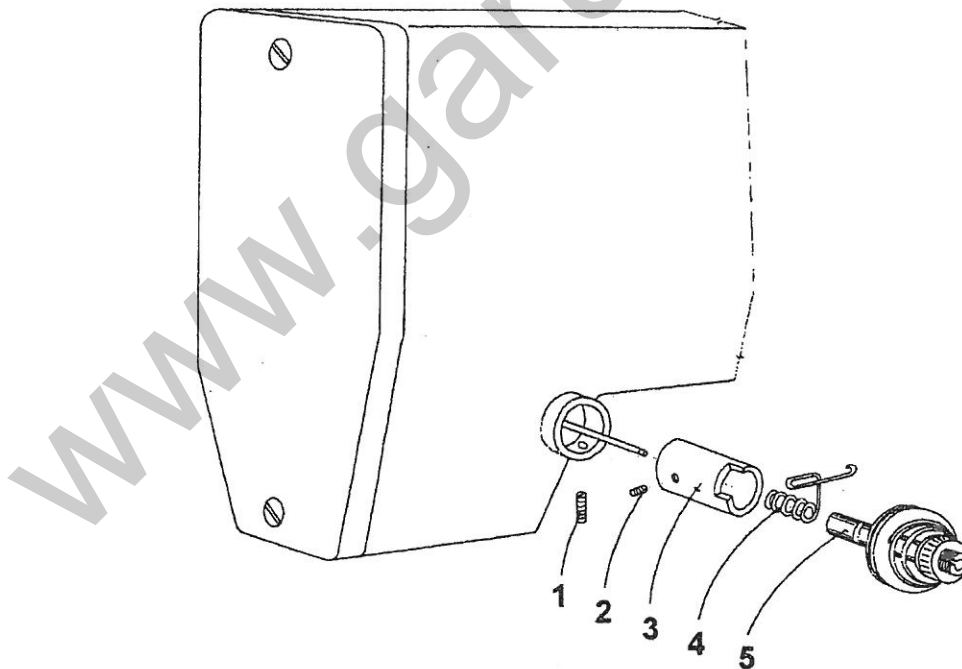


Fig. 14

### 23. To time the trimmer actuating cam (Fig. 15)

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 screws (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 timing of the drawing hook movement is governed by the angular position of the cam on the lower shaft. Tilt the machine head and insert the pin (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 throw-away section of the hook at the moment when the lower thread leaves the latter, thus forming the typical triangle. During the subsequent rotation of the handwheel, the drawing hook point shall pass through the triangle, one arm of the upper together with the lower thread lying on one side, the other arm of the upper thread on the other side, of the drawing hook. The threads lying on the notched side of the drawing hook shall enter the notch. For adjustment, loosen the two screws (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.

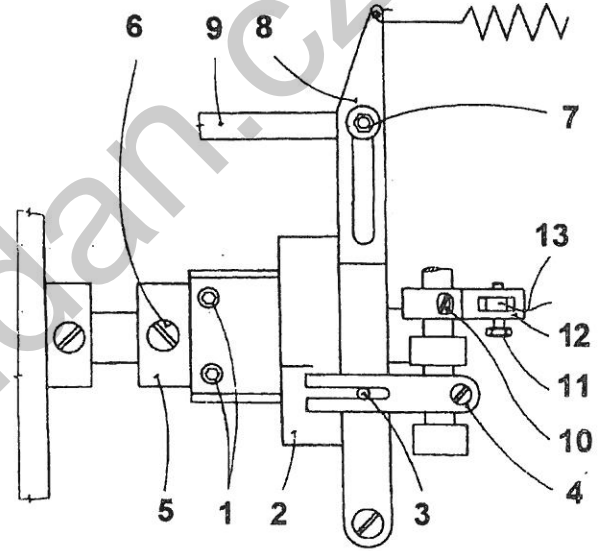


Fig. 15

### 24. To adjust the starting position of the drawing hook (Fig. 16)

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. 15)

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).



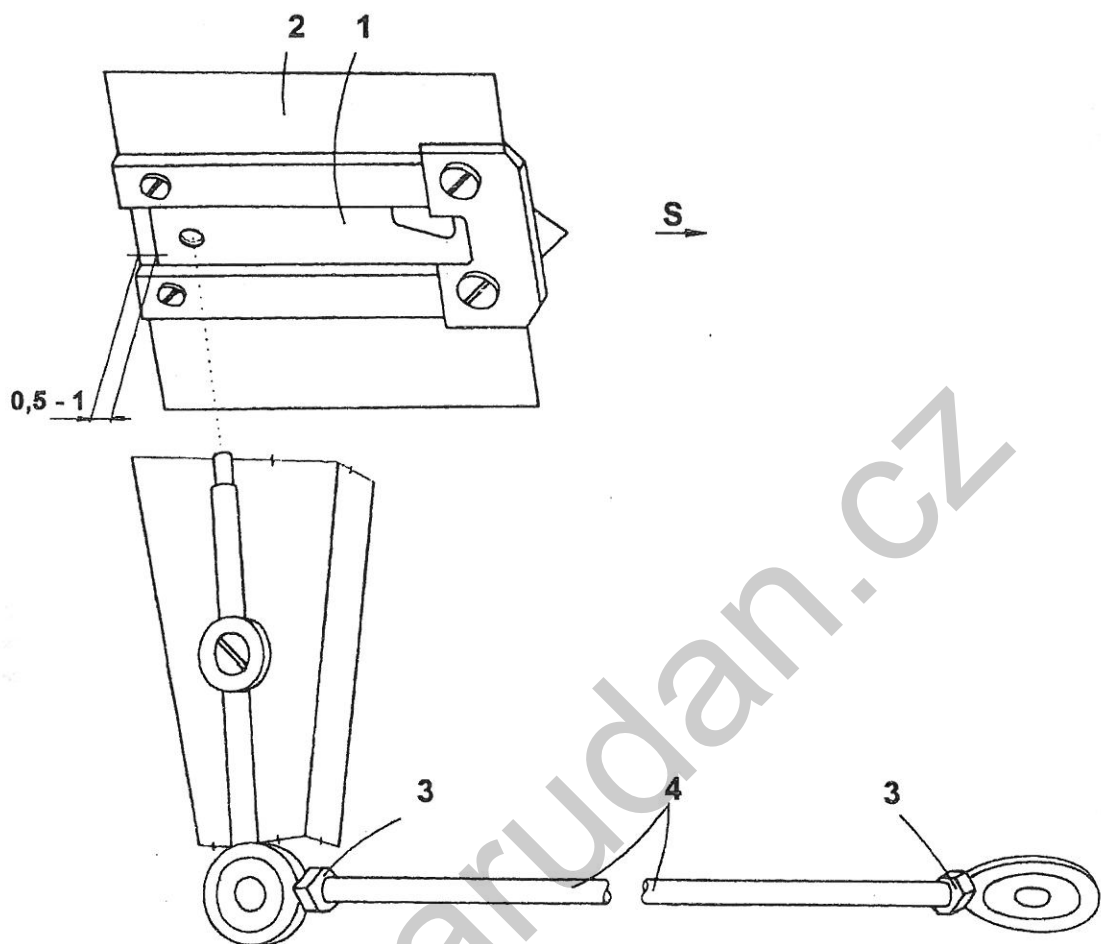


Fig. 16

**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 (10) in the slide plate (12), 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. 15)**

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 described in detail in the instructions for the drive unit. Before leaving the producer's works, the machine was tested and sewn-off at predetermined values, i.e., in the "needle up" position lying between  $0^\circ$  and  $5^\circ$  after the upper dead position of the thread 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 (12) 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. 16)

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
<b>a) Heavy machine run</b>	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 7).
<b>b) Slow machine start</b>	Insufficient belt tension.	Increase the belt tension by tilting the electromotor.
<b>c) Upper thread breakage</b>	<ol style="list-style-type: none"> <li>1. Slashed thread guides.</li> <li>2. Too sharp hook point.</li> <li>3. Faulty feeding.</li> <li>4. Faulty upper thread guiding or needle threading.</li> <li>5. Incorrect upper thread tension.</li> <li>6. Bad needle quality or bent needle.</li> <li>7. Thread size is inadequate to the thickness of sewn material.</li> <li>8. Machine considerably soiled.</li> <li>9. Thread wound on the hook.</li> <li>10. Thread is too thin or not strong enough.</li> </ol>	<ol style="list-style-type: none"> <li>1. Ascertain and exchange them.</li> <li>2. Repair it.</li> <li>3. Adjust it see par. 5, page 13.</li> <li>4. Thread the upper thread correctly see par. 9, page 10.</li> <li>5. Adjust it see par. 3, page 12.</li> <li>6. Exchange the needle see par. 7, page 9.</li> <li>7. Use adequate thread.</li> <li>8. Unscrew the throat plate, clean the mechanism, and set the throat plate see par. 6, page 13.</li> <li>9. Remove the thread.</li> <li>10. Use adequate thread.</li> </ol>
<b>d) Lower thread breakage</b>	<ol style="list-style-type: none"> <li>1. The thread is incorrectly threaded into the bobbin case.</li> <li>2. Thread is too thin or not strong enough.</li> <li>3. Thread is wound incorrectly on the bobbin.</li> <li>4. Damaged bobbin.</li> <li>5. Too sharp pressure spring on the bobbin case.</li> </ol>	<ol style="list-style-type: none"> <li>1. Thread it correctly see par. 12, page 11.</li> <li>2. Use adequate thread.</li> <li>3. Wind it on the bobbin correctly.</li> <li>4. Exchange it.</li> <li>5. Exchange the spring.</li> </ol>
<b>e) Skipped stitches</b>	<ol style="list-style-type: none"> <li>1. Needle inserted incorrectly.</li> <li>2. Blunt or bent needle.</li> <li>3. Slashed or broken hook point.</li> <li>4. Excessive needle aperture in the throat plate.</li> <li>5. Broken adjusting spring for upper thread tension.</li> <li>6. Needle bar positioned too high or too low.</li> </ol>	<ol style="list-style-type: none"> <li>1. Insert it correctly see par. 8, page 9.</li> <li>2. Exchange it see par. 8, page 9.</li> <li>3. Exchange the hook.</li> <li>4. Exchange the throat plate and set it correctly.</li> <li>5. Exchange the spring and adjust the upper thread tension see par. 3, page 12.</li> <li>6. Adjust it see par. 8, page 13.</li> </ol>

<b>Fault</b>	<b>Cause</b>	<b>Removal</b>
	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.
<b>f) Needle breakage</b>	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. 7, page 9.
	4. Needle inserted incorrectly.	4. Insert it correctly see par. 7, page 9.
	5. Loosened throat plate.	5. Set the throat plate correctly see par. 6, page 13 and fix it by screws.
	6. Excessive upper thread tension.	6. Adjust it see par. 3, page 12.
<b>g) Heavy and irregular feeding</b>	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.
<b>h) Stitch forming below sewn material</b>	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 looper or catches the bobbin case.	2. Clean the hook and adjust the bobbin case.
	3. The upper thread is not thread between the tensioner disc.	3. Thread it correctly.
	4. Thread broken and caught between the tensioner disks.	4. Clean the thread tensioner and adjust it see par. 3, page 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.
<b>i) Stitch forming above sewn material</b>	1. Damaged spring on the bobbin case, the lower thread is braked insufficiently.	1. Exchange the spring.
	2. Lower thread is not threaded under the spring of the bobbin case.	2. Tread it correctly.
	3. Lower thread broken and caught under the spring of the bobbin case.	3. Remove the thread.
	4. Incorrect proportion between the upper and lower thread tensions.	4. Correct the proportion see par. 3, page 12.
	5. Premature feeding.	5. Adjust it see par. 5, page 13.

Fault	Cause	Removal
j) Locked hook	Thread rests caught in the hook.	Rotate the hand wheel in each 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 re-commended in par. 5, page 8 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	<ol style="list-style-type: none"> <li>1. Excessive tension of ancillary thread tensioner</li> <li>2. Premature timing of the cam</li> <li>3. The machine stops before reaching the top dead position</li> <li>4. The electromagnet serving to release the main thread tensioner fails to operate</li> <li>5. Incorrect upper thread unwinding</li> <li>6. The edge of the active section of the drawing hook is too sharp and tends to cut the thread</li> <li>7. Too sharp hook edge</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce the tension</li> <li>2. Adjust the timing</li> <li>3. Adjust it correctly</li> <li>4. Ascertain the cause and repair the trouble</li> <li>5. Repair it.</li> <li>6. Polish the edge</li> <li>7. Polish it.</li> </ol>
b) Insufficient amount of lower thread, the machine fails to start stitching	<ol style="list-style-type: none"> <li>1. The lower thread end is drawn into the bobbin case</li> <li>2. Excessive speed prior to machine stop</li> <li>3. Excessive lower thread tension</li> <li>4. Burrs on the cover sheet of the hook</li> </ol>	<ol style="list-style-type: none"> <li>1. Increase the lower thread tension while being wound on the bobbin</li> <li>2. Set it at 140 r.p.m. or less</li> <li>3. Reduce it</li> <li>4. Polish it</li> </ol>
c) Thread ends are poorly cut or are not cut at all	<ol style="list-style-type: none"> <li>1. Maladjusted (insufficient) pressure of stationary knife</li> <li>2. The stationary or the moving knife (the drawing hook) is blunt</li> </ol>	<ol style="list-style-type: none"> <li>1. Increase the tension of the ancillary thread tensioner</li> <li>2. Adjust the cam timing</li> </ol>
e) The upper or the lower thread fails to be cut	<ol style="list-style-type: none"> <li>1. Incorrect cam timing</li> <li>2. Skipped stitches at reduced speed</li> <li>3. Poor thread separation by the drawing hook</li> <li>4. Insufficient stroke of drawing hook</li> </ol>	<ol style="list-style-type: none"> <li>1. Time it correctly</li> <li>2. Adjust the mechanism</li> <li>3. Adjust or exchange the drawing hook</li> <li>4. Adjust it (see par. 27, page 19)</li> </ol>

Fault	Cause	Removal
f) Neither thread is cut but the needle movement from the lower to the upper position does take place	<ol style="list-style-type: none"> <li>1. Incorrect cam timing</li> <li>2. The electromagnet controlling the thread cutting fails to operate correctly (gets stuck)</li> <li>3. Insufficient stroke of drawing hook</li> </ol>	<ol style="list-style-type: none"> <li>1. Time it correctly</li> <li>2. Check the wiring of the electromagnet or exchange it</li> <li>3. Adjust it (see par. 27, page 19)</li> </ol>
g) Stitching begins only after a few skipped stitches	<ol style="list-style-type: none"> <li>1. Insufficient supply of upper thread</li> <li>2. Insufficient supply of lower thread</li> </ol>	<ol style="list-style-type: none"> <li>1. Increase it (see par. 29, page 20)</li> <li>2. Repolish the drawing hook and the hook</li> </ol>
h) At the seam beginning, the upper thread end protrudes above sewn work	Excessive supply of upper thread	<ol style="list-style-type: none"> <li>1. Increase the tension of the ancillary thread tensioner</li> <li>2. Adjust the cam timing</li> <li>3. Adjust the machine stop in the needle up position</li> </ol>

## 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:

<u>72527 - 105 I, No. 205</u>		
021.243		2 parts
828.079		4 parts
272 213 017 015		1 part
323 114 618 117		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 catalogues attached to the machine in question.

We wish you much success in your work.

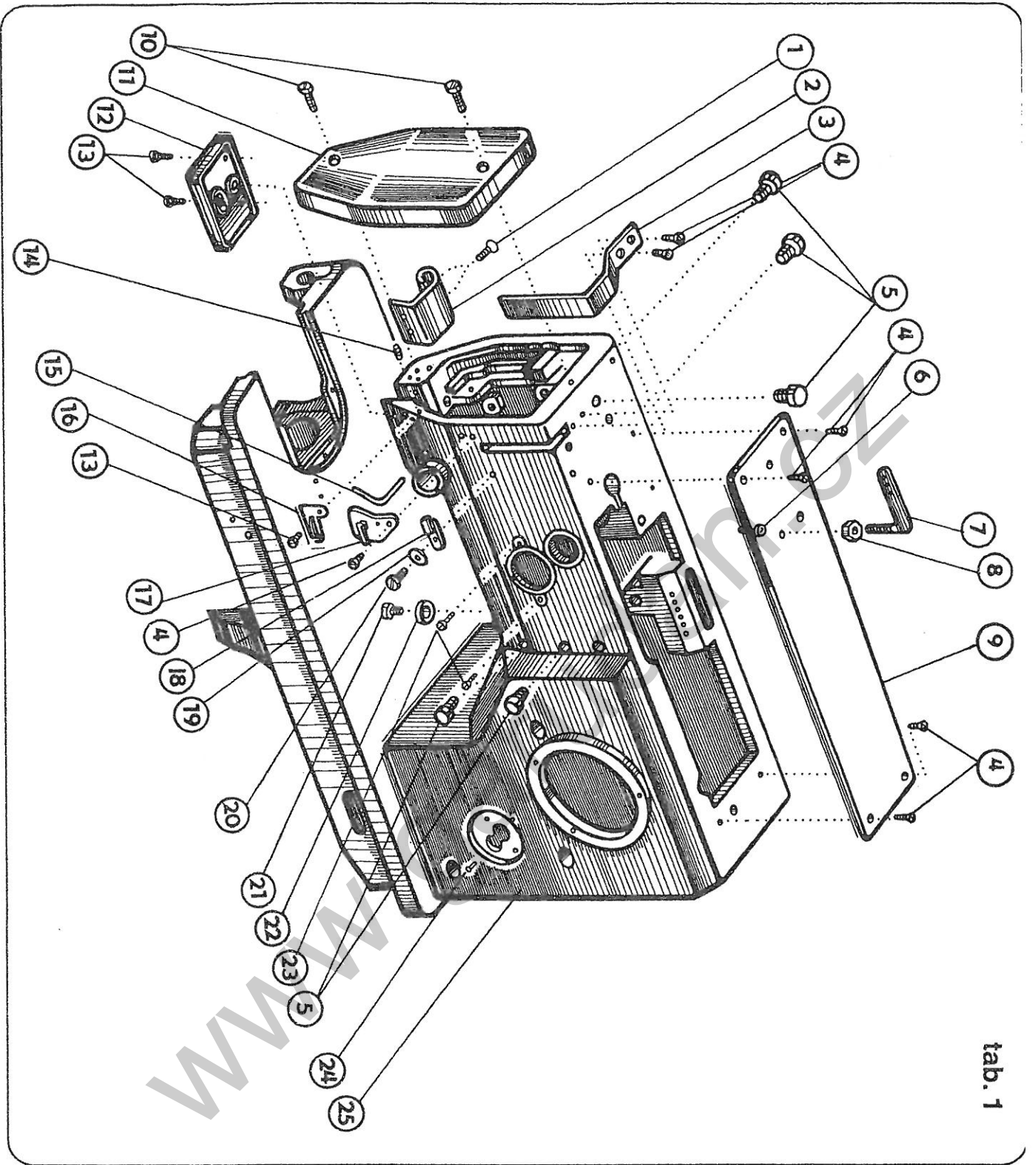


[www.garudan.cz](http://www.garudan.cz)

**TABLES OF SPARE PARTS**

[www.garudan.cz](http://www.garudan.cz)

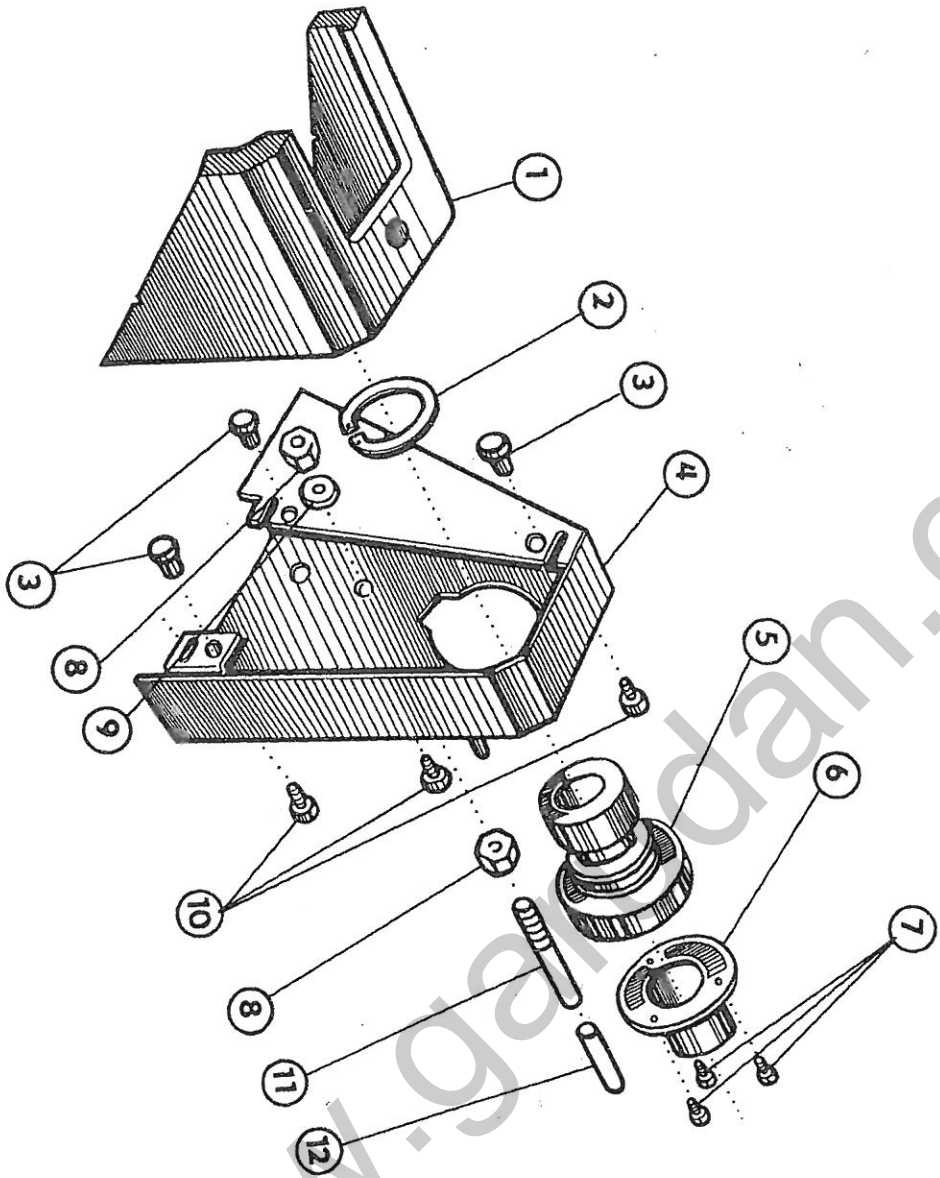




tab. 1

72527 - 105 I

1	522 080	126 063
2	522 080	823 115
3	522 080	831 348
4	522 080	123 117
5	321 161	001 000
6	522 080	840 073
7	522 080	313 254
8	522 080	161 138
9	522 080	813 904
10	522 080	120 248
11	522 080	721 173
12	522 080	827 180
13	522 080	123 122
14	522 080	111 227
15	522 080	271 184
16	522 080	821 115
17	522 080	821 077
18	522 080	821 113
19	522 080	190 368
20	522 080	120 361
21	522 080	124 062
22	722 923	110 000
23	522 080	132 112
24	522 080	220 011
25	522 980	020 385



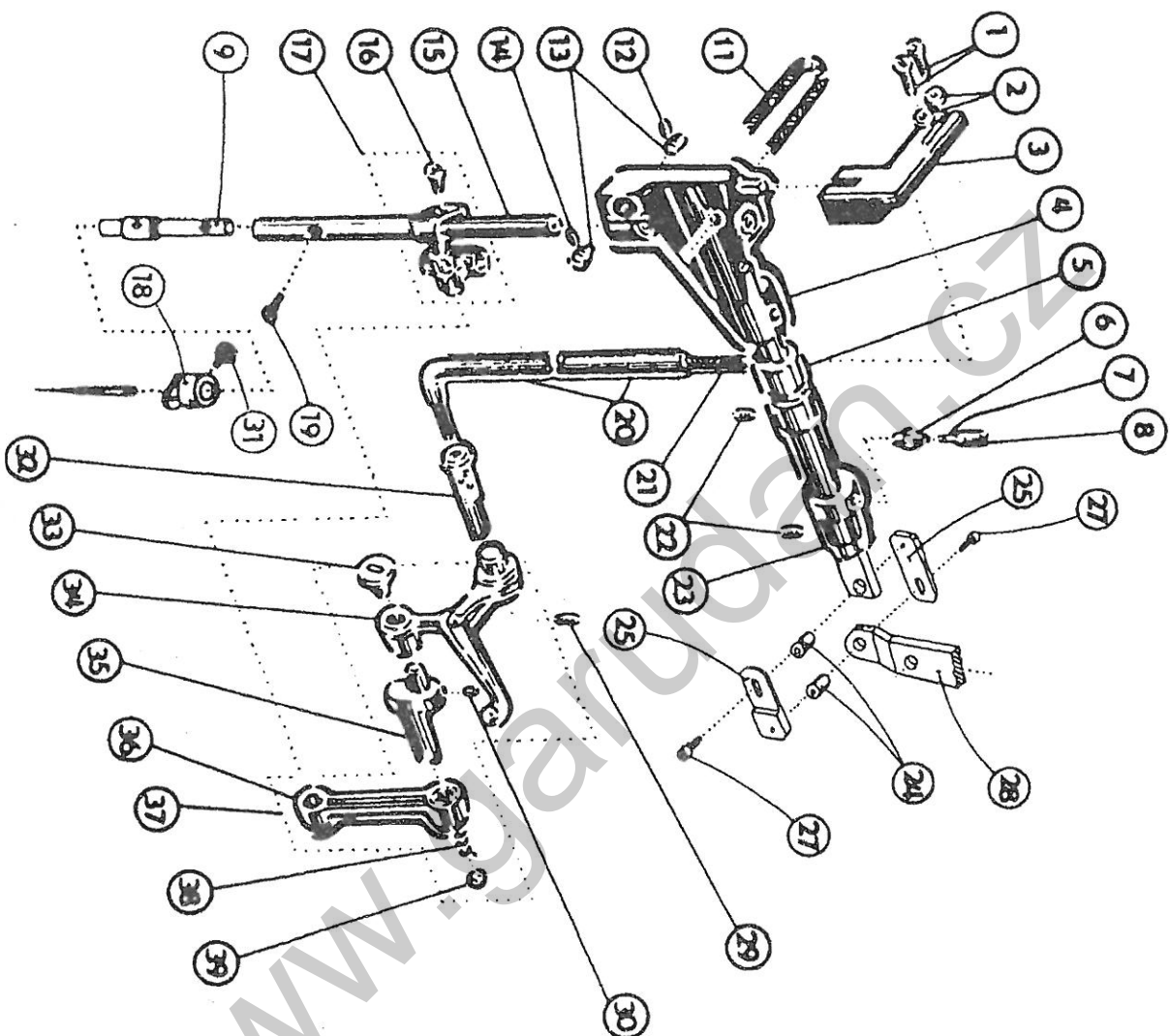
tab. 2

72527 - 105 I

1	522 980	020 385
2	311 733	100 620
3	273 199	005 000
4	522 980	041 162
5	522 980	045 301
6	522 080	442 548
7	522 080	120 252
8	522 080	161 151
9	522 080	191 112
10	522 080	120 346
11	522 080	316 096
12	283 362	003 001

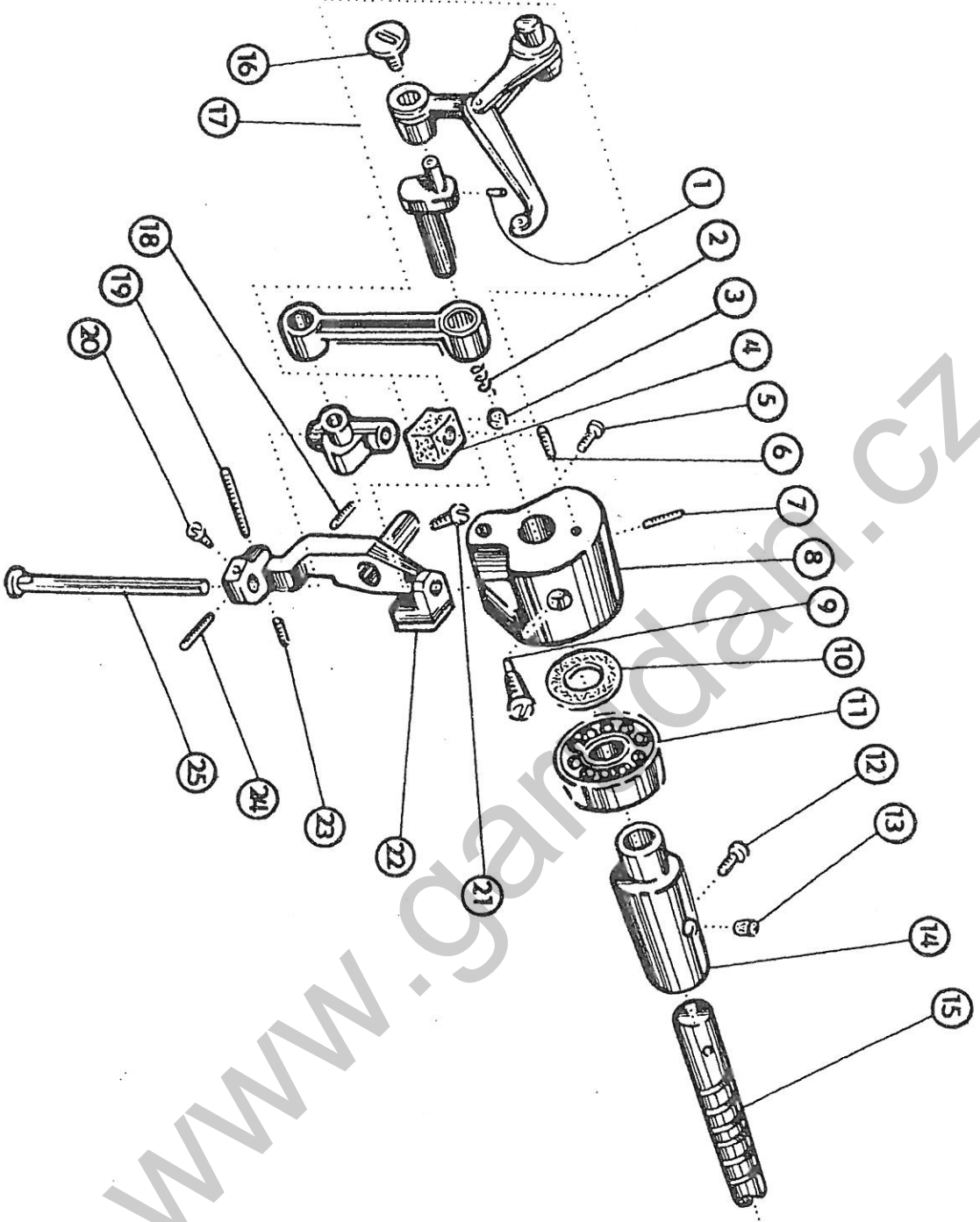
Ø 5/6 x 25 mm

tab. 3



72527 - 105 I

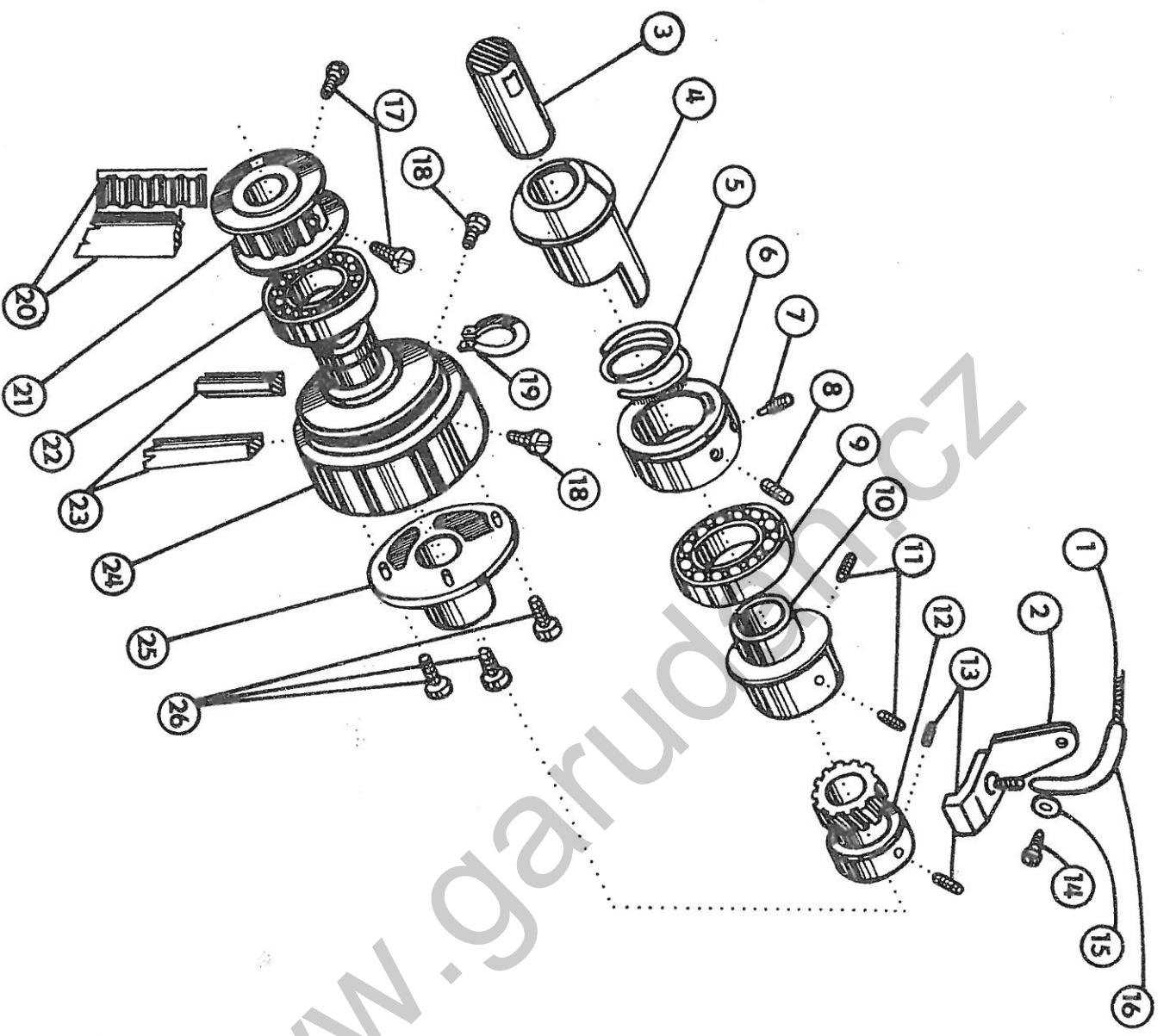
1	522 080	120 276
2	522 080	190 353
3	522 080	646 104
4	522 980	021 338
5	522 080	413 311
6	522 080	424 051
7	708 420	130 002
	l = 250 mm	
8	283 366	002 001
	Ø 3,5/Ø 4,8 x 190mm	
9	522 080	394 167
11	708 420	130 002
	l = 80 mm	
12	522 080	111 229
13	522 080	113 115
14	522 080	111 248
15	522 080	391 155
16	522 080	124 050
17	522 980	035 499
18	522 080	627 170
19	522 080	136 082
20	283 366	002 001
	Ø 3,5/Ø 4,8 x 70 mm	
21	708 420	130 003
	l = 150 mm	
22	522 080	111 122
23	522 080	421 341
24	522 080	410 595
25	522 080	648 132
27	522 080	120 589
28	522 080	613 519
29	522 080	112 014
30	311 515	002 006
31	522 080	135 029
32	522 080	328 005
33	522 080	120 062
34	522 980	025 236
35	522 080	338 180
36	522 980	044 712
37	522 980	044 835
38	522 080	260 458
39	522 080	951 281



tab. 4

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1	311 515	002 006
2	522 080	260 458
3	522 080	951 281
4	522 080	953 159
5	522 080	122 007
6	522 080	111 238
7	522 080	112 015
8	522 080	611 104
9	522 080	138 009
10	522 080	945 281
11	324 165	030 396
12	522 080	120 006
13	522 080	953 139
14	522 080	421 321
15	522 080	349 147
16	522 080	120 062
17	522 980	025 236
18	522 080	111 273
19	522 080	111 126
20	522 080	120 216
21	522 080	120 221
22	522 080	049 782
23	522 080	111 214
24	522 080	111 295
25	522 080	313 322

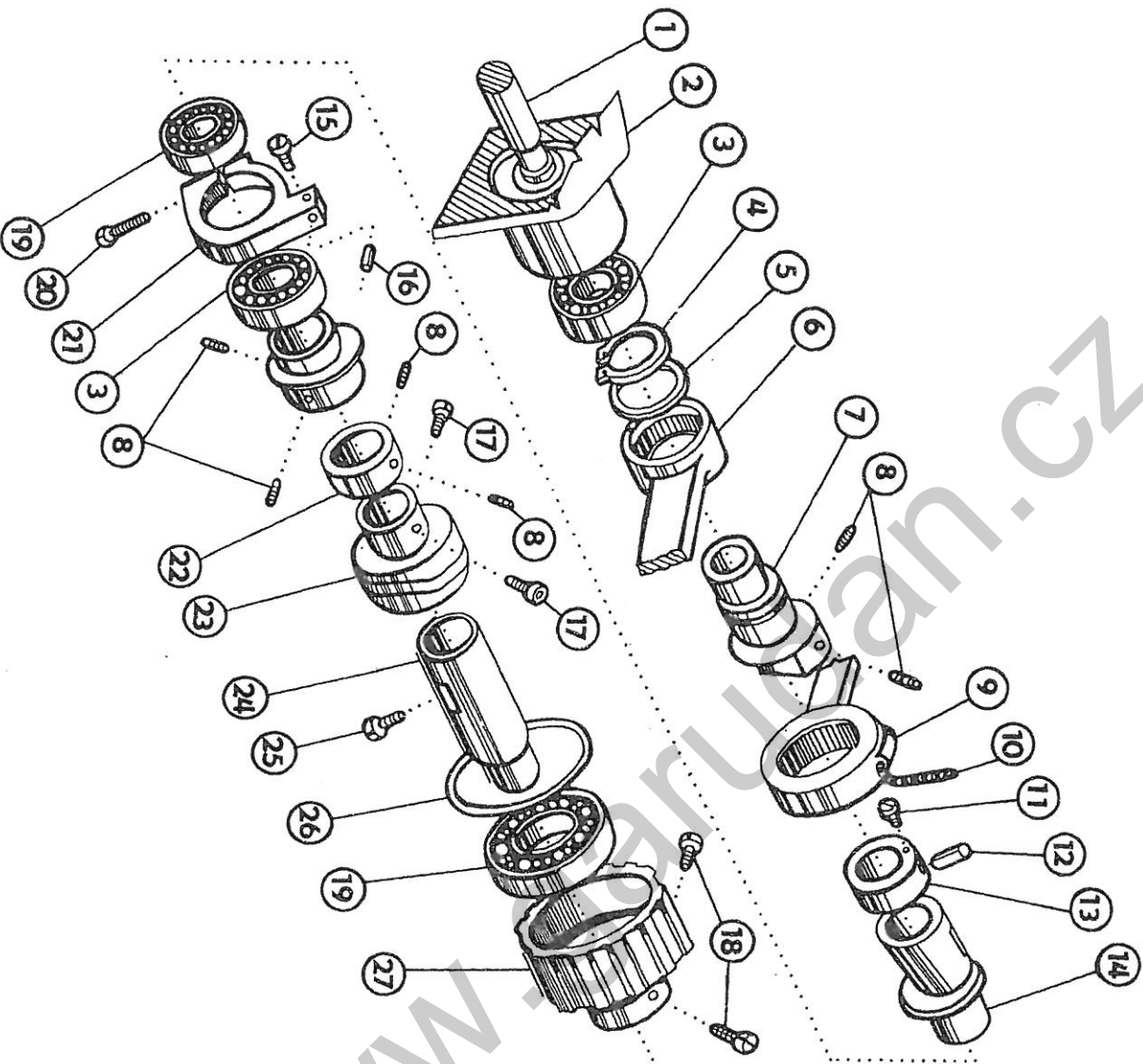


www.garud.pl

tab. 5

72527 - 105 I

1	708 420	130 002
2	522 980	041 176
3	522 080	349 147
4	522 980	039 047
5	522 080	260 467
6	522 080	436 338
7	522 080	113 115
8	522 080	112 013
9	324 165	030 006
10	522 080	424 068
11	522 080	111 225
12	522 980	045 330
13	522 080	111 343
14	522 080	120 259
15	522 080	190 359
16	283 366	002 001
17	∅ 3,5/∅ 4,8 x 90 mm	
18	522 080	122 029
19	522 080	120 006
20	311 733	000 300
21	272 213	011 015
22	522 980	045 315
23	324 162	060 093
24	272 711	222 000
25	522 080	511 082
26	522 080	442 548
	522 080	120 252



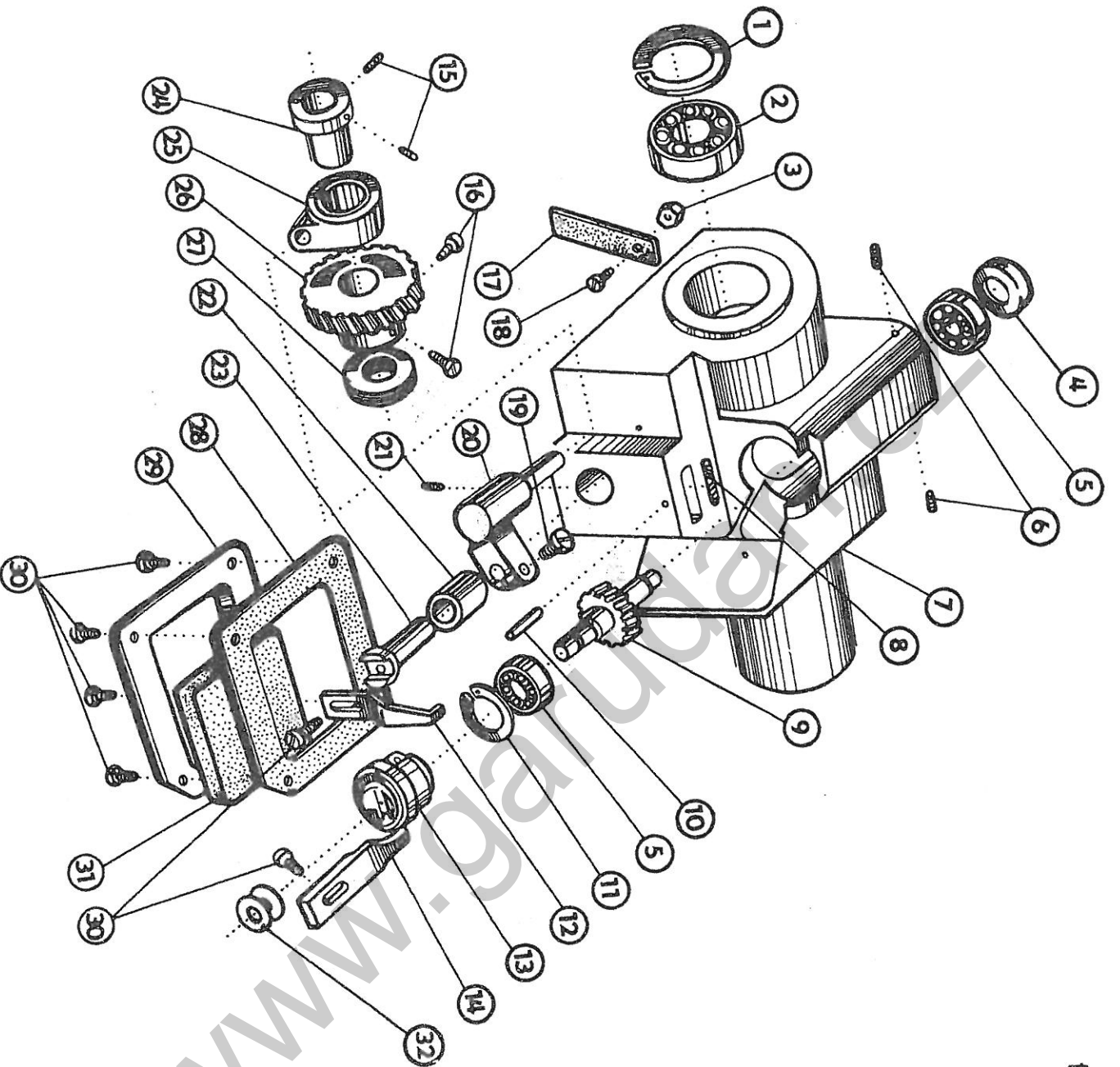
tab. 6

72527 - 105 I

1	522 080	342 243
2	522 080	724 134
3	324 165	020 093
4	311 733	000 180
5	522 080	814 338
6	522 080	630 248
7	522 080	671 152
8	522 080	112 013
9	522 980	044 045
10	708 420	130 002
l = 350 mm		
11	522 080	141 088
12	522 080	318 103
13	522 080	445 045
14	522 080	445 048
15	522 080	141 102
16	522 080	337 033
17	522 080	120 468
18	522 080	122 029
19	324 165	030 396
20	522 080	120 222
21	522 080	627 023
22	522 080	436 346
23	522 080	672 166
24	522 080	421 122
25	522 080	122 031
26	522 080	271 062
27	522 080	554 077

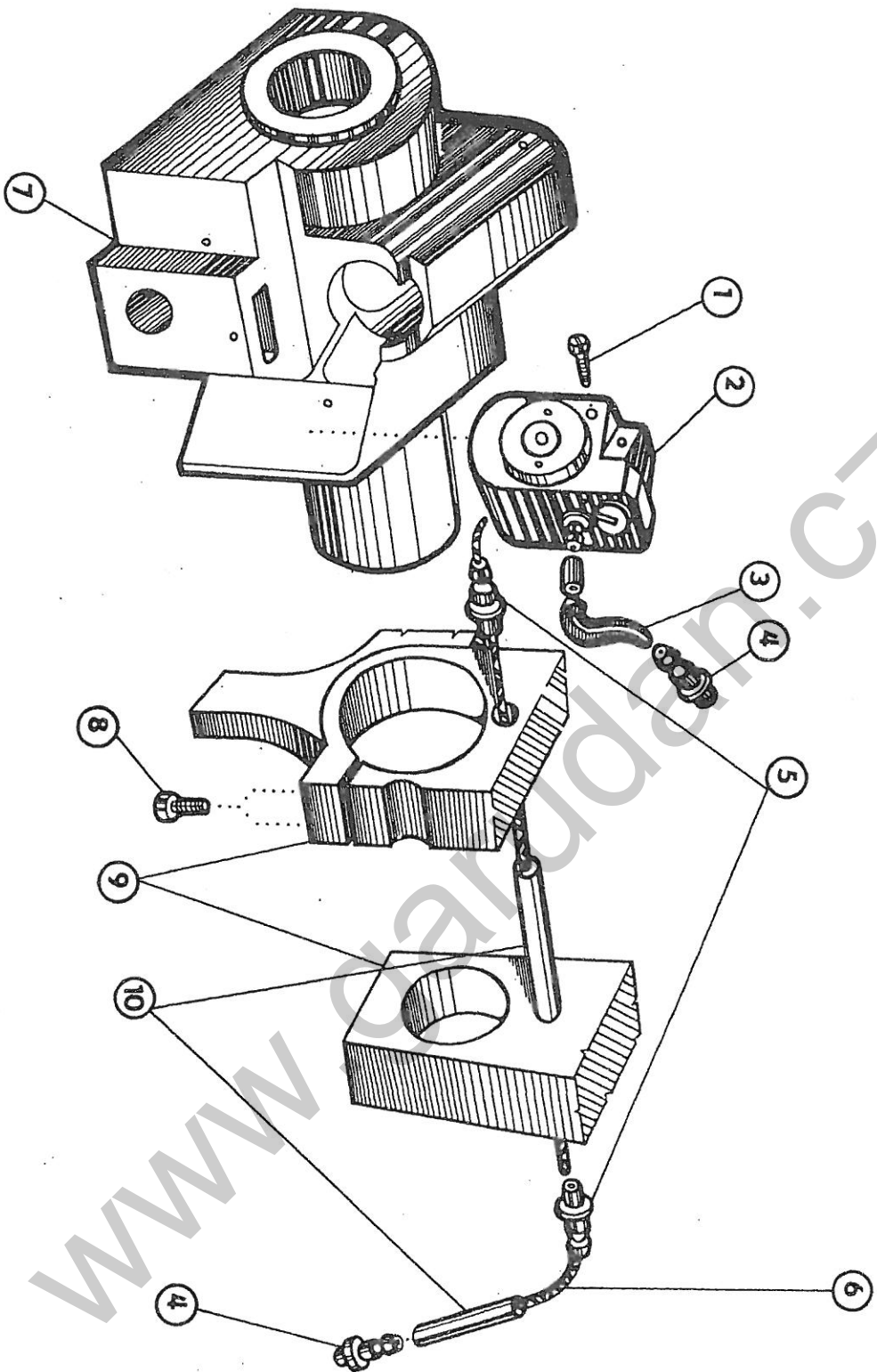


tab. 7



72527 - 105 I

1	311 733	100 260
2	324 152	920 776
3	522 080	161 143
4	522 080	441 287
5	324 155	910 093
6	522 080	111 219
7	522 080	724 134
8	708 420	030 003
9	522 080	552 168
10	311 515	601 612
11	311 733	100 220
12	522 080	825 740
13	522 980	008 251
14	522 080	825 744
15	522 080	112 013
16	522 080	122 007
17	522 080	945 283
18	522 080	120 601
19	522 080	120 226
20	522 080	613 466
21	522 080	111 094
22	522 080	410 530
23	522 080	323 155
24	522 080	671 155
25	522 980	035 406
26	522 080	552 167
27	324 311	010 000
28	522 080	990 134
29	522 080	827 179
30	522 0080	120 246
31	522 080	945 285
32	522 080	685 055

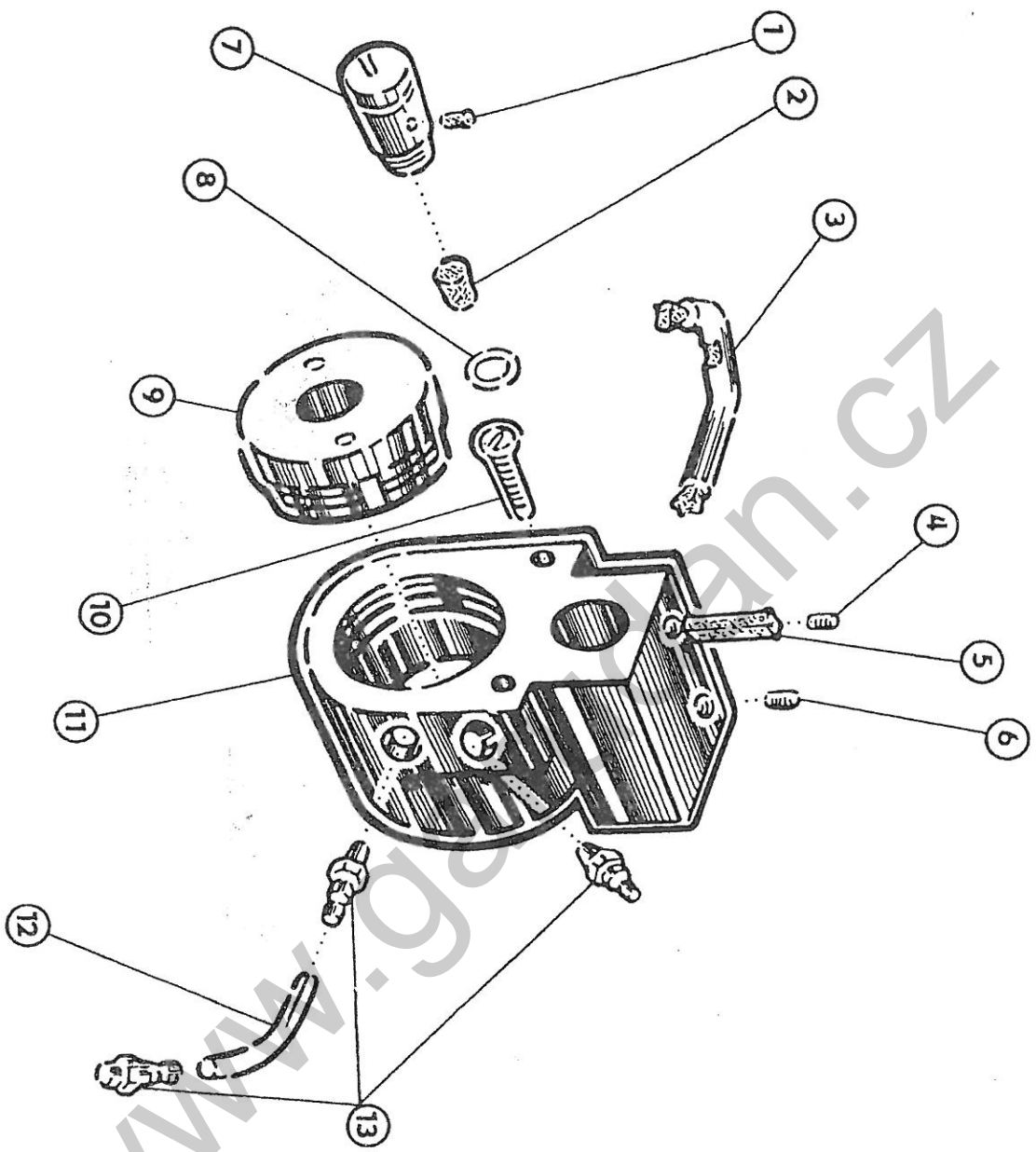


tab. 8

72527 - 105 I

1	522 080	120 269
2	522 980	035 527
3	283 366	002 001
	Ø 3,5/Ø 4,8 x 100 mm	
4	522 080	424 051
5	522 080	424 060
6	708 420	130 005
	l = 300 mm	
7	522 080	724 134
8	522 080	120 430
9	522 980	020 385
	283 366 002 001	
10	Ø 3,5/Ø 4,8 x 170 mm	



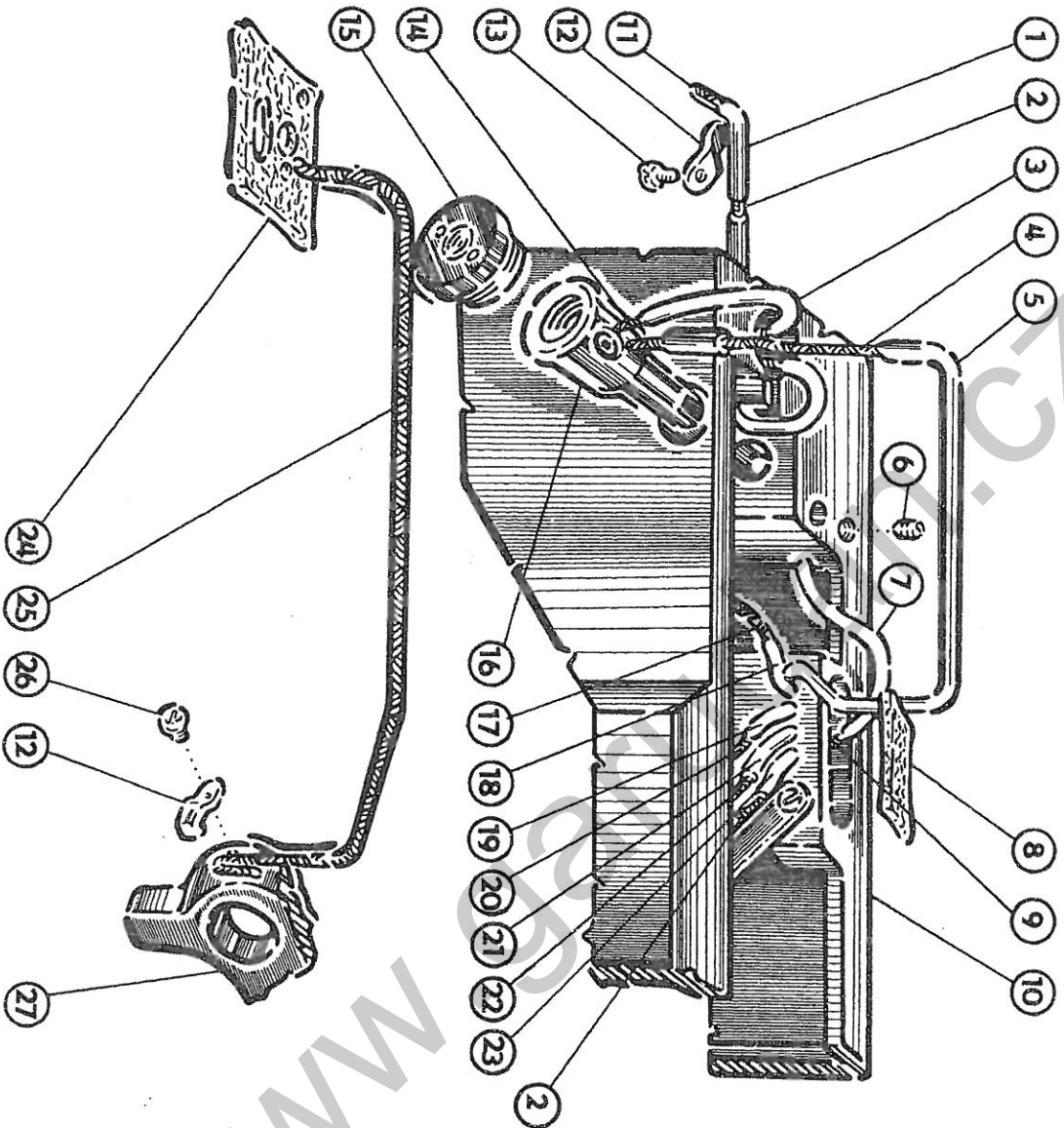


tab. 9

72527 - 105 I

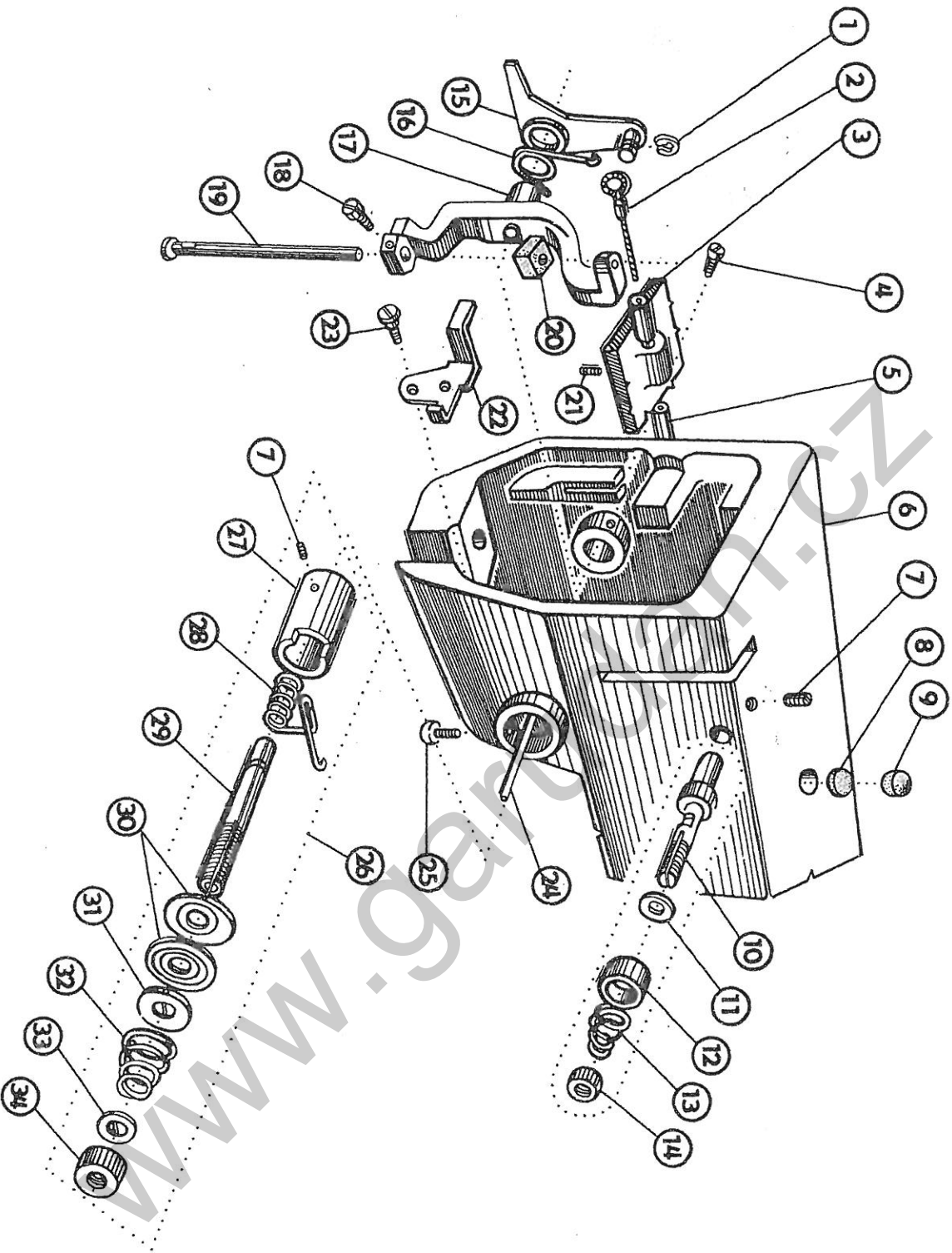
1	522 080	945 170
2	522 080	945 077
3	522 980	035 526
4	522 080	111 252
5	522 080	945 185
6	522 080	111 233
7	522 080	346 053
8	273 111	001 000
9	321 891	001 000
10	522 080	120 269
11	522 080	725 023
12	283 366	002 001
	∅ 3,5/∅ 4,8 x 100 mm	
13	522 080	424 051

tab. 10



72527 - 105 I

1	283 366	002 001
2	∅ 3,5/∅ 4,8 x 65 mm	
3	708 420	130 002
4	l = 140 mm	
5	283 366	002 001
6	∅ 3,5/∅ 4,8 x 75 mm	
7	708 420	130 003
8	l = 300 mm	
9	283 366	002 001
10	∅ 3,5/∅ 4,8 x 150 mm	
11	522 080	111 245
12	283 366	002 001
13	∅ 3,5/∅ 4,8 x 200 mm	
14	522 080	945 316
15	708 420	130 002
16	l = 250 mm	
17	522 980	020 385
18	522 080	945 180
19	522 080	824 095
20	522 080	120 245
21	708 420	130 003
22	l = 110 mm	
23	321 891	001 000
24	522 080	441 313
25	708 420	130 002
26	l = 320 mm	
27	283 366	002 001
	∅ 3,5/∅ 4,8 x 250 mm	
	283 366	002 001
	∅ 3,5/∅ 4,8 x 210 mm	
	708 420	130 002
	l = 270 mm	
	283 366	002 001
	∅ 3,5/∅ 4,8 x 90 mm	
	708 420	130 002
	l = 130 mm	
	283 366	002 001
	∅ 3,5/∅ 4,8 x 100 mm	
	522 080	945 286
	708 420	130 005
	l = 550 mm	
	522 080	120 216
	522 980	013 219

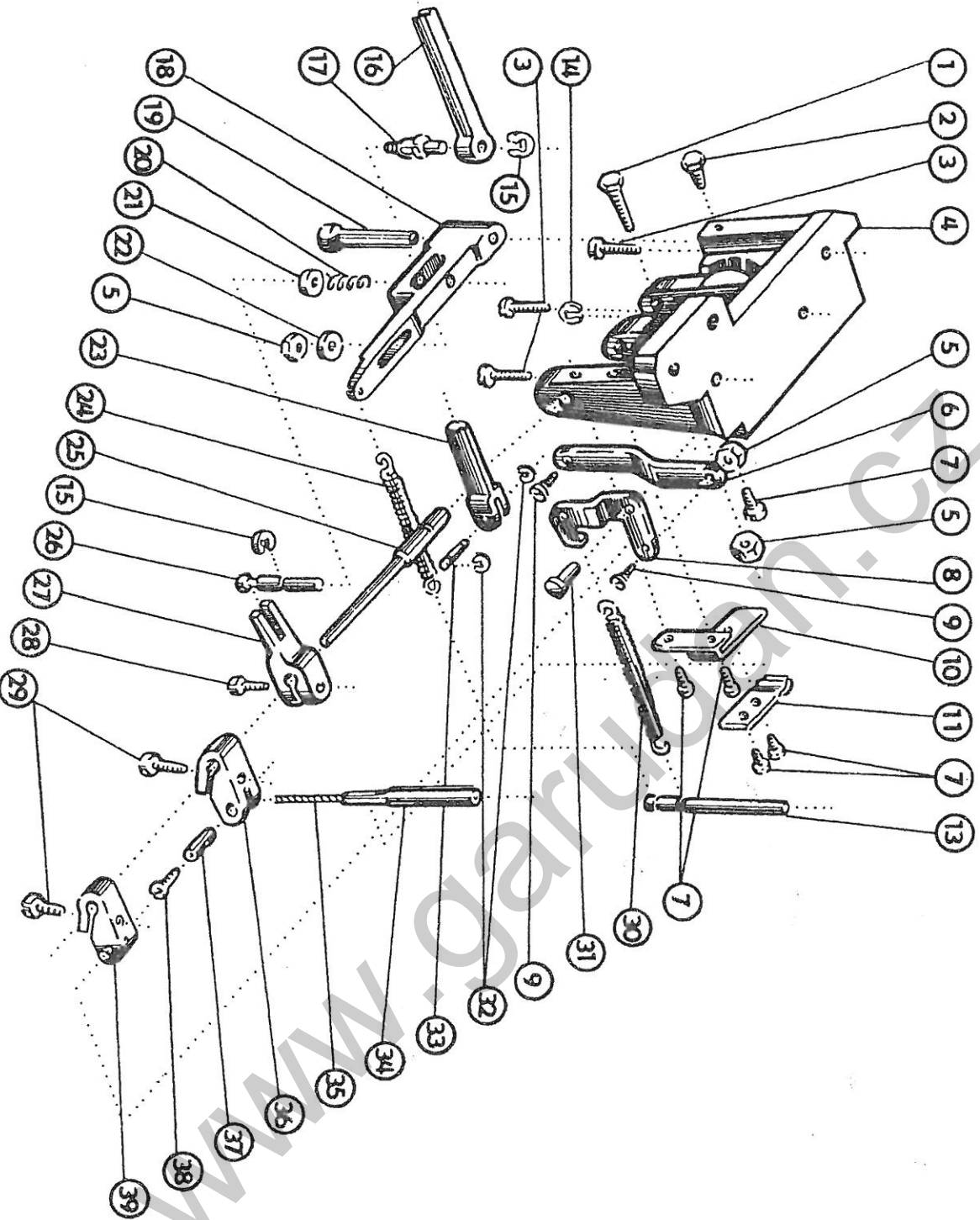


tab.11

72527 - 105 I

1	522 080	274 104
2	522 980	049 786
3	522 080	410 511
4	522 080	120 220
5	522 080	278 009
6	522 980	020 385
7	522 080	111 227
8	522 080	945 100
9	522 080	945 188
10	522 080	118 027
11	522 080	828 051
12	522 080	827 174
13	522 080	262 065
14	522 080	171 030
15	522 080	049 806
16	522 080	264 274
17	522 980	049 782
18	522 080	120 216
19	522 080	313 322
20	522 080	953 159
21	522 080	111 245
22	522 080	822 424
23	522 080	131 027
24	522 080	310 428
25	522 080	120 360
26	522 980	025 244
27	522 080	416 131
28	522 080	264 294
29	522 080	118 039
30	522 080	828 079
31	522 080	828 080
32	522 080	262 073
33	522 080	195 041
34	522 080	171 037

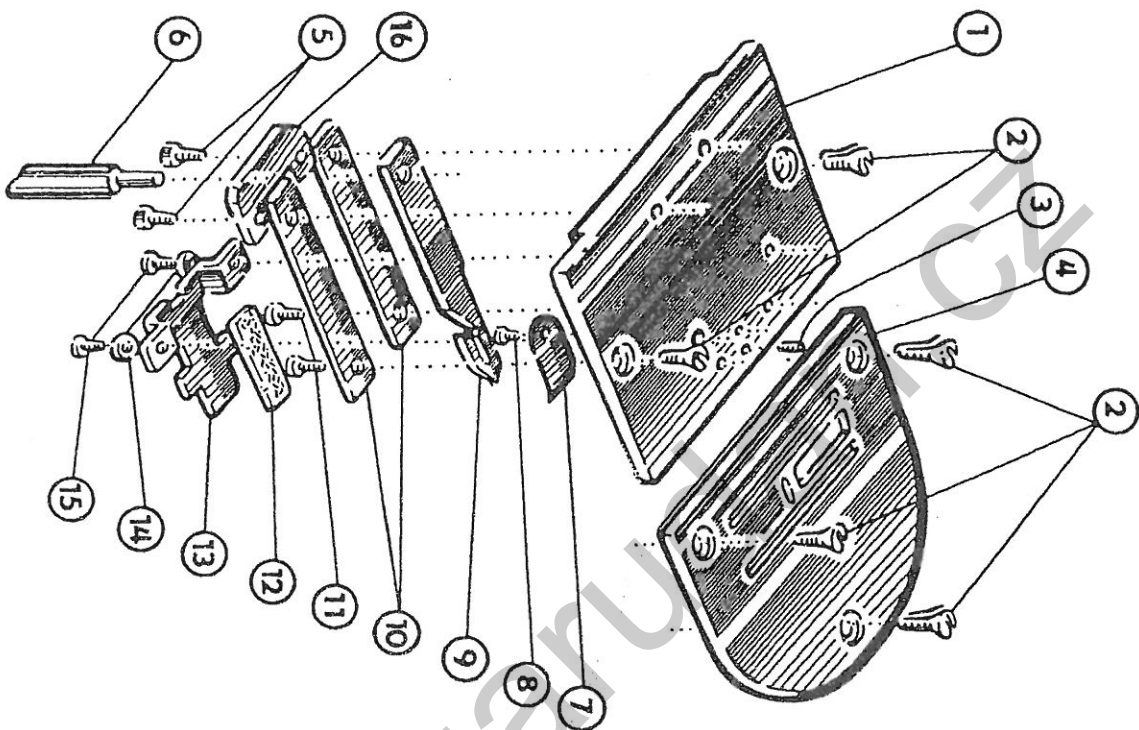
tab. 12



72527 - 105 I

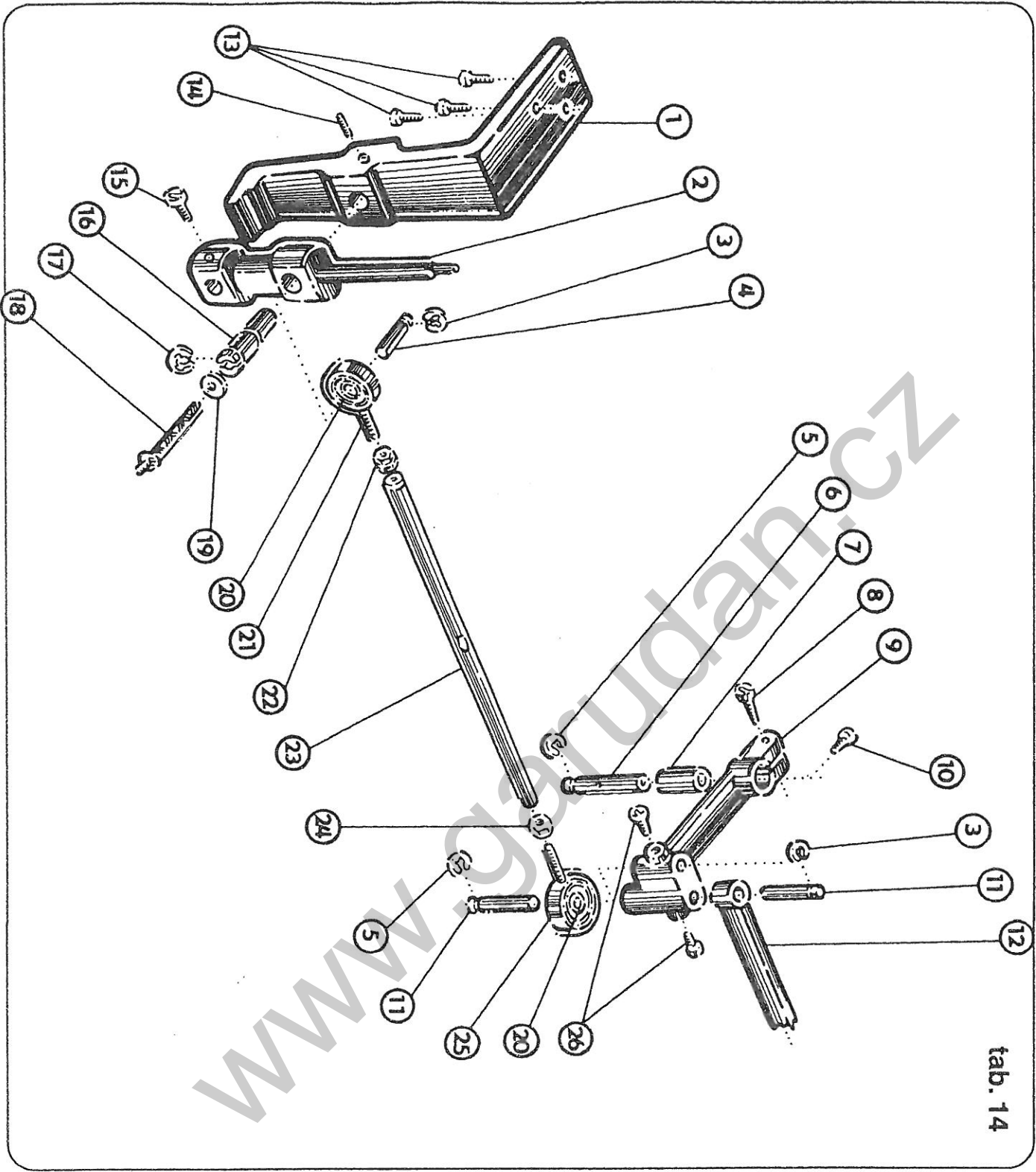
1	522 080	141 204
2	522 080	141 142
3	522 080	120 322
4	522 080	744 380
5	522 080	161 144
6	522 080	822 446
7	522 080	120 218
8	522 080	822 409
9	522 080	131 378
10	522 080	825 587
11	522 080	825 586
13	522 080	310 364
14	522 080	274 083
15	311 732	910 040
16	522 080	632 147
17	522 080	333 121
18	522 080	646 145
19	522 080	320 257
20	522 080	260 434
21	522 080	190 359
22	522 080	190 353
23	522 080	630 272
24	522 080	263 103
25	522 080	341 202
26	522 080	322 231
27	522 080	625 132
28	522 080	120 220
29	522 080	120 221
30	522 080	263 207
31	522 080	320 258
32	522 080	274 104
33	522 080	314 167
34	522 080	278 009
35	522 980	049 786
36	522 080	613 421
37	522 080	334 090
38	522 080	120 246
39	522 080	613 420

tab. 13



72527 - 105 I

1	522 080	647 222
2	522 080	123 117
3	522 080	111 328
4	522 080	811 634
5	522 080	132 153
6	522 080	635 171
7	522 080	870 140
8	522 080	132 216
9	522 080	870 167
10	522 080	825 868
11	522 080	120 332
12	522 080	945 315
13	522 080	839 058
14	522 080	191 118
15	522 080	120 215
16	522 080	826 039



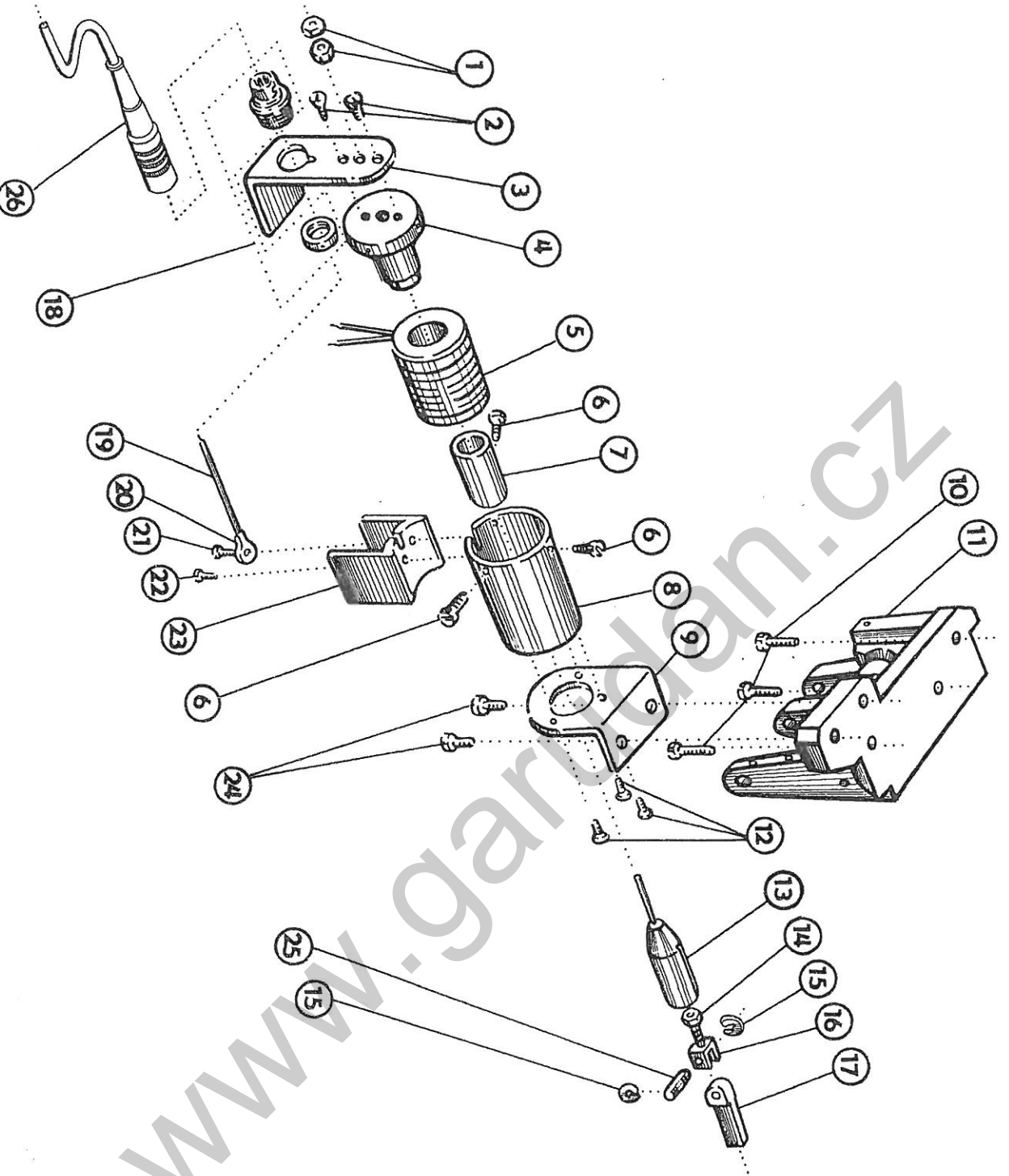
tab. 14

72527 - 105 I

1	522 080	765 090
2	522 080	635 171
3	522 080	274 090
4	522 080	314 165
5	311 732	910 040
6	522 080	318 171
7	522 080	410 481
8	522 080	120 229
9	522 080	636 243
10	522 080	132 183
11	522 080	314 166
12	522 080	632 147
13	522 080	120 293
14	522 080	111 244
15	522 080	120 218
16	522 080	338 190
17	522 080	274 093
18	708 420	130 003
l = 80 mm		
19	522 080	190 483
20	323 232	000 066
21	522 980	049 811
22	522 080	161 227
23	522 080	334 093
24	522 080	161 144
25	522 980	049 810
26	522 080	120 217

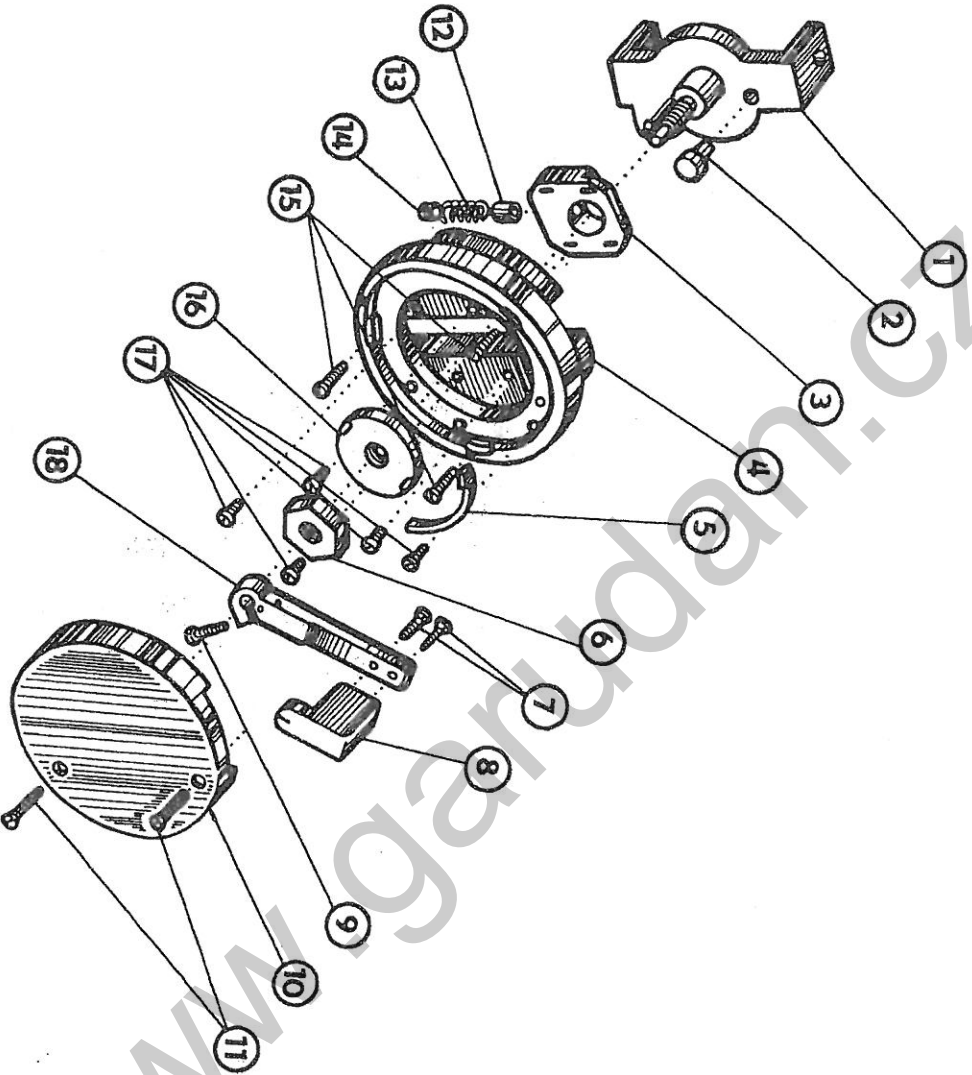


tab. 15



72527 - 105 I

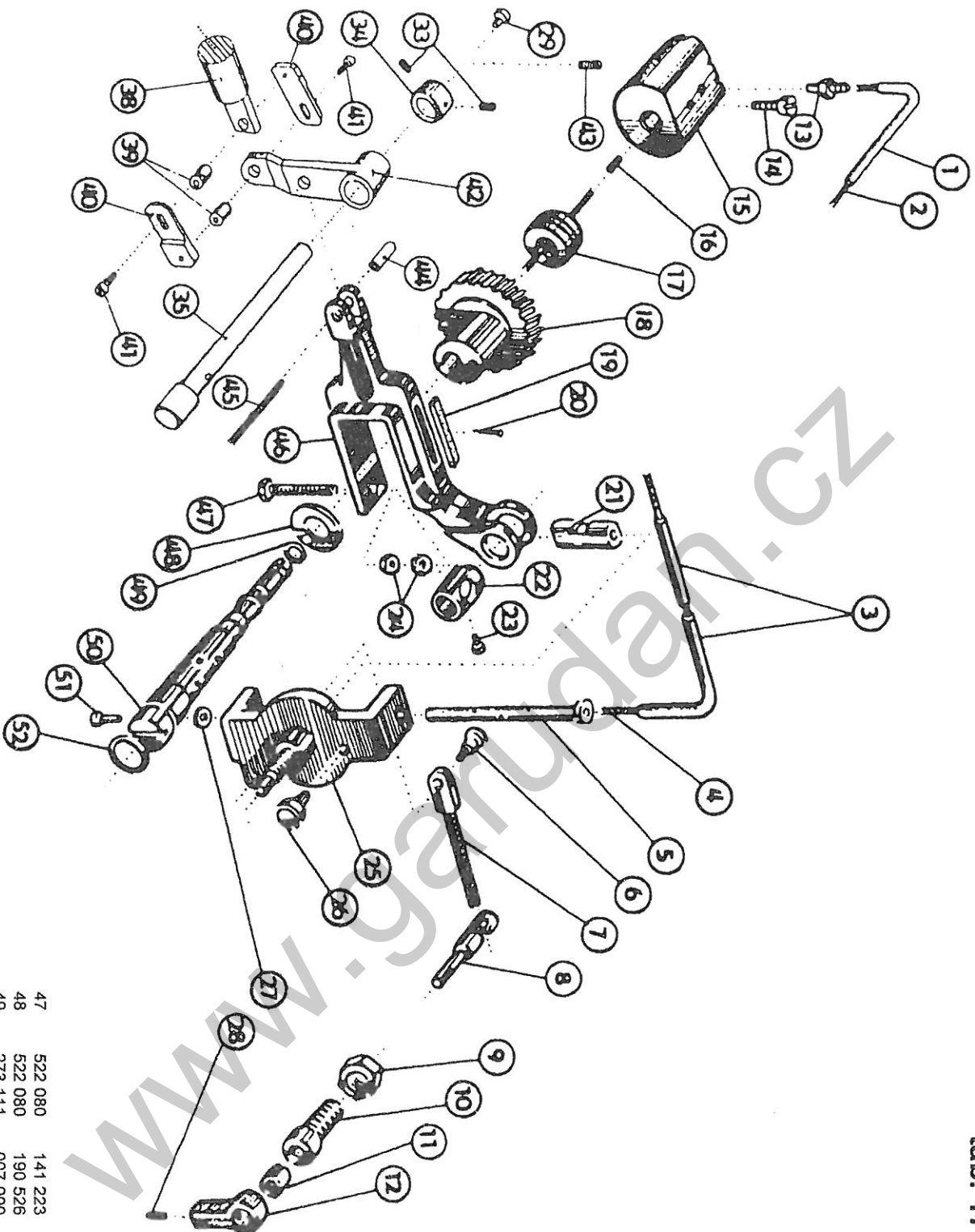
1	522 080	161 165
2	522 080	126 078
3	522 080	825 591
4	522 080	422 155
5	522 080	091 220
6	522 080	120 252
7	323 251	914 064
8	522 080	422 154
9	522 080	825 590
10	522 080	120 322
11	522 080	744 380
12	522 080	126 078
13	522 080	091 219
14	522 080	161 143
15	522 080	274 104
16	522 080	154 033
17	522 080	630 272
18	374 523	059 099
19	341 412	895 012
20	374 860	001 003
21	522 080	120 279
22	522 080	120 245
23	522 080	952 235
24	522 080	120 220
25	522 080	314 167
26	522 980	091 880



tab.16

72527 - 105 I	
1	522 080 646 027
2	522 080 322 247
3	522 080 646 120
4	522 080 442 530
5	522 080 839 010
6	522 080 161 236
7	522 080 126 101
8	522 080 952 251
9	522 080 120 543
10	522 080 954 048
11	522 080 123 130
12	522 080 314 058
13	522 080 260 139
14	522 080 111 099
15	522 080 120 276
16	522 080 174 066
17	522 080 120 219
18	522 080 613 472

tab. 17

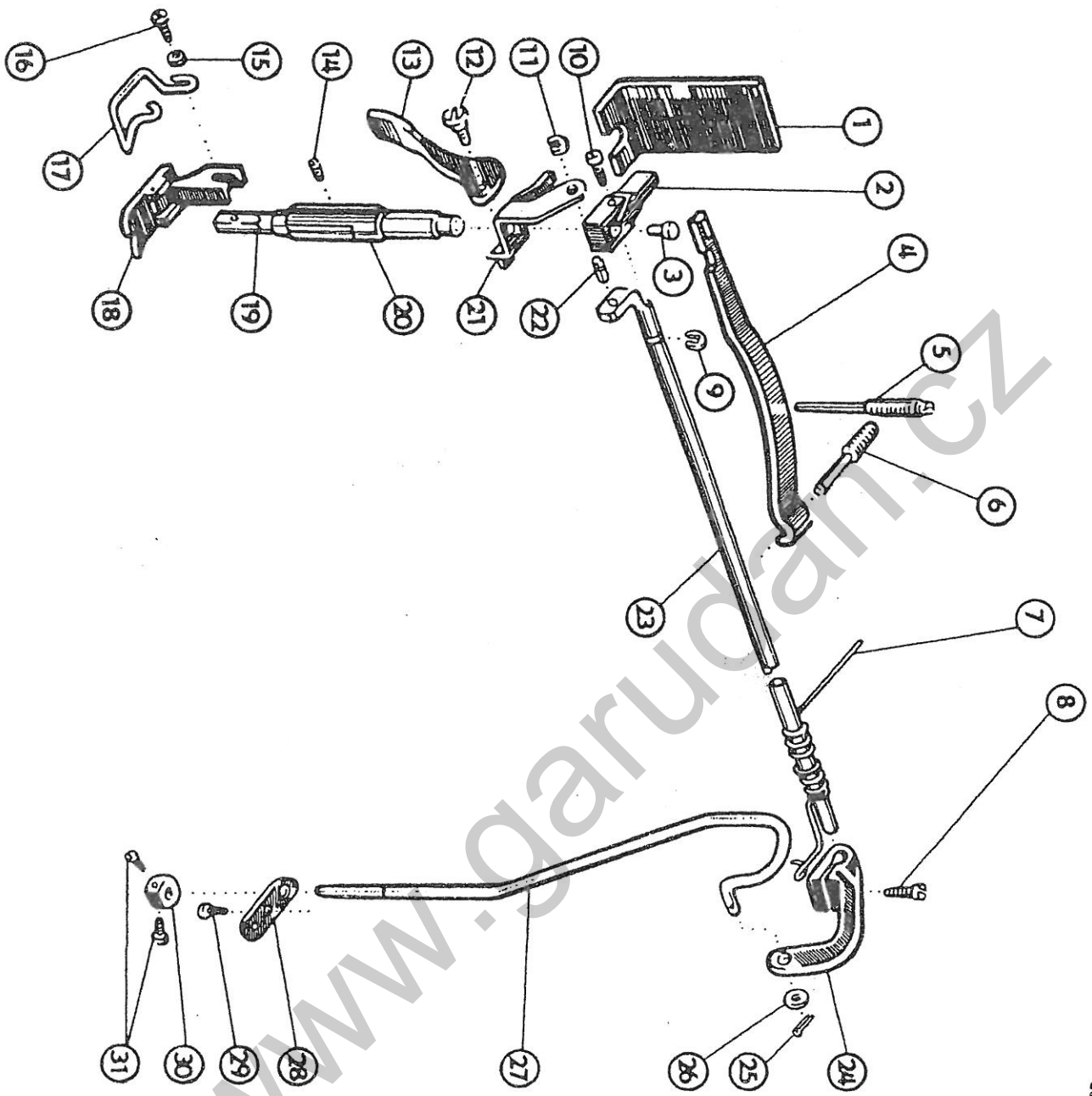


47	522 080	141 223
48	522 080	190 526
49	273 111	007 000
50	522 080	335 105
51	522 080	120 221
52	273 111	001 000

72527 - 105 I

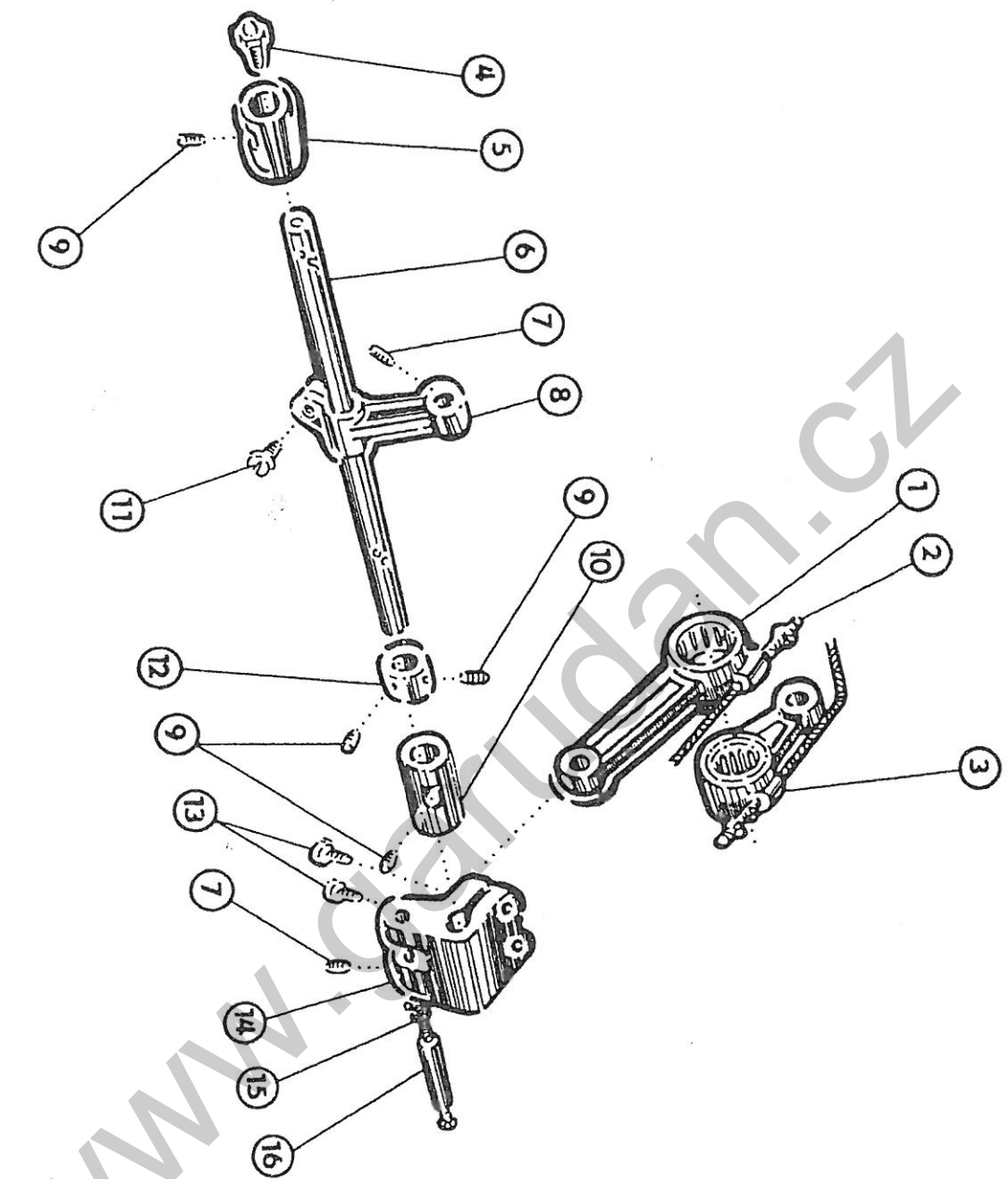
1	283 366	002 001
2	∅ 3,5/∅ 4,8 x 100 mm	
	708 420	130 002
3	l = 140 mm	
	283 366	002 001
	∅ 3,5/∅ 4,8 x 210 mm	
4	708 420	130 002
	l = 270 mm	
5	522 080	335 101
6	522 080	131 391
7	522 080	152 099
8	522 080	334 097
9	522 080	161 237
10	522 080	442 184
11	522 080	163 093
12	522 080	612 342
13	522 080	424 051
14	522 080	120 233
16	522 080	951 327
18	522 980	035 598
19	522 080	945 326
20	738 923	002 000
21	522 080	413 315
22	522 080	413 314
23	522 080	120 291
24	522 080	161 233
25	522 080	646 027
26	522 080	322 247
27	522 080	190 359
28	522 080	112 101
29	425 111	041 000
33	522 080	112 013
34	522 080	436 000
35	522 080	320 289
38	522 980	021 338
39	522 080	410 595
40	522 080	648 132
41	522 080	120 589
42	522 080	613 519
43	522 080	132 203
44	522 080	318 210
45	708 420	130 002
	l = 40 mm	
46	522 080	636 296

tab. 18



72527 - 105 I

1	522 080	945 317
2	522 080	623 249
3	522 080	326 213
4	522 080	283 152
5	522 080	113 122
6	522 080	113 123
7	522 080	264 288
8	522 080	120 221
9	522 080	274 084
10	522 080	120 543
11	311 732	910 040
12	522 080	136 023
13	522 080	615 024
14	522 080	112 014
15	522 080	190 554
16	522 080	120 239
17	522 080	271 393
19	522 080	392 105
20	522 080	421 330
21	522 080	839 215
22	522 080	314 150
23	522 080	635 152
24	522 080	633 196
25	522 080	271 337
26	522 080	190 346
27	522 080	383 178
28	522 080	814 014
29	522 080	120 217
30	522 080	436 331
31	522 080	120 050

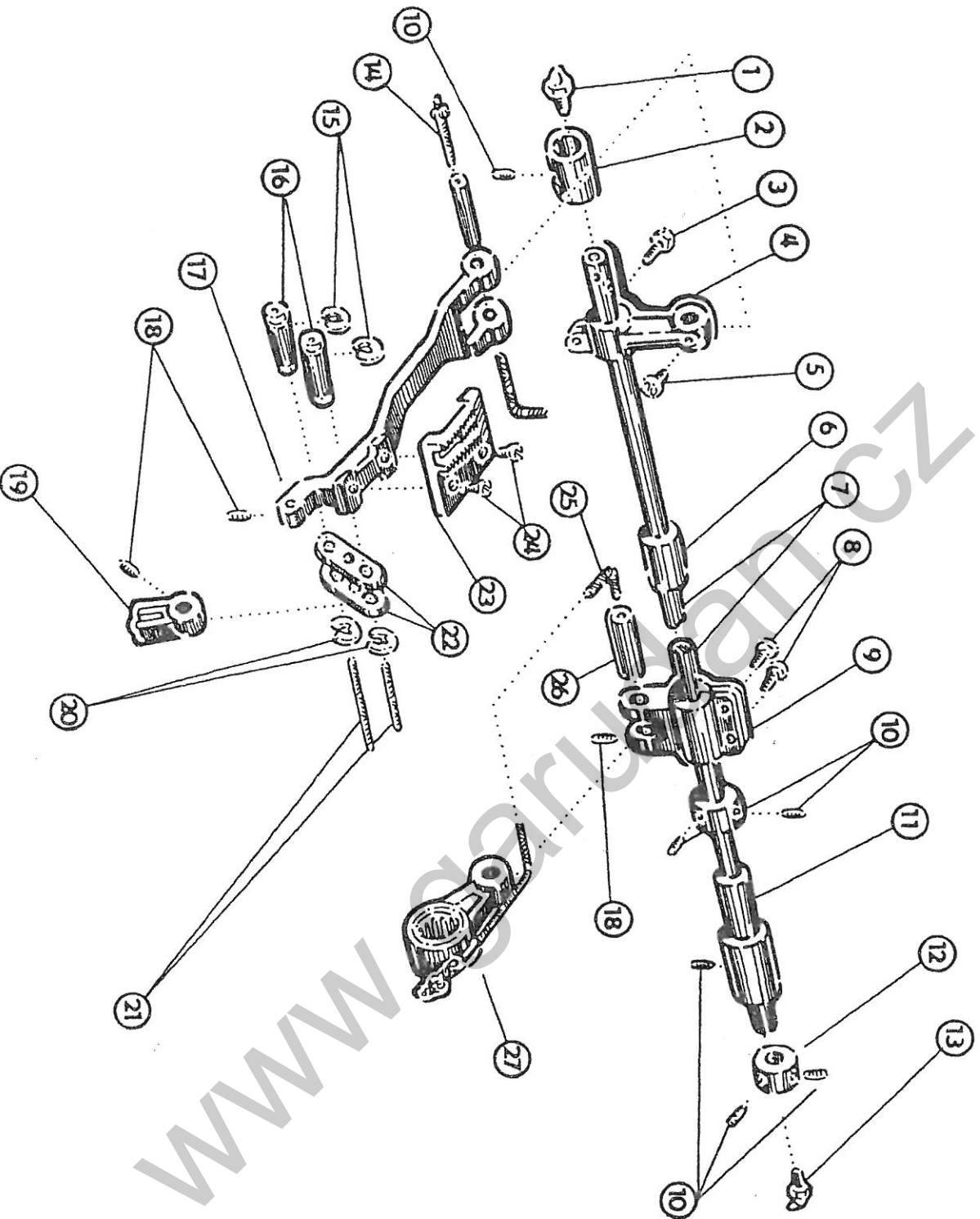


tab.19

72527 - 105 I

1	522 080	630 248
2	708 420	130 002
	l = 220 mm	
3	522 980	044 045
4	425 111	041 000
5	522 080	413 251
6	522 080	345 065
7	522 080	111 227
8	522 080	613 195
9	522 080	112 013
10	522 080	410 538
11	522 080	120 229
12	522 080	436 000
13	522 080	120 231
14	522 080	613 152
15	708 420	130 003
	l = 60 mm	
16	522 080	344 035

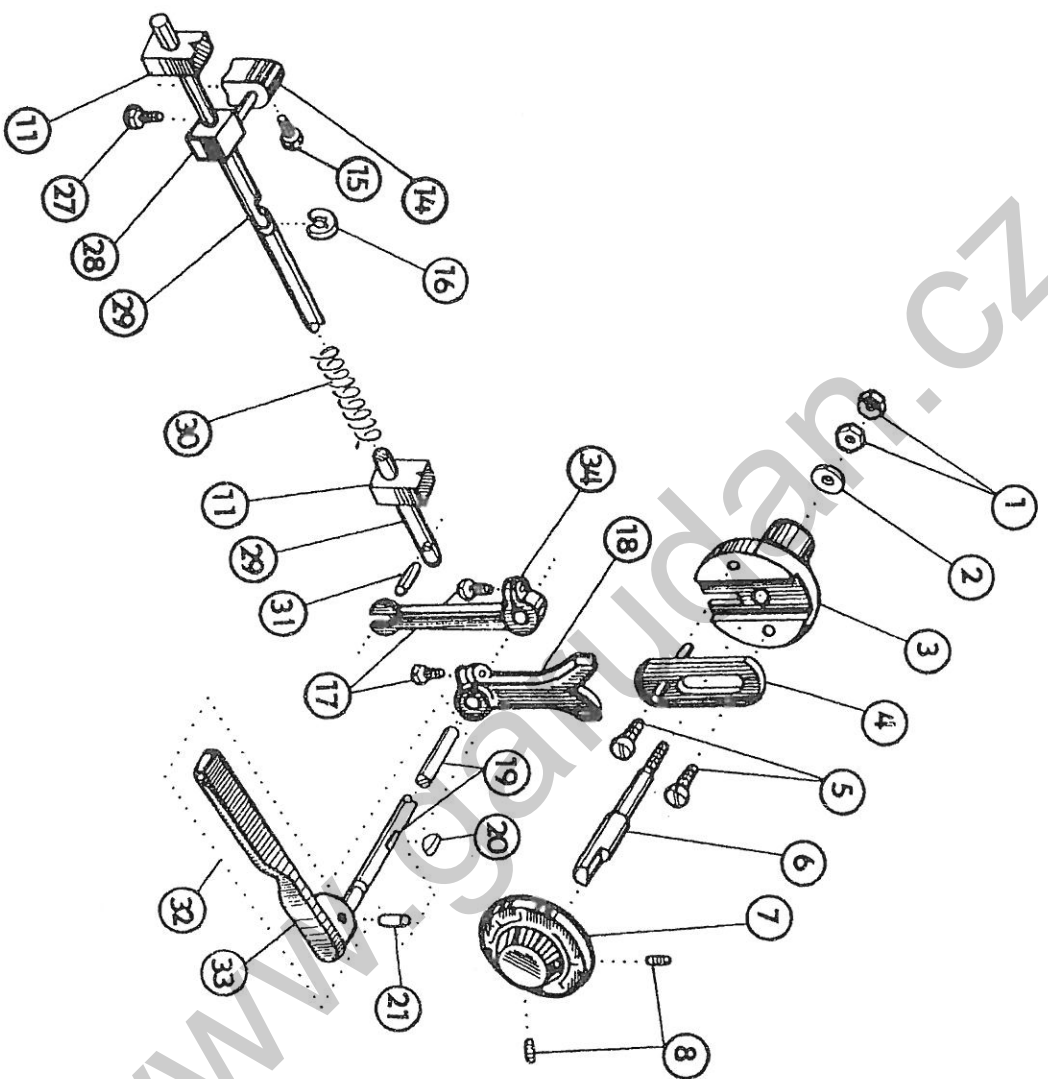
tab.20



72527 - 105 I

1	425 111	041 000
2	522 080	413 252
3	522 080	141 133
4	522 080	613 459
5	522 080	124 050
6	522 080	410 532
7	522 080	345 067
8	522 080	120 229
9	522 080	613 216
10	522 080	112 013
11	522 080	412 193
12	522 080	436 000
13	425 111	061 000
14	708 420	130 002
	l = 160 mm	
15	522 080	274 083
16	522 080	318 144
17	522 080	622 092
18	522 080	111 227
19	522 080	613 195
20	522 080	274 083
21	708 420	130 002
	l = 60 mm	
22	522 080	612 109
23	522 080	651 428
24	522 080	121 157
25	708 420	130 002
	l = 350 mm	
26	522 080	344 035
27	522 980	044 045



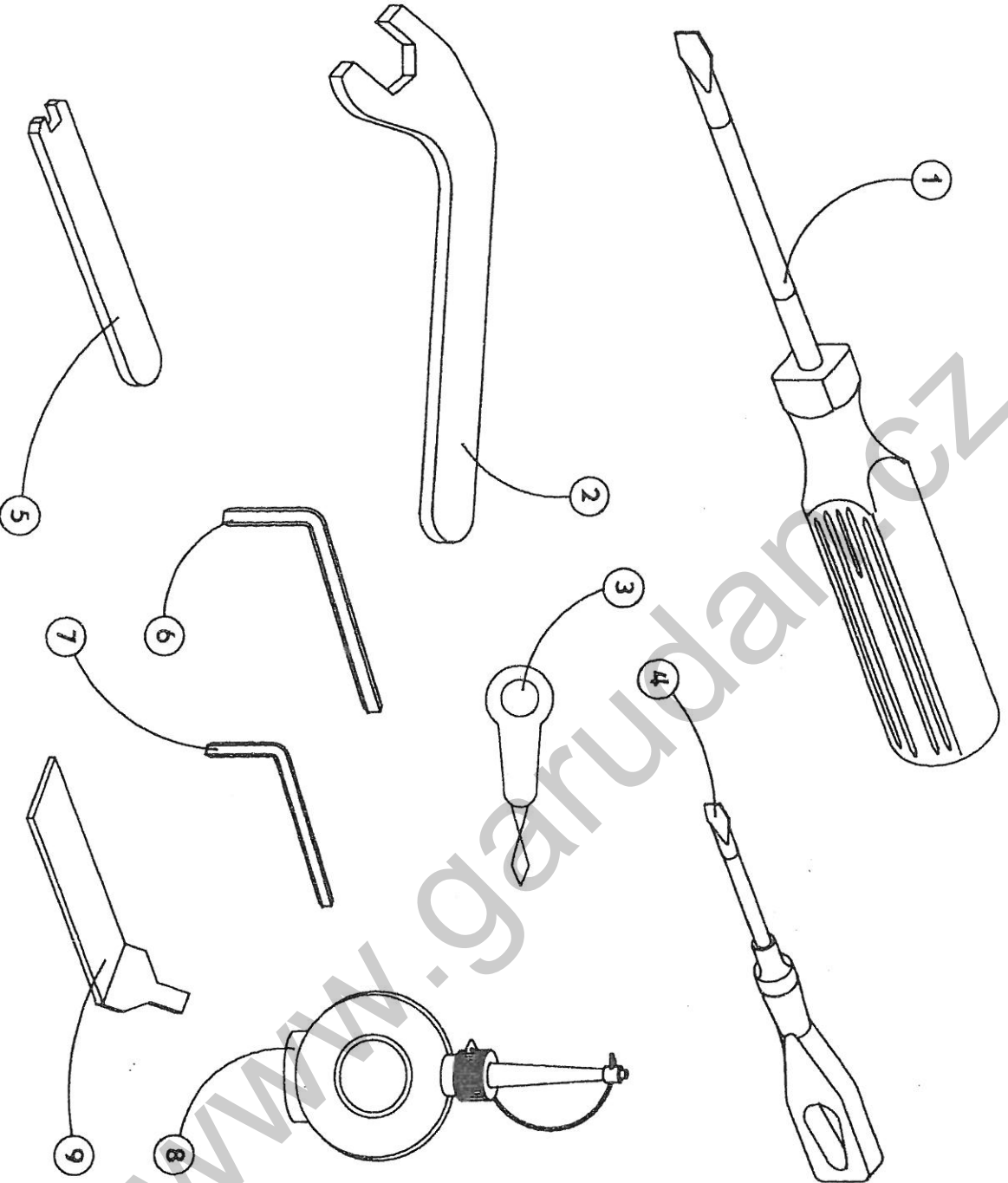


tab.21

72527 - 105 I

1	522 080	161 142
2	522 080	192 161
3	522 080	441 187
4	522 980	049 785
5	522 080	120 246
6	522 080	342 258
7	522 980	233 031
8	522 080	112 013
11	522 080	020 385
14	522 080	627 023
15	522 080	141 102
16	311 732	910 070
17	522 080	120 221
18	522 080	613 328
19	522 080	342 198
20	522 080	211 050
21	311 515	003 012
27	522 080	120 227
28	522 080	337 033
29	522 080	340 156
30	522 080	260 283
31	311 515	006 025
32	522 980	044 714
33	522 980	060 002
34	522 080	613 373

tab. 22

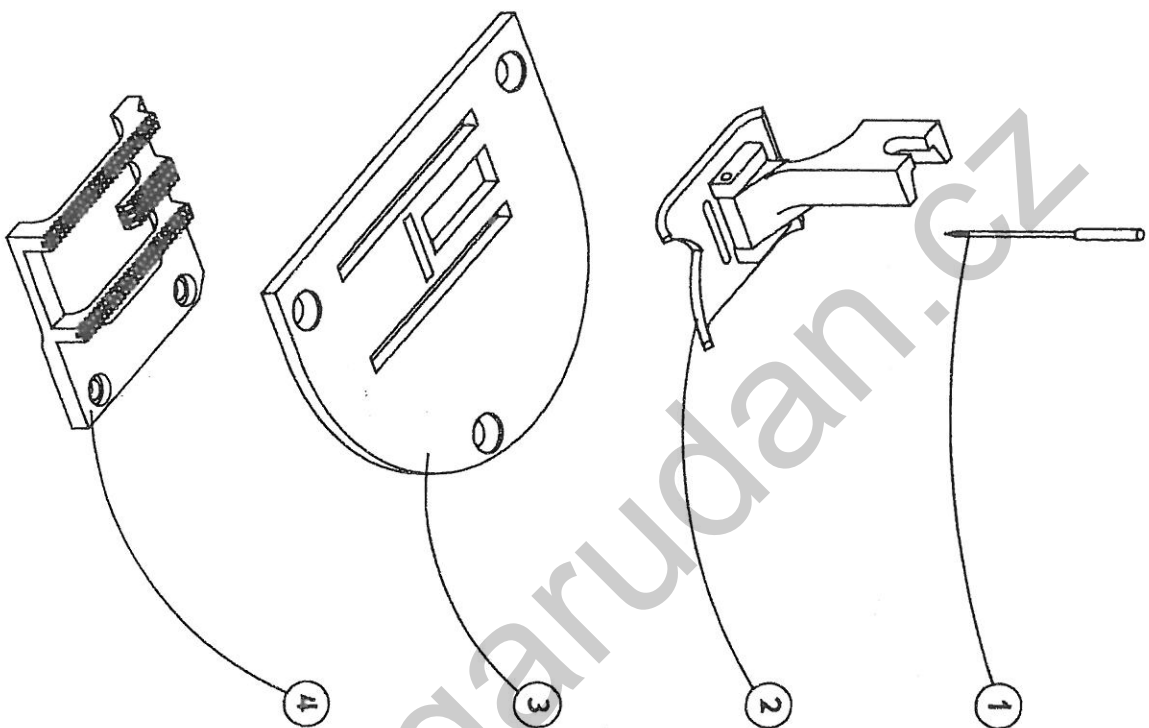


72527 - 105 I

522 980 092 220 35

1	413 621	731 023
2	522 080	818 273
3	548 151	001 000
4	413 624	310 002
5	522 080	813 481
6	413 324	000 500
7	413 324	000 400
8	562 813	002 000
9	522 080	829 796

tab. 23



72527 - 105 I

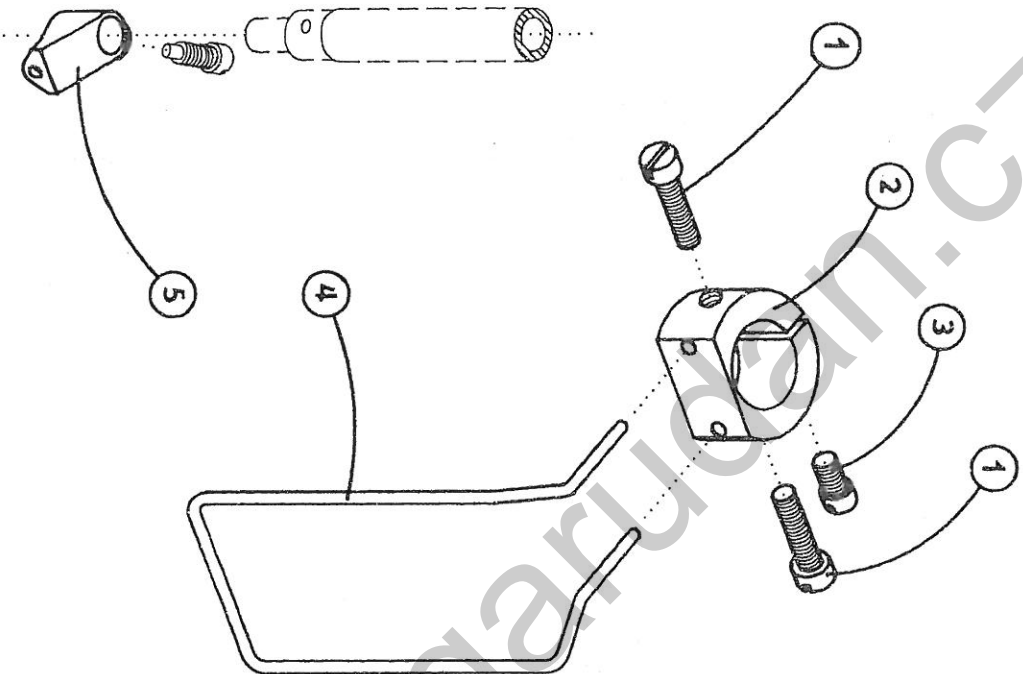
522 791 124 061 35

1 548 300 000 130

2 522 080 031 603

3 522 080 811 634

4 522 080 651 428

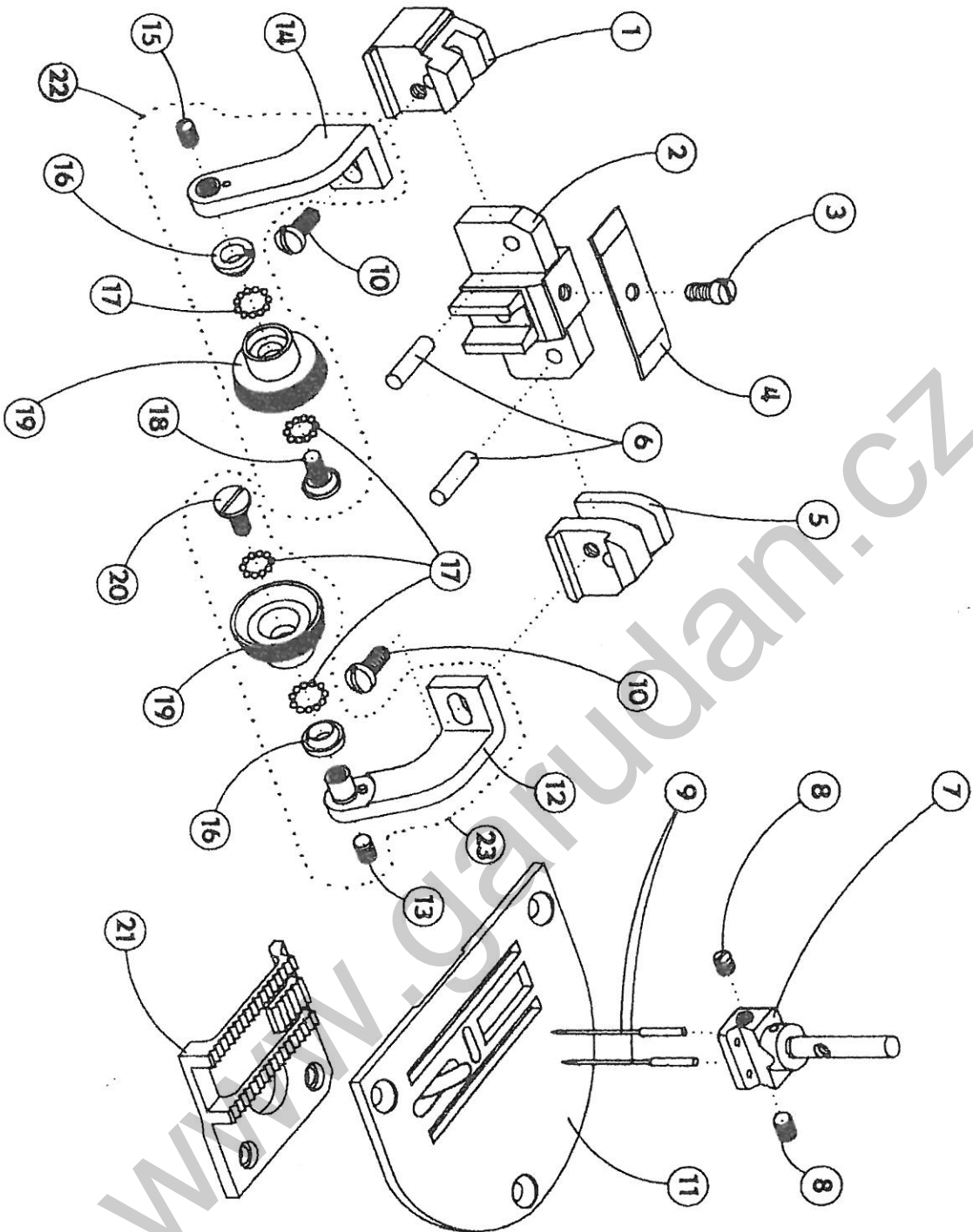


tab. 24

72527 - 105 I

522 791 149 001 00

1	522 080	120 225
2	522 080	646 136
3	522 080	120 037
4	522 080	271 441
5	522 080	627 037



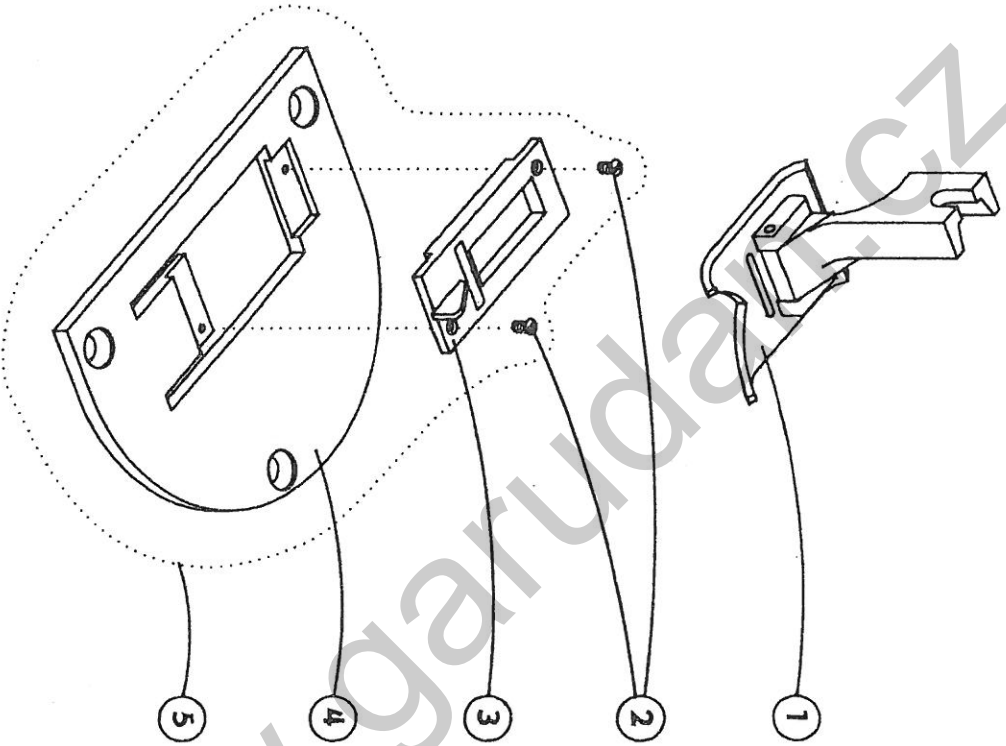
tab. 26

72527 - 105 I

522 791 430 048 35

1	522 080	646 459
2	522 080	743 106
3	522 080	120 217
4	522 080	281 133
5	522 080	646 460
6	311 515	004 012
7	522 080	394 203
8	522 080	111 109
9	548 300	134 019
10	522 080	124 086
11	522 980	022 840
12	522 980	059 054
13	522 080	111 212
15	522 080	111 142
21	522 080	651 499
22	522 980	031 645
23	522 980	031 646

22 x



tab. 25

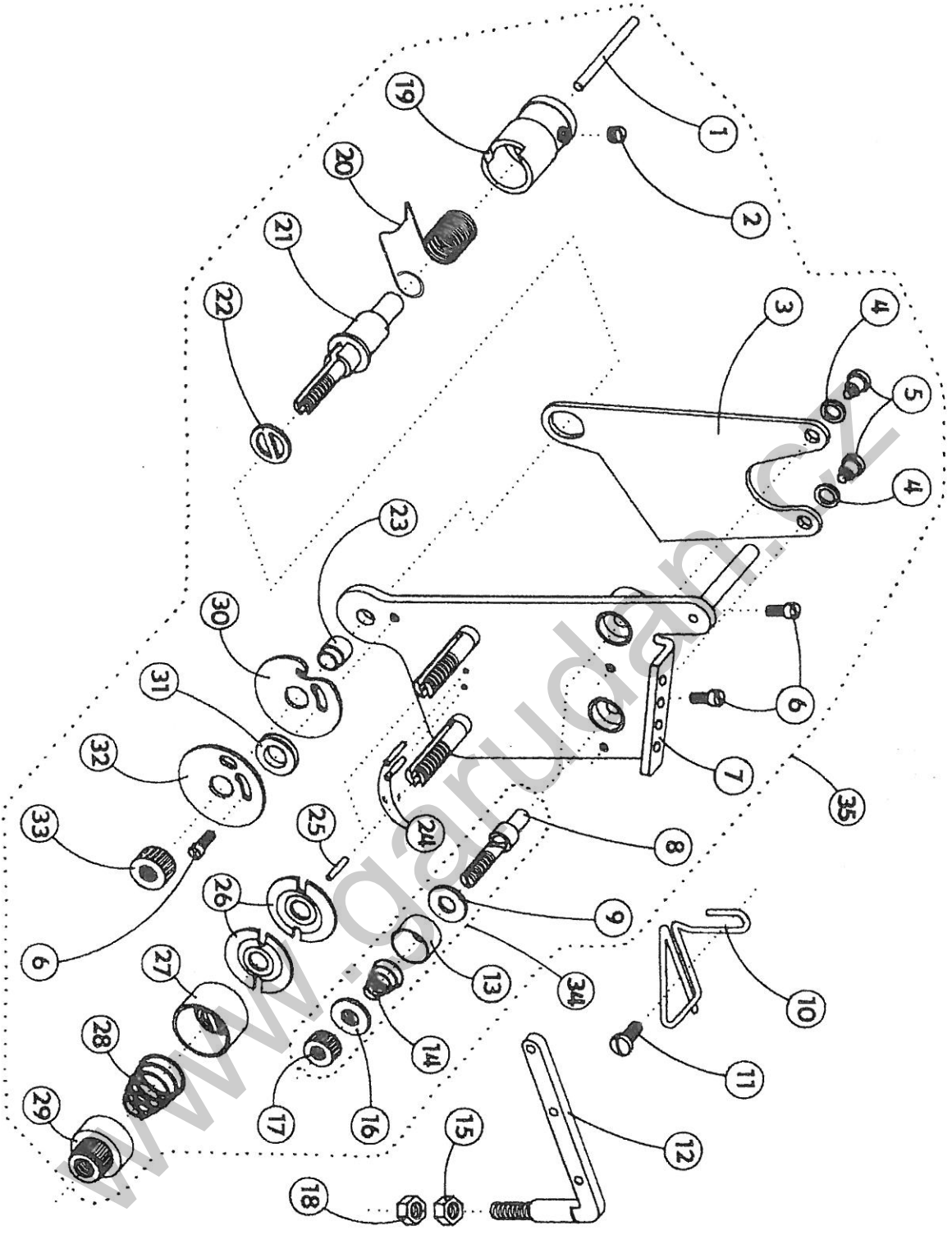
72527 - 105 I

522 791 400 023 00

- 1 522 980 031 604
- 2 522 080 124 061
- 3 522 980 049 443
- 4 522 080 811 633
- 5 522 980 022 282



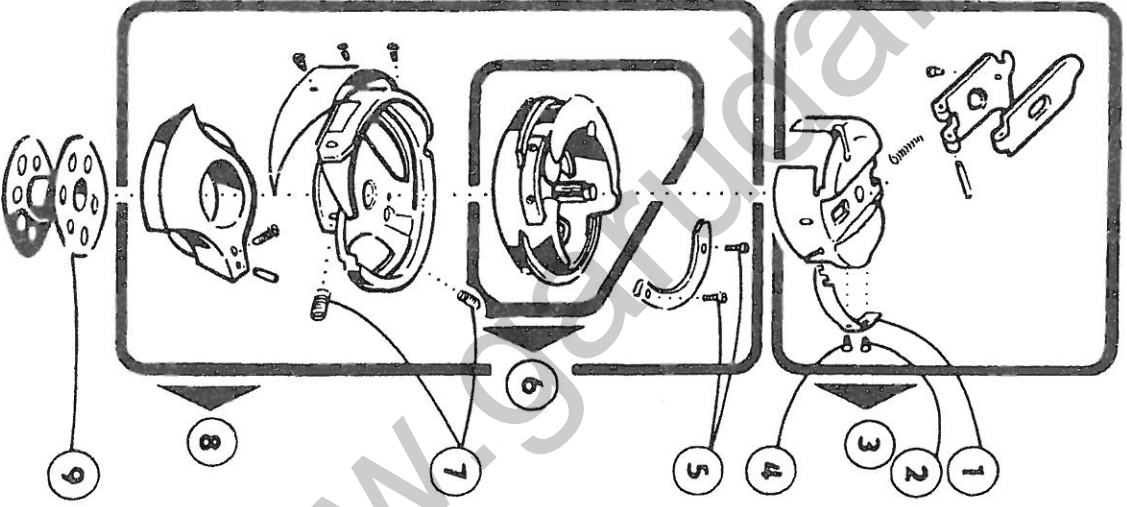
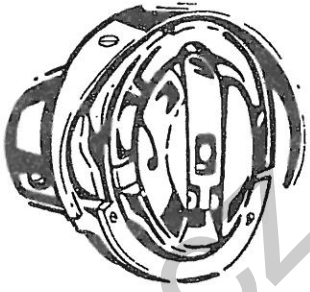
tab. 27



72527 - 105 I

522 791 430 048 35

1	522 080	310 436
2	522 080	112 012
3	522 080	825 733
4	522 080	190 520
5	522 080	135 023
6	522 080	120 245
7	522 080	049 805
8	522 080	118 051
9	522 080	828 051
10	522 080	271 409
11	522 080	132 153
12	522 080	313 204
13	522 080	827 174
14	522 080	262 065
15	522 080	161 146
16	523 081	200 025
17	522 080	171 030
18	522 080	161 138
19	522 080	414 023
20	315 231	264 162
21	522 080	118 003
22	522 080	195 004
23	522 080	421 129
24	311 515	002 008
25	311 515	202 008
26	522 080	828 046
27	522 080	827 048
28	315 231	262 024
29	522 080	173 017
30	522 080	828 048
31	522 080	418 039
32	522 080	828 047
33	522 080	171 023
34	522 980	025 271
35	522 980	025 272

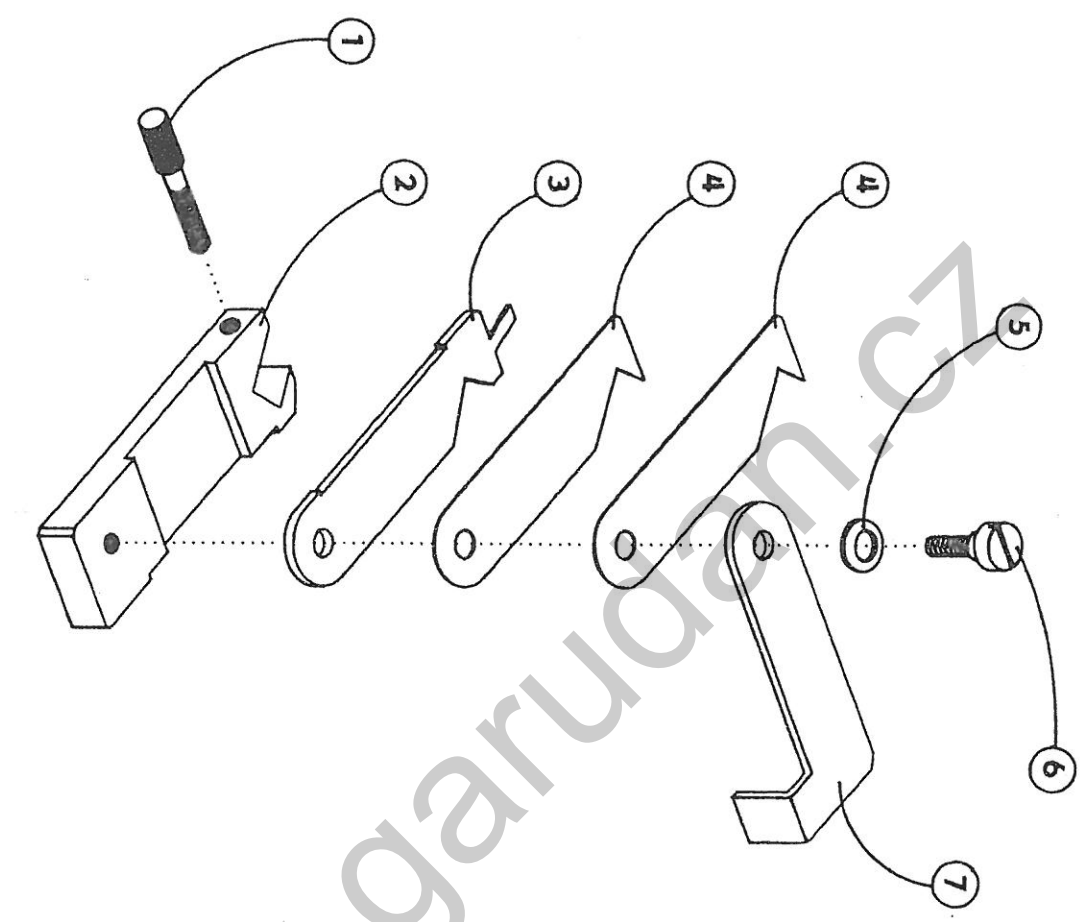


tab. 28

72527 - 105 I

522 791 430 055 00

1	522 080	690 029	
2	522 080	683 063	
3	522 980	081 122	
4	522 080	683 053	
5	522 080	683 064	2 x
6	522 980	081 161	
7	522 080	683 067	2 x
8	522 980	081 160	
9	522 080	685 051	



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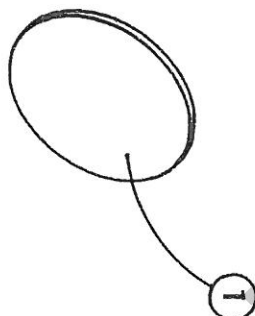
tab. 29

72527 - 105 I

1	522 080	133 112
2	522 080	646 148
3	522 080	814 365
4	522 080	814 364
5	522 080	192 061
6	522 080	131 404
7	522 080	831 412

522 791 947 001 00

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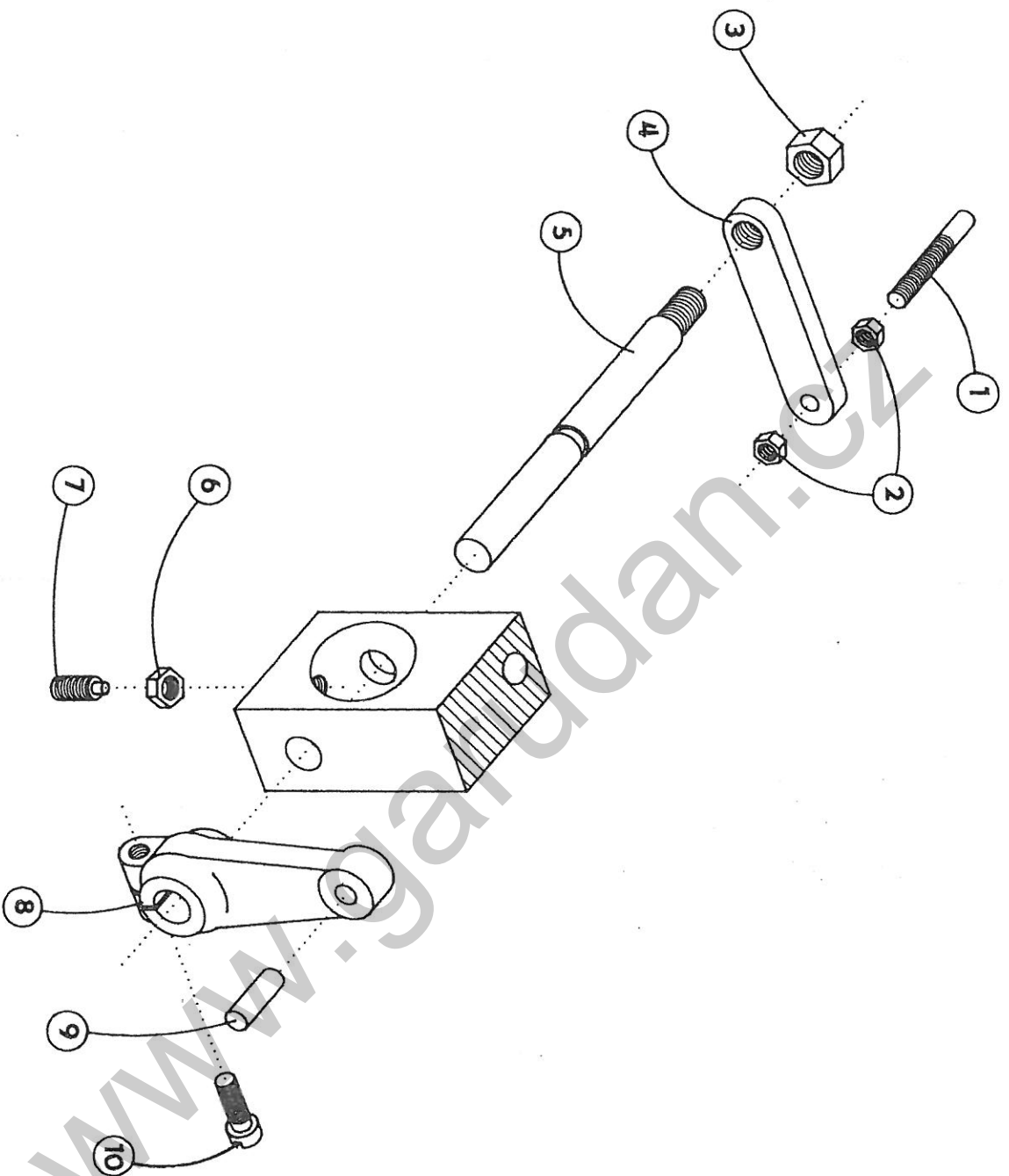


tab. 30

72527 - 105 I

522 791 995 014 00

1 522 080 814 355

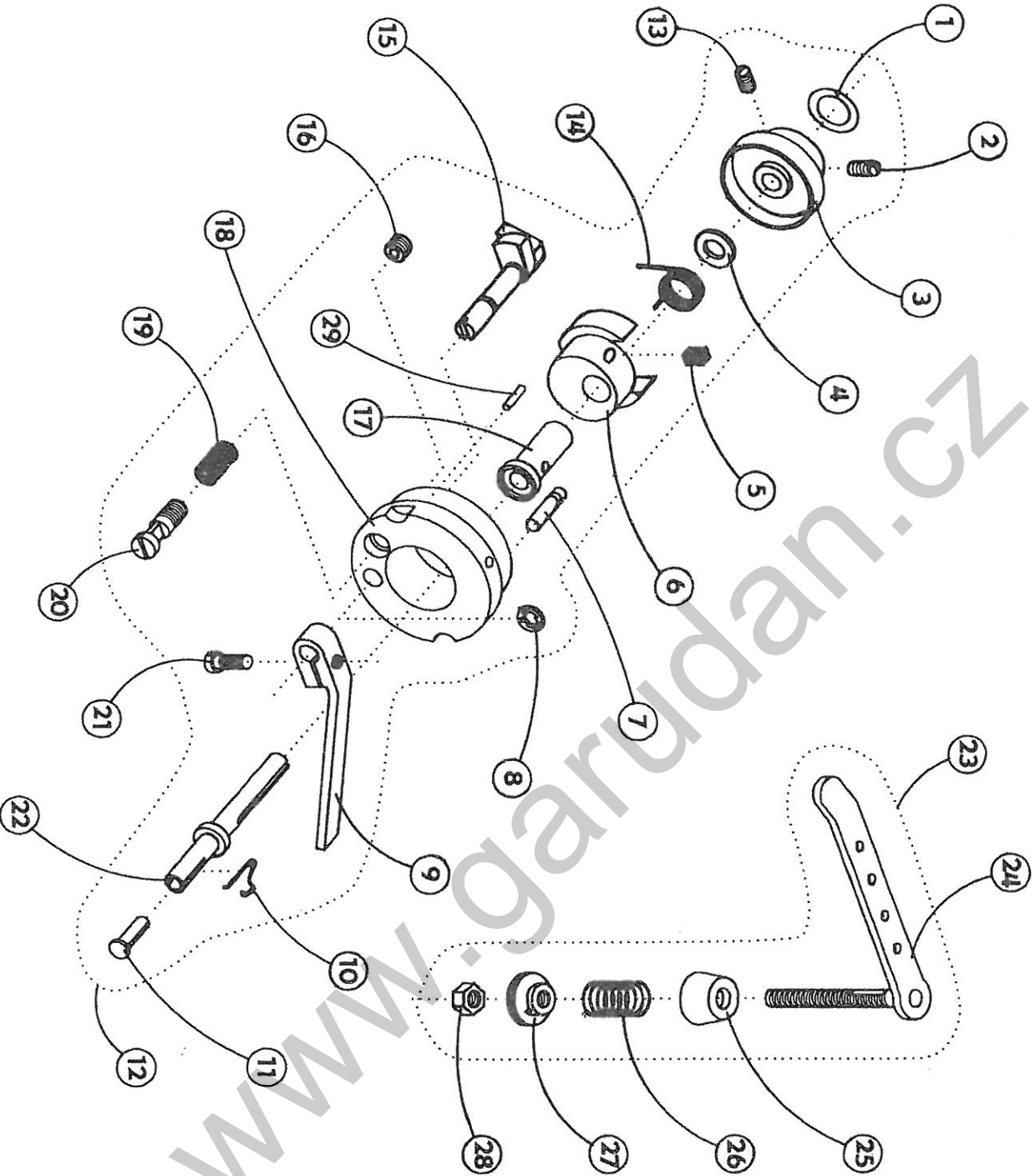


tab. 31

**72527 - 105 I**

522 791 995 068 00

1	522 080 316 038
2	522 080 161 143
3	522 080 161 159
4	522 080 632 019
5	522 080 342 096
6	522 080 161 140
7	522 080 111 097
8	522 080 613 480
9	311 515 006 014
10	522 080 120 230



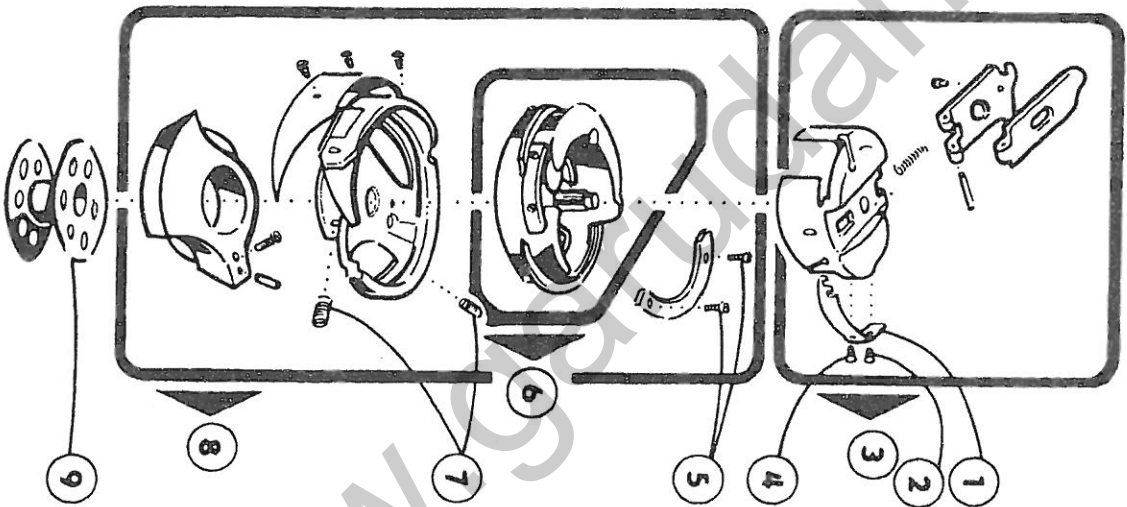
tab. 32

72527 - 105 I

1	273 111	025 410
2	522 080	111 230
3	522 080	441 560
4	522 080	190 593
5	522 080	945 296
6	522 080	441 310
7	522 080	310 377
8	311 732	910 040
9	522 080	613 486
10	522 080	265 037
11	321 861	953 200
12	522 980	036 122
13	522 080	112 115
14	522 080	264 281
15	522 080	672 174
16	522 080	111 094
17	522 080	422 198
18	522 080	441 308
19	522 080	260 483
20	522 080	870 170
21	522 080	124 050
22	522 080	343 074
23	522 980	025 248
24	522 980	025 249
25	522 080	827 194
26	522 080	260 510
27	522 080	163 106
28	522 080	161 138
29	311 515	601 606

522 792 112 010 00



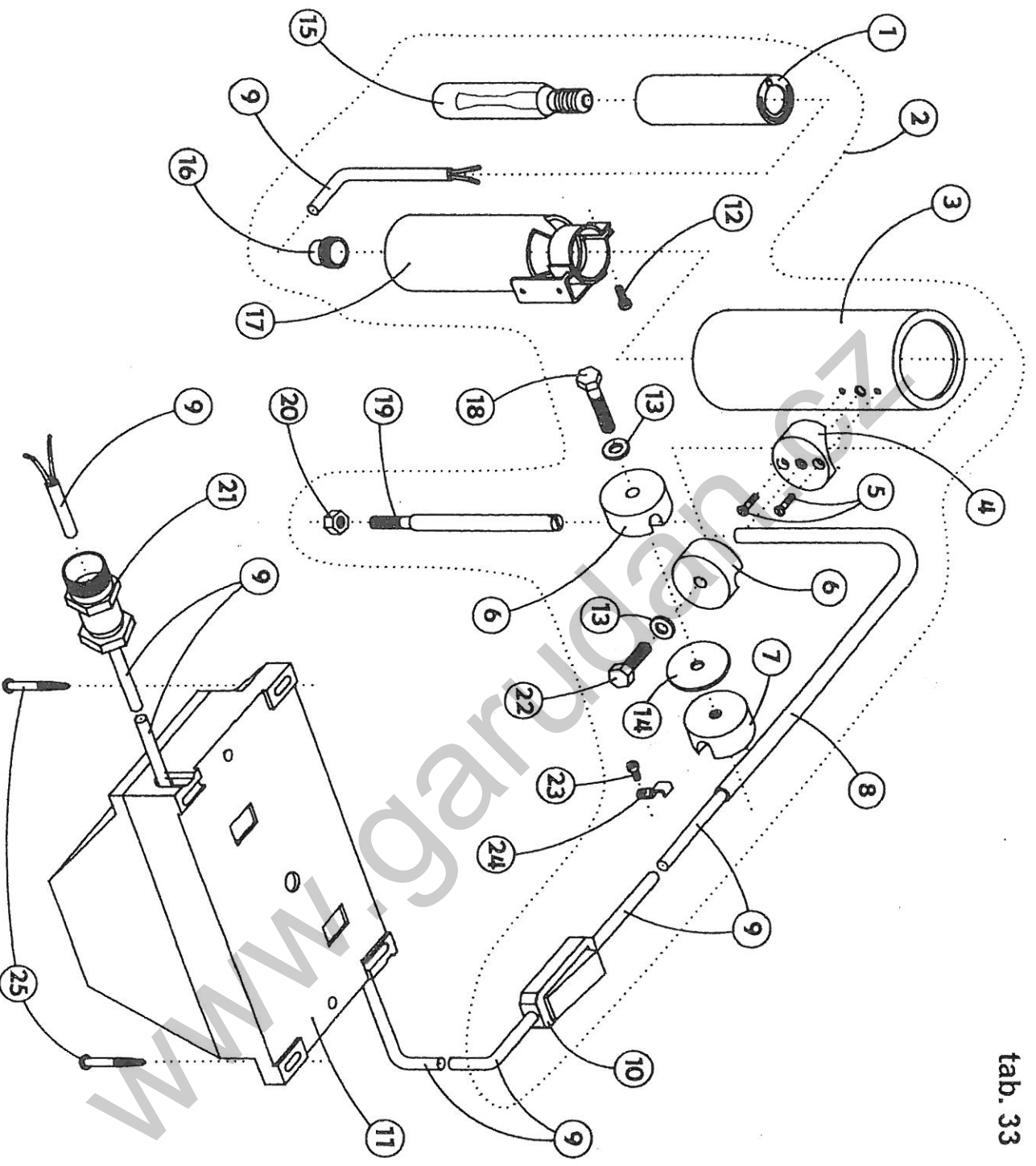


## R 251

522 980 008 251

1	522 080	690 029	
2	522 080	683 063	
3	522 980	081 122	
4	522 080	683 053	
5	522 080	683 064	2 x
6	522 980	081 138	
7	522 080	683 067	2 x
8	522 980	081 139	
9	522 080	685 051	

tab. 33



72527 - 105 I

522 794 222 010 00

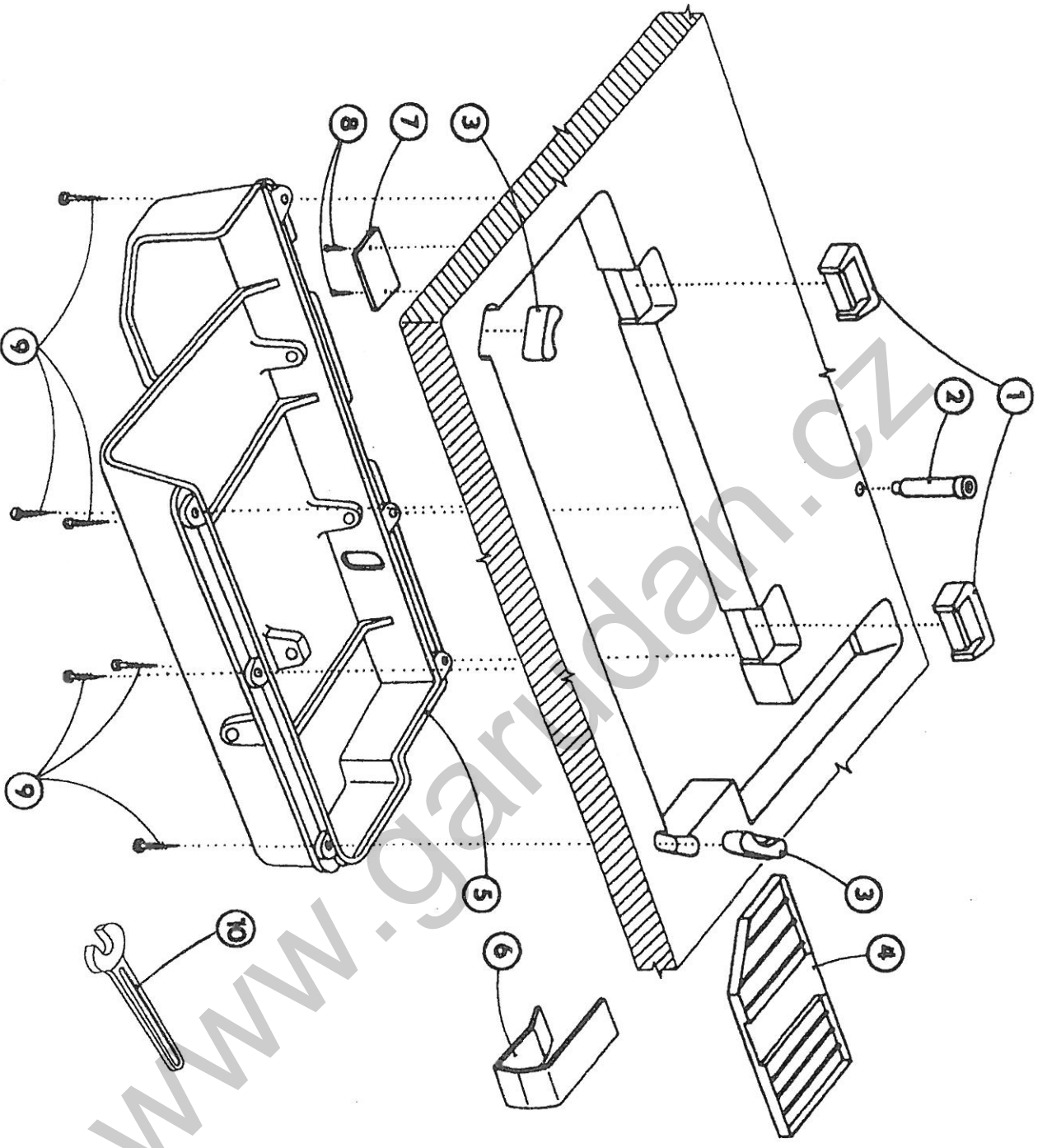
1	345 111	008 000
2	522 980	091 660
3	522 080	831 506
4	522 080	441 501
5	522 080	126 085
6	522 080	441 502
7	522 080	441 570
8	522 080	841 541
9	341 414	028 052
10	345 317	401 915
11	522 980	091 786
12	522 080	120 279
13	522 080	190 347
14	522 080	839 169
15	347 170	002 000
16	321 161	001 000
17	522 980	057 091
18	522 080	141 154
19	522 080	330 088
20	522 080	161 163
21	345 722	201 000
22	522 080	141 265
23	522 080	120 261
24	522 080	824 095
25	522 080	225 018

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**522 980 099 038 35**

**ACCESSORIES**

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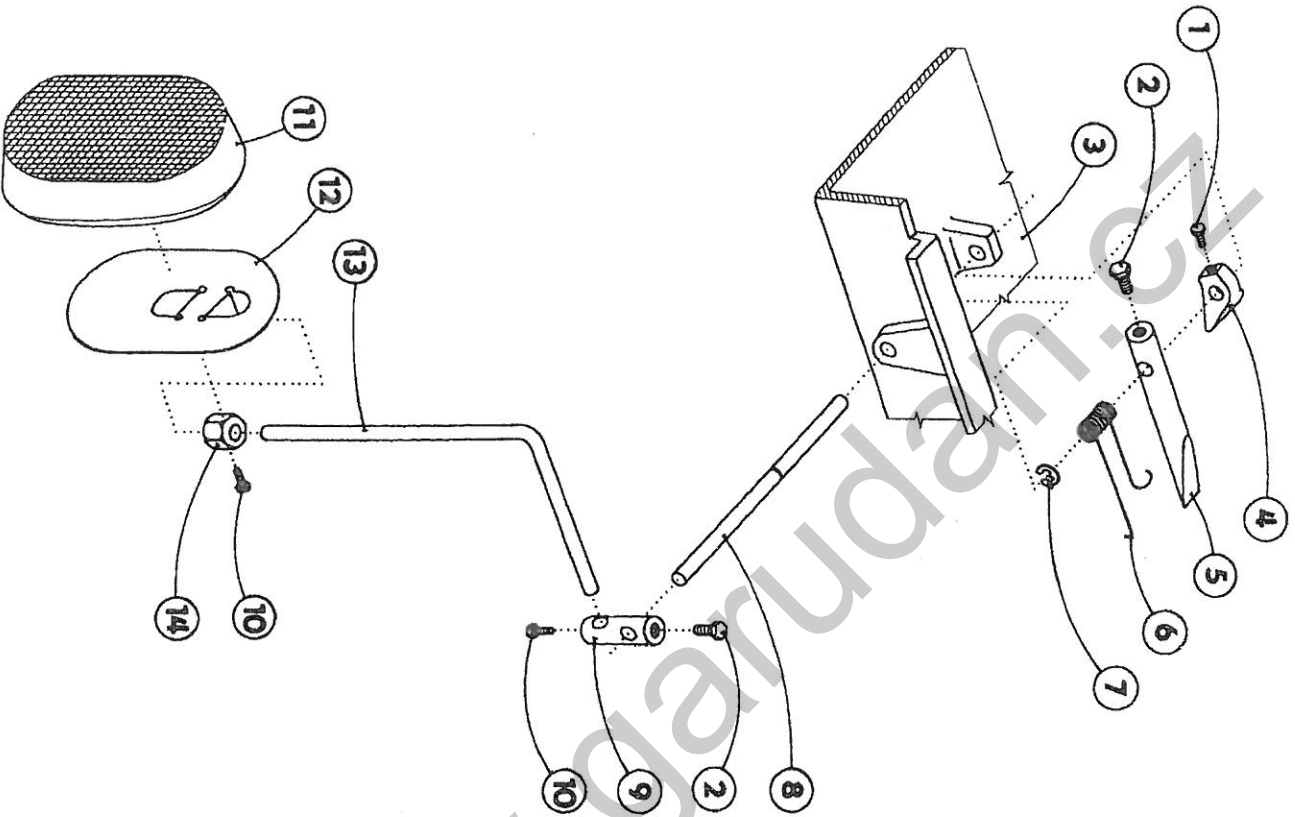


TAB. 1

522 980 099 038 35

1	273 141	940 127
2	522 980	043 051
3	273 141	940 141
4	321 861	953 251
5	522 080	725 050
6	522 080	826 199
7	522 080	941 091
8	314 140	016 020
9	522 080	225 031
10	413 312	100 130

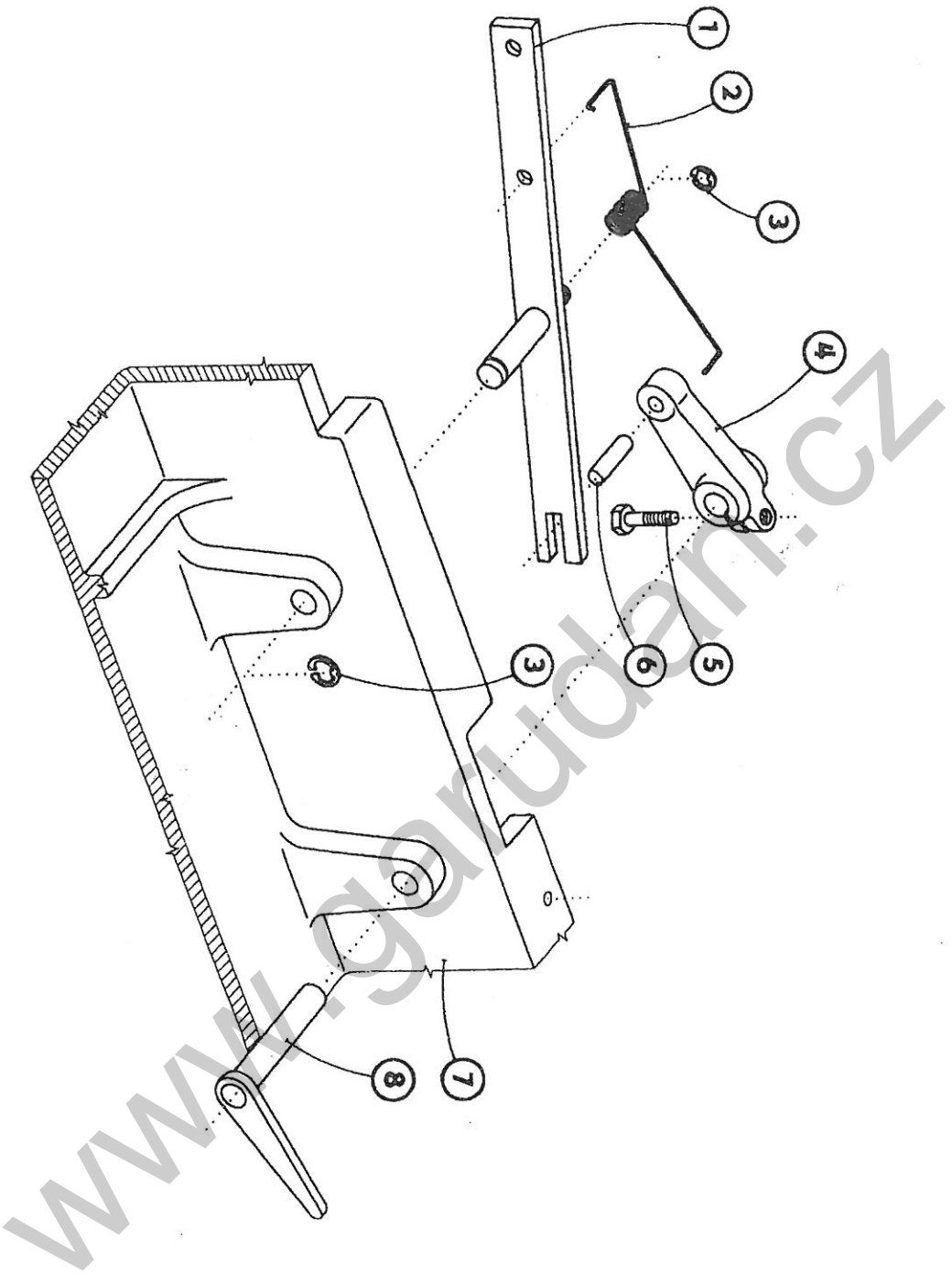
2 x



TAB. 2

522 980 099 038 35

1	522 080	141 141
2	522 080	141 121
3	522 080	725 050
4	522 080	625 022
5	522 080	384 052
6	522 080	264 168
7	311 732	910 070
8	522 080	314 065
9	522 080	318 069
10	522 080	141 112
11	273 412	001 000
12	522 080	827 173
13	522 080	383 022
14	522 080	436 271

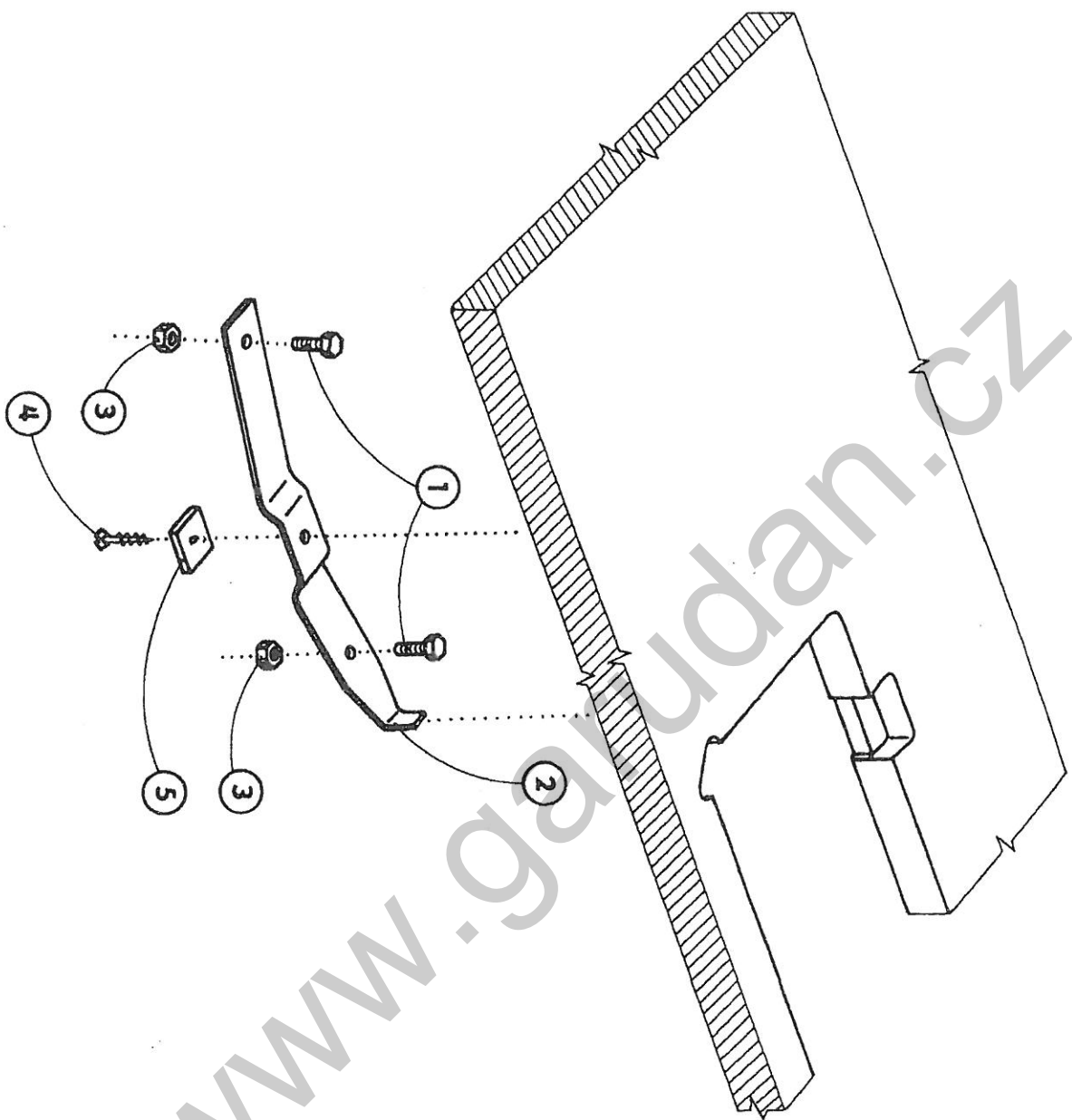


**TAB. 3**

**522 980 099 038 35**

1	522 980	049 109
2	522 080	264 290
3	311 732	910 070
4	522 080	613 480
5	522 080	141 109
6	311 515	006 016
7	522 080	725 050
8	522 980	044 142



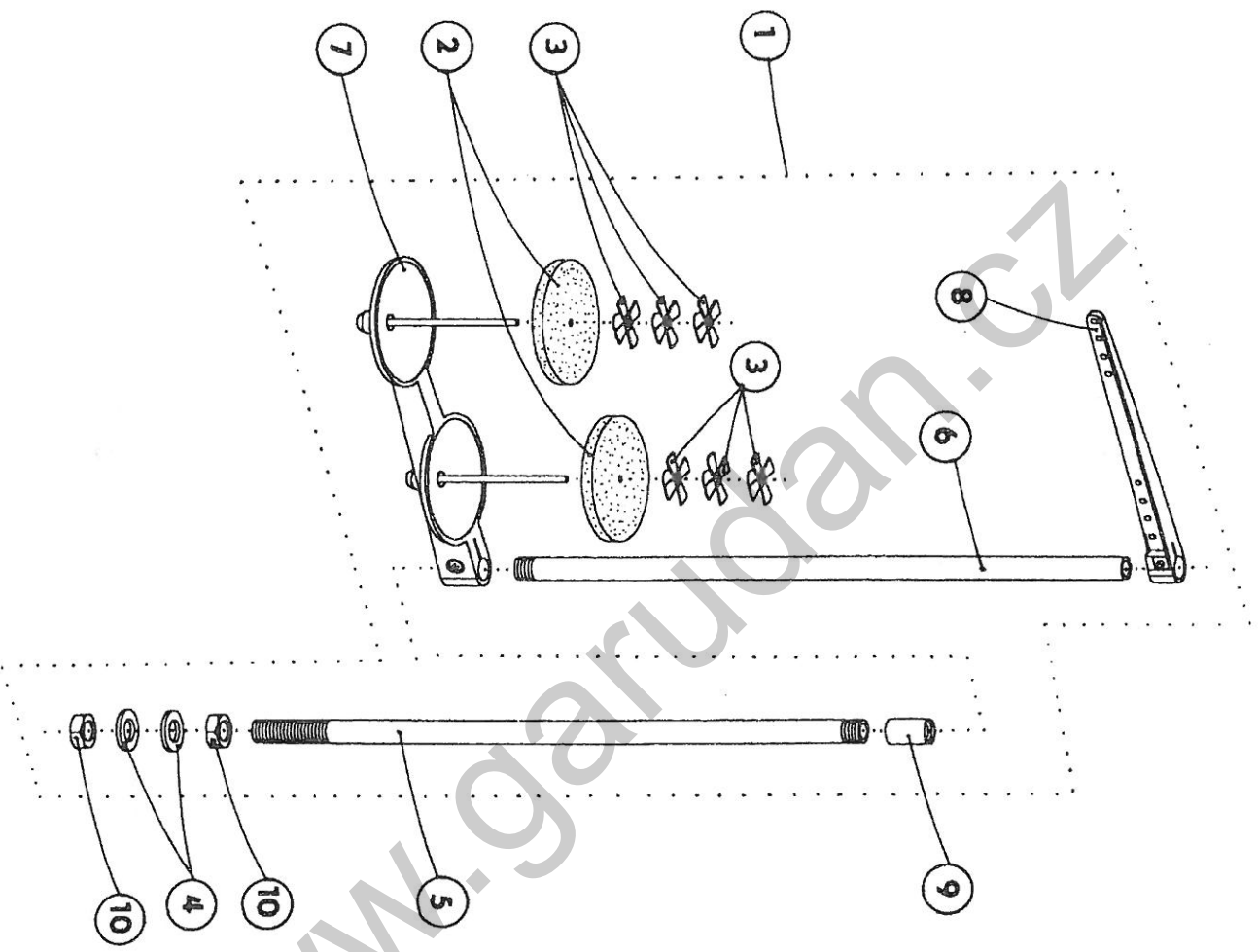


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**TAB. 4**

**522 980 099 038 35**

1	522 080	141 110
2	522 080	283 170
3	522 080	161 142
4	522 080	225 050
5	522 080	941 139



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**TAB. 5**  
**522 980 099 038 35**

1	522 981	036 163 00	
2	522 077	110 220 80	4 x
3	522 077	110 230 80	12 x
4	522 330	000 177 80	
5	522 791	001 085 80	
6	522 791	001 086 80	
7	522 791	001 091 80	2 x
8	522 791	001 096 80	2 x
9	522 990	240 057 80	
10	522 995	340 617 80	

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