

User Manual and Spare Parts List

GARUDAN[®]

GARUDAN GZ-525-443 MH

GARUDAN GZ-525-447 MH



ANITA B s.r.o.
Průmyslová 7
680 01 Boskovice
Czech Republic

tel: +420516454774
fax: +420515553626
e-mail: info@anita.cz
web: www.garudan.cz

www.garudan.cz

FOREWORD

This instruction manual is intended to help the user to become familiar with the machine and take advantage of its application possibilities in accordance with the recommendations.

The instruction manual contains important information on how to operate the machine securely, properly and economically. Observation of the instructions eliminates danger, reduces costs for repair and down-times, and increases the reliability and life of the machine.

The instruction manual is intended to complement existing national accident prevention and environment protection regulations.

The instruction manual must always be available at the machine/sewing unit.

The instruction manual must be read and applied by any person that is authorized to work on the machine/sewing unit. This means:

- Operation, including equipping, troubleshooting during the work cycle, removing of fabric waste
- Service (maintenance, inspection, repair and/or)
- Transport.

The user also has to assure that only authorized personnel work on the machine.

The user is obliged to check the machine at least once per shift for apparent damages and to immediately report any changes (including the performance in service), which impair the safety.

The user company must ensure that the machine is only operated in perfect working order.

Never remove or disable any safety devices.

If safety devices need to be removed for equipping, repairing or maintaining, the safety devices must be re-mounted directly after completion of the maintenance and repair work.

Unauthorized modification of the machine rules out liability of the manufacturer for damage resulting from this.

Observe all safety and danger recommendations on the machine/unit! The yellow-and-black striped surfaces designate permanent danger areas, eg danger of squashing, cutting, shearing or collision.

Besides the recommendations in this instruction manual also observe the general safety and accident prevention regulations!

GENERAL SAFETY INSTRUCTIONS

The non-observance of the following safety instructions can cause bodily injuries or damages to the machine.

1. The machine must only be commissioned of the instruction book and operated by persons with appropriate training.
2. Before putting into service also read the safety rules and instructions of the motor supplier.
3. The machine must be used only for the purpose intended. Use of the machine without the safety devices is not permitted. Observe all the relevant safety regulations.
4. When gauge parts are exchanged (e.g. needle, presser foot, needle plate, feed dog and bobbin) when tread-ing, when the workplace is left, and during service work, the machine must be disconnected from the mains by switching off the master switch or disconnecting the mains plug.
5. Daily servicing work must be carried out only by appropriately trained persons.
6. Repairs, conversion and special maintenance work must only be carried out by technicians or persons with appropriate training.
7. For service or repair work on pneumatic systems the machine must be disconnected from the compressed air supply system.
Exceptions to this are only adjustments and functions checks made by appropriately trained technicians.
8. Work on the electrical equipment must be carried out only electricians or appropriately trained persons.
9. Work on parts and systems under electric current is not permitted, except as specified in regulations DIN VDE 0105.
10. Conversion or changes to the machine must be authorized by us and made only in adherence to all safety regulations.
11. For repairs, only replacement parts approved by us must be used.
12. Commissioning of the sewing head is prohibited until such time as the entire sewing unit is found to comply with EC directives.



It is absolutely necessary to respect the safety instructions marked by these signs.

Danger of bodily injuries !

Please note also the general safety instructions.

IMPORTANT WARNING

In spite of all safety measures made on the machines, inappropriate actions of the operator may lead to dangerous situations. In industrial sewing machine, attention should be paid to the following still remaining possible sources of injury:

1. Moving sewing needle
 - risk of injury when sewing with raised pressure foot or top roller, because the finger guard is then positioned too high.
2. Moving thread take-up lever
 - risk of injury when inadvertently or intentionally inserting the finger(s) between the thread take-up lever and its guard.
3. Moving pressure member
 - risk of injury when holding sewn work in immediate vicinity of the pressure member and beginning to insert under the pressure member a considerably thicker sewn work portion,
 - risk of injury when sinking the pressure member.
4. When switched off, the clutch motor slows down by inertia but would be reactivated by an accidental tread-ing down of the motor treadle. To avoid such risk, it is advised to hold the handwheel by hand and slightly to depress the motor treadle.

Noise level of machine

The noise level of machines is measured as per ISO 3746, ISO 11204 at the machine top speed.

L_{aeq} = equivalent noise level on the work site - reduced to the percentage of application of the machine (in dB)

Type of sewing machine	Noise level in dB	Percentage of application
GZ-525-44X	84	20
GZ-527-44X	83	20

Use of machines

The machines are special industrial sewing machines for stitching natural or artificial leathers, used in the shoe and fancy goods industries, also in combination with textile materials. The sewn material must be dry and 8 mm or less thick when compressed under the top roller or presser foot. It must be free of any hard objects because otherwise an eye protector, not yet available, would be required. As a rule, synthetic, cotton or core-spun threads up to 1000dtex x 1 x 3 (size label No. 10) are used. The use of other special threads may involve risks to be taken into account and possibly require adequate safety measures to prevent them.

These special machines may be used only in dry and well kept rooms.

As sewing machine producers, we expect that the operators of our machines are at least initiated so that all the usual operation actions and their possible risks can be taken as known to them.

BEFORE PUTTING THE MACHINE IN OPERATION FOR THE FIRST TIME



To avoid defects or damages to the machine, adhere to the following hints:

- remove the preserving means from the machine
- apply oil to machine sections (spots) marked in red, and replenish oil into the hook box to the level marked by the oil level indicator
- let check by a specialist if the electrical equipment of the machine is in order, including the voltage for the electric motor. With the electric motor switched on, check if the handwheel of the machine rotates in the sense of the arrow provided on the belt guard
- during the first two weeks of the machine operation, do not exceed about 3/4 of the top speed



Warning !

To avoid the danger of electric shocks, call in an electrician for any work on the electrical equipment.

During the machine operation or while being in its vicinity, take due care to avoid the risk of an accident. In particular, protect the electrical equipment from getting into contact with any liquid to avoid short-circuit or other damage to it. Adhere to the general safety regulations.



During the machine operation, extraordinary care should be taken in the vicinity of the needle, cutting and trimming knives, trimming knife drive situated on the post bed of the machine, thread take-up lever, and sewn work pressure elements.

With the machine head tilted onto the machine stand, take due care to avoid the tilting and fall of the whole machine together with the machine stand.

When tilting the machine to its operative position hold it with both hands so as to avoid an accident between the machine being tilted and the stand plate.

INSTRUCTIONS FOR COMPLETING THE MACHINE AND PUTTING IT INTO OPERATION

1. Electrical connection



The mains voltage must agree with the voltage specified on the rating plate of the motor. All work on the electrical equipment may be carried out only by authorized persons and with the machine disconnected from the mains. The security hints must be under all circumstances fully adhered to.

For connecting the electrical equipment, proceed in accordance with the following hints:

- the electrical connections are shown in the wiring diagram of the drive motor in question
- the machine-specific connections of in- and outputs as well as the machine setting parameters are given in the operation instruction of the drive motor in question
- the parts required are included in the machine accessories

2. Stand frame assembly

A frame is assembled according to the picture. Dimension "B" is defined for medium height figure of an operator. It is necessary to enlarge dimension "B" for taller figure and the other way round. It is possible to reach the levelling of feet with floor by loosening screws (1). It is possible to adjust the height of table top by means of screws (2).

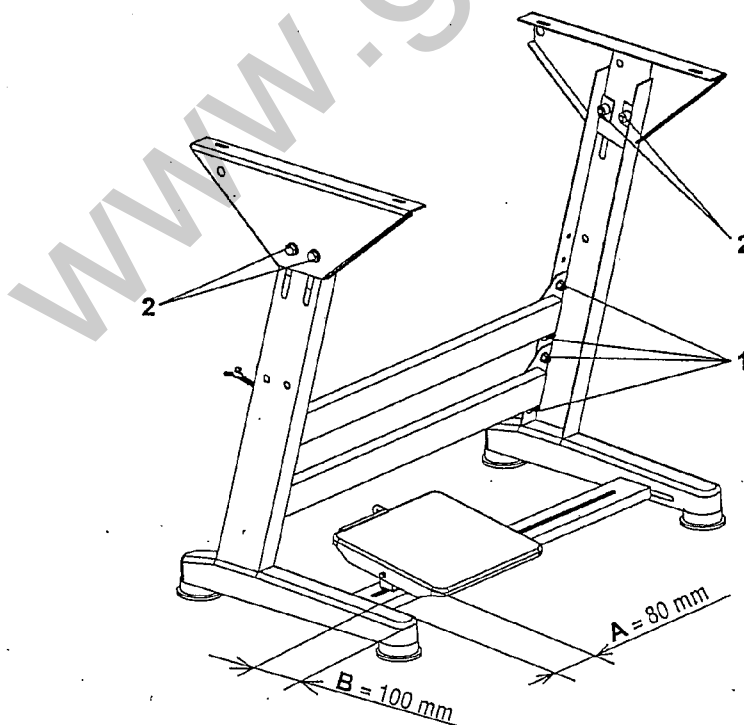


Fig. 1

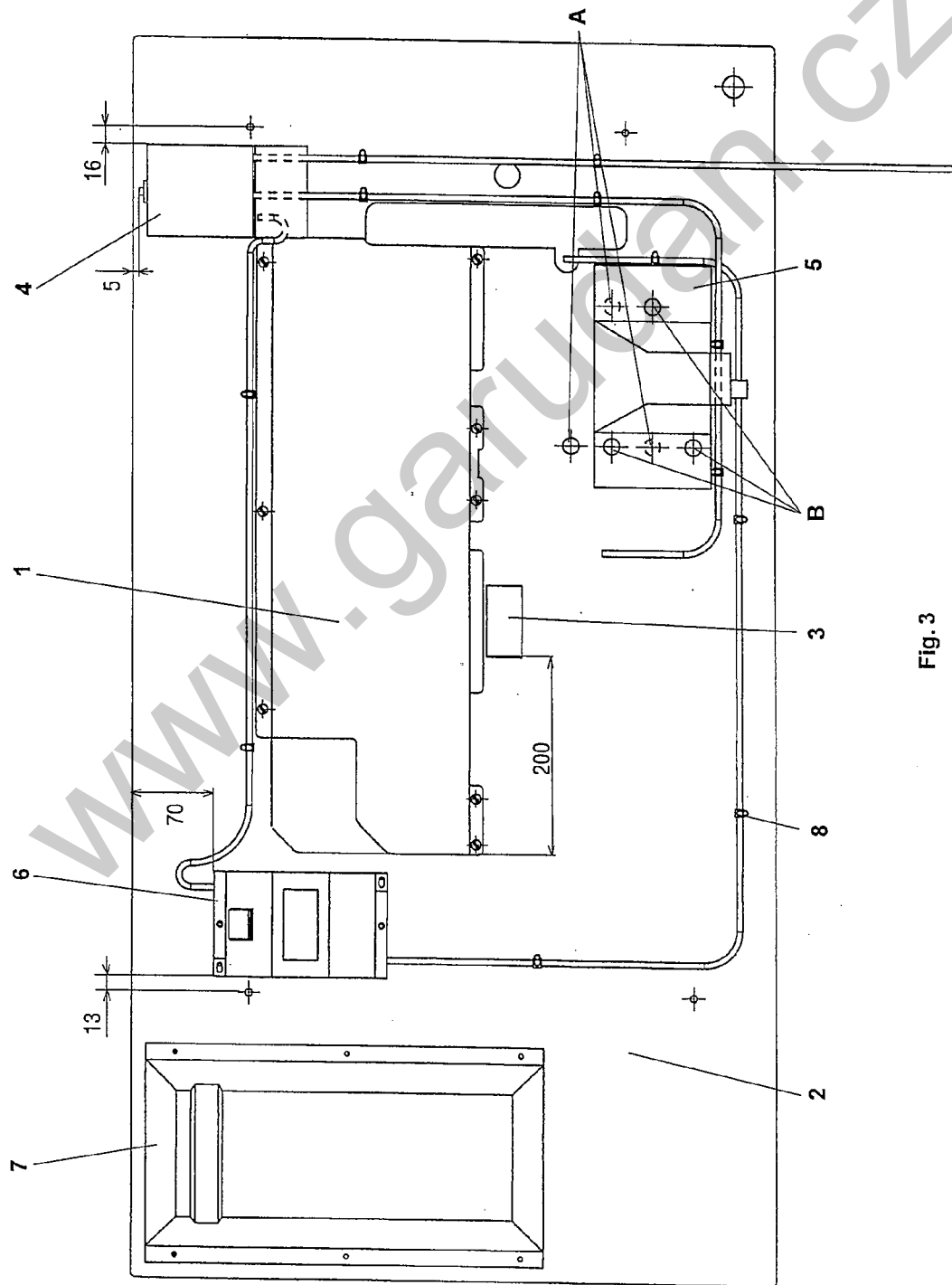


Fig. 3

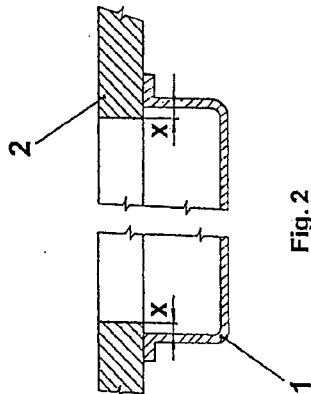


Fig. 2

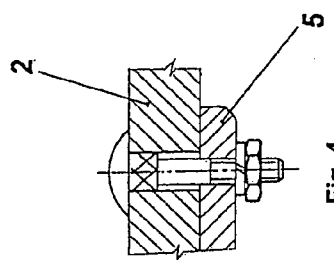


Fig. 4

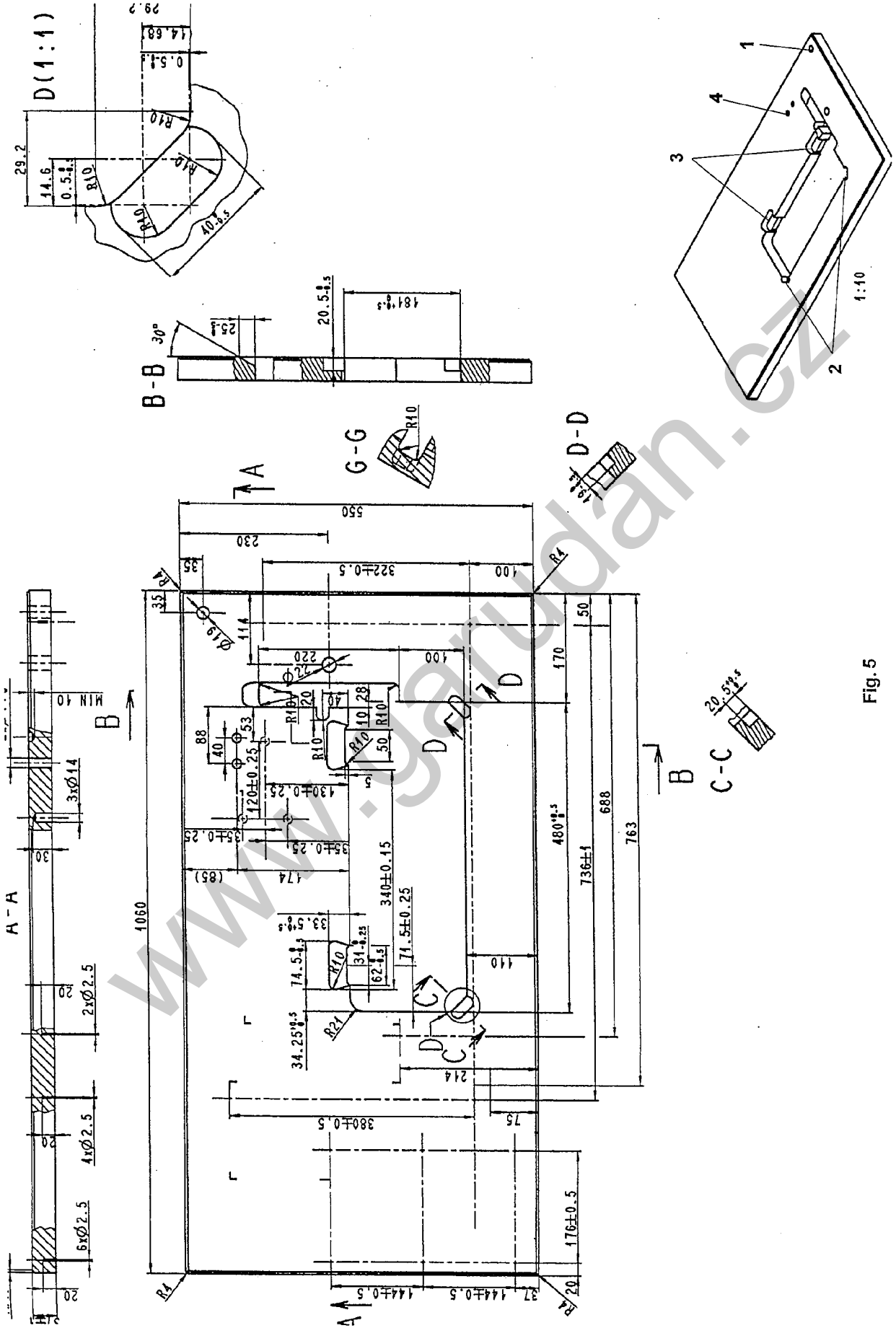


Fig. 5

3. Completion and screwing on of the stand plate

3.1 Completion of the stand plate

Insert into the recesses (2 and 3, Fig. 5) the rubber inlays serving for mounting the machine head into the stand plate, and preferably fix them by sticking them on. When mounting the oil tank (1, Fig. 2) be sure that the inner side of its walls is overlapped by the value "X" by the circumference of the slot of the stand plate (2).

Screw on the main switch (4) to the stand plate (2, Fig. 3).

Nail down the rubber stop (3, Fig. 3).

Screw on the motor holder (5), see Figs. 3 and 4.

Screw on the light transformer (6) for lighting, if supplied.

By means of clips (8, Fig. 3) install transmission line of heavy current conductors. Connection is different from the type of motor, supply voltage and number of conductors of electric supply. In case of quad (four wire) supply 3 x 400 V, transformer for lighting must be supplied with separate supply cable 1 x 230 V - see par. 5.

Screw on the socket (7, Fig. 3).

Both in its operating and in its tilted position, the machine head must be out of contact with the oil tank. The diameter of the motor pulley must agree with the maximum specified speed of the sewing machine type in question and of the motor used.

3.1.1 To set the machine head on the stand

The machine head is fitted with installed hinges. Remove the lower covering sheet of the head and insert the machine into the stand plate. Insert into the hole (4, Fig. 5) the support pin included in the machine accessories.

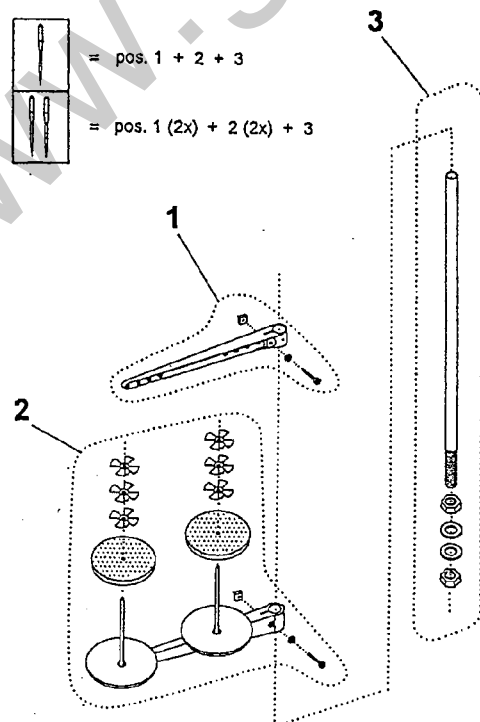
Mount the thread guides on the machine head.

To mount the V-belt, tilt the machine, insert the belt first into the handwheel groove and then on the motor pulley, and tilt the machine back to its operative position.

Check the V-belt for correct tension by applying slight pressure to it at its middle part; if the tension is correct the deflection will be about 20 mm.

Mount the belt guards.

With the main switch off, set the synchronizer to the flange of the handwheel in such a position as to let the stop pin of the belt guard enter the synchronizer groove.



4. To prepare the machine for sewing

Inspect the machine thoroughly and check whether it revolves freely and is adjusted correctly. Mount the bobbin stand as shown in Fig. 6 and insert it into the hole (1) - see Fig. 5.

Each thread may be led through only one aperture of the bobbin stand arm. Fill with oil the oil tank of the sewing hook and that of the central wick lubrication. The lubrication places on the machine are marked in red.

For lubrication, use the white vaseline heavy oil or ESSO SP-NK 10, or another oil of equal quality. Connect the machine to the mains.

In three-phase motor sewing drives check the sense of rotation of the motor blower by switching on the motor for a few moments. The correct sense of rotation of the machine is indicated by an arrow on the belt guard.

If the sense of rotation is incorrect interchange two phases in the power plug.

Let the machine run for a few minutes at low speed before using it at full speed.

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UPPER THREAD THREADING



Warning !

Before the threading, switch off the main switch and hold your feet away from the machine stand treadles to avoid the machine start by depressing the treadle.

Set the wound bobbin on the bobbin stand, unwind a sufficient portion of thread and lead it through the thread guide of the bobbin stand and then via the thread guides (A, Fig. 7, and B) - in machines not equipped with thread trimmer - or via the auxiliary thread guide (L, Fig. 7a) in machines equipped with thread trimmer, then between the tensioner discs (C), via the adjusting spring (D) and the thread guides (E, F, G) into the eye of the thread take-up lever (H), then downwards through the thread guides (F) and (J) and the thread guide (K) situated on the needle bar, and from there, from the front (from the operator) into the needle's eye.

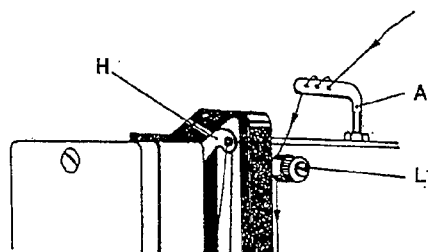


Fig. 7a

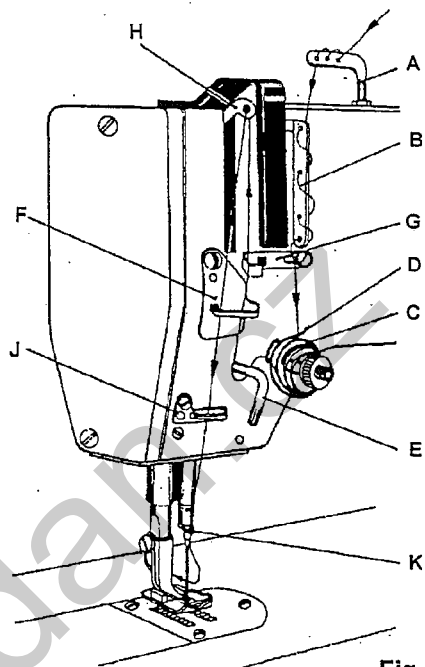


Fig. 7

TO THREAD THE THREAD FROM THE BOBBIN STAND ONTO THE BOBBIN WINDER

As shown in Fig. 8, lead the thread from the bobbin stand through the thread guide (B) situated on the machine head to the thread tensioner (A) and then on the hook bobbin mounted on the shaft (C) of the bobbin winder, make a few thread turns clockwise on the bobbin, and lead it to the spring (D), insert it between its threads, trim it by the knife placed inside the spring, and set the bobbin winder in operation by depressing the lever (E). After the thread has been wound on the bobbin, the bobbin winder is disengaged automatically. Remove the full bobbin from the shaft and trim the thread either with the knife situated in said spring (D) or with scissors. The thread tensioner (A) serves to adjust the thread tension while being wound.

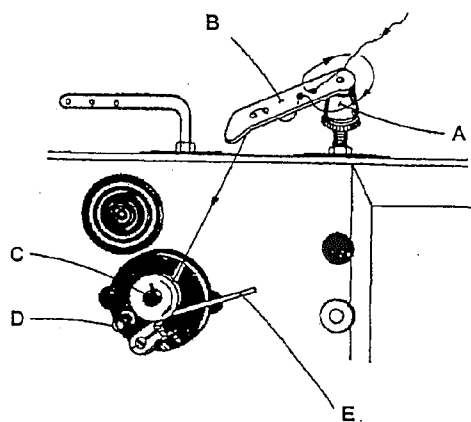


Fig. 8

TO INSERT THE NEEDLE

Warning !



Before proceeding to exchange the needle switch off the main switch and hold your feet away from the machine stand treadles to avoid the machine start by depressing the treadle.

Be sure to choose the correct needle size and system (as a rule, system 134), loosen the screw (A, Fig. 9) on the needle bar in the needle holder, insert the needle (B) up to the stop into the hole provided in the needle bar (needle holder), and turn it so as to ensure that its long groove is directed forward (towards the operator). If inserting a bigger (thicker) needle, check it for possible collision with the hook point and, in positive case, let adjust the hook position by a skilled person. Also check whether the needle passes through the centre of the needle aperture, and replace the needle if faulty.

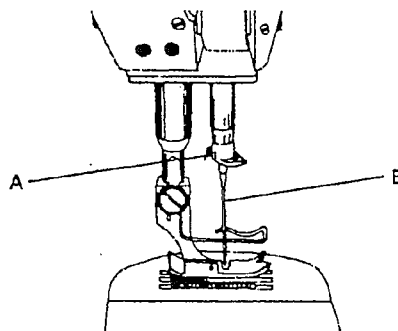


Fig. 9

TO ADJUST THE UPPER THREAD TENSION

The tensions of the upper and the lower thread must be so interrelated that the stitch binding takes place in the median layer of sewn material (Fig. 10). Turn the tensioner nut to the right (clockwise) to increase the upper thread tension, and vice versa. Adjust the lower thread tension as described in the following paragraph. If the lower thread tension has been adjusted to its optimum value, the adjustment of the upper thread tension by means of the tensioner nut will be as a rule sufficient to restore the required quality of stitching (stitch binding).



Correct adjustment of tension of both threads



Incorrect adjustment



Incorrect adjustment

Fig. 10

TO EXCHANGE THE HOOK BOBBIN AND TO THREAD THE LOWER THREAD

In machines equipped with small size hook, insert the full bobbin into the bobbin case, and lead the thread from the bobbin (A, Fig. 10a) into the bobbin case (B) through the groove (C) under the braking spring (D). In machines equipped with large size hook, insert the full bobbin into the bobbin case, and lead the thread from the bobbin (A, Fig. 10b) into the bobbin case (B) through the groove (C) under the braking spring (D) and then into the outlet (E).

Hold free an about 5 to 6 cm-long thread end.

The bobbin should be inserted into the bobbin case in the position ensuring that it turns in the sense of the arrow when the thread is drawn off from it. Be sure that the bobbin is reliably fixed in the bobbin case by the lid.

Pass the lower thread above the throat plate in usual way by means of the upper thread.

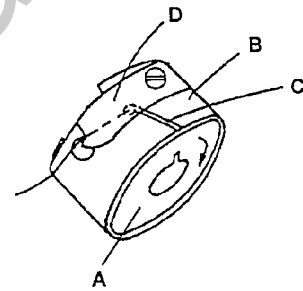


Fig. 10a



Warning !

Never start the machine before the hook cover is set to its operative (protective) position.

Before proceeding to exchange the bobbin in the hook switch off the main switch and hold your feet away from the machine stand treadles to avoid the risk of starting the machine by accidentally depressing the treadle.

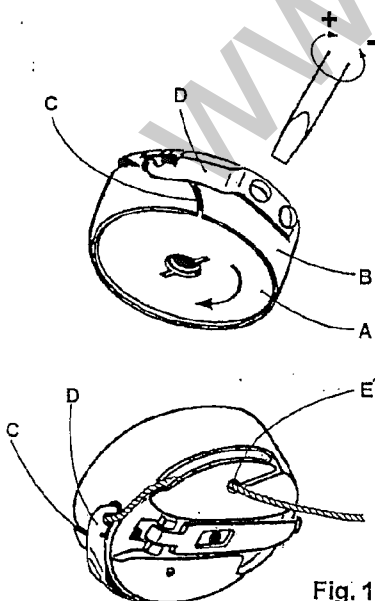


Fig. 10b

In the small-size hook, the force pulling off the thread from the bobbin can be adjusted by the small screw (Fig. 10c). Turning it in the direction (+) will increase the force, and inversely.

In the large-size hook, adjust the pulling force in the same manner (see Fig. 10b).

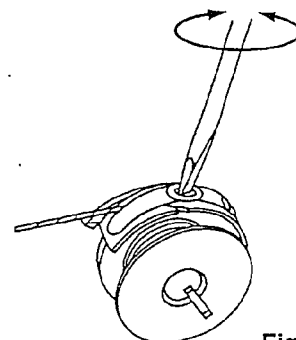


Fig. 10c

TO ADJUST THE STITCH LENGTH

Revolve the stitch length adjusting revolving knob (dial) (A, Fig. 11) situated on the machine arm so as to align with the mark (B) on the machine arm the respective number of the dial indicating the stitch length. Turn the dial in the direction (+) to increase the stitch length, or (-), to reduce it.

The machines equipped with reverse stitching have on the machine arm a reverse stitching lever (C) active throughout the time it is depressed up to the stop in the direction of the arrow (S).

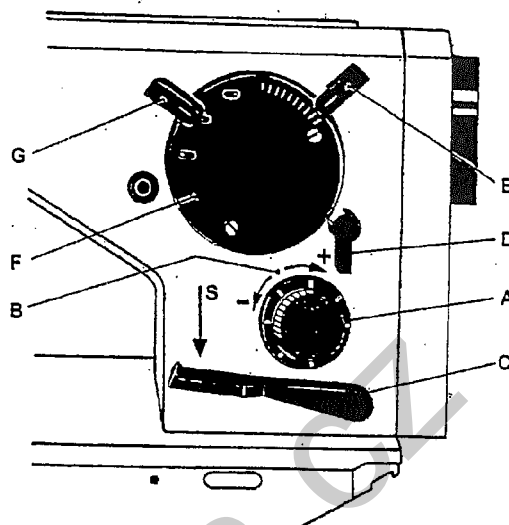






Fig. 11

TO ADJUST THE ZIGZAG STITCH WIDTH AND POSITION

Before any adjustment of the zigzag stitch width and position, the machine must be stopped with the needle raised outside the sewn material. Swing the lever (D, Fig. 11) to the left (anticlockwise) and hold it there throughout the adjustment procedure. Swinging the lever to the right will fix the adjusted width and position of the zigzag stitch. Depending on the machine type, the stitch width is steplessly adjustable from zero to 10 mm by means of the lever (E) projecting out of the cover (F) of the zigzag stitch mechanism. Turning the lever to the right (toward the handwheel) will increase the stitch width up to the maximum of its value, turning it to the left will reduce it up to zero. To adjust the zigzag stitch position use the lever (G) projecting out from the side of the cover (F) of the zigzag stitch mechanism. (This adjustment is possible only with the models 72523 - 101, 105; and 72526 - 101, 105.)

The basic (median) zigzag stitch is adjusted at the middle position of the lever (G) on the mark  in which the lever engages in the fixing notch. To set the right-side position of the zigzag stitch, slightly depress the lever (G) in the direction away from the operator and shift it upwards to the mark . Analogically, to set the left-side position of the zigzag stitch, slightly depress the lever (G) in the direction away from the operator and shift it downwards to the mark . After the required stitch position has been set, fix it by swinging the lever (D) to the right. For plain stitching, (i.e., with stitch width reduced to zero), it is advised to use the median zigzag stitch position corresponding to the setting .

The zigzag stitch width is steplessly adjustable also in the machine model 72525 for pattern stitching by means of interchangeable cams. In this case, proceed as follows:

Remove the cover situated on the machine arm so as to gain access to the lever (A, Fig. 12) controlling the movement of the needle bar holder and with a wrench loosen the nut (B) on the bolt (C) holding the tie rod of the needle bar holder. Move the bolt in the notch of the lever (A) downwards to reduce the width of the pattern, or upwards, to increase it. When increasing the stitch width to the maximum check whether the needle does not collide with the throat plate. To fix the adjusted position of the bolt (C), retighten the nut (B). When adjusting the width of the pattern to be sewn, be sure to keep it within the admissible limits as specified in the list of equipments. When using a double-needle equipment, be sure to limit the zigzag stitch width to a value providing for a sufficient play of the needles with respect to the needle aperture of the throat plate.

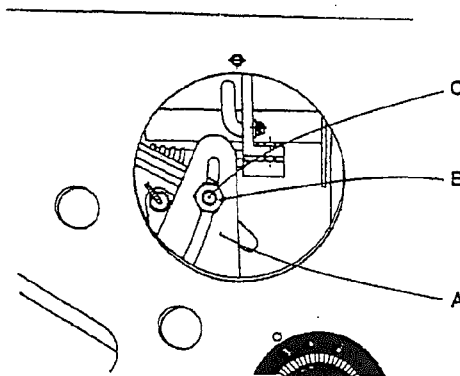


Fig. 12

MACHINE MAINTENANCE



Warning !

Before proceeding to clean and lubricate the machine switch off the main switch and hold your feet away from the machine stand treadles to avoid the risk of starting the machine by accidentally depressing the treadles.

Cleaning

Keep the machine clean and at least once a day (depending on the character of sewn work) remove impurities from the area of the hook and feed-dog and, in machines equipped with trimmer device, from that area. Avoid using volatile liquids since they damage both your health and the machine. A dry piece of cloth will do. Check the filtering screen of the electric motor for deposited dust.

Lubrication

Use usual sewing machine oil. Daily drip an oil drop into the holes marked in red on the machine before starting it. Pay particular attention to the oil level in the oil level indicator of the hook, and replenish oil through the hole over the oil level indicator only if the oil level has sunk considerably below the centre of the indicator.

TO SWITCH ON AND OFF THE MAIN SWITCH

The main switches are marked with „0" and „I", and have green (or also grey) and red push buttons. Depressed position of the (red) push button marked with „0" means „OFF", depressed position of the grey (green) push button means ON.



Warning !

Before switching on, check if the machine is ready to operate and if no hard object is laid under the needle.

FUNCTION OF TREADLE AND OF KNEE LEVER

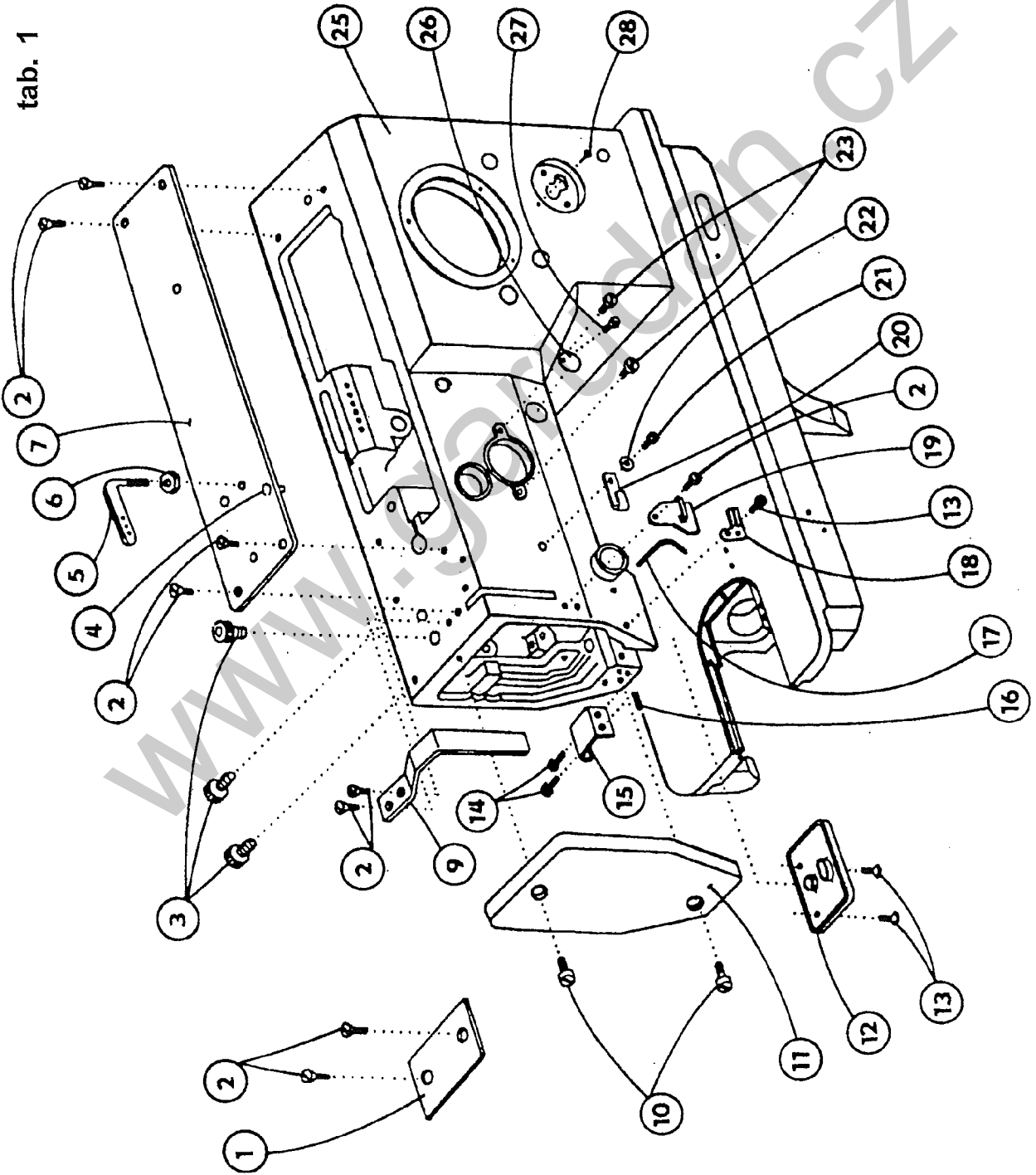
- In machines equipped with only one treadle (a wide or doubled one), the treadle is used to control the machine speed. As a rule, this is the case in electronically regulated stop motor drives. When heeling (depressing backwards) the treadle, the machine, depending on the version and capacity range of the stop motor, carries out the bartacking, trims the threads, and raises the presser foot or the top roller. A more detailed description of the functions is contained in the Instructions for use of the stop motor.
- In machines with mechanically actuated clutch, the treadle can be similar to that of the stop motors, and serves both to adjust the sewing speed and to stop the machine. The knee lever (if mounted) serves to raise the presser foot.

The top roller lifting can be actuated hand lever or knee lever (if mounted).

To observe:

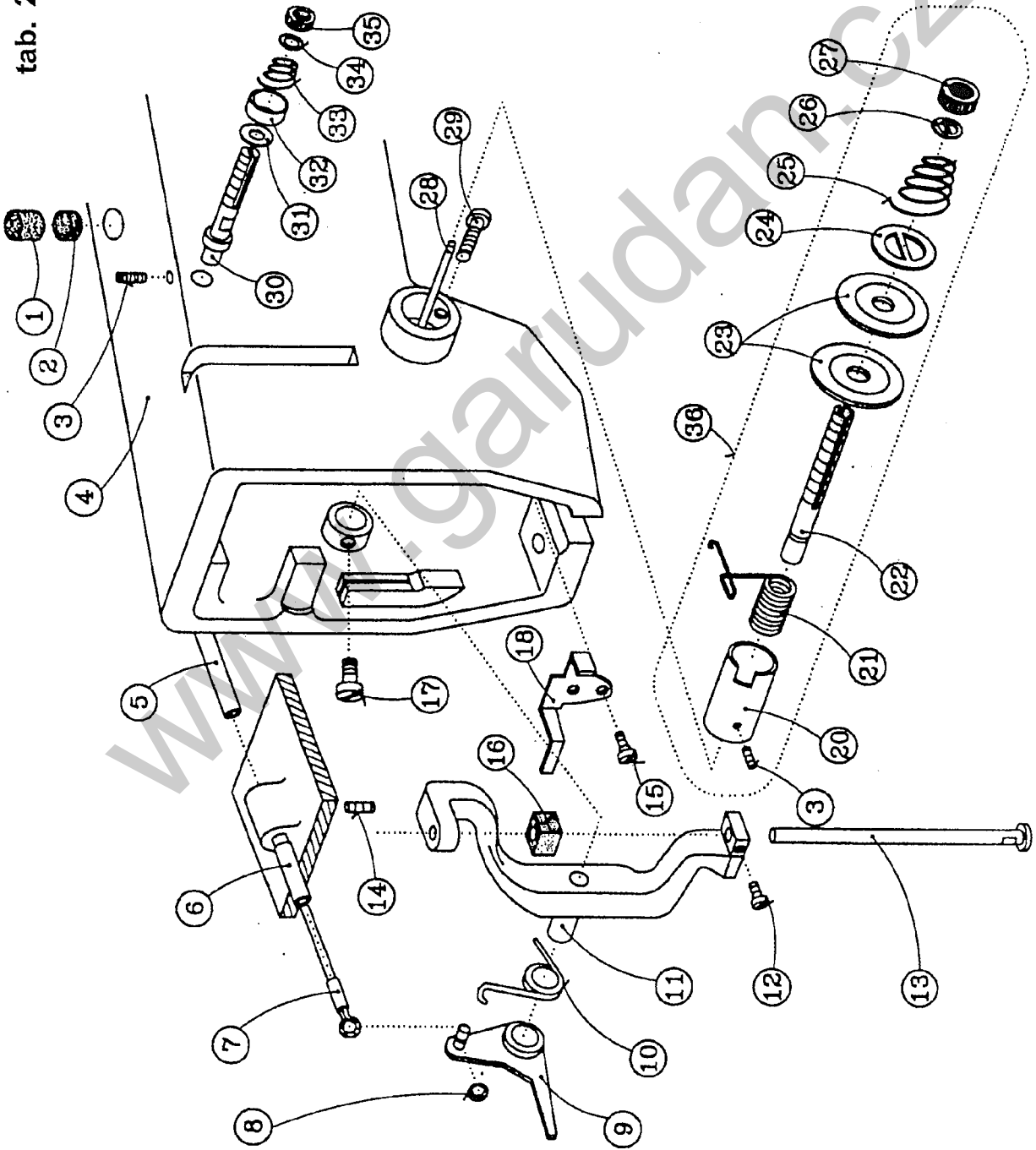
In machines equipped with stop motors, the machine head sometimes carries one or several push buttons. Their function depends on their connection and on the type of the stop motor and is defined in the Instructions for use of the stop motor.

tab. 1



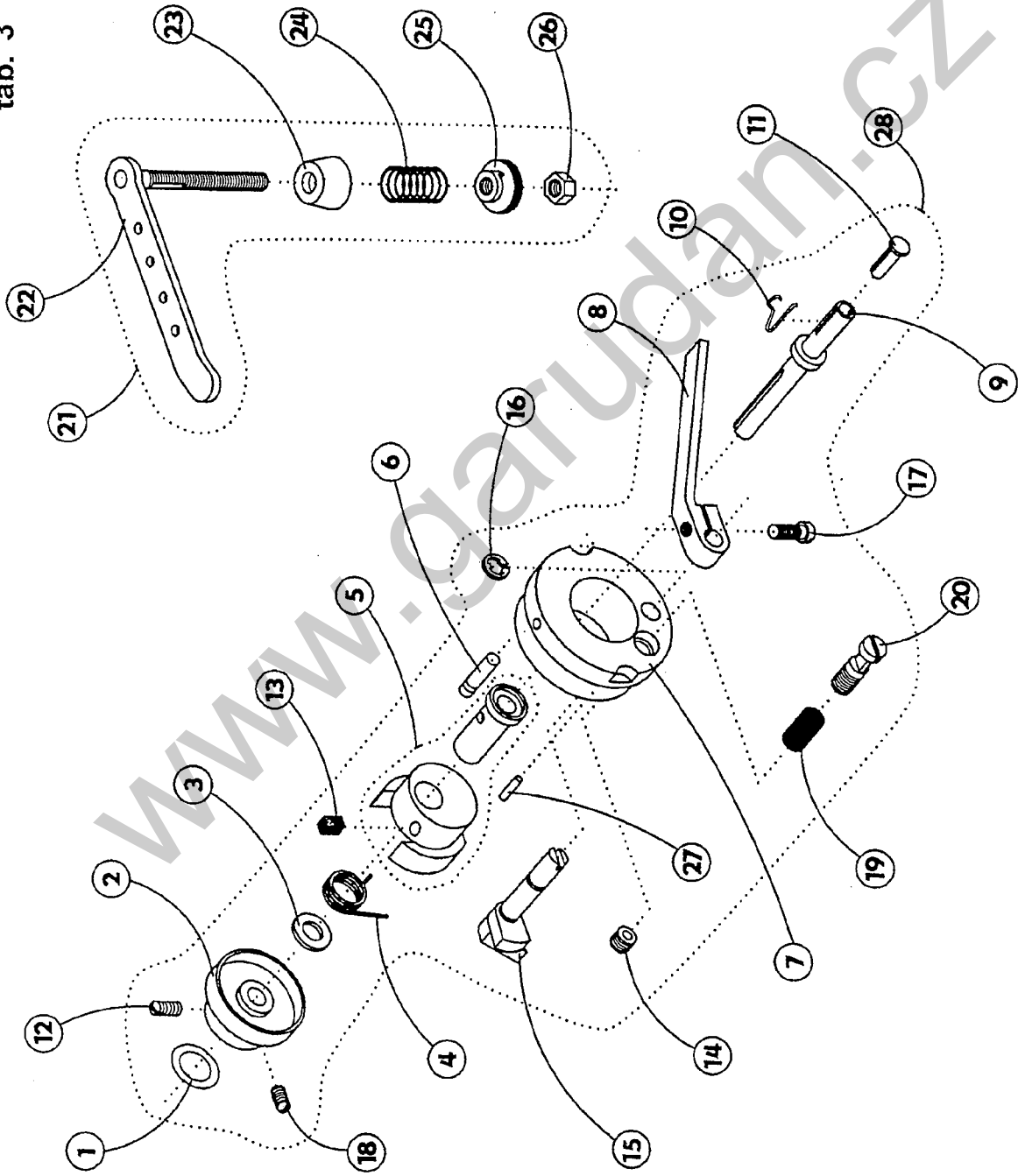
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2	522 080	123 117
3	321 161	001 000
4	522 080	840 073
5	522 080	313 204
6	522 080	161 138
7	522 080	815 007
9	522 080	831 348
10	522 080	120 248
11	522 080	721 173
12	522 080	827 180
13	522 080	123 122
14	522 080	126 063
15	522 080	823 115
16	522 080	112 014
17	522 080	271 184
18	522 080	821 115
19	522 080	821 077
20	522 080	821 113
21	522 080	120 361
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23	522 080	132 112
26	522 080	831 494
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29	321 861	012 000

tab. 2



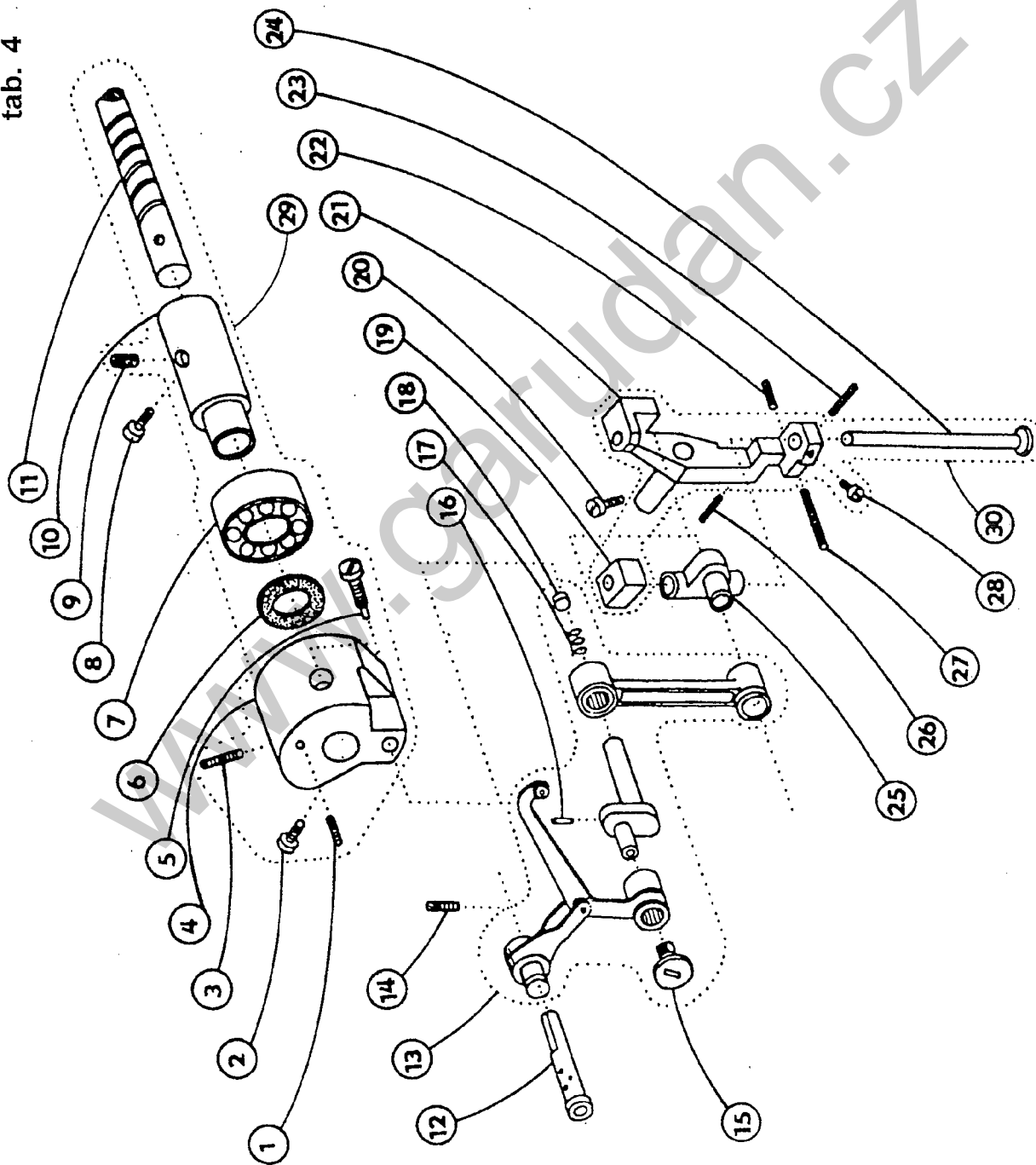
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6	522 080	410 511
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8	522 080	274 104
9	522 980	049 806
10	522 080	264 274
14	522 080	111 245
15	522 080	131 027
17	522 080	120 221
18	522 080	822 424
21	522 080	264 294
23	522 080	828 079
24	522 080	828 080
25	522 080	262 073
26	522 080	195 041
27	522 080	171 037
28	522 080	310 428
29	522 080	120 360
31	522 080	828 051
32	522 080	827 174
33	522 080	262 065
34	523 081	200 025
35	522 080	171 030
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tab. 3



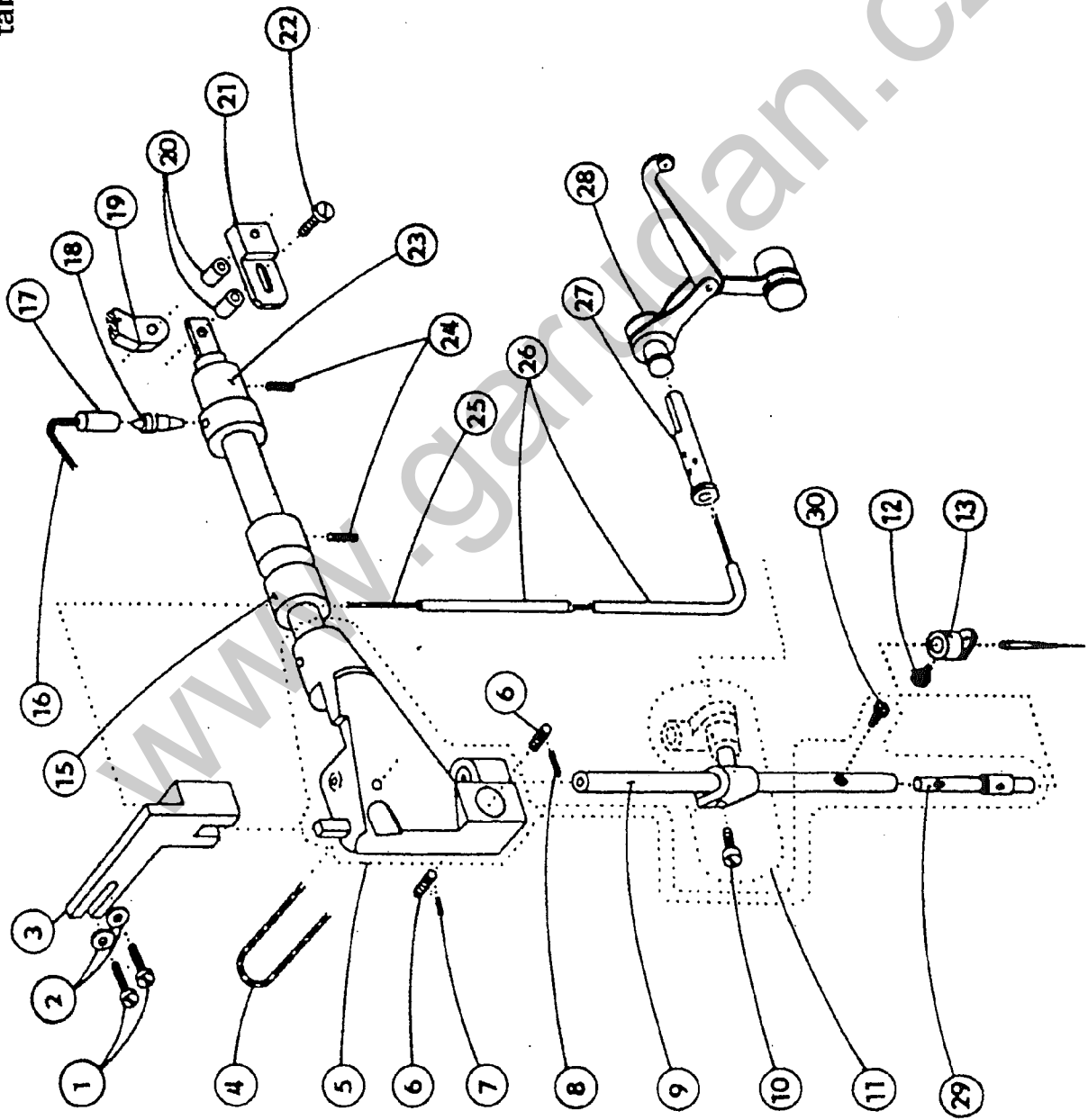
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8	522 080	613 468
9	522 080	343 074
10	522 080	265 037
11	321 861	953 200
12	522 080	112 115
13	522 080	945 296
14	522 080	111 094
15	522 080	672 174
16	311 732	910 040
17	522 080	124 050
18	522 080	111 230
19	522 080	260 483
20	522 080	870 170
21	522 980	025 248
22	522 980	025 249
23	522 080	827 194
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26	522 080	161 138
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28	522 980	036 122

tab. 4



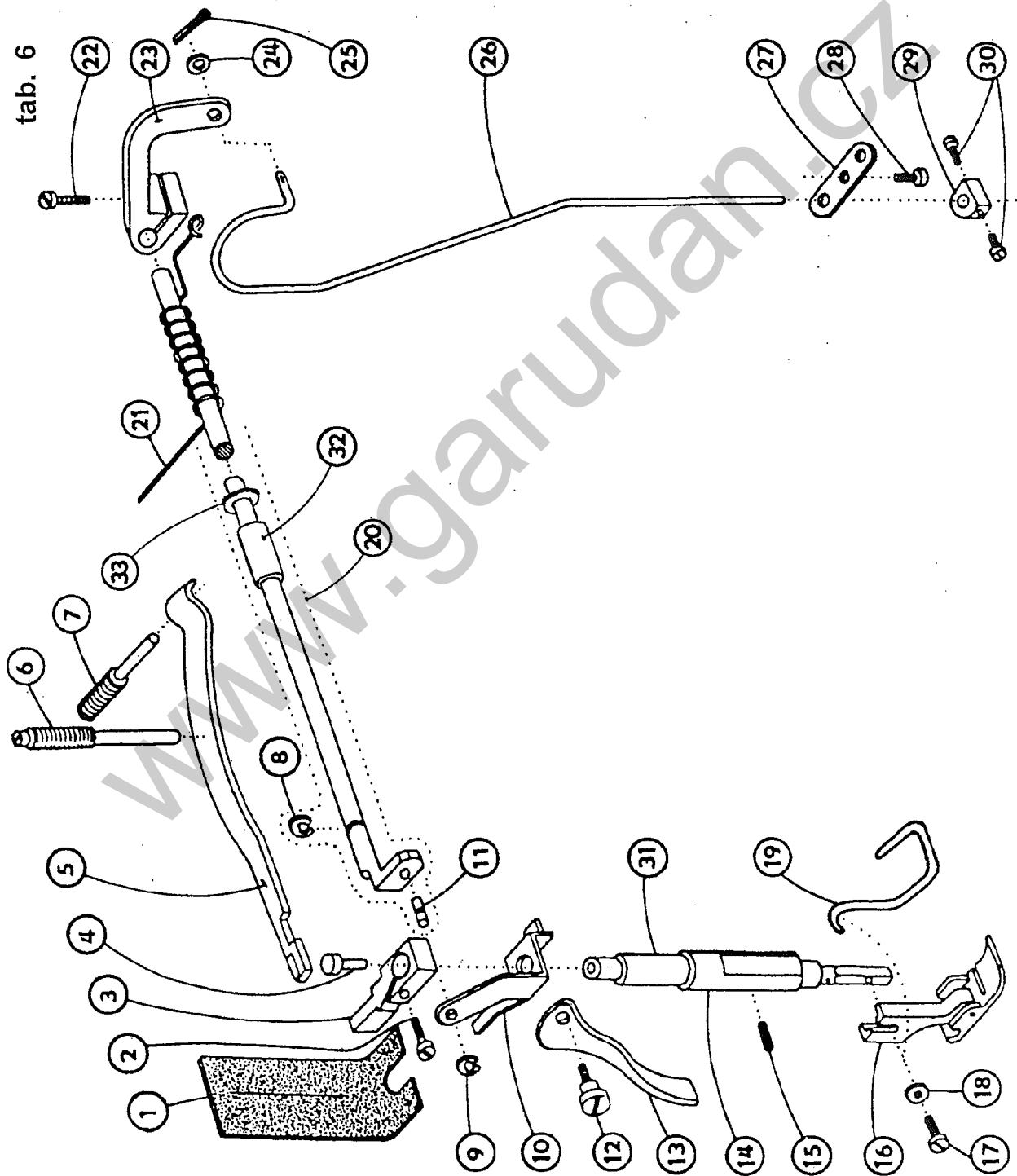
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9	522 080	593 139
12	522 080	328 005
13	522 980	044 830
14	522 080	112 014
15	522 080	120 062
19	522 080	953 159
20	522 080	120 220
22	522 080	111 214
23	522 080	111 295
25	522 080	452 047
26	522 080	111 273
27	522 080	111 126
28	522 080	120 216
29	522 980	043 298
30	522 980	035 318

tab. 5



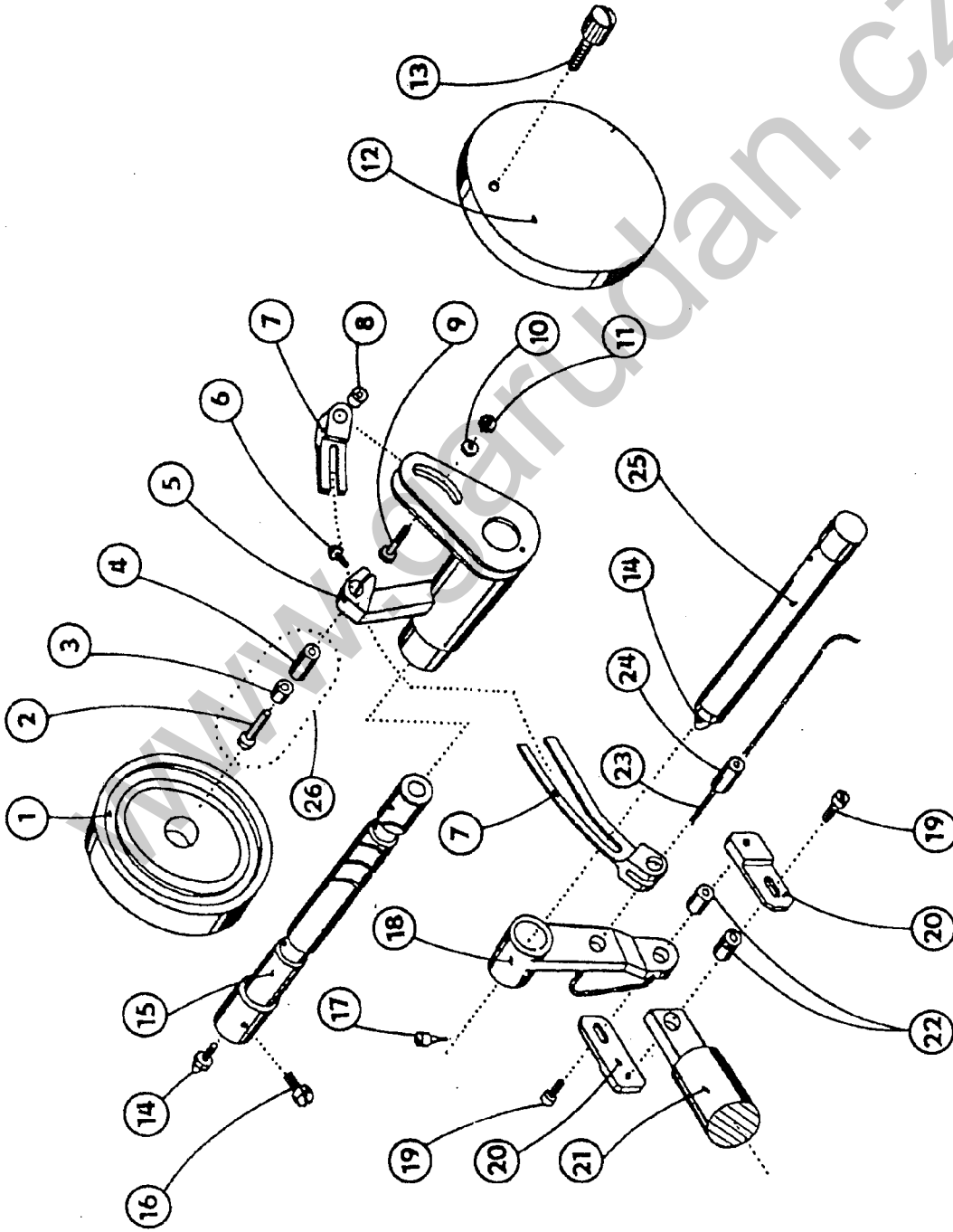
1	522 080	120 276
2	522 080	190 353
3	522 080	646 104
4	708 420	130 002
	ø 2 x 80 mm	
5	522 980	021 338
6	522 080	113 115
7	522 080	111 229
8	522 080	111 248
9	522 080	391 155
10	522 080	124 050
11	522 980	035 499
12	522 080	135 029
13	522 080	627 170
15	522 080	413 311
16	708 420	130 002
	ø 2 x 250 mm	
17	283 366	002 001
	ø 3,5/ø 4,8 x 190 mm	
18	522 080	424 051
19	522 080	613 519
20	522 080	410 595
21	522 080	648 132
22	522 080	120 589
23	522 080	421 341
24	522 080	111 222
25	708 420	130 003
	ø 3 x 300 mm	
26	283 366	002 001
	ø 3,5/ø 4,8 x 147 mm	
29	522 080	394 167
30	522 080	136 082

tab. 6



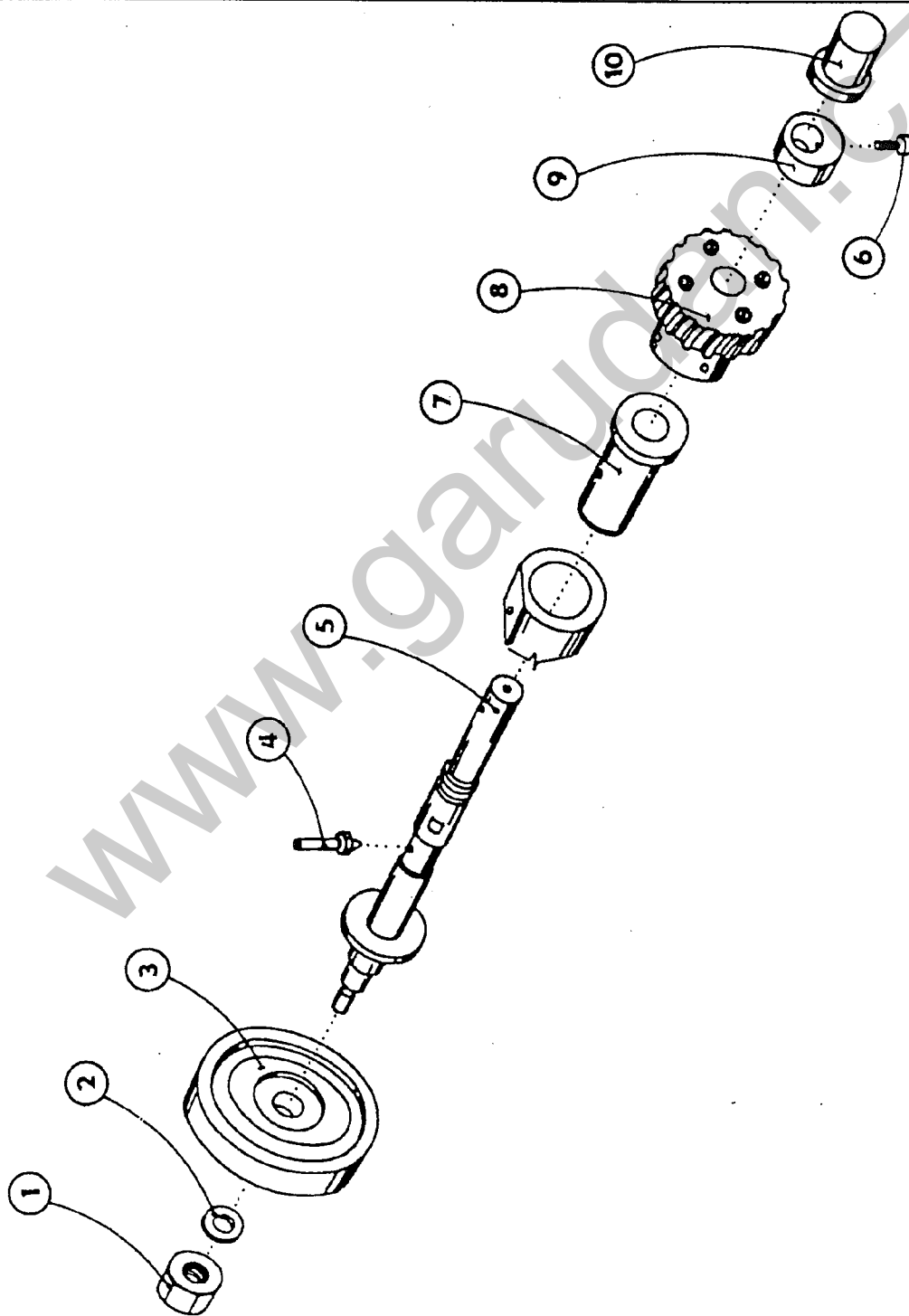
1	522 080	945 317
2	522 080	120 543
3	522 080	623 249
4	522 080	326 213
5	522 080	283 152
6	522 080	113 122
7	522 080	113 123
8	311 732	910 060
9	311 732	910 040
10	522 080	839 215
12	522 080	136 023
13	522 080	615 021
14	522 080	421 330
15	522 080	112 014
17	522 080	120 239
18	522 080	190 554
19	522 080	271 393
20	522 980	044 713
21	522 080	264 288
22	522 080	120 221
23	522 080	633 196
24	522 080	190 346
25	522 080	271 337
26	522 080	383 178
27	522 080	814 014
28	522 080	120 217
29	522 080	436 331
30	522 080	120 050
31	522 080	392 105
32	522 080	841 463
33	522 080	190 364

tab. 7



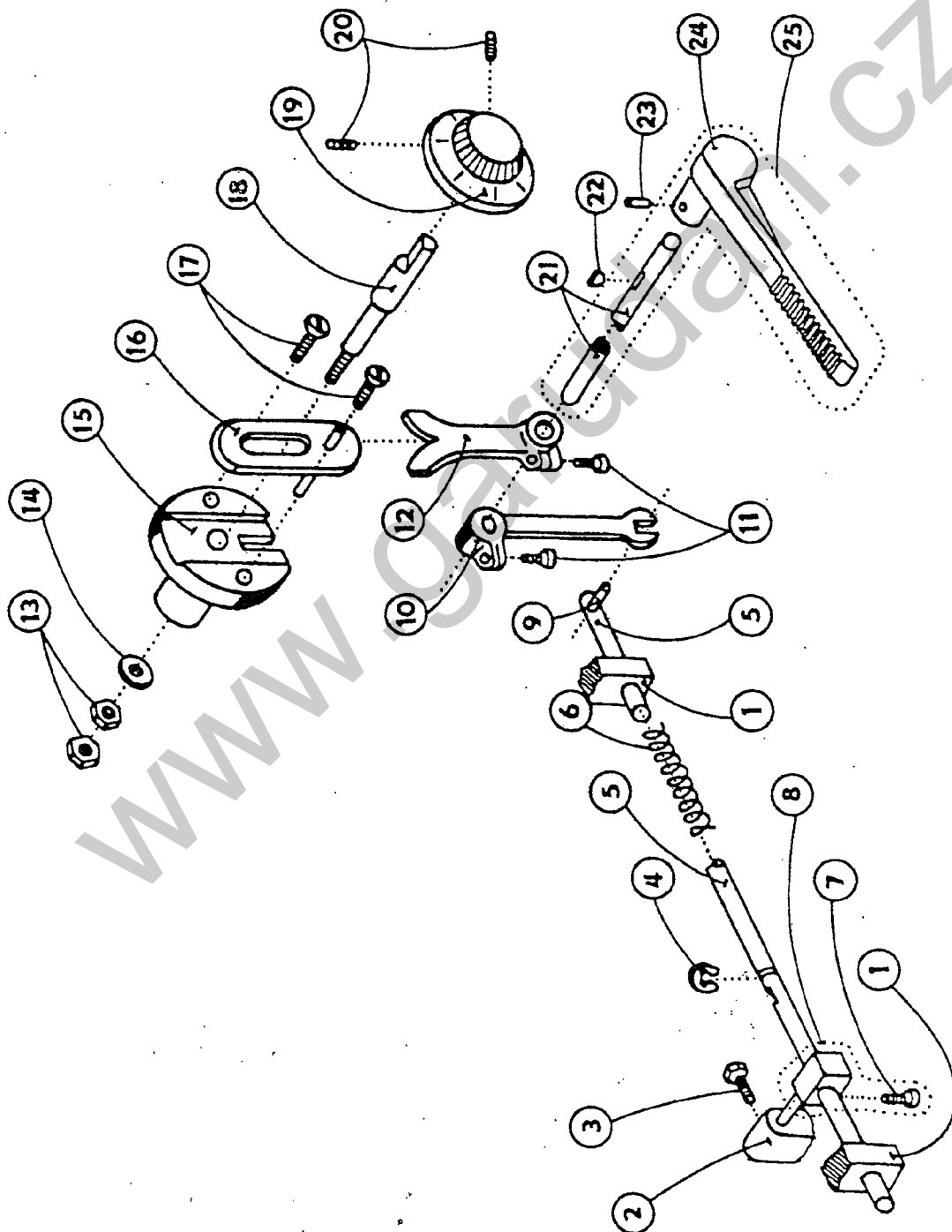
1	522 080	674 124
5	522 980	044 847
6	522 080	141 157
7	522 080	632 166
8	522 080	410 569
9	522 980	043 379
10	522 080	190 346
11	522 080	161 180
12	321 861	951 297
13	522 080	133 022
14	425 111	041 000
15	522 080	335 122
16	522 080	120 006
17	522 080	132 203
18	522 080	613 519
19	522 080	120 589
20	522 080	648 132
21	522 980	021 338
22	522 080	410 595
23	708 420	130 003
	ø 3 x 150 mm	
24	522 080	318 210
25	522 080	320 289
26	522 080	035 521

tab. 8



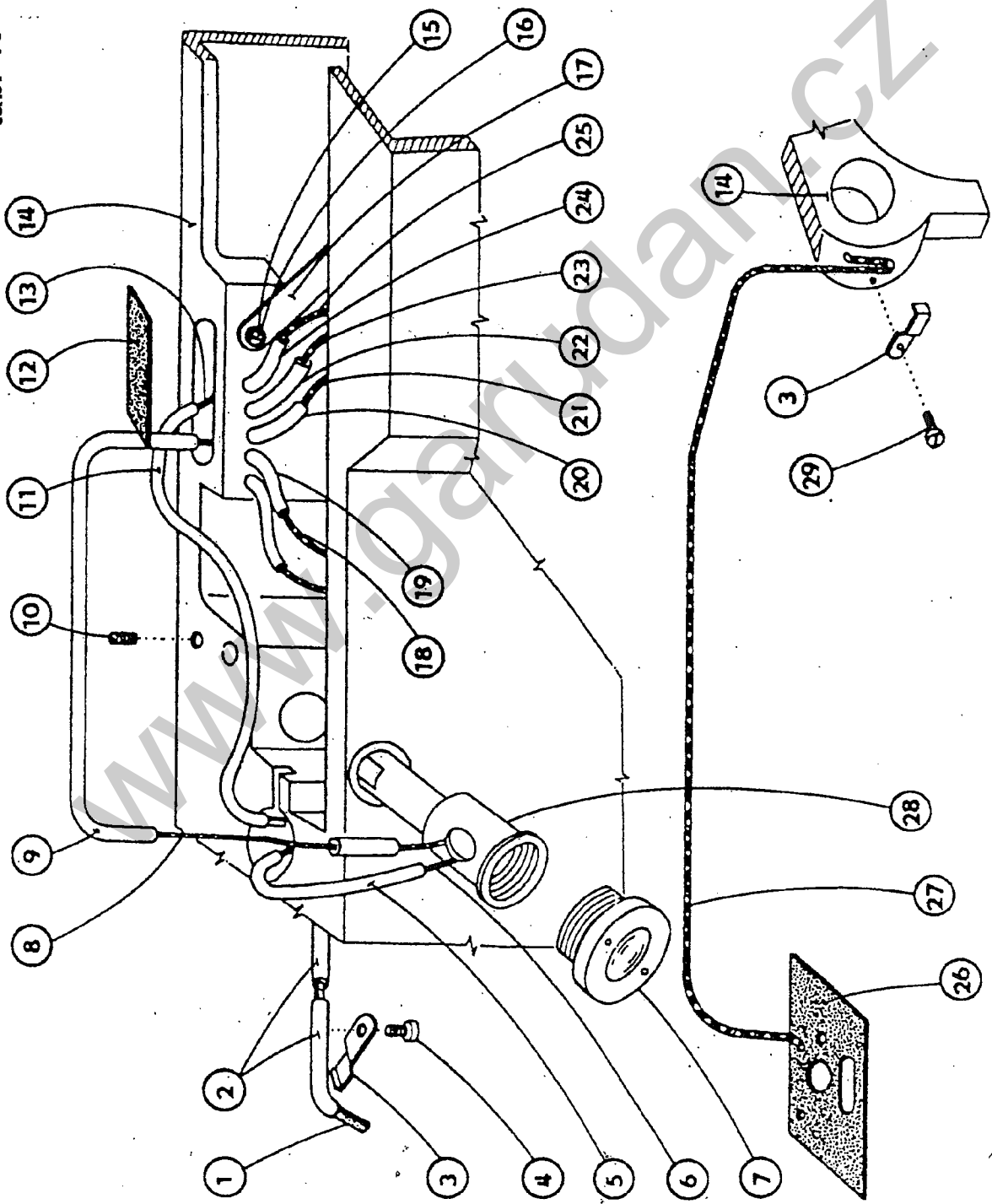
1	522 080	161 234
2	522 080	191 117
4	522 080	441 251
5	522 980	034 380
6	522 080	120 276
7	522 080	413 358
8	522 980	045 422
9	522 080	436 063
10	522 080	422 190

tab. 9



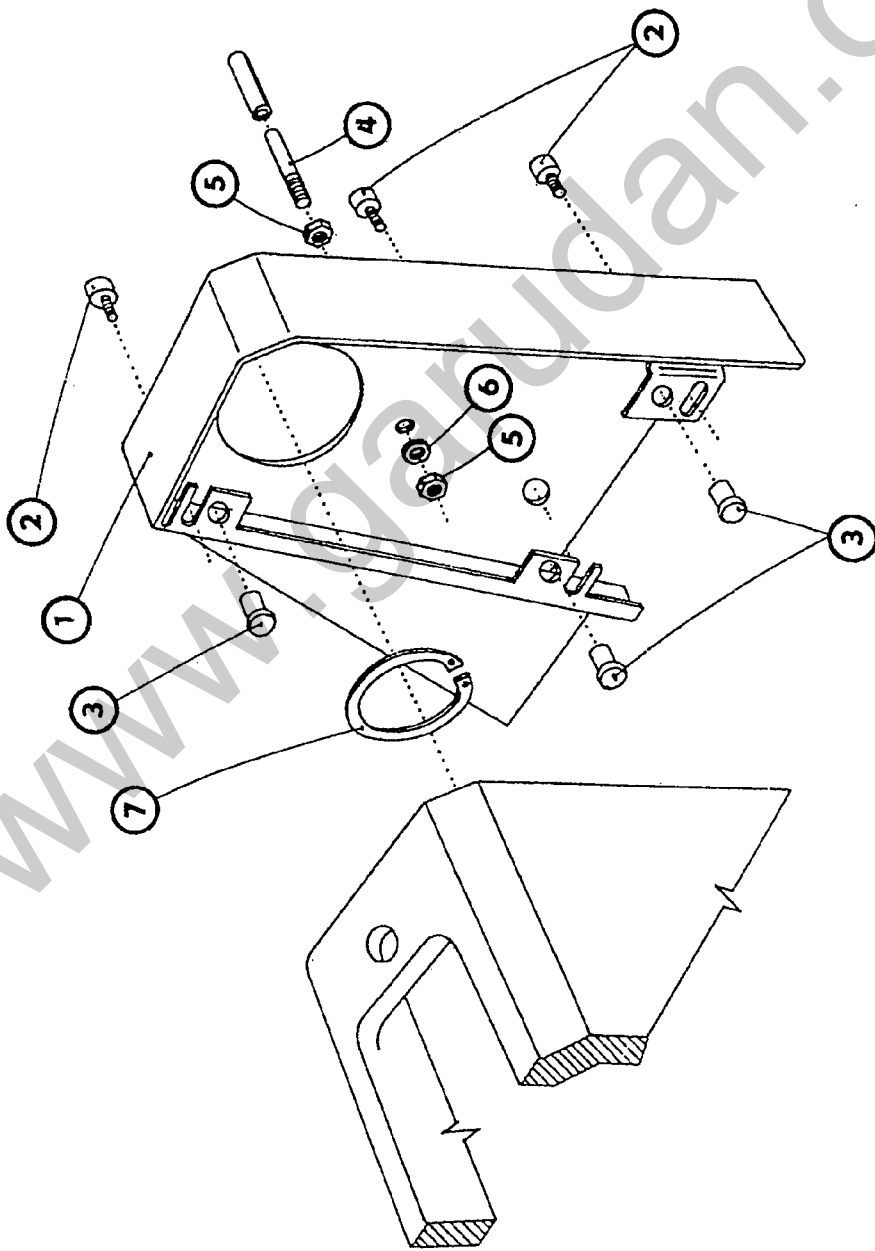
3	522 080	141 102
4	311 732	910 070
5	522 980	043 301
6	522 080	260 547
7	522 080	120 227
8	522 980	022 126
10	522 080	613 373
11	522 080	120 221
12	522 080	613 328
13	522 080	161 142
14	522 080	192 061
15	522 080	441 187
16	522 980	049 785
17	522 080	120 246
18	522 080	342 258
19	522 080	233 031
20	522 080	112 013
22	311 728	502 537
25	522 980	044 714

tab. 10



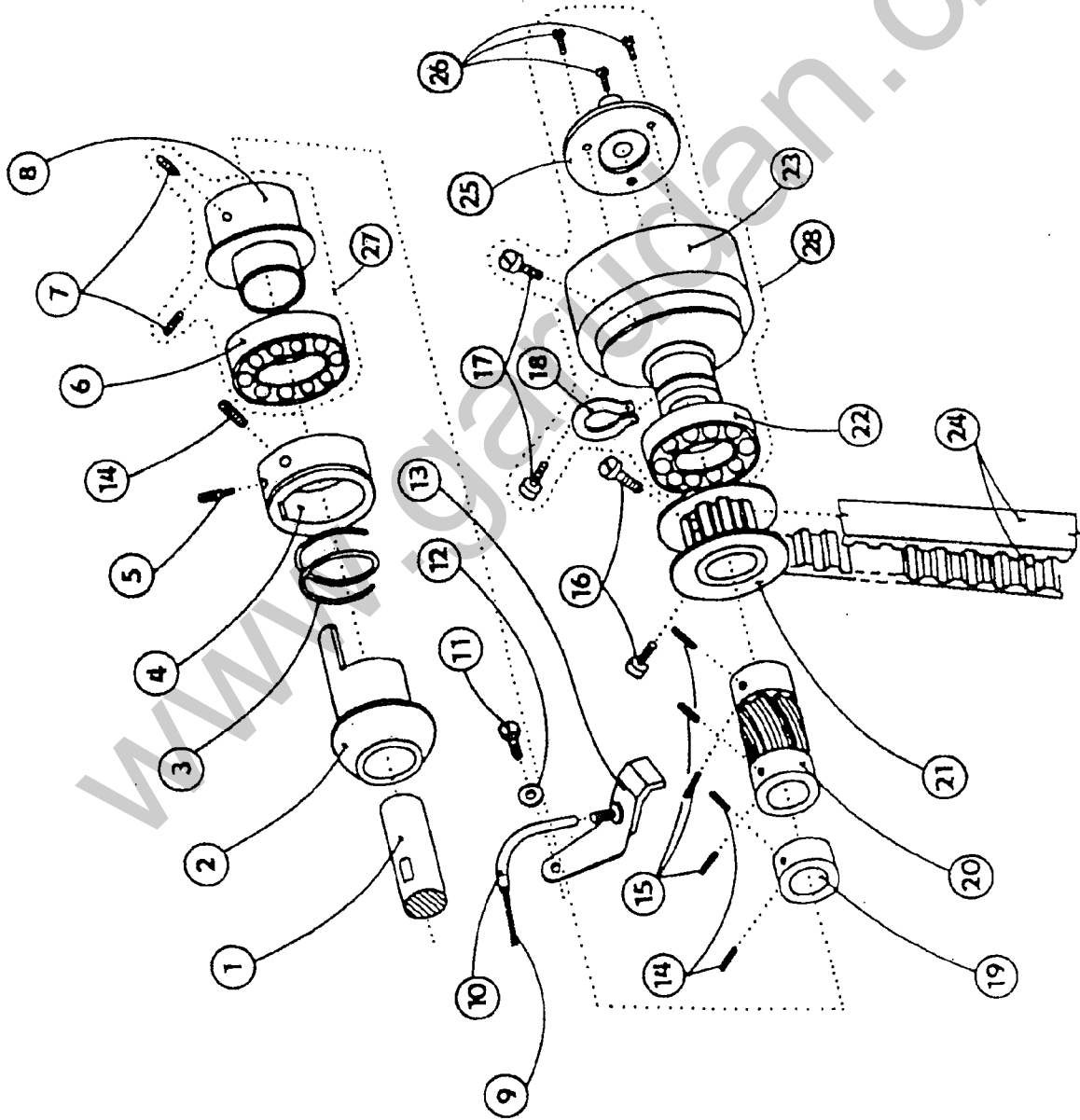
1	522 080	945 180
2	283 366	002 001
3	∅ 3,5/∅ 4,8 x 65 mm	
4	522 080	824 095
5	522 080	120 245
6	283 366	002 001
7	∅ 3,5/∅ 4,8 x 75 mm	
8	708 420	130 003
9	∅ 3 x 110 mm	
10	321 891	001 000
11	708 420	130 004
12	∅ 4 x 300 mm	
13	283 366	002 001
14	∅ 3,5/∅ 4,8 x 150 mm	
15	522 080	111 245
16	283 366	002 001
17	∅ 3,5/∅ 4,8 x 200 mm	
18	522 080	945 316
19	708 420	130 003
20	∅ 3 x 250 mm	
21	522 080	120 259
22	522 080	190 359
23	522 980	041 209
24	708 420	130 002
25	∅ 2 x 320 mm	
26	283 366	002 001
27	∅ 3,5/∅ 4,8 x 250 mm	
28	∅ 3,5/∅ 4,8 x 210 mm	
29	708 420	130 002
30	∅ 2 x 270 mm	
31	283 366	002 001
32	∅ 3,5/∅ 4,8 x 90 mm	
33	708 420	130 002
34	∅ 2 x 130 mm	
35	283 366	002 001
36	∅ 3,5/∅ 4,8 x 100 mm	
37	708 420	130 002
38	∅ 2 x 140 mm	
39	522 080	945 286
40	708 420	130 004
41	∅ 4 x 640 mm	
42	522 080	441 313
43	522 080	120 216

tab. 11



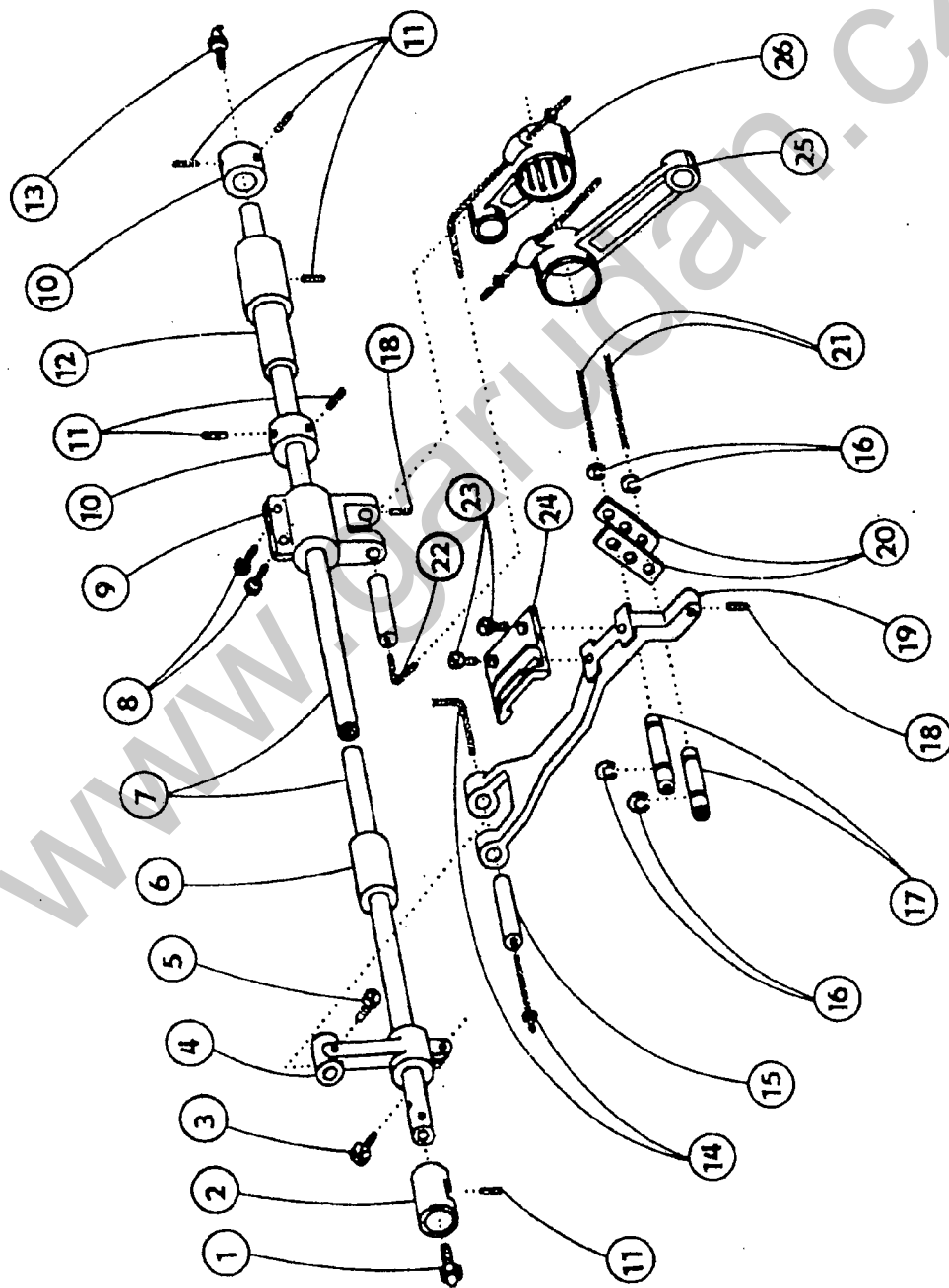
1	522 980	041 162
2	522 080	120 346
3	273 199	005 000
4	522 080	316 096
5	522 080	161 151
6	522 080	191 112
7	311 733	100 620

tab. 12



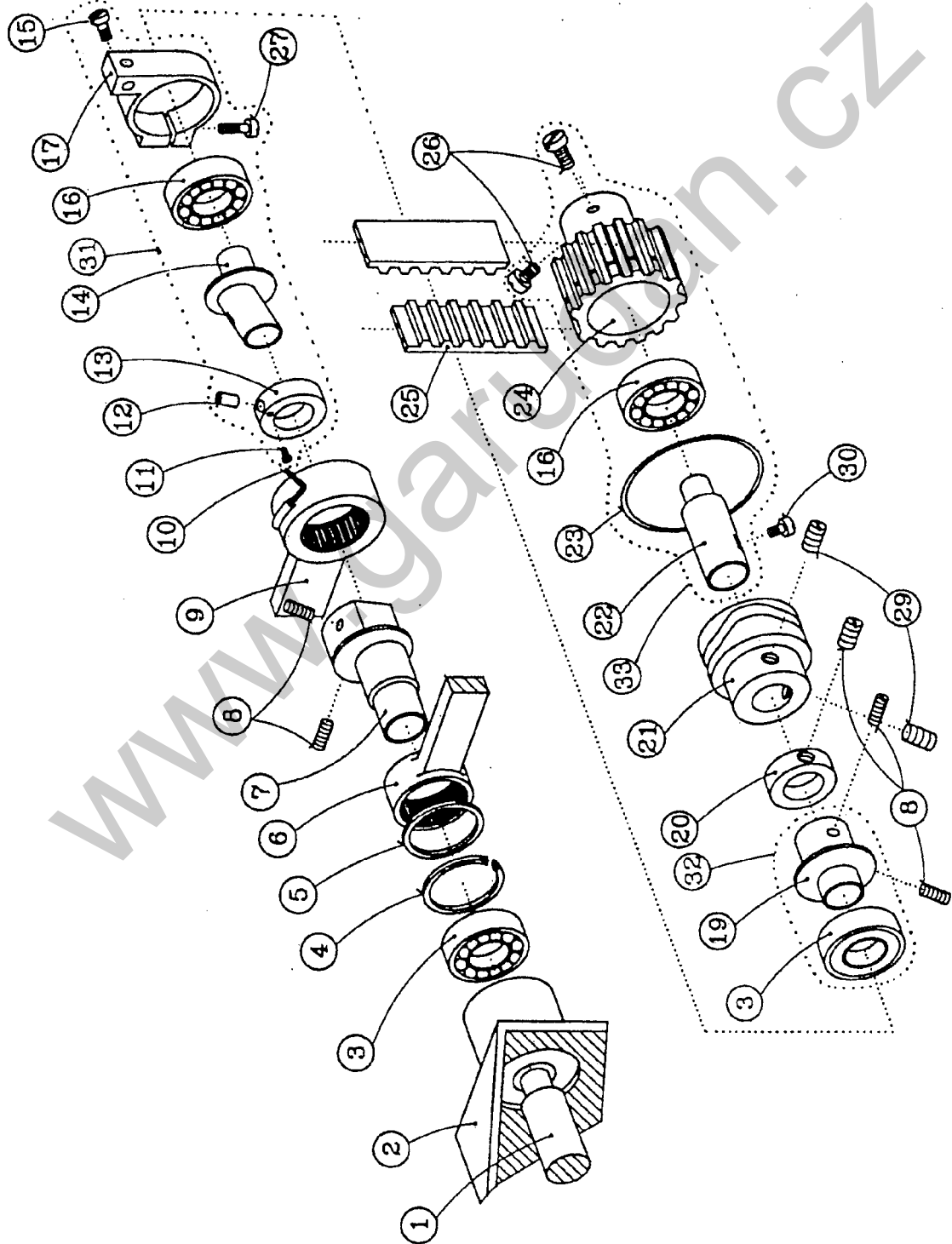
2	522 080	441 541
3	522 080	260 467
4	522 080	436 338
5	522 080	113 115
7	522 080	111 225
9	708 420	130 002
10	ø 2 x 130 mm	283 366 002 001
11	ø 3,5/ø 4,8 x 90 mm	522 080 120 259
12	522 080	190 359
13	522 980	041 209
14	522 080	112 013
15	522 080	111 102
16	522 080	122 029
17	522 080	120 006
18	311 733	000 300
19	522 080	436 388
20	522 080	570 051
21	522 980	045 315
24	272 213	011 015
25	522 080	442 548
26	522 080	120 252
27	522 980	035 849
28	522 980	045 301

tab. 13



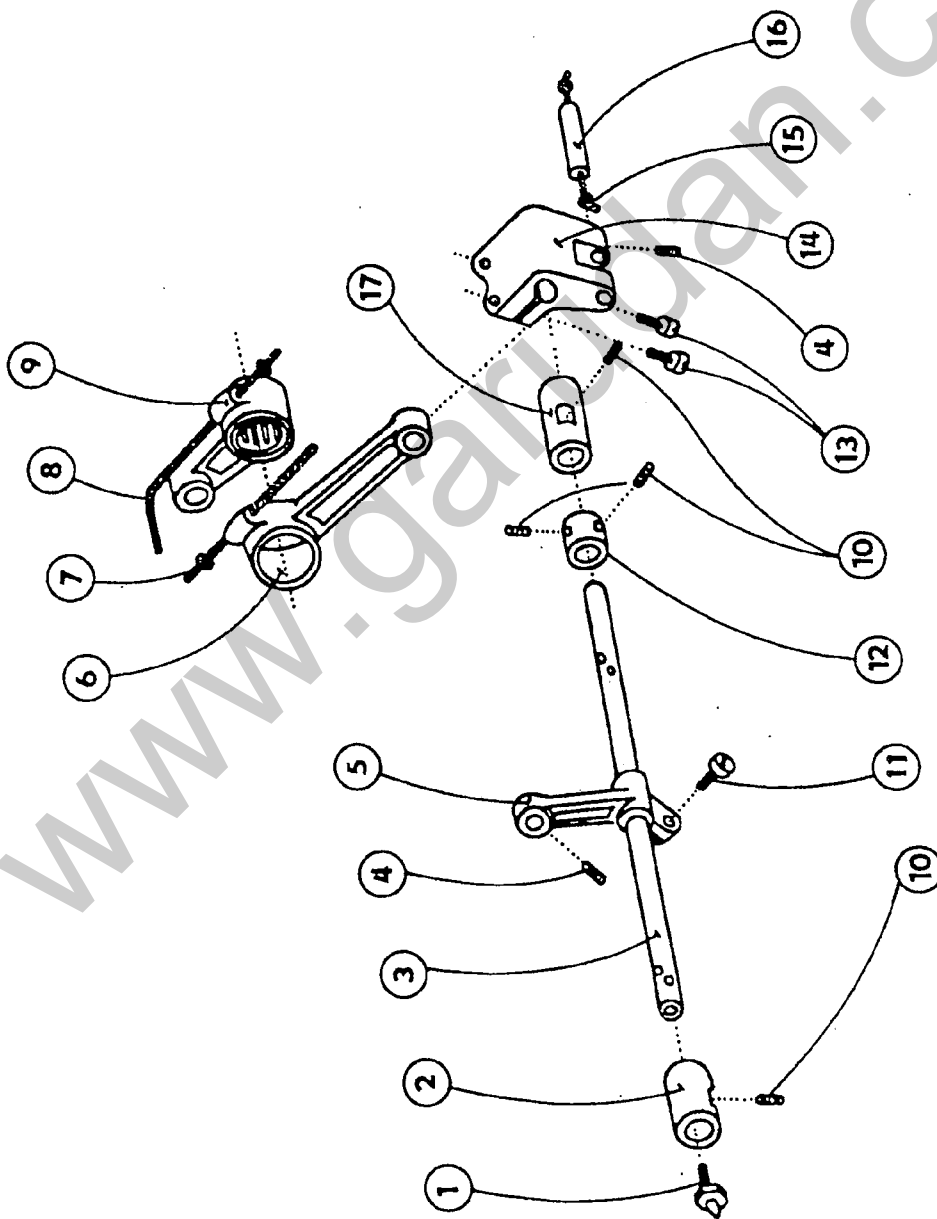
1	425 111	041 000
2	522 080	413 252
3	522 080	141 133
4	522 080	613 495
5	522 080	124 050
6	522 080	410 532
7	522 080	345 067
8	522 080	120 229
9	522 080	613 216
10	522 080	436 000
11	522 080	112 013
12	522 080	412 193
13	425 111	061 000
14	708 420	130 002
	ø 2 x 160 mm	
15	522 080	338 069
16	311 732	910 050
17	522 080	318 144
18	522 080	111 227
19	522 080	622 092
20	522 080	612 109
21	708 420	130 002
	ø 2 x 60 mm	
22	708 420	130 002
	ø 2 x 350 mm	
23	522 080	121 157
25	522 080	630 248
26	522 980	044 045

tab. 14



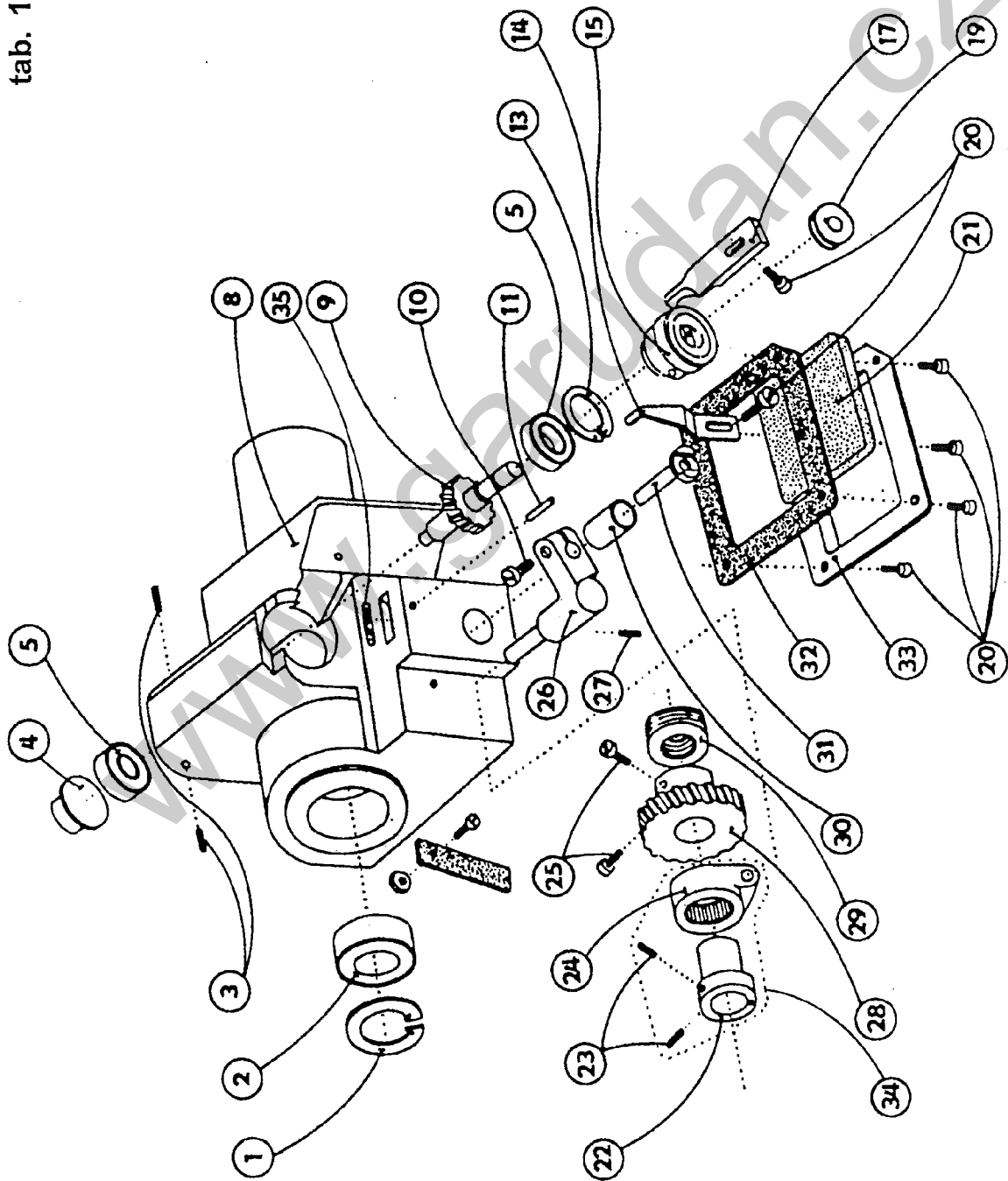
1	522 080	342 243
2	522 080	724 134
3	324 165	028 396
4	311 733	000 180
5	522 080	814 338
6	522 080	630 248
7	522 080	671 152
8	522 080	112 013
9	522 980	044 045
10	708 420	002 105
11	∅ 1,5 x 350 mm	
12	522 080	141 088
15	522 080	318 103
19	522 080	141 102
20	522 080	424 055
21	522 080	436 346
23	522 080	672 166
26	522 080	272 062
27	522 080	122 029
29	522 080	120 222
29	522 080	120 468
30	522 080	122 031
31	522 980	035 422
32	522 980	035 420
33	522 980	045 231

tab. 15



1	425 111	041 000
2	522 080	413 251
3	522 080	345 065
4	522 080	111 227
5	522 080	613 195
6	522 080	630 248
7	708 420	130 002
	ø 2 x 220 mm	
8	708 420	130 002
	ø 2 x 350 mm	
9	522 980	044 045
10	522 080	112 013
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
	ø 3 x 60 mm	
16	522 080	344 035
17	522 080	410 538

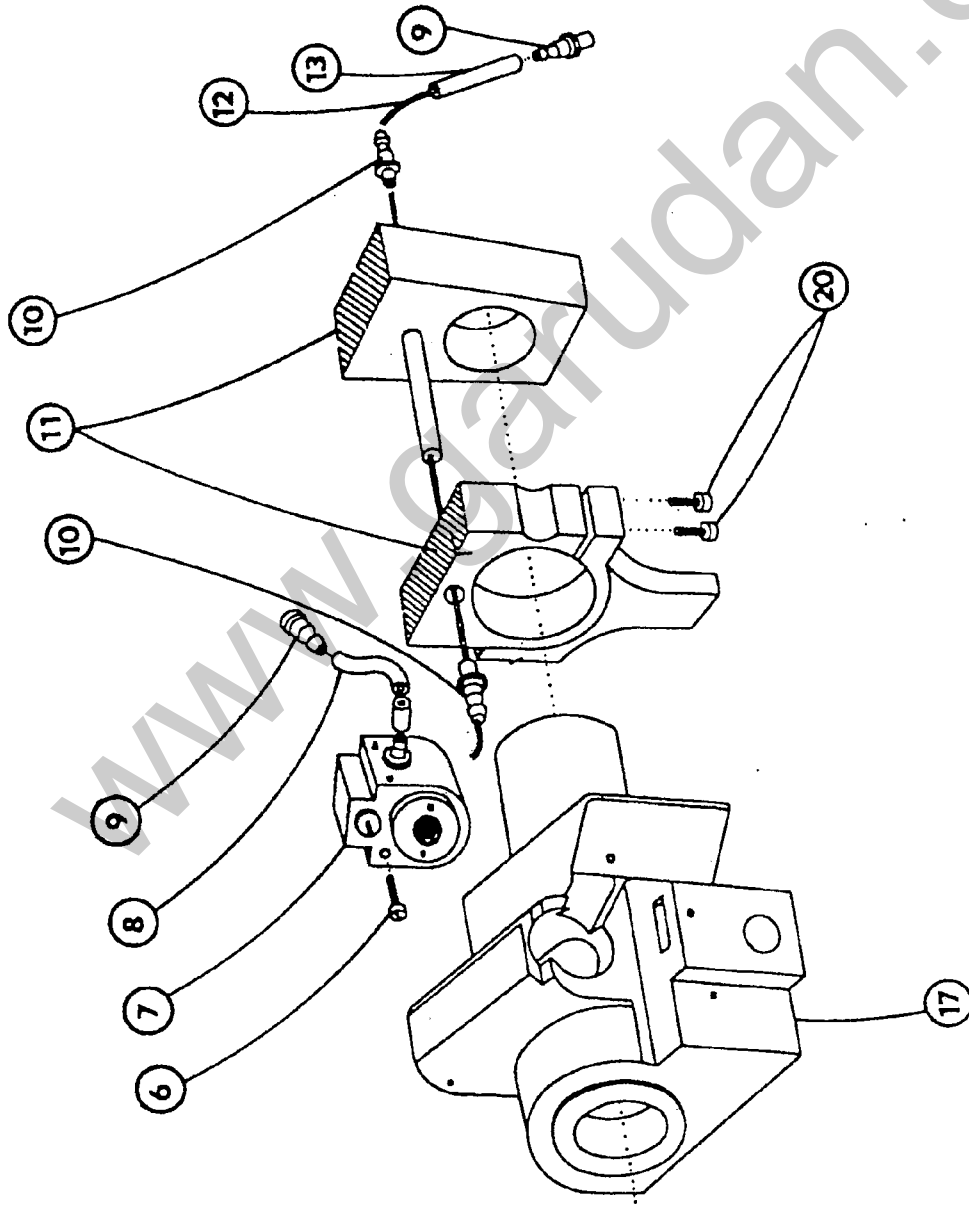
tab. 16



1	311 733	100 260
2	324 152	920 796
3	522 080	111 219
4	522 080	441 287
5	324 155	910 093
8	522 080	724 134
9	522 080	552 168
10	522 080	120 226
13	311 733	100 220
14	522 080	825 740
15	522 980	008 250
17	522 080	825 744
19	522 080	685 051
20	522 080	120 246
21	522 080	945 285
23	522 080	112 013
25	522 080	122 007
26	522 080	613 466
27	522 080	111 094
28	522 080	552 167
29	324 311	010 000
30	522 080	410 530
31	522 080	323 155
32	522 080	990 134
33	522 080	827 179
34	522 980	035 406
35	708 420	130 003

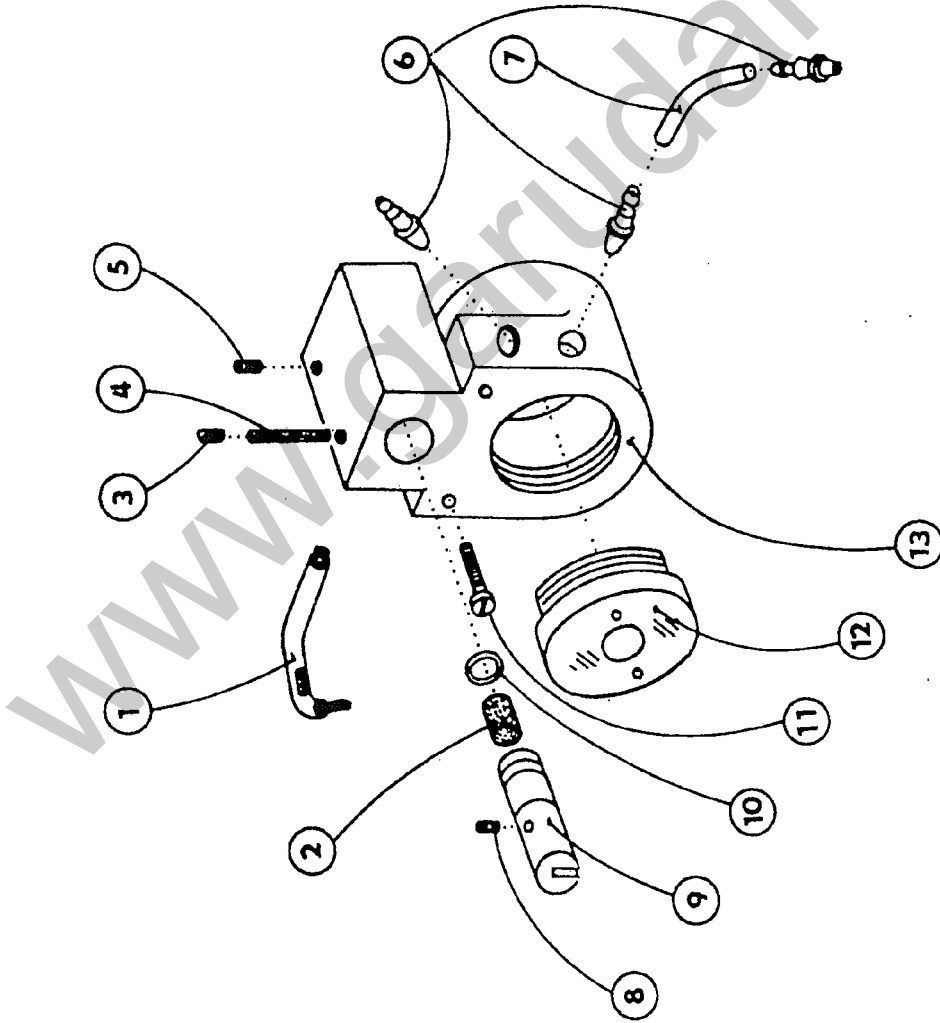
ø 3 x 40 mm

tab. 17



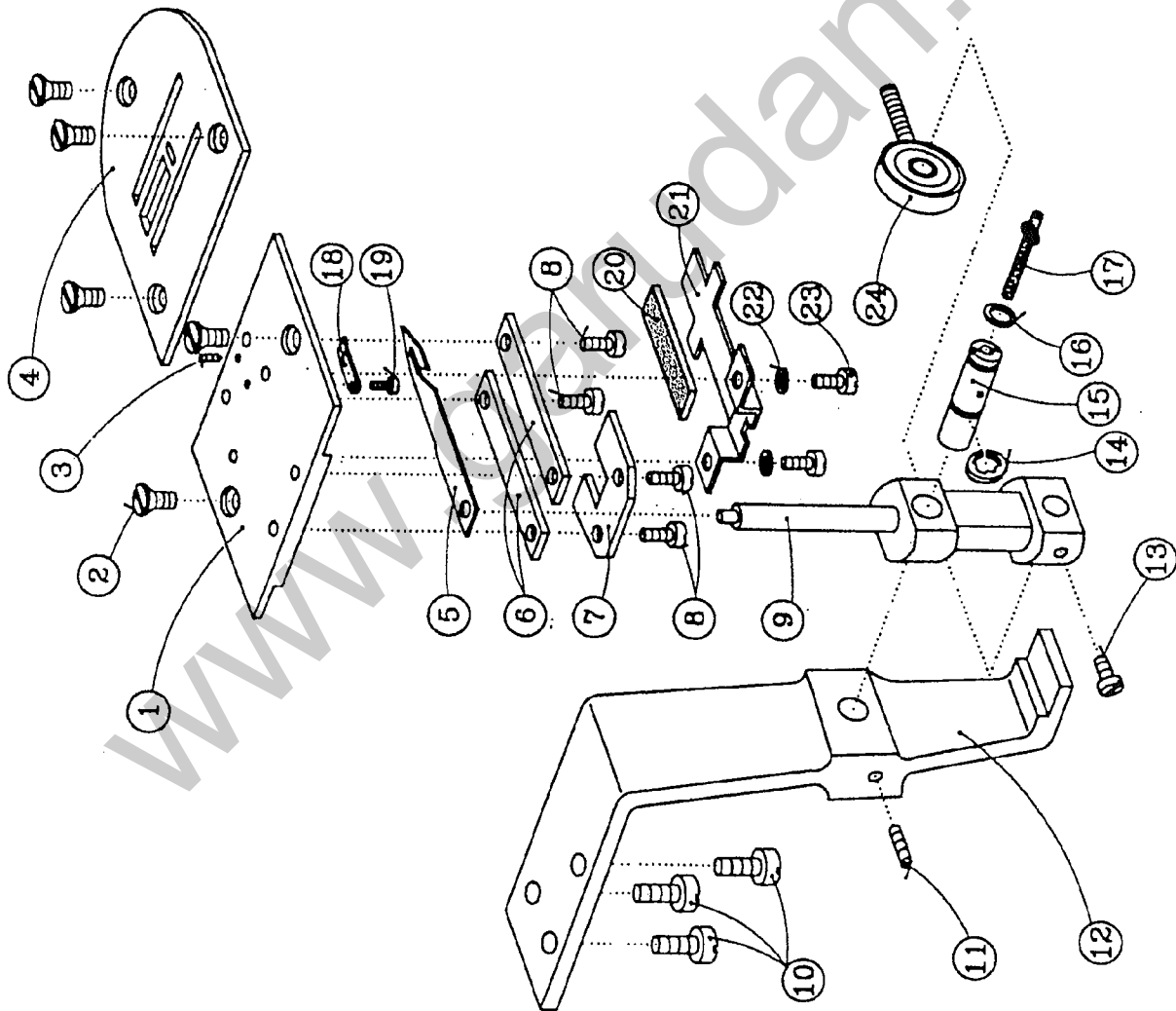
6	522 080	120 269
7	522 980	035 528
8	283 366	002 001
9	Ø 3,5/Ø 4,8 x 100 mm	
10	522 080	424 051
	522 080	424 060
12	708 420	130 005
	Ø 5 x 300 mm	
13	283 366	002 001
	Ø 3,5/Ø 4,8 x 170 mm	
17	522 080	724 134
20	522 080	120 430

tab. 18



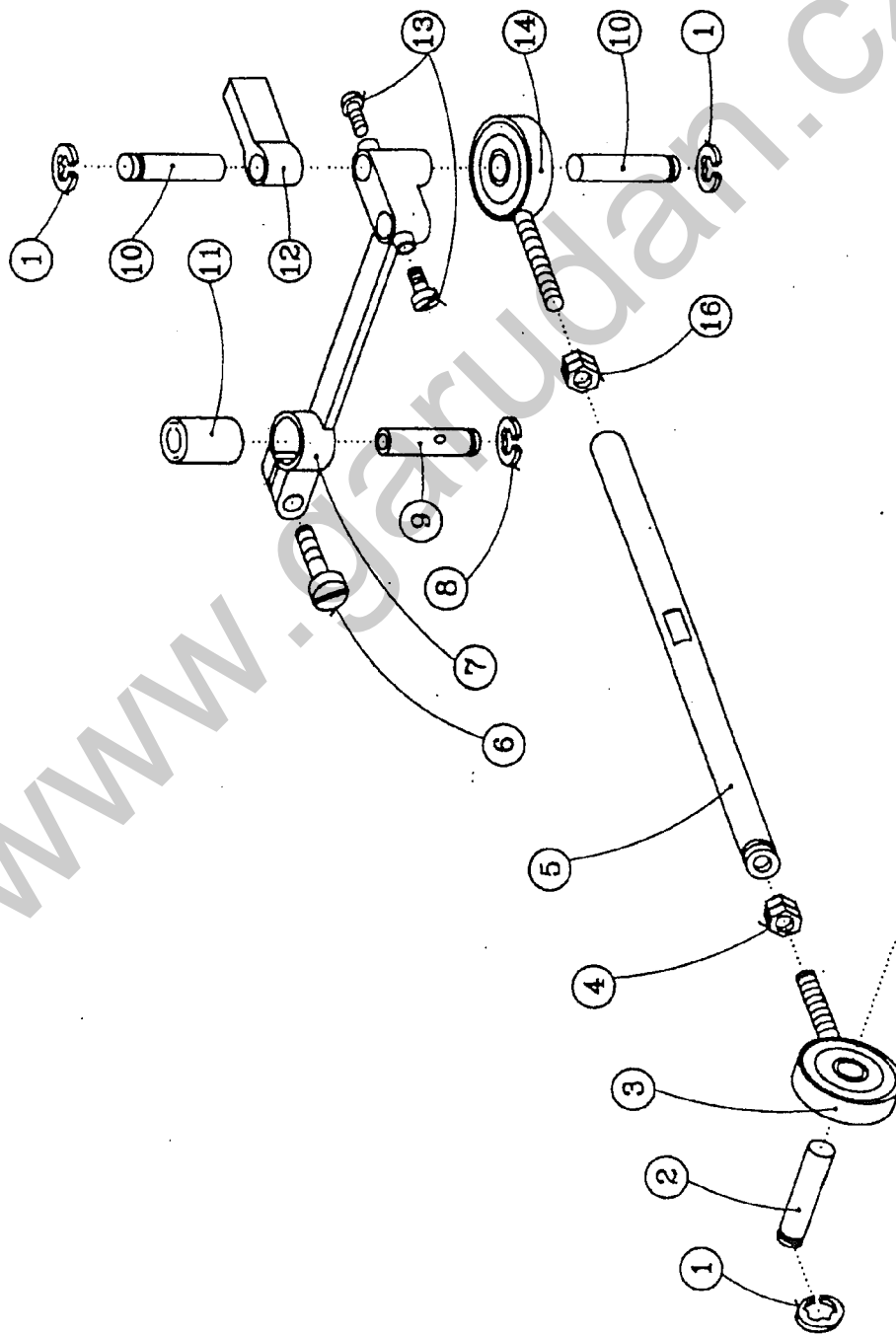
1	522 980	035 525
2	522 080	945 077
3	522 080	111 252
4	522 080	945 185
5	522 080	111 233
6	522 080	424 051
7	283 366	002 001
8	ø 3,5/ø 4,8 x 100 mm	
9	522 080	945 170
10	522 080	346 053
11	273 111	001 000
12	522 080	120 269
13	321 891	001 000
	522 080	725 023

tab. 19



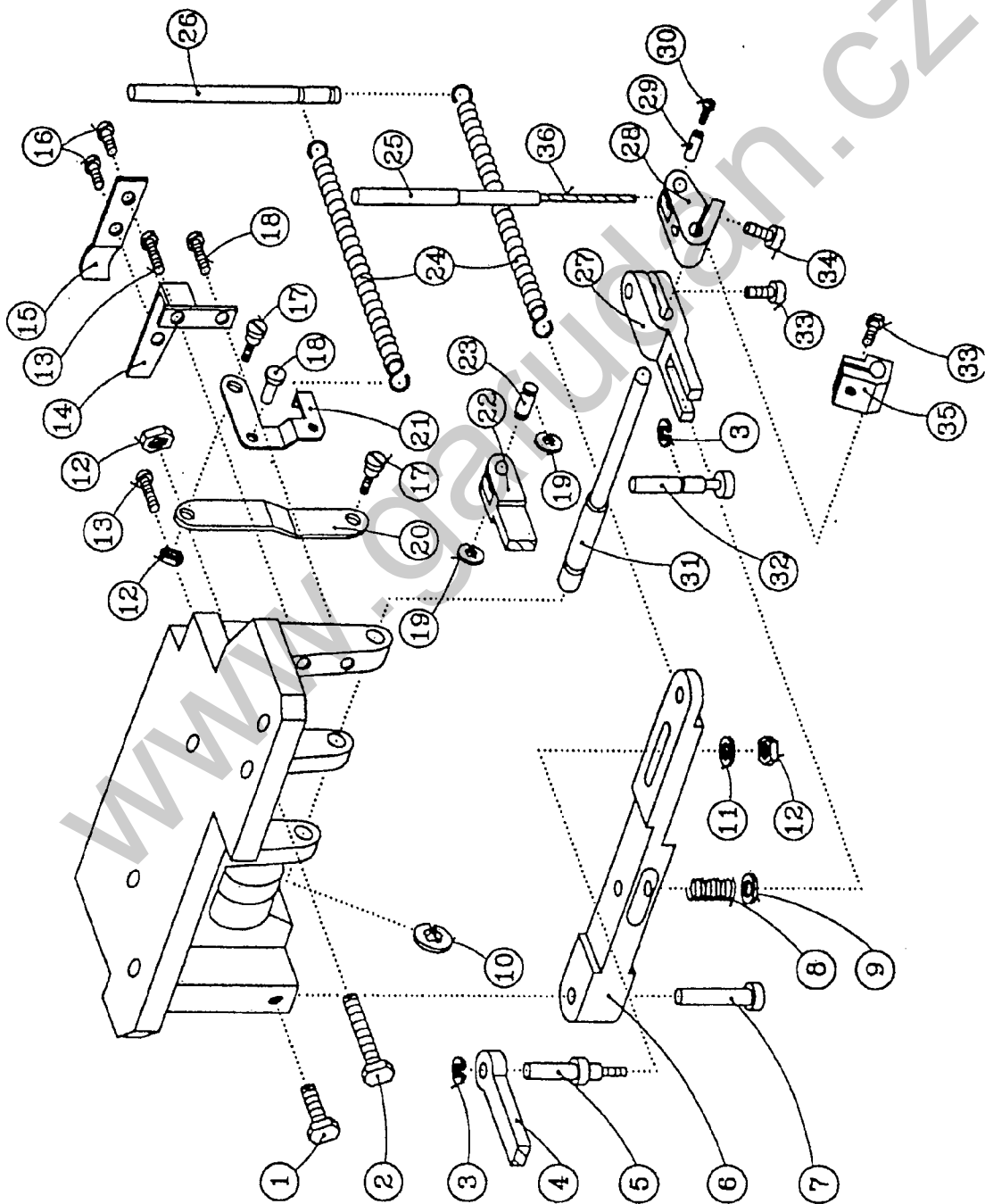
1	522 080	647 222
2	522 080	123 117
3	522 080	111 328
5	522 080	870 167
6	522 080	825 868
7	522 080	826 039
8	522 080	132 153
9	522 080	635 171
10	522 080	120 293
11	522 080	111 244
12	522 080	765 090
13	522 080	120 293
14	522 080	274 093
15	522 080	338 190
16	522 080	190 483
17	708 420	130 003
	ø 3 x 80mm	
18	522 080	870 140
19	522 080	132 216
20	522 080	945 315
21	522 080	839 058
22	522 080	191 118
23	522 080	120 215

tab. 20



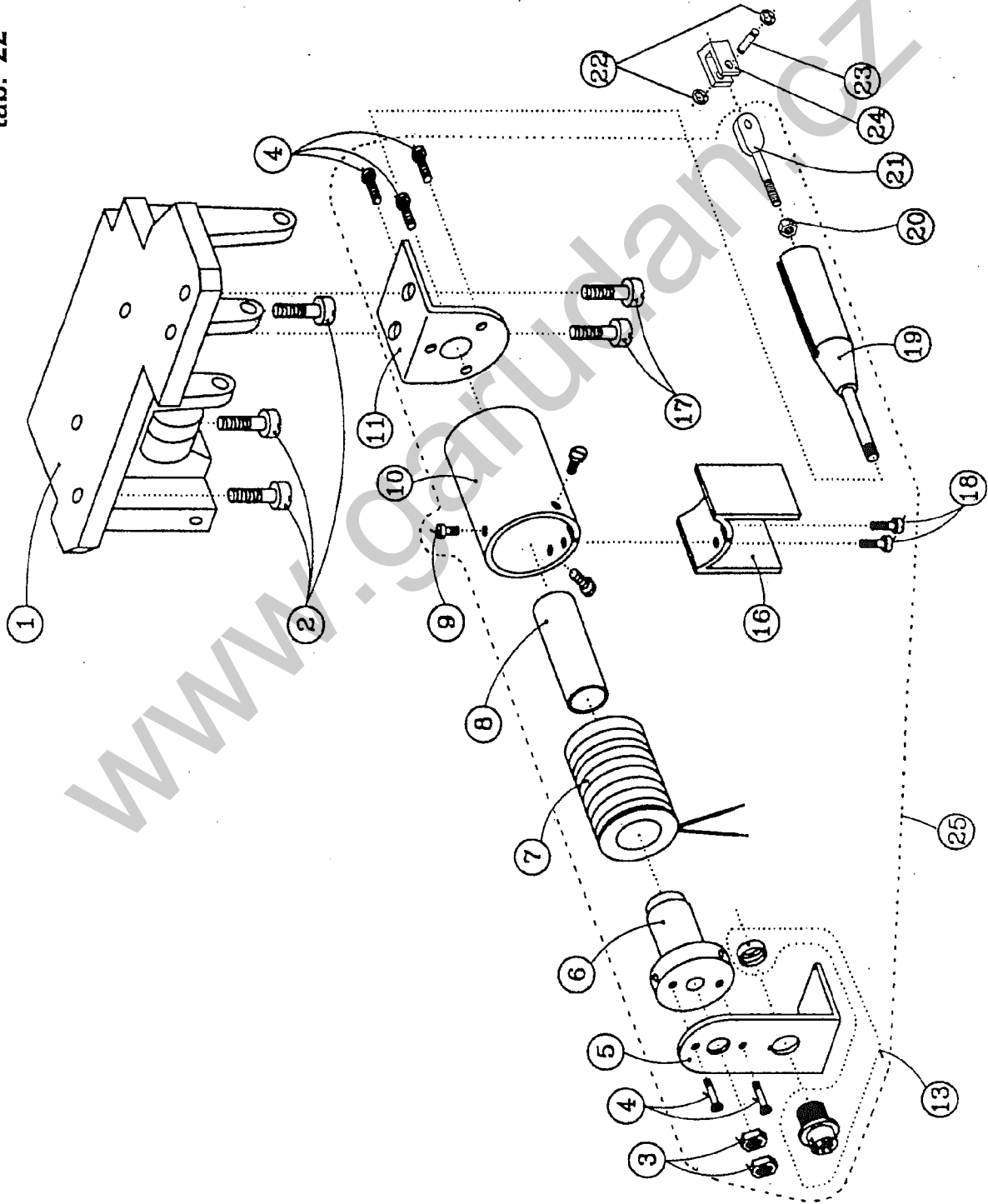
1	522 080	274 090
2	522 080	314 065
3	522 980	049 811
4	522 080	161 227
5	522 080	334 093
6	522 080	120 229
7	522 080	636 243
8	311 732	910 040
9	522 080	318 171
10	522 080	314 166
11	522 080	410 481
12	522 080	632 147
13	522 080	120 217
14	522 980	049 810
16	522 080	161 144

tab. 21



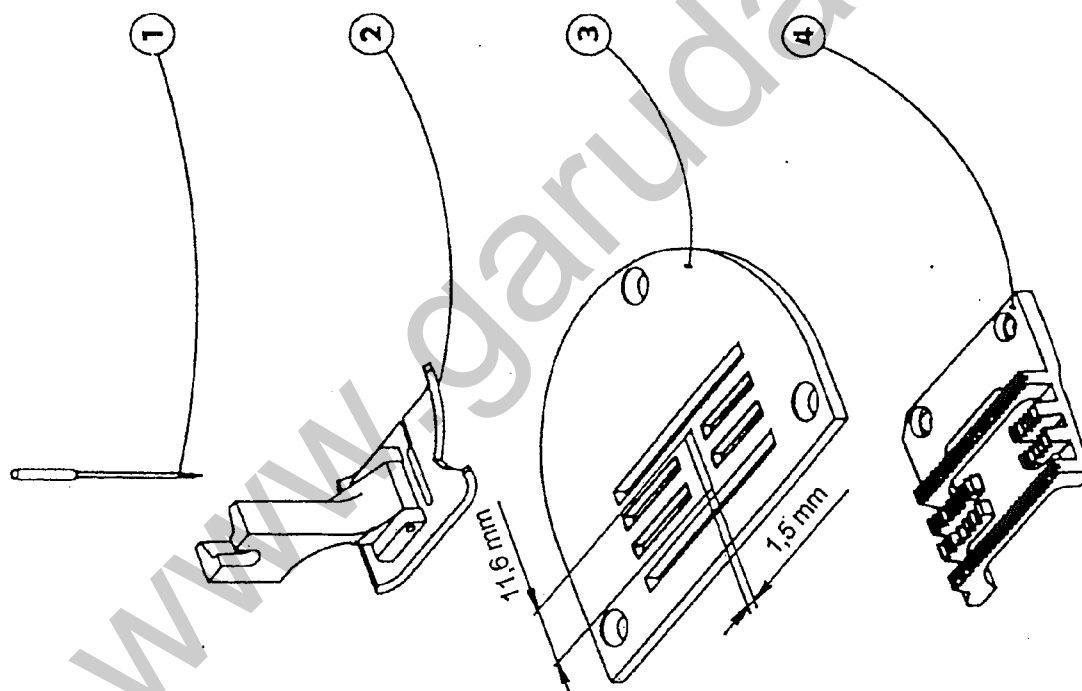
1	522 080	141 142
2	522 080	141 204
3	522 080	274 090
4	522 080	632 147
5	522 080	333 121
6	522 080	646 145
7	522 080	320 257
8	522 080	260 434
9	522 080	190 359
10	522 080	274 083
11	522 080	190 353
12	522 080	161 144
13	522 080	120 218
14	522 080	825 587
15	522 080	825 586
16	522 080	120 319
17	522 080	131 378
18	522 080	320 258
19	522 080	274 104
20	522 080	822 446
21	522 080	822 409
22	522 080	630 272
23	522 080	314 167
24	522 080	263 103
25	522 080	278 009
26	522 080	310 364
27	522 080	625 132
28	522 080	613 420
29	522 080	334 090
30	522 080	120 246
31	522 080	341 202
32	522 080	322 231
33	522 080	120 220
34	522 080	120 221
35	522 080	627 142
36	522 980	049 786

tab. 22



1	522 080	744 380
2	522 080	120 322
3	522 080	161 165
4	522 080	126 078
5	522 080	825 591
6	522 080	422 155
7	522 980	091 220
8	323 251	914 064
9	522 080	120 252
10	522 080	422 154
11	522 080	825 590
13	374 523	059 099
16	522 080	952 235
17	522 080	120 220
18	522 080	120 245
19	522 980	091 219
20	522 080	161 143
21	522 080	154 033
22	522 080	274 104
23	522 080	314 167
24	522 080	630 272
25	522 980	091 446

tab. 23



STANDARD

522 791 124 032 35

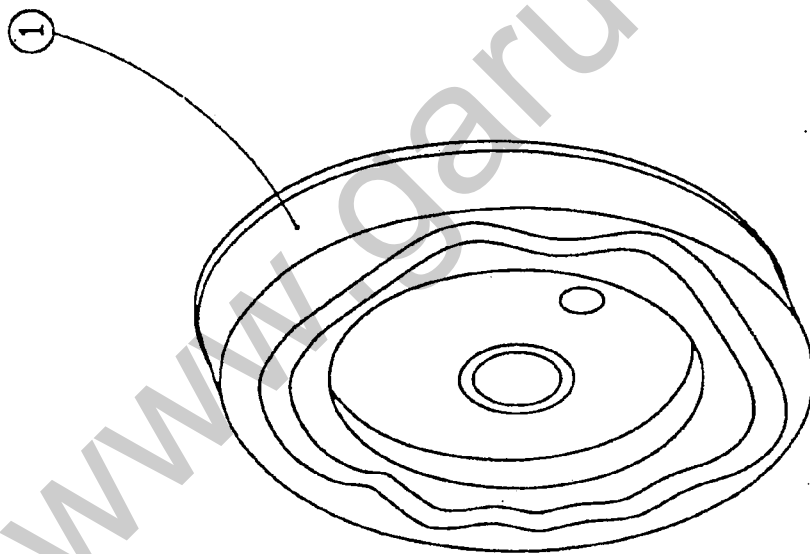
- 1 134 No. 110 - 11 x
- 2 522 980 031 603
- 3 522 080 811 641
- 4 522 080 651 504

STANDARD

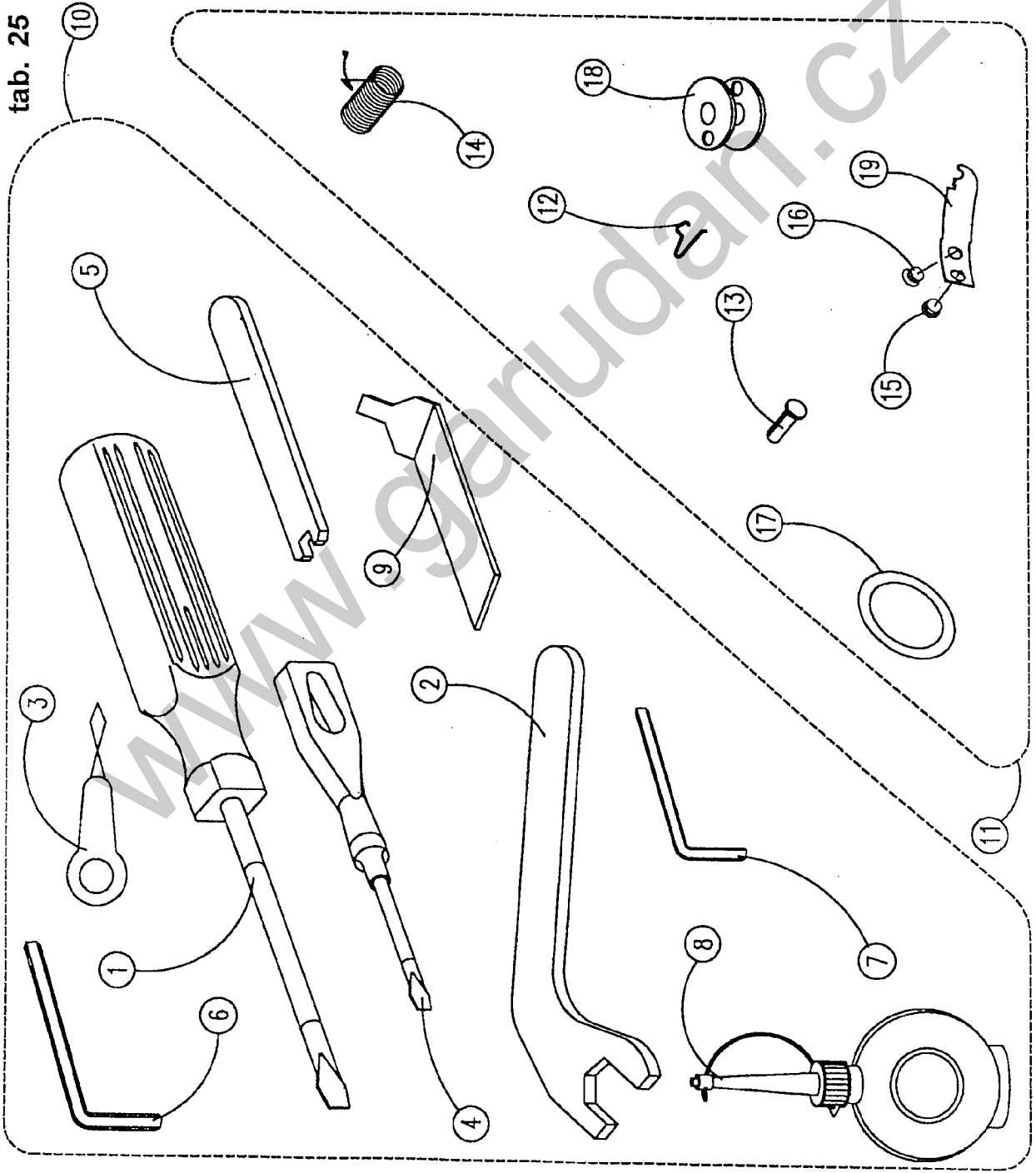
522 791 642 049 00

1 522 080 674 124

tab. 24



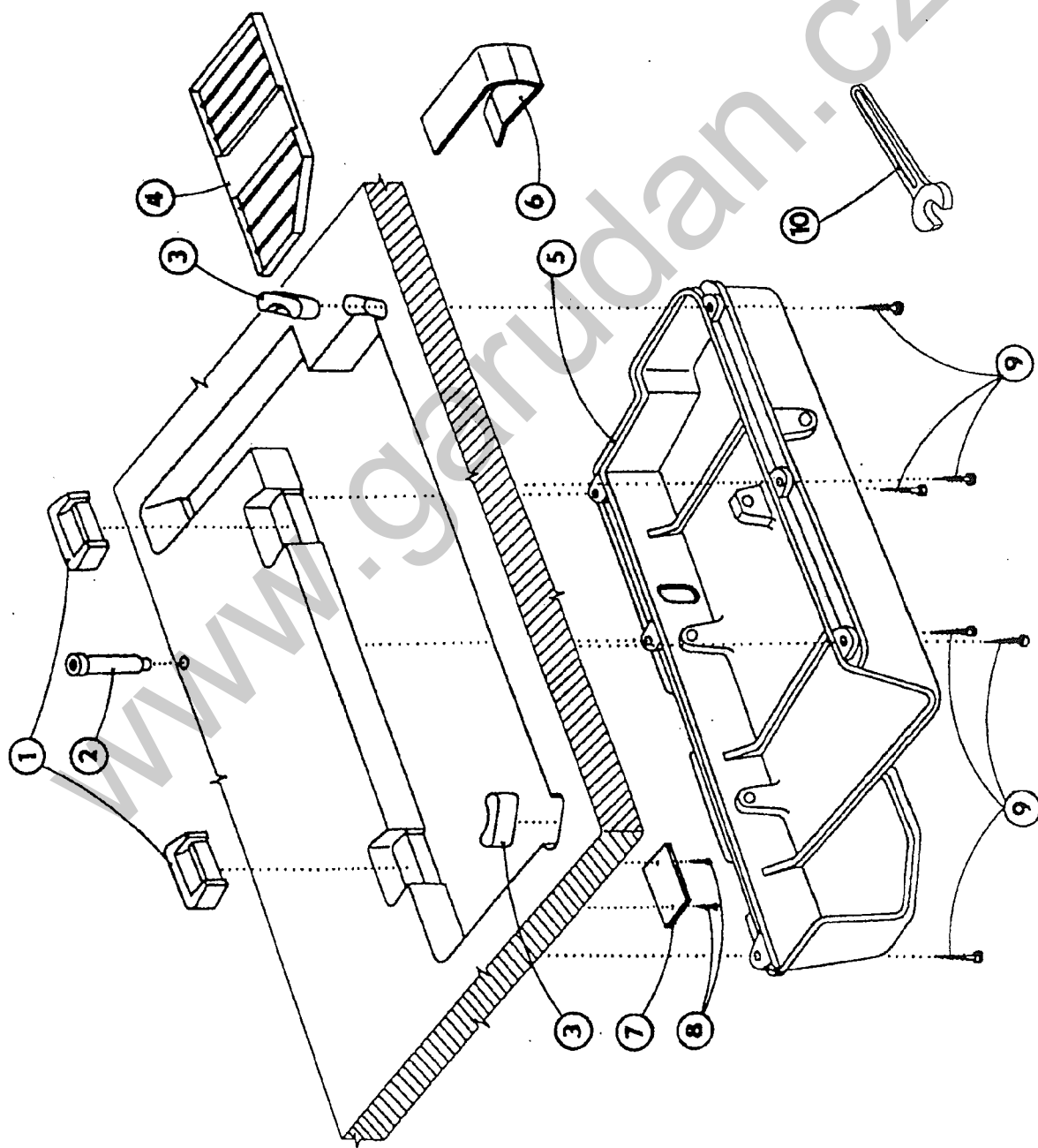
tab. 25



STANDARD

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
10	522 980	092 220 35
11	522 980	092 229 35
12	522 080	265 037 4 X
13	321 861	953 200 2 X
14	315 231	264 294 4 X
15	522 080	683 063 4 X
16	522 080	683 053 4 X
17	273 111	025 410 4 X
18	522 080	685 051 10 X
19	522 080	690 029 4 X

tab. 26

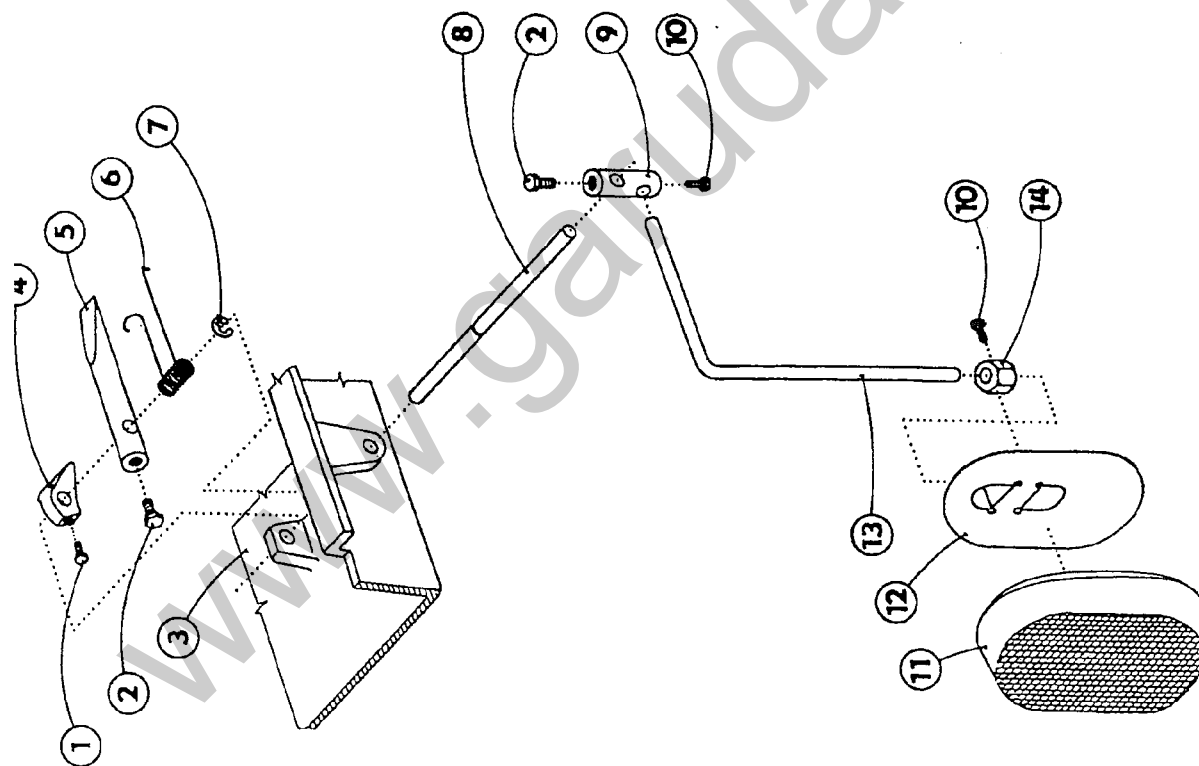


STANDARD

522 980 099 038 35 /1

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

tab. 27

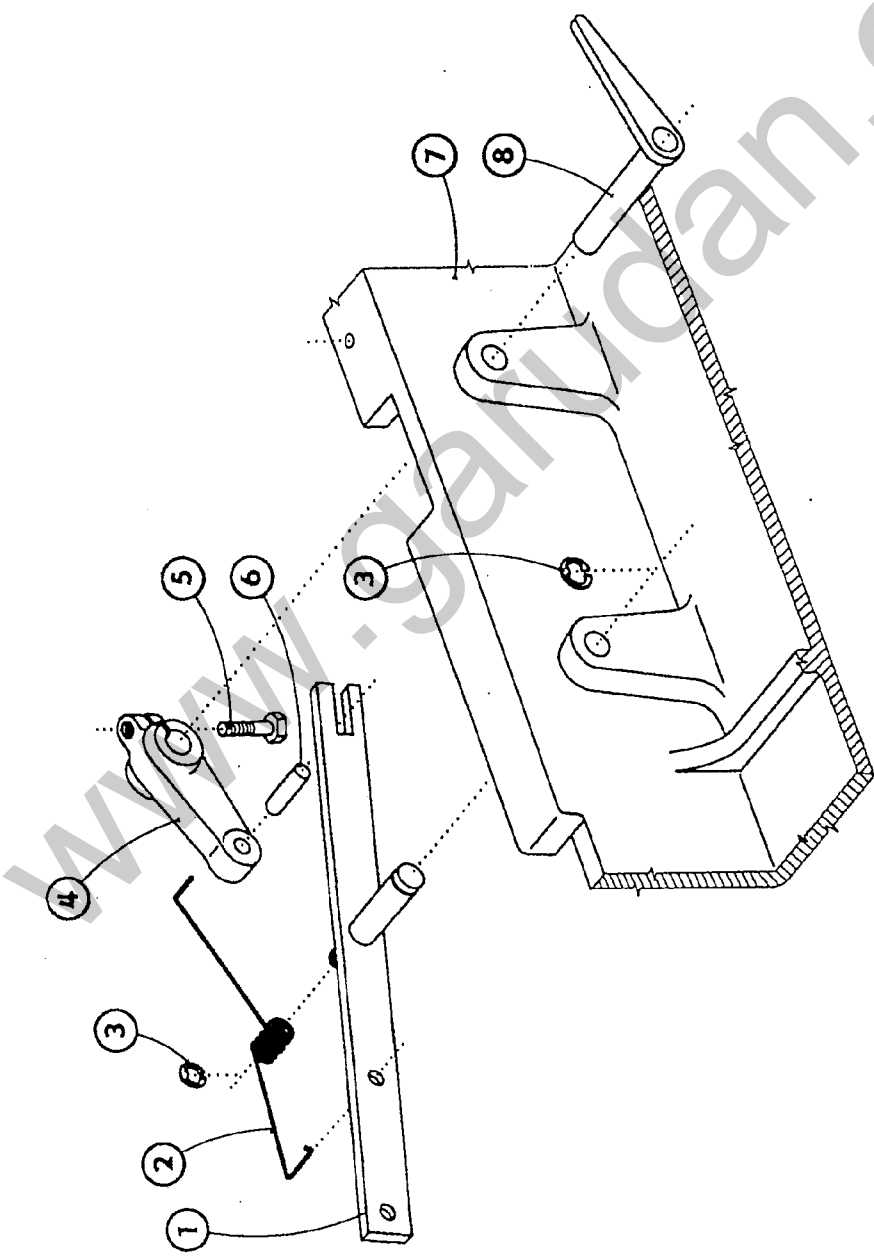


STANDARD

522 980 099 038 35 /2

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. 28



STANDARD

522 980 099 038 35 /3

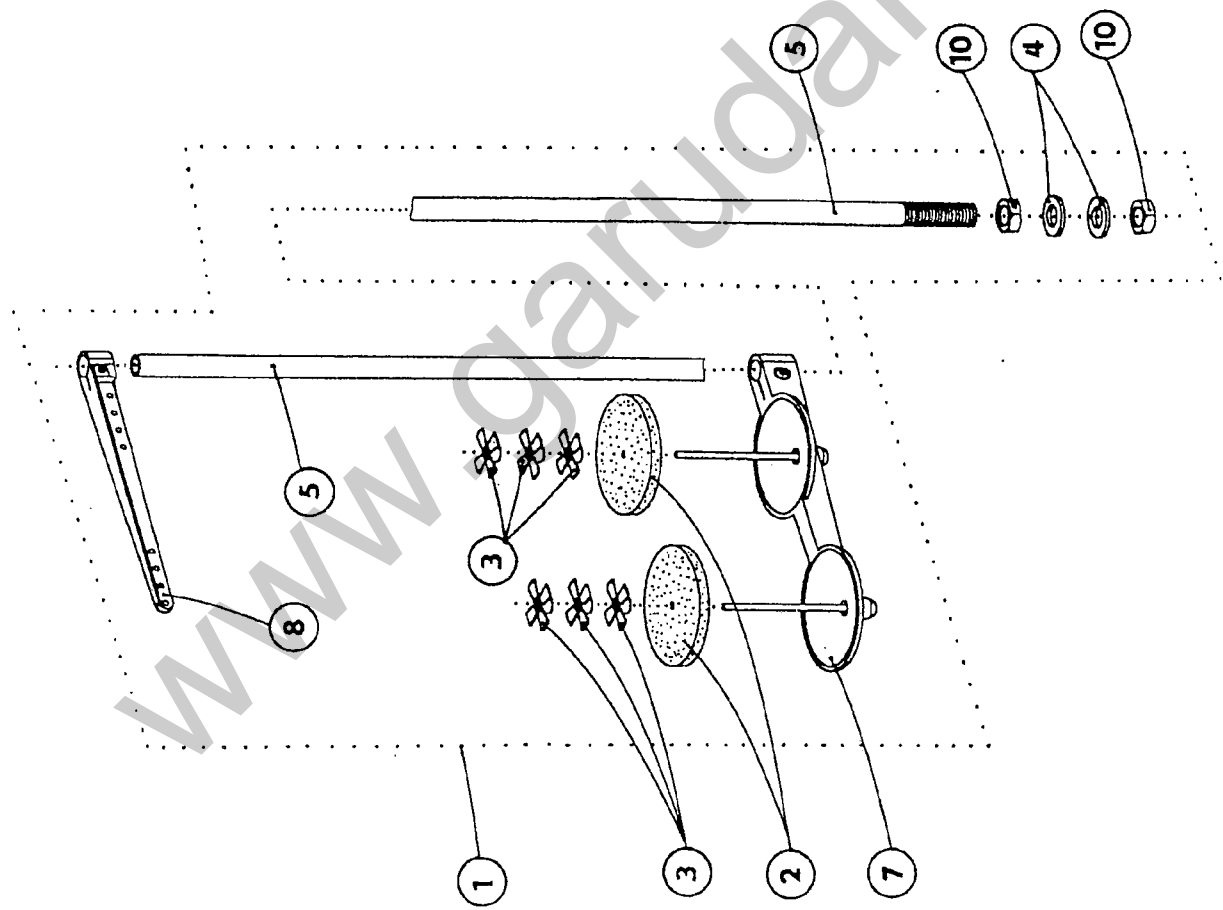
- | | | |
|---|---------|---------|
| 1 | 522 980 | 049 109 |
| 2 | 522 080 | 264 290 |
| 3 | 311 732 | 910 070 |
| 4 | 522 080 | 613 480 |
| 5 | 522 080 | 141 109 |
| 6 | 311 515 | 006 016 |
| 7 | 522 080 | 725 050 |
| 8 | 522 980 | 044 142 |

tab. 29

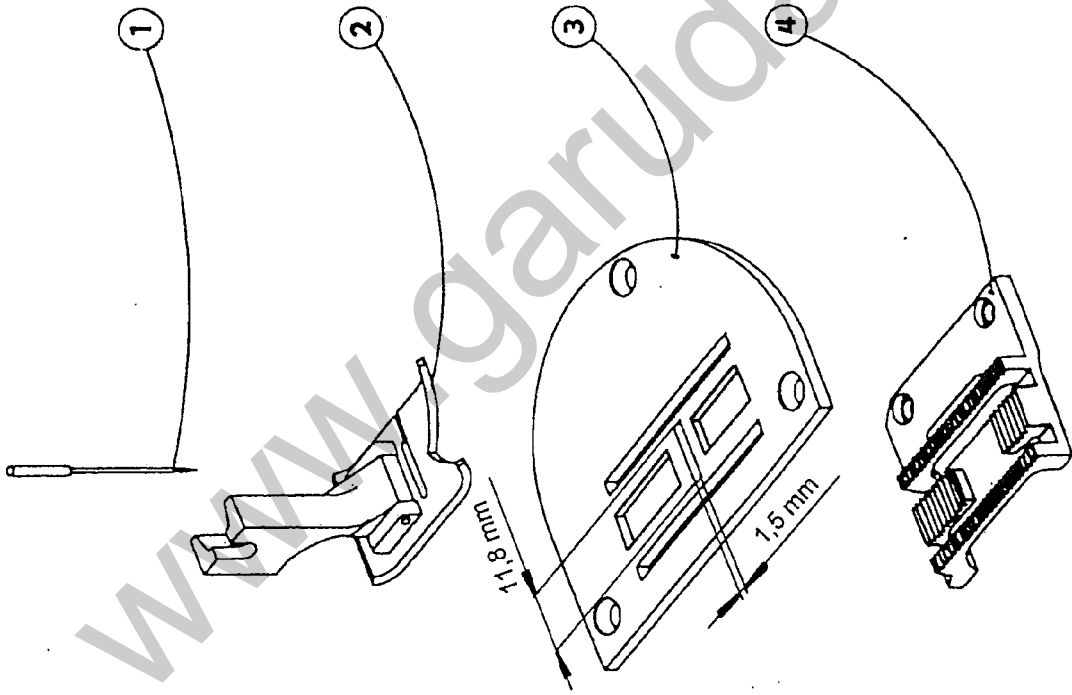
STANDARD

522 980 099 038 35 /4

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	522 791 001 081 80	
7	522 791 001 091 80	2 x
8	522 791 001 096 80	2 x
10	522 995 340 617 80	



tab. 30

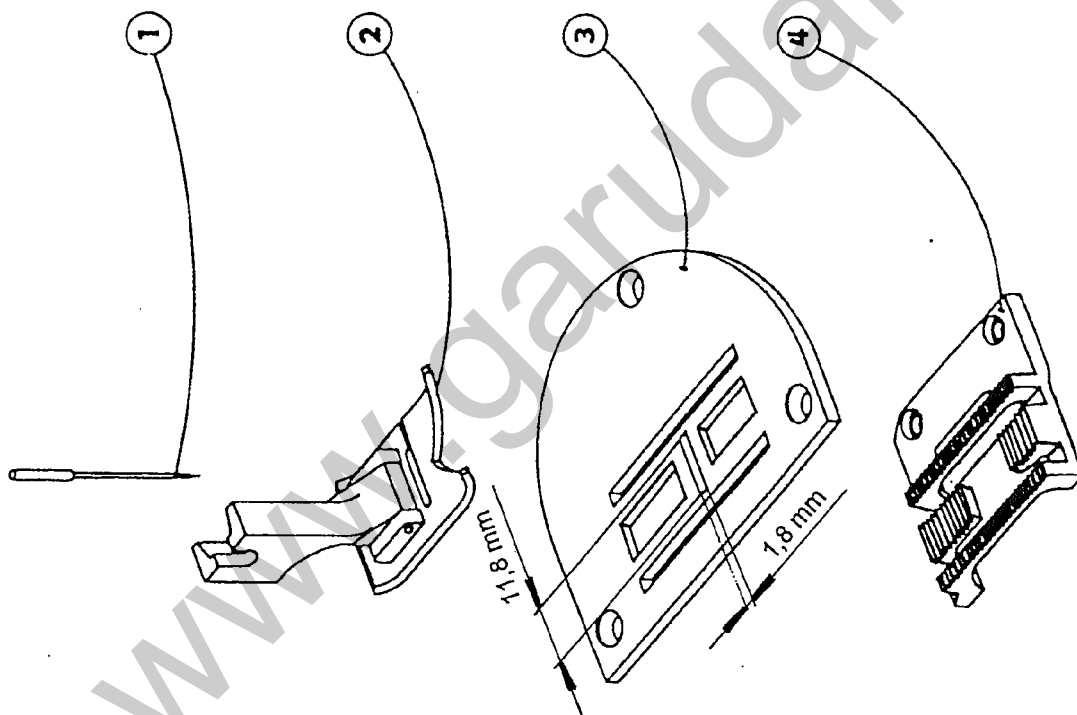


E 118

522 791 124 033 35

- 1 134 No. 110 - 11 X
- 2 522 980 031 603
- 3 522 080 811 637
- 4 522 080 651 336

tab. 31

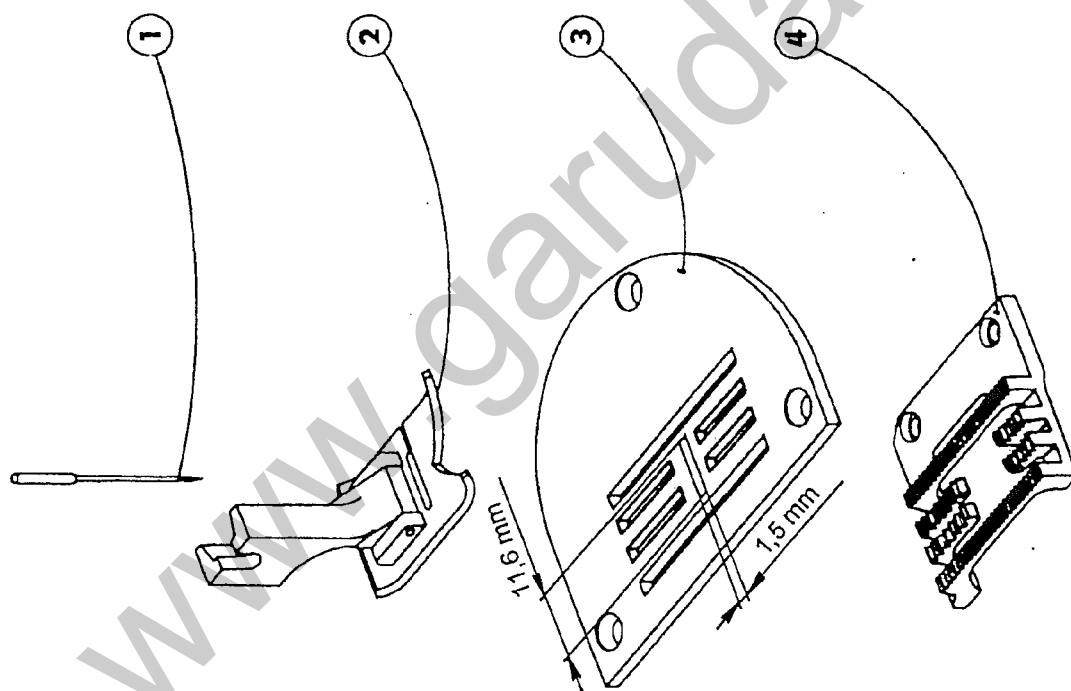


E 119

522 791 124 034 35

- 1 134 No. 110 - 11 X
- 2 522 980 031 603
- 3 522 080 811 557
- 4 522 080 661 336

tab. 32



E 115

522 791 224 075 35

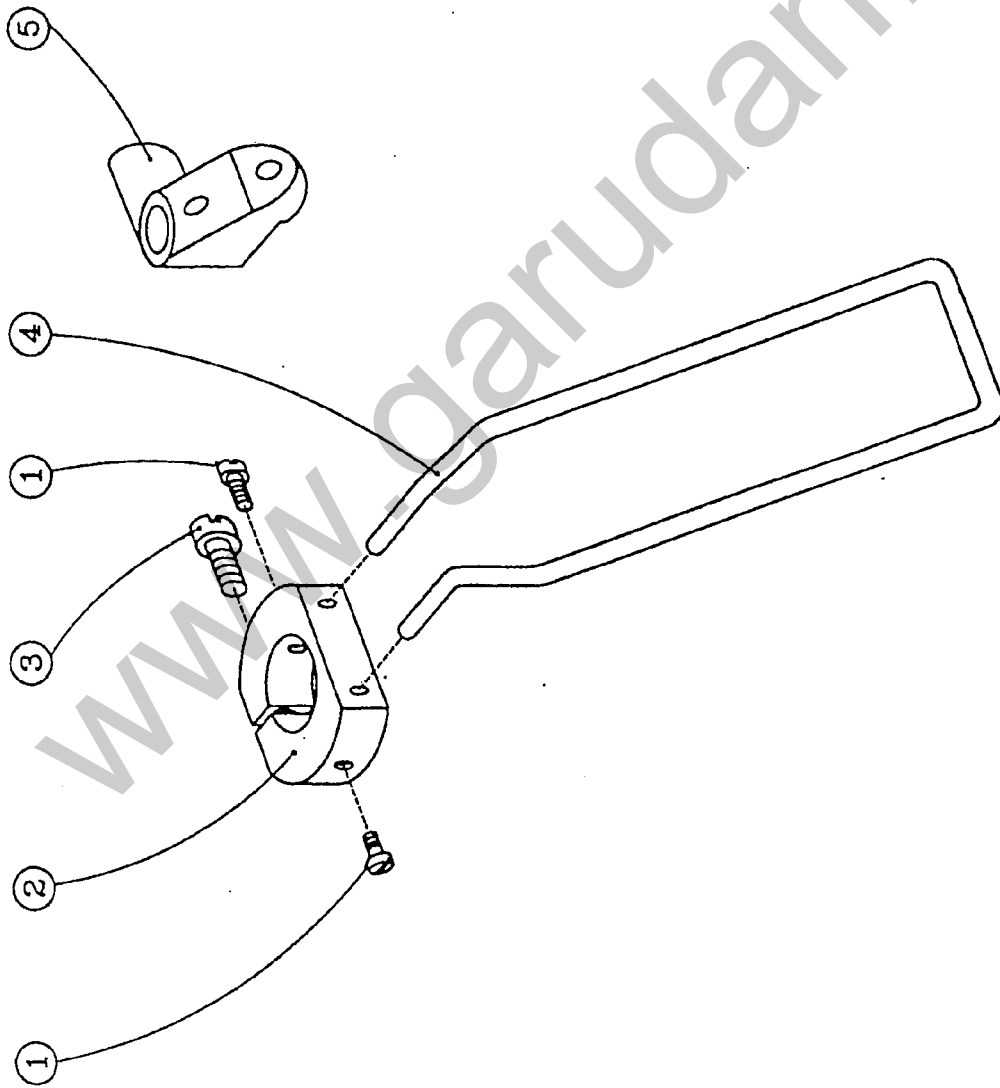
1 134 No. 110 - 11 X

2 522 980 031 603

3 522 080 811 699

4 522 080 651 472

tab. 33



E 116

522 791 149 001 00

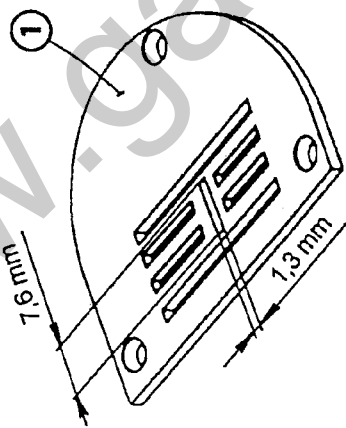
1	522 080	120 037
2	522 080	646 136
3	522 080	120 225
4	522 080	271 441
5	522 080	627 037

E 114

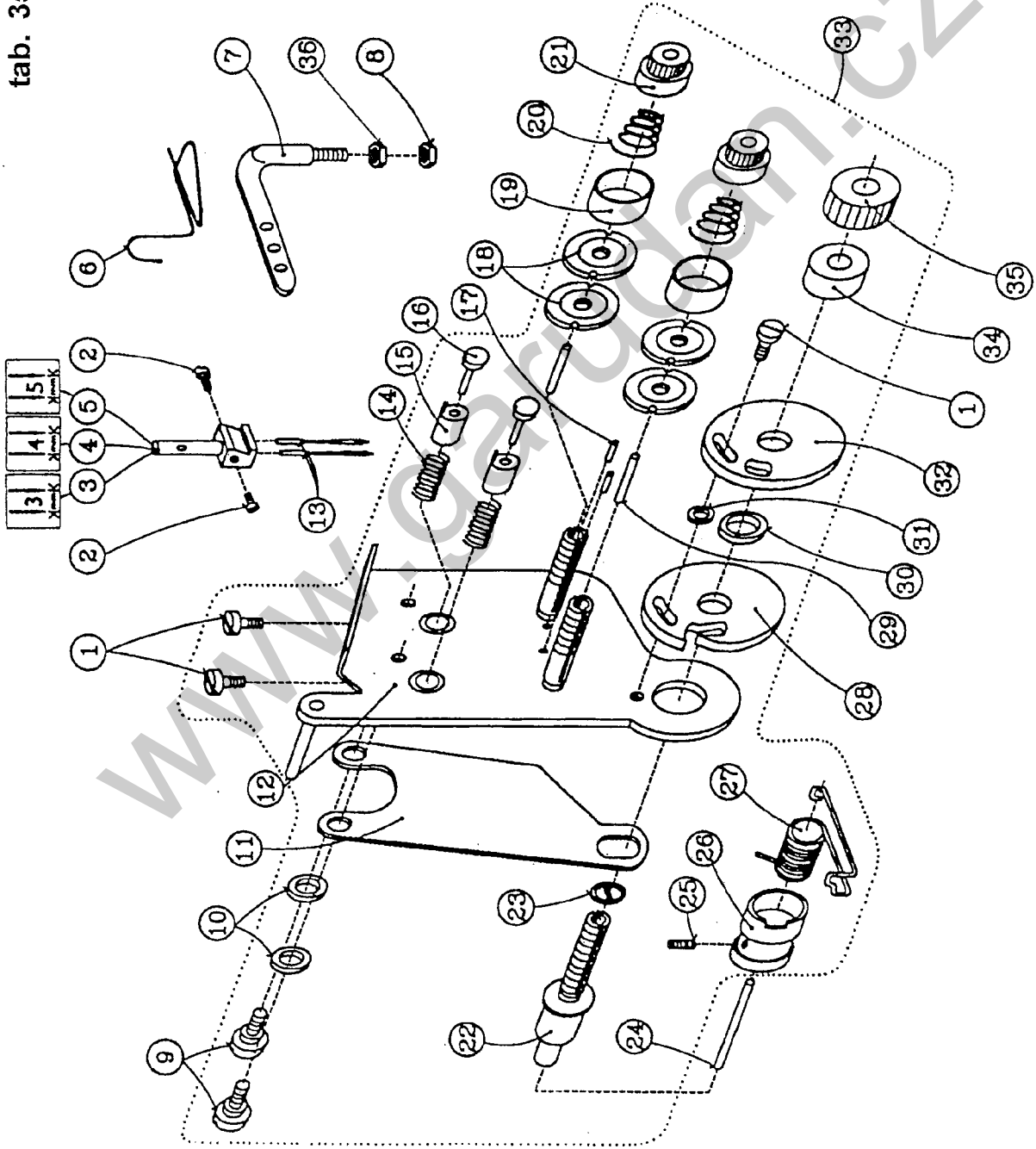
522 791 224 074 00

1 522 080 811 768

tab. 34



tab. 35

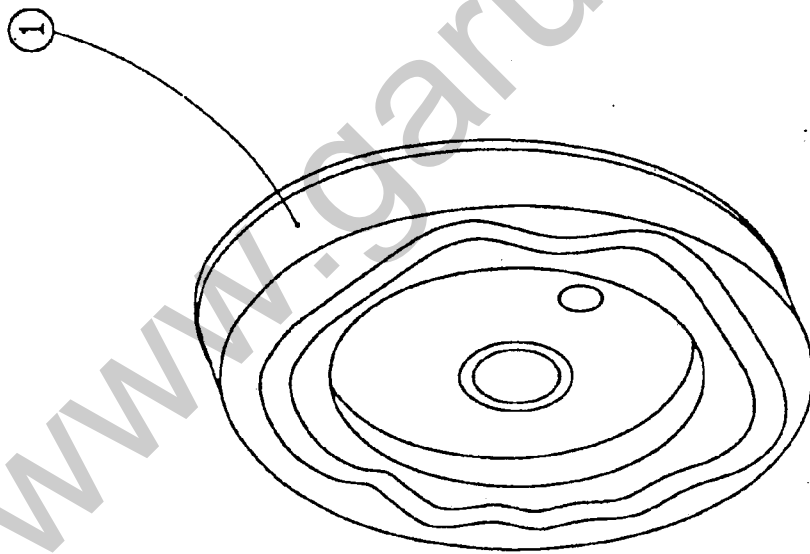


E 113

522 791 630 002 00

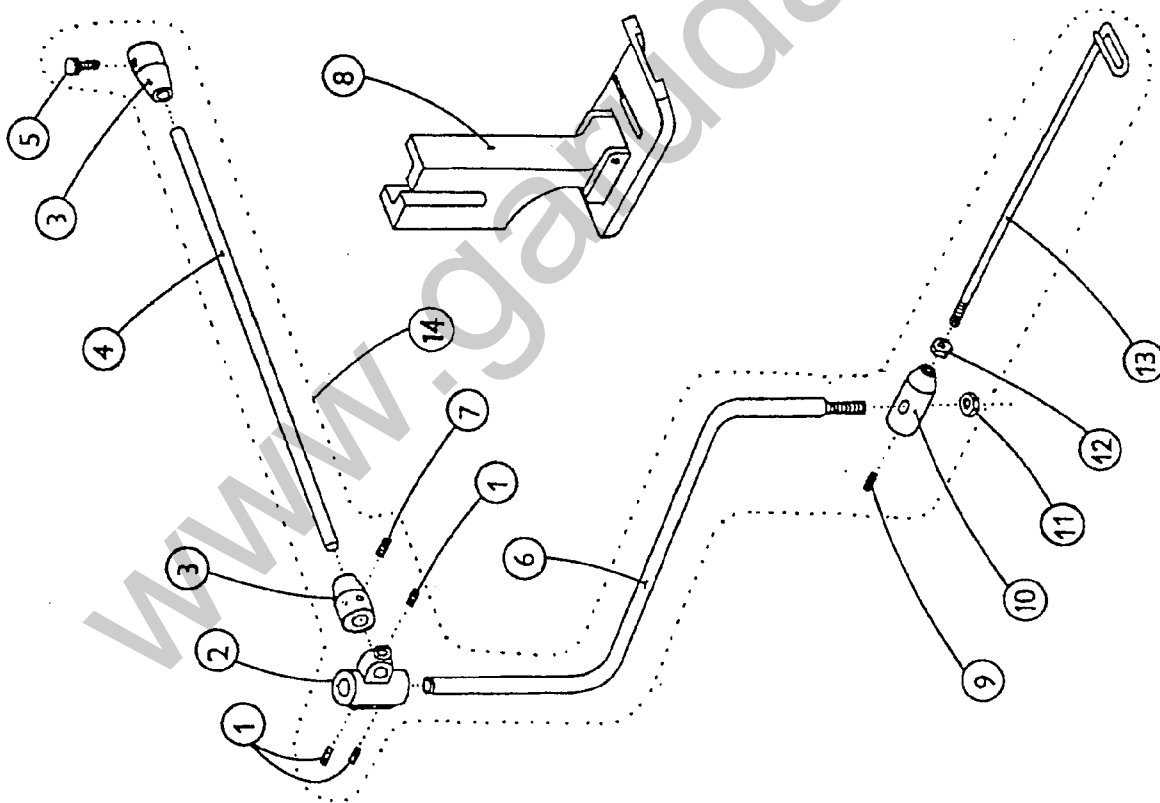
1	522 080	120 245	6 x
2	522 080	124 051	
3	522 080	394 157	
4	522 080	394 158	
5	522 080	394 159	
6	522 080	271 409	
7	522 080	313 204	
8	522 080	161 146	
9	522 080	135 023	
10	522 080	190 520	
11	522 080	825 733	
12	522 980	049 805	10 x
13	548 300	000 130	2 x
14	522 080	261 022	2 x
15	522 980	027 414	2 x
16	522 080	320 047	2 x
17	311 515	002 008	2 x
18	522 080	828 046	4 x
19	522 080	827 048	2 x
20	315 231	262 024	2 x
21	522 080	173 017	2 x
22	522 080	118 003	
23	522 080	195 004	
24	522 080	310 436	
25	522 080	112 012	
26	522 080	414 023	
27	315 231	264 162	
28	522 080	828 048	
29	311 510	202 008	2 x
30	522 080	442 034	
31	522 080	418 039	
32	522 080	828 047	
33	522 980	025 204	
34	522 080	421 129	
35	522 080	171 023	
36	522 080	161 138	

tab. 36



	E 100	522 791 642 038 00
1		522 080 674 113
	E 101	522 791 642 039 00
1		522 080 674 114
	E 102	522 791 642 040 00
1		522 080 674 115
	E 103	522 791 642 041 00
1		522 080 674 116
	E 104	522 791 642 042 00
1		522 080 674 117
	E 105	522 791 642 043 00
1		522 080 674 118
	E 106	522 791 642 044 00
1		522 080 674 119
	E 107	522 791 642 045 00
1		522 080 674 120
	E 108	522 791 642 046 00
1		522 080 674 121
	E 109	522 791 642 047 00
1		522 080 674 122
	E 110	522 791 642 048 00
1		522 080 674 123
	E 111	522 791 642 050 00
1		522 080 674 125
	E 112	522 791 642 051 00
1		522 080 674 221

tab. 37

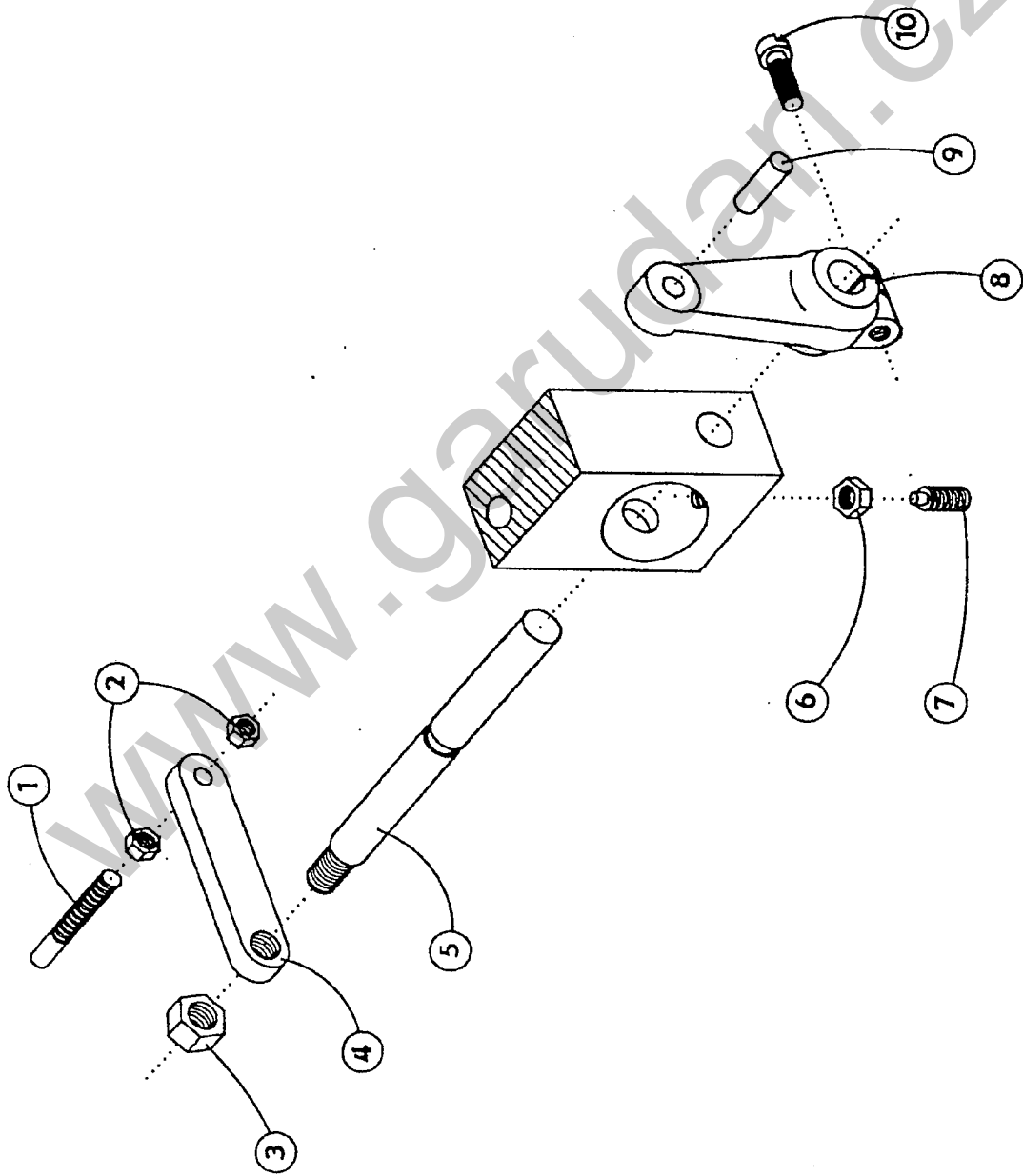


E 117

522 791 235 002 00

1	523 081	104 002
2	522 080	626 056
3	522 080	426 011
4	522 080	341 127
5	522 080	133 009
6	522 080	382 049
7	522 080	111 268
8	522 980	031 541
9	522 080	112 013
10	522 080	436 109
11	522 080	161 163
12	522 080	161 137
13	522 080	271 185
14	522 980	036 063

tab. 38

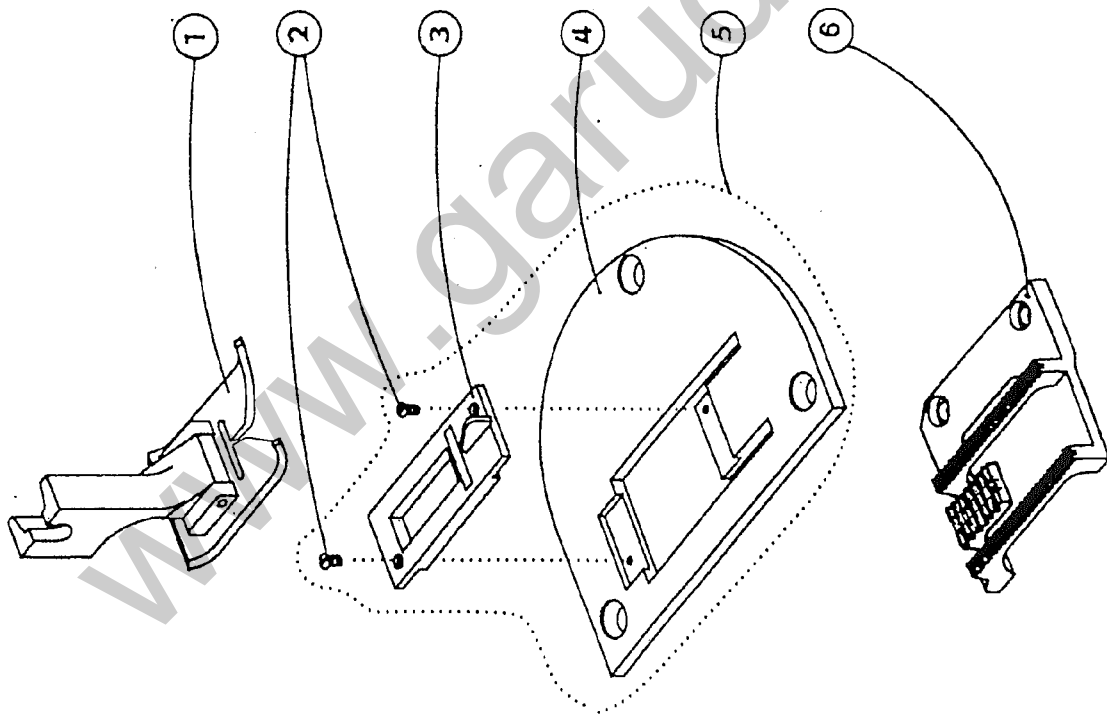


E 121

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. 39

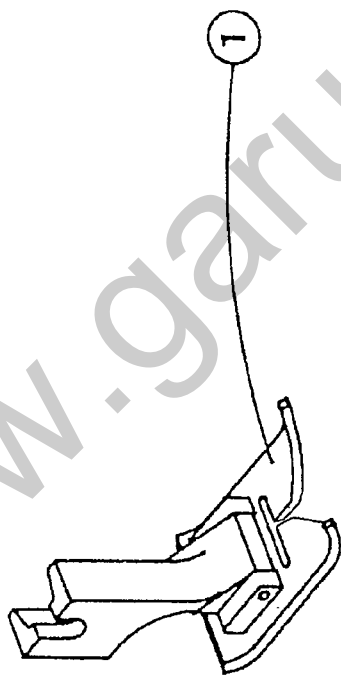


N 023

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
6	522 00	651 428

tab. 40

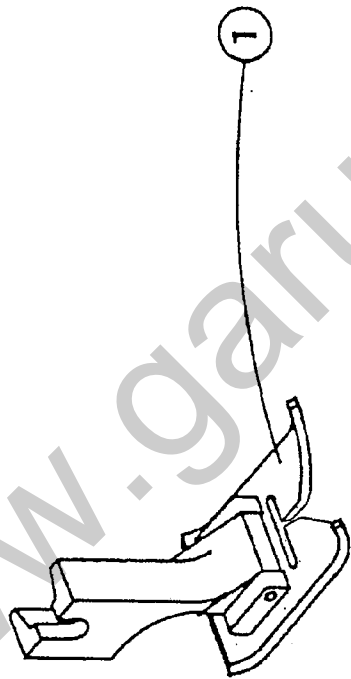


522 791 151 016 00

1 522 980 031 586

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tab. 41



522 791 151 017 00

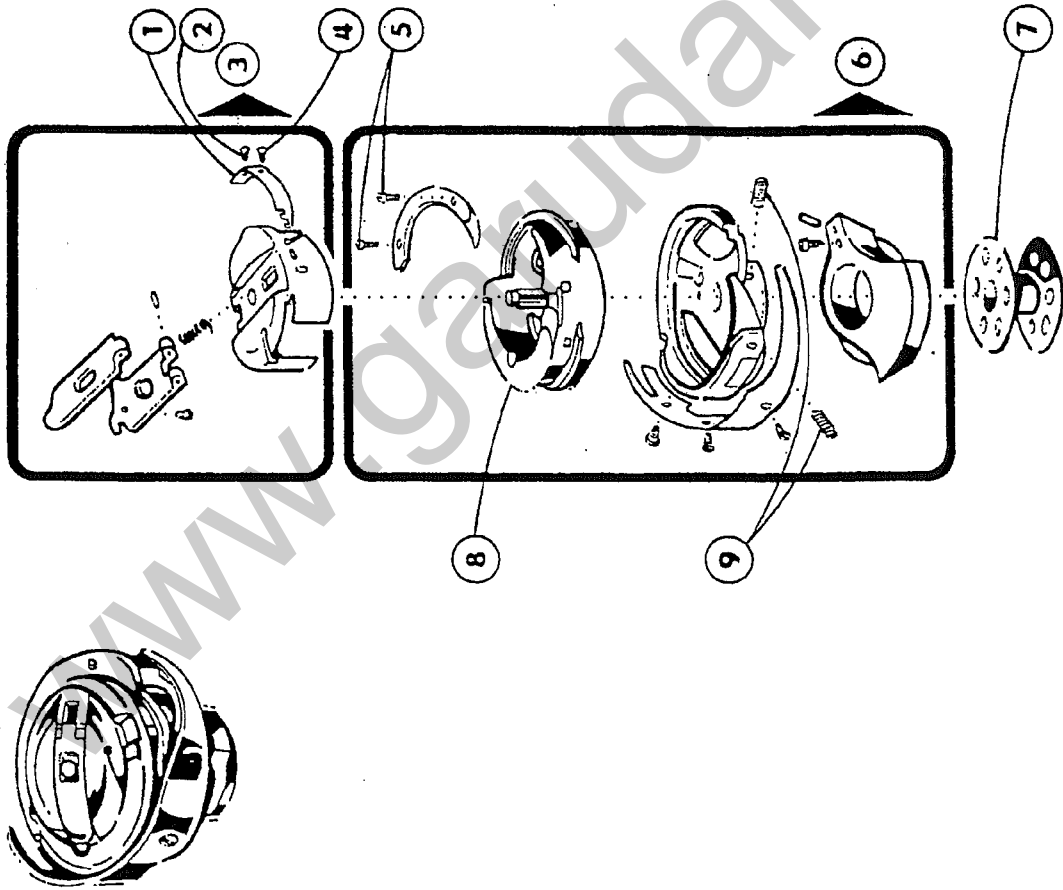
1 522 980 031 652

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R 250

522 980 008 250

1	522 080 690 029	
2	522 080 683 063	
3	522 980 081 133	
4	522 080 683 053	2 x
5	522 080 683 064	
6	522 980 081 126	2 x
7	522 080 685 051	
8	522 080 677 023	
9	522 080 683 067	



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