

# User's Manual



## **GF-4131-447 MH/L34**

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|------------------|---------------------------|------------------|------------------|
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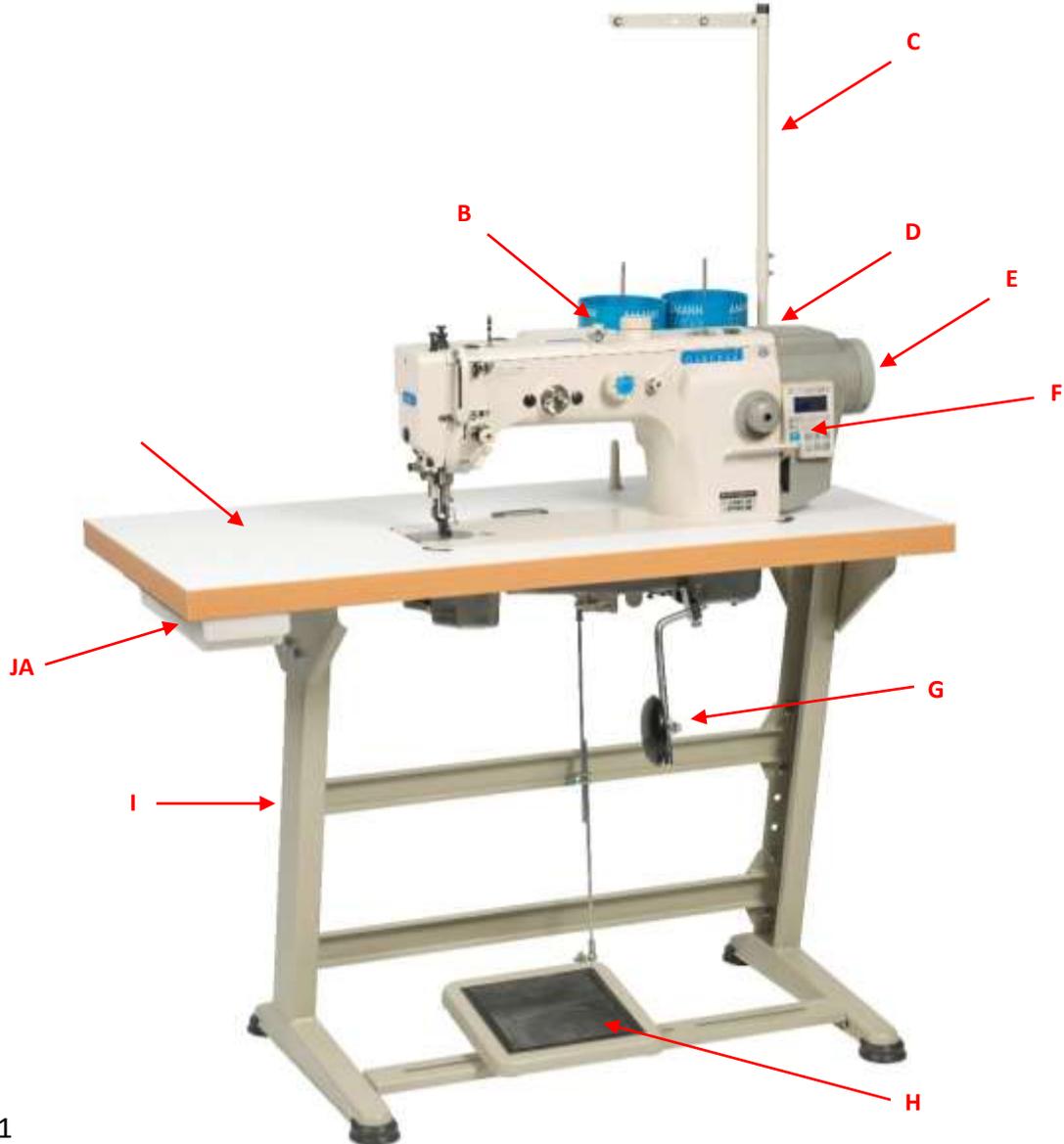
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## A. BRIEF INFORMATIONS

### A.1. BRIEF DESCRIPTION AND INTENDED USE OF THE SEWING MACHINE

The machine characterizes especially stitch length 8 mm, large horizontally positioned hook and a double feed system (feed dog + walking foot). Other significant advantage of the machine is its enlarged working space between the arm and needle (325 × 140 mm) favourable for sewing of bulky materials. The machine is suitable for upholstery, sport tools, etc.



Pic. 1

|   |               |   |               |
|---|---------------|---|---------------|
| A | Table         | F | Control Panel |
| B | Bobbin Winder | G | Knee Lever    |
| C | Spool Stand   | H | Pedal         |
| D | Main Switch   | I | Stand         |
| E | Hand Wheel    | J | Tools Drawer  |

**A.2. TECHNICAL PARAMETERS**

|  |  |
|--|--|
| <b>Model</b>   | <b>GF-4131-447 MH/L34</b>                |
| <b>Use</b>   | Medium/Heavy materials                   |
| <b>Stitch type</b>   | Double thread lockstitch                 |
| <b>Stitch length</b>   | 8 mm                                     |
| <b>Manual lever foot lift</b>                                    | 7 mm                                     |
| <b>Solenoid presser foot lift</b>                                | 16 mm                                    |
| <b>Automatic trimming</b>  | YES - solenoid                           |
| <b>Programmable backtacking</b>                                  | YES - solenoid                           |
| <b>Automatic Presser foot lift</b>                               |  |
| <b>Needle system</b>   | For textile: 135x17; for leather: 135x16 |
| <b>Needle size</b>   | Nm. 110-160 *                            |
| <b>Hook type</b>   | Horizontal, Ø26mm bobbin                 |
| <b>Lubrication</b>   | Automatic                                |
| <b>Lubrication oil</b>   | 10# M22                                  |
| <b>Motor</b>   | Integrated servomotor 750 W              |
| <b>Head weight</b>   | 50 kg (netto)                            |
| <b>Stand weight</b>  | 26 kg (netto)                            |
| <b>Working Space</b>   | 325 x 140 mm                             |
| <b>Machine table dimensions</b>                                  | 515 x 180 mm                             |
| <b>Input power</b>   | max. 900 VA                              |
| <b>Ground plan dimensions of the machine including the stand</b> | 1070 x 550 mm                            |
| <b>Height of the working table</b>                               | 600 – 800 mm                             |
| <b>Height of the machine (including the spool stand)</b>         | 1530 mm                                  |
| <b>Noise data</b>  | 83 dB / A                                |
| <b>Maximum sewing speed</b>                                      | 2200 stitches/min **                     |

\* The machine is set for a needle Nm. 90 in manufacturing facility.

\*\*The mentioned sewing speed cannot be exceeded with respect to lifetime period of the machine mechanism. The reaching of the maximum sewing speed is not guaranteed under any conditions. It is usually reduced due to the type of thread, needle, sewing material, stitch length and presser foot steps.

## B. SAFETY INSTRUCTIONS



### B.1. GENERAL SAFETY INSTRUCTIONS

- Before using the machine, please, read the operation manual carefully, where are mentioned parameters of the machine and specified limits and conditions under which the machine can be used.
- Make sure about the position of ON/OFF button to be able to use it operatively.
- Do not put your fingers in sewing area on any occasion.
- Make sure that electronic cables are not damaged to avoid an injury. Damaged covers must be immediately repaired or replaced for a new one.
- During any mechanical operation such as needle change or threading always make sure to turn off the machine with ON/OFF button or main switch.
- Before cleaning the machine or during its maintenance turn of the machine by pulling the plug out of a socket.
- After finishing work on the machine, turn off the machine with main switch.
- In case of power failure, turn off the machine with main switch.
- Do not adjust the machine in any way that might cause a damage or endanger the safety.
- In case of damaged safety label, order a new one and place it to its original place.
- Make sure to avoid getting caught into the moving mechanisms of the machine with your hair, sleeves or any other loose parts of your clothes.
- Do not use the machine under the influence of alcohol or drugs.



### B.2. SAFETY INSTRUCTIONS AFTER DELIVERY

- During the unpacking of the machine, please, follow the marks on the packing.
- Report any visible damage of the order to the carrier. Doublecheck the contents of the package with your order and immediately report any defect to the manufacturer. Later complaints will not be accepted.

**B.3. SAFETY INSTRUCTIONS DURING MACHINE INSTALLATION AND MAINTENANCE**

- The machine should be installed and set up by an instructed person.
- Only an instructed person can manipulate with an electrical circuit.
- Make sure that the electric power, its voltage and circuit breaker enable stable supply of power necessary for a steady performance of the machine.
- Connect a correct earthing.
- It is prohibited to connect all the connectors when the machine is under voltage owing to threat of damage of electronic parts and motor.
- If it is necessary to dismantle any of the covers on the machine, turn of the main switch or unplug the machine from a socket.
- It is allowed to use only spare parts supplied or approved by the manufacturer.
- The machine should be placed out of high frequency and radio waves. Impact of electromagnetic waves generating interference with servo motor can cause a malfunction.

**B.4. SAFETY INSTRUCTION FOR A DAILY OPERATION OF THE MACHINE**

- Do not plug the machine to the socket if any of the safety covers is removed.
- Check if any of the cables is not damaged to avoid an injury caused by touching an uncovered conductor.
- If you are not sure how to adjust the machine correctly for any concrete operation, contact a machinist responsible.
- The user must ensure an appropriate lightning of the work area and surroundings.

**B.5. WORK AREA OF THE MACHINE**

All installation or service work with machine must be made when the machine is unplugged from a socket.

- A. Do not use the machine in case the electrical voltage exceeds the tolerance of +/-10%
- B. Use a machine under following conditions:
  - working temperature: 5-40 °C
  - stocking temperature: -10 – 60 °C
- C. Humidity between 20 – 80 % (relative humidity)

## **B.6. CONDITIONS OF ELECTRICAL INSTALATION OF THE MACHINE**

### **A. Power supply**

- Power supply must be in regulated range +/- 10 %.
- Frequency should be regulated (50/60 Hz) +/- 1 %.

### **B. Electromagnetic compatibility**

- Use separated power supply and make sure that the machine is not placed near to products emitting a strong magnetic or high frequency field.

### **C. Make sure to avoid spilling the fluids to the control box and motors. Protect the control box and motors from splashing liquids.**

## **B.7. DISPOSAL INSTRUCTIONS**

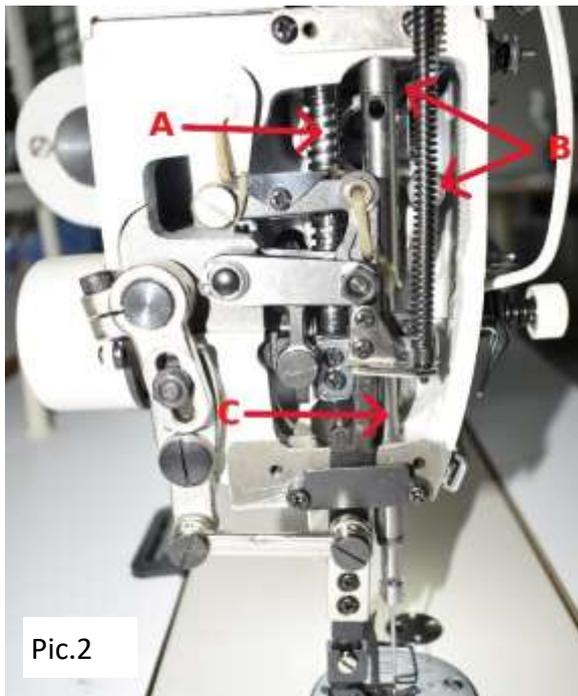
For a disposal of the machine contact your local dealer or manufacturer in accordance with legislation.

## C. INSTALLATION

### C.1. MACHINE LUBRICATION

#### C.1.1. Oil filling

Before putting the machine into operation, it is necessary to lubricate the machine properly. Oil the machine before its first running or in case the machine was not run for a longer time.



- Dismantle the front cover and lubricate the presser bar (A), the thread take up lever joint (B) and presser bar (C). Drip 3-5 drops of oil M22 according to the picture 2.

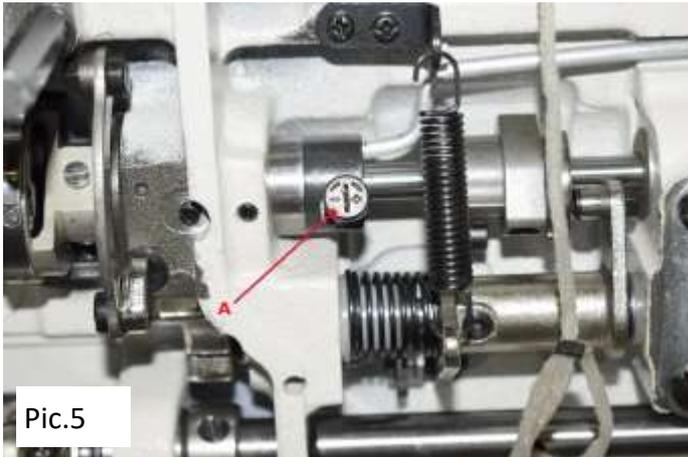


- Fill in the oil tank with oil so the oil level would be between the marks (H) and (L) as on the pic.3. In case of need to empty the oil tank, put a container below the opening and loosen the screw (A).



- Check the oil level in oil tank regularly as well as the oil gushing on the glass (E) on the machine head as on the pic.4.

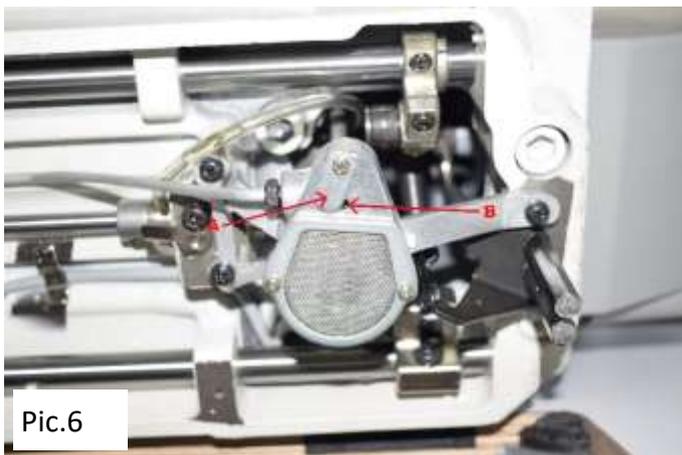
### C.1.2. Hook lubrication regulation



Pic.5

- The hook lubrication amount is regulated by a screw (A) on the pic.5. By turning it in + direction, the lubrication increases, while turning it in – direction, the lubrication decreases. Attention, too large amount of oil can foul the thread and the product sewn. On the other hand, too small amount of the oil can cause overheat and wearing of the mechanism. By a correct hook lubrication, the hook lifetime increases. After lubrication, try to run the machine idly for 30 seconds.

### C.1.3. Front mechanism lubrication



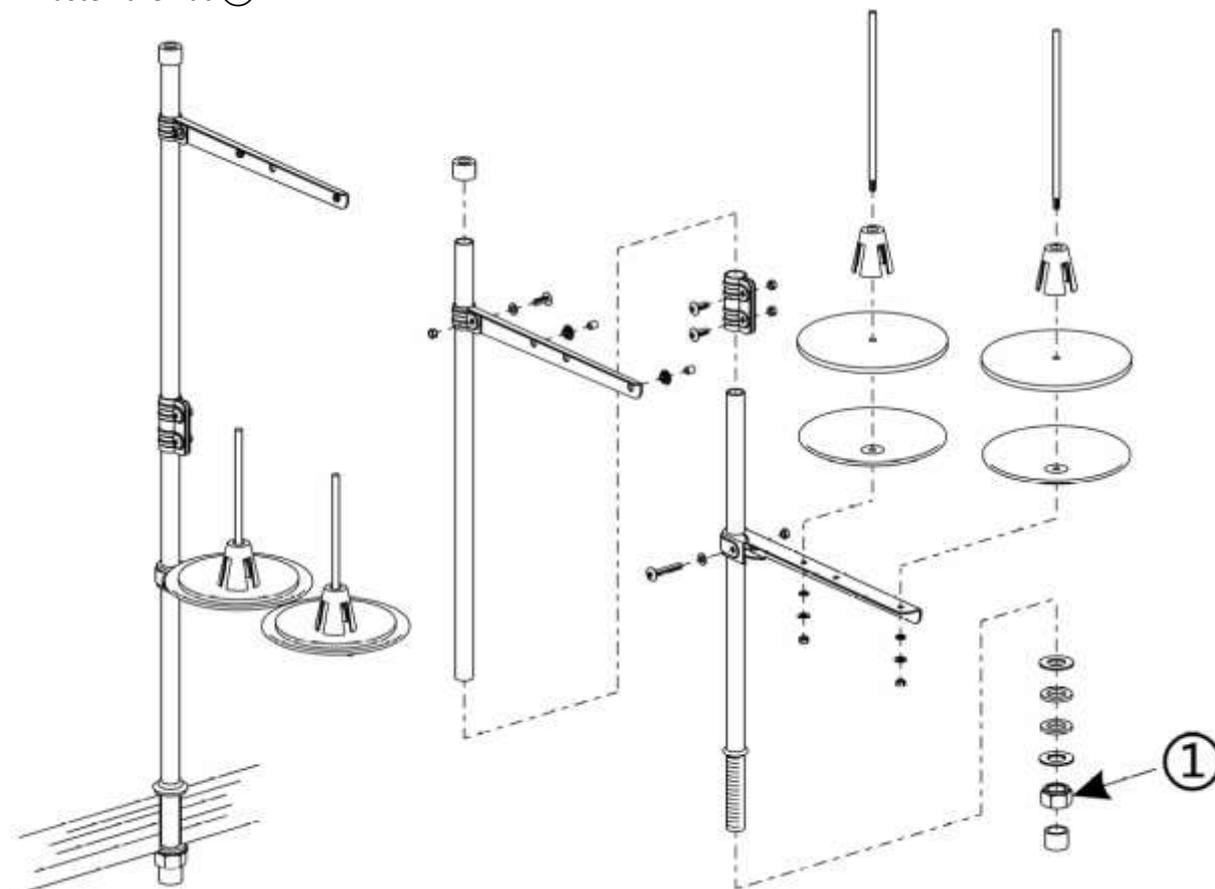
Pic.6

- If the oil amount would be too large, it can be regulated with a diaphragm (A) against the hole (B) on the oil pump as on the pic.6. The lubrication decreases if the diaphragm uncovers the hole (B).

- Run the machine at 75 % of its maximum speed the first 5 days to increase the lifetime of the machine.

## C.2. SPOOL STAND INSTALLATION

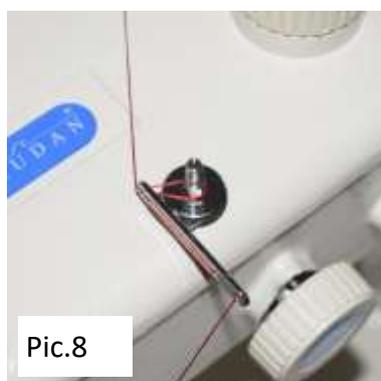
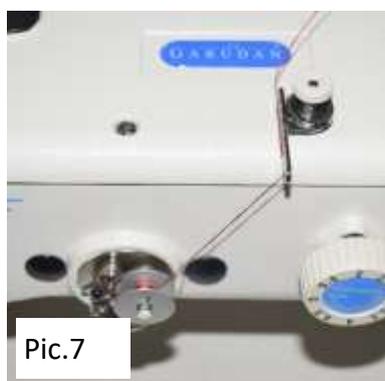
1. Install the spool stand to the hole on the table.
2. Fasten the nut ①.



## C.3. LOWER THREAD THREADING

### C.3.1. Bobbin winding

Before bobbin winding, make sure the spool stand is installed. Follow the pictures 7-9 for threading.



### C.3.2. Inseting/taking out the bobbin case

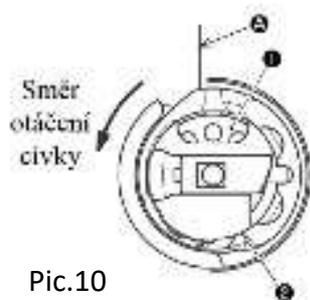
#### Taking out the bobbin case:

- Turn off the machine
- Pull the small releasing lever on the bobbin case.
- Take out the bobbin case out of the hook. **Note:** If the releasing lever is lifted, the bobbin cannot fall out of the bobbin case.

#### Inserting the bobbin case:

- Insert the bobbin to the bobbin case.
- the bobbin case's releasing lever and insert it to the hook base.
- Release the releasing lever of the bobbin case with and press the bobbin case to the hook using a thumb until it clacks. You can check the correct fixation by pulling the releasing lever (1) lightly. It must come back.

### C.3.3. Inserting the bobbin case



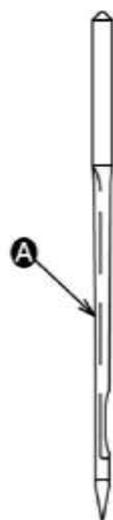
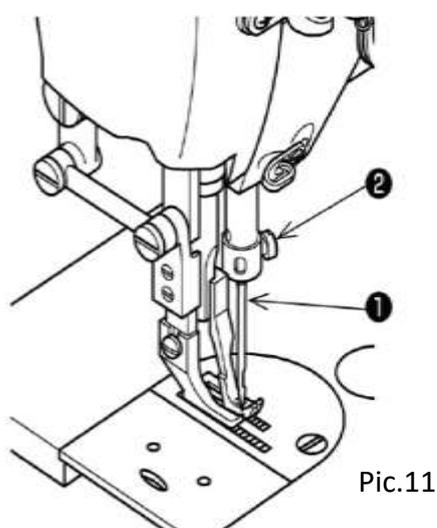
- Insert the bobbin with the lower thread (1) to the bobbin case (2). It must turn in the direction marked on the pic.10.

## C.4. UPPER THREAD THREADING

### C.4.1. Needle inserting

**Make sure that the machine is turned off before this operation.**

Use the needle in accordance a with thread used.



- Lift the needle bar to its highest position using the hand wheel. Loosen the screw (2) and insert the needle (1) to the needle bar as on the pic.11 so the groove (A) would be turned to left. Insert the needle to the limit and tighten the screw (2).

- Check the needle regularly. Consult the correct needle size with your thread distributor.

#### C.4.2. Upper thread threading



*Attention: The thread take up lever must be lifted while upper thread threading.  
Turn off the machine with a main switch.*

Lead the thread according to the following pictures 12 and 13.



Pic.12



Pic.13

**Note:** While changing the thread, cut it between the spool stand and the guide and thread a new one.

#### C.5. MACHINE RUNNING



*Attention: do not put your feet on the pedal while turning on the machine.*

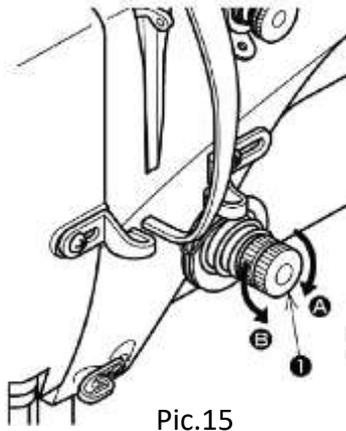


Pic.14

- Turn on the machine with a main switch to position 1 as on the pic.14.

## D. MACHINE OPERATION

### D.1. THREAD TENSION ADJUSTMENT

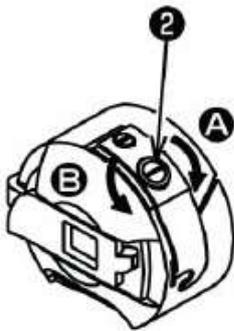


Pic.15

#### D.1.1. Upper thread tension adjusting

Adjust the tension with a tensioner (pic.15).

- Turn the nut (1) in direction (A) to increase the tension, turn in the (B) direction to decrease the tension.



Pic.16

#### D.1.2. Lower thread tension adjusting

- Turn the screw (2) in direction (A) to increase the tension and in direction (B) to lower the tension.

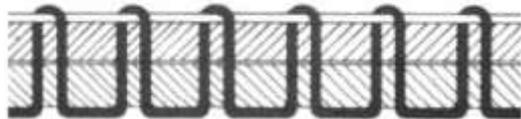


**Correct interlacing of the threads.**



**Incorrect interlacing of the threads.**

Increase the needle thread tension (or reduce the hook needle tension).



**Incorrect interlacing of the threads.**

Reduce the needle thread tension (or increase the tension the hook thread tension)

Pic.17

## D.2. PRESSER FOOT LIFT

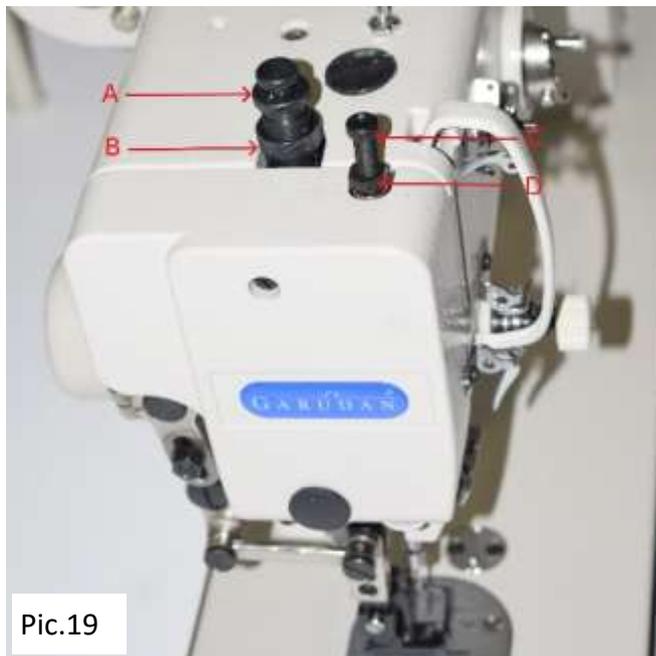


Pic.18

You can lift the presser foot (pic. 18):

- By a hand lever (A)
- By a knee lever (B)
- By pressing the pedal (D) backwards to C position (referring to chapter D.9)

## D.3. PRESSURE ADJUSTING



Pic.19

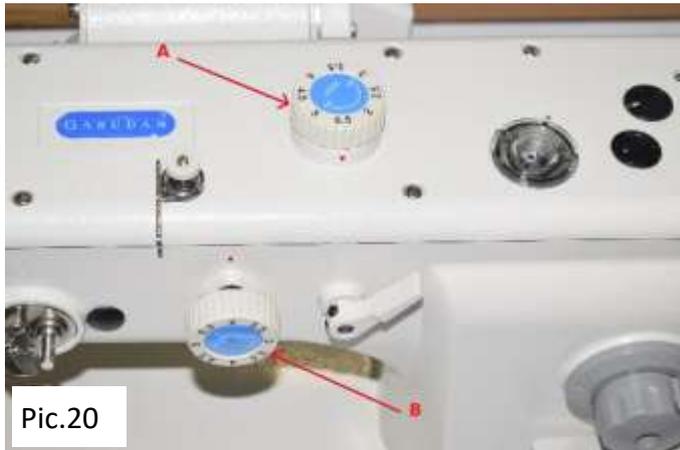
- Inner presser foot pressure can be adjusted by a screw (A) tightened with a nut (B) as on the pic.19. The thinner the material is, the lower the pressure should be. By screwing the screw down the pressure increases, by loosening it up the pressure decreases.

- The outer presser foot pressure is adjusted depending on the material sewn with screw (C) tightened with a nut (D). The thinner the material is, the lower the pressure should be. By screwing down the pressure increases, by loosening it up, the pressure decreases.

**Always try to adjust the pressure as lower as possible so the machine wouldn't be noisy, and the pressure wouldn't be too high on the material sewn. In case the feeding wouldn't work properly, the pressure must be increased.**

#### D.4. PRESSER FOOT STEP ADJUSTING

The presser foot steps are adjusted by the buttons (A) and (B).



Pic.20

- Lower value = smaller steps.
- In case you do not need to use the whole range, you can adjust its maximum value with a button (A).
- In case the value of button (A) is set to 4, the value of the (B) button cannot be set for a higher value.
- Use the smaller value to stress the machine as less as possible.

In case you have to drive into the thicker material, stop, turn the button to its higher value and after that, lower the value back.

#### D.5. STITCH LENGTH ADJUSTMENT

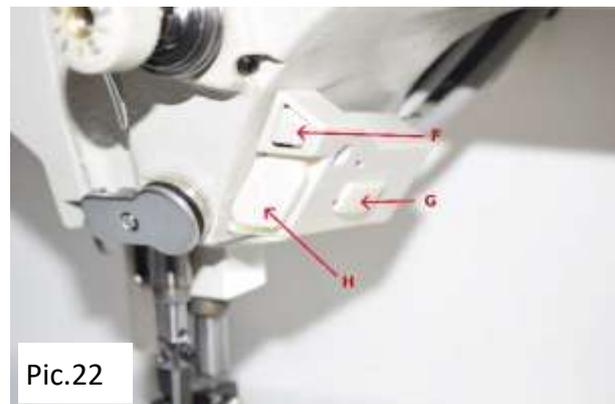
The stitch length can be adjusted by a button A marked on the pic.21. After turning it, press the safety locker (B). By turning it clockwise, the stitch length increases.

#### D.6. BACKTACKING

The reverse feed (backtacking) can be started by pressing a lever (C) marked on the pic.21 or by pressing the button (H) on the pic.22. If the automatic backtacking at the start (D) and at the end (E) is activated, the machine will backtack automatically at the start and the end of the sewing. The start of the sewing = first pedal pressing after trimming. The end of the sewing = pressing the pedal backwards.



Pic.21



Pic.22

#### D.7. SEWING BY A BUTTON

The sewing can be started also with a button (F) as on the pic.22. Each short press makes half a revolution (the needle moves from upper to lower position and the other way around). By a long, the machine makes a whole revolution. By holding the button, the machine will sew with a minimum speed.

#### D.8. LIGHTING

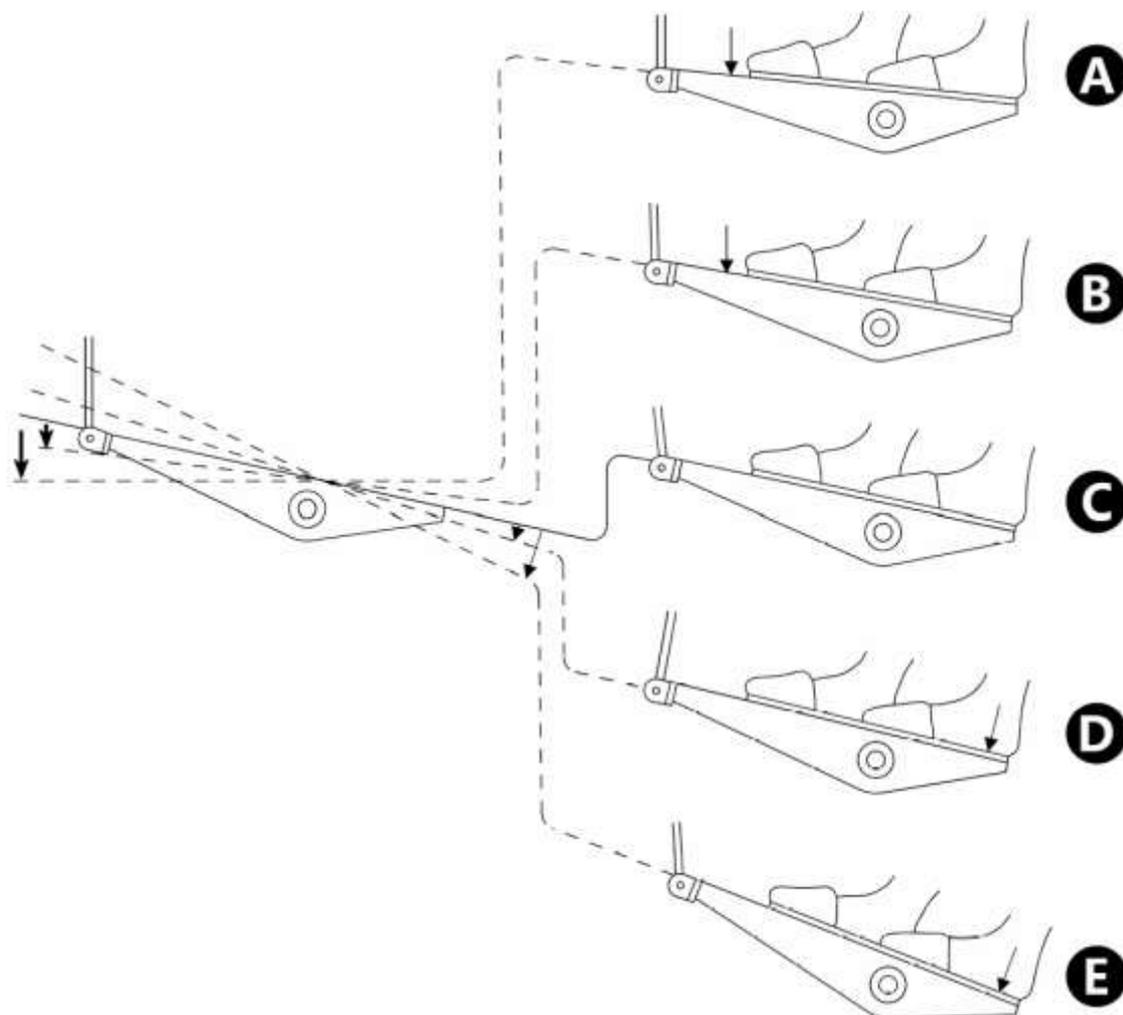
The lighting can be turned on/off by a switch (G) marked on the pic.22.

## D.9. OPERATION BY PEDAL

The pedal has 5 operating positions:

Default position is in point ©

1. If you press the front part of the pedal lightly, the machine runs at low speed (B). If the backtacking is set, it will be made at the start of the sewing.
2. If you press the front part of the pedal fully, the machine runs at high speed (A).
3. If you return the pedal to its original position, the machine stops (C).
4. If you press the rear part of the pedal lightly, the machine lifts the presser foot (D).
5. If you press the rear part of the pedal fully, the machine performs thread trimming and presser foot lift (E). If the backtacking is set, it will be made at the end of the sewing.



### D.10. LCD PANEL AND BUTTONS



Pic.23

| Function                 | Button | Description  |
|--------------------------|--------|--|
| Start/end Backtacking    |        | Starts, switches or ends an automatic start backtacking (A, B)   |
|                          |        | Starts, switches or ends an automatic end backtacking (C, D)   |
| Needle position up/down  |        | Switches the needle position (up or down)  |
| Trimming                 |        | Turns on/off automatic trimming  |
| Presser foot lift        |        | Sets the presser foot position after sewing interruption.  |
| One-shot sewing section  |        | Turns on/off the sectional sewing function.  |
| Value/parameter increase |        | 1. Increases the amount set of the stitch sections A, B, C, D, E, F, G, H.<br>2. Increases the value of the parameter selection.<br>3. Increases the value of the parameter setting. |
| Value/parameter decrease |        | 1. Decreases the amount set of the stitch sections A, B, C, D, E, F, G, H.<br>2. Decreases the value of the parameter selection.<br>3. Decreases the value of the parameter setting. |
| Free sewing              |        | Setts the free sewing mode.  |
| Bartacking               |        | Turns on/off the bartacking.   |

| Function                             | Button   | Description  |
|--------------------------------------|--|--|
| Clamp setting                        |   | Turns on/off the clamp function.   |
| Forward stitch correction            |   | The machine makes half a revolution (the needle goes down from its higher position and the other way around). If the button is held, the machine starts sewing at the lowest speed without pressing the pedal.   |
| Multi-section constant-stitch sewing |   | As the treadle is toed down, constant stitch sewing P01、 P02、 P03 etc. performed section by section. As following, <b>P040 1 16</b> , 1st number is total sections, 2nd number is which section, and 3rd number is the stitches of the section. <b>P04</b> is total segment, use  key and the  key to adjusting, the default maximum 24 segments,  has the current setting segment,  has the sewing needle NO. of the current segment, they are used the  key and the  key to adjusting. |
| Section sewing                       |   | The machine starts sewing the programmed stitch quantity. Each section will be sewn by one pedal press (sections E; F; G; H).  |
| Revolution increase                  |   | Increases the motor speed.   |
| Revolution decrease                  |  | Decreases the motor speed.   |

## **E. MAINTENANCE**

### **E.1. MACHINE LUBRICATION**

Use the oil of viscosity M22 purchased from Garudan company. The lubrication of the machine is described in chapter C1.

### **E.2. CLEANING**

Clean the machine daily. While cleaning the machine focus especially on needle plate and hook area. For a cleaning, use a brush or a compressed air. Do not use any chemical materials.

## F. MALFUNCTIONS AND THEIR POSSIBLE SOLUTIONS

In the following table are mentioned malfunctions which can be solutioned mechanically.  
*If the elimination of some faults goes beyond the scope of this manual, please contact the service.*

| no. | Malfunction  | Check   | Cause   | Solution                                  |
|-----|--|---|---|---|
| 1.  | Broken needle  | Height and side position of the needle            | The needle is not inserted correctly                              | Insert the needle correctly               |
|     |  | The needle  | The needle is belt  | Replace the needle                        |
|     |  | The feed dog and needle synchronization           | Incorrect needle and feed dog synchronization                     | Adjust the synchronization                |
|     |  | Needle bar height                                 | Incorrect needle and rotary hook synchronization                  | Adjust the synchronization                |
|     |  | The distance between the needle and the hook      | Incorrect needle and rotary hook synchronization                  | Adjust the synchronization                |
| 2.  | Thread breakage  | Threading   | Incorrect threading   | Adjust the threading                      |
|     |  | Needle  | The needle is belt or damaged                                     | Replace the needle                        |
|     |  | Height and size adjustment of the needle          | The needle is not inserted correctly                              | Insert the needle correctly               |
|     |  | Upper thread tension                              | The tension is too high   | Adjust the thread tension                 |
|     |  | Lower thread tension                              | The tension is too high   | Adjust the thread tension                 |
|     |  | Compensation spring lift                          | The upper thread is loosened                                      | Adjust the compensation spring            |
| 3.  | Unightly sewing  | The thread tension                                | Incorrect thread tension  | Adjust the thread tension                 |
|     |  | Compensation spring tension                       | Incorrect compensation spring tension                             | Adjust the thread tension                 |
|     |  | The distance between the hook and the hook opener | Incorrect distance between the hook and the hook opener           | Adjust the distance                       |
| 4.  | Pulling out the upper thread at the beginning of sewing or skipping stitches | Height and size position of the needle            | The needle is not inserted correctly                              | Insert the needle correctly               |
|     |  | Needle  | The needle is belt or damaged                                     | Replace the needle                        |
|     |  | Threading   | The threading is not correct                                      | Thread the thread correctly               |
|     |  | The distance between the needle and the hook      | Incorrect needle and rotary hook synchronization                  | Adjust the synchronization                |
|     |  | The upper thread length after trimming            | The thread end is too short                                       | Adjust the upper thread tension           |
|     |  | The lower thread holding                          | The lower thread is not held after trimming                       | Adjust the clamp                          |
| 5.  | Incorrect trimming   | The distance between the fixed and moving knife   | Incorrect high and distance between the moving knife and the hook | Adjust the moving knife                   |
|     |  | Pressure of the fixed knife                       | The fixed and moving knife tension is incorrect                   | Adjust the tension between the knives     |
|     |  | The side position of the needle                   | The needle is not inserted correctly                              | Insert the needle correctly               |
|     |  | The blade of the knives                           | The blades are damaged  | Replace the knives                        |
|     |  | Trimming cam synchronization                      | Incorrect synchronization of the trimming cam                     | Adjust the trimming cam                   |
|     |  | The tensioner adjusting                           | The tensioner doesn't work correctly                              | Adjust the tensioner                      |
| 6.  | The thread end is too short after trimming                                   | Trimming synchronization                          | Incorrect time of trimming  | Adjust the time of the trimming           |
|     |  | Tension washer hole                               | The hole is too small   | Adjust the tensioner                      |
|     |  | Second thread tensioner                           | The second thread tensioner tension is too high                   | Lower the tension of the second tensioner |

|  |                         |   |  |
|--|-------------------------|---|--|
|  | The compensation spring | The compensation spring tension is too high | Adjust the compensation spring tension |
|--|-------------------------|---|--|

## G. DRIVE UNIT MANUAL

### G.1. PARAMETER LIST

#### G.1.1. Technician mode

| NO. | Range      | Default | Description   |
|-----|------------|---------|---|
| 100 | 100 ~ 800  | 200     | Minimum speed   |
| 101 | 200 ~ 5000 | 3500    | Maximum speed   |
| 102 | 200 ~ 5000 | 3000    | Constant-stitch sewing speed  |
| 105 | 100 ~ 500  | 250     | Trimming speed  |
| 106 | 0/1        | 0       | Soft start mode: 0 : soft start only after trimming 1 : soft start after both trimming and stop                             |
| 107 | 1 ~ 9      | 2       | Stitch numbers for soft start   |
| 108 | 100 ~ 800  | 200     | Soft start speed  |
| 110 | 200 ~ 2200 | 1800    | Start back tacking speed  |
| 111 | 200 ~ 2200 | 1800    | End back tacking speed  |
| 112 | 200 ~ 2200 | 1800    | Bar tacking speed   |
| 113 | 1 ~ 70     | 24      | Stitch balance for start back tacking No.1  |
| 114 | 1 ~ 70     | 20      | Stitch balance for start back tacking No.1  |
| 115 | 1 ~ 70     | 24      | Stitch balance for end back tacking No.3  |
| 116 | 1 ~ 70     | 20      | Stitch balance for end back tacking No.4  |
| 117 | 1 ~ 100    | 90      | Stitch balance for back tacking speed @(P107 - Tacking stitches A = 1)  |
| 118 | 1 ~ 100    | 30      | Stitch balance for back tacking speed @(P107 = Tacking stitches A)  |
| 11B | 0 ~ 4      | 0       | Start and end back tacking type (CD and AB)<br>0: B->AB->ABAB->none 1: B->none 2: B->AB->none 3: AB->none 4: AB->ABAB->none |
| 11C | 0 ~ 9999   | 0       | Tens digit for each segment of A/B/C/D  |
| 11D | 0 ~ 9999   | 0       | Tens digit for each segment of E/F/G/H  |
| 11E | 0 ~ 9999   | 0       | Tens digit for each segment of A/B/D  |
| 11F | 0 ~ 359    | 0       | Back tacking under angle control  |
| 130 | 0/1/2/3    | 2       | Speed curve adjustments: 0: ramp curve 1: polygonal curve. 2: quadric curve 3: S-type curve                                 |
| 131 | 200 ~ 4000 | 3000    | The turning point speed of two segment curve.   |
| 132 | 0 ~ 1024   | 800     | The turning point sampling voltage of the pedal when two segment curve (Between parameter 138 and 139)                      |
| 133 | 1/2        | 1       | The type of polygonal curve: 1: square 2: rooting   |
| 134 | 0 ~ 1024   | 90      | Trimming point of pedal   |
| 135 | 0 ~ 1024   | 300     | Footer lifting point of pedal   |
| 136 | 0 ~ 1024   | 460     | Neutral point of pedal  |
| 137 | 0 ~ 1024   | 480     | Motor running point of pedal in low speed.  |
| 138 | 0 ~ 1024   | 580     | Accelerated point of pedal  |
| 139 | 0 ~ 1024   | 962     | Max speed point of pedal  |

Figure 4-1 shows the specific setting method

|            |          |     |   |
|------------|----------|-----|---|
| <b>13A</b> | 0 ~ 800  | 100 | The running delay time of footer lifting  |
| <b>140</b> | 0/1      | 1   | Soft start at the first cycle of power ON. 0: disable 1: enable   |
| <b>141</b> | 0/1      | 1   | Auto bar tacking function: 0: disable 1: enable   |
| <b>142</b> | 0/1      | 0   | Bar tacking mode selection:<br>0: Juki mode. Active when motor stop or running. 1: Brother mode. Active only when motor running.  |
| <b>143</b> | 0/1/2/3  | 0   | Special mode:<br>0: normal Mode 1: simply sewing mode 2: motor initial angle measurement (Do not remove the belt) 3: Automatically setting the pulley ratio by the CPU. (synchronizer is necessary and the belt not removed)  |
| <b>144</b> | 0 ~ 31   | 0   | Feedforward torque of motor: 0: normal functions 1-31: feedforward torque level   |
| <b>148</b> | 0/1/2    | 0   | Mode of stitch correction 0: continuous; 1:half stitch; 2:one stitch  |
| <b>149</b> | 0 ~ 10   | 0   | The time of chopping on for the presser foot slow down (uint is 100us)  |
| <b>14C</b> | 1 ~ 9999 | 40  | The time of chopping off for the presser foot slow down (uint is 100us)   |
| <b>150</b> | 1 ~ 100  | 1   | The proportion coefficient of the stitches counter  |
| <b>151</b> | 1 ~ 9999 | 1   | Maximum stitches of the counter   |
| <b>152</b> | 0 ~ 6    | 0   | Count mode selection (For bobbin thread)<br>0: The counter is invalid 1: Count up by stitches. When count over, counter will be auto-reset.<br>2: Count down by stitches. When count over, counter will be auto- reset.<br>3: Count up by stitches. When count over, motor stops and the counter must be reset by the external switch or the P key on the panel.<br>4: Count down by stitches. When count over, motor stops and the counter must be reset by the external switch or the P key on the panel.<br>5: Count up by trimming. When count over, panel alarms and motor stops after trimming.<br>6: Count down by trimming. When count over, panel alarms and motor stops after trimming. |
| <b>153</b> | 1 ~ 100  | 1   | The proportion coefficient of the pieces counter  |
| <b>154</b> | 1 ~ 9999 | 1   | Maximum pieces of the counter   |
| <b>155</b> | 0 ~ 4    | 0   | Count mode selection (For Sewing Piece)<br>0: The counter is invalid<br>1: Count up by pieces. When count over, counter will be auto- reset.<br>2: Count down by pieces. When count over, counter will be auto- reset.<br>3: Count up by pieces. When count over, motor stops and the counter must be reset by the external switch or the P key on the panel.<br>4: Count down by pieces. When count over, motor stops and the counter must be reset by the external switch or the P key on the panel.  |
| <b>156</b> | 0 ~ 9999 | 0   | The output chopping duty cycle of No. 1/2/3/4 solenoid in each bit.   |
| <b>157</b> | 0 ~ 9999 | 0   | The output chopping duty cycle of No. 5/6/7/8 solenoid in each bit.   |
| <b>158</b> | 0~1      | 0   | Counter adjustable: 0:adjustable, 1:not adjustable  |
| <b>161</b> | 0/1/2    |     | Direction of parameter transfer:<br>0: no action 1: from operation panel to controller 2: from controller to operation panel.   |
| <b>162</b> | 1, 2     |     | Restore factory setting   |
| <b>163</b> | 1, 2     |     | Save current parameters as user-defined default parameters.   |
| <b>164</b> | -        |     | Password  |
| <b>165</b> | -        |     | Restore the default factory setting, and cover the user defined para setting,   |

Note: To keep 160~164 parameters to be effective, you need press  key about 3-5 seconds.

| NO. | Range     | Default | Description   |
|-----|-----------|---------|---|
| 200 | 0/1/2     | 0       | Trimming mode selection:0: lockstitch machine1: interlock machine: Needle stops at the up position and trim. 2: overlock machine: manual trimming |
| 201 | 0 ~ 359   | 0       | Mechanical angle after trimming   |
| 203 | 5-359     | 10      | Trimming output start angle TS (down needle position angle as the reference point)  |
| 204 | 10-359    | 120     | Trimming output end angle TE (Down needle position angle is the reference and this value should be bigger than TS)                                |
| 20A | 10-60     | 20      | Motor torque improvement coefficient during trimming  |
| 211 | 5-359     | 25      | Thread release output start angle LS (down needle position angle as the reference point)  |
| 212 | 10-359    | 350     | Thread release output end angle LE (Down needle position angle is the reference and this value should be bigger than LS)                          |
| 213 | 1-999     | 1       | Thread release output start delay time T1 (ms)  |
| 214 | 1 ~ 999   | 10      | Thread release output end delay time T2 (ms) after up needle position   |
| 215 | 0/1       | 1       | Wiper function 0: disable 1: enable   |
| 216 | 1 ~ 999   | 10      | Wiper output delay time (ms)  |
| 217 | 1 ~ 9999  | 70      | Wiper output time (ms)  |
| 219 | 0/1       | 0       | Thread clamp function 0: disable 1: enable  |
| 21A | 10-359    | 120     | Thread clamp start angle  |
| 21B | 11-359    | 318     | Thread clamp end angle  |
| 21E | 11-359    | 160     | The angle of presser foot solenoid off during thread clamping   |
| 220 | 200 ~ 360 | 360     | Stop position after trimming (motor can stop with a reverse angle)  |
| 231 | 0/1       | 0       | Auto test mode: 0: stitches mode 1: time mode   |
| 232 | 0 ~ 1000  | 300     | Safe switch filtering time (ms)   |
| 234 | 0/1       | 0       | Motor direction: 1: CCW 0: CW   |
| 240 | 0 ~ 9999  | 1000    | The ratio between motor and machine (1000 stands for 1:1)   |
| 242 | 0 ~ 359   | 0       | Up needle stop angle (After detecting the synchronizer signal)  |
| 243 | 0 ~ 359   | 175     | Down needle stop angle  |
| 244 | 0 ~ 800   | 200     | Running delay time when presser footer comes down (ms)  |
| 247 | 0 ~ 2000  | 0       | The alarm time for adding oil (hours), disabled when setting 0  |

### G.1.2. Monitor mode

- Pressing **P** + **⏏** key. The LCD will display **0240000**.
- Press **▲** **⏏** **▼** **↶** **↷** **▼** key to adjust the parameter number, and the para value is shown at the same time.
- Press **P** key then return to normal sewing mode.

| Parameter | Description               | Parameter | Description                         |
|-----------|---------------------------|-----------|-------------------------------------|
| 010       | Counter for stitches      | 024       | Machine angle                       |
| 011       | Counter for sewing pieces | 025       | The sampling voltage of pedal       |
| 013       | State of encoder          | 026       | The ratio between motor and machine |
| 020       | DC voltage                | 027       | The total used time(hours) of motor |
| 021       | Machine speed             | 028       | The sampling voltage of interaction |
| 022       | The phase current         | 029       | Software version                    |
| 023       | Initial electrical angle  | 030-037   | The history record of error codes   |

## G.2. 4 SPECIAL FUNCTIONS

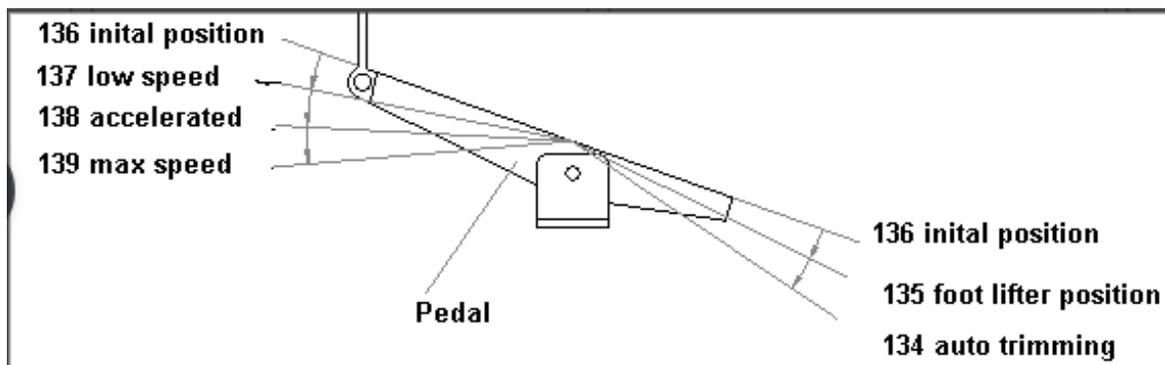
### G.2.1. The needle stop position adjustment

|   |  |   |
|---|--|---|
| 1 |  | Step 1: Press <b>P</b> + <b>Q</b> key, then enter the monitor mode. Parameter 024 is shown, which means the default up needle stop position in angle. |
| 2 |  | Step 2: Turn the hand wheel and adjust to the right position as up needle stop, and the needle position angle is shown simultaneously.                |
| 3 |  | Step 3: Press <b>P</b> + <b>I</b> key, the new up needle position is preserved, and the parameter is set to zero.                                     |

#### Factory setting default

|   |  |   |
|---|--|---|
| 1 |  | Step 1: Press <b>P</b> + <b>Q</b> key, then enter the monitor mode.   |
| 2 |  | Step 2: Press key <b>F</b> for about 5 seconds, then Default Factory Setting is recovered displaying as left LCD.                   |
| 3 |  | When the LCD is displayed as 8888888, the recovery is accomplished. The machine is recovered back to the initial state in delivery. |

### G.2.2. Pedal sensitivity adjustment



The pedal starts moving from its initial position (parameter 136), when motor stops, slowly pressing forward to the low speed point (parameter 137), the motor runs at the minimum speed (parameter 100), continuing to increase the speed (parameter 138), when the motor starts to speed up, until the maximum sewing speed (parameter 139), when the motor runs up to the maximum speed (parameter 101).

When the pedal is stepped back to the foot lifter position (parameter 135), the presser foot lifts. Continuing to the automatic trimming position (parameter 134) and the thread is trimmed. If the automatic backtacking is set, the machine starts to backtack.

By adjusting the corresponding parameters, the user can acquire a proper response to fit the personal habits.

### G3. ERROR CODES AND WARNING MESSAGES

If an error code appears:

1. Check if connection of the machine is correct.
2. Reload the factory settings and try again.

| Alarm code     | Description                  | Corrective  |
|----------------|------------------------------|---|
| <b>RLA-1</b>   | Fuel filling warning         | Fuel filling. Press P key to clear.   |
| <b>RLA-2</b>   | Count over for stitches      | The counter reaches the limit. Press P key to reset the counter.                              |
| <b>RLA-3</b>   | Count over for sewing pieces | The counter reaches the limit. Press P key to reset the counter.                              |
| <b>RLA-4</b>   | Emergency stop               | Press the emergency key stop to clear.  |
| <b>RLA-5</b>   | Lift needle locking          | Then press the needle lifting locking button, can eliminate the needle lifting locking state. |
| <b>POW OFF</b> | Power is off                 | Please wait for 30 seconds, then turn on the power switch.                                    |
| <b>RP-UP</b>   | Safety switch alarm          | Adjust the machine to the correct position.   |

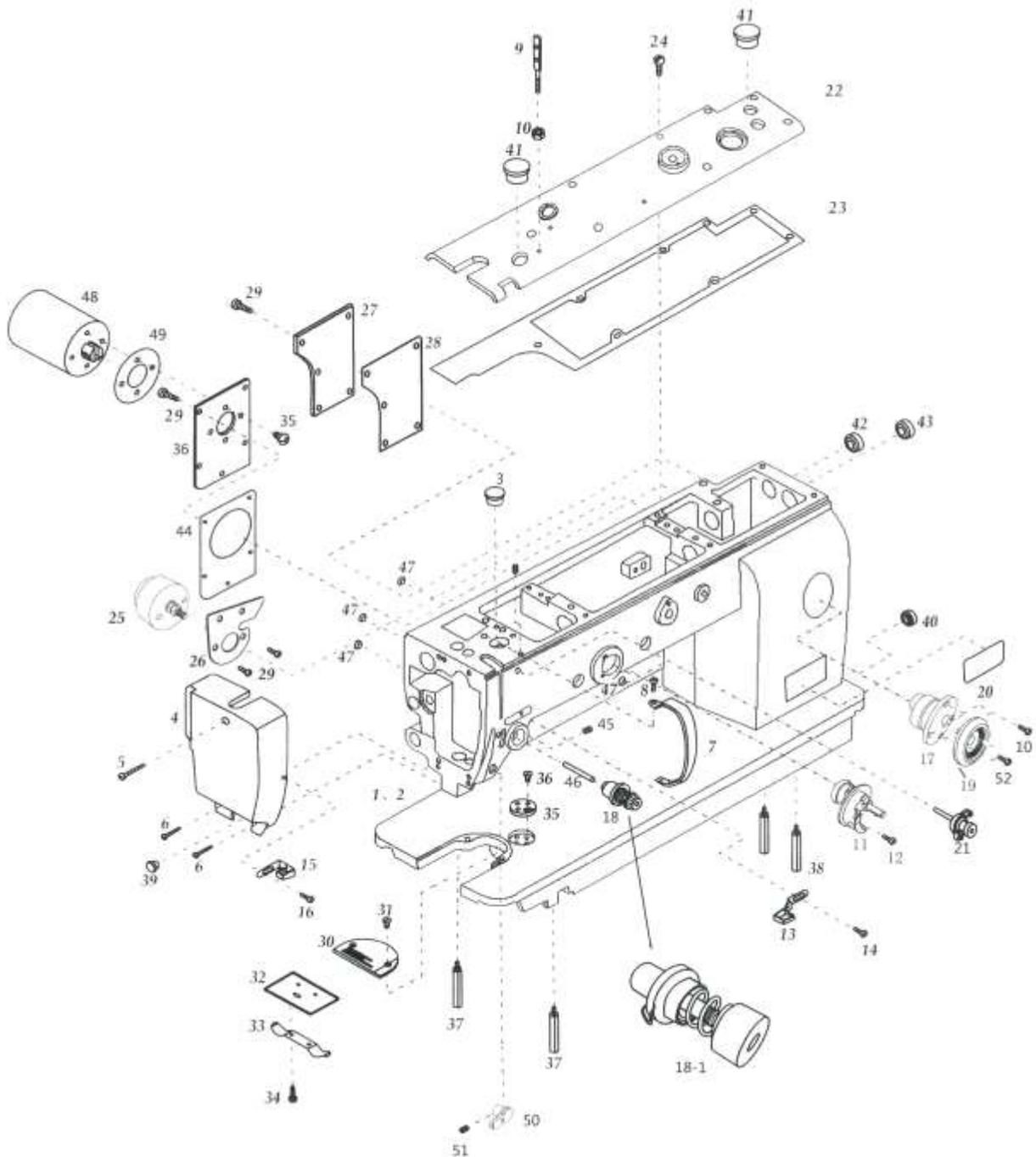
| Error Code    | Description                             | Solution   |
|---------------|---|--|
| <b>ERR-01</b> | Hardware overcurrent                    | Turn off the power switch, and restart after 30 seconds. If the controller still does not work, please replace it and inform the manufacturer.   |
| <b>ERR-02</b> | Software overcurrent                    |  |
| <b>ERR-03</b> | Under-voltage                           | - Check mains voltage - Stabilize mains voltage  |
| <b>ERR-04</b> | Over-voltage when the machine is off    | Disconnect the controller power and check if the input voltage is too high (higher than 264V). If yes, please restart the controller when the normal voltage is resumed. If the controller still does not work when the voltage is at normal level, please replace the controller and inform the manufacturer. |
| <b>ERR-05</b> | Over-voltage in operation               |  |
| <b>ERR-06</b> | Short circuit of solenoid voltage 24V   | - Take plug out, if error continues, replace control box - Test inputs/ outputs for 24V short circuit  |
| <b>ERR-07</b> | Motor current measuring failure         | Turn off the system power, restart after 30 seconds to see if it works well. If such failure happens frequently, seek technical support.   |
| <b>ERR-08</b> | Sewing motor blocked                    | - Eliminate sluggish movement in the sewing machine<br>- Replace encoder - Replace sewing motor  |
| <b>ERR-09</b> | Brake circuit failure                   | Check the brake resistor plug on the electric board. Replace the control box   |
| <b>ERR-10</b> | Communication failure                   | Check the connection and if necessary, plug in. Replace the control box.   |
| <b>ERR-11</b> | Machine head needle positioning failure | Check if the connection line between machine head synchronizer and controller is loose or not, restore it and restart the system. If it still does not work, please replace the controller and inform the manufacturer.  |
| <b>ERR-12</b> | Initial motor electrical angle failure  | - Try 2 to 3 more times after power down<br>if it still does not work, please replace the controller and inform the manufacturer.  |
| <b>ERR-13</b> | Motor HALL failure                      | Turn off the system power, check if the motor sensor plug is loose or dropped off, restore it and restart the system. If it still does not work, please replace the controller and inform the manufacturer.  |
| <b>ERR-14</b> | DSP Read/Write EEPROM failure           | Turn off the system power, restart the system after 30 seconds, if it still does not work, please replace the controller and inform the manufacturer.  |

|               |                                   |  |
|---------------|-----------------------------------|--|
| <b>ERR-15</b> | Motor over-speed protection       |  |
| <b>ERR-16</b> | Motor reversion                   |  |
| <b>ERR-17</b> | HMI Read/Write EEPROM failure     |  |
| <b>ERR-18</b> | Motor overload                    |  |
| <b>ERR-23</b> | Sewing motor blocked Sector error | <ul style="list-style-type: none"> <li>- Eliminate sluggish movement in the sewing machine</li> <li>- Replace encoder    - Replace sewing motor</li> </ul> |



## H. SPARE PARTS LIST

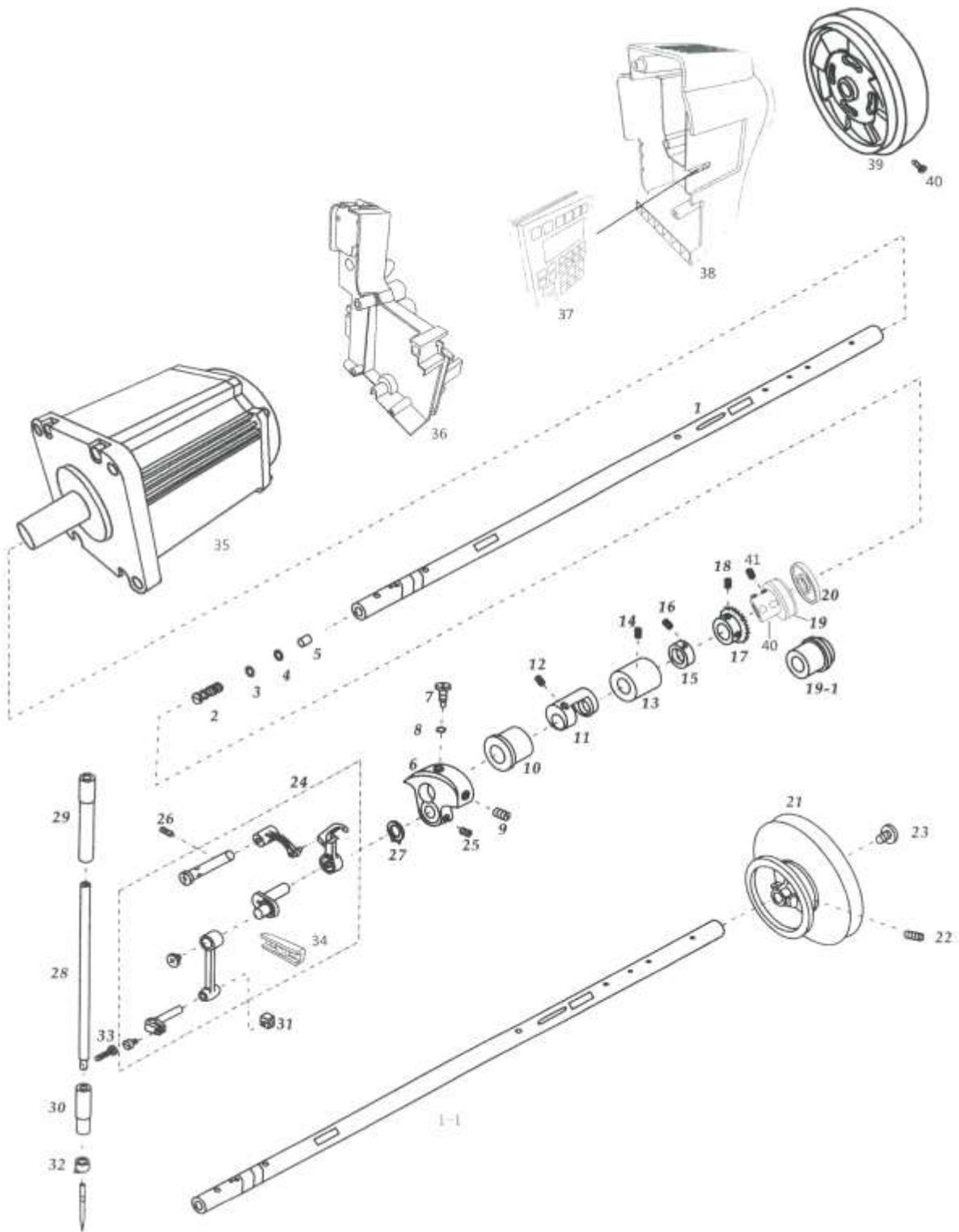
### 1. Machine body & Thread tension



**1. Machine body & Thread tension**

| No.  | Pars No.   | Note | Description                             |
|------|------------|------|---|
| 1    | 103102101  |      | Arm. Bed                                |
| 2    | 103103001  |      | Arm. Bed                                |
| 3    | 86401051   |      | Arm Back Part Rubber Cap (Large)        |
| 4    | 86401001   |      | Face Plate                              |
| 5    | 86401005   |      | Screws For Face Plate (Upper)           |
| 6    | 864001018  |      | Screw C11 '64 " n= 10)                  |
| 7    | 86401007   |      | Thread Take Up Cover                    |
| 8    | 864062011  |      | Screw (11 64 7 n=40)                    |
| 9    | 86401009   |      | Upper Guide Pin Ass'v                   |
| 10   | 86401010   |      | Screw (11/64" n=28)                     |
| 11   | 86401011   |      | Bobbin winder                           |
| 12   | 86401012   |      | Screw (M4)                              |
| 13   | 86401015   |      | Arm Thread Guide                        |
| 14   | 864012004  |      | Screw (9/64 " n=40)                     |
| 15   | 86401017   |      | Face Plate Thread Guide                 |
| 16   | 864012004  |      | Screw (9/64 " n=40)                     |
| 17   | 103110101  |      | Feed Regulator Adjusting Shalt          |
| 18   | 86401060   |      | Thread Tension Control Ass' v           |
| 18.1 | 86401060-1 |      | Thread Tension Ass' v (Soccer)          |
| 19   | 86401021   |      | Scaleplate                              |
| 20   | 86401022   |      | Brand Mark (Arm)                        |
| 21   | 86401013   |      | Sub Upper Thread Tension Assy Control   |
| 22   | 103104001  |      | Top Cover                               |
| 23   | 1031044002 |      | Pin tor Top Cover                       |
| 24   | 864004024  |      | Screw (11/64 » n=10)                    |
| 25   | 86401030   |      | Thread loosen magnet                    |
| 26   | 103125001  |      | Bracket                                 |
| 27   | 103107001  |      | Back Cover (B)                          |
| 28   | 103106001  |      | Gasket For Back Cover (B)               |
| 29   | 86401006   |      | Screw (11/64" n=40)                     |
| 30   | 86401040   |      | Needle Plate                            |
| 31   | 864030017  |      | Screw (11/64 " n=40)                    |
| 32   | 86401042   |      | Slide Plate                             |
| 33   | 864001056  |      | Slide Plate Spring                      |
| 34   | 864001057  |      | Screw SM2. 38X56; 1. 9                  |
| 35   | 864010014  |      | Gauge Plate                             |
| 36   | 103114001  |      | B/T Solenoid Bracket                    |
| 37   | 86401047   |      | Bed Base (Front)                        |
| 38   | 86401048   |      | Bed Base (Rear)                         |
| 39   | 86101049   |      | Face Plate Rubber Cap                   |
| 40   | 86101050   |      | Bed Rubber Cap                          |
| 41   | 86401051   |      | Top Cover Rubber Cap                    |
| 42   | 86401052   |      | Feed Regulator Shatt Rubber Cap         |
| 43   | 86401053   |      | Climb Device Adjusting Shaft Rubber Cap |
| 44   | 103115001  |      | Gasket for B/T Solenoid Bracket         |
| 45   | 86401063   |      | Screw (15/64" n=28)                     |
| 46   | 86401062   |      | Tension Release Pin                     |
| 47   | 86401057   |      | Arm Back Part Rubber Cap (Small)        |
| 48   | 86401065   |      | BT Solenoid Ass' v                      |
| 49   | 86401036   |      | Gasket for BT Solenoid                  |
| 50   |            |      | Clip                                    |
| 51   | 86401061   |      | Screw (11/64" n=10)                     |
| 52   |            |      | Screw (9/64" n=28)                      |

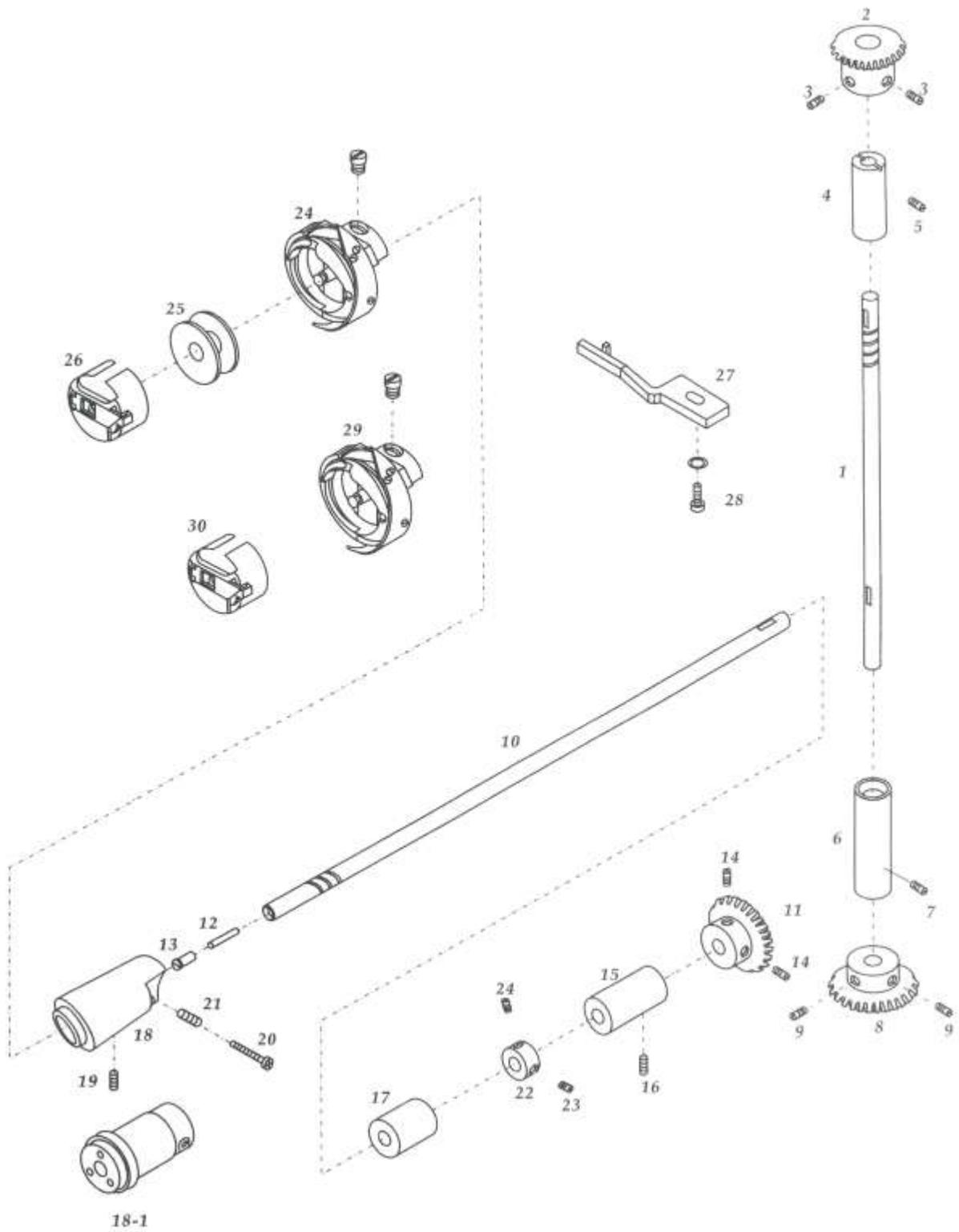
## 2. Upper shaft & Needle Bar



**2. Upper shaft & Needle Bar**

| No.  | Pars No.        | Note | Description                        |
|------|-----------------|------|------------------------------------|
| 1    | 103009001       |      | Upper Shaft                        |
| 1-1  | No Direct drive |      | Upper Shaft                        |
| 2    | 86402002        |      | Oil Adjusting Pin for B-1          |
| 3    | 86402003        |      | O-Ring for B-2                     |
| 4    | 86402005        |      | Washer Shaft Felt                  |
| 5    | 864031004       |      | Upper Shaft Felt                   |
| 6    | 86402008        |      | Link Cam                           |
| 7    | 864031003       |      | Screw (9/32 " n=28)                |
| 8    | 86402003        |      | O-Ring For B-9                     |
| 9    | 86402011        |      | Screw (9/32 " n=28)                |
| 10   | 86402012        |      | Upper Shaft Front Bushing          |
| 11   | 86402013        |      | Blance Cam                         |
| 12   | 86402014        |      | Screw (1/4 " n=40)                 |
| 13   | 86402015        |      | Upper Shaft Middle Bushing         |
| 14   | 864030003       |      | Screw (15/64 " n=28)               |
| 15   | 86402017        |      | Upper Shaft Collar                 |
| 16   | 864003004       |      | Screw (1/4" n=40)                  |
| 17   | 864003020       |      | Upper Shaft Gear Ass' y            |
| 18   | 864003004       |      | Screw (1/4" n=40)                  |
| 19   | 86402021        |      | Bearing                            |
| 19-1 | 86402043        |      | Upper Shaft Rear Bushing           |
| 20   | 864060007       |      | Oil Seal for B-21                  |
| 21   | No Direct drive |      | Pulley                             |
| 22   | No Direct drive |      | Screw (15/64" n=28)                |
| 23   | No Direct drive |      | Screw (5/16" n=24 )                |
| 24   | 86402027        |      | Thread Take Up Lever Assembly      |
| 25   | 864003004       |      | Screw                              |
| 26   | 864020024       |      | Screw                              |
| 27   | 86402030        |      | Protection Plate for B-8           |
| 28   | 103031001       |      | Needel Bar                         |
| 29   | 86403032        |      | Needel Bar Upper Bushing           |
| 30   | 86402033        |      | Needel Bar Lower Bushing           |
| 31   | 86402034        |      | Needel Bar Upper Guide Slide Block |
| 32   | 864002032       |      | Needel bar Thread Guide            |
| 33   | 864044007       |      | Screw (1/8" n=44)                  |
| 34   | 103207001       |      | Slide Slot                         |
| 35   | GF4131-2-35     |      | Motor                              |
| 36   | GF4131-2-36     |      | Circuit Board                      |
| 37   | GF4131-2-37     |      | Operation Panel                    |
| 38   |                 |      | Motor Shell                        |
| 39   |                 |      | Hand Wheel                         |
| 40   |                 |      | Screw (15/64")                     |
| 41   |                 |      | Screw M5                           |
| 42   |                 |      | Coupling                           |

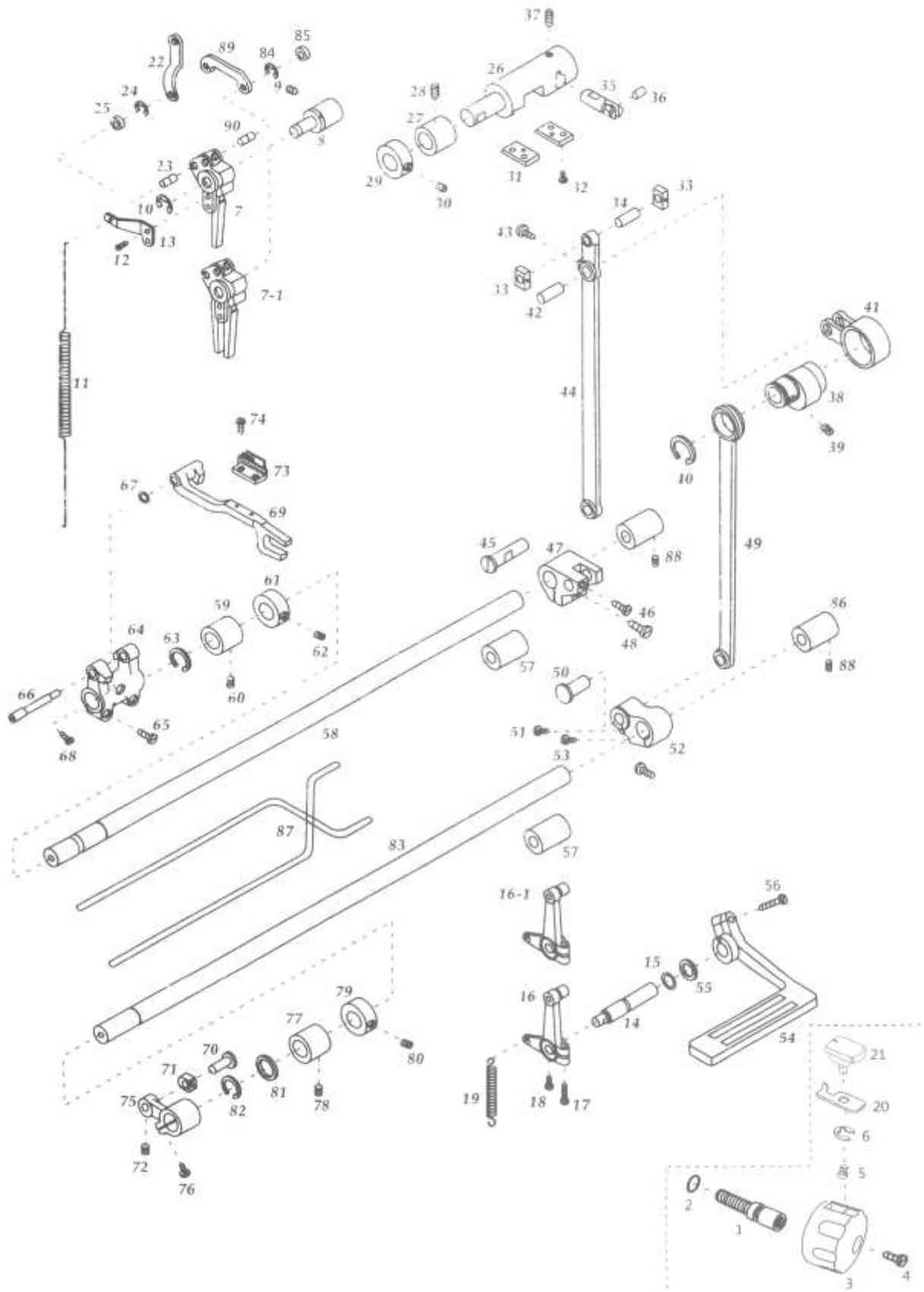
### 3. Upper & Lower shaft & Hook



**3. Upper & Lower shaft & Hook**

| No.  | Pars No.    | Note | Description                              |
|------|-------------|------|--|
| 1    | 103030001   |      | Upright Shaft                            |
| 2    | 864003021   |      | Upright Shaft Upper Gear Ass' y          |
| 3    | 864003004   |      | Screw(1/4" n=40)                         |
| 4    | 86403004    |      | Upper Shaft Upper Bushing                |
| 5    | 864030003   |      | Screw(15/64" n=28)                       |
| 6    | 86403006    |      | Upright Shaft Lower Bushing              |
| 7    | 864030003   |      | Screw(15/64" n=28)                       |
| 8    | 864003024   |      | Upright Shaft Lower Gear Ass' y          |
| 9    | 864030006   |      | Screw(1/4" n=40)                         |
| 10   | 103032001   |      | Lower Shaft                              |
| 11   | 864003023   |      | Lower Shaft Gear Ass' y                  |
| 12   | 864004003   |      | Lower Shaft Felt                         |
| 13   | 864004004   |      | Cap Screw for Lower Shaft Oil Felt       |
| 14   | 864003004   |      | Screw(1/4" n=40)                         |
| 15   | 864003015   |      | Lower Shaft Rear Bushing                 |
| 16   | 864030003   |      | Screw(15/64" n=28)                       |
| 17   | 86403017    |      | Lower Shaft Middle Bushing               |
| 18   | 86403017    |      | Thread Trimmer Lower Shaft Front Bushing |
| 18-1 | 86403017-1  |      | Lower Shaft Front Bushing                |
| 19   | 864030003   |      | Screw(15/64" n=28)                       |
| 20   | 86403021    |      | Screw(3/16" n=28)                        |
| 21   | 86403022    |      | Spring for C-23                          |
| 22   | 864004005   |      | Lower Shaft Collar                       |
| 23   | 864004006   |      | Screw (11/64" n=40)                      |
| 24   | 864004020   |      | Rotary Hook Assembly                     |
| 25   | 864 004 028 |      | Bobbin                                   |
| 26   | 864 004 026 |      | Bobbin Case Assembly                     |
| 27   | 864003030   |      | Inner Bobbin Stopper                     |
| 28   | 864004024   |      | Screw (11/64" n=40)                      |
| 29   | 86403031    |      | Rotary Hook Assembly                     |
| 30   | 86403032    |      | Bobbin Case Assembly                     |

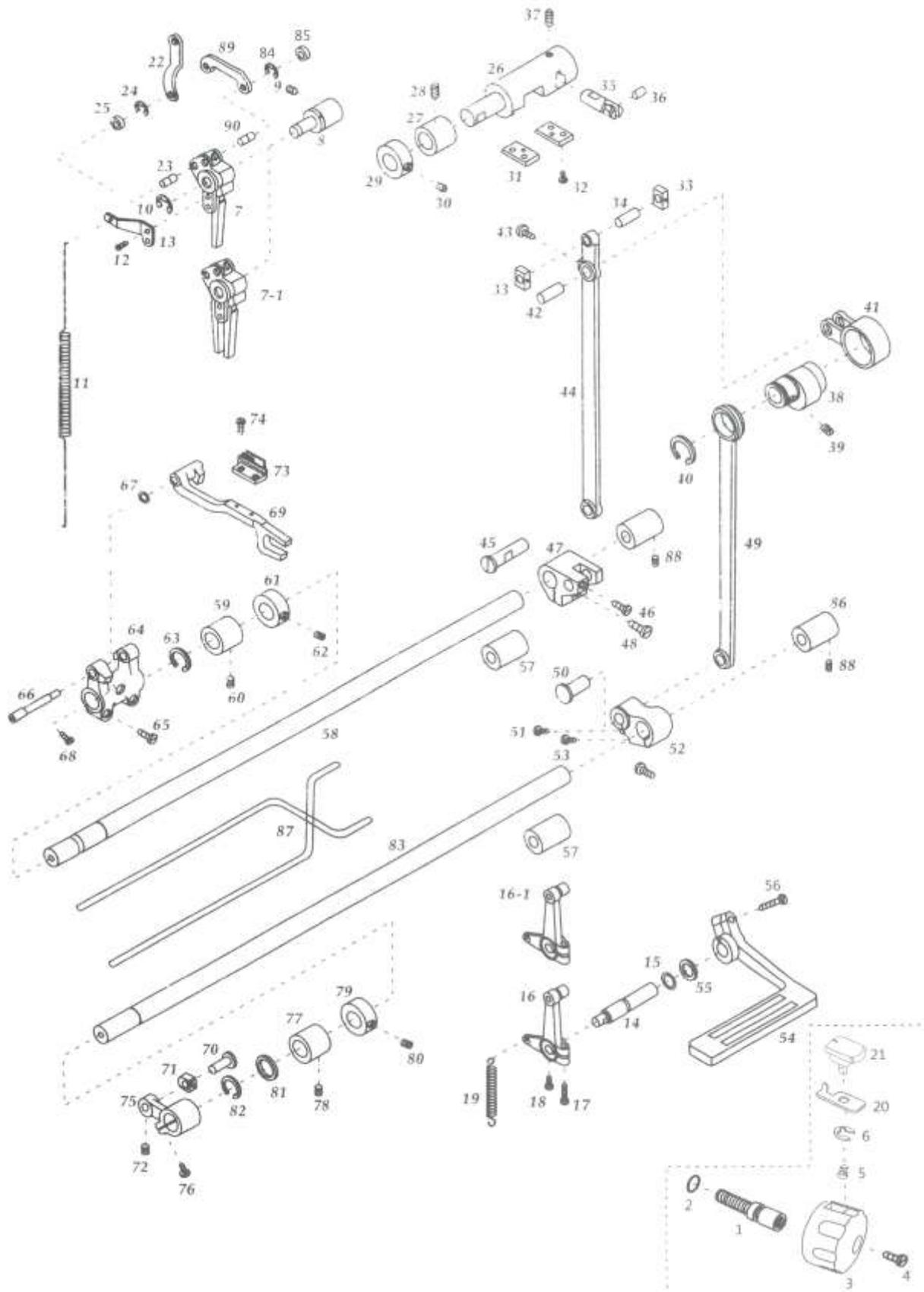
### 4. Lower feed mechanism 1/2



**4. Lower feed mechanism 1/2**

| No. | Pars No.  | Note | Description                              |
|-----|-----------|------|--|
| 1   | 86404001  |      | FeedRegulator Dial Shaft                 |
| 2   | 864045004 |      | P-Ring for D-1                           |
| 3   | 86404003  |      | Feed Regulator Control Plate             |
| 4   | 864006034 |      | Screw(3/16"n=28)                         |
| 5   |           |      | Spring                                   |
| 6   |           |      | Jump Ring                                |
| 7   | 86404007  |      | Feed Adjusting Shaft                     |
| 7-1 | 86404008  |      | Feed Adjusting Shaft                     |
| 8   | 103141001 |      | Feed Adjusting Shaft                     |
| 9   | 864040013 |      | Screw(11/64"n=40)                        |
| 10  | 864010010 |      | E-Ring for D-15                          |
| 11  | 86404012  |      | Spring for D-7,D-8                       |
| 12  | 864062011 |      | Holder for D-12                          |
| 13  | 86404014  |      | Screw(11/64"n=40)                        |
| 14  | 86404015  |      | Reverse Feed Control Lever Shaft         |
| 15  | 86404016  |      | O-Ring for D-25                          |
| 16  | 86404017  |      | Reverse Feed Lever Crans Ass' y          |
| 17  | 86404018  |      | Reverse Feed Lever Crans Ass' y          |
| 18  | 864050017 |      | Screw(11/64"n=40)                        |
| 19  | 86404021  |      | Return Spring for D-17.D-18              |
| 20  | 103152001 |      | Stopper                                  |
| 21  |           |      | Knobs button                             |
| 22  | 103122001 |      | Connecting Rod for Feed Regulator Shaft} |
| 23  | 86404025  |      | Pin for D-24                             |
| 24  | 864040010 |      | E-Ring for D-25                          |
| 25  | 86404027  |      | Feed Regulator Spacer                    |
| 26  | 86404032  |      | Feed Regulator Shaft                     |
| 27  | 86404033  |      | Feed Regulator Shaft Bushing             |
| 28  | 864030003 |      | Screw(15/64"n=28)                        |
| 29  | 864005013 |      | Stopper Collar for D-32                  |
| 30  | 864030006 |      | Screw(1/4"n=40)                          |
| 31  | 86404037  |      | Slide Block Guide Plate                  |
| 32  | 864004024 |      | Screw(11/64"n=40)                        |
| 33  | 86404039  |      | Slide Block                              |
| 34  | 86404040  |      | {Slide Block Shaft                       |
| 35  | 86404041  |      | Reverse Shaft for D-32                   |
| 36  | 86404042  |      | Connecting Pin for D-41                  |
| 37  | 864030003 |      | Screw(15/64"n=28)                        |
| 38  | 86404044  |      | Feed Cam                                 |
| 39  | 864003004 |      | Screw(1/4"n=40)                          |
| 40  | 864003029 |      | C-Ring for D-44                          |
| 41  | 86404047  |      | Connetcting Rod for D-44                 |
| 42  | 86404048  |      | [Pin for D-47                            |
| 43  | 864002038 |      | Screw(11/64"n=40)                        |

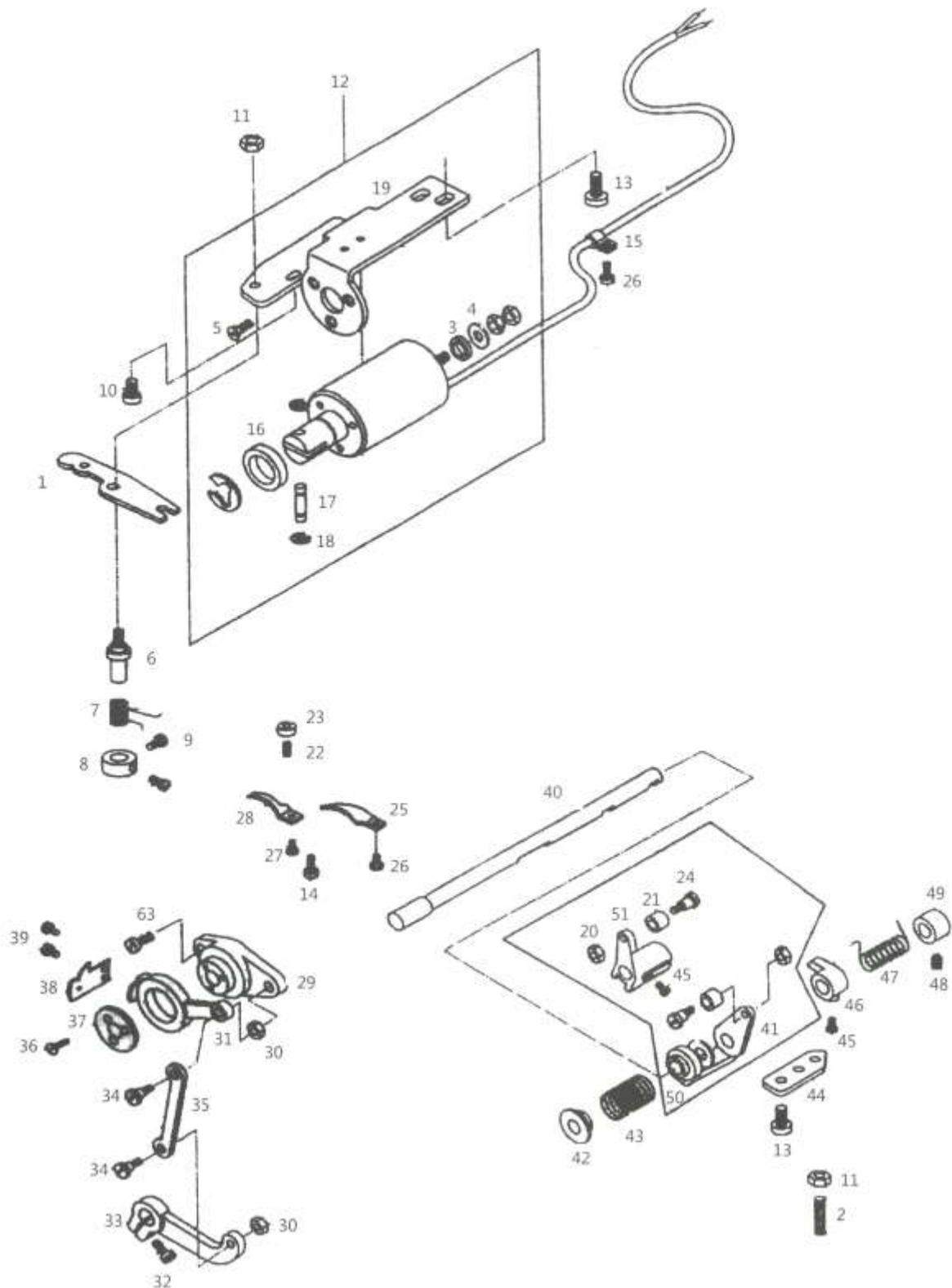
### 4. Lower feed mechanism 2/2



**4. Lower feed mechanism 2/2**

| <b>No.</b> | <b>Pars No.</b> | <b>Note</b> | <b>Description</b>                  |
|------------|-----------------|-------------|-------------------------------------|
| 44         | 86404050        |             | Feed Connecting Rod                 |
| 45         | 86404051        |             | Pin for D-47                        |
| 46         | 864003012       |             | Screw (15/64n=28)                   |
| 47         | 86404053        |             | Level Feed Shaft Crand (Rear)       |
| 48         | 86404054        |             | Screw (15/64'n=28)                  |
| 49         | 86404055        |             | Crand Rod                           |
| 50         | 86404056        |             | Connecting Pin for D-55             |
| 51         | 864040005       |             | Screw (3/16n=32)                    |
| 52         | 86404058        |             | Feed Lifting Shaft Crand(Rear)      |
| 53         | 864040005       |             | Screw (3/16'n=32)                   |
| 54         | 86404060        |             | Reverse Feed Level                  |
| 55         | 86404061        |             | Washer for Reverse Feed Lever Shaft |
| 56         | 864040005       |             | Screw (3/16"n=32)                   |
| 57         |                 |             | Middle Bushing                      |
| 58         | 103033001       |             | Level Feed Shaft                    |
| 59         | 86404065        |             | Level Feed Shaft Bushing            |
| 60         | 864030003       |             | Screw (15/64"n=28)                  |
| 61         | 864005013       |             | Collar for D-64                     |
| 62         | 864003004       |             | Screw (1/4'n=40)                    |
| 63         | 864005011       |             | C-Ring for D-64                     |
| 64         | 864005007       |             | Feed Bar Crank                      |
| 65         | 864005008       |             | Screw (3/16"n=28)                   |
| 66         | 864005005       |             | Feed Bar Shaft                      |
| 67         | 864005004       |             | Washer for D-72                     |
| 68         | 864002037       |             | Screw (11/64"n=40)                  |
| 69         | 86404075        |             | Feed Bar                            |
| 70         | 86404076        |             | Feed Bar Block Shaft                |
| 71         | 86404077        |             | Sliding Block                       |
| 72         | 864002038       |             | Screw (11/64n=40)                   |
| 73         | 864093001       |             | Feed Dog                            |
| 74         | 864044007       |             | Screw (1/8'n=44)                    |
| 75         | 86404081        |             | Feed Lifting Shaft Crand (Back)     |
| 76         | 864005008       |             | Screw (3/16"n=28)                   |
| 77         | 86404033        |             | Feed Lifting Shaft Bushing          |
| 78         | 864030003       |             | Screw (15/64"n=28)                  |
| 79         | 864005013       |             | Collar for D-89                     |
| 80         | 864003004       |             | Screw (1/4'n=40)                    |
| 81         | 864040029       |             | Washer for D-89                     |
| 82         | 864005011       |             | C-Ring for D-89                     |
| 83         | 103034001       |             | Feed Lifting Shaft                  |
| 84         | 86404030        |             | E-Ring for D-29                     |
| 85         | 86404031        |             | B/T Solenoid Crank Spacer           |
| 86         | 86404092        |             | Bushing for D-64, D-89              |
| 87         | 864005028       |             | Oil Wick                            |
| 88         | 864030003       |             | Screw (15/64"n=28)                  |
| 89         | 86404028        |             | B/T Solenoid Crank                  |
| 90         | 86404029        |             | B/T Solenoid Crank Pin              |

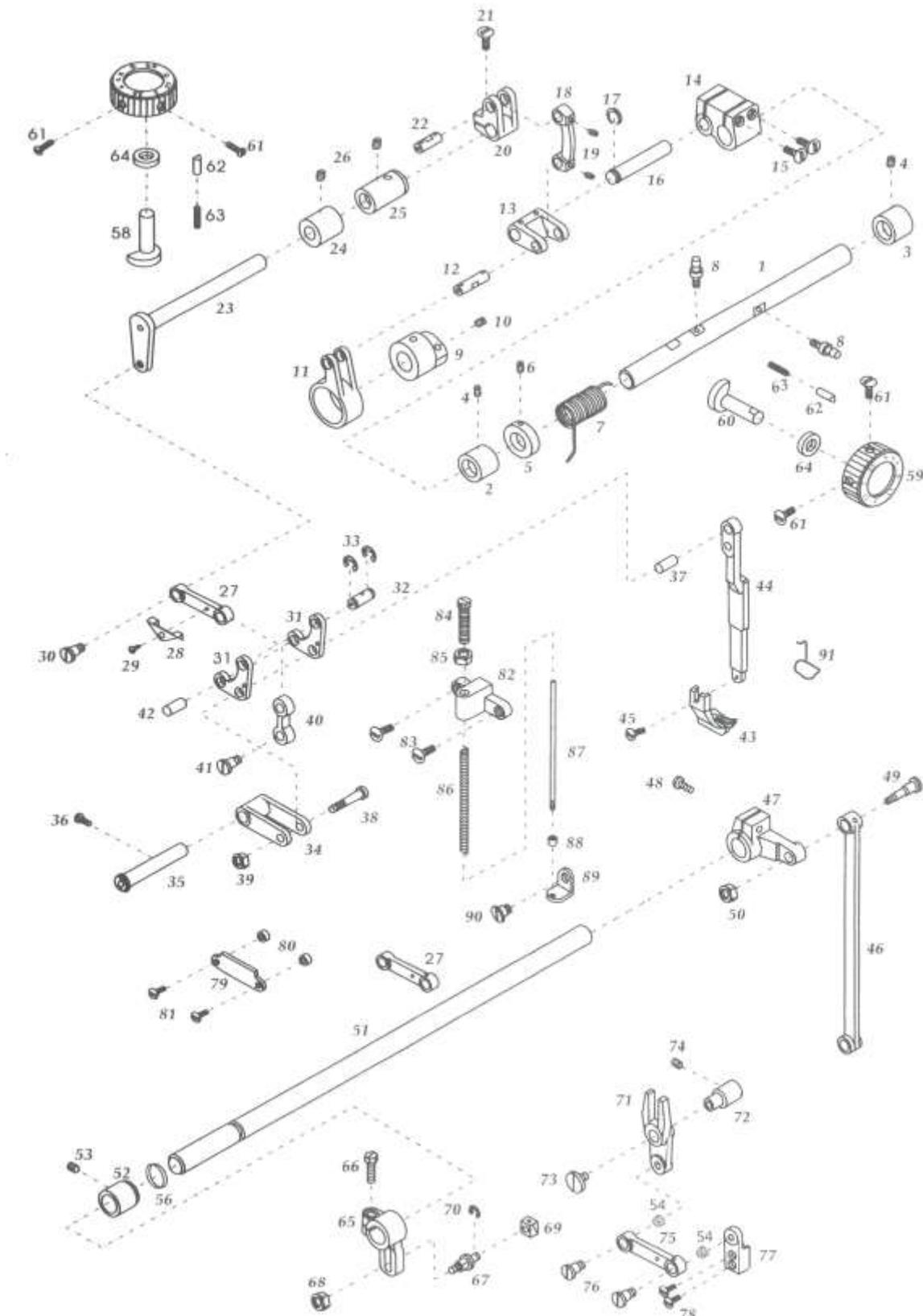
### 5. Thread trimmer mechanism



**5. Thread trimmer mechanism**

| No. | Pars No.   | Note | Description                             |
|-----|------------|------|---|
| 1   | 8640-004   |      | Driving Plate                           |
| 2   | 8640-031   |      | Screw                                   |
| 3   | 18640-001D |      | Washer (Small)                          |
| 4   |            |      | Wahser_GB/T96. 15 necklage              |
| 5   |            |      | Screw GB/T819. 2 M4*6                   |
| 6   | 8640-008   |      | Driving Plate Shaft                     |
| 7   | 8640-009   |      | Driving Plate Spring                    |
| 8   | 18640-010  |      | Driving Plate                           |
| 9   | 8640-024   |      | Screw SM9/64"*4046. 5                   |
| 10  | 8640-015   |      | Screw SM11/64"*40*10                    |
| 11  | 8640-008   |      | Driving Shaft Nut                       |
| 12  | 8640-001   |      | Thread Trimmer Electromagnet Ass' y     |
| 13  | 8640-056   |      | Screw SM15/64"*28#12                    |
| 14  | 8640-047   |      | Screw SM11/64"*40*7. 5                  |
| 15  | 8640-040   |      | Thread Clamp                            |
| 16  | 8640-001C  |      | Washer (Big)                            |
| 17  | 8640-001A  |      | Thread Trimmer Electromagnet Pin        |
| 18  |            |      | E-Ring                                  |
| 19  | 8640-024E  |      | Nut SM3/16"*28                          |
| 20  | 8640-024A  |      | Thread Trimmer Cam Crank (Left)         |
| 21  | 8640-024D  |      | Contact Roller                          |
| 22  | 8640-013   |      | Screw SM9/64"*4048, 5                   |
| 23  | 8640-014   |      | Nut                                     |
| 24  | 8640-024C  |      | Screw SM3/16"*20#8, 5                   |
| 25  | 8640-016   |      | Thread Retaining Plate                  |
| 26  | 8640-017   |      | Screw SM9/64"*4048                      |
| 27  | 8640-002   |      | Screw SM9/64: *40*4, 3                  |
| 28  | 8640-002   |      | Fix Knife                               |
| 29  | 8640-017   |      | Blade Adapter                           |
| 30  | 8640-013   |      | Nut                                     |
| 31  | 8640-018   |      | Blade Adapter (Left)                    |
| 32  | 8640-008D3 |      | Screw SM11/647*40*12                    |
| 33  | 8640-019   |      | Thread Trimmer Electromag Driving Crank |
| 34  | 8640-020A  |      | Screw SM11/647#40                       |
| 35  | 8640-020   |      | Blade Adapter Connecting Link           |
| 36  | 8640-021   |      | Screw SM1/8"*44%5, 2                    |
| 37  | 8640-022   |      | Blade Adapter Washer                    |
| 38  | 8640-003   |      | Rotary Knife                            |
| 39  | 8640-007   |      | Screw SM11/64"*40                       |
| 40  | 8640-023   |      | Cam Crank Shaft                         |
| 41  | 8640-024B  |      | Thread Trimmer Cam Crank (Right)        |
| 42  | 8640-025   |      | Rubber Washer                           |
| 43  | 8640-026   |      | Torsional Spring                        |
| 44  | 8640-027   |      | Stop Plate                              |
| 45  | 8640-010D4 |      | Screw SM15/64"*28#8, 5                  |
| 46  | 8640-028   |      | Stopper                                 |
| 47  | 8640-029   |      | Cam Crank Torsional Spring              |
| 48  | 8640-002B2 |      | Screw SM1/4"*40%4                       |
| 49  | 8640-030   |      | Cam Shaft Collar                        |
| 50  | 8640-024F  |      | Plastic Washer                          |

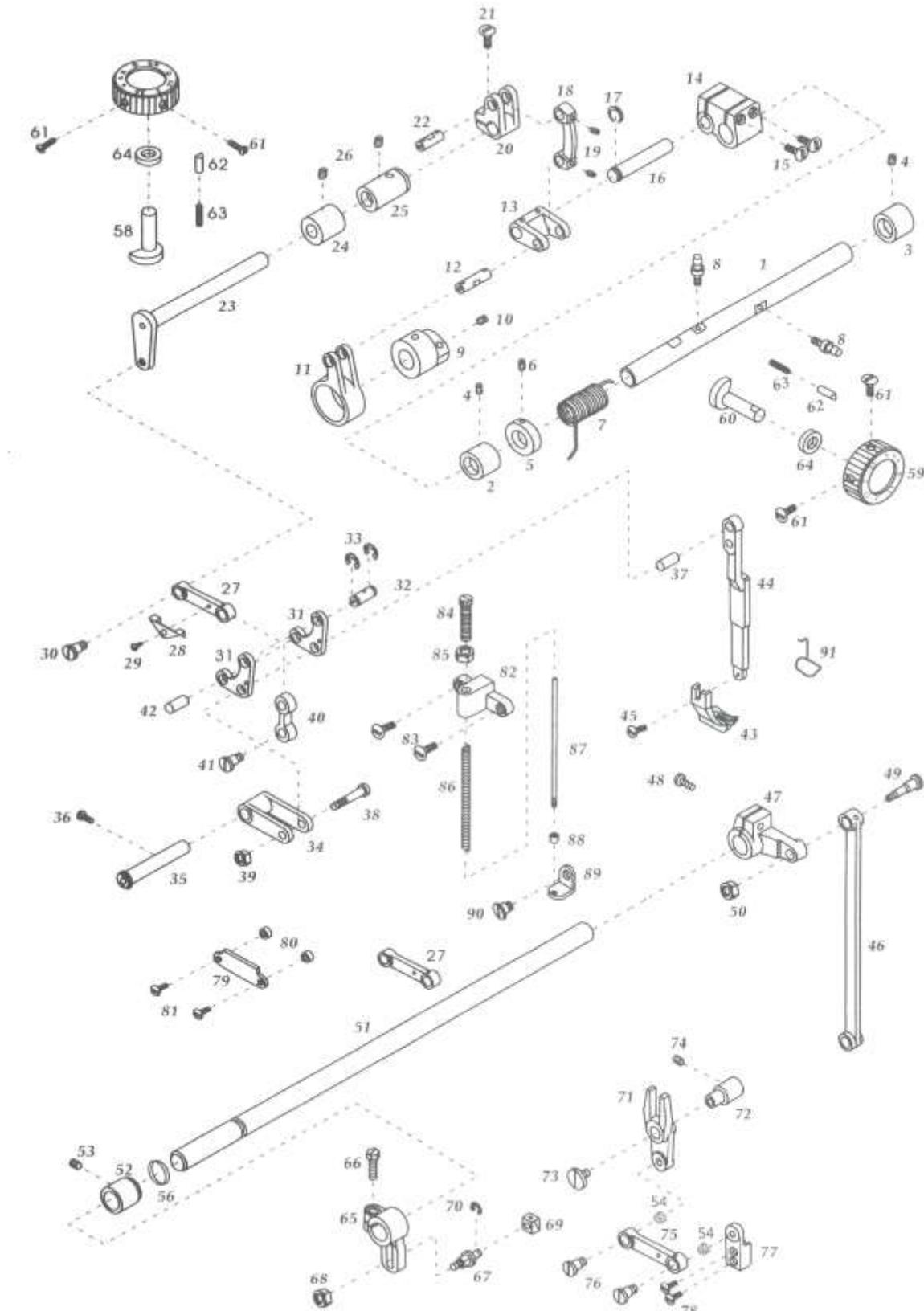
### 6. Upper feed mechanism 1/2



**6. Upper feed mechanism 1/2**

| No. | Pars No.  | Note | Description                                  |
|-----|-----------|------|--|
| 1   | 103123001 |      | Climb Device Adjusting Shaft                 |
| 2   | 86404033  |      | Climb Device Adjusting Shaft Bushing (Front) |
| 3   | 86406003  |      | Climb Device Adjusting Shaft Bushing (Rear)  |
| 4   | 864070003 |      | Screw (11/64"n=40)                           |
| 5   | 864005013 |      | Clooar for F-1                               |
| 6   | 864003004 |      | Holder for F-7                               |
| 7   | 86406007  |      | Return Spring for F-l                        |
| 8   | 86406008  |      | Holder for F-7                               |
| 9   | 86406009  |      | Upper Feed Driving Eccentric Cam             |
| 10  | 864003004 |      | Screw (1/4"n=40)                             |
| 11  | 86406011  |      | Upper Feed Driving Eccentric Cam Rod         |
| 12  | 86406012  |      | Connecting Pin for F-11                      |
| 13  | 86406013  |      | Connecting Link for F-Ll                     |
| 14  | 86406014  |      | Upper Feed Driving Contro] Crank             |
| 15  | 864005008 |      | Screw (3/16"n=28)                            |
| 16  | 86406016  |      | Connecting Shaft for F-14                    |
| 17  |           |      | O-Ring for F-16                              |
| 18  | 86406018  |      | Upper Feed Driving Connecting Link           |
| 19  | 864040013 |      | Screw (11/64n=40)                            |
| 20  | 86406020  |      | Upper Feed Driving Crank                     |
| 21  | 864020024 |      | Screw (15/64"n=28)                           |
| 22  | 86406022  |      | Connecting Pin for F-20                      |
| 23  | 86406023  |      | Upper Feed Driving Shaft                     |
| 24  | 86406024  |      | Upper Feed Driving Shaft Front Bushing       |
| 25  | 86406025  |      | Upper Feed Driving Shaft Rear Bushing        |
| 26  | 864030003 |      | Screw (15/64"n=28)                           |
| 27  | 86406027  |      | Upper Feed Driving Rod                       |
| 28  | 86406028  |      | Upper Feed Driving Rod Wick Holder           |
| 29  | 864020006 |      | Screw (9/64"n=40)                            |
| 30  | 86406030  |      | Hinge Screw for Upper Feed Driving Rod       |
| 31  | 86406031  |      | Upper Feed Connecting Link                   |
| 32  | 86406032  |      | Upper Feed Conecting Link Pin                |
| 33  | 864040010 |      | JE-Ring for F-32                             |
| 34  | 86406034  |      | Upper Feed Lever Rock Crank                  |
| 35  | 86406035  |      | Upper Feed Lever Rock Crank Shaft            |
| 36  | 864030010 |      | Screw (15/64"n=28)                           |
| 37  | 86406037  |      | Upper Feed Lever Connecting Pin              |
| 38  | 86406038  |      | Upper Feed Lever Rock Crank Shaft            |
| 39  | 86406039  |      | Screw (15/64"n=28)                           |
| 40  | 86406040  |      | Presser Bar braket Connecting Link           |
| 41  | 86406030  |      | HingeScrew for F-40                          |
| 42  | 86406042  |      | Pin for F-40                                 |
| 43  | 86406043  |      | Upper Feed Presser Foot                      |
| 44  | 86406044  |      | Upper Feed Lever                             |
| 45  | 86402044  |      | Screw (9/64"n=40)                            |
| 46  | 86406046  |      | Upper Feed Lever Level Driving Rod           |

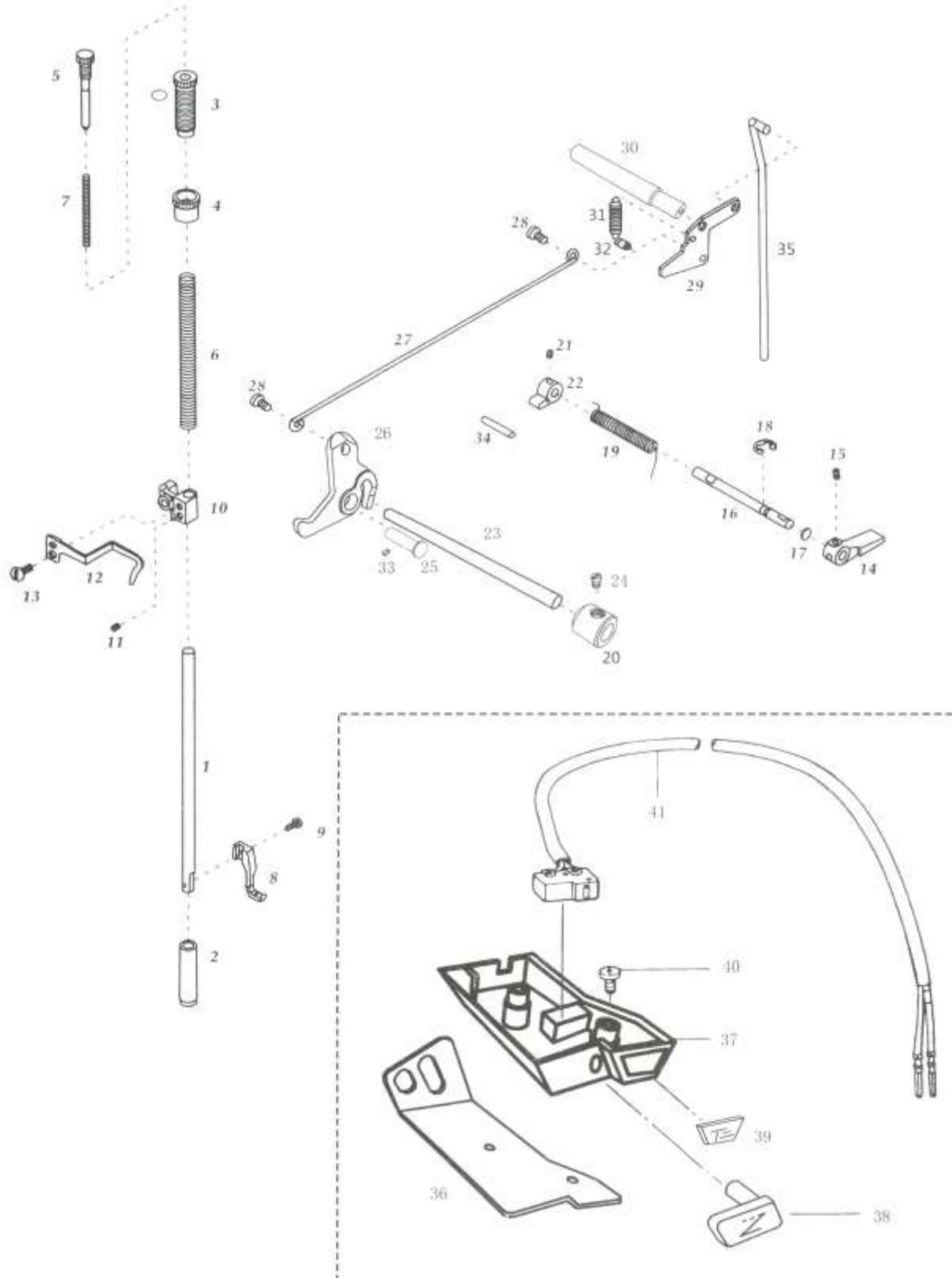
### 6. Upper feed mechanism 2/2



**6. Upper feed mechanism 2/2**

| No. | Pars No.  | Note | Description                                  |
|-----|-----------|------|--|
| 47  | 86406047  |      | (9/32"n=28)                                  |
| 48  | 864020024 |      | Screw (15/64"n=28)                           |
| 49  | 86406049  |      | H. Screw for Up.Feed Lev. Driv. Sh. Cr. Rear |
| 50  | 864010049 |      | Nut_(9/327n=28)                              |
| 51  | 103062001 |      | Upper Feed Lever Level Driving Shaft         |
| 52  | 86404092  |      | Upper Feed Lev.Driving Shaft Front Bushing   |
| 53  | 86403003  |      | Screw (15/64"n=28)                           |
| 54  |           |      | Bearing                                      |
| 55  | 864030003 |      | Screw (15/64"n=28)                           |
| 56  | 86406056  |      | O-Ring for F-51                              |
| 57  | 86406057  |      | Climb Device Dial Ass' y(Top Cover)          |
| 58  | 86406058  |      | Climb Device Eccentric Cam(Top Cover)        |
| 59  | 86406057  |      | Climb Device Dial Assy ('Arm )               |
| 60  | 86406060  |      | Climb Device Eccentric Cam(Arm)              |
| 61  | 86406061  |      | Screw (11/64"n=40)                           |
| 62  | 86406062  |      | Pin for F-57 F-59                            |
| 63  | 86406063  |      | Spring for F-62                              |
| 64  | 86406064  |      | Climb Device Dial Support Ring               |
| 65  | 86406065  |      | Upper Feed Level                             |
| 66  | 86406066  |      | Screw (15/64"n=28)                           |
| 67  | 864010058 |      | Upper Feed Level Adjusting Shaft             |
| 68  | 864010060 |      | Nut (1/47n=40)                               |
| 69  | 864010059 |      | Block  |
| 70  | 864040010 |      | E-Ring for F-67                              |
| 71  | 86406072  |      | Upper Feed Level Driving Link                |
| 72  | 86406073  |      | Hinge Shaft for F-72                         |
| 73  | 86406074  |      | Set Screw for F-72                           |
| 74  | 864030010 |      | Screw (15/64"n=28)                           |
| 75  | 86406076  |      | Upper Feed Lever Level Adjusting Crank       |
| 76  | 86406030  |      | Hinge Screw for F-76                         |
| 77  | 86406078  |      | Upper Feed Level Holder                      |
| 78  | 864062005 |      | Screw(9/64"n=40)                             |
| 79  | 86406080  |      | Upper Feed Lever Support Plate               |
| 80  |           |      | Upper Feed Lever Support Plate Ring          |
| 81  | 864050017 |      | Screw(11/64"n=40)                            |
| 82  | 86406083  |      | Frame for Up. Feed Pressure Adj. Screw       |
| 83  | 864044005 |      | Screw (11/64'n=40)                           |
| 84  | 864010053 |      | Screw( 9/32"n=28)                            |
| 85  | 864010054 |      | Nut (9/32n=28)                               |
| 86  | 864010049 |      | Upper Feed Pressure Adjusting Spring         |
| 87  | 86406088  |      | Upper Feed Pressure Adjusting Spring Bar     |
| 88  | 86406089  |      | Fulcrnm for F-87                             |
| 89  | 86406090  |      | Fulcrnm for F-88                             |
| 90  | 86406091  |      | Hinge Screw for F-90                         |
| 91  | 86406092  |      | Needle Bar Safety Guide                      |

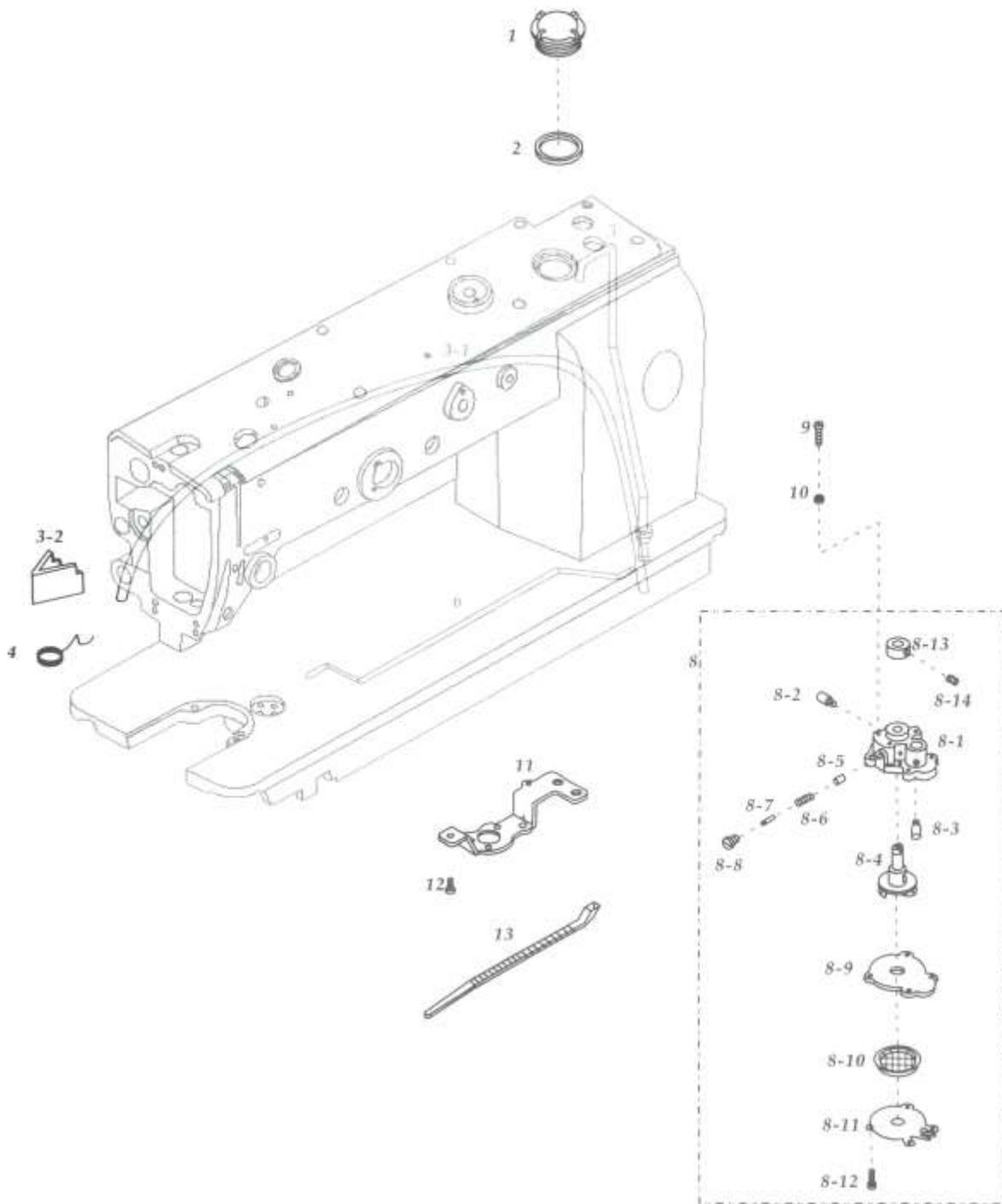
7. Tension release mechanism and reverse button



**7. Tension release mechanism and reverse button**

| No. | Pars No.  | Note | Description                               |
|-----|-----------|------|---|
| 1   | 103070001 |      | Presser Bar                               |
| 2   | 86407002  |      | Presser Bar Bushing                       |
| 3   | 86407003  |      | Pressure Adjusting Screw                  |
| 4   | 86407004  |      | Nut for Pressure Adjusting Screw          |
| 5   | 86407005  |      | Sub Pressure Adjusting Screw              |
| 6   | 864020005 |      | Pressure Adjusting Spring                 |
| 7   | 86406087  |      | Sub Pressure Adjusting Spring             |
| 8   | 86407008  |      | Sub Press Foot                            |
| 9   | 864020006 |      | Screw (9/64"n=40)                         |
| 10  | 86407010  |      | Presser Bar Braket                        |
| 11  | 864070005 |      | Screw (15/64"n=28)                        |
| 12  | 86407012  |      | Thread Guide Plate                        |
| 13  | 864002038 |      | Screw(11/64"n=40)                         |
| 14  | 86407014  |      | Presser Bar Lifter                        |
| 15  | 86404032  |      | Screw (M5)                                |
| 16  | 103126001 |      | Presser Bar Lifter shaft                  |
| 17  | 86407017  |      | O-Ring for G-16                           |
| 18  | 864040010 |      | E-Ring for G-16                           |
| 19  | 86407019  |      | Torsion Spring for G-14                   |
| 20  | 103132001 |      | E-Ring for                                |
| 21  | 864003004 |      | Screw(1/4"n=40)                           |
| 22  | 86407022  |      | Presser Bar Lifting Link                  |
| 23  | 103127001 |      | Thread Losen Shaft                        |
| 24  |           |      | Screw (3/16)                              |
| 25  |           |      | Thread Losen Pin                          |
| 26  | 10313001  |      |   |
| 27  | 86407035  |      | Presser Bar Lifting Link Connecting Stick |
| 28  | 86407036  |      | Hinge Screw for Preser Bar Conn.Stick     |
| 29  | 86407037  |      | Knee Lifting Link                         |
| 30  |           |      | Footlifter Shaft                          |
| 31  | 86407039  |      | Spring for G-37                           |
| 32  | 86407040  |      | Connecting Screw for G-39                 |
| 33  |           |      | Screw (9/64")                             |
| 34  | 103133001 |      | Stopper Pin for G-20                      |
| 35  | 86407043  |      | Knee Lifting Bar Stick                    |
| 36  | 864017001 |      | JON-OFF Mounting Plate                    |
| 37  | 864017003 |      | Back Stich ON-OFF Ass' y                  |
| 38  | 864017004 |      | Back Stich Button                         |
| 39  | 86407046  |      | Button                                    |
| 40  | 86407044  |      | Screw                                     |
| 41  | 86407045  |      | Jiggle ON-OFF Ass' y                      |

### 8. Lubrication



**8. Lubrication**

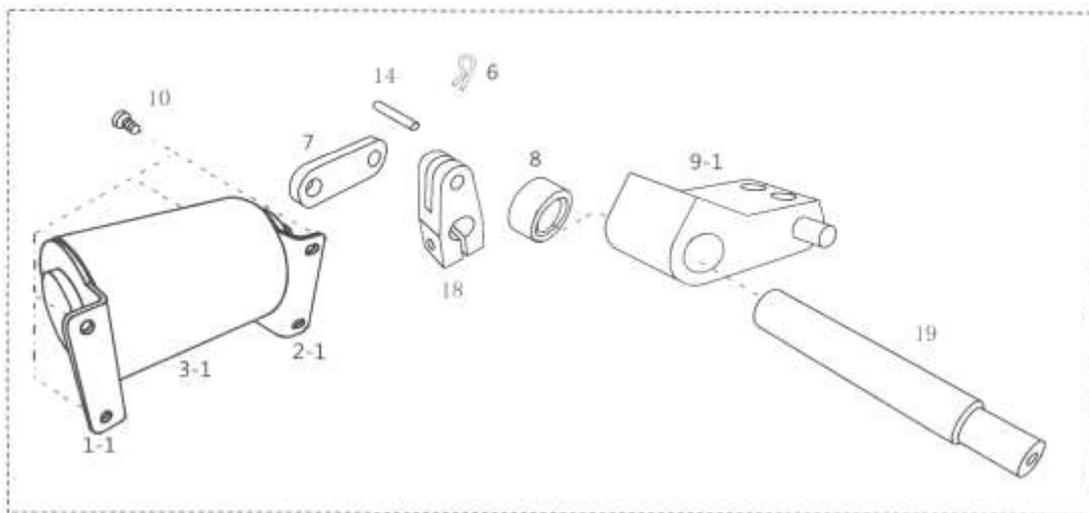
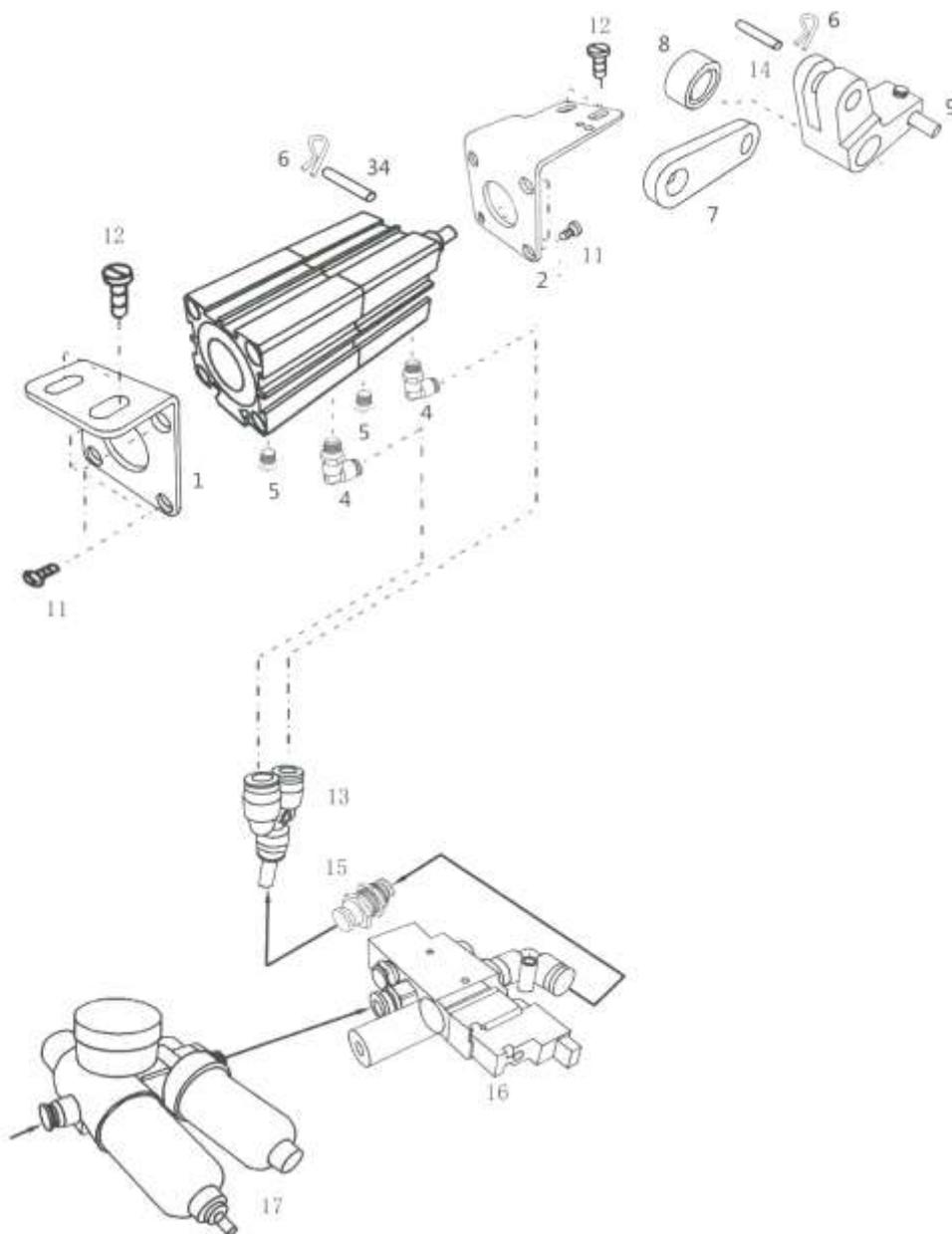
| No.  | Pars No.  | Note | Description                       |
|------|-----------|------|-----------------------------------|
| 1    | 86409001  |      | Oil Gauge Window                  |
| 2    | 86409002  |      | O-Ring for I-1                    |
| 3    | 86409003  |      | Oil Return Tube                   |
| 4    | 86409004  |      | Oil Return Felter                 |
| 5    | 86409005  |      | Oil Return Felter Holder          |
| 6    | 86409006  |      | Upper Shaft Oil Supply Pipe       |
| 7    | 86409007  |      | Lower Shaft Oil Supply Pipe       |
| 8    | 86409008  |      | Oil Pump Ass' y                   |
| 8-1  | 86409009  |      | Oil Pump Body                     |
| 8-2  | 86409010  |      | Nipple for Oil Rerurn Tube        |
| 8-3  | 86409011  |      | Nipple for Lower Shaft Oil Supply |
| 8-4  | 86409012  |      | Impeller                          |
| 8-5  | 86409013  |      | Piston                            |
| 8-6  | 86409014  |      | Piston Spring                     |
| 8-7  | 86409015  |      | Piston Spring Pin                 |
| 8-8  | 86409016  |      | Pistion Spring Pin Screw          |
| 8-9  | 86409017  |      | Oil Pump Cover                    |
| 8-10 | 86409018  |      | Oil Pump Cap                      |
| 8-11 | 86409019  |      | Magnetic Holder                   |
| 8-12 | 864010017 |      | Screw (11/64"n=40)                |
| 8-13 | 86409021  |      | Collar for Impeller Shaft         |
| 8-14 | 864071004 |      | Screw (11/64"n=40)                |
| 9    | 864012004 |      | Screw (9/64 n=40)                 |
| 10   | 86409024  |      | Oil Pump Body Washer              |
| 11   | 86409025  |      | Oil Pump Bradet                   |
| 12   | 864040005 |      | Screw (3/16"n=28)                 |
| 13   |           |      | Nylon Clib                        |

9.

Presser

foot

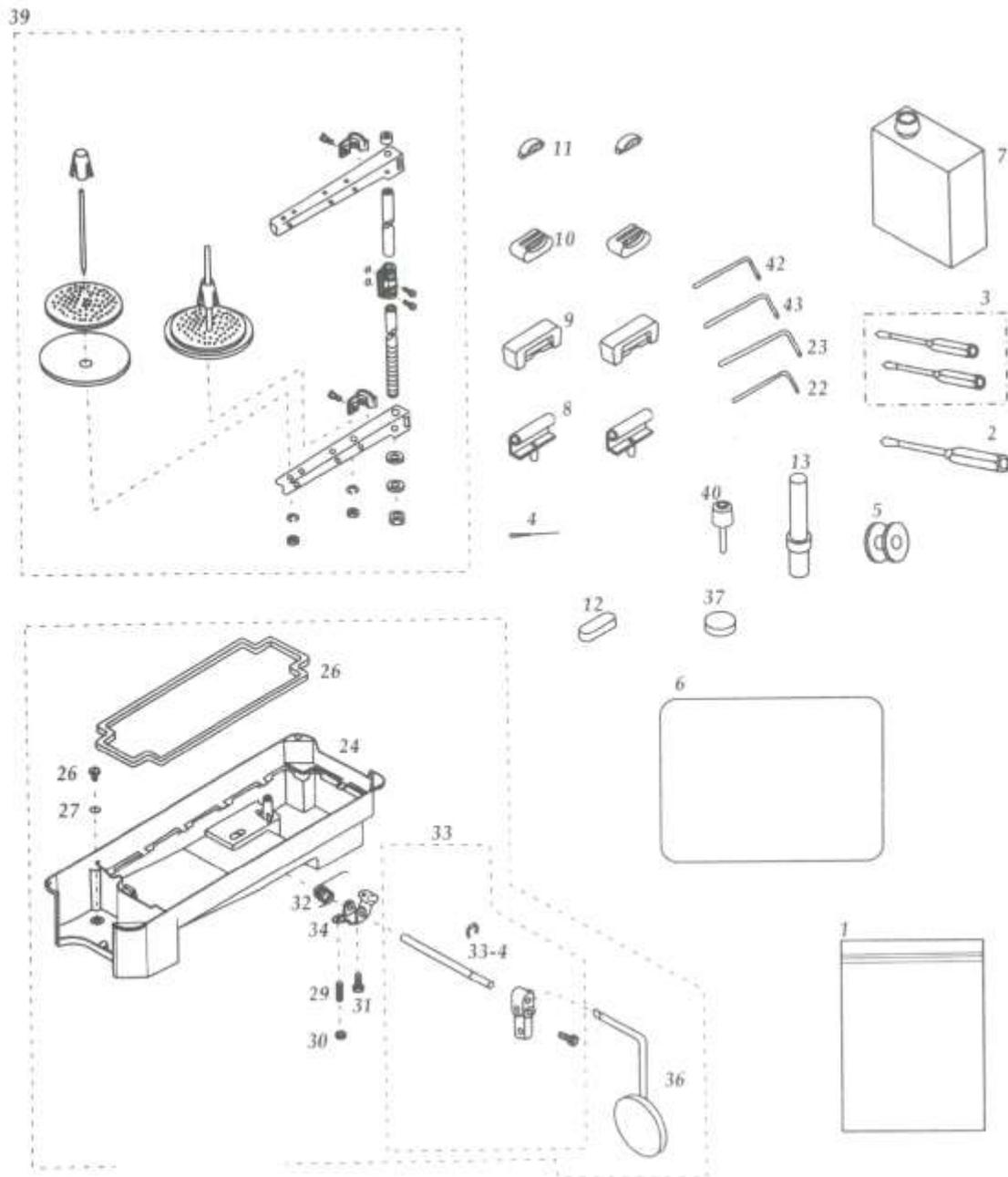
device



**9. Presser foot device**

| No. | Pars No.  | Note | Description                        |
|-----|-----------|------|------------------------------------|
| 1   | 103081001 |      | Air Cylinder Bracket R             |
| 1-1 | 151251001 |      | Electromagnet Bracket R            |
| 1-2 | 151250004 |      | Electromagnet Bracket L            |
| 2   | 103082001 |      | Air Cylinder L                     |
| 3   | 151250003 |      | Air Cylinder                       |
| 3-1 | 151250006 |      | Electronic Footlifter              |
| 4   | 151250007 |      | Air Tube Connection                |
| 5   | 151250008 |      | Filter Connection                  |
| 6   | 151250009 |      | Embolism                           |
| 7   | 130261001 |      | Auto Footlifter rod                |
| 8   | 151250010 |      | Shield Ring                        |
| 9   | 151250011 |      | Air Cylinder Crank                 |
| 9-1 | 103264001 |      | Electronic Footlifter Crank        |
| 10  | 151250012 |      | Electromagnet Screw M5             |
| 11  | 151250013 |      | Air Cylinder Bracket M6            |
| 12  | 151250014 |      | Air Cylinder Bracket Set Screw     |
| 13  | 151250015 |      | Triplet                            |
| 14  | 151250016 |      | Electromagnet Pin                  |
| 15  | 151250017 |      | Air Tube Connection 1/14"          |
| 16  | 151250018 |      | Electronic Valve                   |
| 17  | 151250019 |      | Separator                          |
| 18  | 103260001 |      | Electronic Footlifter Crank (Back) |
| 19  | 151250020 |      | Electronic Footlifter Shaft        |

### 10. Accessory



**10. Accessory**

| No.  | Pars No.  | Note | Description                    |
|------|-----------|------|--------------------------------|
| 1    | 8640A001  |      | Accessory Bag                  |
| 2    | 8640A002  |      | Driver (Large)                 |
| 3    | 8640A003  |      | Driver (Middel, Smal 1)        |
| 4    | 8640A004  |      | Needle (DPX17#22)              |
| 5    | 8640A005  |      | Bobbin (Steel)                 |
| 6    | 8640A006  |      | HeadCover                      |
| 7    | 8640A007  |      | Oil Tank                       |
| 8    | 8640A008  |      | Head Hinge                     |
| 9    | 8640A009  |      | Head Hinge Rubber              |
| 10   | 8640A010  |      | Head Hinge Rubber (A)          |
| 11   | 8640A011  |      | Head Hinge Rubber (B)          |
| 12   | 8640A013  |      | Head Rest                      |
| 22   | 8640A022  |      | L-Wrench (2mm)                 |
| 23   | 86404023  |      | L-Wren(2.c 5hmm )              |
| 24   | 8640A024  |      | Oil Pan                        |
| 25   | 8640A025  |      | Oil Pan Gasket                 |
| 26   | 8640A026  |      | Screw (M8X1. 25)               |
| 27   | 8640A027  |      | O-Ring for J-27                |
| 28   | 8640A028  |      | Control Body                   |
| 29   | 8640A029  |      | Screw (3/16"n=28)              |
| 30   | 8640A030  |      | Nut (3/16"n=28)                |
| 31   | 86404031  |      | Screw (15/64"n=28)             |
| 32   | 8640A032  |      | Control Body Spring            |
| 33   | 8640A033  |      | Knee Lifting Pad Ass' y        |
| 33-4 | 8640A037  |      | E-Ring for J-34                |
| 33-5 | 8640A038  |      | Connection Crank               |
| 34   | 8640A040  |      | Knee Support Shaft Connecting  |
| 35   | 8640A041  |      | Screw (M6X1. 0)                |
| 36   | 8640A042  |      | Knee Support Rubber Ass' y     |
| 37   | 8640A043  |      | Magnetic                       |
| 38   | 8640A044  |      | Bobbin Winder Ass' y           |
| 39   | 8640A045  |      | Thread Stand Ass' y            |
| 40   | 200090007 |      | Knee Lifting Stick Support Cap |
| 42   | 8640A050  |      | L-Wrench (5mm)                 |
| 43   | 8640A051  |      | L-Wrench (3mm)                 |