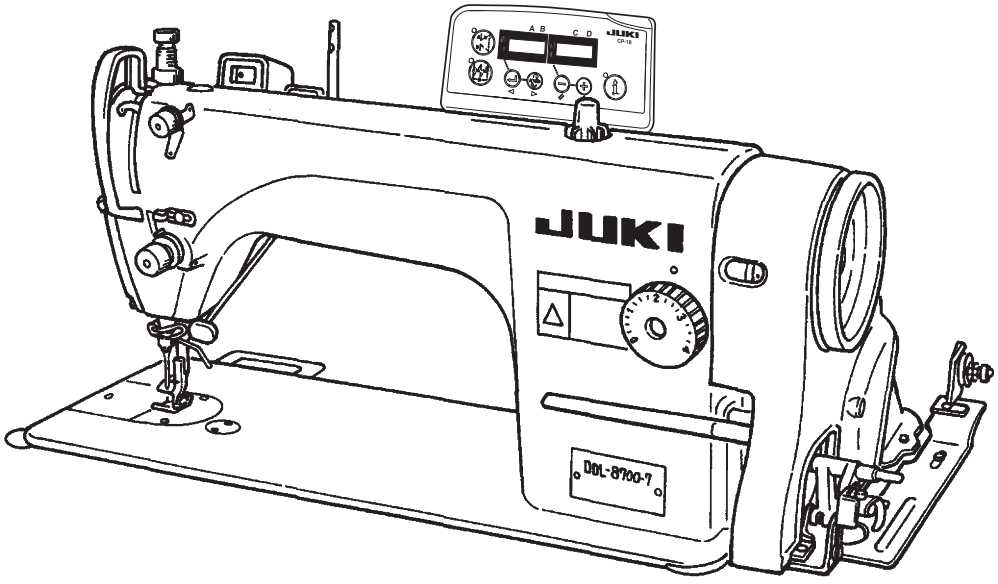
JUKI®

1-Needle, Lockstitch Machine
with Automatic Thread Trimmer

# DDL-8700-7

# ENGINEER'S MANUAL




40094273
No.E395-00

# PREFACE

This Engineer’s Manual is written for the technical personnel who are responsible for the service and maintenance of the machine.
The Instruction Manual for these machines intended for the maintenance personnel and operators at an apparel factory contains operating instructions in detail.
It is advisable to use the Instruction Manual and Parts List for SC-920 together with this Engineer's Manual when carrying out the maintenance of these machines.
This manual gives the "Standard Adjustment" on the former section under which the most basic adjustment value is described and on the latter section the "Results of Improper Adjustment" under which stitching errors and troubles arising from mechanical failures and "How To Adjust" are described.

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# 1. GENERAL

## (1) Features

1. The sewing speed can be changed continuously from low to high by adjusting the level of depression of the pedal, contributing to higher efficiency.
2. Performs automatic reverse feed stitching at the start and end of sewing.
   When the front part of the pedal is depressed, the machine carries out reverse feed stitching at constant speed, assuring consistent quality.
3. The pressure required for depressing the front and back parts of the pedal can be adjusted to suit each operator.
4. A operation panel mounted on the machine head enables the operator to easily check ON/OFF of the main switch and automatic reverse stitch at start/end, and stitching patterns selected. This feature virtually eliminates chances for operational mistakes.
5. A synchronizer is included in the handwheel to ensure easy operation.

## (2) Applications

1. Standard models
   Extensively used for light- to medium-weight general fabrics in men's suits, ladies'wear, working wear, student's uniforms, etc. Cotton or synthetic thread of #80 to #30 is generally used.
2. NA-type machines for light-weight materials
   Suited for relatively light-weight materials from tetoron broadcloth to silky materials and georgette in men's shirts, blouses, etc. Cotton or synthetic thread of #80 to #50 is mainly used for these models.

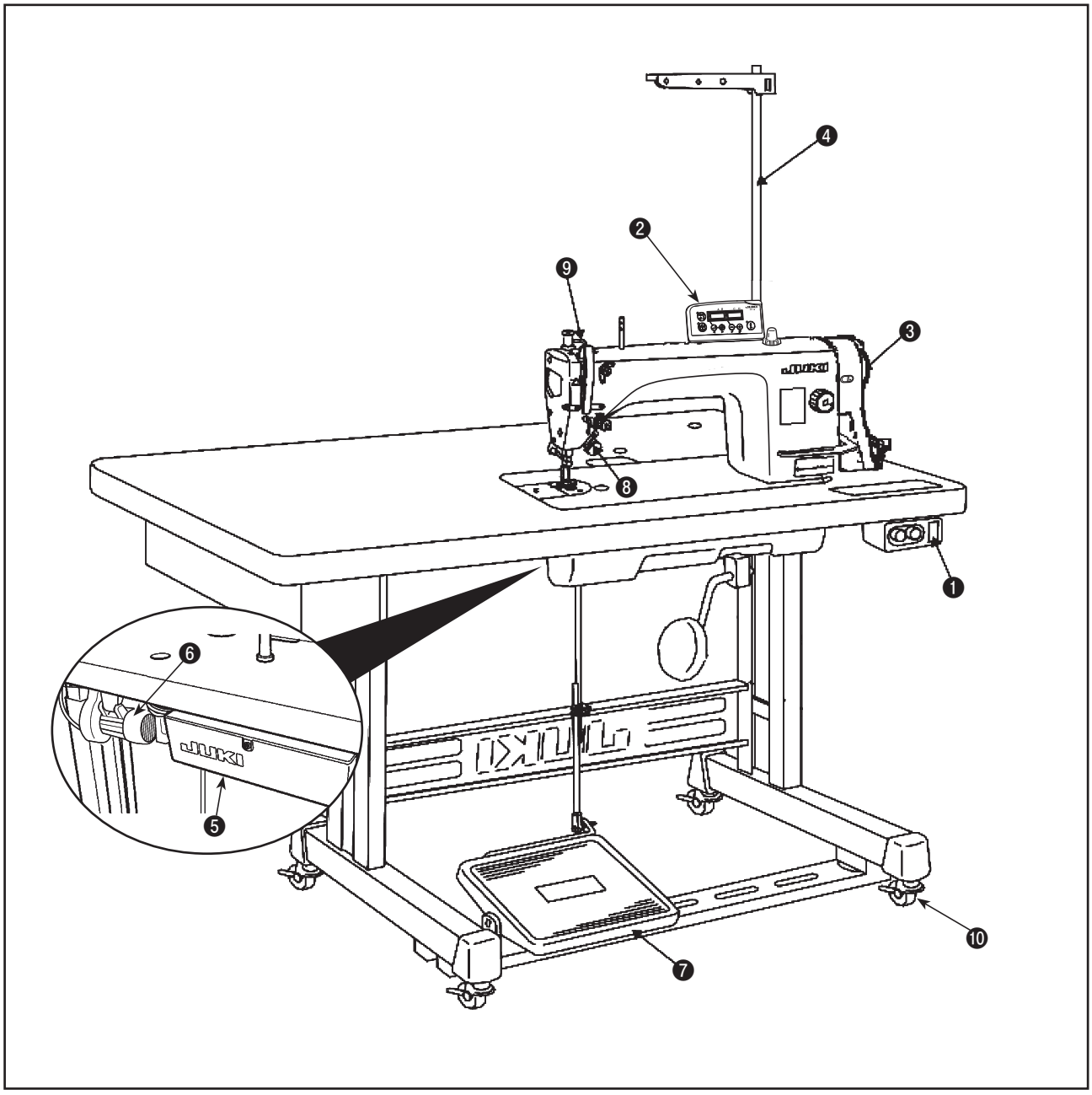
| Needle | Size | Thread | Materials | Application |
|---|---|---|---|---|
| DB × 1 | #9 | #80 | Georgette, nylon, T/C broadcloth | Extremely light-weight materials |
| | #11 | #80 ~ #60 | General broadcloth, light-weight knit | Light-weight materials |
| | #14 | #60 ~ #50 | Wool, cotton gaberdine, drill | General fabrics |
| | #16 | #50 ~ #30 | Overcoats | Medium-weight materials |
| | #18 | #30 ~ #20 | Denim | Heavy-weight materials |
| DB × 1 KN | #9 | #80 | Georgette, nylon, T/C broadcloth | Extremely light-weight materials |
| | #10 | #60 | General broadcloth, light-weight knit | Light-weight materials |
| | #12 | #50 | Wool cotton gaberdine, drill | General fabrics |
| DA × 1 | #8 ~ #9 | #80 | Georgette, nylon, T/C broadcloth | Extremely light-weight materials |
| | #11 | #60 | General velvet, light-weight knit | Light-weight materials |
| | #14 | #50 | Wool, cotton gaberdine, drill | General fabrics |

## 2. SPECIFICATIONS

<table>
<tr><th colspan="2" rowspan="2">Model</th><th colspan="2">DDL-8700-7<br>Standard</th><th colspan="2" rowspan="2">DDL-8700A-7<br>Light-weight</th><th colspan="2" rowspan="2">DDL-8700H-7<br>Heavy-weight</th></tr>
<tr><th>Cotton thread</th><th>Synthetic thread</th></tr>
<tr><td>1</td><td>Max. sewing speed</td><td>5,000 sti/m</td><td>4,000 sti/m</td><td colspan="2">4,000 sti/m</td><td colspan="2">4,000 sti/m</td></tr>
<tr><td>2</td><td>Max. stitch length</td><td colspan="3">4 mm</td><td colspan="2">5 mm</td></tr>
<tr><td>3</td><td>Needle bar stroke</td><td colspan="2">30.7 mm</td><td colspan="2">29 mm</td><td colspan="2">35 mm</td></tr>
<tr><td rowspan="2">4</td><td rowspan="2">Needle (standard)</td><td rowspan="2">DB × 1 #14</td><td>DB × 1<br>#9 to #18</td><td rowspan="2">DA × 1 #9</td><td rowspan="2">DA × 1<br>#9 to #11</td><td rowspan="2">DB × 1 #21</td><td rowspan="2">DB × 1<br>#19 to #23</td></tr>
<tr><td>DB × 1 KN<br>#9 to #18</td></tr>
<tr><td>5</td><td>Presser foot pressure</td><td colspan="2">4 to 5 kg</td><td colspan="2">4 to 5 kg</td><td colspan="2">5 to 7 kg</td></tr>
<tr><td>6</td><td>lift of presser foot</td><td colspan="2">By hand : 5.5 mm<br>By knee : 13 mm</td><td colspan="2">By hand : 4 mm<br>By knee : 9 mm</td><td colspan="2">By hand : 5.5 mm<br>By knee : 13 mm</td></tr>
<tr><td>7</td><td>Presser foot</td><td colspan="6">Exclusive hinging presser foot</td></tr>
<tr><td>8</td><td>Feed dog</td><td colspan="2">4-row teeth or 3-row teeth<br>(feed dog tilt adjustable)</td><td colspan="2">4-row teeth<br>(feed dog tilt adjustable)</td><td colspan="2">4-row teeth<br>(feed dog tilt adjustable)</td></tr>
<tr><td>9</td><td>Height of feed dog</td><td colspan="2">0.75 to 0.85 mm</td><td colspan="2">0.7 to 0.8 mm</td><td colspan="2">1.0 mm</td></tr>
<tr><td>10</td><td>Feed system</td><td colspan="6">Swing type</td></tr>
<tr><td>11</td><td>Thread take-up</td><td colspan="6">Link-type</td></tr>
<tr><td>12</td><td>Thread take-up stroke</td><td colspan="4">Standard 107 mm<br>(Max.112 mm to Min.105 mm)</td><td colspan="2">Max.115 mm to Min.108 mm</td></tr>
<tr><td>13</td><td>Lubrication</td><td colspan="6">Fully automatic</td></tr>
<tr><td>14</td><td>Oil return</td><td colspan="6">By plunger pump</td></tr>
<tr><td>15</td><td>Lubricant</td><td colspan="6">JUKI NEW DEFRIX OIL No.1 or<br>JUKI MACHINE OIL 7 (equivalent to ISO VG7)</td></tr>
<tr><td>16</td><td>Wiper</td><td colspan="2">Equipped (WB)</td><td colspan="2">Equipped (WB)</td><td colspan="2">Not equipped</td></tr>
<tr><td>17</td><td>Automatic reverse<br>stitching device</td><td colspan="6">Equipped as standard device</td></tr>
<tr><td>18</td><td>Motor</td><td colspan="6">Compact-size servo motor M92 (450W)</td></tr>
<tr><td>19</td><td>Motor output</td><td colspan="6">Related output 400 W, Max. output 550 W</td></tr>
<tr><td rowspan="4">20</td><td>Control box</td><td colspan="6">SC-920</td></tr>
<tr><td>Power supply</td><td colspan="6">Single-phase 100 to 120 V, 3-phase 200 to 240 V, Single-phase 220 to 240 V</td></tr>
<tr><td>Frequency</td><td colspan="6">50 Hz / 60 Hz</td></tr>
<tr><td>Power consumption</td><td colspan="6">320 VA</td></tr>
<tr><td>21</td><td>Solenoid drive power supply</td><td colspan="6">DC24 V</td></tr>
<tr><td>22</td><td>Max. speed adjustment range</td><td colspan="6">400 sti/min, to max. speed</td></tr>
<tr><td>23</td><td>Needle up/down<br>stop selector switch</td><td colspan="6">The machine normally stops with its needle down.<br>By setting this switch, the machine can be stopped with its needle up.</td></tr>
<tr><td>24</td><td>Auto-lifter</td><td colspan="6">Option (AK85)</td></tr>
<tr><td>25</td><td>Machine head weight</td><td colspan="6">30 kg</td></tr>
</table>

**MEMO**

## 3. NAME OF EACH COMPONENT




❶ Power switch
❷ Operation panel (CP-18, CP-180)
❸ Synchronizer
❹ L-shaped thread stand
❺ PSC box (SC-920)
❻ Motor (M 92)
❼ Pedal
❽ One-touch type reverse feed switch
❾ Wiper
❿ Adjusting screw for levelling the stand or caster

❶ Power switch
Power switch of the motor, PSC and operation panel.

❷ Operation panel (CP-18, CP-180)
Automatic reverse feed stitching, the stitch number of pattern sewing, etc. are set through this operation panel.

❸ Synchronizer
Built inside the sewing machine pulley and used to detect the upper and lower positions of the needle and transmit input signal to the PSC box.

❹ L-shaped thread stand

❺ PSC box (SC-920)
Comprises a circuit to control the sewing machine and motor, an output circuit to operate the elements (thread trimming solenoid, reverse feed solenoid, etc.), a pedal sensor to sense pedal operation, and a power circuit to actuate the elements.

❻ Motor (M92)
Operates the machine at high speed medium speed low speed in response to the signals received from the PSC box.

❼ Pedal
The front and back parts of the pedal are depressed to control the sewing speed and to actuate the thread trimmer, presser foot lifter (AK85 type only), etc.

❽ One-touch type reverse feed switch
Used by hand to perform reverse feed stitching.

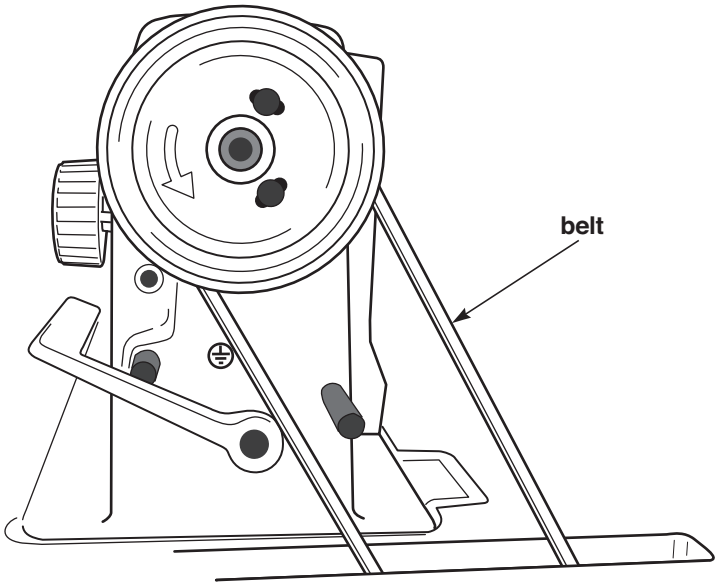
❾ Wiper
Wipes out the needle thread after thread trimming in response to the wiper signal received from the PSC box.

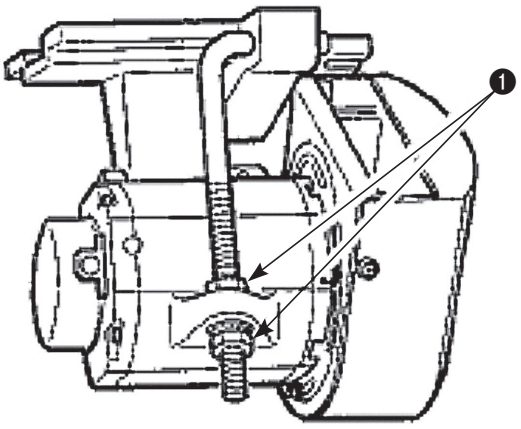
❿ Adjusting screw for levelling the stand or caster
Used to perform adjustment so that the table stands on the floor flatly to minimize variable during operation.

## 4. ADJUSTMENT

### (1) Adjustment of the belt tension

**Standard adjustment**



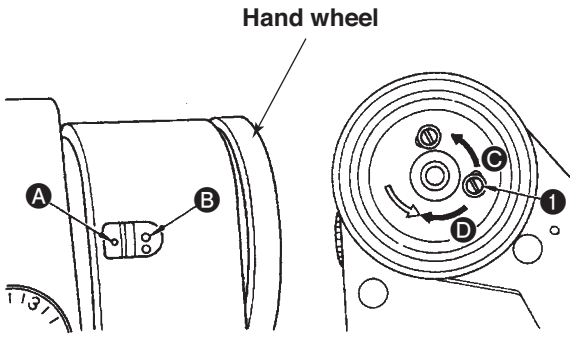



| Adjustment Procedure | Results of Improper Adjustment |
|---|---|
| 1. To avoid such problems, use a belt of an appropriate length as specified in the INSTRUCTION MANUAL.<br>2. Adjust the belt tension using nut ❶ so that the middle of the belt slacks about 18 mm when a 9.8N (1kgf) pressure is applied. | ○ An excessive belt tension may damage the main shaft bushing of the machine or the motor bearing.<br><br>○ An insufficient belt tension may cause the belt to slip with consequent shortened life of the belt, and also cause other failures such as overrun after thread trimming and machine stops with uneven needle stop height. |

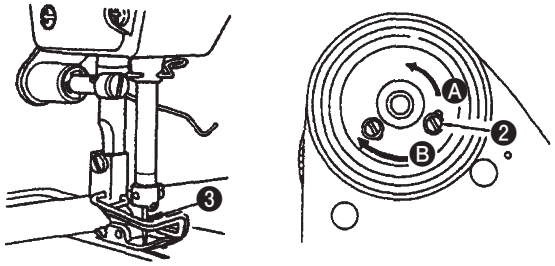
## (2) Adjustment of the needle stop position

**Standard adjustment**

**1) How to sdjust the upper stop position (after thread trimming)**




**2) How to sdjust the lower stop position**

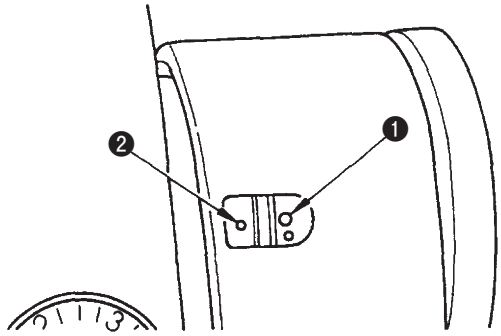


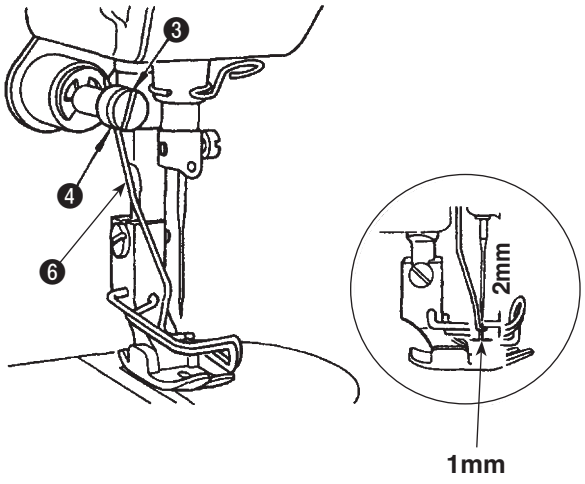
| Adjustment Procedure | Results of Improper Adjustment |
|---|---|
| **1) How to adjust the upper stop position (after thread triming)**<br>1. The standard upper needle stop position is such that the marker Ⓐ dot on the arm aligns with the white marker Ⓑ dot on the handwheel when the needle ❸ stops after thread trimming.<br>2. With the needle ❸ in its upper stop position, loosen screw ❶ shown in the figure at right to perform adjustment within the slit.<br>o Move toward Ⓒ to advance stop timing.<br>o Move toward Ⓓ to retard stop timing.<br><br>**(Caution) Do not the machine with screws ❶ loosened while making the above adjustment. Screws ❶ should be loosened only, and should not be removed.**<br><br>**2) How to adjust the lower stop position**<br>1. To adjust the lower stop position of the needle ❸ at the time when the pedal is set to the neutral position after the front part of the pedal is depressed, set the needle ❸ in its lower stop position, and loosen screw ❷ to make adjustment within the slit.<br>o Move toward Ⓐ to advance stop timing.<br>o Move toward Ⓑ to retard stop timing.<br><br>**(Caution) Do not run the machine with screws ❷ loosened while making the above adjustment. Screws ❷ should be loosened only, and should not be removed.** | |

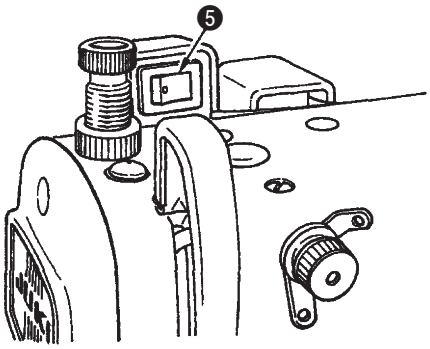
## (3) Adjustment of the wiper (WB type)

**Standard adjustment**

**1) Adjusting the position of the wiper**



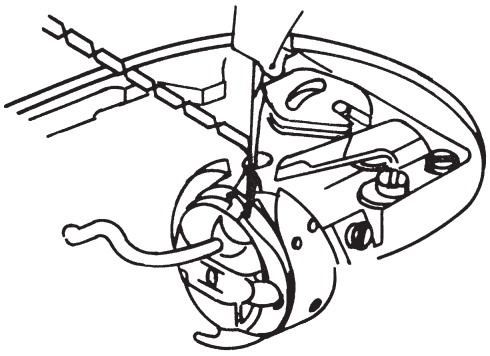



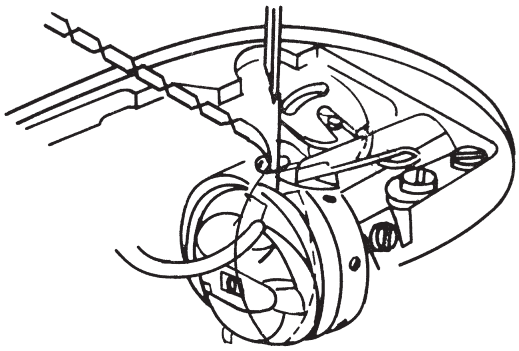
| Adjustment Procedure | Results of Improper Adjustment |
|---|---|
| Adjust the position of the wiper according to the thickness of materials to be sewn as follows:<br>1. Turn the handwheel in the normal rotational direction to align white dot ❶ on the handwheel with dot ❷ on the machine arm.<br>2. Insert wiper ❻ into wiper collar ❹ until the vertical clearance between the wiper edge and the needle point is 2 mm, and until the parallel clearance between the needle center and the straight inside face of the wiper is 1 mm.<br>Press wiper collar ❹ against wiper ❻, and securely tighten wiper adjustment screw ❸.<br><br>**(Caution) Do not loosen the wiper solenoid setscrew.**<br>**When the wiper ❻ is not used, turn the wiper seesaw switch ❺ OFF.** | |

## (4) Theory of thread trimming

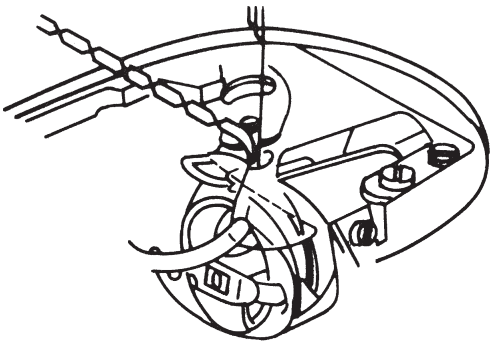
**1) The blade point of the sewing hook catches the needle thread.**



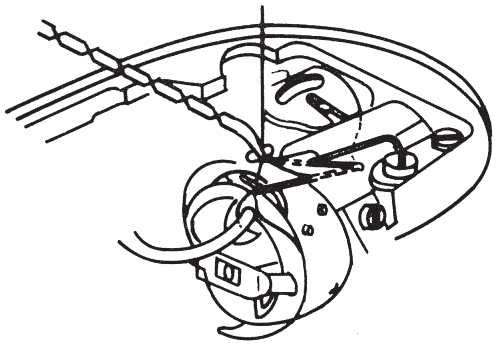
**2) The moving knife spreads the threads. (goed back)**



**3) The moving knife hooks the needle and bobbin threads (advances).**

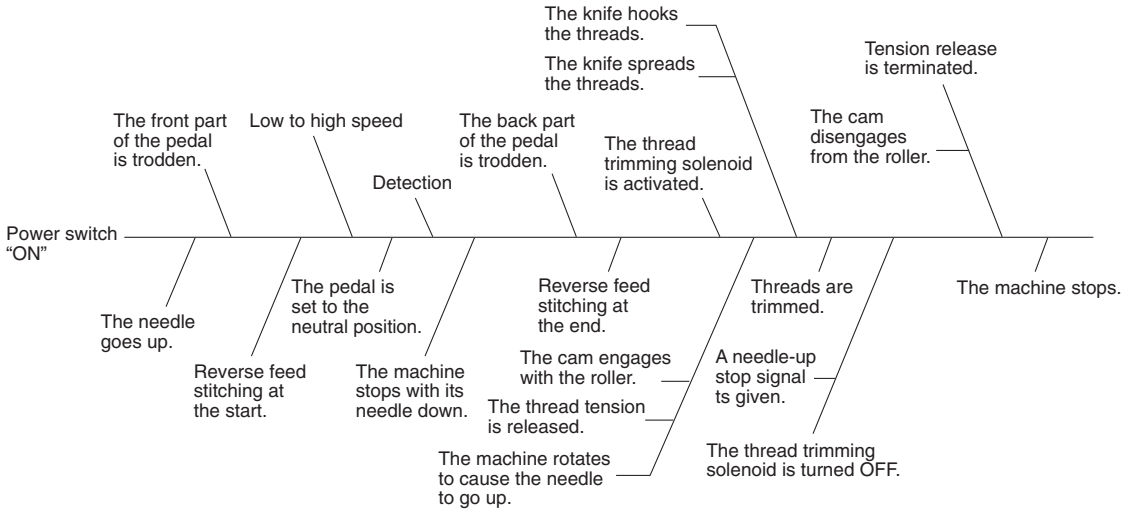


**4) The threads are trimmed.**



## (5) Thread trimming sequence

**Standard adjustment**

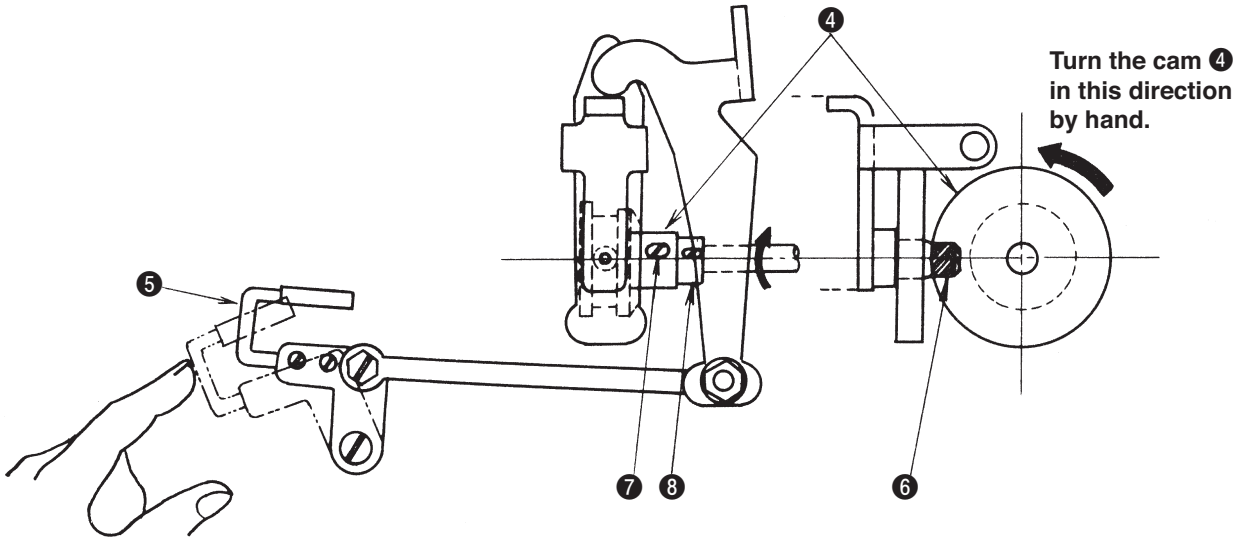



**(Caution) The above chart assumes that the switches for automatic reverse feed stitching at the start and end have been set to "ON".**

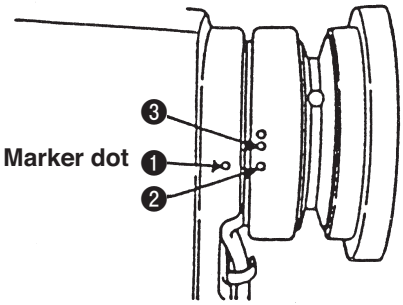
## (6) Adjustment of the timing of the thread trimmer cam

**Standard adjustment**

**1) How to adjust the timing**




**2) How to adjust the timing of the thread trimmer cam**



| Adjustment Procedure | Results of Improper Adjustment |
|---|---|
| **1) How to adjust the timing**<br>The timing of the thread trimmer cam ❹ for cotton and synthetic threads can be obtained simply by aligning the marker dot on the machine arm and the marker dot on the handwheel.<br>1. Tilt the machine head, manually turn the handwheel until the thread take-up lever almost reaches its highest position, and press thread take-up picker ❺ to the right by finger. This causes the cam roller ❻ to fit in the groove of the thread trimmer cam ❹. With this condition maintained, turn the handwheel in the direction opposite to the normal rotational direction, and you will find a position in which the handwheel no longer turns. Then, adjust the cam timing so that marker dot ❶ on the machine arm is aligned with red marker dot ❷ on handwheel as shown.<br>This provides the proper cam timing for cotton and synthetic threads.<br><br>**2) How to adjust the timing of the thread trimmer cam**<br>1. Loosen screw ❼ No.1 first, and then screw No.2, and align red marker dot ❷ on the handwheel with red marker dot ❶ on the machine arm.<br>2. Fit the cam roller ❻ in the groove of the trimmer cam ❹ while pressing thread take-up picker ❺ to the right. Manually turn only the trimmer cam ❹ (do not turn the hook driving shaft) in the direction opposite from the normal rotation of the hook driving shaft (see the arrow in) until a position in which the cam goes no further is reached. In this position, press the trimmer cam ❹ against the thrust collar ❻ of the thread trimmer cam ❹, and retighten the screw ❼ No.2 first and then the screw No.1.<br>3. If the cam collar ❽ has not been moved, press the thread trimmer cam ❹ against the cam collar ❽, and retighten the screw No.2 first and then the screw No.1.<br><br>(Ref.) 1. The red marker dots ❷ engraved on the handwheel provide the standard cam timings. It is possible to obtain a timing which is approx. 2° earlier than that for cotton or synthetic thread, or a timing which is approx. 5° later than that for cotton or synthetic thread. In this case, however, confirm that the moving knife securely separates the two threads below the throat plate bottom surface. If a cam timing is tod to slip or too late, the thread remaining on the needle may become too short, causing the needle threa)ove of off the needle immediately after thread trimming. Also, the cam roller ❻ may fail to fit in the groove of the thread trimmer cam ❹.<br>2. The thread trimmer cam timings for cotton and synthetic threads are basically the same. However, if the following problems are presented when using a thinner synthetic thread:<br>(1) A few beginning stitches are skipped.<br>(2) Thread slips off the needle at the start of sewing.<br>Perform the following adjustment for special synthetic threads: (of a small number count)<br>(3) Align marker dot ❶ on the machine arm with green marker dot ❸ on the handwheel.<br>(4) Use the soft start (800sti/min) function for the first starting stitch.<br>**(Caution) Adjustment (3) is not applicable for a thread with a large number count.** | |

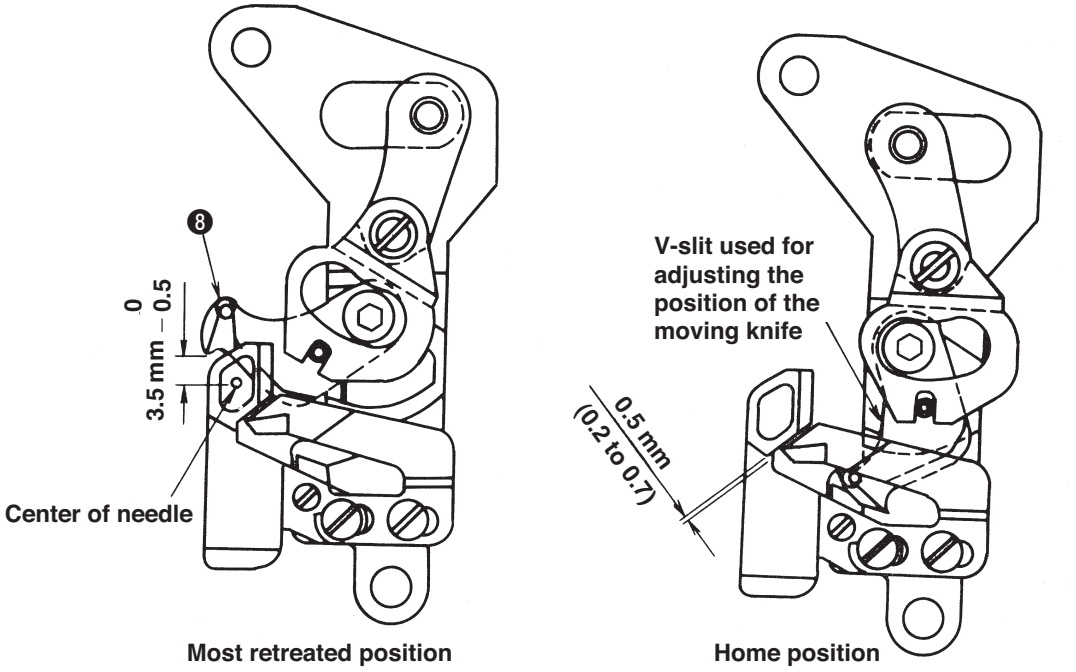
## (7) Adjustment of the position of the moving knife

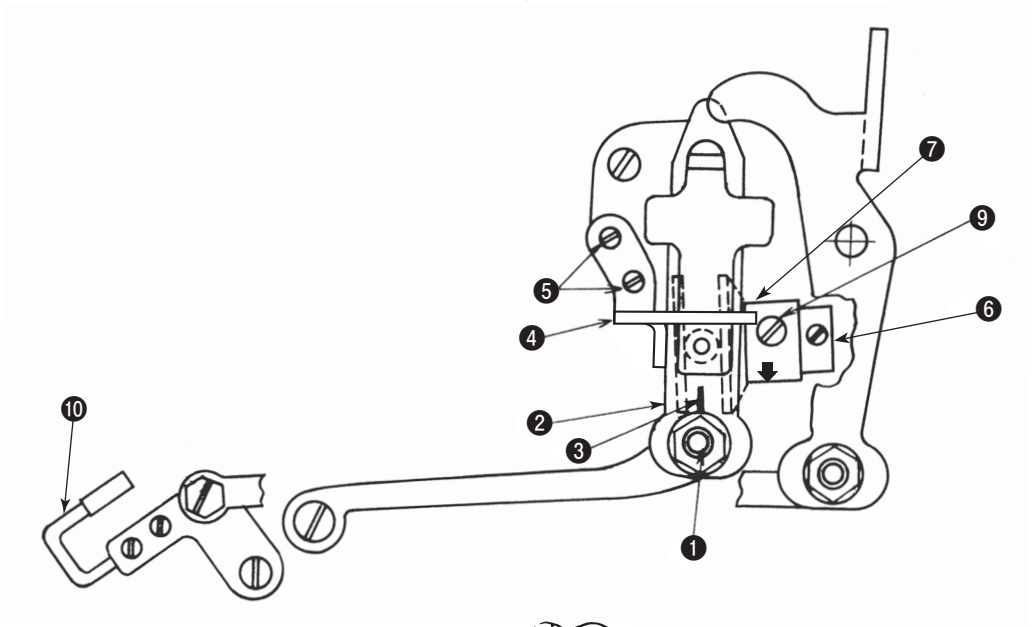
**Standard adjustment**

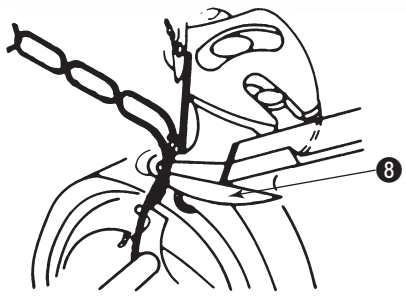
**1) Proper position of the moving knife**

**2) How to position the moving knife**

**3) When the moving knife can not be properly positioned merely by adjusting the position of the link driving magnet pin**



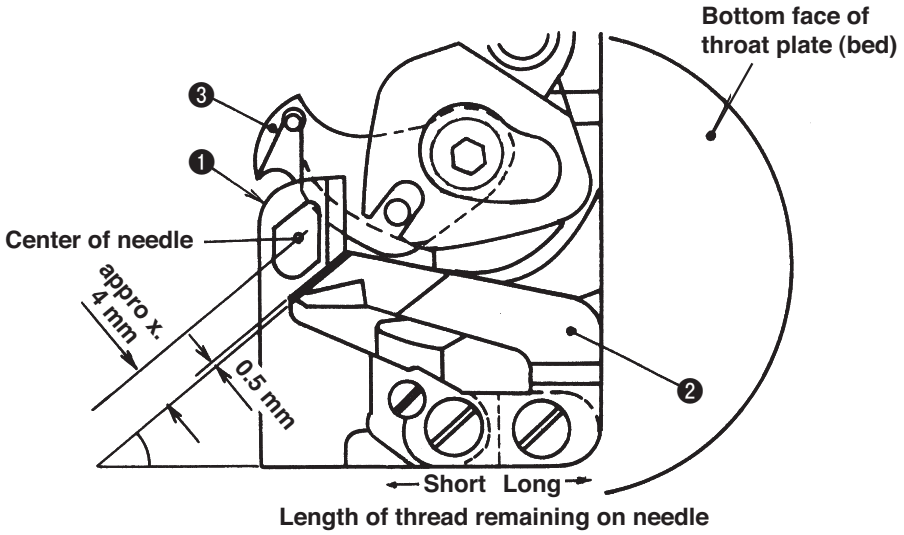
| Adjustment Procedure | Results of Improper Adjustment |
|---|---|
| **1) Proper position of the moving knife**<br>1. The correct position of the moving knife ❽ when the moving knife has gone back farthest is such that the tip of the moving knife is 3 to 3.5 mm away from the center of the needle. If the retreat of the moving knife ❽ is not enough, the knife may fail to catch the needle or bobbin thread at the time of thread trimming. On the contrary, if the moving knife ❽ retreats excessively, the moving knife ❽ may hit the feed dog.<br>2. To avoid these problems, be sure to accurately position the moving knife ❽.<br>The standard moving knife home position is obtained by bringing the periphery of the moving knife ❽ in contact with the V groove of the knife monting base.<br><br>**2) How to position the moving knife**<br>The position of the moving knife is adjusted by changing the lateral position of moving knife link pin ❶ while the machine is at rest.<br>1. Loosen the lock nut of moving knife link pin ❶.<br>2. Move the link driving magnet pin ❶ to the right or left to make the V groove ❸ meet the periphery of the moving knife ❽, referring to the home position.<br>3. Retighten the lock nut of the moving knife link pin ❶ when the proper position of the moving knife has been obtained. As the moving knife link pin ❶ is moved to the right, the retreat of the moving knife increases. As it is moved to the left, the retreat of the moving knife decreases.<br><br>**3) When the moving knife can not be properly positioned merely by adjusting the position of the link driving magnet pin**<br>1. Loosen adjusting nut of moving knife link pin ❶.<br>2. Adjust so that the center of the moving knife link pin ❶ aligns with V groove ❸ of the knife driving arm ❷, and fix link driving magnet pin by tightening the lock nut.<br>3. Loosen two screws ❺ of the knife driving arm stopper ❹.<br>4. Move the knife driving arm ❷ to make the periphery of the moving knife meet the V groove of the mounting base, and fix knife driving shaft stopper ❹ by tightenjng two screws ❺.<br>5. Loosen the two screws of thread trimmer cam ❼ and cam collar ❻.<br>6. Align red dot on the handwheel with red dot ❶ on the machine arm.<br>7. Manually turn the cam until screw ❾ faces toward you.<br>Then press the thread take-up picker ❿ to the right.<br>8. Move the trimmer cam ❼ to the right or left to engage the trimmer cam ❼ with the cam roller.<br>9. With the trimmer cam ❼ engaged with the cam roller, turn the trimmer cam ❼ in the direction of the arrow toward you until it stops, while lightly pulling the trimmer cam ❼ to the right.<br>10. Tighten screw ❾ of the trimmer cam ❼ for preliminary installation.<br>11. Then confirm :<br>(1) that the specified marker dots on the machine arm and handwheel are in alignment,<br>(2) the roller smoothly fits in the cam groove, and<br>(3) the retreat of the knife has been set to 3 to 3.5 mm.<br>12. Securely tighten the two screws of the cam.<br>13. Press the cam collar ❻ against the trimmer cam ❼ and fix it by tightening the screw.<br><br>**(Caution) 1. Note that a minute change in the lateral position of the moving knife link pin ❶ will greatly affect the retreat of the knife.**<br>**2. Confirm that the moving knife ❽ spreads the threads as shown.** | |

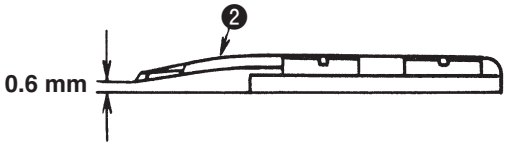
## (8) Adjustment of the counter knife

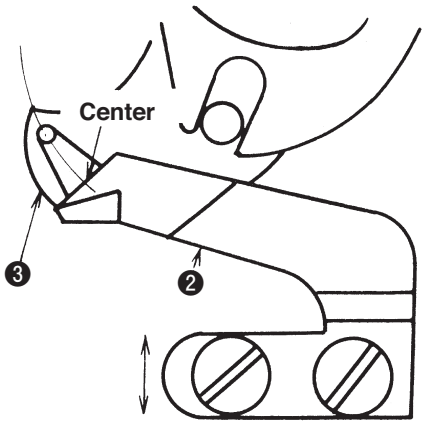
**Standard adjustment**

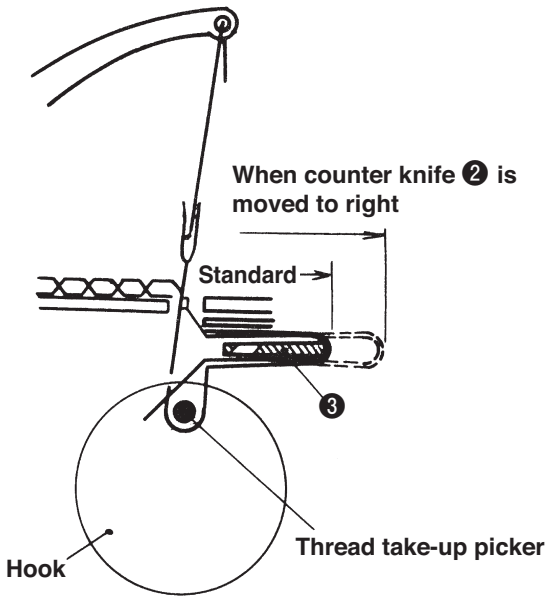
**1) Properly installing the knife thread guide**

**2) Adjusting the counter knife**



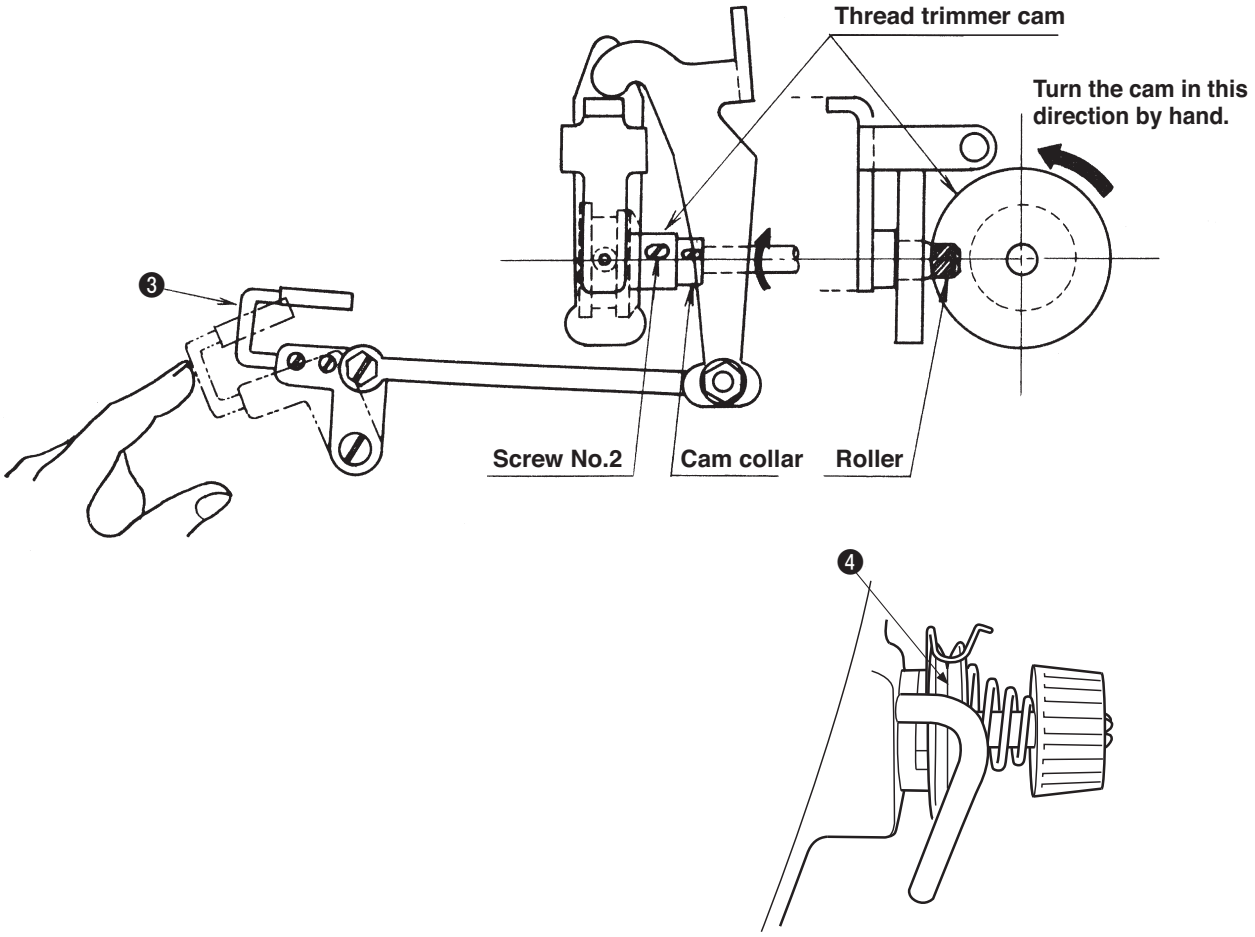



| Adjustment Procedure | Results of Improper Adjustment |
|---|---|
| **1) Properly installing the knife thread guide**<br>Install the knife thread guide ❶ so that the needle enters exactly the center of its opening.<br><br>**2) Adjusting the counter knife**<br>1. The standard distance from the blade point of the counter knife ❷ to the knife thread guide ❶, which is positioned so that the needle enters the center of its opening, is 0.5 mm.<br>2. The blade point of the counter knife ❷ is about 4 mm away from the center of the needle.<br>3. The blade point of the counter knife ❷ is located 0.6 mm above the installing surface.<br>4. The sharpness of the counter knife ❷ depends upon the installing angle of the blade tip of the counter knife ❷.<br>The proper overlap of the counter knife ❷ blade with that of the moving knife ❸ will provide the best sharpness.<br>5. Whenever the counter knife ❷ has been readjusted or replaced, be sure to check the sharpness of the counter knife ❷, and adjust the installing angle of the counter knife ❷.<br>6. The installing position of the counter knife ❷ can be moved to the right from the standard position.<br>When the counter knife has been installed in such a position, the needle and bobbin threads to be pulled out become correspondingly longer, and also the timing of thread trimming is delayed, resulting in an increased length of the thread remaining on the needle after thread trimming.<br>When using synthetic thread, the timing of thread trimming can be delayed by moving the counter knife ❷ to the right.<br>In this case, the timing of the thread trimmer cam must also be adjusted. Refer to 4.-(6) Adjustment of the timing of the thread trimmer cam. | |

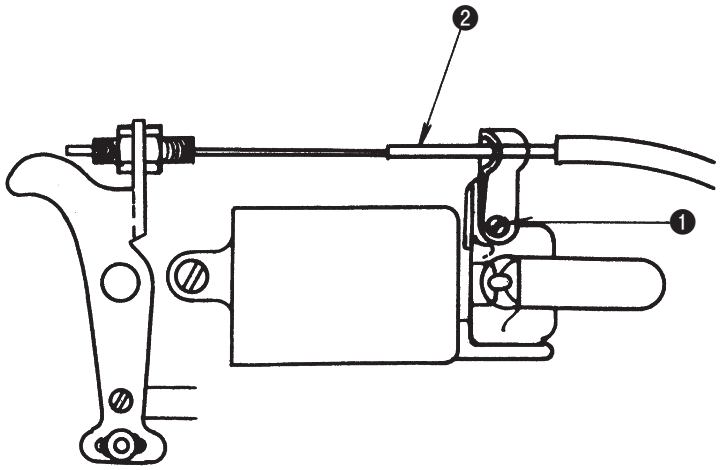
## (9) Adjustment of the floating amount of the tension disc No. 2

**Standard adjustment**

**1) How to check the floating amount of the tension disc No. 2**



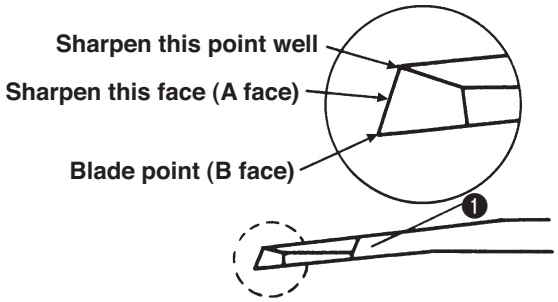

**2) How to adjust the floating amount of the tension disc No. 2**

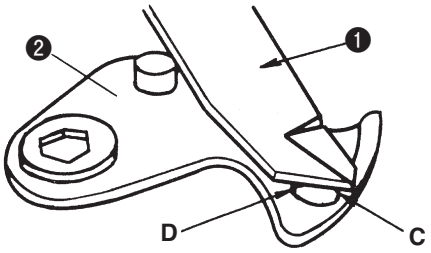


| Adjustment Procedure | Results of Improper Adjustment |
|---|---|
| **1) How to check the floating amount of the tension disc No. 2**<br>Check whether the tension disc No. 2 ❹ floats 0.5 to 1 mm when thread take-up picker ❸ is pressed to the right with the thread take-up lever located slightly below its highest position and the presser foot lifted.<br><br>**2) How to adjust the floating amount of the tension disc No. 2**<br>1. To increase the floating amount, loosen screw ❶, and move tension release wire ❷ to the right.<br>2. To decrease the floating amount, loosen screw ❶, and move tension release wire ❷ to the left. After adjustment, securely tighten screw ❶. | |

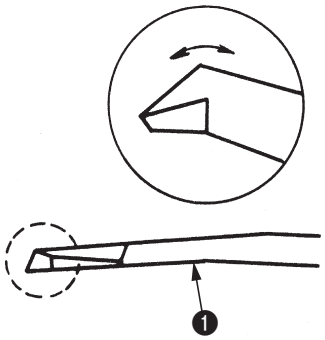
## (10) Sharpening the counter knife

**Standard adjustment**



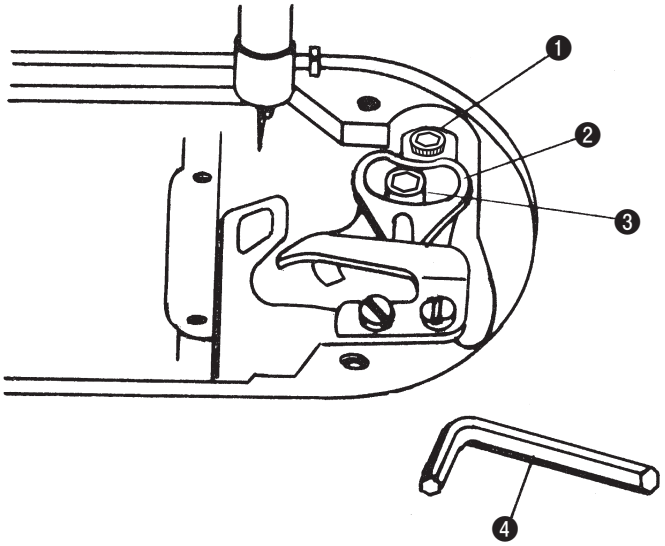

**C and D of moving knife ❷ must come in contact with counter knife ❶ at the same time.**

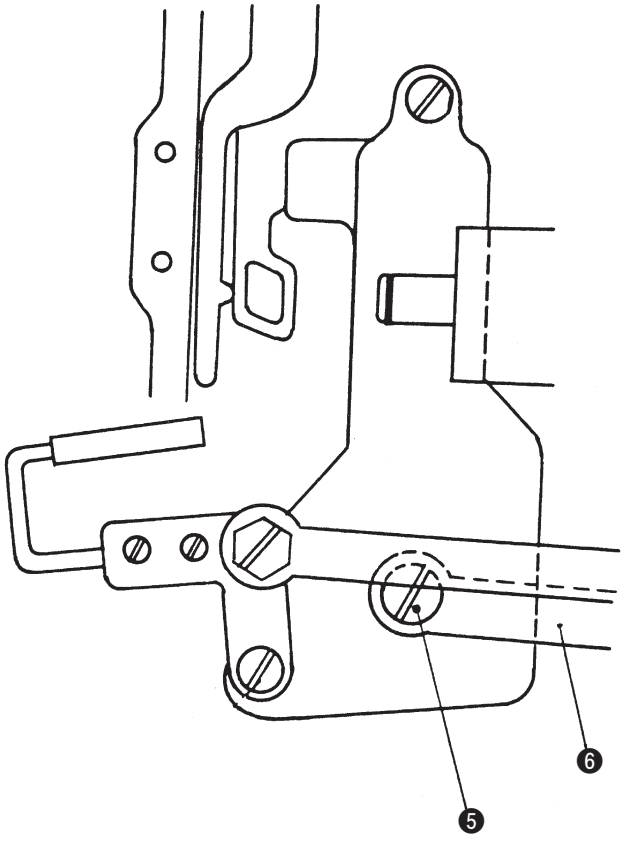


| Adjustment Procedure | Results of Improper Adjustment |
|---|---|
| 1. The most important factor of the sharpness of the thread trimmer is the shape of the blade tip of the counter knife ❶.<br>2. In most cases, the sharpness of the thread trimmer can be improved by mere]y sharpening the blade of the counter knife ❶.<br><br>**(Caution) For proper thread trimming, the blade of the counter knife ❶ must be brought into contact with the blade of the moving knife ❷.**<br><br>(1) The sharpness of the thread trimmer is improved simply by sharpening “A” (Pay attention to the angle).<br>(2) The thread trimmer also becomes dull when “B” is worn and rounded. Take care not to change the angle when sharpening the blade edge.<br><br>(Ref.) 1. The contact of the moving knife ❷ with the counter knife ❶ can also be improved by changing the angle shown by the arrow.<br>2. When “D” side is dull, decrease this angle.<br>When “C” side is dull, increase the angle. | ○ If the thread trimmer is still dull even after the blade of the counter knife ❶ has been sufficiently sharpened, it is because the two points of the moving knife ❷ fail to contact with the blade of the counter knife ❶ at the same time.<br>In this case, correct the tilt of the counter knife ❶. |

## (11) Replacing the moving knife

**Standard adjustment**

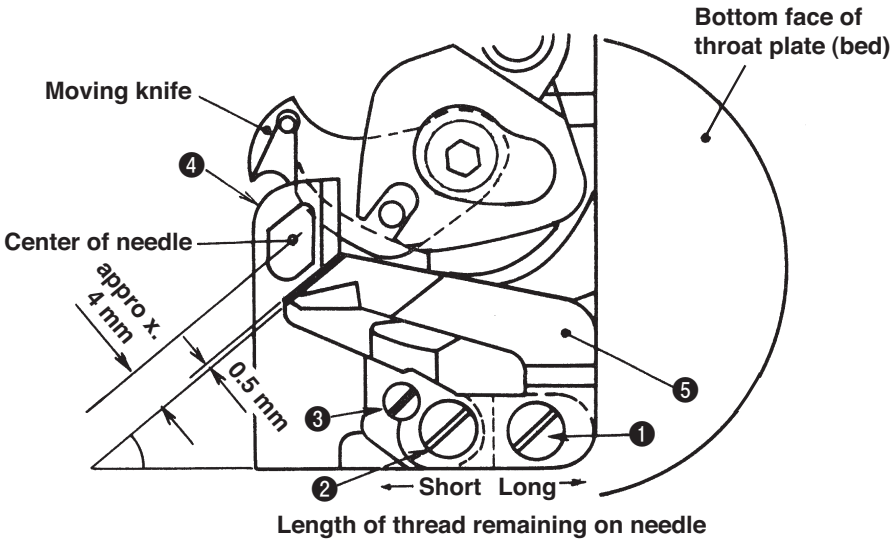


| Adjustment Procedure | Results of Improper Adjustment |
|---|---|
| Remove the moving knife in the following order:<br>1. Loosen screw ❺.<br>2. Remove hinge screw ❸ using 3 mm Hex-head stick Spanner ❹.<br>3. Remove forked hinge screw ❶. Lift forked base ❷ for knife, and remove the moving knife pin from the forked base ❷ for knife.<br>4. After removing the moving knife pin, slide the moving knife to the left, and remove it from the bottom face of the forked base ❷ for knife.<br>5. Assemble the moving knife unit by reversing the above order.<br>6. After tightening the hinge screw ❸ of the moving knife, move the moving knife by hand to confirm that it moves smoothly without play.<br>7. Securely insert the pin for knife forked base into the forked base ❷ for knife.<br>8. Tighten the forked hinge screw ❶.<br>9. Install and tighten the hinge screw ❺ of the moving knife link.<br>10. Confirm that the knife is actuated when moving knife link ❻ is moved to the right and left. | ○ Prior to taking actions for re-assembly, apply an appropriate grease to the hinge screw ❺ of the moving knife link.<br>Appropriate grease part No: 40006323 |

## (12) Replacing the knife thread guide

**Standard adjustment**



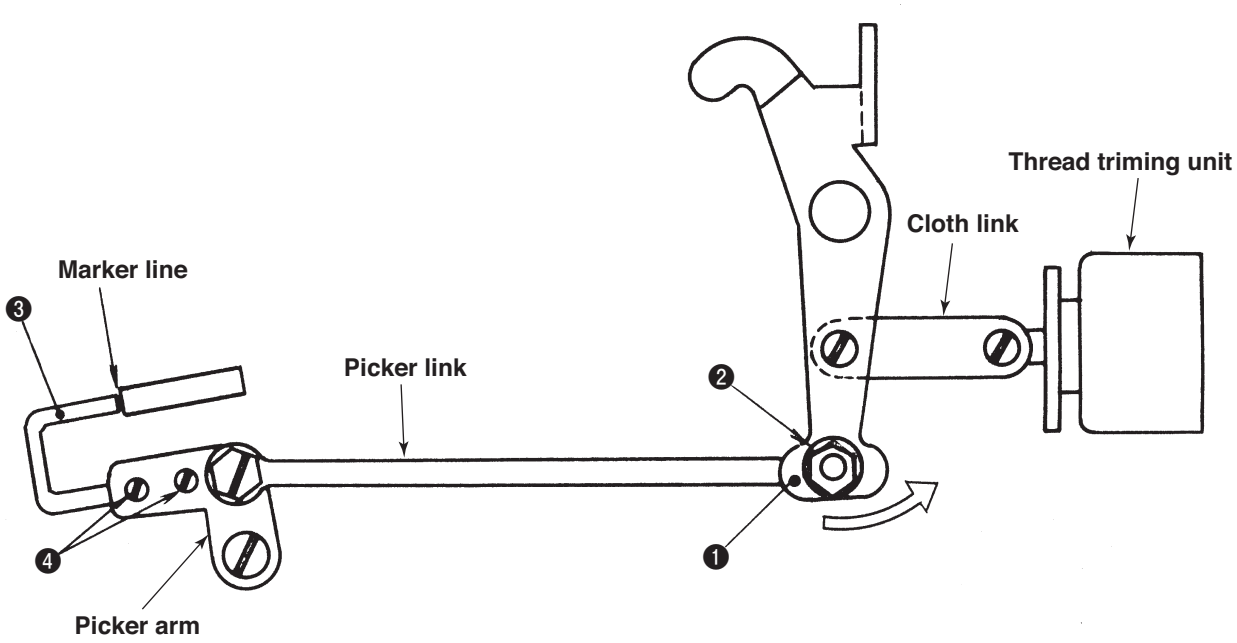
| Adjustment Procedure | Results of Improper Adjustment |
|---|---|
| 1. Change the knife thread guide ❹ by loosening screws ❷ and ❸, with screw ❶ left tightened.<br>2. The installing angle of the counter knife ❺ has been disturbed, readjust it in accordance with 4-(8).“Adjustment of the counter knife”. | ○ If there is no coincidence of the knife thread guide ❹ and the center the needle, this can be a cause of balloon stitches. |

## (13) Adjustment of the thread take-up picker

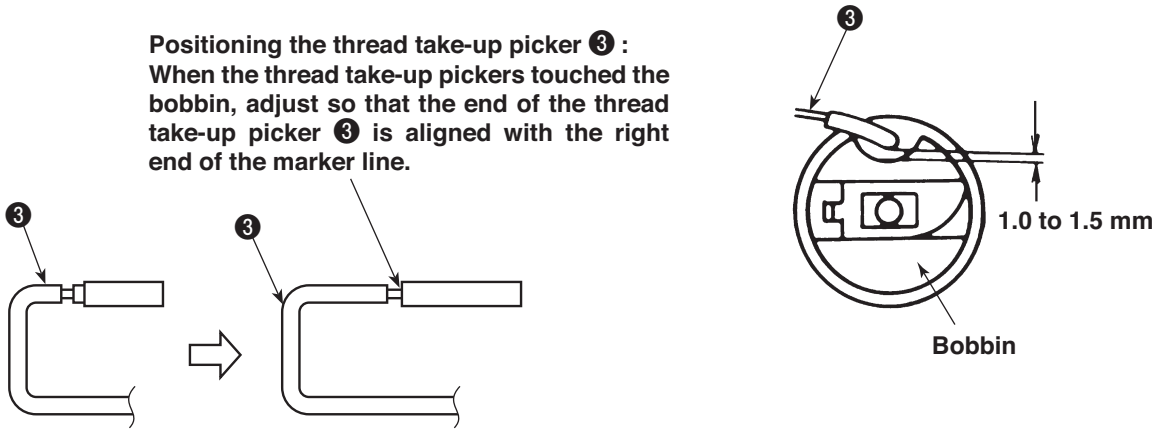
**Standard adjustment**

**1) Positioning the thread take-up picker**

**2) How to adjust the position of the thread take-up picker**



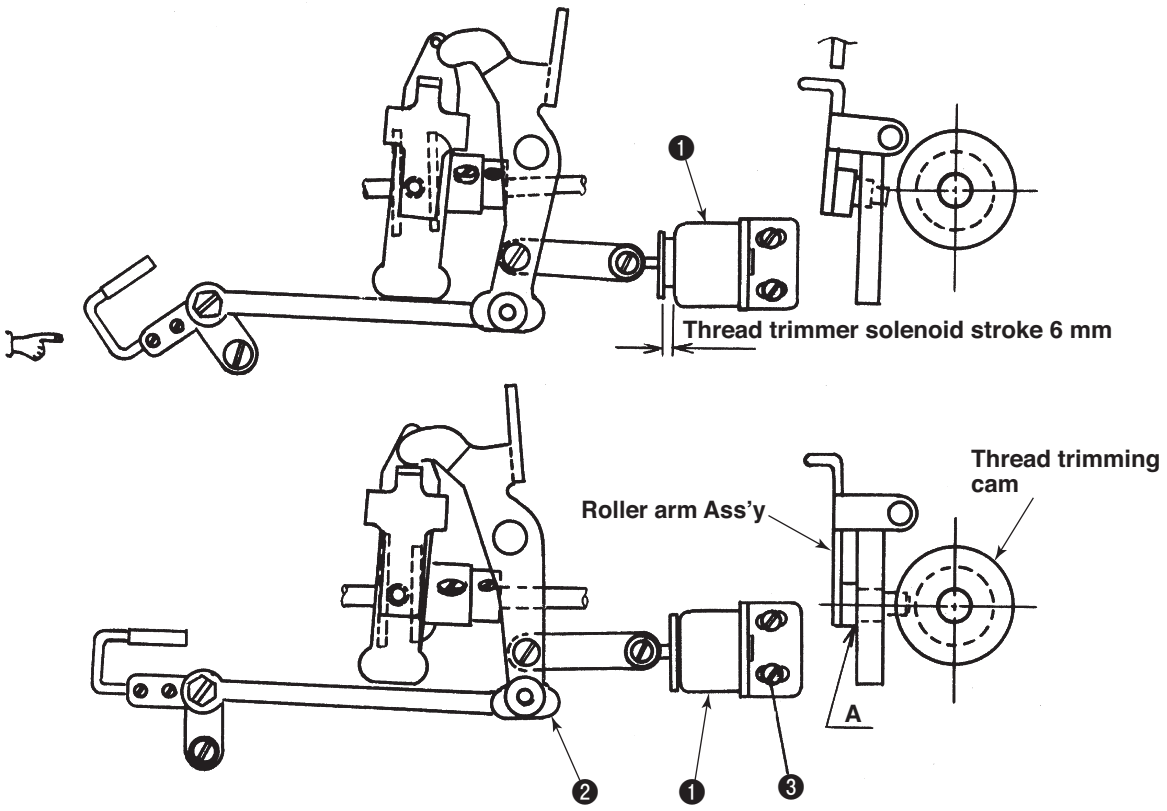

**Positioning the thread take-up picker ❸ :**
**When the thread take-up pickers touched the bobbin, adjust so that the end of the thread take-up picker ❸ is aligned with the right end of the marker line.**



| Adjustment Procedure | Results of Improper Adjustment |
|---|---|
| **1) Positioning the thread take-up picker**<br>1. With clutch disc ❶ pushed in the direction of arrow (to the right), make adjustment so that the bobbin thread can be pulled out smoothly.<br>2. The adjustment so that a clearance of 1.0 to 1.5 mm is provided between the tip of the thread take-up picker ❸ (bobbin winder trip latch) and the middle of the top recess of the bobbin case, and also the rear end of the bobbin winder trip latch is aligned with the marker line of the thread take-up picker ❸.<br><br>**2) How to adjust the position of the thread take-up picker**<br>1. After loosening screws ❹, adjust so that the tip of the thread take-up picker ❸ (bobbin winder trip latch) is positioned, and tighter setscrews ❹.<br>2. To adjust the entrance of the thread take-up picker ❸ into the bobbin case, picker link pin ❷.<br>3. After completion ofthe above adjustment, retighten the nut of the picker link pin ❷.<br>4. The standard position of the picker link pin ❷ is such that, with the clutch disc ❶ pushed to the right, the end of the picker ❸ is the right side with marker line. | ○ If thread take-up picker ❸ enters the bobbin case too deeply at the time of thread trimming, the bobbin does not turn, and the bobbin thread is cut too short, causing stitch skipping at the start of sewing.<br><br>○ On the contrary, if the entrance of the thread take-up picker ❸ into the bobbin case is not enough, the needle thread slips off the tip of the thread take-up picker at the time of thread trimming.<br>As a result, the thread remaining on the needle after trimming becomes too short, causing the thread to slip off the needle. |

## (14) Adjustment of the clutch disc and thread trimmer solenoid

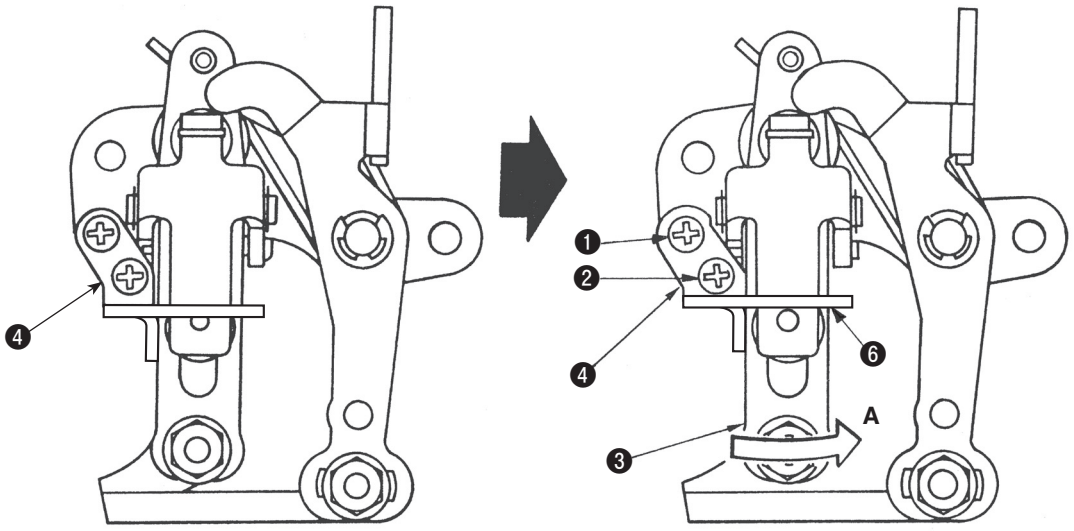
**Standard adjustment**

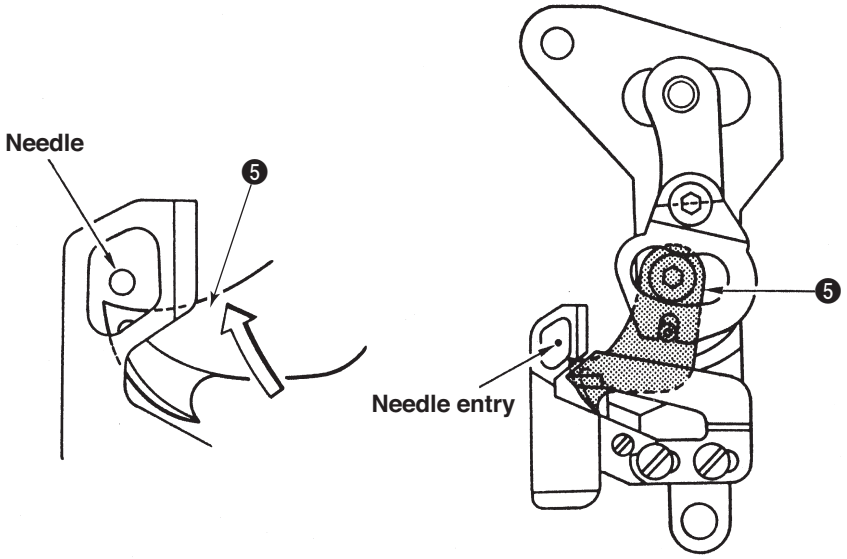


| Adjustment Procedure | Results of Improper Adjustment |
|---|---|
| 1. The thread trimmer solenoid ❶ stroke is 6 mm.<br>2. Position the clutch disc ❷ and trimmer solenoid ❶ so that, when the thread trimmer solenoid ❶ is actuated, clearance A becomes 0.1 mm to 0.5 mm.<br>3. Then tighten setscrews ❸. | |

## (15) Adjustment of driving arm stopper

**Standard adjustment**

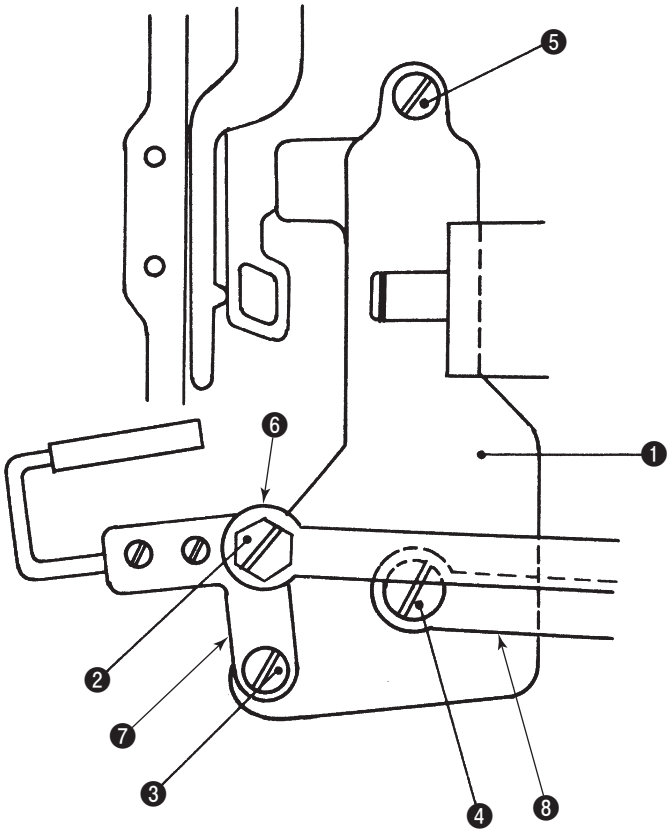


| Adjustment Procedure | Results of Improper Adjustment |
|---|---|
| 1. Press the roller arm ❸ in the direction of arrow A until it is pressed against the stopper ❻ of the driving arm stopper ❹.<br>2. At this time, adjust screw ❶ and ❷ so that the stopper ❻ works at a position where the moving knife ❺ does not reach the needle entry. | |

## (16) Adjustment of the knife mounting base

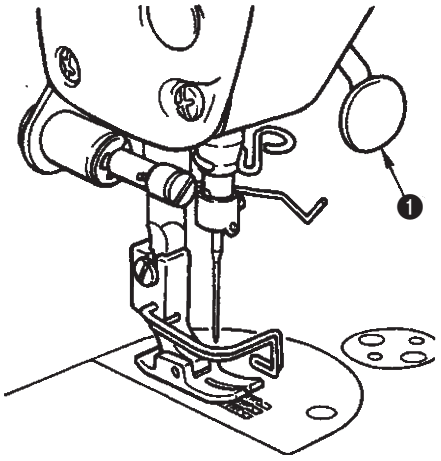
**Standard adjustment**

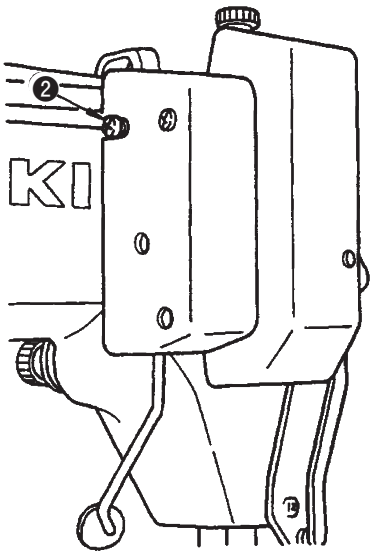


| Adjustment Procedure | Results of Improper Adjustment |
|---|---|
| Removing knife mounting base ❶ in the following sequence:<br>1. Remove the hook.<br>2. Remove the hinge screw ❷ of the picker link ❻, and take out the hinge screw ❸ of the picker arm ❼.<br>3. Remove hinge screws ❹ and ❺, then, the knife mounting base ❶ can be remove.<br><br>* To install the knife mounting base, reverse the above sequence. | |

## (17) Adjustment of the one-touch type reverse feed switch lever

**Standard adjustment**

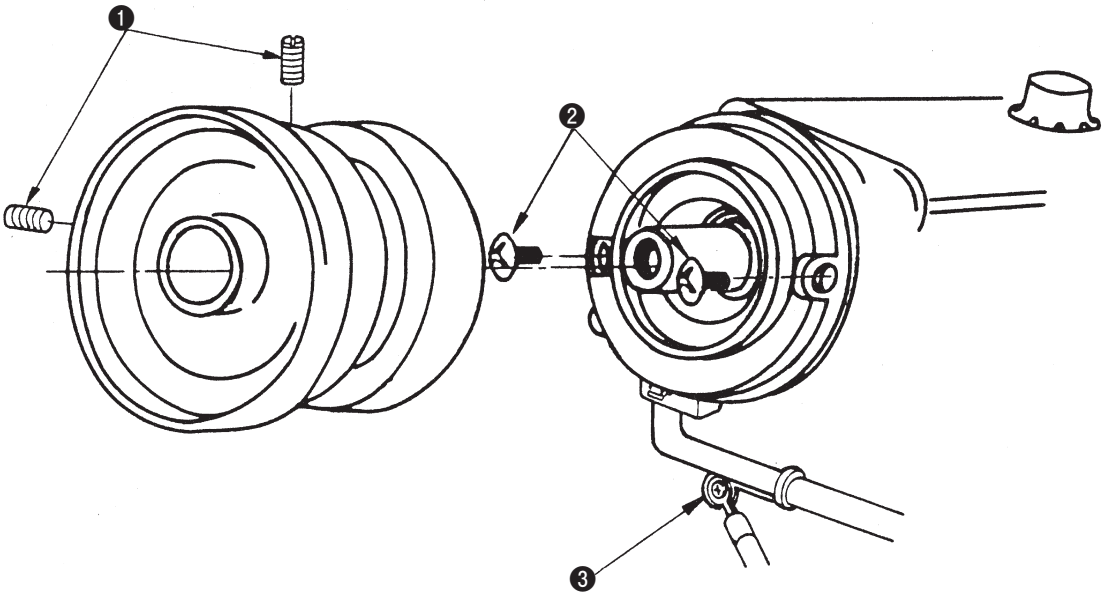


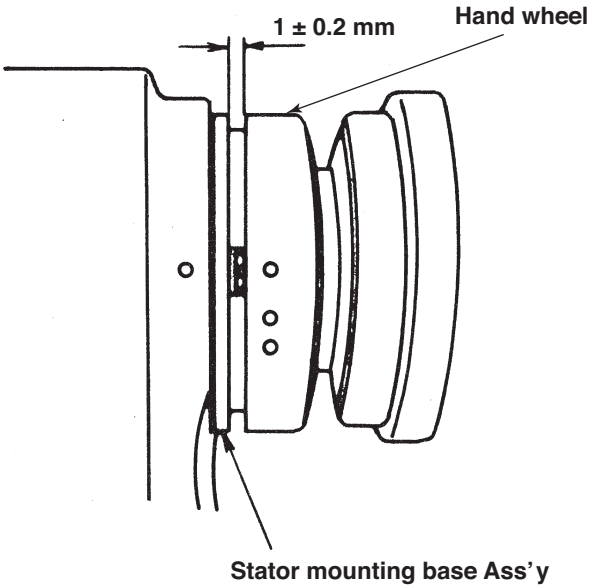



| Adjustment Procedure | Results of Improper Adjustment |
|---|---|
| 1. There is no specified height for one touch reverse feed switch lever ❶, and therefore the one-touch type reverse feed switch lever may be positioned at any height suited for each operator.<br>2. Loosen screw ❷ and move the switch lever ❶ up and down to obtain a suitable height.<br>Retighten the screw ❷ after adjustment.<br><br>**(Caution) This switch is sometimes abbreviated to "B.T.SW" (Back tack switch).** | |

## (18) How to replace the synchronizer

**Standard adjustment**

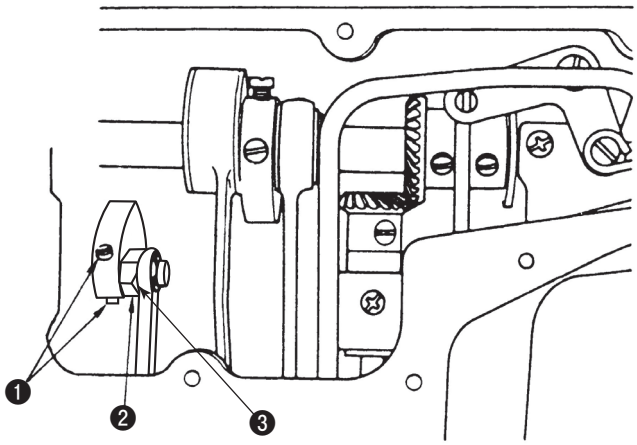


| Adjustment Procedure | Results of Improper Adjustment |
|---|---|
| If the synchronizer fails, the needle will not stop in the upper or lower position when the machine stops, causing the safety circuit to be put into operation, or the machine will keep on running at high speed when it should stop.<br>Replace a faulty synchronizer in the following sequence. Note that the synchronizer is always changed together with the pulley.<br><br>1. Removing the belt cover, loosen two setscrews ❶ of the pulley to remove the pulley.<br>2. Remove the cord setscrew ❸ and two setscrews ❷ of the stator mounting base to remove the stator.<br>3. Fix a new stator by the two setscrews ❷.<br>4. The stator mounting base is made of plastics. Tighten the setscrews ❸ with approx. 1.47 N.m torque.<br>5. Retighten the cord setscrew ❸.<br>6. Install the pulley so that the screw No. 1 contacts the flat part of the main shaft, and a 1 mm ± 0.2 mm clearance is provided between the stator mounting base and the end face of the pulley as shown in the figure.<br>7. Turn the pulley by hand to check it for smooth rotation.<br>8. Install the cord, and attach the V belt to the pulley.<br>Then confirm that there is no contact between the V belt and the cord.<br>9. With the needle set in the lower position, turn on the power switch. The machine will then operate until the needle has gone up fully. If the needle stop position at that time is considerably deviated from the standard, check the position of the pulley two setscrews ❶.<br>10. Run the machine at low speed to check for any frictional noise. After reinstalling the belt cover, check for frictional noise again.<br>11. Adjust the upper and lower needle stop positions by the two setscrews of the magnet mounting base of the pulley. (Refer to 4.-(2) Ajusting the needle stop position) | |

## (19) Adjustment of normal/reverse stitching

**Standard adjustment**

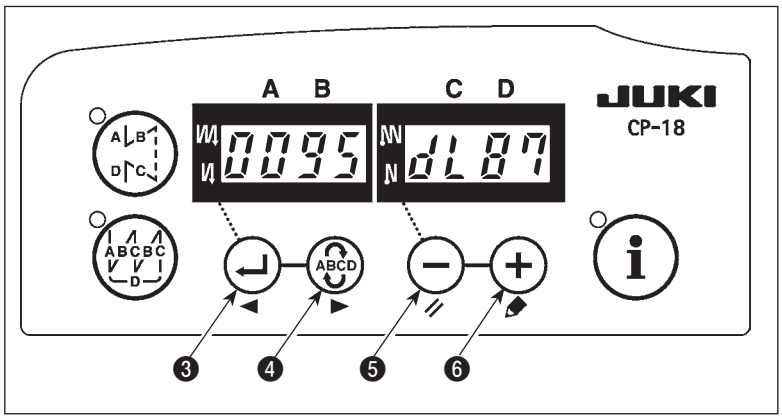


| Adjustment Procedure | Results of Improper Adjustment |
|---|---|
| 1. Pinch a piece of paper beneath the presser hardware and set the feed dial graduation at 3.<br>2. Remove the window plate on the sewing machine.<br>3. Loosen two feed adjust pin setscrews ❶ and make normal/reverse adjustments by turning the feed adjust pin ❷.<br>4. By turning the flywheel by hand in forward direction, confirm that the normal and reverse pitches coincide with each other.<br>5. When coincidence is confirmed, tighten the two feed adjust pin setscrews ❶. | ○ When the normal and reverse pitches are net same, the return stitches are in appropriate.<br><br>○ The chamfered section ❸ of the feed adjust pin ❷ should be adjusted on the window plate.<br><br>○ Under the condition that the feed adjust pin ❷ is pressed, tighten the two feed adjust pin setscrews ❶. Pay attention so that there is no presence of thrust rattling. |

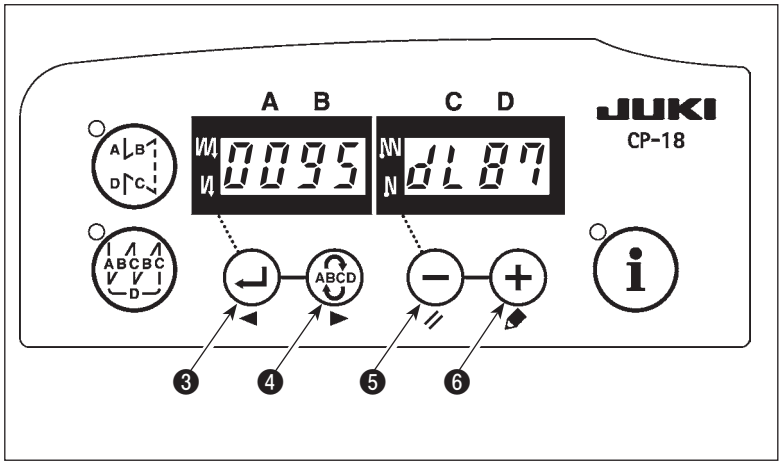
## (20) Setting and Ajusting for SC-920

### 1) Setting procedure of the machine head

**(Caution) For the operation panel other than CP-18, refer to the Instruction Manual for the operation panel to be used for the setting procedure of the machine head.**

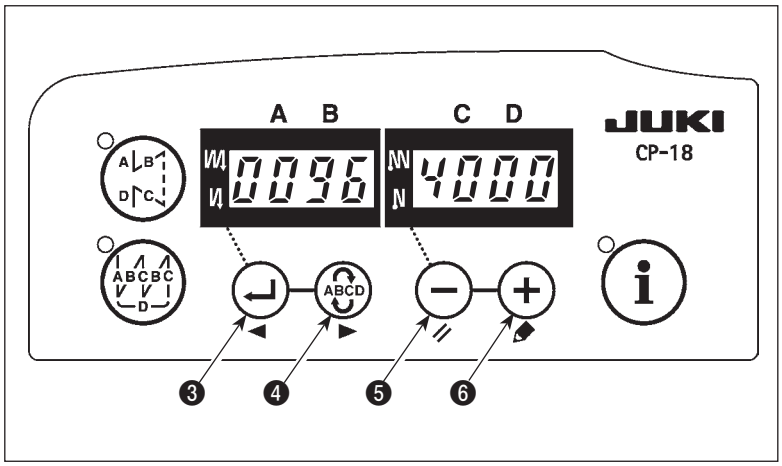



1. Refer to **"Ⅲ-(6) Setting for functions of SC-920 Instruction Manual"**, and call the function setting No. 95.



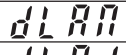
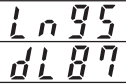
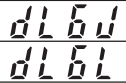
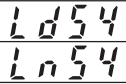
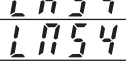

2. The type of machine head can be selected by pressing ⊖ switch ❺ (⊕ switch ❻).

* Refer to "CAUTIONS WHEN SETTING UP THE SEWING MACHINE" or "Machine head list" on the separate sheet for the types of machine heads.




3. After selecting the type of machine head, by pressing ↵ switch ❸ (ABCD switch ❹), the step proceeds to 96 or 94, and the display automatically changes to the contents of the setting corresponding with the type of machine head.

**2) Machine head list**

| | No. | Machine head | Type | Contents of display | Number of revolutions at the time of delivery (sti/min) | Max. number of revolutions (sti/min) |
|---|---|---|---|---|---|---|
| | 1 | DDL-9000B MA/MS/SS | dLbM |  | 4000 | 5000 |
| | 2 | DDL-9000B DS | dLbd |  | 4000 | 4000 |
| | 3 | DDL-9000B SH | dLbH |  | 4000 | 4500 |
| | 4 | DDL-9000A MA/MS/SS | dLAM |  | 4000 | 5000 |
| | 5 | DDL-9000A DS | dLAd |  | 4000 | 4000 |
| | 6 | DDL-9000A SH | dLAH |  | 4000 | 4500 |
| | 7 | LH-3528/68A | H35d |  | 3000 | 3000 |
| | 8 | DLN-9010 | Ln9S |  | 4000 | 5000 |
| * | 9 | DDL-8700 | dL87 |  | 4000 | 5000 |
| | 10 | DDL-5600J | dL6J |  | 4000 | 4000 |
| | 11 | DDL-5600L,U,R | dL6L |  | 3000 | 3000 |
| | 12 | DDL-5550 | dL50 |  | 4000 | 5000 |
| | 13 | DLU-5490 | LU90 |  | 4000 | 4500 |
| | 14 | DLD-5430 | Ld54 |  | 4000 | 4500 |
| | 15 | DLN-5410 | Ln54 |  | 4000 | 5000 |
| | 16 | DLM-5400 | LM54 |  | 4000 | 4500 |
| | 17 | LZ-2280 | Z280 |  | 4000 | 5000 |



*Machine head set at the time of delivery

**(Caution) 1. When the dry-type machine head is connected, any model other than dry-type one cannot be set.**

**2. Refer to the machine head list (40088647) for the details of each machine head.**

# 5. TROUBLES AND CORRECTIVE MEASURES

## (1) Mechanical components

| Trouble | Cause (1) | Cause (2) | Check and corrective measures |
|---|---|---|---|
| 1. Skipping of one or more stitches occurs at the start of sewing. | 1-1) The needle thread passing through the needle is too short after thread trimming. | 1)-A Something is wrong with the needle threat route and the needle thread tension is too high at thread trimming. | Check the needle thread path. Remove thread entangled with thread guide pin, or correct the position of the thread guide on the thread stand or other troubles. |
| | | 1)-B The tension of the 1st thread tension disk is too high. | Turn the thread tension nut of the 1st thread tension disk counterclockwise to decrease the tension. |
| | | 1)-C The floating amount of the 2nd thread tension disk is insufficient at thread trimming. | Check whether the floating amount of the 2nd thread tension disk reads between 0.5 and 1 mm when the hook thread presser is pushed into until the tip of the presser reaches the bobbin. The floating amount is adjustable by moving the tension release wire on the underside of the bed. Check whether the disk is horizontally loosened. If not, turn the thread tension spring 180 degrees or correct the spring inclination. |
| | | 1)-D The timing of the tread trimming cam is too early. | Check and correct the cam timing in accordance with 3-6. |
| | | 1)-E The needle thread is detached at thread trimming due to wrong position of the hook thread presser. | Check for loosened setscrew of the thread take-up picker. |
| | | 1)-F The counter knife is too close to the needle, or the knife tip is too sharp. | Removing the throat plate, check and correct the position of the counter knife, or check for any scratch on the moving knife (Refer to 4-(8)). |
| | | 1)-G The knife thread guide, moving knife, or hook has a flaw. | Check the hole of the knife thread guide and hook for scratches or burrs, and if a scratch or burr has been found, buff it. If buffing does not correct the trouble, replace the components. |
| | | 1)-H The standard cam timing is too early. | Correct the timing for a synthetic thread (special) |
| | 1-2) An inappropriate needle, throat plate, or presser is used. Alternatively, the pressure of the presser is too low. | 2)-A The presser foot can not hold the needle thread because “a” dimension of the relief at “b” of the presser foot is too large.   | Check “a” and “b” of the presser foot, and “A” of the throat plate.<br>○ When synthetic thread is used for tricot “a”< 0.8 mm, and radius of “A” and “b”< 0.3 mm.<br>○ When synthetic thread is used, “a” shall be smaller than 1.2 mm, and there shall be no relief at “b” and “A”.<br>○ For cotton thread, the relief at “a”, “b” and “A” should be minimized as long as good tightness of stitches is obtained.<br>○ The smaller the relief at “a”, “b”, and “A”, the better for lighter-weight or coarser fabrics, more slippery thread, or smaller stitch length. |

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| Trouble | Cause (1) | Cause (2) | Check and corrective measures |
|---|---|---|---|
| From the previous page | From the previous page | From the previous page | |
| | | 2)-B The relief at “A” of the throat plate needle hole is too large.   | |
| | | 2)-C The needle is too thick. | A thinner needle is better as long as sufficient tightness of stitches is obtained. |
| | | 2)-D The needle hole in the throat plate is too large. | Replace the throat plate by one with a smaller needle hole. |
| | | 2)-E The presser foot pressure is insufficient. | Increase the pressure of the presser foot, with care taken not to cause the feed power to decrease or stitches to jam. |
| | 1-3) The blade top of the hook does not scoop the needle. (stitch skipping) | 3)-A The timing between the needle and hook is inappropriate. | Check the needle bar height, and align it with the ruled line on the needle bar. For sewing knitted cloth, lower the needle bar slightly to delay the timing. |
| | | 3)-B The tension and momentum of the thread take-up spring are too high. | Decrease the tension and momentum (Standard 5 to 7 mm). |
| | | 3)-C The blade top of the hook is worn out. | Reshape the blade top or replace the hook. |
| | | 3)-D The needle is inappropriately mounted. | Adjust the needle inclination, or replace the needle if the current needle is bent. |
| | 1-4) The bobbin thread is too short at sewing start. | 4)-A Bobbin idling pulls the edge of the bobbin thread into the bobbin case. | Increase the pressure of the bobbin presser.<br>Increase the bobbin thread tension. |
| | | 4)-B The pressure of the bobbin presser is too high. | Reduce the pressure of the bobbin presser. However, be careful not to idle the bobbin. |
| | | 4)-C A flaw on the hook causes the bobbin thread to be cut too short. | Repair the flaw on the hook, or replace the hook. |
| | 1-5) Knot tying between the needle and bobbin threads is not easy at sewing start. | 5)-A The sewing speed at sewing start is too fast to knot the needle and bobbin threads together. | Conduct 1 or 2 stitches of soft-start (800 sti/min) at the sewing start. |

| Trouble | Cause (1) | Cause (2) | Check and corrective measures |
|---|---|---|---|
| 2. The edge of the needle thread comes out on the material at the sewing start. | 2-1) The needle thread passing through the needle is too long after thread trimming. | 1)-A The 1st thread tension is too low. | Increase the 1st thread tension. |
| | | 1)-B The timing of the tread trimming is too late. | Check and correct the cam timing in accordance with 3-6. |
| | | 1)-C The counter knife is set too back. | Correct the position of the counter knife in accordance with 3-8. |
| 3. The underside of the material is not neat at sewing start. (The needle thread remains long under the material.) | 3-1) The needle thread passing through the needle is too long after thread trimming. | 1)-A Refer to the previous item, [The needle thread passing through the needle is too long after thread trimming]. | Refer to the previous item, [The needle thread passing through the needle is too long after thread trimming]. |
| | 3-2) Adjustment of the throat plate, needle, or foot is inappropriate, and the needle thread passing through the needle cannot be shortened after thread trimming. | 2)-A Refer to the previous item, [An inappropriate needle, throat plate, or presser is used. Alternatively, the pressure of the presser is too low]. | Refer to the previous item, [An inappropriate needle, throat plate, or presser is used. Alternatively, the pressure of the presser is too low]. |
| 4. The needle thread slips off the needle at the sewing start. | 4-1) The length of the needle thread passing through the needle varies after thread trimming. | 1)-A Too high 1st thread tension due to delayed thread trimming timing causes the thread to be cut before engagement between the moving and counter knives. (midway cut) | Turn off the power, push the hook thread presser into the bobbin case by hand when the needle reaches the lowest point, trim the needle while turning the hand wheel, and stop the hand wheel when the thread take-up lever comes to the upper dead point. If the length of the needle thread passing through the needle at this moment is 10 mm or more shorter than that of the pedal operation, hasten the timing of thread trimming or decrease the 1st thread tension because this is a midway cut. |
| | | 1)-B The thread take-up picker does not enter the bobbin case sufficiently, causing the needle thread to come off the thread take-up picker from time to time. | Adjust the hook thread presser with reference to 4.-(13). |
| | | 1)-C The blade of the counter knife has been sharpened excessively, and thread is trimmed only by the counter knife. | Re-sharpen the blade of the knife according to 4.-(10), or replace the knife. |
| | | 1)-D The knife thread guide, moving knife, or hook has a flaw. | Remove the scratches or burrs, or replace the defective component. |
| | | 1)-E The needle is too thick. | Change the needle. |

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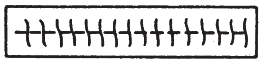
| Trouble | Cause (1) | Cause (2) | Check and corrective measures |
|---|---|---|---|
| From the previous page | | | |
| | 4-2) The needle thread slips off the needle immediately after thread trimming. | 2)-A Too early cam timing or too late hook timing causes the moving knife to cut the needle thread to hold 3 threads before thread separation. | Slipping of the needle thread from the needle immediately after thread trimming results from cutting the needle thread passing though the needle due to defective thread spreading by the moving knife. In such a case, Thread chips of 40mm level exist under the throat plate or on the under cover. In this case, delay the timing of the thread trimming cam. |
| | 4-3) Knot tying between the needle and bobbin threads is not easy at sewing start. | 3)-A The sewing speed at sewing start is too fast to knot the needle and bobbin threads together. | Conduct 1 or 2 stitches of soft-start (800 sti/min) at the sewing start. |
| 5. The thread tension is inappropriate at sewing start. | 5-1) The tension of the needle thread is too low at sewing start. | 1)-A The hook thread presser is inappropriately mounted. | Adjust the hook thread presser with reference to 4. -(13). |
| | | 1)-B Bobbin idling causes the bobbin thread tension at sewing start to decrease. | Adjust the hook thread presser with reference to 4. -(13).<br>Use a spring loaded bobbin case. |
| | | 1)-C The tensions of the bobbin thread and needle thread are too low. | Increase the tensions of the bobbin thread and needle thread. |
| | | 1)-D The presser or throat plate is inappropriate. | Refer to Cause (1) of 1-2). |
| 6. The needle thread is untrimmed. (But the bobbin thread is trimmed.) | 6-1) Stitch skipping at the final stitch occurs. | 1)-A The needle is inappropriately mounted. | Mount a needle appropriately and make sure that the needle is not bent. |
| | | 1)-B The stroke of the thread take-up spring is too long. | Shorten the stroke of the thread take-up spring. (5 to 7 mm) |
| | | 1)-C The hook is inappropriately adjusted. | Check for stitch skipping at low sewing speed, and readjust the hook timing (Adjust the hook timing 2.0 mm which is earlier than that for the standard lockstitchers). |
| | 6-2) The blade portion of the knife is blunt. | 2)-A The blade portions of the moving and counter knives are not per- featly aligned at thread trimming. (The mounting angle, position, and blade inclination of the counter knife are not matched with those of the moving knife.) | Remove the throat plate, and manually operate the thread trimmer to cut about three cotton thread #50. When all the three threads are cut evenly, no further corrective action is required. If not; → Sharpen the counter knife.<br>Correct the tilt of the blade tip of the counter knife.<br>Correct the position of the counter knife. |

| Trouble | Cause (1) | Cause (2) | Check and corrective measures |
|---|---|---|---|
| 7. The bobbin thread is untrimmed. (But the needle thread is trimmed.) | 7-1) The backward movement of the moving knife is insufficient. | 1)-A The backward movement of the moving knife is inappropriately adjusted. (The position of the knife operation axis or the thread trimming cam in the right-left direction is inappropriately adjusted.) | Measure the backward movement length of the moving knife. Adjust the position of the thread trimming cam in the right-left direction to set the backward movement length of the knife to within 2.5 to 3 mm (3 to 3.5 mm for SH) if the measurement result is out of the range. |
| | 7-2) The position of the bobbin thread at thread trimming is unstable. | 2)-A A hook other than the specified hook is used. | Check whether the current hook has a guide slit for the bobbin thread. If the hook has no such a slit, replace the hook with a hook for threat trimming. |
| 8. The wiper interferes with the needle. Trouble | 8-1) The height of the position where the wiper is mounted is inappropriate. | | Mount the wiper appropriately. |
| 9. The moving knife breaks. | 9-1) The timings of the parts are inappropriate. | 1)-A The timing of thread trimming is inappropriate. | Make an adjustment with reference to 4. -(6). |
| | | 1)-B The up stop position is inappropriate. | Make an adjustment with reference to 4. -(6). |
| | 9-2) The thread is tense at thread trimming. | 2)-A The thread tension disk does not float at thread trimming. | Adjust the timing of the disk floating with use of the setscrew of the thread tension unit. |
| | | | Loosen the tension release wire presser (bottom) and readjust the wire position. |
| | | 2)-B Hangnail of the thread is found. | Replace the needle with new one or a ballpoint needle if necessary after checking the needle tip. |
| | | | Check whether the timing and clearance of the hook are appropriately adjusted. |
| | | | Buff the blade top of the hook or other thread paths if necessary after checking them. |
| | | | Check whether a gauge or a needle attached is suitable for the thread (thick thread). |
| | 9-3) The thread trimming drive unit does not function. | 3)-A The mounting position of the thread trimming drive unit is inappropriate. | Make an adjustment with reference to 4. -(15). |

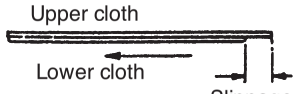
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| Trouble | Cause (1) | Cause (2) | Check and corrective measures |
|---|---|---|---|
| From the previous page | | | |
| | 9-4) The timing belt slips. | 4)-A The tension of the timing belt is too low. | Adjust the tension in accordance with 4.-(1). |
| | | 4)-B The knife pressure is excessive. | Decrease the pressure so that the counter knife bites the moving knife properly. |
| | 9-5) The home position of the moving knife is inappropriate. | 5)-A The thread is not trimmed. | Make an adjustment with reference to 4.-(7). (for backward movement length of the moving knife) |
| | | | Make an adjustment with reference to 4.-(8). (for engagement with the counter knife) |
| | 9-6) Thread trimming operates at sewing start right after thread trimming. | 6)-A The cam roller is not disengaged from the thread trimming cam groove in a dwell section. | Adjust the position relation between the cam groove and roller. |

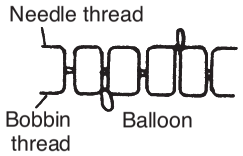
## (2) Sewing performance

| Trouble | Cause (1) | Cause (2) | Check and corrective measures |
|---|---|---|---|
| 1. Puckering<br>Wrinkles developed around stitches due to stitch shrinkage or uneven material feed.<br> | 1-1) The needle is too thick. | | Use a thin needle as much as possible. Use a KN needle (standard needle).<br>(Example DB x 1 #11 - DB x 1KN #9) |
| | 1-2) Thread tension (top or bottom) is too high. | 2)-A The thread path is not smooth. | Finish the thread path appropriately. |
| | | 2)-B The timing of the hook is too late. | Hasten the timing of the hook without occurrence of stitch skipping to obtain smooth unthreading. |
| | | 2)-C The feed timing is too fast. | Delay the feed timing compared to the needle timing to reduce feeding. |
| | | 2)-D The stroke of the thread take-up lever is too long. | Move the arm thread guide rightward to reduce the thread feeding with the thread take-up lever. |
| | | 2)-E The stroke of the thread take-up spring is too short. | Increase the stroke. |
| | | 2)-F The thread is made of Nonsmooth material. | Use silicon. |
| | 1-3) Pressing is inappropriate. | 3)-A The pressure is too high. | Minimize the pressure as long as smooth material feed is assured. |
| | | 3)-B The finish of the backside of the presser is rough. | Use a buff or the like to smooth the presser. |
| | | 3)-C The material is difficult to feed. | Use a fluorocarbon resin presser foot or nidax presser foot. |
| | 1-4) The material is inappropriately stretched. | 4)-A The needle hole of the throat plate is too large. | Replace the current gauge with a new one having a smaller diameter hole. |
| | | 4)-B The thread relief on the backside of the presser is too large. | Use a presser with a smaller thread relief on the backside or without thread relief. |
| | | 4)-C The parallel level of the presser is inappropriate. | Replace the presser foot or presser bar. |
| | | 4)-D The needle tip is blunt. | Replace the needle. |

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| Trouble | Cause (1) | Cause (2) | Check and corrective measures |
|---|---|---|---|
| From the previous page | | | |
| | 1-5) Feeding is inappropriate. | 5)-A Too high feed dog causes jumping at high speeds. | Lower the feed dog as sufficient feed power is maintained. |
| | | 5)-B The tip of the feed dog is worn. | Sharpen the top edges. |
| | | 5)-C The pitch of the feed dog is too large. | Replace the current feed dog with a new one having a smaller pitch. |
| | | 5)-D The inclination of the feed dog is inappropriate. | Adjust the tilt so that the front end of the feed dog is higher than the rear end. |
| | | 5)-E The parallel level of the feed dog is inappropriate. | Replace the current feed tooth with new one. |
| | | 5)-F The feeding speed is too high. | Reduce the feeding speed. |
| | | 5)-G Others | Use the cloth puller. |
| | | | Pull the material back by hand. |
| | | | Use an aluminum bobbin (part No. B9117552A00) |
| 2. Uneven material feed<br>The upper and lower cloths are not evenly fed.<br><br> | 2-1) Feeding is inappropriate. | 1)-A The feed dog is too high. | Lower the feed dog as long as sufficient feed power is ensured. |
| | | 1)-B The top edges of the feed dog teeth are worn. | Sharpen the top edges. |
| | | 1)-C The feed dog pitch is too large. | Use one with a smaller pitch. |
| | | 1)-D The tilt of the feed dog is not correct. | Set the feed dog with its front down. |
| | | 1)-E The feed timing is too late. | Adjust the feed timing to the standard timing. |

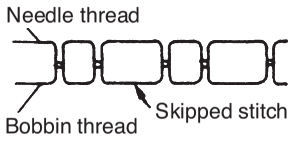
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| Trouble | Cause (1) | Cause (2) | Check and corrective measures |
|---|---|---|---|
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| | 2-2) Pressing is inappropriate. | 2)-A The pressure is too high. | Minimize the pressure as long as material is properly fed. |
| | | 2)-B The finish of the backside of the presser is rough. | Buff the sole. |
| | | 2)-C The presser is made from Nonsmooth material. | Use a fluorocarbon resin presser foot or a nidax presser foot. |
| | 2-3) The feeding speed is too high. | | Reduce the feeding speed. |
| 2. "Balloon" stitches (loose stitches and looping) Thread knots are formed on either side of material as a random thread loop.   | 3-1) The thread tension is too low. | | Increase the 2nd thread tension. |
| | 3-2) The thread take-up spring is inappropriately adjusted. | 2)-A The stroke of the thread take-up spring is too short. | Increase the stroke. |
| | | 2)-B The tension is too low. | Increase the tension. |
| | | 2)-C The spring comes in contact with the machine srm. | Readjust so that the spring does not touch the arm. |
| | 3-3) The stroke of the thread take-up lever is too long. | | Move the arm thread guide rightward to reduce the thread feeding with the thread take-up lever. |
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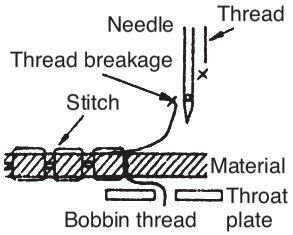
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| Trouble | Cause (1) | Cause (2) | Check and corrective measures |
|---|---|---|---|
| | 3-4) Knife thread guide position is improper. | 4)-A The timing of the hook is too early. | Set the timing of the hook to the standard or slightly late level for cotton or spun thread. |
| | | 4)-B The timing of the hook is too late. | Set the timing of the hook to the slightly early level for filament thread. |
| | | 4)-C The clearance between the hook and inner hook presser is too small. | Increase the clearance to smooth the thread passing. |
| | | 4)-D Hook oil is insufficient. | Adjust the oil volume to the appropriate level. |
| | | 4)-E The hook is defective. (thread catch) | Replace the hook. |
| | 3-5) The matters related to the hook are inappropriate. | 5)-A The thread path is not smooth. | Finish the thread path appropriately. |
| | | 5)-B The thread path has a flaw. | Finish the thread path appropriately. |
| | | 5)-C The thread path has an obstacle. | Finish the thread path appropriately to correct threading. |
| | 3-6) The thread path is defective. | 6)-A Inappropriate engagement between the bobbin and bobbin case causes the bobbin thread to be caught. | Replace the bobbin or bobbin case. |
| | | 6)-B Thread has not properly been wound around the bobbin. | The winding tension was too high or low. |
| | | 6)-C The tension adjusting spring of the bobbin case is defective. | Replace the bobbin case. |
| | | 6)-D The bobbin thread idles in the bobbin case. | To prevent bobbin racing, use a bobbin with spring for prevention of racing or put a thin cloth in the bobbin case. |
| | 3-7) The bobbin or bobbin case is defective. | 7)-A The timing of feeding is inappropriate, or the height of the feed dog is too low. | For cotton or spun thread, adjust the feed timing slightly later than the standard timing, and adjust it slightly earlier than the standard for synthetic thread. Increase the feed dog height (up to 1mm). |

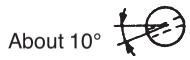
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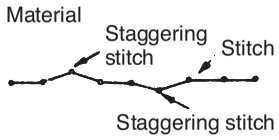
| Trouble | Cause (1) | Cause (2) | Check and corrective measures |
|---|---|---|---|
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| | 3-8) Feeding is inappropriate. | 8)-A The presser is floating. | Correct the height. |
| | | 8)-B The presser foot sole has little or no relief (for thicker thread or larger stitch length). | Use a foot with a large thread relief on the backside. |
| | 3-9) The thread tension device is defective. | 9)-A The thread tension disk is floating. | Adjust the timing of the thread tension disk floating with reference to 3.-(11)-5). |
| | 3-10) The needle hole of the throat plate is too small. | | Use a throat plate with a larger needle hole. |
| | 3-11) The needle is too thin for the thread to be used. | | Change the needle or thread to be used. |
| | 3-12) The needle is defective. | 12)-A A burr exists on the tip of the needle. | Replace the needle. (It is advisable to use a ball-point needle for synthetic thread.) |
| 4. Stitch skipping<br>The machine fails to form a complete stitch.<br><br> | 4-1) The needle is defective. | 1)-A The needle is bent. | Replace the needle. |
| | | 1)-B The needle mounting direction is inappropriate. The needle is not mounted fully to the end. | Mount the needle appropriately. Replace the needle clamp screw. Defective sewing is likely to occur when the needle recess portion faces frontward. |
| | | 1)-C The needle tip is blunt. | Replace the needle. |
| | | 1)-D The needle is too thin or thick for the thread to be used. | Replace the needle. |
| | 4-2) The matters related to the hook are inappropriate. | 2)-A The blade top of the hook is blunt or worn. | Sharpen the blade top of the hook or replace the hook. |
| | | 2)-B The timing of the hook is inappropriate. | Correct the timing. (The proper timing depends on the type of material and thread. In general, the timing should be set earlier for synthetic thread or heavy-weight material, and it should be set later for light-weight material.) |
| | | 2)-C The height of the needle bar is inappropriate. | Properly adjust it with respect to the hook point. (In general, the needle bar should be set higher for synthetic thread, and it should be set lower for light-weight material.) |
| | | 2)-D The clearance between the hook point and needle is wrong. | Minimize the clearance. |
| | | 2)-E The loop shape is unstable. (mesh type materials) | Wrap the thread around the needle. |
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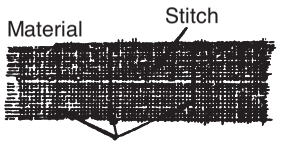
| Trouble | Cause (1) | Cause (2) | Check and corrective measures |
|---|---|---|---|
| | 4-3) The tension of the needle thread is too high. | | Reduce the tension of the needle thread. Use silicon. |
| | 4-4) The speed is too high. | | Reduce the speed. |
| | 4-5) The feed timing is inappropriate. (needle bent) | | Hasten the feed timing. |
| | 4-6) The thread take-up spring is inappropriately adjusted. | 6)-A The stroke of the thread take-up spring is too long. | Shorten the stroke of the thread take-up spring. |
| | | 6)-B The tension of the thread take-up spring is too high. | Reduce the tension of the thread take-up spring. |
| | 4-7) The material is inappropriately stretched. | 7)-A The presser is floating. | Correct the presser foot height. |
| | | 7)-B The needle hole of the throat plate is too large. | Use one with a smaller needle hole. |
| | | 7)-C The thread relief on the back side of the presser is too large. | Use one with a smaller relief or with no relief. |
| | | 7)-D The parallel level of the presser is inappropriate. | Replace the presser foot or presser bar. |
| 5. Needle thread breakage<br>The needle thread splits finely or breaks during sewing.<br><br> | 5-1) The thread path (including the throat plate and foot) is defective. | 1)-A The thread path is not smooth. | Finish the thread path appropriately. |
| | | 1)-B The thread path has a flaw. | Finish the thread path appropriately. |
| | | 1)-C The thread path has an obstacle. | Check threading again and conduct correction if necessary. |
| | 5-2) The tension of the needle thread is inappropriate. | 2)-A The tension of the needle thread is too high or too low. | Adjust the tension of the needle thread to the appropriate level. |
| | | 2)-B The 1st thread tension is too low. | Adjust the tension of the needle thread to eliminate random movement of the thread between the 1st and 2nd thread tension portions. |
| | 5-3) The thread take-up spring is inappropriately adjusted. | 3)-A The stroke of the thread take-up spring is too long or too small. | Adjust the stroke of the thread take-up spring. |
| | | 3)-B The tension of the thread take-up spring is too high or too low. | Adjust the tension of the thread take-up spring. |

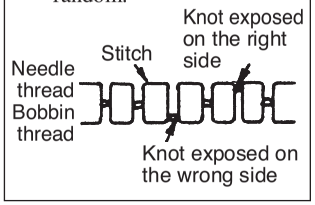
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| Trouble | Cause (1) | Cause (2) | Check and corrective measures |
|---|---|---|---|
| From the previous page | | | |
| | 5-4) The needle is defective. | 4)-A The needle is bent. | Replace the needle. |
| | | 4)-B The needle has a flaw. | Replace the needle. |
| | | 4)-C The needle tip is blunt. | Replace the needle. |
| | | 4)-D The needle mounting direction is inappropriate. | Mount the needle appropriately. Defective sewing is likely to occur when the needle recess portion faces frontward. |
| | | 4)-E The needle is too thin or thick for the thread to be used. | Replace the needle. |
| | | 4)-F The needle tip is too sharp. | Use a ballpoint needle. |
| | 5-5) The matters related to the hook are inappropriate. | 5)-A The thread path of the hook has a flaw. | Smooth the thread path. |
| | | 5)-B The blade top of the hook is blunt or worn. | Sharpen the blade top of the hook or replace the needle. |
| | | 5)-C The clearance between the hook and inner hook presser is too small. | Increase the clearance to smooth the thread passing. |
| | | 5)-D Hook oil is insufficient. | Adjust the hook oil volume to the appropriate level. |
| 6. Thread breakage at back or back-tuck sewing | 6-1) The needle has improperly been attached. | 1)-A The orientation of the needle is wrong.   | Attach the needle so that the long groove of the needle faces exactly to the left or slightly toward the operator as illustrated.   |
| | | | Wrap thread around the needle. |

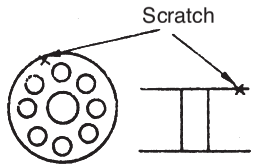
| Trouble | Cause (1) | Cause (2) | Check and corrective measures |
|---|---|---|---|
| 7. Thread breakage at needle entry or idle stitching. | 7-1) The needle has improperly been installed. | 1)-A The orientation of the needle is wrong.   | Attach the needle so that the long groove of the needle faces exactly to the left or slightly away from the operator as illustrated.   |
| | 7-2) The knife thread guide has improperly been positioned. | | Accurately position it so that needle enters the center of the opening. |
| | 7-3) The needle bar is too low | | Raise the needle bar. |
| | | | Wrap the thread around the needle. |
| 8. Staggering stitches<br>Some stitches stagger, whereas they should be aligned.   | 8-1) The tension of the needle thread is too high. | | Reduce the tension of the needle thread. |
| | 8-2) The needle is defective. | 2)-A The needle is bent. | Replace the needle. |
| | | 2)-B The needle tip is blunt. | Replace the needle. |
| | | 2)-C Needle is too thin. | Use a thicker needle. For a KN needle (single needle), use a double needle. |
| | | 2)-D The needle is too long. | Use a shorter needle or a needle with longer shank (DA x 1) |
| | 8-3) The speed is too high. | | Reduce the speed. |

To the next page

| Trouble | Cause (1) | Cause (2) | Check and corrective measures |
|---|---|---|---|
| From the previous page | | | |
| | 8-4) Feeding is inappropriate. | 4)-A The parallel level of the feed dog is inappropriate. | Replace the current feed dog with new one. |
| | | 4)-B The feed dog is aslant mounted. | Mount the feed dog appropriately. |
| | | 4)-C The feeder bar has a backlash in the right-left direction. | Remove the play. |
| | 8-5) Pressing is inappropriate. | 5)-A The presser is floating. | Correct the presser foot height. |
| | | 5)-B The parallel level of the presser is inappropriate. | Replace the presser foot or presser bar. |
| | | 5)-C The pressure is too low. | Increase the pressure of the presser. |
| | 8-6) Threading is inappropriate. | 6)-A Threading of the needle thread is improper. | Correct threading. |
| | | 6)-B The needle bar thread guide is defective. | Try using B1418227T00 or B1418552A00. |
| 9. Material fiber breaks. Material fibers are broken by the needle during sewing.   | 9-1) The needle is defective. | 1)-A The needle heat is too high. | Use silicon. |
| | | 1)-B The needle is too thick. | Use a needle as thin as possible. |
| | | 1)-C The needle tip is blunt. | Replace the needle. |
| | | 1)-D The shape of the needle tip is inappropriate. (different needle type) | Use a ballpoint needle. (KN, S, J, B, U, Y, etc.) |
| | 9-2) The speed is too high. | | Reduce the speed. (prevention of needle heat) |
| | 9-3) The material is excessively tense. | 3)-A The needle hole of the throat plate is too small. | Use a throat plate with a larger needle hole. |
| | | 3)-B The pressure is too high. | Reduce the pressure as low as possible. |
| | | 3)-C The height of the presser tooth is too high. | Lower the height of the presser tooth as low as possible. |
| | 9-4) The room humidity is too low. | | Keep the humidity at approx. 65% to prevent needle heat, electrification, and friction. |
| | 9-5) The feeding pitch is too small. | | Increase the feeding pitch as large as possible. |

| Trouble | Cause (1) | Cause (2) | Check and corrective measures |
|---|---|---|---|
| 10. Irregular stitch<br>Thread knots appear on either side of material at random.<br><br> | 10-1) The matters related to the hook are inappropriate. | 1)-A Hook oil is too large or too small in amount. | Adjust the oil volume to the appropriate level. |
| | | 1)-B The hook is defective. (thread catch, defective thread path, etc.) | Replace the hook or modify the thread path. |
| | 10-2) The bobbin or bobbin case is defective. | 2)-A The bobbin thread cannot be pulled out smoothly due to poor fit between the bobbin and bobbin case. | Replace the bobbin or bobbin case. |
| | | 2)-B Defective thread winding around the bobbin winder causes the bobbin thread to be caught. | Correct the bobbin thread winding tension or the position of the bobbin winding tensioner. |
| | | 2)-C The tension adjusting spring of the bobbin case is defective. | Replace the bobbin case. |
| | | 2)-D The bobbin thread idles in the bobbin case. | To prevent the bobbin from racing, use a bobbin with spring, or put a thin cloth in the bobbin case. |
| | | 2)-E The bobbin is inserted into the bobbin case in the wrong direction. | Refer to “6.-(3). How to correct irregular stitches produced at high/low speed”. |
| | 10-3) The needle or bobbin thread tension is too low. | | Increase the tension of the needle or bobbin thread. |
| | 10-4) The thread take-up spring is inappropriately adjusted. | 4)-A The stroke of the thread take-up spring is too long or too short. | Adjust the stroke of the thread take-up spring. |
| | | 4)-B The tension of the thread take-up spring is too high or too low. | Adjust the tension of the thread take-up spring. |
| | 10-5) The thread path is defective. | 5)-A The thread path is not smooth. | Finish the thread path appropriately. |
| | | 5)-B The thread path has a flaw. | Finish the thread path appropriately. |
| | | 5)-C The thread path has an obstacle. | Finish the thread path appropriately to correct threading. |

To the next page

| Trouble | Cause (1) | Cause (2) | Check and corrective measures |
|---|---|---|---|
| From the previous page | | | |
| | 10-6) The material is inappropriately stretched. | 6)-A The needle hole of the throat plate is too large. | Replace the current gauge with a new one having a smaller diameter hole. |
| | | 6)-B The thread relief on the back side of the presser is too large. | Use a presser with a smaller thread relief on the backside or without thread relief. |
| | | 6)-C The parallel level of the presser is inappropriate. | Replace yhe presser foot or presser bar. |
| | | 6)-D The feed dog has poor parallelism. | Replace the feed dog. |
| | | 6)-E The presser is floating. | Adjust the clearance between the presser bar holder and lifting plate. |
| | 10-7) The stroke of the thread take-up lever is too long. | | Move the arm thread guide rightward to reduce the thread feeding with the thread take-up lever. |
| 11. The bobbin has a scratch.<br><br>The bobbin is scratched as illustrated, and a burris left. | 11-1) When a DAB-type hook (11038650) is used, the needle may come into contact with the bobbin. | | Use the 11141355 (old DAC-type hook) which has needle guard effect for a #11 needle.<br>When using a thicker needle, correct the needle guard. |

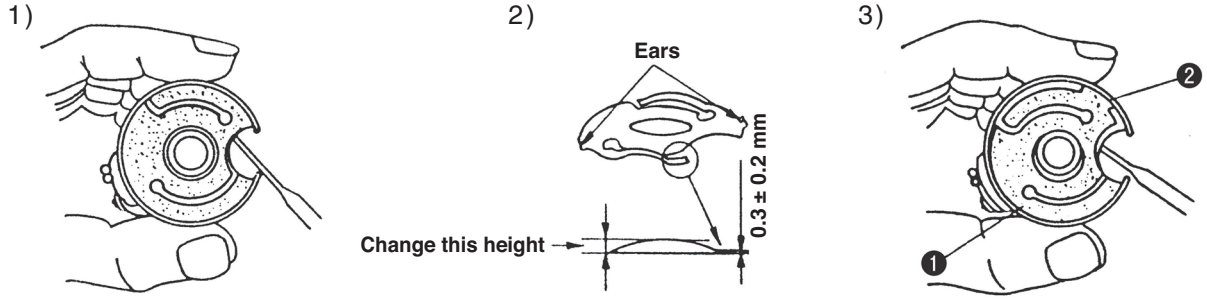
## 6. BOBBIN CASE WITH AN IDLING PREVENTION SPRING

The DDL-8700-7 use bobbin cases with an idling prevention springs. Adjust the tension of the an idling prevention spring as follows:

| | |
|---|---|
| If the bobbin races | Increase the spring tension. |
| If loose stitches result | Decrease the spring tension. |

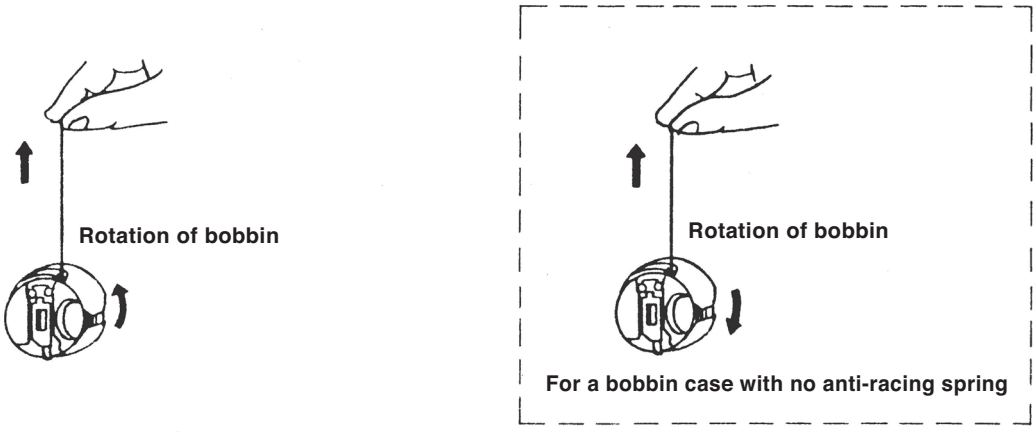
### (1) How to adjust the tension of the an idling prevention spring

1) Remove the spring as illustrated below, using an old sewing machine needle. (At this time, hold the spring with your thumb to prevent it from jumping out.)
2) Adjust the spring pressure by changing the height of the arch of the spring.
3) Set ear ❶ first, and insert the sewing machine needle to push the central part of the spring, then set ear ❷. (Bobbin case spring : Part No. D1837-555-B0B)




### (2) When using a bobbin case

When using a bobbin case with an idling prevention spring, be sure to orient the bobbin as shown below:




### (3) How to correct irregular stitches produced at high/low speed

| | |
|---|---|
| If excessively tight stitches are produced at low sewing speed: | Increase the bobbin thread tension and the an idling prevention spring tension. |
| If loose stitches are produced at low sewing speed: | Decrease the bobbin thread tension and the an idling prevention spring tension. |

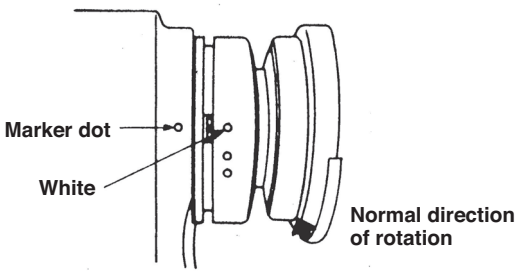
**(Caution) If the bobbin races or if irregular stitches are produced at high/low sewing speed, it is advisable to use a bobbin case with an idling prevention spring.**

## 7. BRIEFLY CHECKING THE ADJUSTMENT OF THE THREAD TRIMMER OF DDL-8700-7 SERIES

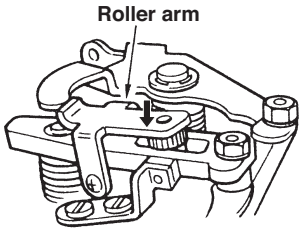
Confirm checkpoints ❶ through ❻ following the procedure described below. It is basically required to adjust the points properly.

Start

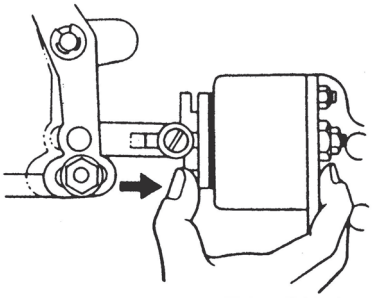
Turn ON the power to the sewing machine, and the machine stops with the marker dot engraved on the machine arm aligned with the marker dot (white) on the pulley.
Turn OFF the power to the machine with the marker dot aligned with the marker dot (white). Now, confirm checkpoints ❶ through ❺.




**Cheakpoint ❶**

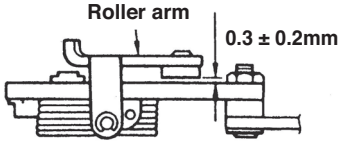



Press the roller arm in the direction of the arrow to confirm that the roller arm smoothly projects and retracts.



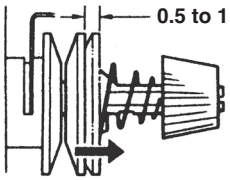
Turn ON the thread trimming solenoid by hand and confirm checkpoints ❷ through ❺.

**Cheakpoint ❷**



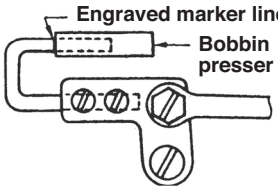

Confirm that a clearance of 0.3 ± 0.2 mm (equivalent to thickness of one or two sheets of paper) is provided.

## Cheakpoint ❸



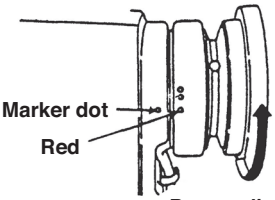

Confirm that the disk rises.

## Cheakpoint ❹




Confirrn that the picker has reached the engraved marker line.

## Cheakpoint ❺




Tum the pulley in the reverse direction of rotation until it stops. Confirm that the marker dot (red) engraved on the machine arm is aligned with the marker dot (red) on the pulley. This is the correct timing of the thread trimming cam.

## Cheakpoint ❻

Check the backward travel amount of the moving knife. It can be checked in the two different procedures. It is recommended to take both procedures for more accurate adjustments.



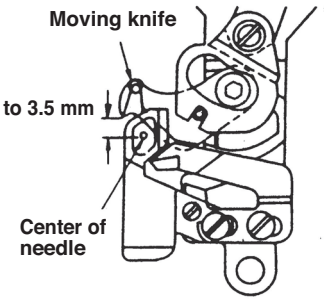

Home position

**Confirmation (1)**

When the moving knife is in the home position, the V slit on the knife mounting base is aligned with the end of the moving knife.

**Confirmation (2)**

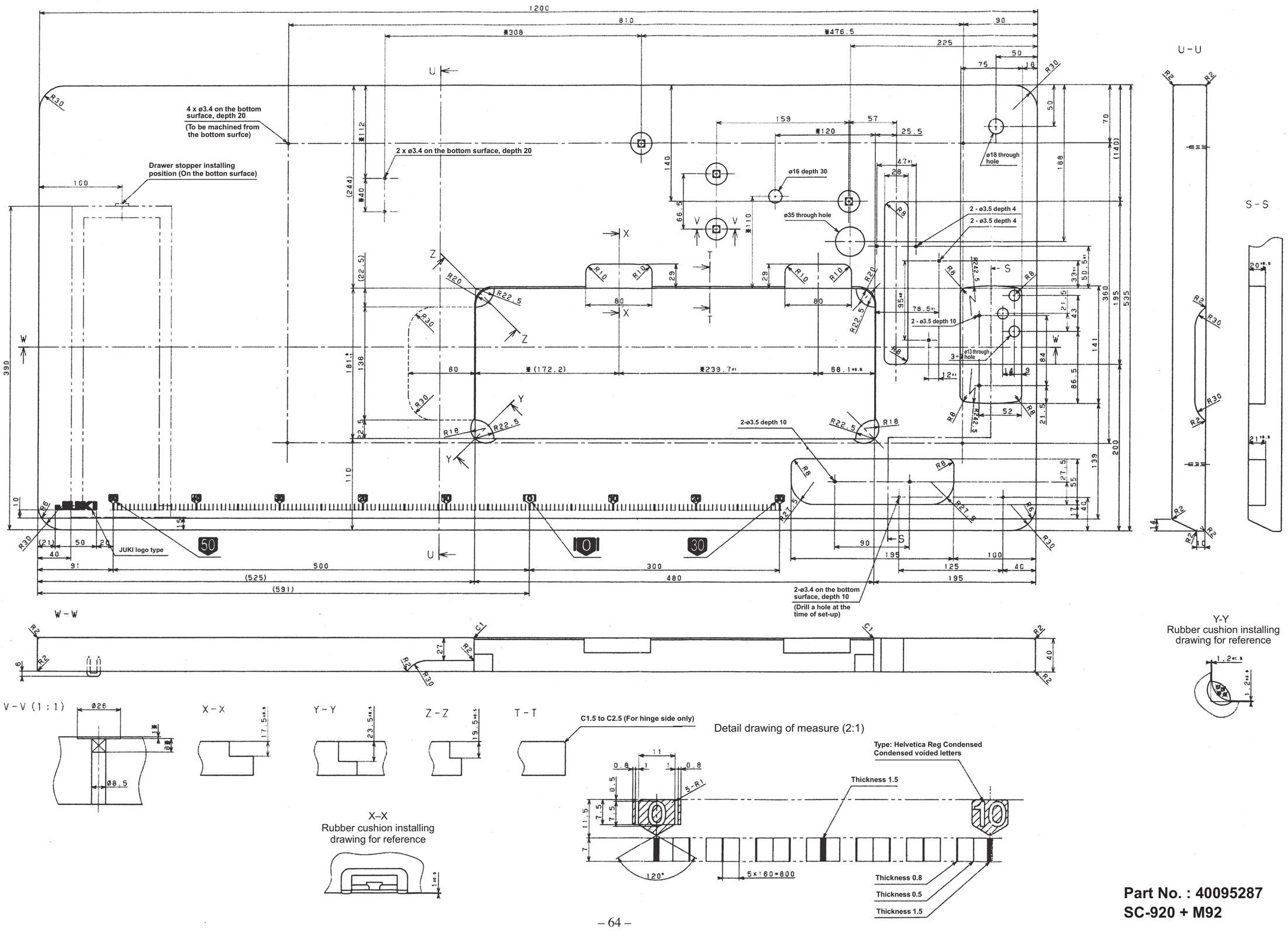
Turn the pulley by hand to make the moving knife reach the backward travel end. Now, confirrn that the top end of the moving knife is spaced 3 to 3.5 mm from the center of the needle.




When the knife is in the backward travel end

**MEMO**

## 8. DRAWING OF THE TABLE




**Part No. : 40095287**
**SC-920 + M92**

ISO14001 : 2004
REG.NO.JSAE389

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Juki Corporation operates an environmental management system to promote and conduct the following as the company engages in the research, development, design, sales, distribution,and maintenance of industrial sewing machines, household sewing machines, industrial robots, etc., and in the provision of sales and maintenance services for data entry systems:

① The development of products and engineering processes that are safe to the environment
② Green procurement and green purchasing
③ Energy conservation (reduction in carbon-dioxide emissions)
④ Resource saving (reduction of papers purchased, etc.)
⑤ Reduction and recycling of waste
⑥ Improvement of logistics efficiency (modal shift and improvement of packaging, packing, etc.)

This manual uses environment-friendly soyink.

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JUKI CORPORATION
**INDUSTRIAL SEWING MACHINE DIVISION**
2-11-1, TSURUMAKI, TAMA-SHI,
TOKYO 206-8551, JAPAN
**PHONE :** (81)42-357-2371
**FAX :** (81)42-357-2274
http://www.juki.com



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