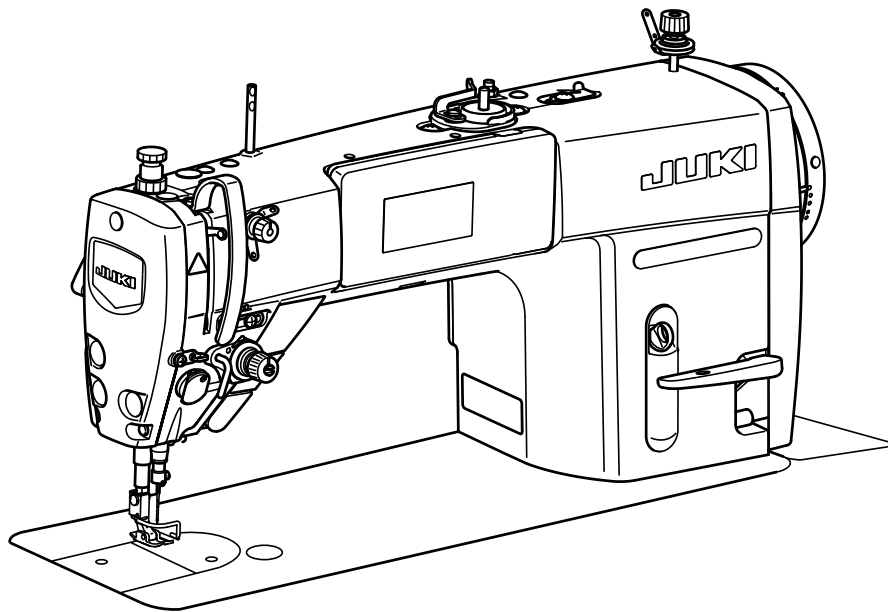**Direct-drive, High-speed, Sewing system
with Automatic Thread Trimmer**

DDL-9000C Series

(DDL-9000C-F, S Series)

ENGINEER'S MANUAL

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 instruction in detail. And this manual describes "Standard Adjustment", "Adjustment Procedures", "Results of Improper Adjustment", and other important information which are not covered in the Instruction Manual.

When carrying out the maintenance work on the sewing machine, be sure to refer also to the Instruction Manual and the Parts List. Further, refer to Engineer's Manual.

In addition, for the motor for the sewing machine with thread trimmer, refer to the separate Instruction Manual or This manual gives the "Standard Adjustment" on the former page under which the most basic adjustment value is described, and on the latter page "Results of Improper Adjustment" under which stitching errors and troubles arising from mechanical failures and "How to adjust" are described.

TO ENSURE SAFE USE OF YOUR SEWING MACHINE

> **Adjustment :**
> **It means replacement of parts, disassembly, and repair assembly.**

For the sewing machine, automatic machine and ancillary devices (hereinafter collectively referred to as "machine"), it is inevitable to conduct sewing work near moving parts of the machine. This means that there is always a possibility of unintentionally coming in contact with the moving parts. Operators who actually operate the machine and maintenance personnel who are involved in maintenance and repair of the machine are strongly recommended to carefully read to fully understand the following Safety precautions of this engineer's manual before using/maintaining the machine. The content of the Safety precautions of this engineer's manual includes items which are not contained in the specifications of your product.

The risk indications are classified into the following three different categories to help understand the meaning of the labels of this engineer's manual and the product. Be sure to fully understand the following description and strictly observe the instructions.

(I) Explanation of risk levels

	DANGER : This indication is given where there is an immediate danger of death or serous injury if the person in charge or any third party mishandles the machine or does not avoid the dangerous situation when operating or maintaining the machine.
	WARNING : This indication is given where there is a potentiality for death or serious injury if the person in charge or any third party mishandles the machine or does not avoid the dangerous situation when operating or maintaining the machine.
	CAUTION : This indication is given where there is a danger of medium to minor injury if the person in charge or any third party mishandles the machine or does not avoid the dangerous situation when operating or maintaining the machine.
	Items requiring special attention

(II) Explanation of pictorial warning indications and warning labels

Pictorial warning indication			Pictorial warning indication	
	There is a risk of injury if contacting a moving section.			Be aware that holding the sewing machine during operation can hurt your hands.
	There is a risk of electrical shock if contacting a high-voltage section.			There is a risk of entanglement in the belt resulting in injury.
	There is a risk of a burn if contacting a high-temperature section.			There is a risk of injury if you touch the button carrier.
	Be aware that eye deficiency can be caused by looking directly at the laser beam.	Indication label		The correct direction is indicated.
	There is a risk of contact between your head and the sewing machine.			Connection of a earth cable is indicated.

Warning label

❶ • There is the possibility that slight to serious injury or death may be caused.
 • There is the possibility that injury may be caused by touching moving part.
❷ • To perform sewing work with safety guard.
 • To perform sewing work with safety cover.
 • To perform sewing work with safety protection device.
❸ • Be sure to turn the power OFF before carrying out "machine-head threading," "needle changing," "bobbin changing" or "oiling and cleaning."

Electrical-shock danger label

	⚠危 険	⚠DANGER
	高電圧部分に触れて、大けがをすることがある。電源を切って、5分以上たってからカバーをはずすこと。	Hazardous voltage will cause injury. Turn off main switch and unplug power cord and wait at least 5 minutes before opening this cover.

SAFETY PRECAUTIONS

Accident means "to cause personal injury or death or damage to property."

⚠ DANGER

1. When it is necessary to open the control box containing electrical parts, be sure to turn the power off and wait for five minutes or more before opening the cover in order to prevent accident leading to electrical shock.

⚠ CAUTION

Basic precaution

1. Be sure to read the engineer's manual and other explanatory documents supplied with accessories of the machine before using the machine. Carefully keep the engineer's manual and the explanatory documents at hand for quick reference.
2. The content of this section includes items which are not contained in the specifications of your product.
3. Be sure to wear safety goggles to protect against accident caused by needle breakage.
4. Those who use a heart pacer have to use the machine after consultation with a medical specialist.
5. Turn OFF the power before starting the work in order to protect against accident that can result in personal injury.
   If it is inevitable to carry out work with the power ON, utmost care should be taken to prevent from depressing the foot pedal or pressing the start switch by mistake.
6. Make sure, after the completion of replacement work, that neither connectors nor cables are damaged, slipped off or loosened in order to protect against accident that can result in personal injury.

Safety devices and warning labels

1. Be sure to operate the machine after verifying that safety device(s) is correctly installed in place and works normally in order to prevent accident caused by lack of the device(s).
2. If any of the safety devices is removed, be sure to replace it and verify that it works normally in order to prevent accident that can result in personal injury or death.
3. Be sure to keep the warning labels adhered on the machine clearly visible in order to prevent accident that can result in personal injury or death. If any of the labels has stained or come unstuck, be sure to change it with a new one.

Application and modification

1. Never use the machine for any application other than its intended one and in any manner other than that prescribed in the engineer's manual in order to prevent accident that can result in personal injury or death. JUKI assumes no responsibility for damages or personal injury or death resulting from the use of the machine for any application other than the intended one.
2. Never modify and alter the machine in order to prevent accident that can result in personal injury or death. JUKI assumes no responsibility for damages or personal injury or death resulting from the machine which has been modified or altered.

Education and training

1. In order to prevent accident resulting from unfamiliarity with the machine, the machine has to be used only by the operator who has been trained/educated by the employer with respect to the machine operation and how to operate the machine with safety to acquire adequate knowledge and operation skill. To ensure the above, the employer has to establish an education/training plan for the operators and educate/train them beforehand.

Items for which the power to the machine has to be turned off

Turning the power off: Turning the power switch off, then removing the power plug from the outlet. This applies to the following.

1. Be sure to immediately turn the power off if any abnormality or failure is found or in the case of power failure in order to protect against accident that can result in personal injury or death.
2. To protect against accident resulting from abrupt start of the machine, be sure to carry out the following operations after turning the power off. For the machine incorporating a clutch motor, in particular, be sure to carry out the following operations after turning the power off and verifying that the machine stops completely.
   2-1. For example, threading the parts such as the needle, looper, spreader etc. which have to be threaded, or changing the bobbin.
   2-2. For example, changing or adjusting all component parts of the machine.
   2-3. For example, when inspecting, repairing or cleaning the machine or leaving the machine.
3. Be sure to remove the power plug by holding the plug section instead of the cord section in order to prevent electrical-shock, earth-leakage or fire accident.
4. Be sure to turn the power off whenever the machine is left unattended between works.
5. Be sure to turn the power off in the case of power failure in order to prevent accident resulting of breakage of electrical components.

PRECAUTIONS TO BE TAKEN IN VARIOUS OPERATION STAGES

Transportation

1. Be sure to lift and move the machine in a safe manner taking the machine weight in consideration. Refer to the text of the engineer's manual for the mass of the machine.
2. Be sure to take sufficient safety measures to prevent falling or dropping before lifting or moving the machine in order to protect against accident that can result in personal injury or death.
3. Once the machine has been unpacked, never re-pack it for transportation to protect the machine against breakage resulting from unexpected accident or dropping.

Unpacking

1. Be sure to unpack the machine in the prescribed order in order to prevent accident that can result in personal injury or death. In the case the machine is crated, in particular, be sure to carefully check nails. The nails have to be removed.
2. Be sure to check the machine for the position of its center of gravity and take it out from the package carefully in order to prevent accident that can result in personal injury or death.

Installation

(I) Table and table stand

1. Be sure to use JUKI genuine table and table stand in order to prevent accident that can result in personal injury or death. If it is inevitable to use a table and table stand which are not JUKI genuine ones, select the table and table stand which are able to support the machine weight and reaction force during operation.
2. If casters are fitted to the table stand, be sure to use the casters with a locking mechanism and lock them to secure the machine during the operation, maintenance, inspection and repair in order to prevent accident that can result in personal injury or death.

(II) Cable and wiring

1. Be sure to prevent an extra force from being applied to the cable during the use in order to prevent electrical-shock, earth-leakage or fire accident. In addition, if it is necessary to cable near the operating section such as the V-belt, be sure to provide a space of 30 mm or more between the operating section and the cable.
2. Be sure to avoid starburst connection in order to prevent electrical-shock, earth-leakage or fire accident.
3. Be sure to securely connect the connectors in order to prevent electrical-shock, earth-leakage or fire accident. In addition, be sure to remove the connector while holding its connector section.

(III) Grounding

1. Be sure to have an electrical expert install an appropriate power plug in order to prevent accident caused by earth-leakage or dielectric strength voltage fault. In addition, be sure to connect the power plug to the grounded outlet without exceptions.
2. Be sure to ground the earth cable in order to prevent accident caused by earth leakage.

(IV) Motor

1. Be sure to use the specified rated motor (JUKI genuine product) in order to prevent accident caused by burnout.
2. If a commercially available clutch motor is used with the machine, be sure to select one with an entanglement preventive pulley cover in order to protect against being entangled by the V-belt.

Before operation

1. Be sure to make sure that the connectors and cables are free from damage, dropout and looseness before turning the power on in order to prevent accident resulting in personal injury or death.
2. Never put your hand into the moving sections of the machine in order to prevent accident that can result in personal injury or death.
   In addition, check to be sure that the direction of rotation of the pulley agrees with the arrow shown on pulley.
3. If the table stand with casters is used, be sure to secure the table stand by locking the casters or with adjusters, if provided, in order to protect against accident caused by abrupt start of the machine.

During operation

1. Be sure not to put your fingers, hair or clothing close to the moving sections such as the handwheel, hand pulley and motor or place something near those sections while the machine is in operation in order to prevent accident caused by entanglement that can result in personal injury or death.
2. Be sure not to place your fingers near the surround area of the needle or inside the thread take-up lever cover when turning the power on or while the machine is in operation in order to prevent accident that can result in personal injury or death.
3. The machine runs at a high speed. Never bring your hands near the moving sections such as looper, spreader, needle bar, hook and cloth trimming knife during operation in order to protect your hands against injury. In addition, be sure to turn the power off and check to be sure that the machine completely stops before changing the thread.
4. Be careful not to allow your fingers or any other parts of your body to be caught between the machine and table when removing the machine from or replacing it on the table in order to prevent accident that can result in personal injury or death.
5. Be sure to turn the power off and check to be sure that the machine and motor completely stop before removing the belt cover and V-belt in order to prevent accident caused by abrupt start of the machine or motor.
6. If a servomotor is used with the machine, the motor does not produce noise while the machine is at rest. Be sure not to forget to turn the power off in order to prevent accident caused by abrupt start of the motor.
7. Never use the machine with the cooling opening of the motor power box shielded in order to prevent fire accident by overheat.

Lubrication

1. Be sure to use JUKI genuine oil and JUKI genuine grease to the parts to be lubricated.
2. If the oil adheres on your eye or body, be sure to immediately wash it off in order to prevent inflammation or irritation.
3. If the oil is swallowed unintentionally, be sure to immediately consult a medical doctor in order to prevent diarrhea or vomiting.

Maintenance

1. In prevention of accident caused by unfamiliarity with the machine, repair and adjustment has to be carried out by a service technician who is thoroughly familiar with the machine within the scope defined in the engineer's manual. Be sure to use JUKI genuine parts when replacing any of the machine parts. JUKI assumes no responsibility for any accident caused by improper repair or adjustment or the use of any part other than JUKI genuine one.
2. In prevention of accident caused by unfamiliarity with the machine or electrical-shock accident, be sure to ask an electrical technician of your company or JUKI or distributor in your area for repair and maintenance (including wiring) of electrical components.
3. When carrying out repair or maintenance of the machine which uses air-driven parts such as an air cylinder, be sure to remove the air supply pipe to expel air remaining in the machine beforehand, in order to prevent accident caused by abrupt start of the air-driven parts.
4. Be sure to check that screws and nuts are free from looseness after completion of repair, adjustment and part replacement.
5. Be sure to periodically clean up the machine during its duration of use. Be sure to turn the power off and verify that the machine and motor stop completely before cleaning the machine in order to prevent accident caused by abrupt start of the machine or motor.
6. Be sure to turn the power off and verify that the machine and motor stop completely before carrying out maintenance, inspection or repair of the machine. (For the machine with a clutch motor, the motor will keep running for a while by inertia even after turning the power off. So, be careful.)
7. If the machine cannot be normally operated after repair or adjustment, immediately stop operation and contact JUKI or the distributor in your area for repair in order to prevent accident that can result in personal injury or death.
8. If the fuse has blown, be sure to turn the power off and eliminate the cause of blowing of the fuse and replace the blown fuse with a new one in order to prevent accident that can result in personal injury or death.
9. Be sure to periodically clean up the air vent of the fan and inspect the area around the wiring in order to prevent fire accident of the motor.
10. In order to prevent accidents resulting in personal injury or death, adjustments have to be carried out within the instructions described in this Engineer's Manual and in the Instruction Manual by the personnel who have been well trained by the employer with respect to the latest knowledge and safety for the machine.
11. Make sure that water is contained in cylinders and pipes, then remove water from them in order to prevent accidents due to a malfunction of the machine.

Operating environment

1. Be sure to use the machine under the environment which is not affected by strong noise source (electromagnetic waves) such as a high-frequency welder in order to prevent accident caused by malfunction of the machine.
2. Never operate the machine in any place where the voltage fluctuates by more than "rated voltage ±10 %" in order to prevent accident caused by malfunction of the machine.
3. Be sure to verify that the air-driven device such as an air cylinder operates at the specified air pressure before using it in order to prevent accident caused by malfunction of the machine.
4. To use the machine with safety, be sure to use it under the environment which satisfies the following conditions:
   Ambient temperature during operation   5°C to 35°C
   Relative humidity during operation   35 % to 85 %
5. Dew condensation can occur if bringing the machine suddenly from a cold environment to a warm one. So, be sure to turn the power on after having waited for a sufficient period of time until there is no sign of water droplet in order to prevent accident caused by breakage or malfunction of the electrical components.
6. Be sure to stop operation when lightning flashes for the sake of safety and remove the power plug in order to prevent accident caused by breakage or malfunction of the electrical components.
7. Depending on the radio wave signal condition, the machine may generate noise in the TV or radio. If this occurs, use the TV or radio with kept well away from the machine.
8. In order to ensure the work environment, local laws and regulations in the country where the sewing machine is installed shall be followed.
   In the case the noise control is necessary, an ear protector or other protective gear should be worn according to the applicable laws and regulations.
9. Disposal of products and packages and treatment of used lubricating oil should be carried out properly according to the relevant laws of the country in which the sewing machine is used.

PRECAUTIONS TO BE TAKEN IN VARIOUS OPERATION STAGES
MECHANICAL COMPONENTS

⚠ CAUTION

Transportation
1. Be sure to lift this machine with four or more workers and use a carriage for moving it in order to prevent personal injury.
2. Be sure to take sufficient safety measures to prevent falling or dropping before lifting or moving the machine in order to protect against accident that can result in personal injury or death.
3. Installation is described in the Instruction Manual. Be sure to fully understand the description before putting the machine into operation.

Replacement of parts
1. In prevention of accident that can result in personal injury, be sure to carry out disassembly/assembly work within the specified range given in this Engineer's Manual and in the Instruction Manual.
2. Turn OFF the power before starting the work in order to protect against accident that can result in personal injury.
   If it is inevitable to carry out work with the power ON, utmost care should be taken to prevent from depressing the foot pedal or pressing the start switch by mistake.
3. Be sure to carry out replacement work after having installed the machine in a stable state in order to protect against accident that can result in personal injury.
   In addition, be sure to select appropriate tools.
4. In prevention of accident that can result in personal injury, make sure, after the completion of adjustment work, that neither screws nor nuts are loosened or come in contact with other parts.
5. Be sure to use JUKI genuine parts when replacing any of the machine parts.
   JUKI assumes no responsibility for any accident caused by any part other than JUKI genuine one.
   In addition, in the event you cannot replace parts within the specified range, immediately stop the replacement work and ask JUKI or distributor in your area for replacement of the parts.

Adjustment
1. Be sure to adjust according to the instructions given in this Engineer's Manual and in the Instruction Manual in order to protect against accident that can result in personal injury.
2. Be sure to carry out replacement work after having installed the machine in a stable state in order to protect against accident that can result in personal injury.
   In addition, be sure to select appropriate tools.
3. In prevention of accident that can result in personal injury, make sure, after the completion of adjustment work, that neither screws nor nuts are loosened or come in contact with other parts.
4. Turn OFF the power before starting the work in order to protect against accident that can result in personal injury.
   If it is inevitable to carry out work with the power ON, utmost care should be taken to prevent from depressing the foot pedal or pressing the start switch by mistake.
5. In prevention of accident that can result in personal injury or entanglement accident, be sure to ensure safety at the time of test run. In addition, be sure to take care not to allow hair or cloths to come in contact with the machine belt.

Disassembly/assembly
1. In prevention of accident that can result in personal injury, be sure to carry out disassembly/assembly work within the specified range given in this Engineer's Manual and in the Instruction Manual.
2. Be sure to carry out replacement work after having installed the machine in a stable state in order to protect against accident that can result in personal injury.
   In addition, be sure to select appropriate tools.
3. In prevention of accident that can result in personal injury, make sure, after the completion of adjustment work, that neither screws nor nuts are loosened or come in contact with other parts.
4. In prevention of accident that can result in personal injury, be sure to tighten screws and nuts in assembly work with a specified torque, if specified, or with an appropriate torque, if not specified.
   After the completion of assembly work, be sure to check that screws and nuts are not loosened before starting test run.
5. In prevention of accident that can result in personal injury, be sure to check whether the direction of rotation is correct at the time of test run.
6. In prevention of accident that can result in personal injury or entanglement accident, be sure to ensure safety at the time of test run. In addition, be sure to take care not to allow hair or cloths to come in contact with the machine belt.

PRECAUTIONS TO BE TAKEN IN VARIOUS OPERATION STAGES

ELECTRICAL COMPONENTS

⚠ **CAUTION**

Transportation

1. Be sure to lift this machine with four or more workers and use a carriage for moving it in order to prevent personal injury.
2. Be sure to take sufficient safety measures to prevent falling or dropping before lifting or moving the machine in order to protect against accident that can result in personal injury or death.
3. Installation is described in the Instruction Manual. Be sure to fully understand the description before putting the machine into operation.

Replacement of parts

1. In prevention of accident caused by unfamiliarity with the machine or electrical-shock accident, be sure to ask an electrical technician of your company or JUKI or distributor in your area for replacement of electrical components.
2. When it is necessary to open the control box containing electrical parts, be sure to turn the power off and wait for five minutes or more before opening the cover in order to prevent accident caused by unfamiliarity with the machine or electrical-shock accident. In addition, do not carry out replacement work with wet hands in order to prevent electrical-shock accident.
3. Be sure to replace parts according to the instructions given in this Engineer's Manual and in the Instruction Manual in order to protect against accident that can result in personal injury.
4. Be sure to carry out replacement work after having installed the machine in a stable state in order to protect against accident that can result in personal injury.
   In addition, be sure to select appropriate tools.
5. Make sure, after the completion of replacement work, that there is no loose soldering, no contact with other parts, inadequate contact between connectors and receptacles, and loose screws/nuts in order to protect against accident that can result in personal injury.
6. Make sure, after the completion of replacement work, that neither connectors nor cables are damaged, slipped off or loosened in order to protect against accident that can result in personal injury.
   It should be remembered that some parts have been factory-insulated with tubes or tapes, or floated above the PWB for safety's sake. In addition, internal wiring has been factory-routed or -clamped in such a way that it does not come close to high-voltage parts. Be sure to re-place those parts as they are at the time of delivery.
7. Be sure to use JUKI genuine parts when replacing any of the machine parts.
   JUKI assumes no responsibility for any accident caused by any part other than JUKI genuine one.
   In addition, in the event you cannot replace parts within the specified range, immediately stop the replacement work and ask JUKI or distributor in your area for replacement of the parts.
8. If the fuse has blown, be sure to turn the power off and eliminate the cause of blowing of the fuse and replace the blown fuse with a new one in order to prevent accident that can result in personal injury or death.

Adjustment

1. In prevention of accident caused by unfamiliarity with the machine or electrical-shock accident, be sure to ask an electrical technician of your company or JUKI or distributor in your area for adjustment of electrical components.
2. When it is necessary to open the control box containing electrical parts, be sure to turn the power off and wait for five minutes or more before opening the cover in order to prevent accident caused by unfamiliarity with the machine or electrical-shock accident. In addition, do not carry out adjustment work with wet hands in order to prevent electrical-shock accident.
3. In prevention of accident that can result in personal injury, adjust adjustment variable resistor or the like installed on PWB within the specified range given in this Engineer's Manual and in the Instruction Manual.
4. Be sure to carry out replacement work after having installed the machine in a stable state in order to protect against accident that can result in personal injury.
   In addition, be sure to select appropriate tools.
5. In prevention of accident that can result in personal injury, make sure, after the completion of adjustment work, that neither screws nor nuts are loosened or come in contact with other parts.
6. Make sure, after the completion of replacement work, that neither connectors nor cables are damaged, slipped off or loosened in order to protect against accident that can result in personal injury.
7. In prevention of accident that can result in personal injury or entanglement accident, be sure to ensure safety at the time of test run. In addition, be sure to take care not to allow hair or cloths to come in contact with the machine belt.

Disassembly/assembly

1. In prevention of accident that can result in personal injury, be sure to carry out disassembly/assembly work within the specified range given in this Engineer's Manual and in the Instruction Manual.

2. In prevention of accident caused by unfamiliarity with the machine or electrical-shock accident, be sure to ask an electrical technician of your company or JUKI or distributor in your area for disassembly/assembly of electrical components.

3. When it is necessary to open the control box containing electrical parts, be sure to turn the power off and wait for five minutes or more before opening the cover in order to prevent accident caused by unfamiliarity with the machine or electrical-shock accident. In addition, do not carry out disassembly/assembly work with wet hands in order to prevent electrical-shock accident.

4. Be sure to carry out replacement work after having installed the machine in a stable state in order to protect against accident that can result in personal injury.
   In addition, be sure to select appropriate tools.

5. In prevention of accident that can result in personal injury, be sure to tighten screws and nuts in assembly work with a specified torque, if specified, or with an appropriate torque, if not specified.
   After the completion of assembly work, be sure to check that screws and nuts are not loosened before starting test run.

6. In prevention of accident that can result in personal injury, make sure, after the completion of adjustment work, that neither screws nor nuts are loosened or come in contact with other parts.

7. Make sure, after the completion of replacement work, that neither connectors nor cables are damaged, slipped off or loosened in order to protect against accident that can result in personal injury.
   It should be remembered that some parts have been factory-insulated with tubes or tapes, or floated above the PWB for safety's sake. In addition, internal wiring has been factory-routed or -clamped in such a way that it does not come close to high-voltage parts. Be sure to re-place those parts as they are at the time of delivery.

8. In prevention of accident that can result in personal injury, be sure to check whether the direction of rotation is correct at the time of test run.

9. In prevention of accident that can result in personal injury or entanglement accident, be sure to ensure safety at the time of test run. In addition, be sure to take care not to allow hair or cloths to come in contact with the machine belt.

PRECAUTIONS TO BE TAKEN SO AS TO USE THE DDL-9000C SERIES MORE SAFELY

1. To avoid personal injury, never put your fingers under the needle when you turn ON the power switch or operate the sewing machine.

2. To avoid personal injury, never put your fingers into the thread take-up cover while the sewing machine is in operation.

3. To avoid personal injury, turn OFF the power switch when you tilt the machine head.

4. To prevent possible personal injury caused by being caught in the machine, keep your fingers, head and clothes away from the handwheel and the thread take-up while the sewing machine is in operation. In addition, place nothing around it.

5. To avoid personal injury, never operate the sewing machine with the finger guard removed.

6. To avoid personal injury, be careful not to allow your fingers in the machine when tilting the machine head.

7. Be sure to mount the machine head support bar on the machine table so that its height from the table surface becomes 63 to 68 mm. For the sewing machine provided with the AK device, be sure to mount the support bar on the table so that its height from the table surface becomes 33 to 38 mm.

1. For the safety, never operate the sewing machine with the ground wire for the power supply removed.

2. Be sure to turn OFF the power switch in prior when connecting/disconnecting the power plug.

3. When thunders occurs, stop the work for the safety and disconnect the power plug.

4. When the sewing machine is suddenly moved from a cold place to a warm place, there is a case where dew condensation may occur. Turn ON the power after there is no worry of the drop of water.

5. To prevent fires, periodically draw out the power plug from the plug socket and clean the root of the pins and the space between pins.

6. The hook rotates at a high speed while the machine is in operation. To prevent possible injury to hands, be sure to keep your hands away from the vicinity of the hook during operation. In addition, be sure to turn OFF the power to the machine when replacing the bobbin.

7. The motor does not produce noise while the machine is at rest.
   To avoid possible accidents due to abrupt start of the machine, be sure to turn OFF the power to the machine.

8. Be careful of handling this product so as not to pour water or oil, shock by dropping, and the like since this product is a precision instrument.

9. When tilting the sewing machine, secure the section marked with the down-pointing arrow (⇩) to prevent the table from shifting.

10. When tilting or raising the sewing machine, hold the upper section of sewing machine with both hands and carefully tilt/raise the sewing machine while taking care not to allow your fingers and other parts of your body to be caught under the machine.
    * When tilting/raising the sewing machine, neither push the operation panel nor put hands on it.

⚠️
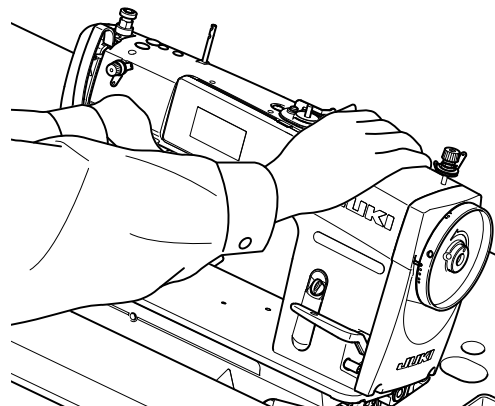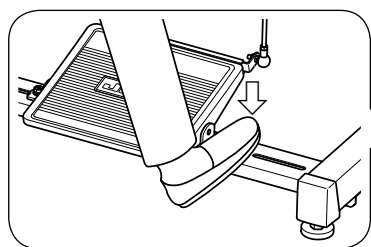
11. For the purpose of protecting the operation panel, do not wipe it with a cloth dampened with thinner or the like which contains volatile constituent, wet cloth or hard cloth.

12. Never lower the needle bar when the picker is brought close to the bobbin. The picker may be damaged by the needle, causing a stitching failure.

13. When the sewing machine is used for the first time after delivery or after an extended time of disuse, remove rubber plug from the frame cover and apply a few drops of oil to the needle bar. If the sewing machine is used with no oil added to the needle bar, the needle bar may be seized due to abrasion of the needle bar or intrusion of dust.
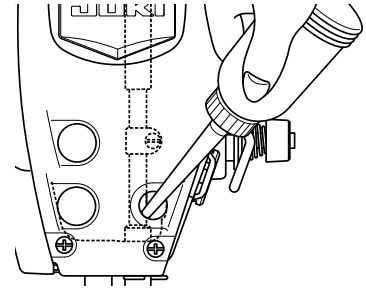
CAUTION BEFORE OPERATION

CAUTION :
To avoid malfunction and damage of the machine, confirm the following.

- **Clean the sewing machine thoroughly before using it for the first time.**
- **Remove all dust collected on the sewing machine during the transportation.**
- **Confirm that the voltage and phase are correct.**
- **Confirm that the power plug is properly connected.**
- **Never use the sewing machine in the state where the voltage type is different from the designated one.**
- **The direction of rotation of the sewing machine is counterclockwise as observed from the handwheel side. Be careful not to rotate it in reverse direction.**
- **Do not tilt the machine head toward this side since oil leakage or parts breakage occurs.**
- **A safety switch is installed so that the sewing machine cannot be operated with the machine head tilted.**
- **When operating the sewing machine, turn ON the power switch after properly setting the head on the table.**
- **Before starting a test run, remove the bobbin case and the needle thread from the machine.**
- **Operate the handwheel after the sewing machine has totally stopped.**

SAFETY DEVICES AND WARNING LABELS

Warning label against pinching

This is the caution label to protect fingers, etc. from being caught between the presser bar cap and the sewing machine.

Warning label

The label gives the minimum precautions to be taken when operating the sewing machine.

(Refer to the warning label on page i.)

Pulley cover

This is a cover for preventing entanglement of hands, hair and clothes by the hand pulley.

Warning label against pinching

This is the caution label to protect fingers, etc. from being caught between the thread take-up lever and the thread take-up lever cover.

Warning label against pinching

This is the caution label to protect fingers, etc. from being caught between the bed and table during maintenance.

Thread take-up lever cover

This is a cover for preventing contact between the human body and the thread take-up lever.

Finger guard

This is a cover for preventing contact between fingers and the needle.
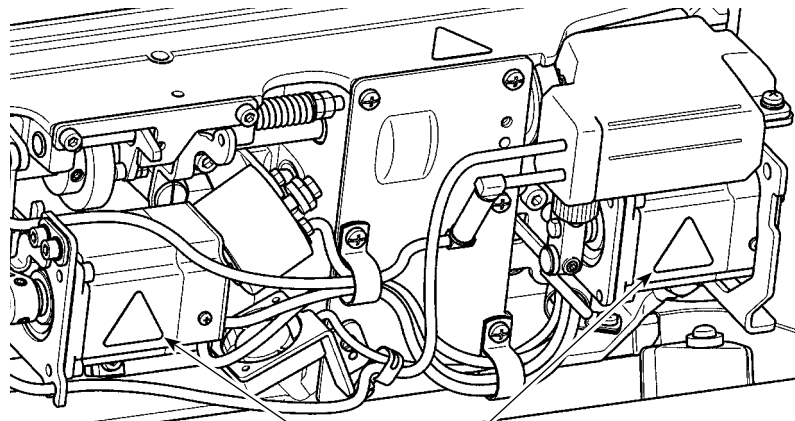
Electrical-shock danger label

In order to protect against electrical shock, safety precautions to be taken to avoid danger are written on this label.

(EU type)

(Refer to "Electrical-shock danger label" on page i.)

Temperature warning label

This label warns that there is a risk of a burn due to contact with the high-temperature parts of the device.
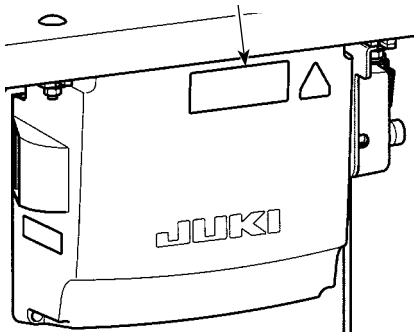
Power switch

This is a switch for disconnecting the power unit of the sewing machine from the power supply.

Power switch (EU type)

This switch is used for disconnecting the power unit of the sewing machine from the power supply. It is also used as the emergency stop switch.
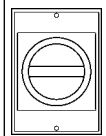
Selection of the power switch

Use the IEC60204-1-compliant power switch with rated current of 20 A or more and short-circuit breaking capacity of 120 A or more, which has the operating section in red against the yellow background.
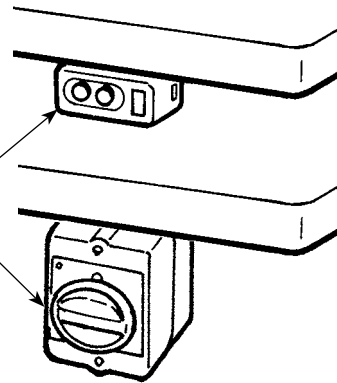
⚠ **CAUTION**

In addition, be aware that the safety devices such as the "eye protection cover" and "finger guard" are sometimes omitted in the sketches, illustrations and figures included in the engineer's manual for the explanation's sake. In the practical use, never remove those safety devices.

CONTENTS

1. Specifications

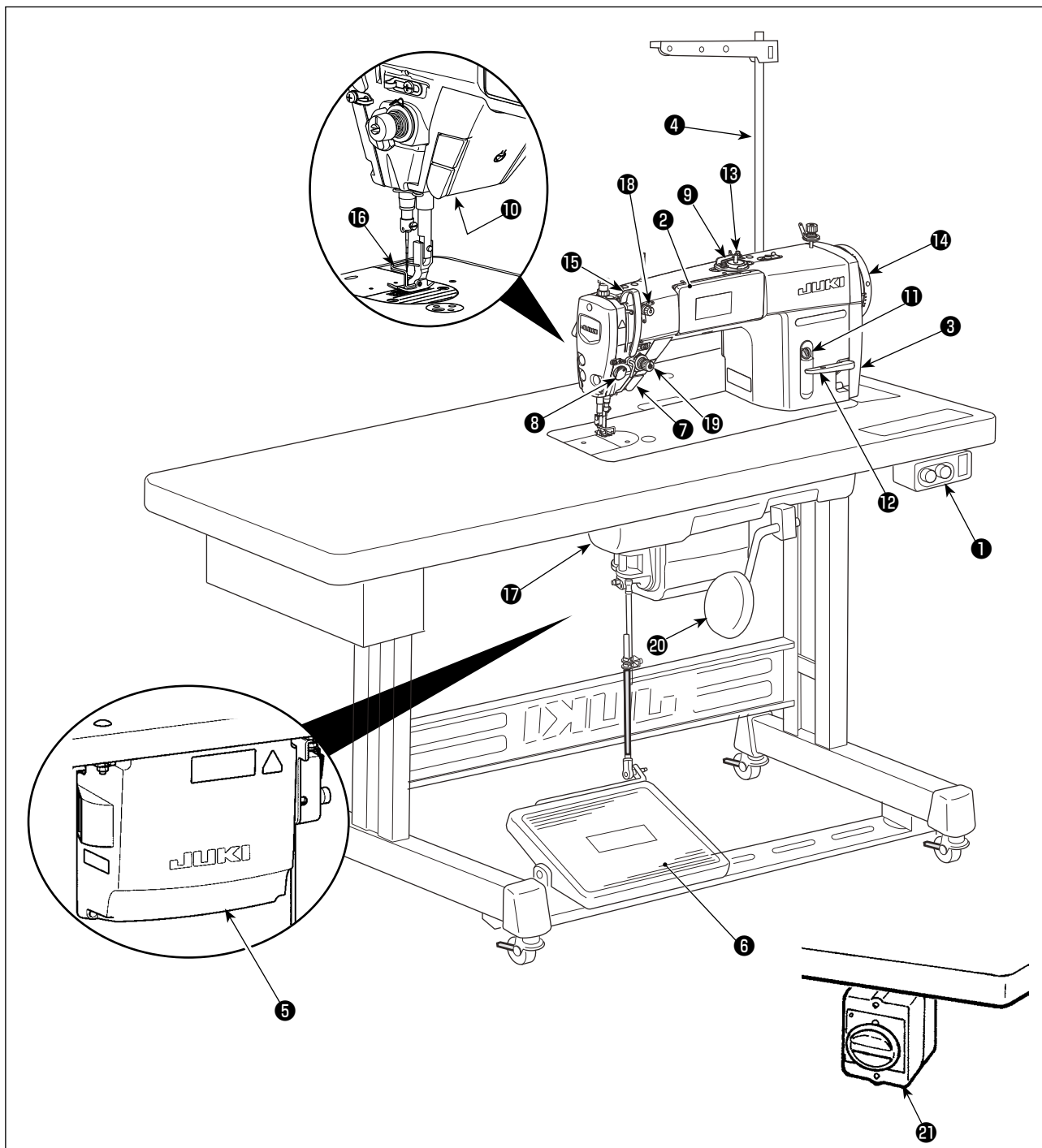| No.	Item	DDL-9000C-SMS	DDL-9000C-SSH	DDL-9000C-FMS	DDL-9000C-FSH
	Model	Semi-dry for standard materials (Digital type)	Minute-quantity lubrication for heavy-weight materials (Digital type)	Semi-dry for standard materials (Full digital type)	Minute-quantity lubrication for heavy-weight materials (Full digital type)
1	Max. sewing speed	5000sti/min ***1**	4500sti/min ***2**	5000sti/min ***1**	4500sti/min ***2**
2	Max. stitch length	Difference of stitch length 5 mm			
3	Needle bar stroke	30.7mm	35mm	30.7mm	35mm
4	Take-up lever stroke	110mm	113mm	110mm	113mm
5	Thread trimming method	Double-edged rotary type			
6	Lower bobbin winder unit	Built-in the machine head (with bobbin thread holding plate)			
7	Needle thread nipper unit（NB type）	Electromagnetic			
8	Horizontal feed control	Electronic control			
9	Vertical feed control	Electronic control			
10	Feed locus	4 kinds			
11	Needle thread tension	Spring type		Active tension	
12	Presser foot pressure	Spring type		Electronic control	
13	Number of patterns	Sewing pattern : 99 patterns (For the polygonal shape sewing, as many as 10 patterns can be registered.)			
		Cycle sewing pattern : 9 patterns			
		Custom-pitch pattern 20 patterns			
		Condensation custom pattern 9 patterns			
14	Data communication system — NFC	With			
	USB	With			
	LAN	Without		With	
15	Lubrication system — Plate (needle bar)	Grease lubrication	Oil wick lubrication	Grease lubrication	Oil wick lubrication
	Hook	Plunger pump type			
	Gearbox	Grease lubrication+Special surface processing			
16	Oil supply — Plate (needle bar)	Grease lubrication + Special surface processing	Oil wick lubrication	Grease lubrication + Special surface processing	Oil wick lubrication
	Hook	With oil tank (capacity: 150 ml)			
17	Oil to be used — Plate (needle bar)	JUKI Grease A (Part No.: 40006323)	No.1 **or** 7 ***3**	JUKI Grease A (Part No.: 40006323)	No.1 **or** 7 ***3**
	Hook	No.1 or 7 ***3**			
	Gearbox	JUKI Grease A (product No.: 40006323)			
18	Lifting amount of presser	By hand：5.5mm、By knee：15mm Auto：1st step 5.0mm（***4**：0.1 to 8.5mm）2nd step 8.5mm（***4**：8.5 to 13.5mm）			
19	Needle	DB×1(#11)#9 to 18 1738 (Nm75) Nm65 to 110	DB×1(#21)#20 to 23 1738 (Nm130) Nm125 to 160	DB×1(#11)#9 to 18 1738 （Nm75）Nm65 to 110	DB×1(#21)#20 to 23 1738 (Nm130) Nm125 to 160
		DP×5(#11)#9 to 18 134 (Nm75) Nm65 to 110	DP×5(#21)#20 to 23 134 （Nm130）Nm125 to 160	DP×5(#11)#9 to 18 134 （Nm75）Nm65 to 110	DP×5(#21)#20 to 23 134 （Nm130）Nm125 to 160
20	Dimensions — From needle to machine arm (width)	303mm			
	From needle to machine arm (high)	137mm			
	Bed size	178mm × 517mm			
21	Machine head drive	Compact AC servomotor：400W that is directly connected to the main shaft（direct-drive system）			
22	Machine head weight	40.5kg			
23	Power consumption	520VA			
24	Working temperature and humidity	Temperature: 5 °C to 35°C, humidity: 35% to 85% (No dew condensation permissible)			
25	Supply voltage and frequency	Rated voltage ±10%, 50/60Hz			
26	Noise	SMS, FMS ;- Equivalent continuous emission sound pressure level (L$_{pA}$) at the workstation: A-weighted value of 81.5 dBA ; (Includes K$_{pA}$ = 2.5 dBA) ; according to ISO 10821- C.6.2 -ISO 11204 GR2 at 5,000 sti/min.			
		SSH, FSH ;- Equivalent continuous emission sound pressure level (L$_{pA}$) at the workstation: A-weighted value of 77.5 dBA ; (Includes K$_{pA}$ = 2.5 dBA) ; according to ISO 10821- C.6.2 -ISO 11204 GR2 at 4,500 sti/min.			

*1：Stitch length 0.00 to 4.00：5,000sti/min, stitch length 4.05 to 5.00：4,000sti/min

*2：Stitch length 0.00 to 4.00：4,500sti/min, stitch length 4.05 to 5.00：4,000sti/min

*3：JUKI New Defrix Oil No. 1 or JUKI CORPORATION GENUINE OIL.7 (equivalent to ISO VG7)

*4：It's adjusted by a panel

2. Name of each component

❶ Power switch

❷ Operation Panel

❸ Pulley cover

❹ Thread stand

❺ Control box (SC-950, SC-951)

❻ Operation pedal

❼ One-touch type reverse feed button

❽ Needle thread presser device

❾ Bobbin winder unit

❿ LED hand light

⓫ Oil filler port

⓬ Reverse feed lever

⓭ Minute adjustable presser lifting screw
(only for DDL-9000C-S)

⓮ Hand wheel

⓯ Take-up lever cover

⓰ Finger guard

⓱ Under cover

⓲ 1st thread tension

⓳ 2nd thread tension

⓴ Knee lifter (only for DDL-9000C-S)

㉑ Power switch (For CE)

❶ Power switch

This switch turns on and off the power to the head unit motor, electric components, and operation panel.

❷ Operation panel

It allows you to adjust the automatic reverse feed stitching speed and a head sewing speed and set a feed pitch and so on.

❸ Pulley cover

This cover protects the machine head motor.

❹ Thread stand

❺ Control box (Full digital type SC-950, Digital type SC-951)

The box contains the circuit that controls the head unit and motor, the output circuit that operates each output (the thread trimming solenoid, back solenoid, wiper solenoid, etc.), the pedal sensor that detects the pedal operation, and the power circuit that performs each function.

❻ Operation pedal

This pedal allows users to conduct machine speed control, thread trimming, presser lifting motion (only for AK-154), and more by depressing the front or back part of the pedal.

❼ One-touch type reverse feed button

This button allows users to conduct reverse stitching.

❽ Needle thread presser device

This device is able to tuck the needle thread on the wrong side of material under control of the signal from the control box.

❾ Bobbin winder unit

This unit is integrated into the head unit.

❿ LED hand light

This is the LED hand light installed on the bottom of the arm jaw. The light illuminates the area surrounding the needle entry. Its brightness can be adjusted with the hand switch. It should be adjusted to match the sewing item and/or to your preference.

⓫ Oil filler port

This port is used for lubrication to the hook.

⓬ Reverse feed lever

This lever allows users to conduct reverse stitching.

⓭ Minute adjustable presser lifting screw (only for DDL-9000C-S)

⓮ Hand wheel

⓯ Take-up lever cover

This cover prevents users from touching the take-up lever.

⓰ Finger guard

This guard prevents users (mainly thumb and fingers) from touching the needle.

⓱ Under cover

⓲ 1st thread tension

⓳ 2nd thread tension

⓴ Knee lifter (only for DDL-9000C-S)

㉑ Power switch (for CE)

3. Standard adjustment

(1) Feed dog height and gradient

> ⚠ **WARNING :**
> **Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.**

Standard adjustment

When making the following adjustments using a panel in the full digital specification (F specification), change the panel using mode to the serviceperson level. For the details of change in the panel using mode, see the U400 panel using mode in "5.-(2) List of memory switch data".
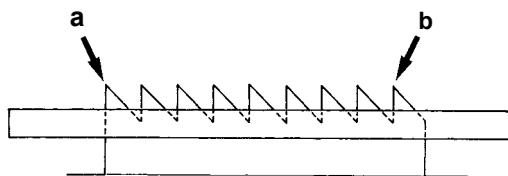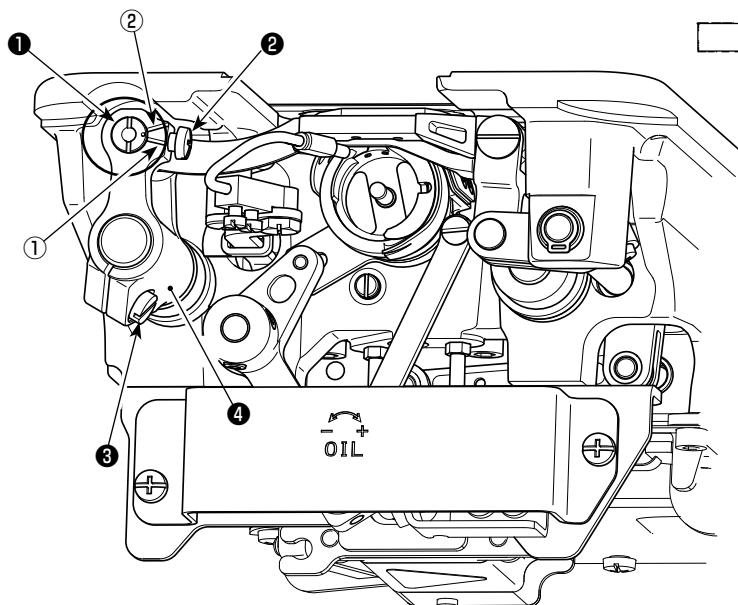
Medel	DDL-9000C-FMS/SMS				DDL-9000C-FSH/SSH			
Seam specification	Medium-weight materials　S type				Heavy-weight materials　H type			
Depends on the destination	AA	GG	BB	EE	AA	GG	BB	EE
	For general export	For Chine	For Europe	For Japan	For general export	For Chine	For Europe	For Japan
Needle plate	B119012I0B Four φ1.6	B1109552000 Four φ1.9	B119012I0B Four φ1.6	11028008 Four φ1.9	40089605 Four φ2.6	11062007 Threeφ2.6	40089605 Four φ2.6	
Opereter side (b)	1.0±0.05				1.3±0.05			
Counter operator side (a)	(1.0±0.1)				(1.3±0.1)			
Timing marker dot position on the horizontal feed bar shaft	①				②			
Engraved marker dot position on the horizontal feed bar shaft								
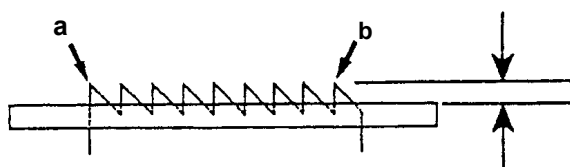
Standard feed dog height (panel setting value : 0)
DDL-9000C-FMS/SMS : 1mm
DDL-9000C-FSH/SSH：1.3mm

– 4 –

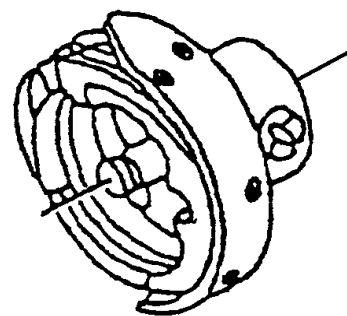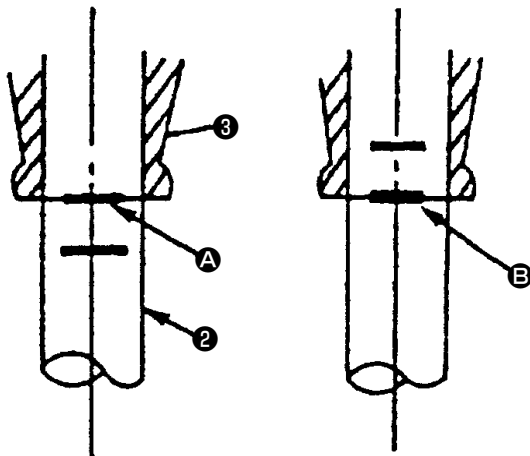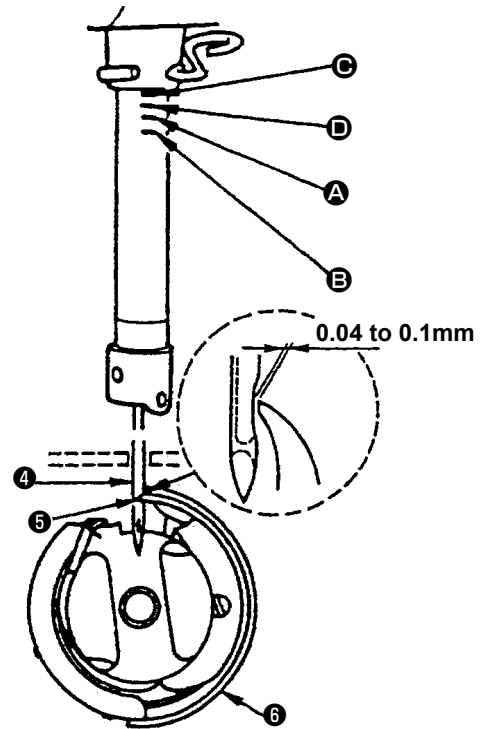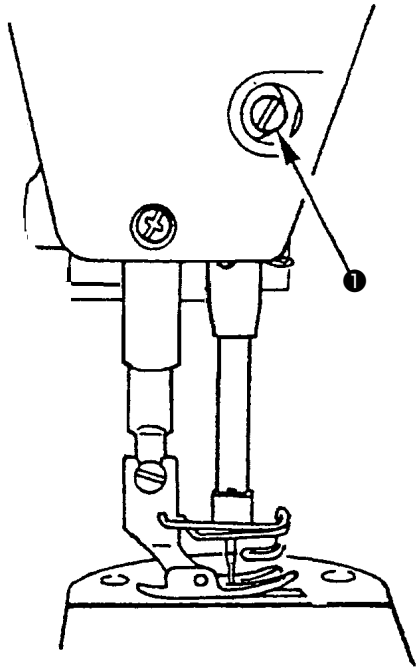| Adjustment Procedure	Results of Improper Adjustment
1. Set the panel setting value at 0. 2. After adjustments, firmly tighten the screws that have been loosened. (Screw tightening should be done under the condition that the setscrews ❷ is pushed against the horizontal feed bracket shaft ❶.) **(Cautions)1. In regard to the locus of standard feeding, the throat plate and the feed dog rise almost horizontally when the throat plate rises.** 　　　　**2. The direction of the horizontal feed bracket shaft ❶ should be adjusted on the right side (operator side).** 　　　　**3. If there is rattle in the horizontal feed bracket shaft ❶, this can be a cause of unusual sound and improper linearity.** 　　　　**4. When you have changed the stitch pitch, the feed dog height, and the feed timing, run the sewing machine at low speed to make sure that nothing interferes with each other before the actual sewing (a gap with 0.5 mm or more).** 　　　　**5. There may be the cases where the feed amount of the operation panel and the actual sewing pitch are different from each other in case of the use in the state other than the standard delivery or material used. Compensate the pitch in accordance with the sewing product.**	○ If the gradient of the feed dog is adjusted for either shaft only, the feed dog height may be changed. Adjustments are needed for both shafts in all cases. ○ According to the shaft adjusting position, the position of feed dog motion may be shifted. In such a case, loosen the tightening screw ❸ of the horizontal feed arm ❹ to adjust the position of motion. ○ According to the result of feed dog height or gradient adjustments, there is possibility of interference with the thread trimmer unit. ○ When the feed dog height is set above the standard level, the feeding power is improved. Instead, there can be problems of presser jumping at high speed and flaws in light materials.

(2) Adjusting the needle and the hook

Standard adjustment

0.04 to 0.1mm

Lubricated hook K
Part No. : 23621303

Adjustment Procedure	Results of Improper Adjustment
1. Turn the flywheel until the needle bar ❷ comes to its lowest position, and loosen the needle bar connecting setscrew ❶. 2. Determine the needle bar height. Adjust the engraved marker line (marker line Ⓐ for the DB needle and marker line Ⓒ for the DA needle) of the needle bar ❷ to the lower end of the needle bar lower metal ❸ and tighten the needle bar connecting setscrew ❶. (Be careful not to tighten the needle bar connecting setscrew ❶ too much.) 3. Determine the mounting position of the hook ❻. Turn the three hook setscrews in the direction of flywheel forward revolutions to raise the needle bar ❷. In this direction, adjust the engraved marker line (marker line Ⓑ for the DB needle and marker line Ⓓ for the DA needle) to the lower end of the needle bar lower metal ❸. 4. In this state, adjust the blade point ❺ of the inner hook to the center of the needle ❹ so that a clearance of 0.04 to 0.1mm (goal value) is secured between the needle ❹ and the hook ❻. Since then, firmly tighten the three hook setscrews.	○ If this clearance is too small, the blade point of the hook ❻ may be damaged. ○ Too much clearance may give rise to stitch skipping.

(Caution) The needle bar ❷ of the DDL-9000C-FMS becomes black because a special coating is applied to the needle bar ❷. When it is difficult for you to check a marker line, make the room brighter using a light and check it.

<Information about the dry hook>

Use the following part number.

The hook part numbers come in two types according to the specifications.

22890206 (without the needle guard)
22890404 (with the needle guard)
22890305 (22890206 with special surface treatment)

(Caution) The dry hook (RP hook) tends to collect thread chips and material dust. This can cause malfunction or defective stitches. Periodic cleaning is required.

<Lubricated hook K: Available separately>

This is a hard blade point hook with a needle holder applicable to needle size #9 (#65).

Where a thin needle has to be used for reasons of sewing processes, this type of hook is applicable to the prevention of stitch skipping and needle breakage.

About the needle bar

Specifications	Part No.	Amount of looper return	Needle shank
DDL-9000C-SMS,FMS	22886904	1.8mm	φ 1.64
DDL-9000C-SMS,FMS	22887004	1.8mm	φ 2.02
DDL-9000C-SMS,FMS	40086602	1.8mm	φ 1.64
DDL-9000C-SMS,FMS	40086604	1.8mm	φ 2.02
DDL-9000C-SSH,FSH	40061767	2.3mm	φ 2.04

○ When you use a dry hook, buy and mount the parts that stop the hook oil quantity.
Refer to "3.-(6)-5) Adjusting the amount of oil in the hook".

(3) How to meet the timing of feed

⚠	**WARNING :** Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

Standard adjustment

1) Origin adjustment for horizontal feed timing

(Reference position)

[S type]

120 degrees
(upper marker line)

[H type]
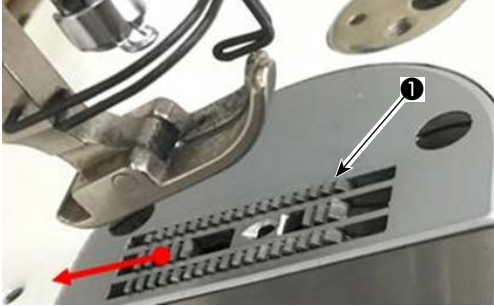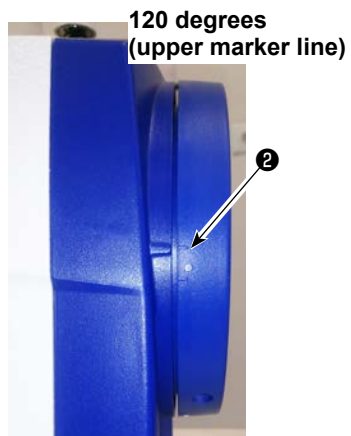
112 degrees
(lower marker line)
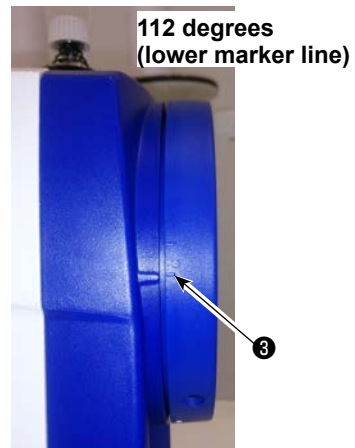
(Methods for adjustment)

Adjustment Procedure	Results of Improper Adjustment

(Caution) A change in the timing of feed can be made with panel operation (refer to the section (3)-2 and up.). In principle, a mechanical adjustment is prohibited.
 	
1. Turn the handwheel and set the feed dog ❶ at the most forward position (the nearest position to the arrow side).
(Caution) The bigger pitch is easy to understand.
 	
2. When it is in the state of 1, make sure it is aligned with the upper marker line (a marker line at 120 degrees) ❷ in the case of the S specification. Make sure it is aligned with the lower marker line (a marker line at 112 degrees) ❸ in the case of the H specification.
 	
3. Align the position of the feed dog with that of a marker line.
  (1) Loosen two screws ❹ for the sprocket.
  (2) Align the position of the feed dog ❶ with that of a marker line in conformity with (the reference position).
  (3) Tighten two screws ❹ for the sprocket.	

2) Panel setting (DDL-9000C-F)
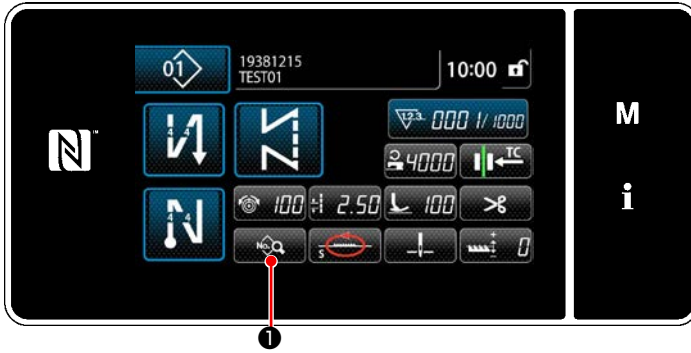
Timing between the needle and feed can be adjusted on the operation panel.

[How to adjust]

1. Display the sewing data edit screen by pressing ❶.

2. Display "S049 Feed timing" by pressing ❷.
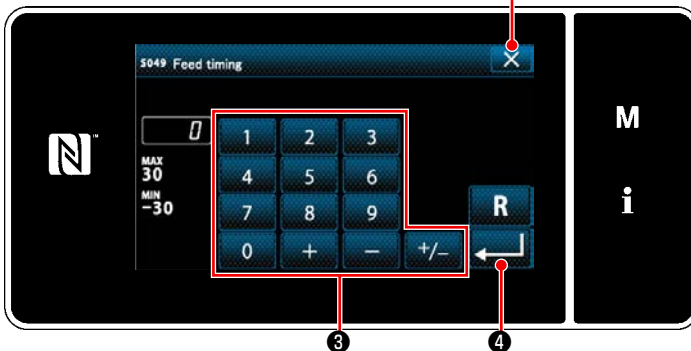
3. Change the feed timing by pressing ten keys and +/- keys ❸.
    (+ : To advance; - : To retard)

4. Confirm your entry by pressing ❹.

5. Display the sewing screen by pressing ❺.

S049 Feed timing

MAX 30
MIN -30

Needle

・ : **Highest point of the feed dog**

Standard : 0

To advance :
Adjust with the + key

To retard:
Adjust with the - key
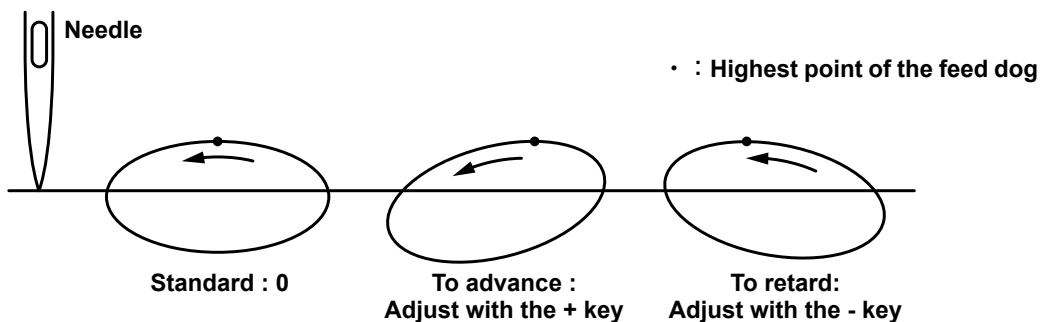
(Cautions)1. The feed timing differs with the set value. (Image figure as observed from the face plate side)

2. The stitch length changes by adjusting the feed timing. Carry out adjustment while actually carrying out sewing for the purpose of checking the stitch length.

In the needle position where the feed dog is positioned below the upper surface of the throat plate is as follows. (Arrow range)

※ Feed pitch is 3mm

Type S   **Type H**
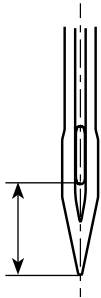
2mm

From the needle tip to the lower end of needle eyelet as a guide
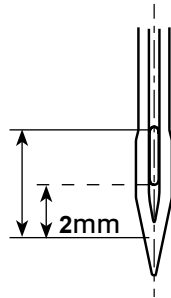
Between the top end of needle eyelet to 2 mm above the lower end of needle eyelet

(Distance as a guide for feed timing)

S type: From the needle tip to the lower end of needle eyelet as a guide.

H type: Between the top end of needle eyelet to 2 mm above the lower end of needle eyelet

(Reference) Since the point of origin for feed timing is adjusted with reference to horizontal feed, it slightly varies in comparison with the feed timing that is adjusted with reference to the needle. The variation within the aforementioned range is acceptable.

3) Panel setting (DDL-9000C-S)
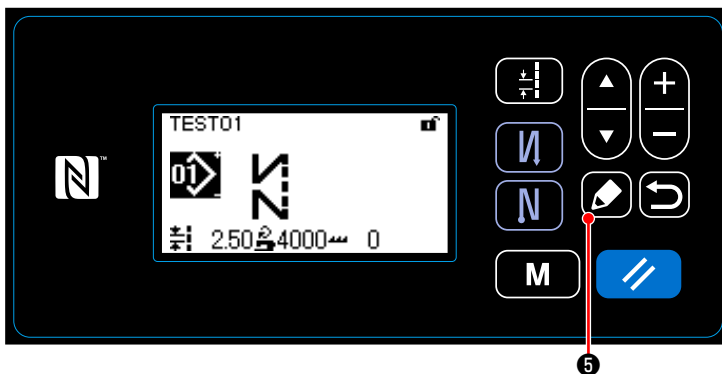
Timing between the needle and feed can be adjusted on the operation panel.

[How to adjust]

1) Display the sewing data edit screen by pressing ❺.
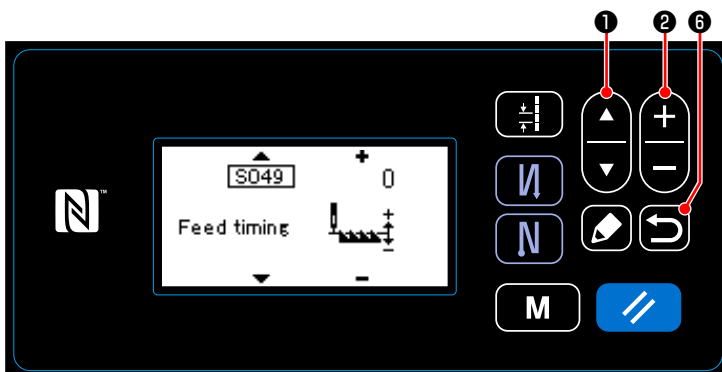
2) Display "S049" by pressing ❶.
3) Change the feed timing by pressing ❷.
   (+ : To advance; - : To retard)
4) Confirm your entry by pressing ❻. Then, the sewing screen is displayed.

○ When the timing is fast,
   1. Since the motion in horizontal direction is reduced at the beginning of feeding, the material cloth is fed assuredly by the effect of creep reduction.
   2. The feeding force is reduced around the end of feeding because the feed dog lowers faster.
○ When the timing is slow,
   1. The motion becomes moderate at the beginning of feeding, thus making the material cloth biting worse.
   2. The light-weight materials tend to be less damaged.
   3. The material cloth is fed assuredly at the end of feeding. Thanks to the leading effect, puckering tends to be improved.

(4) Adjustment of inner hook presser position

⚠️ **WARNING :**
Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

Standard adjustment

1) DDL-9000C-S
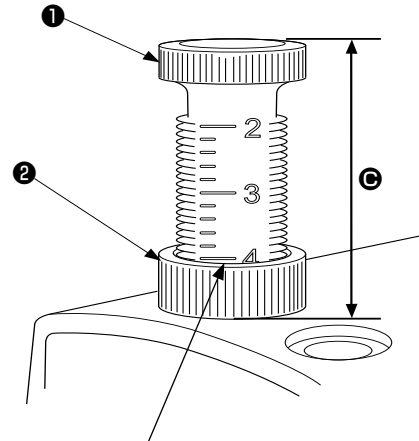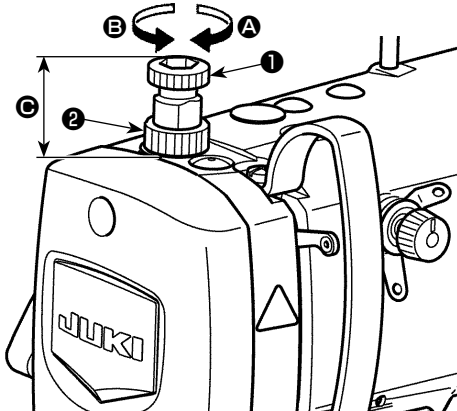
Height of the presser adjusting screw ❶ can be read from the upper face value of the nut ❷.
Example: Approx. 40mm

2) DDL-9000C-F

Factory-setting at the time of shipment : marker line on presser bar coincide with presser bar position bracket (upper)

[Assembly of the presser pressure]   [Adjustment of the presser pressure]

Adjustment Procedure	Results of Improper Adjustment

1) DDL-9000C-S

[Adjustment of the presser pressure]

1. Loosen the nut ❷ and turn the presser adjusting screw ❶.
    Turning in Direction Ⓐ for strengthening
    Turning in Direction Ⓑ for weakening
2. Tighten the nut ❷ after adjustments.

*   Standard value of the presser adjusting screw height Ⓒ

Specifications	Height mm Ⓒ	Presser Pressure N	Presser Pressure kg
DDL-9000C-SMS	29.5	39.2	4
DDL-9000C-SSH	29.5	60	6.1

(The presser adjusting screw varies depending on the specification.)

2) DDL-9000C-F

[Assembly of the presser pressure]

1) Turn OFF the power to the sewing machine.
2) Remove the face plate.
3) Loosen presser bar position bracket (upper) clamping screw ❺.
    Adjust the vertical position of presser bar position bracket (upper) ❹ using marker line Ⓑ on presser bar ❻ as reference.
    * Adjust the orientation of presser bar position bracket (upper) ❹ so that it is in parallel with the face plate.
4) After the completion of adjustment, tighten presser bar position bracket (upper) clamping screw ❺ and attach the face plate.

[Adjustment of the presser pressure]

1) Display the presser foot pressure entry screen by pressing ⌞ 100 ❶.
2) Change the presser foot pressure as desired by pressing ❷. (Range of input values on the panel is from -350 to 200.)
3) Confirm your entry by pressing ⬅ ❸. Then, the sewing screen is displayed.

(5) Bobbin insertion

Standard adjustment

Ⓐ
Ⓑ
Ⓒ

1) Bobbin case with idling prevention spring
(Drawing is for 40000264.)

(1)

Ear

Change the height.

0.3±0.2mm

(2)

○ **For the bobbin case with idling prevention spring**

❷

❶

(3)

Bobbin revolution

(4)

Adjustment Procedure	Results of Improper Adjustment
1. Hold the bobbin so that it turns to the right and insert it in the bobbin case. (See Drawing.) 2. Pass the thread through the threading port ❹ of the bobbin case. When the thread is pulled in the direction of ❺, it can be pulled toward the threading port ❻ passing beneath the thread tension spring. 3. Examine if the bobbin turns in the direction of the arrow when the bobbin thread is pulled.	○ If the direction of clockwise winding is adopted, variation is lessened possibly caused by a change in the amount of bobbin thread.

About the standard part numbers（DDL-9000C-□□）

Part name	S type	H type
Bobbin case	D1837555BAAA	40000264
Bobbin case with idling prevention spring	D1837555BOBA	11038700
Bobbin	40091141 (Made of aluminum)	B9117012000 (Made of iron)

1) Bobbin case with idling prevention spring

The DDL-9000C Series employs the bobbin case with an idling prevention spring.

Adjustments of idling prevention spring tension can be carried out in the procedures below.

If bobbin idling occurs, increase the idling prevention spring tension

When the bobbin runs idle	→	Increase the tension of the idle-prevention spring.

When the thread is not well tightened	→	Decrease the tension of the idle-prevention spring.

* Adjustment of idling prevention spring tension

(1) Insert an old needle as illustrated and remove the spring by lifting it up.

(Suggestion: Use the thumb to prevent the spring from popping out.)

(2) The spring tension can be changed by changing the height of the arch-shaped section of the spring.

(Make sure not to permit the free end of the spring to come out of the bobbin case.)

(3) Firstly, set the ear ❶ and insert the needle. Then, settle the ear ❷ is the state that the center part of the spring is lifted.

(4) When a bobbin case with an idling prevention spring is used, it should be inserted in the winding direction as illustrated.

(Unevenness in sewing at high or low speed)

When sewing seems to be too tight at low speed:	→	Adjust the bobbin thread tension and the idling prevention spring tension to be strengthened.

When sewing seems to be too weak at low speed:	→	Adjust the bobbin thread tension and the idling prevention spring tension to be weakened.

* If there is a problem of bobbin idling or uneven sewing at high or low speed, use of a bobbin case with an idling prevention spring is effective.

# (6) Adjustment of inner hook presser position

⚠ **WARNING :**
Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

Standard adjustment

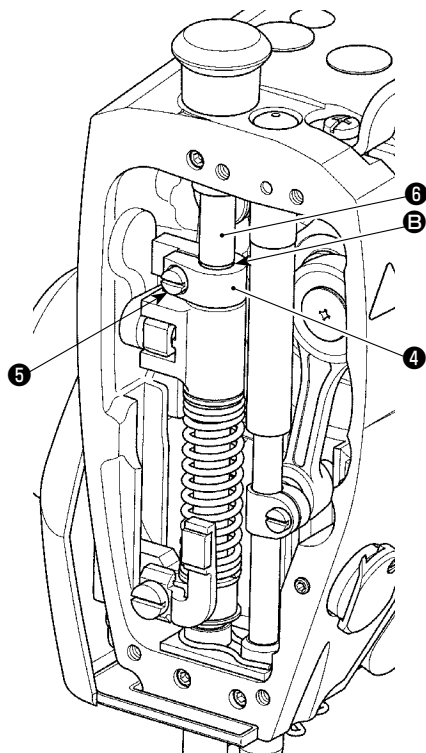**Inner hook presser position**

Inner hook

Needle entry

❶
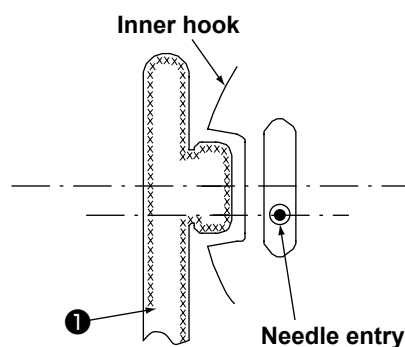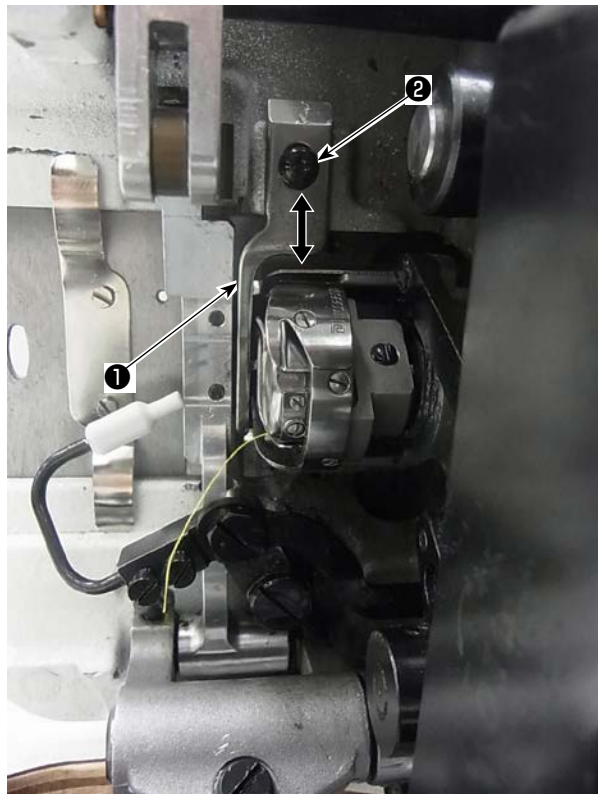
* **As seen from above, after removing the throat plate**

About the standard part numbers

Part name	S type (Semi-dry)	H type (Micro-quantity lubrication)
Inner hook presser	40174351	40174353

Hook shaft position

Plunger position

Reference hole
33 ± 0.15
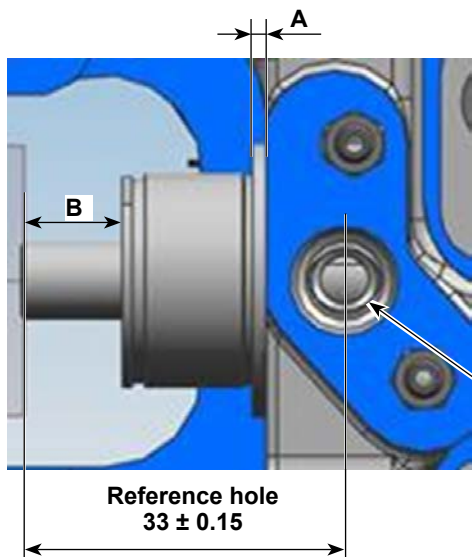
Convexity of metal A (from machined surface)	Convexity of Hook shaft B
1.4	10.3
1.8	9.9

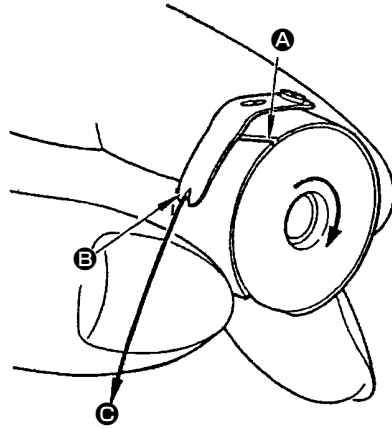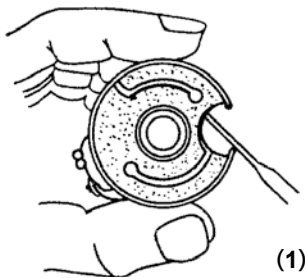| Adjustment Procedure	Results of Improper Adjustment
1. The front and rear positions of the inner hook presser ❶ can be adjusted by means of the setscrew ❷. [Standard adjusting value] Fasten the needle entry section by means of the setscrew ❷ so that it is located closer to the shoulder section toward the front side from the center of the convex section of the inner hook presser ❶. **(Caution) When adjusting the hook shaft position, make sure of the plunger movement without fail (the bobbing motion).**	○If the convex section of the inner hook presser ❶ has any flaw, this can be a cause of thread breakage or uneven sewing. In such a case, the damaged part shall be replaced with a new one. ○If the inner hook presser ❶ is positioned inadequately, an extra tension is exerted when the thread comes out of the convex section. This can be a cause of shrinkage errors.

(7) Lubrication

> **WARNING :**
> **Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.**
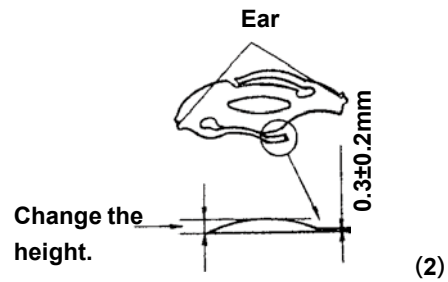
Standard adjustment

1) Method of lubrication

H type (Micro-quantity lubrication)

❶
❻
Float
❷
❸
❺
❹

S type (Semi-dry)

❼
❻
Float
❹
❷
❸
❺

Adjustment Procedure	Results of Improper Adjustment

1) Method of lubrication
 	
1. H type (Specification for minute-quantity lubrication)
   Face plate needle Minute-quantity lubrication by the oil wick ❶
   bar lubrication :
 	
   Hook ❷   :   Forced lubrication by the plunger pump ❸
                                Quantity of oil can be adjusted by the hook
                                oil adjusting screw ❹.
                                Lubricant can be fed to the oil tank ❺ through
                                the arm lubrication hole ❻.
 	
2. S type (Specification for semi-dry items)
   Face plate needle Lubrication by grease sealed in the needle
   bar lubrication :   bar lower metal ❼
   Hook ❷   :   Forced lubrication by the plunger pump ❸
                                Quantity of oil can be adjusted by the hook
                                oil adjusting screw ❹ .
                                Lubricant can be fed to the oil tank ❺
                                through the arm lubrication hole ❻ .	

(7) Lubrication

Standard adjustment

2) Method of lubrication to the oil tank

3) Method of oil drainage from the oil tank

Engraved marker line MAX

Engraved marker line MIN

– 20 –

Adjustment Procedure	Results of Improper Adjustment
2) Method of lubrication to the oil tank Fill the oil tank with oil for hook lubrication before operating the sewing machine. 1.　Remove oil hole cap ❶ and fill the oil tank with JUKI NEW DEFRIX OIL No.1 (part number : MDFRX1600C0) or JUKI CORPORATION GENUINE OIL 7 (part number : 40102087) using the oiler supplied with the machine. 2.　Fill the oil tank ❺ with the oil until the top end of oil amount indicating rod ❸ comes between the upper engraved marker line Ⓐ and the lower engraved marker line Ⓑ of oil amount indicating window ❷. 　　If the oil is filled excessively, it will leak from the air vent hole in the oil tank or proper lubrication will be not performed. In addition, when the oil is vigorously filled, it may overflow from the oil hole. So, be careful. 3.　When you operate the sewing machine, refill oil if the top end of oil amount indicating rod ❸ comes down to the lower engraved marker line Ⓑ of oil amount indicating window ❷. **(Cautions)1.　When you use a new sewing machine or a sewing machine after an extended period of disuse, use the sewing machine after performing break-in at 2,000 sti/min or less.** **　　　　　2.　For the oil for hook lubrication, purchase JUKI NEW DEFRIX OIL No. 1 (part number : MDFRX1600C0) or JUKI CORPORATION GENUINE OIL 7 (part number : 40102087).** **　　　　　3.　Be sure to lubricate clean oil.** **　　　　　4.　Do not operate the machine with the oil hole cap ❶ removed. Never remove cap ❶ from the oil inlet in any case other than oiling. In addition, take care not to lose it.**	○ If too much oil is replenished, there will be oil leakage from the air relief hole of the oil tank ❺. In addition, there can be possibility of failure in adequate lubrication. ○ Violent lubrication can result in overflow from the lubrication hole.
3) Method of oil drainage from the oil tank 　　When carrying the sewing machine or during maintenance servicing, it is possible to remove the lubricant from the oil tank. 1.　Let the sewing machine fall down. 2.　Insert the oil pan in the undercover. 3.　Turn the oil drain screw ❹ of the oil tank ❺ to drain oil. 4.　A maximum of 150ml of oil (to the MAX line) is contained in the oil tank ❺. **(Cautions)1.　Be careful not to forget to tighten the oil drain screw ❹. Otherwise, this can be a cause of oil leakage.** **　　　　　2.　Do not tighten the oil drain screw ❹ too much. Otherwise, this can be a cause of oil leakage as a result of breakage.**	○ Lubricant shall be removed, without fail, when transporting the sewing machine. ○ Due to vibration during transportation, oil leakage may be caused through the air relief hole located on top of the oil tank ❺.

(7) Lubrication

Standard adjustment

4) Cleaning of the oil filter

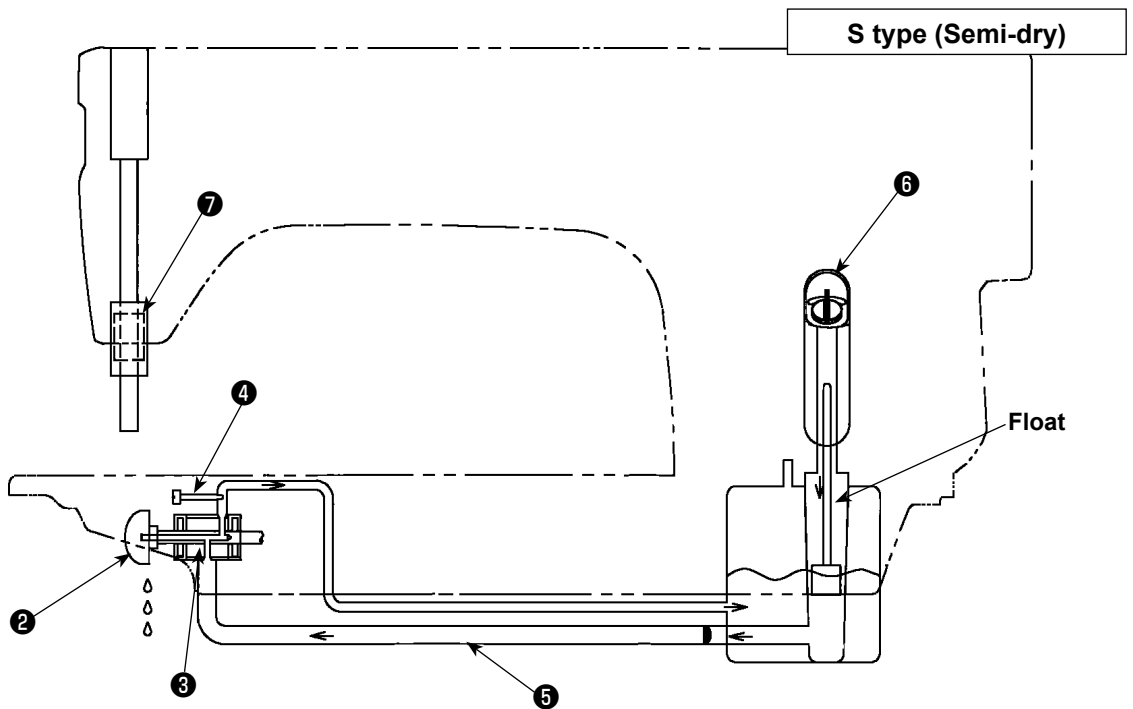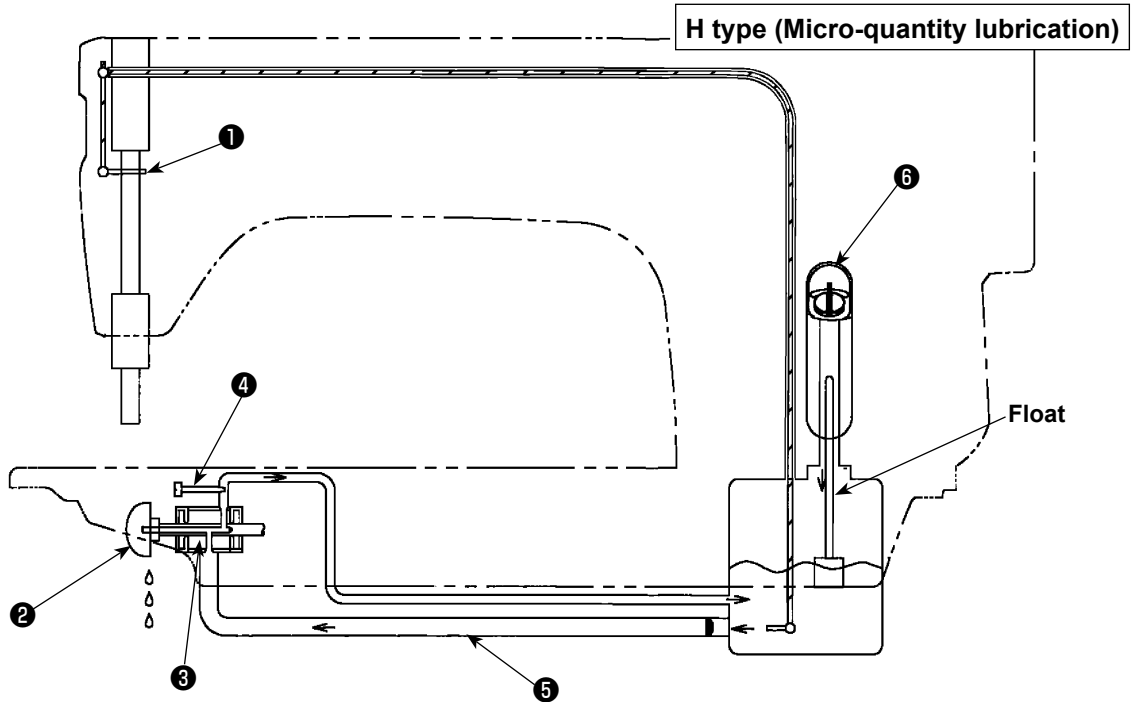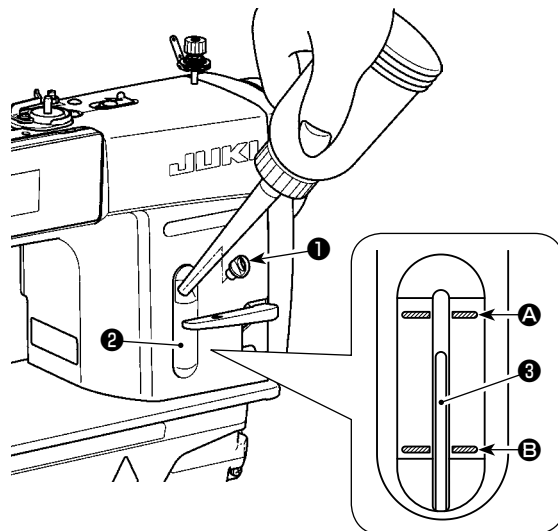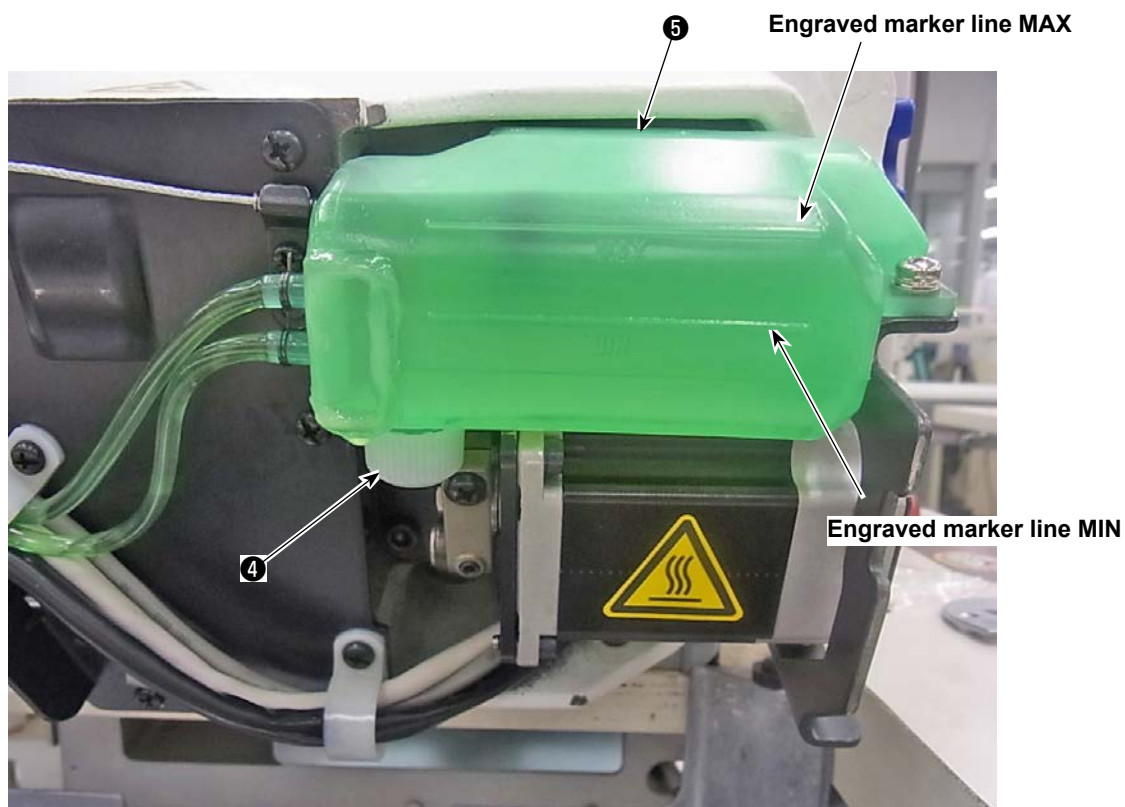| Adjustment Procedure	Results of Improper Adjustment
4) Cleaning of the oil filter Clean the oil filter ❷ periodically (approximately once every three months). 1. Let the sewing machine fall down. 2. Remove the pipe stop ❶ and then the thread waste attached to the oil filter ❷. * Be careful that a lubrication pipe and so on are not damaged at the time of maintenance of a filter.	○ If there is clogging in the oil filter ❶, smooth lubrication cannot be maintained from the lubrication hole.

(7) Lubrication

> **WARNING :**
> Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

Standard adjustment

5) Adjusting the amount of oil in the hook

6) Hook oil adjustment procedures

7) Essentials for hook oil adjustments

8) Replacement of the hook shaft oil wick

❶

OIL

Less ⟵ (⊘) ⟶ Much
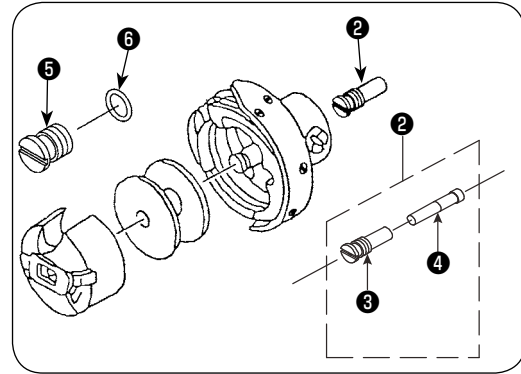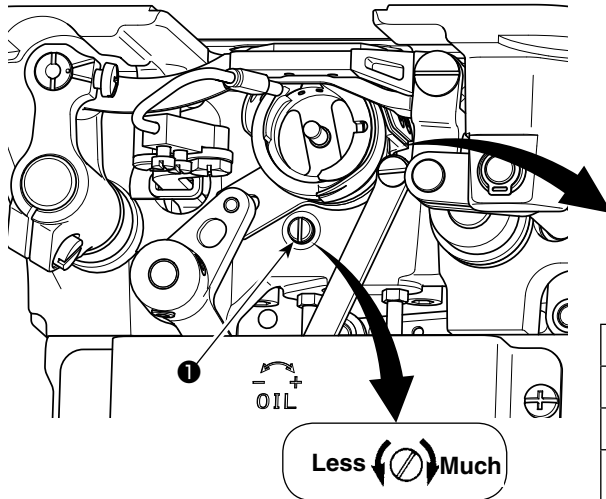
	DESCRIPTION	Part No.
❷	Hook driving shaft oil wick setscrew	22916555
❸	Hook driving shaft stopper screw	22916506
❹	Hook driving shaft stopper setscrew oil wick	11015906
❺	Hook driving shaft stopper screw	11079506
❻	O-ring	RO036080200

Oil quantity (trace) checking paper

Approx. 25mm

Approx. 70mm
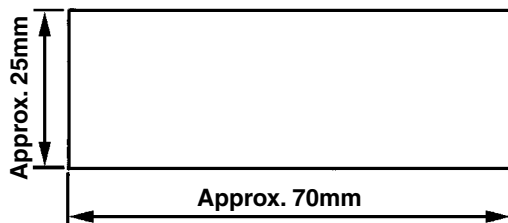
* Unnecessary to worry about the quality of paper.

Oil quantity (trace) checking paper

Hook   **Lower shaft front metal**

3 to 10mm

Bed

Oil trace checking paper

To be applied to the bed wall.
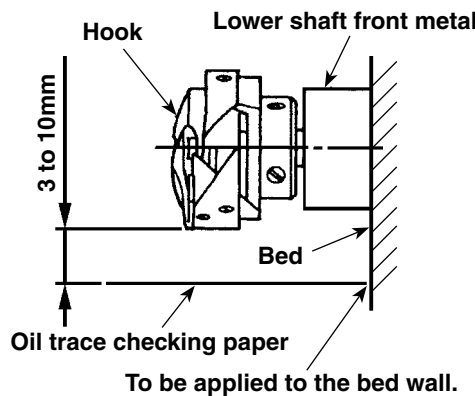
*   Apply the oil quantity (trace) checking paper to hooks lower side and check it from a distance of 3 to 10mm.

Oil quantity (small)

Oil sprinkles from the hook

- **DDL-9000C-SMS : 0.5 to 1mm**
- **DDL-9000C-SSH : 1 to 3mm**

Oil quantity (large)

Oil sprinkles from the hook

- **DDL-9000C-SMS : 1 to 1.5mm**
- **DDL-9000C-SSH : 2 to 4mm**

Adjustment Procedure	Results of Improper Adjustment

5) Adjusting the amount of oil in the hook
Tighten (turn clockwise) oil amount adjustment screw ❶ to increase the amount of oil in the hook, or loosen (turn counterclockwise) to decrease it.
(Caution)
[When using RP hook (hook for dry head) for DDL-9000C-SMS type]
    1. Remove hook driving shaft oil wick setscrew ❷ and attach hook driving shaft stopper screw ❺ (part number : 11079506) and O-ring ❻ (part number : RO036080200).
    2. Loosen oil amount adjustment screw ❶ up to the minimum so as to reduce the oil amount in the hook. However, do not completely stop the oil and be careful not to allow oil adjustment screw ❶ to come off.
    3. Never drain the oil in the oil tank even when RP hook (hook for dry head) is used.
6) Hook oil adjustment procedures
1. Tighten the hook oil quantity adjusting screw ❶ to obtain the maximum oil rate and operate the machine for about 30 seconds.
2. Loosen the oil adjusting screw by two turns and check the quantity of oil. In this case, give 30 seconds of idling to the sewing machine and measure the quantity of oil at the intervals of 5 seconds (about 35 seconds in total).
3. According to the quantity of oil secured at that time, determine the amount of turning for the hook oil quantity adjusting screw ❶. Give 30 seconds of idling to the sewing machine after re-adjustment and measure the quantity of oil at the intervals of 5 seconds.
4. Adjust the screw position in the procedures of 2. to 3. above until an adequate quantity of oil has been attained.
(Caution) When the hook is replaced or in the case of the head (including the heads in a new state) not used for a long time, it takes about 10 to 20 seconds (4,000sti/min) until the oil begins to appear from the hook.
    The machine stays in the state of causing seizure. Therefore, use the machine after running-in operation at 2,000sti/min or below.
7) Essentials for hook oil adjustments
1. When the quantity of hook oil is adjusted from excessive oiling condition to reducing condition (loosening the screw), it is possible to carry out stable adjustments.
2. Check the oil quantity about three times to confirm the stability.
3. If the quantity of oil is too much before adjustments, operate the machine continuously for about one minute so that the oil attached to the hook and remaining in the oil path can be flung off completely.
8) Replacement of the hook shaft oil wick
Hook driving shaft stopper setscrew oil wick ❹ is a consumable item. Periodic replacement is recommended for the stabilization of hook oil quantity.
1. Remove the hook.
2. Remove the hook driving shaft stopper screw ❸.
(Caution) Make sure not to hurt the tip hole of the hook driving shaft stopper screw ❸.
3. Enter a new hook driving shaft stopper setscrew oil wick ❹ to the inner part of the hook driving shaft stopper screw ❸ and then get it around the hook shaft.
	○ When you use an dry hook, buy and mount the hook driving shaft stopper screw ❺ and O-ring ❻ that stop the hook oil quantity.
	
	○ By feeding very much oil, let the oil prevalent around the hook and through the lubrication route as a whole so that the oil path can be stabilized.
	
	<When the quantity of hook oil is too much>
	○ Too much oil can stain the materials to be sewn.
	○ Oil consumption in the oil tank is increased.
	<When the quantity of hook oil is too less>
	○ The lubrication route tends to be affected easily by factors such as dust. It is, therefore, necessary to check the condition of oil quantity periodically.
	○ Under rigorous conditions (operation at high speed or continuous operation), pay attention to the possible occurrence of problems such as hook seizure and thread breakage by heat.
	○ If a contaminated oil is used, filter clogging occurs earlier and this can be a cause of unstable oil quantity.

(8) Various origin adjustments

| ⚠	**WARNING :** Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

Standard adjustment

1) Z-phase adjustment of a main motor

Turn a handwheel one revolution, align one marker line with the other marker line.

Adjustment Procedure

1) Z-phase adjustment of a main motor

* When you implement an origin adjustment of various motors, be sure to start with adjustment of a main motor (Z-phase adjustment).

  It is because the phase of various motors is decided by the angle of the main motor.

* For adjustment of various motors, refer to the Section "11 Check program."

  The procedure conforms to 1) Z-phase adjustment of a main motor.

1)-1. DDL-9000C-S
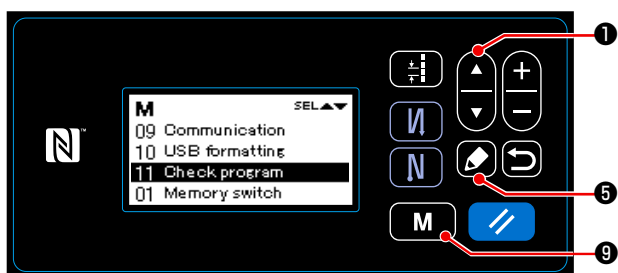
1. Turn on the sewing machine while pressing the **M** ❾.

2. After pressing the ▲▼ ❶ to select the "11 Check program," press the ✎ ❺ to display the check program selection screen.
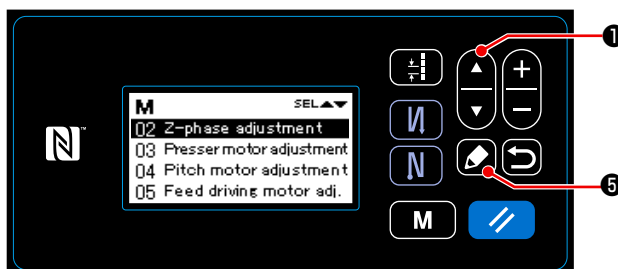
3. After pressing the ▲▼ ❶ to select the "02 Z-phase adjustment," press the ✎ ❺ to display the Z-phase adjustment screen.
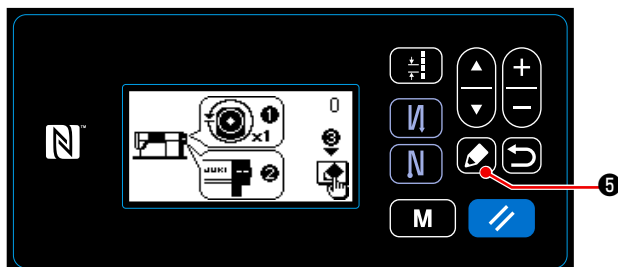
4. Turn a handwheel one revolution and align one marker line with the other marker line. By pressing the ✎ ❺, the current screen returns to the check program election screen after the adjusted contents are fixed.

(8) Various origin adjustments

Standard adjustment

(Z-phase adjustment of a main motor)

Turn a handwheel one revolution, align one marker line with the other marker line.

Adjustment Procedure

1)-2. DDL-9000C-F

1. Turn on the sewing machine while pressing the **M** ❶.
   Press the "8. Check program" key to display the check program selection screen.

2. Press the Z-phase adjustment key to display the Z-phase adjustment screen.
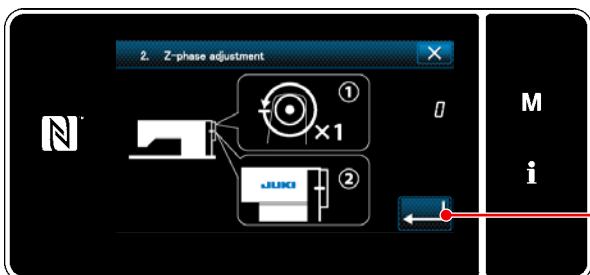
3. Turn a flywheel one revolution, align one marker line with the other marker line, and press the ❸ to fix it.

(8) Various origin adjustments

> ⚠️ **WARNING :**
> Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

Standard adjustment

2) Adjustment of the origin of a presser lifter motor

Only for DDL-9000C-S

Light-contact state

Collinear

> If the cam roller ⑫ is raised, the problem that the presser foot sole fails to come in contact with the throat plate can occur.

Securely tighten three presser motor asm. setscrews ⑩ while bringing cam roller ⑫ and cam ⑬ into light contact with each other.

There is a marker line on the surface of cam ⑬.

Adjust so that marker line Ⓐ on the cam and end face Ⓑ of motor fixing plate ⑨ are collinear to each other.

* **Do not disassemble the cam ⑬ and the motor ⑪ since their origin positions have been factory-adjusted appropriately at the time of delivery.**

(Reference) All you have to do is to assemble the DDL-9000C-F with moderate backlash because it uses a gear unlike the DDL-9000C-S.

Adjustment Procedure

2) Adjustment of the origin of a presser lifter motor

2)-1. DDL-9000C-S
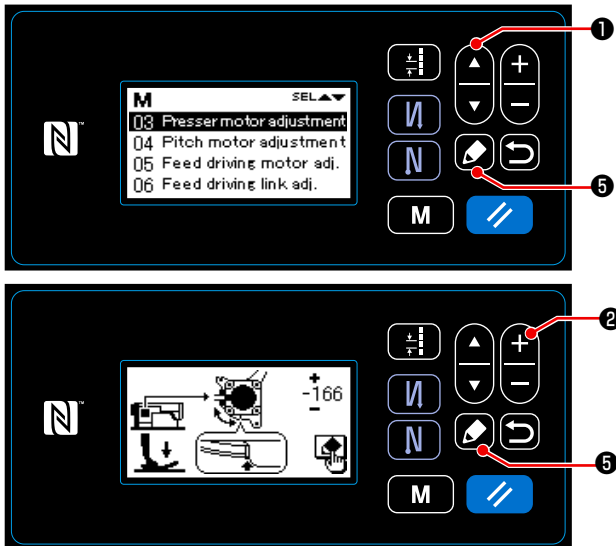
1. Just like the 1. of **1)-1**, open the check program list screen.

2. After pressing the ▲ ▼ ❶ to select the "03 Presser motor adjustment," press the ✎ ❺ to display the Presser motor adjustment screen.

3. Align one marker line on the cam with the other marker line and keep the presser foot in contact with the throat plate. By pressing the ✎ ❺, the current screen returns to the check program election screen after the adjusted contents are fixed.

   * When marker lines of a cam are not aligned with each other, adjust a cam slightly by pressing the + − ❷.

   * For detailed adjustment method and so on, refer to the AK-154 Instruction Manual.

2)-2. DDL-9000C-F
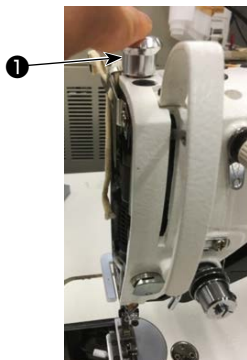
1. Just like the 1. of **1)-2**, open the check program list screen.

2. Make sure that the presser bar moves freely up and down, and press the presser bar cap ❶ in the upper part in a state where the presser foot has been attached. At this time, make sure that the presser is in a state of contacting the throat plate.

3. Press "3. Presser motor adjustment" key to display the presser lifter motor origin adjustment screen.
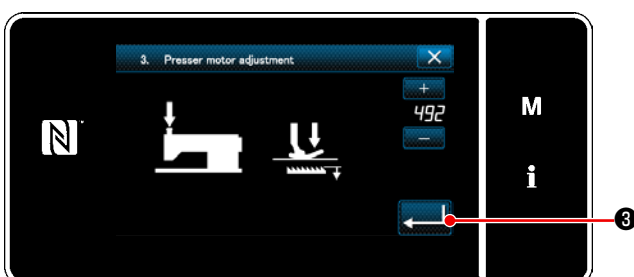
4. Press the ↵ ❸ to fix it.
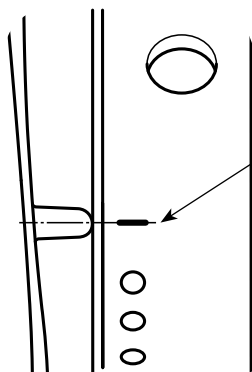
(8) Various origin adjustments

⚠ **WARNING :**
Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

## Standard adjustment

3) Pitch motor adjustment

* **Attach the flat section of the motor shaft ❻ vertically on the slotted side of the horizontal feed pulse motor link ❹.**

Horizontal feed pulse motor ❸

A direction

Horizontal feed pulse motor link ❹

(Caution) 1. When the horizontal feed motor link ❹ is positioned at 90 degrees, the horizontal feed amount is zeroed.

2. After adjusting the pitch motor, do not loosen the screw ❼ (yellow paint is applied as markings) of the horizontal feed pulse motor link ❹. The adjusted value changes, which has an influence on stitch and so on. (Screw ❼: tightening torque: 3.5 N m)

* When the flat position of the motor shaft ❻ differs, the motor shaft ❻ and the pulse motor link ❹ may shift at the time of application of torque.

Fragmentary view taken in the A direction of an arrow (conceptual drawing)

Figure 1 Conceptual drawing of the origin of a horizontal feed pulse motor ❸	Figure 2 Conceptual drawing of input to a horizontal feed pulse motor ❸	Figure 3 Conceptual drawing of input to a horizontal feed pulse motor ❸

+ Pitch

90 °

0 Origin

− Pitch

0 Origin +
−
Finally, set it at 90 degrees.

Finally, set it at 90 degrees.

0 Origin
+
−

When it has got in a slight forward feed motion,
  The horizontal feed pulse motor link ❹ is as shown in the Figure 2 and is slightly upward from the position of 90 degrees. Correct the position by a minus one pulse and confirm the feed by 0 degrees.

When it has got in a slight backward feed motion,
  The horizontal feed pulse motor link ❹ is as shown in the Figure 3 and is slightly upward from the position of 90 degrees. Correct the position by a plus one pulse and confirm the feed by 0 degrees.

Adjustment Procedure

3) Pitch motor adjustment

* The pitch motor adjustment is helpful to adjust the origin of a horizontal feed pulse motor ❸ that controls the horizontal feed motion.

3)-1. DDL-9000C-S
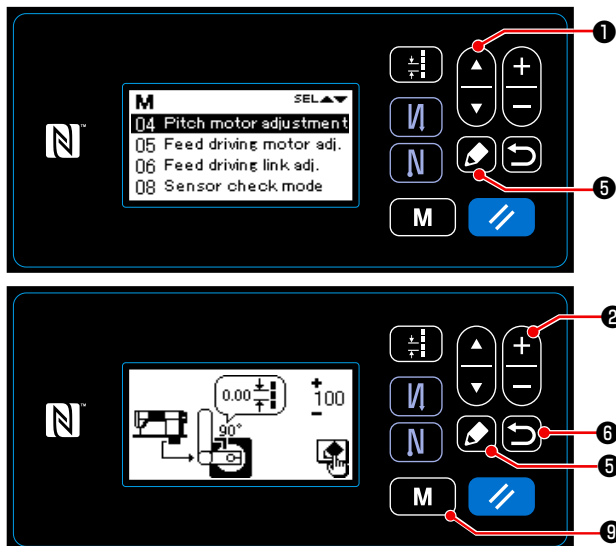
* First, set a feed pitch to 0 (zero).

1. Just like the 1. of **1)-1**, open the check program list screen.

2. After pressing the [▲][▼] ❶ to select the "04 Pitch motor adjustment," press the [🖊] ❺ to display the Presser motor adjustment screen.

3. Confirmation of a horizontal feed motor link ❹

 * When the horizontal feed motor link ❹ is positioned at 90 degrees, the horizontal feed amount is zeroed.

 Correct the [+][−] ❷ by one pulse according to a feed direction and press the [🖊] ❺.

* Even if you have pressed the [+][−] ❷, it does not follow the value of the displayed number linearly, but it is no problem.

* After pressing the [↩] ❻ twice, turn off the machine.

 Be aware that it happens to return to the original position when you press the [🖊] ❺ once again at this time.

4. Turn on the sewing machine again and set the pitch to 0.0mm, and make sure that the feed (amount) is a zero when the sewing machine runs at low speed.

 * The feed (amount) is not a zero, perform operation again from 1 above.

(Caution) When you have replaced the horizontal feed pulse motor ❸ because of a trouble and the like, the motor itself does not recognize its origin. Be sure to enter "11 Check program" while pressing the [M] ❾ (S type) or [M] ❶ (F type), and turn on the sewing machine.

 * When the origin shifts big after replacement of the horizontal feed pulse motor ❸, fix the horizontal feed motor link ❹ at the position of approximately 90 degrees by hand, and turn a handwheel by hand. Then check the position where paper is not fed, press the [🖊] ❺ (S specification) or [⏎] ⓬ (F specification), and set the origin position.

 When you turn on the sewing machine and get into the feed motion in the state of zeroed feed amount and with the inching operation, make an adjustment of the origin again in accordance with the above procedure 1.
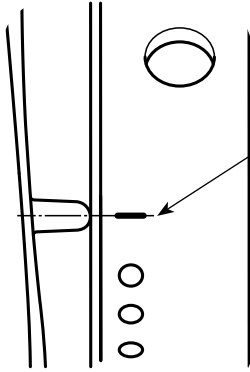
(8) Various origin adjustments

> ⚠️ **WARNING :**
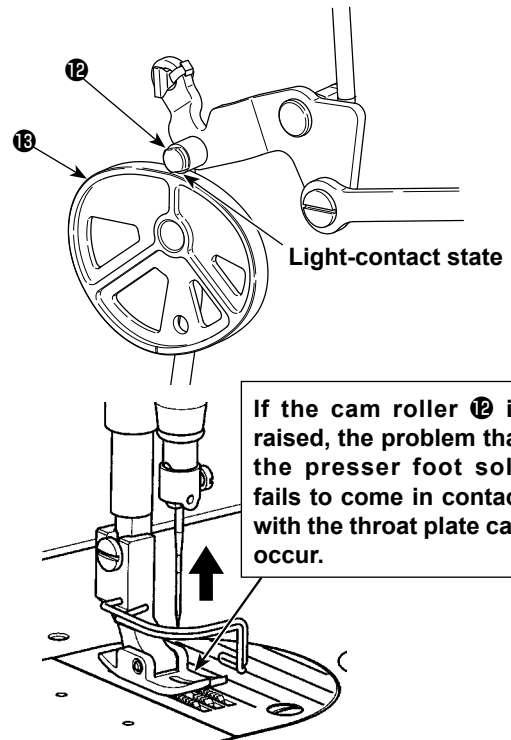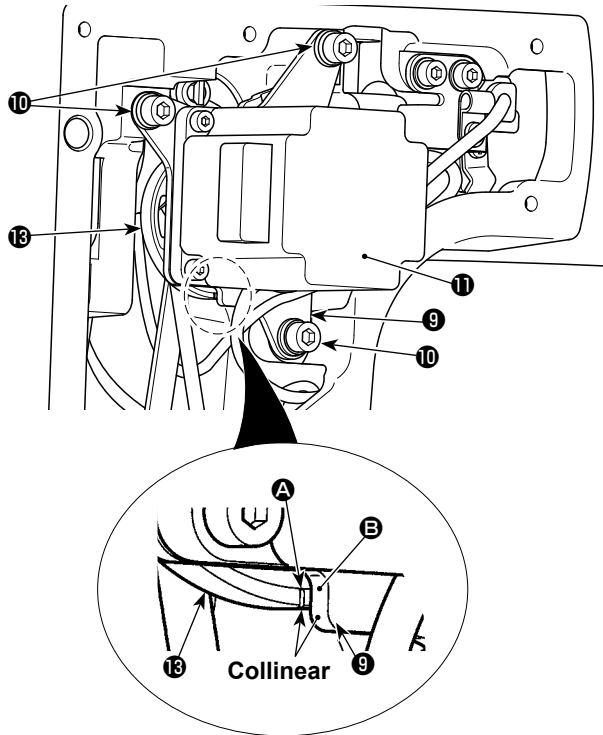> **Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.**

Standard adjustment

(Pitch motor adjustment)

* **Attach the flat section of the motor shaft ❻ vertically on the slotted side of the horizontal feed pulse motor link ❹.**

Horizontal feed pulse motor ❸

A direction

Horizontal feed pulse motor link ❹

(Caution) 1. When the horizontal feed motor link ❹ is positioned at 90 degrees, the horizontal feed amount is zeroed.

2. After adjusting the pitch motor, do not loosen the screw ❼ (yellow paint is applied as markings) of the horizontal feed pulse motor link ❹. The adjusted value changes, which has an influence on stitch and so on. (Screw ❼: tightening torque: 3.5 N m)

* When the flat position of the motor shaft ❻ differs, the motor shaft ❻ and the pulse motor link ❹ may shift at the time of application of torque.

Fragmentary view taken in the A direction of an arrow (conceptual drawing)

Figure 1 Conceptual drawing of the origin of a horizontal feed pulse motor ❸	Figure 2 Conceptual drawing of input to a horizontal feed pulse motor ❸	Figure 3 Conceptual drawing of input to a horizontal feed pulse motor ❸

+ Pitch

90°

0 Origin

− Pitch

0 Origin +
−

Finally, set it at 90 degrees.

Finally, set it at 90 degrees.

+
0 Origin
−

When it has got in a slight forward feed motion,
The horizontal feed pulse motor link ❹ is as shown in the Figure 2 and is slightly upward from the position of 90 degrees. Correct the position by a minus one pulse and confirm the feed by 0 degrees.

When it has got in a slight backward feed motion,
The horizontal feed pulse motor link ❹ is as shown in the Figure 3 and is slightly upward from the position of 90 degrees. Correct the position by a plus one pulse and confirm the feed by 0 degrees.

Adjustment Procedure

3)-2. DDL-9000C-F
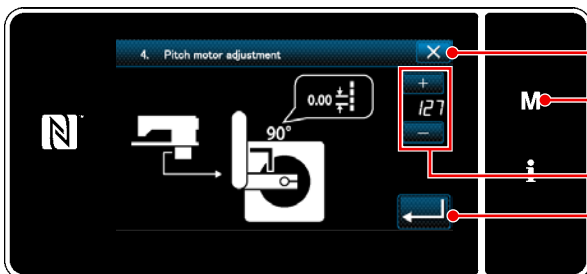
* First, set a feed pitch to 0 (zero).
1. Just like the 1. of **1)-2**, open the check program list screen.
2. After pressing the "4. Pitch motor adjustment key" to display the Pitch motor adjustment screen.
3. Confirmation of a horizontal feed motor link ❹
   * When the horizontal feed motor link ❹ is positioned at 90 degrees, the horizontal feed amount is zeroed. Correct the ❷ by one pulse according to a feed direction and press the ⓬.
   * Even if you have pressed the ❷, it does not follow the value of the displayed number linearly, but it is no problem.

* After pressing the ⓫ twice, turn off the machine.
  Be aware that it happens to return to the original position when you press the ⓬ once again at this time.
4. Turn on the sewing machine again and set the pitch to 0.0mm, and make sure that the feed (amount) is a zero when the sewing machine runs at low speed.
 * The feed (amount) is not a zero, perform operation again from 1 above.

(Caution) When you have replaced the horizontal feed pulse motor ❸ because of a trouble and the like, the motor itself does not recognize its origin. Be sure to enter "11 Check program" while pressing the ❾ (S type) or ❶ (F type), and turn on the sewing machine.
   * **When the origin shifts big after replacement of the horizontal feed pulse motor ❸, fix the horizontal feed motor link ❹ at the position of approximately 90 degrees by hand, and turn a handwheel by hand. Then check the position where paper is not fed, press the ❺ (S specification) or ⓬ (F specification), and set the origin position.**
   When you turn on the sewing machine and get into the feed motion in the state of zeroed feed amount and with the inching operation, make an adjustment of the origin again in accordance with the above procedure 1.
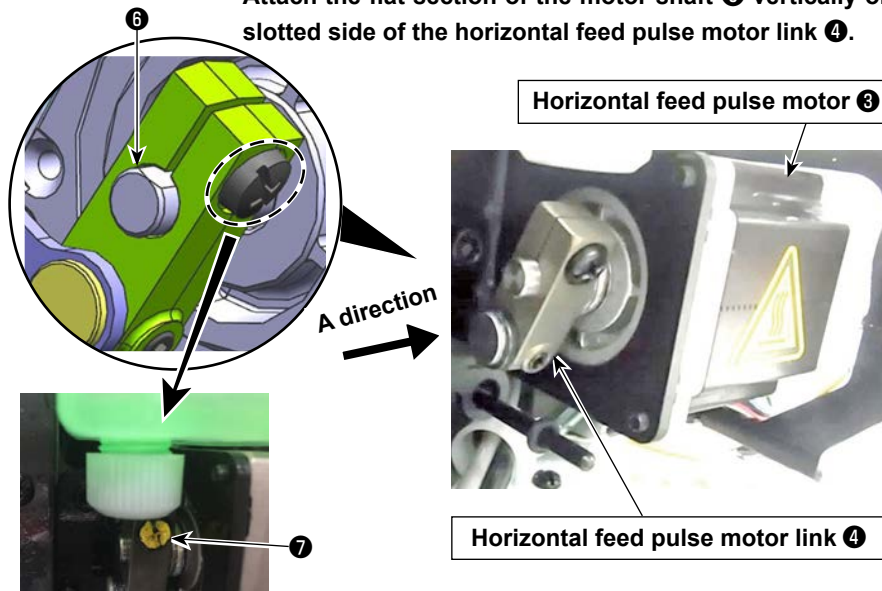
(8) Various origin adjustments

⚠️ **WARNING :**
Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

Standard adjustment

4) Vertical feed motor adjustment

Round bar of φ 3 | Vertical feed pulse motor base

Upper and lower motor link | Upper and lower connection link

(Caution) Make the hole on the side of the upper and lower connection link coincide with the hole of the origin (a reference pin) of a motor base.

* Align a reference pin parallel to the surface of a bed.
* Recommended referenced pin with a round bar of $\varphi\ 3^{\ 0}_{-0.05}$.
  Part number : 12108106

(Caution) Shave the round bar of φ3 to insert into the hole of the origin.

4-3) Vertical feed motor link stopper adjustment

Feeder bar stopper adjustment screw | Feeder bar stopper

Parallel assembly with a gap of 0.2mm

Upper and lower motor link

Upper and lower motor link

Feeder bar stopper adjustment screw

Parallel assembly with a gap of 0.2mm
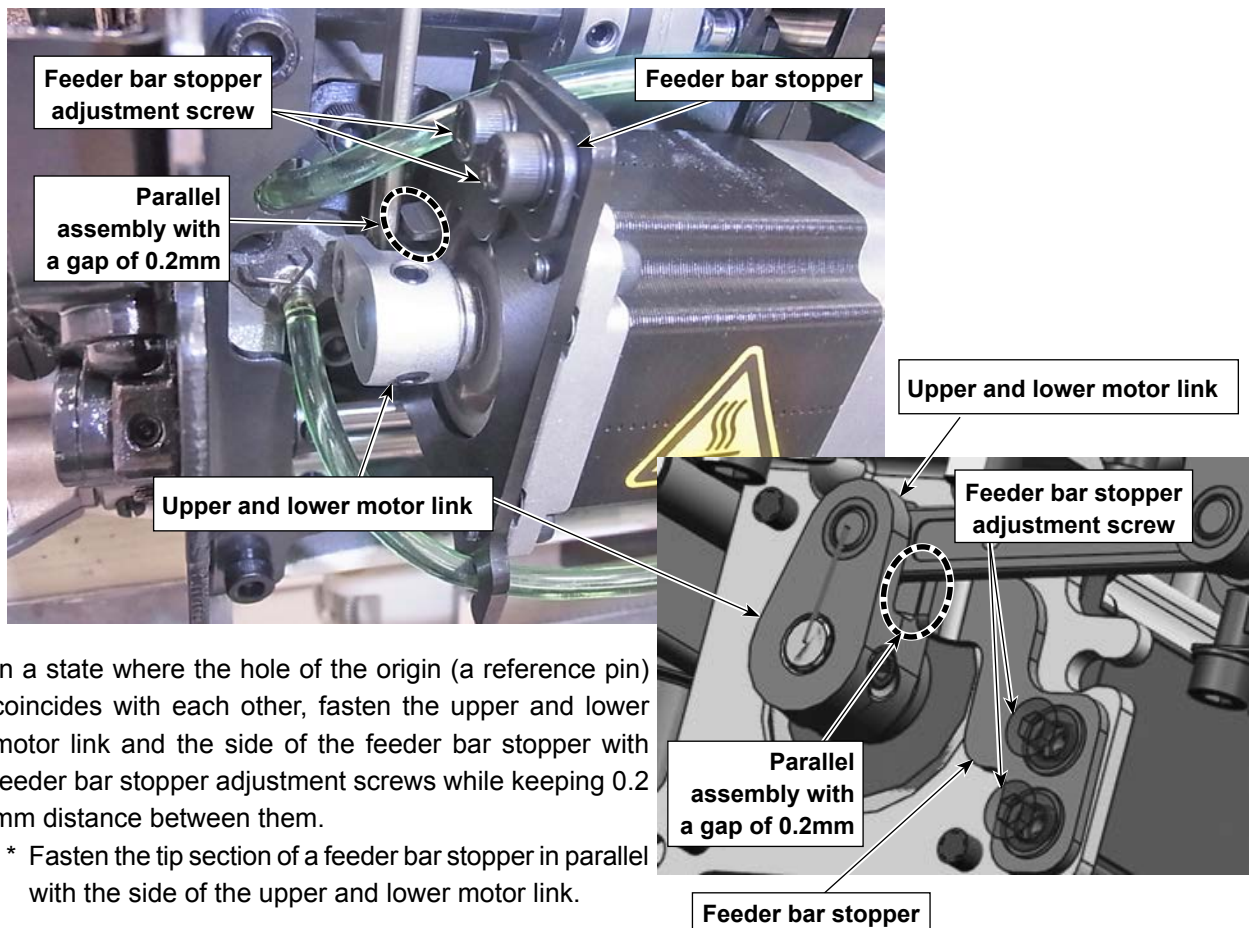
Feeder bar stopper

In a state where the hole of the origin (a reference pin) coincides with each other, fasten the upper and lower motor link and the side of the feeder bar stopper with feeder bar stopper adjustment screws while keeping 0.2 mm distance between them.

* Fasten the tip section of a feeder bar stopper in parallel with the side of the upper and lower motor link.

Adjustment Procedure

4) Vertical feed motor adjustment

* The vertical feed motor adjustment is helpful to adjust the origin of the vertical feed motor adjustment that controls the vertical feed motion.

4)-1. DDL-9000C-S
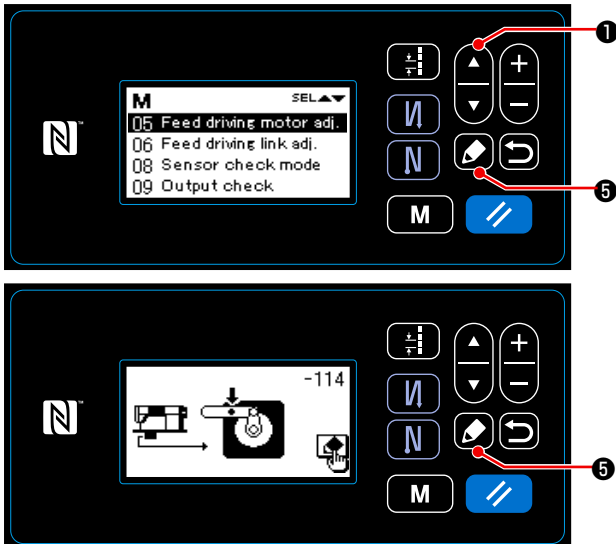
1. Just like the 1. of **1)-1**, open the check program list screen.
2. After pressing the ▲ ▼ ❶ to select the "05 Vertical feed motor adjustment," press the ✎ ❺ to display the Presser motor adjustment screen.
3. Make the hole (of the origin) on the side of the upper and lower connection link coincide with the hole of a motor base.
   * The state of coinciding with each other shall become the origin of the vertical feed motor.
4. By pressing the ✎ ❺, the current screen returns to the check program election screen after the adjusted contents are fixed.

4)-2. DDL-9000C-F

1. Just like the 1. of **1)-2**, open the check program list screen.
2. After pressing the "Vertical feed motor adjustment key" to display the Vertical feed motor adjustment screen.

3. Make the hole (of the origin) on the side of the upper and lower connection link coincide with the hole of a motor base.
   * The state of coinciding with each other shall become the origin of the vertical feed motor.
4. Press the ↵ ❸ to fix it.

4-3) Vertical feed motor link stopper adjustment

* The vertical feed motor link stopper serves as a regulated part that prevents damage of parts such as the thread trimmer by lowering a feeder bar when maintenance work such as replacement of a feed dog is performed at the time of power-off.
  When you have implemented an adjustment of the origin, be sure to make this adjustment.
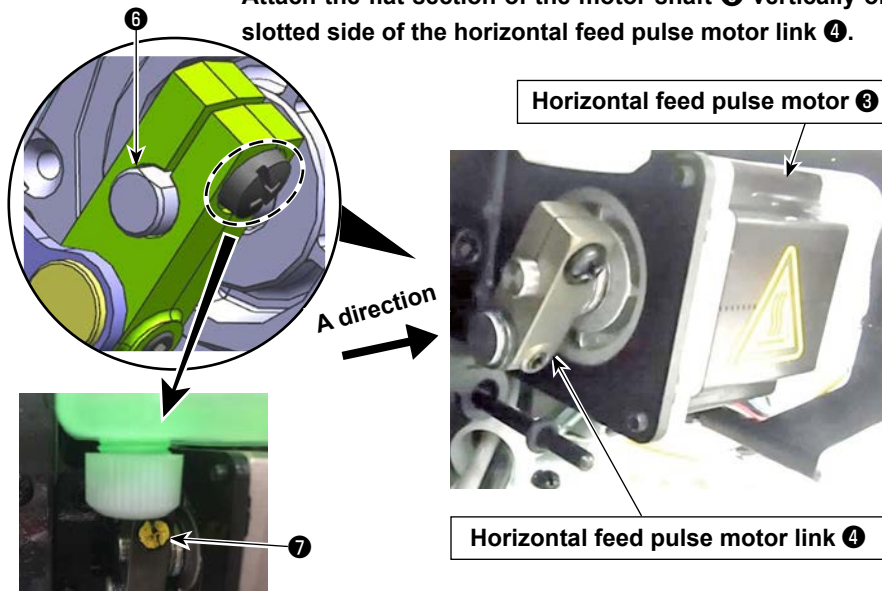
(8) Various origin adjustments

> ⚠ **WARNING :**
> **Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.**

Standard adjustment

5) Vertical feed link adjustment

※

Upper and lower link arm setscrew A ❷

Upper and lower link arm setscrew B ❸

Feed dog

Upper and lower link arm

Upper and lower link arm setscrew A ❷

Upper and lower link arm setscrew B ❸

It is the height of a feed dog from the surface of a throat plate.

* Remove the presser and do not apply the presser pressure.

(Caution) After tuning the feed dog height adjustment, do not loosen the feed (vertical) link arm setscrew A ❷ and the feed (vertical) link arm setscrew B ❸ (yellow paint is both applied as markings.). Even if the feed dog height on the panel is tuned with other sewing machines, the actual height happens to vary, so it has an influence on stitch and so on.

Adjustment Procedure

5) Feed driving link adjustment

* The feed driving link adjustment is helpful to adjust the height of a feed dog at a maximum by producing the biggest possible fluctuations in the feed driving motor.
* Assemble a feed dog in a state of no presser pressure.
* The feed locus motion considering the presser pressure is seen in the actual sewing process.

5)-1. DDL-9000C-S
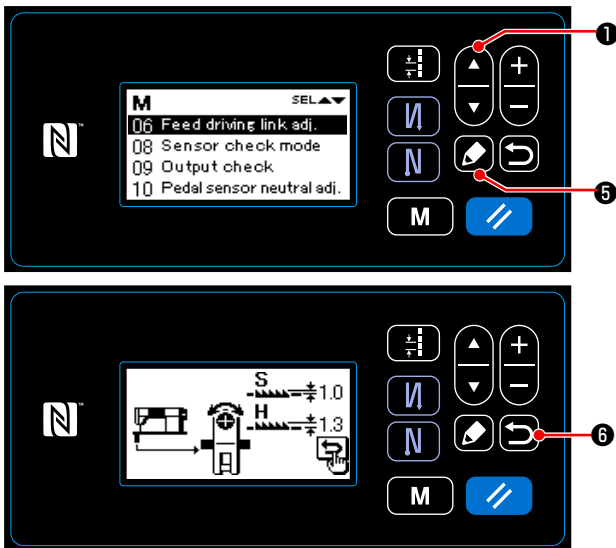
1. Just like the 1. of **1)-1**, open the check program list screen.
2. After pressing the ❶ to select the "06 Feed driving link adj." press the ❺ to display the feed driving link adjustment screen.
3. If the height of a feed dog is decided, tighten the upper and lower link arm setscrews A ❷ and B ❸.

	Height of a feed dog	Remark
S type	1.0mm	The value for assembly is available when a value displayed on the opera-tion panel is 0.
H type	1.3mm	

4. By pressing the ❻, the current screen returns to the check program election screen after the adjusted contents are fixed.

5)-2. DDL-9000C-F

1. Just like the 1. of **1)-2**, open the check program list screen.
2. After pressing the "6. Feed driving link adj." to display the feed driving motor adjustment screen.

3. Confirmation of the upper and lower motor link
4. If the height of a feed dog is decided, tighten the upper and lower link arm setscrews A ❷ and B ❸.

(8) Various origin adjustments

> ⚠️ **WARNING :**
> **Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.**

Adjustment Procedure

6) Adjustment of forward reverse stitches (correction function)

After adjustments described from the above 1) through 5) are completed, check a numerical scale displayed on the operation panel and an actual needle-entry. When you set a numerical value to 3 on the operation panel, put paper under the presser and check a needle-entry pitch with an inching motion (It is driven at 200 rotations.) . When the needle-entry pitch is more or less than 3 of the numerical scale, make an adjustment to correct the pitch.

* Even if you have made a pulse motor adjustment, variation in the sewing machines occurs because of quality of a gauge and so on.

6)-1. DDL-9000C-S
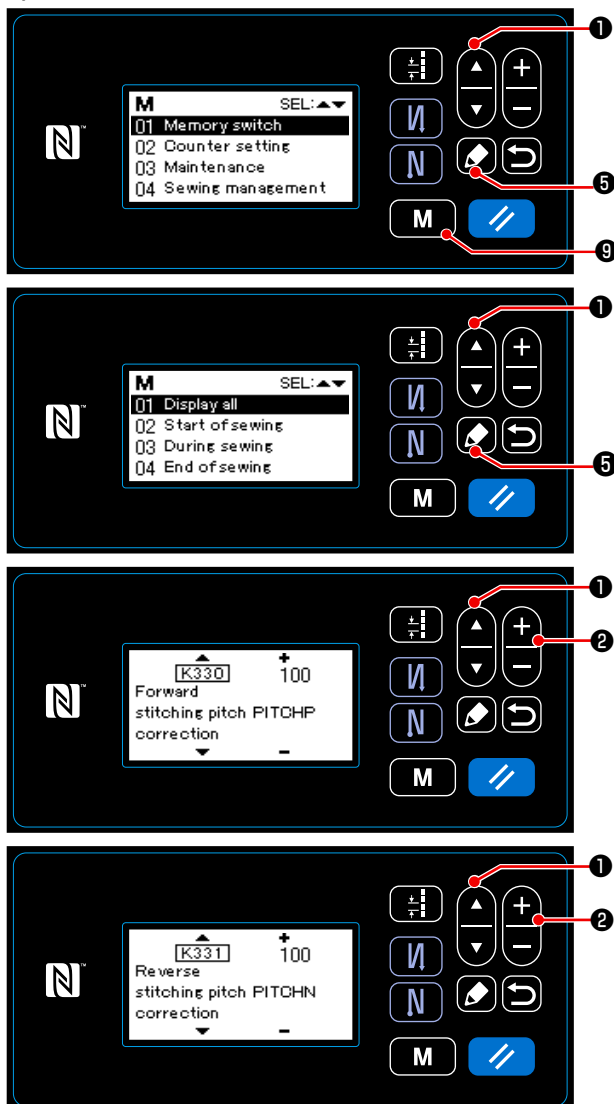
1. When you hold down the **M** ❾ for six seconds, a mode screen is displayed.

2. After selection of the "01 Memory switch" by pressing the ▲▼ ❶, press the ✐ ❺ to display the memory switch classification selection screen.

3. After selection of the "01 Display All" by pressing the ▲▼ ❶, press the ✐ ❺ to display the memory switch settings screen.

4. After selection of the K330 and K331 by pressing the ▲▼ ❶, press the +− ❷ to perform a pitch correction.

Correction		Remarks
Forward pitch	K330	* The pitch is corrected considering the present value as 100%.
Reverse pitch	K331	* Aim at 100% adjustment of the pitch against forward reverse 100% and a numerical value displayed on the operation panel.

* After adjustment, there may be a gap in the display of a scale and in a needle-entry, depending on the sewing products.
  In this case, adjust it with the scale displayed on the panel.

Adjustment Procedure

6)-2. DDL-9000C-F

1. Press **M** ❾ on the sewing screen to display the mode screen.
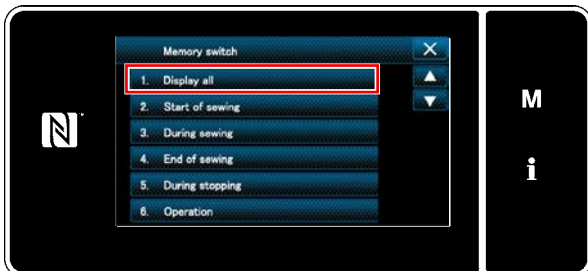
2. After selection of the "1.Memory switch", and selection of the "1. Display all".

3. After selection of the "K330 Forword stitching pitch correction" and "K331 Reverse stitching pitch correction" to perform a pitch correction.
   * After adjustment, there may be a gap in the display of a scale and in a needle-entry, depending on the sewing products.
   In this case, adjust it with the scale displayed on the panel

Correction		Remarks
Forward pitch	K330	* The pitch is corrected considering the present value as 100%. * Aim at 100% adjustment of the pitch against forward reverse 100% and a numerical value displayed on the operation panel.
Reverse pitch	K331	

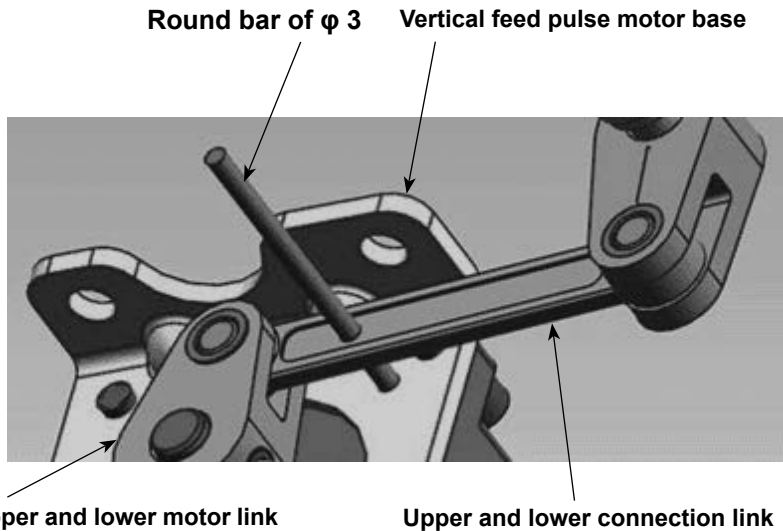# (8) Various origin adjustments

⚠	**WARNING :** Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

Standard adjustment

7) Adjustment of active tension (only the DDL-9000C-F)

7)-1. Assembly

1. Sub assembly

19±0.1mm

2. Complete assembly

○ Positioning of the solenoid

OK The shaft center is in alignment.	NG The shaft center is out of alignment.
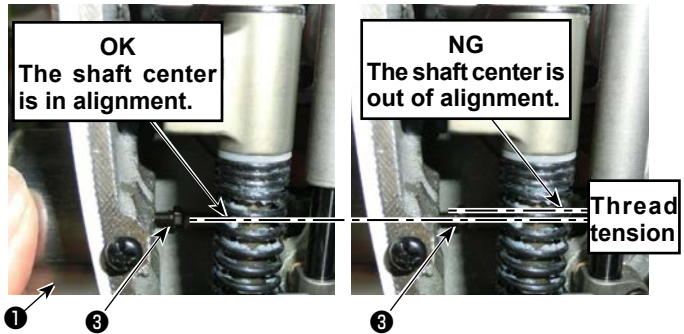
Thread tension

2. Complete assembly

○ Relation between the plunger and the thread tension disk.

OFF

ON

Set the height of a convex section to 1.5 ± 0.1 mm.

Press lightly

* Attach it in the right direction.

＜Completion＞

3. Confirmation of assembly quality

OFF   ON

To return smoothly

OFF

To have a gap of 1 mm or more in the (thread tension) disk

Adjustment Procedure	Results of Improper Adjustment

7) Adjustment of active tension (only the DDL-9000C-F)
7)-1. Assembly
Assemble the active tension in the following way.
1. Sub assembly
    Attach the screw (M4) ❸ to the plunger ❷ of the AT solenoid ❶.
    At this time, keep 19 ± 0.1 mm from the upper surface of the fixed
    plate ❹ to the upper portion of the screw ❸ and a nut torque of
    25± 5kgcm.
(Cautions)1. Put the plunger ❷ in a state of being lowered.
            2. Use the plunger ❷ that falls under its own weight.
               Do not use a torque plunger.
 	
2. Complete assembly
○ Positioning of the solenoid
    Align the shaft center of the thread tension with that of the AT so-
    lenoid ❶ at the time of attachment of the AT solenoid ❶.
    (After assembling the thread tension, attach the AT solenoid ❶.
    Check the shaft center instead of the surface portion.)
(Caution) When the shaft center is out of alignment, the shaft
              becomes worse at the time of pressurization with the
              AT solenoid ❶ and the regular value becomes difficult
              to come out.
○ Relation between the plunger and the thread tension disk.
    Put the convex section of the plunger ❷ in a state where it comes
    out of the surface of the AT solenoid ❶ by 1.5 ± 0.1 mm.
    Loosen the thread tension cap setscrew ❺ to press the thread
    tension cap ❻ lightly.
    Tighten the thread tension cap setscrew ❺.
(Cautions)1. Position the thread tension cap setscrew ❺ in the
              right direction. When it is positioned on the left side,
              there is a possibility that it interferes with thread.
            2. After assembly, press the plunger ❷ to make sure
              that the thread tension disk does not move (not
              revolve).
 	
3. Confirmation of assembly quality
    Make sure that the plunger ❷ returns smoothly at the time of press-
    ing it lightly.
    When the plunger ❷ is OFF, make sure that there is a gap of 1
    mm or more in the (thread tension) disk.
    If the gap is not 1 mm or more, it becomes necessary to adjust
    19±0.1mm as an assembly value.	

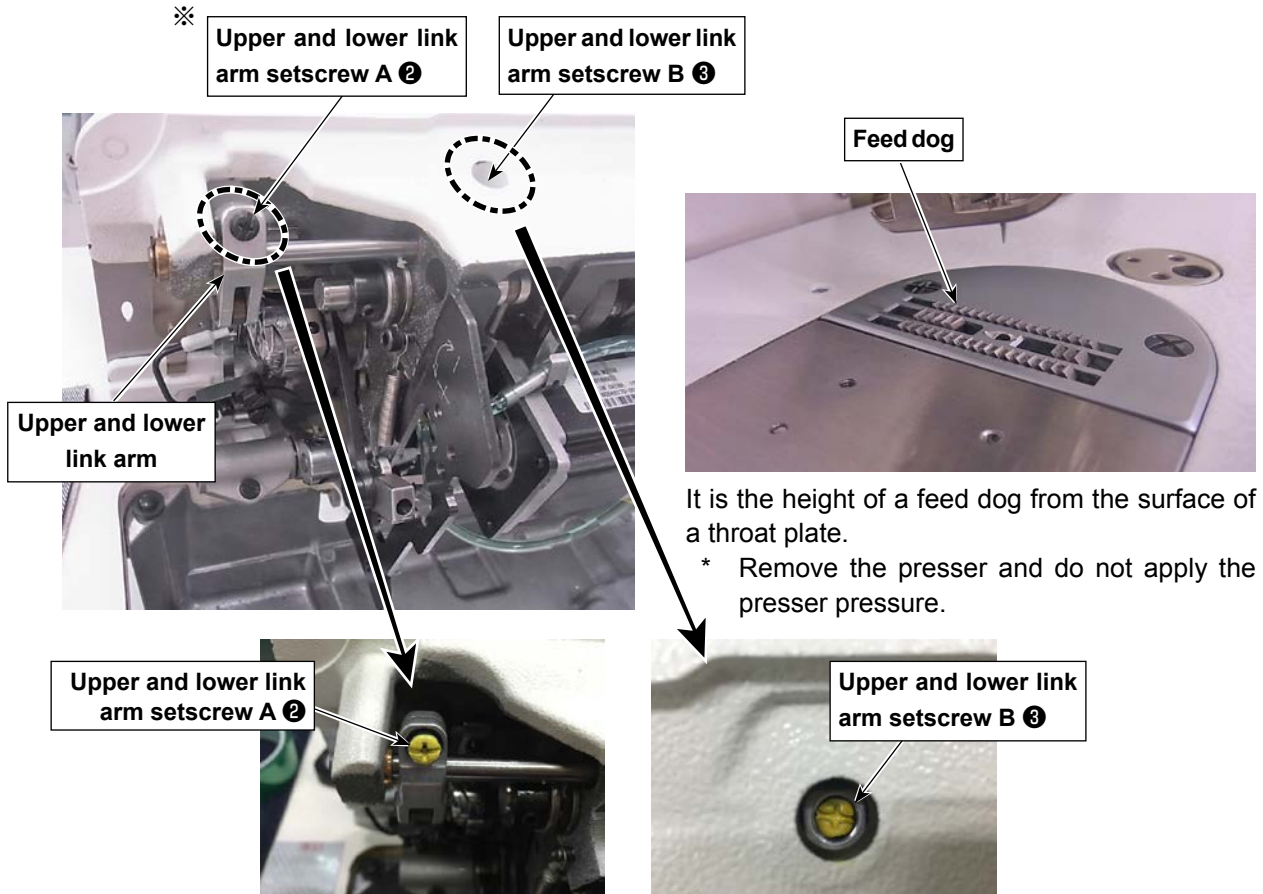# (8) Various origin adjustments

⚠	**WARNING :** **Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.**

Standard adjustment

7) Adjustment of active tension (only the DDL-9000C-F)

   (Cautions) Be sure to take a measure to prevent variation between the sewing machines.

7)-2. Correction for tension

1. Confirmation of the current state

> The screw ❶ and the nut ❷ are on the same plane.

* **The Gunze span #60 is used for thread.**
* **Let the thread take-up spring and the thread guide through.**

* **Set the thread tension on the panel to 60.**

Adjustment Procedure

7)-2. Correction for tension

1. Confirmation of the current state

(1). Using a tension meter, check a panel numerical value (input value) that becomes a tension of 60g.

    * The Gunze span #60 is used for thread.

    * Let the thread take-up spring ❸ and the thread guide ❹ through.

    Conditions at the time of checking the tension

  (1)-1. To release the pre-tension load (It is possible to do it if a screw ❶ tip aligns with a nut ❷.)

  (1)-2. To pull the thread fast (about 10 cm/s) because the tension meter is shaken too much when the thread pulling speed at the time of measuring tension is in conformity with the standard

  (1)-3. To close the (thread tension) disk for active tension. (When moving the presser foot up and down by pedal operation on the main display screen, it applies tension on active tension. Then, measure the tension. Further, the active tension is released over time.

(2). You are given an explanation of the case where tension has become 60g at a numerical value 35 on the panel when checking it under the above-mentioned condition.
In this case, offset will be 35−60=−25.

  * In the case of 60g, offset will be unnecessary because 60−60=0.

2. Correction method

(1). Turn on the sewing machine and hold down the **M** ❾.

(2). Select the "8. Check program" to display the check program list screen.
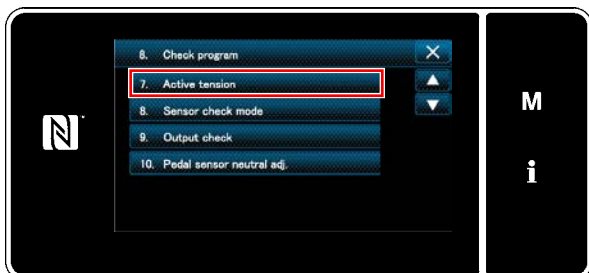
(3). Select the "7. Active tension."

(4). The corrected default value for the active tension is 20.
Taking the above-mentioned offset (−25) as an example, enter −5 because 20−25=−5 and fix it at the ❺ .

  * When a former input value has been 10, enter −15 because 10−25=−15.

(5). By the above procedure, the tension 60 is applied at the time of 60 displayed on the panel.

(9) Adjusting the needle thread presser device

> **WARNING :**
> Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

Standard adjustment

1) Needle thread presser device

Adjustment Procedure	Results of Improper Adjustment

1) Adjusting the needle thread presser device

※ **Factory-set is "ON".**

The needle thread presser device is able to tuck the needle thread on the wrong side of material as in the case of the conventional wiper device.

[Feature]

1. By operating the needle thread presser device ❶ and reducing the needle thread supply from the thread take-up, it is possible to lessen so-called "bird's nest phenomenon" of the cloth lining.
2. Operability around the needle entry point is improved.
3. Applicability of various kinds of attachments designed for use around the needle entry point is improved.

1)-1. DDL-9000C-S

● **How to set up the needle thread presser device (ON/OFF)**

○ In the case the memory switch "U056 Reverse-rotation needle-up after thread trimming" is enabled, the length of needle thread becomes longer. So, in this case, the needle thread presser device should be set to "OFF".
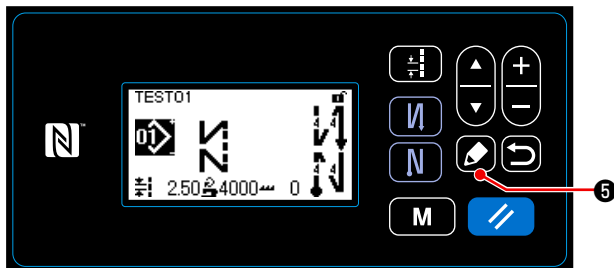
Press the ❺ button on the sewing screen at the time of selection of free stitching, constant-dimension sewing, and multi-layer stitching to display a sewing pattern edit screen.

No.	Item	Input range
S042	Needle thread presser	![icon] : OFF ／ ![icon] : ON

1)-2. DDL-9000C-F

● **How to set up the needle thread presser device (ON/OFF)**

1. On the sewing screen which is displayed in the case free stitching, constant-dimension sewing or multi-layer stitching is selected, press ❾ to display the sewing data edit screen.

2. Press ❻ on the sewing data edit screen to display the thread presser selected screen.
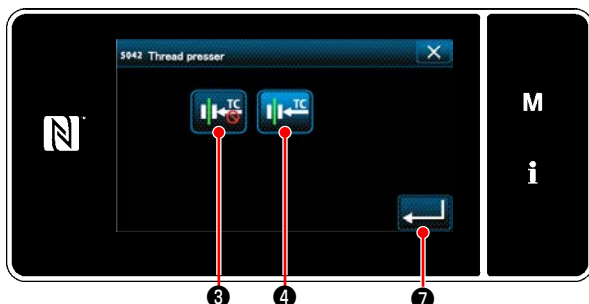
3. Press ❸ or ❹. Press ❼ to confirm the setting. Then, the sewing screen is displayed.

(9) Adjusting the needle thread presser device

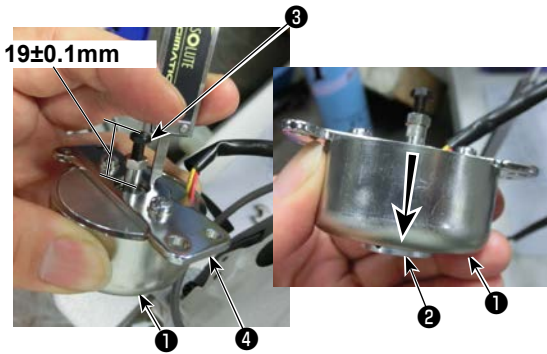| ⚠	**WARNING :** Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

Standard adjustment
2) Adjusting the remaining length of needle thread   **3) Length of needle thread remaining at the needle** **[S type]**　　　　　　**[H type]**   **c = 35 to 45mm**

Adjustment Procedure

2) Adjusting the remaining length of needle thread

Adjust the length of needle thread remaining at the needle by turning thread tension No. 1 nut ❷.

Turn thread tension No. 1 nut ❷ clockwise (in direction ❹), to shorten the thread length remaining on the needle after thread trimming or counterclockwise (in direction ❺), to lengthen the thread length.

3) Length of needle thread remaining at the needle

The needle thread length C dimensions of the S type and H type is 35 to 45mm.

 * **So-called "bird's nest phenomenon" is reduced by shortening the length of needle thread remaining at the needle. In this case, however, the needle thread is likely to slip off the needle eyelet. To reduce slip-off of the needle thread, sewing speed at the beginning of sewing should be reduced.**

[Memory switch]

○ U286 Sewing speed during thread presser operation : Reduce (Factory-adjusted to 300 sti/min at the time of shipment)

○ U293 Sewing speed resetting angle when the thread presser operates (340 degrees preset at the time of factory shipment)

Enlarge the U286 speed range.

No.	Item	Setting range	Factory-adjusted	Unit
U286	**Sewing speed during thread presser operation** This memory switch is used for setting the speed to be employed when the thread presser operates.	100 to 3000	300	sti/min
U293	**Sewing speed resetting angle when the thread presser operates** This memory switch is used for setting the angle at which the sewing speed employed when the thread presser operates is reset. * The setting is enabled when the thread presser operates.	0 to 720	340	Degree

(9) Adjusting the needle thread presser device

⚠ **WARNING :**
Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.
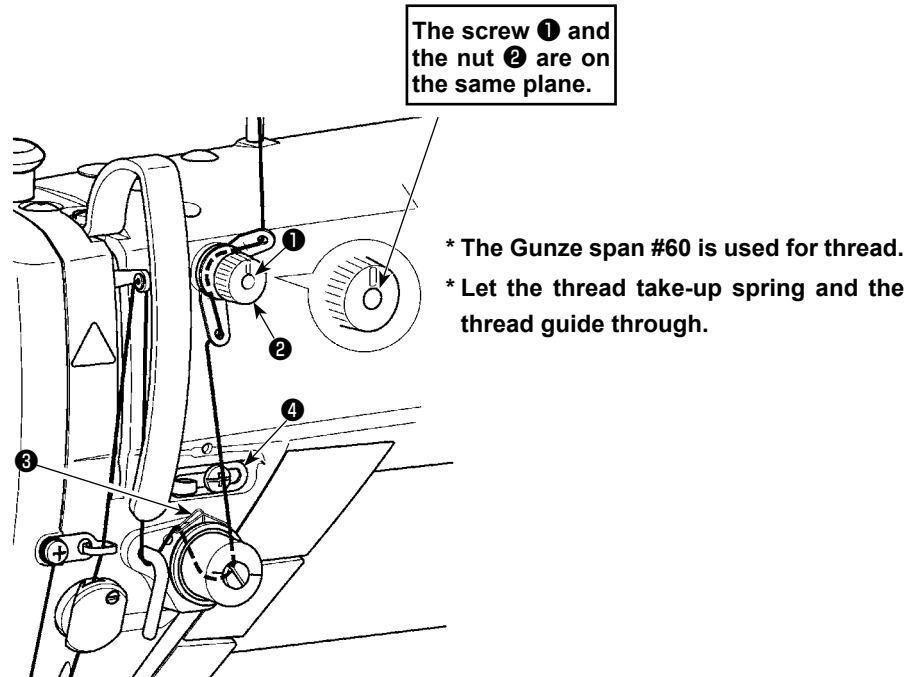
Standard adjustment

4) Response to problems occurring at the beginning of sewing
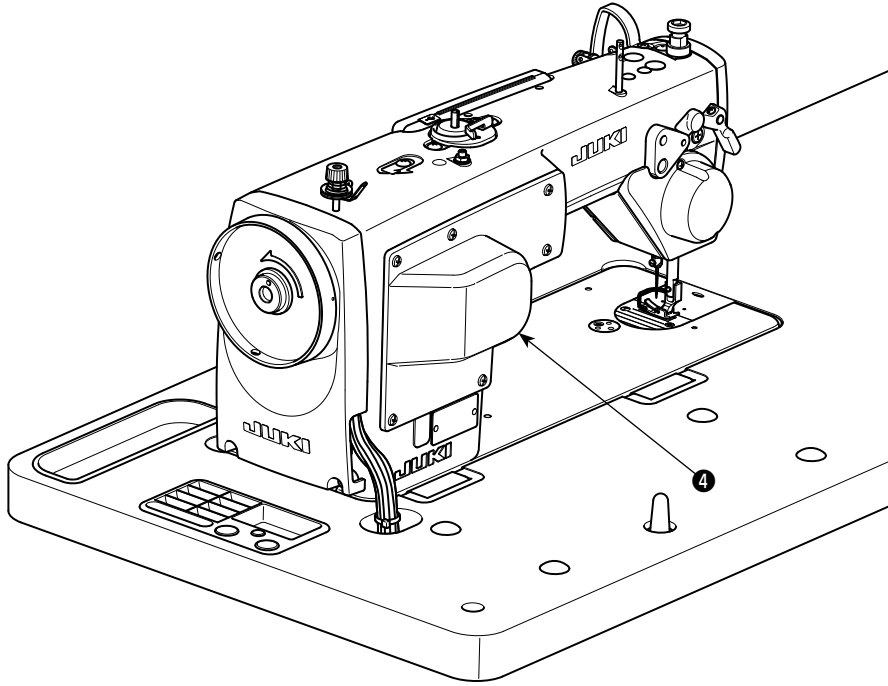
Auto-lifter device (AK-154) ❹

❹	DDL-9000C-S	AK-154	It depends on specification (An optional device is acceptable.)
	DDL-9000C-F	Active presser device	Standard

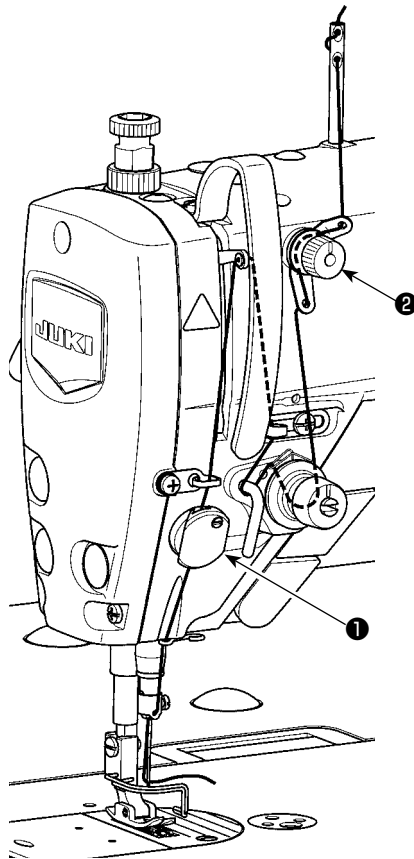| Adjustment Procedure	Results of Improper Adjustment
4) Response to problems occurring at the beginning of sewing ○ In the case needle thread breakage occurs when using a thin thread or fragile thread ○ In the case needle thread is not tucked on the wrong side of material ○ In the case needle thread breakage occurs when starting sewing from the material end (such as sewing the material with needle thread tucked on the undersurface of material) If any of the aforementioned problems occurs, the assist function which works to reduce the presser foot pressure at the beginning of sewing can be set by using the auto-lifter device ❹ (AK-154) * The AK-154 ❹ can be optionally installed. (Part number: 40174617)	○ The AK-154 device ❹ is exclusive for the DDL-9000C-S. ○ In the case the AK-154 ❹ is not used, the presser foot pressure should be reduced to allow the needle thread to be released smoothly. (The recommended presser foot pressure is 30 N (3 kg) or less.) Adjust the presser foot pressure and the sewing speed appropriately to prevent insufficient feed efficiency due to jumping or other faults of the presser foot. Confirm the adjustment result by actually sewing the material.
4)-1. DDL-9000C-S When installing the auto-lifter device ❹ (AK-154), the function of auto-lifter is actuated. 1. Turn ON the power switch. 2. Press M ❾. 3. Move the cursor to "U290" by pressing ▲ ▼ ❶. Input the lifting time using with + − ❷. Factory-set value : 20 Adjustable range : 0 to 50 The longer the lifting time is increased, the higher the presser foot sole is brought up above the throat plate. **(Caution) The amount of uplift of the presser foot above the throat plate varies according to the material thickness of the item to be sewn and the presser foot pressure. Be sure to check the actual condition before starting sewing.**	○ If the adjustment value of the operating time of the AK-154 ❹ is increased while the presser foot pressure is high, the operating noise will become larger. Adjust the adjustment value of the operating time of the AK-154 ❹ and the pressure foot pressure while visually checking the needle thread.

(9) Adjusting the needle thread presser device

WARNING :
Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

Standard adjustment
(Response to problems occurring at the beginning of sewing)

Adjustment Procedure

4)-2. DDL-9000C-F

1. Press **M** ❶ on the sewing screen to display the mode screen.

2. Select the "1. Memory switch".
   The "memory switch type selection screen" is displayed. Select the "1. Display all".

2. Select the "U290 Wiper AK operating time".
   Input the lifting time.

(9) Adjusting the needle thread presser device

⚠	**WARNING :** Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

Standard adjustment
5) To reduce bird's nest (thread tangling) at the beginning of sewing Condensation   Custom condensation (CC) A Condensation or B   B A>B   A>B A : Stitch pitch of the first stitch B : Normal stitch pitch **[How to adjust condensation pitch]** Condensation pitch Sewing pitch

Adjustment Procedure	Results of Improper Adjustment

1. So-called "bird's nest phenomenon" is reduced by increasing the pitch of the first stitch at the beginning of sewing.
2. For the way to change the pitch at the start of sewing, refer to the following items in the instruction manual.
    5)-1. DDL-9000C-S
        "4-2-2. Reverse feed stitching (at start) pattern" or "8-6. Condensation custom pattern"
    5)-2. DDL-9000C-F
        "4-2-3. Reverse feed stitching (at start) pattern".
(Caution) For the set value of the memory switch, it is recommended to set the U286 thread presser sewing speed to 250sti/min and set the U293 thread presser sewing speed cancellation angle to 720 degrees.
3. It is possible to lessen the bird's nest by making the pitch amount of a condensation smaller than the sewing pitch.	

(10) Adjusting the thread trimming unit

> **WARNING :**
> **Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.**

Standard adjustment

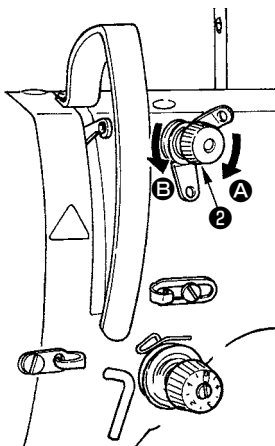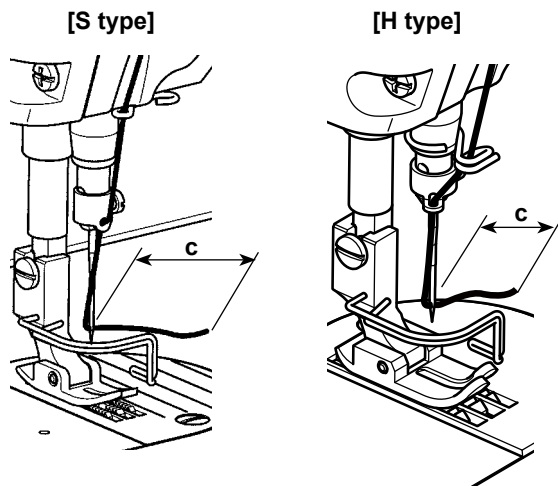### 1) Adjustment of the thread trimming cam position

2) Adjustment of the thread trimming link stopper screw

Outside

Inside

The screw tip is flat. ❻

The screw tip is pointed. ❼

16.5mm

| Adjustment Procedure	Results of Improper Adjustment
1) Adjustment of the thread trimming cam position 1. Assume the condition such that the thread trimming solenoid ❶ is attracted by hand. 2. Loosen and adjust the thread trimming cam setscrew ❹ so that the gap length becomes 2mm between the thread trimming cam ❷ and the cam follower ❸. 3. After adjustment, tighten two thread trimming cam setscrews ❹. **(Caution) After adjustment, make confirmation according to [3.-(9)-3) Standard timing for the thread trimming cam].** 4. Apply exclusive grease (JUKI grease A) to the stopper spring part ❺. **2) Adjustment of the thread trimming link stopper screw** 1. Turn the hand wheel and adjust the thread trimming roller ❾ to the inlet section ⒢ of the thread trimming cam groove. 2. Loosen the thread trimming link stopper setscrew B ❼. 3. Move the thread trimming link stopper setscrew A ❻ and adjust the clearance to be uniform between the thread trimming roller ❾ and the thread trimming cam groove on both inside and outside. 4. Tighten the thread trimming link stopper setscrew B ❼. In this case, make sure that the thread trimming link stopper set-screw A ❻ does not move. 5. Try to move the cam follower ❸ to the right and left and confirm that the thread trimming roller ❾ enters smoothly without touching the thread trimming cam groove. 6. The thread trimming connecting rod bracket ❽ shall be positioned 16.5 mm away from a machined surface. **(Caution) After adjusting the thread trimmer connecting rod bracket ❽, do not loosen the screw ❿ (yellow paint is applied as markings.). The initial position of a knife or the amount of engagement of a blade happens to change.**	○ Be careful about the distance of 16.5 mm because it influences the thread trimming motion.

(10) Adjusting the thread trimming unit

> **WARNING :**
> Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

Standard adjustment

3) Thread trimming cam timing
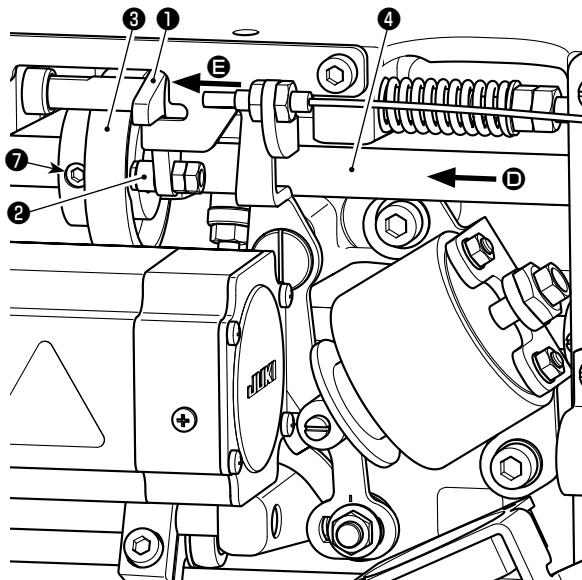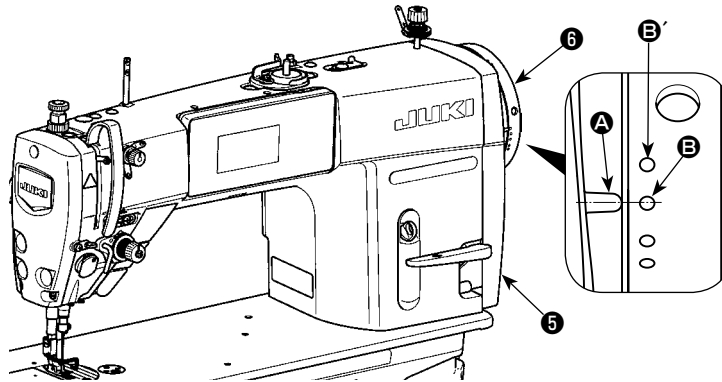
Illustration as observed from D (right side face)

| Correct (F) | Wrong (G) |
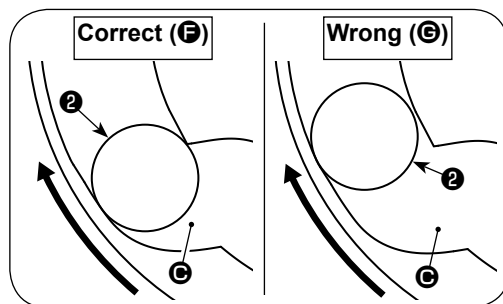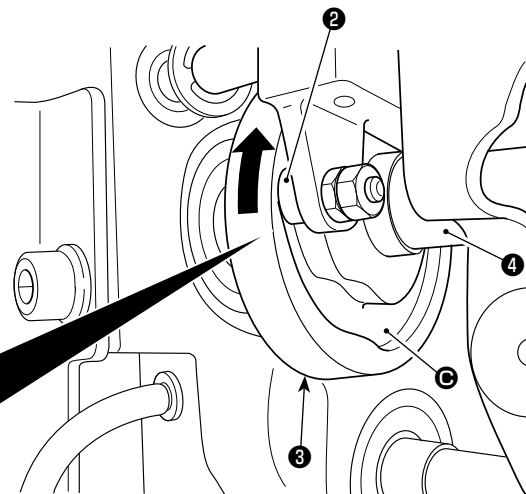
Turn thread trimming cam ❸ in the direction of arrow until the outer periphery of thread trimming cam groove C comes in contact with roller ❷ and stops. At this position, fix thread trimming cam setscrew ❼.

Adjustment Procedure	Results of Improper Adjustment
3) Thread trimming cam timing The purpose of the adjustment of the thread trimming cam is to align marker line **Ⓐ** on pulley cover **❺** with green marker dot **Ⓑ** on hand-wheel **❻**. (In the case of H type model, use white marker dot **Ⓑ´**.) **3)-1. For checking of the thread trimming cam timing** 1. Tilt the sewing machine head. 2. Turn handwheel **❻** by hand in the normal direction of rotation until the thread take-up lever goes up slightly below the upper dead point. Press cam follower **❶** with fingers to the left (in direction of arrow **Ⓔ**) to fit roller **❷** to in groove **Ⓒ** in thread trimming cam **❸**. 3. In this state, turn handwheel **❻** in the direction which is opposite to the normal direction of rotation until handwheel **❻** will go no further. (If the handwheel is turned further, it reaches the position at which cam follower **❶** starts moving.) At this time, marker line **Ⓐ** on pulley cover **❺** aligns with green marker dot **Ⓑ** on handwheel **❻**. (In the case of H type model, use white marker dot **Ⓑ´**.) **3)-2. Adjustment of the thread trimming cam timing** 1. Tilt the sewing machine head. 2. Loosen the screws No.1 and No. 2 of thread trimming cam setscrew **❼** in the written order. 3. Align marker line **Ⓐ** on pulley cover **❺** with green marker dot **Ⓑ** on handwheel **❻**. (In the case of H type model, use white marker dot **Ⓑ´**.) 4. Pressing cam follower **❶** to the left (in the direction of arrow **Ⓔ**), engage thread trimming cam **❸** with roller **❷**. Then, turn only thread trimming cam **❸** with fingers in the direction which is opposite to the normal direction of rotation of feed driving shaft **❹** until it will go no further without turning feed driving shaft **❹**. At this position, tighten the screws No. 1 and No. 2 of thread trimming cam setscrew **❼** in the written order while pressing thread trimming cam **❸** against roller **❷**.	○ In the case of using a high-count filament thread, thread loop formation may be unstable. If faulty loop spreading occurs in this state, correct the thread trimming cam timing by aligning the marker line on the pulley cover with the red marker dot, instead of the green marker dot, on the handwheel. ○ The alignment point between thread trimming cam **❸** and roller **❷** is position (**Ⓕ**) from which cam follower **❶** starts moving. Position (**Ⓖ**) at which you feel that thread trimming cam **❸** comes in contact with roller **❷** for the first time during adjustment is not the correct alignment position. * Be sure to correct the thread trimming cam timing carefully since it largely affects the loop spreading timing.

(10) Adjusting the thread trimming unit

> ⚠ **WARNING :**
> Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.
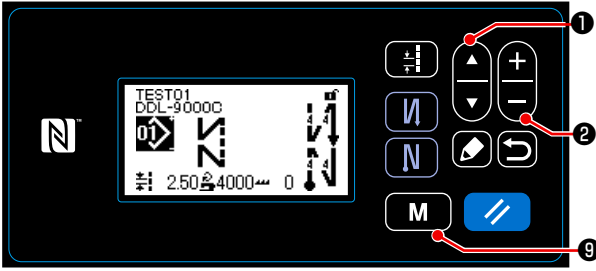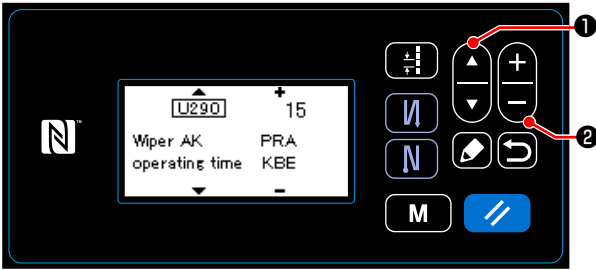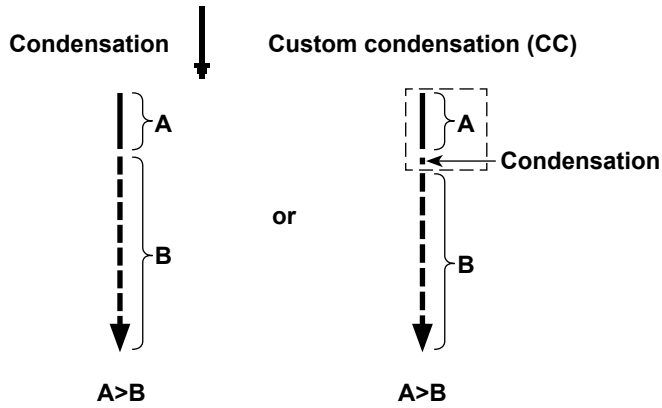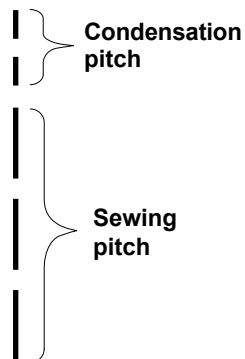
Standard adjustment

4) Adjusting the knife unit

4)-1. For checking the knife unit
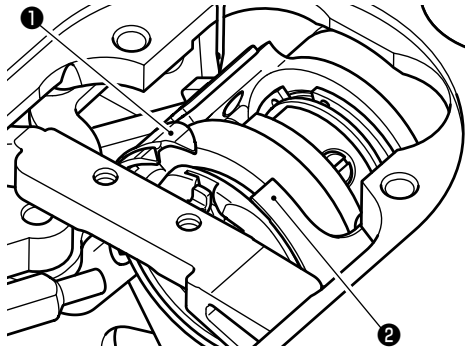
Fig.1
Standby state of the knife

① **The position of the thread spreading knife and needle**

The distance from center of needle Ⓐ to the tip of loop spreading knife ❶
S type : 5.5 to 6.5 mm
H type : 5.0 to 6.0 mm

Fig.1-a

② **The thread trimming shaft and the thread trimming drive arm**

It touches.
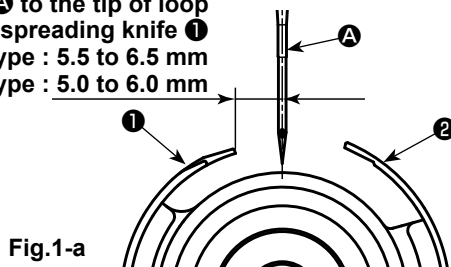
Fig.1-b

Far end of the hole in loop spreading knife ❶ aligns with the tip of thread trimming knife ❷

Fig.2
Aligning state of salient portion of loop spreading knife and thread trimming knife

2.5 to 3mm
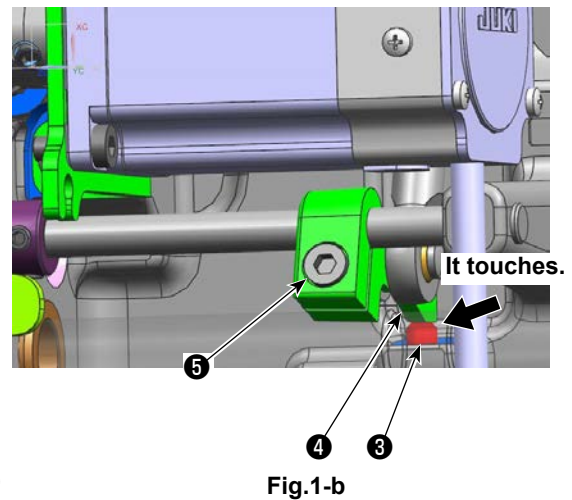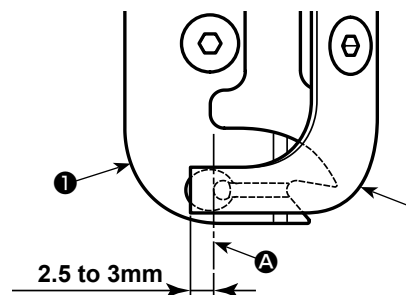
Fig.3
State of engagement of knife

Adjustment Procedure	Results of Improper Adjustment
4) Adjusting the knife unit **4)-1. For checking the knife unit** 1. Check to make sure that the power switch is in the OFF state. Remove the gauge (presser foot, throat plate and feed dog) from around the needle. 2. In the standby state of loop spreading knife ❶, the distance from center of needle Ⓐ to the tip of loop spreading knife ❶ is 5.5 to 6.5 mm. (H type: 5.0 to 6.0 mm)(Refer to Fig.1-a) 3. At the time of 2, the thread trimming drive arm ❹ gets contact with the screw ❸. When there is a gap, loosen the screw ❺ and make the thread trimming drive arm ❹ keep in contact with the screw ❸ to tighten the screw ❺. (Refer to the Fig. 1-b.) 4. The purpose of adjustment of the aligning position of loop spreading knife ❶ and thread trimming knife ❷ (far end of the hole in loop spreading knife ❶ and the tip of thread trimming knife ❷) is to align the aforementioned aligning position with center of needle Ⓐ. (Refer to Fig.2) * There is seldom an actual margin of adjustment because it is used for the creak of the Phillips -head screw. 5. The amount of engagement between loop spreading knife ❶ and thread trimming knife ❷ is 2.5 to 3 mm as measured from center of needle Ⓐ. (Refer to Fig.3)	○ Be aware that, if the distance between loop spreading knife ❶ and center of needle Ⓐ is reduced, thread loop is likely to interfere with loop spreading knife ❶. * Refer to "3.-(9)-4)-2. Adjustment of the knife unit" for how to adjust it. ○ Be aware that, if the aligning position of the loop spreading knife and the thread trimming knife does not align with center of needle Ⓐ, the length of thread remaining on the material after thread trimming will be longer. ○ Be aware that, if the amount of engagement between them is insufficient, faulty thread trimming can occur. Refer to "3.-(9)-4)-2. Adjustment of the knife unit" for how to adjust it. ○ The needle thread may be trimmed excessively short in the case thread such as filament thread which is likely to cause unstable thread loop formation is used or thread trimming is carried out at a position where there is no material. If the aforementioned phenomenon occurs, it should be corrected by carrying out the below-stated procedure. 1. Make the thread take-up spring stroke larger than the standard value. 2. Make the pitch for thread trimming during condensation stitch larger than the standard pitch. 3. Turn OFF the condensation stitch operation when carrying out thread trimming at a position where there is no material.

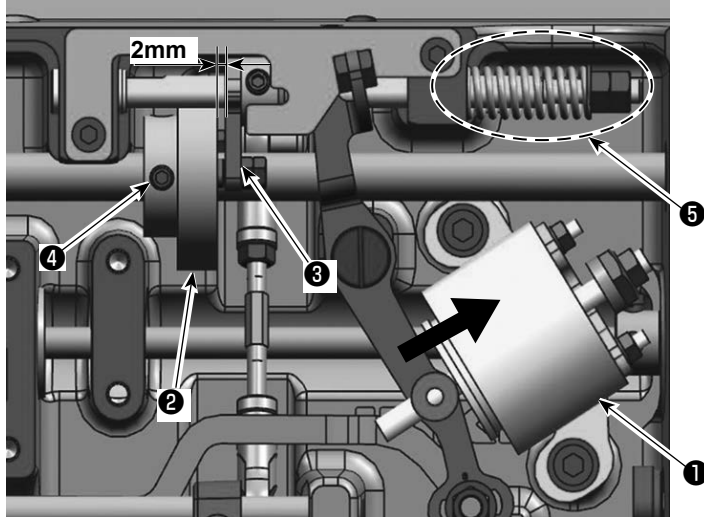# (10) Adjusting the thread trimming unit

⚠️ **WARNING :**
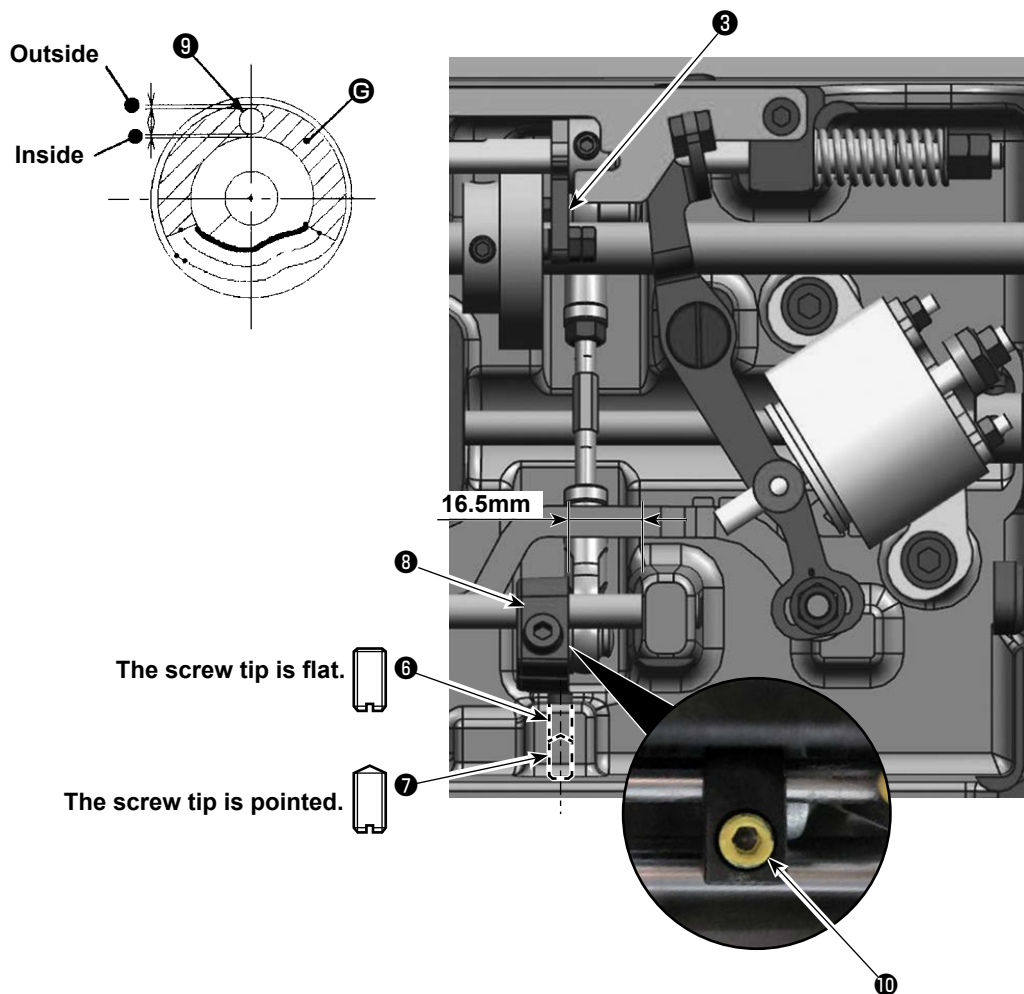**Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.**

Standard adjustment

4) Adjusting the knife unit

4)-2. Adjustment of the knife unit
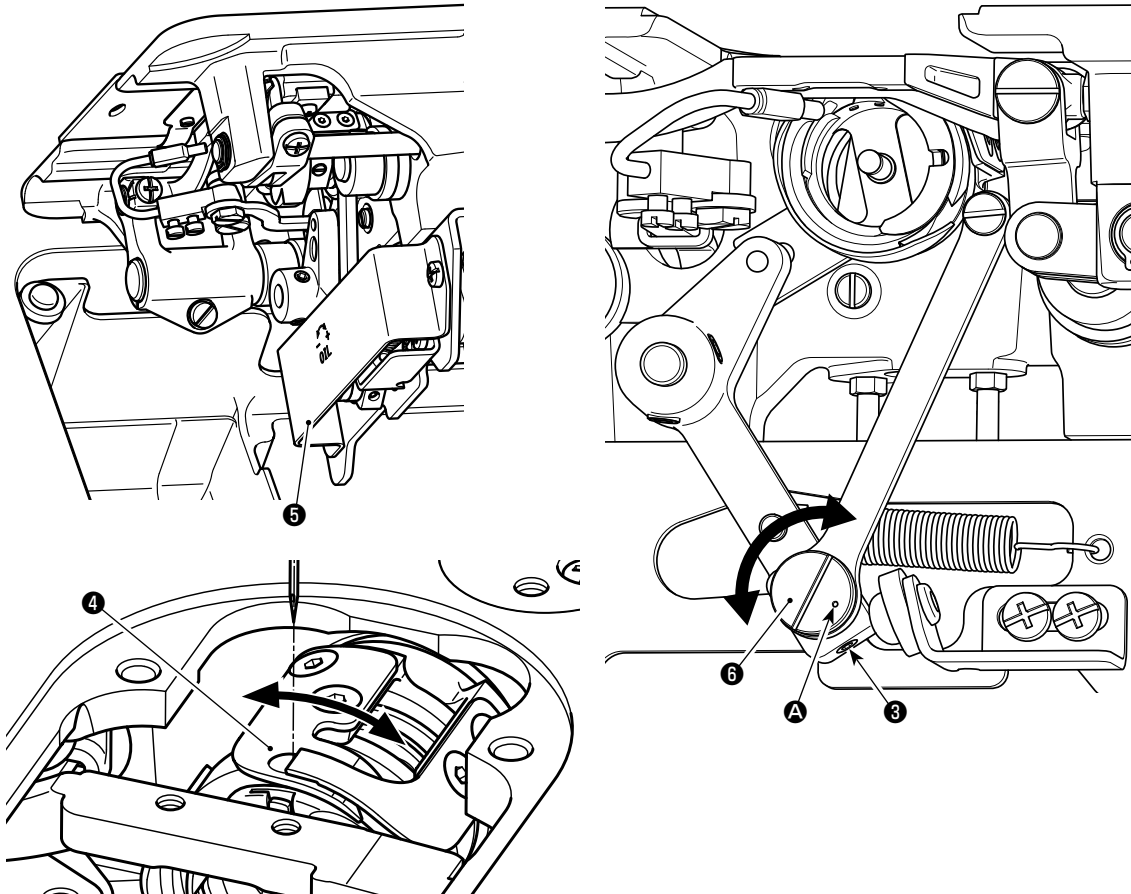
5) Adjustment of thread trimming speed
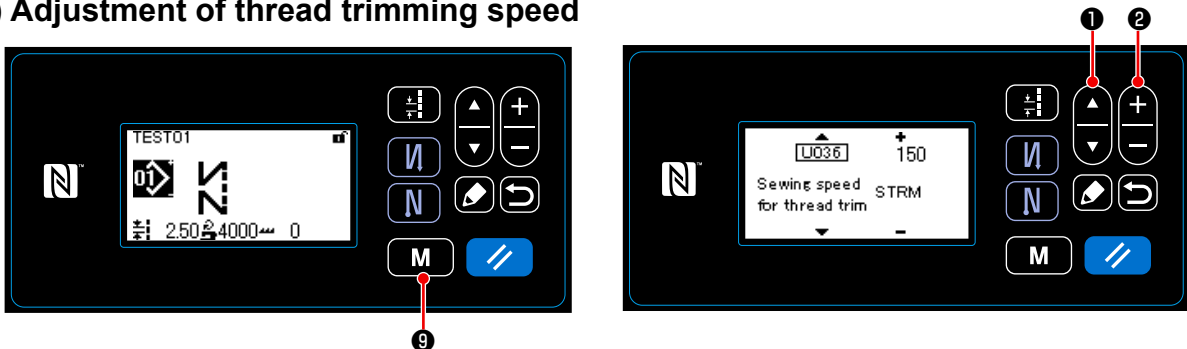
Memory switch

No.	Item	Setting range	Initial value		Unit
			S type	H type	
U036	**Speed during thread trimming** The maximum number of revolutions during thread trimming differs with the machine head.	150 to Max. of thread trimming	300 *	220	sti/min
		* The specification for Japan (EE specification) is set to 220sti/min			

Adjustment Procedure	Results of Improper Adjustment
4) Adjusting the knife unit **4)-2. Adjustment of the knife unit** 1. Check to make sure that the power switch is in the OFF state. Remove the gauge (presser foot, throat plate and feed dog) from around the needle. 2. Tilt the sewing machine head. 3. Remove protective cover ❺. 4. Loosen loop spreading knife eccentric pin setscrews ❸ (two pieces). Turn loop spreading knife eccentric pin ❻ with a flat-blade screwdriver to finely adjust the rotational-direction position of loop spreading knife ❹. 5. After the adjustment, tighten loop spreading knife eccentric pin setscrews ❸ (two pieces). 6. Attach protective cover ❺ back in place. **5) Adjustment of thread trimming speed** The thread trimming speed has been adjusted to 300 sti/min at the time of shipment. This means that the high-speed thread trimming has been selected. (In the case of H type model, thread trimming speed has been factory set to 220 sti/min.) Depending on the type of thread to be used, the thread trimming speed should be increased. On the other hand, in the case of using fragile thread (such as a high-count filament type thread or cotton thread), the thread trimming speed should be decreased to reduce damage to the thread. Thread trimming speed should be adjusted when appropriate according to the sewing process. **[How to adjust]** 1. Press **M** ❾. 2. Press ▲ ▼ ❶ to align the cursor on "U036". Input a thread trimming speed with ➕ ➖ ❷.	○ Position of marker dot ❹ on loop spreading knife eccentric pin ❻ should be adjusted only from the operator's side.

(10) Adjusting the thread trimming unit

⚠	**WARNING :** Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

Standard adjustment

6) Adjustment of rise of the second thread tension disc

0.5 to 1mm

Adjustment Procedure	Results of Improper Adjustment

6) Adjustment of rise of the second thread tension disc
6)-1. How to check the amount of rise of the second thread tension disc
   1. Set the thread take-up lever slightly in front of the upper dead point.
   2. Raise the presser.
   3. The standard amount of the rise of the second thread tension disc ❹ is 0.5 to 1mm when the picker ❶ is pushed toward the bobbin case side.
 	
6)-2. How to adjust the amount of rise of the second thread tension disc
  <When increasing the amount of rise>
  Loosen the thread tension release wire fixing screw ❷ and move the thread tension release wire ❸ to the right.
  <When decreasing the amount of rise>
  Loosen the thread tension release wire fixing screw ❷ and move the thread tension release wire ❸ to the left.
(Caution) After adjustments, tighten the thread tension release wire fixing screw ❷ assuredly.
	○ If the amount of rise of the second thread tension disc ❹ is too small, the needle thread length becomes short at the time of thread trimming and this can be a cause of thread entanglement and needle thread castoff errors at the beginning of sewing.

(10) Adjusting the thread trimming unit

⚠	**WARNING :** Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

Standard adjustment

7) Adjustment of the picker
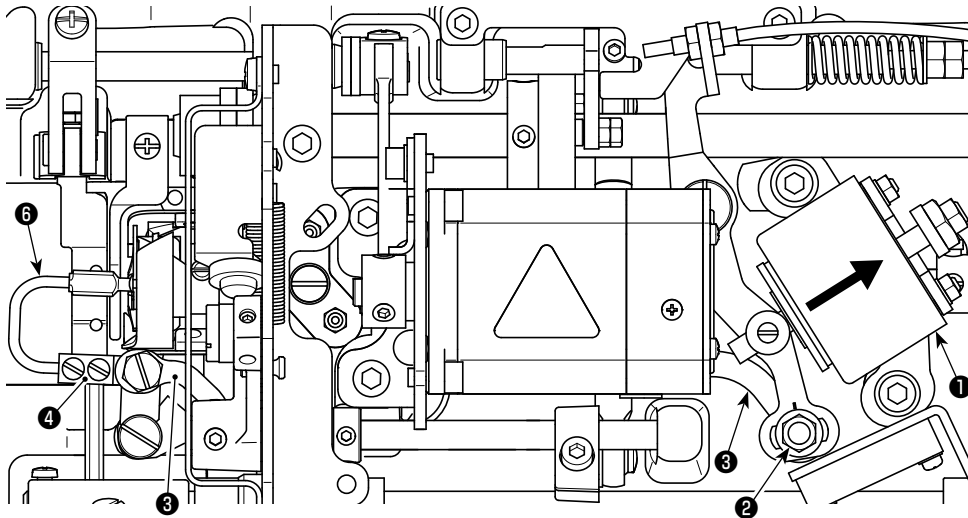
Once the standard adjustment is carried out correctly, there is a slot-shape space in picker link ❸ to allow the picker to make a necessary returning action (damper function).

(0.5 mm)

To be in contact

0 to 0.3 mm
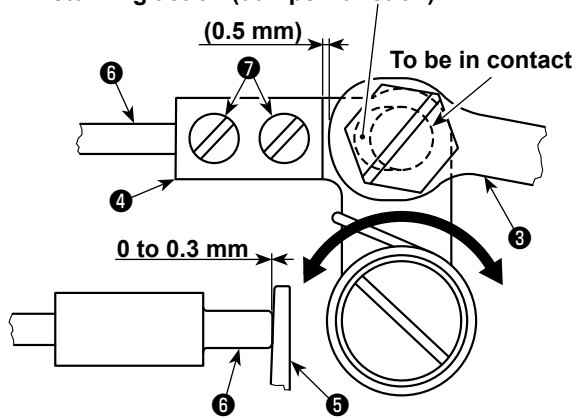
In the standard adjustment state of the picker, the center of picker ❻ is almost aligned with the center of U-shape section of bobbin case.

Adjustment Procedure	Results of Improper Adjustment
7) Adjustment of the picker The picker device is used in order to stabilize idling of the bobbin at the time of thread trimming. **(Caution) When it is necessary to check how the picker ❻ is adjusted, install the bobbin case and bobbin ❺ in the hook first, then check the picker.** **7)-1. Checking the standard adjustment** 1. Check to make sure that the power switch is in the "OFF" state. Tilt the sewing machine. 2. Bring thread trimming solenoid ❶ in the pull-in state by hand. 3. In this state, the standard adjustment value of the clearance between picker link ❸ and picker arm ❹ is 0.5 mm. At this time, a clearance of 0 to 0.3 mm is provided between bobbin ❺ and picker ❻. **7)-2. Standard adjustment** 1. Loosen picker link pin nut ❷ (9 mm). Carry out adjustment by moving picker link ❸ to the right and left. 2. After the adjustment, tighten picker link pin nut ❷. **7)-3. Standard adjustment (Adjustment at the tip position)** 1. Loosen picker setscrews ❼ (two pieces). Adjust the position of picker ❻. 2. After the adjustment, tighten picker setscrews ❼ (two pieces).	○ If there is no clearance between bobbin ❺ and the tip of picker ❻, picker ❻ strongly press bobbin ❺. As a result, the bobbin fails to supply a required length of bobbin thread at the time of thread trimming. In this case, the bobbin thread is likely to be trimmed short and thread slip-off at the beginning of sewing is likely to occur. ○ If there is an excessively large clearance between bobbin ❺ and the tip of picker ❻, thread required for thread trimming may slip off the tip of picker and the length of needle thread remaining at the needle tip after thread trimming will be short. In addition, bobbin ❺ is likely to idle frequently at the time of thread trimming causing problems at the beginning of sewing.

(10) Adjusting the thread trimming unit

⚠	**WARNING :** **Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.**

Standard adjustment

8) Adjustment of the driven part stopper

0.3mm

❸ ❶ ❷

❸ ❷ ❸

❶ ❹

1mm

| Adjustment Procedure	Results of Improper Adjustment
8) Adjustment of the driven part stopper The driven part stopper ❷ is a safety device so that interference is prevented between the needle and the moving knife even though the roller comes off the thread trimming cam when any unexpected problem (such as a service interruption) occurs. 1. In the state that the thread trimming device is not in action, adjust two driven part stopper setscrews ❸ so that the gap length becomes 0.3mm between the notch ❶ of the cam's driven part and the cam's driven part stopper ❷. 2. Adjust two driven part stopper setscrews ❸ so that the gap length becomes 1mm between the notch ❶ of the cam's driven part and the cam's driven part stopper ❷ when the thread trimming solenoid ❹ is moved in the direction of the arrow.	

(10) Adjusting the thread trimming unit

> **⚠ WARNING :**
> **Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.**

Standard adjustment

9) Replacement of the knife unit
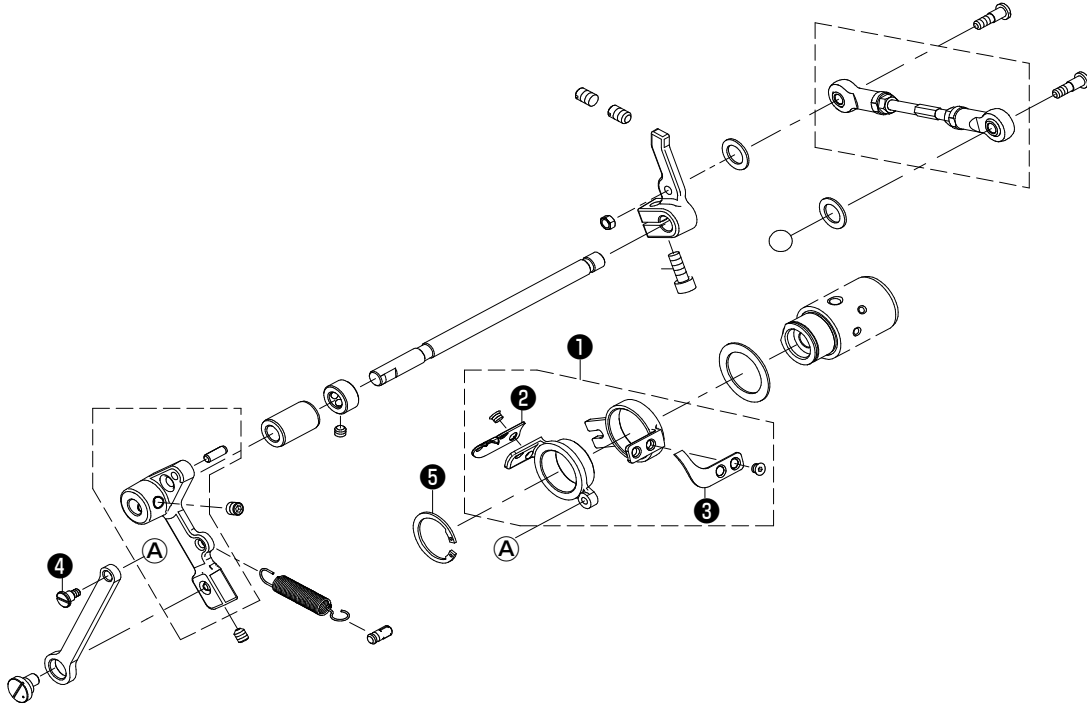
	Knife unit ❶ Part No.	Handling device knife ❷ Part No.	Thread trimmer knife ❸ Part No.
S type	40172485	40172487	40172486
H type	40184950	40172487	40184951

10) Installed length of the thread trimmer connector bar (asm.)

H type : 102±0.2mm（S type : 99.7±0.2mm）

（H type : Reference value = 40mm）
（S type : Reference value = 37.7mm）

	Connecting rod (asm.) Part No.	Connecting rod (asm.) dimension
S type	40174398	99.7±0.2mm
H type	40174323	102±0.2mm

Adjustment Procedure	Results of Improper Adjustment
9) Replacement of the knife unit **[Method of replacement]** 1. Let the sewing machine fall down. 2. Remove the needle, hook, and the inner hook presser. 3. Remove the moving knife link stepped screw ❹. 　* Apply the LOCKTITE 243 on a screw at the time of recombination. 4. Remove the C ring ❺. 5. Remove the female unit ❶ from the metal.	
10) Installed length of the thread trimmer connector bar (asm.) 1. Install two rod ends ❽ so that they cross each other at right angles. Then, fix then with the nuts ❼. 2. In order to avoid loosening by mistake at the time of shipment, "white paint" is applied to the nuts ❼. 3. Loosen the nuts ❼ when removing the thread trimmer connector bar (asm.) (40174323：H type, 40174398：S type) without drawing out the lower shaft. When the nuts are loosened, the respective subsidiary parts are disassembled and the thread trimmer connector bar can be taken out. 4. After disassembly, reassemble the parts so that the standard adjusting values can be secured.	○If the two rod ends ❽ are not crossed at right angles, the obtained torque is the value for thread trimming. ○If the center-to-center distance (99.7±0.2mm：S type, 102±0.2mm：H type) deviates from the standard value, the initial position of the moving knife is changed and this can be a cause of thread trimming failure.

(10) Adjusting the thread trimming unit

> **WARNING :**
> Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

Standard adjustment

11) Protrusion of the thread trimming shaft and stopper position

Adjustment Procedure	Results of Improper Adjustment
11) Protrusion of the thread trimming shaft and stopper position 1. When the thread trimmer solenoid is pulled, the amount of protrusion is 1mm to 2mm between the tip ❾ of the thread trimming shaft ❿ and the end plane of the bed. **(Caution) Confirm that a clearance is secured between the cam follower piece ❼ and the end plane of the thread trimming cam ❸ to 2mm. (Refer to 3.-(9)-1).)**	○ If the amount of protrusion is too small, the action sound of the thread trimmer becomes large. ○ If the amount of protrusion is too large, the amount of picker action becomes small and the lost motion of bobbin may occur. (If the amount of protrusion is too excessive, short cutting of the needle thread may arise. This is because the needle thread is disengaged from the picker.)

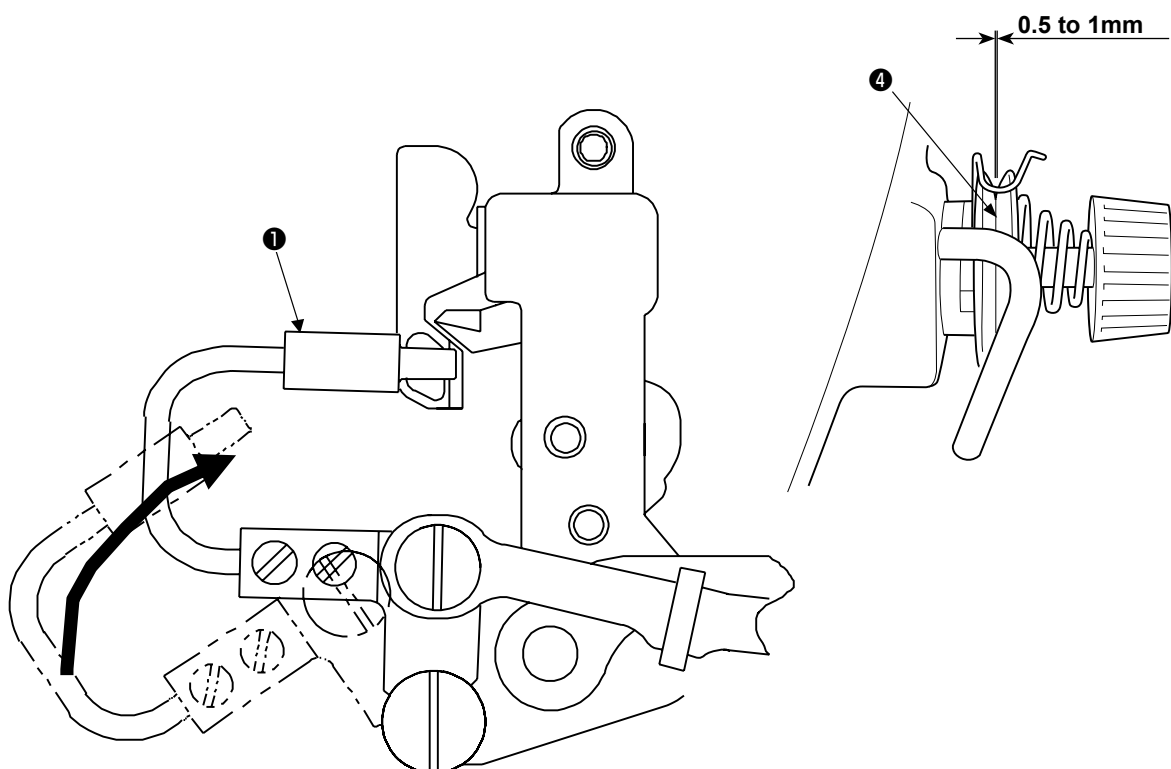## (10) Adjusting the thread trimming unit

> ⚠️ **WARNING :**
> Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

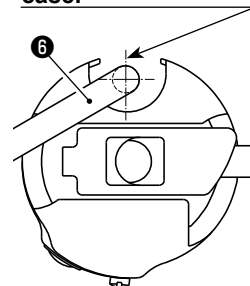| Adjustment Procedure	Results of Improper Adjustment
12) How to shorter-thread remaining thread trimming at the end of sewing In the case of carrying out shorter-thread remaining thread trimming (when condensation is placed in ON), set values of the condensation pitch and the number of stitches are adjustable. Adjust those set values appropriately according to the item to be sewn. **12)-1. DDL-9000C-S** **[Setting the number of condensation stitches]** 1. Select "U280" by pressing ▲▼ ❶. Press ✎ ❺. 2. Press ➕➖ ❷ and enter the number of condensation stitches at the end of sewing for shorter-thread remaining thread trimming. (Factory-set value: 2) 3. Confirm your entry by pressing ↩ ❻. Then, the sewing screen is displayed. **[Setting the condensation pitch]** 1. Select "U281" by pressing ▲▼ ❶. Press ✎ ❺. 2. Press ➕➖ ❷ and enter the condensation pitch at the end of sewing for shorter-thread remaining thread trimming. (Factory-set value: S type 0.3, H type 0.5) 3. Confirm your entry by pressing ↩ ❻. Then, the sewing screen is displayed.	○ If the condensation pitch is decreased, the phenomenon where the needle enters the same needle entry point will likely to occur, resulting in unstable formation of thread loop at the time of thread trimming. As a result, thread trimming fault is likely to occur. It is therefore necessary to adjust the condensation pitch carefully. (The needle entry phenomenon differs according to the material to be sewn and the needle count, the pitch should be increased if thread trimming failure occurs.)
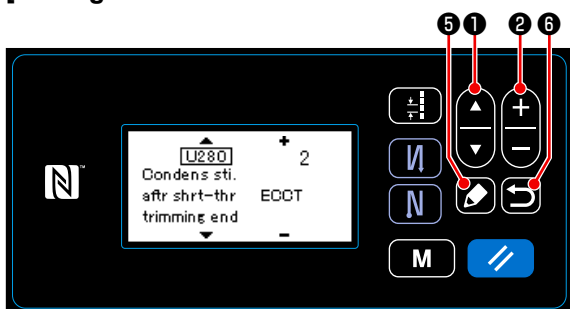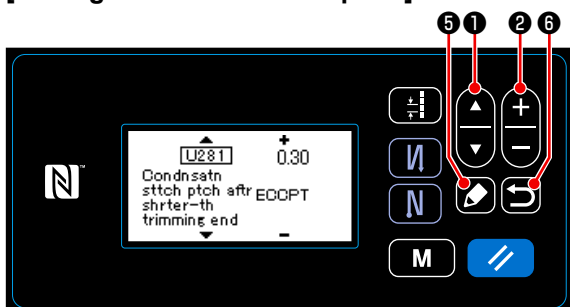
Adjustment Procedure	Results of Improper Adjustment

12)-2. DDL-9000C-F

[Setting the number of condensation stitches]

❶
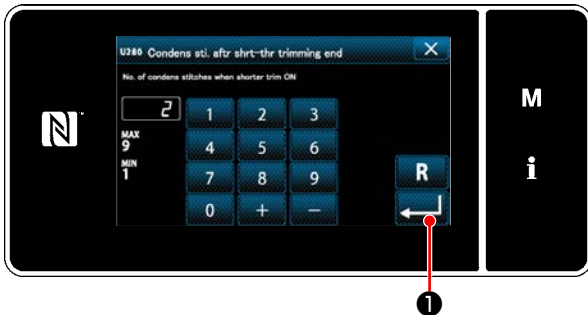
1. Select "U280 Number of end condensation stitches for shorter-thread remaining thread trimming" from "1. Display all".
2. Set the number of stitches.
   (Factory-set value: 2)
3. Confirm your entry by pressing ❶. Then, the sewing screen is displayed.

[Setting the condensation pitch]

❶
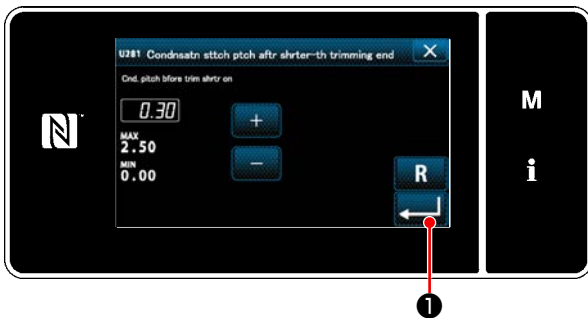
1. Select "U281 End condensation pitch for shorter-thread remaining thread trimming" from "1. Display all".
2. Set the number of stitches.
   (Factory-set value S type 0.3; H type 0.5)
3. Confirm your entry by pressing ❶. Then, the sewing screen is displayed.

○ If the condensation pitch is decreased, the phenomenon where the needle enters the same needle entry point will likely to occur, resulting in unstable formation of thread loop at the time of thread trimming. As a result, thread trimming fault is likely to occur. It is therefore necessary to adjust the condensation pitch carefully. (The needle entry phenomenon differs according to the material to be sewn and the needle count, the pitch should be increased if thread trimming failure occurs.)

(11) Adjustment of thrust values of an upper shaft

⚠ **WARNING :**
Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

Standard adjustment

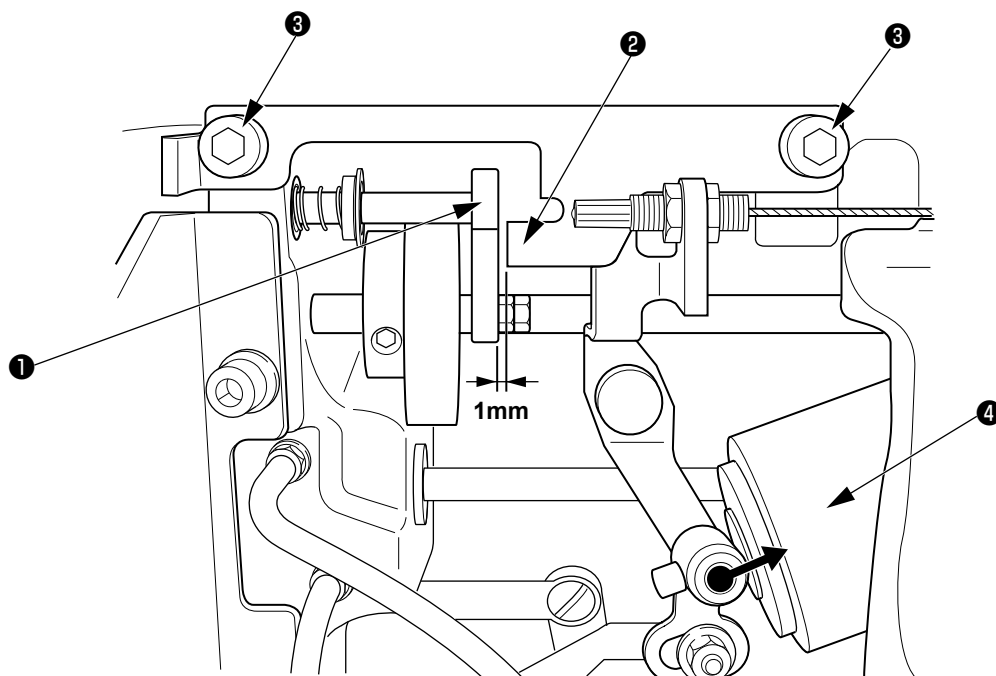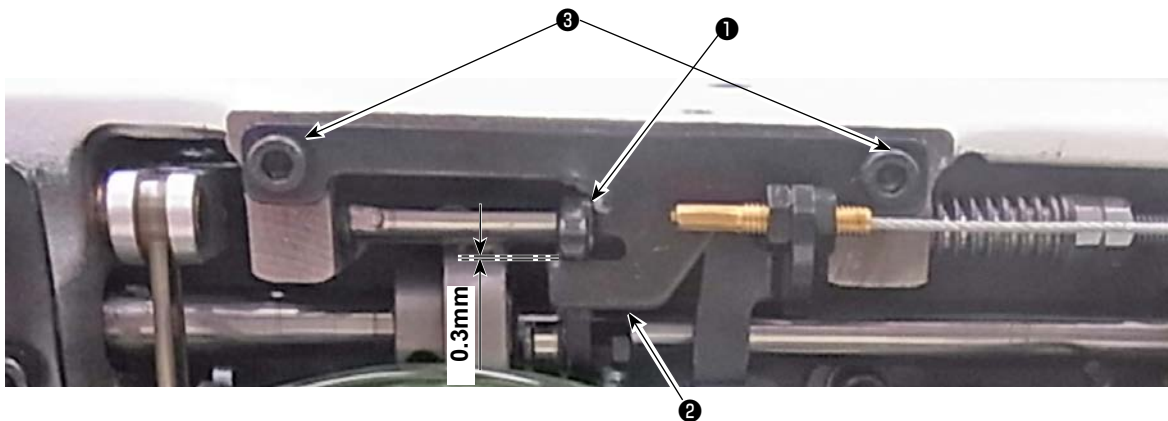| Adjustment Procedure	Results of Improper Adjustment
1. After everything has been installed for the upper shaft, remove rattles from bearings (pressurizing). (1) Assemble all parts for the upper shaft. (2) Loosen two setscrews ❶ of the upper sprocket. (3) Enter the tip of a tapered minus screwdriver into the coupling ❷ slot until it stops. (Part A) * If the screwdriver tip is not inserted fully in the slot, the flange part of the upper sprocket is deformed or destroyed. (4) Lightly turn the screwdriver to move the coupling ❷ toward B in the direction of the arrow. * The torque to turn the screwdriver is 7kgf•cm. (Light turning is sufficient.) If it is turned too strong, the flange part of the upper sprocket is deformed or destroyed. (5) Tighten the setscrew ❶ of the upper sprocket. (6) Turn the upper shaft by 90 degress In regard to the second screw, follow the same procedures as (3) to (5) above.	

(12) Adjustment of external parts

> **WARNING :**
> Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

Standard adjustment

1) Adjustment of the pulley cover

2) Clearance of the hand wheel

1mm

| Adjustment Procedure	Results of Improper Adjustment
1) Adjustment of the pulley cover [Method of replacement] 1. Remove the hand wheel ❶. 2. Remove four pulley cover setscrews ❷. **(Cautions)1. At the time of re-assembly, the pulley cover ❸** **should be kept raised.** **2. At the time of re-assembly, handle the pulley** **cover ❸ carefully not to pinch cables and others.**	
2) Clearance of the hand wheel 1. The clearance is 1mm between the hand wheel ❶ and the pulley cover ❸. For adjustments, loosen the hand wheel setscrews ❹ (2 pcs.)	○ If a clearance is too much, this can be a possible cause of entanglement of the thread from the thread stand.

(12) Adjustment of external parts

> **WARNING :**
> Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.
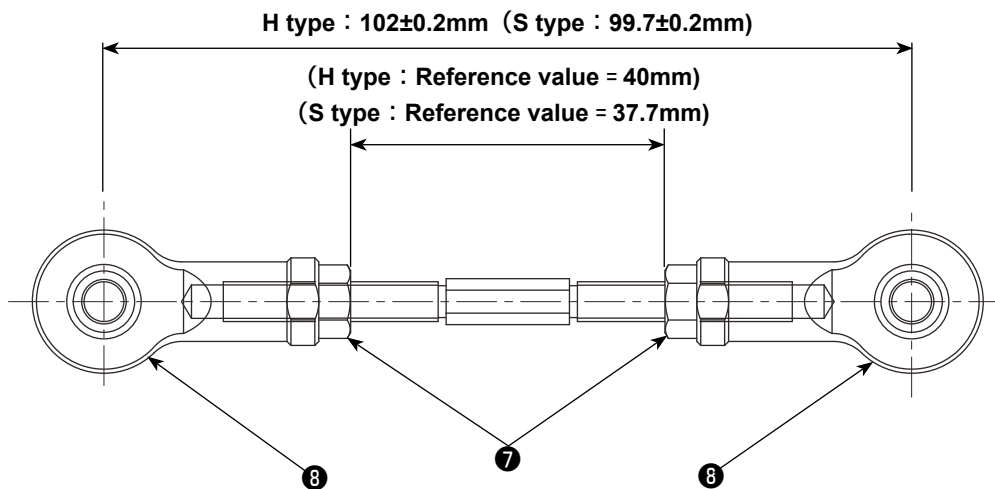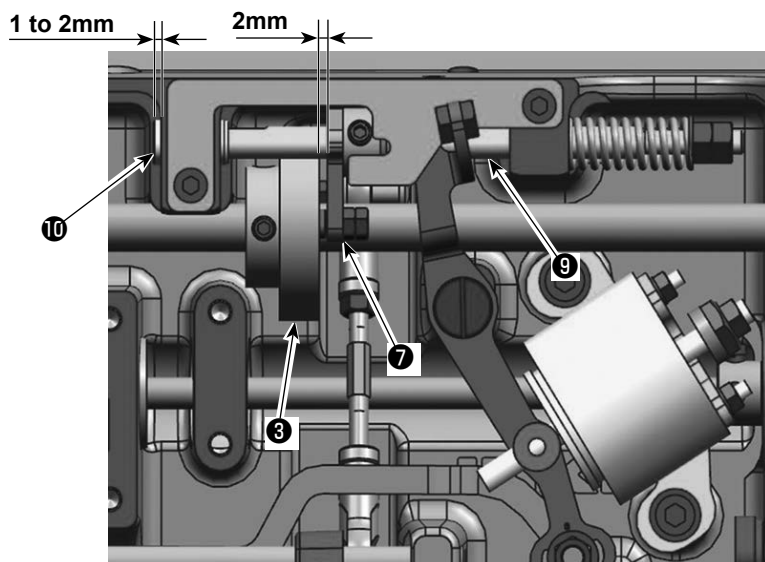
Standard adjustment

3) Adjustment of the bobbin winder unit

Operator side
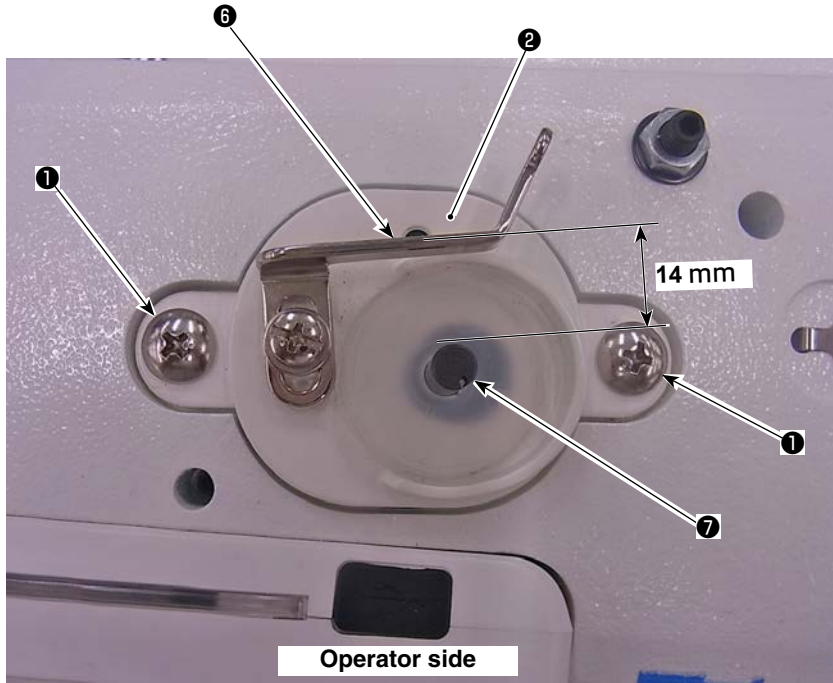
In the state of OFF, the standard distance of the bobbin winder lever ❻ is 14mm from the bobbin winder shaft ❼ .

Adjustment Procedure	Results of Improper Adjustment
3) Adjustment of the bobbin winder unit In regard to adjustments of the bobbin winder amount and winder imbalance, refer to the relevant instruction manual. In this manual, descriptions are provided in regard to problems of winder shaft revolution errors. **3)-1. Replacement of the bobbin friction wheel** 1. Remove two bobbin winder unit setscrews ❶. 2. Take out the bobbin winder unit ❷. 3. Confirm if there is extreme wearing out in the rubber section of the bobbin winder friction wheel ❸. If the amount of wearing out seems to be too much, replace the worn-out section with a new one. | Bobbin winder friction wheel ❸	| |---|---|
Part No.	26261503 | **3)-2. Adjustment of the bobbin winder driver wheel position** 1. Remove the window plate (including the AK unit) from the rear side of the arm. 2. Loosen the bobbin winder driver wheel setscrews ❺ (2 pcs.) of the bobbin winder driver wheel ❹. 3. Mount the bobbin winder unit ❷ on the arm. 4. Turn ON the bobbin winder lever ❻ and let the head ❶ coincide with the bobbin winder lever ❻. At that time, the head ❶ of the bobbin winder unit setscrew shall be made to coincide with the bobbin winder lever ❻. 5. Lightly make the bobbin winder driver wheel ❹ lightly contact with the bobbin winder friction wheel ❸ and tighten two bobbin winder driver wheel setscrews ❺. **(Cautions) 1.When the bobbin winder lever ❻ is turned OFF, turn the hand wheel by hand and confirm that the bobbin winder shaft ❼ does not turn.** **2. Never apply grease or such an oily component to the rubber section of the bobbin winder friction wheel ❸. Otherwise, this can be a cause of friction.**	○ If the hand wheel is turned in the state of OFF, this can be a cause of abnormal abrasion.

4. Operation panel

(1) Names and functions of the panel keys
1) DDL-9000C-S

	Switch/display	Description
❶	Item selection key	This key is used for changing over the screen display or for displaying the edit screen. Refer to the explanation of each screen for details.
❷	Data change key	This key is used for changing the currently-displayed pattern number or for changing the numeric value shown on the counter. Refer to the explanation of each screen for details.
❸	Reverse feed stitching (at start) key	This key is used for selecting whether or not the reverse feed stitching is performed at the beginning of sewing. The reverse feed stitching (at start) edit screen is displayed by keeping this key held pressed for one second.
❹	Reverse feed stitching (at end) key	This key is used for selecting whether or not the reverse feed stitching is performed at the end of sewing. The reverse feed stitching (at end) edit screen is displayed by keeping this key held pressed for one second.
❺	Edit key	This key is used for displaying the edit screen, item section screen or details screen.
❻	Return key	This key is used for returning the screen to the previous one.
❼	Pitch key	This key is used for displaying the pitch entry screen.
❽	Reset key	This key is used for resetting the error, for resetting the counter and for initial setting of the feed. The operation panel is placed in the simple-lock state by keeping this key held pressed for one second. The panel is released from the lock state by operating this key in the same manner again. Refer to "8-7-1. Simple lock" in instruction manual.
❾	Mode key	This key is used for displaying the mode screen. · The user level is displayed by operating this key in the normal manner. · The serviceperson level 1 is displayed by keeping the key held pressed for three seconds. · The serviceperson level 2 is displayed by keeping the key held pressed for six seconds.
❿	Liquid crystal display section	Each screen is displayed on this LCD.

* Confirmation of data

Change in the pattern number is confirmed at the moment Data change key ❷ is pressed.

For the setting items of the memory switch and pattern number, the setting is changed by pressing Data change key ❷ and confirmed by pressing Return key ❻.

The new setting of data of a setting item is also confirmed by selecting other setting item with Item selection key ❶ after making a change.

2) DDL-9000C-F

	Switch/display	Description
❶	Mode key	This switch is used for displaying the menu screen. · The user level is displayed by operating this key in the normal manner. · The serviceperson level 1 is displayed by keeping the key held pressed for three seconds. · The serviceperson level 2 is displayed by keeping the key held pressed for six seconds.
❷	Information key	This switch is used for displaying the information screen. · The user level is displayed by operating this key in the normal manner. · The serviceperson level is displayed by keeping the key held pressed for three seconds.
❸	Touch panel section	Each screen will be displayed. Press the key in the screen to operate the panel.

* Confirmation of data

To change the pattern number, press Sewing pattern No. button ❹.

Select the sewing pattern you want to use. Then, press ☒ to confirm your choice.

For the setting items of the Memory switch or sewing pattern, change the target data and press ⏎ to confirm the change.

After the setting data on the number of stitches of reverse-feed stitching or the number of stitches of multi-layer stitching has been changed, the changed setting data is confirmed by pressing ☒.

(2) To use the functions of the serviceperson level
1) DDL-9000C-S

By pressing **M** ❾ button on the sewing screen for three seconds to display a mode screen for the servisperson level 1 or for six seconds to display a mode screen for the servisperson level 2 respectively. The function that can be used differs depending on the levels as follows.

01	Memory switch	
02	Counter setting	
03	Maintenance	
04	Cycle pattern management	
05	Custom pitch management	**It can be used at the operator level.**
06	Condensation custom management	
07	Ver. display	
08	Contrast setting	
09	Communication	**It can be used at the serviceperson level 1.**
10	USB format	
11	Check program	
12	Optional input/output settings	**It can be used at the serviceperson level 2.**
13	Data initialization	
14	Function restrict setting	

2) DDL-9000C-F

By pressing **M** ❶ on the sewing screen for three seconds to display a mode screen for the servisperson level 1 or for six seconds to display a mode screen for the servisperson level 2 respectively.

On the sewing screen for the switched level, press the **M** ❶ again to display the mode screen and press the **i** ❷ to display the information screen respectively.

The function that can be used differs depending on the levels as follows.

【**Mode screen**】

01	Memory switch	
02	Bobbin winding mode	
03	Counter setting	**It can be used at the operator level.**
04	Condensation custom management	
05	Custom pitch management	
06	Ver. display	
07	Time setting	
08	Check program	
09	Panel setting	**It can be used at the serviceperson level 1.**
10	Key customize setting	
11	At-hand switch setting	
12	Optional input/output settings	**It can be used at the serviceperson level 2.**
13	Data initialization	
14	Function restrict setting	

【**Information screen**】

01	Data communication	**It can be used at the operator level.**
02	Production control	
03	USB formatting	**It can be used at the serviceperson level.**

(3) External interface

1) USB

Sewing data, custom pitch data and condensation custom data can be copied on a commercially-available USB thumb drive.
Refer to "4-(4) Communication function" for details of how to copy the sewing data on a USB thumb drive.

① Position of the USB connector
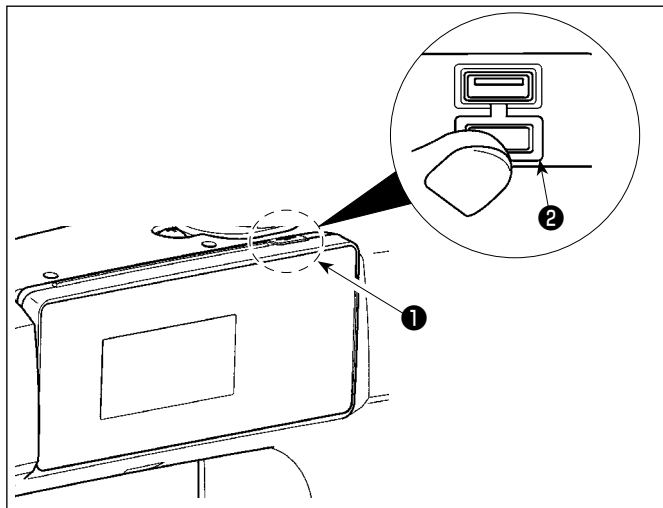
1. USB thumb drive insertion position
   The USB connector is provided on top ❶ of the operation panel.
   To use a USB thumb drive, remove connector cover ❷ and insert the USB thumb drive into the USB connector.
 * In the case a USB thumb drive is not used, the USB connector should be protected with connector cover ❷ without exceptions.
   If dust or the like enters the USB connector, a failure can be caused.

② Precautions to be taken when handling USB devices
 * Do not connect to the USB connection terminal other than the USB memory.
   It may cause failure.
 * Do not leave the USB device or USB cable connected to the USB port while the sewing machine is in operation. The machine vibration can damage the port section resulting in loss of data stored on the USB device or breakage of the USB device or sewing machine.
 * Do not insert/remove a USB device during reading a program or sewing data.
   It may cause data breakage or malfunction.
 * Never forcefully insert a USB thumb drive into the USB connector while carefully checking the orientation of the USB thumb drive. Forceful insertion of the USB thumb drive can cause failure.
 * JUKI does not compensate for loss of data stored on the USB device caused by using it with this sewing machine.
 * In principle, connect only one USB thumb drive to the operation panel. When two or more devices/media are connected/inserted, the machine will only recognize one of them. Refer to the USB specifications.
 * Do not turn the power OFF while the data on the USB flash drive is being accessed.

③ USB specifications
 * Conform to USB 1.1 standard
 * Applicable devices *1 _____ USB memory
 * Format supported _____ FAT 12, FAT 16, FAT 32
 * Applicable medium size __ 4.1MB ~ (2TB)
 * Consumption current _____ The rated consumption current of the applicable USB devices is 500 mA at the maximum.

*1: JUKI does not guarantee operation of all applicable devices. Some device may not operate due to a compatibility problem.

(4) Communication function

It is possible to enter the input and output of data using a USB memory.

Data transmitted and received differs depending on the levels of the mode screen for the DDL-9000C-S and on the levels of an information screen for the DDL-9000C-F as follows.

01 EPD Data transmission / reception	
02 CC Data transmission / reception	**It can be used at the operator level.**
03 CP Data transmission / reception	
04 Memory switch data transmission / reception	
05 All sewing machine data transmission / reception	**It can be used at the serviceperson level 1.**
06 PANEL program rewriting	
07 SC soft rewriting	

1) List of communication data formats

Data name	Picto-graph	Extension	Description of data
Sewing data	N○EPD	DDL00XXX.EPD (XXX:001 to 999)	Data format of sewing shapes and number of stitches created on the sewing machine. This format is specific to the DDL-9000C.
Custom pitch data	N○CP	VD00XXX.VDT (XXX:001 to 999)	It is the data of needle entry point created with PM-1, and the data format that can be operated in common between JUKI sewing machines.
Condensation custom data	N○CC	VD00XXX.VDT (XXX:001 to 999)	It is the data of needle entry point created with PM-1, and the data format that can be operated in common between JUKI sewing machines.
Memory switch data		DDL00 XXX .MSW (XXX:001 to 999)	Memory switch data
All sewing machine data	DATA	DDL00 XXX .MSP (XXX:001 to 999)	All data maintained by the sewing machine
Simple program data		DDL00 XXX .PRO (XXX:001 to 999)	Set contents of simple program No.1 to No.4 and optional input/output function
Panel program data		[DDL-9000C-S] SP RVL(6 digits) .HED SP RVL(6 digits) .P00 [DDL-9000C-F] GP RVL(6 digits) .HED GP RVL(6 digits) .P01 GP RVL(6 digits) .IXX (XX:01 ～ 99)	Panel program data A file differs depending on the models.
Main program data		MT RVL(6 digits) .HED MT RVL(6 digits).P01	Main program data

2) How to use the communication function (DDL-9000C-S)

① Selecting the communication function
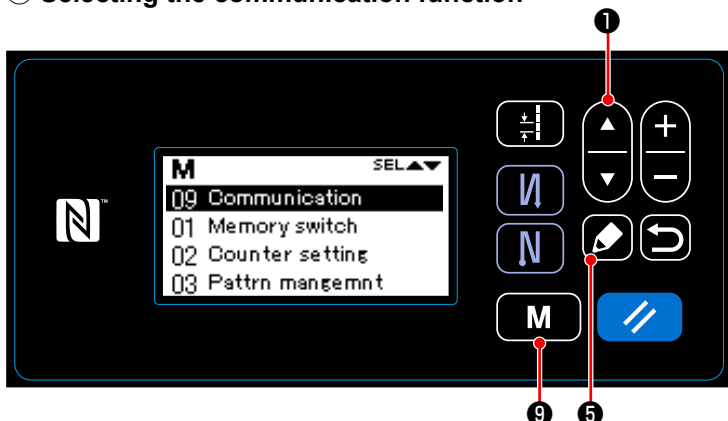
1. Press **M** ❾ on the sewing screen to display the mode screen.
2. Select "09 Communication" by pressing ▲▼❶. Then, press ✎❺ to display the communication data/direction selection screen.

② Selecting the communication data and communication direction
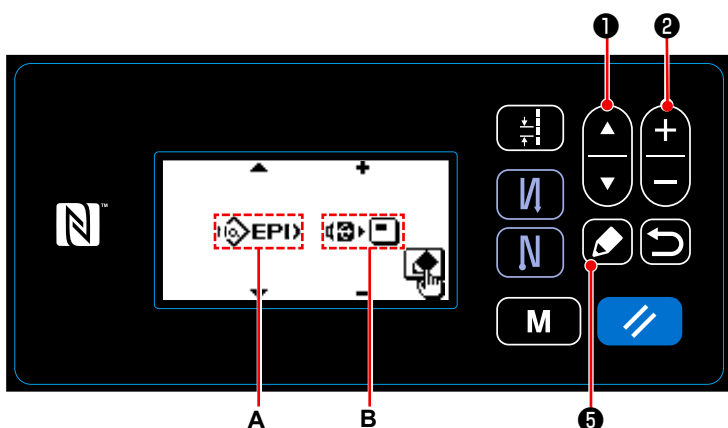
1. Select the communication data **A** by pressing ▲▼❶. (Refer to "4.-(3)-1) List of communication data formats".)
2. Select the communication data **B** by pressing ➕➖❷.

   Communication data and direction that can be selected are as fellows.

Display	Communication direction
▢▸💾	Data stored on the operation panel is written to the USB thumb drive.
💾▸▢	Data stored on the USB thumb drive is written to the operation panel. (If you have selected a program data, you can select only this direction.)

3. Press ✎❺ Data stored on the USB thumb drive is written to the operation panel.

③ Selecting the target data number
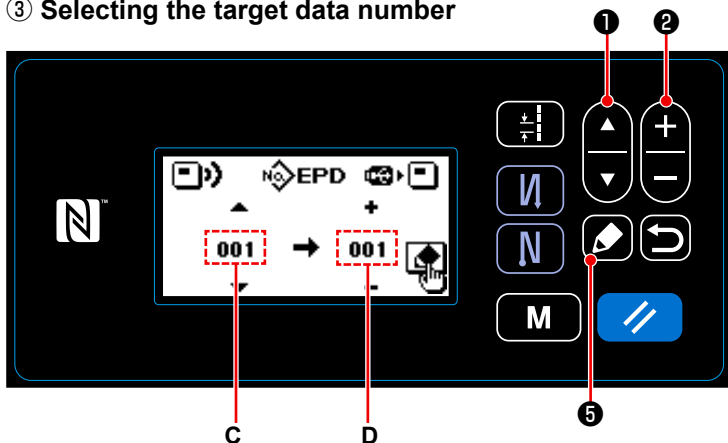
1. Select the source data No. **C** by pressing ▲▼❶.
2. Select the destination data number **D** by pressing ➕➖❷.
3. Press ✎❺ to display the during-communication screen and write the data. After the completion of writing, the current screen returns to the communication data number selection screen.

(When communication data is other than the program data,)
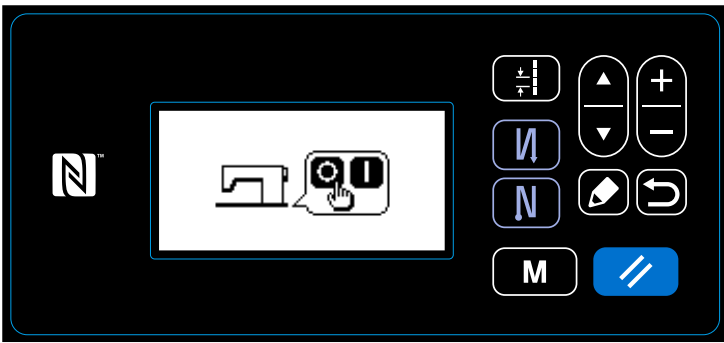
1. While data is being written, the screen of such a situation is displayed.
2. After writing of data is completed, the current screen returns to the selection screen of communication data No.
* When the screen giving you instructions to turn off the sewing machine has been displayed after completion of such a writing of data, turn off the sewing machine.

(When communication data is the program data,)

DDL-9000C
01.01.01

0%   030%   100%
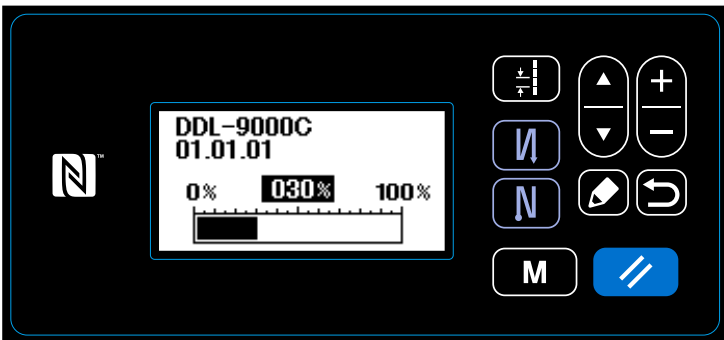
1. While a program is being written, the screen of such a situation is displayed.
2. After such a writing of a program is completed, the screen giving you instructions to turn off the sewing machine is displayed. Turn off then machine.
3. When you turn on the sewing machine again, the written program is executed.

3) How to use the communication function (DDL-9000C-F)

① **Display the data communication list screen.**

1. Press **i** ❶ on sewing screen.
   The "information screen" is displayed.

❶

Information list

1. Data communication
2. Production control
3. USB formatting

2. Select "1. Data communication" on the "information screen".
   The "data communication list screen" is displayed.

3)-1. When communication data is other than program data

② Selecting the data format used for communication

1. Data communication
   1. EPD Data transmission/reception
   2. CC Data transmission/reception
   3. CP Data transmission/reception
   4. Memory switch data transmission/reception
   5. All sewing machine data transmission/reception
   6. PANEL program rewriting

1. Select the transmitting/receiving data format and press the selected data format button.
   For example, select "1. EPD data transmission/receipt".
   The "data direction selection screen" is displayed.

③ Selecting the communication direction

Data direction selection
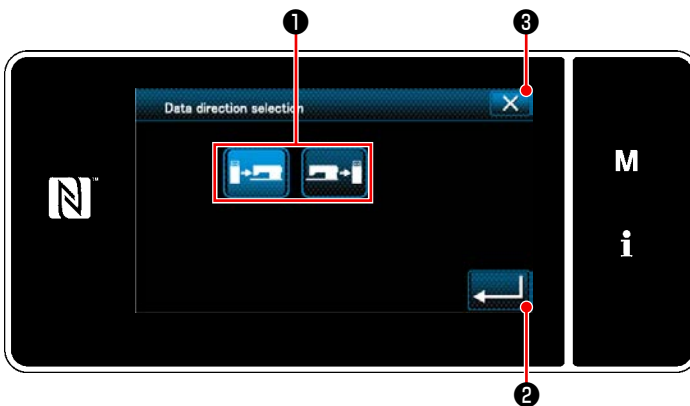
1. Select the communication direction. Press button ❶ to put the communication direction in the selected state.

   Press [⏎] ❷ to confirm the setting.
   The "data transmission/receipt preparation screen" is displayed.
   Cancel the operation with [✕] ❸. The current screen returns to the previous screen.

④ Setting the data number and starting communication

1. EPD Data transmission/reception

   EPD 001 ▶ EPD01
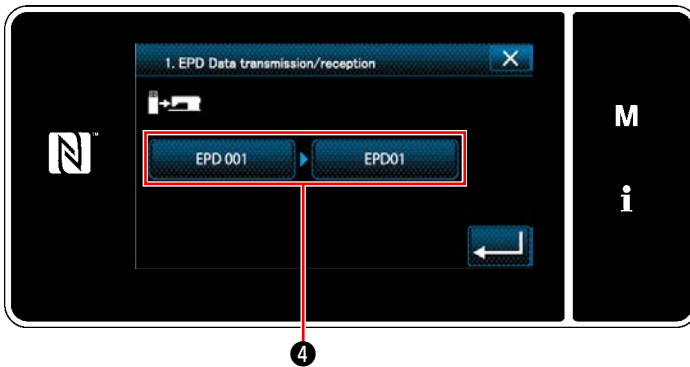
1. Press data number button ❹.
   The "data number input screen" is displayed.

Received data number input

MAX 99
MIN 1

1	2	3
4	5	6
7	8	9
0	+	−
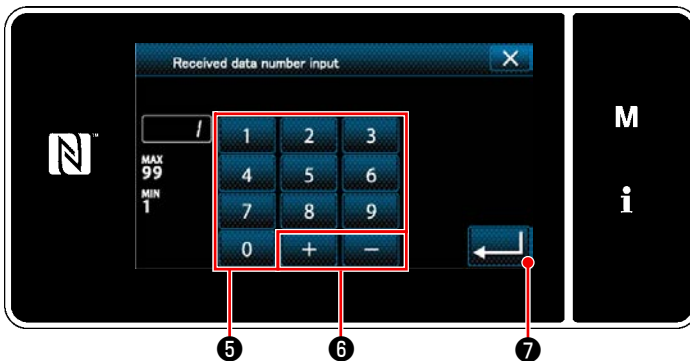
2. Enter the source/destination data number with numeric keypad ❺ and [+][−] ❻.

   Press [⏎] ❼ to confirm the setting.
   The "data transmission/receipt preparation screen" is displayed.

– 90 –
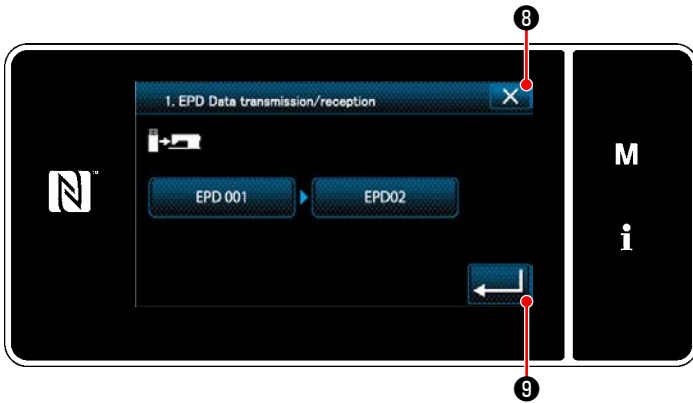
3. Confirm the numeric value with ![key]❾ to start communication.

"During communication" screen is displayed while the communication is being carried out.

Cancel the operation with ![X]❽. The current screen returns to the previous screen.

* If the destination number you have entered has already been registered, the "overwrite confirmation message" screen will be displayed.
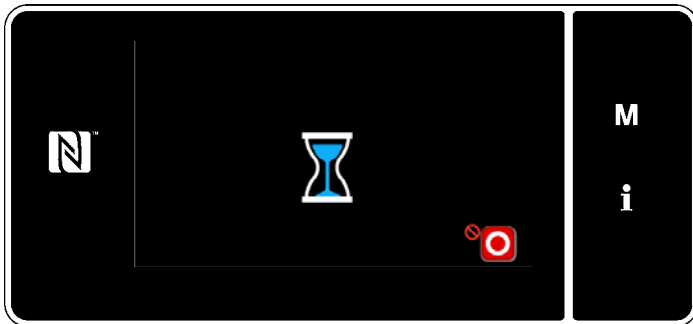
4. While a program is being written, the screen of such a situation is displayed.

3)-2. When communication data is program data

② **Select the program to rewrite, and start communication.**
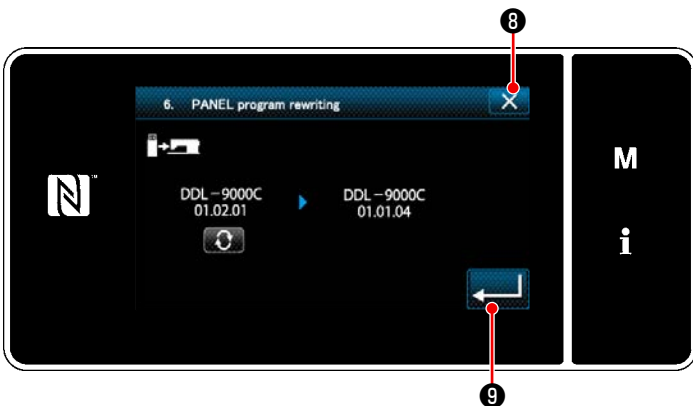
1. After selection of data to communicate, the program rewriting preparation screen is displayed.

   Press the program research key to change program data that is being saved in the USB memory.

2. After selection of the program data, press the ![key]❾ to start communication.

   Press the ![X]❽ to cancel operation, and the current screen returns to the last screen.
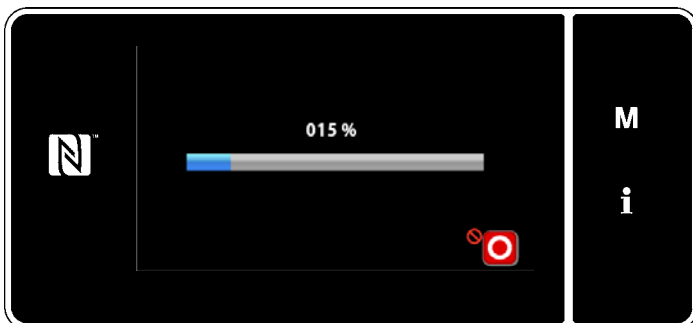
3. While a program is being written, the screen of such a situation is displayed. After such a writing of a program is completed, the screen giving you instructions to turn off the sewing machine is displayed. Turn off the machine.

4. When you turn on the sewing machine again, the written program is executed.

When you save data to a USB memory, save it according to the following folder structure. When data is not being saved to the right folder, it is not possible to write data in a panel from a USB memory.

※[…]: Folder name

```
Media ──┬─ [DDL9000C] ────────┬─ DDL00 XXX .EPD
        │                     ├─ DDL00 XXX .MSW
        │                     └─ DDL00 XXX .MSP
        │
        ├─ [VDATA] ───────────── VD00 XXX .VDT
        │
        └─ [prog] ─ [DDL9000C] ─┬─ [MT RVL (6 digits)] ─┬─ MT RVL(6 digits) .HED
                                │                        └─ MT RVL(6 digits) .P01
                                │
                                ├─ [SP RVL (6digits)] ──┬─ SP RVL(6 digits) .HED
                                │                        └─ SP RVL(6 digits) .P00
                                │
                                └─ [GP RVL (6digits)] ──┬─ GP RVL(6 digits) .HED
                                                         ├─ GP RVL(6 digits) .P01
                                                         └─ GP RVL(6 digits) .IXX
```
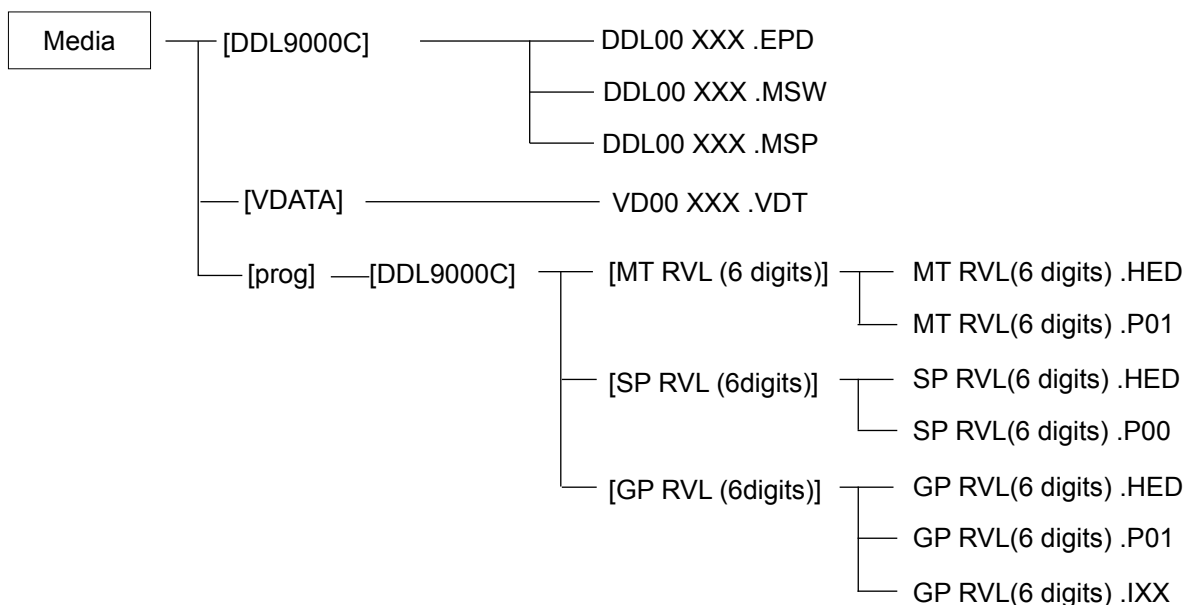
(5) Function of formatting the USB device

It is possible to format the USB device.

1) DDL-9000C-S
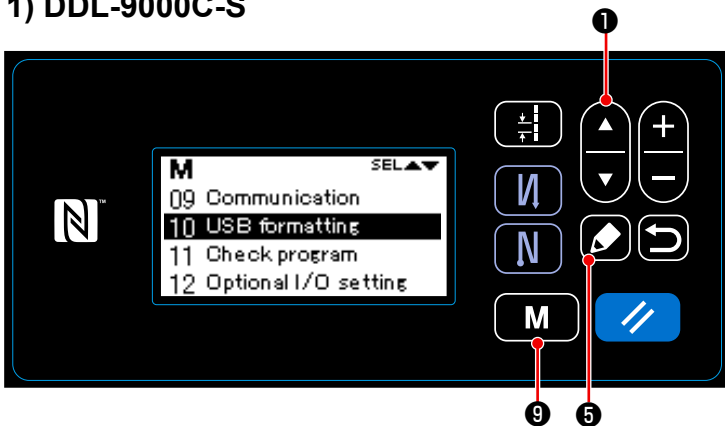
① **Select the function of formatting the USB device.**

1. When you hold down the **M** ❾ for three seconds on the sewing screen, a mode screen for the serviceperson 1 level is displayed.

2. After you press the ▲▼ ❶ and select "10 USB format," press the ✎ ❺ to display the selection screen of a check program.
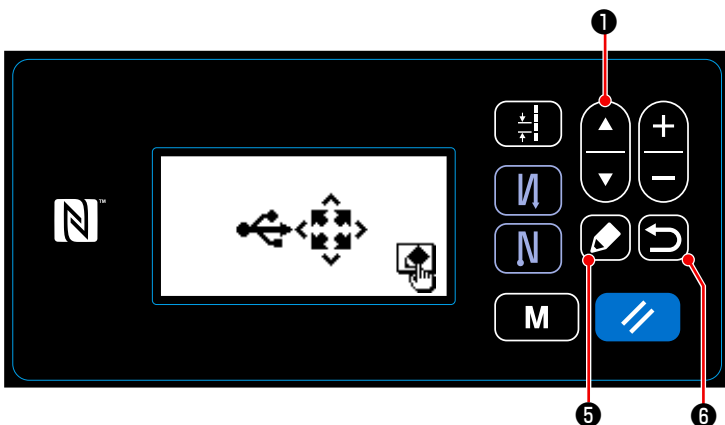
② **Execute or cancel the format of the USB device.**

1. When you press the ✎ ❺ button, the current screen returns to the mode screen after executing the format of the USB device.

2. When you press the ↩ ❻ button, the current screen returns to the mode screen after canceling the format of the USB device.

(Caution) Before you format the USB device, save necessary data stored in the device to other media. When you format the USB device, data stored in the device is erased.

2) DDL-9000C-F
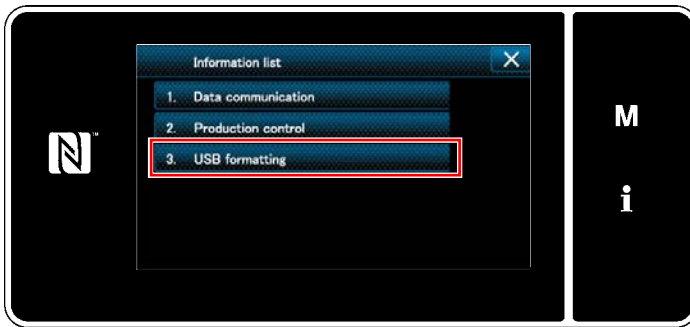
① **Display the USB format confirmation screen.**

Press the "3.USB format" key on the information screen for the serviceperson to display the USB format confirmation screen.
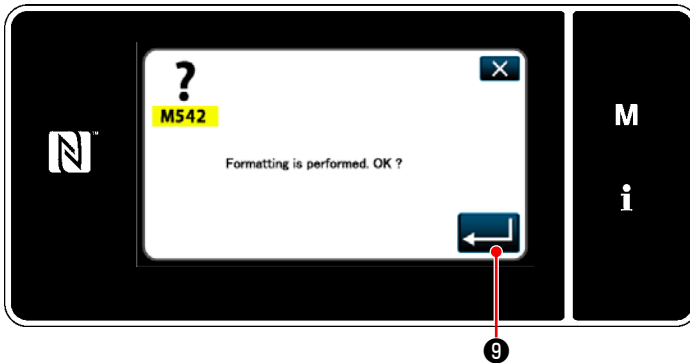
② **Execute or cancel formatting of the USB device.**

By pressing the [⏎]❾, the current screen returns to the information screen after execution of formatting of the USB device.

By pressing the Return key, the current screen returns to the information screen after cancelation of formatting of the USB device.

(Caution) Before you format the USB device, save necessary data stored in the device to other media. When you format the USB device, data stored in the device is erased.

(6) Check program

1) Function of the check program(DDL-9000C-S)

① **Display the selection screen of a check program.**
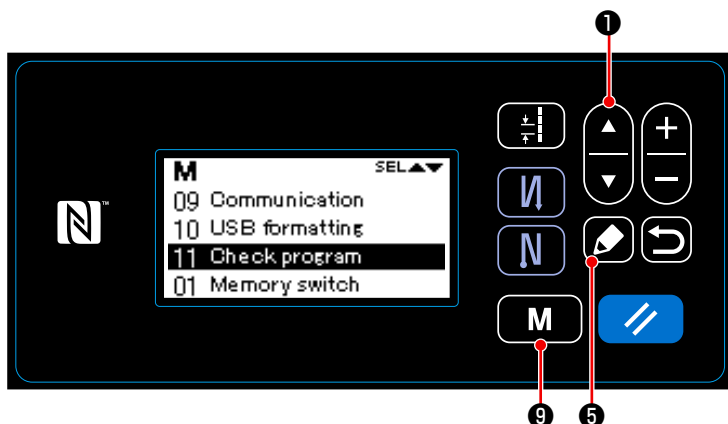
1. When you hold down the **M** ❾ for three seconds on the sewing screen, a mode screen for the serviceperson 1 level is displayed.

2. After you press the ▲ ▼ ❶ and select "11 Check program," press the ✎ ❺ to display the selection screen of a check program.

② **Select the function.**
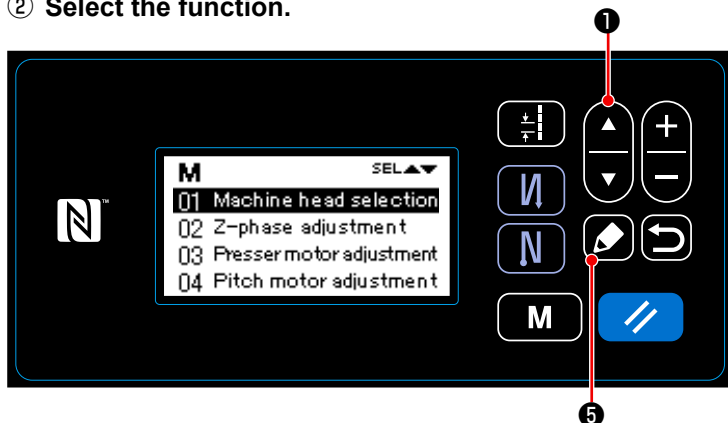
1. When you press the ✎ ❺ button after you press the ▲ ▼ ❶ and select the function, you can use the selected function.
The nine functions can be selected as follows.

No.	Content
01	Machine head selection It is possible to select the machine type of a sewing machine.
02	Z-phase adjustment
03	Presser lifter motor adjustment
04	Pitch motor adjustment
05	Feed driving motor adjustment
06	Vertical feed motor adjustment
08	Sensor check It is possible to check the state of a sensor (ON/OFF or numerical values).
09	Output check It is possible to check the state of output (ON/OFF).
10	Compensation of neutral point of the pedal sensor

2) Use a check program function (DDL-9000C-S)

① No.01 Selection of a machine head

(Caution) 1. Do not use this function.

       2. When you use this function, data on a memory switch is initialized. Be careful about it.
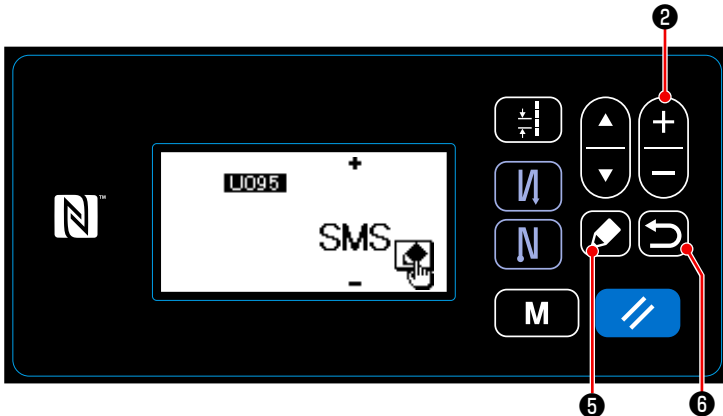
①-1. Press the [+] [−] ❷ to select the machine type.

The machine type that can be selected is as follows:

Machine type	Display	Machine type	Display
For Standard materials (For general export)	SMS	For Standard materials (For CE)	SMS CE
For heavy-weight materials (For general export)	SSH	For heavy-weight materials (For CE)	SSH CE

①-2. Execute or cancel a change in the machine types.

1. By pressing the ✐ ❺, the screen giving you instructions to turn off the sewing machine is displayed after execution of a change in the machine types. Turn off the machine.
2. After you turn on the sewing machine again, the machine starts as a selected machine type
3. By pressing the ↩ ❻, the current screen returns to the check program selection screen after cancellation of a change in the machine types.

②**No.02 Z-phase adjustmen**t .... Refer to "3.-(7)-1) Z-phase adjustment of a main motor"

③**No.03 Adjustment of a presser lifter motor** .... Refer to 1.DDL-9000C-S of "3.-(7)-2) Adjustment of the origin of a presser lifter motor"

④**No.04 Pitch motor adjustment** .... Refer to "3.-(7)-3) Pitch motor adjustment"

⑤**No.05 Vertical feed motor adjustment** .... Refer to "3.-(7)-4) Vertical feed motor adjustment"

⑥**No.06 Vertical feed link adjustment** .... Refer to "3.-(7)-5) Vertical feed link adjustment"

⑦ **No. 08 Sensor check**
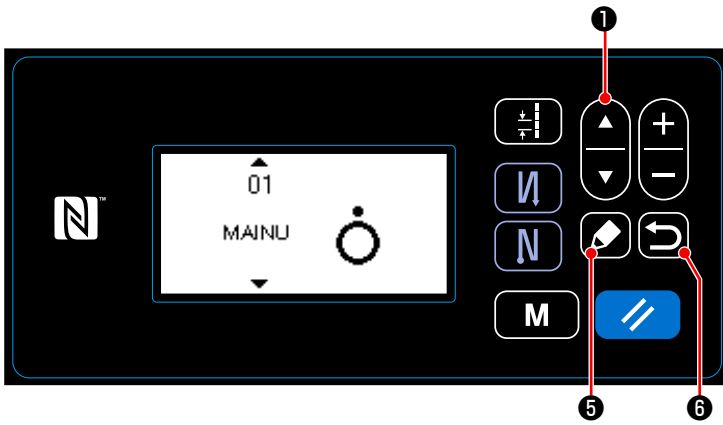
1. Select a sensor to check.

   When you press the ▲ ▼ ❶, you can select a sensor to check.
   The sensors that can be selected are as follows:

No.	Name of sensor	Display	Status	No.	Name of sensor	Display	Status
01	Main Shaft phase U	MAINU	The sensor is OFF ◒	11	Presser lifter encoder	FL ENC	Numerical value
02	Main Shaft phase V	MAINV		12	Pitch motor encoder	PITCH ENC	
03	Main Shaft phase W	MAINW		13	Vertical feed encoder	FEED ENC	
04	Main Shaft phase A	MAINA		14	Principal axis angle	MAIN ANG	
05	Main Shaft phase B	MAINB		15	Presser lifter sensor	FL SENS	
06	Main Shaft phase Z	MAINZ	The sensor is ON ⊙	16	Temperature sensor 1	TEMP1	
07	FLSW	FLSW		17	Temperature sensor 2	TEMP2	
08	HSSW	HSSW		18	24V power supply	24V SENS	
09	LSSW	LSSW		19	85V power supply	85V SENS	
10	TSW	TSW		20	Power supply	POWER SENS	

2. Complete a sensor check.

   When you press the ↩ ❻, the current screen returns to the selection screen of a check program.

* When the origin retrieval is not performed, the numerical value of No.11 to 14 is not displayed.

⑧ **No.09 Output check**
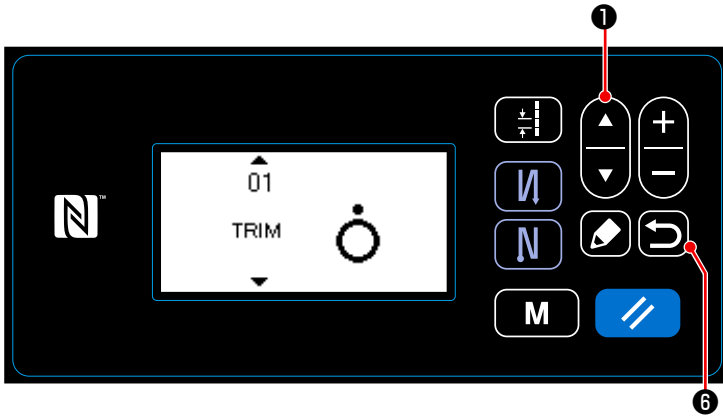
1. Select an output to check.

   When you press the ▲ ▼❶, you can select an output to check.

   The outputs that can be selected are as follows:

No.	Output name	Display	Status
01	Thread trimming solenoid	TRIM	Out put OFF ○ Out put ON ⊙
02	Thread presser	NIPPER	

* When the origin retrieval is not performed, a thread trimming solenoid does not operate.

2. Complete an output check.

   When you press the ⤺❻, the current screen returns to the selection screen of a check program.

* When a needle bar is not at the upper position, the thread trimming solenoid does not operate.

⑨ **No.10 Compensation of neutral point of the pedal sensor**
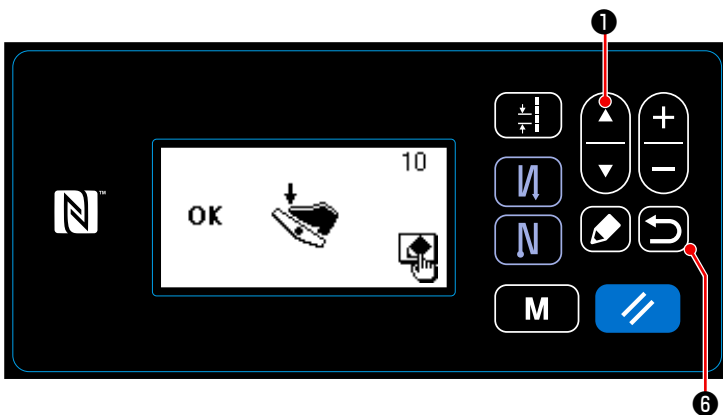
1. As shown in the figure on the left, when it is properly corrected, it will be displayed "OK" and the correction value. (Correction value of the left figure "10" is a reference value)

2. When you press the ✎❺ to confirm the correction value and return to the selection screen of a check program.

3. Complete a compensation of neutral point of the pedal sensor.

   When you press the ⤺❻, the current screen returns to the selection screen of a check program.

(Caution) At this time, the pedal sensor does not work properly if the pedal is depressed. Warning sound "blips" and the correct compensation value is not displayed.

3) Function of the check program(DDL-9000C-F)

① Display the sewing screen for the serviceperson mode.

❶

When you hold down the **M** ❶ for three seconds on the sewing screen, a mode screen for the serviceperson 1 level is displayed.

② Display the selection screen of a check program.

Press the "8.Check program" key to display the check program selection screen.

③ Select the function.
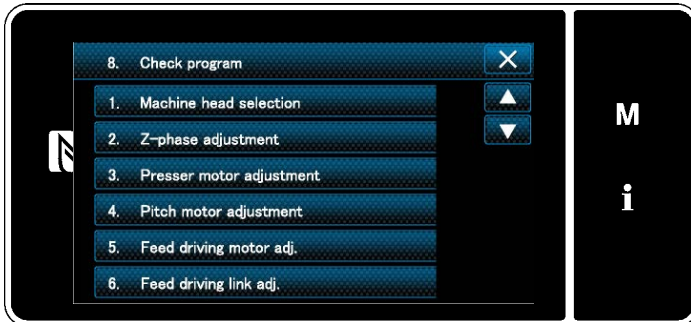
The ten functions can be selected as follows.

No.	Content
01	Machine head selection It is possible to select the machine type of a sewing machine.
02	Z-phase adjustment
03	Presser lifter motor adjustment
04	Pitch motor adjustment
05	Vertical feed motor adjustment
06	Vertical feed link adjustment
07	Active tension
08	Sensor check It is possible to check the state of a sensor (ON/OFF or numerical values).
09	Output check It is possible to check the state of output (ON/OFF).
10	Compensation of neutral point of the pedal sensor

4) Use a check program function (DDL-9000C-F)

① No.01 Selection of a machine head
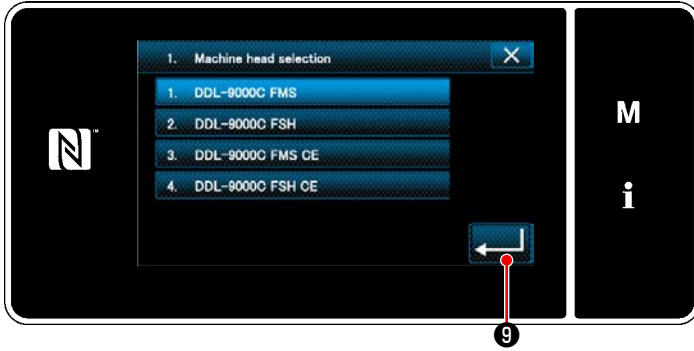
When you press the [⏎] ❾ in the machine head selection screen to select the model, it will be finalized model.

No.	Machine type	Display
01	For Standard materials (For general export)	DDL-9000C FMS
02	For heavy-weight materials (For general export)	DDL-9000C FMH
03	For Standard materials (For CE)	DDL-9000C FMS CE
04	For heavy-weight materials (For CE)	DDL-9000C FMH CE

② **No.02 Z-phase adjustmen**t .... Refer to "3.-(7)-1) Z-phase adjustment of a main motor"

③ **No.03 Adjustment of a presser lifter motor**............ Refer to 2.DDL-9000C-F of "3.-(7)-2) Adjustment of the origin of a presser lifter motor"

④ **No.04 Pitch motor adjustment**.............................. Refer to "3.-(7)-3) Pitch motor adjustment"

⑤ **No.05 Vertical feed motor adjustment** .... Refer to "3.-(7)-4) Vertical feed motor adjustment"

⑥ **No.06 Vertical feed link adjustment** .... Refer to "3.-(7)-5) Vertical feed link adjustment"

⑦ **No.07 Active tension**..Refer to "3.-(7)-7) Adjustment of active tension (only the DDL-9000C-F)"

⑧ **No.08 Sensor check**
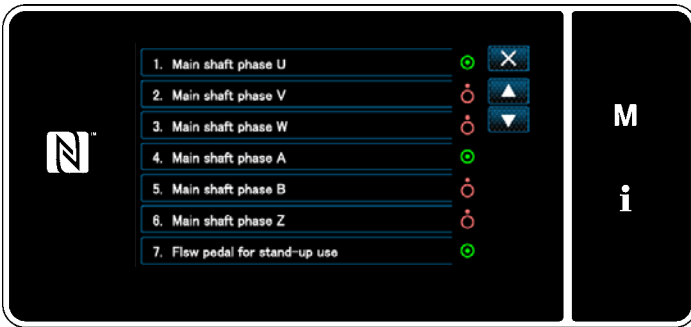
Press the sensor check key on the check program selection screen to display the sensor check screen.
It is possible to check a sensor that checks a program on the sensor check screen.
By pressing ☒, the current screen returns to the check program selection screen.

No.	Name of sensor	Status	No.	Name of sensor	Status
01	Main Shaft phase U	The sensor is OFF ⓞ The sensor is ON ⓞ	11	Presser lifter encoder	Numerical value
02	Main Shaft phase V		12	Pitch motor encoder	
03	Main Shaft phase W		13	Vertical feed encoder	
04	Main Shaft phase A		14	Principal axis angle	
05	Main Shaft phase B		15	Presser lifter sensor	
06	Main Shaft phase Z		16	Temperature sensor 1	
07	FLSW		17	Temperature sensor 2	
08	HSSW		18	24V power supply	
09	LSSW		19	85V power supply	
10	TSW		20	Power supply	

⑨ **No.09 Output check**

⑧**No.09 Output check**
Press the output check key on the check program selection screen to display the output check screen.
By pressing ☒, the current screen returns to the check program selection screen.

No.	Output name	Status
01	Thread trimming solenoid	Output OFF ⓞ Output ON ⓞ
02	Thread presser	

⑨ **No.10 Compensation of neutral point of the pedal sensor**

(7) Initialization of data

It is possible to initialize selected data (reset to factory default.).

1) DDL-9000C-S

① Select the function of initializing data.
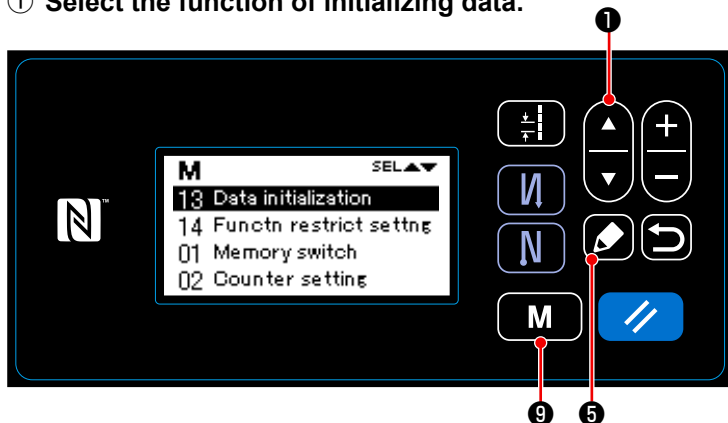
1. When you hold down the **M** ❾ for six seconds on the sewing screen, a mode screen of the serviceperson level 2 is displayed.

2. After you press the ▲ ▼ ❶ and select "13 Data initialization," press the 🖉 ❺ to display the selection screen of an initialization data.

② Select data to initialize.
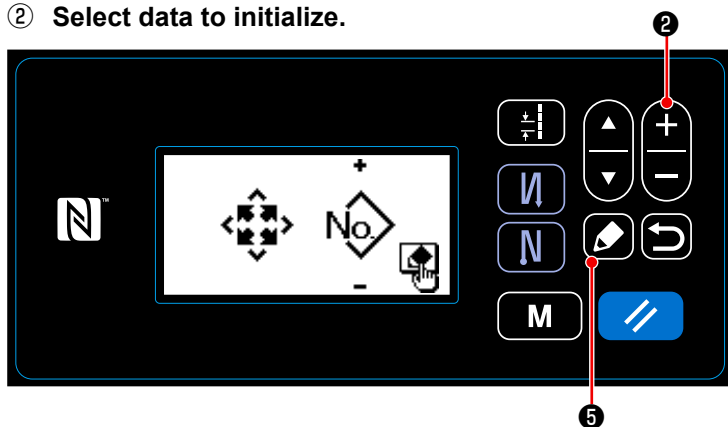
1. Press the ➕ ➖ ❷ to select data to initialize.

2. When you press the 🖉 ❺ after the above selection, the screen of message confirming the initialization is displayed.
   The data that can be selected is as follows:

Data	Display
Pattern data	No⟩
Memory switch data	𝍖
All sewing machine data	DATA

③ Execute or cancel initialization.
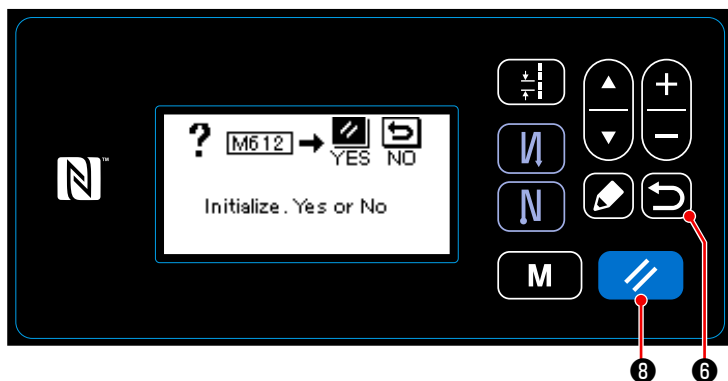
1. When you press the // ❽, initialization is executed.

   When you press the ⤺ ❻, initialization is canceled and the current screen returns to the mode screen.

④ Turn on the sewing machine again.
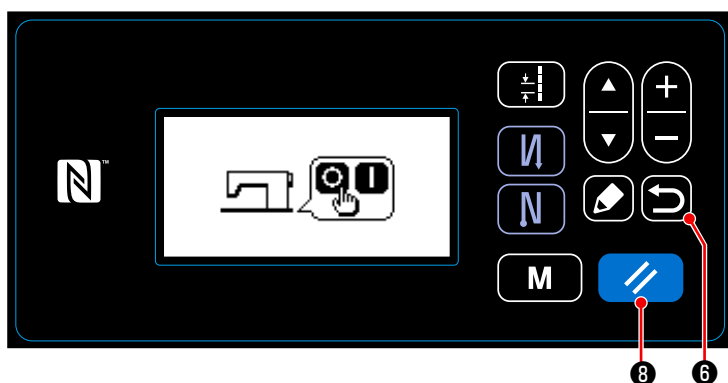
1. The screen for giving you instructions to turn off the sewing machine is displayed after you execute initialization, so turn off the sewing machine actually.

2. When you turn on the sewing machine again, the sewing machine starts up in a state where data has been initialized.

2) DDL-9000C-F

① Select the function of initializing data.
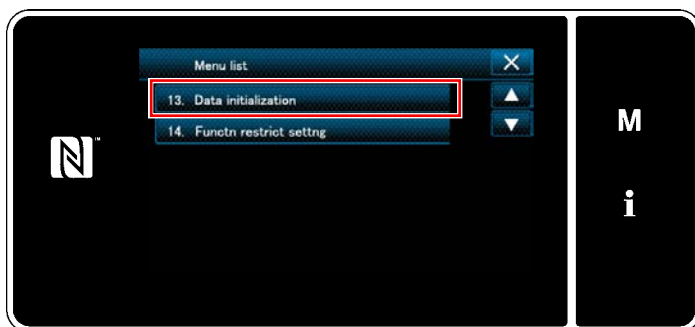
1. When you hold down the **M** for six seconds on the sewing screen, a mode screen of the serviceperson level 2 is displayed.
2. Press the "13 Data initialization" key to display the data initialization selection screen.

② Select data to initialize.
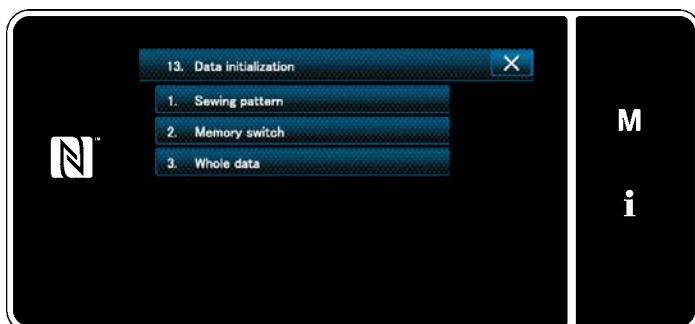
Select the data to initialize on the data initialization selection screen.
The data that can be selected is as follows.

No.	Data
1	Sewing pattern deta
2	Memory switch
3	Whole data

③ Execute or cancel initialization.
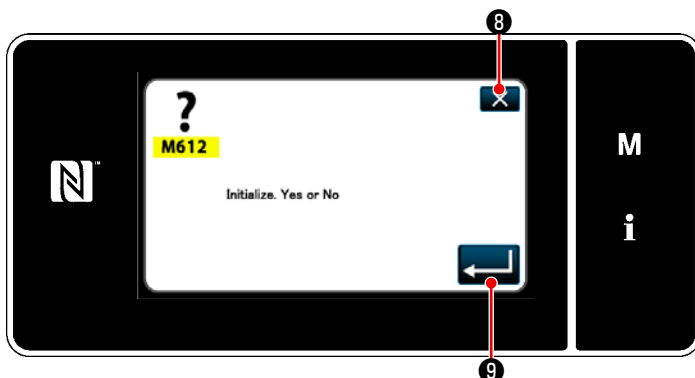
Press the **⑨** to display the data initialization confirmation screen.

Press the **⑨** on the data initialization confirmation screen to execute data initialization.

By pressing the **✕ ⑧**, the current screen returns to the data initialization selection screen.

④ Turn on the sewing machine again.

1. The screen for giving you instructions to turn off the sewing machine is displayed after you execute initialization, so turn off the sewing machine actually.
2. When you turn on the sewing machine again, the sewing machine starts up in a state where data has been initialized.

(8) Brightness adjustment of a panel

It is possible to change the brightness of display of a liquid crystal panel.
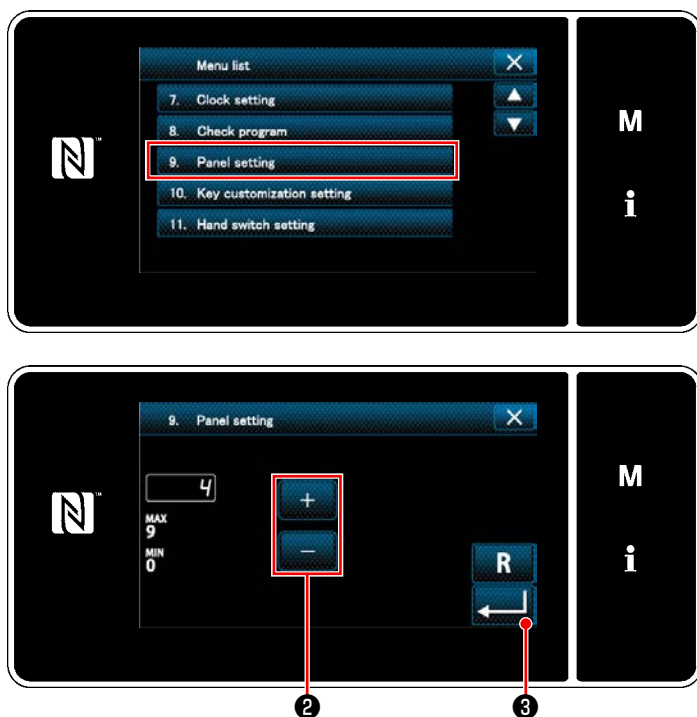
1. "09 Press the panel settings" key on the mode screen to display the panel settings screen.

2. Press the [+−]❷ to adjust the brightness of the panel.

3. By pressing the [↵]❸, the settings are fixed and the current screen returns to the mode screen.

(9) Hand switch setting

It is possible to assign an operation to touch-back switch.
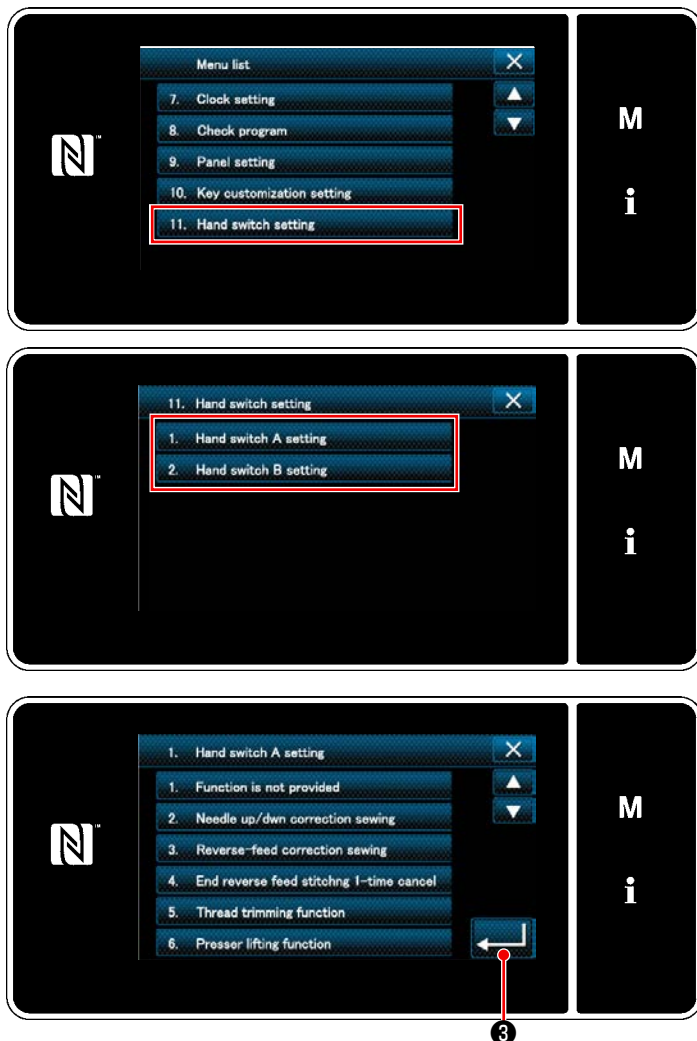
1. "11. Hand switch setting" key on the mode screen to display the hand switch setting screen.

2. Select the "1. Hand switch A setting" or "2. Hand switch B setting" to display the hand switch A setting screen or hand switch B setting screen.

3. Select the function item which is to be assigned to the switch.

4. By pressing the [↵]❸, the settings are fixed and the displaying the previous page.

(10) Key customization

It is possible to register a desired function to a key to customize the peel key arrays. Functions that can be assigned to panel keys are as described below.
The key to which no function is assigned is displayed in blank

1) Assignable data

\<Sewing screen (Operator mode)\>

\<Sewing screen (Maintenance personnel mode)\>

\<Sewing screen (Cycle mode)\>
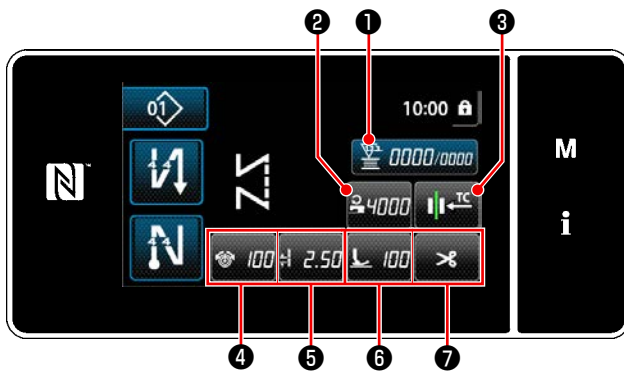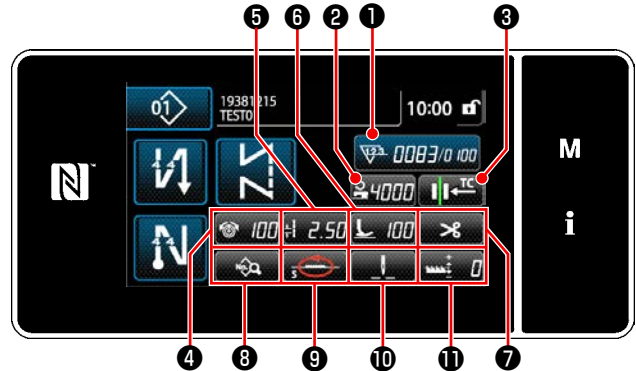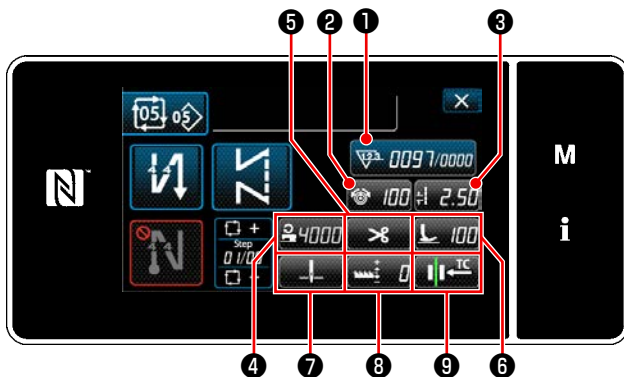
No.	Assignable data	Initial value		
		Operator mode	Maintenance personnel mode	Cycle mode
❶	Sewing pattern data Sewing pattern number Cycle pattern number Memory switch One-touch changeover Bobbin winding Counter Function is not provided	Counter	Counter	Counter
❷	Sewing pattern data	Sewing speed	Sewing speed	Thread tension
❸	Sewing pattern number	Thread presser	Thread presser	Sewing pitch
❹	Cycle pattern number	Thread tension	Thread tension	Sewing speed
❺	Memory switch	Sewing pitch	Sewing pitch	Thread trimming
❻	One-touch changeover	Presser foot pressure	Presser foot pressure	Presser foot pressure
❼	Bobbin winding	Thread trimming	Thread trimming	Stop position of needle bar
❽	Function is not provided		Sewing data list	Feed dog height
❾			Feed locus	Thread presser
❿			Stop position of needle bar	
⓫			Feed dog height	

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2) How to assign a function to a key

① Displaying the key customization mode list screen

1. Press **M** ❶.
   The "mode screen" is displayed.

2. By pressing the ▲▼ ⑮, select the "10. Key customization setting".
   The "key customization mode list screen" is displayed.

② Setting the key customization
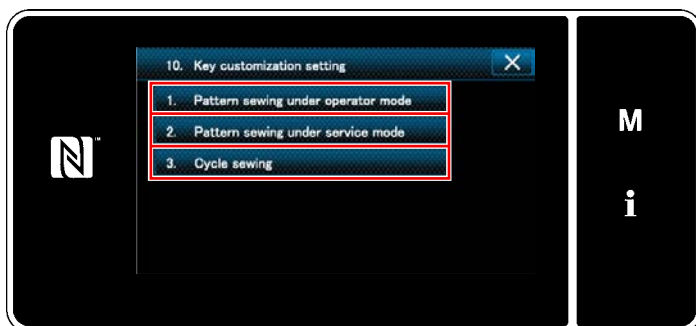
1. Select "1.Pattern sewing under the operator mode". Then, "key customization assignment screen (operator mode)" is displayed.
2. Select "2.Pattern sewing under the serviceperson mode". Then, "key customization assignment screen (Maintenance personnel mode)" is displayed.
3. Select "3.Cycle sewing". Then, "key customization assignment screen (Cycle mode)" is displayed.

③ **Selecting a function to be assigned**

<Key customization assignment screen(Operator mode)>
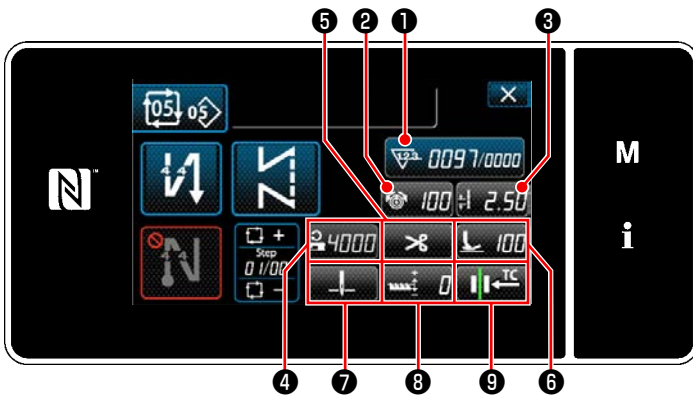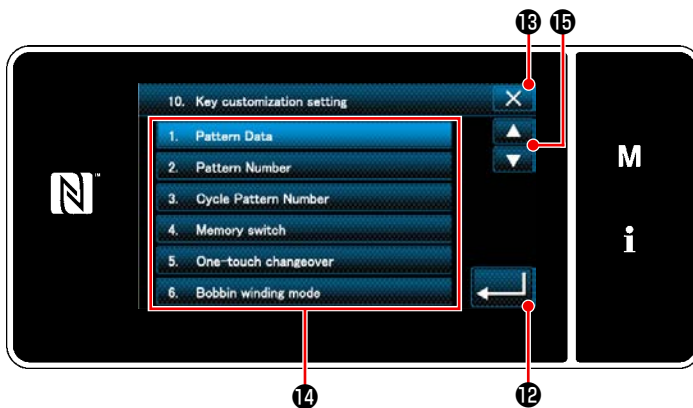
The key customization selection screen is displayed by pressing one of the ❷ to ❼ for the operator mode (❷ to ⓫ for the maintenance personnel mode, ❷ to ❾ for the cycle mode)

<Key customization assignment screen (Maintenance personnel mode)>

<Key customization assignment screen(Cycle mode)>

1. Press ⓯ and each function button ⓮ to assign the key to ❷ to ❼ for the operator mode (❷ to ⓫ for the maintenance personnel mode, ❷ to ❾ for the cycle mode).

2. Press ⓬ to confirm the setting. Cancel the operation with ⓭. The current screen returns to the previous screen.

10. Key customization setting

1. Pattern Data
2. Pattern Number
3. Cycle Pattern Number
4. Memory switch
5. One-touch changeover
6. Bobbin winding mode

(11) Setting the key-lock and the password

By using a keylock function, you can prohibit the specific function and prevent a change in data and so on. The settings of a password (four digits of number) are required to use it.

1）DDL-9000C-S

① Setting a password

1. When you hold down the **M** ❾ for six seconds on the sewing screen, a mode screen of the serviceperson level 2 is displayed.

2. Press the ▲ ▼ ❶ to select the "14. Functional restriction settings," and press the ❺ to display the password settings request screen.
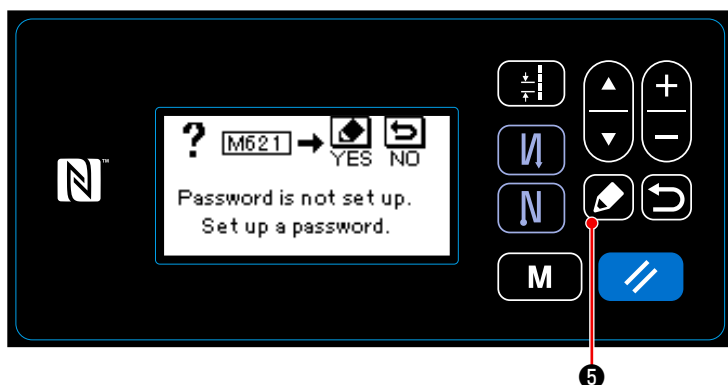
3. Press the ❺ to display the password settings screen.
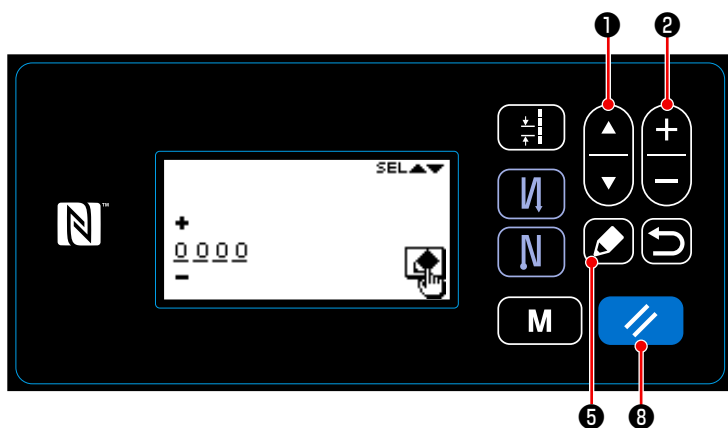
4. Repeat the following operations to enter a password to use.

   ○ After pressing the ▲ ▼ ❶, you can select a number.

   ○ After pressing the + − ❷, you can select the number in the selection process.

○ Only the selected figure can be deleted by pressing ❽ . All figures can be returned to "0000" by keeping it held pressed for one second.

5. Press the ❺ after entry to display the functional restriction settings management screen.

(Cautions) "0000" cannot be used as a password.

② **Setting the key-lock**
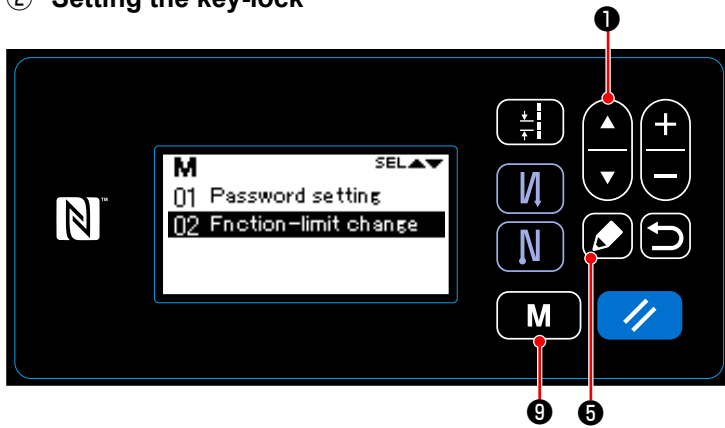
1. Select "02 Fnction-limit change" by pressing ▲ ▼ ❶. Then, press ◆ ❺ to display the key-lock setting screen.

M   SEL▲▼
01 Password setting
02 Fnction-limit change
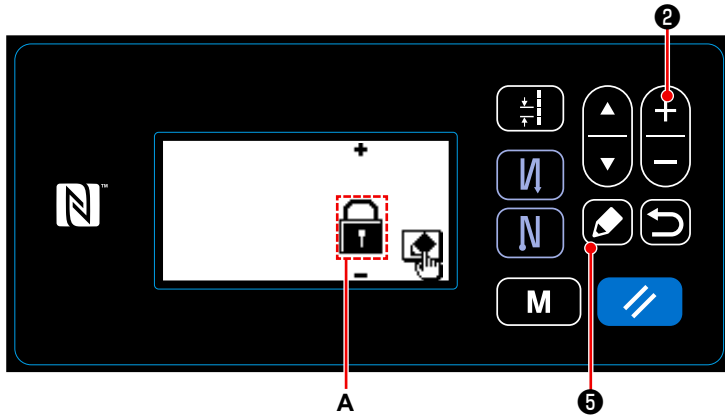
2. After pressing the + − ❷, you can change an enabled and disabled state **A** of a keylock.

   When a keylock is enabled, press the ◆ ❺ to display the keylock item settings screen.

Display	Contents	Display	Contents
🔒	Key-lock is enabled	🔓	Key-lock is disabled
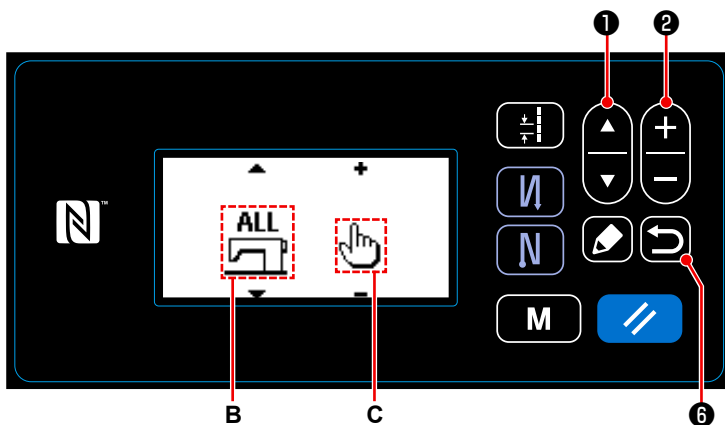
3. Set a functional lock

   After pressing the ▲ ▼ ❶ to select the function **B**, press the + − ❷ to set an enabled and disabled state **C** of the functional lock.

Display	Contents	Display	Contents
🚫👆	Enabled functional lock	👆	Disabled functional lock

   In addition, the settable functional locks are as follows.

Display	Contents
ALL 🏭	Locking all the functions
	All operations except the following are prohibited on the sewing screen.
	○ Change in the pitch in pattern data
	○ Change in the existence or non-existence of the reverse feed stitching in pattern data
	○ Switchover to the display of a sewing counter and a bobbin counter
	○ Switchover between Enabled and Disabled for a single lock
[M]	M keylock
	Operation of the M key is prohibited on the sewing screen.
No▷No◁ ◆	Lock for pattern data editing
	Operation of the Edit key is prohibited on the sewing screen.
No▷No◁	Locking the change in a pattern No.
	Operation of the + − key is prohibited on the sewing screen.
↻🏭	Locking the change in a sewing speed
	Change in the sewing speed in pattern data is prohibited.

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4. Press the ⏎**❻** to return the current screen to the keylock settings screen, and press the ⏎**❻** once again to return the current screen to the functional restriction settings management screen.

5. Press the ⏎**❻** to close the functional restriction settings management screen.

When you have changed the set contents of a password or a keylock, the power-off instruction screen is displayed after the closing of the said screen, so turn off the machine. Turn on the machine once again to reflect the settings.

When it is not changed, the current screen returns to the mode screen after the closing of the said screen.

(Caution) Be aware that the settings of a functional lock are not reflected when a keylock is set to Disabled as follows.

Key-lock	Functional lock	Whether or not it is locked,
Enabled	Enabled	It is locked.
	Disabled	It is not locked.
Disabled	Enabled	It is not locked.
	Disabled	It is not locked.

③ **Entering a password to cancel the lock**

1. When you try to use a locked function in case that the keylock is enabled, the password input screen is displayed. (Example: in case that a pattern No. change lock is enabled, press the **+** **−** **❷** on the sewing screen to display the password input screen.)

2. After entering a password, press the **❺**. (For an input method, refer to the ① - 4.)

3. In case that you have entered a right password, the keylock becomes disabled until you turn off the machine. In case that you have entered a wrong password, press the **//** **❽** to cancel an error because an error screen is displayed. After you cancel it, the current screen returns to the password input screen.

④ **Changing a password**

1. Select the "14. Functional restriction settings" on the serviceperson level 2 mode screen, and press the ▨❺ to display the password input screen.

2. After entering a right password, press the ▨❺ to display the functional restriction settings management screen. (For an input method, refer to the ① - 4.)

3. Press the ▲▼❶ to select "01 Password settings," and press the ▨❺ to display the password settings screen.

4. Enter a new password. (For an input method, refer to ① - 4.)

5. Press the ▨❺ after input to return the current screen to the functional restriction settings management screen.

6. After you press the ↩❻, the power-off instruction screen is displayed, so turn off the machine. After turning on the machine once again, you can use a password after change.

⑤ **Returning a password to the unset state**

1. Hold down the ⁄⁄❽ for three seconds on the password settings screen to display the password initialization completion message screen.

2. Press the ↩❻ to return the current screen to the functional restriction settings management screen.

3. After you press the ↩❻, the power-off screen is displayed, so turn off the machine. After you turn on the machine once again, it starts up in the unset state of a password.

(Caution) If you forget your password, you can return the password setup status to "not set" state. (Even if you carry out the procedure described below, any data other than the password data will not be deleted.)

1. Open the control box. Place DIP switch 2 on the CTL-board in ON. Then, turn the power ON.

2. After the password initialization completion message screen is displayed, turn the power OFF.

3. Place DIP switch 2 back in OFF. When the power is turned ON again, the sewing machine starts up in the "password is not set" state.

2) DDL-9000C-F

Specific key operation can be prohibited to disable change in data by enabling the key-lock.

Furthermore, change in the status of the key-lock between enable/disable can be prohibited by setting a four-digit password.

① Selecting the function restriction setting function
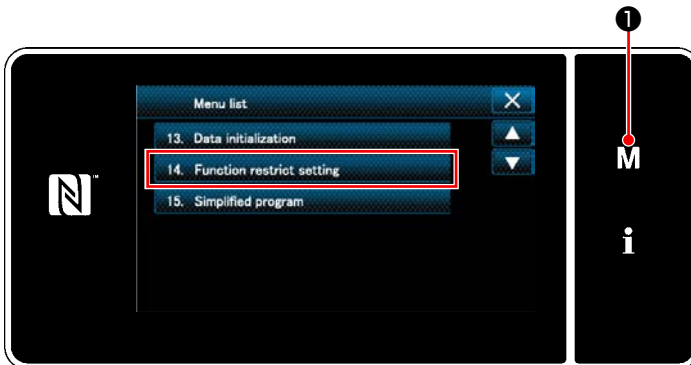
1. Keep **M** ❶ held pressed for six seconds on the sewing screen to dis-play the mode screen.
2. Press the "14. Function restrict setting" to display the password settings request screen.

3. Press the ❷ to display the pass-word settings screen.
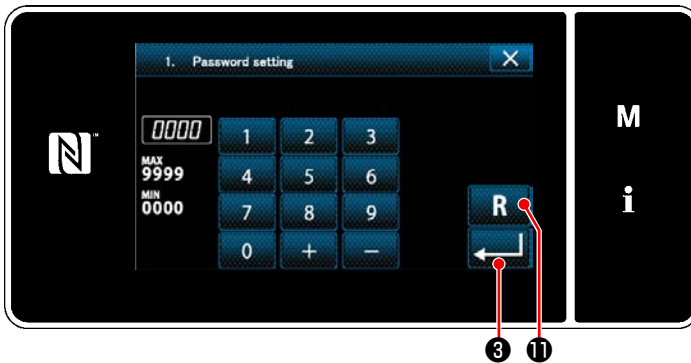
4. Repeat the following operations to enter a password to use.
○ After pressing the **R** ⓫, you can change a number in the selection process to 0 (zero).
5. Press the ❸ after entry to display the functional restriction settings manage-ment screen.

(Caution) "0000" cannot be used as a password.

② Setting the key-lock
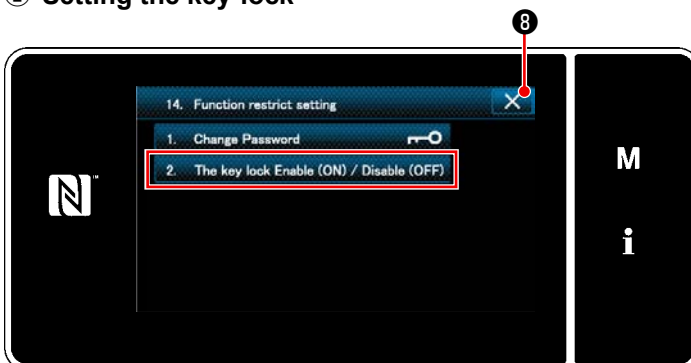
1. Press the "02. The key lock Enabled (ON) / Disabled (OFF)" to display the keylock enabled or disabled settings screen.
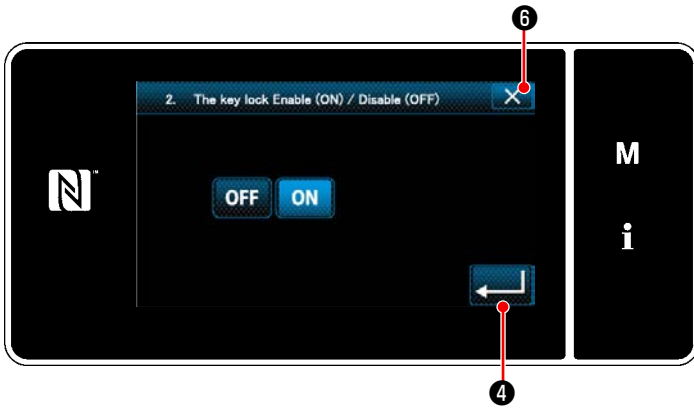
2. You can change the Enabled or Disabled state of a keylock.
   In the case of the Enabled (ON), press the ⟵ ❹ to display the key lock item settings screen.
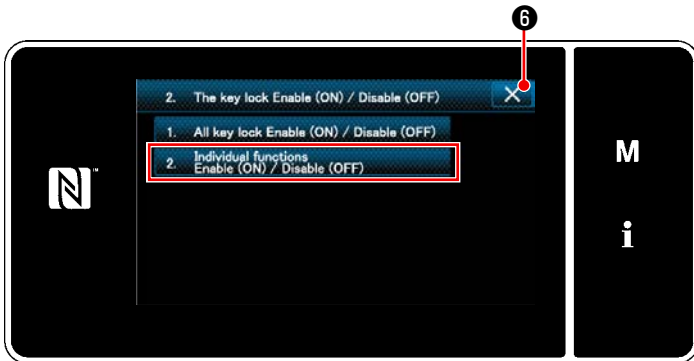
3. Set a functional lock.
   You can select the lock of all functions or the lock of the individual (single) function.
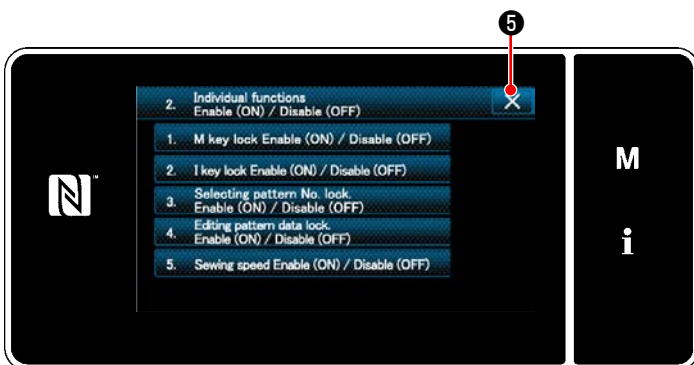
When "2. Individual functions Enable (ON) / Disable (OFF)" has been pressed, the settable functional keylocks are shown in the table below.

Key lock item		Contents
All function keylock : Enabled (ON) or Disabled (OFF)		Locking all the functions All operations except the following are prohibited on the sewing screen. ○ Change in the pitch in pattern data ○ Change in the existence or non-existence of the reverse feed stitching in pattern data ○ Switchover to the display of a sewing counter and a bobbin counter ○ Switchover between Enabled and Disabled for a single lock
Individual (single) function keylock : Enabled (ON) or Disabled (OFF)	**M** key lock: Enabled (ON) or Disabled (OFF)	Operation of the **M** is prohibited on the sewing screen.
	i key lock: Enabled (ON) or Disabled (OFF)	Operation of the **i** is prohibited on the sewing screen.
	Selection of a pattern No.: Enabled (ON) or Disabled (OFF)	A selection operation of a pattern No. is prohibited on the sewing screen.
	Edit of pattern data: Enabled (ON) or Disabled (OFF)	A change in the pattern data is prohibited on the sewing screen.
	Change in a sewing speed Enabled (ON) or Disabled (OFF)	Change in the sewing speed in pattern data is prohibited.

4. Press the ✕ ❺ to close the individual function keylock settings screen. Press the ✕ ❻ to return the current screen to the keylock enabled or disabled settings screen, and press the ✕ ❼ once again to return the current screen to the functional restriction settings management screen.
5. Press the ✕ ❽ to close the functional restriction settings management screen.
   When you have changed the set contents of a password or a keylock, the power-off instruction screen is displayed after the closing of the said screen, so turn off the machine. Turn on the machine once again to reflect the settings.
   When it is not changed, the current screen returns to the mode screen after the closing of the said screen.
(Caution) Be aware that the settings of a functional lock are not reflected when a keylock is set to Disabled as follows.

Key-lock	Functional lock	Whether or not it is locked,
Enabled	Enabled	It is locked.
	Disabled	It is not locked.
Disabled	Enabled	It is not locked.
	Disabled	It is not locked.

③ **Entering a password to cancel the lock**

1. When you try to use a locked function in case that the keylock is enabled, the password input screen is displayed. (Example: in case that a pattern No. change lock is enabled, press the pattern No. button on the sewing screen to display the password input screen.)
2. After entering a password, press the ⏎ ❾. (For an input method, refer to the ① - 4.)
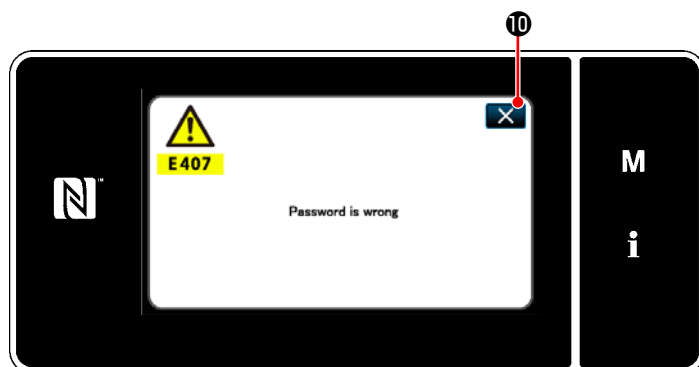
3. In case that you have entered a right password, the keylock becomes disabled until you turn off the machine. In case that you have entered a wrong password, press the ✕ ❿ to cancel an error because an error screen is displayed. After you cancel it, the current screen returns to the password input screen.

④ **Changing a password**
1. Press the "14. Function restrict setting key" on the serviceperson level 2 mode screen, to display the password input screen.
2. After entering a right password, press the ⏎ ❾ to display the functional restriction settings management screen. (For an input method, refer to the ① - 4.)
3. Select "01 Password settings," to display the password settings screen.
4. Enter a new password. (For an input method, refer to the ① - 4.)
5. Press the ⏎ after input to return the current screen to the functional restriction settings management screen.
6. After you press the ✕, the power-off instruction screen is displayed, so turn off the machine. After turning on the machine once again, you can use a password after change.

⑤ **Returning a password to the unset state**

1. Press the [R] ⓫ on the password settings screen and then the [↵] ❸ to display the clear confirmation screen of an M557 password.

2. Press the [↵] to return the current screen to the functional restriction settings management screen.

3. After you press the [✕], the power-off screen is displayed, so turn off the machine. After you turn on the machine once again, it starts up in the unset state of a password.

(Caution) If you forget your password, you can return the password setup status to "not set" state. (Even if you carry out the procedure described below, any data other than the password data will not be deleted.)

1. Open the control box. Place DIP switch 2 on the CTL-board in ON. Then, turn the power ON.

2. After the password initialization completion message screen is displayed, turn the power OFF.

3. Place DIP switch 2 back in OFF. When the power is turned ON again, the sewing machine starts up in the "password is not set" state.

(12) Simple program

After using a simple program, you can control the movement of a sewing machine. Up to 50 steps can be registered with one program. In addition, up to four programs can be executed at the same time.

1) Using a simple program function (DDL-9000C-S)

① **Selecting a simple program editing function**
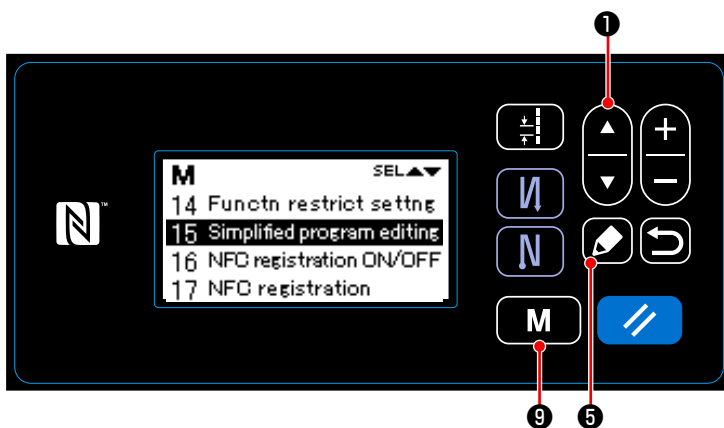
1. Hold down the [M] ❾ for six seconds on the sewing screen to display the serviceperson level 2 mode screen.

2. Press the [▲][▼] ❶ to select the "15. Simple program editing" and press the [✎] ❺ to display the simple program No. selection screen.

② **Selecting a simple program to edit**
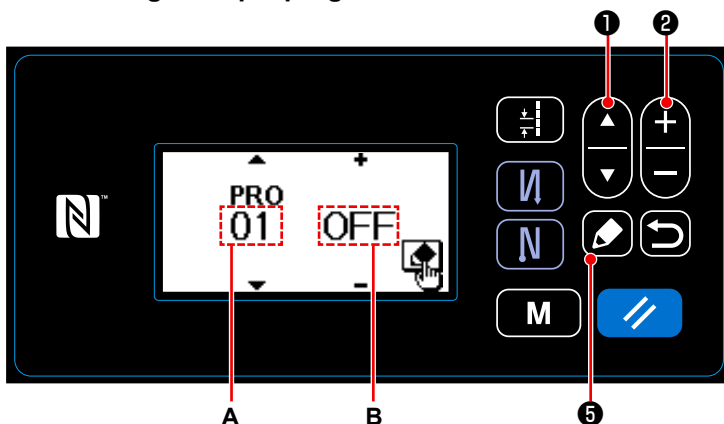
1. Press the [▲][▼] ❶ to select the program No. A in a simple program to edit.

2. After pressing the [+][−] ❷, you can change the state of Enable (ON) and Disabled (OFF) of a simple program.

3. Press the [✎] ❺ to display the simple program command edit screen.

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③ **Editing the step in a simple program**
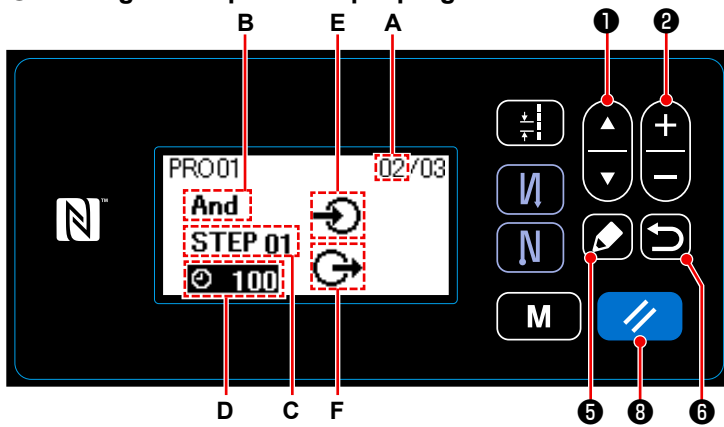
1. Repeat the following operations to edit a step.

   ○ Pressing the ▲ ▼ ❶ to select the edit item

● When a step No. **A** is in the selection process,

   ○ After pressing the ➕ ❷, you can display the next step (the first step when the last step is being displayed), and after pressing the ➖ ❷, you can display the previous step (the last step when the first step is being displayed).

   ○ After pressing the ◆ ❺, you can add a step in front of the step that is being displayed (Only when there is a space in the registrable number of steps.)

   ○ After pressing the ⁄⁄ ❽, you can delete a step follows.

1. Press the ⁄⁄ ❽ to display a step that is being displayed, and hold it down for one second to display the deletion confirmation screen of all steps.

2. Press the ⁄⁄ ❽ to execute the deletion, and press the ⮪ ❻ to cancel it and then the current screen returns to the last (first previous) screen.

● When a command **B** is in the selection process,

   ○ After pressing the ➕ ➖ ❷, you can change a command.
   For details of a command, refer to the "3) Simple program command list."

● When a parameter 1 **C** and a parameter 2 **D** are in the selection process,

   ○ After pressing the ➕ ➖ ❷, you can change the value of a parameter.
   For details of a parameter 1 and a parameter 2, refer to the "3) Simple program command list."

● When the input setting **E** is in the selection process,

   ○ Press the ◆ ❺ to display the simple program input setting screen.
   For an operating method, refer to following ④.

● When the output setting **F** is in the selection process,

   ○ Press the ◆ ❺ to display the simple program output setting screen.
   For an operating method, refer to following ④.

(Cautions)1. When the parameter 1 C, the parameter 2 D, and the input setting E are disabled, they are not displayed.

2. The display of the input setting E and the output setting F differs depending on the set contents as follows.

Display	Set contents	Display	Set contents
➔⊙✓	Using a input port	➔⊙✓	Using an output port
➔⊙	Not using a input port	➔⊙	Not using an output port

④ **Making the settings for the input/output of a step**
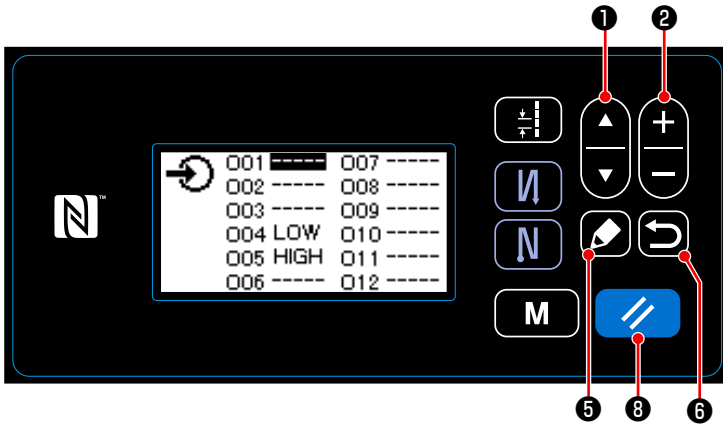
1. Repeat the following operations to make the settings for a port.

- After pressing the ▲ ▼ ❶, you can select a port.

- After pressing the + − ❷, you can change the settings for a port in the selection process.

- After holding down the ⧸⧸ ❸ for one second, you can return all the ports to an unused state.

The settable contents are as follows.

In addition, for the settable input/output, refer to the "4) Simple program input/output information list."

Display	When you have set to the input port,	When you have set to the output port,
LOW	You wait for the entry of a LOW level.	You output a LOW level.
HIGH	You wait for the entry of a HIGH level.	You output a HIGH level.
-----	You never use a port.	You never use a port.

2. Press the ↩ ❻ to return the current screen to the simple program command edit screen.

⑤ **Ending the edit of a simple program**

1. After pressing the ↩ ❻ on the simple program command edit screen, the current screen returns to the simple program No. selection screen.

2. Press the ↩ ❻ to close the simple program No. selection screen.

When you have edited a simple program, the power-off instruction screen is displayed after the closing of the said screen, so turn off the machine. Turn on the machine once again to execute the enabled simple program.

When it is not edited, the current screen returns to the mode screen after the closing of the said screen.

(Caution) Be aware that a step where a command is behind a step of End is deleted at the time of return to the simple program No. selection screen.

2) Using a simple program function (DDL-9000C-F)

After using a simple program, you can control the movement of a sewing machine. Up to 50 steps can be registered with one program. In addition, up to four programs can be executed at the same time.

① Selecting a simple program editing function

1. Hold down the **M** ❶ for six seconds on the sewing screen to display the serviceperson level 1 mode screen.
2. Press the "15. Simplified program" to display the password settings request screen.

② Selecting a simple program to edit
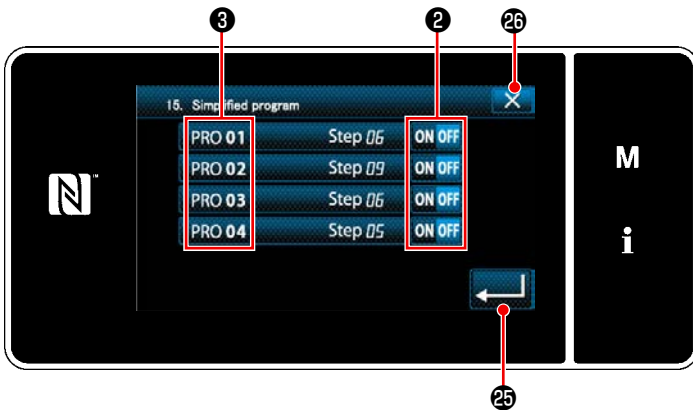
1. After pressing the **ON OFF** ❷, you can change the state of Enable (ON) and Disabled (OFF) of a simple program.
2. Press the "PRO xx" to display the simple program command edit screen.

③ **Editing the step in a simple program**

1. Repeat the following operations to edit a step.

○ After pressing the **+** ④, you can display the next step (the first step when the last step is being displayed), and after pressing the **–** ❺, you can display the previous step (the last step when the first step is being displayed).
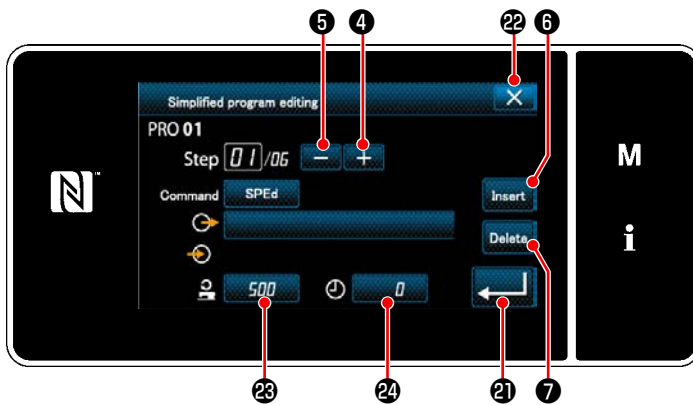
○ After pressing the Insert ❻, you can insert a step in front of a step that is being displayed as follows. (Only when there is a space in the registrable number of steps.)

1. Press the Insert ❻, to display the command selection screen.
2. Press the key ❽ for a command to insert.
3. Press the ↵ ❾ to fix the insertion, and press the ✕ ❿ to cancel it and then the current screen returns to the last (first previous) screen.
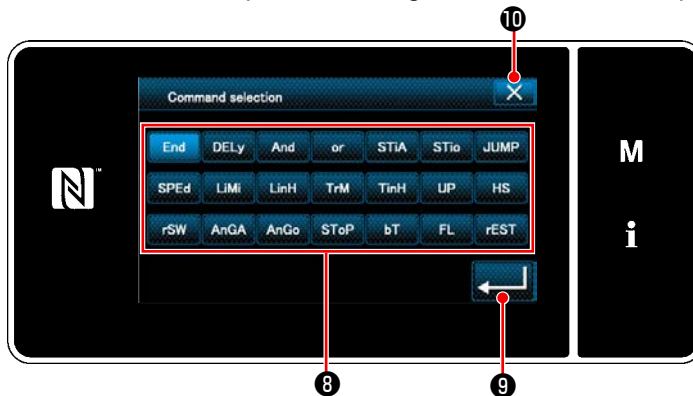
○ After pressing the Delete ❼ key, you can delete a step as follows.

1. Press the Delete ❼ to display a step that you are selecting or in the selection, and hold it down for one second to display the deletion confirmation screen of all steps.
2. Press the ↵ ⓫ to execute the deletion, and press the ✕ ⓬ key to cancel it and then the current screen returns to the last (first previous) screen.
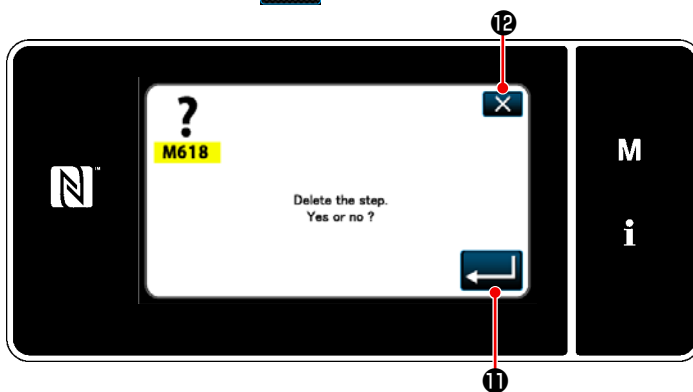
○ Press the key ❽ for a command to display the command selection screen and change a command.

Press the ↵ ⓫ after pressing the key of a command to change to fix the change, and press the ✕ ⓬ to cancel it and then the current screen returns to the last (first previous) screen.

For details of a command, refer to the "3) Simple program command list."

○ After pressing the key for a parameter 1 ㉓ and a parameter 2 ㉔, you can set a parameter as follows.

(When the numerical value is set,)
1. Press the key to display the numeric keypad input screen.
2. Enter a parameter.
3. Press the ↵ ⓭ to fix the entry, and press the ✕ ⓮ to cancel it and then the current screen returns to the last (first previous) screen.

(When ON/OFF is set,)
After pressing the "ON" or "OFF" key, you can the settings.

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For details of a parameter 1 and a parameter 2, refer to the "3) Simple program command list."

○ Press the key for output setting to display the simple program output setting screen.
  For an operating method, refer to following ④.

○ Press the key for output setting to display the simple program input setting screen.
  For an operating method, refer to following ④.

(Cautions) 1. When the parameter 1, the parameter 2, and the input setting E are disabled, they are not displayed.

2. The set contents of a port to use are displayed on the key of output setting and input setting (only when there is a port to use).

④ **Making the settings for the input/output of a step**
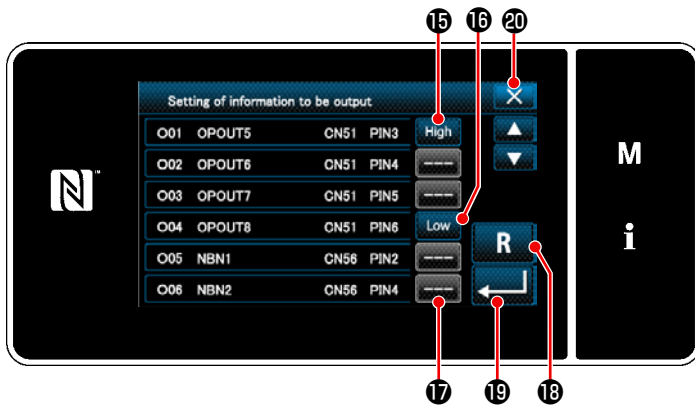
1. Repeat the following operations to make the settings for a port.

○ After pressing the ⓫ High ⑮, Low ⑯, and ⑰, you can change the settings for a port.

○ After holding down the R ⑱ for one second, you can return all the ports to an unused state.

The settable contents are as follows.

In addition, for the settable input/output, refer to the "4) Simple program input/output information list."

Display	When you have set to the input port,	When you have set to the output port,
Low	You wait for the entry of a LOW level.	You output a LOW level.
High	You wait for the entry of a HIGH level.	You output a HIGH level.
	You never use a port.	You never use a port.

2. Press the ⑲ to fix the settings, and press the ✕ ⑳ to cancel it and then the current screen returns to the simple program command edit screen.

⑤ **Ending the edit of a simple program**

1. Press the ㉑ on the simple program command edit screen to fix the edit, and press the ✕ ㉒ and then the current screen returns to the simple program No. selection screen.

2. Enter the ㉕ or ✕ ㉖ to close the simple program No. selection screen.

   When you have pressed the ㉕ after fixing the edit of a simple program, the power-off instruction screen is displayed after the closing of the said screen, so turn off the machine.

(Caution) Be aware that a step where a command is behind a step of End is deleted at the time of return to the simple program No. selection screen.

3) Simple program command list

This is a list of the commands and parameters used for the simple program function.

No	Code	Abbre-viation	Command	Output setting	Input setting	Parameter ①	Setting range	Parame-ter ②	Setting range	Function
1	0	End	End	En-abled	En-abled	Disabled	-	Disabled	-	Initial value
2	1	DELy	Delay	En-abled	Dis-abled	Disabled	-	Delay time [ms]	0 to 999	After passage of time of ②, move on to the next step.
3	2	And	Branching with AND condition	En-abled	En-abled	Step No.	1 to 50	Delay time [ms]	0 to 999	When all of the input setting conditions has been met before passage of time of ②, move on to the step of ①. When is has not be met, move on to the step of ①. When ② is set to 0 (zero), wait until it is met.
4	3	or	Branching with OR condition	En-abled	En-abled	Step No.	1 to 50	Delay time [ms]	0 to 999	When one of the input setting conditions has been met before passage of time of ②, move on to the step of ①. When is has not be met, move on to the step of ①. When ② is set to 0 (zero), wait until it is met.
5	4	STiA	Branching with the number of stitches AND condi-tion	En-abled	En-abled	Step No.	1 to 50	Number of stitches [stitch]	0 to 999	When all of the input setting conditions has been met before passage of the number of stitches of ②, move on to the step of ①. When it has not be met, move on to the next step.
6	5	STio	Branching with the number of stitches OR condition	En-abled	En-abled	Step No.	1 to 50	Number of stitches [stitch]	0 to 999	When one of the input setting conditions has been met before passage of the number of needles of ②, move on to the step of ①. When it has not be met, move on to the next step.
7	6	JUMP	Jump repeat counter	En-abled	Dis-abled	Step No.	1 to 50	Repeat counter value	0 to 999	Until the counter value exceeds the value of ②, move on to the step of ①. When ② is set to 0 (zero), move on to the step of ① without limit in the number of times. **(Caution) Do not perform a nesting input of this command.**

No	Code	Abbreviation	Command	Output setting	Input setting	Parameter ①	Setting range	Parameter ②	Setting range	Function
8	7	SPEd	Rotation speed command	Enabled	Disabled	Speed [x10sti/min]	*Refer to function	Delay time [ms]	0 to 999	During time of ②, set to the speed of ①. When ② is set to 0 (zero), continue this setting. **(Caution) The minimum value in the setting range of the speed of ① is the memory switch U035 pedal lowest sewing speed and the maximum value is the speed of the limit set per machine type.**
9	8	LiMi	Speed limit command	Enabled	Disabled	Speed [x10sti/min]	*Refer to function	Delay time [ms]	0 to 999	During time of ②, set to the speed of ①. When ② is set to 0 (zero), continue this setting. **(Caution) The minimum value in the setting range of the speed of ① is the memory switch U035 pedal lowest sewing speed and the maximum value is the speed of the limit set per machine type.**
10	9	LinH	Lswinh command	Enabled	Disabled	ON/OFF information	ON/OFF	Delay time [ms]	0 to 999	During time of ②, disable the forward pedaling command (when ① is ON). When ② is set to 0 (zero), disable the forward pedaling command (when ① is ON) or enable it (when ① is OFF).
11	10	TrM	Thread trimmer command	Enabled	Disabled	Disabled	-	Delay time [ms]	0 to 999	During time of ②, execute the thread trimmer command. When ② is set to 0 (zero), this command is disabled.
12	11	TinH	Tswinh command	Enabled	Disabled	ON/OFF information	ON/OFF	Delay time [ms]	0 to 999	During time of ②, disable the thread trimmer output (when ① is ON). When ② is set to 0 (zero), disable the thread trimmer output (when ① is ON) or enable it (when ① is OFF).
13	12	UP	Top stop command	Enabled	Disabled	Disabled	-	Delay time [ms]	0 to 999	During time of ②, execute the top stop command. When ② is set to 0 (zero), continue this command.
14	13	HS	Needle up/down command	Enabled	Disabled	Disabled	-	Delay time [ms]	0 to 999	During time of ②, execute a needle up/down command (when the needle is at the lower position, it is positively rotated to the upper position, and when it is at the upper position, it is positively rotated to the lower position.). When ② is set to 0 (zero), continue this command.

No	Code	Abbre-viation	Command	Output setting	Input setting	Parameter ①	Setting range	Parameter ②	Setting range	Function
15	14	rSW	Rsw command	Enabled	Disabled	Disabled	-	Delay time [ms]	0 to 999	During time of ②, execute a reverse-rotate needle up (the needle stops by rotating backward and braking from the set angle.). When ② is set to 0 (zero), continue this command.
16	15	AnGA	Branching with angle AND condition	Enabled	Enabled	Step No.	1 to 50	angle [°]	0 to 359	When all of the input setting conditions has been met before passage of angle of ②, move on to the step of ①. When it has not be met, move on to the next step.
17	16	AnGo	Branching with angle OR condition	Enabled	Enabled	Step No.	1 to 50	angle [°]	0 to 359	When one of the input setting conditions has been met before passage of angle of ②, move on to the step of ①. When it has not be met, move on to the next step.
18	17	SToP	Stop command	Enabled	Disabled	Disabled	-	Delay time [ms]	0 to 999	During time of ②, stop the Sewing machine. When ② is set to 0 (zero), move on to the next step without stopping the sewing machine.
19	18	bT	Reverse feed stitching output	Enabled	Disabled	ON/OFF information	ON/OFF	Delay time [ms]	0 to 999	During time of ②, set the reverse feed stitching command to Enabled (when ① is ON) or Disabled (when ① is OFF). When ② is set to 0 (zero), continue this setting.
20	19	FL	Presser lifter output	Enabled	Disabled	ON/OFF information	ON/OFF	Delay time [ms]	0 to 999	During time of ②, set the presser lifter command to Enabled (when ① is ON), or Disabled (when ① is OFF). When ② is set to 0 (zero), continue this setting.
21	20	rEST	Program reset	Enabled	Disabled	Program No	1 to 4	Disabled	-	Return a program of ① to the step 1 compulsorily.

4) Simple program input/output information list

This is a list of the input/output that can be set on the simple program input/output settings screen.

Input list

	Signal name	Function	Connector	Pin No.	Remarks
I01	OpSwA	At-hand switch A	CN32	29	
I02	OpSwC	Option input	CN32	30	
I03	OpSwB	At-hand switch B	CN32	31	
I04	TSW	Thread trimmer switch input	CN39	7	
I05	FLSW	Presser lifter switch input	CN39	5	
I06	HSSW	High-speed switch input	CN39	9	
I07	LSSW	Low-speed switch input	CN39	11	
I08	OPIN1	OP input 1	CN51	7	
I09	OPIN2	OP input 2	CN51	8	
I10	OPIN3	OP input 3	CN51	9	
I11	OPIN4	OP input 4	CN51	10	
F01	TRM	Thread trimmer output			
F02	NIP	Thread presser output			
F03	BT	Reverse feed stitching output			
F04	FL	Presser lifter output			
F05	SSTAT	Stop state output			
F06	UDET	Top position output			
F07	DDET	Bottom position output			
O01	OPOUT5	Option output_1	CN51	3	An output signal of option output _1 can be input internally.
O02	OPOUT6	Option output_2	CN51	4	An output signal of option output _2 can be input internally.
O03	OPOUT7	Option output_3	CN51	5	An output signal of option output _3 can be input internally.
O04	OPOUT8	Option output_4	CN51	6	An output signal of option output _4 can be input internally.
O05	NBN1	Option output_5	CN56	2	An output signal of option output _5 can be input internally.
O06	NBN2	Option output_6	CN56	4	An output signal of option output _6 can be input internally.
O07	NBN3	Option output_7	CN56	6	An output signal of option output _7 can be input internally.
O08	NBN4	Option output_8	CN56	8	An output signal of option output _8 can be input internally.
O09	OP_01	Option output_9	CN61	2	An output signal of option output _9 can be input internally.
O10	OP_02	Option output_10	CN61	4	An output signal of option output _10 can be input internally.
O11	OP_03	Option output_11	CN61	6	An output signal of option output _11 can be input internally.
O12	OP_04	Option output_12	CN61	8	An output signal of option output _12 can be input internally.

Output list

	Signal name	Function	Connector	Pin No.	Remarks
O01	OPOUT5	Option output_1	CN51	3	An output signal of option output _1 can be input internally.
O02	OPOUT6	Option output_2	CN51	4	An output signal of option output _2 can be input internally.
O03	OPOUT7	Option output_3	CN51	5	An output signal of option output _3 can be input internally.
O04	OPOUT8	Option output_4	CN51	6	An output signal of option output _4 can be input internally.
O05	NBN1	Option output_5	CN56	2	An output signal of option output _5 can be input internally.
O06	NBN2	Option output_6	CN56	4	An output signal of option output _6 can be input internally.
O07	NBN3	Option output_7	CN56	6	An output signal of option output _7 can be input internally.
O08	NBN4	Option output_8	CN56	8	An output signal of option output _8 can be input internally.
O09	OP_01	Option output_9	CN61	2	An output signal of option output _9 can be input internally.
O10	OP_02	Option output_10	CN61	4	An output signal of option output _10 can be input internally.
O11	OP_03	Option output_11	CN61	6	An output signal of option output _11 can be input internally.
O12	OP_04	Option output_12	CN61	8	An output signal of option output _12 can be input internally.

(13) Registering an NFC terminal

You can put restrictions so that only a registered NFC terminal can use the NFC function.

1）DDL-9000C-S

① **Selecting the Enabled or Disabled state of a restriction in using an NFC terminal**
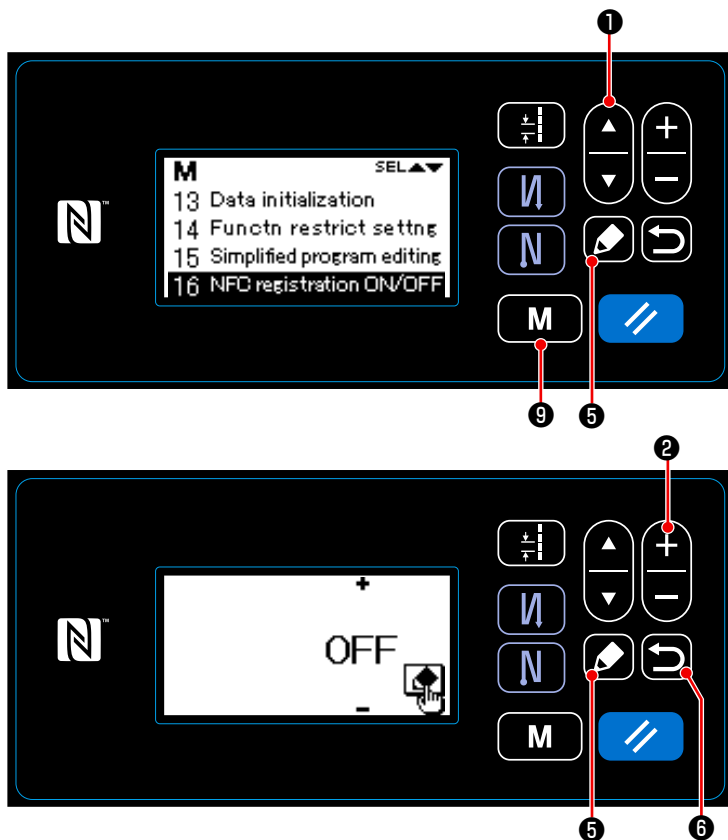
1. Hold down the **M** ❾ for six seconds on the sewing screen to display the serviceperson level 2 mode screen.

2. Press the ▲▼ ❶ to select "16. NFC registration ON/OFF," and press the ✎ ❺ to display the selection screen for the Enabled or Disabled restriction of an NFC terminal.

3. After pressing the ＋－ ❷, you can change the state of Enabled (ON) or Disabled (OFF) of a restriction.

4. Press the ✎ ❺ to fix the settings, and press the ↩ ❻ to cancel it and then the current screen returns to the last (first previous) screen.

② **Registering an NFC terminal**
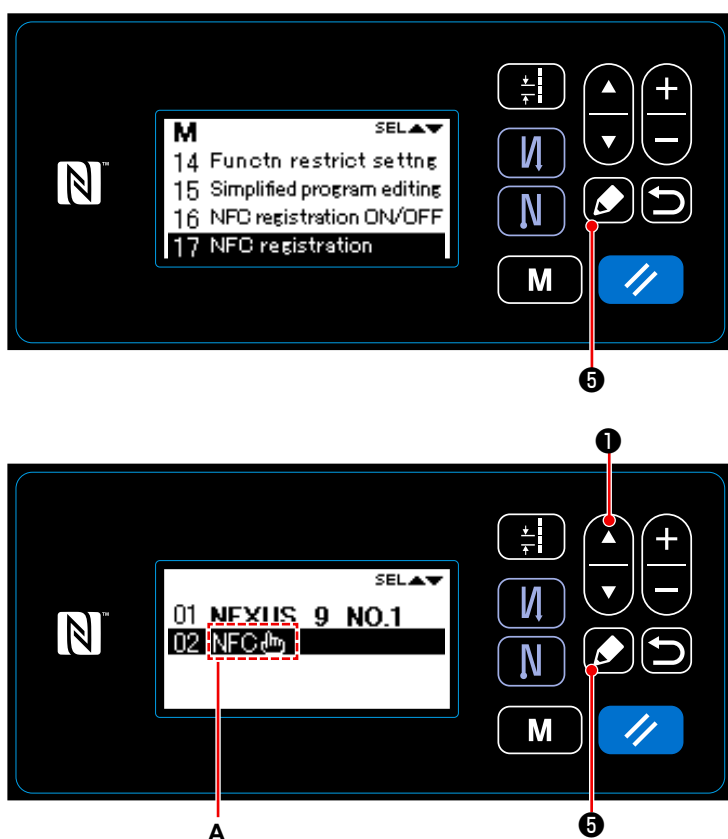
1. Select the "17. NFC registration" on the screen for a maintenance engineer or the serviceperson level 2 mode screen, and press the ✎ ❺ to display the NFC terminal registration screen.

2. Press the ▲▼ ❶ to select the NFC terminal new registration pictogram **A**, and press the ✎ ❺ to display the NFC guide message screen.
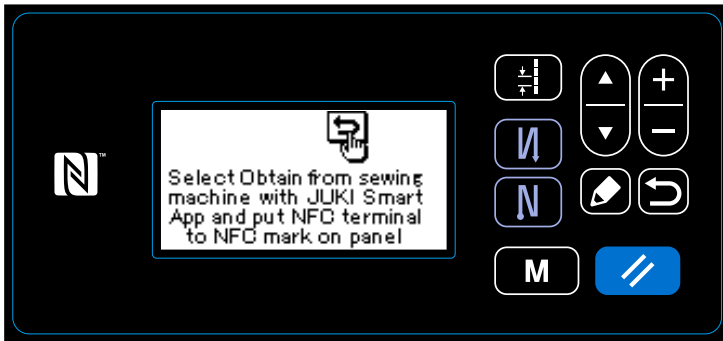
3. Move an NFC terminal to register close to a panel.
   When you succeed in registration, the input request screen for an NFC terminal registered name is displayed.
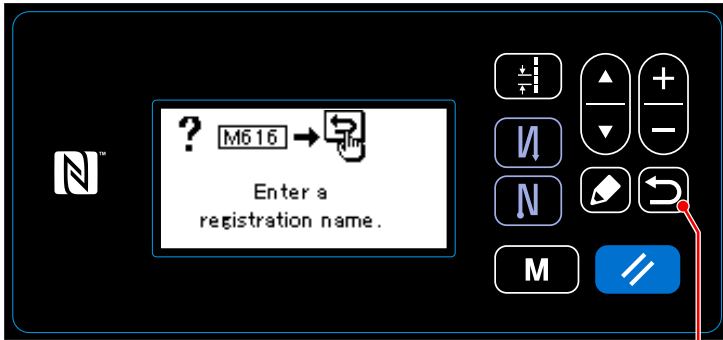
4. Press the ↩️❻ to display the edit screen for an NFC registered name.
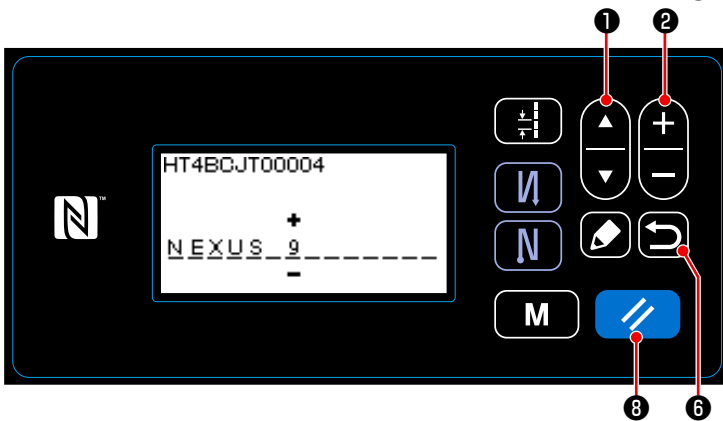
5. Repeat the following operations to enter a registered name.

   ○ After pressing the 🔼🔽❶, you can select a character.
     (+ – is displayed at the top and bottom of the character in the selection process.)

   ○ After pressing the ➕➖❷, you can change a character in the selection process.

   ○ Press the ⫽❽ to delete a character in the selection process, and hold it down for one second to delete all characters.

6. Press the ↩️❻ after entry to display the NFC terminal registration screen.
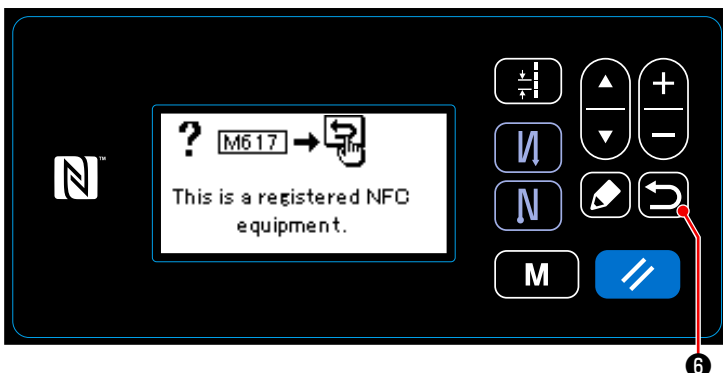
(Caution) When you try to register a registered NFC terminal once again, the NFC terminal registered message screen is displayed, so press the ↩️❻ to return the current screen to the NFC terminal registration screen.

③ **Changing the registered name of an NFC terminal**

1. Press the ⬆️⬇️❶ on the NFC terminal registration screen to select the registered name of an NFC terminal to change, and press the 🖊️❺ to display the NFC registration name edit screen.
For an operating method, refer to ② - 5.

④ **Canceling the registration of a NFC terminal**
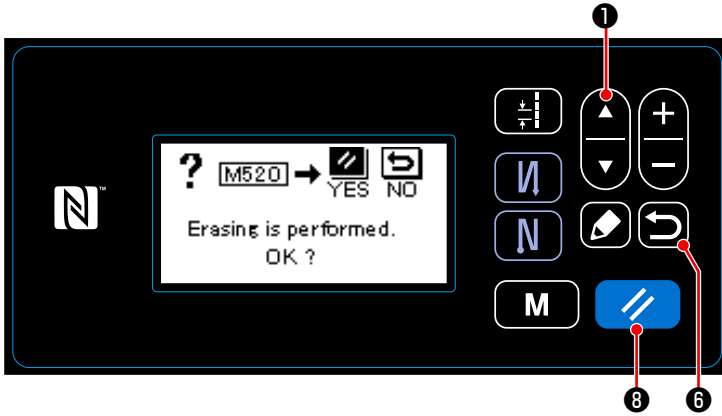
1. Press the ⬆️⬇️❶ on the NFC terminal registration screen to select the registered name of an NFC terminal to cancel.
2. Press the ❽ to display the confirmation message screen for an NFC terminal registration cancelation.
3. Press the ❽ to execute the cancelation, and press the ❻ to cancel it and then the current screen returns to the last (first previous) screen.

2）DDL-9000C-F

① **Selecting the Enabled or Disabled state of a restriction in using an NFC terminal**

1. Hold down the ℹ️❶ for six seconds on the sewing screen to display the serviceperson level 2 mode screen.
2. Press the "4. NFC Terminal registration enable/disable" key to display the selection screen for an Enabled or Disabled restriction in an NFC terminal.
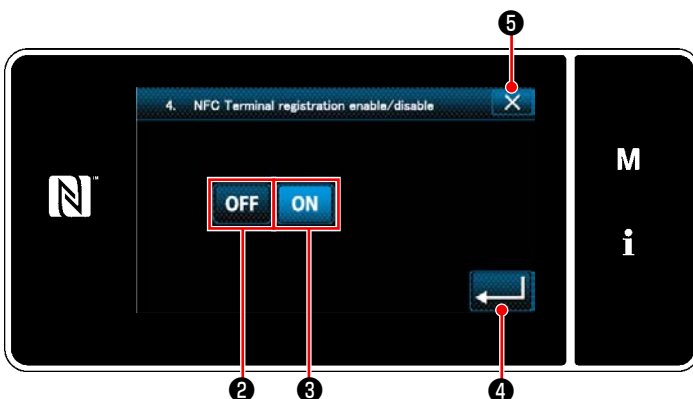
3. After pressing the OFF ❷ or ON ❸, you can change the state of Enabled (ON) or Disabled (OFF) of a restriction.
4. Press the ⤶❹ to fix the settings, and press the ✕❺ to cancel it and then the current screen returns to the last (first previous) screen.

② **Registering an NFC terminal**
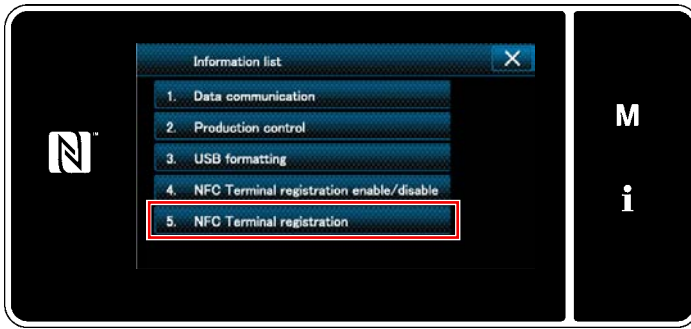
1. Press the "5. NFC Terminal registration" key on the information screen of the serviceperson level 2 to display the NFC terminal registration screen.

2. Press the ✐ ❻ to display the NFC guide message screen.

Select Obtain from sewing machine with JUKI Smart App and put NFC terminal to NFC mark on panel.

3. Move an NFC terminal to register close to a panel.

   When you succeed in registration, the input request screen for an NFC terminal registered name is displayed.

M616
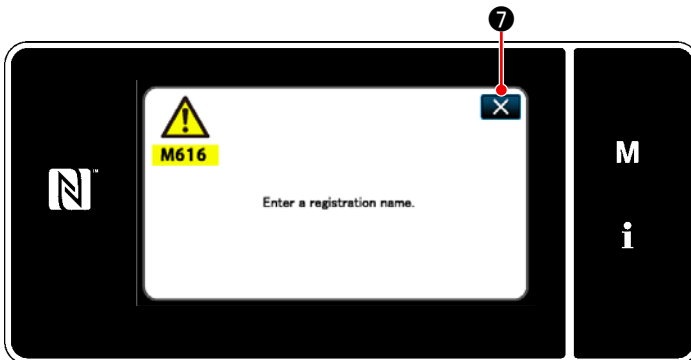
Enter a registration name.

4. Press the ✕ ❼ to display the edit screen for an NFC registered name.
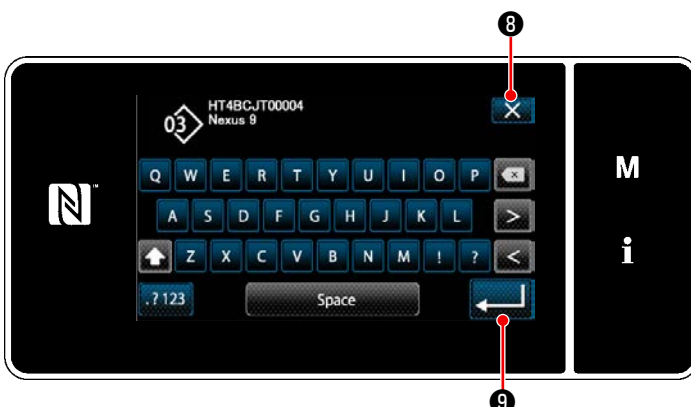
5. Press the ↵ ❾ after entering a registered name to fix it with a registered name that has been entered, and press the ✕ ❽ to fix it with a registered name that is set at default and then the current screen returns to the NFC terminal registration screen.
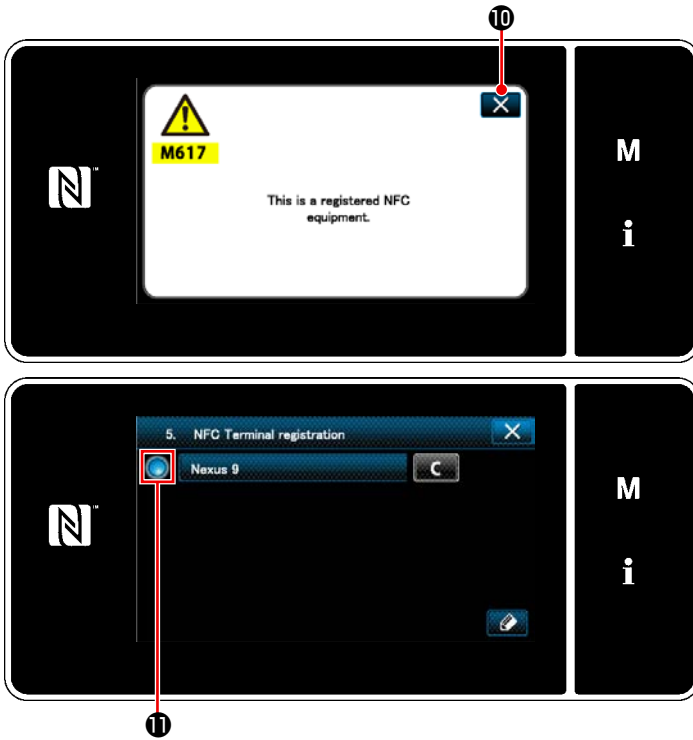
(Caution) When you try to register a registered NFC terminal once again, the NFC terminal registered message screen is displayed, so press the ✕ ❿ to return the current screen to the NFC terminal registration screen. (At this time, ⬤ ⓫ is displayed in the left of a registered name on the NFC terminal registration screen.)

③ **Changing the registered name of an NFC terminal**

1. Press the registered name for an NFC terminal to change on the NFC terminal registration screen to display the NFC registered name edit screen.
2. Press the ⏎ ❾ after entering a registered name to fix the entry, and press the ✕ ❽ to cancel it and then the current screen returns to the last (first previous) screen.

④ **Canceling the registration of a NFC terminal**

1. Press the C ⓬ in the right of the registered name of an NFC terminal to cancel on the NFC terminal registration screen to display the NFC terminal registration cancelation confirming message screen.
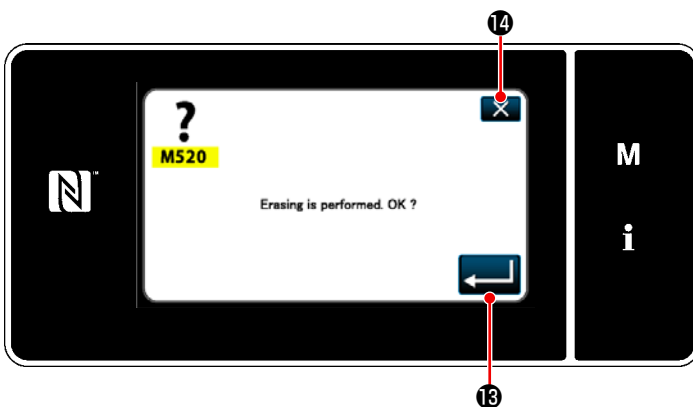
2. Press the ⏎ ⓭ to fix the settings, and press the ✕ ⓮ to cancel it and then the current screen returns to the last (first previous) screen.

5. Data list

(1) List of pattern functions

1）Setting items under the pattern sewing mode

Data No.	Item name	Input range			
S001	Shape	Free	Constant dimension	Multi−layered	Polygonal shape
S002	Number of stitches/ Number of times	—	1 to 2000	1 to 15	—
S003	Pitch	−5.00 to 5.00 / Custom pitch No.1 to 20			—
S004	Thread tension	0 to 200			
S005	Presser	−350 to 200			
S041	Stop position of needle bar	: Stop with the needle down : Stop with the needle up		—	
S042	Thread presser	: OFF / : ON			
S043	Prohibition of thread trimming	: OFF / : ON			
S044	One−shot	—	: OFF : ON	—	—
S045	Thread trimming after one-shot	—	: OFF− : ON	—	: OFF : ON
S046	Shorter-thread remaining	: OFF / : ON			
S047	Limit on sewing speed	150 to U096		—	
S048	Feed locus	S - / A - / C - / B -			
S049	Feed timing	−30 to 30°			
S050	Correction of feed dog height	−4 to 8		—	
S051	Correction value for stitch pitch of reverse feed stitching	−5.00 to 5.00			
S052	Multi-layered part detection sensor value	1000 to 3000			
S053	Number of stitches to start sewing after the detection of multi-layered part	0 to 200			
S061 ※1	Limit on sewing speed	150 to U096 / Common setting S047		—	150 to U096 / Common setting S047

*1 : This is the one-touch type changeover function. Refer to "4-2-9. One-touch type changeover button" in Instruction manual.

Data No.	Item name	Input range		
S062 ※**1**	Pitch	−5.00 to 5.00 / Common setting S003	—	−5.00 to 5.00 / Common setting S003
S063 ※**1**	Thread tension	0 to 200		
S064 ※**1**	Presser	−350 to 200		
S065 ※**1**	Correction of feed dog height	−4 to 8	—	−4 to 8
S066 ※**1**	Feed locus	S -- / A -- / C -- / B -	—	S -- / A -- / C -- / B -
S068	Part number	to 24 characters *2		
S069	Process	to 24 characters *2		
S070	Comment	50 characters *2		

*1 : This is the one-touch type changeover function. Refer to "4-2-9. One-touch type changeover button" in Instruction manual.

*2 : Only the limited number of characters is displayed.

2) Setting items for the polygonal-shape stitching steps

Step 1		
Data No.	Item name	Input range
S071	Number of stitches	1 to 2000
S072	Pitch	−5.00 to 5.00 / Custom pitch No.1 to 20
S073	Thread tension	0 to 200
S074	Presser foot pressure	−350 to 200
S075	Correction of feed dog height	−4 to 8
S076	Stop position of needle bar	: Stop with the needle down / : Stop with the needle up : Thread trimming / : Continuity
S077	Stop position of presser foot	0 to 15.0 mm
S078	One-shot	: OFF / : ON
S079	Limit on sewing speed	150 to U096
	↓	
Step 2		

* Setting items and numeric values are same with those of Step 1.

* Step numbers can be set to Step 20.

(Caution) After you have changed the setting, check to make sure that the feed dog does not come in contact with the throat plate.
Be aware that the stitch pitch may change if you have changed the feed locus or the feed dog height. It is, therefore, necessary to carry out trial stitching first before using the machine for production.

(2) List of memory switch data

1) Level 1

It can be set when a mode screen for the operator level has been displayed.

No.	Item	Setting range	Unit	Initial value							
				SMS	SSH	FMS	FSH	SMS CE	SSH CE	FMS CE	FSH CE
U001	**Soft-start function** The initial value differs with the machine head. (0: OFF**)**	0 to 9	Stitch	0	0	0	0	0	0	0	0
U002	**Material edge sensor function** 0:Without the material edge detection function 1:Sewing machine stops after sewing the preset number of stitches (U004) following the detection of material edge	0 to 1	-	0	0	0	0	0	0	0	0
U003	**Thread trimming function activated by material edge sensor** 0:Without the automatic thread trimming function after detection of material edge 1:Sewing machine stops and simultaneously carries out automatic thread trimming after sewing the preset number of stitches (U004) following the detection of material edge	0 to 1	-	0	0	0	0	0	0	0	0
U004	**Number of stitches for material edge sensor** Number of stitches to be sewn after the detection of material edge until the sewing machine stops.	0 to 19	Stitch	5	5	5	5	5	5	5	5
U007	**Bobbin thread count-down unit** 0: 10 stitches / 1: 15 stitches / 2: 20 stitches	0 to 2	-	0	0	0	0	0	0	0	0
U008	**Reverse feed stitching speed** Set the sewing speed for a multi-layer stitching and a reverse feed stitching. The number of revolutions set with this memory switch is given precedence even if it is lower than the lowest speed by pedal.	150 to 3000	sti/min	1900	1900	1900	1900	1900	1900	1900	1900
U013	**Bobbin thread count stop function** 0: Sewing machine start prohibition function is disabled even when the counter completes counting (negative value). 1: When the counter completes counting, the sewing machine start after thread trimming is prohibited. 2: When the counter completes counting, the sewing machine temporarily stops and the start of sewing machine after thread trimming is prohibited. * Note that the prohibition function is disabled in the case the initial value of counter is 0 (zero).	0 to 2	-	0	0	0	0	0	0	0	0

No.	Item	Setting range	Unit	Initial value							
				SMS	SSH	FMS	FSH	SMS CE	SSH CE	FMS CE	FSH CE
U014	**Sewing count function** 1: Automatic sewing counter / 2: Sewing counter switch input	1 to 2	-	1	1	1	1	1	1	1	1
U021	**Presser foot lift when the pedal is in its neutral position** 0: Disabled / 1: Enabled	0 to 1	-	0	0	0	0	0	0	0	0
U025	**Operation after manual turning (thread trimming)** This memory switch is used for setting the thread trimmer operation after the sewing machine has moved from its upper/lower stop position by manual turning of handwheel. 0: Permitted / 1: Prohibited	0 to 1	-	1	1	1	1	1	1	1	1
U030	**Middle-of-sewing reverse feed stitching function** Midpoint-of-sewing reverse feed stitching function is set. 0: Without the midpoint-of-sewing reverse feed stitching function / 1: With the midpoint-of-sewing reverse feed stitching function	0 to 1	-	0	0	0	0	0	0	0	0
U031	**Number of stitches of middle-of-sewing reverse feed stitching** Number of midpoint-of-sewing reverse feed stitches is set.	1 to 19	Stitch	4	4	4	4	4	4	4	4
U032	**Condition of enabling middle-of-sewing reverse feed stitching while sewing machine is at rest** Midpoint-of-sewing reverse feed stitching function enable condition 0: Disabled when the swing machine is at rest 1: Enabled when the sewing machine is at rest	0 to 1	-	0	0	0	0	0	0	0	0
U033	**Thread trimming activated by middle-of-sewing reverse feed stitching** Thread trimming function after the completion of midpoint-of-sewing reverse feed stitching is set. 0: Without automatic thread trimming function 1: With automatic thread trimming function	0 to 1	-	0	0	0	0	0	0	0	0
U035	**Minimum speed of the pedal** The maximum number of revolutions during thread trimming differs with the machine head.	150 to Max. of thread trimming	sti/min	200	200	200	200	200	200	200	200
U036	**Speed during thread trimming** The maximum number of revolutions during thread trimming differs with the machine head.	150 to Max. of thread trimming	sti/min	300	220	300	220	300	220	300	220
U037	**Speed during soft start** The maximum number of revolutions during soft start differs with the machine head. The number of revolutions set with this memory switch is given precedence even if it is lower than the lowest speed by pedal.	100 to Max	sti/min	800	800	800	800	800	800	800	800

No.	Item	Setting range	Unit	Initial value							
				SMS	SSH	FMS	FSH	SMS CE	SSH CE	FMS CE	FSH CE
U038	**Speed during one-shot stitching** The maximum number of revolutions during soft start differs with the machine head.	100 to Max	sti/min	2500	2500	2500	2500	2500	2500	2500	2500
U039	**Start position of rotation** Set start position from neutral pedal potision. (Pedal Stroke)	10 to 5000	-	600	600	600	600	600	600	600	600
U040	**Start position of acceleration** Set accelerating position from neutral pedal position. (Pedal Stroke)	10 to 1000	-	900	900	900	900	900	900	900	900
U041	**Start position of lifting of presser foot** Set work clamp lift position from neutral pedal position. (Pedal Stroke)	−500 to −10	-	−100	−100	−100	−100	−100	−100	−100	−100
U042	**Start position of lowering of presser foot** Set work clamp fall position from neutral pedal position. (Pedal Stroke)	10 to 500	-	300	300	300	300	300	300	300	300
U043	**Start position of thread trimming** Set thread triming starting position from neutral pedal position. (Pedal Stroke)	−1000 to −100	-	−840	−840	−840	−840	−840	−840	−840	−840
U044	**Position that maximum sewing speed is reached** Set maximum speed reaching position from neutral pedal position. (Pedal Stroke)	10 to 15000	-	4000	4000	4000	4000	4000	4000	4000	4000
U045	**Pedal neutral-position correction value** Set neutral position of pedal sensor.	−150 to 150	-	0	0	0	0	0	0	0	0
U047	**Presser-foot lift finishing position** The position to which the presser foot goes up when the back part of the pedal is depressed to its first step. (1st-step spring position)	−1000 to −100	-	−600	−600	−600	−600	−600	−600	−600	−600
U049	**Presser foot lowering time** The initial value differs with the machine head.	0 to 500	ms	100	100	100	100	100	100	100	100
U051	**Correction of turning-ON of reverse feed stitching (at start)**	−50 to 50	Degree	0	0	0	0	0	0	0	0
U052	**Correction of turning-OFF of reverse feed stitching (at start)**	−50 to 50	Degree	0	0	0	0	0	0	0	0
U053	**Correction of turning-OFF of reverse feed stitching (at end)**	−50 to 50	Degree	0	0	0	0	0	0	0	0
U055	**Presser foot lift after thread trimming** The initial value differs with the machine head. 0: No lift / 1: Lift	0 to 1	-	1	1	1	1	1	1	1	1

No.	Item	Setting range	Unit	Initial value							
				SMS	SSH	FMS	FSH	SMS CE	SSH CE	FMS CE	FSH CE
U056	**Reverse-rotation needle-up after thread trimming** The initial value differs with the machine head. 0: Reverse-rotation needle-up is not performed / 1: Reverse-rotation needle-up is performed	0 to 1	-	0	0	0	0	0	0	0	0
U057	**Function for lowering the feed dog during thread trimming** The presser foot height is fixed at 0 (zero) during thread trimming. 0: OFF / 1: ON	0 to 1	-	1	1	1	1	1	1	1	1
U059	**Selection of revere feed stitching (at start) operation** 0: Manual / 1: Automatic	0 to 1	-	1	1	1	1	1	1	1	1
U060	**Stop after reverse feed stitching (at start)** The stop function stops the sewing machine temporarily regardless of the operating status of the pedal. 0: OFF / 1: ON	0 to 1	-	0	0	0	0	0	0	0	0
U064	**Sewing speed at the start of reverse feed stitching (at end)**	150 to 1000	sti/min	500	500	500	500	500	500	500	500
U068	**Presser foot lifting operation changeover** The presser foot lifting operation when depressing the back part of pedal is changed over. 0: 2-step operation / 1: Manual operation depending on the pedal stroke when the back part of pedal is depressed	0 to 1	-	0	0	0	0	0	0	0	0
U069	**Presser-foot 1st step lifting height** Maximum height of presser foot at the 1st step of its lifting operation when the back part of pedal is depressed.	0.1 to 8.5	mm	5	5	5	5	5	5	5	5
U070	**Presser-foot 2nd step lifting height** Maximum height of presser foot at the 2nd step of its lifting operation when the back part of pedal is depressed. (When the back part of pedal is depressed until the thread trimming position is reached after the presser foot comes down after thread trimming)	8.5 to 13.5	mm	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
U073	**Re-try function** Retry is used when the needle fails to fully penetrate the material. 0: Without retry / 1: Normally retry	0 to 1	-	1	1	1	1	1	1	1	1
U087	**Pedal acceleration characteristic** 0: Standard / -1 to -10: Square / 1 to 10: Square root	−10 to 10	-	0	0	0	0	0	0	0	0

No.	Item	Setting range	Unit	Initial value							
				SMS	SSH	FMS	FSH	SMS CE	SSH CE	FMS CE	FSH CE
U090	**Initial-start upper-position stopping function** 0: The sewing machine stops with its needle up after checking the panel. 1: The machine automatically stops with its needle up.	0 to 1	-	1	1	1	1	1	1	1	1
U092	**Speed reducing function for reverse feed stitching at beginning of sewing** Speed reduction function after the completion of start reverse feed stitching is set. 0: Speed is not reduced. / 1: Speed is reduced	0 to 1	-	0	0	0	0	0	0	0	0
U093	**Needle up/down correction switch adding function** Needle up/down correction switch operation after the power-ON or after thread trimming is set. 0: Normal (only the needle-up/down operation) / 1: One-stitch correction is performed only in the aforementioned case (needle-up stop → Needle-up stop)	0 to 1	-	0	0	0	0	0	0	0	0
U096	**Maximum sewing speed** The initial value differs with the machine head.	150 to Max	sti/min	4000	4000	4000	4000	4000	4000	4000	4000
U120	**Main shaft reference angle correction** The main shaft reference signal angle (0 degree) is corrected with the value set using this memory switch.	−60 to 60	Degree	0	0	0	0	0	0	0	0
U121	**Upper stop position angle correction** The position at which the sewing machine stops with its needle down is corrected.	−15 to 15	Degree	0	0	0	0	0	0	0	0
U122	**Lower stop position angle correction** The position at which the sewing machine stops with its needle up is corrected.	−15 to 15	Degree	0	0	0	0	0	0	0	0

U182	**Sewing counter stopping function**
	0: The sewing machine does not stop even when the sewing counter
	     completes counting.
	1: When the counter completes counting, the sewing machine start after
	     thread trimming is prohibited.
	* Note that the prohibition function is disabled in the case the initial value of
	     counter is 0 (zero).
		0 to 1	-	0	0	0	0	0	0	0	0

U183	**Number of times of thread trimming for sewing counter**	1 to 20	-	1	1	1	1	1	1	1	1

No.	Item	Setting range	Unit	Initial value							
				SMS	SSH	FMS	FSH	SMS CE	SSH CE	FMS CE	FSH CE
U280	**Number of condensation stitches at the end of sewing before shorter-thread remaining type thread trimmer operates** When the shorter-thread remaining function is placed in ON, this memory switch is used for setting the number of condensation stitches to be sewn before thread trimming.	1 to 9	Stitch	2	2	2	2	2	2	2	2
U281	**Pitch of condensation stitches at the sewing end before shorter-thread remaining type thread trimmer operates** When the shorter-thread remaining function is placed in ON, this memory switch is used for setting the stitch pitch of condensation stitches to be sewn before thread trimming.	0 to 2.5	0.05mm	0.3	0.5	0.3	0.5	0.3	0.5	0.3	0.5
U286	**Sewing speed during thread presser operation** This memory switch is used for setting the speed to be employed when the thread presser operates.	100 to 3000	sti/min	300	300	300	300	300	300	300	300
U288	**Thread presser ON angle** This memory switch is used for setting the angle at which the thread presser is turned ON at the start of sewing.	180 to 290	Degree	210	210	210	210	210	210	210	210
U289	**Thread presser OFF angle** This memory switch is used for setting the angle at which the thread presser is turned OFF at the start of sewing.	210 to 359	Degree	290	290	290	290	290	290	290	290
U290	**AK operating time when the thread presser operates** The time to turn ON the AK device that operates when the thread presser operates.	0 to 50	ms	20	20	20	20	20	20	20	20
U292	**Soft-start resetting angel when the thread presser operates** This memory switch is used for setting the angle at which the soft-start is reset. * The setting is enabled when the thread presser operates.	180 to 900	Degree	780	780	780	780	780	780	780	780
U293	**Sewing speed resetting angle when the thread presser operates** This memory switch is used for setting the angle at which the sewing speed employed when the thread presser operates is reset. * The setting is enabled when the thread presser operates.	0 to 720	Degree	340	340	340	340	340	340	340	340
U294	**Thread-presser initial suction time**	4 to 10	ms	8	8	8	8	8	8	8	8

No.	Item	Setting range	Unit	Initial value							
				SMS	SSH	FMS	FSH	SMS CE	SSH CE	FMS CE	FSH CE
U326	**Feed dog travel to 0 position when lifting the presser foot** The feed dog height is set to 0 (zero) when lifting the presser foot. The material on the sewing machine can be handled with ease when this function is used. 0: OFF / 1: ON	0 to 1	-	1	1	1	1	1	1	1	1
U400	**Panel operation mode** This memory switch is used for specifying the mode of the sewing screen that is displayed at the time of startup. 0: Maintenance personnel mode / 1: Operator mode	0 to 1	-	1	1	1	1	1	1	1	1
U401	**Input unit of pitch** 0: Pitch (mm) / 1: Number of stitches per inch 2: Number of stitches in 3 cm	0 to 2	-	0	0	0	0	0	0	0	0
U402	**Automatic lock time** The sewing machine is automatically locked in the case the operation panel is not operated for a predetermined period of time.	0 to 300	Second	0	0	0	0	0	0	0	0
U403	**Auto-OFF of back light** Back light of the panel is automatically turned off in the case the operation panel is not operated for a certain period of time.	0 to 20	Second	0	0	0	0	0	0	0	0
U404	**Selection of part number and process / comment display** This memory switch is used for specifying either the part number/process is displayed or comment is displayed on the sewing screen. 0: Part number/process / 1: Comment	0 to 1	-	0	0	0	0	0	0	0	0
U406	**Language selection** 0: Not yet selected / 1: Japanese / 2: English / 3: Chinese	0 to 3	-	0	0	0	0	0	0	0	0
U407	**Operating sound of panel** 0: OFF / 1: ON	0 to 1	-	1	1	1	1	1	1	1	1

2) Level 2

It can be set when a mode screen for the serviceperson level 1 or the serviceperson level 2 has been displayed.

No.	Item	Setting range	Unit	Initial value							
				SMS	SSH	FMS	FSH	SMS CE	SSH CS	FMS CE	FSH CE
K023	**Presser device** 0: Equipped/1: Non-equipped	0 to 1	-	0	0	0	0	0	0	0	0
K024	**Reverse feed stitching speed (at end)** When the set value is 150, the set value of a memory switch U008 becomes effective. Other than that, the value lower than that of the memory switch U008 becomes effective.	150 to 3000	sti/min	150	150	150	150	150	150	150	150
K026	**Operational settings of BTSW** 0: Normal/1:Stopping double touch Hsw/2: Stopping Hsw/3: Stopping Usw	0 to 3	-	0	0	0	0	0	0	0	0
K034	**Number of needles for prohibited reverse feed stitching (at end)** 0: Prohibited and disabled	0 to 19	Stitch	2	2	2	2	2	2	2	2
K046	**Function for lifting of a presser foot at the time of power activation** 0: OFF/1: ON	0 to 1	-	0	0	0	0	0	0	0	0
K050	**Waiting time after lowering of a presser foot** Waiting time until a principal axis begins to start after lowering of a presser foot	10 to 100	ms	40	40	40	40	40	40	40	40
K067	**Speed correction for presser strength** Correct the presser strength with the sewing speed. 0: Without speed correction/1: With speed correction	0 to 1	-	1	1	1	1	1	1	1	1
K072	**Function for selection of the rise of a sewing machine** 0: Normal/1-400: Restriction on a rise	0 to 400	-	0	0	0	0	260	260	260	260
K086	**Waiting time until the reverse-rotate needle-up starts**	0 to 250	ms	100	100	100	100	100	100	100	100
K103	**Needle cooler output-off delay time** Delay time from a stop until an output-off, using the needle cooler output function	100 to 2000	ms	500	500	500	500	500	500	500	500
K105	**BT Angle that ends prohibition of output operation** The reverse-feed stitching output is prohibited below the set angle.	0 to 359	Degree	112	112	112	112	112	112	112	112

No.	Item	Setting range	Unit	Initial value							
				SMS	SSH	FMS	FSH	SMS CE	SSH CS	FMS CE	FSH CE
K106	**BT Angle that starts prohibition of output operation** The reverse-feed stitching output is prohibited over the set angle.	0 to 359	Degree	262	262	262	262	262	262	262	262
K111	**Sewing speed according to a fan motion** 0: A fan motor always rotates. /100 and up: A fan motor rotates when the current sewing speed exceeds the set sewing speed.	0 to 4000	sti/min	0	0	0	0	0	0	0	0
K118	**Cancellation of a grease-up error** If it is enabled at the time of power activation, clear a counter of the number of stitches for a grease-up error and its settings. 0: Disabled/1: Enabled	0 to 1	-	0	0	0	0	0	0	0	0
K125	**Speed settings for one-touch type reverse feed**	150 to 5000	sti/min	4000	4000	4000	4000	4000	4000	4000	4000
K126	**Time for detecting if the sewing machine is being locked**	500 to 2000	ms	1000	1000	1000	1000	1000	1000	1000	1000
K130	**AT correction value**	−30 to 50	-	20	20	20	20	20	20	20	20
K184	**The number of needles ignoring the sewing counter switch** When the number of sewing needles used at the time of the thread trimming is less than that of needles set in the sewing machine, the sewing counter switch is not accepted. (Both the sewing counter and the ISS data recording are a target.) 0: Disabled	0 to 99	Stitch	0	0	0	0	0	0	0	0
K291	**Angle at which operation of the AK is turned ON for the thread presser** Angle at which operation of the AK starts when the thread presser operates	50 to 359	Degree	200	200	200	200	200	200	200	200
K321	**Change in the vertical phase of the feed locus**	−30 to 30	Degree	0	0	0	0	0	0	0	0
K330	**Pitch correction in the forward direction**	50 to 150	%	100	100	100	100	100	100	100	100
K331	**Pitch correction in the reverse direction**	50 to 150	%	100	100	100	100	100	100	100	100
K420	**Network connecting function** 0: Disabled network connecting function/1: Enabled network connecting function	0 to 1	-	0	0	0	0	0	0	0	0

No.	Item	Setting range	Unit	Initial value							
				SMS	SSH	FMS	FSH	SMS CE	SSH CS	FMS CE	FSH CE
K430	**ISS function** Set whether to use the ISS data measurement function. 0: Not used /1: Use	0 to 1	-	0	0	0	0	0	0	0	0
K437	**ISS backup data initialization** With the settings of the selection 1, initialize the ISS backup data. (After initialization, the selection 1 returns to the selection 0 automatically.)	0 to 1	-	0	0	0	0	0	0	0	0

(3) Details of a memory switch

① **Selection of the soft-start function (U001)**

The needle thread may fail to interlace with the bobbin thread at the start of sewing when the stitching pitch (stitch length) is small or a thick needle is used. To solve such problem, this function (called "soft-start") is used to limit the sewing speed, thereby assuring successful formation of the starting stitches.

       0 :   The function is not selected.

       1 to 9 : The number of stitches to be sewn under the soft-start mode.

The sewing speed limited by the soft-start function can be changed. (U037)

       Data setting range

        100 to MAX sti/min < 10 sti/min >

        (The MAX value varies with the machine head.)

② **Sewing counting function (U014)**

The function counts up every time thread trimming is completed and counts the number of completion of the sewing process.

       1 : on   Sewing counting function is operative. (Every time thread trimming is performed)

       2 : on   External sewing counter switch input.

③ **Neutral automatic presser lifting function (with AK device only) (U021)**

This function can automatically lift the presser foot when the pedal is in the neutral position.

Automatic lifting time of a pedal depends on the lifting time after a thread trimming. When it lowers automatically, it lifts automatically at the second neutral position after deviation from the first neutral position.

       0 : Not provided with the function of automatic presser foot lifting at neutral position of pedal

       1 : Provided with selectable function of automatic presser foot lifting at neutral position of pedal

④ **Speed during one-shot stitching (U038)**

This function can set, by the pedal operation of one time, the sewing speed of one-shot stitching when the sewing machine continues stitching until completing the number of stitches specified or detecting the material end.

       Setting range : 100 to MAX sti/min < 10 sti/min >

⑤ **Adjustment of the pedal stroke (U039 to U044)**
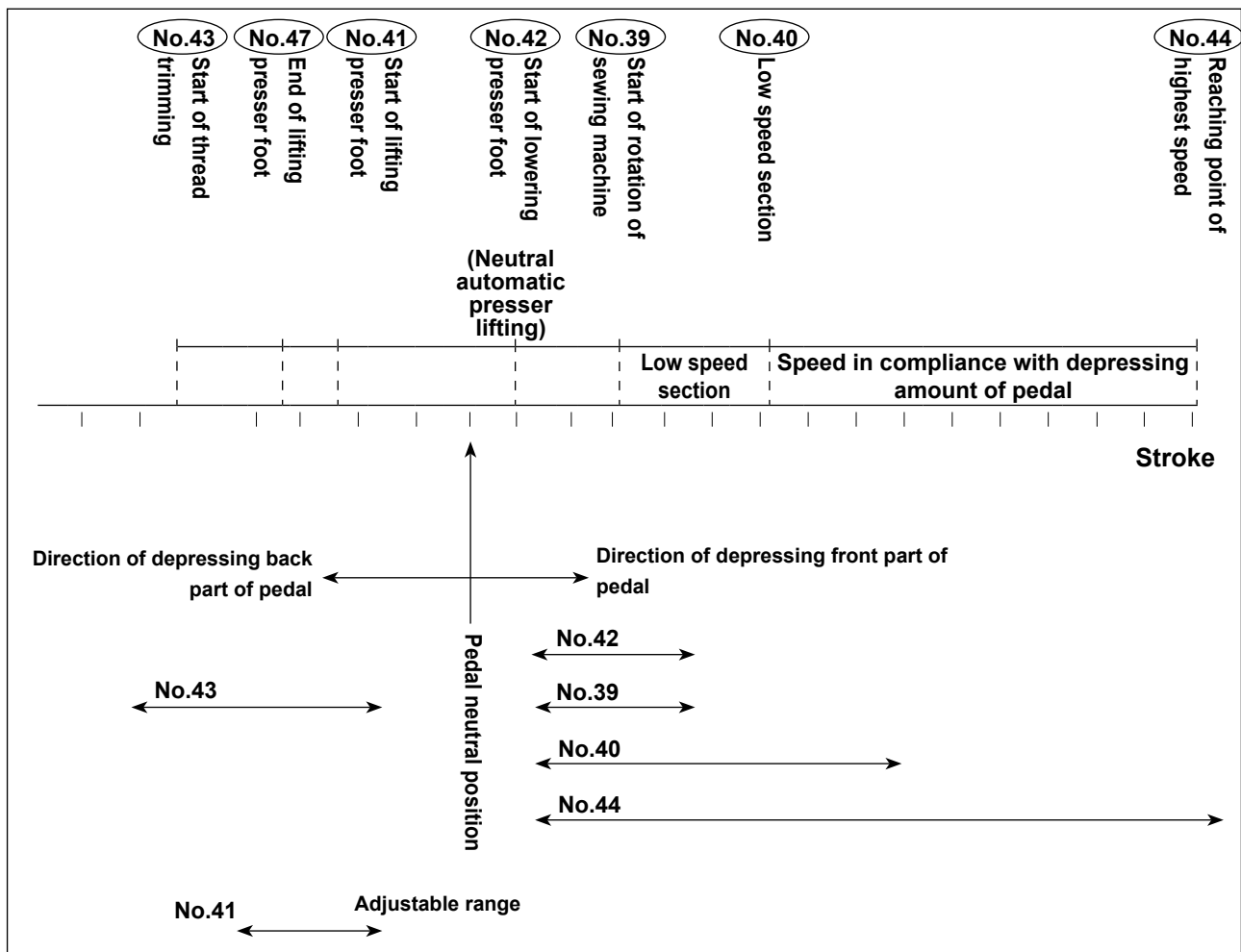
1. Pedal stroke at the start of rotation (U039)
   Stroke between the pedal in its neutral position and starting position of rotation of the sewing machine can be adjusted.
   Setting range : 10 to 5000

2. Low speed section of the pedal (U040)
   Stroke of the low speed section can be adjusted by operating the pedal.
   Setting range : 10 to 1000

3. Starting position of lifting presser foot by pedal (U041)
   Stroke between the pedal in its neutral position and starting position of lifting presser foot can be adjusted.(When lifting presser foot by pedal is applied.)
   Setting range : − 500 to −10

4. Setting of starting position of lowering presser foot (U042)
   Stroke between the pedal in its neutral position and starting position of lowering presser foot can be adjusted.(When the automatic neutral presser foot lifting function is used.)
   Setting range : 10 to 500

5. Pedal stroke 2 for starting thread trimming (U043)
   Stroke between the pedal in its neutral position and starting position of thread trimming can be adjusted.(When the function of lifting presser foot by pedal is provided.)
   Setting range : −1000 to −100

6. Pedal stroke for reaching the maximum number of rotations (U044)
   Stroke between the pedal in its neutral position and the position where the sewing machine reaches at its highest speed can be adjusted .
   Setting range : 10 to 15000

7. Pedal stroke 1 for starting thread trimming (U047)

By setting the U068 to the selection 1, can be adjust the stroke until the U069 (1st presser lifting height).

Setting range : −1000 to −100

⑥ **Foot lift function after thread trimming (U055)**

This function can automatically lift the presser foot after thread trimming. This function is effective only when it is used in combination with the AK device.

0 : OFF Function of automatically lifting the presser foot is not provided.
(Presser foot does not automatically go up after thread trimming.)
1 : ON Function of automatically lifting the presser foot is provided.
(Presser foot automatically goes up after thread trimming.)

⑦ **Reverse revolution to lift the needle after thread trimming (U056)**

This function is used to make the sewing machine rotate in the reverse direction after thread trimming to lift the needle bar almost to highest position. Use this function when the needle appears under the presser foot and it is likely to make scratches on the sewing products of heavy-weight material or the like.

0 : OFF Function of making the sewing machine rotate in the reverse direction to lift the needle after thread trimming is not provided.
1 : ON Function of making the sewing machine rotate in the reverse direction to lift the needle after thread trimming is provided.

(Caution) The needle bar is raised, by rotating the machine in the reverse direction, almost to the highest dead point. This may result in slip-off of the needle thread. It is therefore necessary to adjust the length of thread remaining after thread trimming properly.

⑧ **Manual operation of the presser lifter (U068)**

By setting the U068 to the selection 1, it is possible to change the height of the presser lifter in response to a stroke for stepping the pedal backward.

0 : Two-step operation
By stepping a pedal backward, the current height becomes changes to the 1st presser lifting height (U069).
1 : Manual operation depending on the amount of a reverse step
The presser foot operates up to the 1st presser lifting height (U069) according to the stroke for stepping the pedal backward.

⑨ **Height of the presser lifter (U069 and U070)**

By stepping the pedal backward until the end position of the presser lifter lifting (U047), the presser foot is positioned at the 1st presser foot lifting height (U069). By stepping the pedal more backward before the start of sewing and stepping the pedal backward until the start position of thread trimming (U043), the presser foot is positioned at the 2nd presser foot lifting height (U070).

U069 1st presser foot lifting height Default 5.0 Setting range 0.1 to 8.5
U070 2nd presser foot lifting height Default 8.5 Setting range 8.5 to 13.5

⑩ **Reverse feed stitching speed (at start) switching function between Auto and Manual by pedal directions (U059)**

Select whether to perform a reverse feed stitching (at start) at a speed set with a memory switch U008 at once or perform a reverse feed stitching (at start) at a pedal stepping speed.

0 : Manual Manual sewing with the directions to pedal operation
1 : Auto Automatic sewing at a setting speed

(Cautions) 1. The maximum of the reverse feed stitching speed (at start) is restricted at the speed set with a memory switch U008 irrespective of a pedal.

2. At the time of selecting the selection "0," there is a possibility that one reverse stitch does not come to go with the other reverse stitch.

⑪ **Function of reducing speed of reverse feed stitching at the start of sewing (U060)**

Function to reduce speed at the time of completion of reverse feed stitching at the start of sewing : Normal use depending on the pedal condition (Speed is accelerated to the highest without a break.)
This function is used when temporary stop is used properly. (Cuff and cuff attaching)

       0 : Speed is not reduced.

       1 : Speed is reduced.

⑫ **Function of pedal curve selection(U087)**

This function can perform the selection of the curve of number of rotation of the sewing machine against the depressing amount of the pedal.
Change to this function when you feel that inching operation is hard or that pedal response is slow.

      – 10 to – 1 : The number of revolutions rises linearly against the stepping of a pedal.

      0 :   The acceleration at the time of the small stroke of a pedal is small.

      1 to 10 :   The acceleration at the time of the big stroke of a pedal is big.

Number of rotation (sti/min) vs Pedal stroke (mm); curves labeled 10, 1, 0, −1, −10
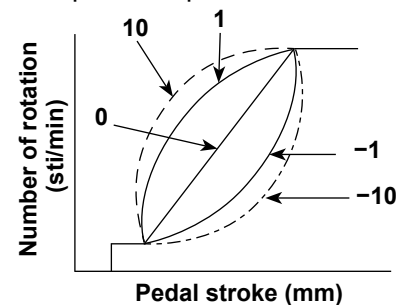
⑬ **Initial motion UP stop position move function (U090)**

Effective/ineffective of automatic return to UP stop position immediately after turning ON the power can be set.

       0 : Ineffective

       1 : Effective

⑭ **Maximum sewing speed settings for a head section (U096)**

It is a function that sets the maximum sewing speed the user wants to use for the head section
The upper limit of the setting value differs depending on the connected head section.

      Setting range : 150 to MAX sti/min < 50 sti/min >

⑮ **Main shaft reference angle compensation (U120)**

Main shaft reference angle is compensated

      Setting range : – 60 to 60° < 1° >

⑯ **UP position starting angle compensation (U121)**

Angle to detect UP position starting is compensated.

      Setting range : – 15 to 15° < 1° >

⑰ **DOWN position starting angle compensation (U122)**

Angle to detect DOWN position starting is compensated.

      Setting range : – 15 to 15° < 1° >

⑱ **Operational sound of the panel (U407)**

It is possible to select the presence or absence of sound at the time of panel operation.

       0 : OFF Without operational sound

       1 : ON With operational sound

(4) List of errors

Error code	Description of error	Cause	Item to be checked
E000	Execution of data initialization (This is not an error.)	• The existing control box has been removed and a new one is mounted. • In the case the initialization operation is executed. • When the machine head is changed.	This is not a failure.
E007	Motor overload	• In the case the machine head is locked. • In the case of sewing extra-heavy weight material that exceeds the guaranteed material thickness. • In the case the motor fails to rotate. • In the case of the motor or driver failure.	• Check whether the pulley is entangled with thread. • Check whether the motor output connector (4P) has loosened. • Check whether the motor can be turned smoothly by hand.
E009	Overtime of solenoid energization	• In the case the length of solenoid energizing time has exceeded the assumed one.	
E011	Media is not inserted	• In the case no media is inserted.	• Turn the power OFF and check for a media.
E012	Read error	• In the case data stored on the media cannot be read.	• Turn the power OFF and check for a media.
E013	Write error	• In the case data cannot be written on the media.	• Turn the power OFF and check for a media.
E014	Write protect	• In the case the media is placed in the write-prohibition state.	• Turn the power OFF and check for a media.
E015	Format error	• In the case formatting of the media cannot be carried out.	• Turn the power OFF and check for a media.
E016	External media over-capacity	• In the case the capacity of media is not enough.	• Turn the power OFF and check for a media.
E019	File size over	• In the case of attempting to read the custom pitch data or condensation custom data which exceeds the maximum permissible data size into the memory of sewing machine from the USB thumb drive.	• Turn the power OFF and check the USB thumb drive.
E021	Access abnormality	• When file access abnormality has occurred.	
E022	File No. error	• In the case of attempting to read a file which is not stored in the USB thumb drive into the operation panel.	
E024	Excess of a pattern data size	• When the number of needles that can be handled by a machine and the data size has been exceeded.	
E032	File compatibility error	• In the case the file is not compatible. (EPD, MSW, etc.)	• Turn the power OFF and check for a media.
E071	Slip-off of the motor connector	• In the case the motor connector has slipped off. • When a motor current detection circuit is damaged. • When current-feedback is not effected.	• Check for looseness and slip-off of the motor output connector.

Error code	Description of error	Cause	Item to be checked
E072	Motor overload when the thread trimmer operates	• Same as E007. (thread trimmer operates)	• Same as E007.
E079	Overload operation error	• Load applied to the main shaft motor is excessively large.	
E081	Feed driving motor lock	• In the case the feed driving motor is locked.	• Check whether the feed driving motor operates smoothly.
E204	USB insertion	• In the case the sewing machine is started up without removing the USB thumb drive.	• Remove and restart a USB memory.
E205	ISS buffer capacity runout warning	• Buffer for storing ISS data will soon be filled to its capacity. If the buffer is used continuously, the stored data will be automatically erased on FIFO basis.	• Output the ISS data.
E220	Warning against shortage of grease	• When the predetermined number of stitches is reached.	• Add grease to the specified points of sewing machine and reset the error.
E221	Grease-shortage error	• In the case the sewing machine cannot continue sewing since the predetermined number of stitches is reached.	• Add grease to the specified points of sewing machine and reset the error.
E302	Head-tilt detection error (When the safety switch operates)	• In the case the Tilt detection switch is turned ON when the power to the sewing machine remains ON.	• Check whether the machine head is tilted before turning OFF the power switch (The sewing machine operation is prohibited for the sake of safety.)
E303	Meniscus sensor error	• In the case the meniscus sensor signal cannot be detected.	• Check for a break in the main shaft motor encoder connector.
E402	Deletion disabled error	• In the case of attempting to delete the pattern which is used in a cycle pattern. • In the case of attempting to delete the custom pitch or condensation custom which is used in a pattern.	
E407	Wrong password	• In the case the password entered is wrong.	
E408	Shortage of number of password characters	• In the case the number of password characters entered is not enough.	
E411	Polygonal stitching pattern registration disabled error	• In the case of attempting to create eleven or more polygonal stitching patterns.	
E412	Custom pitch unregistered error	• In the case the custom pitch number is faulty. (When a custom pitch pattern does not exist.)	
E413	Condensation custom unregistered error	• In the case the condensation custom number is faulty. (When a Condensation custom pattern does not exist.)	
E420	Out of range error (a memory switch and sewing data)	• When the value for sewing data and setting a memory switch is out of range.	
E435	Out of range error (communication screen)	• When the value entered on the communication screen is out of range.	

Error code	Description of error	Cause	Item to be checked
E499	Simplified program fault	• Command parameter data is out of specified range.	• Re-enter the relevant simplified program. • Set the simplified program in disable.
E702	Data abnormality (data abnormality)	• When it cannot be displayed because of data abnormality.	• Check if data (sewing data) exists.
E703	Data abnormality (model inconsistency)	• The operation panel and the sewing machine model for SC do not match in the initial communication.	• Rewrite a panel and the software for SC with a compatible version.
E704	Data failure (system-version mismatch)	• In the case the system version does not match the machine head setting.	• Re-write the system version to the applicable one.
E707	A NAND flash ROM is not formatted.	• When a NAND flash ROM is not formatted.	
E708	A NAND flash ROM cannot be accessed.	• When a NAND flash cannot be accessed.	
E730	Encoder failure	• When the motor signal is not properly inputted.	• Check the motor signal connector (CN30) for loose connection and disconnection. • Check whether the motor signal cord has broken since the cord is caught in the machine head. • Check whether the inserting direction of the motor encoder connector is wrong.
E731	Motor hole sensor fault	• In the case the motor signal is not input properly.	• Check whether the motor signal connector (CN39) has loosened or slipped off. • Check whether the motor signal cord has broken by being caught under the machine head. • Check whether the insertion direction of the motor encoder connector is correct.
E733	Reverse rotation of motor	• When the motor runs at a speed of 500 sti/min. or more, the motor runs in the reverse direction of the indicated direction of rotation.	• Check whether the main shaft motor encoder wire connection is correct. • Check whether the main shaft motor wire connection for power is correct.
E750	Sewing machine stops	• In the case the optional-input safety switch is pressed.	
E811	Over-voltage	• In the case a voltage that is equal to or more than the guaranteed voltage is input. • In the case a voltage of 200 V is applied though the voltage is set to 100 V. • In the case a voltage of 220 V is input to the box of "JA: 120 V". • In the case a voltage of 400 V is applied to the box of "CE: 230 V".	• Check whether the supply voltage of "rated supply voltage +10 % or more" is applied. • Check whether the 100 V/200 V changeover connector is set correctly. • A power supply board is damaged.

Error code	Description of error	Cause	Item to be checked
E813	Low voltage	• When voltage lower than guaranteed one is inputted. • 100V has been inputted to SC-923 of 200V specifications. • JA : 120V is applied to 220V box • Inner circuit is broken by the applied overvoltage.	• Check whether the voltage is lower than the rated voltage - (minus) 10% or less. • Check whether 100V/200V change-over connector is improperly set. • A power supply board is damaged.
E815	Regenerative resistor is not connected	• In the case the regenerative resistor is not connected.	• Check whether the regenerative resister is connected to the regenerative resistor connector (CN11).
E900	Main shaft motor IPM overcurrent protection	• Maloperation of the main shaft motor.	
E901	Main shaft motor IPM overload		
E903	85-V power supply fault	• In the case the 85-V voltage is not properly output.	• Check whether the stepping motor is faulty. • Check the F2 fuse.
E904	24-V power supply fault	• In the case the 24-V voltage is not properly output.	
E910	The presser motor origin retrieval error	• In the case the presser motor has failed to return to its origin.	• Check whether the presser setting is correct (memory switch No. 23). • Check whether the presser motor origin has been correctly adjusted.
E912	Main shaft motor speed detection error	• In the case the main shaft motor runs at a speed that exceeds the assumed speed.	• Check whether connection encoder wire of the main shaft motor is correct. • Check whether connection of the main shaft motor wire is correct.
E915	Failure of communication with operation panel	• In the case communication with the operation panel cannot be carried out.	• Check whether CN38 of the CTL PCB or CN200 of the panel is connected properly. • Whether the cable has broken.
E918	Main shaft temperature error	• In the case the temperature of the CTL PCB is excessively high.	
E922	Main shaft control failure	• In the case the main shaft motor is out of control.	
E924	Motor driver fault	• In the case the motor driver has broken.	
E946	Machine-head EE-PROM write error	• In the case the machine head PCB is not correctly connected.	• Is the connector for an INT board (CN32) is loose?
E955	Electric current sensor error	• Main motor shaft failure. • Electric current sensor failure.	• Check whether the main shaft motor has short-circuited. • Check whether connection of the main-shaft motor wire for power is correct.
E961	Pitch motor deviation error	• In the case the pitch motor fails to operate because of an excessive load.	• Check whether the pitch motor runs smoothly.
E962	Presser motor deviation error	• In the case the presser fails to operate because of an excessive load.	• Check whether the presser motor runs smoothly.
E963	IPM temperature error	• In the case the temperature of the CTL PCB is excessively high.	
E965	Pitch motor temperature error	• In the case the pitch motor is applied with an excessive load.	• Check whether the pitch motor runs smoothly.

Error code	Description of error	Cause	Item to be checked
E966	Feed driving motor temperature error	• In the case the feed driving motor is applied with an excessive load.	• Check whether the feed driving motor runs smoothly.
E971	Pitch motor IPM over-current protection	• Pitch motor maloperation.	
E972	Pitch motor overload	• In the case the pitch motor is applied with an excessive load.	• Check whether the pitch motor runs smoothly.
E973	Feed driving motor IPM overcurrent protection	• Feed driving motor maloperation.	
E974	Feed driving motor overload	• In the case the feed driving motor is applied with an excessive load.	• Check whether the feed driving motor runs smoothly.
E975	Presser motor IPM over-current protection	• Presser motor maloperation.	
E976	Presser motor overload	• In the case the presser motor is applied with an excessive load.	• Check whether the presser motor runs smoothly.
E977	CPU fault	• In the case of a program fault.	
E978	Network communication fault	• In the case the data received from the network is damaged.	
E985	Return-to-origin error of pitch motor or feed driving motor	• In the case the pitch motor has failed to return to its origin. • In the case the feed driving motor has failed to return to its origin.	• Check whether the origin of the pitch motor has been adjusted properly. • Check whether the origin of the feed driving motor has been adjusted properly.

6. Electrical component and the like

(1) Construction of a control box and how to remove a board

1) Construction of a control box

The control box consists of the following three kinds of board assemblies and the board incorporated into the electrical box varies depending on the specifications and places of destinations.
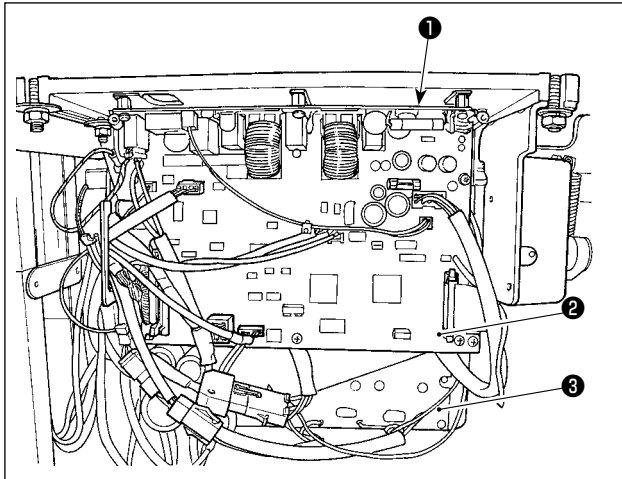
❶	FLT-S board assembly
	FLT-T board assembly
❷	CTL board assembly
	CTL-D board assembly
❸	PWR board assembly
	PWR-CE board assembly

2) How to remove the CTL board assembly

CTL / CTL-D board asm.
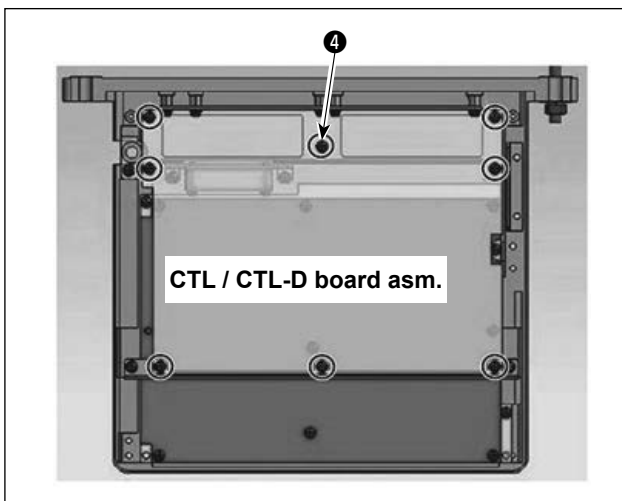
When you remove eight setscrews ❹ shown in the left Figure, you can remove the CTL board assembly ❷ .

* When you remove the CTL board assembly ❷, do it after removing the connector.
* It is necessary to remove the FLT-T board assembly ❶ first according to the specification of the three phases.

3) How to remove the PWR board assembly

PWR / PWR-CE board asm.
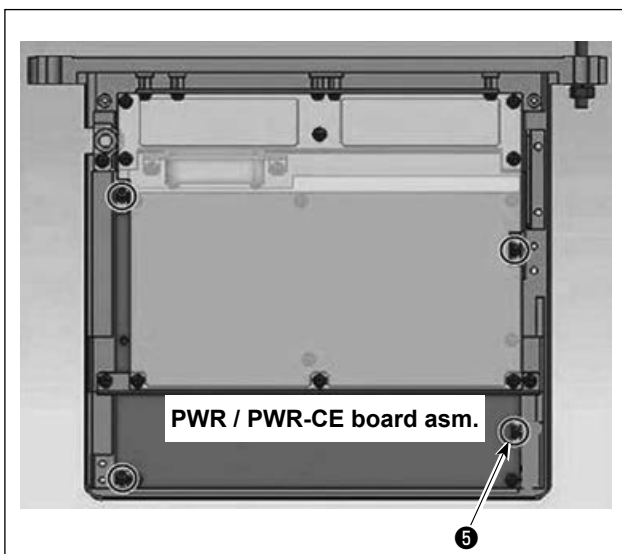
The construction of the PWR board assembly ❸ allows you to remove the PWR board assembly without removing the CTL board assembly ❷ , but it is necessary to follow the following procedure.

1. Remove the connector connected to the PWR board assembly ❸.
2. Remove the FG lines for of a principal axis motor, a horizontal feed motor, and the vertical feed motor.
3. Remove the CN31, CN35, and CN41(CN41 is full digital type only) of the CTL board assembly ❷.
4. Remove the CN2 of the FLT board assembly ❶.
5. Remove four setscrews for the PWR board assembly ❺.
6. Draw the PWR board assembly ❸ upward to the extent of 5 mm and slide it downward to remove it.

* The PWR board asm. ❸ has a groove for anti-drop, so it is not possible to slide it downward only by removing a screw.

(2) Various boards

1) FLT-T board assembly

Power filter board for the three-phase of 200-240V specification/single-phase 100-120V specification
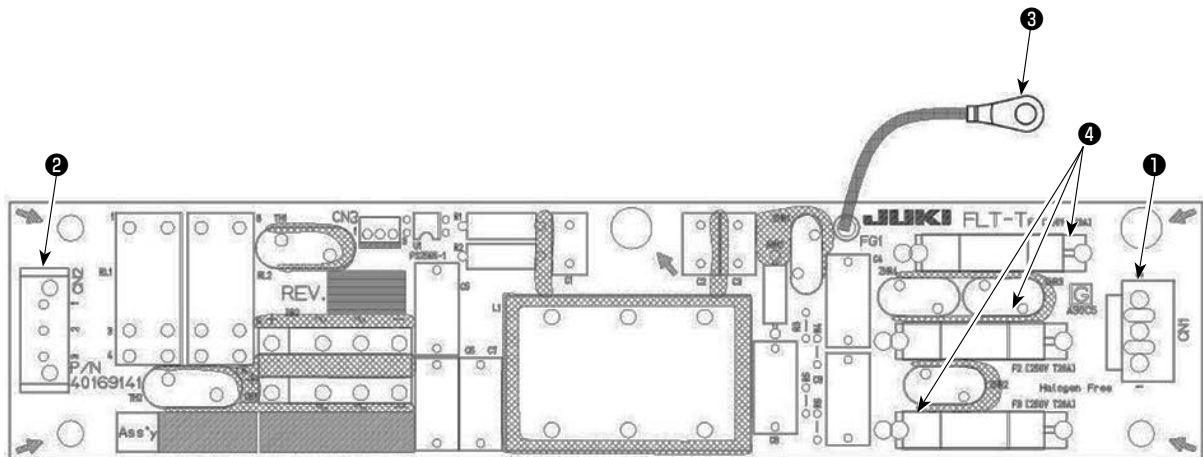
No.	Names of connector and fuse	Name of the destination to connect	Remark
❶	CN1	Power switch	Power input
❷	CN2	PWR board	Power output
❸	FG	Frame ground	
❹	F1,F2,F3	20A Time-lag fuse	Unremoval

2) FLT-S board assembly

Power filter board for the single-phase 220V-240V specification and the CE specification
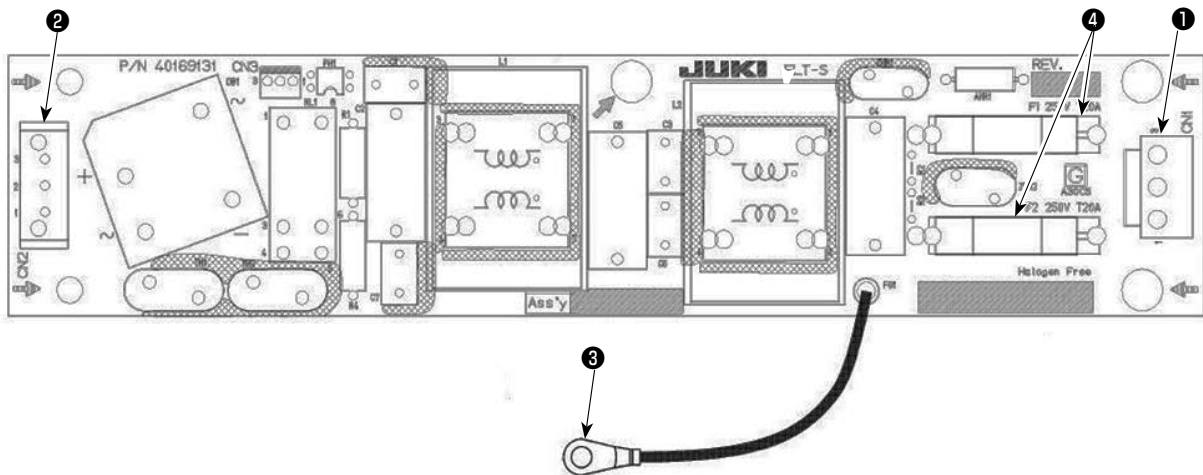
No.	Names of connector and fuse	Name of the destination to connect	Remark
❶	CN1	Power switch	Power input
❷	CN2	PWR board	Power output
❸	FG	Frame ground	
❹	F1,F2	20A Time-lag fuse	Unremoval

3) PWR board assembly /PWR -CE board assembly

Generation of a power supply and board that drives a principal axis motor, a horizontal feed motor, and a vertical feed motor
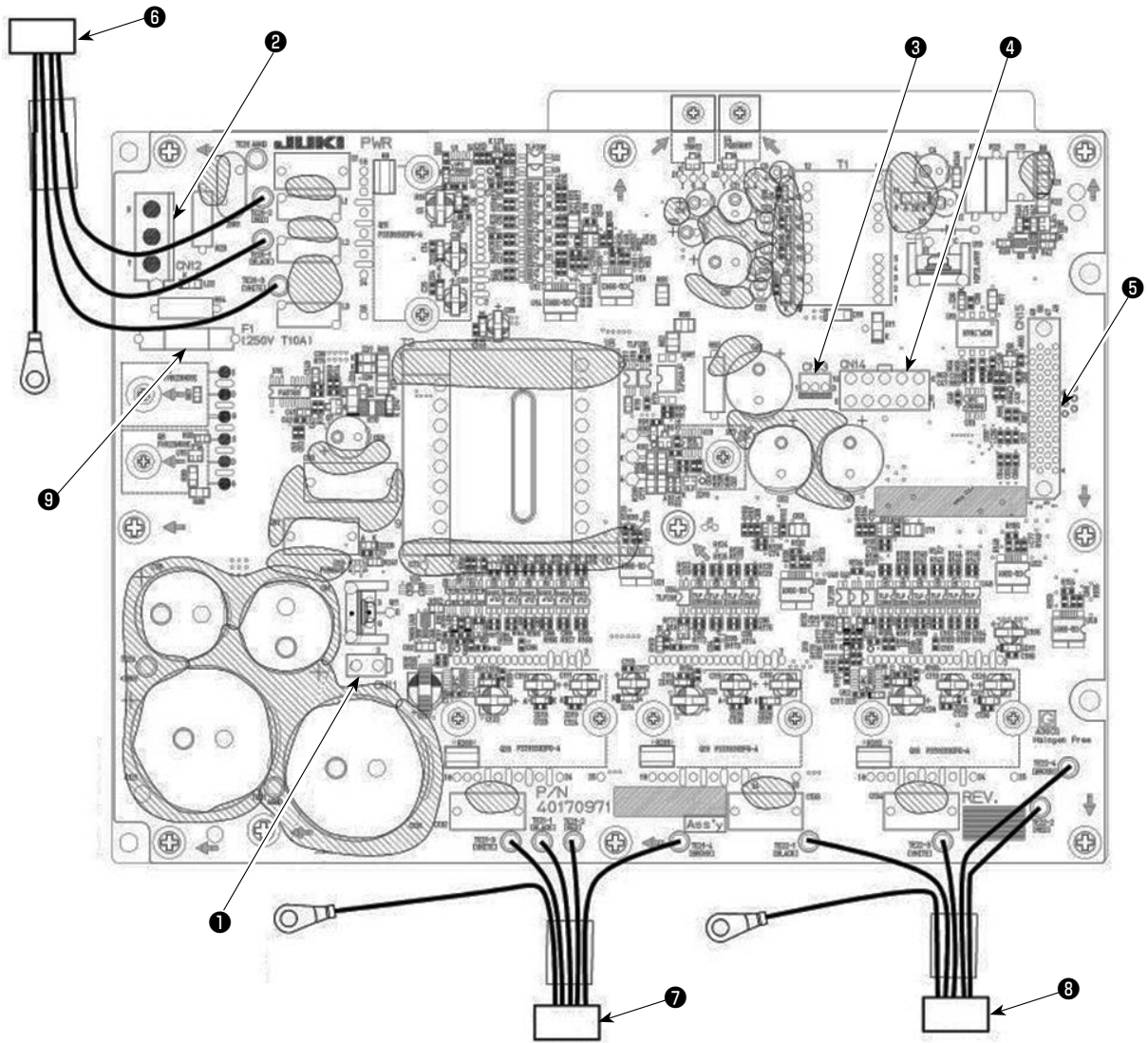
No.	Names of connector and fuse	Name of the destination to connect	Remark
❶	CN11	Regenerative resistance	
❷	CN12	FLT board	Power input
❸	CN13	CTL board	Auxiliary power for the AT
❹	CN14	CTL board	Power output
❺	CN15	CTL board	I/O Signal
❻	CN20	Main motor power	
❼	CN21	Horizontal motor power	
❽	CN22	Upper and lower motor power	
❾	F1	10A Time-lag fuse	Unremoval

4) CTL board assembly /CTL -D board assembly

Board that controls a presser motor and a solenoid, and controls the whole sewing machine including memorization of a memory switch and the like
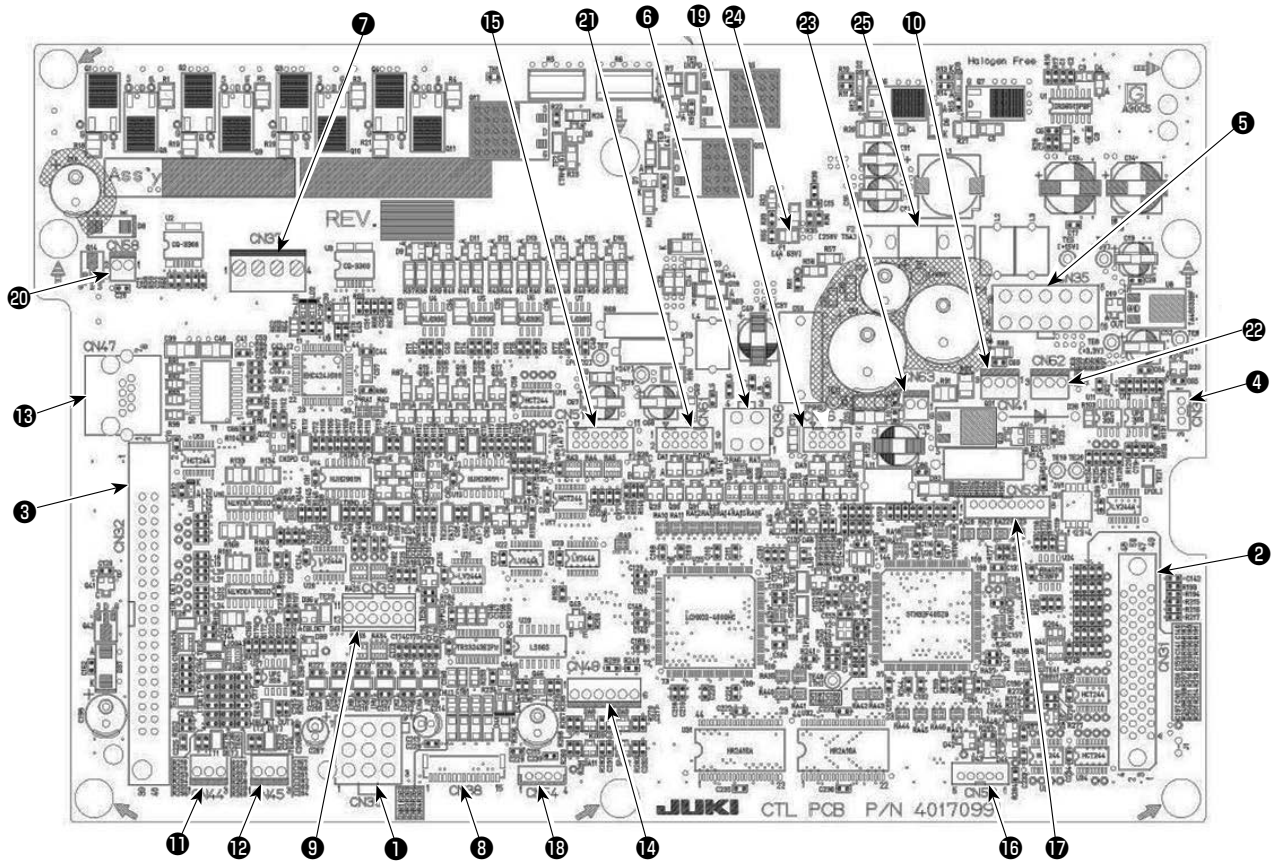
No.	Names of connector and fuse	Name of the destination to connect	Remark
❶	CN30	Principal axis motor encoder	
❷	CN31	CTL board	I/O Signal
❸	CN32	INT board	I/O Signal
❹	CN34	Pedal sensor	
❺	CN35	PWR board	Power input
❻	CN36	Thread trimming/thread presser solenoid	Thread trimming/thread presser solenoid
❼	CN37	Presser motor power	Presser motor output
❽	CN38	Panel	PNL I/F
❾	CN39	Sewing machine for standing work signal	
❿	CN41	PWR board	Auxiliary power for the AT (CTL-D board asm. is non-equipped)
⓫	CN44	Optional input	
⓬	CN45	Optional input	
⓭	CN47	ETHERNET	CTL-D asm. is non-equipped
⓮	CN49	Unused	PLD write
⓯	CN51	Optional logic input/output	
⓰	CN52	Unused	CPU write
⓱	CN53	Unused	CPU debug
⓲	CN54	Optional knee lifter lifting sensor	Knee lifter lifting sensor
⓳	CN56	Optional the bird's nest preventing output	The bird's nest preventing (CTL-D board asm. is non-equipped)
⓴	CN58	Fan in the box	Fan in the box
㉑	CN61	Optional solenoid valve output	Optional solenoid valve output
㉒	CN62	FLT board	Relay signal
㉓	CN63	Active tension solenoid	CTL-D asm. is non-equipped
㉔	F1	4A chip fuse	For 24V、 Unremoval
㉕	F2	5A Time-lag fuse	For 85V

5) INT board assembly

Board that is attached to inside the head section of a sewing machine, which has a connector that relays various sensor signals and also a memory that memorizes data on the head section of a sewing machine
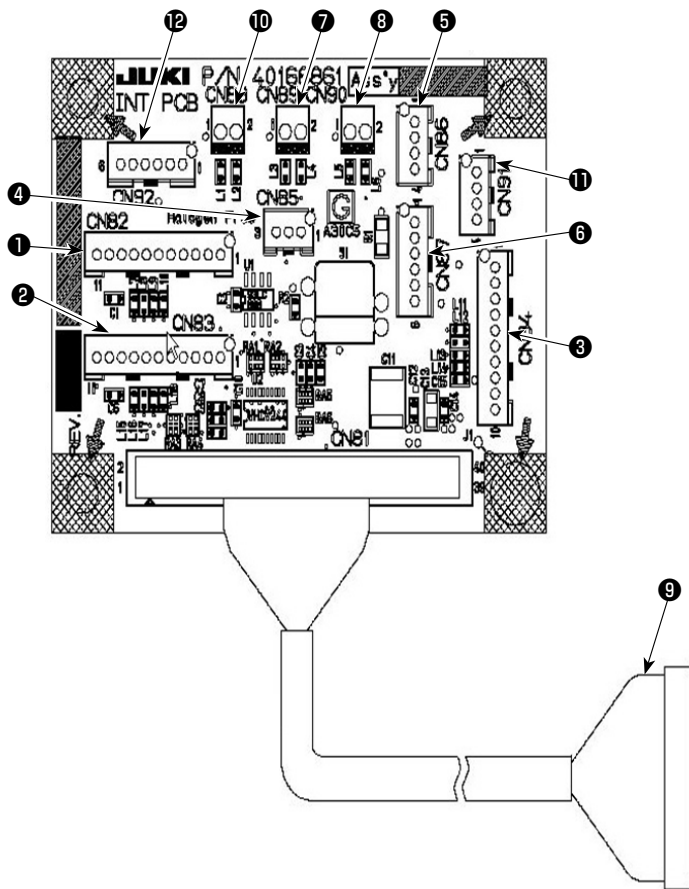
No.	Names of connector and fuse	Name of the destination to connect	Remark
❶	CN82	Horizontal feed motor encoder	
❷	CN83	Vertical feed motor encoder	
❸	CN84	Presser motor encoder	
❹	CN85	Feed lever sensor	
❺	CN86	Presser height sensor	
❻	CN87	LED hand light · Hand Switch	
❼	CN89	Machine head FAN	
❽	CN90	Reserve (FAN)	
❾	CN81	CTL board	I/O Signal
❿	CN88	Non-equipped	
⓫	CN91	Non-equipped	
⓬	CN92	Non-equipped	

(3) Optional input-output connector

When counters and the like are connected or as the destination to output the timing signal from the sewing machine, an external input-output connector is prepared for the SC-951/950. In addition, as for the functions of each connector pin, it is possible to change the already initialized functions or set a new function.
(Caution) Engineers who have electric knowledge should work when it is used.

1) How to set an optional input-output function (DDL-9000C-S)
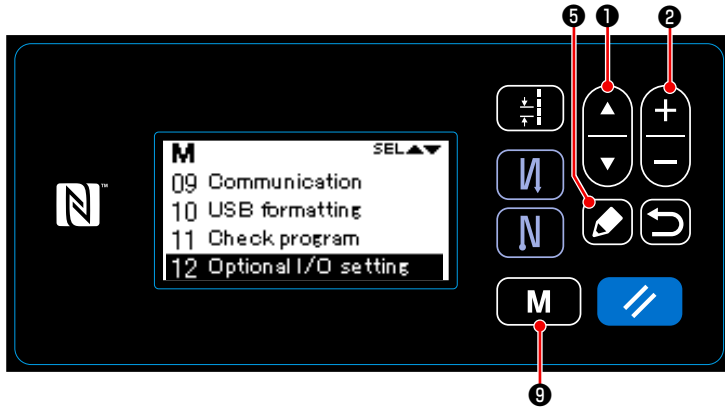
1. Keep **M** ❾ held pressed for six seconds on the sewing screen to display the mode screen.
2. Select "12 Optional I/O setting" by pressing ❷. Then, press ❺ to display the optional input/output setting screen.
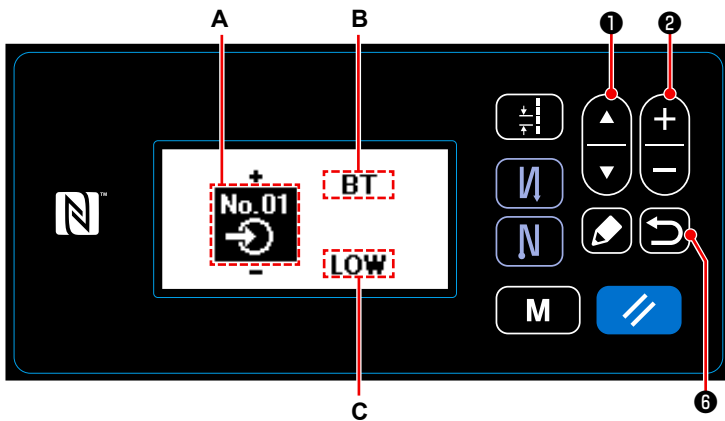
3. How to set an input function
   Description of a display screen and an input switch
   A: Input number
   B: Name of an input function
   C: Active settings of a signal

   ❶ :
   Switch the changes (A, B, and C).

   ❷ :
   Change the set contents of A, B, and C.

Correspondence table between an input number and a connector number

IN_No.	CN No.	Pin_No.	Initialization	Electrical specification
1	CN32	29	BTSW	DC5V、-5mA
2		30	NOP	DC5V、-5mA
3		31	OTSW	DC5V、-5mA
4	CN39	7	TSW	DC3.3V、-3.3mA
5		5	FLSW	DC3.3V、-3.3mA
6		9	HSSW	DC3.3V、-3.3mA
7		11	LSSW	DC3.3V、-3.3mA
8	CN51	7	NOP	DC5V、-5mA
9		8	NOP	DC5V、-5mA
10		9	NOP	DC5V、-5mA
11		10	NOP	DC5V、-5mA

4. Settings of the destination to input a signal

   Select the input number (IN_No.) by pressing the ❶ and specify the destination to input a signal.
   (Check it with the correspondence table between an input number and a connector number.)

(Note) The CN32 is selected as the function of a switch placed on the LED_BT_UNIT.

List of input functions

	Abbreviation	Function item	Remark
0	NOP	No function	(Standard setting)
1	HS	Needle up/down correction stitching	Every time the switch is pressed, normal feed stitching by half stitch is performed.
2	BHS	Reverse-feed correction stitching	Reverse feed stitching is performed at low speed while the switch is held pressing.
3	EBT	Function for canceling reverse-feed stitching (at end) once	By depressing the back part of the pedal after pressing the switch, operation of reverse feed stitching is canceled once.
4	TSW	Thread trimmer function	This function is actuated as the thread trimming switch.
5	FL	Presser lifter function	This function is actuated as the foot lifter switch.
6	OHS	1-stitch correction stitching	Every time the switch is pressed, one stitch stitching operation is executed.
7	SEBT	Function for canceling reverse-feed stitching (at start) (at end)	By operating the optional switch, ineffective/effective can be alternately changed over.
8	LINH	Function for prohibiting depress on the front part of pedal	Rotation by pedal is prohibited.
9	TINH	Thread trimmer output prohibition function	Output of thread trimming is prohibited.
10	LSSW	Low-speed command input	This function works as low speed switch for standing sewing machine.
11	HSSW	High-speed command input	This function works as high speed switch for standing sewing machine.
12	USW	Needle lifter function	UP stop motion is performed when switch is pressed during DOWN stop.
13	BT	Reverse-feed stitching switch input	Reverse feed stitching is output as long as the switch is held pressed.
14	SOFT	Soft-start switch input	The speed of stitch is limited to the predetermined soft-start speed as long as the switch is held pressed.
15	OSSW	One-shot speed command switch input	This function works as one-shot speed command as long as the switch is pressed.
16	BKOS	Reverse-feed one-shot speed command switch input	Reverse feed stitching is performed in accordance with the one-shot speed command as long as the switch is held pressed.
17	SFSW	Safety switch input	Rotation is prohibited.
18	AUBT	Automatic reverse-feed stitching cancellation/addition switch	Every time the switch is pressed, reverse feed stitching at sewing start or reverse feed stitching at sewing end is canceled or added.
19	CUNT	Sewing counter input	Every time the switch is pressed, the sewing counter value is increased.
20	OTSW	One-touch change-over switch	This function changes the settings of a pattern stitch mode every time the SW (switch) is pressed.

5. Setting of an input function

Select the function allocated to an input signal from an input function list.

Select a function item B by pressing the ▲▼❶, and enter the function item by pressing the ➕➖❷.

Display a selection of HIGH or LOW by pressing the ▲▼❶, and move to active level selection F of output to switch between LOW and HIGH.

After the setting is completed, fix the set contents by pressing the ↩❻.

(Caution) When you turn off the sewing machine without pressing the ↩❻, the set contents are not reflected.
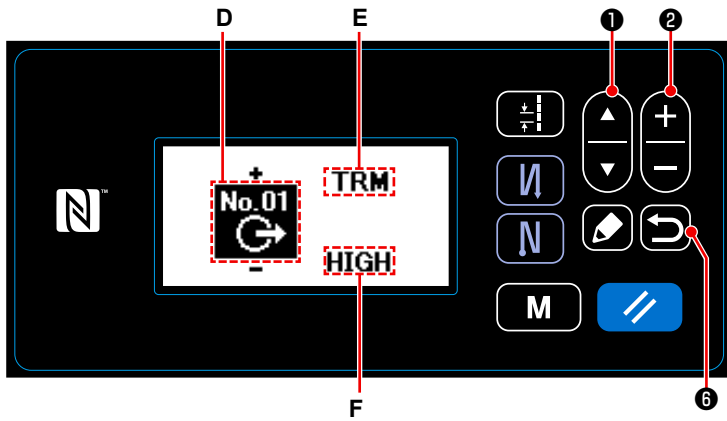
6. How to set an output function

Description of a display screen and an output switch

D: Output number

E: Name of an output function

F: Active level of output

▲ ▼ ❶ :
Switch the changes (D, E, and F).

＋ ➖ ❷ :
Change the set contents of D, E, and F.

Correspondence table between an output number and a connector number

OUT_No.	CN No.	Pin_No.	Initialization	Electrical specification
1	CN51	3	NOP	DC5V
2		4	FL	DC5V
3		5	TRM	DC5V
4		6	SSTA	DC5V
5	CN56	2	NOP	DC24V
6		4	NOP	DC24V
7		6	NOP	DC24V
8		8	NOP	DC24V
9	CN61	2	COOL	DC24V
10		4	NOP	DC24V
11		6	NOP	DC24V
12		8	NOP	DC24V

(Caution) The CN56 accommodates only the SC-950.

7. Settings of the destination to output a signal

Select the input number (OUT_No.) by pressing the ▲ ▼ ❶ and specify the destination to input a signal.

(Check it with the correspondence table between an output number and a connector number.)

List of output functions

	Abbreviation	Function item	Remark
0	NOP	No function	(Standard setting)
1	TRM	Thread trimmer output	Output of thread trimming signal.
2	NIP	Thread presser output	Output of presser lifting signal
3	FL	Presser lifter output	Output of reverse feed stitching signal
4	BT	Reverse-feed stitching output	State of one time cancel of reverse feed stitching at end function is output.
5	SSTA	Sewing machine stop-state output	Sewing machine stop state is output.
6	COOL	Needle cooler output	Output for needle cooler
7	LSWO	Rotation command output	Revolution demanding command state is output.

8. Setting of an output function

Select the function allocated to an output signal from an output function list.

Select a function item E by pressing the ▲ ▼ ❶, and enter the function item by pressing the ＋ ➖ ❷.

Display a selection of HIGH or LOW by pressing the ▲ ▼ ❶, and move to active level selection F of output to switch between LOW and HIGH.

After the setting is completed, fix the set contents by pressing the ↰ ❻.

(Caution) When you turn off the sewing machine without pressing the ↰ ❻, the set contents are not reflected.

2) How to set an optional input-output function(DDL-9000C-F)
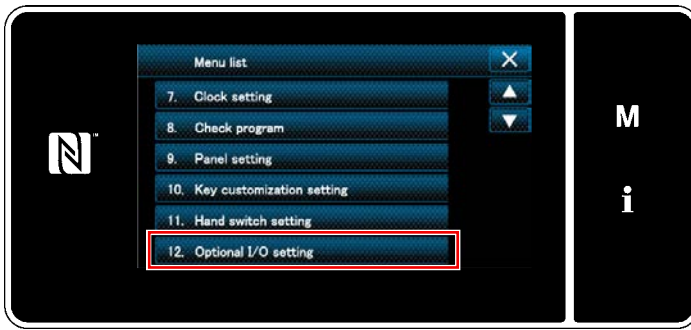
1. Press the "12.Optional I/O setting" key on the mode screen to display the optional I/O settings screen.
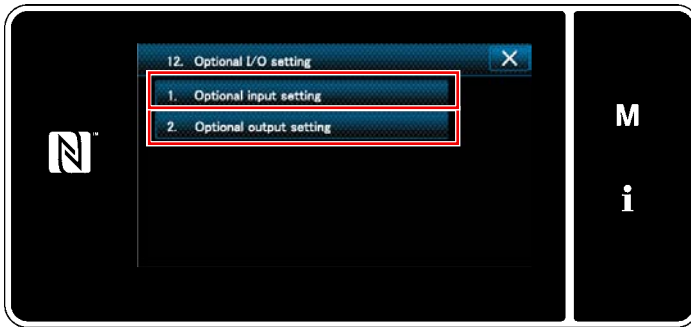
2. Select the "1. Optional input setting/2. Optional output setting" on the optional I/O settings screen to display the optional input setting screen /output settings screen.

3. Select the INPUT number/OUTPUT number on the optional input settings screen/output settings screen to display the input port settings screen/output port settings screen.

4. Select the input function/output function on the input port settings screen/ output port settings screen. Press **HIGH LOW** ❶ to change the active level.

5. Press the ❷ to fix the settings and return the current screen to the previous screen.

3) Position where an optional input-output connector is placed

1. Position of an optional input-output connector

❹ **For connecting optional input-output connector solenoid (For only SC-950) (CN56:8P)**
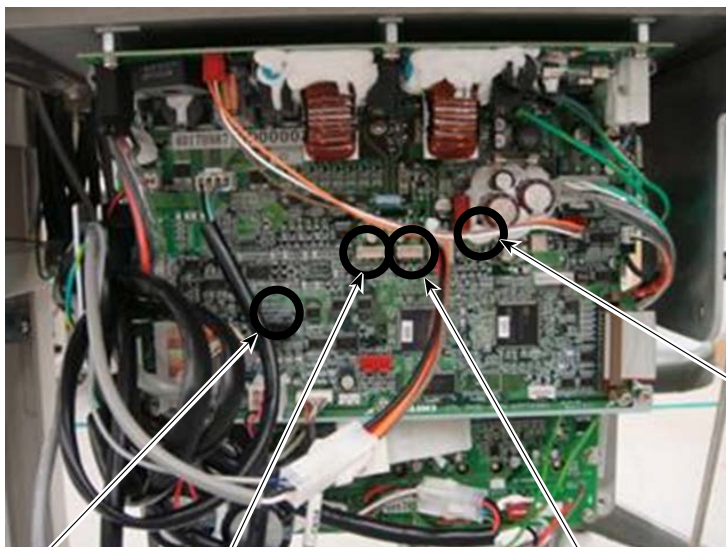
❸ **For connecting sewing machine for standing work connector PK70 (CN39:12P)**

❷ **For connecting optional input-output connector sensor and external switch, for signal (CN51:12P)**

❶ **For connecting optional input-output connector solenoid (CN61:10P)**

2. Description of an optional connector

❶ Optional output connector (CN61)
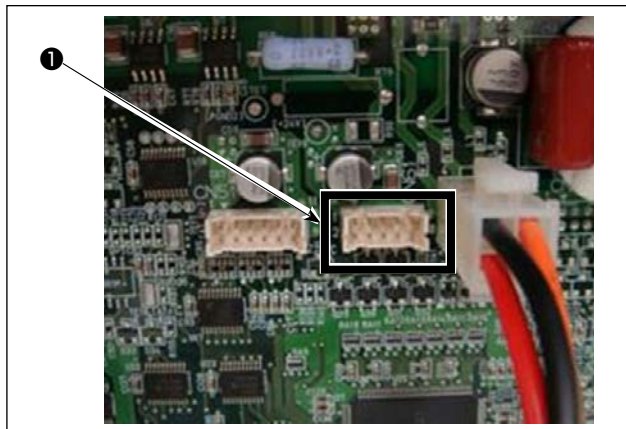
It is used when you connect it to a solenoid valve and so on. For suitable connectors, refer to the following table.

Suitable connectors

No.	1	2
Part number	HK063610100	HK075230000
Name of products	Housing(10p)	Pin contact
Name of manu-facturers	J.S.T. MFG. CO., LTD. (Japan Solderless Terminal)	
Manufacturers' model	PHDR-10VS	SPHD-001T-P0.5
Remark		AWG22-26

Allocation table of signals for the connector (CN61)

No.	Name of signals	I/O	Description	Electrical specification
1	+24V	---	Power supply	
2	OP_01	Output	No function settings and optional output: No.9 and default: COOL	DC24V
3	+24V	---	Power supply	
4	OP_02	Output	No function settings and optional output: No.10 and default: NOP	DC24V
5	+24V	---	Power supply	
6	OP_03	Output	No function settings and optional output: No.11 and default: NOP	DC24V
7	+24V	---	Power supply	
8	OP_04	Output	No function settings and optional output: No.12 and default: NOP	DC24V
9	+24V	---	Power supply	
10	GND	---	0V	

❷ Optional Input-output connector (CN51)

It is possible to use as the destination to connect a sensor on the market or the destination to output a timing signal of a sewing machine.

Suitable connectors

No.	1	2
Part number	HK063610120	HK075230000
Name of products	Housing(12p)	Pin contact
Name of manu-facturers	J.S.T. MFG. CO., LTD. (Japan Solderless Terminal)	
Manufacturers' model	PHDR-12VS	SPHD-001T-P0.5
Remark		AWG22-26

Allocation table of signals for the connector (CN51)

No.	Name of signals	I/O	Description	Electrical specification
1	+24V	---	Power supply	
2	+5V	---	Power supply	
3	OPOUT5	Output	No function settings and optional output: No.1 and default: COOL	DC5V
4	OPOUT6	Output	No function settings and optional output: No.2 and default: COOL	DC5V
5	OPOUT7	Output	No function settings and optional output: No.3 and default: COOL	DC5V
6	OPOUT8	Output	No function settings and optional output: No.4 and default: COOL	DC5V
7	OPIN1	Input	No function settings and optional input: No.1 and default: COOL	DC5V, −5mA
8	OPIN2	Input	No function settings and optional input: No.2 and default: COOL	DC5V, −5mA
9	OPIN3	Input	No function settings and optional input: No.3 and default: COOL	DC5V, −5mA
10	OPIN4	Input	No function settings and optional input: No.4 and default: COOL	DC5V, −5mA
11	GND	---	0V	
12	GND	---	0V	

❸ Connector for a sewing machine for standing work (for the PK70)
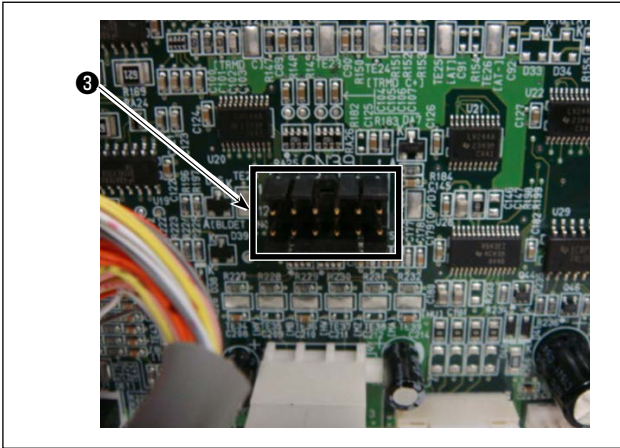
1. Connecting the connector for a PK70 made by JUKI
When you connect the PK70 made by Juki, connect it to the CN39 of SC-951 (SC-950) ❸.
* Variable speed using the variable pedal
* Thread trimming function using the pedal for a thread trimming
* Pressure lifter function using the pedal for a pressure lifter
  Such above functions can be used.
The connector and each signal are being allocated as follows:

[Wiring diagram of variable pedal PK-70 and -71]

	CN39			
3.3V	1	Brown		
	2		1	
				VR(1kΩ)
Variable resistor for speed	3	Orange	2	Used by variable voltage between 0.6 to 1.3V (Increasing / decreasing speed) Neutral position is 0.66V ± 0.3V (Between 3 to 4)
S GND	4	Yellow	3	
Switch for lifting presser foot	5	Green		
S GND	6	Blue		
Switch for thread trimming	7	Perple		
S GND	8	Gray		
Switch for high-speed	9	White		
S GND	10	Light blue		
Switch for low-speed	11	Pink		
S GND	12	Black		

Relay cord A asm. for the standing sewing machine (Part No. M9701351AA0)

Approx. 1.5m
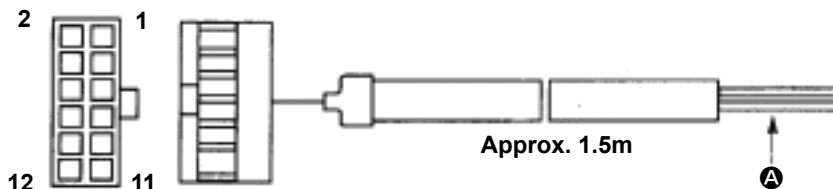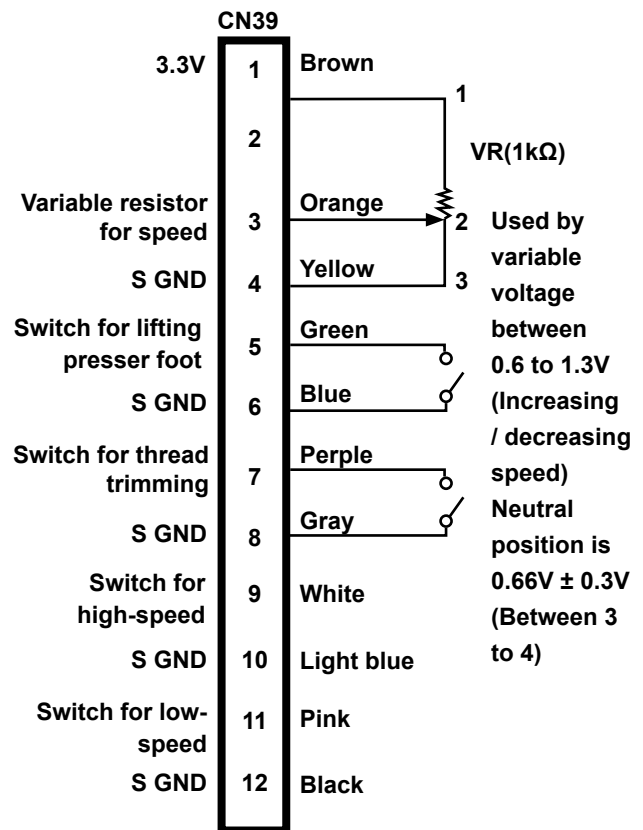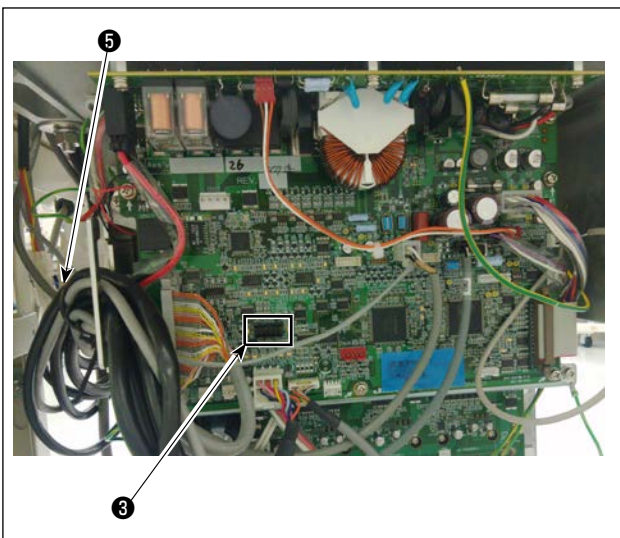
○ Power section A which is separated by respective signals with different colors ❹ comes out from the relay cord A asm. for the standing sewing machine. Connect switches and variable resistor for speed in accordance with the wiring diagram.
○ Insert to the connector ❸ (CN39 : 12P) of standing sewing machine pedal in the PSC box and use it.
○ Tighten the cord of the PK70 together with other cords with cable clip band ❺ attached to the side of the box after passing it through the cable clamp.
(Caution) Be sure to turn OFF the power before connecting the connector.

2. Connector for a sewing machine for standing work (for the PK70)

It is used when you use the pedal for a sewing machine for standing work on the market (of a switch system).To connect it to the sewing machine, you are recommend to use the relay cord A assembly for a sewing machine for standing work, which is made by JUKI and supplied as an option.
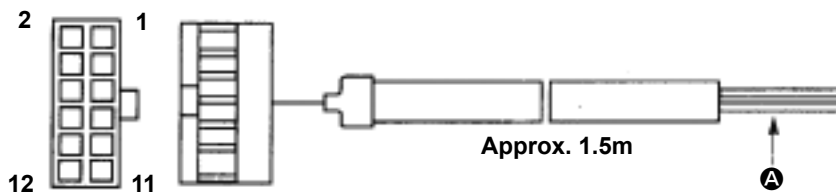
Relay cord A asm. for the standing sewing machine (Part No. M9701351AA0)
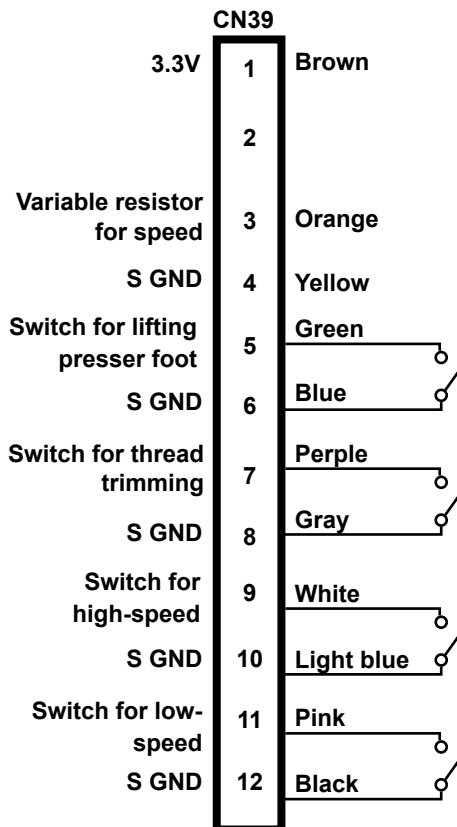
When you buy a connector separately, arrange a connector for the following use.

Suitable connectors

No.	1	2
Part number	HK048910120	HK049240000
Name of products	Housing(12p)	Pin contact
Name of manufacturers	FCI JAPAN	
Manufacturers' model	69176-012	48234-000LF
Remark		AWG22-26

○ Connector for the pedal of a sewing machine for standing work for a PSC box

Insert it into (the connector ❸ CN39) to use it.

(Caution) When you slow down a high-speed SW, make settings for limiting the maximum speed on the operation panel.

❹ Optional output connector (CN56)
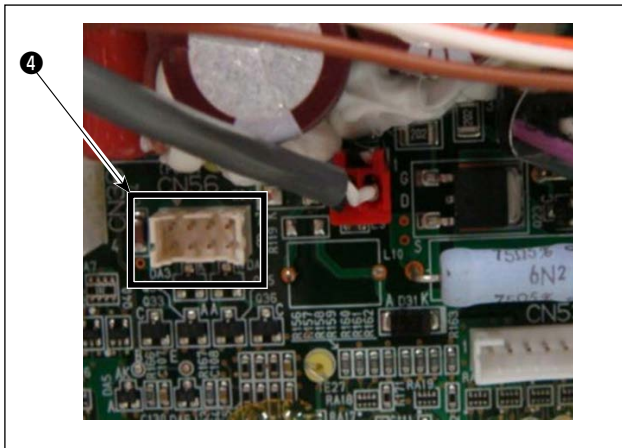
It is used when you connect it to a solenoid valve and so on. For suitable connectors, refer to the following table.
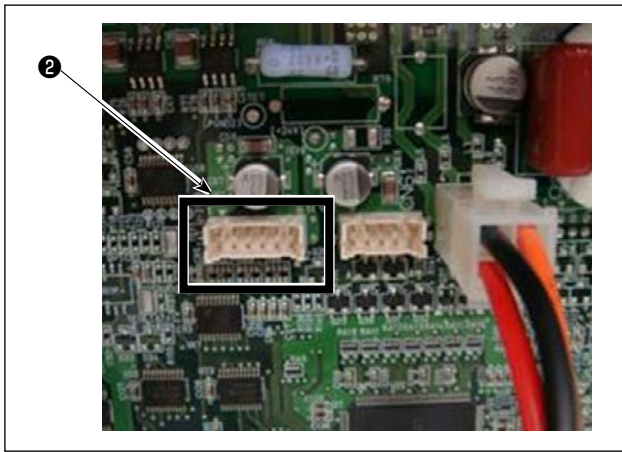
Suitable connectors

No.	1	2
Part number	HK063610080	HK075230000
Name of products	Housing(8p)	Pin contact
Name of manu-facturers	J.S.T. MFG. CO., LTD. (Japan Solderless Terminal)	
Manufacturers' model	PHDR-08VS	SPHD-001T-P0.5
Remark		AWG22-26

Allocation table of signals for the connector (CN56)

No.	Name of signals	I/O	Description	Electrical specification
1	+24V	---	Power supply	
2	NBN1	Output	No function settings and optional output: No.5 and default: NOP	DC24V
3	+24V	---	Power supply	
4	NBN2	Output	No function settings and optional output: No.6 and default: NOP	DC24V
5	+24V	---	Power supply	
6	NBN3	Output	No function settings and optional output: No.7 and default: NOP	DC24V
7	+24V	---	Power supply	
8	NBN4	Output	No function settings and optional output: No.8 and default: NOP	DC24V

7. Maintenance

⚠️ **WARNING :**
Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

Standard adjustment

(1) Oil quantity check

(2) Cleaning

Adjustment Procedure	Results of Improper Adjustment
For your long usage, the following routines (checks and maintenance) are recommended: **(1) Oil quantity check** 1. Confirmation of the amount of oil in the hook oil tank Confirm that the top of oil amount indicating rod ❶ is between the upper engraved marker line Ⓐ and the lower engraved marker line Ⓑ of the oil amount indicating window. **(2) Cleaning** 1. Remove needle ❷, presser foot ❸ and throat plate ❹. 2. Remove dust adhered to feed dog ❺ and thread trimmer unit ❻ with a soft brush or cloth. 3. Tilt the machine head and wipe out the dirt of bobbin case and the like with soft cloth, and confirm that there is no scratch. Wipe out with the cloth dust and hook oil drained in the under cover near the hook.	

(3) Application of appropriate grease

Standard adjustment
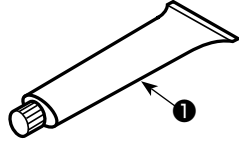
Description	Part No
JUKI GREASE A TUBE ❶ (Appropriate grease)	40006323

1) Needle bar lower bushing and presser bar bushing
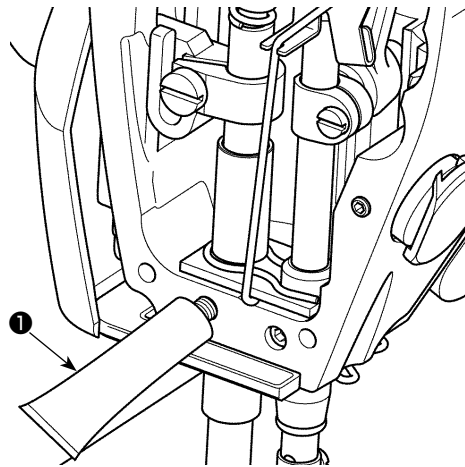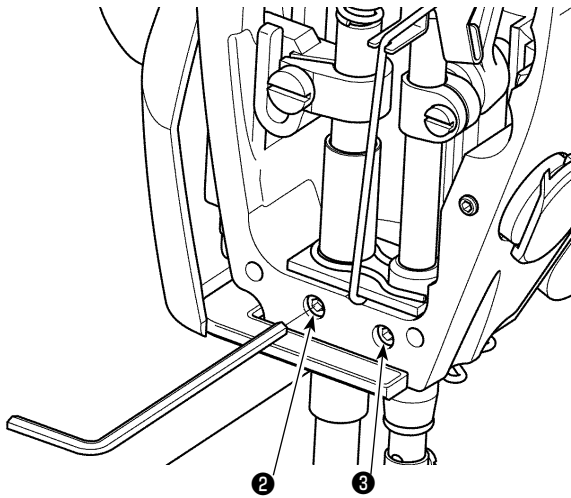
2) Feed bar mechanism

Loosen the setscrew and screw in and pull the M4 screw.

Grease groove filled with
JUKI GREASE A ❶

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Adjustment Procedure	Results of Improper Adjustment

(3)Application of appropriate grease
In ordinary usage, it is unnecessary to replenish the appropriate grease ❶ (JUKI GREASE A). Under particularly rigorous operating conditions, however, periodic replenishment of the appropriate grease ❶ (JUKI GREASE A) is effective (approximately once every one to two years).
(Cautions)
    1. When the machine needs replenishment of grease, error "E220 Warning against shortage of grease" is displayed. Once the alarm sounds, replenish grease. In the case the machine is used under harsh environment, it is recommended to replenish grease once a year for ensuring effective greasing.
    2. Do not apply oil to the sections which are lubricated with grease.
    3. Be aware that grease can leak from the thread take-up cover and needle bar if the amount of grease is excessive.
    4. Be sure to use JUKI GREASE A ❶ (part number : 40006323).
    5. When a grease-up error has been displayed, the start-up of a sewing machine is prohibited. Turn on the sewing machine while pressing the 　M　 **after grease up and set a memory switch K118 to 1.**
 	
1) Needle bar lower bushing and presser bar bushing
(Caution) Carry out greasing with the needle bar installed.
1.   Remove the face plate.
2.   Remove presser bar bushing greasing screw ❷ and needle bar lower bushing greasing screw ❸ (only for the DDL-9000C-SMS) with a hexagonal wrench.
3.   Remove the cap of JUKI GREASE A TUBE ❶. Insert its tip into the oil hole and replenish grease from exclusive JUKI GREASE A ❶.
    At this time, add grease until it overflows the oil hole.
4.   Push overflowing JUKI GREASE A ❶ with the oil filling screw into the oil hole.
5.   Wipe the excess of JUKI GREASE A ❶ off the area around the oil hole.
(Caution) When a lubricant is newly replenished, operate the sewing machine for about 10 seconds of idling. A surplus amount of JUKI GREASE A ❶ may be discharged at that time. Wipe it off then. Repeat this operation several times and use the sewing machine regularly after the generation of the excessive JUKI GREASE A ❶ has disappeared.
2) Feed bar mechanism
1. Take out the horizontal feed bar shaft ❹ feed the JUKI GREASE A ❶ to the grease groove.
*   The horizontal feed bar shaft ❹ is processed to have a sacrifice M4 screw.
    Use an M4 screw and pull it out easily by means of small cutting pliers.
2. At the time of reassembly after the disassembly of various parts, apply the JUKI GREASE A ❶ to the sliding surfaces of the feed bar mechanism.	

(3) Application of appropriate grease

⚠️ **WARNING :**
Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

Standard adjustment

3) Face plate mechanism

Section where the JUKI GREASE A is applied
Exclusive greasing point
Slide portion between arm guide and roller

DDL-9000C-FSH、SSH only

5mm

Adjustment Procedure	Results of Improper Adjustment
3) Face plate mechanism 1. Apply JUKI GREASE A to the roller (arm's vertical sliding section) of the needle bar connecting section. 2. Apply JUKI GREASE A to the intermediate presser bar connection ❶ and arm's sliding groove section.	○ Grease is not required for the presser bar ❷. If grease is applied, contamination like black ink is caused by the presser bar bushing ❸ and the material cloth may be stained.
[DDL-9000C-FSH, SSH only] 3. Confirm that the needle bar ❺ keeps an exact contact with the oil wick ❻ in the position 5mm below the needle bar upper bushing ❹. If there is no contact, correct it by means of the oil wick support plate ❼. **(Caution) Apply a piece of paper to the oil wick ❻ and confirm whether it is wet with oil.**	○ This can be a cause of seizure between the needle bar ❺ and the needle bar upper bushing ❹.

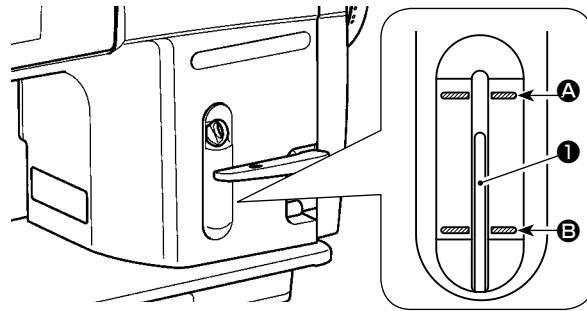# (3) Application of appropriate grease
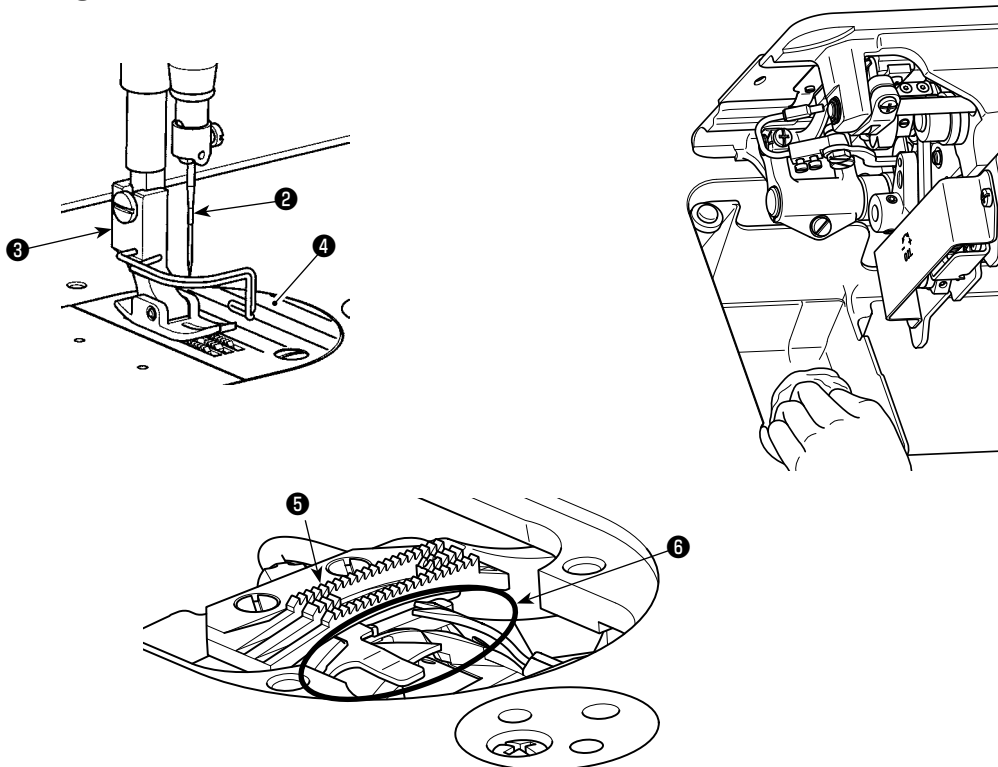
> ⚠ **WARNING :**
> Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

Standard adjustment

4) Inside a gear box

Apply exclusive JUKI GREASE A to the whole mechanical section.

Adjustment Procedure	Results of Improper Adjustment
4) Inside a gear box * It is prohibited to use oil for the mechanism element inside a gear box because of special surface treatment and a JUKI GREASE A lubrication. 1. Apply grease to the mechanism element inside a gear box. * When you have torn it down including removal of the shaft, apply grease to a grease groove and fluctuation part of each shaft. 2. Apply JUKI GREASE A not only to the link cover ❶ that is covering a mechanism element but also the felt part of a horizontal feed cam lubrication felt ❷.	

(4) Lubrication mechanism configuration and adjustments

> **WARNING :**
> Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.
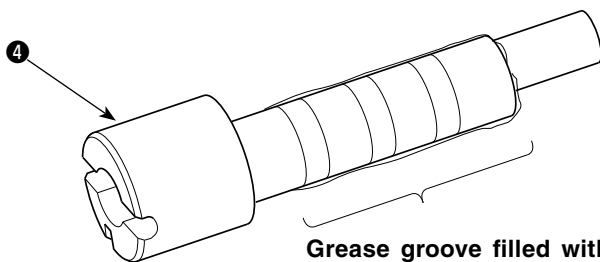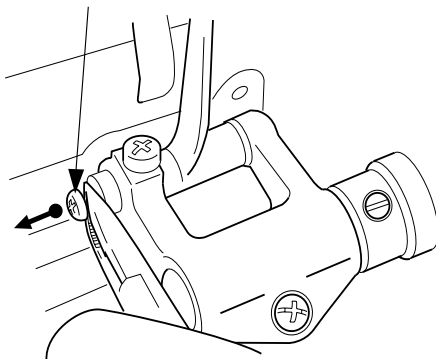
Standard adjustment

Fixed to the arm

When pulling it out, remove this pipe too.

The float case guide ❷ is entered in the slide guide of the peep window.

S type — H type

Fig. B

Adjustment Procedure	Results of Improper Adjustment
Configuration of lubrication mechanism parts is as shown in the drawing. 1. Oil tank 　 Pull up the oil tank ❶ straight from the float case guide ❷ to take it out. 　 Remove and adjust the lubrication pipe ❸ and others within the permissible range where they can be stretched. 　 The float case guide ❷ has a notch groove with orientation. 　 Push it straight along the groove to make a joint. 　 (Push it until there is a feeling of coupling with a click sound.) 2. Float 　 The float ❹ has an orientation. 　 Insert it in the oil tank ❶ with its flat plane positioned on the right as seen from worker side. 　 Be careful not to bend the bar of the float ❹.	

Description	Part No.
Float ❹	40172430

3. Float case guide
　 Put the float case guide ❷ in the guide groove section of the peep window ❺ and fix it to the bed.
4. Peep window
　 Remove the window plate located behind the arm. It is fixed to the arm.
5. Oil filter
　 The oil filter ❻ can be cleaned after removing the lubrication pipe fixing ring ❼ and pulling out the lubrication pipe ❸.
　* When you disassemble it, remove two setscrews for an oil tank and put it out downward. It is removed by unit in such a state as shown in the Figure B

(5) Thread take-up lever mechanism

Standard adjustment

Info about the appropriate grease

Description	Part No
JUKI GREASE A	40006323

Adjustment Procedure	Results of Improper Adjustment
(Important) No lubrication is needed for the thread take-up lever. (Maintenance-free mechanism) When adjusting the thread take-up lever mechanism, the following items shall be observed: Replacement of the thread take-up lever 1. Remove the needle bar ❶ and the needle bar connector ❷. 2. Draw out the needle bar upper bushing ❸. **(Caution) Be careful not to hurt the needle bar upper bushing ❸**	○ If this section is hurt, this will be a cause of seizure.

Needle bar upper bushing ❸		Remarks
Part No.	40172399	It is positioned at a concave 0.5mm from the upper surface of an arm.

3. Loosen two needle bar crank setscrews ❺ of the main shaft counterbalance ❹.
4. Loosen two thread take-up lever crank shaft setscrews ❼.
   (The thread take-up lever support shaft ❻ is processed flat.)
5. Loosen the thrust collar setscrew ❾ of the thread take-up lever crank.
6. Pull out the crank shaft set ❿ toward you, except the thrust collar.
7. Remove the thread take-up lever (coupling) ❽.

Thread take-up lever (coupling) ❽	Part No.	Thread take-up lever stroke
Standard specification	40174341	110mm
Specification for heavy-weight materials	40055604	108mm

8. Reassembly can be carried out in the reverse order for disassembly. At that time, however, the items specified below shall be strictly observed.
9. Insert the thread take-up lever unit to the position where it comes in contact with the main shaft counterbalance ❹. Install the crank shaft set ❿ in the order of the thread take-up lever crank, the thrust collar, and the arm.
10. Fix the needle bar crank setscrew ❺.
(Caution) The first screw in the revolving direction shall be made to coincide with the flat section of the shaft.
11. Remove thrust rattles from the thread take-up lever crank shaft ❻ and fix it being pinched by the thrust collar and the E ring.
    (Make thrust adjustments so that there are no thrust rattles and the thread take-up lever crank can slide smoothly.)
12. Drive the needle bar upper bushing ❸ to install the parts of needle bar ❶ and needle bar connector ❷.
13. Turn the hand wheel by hand several turns in forward direction and fix the thread take-up lever crank shaft ❻ by means of the thread take-up lever crank shaft setscrew ❼, keeping adequate needle bar centering.
(Cautions) 1. Improper centering of the needle bar ❶ causes the thread take-up lever mechanism to be loaded inadequately, thus greatly affecting the durability.
2. Coincidence is absolutely needed between the flat section of the thread take-up lever crank shaft ❻ and the screw.
3. After confirming that there is no thrust backlash, assemble the take-up lever thrust collar.

○ If there is thrust backlash, this will be a cause of breakage of the thread take-up lever.
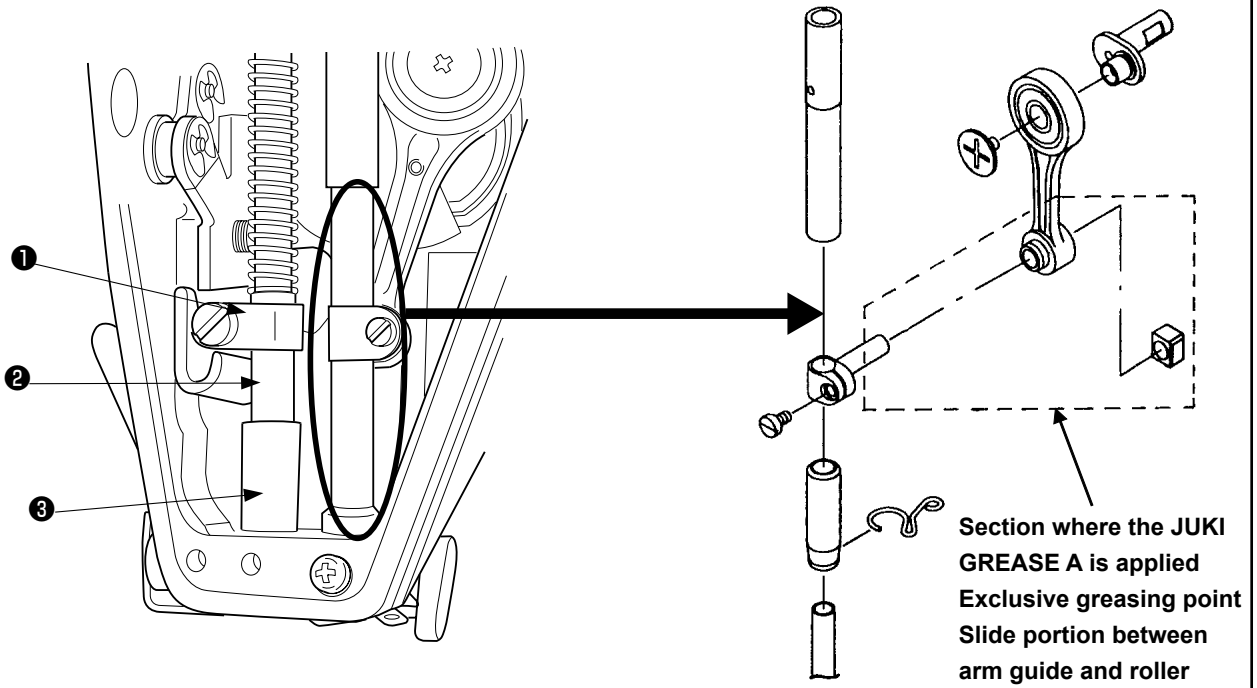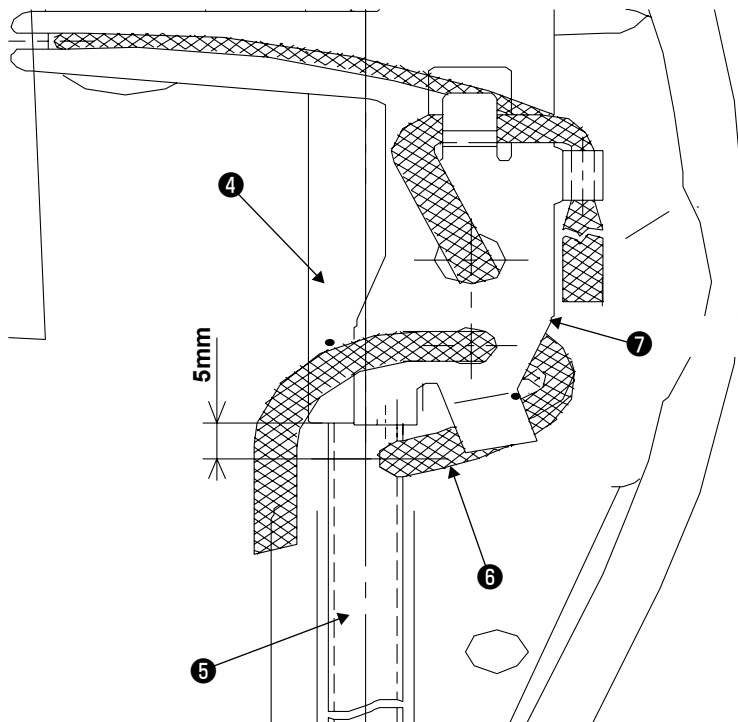
(6) Replacement of the motor

⚠ **WARNING :**
Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

Standard adjustment

Hand wheel ❸

❶

❹ (First screw)

❺

❻

❼

Timing belt

❹ (Second screw)
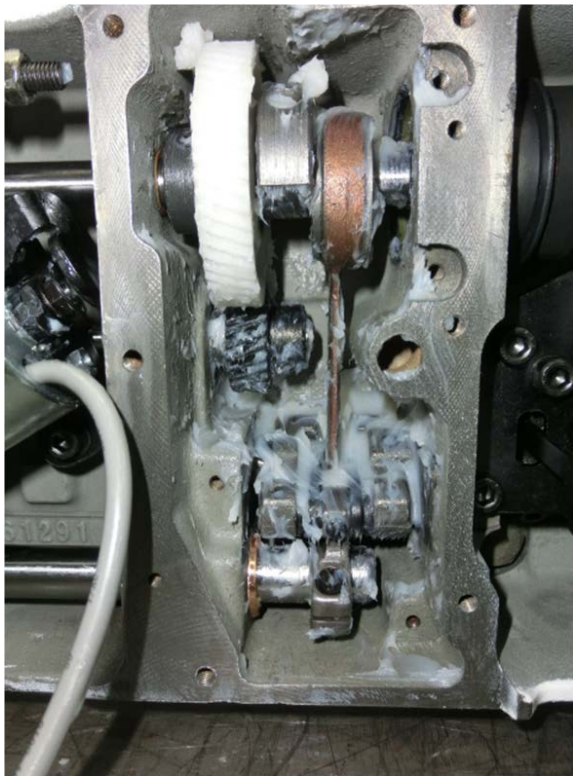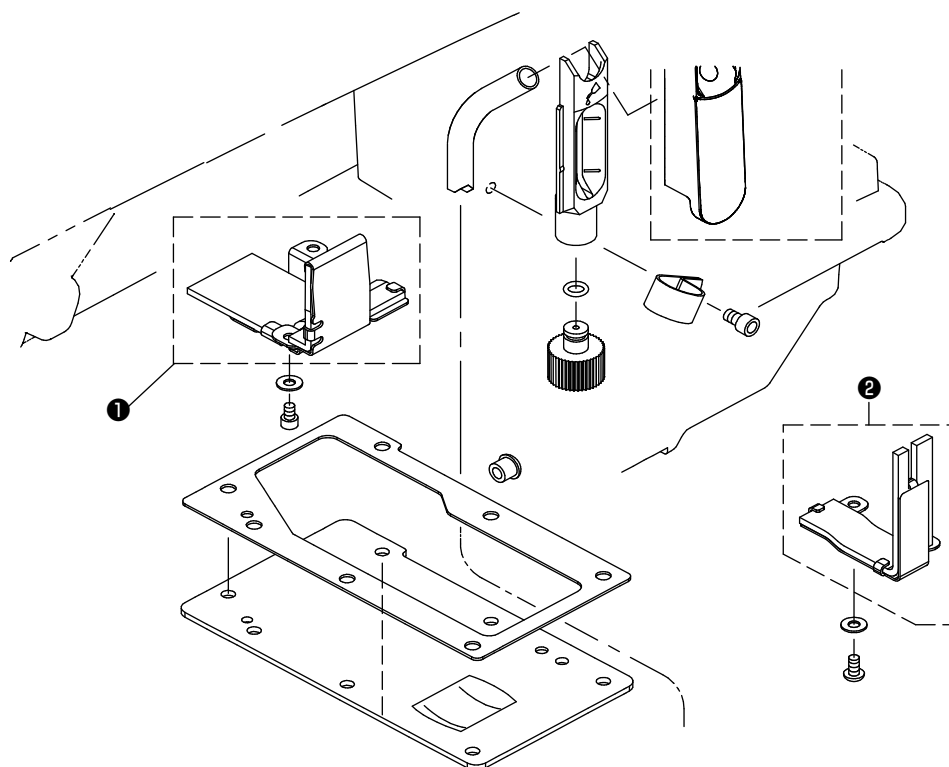
❽

❷

(7) Replacement of the timing belt

⚠ **WARNING :**
Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.
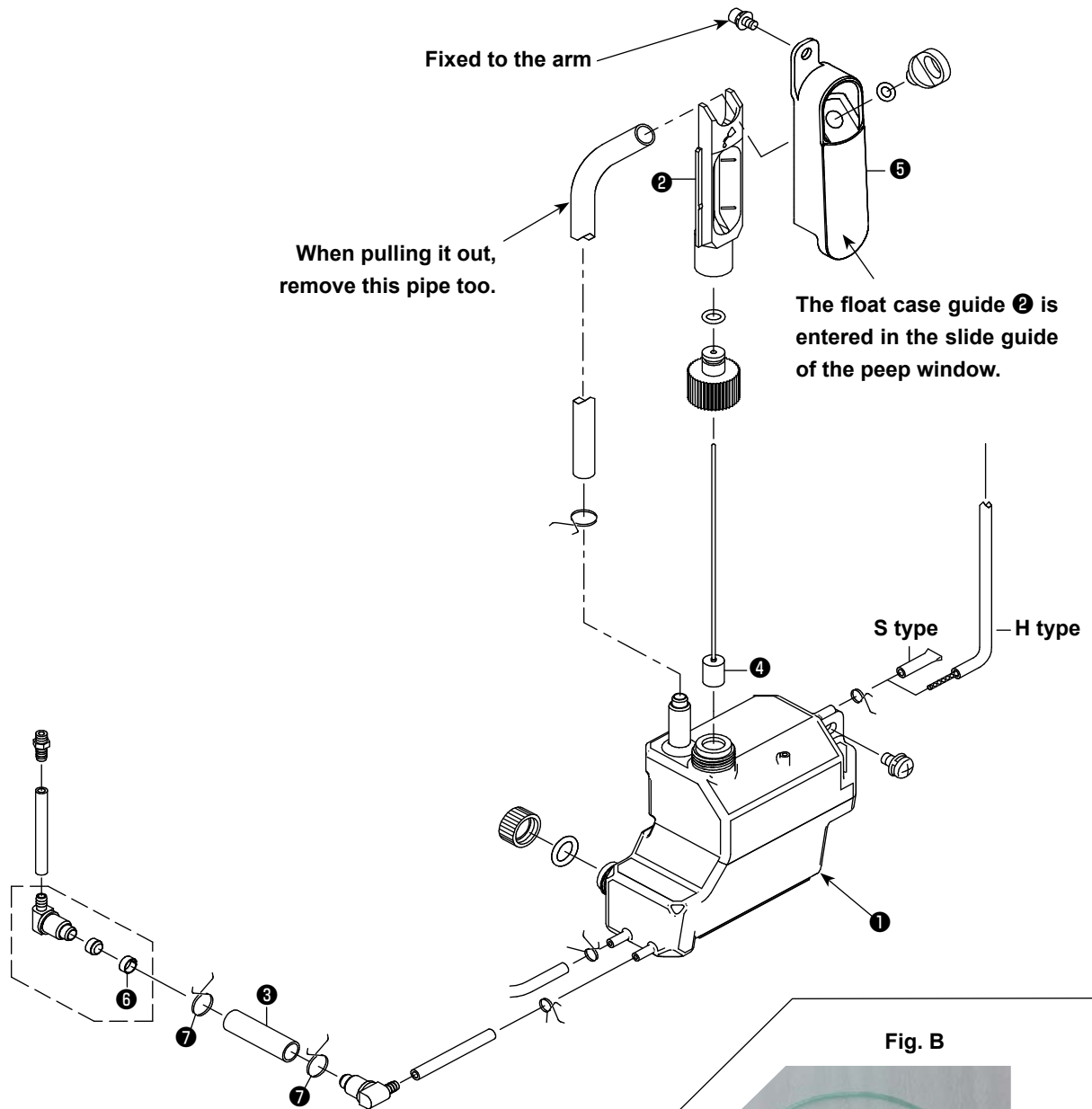
Standard adjustment

❸

❷

❶

Adjustment Procedure	Results of Improper Adjustment
The following is the method of replacement when the motor ❶ is out of order. 1. Remove the second setscrew ❷ of the hand wheel. (4mm hexagonal) 2. Remove the first setscrew ❸ (flat section) of the hand wheel. (4mm hexagonal) 3. Remove the pulley cover. 　Refer to "3. -(11) -1) Adjustment of the pulley cover" . 4. Remove the window plate (AK Specification included) located behind the arm. 5. Loosen two coupling setscrews B ❹ (motor side) from the rear side, in the order of the second screw and first screw (flat section). (3mm hexagonal) **(Cautions)1. No adjustments are required for the two coupling setscrews A ❺.** **2. For the removal of the coupling asm ❻, loosen two coupling setscrews A ❺ used to fasten the main shaft ❼. A clearance of 0.5mm shall be secured between the motor ❶ and the coupling asm ❻.** **3. Do not disassemble the coupling asm ❻.** 6. Remove three motor setscrews ❽. (Examine motor installations and the revolving direction.) 7. Pull out the motor ❶ gently from the coupling asm ❻. 8. Carefully install a new motor ❶ in the mounting position in correct revolving direction.	○ If no clearance is secured, this can be a cause of motor bearing destruction. ○ After disassembly, reproducibility will be lost.

Description	Part No.
Motor ❶	40172146
Coupling asm ❻	40172398

9. In the procedures below, reassembly can be carried out in the reverse order for disassembly.

Adjustment Procedure	Results of Improper Adjustment
The timing belt ❶ used is a product of the highest quality. Therefore, no maintenance is required. To make ready for responding to extra occasions, the method of replacement is explained below. 1. Refer to "7.-(6) Replacement of the motor" and dismantle the motor. **(Caution) It is unnecessary to dismantle the coupling.** 2. Let the sewing machine fall down and remove two setscrews ❸ of the oil tank ❷. Then pull and take out the oil tank ❷. 3. Turn the motor by shifting the timing belt ❶ by hand in the direction of the arrow. 4. Further reassembly work can be done in the reverse procedures for disassembly.	

Description	Part No.
Timing belt ❶	40086731

○ When removing the timing belt ❶, be careful not to hurt it with a sharp tool like a screwdriver. Otherwise, this will be a cause of breakage.

(8) Replacing the fuse

The machine uses the following one fuse ❶ (F2):

CTL board

❶ For 85V power supply protection
5A (time-lag fuse)
JUKI part No. : HF0013050P0
Refer to "6.-(2)-4) CTL board assembly / CTL -D board assembly" for details.

(9) Changing the voltage 100V/200V

(Cautions) 1. Only an electrical box with FLT-T board assembly can switch between 100V and 200V.

2. An electrical box with FLT-S board assembly cannot change to 100V.

3. Never make this change with a FLT-S board assembly because there is danger of an electric shock, a short circuit, a fire accident, and the breakage of an electrical box.

4. Before making this change, be sure to confirm the specification of a mounted FLT board assembly.
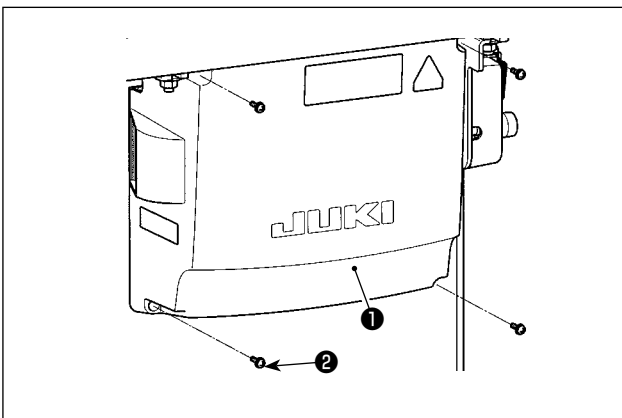
1. Loosen four setscrews ❷ of control box cover ❶. Remove control box cover ❶.
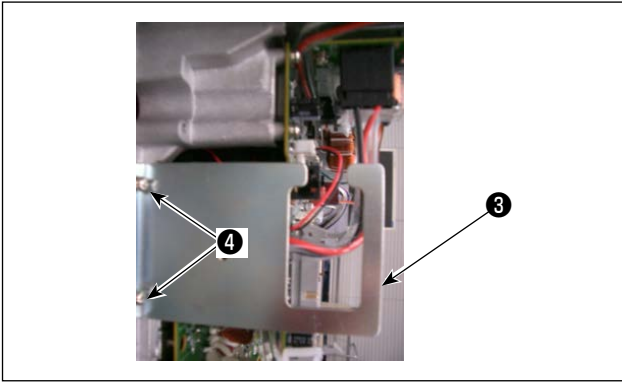
2. Loosen the fixation screws ❹, and remove the plate ❸ for exiting the cords.
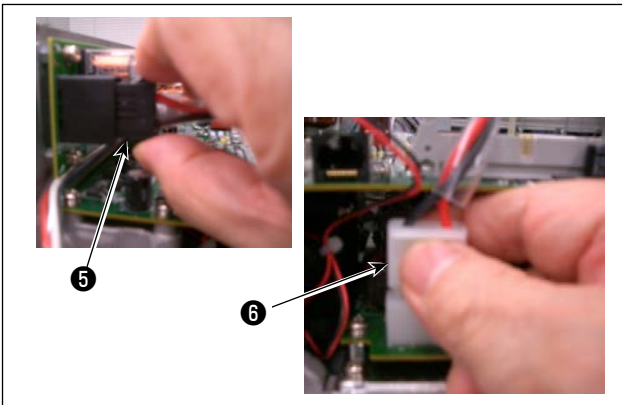
3. Remove the connector ❺ and ❻, and then the power cord.

(Caution) The connector has a lock mechanism. Pull it out while pushing the lock mechanism part.

The power cord differs between the 100V system and/200V system.

Power cord for 100V
  (JUKIpart No.：40175582)
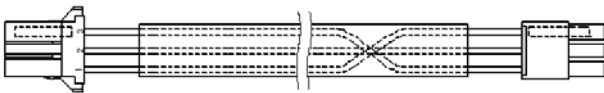
When you change the power voltage to 100V from 200V, replace it by the power code of Part No. 40175582.

Power cord for 200V
  (JUKIpart No.：40175581)
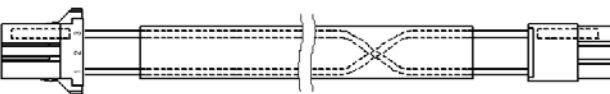
When you change the power voltage to 200V from 100V, replace it by the power code of Part No. 40175581.

Each time you change the factory-configured power voltage and use the changed power voltage, buy the necessary parts from our service department.

(10) How to remove a panel
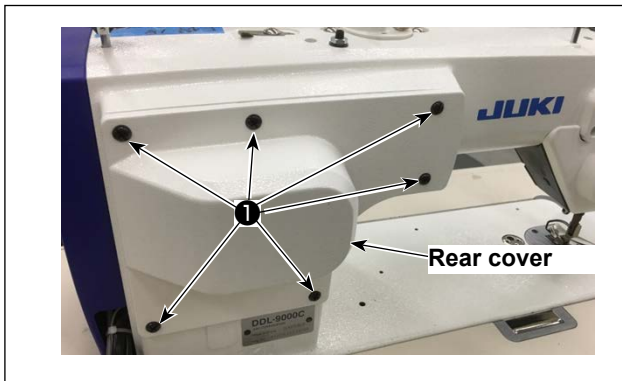
1. Remove the rear cover (six setscrews ❶ of the cover).

Rear cover
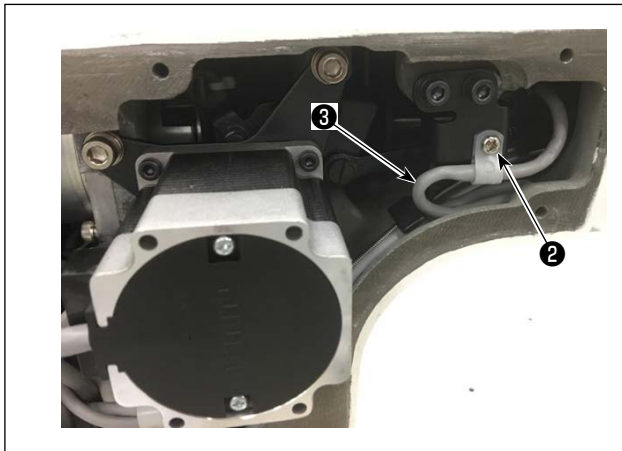
2. Remove the cable clamp setscrew ❷ and remove the panel cable ❸ from inside the arm.
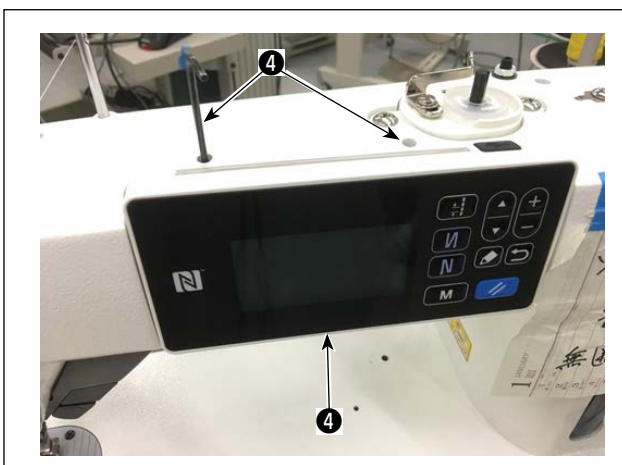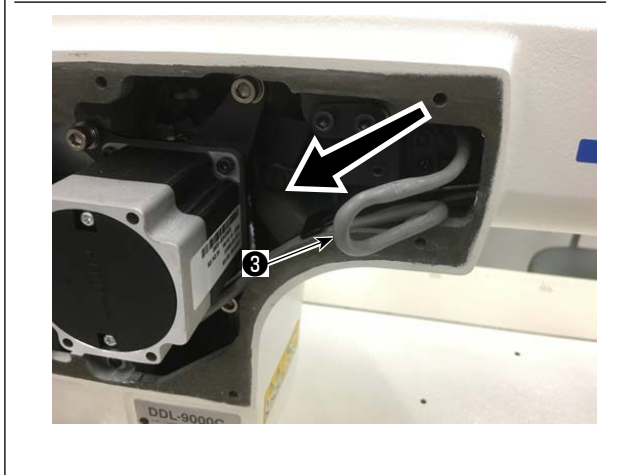
3. Loosen the panel setscrew ❹. (Two setscrews for the upper arm and one setscrew for the lower arm)

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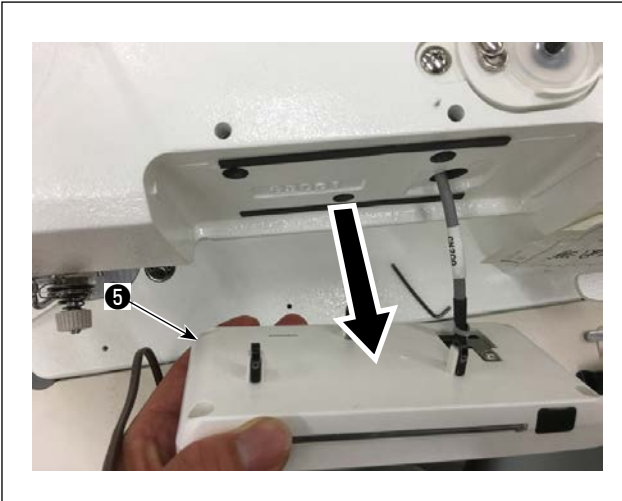
4. Pull out the panel ❺ short.
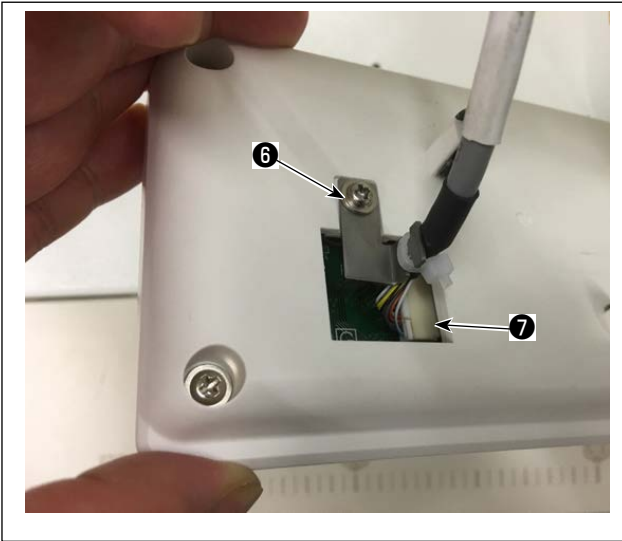
5. Remove the panel cable clamp screw ❻, remove the cable connector ❼, and replace the panel ❺.

6. After replacement of the panel, reassemble it according to the opposite procedure.

(Caution) Pull the panel cable ❸.If it is loose, it may interfere with the upper shaft and the like.

Completion

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8. Screws for attachment and positions of external parts

> **⚠ WARNING :**
> **Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.**

Standard adjustment

283.5

13.5

100.6

148.5

2×M4
Depth 4

M4
Depth 4

M4 Depth 4

213

70

22.5   15.3   M4
Depth 4

M8
Depth 9

134.1

170

137.5

192.5

M4

9. Dry hook
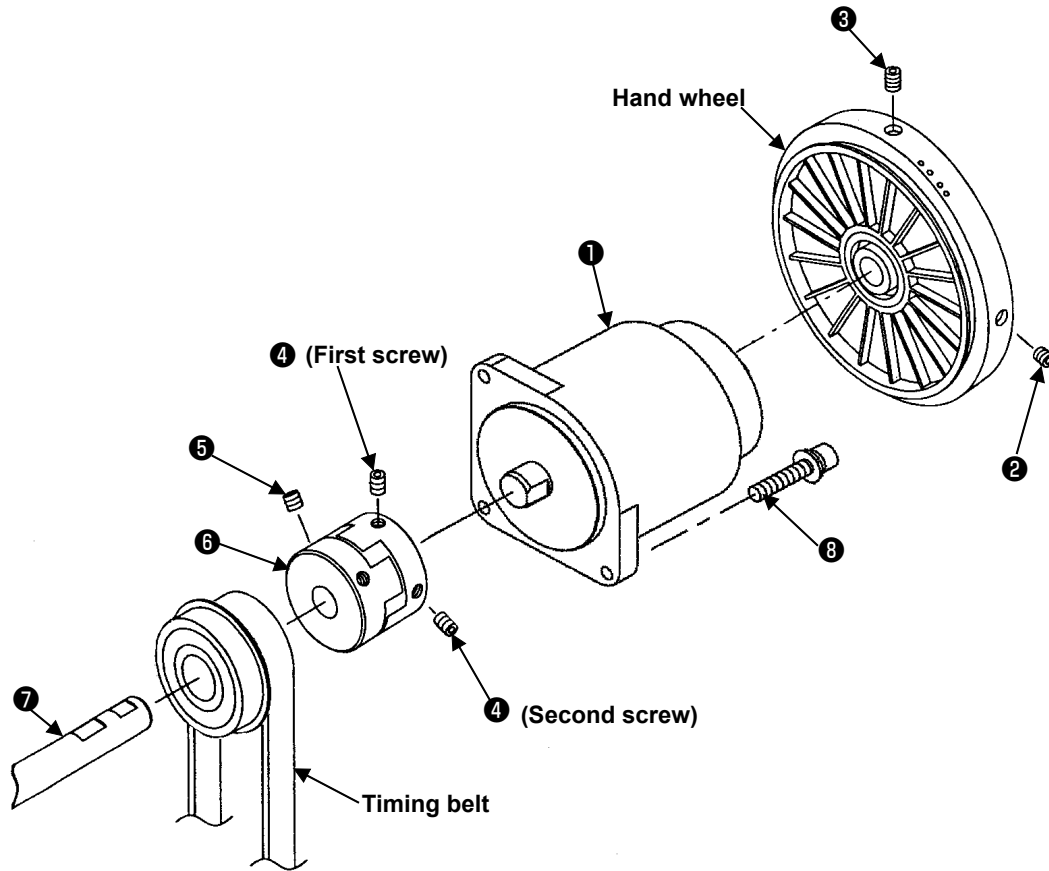
⚠️ **WARNING :**
Be sure to turn the power OFF before the following work in order to prevent personal injury due to unintentional starting of the sewing machine.

Adjustment Procedure	Results of Improper Adjustment
(1) Cautions when a dry hook is used For the dry hook (RP hook), lubrication is given to the hook race with the use of a specific material. In the case of continuous high-speed operation, it must be noted that wear on the race is accelerated. Lubricant shall not be applied to the race. If any abrasion is perceived, change the old part with a new one. **(Caution) The RP hook (dry hook) tends to collect thread chips and cloth dust, and this can be a case of malfunction and defective stitches. For this reason, it should be cleaned periodically.**	○ Hook rattling occurs and there are problems like heat generation and defective stitches. ○ Contamination like black ink is caused and this becomes a cause of thread to be stained.

Dry hook (RP hook)

Part No.	Remarks
22890206	Standard type
22890305	Surface treatment type
22890404	Type with a needle guard

Bobbin case part No. for dry hook : 22896252

(2) Cautions when a dry hook is used
If a dry hook is installed according to the specifications of DDL-9000C-S type, the hook section can be treated as a device conforming to the dry specifications and sewing can be carried out without lubrication.
* According to "3.-(6) Lubrication", set up the hook so that a very small amount of oil is fed.
1. Take out the lubrication hook.
2. Remove the hook shaft filter asm ❶ that is mounted on the hook shaft tip.

3. Install a lower shaft stop plug screw and O ring which is available separately.

Part No.	Remarks
11079506	Lowe shaft stop plug screw
RO036080200	O Ring

4. Adjust the amount of hook oil so that lubrication is maintained to a degree wet with a small amount of hook oil.
(Cautions)1. Do not drain oil from the oil tank.
    2. Be careful not to allow the oil tank to be vacant. This oil is used also to lubricate the lower shaft front metal.

○ This is a cause of metal section seizure.

10. Connection diagram of the head and electrical component

(1) Digital type

The "∗ Symbol:" in the figure shows optional parts according to the place of destination.
No mark is used for all places of destinations. In addition, "∗OP:" shows optional parts.

Code	Destination	Name of finished electric devices	Part number of finished goods
A	UN	SC-951 1PHASE 220-240V	40171000
B	CN	SC-951 1PHASE 220-240V CN	40171001
C	US	SC-951 3PHASE 200-240V JA	40171002
D	LA	SC-951 1PHASE 100-120V JA	40171003
E	CE	SC-951 1PHASE 220-240V CE	40171004
F			

(2) Full digital type

SC-950 Control BOX

DDL-9000CF head section

※Type :
A, B, E : 40169130 FLT-S PCB ASSY
C, D : 40169140 FLT-T PCB ASSY

※Type :
A, B : 40171015 PSC UNIT 1PHASE 220-240V
C : 40171016 PSC UNIT 3PHASE 200-240V
D : 40171017 PSC UNIT 1PHASE 100-120V
E : 40171018 PSC UNIT 1PHASE 220-240V CE

※Type :
A, B, C, D : 40170970 PWR PCB ASSY
E : 40176830 PWR-CE PCB ASSY

CN2 3P 3P AMP: 2-178136-5
DC280V Output
CN11 2P 2P Molex:5566
CN12 3P 3P Molex:5219
DC280VInput
*A, B, C: 40175581 FLT-PWR CORD ASSY (200V)
*D : 40175582 FLT-PWR CORD ASSY (100V)
*E : 40176825 FLT-PWR CORD ASSY (CE)

40141206 RESISTANCE_A_ASSY
Regenerative resistance

JST:VL CN1 3P
Elco:8263 (Red) CN3 3P
3P 3P 3P
CTL I/F
40175583 FLT-CTL CORD ASSY

*A, B : 40111651 POWER SWITCH ASM
*C : 40118323 POWER SWITCH ASSY
*E: M6102461DAA AC INPUT CABLE ASM. (CE)
*E: locally procured parts
*E: 40161412 REACTOR BOX ASSY 1P
*D: locally procured parts

*A, B, E : 40175586 AC INPUT CORD S ASSY
*C, D : 40175587 AC INPUT CORD T ASSY

*A, B, C, D: 40170965 PEDAL SENSOR BASE ASSY
*E : 40176828 PEDAL SENSOR BASE ASSY CE

Pedal sensor

KEL:8931E CN15 50P / 50P / 50P CN31 KEL:8931E
Elco:8263(Black) CN13 3P / 3P / 3P CN41 Elco:8263(黒)
Molex:5566 CN14 10P / 10P / 10P CN35 Molex:5566

40170983 CTL-PWR S CORD ASSY PWR I/F
40175580 CTL-PWR T CORD ASSY AT circuit power supply
40175579 CTL-PWR P CORD ASSY DC-PWR
FLT relay signal

CN62 3P 3P Elco:8263(Red)
CN34 3P 3P JST:PH(White)
CN52 5P JST:PH(White)
CN53 8P JST:PH(White)
CN49 6P Elco:8263(Red)
CN54 4P Elco:8263(White)
CN44 3P Elco:8263(White)
CN45 3P Elco:8263(White)
CN39 12P Dupont:69168
CN38 15P / 15P JST:NSH

CPU INSYSTEM
Debugger
JTAG PLD
ETHERNET
Optional knee lifter lifting sensor
Option input
Option input
PNL I/F

40170987 CTL PCB ASSY D

CN36 4P / 4P Molex:5566 Thread trimming/thread presser solenoid
CN30 9P AMP:770182 Principal axis motor encoder
CN37 4P JST:VH(White) Presser motor output
CN32 40P 3M:6002 INT I/F
CN58 2P Elco:8263(White) 2P FAN in BOX
CN56 8P Option Bird's nest preventing
CN63 2P Elco:8263(Blak) 2P Active tension solenoid
CN61 10P JST:PHD Optional solenoid valve
CN51 12P JST:PHD Optional logic input/output

40111214 FAN MOTOR ASSY

Molex:3191 CN20 4P / 4P 40175575 M1 CORD ASSY Principal axis motor output
TE20

Molex:5559 CN21 6P / 6P Horizontal feed motor output
TE21 *A, B, C, D: 40175576 M2 CORD ASSY / *E: 40176823 M2 CORD ASSY (CE)

Molex:5559 CN22 6P / 6P Vertical feed motor output
TE22 *A, B, C, D: 40175577 M3 CORD ASSY / *E: 40176824 M3 CORD ASSY (CE)

40172146 AC_SERVO_MOTOR
40168921 HORIZONTAL FEED MOTOR
40168922 VERTICAL FEED MOTOR
40168923 PRESSER MOTOR

DDL9000CSMS: 40172491 THREAD_TRIMMER_SOLENOID_F_ASM
40174373 THREAD_NIPPER_SOLENOID
40174350 AT_SOLENOID_A

CN82 11P / 11P JST:PA(White) Horizontal feed motor encoder
CN83 11P / 11P JST:PA(Red) Vertical feed motor encoder
CN84 10P / 10P JST:PA(Black) Presser motor encoder
CN89 2P / 2P Elco:8263(White) Fan for vertical feed motors
CN90 2P / 2P Elco:8263(White) FAN
CN87 6P / 6P JST:PA(White) LED/TB switch
CN81 40P 3M:7840 CTL I/F
CN86 4P / 4P JST:PA(Black) (Presser height sensor)
CN85 3P / 3P JST:PA(White) Feed lever sensor

40172390 INT PCB ASSY

40173468 FAN MOTOR ASSY
40173467 FAN MOTOR RELAY CORD ASSY
40174372 LED_TB_SWITCH
40172464 CLOTH_PRESSER_SENSOR_ASM
40174405 FEED_CONTROL_SENSOR_BASE_ASM

*OP:Connector for the pedal of a sewing machine for standing work type
GPK700010A0 3-JOINT PEDAL PK-70 12P
GPK710010A0 2-PEDAL ASM. PK-71 12P
Optional sewing machine for standing work

40173450 PANEL-F ASSY
DC5V IN CN207 2P JST:PH
ANALOG IN CN209 3P JST:PH
H-UDI I/F CN206 8P Molex:53398
CN200 15P / 15P JST:NSH CTL I/F
CN205 5P JST:PH Debugger
USB TYPE-A CN204 4P USB I/F
40169398 PNL-F PCB ASSY
CN203 30P Omron:XF3M LCD I/F
CN202 2P Omron:XF3M(1) TP I/F
CN201 7P Omron:XF3M(1) Membrane SW
40173452 LCD ASSY
40173454 TOUCH PANEL ASSY
40173128 MEMBRANE SWITCH F
40175585 CTL-PNL CORD ASSY
40174385 GROUND WIRE ASM.

The "* Symbol:" in the figure shows optional parts according to the place of destination.
No mark is used for all places of destinations. In addition, "*OP:" shows optional parts.

Code	Destination	Name of finished electric devices	Part number of finished goods
A	UN1	SC-950 1PHASE 220-240V	40171005
B	CN	SC-950 1PHASE 220-240V CN	40171006
C	US	SC-950 3PHASE 200-240V JA	40171007
D	LA	SC-950 1PHASE 100-120V JA	40171008
E	CE	SC-950 1PHASE 220-240V CE	40171009
F			

11. 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 needle thread routing, thread entangled on thread guide rod the direction, and position of thread stand or thread entangled on it.
		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 to 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.-(9)-3).
		1-E) The needle thread is detached at thread trimming due to wrong position of the hook thread presser.	If there is a clearance at the tip of the hook thread presser when the plunger is pushed by a finger to put the thread trimming solenoid into the suction state and the hook thread presser is pushed into until the tip of the presser reaches the bobbin, conduct readjustment with reference to 3.-(9) -4).
		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 3.-(9) -4)).
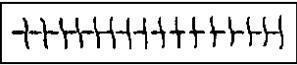
Trouble	Cause (1)	Cause (2)	Check and corrective measures
From the previous page	From the previous page		
		1-G) The knife thread guide, moving knife, or hook has a flaw.	Check whether the hole portion of the hook (especially the blade top) or knife thread guide has a flaw. If there is a flaw there, buff the flaw portion sufficiently. If the flaw portion is large, replace the part.
		1-H) The lifting amount of the auto-lifter device (AK-154) is too large.	Excessive rise of the auto-lifter device causes the thread guide with presser bar guide to rise rapidly and the needle thread to be pulled by the thread take-up spring resulting in shortened needle thread. Readjust the rise amount of the AK device to approx. 8.5 mm. Alternatively, set the remaining amount of the needle thread relatively longer for use of the AK device.
	1-2) The R surface treatment of the edge of a thread trimming knife (other than a cutting portion) lacks.	2-A) The thread makes contact with each other and becomes so short at the time of trimming thread that it becomes difficult for the thread to make a knot at the start of sewing.	The edge of a thread trimming knife (other than a cutting portion) is buff-finished to the extent of R0.5 as an R surface treatment.
	1-3) The low-intensity thread (such as a high-count filament type thread or cotton thread) is being used.	3-A) When the thread trimming speed is fast, the thread comes to be trimmed short at the time of trimming the thread.	The factory-configured thread trimming speed (300sti/min) is lowered. (Recommendation: 220sti/min)
	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.
			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 needle thread slips off the needle at the sewing start.	2-1) 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.
	2-2) The cause and measures are the same as those for the item, "1. Skipping of one or more stitches occurs at the start of sewing".	2-A) 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 in accordance.
		2-B) 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 in accordance.
		2-C) The knife thread guide, moving knife, or hook has a flaw.	Remove the scratches or burrs, or replace the defective component.
		2-D) The needle is too thick.	Change the needle.
	2-3) The needle thread slips off the needle immediately after thread trimming.	3-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 40 mm level exist under the throat plate or on the underside cover. In this case, delay the timing of the thread trimming cam.
	2-4) Knot tying between the needle and bobbin threads is not easy at sewing start.	4-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.
	2-5) Improper clearance of picker	5-A) The picker is too strongly functioning and it disturbs idling that is needed for the bobbin.	Adjust the picker alignment to a weaker level.

Trouble	Cause (1)	Cause (2)	Check and corrective measures	
3. The thread tension is inappropriate at sewing start.	3-1) 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 in accordance with 3.-(9)-7.	
		1-B) Bobbin idling causes the bobbin thread tension at sewing start to decrease.	Adjust the hook thread presser in accordance with 3.-(9)-7.	
			Adjust the tension of the idling prevention spring of the 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 the previous item, [An inappropriate needle, throat plate, or presser is used. Alternatively, he pressure of the presser is too low].	
4. The needle thread is un-trimmed. (But the bobbin thread is trimmed.)	4-1) 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 re-adjust the hook timing (Hasten the timing of the hook.).	
	4-2) 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.
				Correct the tilt of the blade tip of the counter knife.
				Correct the position of the counter knife.

Trouble	Cause (1)	Cause (2)	Check and corrective measures
5. The bobbin thread is un-trimmed. (But the needle thread is trimmed.)	5-1) 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 (SH:3 to 3.5mm) if the measurement result is out of the range.
	5-2) 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.
6. The wiper interferes with the needle.	6-1) The height of the position where the wiper is mount-ed is inappropriate.		Mount the wiper appropriately.

(2) Sewing performance

Trouble	Cause (1)	Cause (2)	Check and corrective measures
1. Puckering Wrinkles developed around stitches due to stitch shrinkage or uneven material feed.	1-1) The needle is too thick.	1-A) Deformation of clothes by penetrating a needle into cloth	Use a thin needle as much as possible. Use a KN or SF needle (standard needle).
	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 Non-smooth material.	Use silicon.
	1-3) Pressing is inappropriate.	3-A) The pressure is too high.	Minimize the pressure. For some materials, sewing with the presser slightly floated with the adjustable screw of the minute presser lifter is effective.
		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 or a special processed presser.

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Trouble	Cause (1)	Cause (2)	Check and corrective measures

From the previous page

|	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. Part No. D1524-555-DBA Small clearance groove Part No. B1524-012-TBO No clearance groove
		4-C) The parallel level of the presser is inappropriate.	Replace the presser, or loosen the presser bar holding screw and correct the needle entry and presser bend if there is no needle entry.
		4-D) The needle tip is blunt.	Replace the needle.
	1-5) Feeding is inappropriate.	5-A) Too high feed dog causes jumping at high speeds.	Lower the height of the feed dog (1.0 mm for standard size, 1.3 mm for SSH, FSH) or increase the pressure to prevent the material from jumping.
		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 sewing speed is too high.	Reduce the sewing speed.
		5-G) Others	Use a small gauge for a gap between the throat plate groove and feed dog in the moving direction without interference with the movement of the feed dog when a feeding pitch is small.

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Trouble	Cause (1)	Cause (2)	Check and corrective measures

From the previous page

| | 1-6) Occurrence of puckering by tightening a thread | 6-A) The course-woven and close-woven stitches come to occur because weaving yarns of clothes are gathered with stitches | The needle thread is made easy to adjust slightly to the low tension by using a weak spring for a thread take-up spring and a thread tension spring. |

6-A) The course-woven and close-woven stitches come to occur because weaving yarns of clothes are gathered with stitches
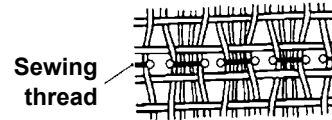
Sewing thread

The needle thread is made easy to adjust slightly to the low tension by using a weak spring for a thread take-up spring and a thread tension spring.
○ Thread take-up spring
 Part No. B3128-012-000 φ0.6mm (Standard)
 Part No. D3128-555-D00 φ0.5mm
                              (For light-weight materials)
Part No. B3128-027-000 φ0.4mm (For embroideries)
○ Thread tension springs
 Part No. B3129-012-A00 φ1.0mm (Standard)
 Part No. D3129-555-D00 φ0.9mm
                              (For light-weight materials)
 (1)Part No. B3121-352-000 φ0.8mm
                              (For ultra light-weight materials)
 (2)Part No. B2017-372-000 φ0.6mm (Weaker springs)
Tension indicated for the lower limit of adjustment
(1) Some 20 grams for Tetoron thread (No. 80)
(2) Some 12 grams for Tetoron thread (No. 80)

Use a lightweight bobbin.
 Part No. 229-64001 (Anodized aluminum)

Use the bobbin case that is easy to adjust even when the tension is low.
(1) Bobbin case for sewing ultra light-weight materials
→ Part No. 111-05459
   (The thickness of the bobbin tension adjust-ing spring (popularly called: a brake shoe pin) is 0.05 mm thinner than the standard one.)
(2) Bobbin case without an idling prevention spring
→ Part No. B1837-012-0A0
   It can be adjusted to the low tension be-cause of no idling prevention spring.
 * It is unsuitable for high-speed sewing because the idle running of a bobbin is easy to occur.
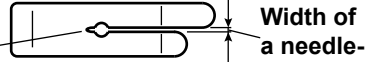
Trouble	Cause (1)	Cause (2)	Check and corrective measures

From the previous page

The influence of thread tightness by a thread take-up and a feed dog is reduced by using small presser with a clearance groove.
Presser asm.
Part No. D1524-555-DBA (Small clearance groove)
Part No. B1524-012-TBO (No clearance groove)

Clearance groove / **Width of a needle-entry portion**

2. Uneven material feed
   The upper and lower cloths are not evenly fed.

   Upper cloth
   Lower cloth
   Slippage
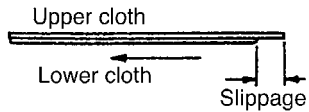
2-1) Feeding is inappropriate.

1-A) The feed dog is too high.

Lower the height of the feed dog (1.0 mm for standard size, 1.3 mm for SSH and FSH) or increase the pressure to prevent the material from jumping.

1-B) The feed trace is inappropriate.

Adjust the timing of the vertical feed cam with reference to "3.-(3) Operating timing of the feed".

1-C) The top edges of the feed dog teeth are worn.

Sharpen the top edges.

1-D) The feed dog pitch is too large.

Use one with a smaller pitch.

1-E) The tilt of the feed dog is not correct.

Set the feed dog with its front down.

1-F) 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

From the previous page

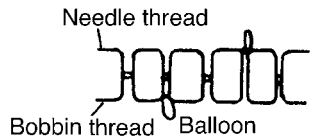| Trouble	Cause (1)	Cause (2)	Check and corrective measures
	2-2) Pressing is inappropriate.	2-A) The pressure is too high.	Minimize the pressure. For some materials, sewing with the presser slightly floated with the adjustable screw of the minute presser lifter is effective.
		2-B) The finish of the backside of the presser is rough.	Buff the sole.
		2-C) The presser is made from Non-smooth material.	Use a fluorocarbon resin presser or a special processed presser.
	2-3) The sewing speed is too high.		Reduce the sewing speed.
3. "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.	The thread take-up spring with too short stroke cannot sufficiently take up the loosened thread resulting in a higher possibility of balloon stitches or thread breakage. The thread take-up spring with too low tension cannot function well at high speeds or sufficiently take up the thread resulting in a higher possibility of balloon stitches or thread breakage.
		2-B) The tension is too low.	The thread take-up spring with too low tension cannot function well at high speeds or sufficiently take up the thread resulting in a higher possibility of balloon stitches or thread breakage.
		2-C) The shape of the thread take-up spring is inappropriate.	Thread slack may cause catching thread when the tip of the thread take-up spring is open. If the open level is too wide, use your finger to close the tip.
		2-D) The thread take-up spring tension is insufficient. The following capability is insufficient at high speeds.	When #60 or thicker thread is used, the thread take-up spring used in the A type is too weak to exert its effect due to insufficient tension of the spring at the end of the operation. In such a case, use a standard type thread take-up spring (or thread tension).

Needle thread

Bobbin thread   Balloon

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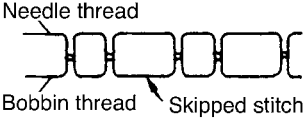| Trouble	Cause (1)	Cause (2)	Check and corrective measures

From the previous page

	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.
	3-4) 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.
	3-5) The matters related to the hook are inappropriate.	5-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.
		5-B) The timing of the hook is too late.	Set the timing of the hook to the slightly early level for filament thread.
		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 oil volume to the appropriate level.
		5-E) The hook is defective. (Thread catch)	Replace the hook.
	3-6) The thread path is defective.	6-A) The thread path is not smooth.	Finish the thread path appropriately.
		6-B) The thread path has a flaw.	Finish the thread path appropriately.
		6-C) The thread path has an obstacle.	Finish the thread path appropriately to correct threading.
	3-7) The bobbin or bobbin case is defective.	7-A) Inappropriate engagement between the bobbin and bobbin case causes the bobbin thread to be caught.	Replace the bobbin or bobbin case.
		7-B) Thread has not properly been wound around the bobbin.	The winding tension was too high or low.
		7-C) The tension adjusting spring of the bobbin case is defective.	Replace the bobbin case.

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Trouble	Cause (1)	Cause (2)	Check and corrective measures
From the previous page	From the previous page		
		7-D) The bobbin thread idles in the bobbin case.	Adjust the tension of the idling prevention spring with reference to 3.-(4).
		7-E) The bobbin has a flaw.	Remove a burr at the flaw portion, or replace the bobbin.
	3-8) Feeding is inappropriate.	8-A) The timing of feeding is inappropriate, or the height of the feed dog is too low.	Set the feed timing to a level slightly later than standard (for cotton or spun thread). Set the feed timing to a level earlier than standard (for filament thread). Lift the feed dog height.
	3-9) Pressing is inappropriate.	9-A) The presser is floating.	Adjust the clearance between the presser bar holder and lifting plate. (The clearance shall be within 0.8 to 1.2mm when the presser is closely contacted with the throat plate. DDL-9000C-S only)
		9-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.
	3-10) The thread tension device is defective.	10-A) The thread tension disk is floating.	Adjust the timing of the thread tension disk floating with reference to 3.-(9)-6.
	3-11) The needle hole of the throat plate is too small.		Use a throat plate with a larger needle hole.
	3-12) The needle is too thin for the thread to be used.		Change the needle or thread to be used.
	3-13) The needle is defective.	13-A) A burr exists on the tip of the needle.	Replace the needle.

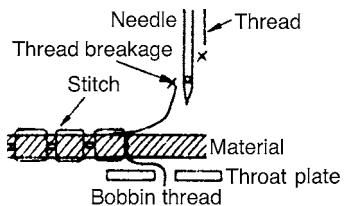| Trouble	Cause (1)	Cause (2)	Check and corrective measures
4. Stitch skipping The machine fails to form a complete stitch. Needle thread Bobbin thread Skipped stitch	4-1) The needle is defective.	1-A) The needle is bent.	Replace the needle.
		1-B) The needle mounting direction is inappropriate. The 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.
		1-E) The feeding force is too weak.	Lift the feed dog height.
	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.
		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)	Wind the needle thread or use the T-type thread guide.(B1418227T00).
		2-F) A needle holder does not exist.	Replace the current hook with a hook with a needle holder equipped. 11141355 for MS, 22890404 for SH
	4-3) The tension of the needle thread is too high.		Reduce the tension of the needle thread. Use silicon.

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Trouble	Cause (1)	Cause (2)	Check and corrective measures

From the previous page

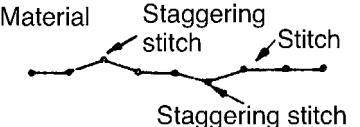| | 4-4) The sewing speed is too high. | | Reduce the sewing speed. |
	4-5) The feed timing is inappropriate. (Needle bent)	5-A) The needle is bent by the thick portion.	Hasten the feed timing.
	4-6) The thread take-up spring is inappropriately adjusted.	6-A) The stroke of the thread take-up spring is 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.	Adjust the clearance between the presser bar holder and lifting plate.
		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, or loosen the presser bar holding screw and correct the foot bend.
5. Needle thread breakage The needle thread splits finely or breaks during sewing.	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.

Needle — Thread
Thread breakage
Stitch
Material
Throat plate
Bobbin thread

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Trouble	Cause (1)	Cause (2)	Check and corrective measures

From the previous page

Trouble	Cause (1)	Cause (2)	Check and corrective measures
	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.
		3-C) The tension of the thread take-up spring is too high or too low.	For the A-type thread tension, replace the current thread take-up spring with a standard type spring. (for a #60 or thicker thread)
	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.	Replace the needle.
		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.
		5-E) The thread path of the hook has a flaw.	Replace the needle.

Trouble	Cause (1)	Cause (2)	Check and corrective measures
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. Long groove side Indented side	Attach the needle so that the long groove of the needle faces exactly to the left or slightly toward the operator as illustrated. About 10°
		1-B) The thread take-up spring is inappropriately adjusted.	Adjust the thread take-up spring so that the thread is not fed from the thread tension disk before the thread take-up spring moves to the end. (The more effective this adjustment becomes, the lower the spring tension is set or the longer the stroke of the spring is set.)
			Wind the thread around the needle or use the T-type needle bar thread guide (B1418227T00).
	6-2) The timing of the hook is too late.	2-A) Late hook timing excessively enlarges and deforms the needle thread loop, and accordingly, the thread is caught twice with the blade top resulting in thread breakage.	Conduct hook adjustment 0.2 to 0.5 mm earlier than the lower marker line of the needle bar.
			Wind the thread around the needle.
	6-3) 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.
		3-C) Spring selection for the thread to be used is inappropriate.	For the A-type thread tension, replace the current thread take-up spring with a standard type spring. (for a #60 or thicker thread)

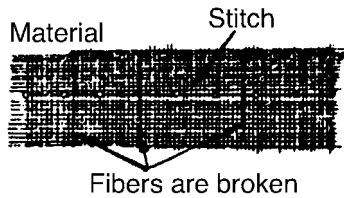| Trouble	Cause (1)	Cause (2)	Check and corrective measures
7. Thread breakage at needle entry or idle stitching.	7-1) The needle has improperly been installed.	1-A) The orientation of the needle is wrong. Long groove side, Indented side	Attach the needle so that the long groove of the needle faces exactly to the left or slightly away from the operator as illustrated. About 10°
	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 Some stitches stagger, whereas they should be aligned. Material, Staggering stitch, Stitch, Staggering stitch	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 sewing speed is too high.		Reduce the sewing speed.
	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.	Eliminate the backlash in the state of slightly pressing the top, bottom, and horizontal feeder bar pins.

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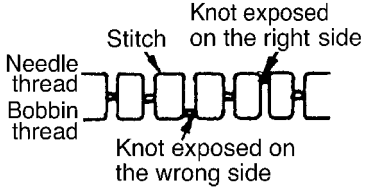| Trouble	Cause (1)	Cause (2)	Check and corrective measures

From the previous page

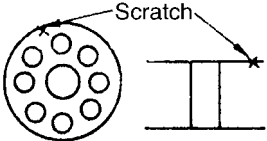| | 8-5) Pressing is inappropriate. | 5-A) The presser is floating. | Readjust the position of the presser bar holder. |
		5-B) The parallel level of the presser is inappropriate.	Replace the presser, or loosen the presser bar holding screw and correct the foot bend.
		5-C) The pressure is too low.	Increase 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 sewing speed is too high.		Reduce the sewing 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 Thread knots appear on either side of material at random. Stitch / Knot exposed on the right side / Needle thread / Bobbin thread / Knot exposed on the wrong side	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.	Adjust the tension of the idling prevention spring with reference to 3.-(4).
		2-E) The bobbin is inserted into the bobbin case in the wrong direction.	Refer to 3.-(4). Irregular stitches are corrected by rotating the bobbin in the reverse direction.
	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.

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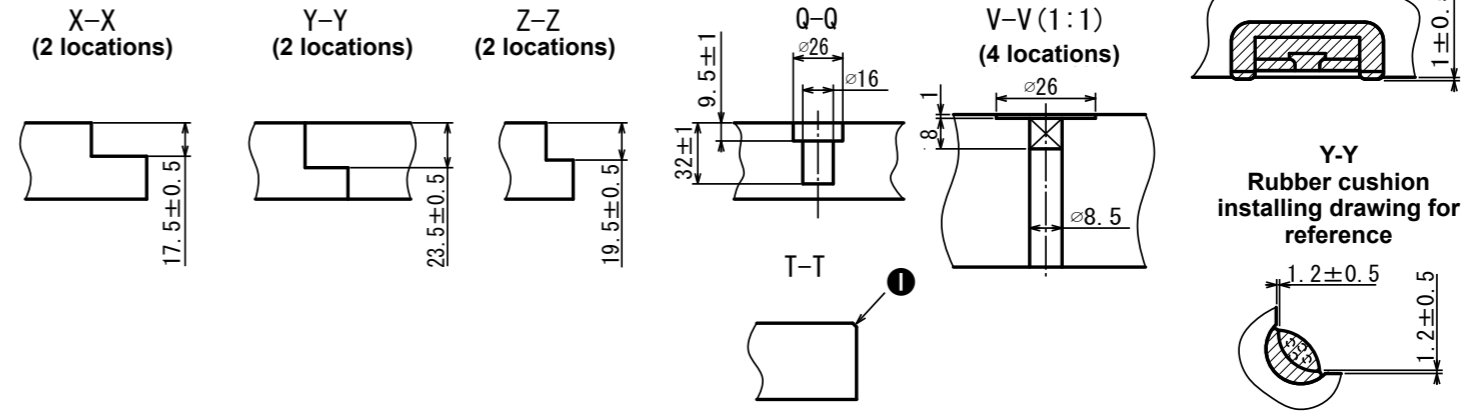| Trouble	Cause (1)	Cause (2)	Check and corrective measures
	From the previous page	From the previous page	
		5-B) The thread path has a flaw.	Finish the thread path appropriately.
		5-C) The thread path has an obstacle.	Finish the thread path appropriately. Correct threading.
	10-6) The material is 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 the presser, or loosen the presser bar holding screw and correct the needle entry and presser bend if there is no needle entry.
		6-D) The presser is floating.	Adjust the clearance between the presser bar holder and lifting plate.
	10-7) Backlash exists in the moving direction..	7-A) Irregular stitches occur due to pitch fluctuations resulting from variation in the sewing speed.	Check whether there is a backlash and eliminate the back lash if necessary. .
	10-8) The stroke of the thread take-up ever is too long.		Move the arm thread guide rightward to reduce the thread feeding with the thread take-up lever.
	10-9) No reaction is observed from the thread guide bar.		Use D1113126WA0.
11. The bobbin has a scratch. The bobbin is scratched as illustrated, and a burr is left.	11-1) When a DAB-type hook (11038650) is used, the needle may come into contact with the bobbin.		Use a hook with needle holder that is compatible with #11 or equivalent needles. 11141355 for MS, 22890404 for SH.

Trouble	Cause (1)	Cause (2)	Check and corrective measures
12. The bird's nest at the start of sewing is big.	12-1) The remaining length of needle thread after a thread trimming is long.		By strengthening the first thread tension, shorten the remaining length of needle thread after a thread trimming.
			Lengthen the pitch of one needle at the start of sewing to make the needle thread to be tucked under the presser. For example, make a reverse stitch to be a condensed stitch and set the number of needles to one needle in order to enlarge a pitch.
13. The situation of crossing over the multi-layered section of the material is imperfect.	13-1) The height of a feed dog is low.		At the time of passing over the multi-layered section of the material, raise a feed dog with the custom switch.
14. Needle thread breakage at the start of sewing	14-1) The needle thread presser device is put on.	1-A) Thread is cut by the needle thread caught under the presser and because needle thread presser device is put on.	The needle thread is made easy to pass through by losing the presser.
			In the case of the AK-154 device of the (standard) digital specification, the presser at the start of sewing is slightly lifted to make the needle thread easy to pass through. (U290: AK operating time when the thread presser operates is enlarged.)
			In the case of the device of the full digital specification, the presser at the start of sewing is slightly lifted to make the needle thread easy to pass through. (U290: AK operating time when the thread presser operates is enlarged.)
15. Faulty thread trimming (The needle and bobbin threads are not trimmed.)	15-1) Wear of the cutting portion of a thread trimming knife or loop spreading knife		It is replaced by a new knife.
	15-2) The amount of engagement between their cutting portions is insufficient.		The amount of engagement between them is adjusted with an eccentric pin.

Trouble	Cause (1)	Cause (2)	Check and corrective measures
16. Faulty thread trimming (The needle thread is not trimmed.) (The bobbin thread is not trimmed.)	16-1) Wear of the cutting portion of a thread trimming knife or loop spreading knife		It is replaced by a new knife.
	16-2) The thread loop formation is unstable.	2-A) The high-count filament type thread is being used.	The thread trimming cam timing is corrected by changing a maker dot from a green one to a red one.
17. Faulty thread trimming (The needle thread is trimmed short.)	17-1) The strength of the thread is weak.	1-A) The high-count filament type thread or cotton thread is being used.	The rotating speed for trimming thread is lowered.
			The edge lines other than cutting portion of a thread trimming knife are buffed to the extent of R0.5.

12. Drawing of table
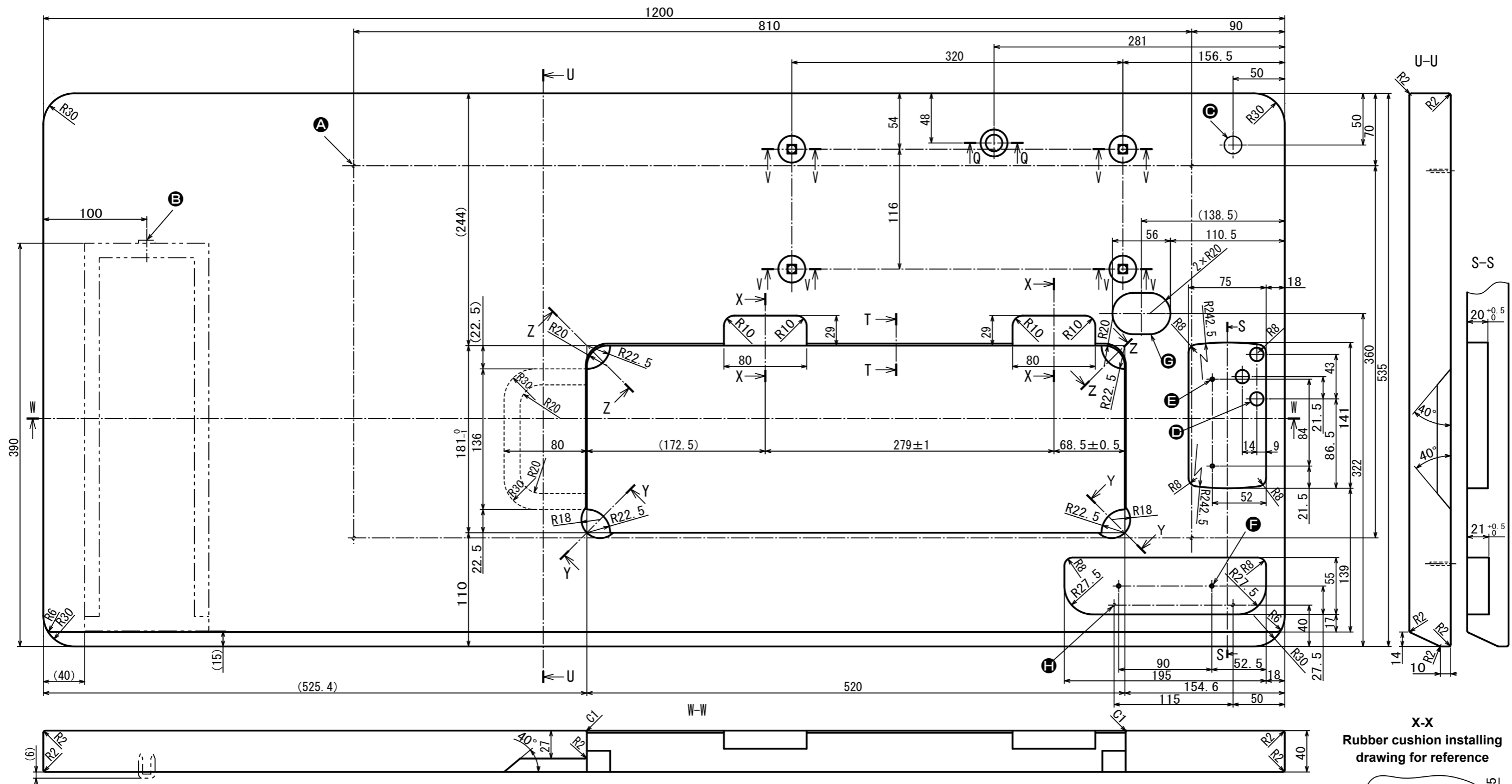
Ⓐ 4×ø3.4 on the bottom surface, depth 20 (Drill a hole at the time of set-up.)
Ⓑ Installing position of drawer stopper (on the reverse side)
Ⓒ ø17 drilled hole
Ⓓ 3×ø13 drilled hole
Ⓔ 2×ø3.5, depth 10
Ⓕ 2×ø3.5, depth 10
Ⓖ Through hole
Ⓗ 2×ø3.4 on the bottom surface, depth 10 (Drill a hole at the time of set-up.)
Ⓘ C1.5 to C2.5 (hinge side only)

Part No.：40172421

ISO 14001
JSAE389

CM001

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* The description covered in this engineer's manual is subject to change for improvement of the commodity without notice.

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