

# LT-591

## INSTRUCTION MANUAL

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<b>NOTE :</b> Read safety instructions carefully and understand them before using. Retain this Instruction Manual for future reference.
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# TO ENSURE SAFE USE OF YOUR SEWING MACHINE

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** before using/maintaining the machine. The content of the **SAFETY PRECAUTIONS** includes items which are not contained in the specifications of your product.

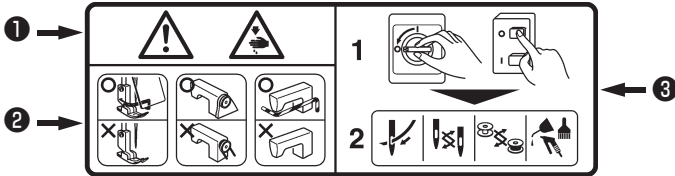
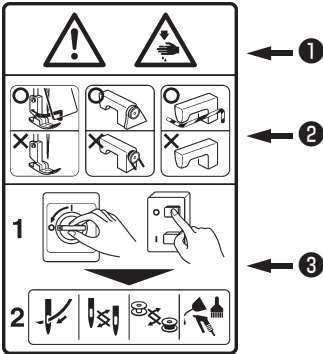


The risk indications are classified into the following three different categories to help understand the meaning of the labels. Be sure to fully understand the following description and strictly observe the instructions.

## (I) Explanation of risk levels

	<b>DANGER :</b> This indication is given where there is an immediate danger of 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.
	<b>WARNING :</b> 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.
	<b>CAUTION :</b> 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		There is a risk of injury if contacting a moving section.	Pictorial warning indication		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				
	<p>① • 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.</p> <p>② • To perform sewing work with safety guard. • To perform sewing work with safety cover. • To perform sewing work with safety protection device.</p> <p>③ • Be sure to turn the power OFF before carrying out "machine-head threading", "needle changing", "bobbin changing" or "oiling and cleaning".</p>			
Electrical-shock danger label				
	<p><b>危険</b> 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。</p>		<p><b>DANGER</b> Hazardous voltage will cause injury. Turn off main switch and unplug power cord and wait at least 5 minutes before opening this cover.</p>	

# 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 instruction manual and other explanatory documents supplied with accessories of the machine before using the machine. Carefully keep the instruction 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.

### 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 instruction 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 instruction 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 instruction 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.

#### **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  $\pm 10\%$ " 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 so as to use the LT-591 more safely

	<ol style="list-style-type: none"> <li>1. To avoid personal injury, never put your fingers under the needle when you turn ON the power switch or operate the sewing machine.</li> <li>2. To avoid personal injury, never put your fingers into the thread take-up cover while the sewing machine is in operation.</li> <li>3. 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.</li> <li>4. To avoid personal injury, never operate the sewing machine with the finger guard removed.</li> </ol>
	<ol style="list-style-type: none"> <li>1. For the safety, never operate the sewing machine with the ground wire for the power supply removed.</li> <li>2. Be sure to turn OFF the power switch in prior when connecting/disconnecting the power plug.</li> <li>3. When thunders occurs, stop the work for the safety and disconnect the power plug.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>7. To avoid possible accidents due to abrupt start of the machine, be sure to turn OFF the power to the machine.</li> <li>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.</li> </ol>

## BEFORE OPERATION



### CAUTION :

Check the following so as to prevent maloperation of and damage to the machine.

- Before you put the machine into operation for the first time after the set-up, clean it thoroughly . Remove all dust gathering during transportation and oil it well.
- Confirm that voltage has been correctly set.  
Confirm that the power plug has been properly connected to the power supply.
- Never use the machine in the state where the voltage type is different from the designated one.
- The direction of normal rotation of the machine is counterclockwise as observed from the pulley side.  
Take care not to allow the machine to rotate in the reverse direction.
- Never operate the sewing machine until it is properly lubricated.
- For a test run, remove the bobbin and the needle thread.
- Operate the handwheel after the machine has totally stopped.
- Be aware that, after the power is turned ON, the handwheel rotates even if the operation pedal is not depressed.
- To increase the stitch length during the continuous operation, decrease the sewing speed to 400 sti/min.

## DECLARATION OF INCORPORATION OF PARTLY COMPLETED MACHINERY

We hereby declare that the sewing machine (sewing head) described below ;

1. Must not be put into service until the machinery to which it is incorporated has been declared in conformity with the provisions of the Directive 2006/42/EC, and
2. Conforms to the essential requirements of the Directive 2006/42/EC, described in the technical documentation, and
3. To be prepared with the above technical documentation compiled in accordance with part B of Annex VII, and
4. Also to conform to the RoHS Directive 2011/65/EU
5. Relevant information on which should be transmitted in response to a reasoned request by the national authorities, by the electronic method or other according to the request.

Model	LT-591
Description	Industrial Sewing Machine
Function	make stitches and sew

Applied harmonized standards, in particular :  
EN ISO12100, EN ISO10821, EN 50581

Manufacturer :  
JUKI CORPORATION  
2-11-1, Tsurumaki, Tama-shi, Tokyo, Japan



# CONTENTS

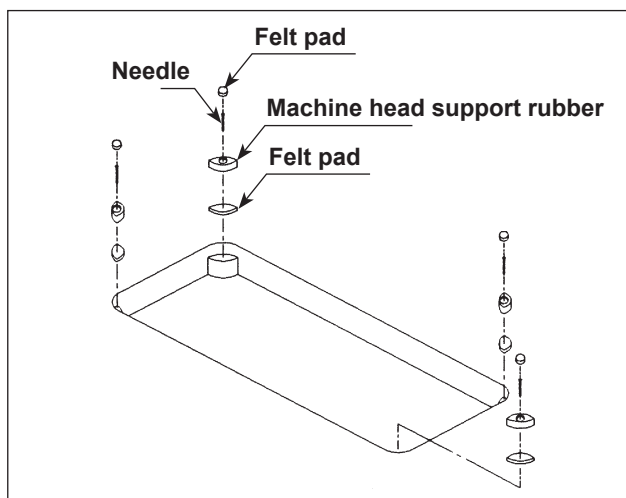
1. SPECIFICATIONS .....	1
2. SETTING UP THE SEWING MACHINE .....	1
3. INSTALLING THE THREAD STAND.....	2
4. INSTALLING THE THREAD TAKE-UP COVER .....	3
5. INSTALLING THE BELT COVER.....	3
6. LUBRICATION.....	4
7. THE THREADS.....	4
8. INSERTING THE NEEDLE.....	4
9. THREADING THE MACHINE.....	5
10. HOW TO START THE SEWING .....	5
11. PASSING THE BOBBIN THREAD .....	5
12. HOW TO ADJUST THE THREAD TENSION .....	5
13. HOW TO STOP THE MACHINE AUTOMATICALLY.....	5
14. ADJUSTING THE POSITION OF THE NEEDLE AND SEWING HOOK .....	6
15. MATCHING THE HEIGHT OF THE PRESSER BAR .....	6
16. HOW TO ADJUST THE STOPPING DEVICE .....	6
17. MATCHING THE TIMING OF THREAD TENSION .....	7



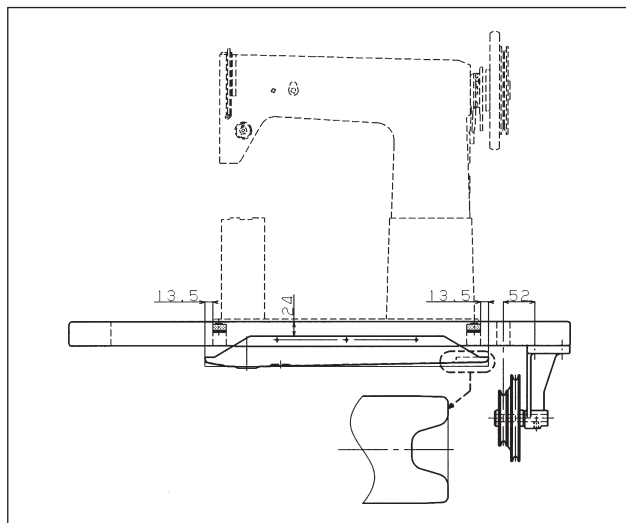
## 1. SPECIFICATIONS

Model	LT-591
Type of sewing machine head	1-needle, lockstitch, post-bed type basting machine
Sewing speed	Max. 600 sti/min
Stitch length	Adjustable as desired
Needle bar stroke	52.8mm
Presser bar lift (max.)	35mm
Needle	TV×7 #14 (standard)
Hook	Full-rotary large vertical-axis hook
Feed system	Manual feed type
Lubrication method	Manual oiling with an oiler
Distance from machine arm to needle	273mm
Dimensions of bed	440mm×178mm
Oil to be used	New Defrix Oil No.1
Noise	<ul style="list-style-type: none"> <li>- Equivalent continuous emission sound pressure level (<math>L_{pA}</math>) at the workstation : A-weighted value of 85.0 dB; (Includes <math>K_{pA} = 2.5</math> dB); according to ISO 10821-C.6.2 -ISO 11204 GR2 at 600 sti/min.</li> <li>- Sound power level (<math>L_{WA}</math>) ; A-weighted value of 91.0 dB; (Includes <math>K_{WA} = 2.5</math> dB); according to ISO 10821-C.6.2 -ISO 3744 GR2 at 600 sti/min.</li> </ul>

## 2. SETTING UP THE SEWING MACHINE



- 1) Installing the machine head support rubber  
Fix the machine head support rubber and the related parts supplied with the unit on the table with a nail. Be sure to attach the felt pads on the machine head support rubber with adhesive agent.



- 2) Installing the oil pan and the idler pulley  
Install the oil pan supplied with the unit on the table by fixing with screws at six locations.



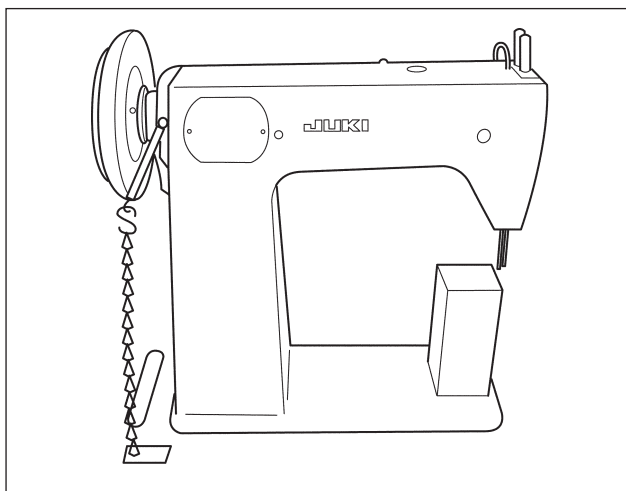
**Install the oil pan so that its forked side is brought to the rear.**

Install the idler pulley supplied with the unit on the table by fixing with screws at four locations.

- 3) Place the sewing machine on the machine head support rubbers which are located at the four corners of the table.

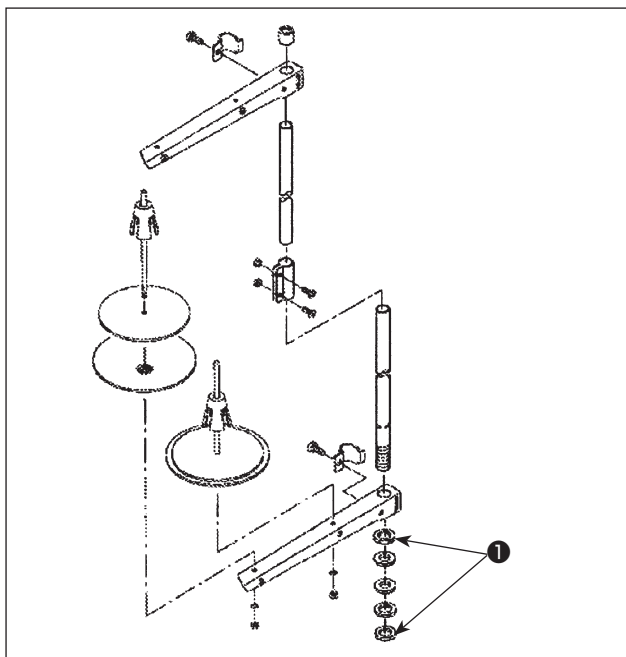


1. Carry the sewing machine with two persons. (Do not hold the handwheel.)
2. Do not put protruding articles such as the screwdriver and the like at the location where the sewing machine is placed.



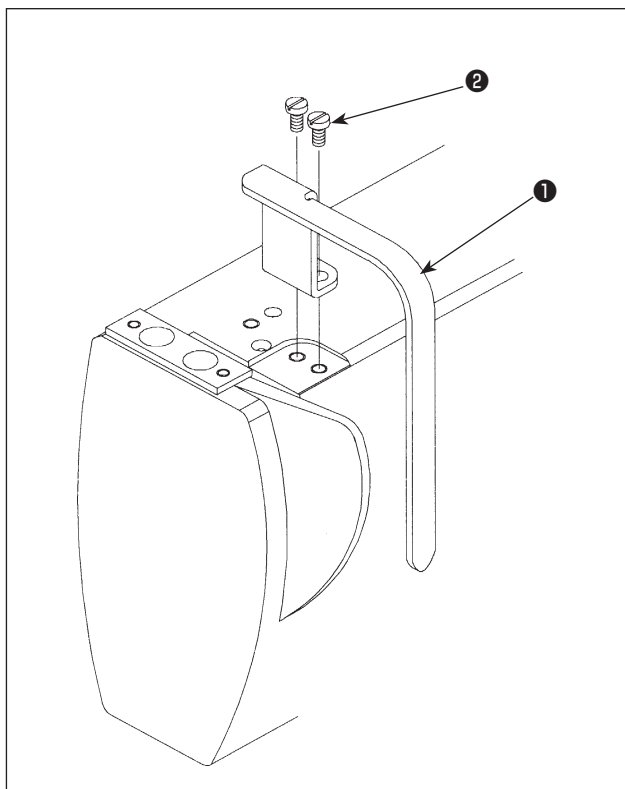
- 4) Attach the S-shaped fitting and chain supplied with the unit to the starting lever. Connect the other end of the chain to the pedal of the table stand.

### 3. INSTALLING THE THREAD STAND



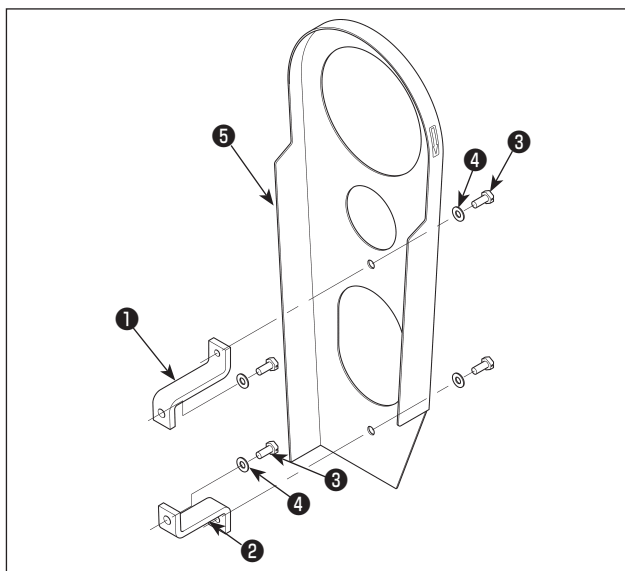
Assemble the thread stand, and insert it in the hole in the machine table, and fix it by tightening nut ❶.

## 4. INSTALLING THE THREAD TAKE-UP COVER



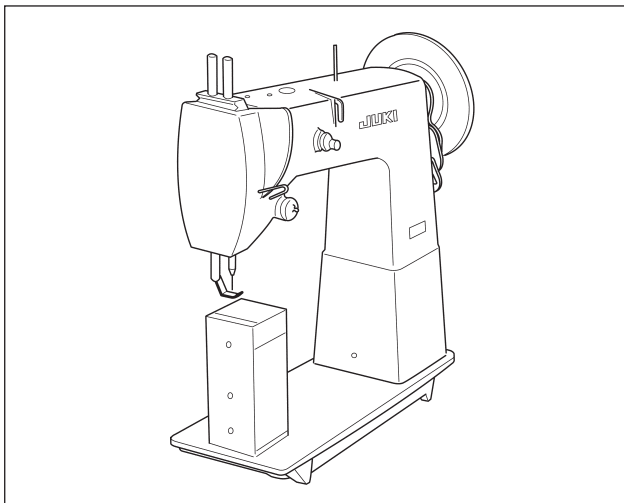
Before using the sewing machine, be sure to install thread take-up cover ❶ using screws ❷ supplied with the unit as shown in the figure.

## 5. INSTALLING THE BELT COVER



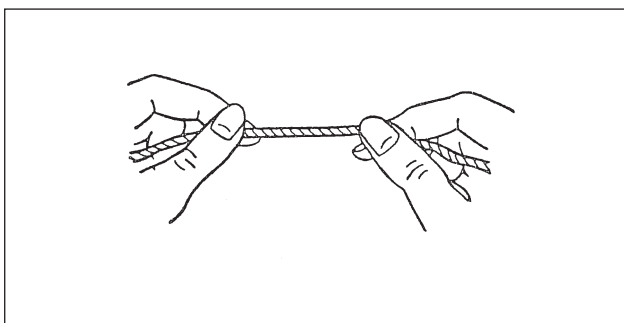
- 1) Attach belt cover support, upper ❶ and belt cover support, lower ❷ to the sewing machine using screws ❸ and washers ❹ .
- 2) Install belt cover ❺ in position and fix with screws ❸ and washers ❹ .

## 6. LUBRICATION



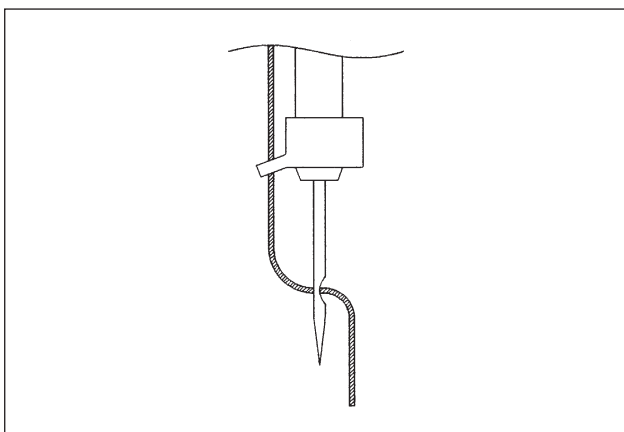
Lubricate the spots marked by arrows, Fig, at least twice a week. The lubrication to the sewing hook components is performed by a felt which is embedded between the sewing hook and the bobbin case holder. Lubricate this felt very slightly every day.

## 7. THE THREADS



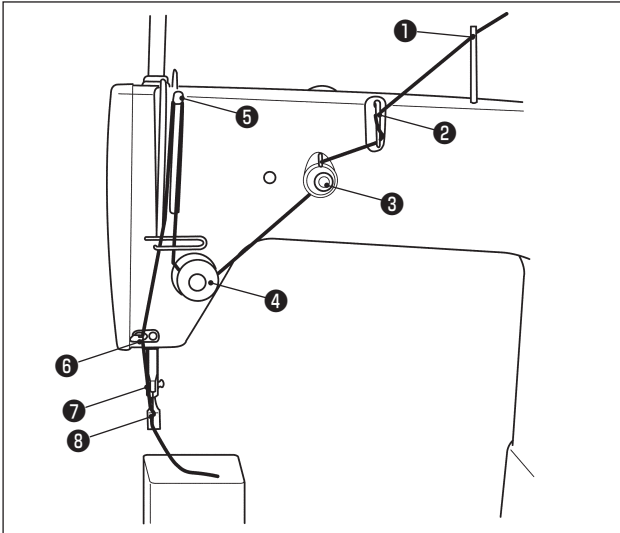
Use left-twist for the needle thread. For the bobbin thread, either right-twist or left-twist can be used. To verify the twist, hold the thread with the left and right thumb and forefinger and if the thread is turned forward the operator by the right hand, the left-twist will become firmer and the right-twist will become loose. (Fig)

## 8. INSERTING THE NEEDLE



Face the grooved part of the needle toward the sewing hook and pass the thread to the opposite side from front.

## 9. THREADING THE MACHINE



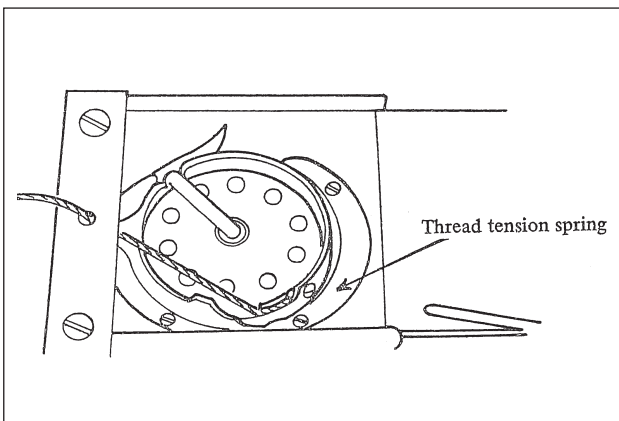
Pass the needle thread as shown in the order of Fig.

## 10. HOW TO START THE SEWING

Hold the tip of the needle thread with the left hand in sagging condition between it and the needle, and if the clutch is motivated and one stitch is sewn, the bobbin thread can be caught. Then if the needle thread is pulled up, the bobbin thread will come up together through the thread hole of the throat plate. Then pull both threads toward rear, place the cloth under the cloth presser and start sewing.

The desired stitch length can be determined by the amount of the cloth moved.

## 11. PASSING THE BOBBIN THREAD



Pass the bobbin thread as shown in Fig.

## 12. HOW TO ADJUST THE THREAD TENSION

The tension of the needle thread is adjusted by the knob and screw of the thread tension disc and that of the bobbin thread is adjusted by the thread tension spring of the bobbin case holder. Be sure to practise the timing of the needle with the feed as this has a great bearing on the method of feeding the cloth by hand.

## 13. HOW TO STOP THE MACHINE AUTOMATICALLY

When the pedal is pushed by foot, the machine will start. When the foot is released, the machine will stop. If the pedal is stepped on continuously, the machine will keep on running. This machine is so constructed to enable the operator to stop the machine at every stitch and to stop the machine at any place desired by him.

## 14. ADJUSTING THE POSITION OF THE NEEDLE AND SEWING HOOK

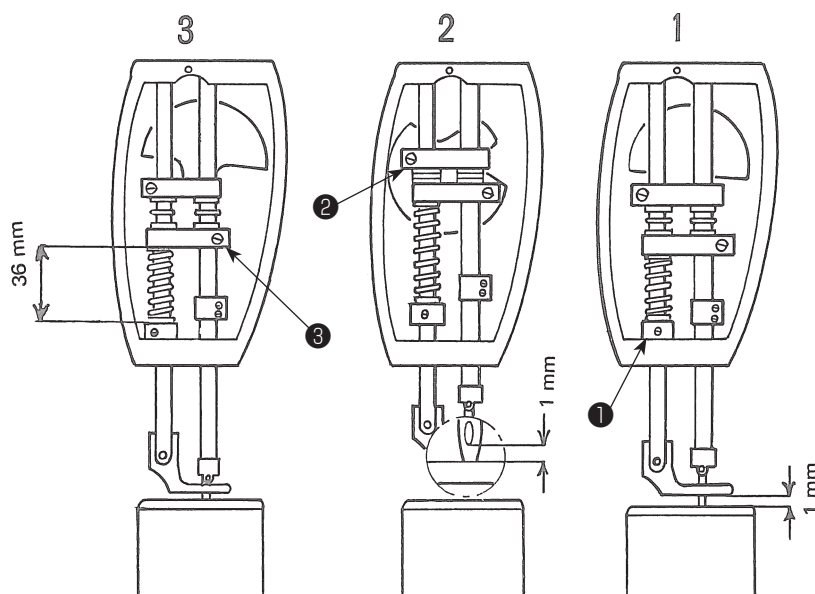
Make adjustment so that when the needle has risen to 3 mm (1/8") from its lowest position, the tip of the sewing hook should match with the center of the needle. At the same time, fix the height of the needle bar so that the grooved part of the needle matches with the tip of the sewing hook.

## 15. MATCHING THE HEIGHT OF THE PRESSER BAR

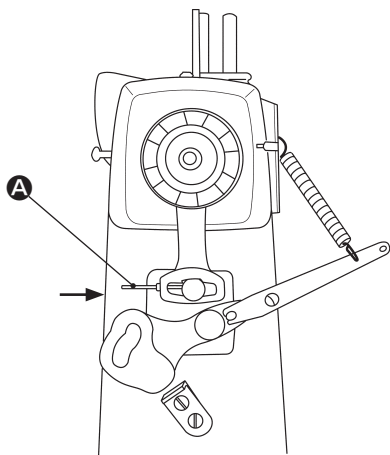
When the needle bar is at its lowest position, make the clearance between the presser foot and the throat plate to 1 mm, then tighten the collar screw ❶, Fig.

Then, make adjustment so that when the needle bar has stopped, the presser foot comes to 1 mm below the needle hole of the needle, then tighten the screw ❷.

Next, make the dimension shown in Fig to 36mm (1-27/64") and tighten the screw ❸.

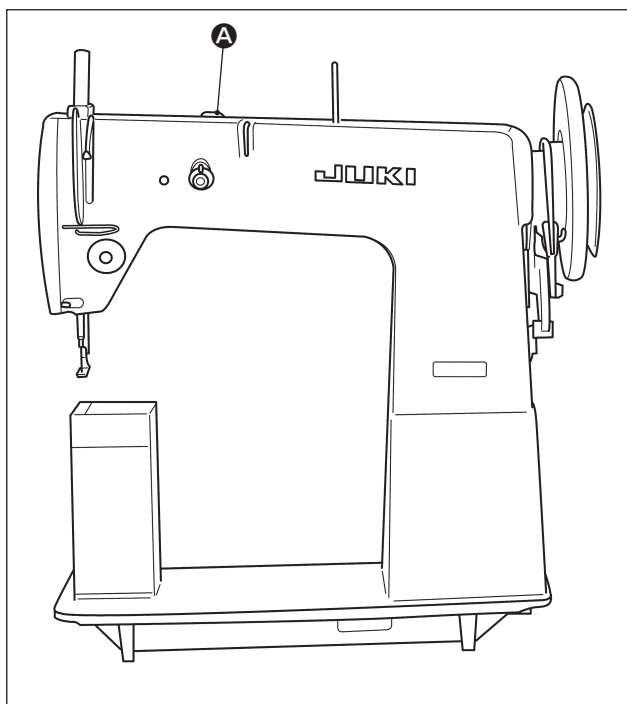


## 16. HOW TO ADJUST THE STOPPING DEVICE



Make adjustment so that the needle bar stops only when the thread take-up has risen to the upper dead point. When the lever A, Fig, is moved toward the arrow direction, the stop timing of the needle bar becomes quicker.

## 17. MATCHING THE TIMING OF THREAD TENSION



Adjust the thread tension by removing the cap **A** , Fig, loosen the 2 screws inside and adjust the position of the cam so that when the thread take-up pulls up the thread, the tension becomes tight and when the machine has stopped, it will become loose.





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