

LG-158

LG-158-1

INSTRUCTION MANUAL

**NOTE : Read safety instructions carefully and understand them before using.
Retain this Instruction Manual for future reference.**

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

	DANGER : 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.
	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		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>危険</p> <p>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>DANGER</p> <p>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 LG-158, 158-1 more safely

	<ol style="list-style-type: none">1. Keep your hands away from needle when you turn ON the power switch or while the machine is in operation.2. Do not put your fingers into the thread take-up cover while the machine is operating.3. Turn OFF the power switch when tilting the machine head, or removing the belt cover or the V belts.4. During operation, be careful not to allow your or any other person's head, hands or clothes to come close to the handwheel, V belt and motor. Also, do not place anything close to them.5. Do not operate your machine with the belt cover and finger guard removed.6. When tilting the machine head, be sure to confirm that the head support bar is properly attached to your machine head, and be careful not to allow your fingers or the like to be pinched in the machine head.
	<ol style="list-style-type: none">1. To ensure safety, never operate the machine with the ground wire for the power supply removed.2. When inserting/removing the power plug, the power switch has to be turned OFF in advance.3. In time of thunder and lightening, stop your work and disconnect the power plug from the receptacle so as to ensure safety.4. If the machine is suddenly moved from a cold place to a warm place, dew condensation may be observed. In this case, turn ON the power to the machine after you have confirmed that there is no danger of water drops in the machine.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. 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 or returning the sewing machine to the home position, hold the upper side of the machine head with both hands and perform the work quietly so that fingers or the like are not caught in the machine.

	<p>CAUTION : Note that safety devices such as “eye guard”, “finger guard”, etc. may be omitted from the illustrations in this Instruction Manual for easy explanation. When operating the machine, be sure not to remove these safety devices.</p>
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BEFORE OPERATION

	<table border="1"><tr><td data-bbox="271 1565 351 1657"></td><td data-bbox="351 1565 1442 1657"><p>CAUTION : Check the following so as to prevent maloperation of and damage to the machine.</p></td></tr></table> <ul style="list-style-type: none">• 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 machine unless the head base has been filled with oil.• For a test run, remove the bobbin case and the needle thread.• Be sure to use your sewing machine with the speed of stitch lowered to 600 sti/min or less for the first month after installation.• Operate the handwheel after the machine has totally stopped.		<p>CAUTION : Check the following so as to prevent maloperation of and damage to the machine.</p>
	<p>CAUTION : Check the following so as to prevent maloperation of and damage to the machine.</p>		

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	LG-158 Series
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

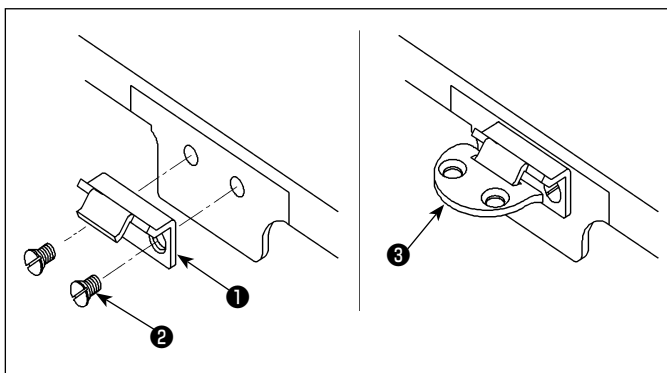
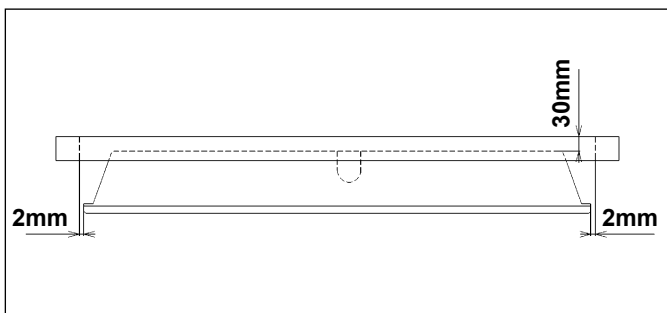
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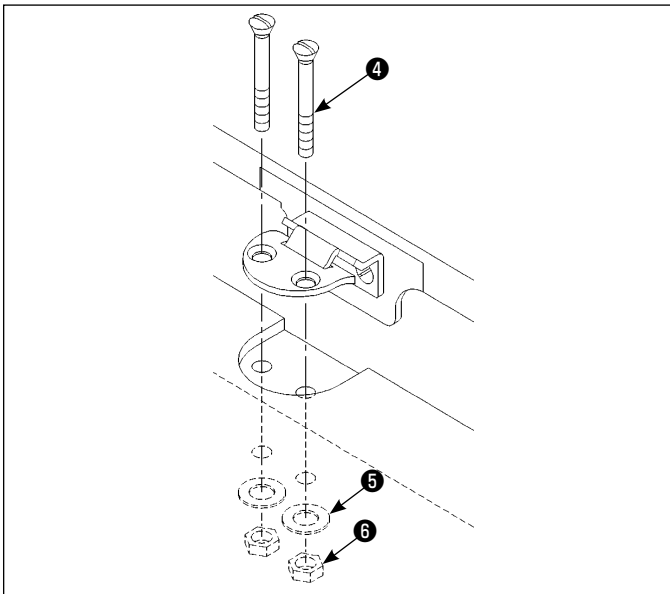
SPECIFICATIONS

Model	LG-158	LG-158-1
Type of sewing machine head	2-needle, unison-feed lockstitch machine (with a reverse-feed stitching function)	1-needle, unison-feed, lockstitch machine (with a reverse-feed stitching function)
Usage	For sewing extremely heavy weight & heavy weight materials	
Sewing speed	Max. 1,500 sti/min	
Lift of presser foot	Max. 16 mm	
Stitch length	0 ~ 10 mm	
Needle	DD x 1 #25 2 ea.	DD x 1 #25 1 ea.
Reverse sewing	By treading pedal	
Needle gauge	3/4" (Standard), 1/4", 5/16", 3/8", 1/2", 5/8", 7/8", 1", 1-1/4", 1-1/2", 2", 2-1/4", 2-1/2"	-
Lubricating oil	JUKI New Defrix Oil No. 1	
Noise	<ul style="list-style-type: none"> - Equivalent continuous emission sound pressure level (L_{pA}) at the workstation: A-weighted value of 87.5 dB; (Includes $K_{pA} = 2.5$ dB); according to ISO 10821- C.6.2 - ISO 11204 GR2 at 1,500 sti/min. - Sound power level (L_{WA}); A-weighted value of 97.5 dB; (Includes $K_{WA} = 2.5$ dB); according to ISO 10821- C.6.2 - ISO 3744 GR2 at 1,500 sti/min. 	<ul style="list-style-type: none"> - Equivalent continuous emission sound pressure level (L_{pA}) at the workstation: A-weighted value of 87.5 dB; (Includes $K_{pA} = 2.5$ dB); according to ISO 10821- C.6.2 - ISO 11204 GR2 at 1,500 sti/min. - Sound power level (L_{WA}); A-weighted value of 96.5 dB; (Includes $K_{WA} = 2.5$ dB); according to ISO 10821- C.6.2 - ISO 3744 GR2 at 1,500 sti/min.

1. INSTALLING THE MACHINE



- When carrying the sewing machine, be sure to carry by two people.
(Caution) Do not hold the pulley.
- Do not place a protruding object, such as a screw driver, at a place where the sewing machine is to be installed.
- Fix the oil pan supplied with the machine on the table in 10 placed with nails.
Set the oil pan so that its U-shaped notch is brought to the opposite side of the operator.
- Attaching the hinge arm
Install hinge arms ① to the front and rear (at one location each) of the sewing machine head with screws ②. Hook hinge seats ③ on hinge arms ①.
(When hooking hinge seats ③ on the hinge arms ①, face the counter sunk plane of the hinge seats ③ upward.)



5) Installation of the machine

Put the sewing machine head on the table with the sewing machine head and hinge seats **3** aligned.

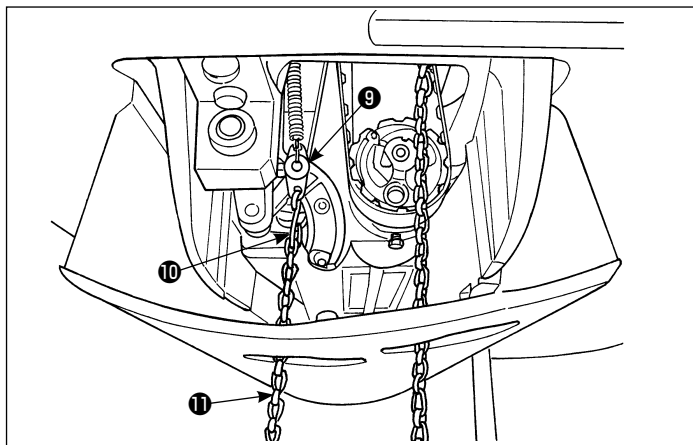
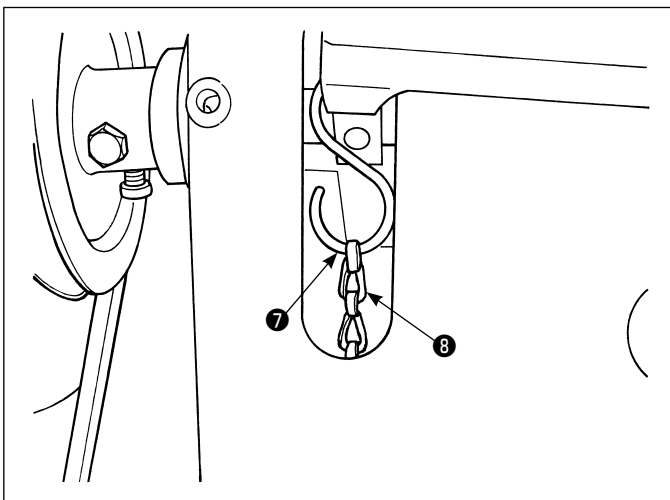
Fix hinge seat **3** with screw **4** , washer **5** and nut **6** supplied with the machine.

6) Installing the coupling chain

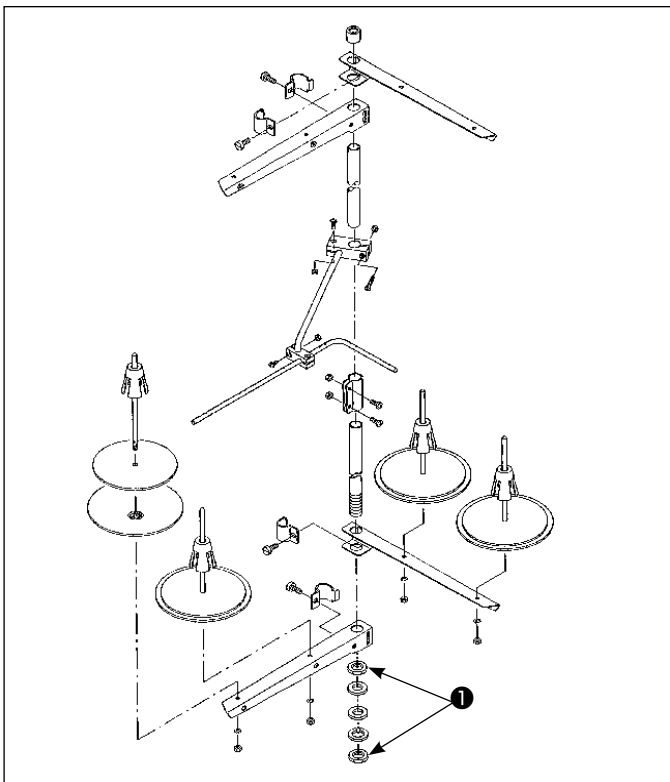
Attach chain **8** supplied with the unit to S-shaped fitting **7** which has been installed on the presser lifting lever.

Install S-shaped fitting **10** and chain **11** to changeover link spring peg plate **9** .

Bring down chains **8** to **11** respectively from the oil pan to connect to the table stand.



2. INSTALLING THE THREAD STAND



Assemble the thread stand device. Fit it in the hole in the table.

Tighten locknut **1** so that the thread stand does not fluctuate.

3. LUBRICATION

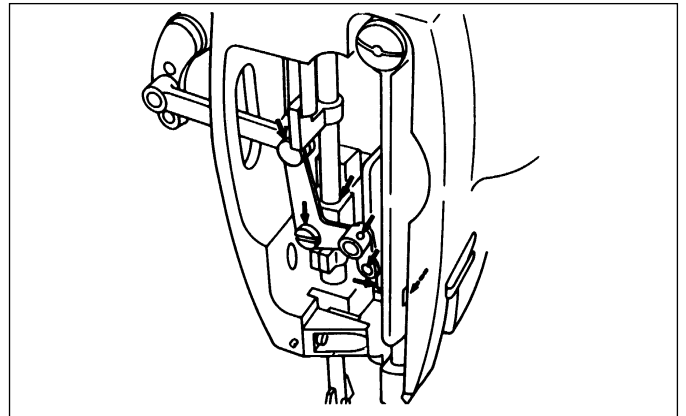
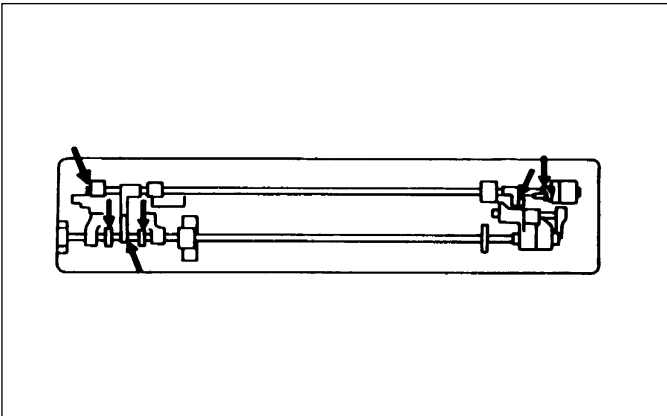
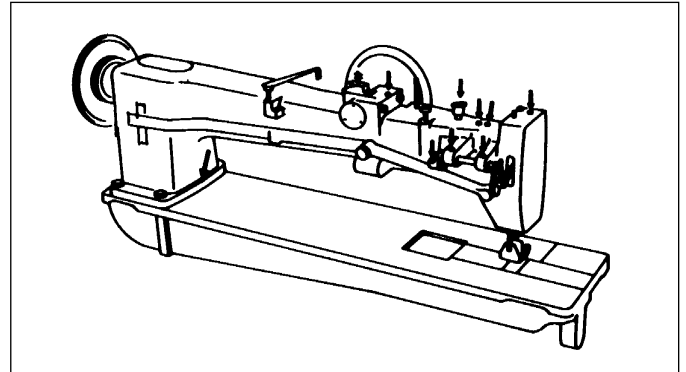
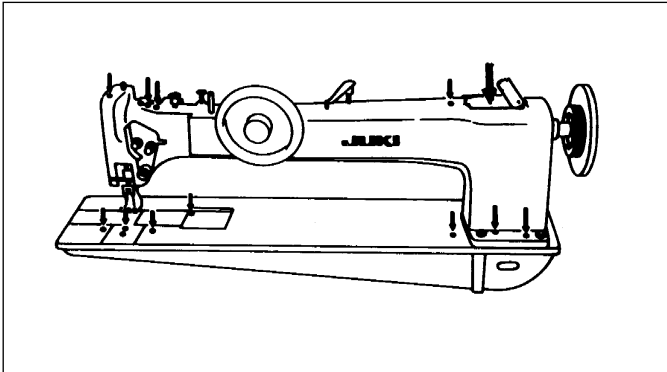


WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

*** Before starting the machine:**

1. For lubrication, use JUKI New Defrix Oil No.1 which is in the accessory box.
2. Before operating the machine, lubricate the parts shown by arrows in the figure. To lubricate the face part, loosen the face plate set screw and by placing the face plate on top, lubricate the oil wick and the moving parts.
3. When the machine is to be used continuously, lubricate it at least twice a day.
4. Finally, when the machine is to be used for the first time or when it is used to sew long length material continuously, be sure to lubricate it often.

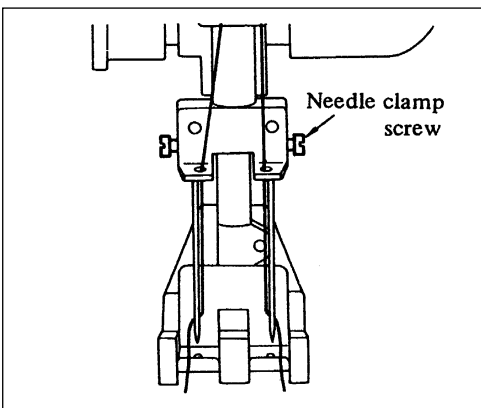


4. HOW TO INSTALL THE NEEDLE



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



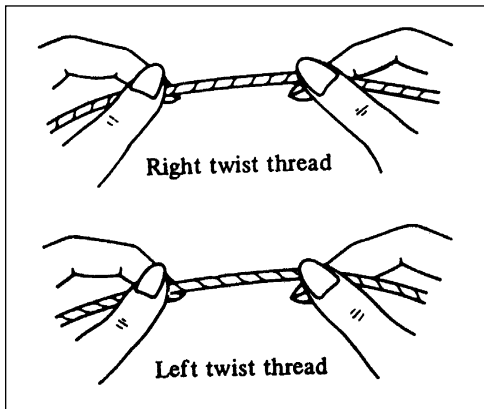
Use DD×1 needle. There are many types and size numbers of needles but all of them depend upon the thickness of the thread or kinds of sewing material, so be sure to select appropriate type and size number.

Standard is #25.

To install the needle:

1. Raise up the needle bar to its highest position.
2. Long grooves of both right and left needles should be facing inside (both long grooves facing each other) and insert the needles deep into the needle hole as far as they will go in and set them tightly with needle clamp screw.

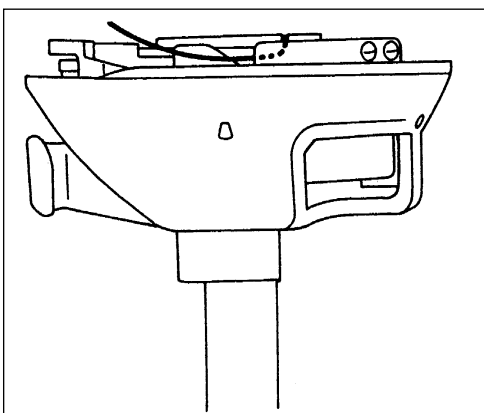
5. ON THREADS



For the needle thread, left-twist thread should be used. For the bobbin thread, either left-twist or right-twist thread can be used.

To verify the twist of thread, hold the thread as shown in the figure and if the thread is twisted toward front by the left hand and is wound tight, it is a right-twist thread. On the contrary, if the thread in the right hand is twisted toward front and is wound tightly, it is left-twist thread.

6. HOW TO PASS THE BOBBIN THREAD



WARNING :

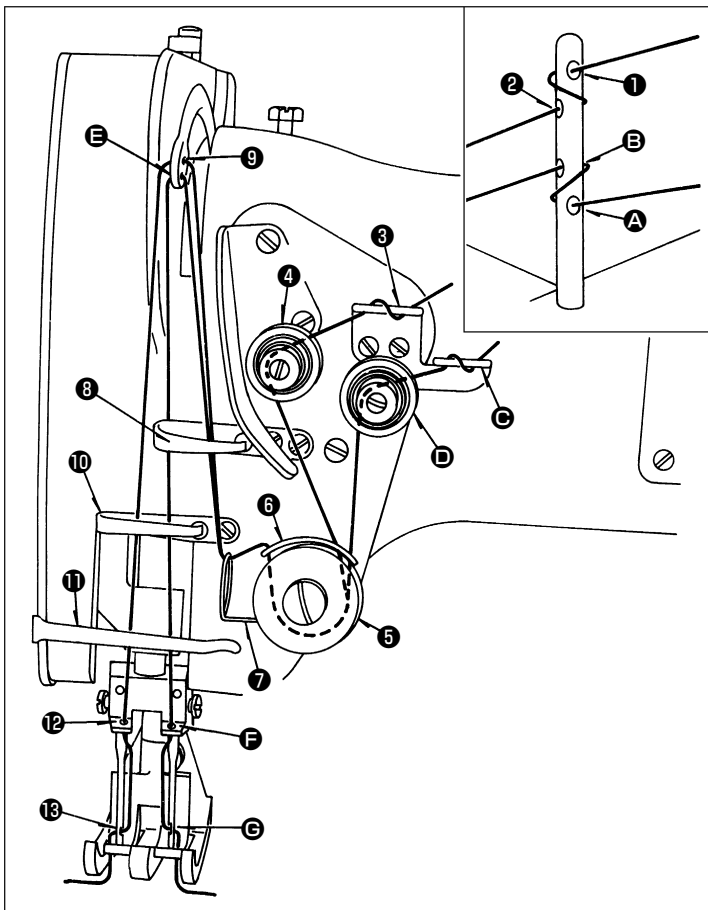
To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

Open the lever of the sewing hook, insert the bobbin and knock down the lever to its original position.

If the bobbin thread is pulled out from the groove of the sewing hook, the thread will pass under the bobbin thread tension spring.

Pull out the bobbin thread about 5cm (about 2") on top of the slide plate.

7. HOW TO THREAD THE MACHINE HEAD



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

Pass the needle threads in order shown in below.

As you face the machine, left side needle thread should be passed from ① - ⑬ (Left thread tension disc → upper hole of take-up lever → left needle)

The right side needle should be passed, in order, from ① - ⑬ (Left thread tension disc → upper hole of take-up lever → left needle)

The right side needle should be passed, in order, from ① - ⑬ (Left thread tension disc → upper hole of take-up lever → left needle)

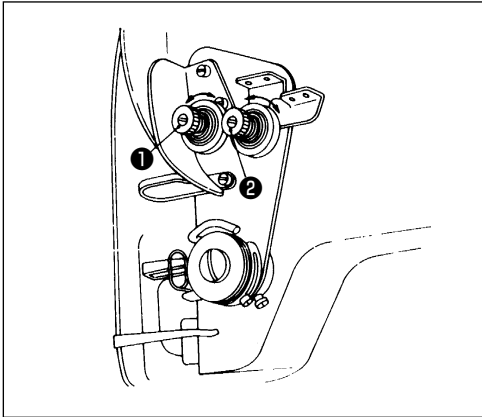
The right side needle should be passed, in order, from ① - ⑬ (Left thread tension disc → upper hole of take-up lever → left needle)

8. THREAD TENSION



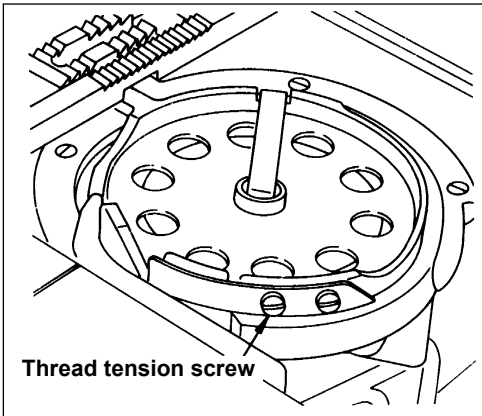
WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



* Needle thread tension

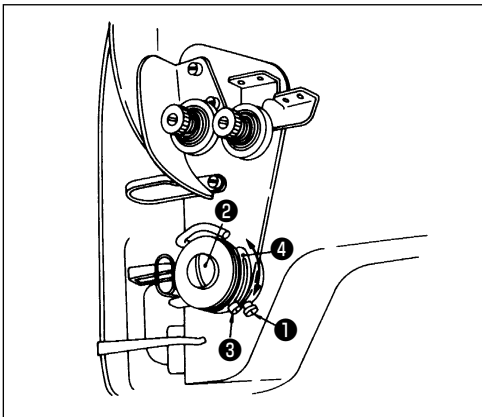
The thread tension of the right side needle can be adjusted by the right side thread tension nut ① and the left side needle thread can be adjusted by the left side thread tension nut. Turn the nut to right to make the needle thread tension stronger and to left to make the tension weaker.



* Bobbin thread tension

The thread tension of the bobbin thread can be adjusted by turning the thread tension screw of the bobbin case holder.

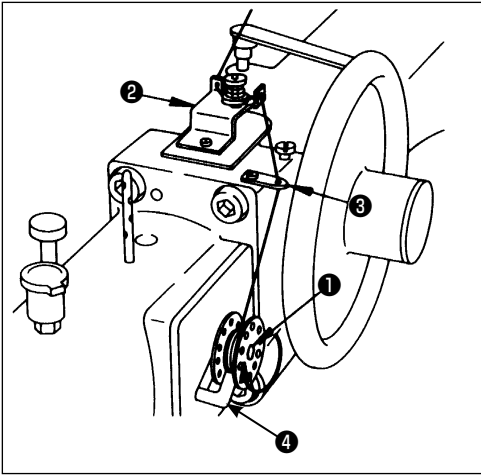
If the screw is tightened, the tension becomes stronger and if it's loosened, the tension becomes weaker.



* Thread take-up spring

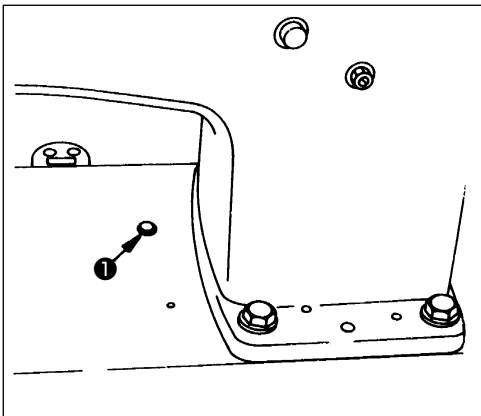
To adjust the strength of the thread take-up spring, loosen the thread take-up spring shaft screw ①, and turn the thread take-up guide shaft ② gently toward left. To weaken the tension, rotate it toward right. After the adjustment, tighten the screw ①. To adjust the stroke of the take-up spring, loosen the stopper set screw ③ and move the stopper ④ to right and left. If the stopper is moved toward right, the stroke gets bigger.

9. HOW TO WIND A BOBBIN THREAD



The bobbin thread winder of this machine is built-in to the frame of the machine. To wind the bobbin thread, first insert the bobbin to the bobbin winding shaft ❶ as far as it will go. Next, pass the thread to bobbin thread guide base ❸ and bobbin thread winder guide ❷, as shown in the figure, and wind the thread to the bobbin several times from the bottom. Then, push in the bobbin trip latch ❹ and rotate the machine. When the fixed amount of thread is wound, the winding will stop automatically.

10. ON THE SAFETY DEVICE



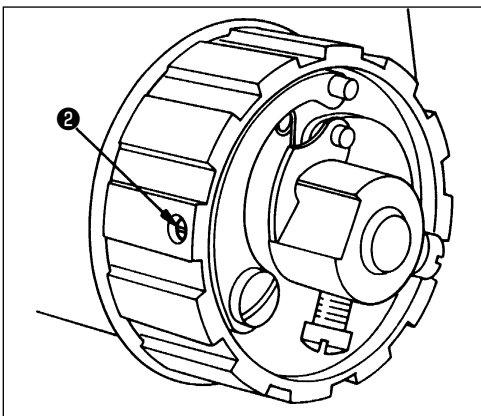
During the running of the machine, sometimes the thread gets caught by the sewing hook, causing an unnecessary exertion to the machine. In such cases, the safety device goes into action automatically to prevent damages to the machine. When the safety device is acting, the feed and the sewing hook do not move even if the handwheel is rotated.

When the safety device is acting, remove the cause of the defect and set the safety device to the original status by the following method:

1. While pushing the push button ❶, push the auxiliary handwheel and rotate strongly toward the left direction.

Be sure to verify that the safety device is set and then operate the machine.

2. When the safety device jumps into action quickly, remove the timing belt and rotate the adjusting screw ❷ to right.



Conversely, when the safety device does not go into action and the machine is damaged (needle, sewing hook, etc.), rotate the adjusting screw ❷ to left. With a slight force, the safety device will spring to action.

11. ADJUSTING THE WALKING FOOT AND PRESSER FOOT



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

1. Timing of the needle with the sewing hook

First, set the feed amount to "0" and verify that the clearance between the presser bar and the walking bar is 17mm (43/64").

Raise up the presser foot and after matching the feed graduator plate to "0", remove the throat plate.

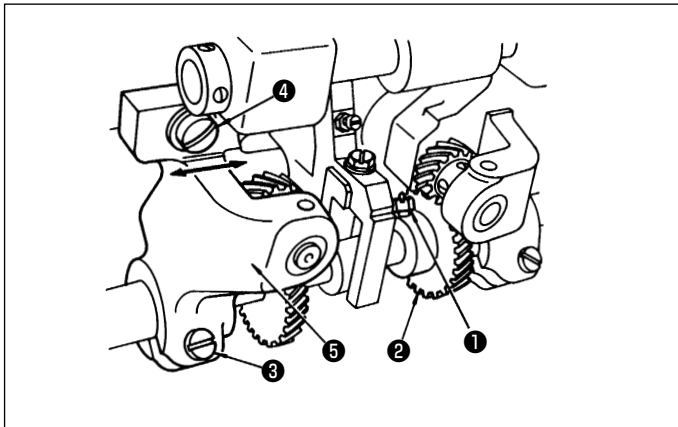
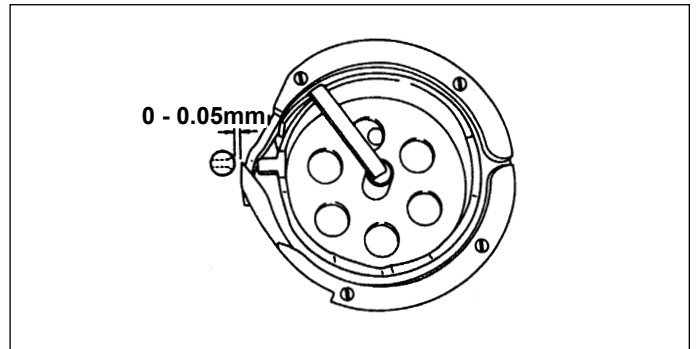
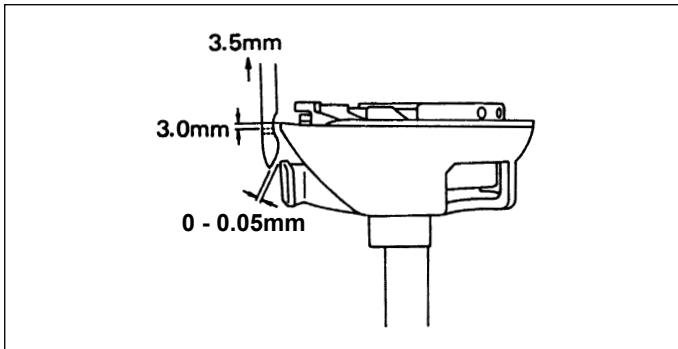
When the needle has risen 3.5 mm (9/64") from the lowest point,

Match the blade point of the sewing hook with the center of the needle. At this point,

- * The clearance between the needle side surface and the blade point of the sewing hook comes to 0 - 0.05 mm (1/512"),
- * The clearance between the needle side surface and the needle guard of the sewing hook comes to 0 - 0.05 mm (1/512"),
- * The distance between the upper tip of the thread hole of the needle and the tip of the sewing hook blade comes to 3.0 mm (1/8").

2. Height of the needle bar

First, set the feed graduator to 0 mm, and bring the needle bar to its lowest point. At this point, make the distance between the bottom end of the needle clamp to the surface of the throat plate to 21.2 mm (53/64") and tighten the needle bar clamping screw.



3. How to match the timing of sewing hook

Loosen the set screw ① of the large gear of the hook shaft, move the large gear ② to right and left and when the center of the needle and the blade point of the sewing hook are matched together, tighten the set screw ①. At this point, be careful to see that the center gear of the large gear and the center of the hook shaft do not slide each other.

4. Adjusting the clearance between the needle and blade point of the sewing hook

Make adjustment as follows:

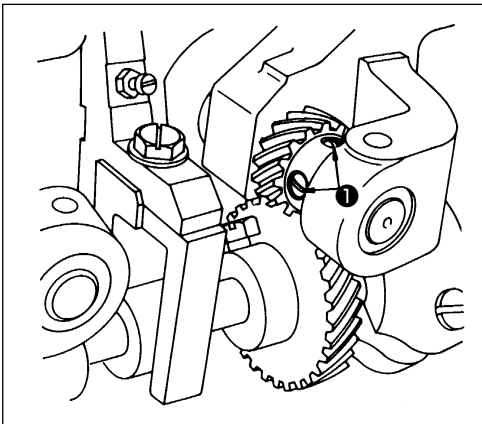
- 1) Remove the presser foot and the throat plate and tilt the machine.
- 2) Loosen the clamp screw ③ and set screw ④ of the hook driving shaft saddle of the adjusting side.
- 3) Tap the hook driving shaft saddle ⑤ lightly and move it to right and left and by making the clearance between the needle and the blade point of the hook to 0 - 0.05 mm (1/512"), tighten the clamp screw ③ and set screw ④ firmly.

12. INSTALLING AND DISMANTLING THE SEWING HOOK



WARNING :

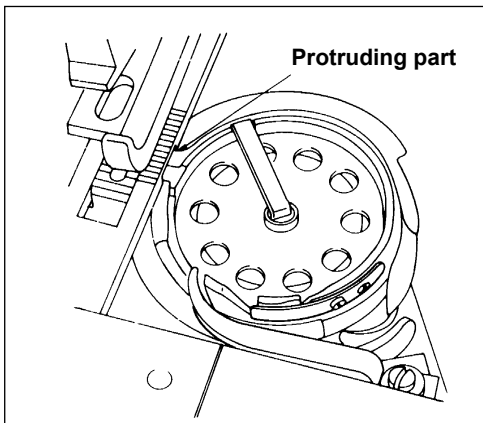
To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



1. Dismantling the sewing hook

- 1) Remove the presser foot, walking foot, throat plate, feed dog and bobbin case opening lever.
- 2) Tilt the machine and loosen the set screw ❶ of the small gear.
- 3) Rotate the handwheel to bring the needle bar to its highest position and remove the sewing hook by pulling it upwards.

(Note) At this point, be sure to see that the interlocking of the large gear and the small gear is not slipping. (If the gears are marked, it will help)



2. How to install the sewing hook

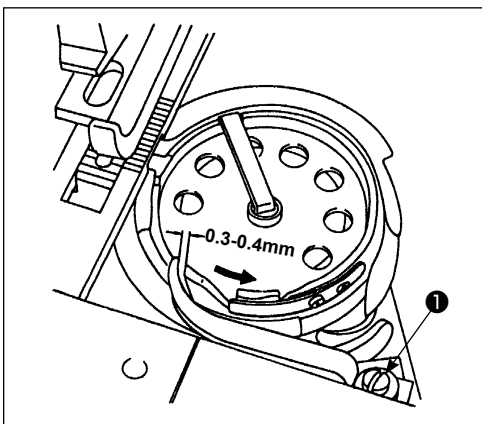
- 1) To install the sewing hook, reverse the dismantling procedure. In so doing, watch the following:
 - * That the bobbin case opening lever link is inserted into the link pin.
 - * Make the No.1 set screw of the small gear (the first screw seen when it is rotated in normal direction) enter the V-groove of the sewing hook driving shaft.
- 2) In order that the protruding part of the bobbin case holder enters the groove of the throat plate, rotate the bobbin case holder by the hand and after that, set the throat plate.

13. ADJUSTING THE BOBBIN CASE OPENING LEVER



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



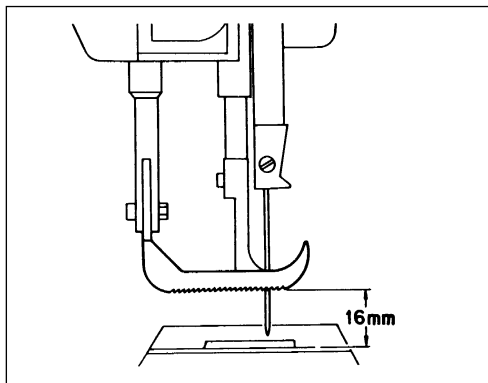
Rotate the handwheel toward the normal direction (with the bobbin case opener in rotated condition toward the arrow direction) and as shown in the figure, when the bobbin case opening lever has retreated to the rearest position, loosen the clamp screw ❶ of the bobbin case opening lever and adjust so that the clearance between the bobbin case opener and the bobbin case opening lever comes to 0.3 - 0.4 mm (3/256 - 1/64").

14. HEIGHT OF THE PRESSER FOOT



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



Raise up the knee lifter.

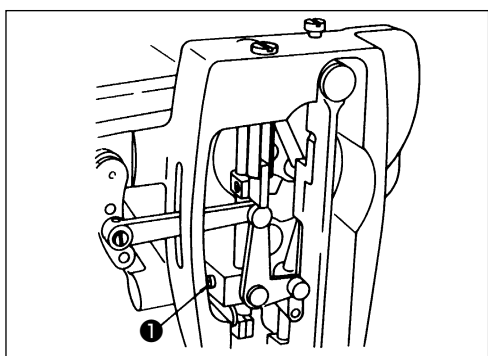
The presser foot will go up 16 mm (5/8") from the surface of the throat plate and stops.

When this height is less than 16 mm (5/8"):

1. With the knee lifter in raised up condition, loosen the set screw ① of the knee lifter mounting bracket, insert a wooden block of 16 mm (5/8") between the presser foot and the throat plate and in that condition, tighten the set screw ① of the knee lifter mounting bracket.

2. Remove the wooden block.

* Maximum rising amount of the presser foot by means of the knee lifter is 16 mm (5/8").

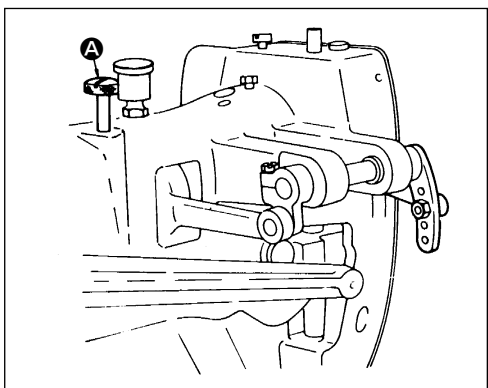


15. INSTALLING POSITION OF THE PRESSER FOOT



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



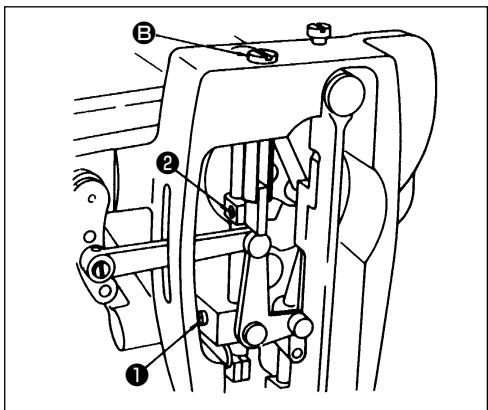
When the presser foot hits the walking foot or the needle, adjust as follows:

1. Loosen the pressure regulating thumb screw ① .

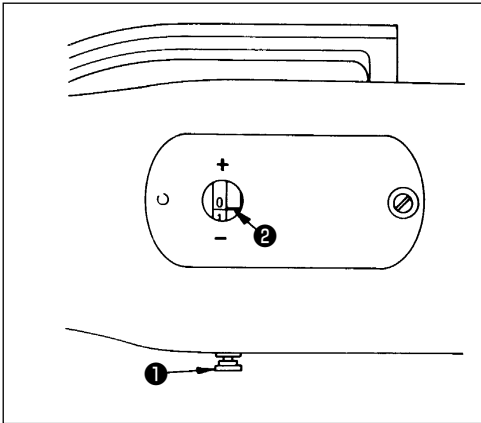
2. If the presser foot is lowered and screw ① and ② are loosened, the presser bar will rotate freely.

3. Adjust the position of the presser foot and by determining the position of the needle and the needle hole of the walking foot and tighten the screw ① .

4. After these adjustments if the presser foot does not go up or down smoothly, loosen the set screw of the presser bar guide sleeve ② , rotate the presser bar guide sleeve to right and left and by bringing the presser foot to the position where it will go up and down smoothly, tighten the set screw.



16. ADJUSTING THE STITCH LENGTH



While pushing the feed adjusting button ❶, rotate the handwheel and when the end of the button has entered the groove of the cam, rotate the handwheel fore and aft while the feed adjusting button ❶ is being pushed, until the desired figure of the graduator plate is matched with the carved line ❷ of the feed adjuster. When the desired figure and the carved line ❷ are matched, release the feed adjusting button.

The figure indicates the length of the stitch in mm unit. (10 → stitch length = 10 mm (25/64")).

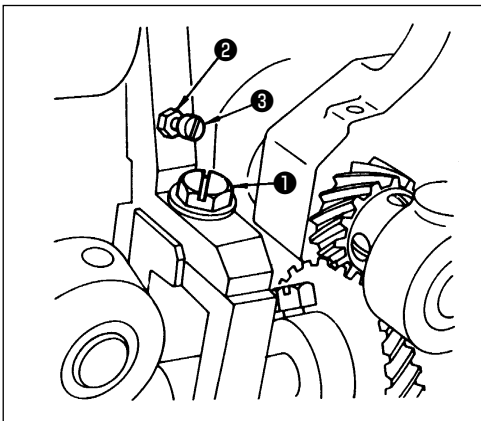
The figure on the graduation plate can be seen from the sight window even with the top cover in closed condition.

17. ADJUSTING THE HEIGHT OF THE FEED DOG



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



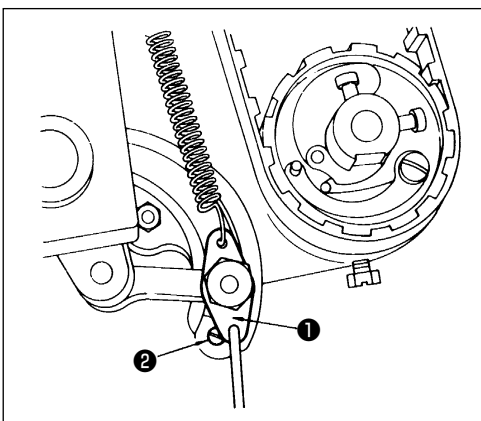
The maximum height of the feed dog above the throat plate is 1.2 - 1.4 mm (3/64 - 1/16").

Adjust to this position by loosening the screw ❶.

* When the feed dog is exchanged, be sure to tighten the ❷ set screw of the feed dog firmly. Further, loosen nut ❷, tighten screw ❸ so that screw push up the feed dog lightly and tighten the nut ❷.

* In case the height of the feed dog does not become parallel, adjust by screw ❸.

18. ON REVERSE SEWING



Hang the chain to the lifting crank link spring latch plate ❶ with a hook and catch the other end of the chain to the pedal.

When reverse sewing is to be performed, step on this pedal until the variable speed link hits the stopper ❷.

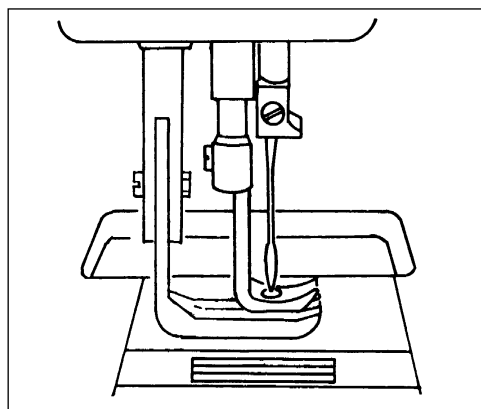
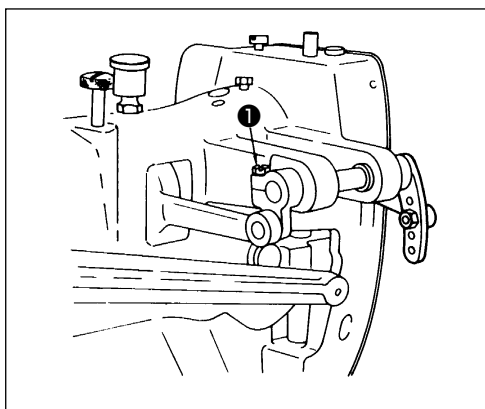
19. ADJUSTING THE PRESSER FOOT AND THE WALKING FOOT



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

- 1) When the lifting amount of the presser foot and the walking foot is to be made equal:
 1. Lower the presser foot and loosen the clamp screw ❶ of the upper feed spring rod.
 2. Rotate the handwheel in the normal direction and when the lower surface of the presser foot and walking foot come to the same position as the surface of the throat plate, tighten the clamp screw ❶ .
 - 2) When the walking foot is to be raised higher than the presser foot:
 1. Lower the presser foot, rotate the handwheel in the normal direction and when the lower surface of the presser foot and walking foot come to the same position as the upper surface of the throat plate, loosen the set screw of the upper feed spring rod.
 2. Then, rotate the handwheel toward the normal direction and firmly tighten the clamp screw.
 - 3) When the presser foot is to be raised higher than the walking foot:
 1. Lower the presser foot, rotate the handwheel in the normal direction and when the upper surface of the presser foot and walking foot come to the same position as the upper surface of the throat plate, loosen the screw ❶ of the feed rod, adjust as follows:
 2. Then rotate the handwheel toward the reverse direction and firmly tighten the clamp screw.
- * In both cases of 2) and 3) above, after the set screw of the upper feed spring rod is loosened, the more the handwheel is rotated in the normal or reverse direction, the difference of the lifting amount of the presser foot and the walking foot gets larger.

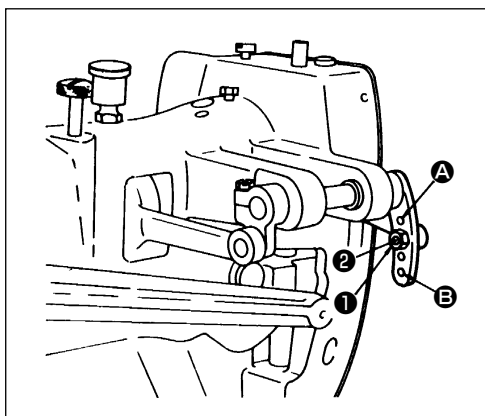


20. ADJUSTING THE LIFTING AMOUNT OF THE PRESSER FOOT AND THE WALKING FOOT



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



The lifting amount of the presser foot and the walking foot is adjusted according to the thickness of the sewing cloth. To make this adjustment, remove the feed adjusting screw nut ❶ with a spanner and by changing the position of the hole of the feed adjusting screw ❷, the lifting amount changes.

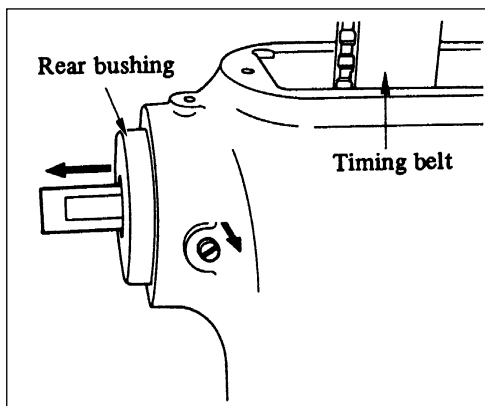
The adjustment can be done in 4 steps. If it's positioned to screw hole A of top-most position, the lifting amount becomes maximum and if it's positioned to the screw hole B of bottom position, the lifting amount becomes minimum. After this adjustment, securely tighten the nut ❶ .

21. EXCHANGING THE TIMING BELT



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



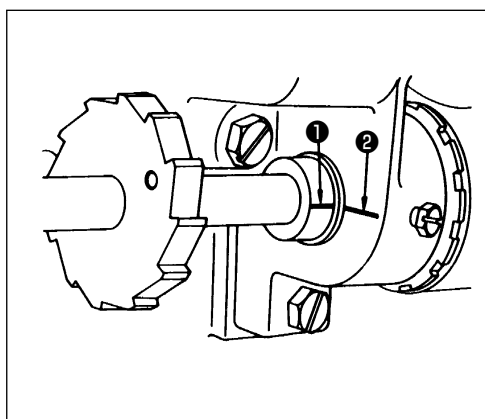
1. Remove the timing belt from the sprocket.
2. Remove the handwheel.
3. Loosen the set screw of the rear bushing and pull out the main shaft rear bushing but be careful not to damage the bushing.
4. Pull out the timing belt from the hole from which the bushing was pulled out.
5. Install the new belt in the reverse order.

22. TIMING OF MAIN SHAFT AND HOOK SHAFT



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



When the timing belt is removed or exchanged, match the timing of the main shaft and the hook shaft as follows:

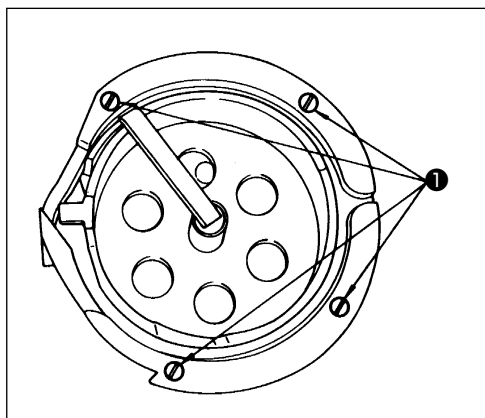
1. Place the thread take-up at the highest dead point.
2. Match the carved line ❶ of the sewing hook thrust guard with the red carved line ❷ of the belt.
3. With this condition, pass the timing belt to the lower sprocket.

23. HOW TO REMOVE THE BOBBIN CASE HOLDER



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



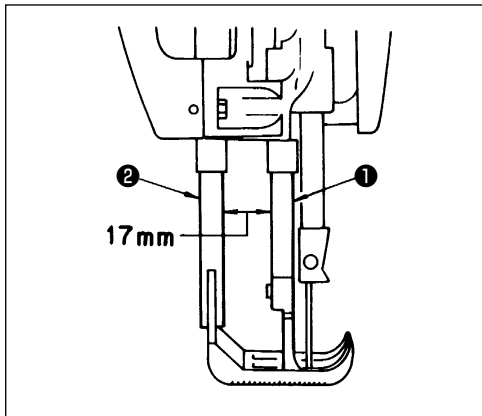
Remove the set screw ❶ of the left and right bobbin case pressers and pull out the bobbin case holder.

24. ADJUSTING THE FORE & AFT POSITION OF NEEDLE BAR ROCKER FRAME



WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

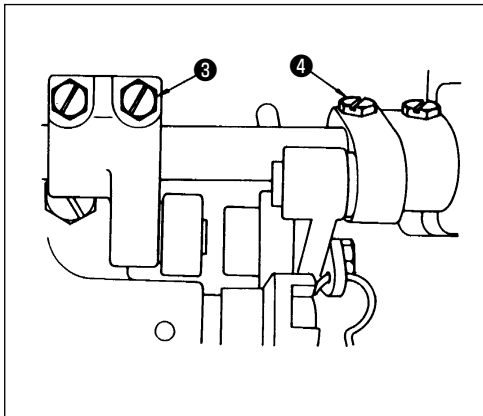


The correct distance between the walking foot bar ① and the presser bar ② is 17 mm (43/64") at the place shown in the figure when the stitch length is "0".

1. Set the stitch length to "0".
2. Loosen the needle bar driving crank clamp screw ③ .
3. Then, by making the clearance between the walking bar and the presser bar to 17 mm (43/64"), tighten the screw ③ .

Adjust the relationship between the needle and the feed dog needle hole as follows:

1. Set the stitch length to "0".
2. Loosen the clamp screw ④ of the feed rock shaft crank.
3. Then, by bringing the needle to about the center or nearer to front from the center of the hole of feed dog, tighten the feed rock shaft crank clamp screw.



25. MOTOR PULLEY AND SEWING SPEED

- 1) Use a 3-phase 400 W AC clutch motor.
- 2) Use an M type V-belt.
- 3) The relation among the motor pulley, the sewing speed of sewing machine is as shown in the table below:

Model	Sewing speed	Effective diameter of handwheel	Number of poles of motor	Frequency	Number of revolution of motor	Effective diameter of motor pulley
LG-158 LG-158-1	1,500 sti/min	φ 108.5	2	50Hz	2,865 rpm	φ 55
				60Hz	3,430 rpm	φ 45

(Caution) The effective diameter of motor pulley is obtained by subtracting 5 mm from its outside diameter.

26. PROBLEMS WITH SEWING AND CORRECTIVE MEASURES

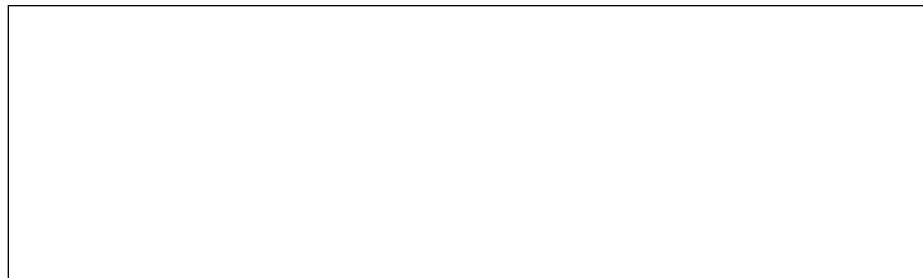
Problems	Causes	Corrective measures
<p>1. Needle thread breakage.</p> <p>a. Needle thread ravel and wears out.</p>	<p>① Bruise on thread path, needle point, blade point of sewing hook and groove of bobbin case holder rotation stopper on backside of throat plate.</p> <p>② Tension of needle thread is too strong.</p> <p>③ Hardly no clearance between bobbin case opening lever and bobbin case holder.</p> <p>④ Needle and the sewing hook are hitting each other.</p> <p>⑤ The oil supply to the sewing hook is insufficient.</p> <p>⑥ Needle is too fine against the using thread.</p>	<ul style="list-style-type: none"> ○ Polish off the bruise of blade point of hook with a fine mesh paper file. Finish the groove part of throat plate by buffing. ○ Refer to the chapter on "8. THREAD TENSION". ○ Loosen the set screw of the bobbin case opening lever and make the clearance between bobbin case opening lever and bobbin case holder to 0.4 mm(1/64") (Refer to the chapter on "13. ADJUSTING THE BOBBIN CASE OPENING LEVER".) ○ Tap the hook driving shaft saddle lightly and adjust the clearance between the needle and the blade point of the sewing hook. (Refer to the chapter on "11. ADJUSTING THE WALKING FOOT AND PRESSER FOOT".) ○ Adjust the oiling amount to the sewing hook. ○ Refer to the chapter on "STANDARD STITCHING SPECIFICATIONS".
<p>b. Thread breaks at step-sewing part.</p>	<p>① Lifting amount of presser foot and walking foot is too small.</p>	<ul style="list-style-type: none"> ○ Increase the lifting amount of presser foot and walking foot. (Refer to the chapter on "20. ADJUSTING THE LIFTING AMOUNT OF THE PRESSER FOOT AND THE WALKING FOOT".)
<p>c. Due to inferior quality of the needle thread.</p>	<p>① When the twist has flows and knots or constrictions are formed.</p> <p>② When old threads are used sometimes they break easily with slight pressure.</p>	<ul style="list-style-type: none"> ○ Exchange the thread. ○ Exchange with new thread.
<p>d. Needle thread breaks at the start of sewing or slips out.</p>	<p>① Position of the thread take-up lever is not at the upper dead point.</p>	<ul style="list-style-type: none"> ○ Bring the thread take-up lever to the upper dead point and start sewing.
<p>e. Bobbin thread breaks.</p>	<p>① Bobbin is defective and rotation is not smooth.</p> <p>② When thread hards get between the bobbin and the bobbin case opener.</p>	<ul style="list-style-type: none"> ○ Exchange the bobbin with a new one. ○ Take out the bobbin and after removing the thread hards, reset the bobbin.
<p>2. Skip-stitching</p>	<p>① Clearance between the needle and blade point of hook is too wide.</p> <p>② Timing of sewing hook and needle is either too fast or too slow.</p> <p>③ Presser foot is "floating". (When pressing pressure is too weak.)</p> <p>④ Installed angle of the needle is bad.</p>	<ul style="list-style-type: none"> ○ Adjust the clearance between the needle and the blade point of sewing hook. (Refer to the chapter on "11. ADJUSTING THE WALKING FOOT AND PRESSER FOOT".) ○ Adjust the timing of needle and sewing hook. (Refer to the chapter on "11. ADJUSTING THE WALKING FOOT AND PRESSER FOOT".) ○ Tighten the pressure regulating thumb screw. ○ Refer to the chapter on "4. HOW TO INSTALL THE NEEDLE".

Problems	Causes	Corrective measures
	<ul style="list-style-type: none"> ⑤ Height of needle bar is not matched. ⑥ When skip-stitches occur at step-sewing part. ⑦ When the blade point of the sewing hook is crushed. ⑧ When the needle is defective. 	<ul style="list-style-type: none"> ○ When the needle bar is at lowest point make the distance between the bottom of needle clamp and upper surface of throat plate to 21.2 mm (53/64"). ○ Increase the alternate lifting amount of the presser foot. ○ Remove the sewing hook and repair with a fine mesh oil whetstone or exchange the hook with a new sewing hook. ○ Exchange with a new needle.
3. Stitching flaw.	<ul style="list-style-type: none"> ① The bobbin thread is not passing the center of the thread tension spring of bobbin case holder. ② The outer rim of the bobbin is not smooth. ③ When the thickness of the needle is not matched with the using thread. ④ When the supply of oil to the sewing hook is not adequate. ⑤ Bobbin thread tension is too weak. 	<ul style="list-style-type: none"> ○ Make the bobbin thread to pass the center of the tension spring. ○ Exchange the bobbin or polish the outer rim of the bobbin with a fine mesh paper file. (sand paper). ○ Exchange with an appropriate thick needle. ○ Refer to the chapter on "3. LUBRICATION". ○ Refer to the chapter on "8. THREAD TENSION".
a. In case of stitching flaw due to change of sewing speed.	<ul style="list-style-type: none"> ① Pressure of take-up spring is too weak. ② Timing of bobbin case opening lever is not matched. ③ Finish of thread paths of all parts are bad. ④ Sewing hook is defective. 	<ul style="list-style-type: none"> ○ Make the strength of take-up spring stronger. (Refer to the chapter on "8. THREAD TENSION".) ○ Refer to the chapter on "13. ADJUSTING THE BOBBIN CASE OPENING LEVER". ○ Polish with a fine mesh paper file (sand paper) or by buffing. ○ Exchange the sewing hook with a new hook.
4. On feed pitch error a. In case feed pitch is too big.	<ul style="list-style-type: none"> ① Pressing pressure of presser foot is too weak. 	<ul style="list-style-type: none"> ○ Tighten the pressure regulating thumb screw.
b. In case feed pitch is too small.	<ul style="list-style-type: none"> ① Feed dog is too low. ② Tension of needle thread and bobbin thread is too strong. 	<ul style="list-style-type: none"> ○ Refer to the chapter on "17. ADJUSTING THE HEIGHT OF THE FEED DOG". ○ Refer to the chapter on "8. THREAD TENSION".
5. Isolated idling loops are produced	<ul style="list-style-type: none"> ① Tension of the needle thread is too weak. ② Timing of the bobbin case opening lever is not matched. (Pulling of the bobbin case opening lever is insufficient) 	<ul style="list-style-type: none"> ○ Strengthen the tension of the needle thread. ○ Refer to the chapter on "11. ADJUSTING THE WALKING FOOT AND PRESSER FOOT".
6. Even with the safety device in action, good stitching condition can not be attained.	<ul style="list-style-type: none"> ① When the safety device has not returned to the correct position. ② Due to the strong impact, sometimes the timing belt slides by one pitch. 	<ul style="list-style-type: none"> ○ Bring the safety device to the correct position. ○ Refer to the chapter on the timing of the main shaft and the hook shaft.

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Please do not hesitate to contact our distributors or agents in your area for further information when necessary.

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