

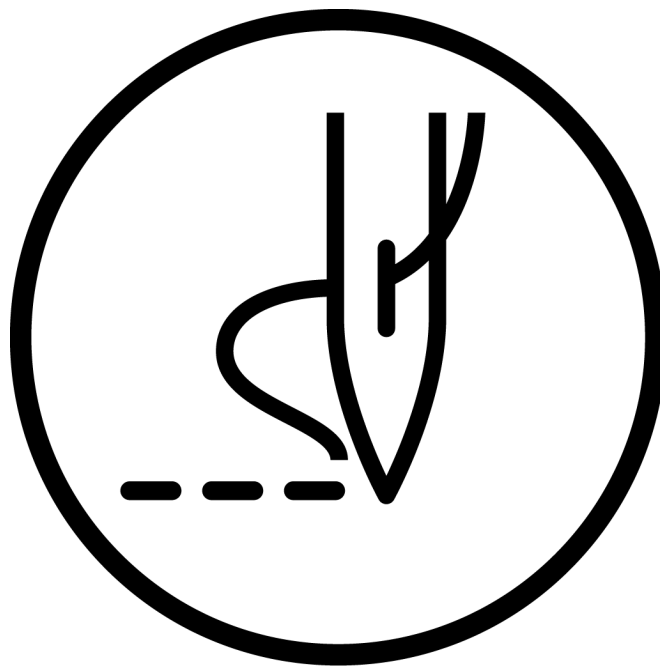
# **T-8421C, 8422C T-8452C, 8722C T-8752C**

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Please read this manual before using the machine.  
Please keep this manual within easy reach for quick reference.

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TWIN NEEDLE DIRECT DRIVE LOCK STITCHER



Thank you very much for buying a BROTHER sewing machine. Before using your new machine, please read the safety instructions below and the explanations given in the instruction manual.



With industrial sewing machines, it is normal to carry out work while positioned directly in front of moving parts such as the needle and thread take-up, and consequently there is always a danger of injury that can be caused by these parts. Follow the instructions from training personnel and instructors regarding safe and correct operation before operating the machine so that you will know how to use it correctly.

# SAFETY INSTRUCTIONS

## [1] Safety indications and their meanings

This instruction manual and the indications and symbols that are used on the machine itself are provided in order to ensure safe operation of this machine and to prevent accidents and injury to yourself or other people.


### Indications

 <b>DANGER</b>	The instructions which follow this term indicate situations where failure to follow the instructions may result in death or serious injury.
 <b>CAUTION</b>	The instructions which follow this term indicate situations where failure to follow the instructions could cause injury when using the machine or physical damage to equipment and surroundings.

### Symbols




.....

This symbol (  ) indicates something that you should be careful of. The picture inside the triangle indicates the nature of the caution that must be taken.  
(For example, the symbol at left means “beware of injury”.)




.....

This symbol (  ) indicates something that you must not do.



.....

This symbol (  ) indicates something that you must do. The picture inside the circle indicates the nature of the thing that must be done.  
(For example, the symbol at left means “you must make the ground connection”.)

## [2] Notes on safety

### **DANGER**



Wait at least 5 minutes after turning off the power switch and disconnecting the power cord from the wall outlet before opening the cover of the control box. Touching areas where high voltages are present can result in severe injury.

### **CAUTION**

#### **Environmental requirements**



Use the sewing machine in an area which is free from sources of strong electrical noise such as electrical line noise or static electric noise. Sources of strong electrical noise may cause problems with correct operation.



Any fluctuations in the power supply voltage should be within  $\pm 10\%$  of the rated voltage for the machine. Voltage fluctuations which are greater than this may cause problems with correct operation.



The power supply capacity should be greater than the requirements for the sewing machine's power consumption. Insufficient power supply capacity may cause problems with correct operation.



The ambient temperature should be within the range of 5°C to 35°C during use. Temperatures which are lower or higher than this may cause problems with correct operation.



The relative humidity should be within the range of 45% to 85% during use, and no dew formation should occur in any devices. Excessively dry or humid environments and dew formation may cause problems with correct operation.



In the event of an electrical storm, turn off the power and disconnect the power cord from the wall outlet. Lightning may cause problems with correct operation.

#### **Installation**



Machine installation should only be carried out by a qualified technician.



Contact your Brother dealer or a qualified electrician for any electrical work that may need to be done.



The sewing machine weighs approximately 50 kg (110 lb). The installation should be carried out by two or more people.



Do not connect the power cord until installation is complete. The machine may operate if the treadle is depressed by mistake, which could result in injury.



Turn off the power switch before inserting or removing the plug, otherwise damage to the control box could result.



Be sure to connect the ground. If the ground connection is not secure, you run a high risk of receiving a serious electric shock, and problems with correct operation may also occur.



When securing the cords, do not bend the cords excessively or fasten them too hard with staples, otherwise there is the danger that fire or electric shocks could occur.



If using a work table which has casters, the casters should be secured in such a way so that they cannot move.



Secure the table so that it will not move when tilting back the machine head. If the table moves, it may crush your feet or cause other injuries.














Use both hands to hold the machine head when tilting it back or returning it to its original position. If only one hand is used, the weight of the machine head may cause your hand to slip, and your hand may get caught.








Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result. Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhea. Keep the oil out of the reach of children.

## ! CAUTION










### Sewing

- |  |  |
|--|--|
| <p> This sewing machine should only be used by operators who have received the necessary training in safe use beforehand.</p> <p> The sewing machine should not be used for any applications other than sewing.</p> <p> Be sure to wear protective goggles when using the machine.<br/>If goggles are not worn, there is the danger that if a needle breaks, parts of the broken needle may enter your eyes and injury may result.</p> <p> Turn off the power switch at the following times. The machine may operate if the treadle is depressed by mistake, which could result in injury.</p> <ul style="list-style-type: none"> <li>• When threading the needle</li> <li>• When replacing the bobbin and needle</li> <li>• When not using the machine and when leaving the machine unattended</li> </ul> <p> If using a work table which has casters, the casters should be secured in such a way so that they cannot move.</p> | <p> Attach all safety devices before using the sewing machine. If the machine is used without these devices attached, injury may result.</p> <p> Do not touch any of the moving parts or press any objects against the machine while sewing, as this may result in personal injury or damage to the machine.</p> <p> Secure the table so that it will not move when tilting back the machine head. If the table moves, it may crush your feet or cause other injuries.</p> <p> Use both hands to hold the machine head when tilting it back or returning it to its original position. If only one hand is used, the weight of the machine head may cause your hand to slip, and your hand may get caught.</p> <p> If an error occurs in machine operation, or if abnormal noises or smells are noticed, immediately turn off the power switch. Then contact your nearest Brother dealer or a qualified technician.</p> <p> If the machine develops a problem, contact your nearest Brother dealer or a qualified technician.</p> |
|--|--|

### Cleaning

- |   |  |
|---|--|
| <p> Turn off the power switch before carrying out cleaning. The machine may operate if the treadle is depressed by mistake, which could result in injury.</p> <p> Secure the table so that it will not move when tilting back the machine head. If the table moves, it may crush your feet or cause other injuries.</p> <p> Use both hands to hold the machine head when tilting it back or returning it to its original position. If only one hand is used, the weight of the machine head may cause your hand to slip, and your hand may get caught.</p> | <p> Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result.<br/>Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhea.<br/>Keep the oil out of the reach of children.</p> <p> Use only the proper replacement parts as specified by Brother.</p> |
|---|--|

### Maintenance and inspection

- |   |  |
|---|--|
| <p> Maintenance and inspection of the sewing machine should only be carried out by a qualified technician.</p> <p> Ask your Brother dealer or a qualified electrician to carry out any maintenance and inspection of the electrical system.</p> <p> Turn off the power switch and disconnect the power cord from the wall outlet at the following times, otherwise the machine may operate if the treadle is depressed by mistake, which could result in injury.</p> <ul style="list-style-type: none"> <li>• When carrying out inspection, adjustment and maintenance</li> <li>• When replacing consumable parts such as the rotary hook</li> </ul> <p> If the power switch needs to be left on when carrying out some adjustment, be extremely careful to observe all safety precautions.</p> | <p> Secure the table so that it will not move when tilting back the machine head. If the table moves, it may crush your feet or cause other injuries.</p> <p> Use both hands to hold the machine head when tilting it back or returning it to its original position. If only one hand is used, the weight of the machine head may cause your hand to slip, and your hand may get caught.</p> <p> Use only the proper replacement parts as specified by Brother.</p> <p> If any safety devices have been removed, be absolutely sure to re-install them to their original positions and check that they operate correctly before using the machine.</p> <p> Any problems in machine operation which result from unauthorized modifications to the machine will not be covered by the warranty.</p> |
|---|--|

### [3] Warning labels

The following warning labels appear on the sewing machine.

Please follow the instructions on the labels at all times when using the machine. If the labels have been removed or are difficult to read, please contact your nearest Brother dealer.

1

		<b>⚠ 危険</b> 高電圧部分にふれて、大けがをすることがある。 電源を切り、5分たってからカバーをはずすこと。		<b>⚠ 危険</b> 触摸高压电部分，会导致受伤。 在切断电源5分钟后，再开启盖罩。	
<b>⚠ DANGER</b>		<b>⚠ GEFAHR</b>		<b>⚠ DANGER</b>	
Hazardous voltage will cause injury. Turn off main switch and wait 5 minutes before opening this cover.		Hochspannung verletzungsgefahr! Bitte schalten sie den hauptschalter aus und warten sie 5 minuten, bevor sie diese abdeckung öffnen.		Un voltage non adapte provoque des blessures. Eteindre l'interrupteur et attendre 5 minutes avant d'ouvrir le capot.	
				<b>⚠ PELIGRO</b>	
				Un voltaje inadecuado puede provocar las heridas. Apagar el interruptor principal y esperar 5 minutos antes de abrir esta cubierta.	

2



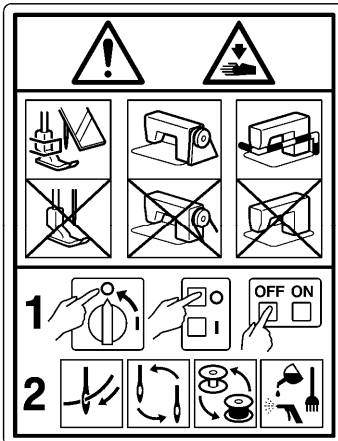
Touching areas where high voltages are present can result in severe injury. Turn off the power before opening the cover.

4



Be careful not to get your hands caught when returning the machine head to its original position after it has been tilted.

3



#### CAUTION

Moving parts may cause injury.

Operate with safety devices\* installed.

Turn off the power before carrying out operations such as threading, changing the needle, bobbin, knives or hook, cleaning and adjusting.

5



Be careful to avoid injury from the moving thread take-up.

6



PE

Be sure to connect the ground. If the ground connection is not secure, you run a high risk of receiving a serious electric shock, and problems with correct operation may also occur.

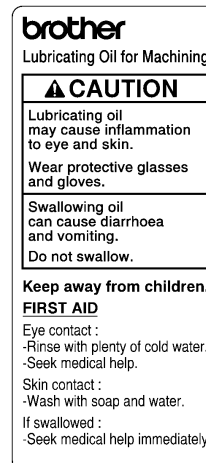
7

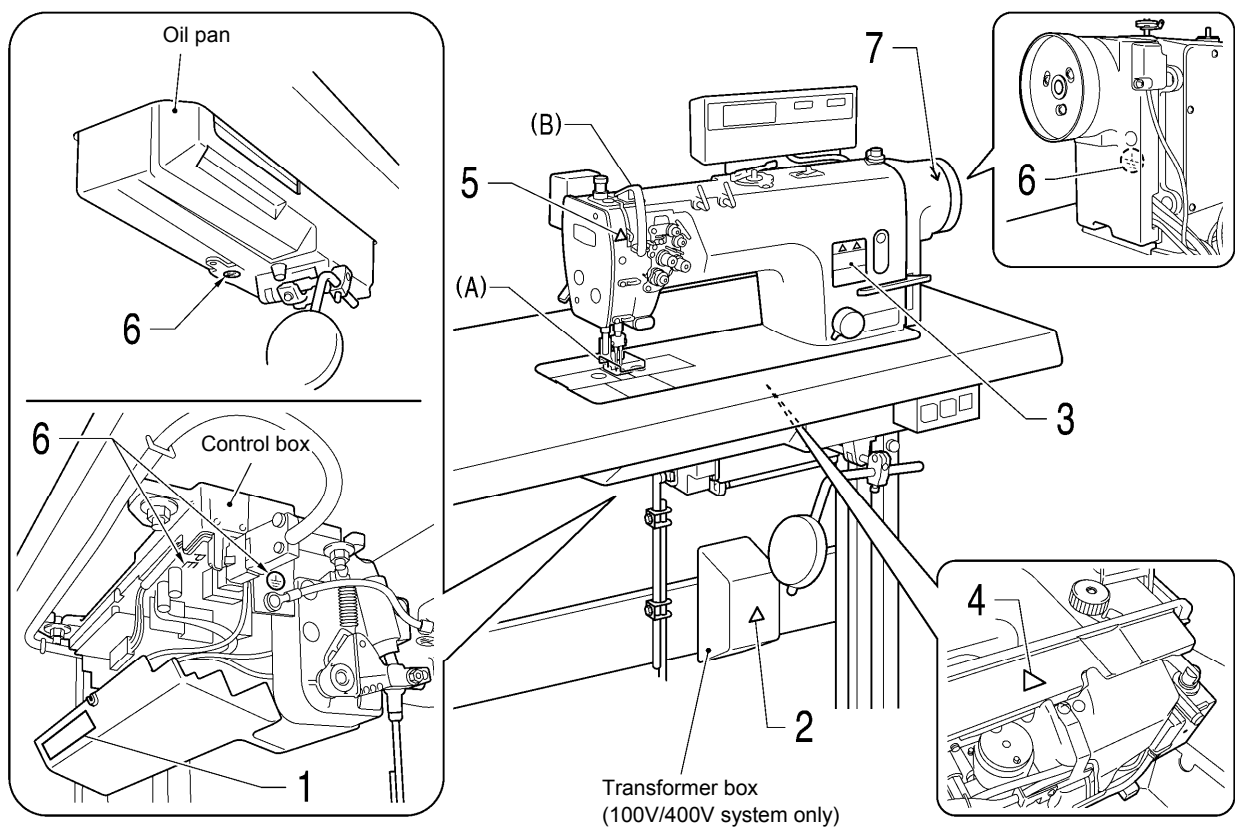


Direction of operation

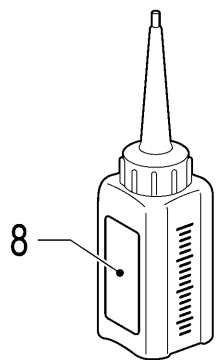
\* Safety devices: (A) Finger guard  
(B) Thread take-up cover

8





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Oil tank

2506B

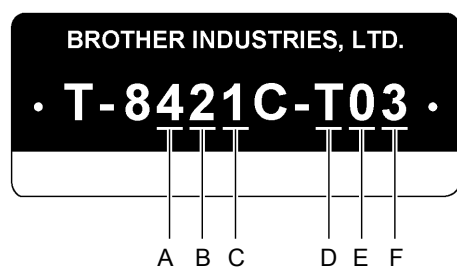
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# 1. MACHINE SPECIFICATIONS



2167B

A		4	7
	Rotary hook	Standard hook	Large hook

B		2	5
	Stitch function	Fixed needle bar	Split needle bar

C		1	2
	Thread trimmer	-	○

D		4	T
	Quick reverse	○	○
	Thread wiper	○	-

E		0	3
	Lubrication type	Minimum lubrication	Semi dry

F		F	3	5	7
	Use	Foundation	Light-weight and medium-weight materials	Heavy-weight materials	Heavy-weight materials (For extra thick thread)

**T-8421C**

		-T3F	-T0F	-T33	-T03
Max. sewing speed		3,000 sti/min	4,000 sti/min	3,000 sti/min	4,000 sti/min
Start backtacking and continuous backtacking speed		250–1,800 sti/min			
End backtacking speed		1,000 sti/min			
Max. stitch length		4 mm			
Presser foot height	Lifting lever	7 mm			
	Knee lifter	13 mm			
Feed dog height		1 mm			
Needle (DP×5)		#9–#14		#11–#16	
Motor		AC servo motor (4-pole, 550W)			
Control circuit		Microprocessor			

**T-8422C**

		-403	-433	-405, -407
Max. sewing speed		4,000 sti/min	3,000 sti/min	
Start backtacking and continuous backtacking speed		250–1,800 sti/min		
End backtacking speed		1,000 sti/min		
Max. stitch length		4 mm		5 mm
Presser foot height	Lifting lever	7 mm		
	Knee lifter	10 mm		
Feed dog height		1 mm		
Needle (DP×5)		#11–#16		#14–#22
Motor		AC servo motor (4-pole, 550W)		
Control circuit		Microprocessor		

**T-8452C**

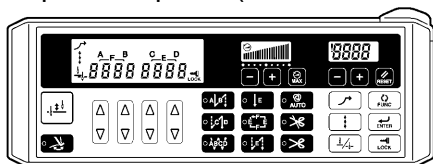
	-403	-405, -407
Max. sewing speed	3,000 sti/min	
Start backtacking and continuous backtacking speed	250–1,800 sti/min	
End backtacking speed	1,000 sti/min	
Max. stitch length	5 mm	
Presser foot height	Lifting lever	7 mm
	Knee lifter	10 mm
Feed dog height	1 mm	
Needle (DP×5)	#11–#16	#14–#22
Motor	AC servo motor (4-pole, 550W)	
Control circuit	Microprocessor	

**T-8722C, 8752C**

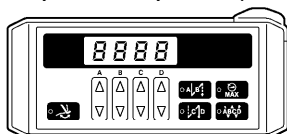
	-403	-405, -407
Max. sewing speed	3,000 sti/min	
Start backtacking and continuous backtacking speed	250–1,800 sti/min	
End backtacking speed	1,000 sti/min	
Max. stitch length	7 mm	
Presser foot height	Lifting lever	7 mm
	Knee lifter	10 mm
Feed dog height	1 mm	
Needle (DP×5)	#11–#16	#14–#22
Motor	AC servo motor (4-pole, 550W)	
Control circuit	Microprocessor	

## 2. NAMES OF MAJOR PARTS

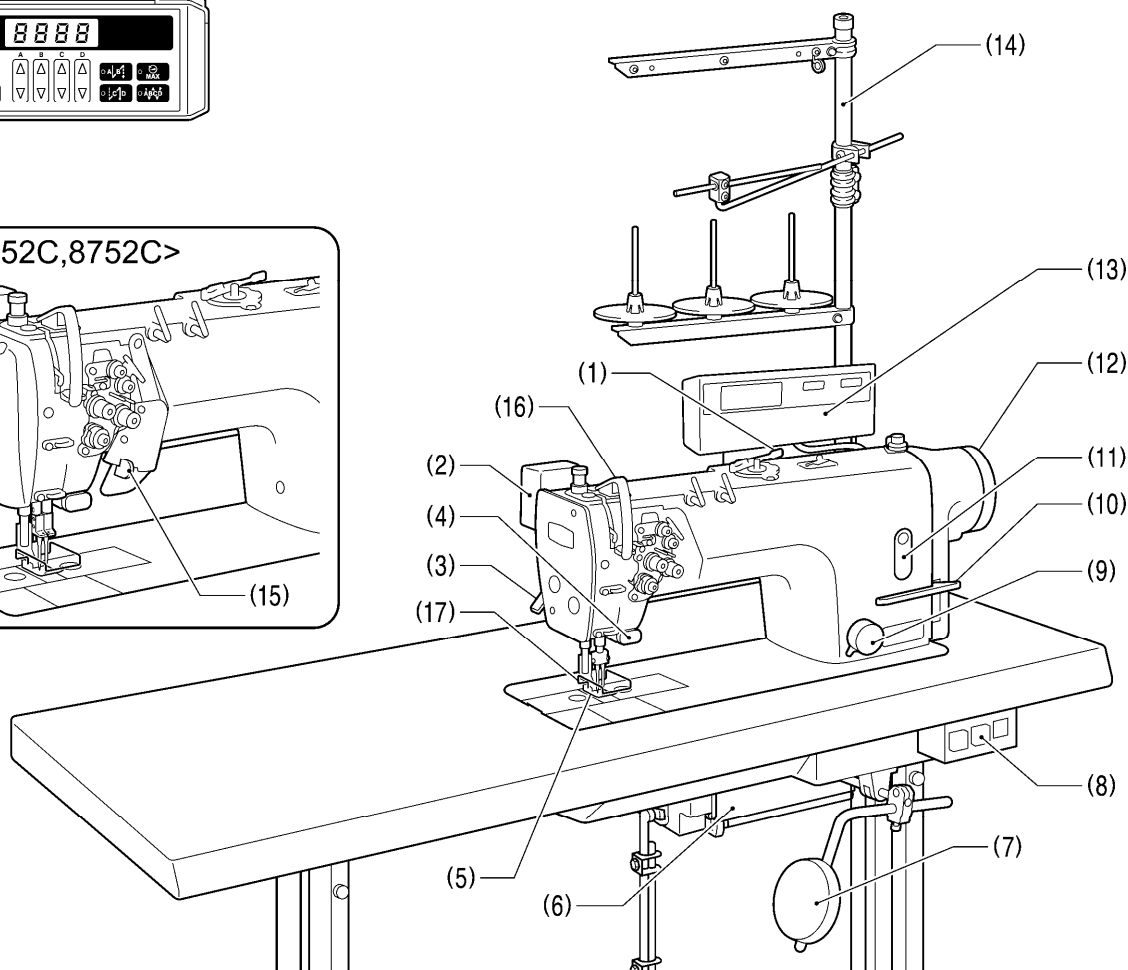
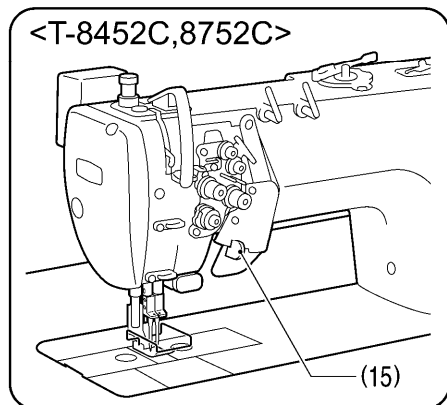
G50 operation panel (advanced function LCD)



G10 operation panel (basic function LED)



<T-8452C, 8752C>



2168B







- |                                  |   |
|----------------------------------|---|
| (1) Bobbin winder                | (2) Thread wiper (T-8422C, 8452C, 8722C, 8752C) |
| (3) Lifting lever                | (4) Quick reverse (Actuator switch)             |
| (5) Presser foot                 | (6) Control box                                 |
| (7) Knee lifter assembly         | (8) Power switch                                |
| (9) Stitch length dial           | (10) Reverse lever                              |
| (11) Oil gauge window            | (12) Machine pulley                             |
| (13) Operation panel             | (14) Cotton stand                               |
| (15) Stop lever (T-8452C, 8752C) |   |

### Safety devices

- |                           |                   |
|---------------------------|-------------------|
| (16) Thread take-up cover | (17) Finger guard |
|---------------------------|-------------------|

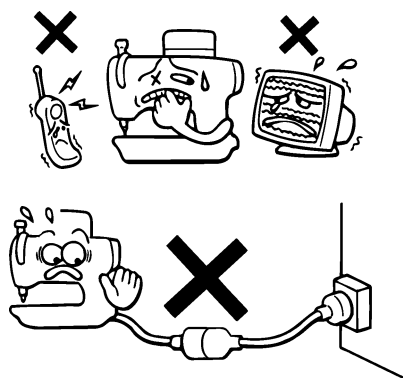
## 3. INSTALLATION

### CAUTION

-  Machine installation should only be carried out by a qualified technician.
-  Contact your Brother dealer or a qualified electrician for any electrical work that may need to be done.
-  The sewing machine weighs approximately 50 kg (110 lb). The installation should be carried out by two or more people.
-  Do not connect the power cord until installation is complete. The machine may operate if the treadle is depressed by mistake, which could result in injury.
-  Secure the table so that it will not move when tilting back the machine head. If the table moves, it may crush your feet or cause other injuries.
-  Use both hands to hold the machine head when tilting it back or returning it to its original position. If only one hand is used, the weight of the machine head may cause your hand to slip, and your hand may get caught.

### About the machine set-up location

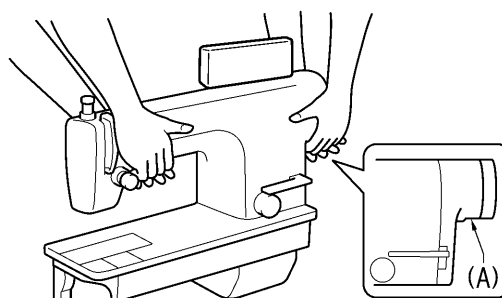
- Do not set up this sewing machine near other equipment such as televisions, radios or cordless telephones, otherwise such equipment may be affected by electronic interference from the sewing machine.
- The sewing machine should be plugged directly into an AC wall outlet. Operation problems may result if extension cords are used.



2086M

### Carrying the machine

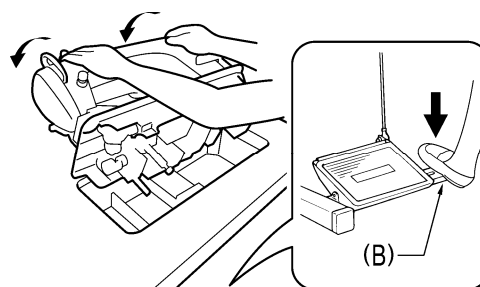
- The machine should be carried by the arm by two people as shown in the illustration.
- \* Hold the motor cover (A) by hand also so that the pulley does not rotate.



2169B

### Tilting back the machine head

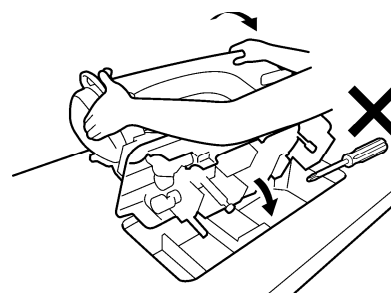
- Hold section (B) with your foot so that the table does not move, and then push the arm with both hands to tilt back the machine head.



2871M

### Returning the machine head to the upright position

1. Clear away any tools, etc. which may be near the table holes.
2. While holding the face plate with your left hand, gently return the machine head to the upright position with your right hand.

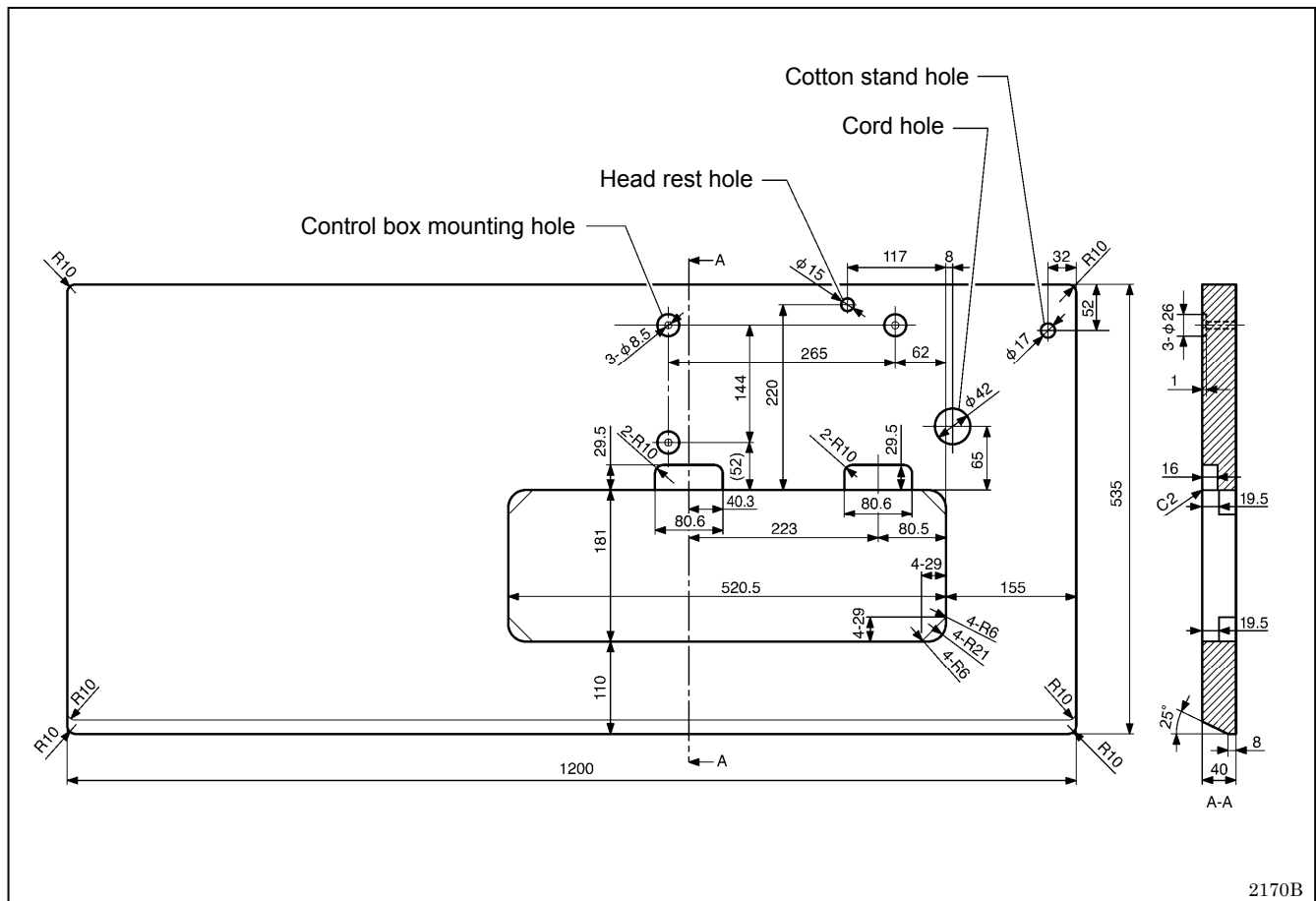


2872M

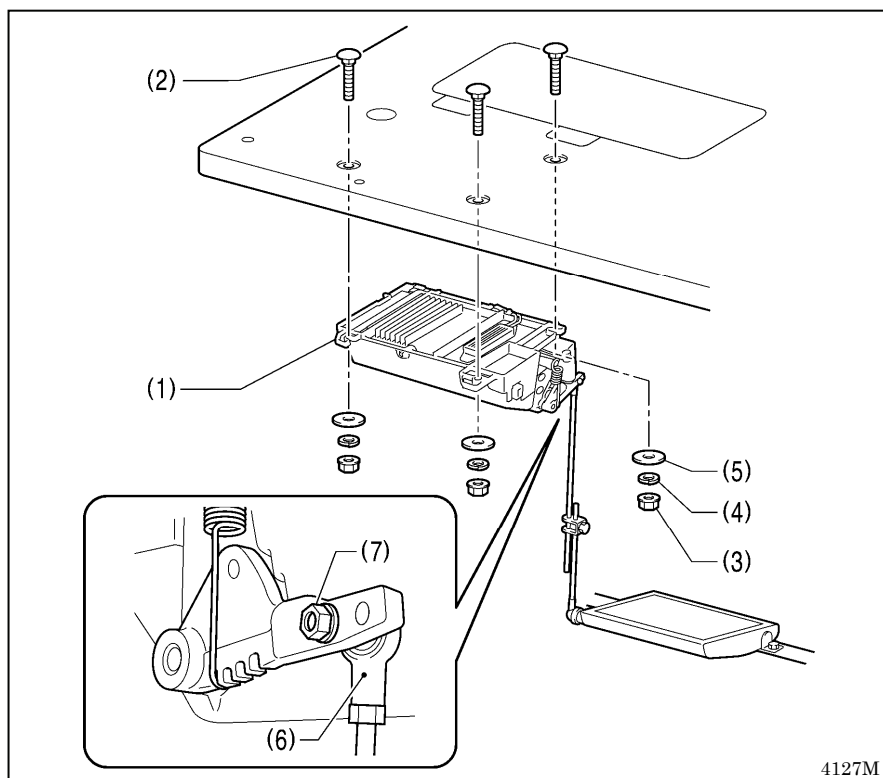
### 3. INSTALLATION

### 3-1. Table processing diagram

- The top of the table should be 40 mm in thickness and should be strong enough to hold the weight and with-stand the vibration of the sewing machine.
- Drill holes as indicated in the illustration below.



## 3-2. Installation

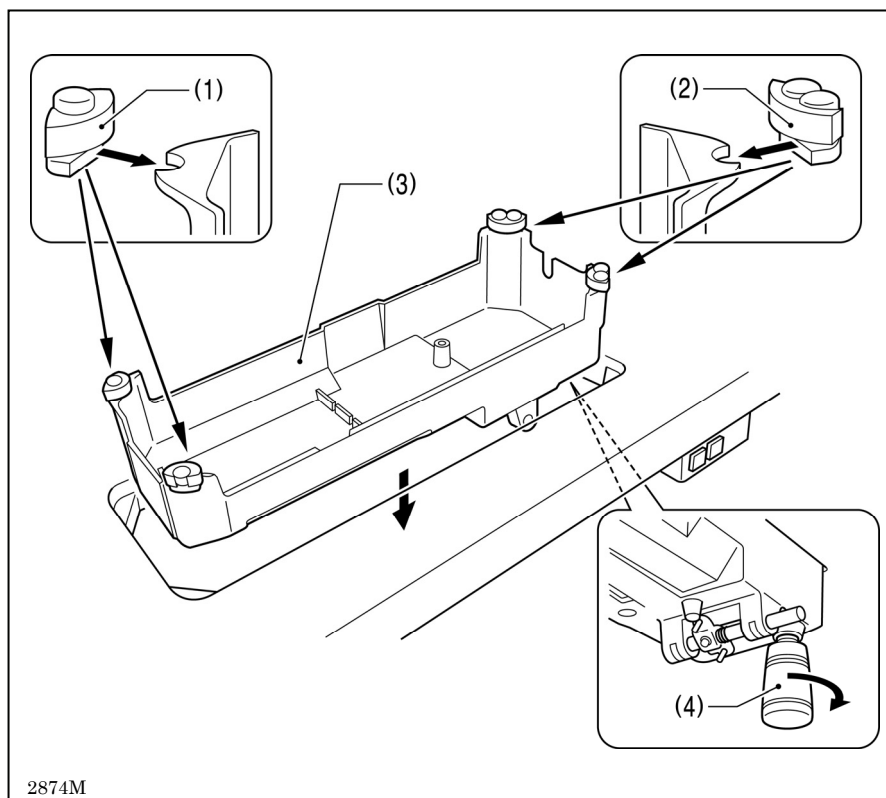


- ## 1. Control box

- (1) Control box
- (2) Bolts [3 pcs]
- (3) Nuts [3 pcs]
- (4) Spring washers [3 pcs]
- (5) Washers [3 pcs]

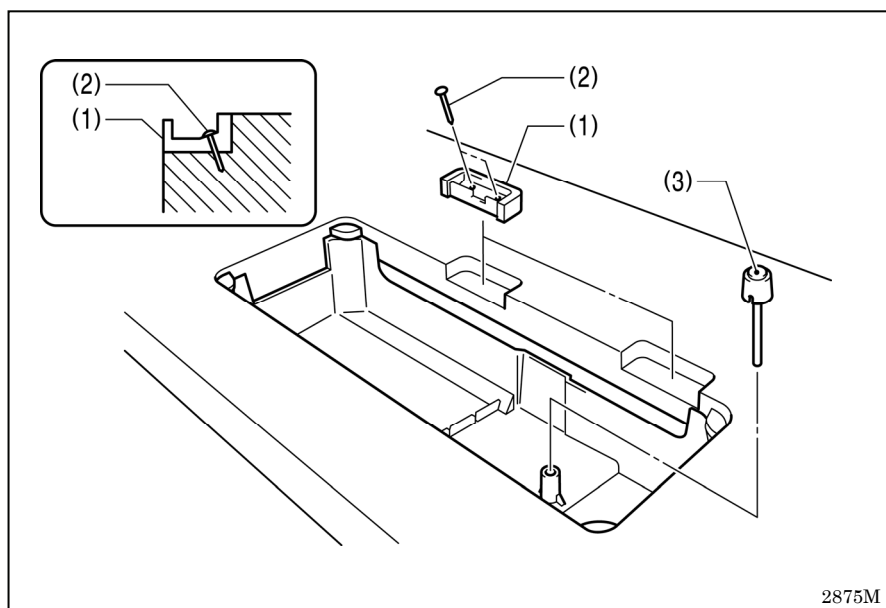
- ## 2. Connecting rod

- (6) Connecting rod  
(7) Nut



### 3. Oil pan

- (1) Head cushions (left) [2 pcs]
- (2) Head cushions (right) [2 pcs]
- (3) Oil pan
- (4) Oiler



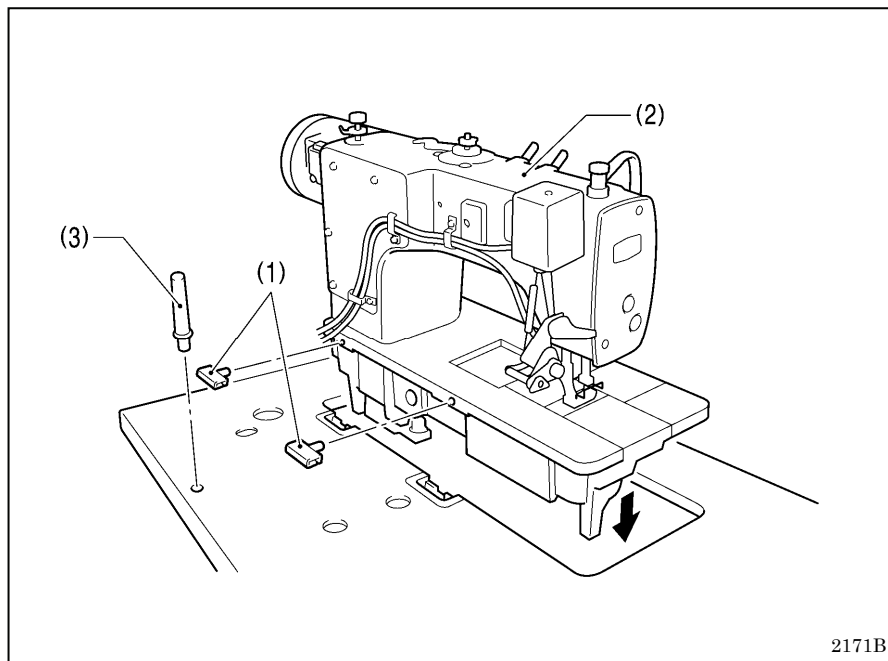
### 4. Rubber cushions

- (1) Rubber cushions [2 pcs]
- (2) Nails [4 pcs]

### 5. Knee lifter complying bar

- (3) Knee lifter complying bar

### 3. INSTALLATION

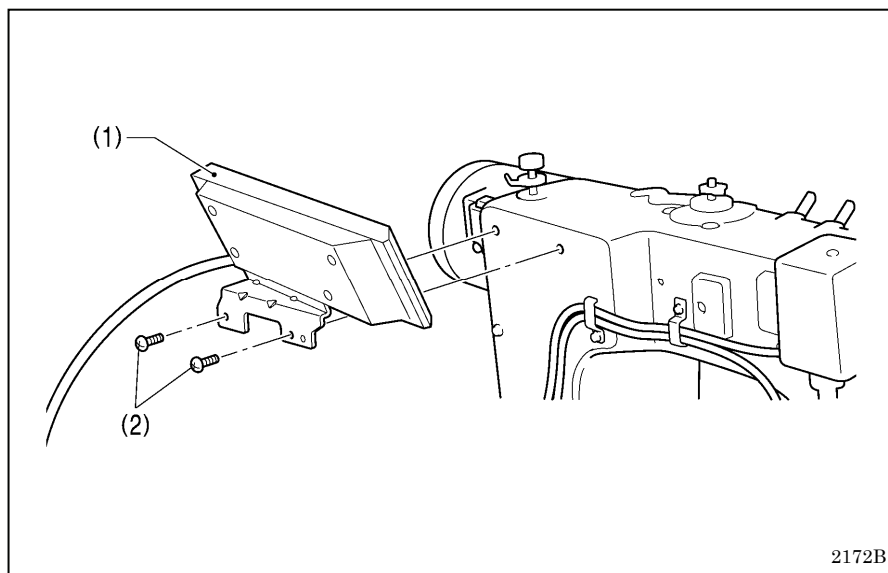


#### 6. Machine head

- (1) Hinges [2 pcs]
- (2) Machine head
- (3) Head rest

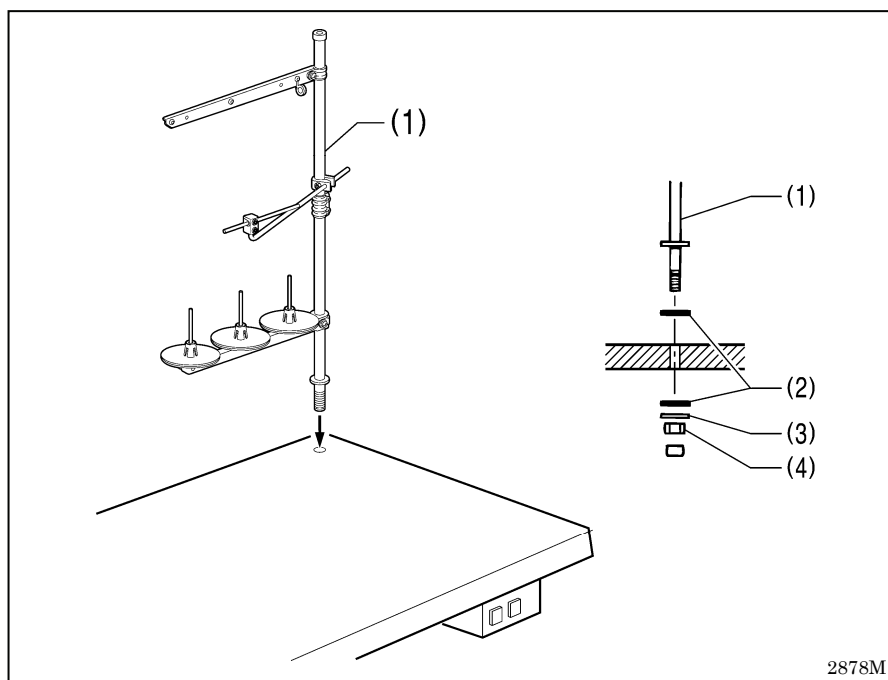
##### NOTE:

- Tap the head rest (3) securely into the table hole.
- If the head rest (3) is not pushed in as far as it will go, the machine head will not be sufficiently stable when it is tilted back.



#### 7. Operation panel

- (1) Operation panel
- (2) Screws [2 pcs]  
(Use for tightening rear cover)



#### 8. Cotton stand

- (1) Cotton stand

##### NOTE:

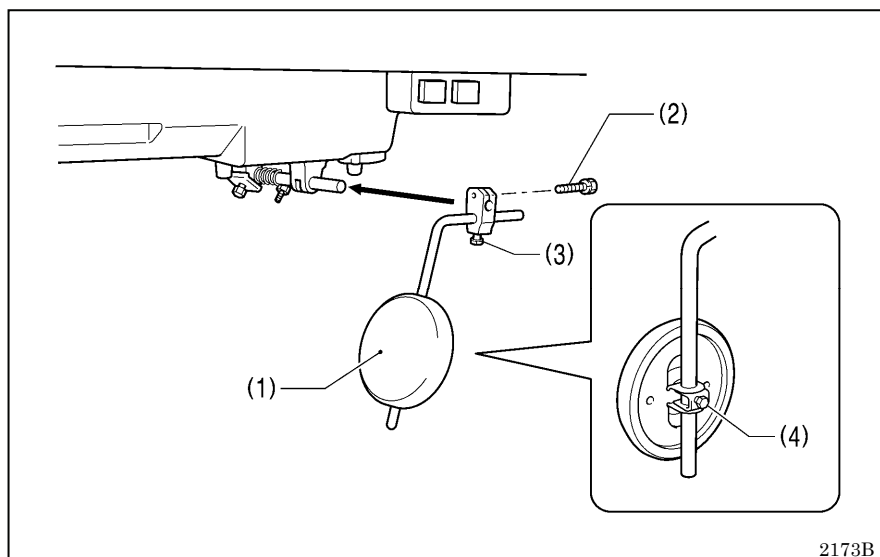
- Securely tighten the nut (4) so that the two rubber cushions (2) and the washer (3) are securely clamped and so that the cotton stand (1) does not move.



## 9. Knee lifter plate

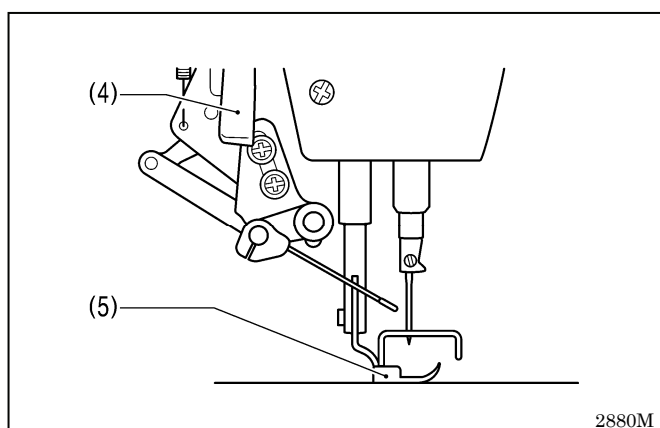
- (1) Knee lifter plate  
(2) Bolt

\* Loosen the bolt (3) and the bolt (4), and move the knee lifter plate (1) to a position where it is easy to use.

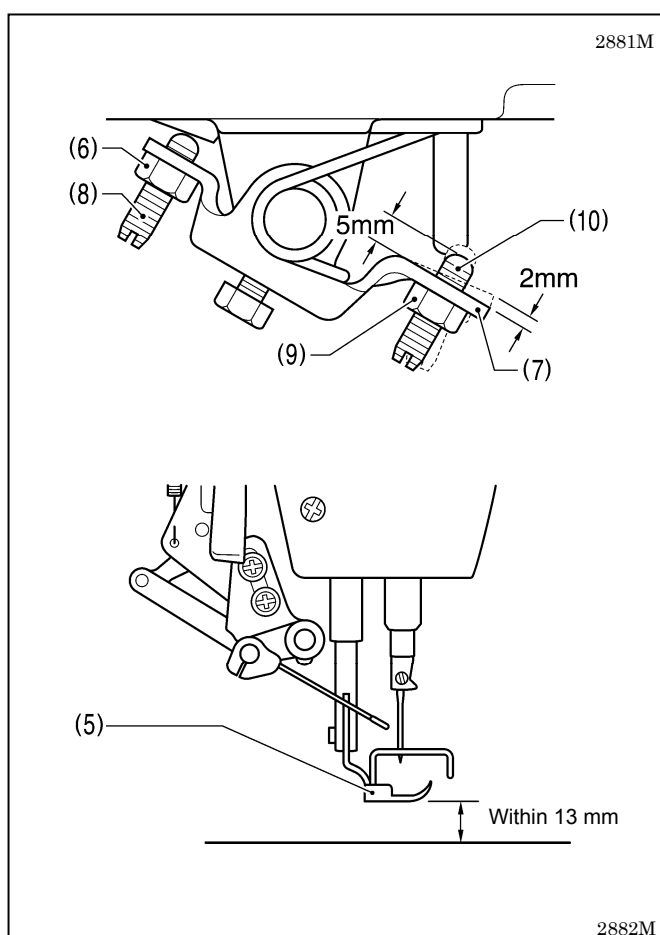


### <Knee lifter adjustment>

1. Turn the machine pulley so that the feed dog is below the top of the needle plate.
2. Lower the presser foot (5) by using the lifting lever (4).






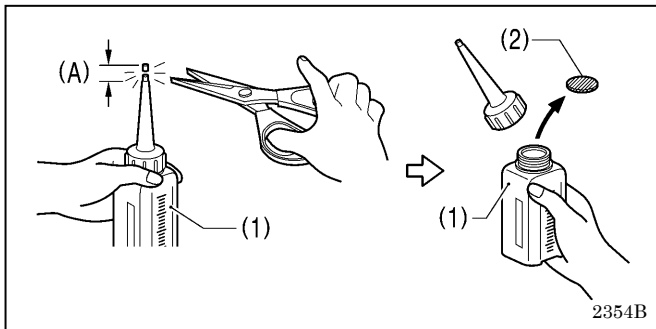
3. Loosen the nut (6).
4. Turn the screw (8) to adjust so that the amount of play in the knee lifter (7) is approximately 2 mm when the knee lifter plate (1) is gently pressed.
5. Securely tighten the nut (6).
6. Loosen the nut (9).
7. Turn the screw (10) until the distance between the end of the screw (10) and the knee lifter (7) is approximately 5 mm.
8. Turn the adjusting screw (10) to adjust so that the presser foot (5) is at the desired position within a distance of 13 mm of the needle plate when the knee lifter plate (1) is fully pressed.
9. After adjustment is completed, securely tighten the nut (9).



### 3-3. Lubrication

## CAUTION

-  Do not connect the power cord until lubrication has been completed, otherwise the machine may operate if the treadle is depressed by mistake, which could result in injury.
-  Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result.  
Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhea.  
Keep the oil out of the reach of children.
-  When cutting the nozzle of the oil tank, hold the base of the nozzle securely.  
If you hold the end of the nozzle, injury from the scissors may result.



- The sewing machine should always be lubricated and the oil supply replenished before it is used for the first time, and also after long periods of non-use.
- Use only the lubricating oil <NIPPON OIL CORPORATION Sewing Lube 10N; VG10> specified by Brother.

\* If this type of lubricating oil is difficult to obtain, the recommended oil to use is <Exxon Mobil EssoTex SM10; VG10>.

1. Hold the base of the nozzle of the accessory oil tank (1), and use scissors to cut about half-way along the straight section (A) of the nozzle.
2. Loosen and remove the nozzle, and then remove the seal (2).
3. Tighten the nozzle.

#### <Lubricating via the oil cover>

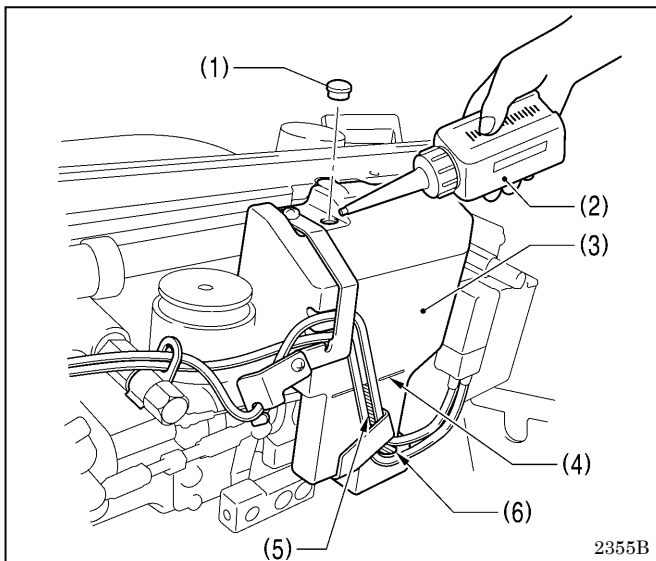
1. Tilt back the machine head.
2. Remove the rubber cap (1).
3. Use the accessory oil tank (2) to pour lubricating oil into the oil cover (3) until the oil level reaches the reference line (4).

#### NOTE:

Do not fill with lubricating oil past the reference line (4). If you pour in too much lubricating oil, it may spill out when the machine head is tilted back.

4. Replace the rubber cap (1).
5. Return the machine head to its original position.

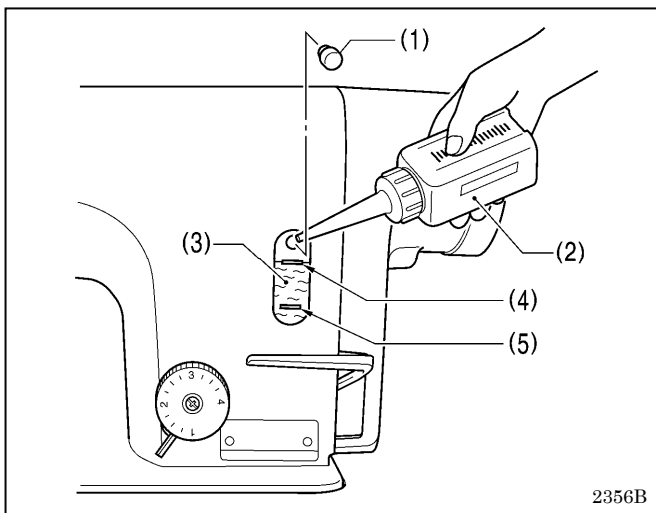
\* If the lubricating oil level drops below the bottom (6) of the oil gauge window (5), be sure to add more oil.



#### <Lubricating via the oil tank>

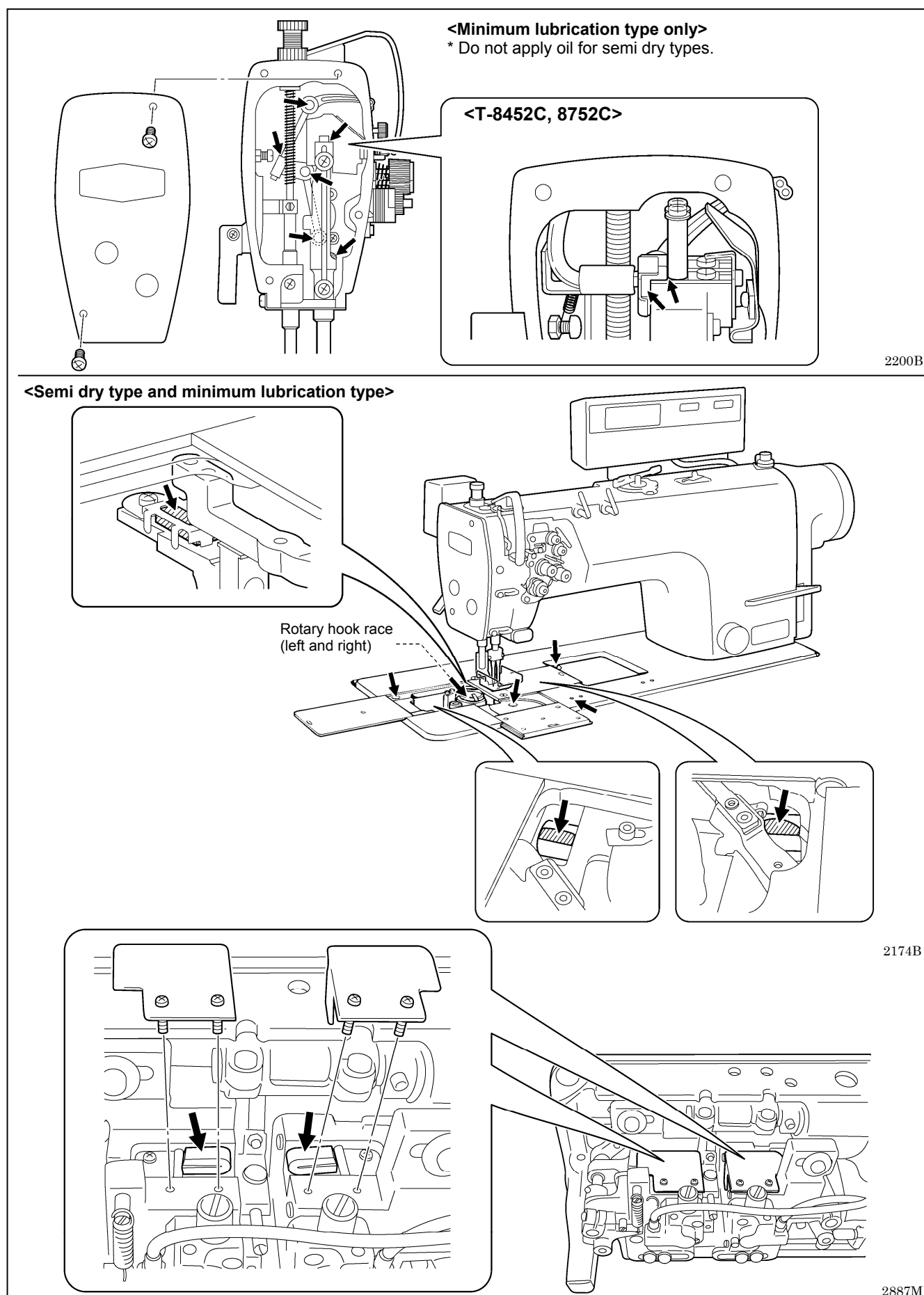
1. Remove the rubber cap (1).
2. Use the accessory oil tank (2) to pour in lubricating oil until the oil level reaches the top reference line (4) of the oil gauge window (3).
3. Replace the rubber cap (1).

\* If the lubricating oil level drops below the bottom reference line (5), be sure to add more oil.



## ■ Lubrication

Apply 1 - 2 drops of oil to the places indicated by the arrows.



### 3. INSTALLATION

#### 3-4. Connecting the cords

##### DANGER



Wait at least 5 minutes after turning off the power switch and disconnecting the power cord from the wall outlet before opening the face plate of the control box. Touching areas where high voltages are present can result in severe injury.

##### CAUTION



Contact your Brother dealer or a qualified electrician for any electrical work that may need to be done.



Do not connect the power cord until all cords have been connected.

The machine may operate if the treadle is depressed by mistake, which could result in injury.

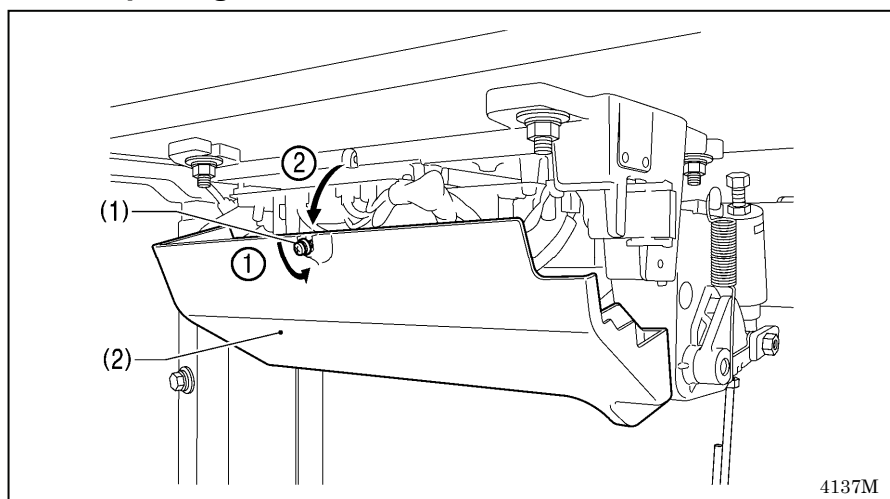


When securing the cords, do not bend the cords excessively or fasten them too hard with staples, otherwise there is the danger that fire or electric shocks could occur.



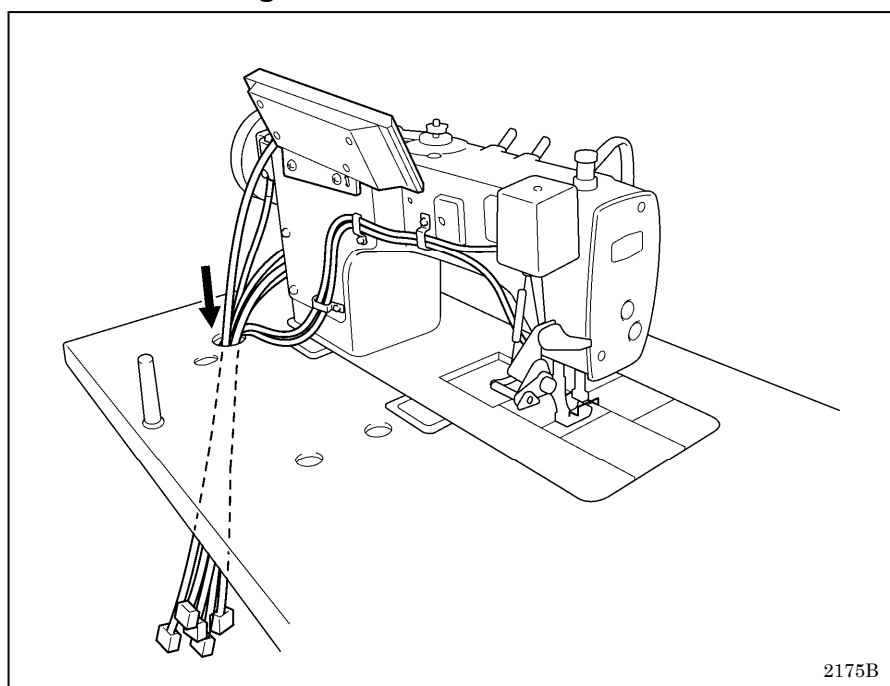
Be sure to connect the ground. If the ground connection is not secure, you run a high risk of receiving a serious electric shock, and problems with correct operation may also occur.

#### 3-4-1. Opening the control box cover

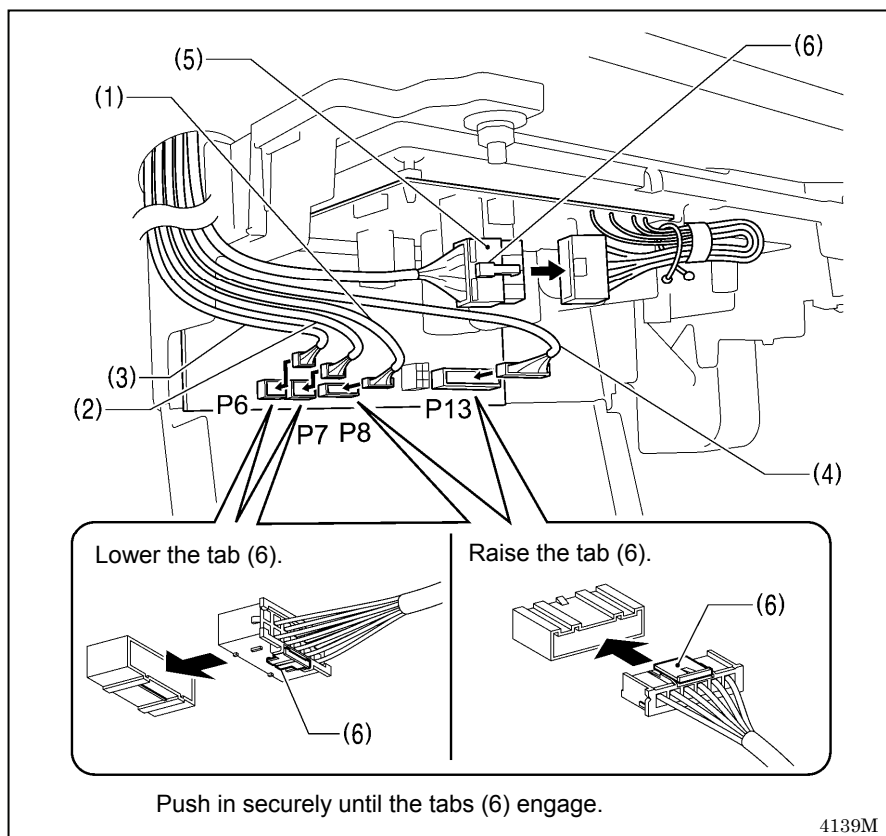


- (1) Screw
- (2) Cover

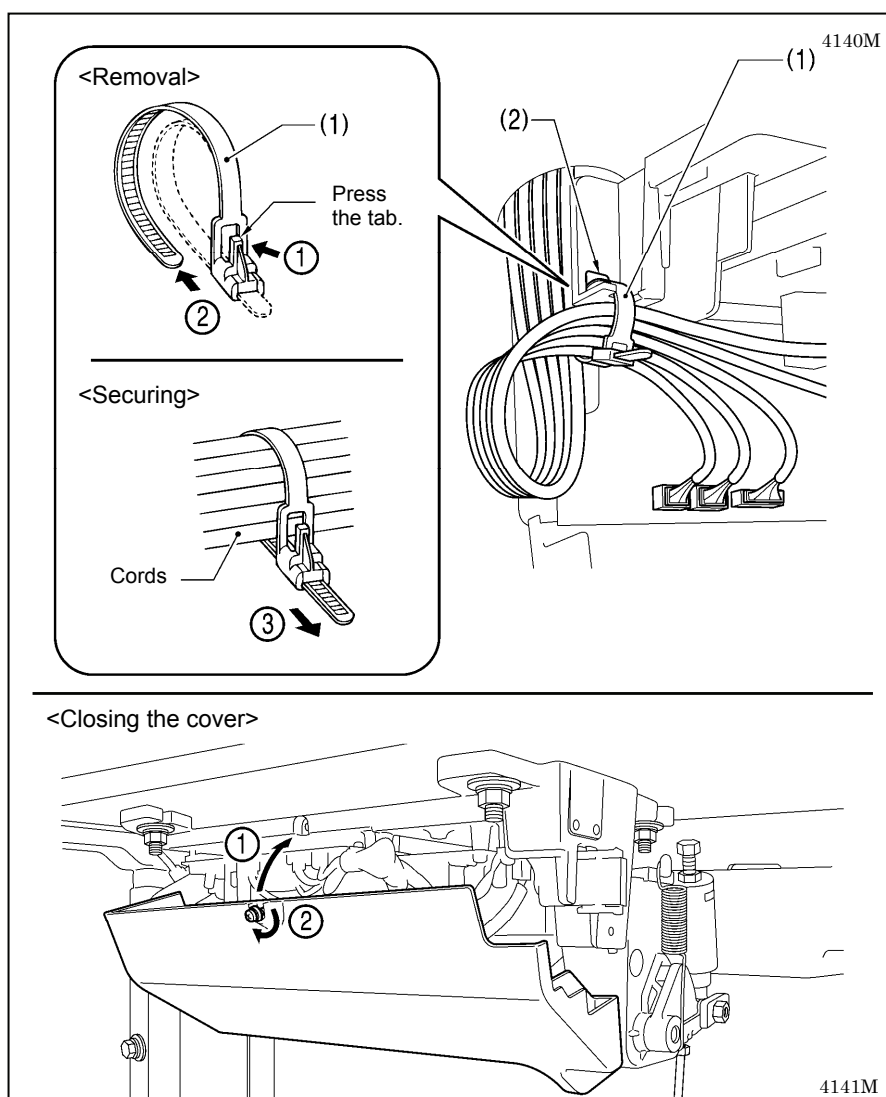
#### 3-4-2. Connecting the cords



#### 1. Sewing machine cords



- (1) 6-pin head detector unit connector
- (2) 12-pin operation panel connector
- (3) 10-pin resolver connector
- (4) 14-pin machine connector
- (5) 4-pin motor connector



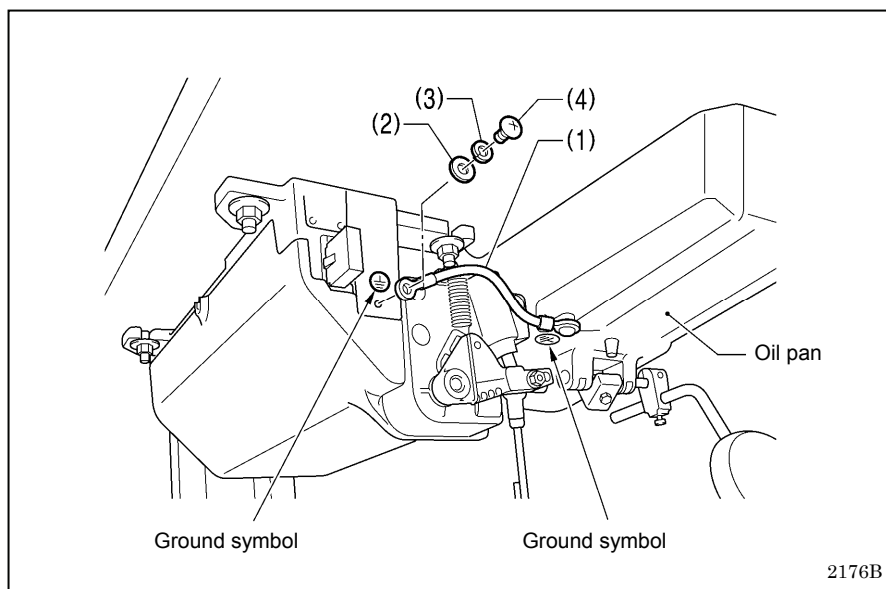
## 2. Binding the cords

- (1) Repeat cable tie

### NOTE:

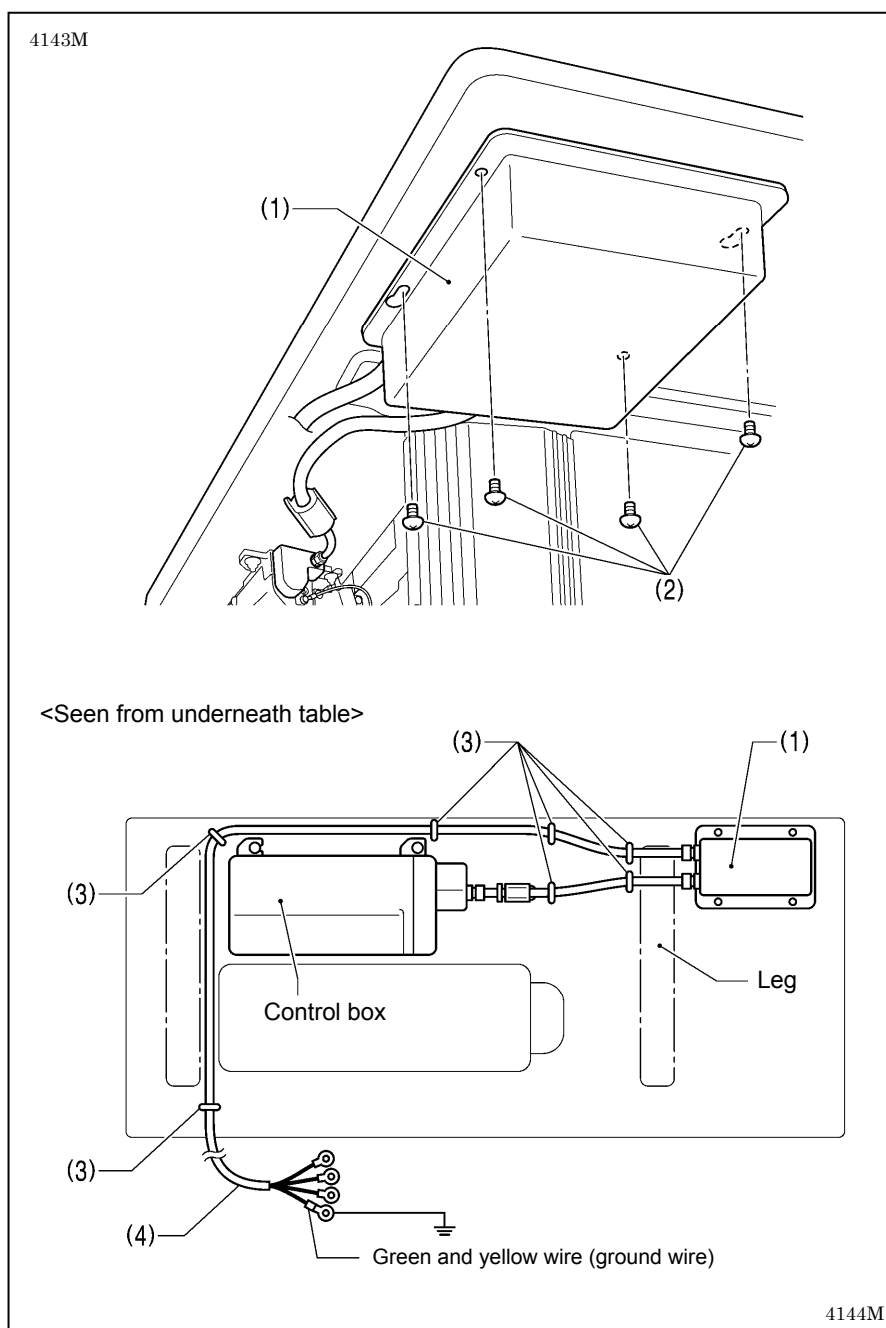
- Bind the cords in such a way that the connector does not get pulled out.
- All cords that come out from the control box should be secured to the cord holder (2) using the repeat cable tie (1), otherwise vibration from the sewing machine may cause the cords to become disconnected, which can cause problems with the operation of the control box.

### 3. INSTALLATION



### 3. Ground wire

- (1) Ground wire
- (2) Washer
- (3) Spring washer
- (4) Screw



### 4. Other cords

Connect cords that match the voltage specifications.

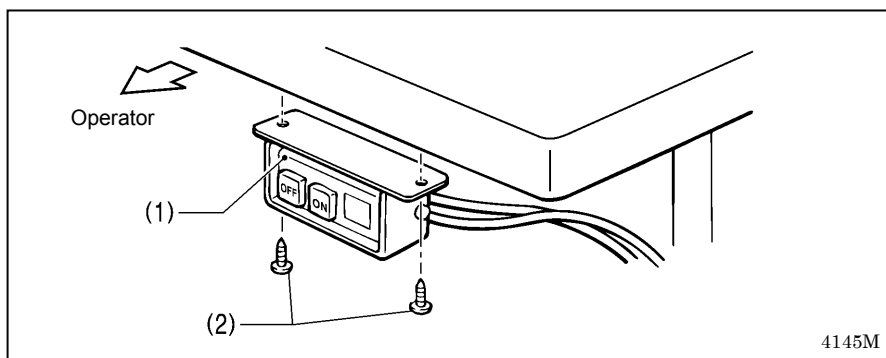
#### < Europe specifications >

- (1) Filter box
- (2) Screws [4 pcs.]
- (3) Staples [7 pcs.]
- (4) Power cord

1. Attach an appropriate plug to the power cord (4). (The green and yellow wire is the ground wire.)
2. Insert the power plug into a properly-grounded electrical outlet.

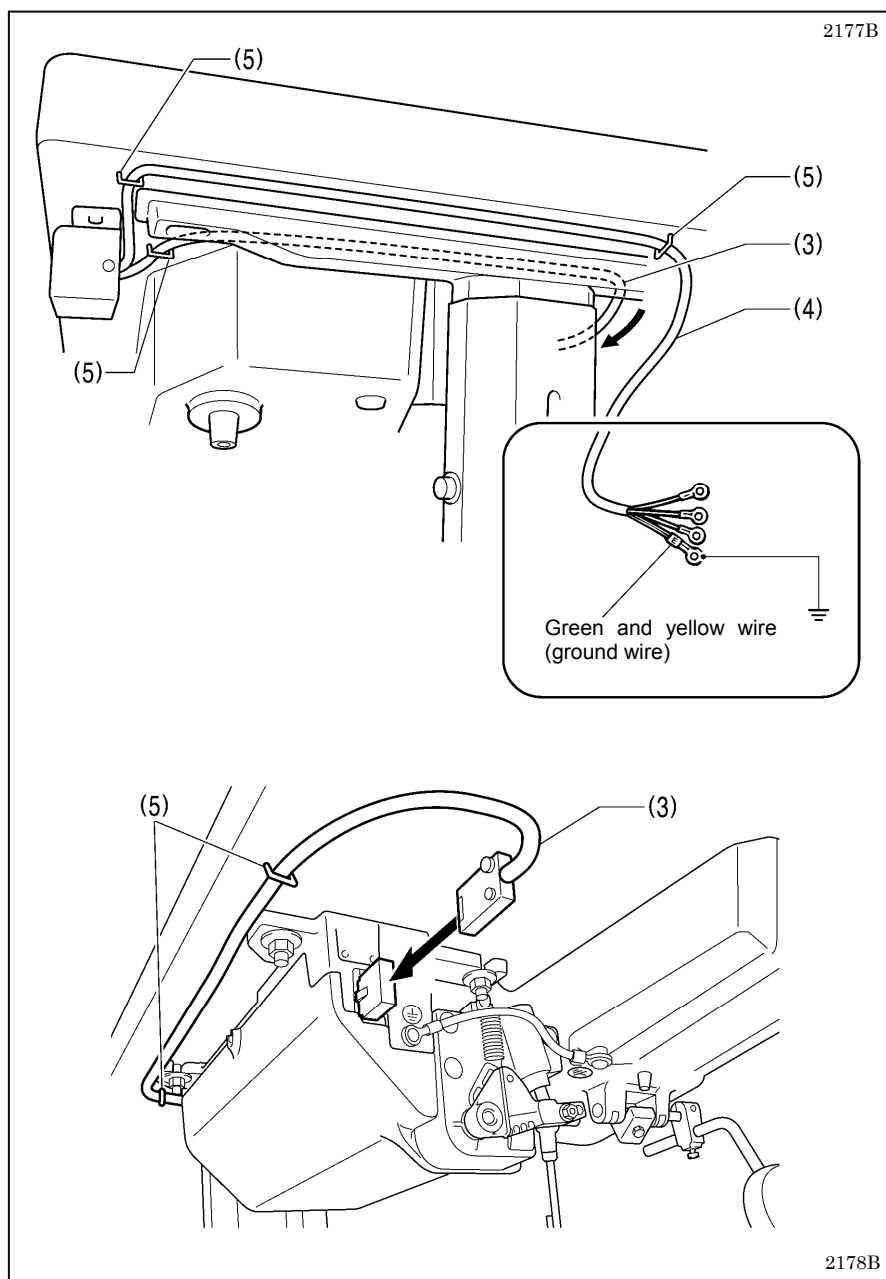
#### NOTE:

- Take care when tapping in the staples (3) to make sure that they do not pierce the cords.
- Do not use extension cords, otherwise machine operation problems may result.



## &lt;200V system&gt;

- (1) Power switch
- (2) Screws [2 pcs]



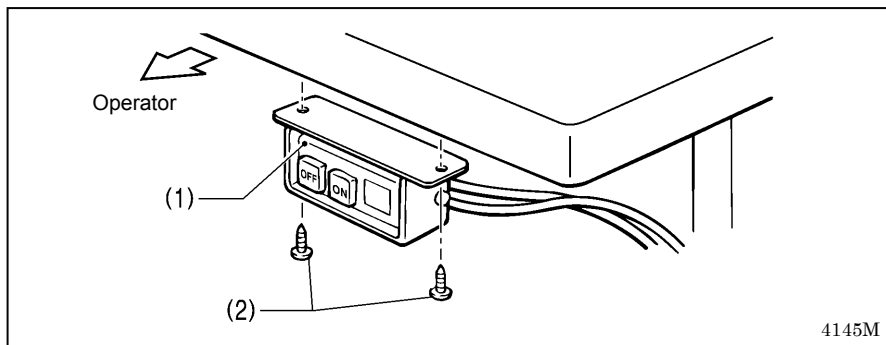
- (3) 3-pin power supply connector
- (4) Power cord
- (5) Staples [5 pcs.]

1. Attach an appropriate plug to the power cord (4). (The green and yellow wire is the ground wire.)
2. Insert the power plug into a properly-grounded electrical outlet.

**NOTE:**

- Take care when tapping in the staples (5) to make sure that they do not pierce the cords.
- Do not use extension cords, otherwise machine operation problems may result.

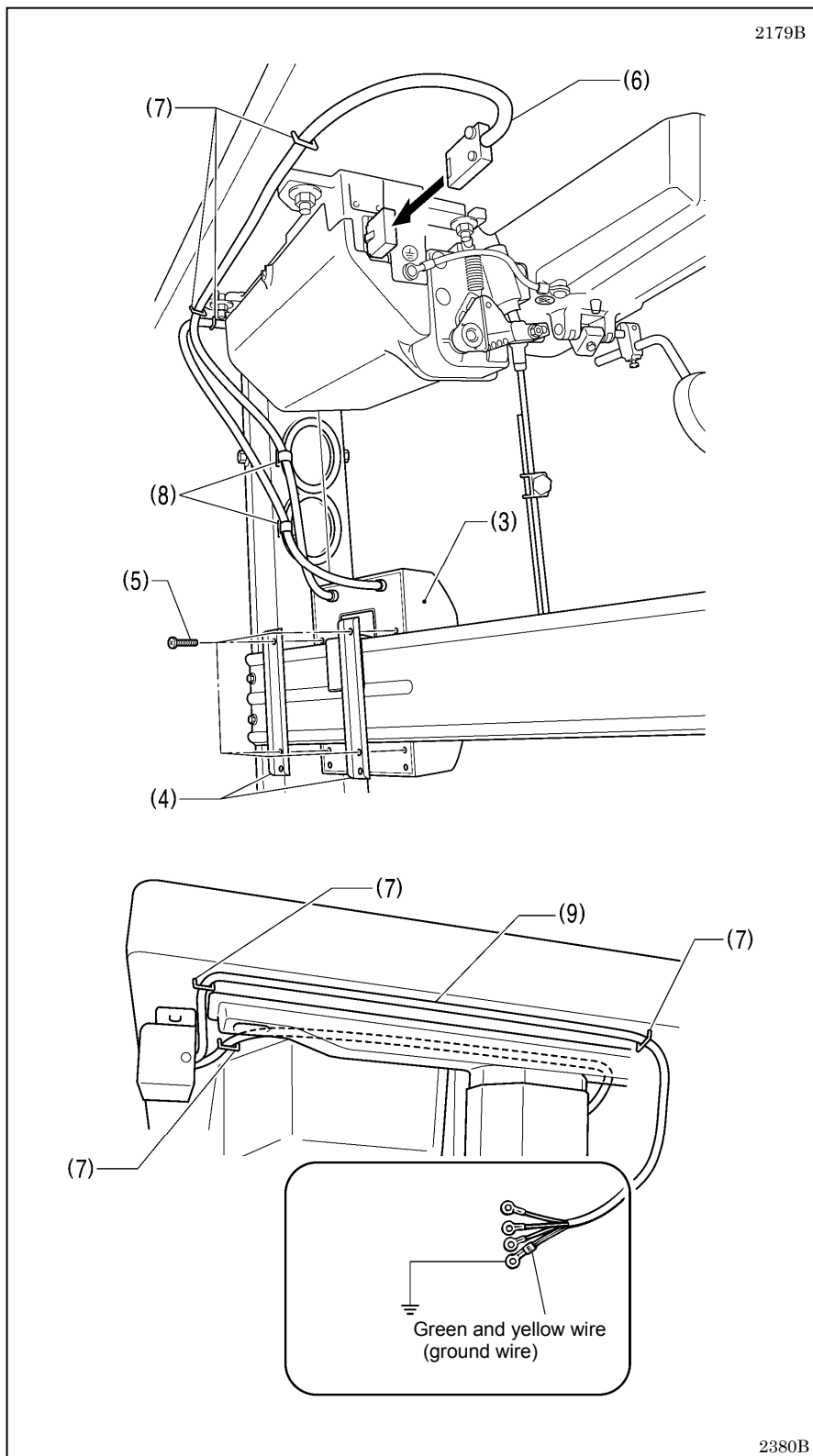
### 3. INSTALLATION



#### <100V/400V system>

- (1) Power switch
- (2) Screws [2 pcs]

4145M



2179B

- (3) Transformer box
- (4) Transformer box plates [2 pcs.]
- (5) Screw [with washer]
- (6) 3-pin power supply connector
- (7) Staples [6 pcs.]
- (8) Cord clamps [2 pcs.]
- (9) Power cord

1. Attach an appropriate plug to the power cord (9). (The green and yellow wire is the ground wire.)
2. Insert the power plug into a properly-grounded electrical outlet.

#### NOTE:

- Take care when tapping in the staples (7) to make sure that they do not pierce the cords.
- Do not use extension cords, otherwise machine operation problems may result.

2380B

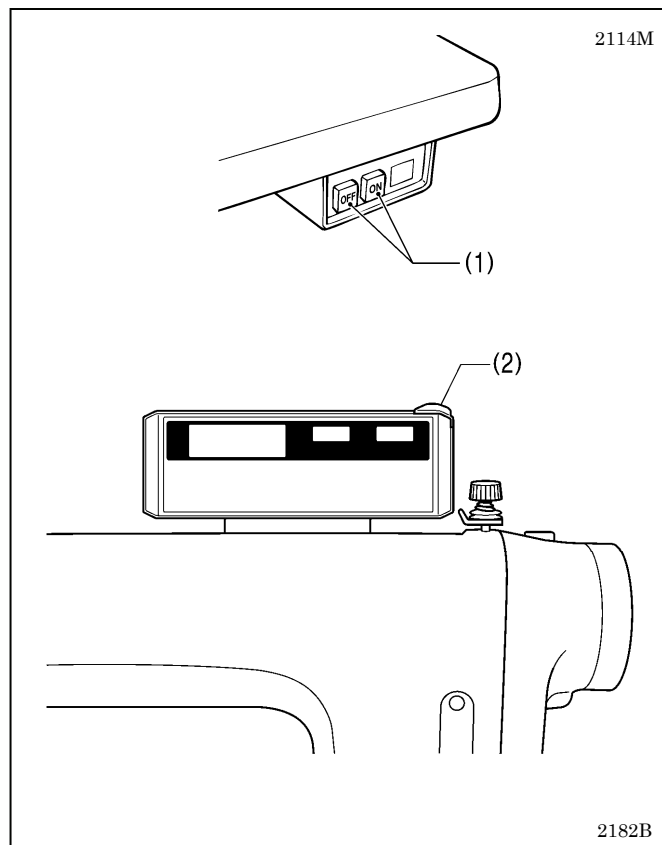


### 3-5. Test operation (Operating the treadle)

## ! CAUTION

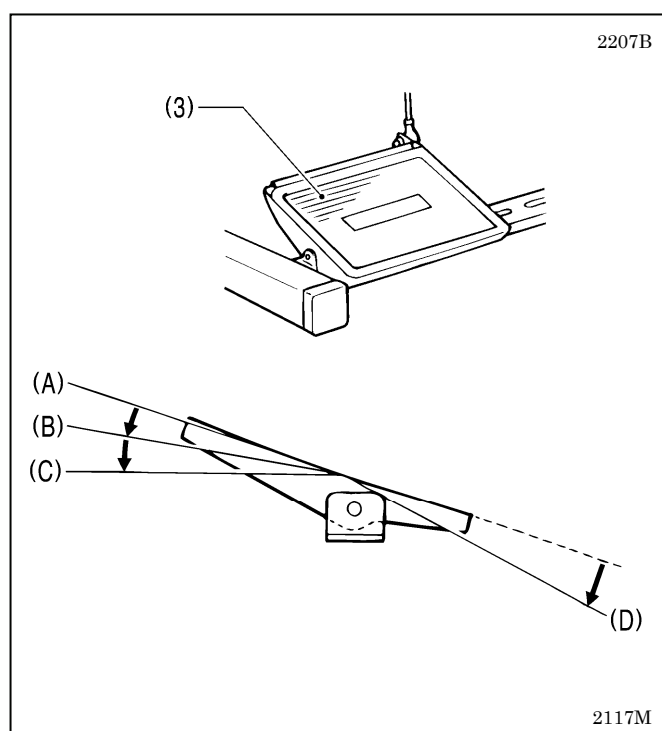


Do not touch any of the moving parts or press any objects against the machine while sewing, as this may result in personal injury or damage to the machine.



#### <Turning on the power>

Press the ON power switch (1).  
The power indicator (2) will illuminate.



#### <Test operation>

1. Check that the machine sews at low speed when the treadle (3) is gently pressed to position (B).

#### NOTE:

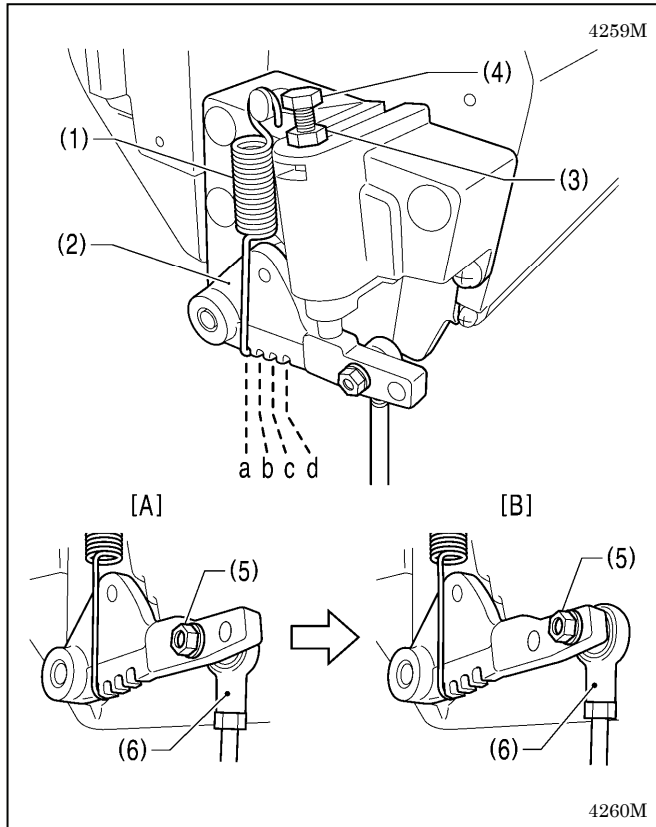
If the sewing machine does not operate even when the treadle (3) is depressed, check the position of the safety switch. (Refer to "13-1. Safety switch position".)

2. Then check that it sews at high speed when the treadle (3) is gently pressed to position (C).
3. After pressing the treadle (3) forward, check that the needle is lowered to the top of the needle plate when the treadle (3) is returned to the neutral position (A). (when needle down stopping has been set.)
4. If the treadle (3) is pressed to position (D), (thread trimming is carried out for models with thread trimmer) and the needle rises above the needle plate and stops.
5. With the machine head tilted back, depress the treadle (3) and check that the sewing machine does not operate.

#### NOTE:

If the sewing machine operates when the treadle (3) is depressed while the machine head is tilted back, the safety switch is probably faulty. Contact the place of purchase.

## 3-6. Adjusting the treadle operation



### <Forward depression sensitivity adjustment>

If the machine starts running at low speed when your foot is simply resting on the treadle, or if the treadle pressure is felt to be too weak, adjust the position (a to c) at which the treadle spring (1) is hooked onto the treadle lever (2).

\* a is the weakest position, and it becomes gradually stronger at b, c and d respectively.

### <Backward depression sensitivity adjustment>

1. Loosen the nut (3) and turn the bolt (4).

\* When the bolt (4) is tightened, the treadle operation becomes heavier, and when it is loosened, the operation becomes lighter.

2. Tighten the nut (3).

### <Adjusting the treadle stroke>

Remove the nut (5), and then move the connecting rod joint (6) from the position in figure A to the position in figure B. The treadle stroke will then be increased by approximately 27 %.

At this time, the treadle forward and backward depression sensitivity will change, so readjust if necessary.

## 4. PREPARATION BEFORE SEWING

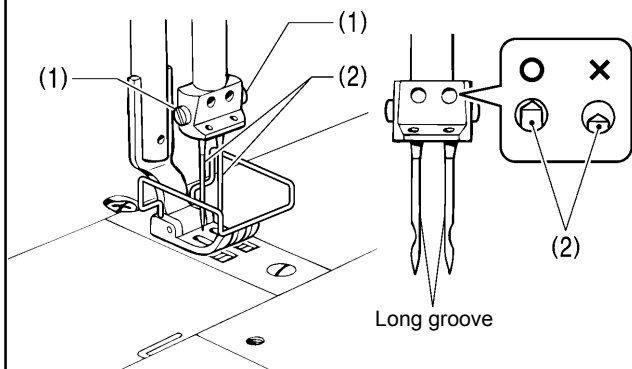
### 4-1. Installing the needle

#### ! CAUTION



Turn off the power switch before installing the needle.  
The machine may operate if the treadle is depressed by mistake, which could result in injury.

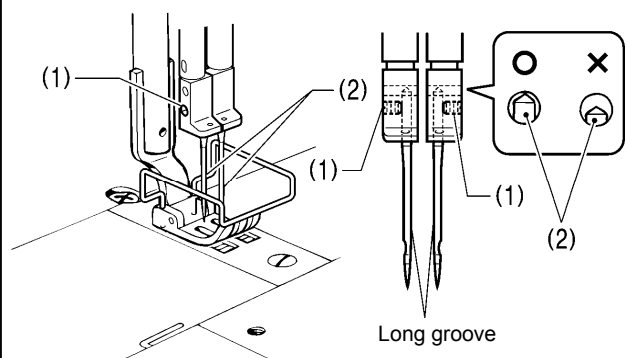
<T-8421C, 8422C, 8722C>



2461B

1. Turn the machine pulley to move the needle bar to its highest position.
2. Loosen the screws (1).
3. Insert the needle (2) straight in as far as it will go so that the long groove is facing inward, and then securely tighten the screws (1).

<T-8452C, 8752C>



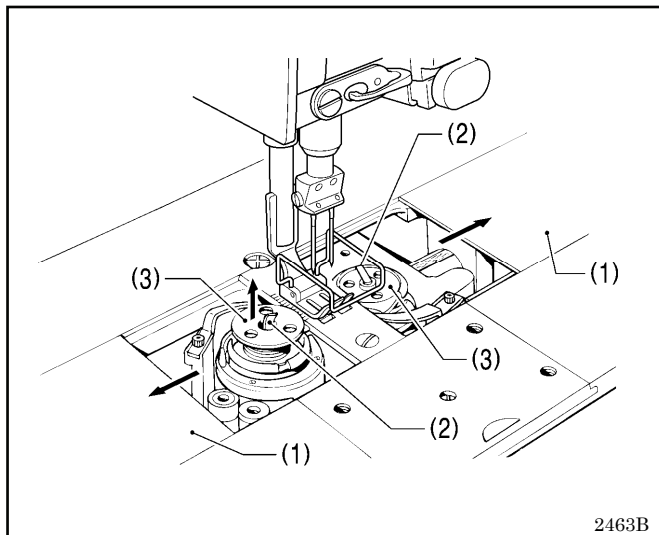
2462B

### 4-2. Removing the bobbin

#### CAUTION



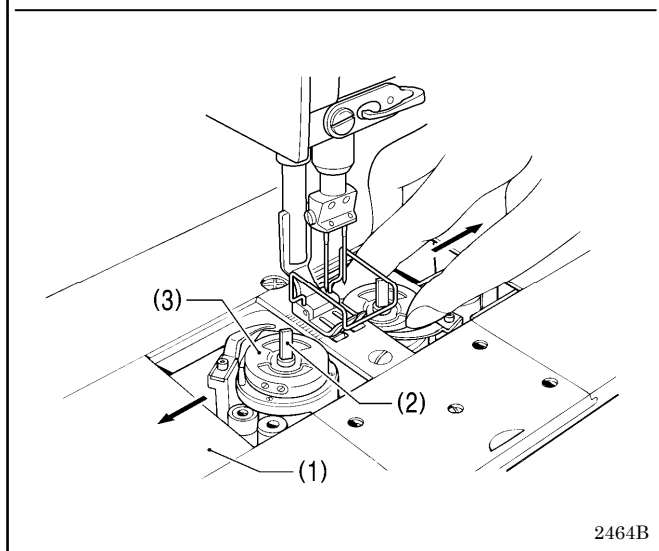
Turn off the power switch before removing the bobbin.  
The machine may operate if the treadle is depressed by mistake, which could result in injury.



2463B

#### <Latch type>

1. Open the slide plates (1) by moving them to the right and left.
2. Pull the rotary hook latches (2) upward, and then remove the bobbins (3).



2464B

#### <Bobbin case type>

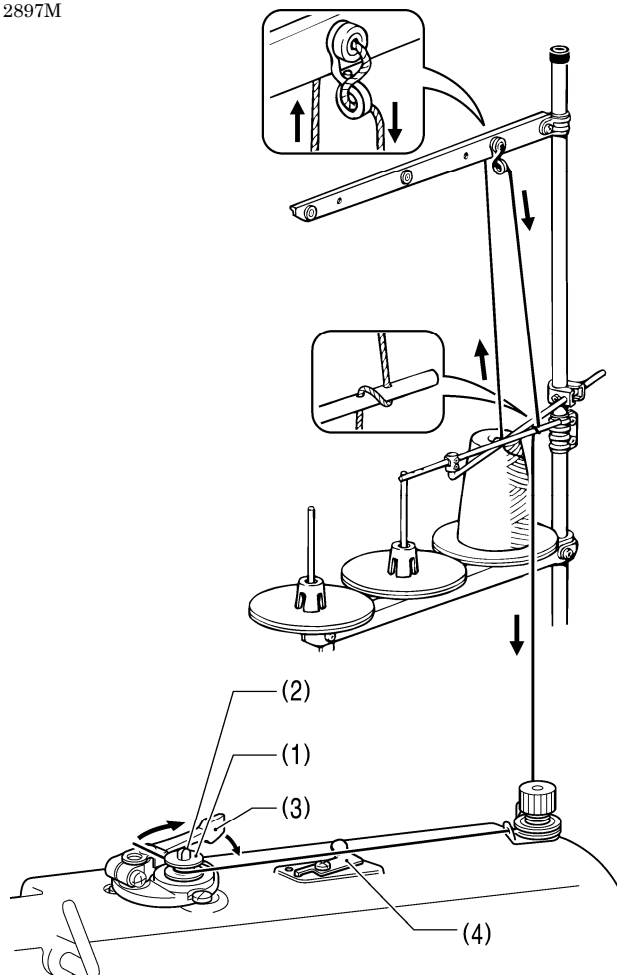
1. Open the slide plates (1) by moving them to the right and left.
2. Lift up the latch (2) of the rotary hook, and then remove the bobbin case (3).
3. Remove the bobbin.

## 4-3. Winding the lower thread

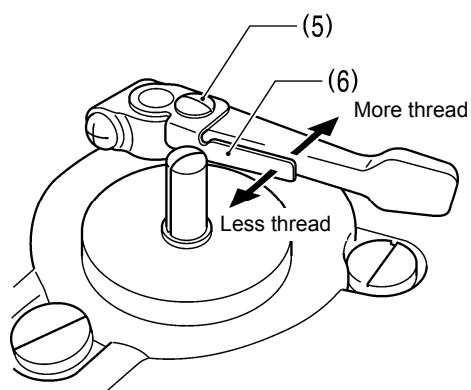
**! CAUTION**

Do not touch any of the moving parts or press any objects against the machine while winding the lower thread, as this may result in personal injury or damage to the machine.

2897M



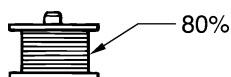
1. Turn on the power switch.
2. Place the bobbin (1) onto the bobbin winder shaft (2).
3. Wind the thread several times around the bobbin (1) in the direction indicated by the arrow.
  - \* Check that the thread is not loose anywhere along the thread path.
4. Push the bobbin presser arm (3) toward the bobbin (1).
5. Raise the presser foot with the lifting lever.
6. Depress the treadle. Lower thread winding will then start.
7. Once winding of the lower thread is completed, the bobbin presser arm (3) will return automatically.
8. After the thread has been wound on, remove the bobbin and cut the thread with the knife (4).



- \* Loosen the screw (5) and move the bobbin presser (6) to adjust the amount of thread wound onto the bobbin.

**NOTE:**

The amount of thread wound onto the bobbin should be a maximum of 80 % of the bobbin capacity.



2123M

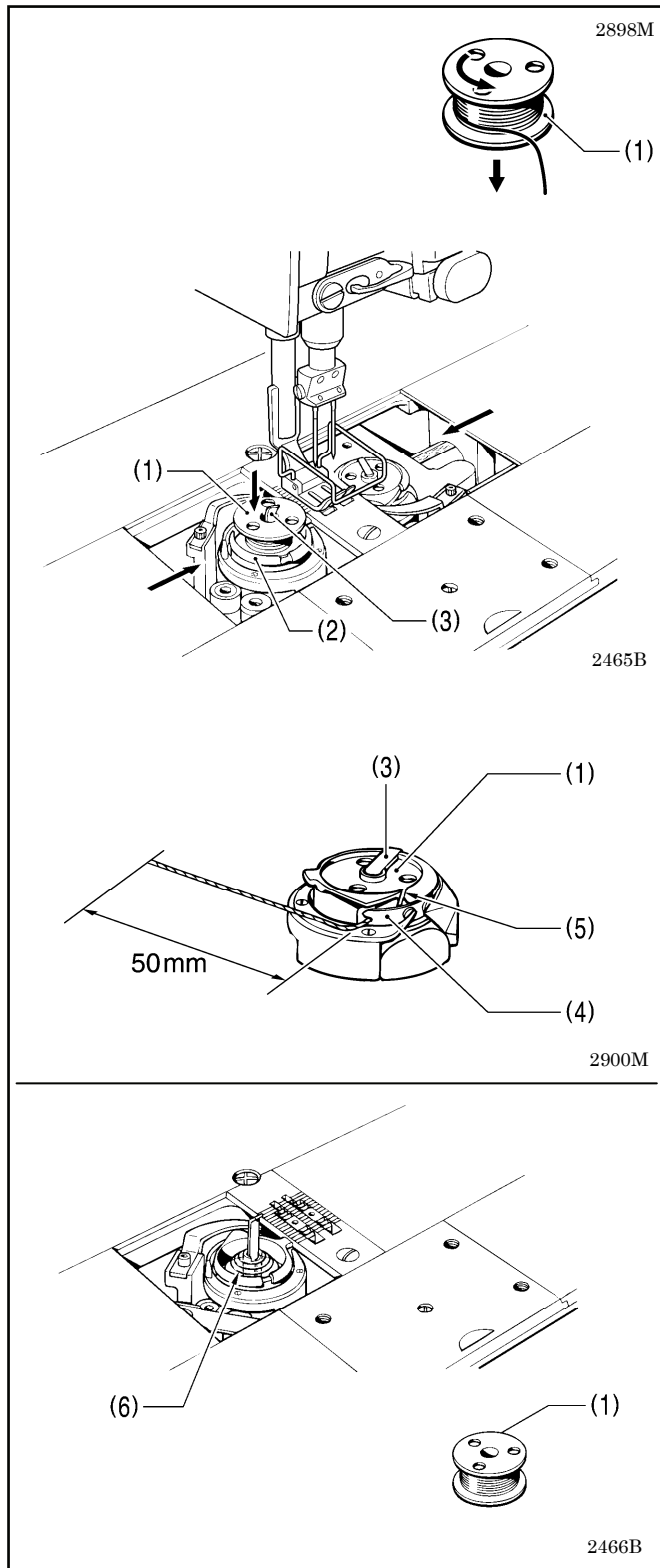
2124M

### 4-4. Installing the bobbin

#### ! CAUTION



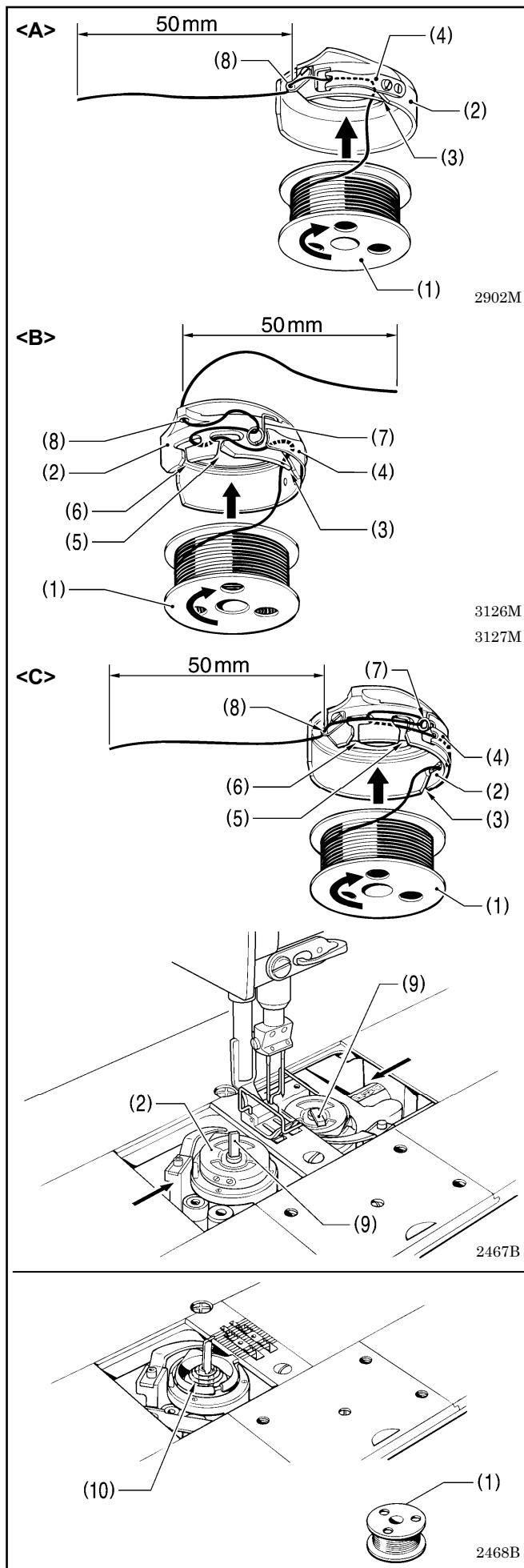
Turn off the power switch before installing the bobbin.  
The machine may operate if the treadle is depressed by mistake, which could result in injury.



#### <Latch type>

1. Insert the bobbin (1) into the rotary hook (2) so that the winding direction is as shown in the illustration.
2. Return the rotary hook latch (3) to its original position.
3. Turn the machine pulley to rotate the rotary hook (2) until the tension spring (4) is visible.
4. Pass the thread through slit (5) in the rotary hook and then pass it under the thread tension spring.
5. Pull out the thread to a length of approximately 50 mm.
6. Close the slide plates.

- There is an anti-spin spring (6) inside the rotary hook. The anti-spin spring (6) prevents the bobbin from racing at times such as during thread trimming.
- Use bobbins (1) made of light alloy as specified by BROTHER.



#### <Bobbin case type>

1. Insert the bobbin (1) into the bobbin case (2) so that the winding direction is as shown in the illustration.
2. There are three types of cap (2) (<A>, <B> and <C>). Thread the thread by one of the following methods in accordance with the shape of the bobbin case (2) being used.

#### <A>

- 1) Pass the thread through slot (3) and under the thread tension spring (4).
- 2) Pass the thread through the thread hole (8) and pull out about 50 mm.

#### <B> <C>

- 1) Pass the thread through slot (3) and under the thread tension spring (4).
- 2) Pass the thread through slots (5) and (6), and then through the spring (7).
- 3) Pass the thread through the thread hole (8) and pull out about 50 mm.

3. Insert the bobbin case (2) into the rotary hook.
4. Push latch (9) of the rotary hook flat.
5. Close the slide plates.

- There is an anti-spin spring (10) inside the rotary hook. The anti-spin spring (10) prevents the bobbin from racing at times such as during thread trimming.
- Use bobbins (1) made of light alloy as specified by BROTHER.

### 4-5. Threading the upper thread

#### CAUTION



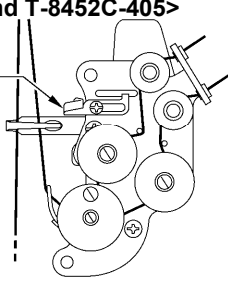
Turn off the power switch before threading the upper thread.  
The machine may operate if the treadle is depressed by mistake, which could result in injury.

- Turn the machine pulley and raise the thread take-up (1) before threading the upper thread.  
This will make threading easier and it will prevent the thread from coming out at the sewing start.
- Thread the left-side thread first.



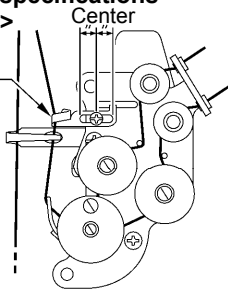
<For all models except foundation specifications and T-8452C-405>

Do not pass the thread through.

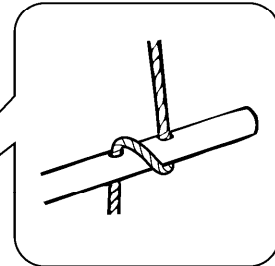
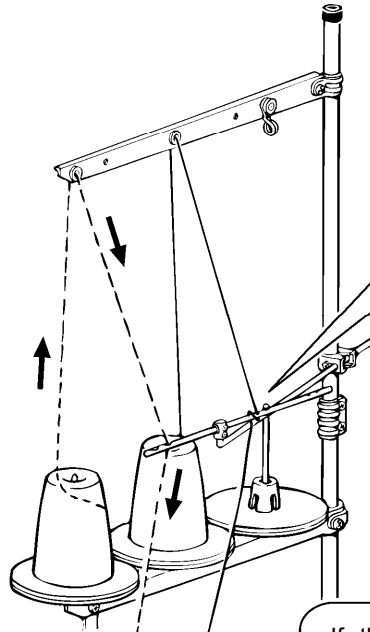


<For foundation specifications and T-8452C-405>

Pass the thread through.



(Refer to p.54)



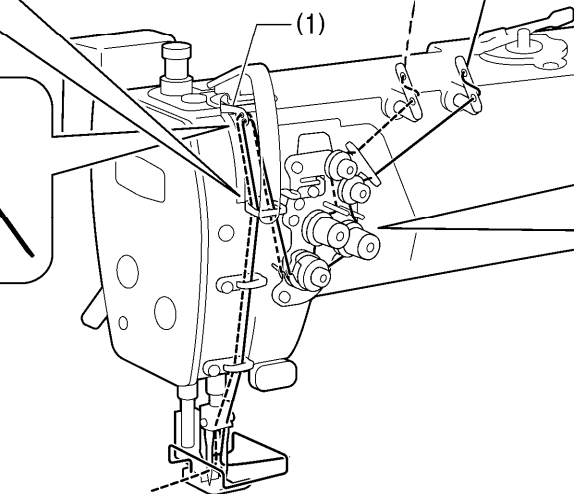
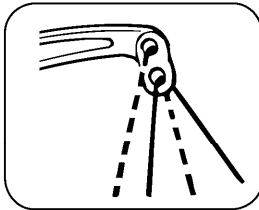
If the tension discs are opened as follows, the thread will become easier to thread.

<Models with thread trimmer>

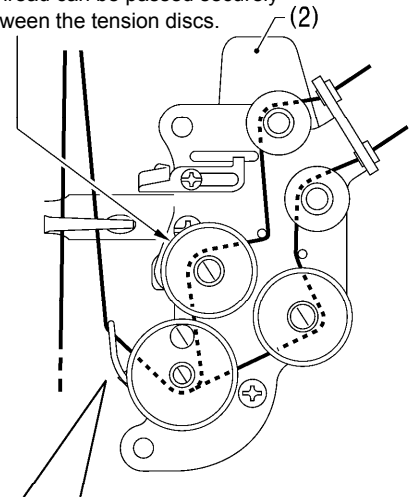
Press the tension release plate (2).

<Models without thread trimmer>

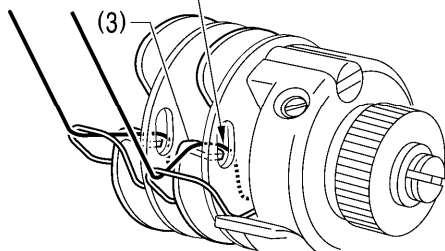
Press the tension release plate (2), or operate the lifting lever or the knee lifter to raise the presser foot.



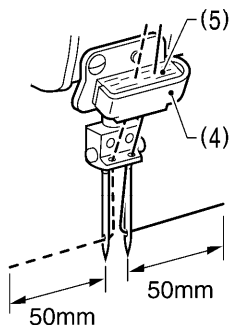
The thread can be passed securely in between the tension discs.



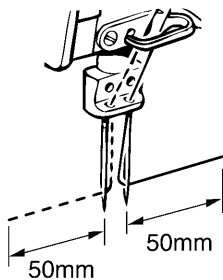
Pass the thread on the inside of the tab (3).



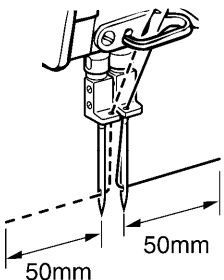
T-8421C  
T-8422C-4[]3\*  
T-8452C-403\*



T-8422C  
T-8722C



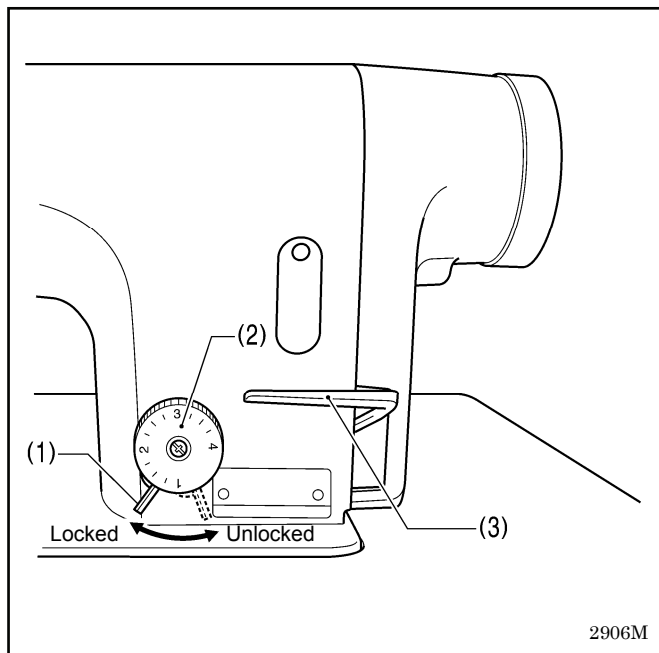
T-8452C  
T-8752C



Specifications indicated by the \* mark include arm thread guide D (4) and felt (5). When using polyester thread, install these components and thread the thread as shown in the illustration.

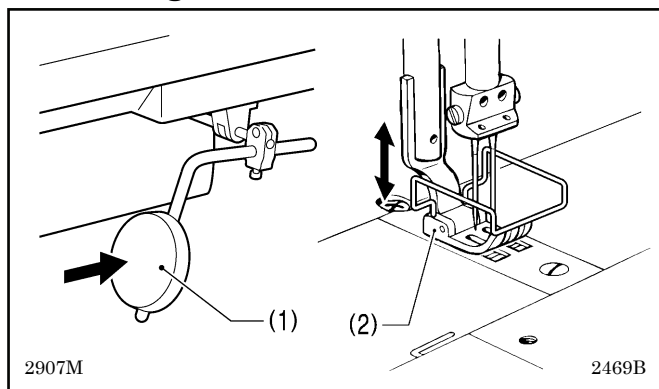
2183B

### 4-6. Adjusting the stitch length



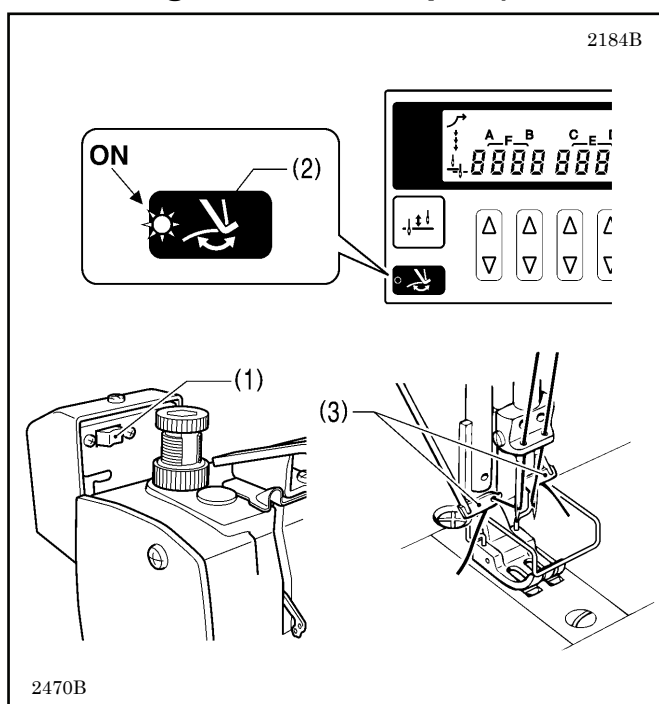
1. Unlock the stitch length dial (2) by turning the dial lock lever (1) to the right until a click is heard.
  2. Turn the stitch length dial (2) clockwise or counterclockwise so that the desired stitch length is at the uppermost position on the dial.
    - The larger the number, the longer the stitch length will be. (The numbers on the dial are for use as a guide. The length of the finished stitches may vary depending on the type and thickness of material being sewn. Adjust while looking at the finished stitches.)
    - When turning the stitch length dial (2) from a larger setting to a smaller setting, it will be easier to turn the dial if the reverse lever (3) is pushed to the halfwaydown position.
  3. Turn the dial lock lever (1) firmly to the left to lock the stitch length dial (2).
- \* Check that the stitch length dial (2) does not rotate.

### 4-7. Using the knee lifter



The presser foot (2) can be raised by pressing the knee lifter plate (1).

### 4-8. Using the thread wiper (models with thread trimmer only)



1. Press the thread wiper switch (1) to the ☒ side.
2. Press the thread wiper key (2) on the operation panel so that the indicator illuminates.

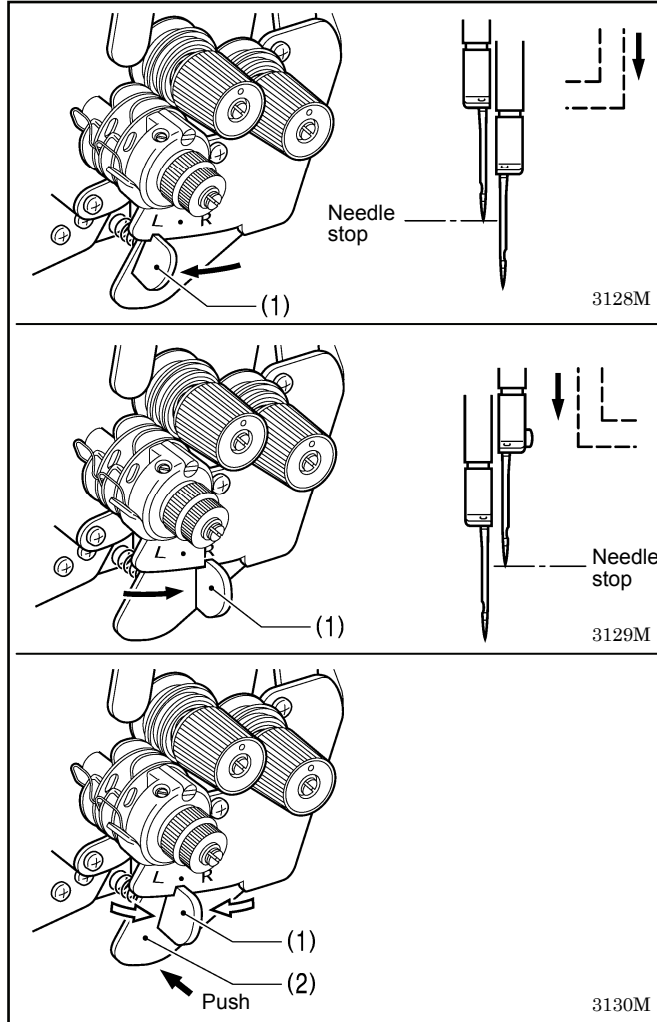
After thread trimming is carried out, the thread wiper (3) will pull up the thread.

## 4-9. Corner sewing method (T-8452C, 8752C)

### NOTE:

If using this machine in place of a single-needle machine, remove the needle which is not being used. In such cases, do not use the procedures given below to stop the unused needle bar from moving, otherwise damage to the machine may result.

### 4-9-1. To stop the needle bars (right and left)



- Operate the stop lever after the needle has penetrated the material and has stopped moving.
- Do not sew at speeds of over 1,000 sti/min while one of the needle bars has been stopped.

#### <To stop operation of the left needle bar>

Move the stop lever (1) to the "L" position.

#### <To stop operation of the right needle bar>

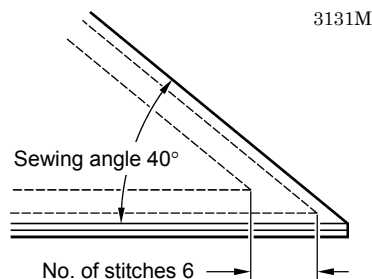
Move the stop lever (1) to the "R" position.

#### <To resume twin-needle sewing>

Press the push lever (2).

The stop lever (1) will then return to its original position automatically.

### 4-9-2. Number of stitches: quick-reference guide



Sewing angle No. of Stitches	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°
2					4.6	3.8	3.2	2.7	2.2	1.8	1.5	1.1
3			4.6	3.5	3.0	2.5	2.1	1.8	1.5	1.2		
4		4.4	3.4	2.8	2.3	1.9	1.6	1.3				
5	4.8	3.5	2.7	2.2	1.8	1.5	1.3					
6	4.0	2.9	2.3	1.9	1.5	1.3						
7	3.7	2.5	2.0	1.6								
8	3.0	2.2	1.7									

#### <For 1/4" needle width>

Determine the stitch length from the chart above to make beautiful corner stitching.

The number of stitches of the outer needle varies according to the combination of sewing angle and stitch length.

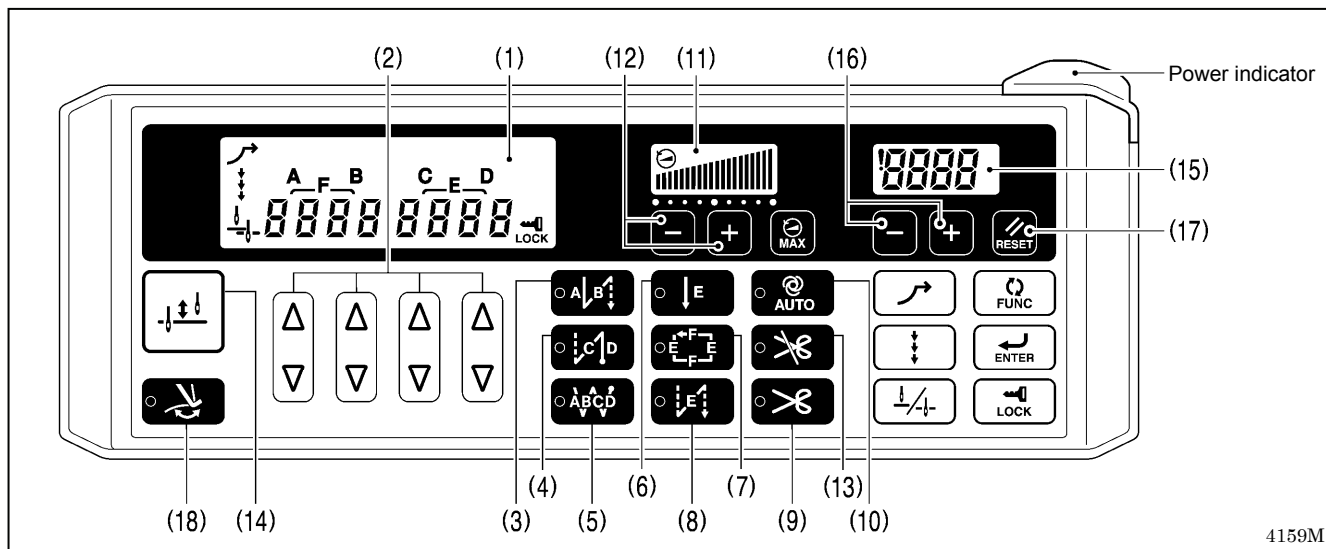
[Example]

For a sewing angle of 40° and a stitch length of 2.9 mm, the number of stitches becomes 6.

## 5. USING THE G50 OPERATION PANEL (BASIC OPERATIONS)

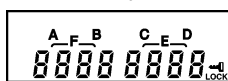
### 5-1. Names and functions

- The operation panel keys cannot be operated while sewing is in progress. Select the keys and set the number of stitches before starting sewing.
- In the case of keys with indicators, the indicator illuminates when that function is operating, and the indicator switches off when the key is pressed once more.



The power indicator illuminates when the power switch is turned on.

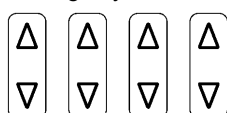
#### (1) Main display



- In start backtick display, AB illuminates and the number of stitches for A and B are displayed.
- In end backtick display, CD illuminates and the number of stitches for C and D are displayed.
- In continuous backtick display, ABCD illuminates and the number of stitches for A, B, C and D are displayed.
- In fixed stitch display, E or F illuminates and the number of stitches for E or F are displayed.

2136M

#### (2) Setting keys



These keys are used to set the number of backtick stitches for A, B, C and D and the number of fixed stitches for E and F.

- When the  $\Delta$  key is pressed, the setting increases from 0 up to 99.
- When the  $\nabla$  key is pressed, the setting decreases from 99 down to 0.

4160M 2138M 2139M

#### (3) Start backtick key



When this key is pressed so that the indicator illuminates, the number of start backtick stitches (0-99) in the A and B stitch number displays is sewn.

4161M

#### (4) End backtick key



When this key is pressed so that the indicator illuminates, the number of end backtick stitches (0-99) in the C and D stitch number displays is sewn. When the treadle is depressed backward, the end backtick stitches are sewn and then the thread is trimmed automatically (models with thread trimmer).

If the treadle has not yet been depressed backward, the end backtick function can be set to ON, the number of stitches can be changed and the function can be set back to OFF.

4162M

#### (5) Continuous backtick key



When this key is pressed so that the indicator illuminates, the number of backtick stitches (0-99) in the A, B, C and D stitch number displays is sewn continuously. After the sewing machine sews a full cycle of stitches set by A, B, C and D, the thread is trimmed automatically (models with thread trimmer).

4163M

#### (6) Fixed stitch key

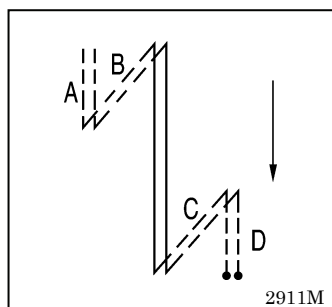


When this key is pressed so that the indicator illuminates, the number of stitches (0-1999) in the E stitch number display is sewn, and then the sewing machine stops automatically.

4164M

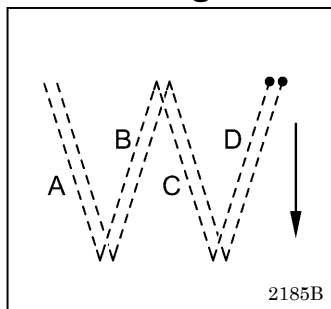
(7) Name label key		When this key is pressed so that the indicator illuminates, fixed stitch sewing of the number of stitches (0-1999) in the E and F stitch number displays is carried out repeatedly.	4165M
(8) Pleat presser sewing key		When this key is pressed so that the indicator illuminates, the number of backtack stitches (0-1999) in the E stitch number display can be sewn by pressing the actuator switch.	4166M
(9) Thread trimming key (models with thread trimmer only)		<ul style="list-style-type: none"> <li>This can only be set for use together with the fixed stitch key (6) or the name label key (7).</li> <li>When this key is pressed so that the indicator illuminates, the set number of stitches (start or end backtack stitches or fixed stitches) are sewn, and then the thread is trimmed automatically.</li> </ul>	4167M
(10) AUTO key		<ul style="list-style-type: none"> <li>This can only be set for use together with the continuous backtack key (5), the fixed stitch key (6) or the name label key (7).</li> <li>When this key is pressed so that the indicator illuminates, the set number of stitches (start or end backtack stitches, fixed stitches or thread trimming (models with thread trimmer)) are sewn automatically simply by depressing the treadle once.</li> </ul>	4168M
(11) Sewing speed control display		<p>This shows the sewing speed when the treadle is depressed to the maximum amount.</p> <ul style="list-style-type: none"> <li>If all bars are illuminated, it indicates that the maximum speed can be set.</li> <li>If all bars are switched off, it indicates the minimum speed (250 sti/min).</li> </ul>	4169M
(12) Sewing speed control keys		<p>These keys let you adjust the sewing speed that is used when the treadle is depressed to the maximum amount.</p> <p>The sewing speed can also be adjusted while sewing is in progress.</p> <ul style="list-style-type: none"> <li>When the + key is pressed, the sewing speed becomes faster.</li> <li>When the - key is pressed, the sewing speed becomes slower.</li> </ul>	4170M
(13) Thread trimming lock key (models with thread trimmer only)		<ul style="list-style-type: none"> <li>When this key is pressed so that the indicator illuminates, the sewing machine stops in the needle up position without thread trimming being carried out even if the treadle is depressed backward.</li> <li>If the indicator of the AUTO key (10) is illuminated, the sewing machine stops in the needle up position without thread trimming being carried out after the set number of stitches have been sewn.</li> </ul>	4171M
(14) Half stitch key		When the sewing machine is stopped, the needle bar can be moved up and down by pressing this key.	4172M
(15) Lower thread counter display		<p>This shows the lower thread counter value.</p> <p>The counter is reduced by "1" for every ten stitches sewn.</p>	2154M
(16) Lower thread counter keys		These keys are used to set the initial value for the lower thread counter. (Refer to "5-6. Using the lower thread counter".)	4170M
(17) RESET key		This key is used to return the lower thread counter to its initial value and to cancel warning conditions. (Refer to "5-6. Using the lower thread counter".)	4173M
(18) Thread wiper key		<ul style="list-style-type: none"> <li>When this key is pressed so that the indicator illuminates, the thread wiper (-4□□ specifications) operates. (Refer to "4-8. Using the thread wiper (models with thread trimmer only)".)</li> <li>When the indicator of the thread trimming lock key (13) is illuminated, the thread wiper key (18) is disabled.</li> <li>If you press the thread trimming lock key (13) so that its indicator illuminates while the indicator of the thread wiper key (18) is illuminated, the indicator of the thread wiper key (18) will switch off.</li> </ul>	

## 5-2. Sewing start and end backtick stitches

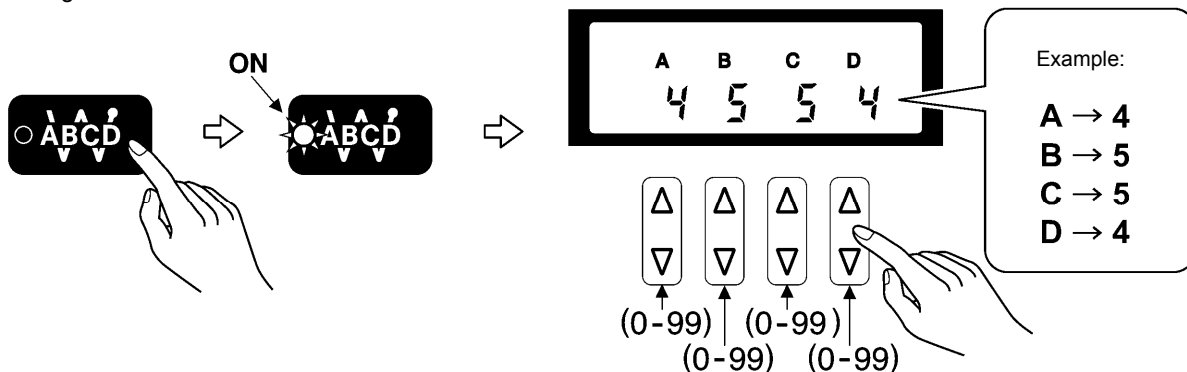


1	<p>Setting start backtick stitches</p> <p>4175M</p>
2	<p>Setting end backtick stitches</p> <p>4176M</p>
3	<p>Start backtacking is carried out. After it has finished, normal sewing continues for as long as the treadle remains depressed.</p> <p><b>NOTE:</b> If the treadle is returned to the neutral position, the sewing machine will continue operating until the set number of start backtick stitches has been sewn.</p> <p>2159M</p>
4	<p>End backtacking is carried out. After it has finished, the thread is trimmed automatically (models with thread trimmer) and the sewing machine stops in the needle up position.</p> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>• If the treadle is depressed backward before sewing of the set number of start backtick stitches is complete, end backtacking will not be carried out.</li> <li>• If the indicator of the thread trimming lock key is illuminated, the sewing machine will stop in the needle up position without thread trimming being carried out.</li> </ul> <p>2160M</p>

### 5-3. Sewing continuous backtack stitches

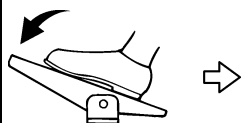


#### 1 Setting continuous backtack stitches



4177M

#### 2



If the treadle is simply depressed continuously, the number of stitches set for A, B, C and D will be sewn in a single cycle, the thread will be trimmed automatically (models with thread trimmer) and then the needle bar will stop in the needle up position.

**NOTE:**

- If the treadle is returned to the neutral position while continuous backtacking is being carried out, the sewing machine will stop at the point where the treadle returns to the neutral position. If the treadle is depressed again, operation will resume from the point where it was interrupted.
- If the indicator of the thread trimming lock key is illuminated, the sewing machine will stop in the needle up position without thread trimming being carried out.

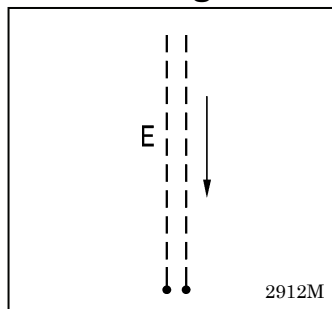
2159M

#### <Automatic sewing>



When the AUTO key is pressed to turn on the automatic sewing function, operation will be carried out automatically from continuous backtack sewing through to thread trimming (models with thread trimmer) just by depressing the treadle once, without needing to keep it depressed continuously.

## 5-4. Sewing fixed stitches



<b>1</b>	<p>Setting the number of fixed stitches <span style="float: right;">4178M</span></p> <p style="text-align: right;">From 0 to 1999 stitches can be set.</p>
<b>2</b>	<p>After the set number of stitches in E (fixed stitches) have been sewn, the sewing machine stops in the needle position that has been set by the needle up/down key (refer to p. 34). After this, normal sewing is carried out if the treadle is depressed. <span style="float: right;">2159M</span></p>
<b>3</b>	<p>After the thread is trimmed (models with thread trimmer), fixed stitch sewing mode is enabled. <span style="float: right;">2160M</span></p>

### <Automatic thread trimming (models with thread trimmer) >



Press the thread trimming key to turn on the thread trimming function. When the treadle is continuously depressed, thread trimming is carried out after the fixed stitches have been sewn.

### <Automatic sewing>



When the AUTO key is pressed to turn on the automatic sewing function, the fixed stitches are sewn simply by depressing the treadle once without needing to depress it continuously.

### <Start and end backtack sewing>



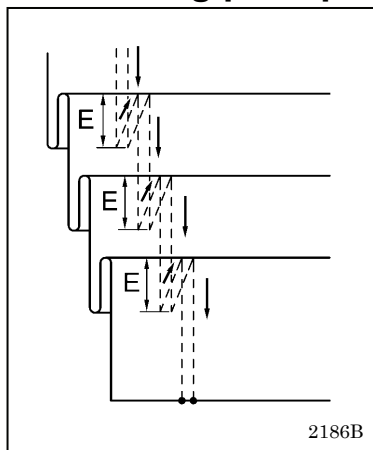
- The start backtack key and end backtack key can be pressed to turn on the backtack sewing function.



- If changing the number of end backtack stitches in C and D, press the fixed stitch key to temporarily turn off the fixed stitch function before making the change. (The CD display will show the number of stitches and the setting can then be changed.)



## 5-5. Sewing pleat presser stitches



<p><b>1</b></p>	<p>4180M</p>
<p><b>2</b></p>	<p>2187B</p>
<p><b>3</b></p>	<p>2160M</p>

### <Automatic sewing and automatic thread trimming>



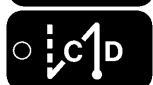
These functions cannot be used.



### <Start and end backtack sewing>



- The start backtack key and end backtack key can be pressed to turn on the backtack sewing function.

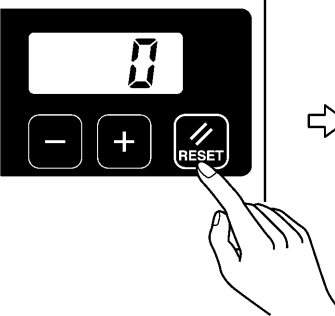
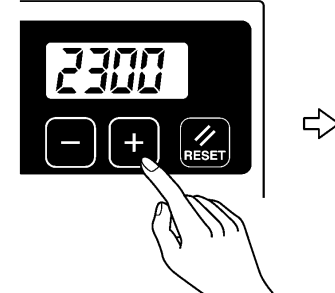


- If changing the number of end backtack stitches indicated in C and D, press the pleat presser sewing key to turn off the pleat presser sewing function before making the change. (The CD display will show the number of stitches and the setting can then be changed.)

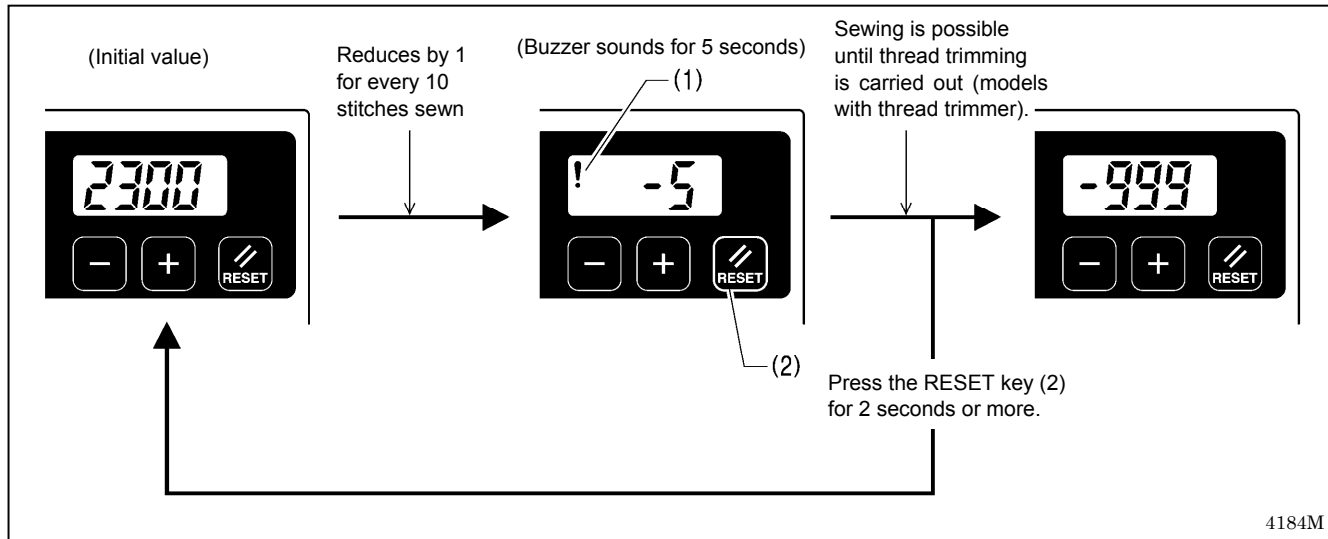
## 5-6. Using the lower thread counter

- The lower thread counter can be used to let you know approximately how much lower thread is remaining.
- The value displayed by the lower thread counter display is reduced by 1 from the initial setting value each time the sewing machine sews 10 stitches, and a warning is given when the counter goes below "0".

### <Initial value setting>

<p><b>1</b></p>	 <p>(Press for 2 seconds or more)</p>	<p>After about 2 seconds, the buzzer will sound and the lower thread counter display will show the initial value which was set previously.</p>	4182M
<p><b>2</b></p>		<ul style="list-style-type: none"> <li>• When the + key is pressed, the setting increases.</li> <li>• When the - key is pressed, the setting decreases.</li> <li>• If you hold down the keys, the setting will change more quickly.</li> <li>• If a value of "0" is set, the lower thread counter will not operate.</li> <li>• The initial setting value will be accepted when sewing starts.</li> </ul>	4183M

### <Lower thread counter operation>



1. When sewing is carried out, the value shown in the lower thread counter display is reduced by 1 for every 10 stitches sewn. (When the value goes below zero ("0"), a minus sign appears and counting continues to a maximum of "-999".)
2. When the value goes below "0", a warning icon (1) illuminates and an electronic buzzer sounds for 5 seconds.
3. Sewing will be possible even after the treadle is returned to the neutral position and the sewing machine stops. However, after the treadle has been depressed backward and thread trimming has been carried out (models with thread trimmer), sewing using the treadle will no longer be possible.

#### NOTE:

If the treadle is depressed after sewing is no longer possible, the buzzer will sound once and " rESEt" will appear in green in the main display. When the treadle is returned to the neutral position, the display will return to the original display.

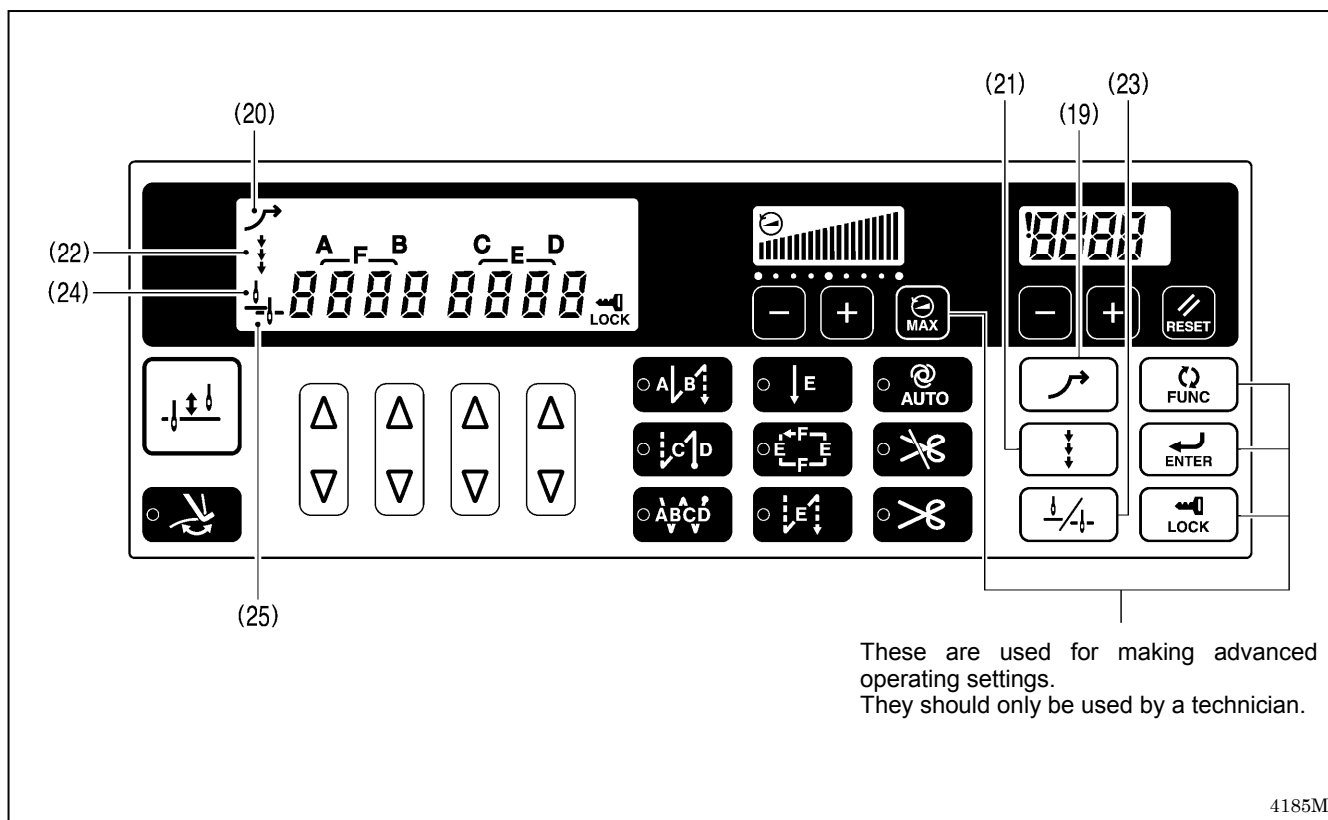
If you press the RESET key (2), the warning icon (1) will disappear and sewing will be possible when the treadle is depressed.

4. If you press and hold the RESET key (2) for 2 seconds or more, the display will return to the initial value.

## 6. USING THE G50 OPERATION PANEL (ADVANCED OPERATIONS)

The operations described in this section should only be carried out by a technician.

### 6-1. Names and functions



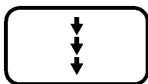
#### (19) Slow start key



- When this key is pressed so that the slow start icon (20) illuminates, the first two stitches sewn after the thread is trimmed are sewn at 700 sti/min. After this, the sewing speed corresponds to the treadle depression amount.
- If you press this key again while the icon (20) is illuminated, the icon (20) will turn off.

4186M

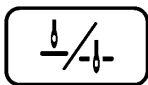
#### (21) Correction key



- When this key is pressed so that the correction icon (22) illuminates, correction sewing can be carried out.  
If the sewing machine is stopped, sewing will be carried out at slow speed (250 sti/min) while the actuator switch is being pressed.
- NOTE:**
  - If you press the actuator switch while sewing is in progress, backtack stitches will be sewn.
  - Correction sewing cannot be carried out while the indicator of the pleat presser sewing key (8) is illuminated.
- If you press this key again while the icon (22) is illuminated, the icon (22) will turn off.

4187M

#### (23) Needle up/down key



Use this key to select whether the needle bar stops in the up position or the down position when the treadle is returned to the neutral position and sewing stops.

- When the needle up icon  $\uparrow$  (24) is illuminated, the needle bar stops in the up position.
- When the needle down icon  $\downarrow$  (25) is illuminated, the needle bar stops in the down position.

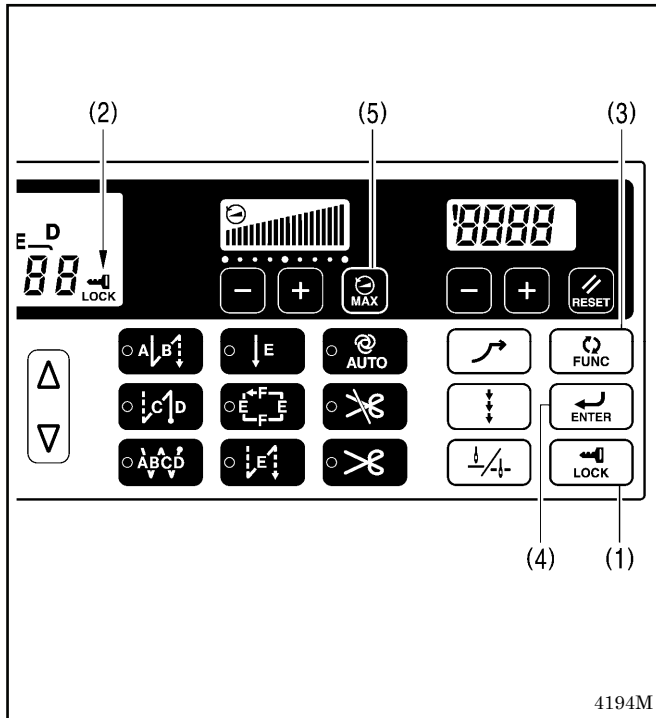
4188M 2207M 2208M

## 6-2. Adjusting the needle up stop position

1	<div style="text-align: right;">4189M 2138M</div> <p>(While pressing the <math>\Delta</math> key (1), press the power ON switch.) "MorG xxx" will appear in orange in the main display (2).</p>
2	<p>Selecting "UpoS xxx"</p> <p>(Press once)</p> <p style="text-align: right;">4190M</p>
3	<p>Needle up stop position setting</p> <p style="text-align: right;">4190M</p> <ul style="list-style-type: none"> <li>• If you press the <math>\Delta</math> key, the setting value will increase and the needle up stop position will become lower.</li> <li>• If you press the <math>\nabla</math> key, the setting value will decrease and the needle up stop position will become higher.</li> <li>• The setting range is from -5 to 10.</li> </ul> <p>* A setting value of "10" corresponds to an angle of rotation of approximately 10° for the upper shaft.</p>
4	<p>The setting values will be memorized.</p> <p style="text-align: right;">2188B 2138M 2139M</p>
5	<p>Normal sewing machine operation will then be possible.</p> <p style="text-align: right;">4192M</p> <p style="text-align: right;">4193M</p>

\* For details on other adjustment items, refer to the Service Manual.

### 6-3. LOCK key



When the power switch is turned on, the LOCK key (1) turns ON. (The icon (2) is illuminated.)

In this state, the following three key operations are disabled so that the setting values cannot be changed accidentally.

**FUNC key (3)**

This key is used to make settings for various functions.

**ENTER key (4)**

This key is used to accept function settings.

**MAX key (5)**

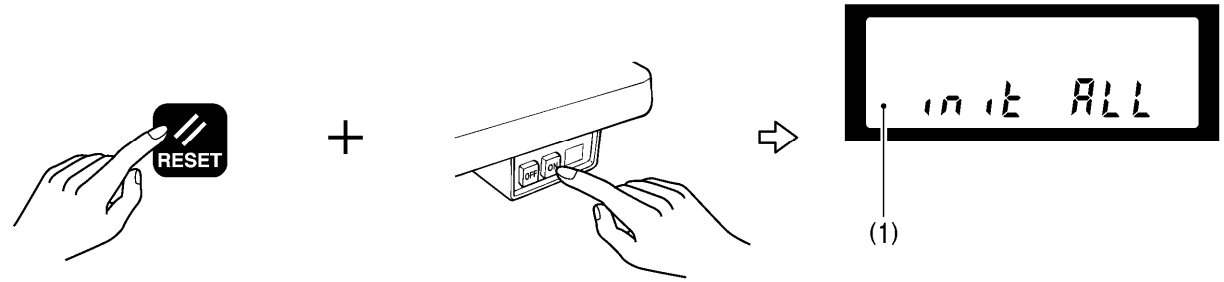
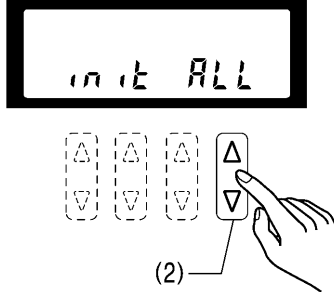
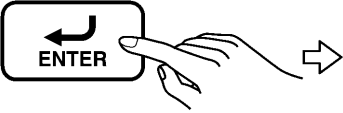
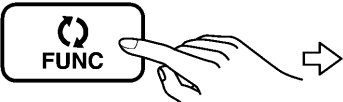
This key is used to change the maximum sewing speed.

\* Refer to the Service Manual for details on using these keys.

4194M

## 6-4. Resetting all settings to their defaults

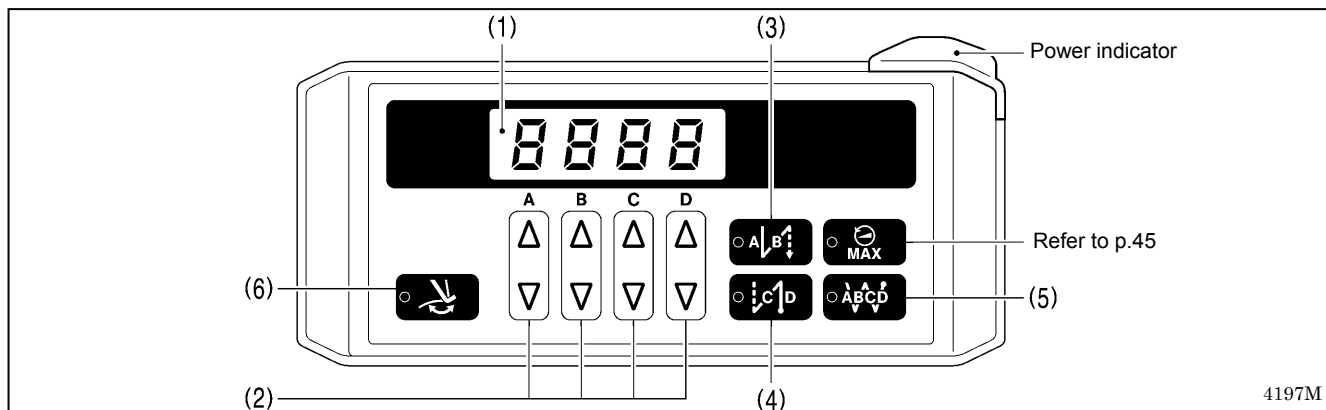
If the sewing machine stops operating normally, the cause may be that an incorrect setting may have been made for the memory data by means of memory switches, for instance. In such cases, it may be possible to restore normal operation by following the steps given below to initialize the memory setting data.

<p><b>1</b></p>	<p>Activating initialization mode <span style="float: right;">4195M</span></p>  <p>(While pressing the RESET key, press the power ON switch.) "init ALL" will appear in orange in the main display (1).</p> <div style="border: 1px solid black; padding: 10px; margin-top: 20px;"> <p><b>Reference</b></p>  <p>If the <math>\Delta \nabla</math> keys (2) are pressed at this time, you can select the items to be initialized as shown below.</p> <p>* For details on initialization items other than "init ALL", refer to the Service Manual.</p> <table border="1" style="width: 100%;"> <thead> <tr> <th>Main display</th> <th>Initialization items</th> </tr> </thead> <tbody> <tr> <td>"init ALL"</td> <td>Clears all settings</td> </tr> <tr> <td>"init MEM"</td> <td>Initializes memory switches</td> </tr> <tr> <td>"init SPd"</td> <td>Initializes sewing speed</td> </tr> <tr> <td>"init SEW"</td> <td>Initializes programs</td> </tr> </tbody> </table> <p style="text-align: right;">4196M 2138M 2139M</p> </div>	Main display	Initialization items	"init ALL"	Clears all settings	"init MEM"	Initializes memory switches	"init SPd"	Initializes sewing speed	"init SEW"	Initializes programs
Main display	Initialization items										
"init ALL"	Clears all settings										
"init MEM"	Initializes memory switches										
"init SPd"	Initializes sewing speed										
"init SEW"	Initializes programs										
<p><b>2</b></p>	<p>Once initialization is complete, the main display will return to green.</p>  <p>(Press for 2 seconds or more) <span style="float: right;">4192M</span></p>										
<p><b>3</b></p>	<p>Initialization mode will be exited and normal sewing machine operation will then be possible.</p>  <p style="text-align: right;">4193M</p>										

## 7. USING THE G10 OPERATION PANEL (BASIC OPERATIONS)

### 7-1. Names and functions

- The operation panel keys cannot be operated while sewing is in progress. Select the keys and set the number of stitches before starting sewing.
- In the case of keys with indicators, the indicator illuminates when that function is operating, and the indicator switches off when the key is pressed once more.



The power indicator illuminates when the power switch is turned on.

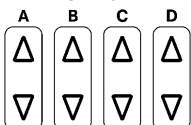
#### (1) Display



- When start backtick stitches are being displayed, the indicator of the start backtick key (3) will illuminate, and the number of A stitches will appear in the A column and the number of B stitches will appear in the B column.
- When end backtick stitches are being displayed, the indicator of the end backtick key (4) will illuminate, and the number of C stitches will appear in the C column and the number of D stitches will appear in the D column.
- When continuous backtick stitches are displayed, the indicator of the continuous backtick key (5) will illuminate, and the number of A, B, C and D stitches will appear in order starting from the left column of the display.

4198M

#### (2) Setting keys



These keys are used to set the number of backtick stitches for A, B, C and D.

- When the  $\Delta$  key is pressed, the setting increases from 0 up to 9.
- When the  $\nabla$  key is pressed, the setting decreases from 9 down to 0.

4199M 2138M 2139M

#### (3) Start backtick key



When this key is pressed so that the indicator illuminates, the number of start backtick stitches (0 - 9) in the A and B columns of the display are sewn.

4161M

#### (4) End backtick key



When this key is pressed so that the indicator illuminates, the number of end backtick stitches (0 - 9) in the C and D columns of the display are sewn. When the treadle is depressed backward, the end backtick stitches are sewn and then the thread is trimmed automatically (models with thread trimmer).

If the treadle has not yet been depressed backward, the end backtick function can be set to ON, the number of stitches can be changed and the function can be set back to OFF.

4162M

#### (5) Continuous backtick key



When this key is pressed so that the indicator illuminates, the number of backtick stitches (0 - 9) in the A, B, C and D columns of the display are sewn continuously. After the sewing machine sews a full cycle of stitches set by A, B, C and D, the thread is trimmed automatically (models with thread trimmer).

4163M

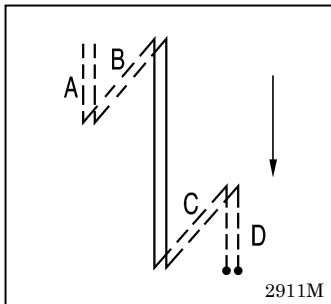
#### (6) Thread wiper key



- When this key is pressed so that the indicator illuminates, the thread wiper (-4□□ specifications) operates. (Refer to "4-8. Using the thread wiper (models with thread trimmer only)".)
- If the thread trimming lock has been set, the thread wiper key (6) will be disabled. (For details on the thread trimming lock, refer to "8-4. Thread trimming lock (models with thread trimmer only)".)
- If thread trimming lock is set when the indicator of this key is illuminated, the indicator of the thread wiper key (6) will switch off.

4174M

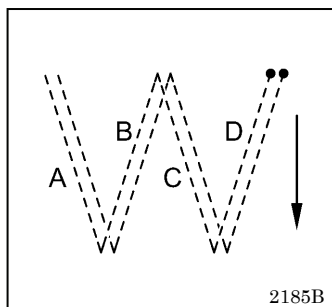
## 7-2. Sewing start and end backtack stitches



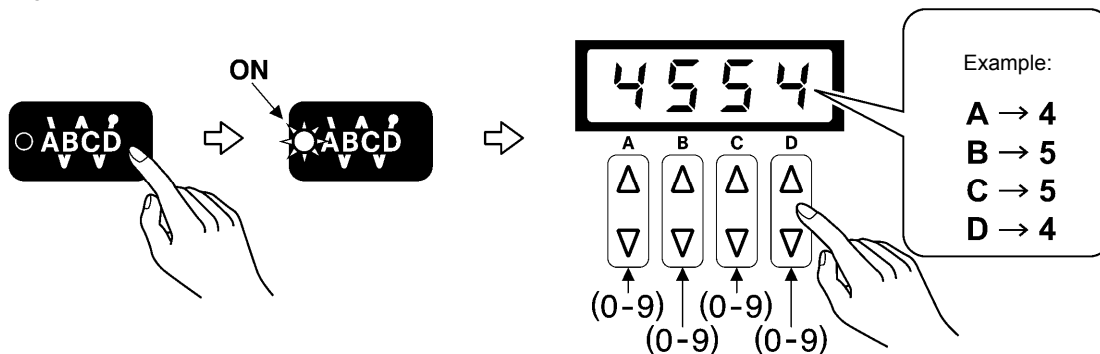
<p><b>1</b></p>	<p>Setting start backtack stitches</p> <p>4200M</p>
<p><b>2</b></p>	<p>Setting end backtack stitches</p> <p>4201M</p>
<p><b>3</b></p>	<p>Start backtacking is carried out. After it has finished, normal sewing continues for as long as the treadle remains depressed.</p> <p><b>NOTE:</b> If the treadle is returned to the neutral position, the sewing machine will continue operating until the set number of start backtack stitches has been sewn.</p> <p>2159M</p>
<p><b>4</b></p>	<p>End backtacking is carried out. After it has finished, the thread is trimmed automatically (models with thread trimmer) and the sewing machine stops in the needle up position.</p> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>• If the treadle is depressed backward before sewing of the set number of start backtack stitches is complete, end backtacking will not be carried out.</li> <li>• If thread trimming lock is set, the sewing machine will stop in the needle up position without thread trimming being carried out.</li> </ul> <p>2160M</p>



### 7-3. Sewing continuous backtack stitches

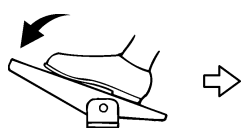


#### 1 Setting continuous backtack stitches



4202M

#### 2



If the treadle is simply depressed continuously, the number of stitches set for A, B, C and D will be sewn in a single cycle, the thread will be trimmed automatically (models with thread trimmer) and then the needle bar will stop in the needle up position.

**NOTE:**

- If the treadle is returned to the neutral position while continuous backtacking is being carried out, the sewing machine will stop at the point where the treadle returns to the neutral position. If the treadle is depressed again, operation will resume from the point where it was interrupted.
- If thread trimming lock is set, the sewing machine will stop in the needle up position without thread trimming being carried out.

2159M

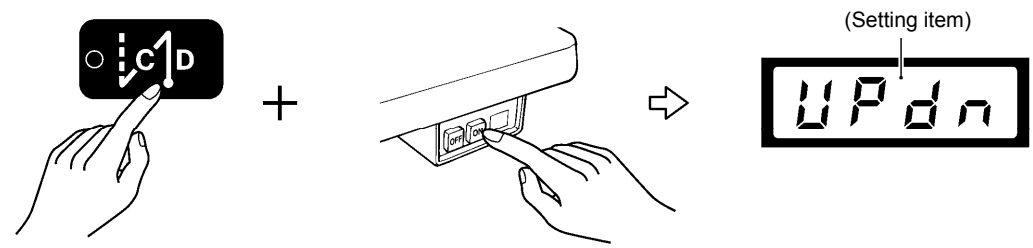
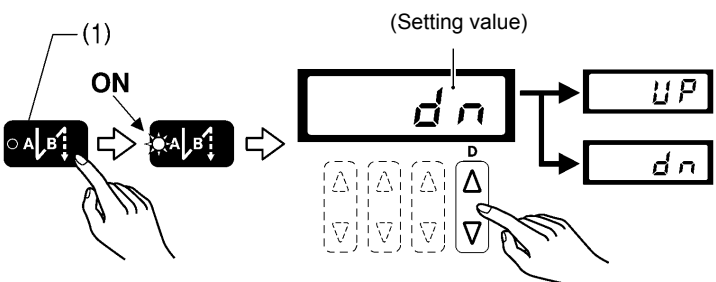
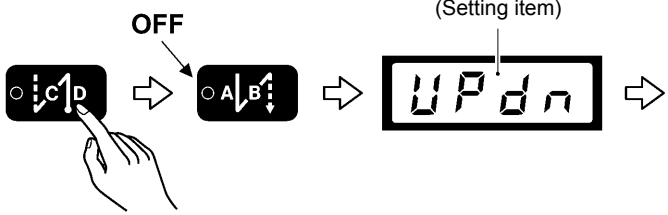

## 8. USING THE G10 OPERATION PANEL (ADVANCED OPERATIONS)

The operations described in this section should only be carried out by a technician.

### 8-1. Changing the needle stop position

This sets whether the needle bar stops in the needle up stop position or the needle down stop position when the treadle is returned to the neutral position and sewing stops.

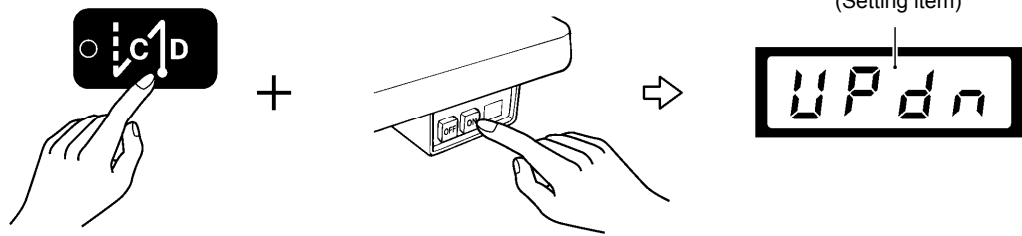
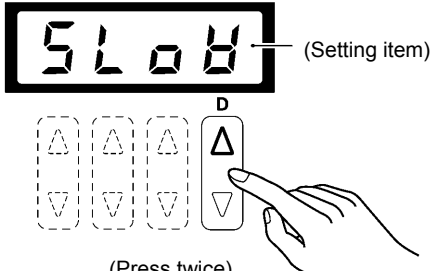
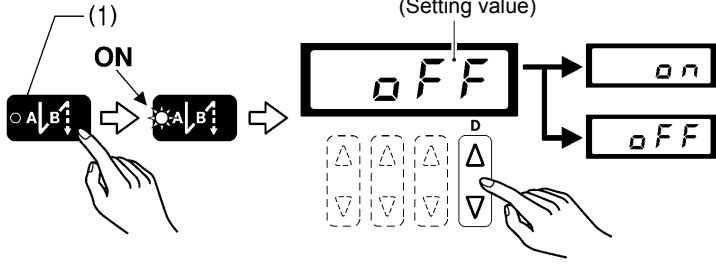
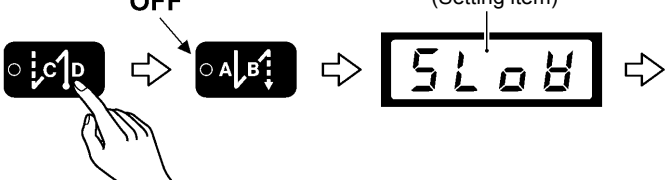
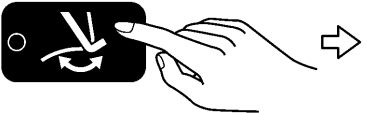
\* This setting cannot be carried out if the lock function is on. (For details on turning the lock function off, refer to “8-7. Lock function”).

1	<p>Activating setting mode</p>  <p>(While pressing the end backtick key, press the power ON switch.)</p> <p>4203M</p>
2	<p>Setting the needle up stop and needle down stop positions</p>  <ul style="list-style-type: none"> <li>• When the <math>\Delta</math> key is pressed, the “UP” display will appear.</li> <li>• When the <math>\nabla</math> key is pressed, the “dn” display will appear.</li> </ul> <p>... Needle up stop</p> <p>... Needle down stop</p> <p><b>NOTE:</b> If the start backtick key (1) is pressed once more, the start backtick indicator will switch off and the display will return to the setting item.</p> <p>4204M</p>
3	 <p>The setting will be stored and the display will return to the setting item.</p> <p>4205M</p>
4	 <p>Setting mode will be exited and normal operation will be possible.</p> <p>4206M</p>

## 8-2. Slow start

When the slow start setting is enabled, the two stitches at the sewing start after thread trimming will be sewn at 700 sti/min. After this, the sewing speed corresponds to the treadle depression amount.

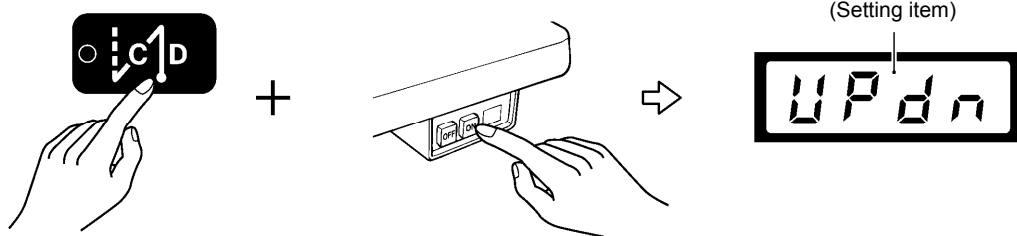
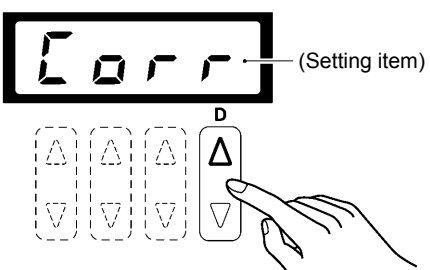
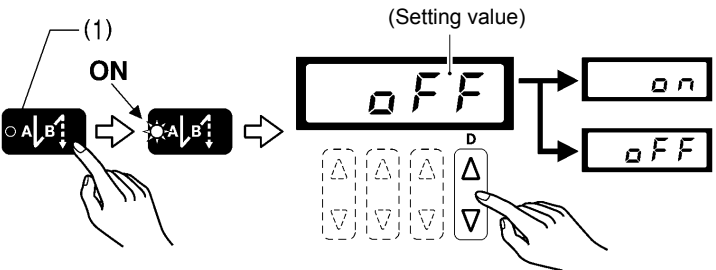
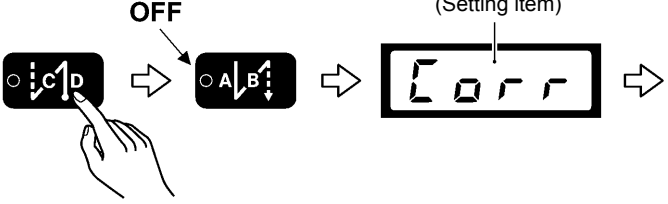

\* This setting cannot be carried out if the lock function is on. (For details on turning the lock function off, refer to “8-7. Lock function”.)

1	<p>Activating setting mode</p>  <p>(While pressing the end backtack key, press the power ON switch.)</p> <p style="text-align: right;">4203M</p>
2	<p>Selecting “Slow” (slow start)</p>  <p>(Press twice)</p> <p style="text-align: right;">4207M</p>
3	<p>Enabling and disabling slow start</p>  <ul style="list-style-type: none"> <li>• When the <math>\Delta</math> key is pressed, the “on” display will appear.</li> <li>• When the <math>\nabla</math> key is pressed, the “oFF” display will appear.</li> </ul> <p><b>NOTE:</b> If the start backtack key (1) is pressed once more, the start backtack indicator will switch off and the display will return to the setting item.</p> <p style="text-align: right;">4208M 2138M 2139M</p>
4	 <p>The setting will be stored and the display will return to the setting item.</p> <p style="text-align: right;">4209M</p>
5	 <p>Setting mode will be exited and normal operation will be possible.</p> <p style="text-align: right;">4206M</p>

### 8-3. Correction sewing

When correction sewing is enabled, sewing will be carried out at slow speed (250 sti/min) while the actuator switch is being pressed when the sewing machine is stopped.

\* This setting cannot be carried out if the lock function is on. (For details on turning the lock function off, refer to “8-7. Lock function”.)

1	<p>Activating setting mode</p>  <p>(While pressing the end backtack key, press the power ON switch.)</p> <p style="text-align: right;">4203M</p>
2	<p>Selecting “Corr” (correction sewing)</p>  <p>(Press once)</p> <p style="text-align: right;">4210M</p>
3	<p>Enabling and disabling correction sewing</p>  <ul style="list-style-type: none"> <li>• When the <math>\Delta</math> key is pressed, the “on” display will appear.</li> <li>• When the <math>\nabla</math> key is pressed, the “OFF” display will appear.</li> </ul> <p>... Correction sewing enabled</p> <p>... Correction sewing disabled</p> <p><b>NOTE:</b> If the start backtack key (1) is pressed once more, the start backtack indicator will switch off and the display will return to the setting item.</p> <p style="text-align: right;">4208M 2138M 2139M</p>
4	 <p>The setting will be stored and the display will return to the setting item.</p> <p style="text-align: right;">4211M</p>
5	 <p>Setting mode will be exited and normal operation will be possible.</p> <p style="text-align: right;">4206M</p>

## 8-4. Thread trimming lock (models with thread trimmer only)

Thread trimming not locked	Thread trimming locked
<p>Thread trimming is carried out.</p> <p>Thread trimming is carried out.</p> <p>2189B</p>	<p>Thread trimming is not carried out.</p> <p>Thread trimming is not carried out.</p> <p>2190B</p>

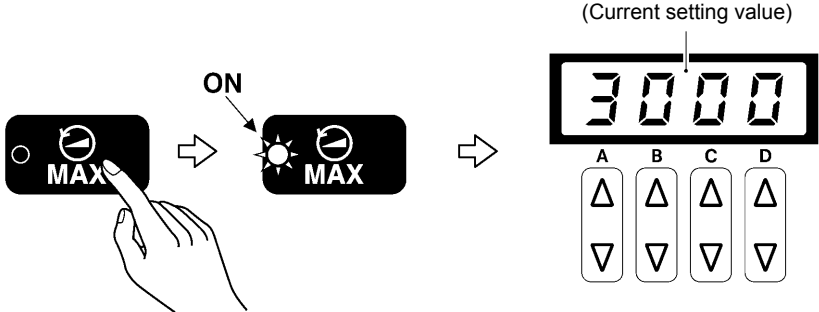
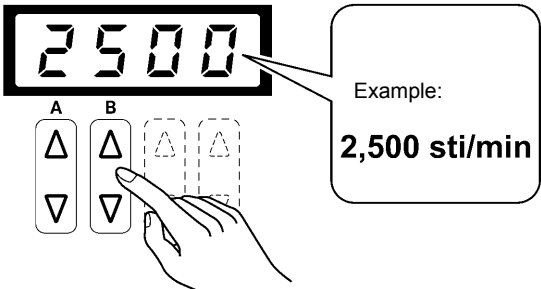
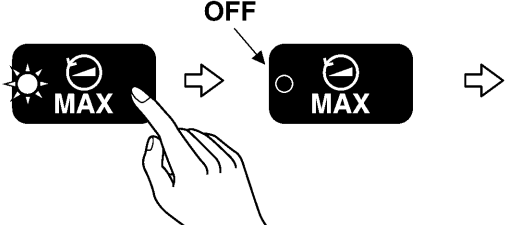
## &lt;Setting method&gt;

- \* This setting cannot be carried out if the lock function is on. (For details on turning the lock function off, refer to “8-7. Lock function”.)

1	<p>Activating setting mode</p> <p>(Setting item)</p> <p>(While pressing the end backtick key, press the power ON switch.)</p>	
2	<p>Selecting “trd” (thread trimming lock)</p> <p>(Setting item)</p> <p>(Press three times)</p> <p>4212M</p>	
3	<p>Enabling and disabling thread trimming lock</p> <p>(1)</p> <p>ON</p> <p>(Setting value)</p> <p>OFF</p> <p>on</p> <p>OFF</p> <p>... Thread trimming locked</p> <p>... Thread trimming not locked</p> <p><b>NOTE:</b> If the start backtick key (1) is pressed once more, the start backtick indicator will switch off and the display will return to the setting item.</p> <p>4208M 2138M 2139M</p>	
4	<p>OFF</p> <p>(Setting item)</p> <p>trd</p> <p>The setting will be stored and the display will return to the setting item.</p> <p>4213M</p>	
5	<p>Setting mode will be exited and normal operation will be possible.</p> <p>4206M</p>	

## 8-5. Setting the maximum sewing speed

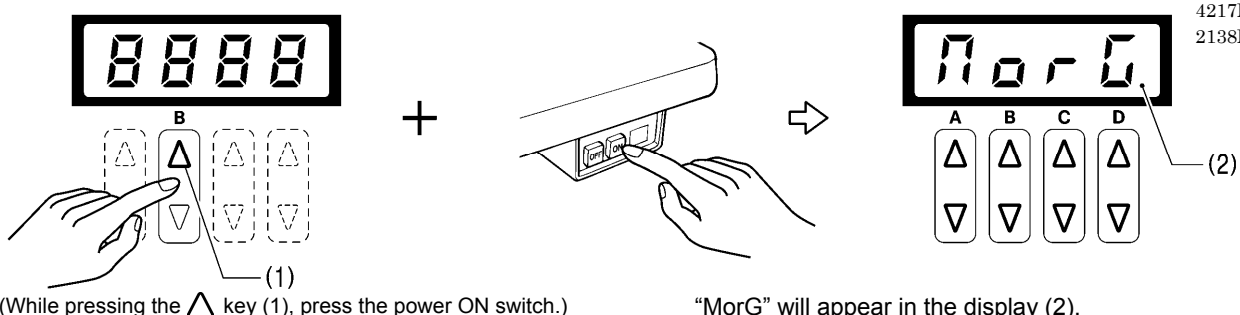
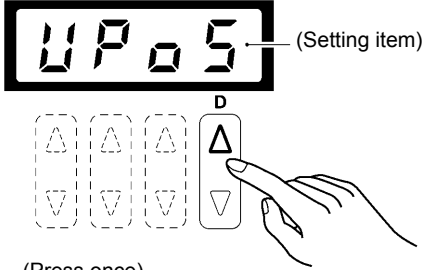
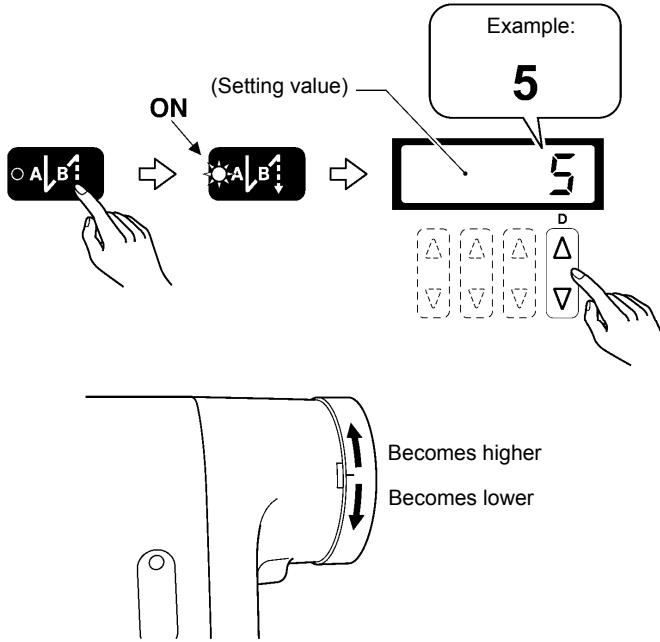
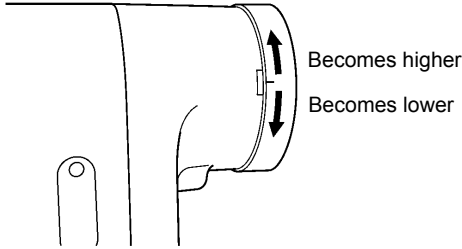
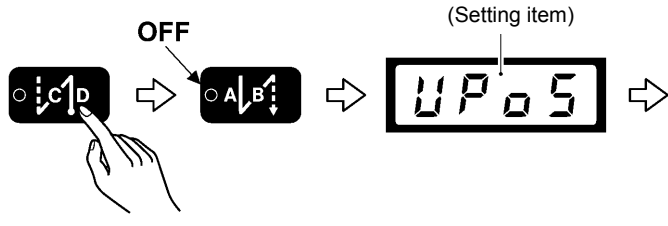

- The maximum sewing speed can be set to a speed from 250 sti/min up to the maximum sewing speed which is set for the head detector unit.
- If the treadle is depressed as far as it will go, sewing will be carried out at the maximum sewing speed which is set here.
  - \* This setting cannot be carried out if the lock function is on. (For details on turning the lock function off, refer to “8-7. Lock function”.)

<b>1</b>	 <p>(Current setting value)</p> <p>2191B</p>
<b>2</b>	<p>Setting the maximum sewing speed</p>  <p>Example: 2,500 sti/min</p> <p>The maximum sewing speed is set in columns A and B. (Setting can be carried out in units of 100 sti/min.)</p> <ul style="list-style-type: none"> <li>When the <math>\Delta</math> key is pressed, the setting increases.</li> <li>When the <math>\nabla</math> key is pressed, the setting decreases.</li> </ul> <p>2192B 2138M 2139M</p>
<b>3</b>	 <p>OFF</p> <p>The display will return to what was shown before the MAX key was pressed.</p> <p>4216M</p>

### NOTE:

While the indicator of the MAX key is illuminated, all keys other than the  $\Delta\nabla$  keys for the A and B columns will be disabled.  
If the MAX key is pressed once more, the indicator of the MAX key will switch off and normal key operations can then be carried out.

## 8-6. Adjusting the needle up stop position

1	 <p>(While pressing the <math>\Delta</math> key (1), press the power ON switch.)</p> <p>"MorG" will appear in the display (2).</p> <p>4217M 2138M</p>
2	<p>Selecting "UPoS"</p>  <p>(Setting item)</p> <p>(Press once)</p> <p>2193B</p>
3	<p>Needle up stop position setting</p>  <p>Example:</p> <p>5</p> <p>(Setting value)</p> <ul style="list-style-type: none"> <li>• If you press the <math>\Delta</math> key, the setting value will increase and the needle up stop position will become lower.</li> <li>• If you press the <math>\nabla</math> key, the setting value will decrease and the needle up stop position will become higher.</li> <li>• The setting range is from -5 to 10.</li> </ul> <p>* A setting value of "10" corresponds to an angle of rotation of approximately 10° for the upper shaft.</p>  <p>Becomes higher Becomes lower</p> <p>2194B 2138M 2139M</p>
4	 <p>OFF</p> <p>(Setting item)</p> <p>UPoS</p> <p>The setting will be stored and the display will return to the setting item.</p> <p>4220M</p>
5	 <p>Normal sewing machine operation will then be possible.</p> <p>4206M</p>

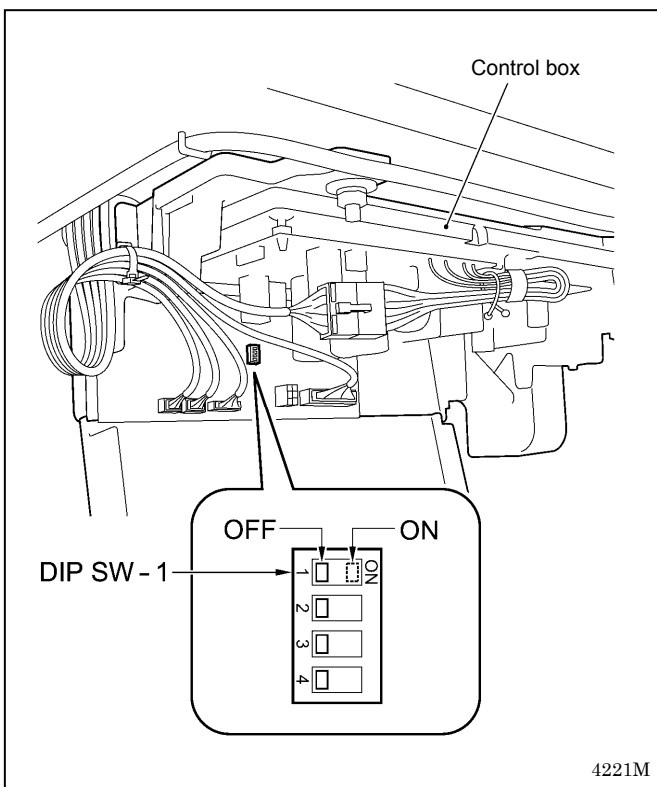
\* For details on other adjustment items, refer to the Service Manual.

### 8-7. Lock function

#### DANGER



Wait at least 5 minutes after turning off the power switch and disconnecting the power cord from the wall outlet before opening the cover of the control box. Touching areas where high voltages are present can result in severe injury.



When the lock function is set to "ON", the key operations for making settings such as the following will be disabled in order to prevent these settings from being accidentally changed.

(Examples of disabled key operations)

- MAX key
- Initialization ..... etc.

#### < To turn on the lock function >

Set DIP switch 1 to ON.

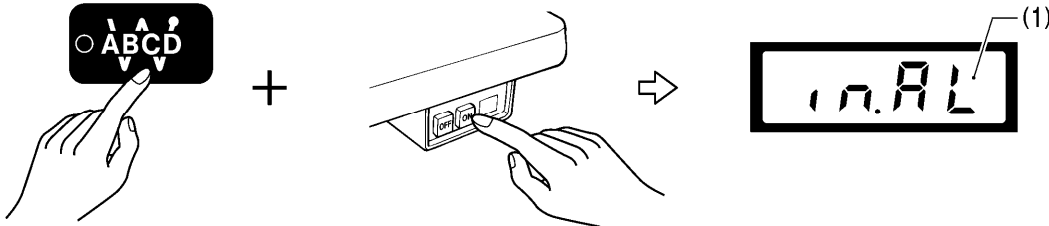
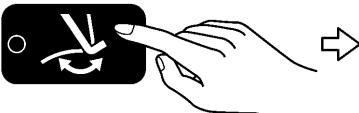
#### < To turn off the lock function >

Set DIP switch 1 to OFF. (The lock will be canceled and the functions can then be set.)

### 8-8. Resetting all settings to their defaults

If the sewing machine stops operating normally, the cause may be that an incorrect setting may have been made for the memory data by means of memory switches, for instance. In such cases, it may be possible to restore normal operation by following the steps given below to initialize the memory setting data.

\* This setting cannot be carried out if the lock function is on. (For details on turning the lock function off, refer to "8-7. Lock function".)

<p><b>1</b></p>	<p>Activating initialization mode <span style="float: right;">4222M</span></p>  <p>(While pressing the continuous backtick key, press the power ON switch.)</p> <p>"in.AL" will appear in the display (1).</p>
<p><b>2</b></p>	 <p>(Press for 2 seconds or more)</p> <p>Once initialization is complete, the "in.AL" appearing in the display (1) will disappear and normal sewing machine operation will then be possible.</p> <p style="text-align: right;">4206M</p>



## 9. SEWING

### ! CAUTION



Attach all safety devices before using the sewing machine. If the machine is used without these devices attached, injury may result.



Turn off the power switch at the following times.

The machine may operate if the treadle is depressed by mistake, which could result in injury.

- When threading the needle
- When replacing the bobbin and needle
- When not using the machine and when leaving the machine unattended



Do not touch any of the moving parts or press any objects against the machine while sewing, as this may result in personal injury or damage to the machine.

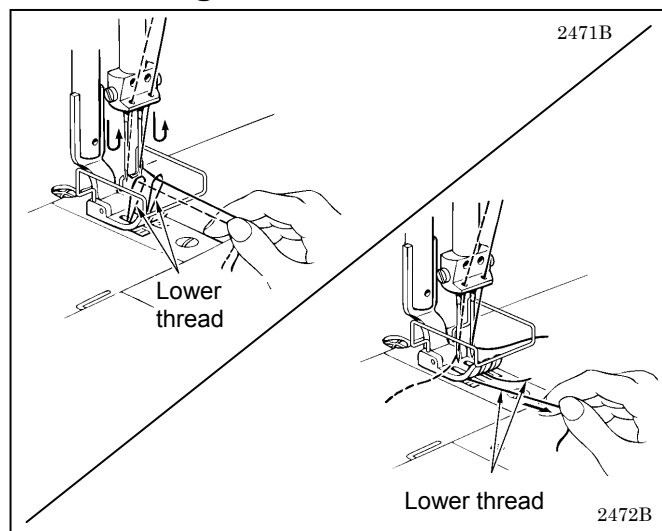


Secure the table so that it will not move when tilting back the machine head. If the table moves, it may crush your feet or cause other injuries.

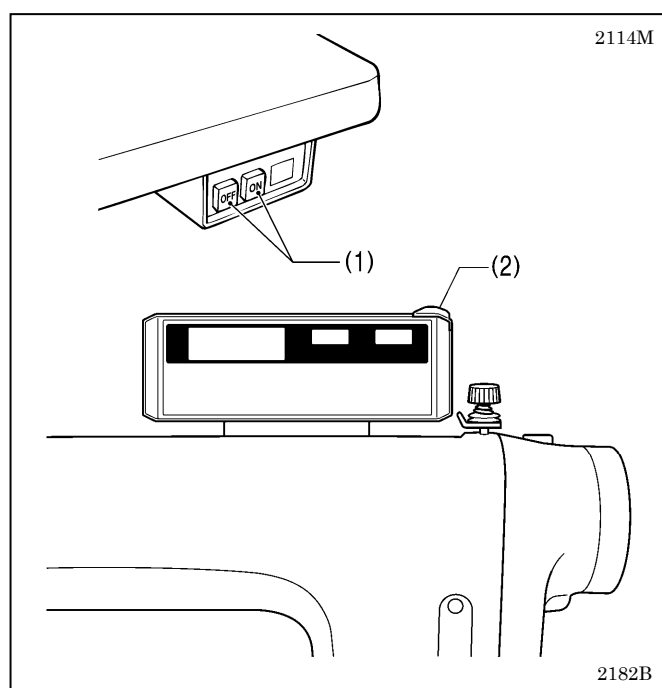


Use both hands to hold the machine head when tilting it back or returning it to its original position. If only one hand is used, the weight of the machine head may cause your hand to slip, and your hand may get caught.

### 9-1. Sewing

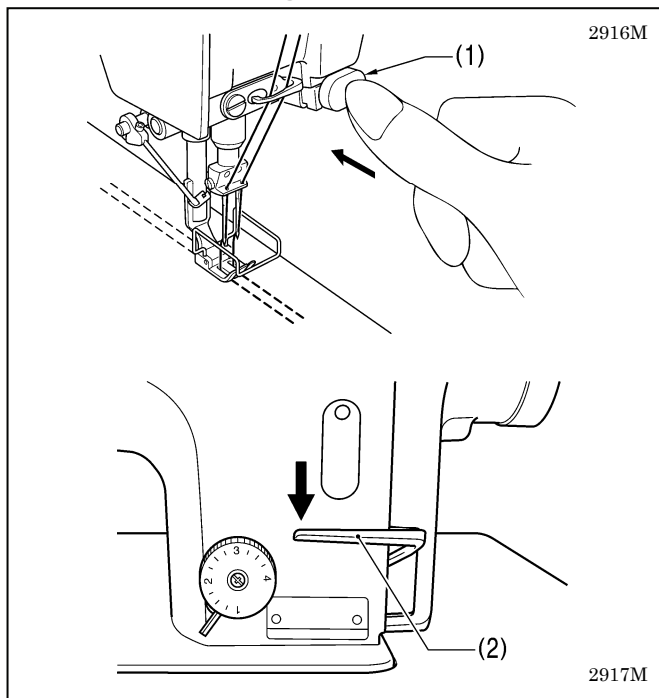


1. While holding the two upper threads with your fingers, turn the machine pulley by hand toward you until the lower threads come out onto the feed dog.
2. Pull the lower threads toward you and check that they pull out smoothly.

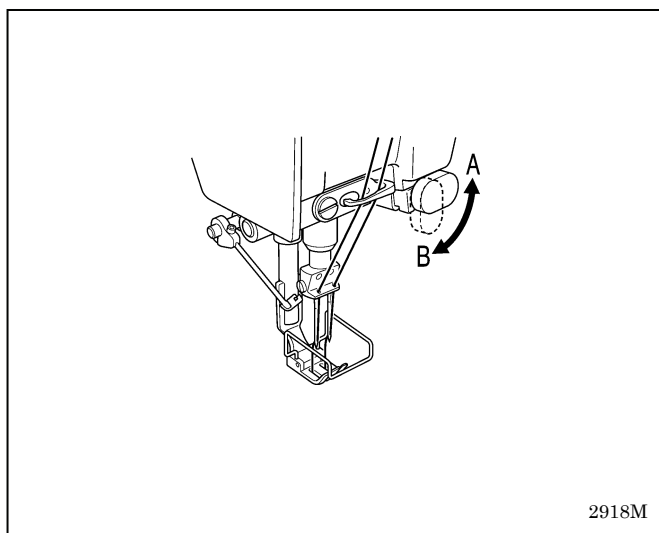


3. Press the ON power switch (1).  
The power indicator (2) will illuminate.
4. Use the operating panel to carry out the programming which is necessary for sewing.  
(Refer to the chapter on "5./7. Using the operating panel".)
5. Depress the treadle to start sewing.

## 9-2. Backtacking



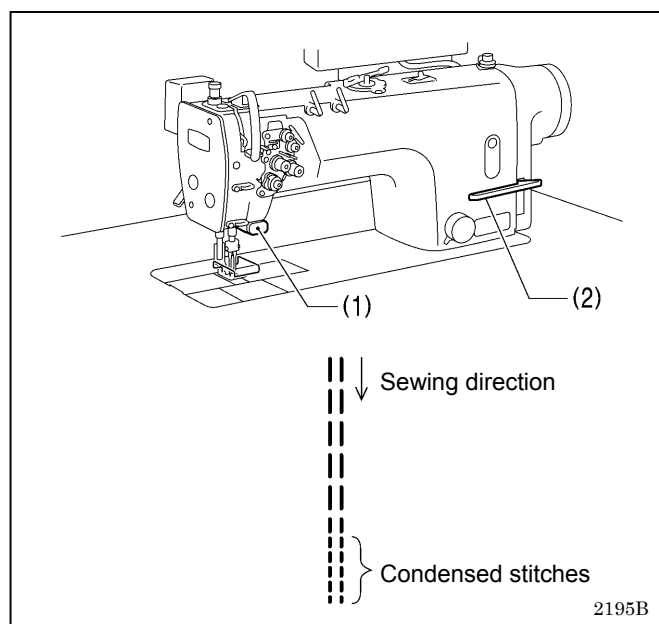
When the actuator switch (1) or the reverse lever (2) is pressed during sewing, the feed direction will be reversed. When it is released, the feed direction will return to normal.



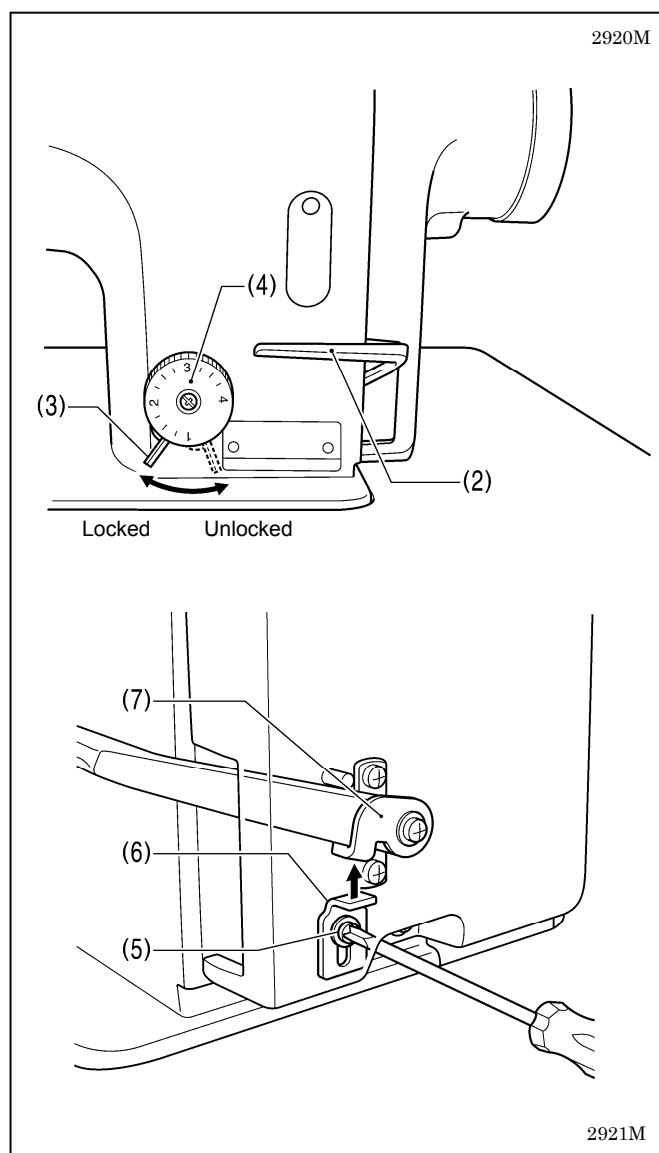
### < Actuator switch rotation function >

The actuator switch can be rotated 90 degrees as shown in the illustration. Select the position (A or B) that is easier to use.

### 9-3. Sewing condensed stitches



- If you press the actuator switch (1) or the reverse lever (2) while sewing is in progress, you can sew stitches (forward direction) with small stitch lengths.
- Before carrying out sewing, set the stitch length for condensed stitches as follows.



#### <Setting>

1. Unlock the stitch length dial (4) by turning the dial lock lever (3) to the right.
2. Turn the stitch length dial (4) to the stitch length to be used for condensed stitches.
3. Loosen the screw (5) and lift up the stopper (6) until it touches the reverse stitching lever plate (7).
4. Tighten the screw (5) to secure the stopper (6).

#### <Sewing>

1. Return the stitch length dial (4) to the stitch length for normal sewing.
2. Turn the dial lock lever (3) firmly to the left to lock the stitch length dial (4).
3. Start sewing.
4. At the position where you would like to start sewing condensed stitches, press the actuator switch (1) or the reverse lever (2).  
(Condensed stitches are sewn while the actuator switch (1) or reverse lever (2) is being pressed.)

- \* To stop sewing condensed stitches and return to using the backtack function, lower the stopper (6) so that it does not touch the reverse stitching lever plate (7).

# 10. THREAD TENSION

## 10-1. Adjusting the thread tension

Good even stitches



← Upper thread  
← Lower thread

0572M



Upper thread tension too weak or  
lower thread tension too strong

0573M

→ Increase the upper thread tension.  
Decrease the lower thread tension.



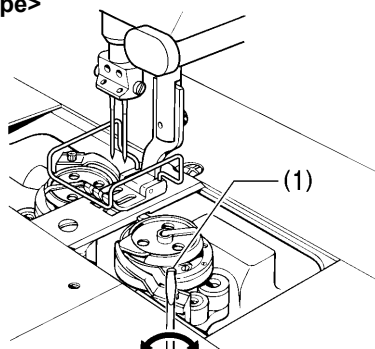
Upper thread tension too strong  
or lower thread tension too weak

0574M

→ Decrease the upper thread tension.  
Increase the lower thread tension.

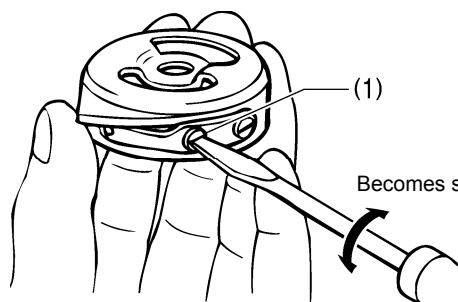
<Latch type>

2473B



Becomes weaker ← Becomes stronger

<Bobbin case type>



Becomes stronger

Becomes weaker

2923M

<Lower thread tension>

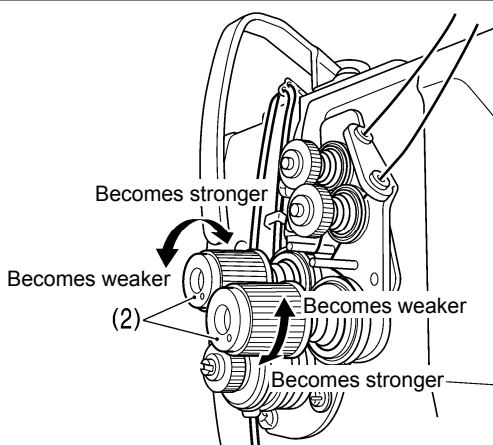
**CAUTION**



Turn off the power switch before adjusting the  
lower thread tension.

The machine may operate if the treadle is  
depressed by mistake, which could result in injury.

Turn the adjusting screw (1) to adjust.



Becomes stronger

Becomes weaker

(2)

Becomes weaker

Becomes stronger

2924M

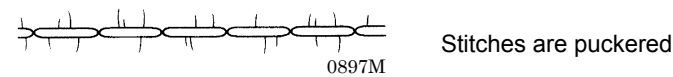
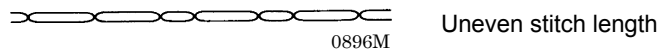
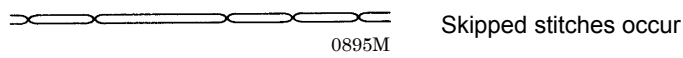
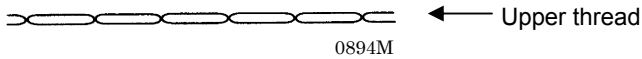
<Upper thread tension>

After the lower thread tension has been adjusted, adjust the  
upper thread tension so that a good, even stitch is obtained.

1. Lower the presser foot.
2. Adjust by turning the tension nut (2).

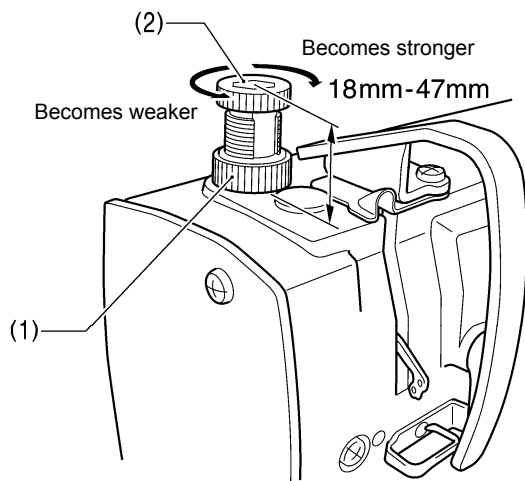
## 10-2. Adjusting the presser foot pressure

Correct stitches



→ Increase the pressure.

→ Decrease the pressure.



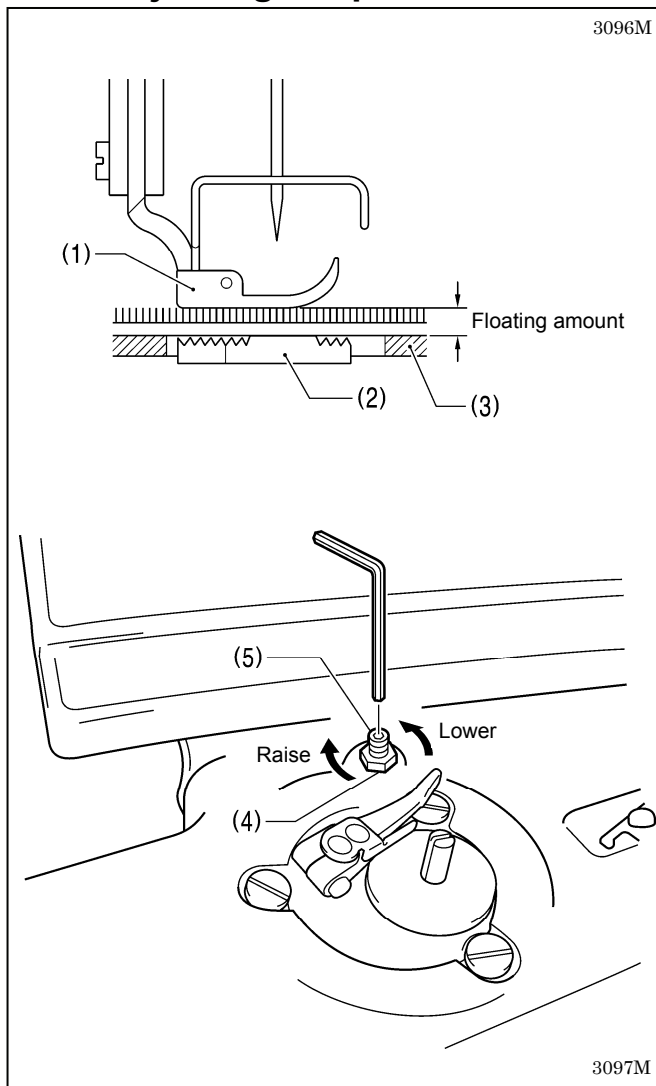
The presser foot pressure should be as weak as possible, but strong enough so that the material does not slip. (Refer to "Adjusting screw height" in the table below as a guide to adjustment.)

1. Loosen the adjusting nut (1).
2. Turn the presser adjusting screw (2) to adjust the presser foot pressure.
3. Tighten the adjusting nut (1).

### Reference values

Use	Adjusting screw height
For foundation	Approx. 34mm
For light-weight and medium-weight materials	Approx. 34mm
For heavy-weight materials	Approx. 29mm

### 10-3. Adjusting the presser foot floating amount (minute lifting amount)



- When sewing stretch materials and materials with long pile, you can make minute adjustments to the floating amount for the presser foot (1) in accordance with the material.
  - In addition, this can be useful for increasing ease of working when sewing curves.
1. Turn the sewing machine pulley by hand to move the feed dog (2) below the needle plate (3).
  2. Use the lifting lever to lower the presser foot (1).
  3. Loosen the nut (4).
  4. Use a hexagon wrench to turn the adjusting screw (5) to adjust the floating amount.
    - To raise the presser foot (1) ...  
Turn the adjusting screw (5) clockwise.
    - To lower the presser foot (1) ...  
Turn the adjusting screw (5) counterclockwise.
  5. Tighten the nut (4).
- \* After making the adjustment, sew a piece of material to check the floating amount.

#### < Guide to adjustment when sewing curves >

When the material is placed under the presser foot (1) and the feed dog (2) is moved to its lowest position and the material is moved, there should ideally be some resistance in the material.

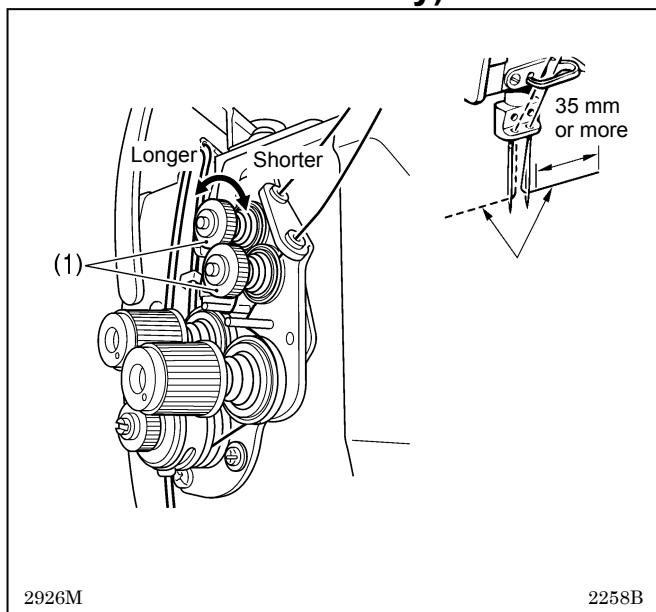
#### If the floating amount is too small

- Ease of working (handling) will be poorer when sewing curves.

#### If the floating amount is too large

- The stitch lengths and seam lines will be unstable.

### 10-4. Adjusting the trailing length after thread trimming (models with thread trimmer only)



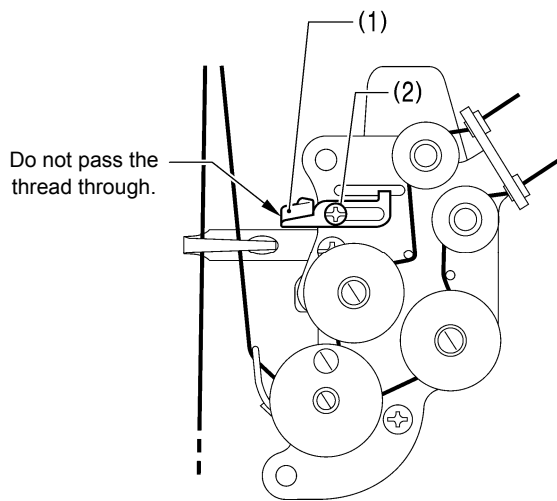
- At the time of thread trimming, the thread tension is loosened and tension is applied by the pretension (1) only.
- The normal trailing length for the upper thread is 35 mm.
- If the tension of the pretension (1) is increased, the lengths of the threads trailing from the needle tips will be reduced; if the tension is reduced, the lengths will be increased.

Adjust by turning the pretension (1).

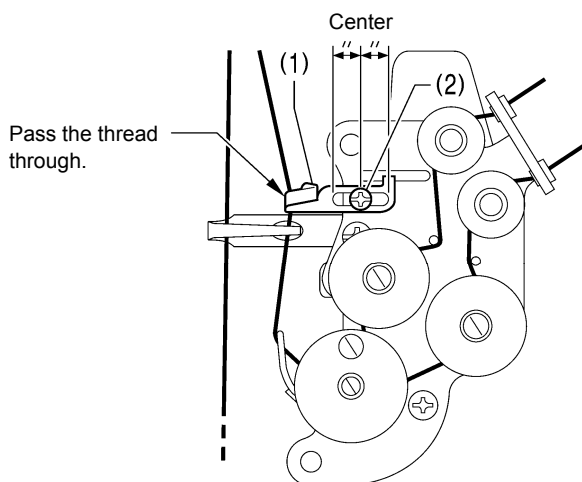
## 10-5. Adjusting the thread take-up amount

<For all models except foundation specifications and T-8452C-405>

2928M



<For foundation specifications and T-8452C-405>



2929M

The thread take-up amount is adjusted by how the thread is passed through the thread amount adjuster (1).

### <Using the standard thread amount adjuster (1)>

For all models except foundation specifications and T-8452C-405

Do not pass the thread through the thread amount adjuster (1). Loosen the screw (2) and slide the thread amount adjuster (1) to the right-side position.

For foundation specifications and T-8452C-405

Pass the thread through the thread amount adjuster (1). The standard position of the thread amount adjuster (1) is when the screw (2) is in the center of the adjustment range.

### <Adjusting the thread take-up amount>

When the thread has been passed through the thread amount adjuster (1), the thread take-up amount becomes less when the thread amount adjuster (1) is moved to the right.

It is better not to pass the thread through the thread amount adjuster (1):

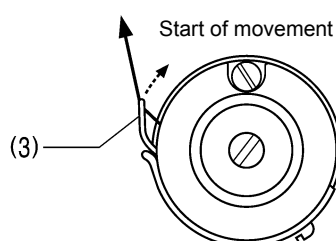
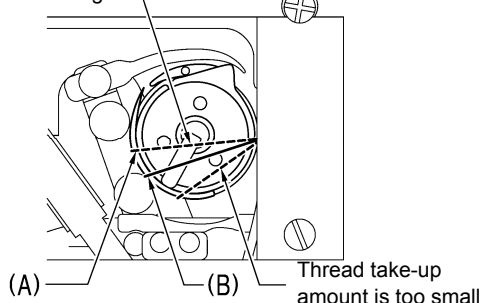
- When sewing heavy materials using a sewing machine with foundation specifications
- When the thread take-up amount is not enough, such as when the stitch length is increased

It is better to pass the thread through the thread amount adjuster (1):

- When sewing with slippery threads such as synthetic yarns
- When sewing light materials
- When sewing with a stitch length of 2 mm or less
- When sewing under any of the above three conditions and you would like to prevent skipped stitches, thread tightening problems such as looping, or thread breakages

Thread take-up amount is too large

3018M



3019M

### < Guide to adjustment >

The standard thread take-up amount is when the thread tension spring (3) starts to move when the loop is moved to point (B) which is slightly in front of point (A) where the rotary hook tip catches the upper thread loop and the rotary hook thread amount is at its maximum.

- If the thread take-up amount is too large, the thread tension spring (3) will not start to move even after point (A) is passed.  
..... This can cause skipped stitches, poor thread tightening and thread breakages.
- If the thread take-up amount is too small, the thread take-up spring (3) will start moving before point (B).  
..... This can cause thread breakages, overtightening of the upper thread and pulling of the seam.

The thread take-up amount required will vary depending on the type of thread, the thickness of the material and the stitch length, so adjust the thread take-up amount to suit the sewing conditions.

# 11. CLEANING

## ! CAUTION



Turn off the power switch before carrying out cleaning.  
The machine may operate if the treadle is depressed by mistake, which could result in injury.



Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result.  
Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhea.  
Keep the oil out of the reach of children.



Secure the table so that it will not move when tilting back the machine head. If the table moves, it may crush your feet or cause other injuries.

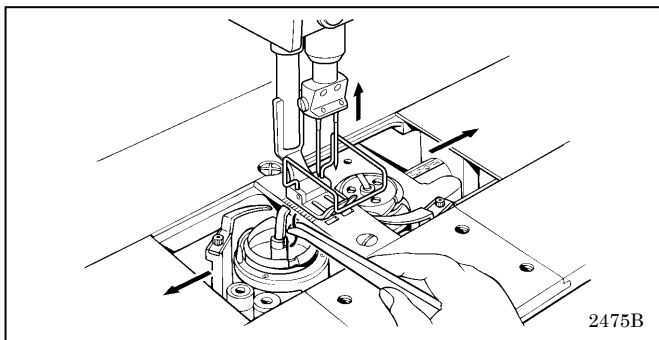


Use both hands to hold the machine head when tilting it back or returning it to its original position. If only one hand is used, the weight of the machine head may cause your hand to slip, and your hand may get caught.

## 11-1. Daily cleaning procedures

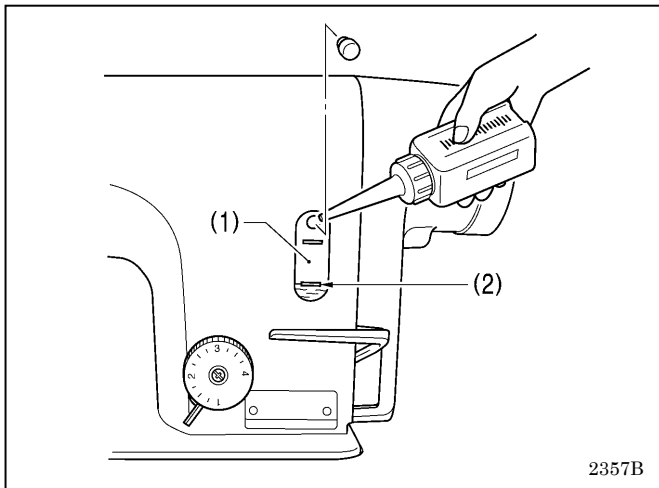
The following cleaning operations should be carried out each day in order to maintain the performance of this machine and to ensure a long service life.

Furthermore, if the sewing machine has not been used for a long period of time, carry out the following cleaning procedures before using it again.



### <Cleaning>

1. Turn the machine pulley to move the needle to the needle up stop position.
2. Open the slide plates at the left and right.
3. Remove the bobbin.
4. Clean the thread scraps from the rotary hook.
5. Install the bobbin (and the bobbin case).



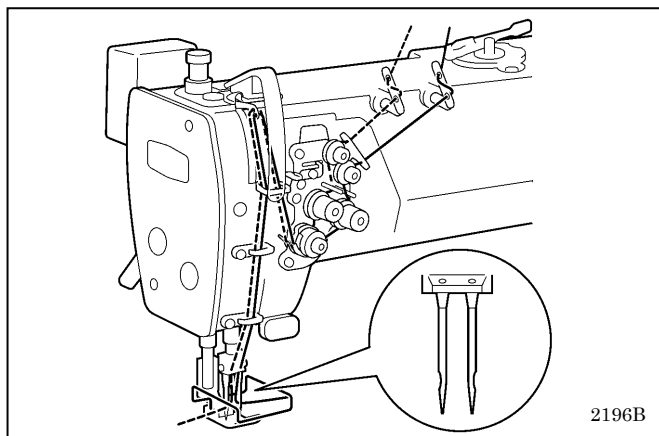
### <Filling the oil tank>

Use only the lubricating oil <NIPPON OIL CORPORATION Sewing Lube 10N; VG10> specified by Brother.

\* If this type of lubricating oil is difficult to obtain, the recommended oil to use is <Exxon Mobil EssoTex SM10; VG10>.

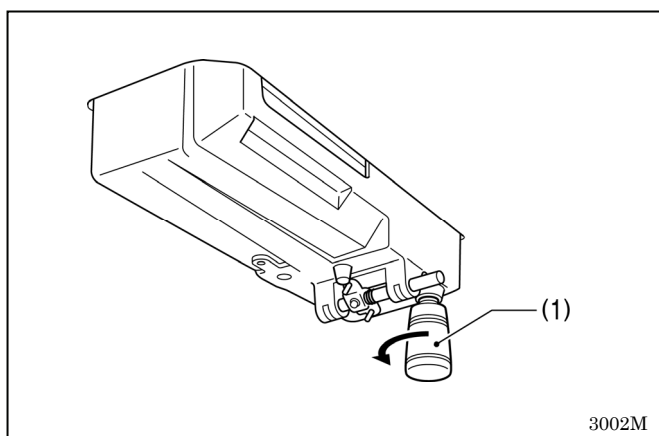
1. If the lubricating oil level drops below the bottom reference line (2) of the oil gauge window (1), be sure to add more oil. (Refer to p.9.)





### <Checking>

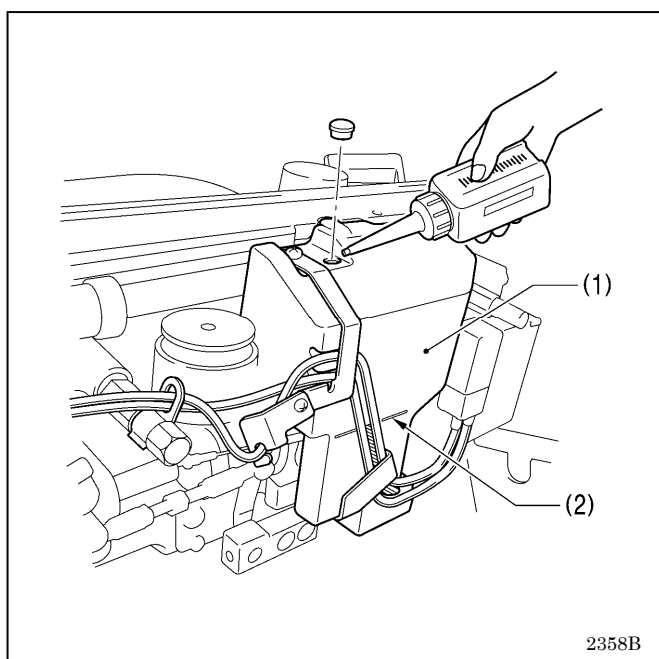
1. Replace the needle if it is bent or if the tip is broken.
2. Check that the upper threads have been threaded correctly. (Refer to page 24.)
3. Carry out a test sewing.



### <Draining lubricating oil>

1. If the oiler (1) has filled with oil, unscrew the oiler (1) and dispose of the oil inside it.
2. Screw the oiler (1) back into the oil pan.

## 11-2. Lubricating via the oil cover (every 6 months)



### <Minimum lubrication specifications>

Pour lubricating oil into the oil cover (1) about once every six months.

### <Semi dry specifications>

Pour lubricating oil into the oil cover (1) about as often as grease is applied.

Use only the lubricating oil <NIPPON OIL CORPORATION Sewing Lube 10N; VG10> specified by Brother.

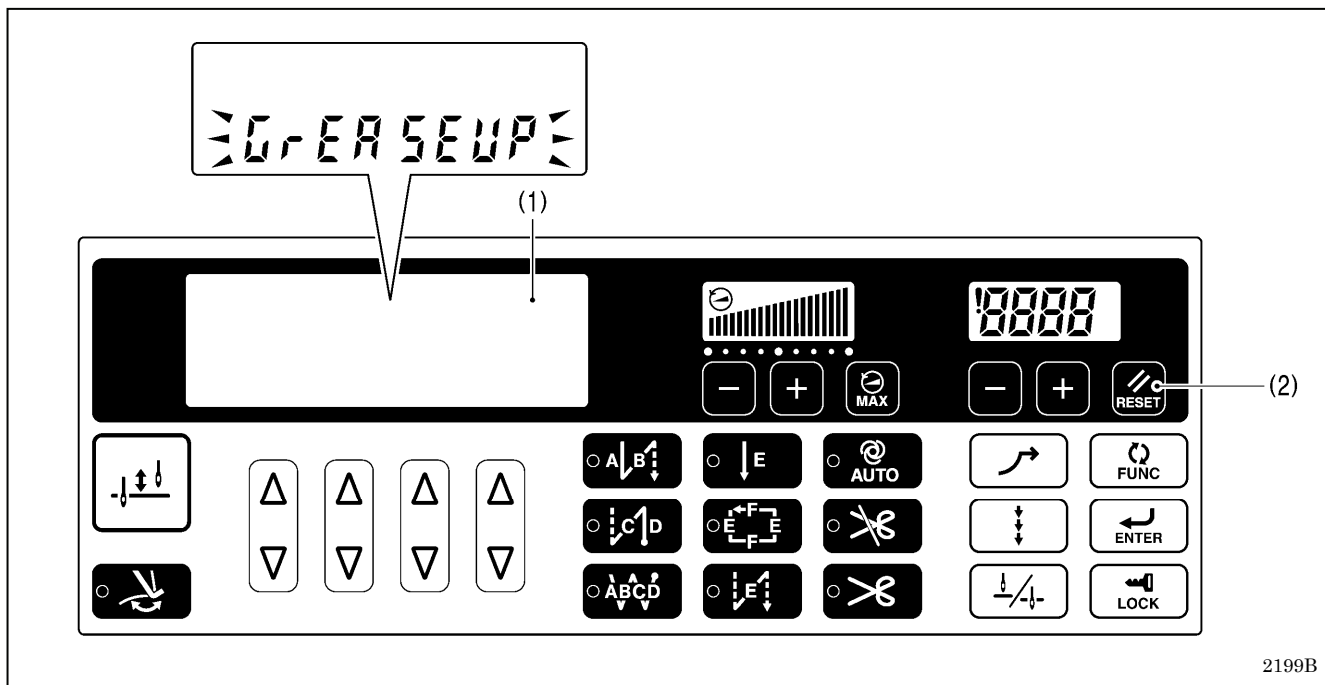
\* If this type of lubricating oil is difficult to obtain, the recommended oil to use is <Exxon Mobil Essotex SM10; VG10>.

1. Tilt back the machine head.
2. Pour lubricating oil into the oil cover (1) until the oil level reaches the reference line (2). (Refer to p.9.)
3. Return the machine head to its normal position.

### 11-3. Applying grease (Semi dry specifications) [When “GrUP” appears ... When using the G50 operation panel]

If “GrUP” flashes in the display (1) and the buzzer sounds when the power ON switch is pressed, it means that it is time to add grease. (The sewing machine will not operate at this time, even if the treadle is depressed.)

Apply grease as required, while referring to the following for details.



#### <To continue sewing without applying grease>

1. Press the RESET key (2).
2. The display (1) will change to stitch number display mode and sewing will be possible when the treadle is depressed.

#### NOTE

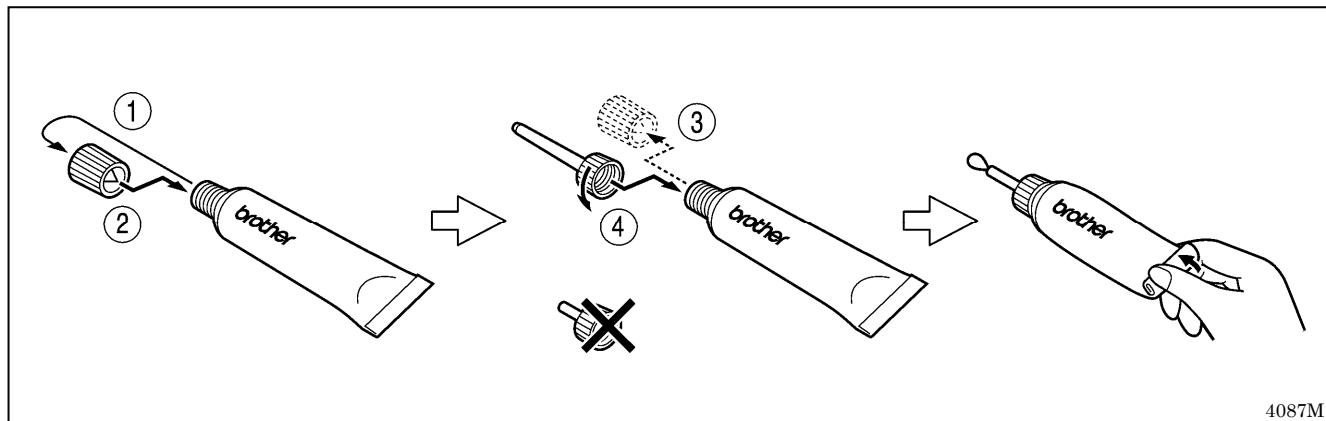
- If you do not apply grease when the “GrEASEUP” notification flashes, the notification will continue to flash each time the power is turned on until you reset the notification by carrying out the procedure on the following page.
- If you continue to use the sewing machine after the “GrEASEUP” notification appears without applying grease (or without carrying out the reset procedure), “ E100” will appear after a certain period of time and the sewing machine will be forcibly prevented from operating for safety reasons.  
If this happens, apply grease and carry out the reset procedure.

\* If you continue to use the sewing machine after carrying out the reset procedure but without applying grease, problems with the sewing machine may result.

## <Applying grease>

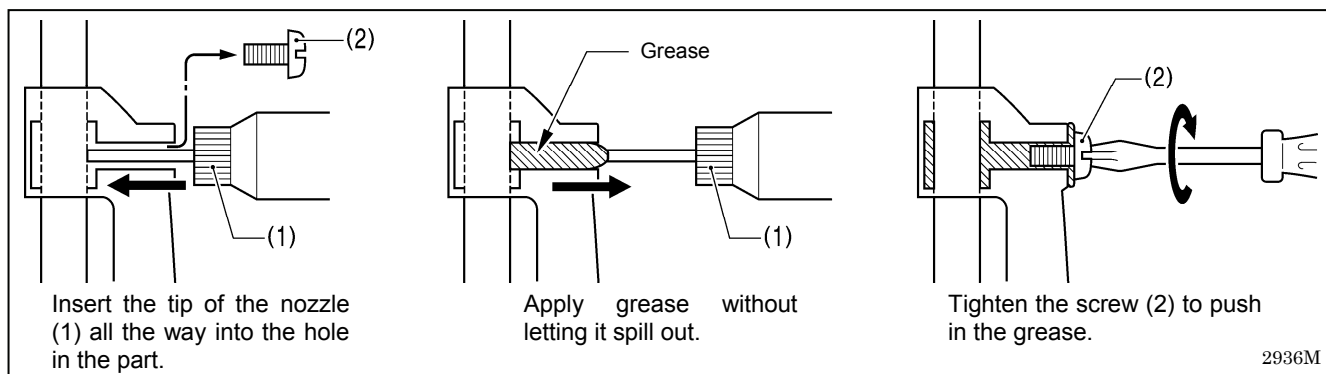
Use Brother-specified "Grease unit (SA8837-001)".

### 1. Using the tube

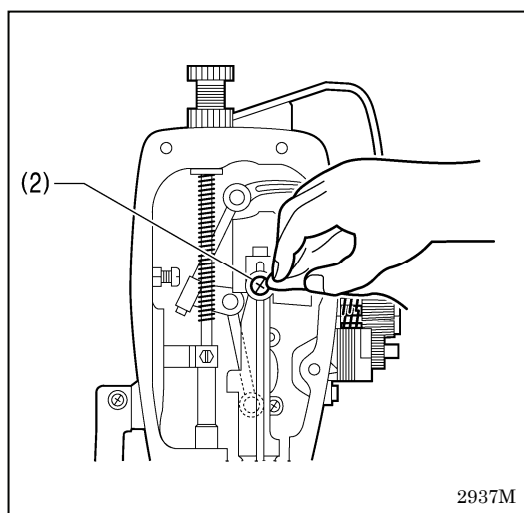


### 2. Applying grease

Follow the procedure below to apply grease to the places indicated by arrows on the next page.



1. Turn the power switch to "OFF".
2. Remove the screw (2). (Refer to the next page for greasing locations.)
3. Apply grease to each of the holes until the grease overflows slightly.
4. Tighten the screw (2) to push in the grease.

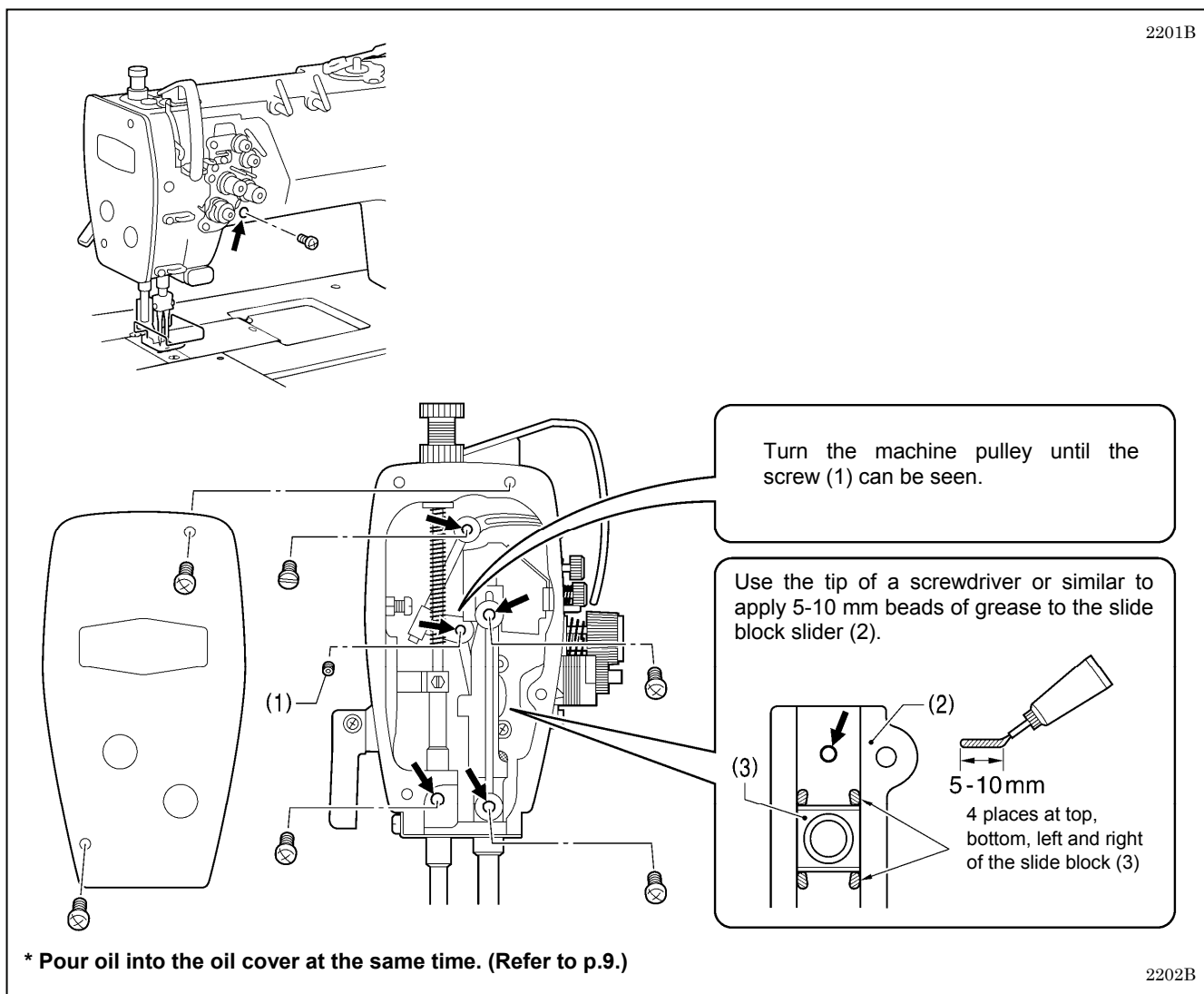


5. Use a cloth to wipe away any excess grease from around the screw (2).
6. Apply grease to all locations shown on the next page in the same way.
7. Carry out the reset procedure given on the next page.

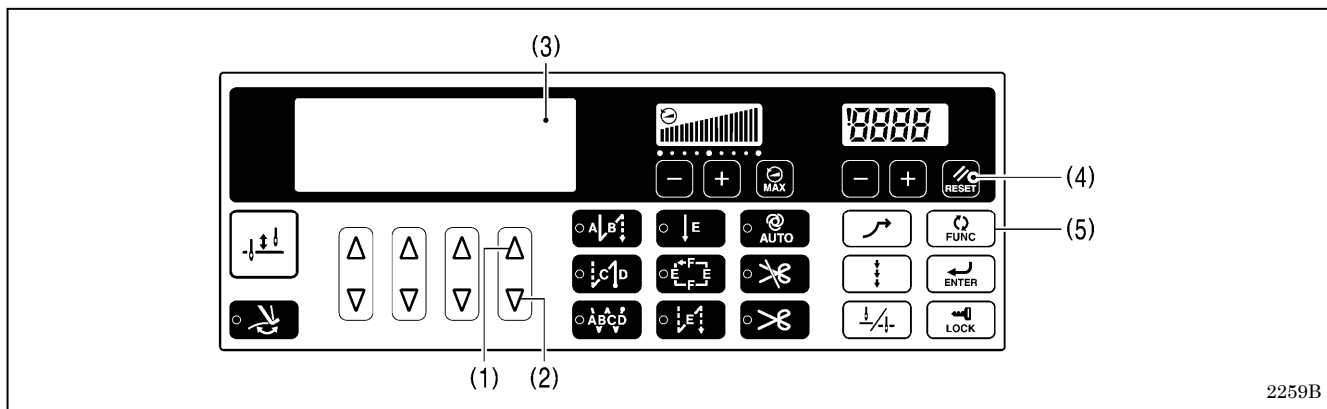
#### NOTE:

- Once the grease tube has been opened, remove the nozzle from the tube, attach the cap securely and store the tube in a cool dark place.
- The grease should be used as quickly as possible.
- When using the grease again, remove any old grease from inside the nozzle first.

(Store the tube away carefully once the tube has been opened, otherwise the grease remaining inside the tube may deteriorate, and this may affect its lubricating performance.)



### < Resetting the grease consumption amount >

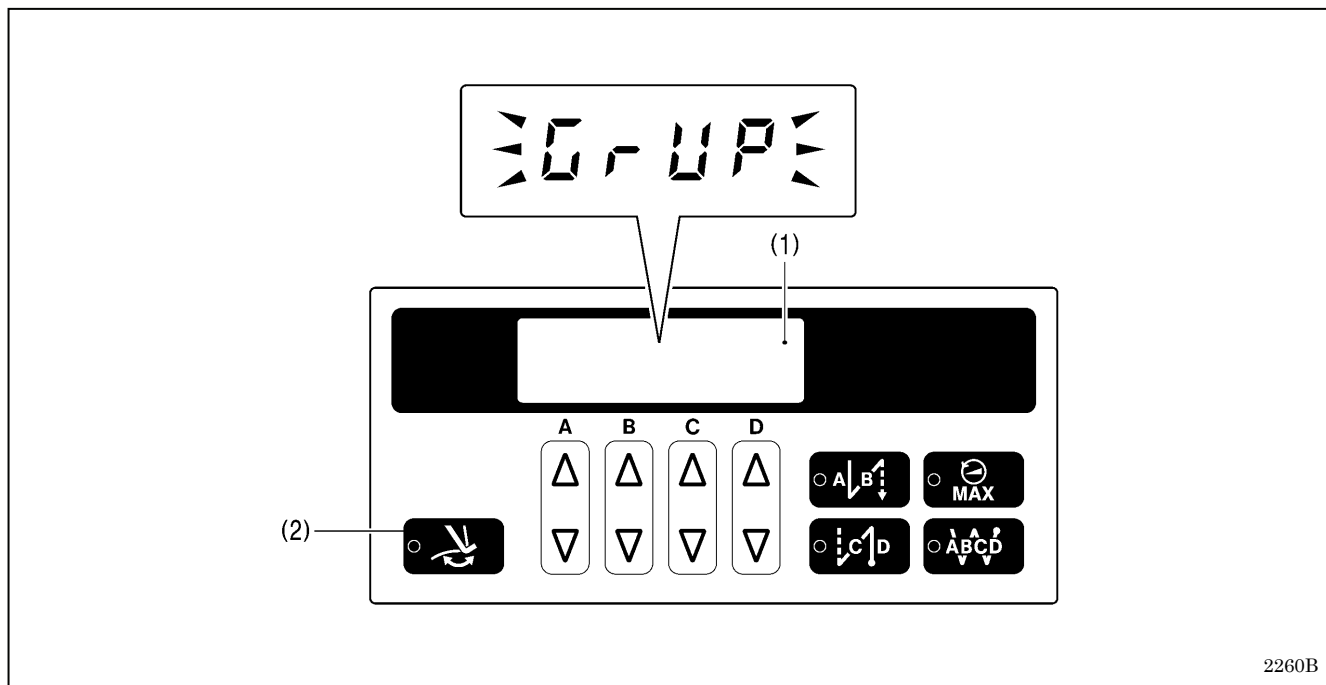


After the grease has been applied, carry out the following procedure to reset the grease consumption amount.

1. While pressing the  $\Delta$  key (1) and the  $\nabla$  key (2) at the right end simultaneously, press the power ON switch.
2. "GuCt xxx" will appear in the display (3). ("xxx" represents the amount of grease consumed. For example, "100" means that 100% of the grease has been consumed.)
3. Press the RESET key (4).
4. The display (3) will change to "GuCt 0".
5. Press the FUNC key (5). The display (3) will change to stitch number display mode and treadle operation will be possible. (This completes the reset procedure.)

## 11-4. Applying grease (Semi dry specifications) [When “GrUP” appears ... When using the G10 operation panel]

If “GrUP” flashes in the display (1) and the buzzer sounds when the power ON switch is pressed, it means that it is time to add grease. (The sewing machine will not operate at this time, even if the treadle is depressed.)  
Apply grease as required, while referring to the following for details.



### <To continue sewing without applying grease>

1. Press the thread wiper key (2).
2. The display (1) will change to stitch number display mode and sewing will be possible when the treadle is depressed.

#### NOTE

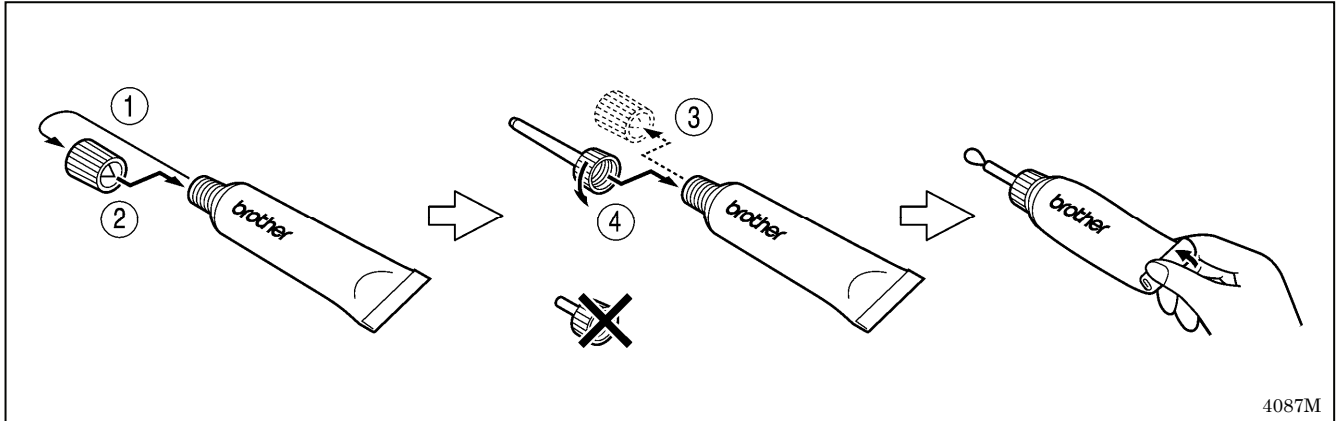
- If you do not apply grease when the “GrUP” notification flashes, the notification will continue to flash each time the power is turned on until you reset the notification by carrying out the procedure on the following page.
- If you continue to use the sewing machine after the “GrUP” notification appears without applying grease (or without carrying out the reset procedure), “E100” will appear after a certain period of time and the sewing machine will be forcibly prevented from operating for safety reasons.  
If this happens, apply grease and carry out the reset procedure.

**\* If you continue to use the sewing machine after carrying out the reset procedure but without applying grease, problems with the sewing machine may result.**

### <Applying grease>

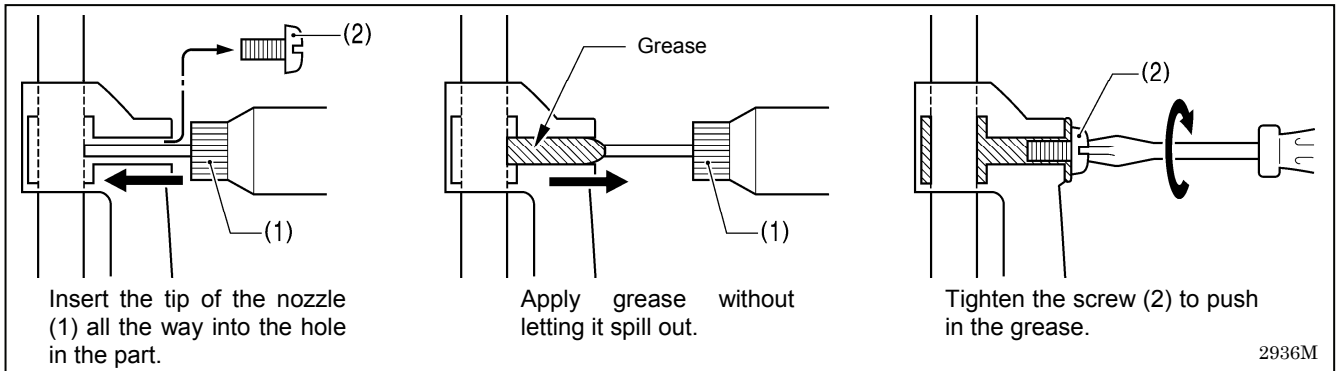
Use Brother-specified "Grease unit (SA8837-001)".

#### 1. Using the tube

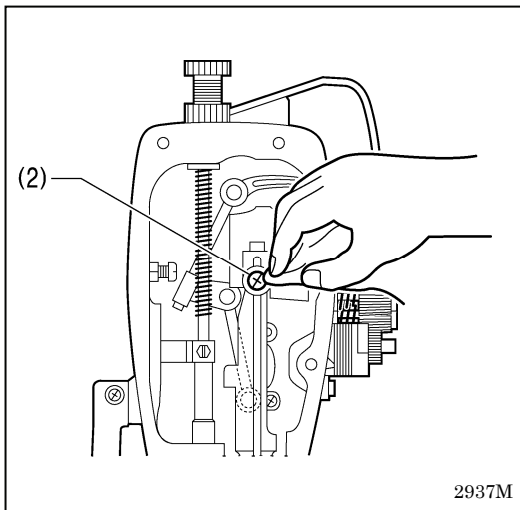


#### 2. Applying grease

Follow the procedure below to apply grease to the places indicated by arrows on the next page.



1. Turn the power switch to "OFF".
2. Remove the screw (2). (Refer to the next page for greasing locations.)
3. Apply grease to each of the holes until the grease overflows slightly.
4. Tighten the screw (2) to push in the grease.



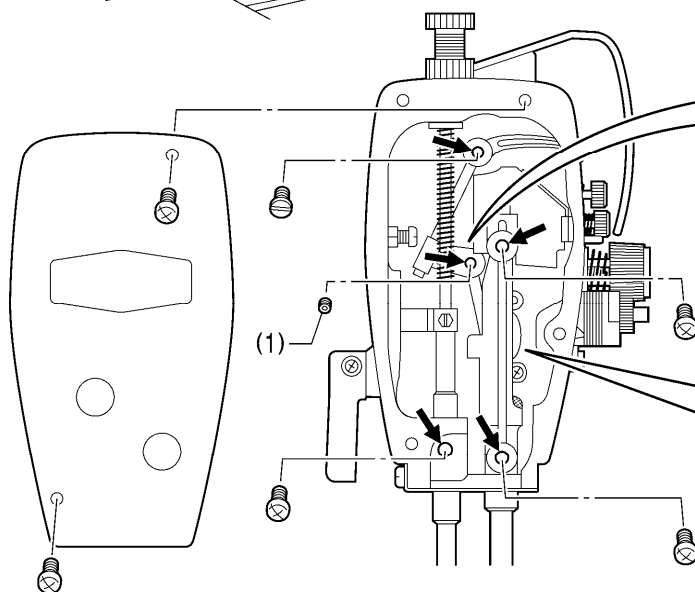
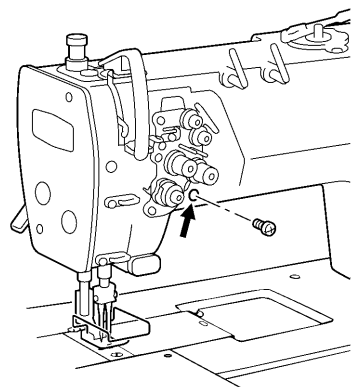
5. Use a cloth to wipe away any excess grease from around the screw (2).
6. Apply grease to all locations shown on the next page in the same way.
7. Carry out the reset procedure given on the next page.

#### NOTE:

- Once the grease tube has been opened, remove the nozzle from the tube, attach the cap securely and store the tube in a cool dark place.
- The grease should be used as quickly as possible.
- When using the grease again, remove any old grease from inside the nozzle first.

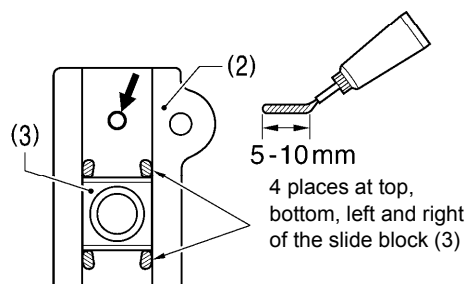
(Store the tube away carefully once the tube has been opened, otherwise the grease remaining inside the tube may deteriorate, and this may affect its lubricating performance.)

2201B



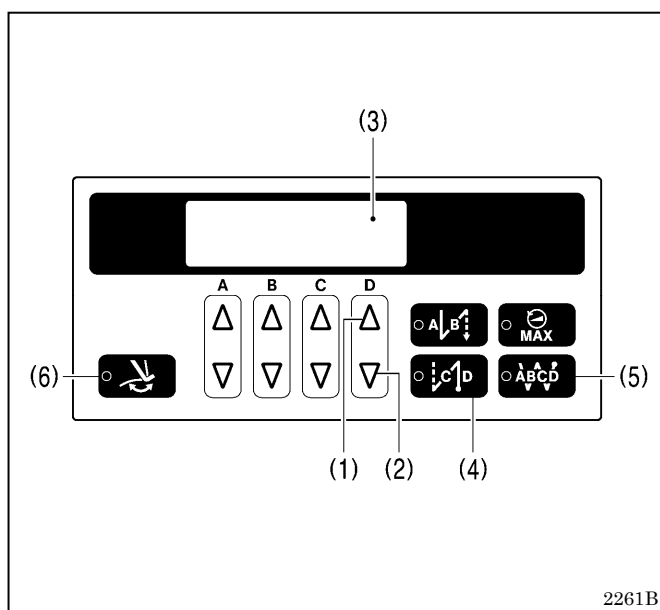
Turn the machine pulley until the screw (1) can be seen.

Use the tip of a screwdriver or similar to apply 5-10 mm beads of grease to the slide block slider (2).



\* Pour oil into the oil cover at the same time. (Refer to p.9.)

2202B



2261B

### < Resetting the grease consumption amount >

After the grease has been applied, carry out the following procedure to reset the grease consumption amount.

1. While pressing the  $\Delta$  key (1) and the  $\nabla$  key (2) at the right end simultaneously, press the power ON switch.
2. "GuCt" will appear in the display (3).
3. Press the end backtick key (4).
4. The indicator of the end backtick key (4) will illuminate and the display (3) will change to showing "xxx". ("xxx" represents the amount of grease consumed. For example, "100" means that 100% of the grease has been consumed.)
5. Press the continuous backtick key (5) for 2 seconds or more.
6. The display (1) will change to " 0".
7. Press the thread wiper key (6). The display (3) will change to stitch number display mode and treadle operation will be possible. (This completes the reset procedure.)

2138M 2139M

# 12. ADJUSTING THE ROTARY HOOK LUBRICATION AMOUNT

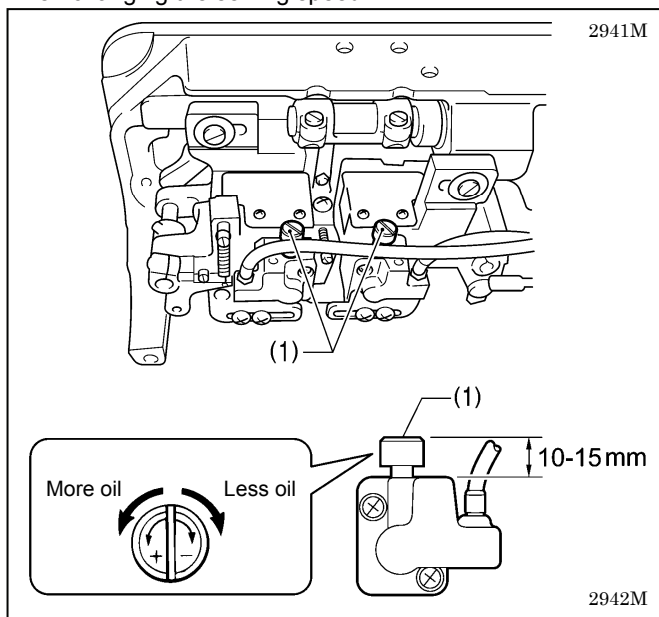


## CAUTION



Be careful not to touch your fingers or the lubrication amount check sheet against moving parts such as the rotary hook or the feed mechanism when checking the amount of oil supplied to the rotary hook, otherwise injury may result.

Use the following procedure to check the amount of oil being supplied to the rotary hook when replacing the rotary hook or when changing the sewing speed.



### <Guide to lubrication adjustment>

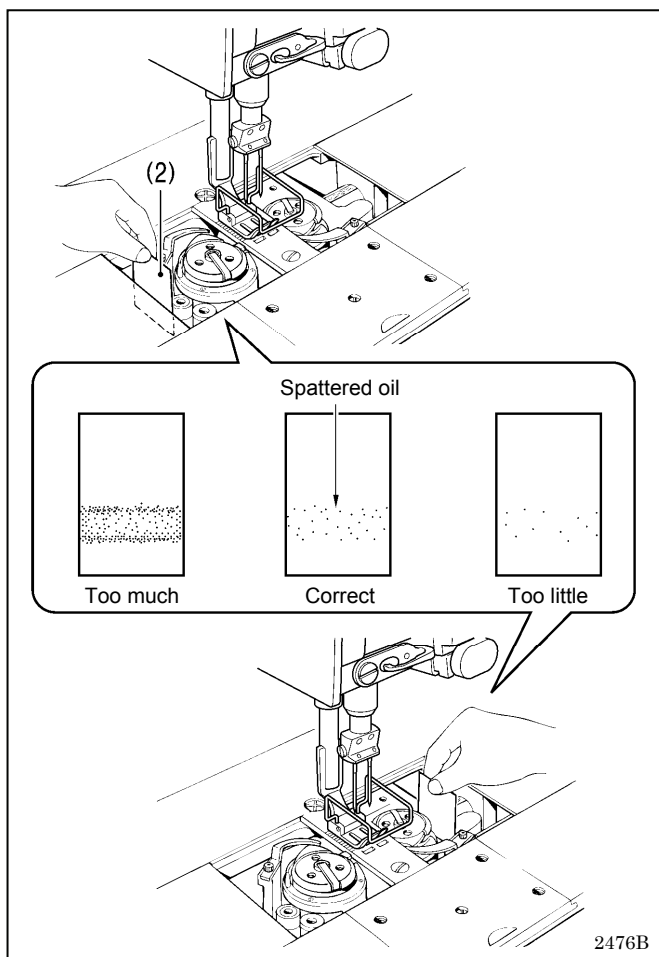
1. Tilt back the machine head.
2. Turn the oil adjusting screw (1) to adjust the height to within 10-15 mm.

### <Checking the lubrication amount>

1. Turn off the power switch.
2. Remove the thread from all points from the thread take-up to the needle.
3. Remove the needle and the bobbin.
4. Use the lifting lever to lift the presser foot.
5. Turn on the power switch.
6. Run the machine at the normal sewing speed for approximately 1 minute without sewing any material (following the same start/stop pattern as when actually sewing).
7. Place the lubrication amount check sheet (2) to the left of the rotary hook (the right side is the right side of the rotary hook), and hold it in place while running the sewing machine at the normal sewing speed for approximately 8 seconds. (Any type of paper can be used as the lubrication amount check sheet (2).)
8. Check the amount of oil which has spattered onto the sheet.

### <Adjusting the lubrication amount>

1. Tilt back the machine head.
2. Turn the adjusting screw (1) to adjust the lubrication amount.
  - If the rotary hook adjusting screw (1) is turned counterclockwise, the lubrication amount becomes greater.
  - If the rotary hook adjusting screw (1) is turned clockwise, the lubrication amount becomes smaller.
3. Check the lubrication amount again according to the procedure given in "Checking the lubrication amount" above.
  - \* Turn the adjusting screw (1) and check the lubrication amount repeatedly until the lubrication amount is correct.
4. Check the lubrication amount again after the sewing machine has been used for approximately two hours.





# 13. STANDARD ADJUSTMENT

## CAUTION



Maintenance and inspection of the sewing machine should only be carried out by a qualified technician.



Ask your Brother dealer or a qualified electrician to carry out any maintenance and inspection of the electrical system.



If any safety devices have been removed, be absolutely sure to re-install them to their original positions and check that they operate correctly before using the machine.



Secure the table so that it will not move when tilting back the machine head. If the table moves, it may crush your feet or cause other injuries.



Use both hands to hold the machine head when tilting it back or returning it to its original position. If only one hand is used, the weight of the machine head may cause your hand to slip, and your hand may get caught.



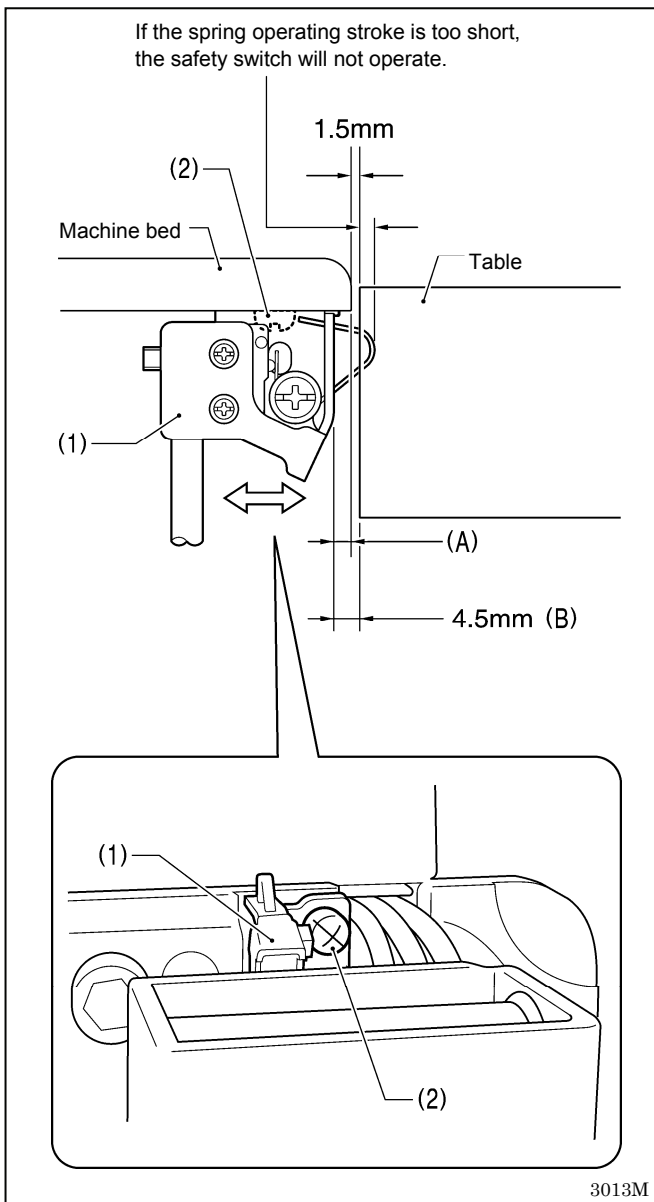
Turn off the power switch and disconnect the power cord from the wall outlet at the following times, otherwise the machine may operate if the treadle is depressed by mistake, which could result in injury.

- When carrying out inspection, adjustment and maintenance
- When replacing consumable parts such as the rotary hook and knife



If the power switch needs to be left on when carrying out some adjustment, be extremely careful to observe all safety precautions.

## 13-1. Safety switch position



The standard installation position for the safety switch (1) is shown in the illustration at left.

At the time of shipment from the factory, dimension (A) is adjusted to 3 mm, and normally this does not need to be readjusted.

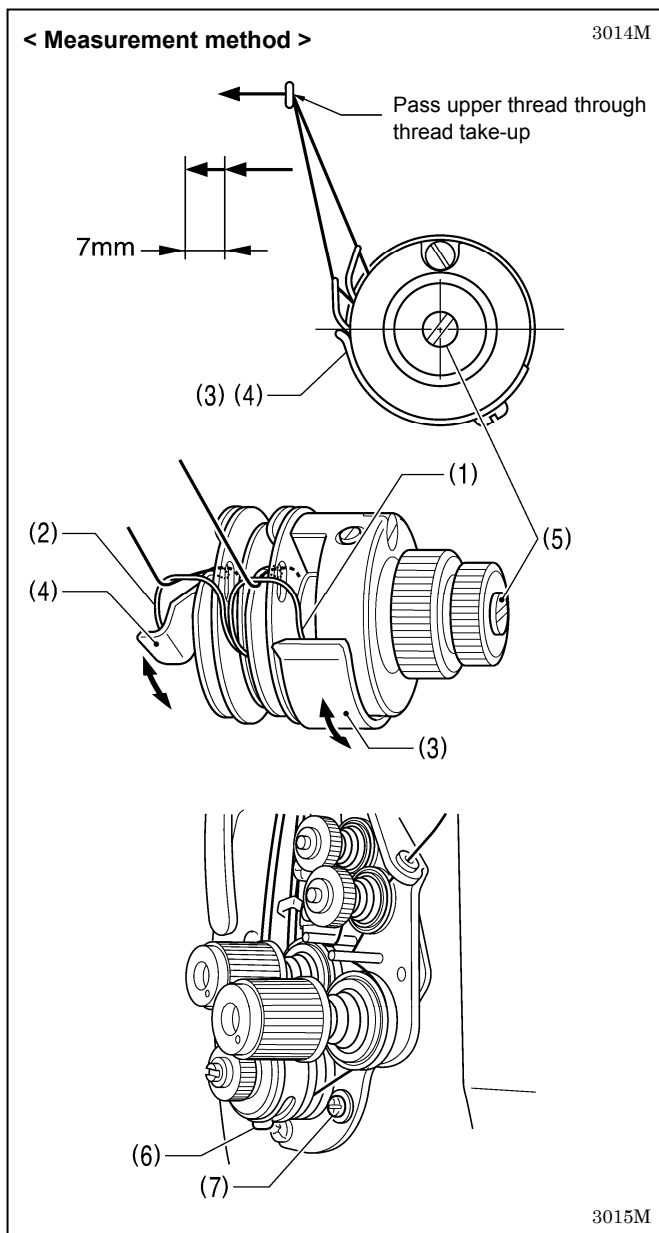
However, if the dimensions of the work table make it so that the gap between the machine bed and the table hole is wider or narrower than the standard gap (1.5 mm), it may have an adverse effect on the operation of the safety switch (1). If this happens, adjust as follows.

- \* If the operation of the safety switch (1) is affected in this way, the sewing machine will not start when the treadle is depressed.

### < Adjustment method >

1. Loosen the screw (2).
2. Move the safety switch (1) to the left or right to adjust its position so that the gap (B) between the safety switch (1) and the table is 4.5 mm.
3. Tighten the screw (2).

## 13-2. Thread take-up amount for thread take-up spring



The standard thread take-up length for thread take-up springs R (1) and L (2) is 7 mm. You can adjust the thread take-up amounts by changing the heights of the stopper [right] (3) and the stopper [left] (4).

\* The standard heights of the stopper [right] (3) and the stopper [left] (4) are when they are aligned with the tension stud (5).

### < Adjustment method >

The thread take-up amount for a thread take-up spring decreases when the height of the stopper is increased.

#### Height of stopper [right] (3) [for right thread]

1. Loosen the screw (6), and then slide the stopper [right] (3) to adjust the thread take-up amount.
2. Tighten the screw (6).

#### Height of stopper [left] (4) [for left thread]

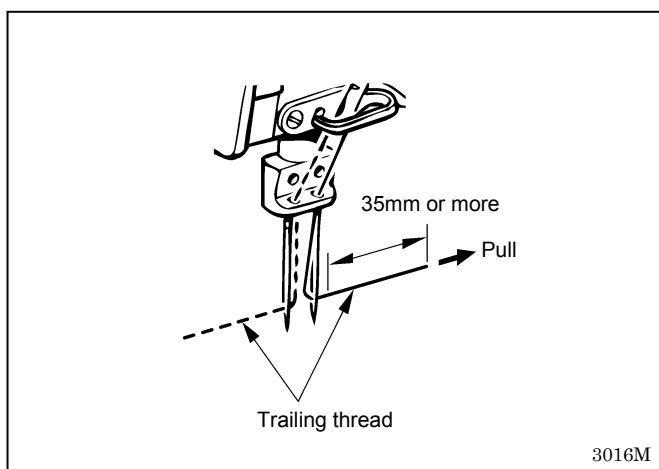
1. Loosen the screw (7), and then slide the stopper [left] (4) to adjust the thread take-up amount.
2. Tighten the screw (7).

### NOTE:

If using a thread trimming sewing machine, the trailing length for the left upper thread may become shorter after thread trimming because of the twist in the thread.

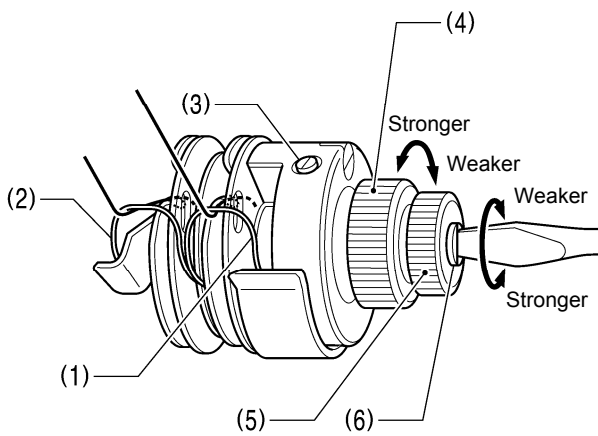
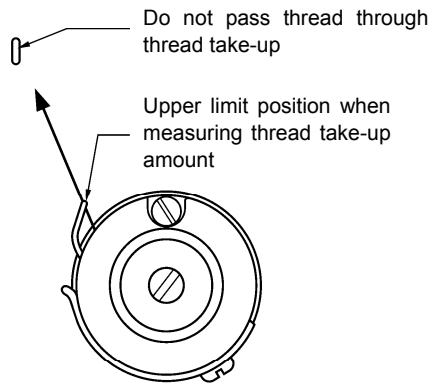
The trailing length is normal if the upper thread length is 35 mm when the thread is pulled from the needle hole. If the thread length is shorter than this, reduce the thread take-up amount of the thread take-up spring.

However, if using fine threads (such as #50 polyester thread or finer), reducing the thread take-up amount too much may cause the right upper thread to be cut too short, or it might result in thread trimming errors for the left upper thread.



### 13-3. Thread take-up spring tension

#### < Measurement method >



3017M

The standard tensions for the thread take-up spring R (1) and thread take-up spring L (2) are as follows depending on sewing machine specifications.

For foundation (-T□□F)	0.25N
For light-weight and medium-weight materials (-□□3)	0.34N
For heavy-weight materials (-405,-407)	0.70N

#### < Adjustment method >

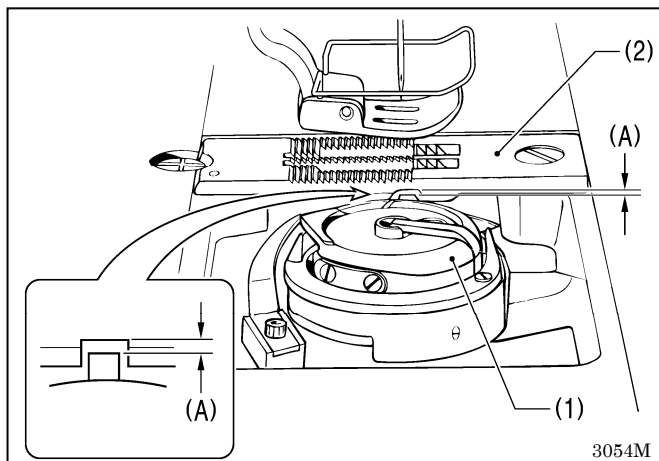
##### Thread take-up spring R (1) [for right thread]

1. Loosen the set screw (3), and turn the adjusting thumb (4) to adjust the tension.
2. Tighten the set screw (3).

##### Thread take-up spring L (2) [for left thread]

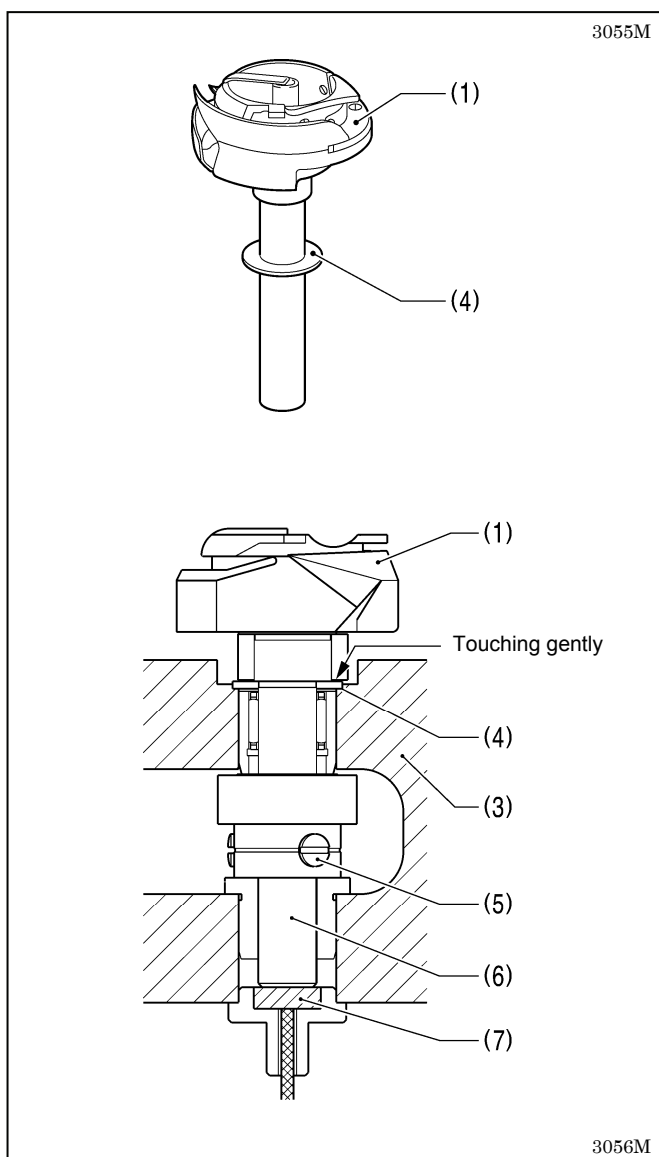
1. Loosen the tension nut (5).
2. Use a small screwdriver to turn the tension stud (6) to adjust the tension.
3. Tighten the tension nut (5).

### 13-4. Clearance between rotary hook and needle plate



The clearance (A) between the rotary hook (1) and the needle plate (2) is adjusted as follows at the time of shipment from the factory.

Model	Distance (A)
Without thread trimming T-8421C	0.9 – 1.2 mm
With thread trimming T-8422C T-8722C T-8452C T-8752C	1.4 – 1.7 mm



- Check clearance (A) each time parts such as the rotary hook (1) and the needle plate (2) that affect clearance (A) are replaced.
- To adjust clearance (A), replace the thrust ring (4) that is in between the rotary hook (1) and the rotary hook base (3).
- Three types of thrust ring (4) are available. Measure the thickness of the thrust ring (4) that is currently being used, and replace it with a thrust ring (4) of the appropriate width.

Part code	Thickness
SA4444-001	0.8 mm
SA4038-001	1.0 mm
S09260-001	1.2 mm

- When replacing the rotary hook (1), loosen the three set screws (5). Be careful not to lose the thrust ring (4) at this time.

#### NOTE:

There is a piece of felt (7) for lubrication at the base of the rotary hook shaft (6). Gently press down on the rotary hook (1) when tightening the set screws (5) so that the rotary hook (1) does not lift up.

#### If the clearance is too large

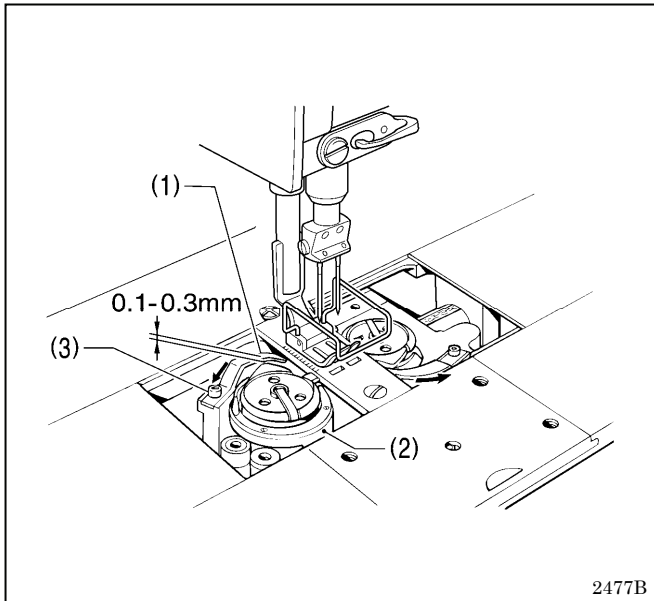
- The inner rotary hook may come out from the needle plate (2).

#### If the clearance is too small

- Poor thread tightening may occur.
- Lower thread trimming errors may occur (models with thread trimmer).
- The right upper thread may be cut too short (models with thread trimmer).

\* These problems may occur particularly if the stitch length is large or when carrying out thread trimming during chaining-off.

### 13-5. Clearance between rotary hook and opener



1. Loosen the set screw (3) and move the opener (1) to the left or right to adjust so that the clearance between the rotary hook (2) and the opener (1) is 0.1–0.3 mm when the opener (1) is pulled as far as it will go in the direction of the arrow.
2. Tighten the set screw (3).

**NOTE:**

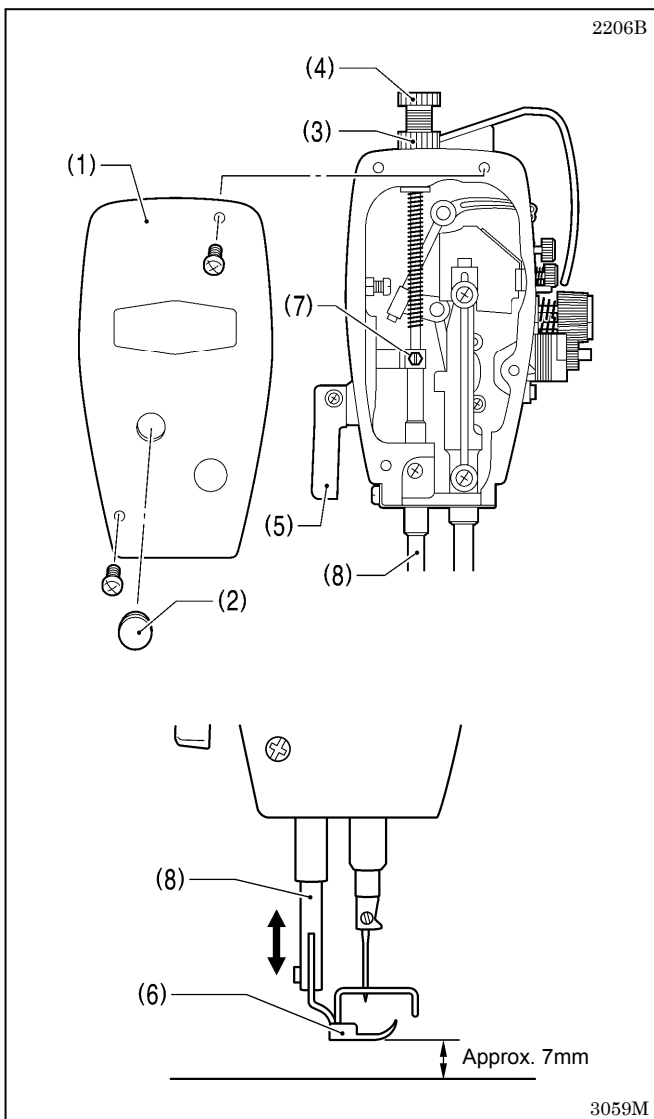
**If the clearance is too large**

- Upper thread trimming errors may occur (models with thread trimmer).
- The right upper thread may be cut too short (models with thread trimmer).

**If the clearance is too small**

- The rotary hook may become damaged.
- The opener (1) may become damaged.

### 13-6. Presser foot height



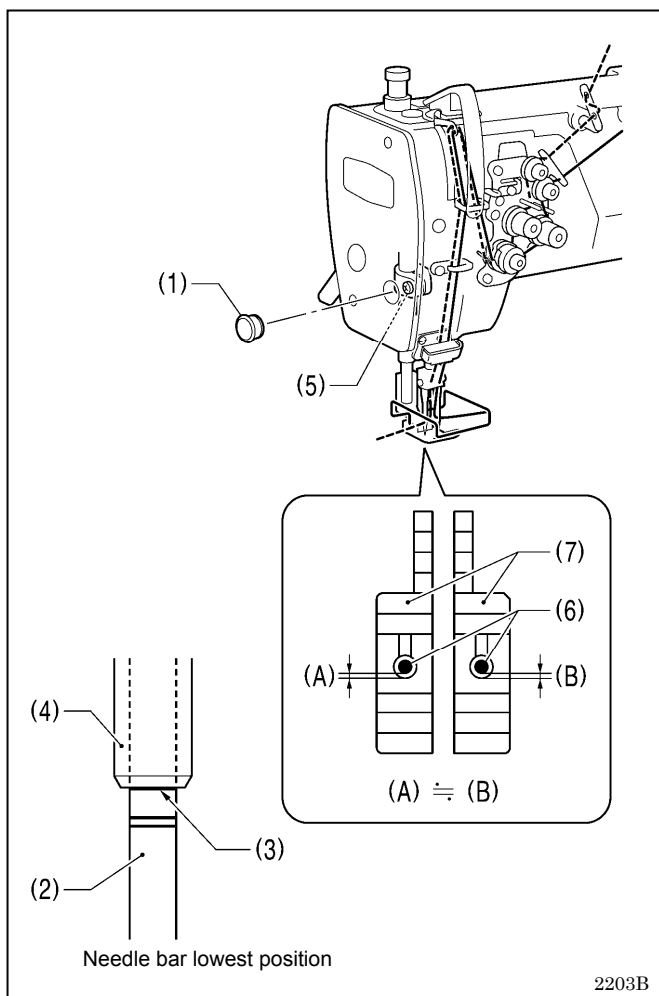
1. Remove the rear cover (1) and remove the rubber cap (2).
2. Loosen the nut (3) and loosen the presser adjusting screw (4).
3. Use the lifting lever (5) to raise the presser foot (6).
4. Loosen the screw (7) and move the presser bar (8) up or down to adjust so that the presser foot (6) is approximately 7 mm above the top of the needle plate.

**NOTE:**

Do not turn the presser bar (8) at this time.

5. Tighten the screw (7).
6. Turn the presser adjusting screw (4) to adjust the presser foot pressure, and then tighten the nut (3).

## 13-7. Needle and rotary hook timing

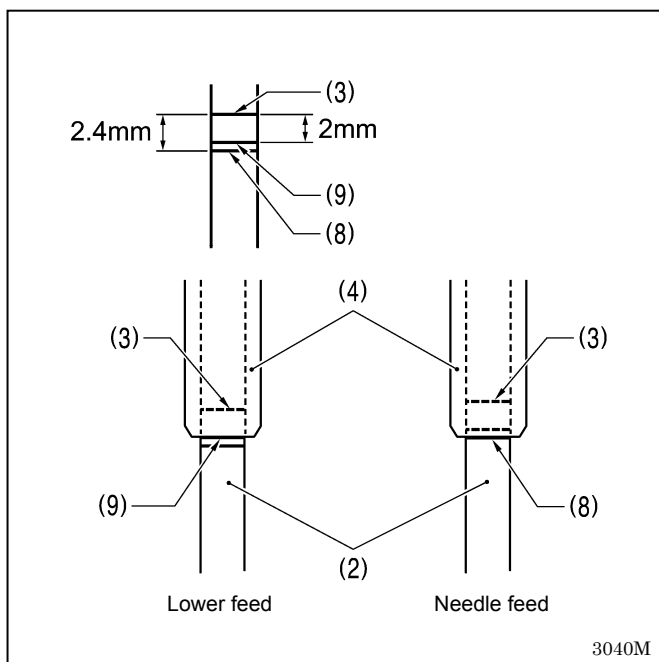


- Set the stitch length dial to the actual length of the stitches to be sewn.

Standard stitch length

Specifications	Stitch length dial
-T□F	2
-□□3	2
-405, -407	3

- Remove the rubber cap (1).
- Loosen the screw (5) and move the needle bar (2) up or down to adjust so that the top reference line (3) on the needle bar (2) is aligned with the bottom edge of the needle bar bracket (4) when the needle bar (2) is at its lowest position.  
(Be careful not to turn the needle bar (2) at this time.)
- Securely tighten the screw (5).
- At this time, the gaps (A) and (B) between the needle (6) and the front of the feed dog (7) should be about the same as each other.



- Turn the machine pulley forward to raise the needle bar (2) until the reference line ((8) or (9), depending on the feed condition) on the needle bar (2) is aligned with the bottom edge of the needle bar base (4).
- In this condition, secure the machine pulley with tape or similar, so that the needle bar (2) will not move.

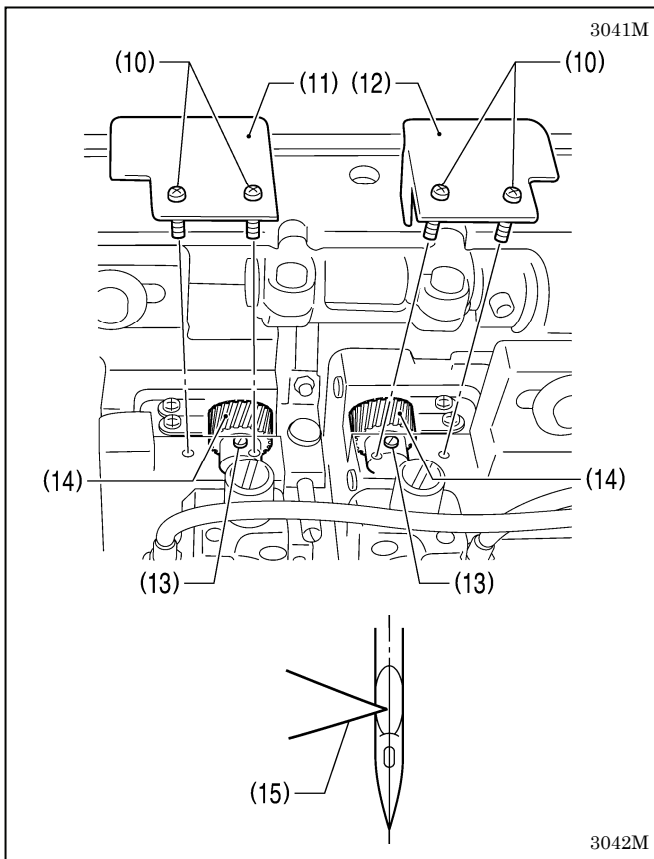
The procedure up to this point determines the needle bar lift amount.

**NOTE:****If the needle bar lift amount is too large**

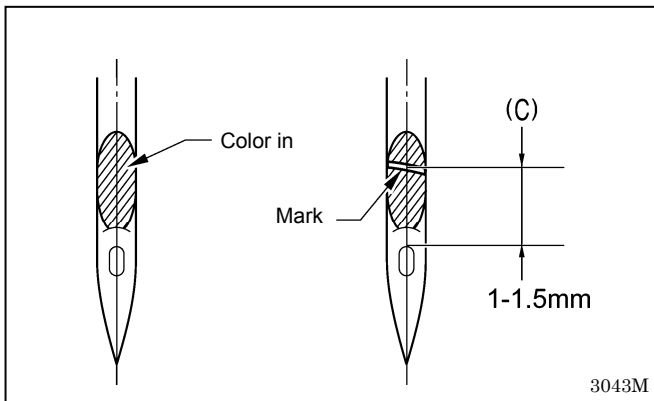
- It will cause poor tightening in the right thread.
- Both the left and right seams will become uneven, and skipped stitches or thread breakages will occur.
- Upper thread trimming errors may occur, or the upper thread may be cut too short (models with thread trimmer).
- The upper thread trailing length will be too long (models with thread trimmer).

**If the needle bar lift amount is too small**

- Skipped stitches and thread breakages will occur.
- The upper thread trailing length will be too short (models with thread trimmer).

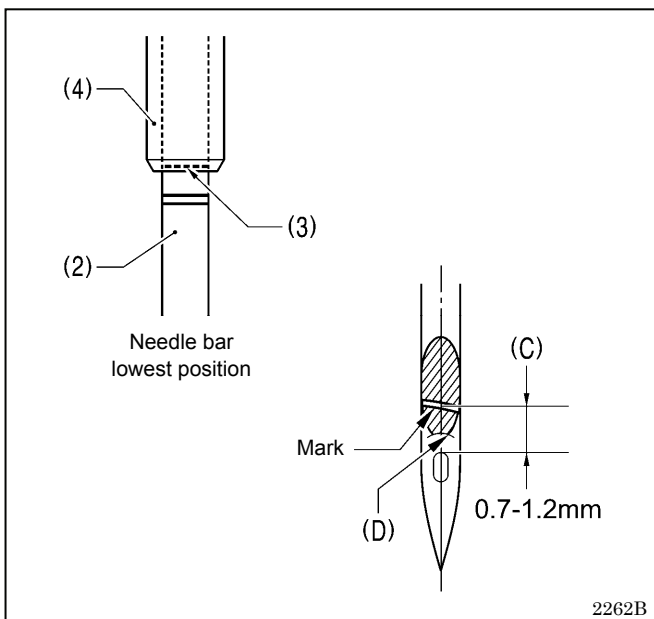


8. Loosen the screws (10), and then remove rotary hook base cover FL (11) and FR (12).  
(The screws (10) is designed so that they cannot be removed from the rotary hook base cover FL (11) and FR (12) to prevent them from being lost.)
9. Loosen the set screws (13) (three each at left and right).  
(However, be careful not to loosen them too much, otherwise the set screws (13) will touch the inside surface of the rotary hook base and the pinion gear (14) will not be able to turn. Loosen the set screws by the minimum amount which will still allow the rotary hook to move freely.)
10. Turn the rotary hook by hand to align the rotary hook tip (15) with the middle of the needle. (Do not turn the machine pulley at this time.)
11. Tighten the set screws (13).  
(Tighten the three set screws (13) a little bit at a time in order so that the pinion gear (14) does not become tilted.)
12. Remove the tape that is securing the machine pulley.



**<For T-8421C, T-8422C and T-8722C>**

13. Use an oil-based marker pen to color in the hollow of the needle.
14. With the needle raised, turn the machine pulley forward while pushing the needle against the rotary hook tip (15) with your finger to make a mark from the rotary hook tip (15) in the hollow of the needle.
15. Check that the distance (C) from the intersection between the mark from the rotary hook tip (15) and the center line of the needle to the top edge of the needle hole is 1–1.5 mm.  
\* If the distance is not 1–1.5 mm, loosen the screw (5) again and adjust the height of the needle bar.  
\* If dimension (C) has been adjusted, the highest reference line (3) on the needle bar (2) may be hidden by the bottom edge of the needle bar base (4) when the needle bar is at its lowest position, but this is not a problem.

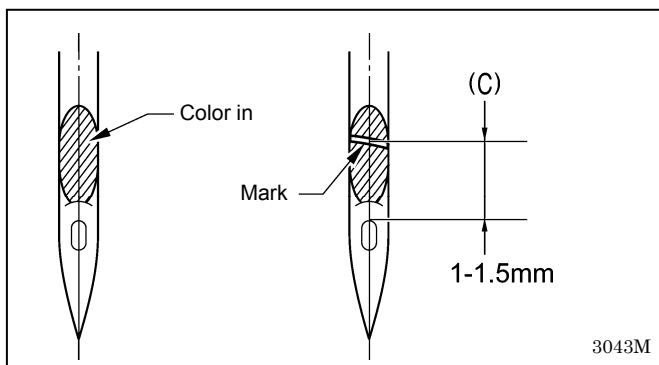


**If using a thread such as polyester thread which does not easily form stable loops**

- \* If problems such as skipped stitches or upper thread breakages occur, set the above distance (C) to 0.7–1.2 mm to make it easier for the rotary hook tip (15) to catch the upper thread loop.

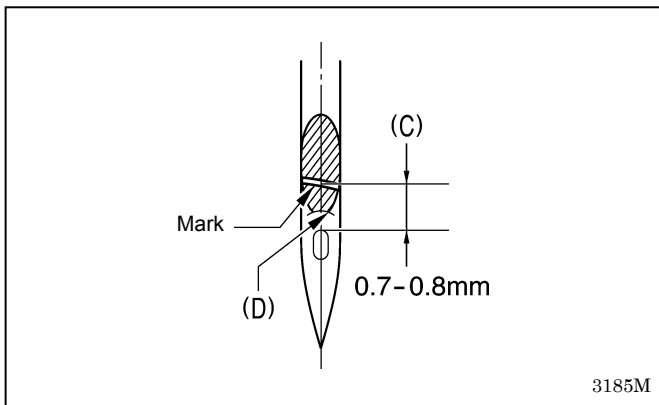
**NOTE:**

- When the stitch length is changed, distance (C) will also change, so re-check distance (C) at such times.
- During quick reverse operation, distance (C) for the left needle will become shorter, so do not set it to less than 0.7 mm, otherwise the rotary hook tip (15) may touch the projection (D) and this could damage the rotary hook tip (15).



## <For T-8452C and T-8752C>

13. Use an oil-based marker pen to color in the hollow of the needle.
14. With the needle raised, turn the machine pulley forward while pushing the needle against the rotary hook tip (15) with your finger to make a mark from the rotary hook tip (15) in the hollow of the needle.
15. Check that the distance (C) from the intersection between the mark from the rotary hook tip (15) and the center line of the needle to the top edge of the needle hole is 1-1.5 mm.

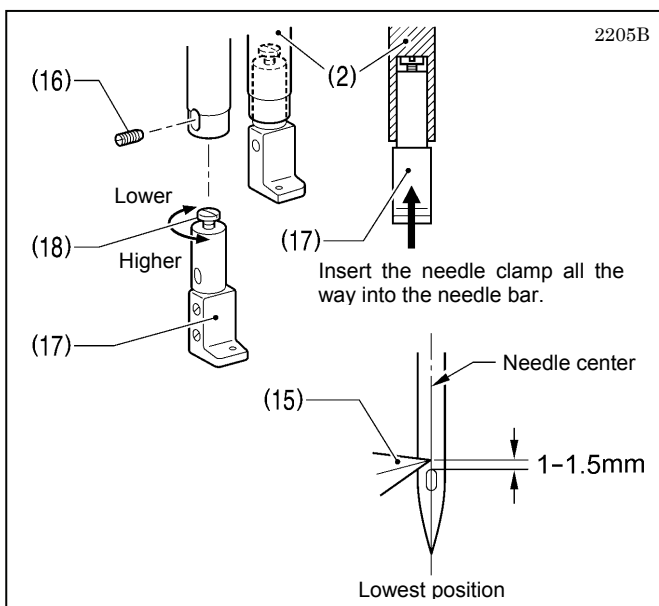


## If using a thread such as polyester thread which does not easily form stable loops

- \* If problems such as skipped stitches or upper thread breakages occur, set the above distance (C) to 0.7-0.8 mm to make it easier for the rotary hook tip (15) to catch the upper thread loop.

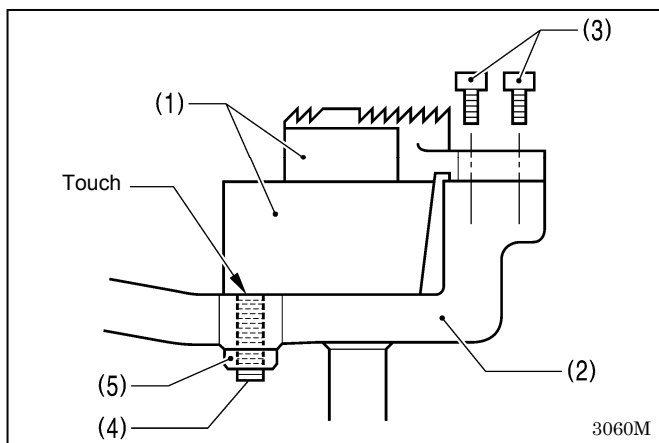
### NOTE:

- When the stitch length is changed, distance (C) will also change, so re-check distance (C) at such times.
- During quick reverse operation, distance (C) for the left needle will become shorter, so do not set it to less than 0.7 mm, otherwise the rotary hook tip (15) may touch the projection (D) and this could damage the rotary hook tip (15).



16. Loosen the set screw (16) and then pull the needle bar clamp (17) downward to remove it.
17. Turn the screw (18) to adjust so that the distance from the upper edge of the needle hole to the rotary hook tip (15) is 1-1.5 mm.
18. After adjustment is completed, insert the needle bar clamp (17) into the hole of the needle bar (2) as far as it will go, and check that the distance is 1-1.5mm. Secure it by tightening the set screw (16).

## 13-8. Installing the feed dog

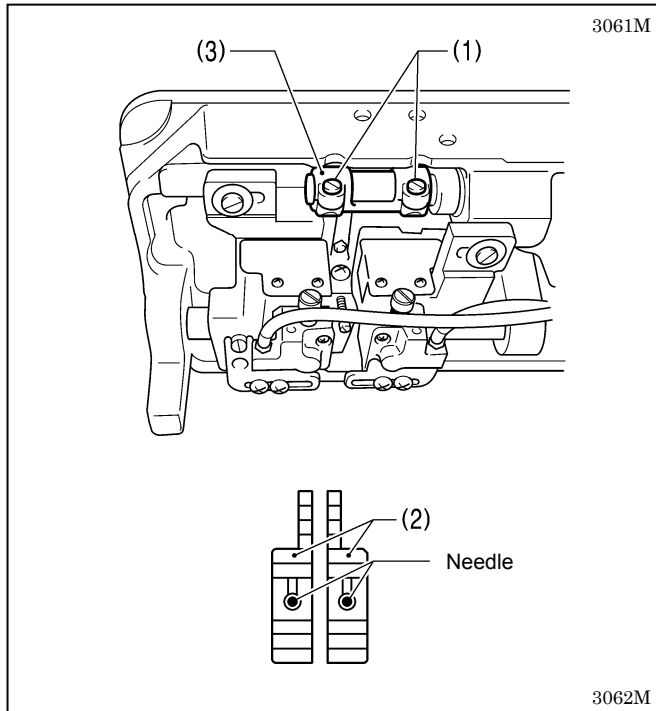


1. Install the feed dog (1) to the feed bar (2) with the two screws (3).
2. Tighten the feed dog support set screw (4) so that the tip of the set screw (4) touches the bottom of the feed dog (1).
3. Tighten the nut (5) to secure the set screw (4).

- \* The set screw (4) is not used for installing the feed dog at an angle.



## 13-9. Feed dog position



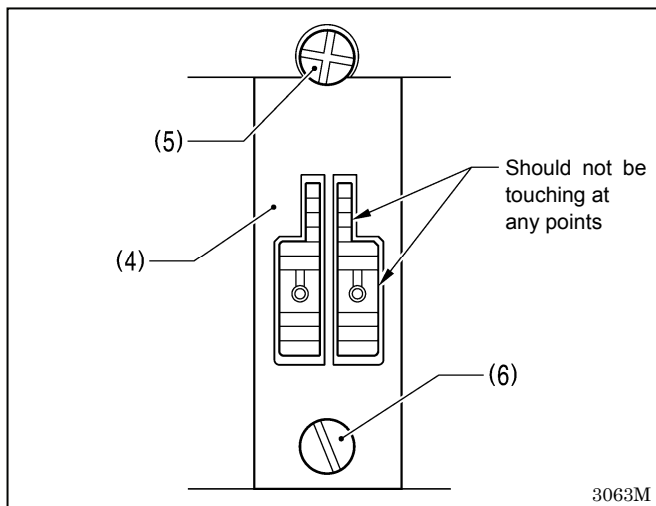
### < Forward-back position adjustment >

Carry out this adjustment if the needle and the needle hole in the feed dog are not positioned correctly even though the clearance between the needle bar and the presser bar (13.3–13.7 mm) is correct.

1. Loosen the two screws (1).
2. Turn the feed rocker base arm (3) to adjust so that the needle drops into the middle of the needle hole in the feed dog (2).  
(The needle will actually be slightly to the front when it goes into the feed dog (2), and will be slightly to the back when it comes out.)
3. Tighten the screw (1).

#### NOTE:

Do not overtighten the screw (1), otherwise it will damage the feed rocker base arm (3).

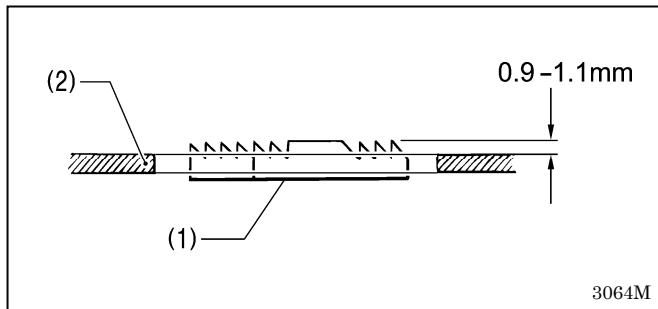


### < Left-right position adjustment >

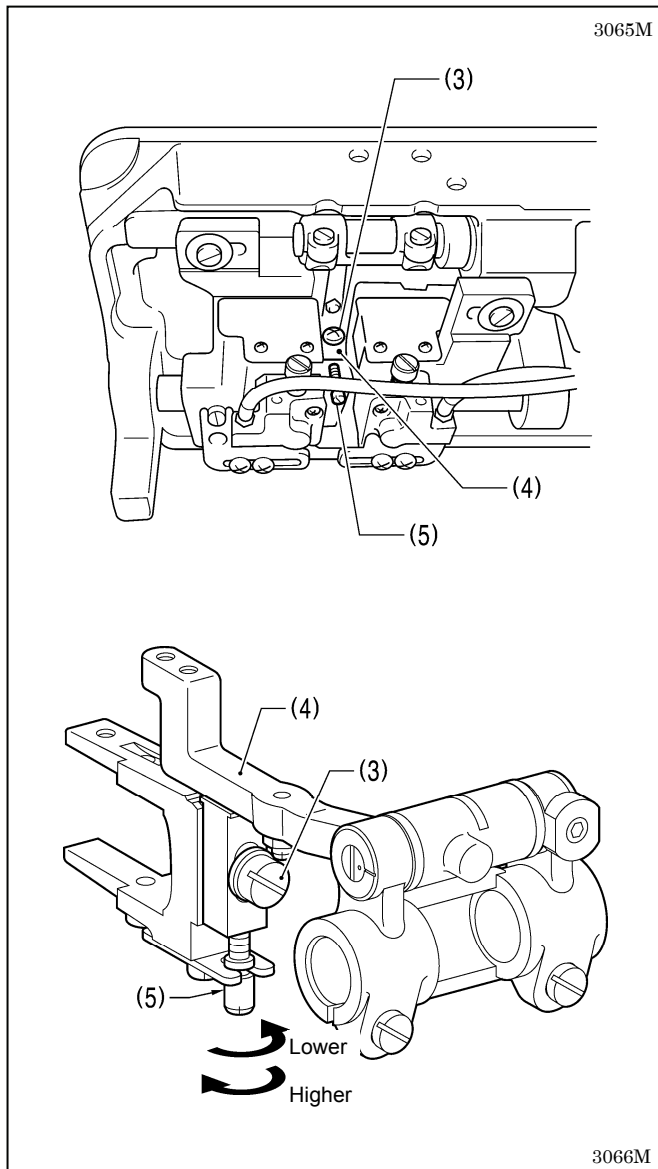
Adjust so that neither side of the feed dog touches the needle plate (4) when the needle plate (4) is secured to the bed with the screws (5) and (6).

If the needle plate and the feed dog are touching, loosen the screw (1) and move the feed rocker base arm (3) sideways to adjust.

## 13-10. Feed dog height



Turn the machine pulley forward until the feed dog (1) is at its highest position, and then adjust so that the feed dog (1) protrudes 0.9–1.1 mm from the top of the needle plate (2).



1. Tilt back the machine head.
2. Loosen the screw (3) just enough so that the feed bar (4) can slide.
3. Turn the height adjustment screw (5) as shown in the illustration to adjust the height of the feed dog (1).
4. Securely tighten the screw (3).
5. Recheck the height of the feed dog (1).

### NOTE:

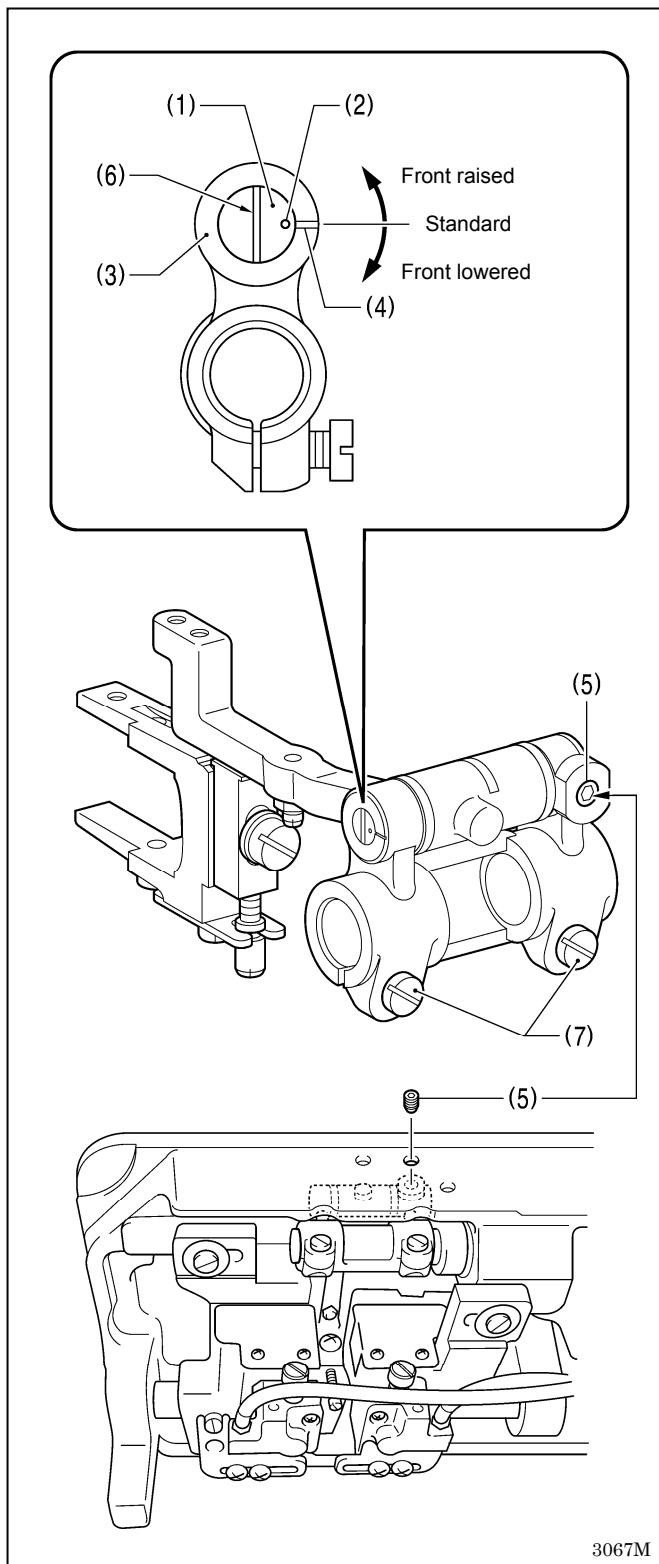
#### If the feed dog is too high

- The feed dog may touch the needle plate.
- The stitch length may become longer than the stitch length dial setting.
- Thread tightening may be poor when using thick threads.
- It may be difficult to obtain uniform stitch lengths for normal feed and reverse feed.
- Lower thread trimming errors may occur (models with thread trimmer).

#### If the feed dog is too low

- The stitch length may become shorter than the stitch length dial setting.
- It may be difficult to obtain uniform stitch lengths for normal feed and reverse feed.
- The feed dog may touch the movable knife (models with thread trimmer).
- Large variations in stitch length may occur at slow and fast sewing speeds.

### 13-11. Feed dog angle



The standard angle for the feed dog is when the mark (2) on the feed bar shaft (1) is aligned with the reference line (4) on the feed rocker base arm (3).

1. Tilt back the machine head.
2. Loosen the set screw (5).
3. Insert a screwdriver into the slit (6) in the feed bar shaft (1), and turn it to make the adjustment.
4. Tighten the set screw (5).

\* When the angle of the feed dog is adjusted, the forward-back position of the feed dog will change. Loosen the two screws (7) and adjust the forward-back position of the feed dog in accordance with the needle (for lower feed, in accordance with the needle plate).

\* In addition, when the angle of the feed dog is adjusted, the height of the feed dog will also change, so readjust the height of the feed dog.

# 14. TROUBLESHOOTING

- Please check the following points before calling for repairs or service.
- If the following remedies do not fix the problem, turn off the power switch and consult a qualified technician or the place of purchase.

## ! DANGER



Wait at least 5 minutes after turning off the power switch and disconnecting the power cord from the wall outlet before opening the face plate of the control box. Touching areas where high voltages are present can result in severe injury.



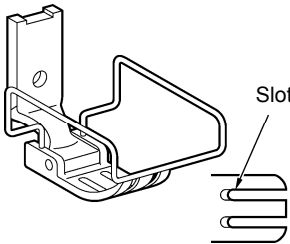
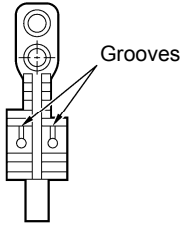

## ! CAUTION

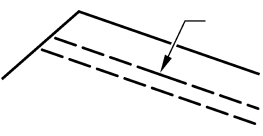
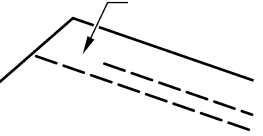
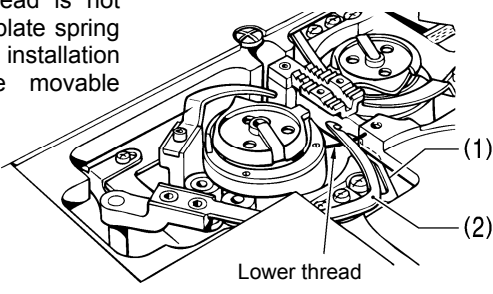
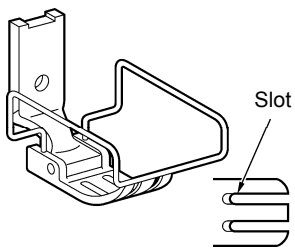
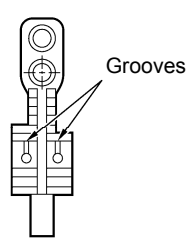


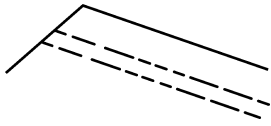

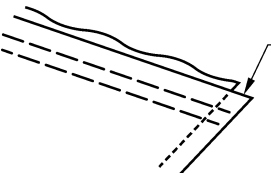
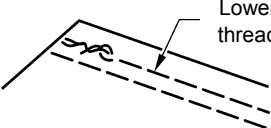

Turn off the power switch and disconnect the power cord before carrying out troubleshooting. The machine may operate if the treadle is depressed by mistake, which could result in injury.

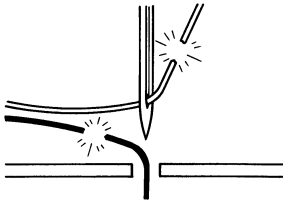
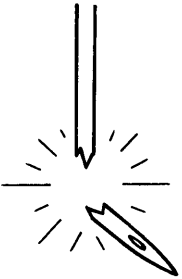
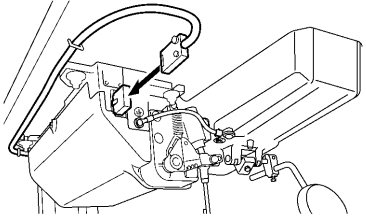
## 14-1. Sewing

Items with a “\*” in the “Page” column should only be checked by a qualified technician.

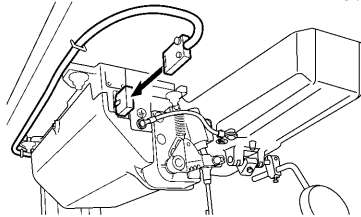
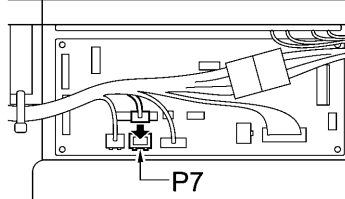
	Problem	Possible cause	Page
1	<p>Upper thread is not tight.</p>  <p>Lower thread is not tight.</p>  <p>0573M 0574M</p>	<ul style="list-style-type: none"> <li>• Has the thread been threaded incorrectly? If the thread is threaded incorrectly, thread it correctly.</li> <li>• Is the upper thread tension or lower thread tension too weak? Adjust the upper thread tension or lower thread tension.</li> <li>• Is the thread take-up spring operating range too small? Lower the position of the stopper.</li> </ul> <p>If using a sewing machine with medium-weight material specifications, poor thread tightening may occur depending on the type of material being sewn. In such cases, replace the presser foot with one that has slots on the underside, or replace the feed dog with a grooved feed dog.</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p>2944M</p>	<p>20-24</p> <p>51</p> <p>65*</p>
2	<p>Loops appear in seam.</p>  <p>0977M</p>	<ul style="list-style-type: none"> <li>• Is the thread path not smooth enough? Use a file with a fine grain or sandpaper to polish smooth the thread path.</li> <li>• Is the bobbin not turning smoothly? Pull out the lower thread to check that there is no slackness in the thread tension, or replace the bobbin or bobbin case.</li> <li>• Is the thread take-up amount too large? Adjust the thread take-up amount.</li> </ul>	<p>54</p>

	Problem	Possible cause	Page
3	<p>Skipped stitches occur while sewing</p>  <p>2945M</p>	<ul style="list-style-type: none"> <li>• Is the needle tip bent? Is the needle tip blunt? If the needle tip is bent or broken, replace the needle.</li> <li>• Is the needle properly installed? If it is incorrect, install the needle correctly.</li> <li>• Is the machine properly threaded? If it is incorrect, thread the thread correctly.</li> <li>• Is the presser foot pressure too weak? Adjust the presser foot pressure.</li> <li>• Is the needle too thin? Replace the needle with a needle that is one rank thicker.</li> <li>• Is the presser foot too high? Adjust the height of the presser foot.</li> <li>• Is the thread take-up spring too weak? Adjust the tension of the thread take-up spring.</li> <li>• Is the thread take-up amount too large? Adjust the thread take-up amount.</li> </ul>	<p>18</p> <p>20-24</p> <p>52</p> <p>68*</p> <p>66*</p> <p>54</p>
4	<p>Skipped stitches at sewing start</p> <p>Thread unravelling at sewing start</p>  <p>2946M</p>	<ul style="list-style-type: none"> <li>• Is the thread take-up spring tension too strong? Reduce the tension of the thread take-up spring.</li> <li>• Is the thread take-up spring operating range too large? Raise the position of the stopper.</li> <li>• Are the trailing lengths of the upper threads too short after thread trimming? Adjust the pretension.</li> <li>• Are the threads not being trimmed cleanly? Sharpen the fixed knives, or replace the fixed and movable knives if necessary.</li> <li>• Is the needle too wide? Try using a needle with a count that is one lower than the current needle.</li> <li>• Is the sewing speed too fast at the sewing start? Use the slow start feature.</li> <li>• Is the needle up stop position too high? Adjust the needle up stop position.</li> <li>• Is the lower thread pressed by the plate spring (1) after thread trimming? If the lower thread is not pressed by the plate spring (1), adjust the installation position of the movable knife (2).</li> </ul>  <p>2947M</p> <ul style="list-style-type: none"> <li>• If sewing light or medium-weight materials, is a presser foot with slots on the underside or grooved feed dog being used? Use a presser foot without slots. Use a feed dog without grooves.</li> </ul>  <p>Slot</p>  <p>Grooves</p> <p>2944M</p>	<p>66*</p> <p>65*</p> <p>53</p> <p>*</p> <p>34</p> <p>35</p> <p>*</p>

Problem	Possible cause	Page
<p>5 Uneven seam</p>  <p>2948M</p>	<ul style="list-style-type: none"> <li>Is the presser foot pressure too weak? Adjust the presser foot pressure.</li> <li>Is the feed dog too low? Adjust the feed dog height.</li> <li>Is the bobbin scratched? If the bobbin is damaged, smooth it with an oiled grindstone or replace it.</li> </ul>	<p>52</p> <p>73*</p>
<p>6 Large degree of puckering (excess tension)</p>  <p>2949M</p>	<ul style="list-style-type: none"> <li>Is the upper thread tension too strong? Make the upper thread tension as weak as possible.</li> <li>Is the lower thread tension too strong? Make the lower thread tension as weak as possible.</li> <li>Are the thread take-up spring tensions too strong? Make the thread take-up spring tension as weak as possible.</li> <li>Is the thread take-up spring operating range too large? Move the stopper to as high a position as possible.</li> <li>Is the presser foot pressure too strong? Adjust the presser foot pressure.</li> <li>Is the sewing speed too fast? Use the sewing speed control keys to gradually reduce the sewing speed.</li> <li>Is the thread take-up amount too small? Adjust the thread take-up amount.</li> </ul>	<p>51</p> <p>51</p> <p>66*</p> <p>65*</p> <p>52</p> <p>28</p> <p>54</p>
<p>7 Material slippage</p>  <p>2950M</p>	<ul style="list-style-type: none"> <li>Is the presser foot pressure too strong? Adjust the presser foot pressure.</li> </ul>	<p>52</p>
<p>8 Lower thread is tangled at the sewing start. Spinning of bobbin during thread trimming</p>  <p>2951M</p>	<ul style="list-style-type: none"> <li>Is the bobbin spinning direction correct when the lower thread is being pulled? Set the bobbin so that it turns in the opposite direction to the rotary hook.</li> <li>Is there too much thread wound onto the bobbin? The bobbin winding amount should not be more than 80%.</li> <li>Is the anti-spin spring attached? (Models with thread trimmer) Attach the anti-spin spring.</li> <li>Is the bobbin turning smoothly? If the bobbin is not turning smoothly, replace the bobbin.</li> <li>Is a bobbin other than the light-alloy bobbins specified by Brother being used? Use only bobbins which are specified by Brother.</li> </ul>  <p>2124M</p>	<p>21 · 22</p> <p>20</p> <p>21 · 22</p> <p>21 · 22</p>

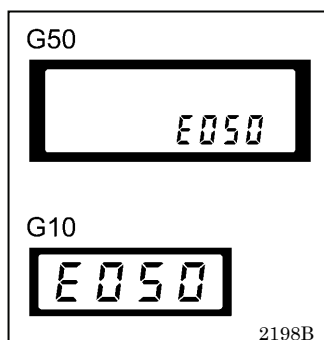
	Problem	Possible cause	Page
9	<p>Upper and lower threads are breaking.</p>  <p>0471M</p>	<ul style="list-style-type: none"> <li>Is the needle bent or is the needle tip broken? Replace the needle if it is bent or broken.</li> <li>Is the needle properly installed? If it is incorrect, install the needle correctly.</li> <li>Is the machine properly threaded? If it is incorrect, thread the thread correctly.</li> <li>Is the oil tank filled with lubricating oil? If the level of lubricating oil is below the bottom reference line, add more oil.</li> <li>Is the upper or lower thread tension too weak or too strong? Adjust the upper thread or lower thread tension.</li> <li>Is the rotary hook blocked with dust or thread scraps? Clean the rotary hook.</li> <li>Is the upper thread may be loose because the thread take-up spring operating range is too small? Adjust the position of the stopper.</li> <li>Is the rotary hook, feed dog or other part damaged? If they are damaged, smooth them with an oiled grindstone or replace the damaged parts.</li> <li>Is the thread path damaged? If the thread path is damaged, smooth it with sandpaper or replace the damaged part.</li> <li>Is the thread take-up amount correct? Adjust the thread take-up amount.</li> </ul>	<p>18</p> <p>20-24</p> <p>9</p> <p>51</p> <p>55</p> <p>65*</p> <p>*</p> <p>*</p> <p>54</p>
10	Incorrect thread trimming	<ul style="list-style-type: none"> <li>Is the movable knife damaged or bent? Replace the movable knife</li> </ul>	<p>*</p>
11	<p>Broken needles</p>  <p>0469M</p>	<ul style="list-style-type: none"> <li>Is the material being pushed or pulled with excessive force during sewing?</li> <li>Is the needle bent, is the needle tip broken, or is the needle hole blocked? Replace the needle.</li> <li>Does the needle drop into the center of the needle hole in the feed dog? Check the needle drop position. If the needle does not drop into the center of the needle hole in the feed dog, reinstall the feed dog. If the needle bar has rotated, rotate the needle bar to the correct position.</li> </ul> <div data-bbox="539 1469 1279 1706"> <p>Caution</p> <ul style="list-style-type: none"> <li>It is extremely dangerous to leave any pieces of broken needle sticking in the material. If the needle breaks, search for all pieces until the whole of the needle is found again.</li> <li>Furthermore, we recommend we recommend that through steps be taken to account for such needles to comply with product liability regulations.</li> </ul> </div>	<p>18</p> <p>*</p> <p>*</p>
12	Machine does not operate when power is turned on and treadle is pressed.	<ul style="list-style-type: none"> <li>Is the power supply connector disconnected from the control box? Insert the connector securely.</li> </ul>  <p>2197B</p>	<p>14 · 15</p>

## 14. TROUBLESHOOTING

Problem		Possible cause	Page
13	Machine does not operate at high speed.	<ul style="list-style-type: none"> <li>Is the sewing speed setting or backtack speed setting incorrect? Use the sewing speed control keys to set the high speed.</li> </ul>	28
14	Machine stops during sewing.	<ul style="list-style-type: none"> <li>Is the fixed stitch key turned on? Press the fixed stitch key so that the indicator turns off.</li> <li>Is the power supply voltage too low? Check the power supply. (If the power cord is too long or too many appliances are being run from a single outlet, this may cause voltage drops which will in turn cause the reset function to activate and stop the machine, even if the power supply itself is normal.)</li> </ul>	27 *
15	Nothing appears on the operation panel display.	<ul style="list-style-type: none"> <li>Is the power supply connector disconnected from the control box? Insert the connector securely.</li> <li>Is operation panel connector P7 inside the control box disconnected? Insert the connector securely.</li> </ul>	<div>2197B</div>  <div>14 · 15</div>  <div>P7</div> <div>4264M</div> <div>12*</div>
16	"GrEASEUP" flashes on the operation panel when the power is turned on.	<ul style="list-style-type: none"> <li>This display is to notify you that it is time to apply grease. Apply grease.</li> </ul>	57*



## 14-2. Error code displays



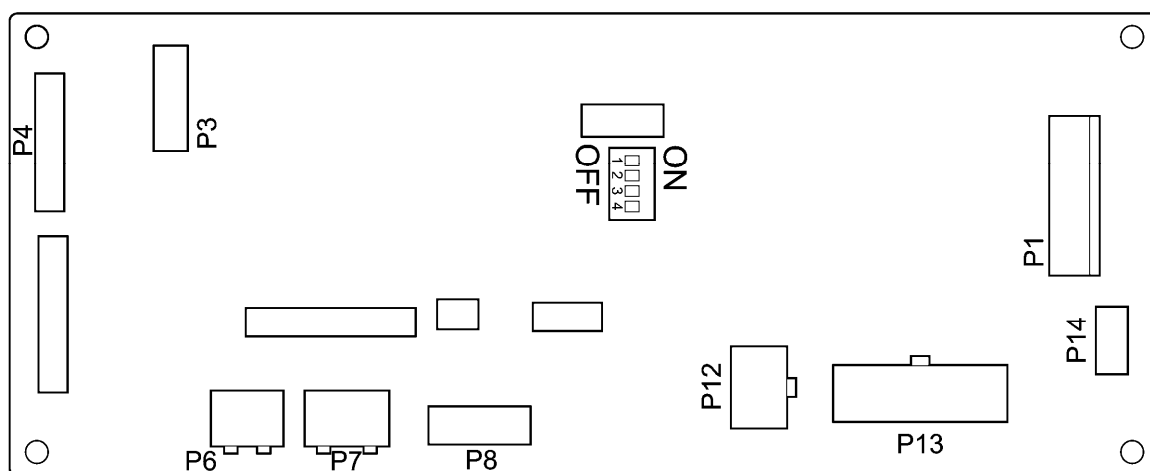
### If an error code appears on the operation panel display

1. Make a note of the error code and then turn off the power.
2. After the operation panel display has turned off, eliminate the cause of the error and then turn the power back on.

- Items with a “\*” in the “Page” column should only be checked by a qualified technician.
- For items with “\*\*” appearing in the “Page” column, ask the place of purchase for advice.

### < Connector and DIP switch layout diagram >

#### Main PCB



4266M

Error code	Possible cause	Page
E050	<ul style="list-style-type: none"> <li>The machine head was detected as being tilted back when the treadle was depressed. Press the power OFF switch and then return the machine head to the upright position. (If tilting back the machine head to carry out any tasks, press the power OFF switch first.)</li> </ul>	
E051	<ul style="list-style-type: none"> <li>The machine head was detected as being tilted back during sewing. Turn the power off and then back on again.</li> </ul>	
E055	<ul style="list-style-type: none"> <li>Was the power ON switch pressed while the machine head was still tilted back? Press the power OFF switch and then return the machine head to the upright position.</li> <li>Is the 14-pin machine connector inside the control box disconnected? Press the power OFF switch, and then check that the 14-pin machine connector is connected to connector P13 on the main PCB.</li> </ul>	12*
E065	<ul style="list-style-type: none"> <li>Was the power ON switch pressed while an invalid key was being pressed on the operation panel? Press the power OFF switch and check that no operation panel keys are being pressed.</li> <li>There is a malfunction of the operation panel. Replace the operation panel.</li> </ul>	**
E066	<ul style="list-style-type: none"> <li>Was the actuator switch being pressed when the power ON switch was pressed? Press the power OFF switch and check that the actuator switch is not being pressed</li> <li>There is a problem with the actuator switch. Replace the actuator switch.</li> </ul>	*

Error code	Possible cause	Page
<b>E090</b> Treadle connector is not connected.	<ul style="list-style-type: none"> <li>Is the 4-pin treadle connector inside the control box disconnected? Press the power OFF switch, and then check that the 4-pin treadle connector is connected to connector P14 on the main PCB. If there is a broken wire in the cord of the treadle connector, replace the treadle unit.</li> </ul>	* **
<b>E091</b>	<ul style="list-style-type: none"> <li>The settings in "Setting method for standard depression stroke" may be incorrect. Redo the settings in "Setting method for standard depression stroke".</li> <li>Problem with treadle unit. Replace the treadle unit.</li> </ul>	* **
<b>E095</b>	<ul style="list-style-type: none"> <li>Was the power ON switch pressed while the treadle was still depressed? Return the treadle to the neutral position. When the treadle neutral position is detected, the error will be cleared and normal operation will then be possible.</li> <li>Is the power supply voltage too low? Check the power supply voltage.</li> </ul>	*
<b>E111</b>	<ul style="list-style-type: none"> <li>The sewing machine could not stop correctly at the needle up stop position after thread trimming. Remove any thread scraps that may be blocking the motor. Press the power OFF switch and then turn the machine pulley by hand and check that it turns easily. Check that there are no problems with the thread trimming mechanism.</li> </ul>	* * **
<b>E130</b>	<p>The sewing machine or motor do not operate when the treadle is depressed.</p> <ul style="list-style-type: none"> <li>Is the 4-pin motor connector inside the control box disconnected? Press the power OFF switch and check the connection of the 4-pin motor connector.</li> <li>Has the sewing machine locked up? Press the power OFF switch and then turn the machine pulley by hand and check that it turns easily.</li> <li>Problem with control box. Replace the control box.</li> </ul>	12* * **
<b>E131</b> Problem with motor encoder signal.	<ul style="list-style-type: none"> <li>Is the 10-pin resolver connector inside the control box disconnected? Press the power OFF switch, and then check that the 10-pin resolver connector is connected to connector P6 on the main PCB.</li> <li>Problem with motor or main PCB. Replace the motor or the control box.</li> </ul>	12* **
<b>E132</b> Problem with motor operation.	<ul style="list-style-type: none"> <li>Problem with motor. Replace the motor.</li> <li>Problem with drive PCB. Replace the control box.</li> </ul>	** **
<b>E140</b> Motor reverse operation.	<ul style="list-style-type: none"> <li>Motor reverse operation was detected. Replace the motor.</li> </ul>	**

Error code	Possible cause	Page
<b>E150</b> Motor is overheating.	<ul style="list-style-type: none"> <li>This is displayed when the motor becomes abnormally hot and the temperature protection has activated. After the temperature has dropped, press the power ON switch and operate the sewing machine as normal.</li> </ul>	
<b>E151</b> Problem with motor overheating sensor.	<ul style="list-style-type: none"> <li>Is the connector inside the motor disconnected? Insert the connector securely.</li> <li>Malfunction of motor overheating sensor Replace the motor.</li> </ul>	<p>**</p> <p>**</p>
<b>E190</b> Motor timeout.	<ul style="list-style-type: none"> <li>This appears on the display when the sewing machine has been operating continuously for 3 minutes or more. Turn the power switch off and then back on again, and then operate the sewing machine normally.</li> </ul>	
<b>E191</b> Thread trimming solenoid timeout.	<ul style="list-style-type: none"> <li>This is displayed if the sewing machine motor locks during thread trimming. Remove any thread scraps that may be blocking the motor. Check that there are no problems with the thread trimming mechanism.</li> </ul>	<p>*</p> <p>**</p>
<b>E410</b> Error communicating with operation panel.	<ul style="list-style-type: none"> <li>Is the 12-pin operation panel connector inside the control box disconnected? Press the power OFF switch, and then check that the 12-pin operation panel connector is connected to connector P7 on the main PCB.</li> </ul>	12*
<b>E440</b> Error writing data to main PCB.	<ul style="list-style-type: none"> <li>Problem with main PCB. Replace the control box.</li> </ul>	**
<b>E441</b> Error reading data from main PCB.	<ul style="list-style-type: none"> <li>Problem with main PCB. Replace the control box.</li> </ul>	**
<b>E442</b> Problem with data on main PCB.	<ul style="list-style-type: none"> <li>The data on the main PCB is corrupted. Corrupt data was initialized. Turn the power off and then back on again.</li> </ul>	
<b>E450</b>	<ul style="list-style-type: none"> <li>Model selection could not be loaded from the head detector unit. Check that the head detector unit specifications are correct.</li> </ul>	*
<b>E451</b> Error writing data to head detector unit.	<ul style="list-style-type: none"> <li>Problem with head detector unit. Replace the head detector unit.</li> </ul>	**
<b>E452</b> Head detector unit connection error.	<ul style="list-style-type: none"> <li>Is the 6-pin head detector unit connector inside the control box disconnected? Press the power OFF switch, and then check that the 6-pin head detector unit connector is connected to connector P8 on the main PCB.</li> </ul>	12*

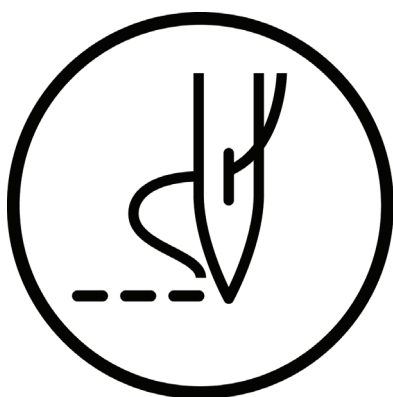
Error code	Possible cause	Page
<b>E701</b> Abnormally high power supply voltage.	<ul style="list-style-type: none"> <li>Does the power supply voltage match the control box voltage specifications? Check that the voltage matches.</li> <li>Is the power supply voltage abnormally high? Check the power supply voltage.</li> <li>Problem with control box. Replace the control box.</li> </ul>	*  *  **
<b>E705</b> Abnormally low power supply voltage.	<ul style="list-style-type: none"> <li>Is the power supply voltage abnormally low? Check the power supply voltage.</li> <li>Problem with control box. Replace the control box.</li> </ul>	*  **
<b>E710</b> Motor overcurrent.	<ul style="list-style-type: none"> <li>Is the electrical equipment connector inside the control box disconnected? Press the power OFF switch, and then check that the drive PCB connector is connected to connector P4 on the main PCB.</li> <li>This is displayed if the machine pulley moves stiffly when it is turned by hand, or if the sewing machine locks up and an abnormal current is flowing. Press the power OFF switch, and then turn the machine pulley by hand and check that it turns easily.</li> <li>This is displayed if there is some problem with the motor and an abnormal current is flowing. Replace the motor.</li> <li>Problem with control box. Replace the control box.</li> </ul>	*  *  **  **
<b>E791</b> Solenoid overcurrent.	<ul style="list-style-type: none"> <li>This is displayed when there is overcurrent in any of the solenoids (thread trimming, thread wiping, quick reverse or presser lifter). Check the resistances of the solenoids.</li> <li>Problem with main PCB. Replace the control box.</li> </ul>	*  **
<b>E901</b>	<ul style="list-style-type: none"> <li>DIP switch No. 4 inside the control box is set to ON. Press the power OFF switch and set DIP switch No. 4 to OFF.</li> </ul>	*

If an error code that is not listed above appears or if carrying out the specified remedy does not solve the problem, contact the place of purchase.

# 15. 7-SEGMENT DISPLAY

0	1	2	3	4	5	6	7	8	9
A	B	C	D	E	F	G	H	I	J
K	L	M	N	O	P	Q	R	S	T
U	V	W	X	Y	Z				

4268M



## INSTRUCTION MANUAL

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This is the original instructions.

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