

CS-342G

Basic Operation Manual

DIRECT DRIVE PROGRAMMABLE ELECTRONIC PATTERN SEWER

Please read this manual before using the machine.

Please keep this manual within easy reach for quick reference.



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.

The meanings of these indications and symbols are given below.

Indications

 DANGER	The instructions which follow this term indicate situations where failure to follow the instructions will result in death or serious injury.
 CAUTION	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 pneumatic delivery capability should be greater than the requirements for the sewing machine's total air consumption.

Insufficient pneumatic delivery capability 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 160 kg. Use equipment such as a crane or hoist when installing the machine head and adjusting the height of the table.

If you try to lift the machine head yourself, it may cause injuries such as back injury.



Do not connect the power cord until installation is complete. If the foot switch is depressed by mistake, the sewing machine might start operating and injury could result.



Hold the machine head with both hands when tilting it back or returning it to its original position.

In addition, do not subject the machine head to extra force while it is tilted back. If this is not observed, the machine head may become unbalanced and fall down, and serious injury or damage to the sewing machine may 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.



All cords should be secured at least 25 mm away from any moving parts. Furthermore, do not excessively bend the cords or secure them too firmly with staples, otherwise there is the danger that fire or electric shocks could occur.



Install the safety covers to the machine head and motor.



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



Use a table with a height of 84 cm or less. If the table is too high, the machine head may become unbalanced and fall down, and serious injury or damage to the sewing machine may result.



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. If the oil and grease get into your eyes or onto your skin, inflammation can result.

Furthermore, do not drink or eat the lubricating oil or grease. They may cause diarrhea or vomiting. 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.
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. If the foot switch is depressed by mistake, the sewing machine might start operating and injury could result.</p> <ul style="list-style-type: none"> • When threading the needle • When replacing the bobbin and needle • When not using the machine and when leaving the machine unattended | <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> 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. If the foot switch is depressed by mistake, the sewing machine might start operating and injury could result.</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. If the oil and grease get into your eyes or onto your skin, inflammation can result.
Furthermore, do not drink or eat the lubricating oil or grease. They may cause diarrhea or vomiting.
Keep the oil out of the reach of children.</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 before carrying out the following operations. If the foot switch is depressed by mistake, the sewing machine might start operating and injury could result.</p> <ul style="list-style-type: none"> • Inspection, adjustment and maintenance • Replacing consumable parts such as the rotary hook <p> Disconnect the air hoses from the air supply and wait for the needle on the pressure gauge to drop to "0" before carrying out inspection, adjustment and repair of any parts which use the pneumatic equipment.</p> | <p> Hold the machine head with both hands when tilting it back or returning it to its original position.
In addition, do not subject the machine head to extra force while it is tilted back. If this is not observed, the machine head may become unbalanced and fall down, and serious injury or damage to the sewing machine may result.</p> <p> If the power switch and air need to be left on when carrying out some adjustment, be extremely careful to observe all safety precautions.</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

	⚠ 危険 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。	⚠ 危険 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。
⚠ DANGER	⚠ GEFAHR	⚠ DANGER
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.
	⚠ PELIGRO	Un voltaje inadecuado puede provocar las heridas. Apagar el interruptor principal y esperar 5 minutos antes de abrir esta cubierta.

2

	⚠ 注意 触摸运动部分, 易造成受伤。所以在装上安全保护装置后, 再进行缝纫操作。在切断电源后, 进行穿线, 更换梭芯, 机针和做清扫, 调整工作。
⚠ CAUTION	
Moving parts may cause injury. Operate with safety devices. Turn off main switch before threading, changing bobbin and needle, cleaning etc.	

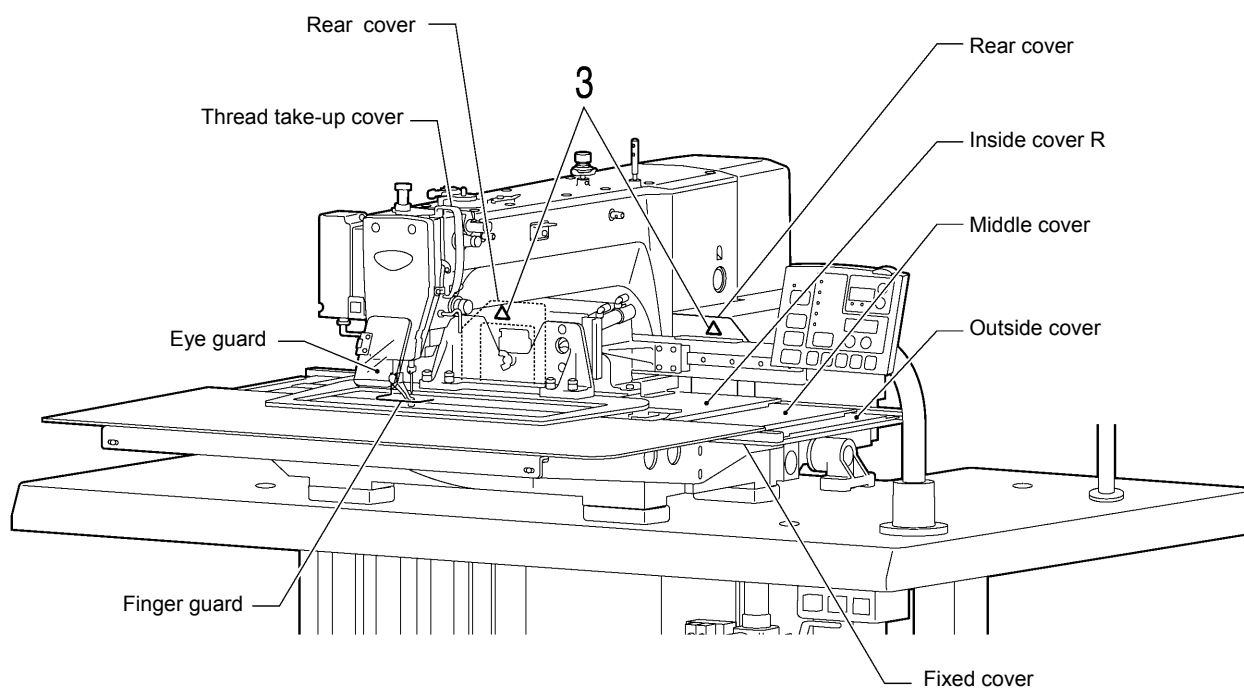
Safety devices:

Devices such as eye guard, finger guard, thread take-up cover, motor cover, X motor cover, tension release solenoid cover, inside cover, outside cover, middle cover, fixed cover and rear cover

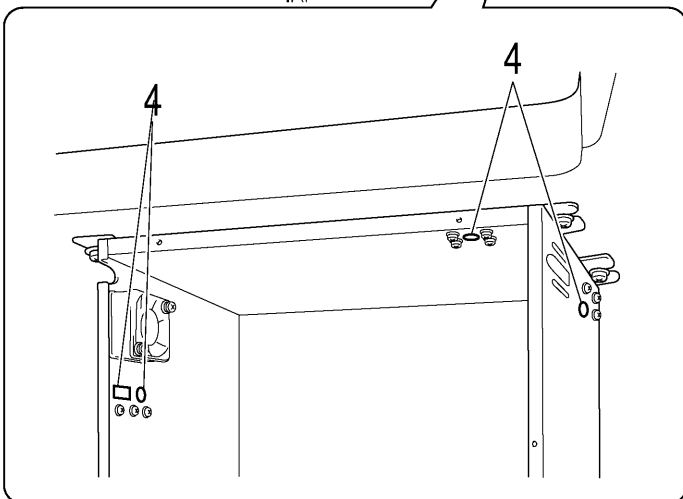
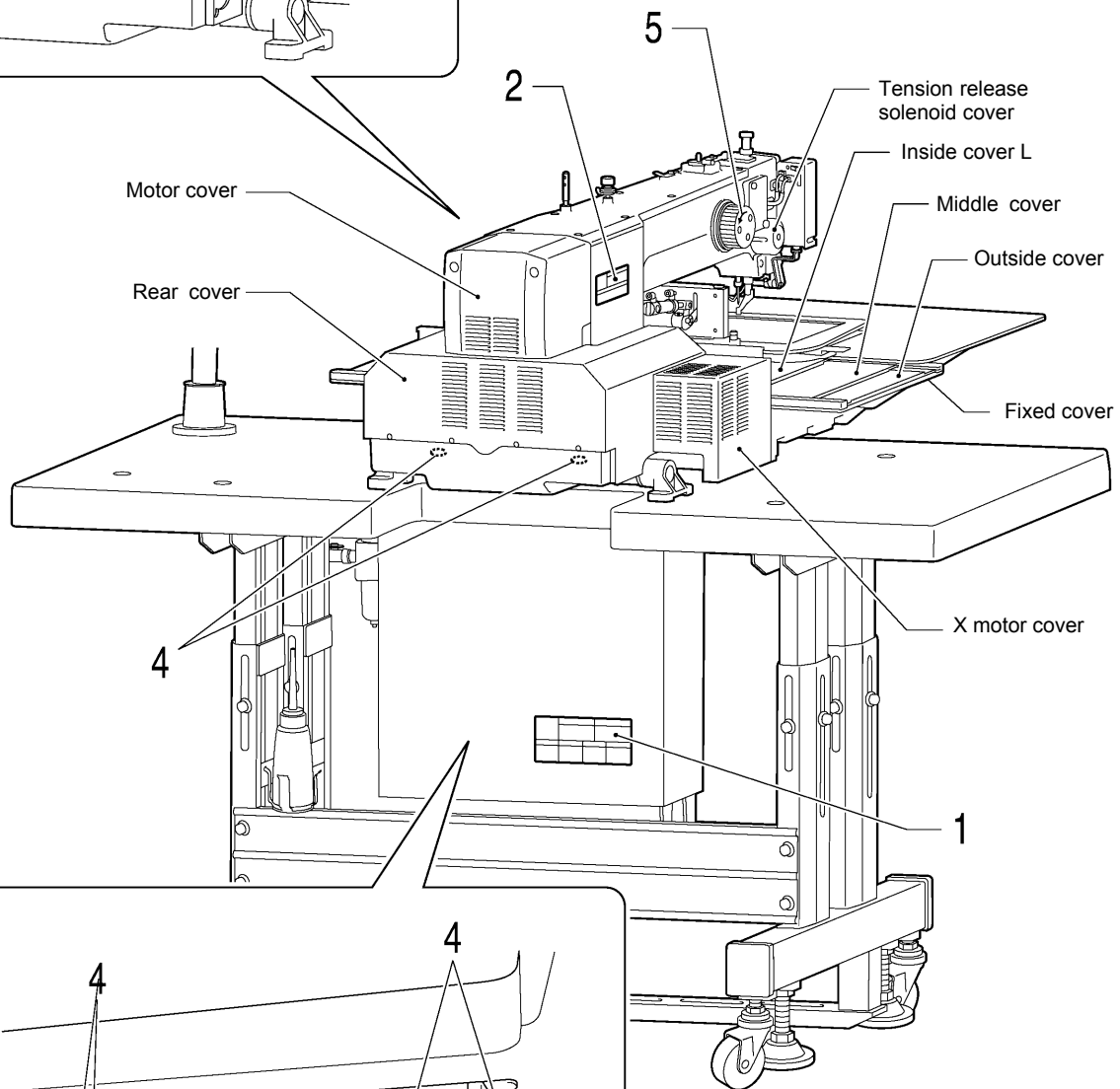
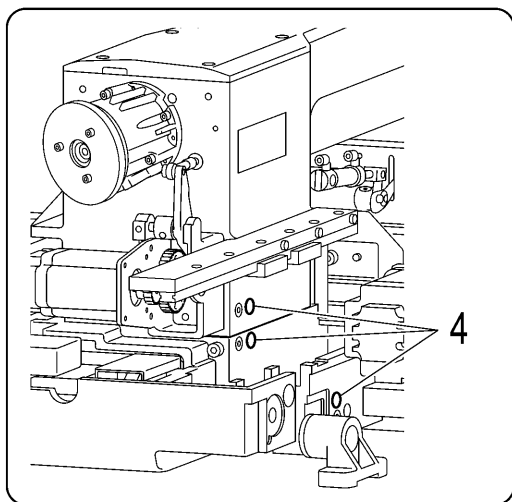
3 Be careful to avoid getting hands caught in sliding parts.

4 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.

5 Direction of operation



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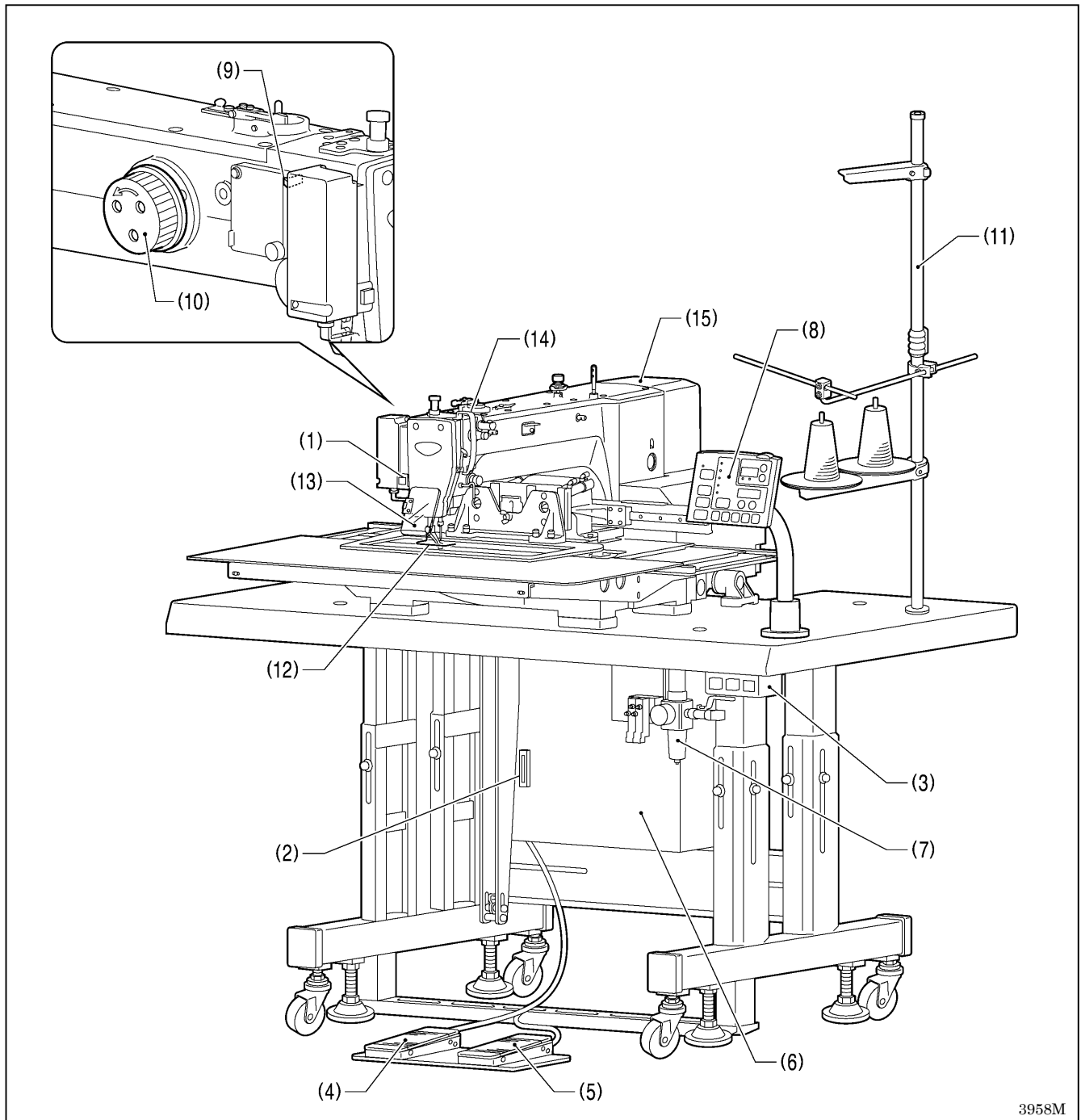
BAS-342G

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1. NAMES OF MAJOR PARTS



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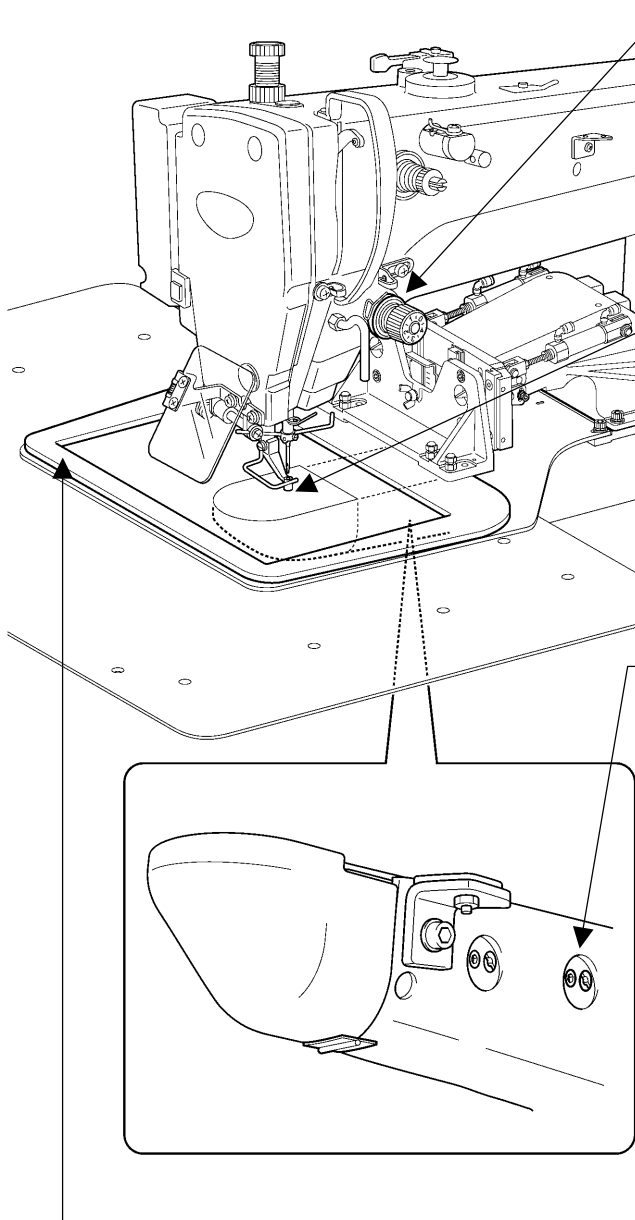
- (1) STOP switch
- (2) CF slot
- (3) Power switch
- (4) Work clamp switch
- (5) Start switch
- (6) Control box
- (7) Solenoid valve
- (8) Operation panel
- (9) Thread wiper switch
- (10) Pulley
- (11) Cotton stand

Safety devices:

- (12) Finger guard
- (13) Eye guard
- (14) Thread take-up cover
- (15) Motor cover

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2. USEFUL FUNCTIONS FOR OPTIMUM SEWING



Easy threading in threading mode

➔ Page 21

When using threading mode for threading, the tension discs will open so that the thread can be threaded more easily. Furthermore, threading mode is safe because the sewing machine will not start even when the foot switch is depressed.

Presser foot height can be set easily using the panel

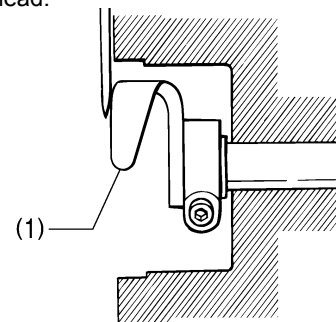
➔ Page 31
➔ INSTRUCTION MANUAL CD
7-7. Using user programs

The height of the presser foot can be set simply by entering a numeric value at the panel, without the need for tools. Furthermore, you can use user programs to set the presser foot height to the desired height separately for each sewing program.

Adjusting the driver needle guard is simple and within close reach.

➔ INSTRUCTION MANUAL CD
11-5. Adjusting the driver needle guard

The driver needle guard (1) can be adjusted easily and within close reach without tilting back the machine head.



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Two types of work clamp dropping operation

➔ INSTRUCTION MANUAL CD
5-8. Setting 2-step operation for the work clamp
7-2. Setting memory switches
7-3. List of memory switch settings

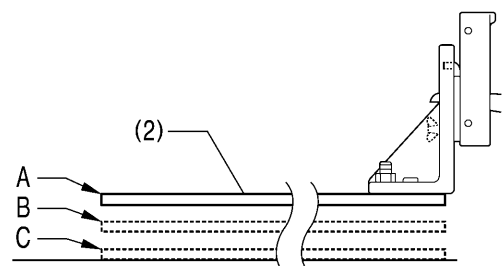
You can select one of two different types of dropping operation for the work clamp (2) by changing memory switch settings.

<Work clamp dropping in one step>

When the work clamp switch is depressed, the work clamp (2) drops in one movement from its highest position A to its lowest position C.

<Work clamp dropping in two steps>

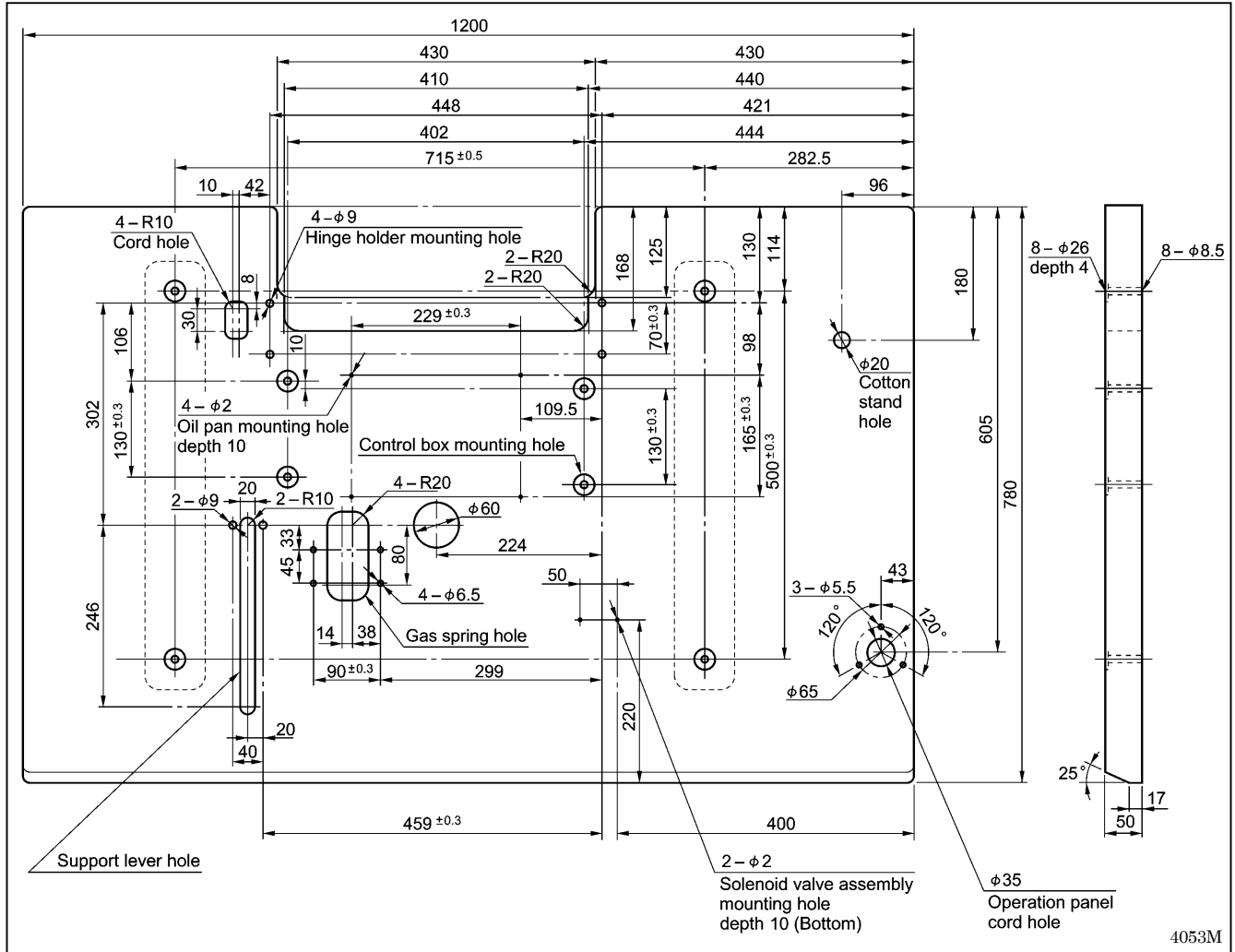
1. When the work clamp switch is depressed to the 1st step, the work clamp (2) drops from its highest position A to the intermediate position B.
2. When the work clamp switch is then depressed to the 2nd step, the work clamp (2) drops to its lowest position C.



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3. TABLE PROCESSING DIAGRAM

- The thickness of the table should be at least 50 mm, and it should be strong enough to bear the weight and vibration of the sewing machine.
- If using casters, use ones which can bear the total weight of sewing machine and table.
- Check that the control box is at least 10 mm away from the leg. If the control box and the leg are too close together, it may result in incorrect sewing machine operation.



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4. 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 head weighs approximately 160 kg.
Use equipment such as a crane or hoist when installing the machine head and adjusting the height of the table. If you try to lift the machine head yourself, it may cause injuries such as back injury.
-  Do not connect the power cord until installation is complete.
If the foot switch is depressed by mistake, the sewing machine might start operating and injury could result.
-  If using a work table which has casters, the casters should be secured in such a way so that they cannot move.
-  Use a table with a height of 84 cm or less. If the table is too high, the machine head may become unbalanced and fall down, and serious injury or damage to the sewing machine may result.
-  Hold the machine head with both hands when tilting it back or returning it to its original position.
In addition, do not subject the machine head to extra force while it is tilted back. If this is not observed, the machine head may become unbalanced and fall down, and serious injury or damage to the sewing machine may result.
-  All cords should be secured at least 25 mm away from any moving parts. Furthermore, do not excessively bend the cords or secure them too firmly 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.
-  Install the safety covers to the machine head and motor.

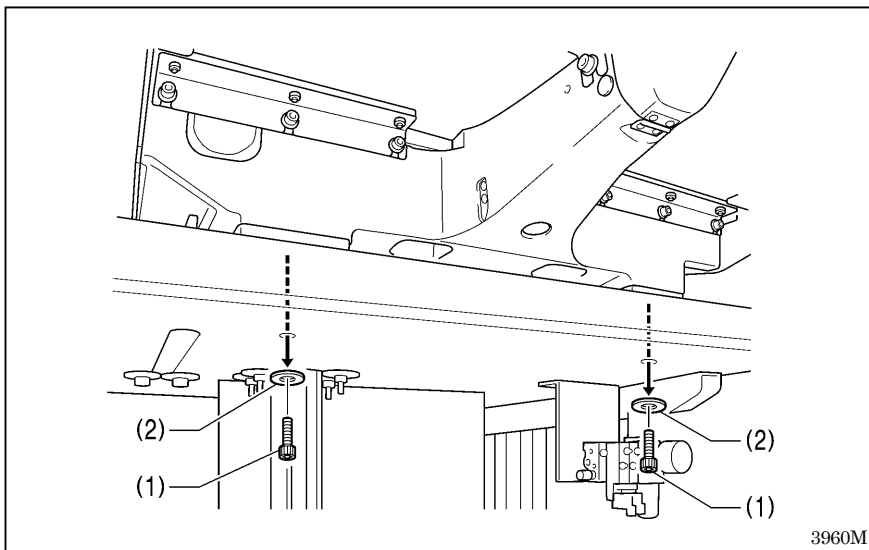
When placing the sewing machine on the table

Carry out the procedure starting from "4-2. Installing the control box" on the next page.

If the sewing machine was already installed to the table when it was delivered

Carry out the procedures indicated by [1] to [15] in the titles in the order of the numbers.

4-1. Removing the machine head fixing bolts [1]



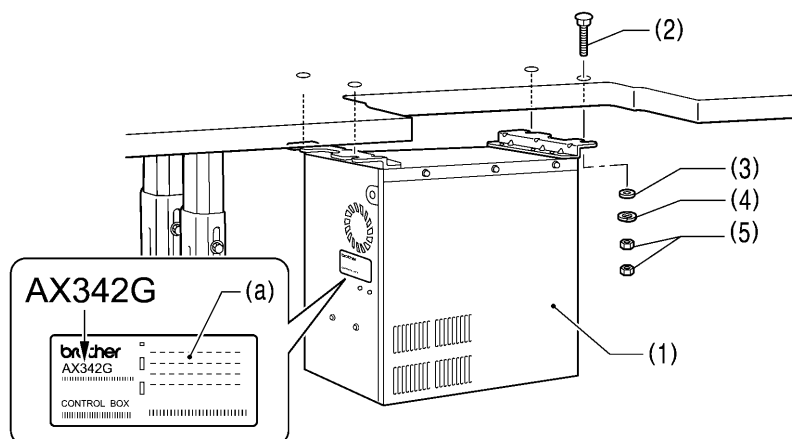
If the sewing machine was already installed to the table when it was delivered, remove the two machine head fixing bolts (1) and the two plain washers (2).

4-2. Installing the control box [2]

**CAUTION**

The control box is heavy, so installation should be carried out by two or more people. In addition, take steps to make sure that the control box does not fall down. If this is not done, injury to feet or damage to the control box may result.

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Before installing the control box (1), check that the model plate (a) on the control box (1) is "AX342G" to indicate that it is an RX-control box for BAS-342G sewing machines.

* If the sewing machine is installed to the table, tilt back the machine head. (Refer to "4-5. Tilting back and returning the machine head".)

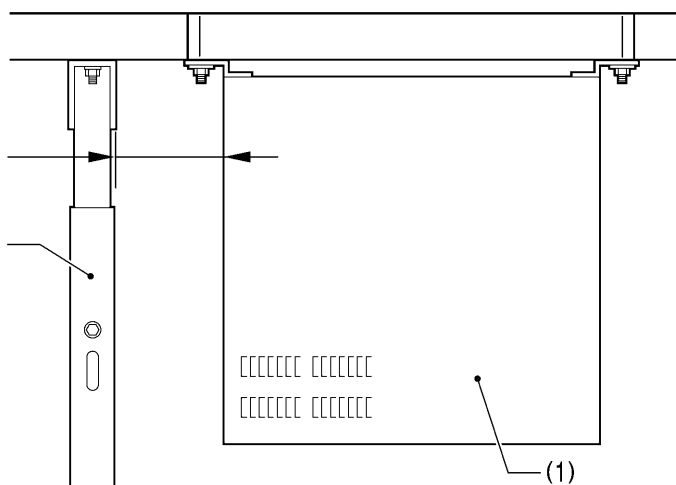
- (1) Control box
- (2) Bolts [4 pcs.]
- (3) Plain washers [4 pcs.]
- (4) Spring washers [4 pcs.]
- (5) Nuts [8 pcs.]

NOTE:

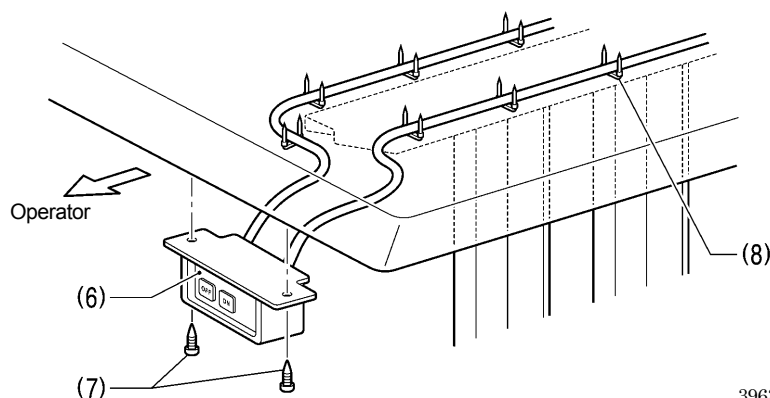
Check that the control box (1) is at least 10 mm away from the leg. If the control box (1) and the leg are too close together, it may result in incorrect sewing machine operation.

10mm or more

Leg



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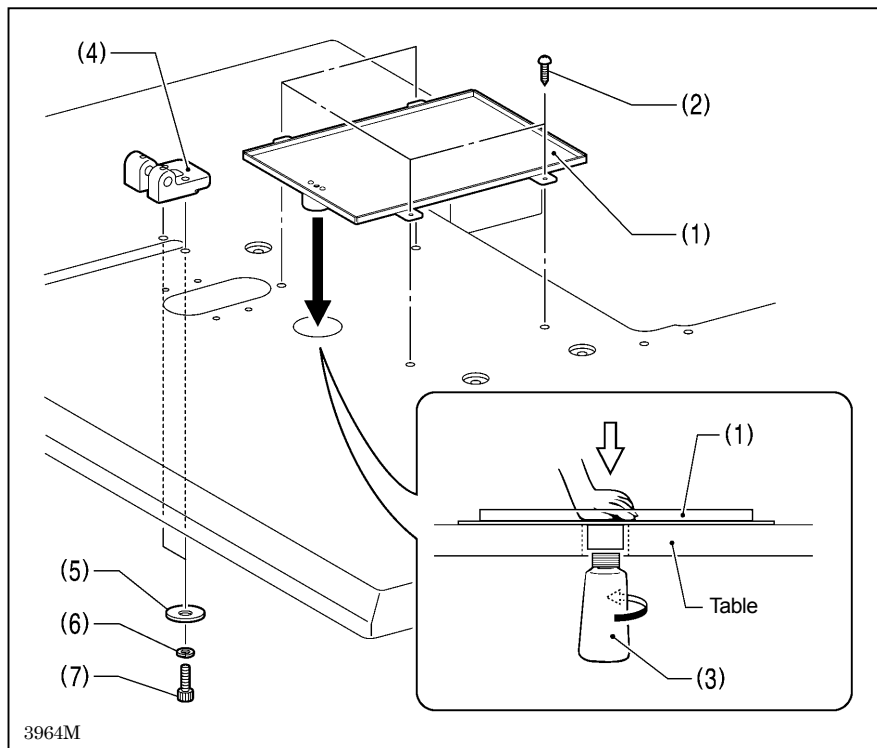
- (6) Power switch
- (7) Wood screws [2 pcs.]
- (8) Staples [7 pcs.]

NOTE:

Take care when tapping in the staples (8) to make sure that they do not pierce the power cord.

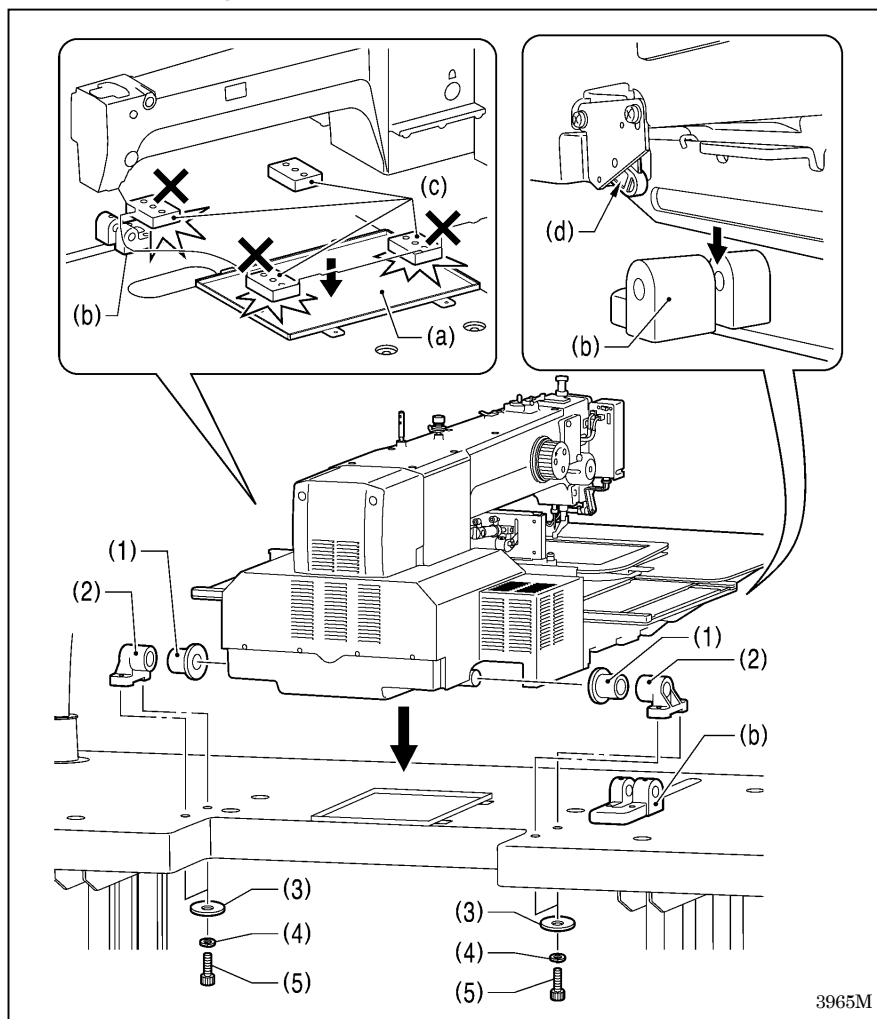
3963M

4-3. Installing the oil pan and support lever base



- (1) Oil pan
- (2) Wood screws [4 pcs.]
- (3) Oiler
- (4) Support lever base
- (5) Plain washers [2 pcs.]
- (6) Spring washers [2 pcs.]
- (7) Bolts [2 pcs.]

4-4. Installing the machine head



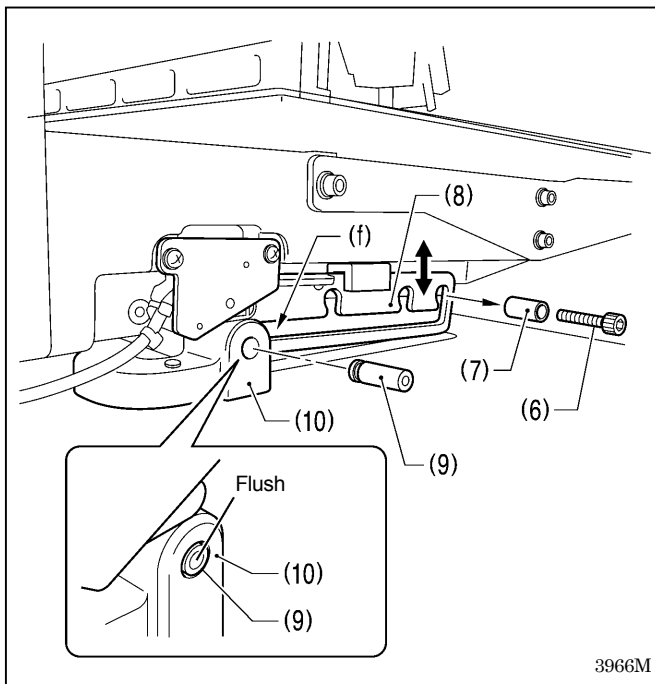
1. Place the machine head onto the table.

NOTE:

- Use a crane or hoist to install the sewing machine.
- Be careful of the following when lowering the machine head onto the table.
 - ! Do not let any cords get clamped between the machine head and the table.
 - ! Do not place the machine head cushion (c) on top of the oil pan (a) or the support lever base (b).
 - ! Do not let the side (d) of the safety switch lever touch the support lever base (b).

- (1) Rubber bushes (2 pcs.)
- (2) Hinge holders (2 pcs.)
- (3) Plain washers [4 pcs.]
- (4) Spring washers [4 pcs.]
- (5) Bolts [4 pcs.]

(Continued on next page)



2. After placing the machine head onto the table, remove the bolt (6) and the spacer (7).

* The bolt (6) and the spacer (7) are necessary for securing the support lever (8) when the machine head is removed from the table, so keep them in a safe place.

3. Pass the support lever shaft (9) through the hole in the support lever base (10) and through the groove (f) in the support lever (8), and push it in until it is flush with the surface of the support lever base (10).

* If it is difficult to pass the support lever shaft (9) through the groove (f) in the support lever (8), move the end of the support lever (8) up and down while passing the support lever shaft (9) through.

4-5. Tilting back and returning the machine head

CAUTION



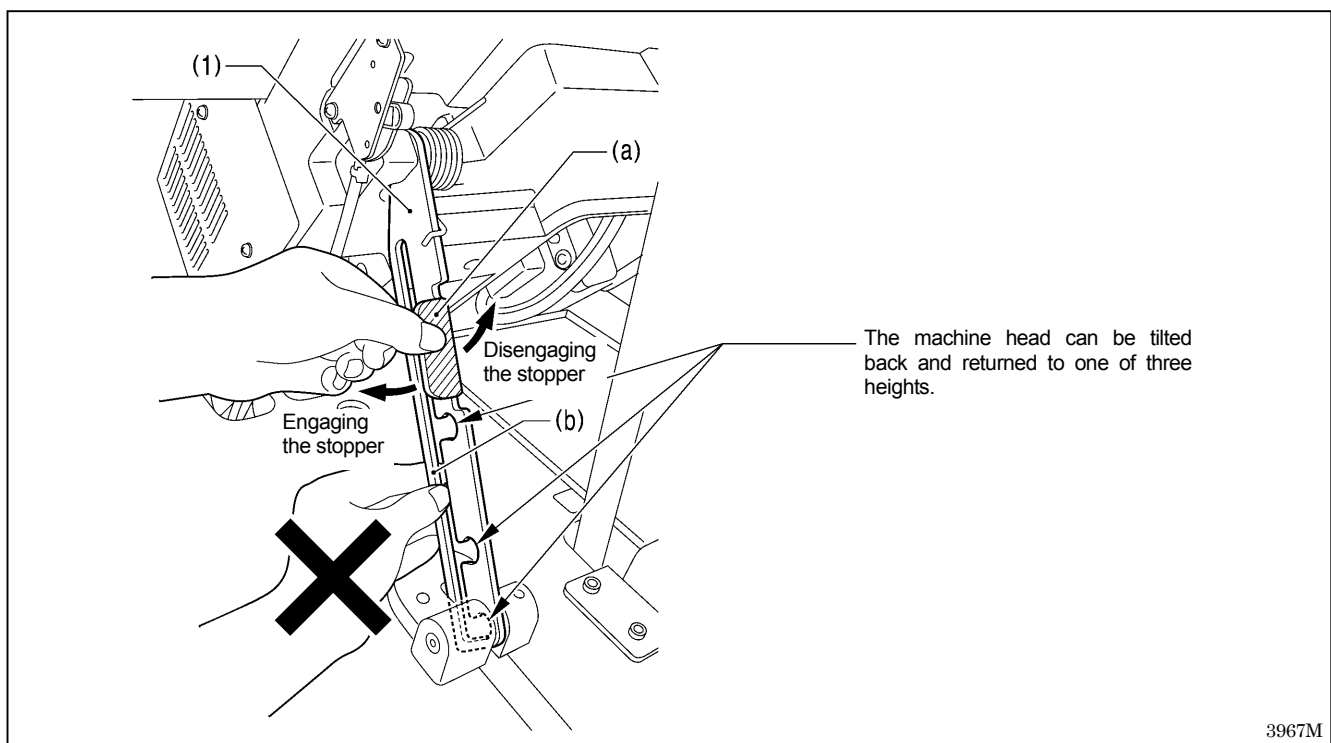
Hold the machine head with both hands when tilting it back or returning it to its original position. In addition, do not subject the machine head to extra force while it is tilted back. If this is not observed, the machine head may become unbalanced and fall down, and serious injury or damage to the sewing machine may result.



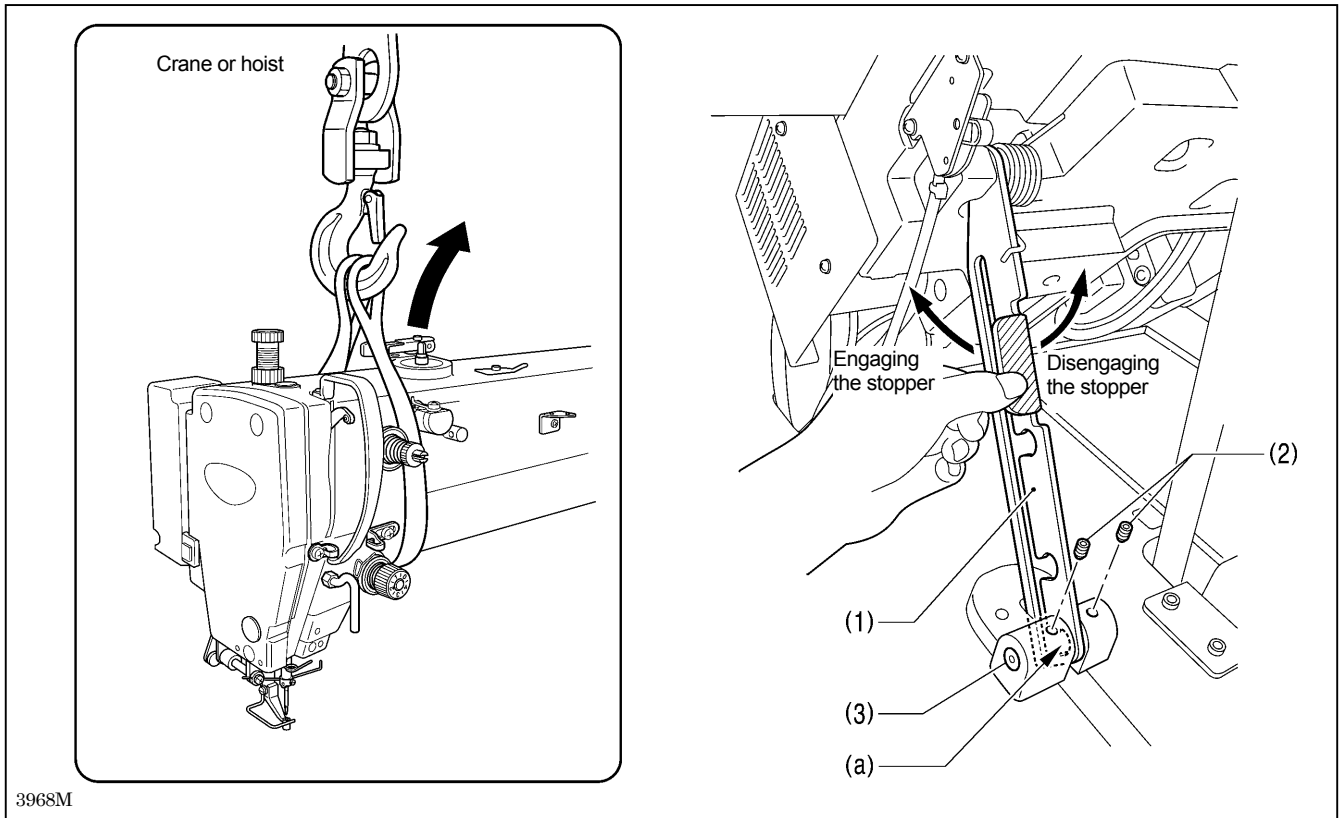
Always be sure to engage the stopper of the support lever (1) when tilting back the machine head. If the stopper is not engaged, the machine head may return to its original position and your hands may get caught and injury may result.



When disengaging the stopper, hold it by the knob (a). If you hold at the place indicated by (b), your hand will get caught between the support lever (1) and the table when the machine head is returned to its original position and injury will result.



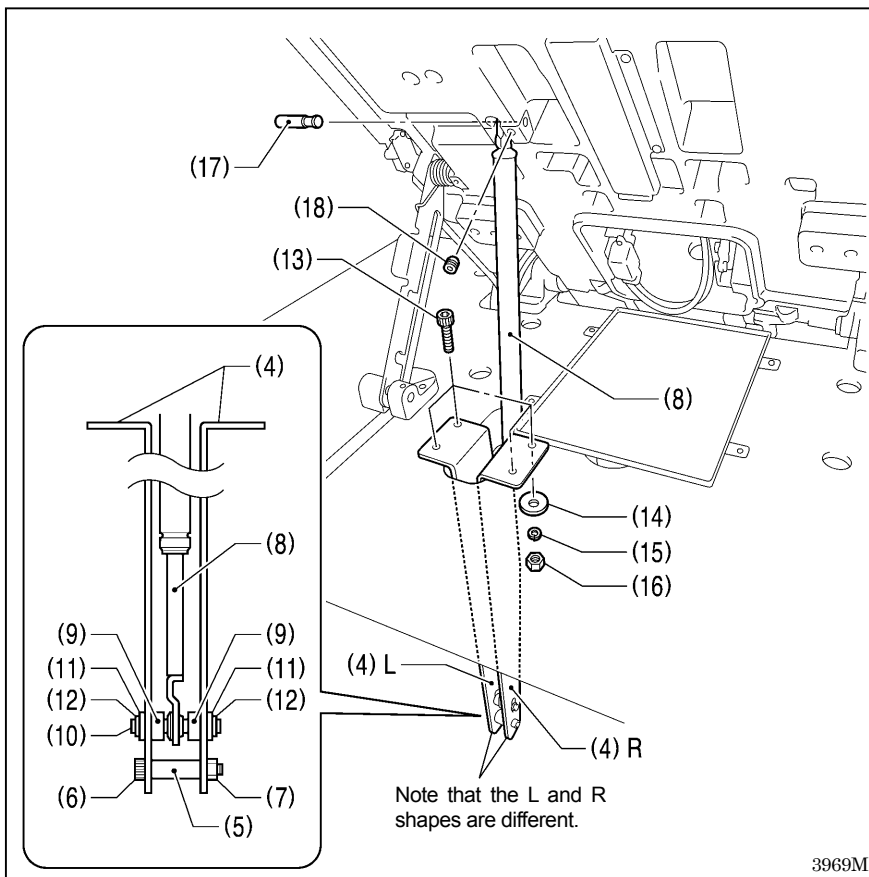
4-6. Installing the gas spring



1. Tilt back the machine head, and then secure the support lever (1) at stopper position (a). (Refer to "4-5. Tilting back and returning the machine head".)

NOTE: Use equipment such as a crane or hoist to tilt back the machine head.

2. Tighten the two set screws (2) to secure the support lever shaft (3).

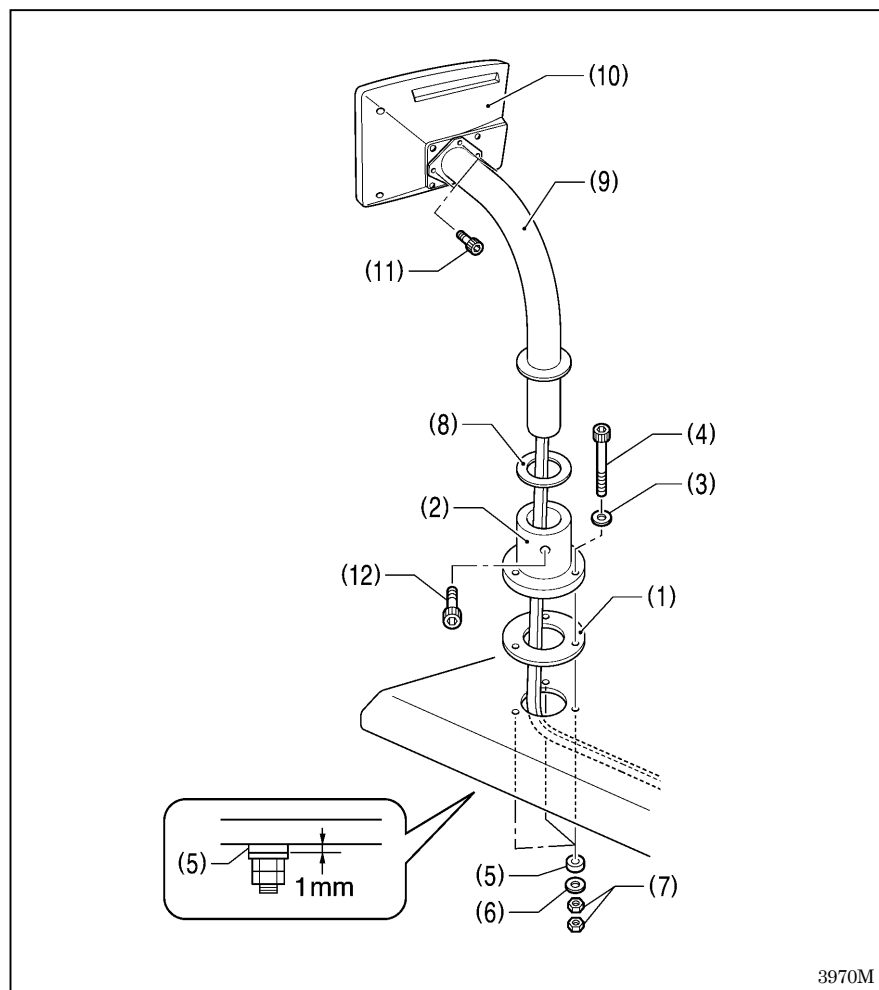


3. Install the gas spring (8).

- (4) Gas spring holders [L and R]
- (5) Spacer
- (6) Bolt
- (7) Nut
- (8) Gas spring
- (9) Shaft collars [2 pcs.]
- (10) Gas spring shaft D
- (11) Plain washers [2 pcs.]
- (12) Retaining rings E [2 pcs.]
- (13) Bolts [4 pcs.]
- (14) Plain washers [4 pcs.]
- (15) Spring washers [4 pcs.]
- (16) Nuts [4 pcs.]
- (17) Gas spring shaft U
- (18) Set screw

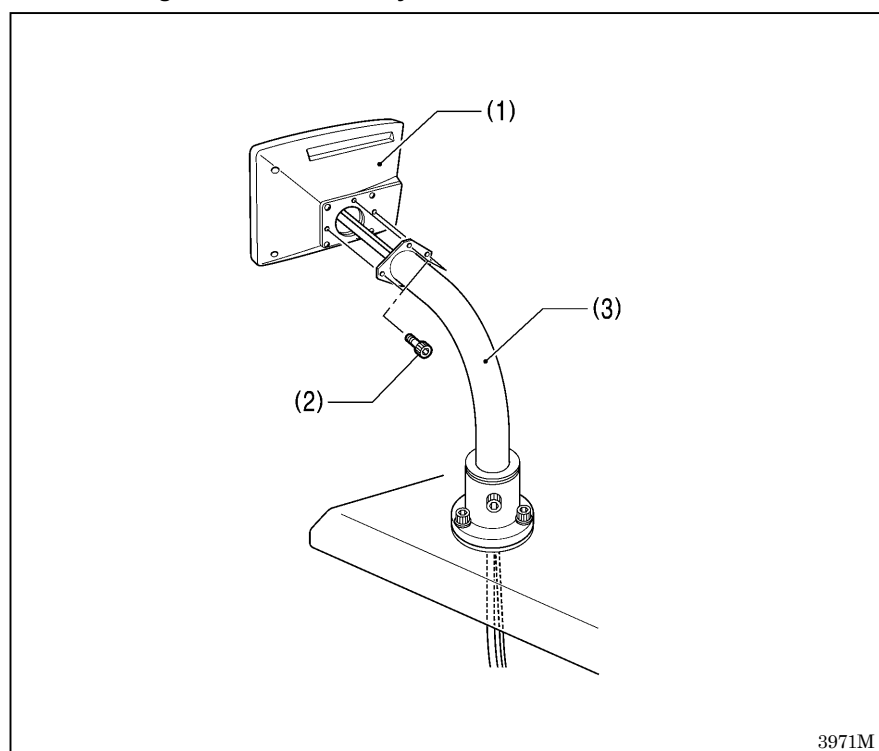
* After installing the gas spring (8), gently return the machine head to its original position. (Refer to "4-5. Tilting back and returning the machine head".)

4-7. Installing the operation panel [3]



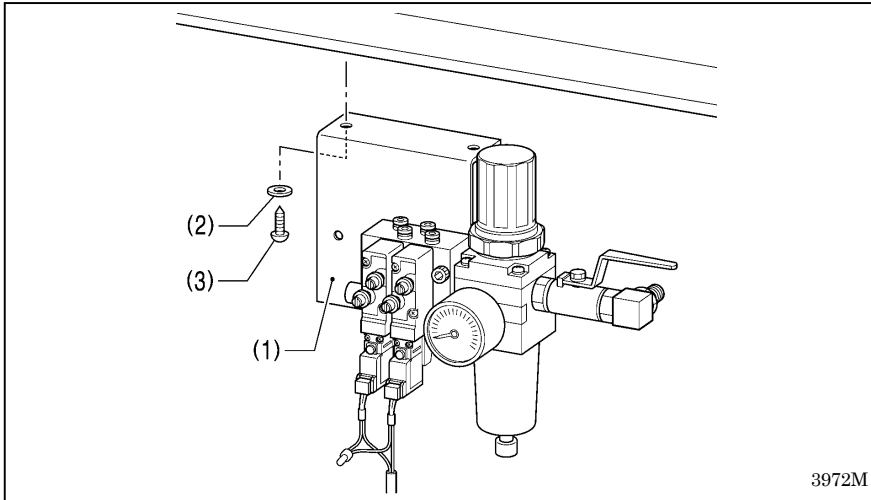
- (1) Cushion A
- (2) Operation panel base
- (3) Plain washers (medium) [3 pcs.]
- (4) Bolts [3 pcs.]
- (5) Cushions B [3 pcs.]
- (6) Plain washers (large) [3 pcs.]
- (7) Nuts [6 pcs.]
- * Tighten until the thickness of cushion B (5) is about 1 mm.
- (8) Rubber seat
- (9) Operation panel stand
- (10) Operation panel
- * Pass the cords of the operation panel (10) through the operation panel stand (9) and under the table.
- (11) Bolts [3 pcs.]
- (12) Bolt

< If the sewing machine was already installed to the table when it was delivered >



- (1) Operation panel
- (2) Bolts [3 pcs.]
- * Pass the cords of the operation panel (1) through the operation panel stand (3) and under the table.

4-8. Installing the solenoid valve assembly



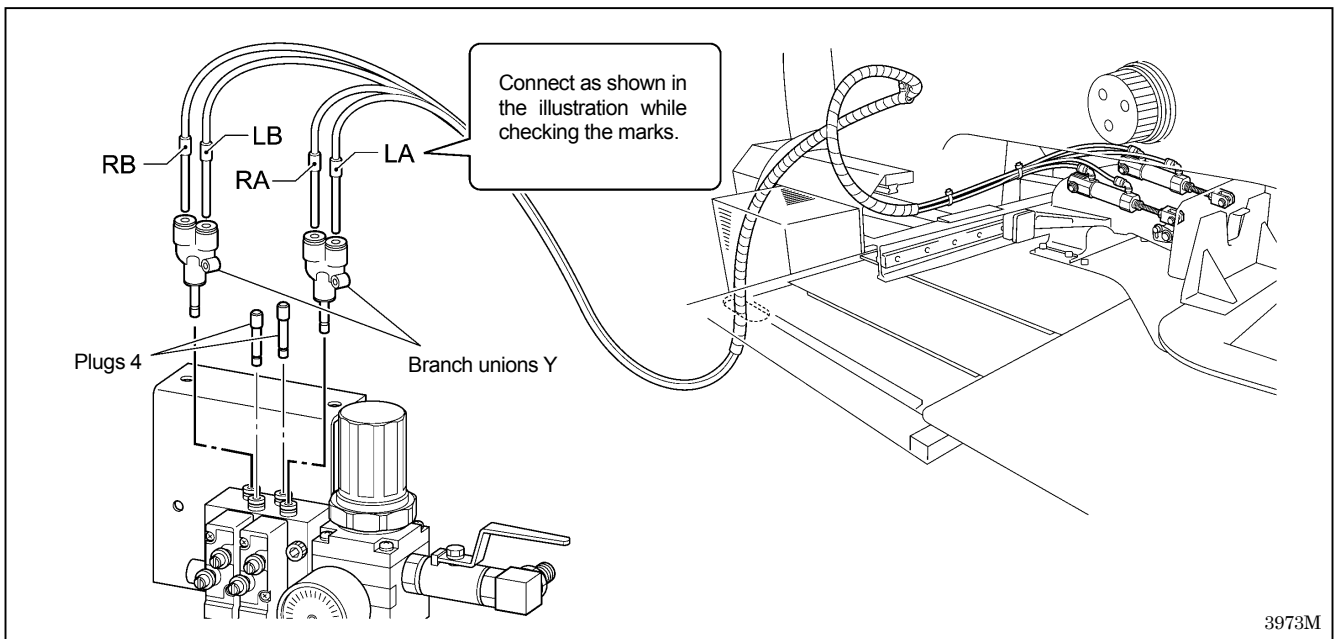
Install underneath the work table. (Refer to "3. Table processing diagram" for the installation positions.)

- (1) Solenoid valve assembly
- (2) Washers [2 pcs.]
- (3) Wood screws [2 pcs.]

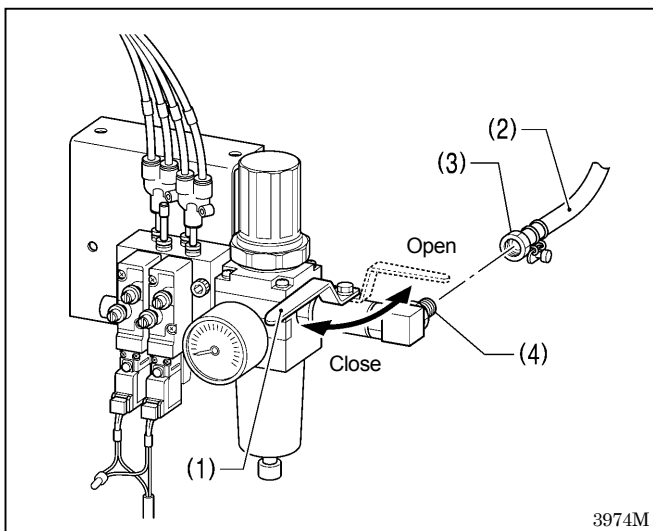
NOTE:

Make sure that the solenoid valve assembly does not touch the control box or the leg of the table.

4-9. Connecting the air tubes [4]



4-10. Installing the air hose [5]



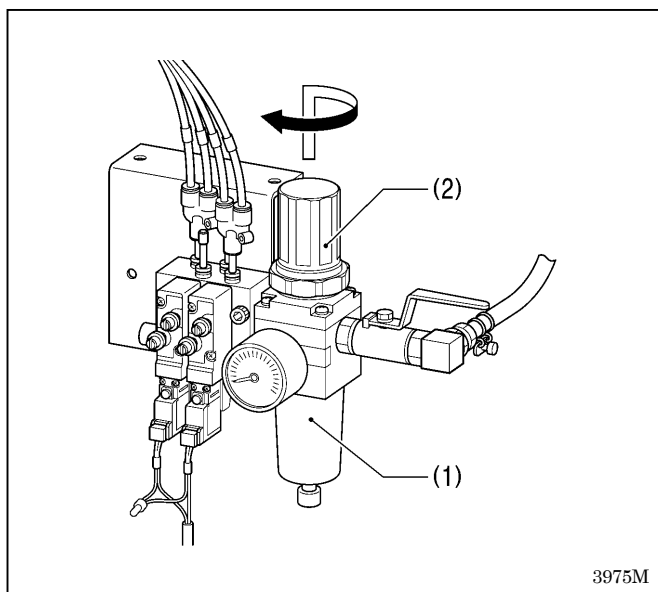
1. Close the cock (1).
2. Turn the nut (3) at the end of the air hose (2) and connect it to the valve (4).
3. Open the cock at the compressor.
* Check that no air is leaking from the connection of the valve (4) and air hose (2).
4. Open the cock (1).
(The meter pointer will turn clockwise.)

NOTE:

Turn the cock (1) gently to open it.

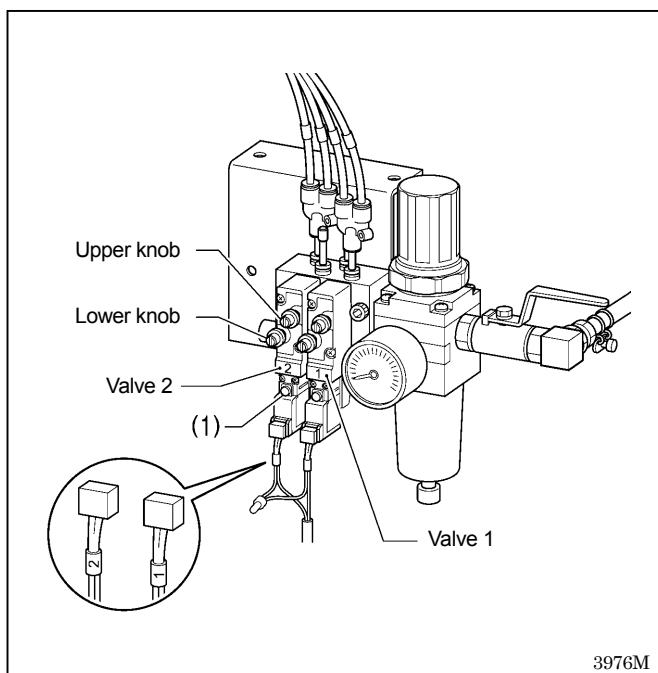
5. Adjust the air pressure. (Refer to the next page.)

4-11. Adjusting the air pressure [6]



Lift up the handle (2) of the regulator (1) and then turn it to adjust the air pressure to 0.5 MPa. After adjustment is complete, push the handle (2) downward to lock it.

4-12. Adjusting the speed controller [7]



You can adjust the lifting and lowering speeds for the work clamp using the knobs on the valves.

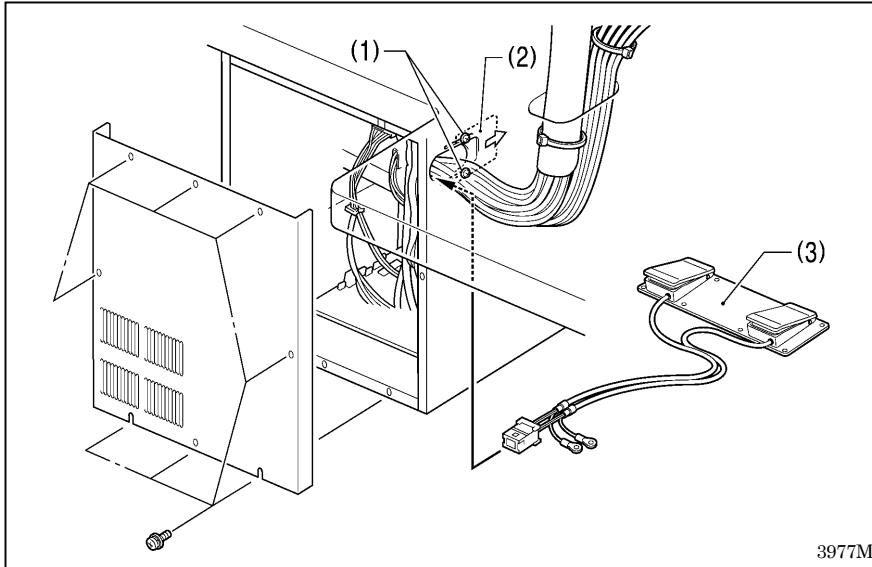
- When the upper knob is tightened, the lifting speed becomes slower. When it is loosened, the lifting speed becomes faster.
- When the lower knob is tightened, the lowering speed becomes slower. When it is loosened, the lowering speed becomes faster.

Reference adjustments

Valve 1	Upper knob	Fully tighten
	Lower knob	Fully tighten and then loosen by 8 turns
Valve 2	Upper knob	Fully tighten and then loosen by 5 turns
	Lower knob	Fully tighten

You can operate the work clamp when the power is turned off by pressing the manual buttons (1).

4-13. Connecting the cords [8]



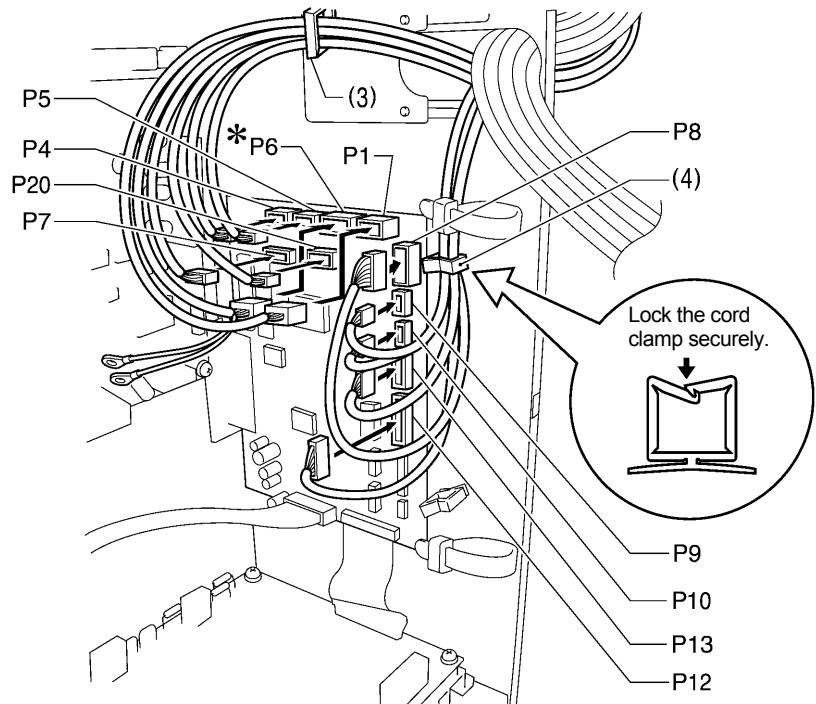
1. Remove the cover of the control box.
2. Loosen the two screws (1), and then open the cord presser plate (2) in the direction of the arrow.
3. Pass the bundle of cords from the machine head through the hole in the table, and then pass it through the hole in the control box together with the following cords.
 - Tow-pedal foot switch (3)
 - Operation panel (Do not pass the ground wires through the hole.)
 - Solenoid valve assembly
4. Securely connect the connectors as indicated in the table below.

<Main P.C. board>

NOTE:

- Check that the connector is facing the correct way, and then insert it firmly until it locks into place.
- Secure the cables with cable ties and cord clamps, while being careful not to pull on the connector.

* Be sure to make the ground connection. (Refer to "4-14. Connecting the ground".)

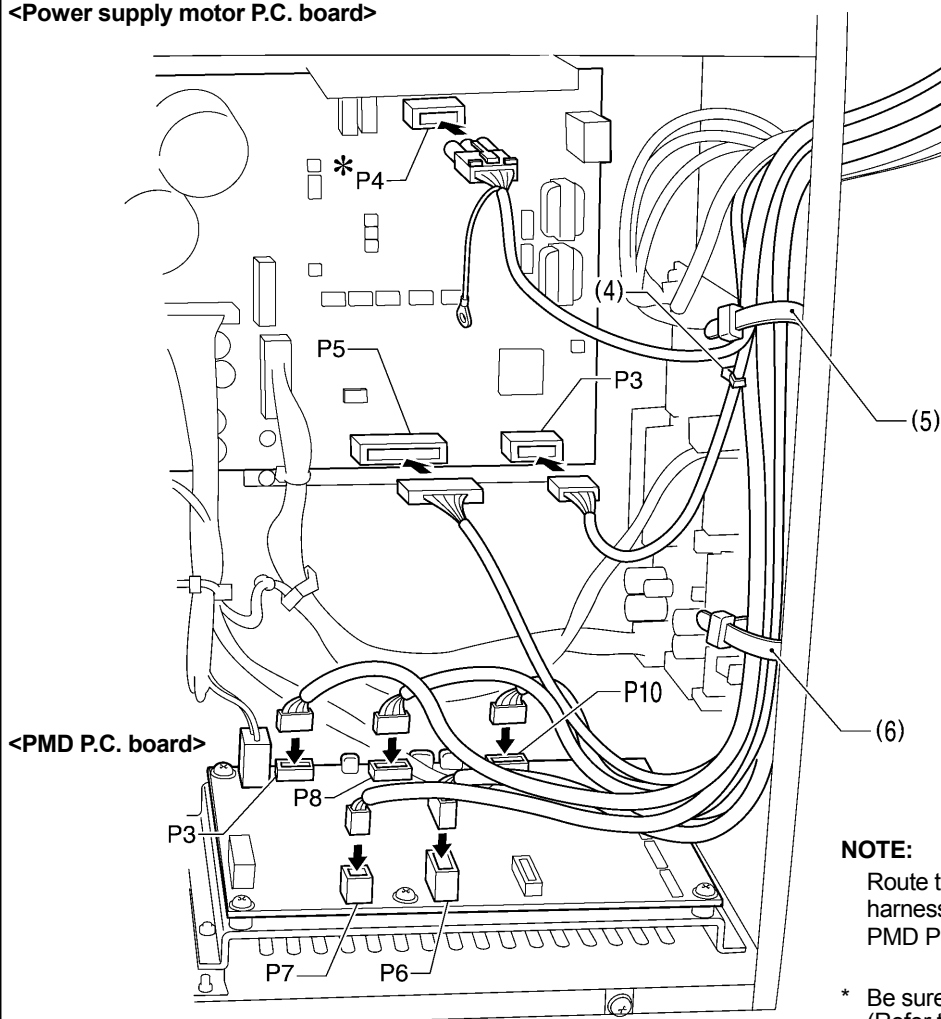


Connector	Connection location on main P.C. board	Cord clamp
X pulse motor encoder 5-pin white	P20 (X-ENC)	(3)
Y pulse motor encoder 5-pin blue	P4 (Y-ENC)	(3)
Intermittent presser foot pulse motor encoder 5-pin black	P5 (P-ENC)	(3)
Foot switch 10-pin	P6 (FOOT)	(3)
Operation panel 8-pin	P1 (PANEL)	(3)
Safety switch 3-pin	P9 (HEAD-SW)	(4)
Home position sensor assembly 12-pin	P8 (SENSOR1)	(4)
STOP switch 6-pin	P13 (HEAD)	(4)
Valve harness 12-pin	P12 (AIR1)	(4)
Programmer relay harness 8-pin	P7 (PRG)	(3)
Fan 6-pin	P10 (SENSOR2)	(4)

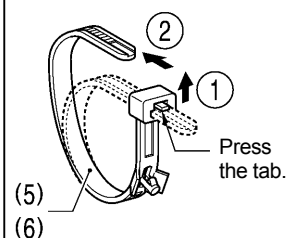
3978M

(Continued on next page)

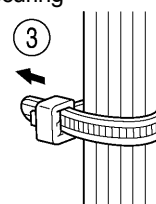
<Power supply motor P.C. board>



<Removing>



<Securing>

**NOTE:**

Route the X, Y and work clamp pulse motor harnesses so that they do not touch the PMD P.C.

* Be sure to make the ground connection. (Refer to "4-14. Connecting the ground".)

Connector	Connection location on power supply motor P.C. board	Cord clamp/cable tie
Machine head memory 7-pin	P3 (HEAD-M)	(4)
Upper shaft motor 3-pin	P4 (UVW)	(5)
Synchronizer 14-pin	P5 (SYNC)	(5), (6)
Connector	Connection location on PMD P.C. board	Cable tie
Work clamp pulse motor 4-pin black	P3 (PPM)	(5), (6)
Thread trimmer solenoid 6-pin	P6 (SOL1)	(5), (6)
Tension release solenoid 4-pin	P7 (SOL2)	(5), (6)
Y pulse motor 4-pin blue	P8 (YPM)	(5), (6)
X pulse motor 4-pin white	P10 (XPM)	(5), (6)

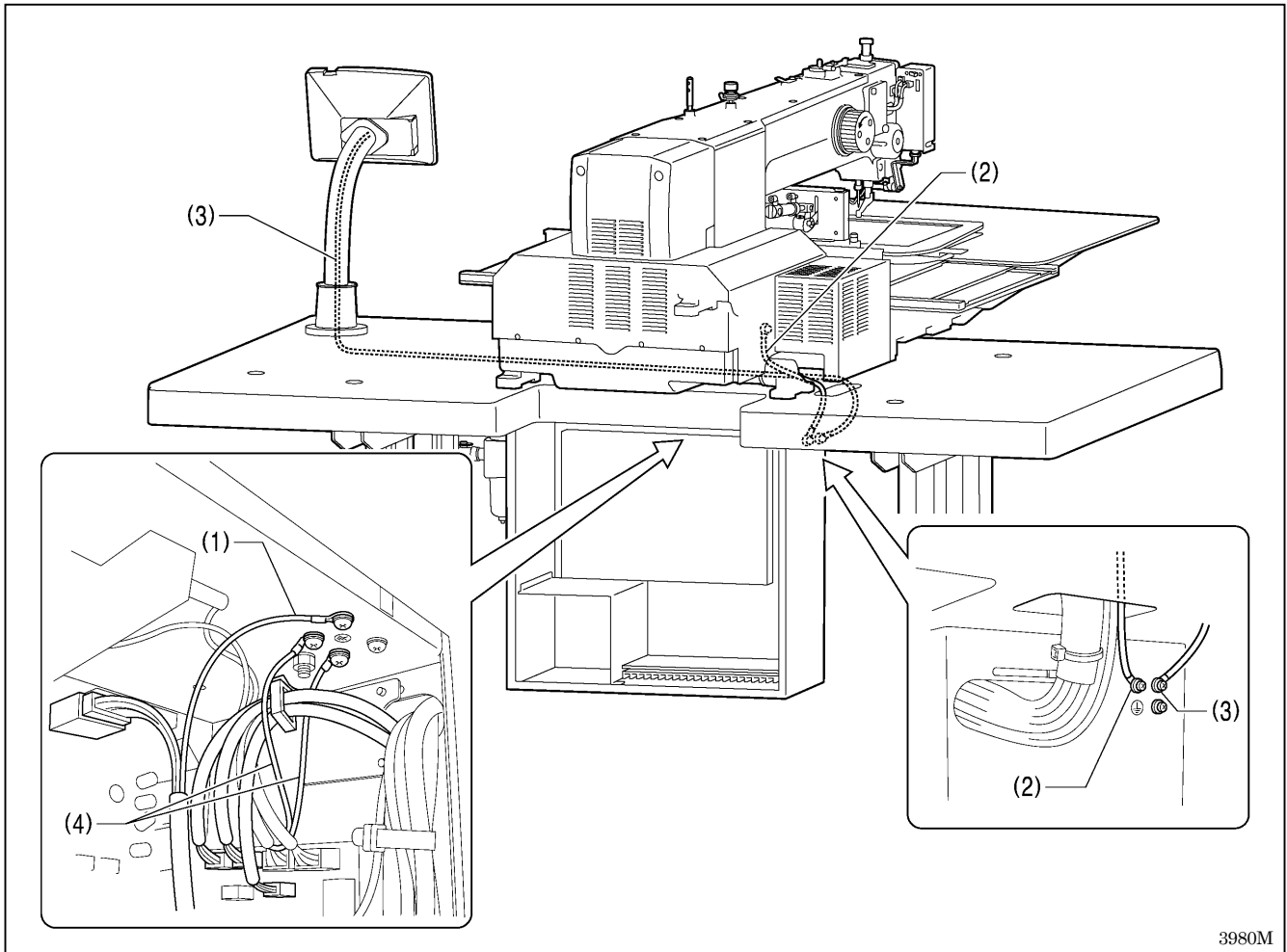
3979M

4-14. Connecting the ground wire [9]

CAUTION



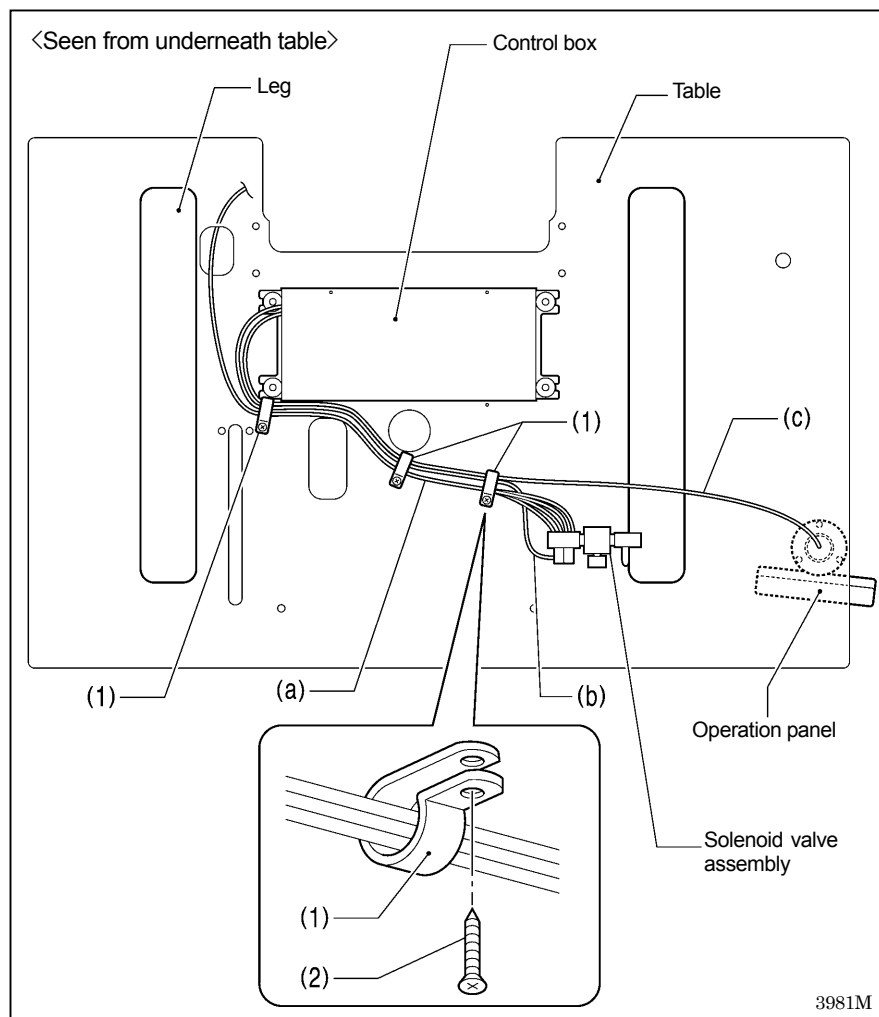
Be sure to connect the ground. If the ground connection is not secure, you run a high risk of receiving a serious electric shock, and problems with correct operation may also occur.



- (1) Ground wire from upper shaft motor harness
- (2) Ground wire from the machine head
- (3) Ground wire from operation panel
- (4) Ground wires from two-pedal foot switch harnesses (2 wires)

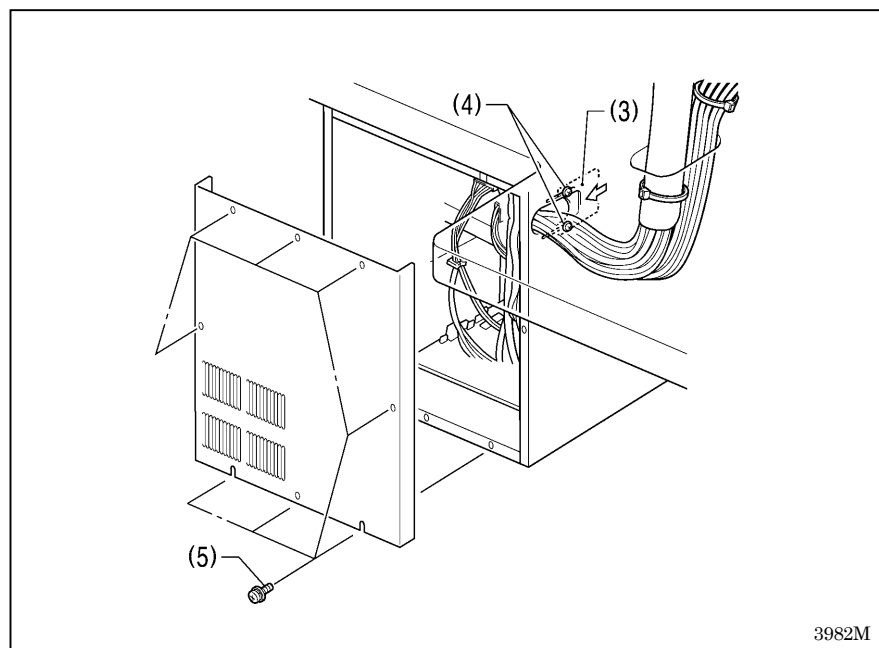
NOTE: Make sure that the ground connections are secure in order to ensure safety.

4-15. Securing the cords and air tubes [10]



Secure the air tubes (a), the solenoid valve assembly cord (b) and the operation panel cord (c) together underneath the table with the three cord holders (1).

- (1) Cord holders [3 pcs.]
- (2) Wood screws [3 pcs.]



<Checking the cords>

1. Gently tilt back the machine head.
(Refer to "4-5. Tilting back and returning the machine head".)
2. Check that none of the cords are being pulled.
3. Return the machine head to its original position.
4. Close the cord presser plate (3) in the direction of the arrow, and secure it by tightening the two screws (4).

NOTE:

Tighten the cord presser plate (3) securely so that no foreign objects or small animals can get inside the control box.

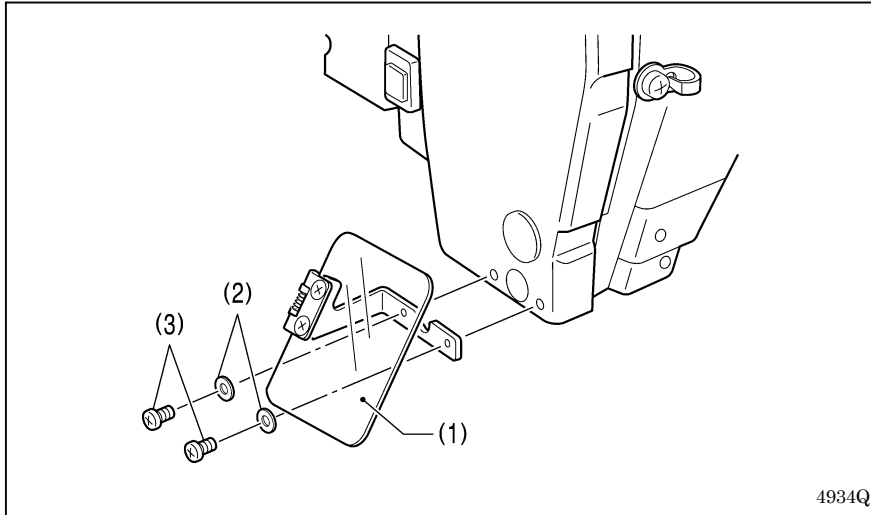
5. Secure the cover of the control box by tightening the eight screws (5).
Check that the cords are not clamped by the cover at this time.

4-16. Installing the eye guard [11]

CAUTION

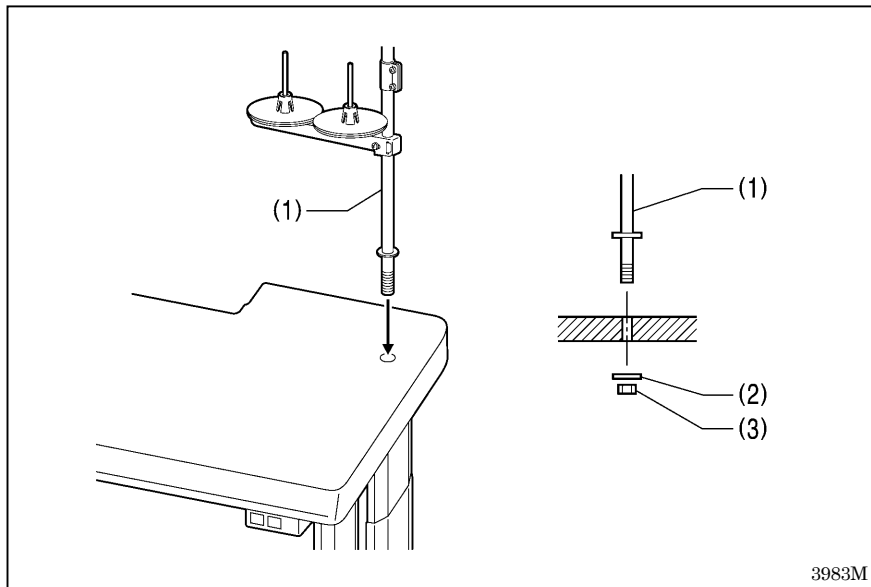


Attach all safety devices before using the sewing machine.
If the machine is used without these devices attached, injury may result.



- (1) Eye guard assembly
- (2) Plain washers [2 pcs.]
- (3) Screws [2 pcs.]

4-17. Installing the cotton stand [12]



- (1) Cotton stand

NOTE:

Fit the washer (2), and then securely tighten the nut (3) so that the cotton stand does not move.

4-18. Lubrication [13]

CAUTION



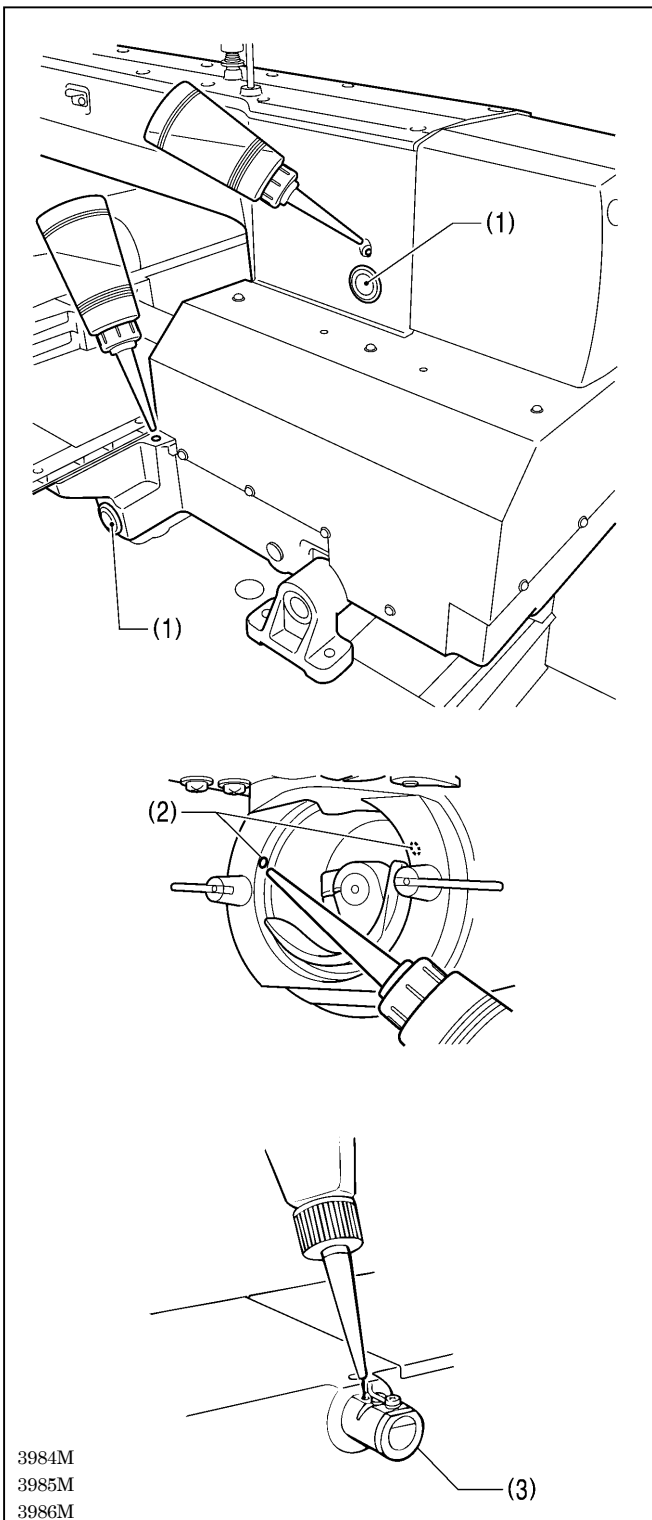
Do not connect the power cord until lubrication is complete.

If the foot switch is depressed by mistake, the sewing machine might start operating and injury could result.



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. If the oil and grease get into your eyes or onto your skin, inflammation can result. Furthermore, do not drink or eat the lubricating oil or grease. They may cause diarrhea or vomiting.

Keep the oil out of the reach of children.



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3986M

- 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. Fill the arm oil tank and the bed oil tank with oil.

NOTE:

Be sure to add more oil when the oil level drops down to about one-third full in the oil gauge window (1). If the oil drops below the one-third full level in the oil gauge window (1), there is the danger that the sewing machine may seize during operation.

2. Pour oil in through the two holes (2) of the shuttle race base assembly so that the felt is lightly moistened.

NOTE:

If there is no more oil on the felt of the shuttle race base assembly, problems with sewing may result.

3. If using the needle cooler (3), fill it with silicon oil (100 mm²/s).

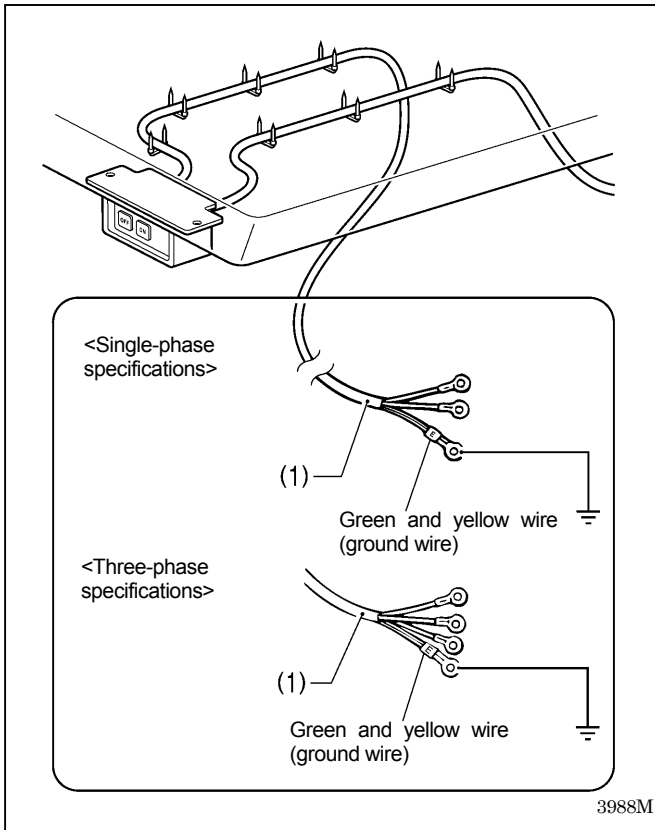
(Refer to "5-3. Threading the upper thread" for details on using the needle cooler (3).)

4-19. Connecting the power cord [14]

! CAUTION



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.



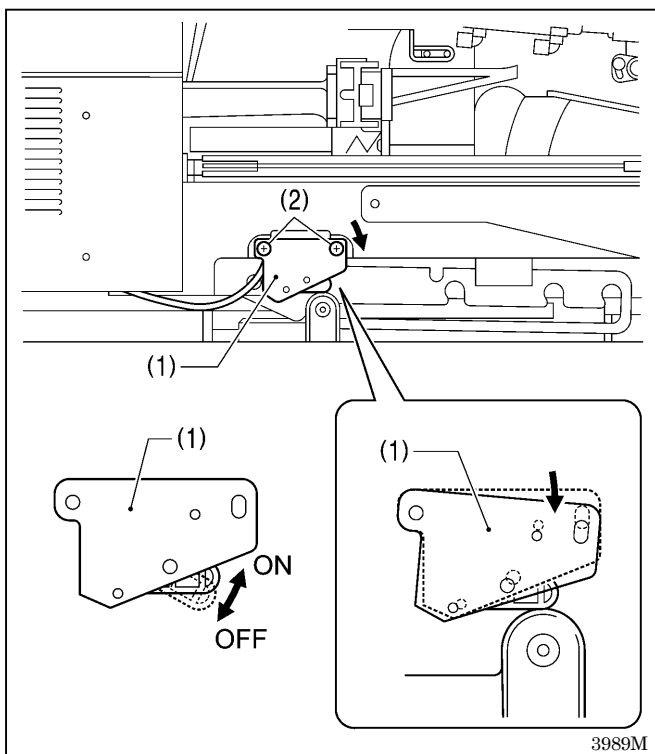
1. Attach an appropriate plug to the power cord (1). (The green and yellow wire is the ground wire.)
2. Insert the plug into a properly-grounded AC power supply.

* The inside of the control box uses single-phase power.

NOTE:

- If the ground connection is not secure, electric shocks, operating errors or damage to electronic components such as P.C. boards may occur.
- Do not use an extension cord. If this is not observed, it may cause problems with correct operation.

4-20. Checking the safety switch [15]



1. If the machine head is tilted back, gently return it to its original position. (Refer to "4-5. Tilting back and returning the machine head".)
2. Turn on the power switch.
3. Check that no error numbers are displayed on the operation panel.

<If error [E050], [E051] or [E055] is displayed >

If the safety switch (1) is not turned on, error [E050], [E051] or [E055] will occur.

Check the installation position of the safety switch (1).

1. Turn off the power switch.
2. Loosen the two screws (2).
3. Push down the right side of the safety switch (1) as far as possible so that the safety switch (1) turns on, and then tighten the two screws (2).
4. Turn on the power and check that no error numbers are displayed.

5. PREPARATION BEFORE SEWING

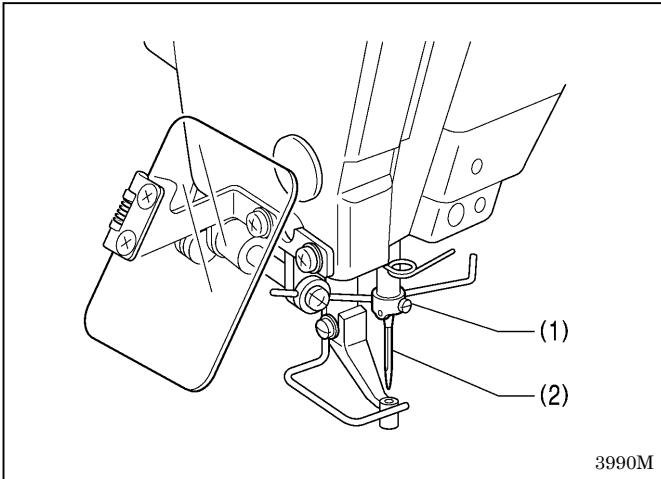
5-1. Installing the needle

⚠ CAUTION



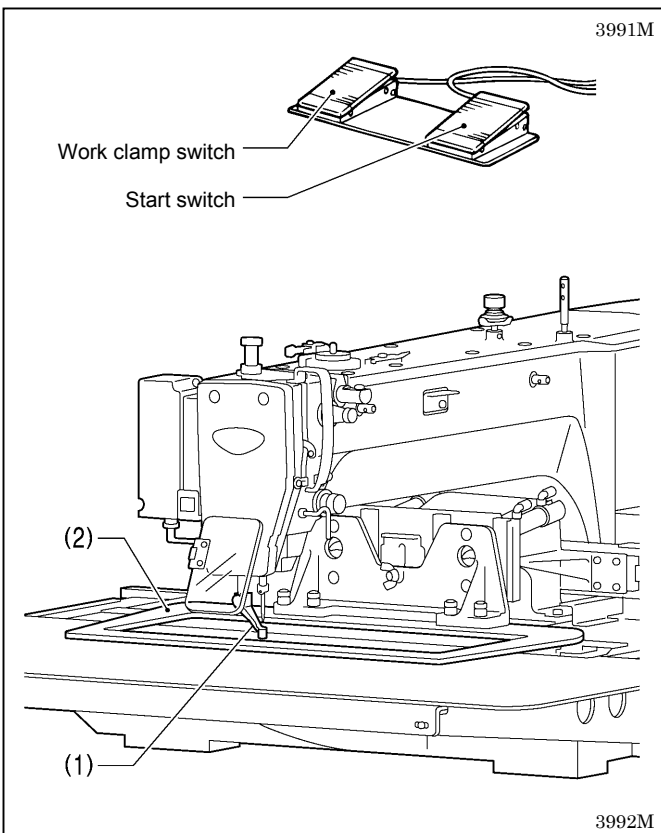
Turn off the power switch before installing the needle.

If the foot switch is depressed by mistake, the sewing machine might start operating and injury could result.



1. Loosen the set screw (1).
2. Insert the needle (2) in a straight line as far as it will go, making sure that the long groove on the needle is at the front, and then securely tighten the set screw (1).

5-2. Operating the 2-pedal foot switch



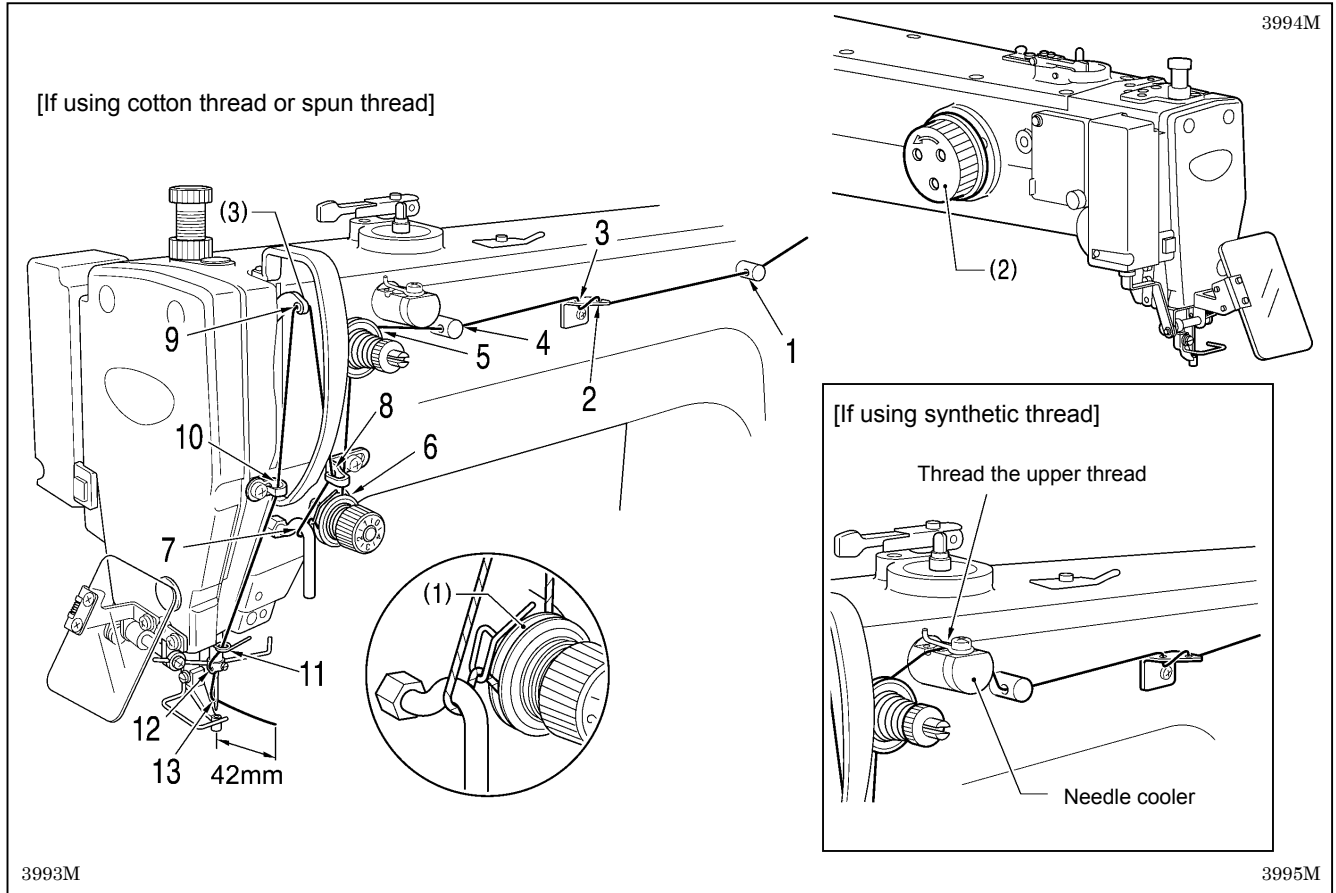
When the work clamp switch (left side) is depressed, the intermittent presser foot (1) and the work clamp (2) are lowered, and when the start switch (right side) is then depressed, the sewing machine starts operating.

* The work clamp (2) lowering method can be changed using memory switch No. 002. (Refer to "7-3. List of memory switch settings" in the instruction manual CD.)

5-3. Threading the upper thread

Thread the upper thread correctly as shown in the illustration below.

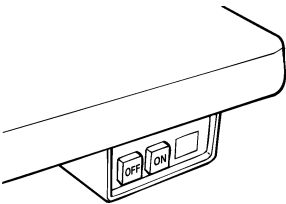
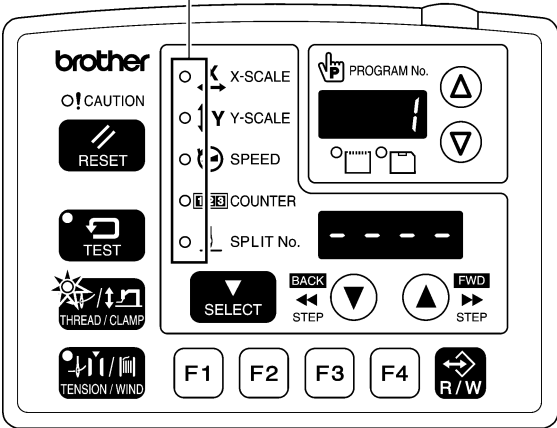
* When using threading mode for threading, the tension discs (1) will open so that the thread can be threaded more easily.
(Refer to following page.)



- Turn the machine pulley (2) and raise the thread take-up (3) to its highest position before threading the upper thread. (This will make threading easier and it will prevent the thread from coming out at the sewing start.)
- When threading the thread through the needle, allow a distance of approximately 42 mm between the needle hole and the end of the thread.
If the trailing length of the thread is too long, it may cause the thread to become tangled.

<Threading mode>

Threading mode is safe because the sewing machine will not start even when the foot switch is depressed.

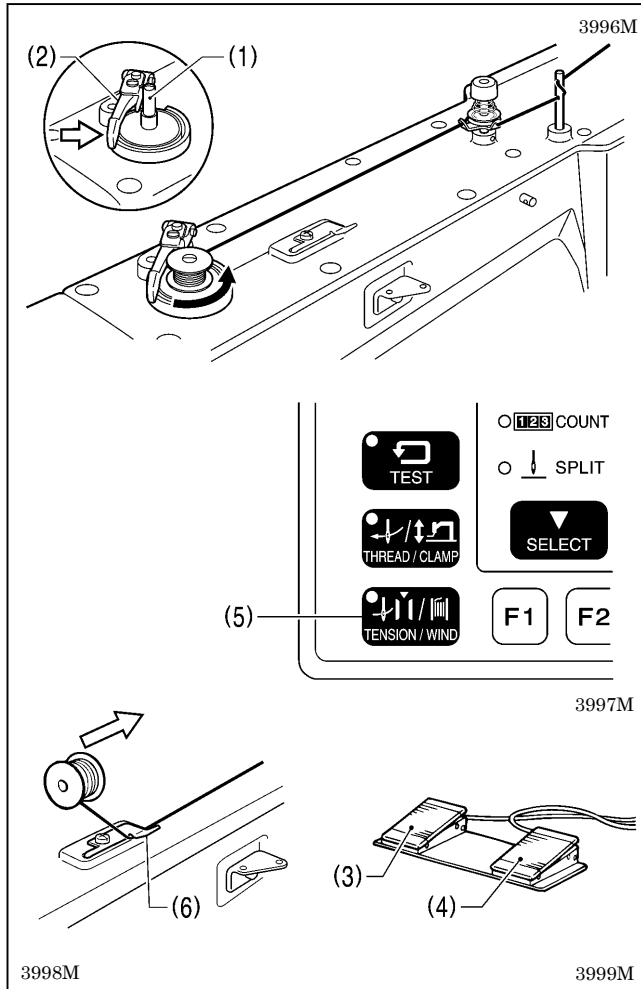
1	Turn on the power switch.  4421Q
2	All indicators switch off Press the THREAD/CLAMP key.   • The work clamp and the intermittent presser foot will be lowered. • The tension discs will open. THREAD/CLAMP indicator illuminates MENU indicator switches off 4427Q
3	Threading the thread. • When 5 minutes have passed, the buzzer will sound and the tension discs will close. * When memory switch No. 564 is set to "2", the buzzer will sound after one minute has elapsed, and the tension discs will close.
4	Ending threading mode  Press the THREAD/CLAMP key. • The work clamp and the intermittent presser foot will return to the position they were at before threading mode began. THREAD/CLAMP indicator switches off

5-4. Winding the lower thread

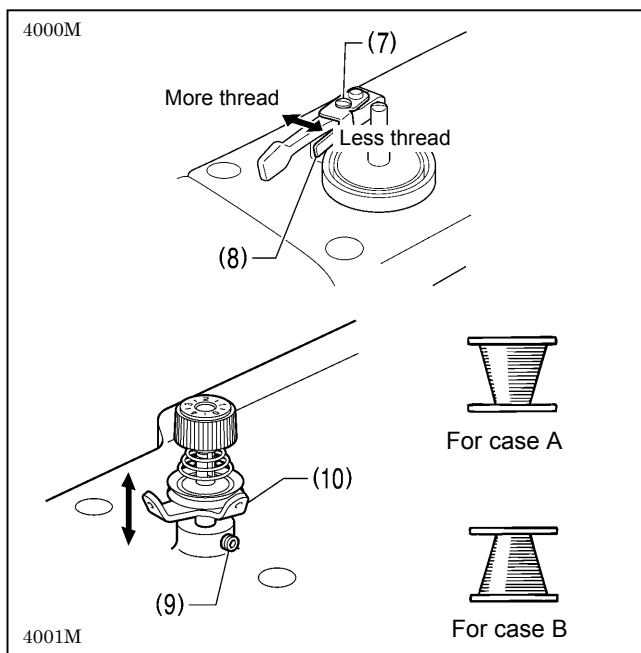
! CAUTION



Do not touch any of the moving parts or press any objects against the machine while winding the lower thread. Injury or damage to the sewing machine may result.



1. Place the bobbin onto the bobbin winder shaft (1).
2. Thread the thread as shown in the illustration, wind the thread around the bobbin several times, and then press the bobbin presser arm (2).
3. Turn on the power switch.
4. Depress the work clamp switch (3) to lower the work clamp, and then depress the start switch (4). (Home position detection will be carried out.)
5. Check that the needle is not touching the work clamp.
6. Depress the work clamp switch (3) to lower the work clamp.
7. While pressing the TENSION/WIND key (5), depress the start switch (4).
8. Release the TENSION/WIND key (5) after the machine starts operating, and keep depressing the start switch (4) until the lower thread stops being wound onto the bobbin. (If you release the start switch (4) while this operation is in progress, hold down the TENSION/WIND key (5) and then depress the start switch (4) to restart winding of the thread.)
9. Once winding of the set amount of lower thread (80 - 90% of the bobbin capacity) is completed, the bobbin presser arm (2) will return automatically.
10. Remove the bobbin, hook the thread onto the knife (6), and then pull the bobbin in the direction of the arrow to cut the thread.



Adjusting the bobbin winding amount

Loosen the screw (7) and move the bobbin presser (8) to adjust.

If the thread winds onto the bobbin unevenly

Loosen the set screw (9) and move the bobbin winder tension assembly (10) up and down to adjust.

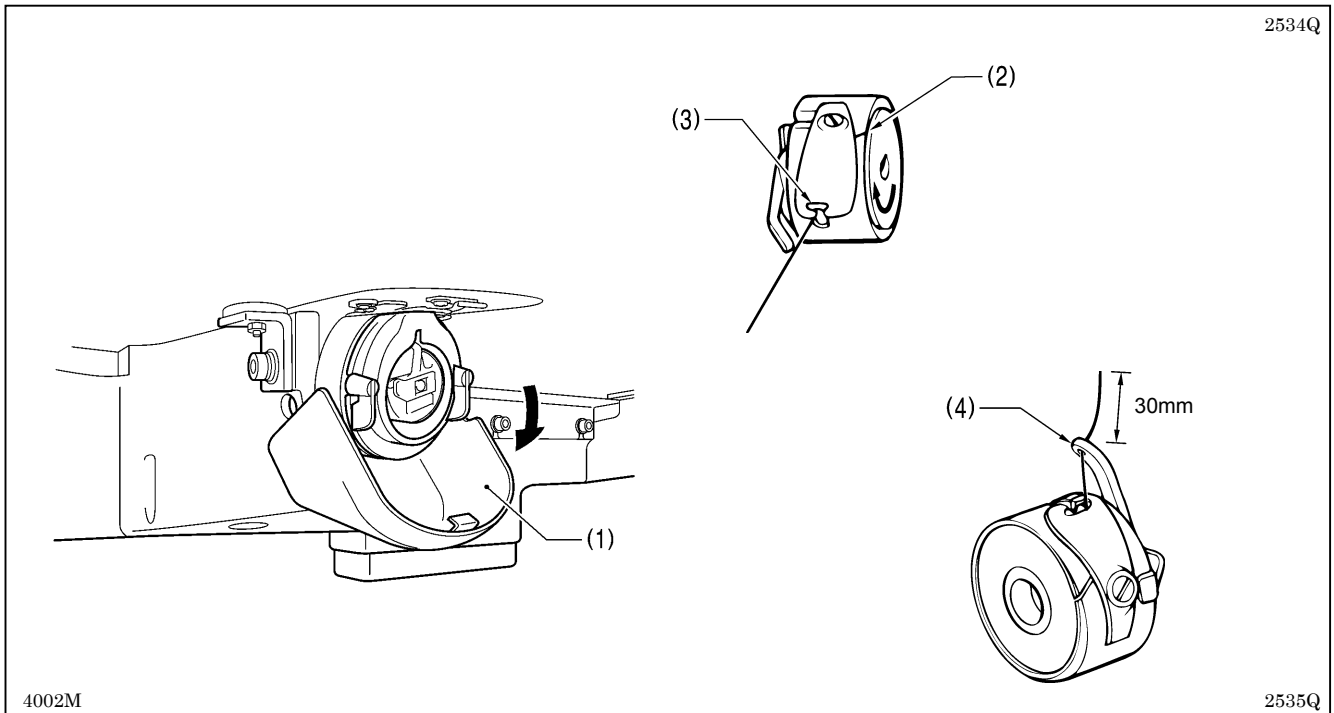
- * For case A, move the bobbin winder tension assembly (10) down, and for case B, move it upward.

5-5. Installing the bobbin case

CAUTION



Turn off the power switch before installing the bobbin case.
If the foot switch is depressed by mistake, the sewing machine might start operating and injury could result.



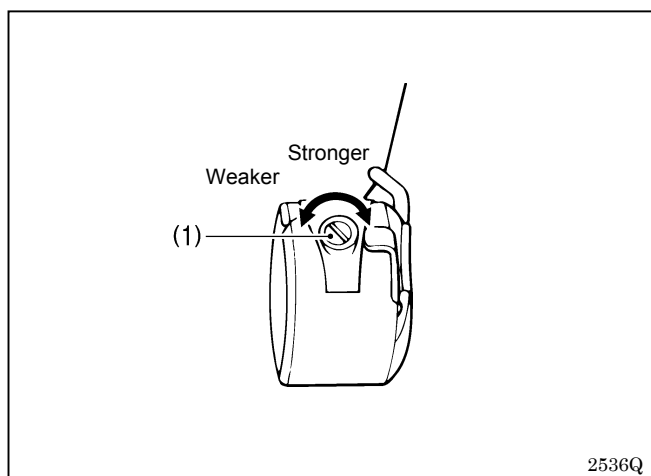
1. Pull the shuttle race cover (1) downward to open it.
2. While holding the bobbin so that the thread winds to the right, insert the bobbin into the bobbin case.
3. Pass the thread through the slot (2) and pull it out from the thread hole (3).
4. Check that the bobbin turns in the direction of the arrow when the thread is pulled.
5. Pass the thread through the lever thread hole (4), and then pull out approximately 30 mm of thread.
6. Hold the latch on the bobbin case and insert the bobbin case into the rotary hook.

5-6. Thread tension

Thread tension reference

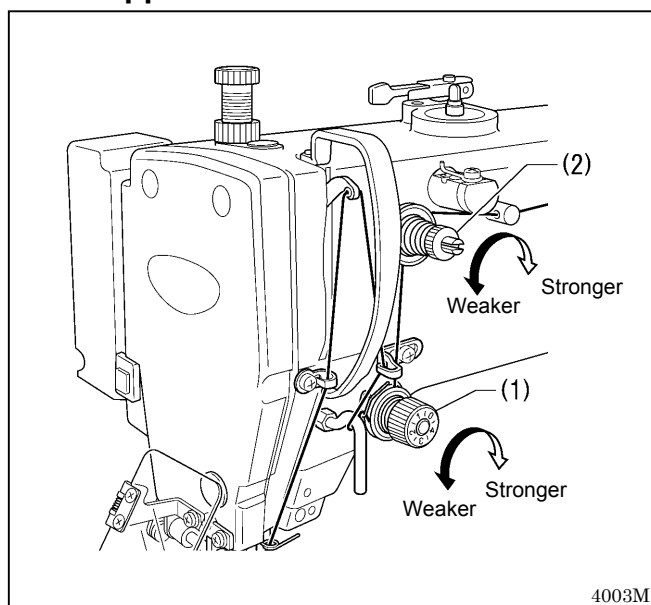
Upper thread	#20 or similar
Lower thread	#20 or similar
Upper thread tension (N)	1.4 – 1.8
Lower thread tension (N)	0.3 – 0.4
Pre-tension (N)	0.2 – 0.4
Needle	DP × 17 #19

5-6-1. Lower thread tension



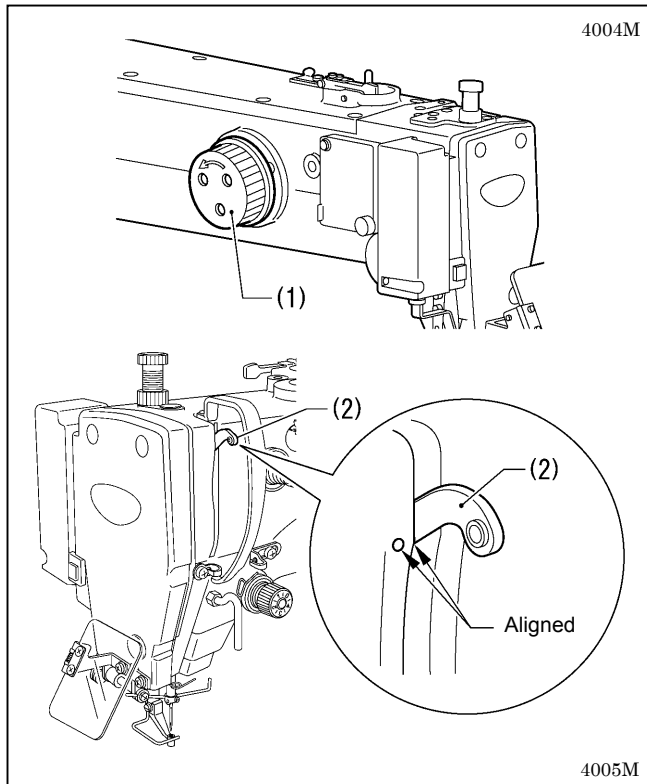
Adjust the thread tension to the weakest possible tension by turning the thread tension nut (1) until the bobbin case will not drop by its own weight while the thread end coming out of the bobbin case is held.

5-6-2. Upper thread tension



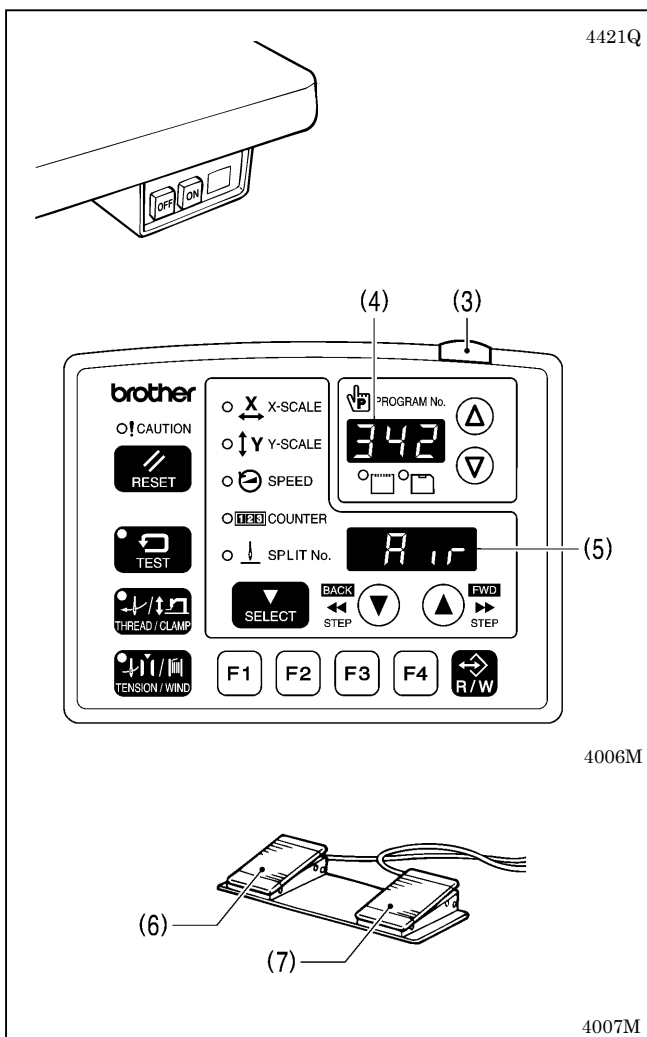
1. Turn the tension nut (1) (main tension) to adjust the tension as appropriate for the material being sewn.
2. Use the tension nut (2) (sub tension) to adjust the upper thread trailing length to about 42 mm.

5-7. Home position detection



Before starting home position detection, check that the needle bar is at the needle up stop position.

Turn the pulley (1) until the ridge at the bottom of the thread take-up (2) is aligned with the O mark on the arm.



1. Turn on the power switch.
The POWER indicator (3) will illuminate, and the model name [342] will appear in the PROGRAM No. display (4) and [Air] will appear in the menu display (5).



After this, the program number will flash in the PROGRAM No. display (4).

2. Depress the work clamp switch (6) to lower the work clamp, and then depress the start switch (7). (After home position detection is carried out, the work clamp will move to the sewing start position and then it will rise.)

* For programs with a large number of stitches, the buzzer will sound after the home position is detected, and then the work clamp will move to the sewing start position.

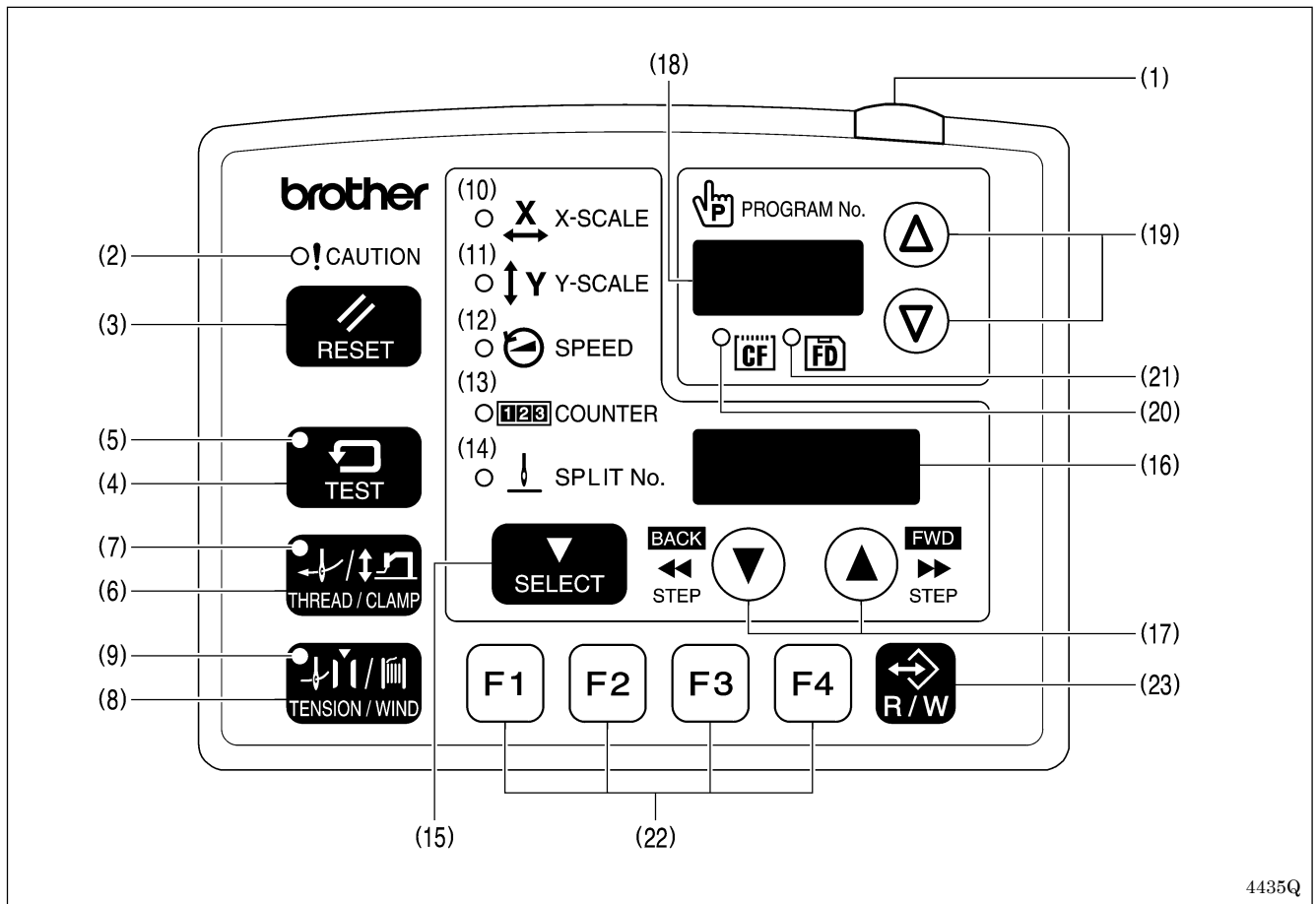
NOTE:

If error "E110" is displayed when the start switch (7) is depressed, turn the pulley (1) in the direction of operation to clear the error display.

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6. USING THE OPERATION PANEL (BASIC OPERATIONS)

6-1. Name and function of each operation panel item



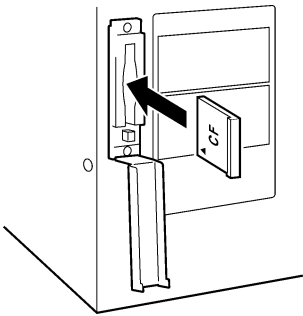
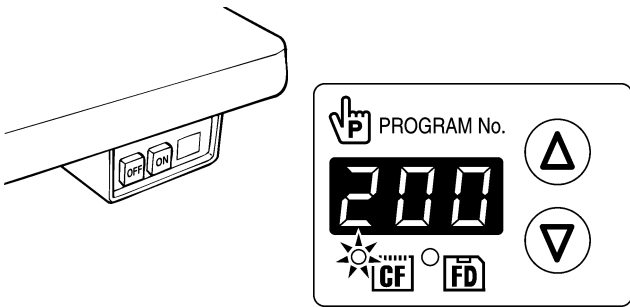
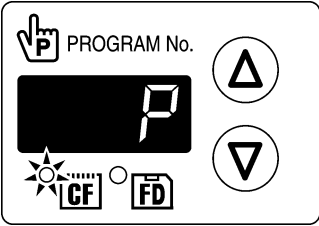
- (1) Power indicator
Illuminates when the power is turned on.
- (2) CAUTION indicator
Illuminates when an error occurs.
- (3) RESET key
Used to reset errors.
- (4) TEST key
Used to start test mode.
- (5) TEST indicator
Illuminates when the TEST key (4) has been pressed.
- (6) THREAD/CLAMP key
Used to start threading mode or work clamp height setting mode.
- (7) THREAD/CLAMP indicator
Illuminates when the THREAD/CLAMP key (6) has been pressed.
- (8) TENSION/WIND key
Used to wind the lower thread.
- (9) TENSION/WIND indicator
Used when the digital tension set (option) is installed.

- (10) X-SCALE indicator
Illuminates when the SELECT key (15) is pressed to shown the X-scale setting.
- (11) Y-SCALE indicator
Illuminates when the SELECT key (15) is pressed to shown the Y-scale setting.
- (12) SPEED indicator
Illuminates when the SELECT key (15) is pressed to shown the sewing speed setting.
- (13) COUNTER indicator
Illuminates when the SELECT key (15) is pressed to shown the lower thread or production counter setting.
- (14) SPLIT No. indicator
Illuminates when the SELECT key (15) is pressed to show the split setting when split data (for specifying a pause while the program is running) exists.
- (15) SELECT key
Used to select a menu (X-scale, Y-scale, sewing speed and counter).
- (16) Menu display
Displays information such as menu setting values, memory switch settings and error codes.
- (17) Setting keys ▼ ▲
Used to change the value which is displayed in the menu display (16).
In addition, it is used to move the needle position forward and back when sewing has been paused.
- (18) PROGRAM No. display
Displays information such as program numbers.
- (19) Setting keys ▽ ▴
Used to change the value which is displayed in the PROGRAM No. display (18).
- (20) CF media indicator
Illuminates when a CF card (external media) is inserted while the power is turned on.
- (21) FD media indicator
Illuminates when the FDD set (option) is connected.
- (22) Function keys [F1, F2, F3, F4]
Used to select user programs and to set and select cycle programs.
- (23) R/W key
Used to read data from and write data to external media.

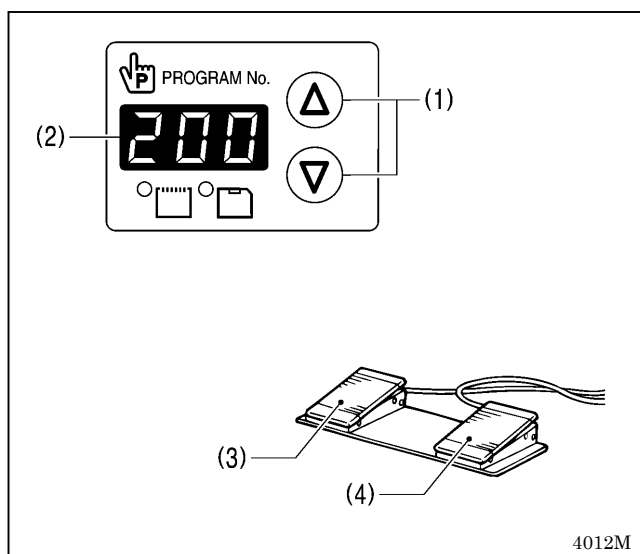
CF™ is a trademark of SanDisk Corporation.

6-2. Loading sewing data

Refer to "6-8. Notes on handling CF cards (sold separately)" for details on using CF cards.

1		With the power turned off, insert the CF card into the CF slot. NOTE: • Make sure the CF card is facing the correct way when inserting it. • Always be sure to keep the cover closed except when inserting and removing the CF card. If this is not done, dust may get inside and cause problems with operation.
2	 CF media indicator illuminates	Turn on the power switch. Press the Δ or ∇ key to select the program number (100 – 999). * The "----" display is used to check the feed home position.
3	 Loading	Press the R/W key.  • The buzzer will sound and the selected sewing data will be loaded from the CF card and copied into the sewing machine's internal memory.
4	Loading complete The PROGRAM No. display will change from " P" to the selected program number. Turn off the power switch, remove the CF card, and then close the cover of the CF slot.	

6-3. Setting the program number

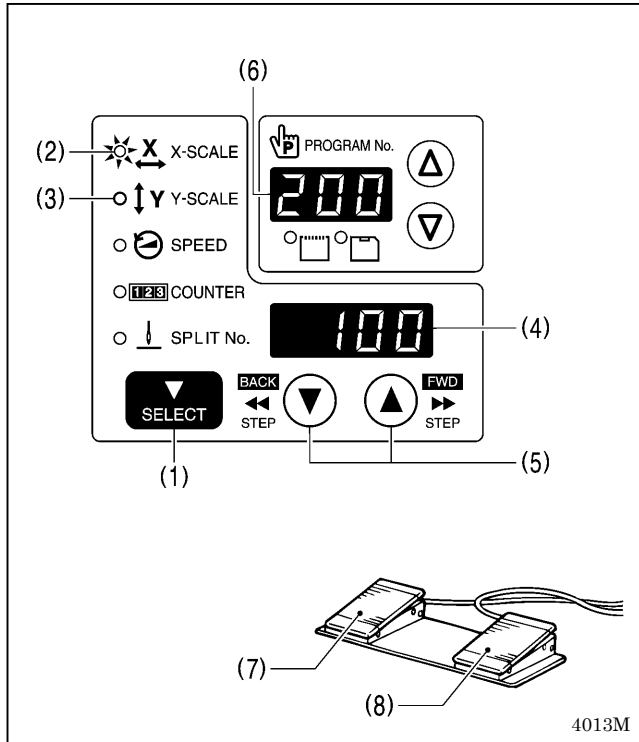


1. Press the Δ or ∇ key (1) to select the program number that is loaded into the internal memory.
 - The program number will flash in the PROGRAM No. display (2).
 - "----" will appear at the time of shipment from the factory. (For checking feed home position)
2. Depress the work clamp switch (3) to lower the work clamp, and then depress the start switch (4).
 - The work clamp will move to the sewing start position, and then the program number will be applied.
 - The program number will stop flashing and illuminate steadily.

NOTE:

After completing the setting, be sure to refer to "6-6. Checking the sewing pattern" to check that the needle drop position is correct.

6-4. Setting the X-scale and Y-scale



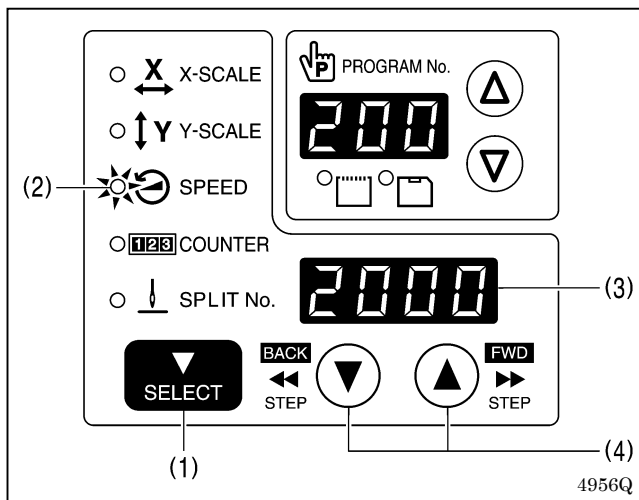
The scales are set to 100 (%) at the time of shipment from the factory.

1. Press the SELECT key (1) so that the X-SCALE indicator (2) (for X-scale setting) or the Y-SCALE indicator (3) (for Y-scale setting) is illuminated.
 - The setting value (%) will appear in the menu display (4).
 - * When memory switch no. 402 is set to "ON", the settings will be displayed in units of mm.
2. Press the ▲ or ▼ key (5) to set the scale (0 – 400).
 - The program number will flash in the PROGRAM No. display (6).
3. Depress the work clamp switch (7) to lower the work clamp, and then depress the start switch (8).
 - The work clamp will move to the sewing start position, and then the scales will be applied.
 - The program number will stop flashing and illuminate steadily.

NOTE:

After completing the setting, be sure to refer to "6-6. Checking the sewing pattern" to check that the needle drop position is correct.

6-5. Setting the sewing speed



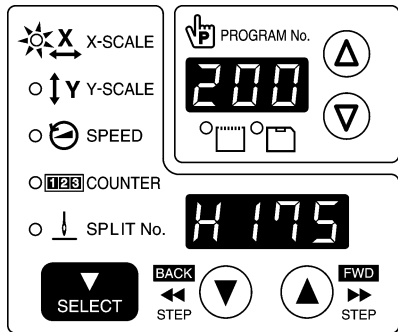
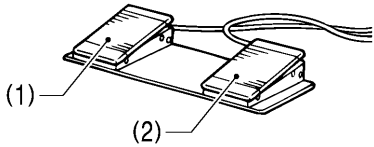
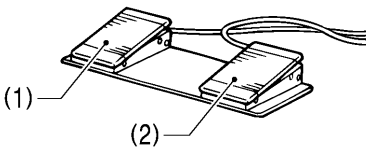
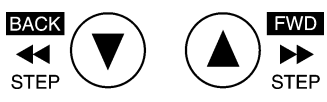
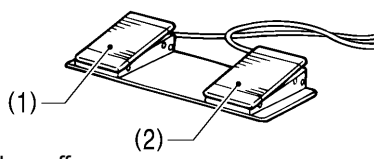
The sewing speed is set to 2000 (rpm) at the time of shipment from the factory.

1. Press the SELECT key (1) until the SPEED indicator (2) illuminates.
 - The setting value (rpm) will appear in the menu display (3).
2. Press the ▲ or ▼ key (4) to set the sewing speed. (Sewing speed setting: 400 – 2700)

6-6. Checking the sewing pattern

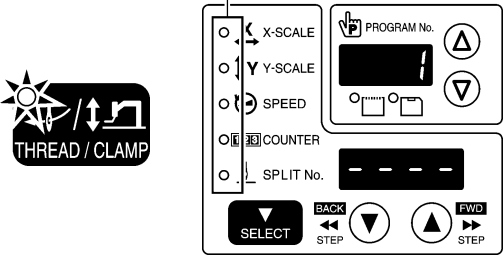
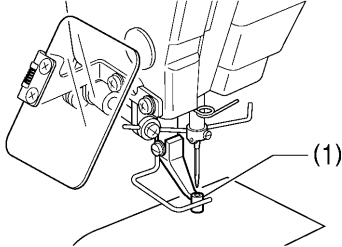
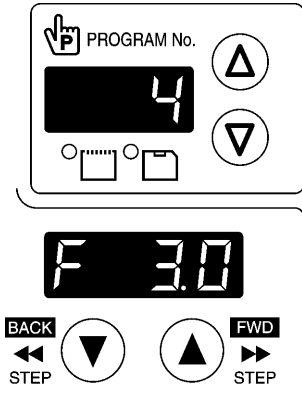
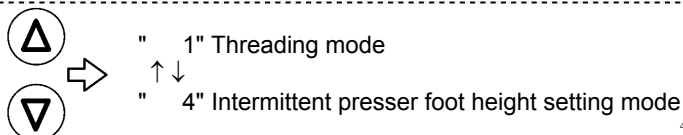
Use test feed mode to check the needle movement with only the work clamp operating.

Check that the needle hole in the needle plate does not come out from the frame of the work clamp.

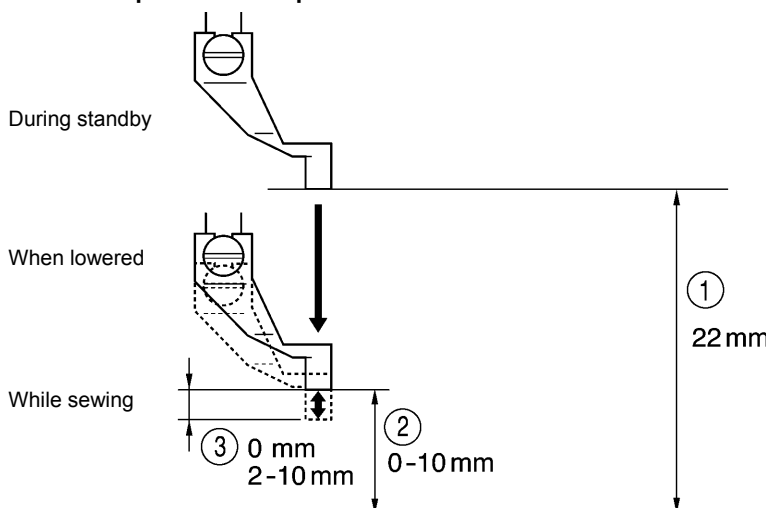
1	 TEST indicator illuminates Press the TEST key.
2	 COUNTER indicator illuminates Select the program number to be checked, and then set the X-scale and the Y-scale. - The program number will flash. Depress the work clamp switch (1) to lower the work clamp, and then depress the start switch (2). - The work clamp will move to the sewing start position, and then the program number will stop flashing and illuminate steadily. - The number of stitches will appear in the menu display.  4957Q 4014M
3	Starting continuous test feed mode Depress the work clamp switch (1) to lower the work clamp, and then depress and release the start switch (2). The work clamp will start moving continuously one stitch at a time.  [Fast-forward test mode] If the work clamp switch (1) is depressed while the work clamp is moving, the feeding speed can be increased while the work clamp switch (1) is depressed.  TEST indicator illuminates  When the ▲ key is pressed, the work clamp will move forward by one stitch, and when the ▼ key is pressed, the work clamp will move backward by one stitch. (It will move quicker if you keep the key pressed down.)  TEST indicator switches off  If you would like sewing to start while test feeding is in progress, press the TEST key to switch off the TEST indicator. When the start switch (2) is depressed, sewing will start. 4443Q 4014M
4	If test feeding continues until the final stitch, the work clamp will move to the sewing start position and then stop. Press the TEST key.  TEST indicator switches off

6-7. Setting the height of the intermittent presser foot

You can use the operation panel to change the setting value for the intermittent presser foot height.

1	All indicators switch off  THREAD/CLAMP indicator illuminates MENU indicator switches off	Press the THREAD/CLAMP key. The sewing machine will switch to threading mode. " 1" will appear in the PROGRAM No. display and the intermittent presser foot (1) will drop.  4445Q 4015M
2		Press the Δ key. The sewing machine will switch to intermittent presser foot height setting mode. " 4" will appear in the PROGRAM No. display and the intermittent presser foot (1) will rise to the setting value that appears in the menu display. (Intermittent presser foot height setting: 0.0 – 10.0) Press the $\blacktriangle$ or $\blacktriangledown$ key to set the intermittent presser foot height. - The intermittent presser foot (1) will be raised or lowered to the height of the new value that has been set. NOTE: After making the setting, be sure to turn the pulley once by hand and check that the intermittent presser foot (1) does not touch the needle bar. 5225Q
<Changing modes>  4016M		
3	Ending setting mode  THREAD/CLAMP indicator switches off	Press the THREAD/CLAMP key. - The setting values will be memorized. - The intermittent presser foot (1) will return to the status that it was at before the sewing machine was switched to setting mode.

Intermittent presser foot operation



① **Intermittent presser foot lift amount**

② **Intermittent presser foot height**

The settings can be made by the above operations.

However, if the intermittent presser foot height is set to a smaller setting than the intermittent presser foot stroke, the intermittent presser foot will not drop in order to prevent it from coming into contact with the needle plate.

③ **Intermittent stroke**

When making the adjustment, refer to "11-13. Changing the intermittent stroke" in the instruction manual CD.

5033Q

6-8. Notes on handling CF cards (sold separately)

- Use a CF card with a memory capacity of 32, 64, 128, 256, 512 MB, 1GB or 2GB. (CF cards with a capacity of more than 2GB are not supported.)
- Do not disassemble or modify the CF card.
- Do not bend, drop or scratch CF cards or place heavy objects on top of them.
- Avoid contact with liquids such as water, oil, solvents or drinks.
- Use and store CF cards in locations that are free from strong static electricity and electrical interference.
- Do not use or store CF cards in places where they may be subject to vibrations or shocks, direct sunlight, high temperature or humidity or strong magnetic fields from equipment such as speakers, or places which are dusty from thread scraps, etc.
- Do not subject CF cards to shocks or impacts or remove them from the sewing machine while data is being loaded or written.
- The data on the CF cards may become lost or corrupted due to some malfunction or accident. It is recommended that you make a backup of important data.
- CF cards should only be removed after the power for the sewing machine has been turned off.
- CF cards are already formatted when they are purchased, and so you should not reformat them.
- The recommended CF cards are commercially-available ones from SanDisk or HAGIWARA SYS-COM. CF cards from other manufacturers can be used, but different formatting methods may mean that loading from or writing to such cards may not be possible.

For more information, refer to the documentation provided with the CF card.

- * This product is compatible with CF cards that have been formatted using the FAT16 method. Cards that have been formatted using the FAT32 method cannot be used.
- * CFTM is a trademark of SanDisk Corporation.
- * Company names and product names appearing in this manual are trademarks or registered trademarks of the respective owners. However, no TM or other similar symbols appear in the main text of this manual.

7. SEWING

CAUTION



Turn off the power switch at the following times.

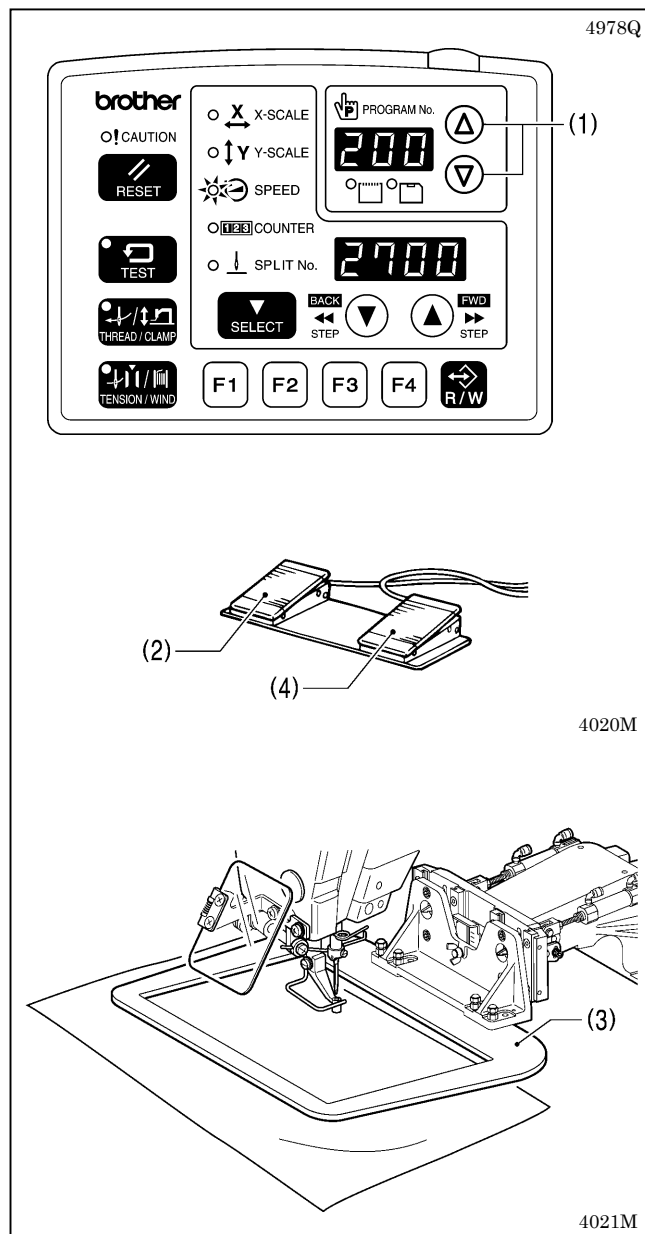
If the foot switch is depressed by mistake, the sewing machine might start operating and injury could result.

- 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.

7-1. Sewing



1. Turn on the power switch.
2. Press the Δ or ∇ key (1) to select the sewing program number that you would like to use.
 - * Refer to "6-2. Loading sewing data" for details on reading sewing data from a CF card.

3. Depress the work clamp switch (2) to lower the work clamp (3), and then depress the start switch (4).
 - The work clamp will move to the sewing start position.
 - Home position detection will be carried out immediately after the power switch is turned on.

4. Place the article to be sewn underneath the work clamp (3).
5. Depress the work clamp switch (2).
 - The work clamp (3) will drop.
6. Depress the start switch (4).
 - The sewing machine will start sewing.

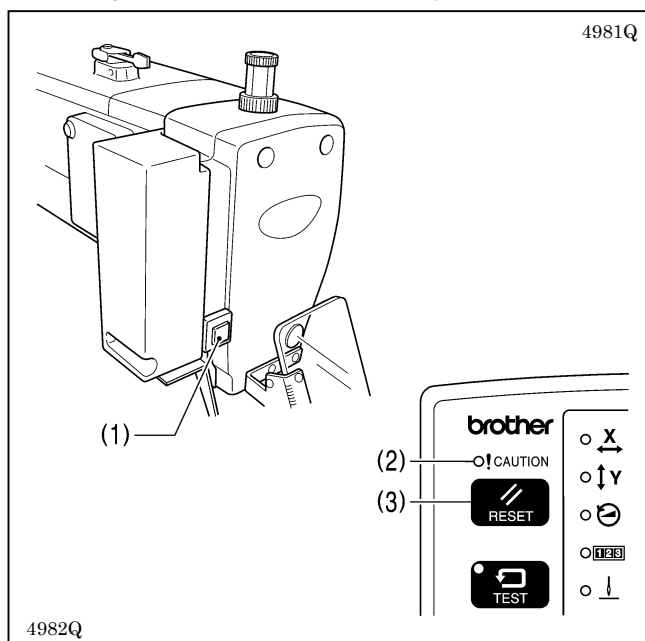
7. When sewing is complete, the thread will be trimmed and the work clamp (3) will rise.

Use a work clamp and a feed plate which will hold the article securely so that it does not slip.

If using the standard work clamp and feed plate and the article being sewn is slipping, take measures to stop the work clamp and feed plate from being slippery.

7-2. Using the STOP switch

If you press the STOP switch (1) while sewing or test feeding is in progress, the CAUTION indicator (2) will illuminate and the sewing machine will stop immediately.



<Clearing>

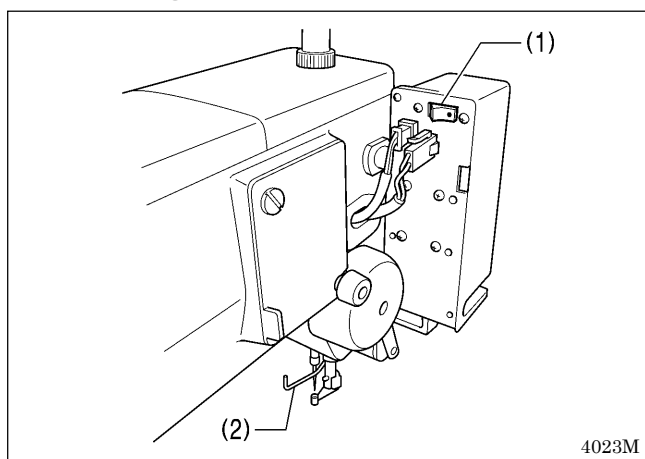
1. Press the RESET key (3).
 - The thread will be trimmed, and then the CAUTION indicator (2) will switch off and the buzzer will stop sounding.
2. If you do not wish to continue sewing, press the RESET key (3) once more.
 - The program number will flash. Carry out preparation for the next sewing.

<Continuing sewing from a stopping point>

If you have pressed the STOP switch (1) at times such as if the thread breaks while sewing or the lower thread runs out, you can resume sewing from the point where the thread ran out.

1		Press the RESET key. • The thread will be trimmed, and then the CAUTION indicator will switch off and the buzzer will stop sounding.
2		Press the ▼ key to return the work clamp to the position where sewing is to be continued. • When the ▼ key is pressed, the work clamp will move backward by one stitch, and when the ▲ key is pressed, the work clamp will move forward by one stitch. (It will move quicker if you keep the key pressed down.)
3		Depress the start switch (4). • The sewing machine will start operating and sewing will start.

7-3. Using the thread wiper switch



The thread wiper switch (1) can be used to turn the thread wiper (2) on and off.

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