

BAS-326G PS

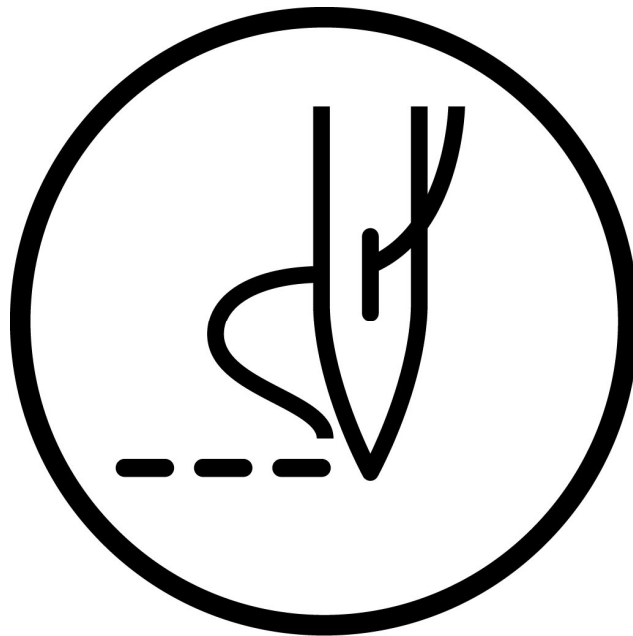
DIRECT DRIVE
PROGRAMMABLE ELECTRONIC PATTERN SEWER

<PERFECT STITCH>

Please read this manual before using the machine.

Please keep this manual within easy reach for quick reference.

This basic operation manual describes basic operations including sewing machine operations. For cleaning, standard adjustments and more details, please refer to the instruction manual contained in the Document CD.



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 lever, 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.

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 may 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 90 kg. The installation should be carried out by two or more people.



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.

Furthermore, do not apply excessive force when tilting back the machine head. The sewing machine 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.












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

-  This sewing machine should only be used by operators who have received the necessary training in safe use beforehand.
-  The sewing machine should not be used for any applications other than sewing.
-  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.
-  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
-  If using a work table which has casters, the casters should be secured in such a way so that they cannot move.
-  Attach all safety devices before using the sewing machine. If the machine is used without these devices attached, injury may result.
-  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.
-  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.
-  If the machine develops a problem, contact your nearest Brother dealer or a qualified technician.

Cleaning

-  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.
-  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.

Maintenance and inspection

-  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.
-  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.
 - Inspection, adjustment and maintenance
 - Replacing consumable parts such as the rotary hook
-  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.
-  Hold the machine head with both hands when tilting it back or returning it to its original position.
Furthermore, do not apply excessive force when tilting back the machine head. The sewing machine may become unbalanced and fall down, and serious injury or damage to the sewing machine may result.
-  If the power switch needs to be left on when carrying out some adjustment, be extremely careful to observe all safety precautions.
-  Use only the proper replacement parts as specified by Brother.
-  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.
-  Any problems in machine operation which result from unauthorized modifications to the machine will not be covered by the warranty.

[3] Warning labels

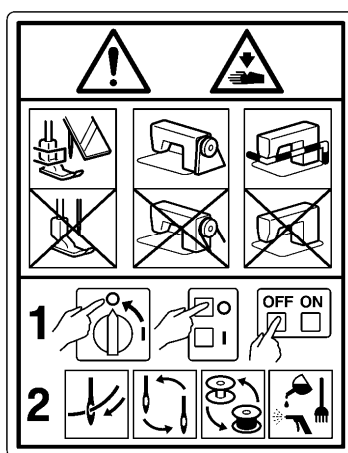
The following warning labels appear on the sewing machine.

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



2



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.

*Safety devices

Devices such as eye guard, finger guard, thread take-up cover, motor cover, solenoid cover, tension release solenoid cover, inner cover, outer cover, fixed cover and gas spring support cover

3



Be careful not to get your hand caught when tilting back the machine head and returning it to its original position.

4

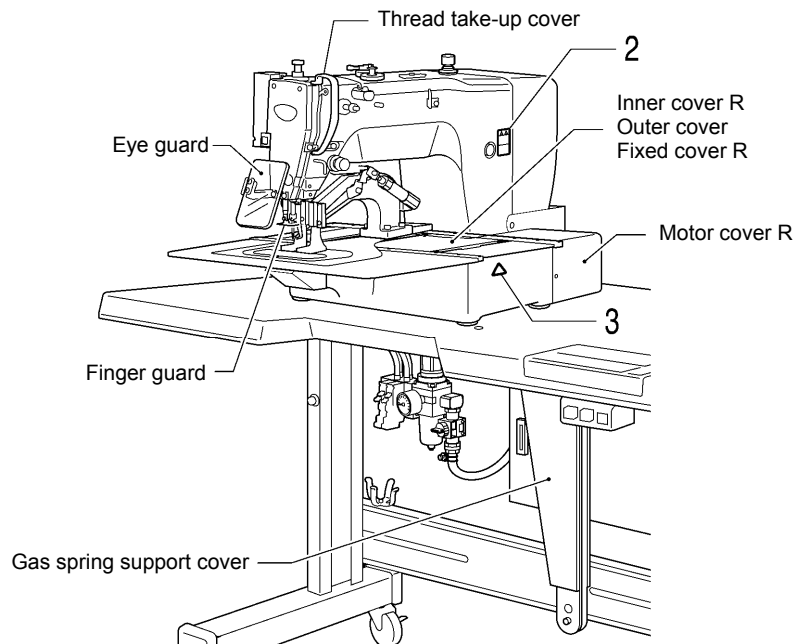
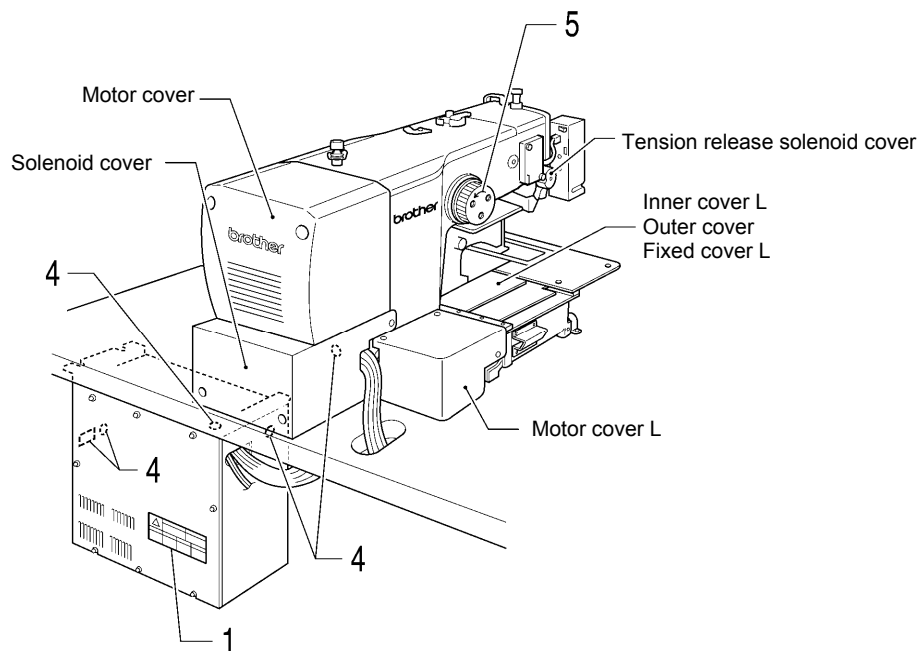


Be sure to connect the ground. If the ground connection is not secure, you run a high risk of receiving a serious electric shock, and problems with correct operation may also occur.

5



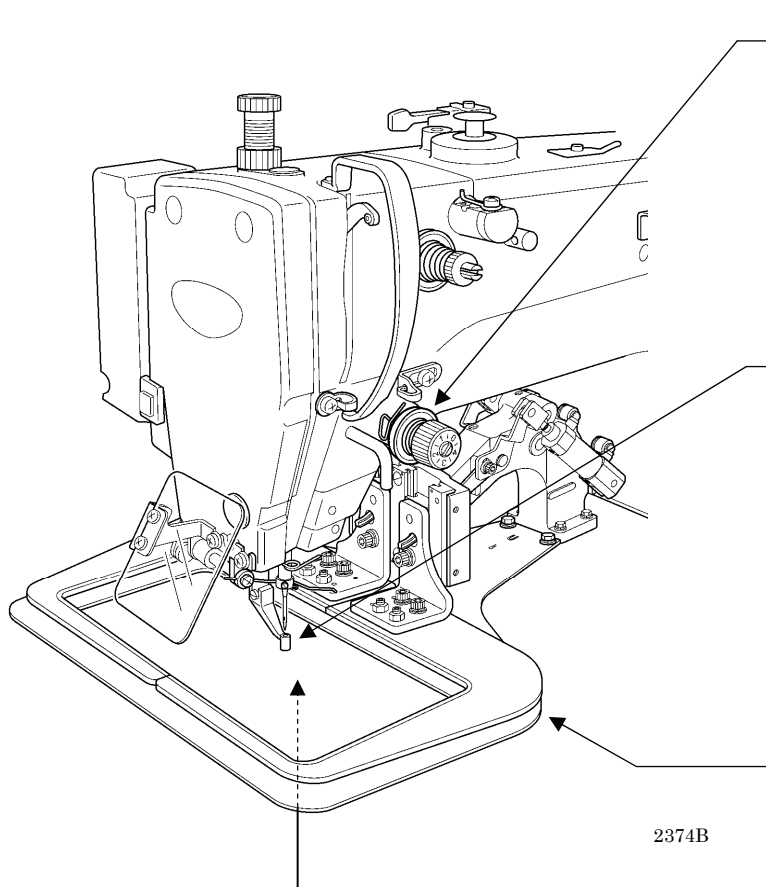
Direction of operation



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1. USEFUL FUNCTIONS FOR OPTIMUM SEWING



Easy threading in threading mode

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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.

Intermittent presser foot height can be set easily using the panel

→ Page 29
INSTRUCTION MANUAL CD
6-7. Using user programs

The height of the intermittent 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 intermittent presser foot height to the desired height separately for each sewing program.

Easy and accurate feed plate replacement

→ INSTRUCTION MANUAL CD
10-11-1. Installing the feed plate

The feed plate installation position can be obtained accurately by using the panel, which makes feed plate replacement much easier.



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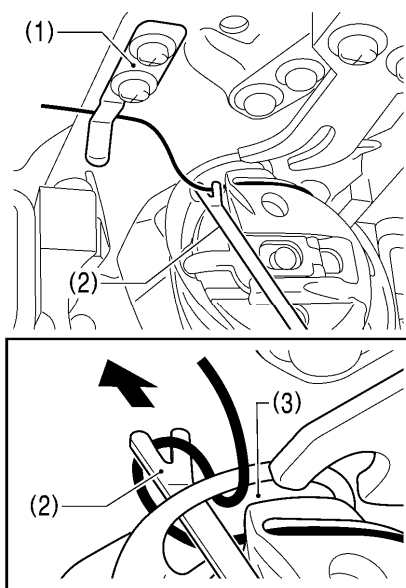


Feed plate installation mode

The lower thread can be easily threaded using the threading bar

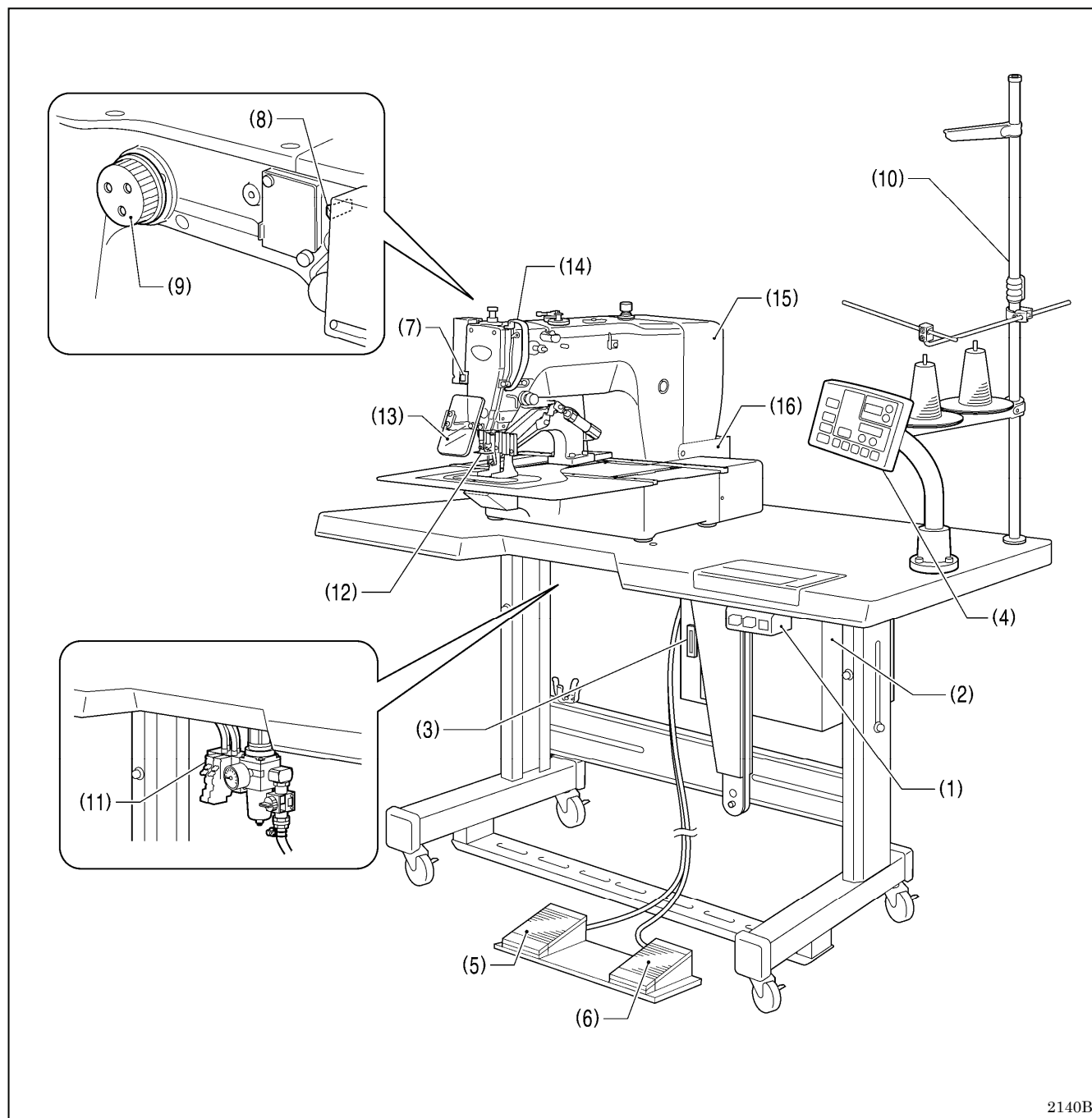
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If you clamp the lower thread in the thread hold spring (1) and then push it gently using the threading bar (2), you can make the lower thread pass easily through the window (3) of the inner rotary hook.



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2. NAMES OF MAJOR PARTS



2140B









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

- Safety devices:**
- (12) Finger guard
 - (13) Eye guard
 - (14) Thread take-up cover
 - (15) Motor cover
 - (16) Solenoid cover

CF™ is a trademark of SanDisk Corporation.

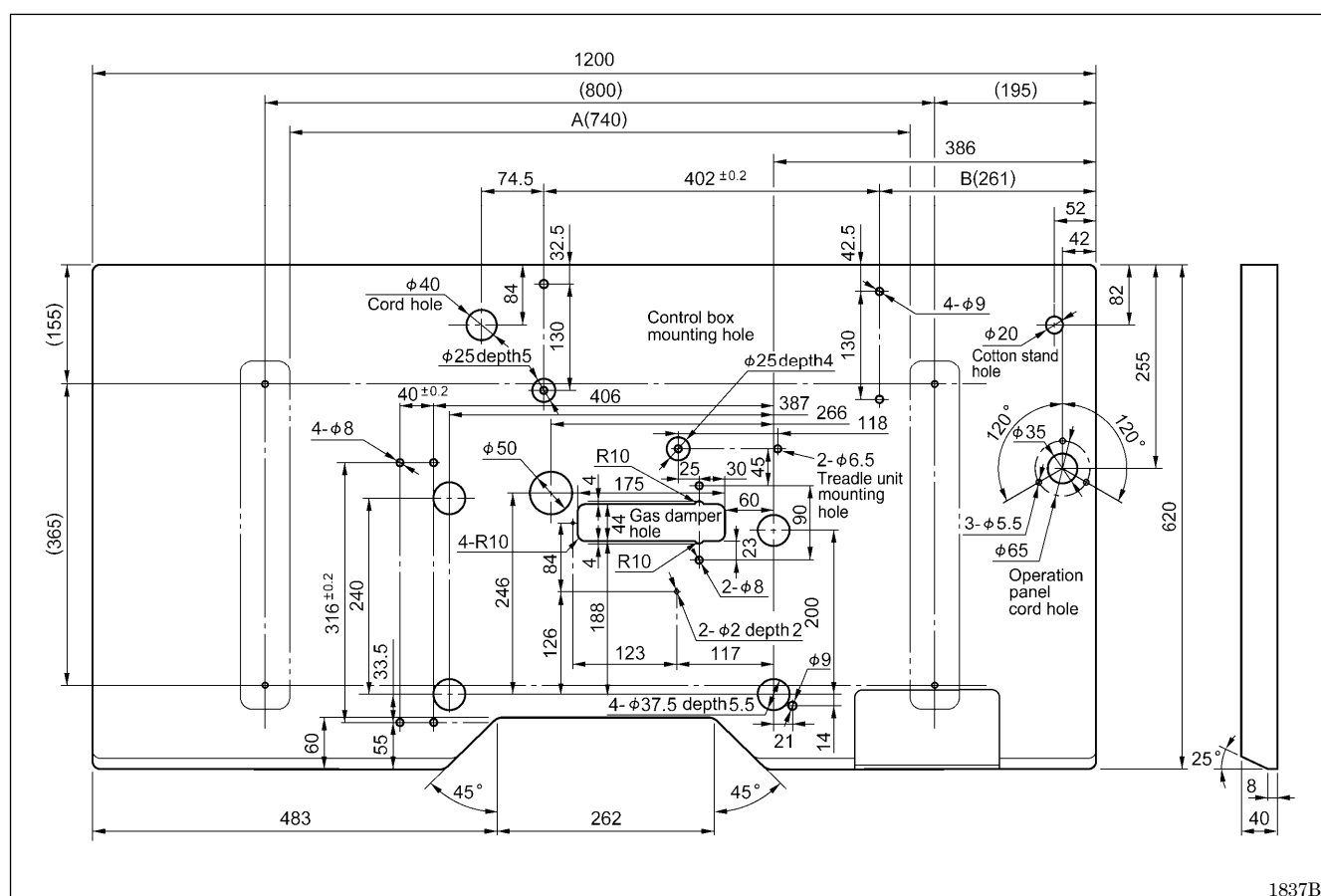
3. INSTALLATION

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 head weighs approximately 90kg. The installation should be carried out by two or more people.
-  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.
Furthermore, do not apply excessive force when tilting back the machine head. The sewing machine 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.

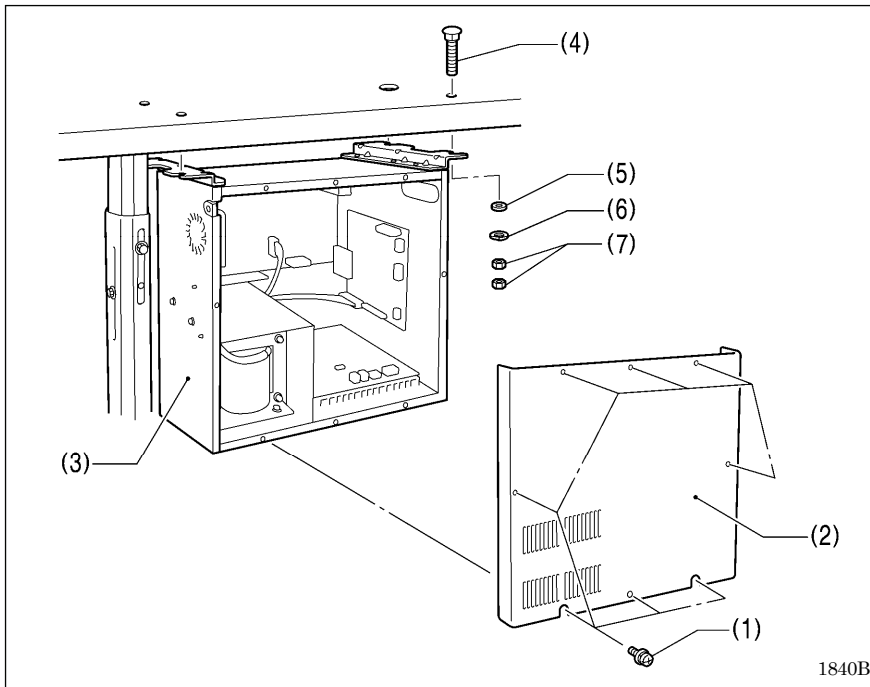
3-1. Table processing diagram

- The thickness of the table should be at least 40 mm, and it should be strong enough to bear the weight and vibration of the sewing machine.
- If the distance A between the insides of the legs is less than 740 mm, move the control box installation position to the left (B = 261mm).
- 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.



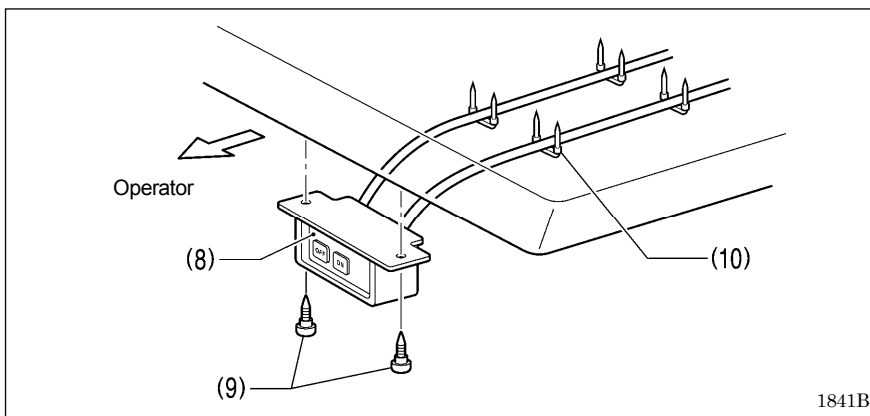
3. INSTALLATION

3-2. Installing the control box



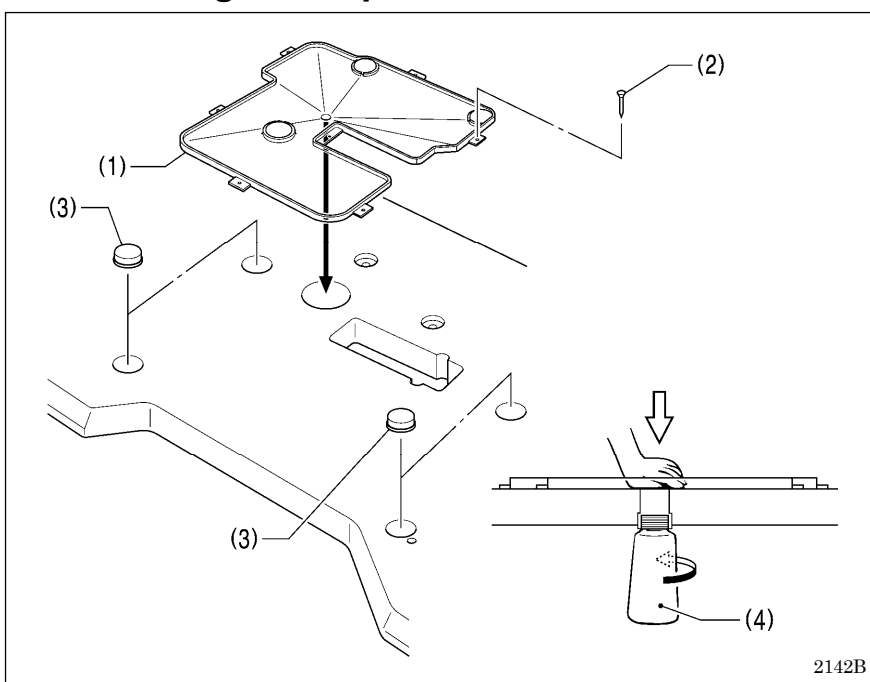
Remove the eight screws (1), and then remove the control box cover (2).

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



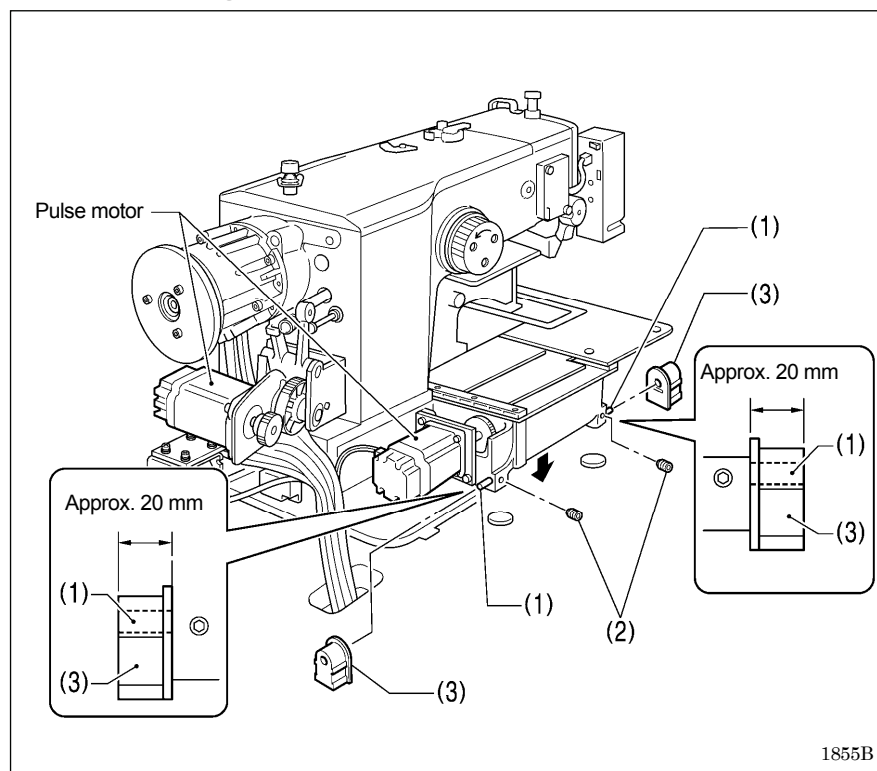
- (8) Power switch
- (9) Wood screws [2 pcs.]
- (10) Staples [4 pcs.]

3-3. Installing the oil pan



- (1) Oil pan
- (2) Nails [7 pcs.]
- (3) Rubber cushions [4 pcs.]
- (4) Waste oil tank

3-4. Installing the machine head

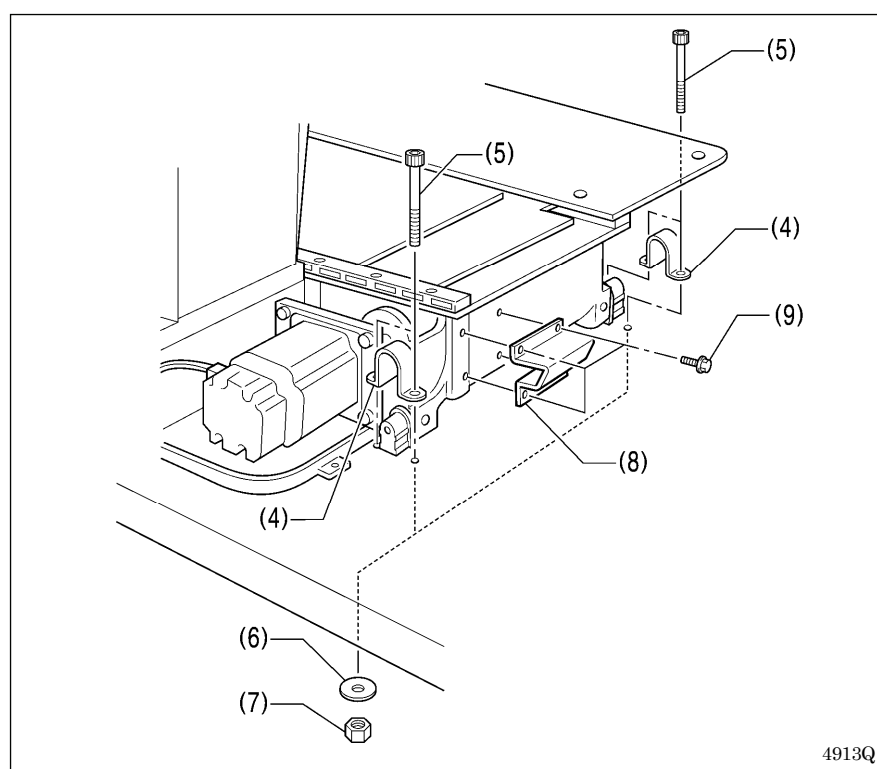


- (1) Pins [2 pcs.]
- (2) Set screws [2 pcs.]
- (3) Hinge rubber assemblies [2 pcs.]

Place the machine head gently on top of the oil pan and the rubber cushions.

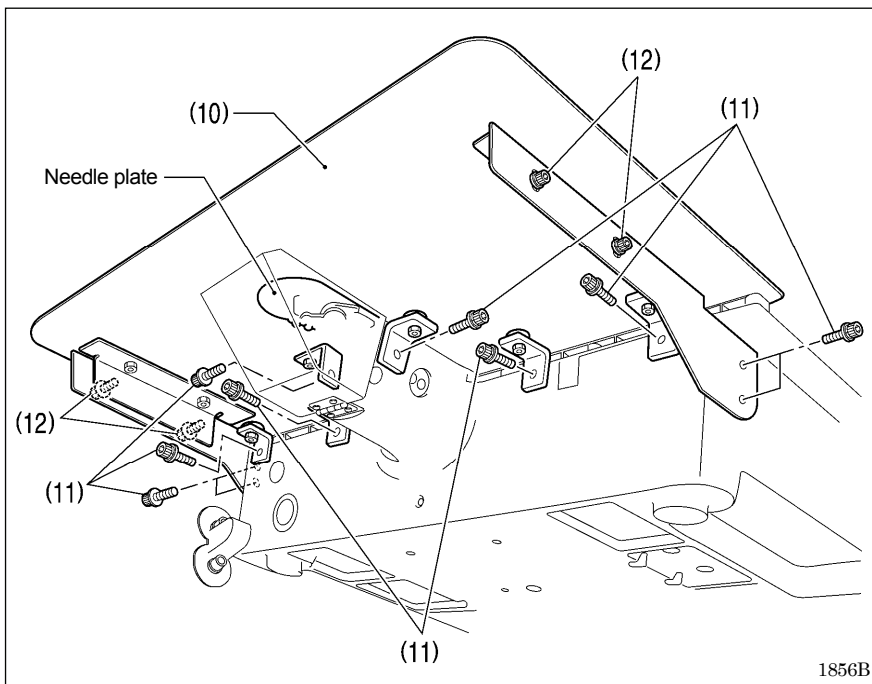
NOTE:

- Be careful not to get the cords clamped between the machine head and the oil pan.
- When holding the machine head, do not hold it by the pulse motor. This may cause problems with operation of the pulse motor.



- (4) Hinge holders [2 pcs.]
- (5) Bolts [4 pcs.]
- (6) Plain washers [4 pcs.]
- (7) Nuts [4 pcs.]
- (8) Head rest
- (9) Bolts with washer [4 pcs.]

3. INSTALLATION



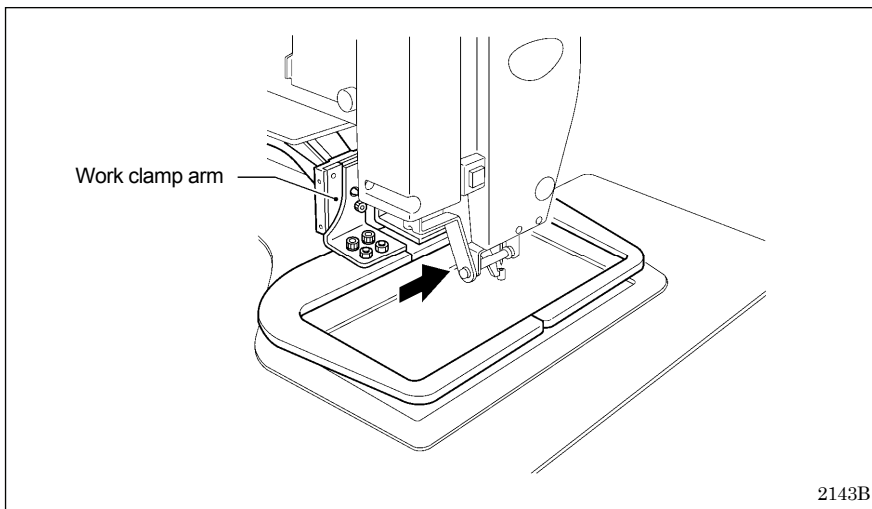
(10) Auxiliary plate

(11) Bolts with washer [10 pcs.]

Loosen the bolts with washer (12) and adjust so that the auxiliary plate (10) and the needle plate are at the same height.

NOTE:

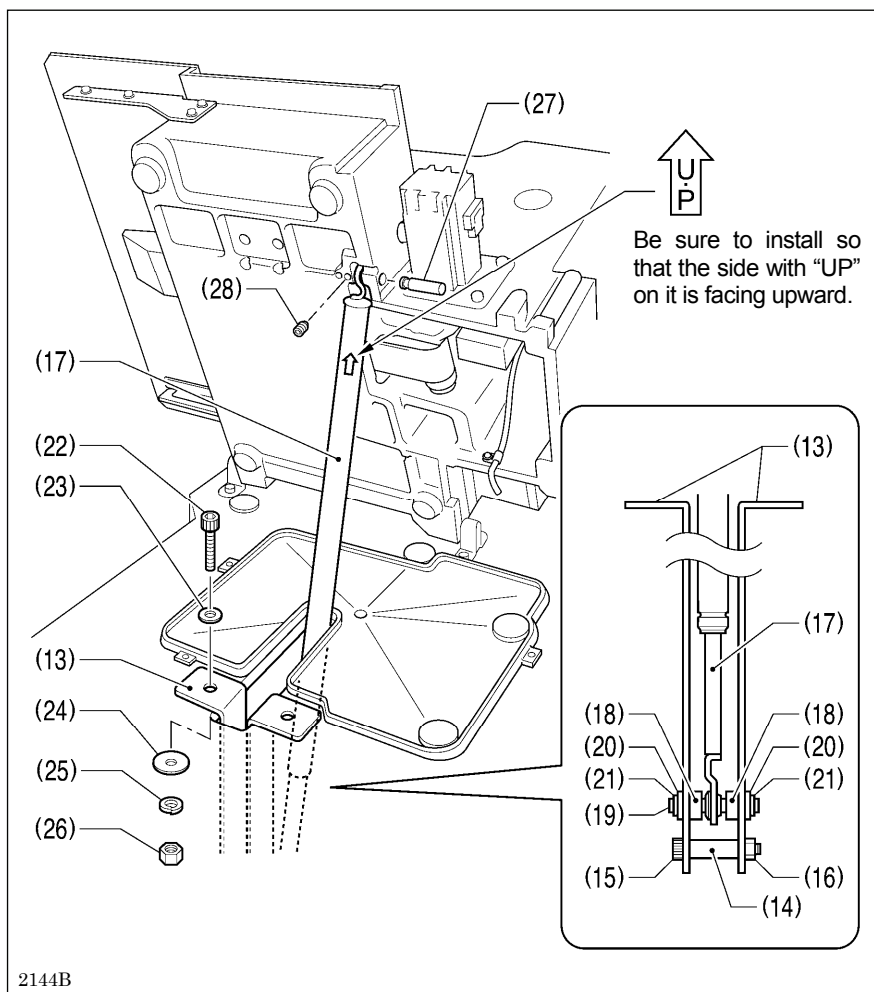
Install the auxiliary plate so that it is horizontal.



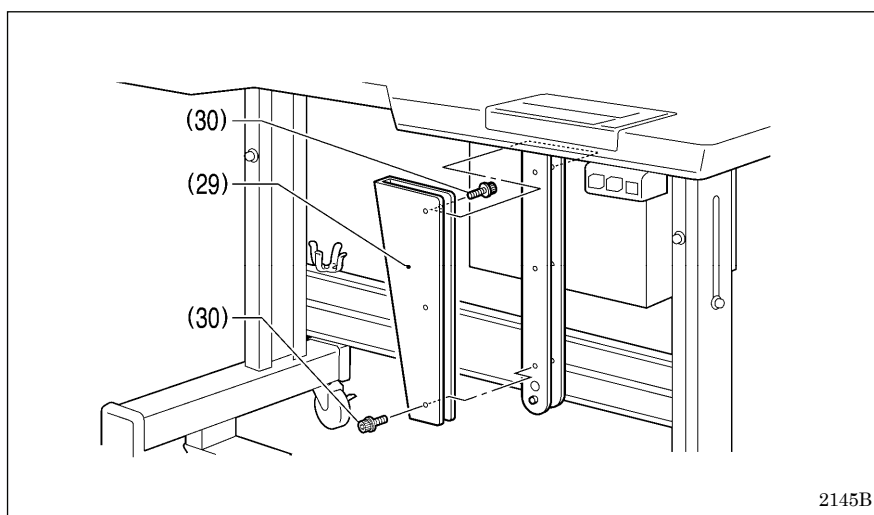
Move the work clamp arm all the way to the right when looking from the front of the sewing machine (the direction of the arrow in the illustration), and then gently tilt back the machine head.

NOTE:

Two or more people should tilt back the machine head, and it should be tilted gently while being held with both hands.

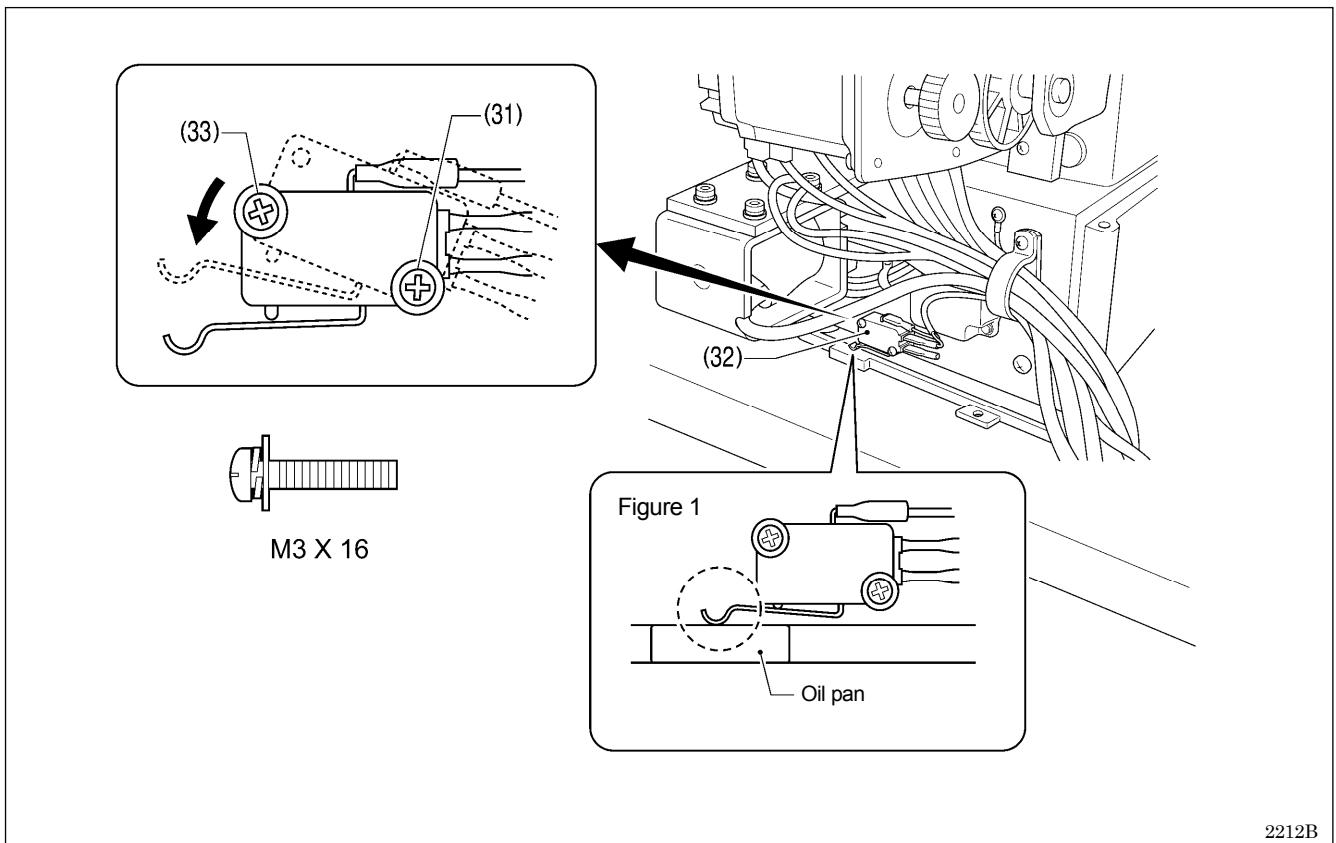


- (13) Gas spring holders [2 pcs.]
- (14) Spacer
- (15) Bolt
- (16) Nut
- (17) Gas spring
- (18) Shaft collars [2 pcs.]
- (19) Gas spring shaft D
- (20) Plain washers [2 pcs.]
- (21) Retaining rings E [2 pcs.]
- (22) Bolts [2 pcs.]
- (23) Plain washers (medium) [2 pcs.]
- (24) Plain washers (large) [2 pcs.]
- (25) Spring washers [2 pcs.]
- (26) Nuts [2 pcs.]
- (27) Gas spring shaft U
- (28) Set screw



- (29) Gas spring support cover
- (30) Bolts with washer [6 pcs.]

3. INSTALLATION

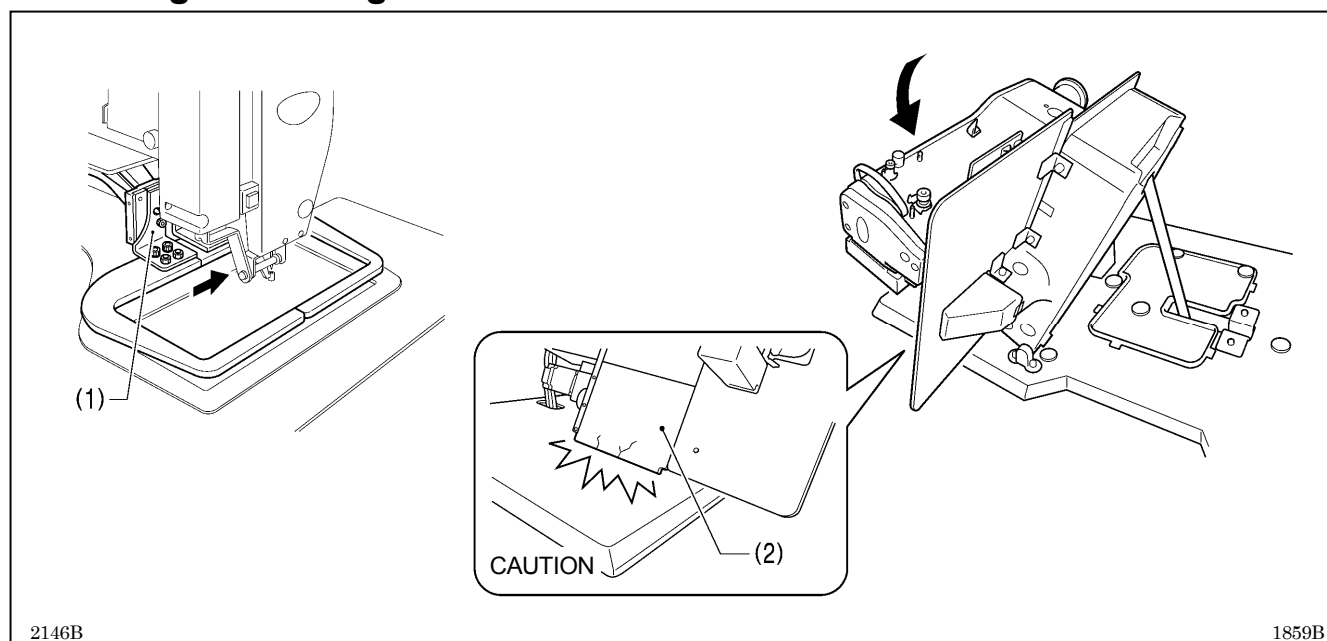


- Gently return the machine head to its original position.
- Loosen the screw (31). Move the machine head switch (32) to the position shown in the illustration, and then secure the machine head switch (32) with the screw (31) and the accessory M3x16 screw (33).
- Check that the machine head switch (32) is turned on as shown in figure 1.

NOTE:

If the machine head switch is not turned on, errors "E050", "E051" and "E055" will be generated.

3-5. Tilting the sewing machine head

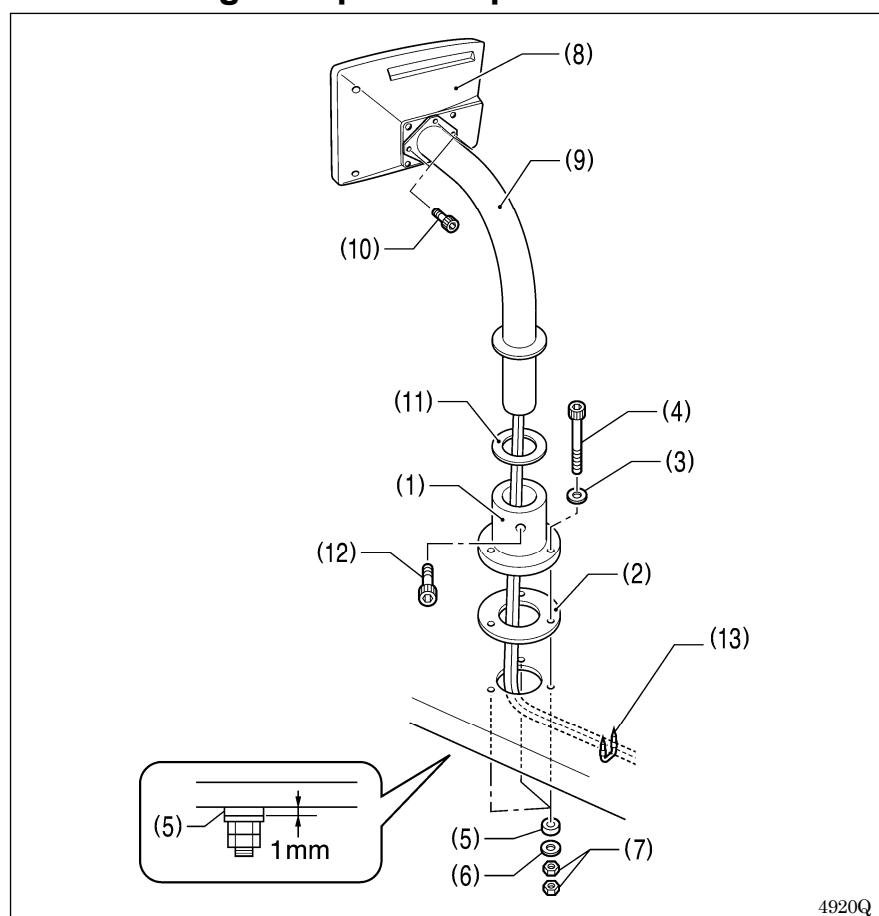


1. Move the presser arm assembly (1) as far as it will go in the direction of the arrow in the illustration (to the right when looking from the front of the sewing machine).
2. Stand at the left side of the table, and gently tilt the machine head towards you.

NOTE:

Always be sure to move the work clamp arm all the way to the right before tilting back the machine head. If you try to tilt back the machine head while the work clamp arm is still on the left side, it may damage the outer cover L (2).

3-6. Installing the operation panel



- (1) Operation panel base
- (2) Cushion A
- (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.]

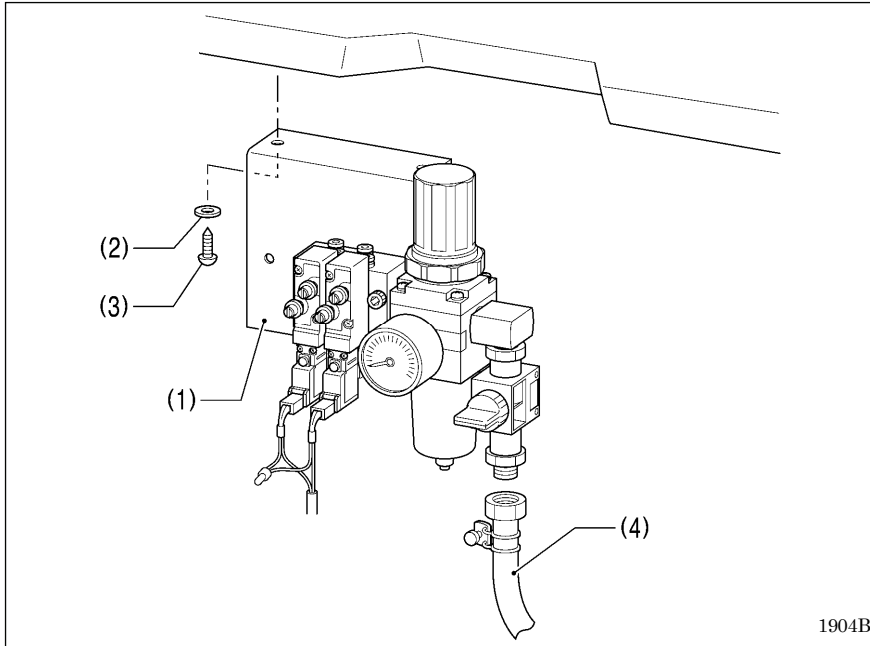
Tighten until the thickness of cushion B (5) is about 1 mm.

- (8) Operation panel
- (9) Operation panel stand
- (10) Bolts [3 pcs.]
- (11) Rubber seat
- (12) Bolt

- Pass the panel cord through the operation panel stand (9) and the rubber seat (11).
- Fit the operation panel stand (9) into the operation panel base (1), and then secure it with the bolt (12).
- Pass the panel cord through the hole in the table, and then insert it into the control box through the hole in the side of the control box.

- (13) Staples [3 pcs.]

3-7. Installing the pneumatic unit



Install underneath the work table.

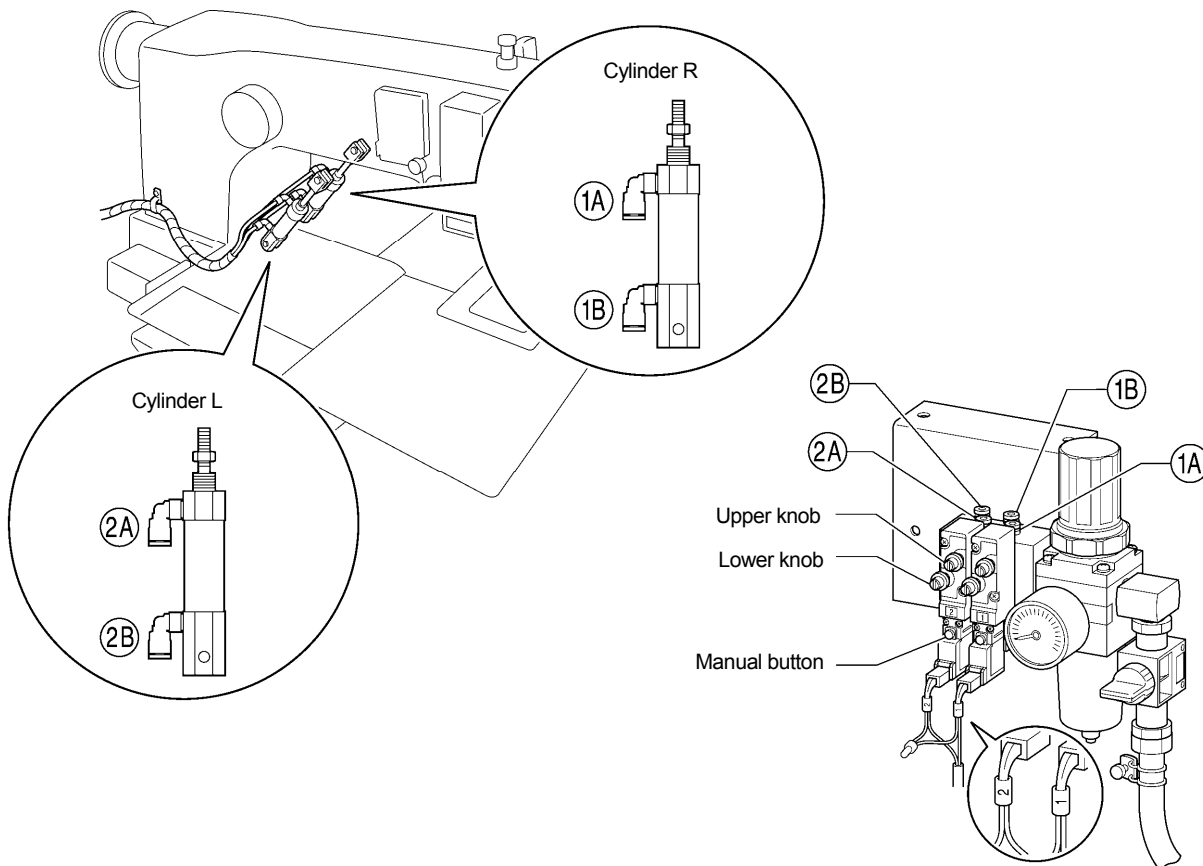
- (1) Solenoid valve assembly
- (2) Washers [2 pcs.]
- (3) Wood screws [2 pcs.]
- (4) Rubber hose

After installing the pneumatic unit, adjust the air pressure.
(Refer to "10-16. Adjusting the air pressure" in the instruction manual CD.)

NOTE:

Make sure that the pneumatic unit does not touch the control box or the work table leg.

Connect each air tube to the position with the corresponding number.



<Adjusting the speed controller>

You can use the valve knobs to adjust the lifting and lowering speeds.

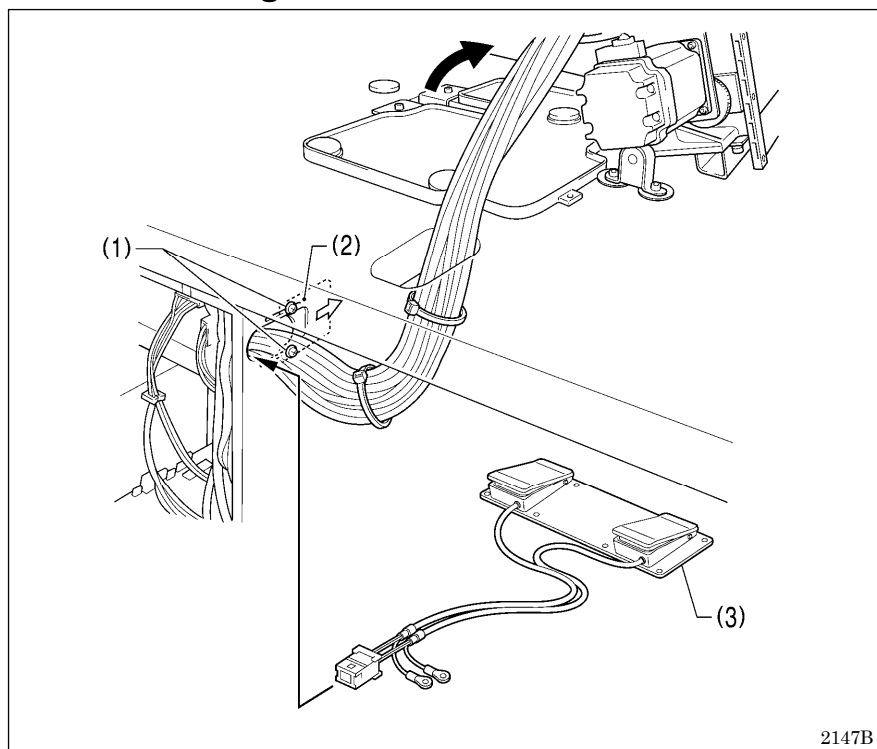
The valve knobs should be adjusted so that the left and right sides of the work clamp operate at the same speed.

- 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.

You can operate the work clamp while the power is turned off by pressing the manual button.

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3-8. Connecting the cords



1. Gently tilt back the machine head.
2. Pass the cord bundle through the hole in the work table.
3. Loosen the two screws (1), and then open the cord presser plate (2) in the direction of the arrow and pass the cord bundle through the opening together with the following cords.
 - Two-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.

NOTE:

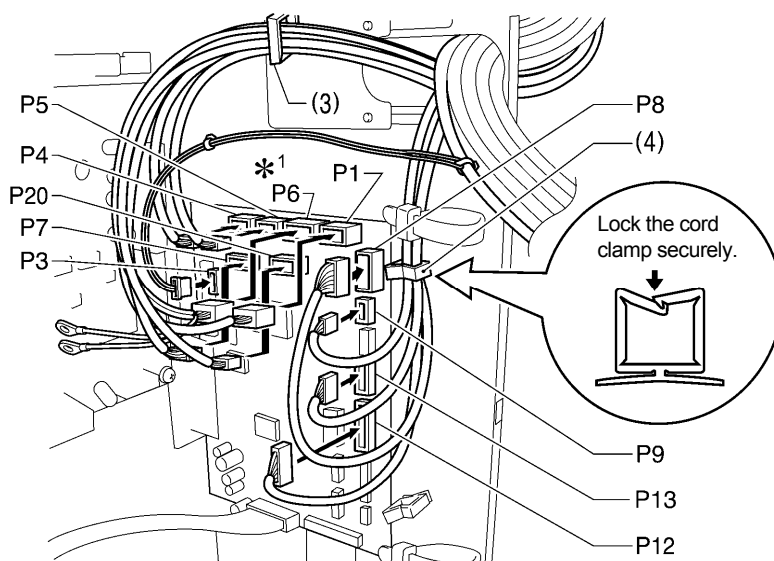
- Check that the connector is facing the correct way, and then insert it firmly until it locks into place.
- Secure the cables with cable ties and cord clamps, while being careful not to pull on the connector.

<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.

*1: Be sure to make the ground connection.
(Refer to "3-9. Connecting the ground wire".)



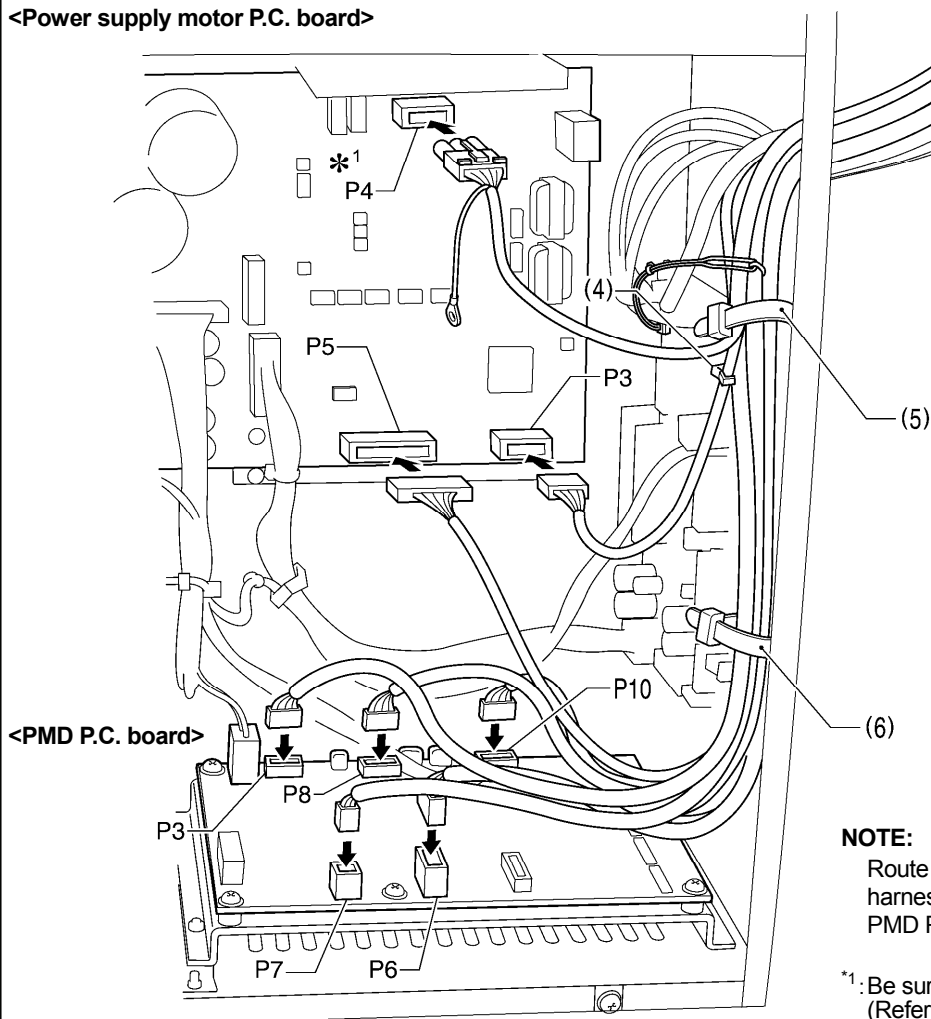
| Connector | Connection location on main P.C. board | Cord clamp |
|--|--|------------|
| X pulse motor encoder 5-pin white | P20 (X-ENC) | (3) |
| Y pulse motor encoder 5-pin blue | P4 (Y-ENC) | (3) |
| Work clamp pulse motor encoder 5-pin black | P5 (P-ENC) | (3) |
| Foot switch 10-pin | P6 (FOOT) | (3) |
| Operation panel 8-pin | P1 (PANEL) | (3) |
| Machine head 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) |
| Solenoid selection harness 4-pin*2 | P3 (CUTTER) | — |

*2: The 4-pin solenoid selection harness may not be used for some versions of tension release solenoid.

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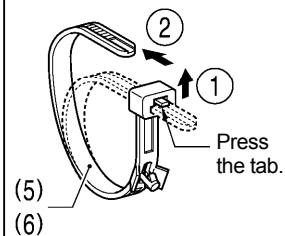
3. INSTALLATION

<Power supply motor P.C. board>

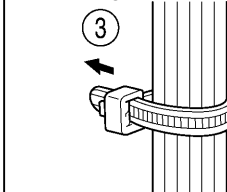


<PMD P.C. board>

<Removing>



<Securing>



NOTE:

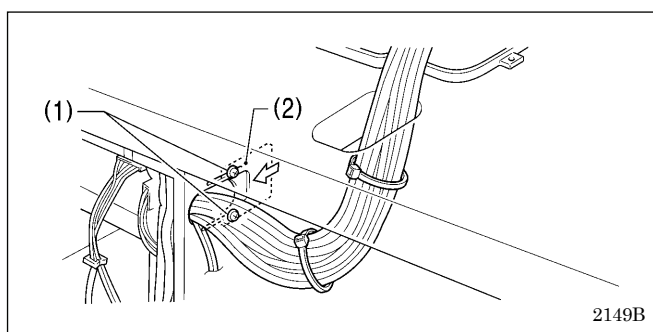
Route the X, Y and work clamp pulse motor harnesses so that they do not touch the PMD P.C.

*1: Be sure to make the ground connection. (Refer to "3-9. Connecting the ground wire".)

| 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) |

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(Continued on next page)



5. Close the cord presser plate (2) in the direction of the left arrow, and secure it by tightening the two screws (1).

Note: Close the cord presser plate (2) securely so that no foreign objects, insects or small animals can get inside the control box.

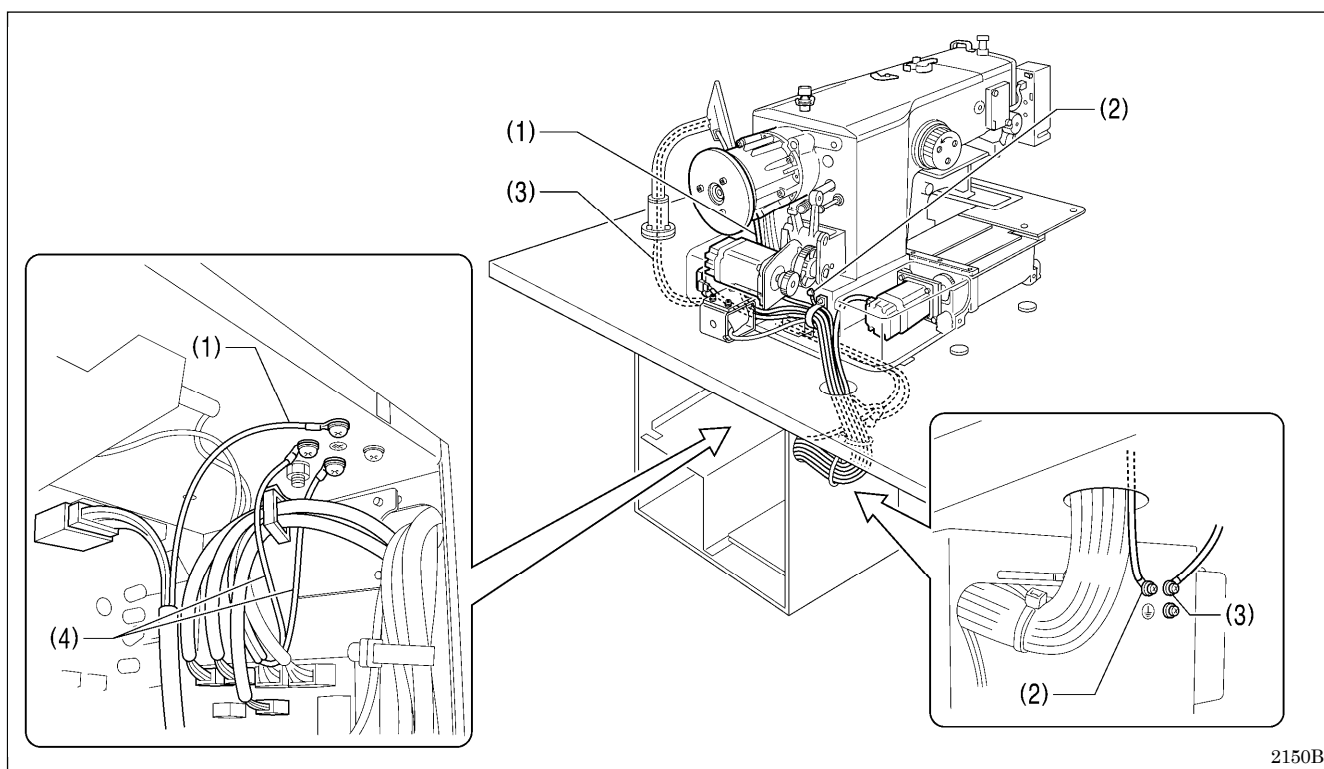
6. Check that the cords do not get pulled, and then gently return the machine head to its original position.

3-9. Connecting the ground wire

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.

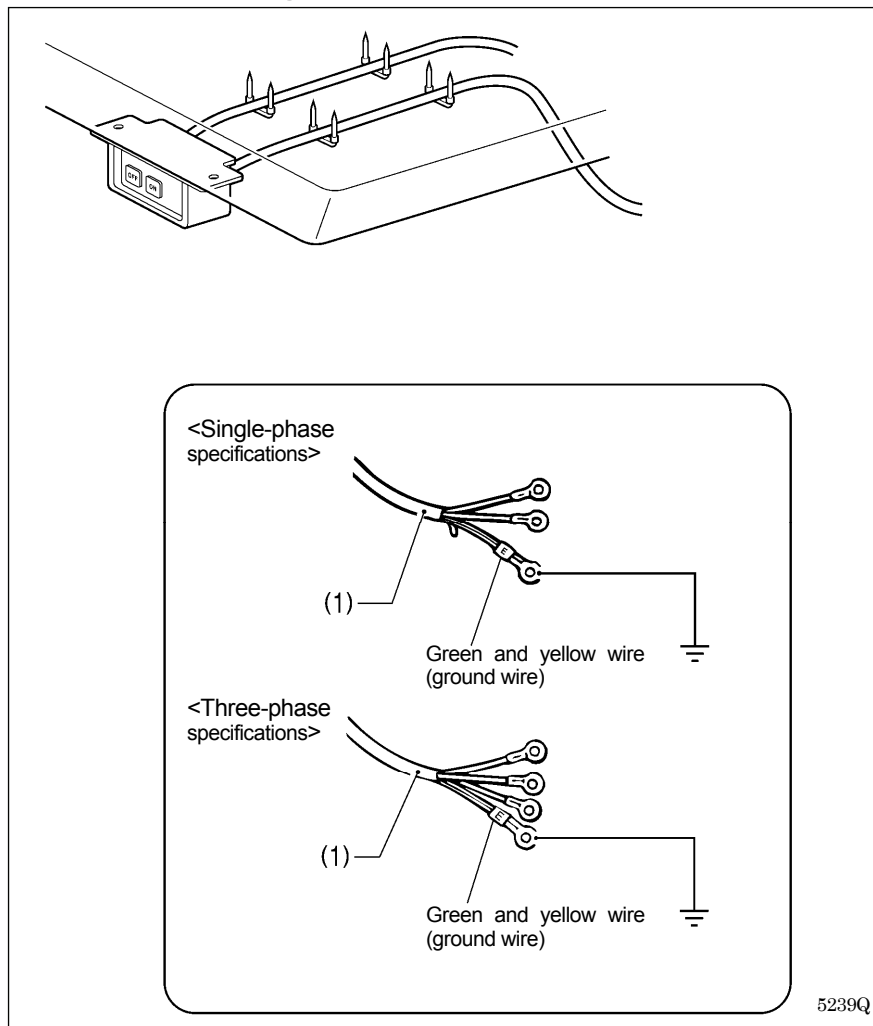


- (1) Ground wire from upper shaft motor harness
- (2) Ground wire from the machine head
- (3) Ground wire from operation panel
- (4) Ground wires from two-pedal foot switch harnesses (2 wires)

- Tighten the control box cover with the eight screws. Check that the cords are not clamped by the cover at this time.

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

3-10. Connecting the power cord

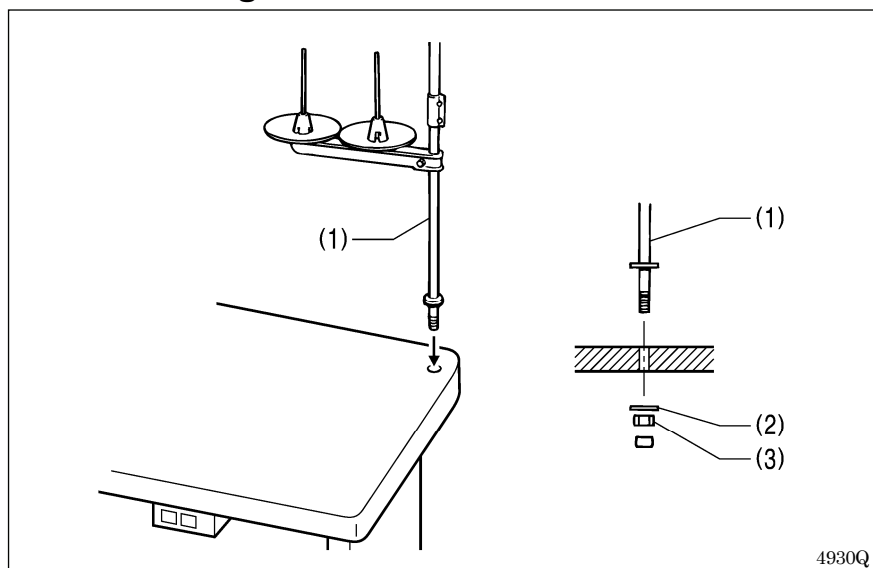


1. Attach an appropriate plug to the power cord (1). (The green and yellow wire is the ground wire.)
 2. Insert the plug into a properly-grounded AC power supply.
- * The inside of the control box uses single-phase power.

NOTE:

Do not use an extension cord. If this is not observed, it may cause problems with correct operation.

3-11. Installing the cotton stand



(1) Cotton stand

NOTE:

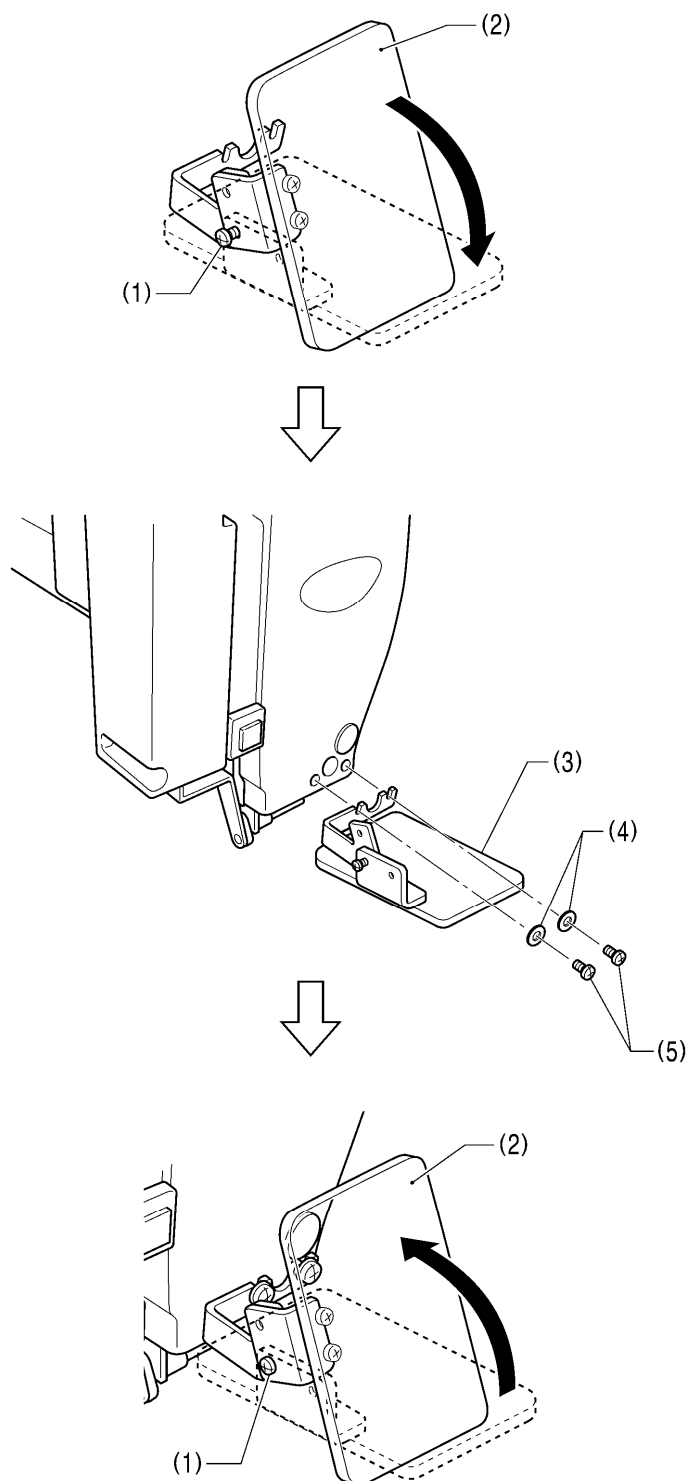
Fit the washer (2), and then securely tighten the nut (3) so that the cotton stand does not move.

3-12. Installing the eye guard

! CAUTION

Attach all safety devices before using the sewing machine.

If the machine is used without these devices attached, injury may result.

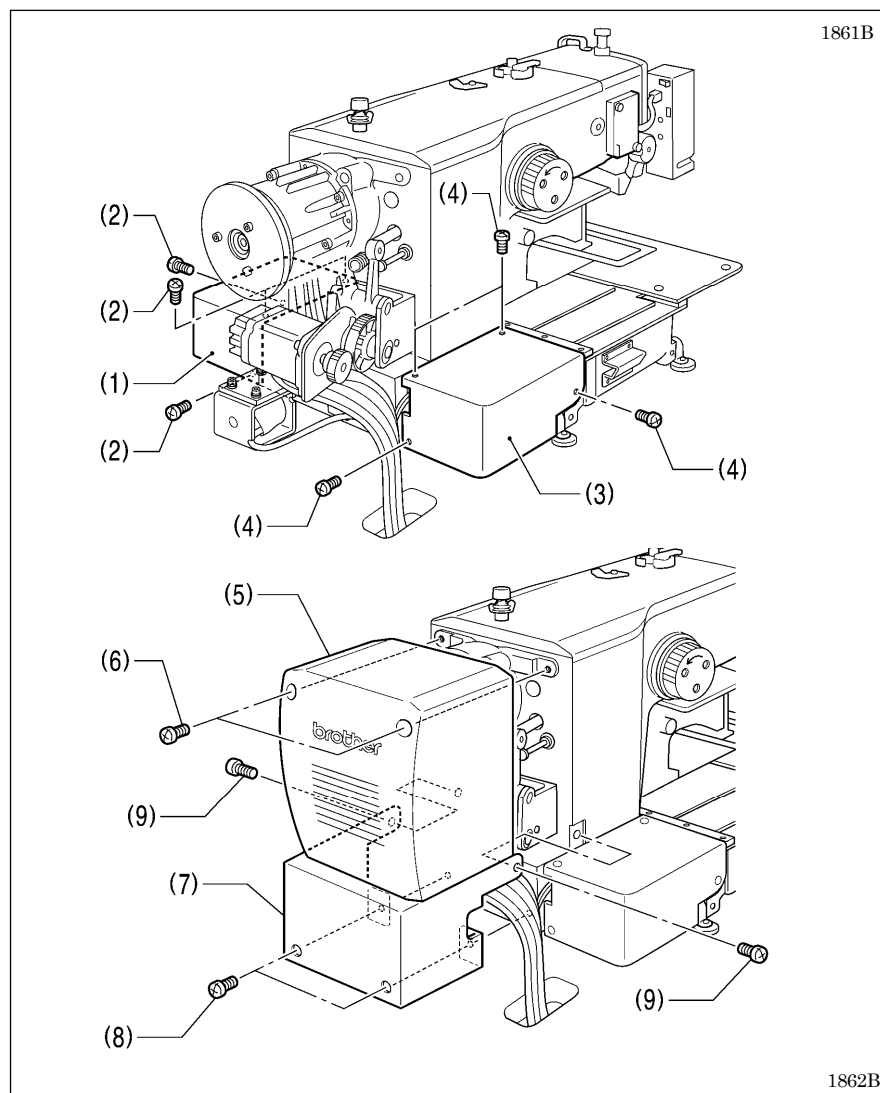


- (1) Screw (loosen)
- (2) Eye guard (tilt forward)
- (3) Eye guard assembly
- (4) Plain washers [2 pcs.]
- (5) Screws [2 pcs.]

After installing the eye guard assembly (3), return the eye guard (2) to its original angle, and then tighten the screw (1) to secure it in place.

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3-13. Installing the motor cover



- (1) Motor cover R
- (2) Screws [4 pcs.]
- (3) Motor cover L
- (4) Screws [4 pcs.]
- (5) Motor cover
- (6) Screws [2 pcs.]
- (7) Solenoid cover
- (8) Screws [2 pcs.]
- (9) Screws [2 pcs.]

NOTE:

Be careful not to clamp the cords when installing the motor cover and the solenoid cover.

3-14. Lubrication

! 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.

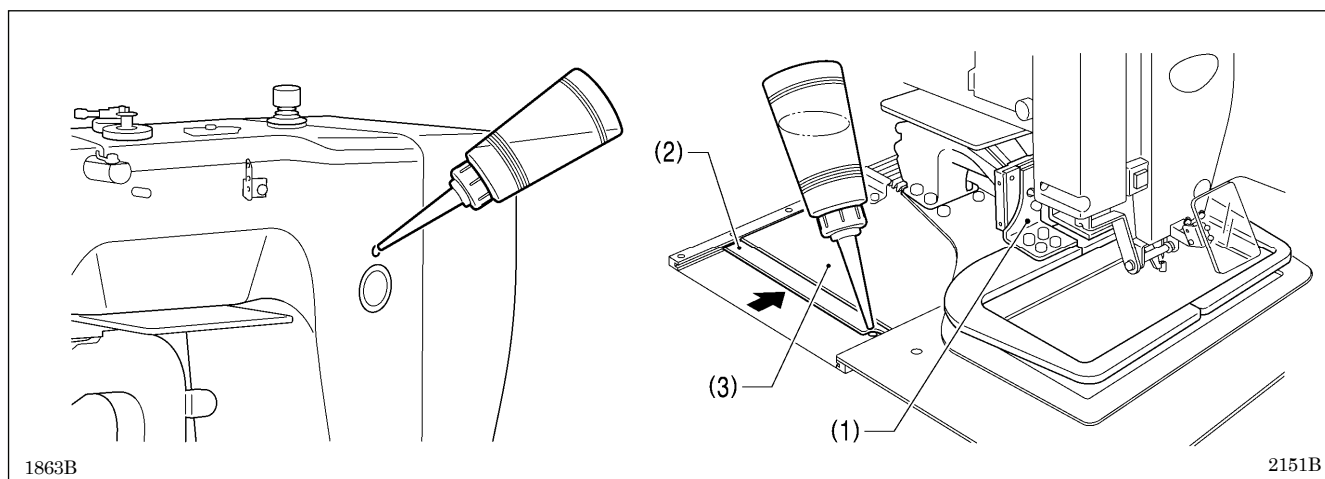


Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin. If the oil and grease get into your eyes or onto your skin, inflammation can result. Furthermore, do not drink or eat the lubricating oil or grease. They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

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.

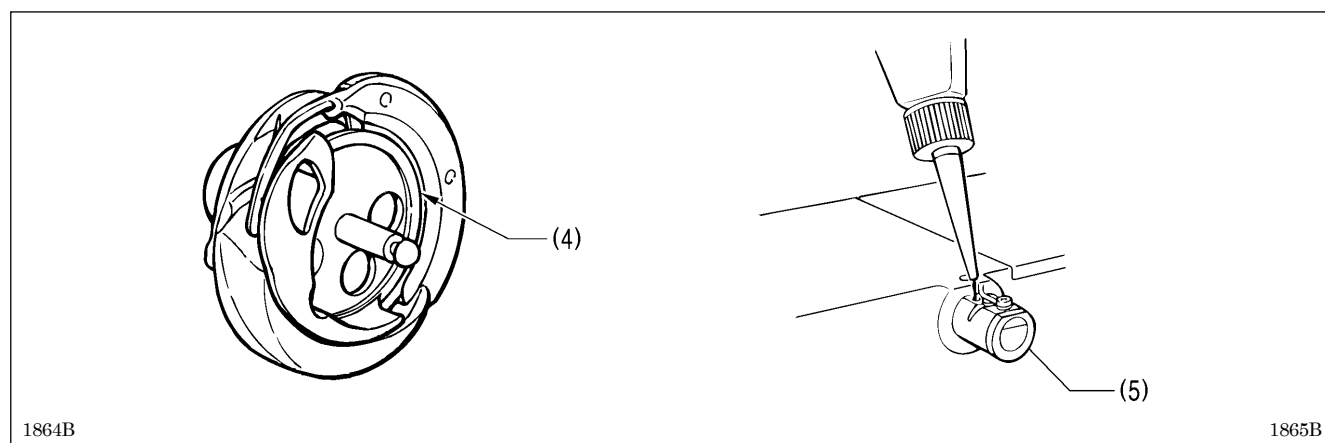
* If this type of lubricating oil is difficult to obtain, the recommended oil to use is <Exxon Mobil EssoTex SM10; VG10>.



1. Fill the arm-side oil tank with oil.
2. Move the work clamp arm (1) as far as it will go to the right when looking from the front of the sewing machine, and then slide the outer cover L (2) into the inner cover L (3) so that the lubrication hole in the bed is visible. Pour oil into the bed side oil tank through this hole.

NOTE:

Be sure to fill the machine with oil when the oil level is down to about one-third full in the oil sight glass. If the oil drops below the one-third level, there is the danger that the machine may seize during operation.



3. Remove the bobbin case and add 2-3 drops of oil to the rotary hook race (4).
4. If using the needle cooler (5), fill it with silicon oil (100 mm²/s).

4. PREPARATION BEFORE SEWING

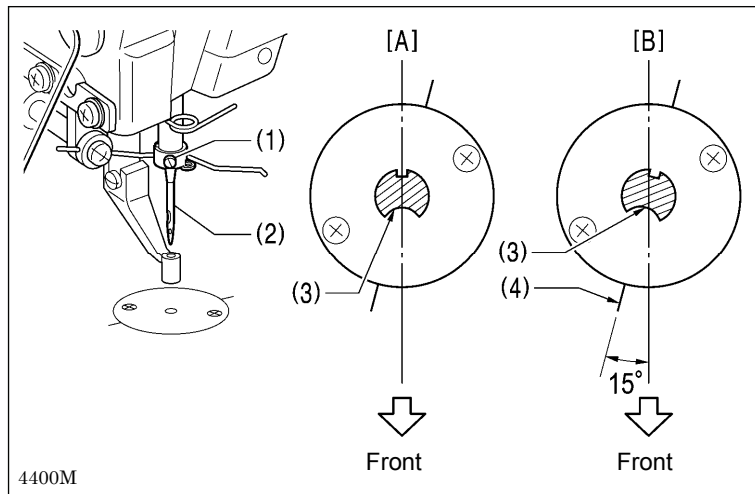
4-1. Installing the needle

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) as far as it will go with the hollow (3) facing to the front, and then securely tighten the set screw (1). [Figure A]

<If hitch stitches appear in one direction during square sewing>

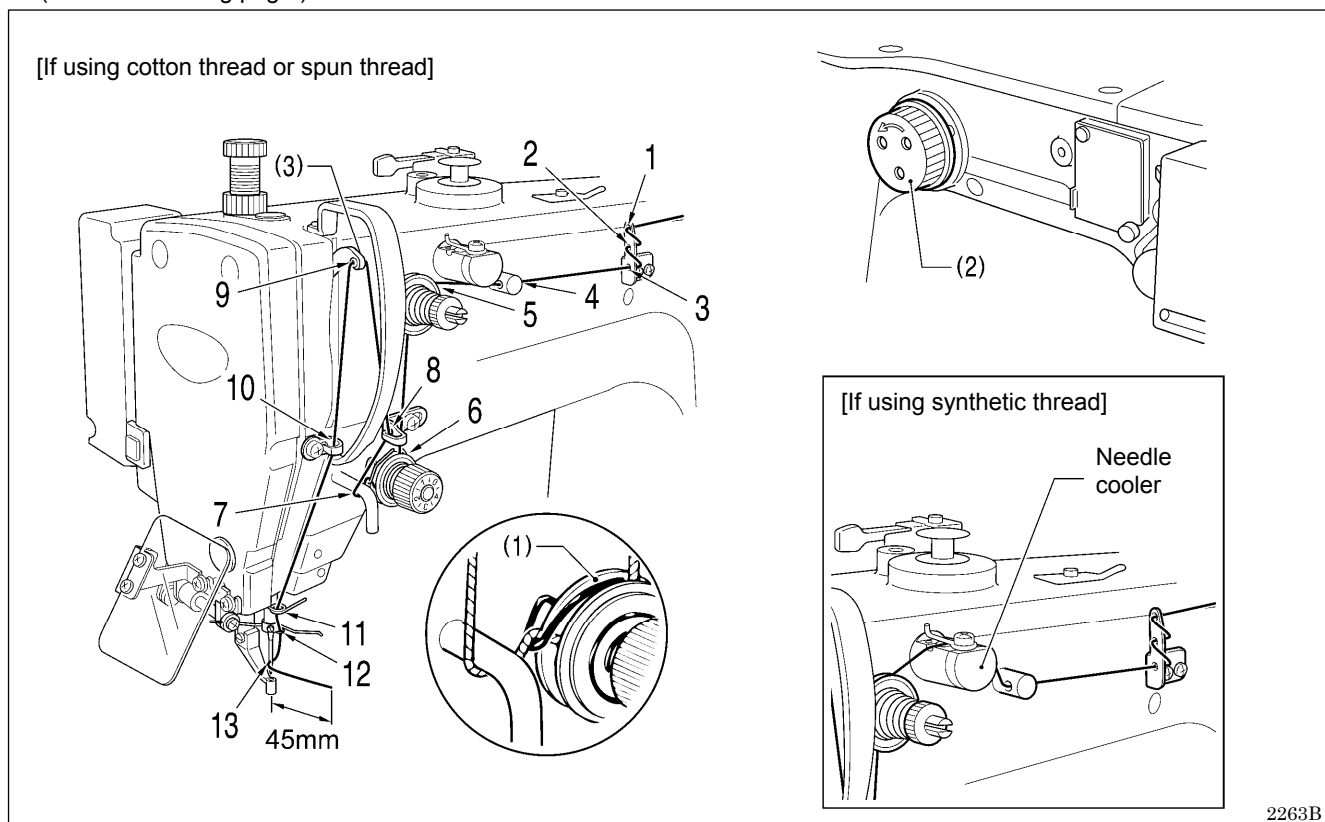
1. Loosen the set screw (1).
2. Insert the needle (2) as far as it will go so with the hollow (3) facing to the front and so that its angle matches the angle of reference line (4), and then securely tighten the set screw (1). [Figure B]

* If the installation angle of the needle has been changed, be sure to readjust the needle clearance. (Refer to "10-7. Adjusting the needle clearance" in the instruction manual CD.)

4-2. Threading the upper thread

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

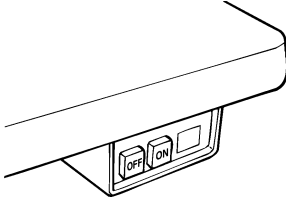
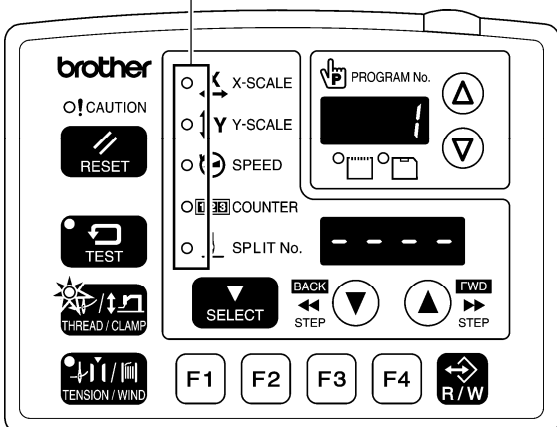


* When using threading mode for threading, the tension discs (1) will open so that the thread can be threaded more easily. (Refer to following page.)

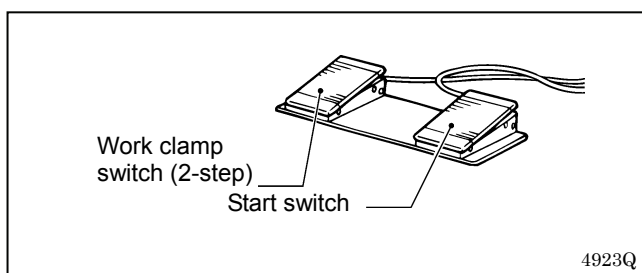


- Turn the machine pulley (2) and raise the thread take-up (3) to its highest position before threading the upper thread. (This will make threading easier and it will prevent the thread from coming out at the sewing start.)
- When threading the thread through the needle, allow a distance of approximately 45 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 |  <p>Turn on the power switch.</p> <p style="text-align: right;">4421Q</p> |
| 2 | <p>All indicators switch off</p>  <p>Press the THREAD/CLAMP key.</p>  <ul style="list-style-type: none"> • The intermittent presser foot and the work clamp will drop. • The tension discs will open. <p>THREAD/CLAMP indicator illuminates MENU indicator switches off</p> <p style="text-align: right;">4427Q</p> |
| 3 | <p>Threading the thread.</p> <ul style="list-style-type: none"> • When 5 minutes have passed, the buzzer will sound and the tension discs will close. |
| 4 | <p>Ending threading mode</p>  <p>Press the THREAD/CLAMP key.</p> <ul style="list-style-type: none"> • The intermittent presser foot and the work clamp will return to where they were before threading mode began. <p>THREAD/CLAMP indicator switches off</p> |

4-3. Foot switch operating method

When the work clamp switch (left side) is depressed, the work clamp will be lowered, and when the start switch (right side) is depressed, the sewing machine will start.

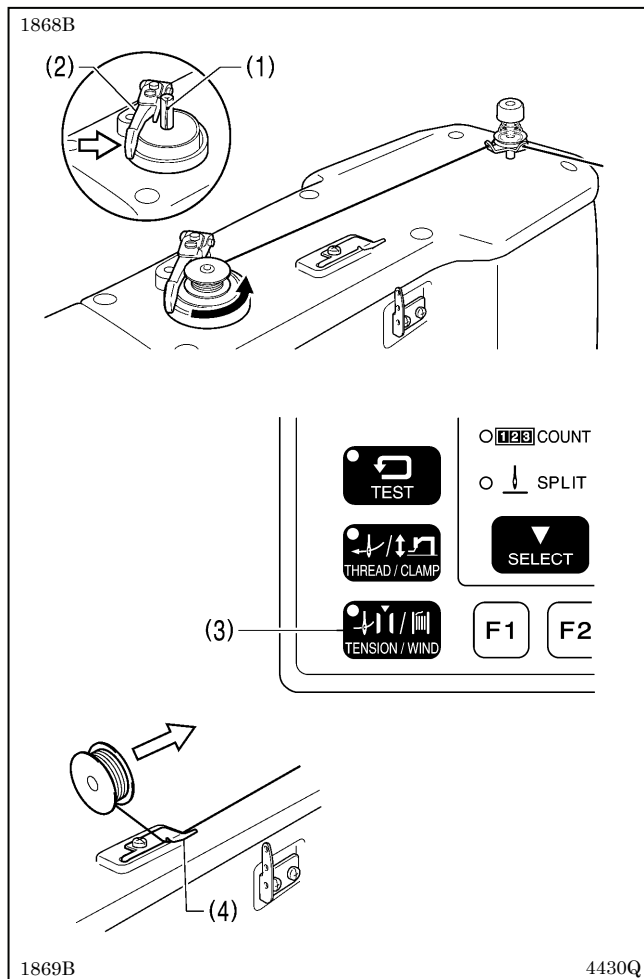
* The work clamp lowering method can be changed using memory switch No. 002. (Refer to "6-3. List of memory switch settings" in the instruction manual CD.)

4-4. Winding the lower thread

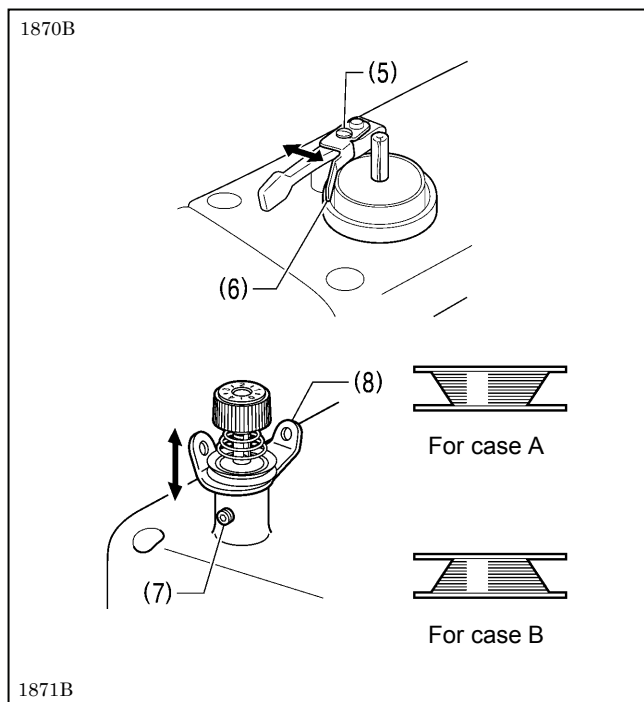
! CAUTION



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 as far as it will go and then release it.
(The work clamp will drop.)
5. Depress the start switch as far as it will go and then release it.
(Home position detection will be carried out.)
6. Check that the needle does not touch the work clamp, and then depress the work clamp switch as far as it will go and then release it.
(The work clamp will drop.)
7. While pressing the TENSION/WIND key (3), depress the start switch.
8. Release the TENSION WIND key (3) after the machine starts operating, and keep depressing the foot switch until the lower thread stops being wound onto the bobbin.
(If you release the foot switch before winding is complete, and then depress it again while pressing the TENSION/ WIND key (3), winding will start again.)
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 (4), and then pull the bobbin in the direction of the arrow to cut the thread.



Adjusting the bobbin winding amount

Loosen the screw (5) and move the bobbin presser (6) to adjust.

If the thread winds onto the bobbin unevenly

Loosen the set screw (7) and move the bobbin winder tension assembly (8) up and down to adjust.

* For case A, move the bobbin winder tension assembly (8) down, and for case B, move it upward.

4-5. Installing the bobbin case

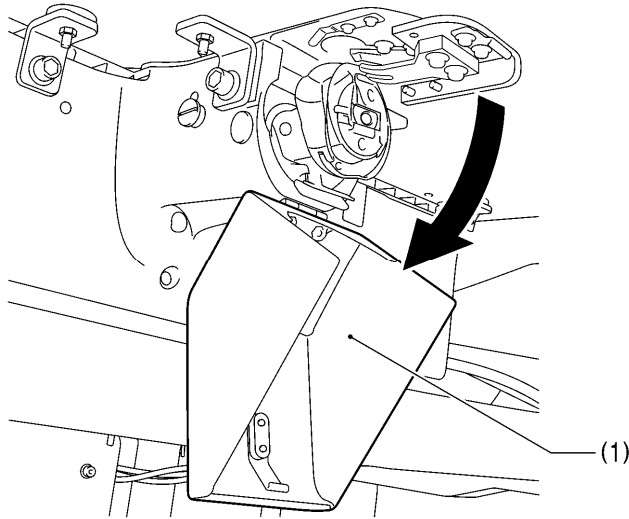
! CAUTION



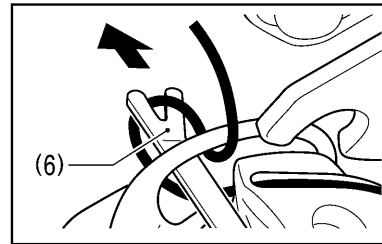
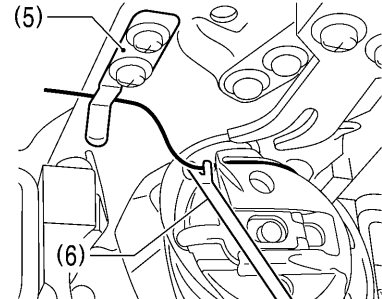
Turn off the power switch before installing the bobbin case.

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

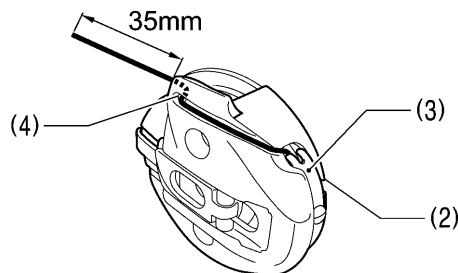
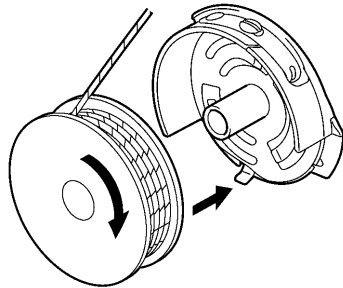
1872B



1897B



1873B



1874B

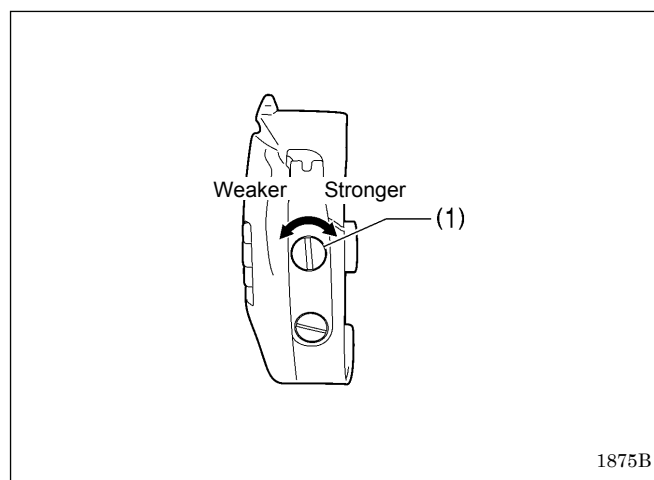
1. Pull the hook cover (1) downward to open it.
2. While holding the bobbin so that the thread winds to the right, insert the bobbin into the bobbin case.
3. Pass the thread through the thread slot (2), pass it underneath the spring (3), and then pass it through the thread guide (4), leaving a trailing-out length of about 35 mm.
4. Hold the latch on the bobbin case and insert the bobbin case into the rotary hook.
5. Clamp the lower thread in the thread hold spring (5).
6. Use the threading bar (6) to pass the thread through the window of the inner rotary hook. (The thread will be released from the thread hold spring (5).)

4-6. Thread tension

[Thread tension reference]

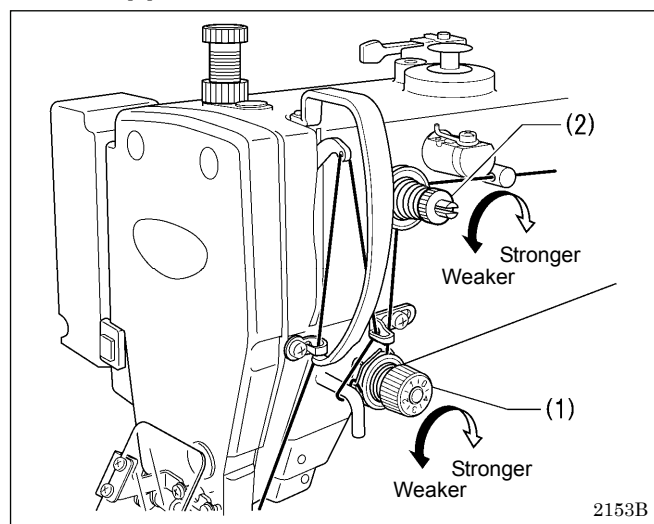
| | |
|--------------------------|----------------|
| Upper thread | #20 or similar |
| Lower thread | #20 or similar |
| Upper thread tension (N) | 1.0 – 1.6 |
| Lower thread tension (N) | 0.4 – 0.6 |
| Pre-tension (N) | 0.3 – 0.6 |
| Needle | DP x 17 #19 |
| Normal sewing speed | 2,000 sti/min |

4-6-1. Lower thread tension



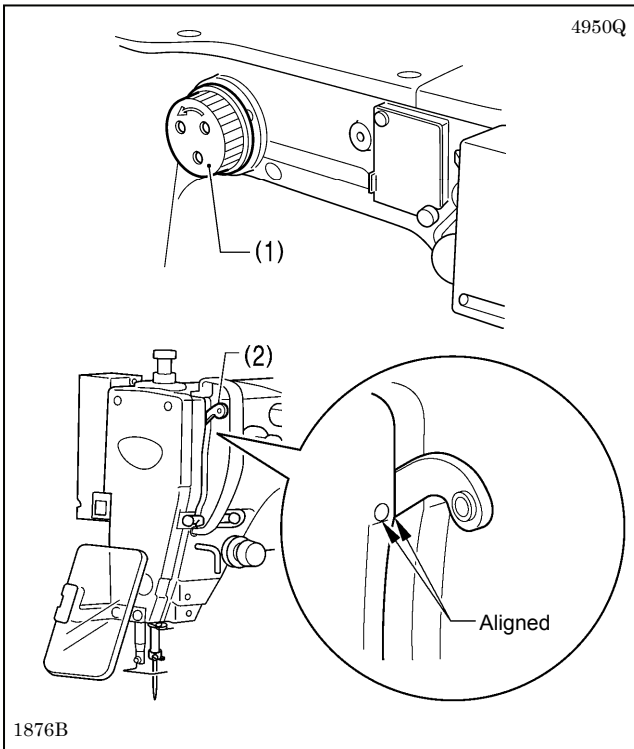
Adjust the lower thread tension by turning the adjusting screw (1).

4-6-2. Upper thread tension



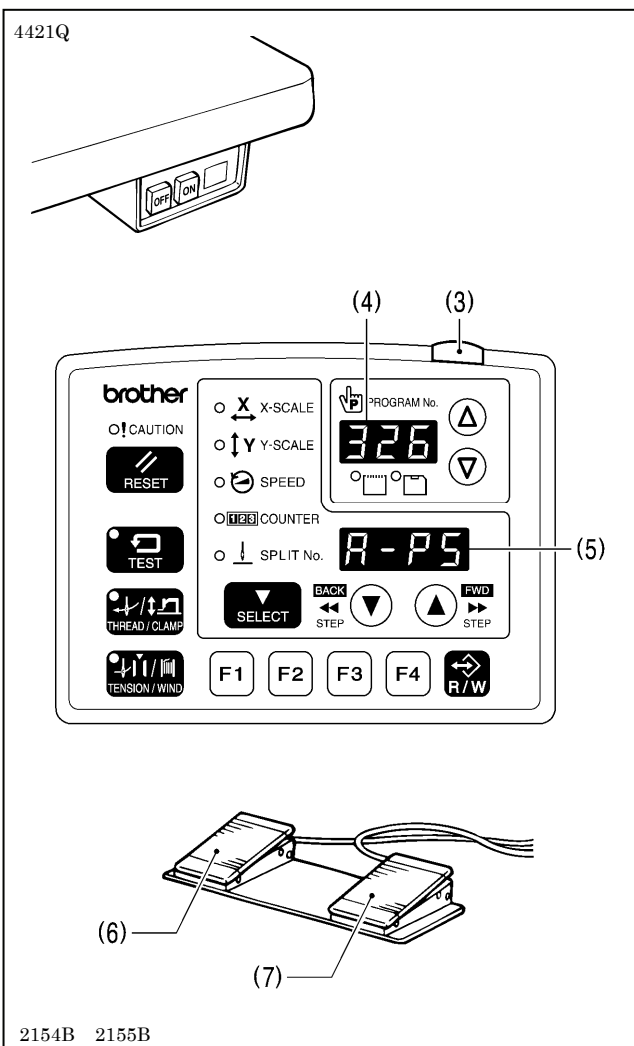
1. Turn the tension nut (1) (main tension) to adjust the tension as appropriate for the material being sewn.
2. Use the tension nut (2) (sub tension) to adjust the upper thread trailing length to about 45 mm.

4-7. Home position detection



Before starting home position detection, check that the needle bar is at its highest 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 [326] will appear in the PROGRAM No. display (4) and [A-PS] 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.)

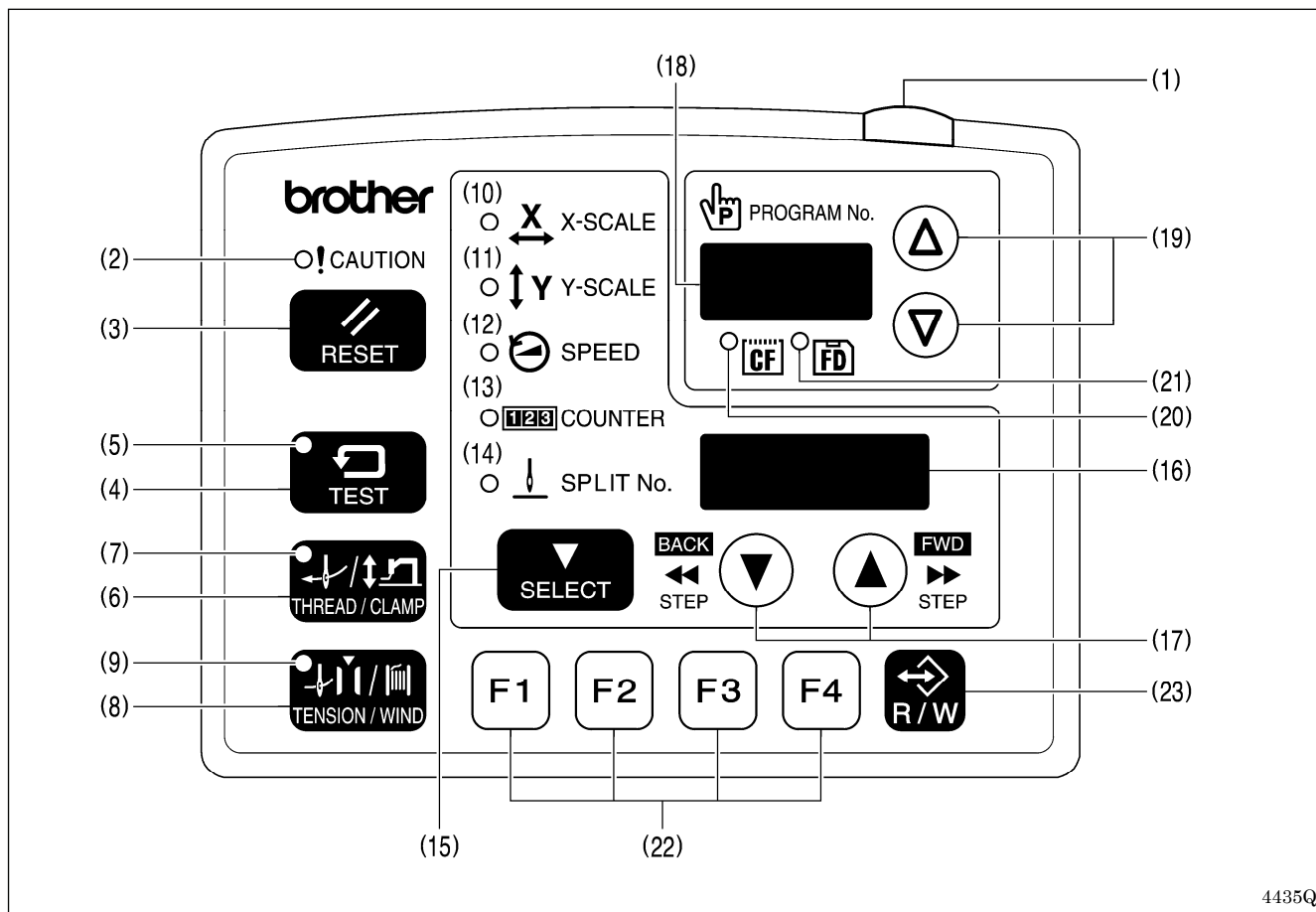
* For programs with a large number of stitches, the buzzer will sound after the home position is detected, and then the work clamp will move to the sewing start position.

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.

5. USING THE OPERATION PANEL (BASIC OPERATIONS)

5-1. Name and function of each operation panel item



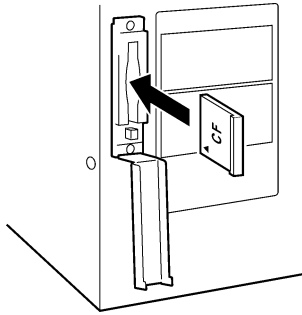
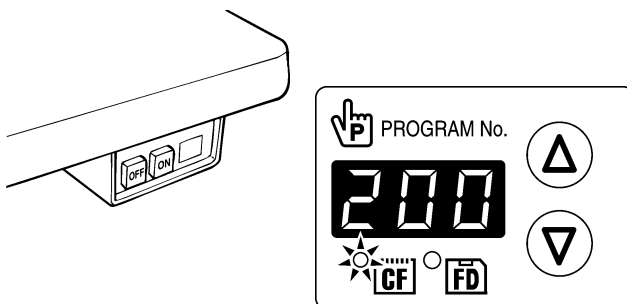
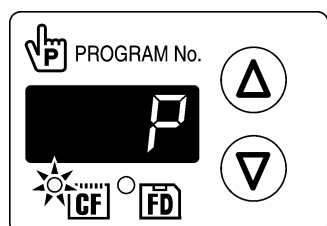

- (1) Power indicator
Illuminates when the power is turned on.
- (2) CAUTION indicator
Illuminates when an error occurs.
- (3) RESET key
Used to reset errors.
- (4) TEST key
Used to start test mode.
- (5) TEST indicator
Illuminates when the TEST key (4) has been pressed.
- (6) THREAD/CLAMP key
Used to 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
Spare

- (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 a floppy disk (external media) is inserted while the power is turned on. [Option compatibility]
- (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.

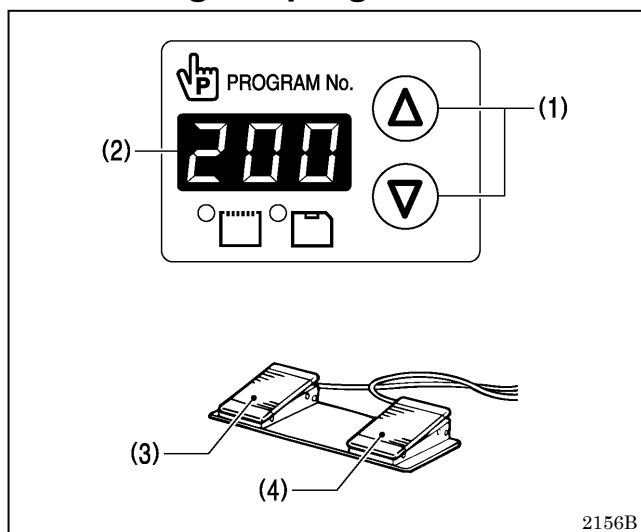
CF™ is a trademark of SanDisk Corporation.

5-2. Loading sewing data

Refer to "5-8. Notes on handling CF cards (sold separately)" for details on using CF cards.

| | | |
|---|--|--|
| 1 |  | <p>With the power turned off, insert the CF card into the CF slot.</p> <p>NOTE:</p> <ul style="list-style-type: none"> • 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 |  <p>CF media indicator illuminates</p> | <p>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.</p> |
| 3 |  | <p>Press the R/W key.</p>  <ul style="list-style-type: none"> • 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 | <p>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.</p> | |

5-3. Setting the program number

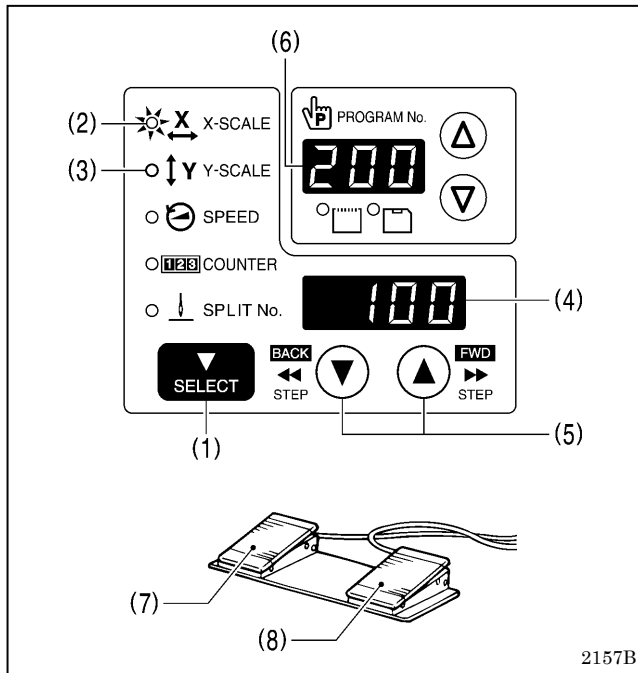


1. Press the Δ or ∇ key (1) to select the program number that is loaded into the internal memory.
 - The program number will flash in the PROGRAM No. display (2).
 - "----" will appear at the time of shipment from the factory. (For checking feed home position)
2. Depress the work clamp switch (3) to 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 "5-6. Checking the sewing pattern" to check that the needle drop position is correct.

5-4. Setting the X-scale and Y-scale



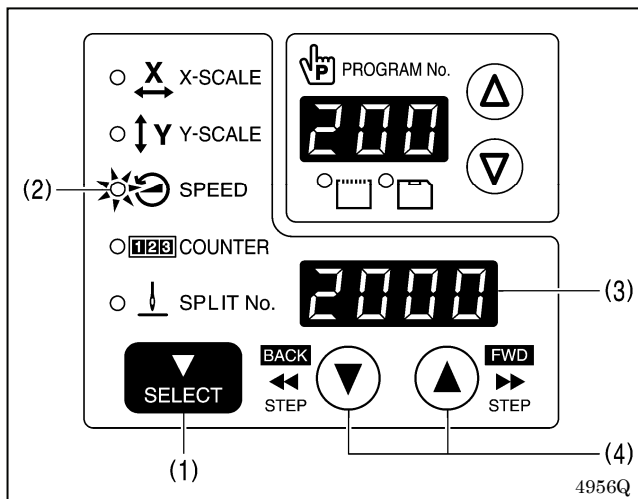
The scales are set to 100 (%) at the time of shipment from the factory.

- 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.
- Press the ▲ or ▼ key (5) to set the scale (0 – 400).
 - The program number will flash in the PROGRAM No. display (6).
- 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 "5-6. Checking the sewing pattern" to check that the needle drop position is correct.

5-5. Setting the sewing speed



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

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

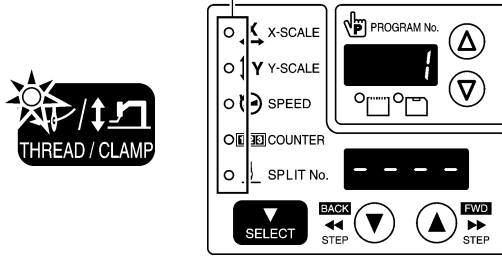
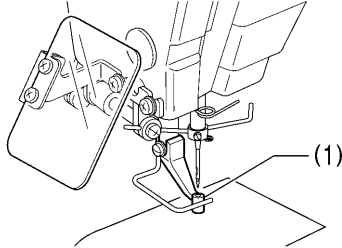
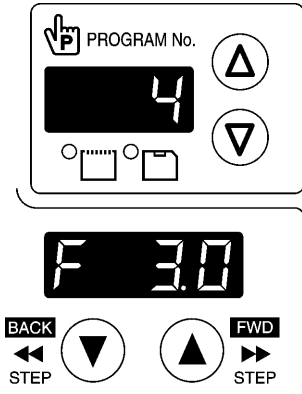
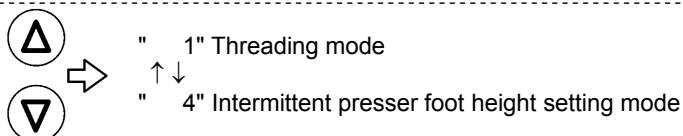

5-6. Checking the sewing pattern

Use test feed mode to check the needle movement with only the feed mechanism operating.
Check that the needle hole does not come out from the frame of the work clamp.

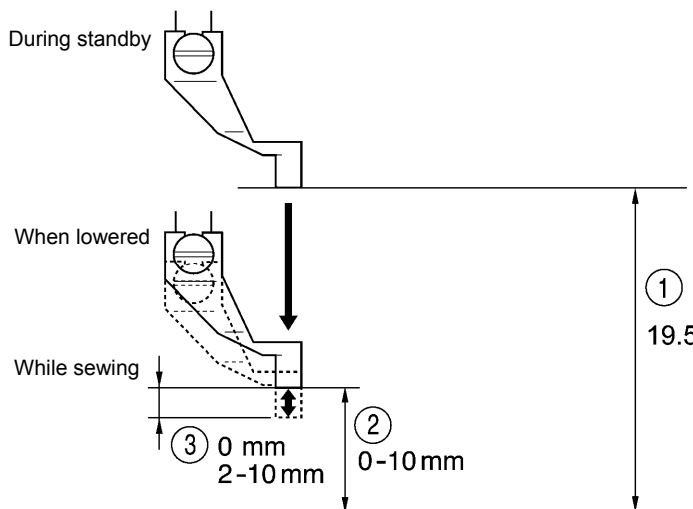
| | |
|---|---|
| 1 | <div data-bbox="199 302 351 403"></div> <div data-bbox="646 280 869 309">Press the TEST key.</div> <div data-bbox="343 414 622 443">TEST indicator illuminates</div> |
| 2 | <div data-bbox="199 481 598 806"></div> <div data-bbox="646 448 1453 694"> Select the program number to be checked, and then set the X-scale and the Y-scale. <ul style="list-style-type: none"> The program number will flash. Depress the work clamp switch (1) to lower the work clamp, and then depress the start switch (2). <ul style="list-style-type: none"> 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. </div> <div data-bbox="798 716 1173 862"></div> <div data-bbox="279 840 622 873">COUNTER indicator illuminates</div> <div data-bbox="1300 840 1444 873">4957Q 4014M</div> |
| 3 | <div data-bbox="199 896 598 929">Starting continuous test feed mode</div> <div data-bbox="646 896 1453 974"> Depress the work clamp switch (1) to lower the work clamp, and then depress and release the start switch (2). <ul style="list-style-type: none"> The work clamp will start moving continuously one stitch at a time. </div> <div data-bbox="215 974 582 1120"></div> <div data-bbox="646 1041 1453 1153"> [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. </div> <div data-bbox="1372 1131 1444 1160">4014M</div> <div data-bbox="207 1164 1436 1601"> <div data-bbox="239 1209 399 1310"></div> <div data-bbox="470 1243 614 1332"></div> <div data-bbox="654 1243 798 1332"></div> <div data-bbox="829 1187 1436 1332"> If you press the ▲ key, the feed mechanism will move forward one stitch at a time, and if you press the ▼ key, the feed mechanism will move backward one stitch at a time. (The feed will move quicker if you keep the key pressed down.) </div> <div data-bbox="223 1355 502 1388">TEST indicator illuminates</div> <div data-bbox="255 1433 399 1523"></div> <div data-bbox="446 1422 821 1568"></div> <div data-bbox="829 1422 1436 1568"> 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. </div> <div data-bbox="223 1556 518 1590">TEST indicator switches off</div> <div data-bbox="1356 1556 1428 1590">4014M</div> </div> |
| 4 | <div data-bbox="199 1635 678 1691">If test feeding continues to the final stitch, it will then stop.</div> <div data-bbox="829 1635 1053 1668">Press the TEST key.</div> <div data-bbox="231 1702 375 1792"></div> <div data-bbox="510 1769 805 1803">TEST indicator switches off</div> |

5-7. 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 | <p>All indicators switch off</p>  <p>THREAD/CLAMP indicator illuminates MENU indicator switches off</p> | <p>Press the THREAD/CLAMP key. The sewing machine will switch to threading mode.</p> <ul style="list-style-type: none"> " 1" will appear in the PROGRAM No. display and the intermittent presser foot (1) will drop.  <p>4445Q 2158B</p> |
| 2 |  | <p>Press the Δ key. The sewing machine will switch to intermittent presser foot height setting mode.</p> <ul style="list-style-type: none"> " 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) <p>Press the \blacktriangle or \blacktriangledown key to set the intermittent presser foot height.</p> <ul style="list-style-type: none"> The intermittent presser foot (1) will be raised or lowered to the height of the new value that has been set. <p>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.</p> <p>5225Q</p> <hr/> <p><Changing modes></p>  <p>4016M</p> |
| 3 | <p>Ending setting mode</p>  <p>THREAD/CLAMP indicator switches off</p> | <p>Press the THREAD/CLAMP key.</p> <ul style="list-style-type: none"> 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



1899B

- 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. (Refer to page 63 of the instruction manual CD.)
- ③ **Intermittent stroke**
Refer to "10-14. Changing the intermittent stroke" in the instruction manual CD when making the adjustment.

5-8. 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.

6. SEWING

! CAUTION



Turn off the power switch at the following times.

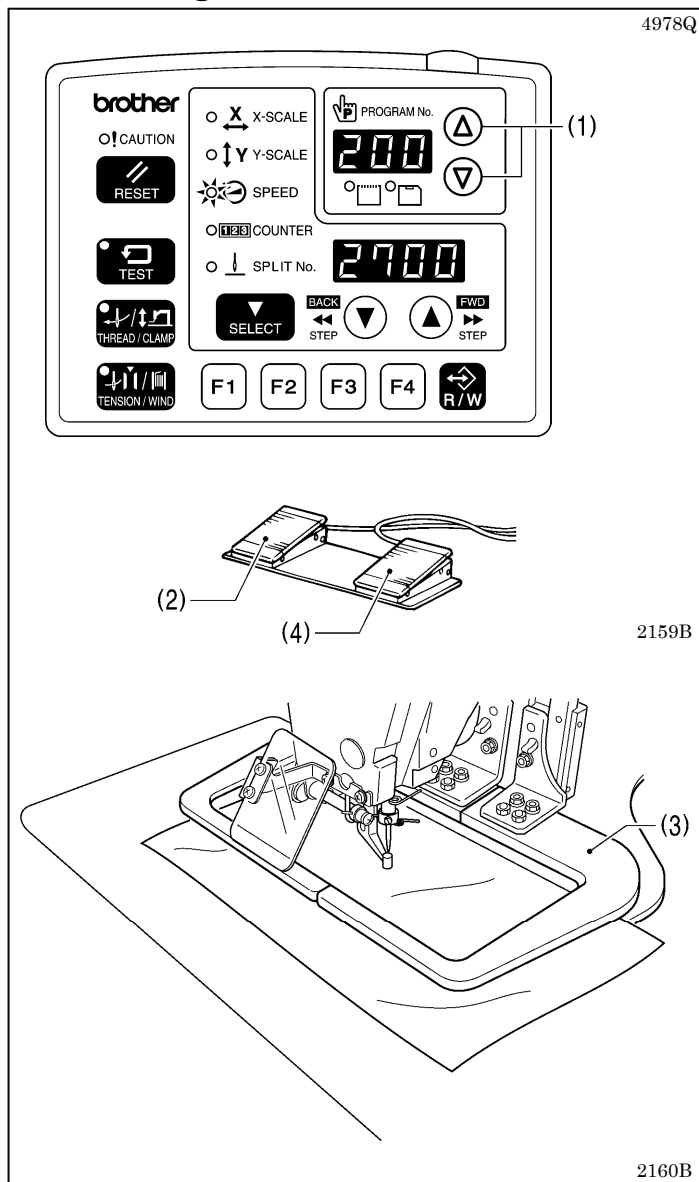
If the foot switch is depressed by mistake, the sewing machine might start operating and injury could result.

- 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.

6-1. 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 "5-2. 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.

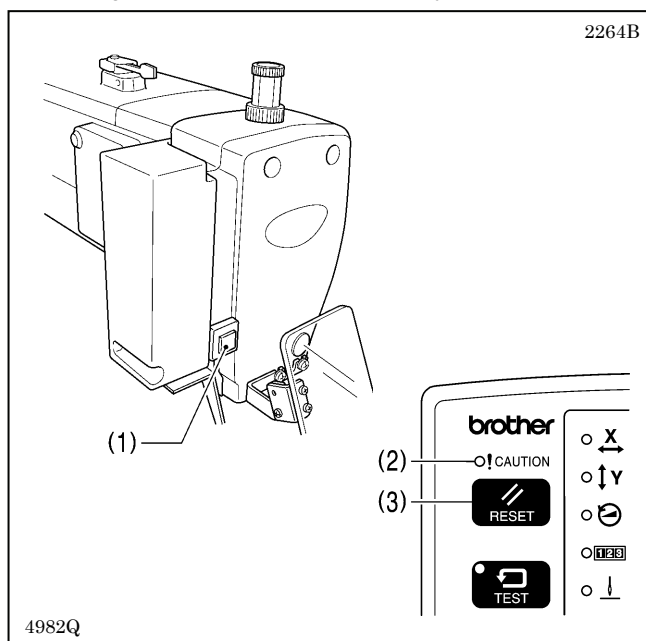
7. When sewing is complete, the thread will be trimmed and the work clamp (3) will rise.

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.

6-2. 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>

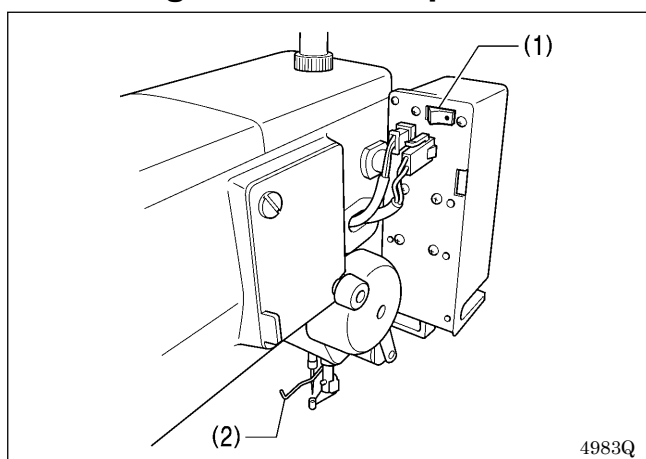
1. Press the RESET key (3).
 - The thread will be trimmed, and then the CAUTION indicator (2) will switch off and the buzzer will stop sounding.
2. If you do not wish to continue sewing, press the RESET key (3) once more.
 - The program number will flash. Carry out preparation for the next sewing.

<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 | | <p>Press the RESET key.</p> <ul style="list-style-type: none"> • The thread will be trimmed, and then the CAUTION indicator will switch off and the buzzer will stop sounding. |
| 2 | | <p>Press the ▼ key to return to the position where sewing stopped.</p> <ul style="list-style-type: none"> • When you press the ▼ key, the feed mechanism will move backward one stitch at a time, and when you press the ▲ key, it will move forward one stitch at a time. (The feed will move quicker if you keep the key pressed down.) |
| 3 | | <p>Depress the start switch (4).</p> <ul style="list-style-type: none"> • The sewing machine will start operating and sewing will start. |

6-3. Using the thread wiper switch



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

Document CD



For cleaning, standard adjustments and more details, please refer to the instruction manual contained in the Document CD.

3168M

Contents of the Document CD

The following documents are contained in PDF format.

- Basic Operation Manual
- Instruction Manual
- Parts Book

Recommended system configuration for using the Document CD

OS: Windows® XP Service Pack 2, Windows Vista®, Windows® 7
Browser version: Microsoft® Internet Explorer 6 Service Pack 1 or higher
Screen resolution: 1024 x 768 pixels or more
Plug in (required to access): Adobe Reader 8.0 or higher

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Windows® and Microsoft® Internet Explorer are either registered trademarks of Microsoft Corporation in the United States and/ or other countries.

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This is the original instructions.

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