HE-800C

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

ELECTRONIC DIRECT DRIVE LOCKSTITCH BUTTON HOLER

brother

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 will result in death or serious injury.
⚠	**WARNING**	The instructions which follow this term indicate situations where failure to follow the instructions could result in death or serious injury.
⚠	**CAUTION**	The instructions which follow this term indicate situations where failure to follow the instructions may result in minor or moderate injury.

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 <u>must not</u> do.

⏚ ・・・・・ This symbol (●) indicates something that you <u>must</u> 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 control box cover. Touching areas where high voltages are present will result in serious injury from electric shocks.

⚠ WARNING

Do not allow any liquids to get onto this sewing machine, otherwise fire, electric shocks or operating problems may occur.
If any liquid gets inside the sewing machine (machine head or control box), immediately turn off the power and disconnect the power plug from the electrical outlet, and then contact the place of purchase or a qualified technician.

⚠ 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 ±10% of the rated voltage for the machine.
Voltage fluctuations which are greater than this may cause problems with correct operation.

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

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

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

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

Installation

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

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

The sewing machine weighs approximately 56 kg. The installation should be carried out by two or more people.

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

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

Be sure to 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, otherwise inflammation can result.
Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhea.
Keep the oil out of the reach of children.

⚠ CAUTION

Sewing

🚫 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, otherwise the machine may operate if the treadle is depressed by mistake, which could result in injury.
- When replacing the needle and bobbin
- When not using the machine and when leaving the machine unattended

⚠ Use threading mode or turn off the power first in order to carry out threading.

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

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

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 from the wall outlet at the following times, otherwise the machine may operate if the treadle is depressed by mistake, which could result in injury.
- When carrying out inspection, adjustment and maintenance
- When replacing consumable parts such as the rotary hook

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

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

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

❗ When replacing parts and installing optional accessories, be sure to use only genuine Brother parts.
Brother will not be held responsible for any accidents or problems resulting from the use of non-genuine parts.

❗ 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.

🚫 To prevent accidents and problems, do not modify the machine yourself.
Brother will not be held responsible for any accidents or problems resulting from modifications made to the machine.

[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	⚠ 危 险
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。	触摸高电压部分，会导致受伤。在切断电源5分钟后，再开启盖罩。

⚠ DANGER	⚠ GEFAHR	⚠ DANGER	⚠ PERIGRO
Hazardous voltage will cause injury. Turn off main switch and wait 5minutes 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 avantd'ouvrir le capot.	Un voltaje inadecuado puede provocar las heridas. Apagar el interruptor principal y esperar 5 minutos antes de abrir esta cubierta.
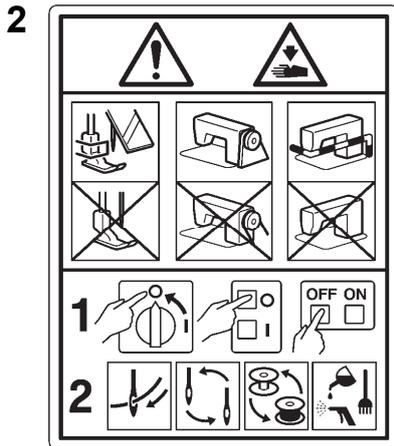
2

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
(A) Eye guard
(B) Finger guard
(C) Thread take-up cover
(D) Motor cover
(E) Slide cover

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

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

5 Be careful to avoid injury from the moving cutter.

6 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.

PE

7

brother

Lubricating Oil for Machining
ミシン用潤滑油

⚠ **CAUTION**

Lubricating oil may cause inflammation to eye and skin.
Wear protective glasses and gloves.

Swallowing oil can cause diarrhoea and vomiting.
Do not swallow.

Keep away from children.
FIRST AID
Eye contact:
-Rinse with plenty of cold water.
-Seek medical help.
Skin contact:
-Wash with soap and water.
If swallowed:
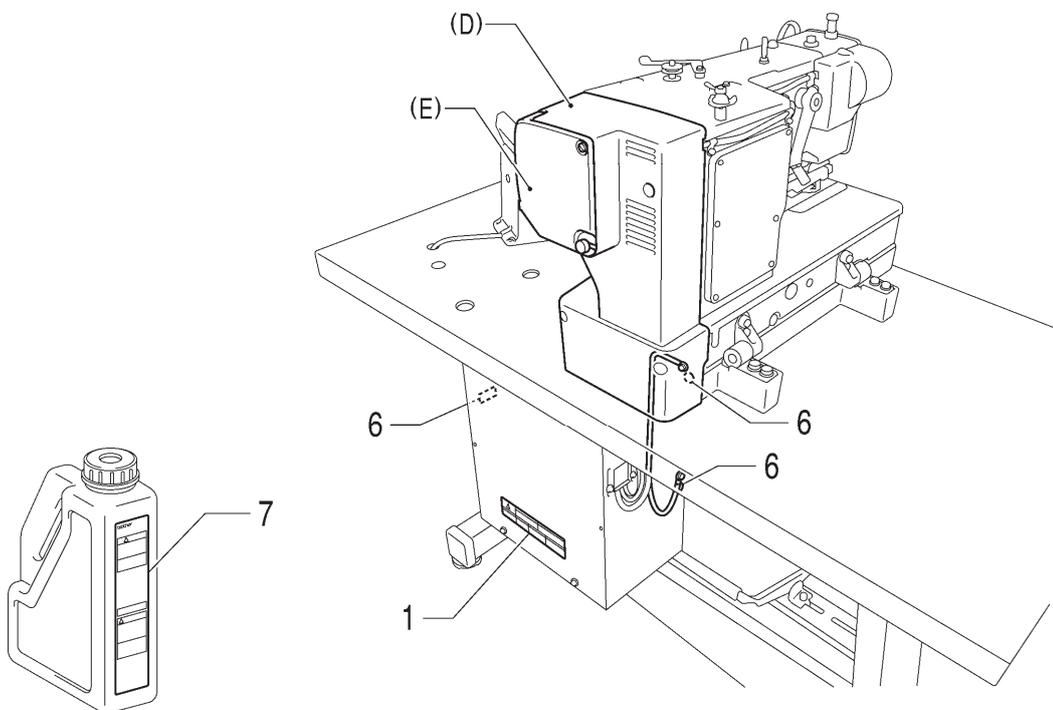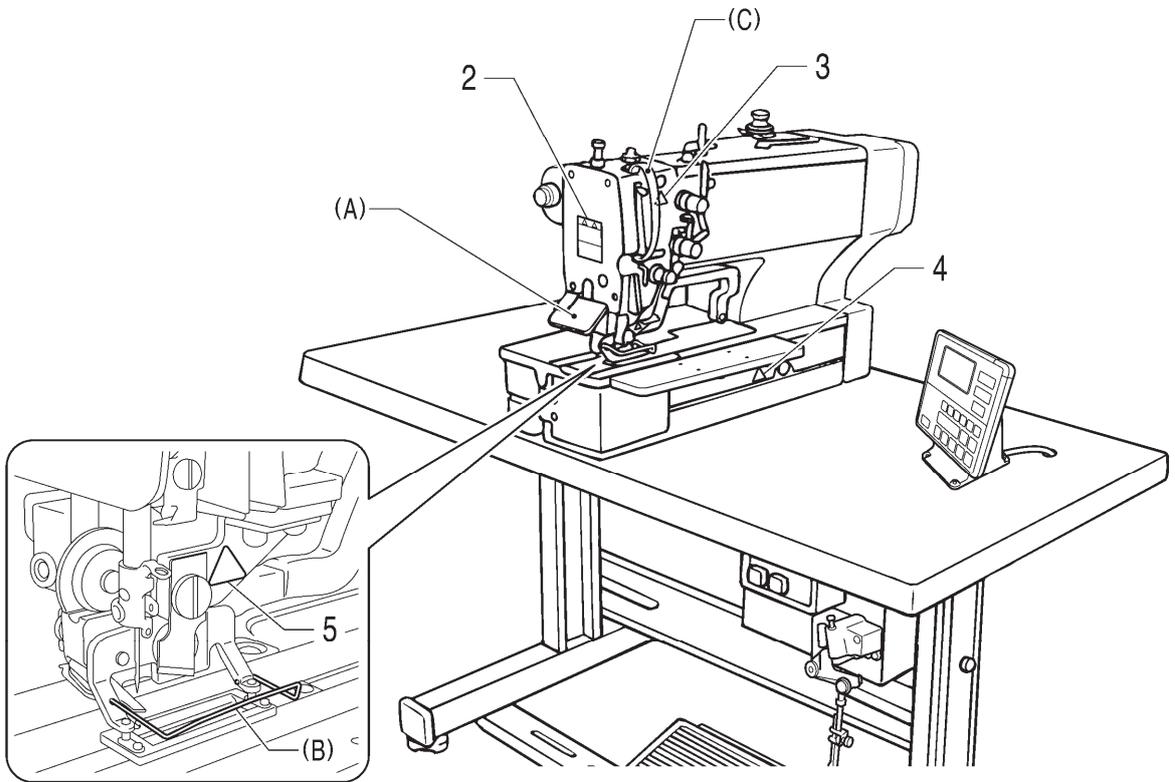-Seek medical help immediately.
-Do not induce vomiting.

⚠ **注 意**

目に入ったり皮膚につくと、炎症を起こすことがある。保護めがね、手袋を使うこと。

飲み込むと、下痢、嘔吐する。飲み込まないこと。

●子供の手の届かない所に置いてください。

●目に入った場合は、清浄な水で15分間洗浄し、医師の診断を受けてください。

●皮膚に触れた場合は、水と石けんで十分に洗ってください。

●飲み込んだ場合は、無理に吐かせずに、直ちに医師の診断を受けてください。

第4類　　第3石油類
危険等級III　火気厳禁
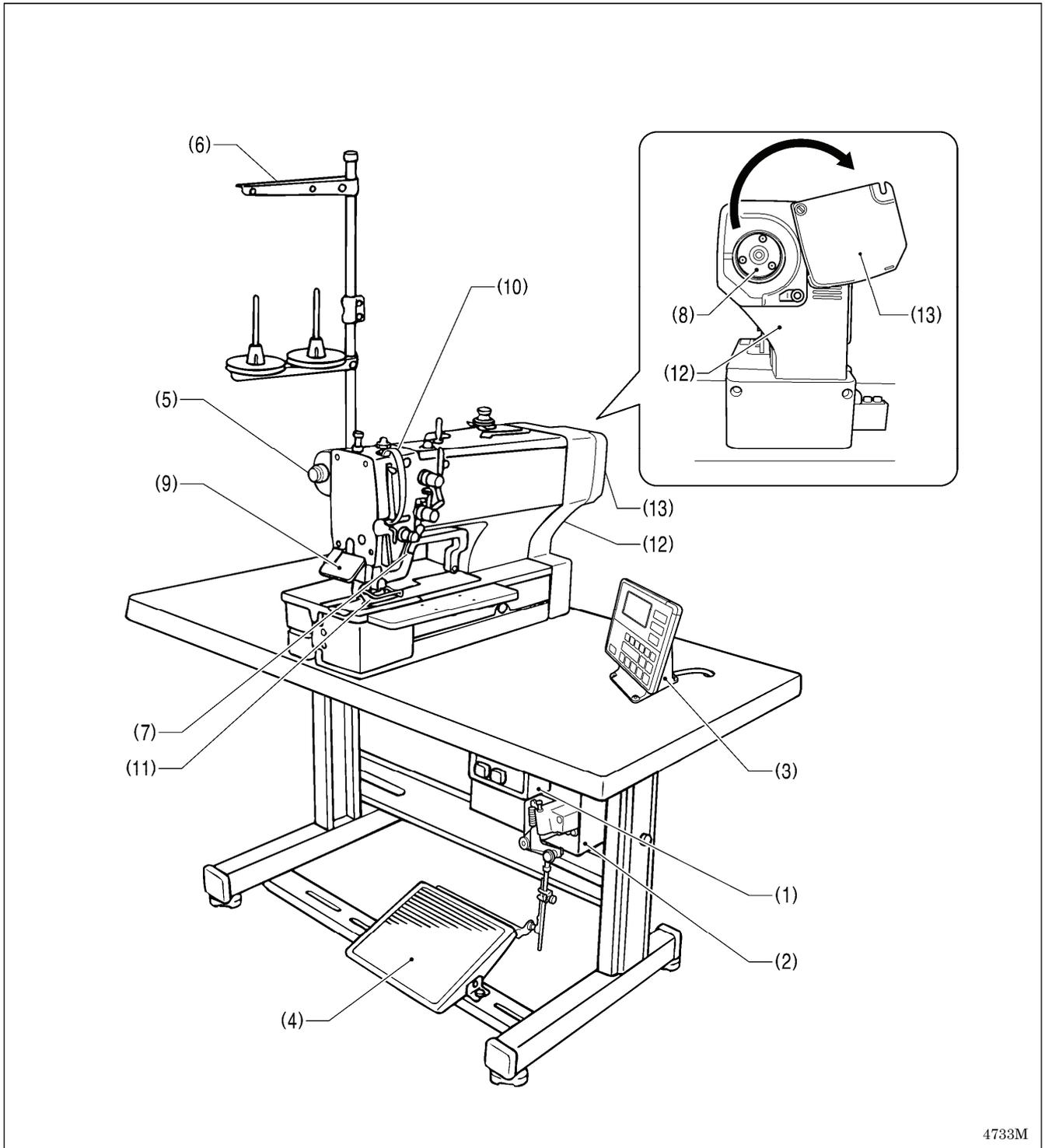
ブラザー工業株式会社
〒448-0803
愛知県刈谷市野田町北地蔵山1番地5
電話：0566-95-0085

Oil tank
(accessory)

CONTENTS

1. NAMES OF MAJOR PARTS

4733M

(1) Power switch
(2) Control box
(3) Operation panel
(4) Treadle
(5) Stop switch
(6) Cotton stand
(7) Tension release lever
(8) Pulley

Safety devices
 (9) Eye guard
(10) Thread take-up cover
(11) Finger guard
(12) Motor cover
(13) Slide cover

2. SPECIFICATIONS

2-1. Specifications

BROTHER INDUSTRIES, LTD.

• **HE-800C-■** •

4201B

	Main use	Buttonhole size
2	Buttonholes for clothing such as dress shirts, blouses, work clothes and women's clothes	2193Q
3	Buttonholes for knitted garments such as knitted underwear, sweaters, cardigans and jerseys	A: Max.6 mm B: Max. zigzag stitch length 36 mm C: Length of the hole 4 – 32 mm D: Max. buttonhole length 40 mm
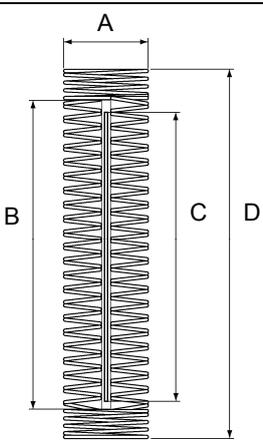
Max. sewing speed	4,000 sti/min	
Zigzag mechanism	Pulse motor driven mechanism	
Feed mechanism	Pulse motor driven mechanism	
Work clamp lifter mechanism	Pulse motor driven mechanism	
Height of work clamp	13 mm max. (adjustable)	
Cutter drive method	Double position solenoid	
Lower thread holding device	Standard equipment	
Bobbin presser	Standard equipment	
Standard sewing pattern	21	
Memory pattern	50	
Max. number of stitch	999 stitches / program (Overall cycle program stitch no. 3,000 stitches)	
Needle	-2	-3
	Schmetz 134 Nm90	Schmetz 134 Nm75
Data recording media	SD memory card (No guarantees of operation can be given for any media.)	
Power supply	Single-phase 100V / 220V, 3-phase 220V / 380V / 400V (For single-phase 100 V and three-phase 380 V/400 V, the trans box is required.)	

2-2. Standard sewing pattern list

Rectangle	Radial	Round	Straight bar tack
← Rear tack ← Front tack			
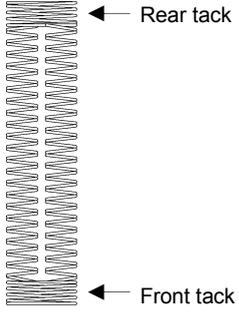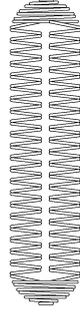
Radial-rectangle	Round-rectangle	Eyelet-rectangle	Rectangle-radial	Round-radial	Eyelet-radial
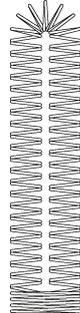
Rectangle-round	Radial-round	Eyelet-round	Rectangle-taper tack	Radial-taper tack	Round-taper tack
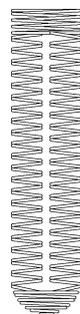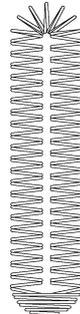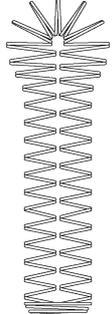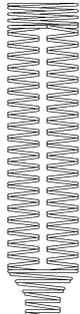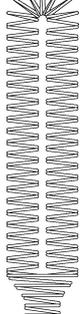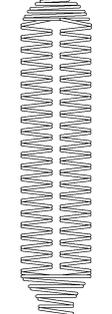
Eyelet-taper tack	Rectangle-tack	Radial-tack	Round-tack	Eyelet-tack	
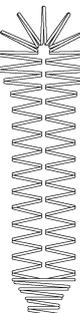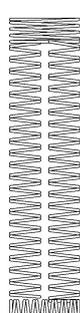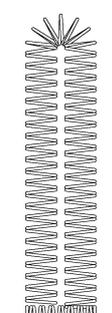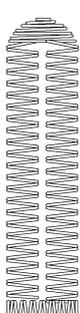
3. INSTALLATION

⚠ CAUTION

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

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

❗ The sewing machine weighs approximately 56 kg. The installation should be carried out by two or more people.

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

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

❗🚫 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.

⏚ 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.
· 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.

4938M
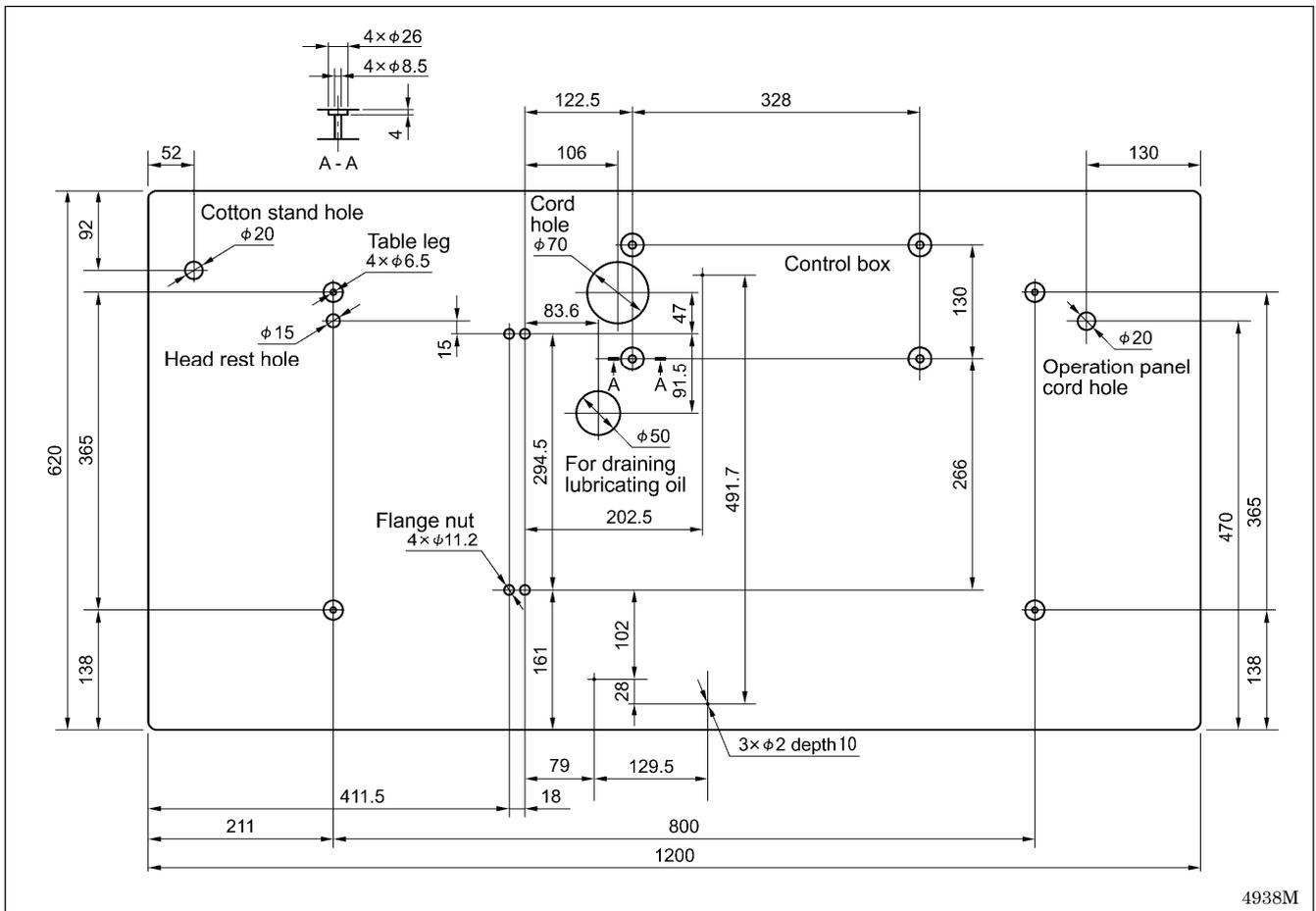
3-2. Installing the control box

> ⚠ **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.

Before installing the control box, check that the model plate (a) on the control box is "HX800C" to indicate that it is an HX-control box for HE-800C sewing machines.
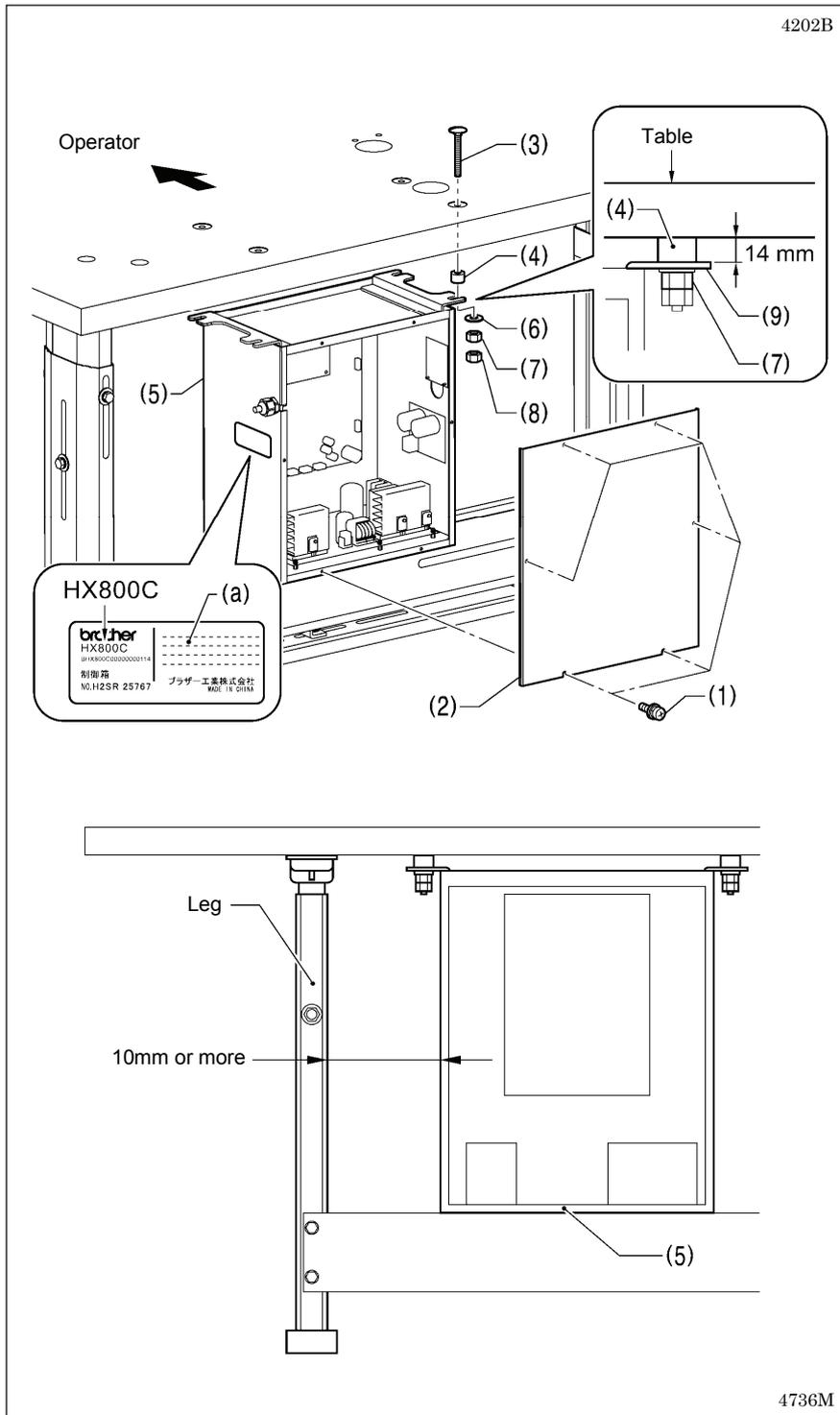
Remove the six screws (1), and then remove the control box cover (2).

NOTE:
> When opening the cover (2), hold it securely so that it does not fall down.

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

* Tighten the four nuts (7) until the clearance between the base of the table and the top of the box setting plate (9) is 14 mm.

NOTE:
> Check that the control box (5) is at least 10 mm away from the leg. If the control box (5) and the leg are too close together, it may result in incorrect sewing machine operation.

HE-800C

3-3. Installing the flange nut
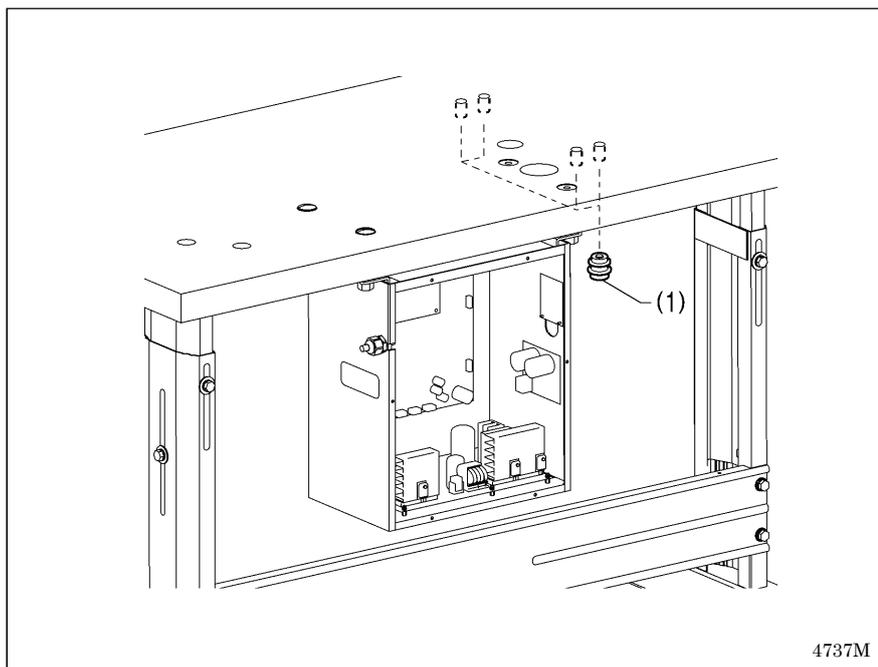
4737M

Install the four flange nuts (1) to the underside of the work table.

3-4. Installing the bed base

4069M
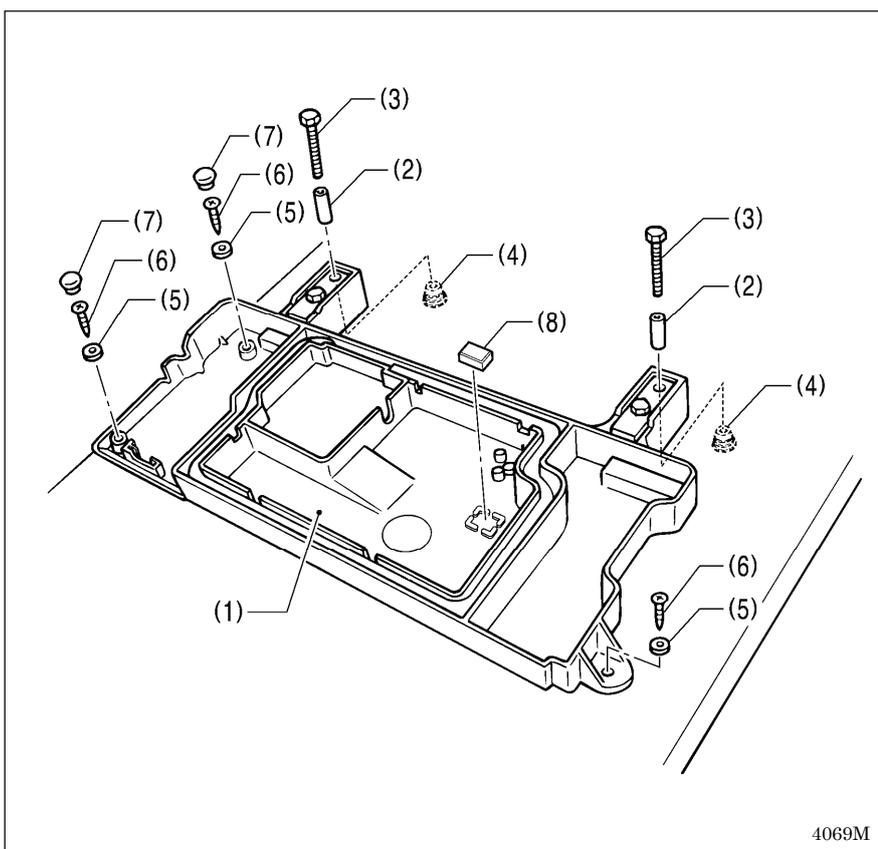
1. Place the bed base (1) on top of the work table, and insert the four collars (2).
2. Provisionally tighten the four flange nuts (4) onto the four bolts (3), and then position the bed base (1).
3. Install the bed base (1) with the three flat washers (5) and wood screws (6), and then install the two rubber caps (7).
4. Remove the four bolts (3).
5. Set the magnet (8) in the position shown in the illustration.

3-5. Installing the machine head

4738M

4739M
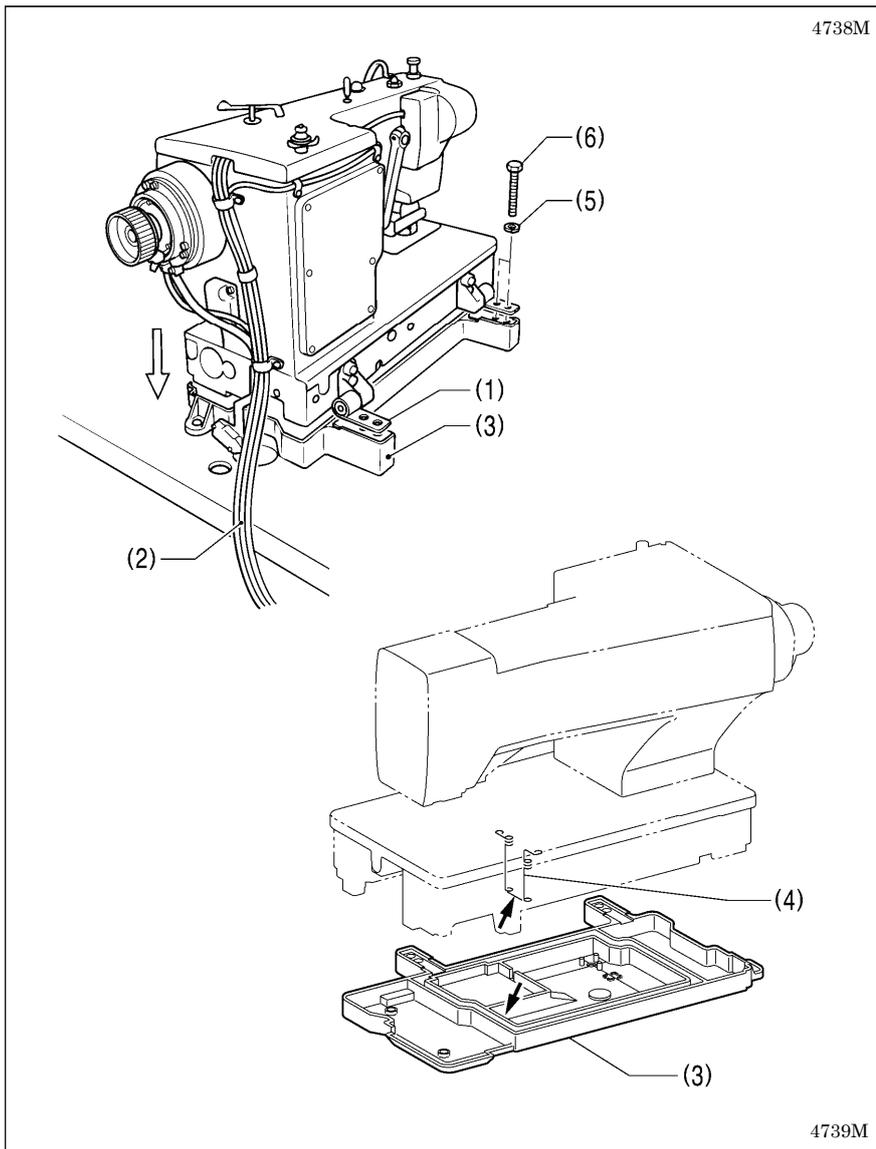
1. Place the two bed hinges (1) so that they are level as shown in the illustration at left, and then place the machine head gently on top of the bed base (3) so that the cables (2) do not get clamped.

   NOTE:
   · The bed base (3) is made from plastic, so be careful not to hit it with the machine head when placing the machine head on top of it.
   · Make sure that the felt support (4) do not touch the bed base (3).

2. Install the machine head with the four spring washers (5) and four bolts (6).

3-6. Installing the head rest

4740M
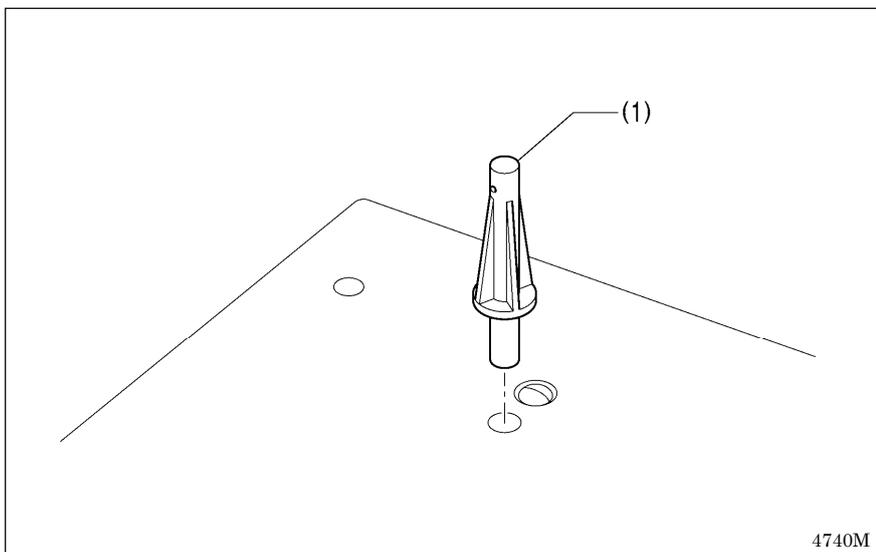
(1) Head rest

NOTE:
   Tap the head rest (1) securely into the table hole.
   If the head rest (1) is not pushed in as far as it will go, the machine head will not be sufficiently stable when it is tilted back.

3-7. Installing the operation panel

4741M
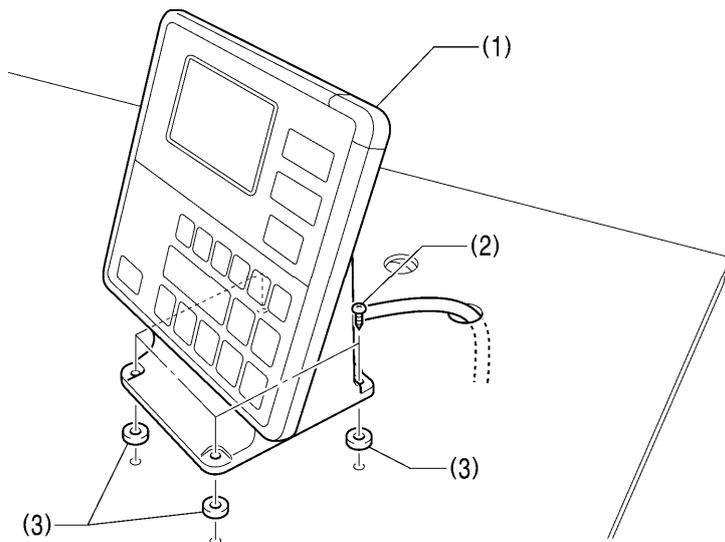
(1) Operation panel
(2) Screws [4 pcs.]
(3) Cushions [4 pcs.]

1. Pass the cord of the operation panel (1) through the table hole.
2. Loosen the two screws (4) at the side of the control box, open the cord presser plate (5) in the direction of the arrow, and pass the cord through the hole into the box.

NOTE:
Check that the operation panel cord is not being clamped when screwing the operation panel into the table. The cord may become damaged if it is clamped.
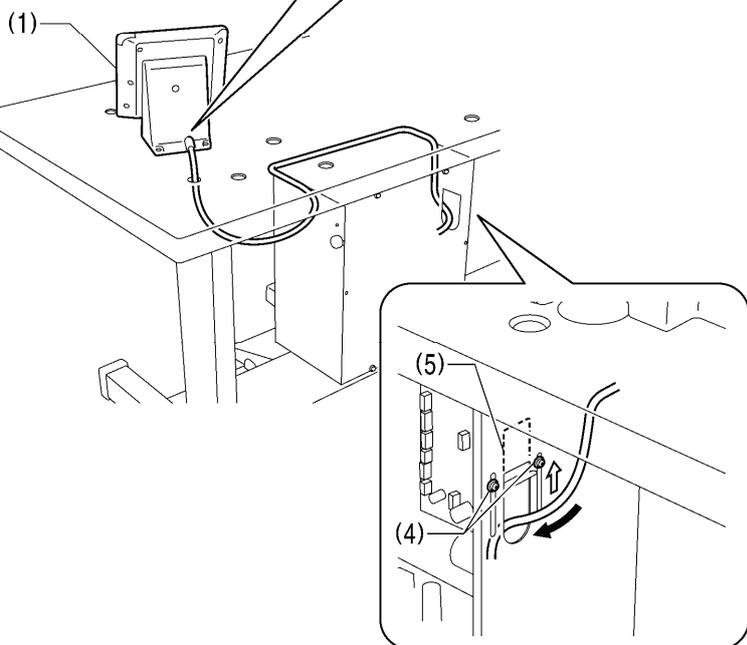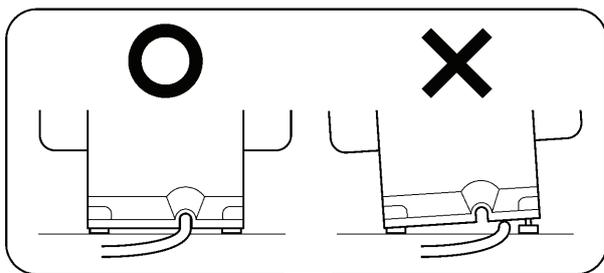
4742M

3-8. Installing the oil stopper plate

4743M

4744M
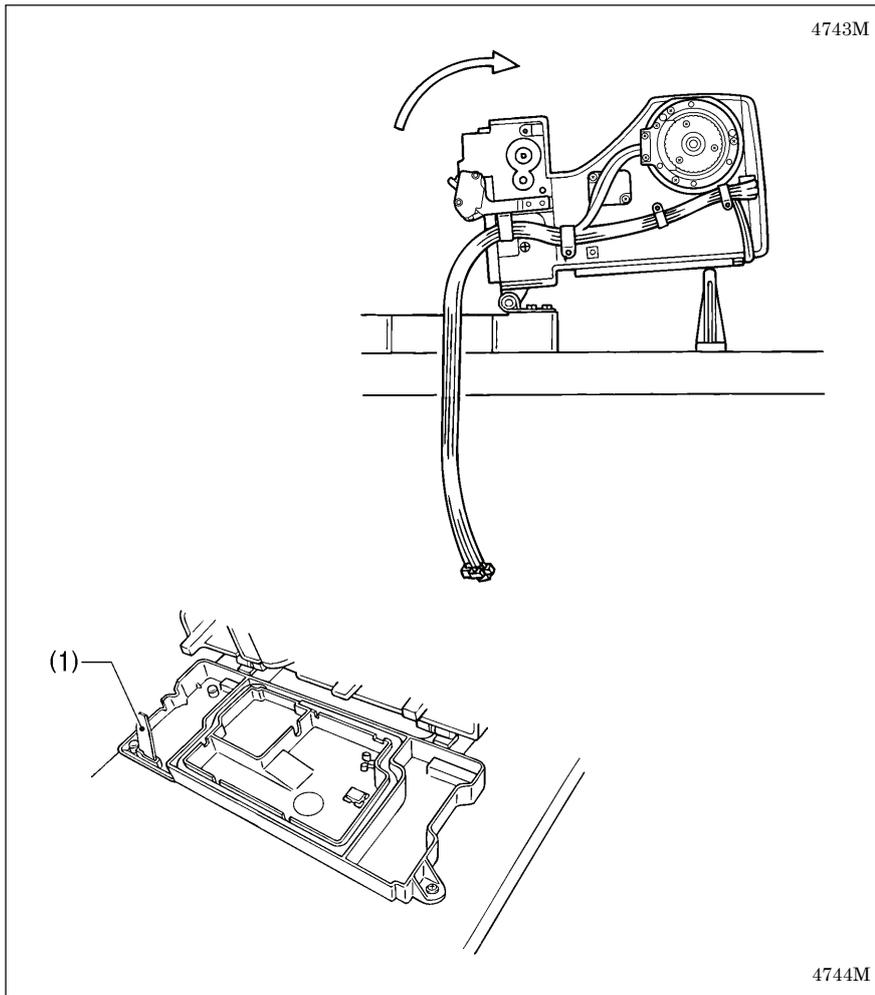
1. Gently tilt back the machine head.
2. Install the oil stopper plate (1).

3-9. Connecting the cords

4745M
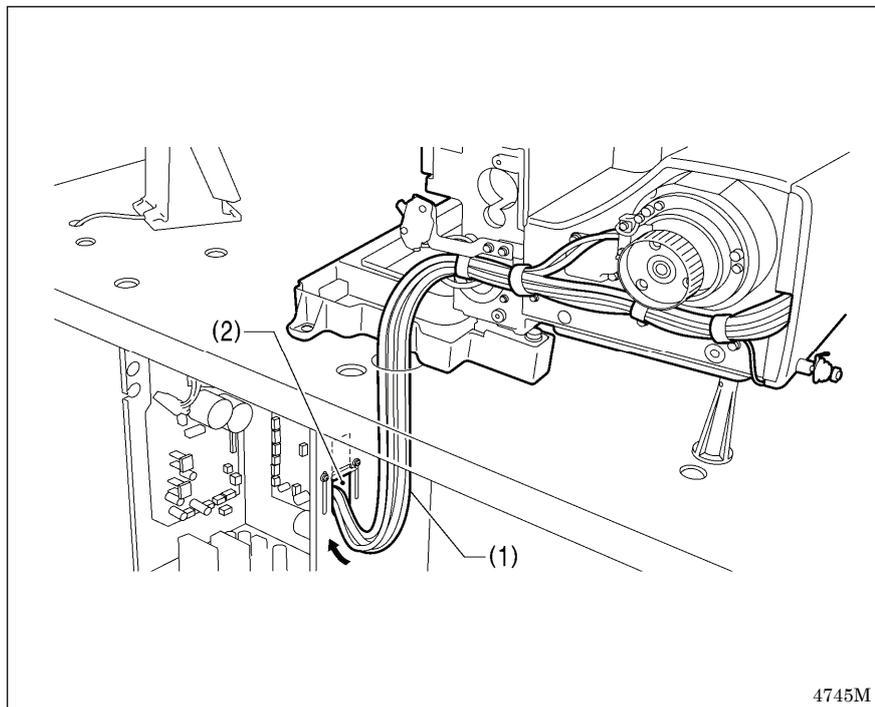
1. Pass the cord bundle (1) through the hole in the work table.
2. Pass the cord bundle (1) through the hole (2) into the control box.
3. Securely connect the connectors as indicated in the table below.
   (Refer to the next page.)

<Main P.C. board>

(4)
(5)

Lock the cord clamp securely.

(6)

P16 P17 P18 P19   P21

P14

P22

P9

P8

P23   P2

P7

P3

<Cutter P.C. board>

<Power supply P.C. board>
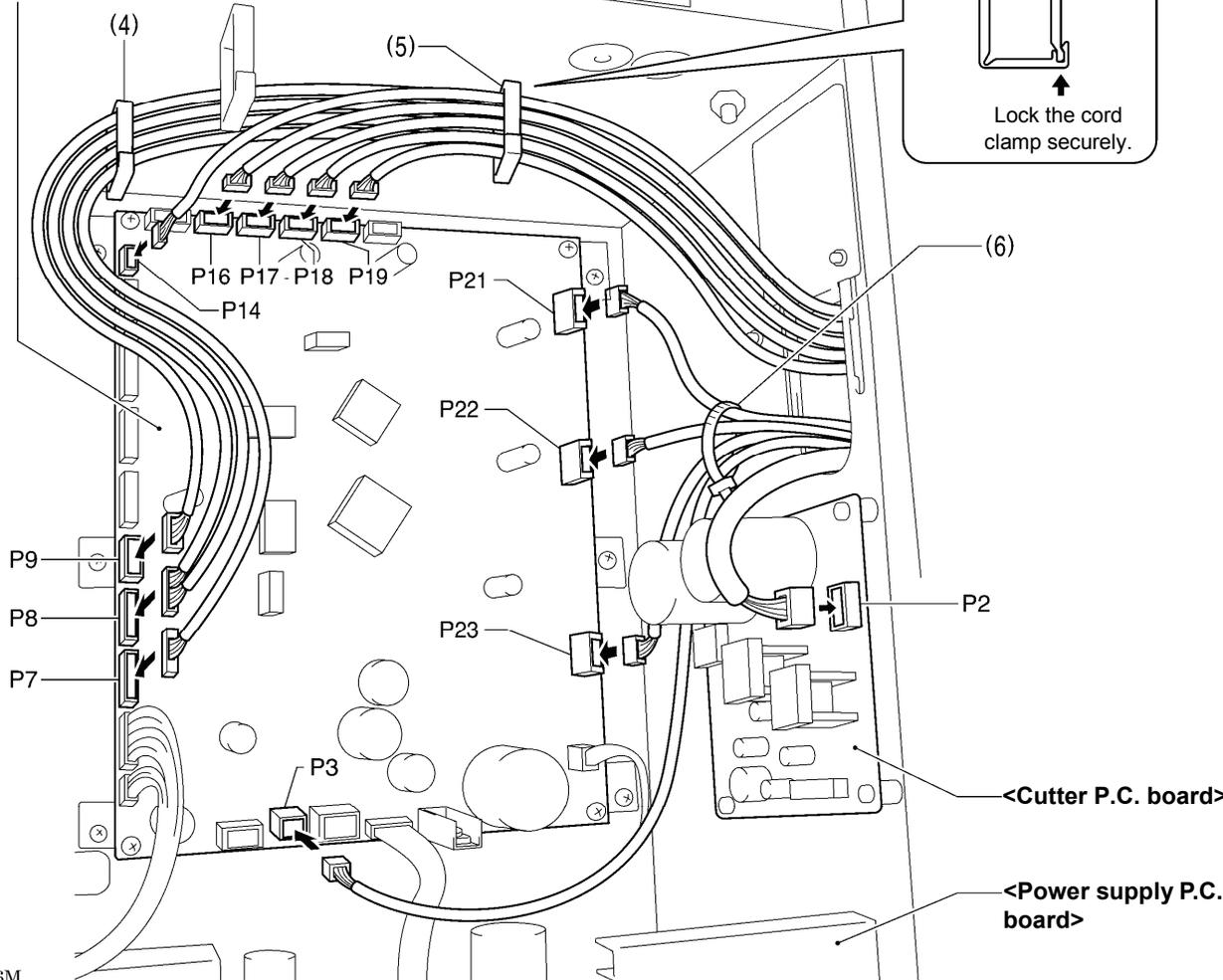
4746M

Connector	Connection location on main P.C. board	Cord clamp
Cutter sensor 6-pin	P7 (SENSOR2)	(4) (5)
Feed sensor, thread breakage sensor 12-pin	P8 (SENSOR1)	(4) (5)
STOP switch 6-pin	P9 (HEAD)	(4) (5)
Safety switch 3-pin	P14 (HEAD-SW)	(5)
Machine head memory 6-pin	P16 (HEAD-MEM)	(5)
Needle zigzag sensor, needle zigzag encoder 5-pin white	P17 (X-ENC)	(5)
Feed encoder 5-pin blue	P18 (Y-ENC)	(5)
Work clamp sensor, work clamp encoder 5-pin black	P19 (P-ENC)	(5)
Needle zigzag motor 4-pin white	P21 (XPM)	(6)
Feed motor 4-pin blue	P22 (YPM)	(6)
Work clamp motor 4-pin black	P23 (PPM)	(6)
Tension release solenoid 4-pin	P3 (SOL2)	(6)

Connector	Connection location on cutter P.C. board	Cord clamp
Cutter solenoid 4-pin	P2 (SOL)	–

NOTE: Route the needle zigzag, feed and work clamp motor harnesses and the tension release solenoid harness so that they do not touch the cutter P.C. board and the power supply P.C. board.

4747M

<Motor P.C. board>

(5)

(UVW)

(7)

(4)

Lock the cord clamp securely.

P11

P3
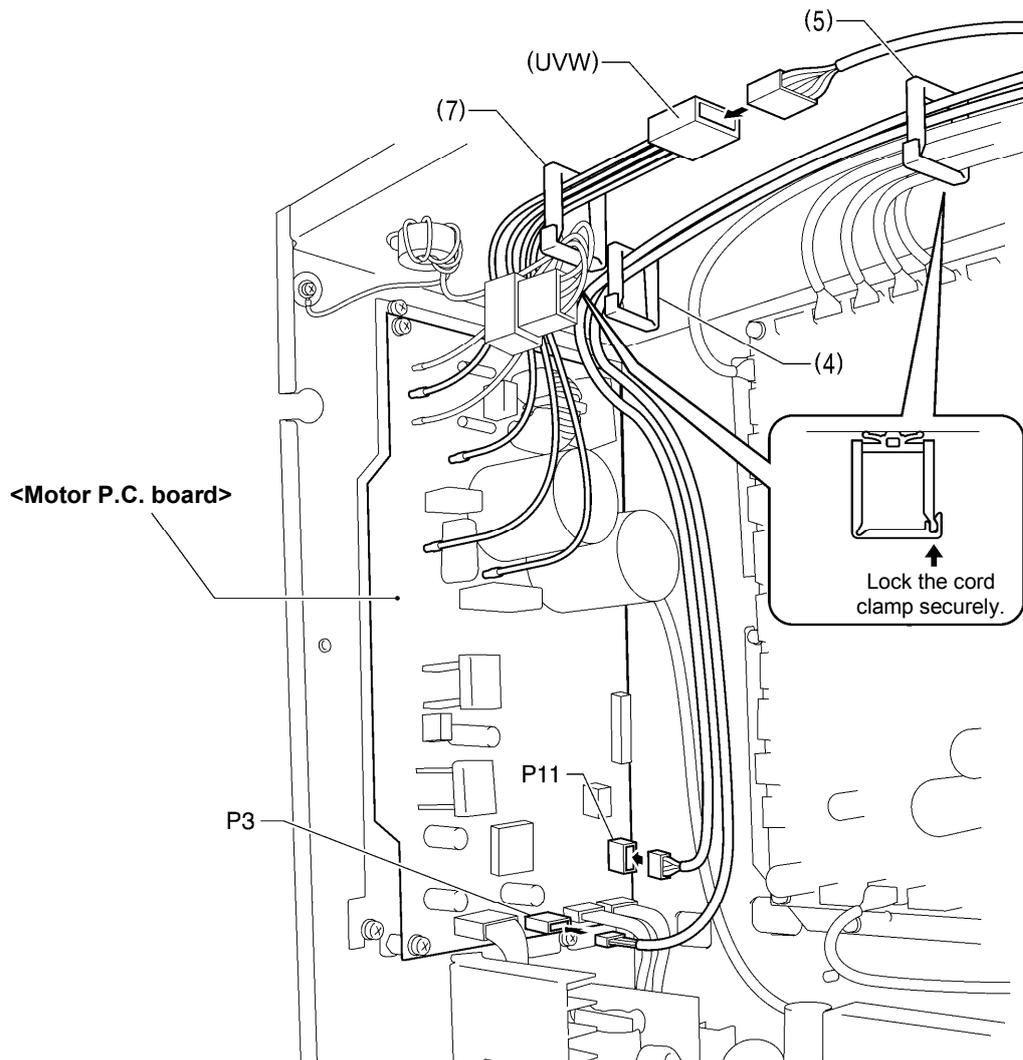
Connector	Connection location on motor P.C. board	Cord clamp
Upper shaft motor 4-pin	(UVW)	(7)
Synchronizer 10-pin	P11 (SYNC)	(4) (5)
Operation panel 4-pin	P3 (PANEL)	(4) (5)

(3)

(2)

(1)
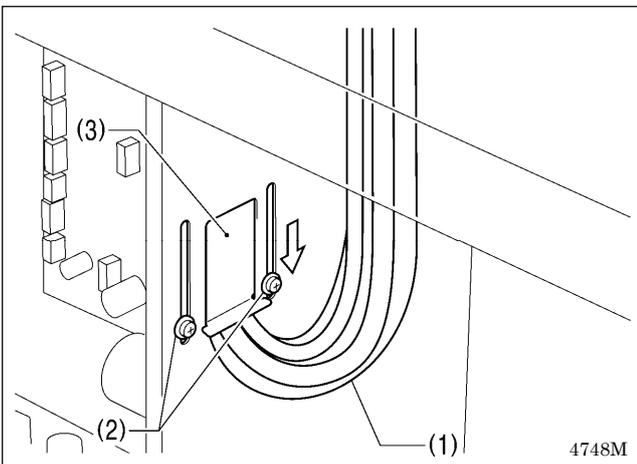
4748M

4. Close the cord presser plate (3) in the direction of the left arrow, and secure it by tightening the two screws (2).

   NOTE: Close the cord presser plate (3) securely so that no foreign objects, insects or small animals can get inside the control box.

5. Check that the cords (1) do not get pulled, and then gently return the machine head to its original position.

11   HE-800C

3-10. Connecting the ground wire

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

4749M
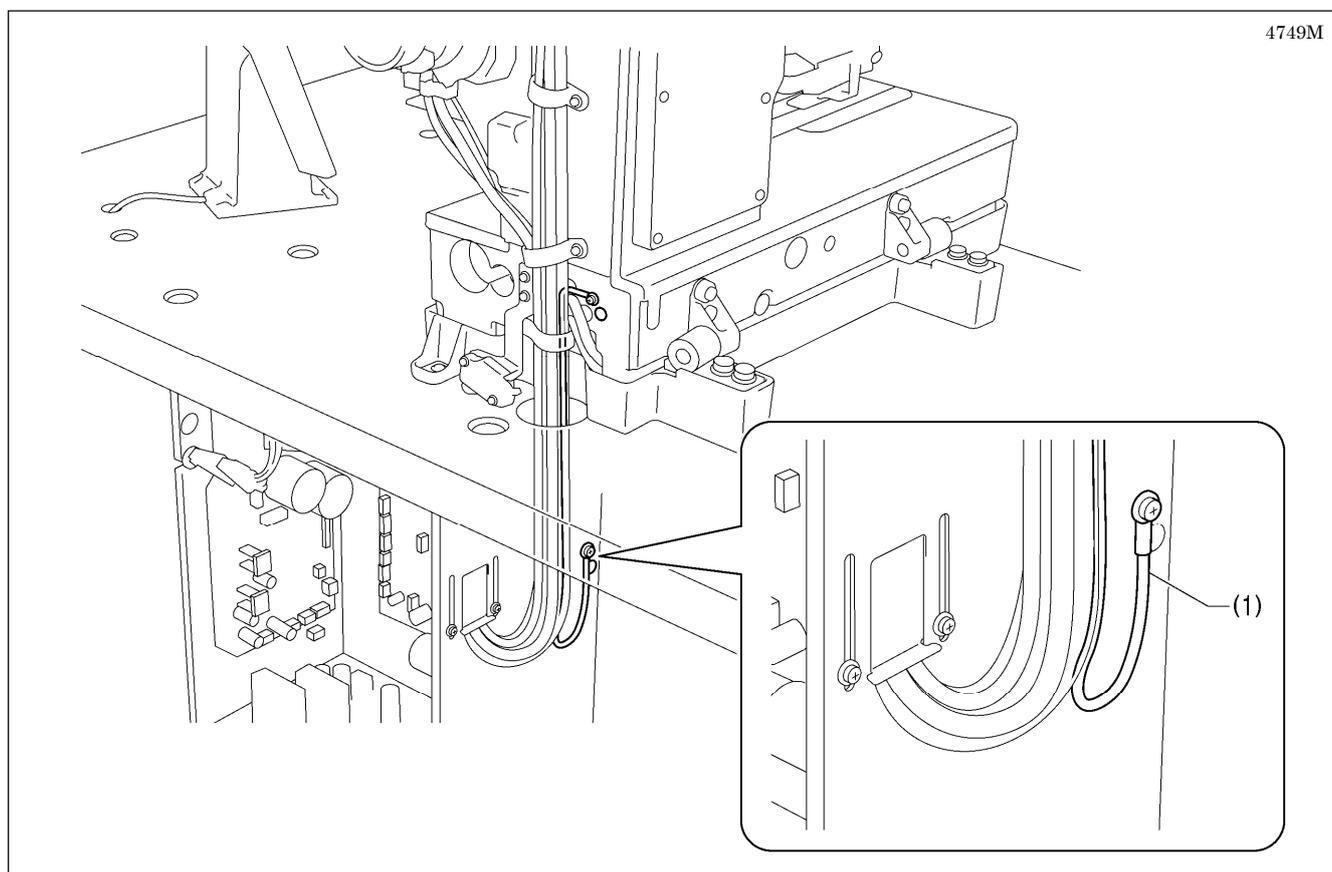
(1) Ground wire from the machine head (Ground mark position)

    * The recommended tightening torque for the ground screws is 1.0±0.1 N·m.

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

3-11. Installing the treadle connecting rod
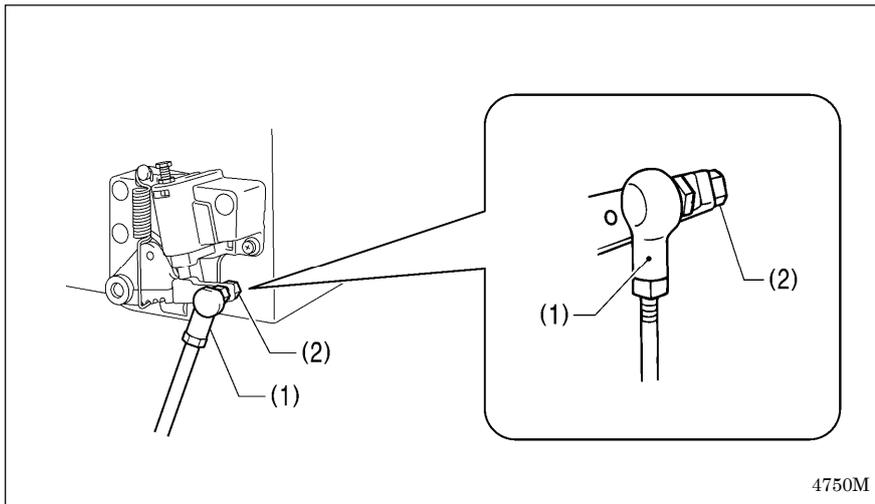
(1) Connecting rod
(2) Nut

4750M
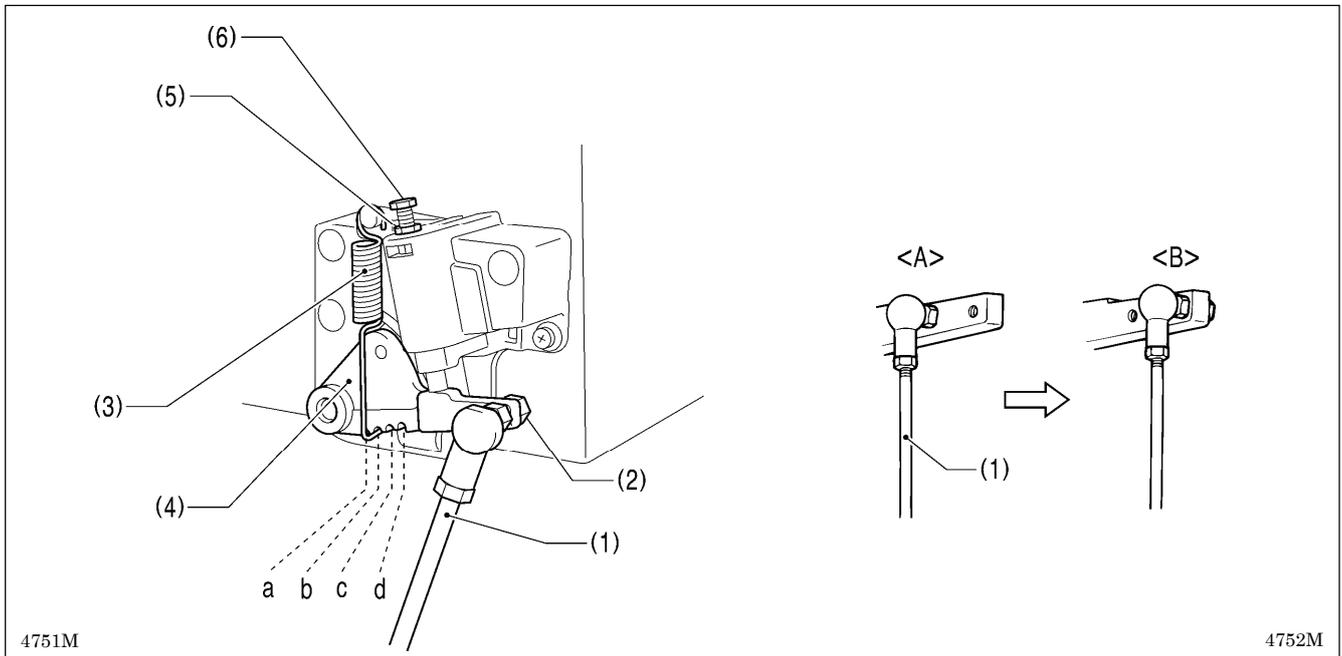
4751M   4752M

Adjusting the treadle pressure

If the machine starts running when your foot is simply resting on the treadle, or if the treadle pressure is too weak, adjust the position (a to d) at which the treadle spring (3) is hooked onto the treadle lever (4).
The treadle pressure will increase from position a to position d.

Adjusting the treadle return pressure

1. Loosen the nut (5) and turn the bolt (6).
   * The treadle return pressure becomes heavier as the bolt (6) is tightened, and becomes lighter as the bolt (6) is loosened.
2. Tighten the nut (5).

Adjusting the treadle stroke

Remove the nut (2), and then move connecting rod (1) from the position in figure <A> to the position in figure <B>.
The treadle stroke will increase by approximately 1.25 times.
* This adjustment will also affect the treadle pressure and the treadle return pressure, so these settings should be readjusted if necessary.

3-12. Installing the cotton stand

4753M
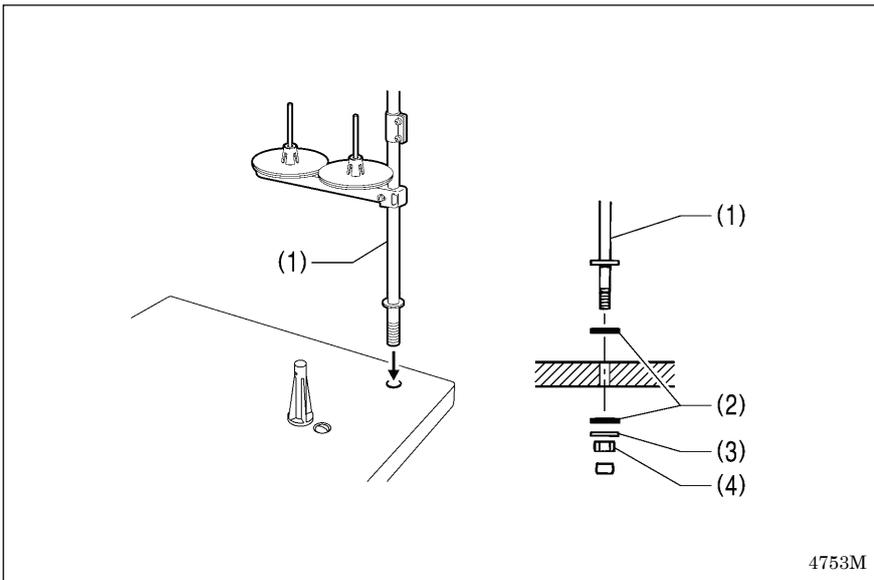
(1) Cotton stand

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

3-13. 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.

4754M
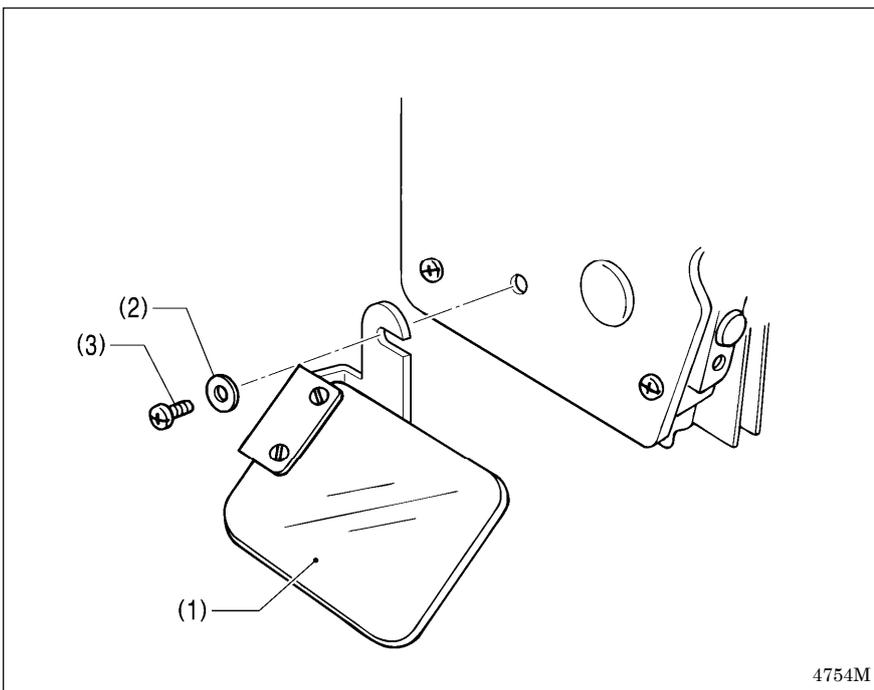
(1) Eye guard assembly
(2) Washer
(3) Screw

3-14. Lubrication

⚠ CAUTION

⚠	Turn off the power switch before starting lubricating, otherwise the machine may operate if the treadle is depressed by mistake, which could result in injury.
🚫	Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result. Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhea. Keep the oil out of the reach of children.
⚠	Be careful not to get your hands caught when returning the machine head to its original position after it has been tilted.

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 <JXTG Nippon Oil & Energy 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>.

3-14-1. Lubricating the bed base

4072M
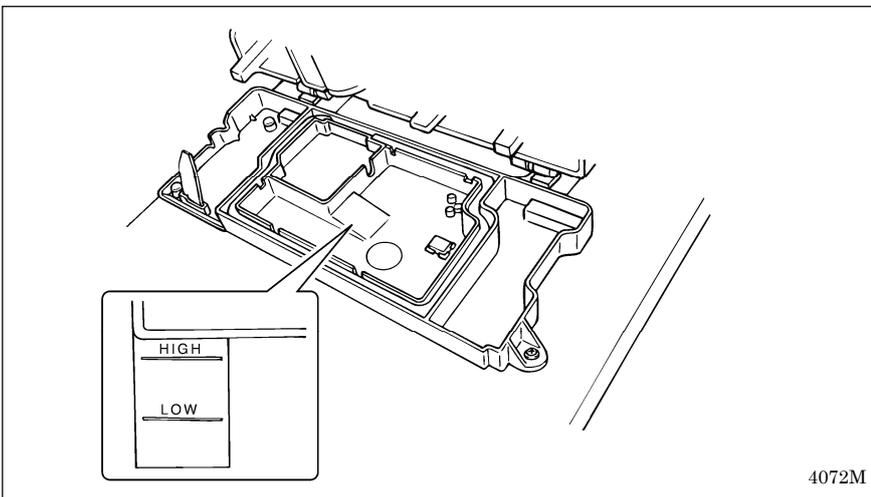
1. Gently tilt back the machine head.
2. Slowly pour in lubricating oil until the oil level reaches the "HIGH" mark.
3. Gently return the machine head to its original position.

* Periodically tilt back the machine head and check the lubricating oil level. If the oil level drops below the "LOW" mark, add more lubricating oil.
* Replace the lubricating oil about once every six months.

3-14-2. Lubricating the arm

3898Q
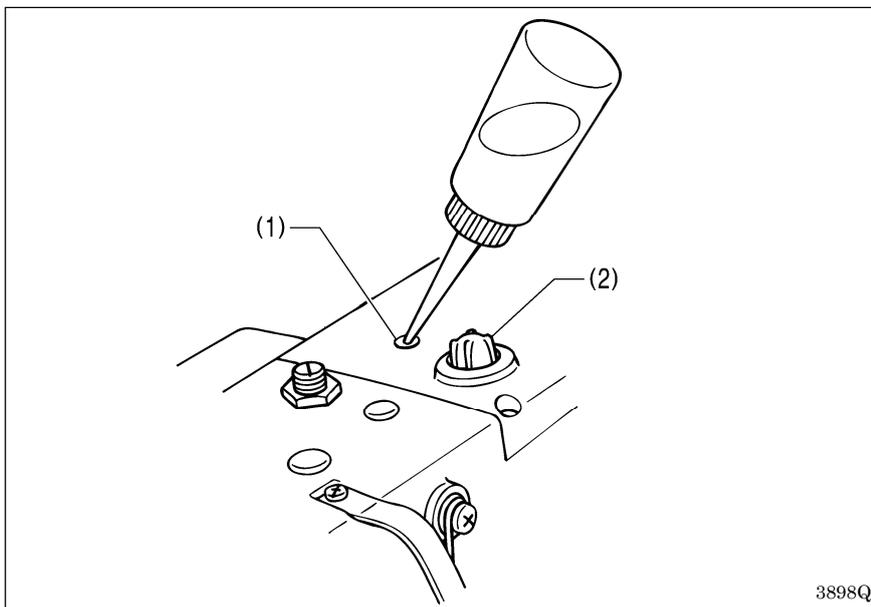
Apply 5-6 drops of oil to the oil inlet (1) at the top of the arm.

* When using the machine, check that the oil is visible through the oil window (2). If it cannot be seen, problems such as seizure of the mechanism may occur.

3-14-3. Lubricating the rotary hook

4755M
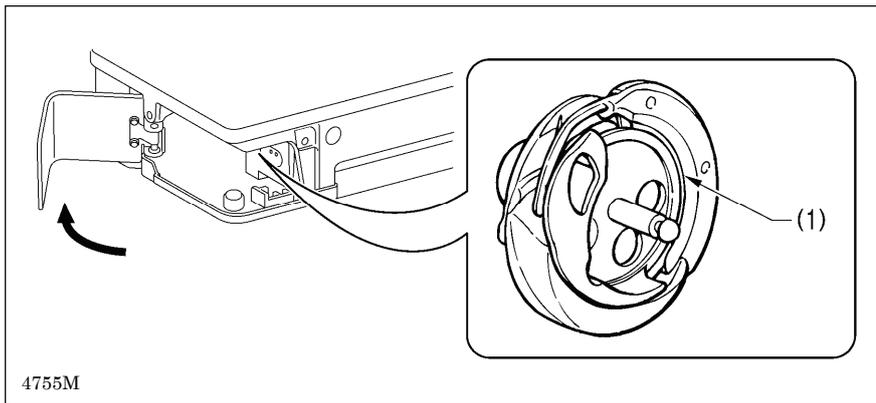
When first installing the machine and when the machine has not been used for an extended period of time, remove the bobbin and add 2-3 drops of oil to the rotary hook race (1) before sewing.

4756M
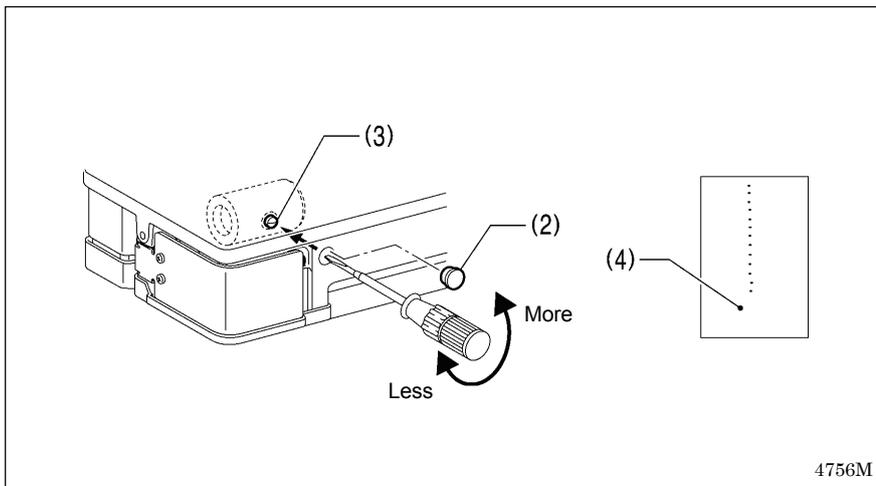
Rotary hook lubrication adjustment

1. Remove the rubber cap (2).
2. Turn the adjusting screw (3) to adjust the lubrication amount.

* Adjust so that approximately 10 drops of oil are released when the sewing machine is run at a speed of 4,000 sti/min for three cycles to sew about 114 stitches. Use Kraft paper (4) or similar to catch the oil drops. As a guide, the optimum position can be obtained if the adjusting screw (3) is tightened as much as possible and then loosened about two turns.

3-15. Connecting the power cord
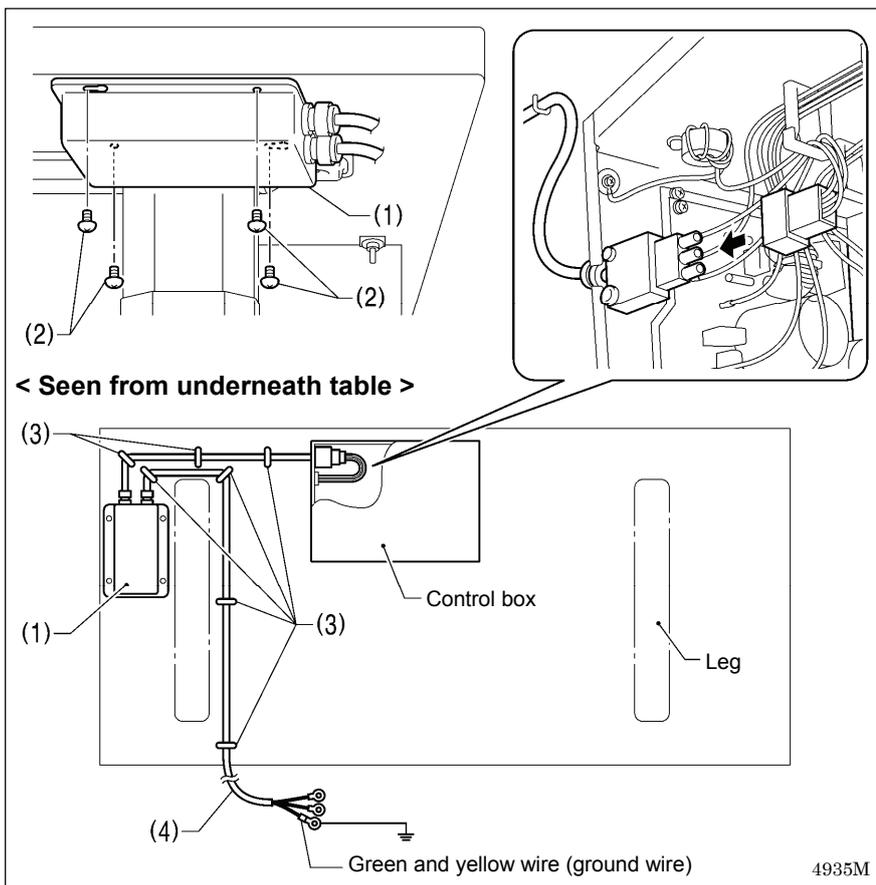
< Seen from underneath table >

Control box

Leg

Green and yellow wire (ground wire)

4935M

⚠ **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.

Connect cords that match the voltage specifications. (Refer to the next page.)

<EU specifications>

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

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

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

⚠ CAUTION

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


Connect cords that match the voltage specifications.
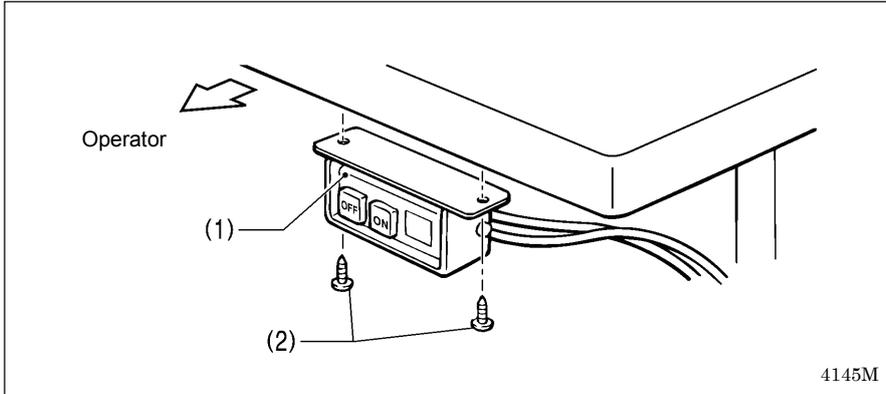
<200 V system>
(1) Power switch
(2) Screws [2 pcs]

Operator

(1)

(2)

4145M

4757M
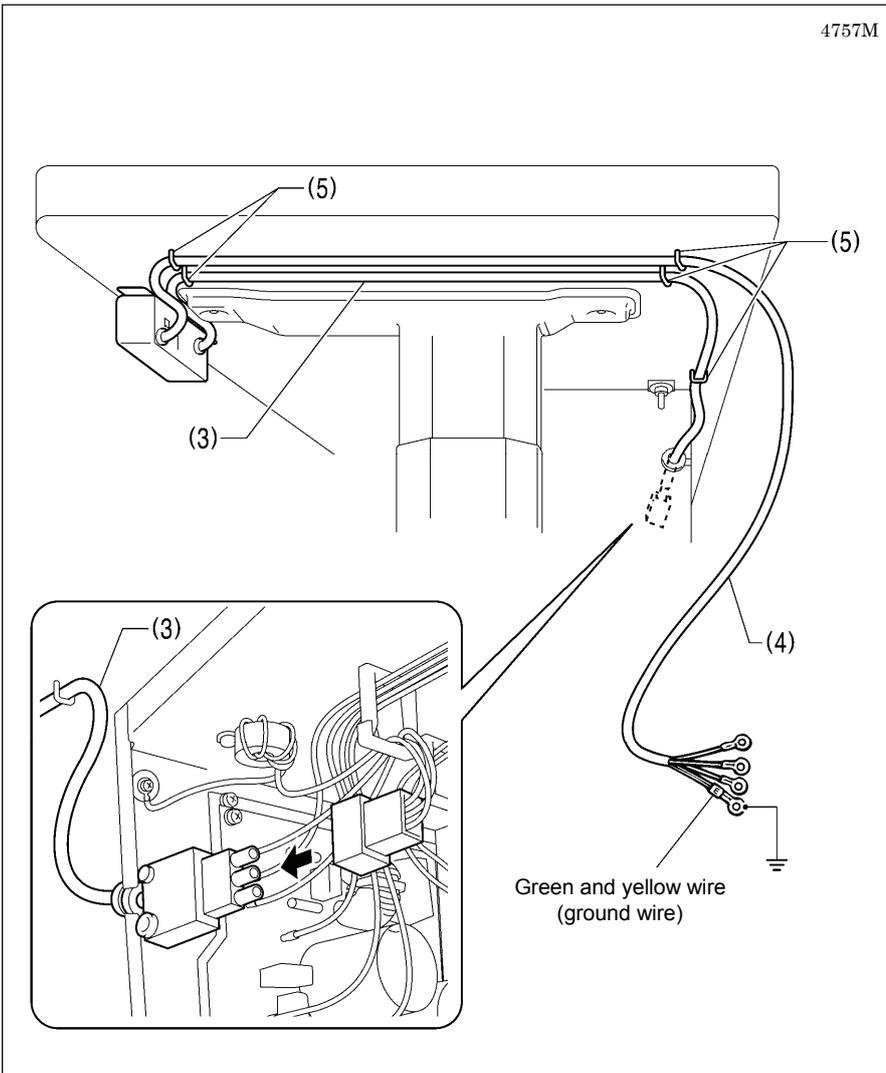
(3) 3-pin power supply connector
(4) Power cord
(5) Staples [5 pcs]

(5)

(5)

(3)

(3)

(4)

Green and yellow wire
(ground wire)

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

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

3. Use the six screws to tighten the cover of the control box. Check that none of the cords are being clamped by the cover at this time.
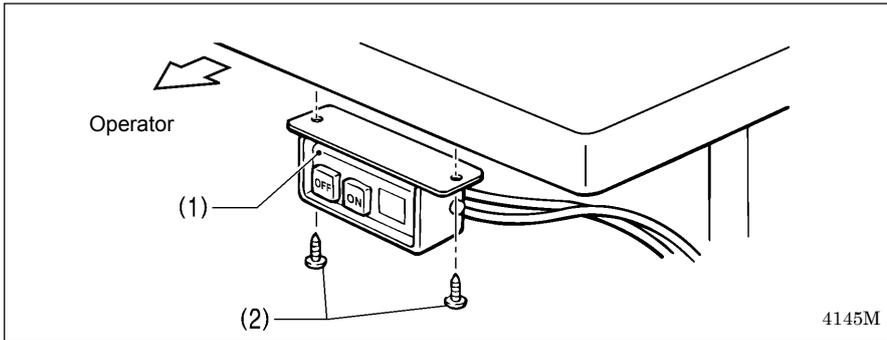
4145M

<100 V / 400 V system>

(1) Power switch
(2) Screws [2 pcs]
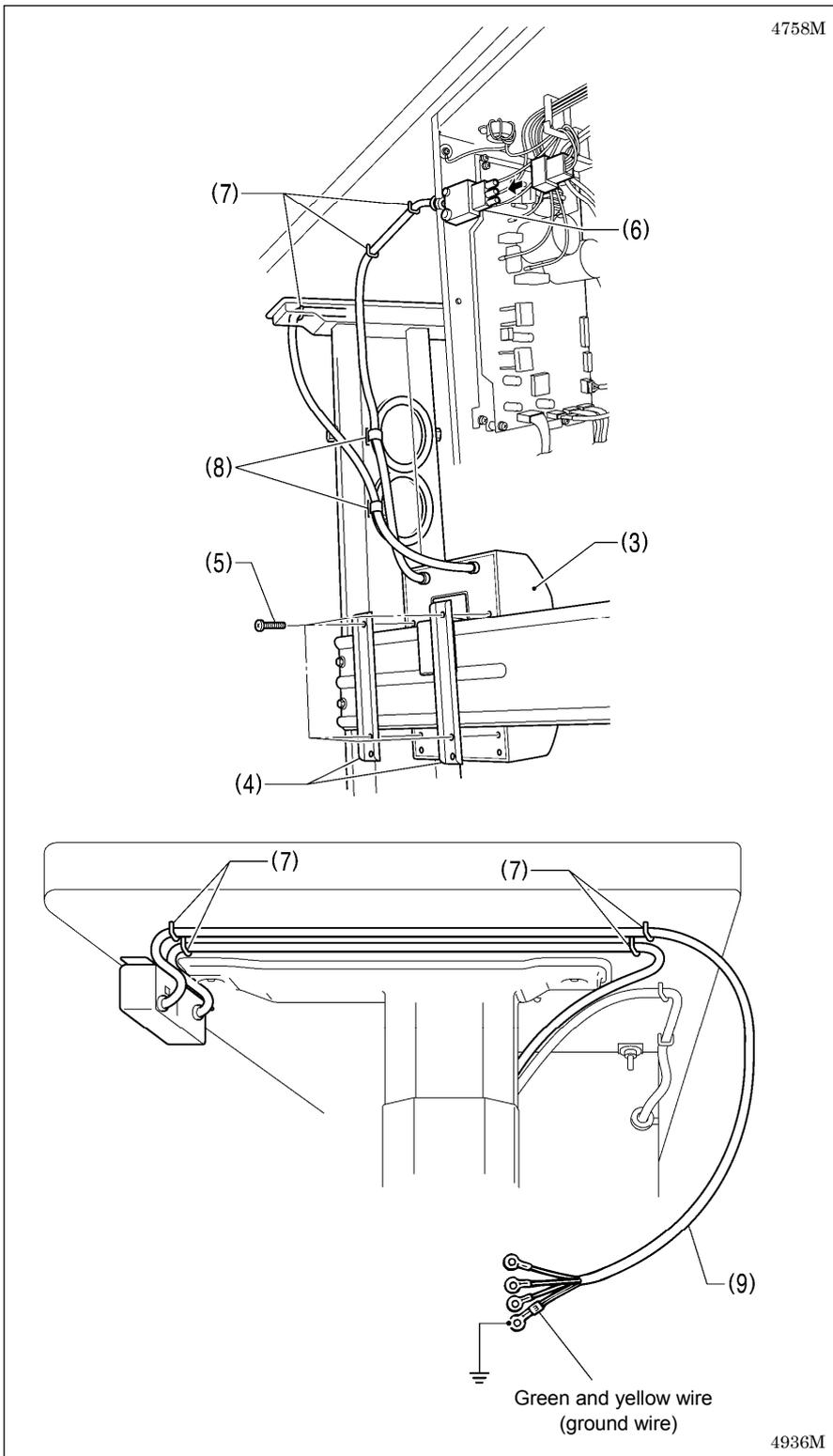
4758M

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

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

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

3. Use the six screws to tighten the cover of the control box. Check that none of the cords are being clamped by the cover at this time.

Green and yellow wire
(ground wire)

4936M

HE-800C

18

3-16. Checking the safety switch

4760M

4761M
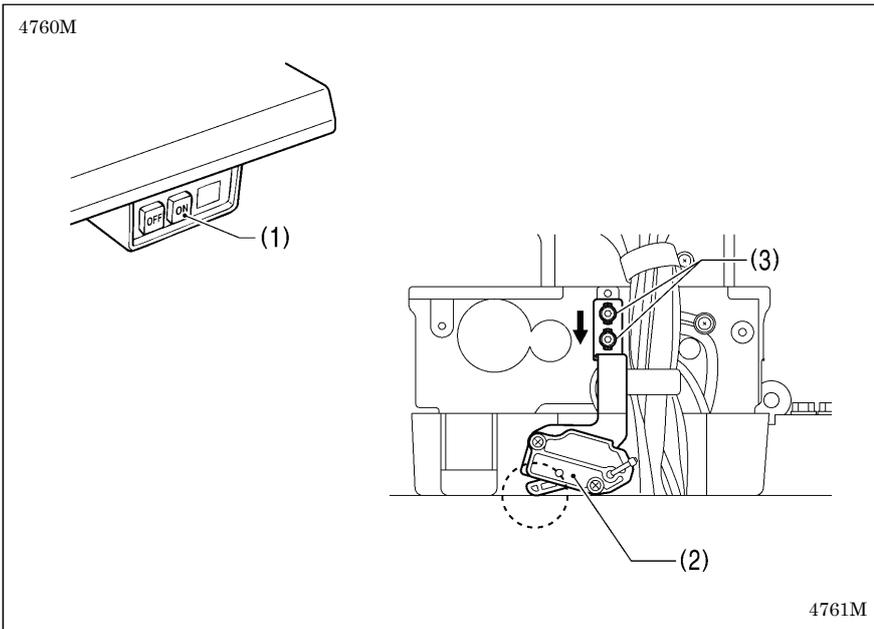
1. Turn on the power switch (1).
2. Check that no error numbers appear on the operation panel.

   <If an error number is displayed>
   If the safety switch (2) is not turned on, error [E050], [E051] or [E055] will occur.

   1) Loosen the two bolts (3), and then adjust the safety switch (2) to a position where no error is displayed.
   2) Tighten the two bolts (3).

3. After checking that no error numbers are displayed, turn off the power switch (1).

3-17. Installing the motor cover

4762M
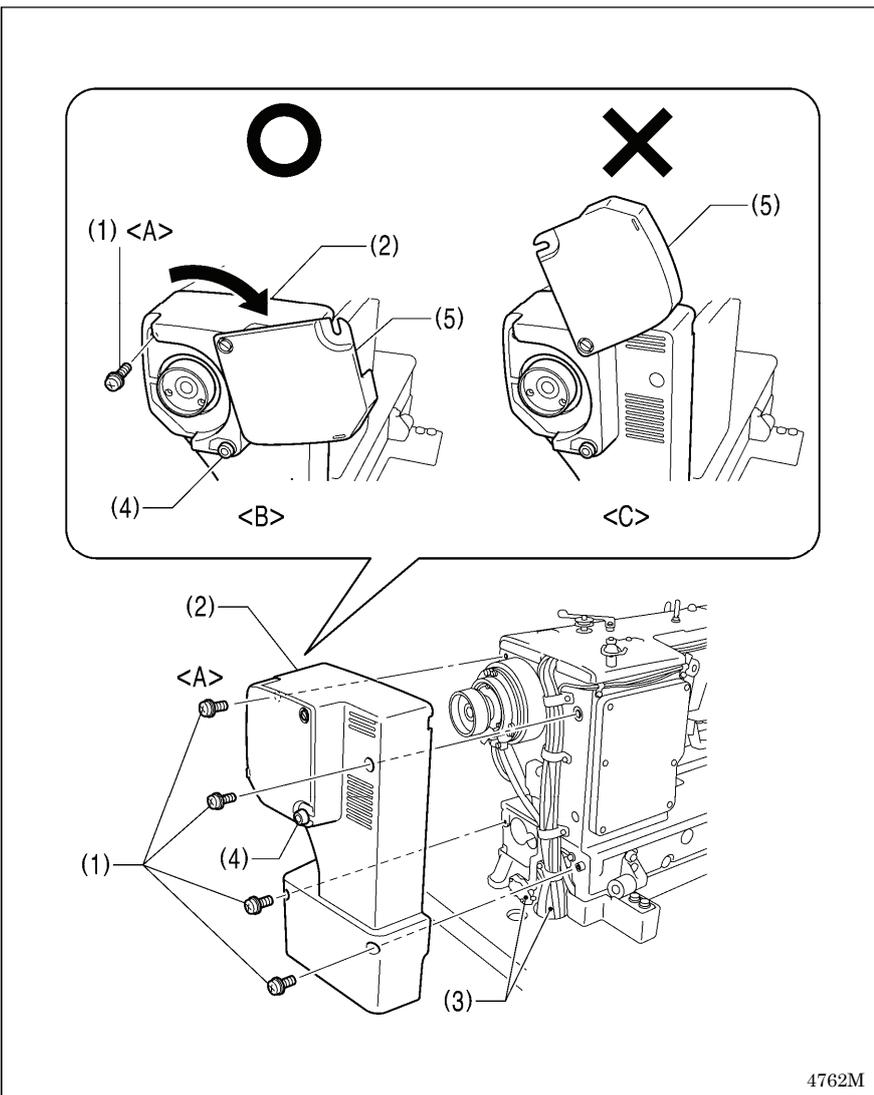
1. Install the motor cover (2) with the three screws (1) (other than <A>).
   NOTE:
   Be careful not to clamp the cords (3) when installing the motor cover (2).

2. Loosen the knob screw (4), and then fully open the slider cover (5). (Figure <B>)
   NOTE:
   · If you try to open the slide cover (5) any further when it is already fully open, the slide cover (5) may become damaged.
   · If the opening angle of the slide cover (5) is too small, the slide cover (5) will close from its own weight or momentum, and your fingers or other objects may get caught. (Figure <C>)

3. Tighten the screw (1) at <A> to secure the motor cover (2).
4. Once the motor cover (2) has been installed, close the slide cover (5) and tighten the knob screw (4) to secure it.

3-18. Installing the auxiliary table

4763M
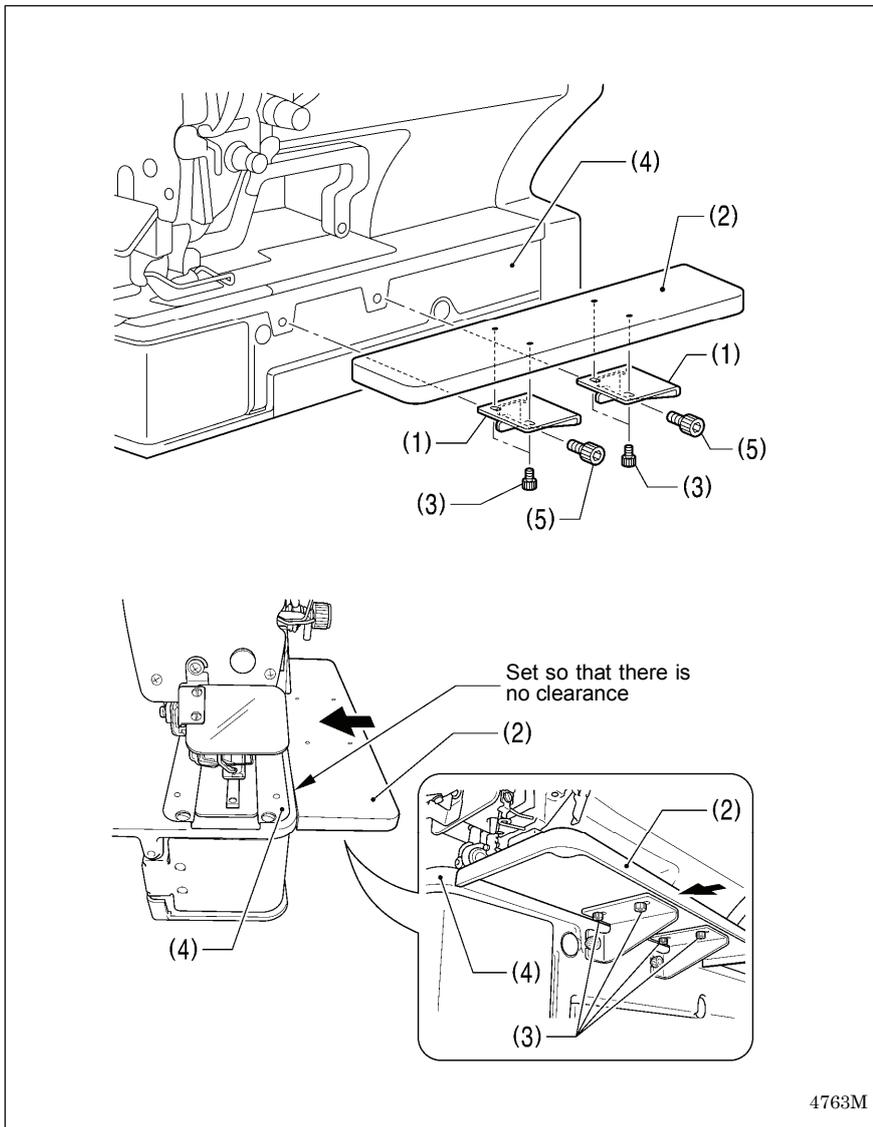
1. Provisionally install the two table support plates (1) to the auxiliary table (2) with the four bolts (3).
2. Install the auxiliary table (2) to the bed (4) with the two bolts (5).
3. While gently pushing the auxiliary table (2) so that there is no clearance between the bed (4) and the auxiliary table (2), tighten the four bolts (3).

4. PREPARATION BEFORE SEWING

4-1. Installing the needle

⚠ CAUTION

Turn off the power switch before installing the needle, otherwise the machine may operate if the treadle is depressed by mistake, which could result in injury.
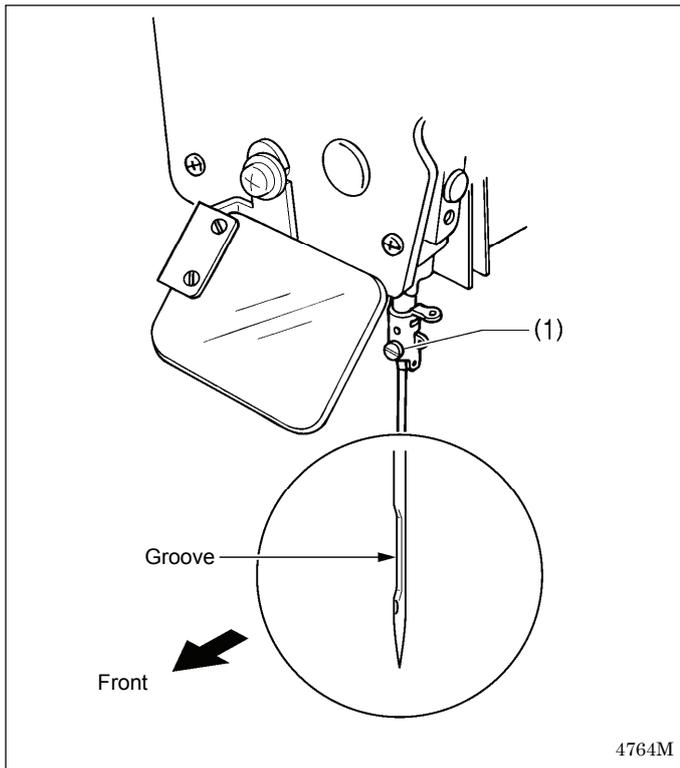
Use a Schmetz Nm 134 needle.
1. Loosen the set screw (1).
2. Insert the needle as far as it will go so that the groove is facing toward you.
3. Securely tighten the set screw (1).

[At the time of shipment]

Spec.	-2	-3
Needle	134 Nm90	134 Nm75

(1)

Groove

Front

4764M

HE-800C

4-2. Threading the upper thread

> ⚠ **CAUTION**
>
> ⚠ Use threading mode or turn off the power first in order to carry out threading.

For threads which do not slide easily

Thread will get caught

or

For spun thread and cotton thread

For polyester thread
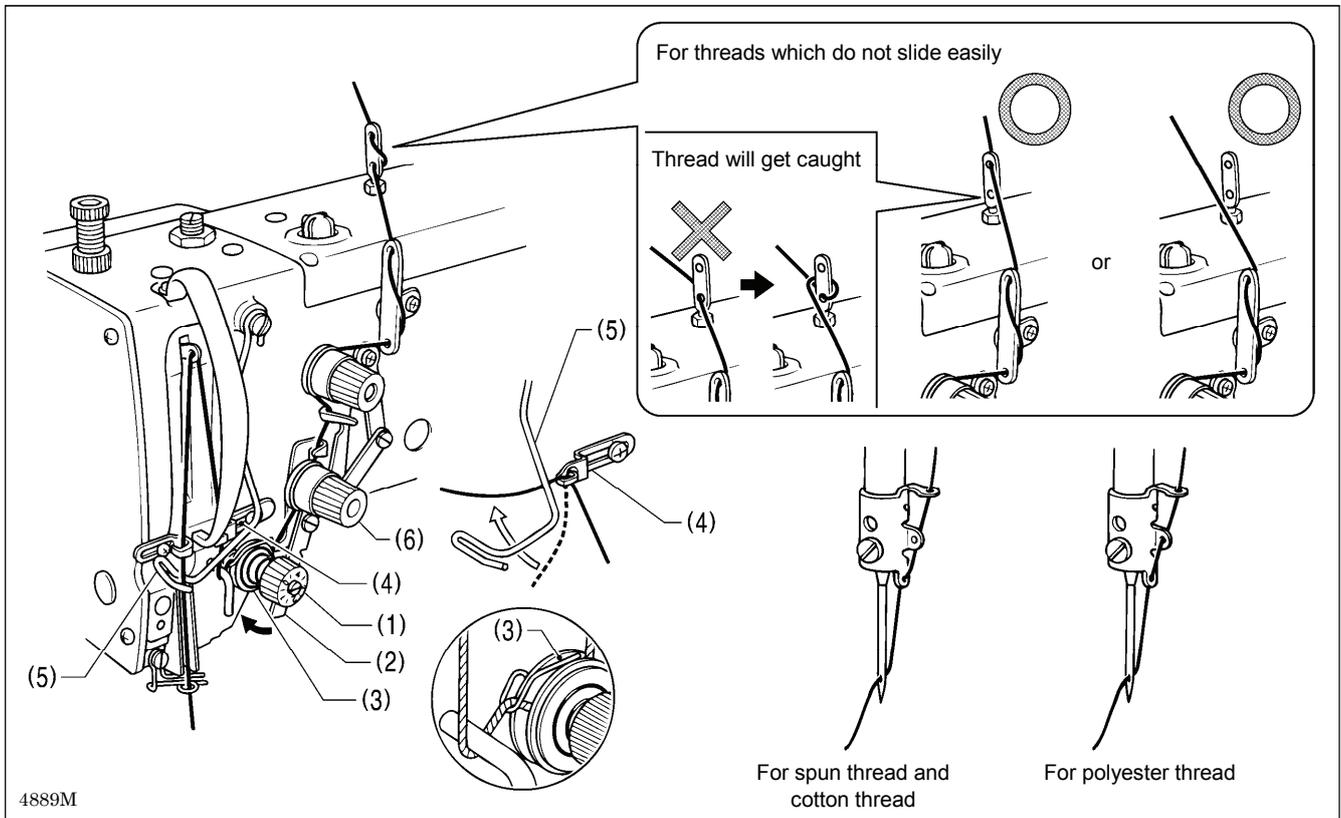
4889M

Thread the upper thread correctly as shown in the illustration.

▪ When pulling the thread out from the zigzag thread tension (1), move the tension release lever (2) in the direction of the arrow to open the tension discs (3) in order to make it easier to pull out the thread.

▪ After threading the arm thread guide (4), pass the thread under the thread guide (5) as shown in the illustration to make it easier to thread.

▪ Push the needle bar to the right to make it easier to pass the thread through the needle.

* When the sewing machine is threaded in threading mode, the tension discs (3) will be open and the needle will be moved to the right to make it easier to thread the upper thread. (Refer to the next page.)

NOTE:

▪ If you start sewing without passing the thread through the thread guide (5), error "E600" will be generated and the sewing machine will stop.

▪ The thread tension (6) is used to prevent the upper thread from becoming knotted, tangled or loose, so do not touch it. It is tightened only gently. If it is tightened too firmly, the knob may become damaged.

<Threading mode>

When the sewing machine is threaded in threading mode, the tension discs will be open and the needle will be moved to the right to make it easier to thread the upper thread.
In addition, the sewing machine will not start up threading mode, even if the treadle is depressed.

1	Press the THREAD key while the sewing machine is at standby in automatic sewing mode or test feeding mode.

Flashing

THREADING MODE
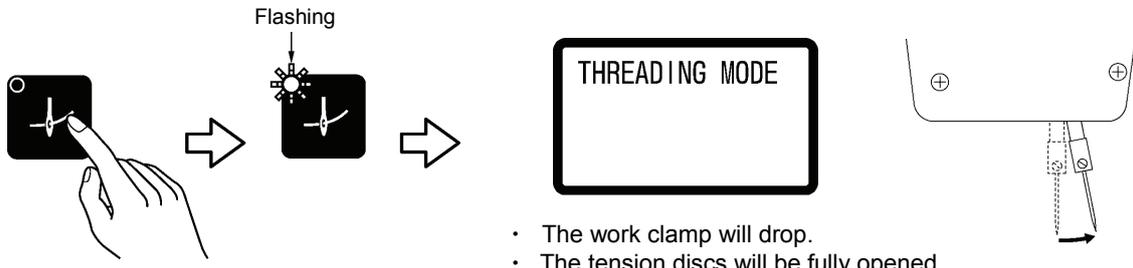
· The work clamp will drop.
· The tension discs will be fully opened.
· The needle will move to the right.

4203B   4916M   4767M

2	Thread the upper thread.

3	Once threading of the upper thread is complete, press the THREAD key.
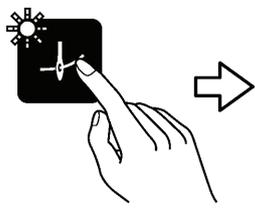
· The work clamp and the needle will return to their original positions.
· The tension discs will close.

4204B

<Reference>

4769M
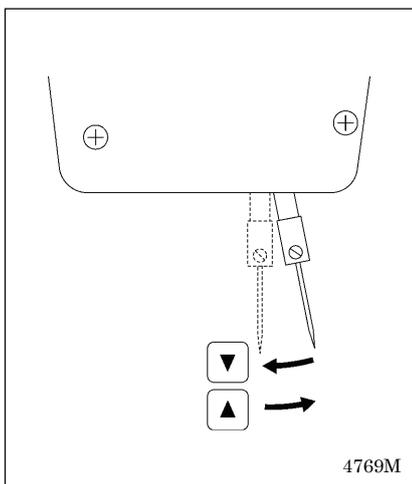
If you press the ▼ key while in threading mode, the needle will return to the middle position.
If you press the ▲ key, the needle will move to the right.

4-3. Winding the lower thread

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

4770M

(1)
(5)
(2)
(5)

4891M

brother

(3) (4)

4205B
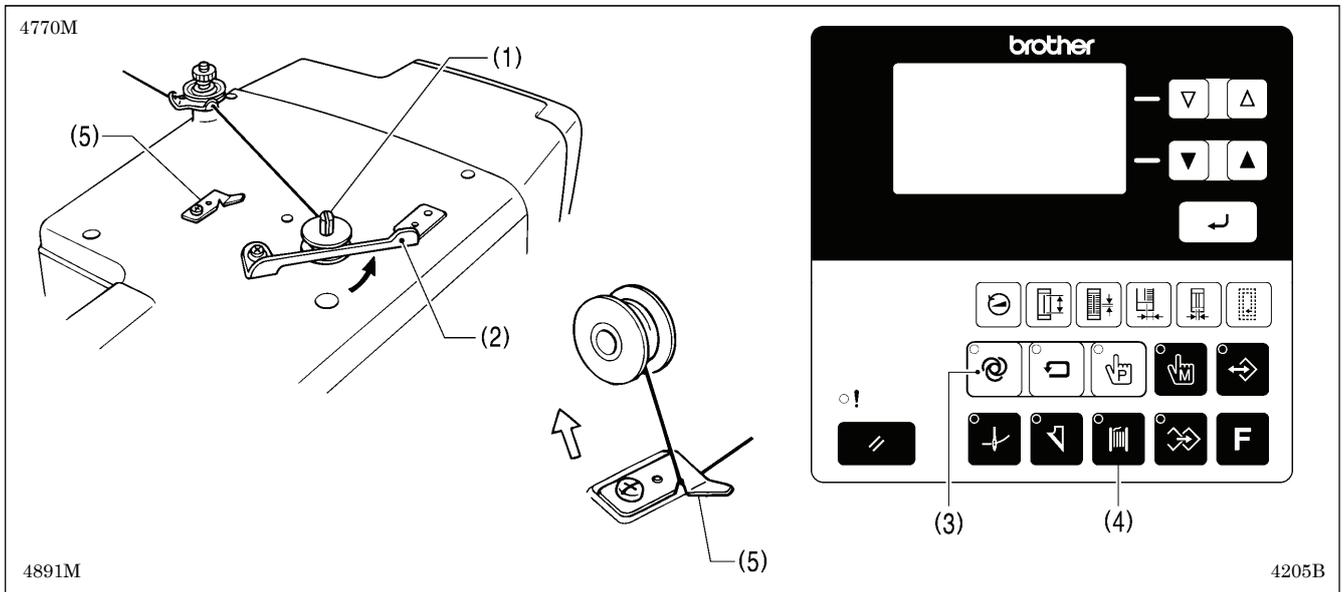
1. Place the bobbin onto the bobbin winder shaft (1).
2. Thread the thread as shown in the illustration, wind the thread around the bobbin several times, and then press the bobbin presser (2).
3. Turn on the power switch.
4. Depress the treadle to the 2nd step. (Home position detection will be carried out.)
5. Press the AUTO key (3) to change the mode to automatic sewing mode.
6. While pressing the WIND key (4), depress the treadle to the 2nd step.
7. When the sewing machine starts operating, release the WIND key (4), and keep depressing the treadle until winding of the lower thread is complete.
   (Once winding of the set amount of lower thread is complete (80% to 90% of the bobbin diameter), the bobbin presser (2) will return automatically.)
8. When winding of the lower thread is complete, release the treadle.
9. Remove the bobbin, hook the thread onto the knife (5), and then pull the bobbin in the direction of the arrow to cut the thread.

(6)   4892M

(2)

(8)

(7)

4772M

Case A

Case B
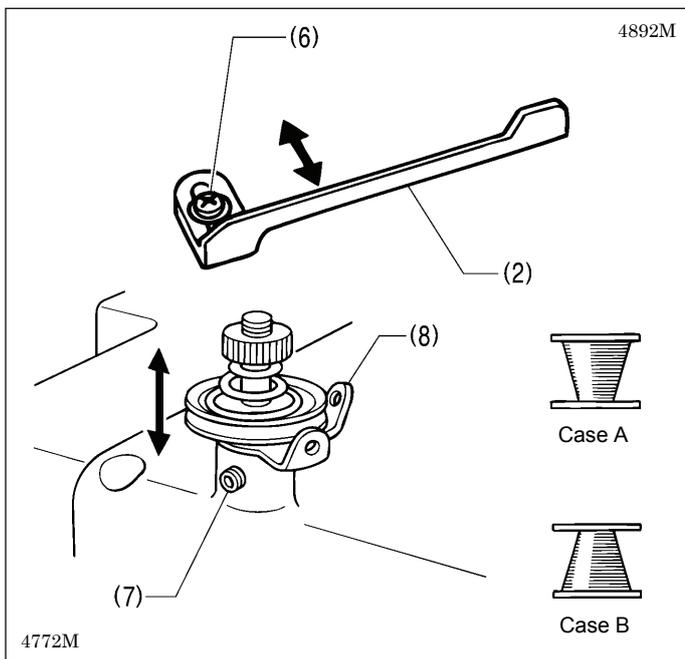
Adjusting the bobbin winding amount
Loosen the screw (6) and move the bobbin presser (2) to adjust.

If the thread winds onto the bobbin unevenly
Loosen the set screw (7) and move the bobbin wider tension bracket (8) up and down to adjust.

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

4-4. Installing the bobbin case

⚠ CAUTION

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

Purl stitch (seal stitch) Whip stitch (plain stitch)
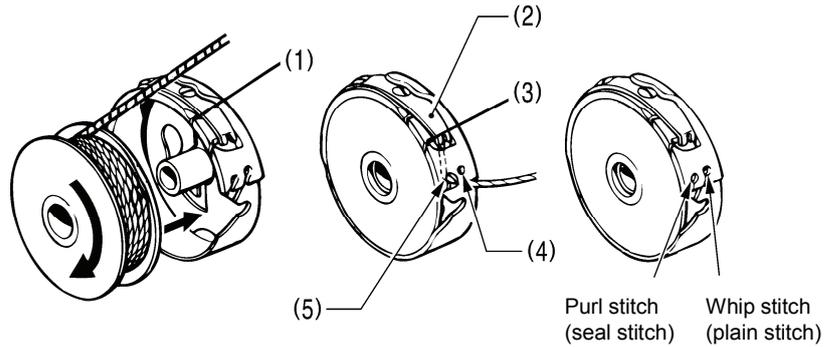
2812Q

1. Insert the bobbin into the bobbin case as shown in the illustration.
   NOTE: If the bobbin is inserted back to front, the bobbin will spin freely and the work clamp pulse motor will get out of step.
2. Pass the thread though the slot (1) and then under the tension spring (2) and through the slot (3).
3. When sewing whip stitches, pull approximately 40 mm of thread out from the thread hole (4), and when sewing purl stitches, pull approximately 40 mm of thread out from thread hole (5).
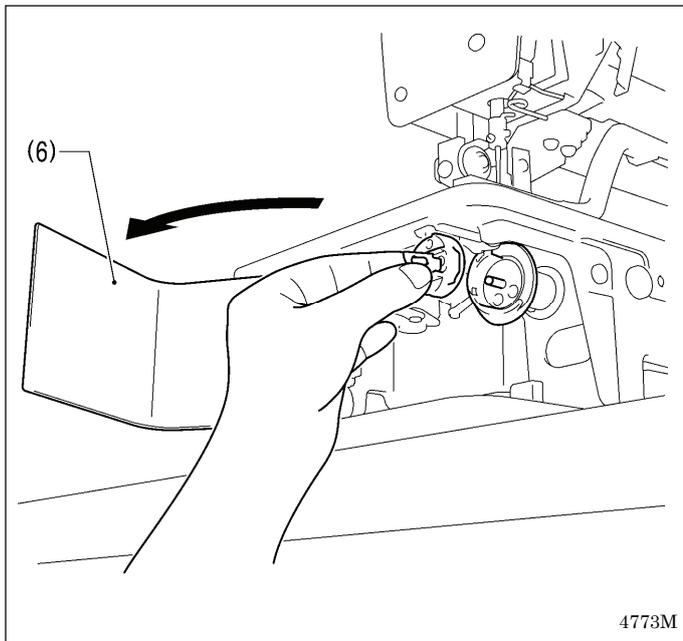
4773M

4. Open the rotary hook cover (6).
5. Hold the latch on the bobbin case and insert the bobbin case into the rotary hook.
6. Close the rotary hook cover (6).

HE-800C

4-5. Thread tension

The shapes of the seams for all patterns which have been stored in programs 1 to 50 can be set using parameter No. 53. Make the following adjustments in accordance with the seam shape which has been set.

[Stitch patterns]

Whip stitch (plain stitch)		Purl stitch (seal stitch)	
Front	Back	Front	Back

1228Q   1229Q
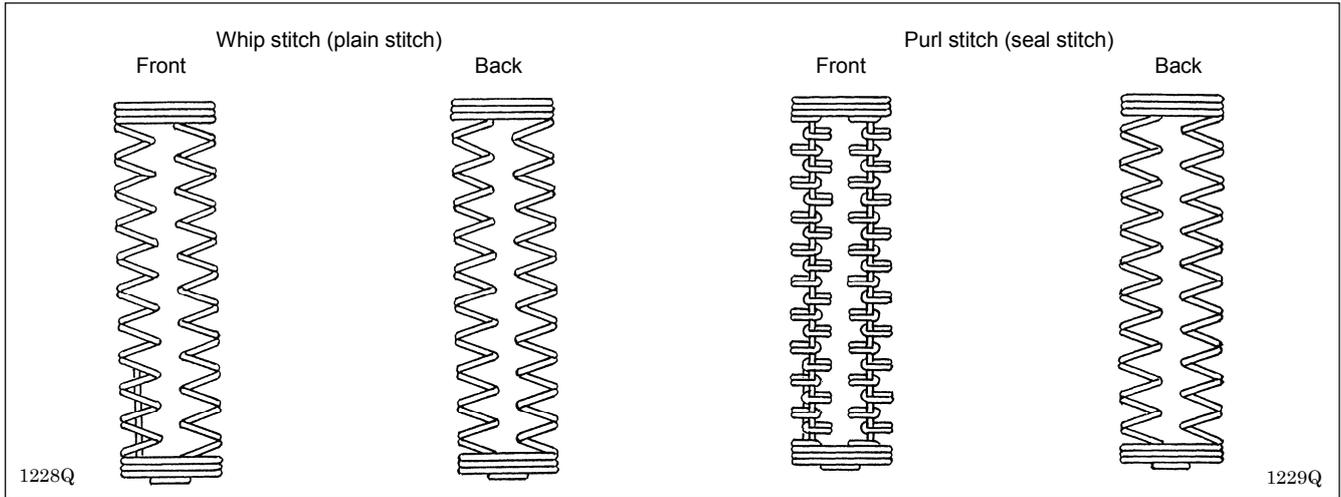
Whip stitch (plain stitch)

The above stitch pattern in which the upper thread moves over the top and the bottom thread moves over the bottom of the material in a zigzag pattern is called a "whip" stitch. This pattern is identical to the zigzag pattern of a lock stitch zigzag machine.

Purl stitch (seal stitch)

The above pattern in which the upper needle thread tension is high and the upper needle follows a straight line through the seam center while the lower thread moves left to right and intertwines with the upper thread is called a "purl" stitch.

[Reference thread tension]

Stitch patterns	Whip stitch		Purl stitch	
Upper thread	Polyester #50	Spun #60	Polyester #50	Spun #60
Lower thread	Polyester #50	Spun #60	Polyester #50	Spun #60
Upper thread tension (N)	0.3 - 0.7	0.40 - 0.75	0.75 - 2.00	1.0 - 2.5
Lower thread tension (N)	0.15 - 0.35		0.05 - 0.25	
Thread take-up spring tension (mm)	4 - 6			
Thread take-up spring height (N)	0.1 - 0.2			

4-5-1. Lower thread tension

Becomes weaker

Becomes stronger

(1)

2813Q
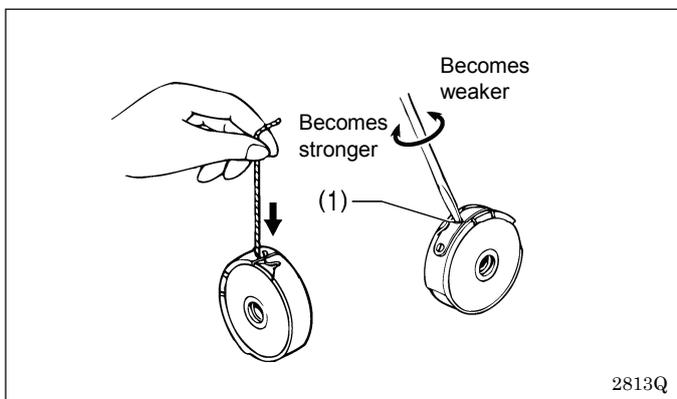
Whip stitch (plain stitch)

Adjust by turning the adjusting screw (1) until the bobbin case drops when it is shaken slightly (0.15 - 0.35 N) while the thread end coming out of the bobbin case is held.

Purl stitch (seal stitch)

Adjust by turning the adjusting screw (1) until the bobbin case drops gently by its own weight (0.05 - 0.25 N) while the thread end coming out of the bobbin case is held.

4-5-2. Upper thread tension

Whip stitch (plain stitch)　　　　　Purl stitch (seal stitch)

[A] Zigzag areas

[B] Purl areas

[A] Bar tacking areas　　　　　[A] Bar tacking areas

(2)

(3)

(1)

4774M　　　　　　　　　　　　　　　　　4775M
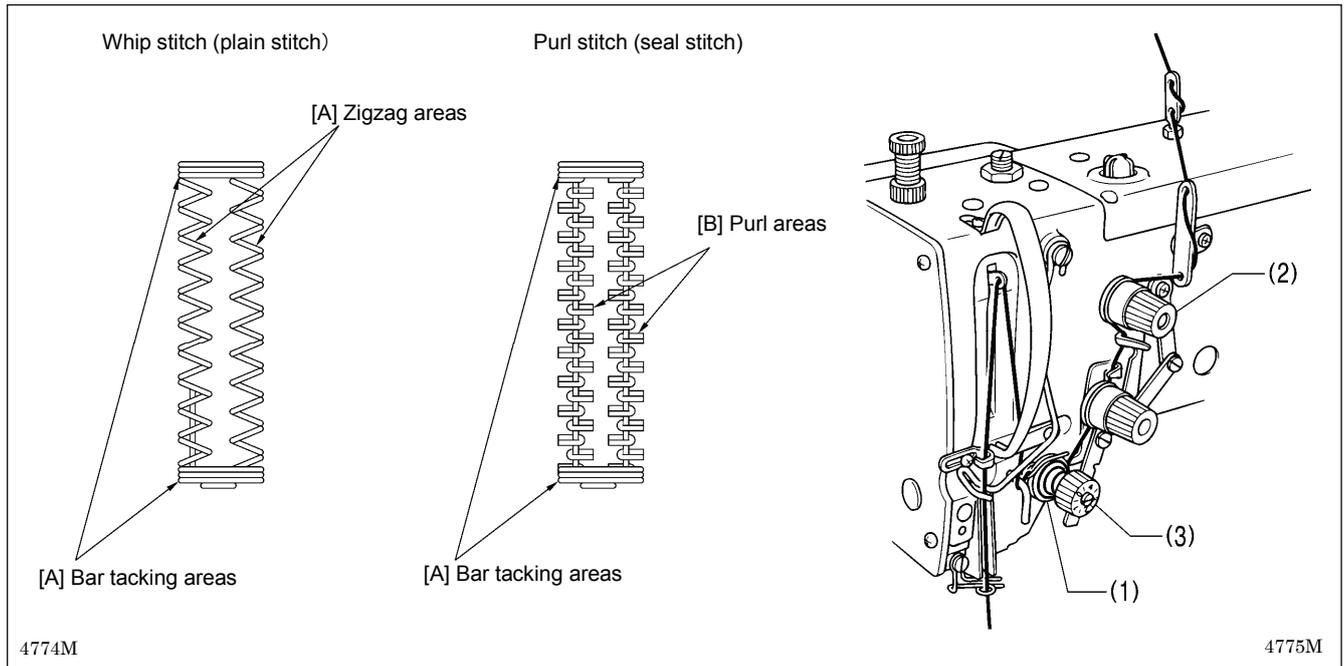
Whip stitch (plain stitch)
To ensure that neat seams will be sewn in the bar tacking areas and zigzag areas, adjust the upper thread tension while the zigzag tension discs are open as shown in "[A] When the zigzag tension discs (1) are open" below.

Purl stitch (seal stitch)
1. First, to ensure that neat seams will be sewn in the bar tacking areas, adjust the upper thread tension while the zigzag tension discs are open as shown in "[A] When the zigzag tension discs (1) are open" below.
2. Next, to ensure that neat seams will be sewn in the purl areas, adjust the upper thread tension while the zigzag tension discs are closed as shown in "[B] When the zigzag tension discs (1) are closed" below.

[A]

(2)

(1) Open

[B]

(1) Closed

(3)

4776M
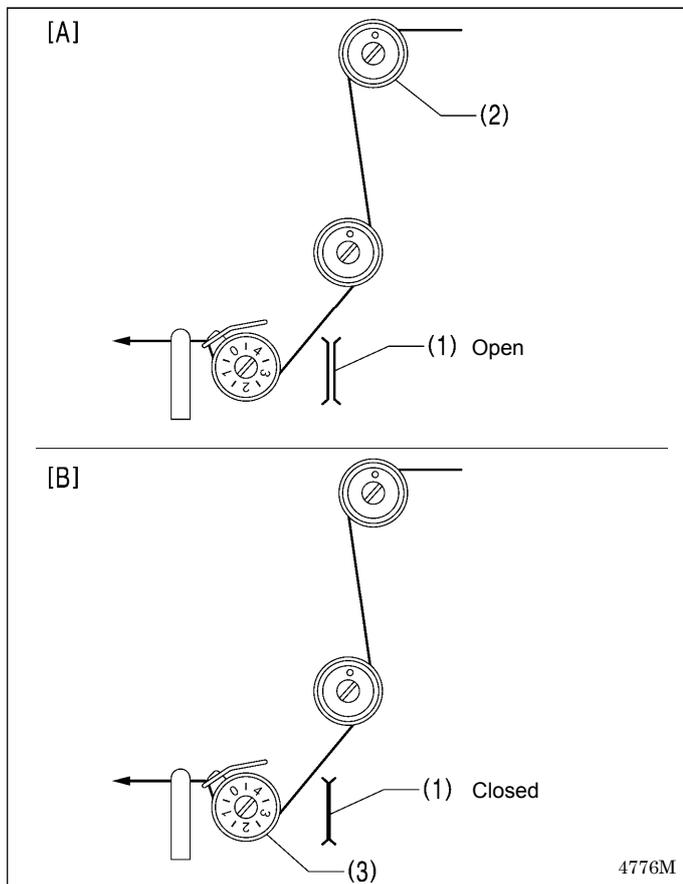
Adjustment method
Use threading mode to adjust by the procedure given below.
In addition, the procedure is safe because the sewing machine will not start up, even if the treadle is depressed.

[A] When the zigzag tension discs (1) are open
1. Press the THREAD key.
   (The sewing machine will switch to threading mode. The zigzag tension discs (1) will be fully opened.)
2. Turn the tack tension control (2) to adjust the tension for the bar tacking area and the zigzag area.
3. Measure the upper thread tension as shown in the illustration.
4. Press the THREAD key to exit threading mode.

[B] When the zigzag tension discs (1) are closed
1. Press the THREAD key.
   (The sewing machine will switch to threading mode.)
2. Press the ▼ key.
   (The zigzag tension discs (1) will be fully closed.)
3. Turn the zigzag tension control (3) to adjust the tension for the purl area.
4. Measure the upper thread tension as shown in the illustration.
5. Press the THREAD key to exit threading mode.

4-5-3. Thread take-up spring height
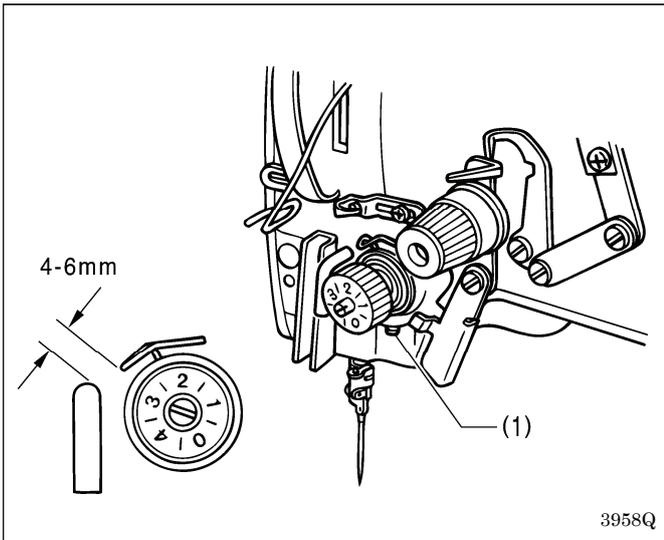
Loosen the set screw (1), and turn the entire thread tension adjuster to adjust the thread take-up spring height to between 4 - 6 mm in accordance with the material to be sewn.

4-6mm

(1)

3958Q

4-5-4. Thread take-up spring tension
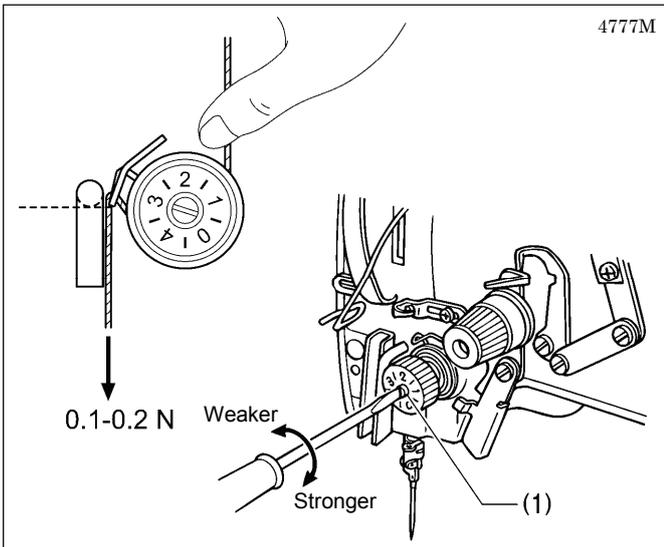
Turn the thread tension stud (1) to adjust the thread take-up spring tension to between approximately 0.1 - 0.2 N in accordance with the material to be sewn.

4777M

0.1-0.2 N

Weaker

Stronger

(1)

4-5-5. Adjusting arm thread guide
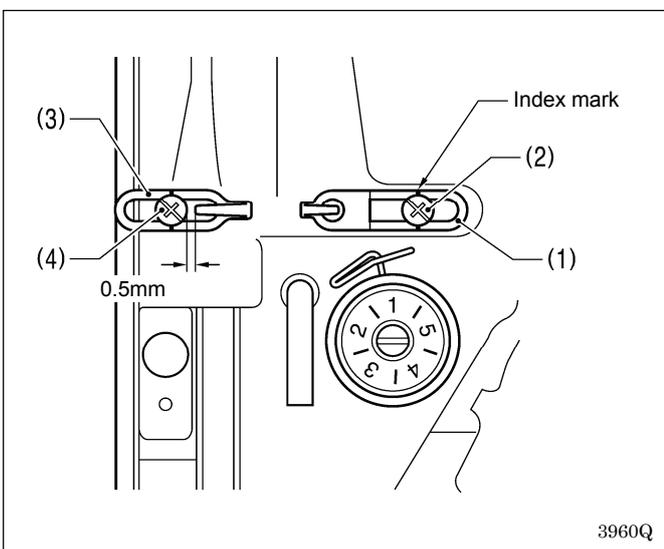
The standard position of arm thread guide (1) is when the screw (2) is aligned with the index mark.
The standard position for the arm thread guide (3) is when the clearance between it and the screw (4) is 0.5 mm as shown in the illustration.

(3)

Index mark

(2)

(4)

(1)

0.5mm

3960Q

5. USING THE SEWING MACHINE (OPERATION PANEL: BASIC OPERATION)

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

4206B

(1) Power indicator
Illuminates when the power is turned on.

(2) Display
This shows information such as program numbers and messages.

(3) CAUTION indicator
Flashes when displaying an error which can be reset, and illuminates when displaying an error which cannot be reset.

(4) RESET key
This key is used to reset errors and to reset the production counter value.

(5) ▽ key
This key is used to decrease the values for program numbers and parameter numbers.

(6) △ key
This key is used to increase the values for program numbers and parameter numbers.

(7) ▼ key
This key is used to decrease the values for parameter settings and memory switch settings.

(8) ▲ key
This key is used to increase the values for parameter settings and memory switch settings.

(9) ENTER key
This key is used to apply the values for parameter settings and memory switch settings.

(10) Shortcut 1 key
This key is used to change the "Sewing speed (zigzag part)" setting.

(11) Shortcut 2 key
This key is used to change the "Length of the hole" setting.

(12) Shortcut 3 key
This key is used to change the "Zigzag pitch" setting.

(13) Shortcut 4 key
This key is used to change the "Zigzag width" setting.

(14) Shortcut 5 key
This key is used to change the "Cutter X space" setting.

(15) Shortcut 6 key
This key is used to change the "No. of rectangle underlays" setting.

4207B

(16) AUTO key
This key is used to switch to automatic sewing mode.
The "AUTO" indicator in the key illuminates when automatic sewing mode is active.

(17) TEST key
This key is used to switch to test feeding mode.
The "TEST" indicator in the key illuminates when test feeding mode is active.

(18) PROGRAM key
This key is used to start program mode.
The "PROGRAM" indicator in the key illuminates when program mode is active.

(19) MEMSW (memory switch) key
This key is used to switch to memory switch mode.
The "MEMSW" indicator in the key illuminates when memory switch mode is active.

(20) R/W (read/write) key
This key is used to switch to data read/write mode.
The "R/W" indicator in the key illuminates when data read/write mode is active.

(21) THREAD key
This key is used to switch to threading mode.
The "THREAD" indicator in the key flashes when threading mode is active.

(22) CUTTER ON key
This key is used to switch cutter operation between enabled and disabled.
The "CUTTER ON" indicator in the key illuminates when cutter operation is enabled.

(23) WIND (thread winding) key
This key is used to switch to lower thread winding mode.
The "WIND" indicator in the key illuminates when lower thread winding mode is active.

(24) COPY key
This key is used to switch to copy mode.
The "COPY" indicator in the key flashes when copy mode is active.

(25) FUNC (function) key
This key is used to display the help screen.

(26) SD card slot
This is the slot for the SD card.

5-2. Starting the sewing machine

1 | Push the power switch (1) to the ON side.

The power indicator (2) will illuminate and the contents of the panel display (3) will switch in the order shown below.

(3)

(2)

Welcome
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4208B

(1)

4780M

HE800C−02

Sewing area → 4.0×32.0 —— Displayed for approx. 2 second

4209B

⊙
DEPRESS TREADLE
FOR HOME POS.

4917M

2 | Depress the treadle (4).

(4)

4784M

· The needle bar and the work clamp will move to the home position.
· The operation panel display will show the standby condition*1 for the mode that was active when operation last stopped (if it was automatic sewing mode, test feeding mode or program mode).

*1: The "standby condition" is the name for the period from the point after switching to one of these modes until the first operation occurs.

5-3. Operating the treadle

<Work clamp>			3906Q
		After sewing	
[4]	[1]	[2]	[3]
<Treadle> D	A	B	C
Depressed backward position (Insertion and removal of the material)	Neutral position	Treadle 1st step (when positioning the material)	Treadle 2nd step (when starting)
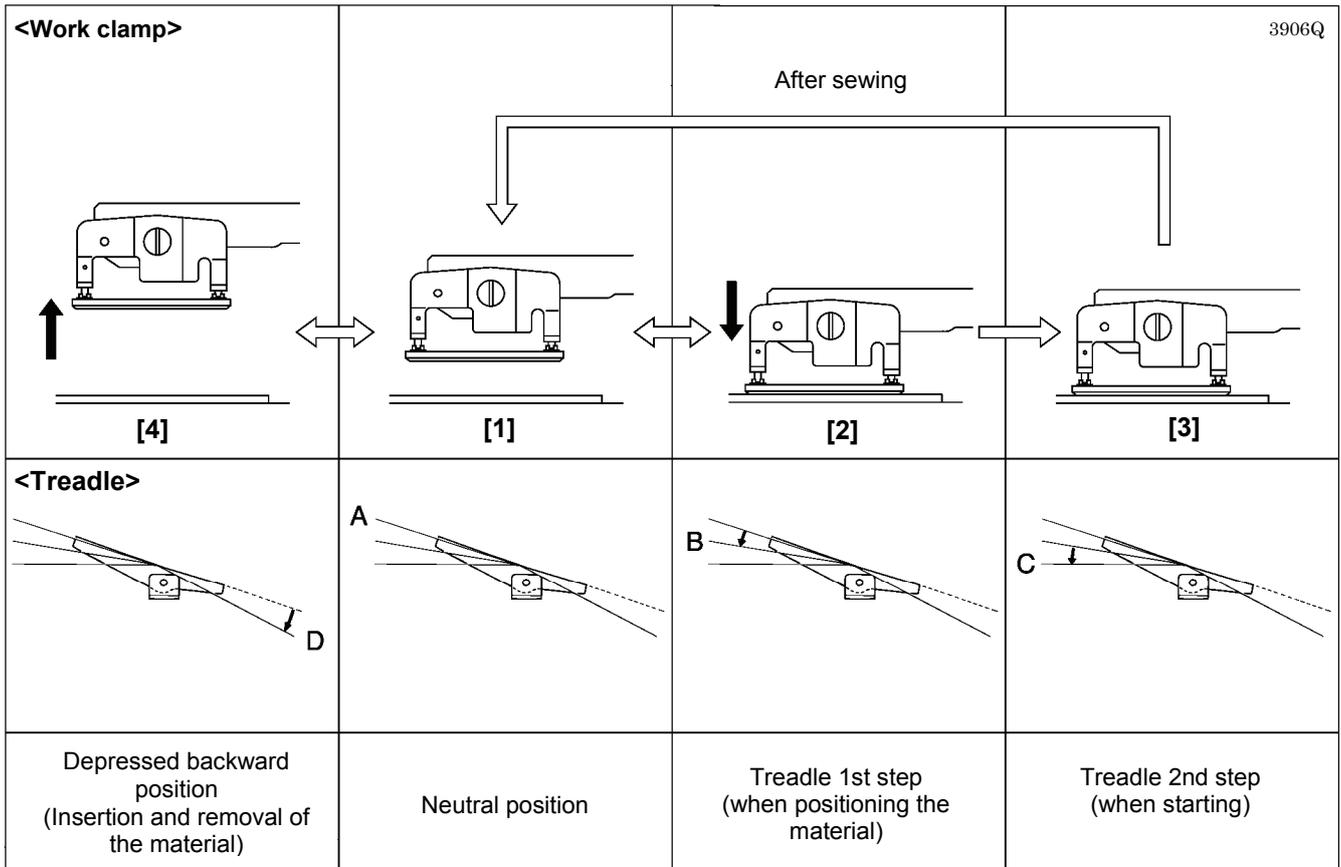
1. When the treadle is not depressed (A), the work clamp is at the neutral position. (Figure [1])
2. When the treadle is depressed to the 1st step (B), the work clamp will drop. (Figure [2])
   When the treadle is released, the work clamp will return to the neutral position. (Figure [1])
3. When the treadle is depressed to the 2nd step (C), the machine starts sewing. (Figure [3])
4. When the treadle is depressed backward to the backward position (D), the work clamp will lift up to higher than the neutral position. (Figure [4])
   This is useful for inserting and removing the material.

   * The work clamp rises while the treadle is being depressed backward, and it returns to the neutral position when the treadle is released.

5-4. Program setting method

It is recommended that you register patterns that are sewn frequently as programs. After programs have been registered, you can retrieve the desired sewing patterns simply by selecting a program number, which eliminates the need to set the pattern each time.

- Normally up to 50 programs can be registered, and their contents can be changed at any time. The contents can be set by changing the parameters for each item.
- At the time of shipment from the factory, temporary contents are set for programs P01 to P50. (The contents are the same for all programs from P01 to P50.) Follow the method given below to change the contents of a program before using it.

1 Switch the mode to test feeding mode.

4210B   4786M

2 Select the program number from P01 to P50 (1) to select the program that you would like to change.
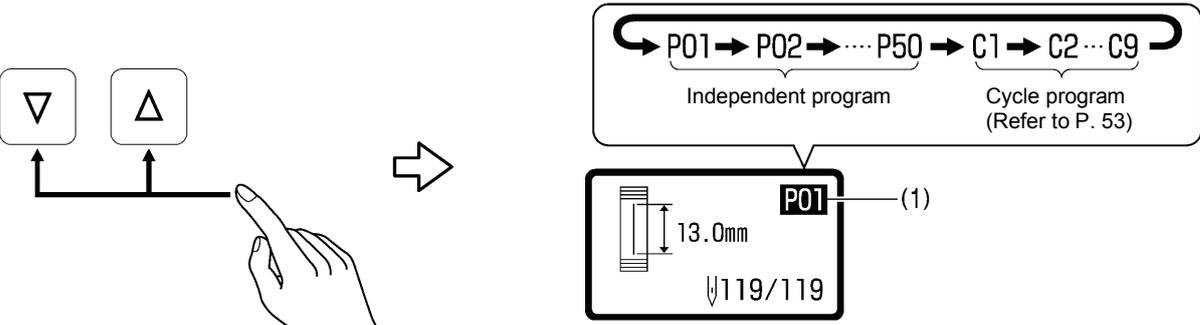
The program No. (1) changes in the order shown in the illustration each time the △ key is pressed. (The ▽ key changes the order in the opposite direction.)

NOTE:
Program mode is not available if a cycle program has been selected.

4787M   4788M

3 Switch to program mode.
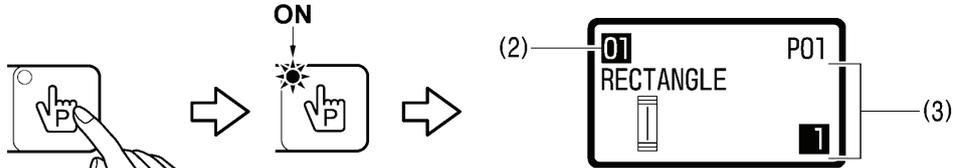
The parameter number (2) that was last selected and the setting (3) for that parameter will appear in the display.

* You can also start program mode by pressing a shortcut key. In this case, the parameter number that corresponds to the shortcut key will be selected. (Refer to the next page.)

4211B   4918M

4 Select the parameter number (2) for the parameter that you would like to change. (Refer to "5-4-1. Parameter list".)

(2)

02   P01
LENGTH OF HOLE
                   13.0mm
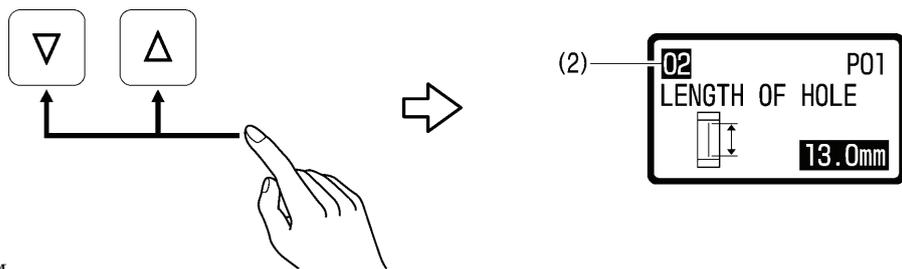
4787M
4919M

5 Change the setting (3) for the parameter.

02   P01
LENGTH OF HOLE
                   14.0mm   (3)
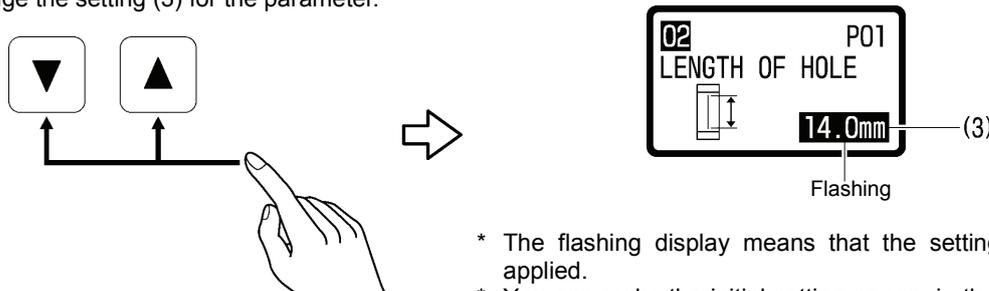
Flashing

* The flashing display means that the setting has not yet been applied.
* You can make the initial setting appear in the display by pressing the RESET key.

4792M
4920M

6 Apply the changed setting.

02   P01
LENGTH OF HOLE
                   14.0mm
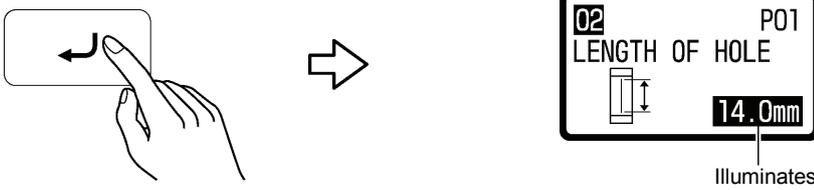
Illuminates

* The display will change from flashing to illuminated, and this means that the setting has been applied.
* You can cancel the setting change by pressing the △, ▽, AUTO, TEST, MEMSW, R/W or COPY key without pressing the ENTER key.

4212B
4934M

7 Repeat steps 4 - 6 above to change other parameters.

Shortcut keys
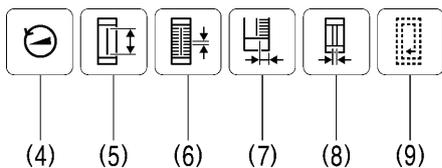
The shortcut keys have the following six often-used parameters registered into them.

· You can retrieve a desired parameter simply by pressing the corresponding shortcut key.
· Parameters cannot be retrieved if a cycle program has been selected.

(4) Zigzag area sewing speed (Parameter No.15)
(5) Length of the hole (Parameter No.02)
(6) Zigzag pitch (Parameter No.07)
(7) Zigzag width (Parameter No.08)
(8) Cutter X space (Parameter No.04)
(9) No. of rectangle underlays (Parameter No.42)

(4)   (5)   (6)   (7)   (8)   (9)

4795M

5-4-1. Parameter list

・Parameters that are not applicable to a particular program will be skipped and not displayed.
・The allowable setting range for some parameters may vary from the range specified, depending on the settings of other parameters. (Refer to "5-4-4. Main restrictions when setting parameters".)

No.	Setting items		Setting range	Unit	Initial value
01	Sewing pattern		1-20: Buttonhole stitch 21: Straight tack stitch	1	1
	1: Rectangle	2: Radial			
	3: Round	4: Radial-rectangle			
	5: Round-rectangle	6: Eyelet-rectangle			
	7: Rectangle-radial	8: Round-radial			
	9: Eyelet-radial	10: Rectangle-round			
	11: Radial-round	12: Eyelet-round			
	13: Rectangle-taper tack	14: Radial-taper tack			
	15: Round-taper tack	16: Eyelet-taper tack			
	17: Rectangle-tack	18: Radial-tack			
	19: Round-tack	20: Eyelet-tack			
	21: Straight bar tack				
02	Length of the hole		4.0–32.0 mm However, it must be less than the sewing area.	0.1	13.0 (*1)
03	Correction of cutter X position		-0.50–0.50 mm	0.05	0.00
04	Cutter X space		-0.40–1.00 mm	0.05	0.40

(*1) If the work clamp dimensions have been set to 5.4x19 mm, the initial value for the length of the hole will be 6.0 mm.

No.	Setting items		Setting range	Unit	Initial value
05	Cutter Y space		0.000–2.000 mm	0.025	1.000

06	Cutter operation (*2)		1: Cutting during sewing
			   Operates when the front tack of the last cycle is sewn (standard)
			2: Cutting after sewing
			   Operates when sewing is finished and material is feeding.
			3: Cutting before sewing
			   Operates immediately before the left zigzag stitch of the last cycle is sewn.
			4: Cutting before sewing +
			   Cutting during sewing
			   Operates twice: immediately before the left zigzag stitch of the last cycle is sewn and when the front tack of the last cycle is sewn
			However, 3 and 4 are only valid for two cycles or more.
				1	1

07	Zigzag pitch		0.20–2.50 mm	0.05	0.35
08	Zigzag width		1.00–3.00 mm	0.05	1.50
09	Zigzag width ratio (at left) (*3)		30–70%	1	50
10	Slow start (*4)	Sewing speed for 1st stitch	500–4,000 sti/min	100	500
11		Sewing speed for 2nd stitch	500–4,000 sti/min	100	500
12		Sewing speed for 3rd stitch	500–4,000 sti/min	100	1,200
13		Sewing speed for 4th stitch	500–4,000 sti/min	100	3,000
14	Underlay speed (*5)		500–4,000 sti/min	100	2,000
15	Sewing speed (zigzag part)		1,000–4,000 sti/min	100	3,600
16	Rear tack speed (*5)		500–4,000 sti/min	100	4,000
17	Front tack speed (*5)		500–4,000 sti/min	100	4,000

(*2) Cutting before sewing is enabled only when underlays or 2-cycle sewing exist. In other cases, cutting during sewing will be enabled.

(*3) The zigzag width ratio will be 50% regardless of the setting value for eyelet types.

(*4) If underlays exist and the setting speed exceeds the underlay speed, the speed during sewing will equal the underlay speed.
If underlays do not exist and the setting speed exceeds the sewing speed (zigzag part), the speed during sewing will equal the sewing speed (zigzag part).

(*5) If the setting speed exceeds the sewing speed (zigzag part), the speed during sewing will equal the sewing speed (zigzag part).

No.	Setting items	Setting range	Unit	Initial value
18	Front tack length (except taper tack)	0.5–5.0 mm	0.1	1.0
19	Front tack pitch (except radial)	0.10–1.00 mm	0.05	0.30
20	Front tack width correction (except radial)	-2.0–2.0 mm	0.1	0.0
21	No. of front tack stitch (radial only)	5–11 stitches	2	7
22	Taper tack length (taper tack only)	1.0–5.0 mm	0.1	3.0
23	Front tack sideways correction (rectangle only)	-1.0–1.0 mm	0.1	0.0
25	Rear tack length (except eyelet)	0.5–5.0 mm	0.1	1.0
26	Rear tack pitch (except radial, eyelet)	0.10–1.00 mm	0.05	0.30
27	Rear tack width correction (except radial, eyelet)	-2.0–2.0 mm	0.1	0.0
28	No. of rear tack stitch (radial, eyelet only)	5–11 stitches	2	7
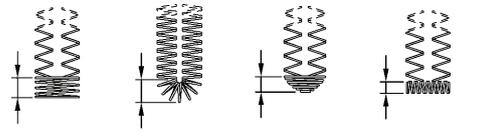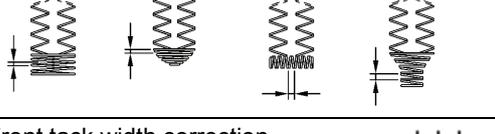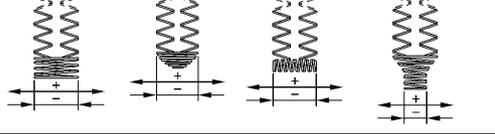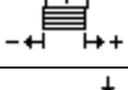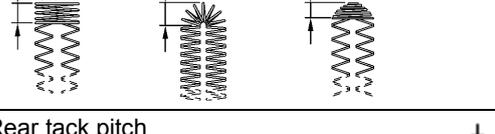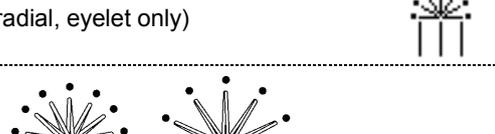
4796M   4797M   4798M   4799M   4800M

No.	Setting items		Setting range	Unit	Initial value
29	Eyelet buttonhole radius (eyelet type only)		1.0–3.0 mm	0.1	2.0
30	Rear tack sideways correction (rectangle only)		-1.0–1.0 mm	0.1	0.0
31	Rear tack vector shape (rectangle only)	1: 2: 3:	1: Triangle 2: Rectangle 3: Saw-shape	1	1
34	Straight bar tack length		7.0–40.0 mm	0.1	13.0
35	Straight bar tack pitch		0.2–2.0 mm	0.1	0.8
36	Straight bar tack width		1.5–6.0 mm	0.1	2.0
38	Start backtack		0–6 stitches	2	2
39	Start backtack width		0.5–3.0 mm	0.1	0.5
40	Start backtack pitch		0.10–0.80 mm	0.05	0.30
41	No. of sewn-together underlays (*6)		0–1 times	1	0
42	No. of rectangle underlays		0–9 times	1	0
43	Saw-shaped underlays	1: 2: 3:	OFF: No saw-shaped underlays 1: Front and rear tack 2: Rear tack only 3: Front tack only	1	OFF

(*6) If sewn-together underlays and rectangle underlays have been set at the same time, rectangle underlays will be sewn after sewn-together underlays have been sewn.

No.	Setting items		Setting range	Unit	Initial value
44	Underlay offset		0.30–1.00 mm	0.05	0.80
45	Underlay sewing start length		2.0–10.0 mm	0.1	4.0
46	Underlay zigzag width for first cycle		0.0–3.0 mm	0.1	0.0
47	Underlay feed pitch (including for sewn-together underlays)		1.0–6.0 mm	0.1	2.0
48	Type of 2-cycle sewing	1: 2:	OFF: No double stitch 1: Identical double stitch 2: Crossed double stitch	1	OFF
49	No. of bar tacks sewn for 2-cycle sewing		1–2 times	1	2
50	First offset for 2-cycle sewing		0.0–0.8 mm	0.1	0.3
51	End backtack		1–6 stitches	1	4
52	End backtack width (rectangle only) OFF: Condense stitch 0.1–1.5 mm		OFF: Condense stitch 0.1–1.5 mm (Normally set to 1.0.)	0.1	OFF
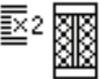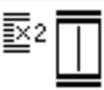
4801M

HE-800C

No.	Setting items	Setting range	Unit	Initial value
53	Stitch type (Whip/Purl)	1–16	1	-2 specifications: 2
				-3 specifications: 1

Whip   Purl

Rear tack

Left zigzag stitch Right zigzag stitch

Front tack

3919Q

1: Whip Purl
2: Whip Purl
3: Whip Purl
4: Whip Purl
5: Whip Purl
6: Whip Purl
7: Whip Purl
8: Whip Purl
9: Whip Purl
10: Whip Purl
11: Whip Purl
12: Whip Purl
13: Whip Purl
14: Whip Purl
15: Whip Purl
16: Whip Purl

No.	Setting items	Setting range	Unit	Initial value
54	Tension apply timing A (Left zigzag stitch)	-4–6 stitches	1	0
55	Tension release timing B (Rear tack)	-4–4 stitches	1	0
56	Tension apply timing C (Right zigzag stitch)	-4–4 stitches	1	0
57	Tension release timing D (Front tack)	-4–4 stitches	1	0
58	Sewing end tension apply timing	-5–0 stitches	1	0

5-4-2. Setting the length of the hole

Set parameter number 02 to the length of the hole that matches the cutter being used.
Be sure to change the setting for the length of the hole if the cutter is replaced with a cutter of a different length.
The stitch length will be automatically determined by the value for the length of the hole which has been set. Therefore, if the length is not set correctly, problems may occur, such as the bar tacking areas being cut by the cutter.

5-4-3. Buttonhole sewing size

3922Q
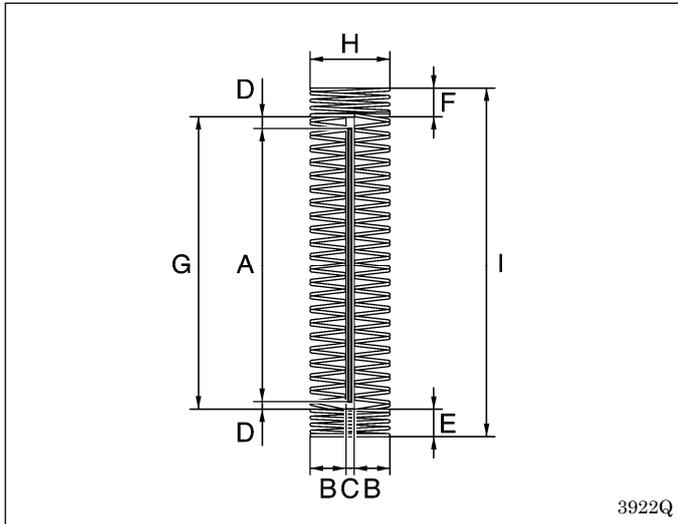
A. Length of the hole (Parameter No.02)
B. Zigzag width (Parameter No.08)
C. Cutter X space (Parameter No.04)
D. Cutter Y space (Parameter No.05)
E. Front tack length (Parameter No.18)
F. Rear tack length (Parameter No.25)
G. Zigzag stitch length (A + D + D) *
H. Bar tack width (B + B + C) *
I. Buttonhole length (A + D + D + E + F) *

* Set automatically.

5-4-4. Main restrictions when setting parameters

When the sewing area is set to 4.0 x 32.0 mm (default setting)

Symptom	Cause	
Parameter number 08 (Zigzag width) does not become larger.	If the sewing area is 4.0 mm and parameter number 04 (Cutter X space) is set to 0.2 mm, the zigzag width that can be entered will be limited to (4.0 - 0.2) ÷ 2 = 1.9 mm.	4802M
Parameter number 04 (Cutter X space) does not become larger.	If the sewing area is 4.0 mm and parameter number 08 (Zigzag width) is set to 1.8 mm, the cutter X space that can be entered will be limited to 4.0 - (1.8 + 1.8) = 0.4 mm.	
Parameter number 29 (Eyelet buttonhole radius) does not become larger or smaller.	If the sewing area is 4.0 mm and parameter number 04 (Cutter X space) is set to 0.2 mm and parameter number 08 (Zigzag width) is set to 1.5 mm, the eyelet buttonhole radius that can be entered will be a minimum of (1.5 + 1.5 + 0.2) ÷ 2 = 1.6 mm, and a maximum of 4.0 ÷ 2 = 2.0 mm.	4803M

Symptom	Cause	
Parameter number 02 (Length of the hole) does not become larger.	If the sewing area is 32.0 mm and parameter number 05 (Cutter Y space) is set to 1.0 mm, parameter number 18 (Front tack length) is set to 1.0 mm and parameter number 25 (Rear tack length) is set to 1.0 mm, the length of the hole will be 32.0 - 1.0 - 1.0 - 1.0 - 1.0 = 28.0 mm. (The default setting is 27.8 mm to match the positions of the needle and cutter.)	
Parameter number 05 (Cutter Y space) does not become larger.	See illustration.	
Parameter number 18 (Front tack length) and parameter number 25 (Rear tack length) do not become larger.	See illustration.	

4804M

5-5. Rear tack vector shape programs

Parameter No. 31		
1: Triangle	2: Rectangle	3: Saw-shape
4805M	4806M	4807M

Setting range 1: Triangle

General sewing

Setting range 2: Rectangle

▪ This is effective for preventing the material from getting stuck in the needle hole when sewing the rear tack, which can happen when using lightweight materials.
  (An offset is used so that the stitches do not overlap when sewing the reverse zigzagging for the rear tack.)
▪ Reducing the number of front tack stitches is effective in preventing the material getting stuck at the front tack.
▪ Using a needle plate with a small needle hole (1.2 mm) as well can also help in preventing the material from getting stuck.

Setting range 3: Saw-shape

This is effective for preventing dimples in the rear tack, without the need for underlay sewing.

5-6. Underlay programs

Four types of underlay patterns are available. These four types can also be combined. Refer to the examples of use to determine which type of underlay to use.

Parameter No.			
41	43	42	46
Sewn-together underlays	Saw-shape underlays	Rectangle underlays	Underlay zigzag width
3931Q	3932Q	3933Q	3934Q
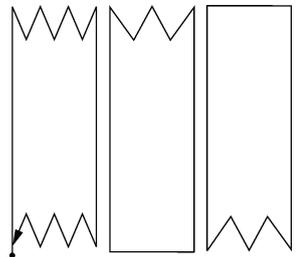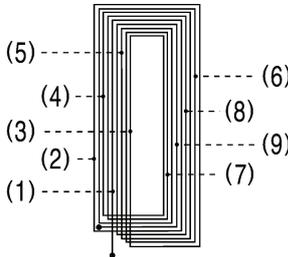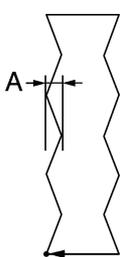
Sewn-together underlays

- This type of underlay pattern is used for resewing if the cutter has operated before the seam has been formed, such as when sewing is complete without the upper thread breaking even though the lower thread has run out. It is particularly useful for sewing up the hole made by the cutter beforehand at times when zigzag stitches do not hold properly.
- The pile of fluffy fabrics is pressed down before sewing, so that the buttonhole finish looks more attractive.

Saw-shape underlays

- This type of underlay is useful for stretch materials to prevent them from stretching.
- It is useful for preventing dimples from forming during bar tacking. Radial-type buttonholes are useful for preventing dimples.
- It is also useful for strengthening the buttonholes to stop the seam from unravelling, which can often happen with materials with coarse weaves.

Rectangle underlays

- This type of underlay is useful for stretch materials to prevent them from stretching.
- This is effective in preventing seams from unravelling in materials which appear not to have a very coarse weave. It also serves to reinforce the buttonhole.
- If the seam is hidden and the seam width seems small, you can sew 2 - 3 rectangle underlays to make the material look more voluminous.
- Underlays such as (1) to (9) in the illustration can be sewn in slightly different positions by changing the setting value for parameter No. 44 (underlay offset) so that the seam does not become too stiff and to further increase the feeling of volume.

Underlay zigzag width

If parameter No. 46 (underlay zigzag width for first cycle) is set after saw-shaped underlays or rectangle underlays have been set, zigzag underlays will only be sewn for the first cycle of saw-shaped underlays or rectangle underlays.

- This is particularly effective in preventing seams from unravelling in materials which appear not to have a very coarse weave. It also serves to reinforce the buttonhole.
- If parameter No. 46 (underlay zigzag width for first cycle) [Dimension A in the illustration] is set to about 0.4 mm, the zigzag underlay stitches will be even less likely to unravel than other underlay stitches.

NOTE:
- When sewing underlays, the number of bar tacking stitches will increase, so that thread breakages or broken needles may occur. Reduce the number of underlays, or use shortcut key 1 or parameter No. 15 to reduce the sewing speed (zigzag part).
- When underlays above are sewn together, the order of sewing is sewn-together underlays → saw-shape underlays → rectangle underlays.

5-7. Cutter operation

The cutter operating pattern can be selected from the following four patterns.

Parameter No. 06			
1: Cutting during sewing	2: Cutting after sewing	3: Cutting before sewing	4: Cutting before sewing + Cutting during sewing
Operates when the front tack of the last buttonhole cycle is sewn.	Operates near the front tack when sewing is finished and material is feeding.	Operates immediately before the left zigzag stitch of the last cycle is sewn.	Operates twice: immediately before the left zigzag stitch of the last cycle is sewn and when the front tack of the last cycle is sewn.
3935Q	3936Q	3937Q	3938Q
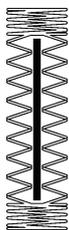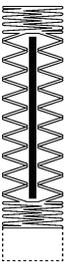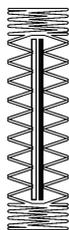
Setting range 1: Cutting during sewing

General sewing

Setting range 2: Cutting after sewing
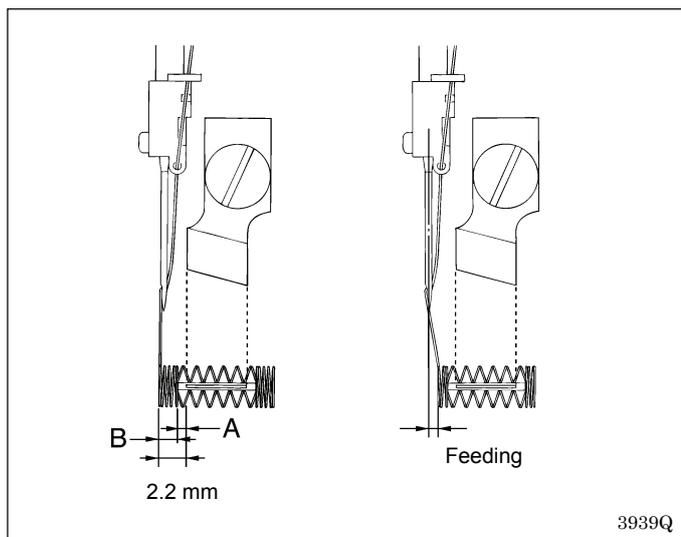
Because the needle and cutter positions are separated by 2.2 mm as shown in the illustration, the distance between the edge of the front tack and the edge of the buttonhole cannot be set to less than 2.2 mm.

For example, if the cutter Y space (A) is set to 0.5 mm, the front tack length (B) will not go below 1.7 mm. At such times, the front tack length can be set to less than 1.7 mm when using cutting after sewing.

Once sewing is finished and material feeding has finished, the cutter will operate.

Setting range 3: Cutting before sewing

▪ Does not operate during the first sewing cycle. Only applies to second and subsequent cycles (during underlay sewing and overlap sewing).
▪ This is used in cases such as when the rough edges of the material after cutting are hemmed by the buttonhole stitches.
▪ The cutter operates before the left zigzag stitch of the last cycle is sewn.

Setting range 4: Cutting before sewing + Cutting during sewing

▪ Does not operate during the first sewing cycle. Only applies to second and subsequent cycles (during underlay sewing and overlap sewing).
▪ This is used in cases such as when the rough edges of the material after cutting are hemmed by the buttonhole stitches.
▪ It can also be used if the rough edges of the material block the buttonhole after the left and right zigzag stitches have been sewn.
▪ The cutter operates immediately before the left zigzag stitch of the last cycle is sewn, and it operates again when the front tack of the last cycle is sewn.

5-8. Double cutting function

During sewing, the cutter can be operated twice in order to sew button holes which are larger than the cutter size.
Use this function when you would like to sew a variety of different sewing shapes without replacing the cutter.

1 | **Setting number of cutter operations**

Check that memory switch No. 502 is set to ON while referring to "7-2. Setting memory switches".

4229B

◇MEMSW   NO 502
DOUBLE CUTTING
FUNCTION
                    ON

4317B

2 | **Enter the cutter size.**

Select memory switch No. 501 while referring to "7-2. Setting memory switches", and then enter the cutter size.
(Initial value: 13.0)

4229B

◇MEMSW   NO 501
CUTTER SIZE

                  13.0

4318B

3 | **Enter the length of the hole.**

Enter the length of the hole while referring to "5-4. Program setting method".

or

02   P01
LENGTH OF HOLE

                14.0mm
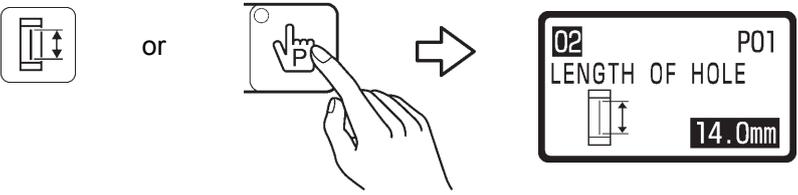
Press the ENTER key to confirm the changed setting.

4215B   4216B

4319B

4 | **Sewing**

Carry out a test sewing while referring to "6-1. Automatic sewing (Automatic sewing mode)".
If double cutting is not possible because of the settings for the cutter size and the length of the hole, a warning screen will be displayed and sewing will not be possible.

*   The cutter size and the length of the hole are the same, the number of operations will be only one, even if the double cutting function is turned on.

Length of hole

1st

2nd

Cutter size
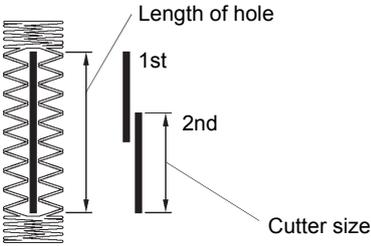
4218B

5-9. Copying programs

To create a program with parameters that are almost exactly the same as those of another program, you can copy the original program and change just the parts which need to be changed.

1 Press any one of the following keys.
(Any one of these keys can be pressed.)
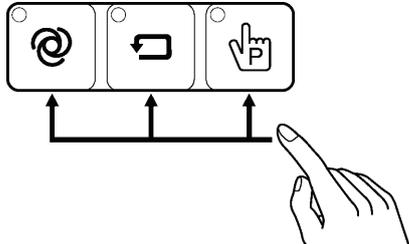
4219B

2 Press the COPY key.
(The sewing machine will switch to program copy mode.)
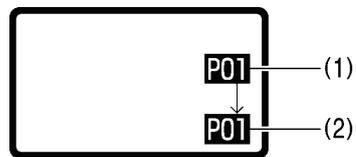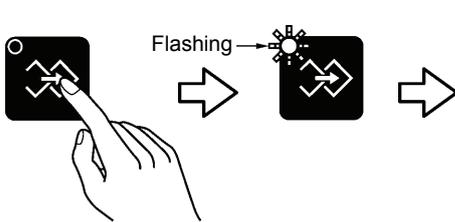
Flashing

4220B

4810M

P01 ———— (1)

P01 ———— (2)

The program number for the copying source (1) and the program number for the copying destination (2) before entering this mode will appear in the display.

3 Select the program number for the copying source (1).

P01 ➔ P02 ➔ ··· P50 ➔ C1 ➔ C2 ··· C9

Independent program   Cycle program

P03 ———— (1)

P01 ———— (2) Flashing
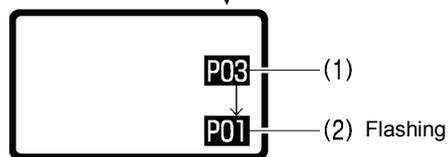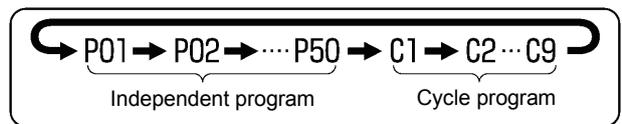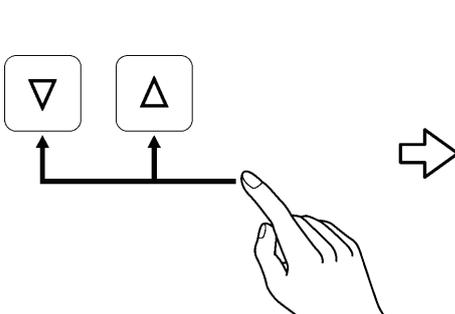
· The program number for the copying source (1) changes in the order shown in the illustration each time the △ key is pressed.(The ▽ key changes the order in the opposite direction.)
· The program number for the copying source (1) and the program number for the copying destination (2) must both be program numbers for the same types of programs.

Independent program: P01～P50
Cycle program: C1～C9

4787M

4811M

4 Select the program number for the copying destination (2).
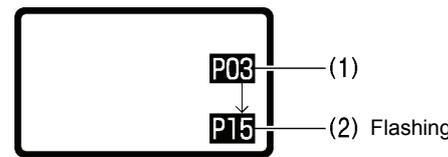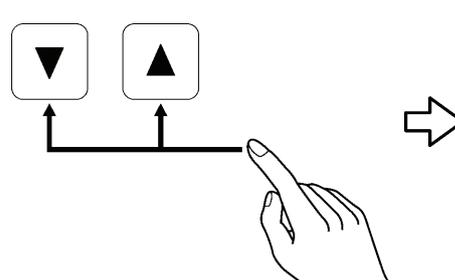
P03 ———— (1)

P15 ———— (2) Flashing

The program number for the copying source (1) and the program number for the copying destination (2) must both be program numbers for the same types of programs.

4792M

4812M

5 | If you press the ENTER key, copying will then be carried out.

P15

↓
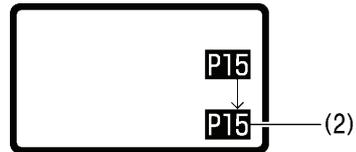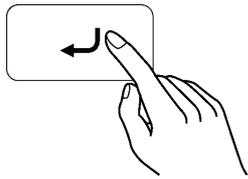
P15 ——— (2)

(In this example, the details of the program number for the copying source [P03] will be copied to the program number for the copying destination [P15] (2).)

4212B   4813M

6 | If you press the COPY key, program copy mode will end.
(The sewing machine will return to the mode that was active before program copy mode.)

OFF
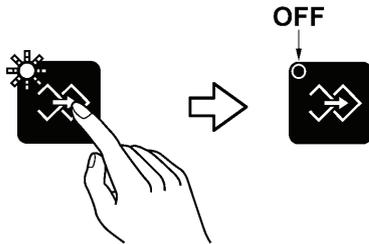
4221B

6. USING THE SEWING MACHINE (SEWING OPERATION)

⚠ CAUTION

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

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

Use threading mode or turn off the power first in order to carry out threading.

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.

When holding the material, place your right hand at the back and your left hand at the front.
If your left hand is toward the back, it may get caught in the feed arm when it operates or it might touch the moving parts of the needle trimmer and injury may result.

NOTE:
- The feed arm (1) can move, so be careful of the clearance.
- When using the machine, check that the oil is visible through the oil cap. If it cannot be seen, stop the machine and eliminate the cause of the problem.

(1)

4893M
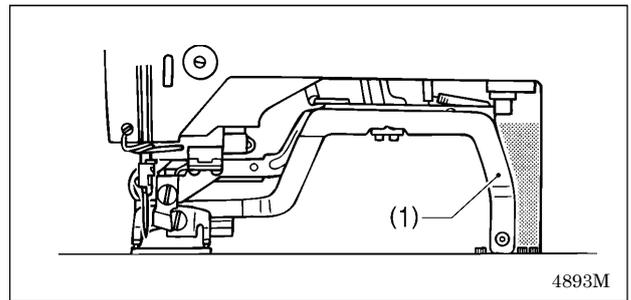
6-1. Automatic sewing (Automatic sewing mode)

- When carrying out automatic sewing for the first time, be sure to carry out a test sewing first.
- In addition, if using the sewing machine when the ambient temperature is cold, carry out several test sewing operations to allow the motor to warm up.

1 Switch the mode to automatic sewing mode.

ON

(3)

(1)
10.0mm ⏲3200

P01 — (2)

123   0 — (4)
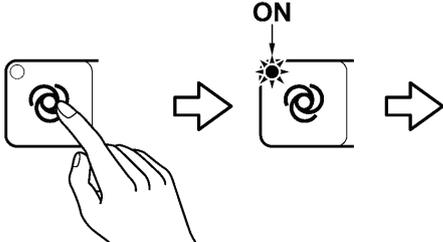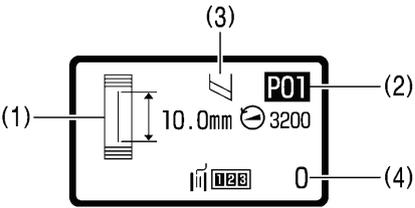
Information such as the sewing pattern (1), the program number (2), the cutter operation (3) and the lower thread counter (4) will appear in the display.

4222B

4816M

2 Select the desired program number (2).
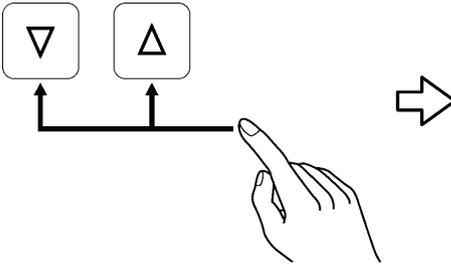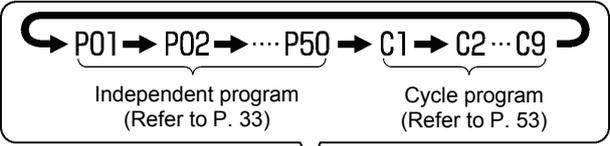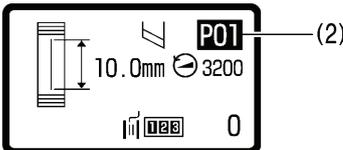
▽ △

P01 ➔ P02 ➔ ···· P50 ➔ C1 ➔ C2 ··· C9

Independent program
(Refer to P. 33)

Cycle program
(Refer to P. 53)

P01 — (2)
10.0mm ⏲3200

123   0

4817M

The program number (2) changes in the order shown in the illustration each time the △ key is pressed.
(The ▽ key changes the order in the opposite direction.)

4787M

HE-800C

48

3	Place the material under the work clamp, and then depress the treadle (5) to the 1st step (B).
	The work clamp will drop. 4818M
4	Depress the treadle (5) to the 2nd step (C).
	Sewing will then start. * When sewing is complete, the work clamp will rise. 4819M
5	To repeat the sewing operation, repeat steps 3 and 4 above.
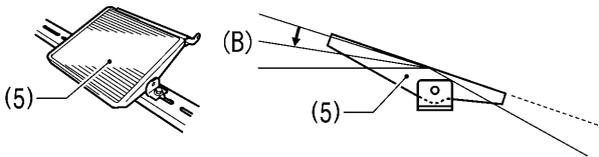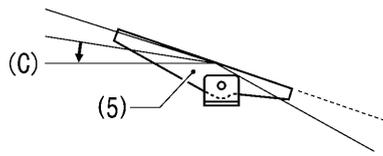
6-2. Test feeding mode

This mode lets you check needle zigzag, work clamp and length feed plate movement in the sewing pattern which has been programmed without actually sewing the program.
(The needle will not move up and down and the cutter will not operate either.)
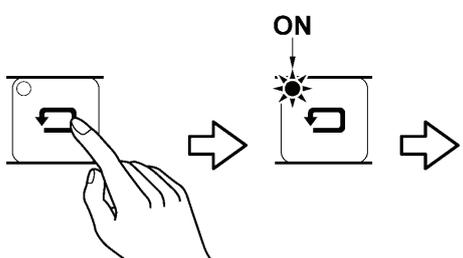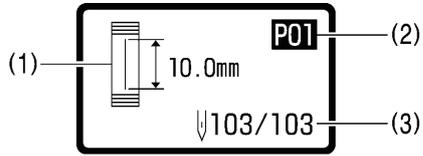
1	Switch the mode to test feeding mode. 4820M
	ON (1)　P01 — (2) 10.0mm 103/103 — (3) The sewing pattern (1), the program number (2) and the number of stitches (3) will appear in the display. 4210B
2	Select the program number (2) for test feeding.
	▽　△ P01 → P02 → ····P50 → C1 → C2···C9 Independent program　　　Cycle program (Refer to P. 33)　　　　　(Refer to P. 53) P01 — (2) 10.0mm 103/103 4821M The program number (2) changes in the order shown in the illustration each time the △ key is pressed. (The ▽ key changes the order in the opposite direction.) 4787M

3 Depress the treadle to the 2nd step (C).

4823M

(C)

P01
10.0mm
▽ 102/103
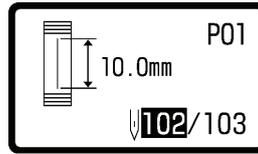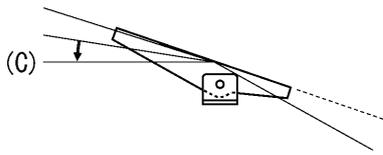
4822M

The work clamp will drop, and test feeding will start.
* However, if the sewing data is protruding outside the sewing area, "OVER SEW AREA" will be displayed for 1.5 seconds, and test feeding will not be carried out.

4 **Test feeding in progress**

4824M

- When the treadle is returned to the neutral position, test feeding will be interrupted.
- If the treadle is depressed to the 2nd step (C), test feeding operation will move forward.
- Test feeding operation moves forward by one stitch each time the ▲ key is pressed.
  (The ▼ key changes operation to the opposite direction.)
- When the cutter operating position is reached, the buzzer will sound and the cutter icon will be displayed for one second.

* If you press the AUTO key, test feeding mode will be exited and the sewing machine will switch to the automatic sewing standby condition.

P01
10.0mm
▽ 102/103

P01
10.0mm
▽ 0/103
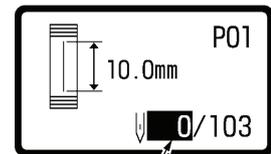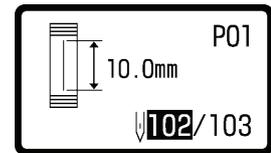
Number of stitches remaining

<Manual sewing method>

Turn the pulley (4) by hand in the direction of the arrow during test feeding.
- Feeding will move forward by one stitch for each rotation of the pulley (4).
- Test feeding operation by turning the pulley (4) by hand also moves the needle up and down, so if material has been set and the sewing machine is threaded with thread, manual sewing can be carried out.

(4)
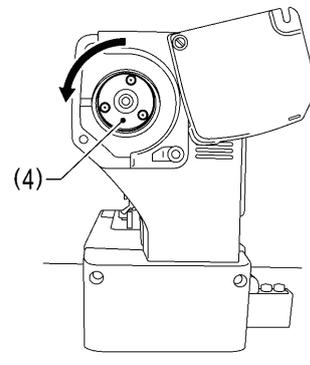
4825M

5 **Test feeding complete**

When the number of stitches remaining reaches "0", depress the treadle to the 2nd step (C).

(C)

⊙
END OF FEED
TEST MODE
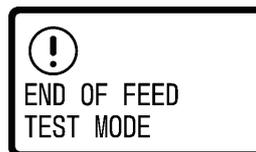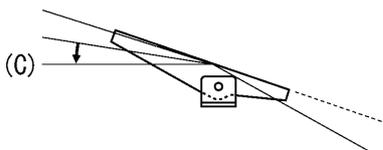
- The above message will be displayed for 1.5 seconds.
- The work clamp will rise, and test feeding mode will be exited.

4822M

4921M

NOTE:

If you press the RESET key during test feeding or after test feeding is complete, the needle bar and the work clamp will carry out home position detection, and then they will return to the sewing start position.

6-3. Using the STOP switch

6-3-1. Pausing sewing during automatic sewing

The STOP switch is used to stop the sewing machine if a problem occurs such as a thread breakage.

\<Pausing sewing\>

Press the STOP switch (1) while sewing is being carried out.

Flashing

SUSPENDED BY
STOP SWITCH
⇓ 80
\<E011\>
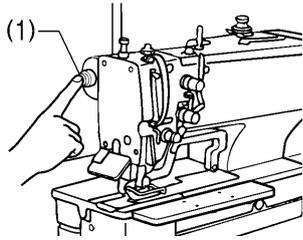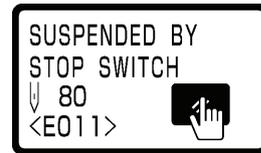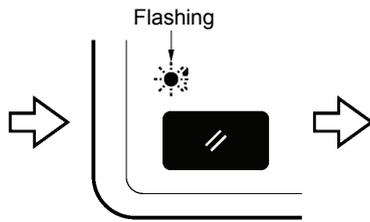
The sewing machine will stop and the buzzer will sound.

4223B

4320B

\<Clearing the pause (when not continuing from the point where sewing was paused)\>

1	Press the RESET key.
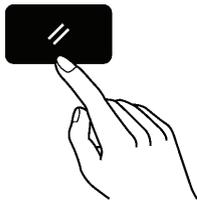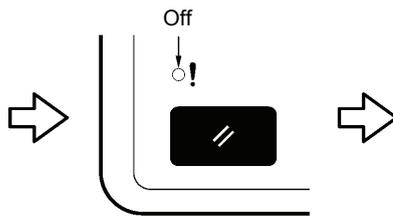
Off

The buzzer will stop sounding.

(The display will change alternately.)

4224B
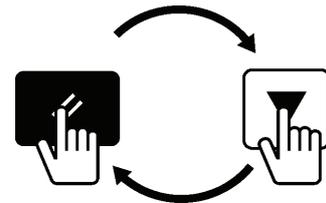
4225B

2	Eliminate the cause of the problem.

3	Press the RESET key once more.

The needle bar and the work clamp will carry out home position detection, and then they will return to the sewing start position.

4226B

<Clearing the pause (when continuing from the point where sewing was paused)>

1	Press the RESET key. Off The buzzer will stop sounding. (The display will change alternately.) 4224B 4225B
2	Eliminate the cause of the problem.
3	Press the ▼ key once. P01 10.0mm 80/103 4832M 4833M
4	Press the ▲ and ▼ keys to determine the position to resume sewing. • The ▲ key moves forward, and the ▼ key moves backward. • The feed will move quicker if you keep the key pressed down. 4834M
5	Depress the treadle (1) to the 2nd step (C). (1) (C) (1) Automatic sewing will resume. 4835M
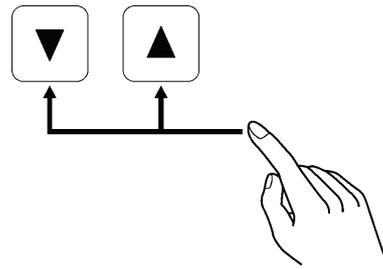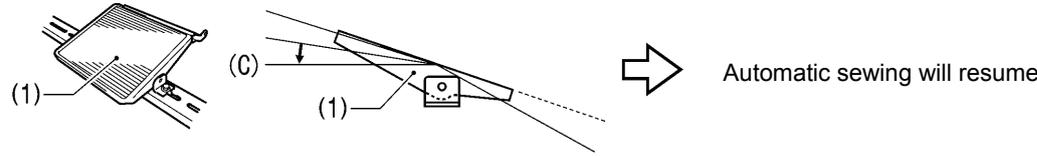
NOTE:
If the STOP switch is pressed before the upper shaft motor starts operating or after it has stopped, it will not be possible to continue sewing from the point where sewing was paused.

7. USING THE SEWING MACHINE (OPERATION PANEL: ADVANCED OPERATION)

7-1. Using cycle programs

The sewing patterns which have been registered in independent programs (P01 – P50) can be combined to register "cycle programs" so that they can be run continuously. When sewing the sewing patterns in a certain order, it can be useful to record them in a cycle program beforehand.

Cycle programs

Max. no. of recordable programs	9 (C1 - C9)
Max. no. of steps	19 (the same independent program can be selected several times)

Program example

The following shows an example of storing a cycle program into cycle program C1 that consists of three steps of independent program P01 with cutter operation on, and one step of independent program P03 with cutter operation off.

Example: Setting contents for cycle program C1

Step number	Step 1	Step 2	Step 3	Step 4
Independent program number	P01	P01	P01	P03
Cutter operation	Yes	Yes	Yes	No

| **1**	Press either the AUTO key or the TEST key. (Either key can be pressed at this time.) 4227B
2	Select cycle program number C1 (1). 4787M 4890M The program number (1) changes in the order shown in the illustration each time the △ key is pressed. (The ▽ key changes the order in the opposite direction.)
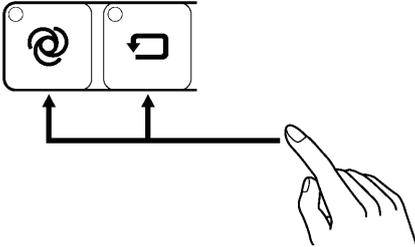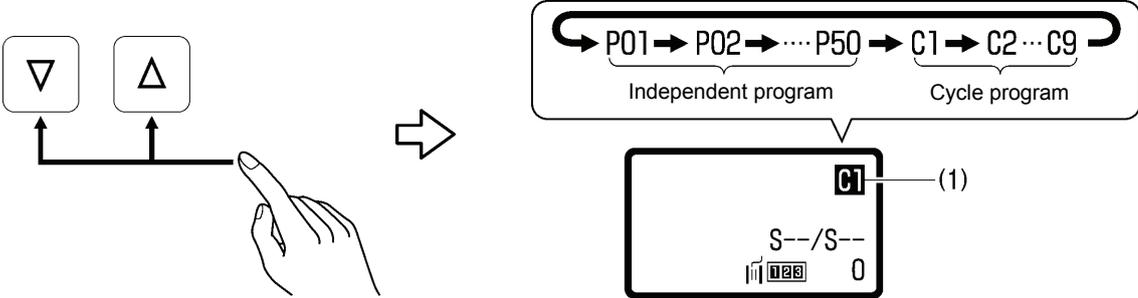
HE-800C

3	Switch to cycle program mode.	4839M

(2) — S01 C1 — (1)
(3) — P-- → P-- → P-- →
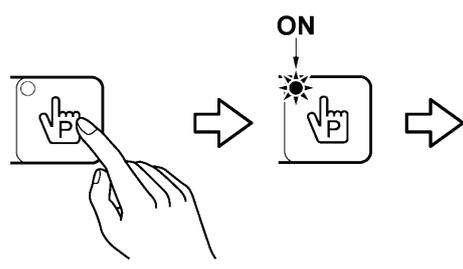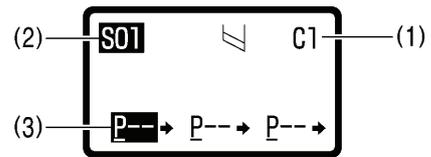
(1) Cycle program number
(2) Step number
(3) Contents (program number, cutter operation) set for the selected step number 1

4211B

4	Set the contents (3) for step 1 to "P01".	4840M

S01 C1
10.0mm — (4)
(3) — P01 → P-- → P-- →
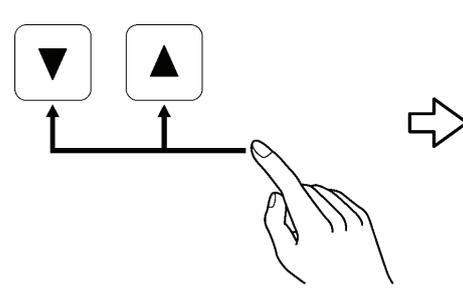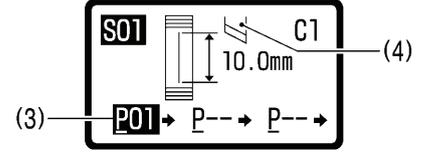
* The "_" underneath "P" and the cutter icon (4) signify that cutter operation is enabled.
* The "--" in "P--" means that no setting has been made. When "--" is set, the contents for all subsequent steps are cleared.

4792M

5	Apply the changed contents.
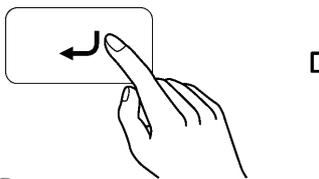
The contents (3) for step 1 will change from flashing to steadily illuminated.

4212B

6	Set the step number (2) to "S02".

(2) — S02 C1
P01 → P-- → P-- →
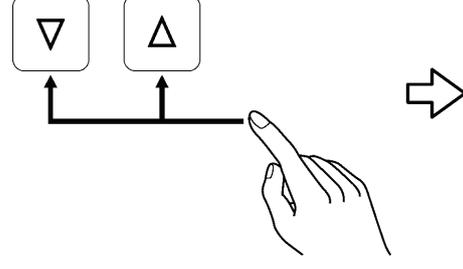
4787M   4841M
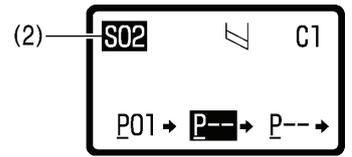
7	Repeat steps 4 and 5 above to set the contents for step 2 of the cycle program to "P01", the same contents as for step 1.

8	Set the step number (2) to "S03".

(2) — S03 C1
P01 → P01 → P-- →
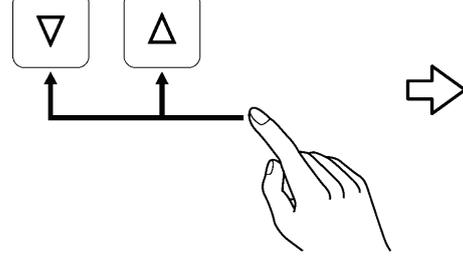
4787M   4842M
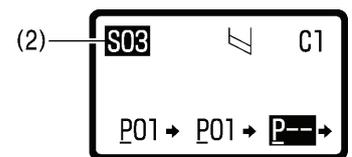
9	Repeat steps 4 and 5 above to set the contents for step 3 of the cycle program to "P01", the same contents as for step 1.

10	Set the step number (2) to "S04".

4787M

(2) —— S04 ⟍ C1

→P01 → P01 → P--- →

4843M

11	Set the contents (3) for step 4 to "P03".

4792M

S04 ⟍ C1
10.0mm

→P01 → P01 → P03 →

(3)
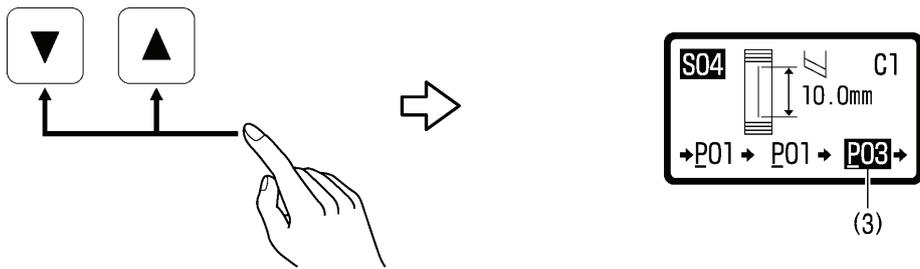
4844M

12	Press the CUTTER ON key to change the "P_" for contents (3) to "P". (This will set "No cutter operation".)

OFF

4228B

The cutter icon (4) will disappear.

S04 C1
10.0mm

→P01 → P01 → P03 →

(3)
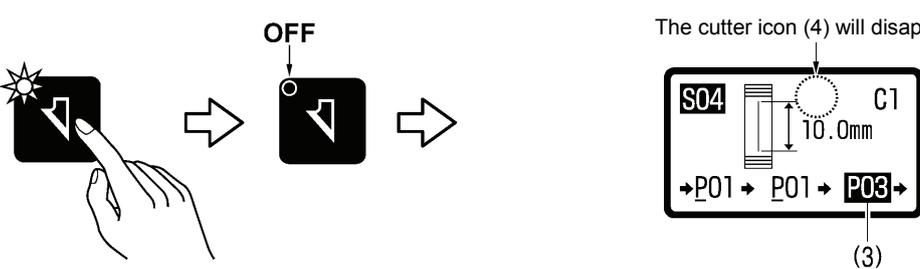
4846M

13	Apply the changed contents.
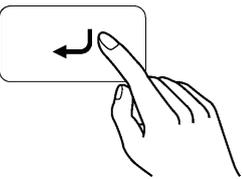
4286B

14	Press one of the following keys to exit cycle program mode.
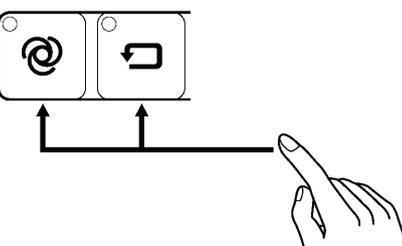
4227B

NOTE:

The cutter operation when a cycle program is selected and automatic sewing is being carried out will occur as shown in the table at right in accordance with the setting of the CUTTER ON indicator which is currently selected.

Cutter operation

		Cycle program	
		P	P
CUTTER ON indicator	ON	Yes	No
	OFF	No	No

HE-800C

7-2. Setting memory switches

The functions of the operation panel include some that are set by memory switches at the time of shipment from the factory. You can change the settings for these memory switches if required. The settings for the memory switches are valid for all programs. Refer to "7-2-1. List of memory switch settings" for details on memory switch Nos. and settings.

1	Press the MEMSW key.

◇MEMSW　NO 1 ──(1)
WORK CLAMP ON
CLAMP HEIGHT
13mm ──(3)

(2) —

(1) Memory switch number
(2) Setting for selected number
(3) Setting range

4229B　　　　　　4923M

2	Select the memory switch (1) that you would like to change the setting for.

◇MEMSW　NO 301 ──(1)
LCD CONTRAST
10
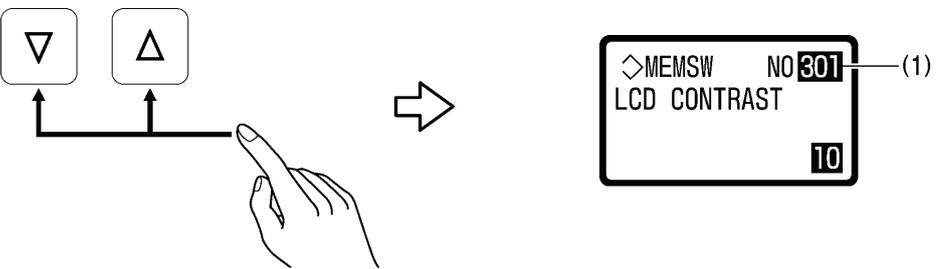
4787M　　　　　　4924M

3	Change the setting value (3).

4925M
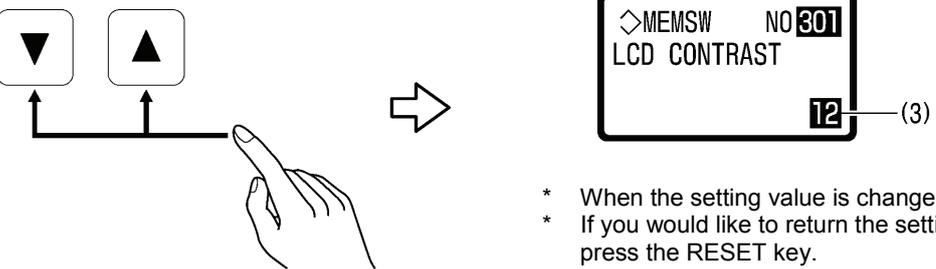
◇MEMSW　NO 301
LCD CONTRAST
12 ──(3)

* When the setting value is changed, (3) will start flashing.
* If you would like to return the setting to the default value, press the RESET key.

4792M

4	Apply the changed setting.

4925M
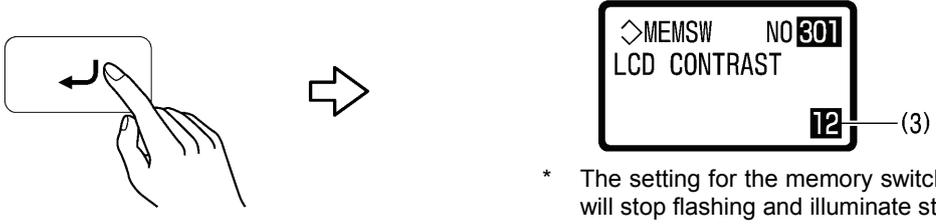
◇MEMSW　NO 301
LCD CONTRAST
12 ──(3)

* The setting for the memory switch will be stored and (3) will stop flashing and illuminate steadily.

4212B

5	To change the settings for other memory switch Nos., repeat the operations in steps 2 - 4 above.

6	Press any one of the following four keys to exit memory switch mode.

4230B

7-2-1. List of memory switch settings

No.	Setting items	Setting range	Default value
001	Work clamp height when treadle is depressed Settings can be made in units of 1 mm.	1–13	13
002	Work clamp height when treadle is at neutral position Settings can be made in units of 1 mm.	1–13	10

003	Work clamp operation when treadle is depressed to the 1st step.
	
	    * When using a triple pedal (optional part), this number will not be displayed.
	
	    1: Work clamp does not drop to intermediate position
	    2: Work clamp drops to intermediate position
		1–2	1

004	Work clamp height (mm) when dropped to intermediate position
	
	    * Displayed when No. 003 above is set to "2".
	
	    Settings can be made in units of 0.1 mm.
		0.1–8.0	1.0

300	Parameter number assignment for FUNC key
	    Functions can be assigned to the FUNC key to make it operate as a seventh shortcut key.
	
	    OFF: No assignment
	        (The help screen is displayed while the FUNC key is pressed.)
	    1–60: When the FUNC key is pressed, the parameter setting screen for the number which has been set is displayed.
		OFF, 1–60	OFF

301	Display screen contrast You can change the degree of contrast. The higher the number, the stronger the contrast.	1–15	10

302	Counter display during automatic sewing mode
	    The contents appearing at (1) in the display during automatic sewing mode can be set to either the lower thread counter display or the production counter display.
	
	◇MEMSW NO302
	COUNTER DISPLAY
	    1-BOBBIN ——(1)
	1
	
	◇MEMSW NO302
	COUNTER DISPLAY
	    2-PRODUCT ——(1)
	2
	
	4926M
		1: Lower thread counter
		2: Production counter
			1

501	Cutter size (mm) Settings can be made in units of 0.1 mm.	4.0–32.0	13.0
502	Double cutting setting	ON, OFF	OFF

700	Correction of cutter Y position
	    The cutter position relative to the sewing pattern can be corrected in the Y direction.
	    Settings can be made in units of 0.025 mm.
		-0.800–0.800	0

7-3. Resetting the data (initialization)

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

1	While pressing the RESET key, push the POWER switch (1) to the ON side. 4927M The mode will switch to initialization mode.
2	Select the initialization level (2) from 1 to 3. 4928M Level 1 is selected as the default. * The settings that are reset (initialized) will vary depending on the initialization level selected. (Refer to the table below.)
3	**[To carry out initialization]** "OPERATING" will be displayed and initialization will start. * If you do not wish to carry out the initialization procedure, press the RESET key. (Press for 2 seconds or more.) 4212B
4	**[To exit initialization mode]** Flashing 4917M Normal sewing machine operation will then be possible.

Initialization level and settings that are reset or initialized.

	Level 1	Level 2	Level 3
Program settings (Parameter) [P01–P50]	Default value	–	Default value
Cycle programs [C1–C9]	Reset	–	Reset
Program No.	P01	–	P01
Cycle step no.	S1	–	S1
Parameter No.	01	–	01
Memory switch	–	Default value	Default value
Production counter	–	–	0
Lower thread counter	–	–	0
Lower thread counter setting value	–	–	0
Operation panel mode	–	–	Program mode (PROGRAM indicator lights)
Cutter operation	–	–	Enabled (CUTTER ON indicator lights)

7-4. Changing the lower thread counter setting

If memory switch no. 302 is set to "1-BOBBIN", the lower thread counter will appear in the lower-right of the display during automatic sewing mode.
If you use the lower thread counter to set the number of articles which can be sewn with the amount of lower thread available, you can stop the lower thread running out in the middle of sewing.

・ The counter number will decrease by "1" for each pattern that is sewn.
・ When the counter value reaches "0", the buzzer will sound as a warning.

1	Switch the mode to automatic sewing mode.

ON

Lower thread counter

4222B 4858M

2	While the sewing machine is at standby, hold down the ENTER key and press the ▼ key. (The mode will switch to lower thread counter setting mode.)

BOBBIN TH COUT

4233B 4929M

3	Set the counting value (1).

4930M

BOBBIN TH COUT

100 —(1)
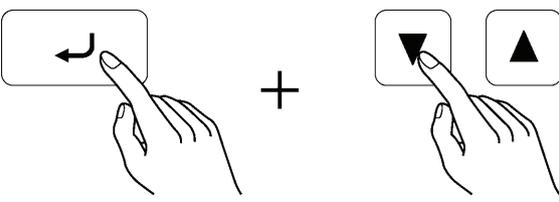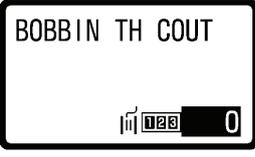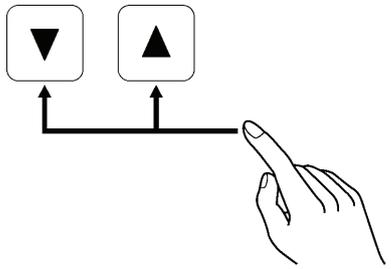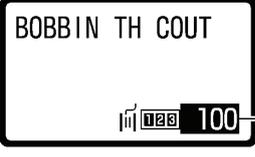
* When the counting value is changed, (1) will flash in the display.
* Press the RESET key to return the value to what it was before it was changed.

4792M
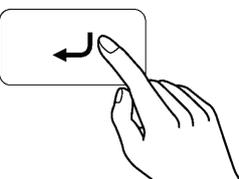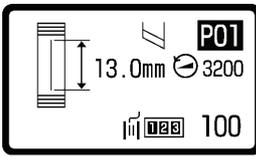
4	Apply the changed setting.

P01
13.0mm 3200

100

The mode will return to automatic sewing mode.

4212B 4862M

NOTE:
> If you press the AUTO key while the counter value (1) is flashing, the mode will return to automatic sewing mode and the setting will not be changed.

<When the counter value has reached "0" and the buzzer has sounded>

1. Replace the lower thread.
2. Press the RESET key.
   (The buzzer will stop and the counter value (1) for the lower thread counter will return to the value which has been set.)

7-5. Changing the production counter setting

If memory switch no. 302 is set to "2-PRODUCT", the production counter will appear in the lower-right of the display during automatic sewing mode. The counter number will increase by "1" for each pattern (or each cycle) that is sewn.

1 | Switch the mode to automatic sewing mode.

ON

4222B

P01
13.0mm ⊖ 3200
123   2921

Production counter

4863M

2 | While the sewing machine is at standby, hold down the ENTER key and press the ▲ key.
(The mode will switch to production counter setting mode.)
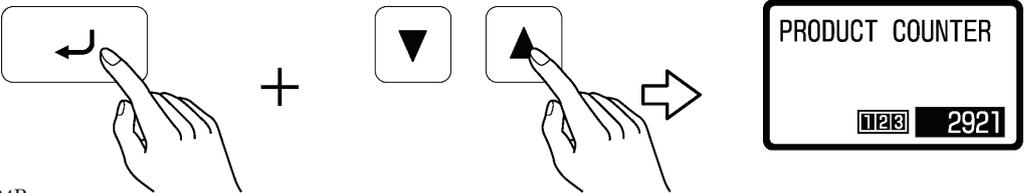
+

4234B

PRODUCT COUNTER

123 2921

4931M

3 | Set the counting value (1).

4932M

4792M

PRODUCT COUNTER

123 2920 ──(1)
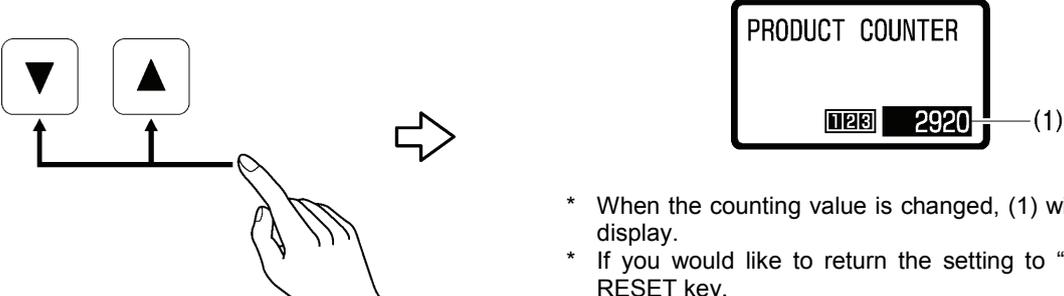
* When the counting value is changed, (1) will flash in the display.
* If you would like to return the setting to "0", press the RESET key.

4 | Apply the changed setting.
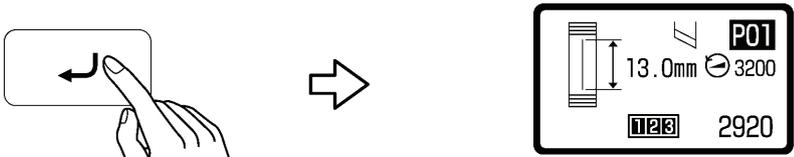
4212B

P01
13.0mm ⊖ 3200
123   2920

The mode will return to automatic sewing mode.

4867M

NOTE:

If you press the AUTO key while the counter value (1) is flashing, the mode will return to automatic sewing mode and the setting will not be changed.

7-6. Displaying the help screen

The help screen is a screen which uses graphics to show how to switch the sewing machine to data initialization mode, production counter setting mode and lower thread counter setting mode. (Refer to the table below for details.)

1	Press the FUNC key while the sewing machine is in standby during automatic sewing mode, test feeding mode, program mode or cycle program mode. 4235B * The help screen will be displayed while the FUNC key is being pressed. 4285B
2	When the FUNC key is released, the display will return to the normal display.
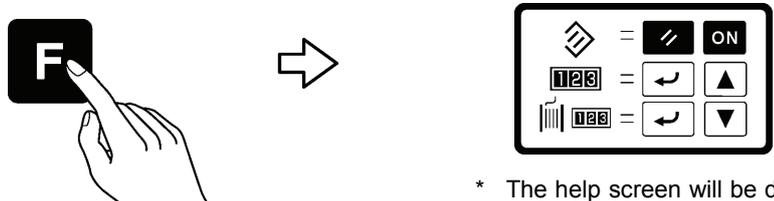
NOTE:
 If the FUNC key has been assigned as a shortcut key by changing the memory switch settings, it will not be possible to display the help screen. To display the help screen, change the setting for memory switch No. 300 to OFF. (Refer to "7-2. Setting memory switches".)

Meaning of help screen symbols

Symbol	Meaning	Operation method
	How to switch to data initialization mode	While holding down the RESET key, push the POWER switch to the ON side.
	Switching to production counter setting mode	While the sewing machine is at standby in automatic sewing mode, hold down the ENTER key and press the ▲ key.
	Switching to lower thread counter setting mode	While the sewing machine is at standby in automatic sewing mode, hold down the ENTER key and press the ▼ key.
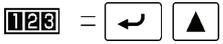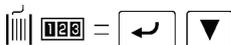
4236B
4237B
4238B

HE-800C

8. CLEANING

⚠ CAUTION

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

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

8-1. Cleaning
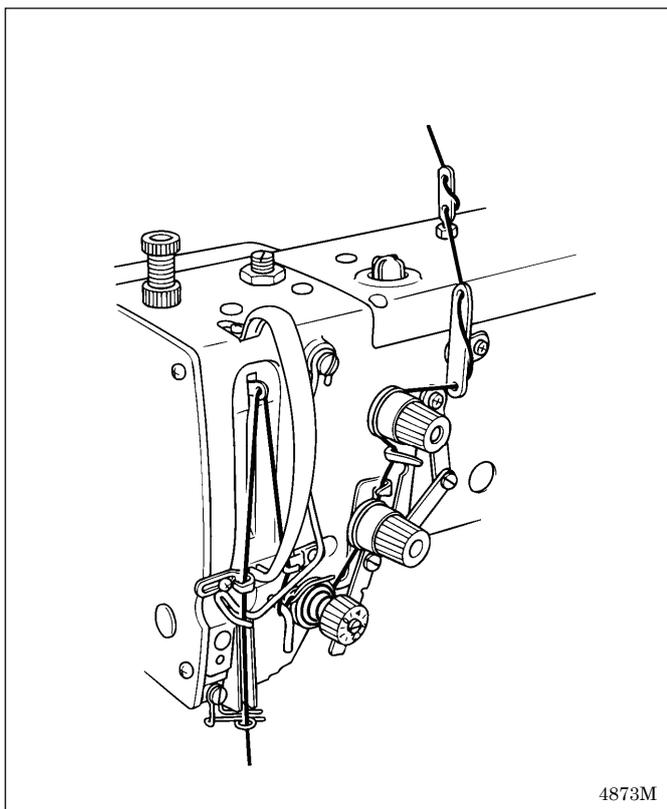
1. Remove lint and dust from the thread passages.

4873M
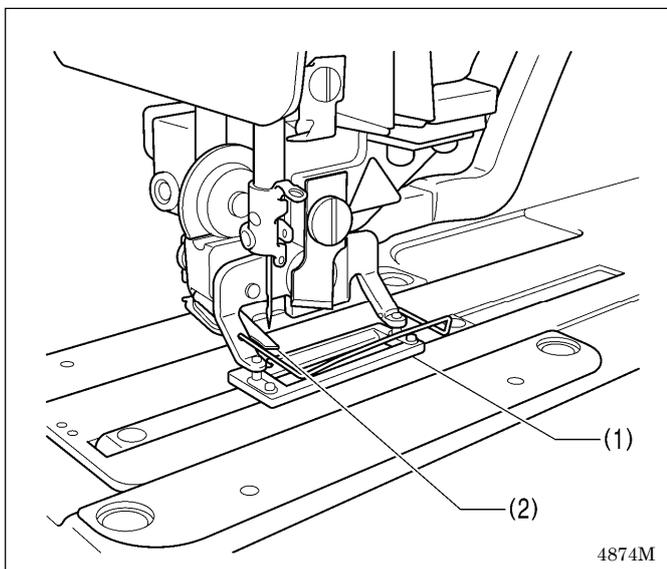
2. Remove lint and dust from around the work clamp (1) and upper thread trimmer (2).

(1)

(2)

4874M

2159Q
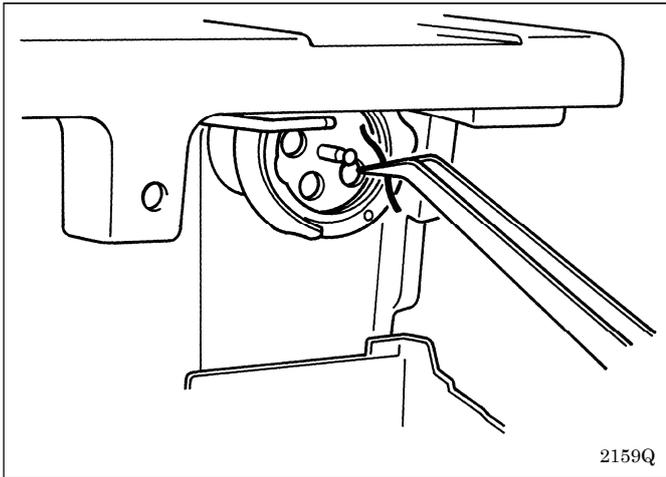
3. Remove the bobbin case, and remove dust and lint from around the shuttle and fixed knife.
   Also wipe the bobbin to remove oil.

   * Periodically clean around the bobbin thread trimmer underneath the needle plate to remove any dust and thread scraps. If you continue using the sewing machine while dust or thread scraps have built up, it may cause the work clamp lifter pulse motor to go out of step.

8-2. Draining the oil

Bed base

(2)
(3)
(5)
(4)
(1)

4070M
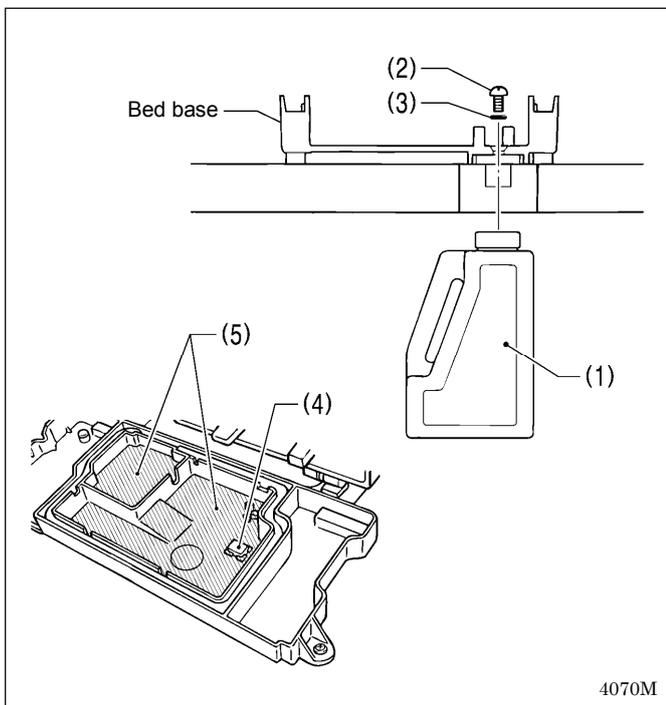
1. Gently tilt back the machine head.
2. Place the oil tank (1) against the underside of the table, and then remove the screw (2).
3. After the lubricating oil has been drained, make sure that the O-ring (3) is in the correct position, and then tighten the screw (2).

   * Wipe the magnet (4) and the bed base (5) so that they are free from dirt.

8-3. Cleaning the control box air inlet port

(1)
(2)
(2)

4875M
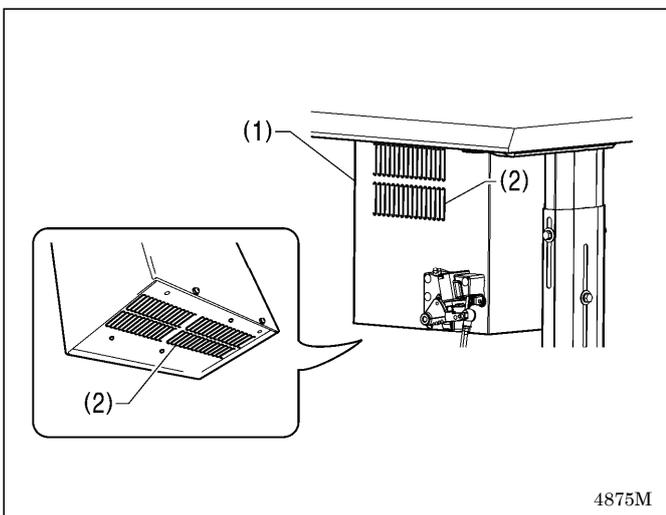
Use a vacuum cleaner to clean the filter in the air inlet port (2) of the control box (1) at least once a month.

8-4. Cleaning the eye guard
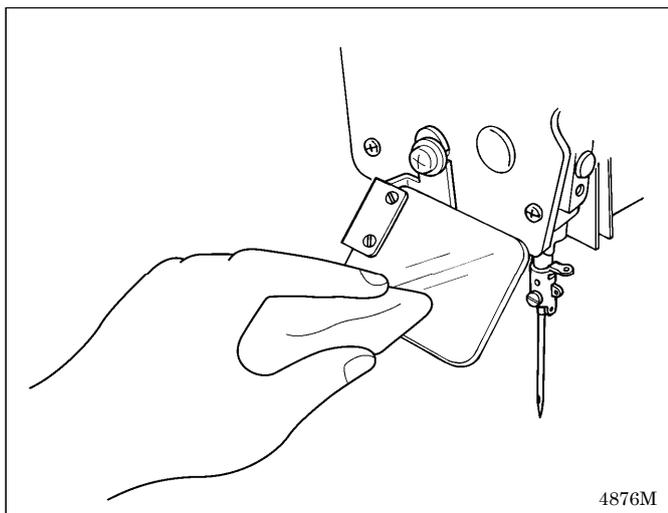
Wipe the eye guard clean with a soft cloth.

NOTE:
   Do not use solvents such as kerosene or thinner to clean the eye guard.

4876M

8-5. Checking the needle
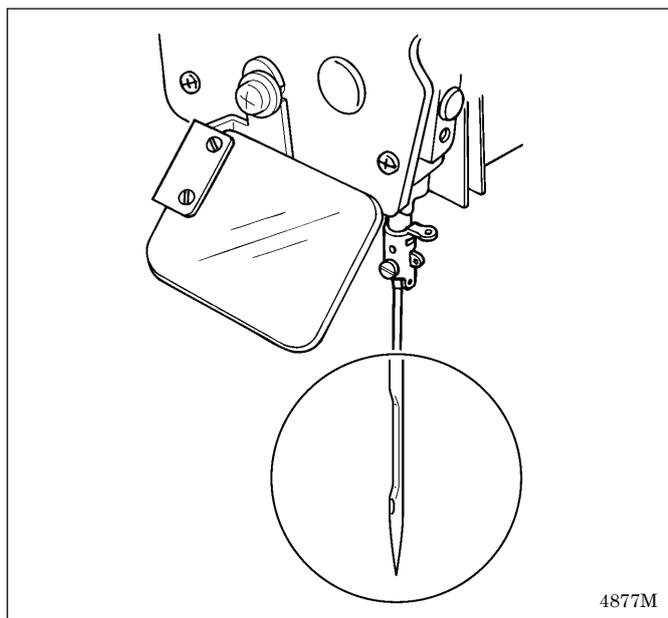
Always check that the tip of the needle is not broken and also the needle is not bent before starting sewing.

4877M

8-6. Cleaning the length feed plate
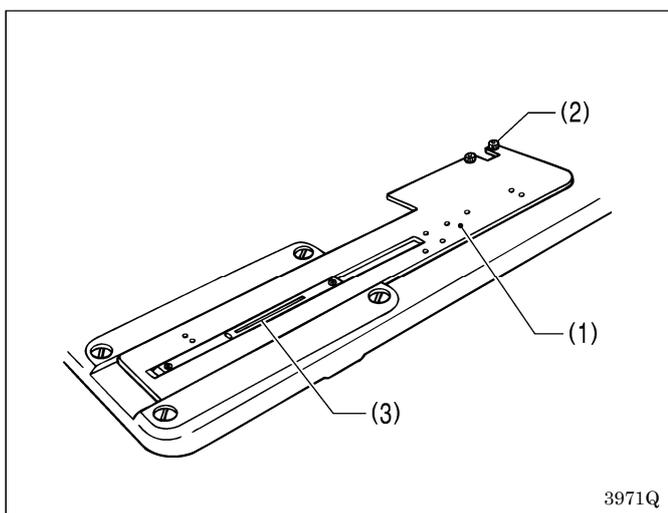
Clean the length feed plate (1) if foreign materials such as shavings start getting onto the material.

1. Loosen the two bolts (2), and then remove the length feed plate (1).
2. Clean the underside of the length feed plate (1) and the needle plate (3).

(2)

(1)

(3)

3971Q

9. STANDARD ADJUSTMENTS

⚠ CAUTION

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

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

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

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

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

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

❗ 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.

NOTE:
- The pulse motor may become hot. Be careful not to touch it when tilting back the machine head.
- Take care when handling the cutter.

Perform the following steps before carrying out the tasks listed below.
1. Turn on the power to carry out home position detection, and then switch the sewing machine to automatic sewing mode or test feeding mode.
2. Press the THREAD key to switch to threading mode, and then carry out adjustments.
   * The work clamp will drop, and the sewing machine will not start up even if the treadle is depressed.

"9-1. Adjusting the needle bar height"
"9-2. Adjusting the needle and hook timing"
"9-3. Adjusting the clearance between needle and hook tip"
"9-8. Adjusting the upper thread trimmer opening timing"
"9-10. Adjusting the bobbin presser"

Turn off the power supply before carrying out all but the above tasks.

9-1. Adjusting the needle bar height

4878M
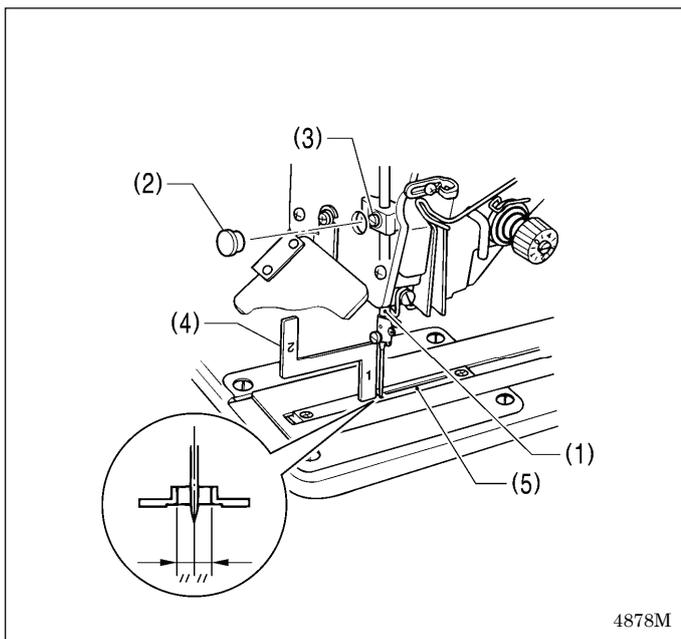
1. Press the THREAD key to switch to threading mode.
2. Press the ▼ key.
3. Set the needle bar (1) to its lowest position.
4. Remove the rubber cap (2) from the face plate, and then loosen the set screw (3) of the needle bar clamp.
5. Insert the "1" part of the gauge (4) between the needle plate (5) and the lower edge of the needle bar (1), and touch the needle bar against the gauge.

   * Different gauges (optional part) are used for each of the two specifications -2 and -3, so make sure that the gauge being used matches the specifications and application for the sewing machine being adjusted.

6. Tighten the set screw (3).
7. Install the rubber cap (2).
8. Press the THREAD key.
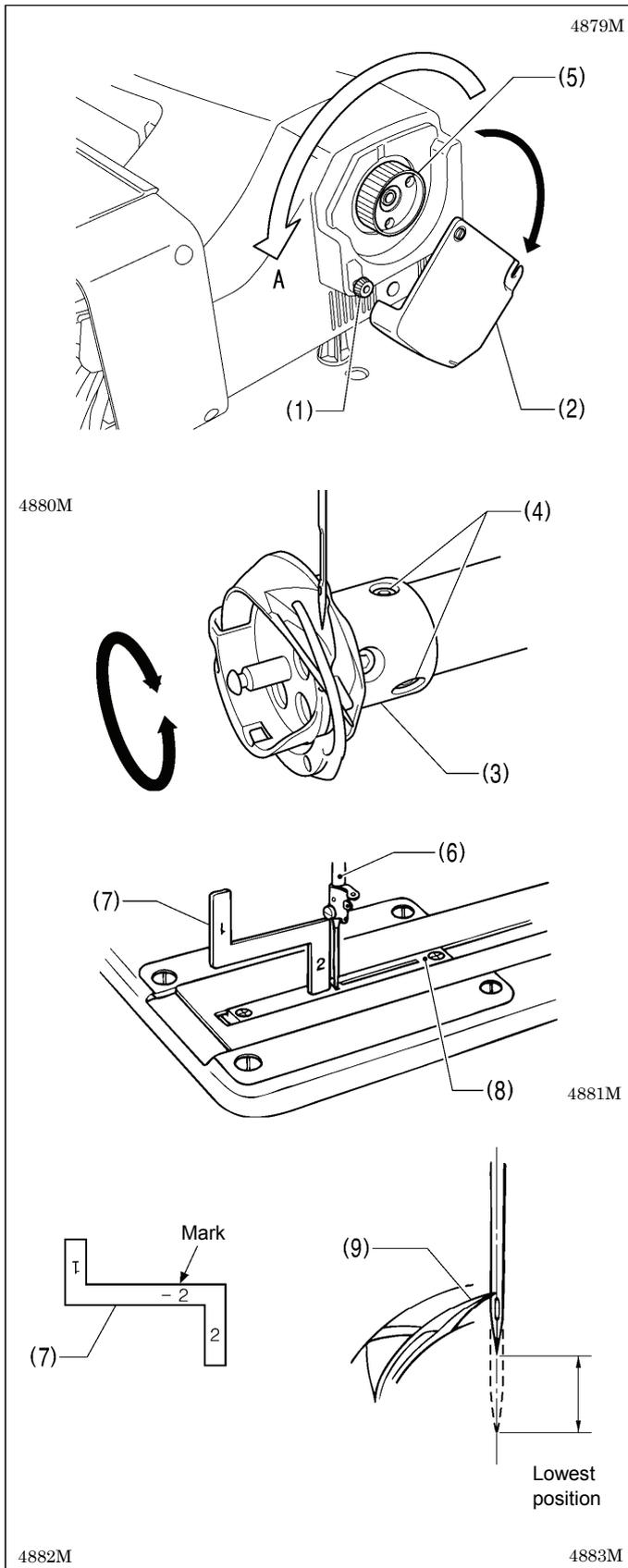
9-2. Adjusting the needle and hook timing

4879M

4880M

4881M

4882M

4883M

1. Press the THREAD key to switch to threading mode.
2. Press the ▼ key.
3. Gently tilt back the machine head.
4. Loosen the knob screw (1), and then fully open the slide cover (2).

5. Loosen the two screws (4) of the rotary hook joint (3).
6. Turn the pulley (5) in the regular direction of rotation (A: toward the front) so that the needle bar (6) just begins to rise from its lowest position.

7. Insert the "2" part of the gauge (7) between the needle plate (8) and the lower edge of the needle bar (6), and then align the rotary hook tip (9) with the center of the needle when the needle bar (6) contacts the gauge (7).

   * Different gauges (optional part) are used for each of the two specifications -2 and -3, so make sure that the gauge being used matches the specifications and application for the sewing machine being adjusted.

8. Tighten the two set screws (4) of the rotary hook joint (3).
9. Close the slide cover (2), and then tighten the screw (1) to secure it.

> ## ⚠ CAUTION
>
> Close the slide cover (2) and secure it. The inner pulley (5) rotates during sewing, so do not touch it, otherwise injury may occur.

10. Gently return the machine head to its original position.
11. Press the THREAD key.
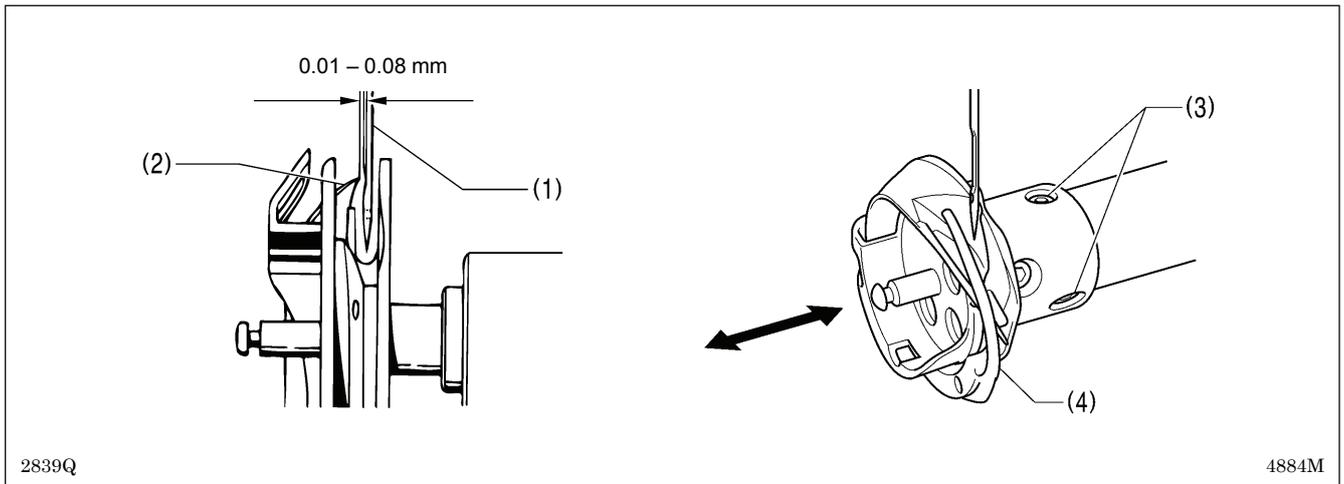
Mark

Lowest position

9-3. Adjusting the clearance between needle and hook tip

0.01 – 0.08 mm

(2)
(1)

(3)

(4)

2839Q

4884M

1. Press the THREAD key to switch to threading mode.
2. Press the ▼ key.
3. Gently tilt back the machine head.
4. Loosen the screws (3) and move the rotary hook (4) forward or back until there is a clearance of 0.01–0.08 mm between the needle (1) and the hook tip (2).
5. Gently return the machine head to its original position.
6. Press the THREAD key.

9-4. Adjusting the inner rotary hook and rotary hook holder overlap

(1)
A
(3)
(2)

3977Q
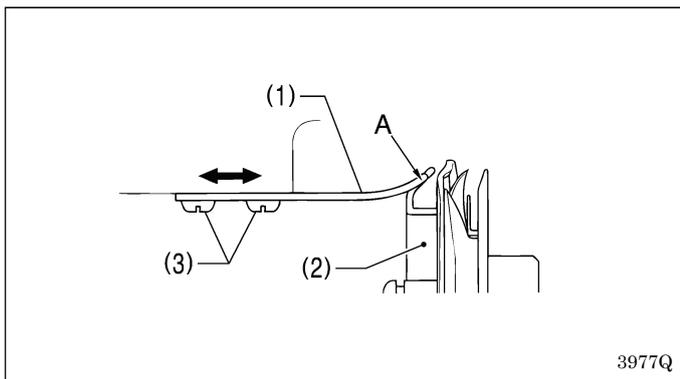
1. Gently tilt back the machine head.
2. Loosen the two screws (3) to adjust so that the tip of the rotary hook holder (1) does not protrude past the edge A of the inner rotary hook (2).
3. Gently return the machine head to its original position.

9-5. Adjusting the work clamp pressure

(2)
(1)
A

3978Q
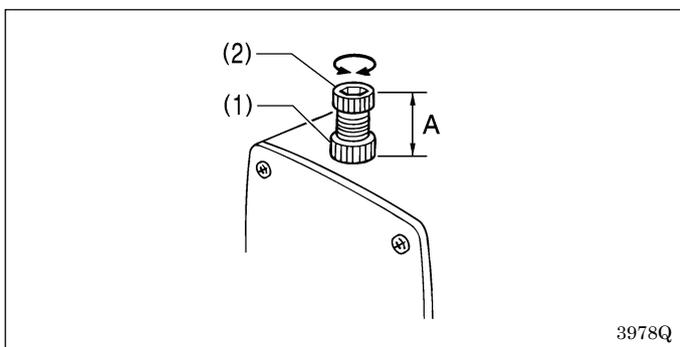
The standard distance A is 30 mm (approximately 30 N). Loosen the nut (1) and turn the adjusting screw (2) to adjust the work clamp pressure.

9-6. Adjusting the cutter installation
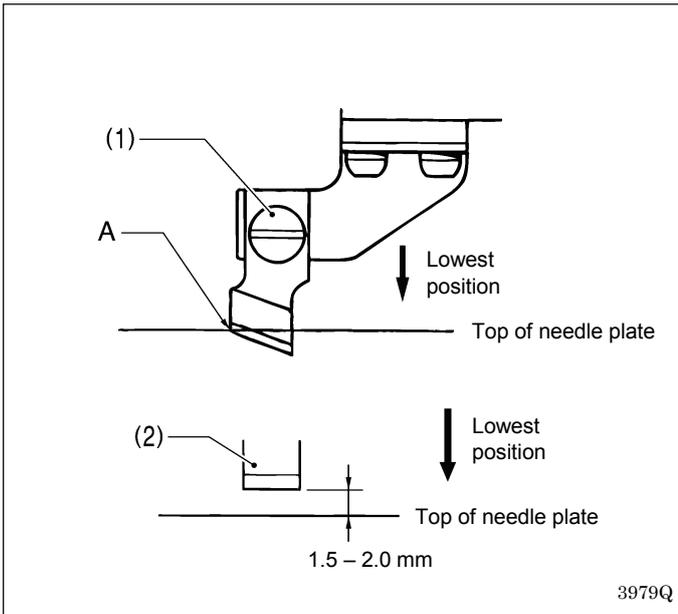
1. Install the cutter with the screw (1) so that the tip A of the cutter blade is aligned with the top of the needle plate when the cutter is pressed down by hand to its lowest position.
   * If using the flat cutter (2), install with the screw (1) so that there is a clearance of 1.5–2.0 mm between the cutter and the top of the needle plate.
   NOTE:
   ・ When the cutter is driven by the solenoid, the movement will be approximately 2 mm greater than that shown in the illustration.
   ・ If the cutter does not cut properly, the cutter may get stuck in the material and not return. If this happens, replace or sharpen the cutter.
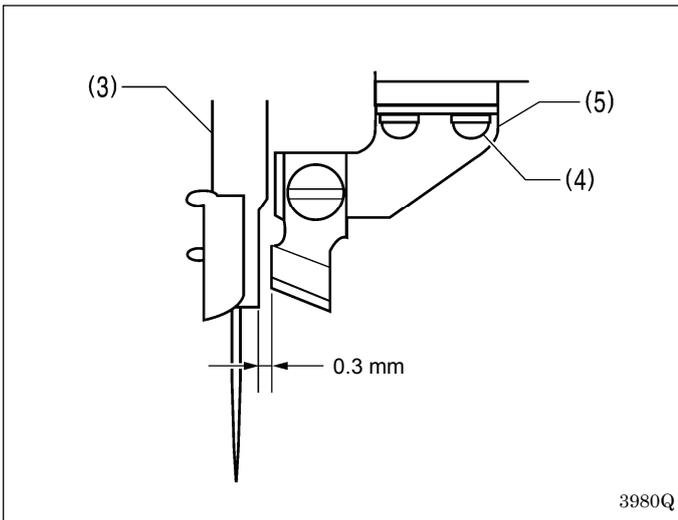
2. Loosen the two screws (4), and move the cutter holder (5) to adjust so that the clearance between the cutter and the needle bar (3) is 0.3 mm.
   * Check that the needle bar (3) does not touch the cutter when it moves sideways.

HE-800C

9-7. Adjusting the installation height of the upper thread trimmer

3982Q

3983Q
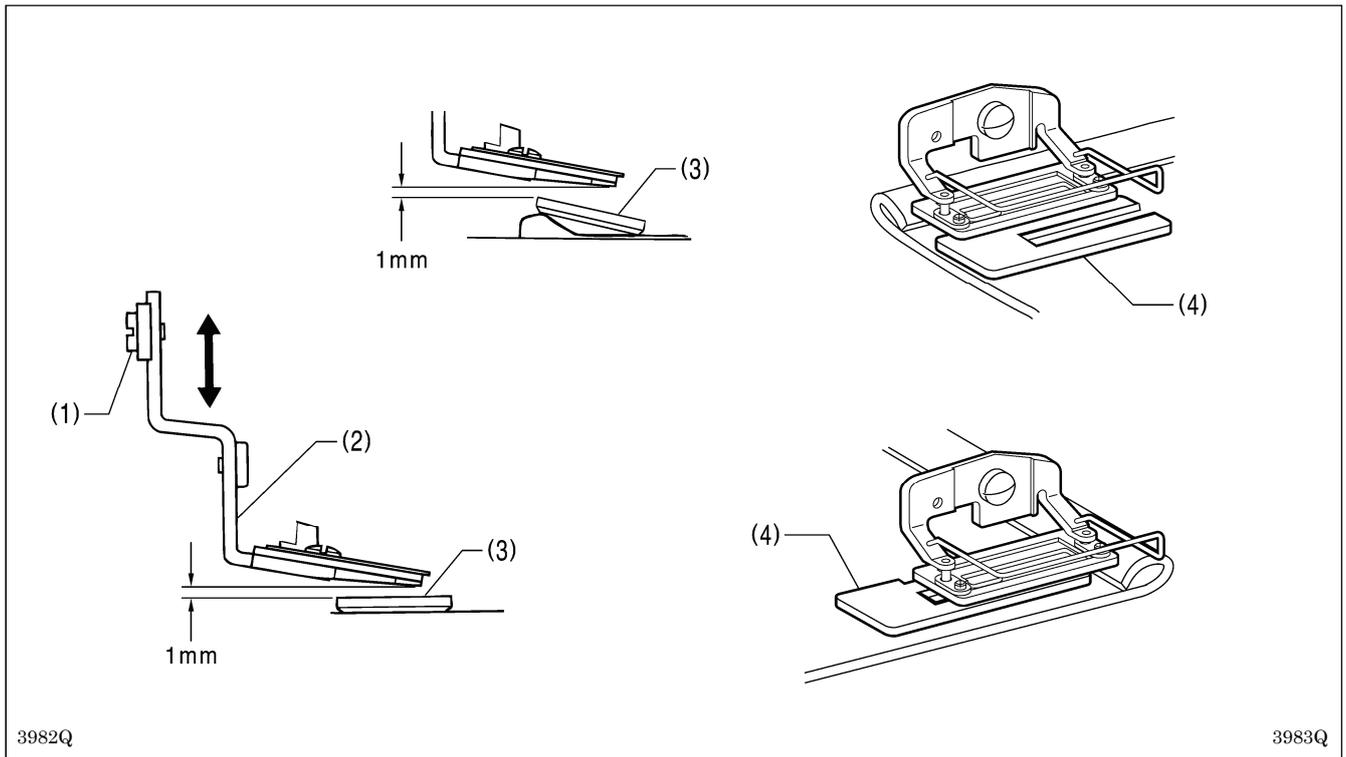
Loosen the screw (1), and then move the upper thread trimmer (2) up or down to adjust the clearance between the upper thread trimmer (2) and the work clamp (3) to approximately 1 mm.

NOTE:

The work clamp (3) will tilt when sewing joints, so adjust so that the upper thread trimmer (2) do not touch it. If the upper thread trimmer (2) touch the work clamp (3), the work clamp lifter pulse motor may get out of step.

* If the tilting of the work clamp (3) causes skipped stitches to occur when sewing material joints, use the accessory auxiliary sheet (4) as shown in the illustration.

9-8. Adjusting the upper thread trimmer opening timing

Press the THREAD key to switch to threading mode, and then carry out adjustments.
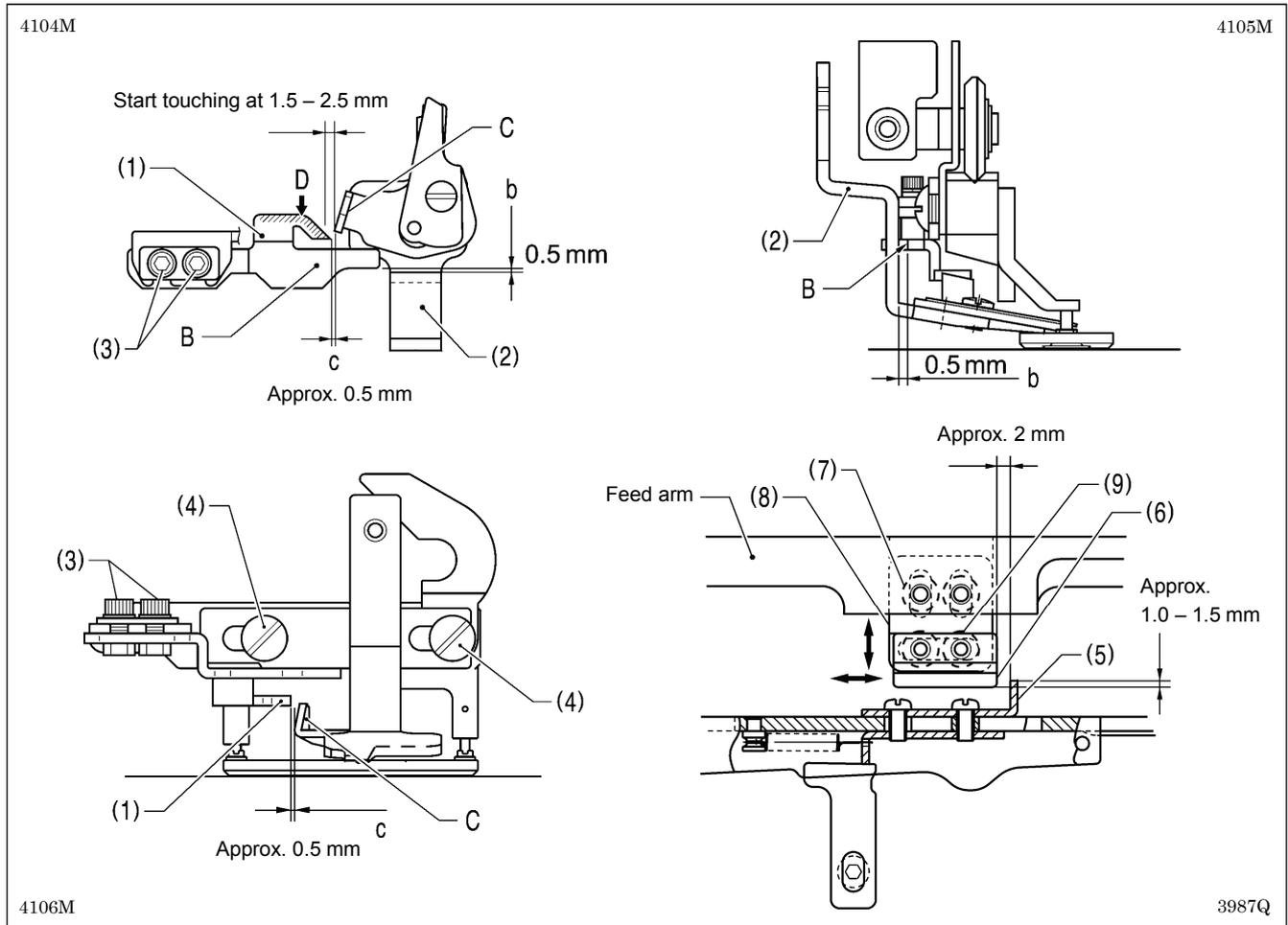
Gradual opening timing adjustment

1. Loosen the two bolts (3), and then adjust so that the distance (b) between ridge line (B) on the opening cam (1) and the upper thread trimmer (2) is 0.5 mm, and so that ridge line (B) on the opening cam is parallel to the feed direction.
2. Loosen the two screws (4), and then adjust so that the distance (c) between the rising section (C) of the upper thread trimmer (2) and the tip of the opening cam (1) is approximately 0.5 mm when the upper thread trimmer (2) is closed.

    * If you would like the trimmer to start opening earlier, make the distance smaller. However, if you make the distance smaller, check that the rising section (C) of the upper thread trimmer (2) does not touch the opening cam (1) and prevent the upper thread trimmer (2) from opening when the work clamp is lowered.

3. Apply grease to the inclined face (D) of the opening cam (1).
4. Press the THREAD key.

Trimmer fully opening timing adjustment

1. Loosen the two bolts (7), and then adjust the support plate (8) so that the back plate (5) and the cam (6) overlap by approximately 1.0–1.5 mm.

    NOTE: If the amount of overlap is too small, the upper thread trimmer will not open properly and the upper thread trimmer and the cutter may touch each other.

2. Loosen the two bolts (9), and then adjust the clearance between the bend in the back plate (5) and the cam (6) to approximately 2 mm.

    * If you would like the trimmer to start opening earlier, make this clearance smaller.

3. Check that the upper thread trimmer (2) opens smoothly during feeding.

    NOTE: If the upper thread trimmer (2) does not open smoothly, the upper thread trimmer (2) may touch the cutter and needle breakage may occur.

4. Press the THREAD key.

9-9. Adjusting the lower thread clamp timing

3988Q
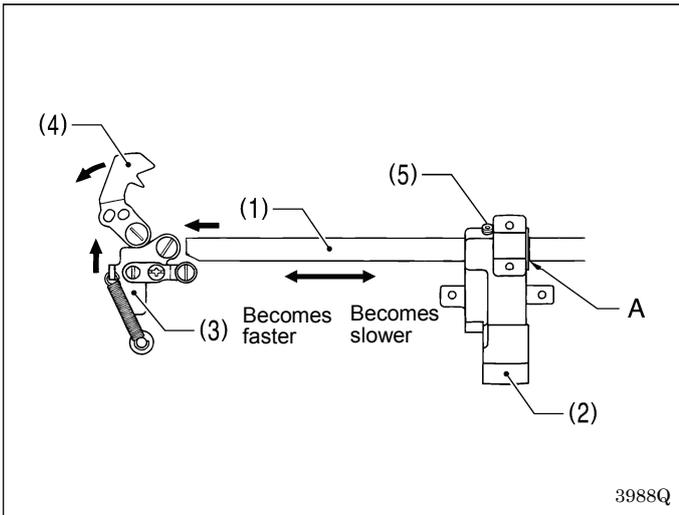
1. Gently tilt back the machine head.
2. When reference line A on feed guide shaft B (1) is aligned with the edge of the feed arm support (2), the opening plate (3) will start moving when the feed mechanism moves 6-7 mm from the home position, and the lower thread retainer (4) will open.
   To change the opening timing, loosen the screw (5) of the feed arm support (2) and move feed guide shaft B (1) to the left or right.
3. Gently return the machine head to its original position.

9-10. Adjusting the bobbin presser

3989Q
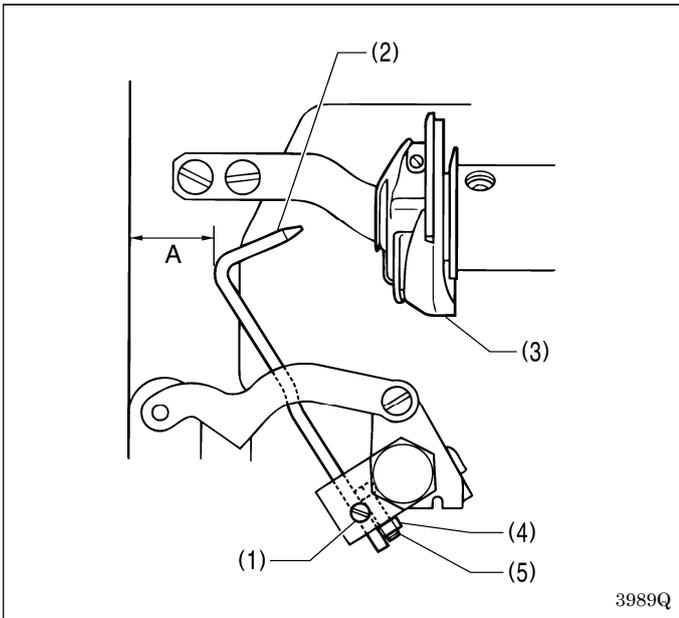
1. Press the THREAD key to switch to threading mode.
2. Gently tilt back the machine head.
3. Loosen the set screw (1), and then adjust so that the bobbin presser (2) goes into the hole in the bobbin case (3).
4. Check that the work clamp is at the home position, and then loosen the nut (4) and turn the screw (5) to adjust the clearance A between the bobbin presser (2) and the edge of the bed to approximately 12.5 mm.
5. Gently return the machine head to its original position.
6. Press the THREAD key.

10. TABLE OF ERROR CODES

⚠ DANGER

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

If a problem should occur with the sewing machine, the buzzer will sound and an error code and error message will appear in the display.
Follow the remedy procedure to eliminate the cause of the problem.
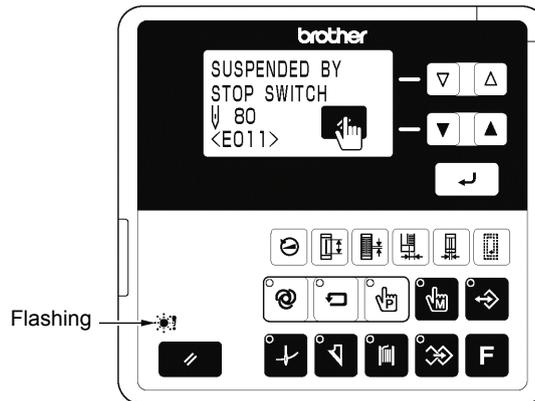
4321B

Switch-related errors

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Code	Cause	Remedy	Page
E010	Stop switch was pressed during standby.	Remove your finger from the stop switch (so that it is off).	1
E011	Stop switch was pressed during sewing.	Press the RESET key to clear the error. * Press the ▼ key to move the needle and the work clamp so that you can continue sewing. * If not continuing sewing, press the RESET key once more.	52 51
E012	Stop switch was pressed while sewing machine was operating other than during sewing.	Press the RESET key to clear the error. (Home position detection will be carried out automatically.)	–
E015	The stop switch was still pressed when the power was turned on, or there is a problem with the stop switch connection.	Turn off the power and check the connection of the stop switch connector P9 at the main P.C. board.	10*
E016	Problem with the stop switch connection.	Turn off the power and check the connection of the stop switch connector P9 at the main P.C. board.	10*
E025	Treadle was still depressed to the 2nd step when the power was turned on, or treadle connection is faulty. (Start switch if a triple pedal is being used)	Turn off the power, and then check that connector P12 on the motor P.C. board is properly connected. (Connector P15 on the main P.C. board if a triple pedal is being used)	75*
E035	Treadle was still depressed to the 1st step when the power was turned on, or treadle connection is faulty. (Work clamp switch if a triple pedal is being used)	Turn off the power, and then check that connector P12 on the motor P.C. board is properly connected. (Connector P15 on the main P.C. board if a triple pedal is being used)	75*
E045	Treadle was still depressed backward when the power was turned on, or treadle connection is faulty. (Work clamp lifter switch if a triple pedal is being used)	Turn off the power, and then check that connector P12 on the motor P.C. board is properly connected. (Connector P15 on the main P.C. board if a triple pedal is being used)	75*

Flashing

Code	Cause	Remedy	Page
E050	Machine head tilting was detected immediately before the sewing machine started operating.	Turn off the power, and then return the machine head to its original position. Check that safety switch connector P14 on the main P.C. board is properly connected.	10*
E051	Machine head tilting was detected while the sewing machine was operating.	Turn off the power, and then return the machine head to its original position. Check that safety switch connector P14 on the main P.C. board is properly connected.	10*
E055	Machine head tilting was detected when the power was turned on.	Turn off the power, and then return the machine head to its original position. Check that safety switch connector P14 on the main P.C. board is properly connected.	10*
E065	An operation panel key was still being pressed when the power was turned on, or key is faulty.	Turn off the power and check the operation panel.	*

Upper shaft motor-related errors

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Code	Cause	Remedy	Page
E110	Pulley is not in needle up stop position during standby when work clamp is lowered.	Turn off the power, and then open the slide cover. Align the mark (A) on the pulley within the edges of the mark (B) on the motor cover. 4886M	*
E111	The sewing machine could not stop correctly at the needle up stop position after sewing.	Turn off the power, and then check that there are no problems with the cutter mechanism, the thread trimming mechanism and the upper shaft motor mechanism.	*
E112	The needle bar dropped during home position detection or while the SD card was being accessed.	Turn off the power, and then turn it back on again. * If this error occurs when the work clamp is not lowered, the work clamp will drop automatically in order to prevent interference between the needle and the lower thread retainer.	–
E113	Pulley is not in needle up stop position during standby when work clamp is not lowered.	Turn off the power, and then open the slide cover. Align the mark (A) on the pulley within the edges of the mark (B) on the motor cover. (Refer to the diagram for "E110" above.) * If this error occurs, the work clamp will drop automatically in order to prevent interference between the needle and the lower thread retainer.	*
E130	Upper shaft motor stopped due to a problem, or synchronizer is faulty.	Turn off the power, and then open the slide cover. Turn the pulley to check if the machine has locked up. Check that the upper shaft motor 4-pin (UVW) connector and synchronizer connector P11 on the motor P.C. board are properly connected.	* 11*
E131	Synchronizer is not connected correctly.	Turn off the power, and then check that synchronizer connector P11 on the motor P.C. board is properly connected.	11*

Code	Cause	Remedy	Page
E132	Problem detected with upper shaft motor operation.	Turn off the power, and then check that synchronizer connector P11 on the motor P.C. board is properly connected.	11*
E133	Upper shaft motor stopping position is incorrect. (During automatic needle lifting)	Turn off the power, and then check that synchronizer connector P11 on the motor P.C. board is properly connected.	11*
E150	Upper shaft motor is overheating, or temperature sensor is faulty.	Turn off the power, and then check the upper shaft motor.	*

Feed mechanism-related errors

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Code	Cause	Remedy	Page
E200	Needle zigzag motor home position cannot be detected. Needle zigzag motor, needle zigzag sensor or needle zigzag encoder signal is not connected correctly.	Turn off the power, and then check that the needle zigzag sensor and needle zigzag encoder connector P17 and the needle zigzag motor connector P21 on the main P.C. board are properly connected.	10*
E201	Needle zigzag motor stopped due to a problem.	Turn off the power, and then check if there are any problems in the needle zigzag direction.	*
E210	Feed motor home position cannot be detected. Feed motor, feed sensor or feed encoder signal is not connected correctly.	Turn off the power, and then check that the feed sensor connector P8, feed encoder connector P18 and feed motor connector P22 on the main P.C. board are properly connected.	10*
E211	Feed motor stopped due to a problem.	Turn off the power, and then check if there are any problems in the feed direction.	*

Work clamp-related errors

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Code	Cause	Remedy	Page
E300	Work clamp motor home position cannot be detected. Work clamp motor, work clamp sensor or work clamp encoder signal is not connected correctly.	Turn off the power, and then check that the work clamp sensor and work clamp encoder connector P19 and the work clamp motor connector P23 on the main P.C. board are properly connected.	10*
E301	Work clamp motor stopped due to a problem.	Turn off the power, and then move the work clamp up and down and check that it moves smoothly.	*

Communication and memory-related errors

Items with a "*" in the "Page" column should only be handled by a qualified technician.
For items with "**" appearing in the "Page" column, ask the place of purchase for advice.

Code	Cause	Remedy	Page
E401	Communication error detected between the main P.C. board and the motor P.C. board when the power was turned on.	Turn off the power, and then check that connector P5 on the main P.C. board and connector P2 on the motor P.C. board are properly connected.	75*
E410	Communication error detected between the main P.C. board and the panel P.C. board.	Turn off the power, and then check that connector P4 on the panel P.C. board and operation panel connector P3 on the motor P.C. board are properly connected.	75* 11*
E411	Communication error detected between the main P.C. board and the motor P.C. board.	Turn off the power, and then check that connector P5 on the main P.C. board and connector P2 on the motor P.C. board are properly connected.	75*
E422	An error occurred while reading from the SD card.	Press the RESET key to clear the error. Check the data on the SD card.	**
E424	Insufficient free space on the SD card.	Press the RESET key to clear the error. Use a different SD card.	**
E425	An error occurred while writing to the SD card.	Press the RESET key to clear the error. Check if the media is write-protected and if it has enough free space.	**
E430	Problem with flash memory on main P.C. board.	Turn the power off and then back on again.	−
E440	Problem with EEPROM on main P.C. board.	Turn the power off and then back on again.	−
E450	Model selection cannot be read from the machine head memory.	Turn off the power, and then check that the correct machine head memory is connected. Check that the machine head memory connector P16 on the main P.C. board is properly connected.	* 10*
E452	Machine head memory is not connected.	Turn off the power, and then check that machine head memory connector P16 on the main P.C. board is properly connected.	10*

[P.C. board and connector positions]

HE-800C
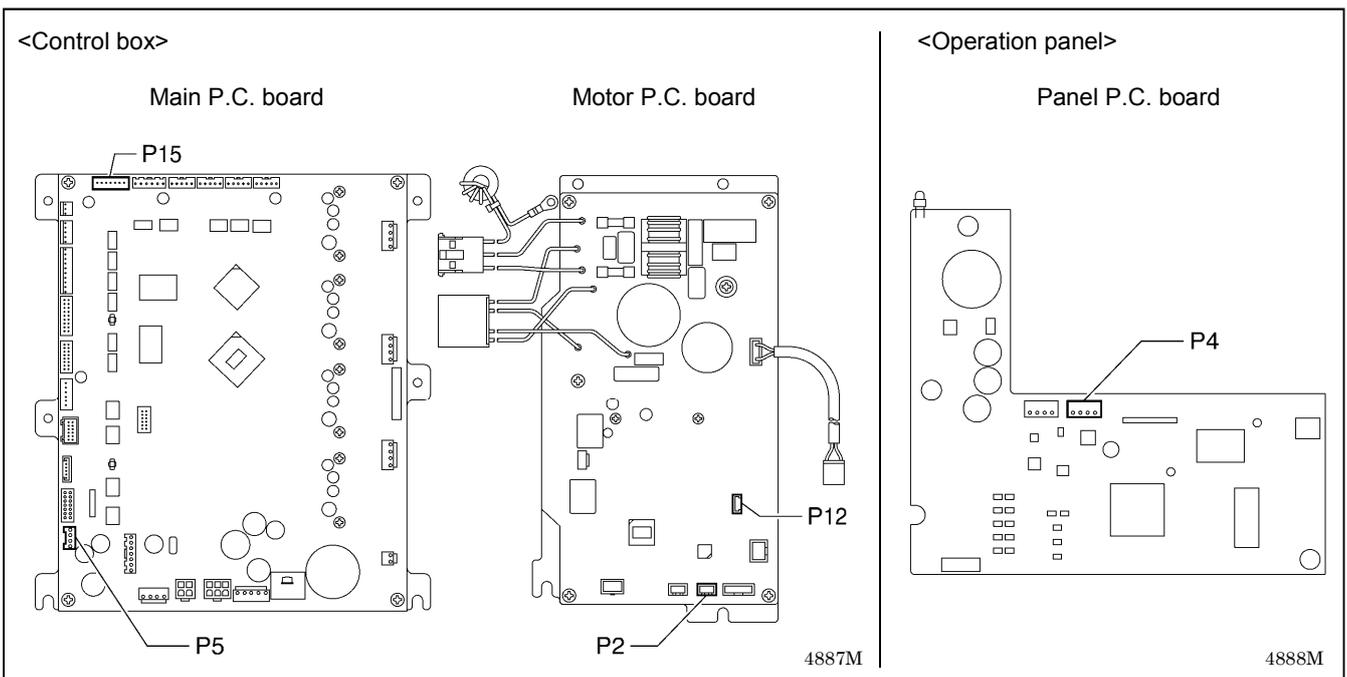
Software-related errors

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Code	Cause	Remedy	Page
E512	Maximum number of stitches for a single program (999 stitches) exceeded.	When the power is turned off and then back on, the zigzag pitch will be set automatically to x1.5 in order to reduce the number of stitches.	2
E582	Error in memory switch version detected.	Turn off the power and carry out level 2 initialization.	58*
E583	Error in parameter data version detected.	Turn off the power and carry out level 1 initialization.	58*

Device-related errors

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Code	Cause	Remedy	Page
E600	Upper thread breakage occurred.	Thread the upper thread, and then press the RESET key to clear the error. * Press the ▼ key to move the needle and the work clamp so that you can continue sewing. * If not continuing sewing, press the RESET key once more.	52* 51*
E650	Cutter is not at home position. (Cutter is lowered.)	Turn off the power, and then check if there are any problems with the cutter mechanism. Check that cutter solenoid connector P2 on the cutter P.C. board is properly connected.	* 10*
E651	Cutter has not operated. (Does not drop.)	Turn off the power, and then check that cutter sensor connector P7 on the main P.C. board and cutter solenoid connector P2 on the cutter P.C. board are properly connected.	10*

P.C. board-related errors

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Code	Cause	Remedy	Page
E700	Abnormal rise in power supply voltage.	Turn off the power and check the input voltage.	17, 18*
E701	Abnormal rise in upper shaft motor drive voltage.	Turn off the power, and then check the voltage.	11*
E705	Abnormal drop in power supply voltage.	Turn off the power and check the input voltage.	17, 18*
E710	Abnormal current detected in upper shaft motor.	Turn off the power, and then check if there are any problems with the upper shaft motor.	*
E711	Abnormal current detected in pulse motor.	Turn off the power, and then check if there are any problems with the pulse motor.	*

Version updating errors

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Code	Cause	Remedy	Page
E870	No control program for the operation panel is present.	Load the control program for the operation panel from the SD card.	*
E880	Version update requests cannot be received.	Turn off the power, and then check that there are no problems with the wiring and the P.C. boards inside the control box.	10, 11*
E881	Communication error was detected during version update.	Turn off the power, and then repeat the version update procedure. If the error continues to occur, turn off the power, and then check that there are no problems with the wiring and the P.C. boards inside the control box.	10, 11*
E883	No control program is present on the SD card.	Check that the control program has been saved into the correct folder.	*
E884	There is a problem with the control program.	Write the correct file onto the SD card.	*
E885	Writing of the control program cannot begin.	Turn off the power, and then check that there are no problems with the wiring and the P.C. boards inside the control box which are to have their firmware versions updated.	10, 11*
E886	Data error occurred during writing of the control program.	Turn off the power, and then check that there are no problems with the wiring and the P.C. boards inside the control box which are to have their firmware versions updated.	10, 11*
E887	Error occurred during writing of the control program.	Turn off the power, and then check that there are no problems with the wiring and the P.C. boards inside the control box which are to have their firmware versions updated.	10, 11*

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

11. TROUBLESHOOTING

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

⚠ **CAUTION**

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

11-1. Upper thread breakage

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Needle	Needle facing	As viewed from the direction of the face plate, attach the needle so that the groove of the needle faces frontward.	21
	Needle installation height	Insert the end of the needle shank so that it touches the top edge of the needle hole of the needle bar.	21
	Bent needle	Replace needle.	21
	Blunt needle tip or burr	Replace needle.	21
	Needle and thread	Replace needle that fits the thread.	–
Threading	Upper thread threading	Thread the upper thread correctly.	22
	Lower thread threading	Thread the lower thread correctly.	25
Thread path	Flaw or abrasion on the thread path	Polish with buff or replace the part. Especially, pay attention to finishing around needle plate hole. Needle plate hole 3996Q	*
	Flaw on the rotary hook tip and rotary hook edge	Polish with buff or replace the part.	*
	Flaw on the rotary hook holder	Polish with buff or replace the part. Check flaw here Adjust the rotary hook overlap amount. 3997Q	*
Thread tension	Zigzag thread upper thread tension	Adjust the upper thread tension appropriately.	26, 27
	Bar tack thread upper thread tension	Adjust the upper thread tension while checking stitches. (The stitches on top are the upper thread and the stitches underneath are the bobbin thread.)	26, 27
Thread take-up spring	Thread take-up spring tension and height	Loosen the thread take-up spring tension or lower the height to such a degree that does not cause double hooking. Adjust it while checking bar tacking stitches.	28
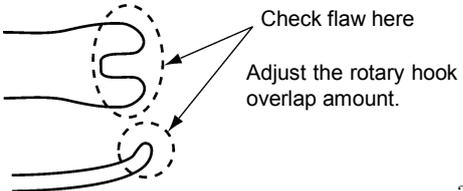
Cause	Check	Remedy	Page
Rotary hook	Needle bar height and needle bar lift amount (The gauge is an option part.)	1. Adjust the needle bar height to "1" on the gauge. 2. Adjust the needle and rotary hook timing to "2" on the gauge.	65* 66*
	Gap between the needle and the tip of the rotary hook	Adjust the gap between the needle and the rotary hook tip to 0.01 - 0.08 mm. (Adjust to as large as possible without causing skipped stitches to occur.) * Move the needle bar to the left and right with your finger, and check that the tip of the rotary hook does not strike the needle.	67*
	Rotary hook lubrication	・Too small quantity of lubrication oil will cause thread breakage. Adjust the quantity of lubrication oil. ・The lubrication holes (1) between rotary hook and rotary hook joint do not match up. 4894M	16* *
	Thread twisted around rotary hook	Remove any twisted thread from the inner and rotary hook.	63
Upper thread amount	Arm thread guide position	Adjust the arm thread guide position.	28
Bobbin case	Damaged outside of bobbin case and bent bobbin holder spring, etc.	Polish with buff or replace the part. * Use the HE-800C bobbin case.	*
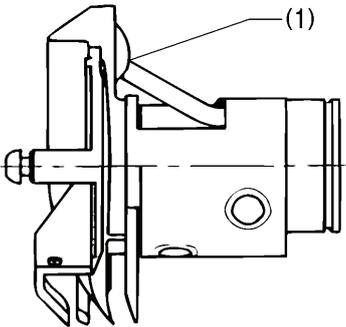
11-2. Skipped stitches

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Needle	Needle facing	As viewed from the direction of the face plate, attach needle so that the groove of the needle faces frontward.	21
	Needle installation height	Insert the end of the needle shank so that it touches the top edge of the needle hole of the needle bar.	21
	Bent needle	Replace needle.	21
	Blunt needle tip or burr	Replace needle.	21
	Thin needle	Use a needle with a count that matches the thread and material.	–
Thread take-up spring	Thread take-up spring tension and height	Loosen the thread take-up spring tension or lower the height to such a degree that does not cause double hooking. Adjust it while checking bar tacking stitches.	28

Cause	Check	Remedy	Page
Work clamp	Work clamp pressure	Increase work clamp pressure. * The standard height of the adjustment screw is approximately 30 mm, so tighten it further than this.	67
	Relation between work clamp assembly and sewing length	・Replace work clamp assembly that fits for sewing length. ・When using knits or woven materials, replace the parts with the -3 specification parts: Length feed plate (for specification -3), work clamp assembly (for knits), needle plate 1.2 (for specification -3)	*
Rotary hook	Blunt rotary hook tip	Polish with buff or replace the part.	*
	Needle bar height and needle bar lift amount (The gauge is an option part.)	1. Adjust the needle bar height to "1" on the gauge. 2. Adjust the needle and rotary hook timing to "2" on the gauge.	65* 66*
	Gap between the needle and the tip of the rotary hook	Adjust the gap between the needle and the rotary hook tip to 0.01 - 0.08 mm. (Adjust to as large as possible without causing skipped stitches to occur.) * Move the needle bar to the left and right with your finger, and check that the tip of the rotary hook does not strike the needle.	67*
Thread tension	Zigzag thread upper thread tension	Adjust the upper thread tension appropriately.	26, 27
Needle bar play	Vertical and longitudinal needle bar play	Reduce the needle bar play, or replace the parts.	*
Lower thread clamp	Lower thread retainer cam	Lower thread retainer cam should be sitting firmly on lower thread clamp plate roller. Cam — Roller — 1-2mm 3998Q	*
	Thread scraps and dust blocking area around lower thread clamp and lower thread presser	Clean around the lower thread presser.	*
	Lower thread clamping force	・If the lower thread clamp and lower thread presser are bent, replace them. ・Check that the screws are tightened. Screw — Lower thread clamp 3999Q	*
Needle plate	Relation between material and needle plate	・When using knit material, replace with the -3 needle plate. ・Replace with a needle plate with a smaller needle hole.	*
Joint sewing	Angle of work clamp means that material is not being clamped.	・Replace with short work clamp that matches the sewing length. ・Use the accessory auxiliary sheet. ・Process the work clamp assembly to match the joint section. (Attach or remove rubber.)	* 69* *
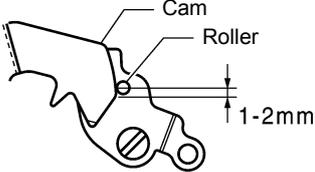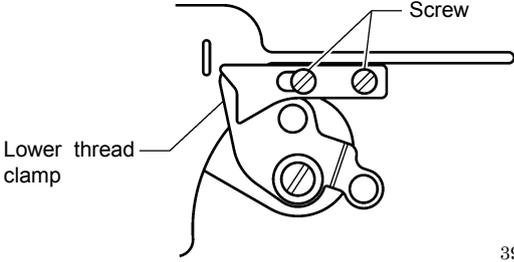
11-3. Uneven seams (1) …… At the sewing start

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Upper thread trimmer	Installation height	Adjust the upper thread trimmer installation height.	69*
	Upper thread trimmer opening timing	Adjust to an appropriate opening timing.	70*
	Upper thread trimmer operation	Apply grease to the inclined face of the opening cam.	70*
Upper thread feeding	Thread take-up amount	Loosen the screw to decrease thread take-up amount so that upper thread does not pull out of trimmer assembly at the sewing start. 4000Q	*
Lower thread (bobbin slip)	Lower thread tension	Adjust the lower thread tension appropriately.	26
	Bobbin holder spring	Add tension to the bobbin holder spring. Add tension to the spring by the same amount that the bobbin tab is projecting. Make a gap 4001Q	*
	Lower thread retainer position	Adjust the lower thread retainer position. * Adjust lower thread retainer so that a 35 - 40 mm thread leader is left after trimming. 35 - 40mm 4002Q	*
	Bobbin presser position	Adjust the bobbin presser position.	71*
	Bobbin insertion	Insert the bobbin correctly.	25
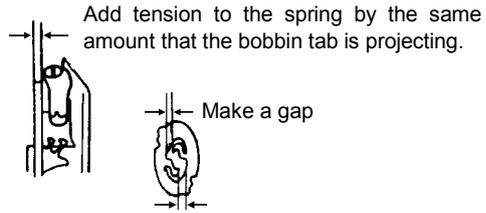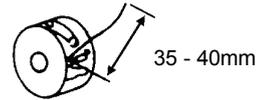
11-4. Uneven seams (2) …… Lower thread is lifted up at the sewing start

The end of the lower thread protrudes above the seam at the sewing start

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Lower thread retainer	Lower thread retaining amount	Adjust the lower thread retaining amount. 1-2mm 4003Q	*
Lower thread clamp	Lower thread clamp opening timing	Adjust so that the lower thread clamp plate opens when the feed mechanism moves 6 - 7 mm.	71*
	Lower thread clamping force	・If the lower thread clamp and lower thread presser are bent, replace them. ・Check that the screws are tightened. Screw Lower thread clamp 3999Q	*
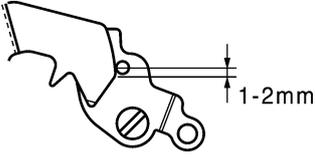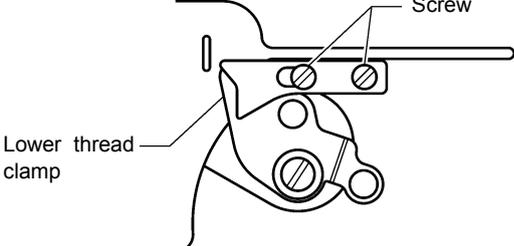
11-5. Uneven seams (3) ……Seam lifts up at the sewing start

Seam lifts up and does not tighten at the sewing start

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Upper thread trimmer	Upper thread trimmer gradual opening timing	Adjust the timing so that the upper thread trimmer gradually start opening when the feed mechanism moves about 1.5 - 2.5 mm.	70*
	Upper thread trimmer operation	Apply grease to the inclined face of the opening cam.	70*
Upper thread feeding	Thread take-up amount	Loosen the screw to decrease thread take-up amount so that upper thread does not pull out of trimmer assembly at the sewing start. Increase Screw Decrease 4000Q	*

11-6. Uneven seams (4) …… Uneven sewing pitch at the sewing start

Bird's nests form at the sewing start, and after 5 - 6 mm the sewing pitch suddenly increases

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Lower thread clamp	Lower thread clamp opening timing	Advance the timing at which the lower thread clamp starts to open.	71*

11-7. Uneven seams (5)……Poor rounding of seam

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Thread tension	Zigzag thread upper thread tension	Adjust the upper thread tension appropriately.	26, 27
	Zigzag tension disc opening	・Check the opening of the zigzag tension discs. ・Replace the tension release solenoid.	*
	Lower thread tension	Adjust the lower thread tension appropriately.	26
Threading	Upper thread threading	Thread the upper thread correctly.	22
	Lower thread threading	Thread the lower thread correctly.	25
Stitch patterns	Purl stitch, whip stitch	Set using parameter number 53.	40
Tension release	Tension release timing	Use parameter numbers 54 to 57 to set the timing for changing the thread tension.	40

11-8. Uneven seams (6) …… Around rear tack or front tack

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Tension release	Tension release timing	Use parameter numbers 54 to 57 to set the timing for changing the thread tension.	40
Threading	Upper thread threading	Thread the upper thread correctly.	22
	Lower thread threading	Thread the lower thread correctly.	25
Zigzag thread tension	Zigzag tension disc opening	・Adjust the tension disc opening amount. ・Check the opening of the zigzag tension discs. ・Replace the tension release solenoid.	*
Upper thread trimmer	Upper thread trimmer operation	Apply grease to the inclined face of the opening cam.	70*

11-9. Uneven seams (7) …… Loose thread end at end backtack

Cause	Check	Remedy	Page
Backtack shape	Checking the number of end backtack stitches Checking the end backtack width	Adjust the setting values for parameter numbers 51 and 52.	39

11-10. Uneven seams (8) …… Thread sticking out at end backtack

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Backtack shape	Checking the number of end backtack stitches Checking the end backtack width	Adjust the setting values for parameter numbers 51 and 52.	39
Uneven material feeding	Work clamp pressure	Increase work clamp pressure. * The standard height of the adjustment screw is approximately 30 mm, so tighten it further than this.	67
	Work clamp	When using knit material, replace with the -3 work clamp and needle plate.	*
	Upper thread trimmer opening timing	Adjust to an appropriate opening timing.	70*
	Upper thread trimmer operation	Apply grease to the inclined face of the opening cam.	70*
	Lower thread clamp opening timing	Adjust so that the lower thread clamp plate opens when the feed mechanism moves 6 - 7 mm.	71*

11-11. Uneven seams (9) …… Sticking in needle plate

Front and rear tack sections of material gets stuck in needle hole

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Start backtack	Number of start backtack stitches	Use parameter number 38 to reduce the number of stitches in the front tack. * If the material is soft, it can be effective to set the number of stitches to 0.	38
Rear tack	Rear tack vector shape	Use parameter number 31 to set the rear tack vector shape to a rectangle. * Setting the vector shape to a rectangle can be effective when the width is less than the bar tack width.	38
Needle plate	Needle plate	・When using knit material, replace with the -3 needle plate. ・Replace with a needle plate with a smaller needle hole.	*

11-12. Uneven seams (10) …… All stitches

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Threading	Upper thread threading	Thread the upper thread correctly.	22
	Lower thread threading	Thread the lower thread correctly.	25
Thread path	Flaw or abrasion on the thread path	Polish with buff or replace the part. Especially, pay attention to finishing around needle plate hole. Needle plate hole 3996Q	*
Needle	Needle installation	Insert needle fully into needle bar.	21
	Needle size	Replace needle with thicker one.	*
Thread chips or dust	Rotary hook rim Rotary hook edge Around needle plate hole	Remove thread chips or dust.	63, 64
Upper thread	Upper thread tension	Increase upper thread tension while checking stitches.	26, 27
	Thread and needle	Replace needle with one that fits for the thread.	–
Rotary hook holder	Flaw on the rotary hook holder	Polish with buff or replace the part. Check flaw here Adjust the rotary hook overlap amount. 3997Q	*
	Rotary hook holder and inner rotary hook overlap amount	Adjust the rotary hook holder and inner rotary hook overlap amount.	67*
Rotary hook	Rotary hook lubrication	Decrease the quantity of lubrication oil. * Note that if you reduce the amount of oil too much, thread breakages may occur.	16*
Bobbin winder tension bracket	Bobbin thread tension	Use the tension nut to adjust the lower thread winding tension.	24
	Uneven bobbin winding	Move bobbin winder tension bracket up and down to adjust.	24
Lower thread	Lower thread tension	Adjust the lower thread tension.	26
Bobbin case	Damaged outside of bobbin case and bent bobbin holder spring, etc.	Polish with buff or replace the part. * Use the HE-800C bobbin case.	*
Stitch patterns	Purl stitch, whip stitch	Set using parameter number 53.	40
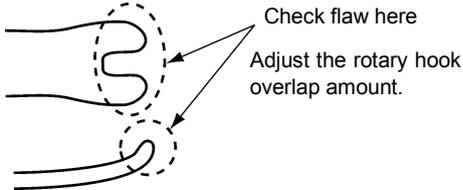
11-13. Upper thread run out

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Upper thread trimmer assembly	Installation position of upper thread trimmer assembly	Adjust the installation position of upper thread trimmer assembly by moving the setting plate assembly. ・Upper thread trimmer longitudinal position adjustment ・Upper thread trimmer cutting depth adjustment 4005Q	*
	Upper thread trimmer assembly holding force	Adjust so that the thread does not come out when you cut it with trimmer and hold the end of the thread between your fingers and gently swing the assembly. ・Bend the trimmer U or replace them so that the correct force is applied. ・Repair any damage from striking the needle. Cotton yarn #60 Holding force approx. 2N 4006Q	*
	Opening cam position	Adjust the position so that the trimmer does not touch the opening cam when the work clamp is lowered. Approx. 0.5 mm 4107M	70*

HE-800C

Cause	Check	Remedy	Page
Tension release timing	End of tension release at the beginning of sewing	Use parameter number 54 to retard the timing for changing the thread tension (increase the setting value).	40
	Opening amount of zigzag tension discs and bar tack tension discs	・Adjust the zigzag tension discs by moving the tension stud bracket in and out. ・Adjust the bar tack tension discs opening amount to 0.5 - 1.0 mm by removing the top cover and moving the tension release cam. Zigzag tension Tack tension 0.5 - 1 mm 4008Q	*
Upper thread feeding	Thread take-up amount	Loosen the screw to decrease thread take-up amount so that upper thread does not pull out of trimmer assembly at the sewing start. Screw Increase Decrease 4000Q	*
Rotary hook	Needle bar height and needle bar lift amount (The gauge is an option part.)	1. Adjust the needle bar height to "1" on the gauge. 2. Adjust the needle and rotary hook timing to "2" on the gauge.	65* 66*
	Thread chips on rotary hook edge	Remove thread chips.	63
Lower thread	Lower thread retaining amount	Adjust the lower thread retaining amount. 1-2mm 4003Q	*
	Lower thread snapping	Adjust the positions of the lower thread retainer, lower thread clamp and lower thread presser plate so that they do not snap the lower thread.	*
	Lower thread clamp opening timing	Adjust so that the lower thread clamp plate opens when the feed mechanism moves 6 - 7 mm.	71*
Sewing start speed	Slow start	Use parameter numbers 10 to 13 to set the number of stitches and the speed for slow starting.	36
Bar tack thread tension	Bar tack thread tension is too strong.	Make the bar tack tension as weak as possible.	27

HE-800C

11-14. Unraveling of thread trimmed by upper thread trimmer assembly
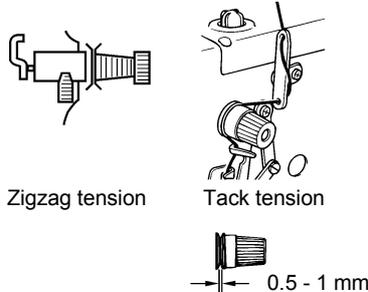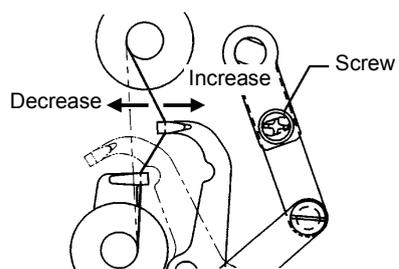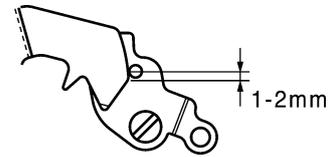
Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Upper thread trimmer assembly	Installation position of upper thread trimmer assembly	Adjust the installation position of upper thread trimmer assembly by moving the setting plate assembly. ・ Upper thread trimmer longitudinal position adjustment ・ Upper thread trimmer cutting depth adjustment 4005Q	*
	Burr on tips of upper thread trimmer M and upper thread trimmer U.	Polish with buff or replace the part. Check burr on upper side here Check burr here 4009Q	*
Tension release timing	Opening amount of zigzag tension discs and bar tack tension discs (particularly zigzag tension discs)	・ Adjust the zigzag tension discs by moving the tension stud bracket in and out. ・ Adjust the bar tack tension discs opening amount to 0.5 - 1.0 mm by removing the top cover and moving the tension release cam. Zigzag tension Tack tension 0.5 - 1 mm 4008Q	*

11-15. Upper thread miss-trimming

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Upper thread trimmer assembly	Installation position of upper thread trimmer assembly	Adjust the installation position of upper thread trimmer assembly by moving the setting plate assembly. ・Upper thread trimmer longitudinal position adjustment ・Upper thread trimmer cutting depth adjustment 4005Q	*
	Upper thread trimmer assembly holding force	Adjust so that the thread does not come out when you cut it with trimmer and hold the end of the thread between your fingers and gently swing the assembly. ・Bend the trimmer U or replace them so that the correct force is applied. ・Repair any damage from striking the needle. Cotton yarn #60 Holding force approx. 2N 4006Q	*
Trimmer driving arm	Upper thread trimmer cutting depth	Adjust the position of the trimmer driving arm roller.	*

11-16. Needle strikes upper thread trimmer
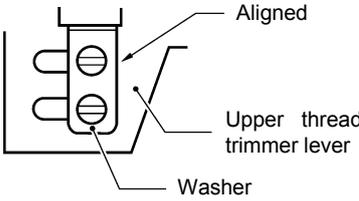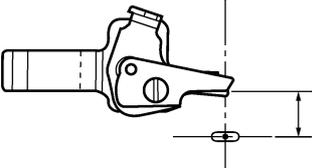
Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Upper thread trimmer assembly	Installation position of upper thread trimmer assembly	Adjust the installation position of upper thread trimmer assembly by moving the setting plate assembly. ・Upper thread trimmer longitudinal position adjustment ・Upper thread trimmer cutting depth adjustment 4005Q	*
	Upper thread trimmer operating force	Remove any scratches and burrs, and adjust the upper thread trimmer M to open when the projection is pressed with a force of 4N or less. 4N 4010Q	*
Longitudinal feed arm	Installation position of the longitudinal feed arm	Move the upper thread trimmer driving link so that it stops at the face plate. In this position, tighten the bolts so that the small slot in the upper thread trimmer lever and the edge of the washer are aligned. Aligned Upper thread trimmer lever Washer 4011Q	*
Cam	Upper thread trimmer opening timing	Adjust so that the cam opens the stop plate properly.	70*
Opening cam	Upper thread trimmer gradual opening timing	Adjust the timing so that the upper thread trimmer gradually start opening when the feed mechanism moves about 1.5 - 2.5 mm.	70*
	Upper thread trimmer operation	Apply grease to the inclined face of the opening cam.	70*
Work clamp home position sensor	Work clamp home position sensor position	After the home position has been detected, press the THREAD key to lower the work clamp, and then adjust the distance between the upper thread trimmer and the center of the needle to 5.5 - 6.0 mm. 5.5 - 6.0 mm 4012Q	*

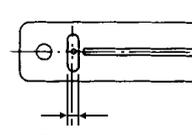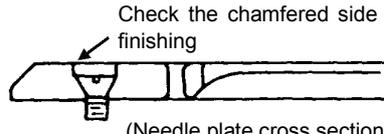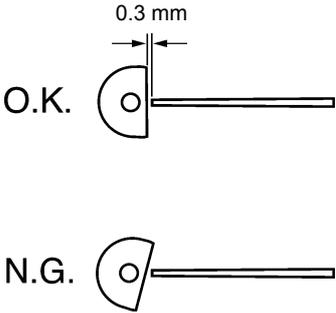| Cause	Check	Remedy	Page
Upper thread trimmer lever	Upper thread trimmer lever operating force	Adjust so that the upper thread trimmer lever opens gently when the stop plate is separated from the stopper. 4013Q	*
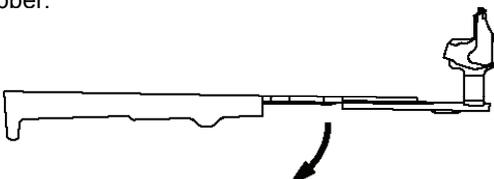
11-17. Needle breakage

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Needle	Needle installation	As viewed from the direction of the face plate, attach the needle so that the groove of the needle faces frontward.	21
Rotary hook	Needle bar height and needle bar lift amount (The gauge is an option part.)	1. Adjust the needle bar height to "1" on the gauge. 2. Adjust the needle and rotary hook timing to "2" on the gauge.	65* 66*
	Gap between the needle and the tip of the rotary hook	Adjust the gap between the needle and the rotary hook tip to 0.01 - 0.08 mm. (Adjust to as large as possible without causing skipped stitches to occur.) * Move the needle bar to the left and right with your finger, and check that the tip of the rotary hook does not strike the needle.	67*
Needle plate	Needle plate position	Adjust the forward/back position of the needle plate so that the needle is in the center of the needle hole. Bisect　　　4014Q	*
	Burr on the screw hole edge (in event of uneven material feeding)	Polish with buff. Check the chamfered side finishing (Needle plate cross section)　4015Q	*
Upper thread trimmer assembly	Needle strikes upper thread trimmer	Refer to "11-16. Needle strikes upper thread trimmer".	90, 91*
Cutter	Clearance between needle bar and cutter	Install the cutter so that the clearance between the needle bar and the cutter is 0.3 mm. * The cutter release section of the needle bar should be at a right angle to the cutter. 0.3 mm O.K. N.G.　　4016Q	68*

11-18. Imperfect cutter function (imperfect material cutting)

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Cutter	Installation position of cutter	Install the cutter so that its edge is aligned with the top of the needle plate.	68*
	Cutter blade	・ If blade is worn or chipped, sharpen it or replace it. ・ Replace with the special needle plate (optional).	*
	Damage to cutter mechanism parts Loose screws	・ Replace any parts that are damaged. ・ Tighten any loose screws.	*
Cutter solenoid	Check for a disconnected cord.	Check that cutter sensor connector P7 on the main P.C. board and cutter solenoid connector P2 on the cutter P.C. board are properly connected.	10*
Solenoid stopper	Nut	Check if the nut is loose, and tighten it securely.	*
	Cutter sensor position	・ Adjust the cutter sensor position. ・ Check if the mounting screws are loose, and tighten them securely. 4.5 ± 0.5 mm Cutter sensor 4017Q	*
Cutter bar guide	Smoothness of cutter operation	Adjust the cutter bar guide so that the cutter operates smoothly with no play.	*
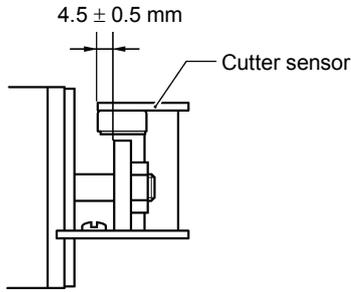
11-19. Cutter does not return

Items with a "*" in the "Page" column should only be handled by a qualified technician.

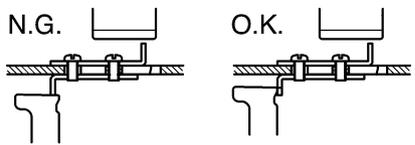| Cause	Check	Remedy	Page
Cutter	Cutter blade	If blade is worn or chipped, sharpen it or replace it.	*
Sticks in material	Needle plate	Replace with the special needle plate (optional).	*
Cutter bar guide	Smoothness of cutter operation	Adjust the cutter bar guide so that the cutter operates smoothly with no play.	*

11-20. Cutter and upper thread trimmer touch

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Upper thread trimmer	Check if the cam opens the stop plate.	Adjust the cam position. * If the feed mechanism operates when the cam has not opened the stop plate, the cutter will bump against the upper thread trimmer. N.G. O.K. 4018Q	70*

11-21. Seam is cut

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Setting the length of the hole	Length of the hole	Set parameter number 02 to the same value as the length of the cutter being used.	35*
Setting the cutter spacing	Cutting of zigzag seam	· Use parameter number 04 to set the cutter X space. · Use parameter number 03 to set the correction of the cutter X position.	35*
Cutter	Cutter play	Adjust the cutter bar guide so that the cutter operates smoothly with no play.	*
	Cutter knife bending	Use the cutter holder (option) to prevent the cutter knife from becoming bent. 4019Q	*
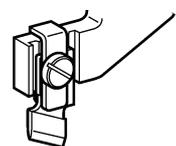
11-22. Upper thread miss-winding

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Upper thread trimmer	Installation height	Adjust the upper thread trimmer installation height.	69*
	Upper thread trimmer gradual opening timing	Adjust the timing so that the upper thread trimmer gradually start opening when the feed mechanism moves about 1.5 - 2.5 mm.	70*
	Upper thread trimmer opening timing	Adjust so that the cam opens the stop plate properly.	70*
	Upper thread trimmer assembly movement	・Polish blade of upper thread trimmer M and upper thread guide with buffer. ・Check for burrs on the top surface of upper thread trimmer M. ・Replace the parts.	*
	Lateral position of upper thread trimmer	Adjust the lateral position of the upper thread trimmer. Approx. 1 mm 4020Q	*
Stitch quality	Upper thread tension	Decrease tension to such a degree that it does not influence stitch quality.	26, 27
	Zigzag width in the zigzag stitch portion	Use parameter number 08 to increase the zigzag width to such a degree that it does not influence the seam shape.	36
Work clamp	Uneven material feeding	・Increase work clamp pressure. (Press material so that the material is properly stretched.) ・When using knits or woven materials, replace the parts with the -3 specification parts: Length feed plate (for specification -3), work clamp assembly (for knits), needle plate 1.2 (for specification -3)	67* *
Underlay	Underlay is being sewn.	・Use parameter number 47 to reduce the underlay feed pitch to about 0.5. ・Use parameter number 14 to reduce the underlay sewing speed. * If sewing knitted wear, problems may easily occur with the insertion of the upper thread, so you may need to process the end of the thread.	39 36
Bar tack	Straight bar tacking is being carried out	When carrying out straight bar tacking, problems may easily occur with the insertion of the upper thread, so you will need to process the end of the thread.	–
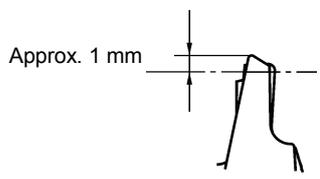
11-23. Work clamp is not raised (1)

…… Pulse motor stepping sound cannot be heard

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Work clamp lifting height	Check the work clamp lifting height setting	Change the settings of memory switch Nos. 001, 002, 003, 004.	57
Work clamp motor	Cord connection	Check if there are any problems with the connection and contacts of work clamp motor connector P23 on the main P.C. board.	10*
	Work clamp motor drive gear	Check if the drive gear screw is loose.	*

11-24. Work clamp is not raised (2)

…… Pulse motor stepping sound can be heard
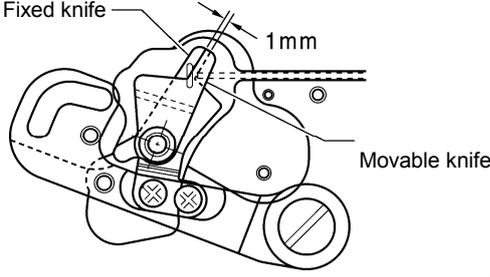
Items with a "*" in the "Page" column should only be handled by a qualified technician.

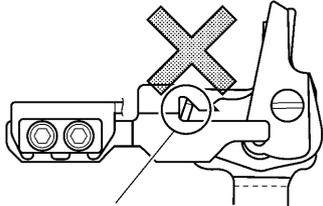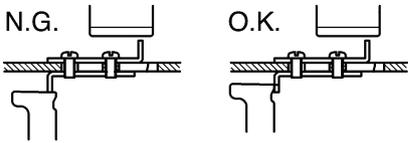| Cause	Check	Remedy	Page
Upper thread trimmer	Interference between upper thread trimmer and work clamp	Adjust the installation height of the upper thread trimmer (remove the upper thread trimmer and check). * Be particularly careful when sewing joints.	69*
	Upper thread trimmer operation	Apply grease to the inclined face of the opening cam.	70*
Lower thread trimmer	Interference between fixed knife set, lower thread clamp, lower thread presser and lower thread retainer.	Repair or replace the parts. Lower thread trimmer link A assembly / Lower thread trimmer connecting rod / Remove the shoulder screw to check. 4022Q	*
	Rubbish, dust or thread scraps present	Remove all rubbish, dust and thread scraps from the lower thread trimmer.	*
Loose screws	Check for loose screws in the upper thread trimmer, lower thread trimmer and work clamp lifter mechanisms.	Securely tighten all screws.	*
Work clamp lifting height setting	Check the work clamp lifting height setting.	Change the settings of memory switch Nos. 001, 002, 003, 004. * If the work clamp lifting height is too high, the lower thread trimming operation and the work clamp lifting will become stiff, and the work clamp motor may go out of step.	57
Threading	Lower thread threading	Insert the bobbin correctly and pass the lower thread through the bobbin case correctly. * If the bobbin is inserted back-to-front, it will spin loosely and the work clamp motor may go out of step.	25
	Lower thread tension	・ Reduce the lower thread tension. * If the lower thread tension is much too strong, the work clamp motor may go out of step.	26
		・ Use memory switch No. 060 to reduce the work clamp lifting speed setting to make the lifting speed slower.	*
		・ Buff this section A to reduce the thread retaining resistance. A 4023Q	*
Upper thread trimmer	Upper thread trimmer operation	Carry out opening timing adjustment for the upper thread trimmer.	70
Work clamp home position sensor	Work clamp home position sensor position	Adjust the work clamp home position sensor position.	*
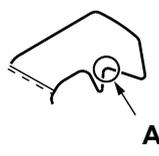
11-25. Lower thread is not trimmed (pulls when material is removed)

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Fixed knife set	Fixed knife and movable knife do not mesh.	Adjust the fixed knife set installation position. Fixed knife — 1mm Movable knife 4024Q	*
	Knife tip is bent or chipped.	Repair or replace the knife.	*

11-26. Feed mechanism does not operate or motor is out of step

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Feed motor	Cord connection	Check if there are any problems with the connection and contacts of feed motor connector P22 on the main P.C. board.	10*
Upper thread trimmer	Upper thread trimmer position	Remove and re-install the upper thread trimmer. Install so that the projection on trimmer M is not inserted. * Always make sure that the upper thread trimmer is in the correct position before use. 4895M	*
	Check if the cam opens the stop plate.	Adjust the cam position. * If the feed mechanism operates when the cam has not opened the stop plate, the cutter will bump against the upper thread trimmer. N.G. O.K. 4018Q	70*
Feed home position sensor	Feed home position sensor position	Adjust the feed home position sensor position.	*
Feed timing belt	Feed timing belt tension	Adjust the feed timing belt.	*

11-27. Needle does not zigzag or noise occurs when needle zigzags

Items with a "*" in the "Page" column should only be handled by a qualified technician.

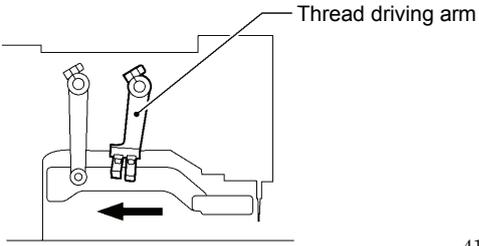| Cause	Check	Remedy	Page
Stopper	Stopper position	Adjust the stopper position.	*

11-28. Sewing machine stops during sewing

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Thread breakage detector	Thread breakage detector position	Adjust the thread breakage detector position. * If the detector is not adjusted, sewing may stop even when the thread is not broken.	*
Threading	Upper thread threading	Pass the thread correctly through the thread guide.	22
Error [E301]	Upper thread trimmer operation	Move the work clamp up and down and check that it moves smoothly.	*

11-29. Upper shaft does not rotate as far as the needle up stop position

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Thread retainer and rotary hook are touching.	Thread trimmer mechanism position	1. Turn the machine pulley backward to set the needle bar to the needle up position. 2. Push the thread driving arm in the direction of the arrow to set the thread trimming mechanism to the home position. Thread driving arm 4109M	*

11-30. Operation panel display freezes and operation is not possible

Items with a "*" in the "Page" column should only be handled by a qualified technician.

Cause	Check	Remedy	Page
Poor connection inside control box.	P.C. board cord connections	· Check if there are any problems with the connection and contacts of connector P5 on the main P.C. board.	75*
		· Check if there are any problems with the connection and contacts of connector P2 and operation panel connector P3 on the motor P.C. board.	10, 75*

brother

INSTRUCTION MANUAL

* Please note that the contents of this manual may differ slightly from the actual product purchased as a result of product improvements.

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