

BAS-326H-484

INSTRUCTION MANUAL

BAS-326H-484 SF

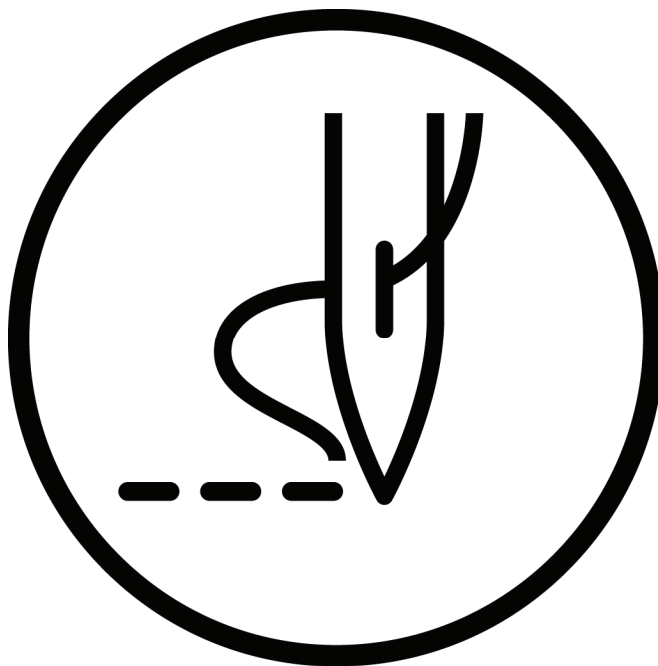
Please read this manual before using the machine.

Please keep this manual within easy reach for quick reference.

DIRECT DRIVE

PROGRAMMABLE ELECTRONIC PATTERN SEWER

<TREBLE HOOK>



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 must not do.



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

[2] Notes on safety

DANGER



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

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



The power supply capacity should be greater than the requirements for the sewing machine's power consumption.

Insufficient power supply capacity may cause problems with correct operation.



Do not connect anything to the USB port other than the USB memory. If this is not observed, problems with operation may result.



The pneumatic delivery capability should be greater than the requirements for the sewing machine's total air consumption.

Insufficient pneumatic delivery capability may cause problems with correct operation.



The ambient temperature should be within the range of 5°C to 35°C during use.

Temperatures which are lower or higher than this may cause problems with correct operation.



The relative humidity should be within the range of 45% to 85% during use, and no dew formation should occur in any devices.

Excessively dry or humid environments and dew formation may cause problems with correct operation.



In the event of an electrical storm, turn off the power and disconnect the power cord from the wall outlet.

Lightning may cause problems with correct operation.

Installation



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



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



The sewing machine weighs approximately 88 kg. The installation should be carried out by three or more people.



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



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

Furthermore, do not apply excessive force when tilting back the machine head. The sewing machine may become unbalanced and fall down, and serious injury or damage to the sewing machine may result.



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



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



Install the safety covers to the machine head and motor.



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













Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin. If the oil and grease get into your eyes or onto your skin, inflammation can result.

Furthermore, do not drink or eat the lubricating oil or grease. They may cause diarrhea or vomiting.



Keep the oil out of the reach of children.

CAUTION










Sewing

-  To prevent problems, do not use objects with sharp points to operate the LCD panel.
-  This sewing machine should only be used by operators who have received the necessary training in safe use beforehand.
-  The sewing machine should not be used for any applications other than sewing.
-  Be sure to wear protective goggles when using the machine.
If goggles are not worn, there is the danger that if a needle breaks, parts of the broken needle may enter your eyes and injury may result.
-  Turn off the power switch at the following times. If the foot switch is depressed by mistake, the sewing machine might start operating and injury could result.
 - When replacing the bobbin and needle
 - When not using the machine and when leaving the machine unattended
-  If using a work table which has casters, the casters should be secured in such a way so that they cannot move.
-  Attach all safety devices before using the sewing machine. If the machine is used without these devices attached, injury may result.
-  Do not touch any of the moving parts or press any objects against the machine while sewing, as this may result in personal injury or damage to the machine.
-  If an error occurs in machine operation, or if abnormal noises or smells are noticed, immediately turn off the power switch. Then contact your nearest Brother dealer or a qualified technician.
-  If the machine develops a problem, contact your nearest Brother dealer or a qualified technician.

Cleaning

-  Turn off the power switch before carrying out cleaning. If the foot switch is depressed by mistake, the sewing machine might start operating and injury could result.
-  Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin. If the oil and grease get into your eyes or onto your skin, inflammation can result.
Furthermore, do not drink or eat the lubricating oil or grease. They may cause diarrhea or vomiting.
Keep the oil out of the reach of children.


Maintenance and inspection

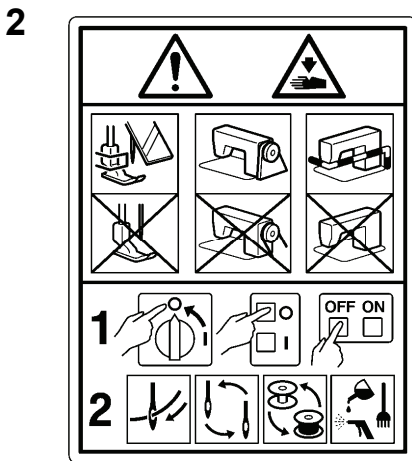
-  Maintenance and inspection of the sewing machine should only be carried out by a qualified technician.
-  Ask your Brother dealer or a qualified electrician to carry out any maintenance and inspection of the electrical system.
-  Turn off the power switch and disconnect the power cord before carrying out the following operations. If the foot switch is depressed by mistake, the sewing machine might start operating and injury could result.
 - Inspection, adjustment and maintenance
 - Replacing consumable parts such as the rotary hook
-  Disconnect the air hoses from the air supply and wait for the needle on the pressure gauge to drop to "0" before carrying out inspection, adjustment and repair of any parts which use the pneumatic equipment.
-  Hold the machine head with both hands when tilting it back or returning it to its original position.
Furthermore, do not apply excessive force when tilting back the machine head. The sewing machine may become unbalanced and fall down, and serious injury or damage to the sewing machine may result.
-  If the power switch needs to be left on when carrying out some adjustment, be extremely careful to observe all safety precautions.
-  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		▲ 危険	
		高電圧部分にふれて、大けがをすることがある。 電源を切り、5分たってからカバーをはずすこと。		触摸高压电部分，会导致受伤。 在切断电源5分钟后，再开启盖罩。	
	▲ DANGER	▲ GEFAHR	▲ DANGER	▲ PELIGRO	
	Hazardous voltage will cause injury. Turn off main switch and wait 5 minutes before opening this cover.	Hochspannung verletzungsgefahr! Bitte schalten sie den hauptschalter aus und warten sie 5 minuten, bevor sie diese abdeckung öffnen.	Un voltage non adapte provoque des blessures. Eteindre l'interrupteur et attendre 5 minutes avant d'ouvrir le capot.	Un voltaje inadecuado puede provocar las heridas. Apagar el interruptor principal y esperar 5 minutos antes de abrir esta cubierta.	




CAUTION
Moving parts may cause injury.


Operate with safety devices* installed.

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


*Safety devices


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

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

4 
PE Be sure to connect the ground. If the ground connection is not secure, you run a high risk of receiving a serious electric shock, and problems with correct operation may also occur.

5  Direction of operation

6  Be careful to avoid injury from moving parts.

7  Do not hold, otherwise problems with operation or injury may occur.

8

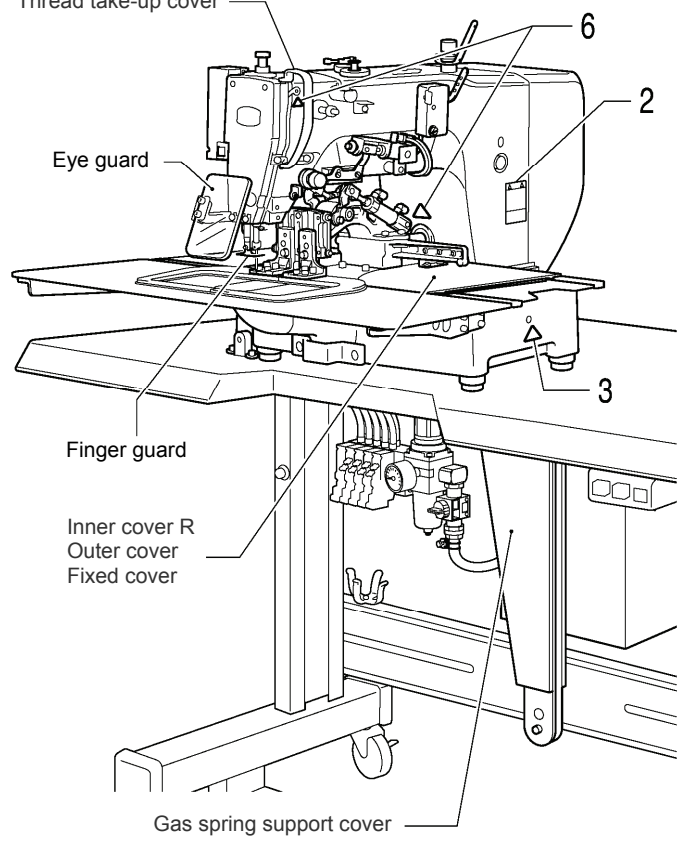
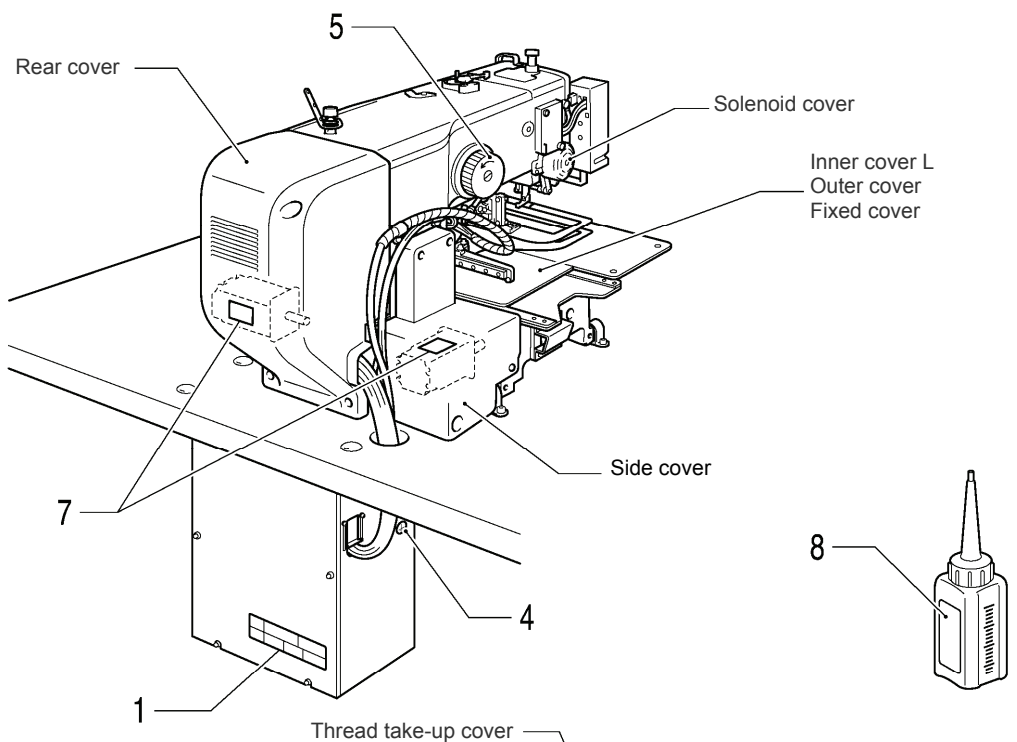
brother
Lubricating Oil for Machining

▲ 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.

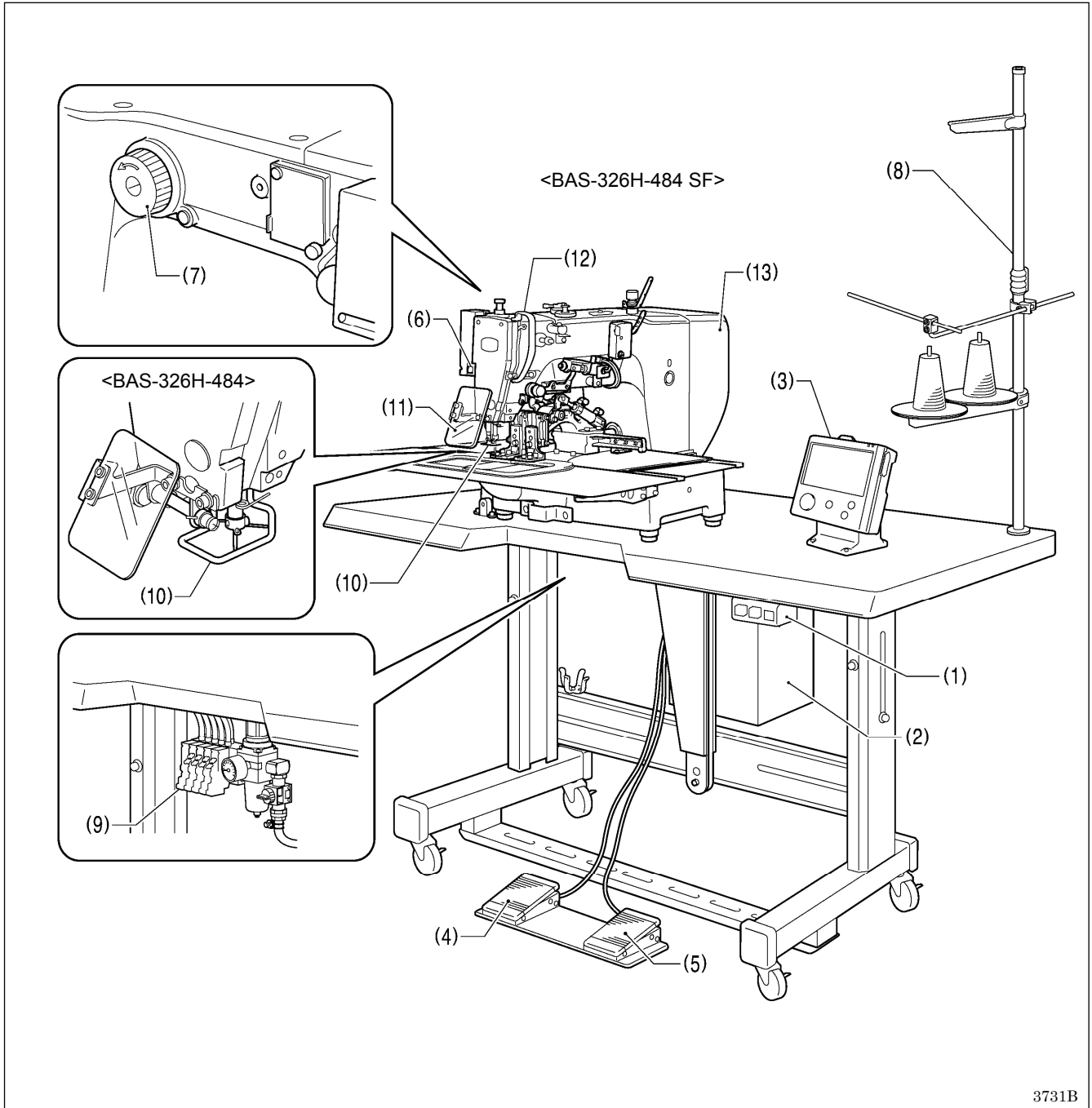


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CONTENTS

1. NAMES OF MAJOR PARTS	1	6. CLEANING	32
2. SPECIFICATIONS	2	6-1. Cleaning the rotary hook.....	32
3. INSTALLATION	3	6-2. Cleaning the control box air inlet ports	32
3-1. Table processing diagram	3	6-3. Draining the oil	33
3-2. Installing the control box.....	4	6-4. Checking the regulator.....	33
3-3. Installing the oil pan.....	4	6-5. Cleaning the eye guard.....	33
3-4. Installing the machine head.....	5	6-6. Checking the needle	33
3-5. Installing the LCD panel	8	6-7. Lubrication.....	33
3-6. Installing the two-pedal foot switch	9	7. STANDARD ADJUSTMENTS	34
3-7. Connecting the cords.....	9	7-1. Checking the machine head switch	34
3-8. Connecting the ground wire.....	13	7-2. Adjusting the sensitivity of the thread breakage sensor	35
3-9. Connecting the power cord.....	14	7-3. Thread take-up spring.....	36
3-10. Installing the cotton stand.....	17	7-4. Arm thread guide R.....	36
3-11. Installing the pneumatic unit.....	18	7-5. Adjusting the needle and rotary hook timing.....	37
3-12. Adjusting the speed controller	19	7-6. Adjusting the needle clearance.....	37
3-13. Installing the eye guard	20	7-7. Adjusting the thread take-up amount.....	38
3-14. Installing the side cover and rear cover.....	20	7-8. Adjusting the clearance between the inner hook and the hook stopper	38
3-15. Lubrication	21	7-9. Replacing the movable and fixed knives	39
3-16. Installing the machine head fixing bolt	22	7-10. Adjusting the position of the movable knife	40
3-17. Checking the machine head switch.....	22	7-11. Adjusting the engagement of the movable knife and fixed knife	41
4. PREPARATION BEFORE SEWING.....	23	7-12. Installing the feed plate	42
4-1. Installing the needle.....	23	7-13. Adjusting the thread wiper	44
4-2. Threading the upper thread	24	7-14. Intermittent presser foot installation position (-484 SF specifications only)	44
4-3. Winding the lower thread.....	26	7-15. Adjusting the intermittent presser foot (-484 SF specifications only)	45
4-4. Installing the bobbin case	27	7-16. Adjusting the work clamp lift amount	47
4-5. Installing the anti-spin spring.....	28	7-17. Adjusting the air pressure	47
4-6. Thread tension.....	28	7-18. If processing the work clamps and the feed plate to a shape that matches the sewing pattern.....	48
4-6-1. Lower thread tension	28	8. LIST OF ERROR CODES.....	49
4-6-2. Upper thread tension	29	9. TROUBLESHOOTING.....	55
4-7. Starting up	29		
5. SEWING.....	30		
5-1. Sewing.....	30		
5-2. Using the STOP switch.....	31		

1. NAMES OF MAJOR PARTS

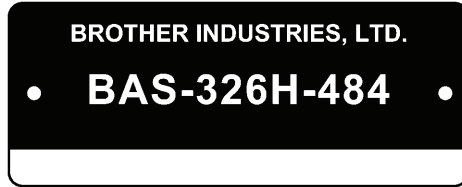


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- (1) Power switch
- (2) Control box
- (3) LCD panel
- (4) Work clamp switch
- (5) Start switch
- (6) STOP switch
- (7) Pulley
- (8) Cotton stand
- (9) Solenoid valve

- Safety devices:**
- (10) Finger guard
 - (11) Eye guard
 - (12) Thread take-up cover
 - (13) Rear cover

2. SPECIFICATIONS



With intermittent presser foot

3714B

Sewing machine	Lock stitch pattern tacking sewing machine
Stitch formation	Single needle lock stitch
Max. sewing speed	2,200 sti/min
Max. sewing area (XxY)	220 x 100 mm
Feed mechanism	Intermittent feed, pulse motor drive
Stitch length	0.05 – 12.7 mm
Maximum No. of stitches	20,000 stitches (per program)
No. of sewing data items that can be stored	999 (Internal memory, SD card, USB memory) (*1)
Work clamp lift method	Pneumatic cylinder method
	Separate-type work clamp
Work clamp height	Max. 27.5 mm
Intermittent presser foot lift amount	19.5 mm (*2)
Intermittent presser foot stroke	2 – 4.5 mm, 4.5 – 10 mm or 0 (Default setting 3 mm) (*2)
Hook	Treble hook
Wiper device	Standard equipment
Thread trimmer	Standard equipment
Thread take-up device	Standard equipment
Cycle programs	30
Motor	550 W AC servo motor
Weights	Machine head Approx. 88 kg, LCD panel Approx. 0.8 kg Control box 9 kg (Differs depending on destination)
Power source	Single-phase 110V / 220V / 230V, 3-phase 220V / 380V / 400V (For single-phase 110 V and three-phase 380 V/400 V, the trans box is required.)
Air pressure	0.5 MPa 1.8 l/min.









(*1) The number of data items and stitches that can be stored will vary depending on the number of stitches in each program.

No guarantees of operation can be given for any media.

(*2) Only applicable to -484 SF specifications.

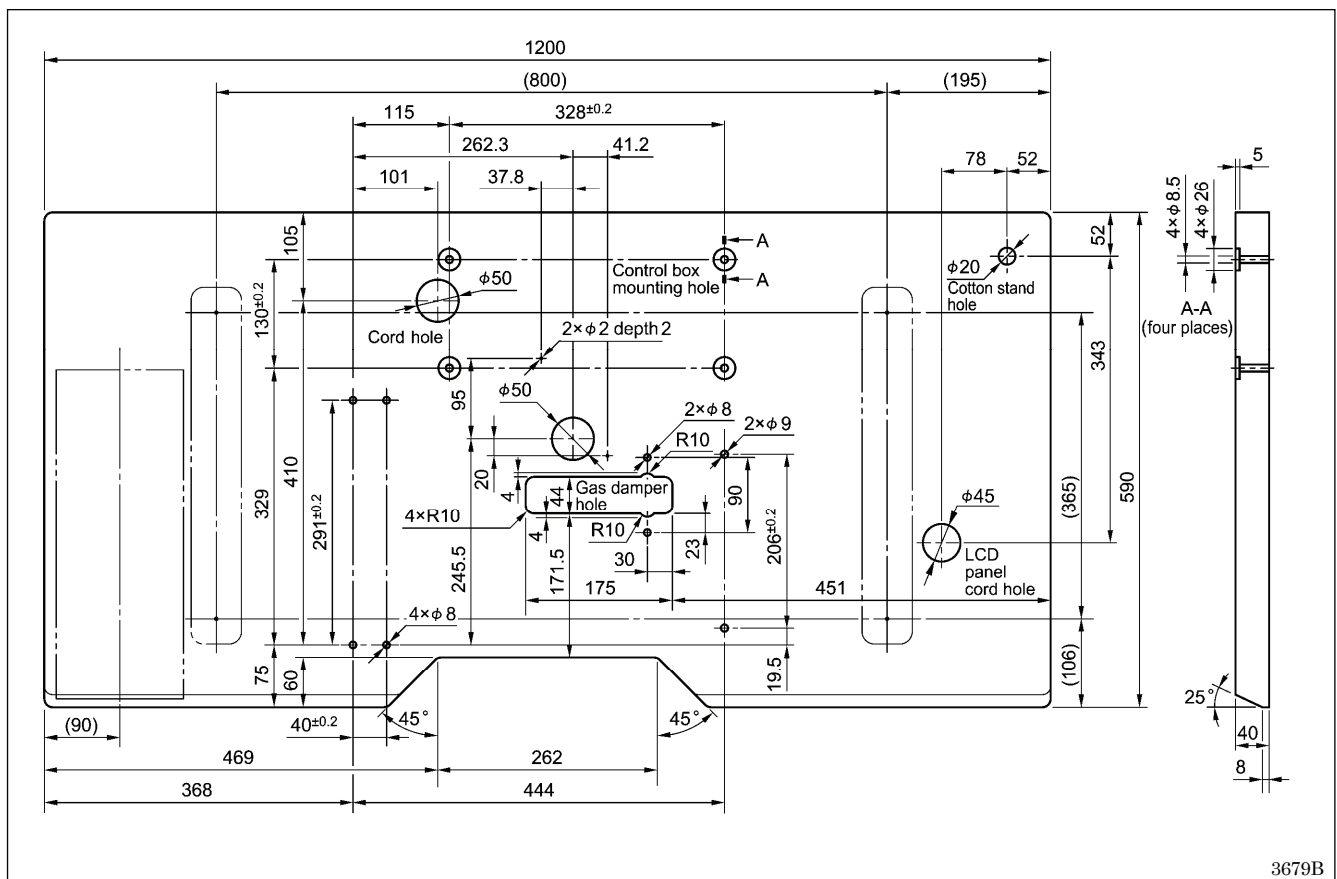
3. INSTALLATION

⚠ CAUTION

-  Machine installation should only be carried out by a qualified technician.
-  Contact your Brother dealer or a qualified electrician for any electrical work that may need to be done.
-  The sewing machine head weighs approximately 88kg. The installation should be carried out by three or more people.
-  Do not connect the power cord until installation is complete.
If the foot switch is depressed by mistake, the sewing machine might start operating and injury could result.
-  Hold the machine head with both hands when tilting it back or returning it to its original position.
Furthermore, do not apply excessive force when tilting back the machine head. The sewing machine may become unbalanced and fall down, and serious injury or damage to the sewing machine may result.
-  All cords should be secured at least 25 mm away from any moving parts. Furthermore, do not excessively bend the cords or secure them too firmly staples, otherwise there is the danger that fire or electric shocks could occur.
-  Be sure to connect the ground. If the ground connection is not secure, you run a high risk of receiving a serious electric shock, and problems with correct operation may also occur.
-  Install the safety covers to the machine head and motor.

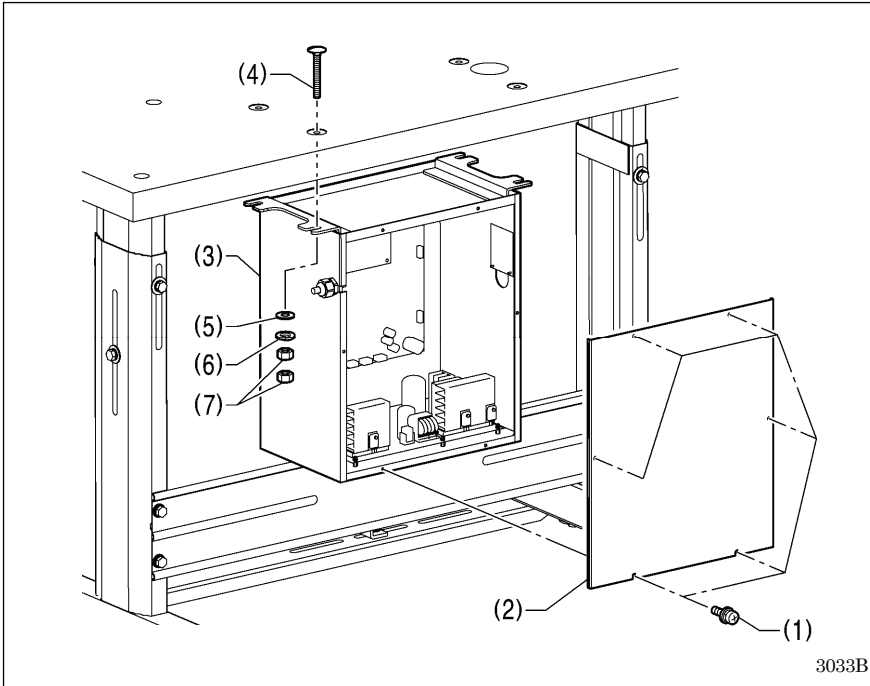
3-1. Table processing diagram

- The thickness of the table should be at least 40 mm, and it should be strong enough to bear the weight and vibration of the sewing machine.
- Check that the control box is at least 10 mm away from the leg. If the control box and the leg are too close together, it may result in incorrect sewing machine operation.



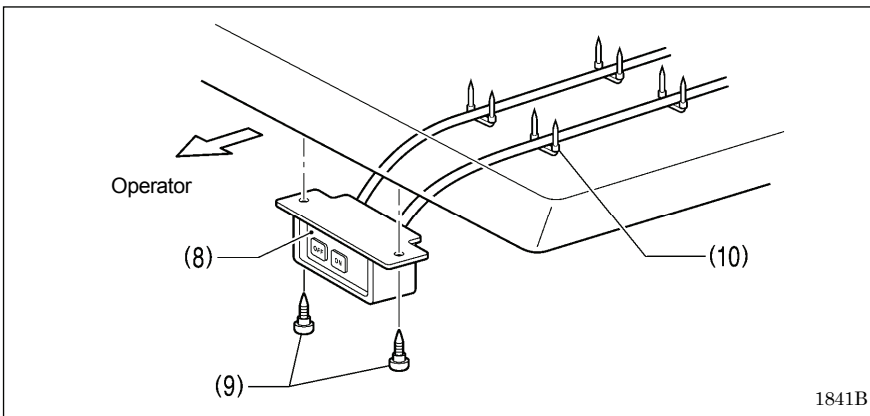
3. INSTALLATION

3-2. Installing the control box



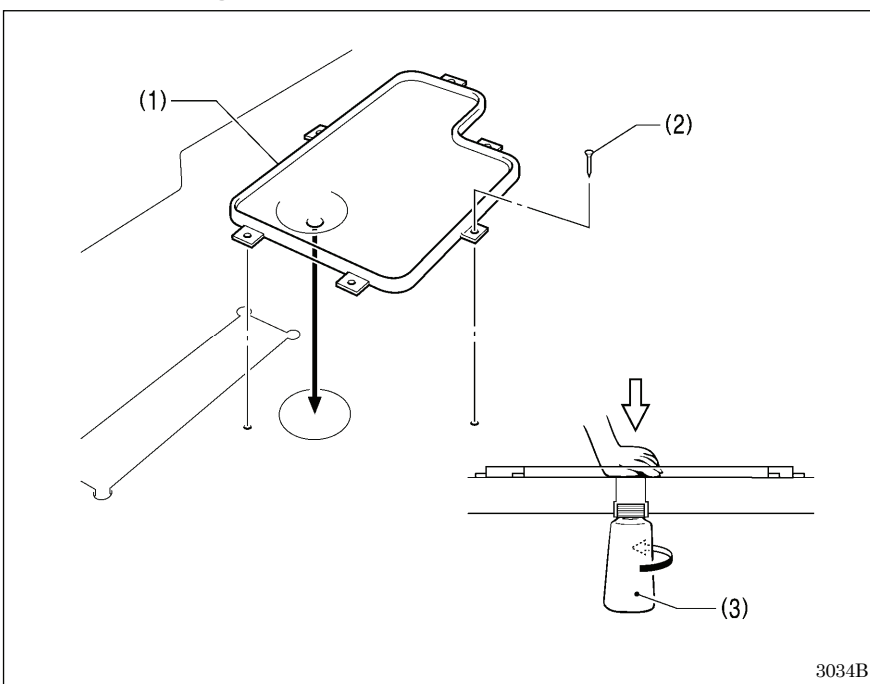
Remove the six screws (1), and then remove the control box cover (2).

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



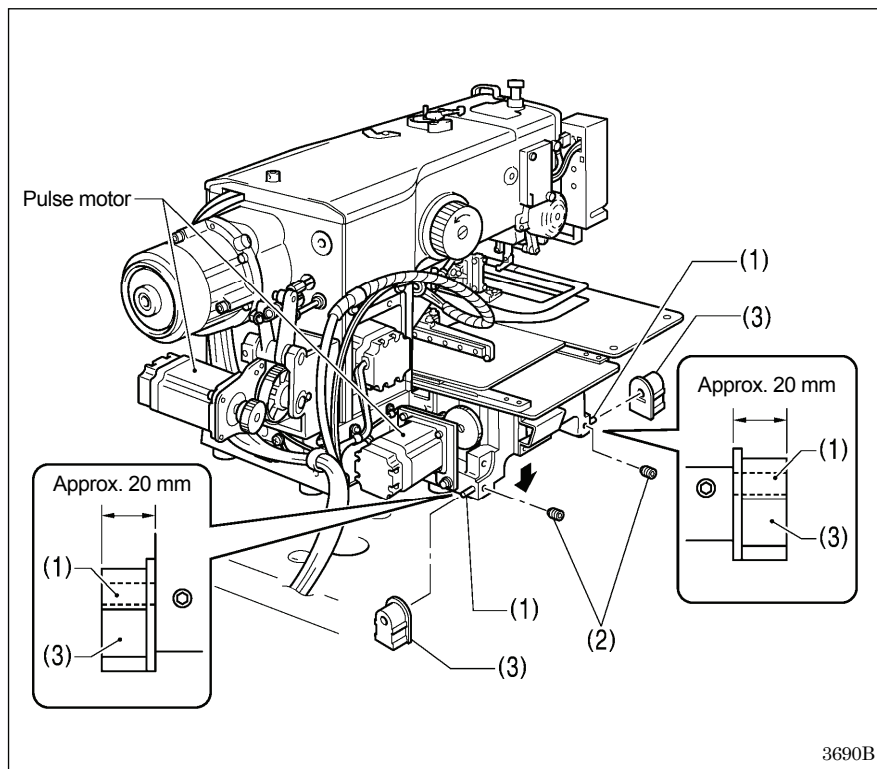
- (8) Power switch
- (9) Wood screws [2 pcs.]
- (10) Staples [4 pcs.]

3-3. Installing the oil pan



- (1) Oil pan
- (2) Nails [6 pcs.]
- (3) Waste oil tank

3-4. Installing the machine head

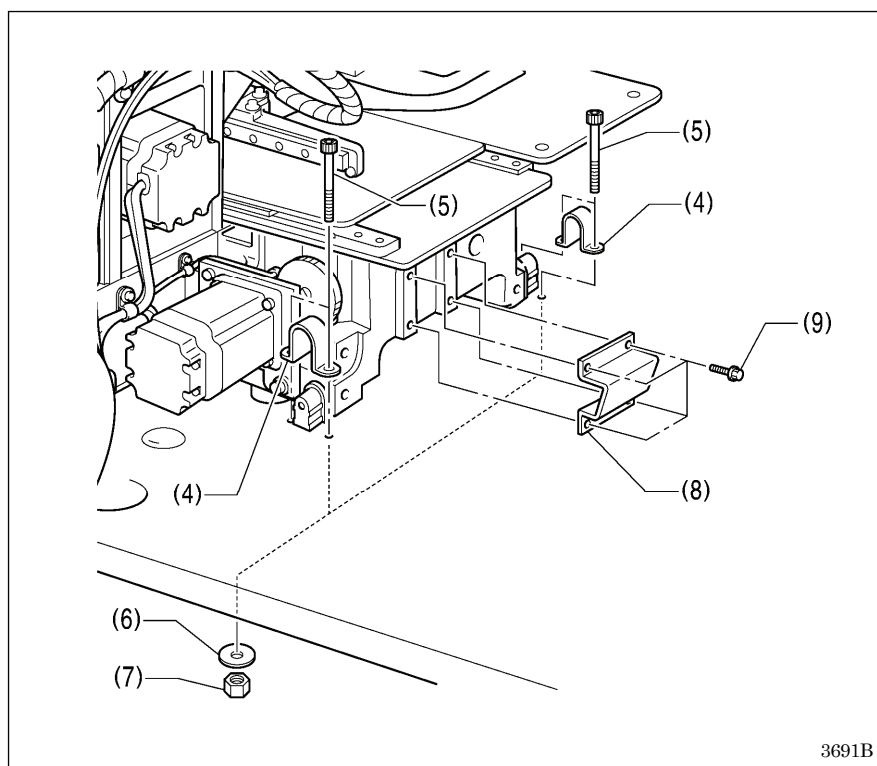


- (1) Pins [2 pcs.]
- (2) Set screws [2 pcs.]
- (3) Hinge rubber assemblies [2 pcs.]

Place the machine head gently on top of the oil pan.

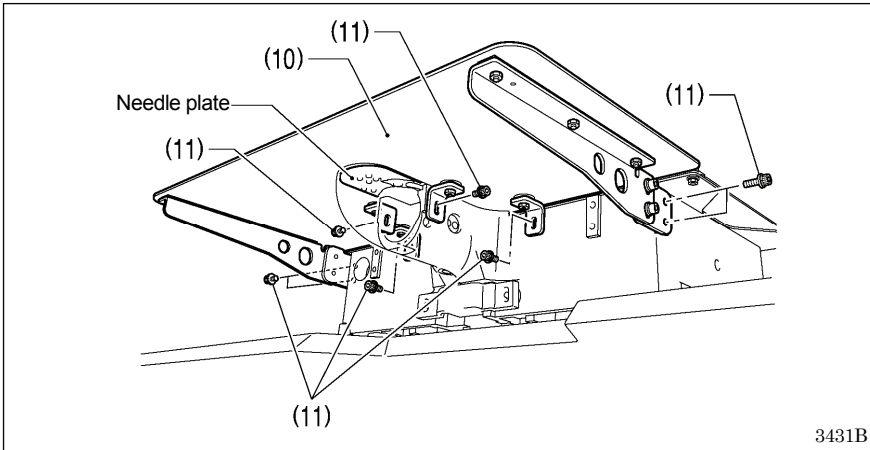
NOTE:

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



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

3. INSTALLATION

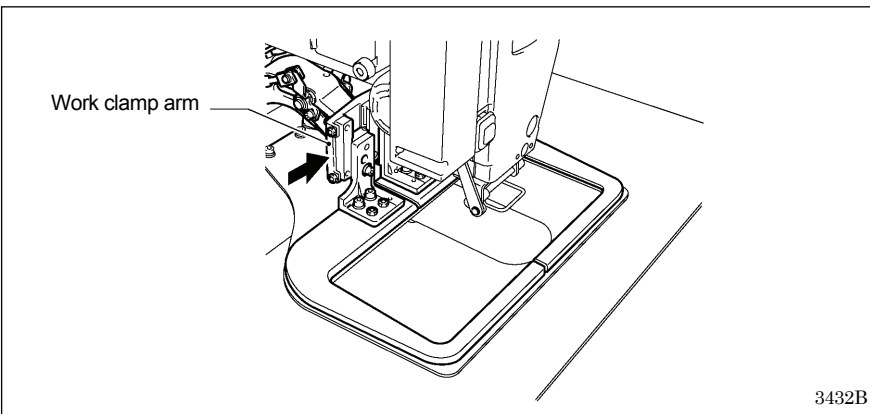


- (10) Auxiliary plate
- (11) Bolts with washer [8 pcs.]

Loosen the eight bolts with washer (11), and adjust so that the auxiliary plate (10) is 0 to 0.5 mm above the needle plate.

NOTE:

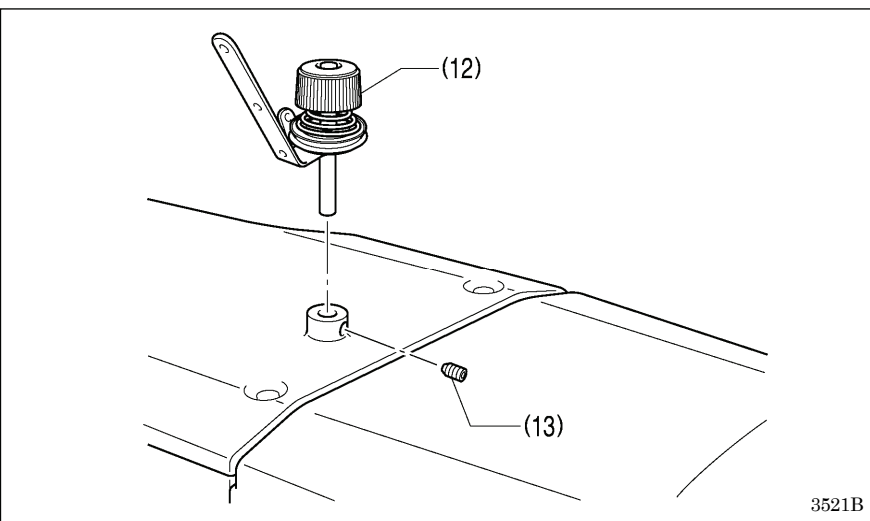
- Install the auxiliary plate (10) so that it is horizontal.
If the auxiliary plate (10) is lower than the needle plate, the feed plate may get caught on the needle plate.



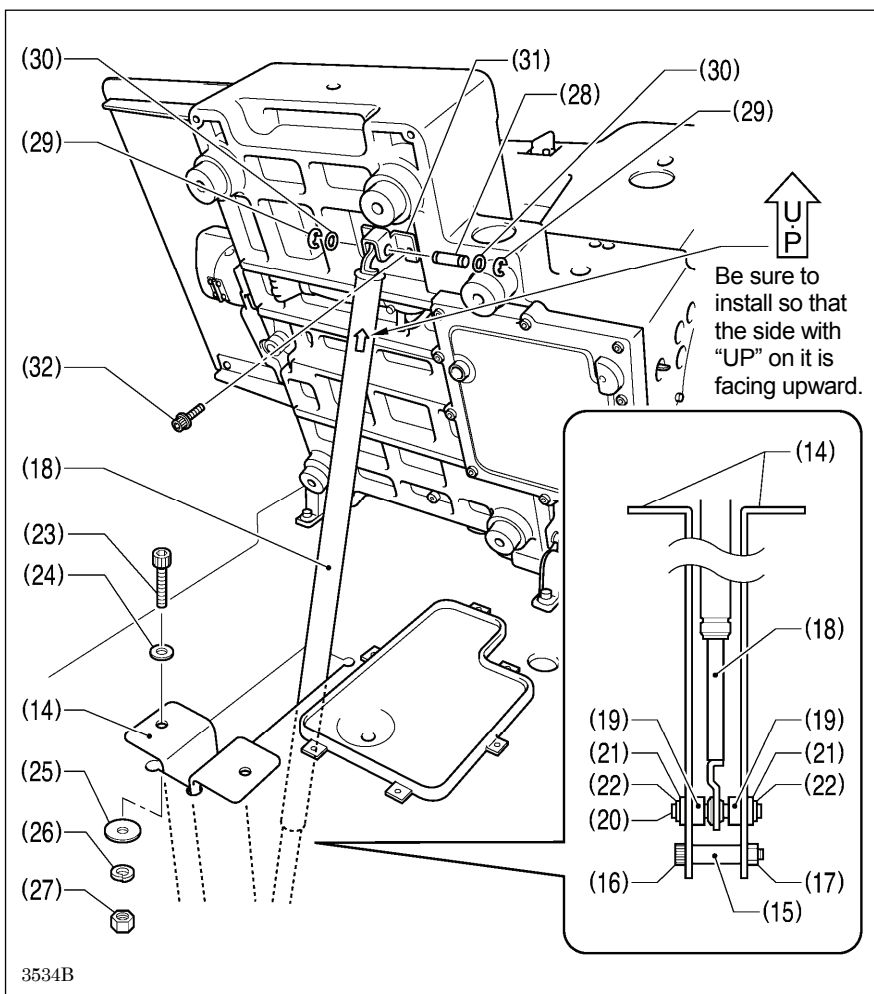
Move the work clamp arm all the way to the right when looking from the front of the sewing machine (the direction of the arrow in the illustration), and then gently tilt back the machine head.

NOTE:

- Three or more people should tilt back the machine head, and it should be tilted gently while being held with both hands.
- Be careful not to clamp any items such as screwdrivers under the cushion when tilting back the machine head.

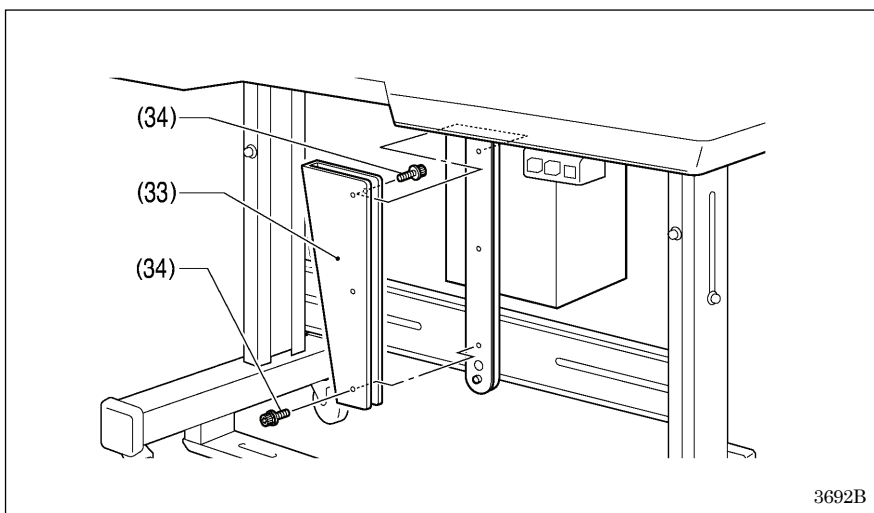


- (12) Bobbin winder tension assembly
- (13) Set screw [1 pc.]



- (14) Gas spring holders [2 pcs.]
- (15) Spacer
- (16) Bolt
- (17) Nut
- (18) Gas spring
- (19) Shaft collars [2 pcs.]
- (20) Gas spring shaft D
- (21) Plain washers [2 pcs.]
- (22) Retaining rings E [2 pcs.]
- (23) Bolts [2 pcs.]
- (24) Plain washers (medium) [2 pcs.]
- (25) Plain washers (large) [2 pcs.]
- (26) Spring washers [2 pcs.]
- (27) Nuts [2 pcs.]
- (28) Gas spring shaft U
- (29) Retaining rings E [2 pcs.]
- (30) Plain washers (small) [2 pcs.]
- (31) Absorber setting plate
- (32) Bolts with washer [2 pcs.]

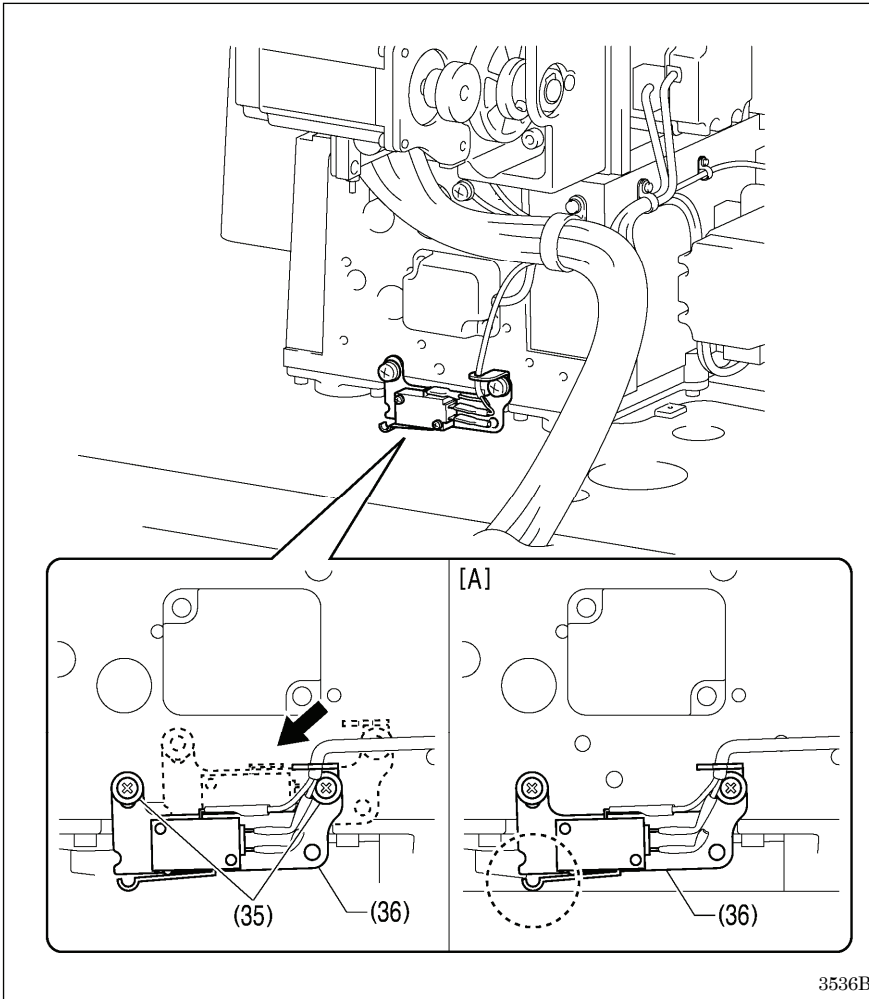
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- (33) Gas spring support cover
- (34) Bolts with washer [6 pcs.]

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3. INSTALLATION

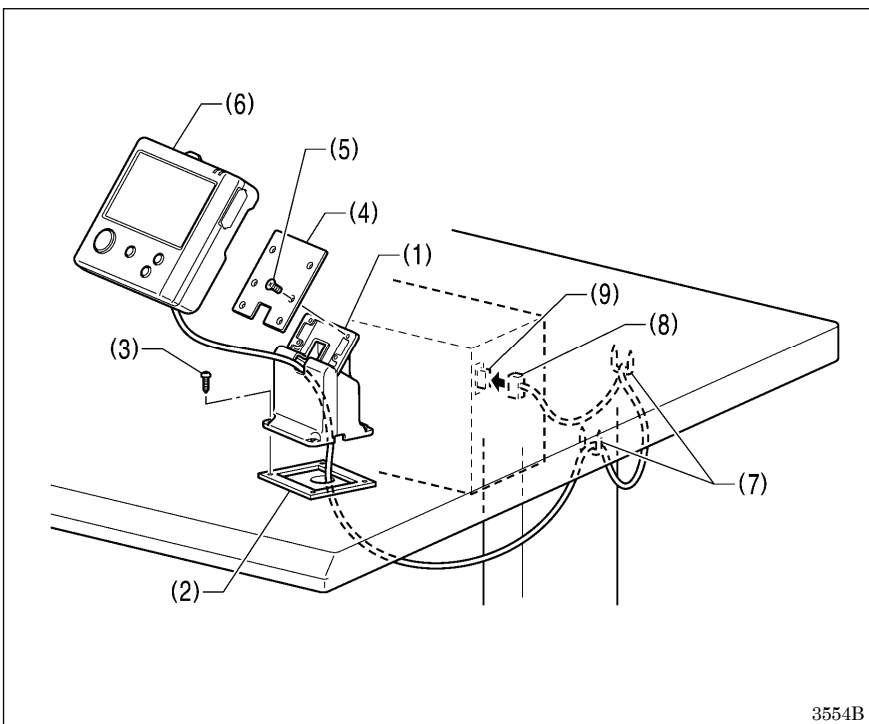


Gently return the machine head to its original position.

1. Remove the two screws (35), and then temporarily remove the machine head switch assembly (36).
2. Use the two screws (35) which were removed to install the machine head switch assembly (36) in the position shown in the illustration.
3. Check that the machine head switch as turned on as shown in figure [A].

* If the machine head switch is not turned on, adjust the installation position while referring to “3-17. Checking the machine head switch”.

3-5. Installing the LCD panel

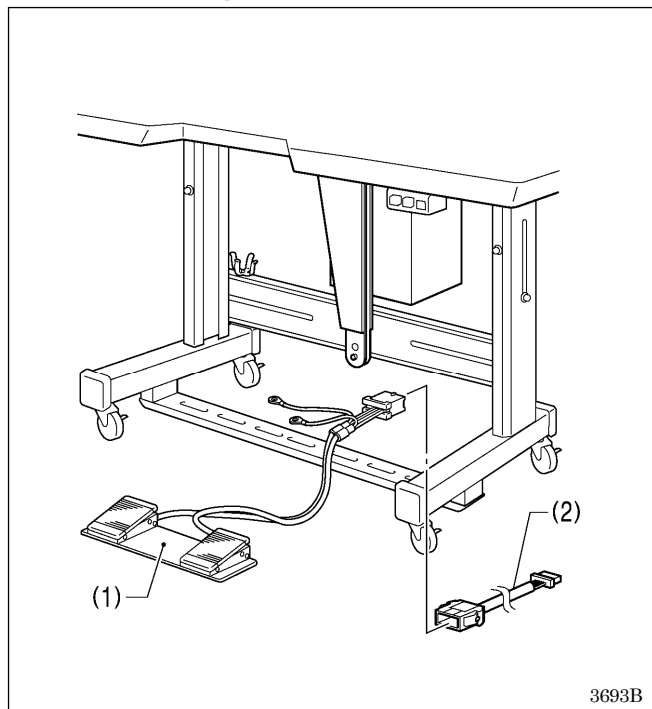


- (1) Cradle
- (2) Rubber cushion
- (3) Wood screws [4 pcs.]
- (4) Setting plate
- (5) Flat screws [4 pcs.]
- (6) LCD panel
- (7) Staples [2 pcs.]

• Pass the cord of the LCD panel (8) through the table hole, and then insert it into the (PANEL) connector (9) on the side of the control box.

• Tighten the four wood screws (3) so that the thickness of the rubber cushion (2) is 5 mm.

3-6. Installing the two-pedal foot switch



- (1) Two-pedal foot switch
- (2) Conversion harness

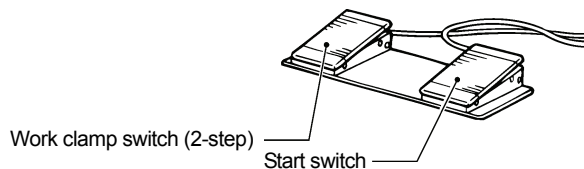
Connect the connector for the two-pedal foot switch (1) to the conversion harness (2). Insert the conversion harness (2) into the P15 (PEDAL) connector on the main board. (Refer to "3-7. Connecting the cords".)

* Be sure to make the ground connection. (Refer to "3-8. Connecting the ground wire".)

<Two-pedal foot switch operating method>

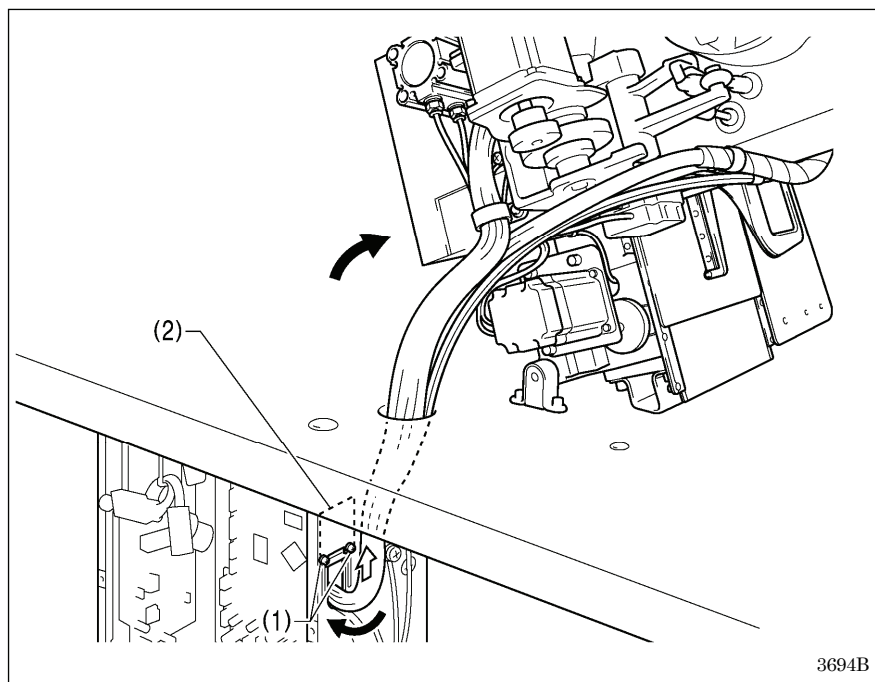
When the work clamp switch (left) is depressed, both work clamps are lowered, and when the start switch (right) is depressed, the sewing machine starts sewing.

* The work clamp lowering method can be changed using memory switch No. 002. (Refer to "2-2. List of memory switch settings" in the "LCD Panel/Operation Panel" Instruction Manual.)



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3-7. Connecting the cords



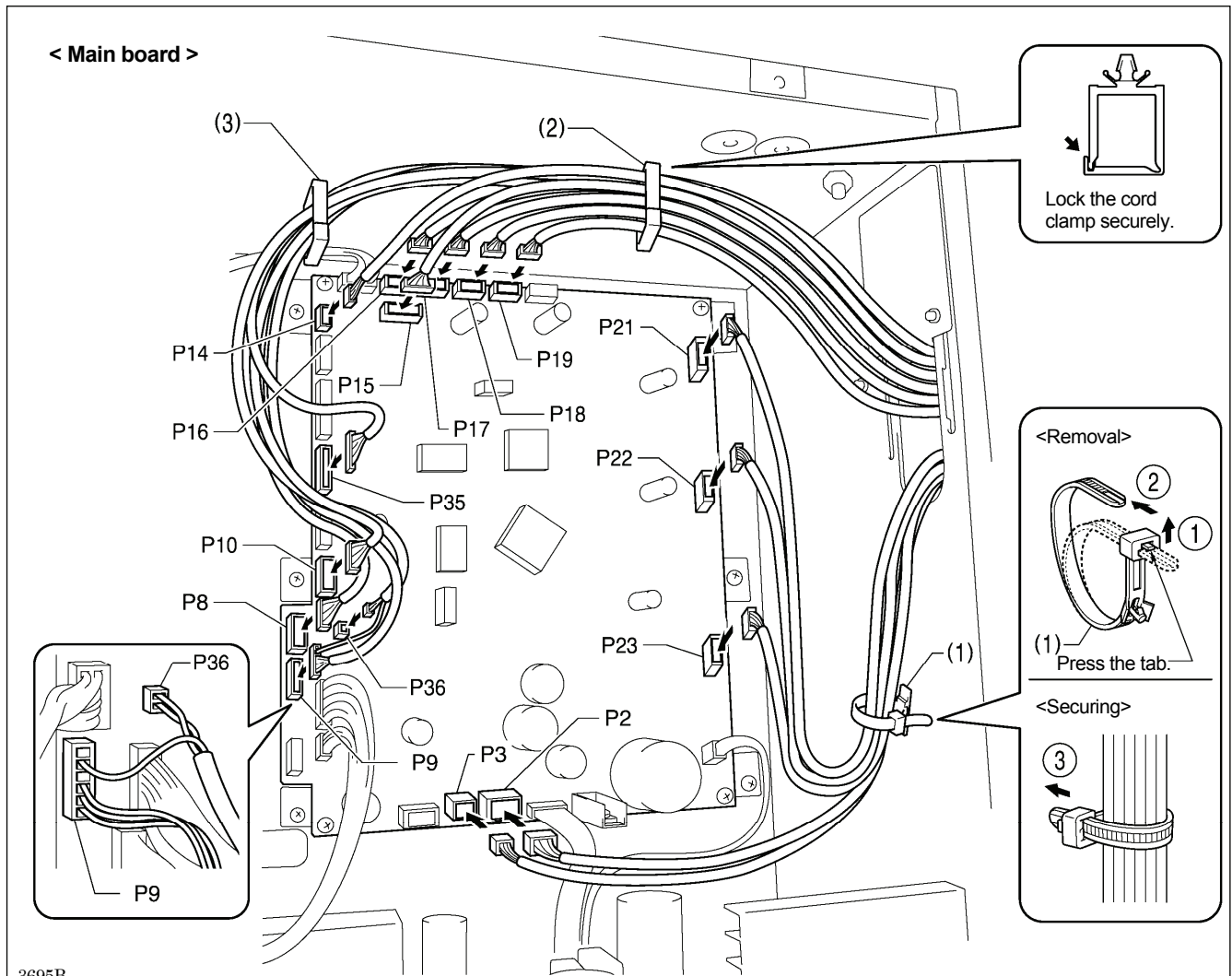
1. Gently tilt back the machine head.
2. Pass the cord bundle through the hole in the work table.
3. Loosen the two screws (1), and then open the cord presser plate (2) in the direction of the white arrow and pass the cord bundle through the opening.
4. Securely connect the connectors as indicated in the table below. (Refer to the next page.)

NOTE:

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

3694B

3. INSTALLATION



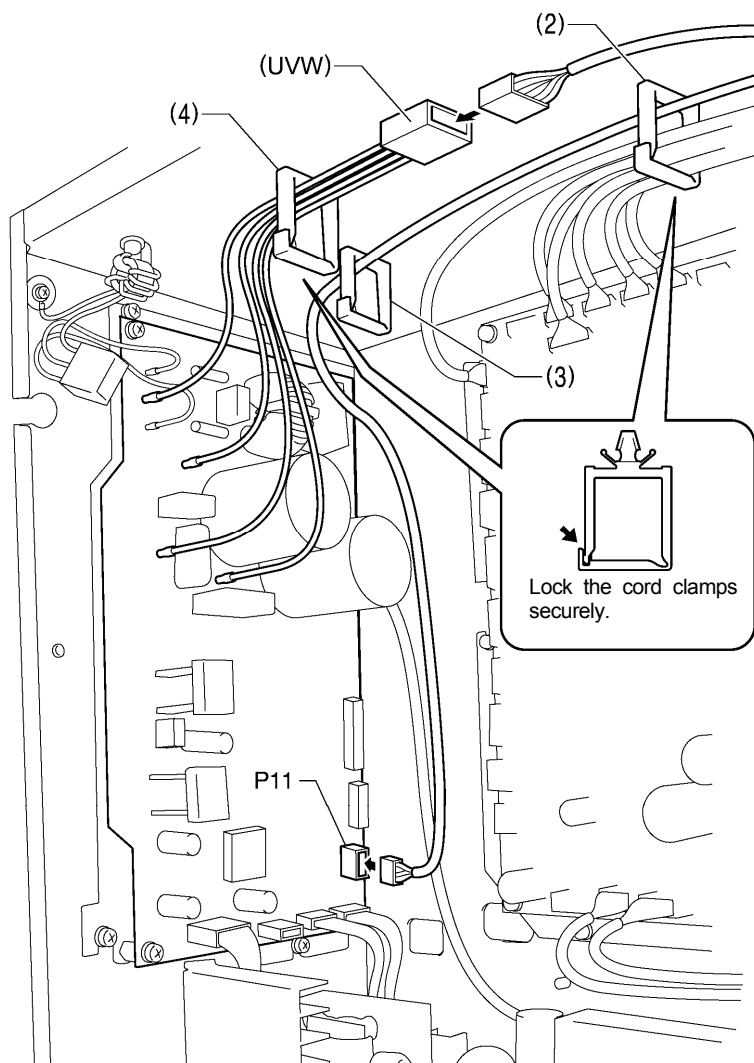
3695B

Connectors	Connection location on main board	Cord clamps / cable ties
X pulse motor encoder [5-pin] White	P17 (X-ENC)	(2)
Y pulse motor encoder [5-pin] Blue	P18 (Y-ENC)	(2)
Intermittent presser foot pulse motor encoder [5-pin] Black *1	P19 (P-ENC)	(2)
Machine head switch [3-pin]	P14 (HEAD-SW)	(2)
Conversion harness (two-pedal foot switch) [7-pin] White	P15 (PEDAL)	(2)
Machine head memory [6-pin]	P16 (HEAD-M)	(2)
Thread trimmer solenoid [6-pin]	P2 (SOL1)	(1)
Tension release solenoid [4-pin]	P3 (SOL2)	(1)
X pulse motor [4-pin] White	P21 (XPM)	(1)
Y pulse motor [4-pin] Blue	P22 (YPM)	(1)
Intermittent presser foot pulse motor [4-pin] Black *1	P23 (PPM)	(1)
Home position sensor [12-pin] White	P8 (SENSOR1)	(2) (3)
STOP switch [6-pin] White	P9 (HEAD)	(2) (3)
Valve harness [12-pin]	P35 (EX-OUT1)	(2) (3)
Upper thread breakage detector [2-pin] White	P36, P9(HEAD)	(2) (3)
Thread trimming cylinder sensor harness [16-pin]	P10 (EX-IN1)	(2) (3)

NOTE: Route the X, Y and lintermittent presser foot pulse motor harnesses so that they do not touch the power supply board at the bottom of the control box.

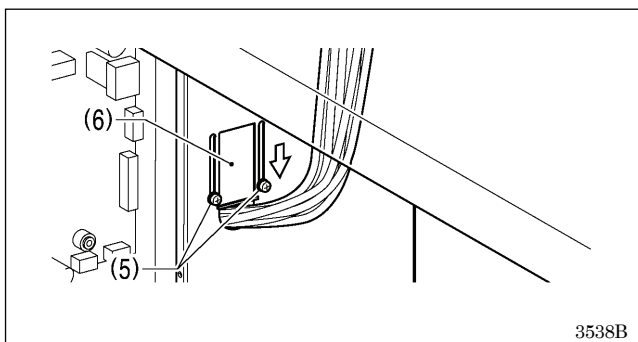
*1: Only applicable to -484 SF specifications.

< Motor board >



3537B

Connectors	Connection location on motor board	Cord clamps
Upper shaft motor [4-pin]	(UVW)	(4)
Synchronizer [10-pin]	P11 (SYNC)	(2) (3)



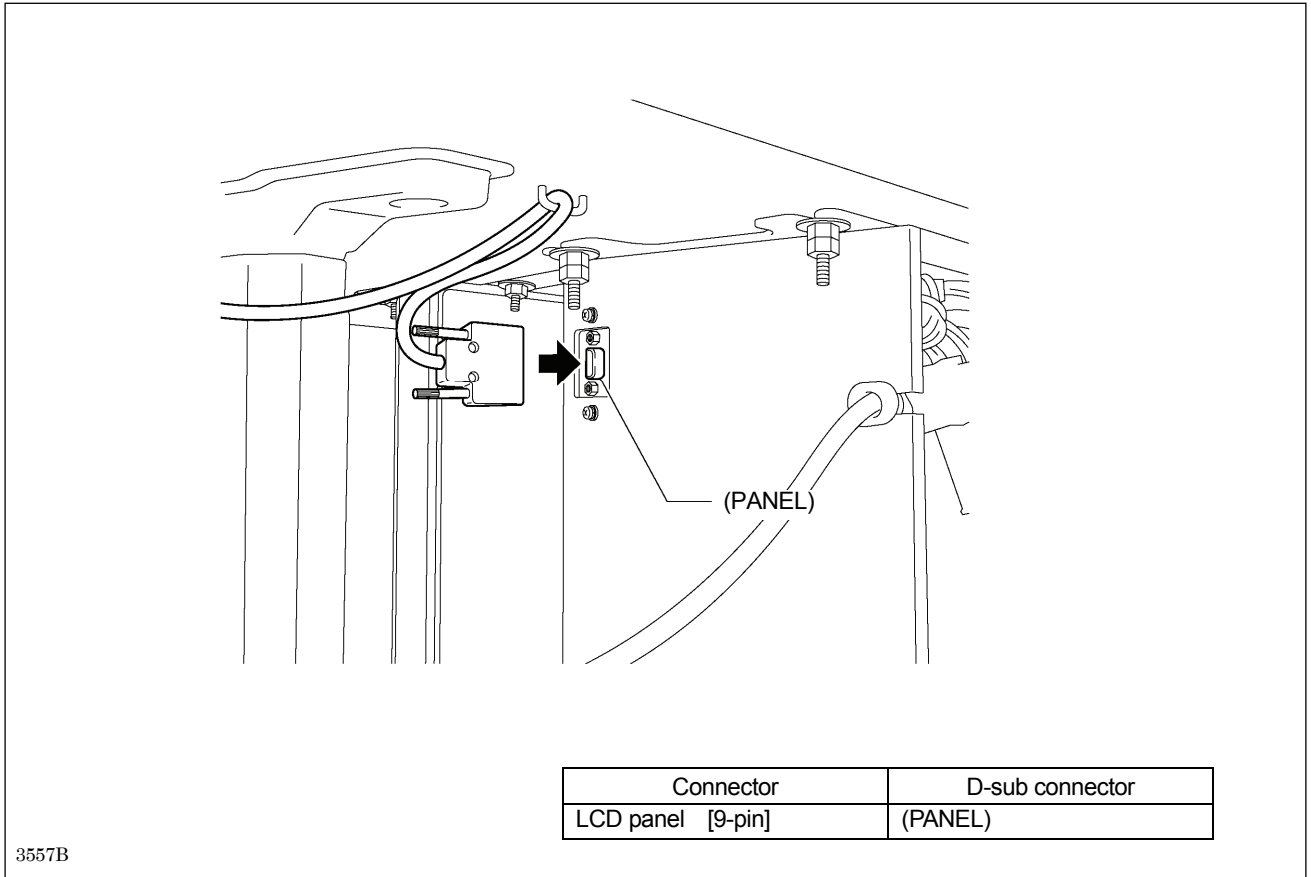
5. Close the cord presser plate (6) in the direction of the white arrow, and secure it by tightening the two screws (5).

NOTE:

Close the cord presser plate (6) securely so that no foreign objects, insects or small animals can get inside the control box.

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

3. INSTALLATION

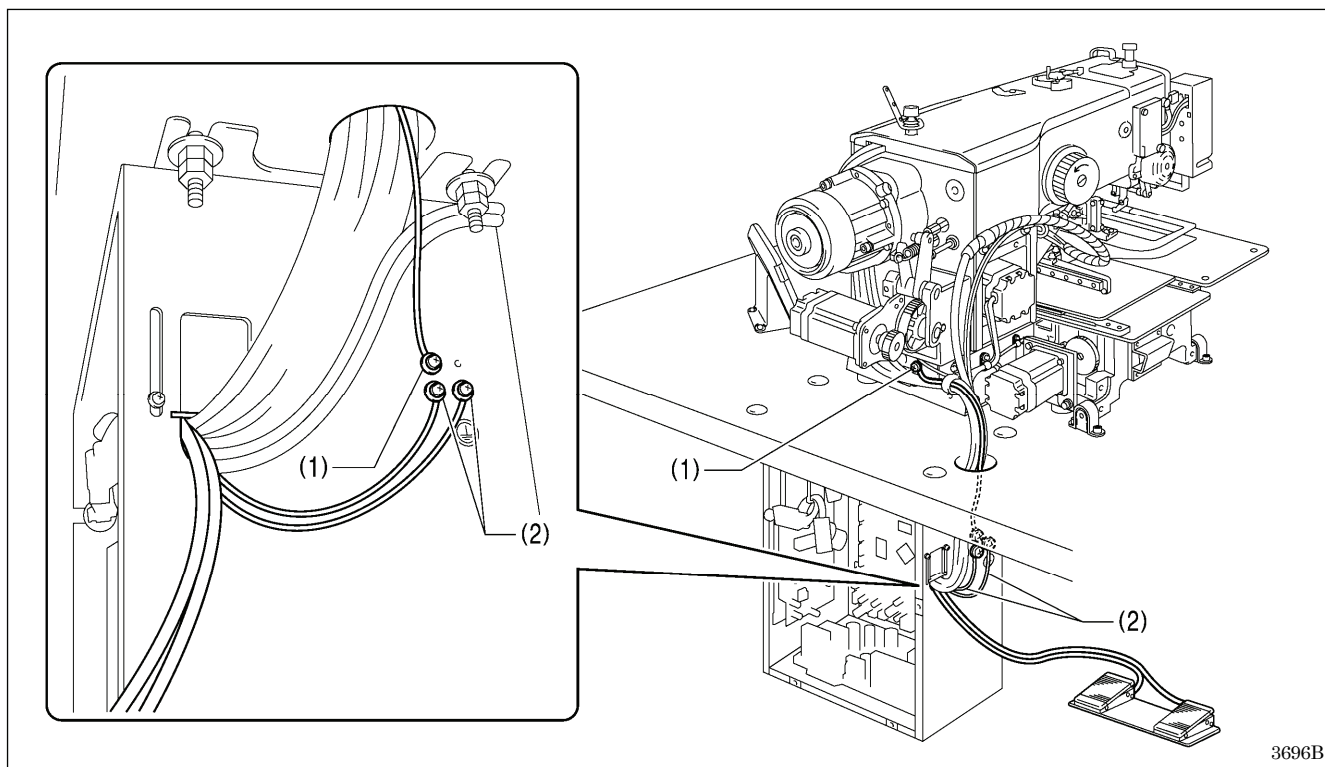


3-8. Connecting the ground wire

⚠ CAUTION



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



- (1) Ground wire from the machine head
 (2) Ground wires from two-pedal foot switch harness (2 wires)

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

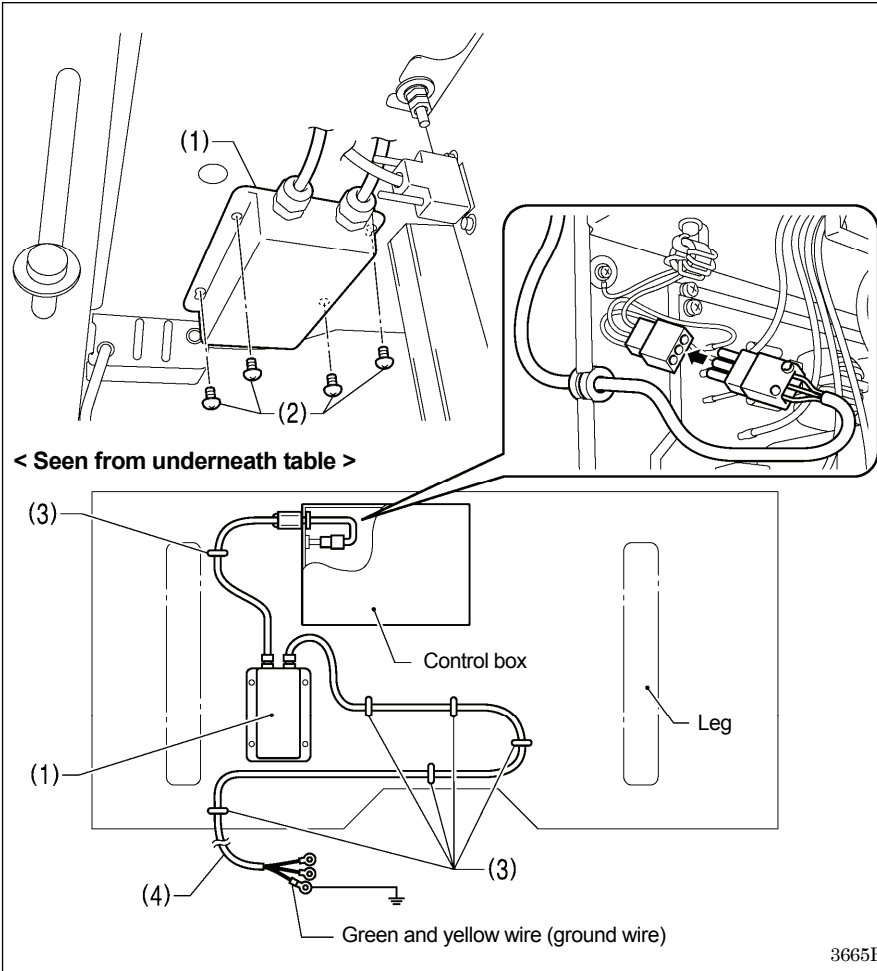
NOTE: Make sure that the ground connections are secure in order to ensure safety.

3-9. Connecting the power cord

! 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.

< EU specifications >

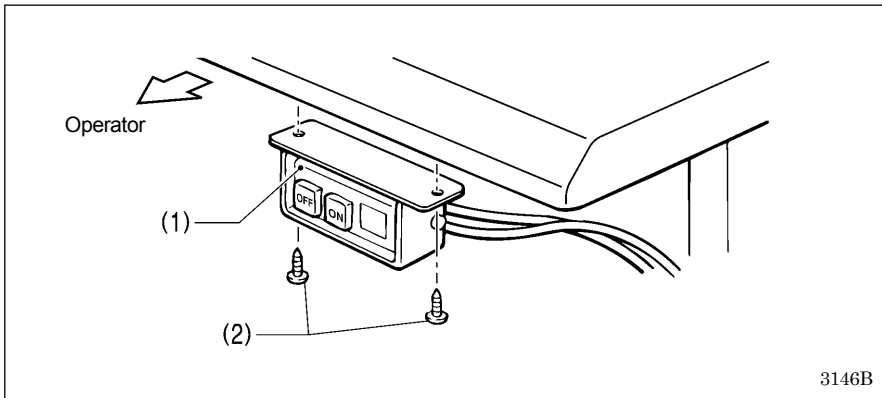
- (1) Filter box
- (2) Screws [4 pcs.]
- (3) Staples [6 pcs.]
- (4) Power cord

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.

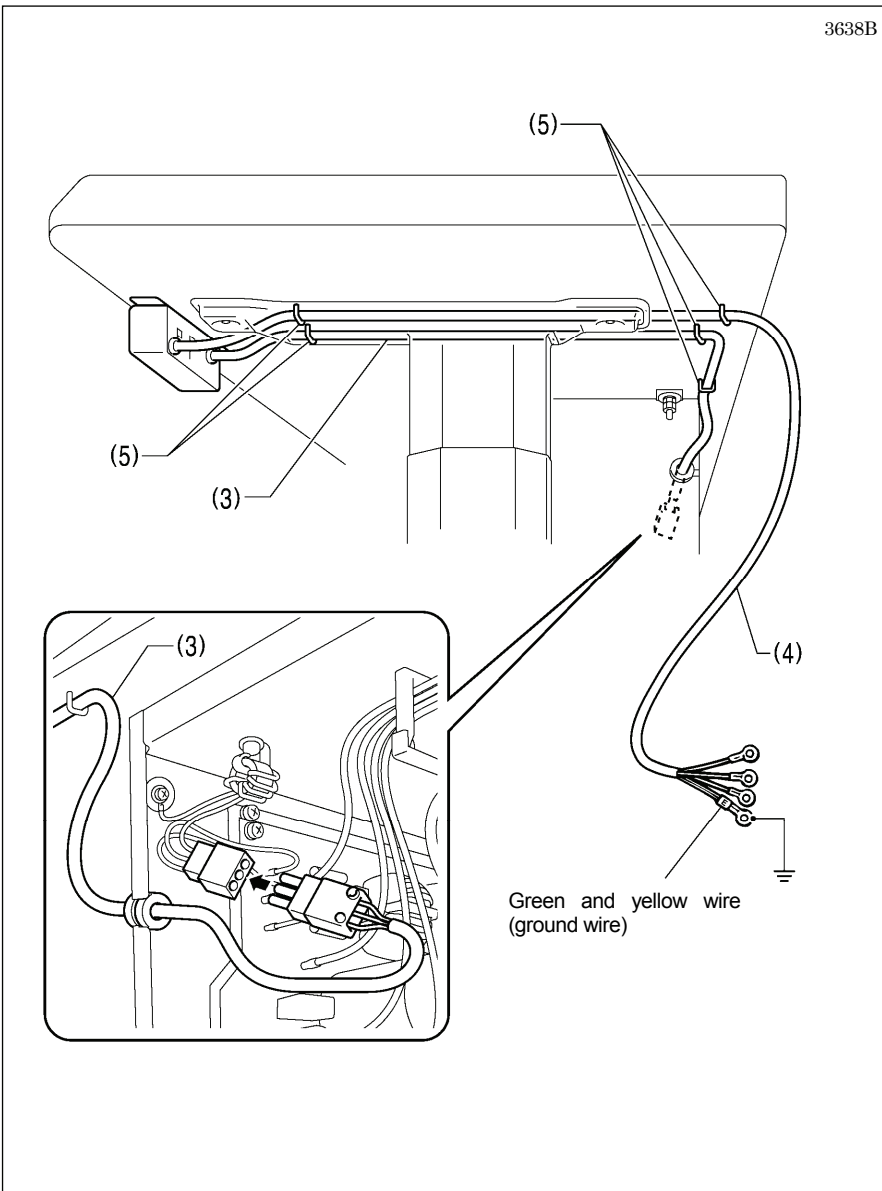
3665B



<200 V system >

- (1) Power switch
- (2) Wood screws [2 pcs.]

3146B



3638B

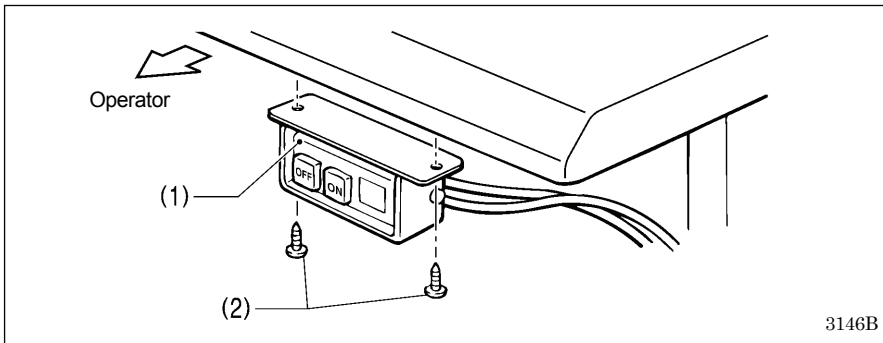
- (3) 3-pin power supply connector
- (4) Power cord
- (5) Staples [5 pcs.]

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

NOTE:

- Take care when tapping in the staples (5) to make sure that they do not pierce the cords.
 - Do not use extension cords, otherwise machine operation problems may result.
3. 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.

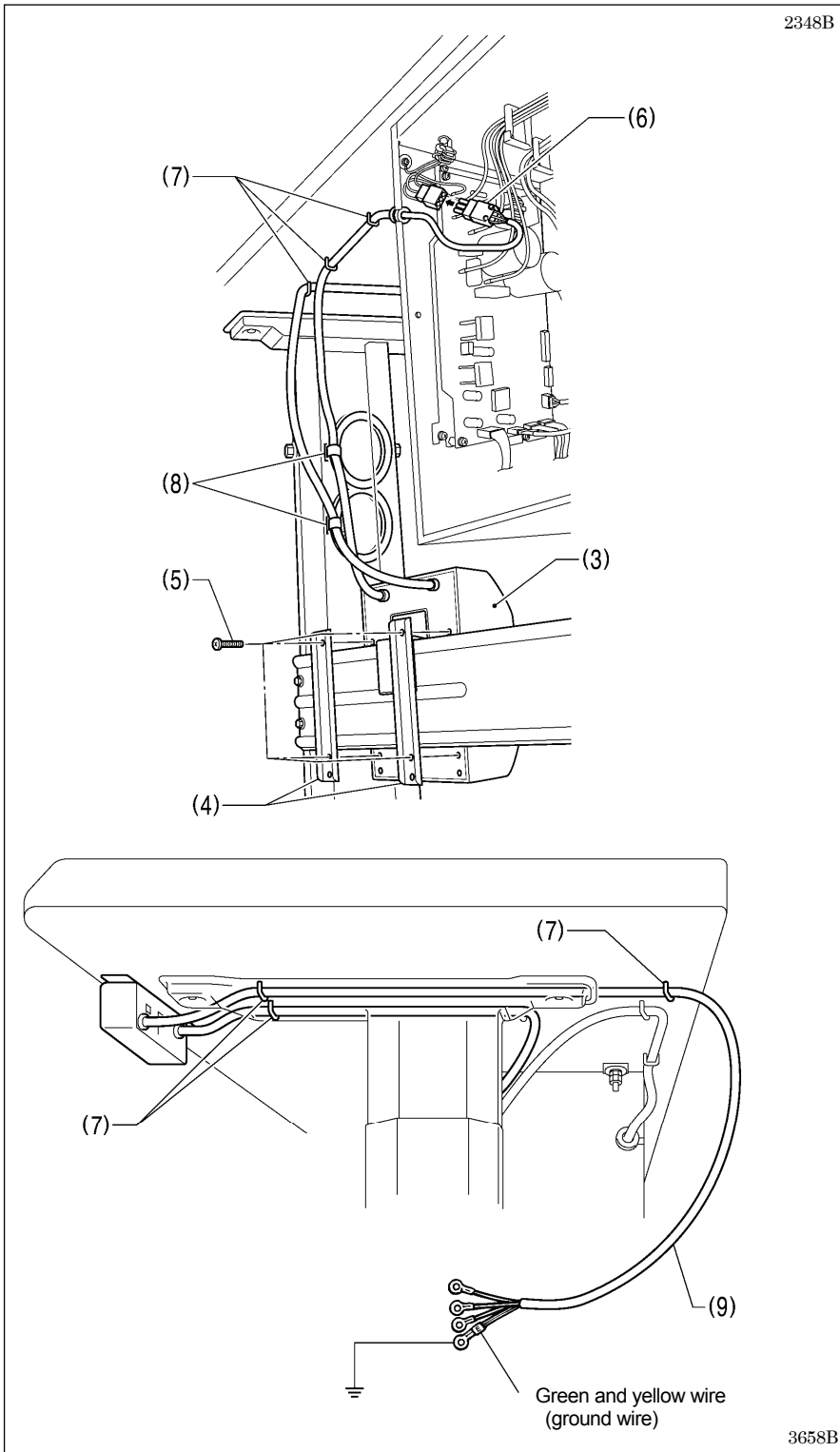
3. INSTALLATION



<100 V / 400 V system >

- (1) Power switch
- (2) Wood screws [2 pcs.]

3146B



2348B

- (3) Transformer box
- (4) Transformer box plates [2 pcs.]
- (5) Screws [with washer] [4 pcs.]
- (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.

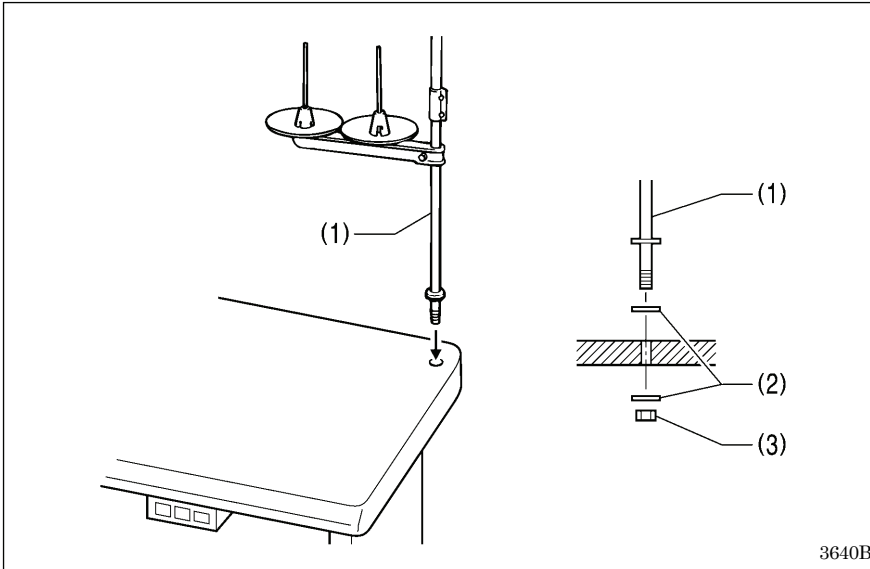
NOTE:

- If the ground connection is not secure, electric shocks, operating errors or damage to electronic components such as PCBs 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.

3658B

3-10. Installing the cotton stand

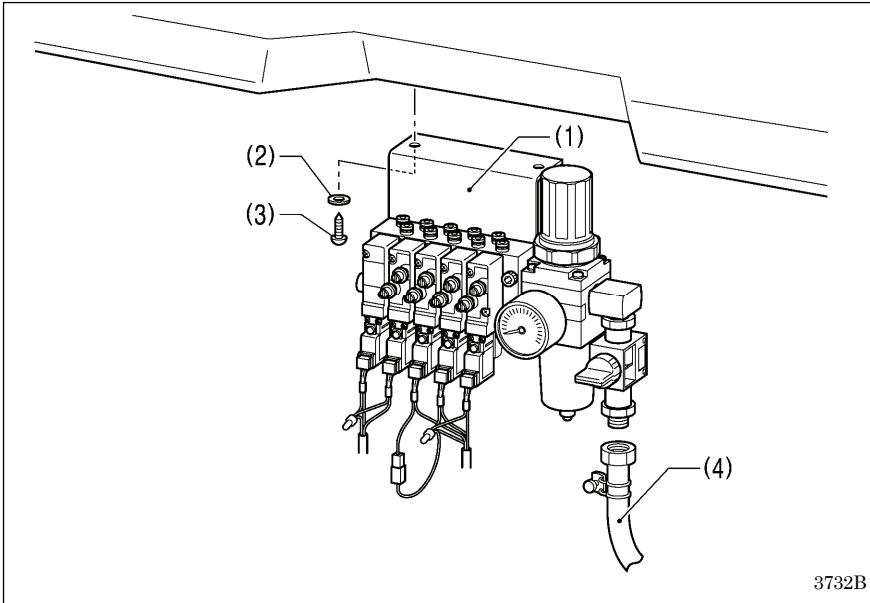


(1) Cotton stand

NOTE:

Securely tighten the nut (3) so that the two washers (2) are securely clamped so that the cotton stand (1) does not move.

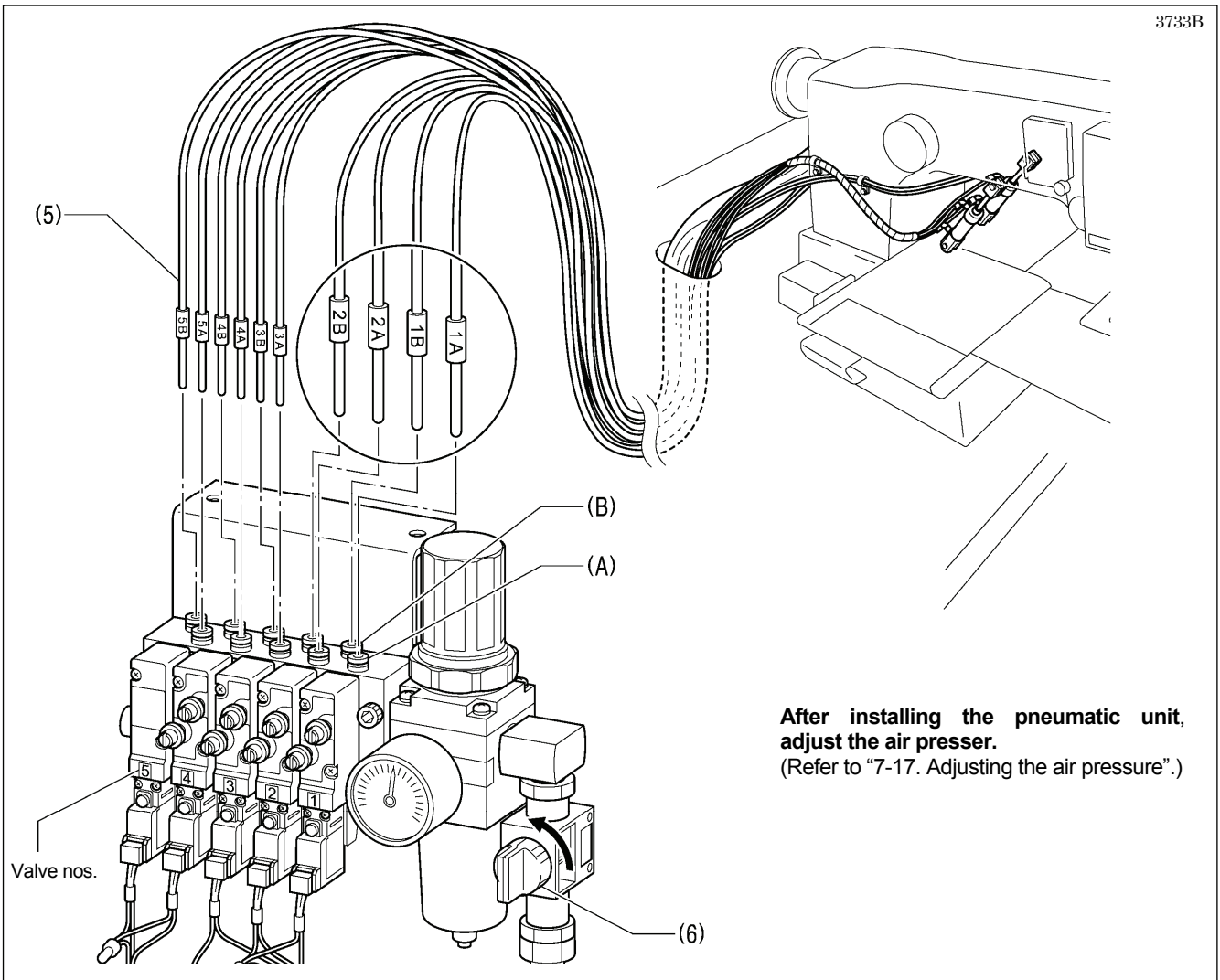
3-11. Installing the pneumatic unit



1. Install the pneumatic unit underneath the work table.

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

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



After installing the pneumatic unit, adjust the air presser.
(Refer to "7-17. Adjusting the air pressure".)

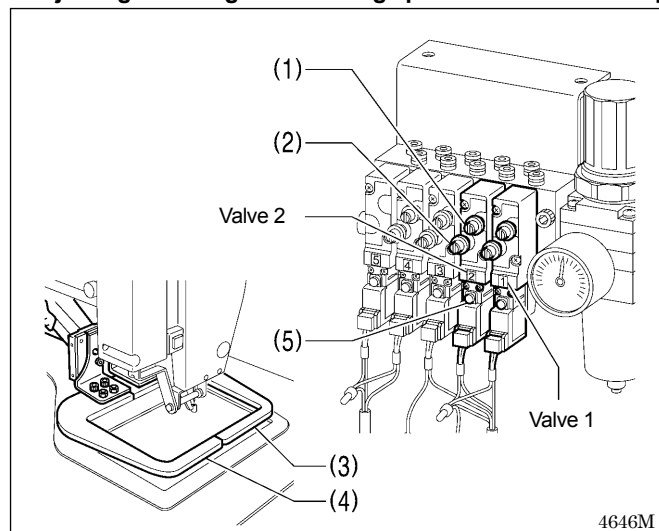
2. Connect each of the air tubes (5) to the valves so that all of the numbers match respectively.

The air tubes (5) marked with an A connect to the front valve connections (A), and those marked with B connect to the rear connections (B).

3. Open the air cock (6).

3-12. Adjusting the speed controller

<Adjusting the lifting and lowering speed for the work clamps>



You can adjust the lifting and lowering speed for the work clamps using the knobs (1) and (2) on valves 1 and 2.

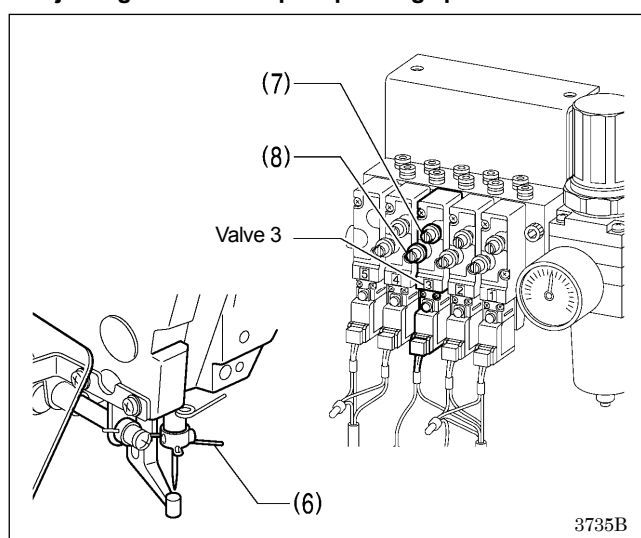
Valve 1 adjusts the right work clamp (3), and valve 2 adjusts the left work clamp (4).

The knobs (1) and (2) should be adjusted so that the left and right work clamps operate at the same speed.

- When the upper knob (1) is tightened, the lifting speed becomes slower. When it is loosened, the lifting speed becomes faster.
- When the lower knob (2) is tightened, the lowering speed becomes slower. When it is loosened, the lowering speed becomes faster.

You can operate the work clamps when the power is turned off by pressing the manual buttons (5).

<Adjusting the thread wiper operating speed>



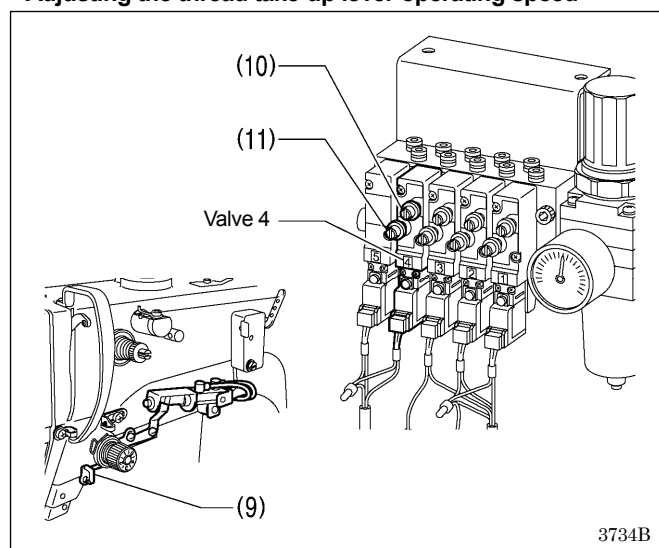
Valve 3 is used for adjusting the operating speed of the thread wiper (6).

To use, fully tighten both the upper and lower knobs (7) and (8), and then loosen them both by 6 turns.

NOTE:

If the knobs (7) and (8) are tightened more than the settings mentioned above, upper thread wiping may not be carried out correctly.

<Adjusting the thread take-up lever operating speed>



Valve 4 is used for adjusting the operating speed of the thread take-up lever (9).

To use, fully tighten both the upper and lower knobs (10) and (11), and then loosen them both by 6 turns.

NOTE:

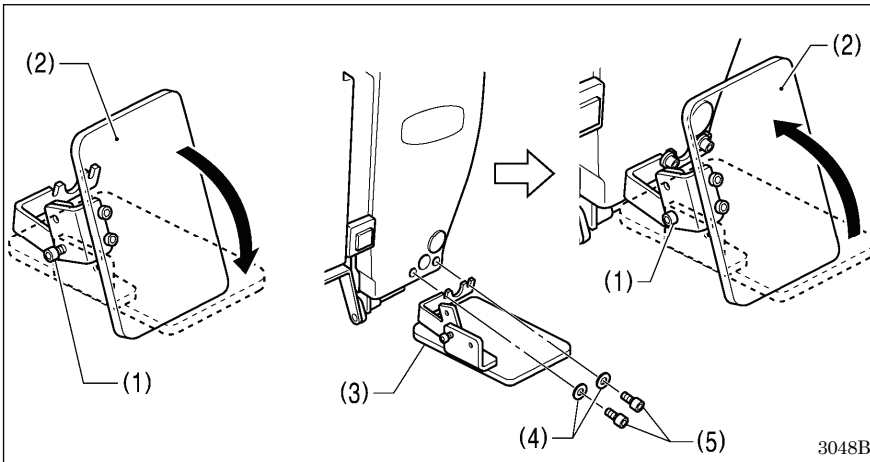
If the knobs (10) and (11) are tightened more than the settings mentioned above, the upper thread trailing length may not be maintained correctly.

3-13. Installing the eye guard

⚠ CAUTION



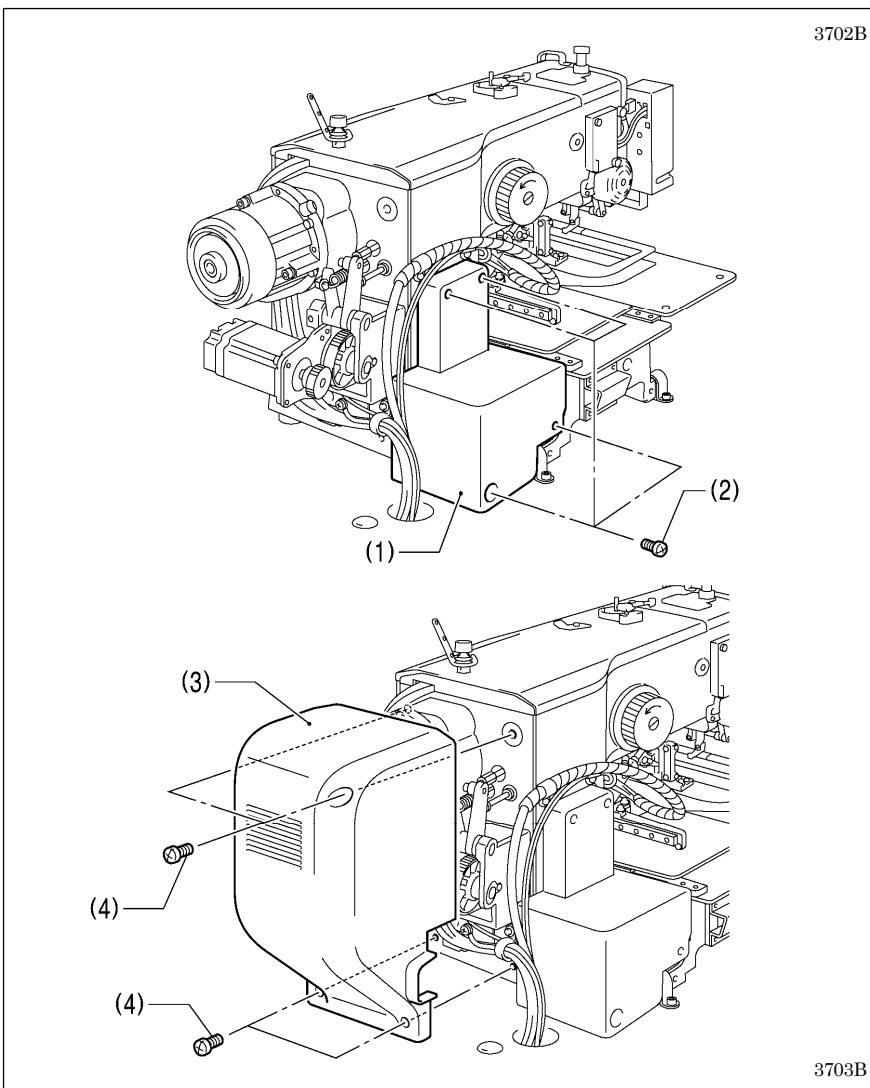
Attach all safety devices before using the sewing machine.
If the machine is used without these devices attached, injury may result.



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

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

3-14. Installing the side cover and rear cover



- (1) Side cover
- (2) Screws [4 pcs.]
- (3) Rear cover
- (4) Screws [4 pcs.]

NOTE:

Be careful not to clamp the cords when installing the side cover and the rear cover.

3-15. Lubrication

 **CAUTION**


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

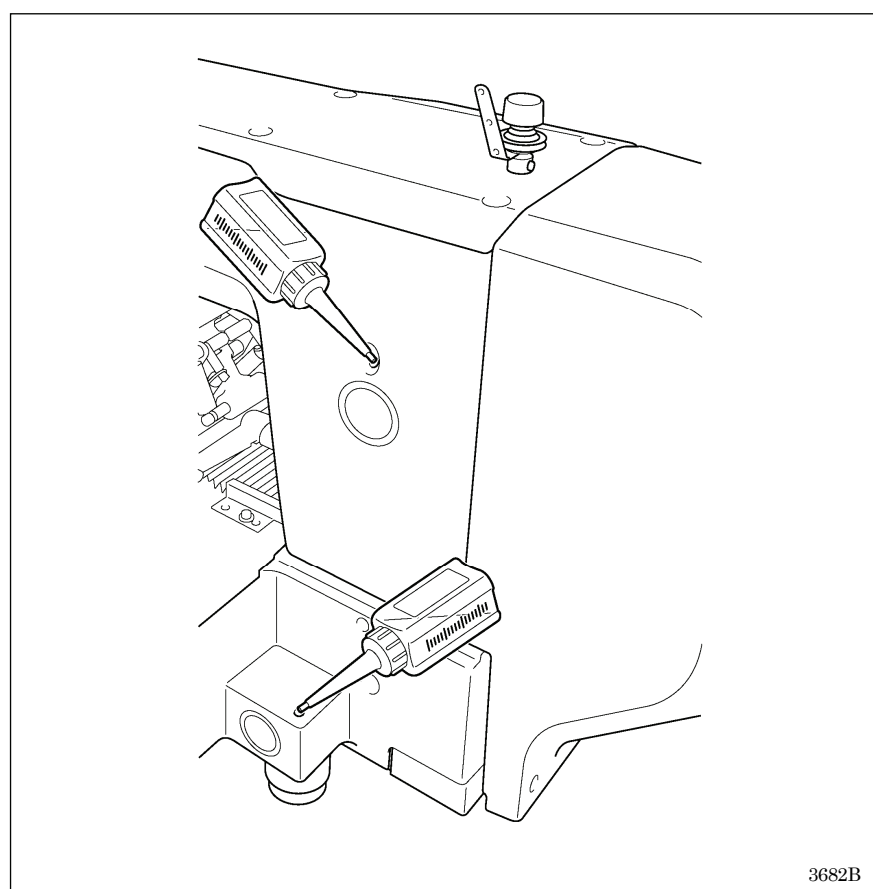


Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin. If the oil and grease get into your eyes or onto your skin, inflammation can result. Furthermore, do not drink or eat the lubricating oil or grease. They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

The sewing machine should always be lubricated and the oil supply replenished before it is used for the first time, and also after long periods of non-use.

Use only the lubricating oil <JX Nippon Oil & Energy Corporation Sewing Lube N10; VG10> specified by Brother.

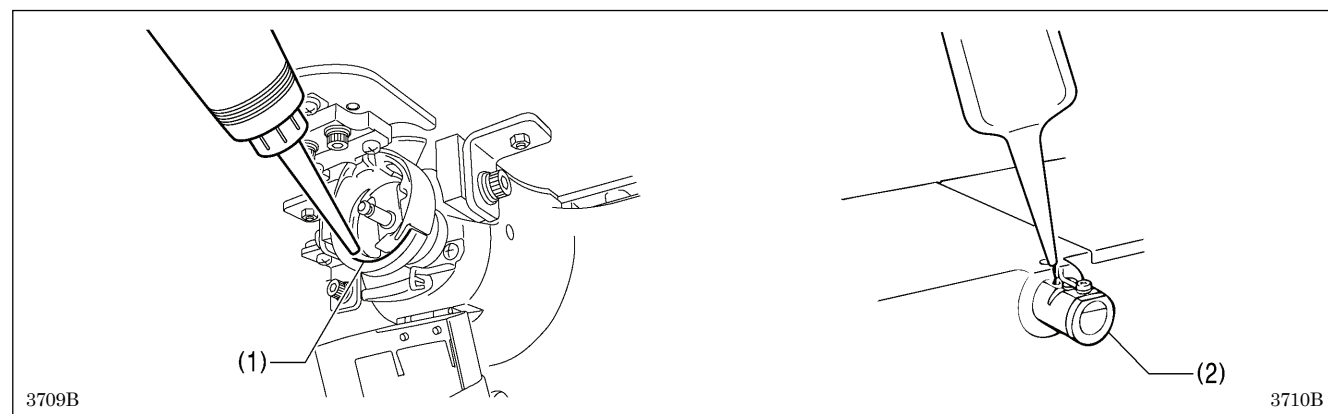
* If this type of lubricating oil is difficult to obtain, the recommended oil to use is <Exxon Mobil EssoTex SM10; VG10>.



1. Fill the arm-side oil tank with oil.
2. Fill the bed-side oil tank with oil.

NOTE:

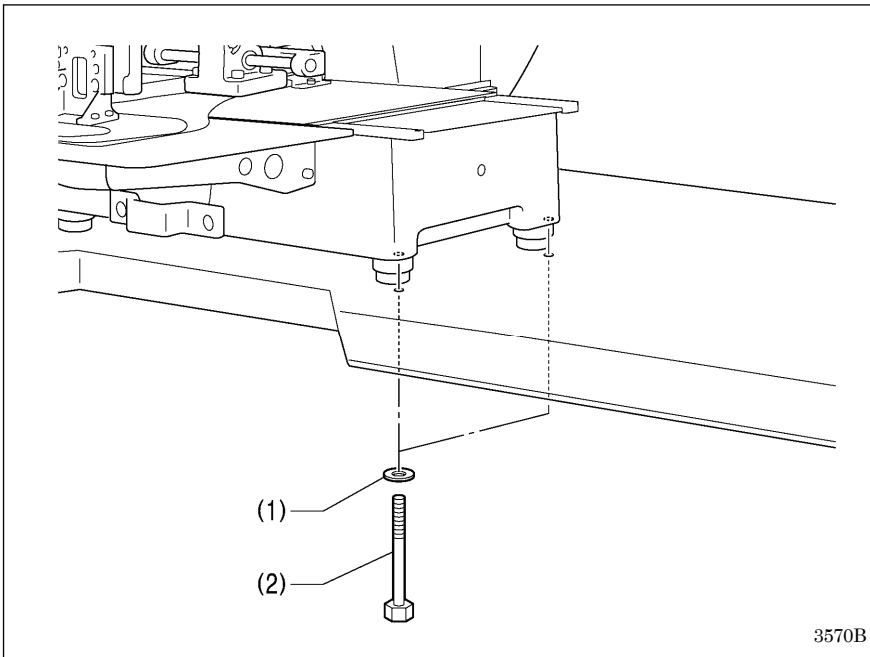
Be sure to fill the machine with oil when the oil level is down to about one-third full in the oil sight glass. If the oil drops below the one-third level, there is the danger that the machine may seize during operation.



3. Remove the bobbin case and add 2-3 drops of oil to the sliding parts (1) of the outer rotary hook and inner hook.
4. If using the needle cooler (2), fill it with optional silicon oil (100 mm²/s). (Refer to "4-2. Threading the upper thread".)

3-16. Installing the machine head fixing bolt

When transporting the sewing machine, secure the machine head to the table with the machine head fixing bolts.

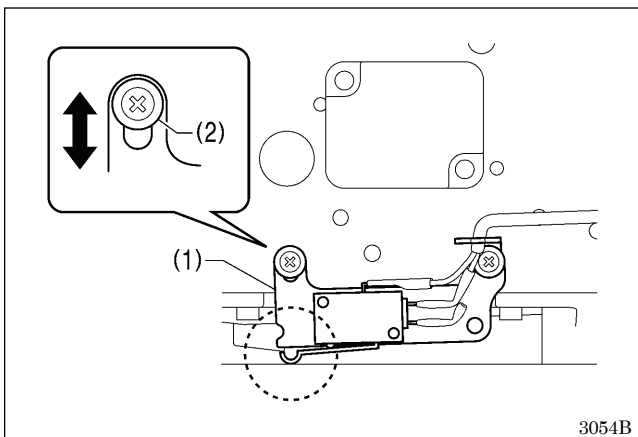


- (1) Plain washers [2 pcs.]
- (2) Machine head fixing bolts [2 pcs.]

NOTE:

When operating the sewing machine, remove the machine head fixing bolts.

3-17. Checking the machine head switch



- 1. Turn on the power.
- 2. Check that no error numbers appear.

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

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

Use the screw (2) to adjust the installation position of the machine head switch as shown in the illustration.

4. PREPARATION BEFORE SEWING

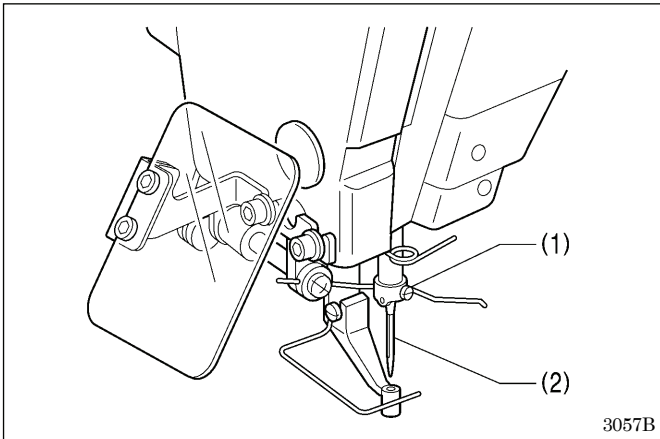
4-1. Installing the needle

CAUTION



Turn off the power switch before installing the needle.

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

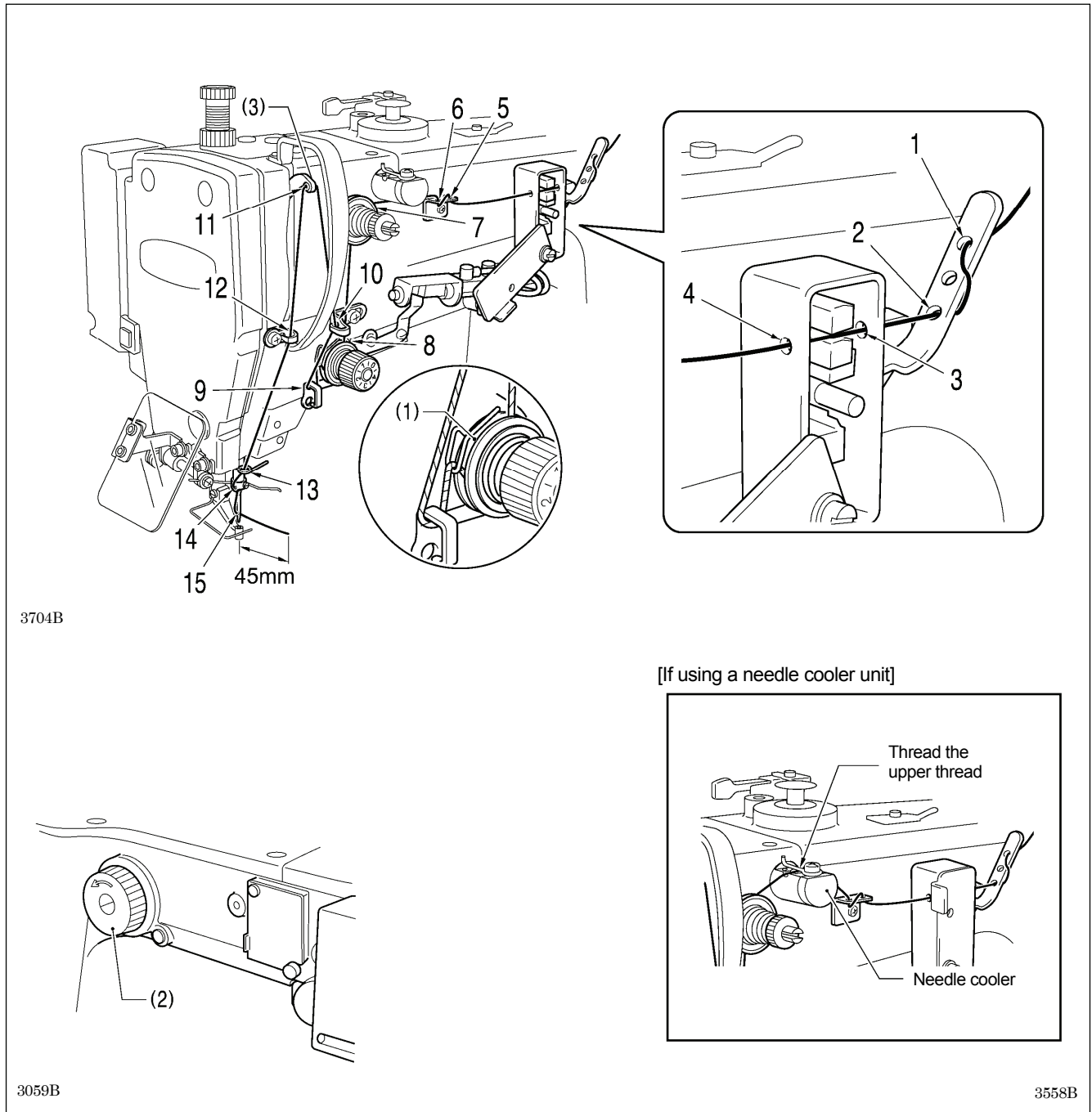


1. Loosen the set screw (1).
2. Insert the needle (2) in a straight line as far as it will go, making sure that the long groove on the needle is at the front, and then securely tighten the set screw (1).

4-2. Threading the upper thread

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

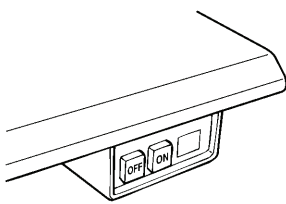
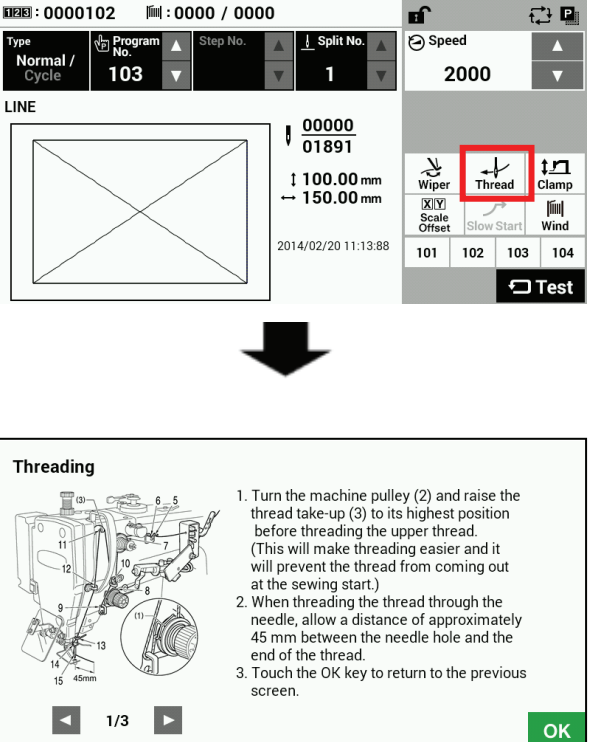

- * When using threading mode for threading, the tension discs (1) will open so that the thread can be threaded more easily. Refer to <Threading mode> (P.25)



- Turn the machine pulley (2) and raise the thread take-up (3) to its highest position before threading the upper thread. (This will make threading easier and it will prevent the thread from coming out at the sewing start.)
- When threading the thread through the needle, allow a distance of approximately 45 mm between the needle hole and the end of the thread. If it is too long, the thread may become tangled, and if it is too short, the thread may pull out at the sewing start.
- If you would like to adjust the sensitivity of the thread breakage sensor, refer to "7-2. Adjusting the sensitivity of the thread breakage sensor".

<Threading mode>


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

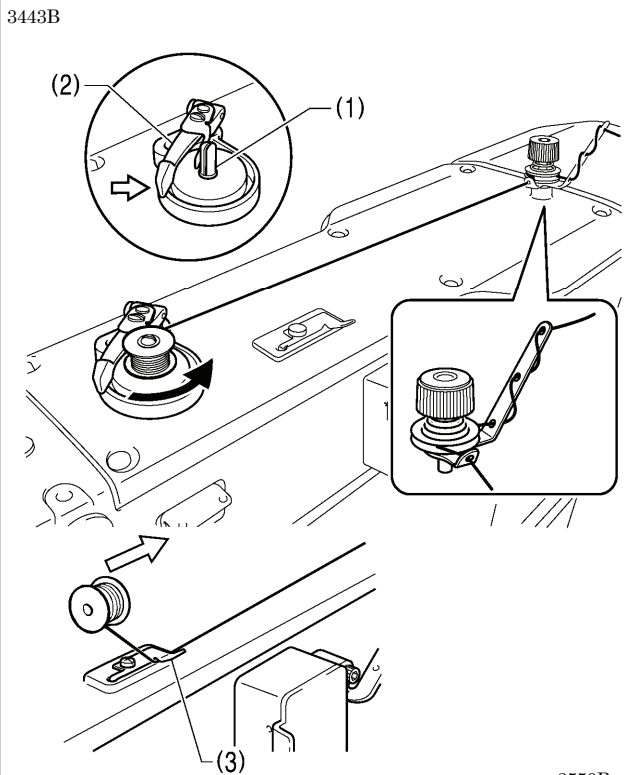
1	 <p>Turn on the power.</p>	3055B
2	 <p>Touch the Thread key on the screen.</p> <ul style="list-style-type: none"> • The work clamps (and the intermittent presser foot *1) will drop. • The tension discs (1) will open. <p>Threading</p> <ol style="list-style-type: none"> 1. Turn the machine pulley (2) and raise the thread take-up (3) to its highest position before threading the upper thread. (This will make threading easier and it will prevent the thread from coming out at the sewing start.) 2. When threading the thread through the needle, allow a distance of approximately 45 mm between the needle hole and the end of the thread. 3. Touch the OK key to return to the previous screen. 	
3	<p>Threading the thread.</p>	
4	<p>Ending threading mode</p> <p>The display will return to the previous screen.</p>  <p>Touch the OK key on the screen.</p> <ul style="list-style-type: none"> • The work clamps (and the intermittent presser foot *1) will return to where it was before threading mode was started. 	

*1: The intermittent presser foot is only applicable to -484 SF specifications.

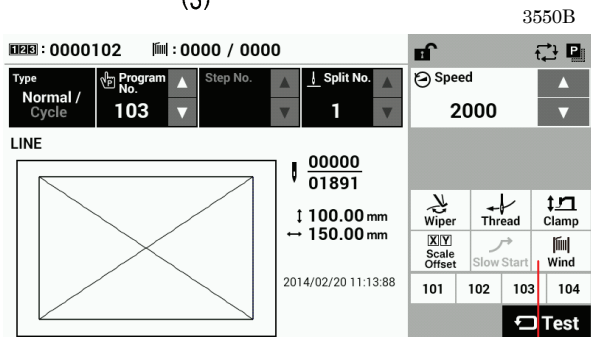
4-3. Winding the lower thread

CAUTION

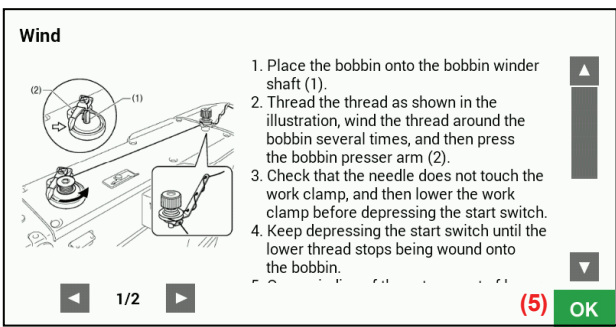
 Do not touch any of the moving parts or press any objects against the machine while winding the lower thread, as this may result in personal injury or damage to the machine.



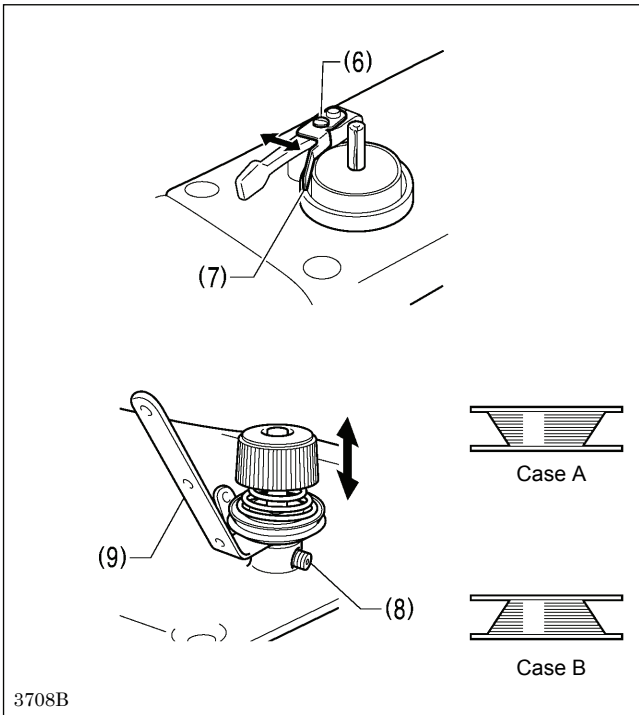
1. Place the bobbin onto the bobbin winder shaft (1).
2. Thread the thread as shown in the illustration, wind the thread around the bobbin several times, and then press the bobbin presser arm (2).
3. Turn on the power.
4. Lower the work clamps (and the intermittent presser foot) before depressing the start switch. Home position detection will be carried out.
5. Touch the Wind key (4) on the screen.
6. The display will switch to the thread winding mode screen.
7. Check that the needle does not touch the work clamps (and the intermittent presser foot), and then lower the work clamps (and the intermittent presser foot) before depressing the start switch.
8. Keep depressing the start switch until the lower thread stops being wound onto the bobbin.
9. Once winding of the set amount of lower thread (80 - 90% of the bobbin capacity) is completed, the bobbin presser arm (2) will return automatically.
10. Remove the bobbin, hook the thread onto the knife (3), and then pull the bobbin in the direction of the arrow to cut the thread.
11. Touch the OK key (5) to return to the previous screen.



(4)



(5) OK



Adjusting the bobbin winding amount

Loosen the screw (6) and move the bobbin presser (7).

If the thread winds onto the bobbin unevenly

Loosen the set screw (8) and move the bobbin winder tension assembly (9) up and down to adjust.

* For case A, move the bobbin winder tension assembly (9) down, and for case B, move it upward.

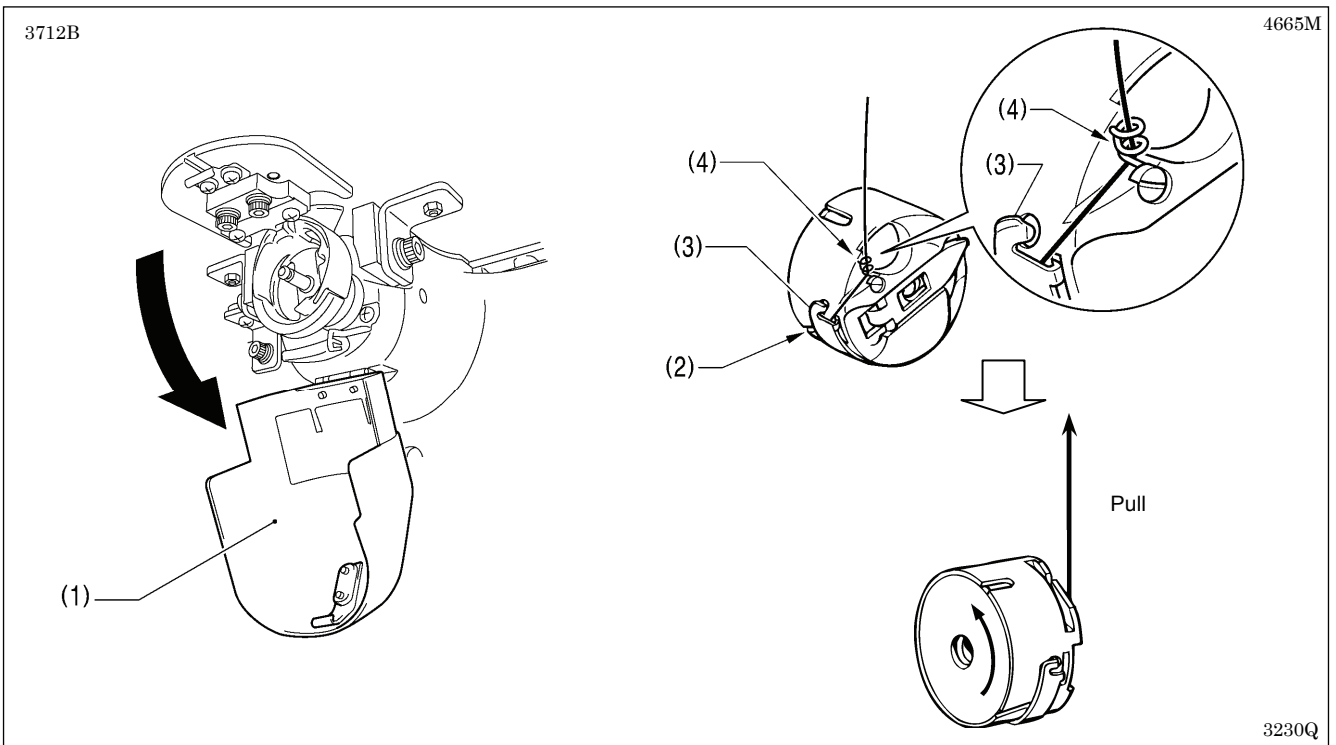
4-4. Installing the bobbin case

! CAUTION



Turn off the power switch before installing the bobbin case.

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

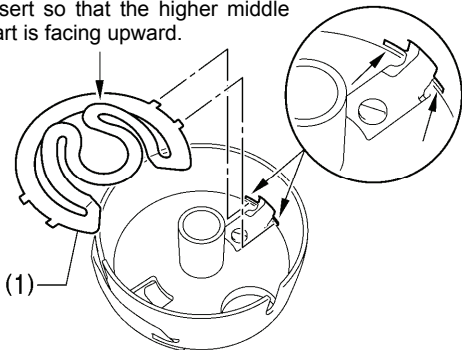
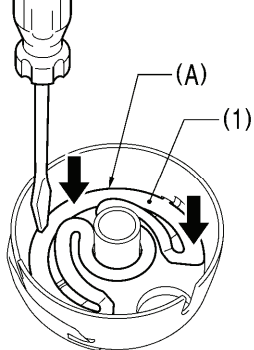
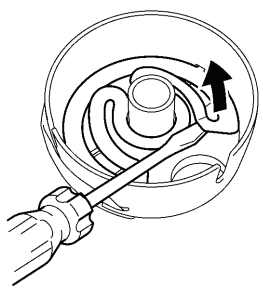


1. Pull the hook cover (1) downward to open it.
2. While holding the bobbin so that the thread winds to the left, insert the bobbin into the bobbin case.
3. Pass the thread through the thread slot (2), pass it underneath the spring (3), and then pass it through the thread guide (4), leaving a trailing-out length of about 30 mm.
4. Hold the latch on the bobbin case and insert the bobbin case into the rotary hook.

4-5. Installing the anti-spin spring

If the following situations occur, operation can be improved by using an anti-spin spring.

- The lower thread becomes tangled inside the bobbin case
- Uneven thread tightening occurs at the sewing start

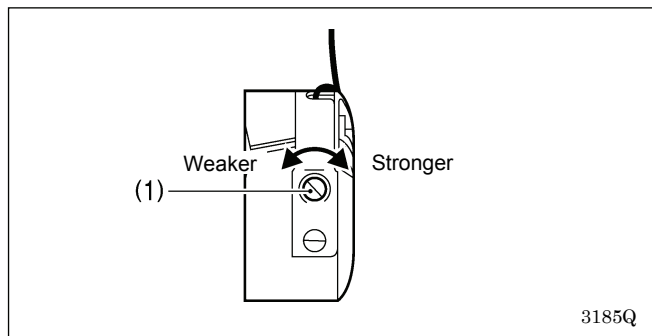
<p>Installation</p> <p>1. While inserting the projections on the anti-spin spring (1) into the grooves of the bobbin case, insert the anti-spin spring (1). Insert so that the higher middle part is facing upward.</p>  <p>2. Push the anti-spin spring (1) to insert it securely so that it does not lift up above the inside edge (A) of the bobbin case.</p> 	<p>Removal</p> <p>Use the tip of a screwdriver or similar to remove as shown in the illustration.</p> 
4715M	4716M

4-6. Thread tension

[Thread tension reference]

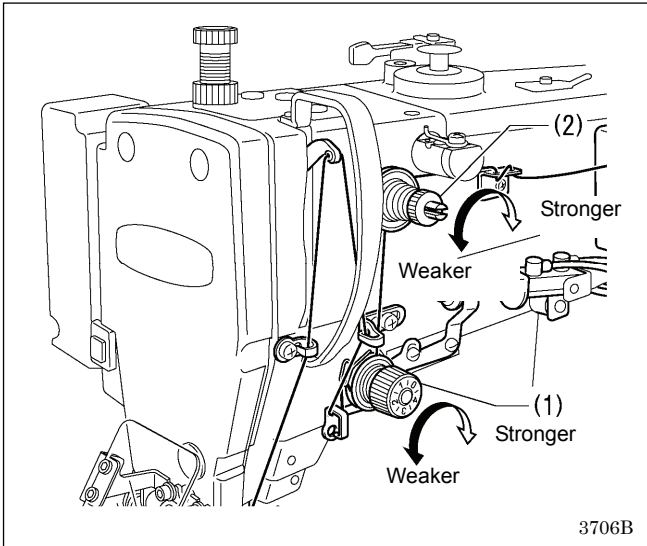
Upper thread	#4 or similar
Lower thread	#4 or similar
Upper thread tension (N)	2.5 – 3.0
Lower thread tension (N)	1.0 – 1.5
Pre-tension (N)	0.3 – 0.6
Needle	DP x 17 #25
Normal sewing speed	1,300 sti/min

4-6-1. Lower thread tension



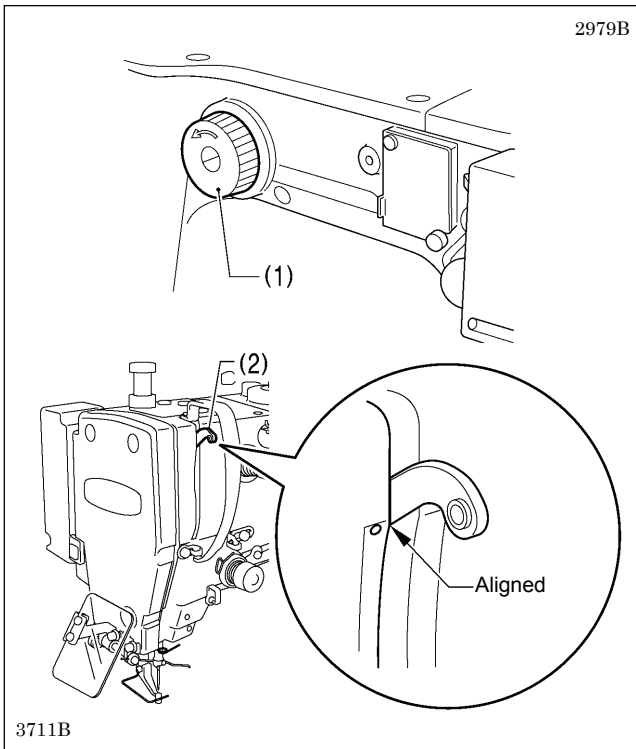
Adjust the lower thread tension by turning the adjusting screw (1).

4-6-2. Upper thread tension



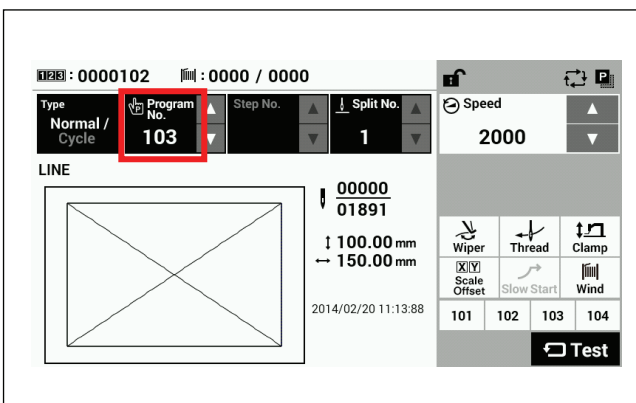
1. Turn the tension nut (1) (main tension) to adjust the tension as appropriate for the material being sewn.
2. Use the tension nut (2) (sub tension) to adjust so that the upper thread trailing length after thread trimming is about 45 mm.

4-7. Starting up



Before turning on the power, check that the needle bar is at the needle up stop position.

Turn the pulley (1) in the direction of the arrow until the ridge at the bottom of the thread take-up (2) is aligned with the index mark.



Turn on the power.

If a program has been registered, the program number and a preview of the sewing pattern will be displayed.

No programs are registered at the time of shipment from the factory, and so "----" is displayed as the program number (No.).

For details on the sewing data reading method, refer to "3. USING STORAGE MEDIA" in the "LCD Panel/Operation Panel" Instruction Manual.

5. SEWING

! 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



Turn off the power switch at the following times.

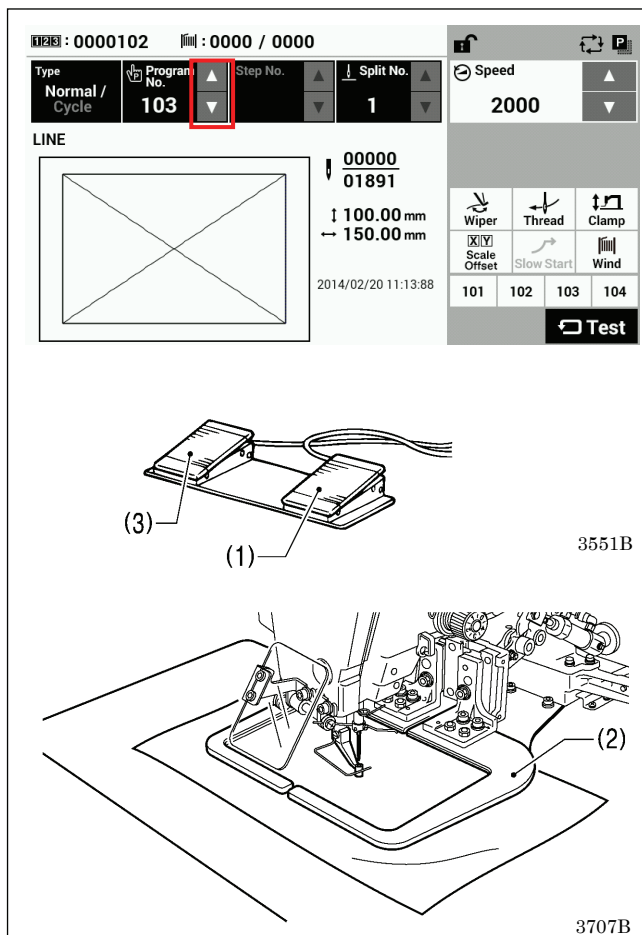
If the foot switch is depressed by mistake, the sewing machine might start operating and injury could result.

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



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

5-1. Sewing

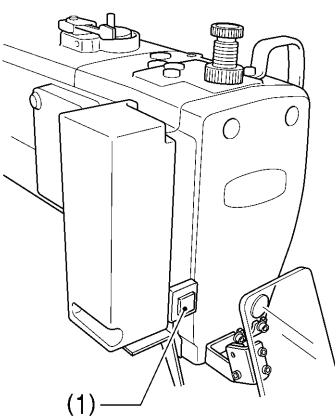


1. Turn on the power.
2. Touch the Δ or ∇ key to select the number for the program to be sewn.
* For details on reading sewing data from SD cards and USB memory devices, refer to "3-4. Importing items of sewing data separately" in the LCD Panel/Operation Panel Instruction Manual.
3. Lower the work clamps (2) and depress the start switch (1).
Home position detection will be carried out.
4. Place the materials under the work clamps (2).
5. Depress the work clamp switch (3).
The work clamps (2) will be lowered.
6. Depress the start switch (1).
The sewing machine will start sewing.
7. After sewing is completed, the thread trimmer will operate. And then the work clamps (2) will be raised.

Use work clamps which will hold the material securely so that it does not slip. If the material slips when using the standard work clamps and feed plate, process them so that the material does not slip.

5-2. Using the STOP switch


If you press the emergency stop switch (1) to during actual sewing, an error dialog box will be displayed and the sewing machine will immediately stop.



3111B

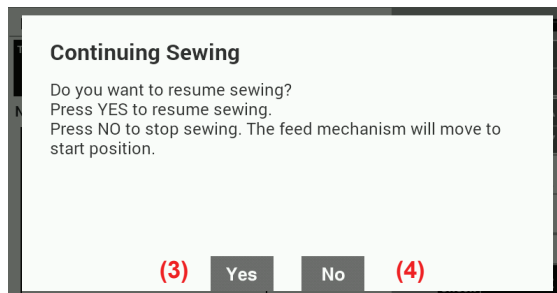
! E011

The STOP switch was pressed. Press the RESET key to clear the error. You can touch the keys on the LCD panel to move the feed in order to continue sewing. (Subcode = 1)

(2) 

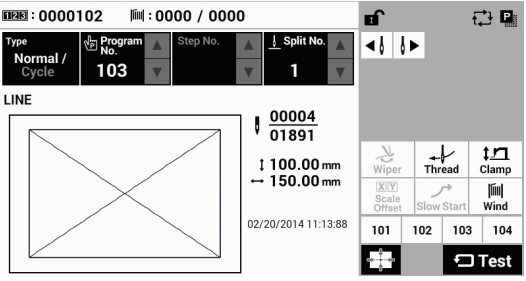
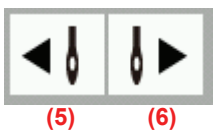




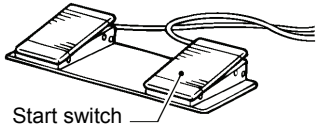
<Clearing>

1. Touch the Reset key (2).
 - The thread will be trimmed, and then the error dialog box on the screen will disappear and the buzzer will stop.
2. A dialog box asking you to confirm if you want to continue sewing will be displayed.



<Continuing sewing from a stopping point>

If the thread breaks or the lower thread runs out during sewing, you can then continue sewing from the point where the thread broke or ran out.

1		<p>Touch "Yes" (3) to switch to the resewing standby screen.</p>
2		<p>Touch the   keys (5) and (6) on the screen to return to the position where sewing is to be resumed.</p> <p>When you touch the  key (5), the feed will move backward by 1 stitch, and when you touch the  key (6), the feed will move forward by 1 stitch.</p>
3	 <p>Start switch</p>	<p>Depress the start switch. The sewing machine will start operating and sewing will start.</p>

3655B

<Returning to the sewing start position without continuing sewing>

If you do not wish to continue sewing, touch "No" (4).

- After home position detection is carried out, the mechanism will return to the sewing start position.

6. CLEANING

CAUTION

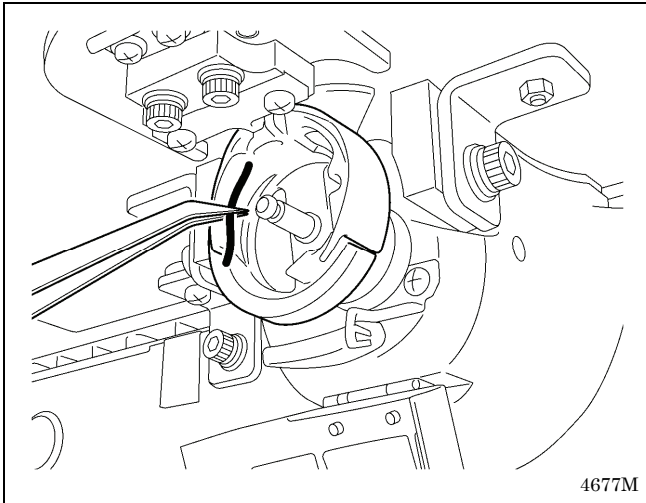


Turn off the power switch before carrying out cleaning.
If the foot switch is depressed by mistake, the sewing machine might start operating and injury could result.



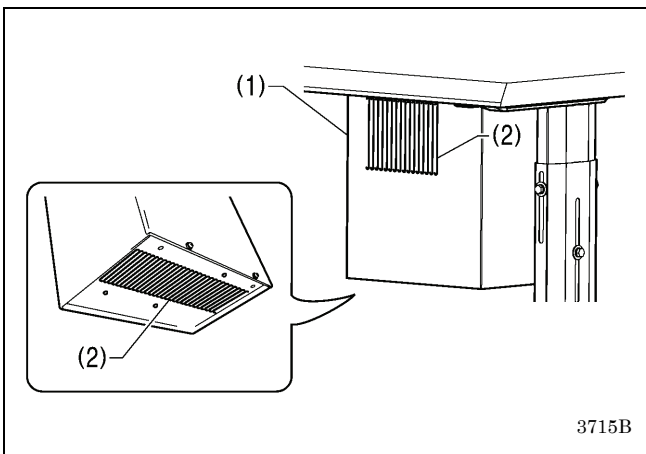
Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin. If the oil and grease get into your eyes or onto your skin, inflammation can result. Furthermore, do not drink or eat the lubricating oil or grease. They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

6-1. Cleaning the rotary hook



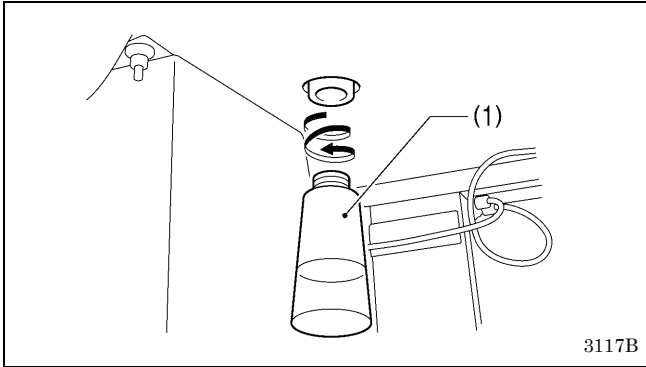
Remove the bobbin case, and then remove the dust and lint from around the shuttle. Also wipe the bobbin to remove oil.

6-2. Cleaning the control box air inlet ports



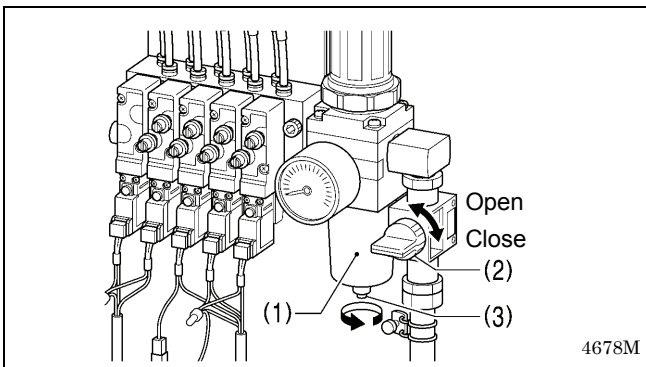
Use a vacuum cleaner to clean the filters in the air inlet ports (2) of the control box (1) at least once a month.

6-3. Draining the oil



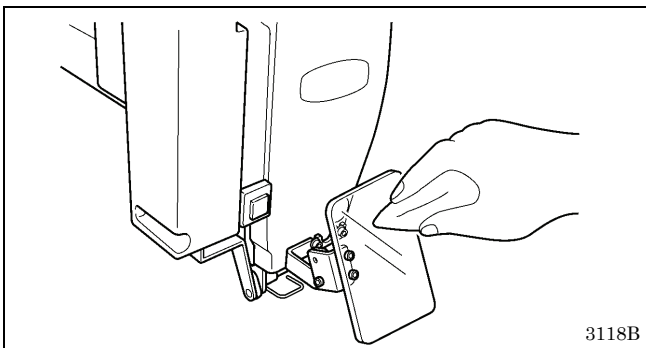
1. Remove and empty the waste oil tank (1) whenever it is full.
2. After emptying the waste oil tank (1), screw it back into its original position.

6-4. Checking the regulator



1. If water collects in the bottle of the regulator (1), close the air cock (2), and then turn the drain cock (3) in the direction of the arrow to drain the water.
2. After draining the water, tighten the drain cock (3).
3. Open the air cock (2).

6-5. Cleaning the eye guard

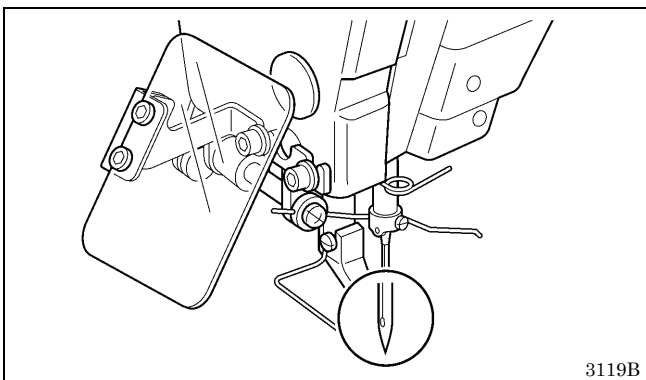


Wipe the eye guard clean with a soft cloth.

NOTE:

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

6-6. Checking the needle



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

6-7. Lubrication

Lubricate the sewing machine while referring to "3-15. Lubrication".

7. 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 before carrying out the following operations. If the foot switch is depressed by mistake, the sewing machine might start operating and injury could result.

- Inspection, adjustment and maintenance
- Replacing consumable parts such as the rotary hook



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

In addition, do not apply excessive force when tilting back the machine head. The sewing machine may become unbalanced and fall down, and serious injury or damage to the sewing machine may result.

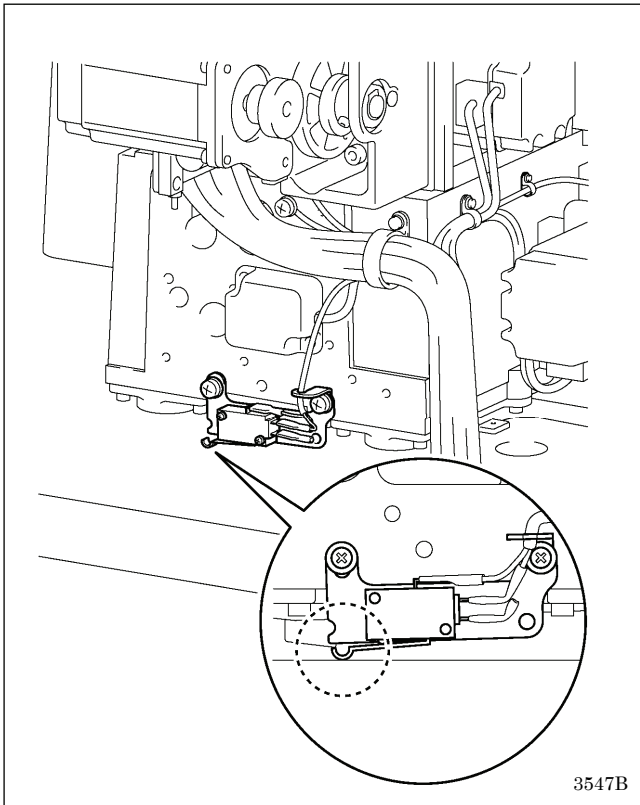


If the power switch needs to be left on when carrying out some adjustment, be extremely careful to observe all safety precautions.



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.

7-1. Checking the machine head switch

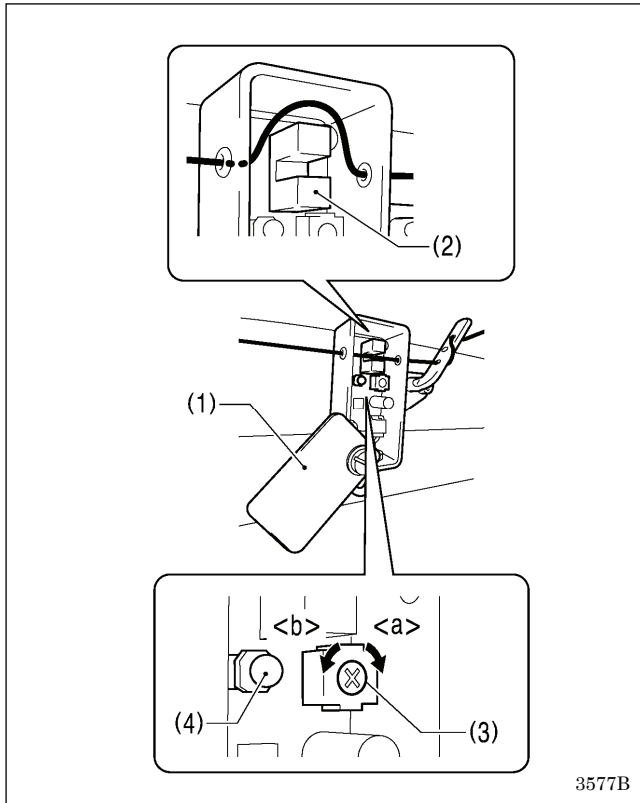


Check that the machine head switch is turned on as shown in the illustration.

NOTE:

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

7-2. Adjusting the sensitivity of the thread breakage sensor



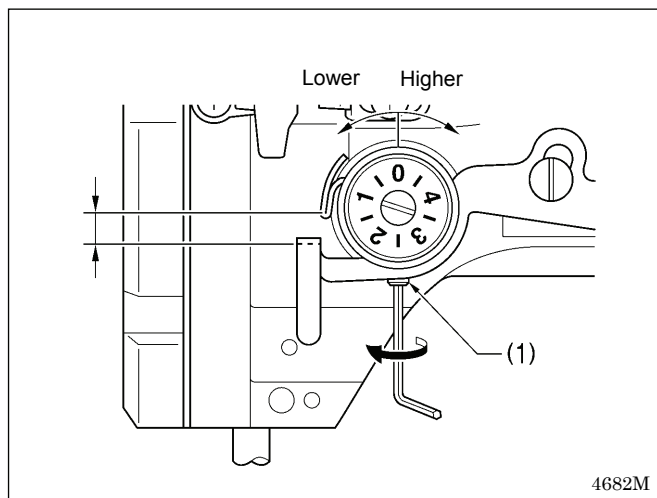
1. Open the cover (1) and remove the upper thread from the photo sensor (2).
2. Turn the control (3) to the right <a> until the LED (4) illuminates.
3. Turn the control (3) to the left until the LED (4) switches off.
4. Place the upper thread into the photo sensor (2), and close the cover (1).

NOTE:

- Thread breakages may be difficult to detect depending on the thickness of the thread and the type of material being sewn. In such cases, turn the control (3) to adjust the sensitivity, or change the number of stitches for judgment of an upper thread breakage.
- * Contact the place of purchase for information on changing the number of stitches for judgment of an upper thread breakage.
- If foreign objects get into the photo sensor (2), it will not be possible to detect thread breakages. Clean inside the photo sensor (2) to keep it free from dust and other foreign particles.
- If applying silicone to the thread, apply the silicone between the thread breakage detector and the thread take-up. If silicone is applied to the thread before it passes through the photo sensor (2), the sensor window inside the photo sensor (2) will become dirty, and detection errors or other problems with operation may occur.

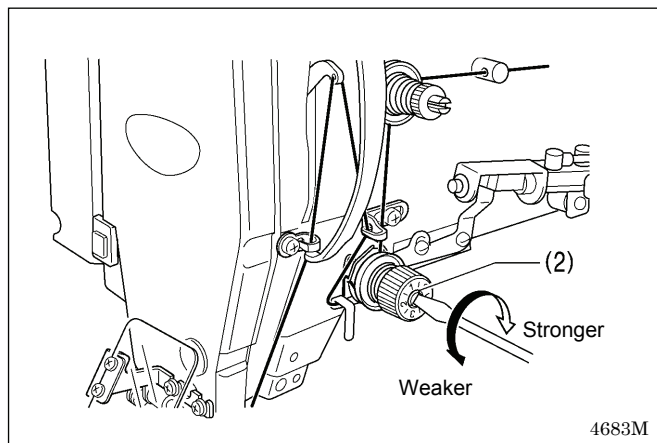
7-3. Thread take-up spring

Thread take-up spring height (mm)	2 – 4
Thread take-up spring tension (N)	1.0 – 1.4



<Thread take-up spring height>

Loosen the set screw (1) and turn the adjuster to adjust.



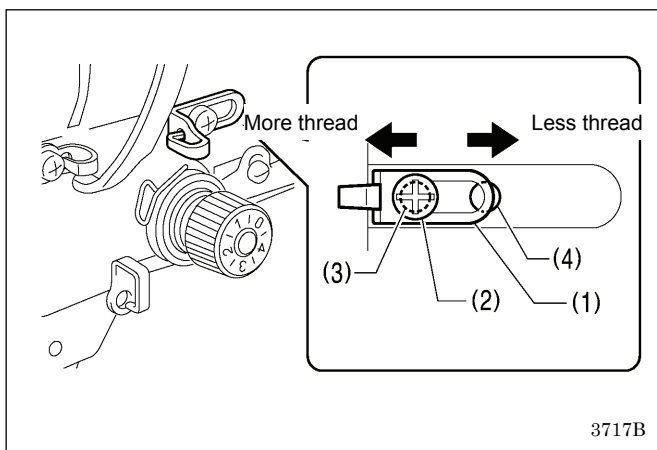
<Thread take-up spring tension>

Turn the tension stud (2) with a screwdriver to adjust the tension.

NOTE:

If the thread tension spring is not adjusted correctly, the upper thread trailing length will be uneven after thread trimming.

7-4. Arm thread guide R



The standard position of arm thread guide R (1) is when the screw (2) is installed to the screw hole (3) on the left side and the arm thread guide R (1) is pushed to the right side as far as it will go.

To adjust the position, loosen the screw (2) and then move arm thread guide R (1).

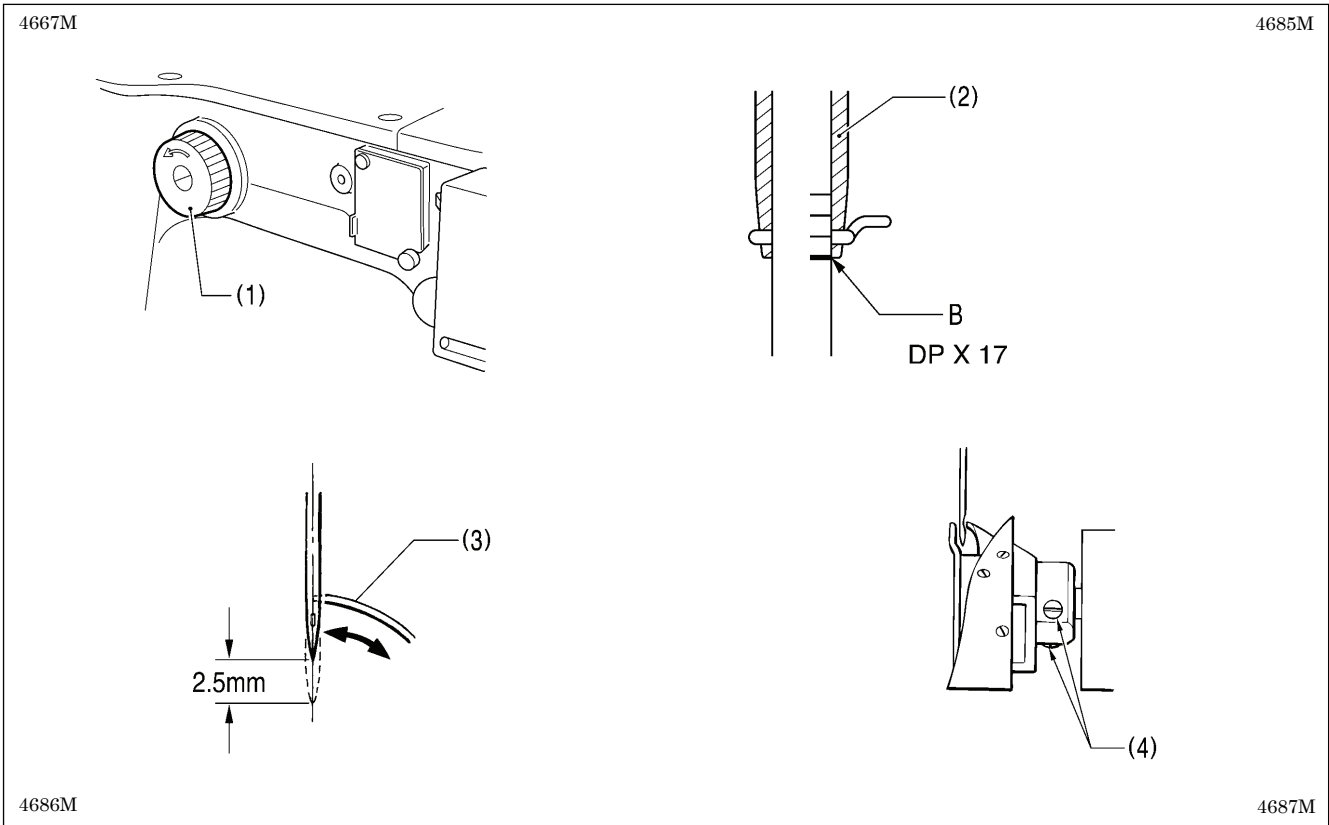
* If upper thread breakages or poor thread tightening occur when sewing heavy-weight materials, move arm thread guide R (1) to the left.

(The thread take-up amount will become greater.)

* If upper thread breakages or poor thread tightening occur when sewing light-weight materials, install the screw (2) to the screw hole (4) on the right side, and then move arm thread guide R (1) to the left or right to adjust its position.

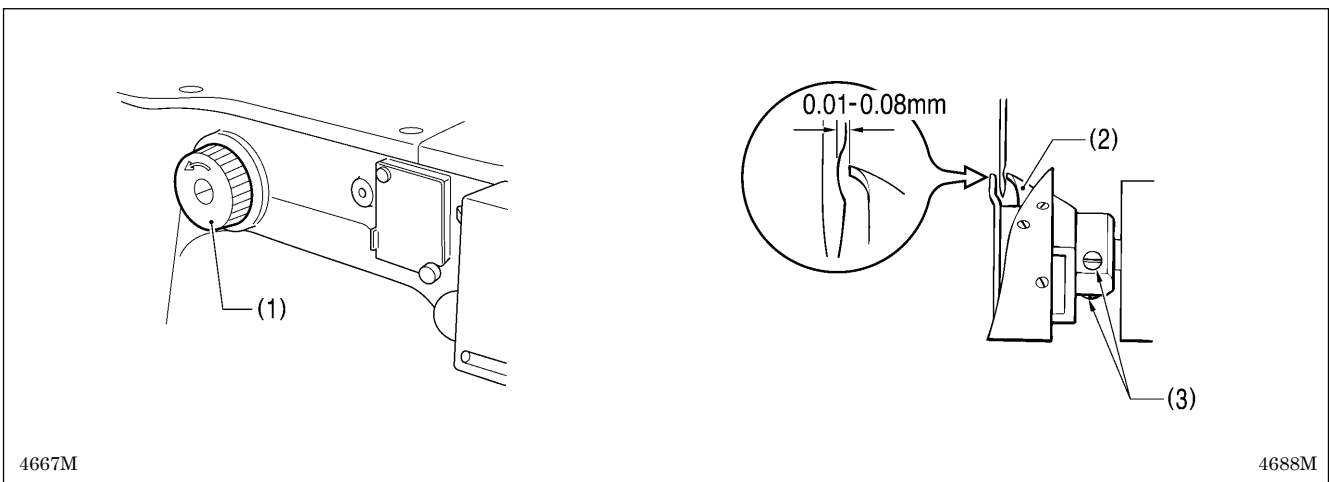
(The thread take-up amount will become smaller.)

7-5. Adjusting the needle and rotary hook timing



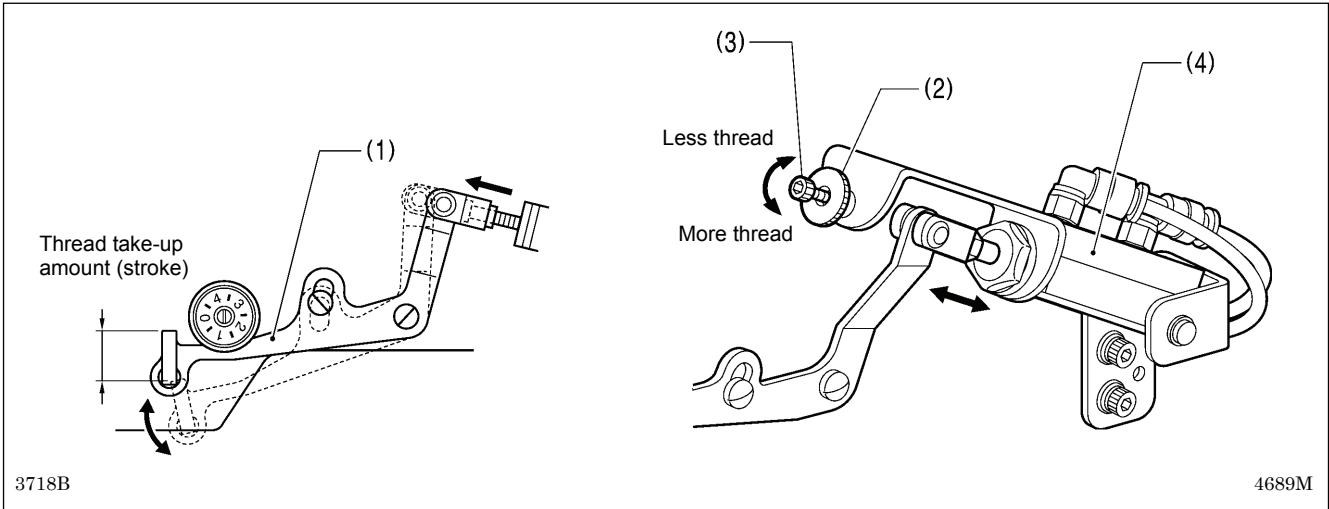
Turn the pulley (1) by hand in the direction of the arrow to raise the needle bar from the lowest position until the lowest reference line on the needle bar (reference line B) is aligned with the lower edge of the needle bar bush (2), and then loosen the two set screws (4) and move the rotary hook to adjust so that the rotary hook tip (3) is aligned with the center of the needle.

7-6. Adjusting the needle clearance



Turn the pulley (1) in the direction of the arrow to align the rotary hook tip (2) with the center of the needle, and then loosen the two set screws (3) and move the rotary hook forward or back to adjust so that the clearance between the needle and the rotary hook tip (2) is 0.01 to 0.08 mm.

7-7. Adjusting the thread take-up amount



At the time of shipment from the factory, the thread take-up amount (stroke) of the thread take-up lever (1) is adjusted to the standard amount of 5 mm. Adjust this amount according to the sewing conditions to prevent the thread from pulling out at the sewing start.

Adjustment method

Loosen the pre-tension nut (2), and then turn the stopper (socket bolt) (3) to adjust the extension position of the thread take-up cylinder (4).

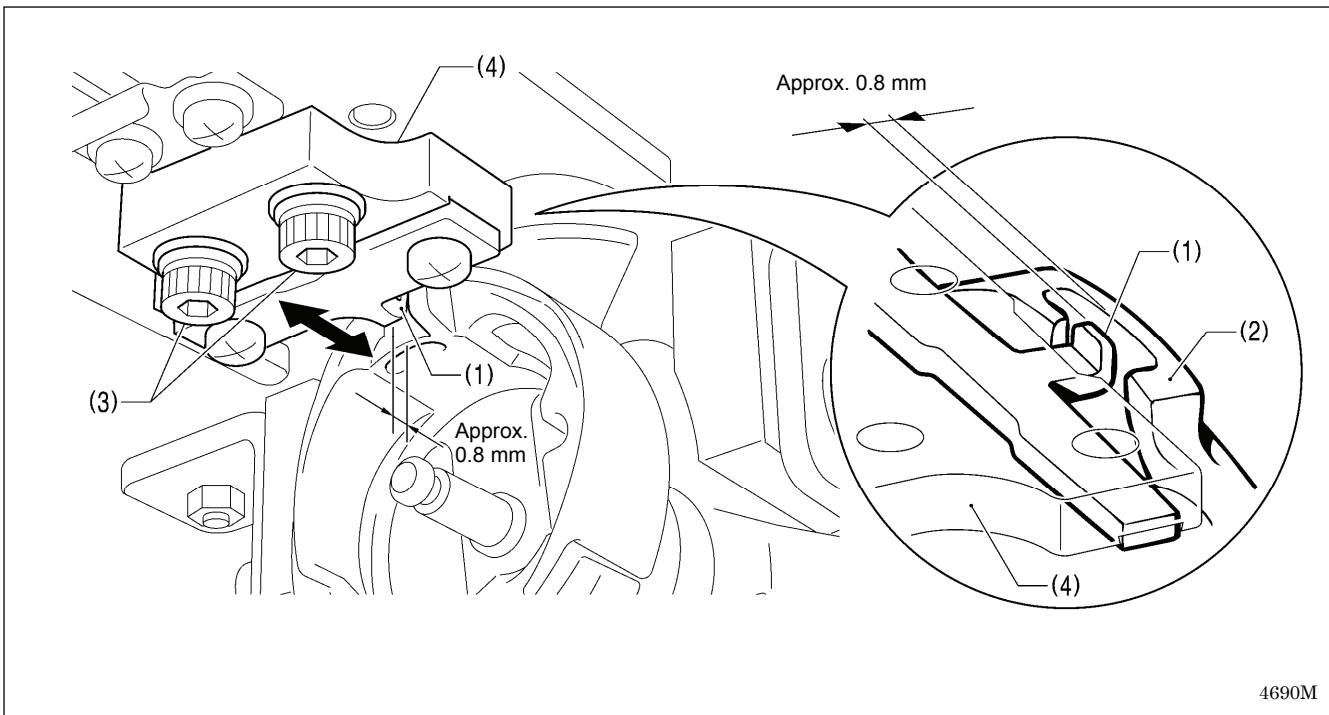
- * If you would like to reduce the upper thread trailing amount, tighten the stopper (3).
- * If you would like to increase the upper thread trailing amount, loosen the stopper (3).

NOTE:

If you make the stroke of the thread take-up lever (1) to be shorter than necessary, it will cause the upper thread trailing length to become too short and the thread will pull out.

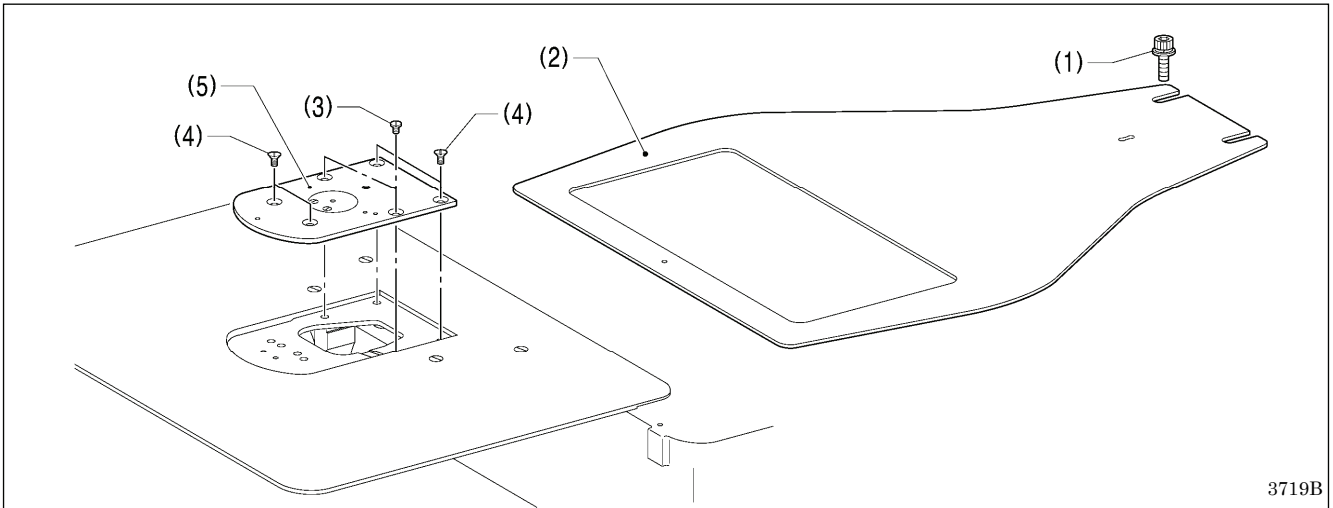
In addition, if the stroke is made to be longer than necessary, it will cause the upper thread trailing length to become too long, and the thread will become tangled on the underside of the material being sewn, creating an untidy finish.

7-8. Adjusting the clearance between the inner hook and the hook stopper

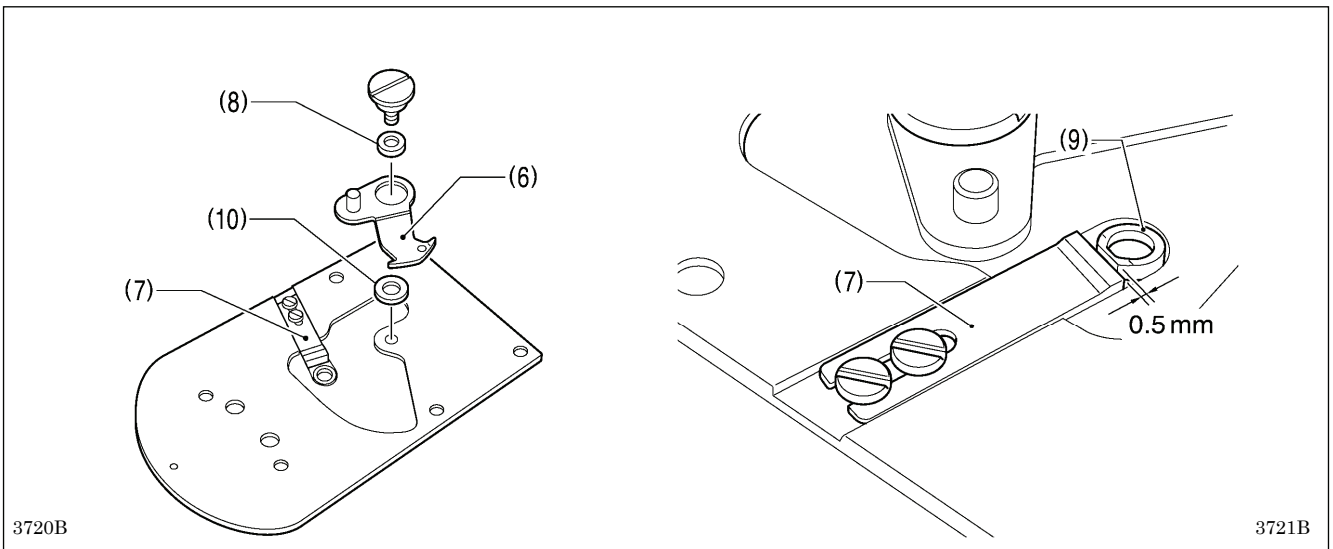


Loosen the two screws (3) and move the hook stopper setting base (4) to adjust so that the tip of the hook stopper (1) is approximately 0.8 mm away from the needle drop surface of the inner hook (2).

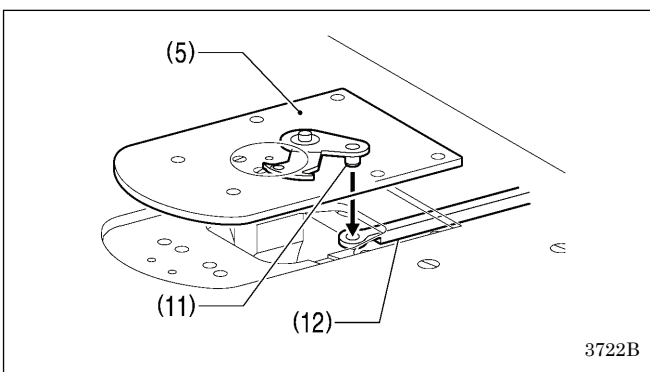
7-9. Replacing the movable and fixed knives



1. Loosen the two bolts (1) and then remove the feed plate (2).
2. Open the hook cover, remove the two screws (3) and the four flat screws (4), and then remove the needle plate (5).

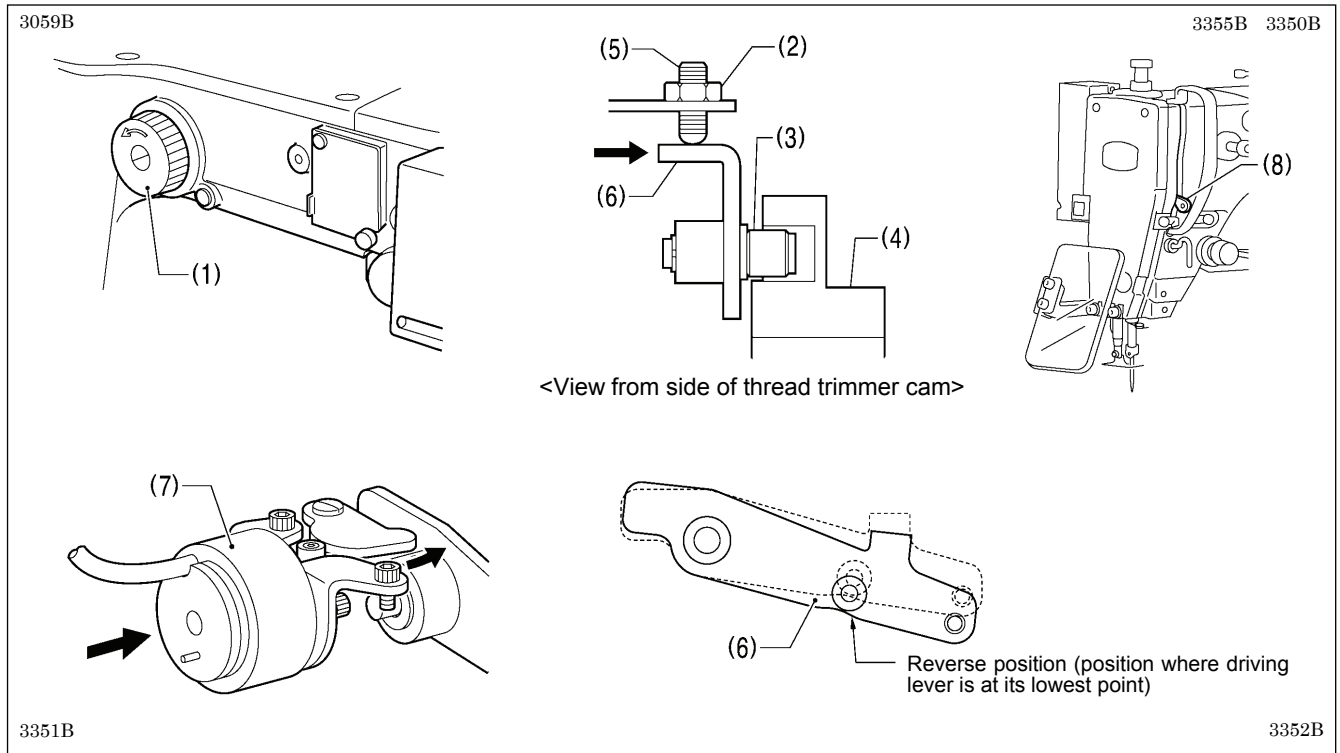


3. Remove the movable knife (6) and the fixed knife (7).
4. Install the new movable knife (6) and fixed knife (7) while referring "7-11. Adjusting the engagement of the movable knife and fixed knife".
- * Apply grease to the outside of the movable knife collar (8) at this time.
- * Install the fixed knife (7) 0.5 mm away from the needle hole plate (9).
5. Check that the movable knife (6) and fixed knife (7) cut the thread cleanly. Replace the movable knife spacer with accessory spacers (10) ($t=0.4, 0.5, 0.6, 0.7$) so that the knives trim the thread accurately.
- * If the knife pressure is too weak and the thread is not completely cut, use a thinner movable knife spacer (10).
- * If the knife pressure is too strong and the movable knife turns stiffly, use a thicker movable knife spacer (10).

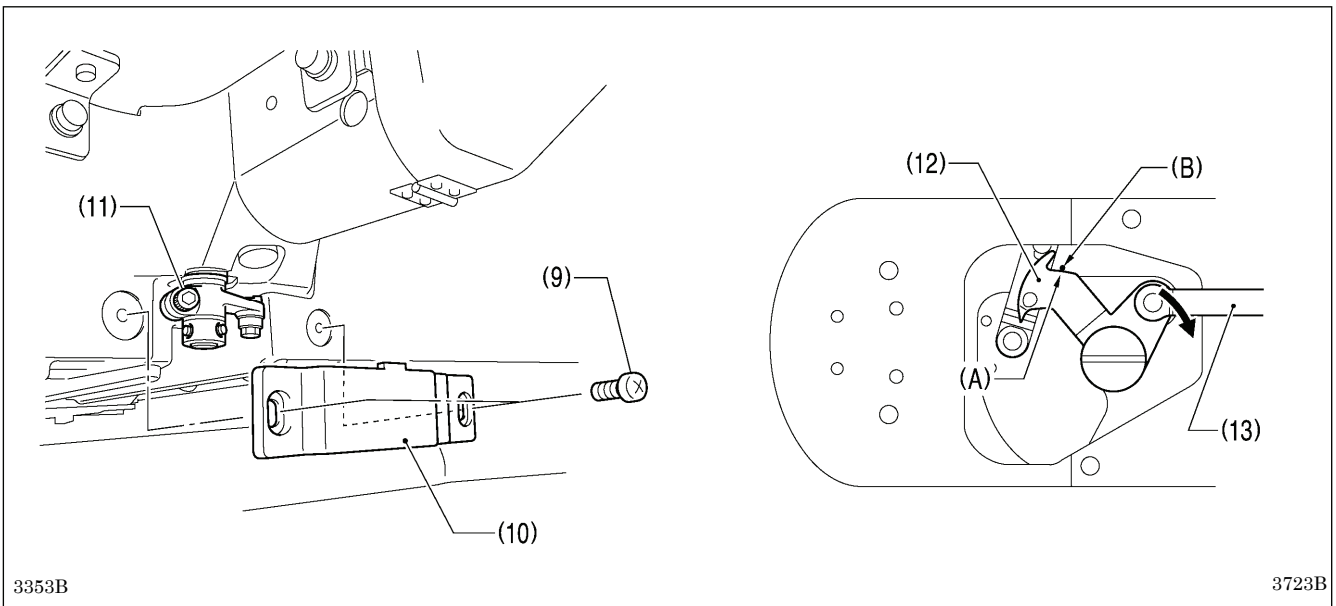


6. Apply grease to the pin (11), place it into the movable knife connecting plate (12), and install it to the needle plate (5).
7. Check that the needle is aligned with the center of the needle hole.

7-10. Adjusting the position of the movable knife

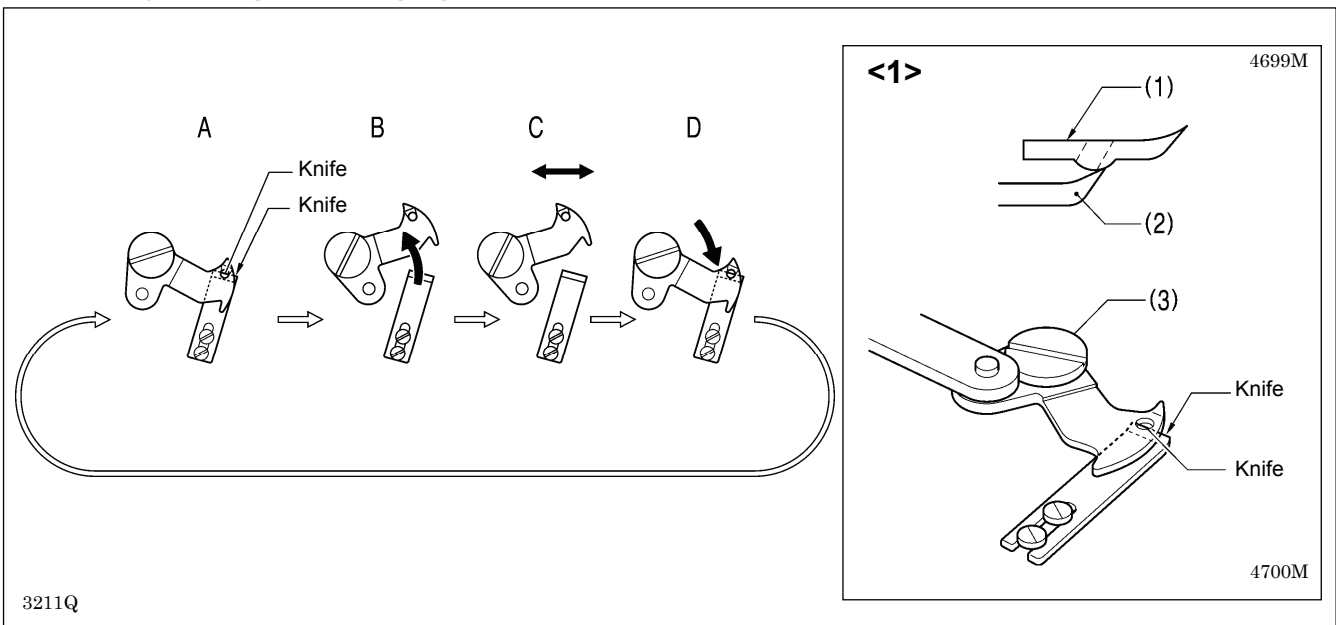


1. Open the top cover and tilt back the machine head.
2. Turn the pulley (1) by hand to move the needle bar to its lowest position.
3. Loosen the nut (2), tighten the set screw (5) until the collar (3) touches the inside of the groove in the thread trimmer cam (4), and then loosen the set screw (5) by approximately 1/4 of a turn.
4. Tighten the nut (2), and then check that the collar (3) is not touching the inside of the groove in the thread trimmer cam (4). In addition, push the driving lever (6) by hand toward the thread trimmer cam (4) until the collar (3) touches the groove of the thread trimmer cam (4), and then check that the driving lever (6) returns smoothly to its original position when it is released.
5. Turn the pulley (1) by hand in the direction of the arrow to move the needle bar to its lowest position, and push the thread trimming solenoid (7) as far as it will go.
6. With the collar (3) inserted into the groove of the thread trimmer cam (4), turn the pulley (1) by hand to set the driving lever (6) to the reverse position and so that the driving lever (6) is at its lowest point (when the thread take-up (8) is close to its lowest position).



7. Loosen the two screws (9), and then remove the cover (10).
8. Loosen the bolt (11).
9. Push the movable knife (12) in the direction of the arrow to take up the play, and then move the movable knife connecting plate (13) forward or back to adjust so that the V section (A) is aligned with the index mark (B) on the needle plate.
10. After tightening the bolt (11), check the above position once more.
11. Replace the cover (10).

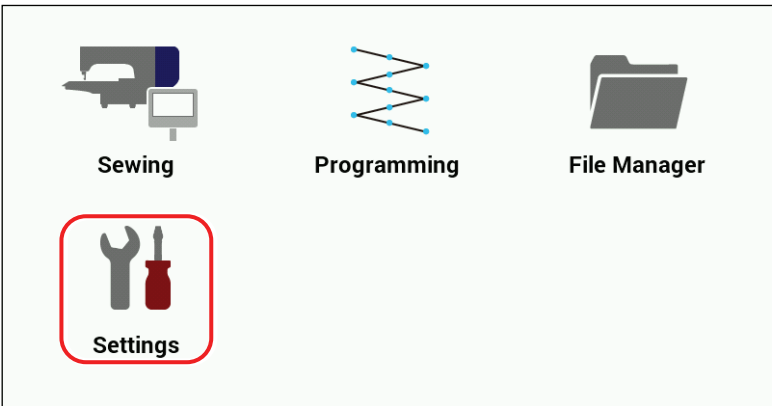

7-11. Adjusting the engagement of the movable knife and fixed knife



- A. Once the movable knife (1) and fixed knife (2) are overlapping as shown in Fig. <1>, tighten the shoulder screw (3).
- B. Turn the movable knife (1) while the shoulder screw (3) is still tightened. (Move in the direction of the arrow)
- C. Loosen the shoulder screw (3).
- D. Turn the movable knife (1) while the shoulder screw (3) is still loosened. (Move in the direction of the arrow)

Repeat above steps A → B → C → D → A four or five times to maintain the cutting performance of the knife.

7-12. Installing the feed plate

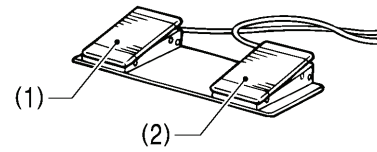
1	 <p>The screenshot shows a main menu with four icons: Sewing (a sewing machine), Programming (a zigzag line), File Manager (a folder), and Settings (a wrench and screwdriver). The Settings icon is highlighted with a red rounded rectangle.</p>	Touch the Settings key.
2	 <p>The screenshot shows a list of settings: Settings, Memory Switch, Sewing Machine Adjustment, Sewing Machine Test, Programmer, Display, Date and Time, Language, and Sound. The 'Sewing Machine Adjustment' option is highlighted with a red rounded rectangle.</p>	Select "Sewing Machine Adjustment".
3	 <p>The screenshot shows a list of adjustment options: Settings > Sewing Machine Adjustment, Work Clamp Origin Adjustment, Feed Origin Adjustment, Pedal Adjustment, Digital Tension Output Adjustment, Main Motor Position Adjustment, Needle Up Stop Position Adjustment, and Feed plate installation. The 'Feed plate installation' option is highlighted with a red rounded rectangle. An 'OK' button is visible at the bottom right.</p>	Select "Feed plate installation".

4

Settings > Sewing Machine Adjustment > Feed plate installation

Press the start switch for moving feed plate installation position.
Press Cancel key for interrupting the feed plate installation.

Cancel

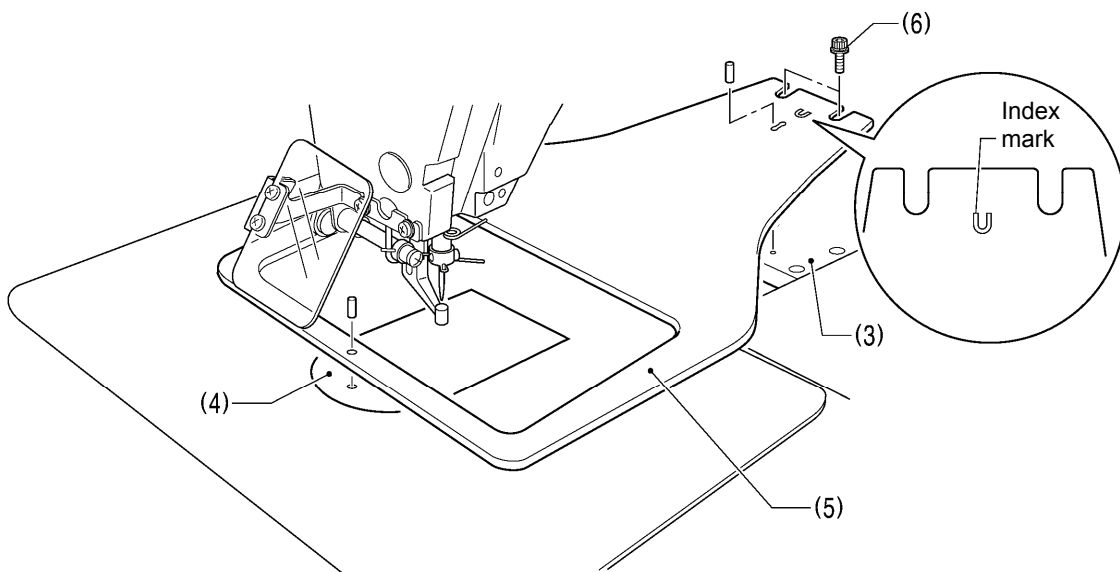


4014M

Depress the work clamp switch (1) to lower the work clamps, and then depress the start switch (2).

- After the home position is detected and the work clamps drop, the feed mechanism will move to the feed plate installation position and then the work clamps will rise.

5



3724B

Use a 2 mm diameter pin to align the holes in the X feed bracket (3) and the needle plate (4) with the two holes in the feed plate (5), and then tighten the two bolts (6).

NOTE: Install the feed plate so that the surface with the index mark is facing upward.

6

End feed plate installation mode

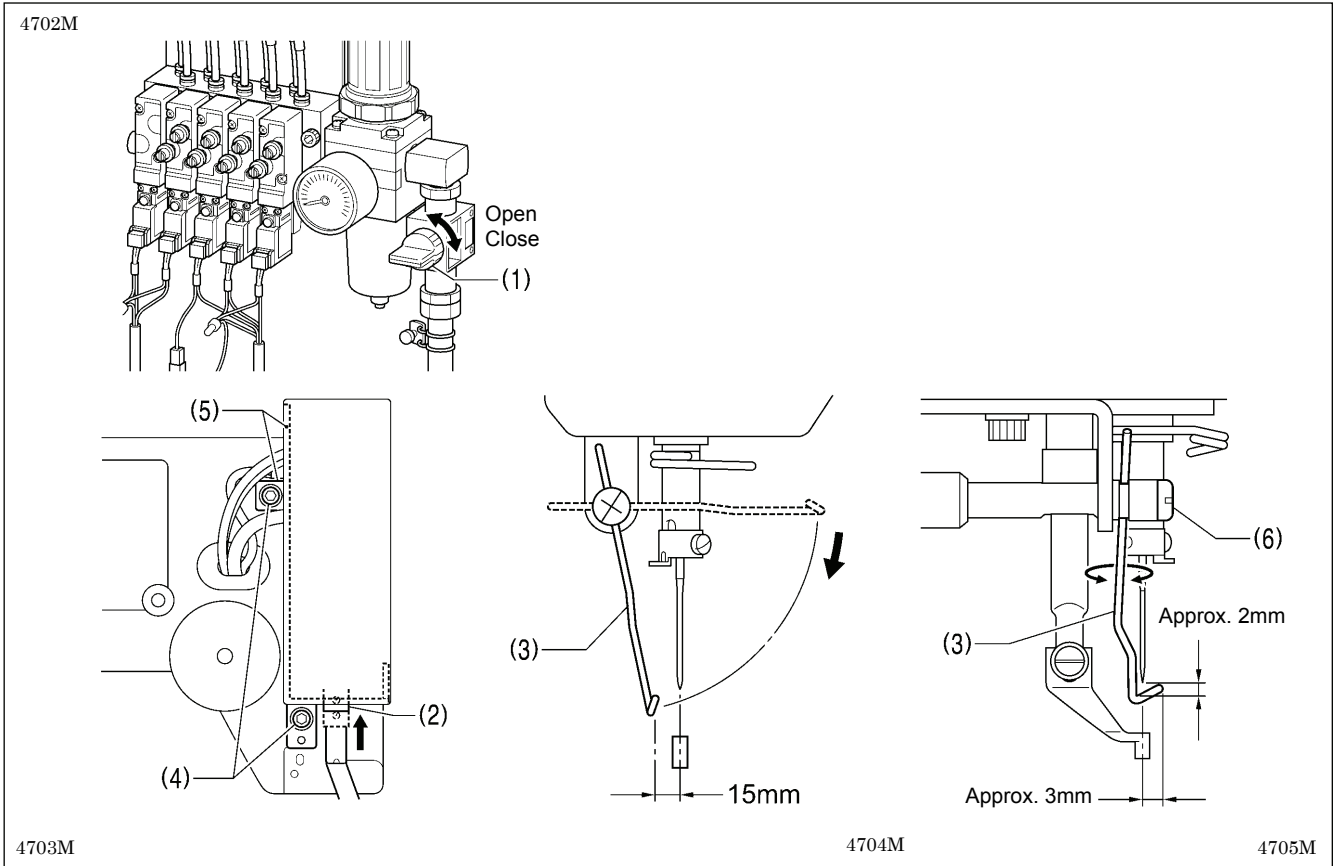
Settings > Sewing Machine Adjustment > Feed plate installation

Press OK key when the feed plate installation has been completed.

OK

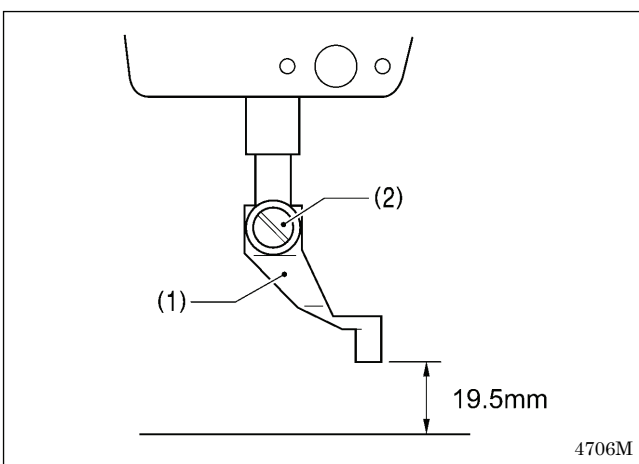
When the installation is complete, touch the OK key to exit the mode.

7-13. Adjusting the thread wiper



1. Close the air cock (1).
2. Loosen the two screws (4) and shift the entire solenoid setting plate (5) up or down to adjust so that the thread wiper (3) is 15 mm in front of the needle center when the thread wiper cylinder (2) is pushed up to its full stroke.
3. Loosen the screw (6) and adjust the position of the thread wiper (3) so that the distance from the thread wiper to the tip of the needle is approximately 2 mm and the tip of the thread wiper (3) is approximately 3 mm from the center of the needle when the thread wiper (3) passes below the needle during operation.
NOTE: Check that the thread wiper (3) does not touch the finger guard.
4. Open the air cock (1).

7-14. Intermittent presser foot installation position (-484 SF specifications only)

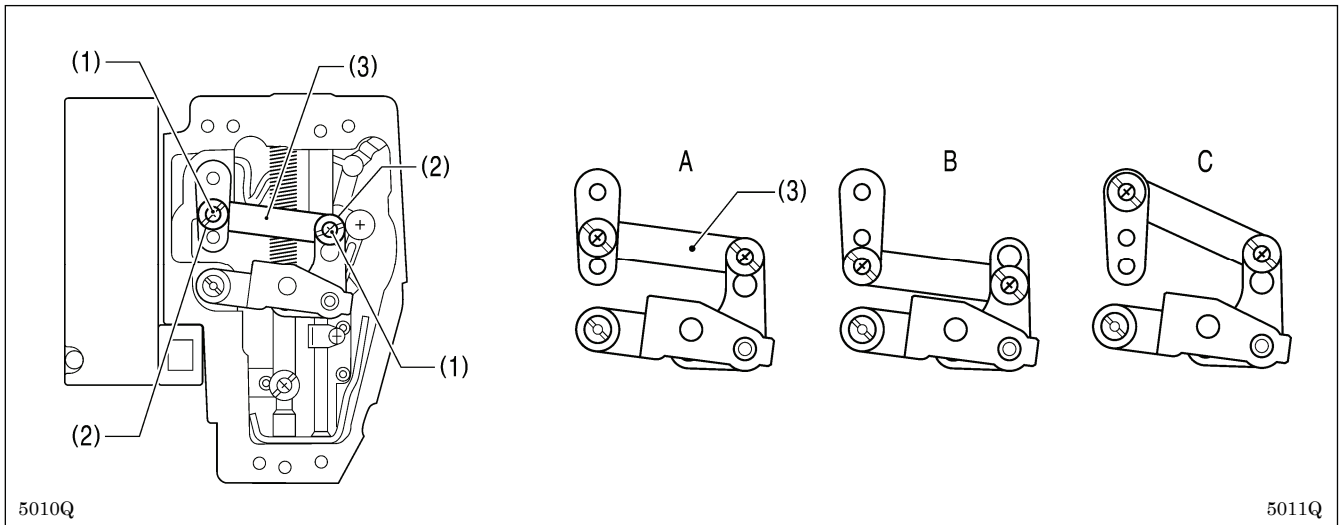


Install the intermittent presser foot (1) with the screw (2) so that the distance from the bottom of the intermittent presser foot to the top of the needle plate is 19.5 mm when the sewing machine is stopped and the intermittent presser foot (1) is raised.

7-15. Adjusting the intermittent presser foot (-484 SF specifications only)

The intermittent presser foot stroke can be adjusted to within 2 – 10 mm by adjusting the position of the stepping clamp connecting rod and changing the installation position of stepping clamp link.

<Changing the installation position of stepping clamp link>



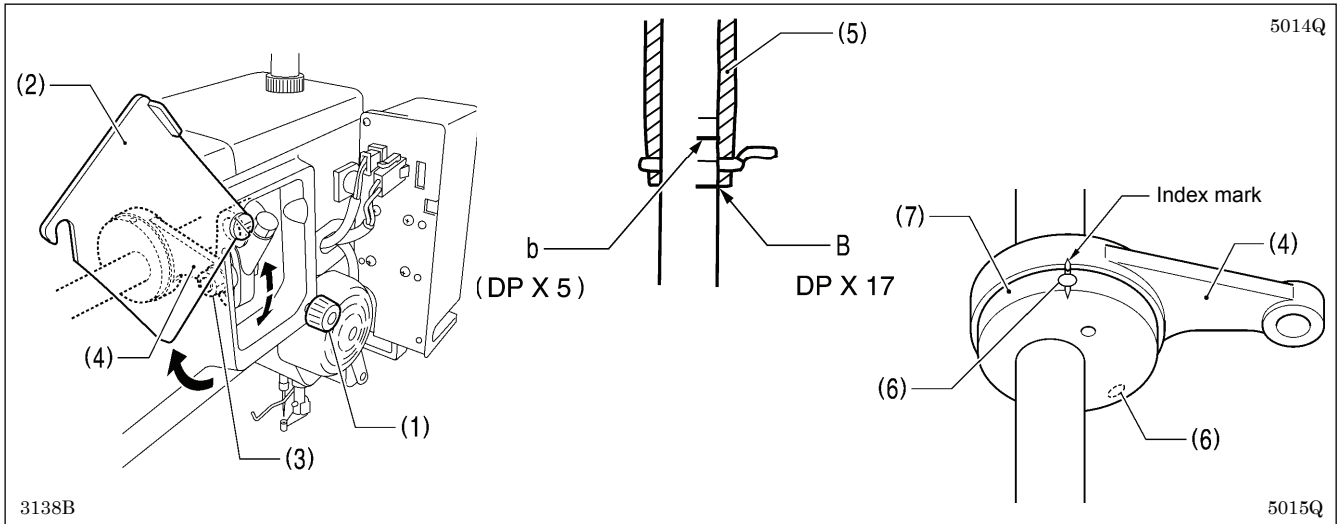
1. Remove the face plate.
2. Remove the two screws (1) and the two shoulder screws (2), and then remove stepping clamp link (3).
3. Change the installation position for stepping clamp link (3) to either A, B or C above.

If the position of the stepping clamp connecting rod is adjusted as described in the following at any one of the installation positions, the adjustment range for the intermittent presser foot stroke will as given in the following table.

Installation position	Intermittent presser foot stroke range	
A	2 – 4.5mm	
B	4.5 – 10mm	
C	0 mm (Intermittent presser foot does not move up and down)	

7. STANDARD ADJUSTMENTS

<Stepping clamp connecting rod position adjustment>



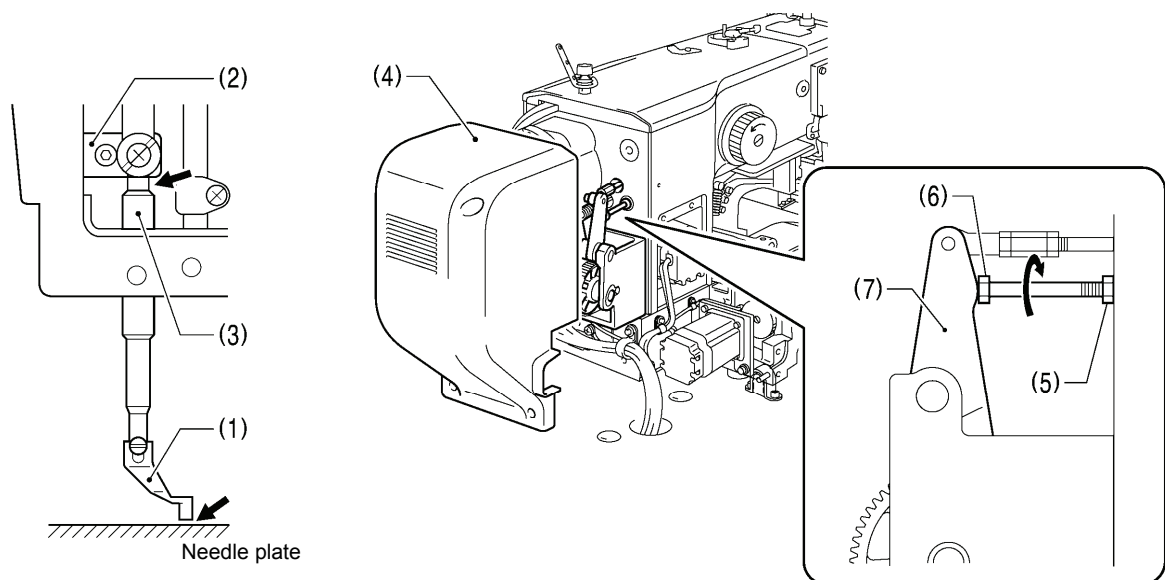
1. Loosen the screw (1), and then open the cover (2).
2. Loosen the nut (3), and then adjust the position of the stepping clamp connecting rod (4).
 - When the stepping clamp connecting rod (4) is raised, the intermittent presser foot stroke will increase.
 - When the stepping clamp connecting rod (4) is lowered, the intermittent presser foot stroke will decrease.

Next, adjust the needle bar and intermittent presser foot timing.

3. Turn the pulley in the direction of the arrow to raise the needle bar from the lowest position until the lowest reference line on the needle bar (reference line B) is aligned with the lower edge of the needle bar bush (5).
(If using a DP x 5 needle, align with the second reference line from the top (reference line b).)
4. Open the top cover and loosen the two set screws (6).
5. Align the index marks of the stepping clamp cam (7) and the stepping clamp connecting rod (4), and then tighten the two set screws (6).

Check the following after changing the intermittent presser foot stroke.

3139B 3511B



1. With the intermittent presser foot (1) lowered, turn the pulley in the direction of the arrow to move the intermittent presser foot (1) to its lowest position.
2. Check that the presser foot (1) does not touch the needle plate and that the presser bar clamp (2) does not touch the presser bar bush (3).

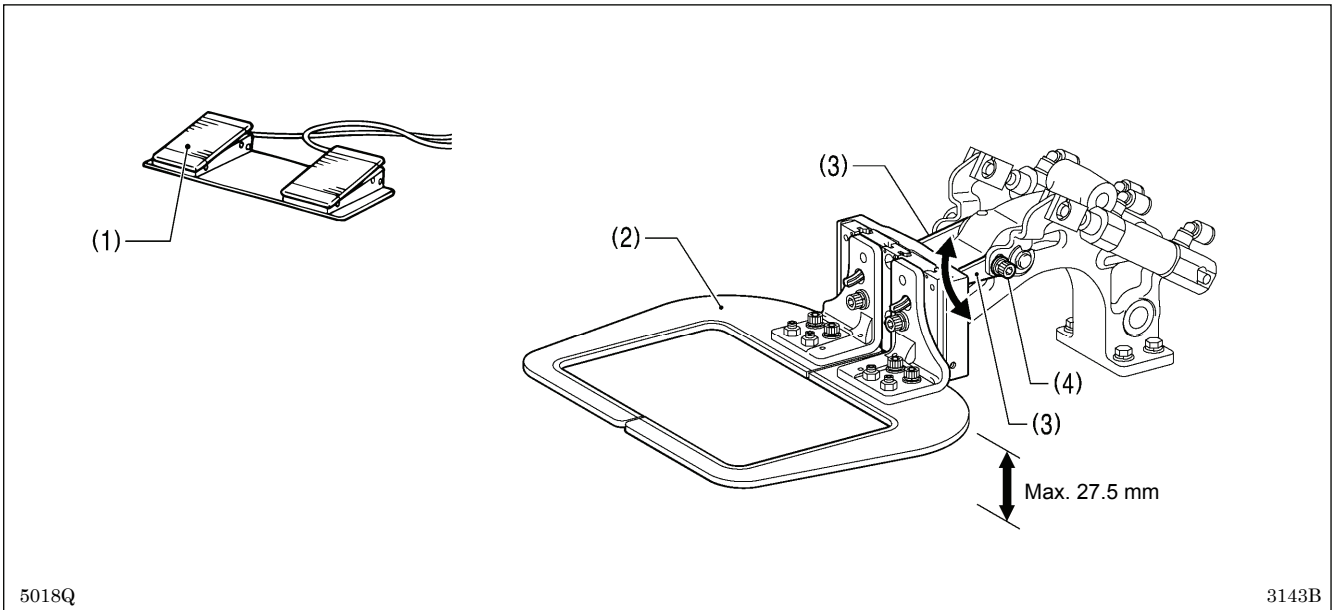
<If they are touching>

Remove the motor cover (4).

Loosen the nut (5), and turn the bolt (6) until it is pressing against the intermittent drive lever (7), and then adjust until the two points mentioned above are not touching.

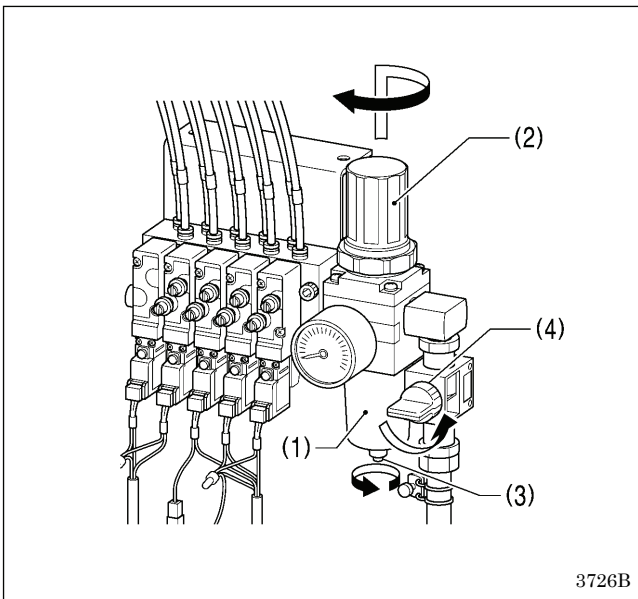
7-16. Adjusting the work clamp lift amount

The maximum lift amount for the work clamp is 27.5 mm above the surface of the needle plate.



1. Turn on the air, and then depress the work clamp switch (1) to raise the work clamps (2).
2. Loosen the two bolts (4) of the work clamp arm lever (3), and move the work clamp arm lever (3) up or down to adjust.

7-17. Adjusting the air pressure



Lift up the handle (2) of the regulator (1) and then turn it to adjust the air pressure to 0.5 MPa.

After adjustment is complete, push the handle (2) downward to lock it.

If water has collected in the bottle of the regulator (1), turn the drain cock (3) in the direction indicated by an arrow to drain the water.

NOTE:

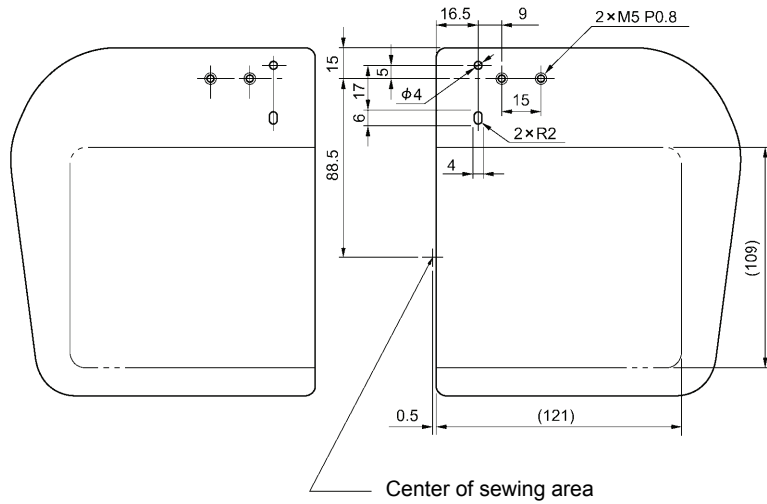
Open the air cock (4) slowly.

7-18. If processing the work clamps and the feed plate to a shape that matches the sewing pattern

Process the work clamps and feed plate which match the sewing pattern, while referring to the processing diagram below.
 * Values in () are the recommended sizes when sewing using the maximum area (220x100 mm).

<Work clamp processing diagram>

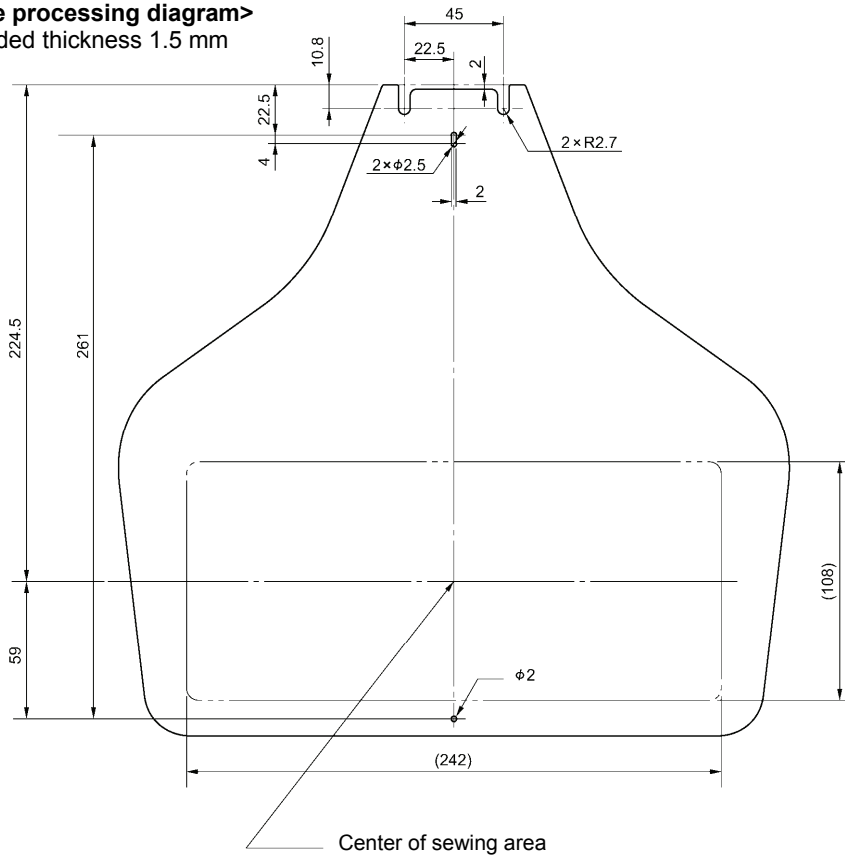
The left and right work clamps are symmetrical.



3513B

<Feed plate processing diagram>

Recommended thickness 1.5 mm



[mm]

3727B

8. LIST 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 can result in severe injury.

If a malfunction occurs with the sewing machine, a buzzer will sound and an error code will appear on the screen. Follow the remedy procedure to eliminate the cause of the problem.

Switch-related errors

Code	Cause of error and remedy
E010	The STOP switch was pressed. Press the RESET key to clear the error.
E011	The STOP switch was pressed. Press the RESET key to clear the error. You can press the     keys on the LCD panel to move the feed in order to continue sewing.
E012	The STOP switch was pressed. Press the RESET key to clear the error, and then depress the start switch to move the feed mechanism to the home position.
E015	The STOP switch was still being pressed when the power was turned on, or there is a problem with the STOP switch connection. Turn off the power, and then check that connector P9 on the main board is properly inserted.
E016	Problem with the STOP switch connection. Turn off the power, and then check that connector P9 on the main board is properly inserted.
E020	The start switch was pressed without the work clamp being lowered. First lower the work clamp.
E025	The start switch was pressed when the power was turned on. Release foot from the start switch.
E035	Work clamp switch was being depressed when power was turned on. Release foot from the switch.
E050	Machine head tilting was detected after the power was turned on. Turn off the power, and then return the machine head to its original position. Check that the connector P14 on the main board is properly inserted.
E051	Machine head tilting was detected while the sewing machine was operating. Turn off the power, and then check that the connector P14 on the main board is properly inserted.
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 the connector P14 on the main board is properly inserted.
E064	Touch panel was being touched when power was turned on. Turn off the power and then turn it back on again without touching panel.
E065	A key on the LCD panel was still being pressed when the power was turned on, or key is faulty. Turn off the power and then turn it back on again without touching panel.

8. LIST OF ERROR CODES

Motor-related errors

Code	Cause of error and remedy
E110	The needle bar is not stopped in the needle up stop position. Turn the pulley until the point where the error display disappears.
E111	Upper shaft did not stop at the needle up stop position when the sewing machine stopped. Turn off the power, and then check that connectors P11 and P1 on the motor board and the connector P6 on the main board are properly inserted.
E121	Thread trimming was not completed. Turn off the power, and then check if the cutting edges of the fixed knife and movable knife are damaged or worn.
E130	Main motor stopped due to a problem, or resolver is faulty. Turn off the power, and then turn the pulley and check if the sewing machine has locked up. Check connectors P11 and P1 on the motor board, P6 on the main board and P4 of the main motor are properly inserted.
E131	Resolver is not connected correctly. Turn off the power, and then check that the connector P11 on the motor board is properly inserted.
E132	Problem detected with main motor operation. Turn off the power, and then check that connectors P11 and P1 on the motor board, the connector P6 on the main board and the connector P4 of main motor are properly inserted.
E133	Main motor stopping position is incorrect. Turn off the power, and then check P11 and P1 on the motor board, P6 on the main board and P4 of main motor are properly inserted. Main motor is overheating, or temperature sensor is faulty. Turn off the power, and then check the main motor.
E150	Main motor is overheating, or temperature sensor is faulty. Turn off the power, and then check the main motor. (When sewing data with a small number of stitches (15 stitches or less) is sewn repeatedly, the main motor may overheat and this error code may be generated.)

Feed mechanism-related errors

Code	Cause of error and remedy
E200	X-feed motor home position cannot be detected. Problem with X-feed motor or poor X home position sensor connection. Turn off the power, and then check that connectors P17, P21 and P8 on the main board are properly inserted.
E201	X-feed motor stopped due to a problem. Turn off the power, and then check if there are any problems in the X-feed direction. Turn off the power, and then check that connectors P17 and P21 on the main board are properly inserted.
E204	X-feed motor stopped due to a problem during sewing. Turn off the power, and then check if there are any problems in the X-feed direction. Turn off the power, and then check that connectors P17 and P21 on the main board are properly inserted.
E205	X-feed motor stopped due to a problem while moving to the sewing start position. Turn off the power, and then check if there are any problems in the X-feed direction. Turn off the power, and then check that connectors P17 and P21 on the main board are properly inserted.
E206	X-feed motor stopped due to a problem during test feeding. Turn off the power, and then check if there are any problems in the X-feed direction. Turn off the power, and then check that connectors P17 and P21 on the main board are properly inserted.
E210	Y-feed motor home position cannot be detected. Problem with Y-feed motor or poor Y home position sensor connection. Turn off the power, and then check that connectors P18, P22 and P8 on the main board are properly inserted.
E211	Y-feed motor stopped due to a problem. Turn off the power, and then check if there are any problems in the Y-feed direction. Turn off the power, and then check that connectors P18 and P22 on the main board are properly inserted.
E214	Y-feed motor stopped due to a problem during sewing. Turn off the power, and then check if there are any problems in the Y-feed direction. Turn off the power, and then check that connectors P18 and P22 on the main board are properly inserted.
E215	Y-feed motor stopped due to a problem while moving to the sewing start position. Turn off the power, and then check if there are any problems in the Y-feed direction. Turn off the power, and then check that connectors P18 and P22 on the main board are properly inserted.
E216	Y-feed motor stopped due to a problem during test feeding. Turn off the power, and then check if there are any problems in the Y-feed direction. Turn off the power, and then check that connectors P18 and P22 on the main board are properly inserted.
E230	Feed motor stopped due to a problem. Reduce the sewing speed or change the operation settings to the settings for heavy-weight materials. Ask the place of purchase for details on the setting method.

Work clamp-related errors

Code	Cause of error and remedy
E300	Work clamp home position cannot be detected. Problem with work clamp motor or poor work clamp home position sensor connection. Turn off the power, and then check that connectors P19, P23 and P8 on the main board are properly inserted.
E301	Work clamp raised or lowered position cannot be detected. Turn off the power, and then check if there are any problems in the work clamp vertical direction. Turn off the power, and then check that connectors P19 and P23 on the main board are properly inserted.

8. LIST OF ERROR CODES

Communication and memory-related errors

Code	Cause of error and remedy
E401	Communication error was detected between the main board and the motor board when the power was turned on. Turn off the power, and then check that connector P5 on the main board and the connector P2 on the motor board are properly inserted.
E410	Communication error was detected between the main and the panel. Turn off the power, and then check that the connector P10 on the programmer main board inside the LCD panel, the connector on the right side of the control box, connectors P5 and P32 on the main board and the connector P2 on the motor board are properly inserted.
E411	Communication error was detected between the main and the motor board. Turn off the power, and then check that the connector P5 on the main board and the connector P2 on the motor board are properly inserted.
E420	No storage media is inserted. Press the RESET key to clear the error. Insert the storage media and then try again.
E421	The program number is invalid or it has no corresponding data. Press the RESET key to clear the error. Check that data for this program number is present.
E422	Error occurred while reading. Press the RESET key to clear the error. Check the data.
E425	Error occurred while writing to storage media. Check the storage media. It may be write-protected. There is a possibility of a failure of the storage media or free space shortage of storage media. Press the RESET key to clear the error. Use the specified storage media.
E427	The program containing the specified program has been cleared. Press the RESET key to clear the error.
E430	Cannot be accessed to the main board (flash memory). Turn off the power, and then turn it back on again.
E435	Cannot be accessed to the programmer main board (flash memory). Turn off the power, and then turn it back on again.
E440	Cannot be accessed to the main board (EEPROM). Turn off the power, and then turn it back on again.
E445	Cannot be accessed to the programmer main board (EEPROM). Turn off the power, and then turn it back on again.
E450	Model selection cannot be read from the machine head detector. Turn off the power, and then check that the connector P16 on the main board is properly inserted.
E452	Machine head detector is not connected. Turn off the power, and then check that the connector P16 on the main board is properly inserted. If you press the RESET key to clear the error, you can restart the machine using the backup data in the machine head detector.
E453	Problem with data in machine head detector. Turn off the power, and then turn it back on again.
E454	Problem with data in machine head detector. Press the RESET key to clear the error and then data is recovered.
E471	The program number is invalid or it has no corresponding data. Press the RESET key to clear the error. Check that data for this program number is present in the internal memory.
E474	Internal memory is full and copying is not possible. Press the RESET key to clear the error. Delete the sewing data.

Data editing-related errors

Code	Cause of error and remedy
E500	The enlargement ratio setting caused the sewing data to extend outside the sewing area. Set the enlargement ratio again. Press the RESET key to clear the error.
E502	The enlargement ratio caused the stitch length to exceed the maximum length of 12.7 mm. Press the RESET key to clear the error. Set the enlargement ratio again.
E510	Error in data. Press the RESET key to clear the error. Please try again. If an error occurs while reading the data, revise the data.
E511	No end code has been input into pattern data. Press the RESET key to clear the error.
E512	Number of stitches exceeds allowed maximum. Press the RESET key to clear the error.
E520	Extended option output number already exists. Press the RESET key to clear the error. Change the extended option output number. If not using the extended option output, initialize the data to clear the extended option program.
E582	Memory switch version does not match. Press the RESET key to clear the error. Read data for the same version.
E583	User parameter version does not match. Press the RESET key to clear the error. Read data for the same version.

Device-related errors

Code	Cause of error and remedy
E600	Upper thread breakage occurred. Thread the upper thread. Press the RESET key to clear the error. Re-sewing is possible.
E670	Problem with the lower thread detector. Turn off the power, and then check the lower thread detector.

8. LIST OF ERROR CODES

Board-related errors

Code	Cause of error and remedy
E700	Abnormal rise in power supply voltage. Turn off the power, and then check the input voltage.
E701	Abnormal rise in main motor drive voltage. Turn off the power, and then check the voltage.
E705	Abnormal drop in power supply voltage. Turn off the power, and then check the input voltage.
E710	Abnormal current was detected in main motor. Turn off the power, and then check if there are any problems with the sewing machine. Turn off the power, and then check that connectors P11 and P1 on the motor board, P6 on the main board and P4 of the main motor are properly inserted.
E711	Abnormal current was detected in pulse motor. Turn off the power, and then check if there are any problems with the work clamp operation.
E730	External error input (AIRSW) was detected. Turn off the power, and then check the air pressure.

Version updating-related errors

Code	Cause of error and remedy
E860	No main software is present. Install the main control software.
E865	No motor software is present. Install the motor control software.
E880	Software update request is not accepted. Turn off the power, and then turn it back on again.
E881	Software updating did not complete normally. Turn off the power, and then repeat the software update procedure.
E883	No software data is present in the storage media. Check that the software data has been saved into the correct folder.
E884	There is a problem with the software data. Write the correct data into the storage media.
E887	Software updating could not be carried out. Turn off the power, and then turn it back on again.
E888	It failed to send and receive software update file. Please try again.
E889	Written data to flash memory is incorrect. Please try again.
E890	Software updating could not be carried out. Please try again.

Other errors

Code	Cause of error and remedy
E920	Failed to read bar-code. Press the RESET key to clear the error.

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.

9. 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 and consult a qualified technician or the place of purchase.

CAUTION



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

Items with "*" in the "Reference" column should only be checked by a qualified technician.

Problem	Cause	Remedy	Reference
Sewing machine does not start when the power is turned on and the start switch is depressed.	Machine head switch does not work.	Check if the machine head switch cord is disconnected.	P. 10
		Adjust the position of the machine head switch.	P. 8 P. 34
		If the machine head switch is malfunctioning, replace it with a new one.	
The following parts do not work. • Work clamp • Thread wiper • Thread trimmer cylinder • Thread take-up lever	Air cock is closed.	Open the air cock.	P. 18
	Air pressure is too weak.	Adjust the regulator so that the air pressure is about 0.5 MPa.	P. 47
	Speed controller has been tightened too far. (applicable to thread trimmer cylinder and thread take-up lever)	Work clamp: Adjust the speed controller by loosening it 4 turns from the fully-tightened position.	P. 19
		Adjust the speed controller by loosening it 6 turns from the fully-tightened position.	P. 19
Work clamp does not rise to the maximum height.	Work clamp arm lever position is incorrect.	Adjust the position of the work clamp arm lever.	P. 47
Work clamp pressure is too weak.	Air pressure is too weak.	Adjust the regulator so that the air pressure is about 0.5 MPa.	P. 47
Work clamp pressure is not uniform at front and back of work clamp.	Work clamp is tilted.	Adjust the tilt of the work clamp.	*
Thread wiper does not operate correctly.	The thread wiper is obstructing the needle.	Adjust the height of the thread wiper.	P. 44
		Adjust the operating stroke of the thread wiper.	P. 44
	Thread wiper position is incorrect.	Adjust the operating stroke of the thread wiper.	P. 44

(Continued on next page)

(*1) Refer to the "LCD Panel/Operation Panel" Instruction Manual.

9. TROUBLESHOOTING



Problem	Cause	Remedy	Reference	
Lower thread winds to one side.	Height of bobbin winder tension assembly is incorrect.	Adjust the height of the bobbin winder tension assembly.	P. 27	
Lower thread winding amount is incorrect.	Bobbin presser position is incorrect.	Adjust the position of the bobbin presser.	P. 27	
Thread unraveling at sewing start.	Needle is too thick.	Select a needle that is suitable for the sewing conditions.	P. 28	
	Upper thread trailing length is too short.	When threading the thread through the needle, allow a distance of approximately 45 mm between the needle hole and the end of the thread.	P. 24	
		Adjust the sub-tension so that the upper thread trailing length after thread trimming is approximately 45 mm.	P. 29	
		Increase the stroke of the thread take-up lever. * Adjusting the stroke of the thread take-up lever should be carried out also if adjusting the sub-tension fails to prevent the thread from pulling out.	P. 38	
		Amount of lower thread being fed out from bobbin is too small.	Set the feeding amount to approximately 30 mm.	P. 27
	Sewing start speed is too fast.	Adjust the sewing start speed.	(*1)	
Skipped stitches occur.	Rotary hook tip is missing.	Replace the part.	*	
	Needle is too thin.	Select a needle that is suitable for the sewing conditions.	P. 28	
	Needle is too thick.			
	Needle is bent.	Replace the needle.	P. 23	
	Needle is not installed correctly.	Install the needle so that it faces correctly.	P. 23	
	Clearance between needle and rotary hook tip is too large.	Adjust the needle clearance.	P. 37	
	Needle and rotary hook timing is incorrect.	Adjust the timing.	P. 37	
	Material is flapping.	Replace the needle hole plate with one with a smaller needle diameter.		
		Use a thinner feed plate. * Recommended thickness: 1.5 mm		
		Process the work clamps and the feed plate into shapes that can hold the material near the seam.	P. 48 *	
Adjust the intermittent height of the intermittent presser foot. (-484 SF specifications only)		(*1)		

(Continued on next page)

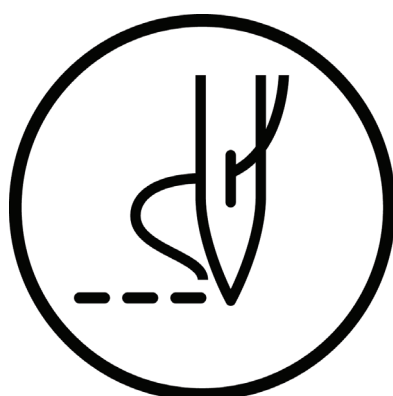
Problem	Cause	Remedy	Reference
Upper thread is breaking.	Thread is too thick for the needle.	Select a thread which is suitable for the needle.	P. 28
	Needle is not installed correctly.	Install the needle so that it faces correctly.	P. 23
	Thread is not threaded correctly.	Thread the thread correctly.	P. 24
	Damage or burring in parts such as the rotary hook, hook stopper, needle hole plate, needle or thread path.	Repair the respective part by buffing it. Alternatively, replace the part.	*
	Needle and rotary hook timing is incorrect.	Adjust the timing.	P. 37
	Upper thread tension is too strong.	Reduce the upper thread tension.	P. 29
	Thread take-up spring tension is too strong.	Reduce the tension of the thread take-up spring.	P. 36
	Thread breaks due to heat.	Use a needle cooler unit. Reduce the sewing speed.	P. 21, 24 (*1)
Lower thread is breaking.	Damage to the needle hole plate or bobbin case.	Repair the respective part by buffing it. Alternatively, replace the part.	*
	Lower thread tension is too strong.	Reduce the lower thread tension.	P. 28
Needle breaks.	Needle is bent.	Replace the needle.	P. 23
	Needle is too thin.	Select a needle that is suitable for the sewing conditions.	P. 28
	Needle and rotary hook tip are touching.	Adjust the needle clearance.	P. 37
	Needle and rotary hook timing is incorrect.	Adjust the timing.	P. 37
	Feed timing is too slow.	Advance the feed timing.	*
Upper thread is not cut.	Movable knife is blunt.	Replace the movable knife with a new one.	P. 39
	Fixed knife is blunt.	Sharpen the fixed knife or replace it with a new one.	P. 39
	Movable knife is not picking up the upper thread.	Adjust the timing.	P. 37
		Adjust the standby position of the movable knife.	P. 40
	Movable knife is not picking up the needle thread because the last stitch is being skipped.	Refer to "Skipped stitches occur".	P. 56
Lower thread is not cut.	Lower thread tension is too weak.	Increase the lower thread tension.	P. 28

(Continued on next page)

9. TROUBLESHOOTING

Problem	Cause	Remedy	Reference
Upper thread is not tight.  0573M	Needle is too thin.	Select a needle that is suitable for the sewing conditions.	P. 28
	Hole diameter in needle hole plate is too small.	Replace the needle hole plate with one with a larger hole diameter.	
	Feed plate is too thin.	Use a thicker feed plate. *Recommended thickness: 1.5 mm	
	Hole diameter of intermittent presser foot is too small. (-484 SF specifications only)	Replace the intermittent presser foot with one with a larger hole diameter.	
	Sliding parts of outer rotary hook and inner hook have little or no sewing machine oil.	Lubricate the felts for the sliding parts of the outer rotary hook and inner hook.	P. 21
	Damage or burring in parts such as the rotary hook, hook stopper, needle hole plate, needle or thread path.	Repair the respective part by buffing it. Alternatively, replace the part.	*
	Lower thread tension is too strong.	Reduce the lower thread tension.	P. 28
	Upper thread tension is too weak.	Increase the upper thread tension. *Adjust the upper thread tension after adjusting the lower thread tension.	P. 29
	Thread take-up spring tension is too weak.	Increase the tension of the thread take-up spring.	P. 36
	Upper thread does not release correctly from hook stopper.	Adjust the forward-back clearance between the tip of the hook stopper and the surface of the inner hook needle drop section to approximately 0.8 mm.	P. 38
	Feed timing is too fast.	Retard the feed timing.	*
	Intermittent height of intermittent presser foot is too low. (-484 SF specifications only)	Adjust the intermittent height of the intermittent presser foot.	(*1)
Lower thread is not tight.  0574M	Lower thread tension is too weak.	Increase the lower thread tension.	P. 28
	Upper thread tension is too strong.	Reduce the upper thread tension. *Adjust the upper thread tension after adjusting the lower thread tension.	P. 29
Uneven thread tightening at the sewing start.	Bobbin spinning.	Use an anti-spin spring.	P. 28
Poor seam finish on underside of material at the sewing start.	Upper thread trailing length is too long.	Adjust the sub-tension so that the upper thread trailing length after thread trimming is approximately 45 mm.	P. 29
		Reduce the stroke of the thread take-up lever. * Adjusting the stroke of the thread take-up lever should be carried out also if adjusting the sub-tension fails to improve the seam finish.	P. 38
Upper thread trailing length is irregular.	Movable knife is blunt.	Replace the movable knife with a new one.	P. 39
	Fixed knife is blunt.	Sharpen the fixed knife or replace it with a new one.	P. 39
	Sub-tension is too weak.	Adjust the sub-tension.	P. 29
	Thread take-up spring tension is too weak.	Increase the tension of the thread take-up spring.	P. 36

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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This is the original instructions.

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