

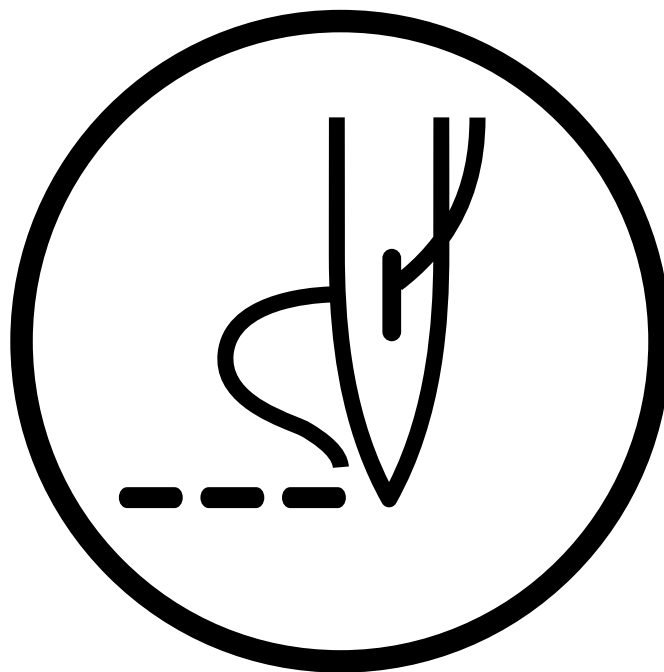
BAS-343E

INSTRUCTION MANUAL



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

PROGRAMMABLE ELECTRONIC PATTERN SEWER



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 the machine 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 almost certainly result in death or severe injury.
 CAUTION	The instructions which follow this term indicate situations where failure to follow the instructions could cause injury when using the machine or physical damage to equipment and surroundings.

Symbols

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

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

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

2 Notes on safety

DANGER



Wait at least 5 minutes after turning off the power switch and disconnecting the power cord from the wall outlet before opening the face plate of the control box.

Touching areas where high voltages are present can result in severe injury.

CAUTION

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 more than 200 kg. The installation should be carried out by two or more people.



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



Be sure to connect the ground. If the ground connection is not secure, you run the risk of receiving a serious electric shock.



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



Avoid setting up the sewing machine near sources of strong electrical noise such as high-frequency welding equipment. If this precaution is not taken, incorrect machine operation may result.



Have two people present to hold the machine head with both their hands when tilting it back or returning it to its original position.

Sewing



This sewing machine should only be used by operators who have received the necessary training in safe use beforehand.



The sewing machine should not be used for any applications other than sewing.



Attach all safety devices before using the sewing machine.

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



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

- When not using the machine
- 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.



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.

CAUTION

Cleaning



Turn off the power switch before starting any cleaning work, otherwise the machine may operate if the start switch is pressed by mistake, which could result in injury.



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

Maintenance and inspection



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



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



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

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



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.



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



Use only the proper replacement parts as specified by Brother.



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



Any problems in machine operation which result from unauthorized modifications to the machine will not be covered by the warranty.



Have two people present to hold the machine head with both their hands when tilting it back or returning it to its original position.

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

⚠ CAUTION	
	Moving parts may cause injury.
	Operate with safety devices. Turn off main switch before threading, changing bobbin and needle, cleaning etc.



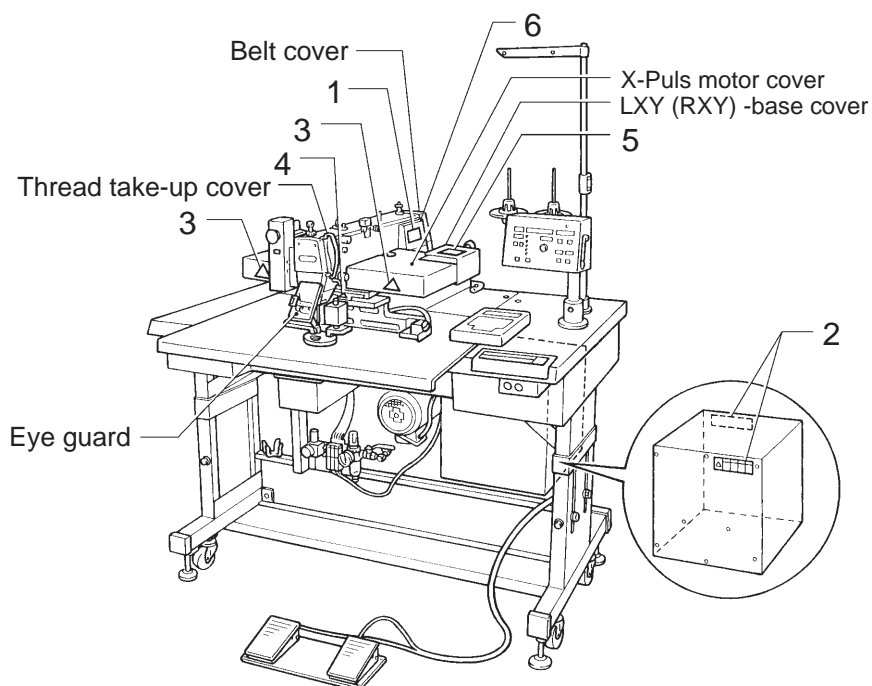
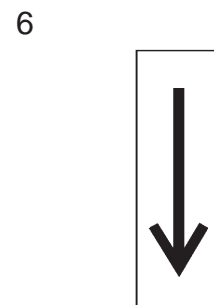
5

	⚠ 注意
	高温部 さわるとやけどする ことがある。 通電中はさわらない こと。
⚠ CAUTION	⚠ ACHTUNG
Heated cover may burn hands. Do not touch when operating.	Verbrennungsgefahr! Deckel bei Bedienung nicht berühren!
⚠ ATTENTION	⚠ ATENCION
Couvercle chaud risque de brûler les mains. Ne pas toucher pendant le fonctionnement.	La tapa caliente puede quemar las manos. No tocar estando en marcha.

Safety devices: Thread take-up cover,
Eye guard, Belt cover, X-Pulse motor cover,
LXY (RXY)-base cover,

2

	⚠ 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 adapté provoque des blessures. Eteindre l'interrupteur et attendre 5 minutes avant d' ouvrir le capot

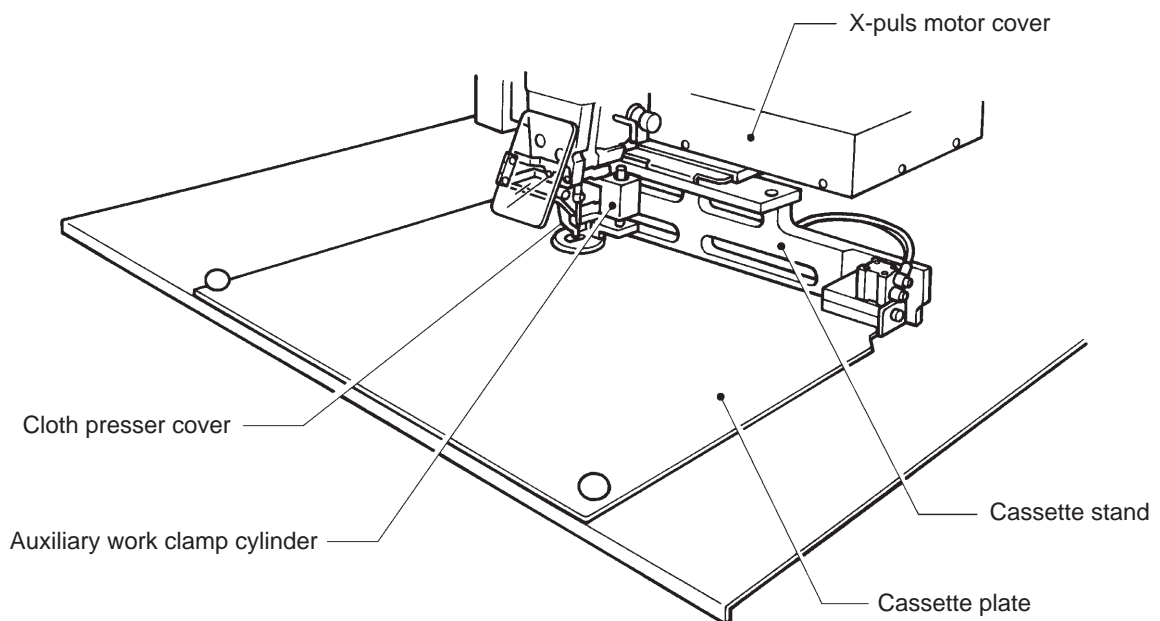
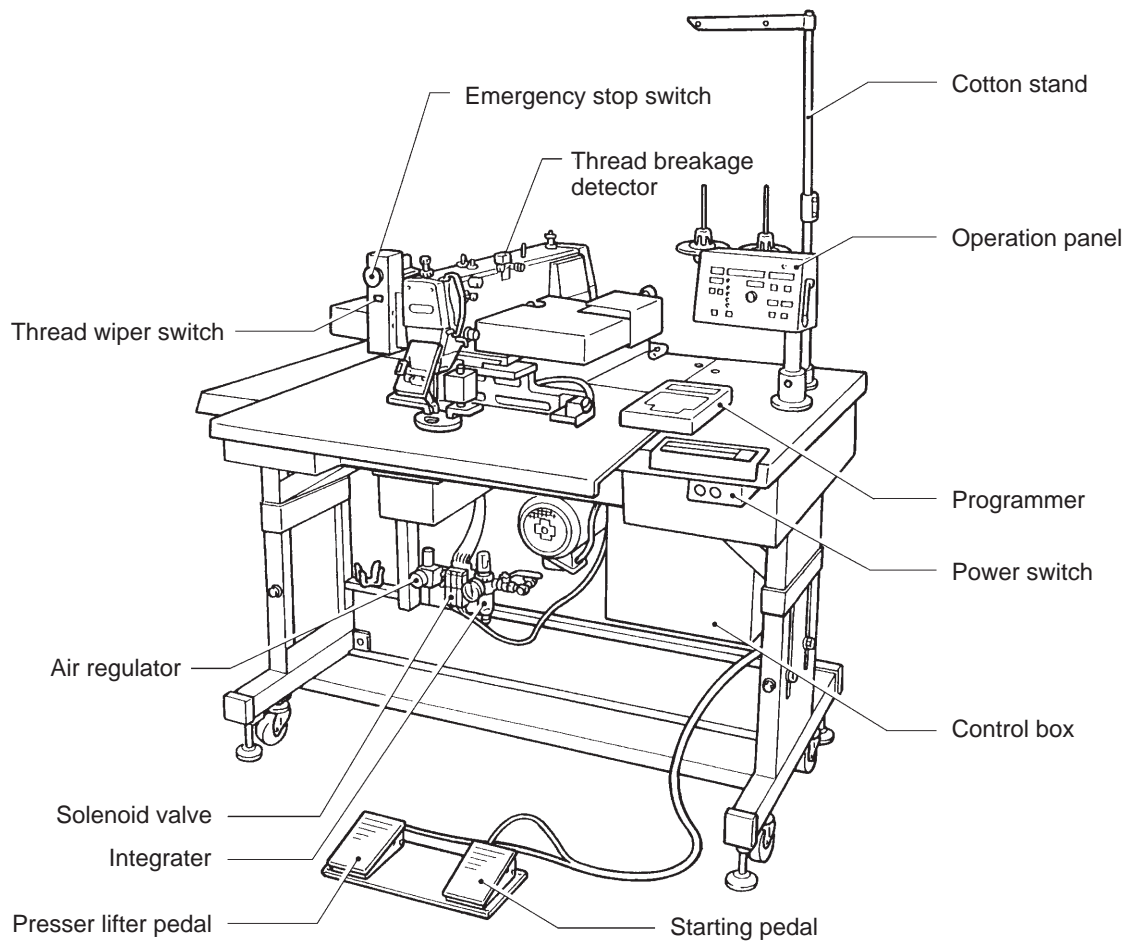


CONTENTS

1. Name of each parts	1
2. Specifications	2
3. Preparation	3
3-1. Before setting up	3
3-2. Positioning	4
3-3. Tilting the sewing machine head	4
3-4. Connecting the ground wire	5
3-5. V-belt tension	5
3-6. Installing the foot switch	5
3-7. Installing the spool stand	6
3-8. Installing the programmer (option)	6
3-9. Adjustment of air pressure	7
4. Lubrication	8
4-1. Lubrication points	8
5. Correct use	9
5-1. Selecting the needle and thread	9
5-2. Installing the needle and running the sewing machine	9
5-3. Threading the upper thread	10
5-4. Winding the lower thread	11
5-5. Replacing the bobbin case and threading the thread	12
5-6. Sewing conditions	12
5-6-1. Sewing conditions	12
5-6-2. Lower thread tension	13
5-6-3. Upper thread tension	13
5-6-4. Thread take-up spring height	13
5-6-5. Thread take-up spring tension	13
5-6-6. Pretension tension	14
6. Panel operation	15
6-1. Explanation of panel	15
6-2. Using the floppy disk	17
6-3. Using the program R/W (Read/Write) switch	19
6-4. Using the TEST switch (Checking the sewing pattern)	20
6-5. Using the emergency stop switch	21
6-6. Adjusting the sewing SPEED control	22
6-7. Changing the X-SCALE and Y-SCALE settings	22
6-8. Using the bobbin thread counter	23
6-9. Using production counter	24
6-10. Using single split mode	25
6-11. Shifting a stitch pattern	26

7. Sewing	27
7-1. Before starting sewing....	27
7-2. Sewing operation	27
8. Maintenance and inspection	29
8-1. Cleaning the rotary hook	29
8-2. Lubrication	29
8-3. Draining the oil	30
8-4. Cleaning the control box air inlet port	30
8-5. Cleaning the eye guard	31
8-6. Checking the needle	31
9. Standard adjustments	32
9-1. Adjusting the needle bar height adjustment	32
9-2. Adjusting the needle bar lift amount	32
9-3. Adjusting the needle clearance	33
9-4. Adjusting the driver needle guard	33
9-5. Adjusting the shuttle race thread guide	33
9-6. Adjusting the movable knife	34
9-7. Presser foot adjustment	36
9-8. Changing the presser foot lift	37
9-9. Wiper adjustment	38
9-10. Adjusting the needle up stop position	38
9-11. Adjustment of air pressure	39
9-12. Adjusting the lubricator	39
9-13. Checking the input sensor and DIP switch input	40
9-14. Checking the input voltage	41
9-15. Clearing all memory settings	41
10. DIP switch	42
10-1. Panel DIP switch functions	42
10-2. DIP switches inside the control box	44
11. Changing special functions using the memory switches	46
12. Error codes	50
13. Gauge parts list according to subclasses	53
14. Troubleshooting	54
15. Option	58

1. Name of each parts



2. Specifications

2. Specifications

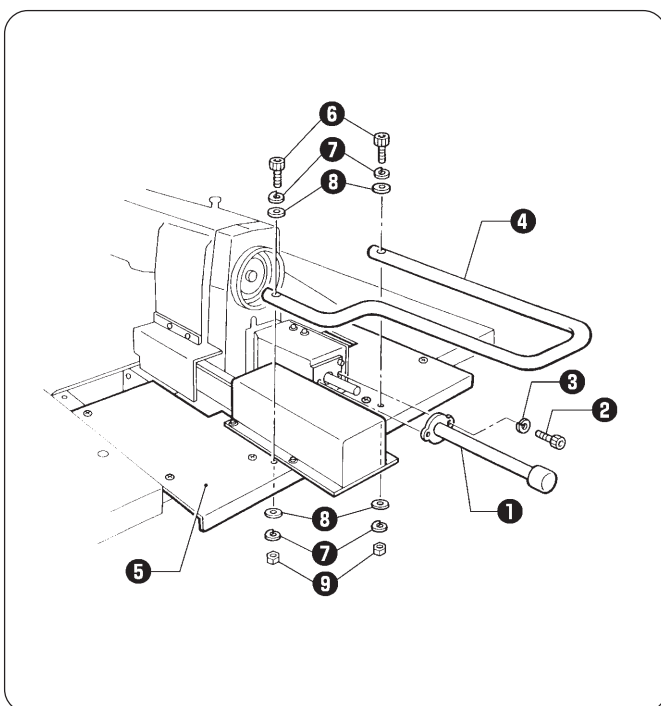
Stitch type	Single needle, lock stitch
Sewing machine	Lock stitch, pattern tacking sewing machine (with large shuttle hook)
Maximum pattern size (X-Y)	380 mm wide (X axis) and 280 mm deep (Y axis)
Maximum stitch number	Max. 20,000 (one pattern)
Stitch length	0.05 - 12.7 mm
Maximum sewing speed	2,500 rpm (When stitch length is 3 mm or less)
Feed format	Intermittent feed, pulse motor drive
Rotary hook	Shuttle hook
Needle	DP × 17, MR
Data storage method	3.5 floppy disk 2HD/1.44 MB, 2DD
Test function	Operation test function provided for use with low speed drive
Safety devices	Automatic stop function for activation in the event of misoperation realized with intermediate stop function and safety circuits
Wiper device	Standard equipment
Thread trimmer device	Standard equipment
Auxiliary work clamp lift amount	14.5 mm ± 1 mm
Work clamp lift stroke	18 mm
Intermittent stroke	0, 3 (Factory default) - 8 mm
Weights	Machine head: 100 kg Control box: 10 - 20 kg (depending on destination)
Cramp type	Cassette-type with auto-eject
Lubricator device	Standard equipment
Power supply	Single-phase 110V, 220V, 230V, 3-phase 200V, 380V, 400V, 900VA
Motor	Three-phase 400 W induction motor
Air pressure	0.49 MPa (5.0 kgf/m ²)
Power table	Shaped for use sitting or standing
Machine dimensions	1,200W × 1560D × 860H mm (Sitting) - 1,130H mm (Standing)

3. Preparation

⚠ 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 more than 200 kg. The installation should be carried out by two or more people.
- ⊘ Do not connect the power cord until installation is complete, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.
- ⚠ Be sure to connect the ground. If the ground connection is not secure, you run the risk of receiving a serious electric shock.
- ⊘ Hold the machine head with both hands when tilting it back or returning it to its original position. Furthermore, after tilting back the machine head, do not push the face plate side or the pulley side from above, as this could cause the machine head to topple over, which may result in personal injury or damage to the machine.
- ⊘ Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result. Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhoea. Keep the oil out of the reach of children.
- ⚠ Avoid setting up the sewing machine near sources of strong electrical noise such as high-frequency welding equipment. If this precaution is not taken, incorrect machine operation may result.

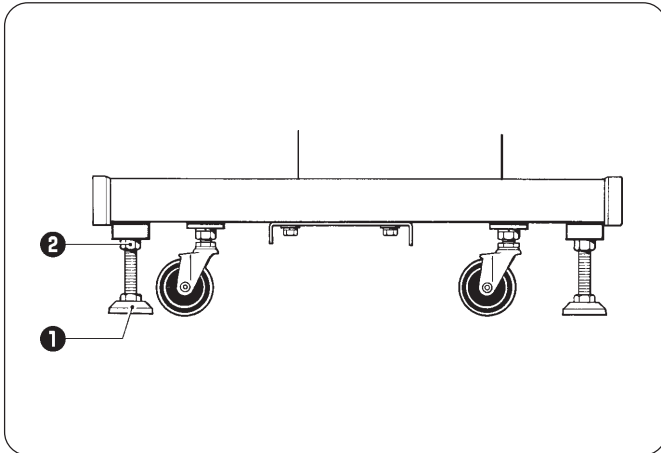
3-1. Before setting up



1. Install the Y driving shaft guard **1** to the rear of the arm with the bolt **2** and the spring washer **3**.
2. Install the guard **4** to the table rear cover **5** with the bolt **6**, spring washer **7**, flat washer **8** and nut **9**.

3. Preparation

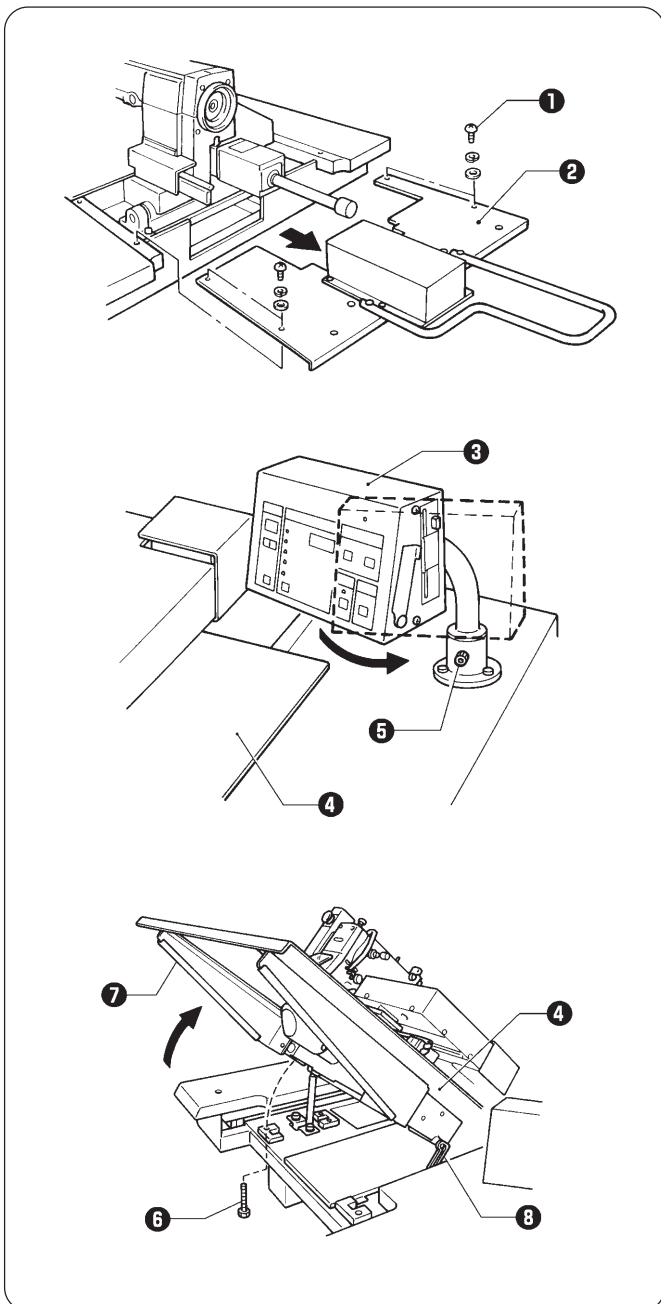
3-2. Positioning



Decide the position for the sewing machine. Loosen nuts of four level adjusters **1**. Lower the level adjusters and secure them with nuts **2**.

Turning the level adjuster counterclockwise will raise its height and turning it clockwise will lower it.

3-3. Tilting the sewing machine head



1. Remove screws **1** at the back of the work table, and remove table cover (rear) **2**.

2. When tilting back the machine head, loosen the bolt **5** of the control box base and move the control box **3** to the right so that the needle plate support plate **4** does not touch the control box **3**.

3. Remove bolt **6**.
The bolts are used to fix the machine in shipping. Generally they are needless after removing them keep them in another place.

4. Stand at the front of the table and slowly raise the machine **7**. Then lock **8** it.

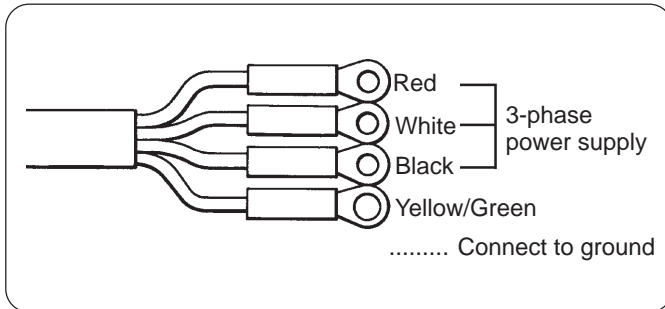
5. When returning the machine to its former position, release lock **8**. The gas spring will guide the machine to its original position.

3-4. Connecting the ground wire

DANGER

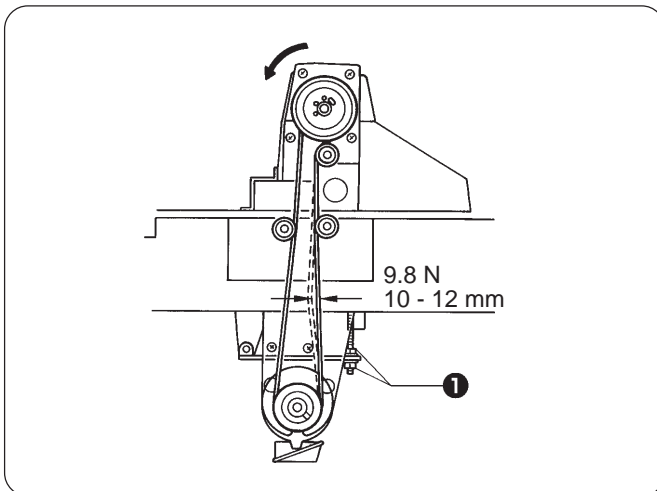


Be sure to connect the ground. If the ground connection is not secure, you run the risk of receiving a serious electric shock.



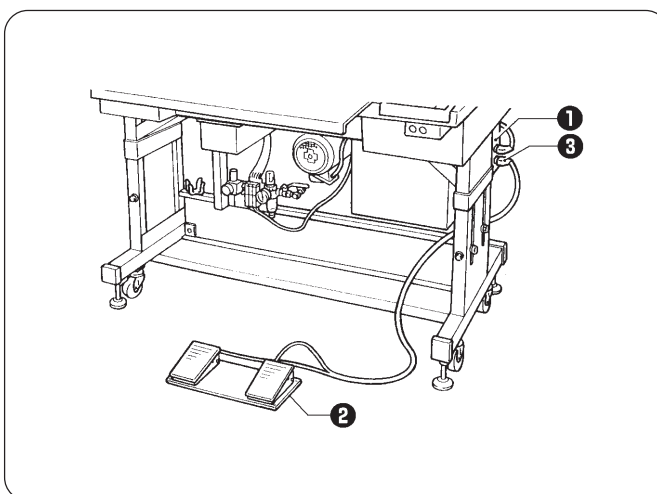
Connection method for 3-phase power supply

3-5. V-belt tension



These should have approximately 10 - 12 mm of slack when V-belt is loaded at 9.8 N (1 kgf). To adjust, loosen the two nuts **1**, and shift the motor up or down.

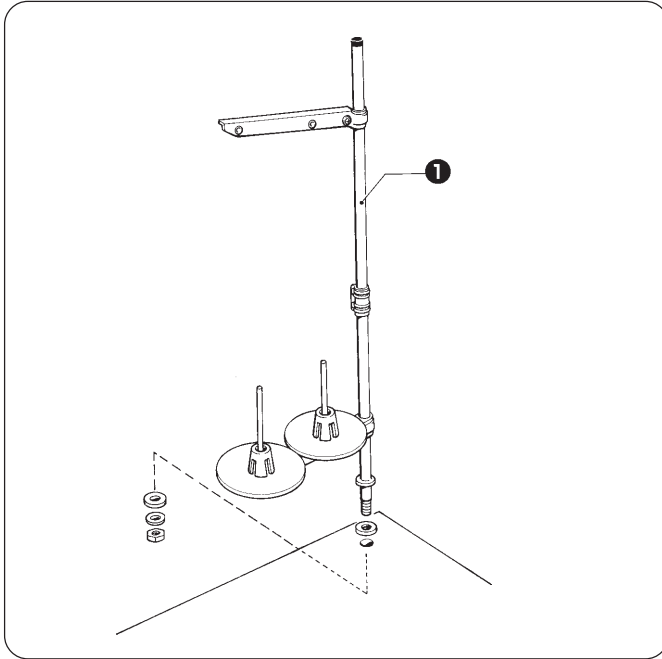
3-6. Installing the foot switch



Insert the connector of the foot switch **2** into the connector **3** of the control box **1**.

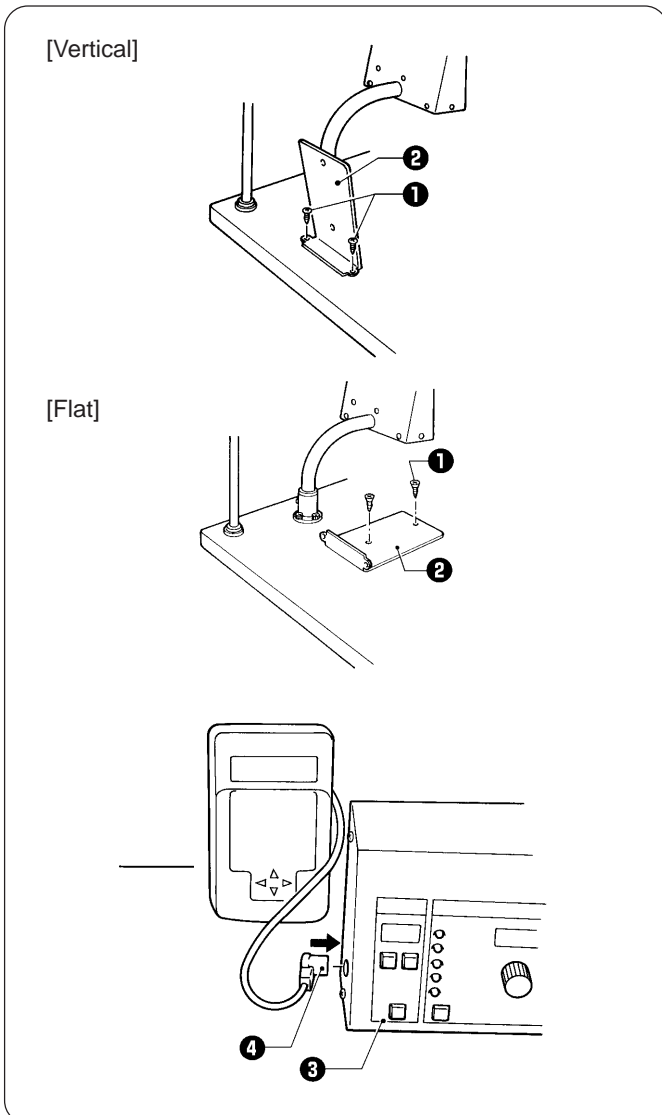
3. Preparation

3-7. Installing the pool stand



Install the pool stand **1** to the table.

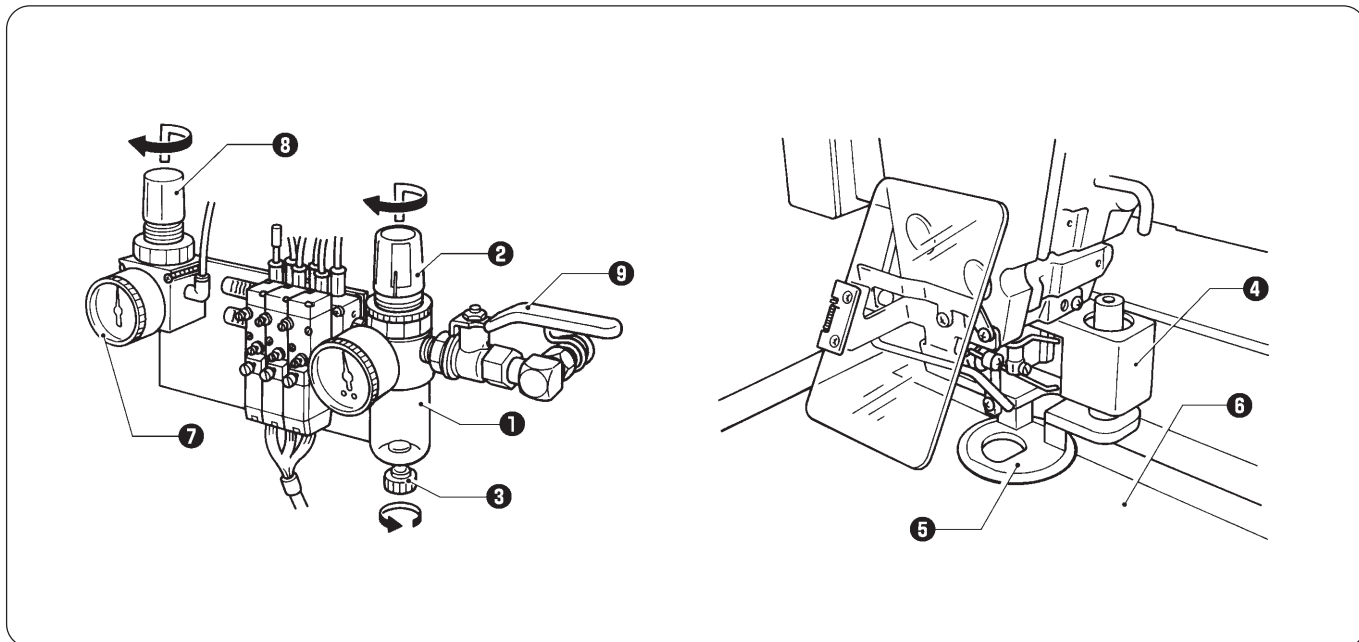
3-8. Installing the programmer (option)



1. Install the programmer support **2** to the work table with the two screws **1**.

2. Insert the programmer connector **4** securely into the left side of the operation panel **3**.

3-9. Adjustment of air pressure



1. Air pressure should be 0.49 MPa [5 kg/cm²].
The air pressure can be adjusted by pulling up and turning the control knob **2** on the integrator **1**.
After adjustment is complete, push the control knob **2** downward to lock it.
2. If water stands in the bottle of the integrator **1**, turn the drain cock **3** in the direction indicated by an arrow to drain the water.
3. Adjust the air pressure for the auxiliary work clamp cylinder **4** to a low pressure but within the range so that the cassette plate **6** does not lift up when it is pressed by the cloth presser cover **5** during sewing.
The factory default setting is 0.3 MPa (3 kgf/cm²)

Adjustment method

Pull up the handle **8** of the air regulator **7** and turn it to adjust.

After adjusting, push the handle **8** down again to lock it.

NOTE

Open the air cock **9** slowly.

4. Preparation

4. Lubrication

CAUTION



Turn off the power switch before starting lubricating, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.



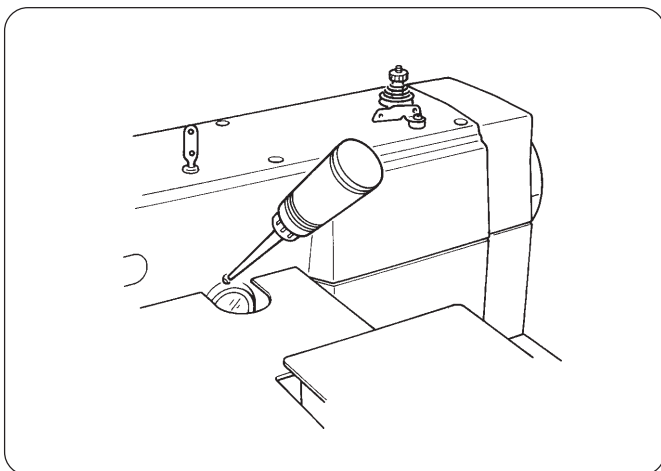
Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result.

Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhoea. Keep the oil out of the reach of children.

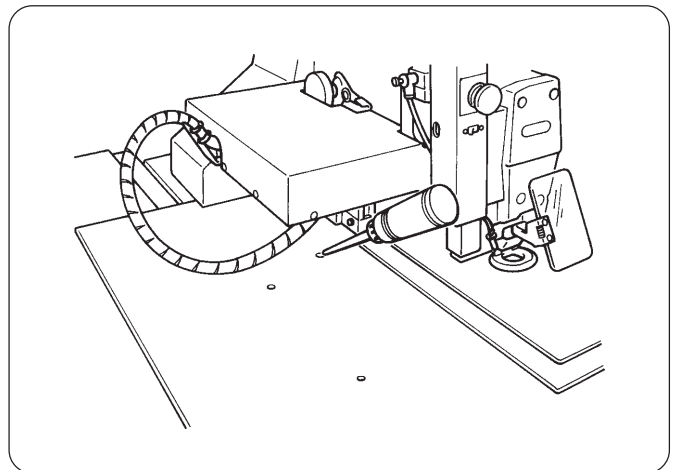
NOTE

- Fill the machine with oil when the oil level is down to about one-third full in the oil sight glass.
If oil is not added and the oil drops below this level, there is the danger that the machine may seize during operation.
- Be sure to let the machine operate for a while after adding the oil.
- Use only specified Brother oil (Nisseki Sewing Lube 10) for the machine oil.

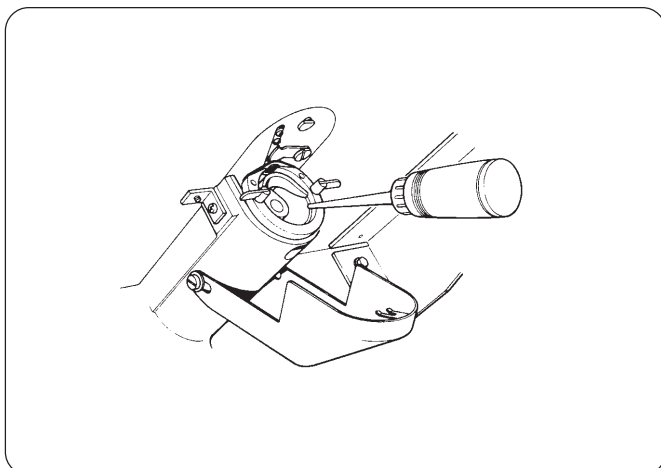
4-1. Lubrication points



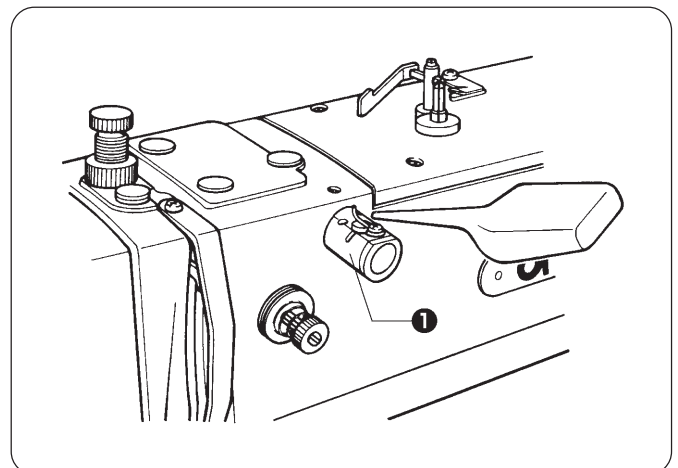
1. Fill the arm-side oil tank with oil.
(Fill the oil tank with sewing machine oil.)



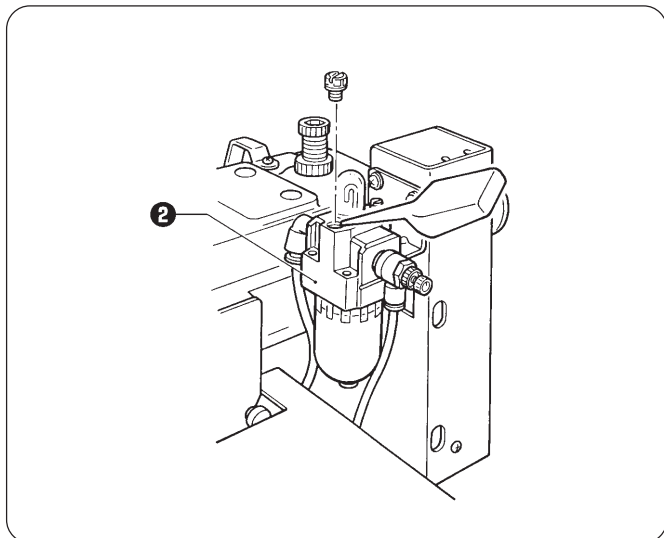
2. Fill the bed-side oil tank with oil.



3. Add a drop of oil to the shuttle hook race.



4. If using the liquid cooling tank **1**, fill it with silicon oil (100 cs).



5. Fill the lubricator tank **2** with silicone oil.

5. Correct use

5-1. Selecting the needle and thread

Needle	Thread	Main application
DP x 17 #21	#50 -#20	Denim
DP x 17 #25	"	Leather

Different needles and threads are used for different sewing applications.

Refer to the table at left for details on which needle.

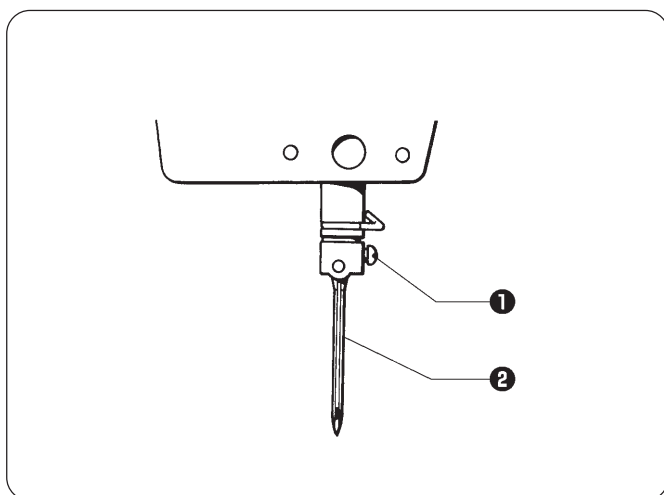
5-2. Installing the needle and running the sewing machine

CAUTION



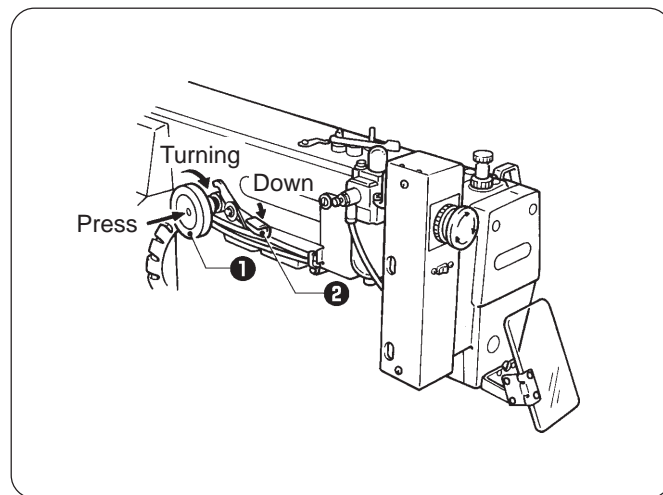
Turn off the power switch before installing the needle, otherwise the machine may operate if the foot switch is depressed by mistake and serious injury could result.

Installing the needle



Loosen the set screw **1**, insert the needle **2** as far as it will go so that the groove is facing toward you and then tighten the set screw **1**.

To turn the pulley by hand



Simply press in on the pulley **1** to turn it by hand. To turn the pulley, press lever **2** down.

- After turning the pulley by hand, be sure to press the lever down to return the pulley to the normal operating position.

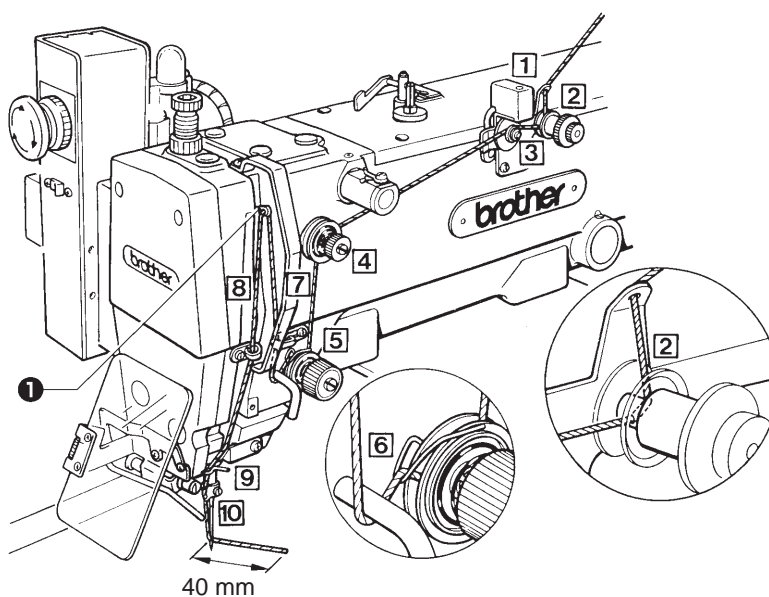
5-3. Threading the upper thread

⚠ CAUTION

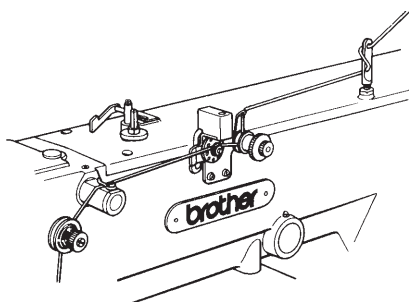


Turn off the power switch before threading the thread, otherwise the machine may operate if the foot switch is depressed by mistake and serious injury could result.

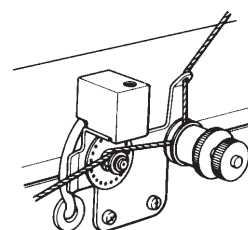
[When using cotton thread and spun yarn]



With synthetic thread



Threading in the upper thread breakage detector



Real the thread from above once or twice as the above figure.

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

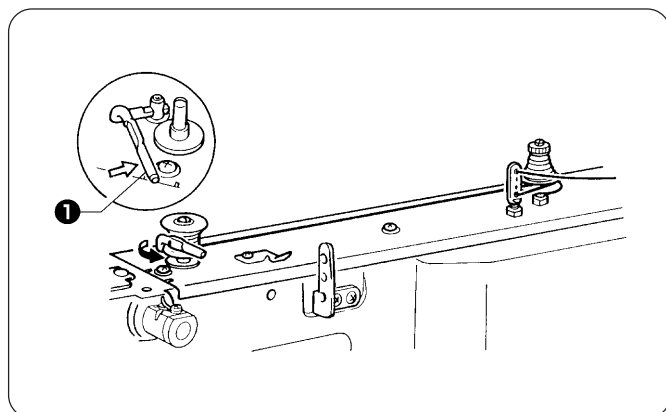
NOTE

- Turn the machine pulley and raise the thread take-up lever ❶ 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 40 mm between the needle hole and the end of the thread. If the trailing length of the thread is too long, it may cause the thread to.

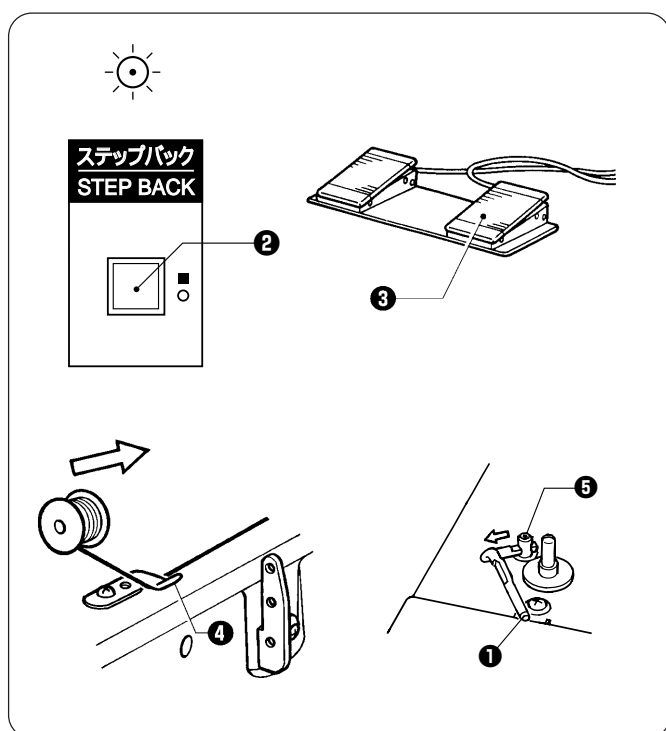
5-4. Winding the lower thread

! CAUTION

Do not touch or place anything against any of the moving parts while winding the lower thread, otherwise personal injury or damage to the machine may result.



1. Place the bobbin all the way onto the shaft.
2. Thread the thread as shown in the illustration at left, wind the thread around the bobbin several times in the direction of the arrow, and then press the bobbin presser ①.
3. Turn on the power switch.
(The POWER indicator on the operation panel will illuminate.)



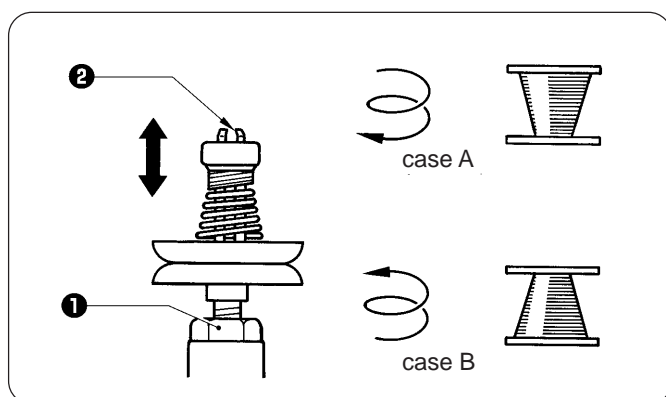
4. Check that the needle is not touching the presser foot, and then while pressing the STEP BACK switch ②, depress the foot switch ③ to start the machine. Keep depressing the foot switch ③ until the lower thread stops being wound onto the bobbin. Release the STEP BACK switch ② after the machine starts operating. If you release the foot switch before winding is completed, depress it once more while pressing and holding the STEP BACK switch ②.
5. The bobbin presser ① will automatically return to its original position after a set amount of thread (80 - 90% of the bobbin capacity) has been wound on.
6. Release the foot switch ③.
7. Remove the bobbin, hook the thread onto the knife ④, and then pull the bobbin in the direction of the arrow to cut the thread.
8. To wind more thread onto the bobbin, loosen the set-screw ⑤ and pull the bobbin presser ① outward.

<< If the thread winds onto the bobbin unevenly >>

If the thread winds onto the bobbin unevenly, loosen the nut ① and turn the bobbin winder thread tension stud ② to adjust.

NOTE

If the thread winds on as shown in A, turn the bobbin winder thread tension stud ② clockwise; if it winds on as shown in B, turn the bobbin winder thread tension stud ② counterclockwise.



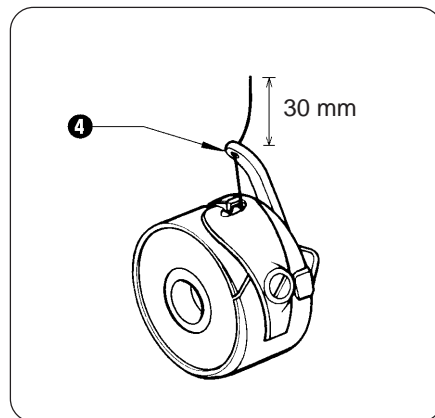
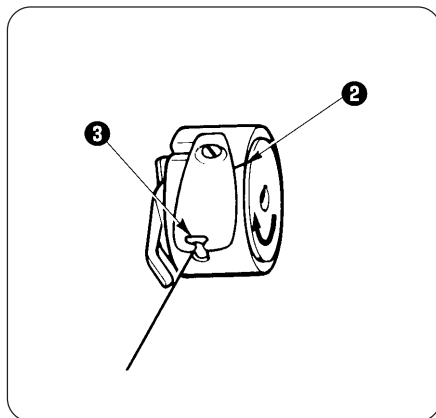
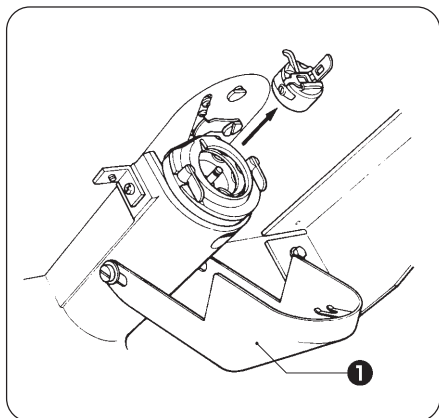
5. Correct use

5-5. Replacing the bobbin case and threading the thread

CAUTION



Turn off the power switch before removing and replacing the bobbin case, otherwise the machine may operate if the foot switch is depressed by mistake and serious injury could result.



1. Pull the shuttle race cover **1** forward and then open the cover.
2. Lift the bobbin case latch and remove the bobbin case.
3. Insert a new bobbin into the bobbin case, and then pass the thread through the slot **2** and pull it out from the thread hold **3**. Check that the bobbin turns in the direction of the arrow when the thread is pulled at this time.
4. Pass the thread through the lever thread hole **4**, and then pull out approximately 30 mm of thread.

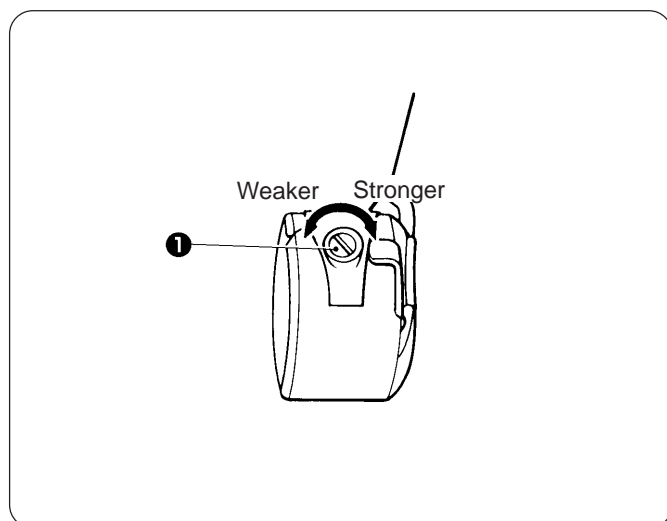
5-6. Sewing conditions

5-6-1. Sewing conditions

Specifications	For thick materials
Upper thread	#20 or equivalent
Lower thread	#20 or equivalent
Upper thread tension	150 - 200 g
Lower thread tension	20 - 40 g
Thread take-up spring height	8 - 10 mm
Thread take-up spring tension	150 - 200 g
Needle	DP x 17 #21
Normal sewing speed	2000 rpm

The sewing conditions given above may vary depending on the type of material being sewn.

5-6-2. Lower thread tension

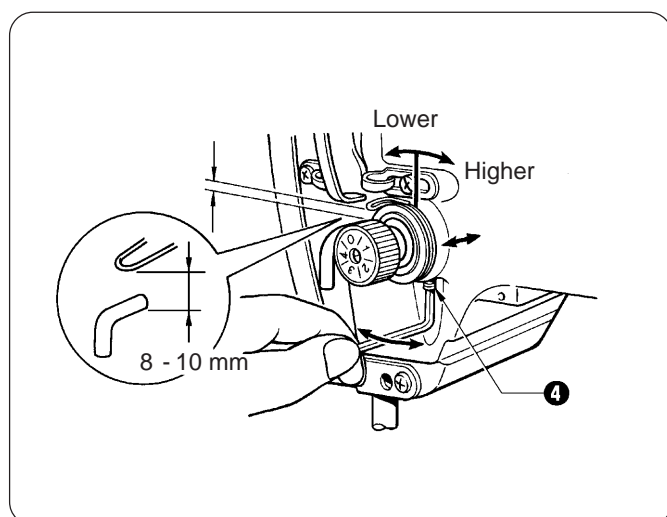


Set the lower thread tension to as weak a tension as possible and so that the bobbin case drops by its own weight when the end of the thread is held. Turn the adjusting screw **1** to adjust the tension.

NOTE

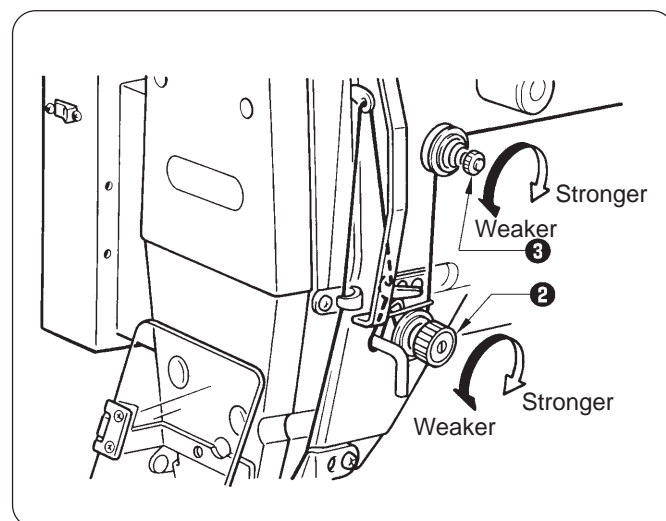
If the lower thread tension is too weak, it may not be possible to cut the lower thread properly during thread trimming.

5-6-4. Thread take-up spring height



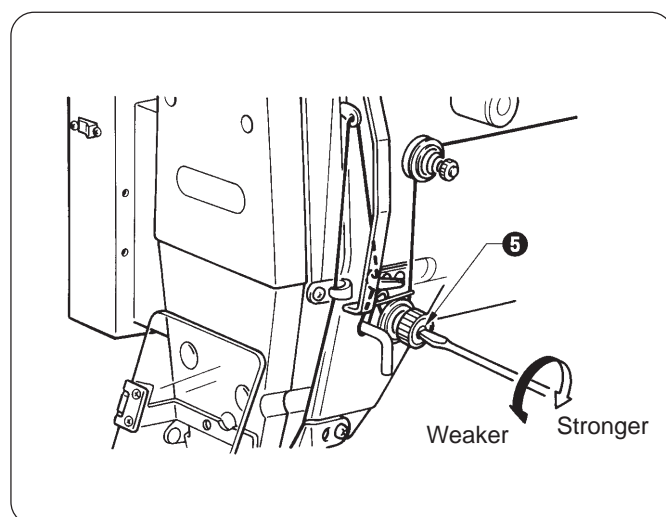
Loosen screw **4** and turn the entire thread take-up unit to adjust so that the height of the thread take-up spring is 8 - 10 mm.

5-6-3. Upper thread tension



Turn the tension nut **2** (main tension) to adjust the tension as appropriate for the material being sewn. Furthermore, turn the thread nut **3** (sub-tension) to adjust the remaining length of upper thread to 35 - 40 mm.

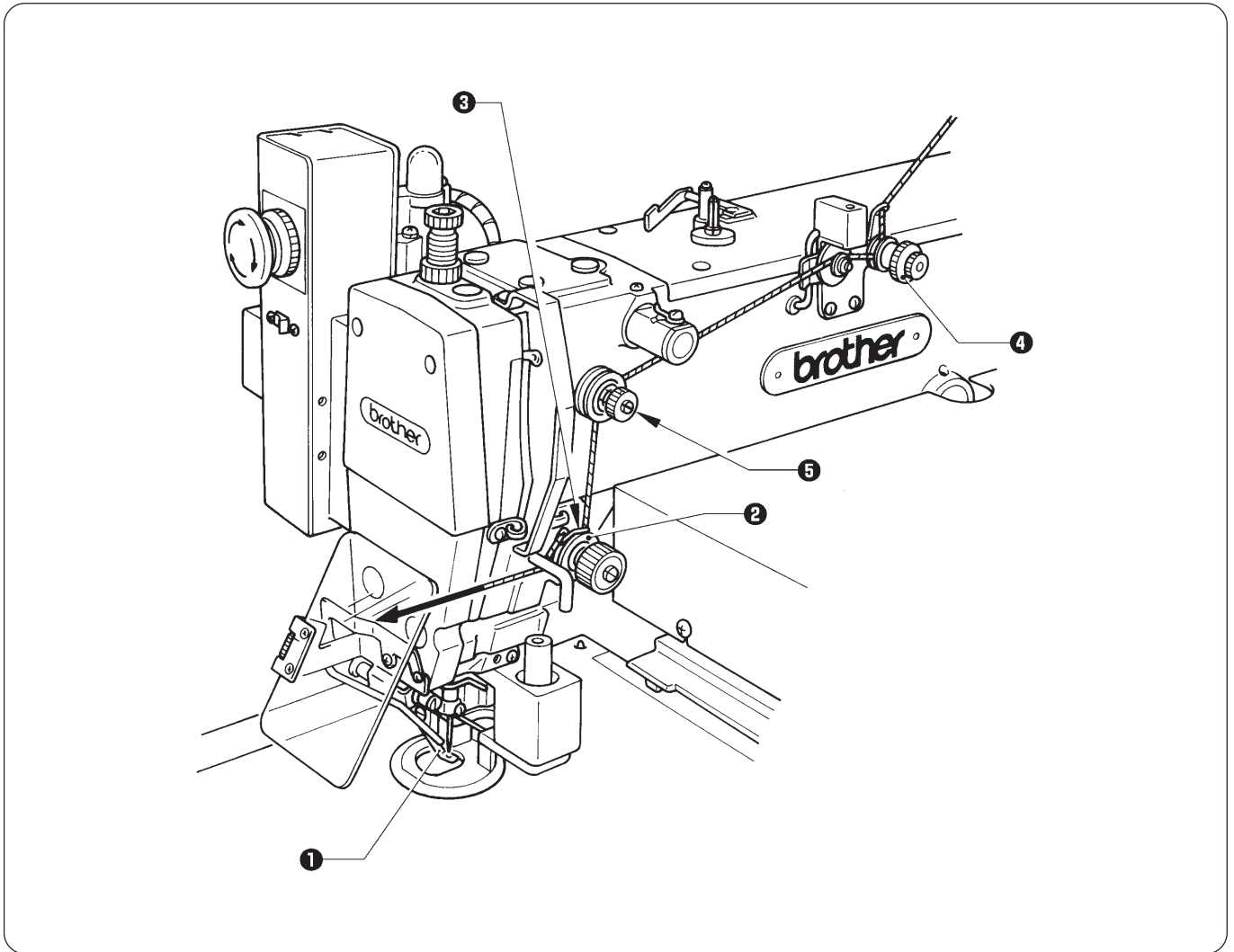
5-6-5. Thread take-up spring tension



Adjust the thread take-up spring tension by turning the tension stud **5** with a screwdriver.

5. Correct use

5-6-6. Pretension tension



1. Raise the work clamp **1** and open the main tension disc **2**.
The thread take-up spring **3** should not operate when the thread is pulled in the direction of the arrow.
2. Set the thread tension for the thread breakage detector pretension **4** to approx. 5 g.
Weaken the thread tension for the machine head pretension **5** as much as possible.

Standard for balance of thread tension

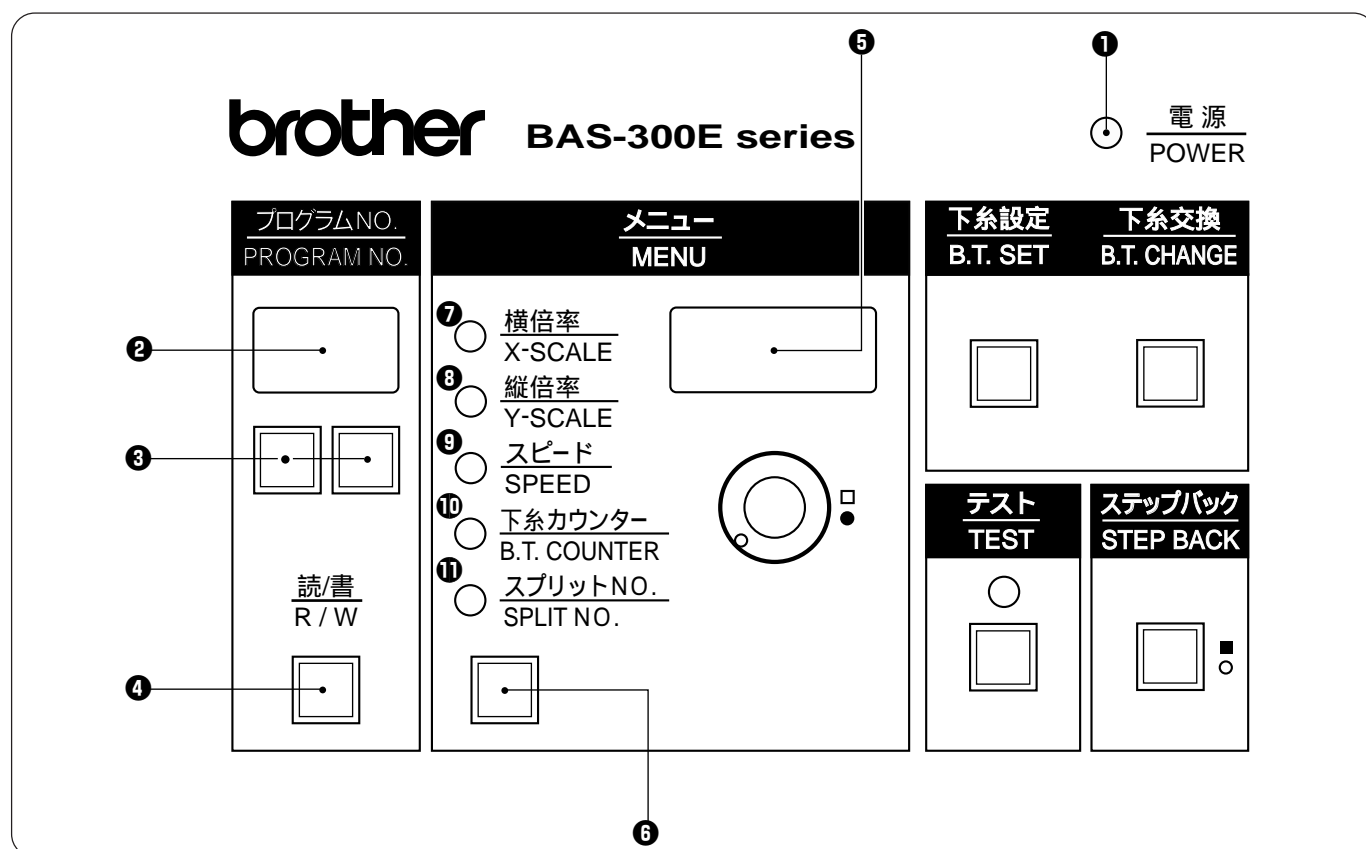
Adjust the thread tensions so that the total tension for the pretensions **4** and **5** is lower than the tension for the thread take-up spring.

NOTE

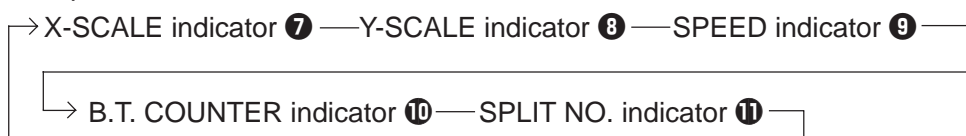
If misoperation of the thread breakage detector continues, repeat the adjustment procedure above.
(Such misoperation is most likely to occur when synthetic fiber yarns are used.)

6. Panel operation

6-1. Explanation of panel

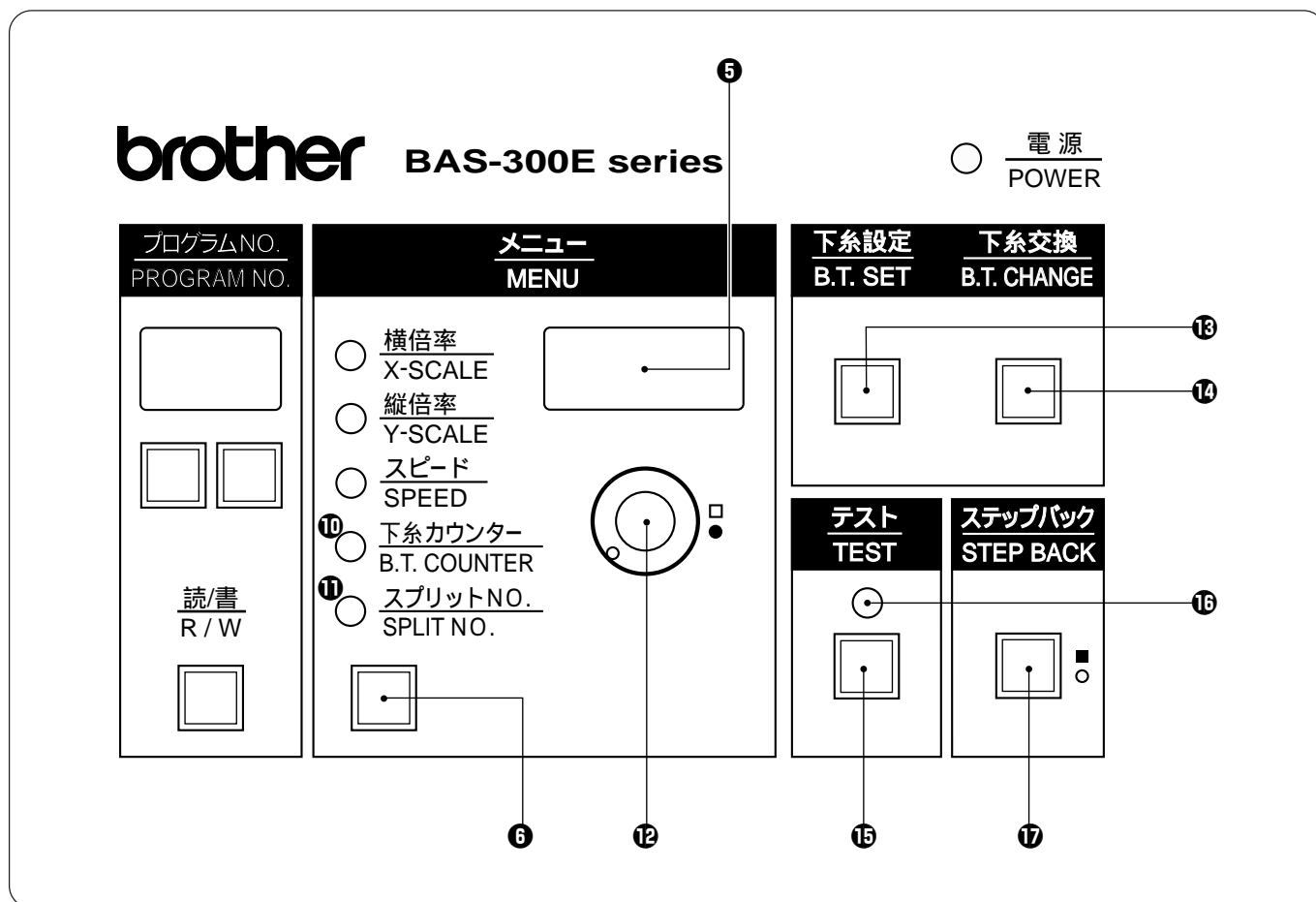


- ① POWER indicator When the power is turned on, the indicator lights to show that the power is on.
- ② PROGRAM No. display Displays the program number 00 - 99.
- ③ Program select switch Used to select the program number when reading a program from or writing a program to disk.
- ④ Program Read/Write switch • Used to read a program from floppy disk, or to write a newly programmed stitch pattern to floppy disk.
 Up to ten patterns (00 - 99) can be stored on each disk.
- ⑤ Display screen Used to display data such as menus, errors and memory switch settings.
- ⑥ Menu switch Used to select the desired menu (scale, speed, bobbin thread counter, split No.). One of the indicators ⑦ - ⑪ illuminates to indicate the menu selected, and the setting for that menu then appears on the display screen ⑤.
 The illuminated indicator changes in the following order each time the switch is pressed.



- ⑦ X-SCALE indicator Illuminates when X-scale mode has been selected using the menu switch ⑥.
- ⑧ Y-SCALE indicator Illuminates when Y-scale mode has been selected using the menu switch ⑥.
- ⑨ SPEED indicator Illuminates when speed mode has been selected using the menu switch ⑥.

6. Panel operation



- ⑩ Bobbin Thread COUNTER Illuminates when bobbin thread counter mode has been selected using the indicator menu switch ⑥.
- ⑪ SPLIT NO. indicator Illuminates when split No. mode has been selected using the menu switch ⑥.
- ⑫ Dial The setting shown on the display screen ⑤ can be changed by turning this dial while pressing the STEP BACK switch ⑰.
- ⑬ Bobbin Thread SET switch Used to store the number of work pieces displayed in the bobbin thread counter to floppy disk.
- ⑭ Bobbin Thread CHANGE switch Used to continue sewing after replacing the bobbin thread. (An alarm will sound when the counter reads <000>. Sewing is not possible when the counter reads <000>.) (Refer to "6-9. Using the bobbin thread counter".)
- ⑮ TEST switch Used to move the feed mechanism only in order to confirm a programmed stitch pattern.
- ⑯ TEST indicator Lights when the TEST switch is pressed.
- ⑰ STEP BACK switch Used when winding a fresh bobbin, or when correcting a stitch pattern due to a broken needle thread.

6-2. Using the floppy disk

Compatible types of floppy disk

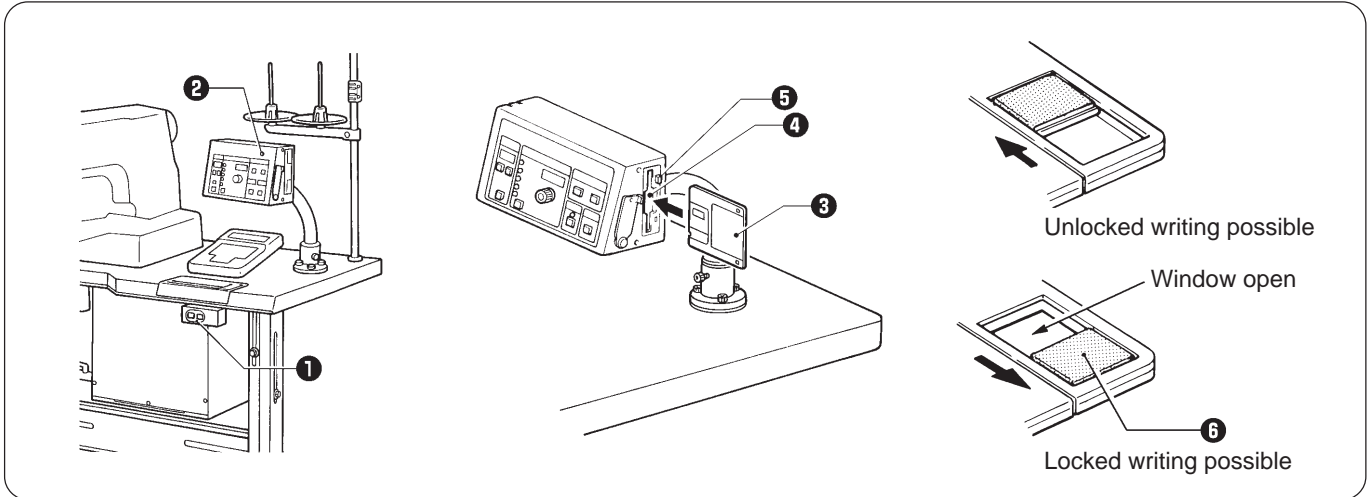
Data type	No. of stitches programmed	Data resolution	Disk	Format	Write enabled
300E type	20,000 stitches per pattern 100 pattern Up to a maximum of 360,000 stitches	0.05 mm/pulse	2HD	1.44 MB	Yes
Tajima embroidery data	50,000 stitches per pattern	0.1 mm/pulse			No
Old 300A type	4,000 stitches per pattern 10 patterns Up to a maximum of 40,000 stitches	0.1 mm/pulse	2DD	Automatically formatted	Yes
Old 300 data	2,000 stitches per pattern 10 patterns Up to a maximum of 20,000 stitches	0.2 mm/pulse			No

- The above four types of data can all be read, but when writing to disk, all data is automatically converted to 300E data when writing to 2HD disks and 300A data when writing to 2DD disks.
- When using a 2HD disk, use a disk which has been pre-formatted as a 1.44 MB disk. (The programmer can be used to format these disks. Refer to the programmer instruction manual for details.)
- TFD embroidery data can be embroidered after it has been converted by the programmer to BAS-300E data.
- Restriction on using 2DD floppy disks.

In order to maintain compatibility with the old 300A series, the following restrictions have been placed on the use of the new functions which have been added to the E series.

Restricted function	A series (2DD)	E series (2HD)	Applicable command
Resolution	0.1 mm/pulse	0.05 mm/pulse	
Low-speed conversion	2 types (400 and 1,200 revolutions)	4 types (400, 600, 800 and 1,200 revolutions)	[668]L [669]L
Split function during embroidering	Not available	Available	[220]L [230]L
Needle down stop for split	Not available	Available	[221]L [231]L
Expansion option output	Not available	Available	

6. Panel operation



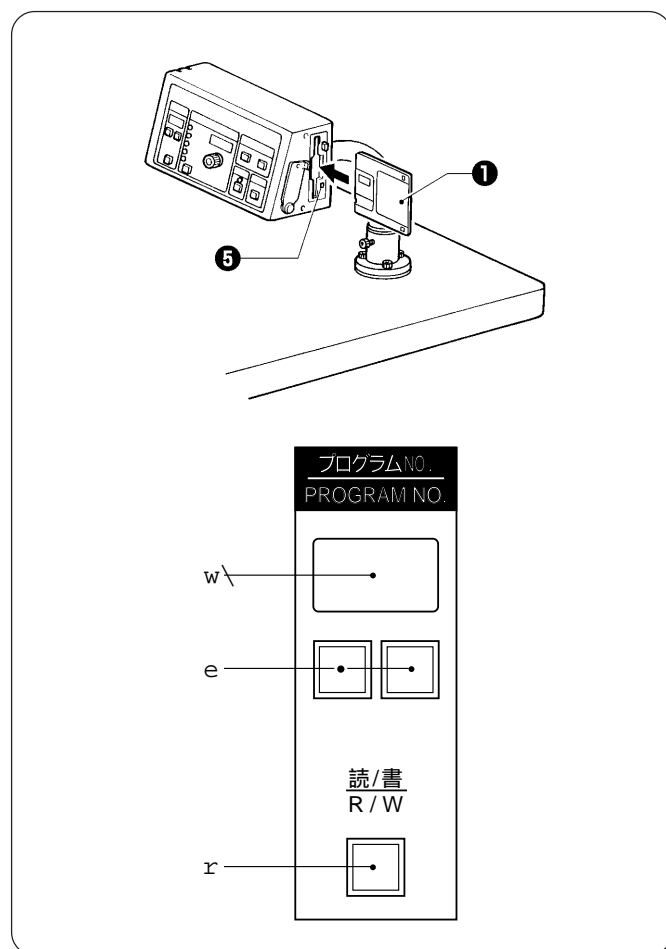
1. Turn on the power switch **1**. The POWER indicator **2** will illuminate and the machine model number will appear on the display screen.
2. Hold the disk **3** with the label up and the metal shutter to the front, and insert the disk into the drive **4**. It will click into place.
3. To eject the disk, press the eject button **5**.

NOTE

- Slide the write protector y on the back of the disk up (the window opens) to lock the disk and prevent accidental erasure of the disk contents.
- Inserting the disk into the drive upside down or backwards may damage the drive and will prevent reading or writing of data.
- Be sure to store your disks away from any magnets or magnetic sources, including radios, televisions, tele phones, and other devices. Magnetism can erase or damage disk contents. Also, be careful to prevent exposure of the disk to oil or dust.

6-3. Using the program R/W (Read/Write) switch

Programmed stitch patterns stored on floppy disk can be read into memory, and newly programmed patterns can be written to disk for permanent storage and later recall.



Insert the floppy disk **1** containing or which is to contain the programmed stitch pattern.

To READ a pattern to memory

Press the program select switch **3** on the operation panel. The program number will then appear in the PROGRAM NO. display **2**. After selecting the desired program number, press the R/W switch **4**. The disk drive indicator **5** will illuminate and a "P" will appear on the PROGRAM NO. display **2** to indicate that the data is being read. When the alarm sounds and the disk drive indicator **5** turns off, the program number will then flash in the PROGRAM NO. display **2** instead of the "P" to indicate that the reading of the data is complete.

To WRITE a pattern to disk

Press the program select switch **3** on the operation panel to select the desired program number. After programming the pattern using the stitch programmer, press the R/W switch **4**. The disk drive indicator **5** will illuminate and a "P." will appear on the PROGRAM NO. display **2** to indicate that the data is being written. When the alarm sounds and the disk drive indicator **5** turns off, the program number will then flash in the PROGRAM NO. display **2** instead of the "P" to indicate that the writing of the data is complete.

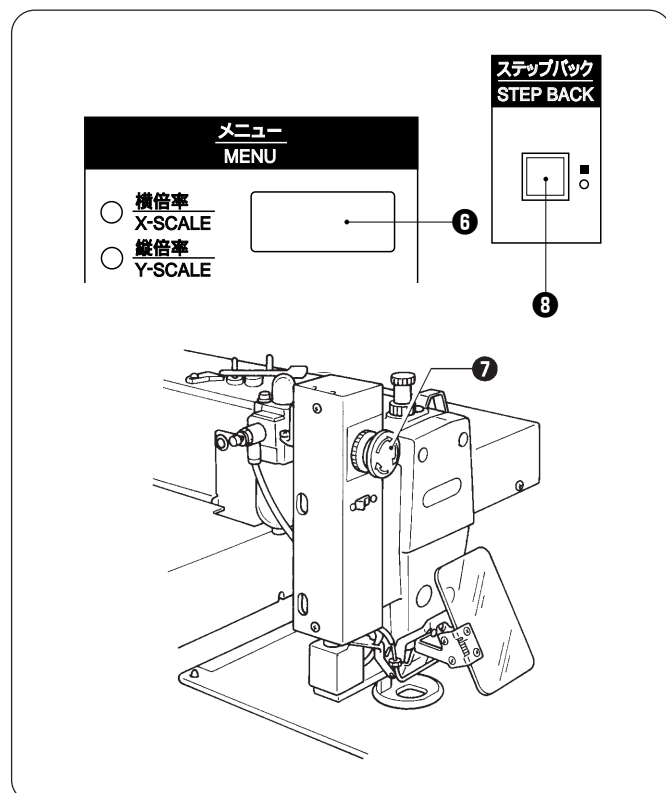
If an error message is displayed

If an error message code is displayed in the display **7**, and alarm will sound.

Press the emergency stop switch **6** on the front of the machine to stop sewing machine operation, and then refer to and follow the error code list on page 59.

Clearing the error

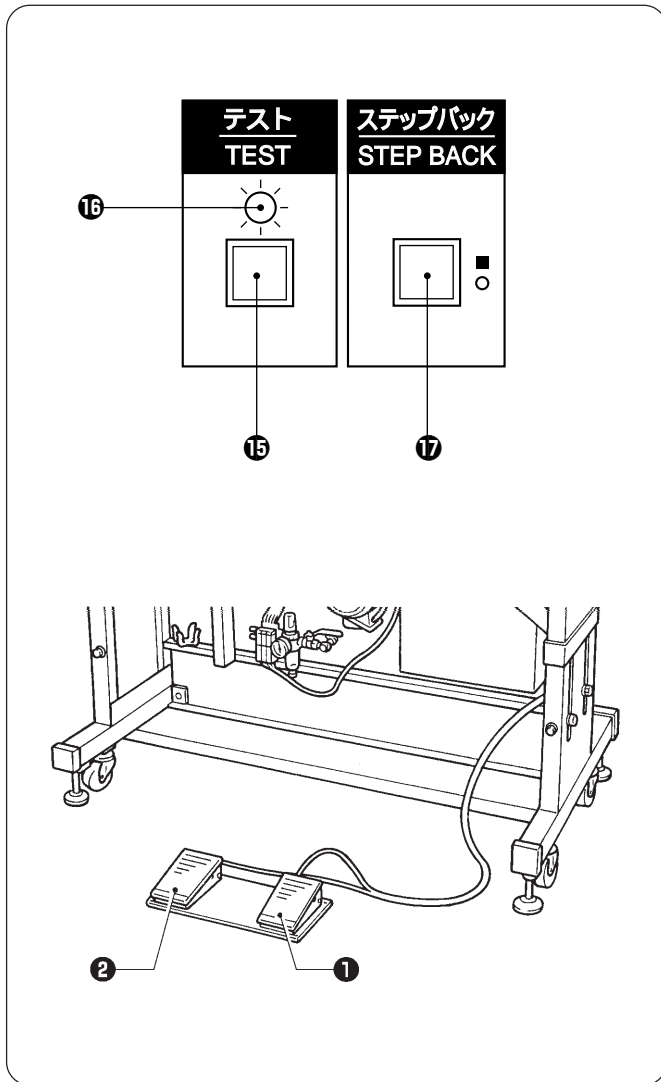
1. Turn the EMERGENCY STOP switch **7** clockwise and then pull it forward to release it.
2. Press the STEP BACK switch **8** on the operation panel (when memory switch No. 0d is ON).
If memory switch No. 0d is OFF, press the EMERGENCY STOP switch **7** once more to release it.



6. Panel operation

6-4. Using the TEST switch (Checking the sewing pattern)

Use the TEST switch to begin sewing again from any desired point when the thread breaks or the bobbin thread runs out.



1. Press the TEST switch **15**. The test indicator **16** will light.
2. If the work clamp is raised, depress the work clamp lifter pedal **2** to lower the work clamp.
3. Press the starting pedal **1**.

NOTE

After the feed mechanism has returned to the home position, it will then move the sewing start position and the program number will stop flashing.

This only occurs the first time that a program is selected.

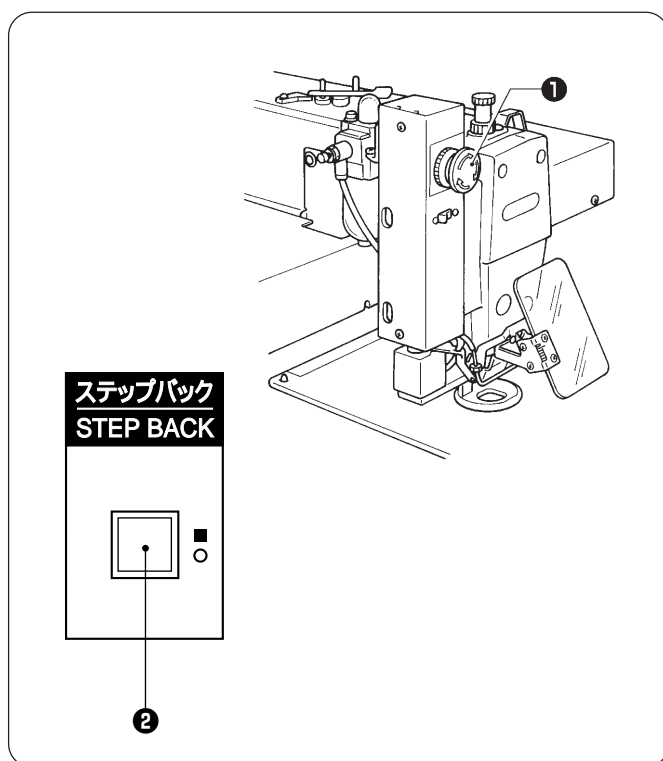
4. Press the starting pedal **1**. (The needle will remain stationary as the work clamp advances through the pattern at low speed one stitch at a time. Press the presser lifter pedal **2** to fast forward.
- If the STEP BACK switch **17** is pressed while moving at low speed, the work clamp will move in the forward direction in steps of 100 stitches.
5. When the work clamp reaches the desired position, press the TEST switch **15**. The work clamp will stop, and the test indicator **16** will go out. If the work clamp was stopped too early, press the TEST switch **15** again to proceed.
- If the work clamp was stopped too late, press the STEP BACK switch **17** to advance the work clamp one stitch at a time.

Resuming operation from a stopping point

6. Sewing will start when the starting pedal **1** is pressed.

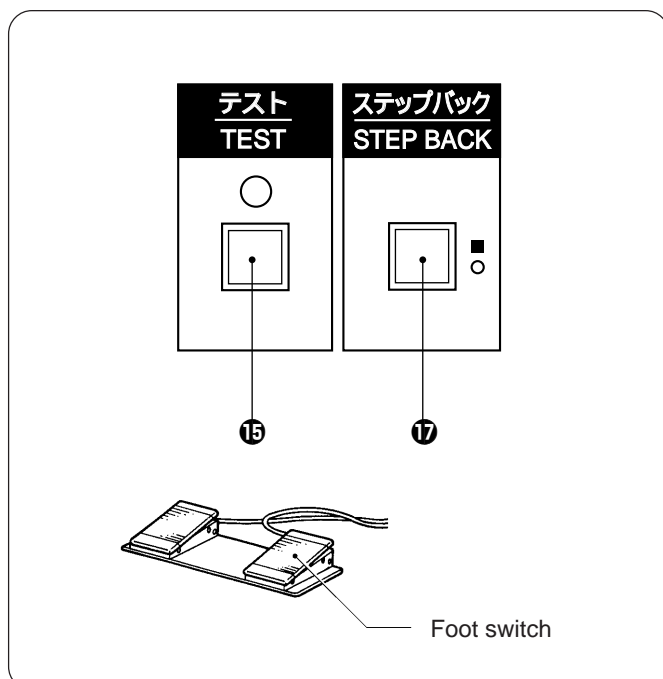
6-5. Using the emergency stop switch

Press the emergency stop switch to immediately stop the sewing machine during actual sewing or when in the test mode.



Clearing the error

1. Turn the EMERGENCY STOP switch **1** clockwise and then pull it forward to release it.
 2. Press the STEP BACK switch **2** on the operation panel. (The buzzer will stop sounding.)
 3. If you do not wish to resume sewing, press the EMERGENCY STOP switch **1** once more to release it, and then press the STEP BACK switch **2** so that the operation panel display flashes. The sewing machine will then be ready for the next sewing operation.
- * Releasing the EMERGENCY STOP switch using the STEP BACK switch is only possible when memory switch 0d is ON. If memory switch 0d is OFF, press the EMERGENCY STOP switch once more to release it.
- If memory switch No. 0d is OFF, press the EMERGENCY STOP switch **7** once more to release it.



Continuing sewing from a stopping point

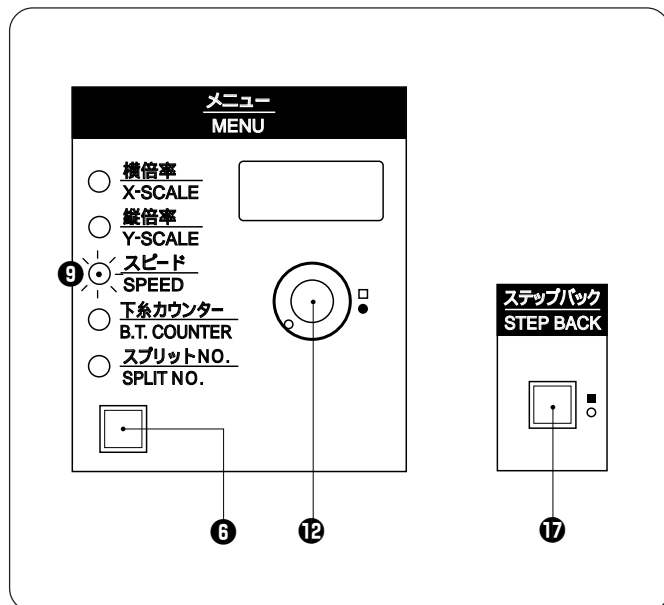
If you press the EMERGENCY STOP switch after the thread breaks or the bobbin thread runs out during sewing, you can then resume swing from the point where the thread broke or ran out.

1. Press the EMERGENCY STOP switch to release it.
2. Press the STEP BACK switch **17** to trim the thread.
3. Press the STEP BACK switch **17** once more.
(The sewing machine will move stitch by stitch in the reverse direction while this switch is pressed.)
If the sewing machine moves back too far, press the TEST switch **15** to move it forward again. Press the TEST switch **15** again to stop the machine.
4. After you have reached the desired position, depress the foot switch to start sewing.

6. Panel operation

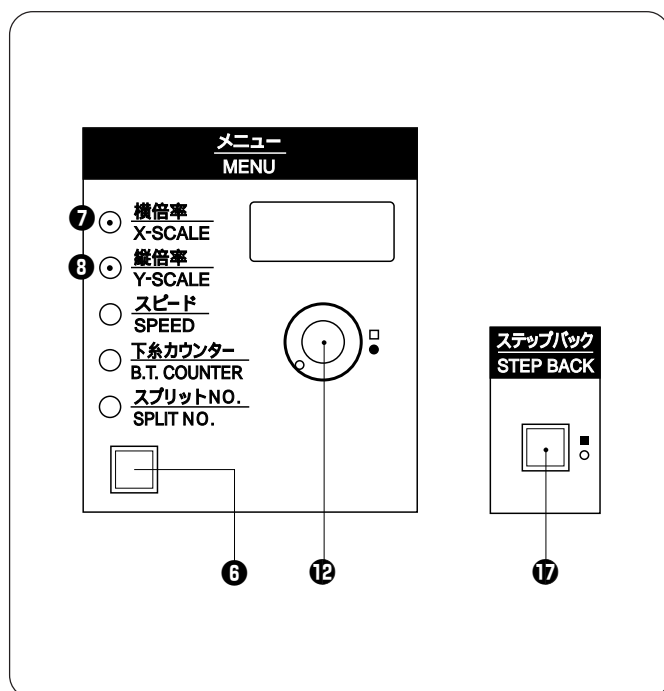
6-6. Adjusting the sewing SPEED control

The sewing speed can be changed in steps of 100 spm to the appropriate speeds for each stitch length setting.



1. Press the MENU switch **6** until the SPEED indicator **9** illuminates.
2. While pressing the STEP BACK switch **17**, turn the dial **12** until the desired speed is displayed.
 - The display will change in steps of 10 spm.

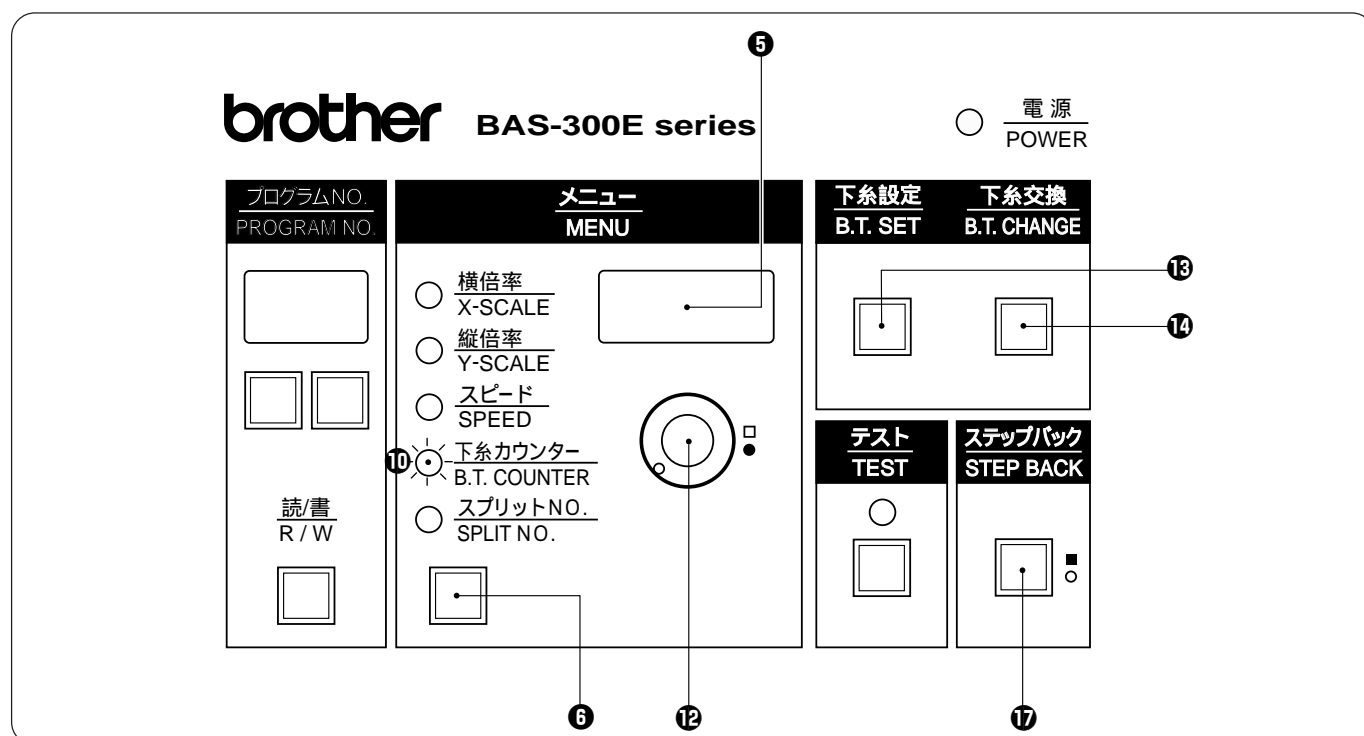
6-7. Changing the X-SCALE and Y-SCALE settings



1. Press the MENU switch **6** until the X-SCALE indicator **7** or the Y-SCALE indicator **8** illuminates.
2. While pressing the STEP BACK switch **17**, turn the dial **12** until the desired ratio flashes on the display.
 - The scale setting is displayed as a percentage.
3. The program number will flash, and after the home position is detected the flashing will stop.

6-8. Using the bobbin thread counter

Set the bobbin thread counter to display the number of pieces of the selected pattern which can be sewn with the amount of thread on the bobbin to avoid running out of bobbin thread in the middle of a pattern.

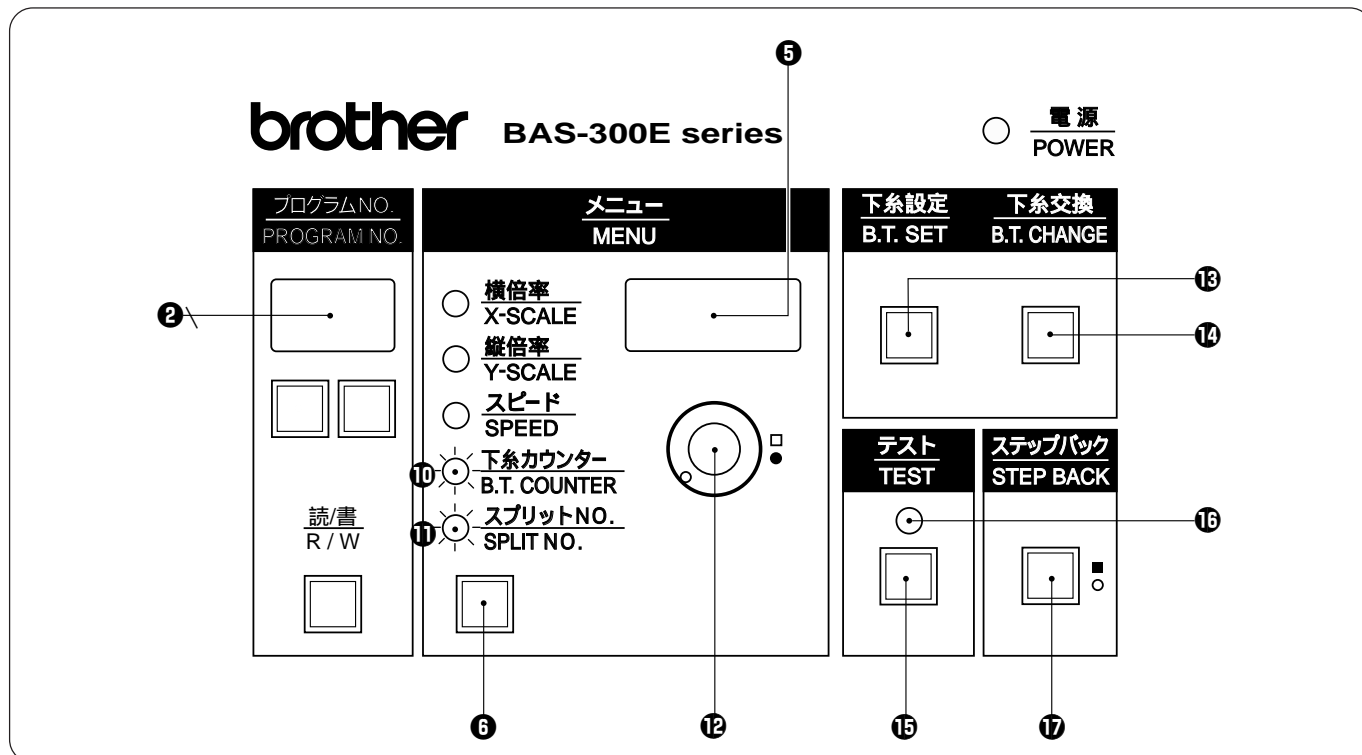


1. Press the MENU switch **6** until the B.T. COUNTER indicator **10** illuminates.
2. While pressing the STEP BACK switch **17**, turn the dial **12** to set the number of articles to be embroidered.
 - The bobbin thread counter can be set to any number from <001> to <999>. If the counter is set to <000>, sewing continues irrespective of the amount of bobbin thread remaining.
3. Insert the floppy disk and press the bobbin thread SET switch **13**. An alarm will beep twice. This will record the number of work pieces shown in the counter **5** to the disk.
4. The number shown in the counter **5** will decrease one each time the stitch pattern is completed. When the number of patterns shown in the counter is sewn, the counter **5** will red <000>, and an alarm will sound. (The sewing machine will not start even if the start switch is pressed.)
5. Press the bobbin thread change switch **14** and replace the bobbin. The alarm will stop, and the number of work pieces set in step 3 will be displayed again in the counter **5**.

6. Panel operation

6-9. Using production counter

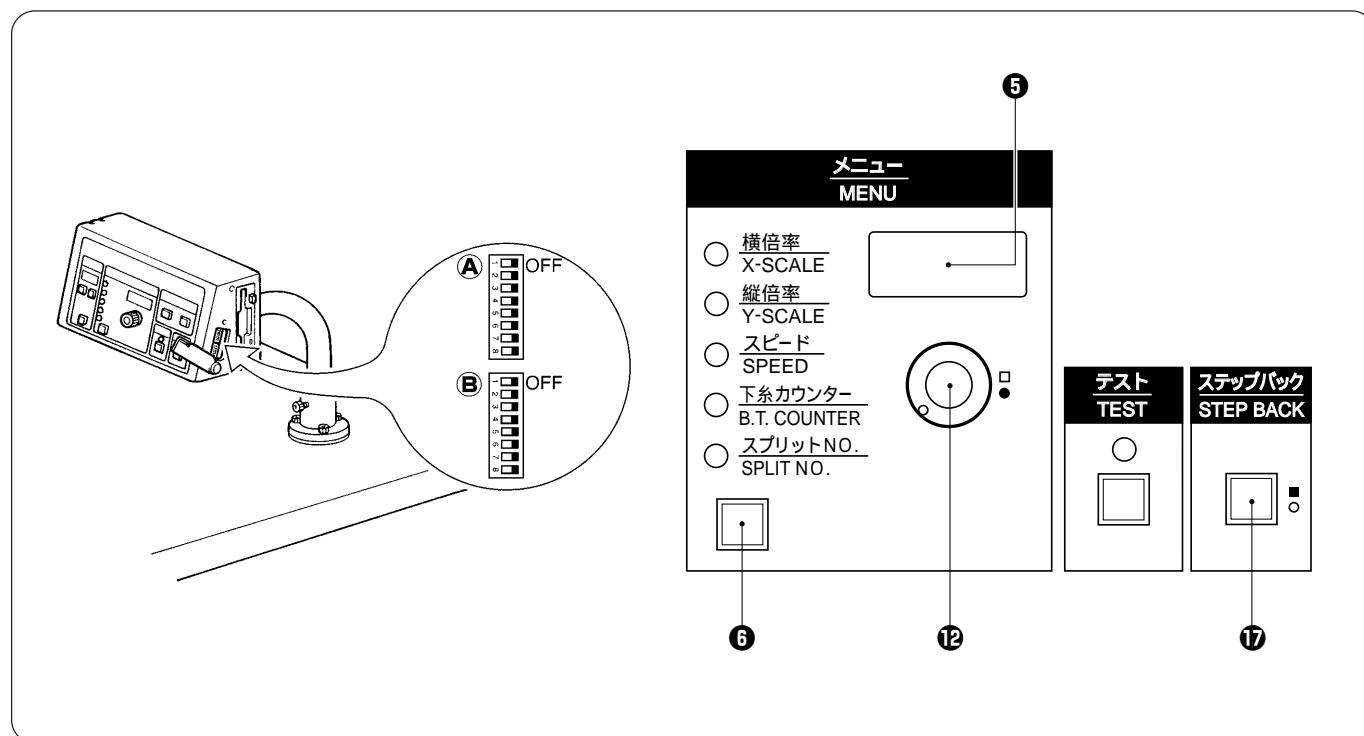
Both PRO. NO. and B.T. COUNTER displays are available for the five-digit PRODUCTION counter.



1. While pressing the TEST switch 15, press the B.T.SET switch 13. The B.T. COUNTER indicator 10 and the SPLIT NO. indicator 11 will both illuminate, and the production counter value will appear on the program number display 2 and on the display screen 5.
 - Press the B.T. CHANGE switch 14. The PRODUCTION counter will display <00000>.
 - The production counter can be set to a value between <00000> and <99999> by turning the dial 12 while pressing the STEP BACK switch 17.
2. Depress the start switch to start embroidering.
3. Press the TEST switch 15 or the MENU switch 6. The TEST indicator 16 will switch off and the contents of each display screen will return to the normal display.

6-10. Using single split mode

By using single split mode, it is possible to change up to 100 patterns immediately.



1. Move DIP switch B No. 1 to the ON position. This will activate single split mode.
(Refer to "DIP SWITCH SETTINGS" on 10.)
2. Turn on the power read in the patterns which have been programmed for split sewing.
3. Press the MENU switch **6** until the SPLIT NO. indicator **11** is illuminated. "1" will then appear in the display screen **5**. Then, while pressing the STEP BACK switch **17**, turn the dial **12** to change the contents appearing on the display screen **5** in order.
(Example) If three patterns have been programmed for split sewing, the number on the display screen changes in the following order: "1" "2" "3" "1" "2" ...
4. When the starting switch is pressed, only the pattern displayed on the display screen **5** will be sewn.

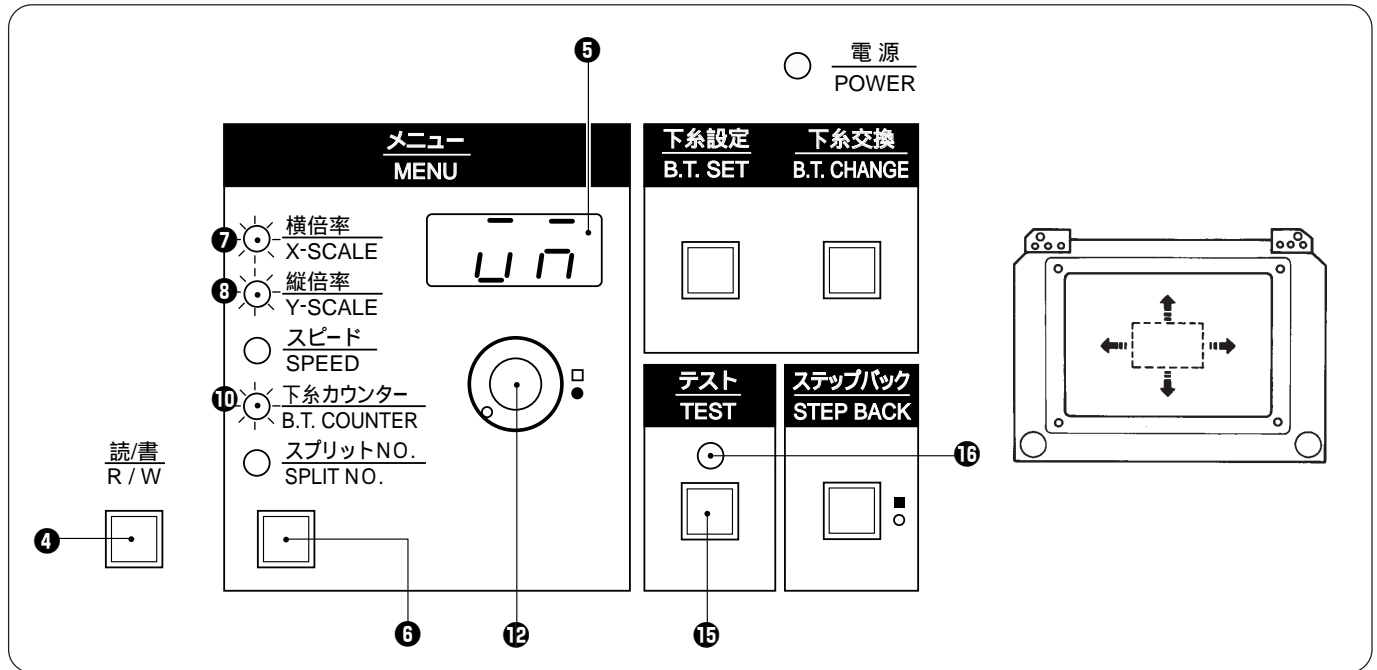
NOTE

As to split sewing, refer to the instruction manual of the "electronic programmable pattern tacker programmer"

6. Panel operation

6-11. Shifting a stitch pattern

- Programs which have already been programmed can be moved up, down and to the left and right.
(However, such patterns will be reset if the power supply is turned off or the program number is changed.)
- The feed position can be set to the any position desired.



1. Press the MENU switch **6** until the B.T. COUNTER indicator **10** illuminates.
2. Press and hold the TEST switch **15** and press the R/W switch **4**. The test indicator **16** will light, and $\bar{U} \bar{n}$ will appear in the counter **5**.
3. Press the MENU switch **6** so that either the X-SCALE indicator **7** or Y-SCALE indicator **8** illuminates.
4. Turn the setting dial **12** to move the feed mechanism one pulse at a time.
 - If the setting dial is turned counterclockwise while the X-SCALE indicator is illuminated, the feed mechanism will move to the right.
 - If the setting dial is turned clockwise while the X-SCALE indicator is illuminated, the feed mechanism will move to the left.
 - If the setting dial is turned counterclockwise while the Y-SCALE indicator is illuminated, the feed mechanism will move up.
 - If the setting dial is turned clockwise while the Y-SCALE indicator is illuminated, the feed mechanism will move down.
5. When the TEST switch **15** is pressed after the above fine adjustments have been made, the TEST indicator **16** and display window **5** will both switch off and movement of the stitch pattern will be completed. (*1)

(*1) When moving the stitch pattern, the sewing start position can be moved to any desired point within the sewing area, but if the pattern goes outside the sewing area, an error will occur during sewing and you will not be able to sew the pattern. Give consideration to the pattern as a whole when moving it.

7. Sewing

⚠ CAUTION



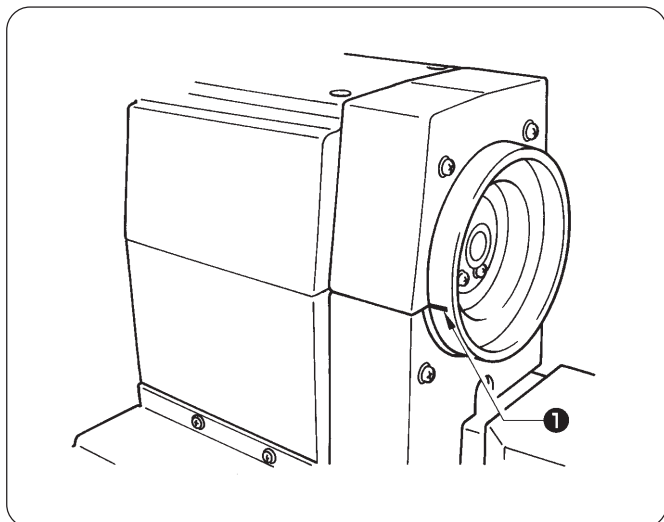
Turn off the power switch at the following times, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.

- Threading
- 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 be machine.

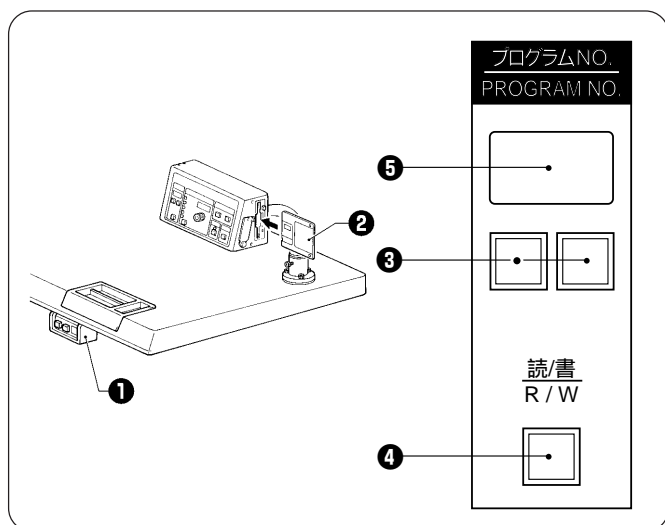
7-1. Before starting sewing....



Check that the needle bar is at the highest position. Turn the machine pulley so that the index mark **1** on the pulley is almost aligned with the point where belt cover U and belt cover D meet.

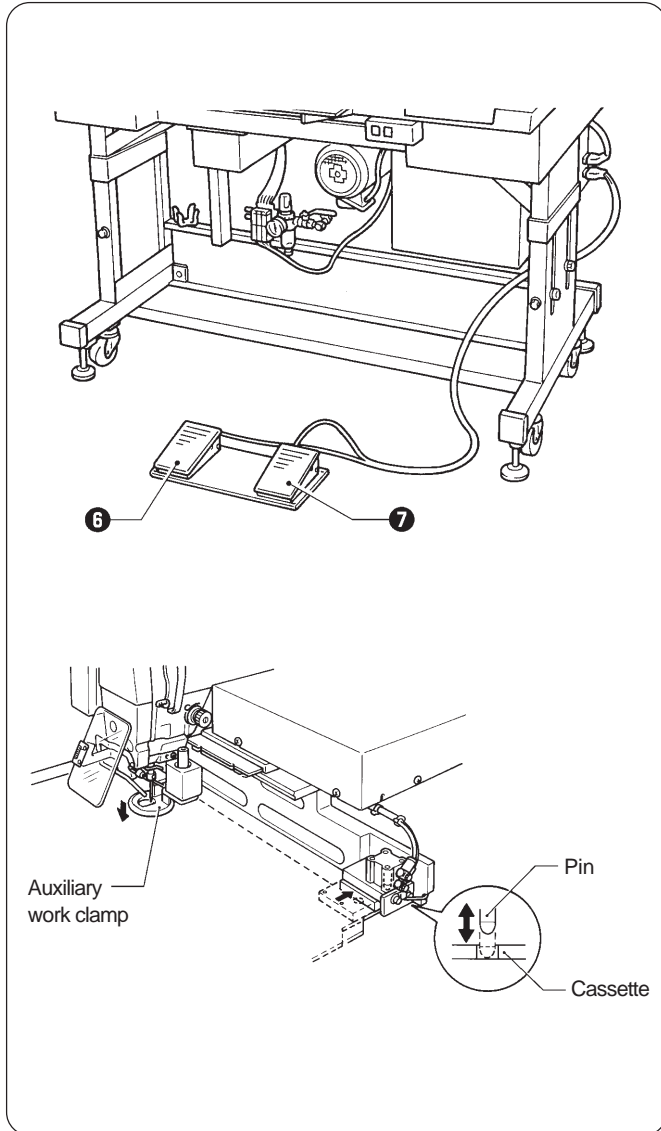
* If the machine is started while the index mark **1** is not correctly aligned, error message "E-22" will be displayed (only when memory switch No.14 is on).

7-2. Sewing operation



1. Turn the power switch **1** on.
(The power indicator on the operation panel will light.)
2. Insert the floppy disk **2**.
3. Press the PRO. No. selection switch **3** to select the desired program number.
4. Press R/W switch **4**.
The floppy disk drive indicator will light and the program no. display **5** will show a P while the data is being read. When reading is completed, an alarm will sound and the indicator will go out, then the program no. display **5** will blink the program number.

7. Sewing



5. Depress the work clamp lift pedal **6** to raise the cassette holding pin.

6. When the cassette is inserted into the mounting support, the sensor will detect it automatically and the cassette will be clamped in place. At this time, the auxiliary work clamp will be lowered.

7. Press the starting pedal **7**.

NOTE

The work clamp will return to the origin, and will then advance to the sewing start position and blinking will stop. This is only required the first time a program is sewing.

8. Press the starting pedal **7** again to start sewing.

9. When sewing is finished, the thread will be trimmed automatically, and then the auxiliary work clamp will be raised and the cassette will come away from the pin.

During automatic sewing (after the cassette is clamped)

Set DIP switch A-7 to ON.

1. Depress the work clamp lift pedal **6** to raise the cassette holding pin.
 2. When the cassette is inserted into the mounting support, the sensor will detect the cassette automatically and it will be clamped in place. After the feed mechanism has returned to the home position, it will move to the sewing start position and the program cover will stop flashing. This happens only for the first sewing operation after a program has been selected.
 3. When the start pedal **6** is depressed, sewing will start.
 4. Same as step 9. above.
 5. At the second sewing operation, or if the cassette is removed and re-inserted, the sensor will detect the cassette automatically and sewing will start immediately.
- * The delay time from the point when the sensor detects the cassette to the start of sewing can be set using memory switch 38 to between 0.1 and 2 seconds in steps of 0.1 of a second.

NOTE

When the power is turned on after once being turned off, the same pattern of sewing can be continued since the machine will store the sewing data from the last time.

8. Maintenance and inspection

⚠ CAUTION



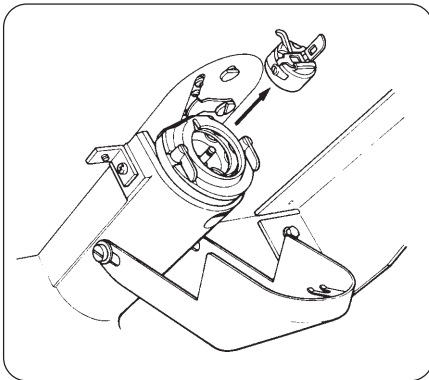
Turn off the power switch before starting any cleaning work, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.



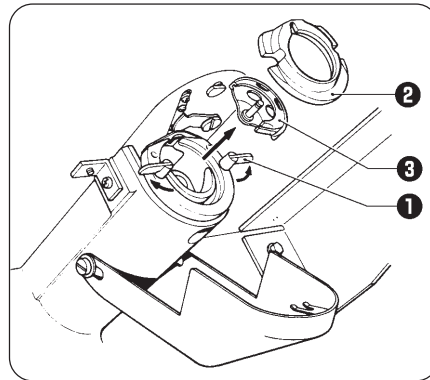
Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result.

Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhoea. Keep the oil out of the reach of children.

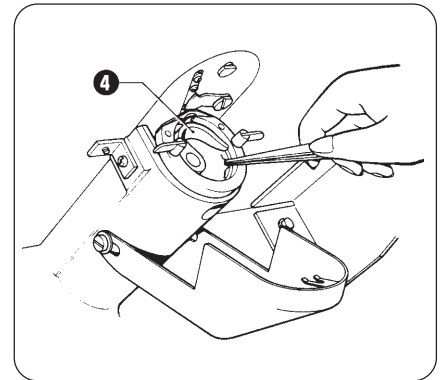
8-1. Cleaning the rotary hook



1. Pull the shuttle hook cover forward to open, and then remove the bobbin case.



2. Open the large shuttle hook set claw **1** in the direction indicated by the arrow, and then remove the large shuttle hook **2** and the inner rotary hook **3**.

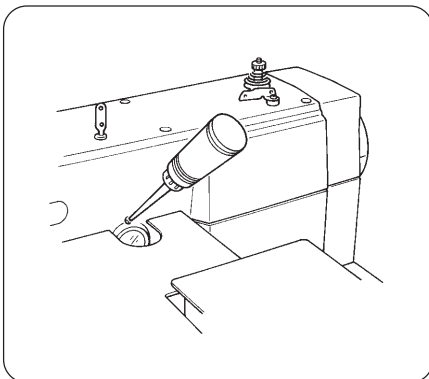


3. Clean all the dust and thread ends from around the driver **4**, the top of the rotary hook thread guide and the shuttle race.

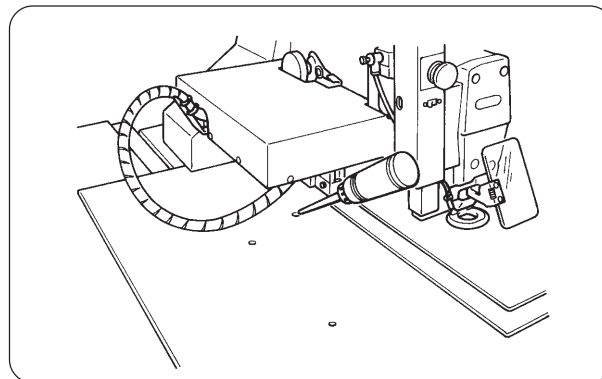
8-2. Lubrication

NOTE

- Fill the machine with oil when the oil level is down to about one-third full in the oil sight glass.
- If oil is not added and the oil drops below this level, there is the danger that the machine may seize during operation.
- Be sure to let the machine operate for a while after adding the oil.
- Use only specified Brother oil (Nisseki Sewing Lube 10) for the machine oil.

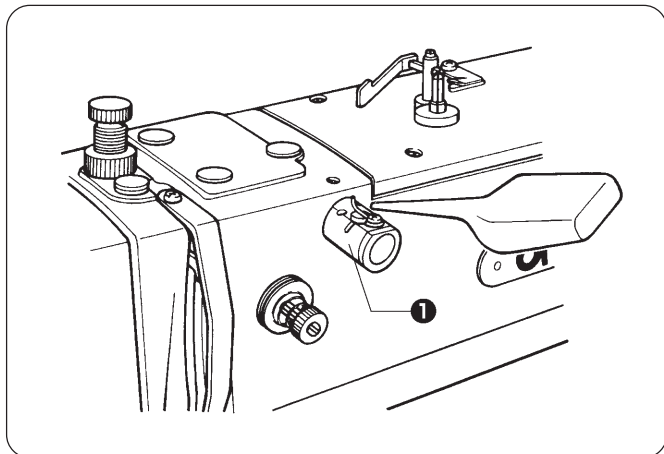


1. Fill the arm-side oil tank with oil.

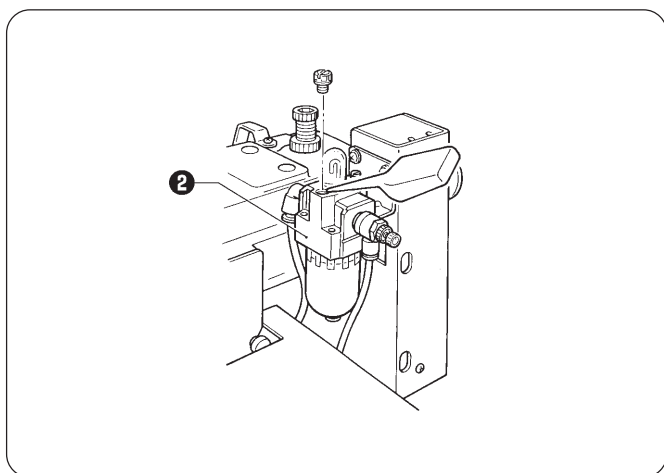


2. Fill the bed-side oil tank with oil.

8. Maintenance and inspection

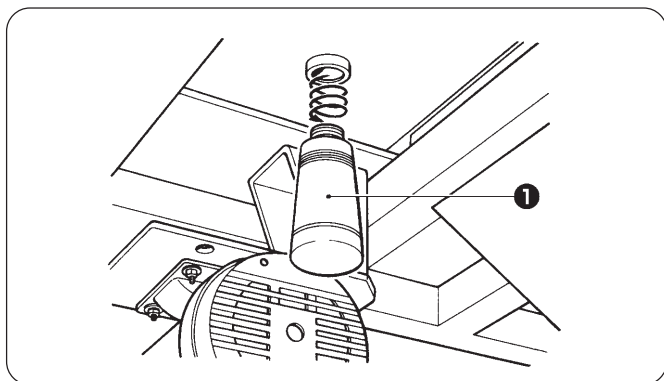


3. If using the liquid cooling tank **1**, fill it with silicon oil (100 cs).



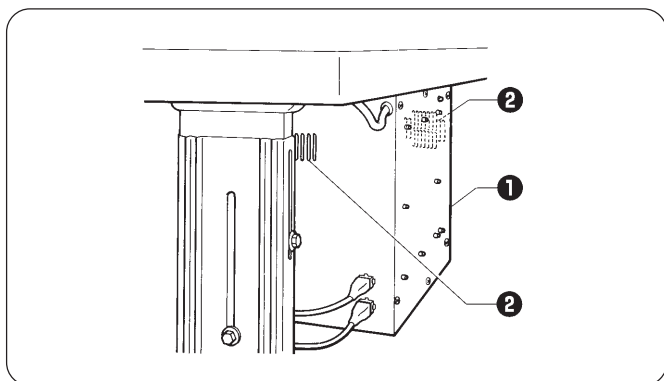
4. If oil is to be mixed with the air in the needle cooler, remove the black cap and fill the oiler **2** with silicone oil.

8-3. Draining the oil



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

8-4. Cleaning the control box air inlet port

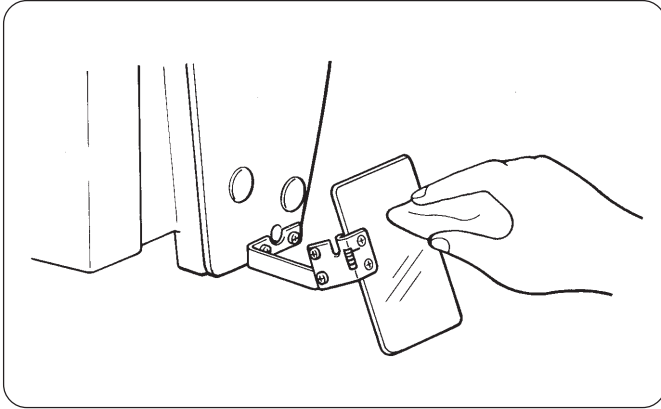


Use a vacuum cleaner to clean the filter in the air inlet port **2** of the control box **1** at least once a month.

* If the machine is used while the air inlet port is blocked, the inside of the control box will overheat.

When this happens, the overheating error code ("E-d") will be displayed and you will not be able to operate the sewing machine.

8-5. Cleaning the eye guard

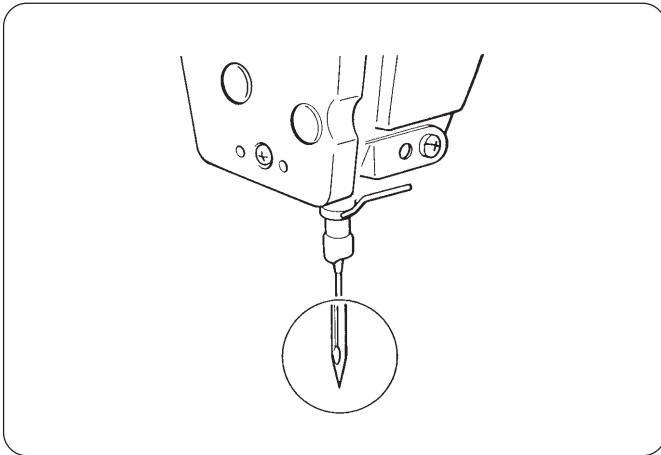


Wipe the eye guard clean with a soft cloth.

NOTE

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

8-6. Checking the needle



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

9. Standard adjustments

CAUTION



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



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



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

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



Hold the machine head with both hands when tilting it back or returning it to its original position. Furthermore, after tilting back the machine head, do not push the face plate side or the pulley side from above, as this could cause the machine head to topple over, which may result in personal injury or damage to the machine.

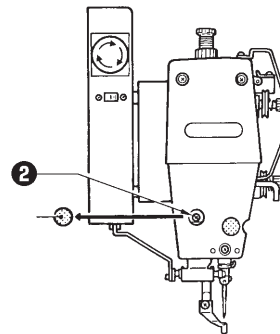
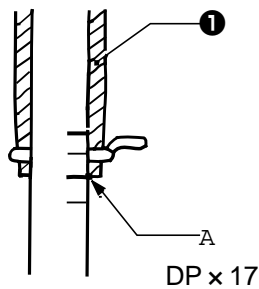


If the power switch needs to be left on when carrying out some adjustment, be extremely careful to observe all safety precautions.



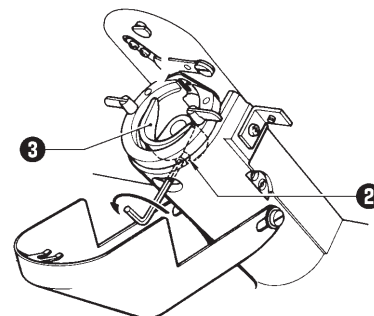
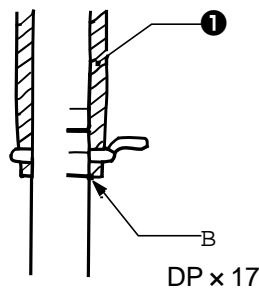
If any safety devices have been removed, be absolutely sure to re-install them to their original positions and check that they operate correctly before using the machine.

9-1. Adjusting the needle bar height adjustment



Turn the machine pulley to move the needle bar to the lowest position. Then remove the rubber plug **2**, loosen the screw **3** and then move the needle bar up or down to adjust so that the second reference line from the bottom of the needle (reference line A) is aligned with the lower edge of the needle bar bush **1**.

9-2. Adjusting the needle bar lift amount



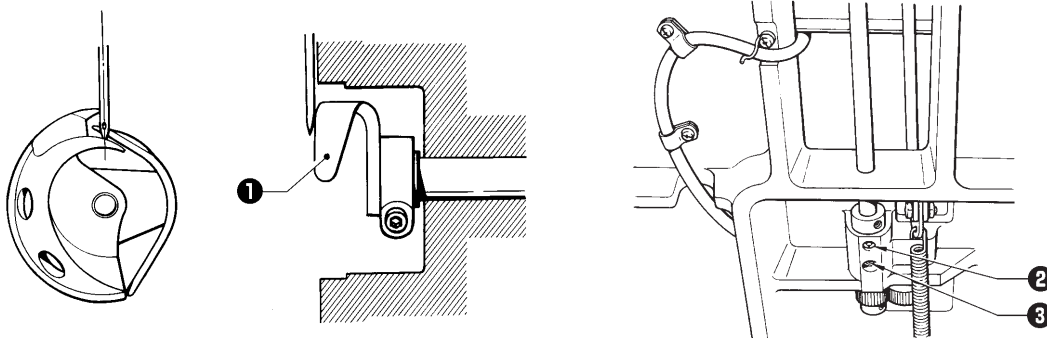
Turn the machine pulley to raise the needle bar from the lowest position until the lowest reference line on the needle (reference line B) is aligned with the lower edge of the needle bar bush **1**. Then loosen the screw **2** and move the driver to adjust so that the tip of the rotary hook is aligned with the needle center line.

9-3. Adjusting the needle clearance



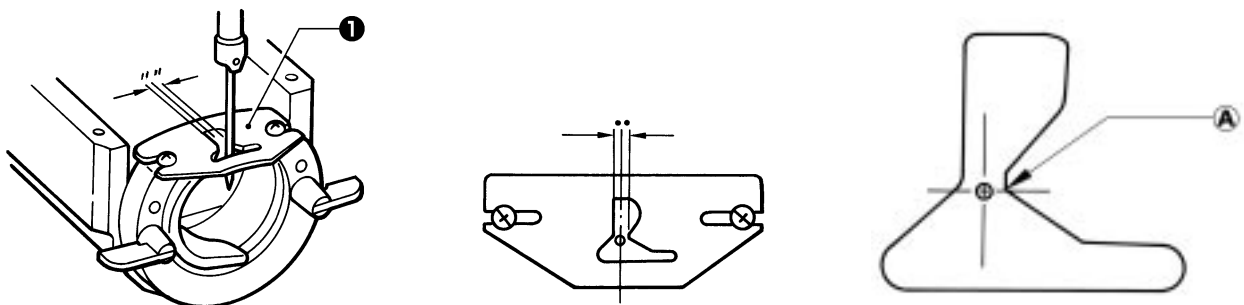
Turn the machine pulley to align the tip of the rotary hook with the needle center line. Then loosen the set screw **1** and turn the eccentric shaft **2** to adjust so that the clearance between the needle and the rotary hook is 0.01 - 0.08 mm.

9-4. Adjusting the driver needle guard



Turn the machine pulley to align the tip of the rotary hook with the needle center line. Then loosen the set screw **2** and turn the eccentric shaft **3** to adjust so that the driver needle guard **1** contacts the needle. If the needle contact pressure is too great, skipped stitches may occur. On the other hand, if the driver needle guard **1** is not touching the needle, the tip of the inner rotary hook will obstruct the needle, resulting in an excessively high amount of friction.

9-5. Adjusting the shuttle race thread guide



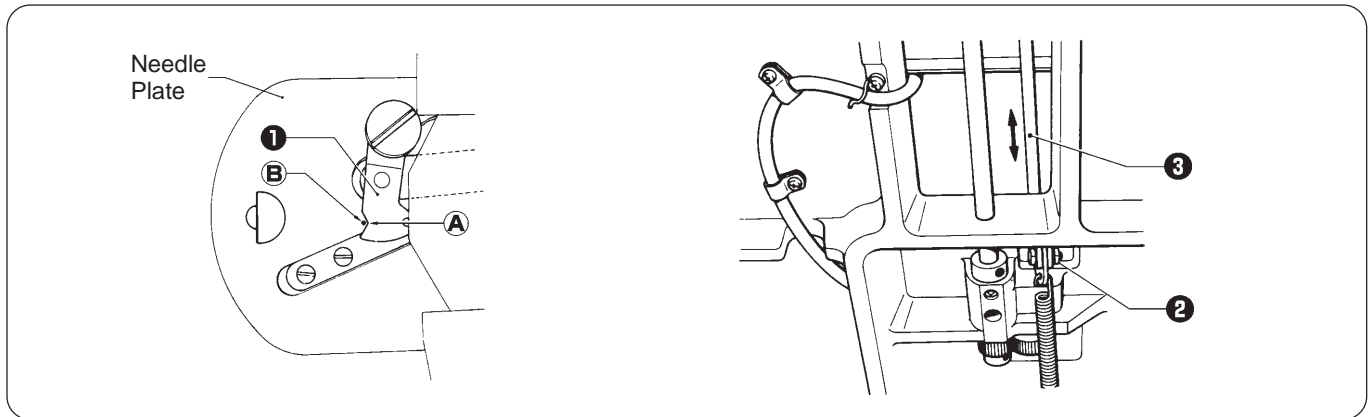
The needle groove of the shuttle race thread guide **1** should be aligned with the center of the needle plate hole, and the needle center and the angled section A should be aligned.

NOTE

If the shuttle race thread guide is in the wrong position, thread breakages, soiled thread or catching of the thread may occur.

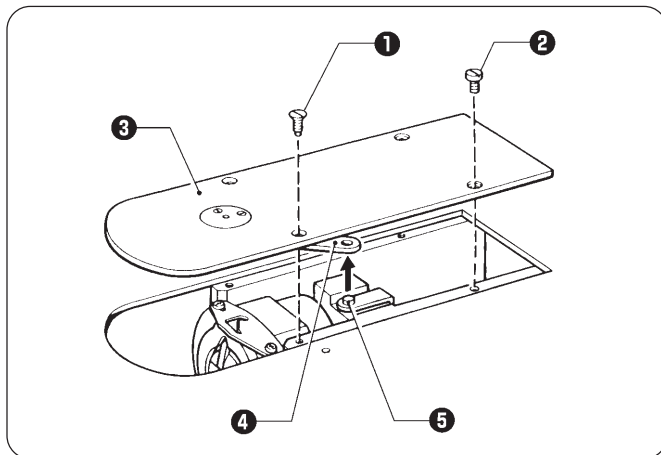
9. Standard adjustments

9-6. Adjusting the movable knife

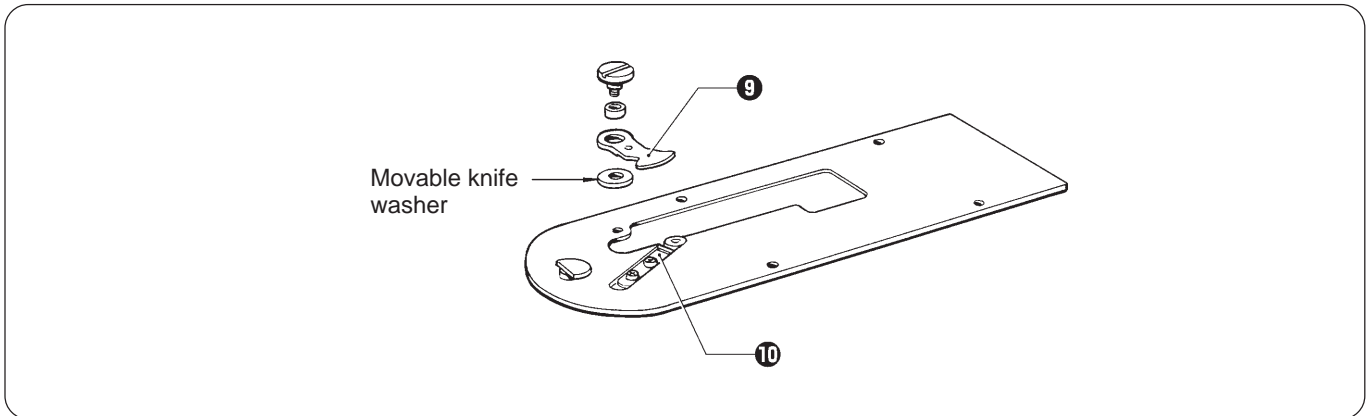


Loosen the nut **2** and move thread trimmer rod L **3** to the left or right to adjust so that the V section A of the movable knife **1** is aligned with the index mark B on the needle plate when the machine is at the stop position.

Replacing the movable and fixed knives



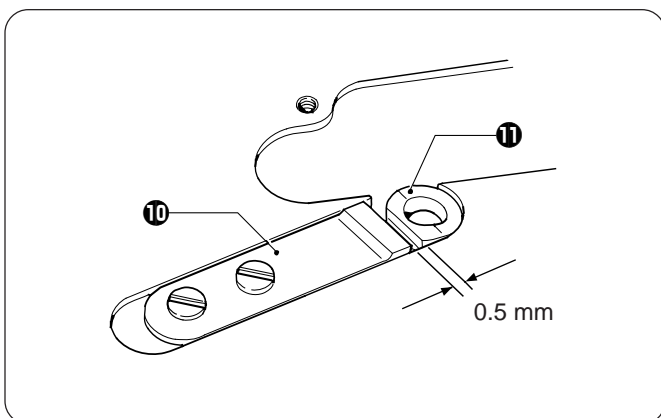
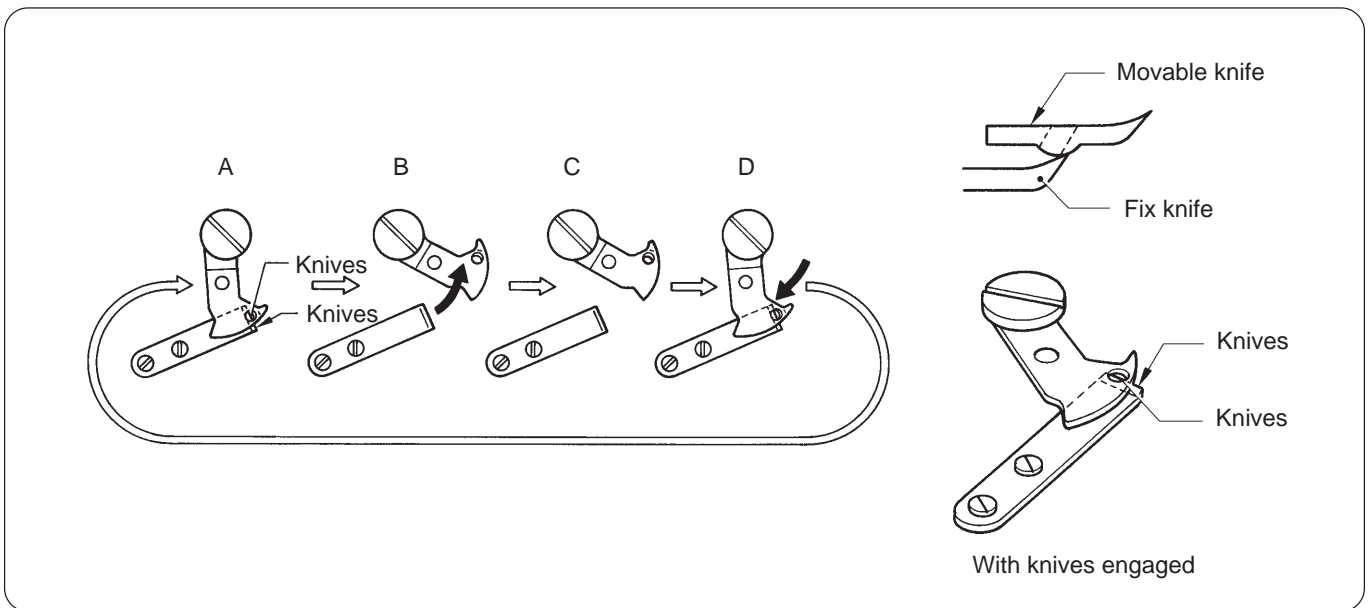
1. Remove screws **1** and **2**, and needle plate **3**. Now disconnect the thread cutter connecting rod **4** from stud **5**.



2. Remove the movable knife, and replace it with a new movable knife. Now check the cutting edge of the movable knife 9 and the fixed knife 10. If necessary, use the provided movable knife washer (T=0.4, T=0.5, T=0.6) to adjust the knives so that they cut properly.

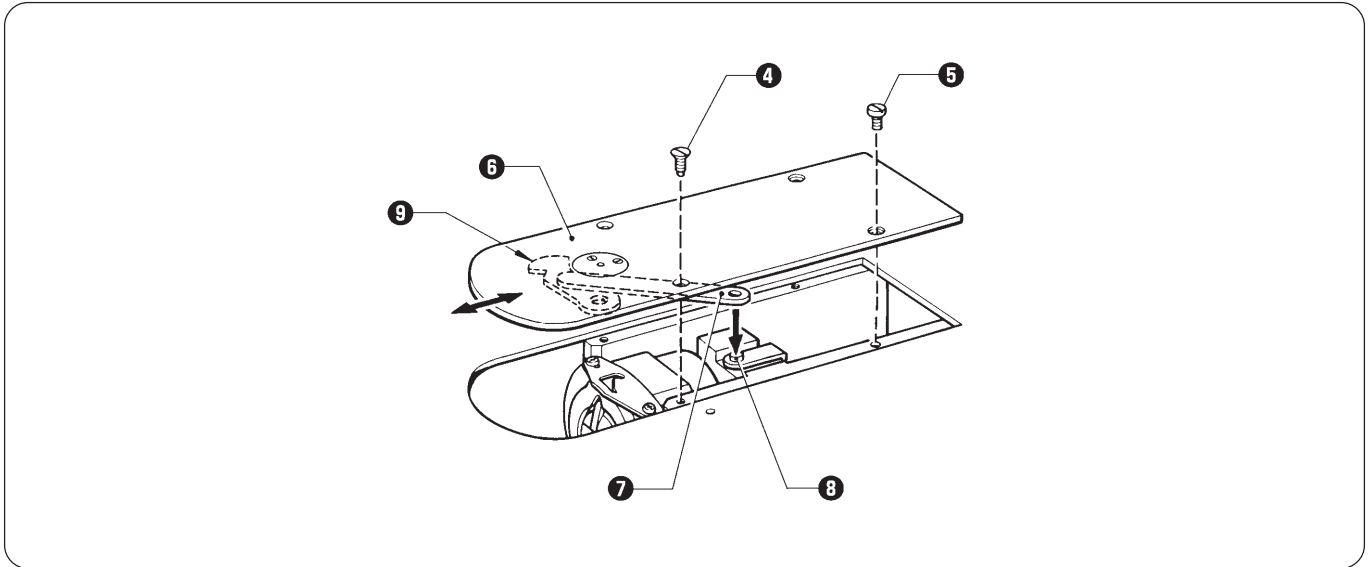
NOTE:

- A. After the movable knife and fixed knife are properly engaged, tighten the screw.
 - B. Turn the movable knife (in the direction of the arrow) while the screw is still tightened.
 - C. Loosen the screw.
 - D. Turn the movable knife (in the direction of the arrow) while the screw is still loosened.
- Repeat above steps A, B, C and D four or five times to maintain the cutting performance of the knife.



3. Install the fixed knife 10 0.5 mm away from needle hole plate 11.

9. Standard adjustments

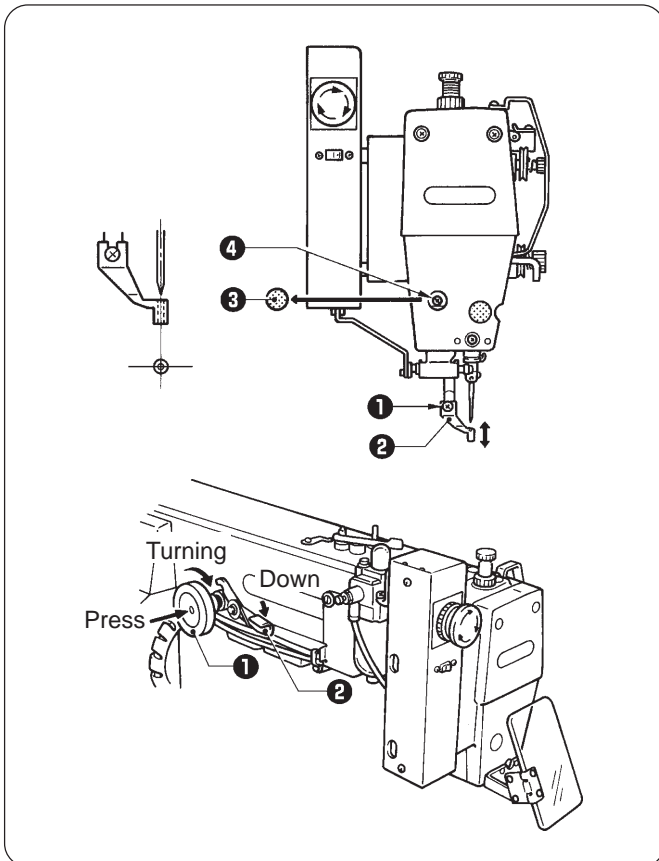


4. Fit the thread cutter connecting rod **7** on connecting lever pin **8**, and install needle plate **6**.

* When fitting the connecting rod **7** on the connecting lever pin **8** and before tightening screws **4** and **5**, move the needle plate back and forth a little bit to confirm that the movable knife **9** is pulled by the connecting rod **7**.

9-7. Presser foot adjustment

Turn the pulley by hand to lower the presser foot to the down position, and then proceed with the steps below.



1. Loosen screw **1**, set the bottom of the presser foot **2** lightly against the work piece, and then tighten screw **1**.

NOTE

If the presser foot is lowered too far, the work piece will shift when sewing. Also, if the presser foot is too high, skipped stitches may occur.

2. Turn the pulley by hand, and make sure the needle enters the center of the needle hole in the presser foot **2**. If the needle is not aligned with the center of the needle hole, remove cap **3**, loosen screw **4**, and turn the presser foot (presser bar) to adjust.



If the needle projects past the presser foot when the presser foot is raised, injury may result.

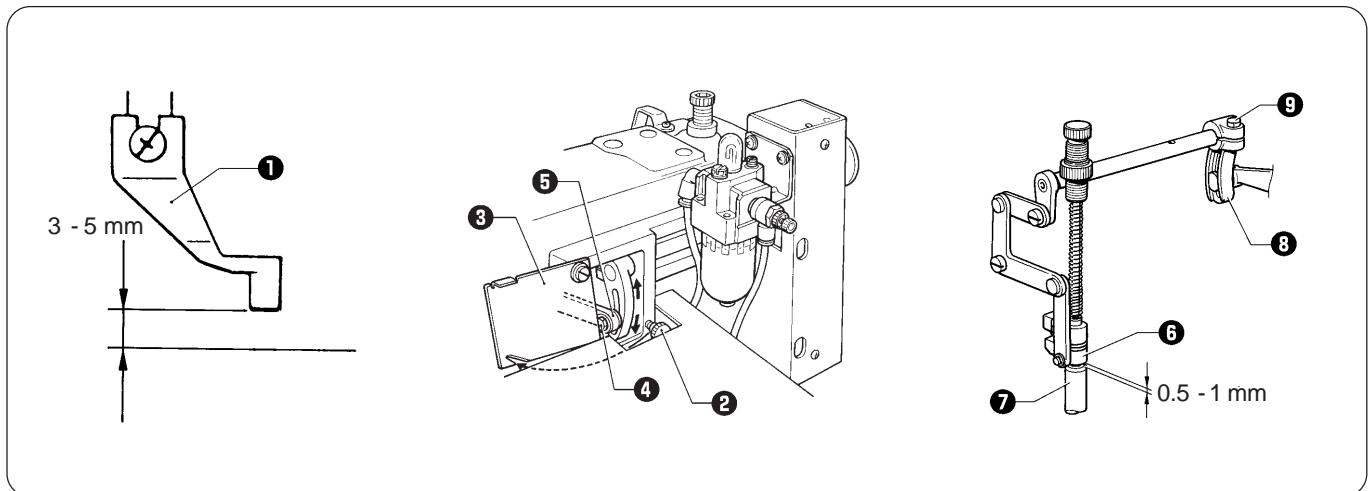
To turn the pulley by hand

Simply press in on the pulley **1** to turn it by hand. To turn the pulley, press lever **2** down.

- After turning the pulley by hand, be sure to press the lever down to return the pulley to the normal operating position.

9-8. Changing the presser foot lift

Standard presser foot **1** lift is 3 mm (max. 8 mm).

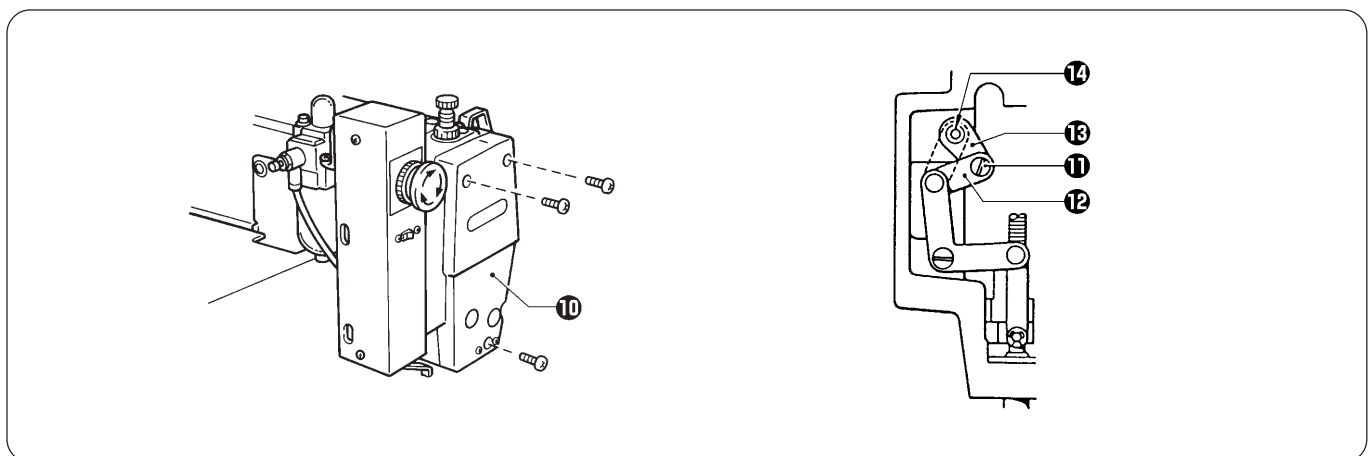


Adjusting presser foot lift to 3 - 5mm

1. Loosen the stud screw **2** and open the intermittent cover **3**.
2. Loosen the nut **4** and adjust the intermittent presser connecting rod **5** position.
(When the intermittent presser connecting rod is raised, the lift will increase. When lowered, the lift will

Adjusting presser foot lift to 5 - 8 mm

1. Turn the upper shaft to set the presser foot to its lowest point. Loosen the screw **9** of intermittent presser arm (R) **8**. Adjust the clearance between the presser lifter **6** and the presser bar bush **7** to 0.5 - 1 mm.
2. Loosen the nut **r** and adjust the intermittent presser connecting rod **5** position.
(When the intermittent presser connecting rod is raised, the lift will increase. When lowered, the lift will
3. Loosen the presser foot screw and adjust the height of the presser foot so that it is 0.5 mm above the top of the material being sewn when the presser foot is lowered.



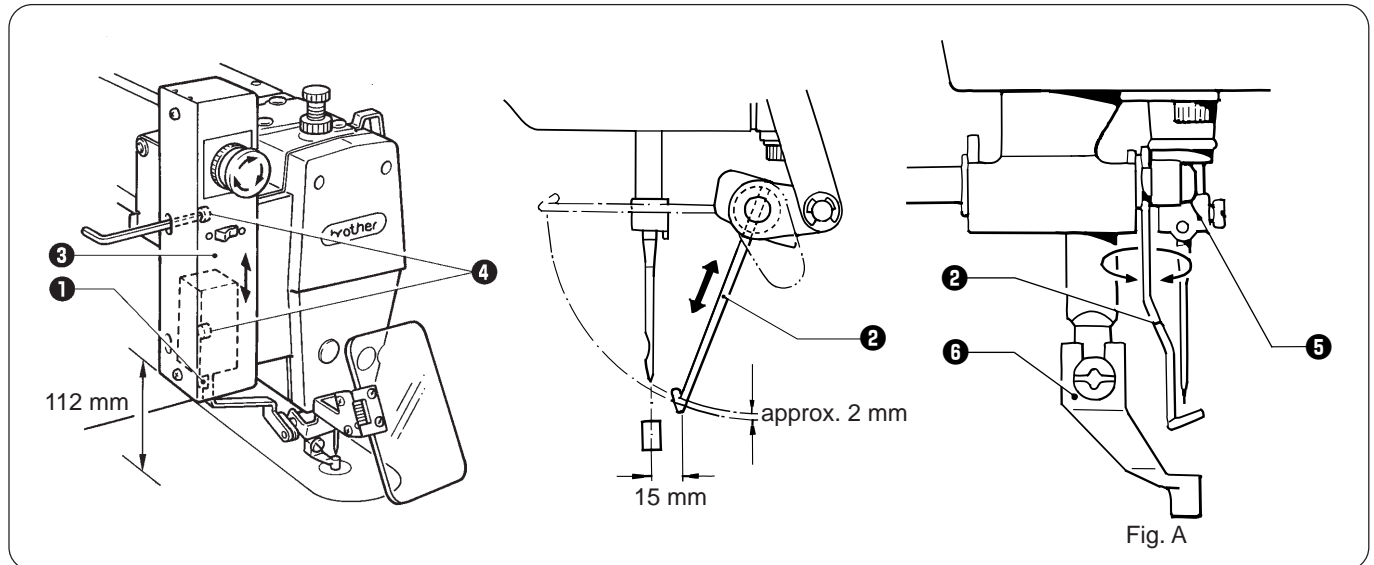
If vertical movement of the presser foot is not required

1. Remove the face plate **10**.
2. Remove the stud screw **11** and re-attach the intermitte connecting rod **12** to the upper screw hole **14** of the intermit- tent presser arm R **13**.

9. Standard adjustments

9-9. Wiper adjustment

For vertical wiper (standard)

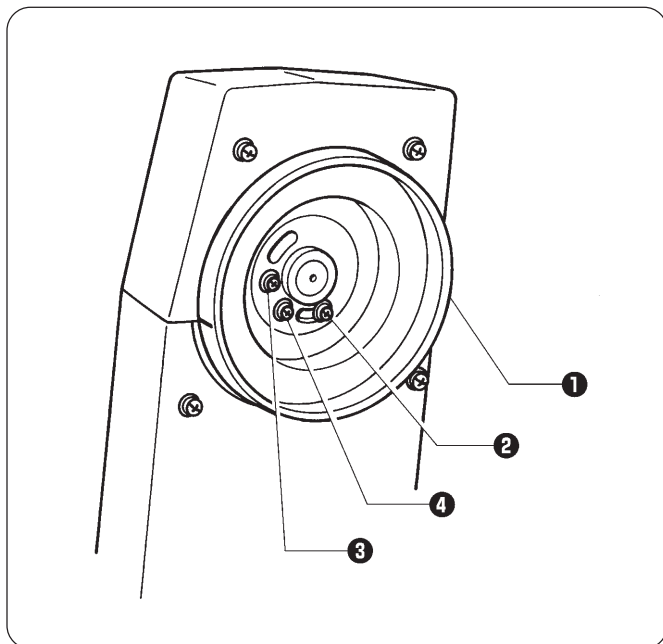


1. When the thread wiper solenoid plunger **1** is driven to the full stroke, the wiper **2** should be 15 mm in front of the needle center. Loosen screws **3** and shift the entire solenoid bracket **4** up or down to adjust.
The standard height from the solenoid bracket **4** bottom to the needle plate top is approximately 112 mm.
2. When the wiper **2** is operated and aligned with the center of the needle bar, the distance from the wiper **2** to needle tip should be approximately 2 mm. Loosen screw **5** and move the wiper **2** in or out to adjust. As shown in Fig. A, make sure the wiper **2** does not strike the presser foot **6** or needle.

NOTE

Check that the wiper **2** is not touching the finger guard.

9-10. Adjusting the needle up stop position

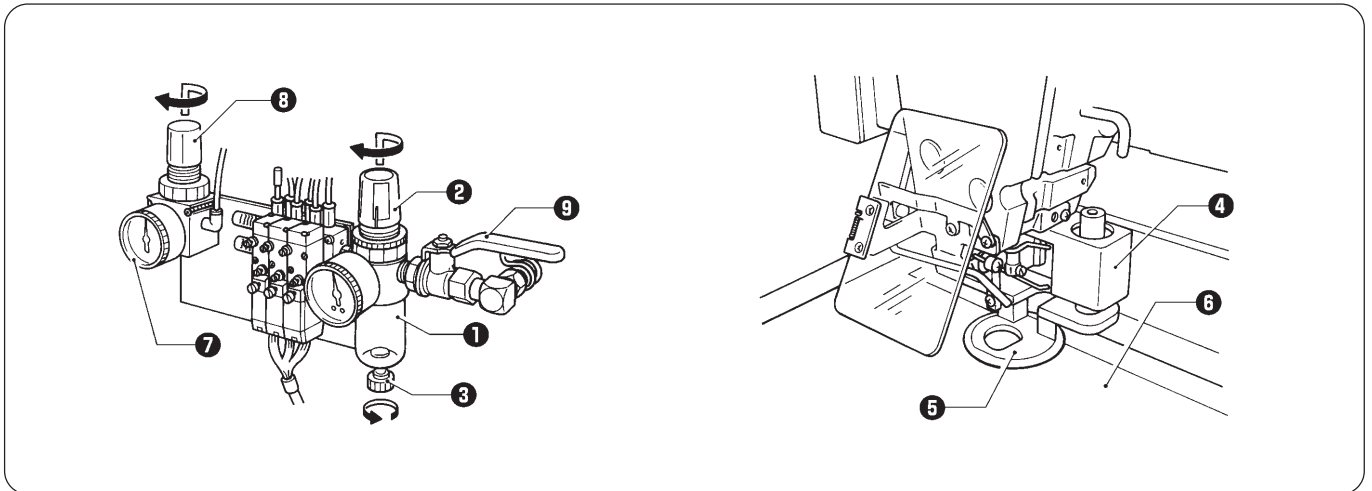


- The needle up stop position has been adjusted so that the tip of the needle stops 17.5 - 19.5 mm above the top of the needle plate.
- If adjustment is necessary, loosen the screw **2** at the "U" mark of the machine pulley **1** and adjust the position of the machine pulley **1**. The machine pulley **1** stops later if it is turned clockwise, and it stops earlier if it is turned counterclockwise.

NOTE

- The screw **3** is used by the needle down detection function and should not be loosened.
- The screw **4** is a screw for detecting the machine stop position, and should not be loosened.
- If the index mark is not inside the mark when be displayed (when memory switch No.14 is on). Turn the machine pulley to move the index mark to the correct position and then start the sewing machine.

9-11. Adjustment of air pressure



1. Air pressure should be 0.49 MPa [5 kg/cm²].
The air pressure can be adjusted by pulling up and turning the control knob **2** on the integrator **1**.
After adjustment is complete, push the control knob **2** downward to lock it.
2. If water stands in the bottle of the integrator **1**, turn the drain cock **3** in the direction indicated by an arrow to drain the water.
3. Adjust the air pressure for the auxiliary work clamp cylinder **4** to a low pressure but within the range so that the cassette plate **6** does not lift up when it is pressed by the cloth presser **5** during sewing.
The factory default setting is 0.3 MPa (3 kgf/cm²)

Adjustment method

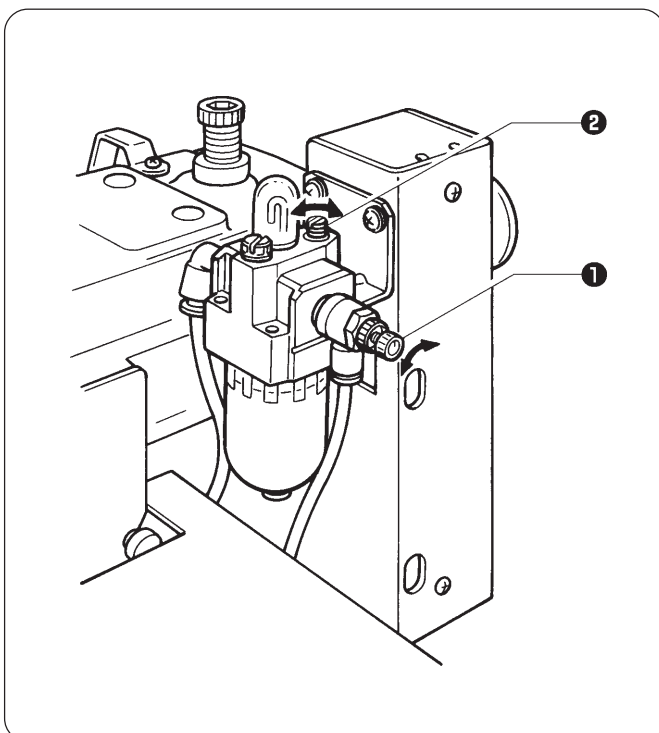
Pull up the handle **8** of the air regulator **7** and turn it to adjust.

After adjusting, push the handle **8** down again to lock it.

NOTE

Open the air cock **9** slowly.

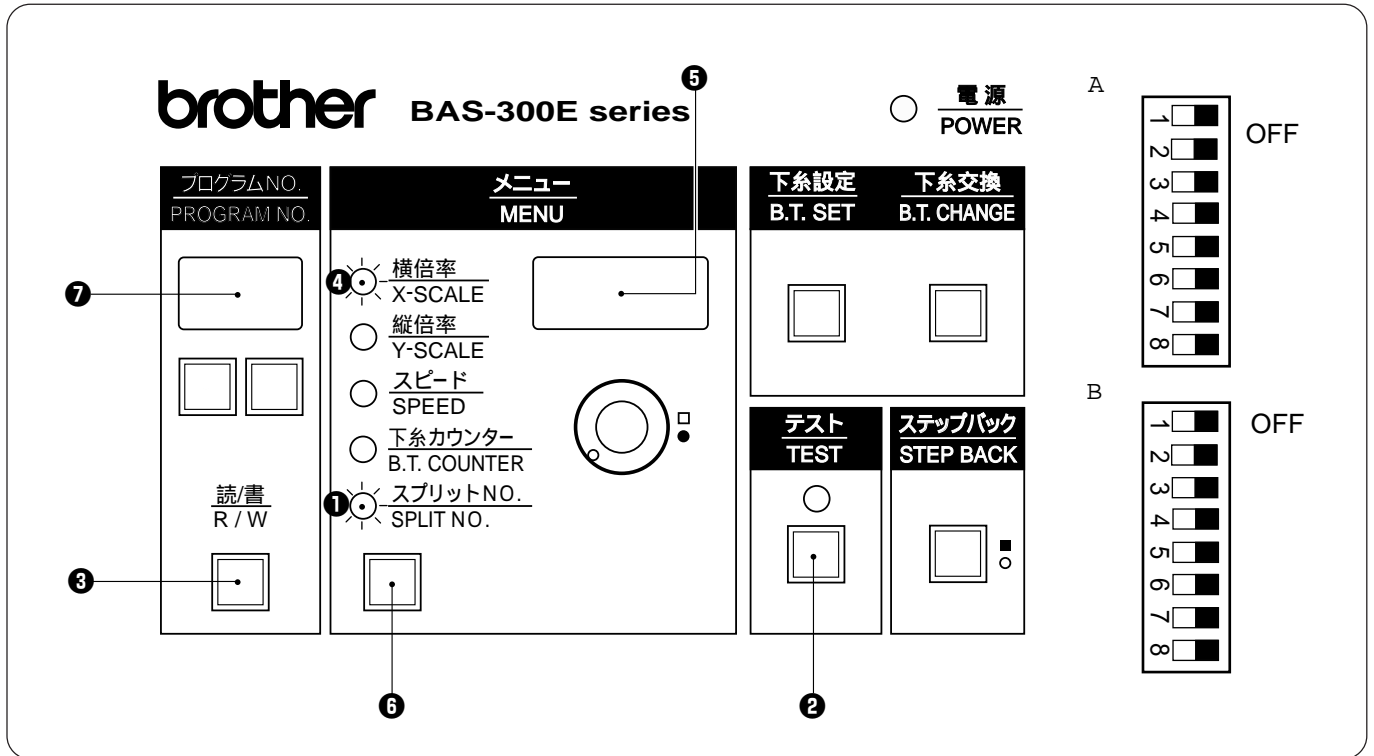
9-12. Adjusting the lubricator



1. Use the screw **1** to adjust the air amount.
2. Use the screw **2** to adjust the amount of silicone oil to be mixed with the air.

9. Standard adjustments

9-13. Checking the input sensor and DIP switch input



1. When the SPLIT NO. indicator ① is illuminated and the R/W switch ③ is pressed while the TEST switch ② is being pressed, the X-SCALE indicator ④ will illuminate and the state of the X home position signal will appear on the display screen ⑤.

When sensor is ON



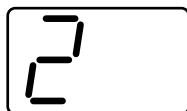
When sensor is OFF



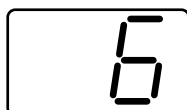
2. Each time the MENU switch ⑥ is pressed, a different indicator will illuminate and the operating condition for the corresponding item will appear on the display screen.

- When X-SCALE indicator is illuminated : X home position sensor
- When Y-SCALE indicator is illuminated : Y home position sensor
- When SPEED indicator is illuminated : Needle up signal (synchronizer)
- When B.T. COUNTER indicator is illuminated : 24-section signal (synchronizer)
- When SPLIT ON. indicator is illuminated : Needle down signal (synchronizer)

3. If the settings for DIP switch A at the side of the operation panel are changed at this time, the number of the changed switch will appear in the top row of the program number display ⑦.

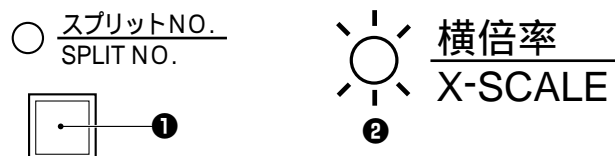


4. If the settings for DIP switch B are changed at this time, the number of the changed switch will appear in the bottom row of the program number display ⑦.

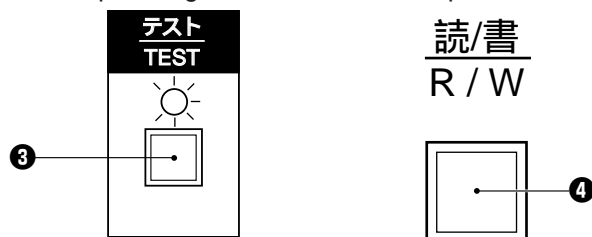


9-14. Checking the input voltage

1. Turn on the power switch.
2. Press the menu switch ❶ until the X-SCALE indicator ❷ illuminates.



3. While pressing the TEST switch ❸, press the R/W switch ❹.



4. If the input voltage is normal, the input voltage conditions will be shown in the display as indicated at right.

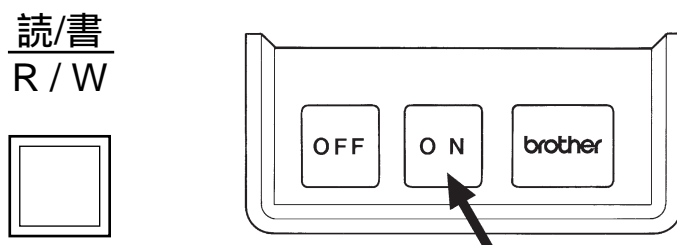
200-V specifications	090 ~ 110	"100" is displayed when the input voltage is 200 V.
220-V specifications	100 ~ 120	
230-V specifications	105 ~ 125	"110" is displayed when the input voltage is 100 V (for 100-V specs.), 380 V (for 380-V specs.) or 415 V (for 415-V specs.).
100-V, 380-V, 400-V and 415-V specifications	100 ~ 120	

5. Press the TEST switch ❸ once more to return the display to the normal condition.

9-15. Clearing all memory settings

- If the sewing machine stops operating normally, the cause may be that an incorrect memory setting may have been made by means of the memory switch, for instance. In such cases, carry out the following procedure to clear the memory, and also check the DIP switch settings.

While pressing the R/W switch, turn on the power. This will clear all of the memory setting.



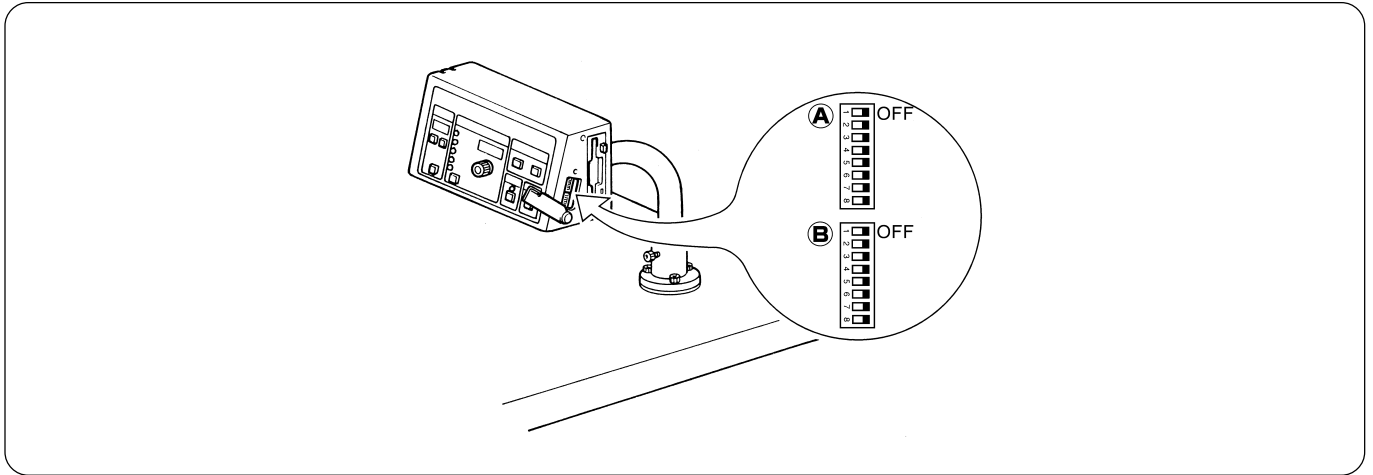
10. DIP switch

10. DIP switch

NOTE

When changing DIP switch, the power must be off.

10-1. Panel DIP switch functions



DIP switch A

SW No.	When ON
A - 1	After sewing is finished, the cassette is not ejected automatically, but it is ejected when the work clamp pedal is depressed.

- Various setting combinations for DIP switch No. 2, No. 3 and No. 4 can be used to change the way the work clamp is raised and lowered.
- The operation mode can be changed using the two-stage work clamp switch.
- * For the BAS-343E, set only(A-4 to ON.

DIP switch A

SW No.	When ON
A - 5	After sewing is completed, work clamp does not automatically rise (only in split mode)
A - 6	Clamping force output is produced (Inner clamping device available as an option)
A - 7	After the cassette is clamped automatically, sewing operations start automatically.
A - 8	Thread breakage detector device is activated (available as an option)

DIP switch B

SW No.	When ON
B - 1	Single split mode activated
B - 2	-
B - 3	Thread is not trimmed after an emergency stop
B - 4	Needle cooler output is produced.
B - 5	When a rotating-type thread breakage detector device is used, detection precision is increased from 8 to 14. When a fiber-type thread breakage detector device is used, detection precision is increased from 5 to 10.
B - 6	Fiber-type thread breakage detector device is ON, and DIP switch A - 8 is ON (available as an option).
B - 7	When using a 3-stage pedal
B - 8	Feeding speed is switched to high speed.

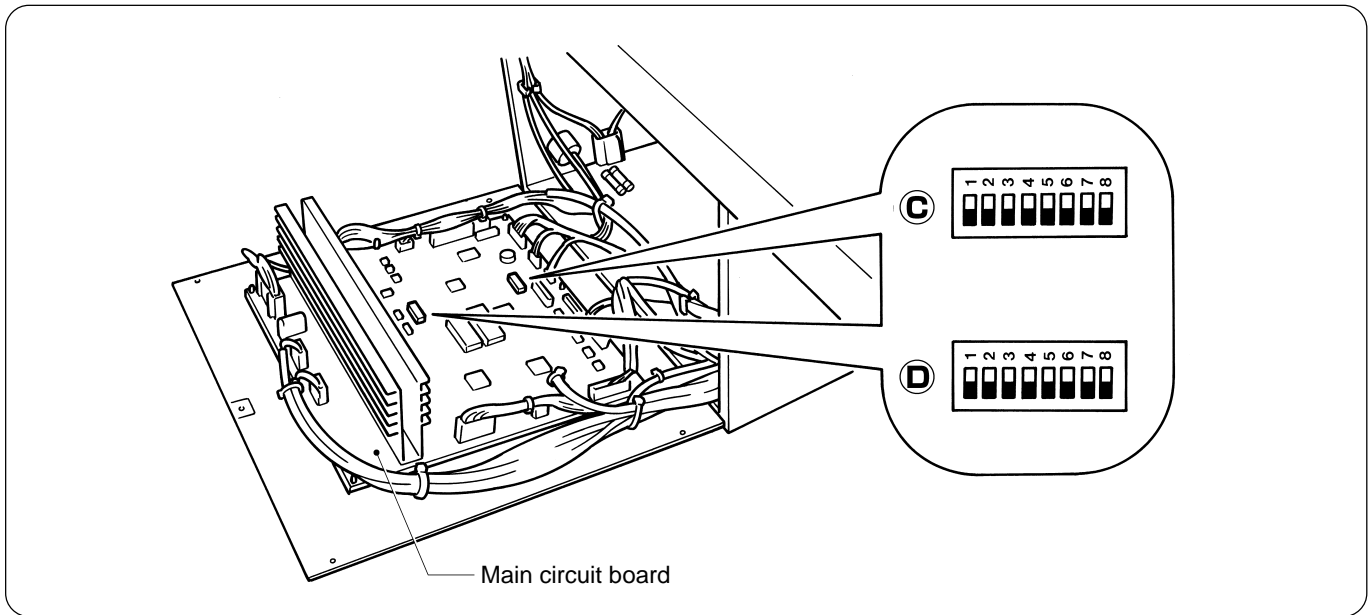
10. DIP switch

10-2. DIP switches inside the control box

⚠ DANGER



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



DIP switch C

C - 1	C - 2	C - 3	Model setting
-	-	-	
ON	-	-	BAS-311E
-	ON	-	BAS-326E
ON	ON	-	BAS-343E
-	-	ON	BAS-341E
ON	-	ON	BAS-342E
-	ON	ON	
ON	ON	ON	BAS-311EL

SW No.	When ON
C - 4	Controlled sewing area becomes 1200 mm × 400 mm
C - 5	For pneumatic type, set to ON when the connection has been changed so that the work clamp remains raised when the power is turned off.
C - 6	-
C - 7	-
C - 8	-

DIP switch D

SW No.	When ON
D - 1	The first two stitches at the sewing start will be sewn at low speed (approx. 260 rpm)
D - 2	The last two stitches at the sewing end will be sewn at low speed (approx. 260 rpm)
D - 3	-
D - 4	The last two stitches at the sewing end will be sewn at low speed (approx. 700 rpm)
D - 5	-
D - 6	Slow-speed sewing at the sewing start will be canceled
D - 7	When the upper shaft is stopped, the motor will change direction and the needle bar will return to the vicinity of the needle up stop position
D - 8	During an emergency stop, the thread is trimmed and the needle bar stops in the raised position.

11. Changing special functions using the memory switches

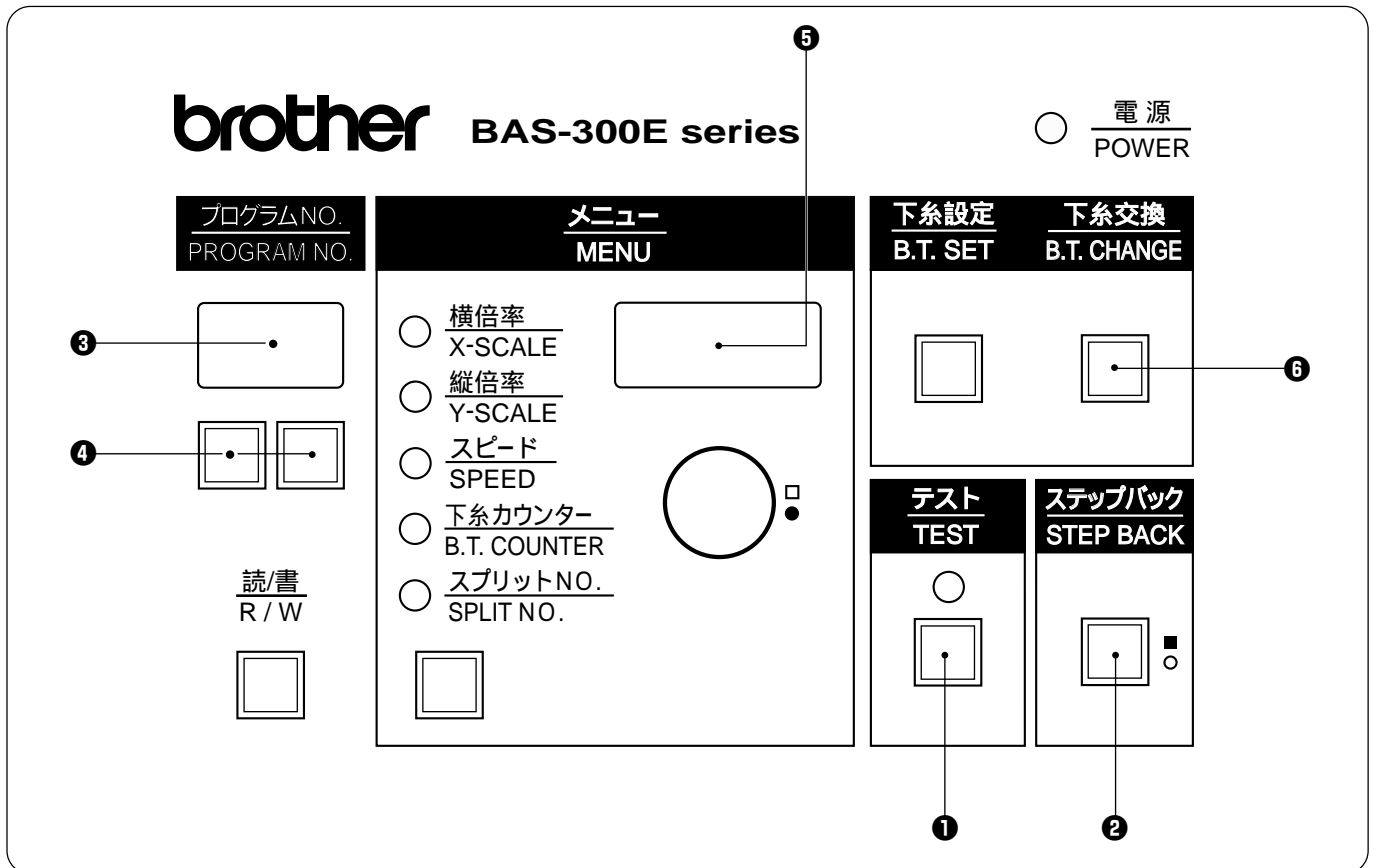
11. Changing special functions using the memory switches

The functions of the switches on the operation panel can be changed to carry out special functions.

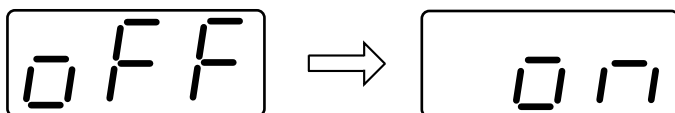
* All of the memory switches are set to OFF at the time of shipment.

NOTE

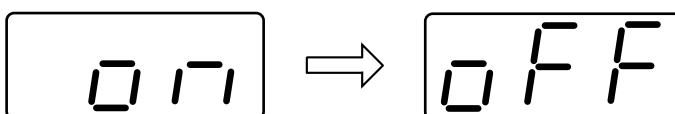
The following are special uses. All of the memory switch is usually set to OFF.



1. Turn on the power switch.
2. While pressing the TEST switch ①, press the STEP BACK switch ② to switch to setting mode.
3. Press the program select switch ④ so that the number displayed on the display screen ③ matches the switch number (00 - 3F) for the function that you would like to select from the table.
4. Press the STEP BACK switch ② to switch the setting appearing in the display screen ⑤ from OFF to ON.



If pressed once more:



If the B.T. CHANGE switch ⑥ is pressed at this time, all memory switch settings will be changed to OFF.

5. Press the TEST switch ①. The display will return to normal.

11. Changing special functions using the memory switches

Memory Switches (00 ~ 0F)

SWNo.	When ON
memo-00	When moving to the home position, the feed plate moves in the order X → Y and the start position moves in the order Y → X.
memo-01	When moving to the home position, the feed plate moves in the order Y → X and the start position moves in the order X → Y.
memo-02	The forward position becomes the home position, and movement is in the order Y → X and X → Y. Used for attaching buttons.
memo-03	Eject device operates. (Eject device is available by special order.)
memo-04	Needle stops in up position during emergency stop. (Needle normally stops in down position.)
memo-05	When sewing is finished, the feed plate moves via the machine home position to the start position.
memo-06	After the final stitch, the work clamp rises and then the feed plate returns to the start position.
memo-07	Intermittent work clamp is not used (does not rise).
memo-08	When using an alternating clamping presser (1/4 ON, 3/4 OFF), and when sewing overlapping rectangles.
memo-09	Changes the wiper to air drive. (Air wiper is available as an option.)
memo-0A	Jog feeding becomes faster during programming.
memo-0b	ON when a two-stage tensioner is used. (Two-stage tensioner is available as an option.)
memo-0c	-
memo-0d	Clearing the emergency stop switch action is carried out using the STEP BACK switch.
memo-0E	Test feeding is carried out at the same speed as normal sewing. (For checking feed operation)
memo-0F	-

11. Changing special functions using the memory switches

Memory Switches (10 ~ 1F)

SW No.	When ON
memo-10	Milling device can be used (available as an option)
memo-11	Bobbin thread counter and production counter are adjusted when thread is trimmed
memo-12	Work clamp is lowered by pressing work clamp first stage switch twice, without using work clamp second stage switch. When DIP switch A-2 is ON, work clamp lowers in the order right left; when OFF, work clamp lowers in the order left right. Order is opposite when rising.
memo-13	When work clamp is lowered, the starting switch causes locking; if the switch is released before locking, the work clamp rises When DIP switch A-2 is ON, work clamp lowers in the order right left; when OFF, work clamp lowers in the order left right. Order is opposite when rising
memo-14	Needle up error detected.
memo-15	ON when machine is equipped with signal tower indicator. (This indicator is available by special order.)
memo-16	ON when machine is equipped with thread nipper. (Thread nipper is available by special order.)
memo-17	ON when machine is equipped with reset switch. (Reset switch is available by special order.)
memo-18	-
memo-19	-
memo-1A	When using a triple pedal (DIP switch B-7 is also ON), the right is used exclusively to detect the home position. If DIP switch A-7 is OFF, the left pedal causes left and right work clamps to be raised and lowered simultaneously. If ON, the left pedal causes the left work clamp to be raised and lowered, and the right work clamp lowers when starting pedal to sew
memo-1b	B430E single foot pedal can be used. DIP switch A-7 is ON.
memo-1c	Bobbin thread counter is decremented at the start of sewing.
memo-1d	When using an air pressure drop detection switch. (This detection switch is available by special order.)
memo-1E	Split number is changed automatically
memo-1F	Program number is changed automatically

Memory Switches (20 ~ 2F)

SW No.	When ON
memo-20	During feed test operation, feeding 100 stitches at a time is possible using the STEP BACK switch.
memo-21	After the home position is detected and the machine moves to the sewing start position, the work clamp rises automatically.
memo-22	When extended option output No. 1 is ON, the sewing machine starts automatically.
memo-23	Set to ON when the bobbin changer is being used. (This part is available by special order.)
memo-24	Sewing operations are carried out even if the cassette detection sensor is off.
memo-25 ~ memo-2F	-

11. Changing special functions using the memory switches

Turn the dial while pressing the STEP BACK switch to change the values.

SW No.	Possible setting range	Units	Initial value	Explanation
memo-30	1 ~ 999	× 10ms	10	Time until feed mechanism starts moving after work clamp has lifted.
memo-31	1 ~ 4	-	1	Changes the feed speed. 1 (Fast) ←→ 4 (Slow)
memo-32	1 ~ 7	-	3	Changes the possible sewing speed for a given stitch length. 1 (Fast) ←→ 7 (Slow) 1 (2,700/3 mm), 2 (2,600/3 mm), 3 (2,500/3 mm), 4 (2,300/3 mm), 5 (2,000/3 mm), 6 (1,800/3 mm), 7 (1,200/3 mm) Settings 1 and 2 are outside the warranty specification at the time of shipment from the factory.)
memo-33	1 ~ 10	× 7.5 °	5	Changes the feed timing 1 (Fast) ← 5 (standard) → 10(Slow)
memo-34	1 ~ 5	-	0	Number of low-speed stitches sewn at 400 spm at sewing start
memo-35	10 ~ 60	× ms	40	Solenoid ON time changes when work clamp is being lowered (solenoid specifications only) 10 ← → 60 (Quiet) (High work clamp capacity)
memo-36	1 ~ 3	-	1	The solenoid ON time when the presser foot is raised changes. (Standard) 1 ←→ 3 (Upper limit)
memo-37	0 ~ 3	-	0	Specifies the enlargement and reduction method when reading from a 2DD floppy disk. 0: No conversion; 1: 311, 311A; 2: 326, 326A, 326L, 326LA; 3: 341, 341A, 342, 342A
memo-38	1 ~ 20	× 0.1s	1	Delay time from the point when the cassette is clamped to the start of sewing when DIP switch A7 is ON during automatic sewing
memo-39	0 ~ 11	-	0	Sets the enlargement and reduction home positions on the panel.
memo-3A	-	-	0	-
memo-3b	-	-	0	-
memo-3c	-	-	0	-
memo-3d	-	-	0	-
memo-3E	-	-	0	-

12. Error codes

12. Error codes

NOTE

- If an operation problem occurs, a buzzer will sound and an error code will appear on the display screen; if a programmer is connected, an error message will appear on the screen.
- Wait 10 seconds or more after turning the power off before turning it back on again.

Code	Cause	Remedy
E.10	Emergency stop switch was pressed.	Press the emergency stop switch once more to cancel.
E.11	Emergency stop switch was pressed during sewing.	Press the emergency stop switch once more to cancel. The STEP BACK switch can then be used to resume sewing.
E.12	Emergency stop switch is being continually pressed, or emergency switch connection error.	Turn off the power and check.
E.20	Problem with machine motor stopping, or synchronizer connection error.	Turn off the power, and then turn the machine pulley to check if the machine has locked up. Check the synchronizer connection. Check if connectors P14, P15 or P16 are disconnected.
E.21	Machine motor operation error.	Turn off the power and check the ground wire connection.
E.22	Needle up stop position error.	Turn the pulley to align the index mark with the needle up stop position. Check the V-belt tension.
E.30	Data is outside possible sewing area due to enlargement or reduction ratio setting.	Check the enlargement or reduction ratio setting.
E.31	Data pitch exceeds 12.7 mm due to enlargement or reduction ratio setting.	Check the enlargement or reduction ratio setting.
E.32	No end code was input into sewing data.	Input an end code, or change the program number.
E.40	Floppy disk is not inserted, disconnected cord inside operation panel, or malfunction of drive.	Insert a floppy disk. If floppy disk is already inserted, turn off the power and check the connections of cords inside the operation panel.
E.41	Program number is invalid, no data, or floppy disk is not formatted.	Check the floppy disk.
E.43	Floppy disk changed from readable disk when setting the bobbin thread or when setting the memory switch.	Replace with a readable floppy.
E.4F	Other error when reading floppy disk.	Replace the floppy disk and repeat the operation.
E.50	Floppy disk is write-protected.	Remove the write-protection.
E.51	Insufficient space on floppy disk.	Use a different floppy disk.
E.52	Floppy disk cannot be formatted	Replace the floppy disk and repeat the operation.
E.5F	Floppy disk write error.	Repeat the operation.
E.60	Data backup is not possible.	Turn off the power, wait a while and then turn it back on. If the error appears continually, contact a qualified service technician.
E.61	Data cannot be backed up	
E.70	Overlapping option output numbers.	Change the option output number.
E.80	Thread breakage error detected by rotating-type thread breakage detector device.	Thread the upper thread. Sewing can then resume.
E.81	Upper thread breakage error detected by optical fiber-type sensor.	Thread the upper thread. Sewing can then resume.

Error codes (Bobbin changer)

If an operation problem occurs, a buzzer will sound and an error code will appear on the display screen.

Code	Cause	Remedy
E.71	<p>If the sensor on the underside of the bobbin cassette does not activate when the bobbin changer is rotated:</p> <p>1. The changer motor does not operate correctly. 2. The sensor does not operate correctly.</p>	<p>1. Check the changer motor and the wires connected to the motor. 2. Check the sensor at the back of the cassette and the wires connected to the sensor.</p>
E.72	<p>There is no space in the bobbin cassette when the rotary hook bobbin tries to return to the bobbin cassette.</p> <p>The sensor does not turn on or off when it should.</p>	<p>Make enough space in the bobbin cassette.</p> <p>Check whether the tab might be holding the bobbin and causing the problem.</p>
E.73	<p>The sensor which detects the raised cylinder arm does not turn on when the arm is raised.</p> <p>The sensor which detects the lowered cylinder arm does not turn on when the arm is lowered.</p>	<p>Check the cylinder sensor for detecting the raised cylinder arm and the wires connected to the sensor.</p> <p>Check the cylinder sensor for detecting the lowered arm cylinder and the wires connected to the sensor.</p>
E.74	<p>The bobbin is already in the changer at the bobbin retract position.</p>	<p>Check that the bobbin is in the rotary hook rather than in the changer at the sewing start.</p>

12. Error codes

Error codes[E.9 *] ~ [E.F *]

⚠ DANGER



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






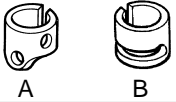



Code	Cause	Remedy
E.90	Abnormal drop in power supply voltage, or power was turned on again immediately after it was turned off.	Turn off the power and check the input voltage. After turning off the power, wait 3 seconds or more before turning it on again.
E.91	Abnormal rise in power supply voltage.	Turn off the power and check the input voltage.
E.A0	Starting switch was pressed without any valid sewing data loaded.	Re-read the sewing data.
E.A1	Home position point was not detected within a certain time during home position detection.	Turn off the power and check the X-Y feed and the home position sensor connection.
E.c0	Motor PROM is not correctly inserted.	Turn off the power and check.
E.c1	The box cooling fan (at the left when looking from the front) is not operating.	Turn off the power and check whether any thread scraps have built up.
E.c2	Heat sink of control circuit board is abnormally hot.	Turn off the power and clean the air intake port of the box.
E.c3	Abnormal current detected in X pulse motor.	Turn off the power and contact a qualified service technician.
E.c4	Abnormal current detected in X pulse motor.	Turn off the power and contact a qualified service technician.
E.c5	The box cooling fan (at the right when looking from the front) is not operating.	Turn off the power and check whether any thread scraps have built up.
E.d0	Air pressure drop error.	Turn off the power and check.
E.E0	Main PROM is not correctly inserted.	Turn off the power and check.
E.E1	Communication error detected by control circuit board.	Turn off the power, wait a while and then turn it back on.
E.E2	Communication error detected by panel circuit board.	Turn off the power, wait a while and then turn it back on.
E.E3	Bad connection in cable between panel and box.	Turn off the power and check.
E.F0	Power relay is not operating (malfunction of power supply circuit board).	Turn off the power and contact a qualified service technician.
E.F1	Bad connection in cable between power supply circuit board and main circuit board.	Turn off the power and check.
E.F2	Abnormal current detected in power supply circuit board.	Turn off the power and contact a qualified service technician.

REFERENCE segment LED alphabet

	Panel display	<i>A</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>E</i>	<i>F</i>	<i>6</i>	<i>H</i>	<i>L</i>	<i>o</i>
	Text display	A	b	c	d	E	F	6	H	L	O

13. Gauge parts list according to subclasses

The following parts are available for the BAS-343E for adding further flexibility to the range of applications.

Model	BAS-343E
Subclass	-21
Part name / Use	Heavy-weight materials
Needle hole plate 	Needle hole plate E (2.6) S10212-101
Inner rotary hook assembly 	Inner rotary hook LB assembly S15663-991
Large shuttle hook 	Large shuttle hook B 152686-101
Tension spring 	Tension spring B 144588-001
Bobbin case assembly 	Bobbin case assembly LA S15902-401
Needle bar thread guide 	Needle bar thread guide A S02438-001
Needle 	DP × 17 # 21 145646-021
Work clamp 	Feed plate A S42843-001
Spring 	Spring 107606-001

14. Troubleshooting

Problem	Cause	Check	Remedy	Page
Auxiliary work clamp does not rise.	Insufficient air pressure	Auxiliary work clamp regulator setting	Adjust the air pressure.	6
	Presser lifter air tube is bent or damaged.	Presser lifter air tube	Straighten the bend in the tube or replace the tube.	
Auxiliary work clamp does not drop.	Work clamp operation is sluggish.	Sliding part of the work clamp lubrication	Grease the sliding part of the work clamp.	6
	Presser lifter air tube is bent or damaged.	Presser lifter air tube	Straighten the bend in the tube or replace the tube.	
Presser lift amount is incorrect.	Incorrect position of presser arm lever F.	Distance between work clamp and top of needle plate	Adjust the work clamp lift amount.	37
Thread wiper does not operate correctly.	Interference between thread wiper and work	Clearance between thread wiper and work clamp	Adjust the height of the thread wiper.	38
	The thread wiper is obstructing the needle.	Clearance between thread wiper and needle tip	Adjust the height of the thread wiper.	38
	Thread wiper position is incorrect.	Thread wiper position	Adjust the operating distance of the thread wiper.	38
Lower thread winds to one side.	Bobbin winder thread tension stud height is incorrect.	Bobbin winder thread tension stud height	Adjust the height of the thread tension stud.	11
Lower thread winding amount is incorrect.	Bobbin presser position is incorrect.	Thread winding amount	Adjust the position of the bobbin presser.	11
Thread slips out of the needle.	Stitches being skipped at the sewing start.	Refer to "Skipped stitches occur".	Refer to "Skipped stitches occur".	
	Uneven upper thread length.	Upper thread length	Adjust the sub-tension.	10
	Position of shuttle race thread guide is incorrect	Position of shuttle race thread guide	Adjust the position of the shuttle race thread guide	33
Cassette is not ejected.	Cylinder pin is not working properly.	Turn off the power and check valve 2 manually.		
	Sensor is not detecting the cassette.			
	Malfunction of foot switch	Check the indicator lamp status.		

14. Troubleshooting

Problem	Cause	Check	Remedy	Page
Upper thread breaks.	Upper thread tension is too strong.	Upper thread tension	Adjust the upper thread tension.	13
	Needle is installed incorrectly.	Needle direction	Install the needle so that the groove is facing forward.	9
	Thread is too thick for the needle.	Thread and needle	Use the correct thread for the needle.	12
	Thread take-up spring tension and height are incorrect.	Thread take-up spring tension and height	Adjust the tension and height of the thread take-up spring.	13
	Damaged or burred rotary hook, needle hole plate or needle.	Damage or burring	File smooth or replace the affected part.	/
	Thread melting (synthetic thread)	Thread edge	Use a thread cooling device.	10
	Thread path is incorrect.	Thread	Pass the thread correctly along the thread path.	10
Lower thread breaks.	Lower thread tension is too strong.	Lower thread tension	Adjust the lower thread tension. amount.	13
	Corners of needle hole plate or bobbin case are damaged.	Damage	File smooth or replace the affected part.	/
Skipped stitches	Clearance between needle and rotary hook tip is too great.	Needle clearance	Adjust the needle clearance. the affected	33
	Incorrect needle and rotary hook timing.	Needle bar lift amount	Adjust the needle bar lift amount.	32
	Driver is contacting needle more than is necessary.	Clearance between driver and needle	Adjust the driver needle guard.	33
	Needle is bent.	Bent needle	Replace the needle.	/
	Needle is installed incorrectly.	Needle direction	Install the needle so that the groove is facing forward.	9
Needle breaks.	Needle is touching the rotary hook.	Needle clearance	Adjust the needle clearance. the groove	33
		Needle bar lift amount	Adjust the needle bar lift amount.	32
	Needle is bent.	Bent needle	Replace the needle.	/
	Needle moves about.	Needle and thread	Select the correct needle for the sewing conditions. Reduce the sewing	12
	Needle is too thin.	Needle and thread	Use the correct needle for the material.	12

14. Troubleshooting

Problem	Cause	Check	Remedy	Page
Upper thread is not trimmed.	Fixed knife is blunt.	Fixed knife blade	Sharpen or replace the fixed knife.	/
	Movable knife does not pick up the thread.	Shuttle race thread guide position	Adjust the position of the shuttle race thread guide.	33
		Needle bar lift amount	Adjust the needle bar lift amount.	32
	The movable knife does not pick up the thread because of skipped stitches at the sewing end.	Skipped stitches at sewing end	Refer to "Skipped stitches occur".	/
	Movable knife position is incorrect.	Movable knife position	Adjust the position of the movable knife.	34
	Sub-tension is too weak.	Sub-tension	Turn the sub-tension nut to adjust the tension.	13
Thread jamming.	Thread take-up spring tension and height are incorrect.	Thread take up spring tension and height	Adjust the tension and height of the thread take-up spring.	13
	Incorrect needle and rotary hook timing.	Needle bar lift amount	Adjust the needle bar lift amount	32
	Shuttle race thread guide is not separating the threads.	Shuttle race thread guide position	Adjust the position of the shuttle race thread guide.	33
Poor seam finish on reverse side of material.	Shuttle race thread guide is not separating the threads. incorrect.	Shuttle race thread guide position	Adjust the position of the shuttle race thread guide.	33
	Upper thread is not properly tight.	Upper thread tension	Adjust the upper thread tension.	13
	Uneven upper thread length.	Upper thread length	Adjust the sub-tension.	12
Incorrect thread tightness.	Upper thread tension is too weak.	Upper thread tension	Adjust the upper thread tension.	13
	Lower thread tension is too weak.	Lower thread tension	Adjust the lower thread tension.	13
	Thread take-up spring tension and height are incorrect.	Thread take-up spring tension and height	Adjust the tension and height of the thread take-up spring.	13

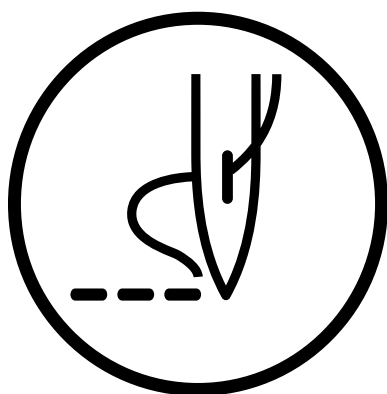
Problem	Cause	Check	Remedy	Page
Unstable upper thread length	Improper tension and height of thread take-up spring	Thread take-up spring tension and height	Adjust the tension and height of the thread take-up spring.	13
	Improper adjustment of sub tension	sub tension	Adjust the sub tension.	12
	Needle up stop position fluctuates.	See "Unstable needle up stop position."		
	Fixed knife is blunt.	Fixed knife blade	Sharpen or replace the fixed knife.	
Unstable needle up stop position	Inadequate adjustment of V belt tension	Tension pulley position	Adjust the tension of the V belt using the tension pulley.	5
	Electrical trouble	Refer to the details for [E.22] in the error code table.		50

15. Option

Programmer assy	Used to create sewing patterns for the BAS-300E series. It can also be used to display error messages.
Milling device	This device can be used to cut a variety of objects such as grooves, holes, and outline shapes in plastic or aluminum sheets.
WP stitch device	Increases the stitch creation range for perfect stitches.
Auto bobbin changer	When the amount of bobbin thread remaining becomes low, this device automatically replaces the bobbin. This reduces the need for tasks such as checking the amount of bobbin thread remaining and replacing bobbins, so that productivity can be increased.
Needle thread presser device	This allows the upper thread to be securely placed under the material for the first stitch at the sewing start.
Thread breakage detector device	Available as rotary type or fiber type, stops sewing when a thread breakage is detected and warns the operator.
Play prevention work clamp	This work clamp prevents any play from occurring in the clamp.
Thread wiper the side	Wipes the upper thread away to the side when an inner clamping device is being used.
2-step thread tension device	Allows the upper thread tension to be switched between two settings at any position desired by using the programmer.

* Refer to the separate Parts Book for details.

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