S-7000DD
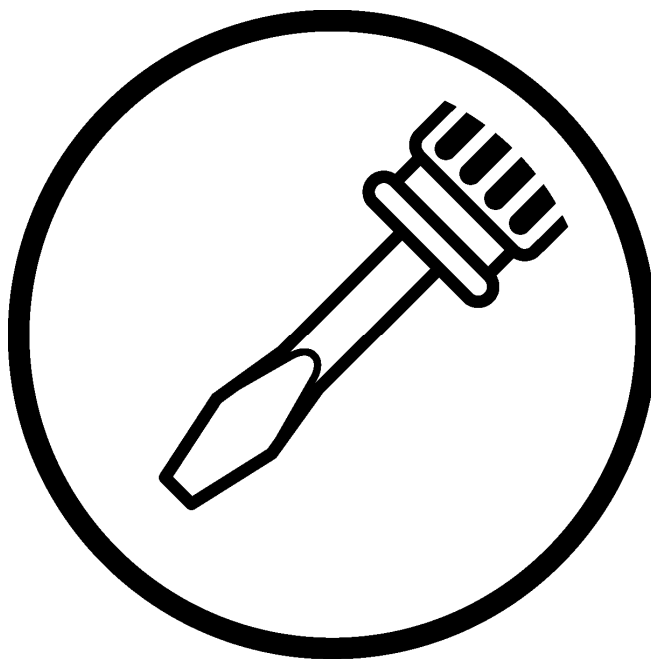
Draft Ver. 1

Please read this manual before making any adjustments.

SINGLE NEEDLE DIRECT DRIVE STRAIGHT LOCK STITCHER
WITH THREAD TRIMMER

brother

This service manual is intended for S-7000DD; be sure to read the S-7000DD instruction manual before this manual.

Carefully read the "SAFETY INSTRUCTIONS" and the whole of this manual to understand this product before you start maintenance.

As a result of research and improvements regarding this product, some details of this manual may not be the same as those for the product you purchased.
If you have any questions regarding this product, please contact a Brother dealer.

SAFETY INSTRUCTIONS

[1] Safety indications and their meanings

This service manual and the indications and symbols that are used on the machine itself are provided in order to ensure safe operation of this machine and to prevent accidents and injury to yourself or other people.

The meanings of these indications and symbols are given below.

Indications

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

Symbols

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

🚫 •••••• This symbol (⊘) indicates something that you <u>must not</u> do.

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

⚠ DANGER

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

⚠WARNING

Do not allow any liquids to get onto this sewing machine, otherwise fire, electric shocks or operating problems could occur.

If any liquid gets inside the sewing machine (machine head or control box), immediately turn off the power and disconnect the power plug from the electrical outlet, and then contact the place of purchase or a qualified technician.

⚠ CAUTION

Environmental requirements

Use the sewing machine in an area which is free from sources of strong electrical noise such as electrical line noise or static electric noise.
Sources of strong electrical noise may cause problems with correct operation.

Any fluctuations in the power supply voltage should be within ±10% of the rated voltage for the machine.
Voltage fluctuations which are greater than this may cause problems with correct operation.

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

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

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

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

Installation

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

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

The sewing machine weighs more than 45 kg. The installation should be carried out by two or more people.

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

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

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

When securing the cords, do not bend the cords excessively or fasten them too hard with staples, otherwise there is the danger that fire or electric shocks could occur.

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

Secure the table so that it will not move when tilting back the machine head. If the table moves, it may crush your feet or cause other injuries.

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

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

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⚠ CAUTION

Sewing

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

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

❗ Be sure to wear protective goggles when using the machine.
If goggles are not worn, there is the danger that if a needle breaks, parts of the broken needle may enter your eyes and injury may result.

⚠ Turn off the power switch at the following times.
The machine may operate if the treadle is depressed by mistake, which could result in injury.
- When threading the needle
- When replacing the bobbin and needle
- When not using the machine and when leaving the machine unattended

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

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

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

⚠ Secure the table so that it will not move when tilting back the machine head. If the table moves, it may crush your feet or cause other injuries.

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

❗ If an error occurs in machine operation, or if abnormal noises or smells are noticed, immediately turn off the power switch. Then contact your nearest Brother dealer or a qualified technician.

❗ If the machine develops a problem, contact your nearest Brother dealer or a qualified technician.

Cleaning

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

⚠ Secure the table so that it will not move when tilting back the machine head. If the table moves, it may crush your feet or cause other injuries.

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

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

Maintenance and inspection

🚫 Disassembly, assembly, maintenance and inspection of the sewing machine should only be carried out by a qualified technician.

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

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

⚠ Always be sure to turn off the power switch and then wait one minute before opening the motor cover.
If you touch the surface of the motor, it may cause burns.

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

⚠ Secure the table so that it will not move when tilting back the machine head. If the table moves, it may crush your feet or cause other injuries.

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

❗ Use only the proper replacement parts as specified by Brother.

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

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

[3] Warning labels

The following warning labels appear on the sewing machine.
Please follow the instructions on the labels at all times when using the machine. If the labels have been removed or are difficult to read, please contact your nearest Brother dealer.

1

⚠ 危 険	⚠ 危 险
高電圧部分にふれて、大けがをすることがある。電源を切り、5分たってからカバーをはずすこと。	触摸高压电部分，会导致受伤。在切断电源5分钟后，再开启盖罩。

⚠ DANGER	⚠ GEFAHR	⚠ DANGER	⚠ PELIGRO
Hazardous voltage will cause injury.Turn off main switch and wait 5minutes before opening this cover.	Hochspannung verletzungsgefahr! Bitte schalten sie den hauptschalter aus und warten sie 5 minuten, bevor sie diese abdeckung öffnen.	Un voltage non adapte provoque des blessures.Eteindre l'interupteur et attendre 5 minutes avantd'ouvrir le capot.	Un voltaje inadecuado puede provocar las heridas.Apagar el interruptor principal y esperar 5 minutos antes de abrir esta cubierta.

2 Touching areas where high voltages are present can result in severe injury. Turn off the power before opening the cover.

3

CAUTION
Moving parts may cause injury.

Operate with safety devices* installed.

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

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

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

6 High temperature warning display

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

8 Direction of operation

* Safety devices: (A) Finger guard (C) Motor cover
(B) Thread take-up cover

9

brother
Lubricating Oil for Machining

⚠ CAUTION
Lubricating oil may cause inflammation to eye and skin.
Wear protective glasses and gloves.
Swallowing oil can cause diarrhoea and vomiting.
Do not swallow.

Keep away from children.
FIRST AID
Eye contact :
-Rinse with plenty of cold water.
-Seek medical help.
Skin contact :
-Wash with soap and water.
If swallowed :
-Seek medical help immediately.
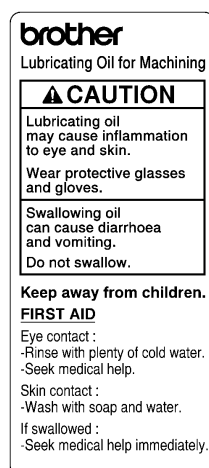
机械润滑油

注意
润滑油可能会引起眼睛或皮肤发炎。

请佩戴护目镜和手套。

吞食润滑油会引起腹泻和呕吐。
请勿吞食。

请勿让儿童触碰。
急救护理
接触眼睛时：
-请用大量冷水冲洗。
-寻求医疗救助。

接触皮肤时：
-请使用肥皂及清水清洗。

如果不慎吞食：
-请立即寻求医疗救助。

(C)

(B)

(A)

8

5

3

6

7

4

2

Transformer box
(110 V/400 V system only)

7

6

1

Control box

9

Oil tank

0591D

CONTENTS

1. LIST OF SPECIAL FUNCTIONS WHEN POWER IS TURNED ON
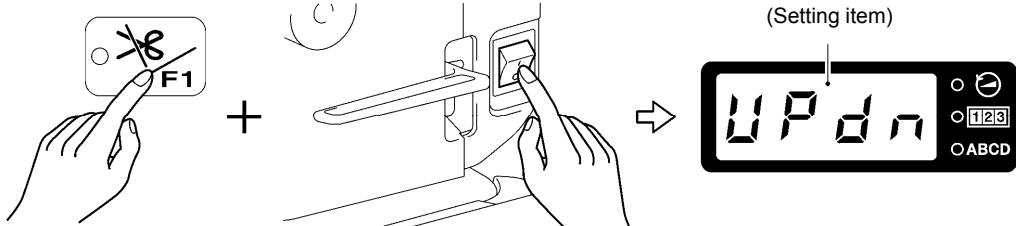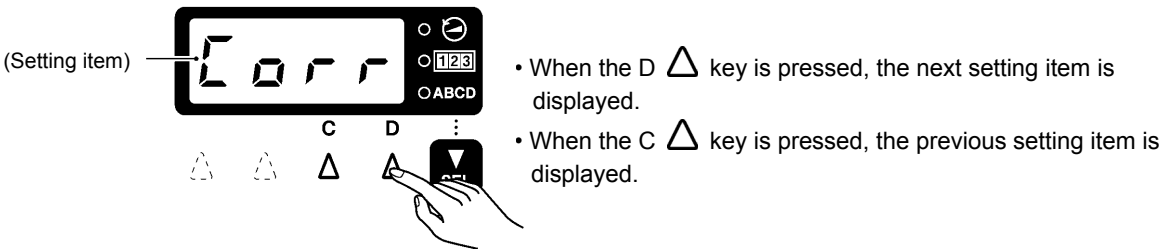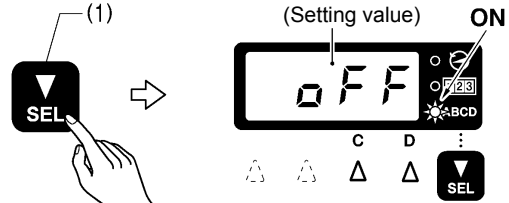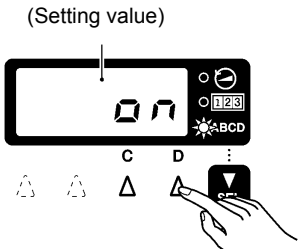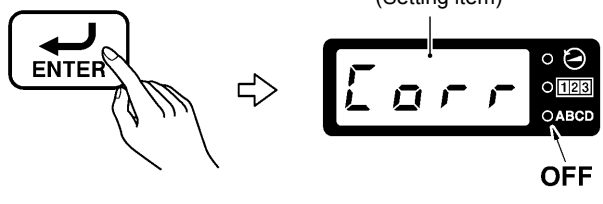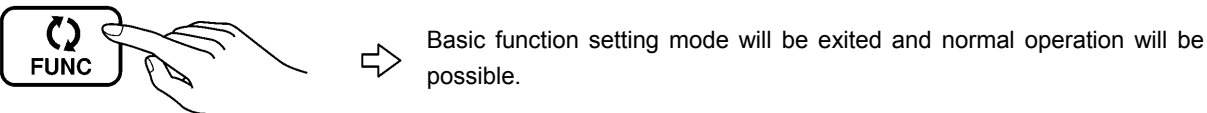
This section contains a list of functions for the operation panel and the key operations which are used to call the setting mode for the functions.

(Power switch ON)

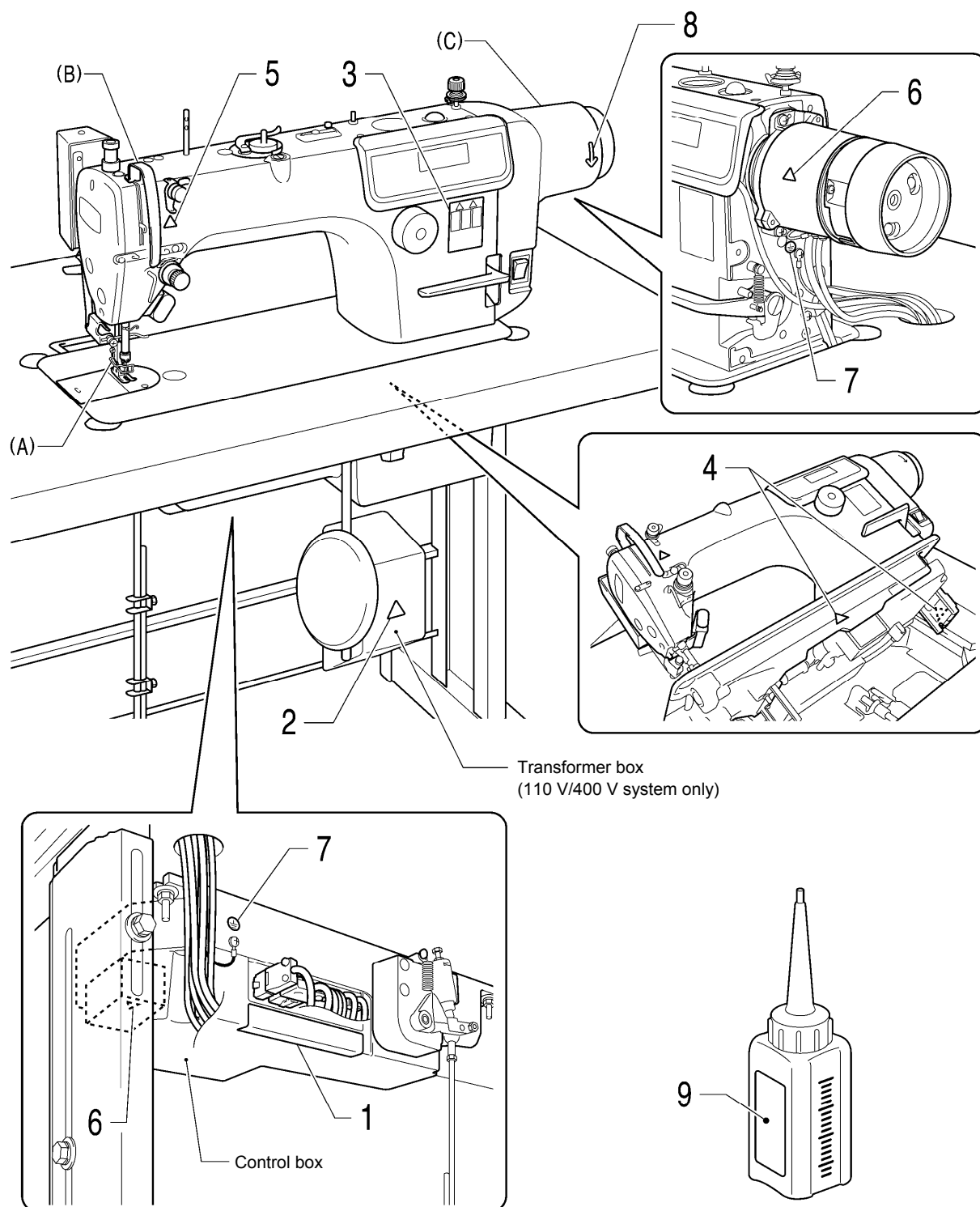|			
1	Basic function setting mode Refer to "2-1. Basic function setting method".	**7**	Protect setting mode [SW1 middle (Refer to P.40)] Refer to "2-7. Protection settings method".
2	Memory switch setting mode Refer to "2-2. Memory switch setting method".	**8**	Software version display function Refer to "2-8. Software version checking method".
3	Data initialization function Refer to "2-3. Data initialization function".	**9**	Treadle position adjustment mode [SW1 middle (Refer to P.40)] Refer to "4. SETTING METHOD FOR STANDARD DEPRESSION STROKES".
4	Error log display function Refer to "2-4. Error history checking method".	**10**	Sewing machine reference position adjustment mode Refer to "2-10. Sewing machine reference position adjustment method".
5	Input checking function Refer to "2-5. Input checking method".	**11**	Maintenance information viewing mode Refer to "2-9. Maintenance information viewing method".
6	Output checking function Refer to "2-6. Output checking method".		

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2. FUNCTION SETTINGS (OPERATION PANEL)

2-1. Basic function setting method
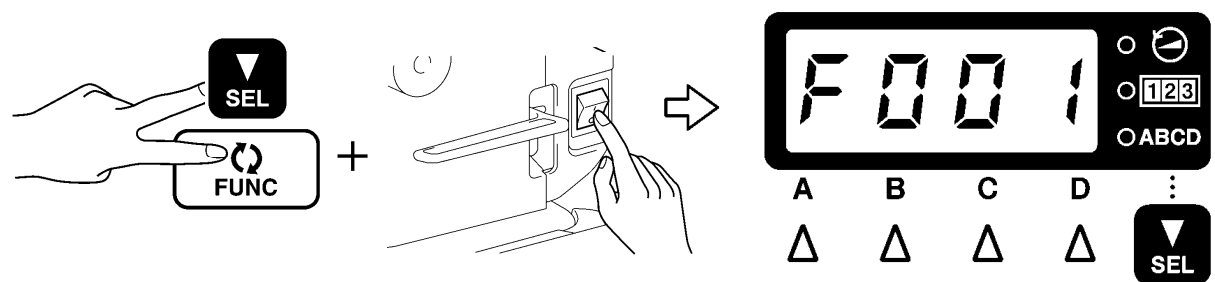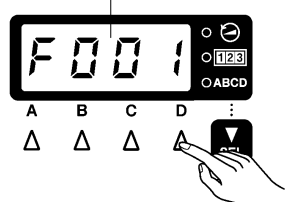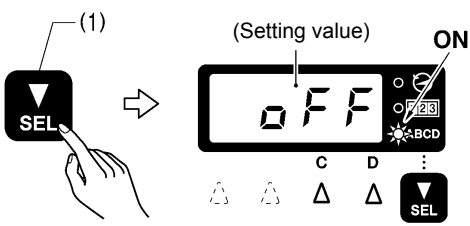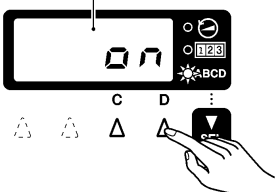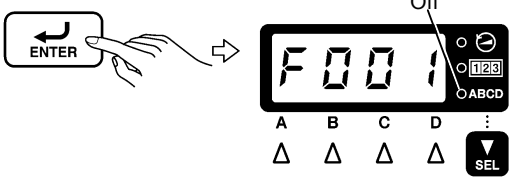
1 Change to basic function setting mode

(Setting item)

(While pressing the thread trimming disable/F1 key, turn on the power switch.)

2 Select the setting item (Refer to <Setting item list> (next page))

(Setting item)

• When the D △ key is pressed, the next setting item is displayed.
• When the C △ key is pressed, the previous setting item is displayed.

3 Change to the setting value display

(1)

(Setting value) **ON**

4 Change the setting value

(Setting value)

* If the setting value is different from the original details, the setting value will flash.

NOTE:
If the SEL key (1) is pressed once more, the ABCD indicator will switch off and the display will return to the setting item.

5 Confirm the setting value

(Setting item)

OFF

6 To set other items, repeat the operations in steps 2 to 5 and change the settings.

7 Basic function setting mode will be exited and normal operation will be possible.

<Setting item list>

Setting item	Display		Setting value or operation when setting	Default value
	Setting item	Setting value		
Needle up/down stop	[UPDN]	[UP]	Needle up stop	[DN]
		[DN]	Needle down stop	
Correction sewing	[CORR]	[ON]	Correction sewing	[OFF]
		[OFF]	No correction sewing	
Slow start	[SLOW]	[ON]	Slow start	[OFF]
		[OFF]	No slow start	
Thread trimming disable	[TRDI]	[ON]	Thread trimming disabled	[OFF]
		[OFF]	Thread trimming enabled	
Thread wiping	[WIP]	[ON]	Thread wiping enabled	[ON]
		[OFF]	Thread wiping disabled	
Needle tip illumination lamp brightness	[LAMP]	[OFF]/ [1] - [6]	OFF: Off 1 (Dark) ⟷ 6 (Bright)	[4]

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2-2. Memory switch setting method

1 Change to memory switch mode

(While holding down the SEL key and the FUNC (function) key, press the power ON switch.)
Lastly, change the setting and confirm the change. The memory switch number will then be displayed.

2 Select a memory switch number

(Memory switch number)

• When the D △ key is pressed, the next number is displayed.
• When the C △ key is pressed, the previous number is displayed.

* When the A △ or B △ key is pressed, a search starts for memory switches which have a different current value to the initial value.
When you press the B △ key, the previous corresponding number is displayed, and when you press the A △ key, the next corresponding number is displayed.

3 Change to the setting value display

(1)

(Setting value)   **ON**

NOTE:
If the SEL key (1) is pressed once more, the ABCD indicator will switch off and the display will return to the memory switch number display.

4 Change the setting details

(Setting value)

• When the D △ key is pressed, the setting value increases.
• When the C △ key is pressed, the setting value decreases.

* If the setting value is different from the original details, the setting value will flash.
* If you would like to return the setting which is currently being displayed to the default value, press the key.

5 Confirm the setting

Off

The ABCD indicator will switch off and the display will return to the memory switch number display.

NOTE:
The changed settings will be enabled after memory switch mode has been exited.

6 Repeat steps 2 to 4 above to change other memory switch settings.

7 Normal sewing machine operation will then be possible.

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2-2-1. List of memory switch settings

Presser foot lifter and presser foot lifter pedal settings (001-)
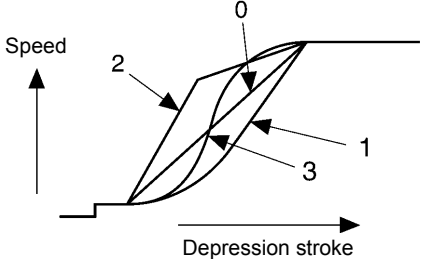
No.	Setting range	Initial value	Setting units	Setting details
F001	ON/OFF	OFF	-	Presser foot status when treadle is returned to neutral after thread trimming ON: Presser foot does not drop. OFF: Presser foot drops. (Presser foot will not drop if F851 is set to OFF.)
F002	ON/OFF	OFF	-	Presser foot status after treadle stops at neutral ON: Presser foot lifts. OFF: Presser foot does not lift.
F003	ON/OFF	ON	-	Presser foot lifting when treadle is depressed backward to 1st step after returning to neutral * If F004 is "OFF", this function will operate as if the setting is "OFF". ON: Possible OFF: Not possible
F004	ON/OFF	ON	-	Operation when treadle is depressed backward ON: Thread trimming and end backtack sewing operations are enabled. 　(If thread trimming operation has been disabled, needle up operations will be carried out without thread trimming.) OFF: Thread trimming and end backtack sewing operations are disabled. 　(Presser foot is raised when treadle is depressed backward.)
F010	ON/OFF	OFF	-	Alternate standing operation pedal and treadle operation ON: Standing operation pedal and the treadle can operate alternately. 　(If the standing operation pedal and the treadle are operated at the same time, the standing operation pedal will have priority.) OFF: Treadle operation can also be used after standing operation pedal is used.
F011	0 - 2	0	1	Operation when standing operation variable speed pedal is on 0: Sewing speed corresponds to treadle depression amount. 1: Sewing is carried out at the maximum sewing speed which has been set. (constant speed) 2: Sewing speed corresponds to end backtack speed.
F012	0 - 500 (ms)	80 (ms)	10 (ms)	Delay time from standing pedal turning on until motor starts operating
F013	ON/OFF	ON	-	Pause function during standing operation when presser foot lifter pedal is operated (when AUTO key is set to ON) ON: Operation pauses during sewing when presser foot lifter pedal is ON. OFF: No operation
F014	ON/OFF	ON	-	Pause function during standing operation when high-speed pedal is operated (when AUTO key is set to ON) ON: Operation pauses during sewing when high-speed pedal turns ON once more. Sewing is resumed when high-speed pedal next turns OFF. OFF: No operation
F015	ON/OFF	ON	-	Presser foot lifting operation from thread trimming pedal after thread is trimmed during standing operation ON: Presser foot can be lifted and lowered. 　(If F051 is "OFF", the thread trimming pedal operation is disabled after the presser foot lifter pedal has been operated during standing operation.) OFF: No operation (Only possible by using presser foot lifter pedal.)

Presser foot lifter and presser foot lifter pedal settings (050-)

No.	Setting range	Initial value	Setting units	Setting details
F050	ON/OFF	ON	-	Forward treadle operation interlock during thread trimming ON: Depressing treadle forward during thread trimming is disabled (After the treadle is returned to the neutral position, depressing it forward is enabled.) OFF: Depressing treadle forward during thread trimming is enabled
F051	ON/OFF	OFF	-	Operation after knee switch is used to raise and lower presser foot. ON: Presser foot can be raised and lowered by depressing the treadle backward. OFF: Above operation is not possible.
F055	ON/OFF	OFF	-	Backward treadle operation when presser foot is lifted, or operation after knee switch is operated * This setting is only enabled when F851 is "ON" and F001 is "ON". ON: Presser foot does not lift when treadle is returned to neutral position. OFF: Presser foot lifts when treadle is returned to neutral position.
F057	ON/OFF	OFF	-	Presser foot dropping when treadle is depressed forward to 1st step * This is disabled when F852 is set to "OFF". ON: Presser foot is lowered. OFF: Presser foot is not lowered.

No.	Setting range	Initial value	Setting units	Setting details
F080	-7 - 7	0	1	Treadle backward on (thread trimming) point (S7)
F081	-5 - 5	0	1	Treadle backward 1st step on (presser foot lifting) point (S6)
F082	-5 - 5	0	1	Treadle forward 1st step on (presser foot dropping) point (S1)
F083	-5 - 5	0	1	Treadle forward on (starting) point (S2)
F084	-5 - 7	0	1	Treadle variable speed range starting point (S3)
F085	-7 - 7	0	1	Treadle high speed range reaching point (S4)
F086	-2 - 2	0	1	Variable speed range starting point for standing operation variable speed pedal (S3)
F087	-2 - 2	0	1	High speed range reaching point for standing operation variable speed pedal (S4)
F088	0 - 3	0	1	Treadle speed curve 0: Constant 1: Curves downward 2: Curves upward 3: S line curve

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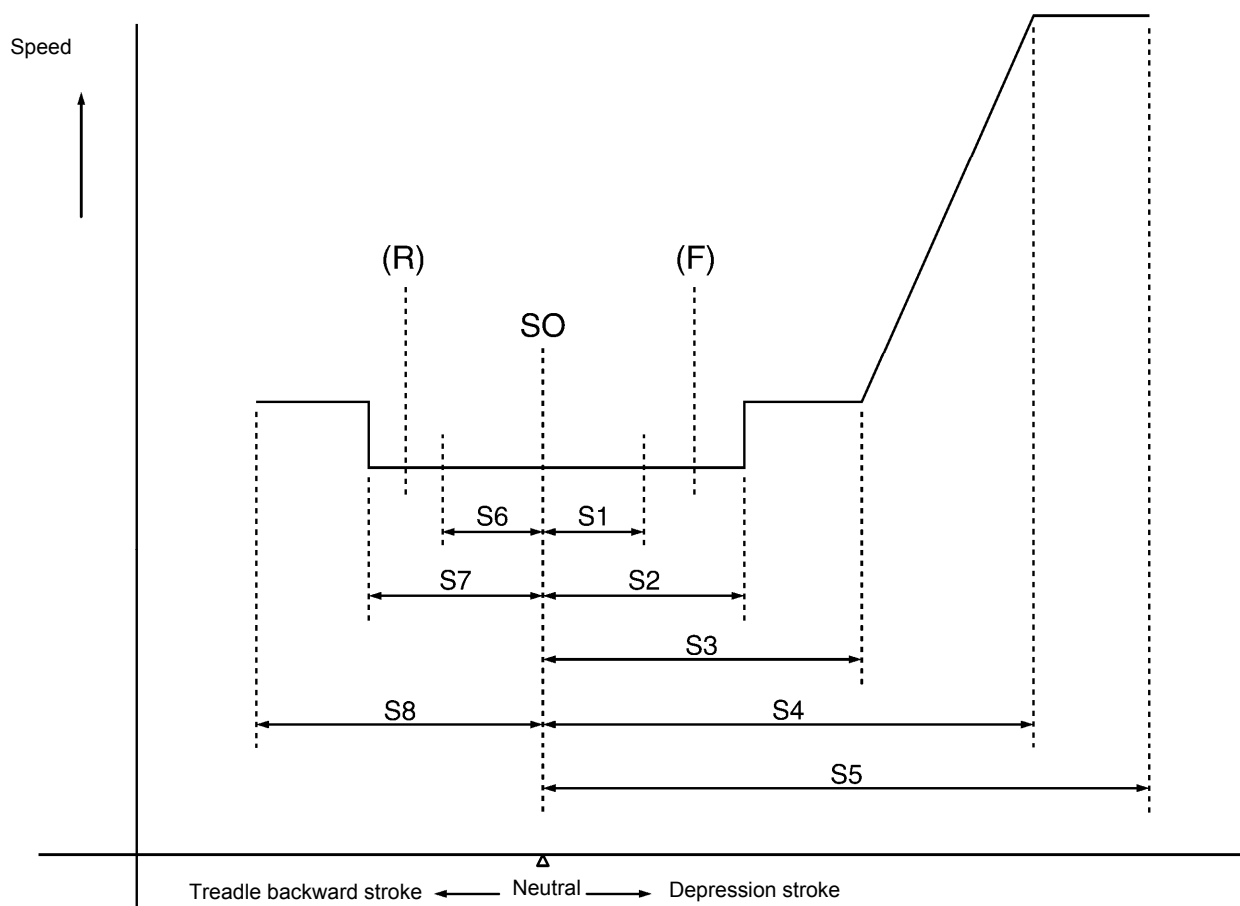
Sewing machine motor settings (100-)

No.	Setting range	Initial value	Setting units	Setting details
F100	1-99 (needles)	2 (needles)	1	Number of slow start stitches
F101	OFF/1-3	OFF	1	Pedal response switching settings immediately after sewing has started OFF: No switching 1: Slow start only when sewing starts after thread trimming 2: Slow start only when sewing starts after sewing has been paused 3: Slow start always when sewing starts
F102	1-5	1	1	Pedal response immediately after sewing has started * The larger the value, the slower the speed when sewing starts. * If F101 is set to "OFF", this setting is disabled.

Sewing machine motor settings (150-)

No.	Setting range	Initial value	Setting units	Setting details

F150	ON/OFF	ON	-	Slow stop control when treadle is returned to neutral
				ON: Slow stop control without step operation
				    (Low speed operating time before sewing stops is almost constant)
				OFF: Above control is not used.
				    (Low speed operating time before sewing stops is not constant.)

F151	OFF/1-2	1	1	Effective hammer operation OFF: No operation 1: Only operates when needle does not pierce 2: Operates when needle does not pierce and during thread trimming
F152	ON/OFF	OFF	-	Highest needle position stop operation * This is disabled when F156 is set to "ON". ON: Used OFF: Not used
F153	10 - 500 (ms)	150 (ms)	10 (ms)	Delay time until reverse operation starts during highest needle position stop operation * This is only enabled when F156 or F152 is set to "ON".
F154	-20 - 20 (degrees)	0 (degrees)	1	Quick reverse needle up stop position setting * This is only enabled when F156 is set to "OFF" and F152 is set to "ON". * The reverse operation angle is 40° to 80°. -20 ◄——————— 0 ———————► 20 Becomes lower Becomes higher 2248M
F155	0	1	1	Thread wiping operation and presser foot lifting operation during highest needle position stop operation * This is only enabled when F152 is set to "ON". 0: The needle is raised, then thread wiping is carried out, and then the presser foot is lifted.
F156	ON/OFF	OFF	-	Reverse needle lifting operation 2 * This operation has priority over the setting for F152, and makes the reverse operation angle larger. ON: Enabled OFF: Disabled
F157	-20 – 20 (degrees)	0	1	Reverse operation needle up stop position 2 setting * This is only enabled when F156 is set to "ON". * The reverse operation angle is 80° to 120°. -20 ◄——————— 0 ———————► 20 Reverse operation increases Reverse operation decreases

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No.	Setting range	Initial value	Setting units	Setting details
F170	5 - 12 (A)	9 (A)	1	Current limit value during acceleration * The larger the value, the faster the sewing machine motor acceleration; the smaller the value, the slower the acceleration. (Setting a small value may be effective in preventing fluorescent light flickering.)
F171	5 - 12 (A)	10 (A)	1	Current limit value during deceleration * The larger the value, the faster the sewing machine motor deceleration; the smaller the value, the slower the deceleration.
F172	-3 - 9	3	1	Gain during high-speed motor operation [Do not change this setting.]
F173	-3 - 9	3	1	Gain during low-speed motor operation [Do not change this setting.]
F174	-3 - 9	6	1	Weak gain during thread trimming [Do not change this setting.]
F175	OFF/1	OFF	1	Servo lock operation OFF: None 1: Servo lock operation occurs when sewing is stopped
F176	OFF/ 1 - 120 (seconds)	OFF	1	Servo lock timer setting * This is disabled when F175 is set to "OFF". OFF: No timer operation 1-120: Timer operates (1-120 seconds)
F177	30 - 89 (degrees)	45 (degrees)	1	Servo lock release rotation angle [Do not change this setting.] * This is disabled when F175 is set to "OFF".
F180	150 - 300 (sti/min)	220 (sti/min)	10	Thread trimming speed (TRIM) (*1)
F181	150 - 300 (sti/min)	220 (sti/min)	10	Inching speed (INCH)
F182	500 - 2500 (sti/min)	1400 (sti/min)	100	Stop improvement speed (POS) [Do not change this setting.]
F183	150 - 1000 (sti/min)	700 (sti/min)	10	Slow speed (SLOW) (*2)
F184	150 - 3000 (sti/min)	3000 (sti/min)	100	Upper limit for start backtack speed setting (SBL) (*2)
F186	150 - 3000 (sti/min)	1800 (sti/min)	100	End backtacking speed (EBT) (*2)
F188	150 - 4000 (sti/min)	4000 (sti/min)	100	Automatic speed (AUTO) (*2), (*3)
F189	150 - 4000 (sti/min)	4000 (sti/min)	100	Maximum sewing speed limit speed (HIL) (*3)

(*1) The actual upper limit for the operating speed will be the speed set by F181.
(*2) The actual lower limit for the operating speed will be the speed set by F181.
(*3) The upper limit set will vary depending on the sewing machine head specifications.

Panel operation settings (300-)
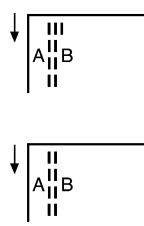
No.	Setting range	Initial value	Setting units	Setting details

F300	1 - 3	1	1	Main counter display
				   * Initial display item when switching the display using the SEL key
				     Changes in the order 1→2→3→1→… each time the FUNC key is pressed.
				
				1: Lower thread counter (Counting units are set by F301.)
				2: Thread trimming counter (incremented by 1 each time of a thread trimming operation occurs)
				   * The counter is incremented even if thread trimming is set to disabled.
				3: Needle replacement counter (Counting units are set by F303.)

F301	0 - 100 (stitches)	10 (stitches)	1	Lower thread counter counting units 0: No counting operation 1-100: Display counts down by the set number of stitches
F302	0 - 2	1	1	Operation for counter warning (when < ! > warning icon is displayed) 0: Starting using the treadle is always enabled 1: After thread trimming stops, starting using the treadle is disabled. (enabled until depressed backward) 2: Operation using treadle fully disabled after treadle is returned to neutral position and sewing stops
F303	0 - 1000 (stitches)	100 (stitches)	10	Needle replacement counter counting units 0: No counting operation 10-1000: Display counts down by the set number of stitches

F305	ON/OFF	ON	-	Switching the counter display at the sewing start
				ON: Remains at counter display
				   * To switch to a display other than the counter display, press the SEL key.
				OFF: Switches from counter display to stitch number display (When F470 is set to "OFF")
				     Returns to pattern display (When F470 is set to "ON")

F310	1 - 2	1	1	4-digit display operation when the SEL key is pressed 1: No display → Stitch number display → Counter display → Sewing speed display 2: No display → Sewing speed display → Counter display → Stitch number display
F311	1 - 5	4	1	F1 function setting * The same function as F312 cannot be selected. 1: Needle up/down 2: Correction 3: Slow start 4: Thread trimming disable 5: Thread wiping
F312	1 - 5	3	1	F2 function setting * The same function as F311 cannot be selected. 1: Needle up/down 2: Correction 3: Slow start 4: Thread trimming disable 5: Thread wiping
F313	ON/OFF	OFF	-	Automatic operation during continuous backtack sewing (When F470 is "OFF") ON: AUTO operation enabled OFF: AUTO operation disabled

Panel operation settings (350-)

No.	Setting range	Initial value	Setting units	Setting details
F350	ON/OFF	ON	-	Buzzer (electronic sound) during panel operation ON: Used OFF: Not used * The buzzer will always be ON when a warning or error is displayed.

F351	0 - 10 (seconds)	0 (seconds)	1	Additional display time for model name when power switch is turned on
				0: Not displayed
				1 - 10: Model name is displayed for the amount of time set.
				    -[]030 specifications: "7030"
				    -[]03A specifications: "703A"
				    -[]05 specifications: "7050"

F352	ON/OFF	ON	-	Limit for maximum speed setting in start and end backtacking speed settings ON: Limited by maximum sewing speed OFF: Not limited by maximum sewing speed However, the setting upper limit will be limited by the setting value for F184.
F353	ON/OFF	ON	-	End backtack sewing speed ON: Separate setting from start backtack sewing speed is possible. OFF: Setting for start backtack sewing is used.
F354	0 - 3	1	1	Correction sewing function * This is enabled when F500 is set to "1". * Operates when the left-side correction (CORR) is set to "OFF" and the right-side correction (CORR) is set to "ON". 0: Half stitch correction sewing / Single stitch correction sewing 1: No correction sewing / Single stitch correction sewing 2: Reverse correction sewing (reverse feed) / Single stitch correction sewing 3: Single stitch operation after thread trimming (once only) / Single stitch correction sewing

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Sewing program settings (400-)

No.	Setting range	Initial value	Setting units	Setting details
F400	2 - 6	2	1	Start backtack sewing pattern * If A=0, there is no A operation, and if B=0, there is no B operation. 2: A-B 3: B-A-B 4: A-B-A-B 5: B-A-B-A-B 6: A-B-A-B-A-B
F401	2 - 6	2	1	End backtack sewing pattern * If C=0, there is no C operation, and if D=0, there is no D operation. 2: C-D 3: C-D-C 4: C-D-C-D 5: C-D-C-D-C 6: C-D-C-D-C-D

F402	1 - 2	1	1	Continuous backtack sewing pattern
				1: A-B-C-D
				  * If A=0, there is no A operation, and if B=0, there is no B operation.
				   If C=0, there is no C operation, and if D=0, there is no D operation.
				2: A-B × D times
				  * If A=0, there is no A operation, and if B=0, there is no B operation.
				   If A≠0, B≠0 and D=4, operation is in the order A-B-A-B.

F403	ON/OFF	OFF	-	Stopping while start backtacking is in progress, and speed during start backtacking ON: When the treadle is returned to the neutral position, start backtacking can be stopped before it is finished, and the speed during start backtacking becomes the speed corresponding to the treadle depression amount. (low speed – start backtacking speed) OFF: Even if the treadle is returned to the neutral position, sewing does not stop until start backtacking ends, and the sewing speed becomes the start backtacking speed.

F404	ON/OFF	OFF	-	Feed direction when sewing is stopped immediately after start backtacking is complete
				ON: Quick reverse solenoid turns OFF after sewing stops
				  * If F403 is "OFF", operation occurs when the treadle is depressed slightly.
				OFF: Quick reverse solenoid turns OFF and feed returns to normal direction, then stops
				  * If F452 is "ON", the operation set by this setting is disabled.

F405	1 - 2	1	1	Fixed stitch sewing loading function * Operation when F470 is set to "ON" and pattern No. 4 (pleat presser sewing) is carried out 1: Reverse sewing operation when actuator switch is ON 2: Fixed stitch sewing operation when actuator switch is ON

Sewing program settings (450-)

No.	Setting range	Initial value	Setting units	Setting details
F450	ON/OFF	OFF	-	Correction sewing using actuator switch after thread trimming * This is only enabled when F500 is set to "1". ON: Enabled OFF: Disabled (switch operation disabled)
F451	ON/OFF	OFF	-	Speed for moving to end backtack (Set to "ON" if you want cycle time to be shorter.) OFF: Decelerates to low speed, then end backtacking starts ON: Decelerates to end backtacking speed, then end backtacking starts * If F452 has been set to "ON", the operation when F451 is set to "ON" will be disabled.
F452	ON/OFF	OFF	-	Seam matching function during automatic backtacking (Set to "ON" if you want to match seams accurately during automatic backtacking.) ON: Momentarily stops at needle down position when material feed direction is changed OFF: No stopping when material feed direction is changed * F454 can be used to change the time until restart.
F454	10 - 500 (ms)	100 (ms)	10 (ms)	Momentary stopping time when material feed direction is changed (The quick reverse mechanism switches at the stopping position, and then after the stopping time has elapsed, sewing automatically restarts.) * This is only enabled when F452 is set to "ON".
F455	OFF/ 1 - 2	2	1	Synchronization function when quick reverse mechanism has been operated using the actuator switch OFF: Disabled (Quick reverse mechanism is synchronized with switch) 1: Quick reverse mechanism synchronization without motor deceleration 2: Quick reverse mechanism synchronization when motor decelerates automatically to the speed set by F456
F456	300 - 4000 (sti/min)	4000 (sti/min)	100	Automatic deceleration speed when quick reverse mechanism has been operated using the actuator switch * This is only enabled when F455 is set to "1" or "2".
F457	0 - 355 (degrees)	0 (degrees)	1	Quick reverse mechanism operation angle at low speed (less than 1000 sti/min) * This is only enabled when F455 is set to "1" or "2".
F458	0〜355 (degrees)	150 (degrees)	1	Quick reverse mechanism operation angle at high speed (1000 sti/min or more) * This is only enabled when F455 is set to "1" or "2".
F470	ON/OFF	OFF	-	Changing panel functions OFF: Standard functions ON: Program sewing expansion functions 　　The following sewing programs can be selected for program patterns 1 to 9. 　　• Pattern 1: Normal sewing / Continuous backtack sewing 　　• Pattern 2: Fixed stitch sewing 　　• Pattern 3: Name label sewing 　　• Pattern 4: Pleat presser sewing 　　• Patterns 5 to 9: Program sewing (20 steps) 　　* Refer to "2-2-2. Program sewing expansion functions (F470="ON")" for details on the setting method for each pattern.

Standard device settings (500-)

No.	Setting range	Initial value	Setting units	Setting details
F500	OFF/ 1 - 5	1	1	Actuator switch function when sewing is stopped (*1) OFF: No operation 1: Correction sewing switch (*2) 2: Thread trimming switch (*3) 3: Cloth feed quick reverse switch (*4) 4: Work clamp lifter switch (alternate operation) 5: Work clamp lifter switch (momentary operation)
F501	OFF/ 1 - 2	1	1	Actuator switch function during sewing (*1) OFF: No operation 1: Manual backtack switch (*2) 2: Thread trimming switch (*2)
F502	OFF/ 1 - 3	1	1	Presser foot lifter switch function OFF: No operation 1: Presser foot lifter switch 2: Puller switch (alternate) (*5) 3: Puller switch (momentary) (*5)

(*1) Functioning as a pleat presser sewing switch is enabled when F470 is set to "ON" and pattern 4 (pleat presser sewing) is being sewn. However, when set to "2", the thread trimming switch function takes priority.

(*2) Functioning as a correction sewing switch is enabled when F470 is set to "ON" and pattern 4 (pleat presser sewing) is being sewn.

(*3) To make it function as a thread trimming switch while sewing is in progress, F501 must be set to "2".

(*4) To make it function as a quick reverse switch while sewing is in progress, F501 must be set to "1".

(*5) Operation is enabled when F960 is set to "1". Functioning as a presser lifter switch is enabled when F960 is set to "1".

Standard device settings (550-)

No.	Setting range	Initial value	Setting units	Setting details

F550	0 - 1	0 (*1)	1	Automatic presser foot lifter type
				0: Solenoid type
				  (Duty during chopping can be changed using F565.)
				1: Pneumatic type
				  (Duty during chopping can be changed using F566.)

F551	0 - 500 (ms)	150 (ms)	10 (ms)	Sewing machine motor start delay time when presser foot is raised
F555	-345 - 345 (degrees)	0 (degrees)	1	Quick reverse solenoid on timing during start backtacking/continuous backtacking
F556	-345 - 345 (degrees)	0 (degrees)	1	Quick reverse solenoid off timing during start backtacking/continuous backtacking
F557	-345 - 345 (degrees)	0 (degrees)	1	Quick reverse solenoid off timing during end backtacking
F558	-345 - 345 (degrees)	0 (degrees)	1	Quick reverse solenoid on timing during end backtacking * This is only enabled when F451 is set to "ON".
F560	10 - 200 (ms)	20 (ms)	10 (ms)	Thread wiping and presser foot lift operation timing after thread trimming
F561	10 - 200 (ms)	50 (ms)	10 (ms)	
F562	10 - 200 (ms)	50 (ms)	10 (ms)	
F563	10 - 500 (ms)	300 (ms)	10 (ms)	Presser foot lifter solenoid fully ON time
F564	0 - 240 (seconds)	180 (seconds)	1	Presser foot lift time 0: No timer function (does not drop) 1-240: Presser foot drops after set time.
F565	10 - 60 (%)	25 (%)	1	On duty when solenoid-type presser lifter solenoid is chopping * This is only enabled when F550 is set to "0".
F566	10 - 60 (%)	50 (%)	1	On duty when pneumatic-type presser lifter solenoid is chopping * This is only enabled when F550 is set to "1".
F567	0 - 1	0	1	Presser foot soft down mode 0: Automatic mode (This can be adjusted using F569.) 1: Manual mode (This must be adjusted using F568.)
F568	20 - 120 (ms)	40 (ms)	5 (ms)	Delay time for presser foot lifter solenoid to turn on after presser foot drop command * This is only enabled when F567 is set to "1".
F569	10 - 15	12	1	Voltage detection constant for presser foot lifter solenoid to turn on after presser foot drop command * This is only enabled when F567 is set to "0". If it is set to "10", the response time will be fastest and the operating sound will be loudest.
F573	40 - 100 (ms)	85 (ms)	5 (ms)	Fully on time for quick reverse solenoid
F574	10 - 60 (%)	60 (%)	1	On duty when quick reverse solenoid is chopping

(*1) This is not initialized during initialization mode.

Error processing settings (650-)

No.	Setting range	Initial value	Setting units	Setting details
F650	OFF/ 2 - 30 (seconds)	OFF	1	Time from error display to buzzer stopping (seconds) OFF: Buzzer does not stop. 2-30: Buzzer stops after the specified time.
F651	1 - 30 (minutes)	3 (minutes)	1	Overtime error display 1-30: After continuous operation for the set length of time, operation stops and [E190] is displayed.
F652	ON/OFF	ON	-	Needle up stop error display * An error is not displayed when the setting for thread wiping " WIP" is "OFF". OFF: None ON: If the needle does not stop at the up position after thread trimming, [E111] is displayed.

Specifications and destination settings (850-)

No.	Setting range	Initial value	Setting units	Setting details
F851	ON/OFF	OFF (*1)	-	Treadle operation specifications ON: Specifications for Europe and the Americas ・ If F001 is "OFF" When the treadle is returned to the neutral position after thread trimming, the presser foot is lowered. * If the treadle is returned to the neutral position during thread trimming, the presser foot does not rise. ・ If F001 is "ON" After thread trimming, the presser foot rises. The presser foot does not drop even when the treadle is returned to the neutral position. ・ If F001 or F002 is "ON" Even after the treadle has been depressed to the 1st step and the presser foot has dropped, the presser foot rises when the treadle is returned to the neutral position. **NOTE:** If F852 and F057 are not both "ON" at the same time, the presser foot lowering function at the treadle's 1st step will be disabled. OFF: Other specifications ・ The presser foot does not drop even when the treadle is returned to the neutral position after thread trimming. ・ When the treadle is depressed backward or the knee switch changes from ON to OFF, the presser foot drops. **NOTE:** The presser foot does not rise at the treadle neutral position regardless of the settings for F001 and F002.
F852	ON/OFF	OFF (*1)	-	Presser foot lowering at the forward 1st step ON: Enabled OFF: Disabled
F890 (*2)	0 - 1	0	1	[Do not change this setting.]

(*1) This is not initialized during initialization mode.

(*2) Not displayed for -[ ]05 specifications.

Specifications and destination settings (950-)

No.	Setting range	Initial value	Setting units	Setting details

F950	OFF/ 1 - 9	OFF	1	Option input 1 function (manual option switch)
				OFF: Function not available
				1: Lower thread counter reset switch
				   * Option output 1 outputs counter warning signals.
				2: End backtacking single cancel switch
				   * Option output 1 outputs end backtacking cancel signals.
				3: Speed selection high-speed switch
				4: Half-stitch correction switch
				5: Single stitch correction switch
				6: Reverse correction switch
				7: Thread trimming switch
				8: Work clamp lifter switch (alternate operation)
				9: Work clamp lifter switch (momentary operation)

F951	OFF/ 1 - 2	OFF	1	Option input 2 function
				OFF: Function not available
				   * When F950 is set to "3", functions as a speed selection switch for medium speed.
				1: Operation prohibition input (operation by operating the pedal at Low, etc. is prohibited)
				2: Variable input for optional solenoid
				   * This is enabled when F960 is set to "7".

F952	OFF/1	OFF	1	Option input 3 setting * When F950 is set to "3", the following settings are disabled. OFF: Function not available (When F950 is set to other than "3") Speed selection low-speed switch (When F950 is set to "3") 1: Low-speed operation limit input (Limits the sewing speed using the pedal to low speed at Low setting)

F953	OFF/1	OFF	1	Option output 1 setting
				* When F950 is set to "1" or "2", the following settings are disabled.
				
				OFF: Function not available (When F950 is set to other than "1" or "2")
				    Lower thread counter warning signal output (When F950 is set to "1")
				    End backtacking cancel signal output (When F950 is set to "2")
				1: Error signal (Output ON when error is generated)

F954	OFF/ 1 - 4	OFF	1	Option output 2 setting OFF: Function not available 1: Thread trimming solenoid signal (Output ON when thread trimming solenoid is ON) 2: Quick reverse solenoid signal (Output ON when quick reverse solenoid is ON) 3: Work clamp lifter solenoid signal (Output ON when work clamp lifter solenoid is ON) 4: Automatic backtacking output signal (Output ON during automatic backtacking)
F955	300 - 4500 (sti/min)	1000 (sti/min)	100	Sewing speed when low-speed operation switch is pressed * This is enabled when F950 is set to "3". **NOTE:** The actual operating speed will be limited by the maximum sewing speed setting.
F956	300 - 4500 (sti/min)	3000 (sti/min)	100	Sewing speed when medium-speed operation switch is pressed * This is enabled when F950 is set to "3". **NOTE:** The actual operating speed will be limited by the maximum sewing speed setting.

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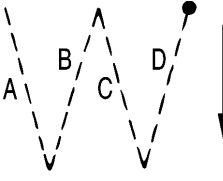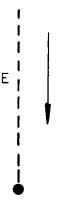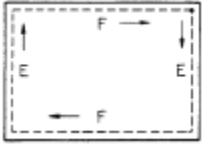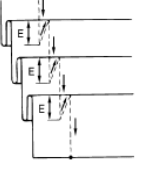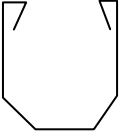
| No.	Setting range	Initial value	Setting units	Setting details
F960	OFF,1 - 7	OFF	1	Option solenoid output 0: No output 1: Puller 2: Operation sync output (needle cooler) 3: Air saving 4: Condense 5: Chain stitch thread trimming 6: Air wiper 7: Variable output
F961	0 - 99 (needles)	0	1	Number of stitches from sewing start to puller dropping (C0) * This is enabled when F960 is set to "1". 0: No stitch number control 1 - 99: Stitch number control enabled
F962	5 - 30 (seconds)	10 (seconds)	1	Puller continuous ON time * This is enabled when F960 is set to "1".
F963	0 - 99 (needles)	10 (needles)	1	Number of stitches for option output * This is enabled when F960 is set to "3".
F964	0 - 990 (ms)	10 (ms)	10	Option output ON extension time * This is enabled when F960 is set to "5".
F965	0 - 990 (ms)	0 (ms)	10	Option output ON time * This is enabled when F960 is set to "5".
F966	0 - 990 (ms)	10 (ms)	10	Option output ON extension time * This is enabled when F960 is set to "6".
F967	0.000 - 9.900 (seconds)	2.000 (seconds)	0.1	Option output ON time * This is enabled when F960 is set to "3" or "6".
F968	0 - 99 (needles)	0 (needles)	1	Number of stitches for option output * This is enabled when F960 is set to "7".
F969	0 - 99 (needles)	0 (needles)	1	Number of stitches for option output * This is enabled when F960 is set to "7".

2-2-2. Program sewing expansion functions (F470=”ON”)

・ When memory switch F470 is set to “ON”, the following sewing patterns are enabled.
・ Sewing patterns can be selected from patterns 1 to 9.
・ Stitch number programs of up to 20 stitches can be set for patterns 5 to 9.

* For details on memory switch setting methods, refer to “2-2. Memory switch setting method”.

Pattern	Sewing pattern	Pattern display	Setting item
1	Normal sewing	[1 -]	Start backtack stitches enabled/disabled, No. of AB stitches End backtack stitches enabled/disabled, No. of CD stitches
	Continuous backtacking	[1-]	No. of ABCD stitches Automatic operation enabled/disabled
2	Fixed stitches	[2-E]	Start backtack stitches enabled/disabled, No. of AB stitches End backtack stitches enabled/disabled, No. of CD stitches No. of E stitches Automatic operation enabled/disabled Automatic thread trimming enabled/disabled
3	Name label sewing	[3-E] [3-F]	Start backtack stitches enabled/disabled, No. of AB stitche End backtack stitches, No. of CD stitches No. of EF stitches Automatic operation enabled/disabled Automatic thread trimming enabled/disabled
4	Pleat presser sewing	[4-E]	Start backtack stitches enabled/disabled, No. of AB stitches End backtack stitches enabled/disabled, No. of CD stitches No. of E stitches * When memory switch F405 is set to “ON” Automatic operation enabled/disabled Automatic thread trimming enabled/disabled
5 - 9	Program sewing	[5-SS] SS: step (1 - 20)	Start backtack stitches enabled/disabled, No. of AB stitches End backtack stitches enabled/disabled, No. of CD stitches No. of step stitches AUTO function Automatic thread trimming function * Can be set for each step. * The number of ABCD stitches cannot be set separately for each step.

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2-2-3. 4-digit display switching method (F470="ON")
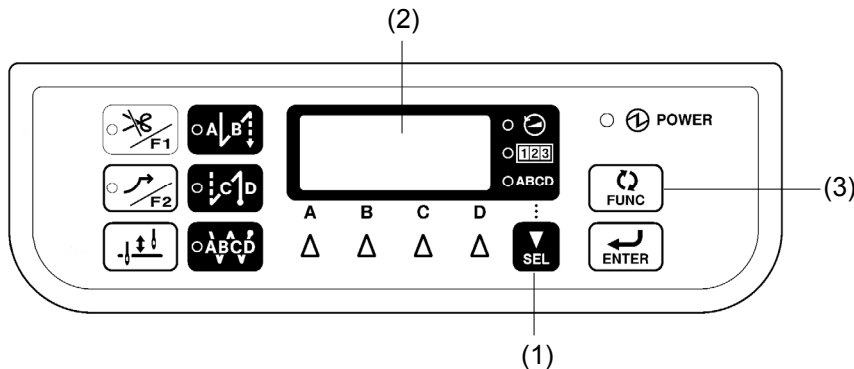
- The 4-column data in the display (2) can be changed to one of the following three statuses each time the SEL key (1) is pressed.

    Pattern display → Sewing speed display → Counter display

- The display can be changed to another value by pressing the FUNC key (3).
- The sewing speed setting method and the counter setting method are the same as when F470 is set to "OFF".
    (Refer to "4-2. Speed setting method" and "4-3. Counter setting method" in the instruction manual.)

Display mode	⊙	⊙ 123	○ ABCD	4-digit display
Pattern display				Pattern and step display
No. of backtack stitches display			ON	ABCD stitch number display
Number of step stitches display			Flashing	Number of step stitches display
Sewing speed display	ON			Maximum sewing speed setting value
	ON		ON	Start backtack sewing speed setting value
Counter display		ON		Lower thread counter value
		Flashing		Lower thread counter warning enabled
	ON	ON		Thread trimming counter value
		ON	ON	Needle replacement counter value
		Flashing	Flashing	Needle replacement counter warning enabled

2-2-4. Switching to number of backtack stitches display and number of step stitches display (F470="ON")

- The pattern display will appear immediately after the power switch is set to "ON".
- The display can be changed to the following displays by pressing the FUNC key (3).

    Pattern display → Number of backtack stitches display → Number of step stitches display

  * There is no number of step stitches display for pattern 1.
  * If any of the indicators for the start backtacking, end backtacking and continuous backtacking keys are illuminated, you can switch to number of backtacking stitch display. If all indicators are switched off, this display will be skipped.

2-2-5. Pattern display mode (F470="ON")

・ The sewing pattern and sewing step displays will appear immediately after the power switch is set to "ON".
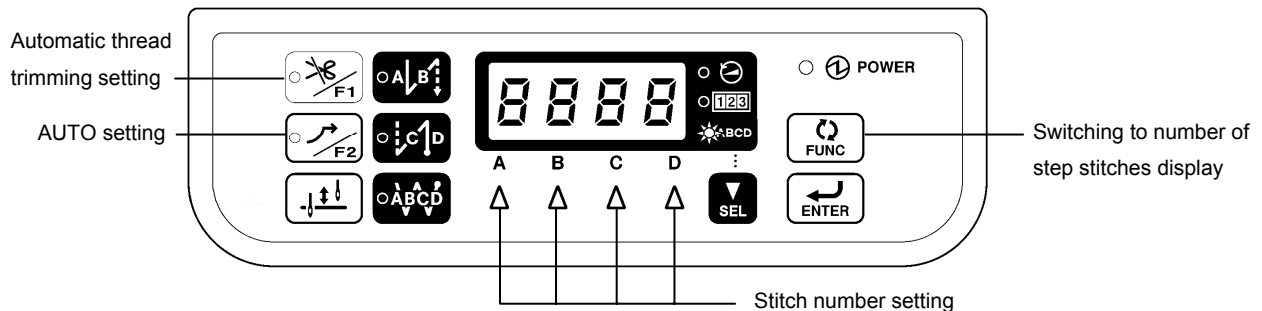The pattern number and the sewing step can be changed.

[Patterns 1 to 4]

Pattern number (1 to 4) ———— Step (E or F)   * Not displayed for pattern 1.

Switches to No. of backtack stitches display

Switches to pattern number ———— Switches to step display (* Pattern 3 only)

[Patterns 5 to 9]

Pattern number (5 to 9) ———— Step (1 to 20)

Switches to No. of backtack stiches display

Switches to pattern number ———— Switches to step display
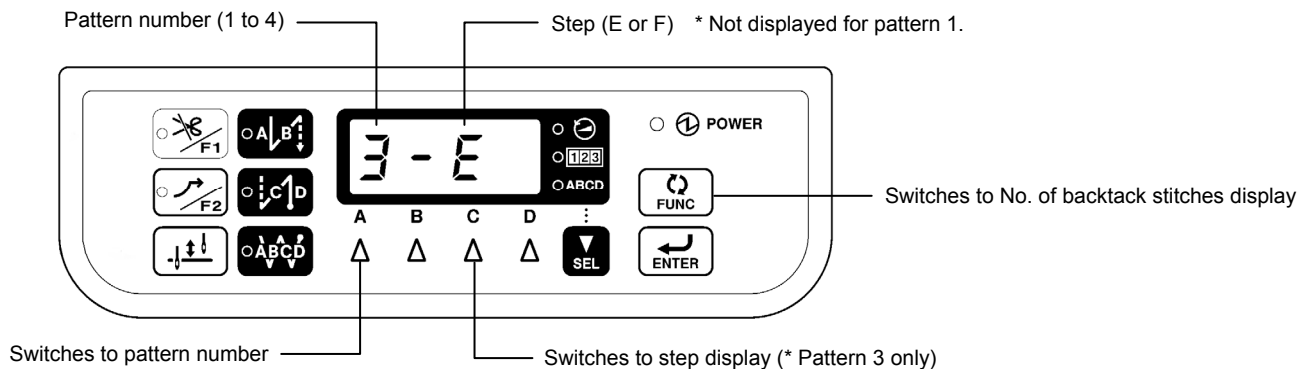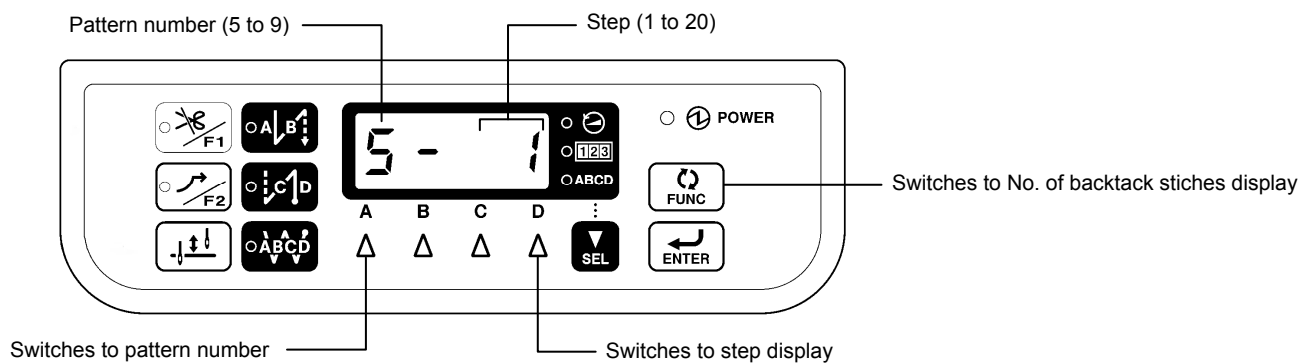
2-2-6. Number of backtack stitches display mode (F470="ON")

· You can switch to this display if the number of start backtack stitches (AB) and the number of end backtack stitches (CD) or the number of continuous backtack stitches (ABCD) have been set.

· If the start backtack, end backtack or continuous backtack keys are pressed so that the corresponding indicator illuminates , you can switch to the number of backtacking stitch display.

   * For a pattern other than pattern 1, when the continuous backtack key is pressed so that the indicator illuminates, the pattern will change to pattern 1. In this case, the pattern display will change to "1- ".

· If the start backtack or end backtack keys are pressed so that the indictors mentioned previously are switched off, the display will switch to pattern display.

Automatic thread trimming setting
AUTO setting
Switching to number of step stitches display
Stitch number setting

· The thread trimming disable/F1 key can be used to set the automatic thread trimming function. (This can be set for patterns 2 to 9.)
   If you press the key so that the indicator illuminates, automatic thread trimming will be enabled.
   After the number of stitches which have been set (start and end backtacking, fixed sewing) have been sewn, thread trimming will be carried out automatically. Sewing will be carried out automatically for the number of stitches which have been set (start and end backtacking, fixed sewing, thread trimming) simply by depressing the treadle once.

   * For pattern 1, the AUTO function can be set when the indicator in the continuous backtack key is illuminated.
   * For pattern 4, setting is possible when memory switch F405 is set to "ON".
   * For patterns 5 to 9, the setting can be made for each step.

· The AUTO function can be set using the slow start/F2 key. (For pattern 1, the AUTO function can be set when the indicator in the continuous backtack key is illuminated.)
   If you press the key so that the indicator illuminates, the AUTO function will be enabled.
   Sewing will be carried out automatically for the number of stitches which have been set (start and end backtacking, fixed sewing, thread trimming) simply by depressing the treadle once.

   * This setting cannot be made for pattern 1.
   * For pattern 4, setting is possible when memory switch F405 is set to "ON".
   * For patterns 5 to 9, the setting can be made for each step.

NOTE:
   The thread trimming disable and slow start functions cannot be set in this display mode.
   Press the FUNC key to switch to pattern display before making these settings.

2-2-7. Number of step stitches display mode (F470="ON")

・ You can switch to this display when the number of stitches for each step have been set.
・ If the start backtack, end backtack or continuous backtack keys are pressed so that the corresponding indicator illuminates, you can switch to the number of backtacking stitch display.

   * For a pattern other than pattern 1, when the continuous backtack key is pressed so that the indicator illuminates, the pattern will change to pattern 1. In this case, the pattern display will change to "1- ".

・ If the start backtack or end backtack keys are pressed so that the indictors mentioned previously are switched off, the display will switch to pattern display.

[Patterns 2 to 4]
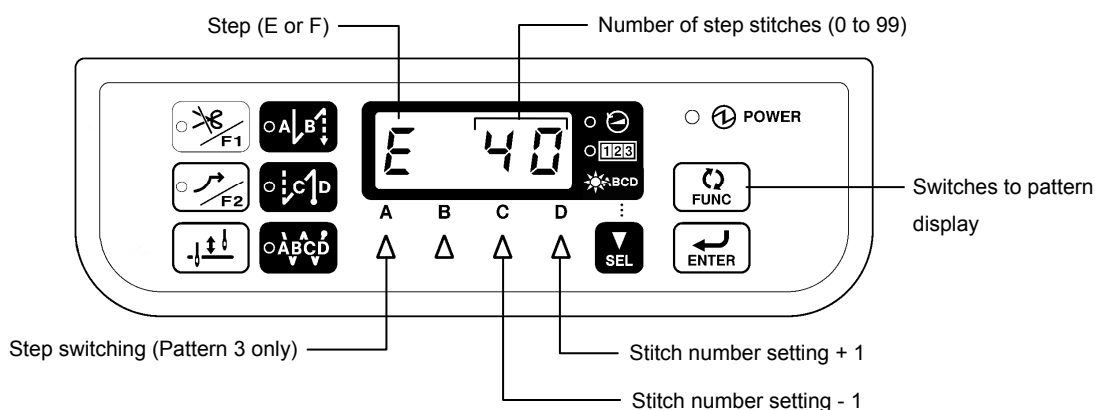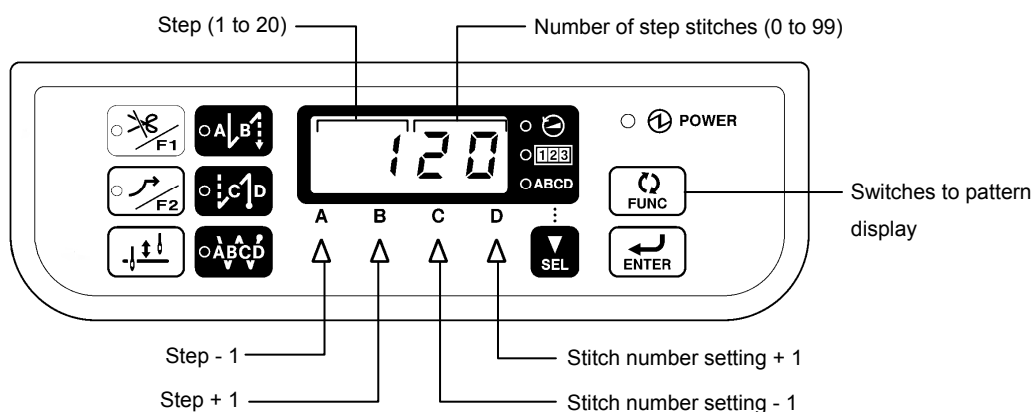
Step (E or F) — Number of step stitches (0 to 99)
Switches to pattern display
Step switching (Pattern 3 only) — Stitch number setting + 1
Stitch number setting - 1

[Patterns 5 to 9]

Step (1 to 20) — Number of step stitches (0 to 99)
Switches to pattern display
Step - 1 — Stitch number setting + 1
Step + 1 — Stitch number setting - 1

・ The thread trimming disable/F1 key can be used to set the automatic thread trimming function. (Setting is possible for patterns 2 to 9.)
   If you press the key so that the indicator illuminates, automatic thread trimming will be enabled.
   After the number of stitches which have been set (start and end backtacking, fixed sewing) have been sewn, thread trimming will be carried out automatically. Sewing will be carried out automatically for the number of stitches which have been set (start and end backtacking, fixed sewing, thread trimming) simply by depressing the treadle once.

   * For pattern 4, setting is possible when memory switch F405 is set to "ON".
   * For patterns 5 to 9, the setting can be made for each step.

・ The AUTO function can be set using the slow start/F2 key. (For pattern 1, the AUTO function can be set when the indicator in the continuous backtack key is illuminated.)
   If you press the key so that the indicator illuminates, the AUTO function will be enabled.
   Sewing will be carried out automatically for the number of stitches which have been set (start and end backtacking, fixed sewing, thread trimming) simply by depressing the treadle once.

   * For pattern 4, setting is possible when memory switch F405 is set to "ON".
   * For patterns 5 to 9, the setting can be made for each step.

NOTE:
   The thread trimming disable and slow start functions cannot be set in this display mode.
   Press the FUNC key to switch to pattern display before making these settings.

2-2-8. Program sewing (patterns 5 to 9) setting procedure

[Example: If creating a program with the following nine steps in pattern 5]
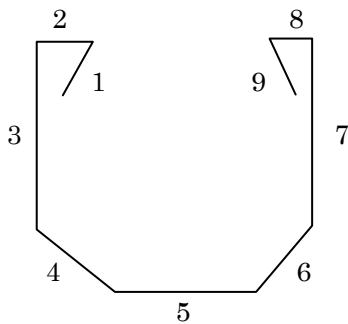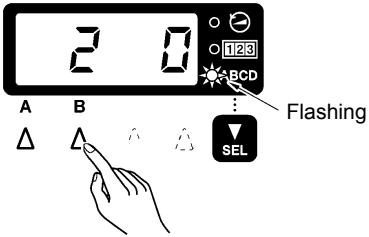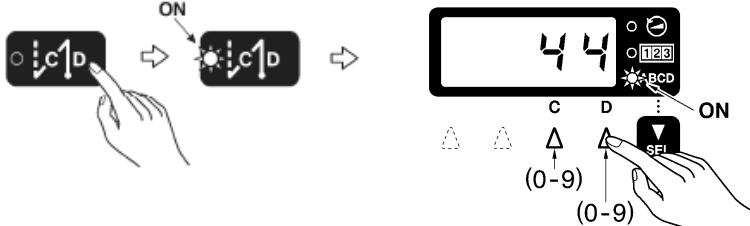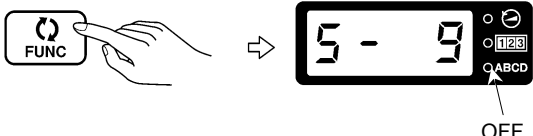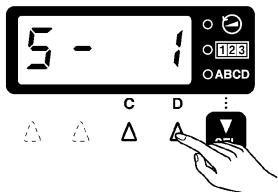
STEP 1	Start backtack stitches A = 4, B = 4, No. of step stitches = 5, AUTO
STEP 2	No. of step stitches = 10, AUTO
STEP 3	No. of step stitches = 40, AUTO
STEP 4	No. of step stitches = 20, AUTO
STEP 5	No. of step stitches = 30, AUTO
STEP 6	No. of step stitches = 20, AUTO
STEP 7	No. of step stitches = 40, AUTO
STEP 8	No. of step stitches = 10, AUTO
STEP 9	No. of step stitches = 5, End backtack stitches C = 4, D = 4, AUTO, Automatic thread trimming

1	Select pattern 5	Press the A △ key to select pattern 5.
2	Set the start backtack stitches in step 1	• Press the A △ key to set the number of stitches A to 4. • Press the B △ key to set the number of stitches B to 4.
3	Switch to number of step stitches display (Step 1)	• Press the FUNC key to switch to the number of step stitches display. Flashing
4	Set step 1	• Press the D △ key to set the number of stitches D to 5. • Press the ⟨F2⟩ key to set the AUTO function to enabled. (Indicator illuminates)

(Continued on next page)

5	Change to the next step Flashing • Press the B △ key to switch to the next number of step stitches display. **NOTE:** To return to the previous step, press the A △ key.
6	Repeat 4 and 5 to make the settings for steps 2 to 9. (At step 9, press the ✂/F1 key to set the automatic thread trimming function to ON.)
7	Set the end backtack stitches (Step 9) ON ON (0-9) (0-9) • Press the C △ key to set the number of stitches C to 4. • Press the D △ key to set the number of stitches D to 4.
8	Switch to pattern display FUNC 5 - 9 OFF * Press the FUNC key to switch to the pattern display.
9	Switch to the sewing start step (Step 1) 5 - 1 C D • Press the D △ key to switch to the Step 1 display. **NOTE:** To return to the previous step, press the C △ key.
10	Sewing will be carried out automatically to the end of each step and then stop each time the treadle is depressed once. Once step 9 has finished being sewn, it will return to step 1.

[Changing steps]

・ The step can be changed after a step has been sewn and after thread trimming.

・ If the step has been changed, the next sewing start position will be the beginning of the step which is being displayed.

[Restricting settings]

・ If the number of step stitches is "0", the settings will not be stored, even if the settings for start backtacking, end backtacking, AUTO and automatic thread trimming are enabled.
(The settings will be cleared when changing step and changing pattern operations are carried out.)

・ If start backtack settings have been enabled for steps 2 onward, set automatic thread trimming to be enabled for the step immediately preceding. (If automatic thread trimming is not enabled, the start backtack setting will not be stored even if you set it to be enabled.)

・ If automatic thread trimming is not enabled, the end backtack setting will not be stored even if you set it to be enabled.

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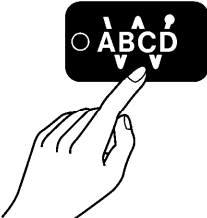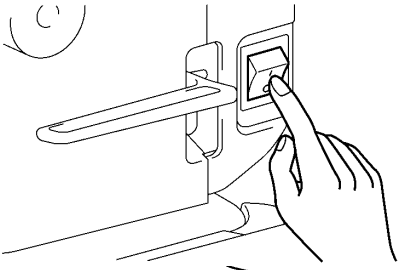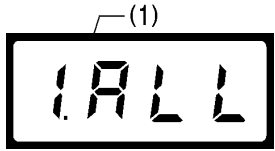
2-3. Data initialization function

NOTE:

If the slide switch (SW1) on the main P.C. board has been moved to a position other than the middle position, initialization cannot be carried out.

Move the slide switch (SW1) to the middle position (factory default position) and then carry out the following operations.
(Refer to "3. SLIDE SWITCH (SW1) SETTING METHOD" for details on the slide switch.)

1 | Change to initialization mode
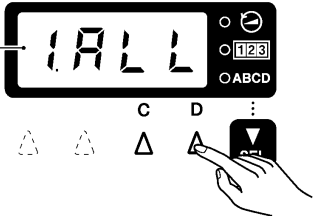
"1.ALL" will appear in the display (1).

(While pressing the continuous backtack key, press the power ON switch.)

	Initialization item display	Initialization item
1	[1.ALL]	Clear all (items 2, 3 and 4 will be initialized.)
2	[2.MEM]	Memory switches
3	[3.SPD]	Sewing speed settings (Maximum sewing speed, start backtack sewing speed) Settings for memory switches F180 to F189
4	[4.SEW]	Sewing programs Backtacking function, stitch number settings, counter initialization settings and counter values, basic function settings

2 | Select the initialization item

Initialization item

- When the D △ key is pressed, the next initialization item is displayed.
- When the C △ key is pressed, the display returns to the previous initialization item.
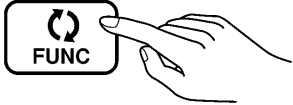
3 | Carry out initialization

NOTE:

After "END" is displayed, press the C △ or D △ key to return the display to the initialization item.

(Press for 2 seconds or more.)
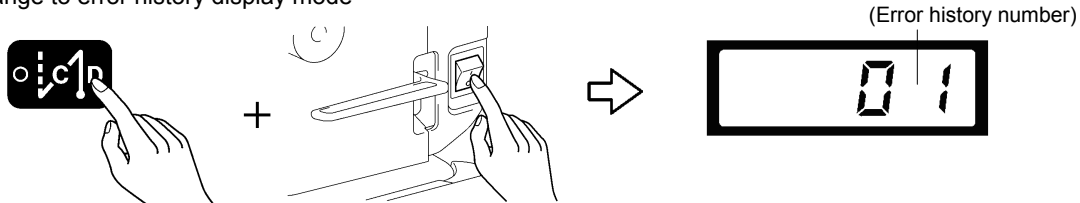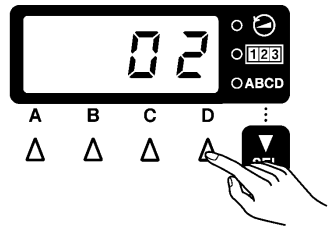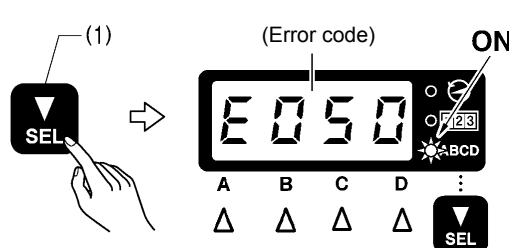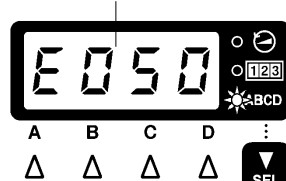
4

Function setting mode will be exited and normal operation will be possible.
(If you would like to cancel initialization, set the power switch to OFF.)

2-4. Error history checking method

The past error history can be checked by the following procedure.
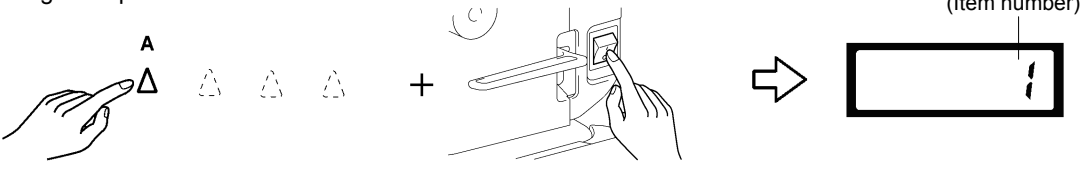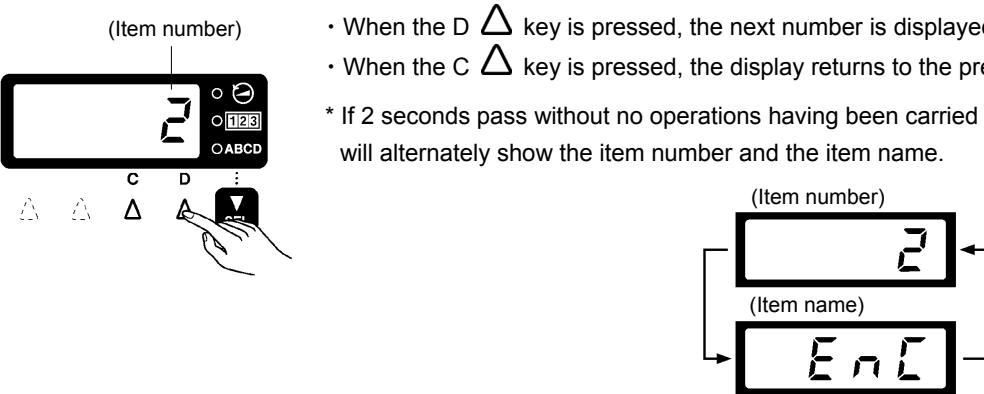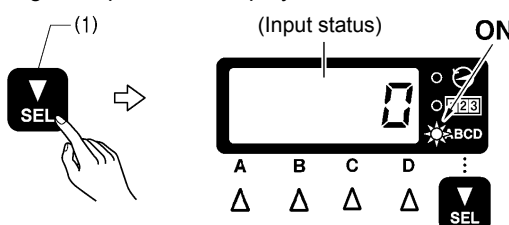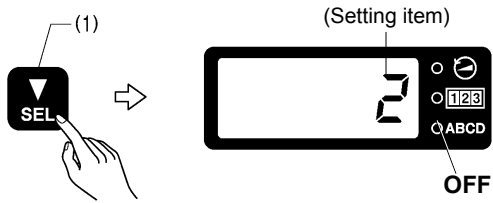
1	Change to error history display mode (Error history number) (While pressing the end backtack key, press the power ON switch.)
2	Change the error history number Up to 99 histories (01-99) are stored in order starting from the newest. (No. 01 represents the newest error.) ・When the D △ key is pressed, the next number is displayed. ・When the C △ key is pressed, the previous number is displayed.
3	Check the history details (1)　(Error code)　**ON** If there is no error code, [E---] will be displayed. * While the A △ key (1) or the B △ key (2) is being pressed, the display will change to displaying the time the error occurred. ・While the B △ key is being pressed, the last 4 digits are displayed. [Units: 1 hour] ・While the A △ key is being pressed, the first 3 digits ([T***]) are displayed. [Units: 10,000 hours] However, if the total is less than 10,000 hours, the first 3 digits will not be displayed. ・When the key is released, the display returns to the original error code. * If the SEL key (1) is pressed once more, the ABCD indicator will switch off and the display will return to the history number. **NOTE:** The following error cods do not remain in the history, and so they will not be displayed. [E065. E066. E095. E440. E441. E705]
4	**[If checking the details for another error history number]** (Error history number) ・When the D △ key is pressed, the next error code is displayed. ・When the C △ key is pressed, the display returns to the previous error code.
5	**[To exit error history display mode]** Set the power switch to OFF.

2-5. Input checking method

This is used at the following times.

- ・ When there is a problem with an operation panel key, P.C. board or sensor
- ・ When you would like to check for broken cords
- ・ When you would like to adjust a sensor position

This lets you check if the CPU is reading signals from the keys and the sensors correctly.

1	Change to input check mode (Item number) (While pressing the △ key, press the power ON switch.)
2	Select the item number (Item number) ・ When the D △ key is pressed, the next number is displayed. ・ When the C △ key is pressed, the display returns to the previous number. * If 2 seconds pass without no operations having been carried out, the display will alternately show the item number and the item name. (Item number) (Item name) EnC
3	Change to input status display (1) (Input status) **ON** * When the SEL key (1) is pressed, the ABCD indicator will illuminate and the input status will be displayed. A B C D
4	Check the responses from the keys and switches, etc. while referring to the <Input check list> (next page).
5	**[To check another item number]** 1) Press the SEL key (1). (1) (Setting item) * When the SEL key (1) is pressed, the ABCD indicator will switch off and the display will return to the item number/item name display. **OFF** 2) Repeat steps 2 to 4 above.
6	Set the power switch to OFF and then turn the power back on again.

<Input check list>

The display on the operation panel shows the item number/item name or the input status.

Item no.	Item name	Input status	Check item and checking method
[1]	[PDL]	[0.000] - [5.000] [V]	Treadle pedal voltage Depress the treadle forward/backward.
[2]	[ENC]	[0] - [359] [degrees]	Motor position signal (needle up side reference signal = 0 degrees) Turn the pulley by hand. * The input will be unstable until the reference signal from the resolver is detected.
[3]	[NLUP]	[ON] - [OFF]	Needle up signal Turn the pulley by hand * The input will be unstable until the reference signal from the resolver is detected.
[4]	[NLDN]	[ON] - [OFF]	Needle down signal Turn the pulley by hand * The input will be unstable until the reference signal from the resolver is detected.
[5]	[UPOG]	[ON]/[OFF]	Needle up sensor signal Turn the pulley by hand
[7]	[VOLT]	[***] [%]	Power supply voltage The voltage is displayed as a percentage of the rated voltage.
[8]	[HEAD]	[ON] - [OFF]	Safety switch input Becomes "OFF" when the machine head is tilted back.
[9]	[BT]	[ON] - [OFF]	Actuator switch input Becomes "ON" when the switch is on, and "OFF" when the switch is off.
[10]	[PRE]	[ON] - [OFF]	Knee switch or standing pedal presser foot lifter switch input Becomes "ON" when the switch is on, and "OFF" when the switch is off.
[11]	[OPDL]	[0.000] - [5.000] [V]	Standing pedal speed input Depress the variable speed pedal of the standing pedal.
[12]	[HIGH]	[ON] - [OFF]	Standing pedal high speed switch input Becomes "ON" when the switch is on, and "OFF" when the switch is off.
[13]	[TRIM]	[ON] - [OFF]	Standing pedal thread trimming switch input Becomes "ON" when the switch is on, and "OFF" when the switch is off.
[14]	[INCH]	[ON] - [OFF]	Standing pedal low speed switch input Becomes "ON" when the switch is on, and "OFF" when the switch is off.
[15]	[PNL]	[****]/[OFF]	Operation panel key input Press a key on the operation panel other than the SEL key. The name of the key pressed will be displayed as the right four characters. If no key is pressed, " OFF" will be displayed. (For details, refer to <Operation panel key input> on the next page.)
[16]	[OH]	[0.000] - [5.000] [V]	Motor overheating protection sensor input Shows the voltage at the thermistor on the resolver P.C. board.
[17]	[IN1]	[ON] - [OFF]	Option input 1 Becomes "ON" when the input signal is low, and "OFF" when it is high.
[18]	[IN2]	[ON] - [OFF]	Option input 2 Becomes "ON" when the input signal is low, and "OFF" when it is high.
[19]	[IN3]	[ON] - [OFF]	Option input 3 Becomes "ON" when the input signal is low, and "OFF" when it is high.
[20]	[DIP1]	[ON] - [OFF]	Slide switch on main P.C. board (*1): Input at back position "ON" at back position, "OFF" at any other position
[21]	[DIP2]	[ON] - [OFF]	Slide switch on main P.C. board (*1): Input at front position "ON" at front position, "OFF" at any other position
[22]	[DIP4]	[ON] - [OFF]	Slide switch on main P.C. board (*1): Input at middle position "ON" at middle position, "OFF" at any other position

(*1) Refer to "3. SLIDE SWITCH (SW1) SETTING METHOD" for details on the slide switch.

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<Operation panel key input>

Key name	Display		Key name	Display
⊘ F1	[F1]	A △	[A-UP]
⟋ F2	[F2]	B △	[B-DN]
HUD symbol	[HUD]	C △	[C-UP]
A B SBT	[SBT]	D △	[D-DN]
C D EBT	[EBT]	SEL	
ABCD RBT	[RBT]	FUNC	[FUNC]
		ENTER	[ENT]
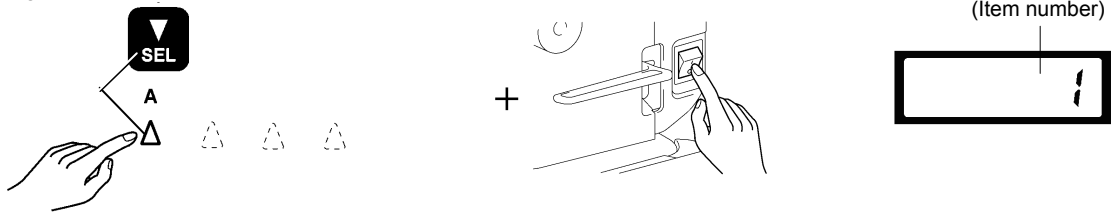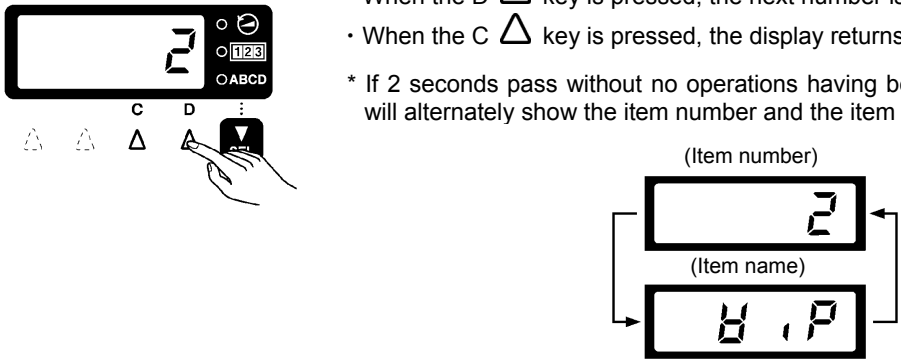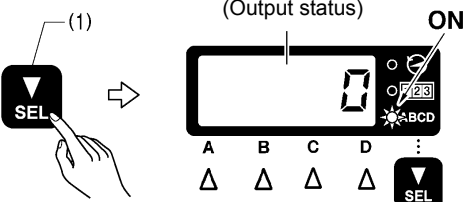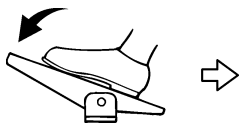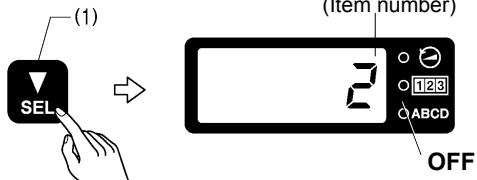
2-6. Output checking method

This is used at the following times.

· When there is a problem with the operation panel P.C. board

· When there is a problem with the drive mechanism

· When you would like to check for broken cords

This lets you check if the signals output from the CPU are working correctly.

1	Change to output check mode (Item number) I (While pressing the SEL key and A △ keys, press the power ON switch.)
2	Select the item number 2 · When the D △ key is pressed, the next number is displayed. · When the C △ key is pressed, the display returns to the previous number. * If 2 seconds pass without no operations having been carried out, the display will alternately show the item number and the item name. (Item number) 2 (Item name) $H.P$
3	Change to output status display (1) (Output status) **ON** 0 A B C D * When the SEL key (1) is pressed, the ABCD indicator will illuminate and the output status will be displayed.
4	The operation corresponding to the item number being checked will be carried out. 2159M
5	**[To check another item number]** 1) Return the treadle to the neutral position. 2) Press the SEL key (1). (1) (Item number) 2 **OFF** * When the SEL key (1) is pressed, the ABCD indicator will switch off and the display will return to the item number/item name display. 3) repeat the operations in steps 2 to 4 above.
6	Press the power OFF switch to turn off the power, and then turn the power back on.

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<Output check list>

The display on the operation panel shows the item number/item name or the output status.

Item no.	Item name	Output status	Check item and checking method
[1]	[TRM]	Off	**Thread trimming solenoid** When the treadle is depressed, the solenoid operates for 0.5 second. When the treadle is returned to the neutral position, the signal turns off.
[2]	[WIP]	Off	**Thread wiper solenoid** When the treadle is depressed, the solenoid operates. When the treadle is returned to the neutral position, the signal turns off.
[3]	[REV]	Off	**Quick reverse solenoid** When the treadle is depressed, the solenoid operates for 0.5 second. When the treadle is returned to the neutral position, the signal turns off.
[4]	[PRE]	Off	**Work clamp lifter solenoid** When the treadle is depressed, the solenoid operates for 0.5 second. When the treadle is returned to the neutral position, the signal turns off.
[5]	[OPT]	Off	**Work clamp lifter solenoid** When the treadle is depressed, the solenoid signal turns on for 0.5 second. When the treadle is returned to the neutral position, the signal turns off.
[6]	[INCH]		**Inching speed operation** When the treadle is depressed, the upper shaft rotates at the inching speed. When the treadle is returned to the neutral position, the upper shaft stops.
[7]	[TRIM]		**Thread trimming speed operation** When the treadle is depressed, the upper shaft rotates at the thread trimming speed. When the treadle is returned to the neutral position, the upper shaft stops.
[8]	[SLOW]		**Slow speed operation** When the treadle is depressed, the upper shaft rotates at slow speed. When the treadle is returned to the neutral position, the upper shaft stops.
[9]	[SBT]	[****] [sti/min] Shows the actual sewing machine speed	**Start backtack sewing speed operation** When the treadle is depressed, the upper shaft rotates at the start backtack sewing speed. When the treadle is returned to the neutral position, the upper shaft stops.
[10]	[EBT]		**End backtack sewing speed operation** When the treadle is depressed, the upper shaft rotates at the end backtack sewing speed. When the treadle is returned to the neutral position, the upper shaft stops.
[11]	[HIGH]		**High speed operation** When the treadle is depressed, the upper shaft rotates at a speed corresponding to the treadle depression amount (inching speed to maximum speed). When the treadle is returned to the neutral position, the upper shaft stops.
[12]	[AUTO]		**Automatic speed operation** When the treadle is depressed, the upper shaft rotates at the automatic speed. When the treadle is returned to the neutral position, the upper shaft stops.
[13]	[POS]		**Stop improvement speed operation** When the treadle is depressed, the upper shaft rotates at the stop improvement speed. When the treadle is returned to the neutral position, the upper shaft stops.
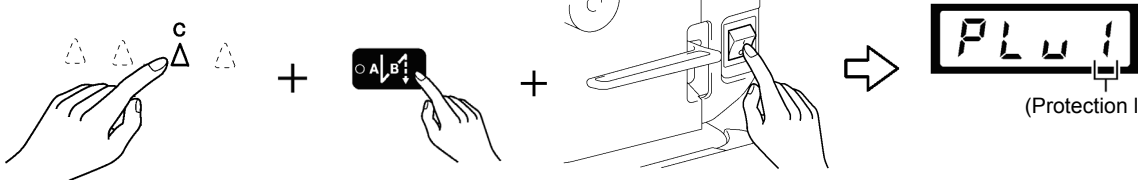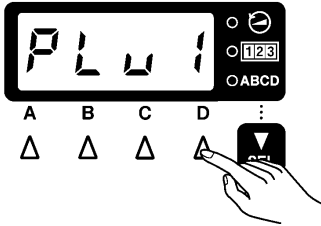
[14]	[BUZZ]	Off	Buzzer When the treadle is depressed, the buzzer sounds for 1 second.
[15]	[PNL]	[****]	Panel display When the treadle is depressed, checking of the operation panel indicators and display will start. When the treadle is returned to the neutral position, all indicators will illuminate, and then the display will return to how it was before the treadle was depressed.
[16]	[MOVE]	Off	Operation synchronization signal When the treadle is depressed, the operation synchronization signal turns on. When the treadle is returned to the neutral position, the signal turns off.
[17]	[OUT1]	Off	Option output signal 1 When the treadle is depressed, the option output signal turns on. When the treadle is returned to the neutral position, the signal turns off.
[18]	[OUT2]	Off	Option output signal 2 When the treadle is depressed, the option output signal turns on. When the treadle is returned to the neutral position, the signal turns off.

2-7. Protection setting method
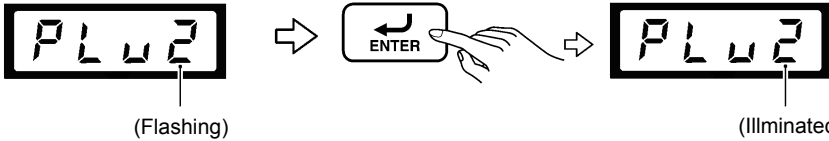
NOTE: If the slide switch (SW1) on the main P.C. board has been moved to a position other than the middle position, setting cannot be carried out.

Move the slide switch (SW1) to the middle position (factory default position) and then carry out the following operations.

(Refer to "3. SLIDE SWITCH (SW1) SETTING METHOD" for details on the slide switch.)

1	Change to protect setting mode. (While pressing the C △ key, press the power ON switch.) · "PLV*" and the protection level will appear in the display. (* is the protection level. At the time of shipment from the factory, the protection level is set to "1".) (Protection level)
2	Set the protection level (1 to 3). Use the D △ key to set the protection level (1 to 3). **NOTE:** The range for disabling operation varies depending on the setting position for SW1. For details, refer to <Protection setting list> (P.36). * If the protection level is different from the original value, the protection level will flash in the display.
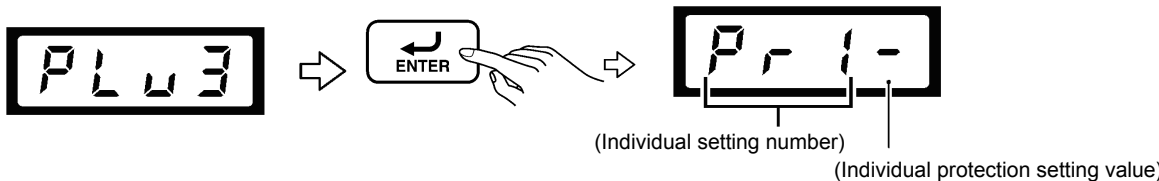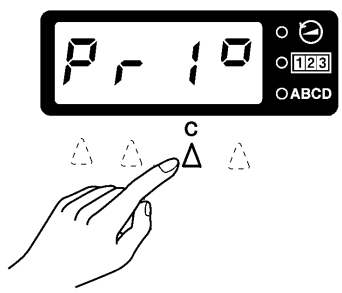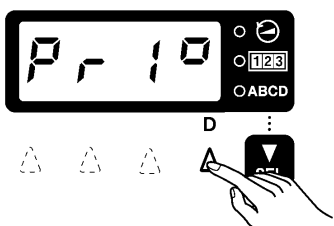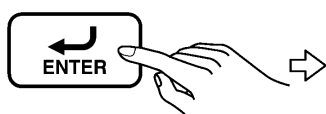
[If set to level 1 – 2]

3	Confirm the protection level (example: set to level 2) PLv2 (Flashing) ⇨ ENTER ⇨ PLv2 (Illuminated)
4	FUNC ⇨ Protect setting mode will be exited and normal operation will be possible.

[If set to level 3]

To make individual settings, select level 3.

3	Confirm the protection level `PLu3` ⇨ ENTER ⇨ `Pr1-` (Individual setting number) (Individual protection setting value) [-]:OFF、[▢]:ON **NOTE:** When the SEL key is pressed, the display will return to the protection level setting display
4	Select an individual setting number (1-6) `Pr1▢` C Press the C △ key to select an individual setting number (1-6). **NOTE:** The range for disabling operation varies depending on the setting for the DIP switch (SW1). For details, refer to <Protection setting list> (next page). Details table below
5	Make the individual protection (ON/OFF) setting `Pr1▢` D Use the D △ key to set to ON/OFF. * If the individual protection setting value is different from the original value, the protection setting value will flash.
6	Confirm the protection setting value ENTER ⇨ The protection setting value will return to illuminating steadily.
7	FUNC ⇨ Protect setting mode will be exited and normal operation will be possible.

Individual setting number	Details of main operation disabled
1	Maximum sewing speed and start backtack sewing speed settings
2	Memory switch settings
3	None (setting disabled)
4	Mainly keys with indicators
5	Stitch number settings (ABCD)
6	Initialization

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<Protection setting list>

○ : Enabled

× : Disabled

Setting function \ Level	1	2	3 (Individual settings) All OFF	1 =ON	2 =ON	3 =ON	4 =ON	5 =ON	6 =ON
Sewing speed (Set using SEL key)	○ (×)	× (×)	○ (×)	× (×)	(×)	(×)	(×)	(×)	(×)
Memory switch setting	○ (×)	× (×)	○ (×)	(×)	× (×)	(×)	(×)	(×)	(×)
Basic function setting	○ (○)	× (×)	○ (○)	( )	× (×)	( )	( )	( )	( )
[Half stitch] key	○ (○)	○ (○)	○ (○)	( )	( )	( )	( )	( )	( )
[Thread trimming disabled/F1] setting	○ (○)	× (×)	○ (○)	( )	( )	( )	× (×)	( )	( )
[Slow start/F2] setting	○ (○)	× (×)	○ (○)	( )	( )	( )	× (×)	( )	( )
[Start backtack] setting	○ (○)	× (×)	○ (○)	( )	( )	( )	× (×)	( )	( )
[End backtack] setting	○ (○)	× (×)	○ (○)	( )	( )	( )	× (×)	( )	( )
[Continuous backtack] setting	○ (○)	× (×)	○ (○)	( )	( )	( )	× (×)	( )	( )
A – D stitch number setting	○ (○)	× (×)	○ (○)	( )	( )	( )	( )	× (×)	( )
Program sewing stitch number setting * Enabled when F470 is set to "ON"	○ (○)	× (×)	○ (○)	( )	( )	( )	( )	× (×)	( )
Program sewing (Changing patterns and steps) * Enabled when F470 is set to "ON"	○ (○)	× (×)	○ (○)	( )	( )	( )	( )	× (×)	( )
Counter initial value setting (Changing thread trimming counter value)	○ (○)	× (×)	○ (○)	( )	( )	( )	( )	× (×)	( )
Initialization	○ (×)	○ (×)	○ (×)	(×)	(×)	(×)	(×)	(×)	× (×)
Protection setting	○ (×)	○ (×)	○ (×)	(×)	(×)	(×)	(×)	(×)	(×)

* Values in brackets are for when the slide switch (SW1) on the main P.C. board is at the back position.

  (Refer to "3. SLIDE SWITCH (SW1) SETTING METHOD" for details on the slide switch.)

* Individual settings are disabled if even one of 1 to 6 is ×. If all columns are blank, the setting is enabled.

2-8. Software version checking method

1	Change to version display mode (Version display) (While pressing the start backtack key, press the power ON switch.)

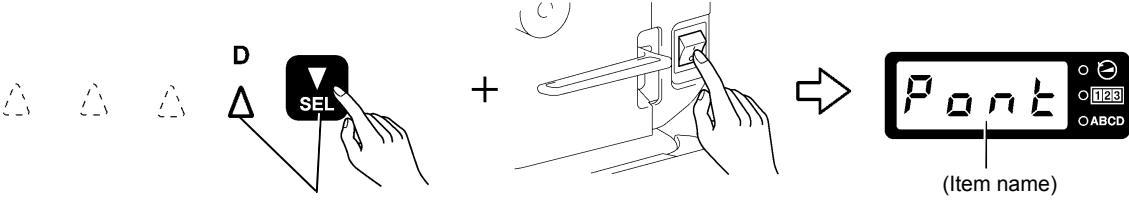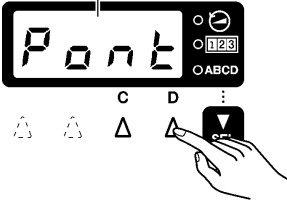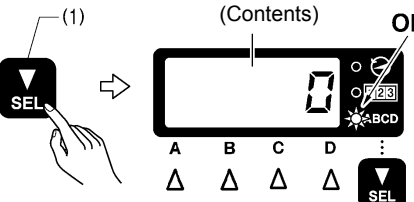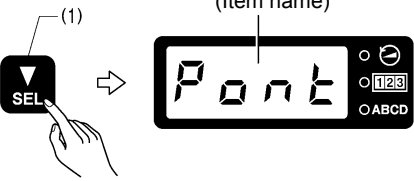|	
2	Check the versions of each software The indicator displays switch as shown in the table below each time the SEL key is pressed, so that you can check the versions for each software. * The type of software is displayed while the D △ key is pressed.
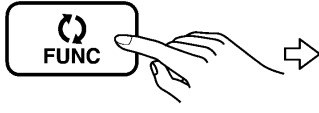
	Indicator	Software	Version display	Software type display (when D △ key is ON)
1	○ ⊖	Main CPU	[1.0.00]	[1. MN]
2	○ 1 2 3	Panel CPU	[1.000]	[2. PL]
3	○ ABCD	Main IPL	[1.000]	[3. IPL]

3	FUNC ⇨ Version setting mode will be exited and normal operation will be possible.

2-9. Maintenance information viewing method

You can check the information stored on the main P.C. board inside the control box.

1 | Change to maintenance display mode

(Item name)

(While pressing the SEL key and D △ keys, press the power ON switch.)

2 | Select the maintenance item

(Item name)

• When the D △ key is pressed, the next item name is displayed.
• When the C △ key is pressed, the display returns to the previous item name.

No.	Item name	Item name display
1	Cumulative power on time	[PONT]
2	Cumulative operating time	[MONT]
3	Maximum speed history	[HHST]

3 | Change to the setting value display

If the SEL key (1) is pressed, the ABCD indicator will switch off and the contents will be displayed.

No.	Item name	Contents (display)
1	Cumulative power on time (7 characters)	[****](Units: hours)*1
2	Cumulative operating time (7 characters)	[****](Units: hours)*1
3	Maximum speed history	[****]

*1: Normally the last four digits of the counter are displayed, but the first three digits are displayed while the D △ key is being pressed.

4 | To check another item
1) Press the SEL key (1).

(Item name)

If the SEL key (1) is pressed, the ABCD indicator will switch off and the display will return to the item name.

2) Repeat steps 2 to 3 above.

5 |

Exit maintenance display mode so that normal operation is possible

2-10. Sewing machine reference position adjustment method

1 Change to sewing machine reference position adjustment mode

(While pressing the B △ key (1), press the power ON switch.)　　"MORG" will appear in the display (2).

2 Select the adjustment item

(Adjustment item name)

	Adjustment item	Display	
		Adjustment item name	Adjustment value
1	Sewing machine reference position (Adjustment when motor is replaced)	[MORG]	-20° - 20°
2	Needle up stop position (during individual adjustment)	[UPOS]	-5°- 10°
3	Needle down stop position (during individual adjustment)	[DPOS]	-5°- 10°

• "1 Sewing machine reference position" is adjusted at the time of shipment from the factory.

• If you would like to change only the stop positions, make adjustments to "2 Needle up stop position" or "3 Needle down stop position".

NOTE:
When an adjustment value is changed, the needle up and needle down signal positions will change. Other settings such as solenoid operation timing and needle up/needle down stop positions will change in line with this.

3 Change to the adjustment value display

(Adjustment value) **ON**

* If you press the SEL key once more, the display will return to the adjustment item display.

4 Change the adjustment value

(Adjustment value)

• When the D △ key is pressed, the setting value increases by 1.

• When the C △ key is pressed, the setting value decreases by 1.

* If the adjustment value is different from the original value, the adjustment value will flash.

* A setting value of "10" corresponds to an angle of rotation of approximately 10° for the upper shaft.

5 Confirm the adjustment value

(Adjustment item name)

OFF

The setting value will be stored and the display will return to the setting item.

NOTE:
Any changed settings will take effect after sewing machine reference position adjustment mode has been exited.

6

FUNC

Sewing machine reference position adjustment mode will be exited and normal operation will be possible.

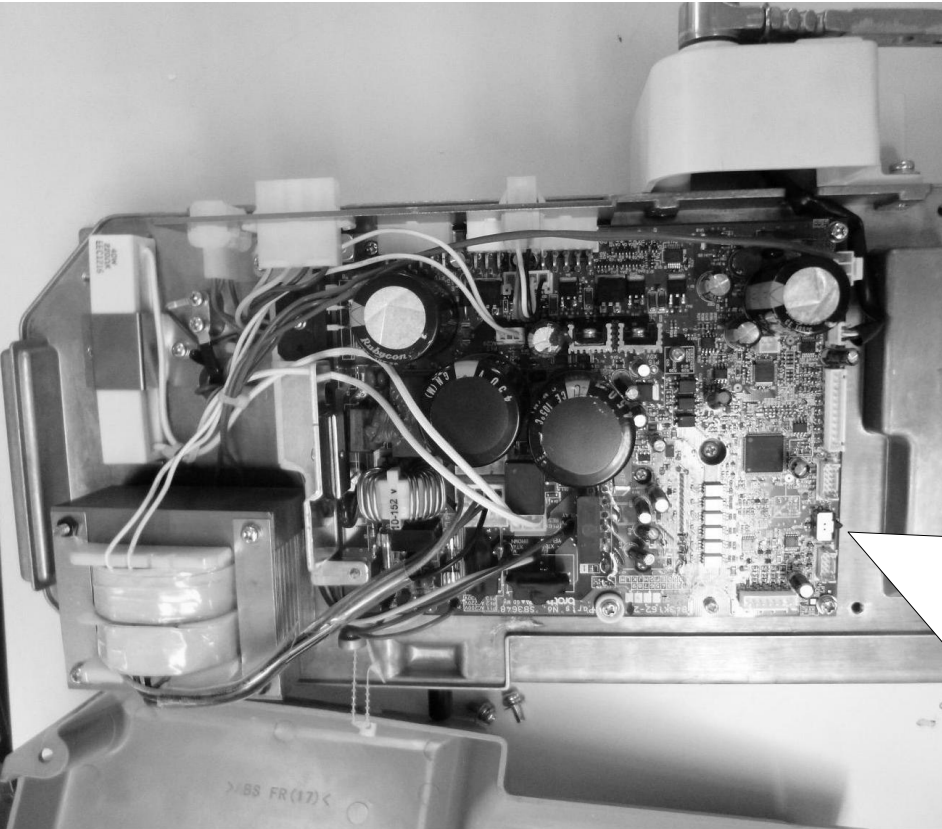# 3. SLIDE SWITCH (SW1) SETTING METHOD

⚠ 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.

SW1 position	Back	Key protect settings	Disables operation panel key operations. (*1)
	Middle	At the time of factory shipment	Initialization, speed settings, memory switch settings, protection settings and treadle position adjustments can be carried out.
	Front	For maintenance	[Do not set to this position for normal use.]

(*1) For details, refer to <Protection setting list> (P.36).

Back
↑

At treadle ⇨

SW1
Back ↑
Middle ←
Front ↓
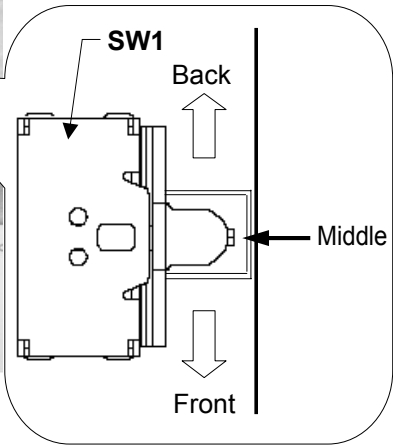
⇩
Front (operator side)

4. SETTING METHOD FOR STANDARD DEPRESSION STROKES
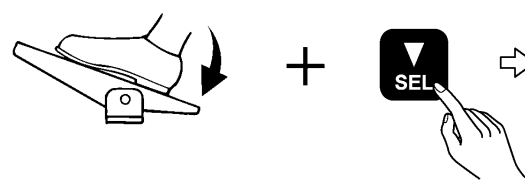
⚠ DANGER
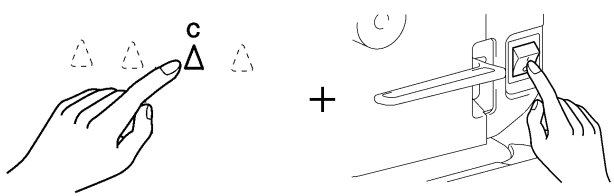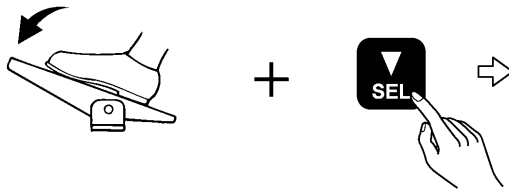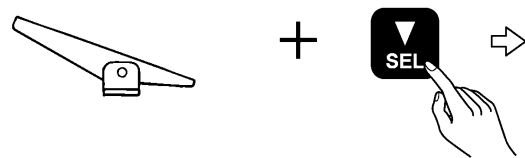
⚡ Wait at least 5 minutes after turning off the power switch and disconnecting the power cord from the wall outlet before opening the face plate of the control box. Touching areas where high voltages are present can result in severe injury.
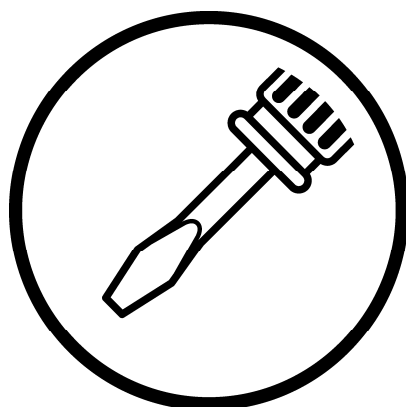
Use the following procedure to set the operating positions for the depression stroke.

NOTE: If the slide switch (SW1) on the main P.C. board has been moved to a position other than the middle position, initialization cannot be carried out. Move the slide switch (SW1) to the middle position (factory default position) and then carry out the following operations.

(Refer to "3. SLIDE SWITCH (SW1) SETTING METHOD" for details on the slide switch.)

1	Change to treadle position adjustment mode "FF x.x" will appear in the display (1). ("x.x" indicates the treadle voltage.) (While pressing the C △ key, press the power ON switch.)
2	Store the maximum forward depression amount "NN x.x" will appear in the display (1). (With the treadle depressed to the maximum forward position, press the SEL key.)
3	Store the neutral position "RR x.x" will appear in the display (1). (With your foot released from the treadle, press the SEL key.)
4	Store the maximum backward depression amount "PD --" will appear in the display (1). (With the treadle depressed to the maximum backward position, press the SEL key.)

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5	Finish the settings
	The buzzer will sound and " END" will appear in the display (1).
	NOTE: ・ If you do not press the ENTER key, the settings will not be stored. ・ If the treadle is not operated correctly, "E091" may be displayed. If this happens, after "FF x.x" appears in the display (1), repeat the operation from step 2.
6	**[To end treadle position adjustment mode]** Set the power switch to OFF.

brother

SERVICE MANUAL