DB2-DD7100

brother.

Single needle direct drive straight lock stitcher with thread trimmer

PRODUCT MANUAL

1 Outline

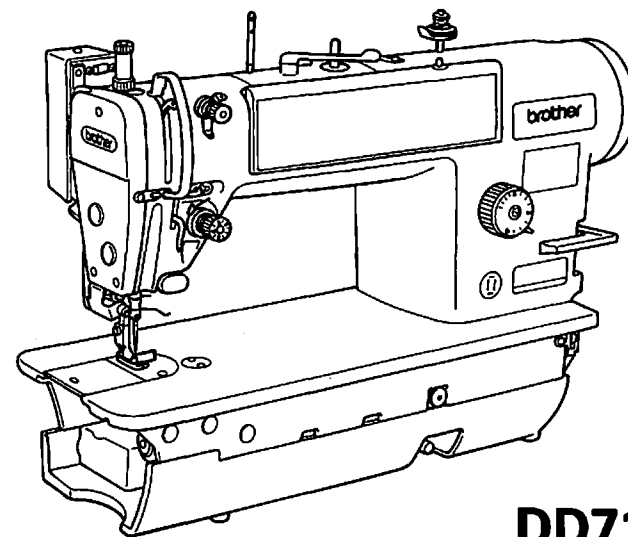## ● What is the DD7100?

DD7100 is the newest and most up-to-date single needle straight lock stitcher in our range, with a motor which is integrated into the machine head. With the adoption of a new lubrication system and further improvements to conventional functions, this machine is designed to give better cost performance by parts sharing and thorough review of the design.

· The motor, which used to be equipped under the table, is built into the machine head, and is directly coupled to the upper shaft.

· A dry-head tank lubrication method is adopted.

· Measures to reduce machine operating noise and increase safety have been taken to produce a more comfortable working environment.

· Specification -1 is provided to flexibly cope with the sewing of difficult-to-sew materials in addition to general thin materials.

Single needle straight lock stitcher ➡ Single needle straight lock stitcher with thread trimmer ➡ EXEDRA series sewing machine with brain ➡

DD7100
Single needle direct drive straight lock stitcher with thread trimmer
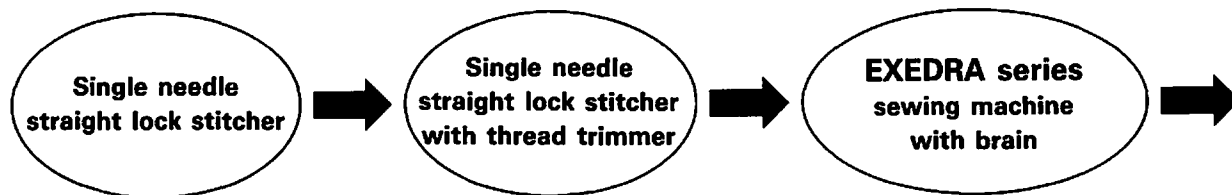
2 Specifications

● Machine head specifications

DB2-DD7100-☐☐☐-☐

Device			Lower thread detector		Application		Operation panel
	Thread wiper	Automatic presser lifter	0	None	1	*Difficult-to-sew and thin materials	B-20
3	-	-	1	Installed			B-40
4	O	-			3	Medium heavy materials	B-100
9	O	O			5	Heavy materials	

* Difficult-to-sew material specifications refers to the ability to sew a range of materials from general thin materials to materials made from new synthetic fibers, without puckering or unevenness in the seam occurring.

Specification	DD7100-□□1	DD7100-□□3	DD7100-□□5
Application	For thin and difficult-to-sew materials	For medium heavy materials	For heavy materials
Max. sewing speed	4,000 spm	5,000 spm	3,500 spm
Max. stitch length	4.2 mm		5 mm
Needle bar stroke	29 mm	31 mm	35 mm
Thread take-up stroke	57.4 mm		61 mm
Type of feed dog	4 rows		4 rows (rough)
Feed dog height	0.8 mm		1.2 mm
Presser foot height — Presser lifter lever	6 mm		
Presser foot height — Knee lifter	13 mm		
Presser foot height — Automatic presser lifter	10 mm		
Presser foot pressure	9.8 – 39.2N (1 – 4 kgf)	39.2 – 78.4N (4 – 8 kgf)	58.8 – 98N (6 – 10 kgf)
Bed size	476 × 178 mm		
Arm pocket size	266.5 × 134.5 mm		
Needle	DB × 1 NS#9 DP × 5 NS#9	DB × 1 #11 DP × 5 #11	DB × 1 #22 DP × 5 #22
Rotary hook	For thread trimming		
Mass	41 kg		

Sewing speed depends on the machine specifications.

● Motor specifications

High sewing speed	220 spm to the maximum (Changeable)
Low sewing speed	220 spm
Front/continuous backtacking speed	220 spm to 1,800 spm (Changeable)
End backtacking speed	1,800 spm
Motor	AC servomotor (3-phase/single-phase 4 pole 400W, 100 – 240V)
Control circuit	Microcomputer

Control box   MD721 (Single-phase)
                 MD731 (3-phase)

● Operation panel

B-20
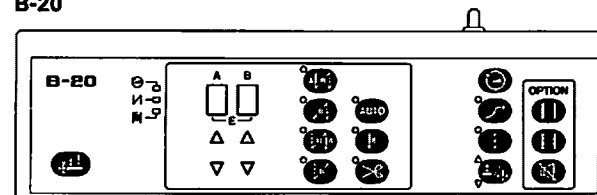
B-40
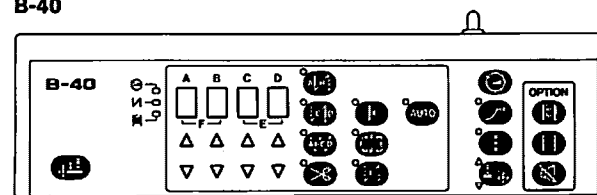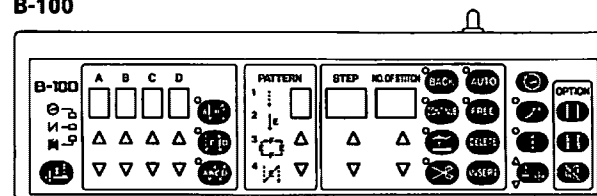
B-100

● Quick reference for indication and meaning on the operation panel

		B-20	B-40	B-100			B-20	B-40	B-100
	Normal lock stitch	O	O	O	✂	Automatic thread trimming	O	O	O
	Half stitch	O	O	O	AUTO	Automatic sewing	O	O	O
	Start backtack (0-9)	O	O	O	FREE	Temporarily cancel programming sewing	-	-	O
	End backtack (0-9)	O	O	O	DELETE	Step deletion	-	-	O
	Continuous backtack (0-9)	-	O	O	INSERT	Step insertion	-	-	O
	Fixed stitch (1-99)	O	O	O		Sewing speed setting	O	O	O
	Name label stitch (1-99)	-	O	O		Slow start sewing	O	O	O
	Pleats presser stitch (1-99)	-	O	O		Correction sewing	O	O	O
PATTERN	Pattern stitch	-	-	O	¼	Needle up stop/ Needle down stop	O	O	O
BACK	Back stitch	-	-	O		Lower thread detector (optional)	O	O	O
CONTNUE	Continuous stitch	-	-	O					
	Automatic presser foot lifting	-	-	O					

3 Sales points

Machine head with built-in motor

● The servomotor is directly coupled to the upper shaft, and because this eliminates the need for a V-belt, motor power is transmitted directly without any losses. In addition, power consumption is also kept to a minimum so that extensive energy savings can also be achieved (approximately 25% compared to previous Brother models).

Pedal

— — — 80%

Motor rotation speed

Warm-up time
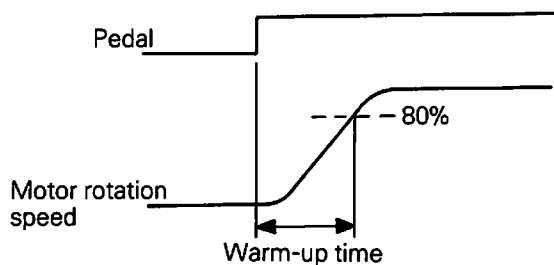
	DD7100	B737 MarkII
4,000 spm	96 ms	155 ms
5,000 spm	103 ms	189 ms

● Elimination of the V-belt also means that flakes from the belt as it wears will no longer make the material dirty.

● Because the motor is built-in, it is no longer necessary to mount a motor on the work table. Jobs such as installation of belt covers and a bobbin winder have also been eliminated, so that overall setting up has become much easier.

● The motor can be exchanged easily.

\<Upper shaft mechanism\>
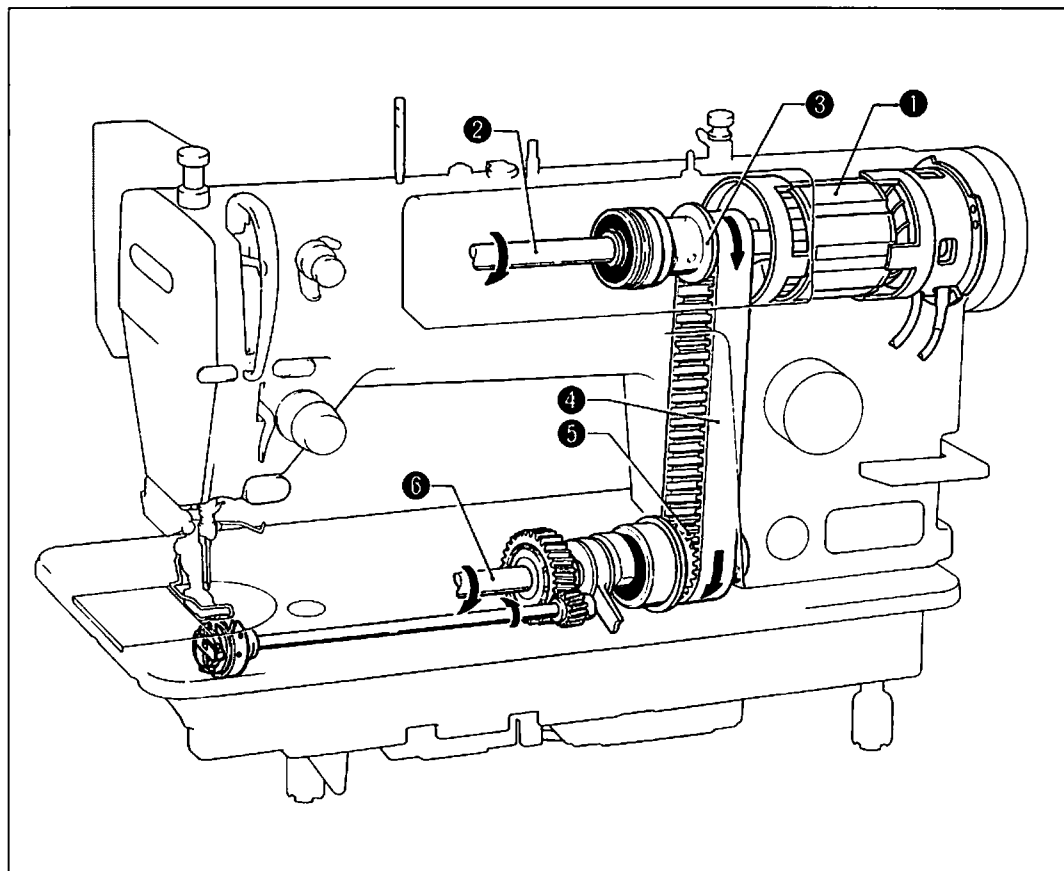
● Rotation of the motor ❶ is transmitted directly to the upper shaft ❷.

\<Lower shaft mechanism\>

● Timing pulley (U) ❸ in the joint set transmits the rotation of the motor ❶ to the timing pulley (D) assembly ❺ and the lower shaft ❻ via the timing belt ❹.

Adoption of the dry-head lubrication method

- A dry-head tank lubrication method has been adopted. (Upper and lower shafts have bearings on both ends.) This enables minimization of lubrication to the needle bar mechanism.

- For easy maintenance, the number of times of lubrication is reduced (compared with previous Brother models).

- An oil pan is no longer used, and there is no longer any need to worry about oil staining the material.

- The oil level can be checked easily through a sight glass. There is no longer any need to tilt or rotate the machine.

Used oil   Rotary hook and rotary hook shaft   Upper shaft, thread take-up, and needle bar

Decrease ⊖ Increase   Plunger pump
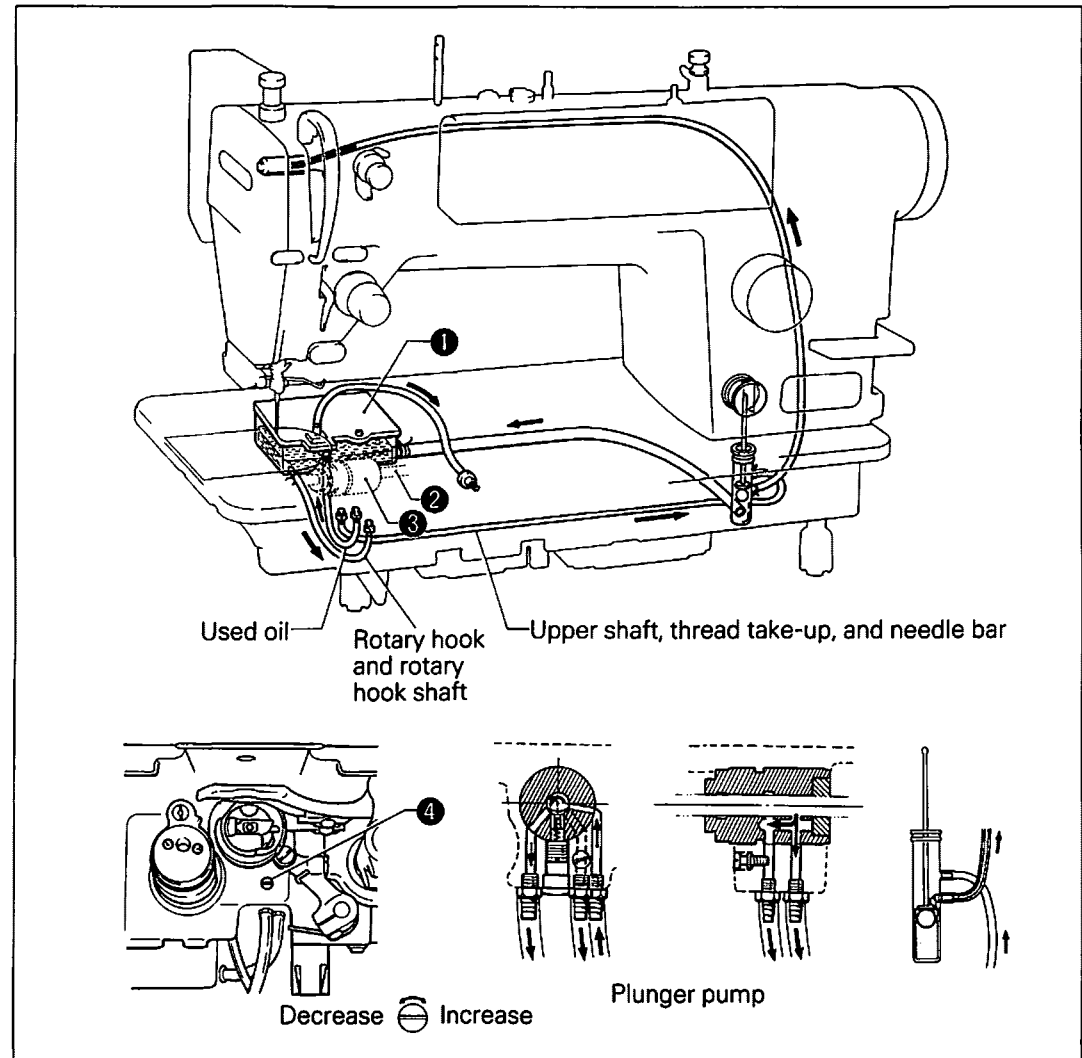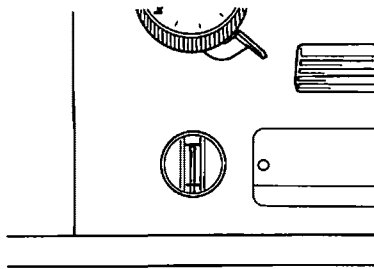
(1) The oil poured in through the oil port is stored in the oil tank ❶.
(2) The oil in the oil tank ❶ is drawn by the plunger pump ❸ attached to the rotary hook shaft ❷.
(3) The oil is fed from the plunger pump ❸ to the thread take-up and the needle bar via the vinyl tube and the wick.
(4) Lubrication of the rotary hook can be adjusted using the adjusting screw ❹.

4

Comfortable working environment

- Reduction of the noise from the solenoids used for thread trimming and when motor rotation is reversed and so on, plus reduced machine operating noise combine to produce a much quieter working environment (approx. 5 dB less compared to Brother previous models).

- The elimination of the V-belt means that there is no longer a problem of anything getting caught in the belt. Furthermore, a safety switch operates when the machine head is tilted back for maintenance, so that the motor will not operate even if the pedal is pressed.

- A motor is built into the machine head, giving the machine a more streamlined shape and the operator more space below the work table. That promotes the adoption of further amenities in sewing factories without leading to there being less space.
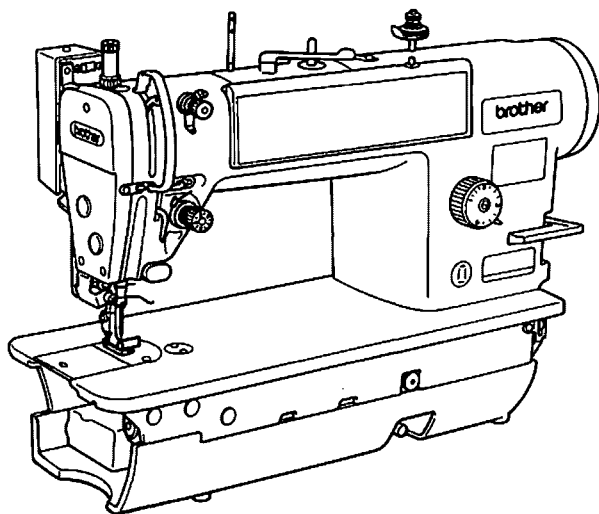
● Major difference between DD7100 and B737 Mark II

	DD7100	B737 Mark II
Motor installation	Built-into the machine head	Mounted under the table
Motor type	AC servomotor 400W (Possible to reverse rotation)	DC servomotor 400W (Impossible to reverse rotation)
V-belt	None	Installed
Bobbin winder installation	Built-into the top of the machine head	Attached to the table
Synchronizer	Built into the motor	Built into the machine head
Mass	76 kg	85 kg
Lubrication method	Dry-head	Automatic lubrication (oil pan)
Specification -1	For thin and difficult-to-sew materials	For thin materials
Lower thread detector	Attachable as an optional part	—
Sewing and backtacking speed settings	On the operation panel	Using the knob in the control box

Flexible handling of even previously difficult-to-sew materials

- The focus of machines with -1 specification is on sewing materials which are thin and difficult-to-sew. As a result of modification of mechanisms such as the needle bar, thread take-up, and rotary hook, materials which were previously difficult-to-sew can be sewn at high speed. (See page 7.)

	DD7100-1* for difficult-to-sew materials specification	For new synthetic materials specification on the B737	B737-1 for thin materials
Needle bar stroke	29.0 mm	31.0 mm	31.0 mm
Needle	DB × 1 #9 NS	DB × 1 #10 NS	DB × 1 #11
Rotary hook	For thin material	Plastic race (lubrication not required)	For thin materials
Maximum sewing speed	4,000 spm	3,500 spm	4,000 spm

*It is possible to attach a plastic race (lubrication not required). (In this case, the maximum sewing speed is 3,500 spm.)

- The special tool for measuring the presser foot pressure is no longer needed. A tension gauge set enabling easy measurement of upper and lower thread tensions is provided as an optional part. (See page 8.)

Others

- The switches for slow start, correction stitch, and needle up/down stop position are provided on the operation panel so that you can set and check the current settings easily.
- After thread trimming, the machine can be stopped with the needle at its highest position by reversing the motor. This is useful when changing the materials to be sewn, thick materials in particular. (See page 9.)
- Gauge parts for the B737 and those for other manufacturer's can be used.
- A lower thread detector (optional part) is provided to indicate the remaining lower thread. This is useful when sewing a product that allows no overlapping or incomplete stitching. (See page 7.)
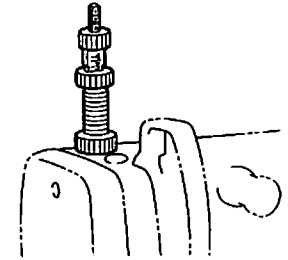
4 Optional parts

● Lower thread detector (183955-001)

The lower thread remaining will be displayed as % on the operation panel. The lower thread detector will warn you that the thread has been all used up according to the amount you set in advance by making the lower thread remaining indicator blink and a issuing beep.
This is useful when sewing a product that allows no overlapping or incomplete stitching.
Use the bobbin case assembly (S25780-001) exclusive to the DD7100.
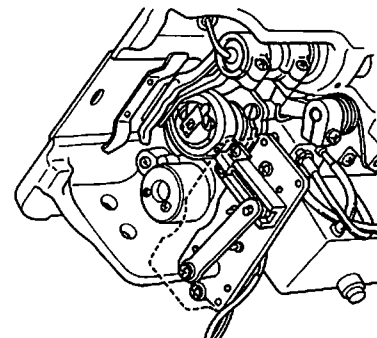
● Set for new synthetic fabric (for specification −3) (183910-001)

*When the following part set is used on the machine, regularly set the sewing speed to 2,800 spm. (Max. 3,500 spm)
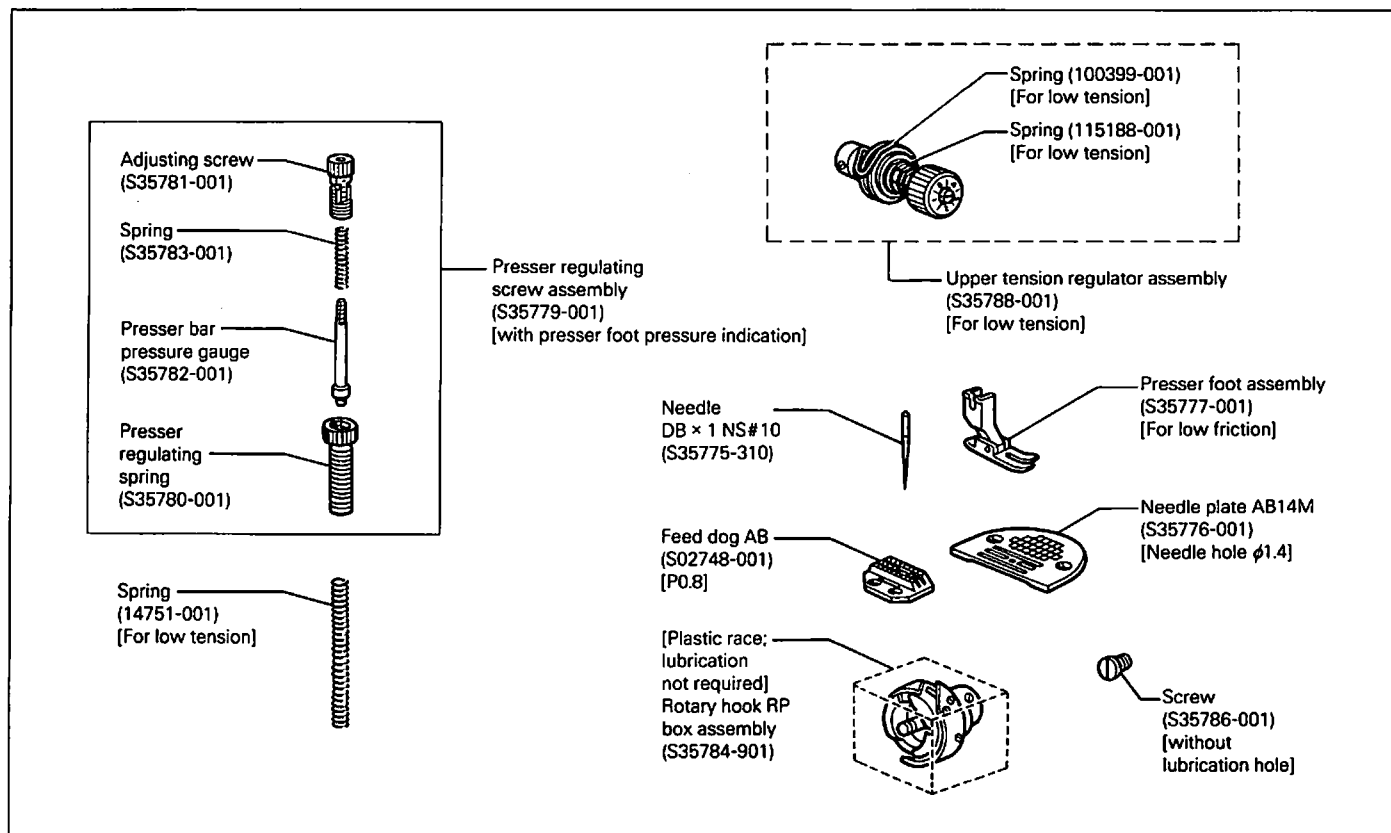
When you change specifications −1 so as to be able to handle new synthetic fabrics, use the following parts:
· Rotary hook RP box assembly (S35784-901)
· Screw (S35786-001)

Adjusting screw (S35781-001)
Spring (S35783-001)
Presser bar pressure gauge (S35782-001)
Presser regulating spring (S35780-001)
Spring (14751-001) [For low tension]

Presser regulating screw assembly (S35779-001) [with presser foot pressure indication]

Spring (100399-001) [For low tension]
Spring (115188-001) [For low tension]
Upper tension regulator assembly (S35788-001) [For low tension]

Needle DB × 1 NS#10 (S35775-310)
Presser foot assembly (S35777-001) [For low friction]
Feed dog AB (S02748-001) [P0.8]
Needle plate AB14M (S35776-001) [Needle hole φ1.4]
[Plastic race; lubrication not required] Rotary hook RP box assembly (S35784-901)
Screw (S35786-001) [without lubrication hole]

● Tension gauge set (183922-001)

This is a device designated for easy measurement of upper and lower thread tensions. This is useful when frequent changing of threads and materials to be used for small-lot production is required, or the same thread tension is required on different machines.

Upper thread tension measurement	Lower thread tension measurement
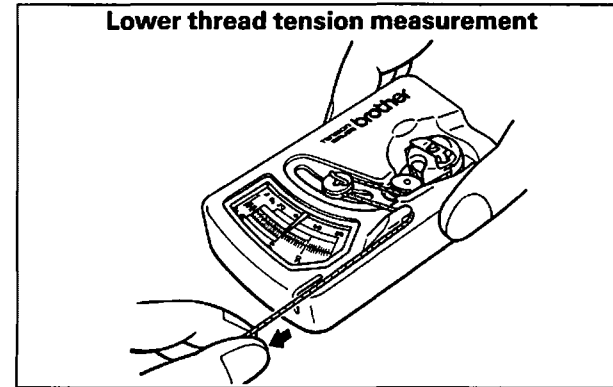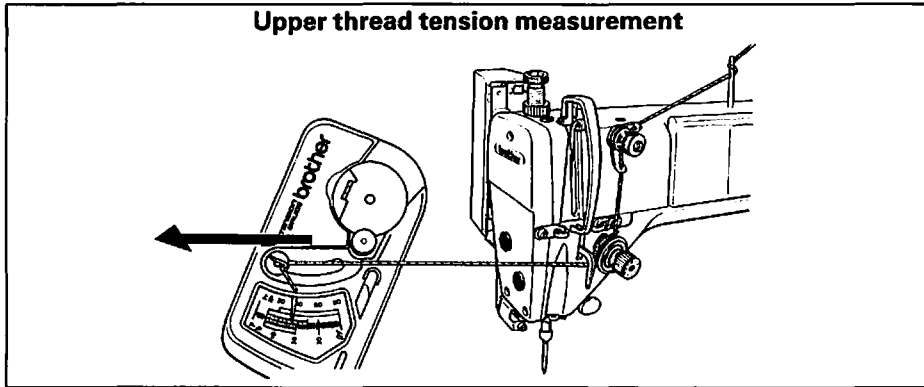
● Thread wiper set (183956-001)

● Presser foot lifting solenoid set

Presser foot lifting solenoid set A (with knee lifter) (183959-001)
Presser foot lifting solenoid set B (without knee lifter) (183960-001)

5 DIP switch functions

See page 16, "10 Connector configuration" for the DIP switch position.

1	Presser foot position when the foot pedal is returned to the neutral position after thread trimming	ON	Presser foot is lowered. (Export specification)
		OFF	Presser foot is kept raised. (Japanese specification only) (See NOTE 1.)
2	Setting of a delay from the time the presser foot is turned OFF until the motor starts (See NOTE 2.)	ON	With delay
		OFF	Without delay
3	Needle up stop position due to reverse rotation	ON	The machine stops with the needle at its highest position due to reverse rotation.
		OFF	The machine stops with the needle at its highest position without reverse rotation.
4		ON	
		OFF	
5			N. C
6	Limited speed setting 1		Maximum sewing speed (during high-speed sewing) that can be set through the operation panel (See NOTE 3.)
7	Limited speed setting 2		
8			Always set to off. (See NOTE 4.)

(NOTE 1)   Once the knee lifter switch is used to lower the presser foot, the foot pedal can not be used to raise the presser foot while the machine is stopped; at this time, only the knee lifter is able to raise and lower the presser foot.

(NOTE 2)   For -900 series specification machines (machines with an automatic presser foot lifter), be sure to set DIP switch 2 to on.

(NOTE 3)   Limited sewing speeds depend on settings for DIP switches 6 and 7 as shown in the following table. When the maximum sewing speed is specified as 5,000 spm on the operation panel, it is actually limited to 4,700 spm.
If the setting of memory switch 04 is changed to on, the set sewing speed is not limited to 4,700 spm.

DIP switch 6	DIP switch 7	Limited speed
OFF	OFF	3,500 spm
ON	OFF	4,000 spm
OFF	ON	4,500 spm
ON	ON	5,000 spm

(NOTE 4)   If DIP switch 8 is set to on, all pedal operations are deactivated. Be sure to set it to off.

6 Parameter setting flowchart

```
                    ┌─────────────┐
                    │    Start    │
                    └─────────────┘
                           │
    ┌──────────────────────────────────────────┐
    │ · Set memory switch 01 to ON. *1          │      *1: Refer to the memory switch setting flowchart.
    └──────────────────────────────────────────┘
                           │
    ┌──────────────────────────────────────────┐
    │ · Turn off all LEDs.                      │
    │   For the B-100 operation panel, select   │
    │   pattern 1.                              │
    │ · Leave the machine stopped after thread  │
    │   trimming.                               │
    └──────────────────────────────────────────┘
                           │
    ┌──────────────────────────────────────────┐
    │ · Press the thread trimming and AUTO keys.│
    │   (The LED of the thread trimming key will│
    │   blink, and a parameter number will      │
    │   appear on the AB displays.)             │
    └──────────────────────────────────────────┘
                           │
                           ▼
    ┌──────────────────────────────────────────┐       ┌ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─┐
    │ · Select the desired parameter number     │ · · · │ The data currently set for the      │
    │   using the △ and ▽ keys below the B       │       │ parameter can be checked only while │
    │   display.                                 │       │ the △ key below the A display is    │
    └──────────────────────────────────────────┘       │ kept pressed. *2                    │
                           │                            └ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─┘
```

*2: As to the data related to backtacking, press the △ key to indicate the timing angle (×15°) and ▽ key to indicate a plus or minus symbol.

```
              ◇ Change other parameter          Finish
                setting or finish setting? ◇───────────────────────┐
                           │ Change                                │
    ┌──────────────────────────────────────────┐                  │
    │ · Press the thread trimming key. (The     │                  │
    │   value corresponding to the currently    │         ◇ Changing completely? ◇──── No more changes ──┐
    │   set parameter number will blink.)       │                  │                                      │
    └──────────────────────────────────────────┘          Further changes                                │
                           │                                       │                                      │
    ┌──────────────────────────────────────────┐   ┌───────────────────────────────┐   ┌─────────────────────────────┐
    │ · Change the value using the △ and ▽ keys │   │ · Indicate parameter number 99│   │ · Indicate parameter        │
    │   below the AB displays. *3               │   │   using the △ and ▽ keys below │   │   number 90.                │
    └──────────────────────────────────────────┘   │   the B display.              │   └─────────────────────────────┘
                           │                        └───────────────────────────────┘                     │
              ◇ Related to        No                         │                                            │
                backtacking? ◇───────────┐      ┌───────────────────────────────┐                         │
                           │ Yes         │      │ · Press the thread trimming    │◄────────────────────────┘
    ┌──────────────────────────────────┐ │      │   key.                         │
    │ · Press the thread trimming key. │ │      └───────────────────────────────┘
    │   (The plus or minus symbol      │ │                    │
    │   currently selected will blink.)│ │              ┌───────────┐
    │ · Select the plus or minus symbol│ │              │    End    │
    │   using the △ key below the B    │ │              └───────────┘
    │   display. *4                    │ │
    └──────────────────────────────────┘ │
                           │◄────────────┘
    ┌──────────────────────────────────────────┐
    │ · Press the thread trimming key.          │
    │   (Parameter number will reappear.)       │
    └──────────────────────────────────────────┘
```

*3: As to backtacking information, the timing angle (×15°) will appear.

*4: Select a plus < ┤ > or minus symbol < — > for the value determined in *3.

7 Parameters

Parameter No.	Default value	Data value setting range	Function
10	15 (150 ms)	00 – 25 [×10] (0 – 250 ms)	Time delay from the time the machine starts to operate with the automatic presser foot raised to the time the motor operates.
11	05 (50 ms)	03 – 10 [×10] (30 – 100 ms)	Time delay from the time the thread wiper turns OFF until the automatic presser foot turns ON
13	30 (300 ms)	10 – 90 [×10] (100 – 900 ms)	Time to keep the automatic presser foot lifter raised
14 ☆	36 (3 min.)	00 – 60 [×5] (5 sec. – 5 min.)	The presser foot signal will be automatically off after the set time passes. When the data is set to 00, the presser foot signal is not automatically off.
15 ★	00 (30 ms)	00 – 60 [×2.5] (0 – 150 ms)	Time from the presser foot lowering command to the presser foot ON once
16	12	10 – 12	Constant voltage required to turn on the presser foot after the presser foot lowering command
17	10 (10s)	05 – 30 (5 – 30s)	Puller continuous ON time
18	40 (40 stitches)	00 – 99 (0 – 99 stitches)	The number of stitches to be produced from the start of sewing until the puller lowers
20	02 (20 ms)	01 – 07 [×10] (10 – 70 ms)	Time delay from the time the machine stops after thread trimming to the time the thread wiper operates
21	05 (50 ms)	04 – 10 [×10] (40 – 100 ms)	Thread wiper ON time
22	50 (50 ms)	40 – 70 [×10] (40 – 70 ms)	Lower thread detecting pin ON control time (in all blocks)
23	10 (10 ms)	05 – 25 [×1] (5 – 25 ms)	The first ON time of the lower thread detecting pin
24	07 (7 ms)	01 – 15 [×1] (1 – 15 ms)	The first OFF time of the lower thread detecting pin
26	03 (30 ms)	00 – 05 [×10] (0 – 50 ms)	Time delay from the thread wiper OFF to the lower thread detecting pin ON
27 ◆	05 (0.5s)	02 – 50 [×0.1] (0.2 – 5.0s)	Time delay from the time when the machine stops with the needle at its highest/lowest position to the lower thread detecting pin ON (Lower thread detection function at the needle up/down stop with the foot pedal in neutral)
30	–04 (–60°)	–23 to +23 (in 15° increments) (On the panel, indications for minus and plus are " – " and " ⅃ " respectively.)	Quick reverse device ON-timing upon start or continuous backtacking
31	00 (0°)	–23 to +23 (in 15° increments) (On the panel, indications for minus and plus are " – " and " ⅃ " respectively.)	Quick reverse device OFF-timing upon start and continuous backtacking
32	+02 (30°)	–23 to +23 (in 15° increments) (On the panel, indications for minus and plus are " – " and " ⅃ " respectively.)	Quick reverse device OFF-timing upon end backtacking
33 ▲	–04 (–60°)	–23 to +23 (in 15° increments) (On the panel, indications for minus and plus are " – " and " ⅃ " respectively.)	The second ON-timing for the quick reverse device upon double end backtacking

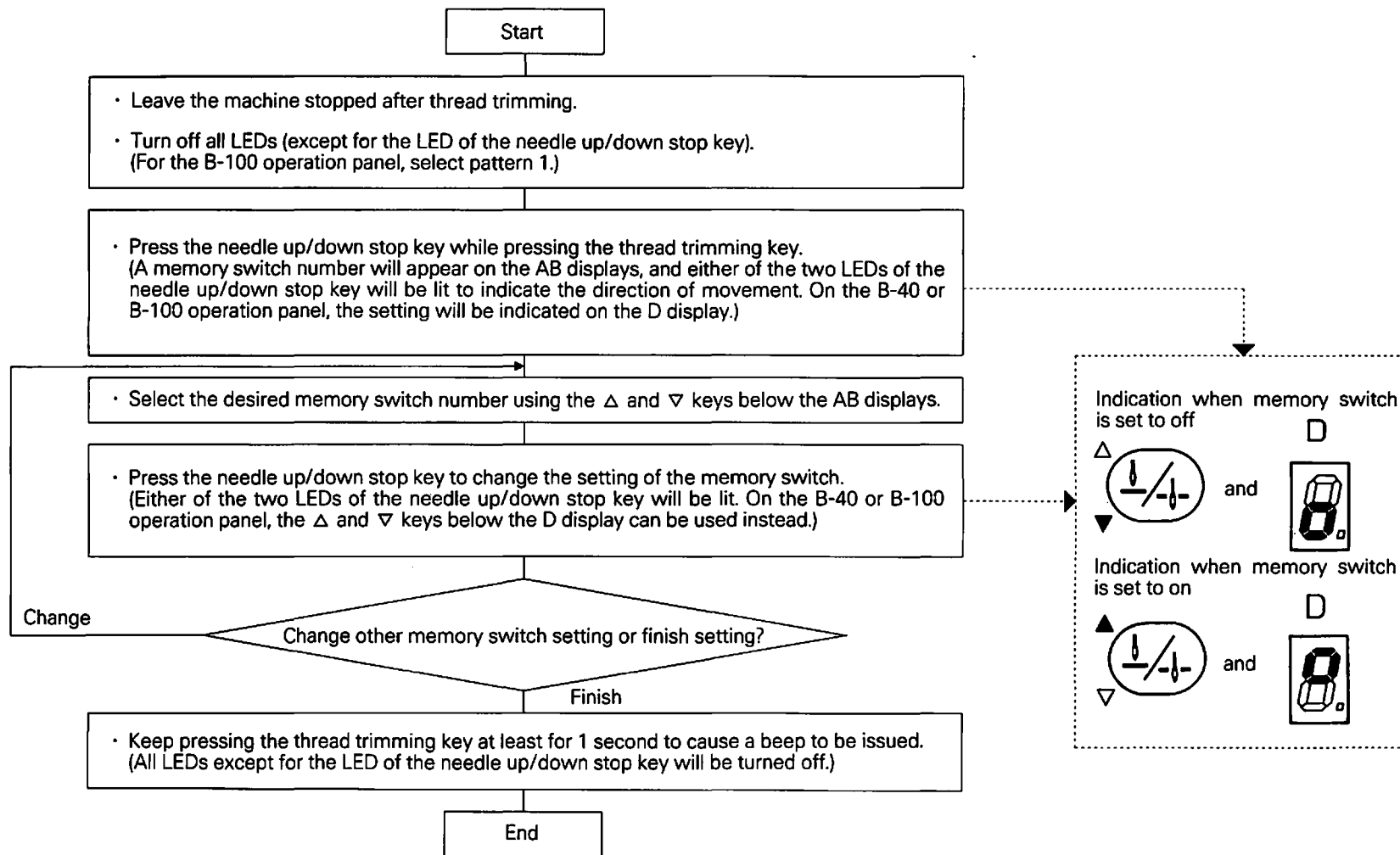The parameter numbers appear on the panel.

(NOTES) ☆: The timer-off function for the presser foot is activated only when memory switch 36 is set to off.
　　　　★: This parameter is available only when memory switch 35 is set to on.
　　　　◆: The lower thread detection function for the needle up/down stop when the pedal is positioned at neutral is activated only when memory switch 51 is set to on.
　　　　▲: This parameter is available only when memory switch 22 is set to on.

8 Memory switch setting flowchart

```
┌─────────────┐
│    Start    │
└─────────────┘
```

- Leave the machine stopped after thread trimming.

- Turn off all LEDs (except for the LED of the needle up/down stop key).
  (For the B-100 operation panel, select pattern 1.)

- Press the needle up/down stop key while pressing the thread trimming key.
  (A memory switch number will appear on the AB displays, and either of the two LEDs of the needle up/down stop key will be lit to indicate the direction of movement. On the B-40 or B-100 operation panel, the setting will be indicated on the D display.)

- Select the desired memory switch number using the △ and ▽ keys below the AB displays.

- Press the needle up/down stop key to change the setting of the memory switch.
  (Either of the two LEDs of the needle up/down stop key will be lit. On the B-40 or B-100 operation panel, the △ and ▽ keys below the D display can be used instead.)

Change

Change other memory switch setting or finish setting?

Finish

- Keep pressing the thread trimming key at least for 1 second to cause a beep to be issued.
  (All LEDs except for the LED of the needle up/down stop key will be turned off.)

```
┌─────────────┐
│     End     │
└─────────────┘
```

Indication when memory switch is set to off

△ (—/—) and **D** [8]
▼

Indication when memory switch is set to on

▲ (—/—) and **D** [8]
▽

(NOTE) If the power is turned off before the end operation, memory switch settings are not renewed.

9 Memory switches

Memory switches 01 - 08

01	Parameter setting	ON	Parameter setting can be changed.
		OFF	Parameter setting change is prohibited.
02	Interlocking along with forward step	ON	Forward step is possible during backward step (for thread trimming).
		OFF	Forward step is impossible during backward step (for thread trimming).
03	Power supply drop check	ON	Power supply drop check (reset detection) function is activated.
		OFF	Without the above-mentioned function
04	Limited sewing speed	ON	The same as settings of DIP switches 6 and 7. (See NOTE 1.)
		OFF	Maximum sewing speed is limited to 4,700 spm.
05	Needle penetration force	ON	Needle penetration force is strong.
		OFF	Needle penetration force is ordinary.
06		ON	
		OFF	
07		ON	
		OFF	
08		ON	
		OFF	

(NOTE 1) When the power is turned on again, sewing speed can be set up to 5,000 spm.

Memory switches 11 - 18

11	Thread trimming and thread wiper output	ON	Without thread trimming and thread wiper
		OFF	With thread trimming and thread wiper
12	Presser foot position after thread trimming (See NOTE 2.)	ON	Presser foot is raised when the foot pedal is in neutral.
		OFF	Presser foot is lowered when the foot pedal is in neutral.
13	Presser foot position after the machine stops with the pedal in neutral	ON	Presser foot is at its highest position.
		OFF	Presser foot is at its lowest position.
14	Actuator switch	ON	It is used as the thread trimming switch.
		OFF	It is used as the reverse and correction switches.
15	Slowdown stop control	ON	Ordinary slowdown stop and control
		OFF	Slowdown and stop control with 1 stitch elimination
16	Lower thread remaining detection	ON	Unable to be used.
		OFF	Able to be used.
17	Half-stitch correction	ON	A forward stitch or half stitch can be corrected. (See NOTE 3.)
		OFF	A forward stitch can be corrected. A half stitch cannot be corrected. (See NOTE 3.)
18	Reverse stitch correction	ON	A forward stitch or reverse stitch can be corrected. (See NOTE 3.)
		OFF	A forward stitch can be corrected. A reverse stitch cannot be corrected. (See NOTE 3.)

(NOTE 2) It is activated when DIP switch 1 is set to on.
(NOTE 3) A forward stitch can be corrected when the LED of the correction switch is lit. A half stitch or reverse stitch can be corrected when the LED of the correction switch is not lit.

Memory switches 21 - 28

21	Double start backtacking	ON	Start backtacking is performed in the order of lengths A, B, A, then B.
		OFF	Start backtacking is performed in the order of lengths A and B.
22	Double end backtacking	ON	End backtacking is performed in the order of lengths C, D, C, and D (B, A, B, and A on the B-20 operation panel).
		OFF	End backtacking is performed in the order of lengths C and D (B and A on the B-20 operation panel).
23	Number of stitches for start backtacking plus 10 stitches	ON	Extra 10 stitches are added to the number of stitches set for both lengths A and B.
		OFF	No extra stitches are added.
24	Number of stitches for end backtacking plus 10 stitches	ON	Extra 10 stitches are added to the number of stitches set for both lengths C and D (B and A on the B-20 operation panel).
		OFF	No extra stitches are added.
25	Feed direction when the start backtacking is completed	ON	The machine will stop with the reverse feed remaining on.
		OFF	The machine will stop after feed is returned to normal.
26	Start end backtacking	ON	End backtacking will start without speed slowing down.
		OFF	The machine will slow the sewing speed gradually to start low speed sewing, then shift to end backtacking.
27	Continuous backtacking setting	ON	Forward stitching for the number of stitches set in the A display, and backward stitching for the number of stitches set in the B display will be performed repeatedly for the number of times set in the D display. (The C display will be blank.)
		OFF	Continuous stitching will be performed for lengths A, B, C, and D as specified in the ABCD displays.
28	Number of stitches for continuous backtacking plus 10 stitches	ON	Extra 10 stitches are added to each lengths A, B, C, and D.
		OFF	No extra stitches are added.

Memory switches 31 - 38

31	Start backtacking suspension by foot pedal being placed in neutral or backtacking speed change during the start backtacking	ON	Sewing can be suspended by returning the foot pedal to neutral. During start backtacking, sewing speed depends on the foot pedal stroke.
		OFF	Sewing can not be suspended by returning the foot pedal to neutral. During start backtacking, sewing speed is fixed regardless of the foot pedal stroke.
32	The number of backtack stitches on the B-20 or B-40 operation panel	ON	The number of backtack stitches for fixed stitching, label attaching, or pleats presser sewing can be changed.
		OFF	The number of backtack stitches is fixed to 4 (for fixed stitching, label attaching, and pleats presser sewing). (See NOTE 4.)
33	Pleats presser stitching direction	ON	Without reverse stitching (Fixed stitching will be called back.)
		OFF	With reverse stitching (Ordinary pleats presser stitching)
34	—	ON	—
		OFF	—
35	Presser foot soft drop function	ON	Manual soft drop function (See NOTE 5.)
		OFF	Automatic soft drop function (See NOTE 6.)
36	Presser foot timer-off function	ON	Timer-off function is not activated. (Presser foot will not be lowered by timer.)
		OFF	Timer-off function is activated. (See NOTE 7.)
37		ON	
		OFF	
38		ON	
		OFF	

(NOTE 4) For the B-40 operation panel, the number of end backtack stitches can be changed for fixed stitching or pleats presser sewing.

(NOTE 5) This setting depends on the setting of parameter No.15. When parameter No.15 is set to 00, the machine response will be the fastest but with noisy operating sounds.

(NOTE 6) This setting depends on the setting of parameter No.16. When parameter No.16 is set to 10, the machine response will be the fastest but with noisy operating sounds.

(NOTE 7) Timer-off function is not activated when parameter No.14 is set to 00.

Memory switches 41 - 48

41	Mode after lower thread alarm	ON	Foot pedal can be used after lower thread alarm.
		OFF	After lower thread alarm, the foot pedal operation is deactivated until the cancel key is pressed.
42	Rotary hook used with the lower thread detector	ON	1.7-time rotary hook
		OFF	Standard rotary hook
43	(See NOTE 8.)	ON	—
		OFF	Be sure to set to off.
44	(See NOTE 8.)	ON	—
		OFF	Be sure to set to off.
45	Delayed start of standing operation	ON	Without any delay.
		OFF	With a delay (for 80 ms).
46	Emergency stop by presser lifter pedal during standing operation	ON	Impossible to make an emergency stop using presser lifter pedal
		OFF	During automatic sewing, emergency stop can be performed using presser lifter pedal.
47	Emergency stop using variable speed pedal during standing operation	ON	Impossible to make an emergency stop using variable speed pedal
		OFF	During automatic sewing, emergency stop can be performed using variable speed pedal.
48	Lifting the presser foot using thread trimming pedal during standing operation	ON	It is always deactivated after the presser lifter pedal is used.
		OFF	It is activated.

Memory switch 61

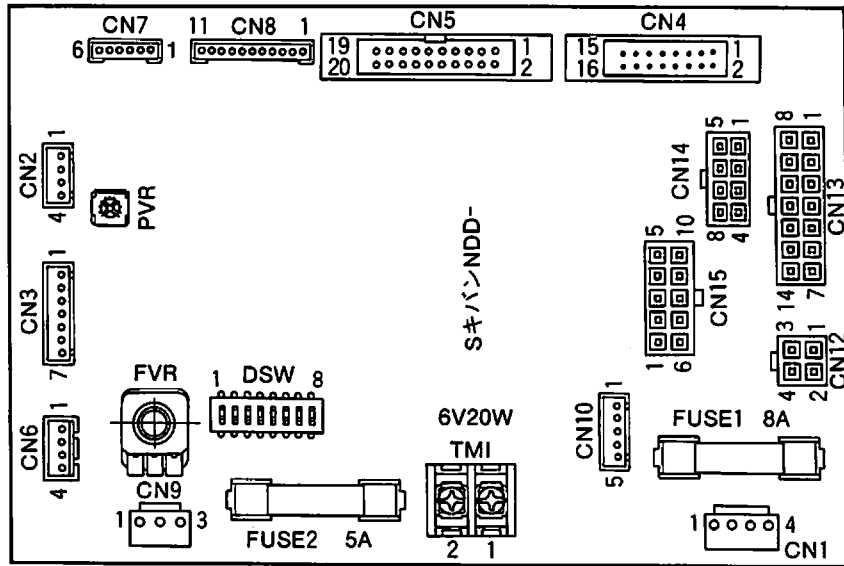| 61	Puller output selection (lifting/lowering the puller)	ON	Synchronizer signal output
		OFF	Puller output

Memory switches 51 - 58

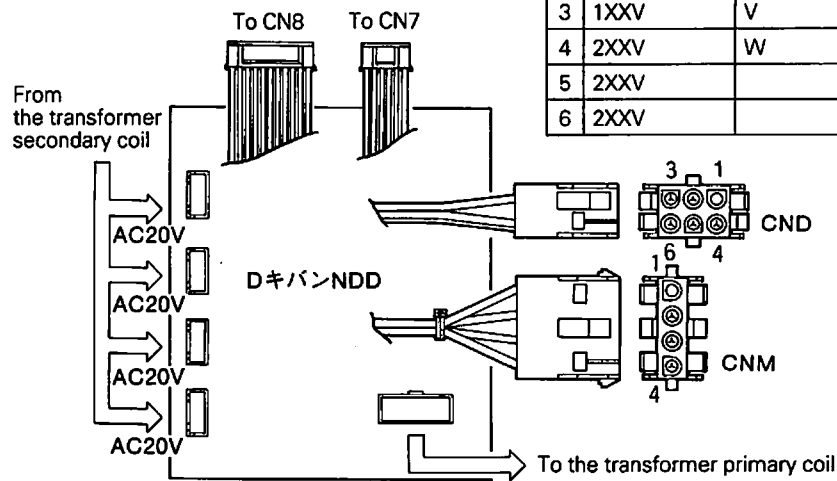| 51	Lower thread detection after the machine is stopped by putting foot pedal in neutral (See NOTE 9.)	ON	Lower thread is detected while the machine is stopped by putting foot pedal in neutral for the specified time.
		OFF	Lower thread is not detected after the machine is stopped by putting foot pedal in neutral.
52	Needle up/down stop key operation	ON	Needle up/down stop key operation is deactivated. (Needle stop position cannot be changed.)
		OFF	Needle up/down stop key operation is activated.
53		ON	
		OFF	
54		ON	
		OFF	
55		ON	
		OFF	
56		ON	
		OFF	
57		ON	
		OFF	
58		ON	
		OFF	

(NOTE 8) Do not change these settings.
(NOTE 9) The time for delay can be changed in parameter No. 27. If the foot pedal is pushed forward within the time, lower thread will not detected. The default delay is 0.5 seconds. This function is available for sewing process without thread trimming.

🔟 Connector configuration

	CN1 (Transformer)	CN2 (Forward step)	CN3 (Standing operation)	CN4 (Detector)	CN5 (Panel)	CN6 (VR/Bobbin changer)	CN9 (Transformer)
1	AC10V	DC+8V	DC+8V	F. G	DC+5V	DC+5V	AC6V
2	AC10V	DC+5V	High speed switch	N. C	SOV	VR (Bobbin input)	N. C
3	AC30V	Forward step input	Thread trimming switch	N. C	KEY0	Bobbin output	AC6V
4	AC30V	SOV	SOV	N. C	KEY1	SOV	
5			Low speed switch	SOV	KEY2		
6			Presser foot switch	ENCA	OC		
7			Variable speed input	ENCB	A		
8				U	B		
9				V	C		
10				W	D		
11				Needle down	E (LED0)		
12				Needle up	F (LED1)		
13				DC+5V	G (LED2)		
14				N. C	PLED (STB)		
15				N. C	DC+8V		
16				N. C	SEN		
17					BUZZ		
18					N. C		
19					N. C		
20					N. C		

	CND (Power)	CNM (Motor)
1	Ground	Ground
2	1XXV	U
3	1XXV	V
4	2XXV	W
5	2XXV	
6	2XXV	

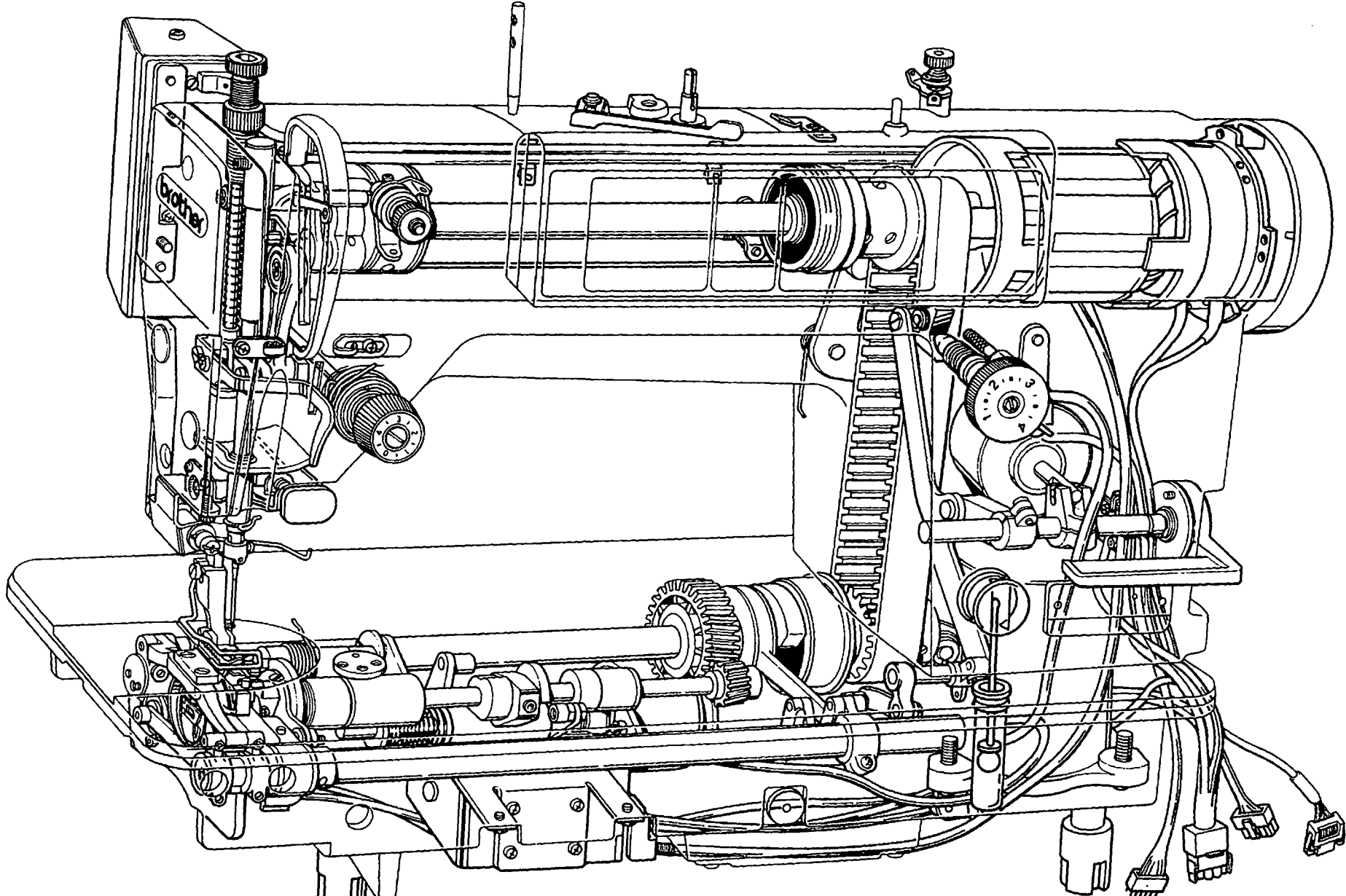|	CN10 (External power supply)	CN12 (Presser foot)	CN13 (Machine)	CN14 (Lower thread)	CN15 (Puller)	TM1 (Lamp)
1	DC+12V	0V	F. G	F. G	Puller output	AC6V
2	DC+5V	Presser power	N. C	N. C	N. C	AC6V
3	SOV	Presser switch	Thread trimmer power	Sensor input	N. C	
4	0V	Presser output	Thread wiper power	Lower thread power	N. C	
5	+40V (E1)		Quick reverse power	DC+8V	N. C	
6			0V	SOV	Puller power	
7			0V	DC+5V	N. C	
8			N. C	Lower thread output	N. C	
9			N. C		N. C	
10			Thread trimming output		N. C	
11			Thread wiper output			
12			Quick reverse output			
13			Quick reverse switch			
14			Safety switch			
15						

1. Connectors are illustrated as viewed from the pin side.
2. Connector positions are different from actual ones.

16

🔢 Perspective view

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