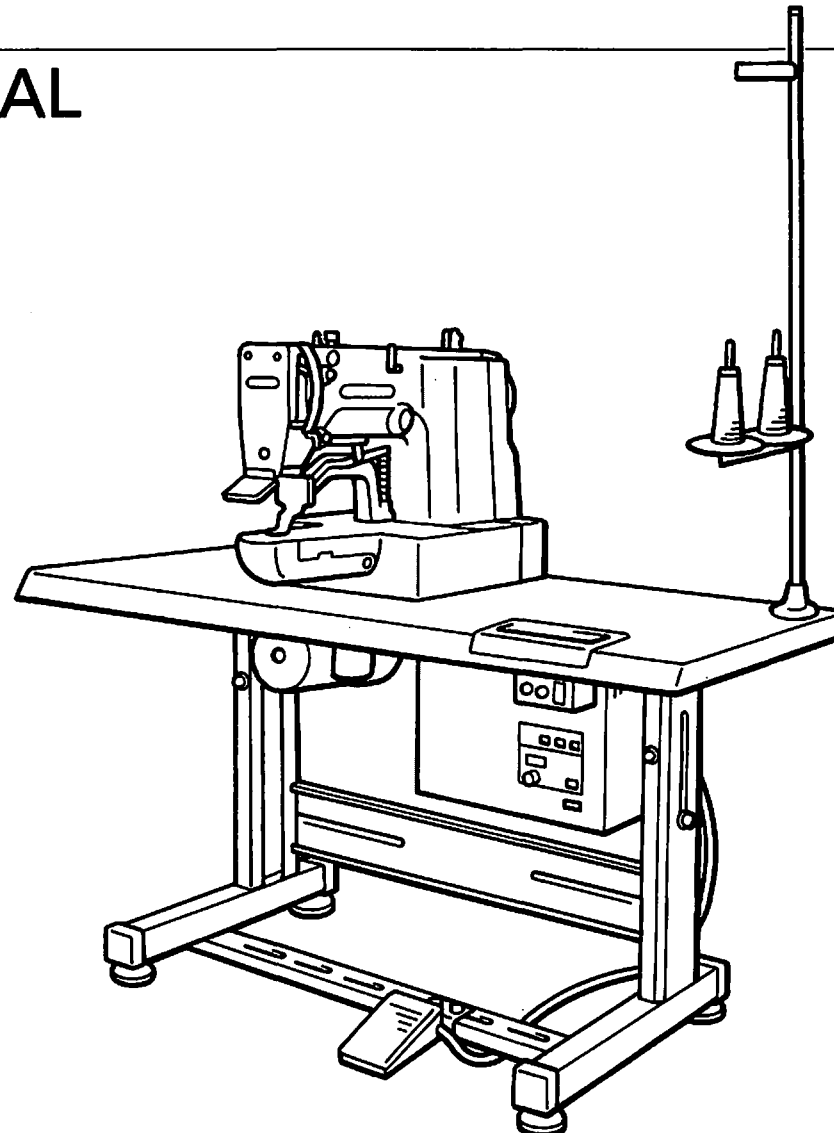


LK3-B430E

ELECTRONIC LOCKSTITCH BAR TACKER

PRODUCT MANUAL



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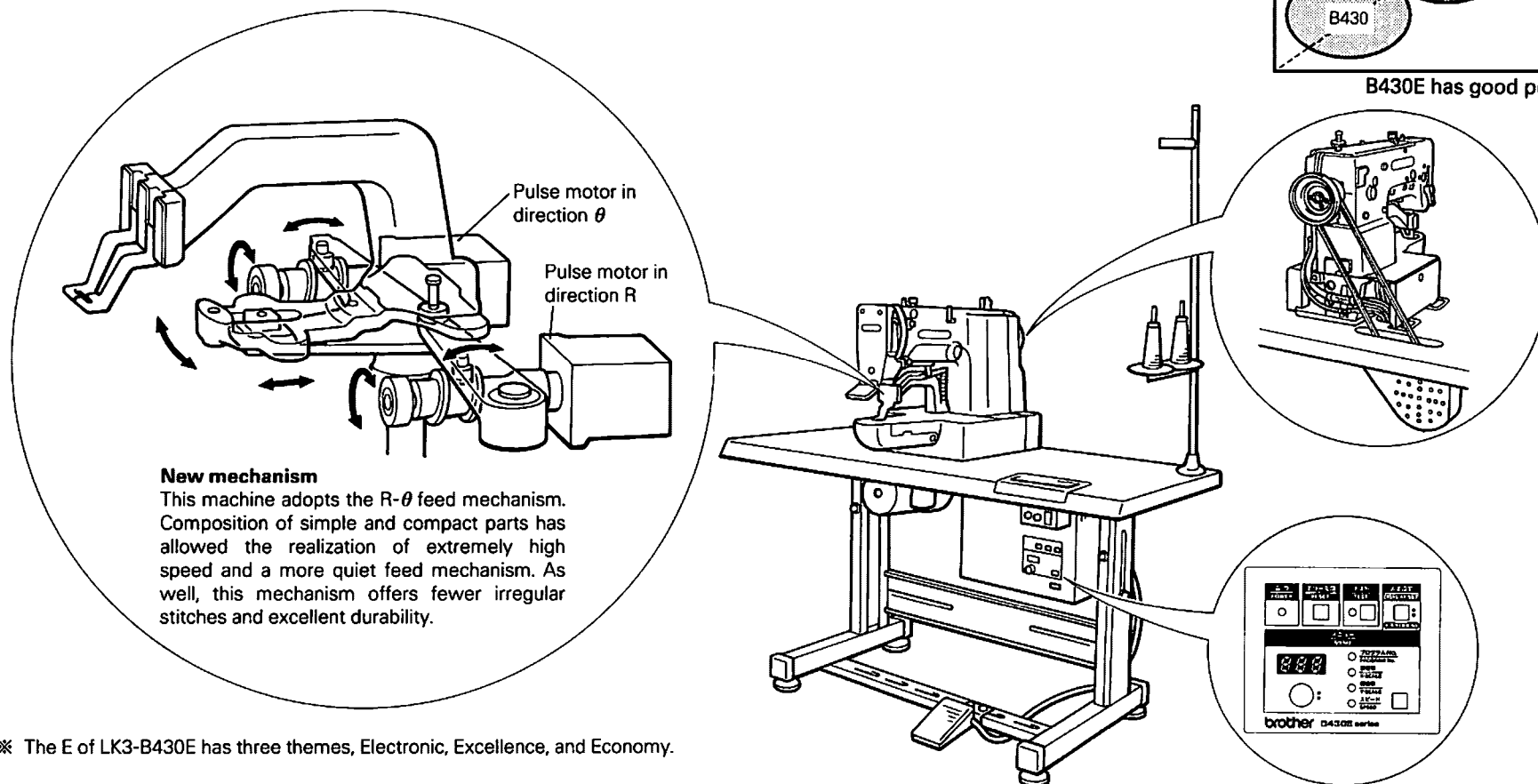
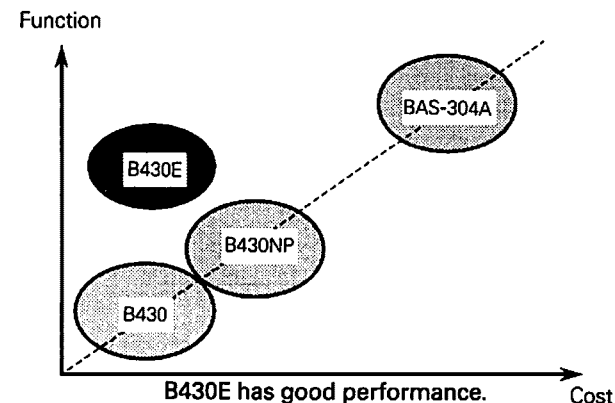
1 B430E Outline

• What is the LK3-B430E?

LK3-B430E is a sewing machine with electronic elements added to a conventional lockstitch bar tacking machine. This machine offers higher efficiency, simpler operation and more functions than the conventional lockstitch bar tacking machine does. Nevertheless, this machine has a reasonable price. This machine has good performance. (See the left graph.) Nine different types of bar tacking patterns and three different types of straight bar tacking patterns have all been pre-programmed.

Decorative bar-tacking patterns can also be sewn in a 30×10 mm sewing area.

- The conventional clutch mechanism and parts like the feed cam, worm, worm wheel, change gear, and power cam have been eliminated.
- Variable sewing speeds can be changed easily from the operation panel.
- Sewing patterns can also be changed easily from the operation panel.
- Sewing pattern size can be enlarged or reduced from the operation panel.
- Foot switch pedal pressure has been reduced.



※ The E of LK3-B430E has three themes, Electronic, Excellence, and Economy.

2 B430E position

● Comparison with mechanical bar tacking machines

Model \ Items	Sewing speed (spm) Stitch pitch	Number of stitches	Sewing area W×L (mm)	Starting and work clamp lifter drive	Cycle time (seconds) (1 cycle: 42 stitches and 2,300 spm)	Machine drive	Feed mechanism
B430E Electronic lockstitch bar tacker	2,500 max. 9 different level speeds	Either 42, 35, 28 or 21 12 sewing patterns with above numbers are already set.	30×10	Solenoid	1.62 (At 2,500 spm, cycle time is reduced up to 6% compared with B430.)	Induction motor Single V belt Motor control	Pulse motor
B430NP Lockstitch bar tacker <Clutch-less type>	2,300 max. 7 different level speeds	Either 42, 35, 28 or 21 It is necessary to change number of stitches by replacing feed cam and change gear.	30×10	Air cylinder	1.62	DC servo motor Single V belt Motor control	Feed cam
B430 Lockstitch bar tacker	2,300, 2,000, 1,800 It is necessary to replace motor pulley.	Either 42, 35, 28 or 21 It is necessary to change number of stitches by replacing feed cam and change gear.	30×10	Power cam	1.62	Clutch motor Two V belts Two-step clutch control	Feed cam

Compared with mechanical bar tacking machines, the B430E features are:

- Improved maximum high speed sewing, and easy variable speed setting
- Simple to change sewing pattern
- Simple pattern size enlargement/reduction by switch operation
- Easy maintenance due to elimination of clutch and parts like worm, worm wheel and change gear
- Lower noise due to no clutch noise
- 2-step foot switch making operation and productivity more efficient
(2-pedal foot switch is prepared as an optional part.)
- Almost same price as mechanical sewing machines even with the above-mentioned features equipped

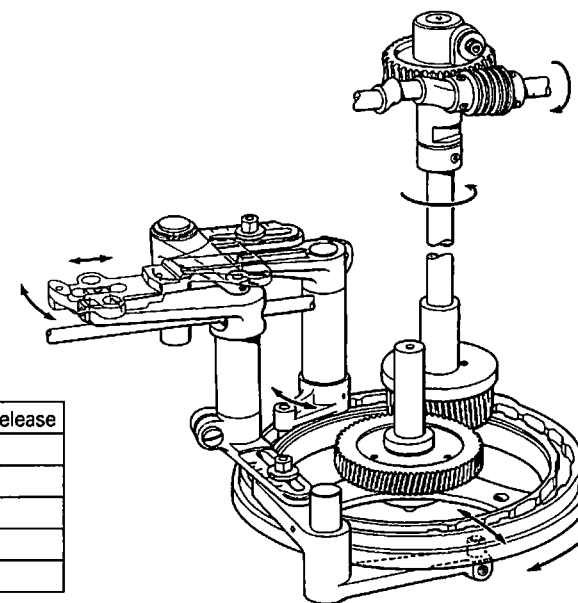
B430E offers the following sewing patterns for B430 series machines: (As of July, 1995)

B430E	• Bar tacking (Nine different patterns corresponding to those in specifications B430-1 to B430-9 have already been set.)
	• Straight bar tacking (Three types corresponding to those in specifications B431-1 to B431-3 have already been set.)
	• Decorative pattern tacking within pattern size 30×10 mm (Consult Brother Sales Officed for details.)

Sales schedule for coming models

Model	Application, sewing area	Scheduled sales release
B431E	Belt loop bar tacking	'96 in spring
B432E	Eyelet button hole end bar tacking	'96 in spring
B438E	Button sewing	'96 in spring
—	Decorative pattern tacking, 30×30 mm	—
—	Decorative pattern tacking, 50×50 mm	—

The above specifications may be subject to change without notice for the purpose of continuing product improvement, and consequently the model and the sales release date may be adjusted.



B430 Feed mechanism

● Comparison with electronic pattern sewers

Model \ Items	Maximum sewing speed (spm)	Available programs on machine	Stitch length	Feeding length	Sewing area W×L (mm)	Feeding type
B430E Electronic lockstitch bar tacker	2,500/4.5 mm (horizontal) 2,500/3.5 mm (vertical)	Not equipped	0.1–10.0 mm	0.1 mm/pulse	30×10	R-θ intermittent
BAS-304A Programmable electronic pattern sewer	2,000/3 mm	Equipped	0.1–12.7 mm	0.1 mm/pulse	50×50	X-Y intermittent

Feed drive	Data storage method	Number of pieces of data to be stored	Scale function	Work clamp lifter height	Intermittent work clamp (stroke)	Two-step work clamp
Pulse motor	P-ROM	12 already set	50–150%	17 mm	Not equipped	Not equipped
Pulse motor	3.5 FD 2DD	10	0–199%	Solenoid 18mm Air 20 mm	Equipped (either of 0, 4 or 7 mm)	Air type

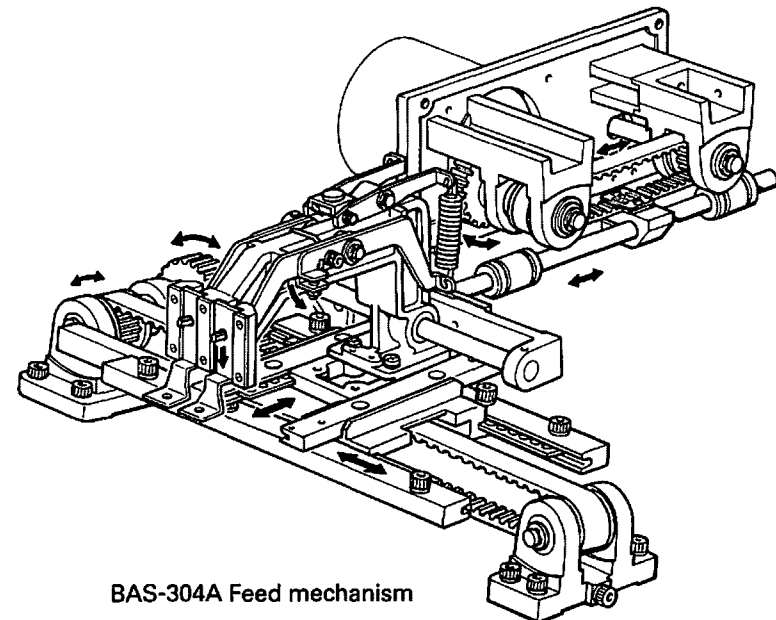
Comparing B430E with BAS series electronic pattern sewers:

B430E is more suitable when

- Main use is bar tacking and pattern size is within 30×10 mm.
- High speed sewing is required.
- Low-cost sewing machine is required

BAS series electronic pattern sewers are more suitable when

- Not only bar tacking but also pattern sewing is required.
- Pattern size exceeds 30×10 mm.
- Additional functions such as programming, intermittent work clamp lifter, and two-step work clamp lifter are required.



BAS-304A Feed mechanism

3 B430E sales points

1. Improved flexibility

- Variable sewing speed

When sewing speed is changed, it was required that the motor pulley be replaced, but now you can change to the desired sewing speed by only pressing the switch and without any difficulties. There is no need to change the motor pulley any more. Through switch operation, the machine can cope with diversified materials and threads.

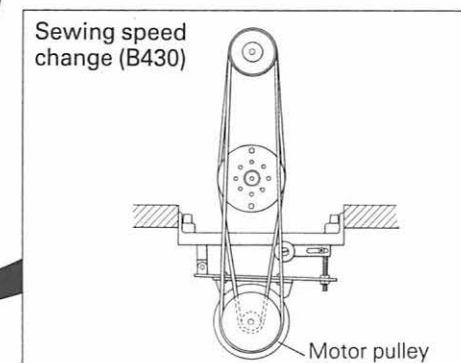
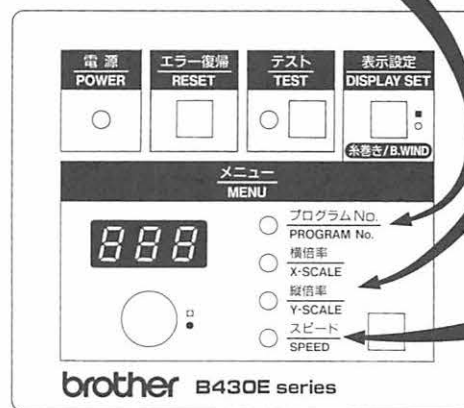
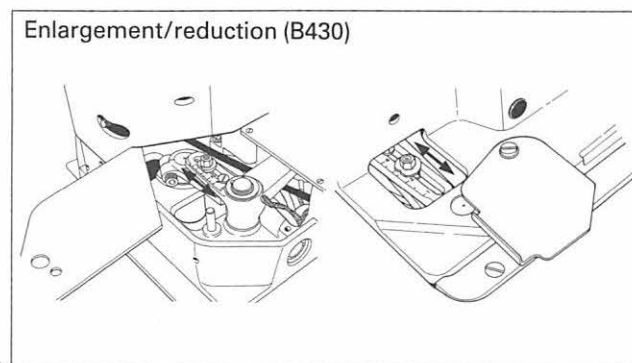
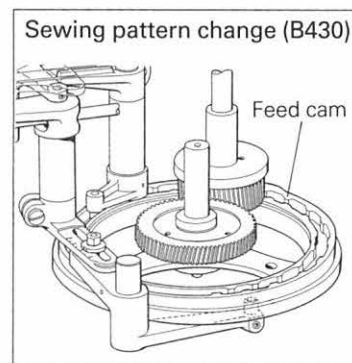
- Easy pattern change

There are 12 sewing patterns stored in PROM. It is easy to change the sewing pattern by just selecting one on the operation panel. There is no need to change the cams, nor adjust the timing between needle and feed mechanism. You can select a suitable sewing pattern quickly.

- Enlargement/reduction available

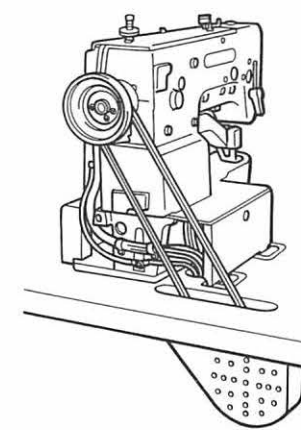
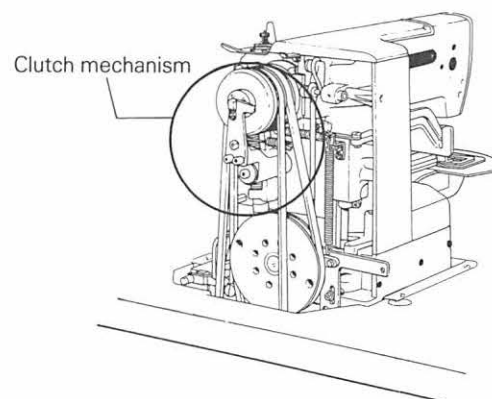
Through switch operation, it is possible to change the size of sewing pattern freely within the range of 50-150%. There is no need to change the tack length or width of the sewing pattern size using tools.

See page 6 for setting sewing speed and sewing pattern.



2. Easy maintenance

- The clutch mechanism and parts like feed cam, worm, worm wheel, change gear and power cam have been eliminated. In other mechanisms, as well, the number of parts have been greatly decreased. The machine can be maintained without any difficulties.



3. Improved work efficiency

- The pressure of the foot pedal has been reduced. Starting sewing or lifting the work clamp can be performed with a light touch, reducing operator fatigue.

4. Low cost and high performance

- With almost the same price as a mechanical sewing machine, high speed sewing has been realized with a maximum of up to 2,500 spm, offering higher performance and efficiency. (Compared with B430, productivity is increased approximately 6%.)

5. Low noise, low power consumption

- As there is no clutch noise, this machine provides a quiet and comfortable work environment.
- Work clamp lifter sensor has been added to work clamp lifter mechanism to counter impulse sound of work clamp. The machine is quiet even though the work clamp operates and in spite of it having a solenoid drive.
- With the adoption of the inverter motor, the motor will be stopped while sewing machine is stopped.

6. Improved durability

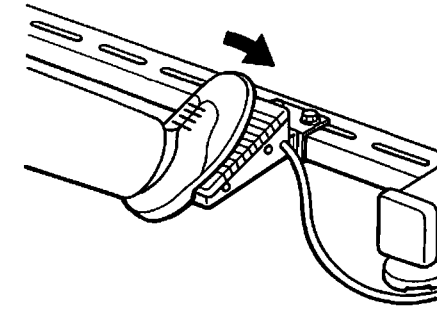
- Each mechanism, like the feed and thread trimmer mechanisms, has been simplified. Both durability and liability have been improved.

7. Common gauge parts

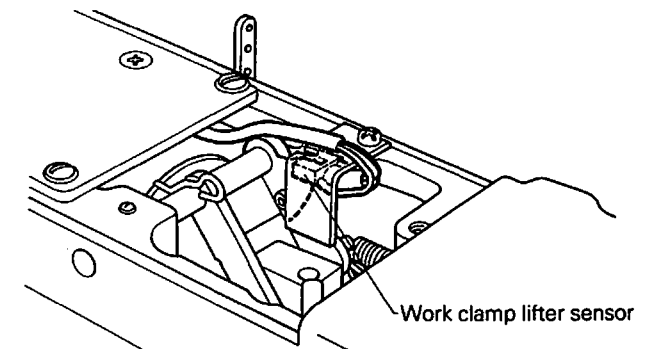
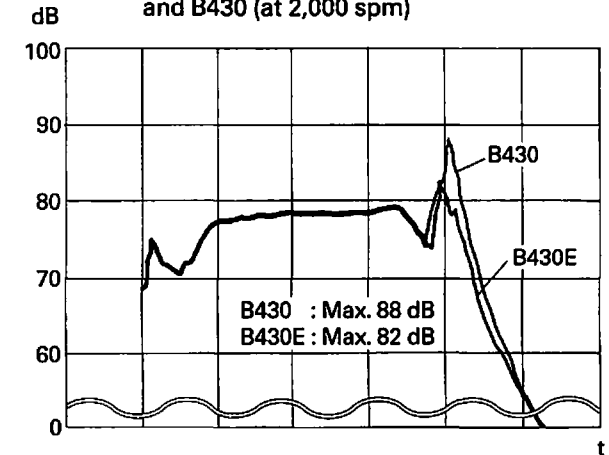
- Gauge parts like the work clamp and feed plate can be used on the LK3-B430, as well. (See page 10.)

8. Others

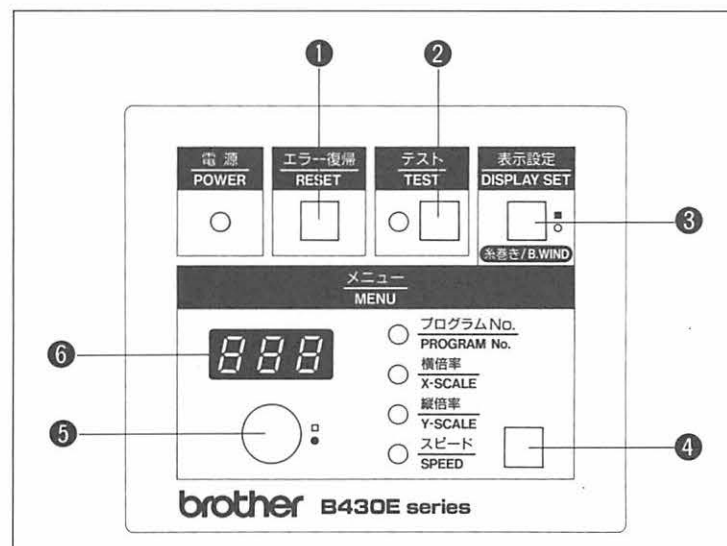
- Conventional subdivided specifications have been reduced to four specifications to facilitate understanding. (See pages 8 and 9.)
- Safety mechanisms are installed on this machine. Operator can work safely and comfortably.
- Operation panel is designed for simplicity and easy understanding. With simple operation, work efficiency will be further increased. (See page 6.)
- The machine head has been lightened to 47kg, and it is positioned on the table top. Installation can be performed easily.
- Air is no longer used.
- To prevent thread from getting dirty when sewing knitted materials, the exclusive large shuttle hook is equipped as a standard part. (See page 10.)
- A switching regulator (for stabilizing power supply) has been adopted, and consequently sewing operations will not usually be affected by voltage fluctuations. However, if the voltage drastically fluctuates, the machine will stop and display an error code. (See page 15.)



Comparison of loudness of B430E and B430 (at 2,000 spm)



4 B430E operation panel



① RESET switch

Used to release an error indication, and to reset to initial status.

② TEST switch

Used to check the needle movement by moving only the feed mechanism stitch by stitch. At this time, press the pedal to move the feed mechanism rapidly.

③ DISPLAY SET/B. WIND switch

Used to indicate setting of the selected menu by pressing this switch and turning the rotary switch ⑤.

This is also used to wind bobbin thread on the bobbin without moving feed mechanism.

④ MENU switch

Used to switch menu item of PROGRAM, X-SCALE, Y-SCALE, and SPEED. The lamp on the selected menu will light, and its contents will be appear on the display ⑥.

⑤ Rotary switch

Used to change the contents of the selected menu while pressing the DISPLAY/B. WIND switch, turn this switch.

⑥ Display

The display will indicate the current status for the selected menu, error or memory switch.

● Changing sewing speed

1

Press the B. WIND switch ③ to light the SPEED lamp.



2

Pressing the B. WIND switch ③, turn the switch ⑤ to indicate the desired speed (×10 spm).

● Changing sewing pattern

1

Press the MENU switch ④ to light the PROGRAM No. lamp.



2

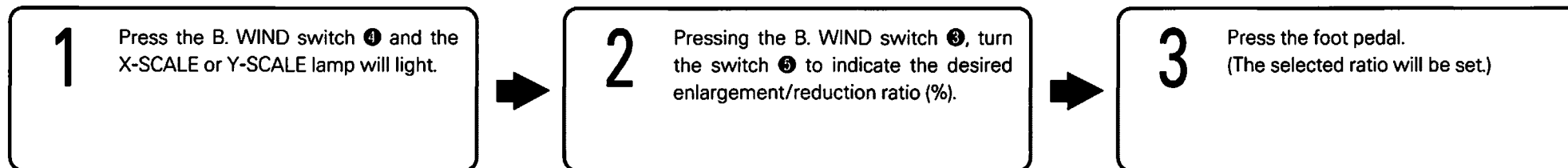
Pressing the B. WIND switch ③, turn the switch ⑤ to indicate the desired program number.



3

Press the foot pedal.
(The selected program number will be set.)

● Enlarging or reducing sewing pattern size



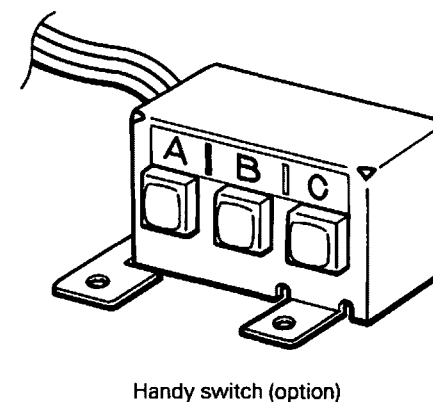
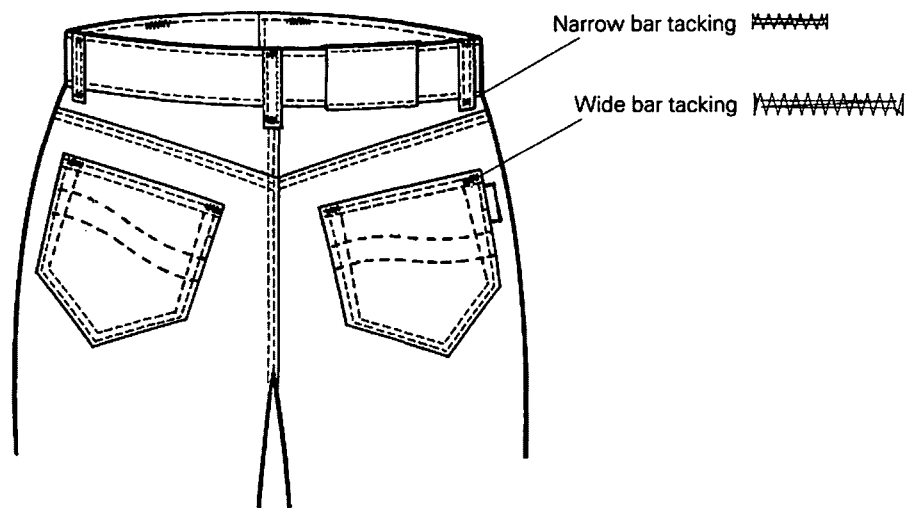
5 Effective use of B430E

B430E makes sewing operation efficient since the sewing pattern is changed easily by just pressing a button. Also, it offers flexibility to rearrange the process organization.

< Example >

Since a process that previously required two machines due to the different number of stitches can be performed on only one machine, the time taken to convey work pieces between the two machines has been eliminated, thus increasing productivity.

It is more efficient to use a handy switch (optional part). See page 12 for handy switch.



6 B430E specification

● Machine head

- Compared with the conventional machine, B430, which has nine specifications, B430E has only four.

LK3-B430E-

Specification			
	Material	Needle type	Sewing speed (spm)
1	Ordinary materials	DP×5 #16	1,700-2,000 ○ ◎
5			
2	Denim	DP×17 NY #19	1,700-2,500
7	Knitted materials	DP×5 #9	1,700-2,000 ◎

Destination			
01	Three-phase	200V (Japan)	12 Single-phase 220-230V (Other countries)
02	Single-phase	100V (Japan)	13 Single-phase 220-230V (Other countries)
10	Three-phase	220V (Other countries)	14 Three-phase 415V (Other countries)
11	Three-phase	380V (Other countries)	20 Three-phase 400V (Other countries)

◎ To prevent thread breakage due to heat, set the sewing speed to a maximum of 2,000 spm for sewing ordinary materials and knitted materials.

○ Standard work clamp and feed plate for subclasses -1 and -5 are different from those used on other machines.

● Specifications

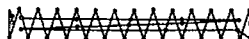

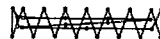
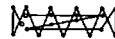
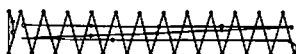
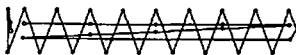
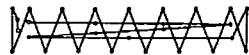
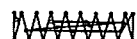
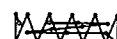
Stitch formation	Single needle lock stitch	Rotary hook	Shuttle hook (shuttle hook 1.8, optional)
Maximum sewing speed	2,500 spm	Wiper device	Standard equipment
Maximum pattern size	30×10 mm	Thread trimmer device	Standard equipment
Feed mechanism	R-θ intermittent feed mechanism (pulse-motor driven mechanism)	Data storage method	PROM (Any sewing pattern can be added using BAS-PC/300.)
Stitch length	0.1-10.0 mm	Number of stored data	12 sewing patterns are set already. (Up to 50 patterns can be added. Total number of stitches of stored data is within 5,000.)
Number of stitches	Any of 21, 28, 35, 42	Motor	Three-phase 400W induction motor
Maximum stitch number	5,000 stitches	Weights	Machine head: 47 kg Control box: 9-19 kg (depending on destination)
Work clamp lifter	Solenoid type		
Work clamp height	17 mm max.		

Main use

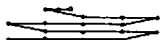
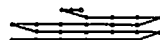
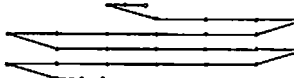
- Jeans ···· Belt loop attachment, pocket top, front, crotch
- Slacks ··· Belt loop attachment, side-pocket top, rear pocket, front
- Jackets, foundation garments, underwear, etc.

● Program list

- There are twelve standard sewing patterns on the LK3-B430E. Programs Nos. 1–9 are identical to those of the LK3-B430. Programs Nos. 10–12 are newly designed for the B430E.
- For each specification, sewing patterns are limited as shown in the right table. (Any program is available as long as the sewing pattern is within the work clamp and feed plate in size.)
These program numbers are equal to those for the LK3-B430 lockstitch bar tacker.

Specification	Use	Program No.	Sewing pattern	No. of stitches	Standard bar tacking length	Standard bar tacking width
-1	For ordinary materials	01		42	16 mm	2 mm
		04		28	16 mm	2 mm
-5		05		28	10 mm	2 mm
		08		21	7 mm	2 mm
-2	For denim	02		42	20 mm	3 mm
		03		35	20 mm	3 mm
		06		28	16 mm	3 mm
-7	For knitted materials	07		28	8 mm	2 mm
		09	(To prevent stitches from unraveling) 	21	7 mm	2 mm






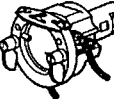
- Programs No.10–12 are for straight tack stitches.
- If you want to sew a pattern other than one of the standard 12 patterns, you can create your original pattern using the BAS-PC/300. (See page 12.) Consult with your local Brother Sales Office for details.






Program No.	10	11	12
Sewing pattern			
No. of stitches	21	28	28
Standard bar tacking length	10 mm	10 mm	20 mm
Standard bar tacking width	0 mm	0 mm	0mm

● Gauge parts list according to subclasses

The following are standard gauge parts according to each specification.

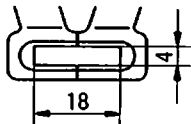
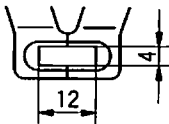
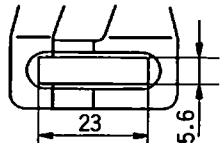
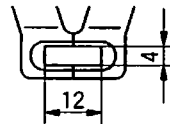
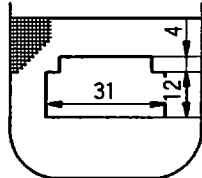
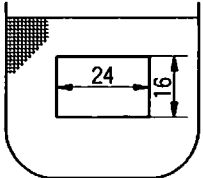
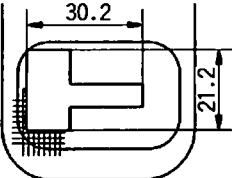
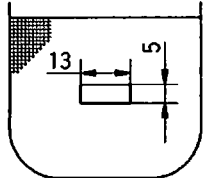
(In the following table, parts marked with ◎ are common with the LK3-B430; parts with ○ are common with the BAS-304A.)

Subclass	Part name Use	Needle hole plate 	Inner rotary hook 	Large shuttle hook 	Tension spring 	Spring 	Shuttle race base assembly 
-1	For ordinary materials	Needle hole plate ○ F (φ2.2) S10213-001	Inner rotary hook A ◎ 152685-201	Large shuttle hook A ◎ 152682-001	Tension spring ◎ 104525-001	Spring ◎ 145519-001	Shuttle race base assembly S02427-201
-5							
-2	For denim	Needle hole plate ○ E (φ2.6) S10212-101	Inner rotary hook B ◎ 152687-201	Large shuttle hook B ◎ 152686-001	Tension spring ◎ 107606-001	Spring B ◎ 144588-001	Shuttle race base assembly for knitted materials S37976-001
-7	For knitted materials	Needle hole plate ○ A (φ1.6) S10211-001	Inner rotary hook A ◎ 152685-201	Large shuttle hook A ◎ 152682-001	Tension spring ◎ 104525-001	Spring ◎ 145519-001	

Subclass	Part name Use	Needle 	Presser arm assembly 	Spring 	Work clamp 	Feed plate 
-1	For ordinary materials	DP×5 #16 107415-016 ◎	Presser arm assembly S37952-009	Spring A 153568-001 ◎	4×18 (for 2 mm use) ◎ R. 152777-001 L. 152778-001	12×31 ◎ (Submerged-type L) 153055-201
-5			Presser arm assembly for knitted material use S37953-009		4×12 (for 2 mm use) ◎ R. 152779-001 L. 152780-001	12×24 ◎ (Submerged-type S) 153207-201
-2	For denim	DP×17 NY #19 S37928-019	Presser arm assembly for denim use S37948-009	Spring C 154356-001 ◎	5.6×23 (for 3 mm use) ◎ R. 153608-101 L. 154527-001	153610-101 ◎
-7	For knitted materials	DP×5 #9 107415-009 ◎	Presser arm assembly for knitted material use S37953-009	Spring A 153568-001 ◎	4×12 (for 2 mm use) ◎ R. 152779-001 L. 152780-001	5×13 (for 2 mm use) ◎ 152791-201

Standard sizes for work clamps and feed plates are as follows:

(The actual sewing area has a 1.5 mm margin on every side; inside the lines which the dimensions indicate.)

Specification	-1	-5	-2	-7
Work clamp R Work clamp L	152777-001	152779-001	153608-101	152779-001
	152778-001	152780-001	154527-001	152780-001
				
Feed plate	153055-201	153207-201	153610-101	152791-201
				

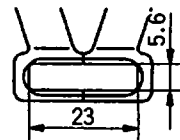
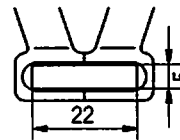
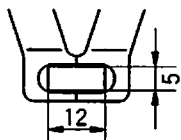
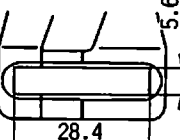
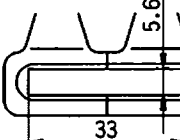
The movable knife assy (S10205-001) and the fixed knife (S10210-101) are used.

• Optional parts

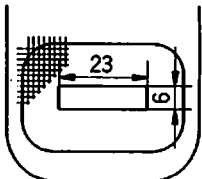
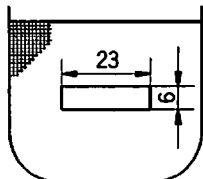
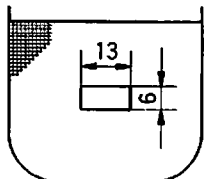
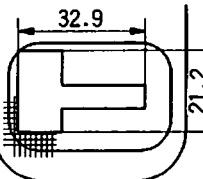
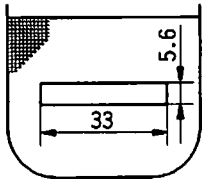
• Gauge parts

The following are provided as optional gauge parts. (Each work clamp pair is used in combination with the feed plate directly below them.)

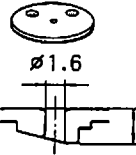
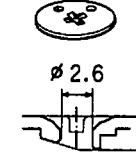
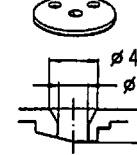
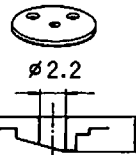
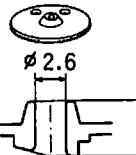
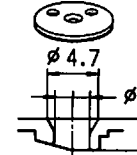
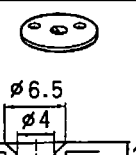
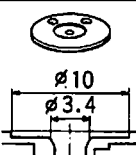
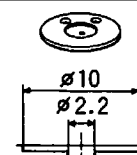
• Work clamps R and L

152781-001 (For denim)	153201-001 (PL)	153203-001 (PS)	S00906-001 (1 inch)	S33747-001 (30 mm)
152782-001 (For denim)	153202-001 (PL)	153204-001 (PS)	S00907-001 (1 inch)	S33748-001 (30 mm)
				

• Feed plate

152792-001 (For denim)	153205-201 (PL)	153206-201 (PS)	S00908-001 (1 inch)	S33749-001 (30 mm)
				

• Needle hole plate

A	S10211-001	D	S29997-001	E	S10212-001
					
-7 (For knitted materials)				-2 (For denim)	
F	S10213-001	H	S30450-001	L	S25127-001
					
-1, -5 (For ordinary materials)					
M	S34348-001	ED	S30925-001	FD	S30926-001
					

• Handy switch

B430E can register up to 6 sewing patterns in addition to the standard sewing patterns, Nos.1-12. These patterns are sewing patterns that are created by enlarging or reducing the size of standard patterns.

Using the handy switch, 6 patterns can be retrieved from the registered patterns. It will be useful to increase productivity since sewing patterns can be changed with a workpiece left on the machine.

Make sure that the sewing pattern is within the dimensional limits of the work clamp and feed plate.

• Two-pedal foot switch

The single-pedal foot switch is standard equipment. With the two-pedal foot switch, one pedal is used to lift the presser foot, the other being for starting sewing.

● Associated software

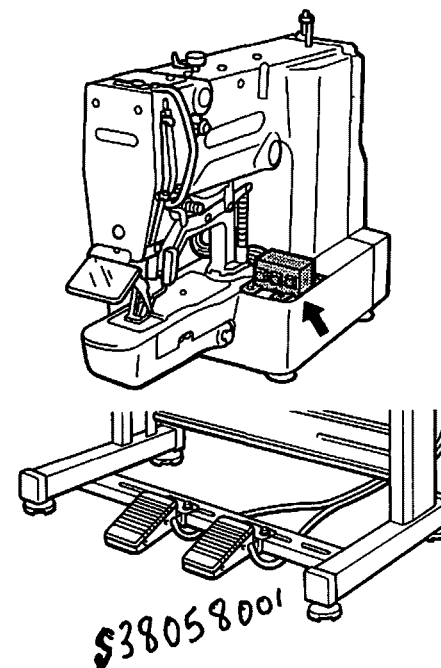
• BAS-PC/300 Programming software for electronic pattern sewer

This is software designed for creating patterns (whose size is within 30×10 mm) on a personal computer for transferred to the B430E, supplementing standard patterns already installed. (A ROM writer should be required.)

● Shipping condition

The B430E is set as follows at shipping:

PROGRAM No.	00	
X-SCALE	100 (%)	
Y-SCALE	100 (%)	
SPEED	2,000 spm	
Work lifter rise	-2 (for denim)	14 mm
	-1, -5 (for ordinary materials)	10 mm
	-7 (for knitted materials)	9 mm
DIP switches	All are set to OFF.	
Memory switches	All are set to OFF.	



● DIP switch

1. DIP switch on the circuit board in the control box

The DIP switch in the control box is used for setting functions that are least likely to have their mode changed.

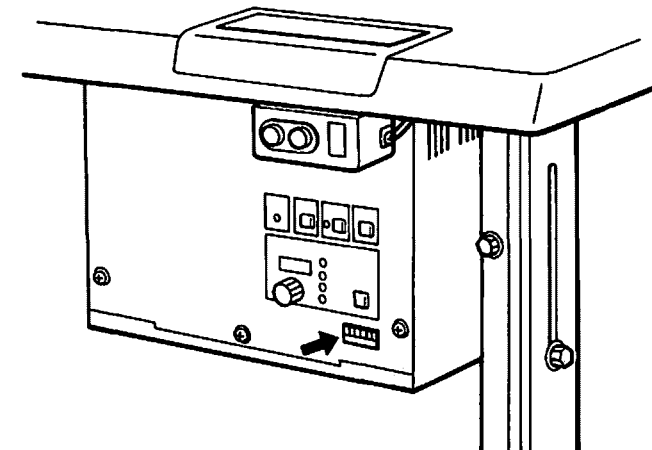
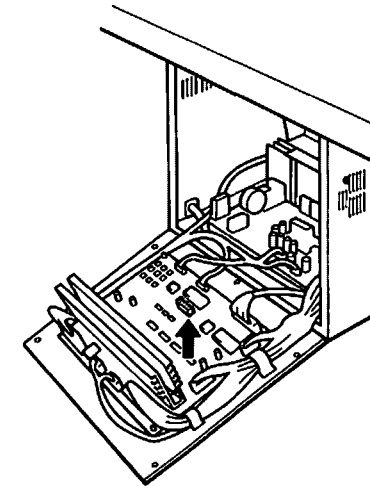
Switch	Motion when set to ON	
DIP B-1	First two stitches are sewn at a low speed of 260 spm.	
DIP B-2	Last two stitches are sewn at a low speed of 260 spm.	
DIP B-3	Last two stitches are sewn at a low speed of 400 spm regardless of the pattern.	SEE NOTE
DIP B-4	Last two stitches are sewn at a low speed of 700 spm regardless of the pattern.	SEE NOTE
DIP B-5	This is used for checking circuit board. Be sure to set to OFF.	
DIP B-6	Low speed sewing is not performed at the start of sewing.	
DIP B-7	-	
DIP B-8	This is used for future specifications. Be sure to set to OFF.	

NOTE: Last two stitches of sewing pattern No. 2, 3 or 6 will be sewn at 700 spm for denim specification; other than those, about 400 spm will be set automatically.

2. DIP switch on operation panel

The DIP switch, on the front of the operation panel, is used for setting the functions that are most likely to have their mode changed according to sewing requirements.

Switch	Motion when set to ON	
DIP A-1	Work clamp does not automatically lift after sewing is completed.	See "3. Setting work clamp motions" on the following page.
DIP A-2	Two-pedal mode is available.	
DIP A-3	User program mode is available.	
DIP A-4	-	
DIP A-5	-	
DIP A-6	-	
DIP A-7	Enlargement of pattern size is not available.	
DIP A-8	Program number is fixed.	



3. Setting work clamp motions

Through the combination of DIP switches A-1 and A-2 on the operation panel, work clamp motions can be set as follows:

DIP A-1	DIP A-2		
-	-	Single pedal	Work clamp is raised automatically.
ON	-	Single pedal	Work clamp is raised by pressing the pedal.
-	ON	Two pedals	Work clamp is raised automatically, then it is lowered by pressing the pedal.
ON	ON	Two pedals	Work clamp is kept lifted while the pedal is pressed.

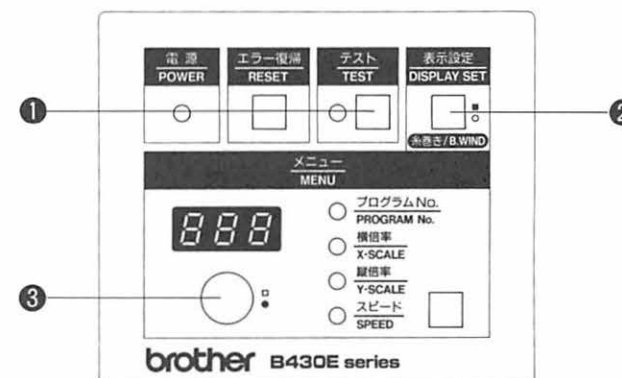
● Memory switch

Memory switch functions are stored in the EEPROM chip on the main circuit board.

These function settings are able to be changed according to sewing requirements, however, most of them are not often used.

Switch	Motion when set to ON
memo-0	At the end of sewing, the feed plate will be returned to the sewing start point via mechanical home position.
memo-1	Work clamp will move to the sewing start point, and then will be lifted.
memo-2	-
memo-3	-
memo-4	-
memo-5	-
memo-6	-
memo-7	-
memo-8	-
memo-9	-
memo-A	-
memo-b	-
memo-c	-
memo-d	-
memo-E	Test feeding will be performed at the same speed as that for actual sewing. (This is used for checking feeding operation.)
memo-F	At the end of sewing, the clamp will automatically open and close once. (This is used for running-in operation.)

1. Pressing the TEST switch ❶, press the DISPLAY SET switch ❷.
2. Turn the switch ❸ until the desired function number is indicated on the most further left of the display.
3. Press the DISPLAY SET switch ❷. The display will alternate between on and off (-).
4. Press the TEST switch ❶. (The display will be returned to its normal condition.)



● Self-diagnosis functions

In the case of trouble, the machine will display an error number along with issuing a beep. Press the RESET switch to find the cause.

Error No.	Contents (cause)	Countermeasures
E-1	Operation is stopped by pressing the emergency stop switch (optional).	Release emergency stop switch, and press the RESET switch.
E-2	Motor is stopped. Motor does not rotate, or synchronizer is defective.	Turn off the power, and turn the pulley to check if machine is locked. Make sure synchronizer is connected.
E-3	Part or all of the sewing pattern lies outside the sewing area.	Press the RESET switch to reset sewing pattern size.
E-4	Stitch length exceeds 10 mm or some other part of the sewing data is wrong.	Press the RESET switch to reset sewing pattern size. If PROM chip is newly installed, do it again.
E-5	The machine did not stop with the needle at its upper position.	Turn the pulley until the mark on it is aligned with the needle up stop position. Adjust the needle up stop position referring to standard adjustment instruction. Adjust V belt tension.
E-6	Work clamp does not move up and down.	Refer to TROUBLESHOOTING GUIDE in instruction manual.
E-7	Cooling fan does not function.	Turn off the power. Check if waste thread is clogging the cooling fan.
E-8	Motor PROM or main circuit board is defective.	Turn off the power. Consult your dealer.
E-9	Abnormal voltage is detected.	Check input voltage.
E-A	Home position can not be detected (home position sensor is defective), or power supply PCB is defective.	Turn off the power. Consult your dealer.
E-b	You tried changing program number although DIP SW A-8 is set to ON.	Press the RESET switch. When you change program number, set DIP SW A-8 to OFF.
E-d	Heatsink of the main circuit board has overheated.	Turn off the power. Clean the air inlet of control box.
E-E	EEPROM chip is defective. (Main circuit board is defective.)	Turn off the power. Wait a minute and turn on the power again. If error still occurs, consult your dealer.
E-F	Power supply relay does not function. (Power supply circuit board is defective.)	Turn off the power. Consult your dealer.

※ Before opening the cover of the control box, be sure to turn off the power and wait for five minutes.

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