

### 2-needle, Automatic Belt-Long loop Attaching Machine

# JTR-MOL254/LBA

## **INSTRUCTION MANUAL**



NOTE :

Congratulations on your purchase of a JTRON sewing machine. Read safety instructions carefully and understand them before using. Retain this Instruction Manual for future reference.

> JTR000 MOL254LBA-TM

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### I. SPECIFICATIONS

- 1) Max. sewing speed
- 2) Hook
- 3) Bobbin
- 4) Thread take-up
- 5) Needle
- 6) Range of thread specification
- 7) Number of stitches

#### 8) Replacement of number of stitches

- Number of bartacking patterns stored in memory
- 10) Needle bar stroke
- 11) Stitch adjustment method
- 12) Bartacking width
- 13) Bartacking length
- 14) Needle entry
- 15) Thread trimming method
- 16) Lift of cloth presser foot
- 17) Cloth feed method
- 18) Sewing machine drive method
- 19) Thread presser drive method
- 20) Cloth presser drive method
- 21) Wiper drive method
- 22) Sewing machine lubrication method
- 23) Lubricating oil
- 24) Center distance of needle adjustment method
- 25) Length of center distance of bartacking
- 26) Loop width
- 27) Allowance of loop folding
- 28) Allowance of loop presser
- 29) Loop cut method
- 30) Loop cut

- : 2,500 sti/min delivery speed : 2,200 sti/min (sewing pitch : 3.4 mm or less)
- : Horizontal semi-rotary hook (oil wick lubrication)
- : 1.8 fold hook
- : Link thread take -up
- : DP×17 #19 to #21
- : Cotton thread #30 to #50, spun thread #30 to #50
- Panel selection method from among 28 stitches, 36 stitches and 42 stitches
   (28 stitches at the time of delivery)
  - (Max . 64 stitches when external ROM is used .)
- : Panel selection method
- : Standard number of patterns : 9 patterns (Max . 99 patterns when external RO M is used.)
- : 45.7 mm

:

- : Panel input method
- : 1.0 mm to 3.0 mm (2.3 mm at the time of delivery)
- : 7.0 mm to 22.0 mm (10.0 mm at the time of delivery)

28 stitches	36 stitches	42 stitches
28	36	42
/////////	/₩₩₩₩₩₩₩	/₩₩₩₩₩₩
1	1	1

- Knife method (Hook on this side : Air cylinder drive method)
   Knife method (Hook on rear side : Electromagnetic valve solenoid drive method)
- : 21 mm (from top surface of cloth presser lower plate to bottom surface of cloth presser)
- : Intermittent feed (2-shaft drive by stepping motor)
- : DD AC servomotor (450W) mounted onto machine head
- : Air cylinder drive
- : Air cylinder drive
- : Air cylinder drive
- : Manual oiling (centralized oil-wick lubrication)
- : JUKI New Defrix Oil No.2
- : Needle portion : manual moving method Hook portion : stepping motor drive moving method (in 0.01 mm steps)
- : 80.0 mm to 110.0 mm
- : 9 mm to 20 mm
- : 11 mm (excluding cross cut section)
- : 4mm
- : Selection of cross cut and straight cut (Range : 9 mm to 20 mm) (Cross cut at the time of delivery)
- : Cutting method by engaging moving knife with counter knife

31)	Loop bending	: Fork folding method
32)	Loop feeding drive method	: Front and rear assisted drive method (stepping motor)
33)	Loop length setting	: Automatic recognition method
34)	Loop splice detection	: Potentiometer automatic splice detection method
35)	Bobbin thread winder device	: Single and separated drive
36)	Temporary stop function	: Possible to stop the machine during sewing
37)	Bobbin thread counter	: Selection method of UP/DOWN counter (Front and rear hooks can be separately set. Device automatically stops at COUNT UP.)
38)	Fork drive method	: AC servomotor (120W)
39)	Loosing loop mechanism	: Optional
40)	Loop pull-out mechanism	: Optional
41)	Needle thread breakage detector	: Optional
42)	Needle cooler	: Optional
43)	Air gun	: Optional
44)	Table height	<ul> <li>Provided with adjustable stand function (Manual type)</li> <li>920 mm to 1,250 mm (from floor level to top surface of throat plate)</li> </ul>
45)	Dimensions	: Width : 1 ,200 mm Length: 800 mm Height: 1,350 mm (excluding thread stand) (When table comes down to the lowest.)
46)	Weight	: 230 kg
47)	Power consumption	: 350VA
48)	Operating temperature range	: 5 °C to 35 °C
49)	Operating humidity range	: 35% to 80% (no dew condensation)
50)	Line voltage	: AC230V ± 10 % (Power frequency : 50 Hz)
51)	Air pressure used	: 0.5 MPa
52)	Air consumption	: 52 ℓ /min. (Nℓ min) (Splice processing : 1 cycle/min, excluding optional)
53)	Capacity	: 1,200 - 1,400 jeans or uniforms / 8 hours

### **II. NAMES AND FUNCTIONS OF COMPONENTS**





C

B type (for high-voltage) This switch is used also as the emergency stop switch.

ON: Turn the center grip of the switch clockwise. OFF : Turn it counterclockwise.



### **III. INSTALLATION**



DANGER : When transporting the sewing machine, be sure to perform the work with two persons or more.

### 1. Fixing the table stand



2. Installing the thread stand



Adjust adjustment bolts **1** in the stands and fix the sewing machine on the floor.

- Assemble the thread stand and set it in the hole located in the upper right of the machine table.
- 2) Tighten locknut 1 to fix the thread stand.
- 3) Attach the thread guide arm (asm.) ③ to the thread stand.
- 4) When ceiling wiring is possible, pass the power cord through spool rest rod ②.

#### 3. Air adjustment



Open air cock ①, pull up and turn air regulator knob ②, and adjust so that air pressure gauge ③ indicates 0.5 MPa. Then push down the knob to fix it.

\* When closing air cock ①, air comes out.

### 4. Removing the head fixing bolt



Remove the transport fixing bolts,  $(\mathbf{A}, \mathbf{B})$  and  $(\mathbf{O})$ , and washer  $(\mathbf{D})$ .

It is recommended that you should keep the transport bolts with care.

Tighten screw (Part No. SS5680740SP) supplied with the machine as accessory after removing the fixing bolt. (To prevent oil leakage)

#### 5. Installing the bobbin winder



- Fit bobbin winder ① and bobbin winder thread tension ② to lower hole ③ located on the right side of the table, and fix them respectively with screw ④ and flat washer ⑤.
- 2) Connect the cable of bobbin winder to the connector attached to the upper surface of table.

### 6. Adjusting the height of the table



1) Turn table up/down handle 1) as shown on the seal located on the left side of the handle. Turn it clockwise in the direction A to go up and counterclockwise in the direction **B** to go down.



The height of the table is set in the lowest position at the time of delivery. Be sure, at first, to make the table go up. Be careful that you do not turn the handle further from the lowest position or highest position of the

2) The lowest position of the table is the position where hole **O** of the lower stand **O** is aligned with hole **()** of the upper stand **(3)**. The highest position is the position where hole **()** of the lower stand is aligned with hole **(B)** of the upper stand 3.

### **IV. PREPARATION**

#### 1. Lubrication



WARNING :

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

#### (1) Machine head



 Apply oil from oil lubricating inlet ① (2 places) to the red mark in the center of oil gauge ② once a day.

#### (2) Hook race surface



#### Rear side

 Apply a drop of oil to hook race surface 
 to such an extent that the race surface is blurred with oil.

#### Front side

2) Apply a drop of oil to the hook race surface ①.
Remove rubber plug ② and apply oil to hook base felt ③.



Be sure to apply oil when operating the sewing machine again after an extended period of disuse.

#### (3) Crank rod lubricating plate



 Remove the arm cover and apply oil to the crank rod lubricating plate ①.

I



### (4) Main shaft front Metal



1) Apply oil to the main shaft front Metal.



Be sure to apply oil when operating the sewing machine again after an extended period of disuse.

#### (5) Loop feeding device

#### Lubrication method



- Loosen cover setscrew ② and remove cover
   , and apply oil to all the lubricating locations painted in yellow (marked with a thick arrow).
- Front ① and rear ② of the fork folding shaft
- Front ③ and rear ④ of receiving portion of the fork folding shaft connecting shaft
- $\,\circ\,$  Slider portion (5)
- Top ⑥ and bottom ⑦ of loop cut portion



### 2. Crossing a belt loop



WARNING: Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



- 1) Cross a belt through belt loop guides (**B**, **()**, and **G** in the written order.
- 2) Cross the belt loop through adjust binder 1.
- 3) Press down feeding roller 2 by hand and insert the loop under the roller.



• Refer to page. 38 for adjusting the belt loop splice. Refer to page. 36 for adjusting the width of belt loop.

★ When the optional loop pull-out device is used

respectively.

### 3. Attaching the needle

WARNING :

Tum the power switch OFF before starting the work.



- 1) Loosen setscrews **1**.
- 2) Insert needles ② fully into the hole in needle fitting base ③ until the end of hole is reached. At this time, set scarf ④ of needle ② on front side to the front side and that of the needle on the rear side to the rear side (refer to left illustration).
- 3) Tighten setscrews 1 .



Use a suitable count for sewing since it varies in accordance with sewing conditions.

- 1. Needle .... DP×17 # 19 to 21
- 2. Thread .... Cotton thread : #30 to #50 Spun thread : #30 to #50



When using needle or thread other than the aforementioned needle or thread, gradually increase the speed after performing confirmation of sewing state at a low speed rotation of the sewing machine. Otherwise, needle breakage may occur.

### 4. Setting the bobbin case



#### WARNING :

Tum the power switch OFF before starting the work.



- Press the bobbin replacement switch and the panel and widen the center-to-center distance between the hooks.
- 2) Turn OFF the power switch.
- 3) Open hook base cover **1** (Both right and left sides).
- Raise latch ③ of bobbin case ② and take out the bobbin case. Hold latch ③ and the bobbin does not fall.
- 5) When setting, insert the bobbin case fully into the hook shaft, close latch 3, and close hook base cover 1.
- 6) Perform the same procedure for front side and rear side.
- 7) Turn ON the power switch.
  - 1. The sewing machine does not start even when the start switch of the sewing machine is pressed with hook base cover **1** opened.
  - 2. If the insertion of bobbin case (2) is insufficient, it will fall away from the hook shaft during sewing.
  - 3. The hook base cm this side moves when the power switch is turned ON.

So, be careful not to allow your hand or the like to be caught in the hook base.

### 5. Winding the bobbin thread



- 1) Insert bobbin 1) into bobbin shaft 2.
- 2) Pass thread through thread guide (3), open thread tension disks (9), and enter the thread into the slit of thread tension post (10).
- 3) Wind thread 4 to 5 turns with bobbin 1 in the direction of arrow, press bobbin presser 3 to bobbin side (in the direction of arrow), and turn switch 4 ON. Then, thread winding starts.
- 4) To adjust the thread winding amount, loosen thread winding amount adjustment nut <sup>(5)</sup>, and perform the adjustment with thread winding amount adjustment screw <sup>(5)</sup>. When screwing in screw <sup>(6)</sup>, thread winding amount decreases, and increases by turning the screw in the reverse direction.
- 5) When the thread is one-sidedly wound with bobbin ①, loosen screw ⑦ and move thread guide ③ in the direction of arrow to adjust.
- 6) When thread winding with bobbin ① is completed, put thread on thread cutter ① to cut it.

For reference, wind the bobbin thread around the bobbin to the extent of 80% of its capacity.

### 6. Setting the bobbin into the bobbin case



- Hold bobbin ① so that thread is "left twist" (Z-twist), and set the bobbin into bobbin case
   2.
- 2) Pass the thread through thread slit ③ in bobbin case ②, and continue pulling the thread. By so doing, the thread will pass under the thread tension spring and come out from notch ④. At this time, adjust so that bobbin ① rotates in the direction of arrow when the thread is pulled.
- 3) Pass thread through thread hole (5) in the hook portion and draw out the thread by 25 mm from thread hole (5).

### 7. Threading the machine head



#### WARNING :

When threading the machine head, lower the cloth presser foot by pressing "Threading" switch on the operation box or tum OFF the power switch.



Thread the machine head as shown in the illustration given above.

### 8. Adjusting the thread tension



(1) Adjusting the needle thread tension
 As you turn thread tension No. 2 knob ①
 clockwise, the needle thread tension will be
 increased, and as you turn it counterclockwise,
 the needle thread tension will be decreased.

### (2) Adjusting the bobbin thread tension

As you turn tension adjust screw **2** attached to the bobbin case clockwise, the bobbin thread tension will be increased, and as you turn it counterclockwise, the bobbin thread tension will be decreased.

(3) Adjusting the thread remaining length

As you turn thread tension No. 1 knob ③ clockwise, the thread remaining length on the needle after thread trimming will be shorter, and as you turn it counterclockwise, the thread length will be longer.

(Shorten the thread length to such an extent that the thread does not slip out of the needle.)

### **V. BASIC OPERATION FLOW CHART**

### 1. Basic Process Alarm indication is displayed. Operation

If you press the RE-SET switch after having turned the power on, the fork, loop cutter, loop draw-out hook move and the presser foot carries out its initial operation (origin retrieval operation), be careful not to place hands near their operating area.



### VI. OPERATION

### 1. Names and functions of operation box panel



Name of switch	Function	
Standard screen key	<ul> <li>a. This key is used to enter the setting screen.</li> <li>b. When changing the sewing data, keep pressing this key for 10 seconds to release data-lock, In addition, data is locked when keeping pressing this key again.</li> <li>c. Pressing the standard screen key, press the ten key [3], and the belt loop is put in the state of being removed. (Refer to page. 48.)</li> </ul>	
5 Ten key	These keys are used when inputting various numeric data.	
Needle threading switch	Presser foot of the machine comes down and the threading is facilitated. A hazardous state arises when this switch is turned ON, since the belt loop feeding device operates at a high speed. Keep your hands or any other part of your body away from the area of the belt loop feeding device drive and under the presser foot of the machine.	
Bobbin replacement switch	This switch is used when replacing bobbin. Center-to-center distance between first hook and second hook can be widened to the maximum. A hazardous state arises when this switch is turned ON, since the belt loop feeding device operates at a high - speed. Keep your hands or any other part of your body away from the area of the belt loop feeding device drive and under the presser foot of the machine.	
Reset switch	<ul> <li>Screen returns from the alarm display screen or the like to the standard screen. The following functions are performed.</li> <li>1. When the RESET switch is pressed after the power is turned on, the sewing machine belt loop feeding device carries out origin retrieval and the display screen changes over to the setting screen.</li> <li>2. Release of the alarm (When the alarm screen is displayed.)</li> <li>3. Reset of the sewing counter (When the counter screen is displayed.) (When the count up screen is displayed.)</li> <li>4. Reset of the total counter (When the counter screen is displayed.)</li> <li>5. End of the machine adjustment screen</li> <li>6. End of the check program</li> </ul> A hazardous state arises when you press this switch after having turned the power ON, since the belt loop feeding device operates at a high speed. Keep your hands or any other part of your body away from the operating area of loop feeding device and under the presser foot of the sewing machine.	
Temporary stop switch	This switch is used to temporarily stop the operation or stop the operation. (Caution) Re-start cannot be performed when the temporary stop switch is operated during the operation.	
Left cursor key	<ul> <li>a. This key scrolls setting item to the left when displaying setting screen or the like.</li> <li>b. This key performs presser foot jump feed operation (traveling backward) when displaying the sewing screen. (Refer to page. 20.)</li> </ul>	
Screen change-over key	This key selects setting item.	
Right cursor key	<ul> <li>a. This key scrolls setting item to the right when displaying setting screen or the like.</li> <li>b. This key performs presser foot jump feed operation (traveling forward) when displaying the sewing screen. (Refer to page. 20.)</li> </ul>	
Display screen	This screen performs various displays.	
DIP switches	These switches change over various settings. (Refer to page. 29.)	
Set ready LED switch	Green color	

### 2. Explanation of the counter

Count operation means that number of times of sewing is added or subtracted when sewing is completed while one loop is regarded as "1 ".

When the number of times of sewing reaches the specified value, the sewing machine automatically stops, and the hook on front side widens to front side. Turn OFF the power and replace the bobbin with a new one.

#### Operation

- $\,\circ\,$  Make the set ready LED go out.
- (Press the set ready key (green color), and light-up and go-off are repeated.)
- $\circ$  Press the counter key  $\sqrt{\frac{12}{3}}$  and the count setting screen is displayed as given below.



When the screen change-over key  $[ \ ]$  is pressed while selecting pictograph Nos. <AA> to <AD>, the counter is changed over UP counter to DOWN counter.



Display at the time of DOWN counter

Set value is entered with the ten keys.

 $\,\circ\,$  Count can be individually set to the first hook and the second hook.

- '• This setting is convenient when bobbin thread amount to be used of the respective hooks is different from) each other.
- When replacing bobbins as a set, count UP or DOWN operates by setting of either one only.
- <AA> First hook counter
- <AB> First hook counter value (set value)

#### When counter value is set to "0", count-end operation is not performed.

- <AC> Second hook counter
- <AD> Second hook counter value (set value)

When counter value is set to "0", count-end operation is not performed.

- <AE> Total counter
  - (UP counter function only)
  - Clear with the reset key.

(Even when the power is turned OFF, data will remain. Be sure to reset before starting counting.)

#### Count UP screen

When the counter is in the state of count-up after sewing, the following screen is displayed.

\* When setting first hook and second hook individually, the part only to which count-up is performed is displayed.



\* Be sure to use the counter since the moving mechanism is provided on front side (first hook).

After turning OFF the power switch and replacing the bobbin on the displayed side, turn ON the power and press the set ready switch. Then, count-up screen is displayed. Here, press the reset switch  $\mathbf{R}$  and clear the counter.

#### 3. Confirmation of needle entry point

\_\_\_\_\_

 ○ When the sewing screen is displayed, jump feed operation of presser foot only can be performed by pressing the left cursor key ◀ or the right cursor key ►.

Use this function when confirming the needle entry point or the like.

Traveling backward is performed with the  $\blacktriangleleft$  key, and traveling forward with the  $\blacktriangleright$  key.

In addition, when jump feed operation screen is displayed, the presser foot moves up or down by pressing the needle threading switch  $-\frac{1}{2}$ .



When turning ON the needle threading switch  $-\not\!\!\!\!\!/ \!\!\!\!/$  , be sure not to place your hand or the like under the presser foot.

 $\circ$  The screen returns to the sewing screen by pressing the **R** button.

### 4. Setting screen



Setting of sewing data is performed.

The screen is displayed by pressing the program key.

When you desire to change the set value, keep pressing the standard screen key for 10 seconds. Data-lock is released.

When you desire to lock the data again, keep pressing standard screen key for 10 seconds.

In addition, when turning ON the power, it is recommended to release the lock only when it is necessary since the state before turning OFF the power has been stored in memory.

#### (1) Selection of the pattern



Sewing pattern No. is displayed.

Sewing pattern Nos. are 01 to 99 (internal patterns are 1 to 9.).

Press the screen change-over key [ ], and screen moves to the sewing pattern selection screen.

From 10th pattern, write in the optional external data ROM from the PGM-20 and input it. (Refer to the Instruction Manual for PGM-20 for input procedure.) When the external data ROM is mounted, external data ROM has priority in display.



Press the screen change-over key  $\uparrow$  and pattern of font which is flickering is selected. Then, screen moves to the sewing pattern setting screen.

#### (2) Setting of max. rotation number



(Setting range : 500 to 2,200 sti/rnin) Input with the ten keys.

\* The maximum rotation number can be set to 2,500 sti/min at the maximum. It should be noted, however, the sewing machine should be used within the range up to 2,200 sti/min.

#### (3) Setting of number of stitches



Sewing pattern should be selected from among 28-stitch, 36-stitch and 42-stitch patterns built in system ROM.

#### (4) Setting of bartacking length



(Setting range : 7.0 to 22.0 mm)

#### (5) Setting of bartacking width



(Setting range : 1.0 to 3.2 mm)

### (6) Setting of belt loop width (\*1)



(Setting range : 9.0 to 20.0 mm)

This setting makes the machine memorize the belt width so that the sewing position is symmetrical to the center when bartacking length is changed.

### (7) Fine adjustment of bartacking position (\*1)

Sewing position may slightly move when a loop is changed to the other loop of different width or to the other loop of different material.

Use this setting when compensating the correction amount at this time.



Moves to the right as much as the set value.



Moves to the left as much as the set value.

• Moving direction changes with the press of the screen change-over key  $|\mathbf{t}|$ .

#### (8) Fullness setting

Changeover of standard to fullness alternatively (\*1)



Standard sewing



Fullness sewing (Optional)

(\*1) It is not displayed when the fullness device is stopped (SW3 located on lower side of DIP switches, refer to **page. 29**.).

Set value (fullness gathering amount)

Loop of double input value is supplied in surplus.

Be sure to perform trial stitching, however, since input value may be different from the expected value in accordance with waist and thickness of the loop or center-to-center distance between bartacks.

#### (9) Setting of the belt loop splice detection



Make the machine memorize the thickness of belt loop splice.

#### (10) Setting of the belt loop detection



Make the machine memorize the thickness of belt loop and make the machine stop when the belt loop runs out.

For the aforementioned (9) and (10)

When the pattern is changed, set again since data is memorized by each pattern data.

Therefore, it is not necessary to set again if the sewing products are the same since pattern data and loop that have been entered once are controlled by the machine.

Refer to **page. 38** for the setting procedure.

When setting the belt loop splice and detection using the actual product, it is possible to set with either (9) or (10).

### 5. Adjustment screen



Pressing the standard screen key (), press ten key "0", and adjustment screen is displayed.

At this time, when No. 2 of the upper section of DIP switches located on the right side of operation box panel is :

- OFF : Display only
- ON : Setting possible state

A padlock mark on the lower right of the panel display screen represents the state.

#### (1) Sewing machine start-up speed



Start-up speed can be selected from among 5 stages. (Standard value : 3) Change the start-up speed to slow if thread slip-off at the start of sewing should occur.



### (2) Adjusting the first hook



#### WARNING :

Operate by only an operator who has a proper knowledge and operation training since needle-tohook timing adjustment is performed after turning ON the power.



Enter the first hook adjustment screen with the selection key [1].

The value displayed on the pictograph represents the distance between first hook and second hook (reference).

(Note) Perform opening/ closing of the hook cover after entering the first hook adjustment screen.

The hook moves in a unit of 0.01 mm with the ten key "1" (open) or "7" (close), and moves in a unit of 0.1 mm with the ten key "2" or "8".

To ensure safety, however, the keys "2" and "8" cannot be accepted when the thread take-up lever is not positioned in its upper dead point.

(Note) Be sure to press the R key to register after performing hook position adjustment



Be careful not to allow your hand to be caught in the hook base by the move of the hook base on front side during performing hook position adjustment.



#### (3) Belt feeding amount



Setting of the length when belt loop is picked out (unit : mm) Folding amount of belt loop in the rear side changes. The longer the belt loop is picked out, the more the folding amount increases. Caution : The value and the value of folding length are not the same since there is a difference in mechanical adjustment value. When setting the folding amount of belt loop in the front side, adjust the loop feeding unit. (Refer to the item (8) on page. 34.)

At this time, be sure to re-turn ON the power after the adjustment.

#### (4) Setting of splice cutting (front)



This setting inputs the distance to conduct as a defective loop the front side from the position where the top end of splice is confirmed. (Unit : mm) Splice section at the top end of splice is gradually swollen, and the accuracy of detection varies in accordance with the material of loop. This setting is to compensate the error of accuracy of detection. In addition, it may be necessary to adjust the error in accordance with the width

(5) Setting of splice cutting (rear)

of belt loop.



This setting inputs the distance from the rear end of splice section to the position to cut the loop. (Unit : mm)

The loop should be cut in the slight rear of splice section since the cross cut is applied to the loop. Otherwise, the splice section gets mixed with the loop. The standard set value of [BD] or [BE] value is 10mm.



#### (6) Setting of wiper operating time



Setting of wiper operating time is performed. (Unit: sec.) Change the operating time when the operating time is short and thread cannot be wiped.

Input the change with the ten key. (Standard setting : 0.06)

#### (7) X-axis origin compensation of the sewing machine presser



This adjustment is performed when the position of the presser and needle is shifted due to unexpected accident or the like. (unit : mm) (This adjustment is not used unless replacement of X-Y table, or adjustment of X-Y table sensor slit is performed.) Move the X-axis origin to the right or left. Enter the adjustment screen with the screen change-over key 1. Adjust with the ten keys following instructions in the screen.

#### (8) Y-axis origin compensation of the sewing machine presser



This adjustment is performed when the position of the presser and needle is shifted due to unexpected accident or the like. (unit : mm) (This adjustment is not used unless replacement of X-Y table, or adjustment of X-Y table sensor slit is performed.) Lower the Y-axis origin. Enter the adjustment screen with the screen change-over key  $\blacklozenge$ .

Adjust with the ten keys following instructions in the screen.

#### (9) Fork origin compensation



This setting performs compensation of the position where the fork catches the belt loop.

Left direction makes the fork travel forward, and right direction makes it travel backward.

Changeover of front/rear direction can be performed with the screen changeover key  $| \clubsuit |$ .

Data of compensation amount is memorized in ROM. It is recommended, however, to take a memo of the data for preparing the worst.

#### (10) Setting of thread presser operation



This setting performs the selection of operation/non-operation of the thread presser.

ON/OFF of the operation can be changed over with the screen change-over key  $| \blacklozenge |$ .

Make this setting OFF when damage is given to the thread by the pressure of the thread presser.

#### (11) Selection of check PGM mode



After inputting the aforementioned mode No., the check program can be actuated with the screen change-over key  $\lfloor \bigstar \rfloor$ . Do not use this mode since it is used for maintenance and inspection by the

#### (12) Origin compensation value at the time of delivery

manufacturers.

A sheet which are described the origin compensation values of this machine is enclosed wit it, so keep it with care.

If the replacement of the Main PCB should occur due to the trouble, you should re-entry their values to the machine with using the sheet.

If you have changes their vales, take a memo new values of <BG>, <BH>, or <BI> to it.

MOL-254			Adjustment Sheet	
			MOL Mfg. No	
	Data No	Data Name	Adjustment value	NOTE
	<bb></bb>	Hook-Position		Hook position data at the time of delivery
	<bg></bg>	X-Origin		X-axis origin compensation value
	<bh></bh>	Y-Origin		Y-axis origin compensation value
	<bi></bi>	Fork-Origin		Fork origin compensation value

### 6. Setting of DIP switches



DIP switches can be set when removing cover **1** located on the right side face of the operation box.

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#### Upper side of side face

No.	Name (function) of mode	Standard setting	Description
SW1	Expansion of setting range	OFF	When the switch is set to ON, limitation item is ineffective.
SW2	Adjustment screen protect	OFF	When the switch is set to ON, protect is released.
SW3	Thread breakage detection	OFF	When the switch is set to ON, detection is effective.
SW4	Auxiliary loop feeding device	OFF	When the switch is set to ON, the device actuates.
SW5	Air pressure sensor	OFF	When the switch is set to ON, the sensor is ignored.
SW6	No setting	OFF	
SW7	No setting	OFF	
SW8	Sewing machine durability operation switch	OFF	When the switch is set to ON, the drive starts (used in the maintenance screen).



It is possible to change during turning ON the power.

#### Lower side of side face

No.	Name (function) of mode	Standard setting	Description
SW1	Manual sewing operation	OFF	When the switch is set to ON, operation of the supplying device stops.
SW2	Step operation	OFF	When the switch is set to ON, step operation is effective.
SW3	Fullness device	OFF	When the switch is set to ON, the device operates (change of set-back operation).
SW4	Belt loop retaining when turning ON the power	OFF	When the switch is set to ON, the loop is dropped.
SW5	Splice detection	OFF	When the switch is set to ON, the detection is ignored.
SW6	Cross cut	OFF	When the switch is set to ON, the cut is changed to straight cut.
SW7	No setting	OFF	
SW8	Switch for production	OFF	Operate with the switch OFF at any time.



Perform setting of the switches after turning OFF the power, and re-tum ON the power.

### 7. Operation



#### WARNING :

Operate the machine after you thoroughly understand a series of procedure steps referring to the basic operation flow chart. (See page. 16.)



Operate the machine following the steps of procedure described below.

- 1) Turn ON the power switch. (Turn ON switch ①.)
- 2) Set a garment body to be sewn on the machine.
- 3) Press the start switch. (Press switch 2).)
- After the machine completes predetermined steps of procedure, the machine actuates the thread trimmer to cut needle and bobbin threads, automatically lifts the presser foot, then stops.

### VII. MAINTENANCE



WARNING :

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

#### 1. Changing the center-to-center distance between bartacks

The center-to-center distance between bartacks can be adjust ed within the range of 80 mm to 110 mm.

#### (1) Changing the space between the needles



#### (2) Changing the presser foot

- Loosen position adjustment screw ① (2 pieces), and move the needle clamp ② to the right or left to change the space between the needles. (second needle is in the fixed state as reference.)
- Space of the needles can be adjusted within the range of 80 mm to 110 mm.
- Tighten position adjustment screw ① (2 pieces) after the adjustment.



- Loosen two setscrews ① in the presser foot base.
- Move presser foot base 2 in the direction of arrow and adjust so t hat the needle is symmetrically positioned in the center of the slot of presser foot 3.
- Tighten two setscrews **()** in the presser foot base.

#### (3) Changing the cloth presser lower plate



 Loosen setscrew 

 in the cloth presser lower plate and replace it with a new one.
 It should be replaced since the adjustment is not possible.

When plate hole (Toge sides

When fixing the cloth presser lower plate, fix it at the position where the hole of the presser foot meets the hole of the cloth presser lower plate. (Together with the front and rear sides)

• Tighten setscrew **①** in the cloth presser lower plate after the adjustment.



### (4) Adjusting the second hook position

- Turn ON the power. When the data is locked, keep pressing the standard screen key for 10 seconds to release the data lock key.
- 2) Simultaneously press ( key and "0" key, and the setting mode screen appears.
- 3) Select [BB] **\_\_**, with **\** key.
- Press <sup>↑</sup> key, and the hook moving mode screen appears.
- 5) Press "2" key or "8" key, and the hook moves in increments of 0.1 mm. In addition, if you keep pressing the key, the hook moves continuously. Press "1" key or "7" key, and the hook moves in increments of 0.01 mm. Refer to the illustration for the key to be pressed and the moving direction.
- 6) The hook moves to the position where the center of needle hole is almost aligned with the center of needle with the "2" key or "8" key.
- 7) Fine adjustment is performed with the "1" key or "7" key. Perform the adjustment while checking the clearance between the blade point and needle. At this time, adjust so that a clearance of 0.05 to 0.1 mm is provided between the blade point of inner hook and needle.
- 8) Return the screen to the initial screen with "**R**" key after the adjustment.

#### (Note)

If the needle stop position varies, "2" and "8" keys are ineffective and the panel display disappears. It is not necessary to adjust the needle-tohook timing.

Be careful not to allow your hand to be caught in the hook base by the move of the hook base on front side during performing hook position adjustment.

#### (5) Adjusting the wiper



#### WARNING :

This work has to be carried out with the power switch OFF. This work has to be carried out with the compressed air supply shut off.



- (1) In case of front side (in the state where the machine stops)
- Loosen two setscrews ① and wiper base A ② moves in the direction of arrow.
- 2) Adjust the position when moving the wiper by hand as shown in the illustration so that section
  A which catches thread comes in contact with thread and enters further than thread when it extends to the maximum.

(Adjust so that the wiper does not come in contact with needle. It is all right if the wiper section is bent.)

- 3) Tighten two setscrews **①** after the adjustment.
- (2) In case of rear side (It is not necessary to adjust since normally, this wiper is fixed.)
- 1) Loosen two setscrews ③ and wiper base B ④ moves up or down.
- 2) Loosen two setscrews (3) and wiper base C (3) moves front and rear.
- 3) Adjusting position is the same as the aforementioned (1) 2).
- 4) Tighten two setscrews each of ③ and ⑤ after completion of the adjustment.

#### (6) Adjusting the fork



#### WARNING : When performing maintenance, detach the power plug or turn OFF the power switch in advance. Shut off the compressed air supply.



Loosen cover setscrews **1** and remove the cover.



#### (1) Moving the front side folding shaft

- Loosen setscrews 1 and 2. Align the center of each fork with the needle entry point. Then, tighten setscrews 1 and 2.
- 2) Attach the cover in position.



#### (7) Changing the loop receiver





#### (1) Moving the loop receiver

 Loosen setscrews ①. Move loop receiver (front) ② to set it to a desired belt loop length. (Do not use scale mark ③ since it does not match the belt loop length.) After the adjustment, tighten screws ①.

At this time, adjust so that the clearance between the fork and the loop receiver is approximately 5.5 mm.



#### (8) Moving the loop feeding unit



Loosen screw 1, move knife unit guide rail 2. In addition, do not use scale mark 3 since it does not match the loop length.

#### (9) In case of the fullness



Loosen screw (4) and move fullness lever (1) to almost the center between loop receivers, front 2 and rear 3.

When the position is determined, tighten screw  $\boldsymbol{Q}$ .

(10) Change data value of fullness amount <1H> on the panel to a proper value.





In terms of changing the center-tocenter distance, steps of procedure are inverted in some steps when widening or narrowing the distance.

When all the adjustments are completed, re-turn ON the power. Make the belt loop length re-initialize.

### 2. Adjusting the width of belt loops

#### (1) Changing the binder



Loosen screws **1** and adjust the position of loop width guide **2** so that a clearance of 1 mm (as thick as the splice section) is provided between the belt loop and the binder. Then, tighten screws **1**.

### (2) Adjusting the loop gathering claw



Loosen screws ①, and move loop gathering claws A ③ and ④ until the belt loop comes in contact with the loop gathering claw B ②.

### (3) Adjusting the cross cut position



Loosen main body setscrews ①, turn adjustment screw ② and move the setscrews in the direction **A** or **B** to adjust the position of the main body so that the cut belt loop becomes the loop center as shown in Fig. 1.

Pull the belt loop splice detector lever ③ to front side, and the necessary amount of the loop can be fed. Further, pressing the standard screen key ④, press ten key 3. Then, the loop presser unit releases the loop.

Again, pressing the standard screen key (), press the ten key 3. Then, the loop can be cut. Use this function when performing the adjustment.



The aforementioned operations can be actuated only when the setting screen is displayed.

#### (4) Changing the length of bartacking



Change the data of loop width of 1D in the setting screen.

#### (5) Changing the value of belt loop width



Change the data of loop width of 1F in the setting screen.

### 3. Replacing loop cut moving knife



#### WARNING :

Tum OFF the power and shut off the compressed air supply!!

Exercise extra care not to allow your fingers to be cut by moving knife () during the knife replacing procedure.

#### (1) Removing the moving knife



Remove setscrews ① from the loop receiver, then remove loop receiver ② . Remove setscrew ③ from the knife presser spring collar, then remove knife presser spring ④ and moving knife ⑤ . When installing, follow the aforementioned procedure for removing the moving knife in the reverse order.

#### (2) Adjustment

If the top face of moving knife ③ is not flush with moving knife mounting base (no clearance is provided between the knife and the base), when attaching moving knife ⑤ in position, loosen setscrew ⑦ and perform the adjustment by changing the position of moving knife mounting base ⑥.

### 4. Adjusting the belt loop splice detector (Adjusting with the actual

product)



#### WARNING :

So as to ensure safety, be sure to carry out this adjustment in the state that the sewing ready LED has gone out. This adjustment has to be carried out with the power switch ON.

#### (1) Removing the moving knife



* Belt loop *	
→ P=1	level (0)
Key [1] = level	
Adjustment	
Key [R] = Return	
* Belt loop *	
	level (30)

- [7] = Feed [9] = set
- [R] = Return

- Flashing to [1I] or [1J] in the setting screen, press ▲ key to enter the splice input screen.
- 2) Press the ten-key [1].
- 3) When the zero level is entered, the ten key [0] is not displayed. However, when the zero level (when there is no loop) has not been entered even one time, press the ten key [0]. Refer to Note).
- 4) Set a belt loop on the machine and keep pressing the ten key [7] of the loop feed button to pass the normal loop section and splice section up to detection lever ①.
- 5) Enter the ten key [9].
- 6) Press the  $\mathbf{R}$  key to return to the setting screen.

#### Note)

#### When the belt loop splice detector

(potentiometer **2** and gear **3**) is adjusted, or Main PCB board is replaced, a slip occurs in the zero level. Be sure to set the zero level again in accordance with the procedure given below before adjusting the belt loop splice detector. (See page.38.)

- Flashing [1I] or [1J] in the setting screen, press the splice input screen.
- Press the ten key [1]. The display screen is as shown on the left side.

When pressing the ten key [0] without inserting the belt loop in this screen, the zero level is set.

③ After the aforementioned steps, perform the normal adjustment of the belt loop splice detector.

#### [ Adjusting the belt loop splice detector ]

#### Numeric value input method (applied volume)

When the pattern No. is changed, it is necessary to re-input splice level. However, when changing other setting using the same belt loop,the value can be directly entered by entering the value with the ten keys in flashing state of [11] (Thickness of splice section) and [1J] (thickness of normal loop). As for the numeric value, enter the same data as the pattern data that is adjusted to the actual belt loop since there is no correlation between the numeric value and the thickness of the belt loop.

### 5. Adjustment of the belt loop without splice

[1]]	[1J]
**************************************	<b></b> ‡ 24
* Belt loop *	
> P=1	level (0)
Key [1] = level	
Adjus	tment
Key [R] = Return	)
* Belt loop *	
	level (30)
[7] = Feed	
[9] = set	
[R] = Return	,

1) Flashing [1I] or [1J] in the setting screen, press <u>h</u> key to enter the splice input screen.

2) Press the ten key [1].

- Set a belt loop and keep pressing the ten key [7] of the loop feed button. (For approximately two seconds)
- 4) Press the ten key [9] to set the data.
- 5) Press the  $\mathbf{R}$  key to return to the setting screen.

[1]	[1]]
- <u>+</u> -	-‡
82	24

6) Here, enter with the ten key the numeric value as much as approximately 4-times of the data value of [1J] in the state of flashing [1I] (thickness of splice section) data. Example) Enter 24 → 96.

#### (Note)

A belt loop without splice, when setting in the step 6) is not performed, cannot distinguish the thickness from the thickness of normal loop, and the error (AL-56) may occur during sewing.

Be sure to perform the aforementioned setting for the belt loop without splice.

### 6. Changing the straight cutting





#### (1) Removing the chip cover

Remove setscrews 1 and 2 and remove chip cover 3.

#### (2) Moving the loop feeding unit

Loosen screws 1, and move knife unit guide rail **2** to the rear side as much as the cross cutting length (S mm).



Dimension S varies according to the loop width. Perform the adjustment while confirming the folding length referring to the table below.

J

Loop width	9	10	11	12	13	14	15	16	17	19	20
Dimension "S"	3.3	3.7	4.1	4.4	4.8	5.2	5.5	5.9	6.3	7.0	7.4





#### (3) Changing the knife position

• Loosen setscrew 2 in clamp collar 1.

• Adjust so that the moving knife is at right angle against the loop.



• Fit clamp collar **1** to the bushing on the rod side of cylinder, and fix it with setscrew **2**.



E BC I

#### (4) Changing the DIP switch

 Remove cover ① located on the right side of operation box, and turn ON SW 6 of DIP switches located on the lower side of the right side. (Refer to page.29.)

#### (5) Changing the belt feeding amount

• Change the winding amount of belt in the rear belt.

Decrease as much as the cross cutting length (S mm).

### 7. Selecting the folding fork



### 8. Replacing the loop folding shaft and adjusting the folding pressure

#### WARNING :

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



- 1) Turn OFF the power switch and shut off the compressed air supply.
- 2) Loosen setscrew 1 in the folding shaft.
- 3) Move the folding shaft in the direction of arrow  $\blacklozenge$ , and draw it out from rotor shaft 2.
- 4) When installing it, do not mistake for the front and rear shafts, and adjust the position of the setscrew to the contact face. Then, tighten the screw while pressing the shaft to the face A.





### 9. Draining



5) Adjusting the loop folding pressure Adjust the pressure to the lowest pressure with which both ends of the loop to be used can be folded.

(Adjustment)

First, turn counterclockwise adjustment screw (4) in reducing valve (3) for loop folding located in the stand to make the pressure the lowest, then turn it clockwise gradually to increase the pressure until the loop can be folded.

- 1) Draining has to be carried out once a day.
- 2) Press the portion **1** upward, and draining is automatically performed.

### 10. Adjustment of the height of the needle bar



### WARNING :

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



Bring needle bar 1 to its lowest point, loosen two setscrews 2 in the needle bar connection, and adjust the height of the needle bar so that upper engraved line 4 on the needle bar meets the bottom end of needle bar lower bushing 3.



#### Be sure to check that there is no unevenness of torque after the adjustment.

\* If stitch skipping should occur in accordance with the sewing conditions, lower the needle bar from upper engraved line ④ on the needle bar by 0.5 to 1 mm to adjust the height.

### 11. Adjustment of the needle-to-hook timing



WARNING :

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.









 Turn the handwheel by hand, and align lower engraved line 2 with bottom end of the needle bar lower bushing 3 when needle bar 1 goes up.

2) Loosen driver setscrew ③, open inner hook presser hooks ④ to the right and left sides, and remove inner hook presser ⑤.



At this time, be careful so as not to drop inner hook **()**.

3) Align the blade point of inner hook (3) with the center of needle (7) and adjust so that a clearance of 0 mm is obtained between the front end face of the driver and the needle since driver (3) receives the needle at its front end face to prevent the needle from being bent. Then, tighten driver setscrew (3).



#### **Rear side**

- 4) Loosen shuttle setscrew (9), turn shuttle adjustment shaft (1) clockwise or counterclockwise, and adjust the longitudinal position of the shuttle so that a clearance of 0.05 to 0.1 mm is obtained between needle **7** and inner hook 6.
- 5) After adjusting the longitudinal position of the shuttle, adjust the direction of rotation so that a clearance of 7.5 mm is provided between the needle and the shuttle. Then, tighten shuttle setscrew 1

#### Front side

Refer to the item (4) "Adjusting the first hook position" on page.32.

(1) Adjusting thread take-up spring (1) (front

pressure, and counterclockwise to decrease

2) Turn knob 2 clockwise to increase the

3) After the adjustment, tighten screw 1.

to decrease the pressure.

spring adjustment nut 8.

(2) Adjusting thread take-up spring (2) (rear

1) Loosen thread take-up spring adjustment nut

2) Turn thread take-up guide presser **4** clockwise

3) After the adjustment, tighten thread take-up

to increase the pressure, and counterclockwise

### 12. Thread take-up spring



WARNING :

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

side)

side)

8.

1) Loosen screw 1.

the pressure.



#### (3) Adjusting the thread take-up spring stroke Front side

- 1) Loosen setscrew **(5)** in the thread take-up spring adjusting plate.
- 2) Move thread take-up spring adjusting plate (b). Move it clockwise to increase the stroke, and counterclockwise to decrease the stroke.

#### (4) Adjusting the thread take-up spring stroke Rear side

- 1) Loosen setscrew () in the thread take-up spring adjusting plate.
- 2) Move thread take-up spring adjusting plate (3). Move it clockwise to increase the stroke, and counterclockwise to decrease the stroke.

### 13. Adjusting the rising amount of the thread tension disk



- Remove the arm cover and confirm that thread release pin ③ rides on thread release notch ④.
- If the pin does not ride on the notch, press cam follower ⑤ in the direction ⇒ by hand, make the main shaft rotate in the normal direction to bring to the state as shown in the illustration.
- 3) In such a state as the illustration, loosen screw
  2) in the thread release adjusting arm and move thread release adjusting arm 1 to the right or left. The rising amount of the tension disk changes by moving it to the right or left.

0.6 to 1.0 mm



If the rising amount is small, the length of remaining thread after thread trimming varies. Also, if it is large, defective disk closing after releasing the disk rising will occur.

#### 14. Adjusting the moving and counter knives



#### WARNING :

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



1) Adjust so that the top end of the moving knife protrudes by 1.2 mm from the front end of the throat plate.





2) Front side

Loosen setscrew **1** in the thread trimming arm and adjust by moving it in the direction of arrow.

3) Rear side

Remove rubber cap **2** located on the machine bed side and adjust by loosening setscrews **3** in the thread trimming connection plate.



4) Loosen setscrew (i) and adjust so that a clearance of 0.8 mm is provided between needle hole guide (1), and counter knife (5). (Same adjustment procedure for both front side and rear side)

#### 15. Draining waste oil



When polyethylene oiler **1** becomes filled with oil, remove polyethylene oiler **1** and drain the oil.

### 16. Cleaning the air filter



WARNING :

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



Clean filter **2** of the control box fan once every week.



Temperature in the control box rises unless the filter is cleaned. As a result, it will be a cause of trouble (AL-13).

- 1) Pull screen kit **1** in the direction of arrow to remove it.
- 2) Wash filter **2** under running water.
- 3) Reinstall filter **2** and screen kit **1** in the original positions.

#### 17. Belt loop retaining release function



In case there is a belt loop currently held between the loop pressers and the loop receivers when performing adjustment of the machine, remove the belt loop.

Pressing the standard screen key **(**, press

the ten key [3], and loop pressers ① go up in the direction of **A**, and loop receivers ② come down in the direction of **B**.

Perform the adjustment after removing the belt loop.

### **VIII. ALARM LIST**

Alarm No. is displayed in the display screen of the operation panel when an alarm occurs.

No.	Item	Description
AL-01	Trouble M-axis motor driver (Trouble SDC)	Servomotor for the sewing machine is trouble. Refer to the alarm list for SOC PCB.
AL-04	Trouble X-axis feed	In case where pulse output is not completed within the specified feed section.
AL-07	Trouble Y-axis feed	In case where pulse output is not completed within the specified feed section.
AL-10	Insufficient air pressure	This occurs when the air pressure sensor detected insufficient pressure.
AL-11	Temporary stop	This occurs when "Temporary stop" button on the operation panel is pressed.
AL-13	Abnormal temperature	This occurs when temperature in the control box is abnormally high.
AL-15	Trouble start switch	Start switch is pressed at any time.
AL-20	No pattern	The pattern has not been registered.
AL-21	Thread trimming detection	This occurs after completion of sewing when thread breakage was detected during sewing.
AL-25	Outside input data value	This occurs when the numeric value entered in the panel is outside of the range of each item. Alarm is displayed from the result of stitch length calculation as well.
AL-26	Outside input data value	Fork excessively advances and comes in contact with the stopper when sewing by the numeric value entered in the panel.
AL-30	Trouble X movement limit	In the case where the sewing table reached movement limit value.
AL-31	Trouble Y movement limit	In the case where the sewing table reached movement limit value.
AL-32	Safety SW error	This occurs when pressing the start switch while the machine head is tilted.
AL-41	Trouble needle up	When operation starts, the needle up position is checked. This alarm occurs when the needle up detection is not performed at this time.
AL-43	Trouble setting of belt loop thickness	This occurs when setting of thickness of belt loop cut section is not performed.
AL-44	Trouble RAM	This occurs when turning ON the power, and when a defect is detected in checking of RAM on Main PCB.
AL-45	Trouble belt loop feeding device	This occurs when the drawing device (pull-out device) is not in the predetermined position. (This occurs in case of step-out of stepping motor.)
AL-46	Warning for no existence of belt loop	This occurs when the belt loop thickness comes down to the level of no existence of loop.
AL-48	Trouble fork movement	This occurs when movement of servomotor is not completed within a certain period of time or when traveling backward end sensor does not operate although the fork is traveled backward by the initialization operation.
AL-49	Servo alarm for belt loop feeding device	This occurs when "servo for belt loop feeding device" on Main PCB outputs alarm. Refer to the alarm list for MAIN printed circuit board.
AL-50	Trouble communication	When trouble has occurred in communication function inside Main PCB.

No.	Item	Description
AL-51	Trouble signal at the traveling forward end of fork	
AL-52	Servo free for belt loop feeding device	
AL-53	Trouble movement of servo for belt loop feeding device	
AL-55	Occurrence of belt loop block	
AL-56	Trouble belt loop elimination	This occurs when belt loop cut section of 200 mm or more is detected.
AL-57	Trouble belt loop clamp	This occurs when belt loop clamp cannot clamp belt loop.
AL-61	Hook cover release	This occurs when hook cover is opened (excluding bobbin replacement, bobbin clearance adjustment and threading operation).
AL-62	Trouble hook movement origin sensor	This occurs when origin is not detected although hook movement is performed and origin retrieval is performed.
AL-63	Abnormal temperature of POWER PCB	This occurs when temperature of POWER PCB is abnormally high. *)

#### \*) Added from the machine corresponding to RoHS



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### WARNING :

Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

Check with the number of blinking times of the red LED lamp on the PCB. Count the long blinking as "First" and continue to count the short blinking as "Second" time and after.

• Alarm list for SOC PCB (refer to the item of No. AL-01.)

	First time	Motor-lock
	Second time	Trouble upper dead point sensor
	Third time	Detection of trouble motor encoder
	Forth time	Detection of trouble motor position sensor
	Fifth time	Signal of motor driver element error
	Sixth time	Detection of low voltage of power voltage
	Seventh time	Detection of motor control current limitation value
	Eight time	Detection of high voltage of power voltage
	Ninth time	Trouble motor rotation direction
	Tenth time	Input of motor control method
A	Alarm list for MAI	N PCB (refer to the item of No. AL-49.)
	First time	Motor-lock
	Second time	Blown-out of fuse MAIN PCB
	Third time	Trouble power voltage, outside of range of power alarm
		voltage
	Forth time	Trouble boosting voltage, trouble of predriver inside
		the PCB
	Fifth time	Disconnection of encoder cable
	Sixth time	Detection of predriver abnormal current
	Seventh time	Abnormal temperature of predriver, abnormal rise of
		temperature inside control box.
	Eight time	Shift of fork position
	Ninth time	Fork overrun error
	Tenth time	Accumulated pulse overflow
	Eleventh time	Trouble overload
	Twelfth time	Trouble overload
	Thirteenth time	Trouble number of rotations
	Fourteenth time	e System error
	Fifteenth time	Loop sensor detection error

# IX. PHENOMENA, CAUSES AND CORRECTIVE MEASURES OF TROUBLES IN SEWING.

No.	Item	Description	Corrective measure
1	Thread slips off the needle eyelet at	1 Stitches skip at the start of sewing.	<ul> <li>Make a clearance of 0.05 to 0.1 mm between needle and hook.</li> </ul>
	the start of sewing.		<ul> <li>Delay the sewing speed at the start of sewing.</li> </ul>
		<ul> <li>Length of needle thread remaining at the needle after thread trimming is</li> </ul>	<ul> <li>Decrease tension of the thread tension No. 1.</li> </ul>
		short.	<ul> <li>Increase tension of the thread take-up spring.</li> </ul>
			<ul> <li>Decrease stroke of thread take-up spring.</li> </ul>
		③ Bobbin thread is short.	$\circ~$ Decrease tension of the bobbin thread.
			• Adjust the disk rising timing.
2	Thread breakage occurs many times.	① Hook or driver has a scratch.	<ul> <li>Remove the part and polish it with a fine grind stone or buff.</li> </ul>
		<ol> <li>Finish of needle eyelet is not good.</li> </ol>	<ul> <li>Replace the needle with a new one.</li> </ul>
		<ol> <li>Presser foot comes in contact with needle.</li> </ol>	<ul> <li>Adjust position of the presser foot.</li> </ul>
		<ul> <li>A Shuttle groove is clogged with thread waste.</li> </ul>	<ul> <li>Remove the thread waste.</li> </ul>
		<ol> <li>Needle thread tension is too high.</li> </ol>	• Decrease tension of the needle thread.
		<ul> <li>6 Thread take-up spring pressure is too strong.</li> </ul>	<ul> <li>Decrease tension of the thread take-up spring.</li> </ul>
		I Arm thread guide has a scratch.	<ul> <li>Polish it with buff or replace it with a new one.</li> </ul>
		⑧ Thread is weak.	$\circ$ Delay the sewing speed.
3	Needle breakage	① Needle is bent.	$^{\bigcirc}\;$ Replace the needle with a new one.
	occurs many times.	Presser foot comes in contact with needle.	<ul> <li>Adjust position of the presser foot.</li> </ul>
		③ Needle is too thin.	<ul> <li>Change the needle No. in accordance with sewing products.</li> </ul>
		④ Needle is excessively bent by driver.	• Adjust the needle-to-hook position.
4	Thread cannot be	① The last stitch skips.	<ul> <li>Adjust the needle-to-hook timing.</li> </ul>
	cut.	<ul> <li>Initial position of moving knife is not proper.</li> </ul>	<ul> <li>Adjust initial position of the moving knife.</li> </ul>
		③ Counter knife is not sharp.	<ul> <li>Replace the counter knife with a new one.</li> </ul>
5	Stitches skipping	1 Needle-to-hook timing is not proper.	$\circ$ Adjust the needle-to-hook position.
	occurs many times.	② Clearance between needle and inner hook is too large.	<ul> <li>Adjust the needle-to-hook position.</li> </ul>
		③ Needle is bent.	$^{\circ}~$ Replace the needle with a new one.
		④ Needle is excessively bent by driver.	<ul> <li>Adjust position of the driver.</li> </ul>
		<ol> <li>Attaching the needle is changed.</li> </ol>	<ul> <li>Attach the needle with the long groove turned slightly to the right.</li> </ul>
6	Poorly tensed	① Needle thread tension is not sufficient.	$\circ\;$ Increase tension of the needle thread.
stitches are made.		<ol> <li>Thread tension disk No. 2 is rising.</li> </ol>	<ul> <li>Adjust rising amount of the thread tension disk.</li> </ul>
		③ Cloth feed timing is not proper.	<ul> <li>Adjust the cloth feed timing.</li> </ul>

### X. PHENOMENA, CAUSES AND CORRECTIVE MEASURES OF TROUBLE

Phenomenon	Cause	Corrective measure		
1. Belt loops cannot be cut.	<ol> <li>Moving knife fails to cut belt loops sharp.</li> </ol>	<ul> <li>Grind the moving knife blade or replace the knife with a new one.</li> </ul>		
	2. Moving knife and counter knife fail to properly engage with each other.	<ul> <li>Check whether moving knife fixing screw is loosened.</li> </ul>		
	<ol> <li>Moving knife drive cylinder fails to work.</li> </ol>	<ul> <li>Check operation of cylinder or solenoid valve, or check whether air pipe is crushed.</li> </ul>		
	<ol> <li>Position of the moving knife cylinder sensor is shifted.</li> </ol>	<ul> <li>Check operation of the sensor and adjust the position.</li> </ul>		
2. Belt loops cannot be cut	1. Knife blade(s) has worn out.	Grind the blade(s) or replace the defective		
neatly.	2. Counter knife is not set properly.	knife with a new one.		
	3. Knife blade(s) has cracked.			
3. Loop is not cross-cut at the center.	1. Loop cutting position of the cross cutter is not proper.	<ul> <li>Refer to the item of "Adjusting the width of belt loops" (page.36).</li> </ul>		
4. Belt loop clogs in the	1. Inside measurement dimension of the	• Turn OFF the power switch and remove		
binder.	binder does not correspond with the	the loop that clogs in the binder.		
	belt loop.	<ul> <li>Adjust the binder to the loop width (splice section).</li> </ul>		
	2. Moving knife does not fully go up.	• Check whether air pipe is crushed.		
5. Belt loop folding amount is excessive or too	<ol> <li>Folding amount on front side Adjustment of the loop feeding unit is</li> </ol>	• Adjust the loop feeding unit.		
smail.	<ol> <li>Folding amount on the rear side Data value of item (BC) in the adjustment screen is not proper.</li> </ol>	<ul> <li>Adjust and change the data of (BC) value in the adjustment screen.</li> </ul>		
6.Splice section is not discharged and sewn	1. (BD) or (BE) value in the setting screen is not proper.	<ul> <li>Adjust and change the value of top end portion of splice (BD).</li> </ul>		
as a loop.		<ul> <li>Adjust and change the value of rear end portion of splice (BE).</li> </ul>		
	2. Splice detection data set value is not proper.	<ul> <li>Re-input the splice detection data. Refer to page.38.</li> </ul>		
7. Clamp feed section cannot clamp belt.	1. Loop feeding data (BC) is not proper.	<ul> <li>Adjust and change (BC) value in the adjustment screen.</li> </ul>		
	2. Loop is caught.	• Check whether the loop is caught and remove the place of trouble.		
8. Clamp feed section cannot pull out the	1. Loop feeding data (BC) is not proper.	<ul> <li>Adjust and change (BC) value in the adjustment screen.</li> </ul>		
loop.	2. Loop is caught.	<ul> <li>Check whether the loop is caught and remove the place of trouble.</li> </ul>		
9. Bartacking position does	1. Position of loop gathering claw is not	• Adjust position of the loop gathering		
not correspond with the	proper as in such a case that the loop	claw.		
	gathering claw does not gather the loop.	<ul> <li>Refer to the item of "Adjusting the width of belt loops" (page.36).</li> </ul>		
10. Bartacking position	1. Loop width set value (1F) is not proper.	Adjust and change set value (1F).		
does not correspond	2. Position is shifted due to the	Adjust and change set value (1G).		
	characteristics of the material.			

### **XI. OPTIONAL**

Name	Function
1. Belt drawer device (G5730254000)	It is a device which helps supplying belt loops so that the loop feeding device can feed belt loops in a stable state. In addition, it outputs an alarm when the loop is entangled and cannot be supplied as specified.
2. Belt tension releasing device (G57002540A0)	It is a fullness device that gives allowance to the loop.
3. Needle thread breakage detection device (G57802540A0)	It detects when needle thread is broken, and stops to make the alarm display.
4. Needle cooler (G57702540A0)	It decreases the rise of needle heat, and decreases occurrence of needle thread breakage due to needle heat.
5. Air gun (G57602540A0)	Air spray

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