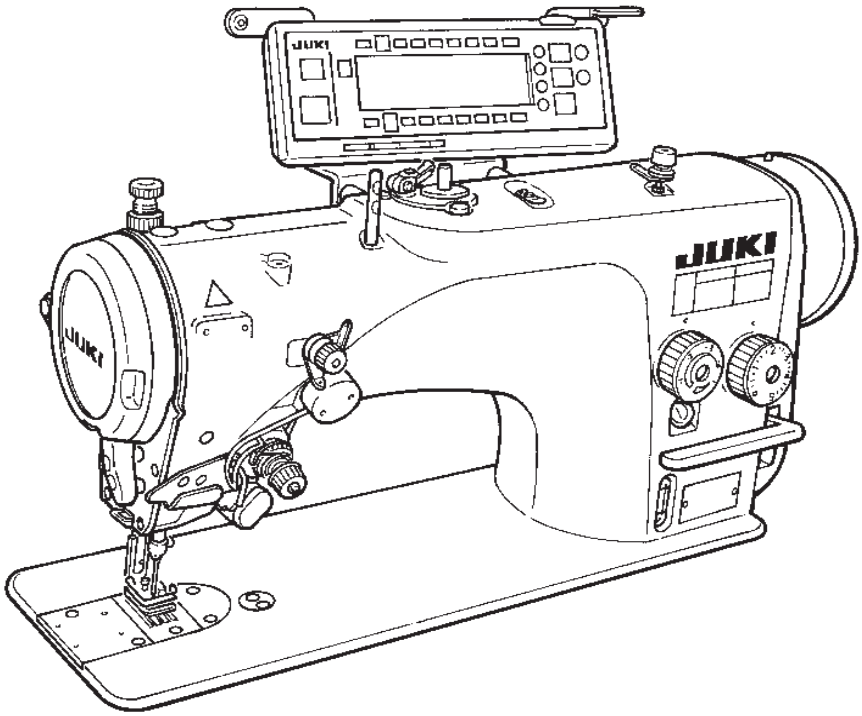
JUKI®

Computer-controlled, Direct-drive, High-speed, 1-needle, Lockstitch, Zigzag Stitching Machine

LZ-2290A Series

IP-100A / SC-915
IP-100D / SC-916

ENGINEER'S MANUAL



40011067
No.E355-01

1. SPECIFICATIONS

(1) Specifications of the machine head

	Model	LZ-2290A-SS / -7	LZ-2290A-SU / -7	LZ-2290A-DS / -7	LZ-2290A-DU / -7	LZ-2290A-SR-7
1	Application	Light- to medium-weight materials				
2	Max. sewing speed	5,000 rpm **(*1)**	4,500 rpm **(*1)**	4,000 rpm **(*1)**		5,000rpm **(*1)**
3	Max. zigzag width	10 mm **(*2)**				
4	Max. feed amount (Normal/reverse)	5 mm/4 mm **(*3)** (Stepless fine adjustment)	2.5 mm/2.5 mm **(*3)** (Stepless fine adjustment)	5mm/4 mm **(*3)** (Stepless fine adjustment)	2.5mm/2.5 mm **(*3)** (Stepless fine adjustment)	5mm/5 mm (0.1 adjustment by electronic control)
5	Stitch pattern	8 kinds 14 patterns				14 kinds 20 patterns
		(Custom pattern : 500 stitches, 20 kinds can be stored.)				
6	Needle	SCHMETZ 438, ORGAN DPX5 : #65 to #90				
7	Dimension of the bed	178 mmX517 mm				
8	Number of revolution of resistor pack	4,000 rpm (Excluding a certain territory of export)				
9	Needle bar stroke	33.4 mm				
10	Bobbin winder	Built-in in the upper face of machine head type (with bobbin thread retaining plate)				
11	Wiper	Electromagnetic front-wiping system (WB), electromagnetic side-wiping system (CB)				
12	Automatic reverse stitching device	Built-in electromagnetic system				Stepping motor control
13	Lubrication	Lubrication system to oil tank for hook lubrication JUKI New Defrix Oil No. 1 is used. (Equivalent to ISO VG7) Plunger pump is employed.		Full non-lubrication		Lubrication system to oil tank for hook lubrication JUKI New Defrix Oil No. 1 is used. (Equivalent to ISO VG7) Plunger pump is employed.
14	Lift of the presser foot (by hand lifter)	5.5 mm				
15	Lift of the presser foot (by knee lifter)	10 mm				
16	Lift of the presser foot (by AK auto-lifter)	6 to 6.5 mm				
17	Kind of the hook (Part No.)	22525877		23557259 (Non-lubrication hook)		22525877
18	Bobbin case (asm.)	40003598 (with idle-prevention spring)		40003609 (with idle-prevention spring)		40003598 (with idle-prevention spring)
19	Height of the feed dog (standard)	1.2 mm	1.4mm	1.2 mm	1.4mm	1.2 mm
20	Lubrication of the face plate section	Minute quantity lubrication by oil wick		Non-lubrication		Minute quantity lubrication by oil wick
21	Drive system	Direct drive system (compact AC servo motor)				
22	Transmission function	Timing belt system				
23	Motor output	Rated output 450W				
24	Operating power	3-phase 200 to 240V, Single phase 100 to 120V				
25	Solenoid drive power	DC34V				
26	Additional function	Presser foot micro-lifting screw is provided as standard.				
27	Major optional devices	1. AK-121 (Auto-lifter : Part No. : GAKA21000B0) 2. Exclusive grease tube for maintenance 10g (JUKI grease A Part No. : 40006323) 3. Exclusive grease can for maintenance 500g (Part No. : 23640204) 4. Touch-back kit asm. (Part No. ; 40010795) ... Other than WB, CB, OB, A-SR) 5. Optional switch kit (Part No. ; 40003640)				

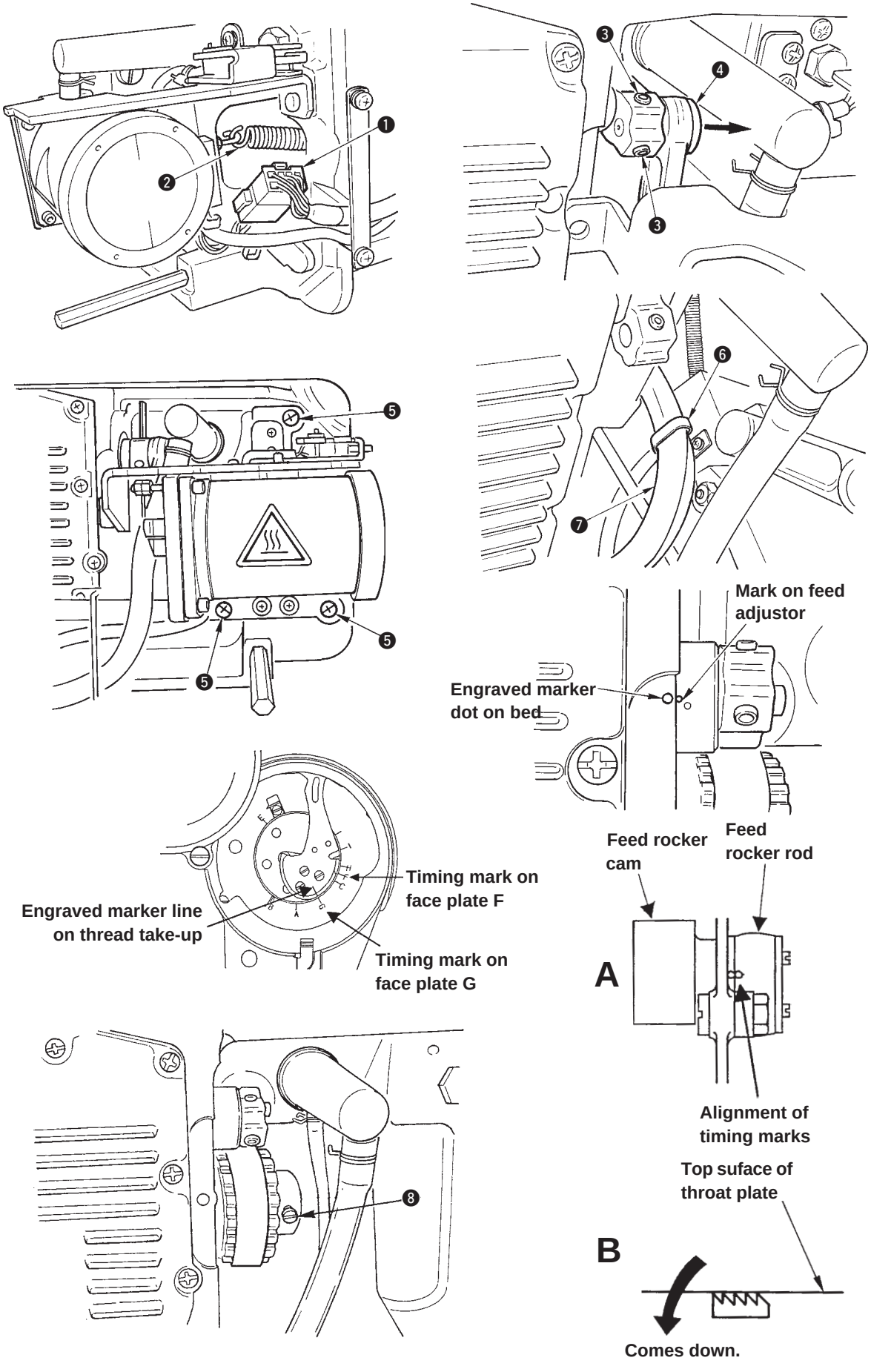
*** 1** : The sewing speed is regulated in accordance with zigzag width (A-SR : zigzag width and feed amount).
*** 2** : Zigzag width is regulated to 8 mm at the time of delivery. (Max. zigzag width of all machines is 10 mm.)
*** 3** : Normal and reverse feed amounts are regulated to 2 mm at the time of delivery.

(2) Stitch pattern table

Name of pattern		Stitch pattern	Number of stitches for pattern	Max.zigzag width	Remarks
Straight stitch			1	——	
Standard zigzag stitch			2	10	
2-step zigzag stitch			4		
3-step zigzag stitch			6		
Scallop (right)	Standard scallop		24		
	Crescent scallop				
	Equal-width scallop				
	Equal-width scallop		12		
Scallop (left)	Standard scallop		24		
	Crescent scallop				
	Equal-width scallop				
	Equal-width scallop		12		
Blind stitch (right)			2 + a		
Blind stitch (left)					
Custom pattern		——	500		
T stitch (left)			3		
T stitch (right)					
Pattern 1			6		
Pattern 2 (fagoting)					
Pattern 3					
Pattern 4					

2) Adjusting the feed timing (for A-SR only)

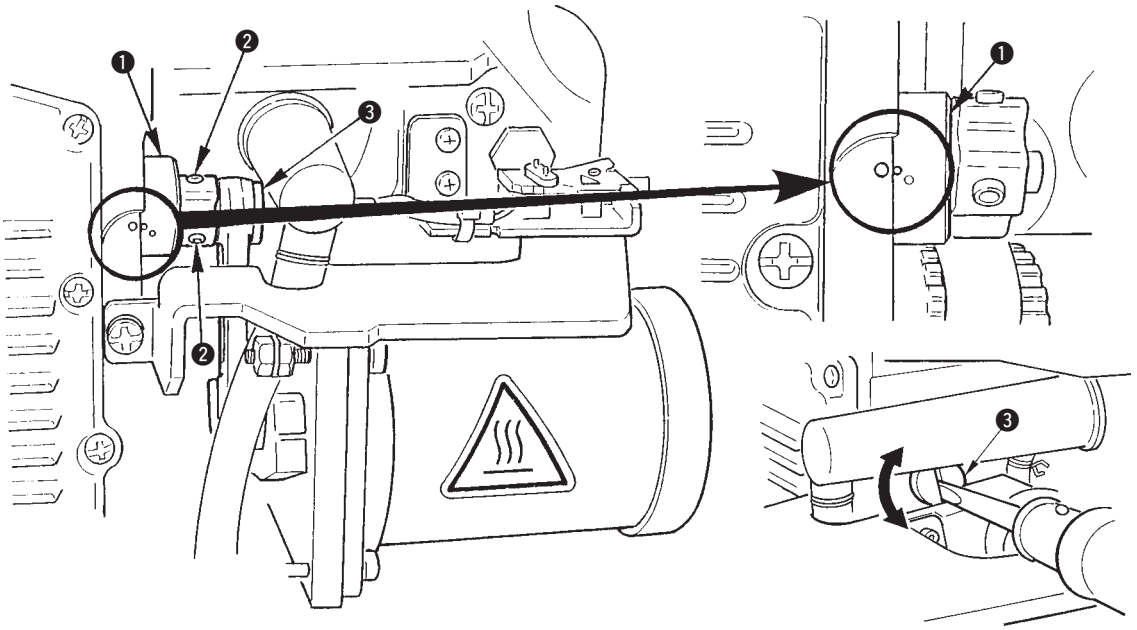
Standard Adjustment

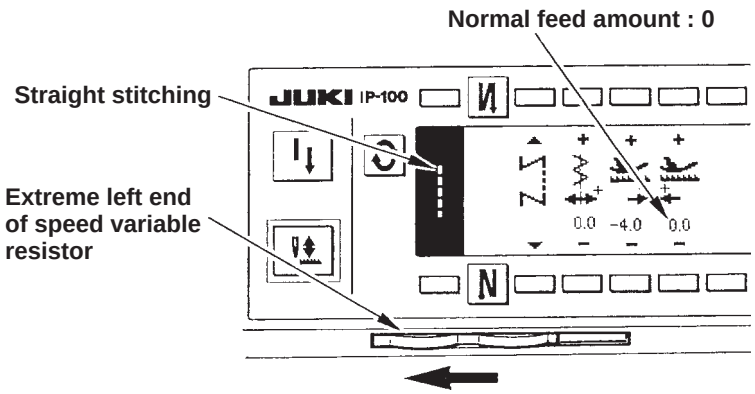


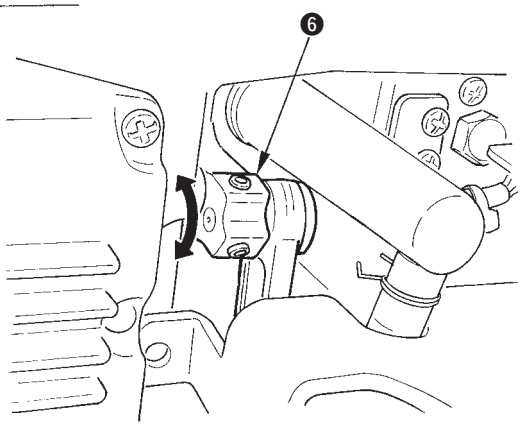
Adjustment Procedures	Results of Improper Adjustment
A. Procedure by removing the gear box large lid (Standard adjustment) (A-SR) 1) Remove the gear box large lid. (Refer to 4-(1).) 2) Adjust the engraved marker line on the thread take-up to timing mark G on the face plate. 3) Align the timing mark on the feed adjustor with the engraved marker dot on the machine bed. <<Confirmation of the standard timing>> 4) Timing mark of the feed rocker cam aligns with that of the feed rocker rod. ... Standard state Standard assembling adjustment is described below. 5) When they do not align with each other, loosen two setscrews ❽ in the hook driving shaft sprocket, and it is necessary to align the timing mark of the feed rocker cam with that of the feed rocker rod. 6) Tilt the machine head, remove feed stepping motor connector ❶, and remove feed lever spring ❷ from the spring bracket. * When removing feed lever spring ❷, perform the work using the radio pincers or the like. 7) Loosen two setscrews ❸ in the feed stepping motor link C and draw out feed link shaft ❹ to the right-hand side. 8) Remove three setscrews ❺ in the feed stepping motor unit. 9) When removing the feed stepping motor unit, remove oil pipe ❼ from oil pipe guide ❻. 10) In the state of 3), loosen two setscrews ❽ in the hook driving shaft sprocket, and adjust the timing mark on the feed rocker cam to that on the feed rocker rod. 11) When re-assembling the feed stepping motor unit, refer to 3-(3)-2) Adjusting the feed amount.	○ When oil pipe guide ❻ is forcibly drawn, the oil pipe comes off or damaged. As a result, oil leakage will be caused. ○ When changing the feed timing other than the standard one, it is easy to adjust when the standard state is made a basis. * When changing the feed timing other than the standard one, and sewing patterns that perform normal/reverse feed motion (T stitch, custom pattern, etc.), needle may bend according to the feed amount (needle snaps). In this case, change the feed timing from the panel and compensate.
B. Procedure with the gear box large lid installed (For fine adjustment) (A-SR) It is possible to check standard timing without opening the gear box large lid. 1) Adjust the engraved marker line on the thread take-up to timing mark F on the face plate. 2) It is the standard timing that the top surface of feed dog almost aligns with the top surface of throat plate when the feed dog sinks. However, the height of feed dog is 1.2 mm at the time of standard delivery. 3) Align the timing mark on the feed adjustor with the engraved marker dot on the machine bed. (When feed amount is “0”) 4) When they do not align with each other, loosen two setscrews ❽ in the hook driving shaft sprocket and adjust the timing. (For the adjustment procedure, refer to the aforementioned items 1) through 6). * Adjusting the feed timing (Common to A. and B.) By performing the feed timing adjustment, stitch tightness changes and sewing quality is improved according to the process.	○ Timing mark on the feed adjustor is the inside mark. (Common to A. and B.)

2) Adjusting the feed amount (A-SR only)

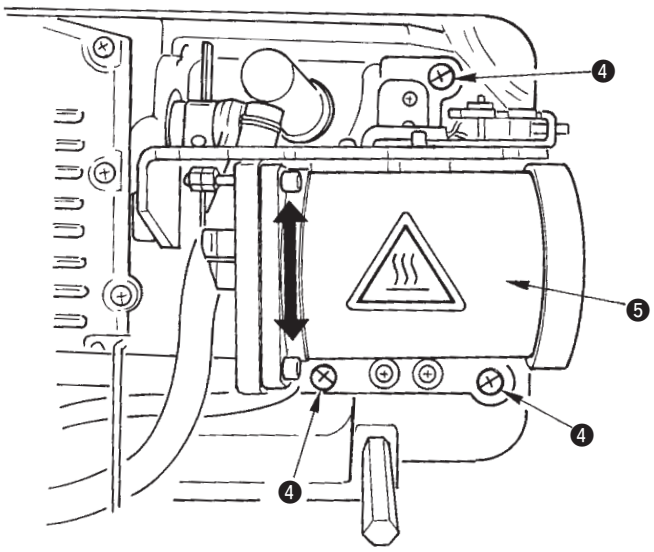
Standard Adjustment



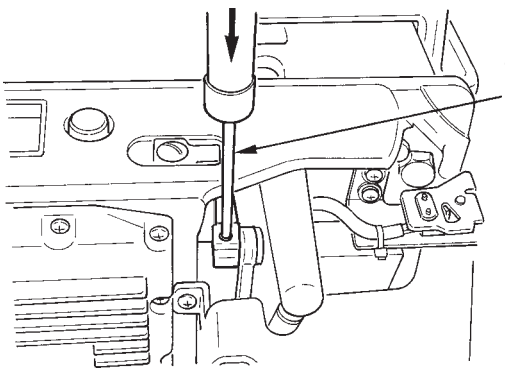




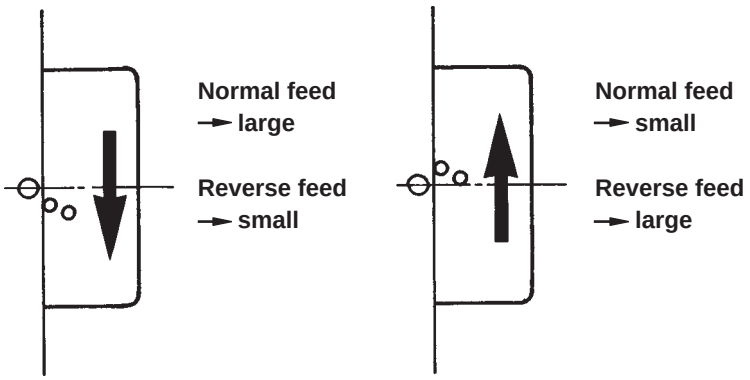
To smoothly rotate



Feed stepping motor unit



Less than 700g by spring balancer is the srandard.

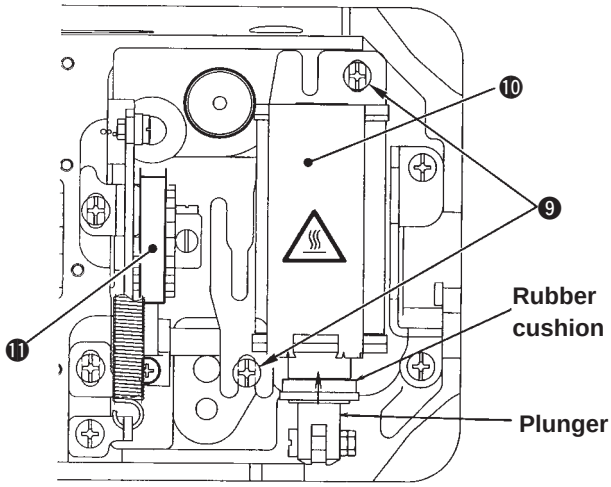
Adjustment Procedures	Results of Improper Adjustment
[Feed 0 adjustment] For the adjustment of feed 0 position, perform fine adjustment of the direction of rotation of feed adjustor ❶. 1) Tilt the machine head and loosen two setscrews ❷ in the stepping motor link C. 2) Adjust feed link shaft ❸ to the slippage amount of feed using a slotted screwdriver and temporarily tighten two setscrews ❷ in the stepping motor link C. * Feed link shaft ❸ consists of eccenric pin.  **Normal feed → large** **Reverse feed → small** **Normal feed → small** **Reverse feed → large** 3) Return the machine head to the home position, turn ON the power, set the operation panel to straight stitching, and set normal feed amount to “0”. * Set the speed variable resistor of operation panel to the extreme left end and set the sewing speed to 200 rpm. 4) Insert a sheet of paper under the presser foot and depress the pedal to operate the sewing machine. At this time, check the needle entry on the paper to check that feed amount becomes “0”. 5) When feed amount is “0”, tilt the sewing machine head after turning OFF the power and securely tighten two setscrews ❷ in the stepping motor link C. After securely tightening the setscrews, check that feed adjustor ❶ smoothly moves with the presser foot lifted. When the feed amount does not become “0”, turn OFF the power again and repeat the work of steps 1) and 2).	○ Start the work of the feed amount “0” adjustment after performing 3-(2)-2) Adjusting the feed timing (A-SR only). ○ When there is a torque, one-sided worn-out of feed link or step-out of feed stepping motor ❺ will be caused.
[Feed 0 adjustment] : When feed amount does not become “0” by adjusting feed link shaft ❸ only. 1) Loosen three fixing screws ❹ in the feed stepping motor unit and perform the vertical adjustment of feed stepping motor unit ❺. 2) After the adjustment, check that feed adjustor link ❻ smoothly moves with the presser foot lifted. 3) The standard that feed adjustor link ❻ smoothly moves is the feed mechanism torque (less than 700g by the spring balancer) before setting the feed stepping motor unit. (Be sure to perform the centering work so that the torque is less than 1,000g.)	○ When there is a torque, one-sided worn-out of feed link or step-out of feed stepping motor ❺ will be caused.
[Normal/reverse feed amount control] 1) Input max. feed amount limitation value of normal/reverse feed with the information of operation panel * For the information operation, refer to Instruction Manual. * Normal/reverse feed amount has been factory-set to the standard adjustment value of JUKI standard delivery gauge (Part No. 40018430 ... max. feed amount of normal/reverse stitching is 5 mm). There are cases where the feed amount varies from the actual input value in accordance with the material used or kind of gauge. Then perform the input compensation.	

(3) Replacing the timing belt

Procedures of disassembling/assembling

* The timing belt ⓫ (22505705) of the highest quality is used, and it is not necessary to replace it unless a special trouble occurs.

1) Perform removing/installing of the motor in accordance with the steps of 4. - (2) Replacing the motor.



<<A-SS(-7), A-SU(-7), A-DS-7, A-DU-7>>

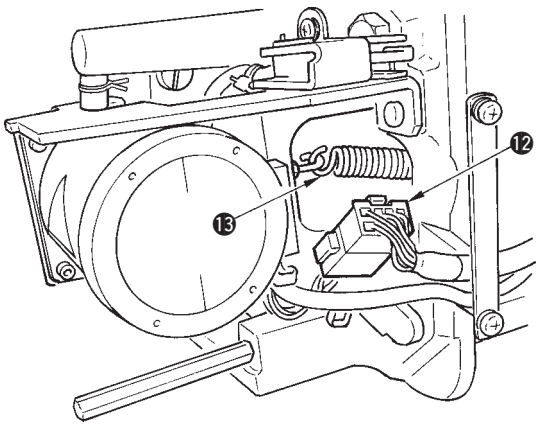
2) Tilt the sewing machine, remove back-magnet setscrews ❾ and remove back-magnet ⓾.
3) Pressing timing belt ⓫ in the right-hand direction, turn the timing belt to the front by fingers, then the timing belt can be removed.3) Pressing timing belt ⓫ in the right-hand direction, turn timing belt ⓫ to the front by fingers, then timing belt ⓫ can be removed.
4) Replace timing belt ⓫ with a new one and install again by reversing the above order.

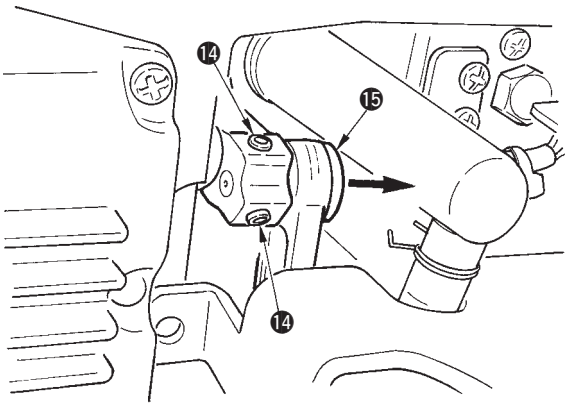
<<A-SR only>>

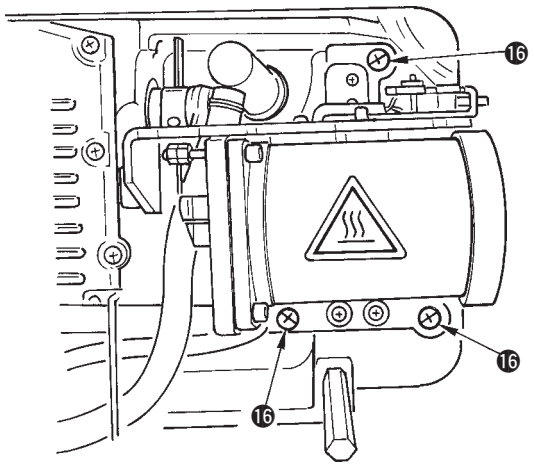
2) Tilt the sewing machine, remove feed stepping motor connector ⓬, and remove feed lever spring ⓭ from the spring bracket.

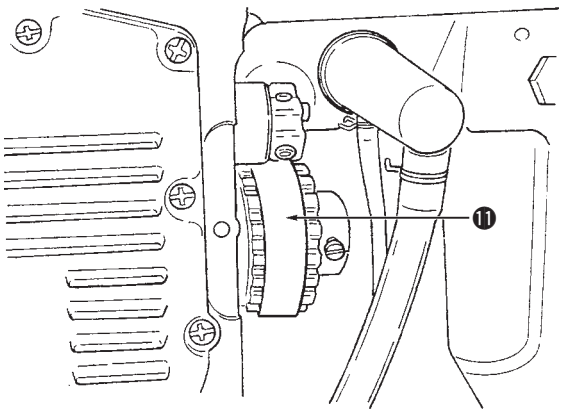
* When removing feed lever spring ⓭, perform the work using a radio pincers or the like.

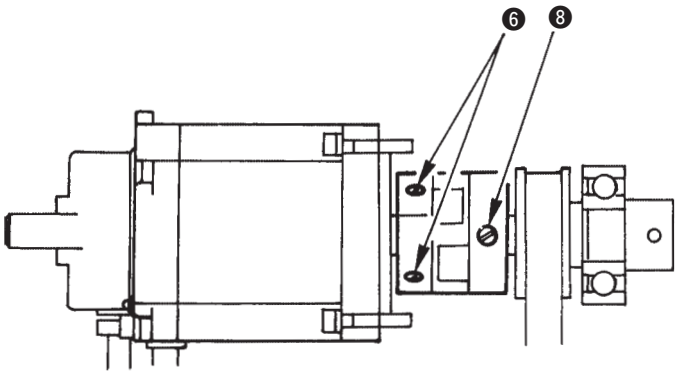
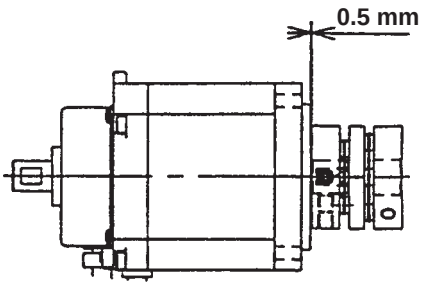
3) Loosen two setscrews ⓮ in the stepping motor link C and draw out feed link shaft ⓯ to the right-hand side.
4) Remove three setscrews ⓰ in the feed stepping motor unit.
5) Similarly, perform the work as the aforementioned steps 3) and 4) of <<A-SS(7), A-SU(-7), A-DS-7, A-DU-7>>.







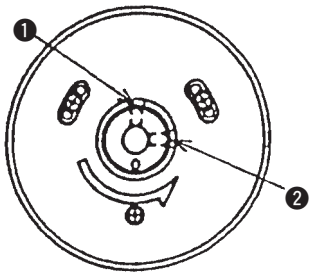


Caution in disassembling	Caution in assembling
○ When removing/installing the motor, unless the motor is defective, loosen coupling setscrew ❽ without loosening coupling setscrews ❻ and remove the motor with the coupling installed.  	○ When the motor is separated from the coupling, set the clearance between the end face of the motor and that of the coupling to 0.5 mm when re-assembling.  ○ For re-assembling the stepping motor unit, refer to 3-2) Adjusting the feed timing.

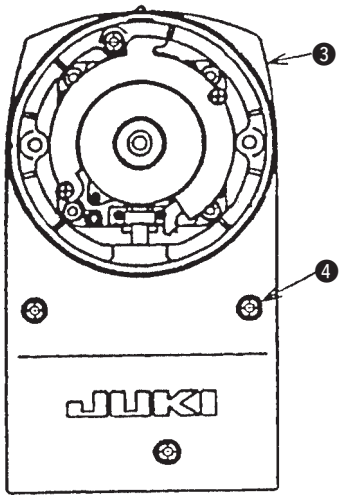
(6) Adjusting/assembling the reverse feed control lever (A-SR only)

Procedures of disassembling/assembling

1) Loosen setscrews in the handwheel in the order of screw No. 2 ❷ and screw No. 1 ❶, and remove the handwheel.

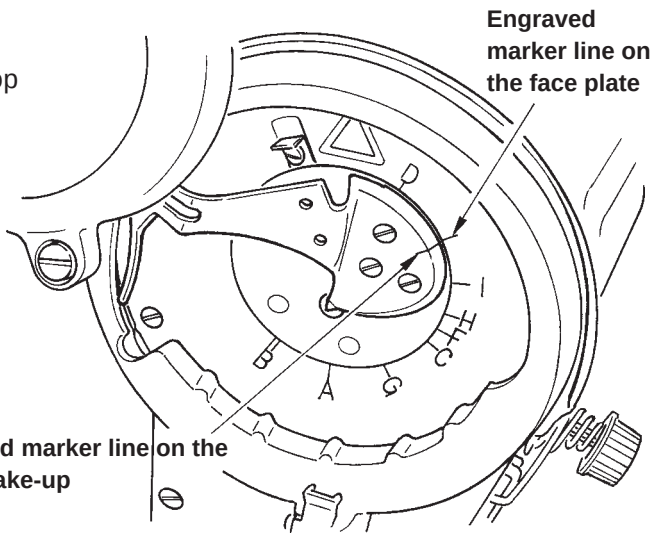


2) Remove four setscrews ❹ in the pulley cover ❸, and remove pulley cover ❸.

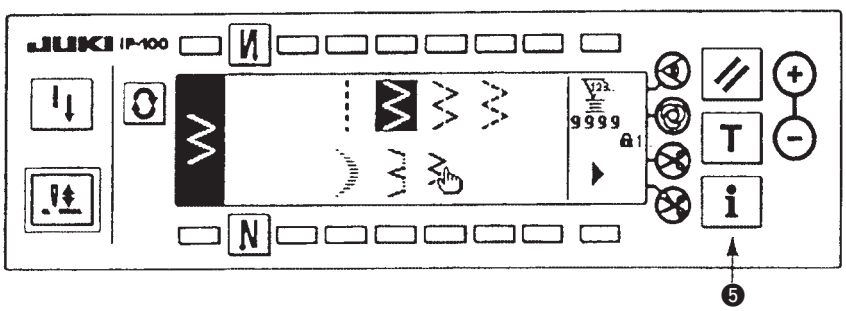


3) Temporarily assemble the handwheel again. (Assembling the handwheel is due to the workability.)

4) Turn the handwheel and adjust it to UP-stop position (60 º).



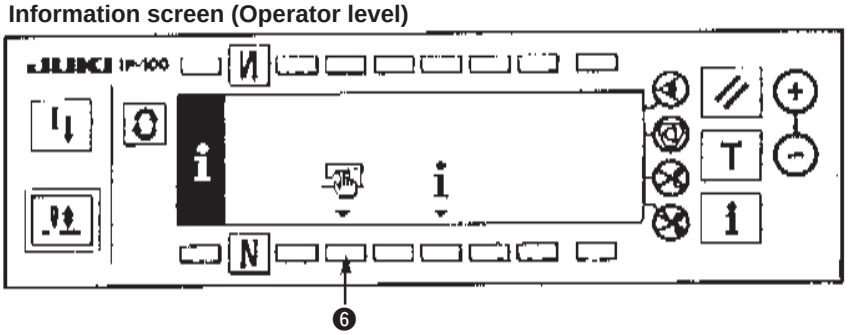
5) Turn the power ON, press switch ❺ to display the information screen.



Caution in disassembling	Caution in assembling
○ Be very careful of handling the magnet assembled to the handwheel. (Be careful of the damage or collection of dust or the like.) ○ Align the engraved marker line on the thread take-up with that on the face plate at UP-stop position.	○ Set the handwheel to the position where the clearance between pulley cover ❸ and the handwheel is approximately 1 mm, and adjust screw No. 1 ❶ to the flat position of the motor shaft. Then tighten the screws in the order of screw No. 1 ❶ and screw No. 2 ❷ in the direction of rotation of the handwheel. ○ Make the position of handwheel flush with the end of the motor shaft and adjust screw No. 1 ❶ in the direction of rotation of the handwheel to the flat position of of the motor shaft.

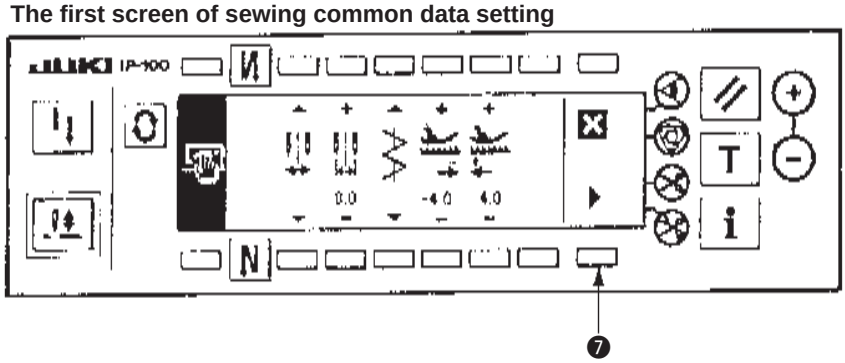
6) Press switch ❻ to display the sewing common data screen.

Information screen (Operator level)



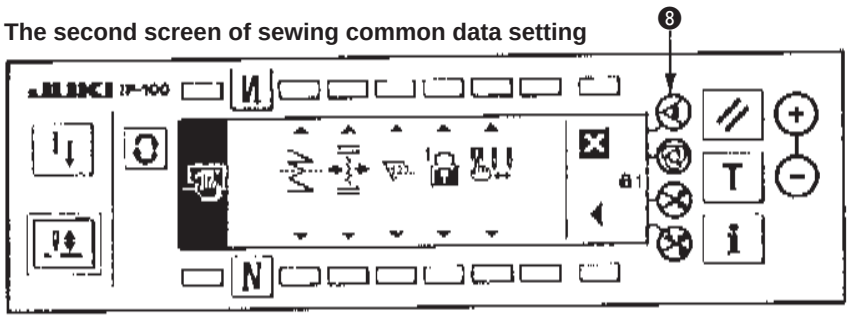
7) Press switch ❼ from the first screen of sewing common data setting to display the second screen.

The first screen of sewing common data setting



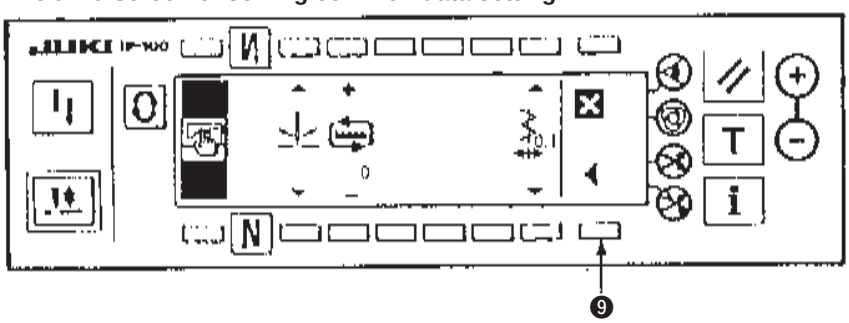
8) Press switch ❽ for approximately three seconds from the second screen of sewing common data setting to change to the third screen.

The second screen of sewing common data setting



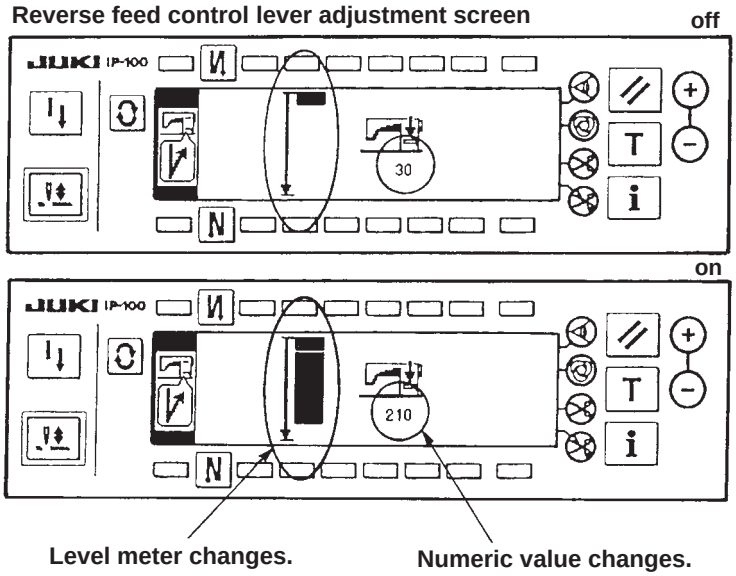
9) Press switch ❾ from the third screen of sewing common data setting to change to the reverse feed control lever adjustment screen.

The third screen of sewing common data setting



Caution in disassembling	Caution in assembling

10) When reverse feed control lever ⓾ is turned on in the reverse feed control lever adjustment screen, the numeric value on the panel changes.
When the numeric value is not within the range of 22 to 32 (standard assembling value) with reverse feed control lever ⓾ lifted (off), re-adjust as described in 11) and after.

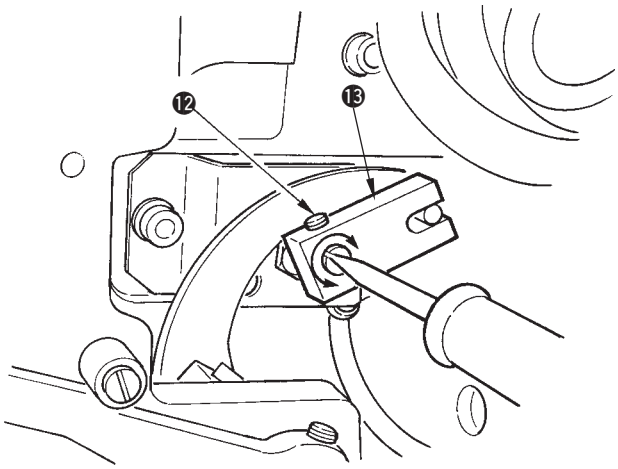


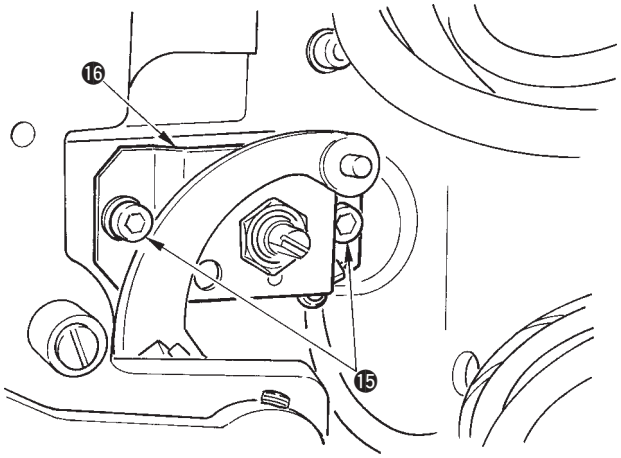
11) Adjusting the reverse feed control lever sensor
Loosen setscrew ⓬ in the variable resistor link.
Turn the feed lever sensor shaft and adjust the numeric value of the reverse feed control lever adjustment screen to 22 to 32 (standard assembling value) using a flat-blade screwdriver.
After the adjustment, tighten setscrew ⓬ in the variable resistor link.

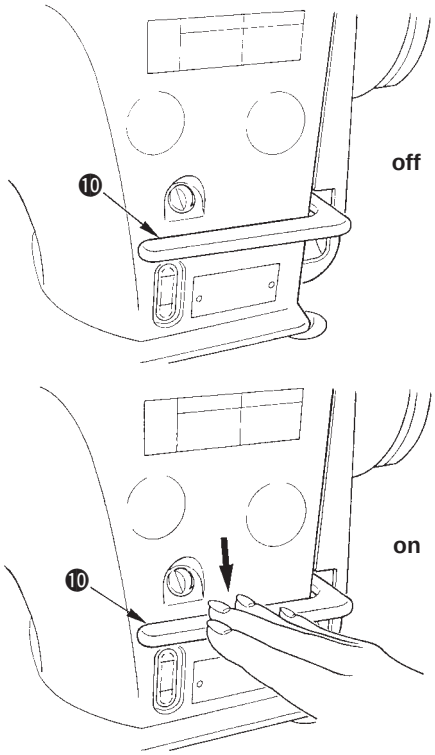
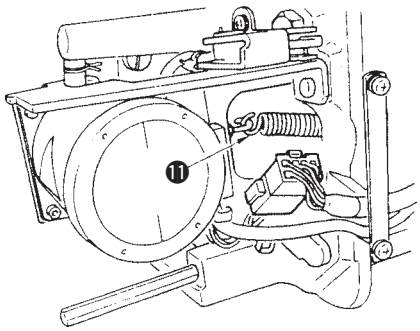
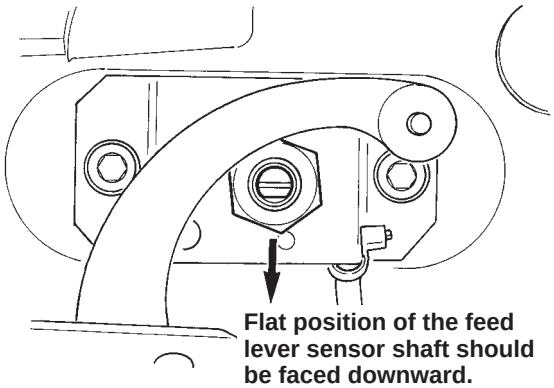
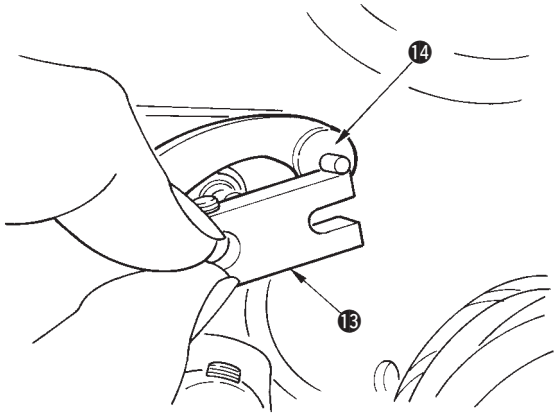
12) Replacing the reverse feed control lever sensor
Loosen setscrew ⓬ in the variable resistor link and remove variable resistor link ⓭.
Rmove two setscrews ⓯ in the feed lever sensor installing plate and remove feed lever sensor installing plate ⓰.

* Replace the sensor with a new feed lever sensor (Part No. : HD001530000).
After the replacement, perform 11) Adjusting the reverse feed control lever sensor.

(Caution) It is not possible to move to the other screen from the reverse feed control lever adjustment screen. When the adjustment is completed, turn off the power.



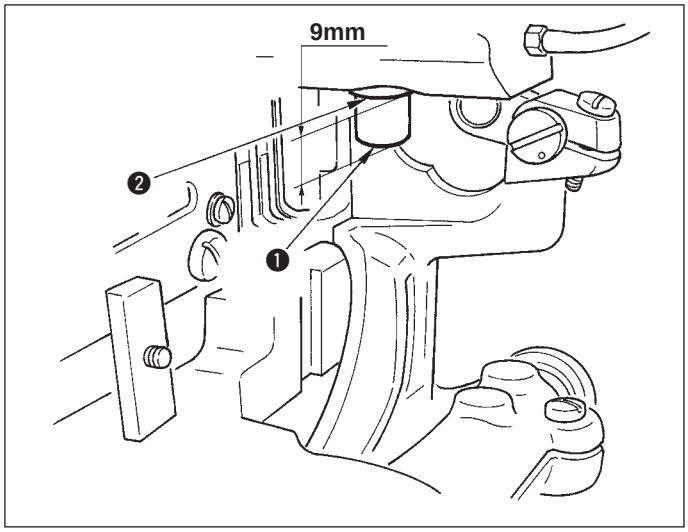


Caution in disassembling	Caution in assembling
	○ When the numeric value does not change or E734 occurs, replace the feed lever sensor. Refer to 12) Replacing the reverse feed control lever sensor. * E734 : Feed lever sensor error ... Feed lever sensor detection trouble Feed lever sensor : Part No. HD001530000 ○ Be sure to perform the check of the function of the reverse feed control lever in the state that reverse feed control lever return spring ⓫ is hooked.  ○ When the power is turned off once in case of replacing the feed lever sensor or the like, turn the power on in the state that the flat position of the feed lever sensor shaft is faced downward. (E734 occurs.)  ○ Assembling position of variable resistor link ⓭ is the position where it lightly comes in contact with the machined edge of feed lever link ⓮. 

(9) Protruding amount of the hook shaft

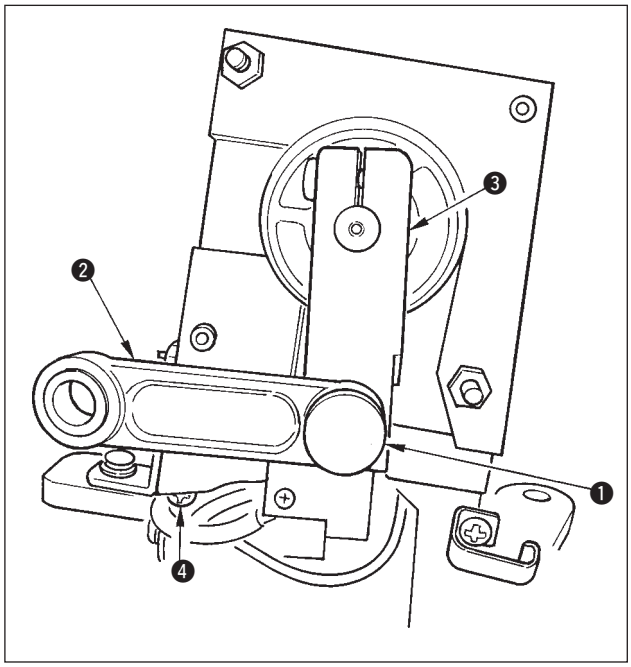
1. Protruding amount of hook shaft ❶ from the end plane of hook shaft front metal ❷ is 9 mm.

(Caution) When the protruding amount is excessively large or small, lubrication failure will occur. So, be careful.



(10) Adjusting the feed stepping motor unit (A-SR only)

Feed stepping motor link is treated as the selective part to improve the quality of the feed mechanism. When replacing the part, be careful of the selection of selective parts.



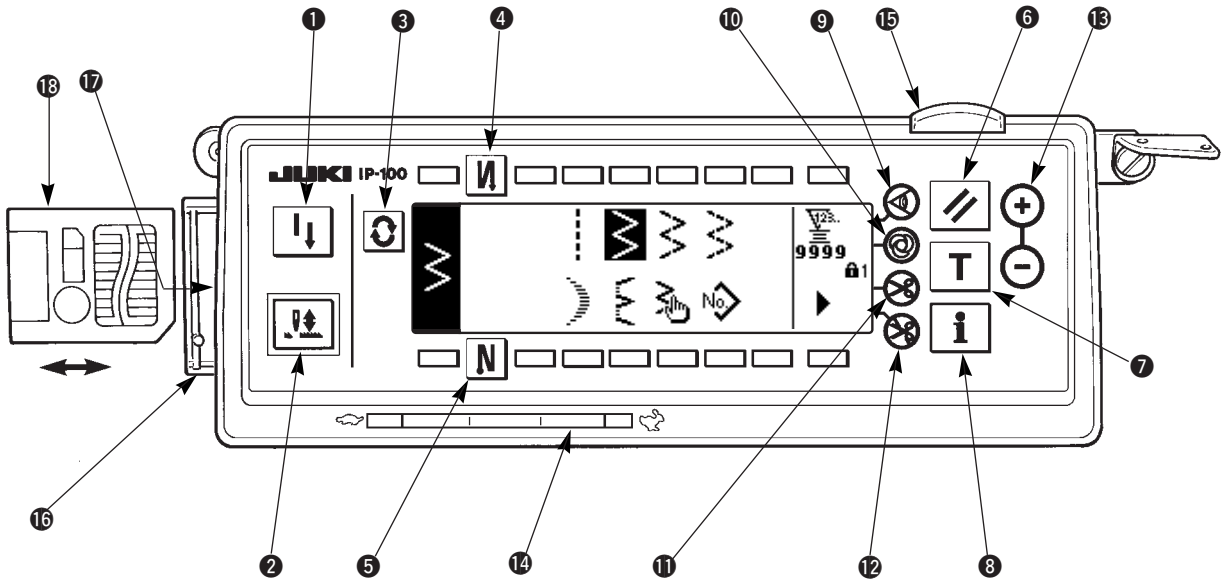
1. For feed stepping motor connecting shaft ❶, there are four kinds which are different in outer diameter tolerance of shaft, A to D. Select the shaft which is of less looseness to the hole of feed stepping motor link A asm. ❷

Name of part	Part No.	Outer diameter tolerance	Remarks
Feed stepping motor connecting shaft A	23544109	Maximum	There are engraved marks at the edge sections.
Feed stepping motor connecting shaft B	23544208	Large	
Feed stepping motor connecting shaft C	23544307	Medium	
Feed stepping motor connecting shaft D	23544802	Small	

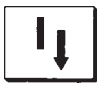
2. There are grease grooves in the both ends of bushing of feed stepping motor link A asm ❷. and a grease filling hole inside feed stepping motor connecting shaft ❶. Fill those parts with exclusive grease (can type part No. 23640204 or tube type part No. 40006323).
3. Connect feed stepping motor link B ❸ and feed stepping motor link A asm. ❷ after making the looseness in the shaft direction as small as possible. Assemble feed stepping motor link A asm. ❷ so that it can move by its weight.
4. Do not adjust the position of origin sensor installing plate setscrew ❹ and feed stepping motor link B ❸.

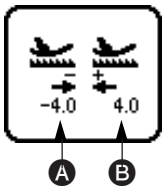
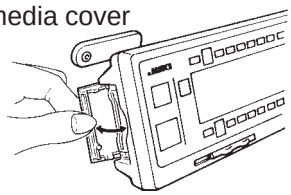
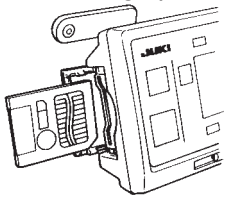
6. OPERATION PANEL

(1) Names of the respective sections



❶ Re-sewing switch
❷ Needle up/down compensating switch
❸ Screen changeover switch
❹ With/without reverse feed stitch at sewing start switch
❺ With/without reverse feed stitch at sewing end switch
❻ Reset switch
❼ Teaching switch
❽ Information switch
❾ Edge sensor switch
❿ One-shot stitching switch
⓫ With/without automatic thread trimmer switch
⓬ Thread trimming prohibiting switch
⓭ Counter value setting switch
⓮ Max.speed limitation variable resistor
⓯ Power display lamp
⓰ Smart media cover
⓱ Smart media slot
(Smart media inserting opening)
⓲ Smart media
(Optional :
Part No. HX005750000)

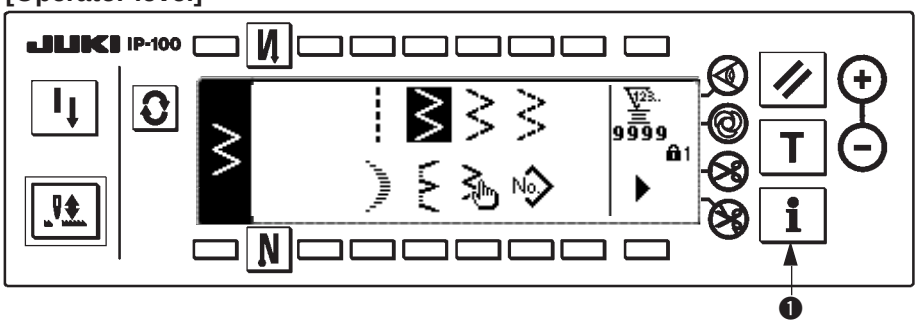
❶ Re-sewing switch 	This switch is used to continue sewing from the step on the way after replacing bobbin thread when bobbin thread has run out during program stitching step.
❷ Needle up/down compensating switch 	This is the switch to perform needle up/down compensating stitching. (Needle up/down compensating stitching and one stitch compensating stitching can be changed over with function setting No. 22.)
❸ Screen changeover switch 	This is the switch to change over the screen.
❹ With/without reverse feed stitch at sewing start switch 	This is the switch to turn ON/OFF automatic reverse feed stitch at sewing start. * This switch cannot be used with the sewing machine which is not provided with automatic reverse feed stitching device.
❺ With/without reverse feed stitch at sewing end switch 	This is the switch to turn ON/OFF automatic reverse feed stitch at sewing end. * This switch cannot be used with the sewing machine which is not provided with automatic reverse feed stitching device.
❻ Reset switch 	This is the switch to make the value of bobbin thread counter or sewing counter the set value.

❼ Teaching switch 	This is the switch to set the setting of the number of stitches with the value of number of stitches which has been actually sewn.
❽ Information switch 	This is the switch to perform various function settings.
❾ Feed amount display switch 	* LZ-2290A-SR only Normal feed amount and reverse feed amount of the pattern which is selected at present are displayed.  Ⓐ : Reverse feed amount Ⓑ : Normal feed amount * The above amounts are not displayed at the time of cycle stitching.
❿ One-shot stitching switch 	When this switch is set to effective at the time of program stitching, the sewing machine automatically operates up to the specified number of stitches.
⓫ With/without automatic thread trimmer switch 	When this switch is set to effective at the time of program stitching, the sewing machine automatically performs thread trimming when the specified number of stitches has been completed.
⓬ Thread trimming prohibiting switch 	This switch prohibits all thread trimmings. * This switch cannot be used with the sewing machine which is not provided with the automatic thread trimming device.
⓭ Counter value setting switch 	This is the switch to set the value of bobbin thread counter or No. of pcs. counter.
⓮ Max. speed limitation variable resistor	When moving the resistor in the left direction, max. speed is limited.
⓯ Power display lamp	This lamp lights up when the power switch is turned ON.
⓰ Smart media cover 	This is the cover for smart media inserting opening. To open the cover, place your finger on the notch located on the side of the cover as shown in the figure and push the cover in the direction of left slanting rear. Do not close the cover unless smart media is completely inserted.
⓱ Smart media slot (Smart media inserting opening) 	To set smart media, insert smart media into smart media slot and push it until it is almost hidden. To remove smart media, push it further again and it protrudes to the position where it can be held between your fingers. Now, draw it out. * Be very careful of the inserting direction of smart media.

(2) Information

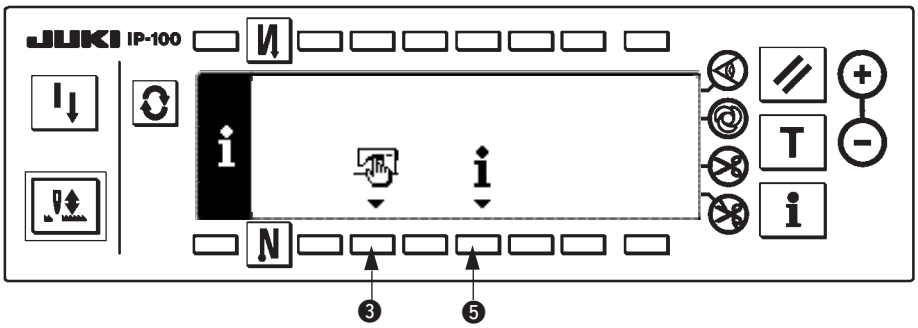
Setting and checking of various data can be performed with the information.
For the information, there are the operator level and the maintenance personnel level.

[Operator level]



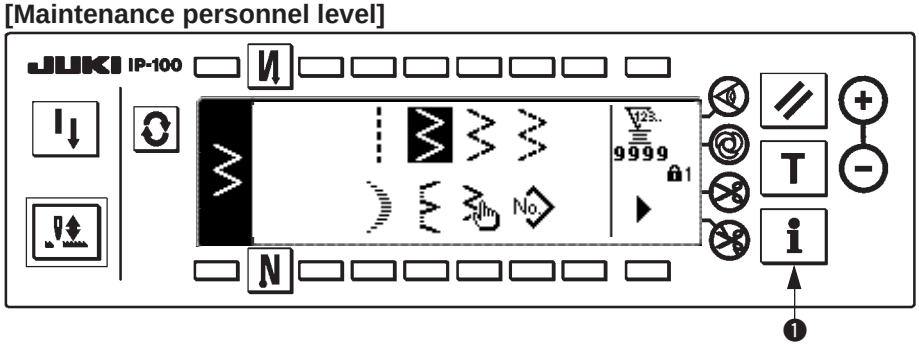
1. Turn ON the power. When the needle bar is not in the UP position, turn the handwheel to bring the needle bar to its UP position.
2. Press switch ❶ to display the information screen.
3. Press switches ❸, ❺ corresponding to the various functions.

Information screen (Operator level)



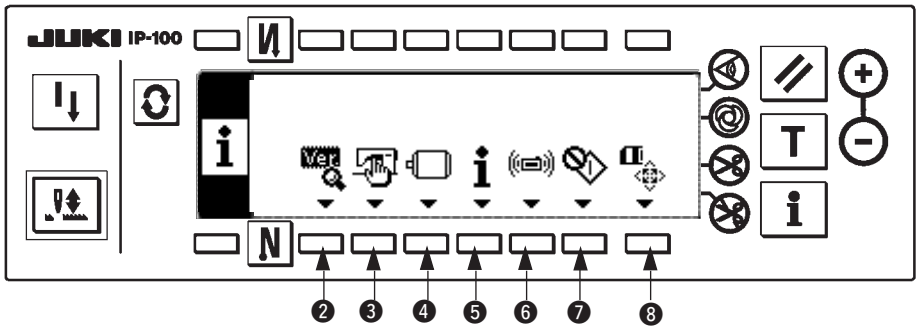
❸ : Sewing common data
❺ : Sewing management information

[Maintenance personnel level]



1. Turn ON the power. When the needle bar is not in the UP position, turn the handwheel to bring the needle bar to its UP position.
2. Press switch ❶ for approximately three seconds to display the information screen.
3. Press switches ❷ through ❽ corresponding to the various functions.

Information screen (Maintenance personnel level)



❷ : Ver display
❸ : Sewing common data
❹ : Function setting
❺ : Sewing management information
❻ : Communication mode
❼ : Hook adjusting mode
❽ : Smart media format

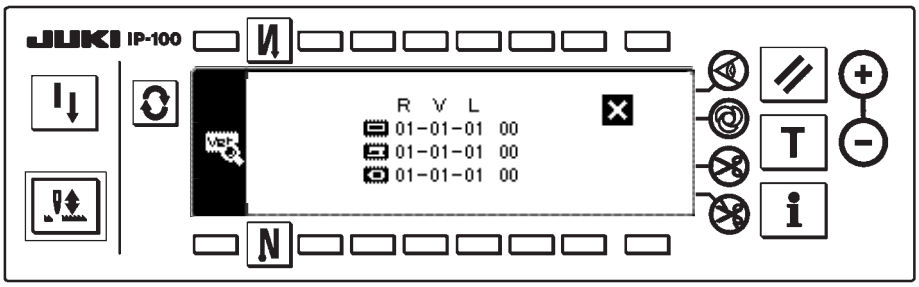
1) Ver display

Software version of each CPU is displayed.

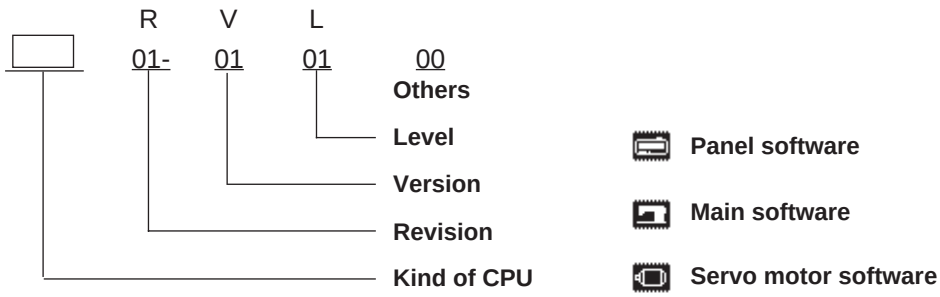
Press switch ❷ Ver in the information screen (maintenance personnel level).

Ver display screen

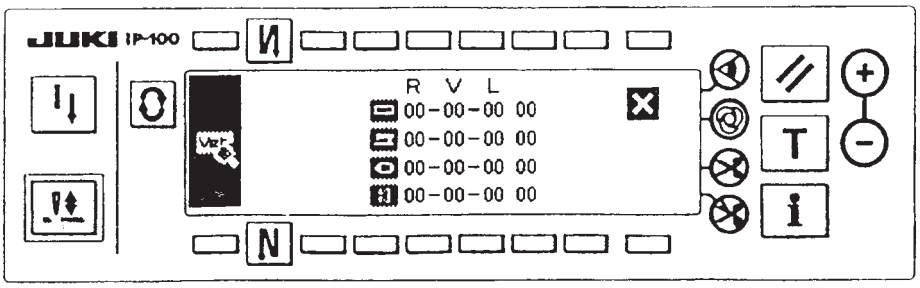
Excluding LZ-2290A-SR



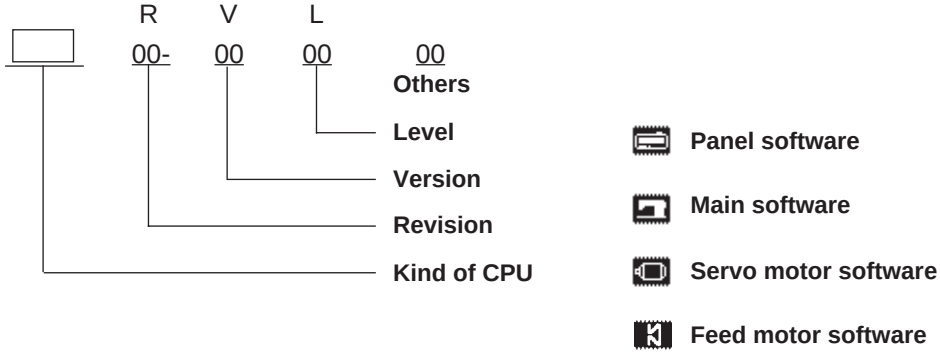
Explanation of display



LZ-2290A-SR only



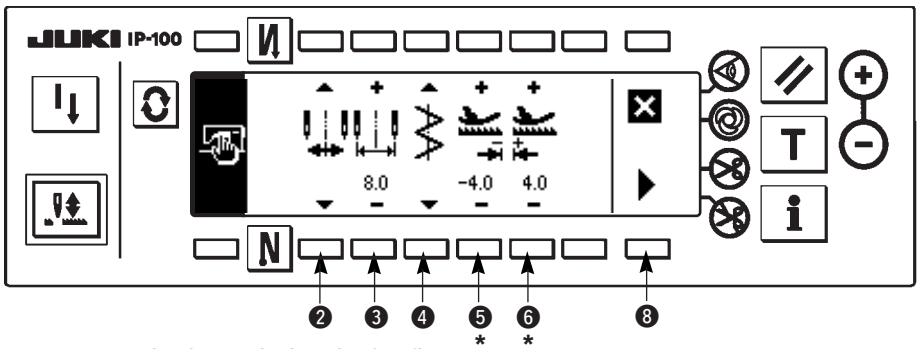
Explanation of display



2) Sewing common data

1. Press switch ❸ in the information screen.

The first screen of sewing common data setting



2. Set the items below in the first screen.

❷ : Limiting procedure of max. zigzag width limitation
For the limiting procedure of max. zigzag width limitation, there are two settings below.

1) Center 

2) Left/right 

❸ : Max.zigzag width limitation value
* Display varies according to the procedure selected in ❷.

1) When the center is set in ❷ :
Max.zigzag width limitation value (center) 

2) When the left/right is set in ❷ :
Max.zigzag width limitation value (right) 

Max.zigzag width limitation value (left) 

* ❺ : Reverse feed limitation value (LZ-2290A-SR only)
Reverse feed limitation value is set with “+”/”-” of switch ❺. In case of the example, set it to -4.0.

* ❻ : Normal feed limitation value (LZ-2290A-SR only)
Normal feed limitation value is set with “+”/”-” of switch ❻. In case of the example, set it to 4.0.

❽ : Second screen of sewing common data setting is displayed.

❹ : Reference of stitch base line
For the reference of stitch base line, there are three settings below.

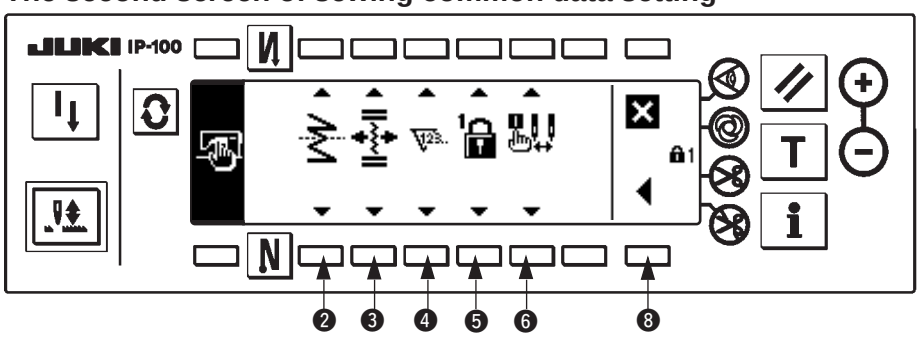
1) Center 

2) Right 

3) Left 

3. Set the items below in the second screen.

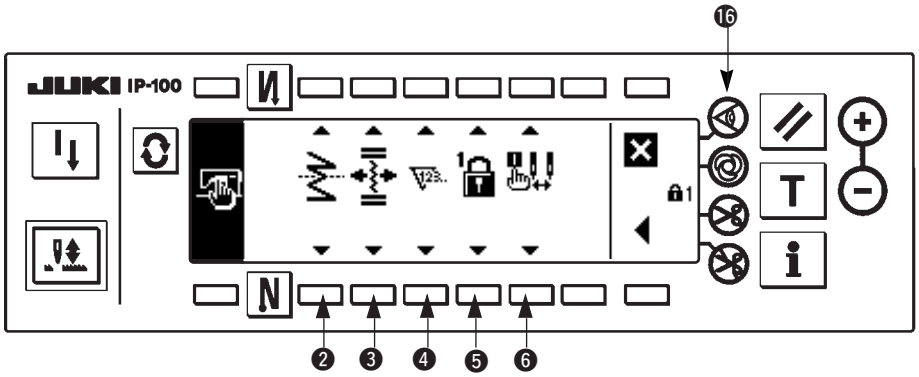
The second screen of sewing common data setting



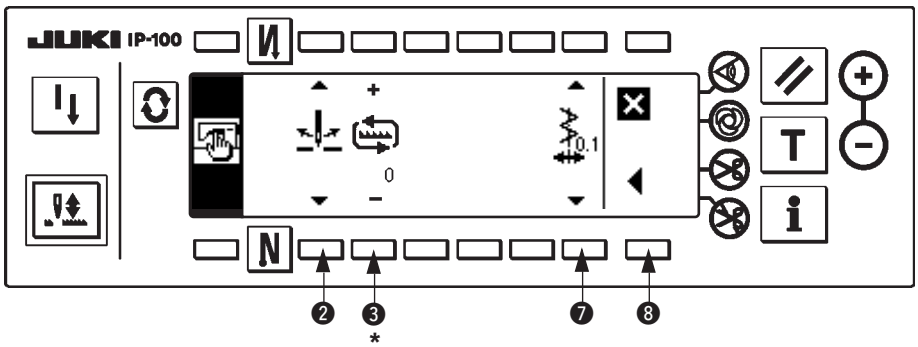
❷: Mirror function setting
Mirror inversion means the function that the reverse pattern stitching is performed after pressing the mirror inversion switch during temporary stop of sewing.
The sewing patterns that the mirror inversion is possible are scallop, custom, continuous stitching and cycle stitching.
For the mirror inversion, there are two settings below.

4. Press switch ⓰ for approximately three seconds in the second screen of sewing common data setting.

The second screen of sewing common data setting



The third screen of sewing common data setting



❷ : Change of zigzag timing

Zigzag timing can be changed.

Needle sway can be prevented by delaying timing when sewing heavy-weight materials or the like.

1. Fast : Standard setting
2. Slow : Timing is delayed by approximately 30fl in terms of the standard.

However, to delay timing, conditions below are necessary.

1. When the number of rotation is set to less than 4,000 rpm with the function setting No. 96, Max. number of rotation setting.
2. When the travelling distance of 1 stitch is less than 4 mm.
   In case of more than 4 mm, needle may travel while it is stuck on the cloth.
   In case the distance is more than 4 mm and zigzag motion is performed, do not set this function.

* ❸ : Change of feed timing (LZ-2290A-SR only)

When adjusting the heigt of feed dog or hook driving shaft sprocket timing, feed dog is fed while needle is stuck on the cloth according to the feed pitch amount. As a result, needle bend will be caused.
In this case, perform the adjustment of the phase of feed timing.
Setting range : -50 º to + 50 º in terms of the standard timing

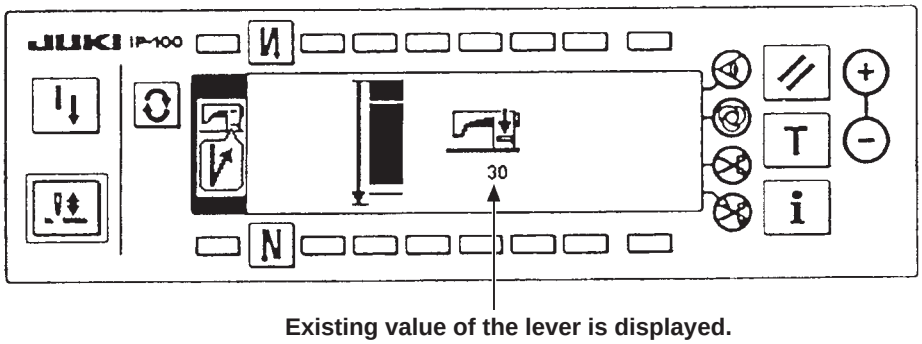
❼ : Alternate changeover of stitch base line unit between 0.1 mm and 0.2 mm

The unit of change of stitch base line position can be changed over to 0.1 mm unit or 0.2 mm unit.

1. 0.1 mm unit : Standard setting
2. 0.2 mm unit : Panel setting is 0.1 mm unit, but actually the position travels every 0.2 mm.

5. Press switch ❽ in the third screen of sewing common data setting.

Reverse feed control lever adjustment screen (LZ-2290A-SR only)



Existing value of the lever is displayed.

1. Set the reverse feed control lever to the free state and adjust so that the numeric value is among 22 to 33.

(Caution) When the adjustment is completed, turn the power OFF since it is not possible to move from the reverse feed control lever adjustment screen to the other screen.

* For the detailed adjusting procedure, refer to 4.-(6) Adjusting/assembling the reverse feed control lever (A-SR only)

3) Sewing management information

For the sewing management information, there are the operator level and the maintenance personnel level.

[Maintenance personnel level]

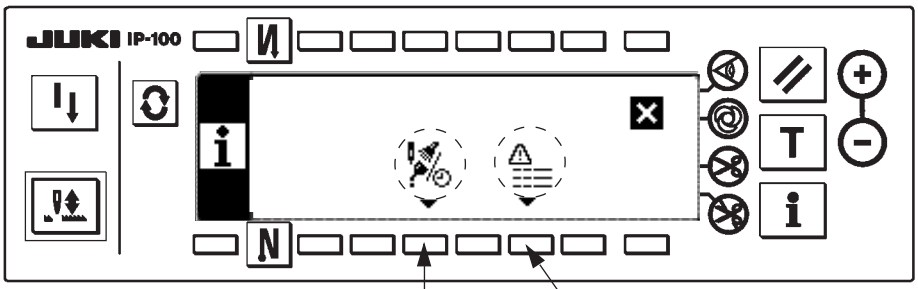
Press switch ❺ i in the information screen.

[Maintenance personnel level]

Press switch ❺ i for approximately three seconds in the information screen.

Pictograph on the left end of the sewing management information is shown in reverse video.

Sewing management information screen (Maintenance personnel level)



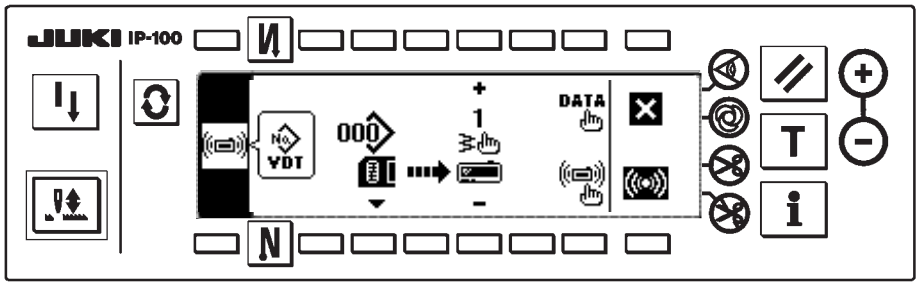
Maintenance management function ❹

Error record display ❻

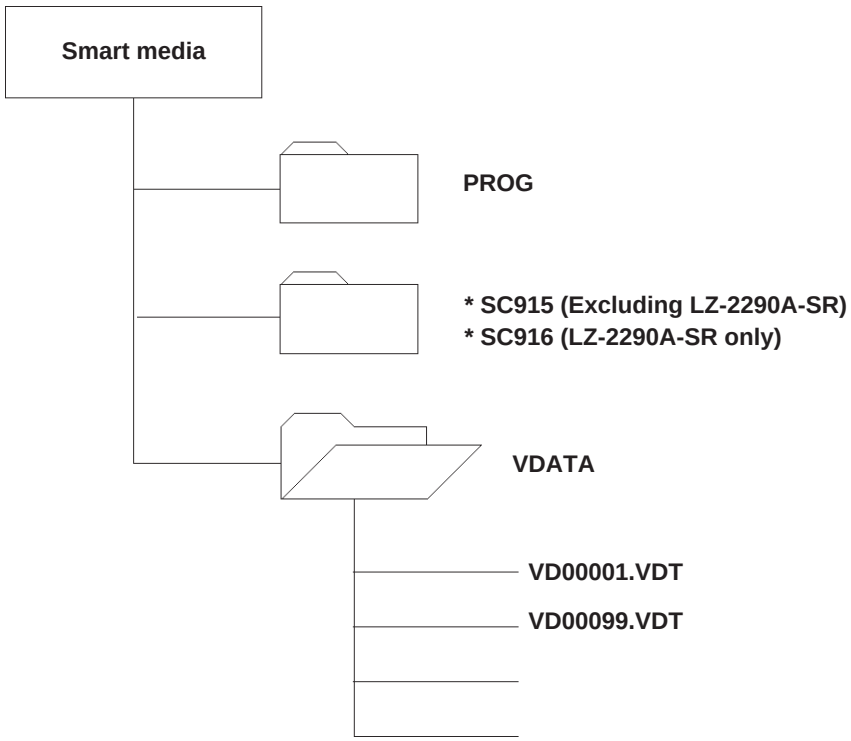
5) Vector form data (Custom pattern data)

1. The custom pattern created with the panel can be stored as the vector form data.
2. The same custom pattern can be used with other sewing machines by downloading the vector form data which has been stored.
3. The vector form data created with PM-1 can be can be downloaded as the custom pattern.
4. The vector form data which has been stored can be edited with PM-1.

Communication screen (Download of vector form)



Folder structure of vector form (* .VDT) file in the smart media



Upload : Uploading to the smart media is written in the folder of "VDATA".
In case there is no folder, the folder of "VDATA" is automatically created.

Download : Downloading from the smart media is read from the folder of "VDATA".
When creating the pattern with PM-1, store it in the folder of "VDATA".

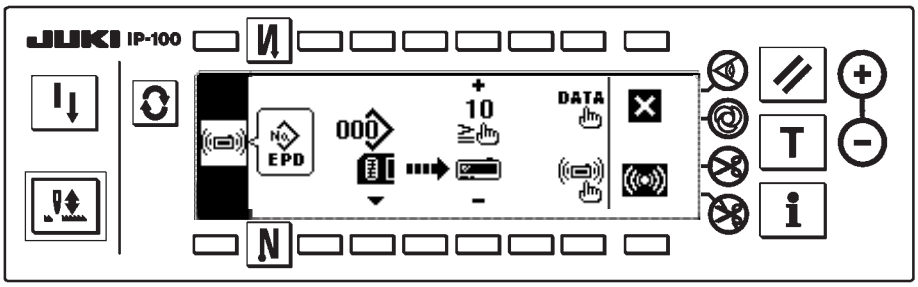
① Create folder "VDATA" in the smart media.
(It is not necessary to create the folder when it already exists.)

② Copy the file (extension VDT).

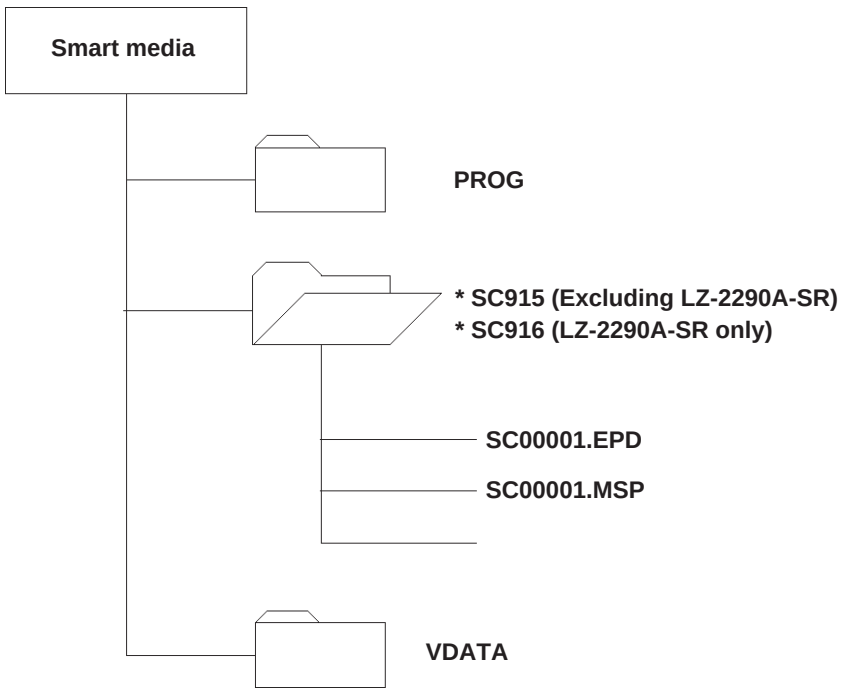
6) Parameter form data (Condensation custom pattern)

1. The condensation custom pattern created with the panel can be stored as the parameter form data.
2. The same condensation custom pattern can be used with other sewing machines by downloading the parameter form data which has been stored.

Communication screen (Download of parameter form)



Folder structure of parameter form (* .EPD) file in the smart media



Upload : Uploading to the smart media is written in the folder of "SC915" or "SC916".
In case there is no folder, the folder of "SC915" or "SC916" is automatically created.

Download : Downloading from the smart media is read from the folder of "SC915" or "SC916".
Store the copy from other media or the like in the folder of "SC915" or "SC916".

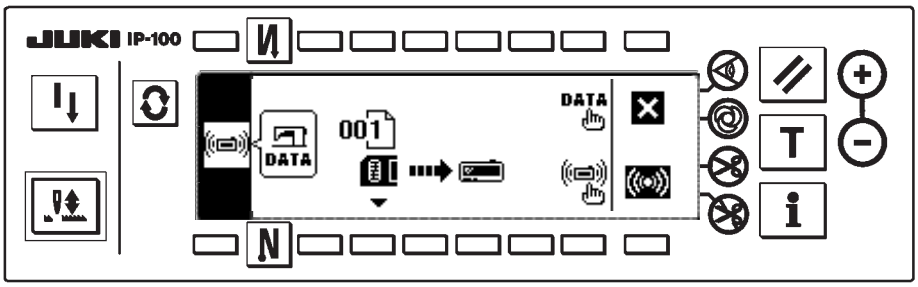
① Create folder "SC915" or "SC916" in the smart media.
(It is not necessary to create the folder when it already exists.)

② Copy the file (extension EPD).

7) All sewing machine data

1. Data such as sewing setting data, adjustment data, etc. which are memorized in the sewing machine can be stored in one package.
2. It is possible to download the all sewing machine data to the other sewing machines to make the same setting.

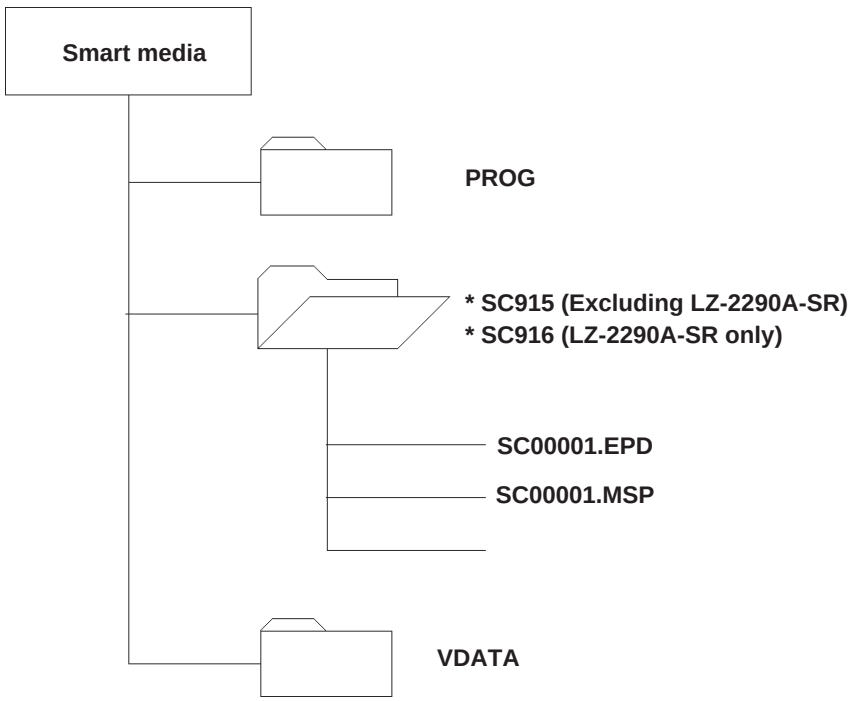
Communication screen (Download of all sewing machine data)



Reference : When downloading the all sewing machine data, it is necessary that the file and the Ver of the sewing machine have to agree with each other. An error occurs when the file of different Ver is downloaded.

(Caution) It is not possible to store and copy the function setting of the servo motor.

Folder structure of all sewing machine data (* .MSP) file in the smart media



Upload : Uploading to the smart media is written in the folder of "SC915" or "SC916".
In case there is no folder, the folder of "SC915" or "SC916" is automatically created.

Download : Downloading from the smart media is read from the folder of "SC915" or "SC916".
Store the copy from other media or the like in the folder of "SC915" or "SC916".

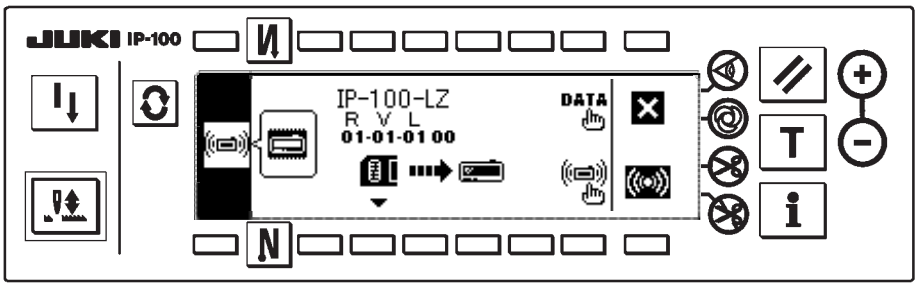
① Create folder "SC915" or "SC916" in the smart media.
(It is not necessary to create the folder when it already exists.)

② Copy the file (extension MSP).

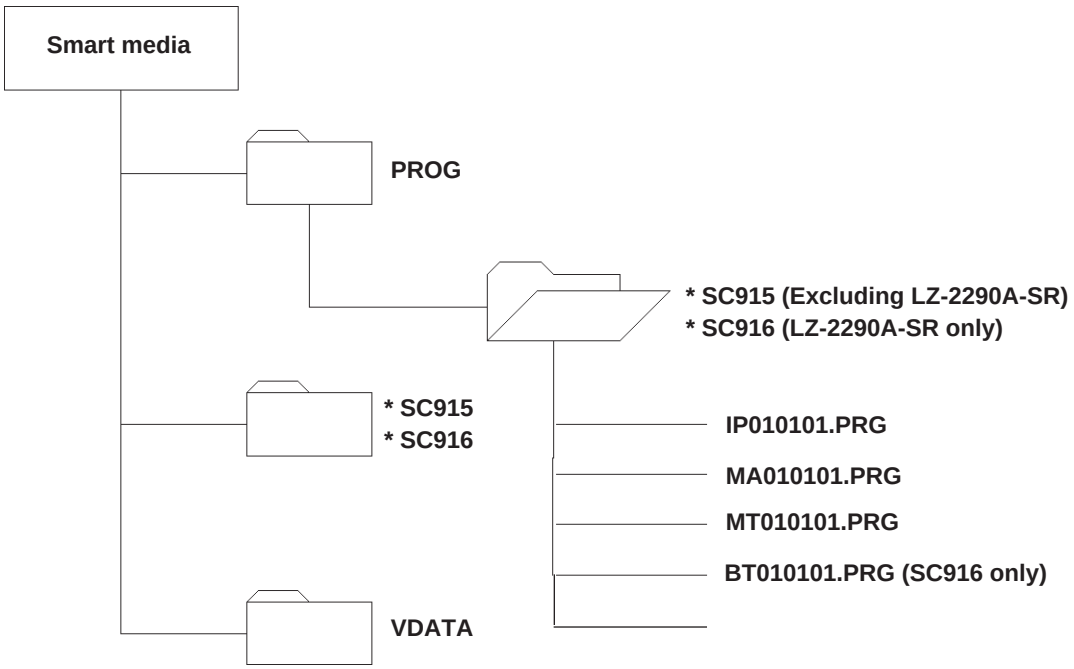
8) Program data

1. When the change of software occurs in the future due to Ver-up or the like, rewriting of the program can be performed. Rewriting of the program is performed with each CPU.

Communication screen (Download of IP-100 program data)



Folder structure of program (* .PRG) file in the smart media



Upload : Downloading from the smart media is read from the folder of "PROG\SC915" or "SC916".
Download : Store the copy from other media or the like in the folder of "PROG\SC915" or "SC916".

① Create folder "PROG" in the smart media.
② Create folder "SC915" or "SC916" in the PROG folder.
(It is not necessary to create the folder when it already exists.)
③ Copy the program file (extension PRG).

(2) Error code list (Error display in panel)

There are the following error codes in this device. These error codes interlock (or limit function) and inform the problem so that the problem is not enlarged when any problem is discovered. When you request our service, please confirm the error codes.

No.	Description of error detected	Cause	Item to be checked or corrective measure	Mirror LED flash	Pictograph display
–	UP position detection error when turning ON the power	• When needle position is not UP position at the time of turning ON the power.	• Set to UP position by turning handwheel by hand. • Connect synchronizer connector.	–	
–	Smart media cover open	• Lid of smart media slot is open.	• Close the lid.	–	
003	Disconnection of synchronizer connector	• When position detection signal is not inputted from the sewing machine head synchronizer. • When the synchronizer has broken.	• Check the synchronizer connector (CN30) for loose connection and disconnection. • Check whether the synchronizer cord has broken since the cord is caught in the machine head or the like.	–	
004	Synchronizer lower position sensor failure				
005	Synchronizer upper position sensor failure				
007	Overload of motor	• When the machine head is locked. • When sewing extra-heavy material beyond the guarantee of the machine head. • When the motor does not run.	• Check whether the thread has been entangled in the motor pulley. • Check the motor output connector (4P) for loose connection and disconnection.	–	
008	Machine head connector failure	• When the machine head connector is not properly read.	• Check the machine head connector (CN54) for loose connection and disconnection.	–	
011	Smart media not inserted	• Smart media is not inserted.	• Turn OFF the power.	–	
012	Read error	• Data read from smart media is not possible.	• Turn OFF the power.	–	
013	Write error	• Data write to smart media is not possible.	• Turn OFF the power.	–	
014	Write protect	• Smart media is in write prohibition state.	• Turn OFF the power.	–	
015	Format error	• Formatting cannot be performed.	• Turn OFF the power.	–	
016	External media capacity over	• Media capacity of smart media is short.	• Turn OFF the power.	–	
019	File size over	• File is too big.	• Turn OFF the power.	–	
024	Pattern data size over	• Number of stitches and data amount which can be handled with device are over.	• Turn OFF the power.	–	
032	File compatibility error	• There is no file compatibility.	• Turn OFF the power.	–	
040	Travel limit over	• Sewing data has exceeded sewing possible area.	• Turn OFF the power.	–	
042	Operation error	• Operation of sewing data cannot be performed.	• Turn OFF the power.	–	
302	Fall detection switch failure	• When fall detection switch is inputted in the state that the power is turned ON.	• Check whether the machine head is tilted without turning OFF the power switch (sewing machine operation is prohibited for safety sake). • Check whether the fall detection switch cord is caught in the sewing machine or the like and has broken. • Check whether the fall detection switch lever is caught in something.	–	
487	Feed pitch error of condensation section	• When feed pitch of condensation section exceeds the range of feed.	• Re-enter data after reset operation. • Set the feed amount of condensation section within the range of limitation.	7 times flash	
488	Reverse feed pitch error of normal sewing section	• When reverse feed pitch of normal sewing section exceeds the range of feed.	• Re-enter data after reset operation. • Set the reverse feed amount of normal sewing section within the range of limitation.	7 times flash	
489	Normal feed pitch error of normal sewing section	• When normal feed pitch of normal sewing section exceeds the range of feed.	• Re-enter data after reset operation. • Set the normal feed amount of normal sewing section within the range of limitation.	7 times flash	

No.	Description of error detected	Cause	Item to be checked or corrective measure	Mirror LED flash	Pictograph display
490	Pattern setting error of continuous stitching and cycle stitching	• When pattern No. is not set to continuous stitching. • When the number of stitches of 1st step of continuous stitching is "0". • When pattern No. is not set to cycle stitching.	• Re-enter data after reset operation. • Set pattern No. and number of stitches.	7 times flash	
491	Cycle stitching pattern error	• When pattern to be used in cycle stitching becomes error.	• Re-enter data after reset operation. • Correct data of pattern which becomes error.	7 times flash	
492	Data deletion impossible	• When data to be deleted is used in pattern sewing, continuous stitching or cycle stitching.	• Reset operation • In case of deletion, release the use of pattern sewing, continuous stitching or cycle stitching used, and perform again deletion.	—	
493	Condensation custom pattern width error	• When zigzag width of condensation custom pattern is larger than max. zigzag width limitation.	• Re-enter data after reset operation. • Set zigzag width of condensation custom pattern within max. zigzag width limitation.	7 times flash	
498	Position of stitch base line error	• When the set zigzag width is within max. zigzag width limitation, but zigzag position exceeds max. zigzag width limitation according to the position of stitch base line.	• Re-enter data after reset operation. • Set the position of stitch base line within max. zigzag width limitation. • When condensation custom is selected, check and correct the position of condensation.	7 times flash	
499	Max. zigzag width error	• When specified zigzag width is within max. zigzag width limitation, but zigzag position exceeds max. zigzag width limitation according to the position of stitch base line.	• Re-enter data after reset operation. • Set the position of stitch base line within max. zigzag width limitation.	7 times flash	
703	Connection of panel which is not supposed	• When panel connected to the sewing machine is the kind which is not supposed.	• Turn OFF the power. • Connect the proper panel.	—	
704	Inconsistency of system versions	• When system versions are inconsistent.	• Turn OFF the power. • Consist system versions with each other.	—	
730	Encoder failure	• When the motor signal is not properly inputted.	• Check the motor signal connector (CN38) for loose connection and disconnection. • Check whether the motor signal cord has broken since the cord is caught in the machine head or the like.broken since the cord is caught in the machine head or the like.	—	
731	Motor hole sensor failure				
733	Reverse rotation of main shaft motor	• State that the sewing machine is rotating in the different direction from the normal rotating direction at 500 rpm or more continues 40 times or more while motor is running (excluding holding of needle position).	•Turn OFF the power.	—	
734	Reverse feed control lever sensor erroe	• Abnormality of reverse feed control lever sensor detection.	• Turn OFF the power. • Disconnection of relay cable of reverse feed control lever sensor. • Trouble of reverse feed control lever sensor.	—	
810	Solenoid short-circuit	• When the short-circuited solenoid is desired to be driven.	• Check whether the solenoid is short-circuited.	—	
811	Overvoltage	• When voltage upper than guaranteed one is inputted. • When 200V is inputted for 100V setting.	• Check whether the applied power voltage is higher than the rated voltage + (plus) 10% or more. • Check whether 100V/200V changeover connector is set by mistake. In the above cases, POWER circuit board has broken.	—	

No.	Description of error detected	Cause	Item to be checked or corrective measure	Mirror LED flash	Pictograph display
813	Low voltage	• When voltage lower than guaranteed one is inputted. • When 100V is inputted for 200V setting.	• Check whether the votage is lower than the rated voltagw - (minus) 10% or less. • Check whether 100V/200V changeover connector is set by mistake.	—	
838	85V low voltage error	•When 85V detection sensor judges that voltage is low.	•Turn OFF the power.	—	
907	Zigzag drive origin error	• Origin sensor of zigzag drive motor is not detected.	• Turn OFF the power. • Trouble of origin sensor of zigzag drive motor • Disconnection of relay cable of zigzag drive motor • Trouble of zigzag drive circuit	—	
915	Operation panel transmission failure	• Disconnection of operation panel cord • Operation panel has broken.	• Check the operation panel connector (CN34) for loose connection and disconnection. • Check whether the operation panel cord has broken since the cord is caught in the machine head or the like.	4 times flash	
916	Communication failure between NAIN and main shaft control CPU	• When main shaft fails to communicate with MAIN. • When MAIN fails to communicate with main shaft.	• Turn OFF the power. Turn OFF the power.	—	
917	Communication failure between panel and personal computer	• Panel fails to communicate with personal computer.	• Turn OFF the power.	—	
919	Overheat error	•When temperature of inside of electrical box has abnormally risen.	• Turn OFF the power. • Cleaning of fan filter • Removal of cause of temperature rise of electrical box	—	
922	Main shaft motor control is impossible.	• When main shaft motor cannot be controlled.	• Turn OFF the power.	—	
924	Motor driver failure	• Motor driver has broken.		—	
939	Feed drive orign error	• Orign sensor of feed drive moter is not detected.	• Turn OFF the power. • Trouble of origin sensor of feed drive motor. • Disconnection of relay cable of feed drive motor. • Trouble of feed drive circuit.	—	
940	Bird's nest sequence error	• Bird's nest prevention sequence is not completed.	• Turn OFF the power.	—	
942	Main shaft EEPROM failure	• Writing is not completed even after the lapse of 10 [ms] or more.	• Turn OFF the power.	—	
943	MAIN EEPROM failure	• Writing is not completed even after the lapse of 10 [ms] or more.	• Turn OFF the power.	—	
948	FROM failure	• Deletion or writing of FROM cannot be performed at the time of downloading program.	• Turn OFF the power.	—	
— —	Servo motor RAM error	• RAM check error when the power is turned ON.	• Turn OFF the power.	LED flash (Caution) 1	
— —	Main RAM error	• RAM check error when the power is turned ON.	• Turn OFF the power.	LED is lit up.	

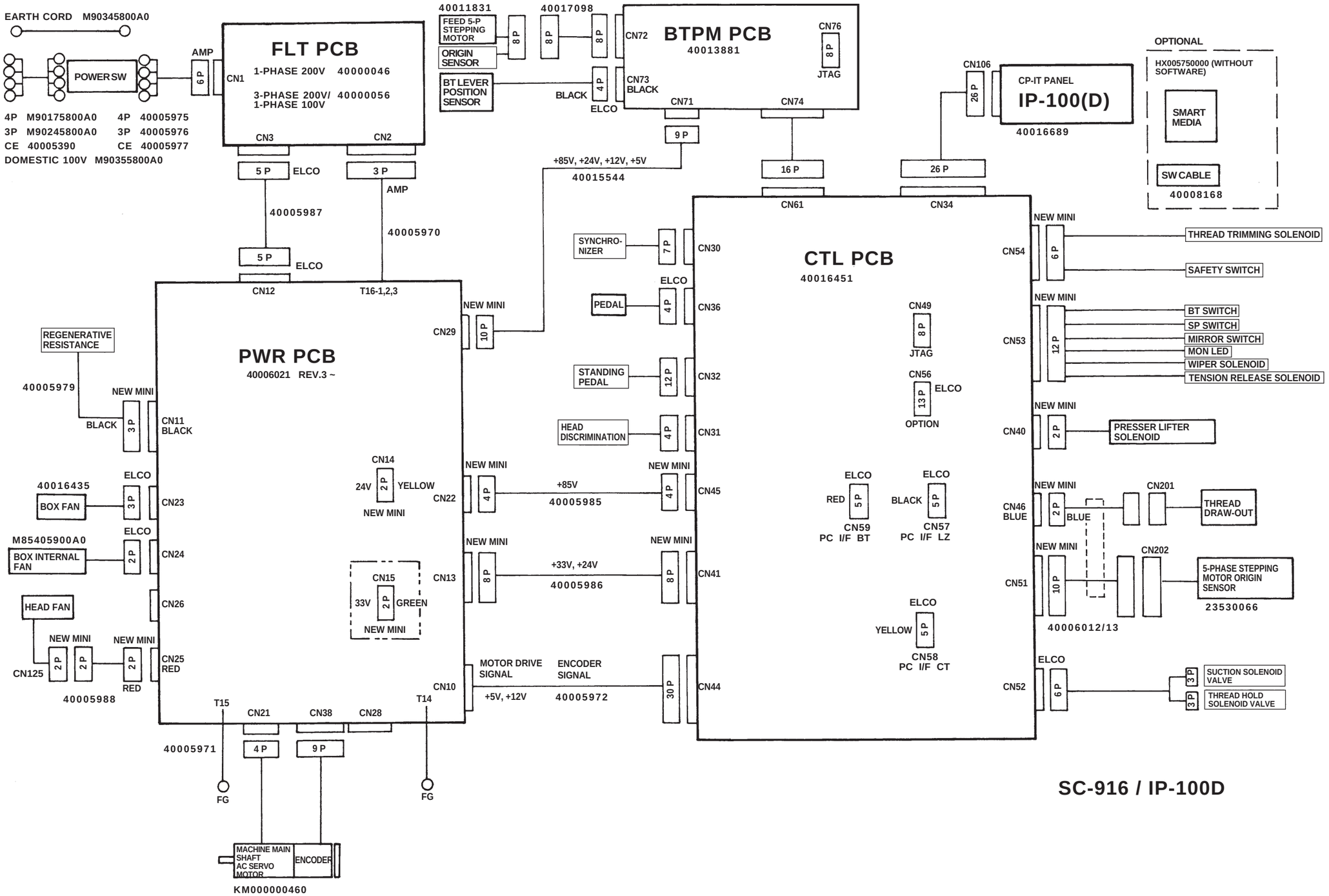
(Caution) 1 Flash of LD 2 on the circuit board

LZ-2290A-SR (Quick reverse type only)

Trouble	Ca1use 1	Cause 2	Corrective measure and adjusting procedure
15. Display is different from the feed display of operation panel value even when the reverse feed control lever is operated.	15-1) Position of the reverse feed control lever sensor is improper.		Perform adjustment of the position of reverse feed control lever sensor. Refer to 4-(6)-11) Adjusting the reverse feed control lever sensor.
	15-2) Reverse feed control lever return spring is disconnected.		Install the reverse feed control lever return spring. Refer to 4-(6)-11) Adjusting the reverse feed control lever sensor.
16. “Snap”, sound of needle bend, occurs or needle is apt to be broken.	16-1) Feed timing in terms of standard timing is changed.	1-A) Height of feed dog is too high.	Lower the height of feed dog. (Return the mechanical adjustment value to the standard.) Refer to 3-(1) Height and inclination of the feed dog.
			Change the feed timing on the operation panel.
		1-B) Feed timing in terms of standard timing is changed.	Adjust the feed timing. (Return the mechanical adjustment value to the standard.) Refer to 3-(2)-2) Adjusting the feed timing.
			Change the feed timing on the operation panel.
17. Feed amount input value on the operation panel is different from the actual sewing value.	17-1) The value is changed from the value at the time of delivery from the factory.		Return to the standard state or compensate and input the panel input value adjusting to the actual sewing. (Actual sewing may differ from the input value due to shape of gauge, height of feed dog, presser pressure, slide characteristic of material, etc.)
18. Shape of custom pattern on the operation panel is different from the actual sewing value.	18-1) The state is changed from that at the time of delivery from the factory.		Compensate and input the panel input value adjusting to the actual sewing. (Actual sewing may differ from the input value due to shape of gauge, height of feed dog, presser pressure, slide characteristic of material, etc.)
	18-2) The pattern is a pattern that frequently performs normal/reverse feed stitching repetition motion.		Compensate and input the panel input value adjusting to the actual sewing and decrease the sewing speed. (Standard : up to max. 2,500 rpm) (In case of the shape that frequently performs normal/reverse feed repetition motion, as the sewing speed is increased, motion-loss is increased, and the pattern shape may be broken.

Trouble	Ca1use 1	Cause 2	Corrective measure and adjusting procedure
19. T stitch pattern is dirty.	19-1) “0” position is slipped.	1-A) State of feed dog is different from the standard state.	Make it the standard state.
			Perform compensation and input of feed amount “0”. (Feed amount may be different from the input value due to the slide characteristic of material or the like.) ... Refer to the Instruction Manual.
			Adjust the feed amount. (Return the mechanical adjustment value to the standard.) Refer to 3-(1)-2) Adjusting the feed amount.
	19-2) Stitch tightness is not good.		Replace the thread tension with 2-disk type thread tension of lockstitch type. Part No. : 40017095
20. Material falls (is caught in).	20-1) Clearance between throat plate and feed dog is too large.		Replace the feed dog with that adjusted to the feed pitch used. (Make minimum the clearance between throat plate and feed dog.) ... Standard delivery gauge is for 5 mm feed.
21. Step-out of motor occurs.	21-1) Assembling torque of feed mechanism is too heavy.		Re-adjust the feed mechanism torque at the time of assembling the feed stepping motor unit. Refer to 3-(3)-2) Adjusting the feed amount.

(2) Block diagram B (for SC-916)



SC-916 / IP-100D