

ENGLISH

**DDL-8000CS
MULTI-LAYERED SECTION
DETECTION SENSOR
INSTRUCTION MANUAL**

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1. General

This device is attached to the DDL-8000CS. By installing the multi-layered section detection sensor, sewing parameters can be automatically switched at multi-layered sections while sewing.

Switchable sewing parameters	Stitch length and sewing speed
Detectable material thickness	Max. 13 mm
Detection resolution	0.1 mm

* Multi-layered section of material that is less than 2 mm in thickness is likely to be affected by the feed dog height. Stable detection, therefore, cannot be carried out.

In addition, it is not possible to detect two or more multi-layered sections with different heights.

2. Multi-layered section detection sensor kit parts list

Multi-layered section detection sensor kit parts number : 40299026



No.	Parts No.	Description	Qty
①	40299025	Multi-layered section detection sensor (connection unit)	1
②	40299027	Magnet fixing base (asm.)	1
③	40297939	Stopper	1
④	40297951	Setscrew	3
⑤	40299028	Setscrew	1
⑥	40298669	Connector 8R	1

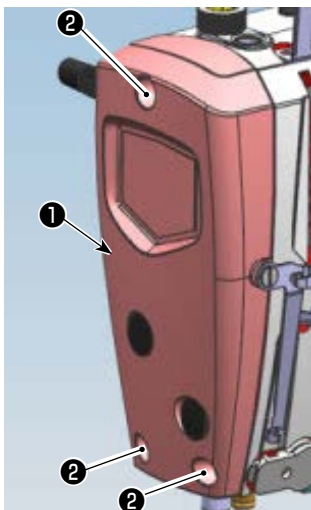
3. How to assemble



WARNING :

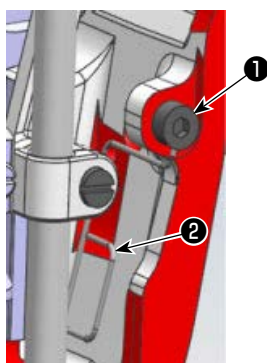
To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.

3-1. Removing the face plate



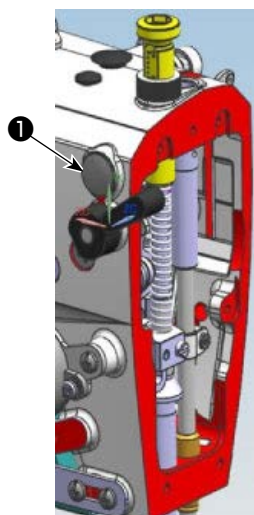
- 1) Loosen the three setscrews ② and then remove the face plate ①.

3-2. Removing the oil wick presser



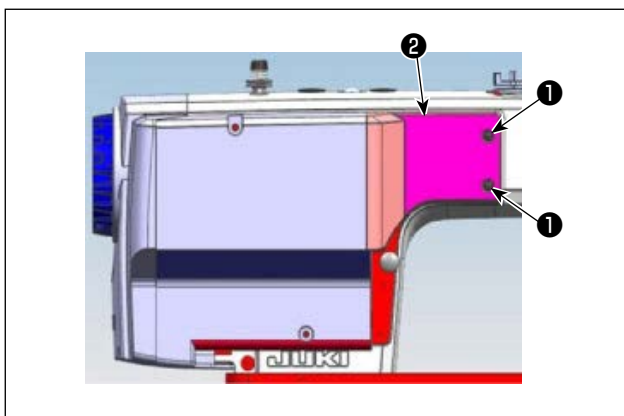
- 1) Loosen the setscrew ② (1 piece), and then remove the oil wick presser ①.

3-3. Removing the stopper



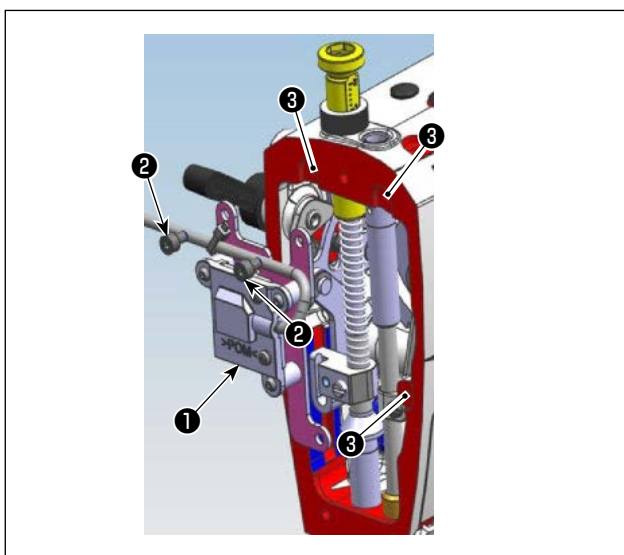
- 1) Remove the stopper ① from the upper rear side of the arm.

3-4. Removing the side cover

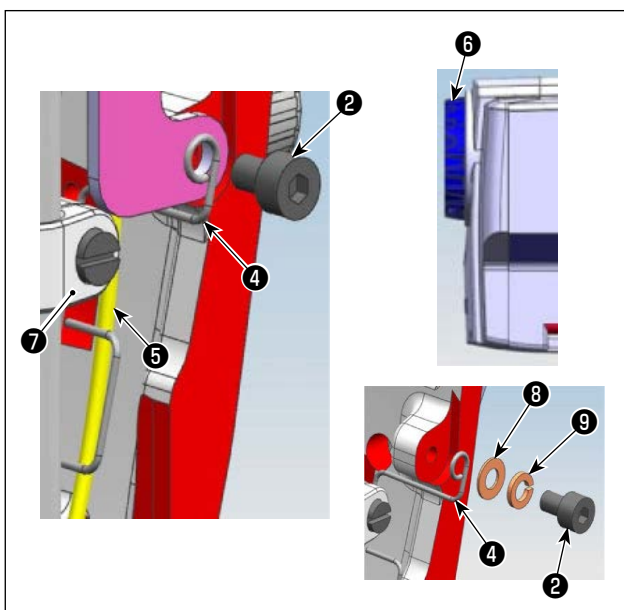


- 1) Loosen the setscrews ❶ (2 pieces) and then remove the side cover ❷ .

3-5. Attaching the multi-layered section detection sensor (connection unit)

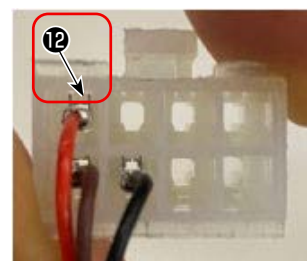
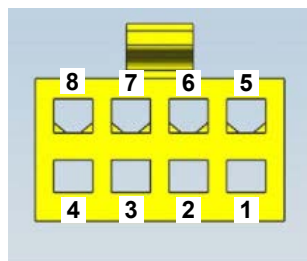
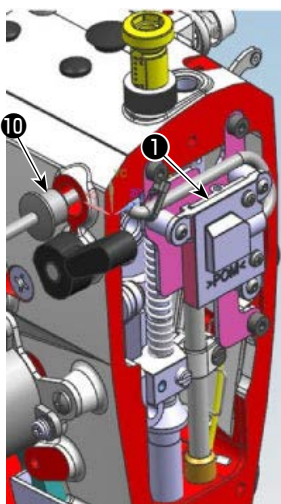


- 1) Pass the multi-layered section detection sensor (connection unit) cord ❶ through the hole at the upper rear side of the arm.
- 2) Align the multi-layered section detection sensor (connection unit) ❶ with the tapped holes ❸ (3 locations) on the arm.
- 3) Tighten the setscrews ❷ into the upper tapped holes ❸ (2 locations) on the arm to secure it in place.



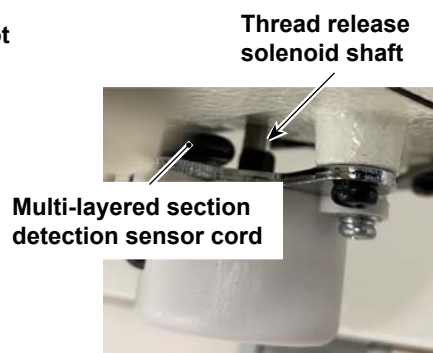
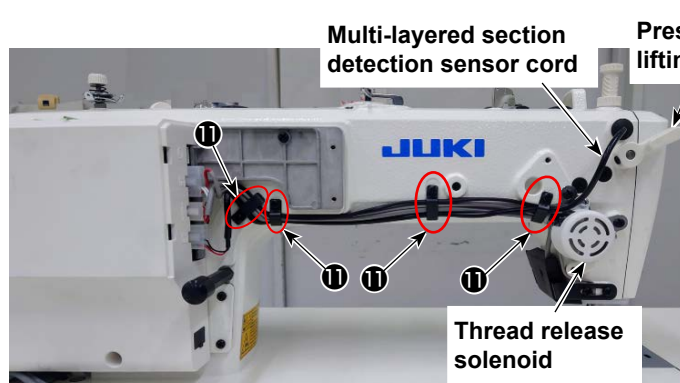
- 4) Align the circular bore section of the oil wick presser ❷ with the lower tapped hole ❸ on the arm.
 - 5) With the oil wick presser ❷ pressing the face oil wick ❺ against the arm wall, tighten the set-screw ❷ to secure it in place.
- The washer ❽ and spring washer ❾ previously attached between the oil wick presser ❷ and the setscrew ❷ are no longer necessary.

- * 1. Once the oil wick presser ❷ is assembled, when turning the handwheel ❹ by hand to move the needle bar bracket ❺, make sure that the oil wick presser ❷ does not come in contact with the needle bar bracket ❺ .
- * 2. If the multi-layered section detection sensor is not installed, place the washer ❽ and spring washer ❾ between the oil wick presser ❷ and the setscrew ❷ .

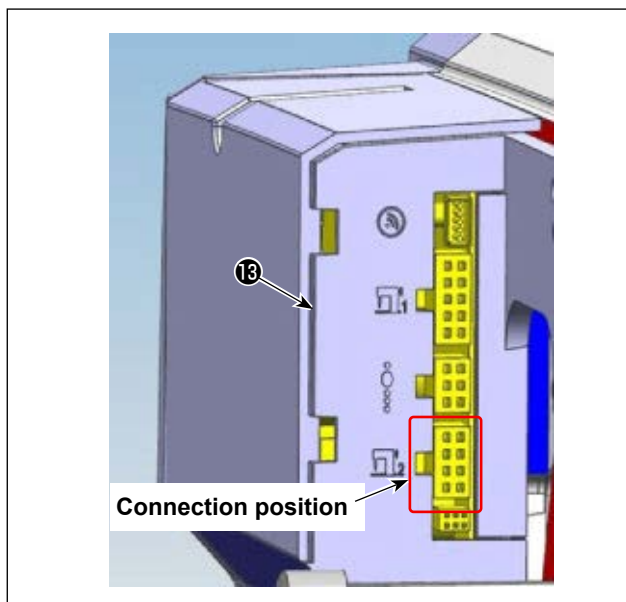


1		5	
2		6	
3	Black	7	
4	Brown	8	Red

- 6) Pass the multi-layered section detection sensor (connection unit) cord ① through the hole at the upper rear side of the arm.
- 7) Place the stopper ⑩ into the multi-layered section detection sensor (connection unit) cord ①, and then firmly insert it all the way into the hole at the upper rear side of the arm.
- * At this time, make sure that there is no slack in the multi-layered section detection sensor (connection unit) cord ①.

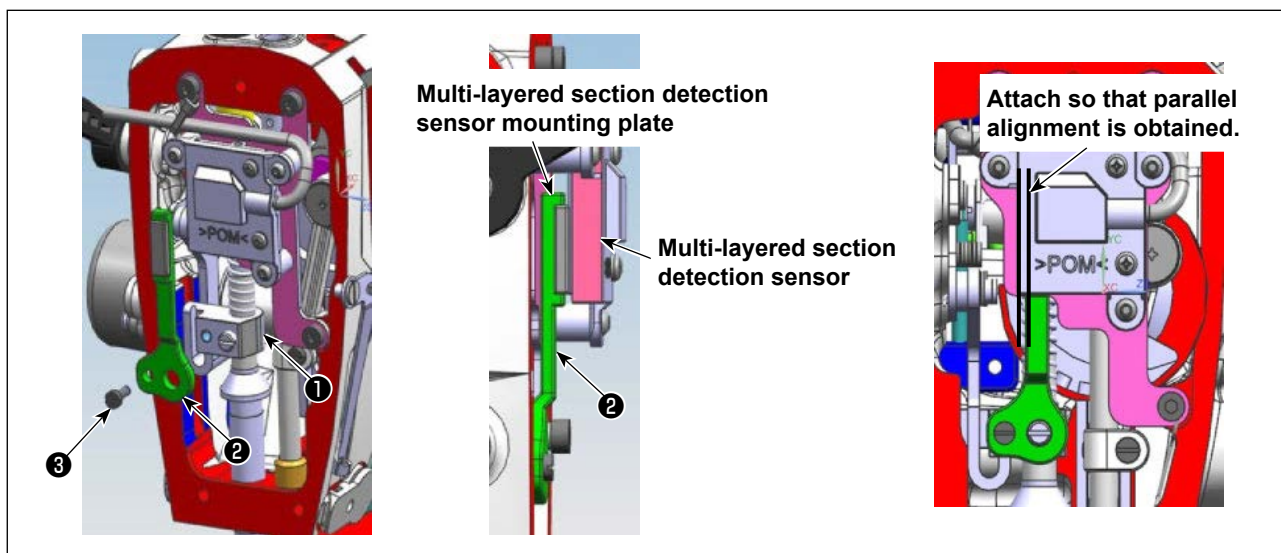


- 8) Loosen the setscrews for the cord holders ⑪ (4 locations).
 - 9) Pass the multi-layered section detection sensor cord between the thread release solenoid and the frame.
 - * Make sure the multi-layered section detection sensor cord does not interfere with the presser foot lifting lever and the thread release solenoid shaft.
 - 10) Secure the multi-layered section detection sensor cord and the other cords with the cord holders ⑪ (4 locations).
 - 11) Tighten the setscrews (4 locations) of cord holders ⑪ to secure the cords and make sure there is no slack in any of the cords.
 - 12) Firmly insert the multi-layered section detection sensor (connection unit) pin ① into the connector 8R ⑫ all the way in.
 - * At this time, make sure that the multi-layered section detection sensor (connection unit) pin ① does not come off.
- Refer to the figure above for the insertion position of the connector 8R ⑫.



- 13) Connect to the connector of circuit board 13 as shown on the left.

3-6. Attaching the magnet fixing base (asm.)



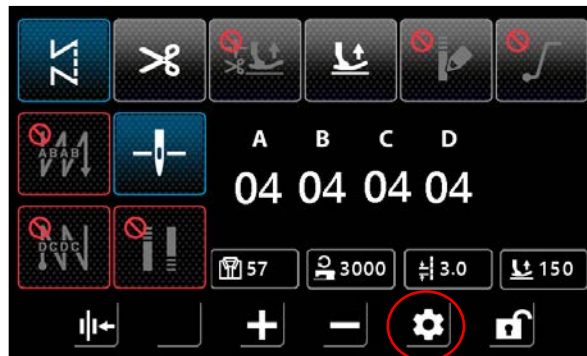
- 1) Attach the magnet fixing plate (asm.) 2 to the presser bar bracket 1.
 - 2) Fix the magnet fixing plate (asm.) with the setscrew 3 so that it is positioned between the multi-layered section detection sensor and the multi-layered section detection sensor mounting plate.
- * Assemble the magnet mounting base (asm.) so that it is nearly parallel to the multi-layered section detection sensor.

3-7. Attaching the parts

- 1) Assemble the disassembled parts back to their original state.

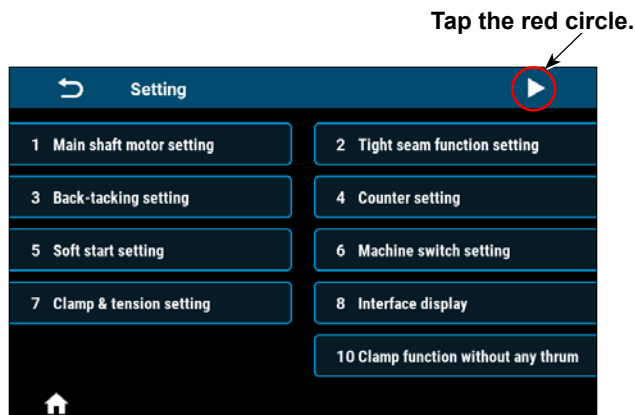
4. How to operate the panel (Multi-layered section detection function setting)

4.1 The user level parameter setting screen will be displayed.

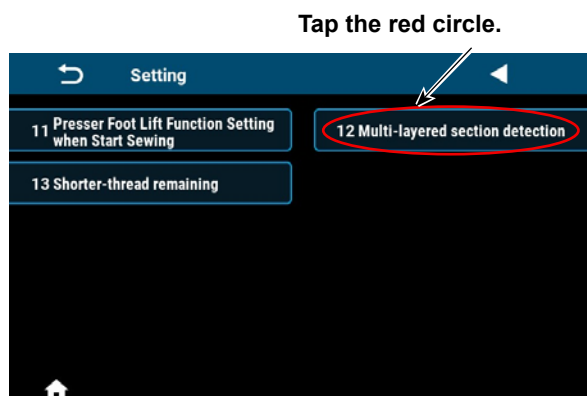


Tap the red circle once.

4.2 The screen will change.

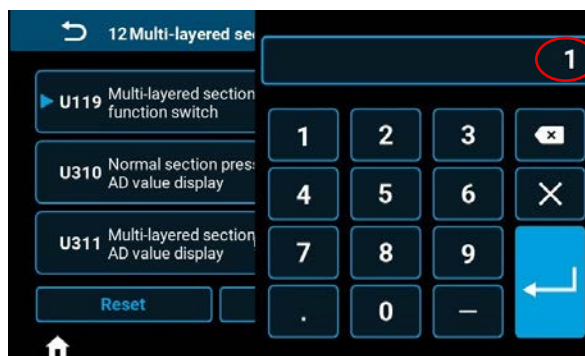
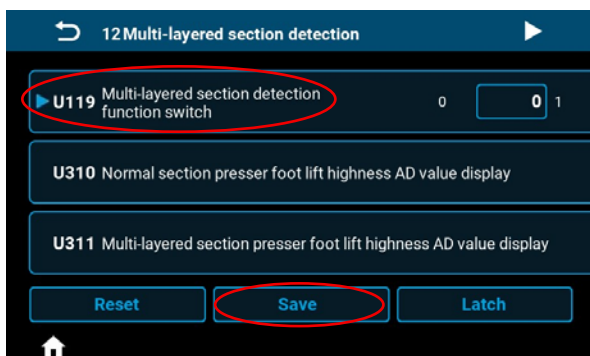


4.3 Select "Multi-layered section detection".



4.4 Select 1 for “Multi-layered section function switch”.

If you select “Save”, the multi-layered section function will be turned ON.

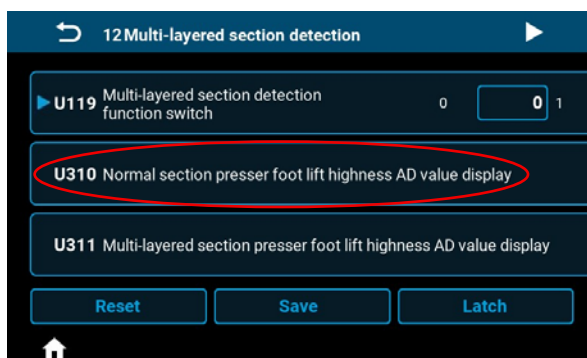


If you select “8: One touch utility changeover function” for U015 “Hand switch A function setting” or U174 “Hand switch B function setting”, you cannot set U119 “Multi-layered section detection function setting” to 1.

4.5 Next, we will explain how to adjust the multi-layered section detection threshold.

Acquire the AD value for normal section.

Press “Normal section presser foot lift highness AD value display”.



4.6 Place the sewing material of normal section thickness under the presser foot.

You can lift the presser foot by pressing the pedal reversely or using the knee lever.

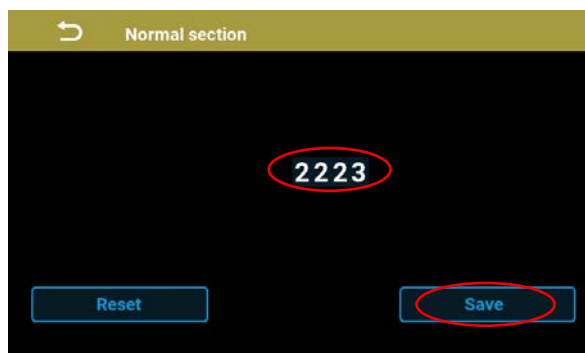
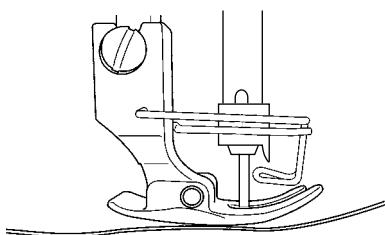


Rotate the pulley until the needle reaches near the bottom dead center, and then lower the feed dog completely.

If AD value is acquired without this operation, the multi-layered section detection may not operate properly.

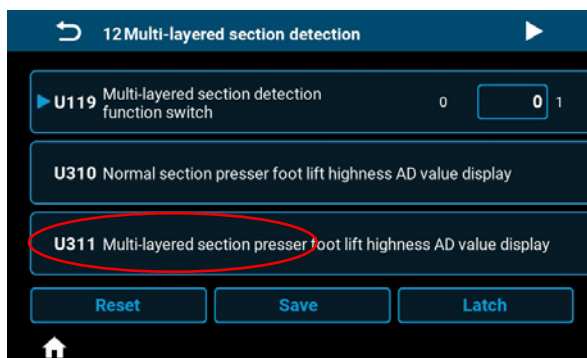
The AD value for normal section is displayed.

Pressing the “Save” button records the value as the normal section AD value.



4.7 Acquire the AD value for multi-layered section.

Press “Multi-layered section presser foot lift highness AD value display”.



4.8 Place the sewing material of multi-layered section thickness under the presser foot.

You can lift the presser foot by pressing the pedal reversely or using the knee lever.

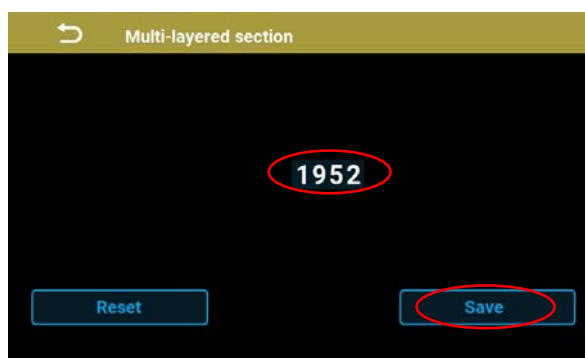
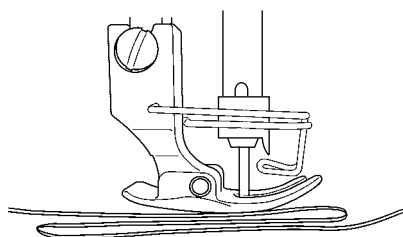


Rotate the pulley until the needle reaches near the bottom dead center, and then lower the feed dog completely.

If AD value is acquired without this operation, the multi-layered section detection may not operate properly.

The AD value for multi-layered section is displayed.

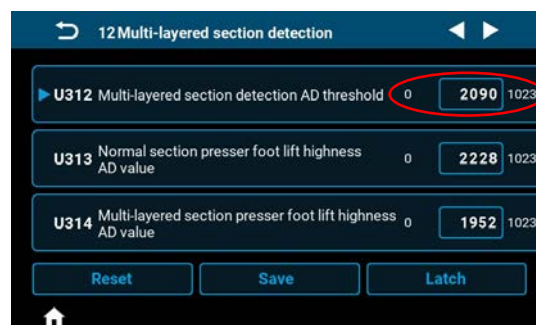
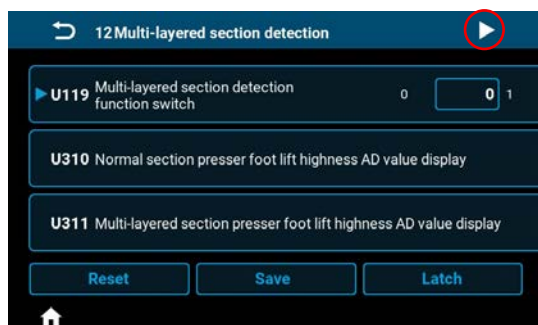
Pressing the “Save” button records the value as the multi-layered section AD value and simultaneously calculates and saves the multi-layered section threshold.



4.9 Confirm the “Multi-layered section AD value and threshold value”.

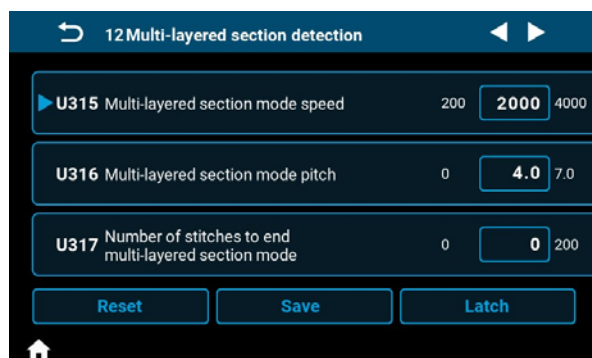
The screen will return to the selection screen.

You can change the multi-layered section threshold value by entering numbers directly.



5. How to operate the panel (Parameter setting)

5.1 Changeover of sewing speed and stitch length in multi-layered section mode



- 1) If the multi-layered section detection function is set, the sewing speed and stitch length will be automatically changed to the multi-layered section mode setting values when a multi-layered section is detected.

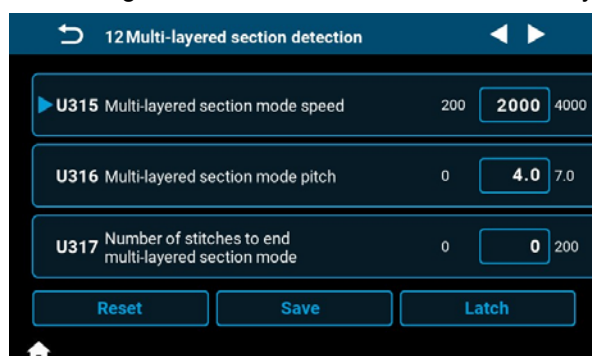
Normal sewing speed ⇔ U315 Multi-layered section mode sewing speed

Normal stitch length ⇔ U316 Multi-layered section mode pitch



- 2) During the multi-layered section detection, a  mark is displayed in the lower left corner of the screen and the display switches between sewing speed and stitch length.

5.2 Setting the number of stitches to end multi-layered section mode



Though the multi-layered section mode will automatically end when the set threshold value is exceeded, you can also end it by setting a number of stitches. Note that even if the number of stitches to end multi-layered section mode is within the set range, the multi-layered section mode will end if the threshold for multi-layered section detection is exceeded.

[Setting parameter]

U317 Number of stitches to end multi-layered section mode

Initial value: 0 (Number of stitches is not set)

Range: 0 to 200

* Setting to 0 will disable the setting for the number of stitches to end multi-layered section mode.

5.3 Setting the number of stitches to wait for multi-layered section mode changeover



When approaching a multi-layered section, depending on the sewing conditions, the mode may switch to multi-layered section mode before the multi-layered section is reached.

By setting the number of delayed stitches for multi-layered section mode, you can delay the switch to multi-layered section mode.

[Setting parameter]

U318 Number of stitches to wait for multi-layered section mode changeover

Initial value: 0 (Number of stitches is not set)

Range: 0 to 10

* Setting to 0 will disable the setting for the number of stitches to wait for multi-layered section mode changeover.