

ENGLISH

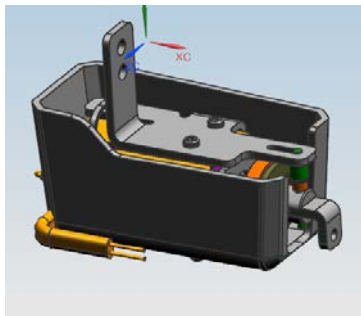
**NR-1 One-Touch Corner Stitching Device
INSTRUCTION MANUAL**

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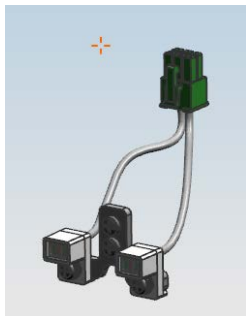
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1. Device configuration

40301218 One-Touch Corner Stitching Device



① Return solenoid assembly



② Sensor cable assembly



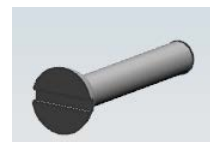
③ Magnet fixing plate



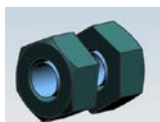
④ Pan head machine screw (M4) x 3



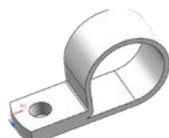
⑤ Pan head machine screw (M5) x 2



⑥ Single-needle solenoid connecting shaft



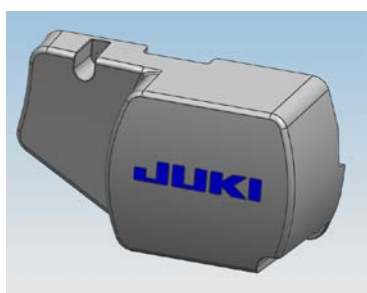
⑦ Hex nut x 2



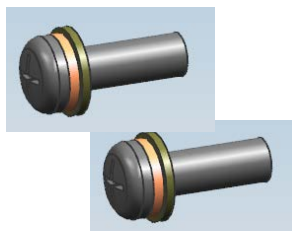
⑧ Cable clip



⑨ Cable clip band x 4



⑩ AT cover



⑪ Pan head machine screw with washer (M4)

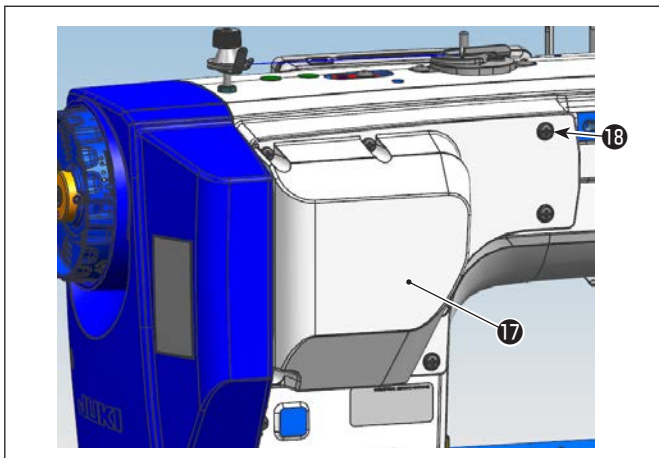
2. Installing the single-needle detection sensor assembly



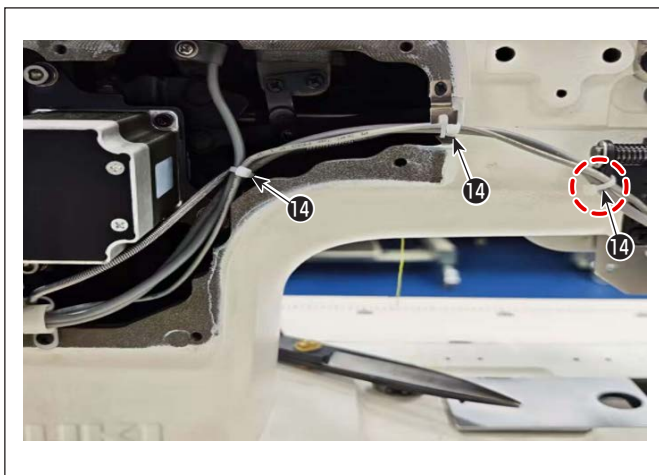
WARNING :

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

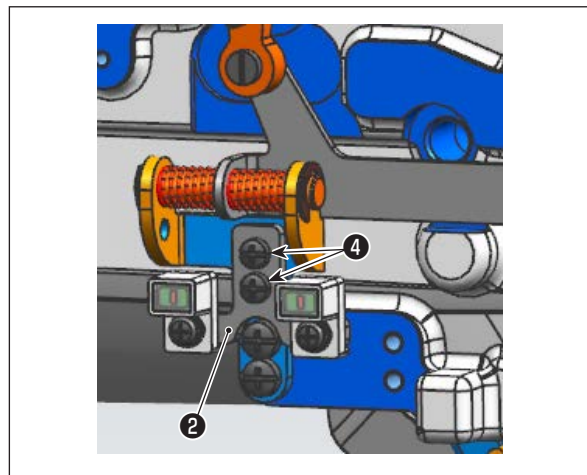
(1) Installing the single-needle detection sensor assembly



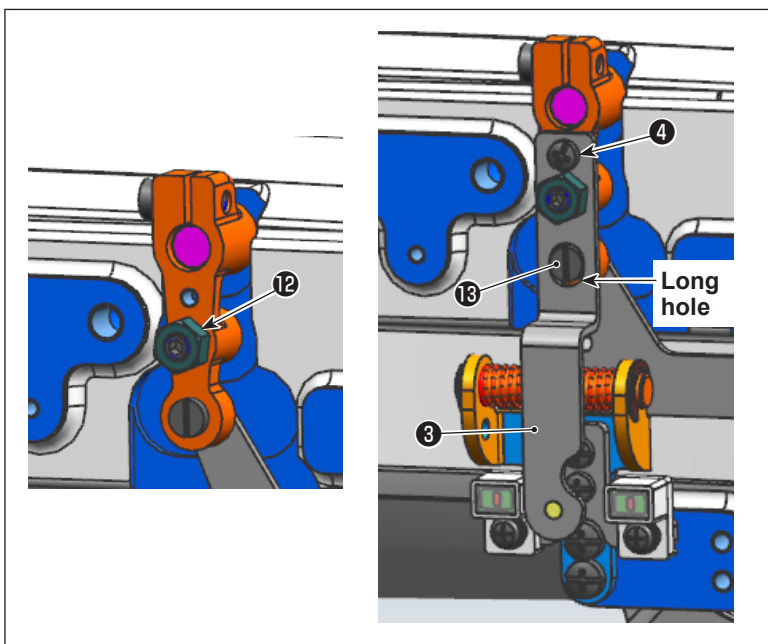
- 1) Loosen the six setscrews **18** of the side plate **17** , and remove the side plate **17** .



- 2) Cut the cable clip band **14** (at three locations).



- 3) Secure the sensor cable assembly **2** to the frame with two pan head machine screws **4** (M4).



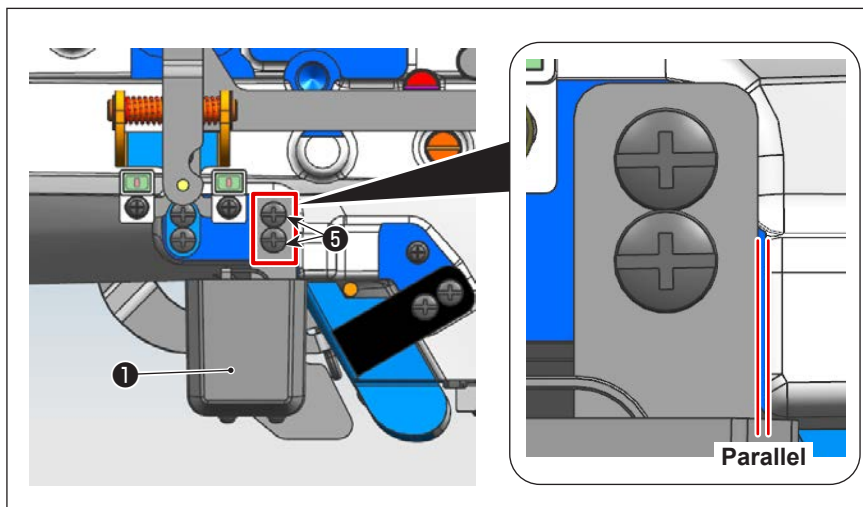
- 4) Remove the hex nut **12** .
Then, attach the magnet fixing plate **3** and firmly tighten the pan head machine screw **4** (M4) and nut **12** .
* Visually check that the left and right clearances between the long hole in the magnet fixing plate **3** and the screw **13** are uniform.



WARNING :

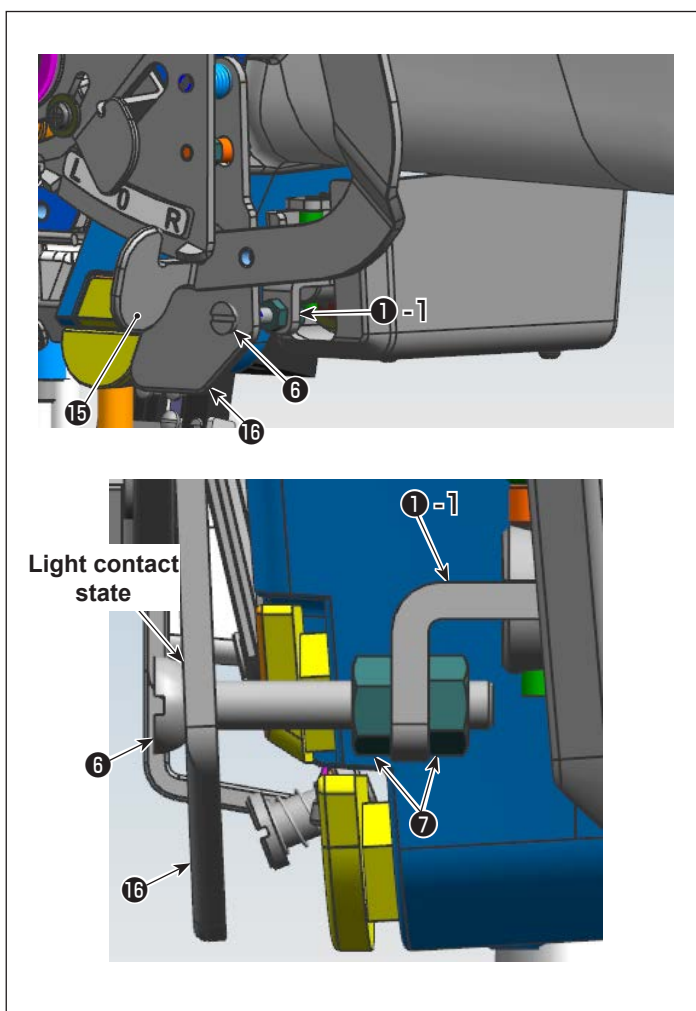
Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

(2) Installing the return solenoid



- 1) Install the return solenoid assembly **1** with two pan head machine screws **5** (M5).

* As shown in the left figure, the mounting plate of the return solenoid assembly **1** and the machined surface of the arm must be visually parallel.



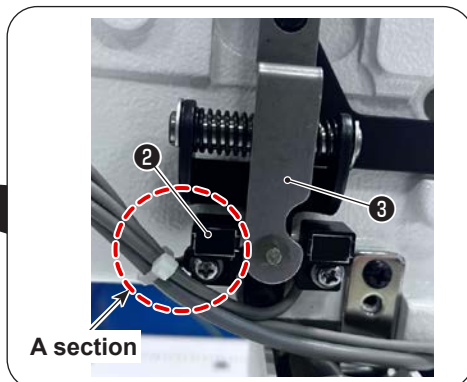
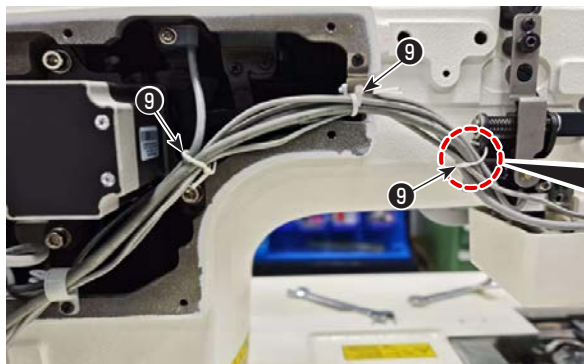
- 2) Turn the conversion lever **15** to the “R” position.
 - 3) Apply a thin layer of JUKI GREASE A to the shaft portion and head portion of the single-needle solenoid connecting shaft **6**.
 - 4) Pass the single-needle solenoid connecting shaft **6** through the release lever **16**, the first nut **7**, the tip plate **1-1** of the return solenoid assembly **1**, and the second nut **7**, in that order, and then secure the two nuts **7** while the single-needle solenoid connecting shaft **6** and the release lever **16** are in light contact.
- * Attach the flat side of nut **7** facing the plate **1-1**.



WARNING :

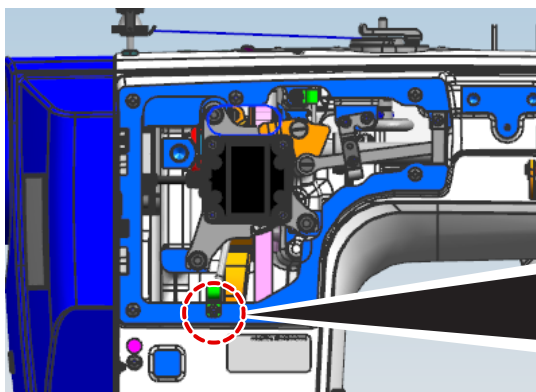
Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

(3) Connection

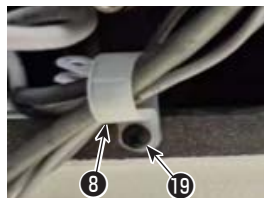


- 1) Bundle the wires with the new cable clip band 9 and cut off the excess of the cable clip band 9 . Place the cable of section A below the sensor cable assembly 2 .

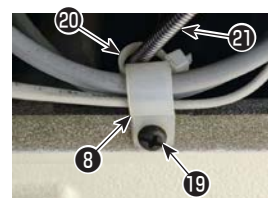
* If the cable in section A is pinched between the sensor cable assembly 2 and the magnet fixing plate 3 , it may cause malfunction.



Model without thread trimmer



Model with thread trimmer



- 2) Model without thread trimmer

Loosen the setscrew 19 , and remove the currently installed cable clip 8 .

Pass the cable through the supplied cable clip 8 and attach it to the arm with the setscrew 19 .

Model with thread trimmer

Cut the currently installed cable clip band 20 , loosen the setscrew 19 , and remove the currently installed cable clip 8 .

Pass the cable through the supplied cable clip 8 and attach it to the arm with the setscrew 19 .

Pass the new cable clip band 9 through the cable clip 8 to bundle the wires 21 . Cut off the excess of the cable clip band 9 .



WARNING :

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

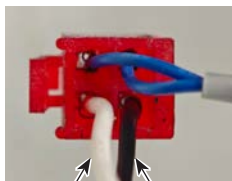


Pin terminal



Protrusion

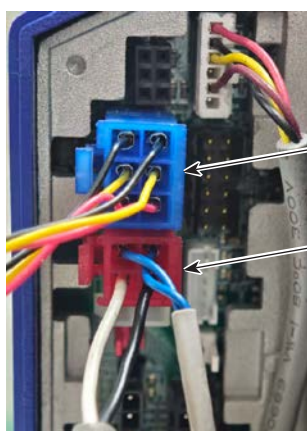
Connector connection diagram



White Black

Insert the pin terminal into the connector with the protrusion facing left.

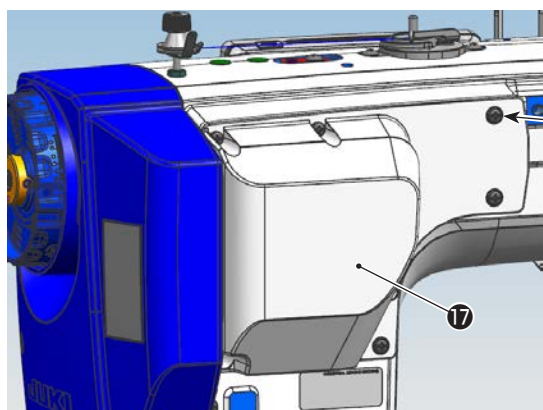
- 3) Remove the nipper connector 22 , and insert the pin terminal of the return solenoid cable into the nipper connector 22 . (Connector connection diagram reference)



Sensor cable assembly connector

Return solenoid assembly connector

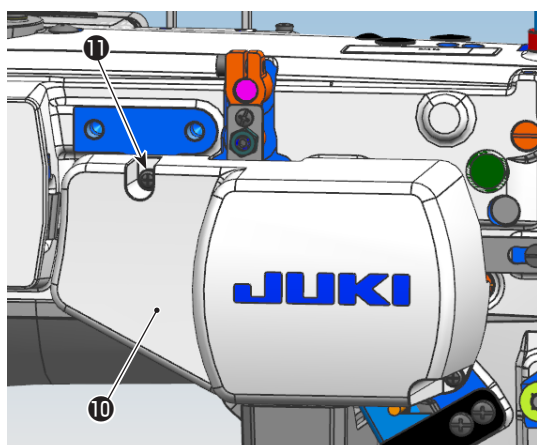
- 4) Connect the connectors of the return solenoid assembly and sensor connector assembly to the electrical control box.



- 5) Install the side plate 17 and tighten the six setscrews 18 .

Install the AT cover 10 and tighten the two pan head machine screws with washer 11 (M4).

* Be careful not to pinch the cables when installing the AT cover 10 and the side plate 17 .



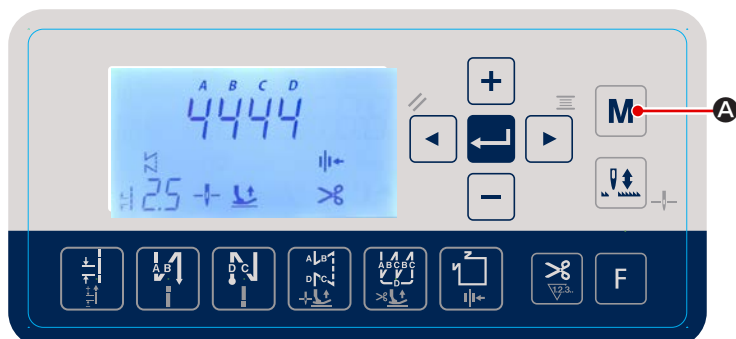


WARNING :

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

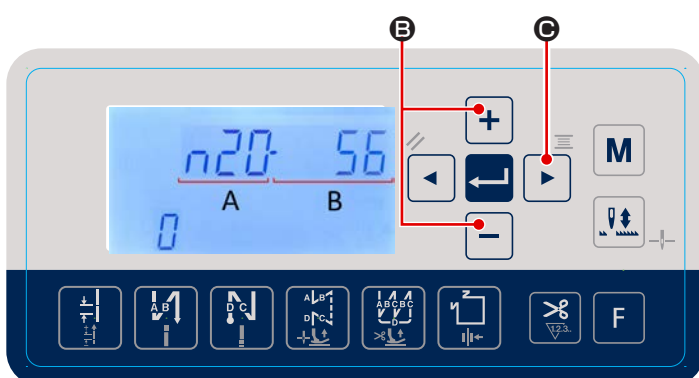
6) Checking the single-needle changeover sensor

After installing the single-needle changeover sensor, check the sensor operation by following the procedure below.



1. Turn on the power while holding down

M **A**. The function setting screen is displayed.

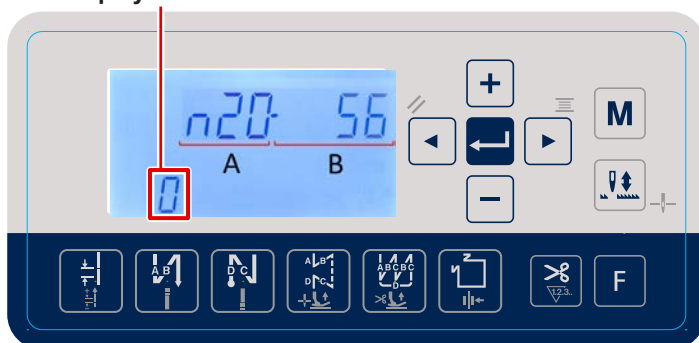


2. On the function setting screen, press

+ **-** **B** and select "N20" in display section **A**.

3. Press **→** **C** to make the display section **B** flash.

Display section C

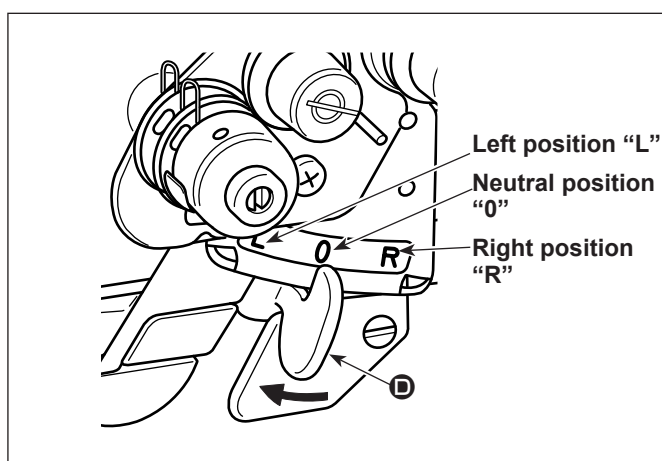


4. On the function setting screen, press

+ **-** **B** and select "S6" or "S7" in display section **B**.

S6 : Lever detection sensor (Left)

S7 : Lever detection sensor (Right)



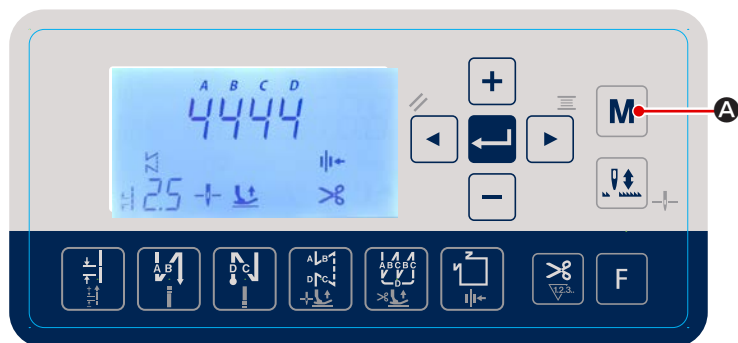
5. When the single-needle change lever **D** is in the neutral position "0", display section **C** for "S6" and "S7" shows "0".

When the single-needle change lever **D** is in the left position "L", display section **C** for "S6" shows "1".

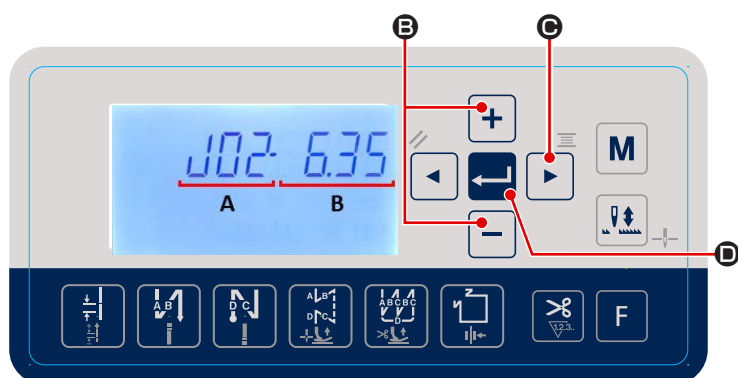
When the single-needle change lever **D** is in the right position "R", display section **C** for "S7" shows "1".

(4) Corner stitching setup

1) Needle width setting



1. On the sewing screen, press **M** **A** to open the function setting screen.



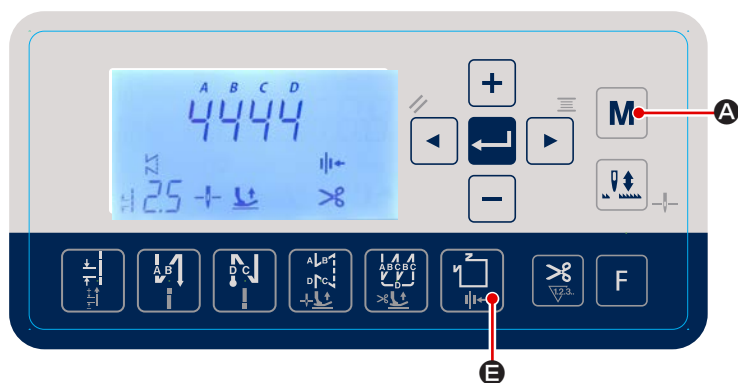
2. On the function setting screen, press **+** **-** **B** and select "J20" in display section **A**.
3. Press **→** **C** to make the display section **B** flash.
4. Press **+** **-** **B** and select the needle width (mm).
5. Press **←** **D** to save the selected needle width.

For the gauge-specific needle settings, refer to **"13) Quick reference table for stitch length at inner corners by gauge" p.28**.



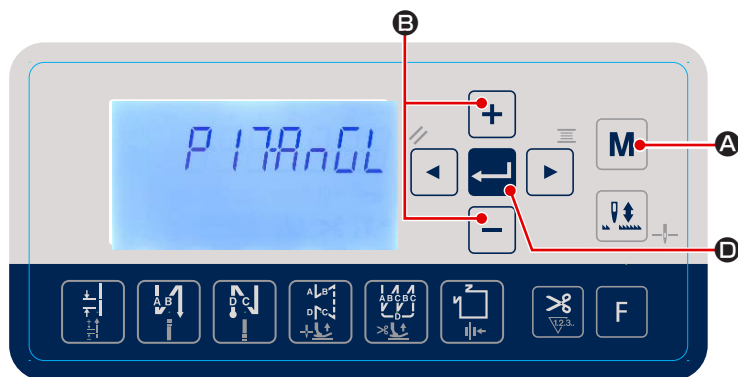
Needle widths for gauges that are not listed in **"13) Quick reference table for stitch length at inner corners by gauge" p.28** cannot be selected.

2) How to display the corner stitching setting screen



There are three methods to display the corner stitching setting screen.

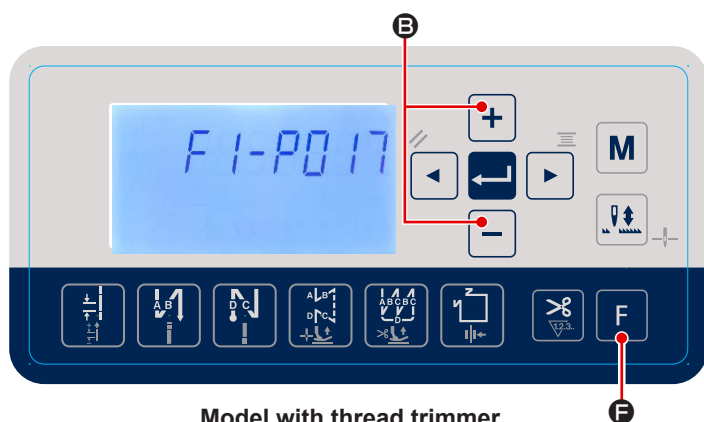
1. On the normal sewing screen, press and hold **M** **A** and **[Corner Stitching Icon]** **E** simultaneously for three seconds to open the corner stitching setting screen.



2. On the normal sewing screen, press **M** **A** to open the function setting screen.

On the function setting screen, press **+** **-** **B** to select "P17".

Press **[Left Arrow]** **D** to open the corner stitching setting screen.



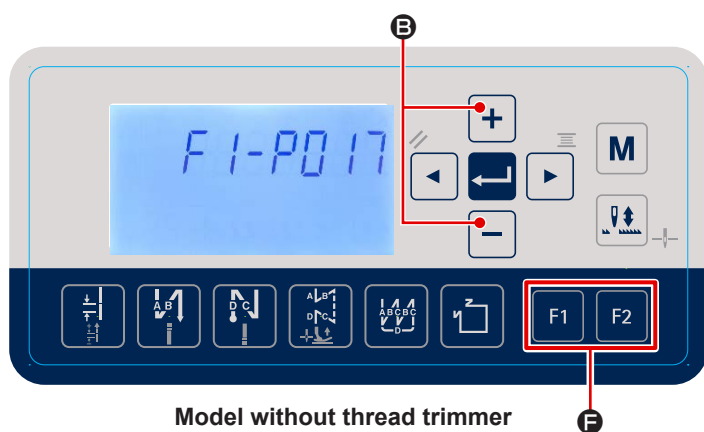
3. Press and hold **F** **F** to open the function key function setting screen. On the function key function setting screen, press **+** **-** **B** to select "P017".

Press **[Left Arrow]** **D** to assign the corner stitching setting screen "P017" to **F** **F**.

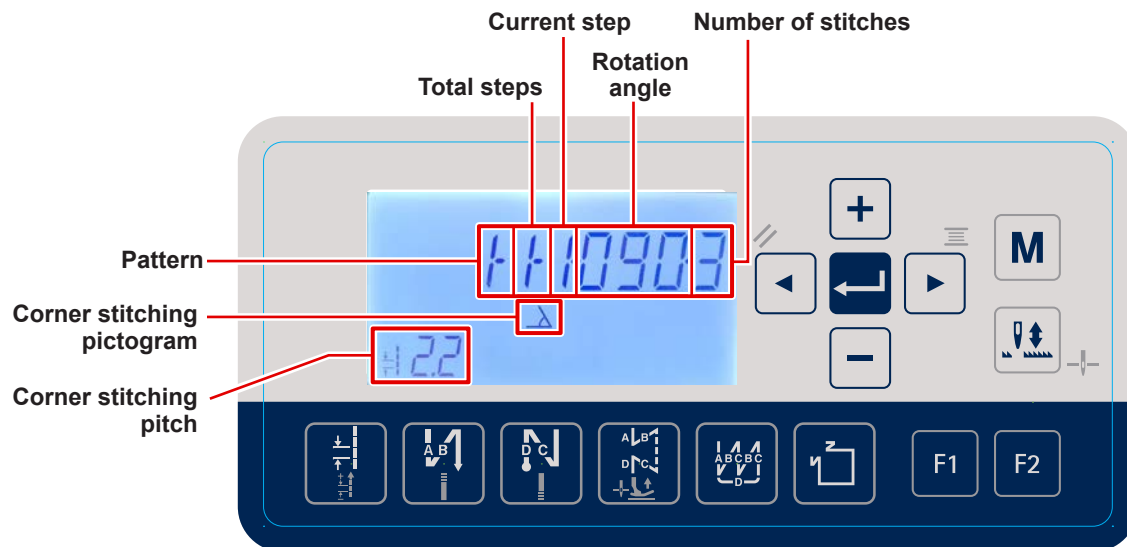
On the normal sewing screen, press **F** **F** to open the screen described in 2. above.

Press **[Left Arrow]** **D** to open the corner stitching setting screen.

* Models without a thread trimmer are equipped with two function keys (**F1** **F2**).



3) Corner stitching setting screen



Item	Initial value	Setting range	
		Minimum value	Maximum value
Pattern	1	1	8
Total steps	1	1	9
Current step	1	1	9 *1
Rotation angle	30	30 *2	175
Number of stitches	Automatically calculated value	1	F
Corner stitching pitch	Automatically calculated value	0.1	5.0

* For details, refer to the explanations below.

*1 Currently, the maximum selectable step value is limited to the total number of steps + 1.

*2 The rotation angle can also be set to 0. For details, please refer to **"9) Constant-dimension stitching and pattern sewing" p.24.**

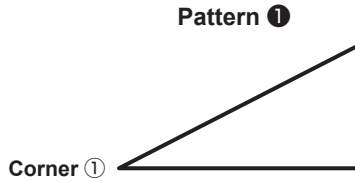
Actual number of stitches	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Displayed number of stitches	0	1	2	3	4	5	6	7	8	9	A	b	c	d	e	F

1. Pattern: Selected customized corner stitching pattern number

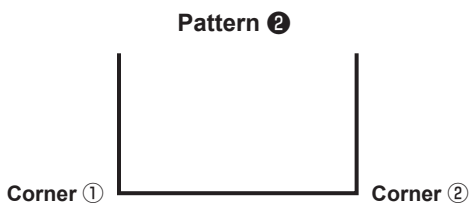
As many as 8 patterns can be set.

At the time of shipment, patterns 1 to 5 are preset as shown below. (Each step has its own angle value.)

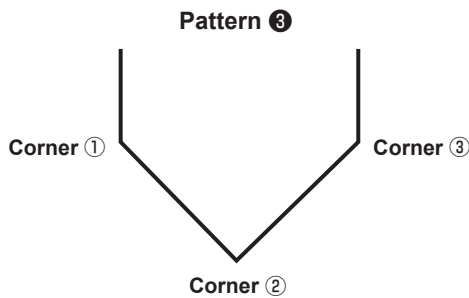
* The corner stitching pitch and number of corner stitches are automatically calculated based on the normal stitching pitch, needle width and rotation angle settings.



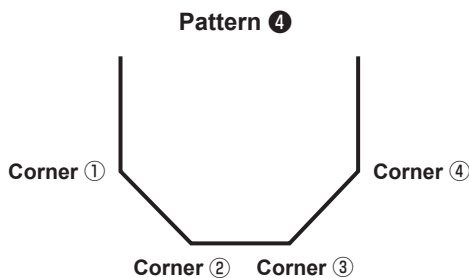
Pattern ① : Total steps = 1 "Number of corners : 1"
Step 1: Angle 30°



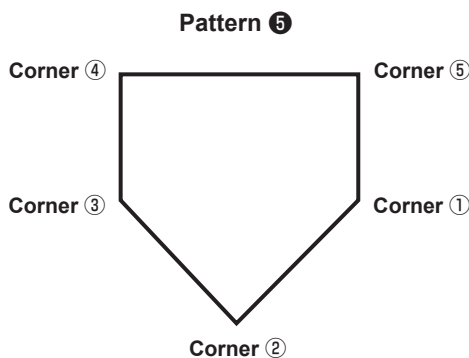
Pattern ② : Total steps = 2 "Number of corners : 2"
Step 1: Angle 90°
Step 2: Angle 90°



Pattern ③ : Total steps = 3 "Number of corners : 3"
Step 1: Angle 135°
Step 2: Angle 90°
Step 3: Angle 135°



Pattern ④ : Total steps = 4 "Number of corners : 4"
Step 1: Angle 135°
Step 2: Angle 135°
Step 3: Angle 135°
Step 4: Angle 135°



Pattern ⑤ : Total steps = 5 "Number of corners : 5"
Step 1: Angle 135°
Step 2: Angle 90°
Step 3: Angle 135°
Step 4: Angle 90°
Step 5: Angle 90°

At the time of shipment, patterns 6 to 8 are set as follows:

Total steps = 1, current step = 1, angle = 90°

2. Total steps

This shows the total number of steps for the selected corner stitching pattern.

The total number of steps in the corner stitching pattern can be freely adjusted, up to a maximum of 9 steps.

Once set, the values and the automatically calculated corner stitching pitch and number of corner stitches are saved in memory.

If you want to add steps again after reducing the total number of steps, the previously set value will be cleared and you will need to set it again.

Example : Pattern ❶ originally set as follows:

Total steps = 5 "Number of corners : 5"

Step 1: Angle 90°

Step 2: Angle 90°

Step 3: Angle 135°

Step 4: Angle 90°

Step 5: Angle 135°

If you change the total steps from 5 to 3, the settings for this pattern will be changed as shown below.

Total steps = 3 "Number of corners : 3"

Step 1: Angle 90°

Step 2: Angle 90°

Step 3: Angle 135°

3. Current step

This indicates the current step number relative to the total number of steps.

The number of corner stitches, corner stitching pitch, and rotation angle shown on the corner stitching setting screen are the settings for the current step.

If the current step number is set to a value exceeding the total number of steps and the Enter key is pressed, the total number of steps is automatically updated to the same value.

Example : Pattern ❶ originally set as follows:

Total steps = 5 "Number of corners : 5"

Step 1: Angle 90°

Step 2: Angle 90°

Step 3: Angle 135°

Step 4: Angle 90°

Step 5: Angle 135°

For example, if you directly set the current step number to 6 and press the Enter key, the total number of steps will also change to 6.

Total steps = 6 "Number of corners : 6"

Step 1: Angle 90°

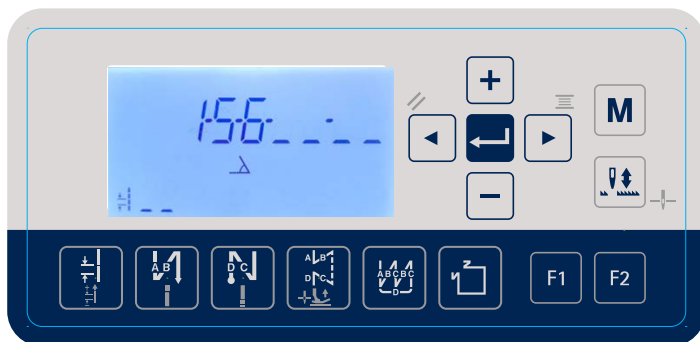
Step 2: Angle 90°

Step 3: Angle 135°

Step 4: Angle 90°

Step 5: Angle 135°

Step 6: Angle 0°



- * When the current step number is set to a value greater than the total number of steps, the display digits for the corner stitching rotation angle, number of corner stitches, and corner stitching pitch will show “ _ ”.

4. Rotation angle

This item displays the rotation angle for the selected step number. (If the rotation angle is set to 0°, constant-dimension stitching is performed.)

The rotation angle setting range is 30° to 175° and 0°.

A short press changes the value in 1° increments.

Press and hold to change the value in 5° increments.

When the rotation angle value is changed and the Enter key is pressed, the number of corner stitches and the corner stitching pitch are automatically recalculated and updated.

Example :

Pattern ❶ originally set as follows:

Step 1: Angle 90° Normal stitching pitch : 3mm Needle width : 6.4mm

The automatically calculated number of corner stitches 2, and the corner stitching pitch to 3.2 mm.

If the rotation angle is changed from 90° to 120° while the normal stitching pitch and needle width remain unchanged, the automatically calculated number of corner stitches will become 1, and the corner stitching pitch will automatically change to 3.7 mm.

- * For details on how to set the rotation the rotation angle to 0°, refer to **"9) Constant-dimension stitching and pattern sewing" p.24**.



When sewing at a rotation angle of 30° to 40°, note that thread floating is likely to occur at the corner vertex.

5. Pitch & Number of stitches

This shows the calculated values of the corner stitching pitch and number of corner stitches for the selected step.

The corner stitching pitch and number of corner stitches are automatically calculated.

There are a total of six settings related to these calculations.

The six settings are: needle width, rotation angle, precision standard, normal stitching pitch, corner stitching pitch, and number of corner stitches.

If any of these settings is changed, the corner stitching pitch and number of corner stitches will be automatically recalculated and displayed.

- * If the corner stitching pitch or number of corner stitches is reset, the manually adjusted values will be used instead of the automatically calculated values.

For details on the manually adjusted values, refer to **"8) Manual adjustment of corner stitching pitch and number of corner stitches" p.22**.

6. Corner stitching pictogram

This indicates that the corner stitching setting screen and the corner stitching function are enabled.

On the corner stitching setting screen, the corner stitching pictogram may either be lit or flashing.

When the corner stitching pictogram is lit :

The corner stitching pitch and number of corner stitches for the displayed pattern step are automatically calculated values.

When the corner stitching pictogram is flashing :

The corner stitching pitch and number of corner stitches for the displayed pattern step are manually adjusted values.

- * If the corner stitching function is enabled on the sewing screen, the corner stitching pictogram will remain lit (it will not flash) even when manually adjusted values are used.

On the sewing screen, the lighting status of the corner stitching pictogram indicates whether the automatic corner stitching operation is enabled or disabled.

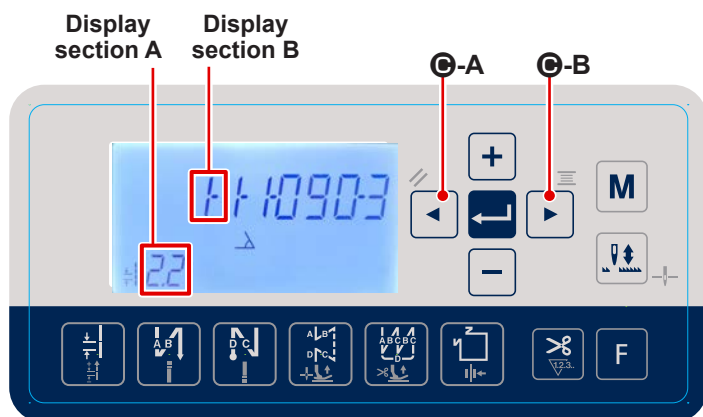
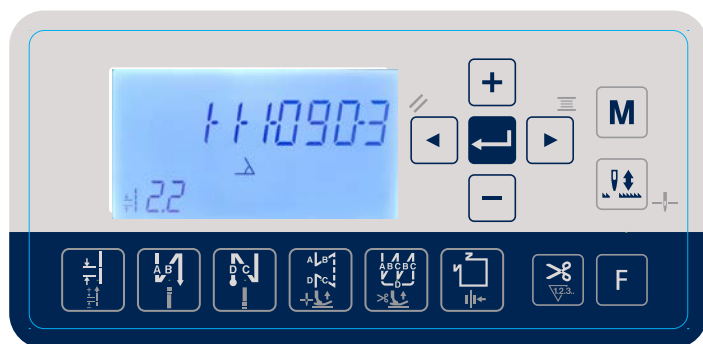
When the corner stitching pictogram is lit on the sewing screen :

Operating the single-needle change lever starts the automatic corner stitching operation according to the selected pattern.

When the corner stitching pictogram is not lit on the sewing screen :

Operating the single-needle change lever switches the machine to single-needle sewing, but the automatic corner stitching operation does not start.

4) How to operate the corner stitching setting screen



1. Follow the instructions in **"2) How to display the corner stitching setting screen" p.8** to open the corner stitching setting screen.

If no adjustments have been made on the corner stitching setting screen, the pictogram and 7-segment display shown in the figure will be lit.

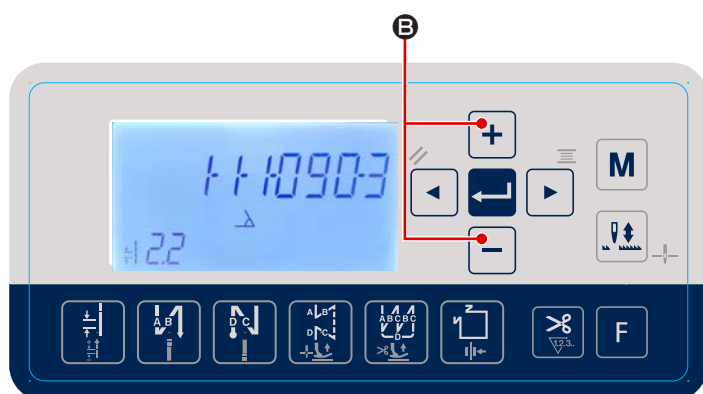
2. On the corner stitching setting screen, press to select the corner stitching function settings.

When is pressed, the corner stitching pitch setting (Display section A) starts flashing.

When is pressed, the corner stitching pattern number setting (Display section B) starts flashing.

You can also select other 7-segment displays by pressing and holding .

* Since the rotation angle setting consists of three 7-segment digits, all three digits flash simultaneously when selected.



3. When is pressed, the currently flashing 7-segment display can be adjusted. At the same time, the flashing speed of the selected setting value changes to indicate that editing is in progress.

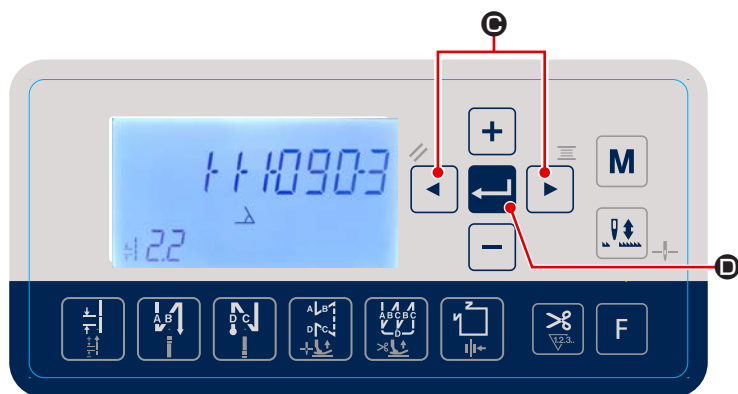
The setting value flashes at two speeds: slow and fast.

Slow flashing : The setting value is selected but has not been edited.

Fast flashing : The setting value has been edited but has not yet been saved. (Pressing the Enter key returns the display to the slow flashing state.)

* The flashing behavior of the current step is special. If the current step value is edited to be greater than the total number of steps, the flashing speed becomes fast.

If the current step value is edited to be equal to or less than the total number of steps, the flashing speed becomes slow.



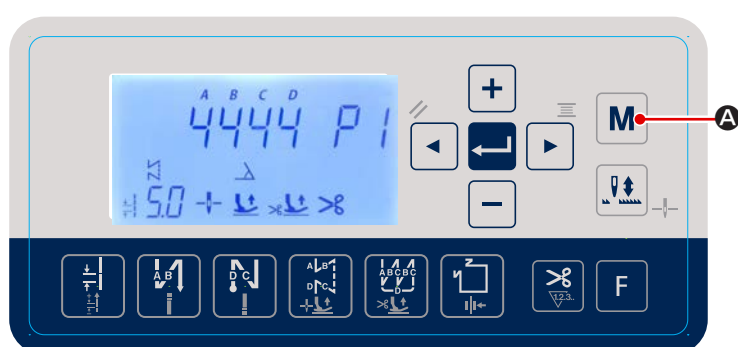
4. After editing a setting value, press

 **D** to save the setting.

The number of corner stitches and corner stitching pitch are automatically calculated values. After changing any setting value, automatic calculation will not be performed unless

 **D** is pressed.

* When the setting value is flashing rapidly, if   **C** is pressed without pressing  **D**, the changed setting value will not be saved, will revert to the original value, and the flashing speed will return to slow.



5. On the corner stitching setting screen, pressing

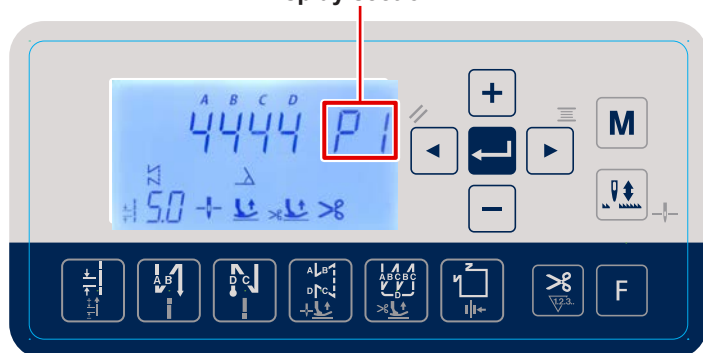
 **A** returns to the sewing screen and enables the automatic corner stitching function.

Sewing cannot be performed on the corner stitching setting screen. Perform sewing after returning to the sewing screen.

* There are other methods for enabling the automatic corner stitching function.

For the details, refer to **"5) How to enable or disable the automatic corner stitching function"** p.17.

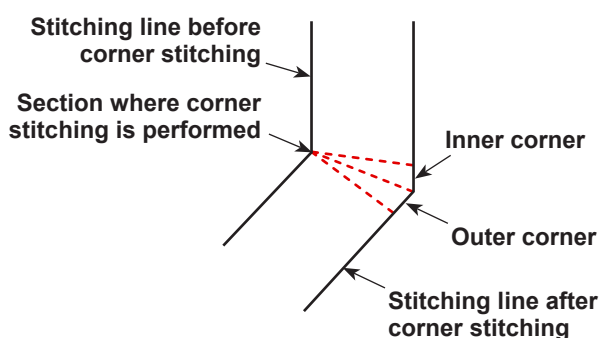
Display section C

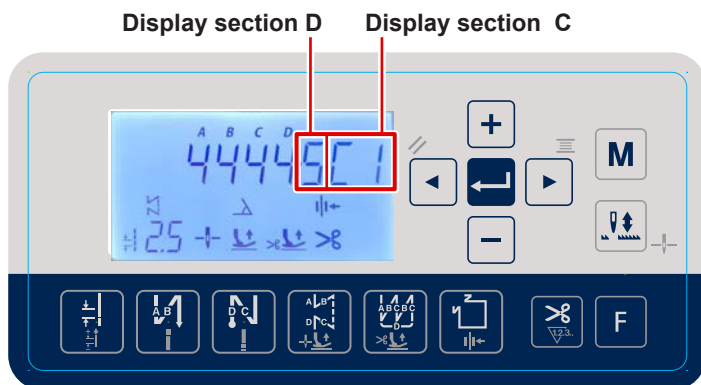


6. When the automatic corner stitching function is enabled, the corner stitching pictogram lights up on the sewing screen.

The pattern number to be sewn is displayed in "Display section C" on the sewing screen.

Depress the pedal to sew the stitching line before the corner.





7. Sew up to the desired corner stitching position. After turning the single-needle change lever in the corner rotation direction, sew the inner corner using the automatically calculated number of corner stitches and corner stitching pitch.

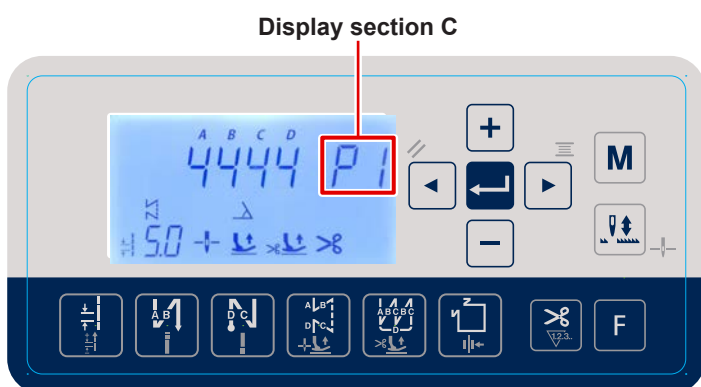
On the sewing screen, "Display section D" shows the total number of steps in the corner stitching pattern currently being sewn.

On the sewing screen, "Display section C" shows the step number currently being sewn.

When this screen is displayed, the panel buttons are disabled until the pedal is depressed and the corner stitching operation is completed.

- * When sewing a step for which the rotation angle is set to 0°, "Display section C" shows "d*".

For details on how to set the rotation angle to 0°, refer to **"9) Constant-dimension stitching and pattern sewing" p.24"**.



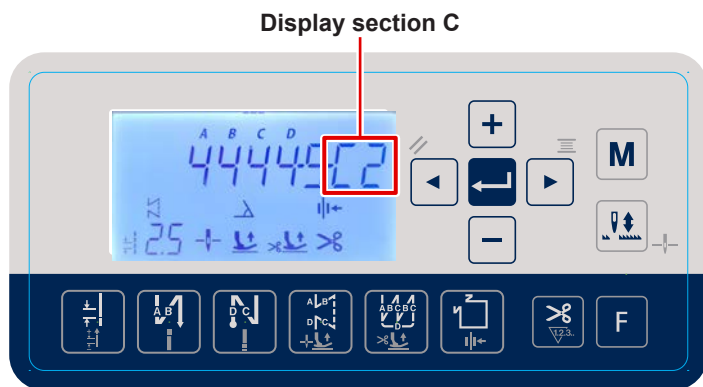
8. Once inner corner stitching is completed, the sewing machine stops automatically.
If the machine is equipped with a presser foot motor, the presser foot is raised automatically.

If the machine is not equipped with a presser foot motor, raise the presser foot using the knee lifter. After the presser foot is raised, rotate the fabric to the desired sewing angle.

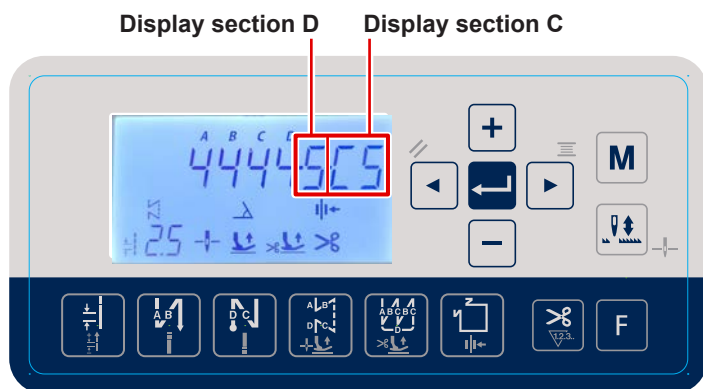
Then depress the pedal to have the machine automatically sew the outer corner.

When outer corner stitching is completed, the single-needle release solenoid operates automatically. The machine automatically switches from single-needle sewing to double-needle sewing and continues sewing the stitching line after the corner without stopping.

- * When sewing the stitching line after a corner, if the pedal is released and then depressed again, the pattern number currently being sewn is displayed again in "Display C", as described in 6 above.

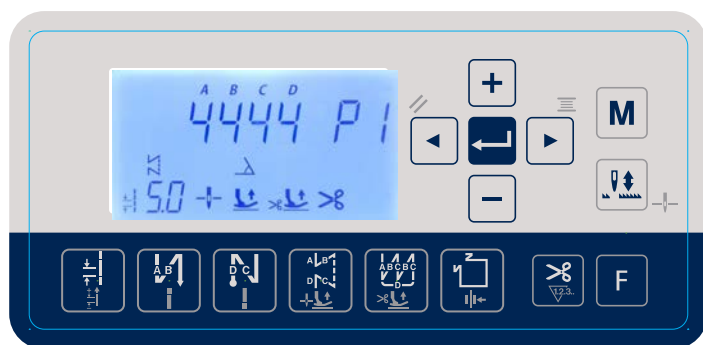


9. If multiple steps are set for the corner stitching pattern being sewn, after the first corner is sewn, turning the single-needle change lever a second time also changes the step number currently displayed in “Display section C”.



10. For example, if five steps are set for the pattern currently being sewn, when the number shown in “Display section C” becomes the same as the total number of steps shown in “Display section D”, this indicates that all steps in the pattern have been sewn.

5) How to enable or disable the automatic corner stitching function

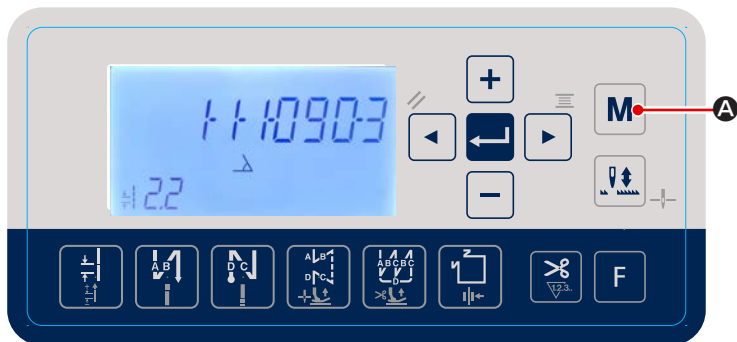


The ON/OFF status of the automatic corner stitching function can be determined by whether the corner stitching pictogram is lit or not lit on the sewing screen. There are five methods for enabling or disabling the automatic corner stitching function.

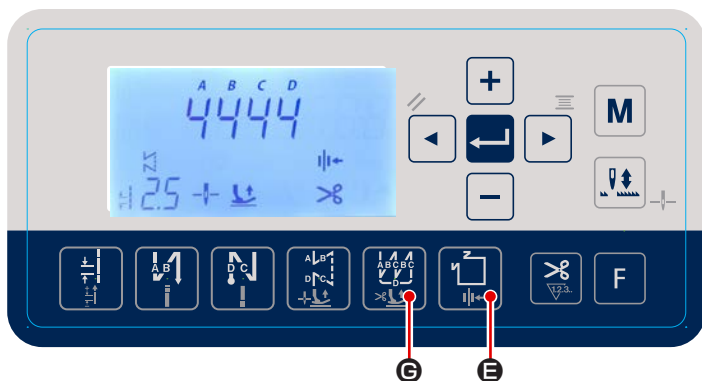
- * When the corner stitching function is set to ON, the sewing mode automatically changes to free stitching mode , and the corner stitching function is turned on.

At the same time, the needle stop position automatically changes from the upper stop position to the lower stop position.

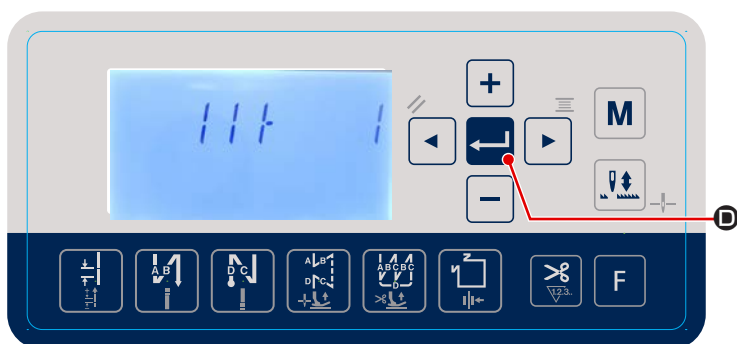
If the needle bar is set to the upper stop position while the corner stitching function is enabled, the needle stop position will automatically change to the lower stop position the next time the power is turned off and then on.



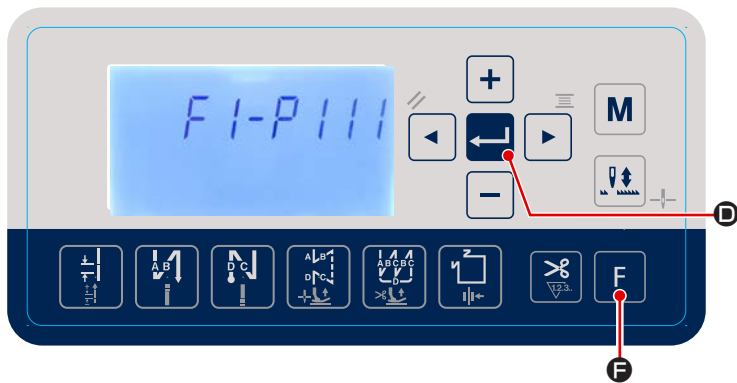
1. On the corner stitching setting screen, pressing **M** **A** returns to the sewing screen and enables the automatic corner stitching function.



2. When **G** or **E** is pressed while the automatic corner stitching function is enabled, the sewing mode switches to polygonal-shape stitching mode or multi-layer stitching mode, and the automatic corner stitching function is disabled.



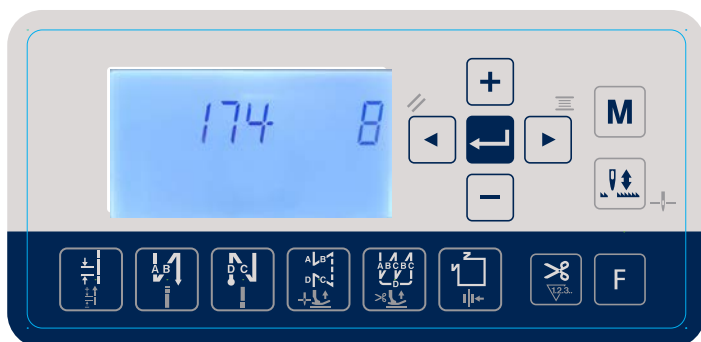
3. On the function setting screen, select "P111: Enable/disable of corner stitching automatic return function".
 - 1 : Corner stitching automatic return function enabled
 - 0 : Corner stitching automatic return function disable
 Set P111 to 1 and press **D** to enable the automatic corner stitching function.
- * When the machine is in multi-layer stitching mode or constant-dimension stitching mode, P111 cannot be adjusted.



4. On the sewing screen, press and hold **F** **F**, select "P111: Enable/disable of corner stitching automatic return function", and then press **←** **D** to assign P111 to the function key. After this, P111 can be called up directly by pressing **F** **F** on the sewing screen.

As described in 2 above, if P111 is set to 1 and **←** **D** is pressed, the automatic corner stitching function is enabled.

* Models without a thread trimmer are equipped with two function keys (**F1** **F2**).

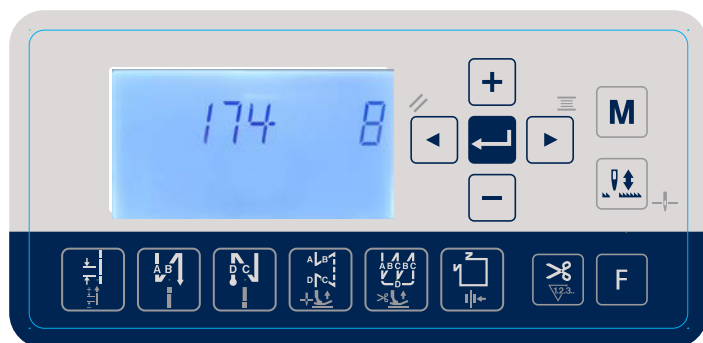


5. On the function setting screen, when "P15: Machine head switch function setting" or "P174: Hand switch function setting" is set to 8, the custom switch can be used to enable or disable the automatic corner stitching function.

8 : Automatic corner stitching function ON/OFF (corner stitching standby state)
Automatic temporary corner stitching disable (corner stitching sewing state)

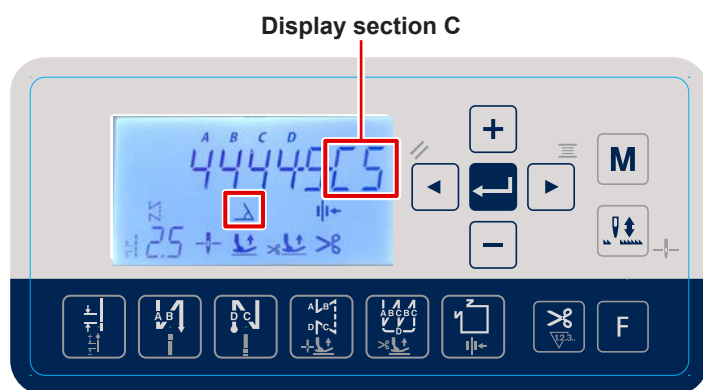
For the details, refer to **"6) Controlling the corner stitching function ON/OFF with a custom switch"** p.20.

6) Controlling the corner stitching function ON/OFF with a custom switch



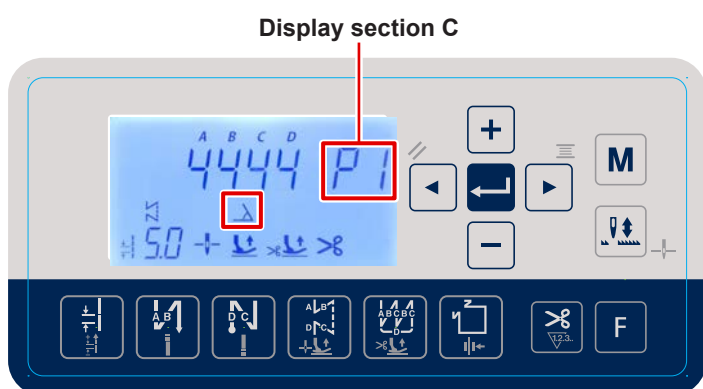
1. When "P15: Machine head switch function setting" or "P174: Hand switch function setting" is set to 8, the function of the custom switch differs depending on the operating state.

8 : Automatic corner stitching function ON/OFF (corner stitching standby state)
Automatic temporary corner stitching disable (corner stitching sewing state)



2. When the automatic corner stitching function is disabled and the custom switch set to 8 is pressed, the corner stitching pictogram and the pattern number in "Display section C" light up, and the automatic corner stitching function is enabled.

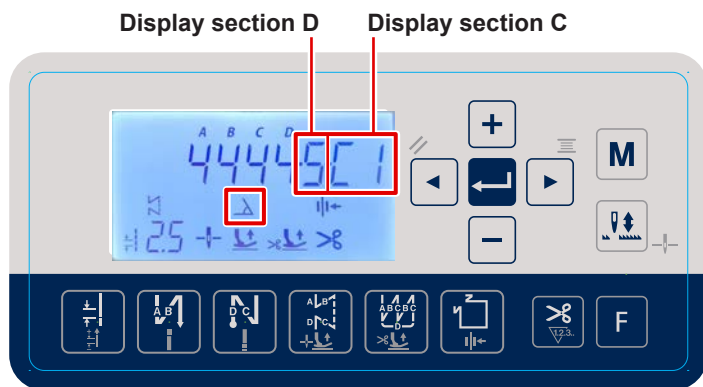
* If you turn off the automatic corner stitching function by switching sewing modes while automatic corner stitching is in progress, pressing the custom switch set to "8" will not switch the automatic corner stitching function back on.



3. The corner stitching standby state means that the automatic corner stitching function is enabled, but corner stitching has not yet started. Or corner stitching has already been completed and thread trimming has been performed.

At this time, the pattern number currently being sewn is displayed in "Display section C" on the sewing screen.

If the custom switch set to 8 is pressed in this state, the corner stitching pictogram and the pattern number in "Display section C" turn off, and the automatic corner stitching function is disabled.



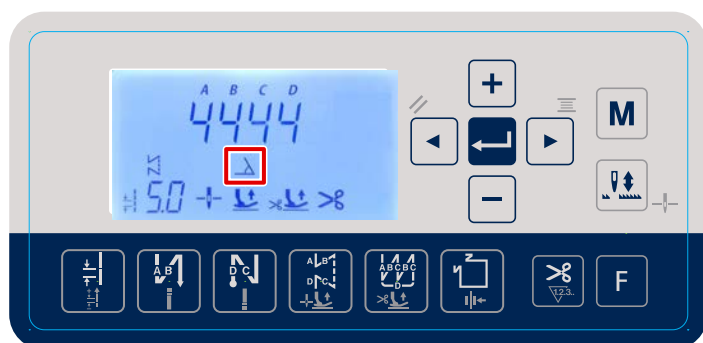
4. The corner stitching sewing state means that the automatic corner stitching function is enabled, corner stitching has been performed once, and thread trimming has not yet been performed.

On the sewing screen, “Display section D” shows the total number of steps in the corner stitching pattern currently being sewn.

On the sewing screen, “Display section C” shows the step number currently being sewn.

If the custom switch set to 8 is pressed in this state, the unfinished sewing conditions are saved.

At this time, the contents of “Display section C” and “Display section D” turn off, the corner stitching pictogram starts flashing, and the automatic corner stitching operation is temporarily stopped.



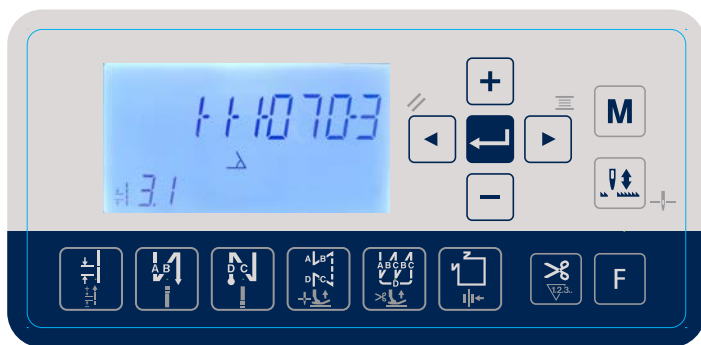
5. The temporary stop state means that the automatic corner stitching information during sewing is saved and the machine temporarily returns to normal sewing mode.

The corner stitching pictogram flashes, indicating that automatic corner stitching is temporarily stopped.

If the custom switch set to 8 is pressed in this state, sewing resumes from the last saved automatic corner stitching step.

The corner stitching pictogram changes from flashing to lit.

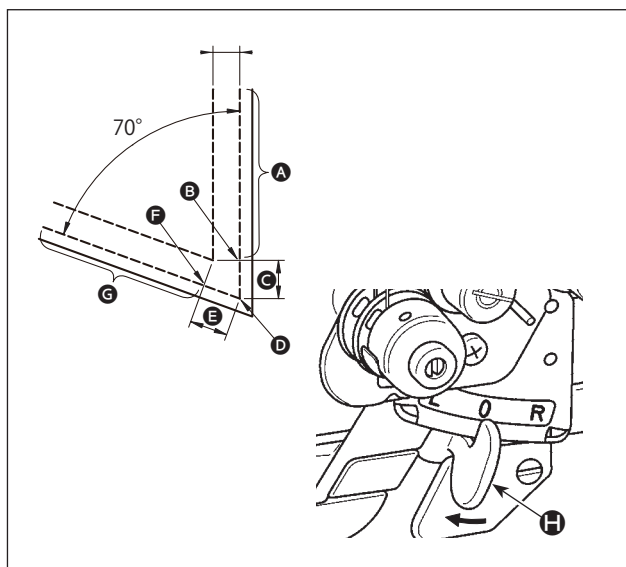
7) Automatic corner stitching operation



For example, to perform the corner stitching shown in the figure, first refer to **"2) How to display the corner stitching setting screen" p.8** to open the corner stitching setting screen.

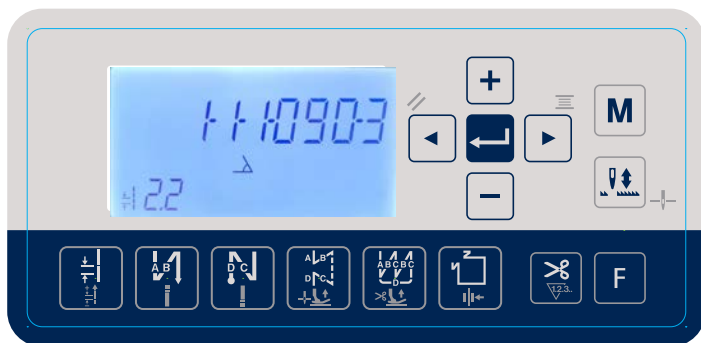
Next, refer to **"4) How to operate the corner stitching setting screen" p.14** to configure the corner stitching settings. After completing the settings, follow the procedures below to perform automatic corner stitching.

A sewing pattern is indicated in the example in the aforementioned figure.



- A** 2-needle sewing
- ↓
- B** After the sewing machine has stopped, move separately-driven needle bar changeover lever **H** to the L position.
- ↓
- C** Carry out sewing with the single needle, right, under sewing condition.
- ↓
- D** The Auto-lifter/Knee-lifter goes up after the sewing machine has finished sewing of the number of stitches set.
- ↓
- E** Turn the material (by 70 °).
- ↓
- F** Carry out sewing with the single needle, right, under sewing condition.
- ↓
- G** The separately-driven needle bar function is reset after the sewing machine has finished sewing of the number of stitches set.
- ↓
- H** 2-needle sewing

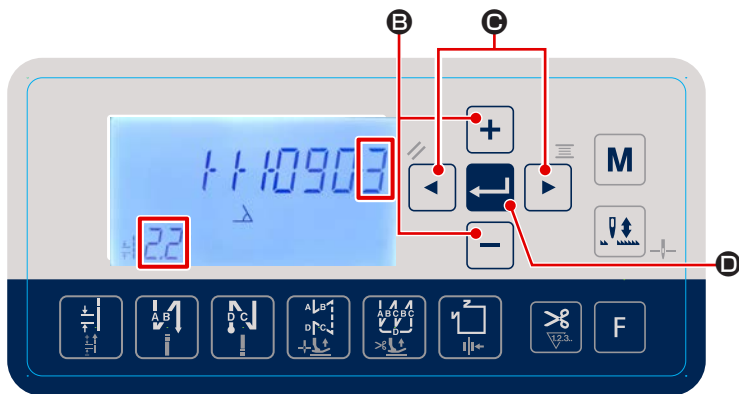
8) Manual adjustment of corner stitching pitch and number of corner stitches



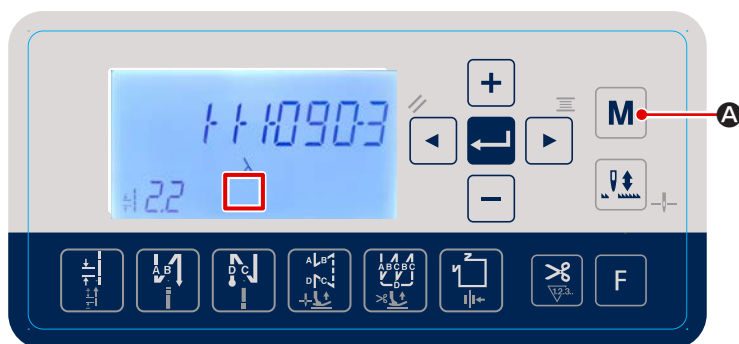
1. On the corner stitching setting screen, the corner stitching pitch and number of corner stitches can be automatically calculated based on the rotation angle setting.

The automatically calculated values are rounded to one decimal place. Fine adjustments can be made by manually adjusting the corner stitching pitch and the number of corner stitches.

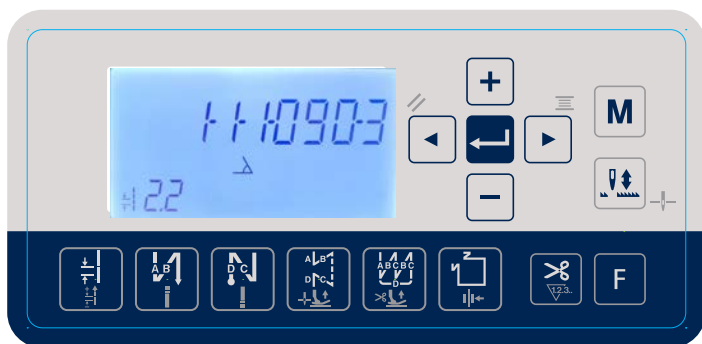
* The automatically calculated pitch and number of stitches vary depending on the normal sewing pitch and gauge.



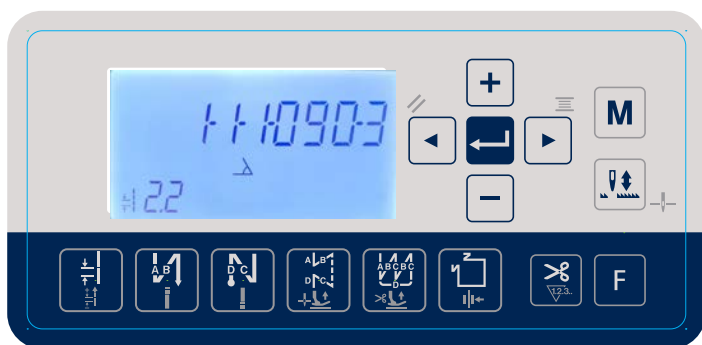
2. On the corner stitching setting screen, press to select either the pitch or the number of stitches, and then press to manually adjust the corner stitching pitch or number of corner stitches. Press to save the manually adjusted values.



3. When the corner stitching pitch or number of corner stitches is manually adjusted, the corner stitching pictogram on the corner stitching setting screen flashes, indicating that the values are manually adjusted rather than automatically calculated.
* Press to return to the sewing screen. The corner stitching pictogram will light up again.

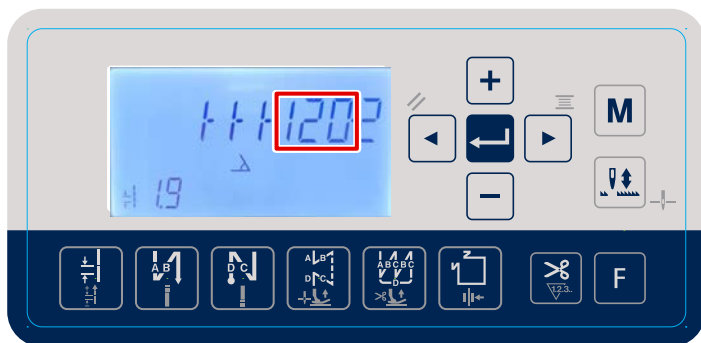


4. The adjustable range of the corner stitching pitch is 0.1 to 5.0 mm, and the adjustable range of the number of corner stitches is 1 to 15 stitches. (*1) If the number of corner stitches is adjusted manually, the corner stitching pitch is calculated automatically. However, if the corner stitching pitch is adjusted manually, the number of corner stitches does not change.
*1 The number of corner stitches is displayed as a single digit, so values from 10 to 15 are displayed as A to F.



5. To return the corner stitching pitch and number of corner stitches to their automatically calculated values, change the rotation angle to a different value and then return it to the original value. The corner stitching pitch and number of corner stitches will then automatically revert to the calculated values. When the automatically calculated values are restored, the corner stitching pictogram will also return to its lit state.

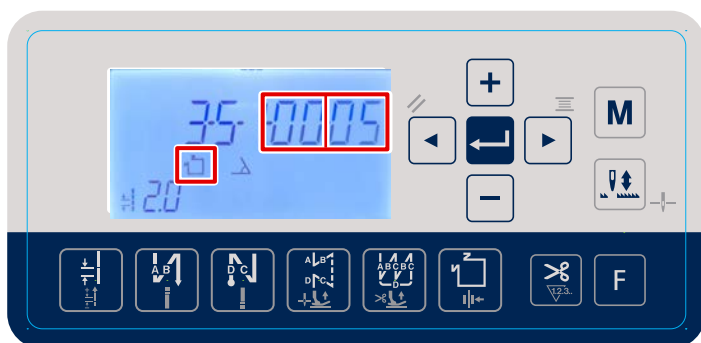
9) Constant-dimension stitching and pattern sewing



1. On the corner stitching setting screen, the rotation angle can be set down to 0°.

When set to 0°, the function switches from corner stitching to constant-dimension stitching.

- * For constant-dimension stitching, the sewing speed is set to the normal sewing speed "P001".



2. When the rotation angle is set to 0°, 7-segment display for the angle changes from three digits to two digits.

At the same time, the 7-segment display for the number of stitches changes from one digit to two digits.

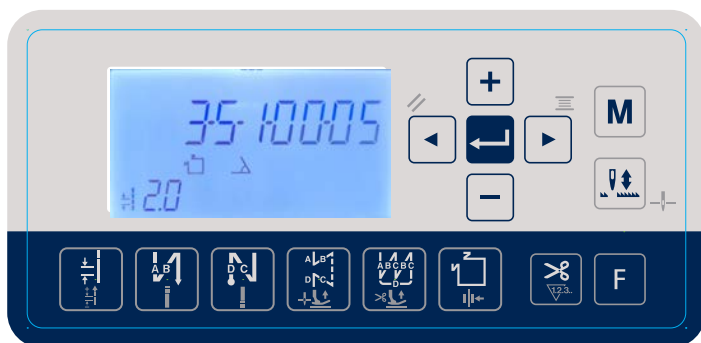
When the corner stitching setting screen displays a step with the rotation angle set to 0°, the polygonal-shape stitching pictogram lights up.

When the display is switched to a step with the rotation angle set between 30° and 175°, the polygonal-shape stitching pictogram turns off.

- * Polygonal-shape stitching pictogram

If the pitch of the constant-dimension stitching step is set to the same value as the normal stitching pitch, the polygonal-shape stitching pictogram will light up.

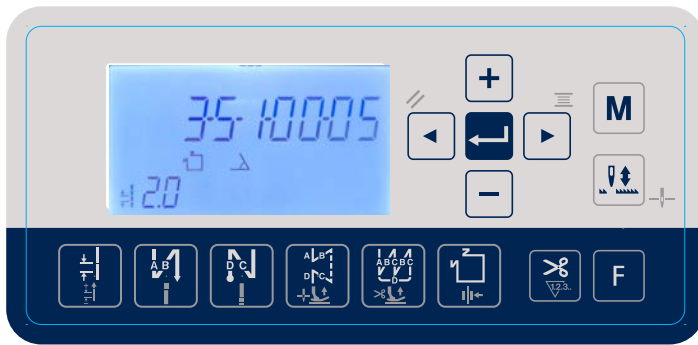
If the pitch of the constant-dimension stitching step is set to a value different from the normal stitching pitch, the polygonal-shape stitching pictogram will flash.



3. By increasing the number of digits displayed for the number of stitches, constant-dimension stitching can be set up to 99 stitches.

The default pitch value is 4.0 mm, the same as the number of stitches, but it can be freely adjusted.

- * If you continue to depress the pedal after the outer corner of the corner stitching has been sewn, the constant-dimension stitching step set for the corner stitching function will automatically switch to the constant-dimension stitching step, allowing sewing to continue without interruption.

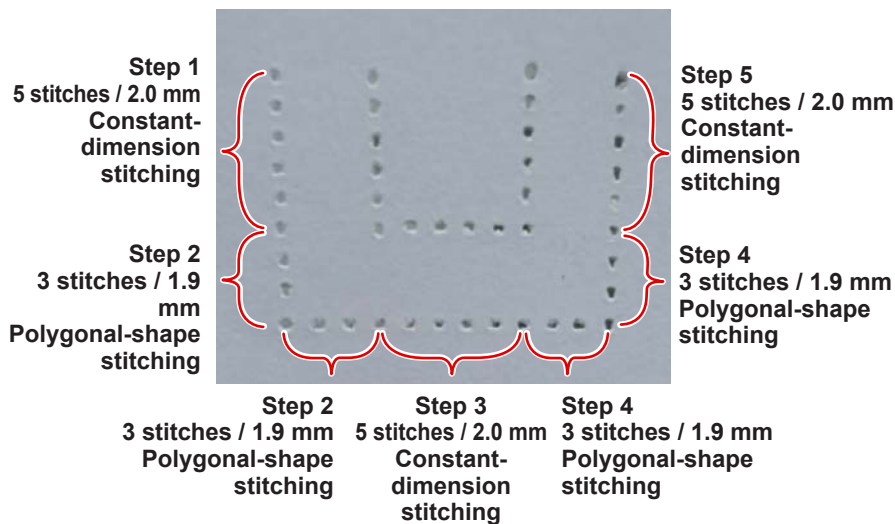


4. Free corner stitching steps and constant-dimension stitching steps can be set arbitrarily within a single pattern.
- It is possible to set the reverse feed stitching at the start and end of sewing, condensation stitching, and others.

Each step can be freely combined according to the sewing conditions to create a stitching pattern.

* Constant-dimension stitching steps can also be deleted individually.

For the details, refer to **"9) Constant-dimension stitching and pattern sewing" p.24"**.



Example : Pattern ③ is set as follows:

Total steps = 5 "Number of corners : 5"

Step 1: Constant-dimension stitching Pitch: 2.0 Number of stitches: 5

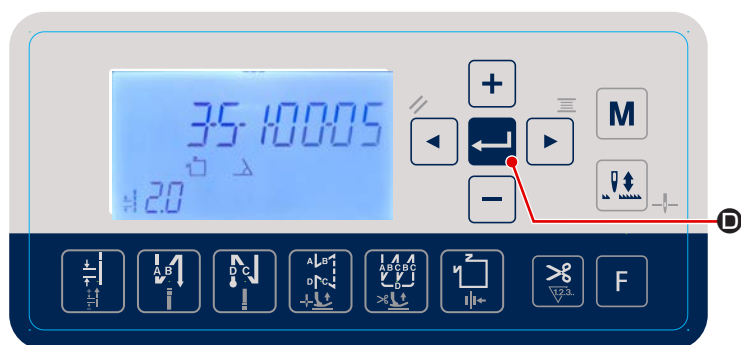
Step 2: Angle 90° Pitch: 1.9 Number of stitches: 3

Step 3: Constant-dimension stitching° Pitch: 2.0 Number of stitches: 5

Step 4: Angle 90° Pitch: 1.9 Number of stitches: 3

Step 5: Constant-dimension stitching Pitch: 2.0 Number of stitches: 5

10) How to delete the step of constant-dimension stitching



1. If the total number of steps in a pattern is only 1, individual step deletion cannot be performed.

However, if the total number of steps in the pattern is 1 or more, a constant-dimension stitching step can be deleted by setting the number of stitches for that step to 0 and pressing

the  .

Example : Pattern ③ is set as follows: ("**3** Corner stitching setting screen" p.9.)

Total steps = 5 "Number of corners : 5"

Step 1: Constant-dimension stitching Pitch: 2.0

Number of stitches: 5

Step 2: Angle 90° Pitch: 1.9 Number of stitches: 3

Step 3: Constant-dimension stitching Pitch: 2.0

Number of stitches: 5

Step 4: Angle 90° Pitch: 1.9 Number of stitches: 3

Step 5: Constant-dimension stitching Pitch: 2.0

Number of stitches: 5



Step 3 is deleted

Total steps = 4 "Number of corners : 4"

Step 1: Constant-dimension stitching Pitch: 2.0

Number of stitches: 5

Step 2: Angle 90° Pitch: 1.9 Number of stitches: 3

Step 3: Angle 90° Pitch: 1.9 Number of stitches: 3

Step 4: Constant-dimension stitching Pitch: 2.0

Number of stitches: 5

2. Change the number of stitches for step 3 from 5 to 0, then press 

 to delete step 3.

Step 4 will automatically change to step 3, and step 5 will automatically change to step 4.

The total number of steps will also automatically change from 5 to 4.

- * Only constant-dimension stitching steps can be deleted using method 1. above; corner stitching steps cannot be deleted even if the number of stitches is directly set to 0.

To delete a corner stitching step, first adjust the rotation angle of the relevant step to 0°, then delete it using the method described in step 1. above.

11) Other points to note when configuring corner stitching settings

1. When the normal stitching pitch is 0 mm or a negative value, the corner stitching setting screen cannot be enabled.
2. If you restart the sewing machine power while the corner sewing function is enabled, the corner sewing function will remain active.
However, the current sewing pattern will not be saved. You will need to restart sewing from Step 1. Please note this precaution.
3. The maximum number of corner stitches is 15, and the maximum corner stitching pitch is 5.0 mm. The usable needle width for corner stitching is 3.17 to 12.7 mm (1/8 to 1/2 inch). The initial value is 6.4 mm (1/4 inch).
4. Since the corner stitching pitch and number of stitches are automatically calculated, the resulting values may exceed the allowable range.
If the calculated pitch value exceeds 5.0 mm, increase the number of stitches by one and recalculate until the pitch value is within 5.0 mm.

12) Corner stitching function parameters

P 0 1 5 8 : Automatic corner stitching function ON/OFF (corner stitching standby state)
or Automatic temporary corner stitching disable (corner stitching sewing state)
P 1 7 4 For **"6) Controlling the corner stitching function ON/OFF with a custom switch" p.20.**

P 0 1 7 This parameter opens the corner stitching setting screen.
Press the Enter key  to enter the corner stitching setting screen.
For **"2) How to display the corner stitching setting screen" p.8.**

P 1 1 1 This parameter enables or disables the corner stitching automatic return function.
0 : Corner stitching automatic return function disable
1 : Corner stitching automatic return function enabled
For **"5) How to enable or disable the automatic corner stitching function" p.17.**

P 1 1 3 This parameter sets the number of corner stitching rotations.
Setting range : 100 to 1200 sti/min Initial setting : 700 sti/min
* The rotation speed for constant-dimension stitching during corner stitching function is set by P001.

P 1 3 5 This parameter sets the auto-lifter height for corner stitching.
Setting range : 0 to 1750 Initial setting : 760

J 0 0 2 This parameter sets the needle width used for automatic calculation of the corner stitching pitch and number of corner stitches.
For the gauge needle width setting, refer to **"1) Needle width setting" p.7.**

13) Quick reference table for stitch length at inner corners by gauge

This table shows the stitch length by number of stitches for each corner stitching angle with different gauges, particularly for inner-corner sewing.

* The stitch length values shown in this table are reference values only. Fine-adjust the stitch length according to the actual sewing results.

1/8"(3.17mm)

Angle \ Number of stitches	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
30				3.9	3.0	2.4	2.0	1.7	1.5						
40	*1	4.4	2.9	2.2	1.7	1.5									
50		3.4	2.3	1.7											
60		2.7	1.8												
70	4.5	2.3	1.5												
80	3.8	1.9													
90	3.2	1.6													
100	2.7														
110	2.2														
120	1.8														
130	1.5														
140															

5/32"(3.96mm)

Angle \ Number of stitches	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
30				4.9	3.7	3.0	2.5	2.1	1.8	1.6	1.5				
40		*1	3.6	2.7	2.2	1.8	1.6								
50			4.2	2.8	2.1	1.7									
60			3.4	2.3	1.7										
70			2.8	1.9											
80	4.7	2.4	1.6												
90	4.0	2.0													
100	3.3	1.7													
110	2.8														
120	2.3														
130	1.9														
140															

3/16"(4.76mm)

Angle \ Number of stitches	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
30				4.4	3.6	3.0	2.5	2.2	2.0	1.8	1.6	1.5			
40	*1	4.4	3.3	2.6	2.2	1.9	1.6	1.5							
50			3.4	2.6	2.0	1.7	1.5								
60		4.1	2.7	2.1	1.6										
70		3.4	2.3	1.7											
80		2.8	1.9												
90	4.8	2.4	1.6												
100	4.0	2.0													
110	3.3	1.7													
120	2.8														
130	2.2														
140	1.7														

7/32"(5.56mm)

Angle \ Number of stitches	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
30					4.2	3.5	3.0	2.6	2.3	2.1	1.9	1.7	1.6	1.5	
40		*1		3.8	3.1	2.5	2.2	1.9	1.7	1.5					
50			4.0	3.0	2.4	2.0	1.7	1.5							
60			4.8	3.2	2.4	1.9	1.6								
70			4.0	2.6	2.0	1.6									
80			3.3	2.2	1.7										
90			2.8	1.9											
100	4.7	2.3	1.6												
110	3.9	1.9													
120	3.2	1.6													
130	2.6														
140	2.0														

1/4"(6.35mm)

Angle \ Number of stitches	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
30					4.7	4.0	3.4	3.0	2.6	2.4	2.2	2.0	1.8	1.7	1.6
40		*1		4.4	3.5	2.9	2.5	2.2	1.9	1.7	1.6	1.5			
50			4.5	3.4	2.7	2.3	1.9	1.7	1.5						
60			3.7	2.8	2.2	1.8	1.6								
70			4.5	3.0	2.3	1.8	1.5								
80			3.8	2.5	1.9	1.5									
90			3.2	2.1	1.6										
100			2.7	1.8											
110	4.5	2.2	1.5												
120	3.7	1.8													
130	3.0	1.5													
140	2.3														

9/32"(7.14mm)

Angle \ Number of stitches	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
30						4.4	3.8	3.3	3.0	2.7	2.4	2.2	2.1	1.9	1.8
40				4.9	3.9	3.3	2.8	2.5	2.2	2.0	1.8	1.6	1.5		
50				3.8	3.1	2.6	2.2	1.9	1.7	1.5					
60			4.1	3.1	2.5	2.1	1.8	1.5							
70			3.4	2.6	2.0	1.7	1.5								
80			4.3	2.8	2.1	1.7									
90			3.6	2.4	1.8										
100			3.0	2.0	1.5										
110	5.0	2.5	1.7												
120	4.1	2.1													
130	3.3	1.7													
140	2.6														

* For combinations of angles and number of stitches within the range marked as 1, a corner stitching pitch of 5.0 mm or more is required to achieve neat corner stitching.

However, this exceeds the sewing machine's maximum pitch specification of 5.0 mm and is therefore not recommended.

5/16"(7.93mm)

Number of stitches Angle	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
30						4.9	4.2	3.7	3.3	3.0	2.7	2.5	2.3	2.1	2.0
40					4.4	3.6	3.1	2.7	2.4	2.2	2.0	1.8	1.7	1.6	1.5
50				4.3	3.4	2.8	2.4	2.1	1.9	1.7	1.5				
60			4.6	3.4	2.7	2.3	2.0	1.7	1.5						
70			3.8	2.8	2.3	1.9	1.6								
80		4.7	3.2	2.4	1.9	1.6									
90		4.0	2.6	2.0	1.6										
100		3.3	2.2	1.7											
110		2.8	1.9												
120	4.6	2.3	1.5												
130	3.7	1.9													
140	2.8														

3/8"(9.52mm)

Number of stitches Angle	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
30								4.4	3.9	3.6	3.2	3.0	2.7	2.5	2.4
40							4.4	3.7	3.3	2.9	2.6	2.4	2.2	2.0	1.9
50						4.1	3.4	2.9	2.6	2.3	2.0	1.9	1.7	1.6	1.5
60				4.1	3.3	2.7	2.4	2.1	1.8	1.6	1.5				
70			4.5	3.4	2.7	2.3	1.9	1.7	1.5						
80		3.8	2.8	2.3	1.9	1.6									
90		4.8	3.2	2.4	1.9	1.6									
100		4.0	2.7	2.0	1.6										
110		3.3	2.2	1.7											
120		2.8	1.8												
130	4.4	2.2	1.5												
140	3.5	1.7													

1/2"(12.7mm)

Number of stitches Angle	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
30										4.7	4.3	4.0	3.6	3.4	3.2
40							5.0	4.4	3.9	3.5	3.2	2.9	2.7	2.5	2.3
50						4.5	3.9	3.4	3.0	2.7	2.5	2.3	2.1	1.9	1.8
60				4.4	3.7	3.1	2.8	2.4	2.2	2.0	1.8	1.7	1.6	1.5	
70			4.5	3.6	3.0	2.6	2.3	2.0	1.8	1.6	1.5				
80		5.0	3.8	3.0	2.5	2.2	1.9	1.7	1.5						
90		4.2	3.2	2.5	2.1	1.8	1.6								
100		3.6	2.7	2.1	1.8	1.5									
110		4.4	3.0	2.2	1.8	1.5									
120		3.7	2.4	1.8	1.5										
130		3.0	2.0	1.5											
140	4.6	2.3	1.5												

* For combinations of angles and number of stitches within the range marked as 1, a corner stitching pitch of 5.0 mm or more is required to achieve neat corner stitching.

However, this exceeds the sewing machine's maximum pitch specification of 5.0 mm and is therefore not recommended.

14) Dealing with corner stitching problems

1. If the corner stitching pitch does not match, adjust the pitch according to **"8) Manual adjustment of corner stitching pitch and number of corner stitches" p.22.**
2. If the panel becomes unresponsive during corner stitching, the corner stitching operation may still be in progress.
Since the panel buttons cannot be operated during corner stitching, check the panel again after corner stitching is completed.
3. If an error occurs during corner stitching, contact after-sales service.
4. When the corner stitching is complete after the outer corner of the corner stitching has been sewn and the machine is about to automatically release the single-needle state, if the single-needle detection sensor or single-needle return solenoid is faulty and the automatic release fails, error E061 will be displayed.
In this case, the error E061 cannot be cleared without restarting the power.
If E061 error occurs, check the following:
 - ① Check if the wiring for the single-needle detection sensor and the single-needle return solenoid is loose.
 - ② Check if the single-needle lever has ever been mechanically stuck.
 If you still experience error E061 even after checking and finding no problems, please contact after-sales service.

15) Font comparison table

Use the comparison table below to convert the characters displayed on the panel into their actual alphanumeric characters.

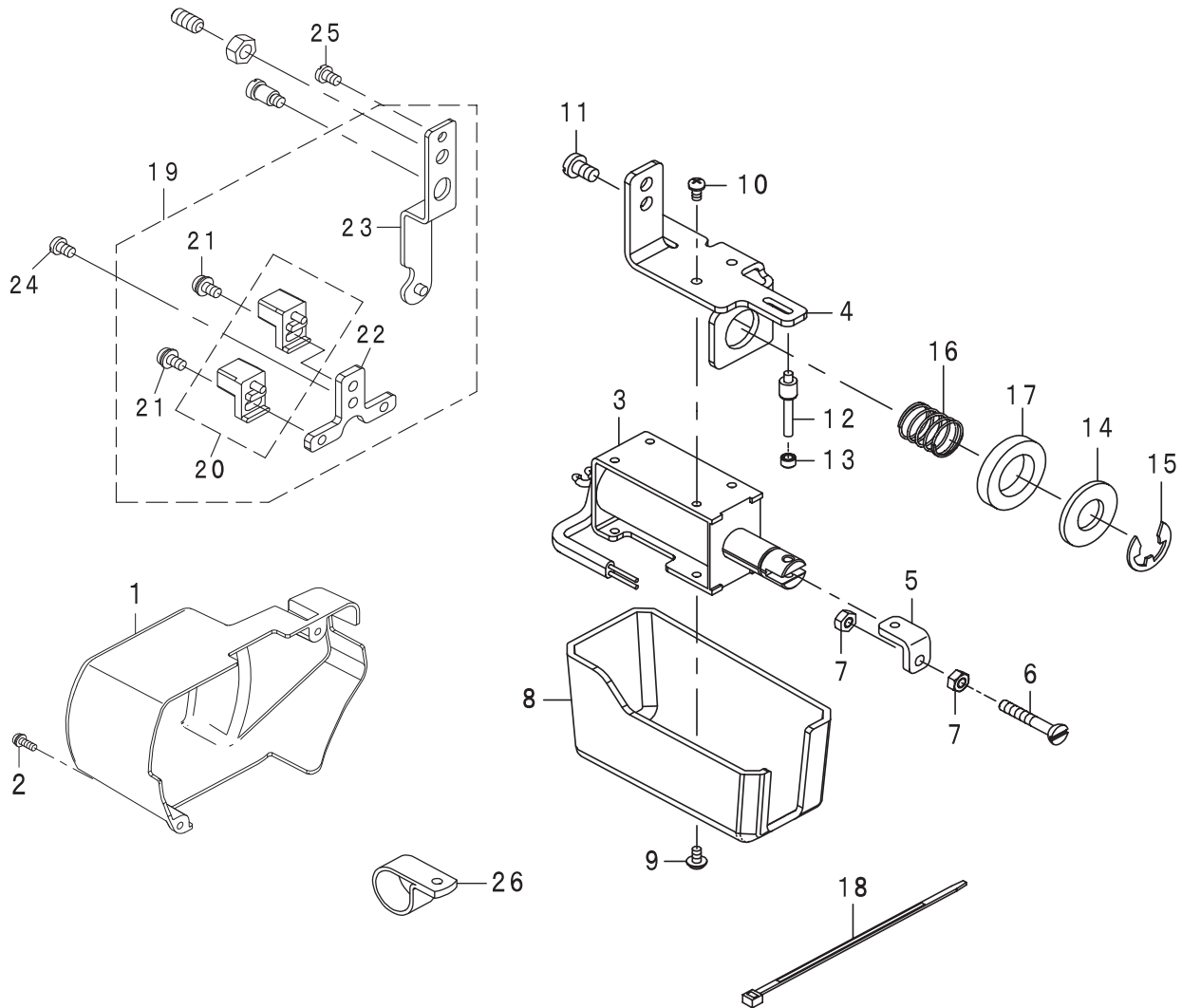
Arabic Numerals :

Actual	0	1	2	3	4	5	6	7	8	9
Display	0	1	2	3	4	5	6	7	8	9

English Alphabet :

Actual	A	B	C	D	E	F	G	H	I	J	K	L	M
Display	A	b	c	d	e	f	G	H	i	J	k	L	M
Actual	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Display	n	O	P	q	r	S	T	U	v	W	X	Y	Z

3. Parts list



REF.NO	NOTE	PART NO	DESCRIPTION	品 名	Qty
1		402-20131	AT_COVER	A Tカバー	1
2		SL-4041281-SC	SCREW M4 L=12	座金付きなべ小ねじ M4 L=12	2
3		402-20144	REPOSITION_SOLENOID	復帰ソレノイド	1
4		402-20141	SOLENOID_BASE_PLATE	ソレノイド固定板	1
5		402-20140	LEVER_PIN_LINK	復帰ソレノイド連結板	1
6		402-20142	LEVER_PIN	片針ソレノイド連結軸	1
7		NM-6040001-SC	NUT M4X0.7 TYPE1	六角ナット M4X0.7 1種	2
8		402-20135	SOLENOID_COVER	ソレノイドカバー	1
9		SL-4030631-SC	SCREW M3 L=6	座金付きなべ小ねじ M3 L=6	2
10		SL-4030641-SE	SCREW M3 L=6	座金付きなべ小ねじ M3 L=6	3
11		SM-4050855-SP	SCREW	なべねじ M5 L=8	2
12		229-57104	WIPER SOLENOID SHAFT	ワイパーソレノイド軸	1
13		229-57203	WIPER LINK COLLAR	ワイパーリンクカラー	1
14		WP-1252210-SC	WASHER 12.5X25.6X2.2	平座金 12.5X25.6X2.2	1
15		RE-1000000-K0	E-RING 10	E形止め輪 10	1
16		402-20145	PLUNGER_REPOSITION_SPRING	プランジャーばね	1
17		D2468-555-B00	RUBBER PLUNGER	プランジャーゴム	1
18		EA-9500B01-00	CABLE BAND	束線バンド	5
19		40298941	LEVER_SENSOR_ASM	片針検知センサー(組)	1
20		40299111	SENSOR CABLE ASSY	センサケーブル(組)	(1)
21		SL-4040881-SC	SCREW M4 L=8	座金付きなべ小ねじ M4 L=8	(2)
22		402-20149	SENSOR_PLATE	センサー取付板	(1)
23		402-20143	MAGNETIC_FIXED_PLATE	磁石固定板	(1)
24		SM-4040655-SP	SCREW	なべ小ねじ M4 L=6	2
25		SM-4040655-SP	SCREW	なべ小ねじ M4 L=6	1
26		HX0015000F	CABLE CLIP	ケーブルクリップ	1