



# TENSION TYPE COMPUTERIZED METERING COUNTER DEVICE

## OPERATION MANUAL



**MODEL : TC 1**



**ENGLISH**

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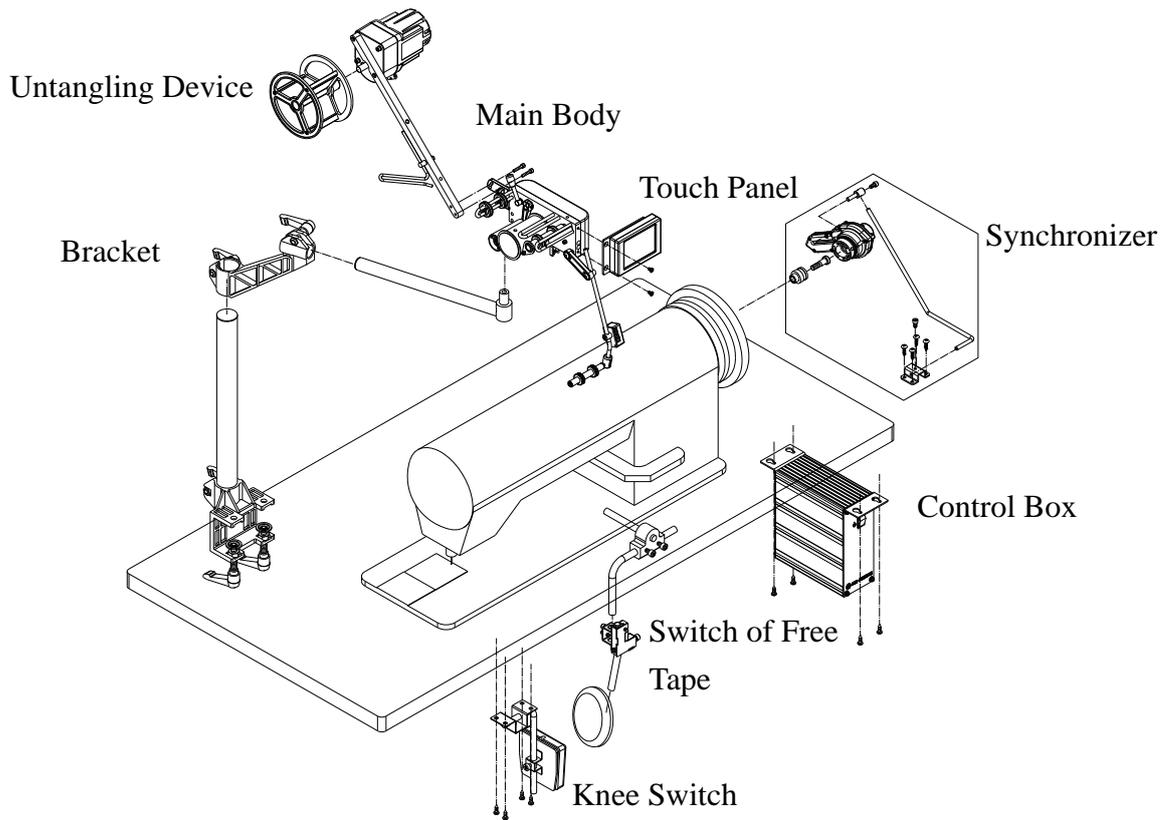
2016.11

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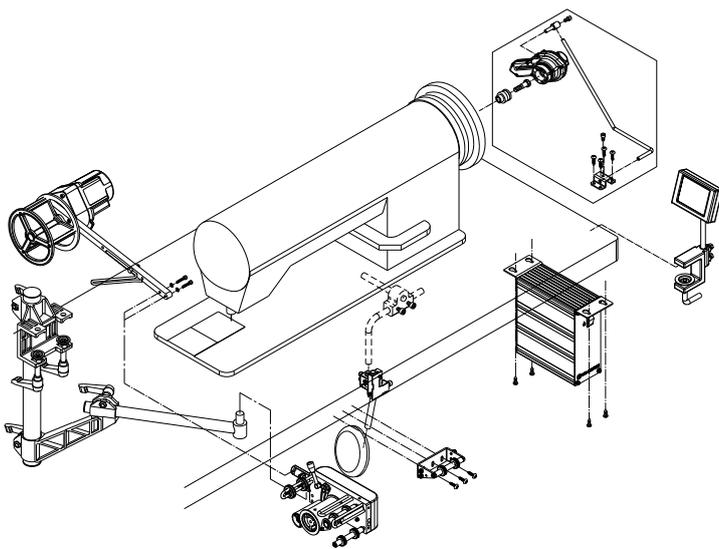
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# 1. Installation

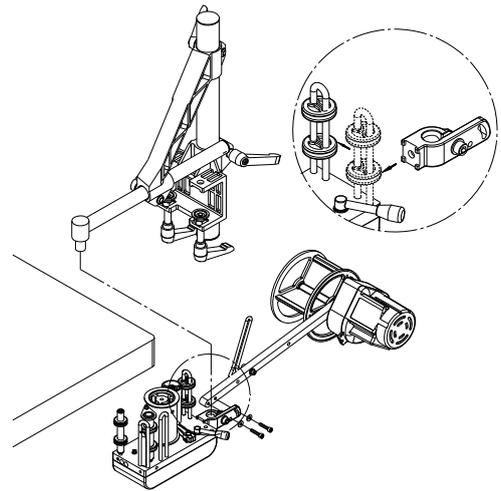
TC1-U Upper Feeder



TC1-B Down Feeder



TC1-S Side Feeder

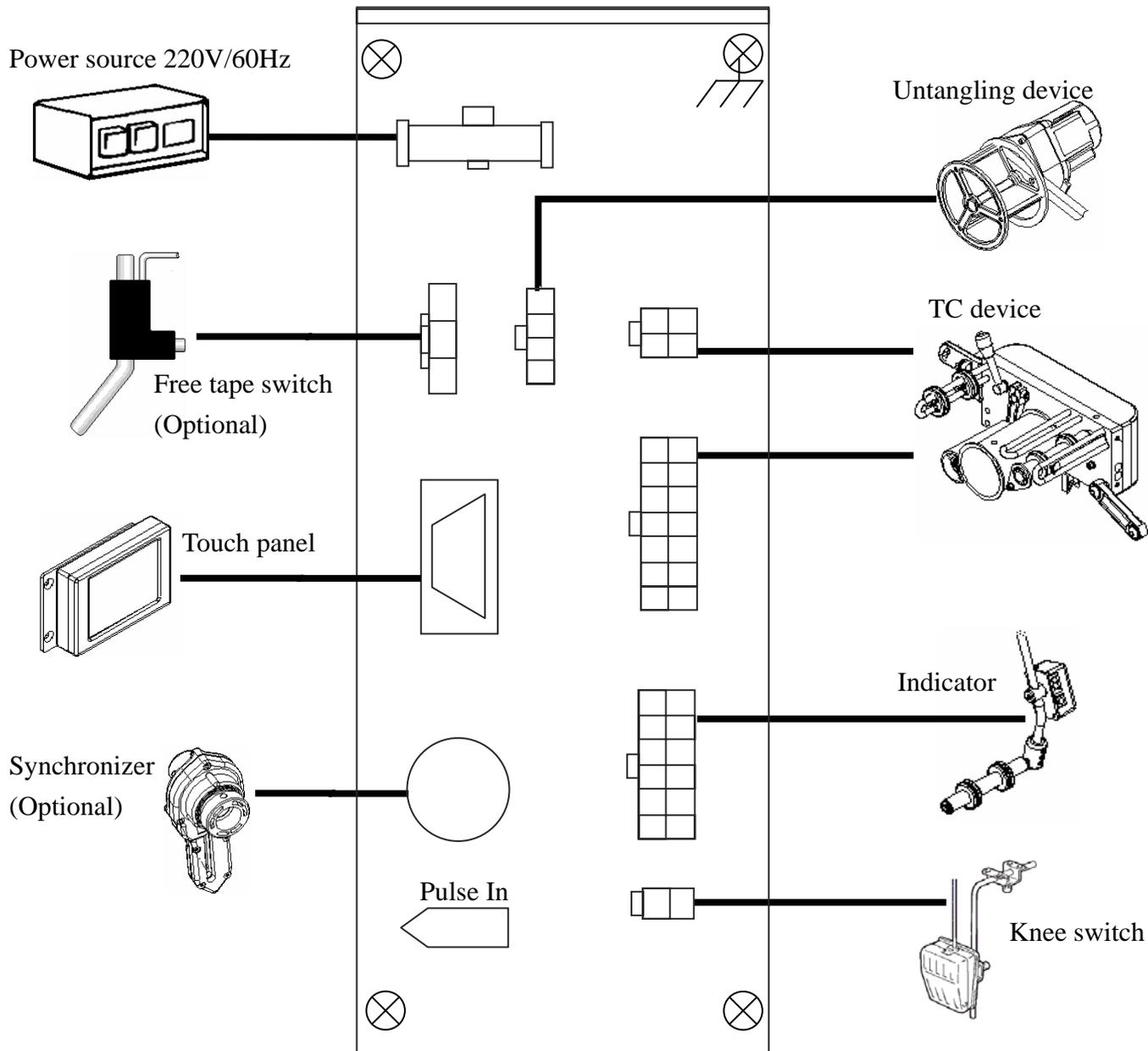


## 1-1. Connections of control box



### CAUTION

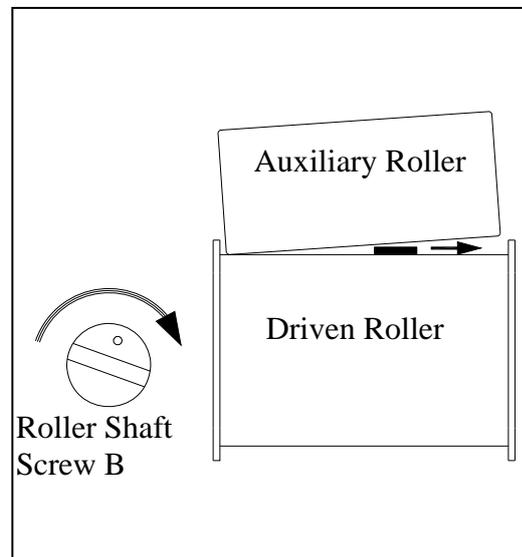
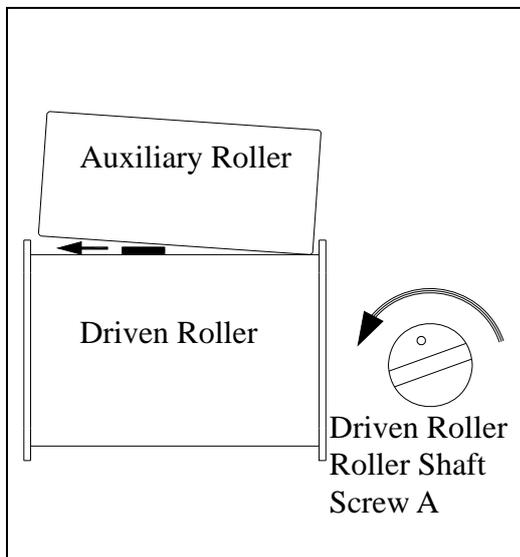
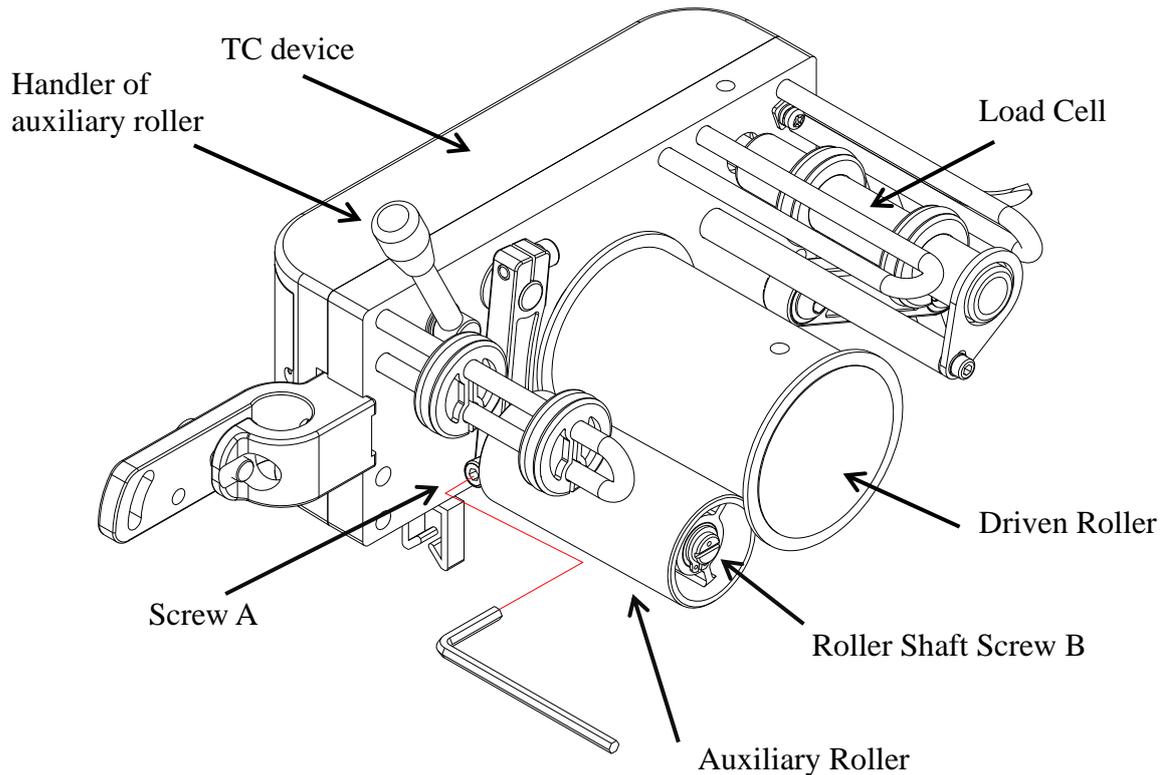
1. Only the authorized technicians are allowed to conduct the cable connections.
2. Always turn the power off and unplug the power cord before conducting or checking the connections.



## 2.Adjustments

### 2-1.Adjusting the feeding shift of tape

If the auxiliary roller is not parallel to the driven roller, the tape will be misaligned to the right or the left. To correct the misalignment, loosen screw A on the roller shaft, and turn the roller shaft screw B until the tape feeds straight and aligns perfectly.



### 3.Boot page



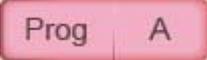
1. Main software Ver. xxx.yyy  
Displays the current operating software version.
2. Touch panel Ver. xxx  
Displays the software version of the touch panel.

### 4. Sewing operation mode

#### 4-1. Sewing mode

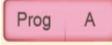


Icon	Description
	Lock key at left side menu: 1. Press  to lock menu. 2. Press  then key in a correct password to unlock. 3. Functions on the left side menu are prohibited when it is locked.
	Press to pull down menu on the left/right side(please refer to 4-3)
	Fabric detected indication (No function without sensor), LED on: detected, LED off: not detected.

Icon	Description
	Press to change the sewing program no. Maximum of 9 sewing programs. A ~ I.
	stitch number: Press to copy the current display stitch number to the stitch field of the working sewing step.
	Piece counter, press and hold for 3 seconds to reset the counter. (to display or hide the piece counter please refer to 4.3)
 987	Free to change tension control:  with tension control,  free tension control. The tension-free value is displayed below the key. Press the Tension-free key for 2 seconds to adjust the tension-free value.
	Step selector, press to move the selection bar.
	Step number: 1. Displays the Step number. 2. Press to activate TK setting, to set the stitch number of tape cut at start and end (please refer to 4-2 Step9)
	Press to adjust sensitivity. (please refer to 4-2)
	Press to set the stitches of current step. (please refer to 4-2)
	Press to adjust the tension range. (please refer to 4-2)
	Press to select Sewing mode. (please refer to 4-2)



## 4-2. Step data setting

Step 1. Press  to edit the Program A~I.

Step 2. The selection bar displays on the Step 1. Press  to pop up the keyboard.



Step 3. Enter the required tension value. Then press the  to save the value and to close the keyboard.

Note: 1. Tension values range from 1 to 999. The smaller the value, the tighter the tension.  
2. Press <Free> to set the free tension value.

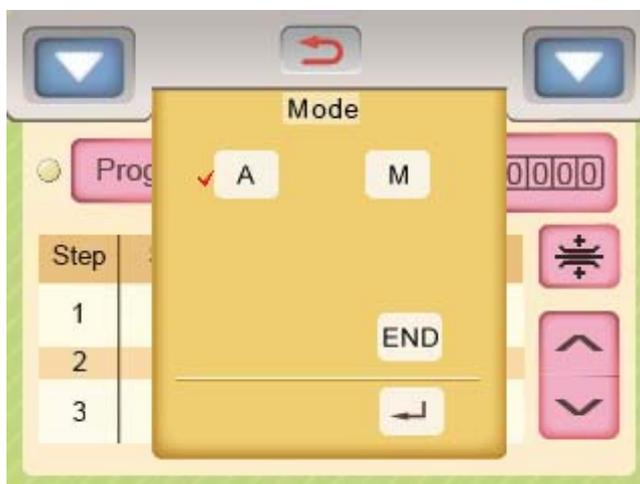
Step 4. If the tape vibrates, press **Sen.** to set the sensitivity of the tape.



Step 5. Reduce the value of the sensitivity until the vibration disappears. Then press  to return to the sewing mode.

NOTE: As long as the vibration of tape disappears, the larger the value of sensitivity, the more accurate the control of tension.

Step 6. Press **Mode** to select Sewing mode A, M or END.



NOTE:

6-1.Sewing mode selection:

A (automatic): The sewing steps of programs will run automatically and the stitches of steps will be completed sequentially as settings.

M (manual): The sewing steps of programs will run manually by an external Step change switch.

END (ending mode): Ends the current sewing program and prohibits sewing stitches in this step.

6-2.Setting the END mode in Step 1 is not allowed.

6-3.Press  to save the settings and back to the Sewing mode.

6-4. Press  to cancel the settings and back to the Sewing mode.

Step 7. You must enter the number stitches when the sewing mode is set to A. Please press  to display the keyboard.



Step 8. Enter the required the number of stitches .

Press  to return to the Sewing mode.

Step 9. Set all settings of Steps required for the corresponding Program (A~I) according to the instruction described in the procedure Step 1-9; finally, set the last Step as END mode.

Example:

Step 1: Sensitivity:70, Tension:800, Mode:M

Step 2: Sensitivity:70, Stitches:80, Tension:700, Mode:A

Step 3: Mode:END

Setting data as shown:

Step	Sen.	Stitch	Ten.	Mode
1	70		800	M
2	70	80	700	A
3				END

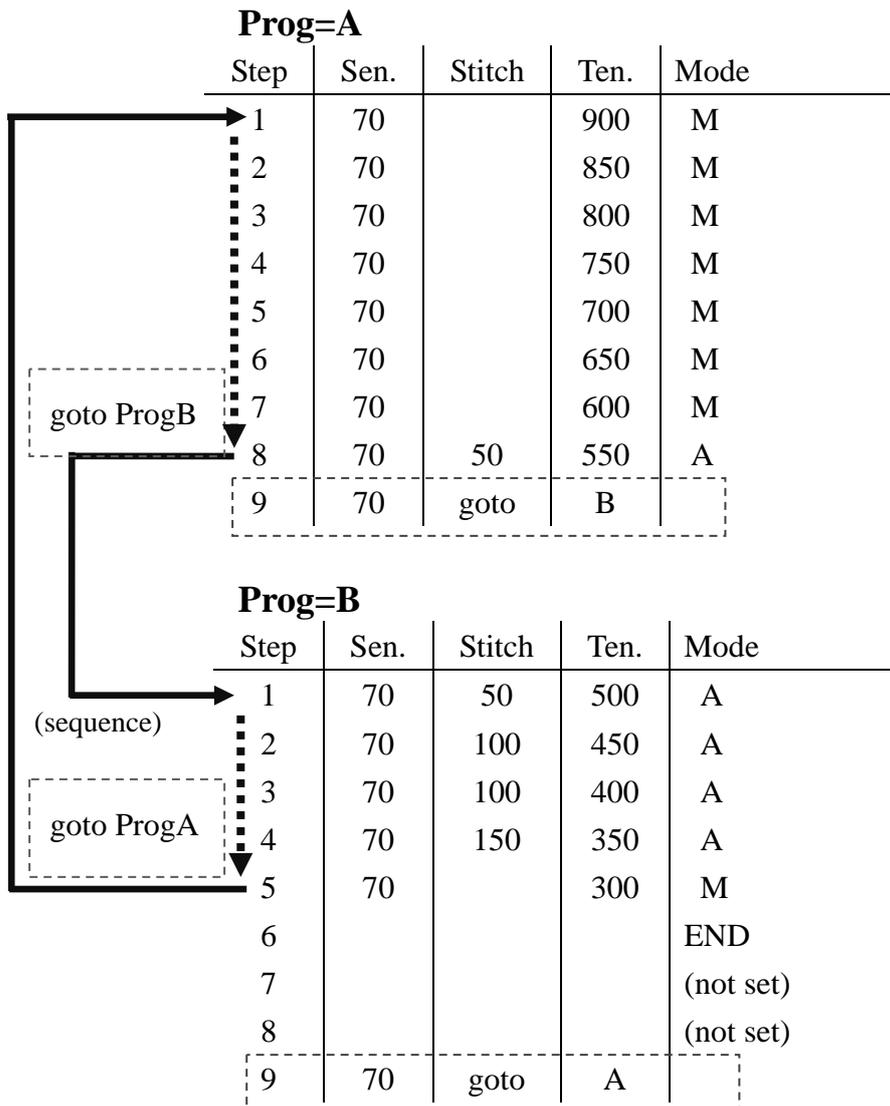
Step 10. The maximum number of Steps in one Program (A~I) is 8. In case of 13 Steps designed, the Step 9 in Program A allows you to continue the Steps to the next Program (Program B) by setting the Step 9 in Program A with the data "goto B" as shown below.

The system allows you to design a maximum number of 27 Steps in total for a specific project.

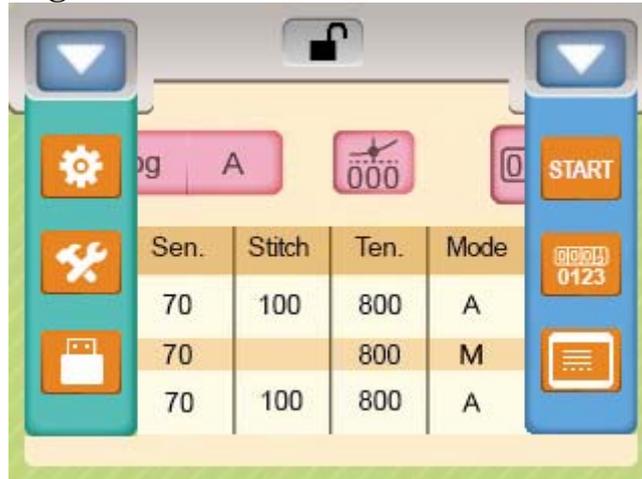
Example:

- step 1: Sensitivity:70, Tension:900, Mode:M
- step 2: Sensitivity:70, Tension:850, Mode:M
- step 3: Sensitivity:70, Tension:800, Mode:M
- step 4: Sensitivity:70, Tension:750, Mode:M
- step 5: Sensitivity:70, Tension:700, Mode:M
- step 6: Sensitivity:70, Tension:650, Mode:M
- step 7: Sensitivity:70, Tension:600, Mode:M
- step 8: Sensitivity:70, Stitches:50, Tension:550, Mode:A
- step 9: Sensitivity:70, Stitches:50, Tension:500, Mode:A
- step 10: Sensitivity:70, Stitches:100, Tension:450, Mode:A
- step 11: Sensitivity:70, Stitches:100, Tension:400, Mode:A
- step 12: Sensitivity:70, Stitches:150, Tension:350, Mode:A
- step 13: Sensitivity:70, Tension:300, Mode:M

Setting data in Program A and B as shown:



### 4-3. Left side menu and right side menu



Left side menu	
	Press to pull down the left side menu
	Press to enter the parameter setting mode
	Press to enter the testing mode
	Reserved

Right side menu	
	Press to pull down right side menu
	Start/stop the tape feeding device
	Press to display/hide the piece counter.
	Group selection

NOTE: You can use left side menu when  is shown.

4-3-1.  Start/stop the tape feeding:

Start: Stops tension control and untangling device for tape insertion or maintenance.

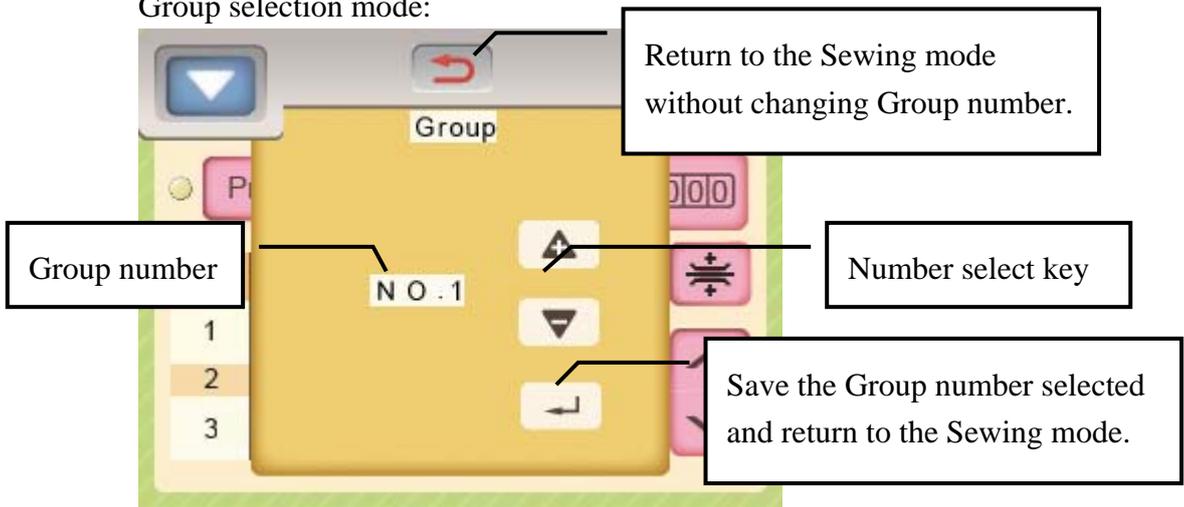
Stop: Start tension control and untangling device.

4-3-2.  Display/hide the piece counter.

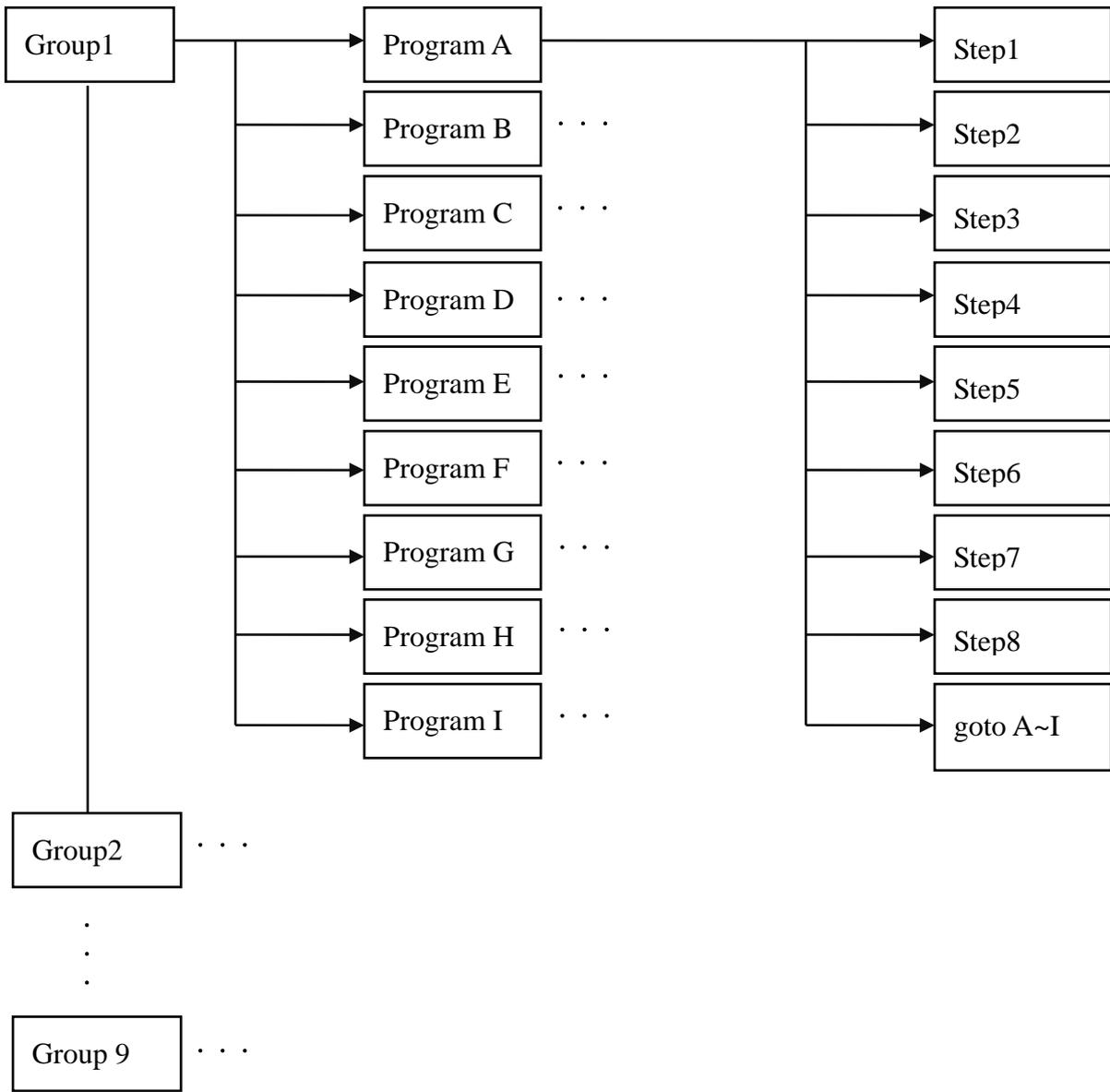
4-3-3.  Group selection:

There are 9 selectable groups. Each group consists of 9 Programs (A~I) and each Program allows you to design 8 steps. Group selection page is shown as below.

Group selection mode:

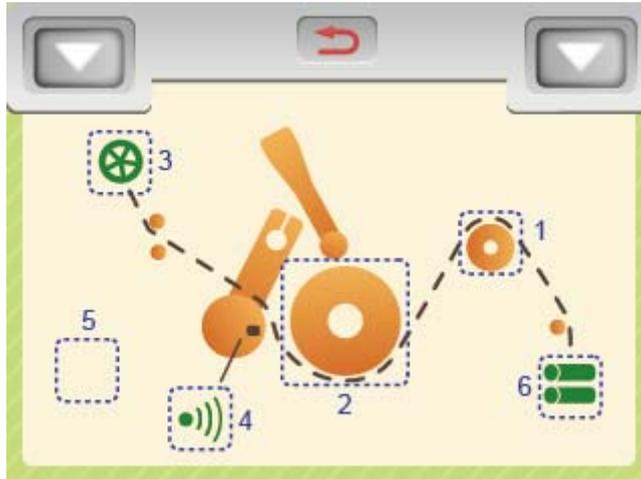


Group structure:



## 5. Testing mode

Press  at left side menu to enter the Testing mode, the following menu is shown.



Icon	Description	Icon	Description
	Reserved.		Tape thickness detector settings.
	Driven Roller test.		Reserved.
	Untangling device settings.		Accessory test.

### 5-1. Driven roller test

Press  to enter the driven roller test menu as shown below.

Caution: Ensure that no tape is on the driven roller.



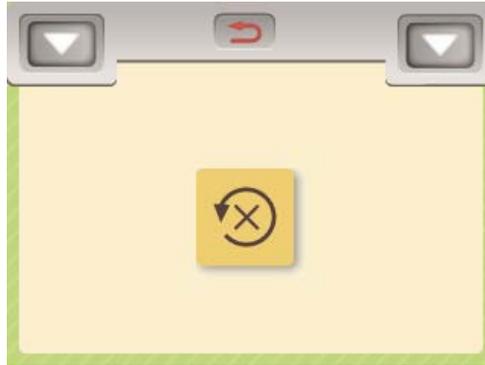
Step 1. Press  and the driven roller will run clockwise for 2 seconds.

Step 2. Press  and the driven roller will run counterclockwise for 2 seconds.

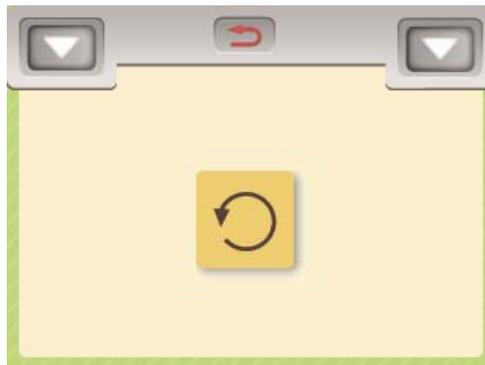
## 5-2. Untangling device setting mode

Press  to enter the untangling setting mode. There are 3 possible sub modes in this mode.

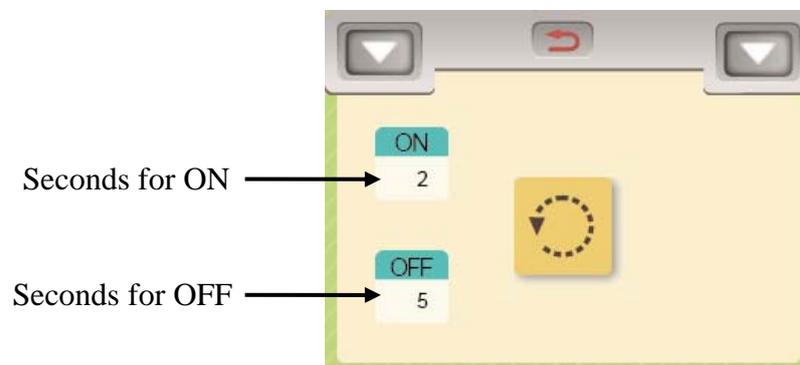
5-2-1. Off mode: Untangling device stops working.



5-2-2. Synchronous mod: The driven roller rotates synchronously with the untangling device.



5-2-3. Intermittent mode: Press On/OFF to pop up the keyboard, then enter the seconds for ON/OFF the untangling device.



### 5-3. Thickness detecting mode

Press  to enter the Thickness detecting mode.



The setting steps are as follows:

Step 1. Press .

Step 2. Remove any tape from the driven roller and the auxiliary roller, then close the auxiliary roller handler. The value of thickness (Origin) should read between -5~+5. If the value of thickness is incorrect, refer to Step 3 for performing the calibration of thickness detecting sensor.

Step 3. Press <Tape thickness sensor calibration>, menu shows. "N074:tape thickness sensor calibration OK". The value of thickness should read between -5~+5.

Step 4. Place the tape over the driven roller and the auxiliary roller to get the value of tape thickness.

Step 5. Press  to copy the tape thickness to  .

Step 6. The alarm setting can be set to a maximum thickness of 200% and the system alarm "E075" alerts when the thickness of tape exceeds the maximum setting.

### 5-4. Accessory test

Press  to enter the Accessory test mode for the optional device.



Description of Accessory test:

5-4-1.  Reserved

5-4-2.  Reserved

5-4-3.  Reserved

5-4-4.  Reserved

5-4-5.  External switch and state display.  
Used for an external switch activation status display.

Display	Description
	No external switch in use
	Used for an external knee switch activation status display
	Used for external Step change switch activation status display
	Free tension switch activated status display.

5-4-6.  Reserved

5-4-7.  Reserved



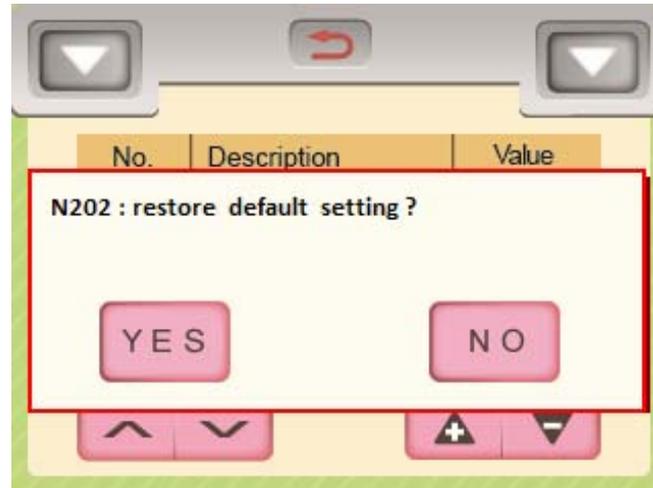
## 6-1.Restore default setting

The procedure to restore default settings is described as follows:

Step 1. Press  at left menu to enter restore default setting page.

Step 2. Shift the selection bar to 18.

Step 3. Press '+' to pop up the following dialog box menu.

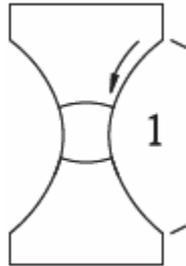


Step 4. Press “YES”, then a prompt code shows "N099:Please reboot".

Step 5. Turn the power OFF then ON, the default settings are restored.

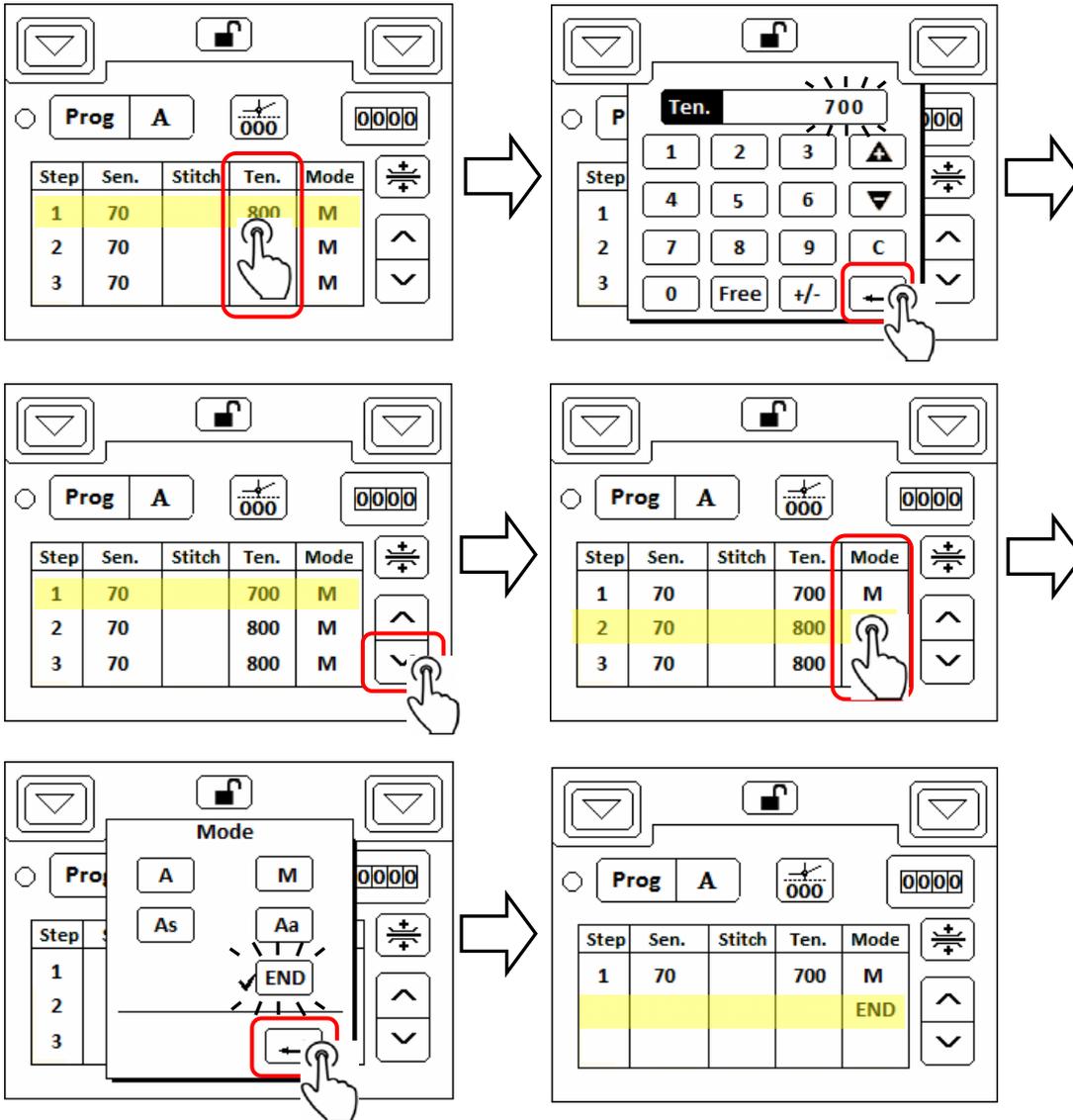
# 7.Operation instruction

Example 1: Single step program with the tension value 700.



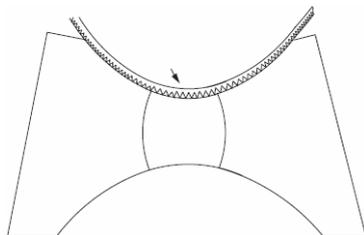
Tension value=700

The procedure is illustrated as follows:

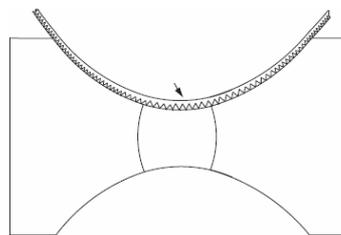


Comparison of tension values adjusted:

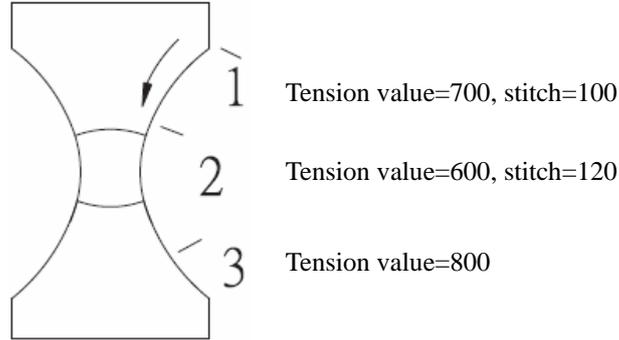
A small tension value



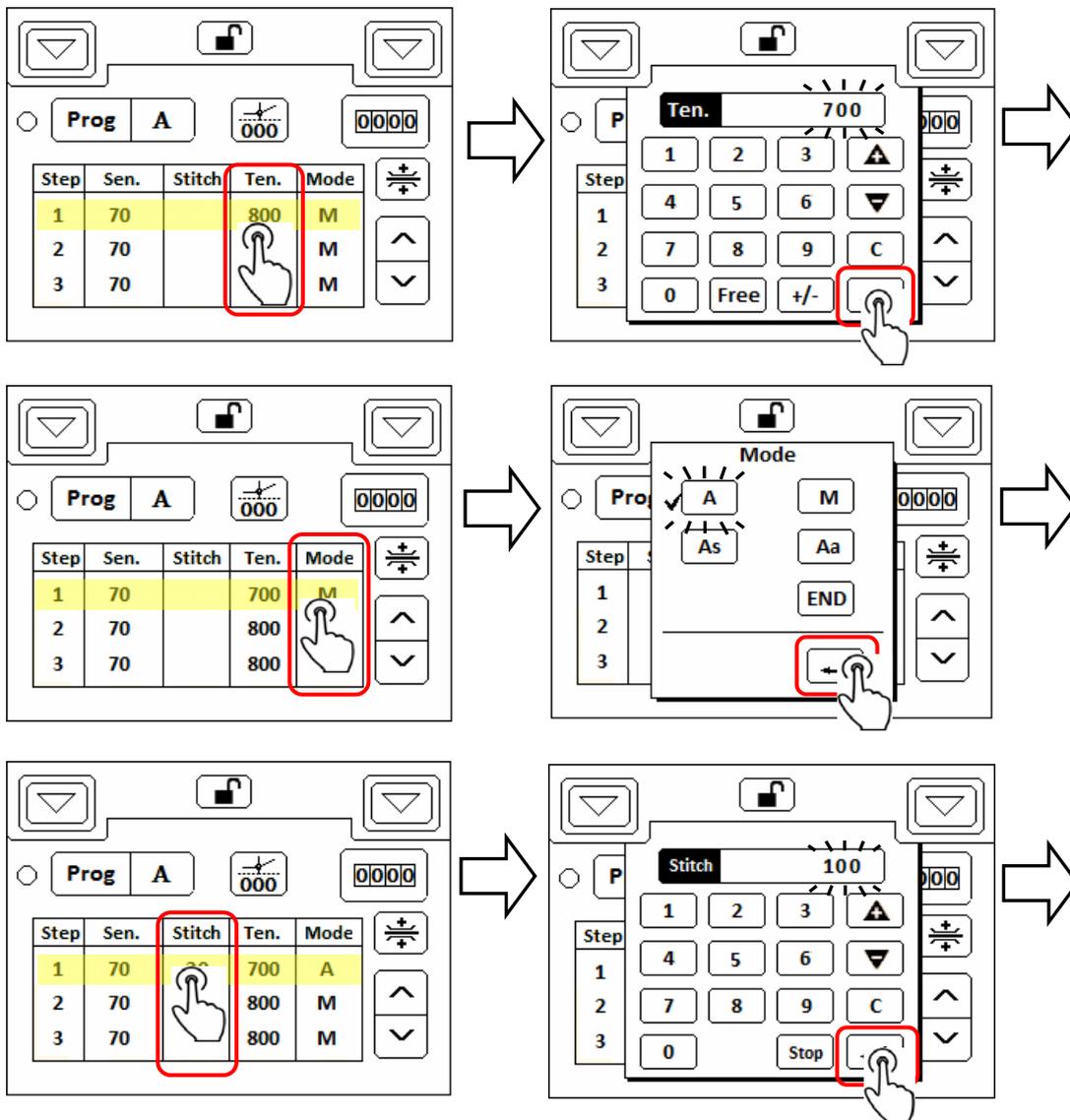
A large tension value

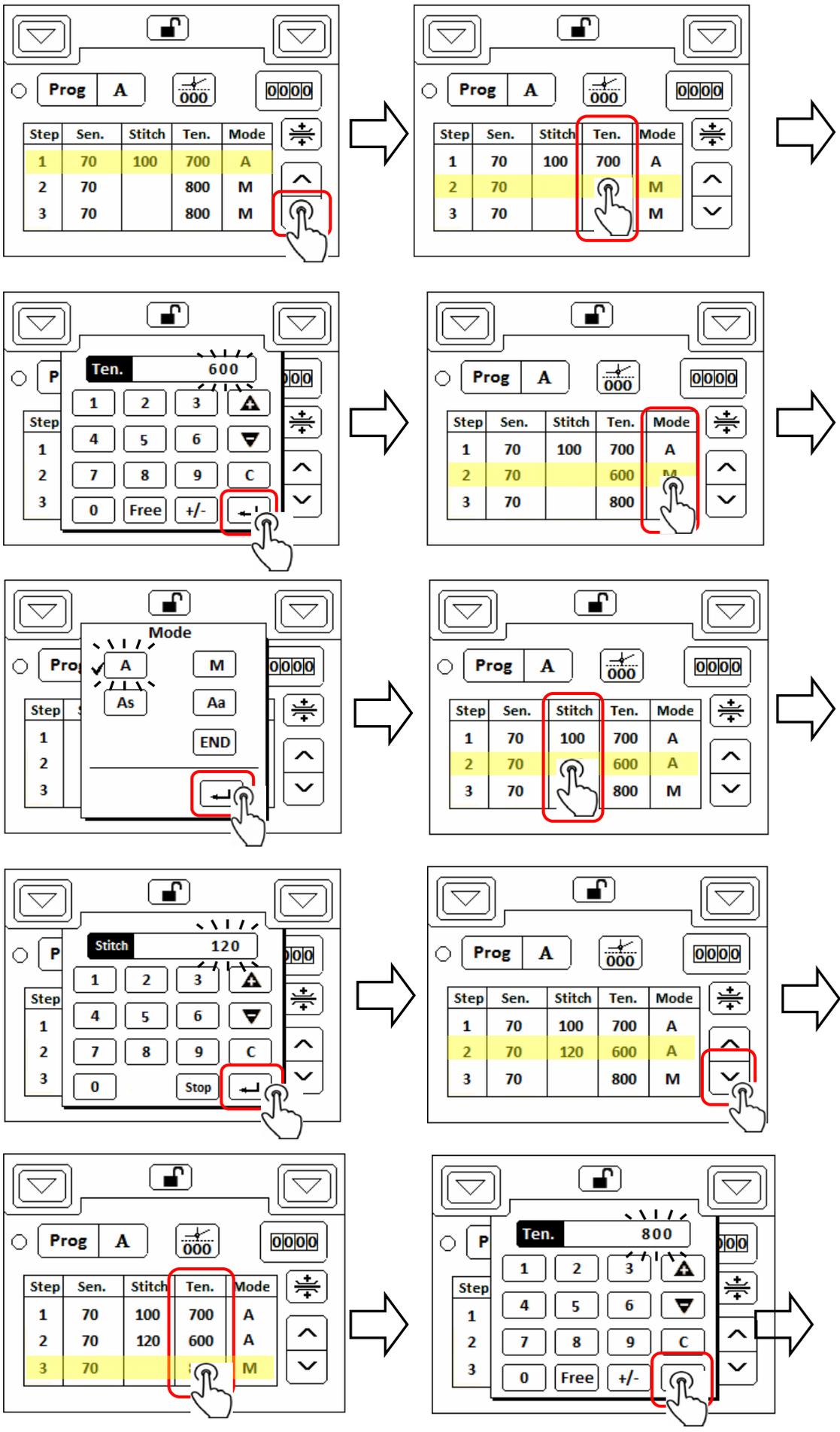


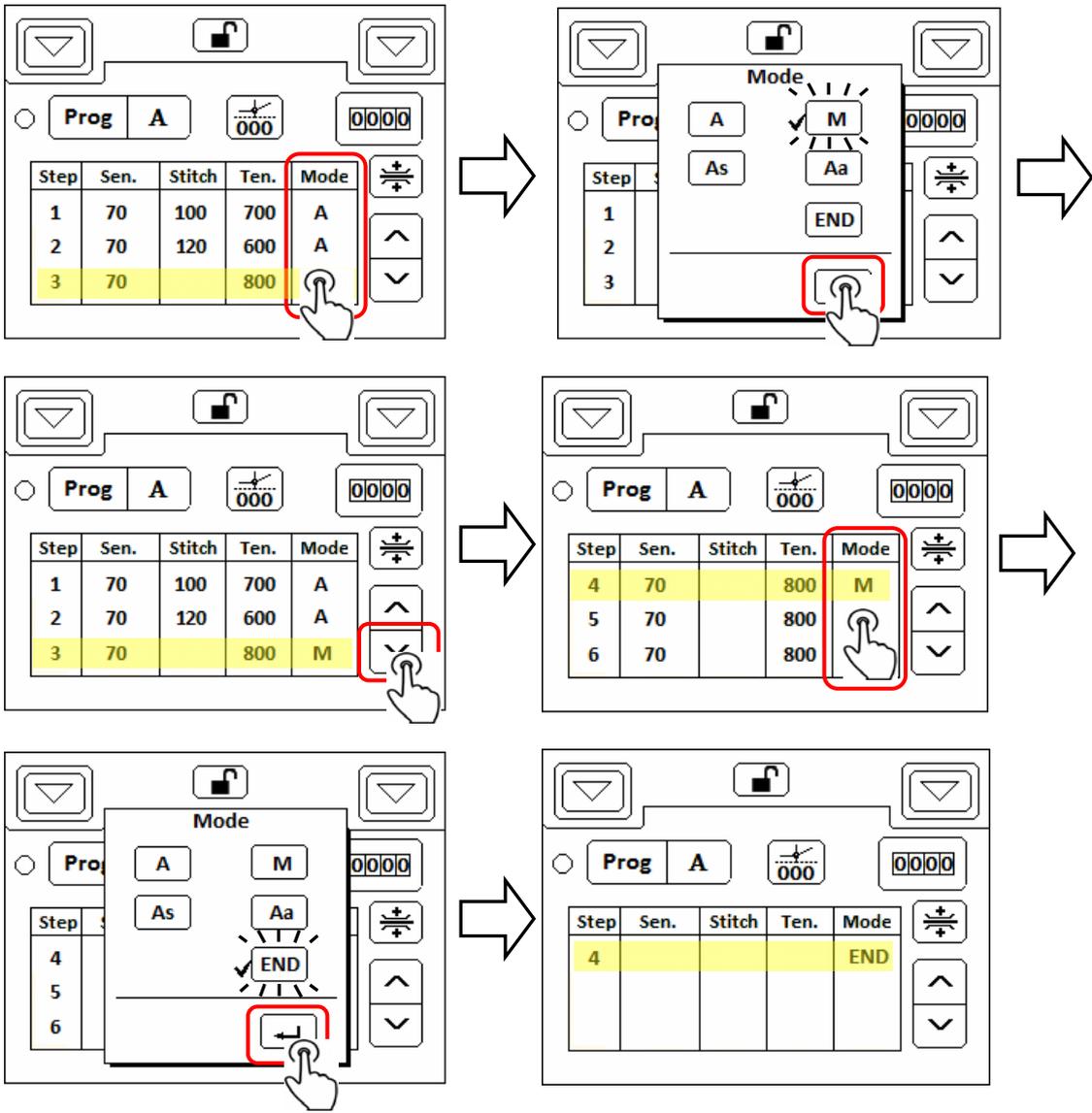
Example 2: Program of 2 steps changed automatically with the tension values and stitches set as shown.



The procedure is illustrated as follows:







## 8. Prompt code and error code

### 8-1. Prompt code

Prompt codes are Arabic numerals with a character 'N' at the beginning. There are used to prompt user the next action to do or the feedback message from the previous action.

Code	Prompt message	Description
N064	Load cell calibration OK	Load cell 0kg calibration is successful.
N065	Load cell calibration OK	Load cell 1.8kgs calibration is successful. Please remove the 1.8kgs weight.
N066	Pls remove tape and weights on the load cell then press any key...	Please remove the fabric and weights on the load cell, then press any key.
N067	Pls hang 1.8KG of weights on the load cell then press any key...	Please hang the 1.8 kg weight onto the load cell.
N074	tape thickness sensor calibration OK	Tape thickness sensor calibration is successful.
N076	Pls remove tape on the auxiliary roller and handle bar back to original position then press any key...	Please remove any tape on the auxiliary roller and handler back to original position, and then press any key...
N098	Save parameters ok	Restoring the default setting is successful.
N099	Please reboot	Turn the power OFF, then turn it ON.
N200	Reset system? all params will be lost	Confirm message for "Reset".
N201	Power Off	Power off.
N202	restore default setting?	Confirm message for "restore". Press "YES" to restore the default value.
N205	Auxiliary roller handle is opened	Auxiliary roller handler is opened.

## 8-2. Error code

Error codes are Arabic numerals with a character 'E' at the beginning. There are used to alert user the system malfunctions occur. Further actions should be taken to conduct the troubleshooting.

Code	Error and failure	Troubleshooting
E050	memory read error	Ask a qualified technician.
E051	memory write error	Ask a qualified technician.
E052	Calibration value read error	Check the cable connection between Control box and Tension device.
E053	Calibration value write error	Check the cable connection between Control box and Tension device.
E060	Load cell calibration fail	Check the cable connection between Control box and Tension device.
E061	Load cell calibration fail	Load cell free calibration failed. 1. Check the cable connection between Control box and Tension device.. 2. Remove the tape on load cell.
E062	Load cell calibration fail	Load cell 1.8kg calibration failed. 1. Check the cable connection between Control box and Tension device.. 2. Hang the 1.8Kg weight on load cell.. 3. Ensure no mechanical obstacle of load cell movement.
E063	Read tension fail	Check the cable connection between Control box and Tension device.
E071	tape thickness sensor calibration fail	1. Check the cable connection between Control box and Tension device. 2. Remove the tape on the auxiliary roller. 3. Close the handler of untangling device.
E073	Read tape thickness fail	Check the cable connection between Control box and Tension device.
E075	Detect abnormal thickness of the tape	1. Ensure that the tape is properly winding around the Driven and Auxiliary roller. 2. Check if a correct value is set (refer to 5-4.)
E077	Load cell overload warning	1. Ensure that the tape is properly winding around the Driven and Auxiliary roller. 2. Increase the setting value of parameter 11.
E100	TP and MB link fail	Check the cable connection between Control box and Touch panel.

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