

Section 2.2

Stop Mark Preventions

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2. LET-OFF MOTION

2.2 Stop Mark Preventions

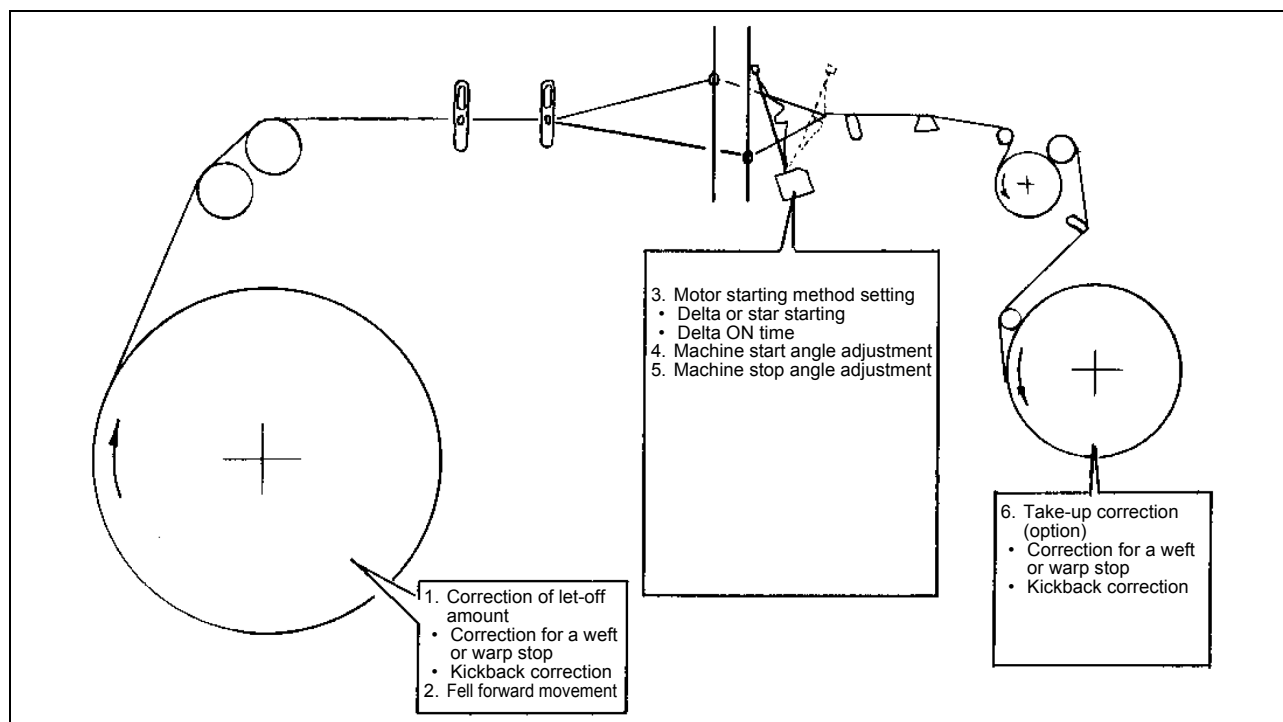
The LWT710 weaving machine has a variety of stop mark preventions (see the illustration below) to eliminate stop marks. If a stop mark is found, you should set or adjust these stop mark preventions on the function panel.

These stop mark preventions, however, cannot eliminate all stop marks. The process which causes stop marks is so complicated that it will be affected by machine conditions such as back roller & dropper height, heald frame height, shed size, shed close timing, easing timing, easing amount, warp tension, and cloth fell height.

In addition, the occurrence of stop marks will be influenced by the warp sizing state and ambient conditions such as temperature and humidity.

To keep the woven fabrics at a good, stable quality, therefore, it is necessary to

- (1) Set or adjust the stop mark preventions (refer to 2.2.2 [1]),
- (2) Modify the machine conditions (refer to 2.2.2 [2]), and
- (3) Control the warp seizing state and ambient conditions.

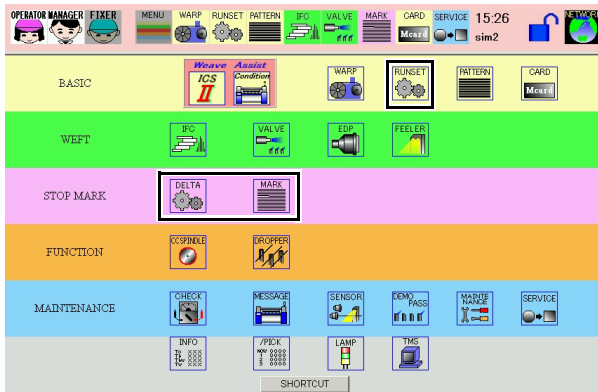


No.	Stop Mark Preventions	Explanation
1.	Correction of let-off amount	The let-off motion corrects slight changes caused in the cloth fell area, before and after the start of operation
2.	Fell forward movement	This function automatically decreases (or increases) the warp tension in order to move the cloth fell immediately after the machine halts and then resumes the warp tension to return the cloth fell to the original position at the time of restart.
3.	Choice of motor starting method	You can select delta or star starting. (For a weft or warp stop, etc.*)
4.	Start angle adjustment	You can adjust the crank angle at which the machine will restart. (For a weft or warp stop, etc.*)
5.	Stop angle adjustment	You can adjust the crank angle at which the machine will stop. (For a weft or warp stop, etc.*)
6.	Take-up correction (option)	The take-up motion performs the same type of correction as for number 1.

* For manual stops, leno-yarn break stops, and waste-selvage break stops, take the same actions as for warp stops.

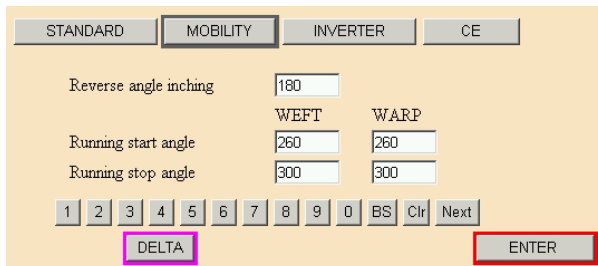
2.2.1 Stop Mark Related Screens

To call up the stop mark related screens, touch [FIXER] – [RUNSET] (on BASIC menu), [DELTA] / [MARK] (on STOP MARK menu).



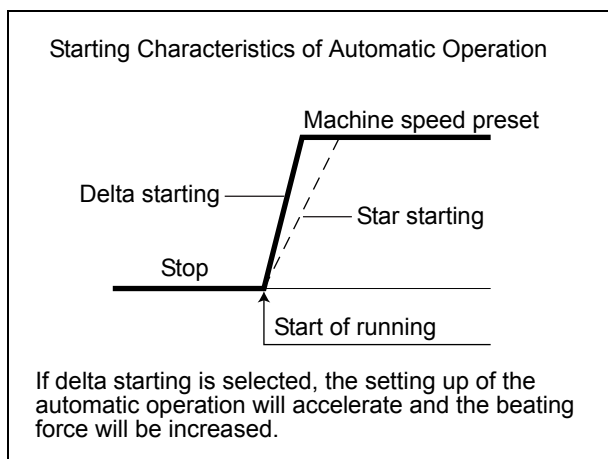
[1] [RUNSET] Switch

Touching [RUNSET] – [MOBILITY] calls up the screen shown at left, which displays the values pre-set automatically with the [ICS] switch. Depending on the occurrence of stop marks, it is necessary to modify these values.



2. LET-OFF MOTION

	WEFT STOP	WARP STOP
High speed starting(delta)	<input type="button" value="ON"/>	<input type="button" value="ON"/>
Delta ON Correction	<input type="button" value="AUTO"/>	<input type="button" value="AUTO"/>
<input type="button" value="1"/> <input type="button" value="2"/> <input type="button" value="3"/> <input type="button" value="4"/> <input type="button" value="5"/> <input type="button" value="6"/> <input type="button" value="7"/> <input type="button" value="8"/> <input type="button" value="9"/> <input type="button" value="0"/> <input type="button" value="BS"/> <input type="button" value="Clr"/> <input type="button" value="Next"/>		
<input type="button" value="RUNSET"/> <input type="button" value="MARK"/>		<input type="button" value="ENTER"/>



[2] [DELTA] Switch

(1) High speed starting (delta)
Touching [DELTA] calls up the screen shown at left.

You may select delta or star starting for the start of automatic operation. If this item is set to ON, delta starting applies; if OFF, star starting applies.

(2) Delta ON Correction

The delta ON correction method below is for the group inverter specification. The setting method for the SC inverter specification is different because the starting method is different. For details, refer to the "Integrated SC Inverter (Option)" section in Chapter 1 "PREPARATION."

Set "High speed starting (delta)" to ON. You can select [AUTO], [PICK], or [TIME] for "Delta ON Correction".

Normally use [AUTO].

Changeover from delta to star is performed at the optimum timing.

For stop mark correction, you can use any of the following settings:

Select [PICK] for changeover after picking (front).

Use this setting when a stop mark by variation in rotation at the time of picking appears.

Select [TIME] to vary acceleration.

Increasing this value will accelerate the setting up of the automatic operation.

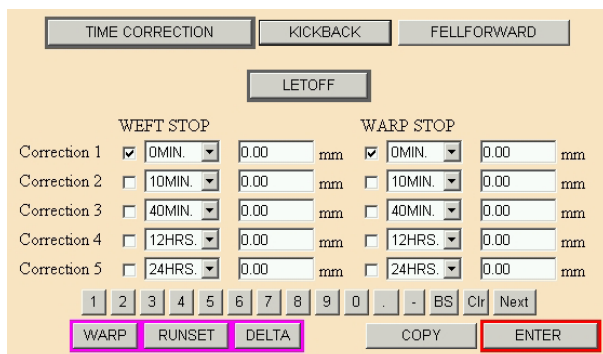
<p>Entry range: From 100 ms to 500 ms Typical setting: For less than 800 rpm: 120 ms For 800 rpm or higher: 120 ms for weft stop 150 ms for warp stop</p>

(3) Heaving before operation (usable in case of EDP specification)

You can repeat inching repetition before running to loosen the woven weft yarns to correct a pillow mark.

The set value becomes the number of forward and reverse inching picks.

<p>Entry range: From 0 to 5 times Typical setting: 1 or 2 times for special purposes</p>



[3] [MARK] Switch

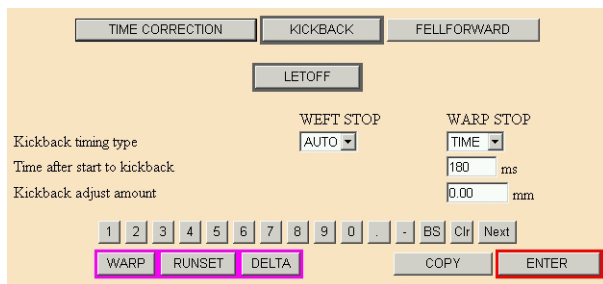
Touch [MARK] – [TIME CORRECTION] to display the screen at left. Depending upon the occurrence of stop marks, it is necessary to modify those values.

■ **[TIME CORRECTION]**

You may set the correction values of the let-off amount. According to these values, the motor corrects the cloth fell which will move depending upon the machine stop time. Touching [ENTER] makes items selected with check marks effective.

Entry range for time: From 0 to 40 minutes, 12 and 24 hours
 Typical time setting: 1 or 2 times for special purposes
 Entry range for cloth fell: From -1.99 to +1.99 mm
 Typical setting: ±0 mm

Generally use only [LETOFF]. To use [TIME CORRECTION] for take-up with an electronics control take-up motion, set the MARK (take-up) item to WITH in the SERVICE-SPEC (password: 3134).



■ **[KICKBACK]**

- (1) Kickback timing type
 You can select either [AUTO] or [TIME]. Normally set [AUTO].
 When [AUTO] is set, operation starts after calculating the travel and operation timing required for kickback from the stop time correction setting.
 When [TIME] is set, kickback operation continues for the set travel after the lapse of set time following the start of automatic operation. Use this setting when the kickback amount is set arbitrarily.
- (2) Time after start to kickback
 This is valid only when [TIME] is selected for the kickback timing above.

Entry range: 0 to 299 ms with 180 ms as the initial value

2. LET-OFF MOTION

(3) Kickback adjust amount

This is valid only when [TIME] is selected for the kickback timing.

The travel immediately after the start of automatic operation can be corrected by motor forward or reverse rotation.

Standard setting: Same as 0 minute in stop time correction on the preceding page with reversed + or – sign.

■ [FELLFORWARD]

(1) Fell forward amount

Set the amount of fell relief to prevent the reed from beating the cloth fell.

Entry range: 0.00 to 9.99 mm (only a positive value is allowable)
Normally set 3 to 5 mm.

(2) Shake on start

Set the travel and the number of repetitions to correct a temple mark. The set beam-side travel and cloth-side travel are repeated according to the setting before the start of operation.

Entry range: 0.00 to –5.00 mm (a negative value only)
Normally set –3 mm.
The number of repetitions can be set to 1 to 3.

Increase the number of repetitions if the effect is insufficient when 1 is set.

In case of an electronically controlled take-up motion, normally set the same values for [LETOFF] and [TAKEUP], both for the correction amount and number of repetitions.

2.2.2 Stop Mark Prevention Procedure

[1] Setting and Adjusting the Stop Mark Preventions

Set or adjust the stop mark preventions on the function panel according to the steps given below.

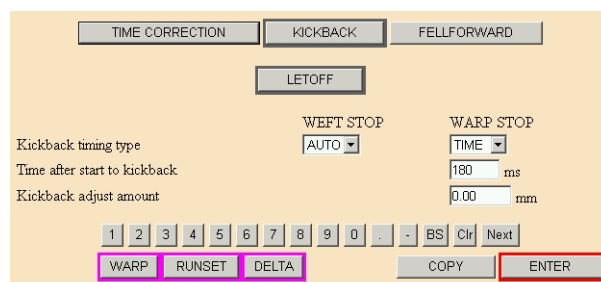
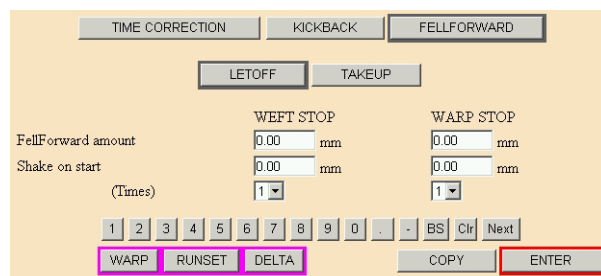
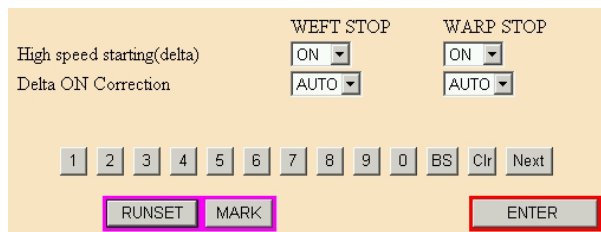
NOTE: If the correction value of the let-off amount or kickback, or fell-forward amount is too large, a stop mark may appear differently depending upon the location (near the temple or at the center of the woven cloth). In such a case, decrease those correction values and adjust the machine conditions (refer to item [2] later) instead of using the stop mark preventions.

(1) Setting the basic conditions:

1) Set the weaving conditions to the basic values suitable for the desired fabric type.

- Running start angle:
 - 240° (BLD specification both vertical and horizontal)
 - 300° (EDP specification, both vertical and horizontal)
- Running stop angle:
 - 300° (for weft and warp stops)
- High speed starting (delta):
 - Delta starting for a warp stop
 - Star starting for a weft stop
- Delta ON Correction: AUTO
- Correction of LET-OFF amount:
 - ±0 mm for each stop time
- Fell Forward amount: ±0 mm
- KICKBACK - Kickback timing type: AUTO

2) Set the machine conditions (the back roller height, heald frame height, shed size, shed close timing, easing timing, easing amount, warp tension, and cloth fell height) to the basic values suitable for the desired fabric type.



2. LET-OFF MOTION

- (2) In order to take stop mark samples, stop the running machine and restart it
 - without stop time (00 minute),
 - after 5 minutes' stop, and
 - after 10 minutes' stop.

Repeat the above operation cycle more than two times. Investigate the occurrence of stop marks and their change depending upon the stop time length.

If no stop mark is found, stop this adjustment procedure.

- (3) The following should apply to both weft and warp stops:

If a stop mark appears after less than 5 minutes' stop:

- 1) Select the motor starting method.
If a thick place is found, select the star starting; if a thin place, select the delta starting.
- 2) If a thin place is found:
Tentatively change the Delta ON Correction from [AUTO] to [PICK].
- 3) When the automatic pick finder is in use for the EDP specification, modify the start angle in units of 10° on the [RUNSET] braking angle screen.
 - If a thick place is found, increase the crank angle to more than 300° (but not more than 350°).
 - If a thin place is found, decrease the crank angle to less than 300° (but not less than 180°).
- 4) Change the stop time correction setting (stop time: 0 minute).
- 5) Modify the fell-forward amount.
If a thick place is found, enter a plus (+) value; if a thin place, do not use this fell forward function.

WEFT STOP WARP STOP

High speed starting(delta) ON ON

Delta ON Correction AUTO AUTO

1 2 3 4 5 6 7 8 9 0 BS Clr Next

RUNSET MARK ENTER

TIME CORRECTION KICKBACK FELLFORWARD

LETOFF

WEFT STOP WARP STOP

Correction 1	<input checked="" type="checkbox"/>	0MIN.	0.00	mm	<input checked="" type="checkbox"/>	0MIN.	0.00	mm
Correction 2	<input type="checkbox"/>	10MIN.	0.00	mm	<input type="checkbox"/>	10MIN.	0.00	mm
Correction 3	<input type="checkbox"/>	40MIN.	0.00	mm	<input type="checkbox"/>	40MIN.	0.00	mm
Correction 4	<input type="checkbox"/>	12HRS.	0.00	mm	<input type="checkbox"/>	12HRS.	0.00	mm
Correction 5	<input type="checkbox"/>	24HRS.	0.00	mm	<input type="checkbox"/>	24HRS.	0.00	mm

1 2 3 4 5 6 7 8 9 0 . - BS Clr Next

WARP RUNSET DELTA COPY ENTER



- (4) If a stop mark occurs after 5 or more minutes' stop:
 Perform 4) through 5) in step (3), except that you should set a correction value for each stop time (05 to 40 min.).

Stop mark occurrence	Correction value of let-off amount
A thin place is found on the last pick before stop and on the 1st pick after restart, but no thin place is found on the 2nd and subsequent picks.	Minus (-) value
A thin place is found on the last pick before stop and on the 1st pick after restart, and thick places are found on the 2nd and subsequent picks.	Minus (-) value
A thick place is found on the last pick before stop and on the 1st pick after restart, but no thick place is found on the 2nd and subsequent picks.	Plus (+) value
Thick places are found on the last pick before stop and on two or three picks after restart.	Plus (+) value
Thin places are found on the last pick before stop and on two or three picks after restart.	Minus (-) value
Thick places are found on the last pick before stop and on four picks or more after restart.	No beating.
Thick places are found on the last pick and the preceding picks.	

2. LET-OFF MOTION

[2] Modifying the Machine Conditions

Only when a stop mark persists even after adjustment of the stop mark preventions (in [1]), you should modify the machine conditions as described below.

Before proceeding to the modification of the machine conditions, return the stop mark prevention settings adjusted in item [1] to the basic values suitable for the desired fabric style.

Machine conditions	Effects
1 Back roller height	<p>Effective in preventing the stop mark due to excessive or insufficient pick.</p> <p>(Plain weave) Lift up the back roller for thick places, and lower it for thin places. (Twill weave) Front weave: As the back roller lifts up when the machine is on halt, the tension of the center shed will increase and that of the open shed warps will decrease, thereby affecting wavy set marks. Back weave: The lower the back roller, the greater effect on wavy set marks.</p>
2 Height of the heald frame	<p>Like the height of the back roller, adjusting the height of the heald frame will affect stop marks due to excessive or insufficient pick.</p> <p>(Plain weave) For thick places, the lower the heald frame is positioned, the greater the effect. For thin places, the higher the heald frame is positioned, the greater the effect. (Twill weave) Front weave: The lower the heald frame is positioned, the greater the effect on wavy set marks. Back weave: The higher the heald frame is positioned, the greater the effect on wavy set marks.</p> <p>When changing the height of the heald frame, take care since it will influence the occurrence of weft stops.</p>
3 Shed size (Heald frame stroke)	<p>The larger the shed size, the easier becomes picking; the smaller, the more difficult the picking.</p> <p>(Twill weave) The smaller the shed size, the greater the effect on wavy set marks.</p>
4 Shed close timing	<p>The earlier the shed close timing, the easier the picking; the later, the more difficult.</p> <p>(Plain weave) For thick places, the earlier the shed close timing, the greater the effect. For thin places, the later, the greater the effect. (Twill weave) The earlier the shed close timing, the greater the effect on wavy set marks.</p>
5 Easing timing	<p>The earlier the easing timing, the more difficult the picking; the later, the easier.</p> <p>(Plain weave) For thick places, delay the easing timing; for thin places, advance it. Note that the difference between the easing timing and the shed close timing should be within $\pm 30^\circ$. (Twill weave) Match the easing timing to the shed close timing.</p>
6 Easing amount	<p>(Plain weave) For thick places, decrease the easing amount; for thin places, increase it. This adjustment will have a greater effect on the edges of woven cloth than at the center of it. The larger the easing amount, the easier the stop marks (due to the longer stop time) will occur.</p> <p>(Twill weave) The smaller the easing amount, the greater the effect on wavy set marks.</p>

Machine conditions	Effects
7 Warp tension	<p>The higher the warp tension, the easier the picking; the lower, the more difficult.</p> <p>(Plain weave) For thick places, increase the warp tension; for thin places, decrease it. It is not recommended to make this adjustment as a stop mark prevention, since this adjustment will only have little effect and influence the cloth appearance or the occurrence of weft stops.</p> <p>(Twill weave) The lower the warp tension, the greater the effect on wavy set marks.</p>

NOTE: The above stop mark preventions may not always have the above effects depending upon the combination of motions and devices.

