Section 4.5 Electronic Dobby

Contents

The main motor rotation is transmitted to the electronic dobby via the driving pulley of the weaving machine and the timing pulley and timing belt installed on the outer side.
The shedding pattern is controlled by the main control box of the weaving machine.

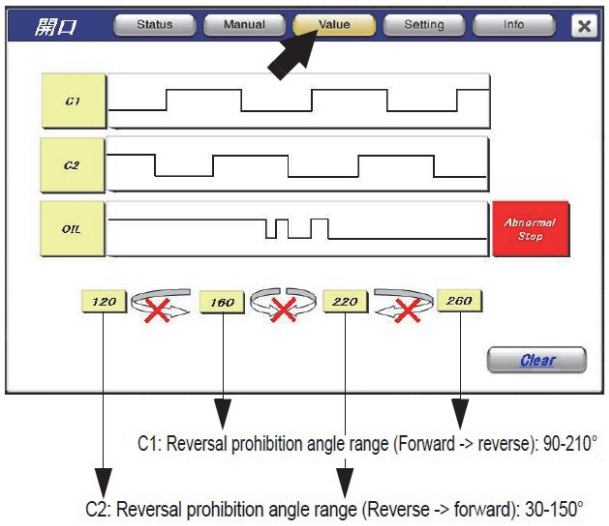
Reference :

- Refer to the electronic dobby in the appendix for the electronic dobby unit.
- Refer to 5.1.6 [4] PATTERN Switch section for the electronic dobby weaving pattern setting method.
- Refer to 9.3 Electronic dobby (controller) in Chapter 9 for the electronic dobby controller.

[1] Cautions for Power off

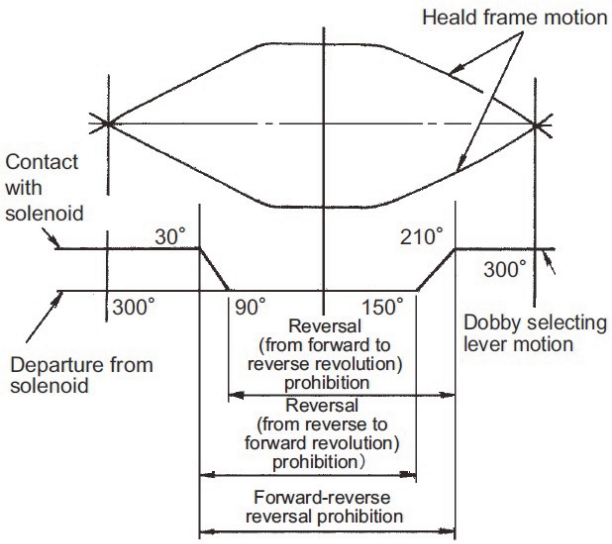
Before turning the power supply to the weaving machine off, always stop the machine at around 300° (within ± 20°).
If the power is turned off when the machine is stopping at other than 300 ± 20°, the weaving pattern may become disorderly.

[2] Checking abnormality of dobby



You can check the abnormality in C1 and C2 of the dobby and the oil by touching [Map] - [Shedding] - [Value] and the graph at left will be displayed.
“ABNORMAL STOP” is displayed at abnormality.

[3] Reversal Prohibition Angle Range



Reversal of the electronic dobby revolution is prohibited in the angle ranges shown at left. The reversal prohibition angle range varies with each dobby, and the reversal prohibition angle position changes when the shedding cross timing is changed.

The reversal prohibition angle range in the example shown at left is as follows:

C1: (Forward to reverse revolution): 90° to 210°

C2: (Reverse to forward revolution): 30° to 150°

If the weaving machine operating direction is reversed within the angle range, the pattern becomes disorderly. In this range, operating switch functions are restricted partially. (If the switch operation for running, forward inching or reverse inching is in the direction to reverse the weaving machine operating direction, the switch operation is rejected.)

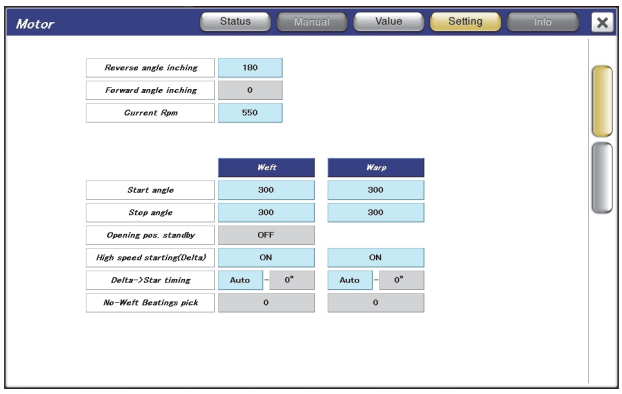
In the reversal (forward to reverse) prohibition angle range, machine operation in the forward direction cannot be reversed to the reverse direction. If the machine forward inching operation is stopped within this range, for example, the reverse inching switch operation is rejected. In this case, first go out of this reversal (forward to reverse) prohibition range by forward inching operation, and perform reverse inching operation then.

In the reversal (reverse to forward) prohibition angle range, machine operation in the reverse direction cannot be reversed to the forward direction. If the machine reverse inching operation is stopped within this range, for example, the forward inching switch operation is rejected. In this case, first go out of this reversal (reverse to forward) prohibition range by reverse inching operation, and perform forward inching operation then.

NOTE: With regard to the forward or reverse inching switch, keep the switch pressed for 3 seconds or more to perform inching in the direction selected by the switch. Forced reversal of the machine operation in this way, however, will cause disorder in the weaving pattern.

NOTE: The displayed angle is not accurate unless the weaving machine is operated for one forward rotation angle or more after the power is on.

[4] Changing the Stop Angle during Inching



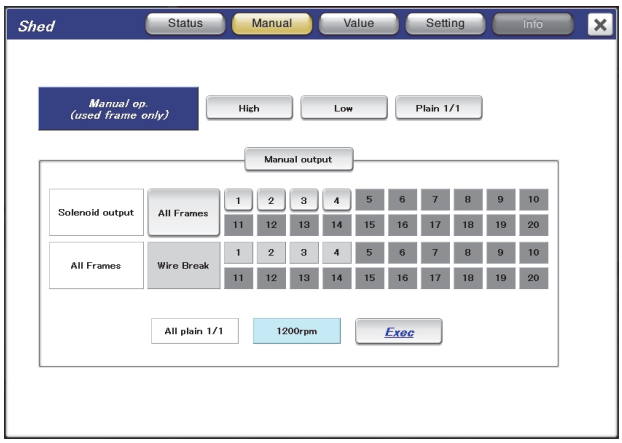
Depending on the shedding cross timing condition, the stop angle during reverse inching may fall within the reversal (reverse to forward) prohibition angle range to disable forward inching from that position.
In that case, touch [Map] - [Motor]. Shift the reverse angle during inching on the displayed screen to change the reverse inching stop angle to outside the reversal (reverse to forward) prohibition angle range.

[5] Recovery from Disorderly Pattern Generation

For recovery from the disorderly pattern generated upon forced reversal in the reversal prohibition angle range, stop the weaving machine at a desired angle after operating it for two revolutions in one direction.

[6] Restarting after Power Failure or All Heald Frame up during Operation

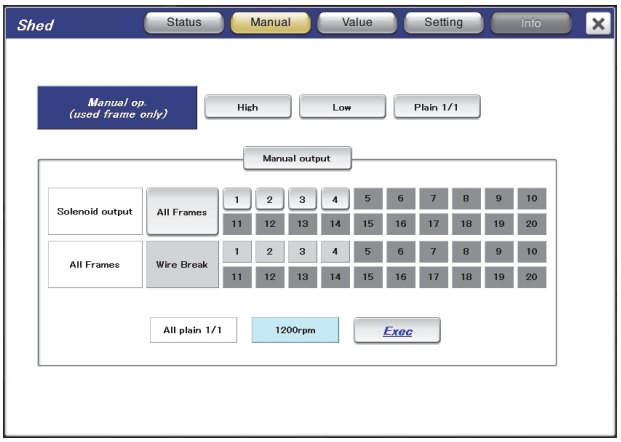
Return the heald frames in their normal positions as follows:



(1) Touch [Map] - [Shedding] - [Manual].
(2) Touch the output to solenoids and all frames.
(3) Select the lowest point in succession, and touch the [ENTER] switch.
(4) Operate the weaving machine in the inching mode to bring about half of the heald frames in use down. (If 16 frames are in use, bring them down by operating two revolutions.)
If inching fails because of a heavy load to the shedding motion, select [Leveling: data setting] and perform inching after selecting a smaller number of frames to be brought down.
(5) Select [Pattern data] and touch the [ENTER] switch.

(6) Operate the weaving machine for two to three rotations by inching operation, and check if shedding is performed as specified by the pattern data.
The pattern data can be checked on the screen displayed by touching the [Map] - [Pattern].

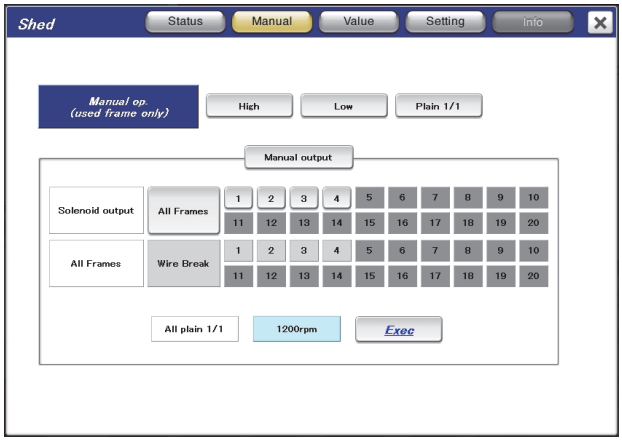
[7] Setting the Dobby Function



Touching [Map] - [Shedding] - [Manual] displays the screen shown at left.
Each setting function is as shown below. For each function, touch the [ENTER] switch after selecting the function to determine the function, and operate the weaving machine for several revolutions to set the selected shedding status.

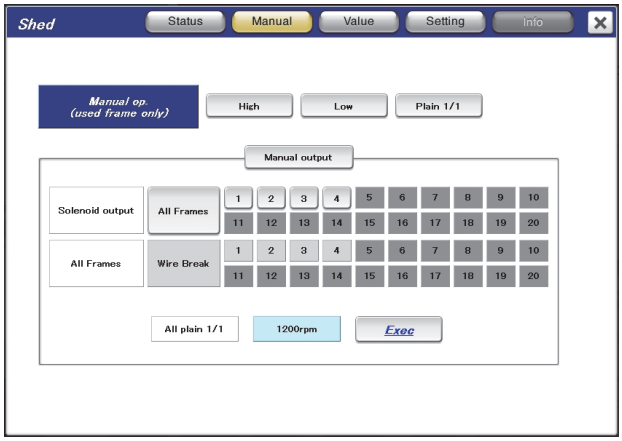
(1) Plain weaving
For selecting the shedding for plain weaving texture.
(2) For selecting the upper shedding at the highest point.
Upper shedding of each 4 frames occurs at a time as the machine is rotated.
(3) For selecting the lower shedding at the lowest point.
Lower shedding of each 8 frames occurs at a time as the machine is operated.
(4) Solenoid output
Electrical outputs to solenoids for either all or specified frames are turned off.

[8] Signal of disconnection



When the solenoid of the dobby is disconnected, the respective frame is displayed in red.

[9] Confirmation mode of solenoid operation



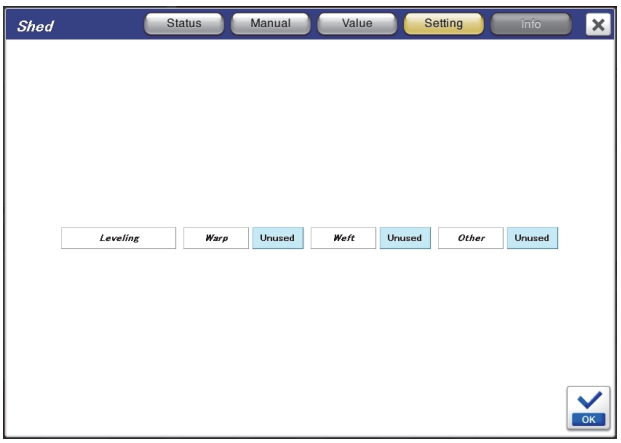
This is to confirm the operation of the solenoid by operating the solenoid of the dobby at a designated number of rotation.

NOTE: Normally, this switch is not used. Even when this is used, this confirmation mode ends after starting the weaving machine that should be prioritized.

[10] Automatic Leveling (Option)

If the weaving machine stops due to a broken warp or broken waste-selvage yarn, recovery will be difficult except when all of the heald frames are almost aligned as in plain weaving.
This automatic leveling function facilitates recovery from machine stop by selecting a plain weave pattern to align all of the heald frames regardless of the current fabric texture. This is also effective in preventing stop marks (thick places, thin places and wavy set marks) for better fabric quality by leveling at the time of a stop.

(1) Function
When the machine stops full automatic operation, the leveling function runs the machine automatically for two picks in the reverse direction, during which it selects a plain weave pattern, and then it stops the machine at the designated stop angle.
If the weaving machine stops due to a broken weft (detected by WF1 or WF2), no automatic leveling occurs.



(2) Selecting the Leveling Type on the Function Panel
Touch [Mapping] - [Shedding] - [Setting] to display the screen shown at left.
The functions of two switches are as follows:
Touch the desired one.

[Warp]
When set as used, the machine stops with automatic leveling only when a broken warp or broken leno-selvage yarn occurs.

[Weft]
When set as used, automatic leveling occurs only when the machine stops due to a broken weft (detected by WF1 or WF2).

[Others]
When set as used, automatic leveling occurs when the machine stops due to a condition other than a broken warp or weft. In other words, automatic leveling occurs for a machine stop due to a broken selvage yarn or by pressing the machine STOP switch as well.

(3) Action upon any erroneous operation

1. If you turn the weaving machine (which underwent automatic leveling and came to a stop) from the current pick beyond 0° in the reverse direction:
   The heald frames will return to the previous pattern applied for the latest pick preceding the machine stop. Therefore, turn the machine in the reverse direction to approximately 180° and pull out one weft before starting the machine.
2. If you turn the weaving machine (which underwent automatic leveling and came to a stop) from the current pick beyond 0° in the forward direction:
   Turn the machine out of the leveling stop pick in the reverse direction and pull out one weft before starting the machine.
3. If automatic reverse operation following the machine stop after automatic operation is terminated halfway by the optical safety sensor actuated or the STOP switch pressed:
   Turn the machine out of the leveling stop pick in the reverse direction and pull out one weft before starting the machine.

In the above cases, take the appropriate actions specified above; otherwise, a pattern missing will result.

ATTENTION: Follow the steps below if main control software replacement or RAM clearing becomes necessary. Be especially careful because the weaving pattern may become disorderly or all of the heald frames go up if these steps are not followed.

(1) Be sure to turn the Automatic leveling [OFF] on the function panel.
(2) Start the automatic operation.
(3) Stop the machine and call up the pattern setting screen to make a note of the start position.
(4) Replace the main control software or clear the RAMs.
(5) Set up heald frames according to your needs.
(6) Perform starting setting by touching [Map] - [Motor].
(7) Turn the machine in the reverse direction and pull out one weft.
(8) Start the automatic operation