Section 8.1
Full-leno Selvage Device

8.1 Full-leno Selvage Device

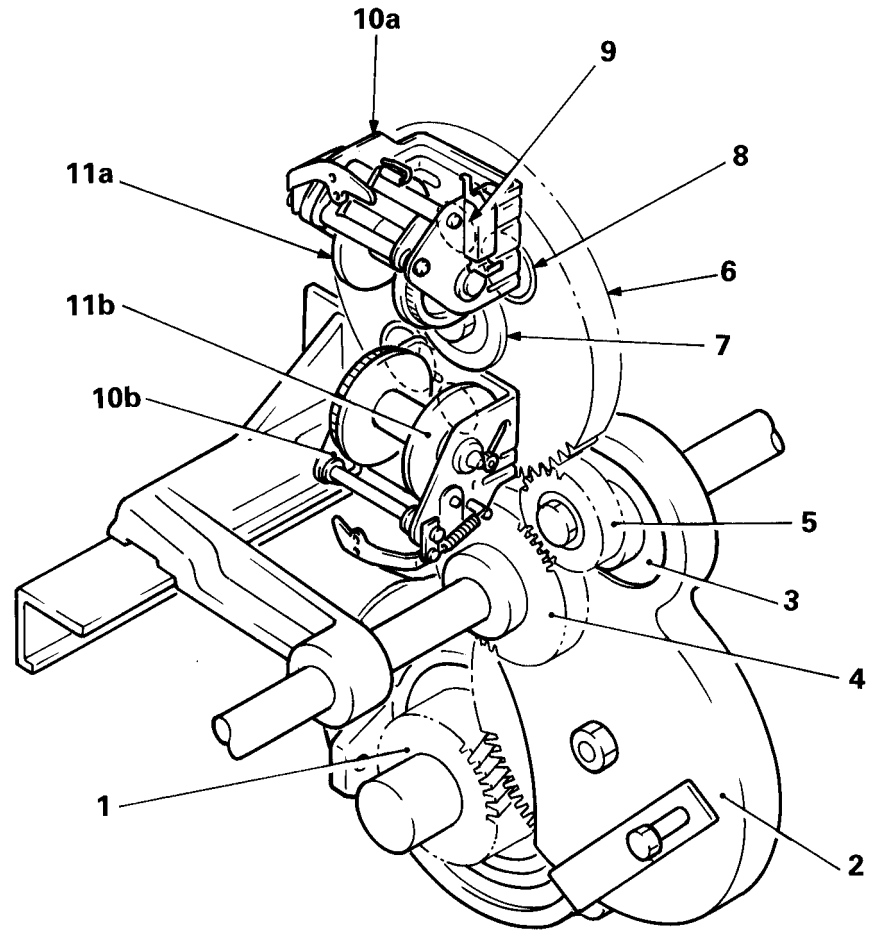
This device binds two leno yarns with every weft yarn at each side of the fabric to produce a firm selvage construction which will not become loose if weft yarns are cut.

Sequence of Movement

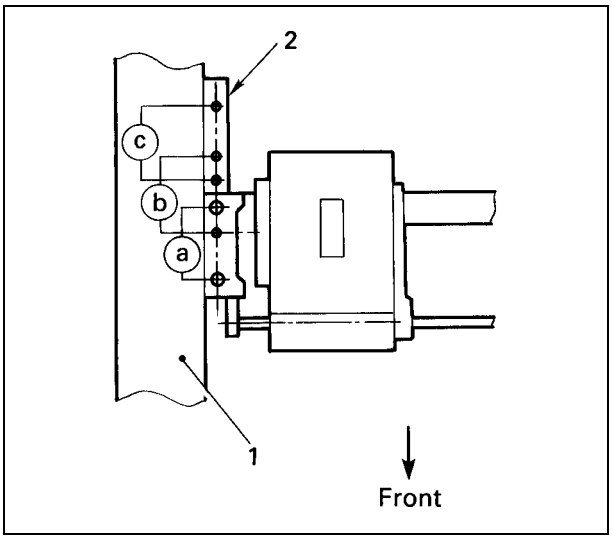
(1) The rotational force is transmitted via the gear train of gears **1**, **2**, **3**, **4**, and **5**, to leno selvage gear **6**.

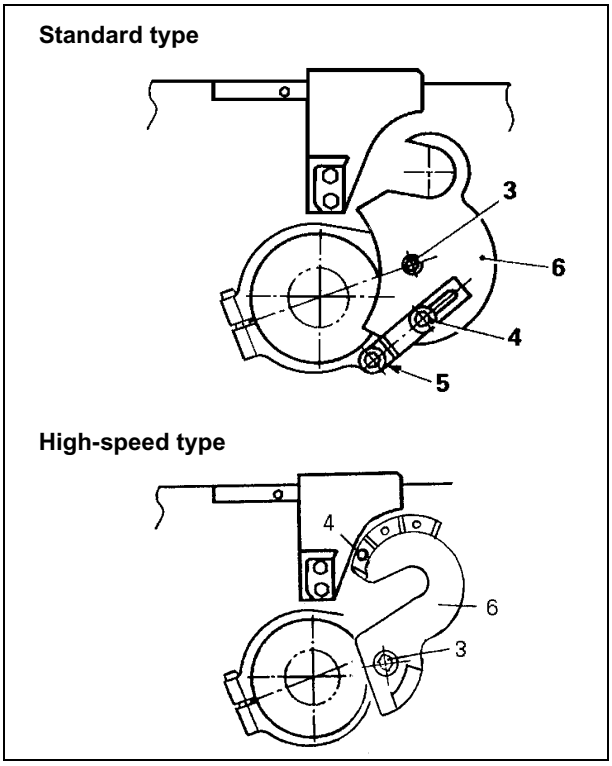
(2) Since leno selvage gear **6** and stationary gear **7** are set on the same shaft, stationary gear **7** also rotates so as to engage idle gears **8** and planetary gears **9** with each other. Consequently, bobbin holders **10a** and **10b** rotate.

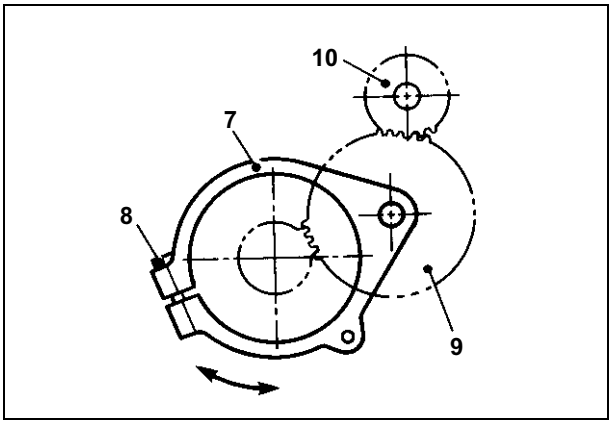
(3) Leno yarns fed from bobbins **11a** and **11b** go up and down to produce a full leno selvage.



RH Full-leno Selvage Device







8.1.1 Installation, Adjustment, and Preparatory Operation

[1] Front-to-rear positioning

According to the number of the heald frames to be used, select a set of the mounting holes provided in side bracket **2** for supporting the leno selvage device, by referring to the table below. "**1**" in the figure at left indicates the side frame.

The position of the leno selvage device can be adjusted at the three levels by selecting the mounting holes **a**, **b**, or **c** as listed below.

Mounting holes	No. of heald frames
a	Up to 4 frames
b	5 to 7 frames
c	8 to 10 frames

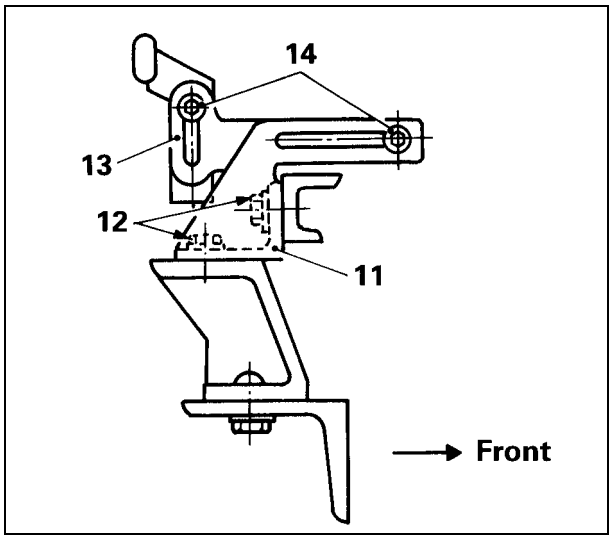
NOTE: When using more heald frames (max. 16) than listed above in those machines equipped with a dobby, you can move side bracket **2** itself to the rear for mounting the leno selvage device.

(1) Press the emergency stop button down until it locks itself and the machine.

(2) Standard type
Remove fixing bolts **3** and **4**, loosen bolt **5**, and take off gear cover **6**.

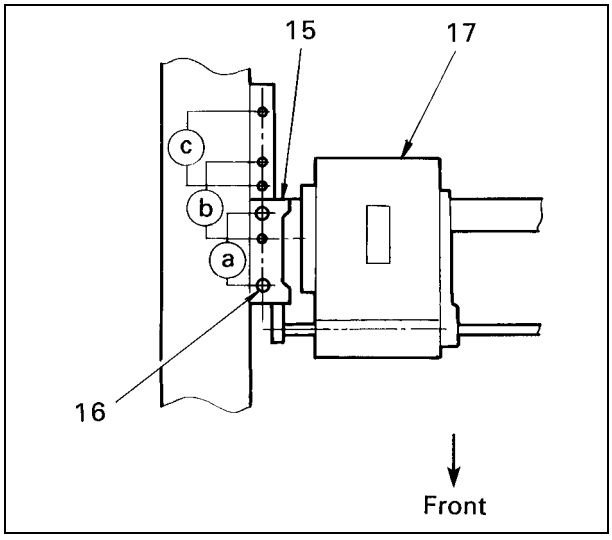
High-speed type
Remove fixing bolts **3** and **4**, then take off gear cover (resin) **6**.

(3) Loosen fixing bolt **8** on intermediate bracket **7**, then disengage intermediate gear **9** from drive gear **10**.

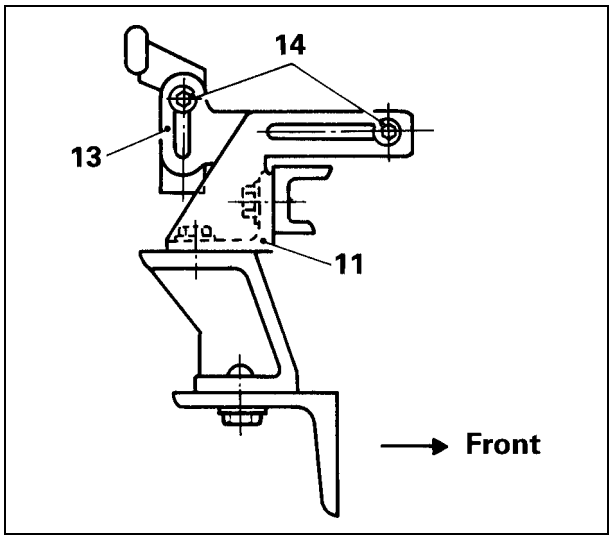


(4) Remove fixing bolts **12** from middle support **11** at the middle of the weaving machine, then loosen fixing bolts **14** of connector **13**.

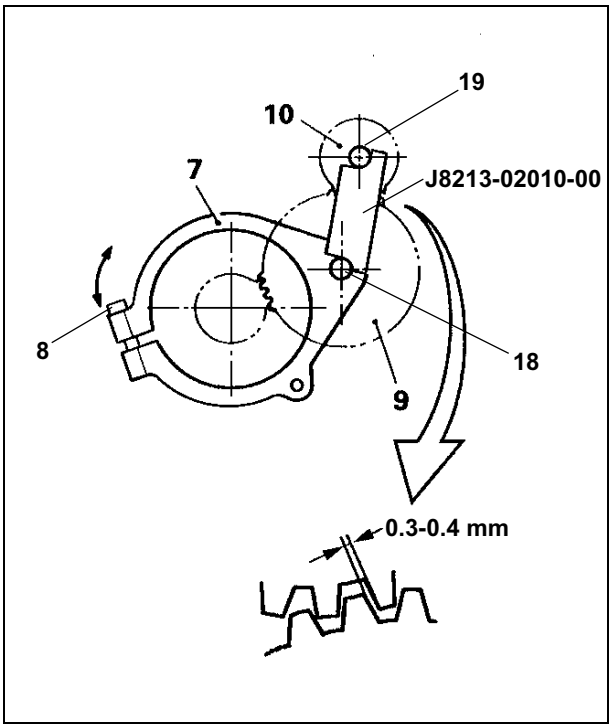
NOTE: Take care during this removal operation, since middle support **11** and connector **13** are linked to the warp detector.

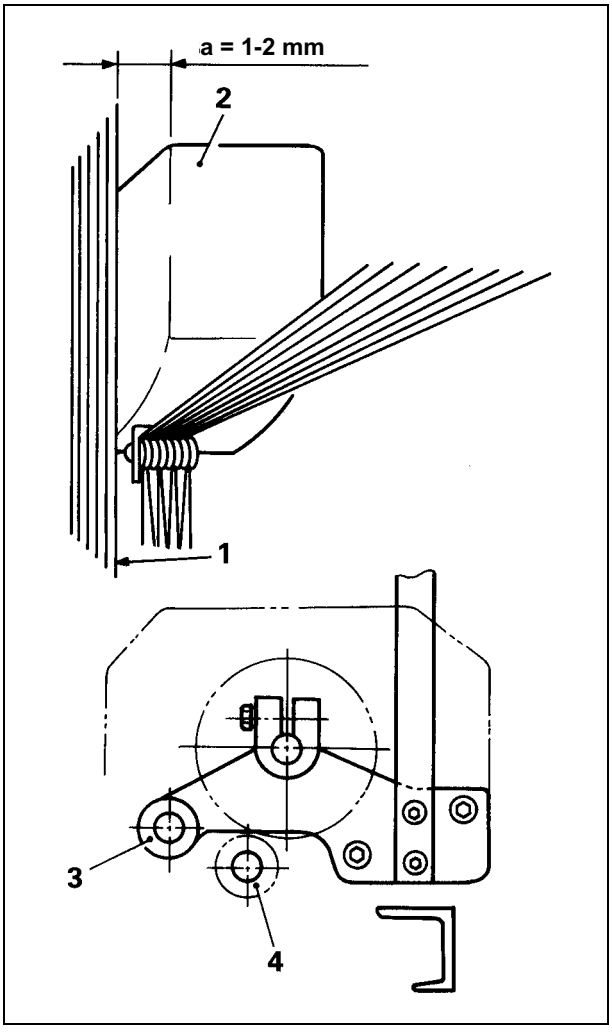


(5) Remove fixing bolts **16** from stay bracket **15**, then install the full-leno selvage device **17** into place.



(6) Reinstall middle support **11**, connector **13**, and stay bracket **15**.





(7) Remove nut **18** from intermediate gear **9**, then set the nut gauge* onto gear **9** instead and tighten it.

* Nut gauge:
J8213-03010-00 (Standard type)
J8213-03020-00 (High-speed type)

(8) Apply the plate gauge (J8213-02010-00) as shown at left, then adjust intermediate bracket **7** so that the plate gauge becomes fitted over drive shaft **19** and the shaft of the nut gauge. Tighten bolt **8**.

If a high-speed type of intermediate gear **9** is used, loosen the slotted-head bolt of drive gear **10** and move the gear inwards so that the plate gauge becomes fitted over drive shaft **19** and the shaft of the nut gauge.

This adjustment using these gauges brings 0.3- to 0.4-mm backlash between intermediate gear **9** and drive gear **10**.

(9) Remove the plate gauge and nut gauge, then set the nut removed in step (7).
If a high-speed type of intermediate gear **9** is used, move drive gear **10** back to the original position and tighten the slotted-head bolt.

(10) Reinstall gear cover **6**.

NOTE: Take care not to let the gear cover interfere with the gear teeth.

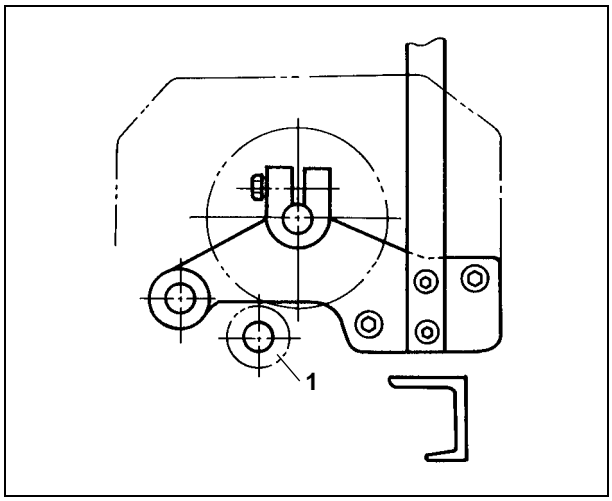
[2] Right-to-left positioning

Shift leno selvage holder bracket **3** and drive gear **4** to the right and left to provide 1 to 2 mm clearance "**a**" between warp ends **1** and leno selvage cover **2**.

[3] Timing adjustment

The table below lists the standard crank timing at which the upper and lower leno yarns fed from the full-leno selvage device align with each other.

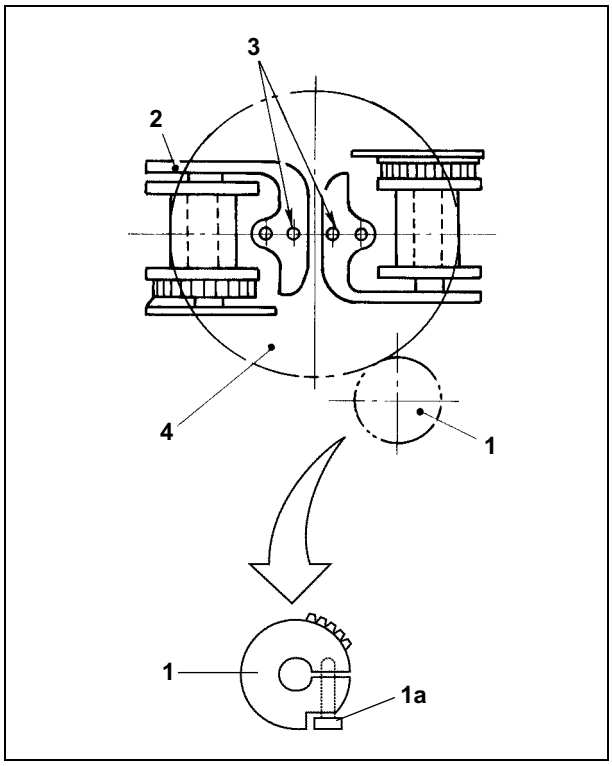
Full leno selvage device	Crank angle
At the LH side of the machine	280°
At the RH side of the machine	10°



(1) Turn the weaving machine manually up to the angle specified above.

(2) Loosen bolt **1a** on drive gear **1** at each of the right and left full-leno selvage devices.

NOTE: If bolt **1a** is mounted at a location where it is not easy to loosen the bolt, it means that the previous adjustment was not correct. Take care when tightening bolt **1a** in step (4).



(3) Turn leno bobbin holder **2** by hand to align two binding eyes **3** horizontally.

(4) Make sure that the end of each drive gear **1** is flush with that of leno selvage wheel gear **4**, then tighten bolt **1a** of drive gear **1**.

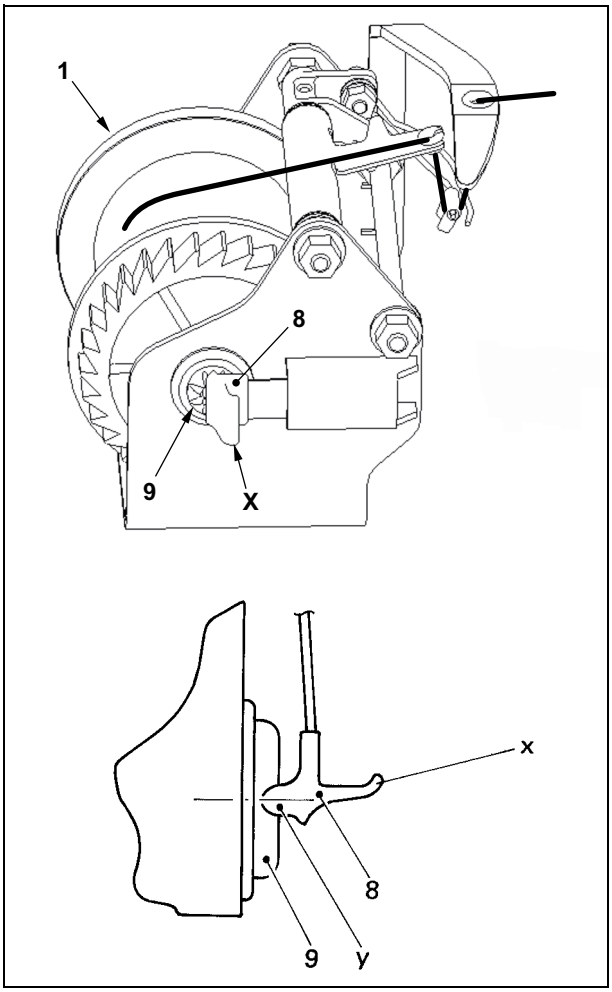
(5) Turn the machine in the forward direction by hand and check that bolt **1a** on each drive gear **1** almost faces down at the maximum shed opening, as illustrated at left.

NOTE: If bolt **1a** does not face down, it will come into contact with leno bobbin holder **2**, resulting in a broken leno bobbin holder.

[4] Yarn threading and the related operations

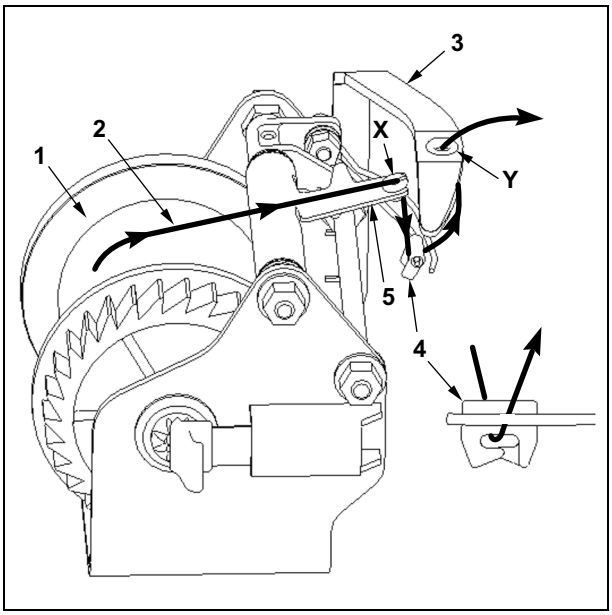
[4.1] How to set the leno bobbin

Set leno bobbin **1**. Then, pull knob "**x**" of bobbin rod stopper **8** and fit the convex section "**y**" into the concave section provided on the head of bobbin rod **9**.



NOTE: Make sure that bobbin rod stopper **8** catches bobbin rod **9** firmly. Running the machine without fitting stopper **8** into bobbin rod **9** will damage the full-leno selvage device. Such a mistake is the most frequent cause of the damaged full-leno selvage device.

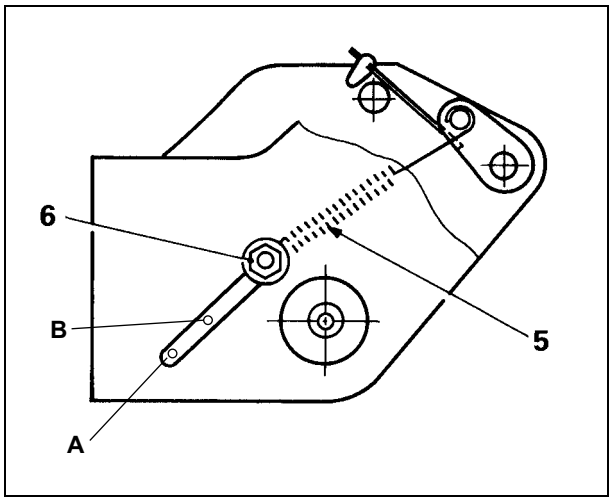
[4.2] How to thread yarn through the bobbin holder



(1) Pull out leno yarn **2** from leno bobbin **1** and thread it downwards through hole "**x**" provided in claw arm **5**.

(2) Hook the yarn on tenser arm **4**.

(3) Thread the yarn upwards through hole "**y**" in binding eye **3**.



[4.3] How to adjust the leno yarn tension

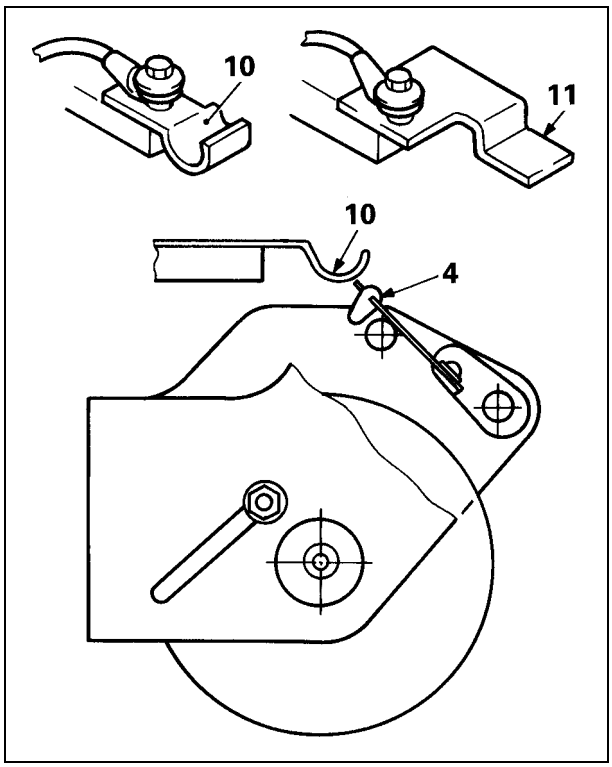
In order to make the tension of leno yarn match the warp tension, adjust the yarn tension with spring **5** and secure it with fixing nut **6** at each of the leno selvage devices.

For typical leno yarn tension, refer to the table below.

To construct the well-tightened selvages at both sides of the fabric, tension spring **5** at the left leno selvage device should be tensed harder.

TIP: Standard Leno Yarn Tension

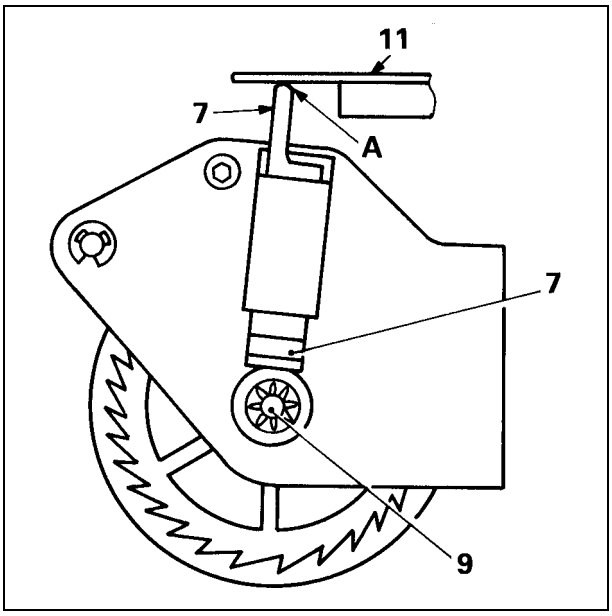
Leno selvage device	Yarn tension	Fixing nut position
At the left side of the weaving machine	50 g	"**A**" (Stronger spring force)
At the right side of the weaving machine	20-30 g	"**B**" (Medium spring force)



[4.4] Sensor plates for stop motion

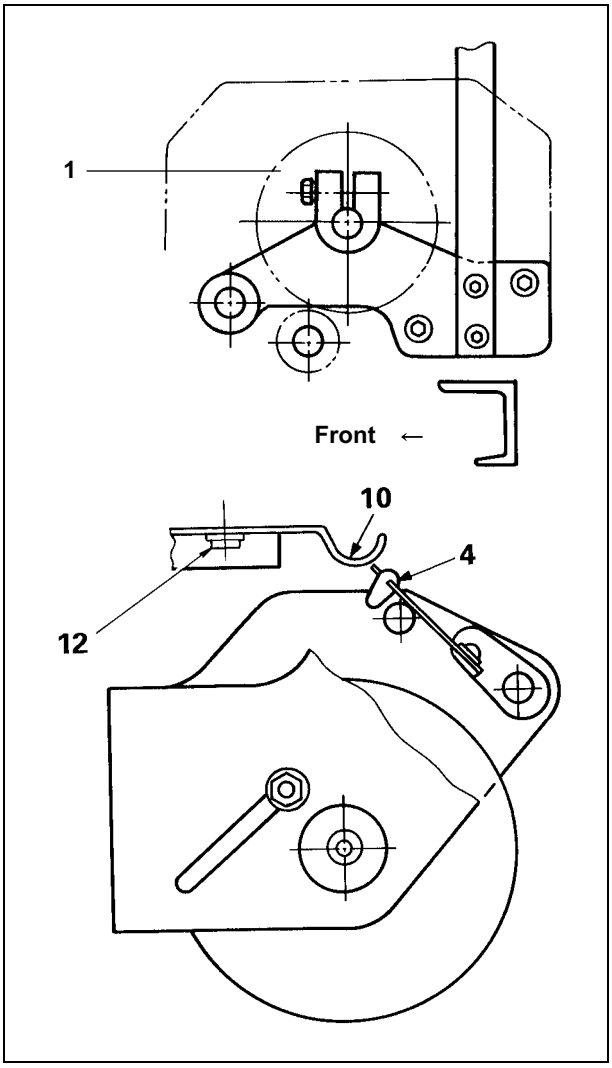
The leno selvage device has two sensor plates: round sensor plate **10** and straight sensor plate **11** for stop motion. What follows is a brief description of these functions.

(1) If a leno yarn is broken, tenser arm **4** lightly pushes the round sensor plate **10** to stop the machine.



(2) If the operator attempts to run the weaving machine when bobbin rod stopper **7** does not catch bobbin rod **9** firmly, the tip end **A** of bobbin rod stopper **7** lightly pushes the straight sensor plate **11** to stop the machine.
Then, the same indication as the “full-leno selvage stop” will be shown on the signal indicator and the function panel.

NOTE: If a full-leno selvage stop occurs (e.g. during reverse inching caused by the START switch after bobbin replacement), be sure to check whether the bobbin rod stopper catches the bobbin rod firmly.

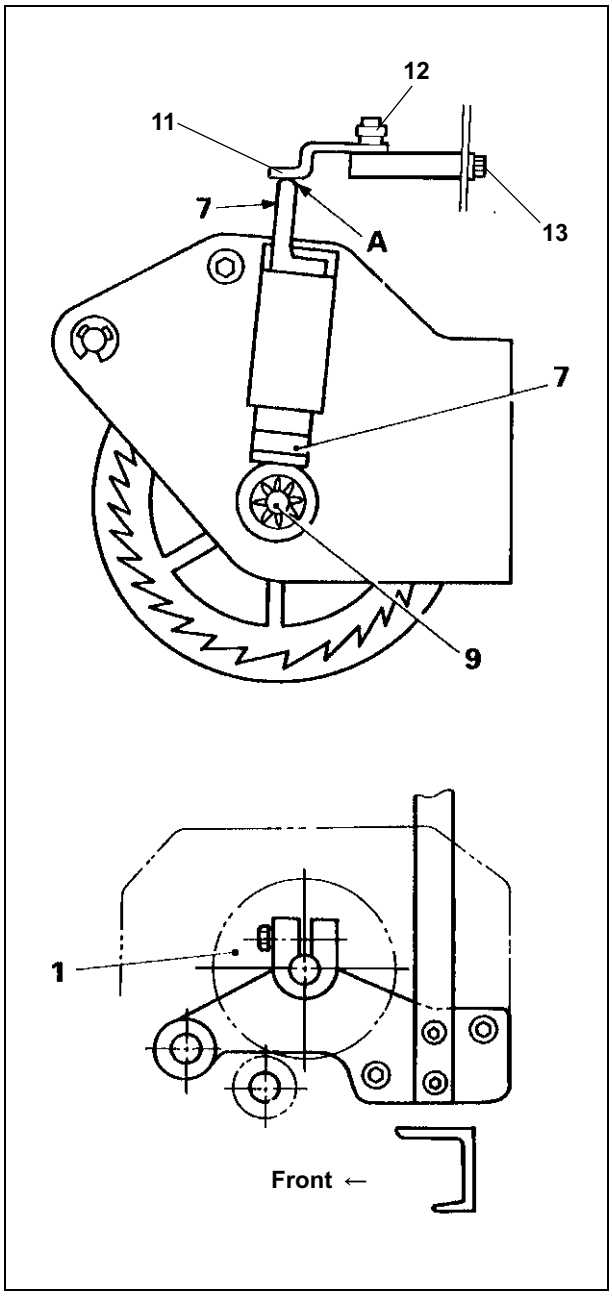


The sensor plates for stop motion may be adjusted according to the procedure given below.

(1) Release the tension of leno yarns.

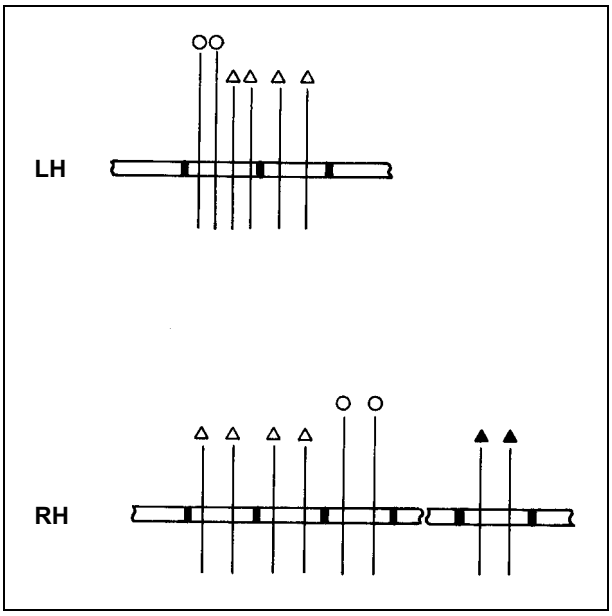
(2) Turn leno selvage wheel gear **1** until tenser arm **4** comes in light contact with round sensor plate **10**, then secure the sensor plate with fixing bolt **12**.

(3) Tense the leno yarns and check that tenser arm **4** is not in contact with round sensor plate **10**.



(4) Remove bobbin rod stopper **7** from bobbin rod **9**.

(5) Turn leno selvage wheel gear **1** until the tip end **A** of bobbin rod stopper **7** comes in light contact with straight sensor plate **11**, then secure the sensor plate with fixing bolts **12** and **13**.



[5] Threading leno yarns through the reed

Yarn type symbols:

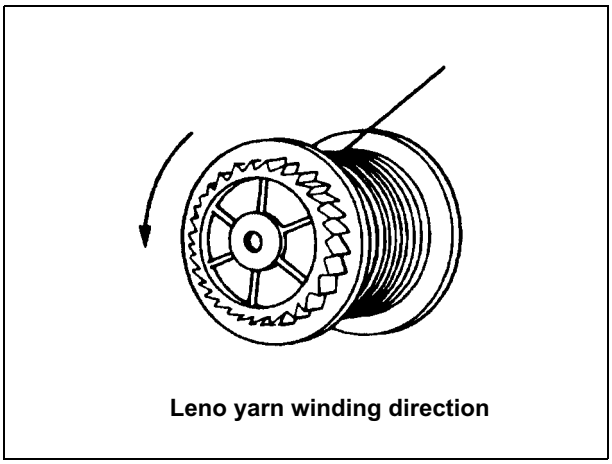
○ Leno yarn

△ Ground yarn

▲ Waste-selvage yarn

(1) At the left side of the machine:
Thread leno yarns ○ through the same dent through which the leftmost ground yarns △ are drawn.

(2) At the right side of the machine:
Thread leno yarns ○ through an empty dent adjacent to the one through which the rightmost ground yarns △ are drawn.



Leno yarn winding direction

[6] Preparation of leno yarn

(1) Yarn specifications for full-leno selvage devices

- Yarn type: Same type of two-ply yarn as that for the ground warp (Primary twist: Z-twist, Final twist: S-twist)
- Yarn number count:
  Almost the same as for the ground warp or slightly greater than that for the ground warp (thinner than the ground warp)

If using the same type of yarn as for ground warp results in insufficient strength of the full-leno selvage, it is recommended that finished yarn of 50d or 75d be used, provided that no problem occurs in the subsequent processes.

(2) The yarn winding direction onto the leno bobbin is as shown at left.

NOTE: When using the special winder for winding yarn onto the leno bobbin, do not increase the yarn take-up tension excessively by the winder, particularly when filament yarn is used. Otherwise, the leno bobbin may be deformed, making it impossible to set the bobbin into the bobbin holder.