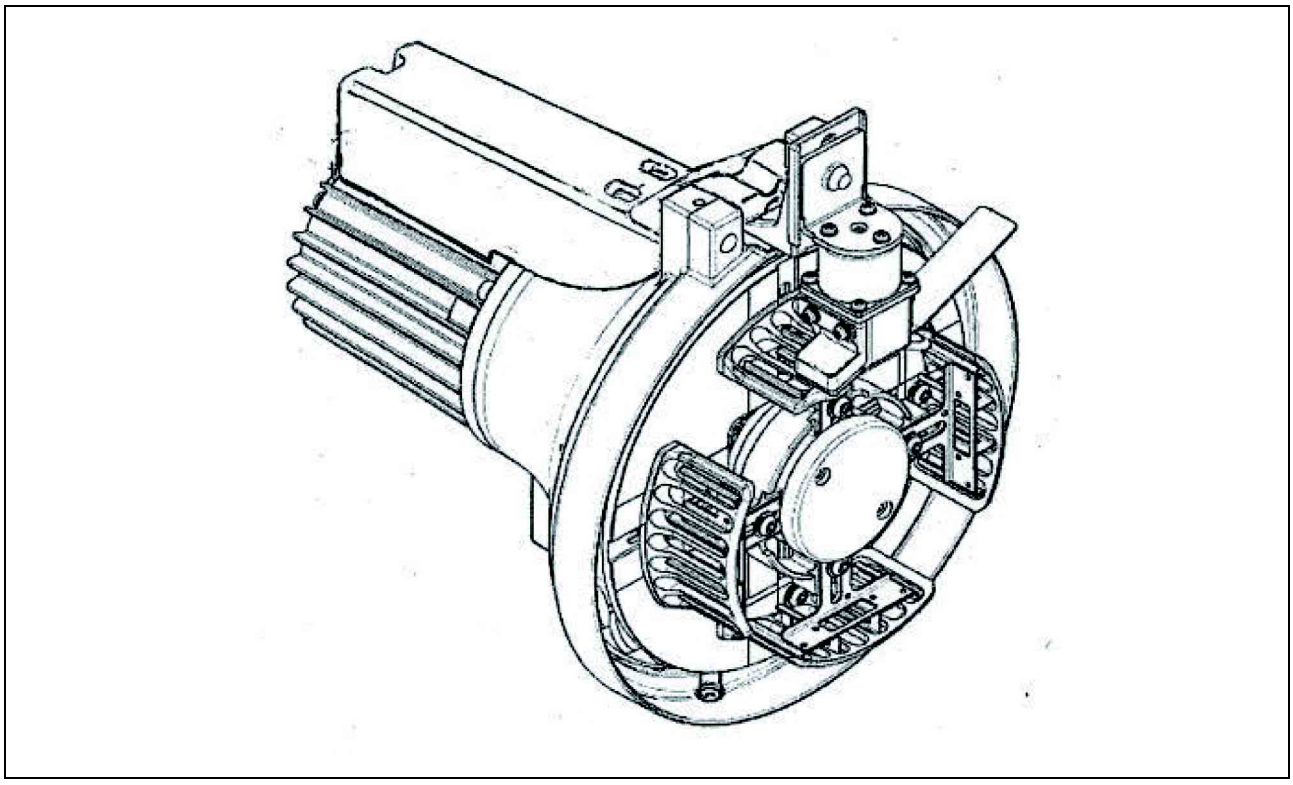
Section 5.11
Oscillatory Electric Drum

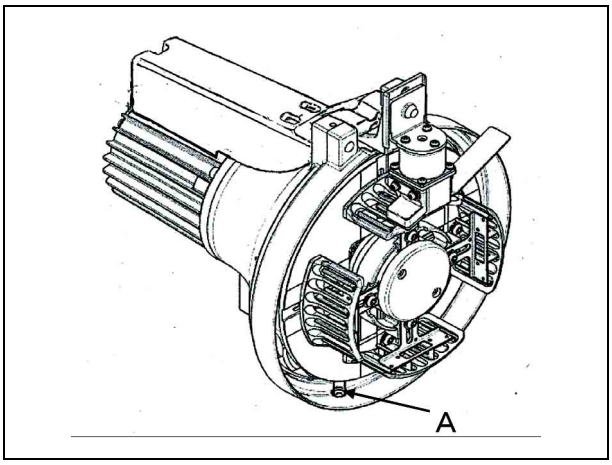
5.11 Oscillatory Electric Drum

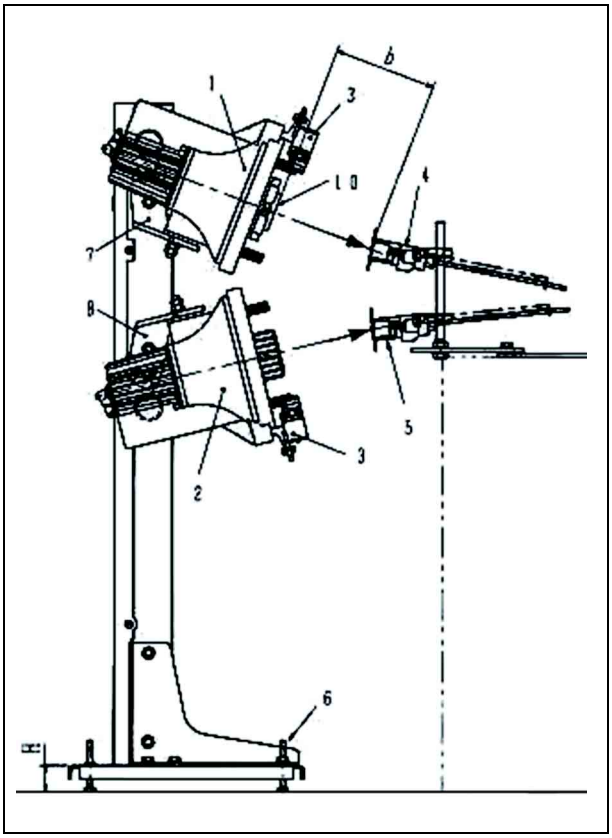
The weft that is released from the cheese is wound around the measuring band of the oscillatory electric drum and is accumulated.

The feature of the oscillatory electric drum is gradually transferring the weft that is wound around the measuring band with the oscillating bands towards the nozzles in order to widen the winding interval. By widening the winding interval properly, weft will be smoothly separated and jetted into warps when the electromagnetic pin is released.

Due to the features above, the oscillatory electric drum should be used for weaving with fluffy weft yarns such as wool yarn and T/R.







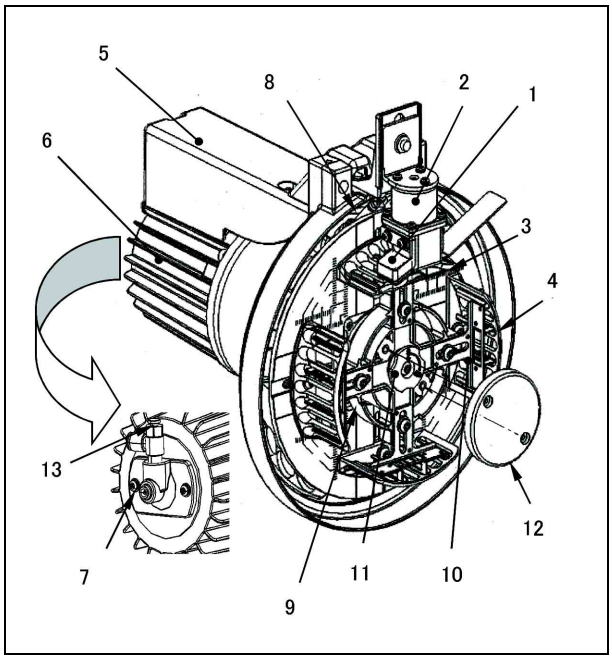
5.11.1 Electric Drum and Cheese Stand

⚠ CAUTION

NEVER access or touch winding arm **A** which cannot be seen when the weaving machine is in operation. The arm is in ultra-high speed rotation.

Positioning procedures of the electric drum(s), cheese stand(s), and drum head(s) are the same as for the standard electric drum.
Refer to 5.1.1 [1-3] for details.

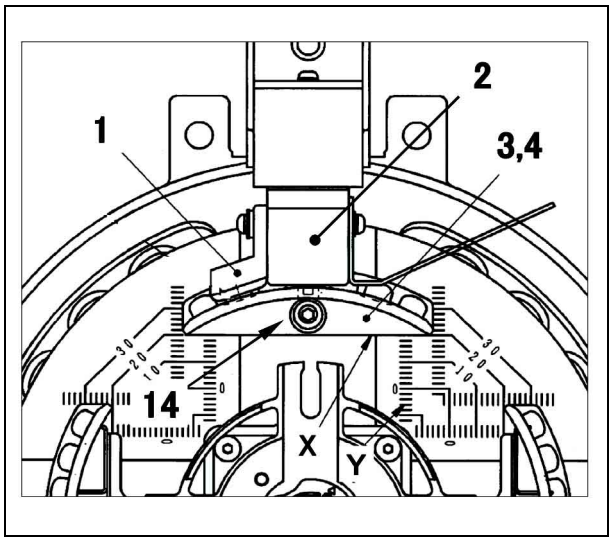
Ensure to position the drum stand against the tandem nozzle with no balloon cover so that dimensions b between drum head 1&2 and tandem nozzle 4&5 (dimensions between oscillating base cover 10 - tandem nozzles) become 150-350 mm.



5.11.2 Drum head

[1] Names of components

1: Winding sensor
2: Electromagnetic pin
3: Measuring band (with a reflector)
4: Measuring bands (three bands)
5: Head cover
6: Motor
7: Air nozzle
8: Winding arm
9: Oscillating base
10: Oscillating band (1 pc)
11: Oscillating washer
12: Oscillating base cover
13: Push button



[2] Function and adjustment of drum head

⚠ CAUTION

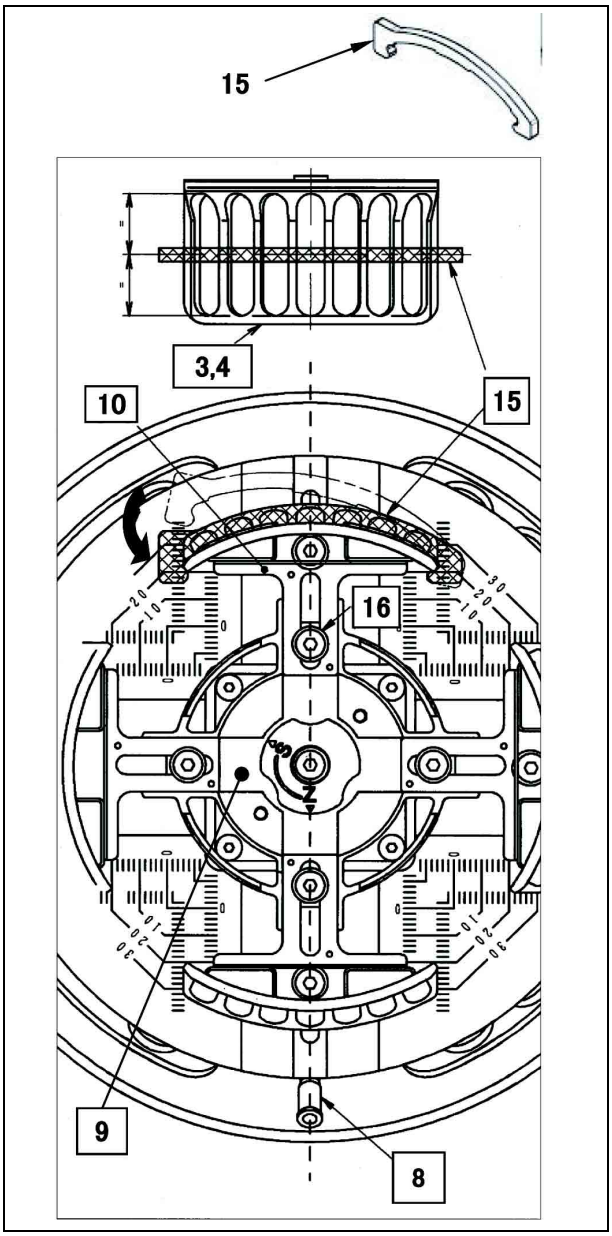
Ensure to lock the emergency stop switch before adjusting the drum head. This is to prevent sudden rotation of the winding arm that may be caused by a malfunction of switches.

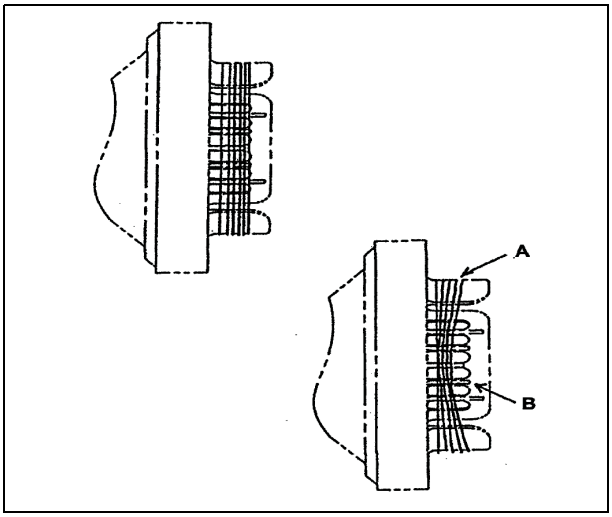
Adjusting balloon sensor 1 and electromagnetic pin 2 is the same as for the standard electric drum. Refer to Section 5.1.2, [2].

[2.1] Adjusting the measuring length

- The outlined quantity of the length measurement is shown in the 5.11.2 [3] list of the quantity of length measurement on the following page.

(1) Determine the lower-part straight line “X” of measuring bands 3 and 4 according to graduation of scale "Y" that is obtained from the list of quantity of length measurement, and then fasten bolt 14.





[2.2] Adjusting Oscillating Band 10

- Move the winding position toward the side of the electromagnetic pin, to prevent for yarn that is wound around the measuring band to overlap.

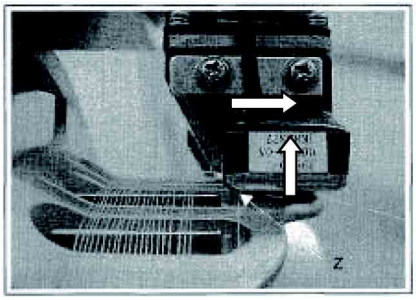
(1) Temporarily fasten oscillating band 10 to base 9 with bolt 16.

(2) Mount set tool 15 (J8211-20020-00) in the center part of the long holes of measuring bands 3 and 4.

(3) Move winding arm 8 to the other side of oscillating belt 10.

(4) Fasten bolt 16 while butting oscillating band 10 with the inside of set tool 15 without a gap in between.

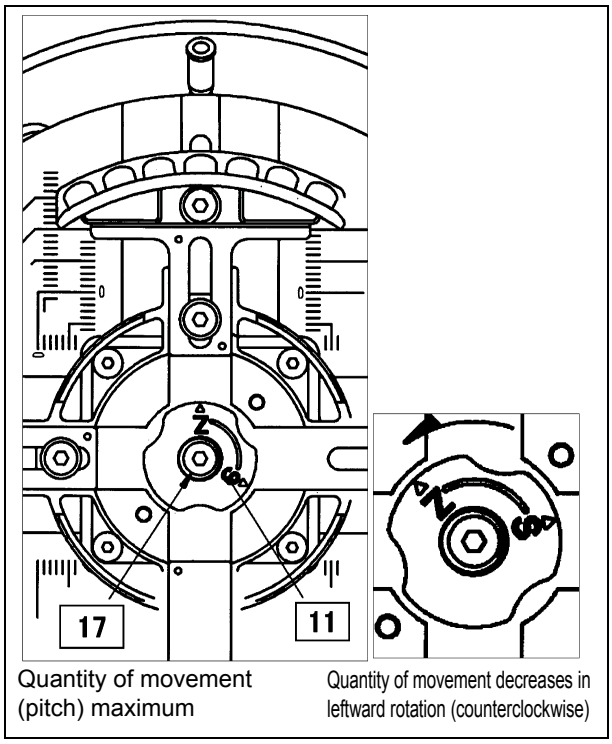
- When there is a problem in releasing the weft due to the narrow gap between the oscillating band and the balloon sensor, adjust the position of the sensor in ↑ direction with the long hole for mounting the sensor.
  When a weft is stuck in gap Z due to thickness, widen the gap by moving the sensor toward the side of the main nozzle (in → direction).



[2.3] Checking the weft winding posture on the measuring bands during operation

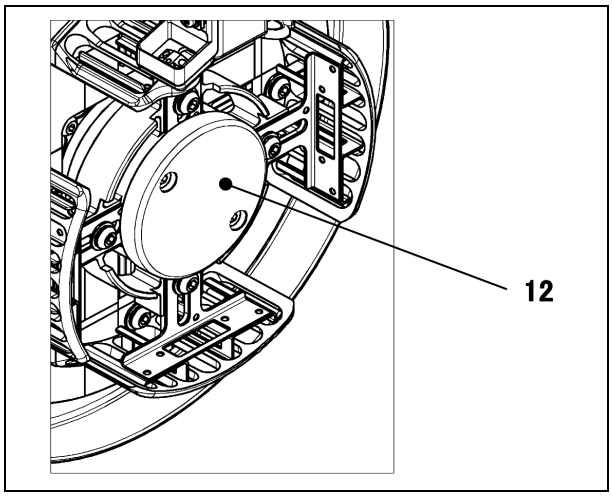
(1) When the machine is in operation, confirm that the wefts on all measuring bands are wound at almost equal pitch.

(2) When the winding pitches of A and B on the measuring bands are not the same as shown at left, adjust them again as instructed in the previous item [2.2].



Quantity of movement (pitch) maximum

Quantity of movement decreases in leftward rotation (counterclockwise)



[2.4] Adjusting oscillating washer 11

- Adjust the quantity of movement (pitch) of the yarn that is wound around the measuring band.

(1) Loosen bolt 17 which fixes the oscillating washer while holding the winding arm.

(2) When using the weft of Z (left) twisted, set "Z" of the oscillating washer in the direction of the winding arm.
   - The quantity of movement decreases by rotating oscillating washer 11 leftward (counterclockwise).
   - The quantity of movement is minimized when setting it in the middle of "Z" and "S".

(3) Fasten set bolt 17 surely after adjustment.
   - The clamping torque is 4.3-5.9 N•m (44-60 kg•cm).

[2.5] Mounting oscillating base cover 12

- This is to protect the rotary unit as a wall in order to prevent winding of the yarn around oscillating washer 11.
  After adjustment is completed, be sure to attach cover 12.

[3] Measuring length by oscillatory electric drum

- The measuring length of the oscillatory electric drum that applies the special band is not the same as the one for the standard drum.

■ Oscillatory electric drum

Note1. The measuring band with oscillation comes in one size.

2. Note that a scale is different from the one for the standard drum (ceramic band).

Unit: mm

Number of rolls / Scale	2 Rolls	3 Rolls	4 Rolls	5 Rolls	6 Rolls	7 Rolls
0	882	1323	1765	2206	2647	3088
2	905	1357	1810	2262	2715	3167
4	928	1391	1855	2319	2783	3246
6	950	1425	1900	2375	2851	3326
8	973	1459	1946	2432	2918	3405
10	995	1493	1991	2489	2986	3484
12	1018	1527	2036	2545	3054	3563
14	1041	1561	2081	2602	3122	3642
16	1063	1595	2127	2658	3190	3722
18	1086	1629	2172	2715	3258	3801
20	1109	1663	2217	2771	3326	3880
22	1131	1697	2262	2828	3394	3959
24	1154	1731	2308	2885	3462	4038
26	1176	1765	2353	2941	3529	
28	1199	1799	2398	2998	3597	
30	1222	1833	2443	3054	3665	
32	1244	1867	2489	3111	3733	
34	1267	1900	2534	3167	3801	
36	1290	1934	2579	3224	3869	
38	1312	1968	2624	3281	3937	
39	1324	1985	2647	3309	3971	

NOTE: Measuring length = width of reed drawing-in + length of waste selvage

Adjust the quantity of measurement based on the list above as standard. Note that the figures in the above list are the calculated values and actual lengths are slightly shorter due to tension of the yarn.

[4] Reversing the rotational direction of the oscillatory electric drum

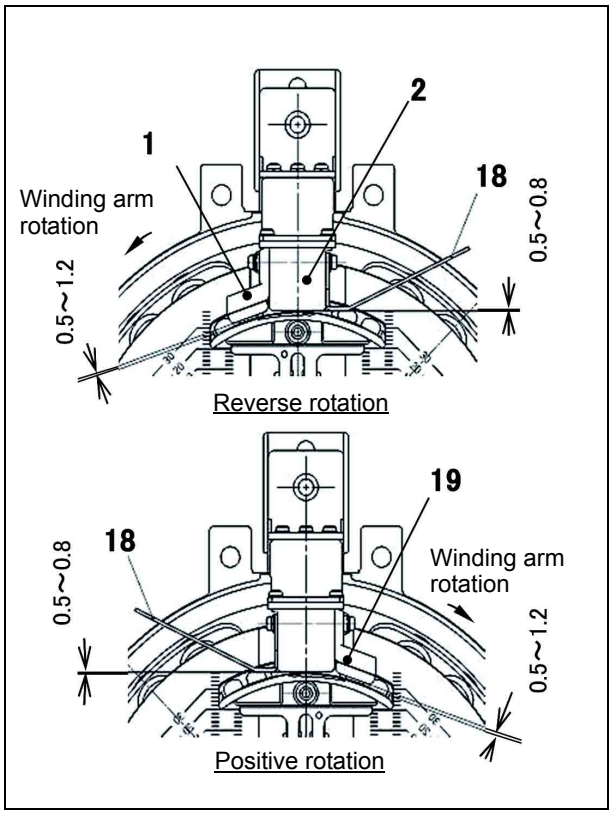
The single weft is generally Z (left) twisted.
Therefore, the drum rotates leftward (counterclockwise) towards the drum as standard.
When applying the weft of S (right) twisted, change the direction of the rotation of the drum head from leftward (counterclockwise) → rightward (clockwise).

In this case, the following changes are necessary.

NOTE: No need to change the measuring band that serves for both normal and reverse rotation.

[4.1] Reversing the rotational direction of the winding arm (motor)

The change of the rotatory direction can be set on the function panel (cf. Chapter 5.1,5).



[4.2] Replacing the winding sensor

(1) Switch OFF the main power.

(2) Remove the connector of the winding sensor cable from the control board that is installed in the drum stand.

(3) Remove winding sensor 1 from electromagnetic pin 2.

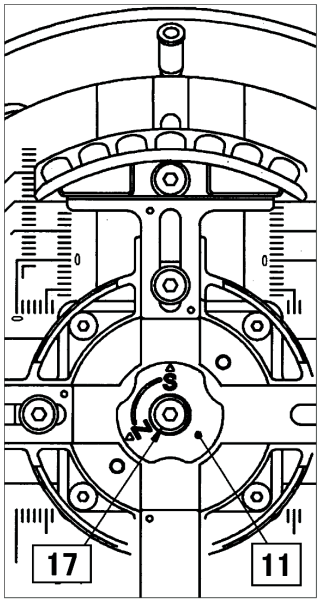
(4) Re-mount guide plate 18 from the right to the left side of the electromagnetic pin.

(5) Mount balloon sensor 19 for reverse rotation to the electromagnetic pin, and connect the connector to the control board.

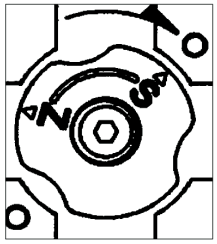
(6) Turn on the main power.

NOTE:

- Because balloon sensor 19 is an optional part, purchase it as needed.
- After all steps for changing the rotation direction of EDP are finished, rotate the weaving machine, touch [INFO], and confirm the numerical values displayed in balloon 1-5 are normal.



Quantity of movement (pitch) maximum



Quantity of movement decreases in rightward rotation (clockwise)

[4.3] Adjusting oscillating washer 11

(1) Loosen bolt 17 that fixes the oscillating washer while holding the winding arm.

(2) When using the weft of S (right) twisted, set "S" of the oscillating washer in the direction of the winding arm.
- The quantity of movement decreases by rotating oscillating washer 11 rightward (clockwise).
- The quantity of movement is minimized when setting it in the middle of "Z" and "S".

(3) Fasten set bolt 17 surely after adjustment.
- The clamping torque is 4.3-5.9 N•m (44-60 kg•cm).