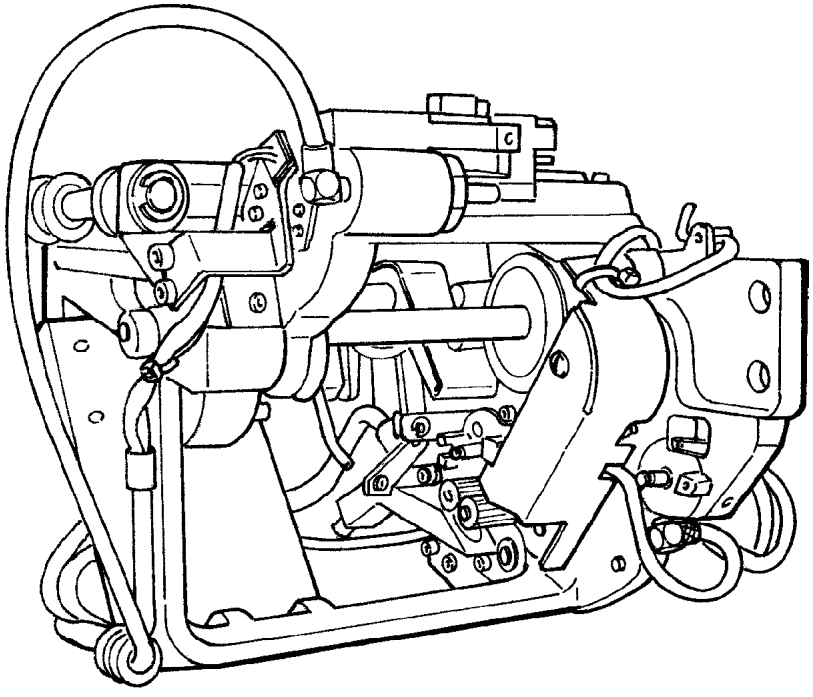
JUKI

Automatic Bobbin Winding and Feeding Device

AW-2

ENGINEER'S MANUAL



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PREFACE

This Engineer's Manual is written for the technical personnel who are responsible for the service and maintenance of the machine.

The Instruction Manual for these machines intended for the maintenance personnel and operators at an apparel factory contains operating instructions in detail. And this manual describes "Standard Adjustment", Adjustment Procedures", "Results of Improper Adjustment", and other important information which are not covered in the Instruction Manual.

It is advisable to use the relevant Instruction Manual and Parts List together with this Engineer's Manual when carrying out the maintenance of these machines.

This manual gives the "Standard Adjustment" on the former page under which the most basic adjustment value is described and on the latter page the "Results of Improper Adjustment" under which stitching errors and troubles arising from mechanical failures and "How To Adjust" are described.

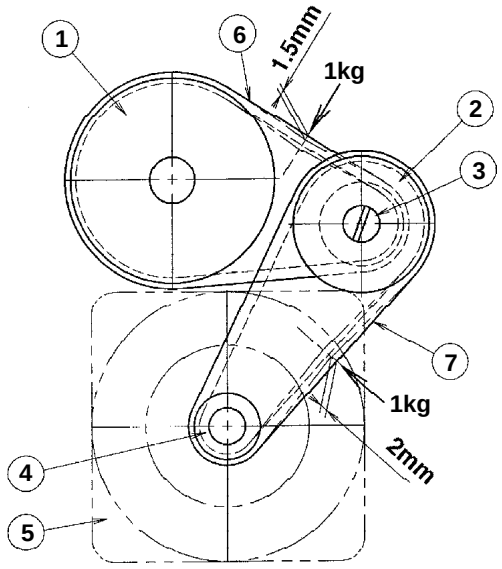
CONTENTS

4. STANDARD ADJUSTMENT

Standard Adjustment

(1) Rotating belt tension

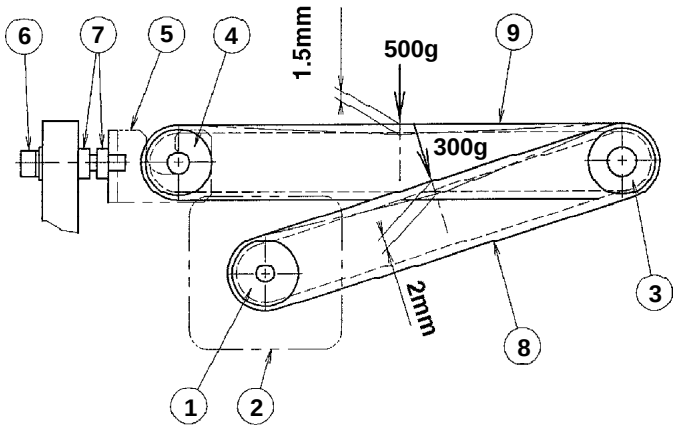
- Adjust so that belt sags 1.5 mm with a 9.8N (1 kgf) load and so that belt sags 2 mm with a 9.8N (1 kgf) load.
- Apply a load to the center between the centers of the respective pulleys to adjust the belt tension.



1. Rotating pulley
2. Rotating idler pulley asm.
3. Rotating idler shaft
4. Rotating motor pulley
5. Rotating motor
6. Timing belt (P=192)
7. Timing belt (P=180)

(2) Horizontal feed belt tension

- Adjust so that belt sags 2 mm with a 2.94N (300gf) load and so that belt sags 1.5 mm with a 4.9N (500gf) load.
- Apply a load in the center between the centers of the respective pulleys to adjust the belt tension.



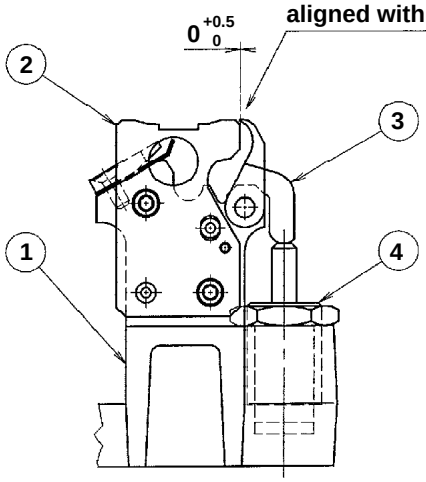
1. Horizontal feed motor pulley
2. Horizontal feed motor
3. Horizontal feed idler pulley
4. Hozrizontal feed pulley asm.
5. Horizontal feed pulley plate
6. Bolt M4
7. Nut M4
8. Timing belt P=264
9. Timing belt P=303

Adjustment Procedures	Results of Improper Adjustment
(1)Adjusting belt on the convey shaft side Loosen M8 nut fixing eccentric shaft and adjust the tension by rotation of the eccentric shaft. (2)Adjusting belt on the motor side Loosen setscrews (4 pcs.) fixing the rotating motor to adjust the tension. **(Caution) When the above step (1) is performed and eccentric shaft is rotated, tension of belt on the motor side varies as well. In some case, re-adjustment of the above step (2) may be required.**	Belt tension adjustment Low Belt tooth skipping Looseness (play) in the rotating direction occurs resulting in defective convey. High Step-out of motor
(1)Adjusting belt on the motor side Loosen three setscrews fixing the horizontal feed motor and adjust in the horizontal direction. (2)Adjusting belt on the convey arm side Loosen two M4 nuts and adjust with M4 bolt .	Belt tension adjustment Low Belt tooth skipping Looseness (play) in the horizontal feed direction occurs resulting in defective convey. High Step-out of motor

Standard Adjustment

(3) Chuck cylinder

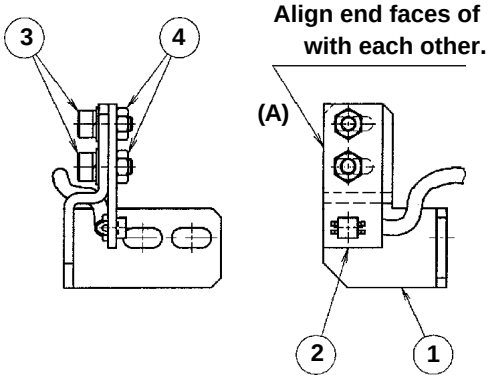
(A) Adjust the installing position of so that end face of is aligned with top end of .



1. Convey arm asm.
2. Chuck base plate
3. Chuck nail
4. Cylinder

(4) Horizontal feed sensor

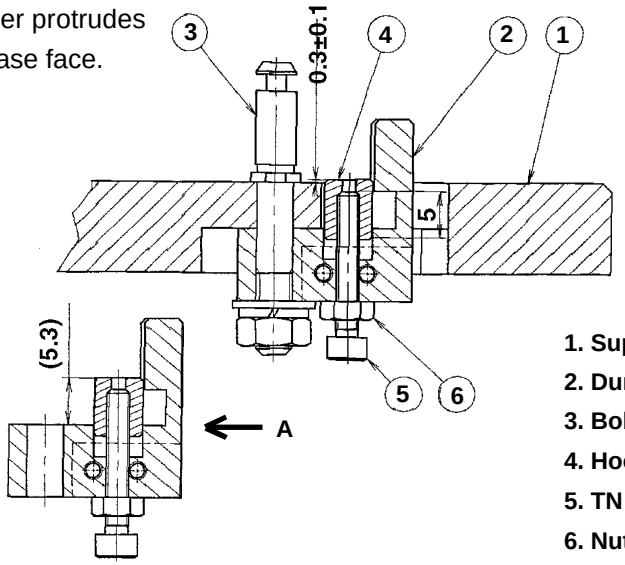
Align end faces of and with each other.



1. Horizontal feed sensor plate
2. Horizontal sensor asm.
3. Bolt M3
4. Nut M3

(5) Dummy shaft rubber

- Adjust with bolt and nut so that upper end face of rubber protrudes 0.3 mm from support base face.



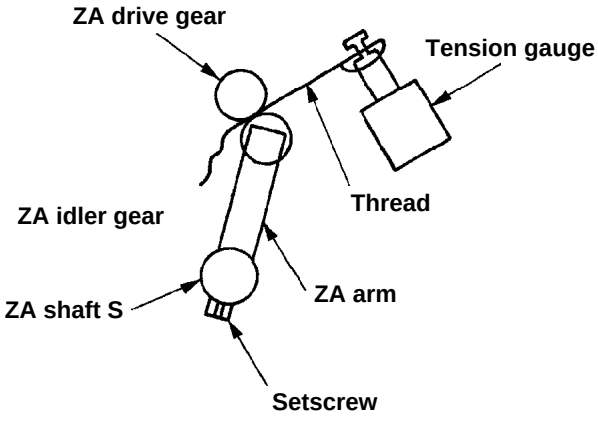
1. Support base
2. Dummy base
3. Bobbin case waiting shaft
4. Hook release lever rubber
5. TN Bolt M2.5
6. Nut M2.5

Adjustment Procedures	Results of Improper Adjustment
Loosen the nut fixing air cylinder and rotate the air cylinder to adjust the blowing amount.	Clearance dimension Small (in case of clearance < 0) Chuck cylinder comes in contact with the bobbin case lever resulting in defective chucking. Large (in case of clearance > 0.5) Chuck cylinder comes in contact with sewing machine hook and feed dog or bobbin case chucking becomes improper resulting in defective chucking or defective convey.
Loosen bolts and nuts (2 pcs. each) fixing the horizontal feed sensor cirduit board, align end face (A) of the horizontal feed sensor circuit board and the horizontal feed sensor plate with each other and fix them. **(Reference) Re-adjustment of the horizontal feed origin position is not required since the sensor positioning can be performed by aligning end face (A) even when the replacement of sensor or the like is performed.**	
Loosen M2.5 nut and adjust the rubber in the vertical direction with M2.5 bolt . **(Caution) Note that the top end of the bolt should not protrude from the top surface of the rubber.** Push rubber into bolt by approximately 5 mm (top end of the bolt should not protrude from the rubber). As shown in Fig A, it is accepted to assemble the height of 5.3 mm between upper end of rubber and dummy base face beforehand. Check, however, the aforementioned dimension of 0.3 mm.	Protruding amount of the rubber Small (protruding amount < 0.2 mm) Bobbin idles resulting in thread scatter. Large (protruding amount > 0.4 mm) Bobbin is pushed resulting in defective setting to the bobbin case waiting shaft.

Standard Adjustment

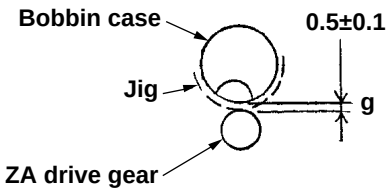
(6) Thread drawing force

Adjust so that a pair of ZA drive gear and ZA idler gear should be parallel.
After assembling the unit, make the thread drawing force F = 0.78N (80gf) or more.
(Thread : Tetron #80 The force should be equally applied to the whole area of the gears if possible.)



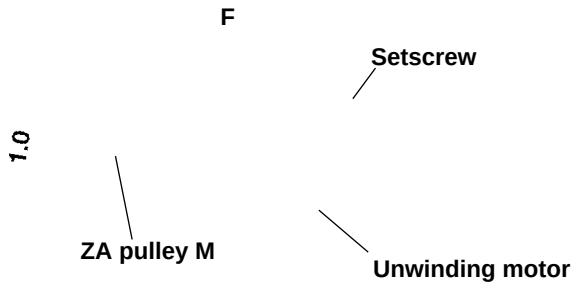
(7) ZA frame asm.

Clearance provided between ZA drive gear (tooth top) and bobbin case (outer perimeter) “g” = 0.5 mm



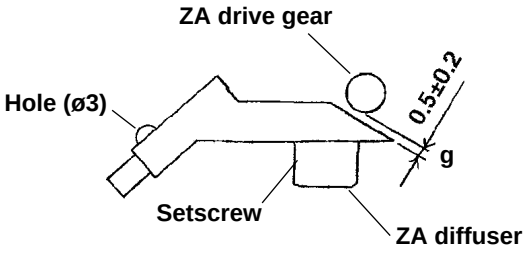
(8) Unwinding belt tension

The belt sags 1 mm when the center of the belt is applied with a 1.57N±0.39N (0.16 kgf±0.04 kgf) load “F”.



(9) ZA diffuser

Clearance provided between the inclined plane of ZA diffuser and ZA drive gear (tooth top) “g” = 0.5 mm
The hole (ø3) of the support base should be half hidden by ZA diffuser.

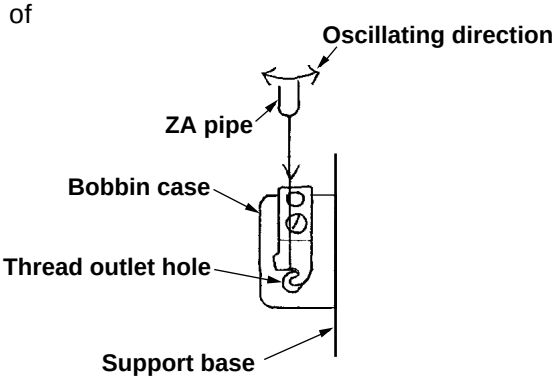


Adjustment Procedures	Results of Improper Adjustment
Loosen two setscrews in the ZA arm, and adjust so that the ZA drive gear and the ZA idler gear should be parallel with each other when the claw spring force is applied.	When the thread drawing force is weakened, in case of thick thread or the like, thread slips and thread may be not drawn from bobbin case.
Loosen three setsscrews in the ZA frame asm., and adjust the clearance in the vertical direction.	Clearance dimension Small (clearance < 0) Bobbin case interferes with gear. Large (clearance > 1) Thread is likely to enter the clearance between gear and bobbin case when thread end is guided.
Loosen three setscrews in the unwinding motor, and adjust the tension laterally so that a load of 1.57N±0.39N is applied when the belt is sagged 1 mm at the position of F mark in the figure.	Belt tension adjustment Low Belt tooth skipping High Step-out of motor
Loosen two setscrews in the ZA diffuser, and adjust the clearance in the vertical direction.	If the position of ZA diffuser is improper, suction of thread tends to be malfunctioned.

(10) ZA pipe direction

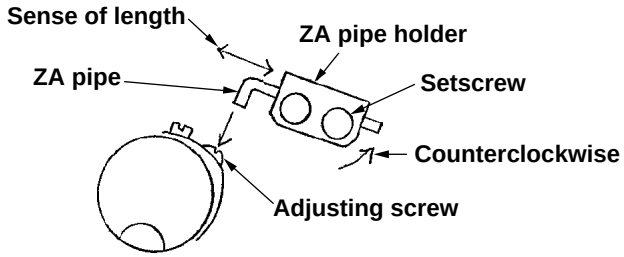
1) Oscillating direction

Air exhaust direction should be in the direction of thread outlet hole in the bobbin case.



2) Sense of length

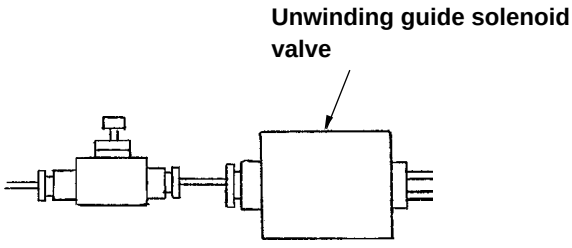
Air exhaust direction should be in the direction of adjusting screw in the bobbin case.



(11) Unwinding guide air flow rate

1) Initial setting

Set the speed controller to close by three rotation from full open.



2) Fine adjustment

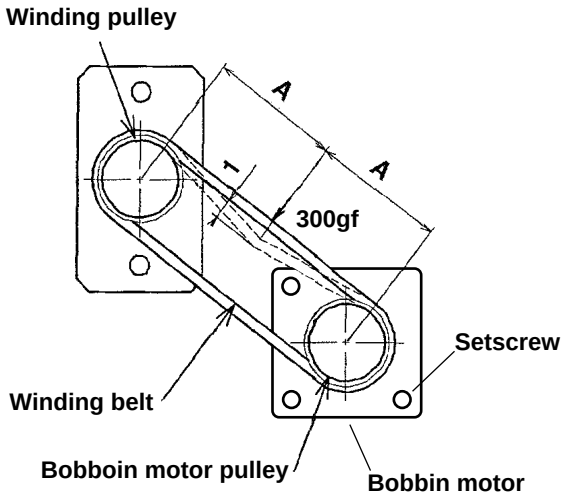
Perform adjustment of increase/decrease in accordance with thread type or thread count used if necessary.

Adjustment Procedures	Results of Improper Adjustment
Install the ZA pipe holder after adjusting the looseness in the counterclockwise direction beforehand. Loosen two setscrews in the ZA pipe holder and adjust the oscillating direction and the sense of length of the ZA pipe.	Oscillating direction When the direction is turned to the frame side Thread end to be guided flows to anti frame side. When the direction is turned to the anti frame side Thread end to be guided flows to frame side. Sense of length When the direction is turned to the lower side of adjusting screw Thread end to be guided flows between ZA drive gear and bobbin case. When the direction is turned to the upper side of adjusting screw Thread end to be guided is likely to be floppy.
Adjust the flow rate by turning the knob of speed controller located just below the outlet of solenoid valve on the piping plate.	Flow rate Small — Air flow is beaten by thread strain and thread end cannot be guided into the gear. Large — Thread runs around and the thread end enters the opening of bobbin case. As a result, the thread end cannot be guided into the gear.

Standard Adjustment

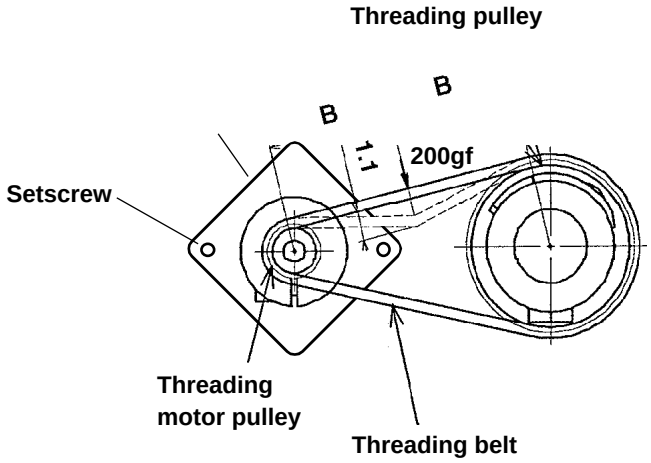
(12) Winding belt tension

Adjust so that the belt sags 1 mm when the center between the centers of pulleys of the belt is applied with a 2.94N (300gf) load.



(13) Threading belt tension

Adjust so that the belt sags 1.1 mm when the center between the centers of pulleys of the belt is applied with a 1.96N (200gf) load.



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JUKI CORPORATION
INTERNATIONAL SALES DIVISION
8-2-1. KOKURYO-CHO.
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PHONE : 03 (3430) 4001 to 4005
FAX : 03 (3430) 4909 • 4914 • 4984
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