

***ENGLISH***

**AK-159  
INSTRUCTION MANUAL**

# CONTENTS

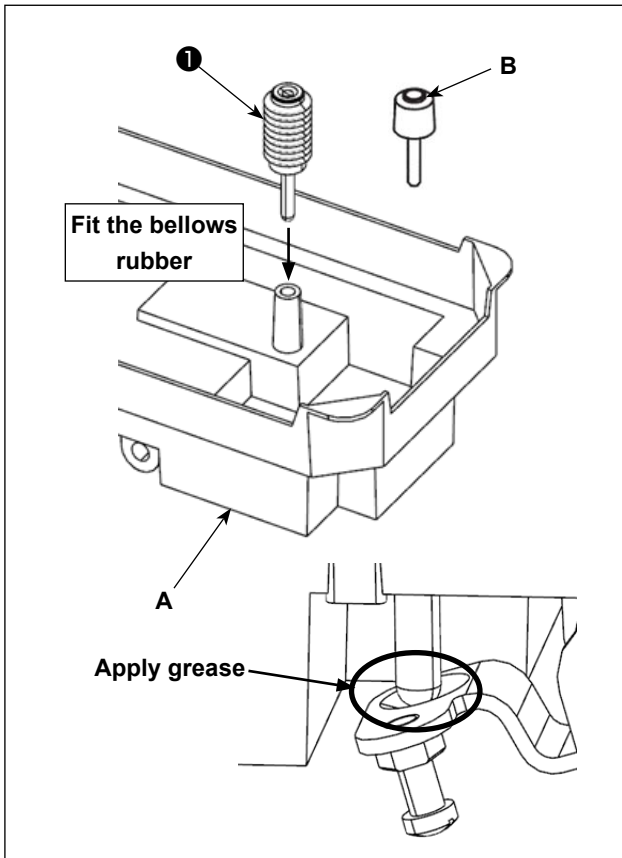
1. Changing the knee lifter components .....	1
2. Installing the air components.....	3
3. Wiring the pneumatic device.....	6
4. [ Reference ] Adjusting the parameters for the electrical box .....	7

# 1. Changing the knee lifter components

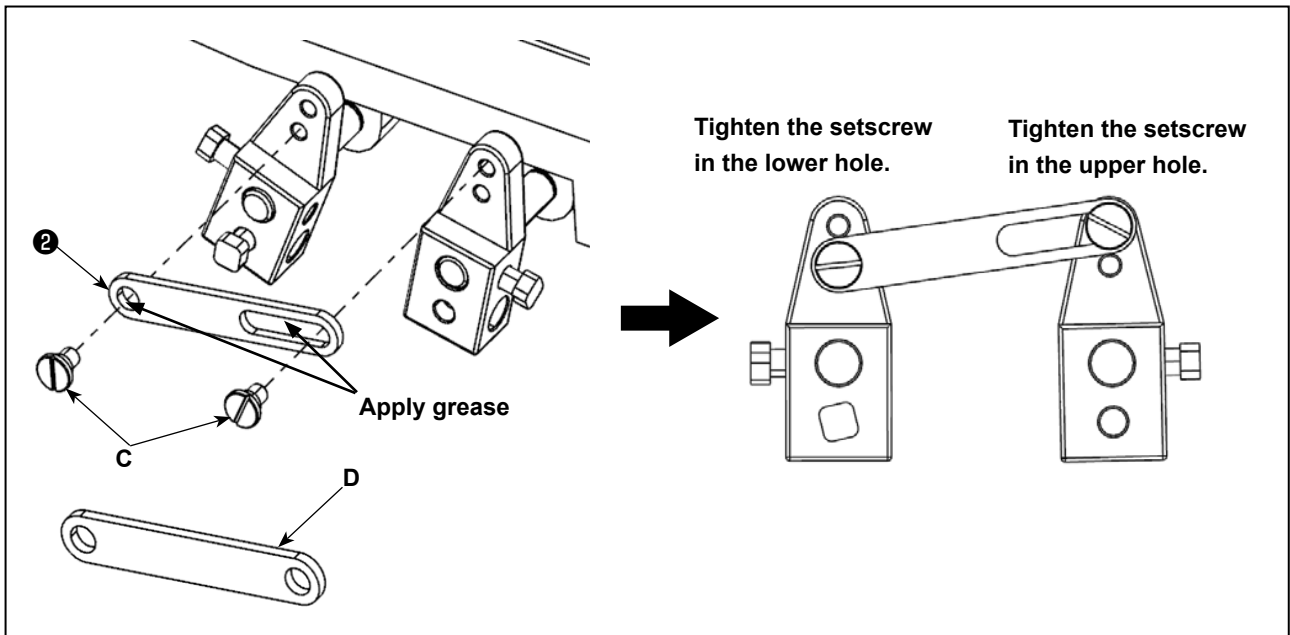


## WARNING :

To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



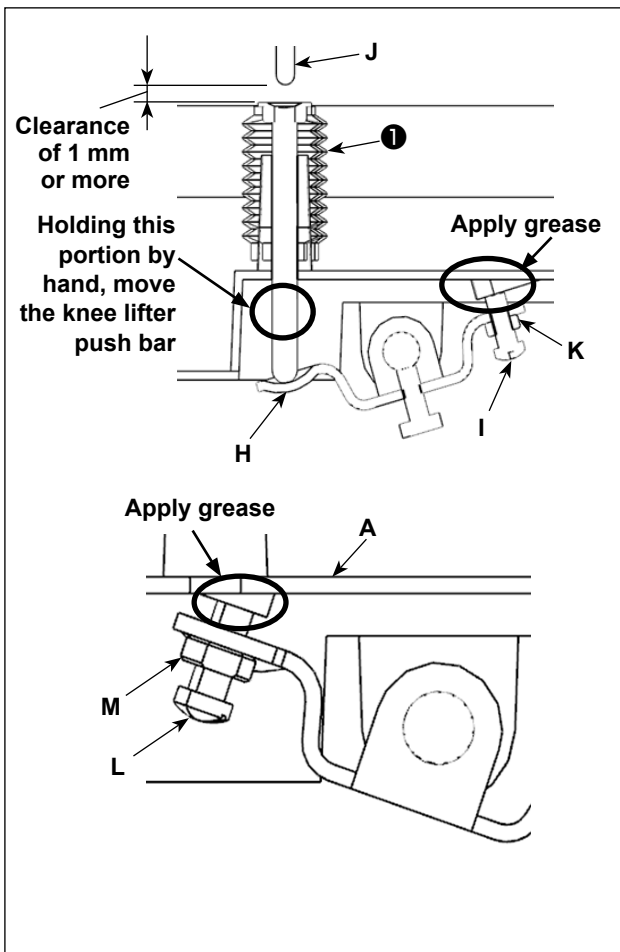
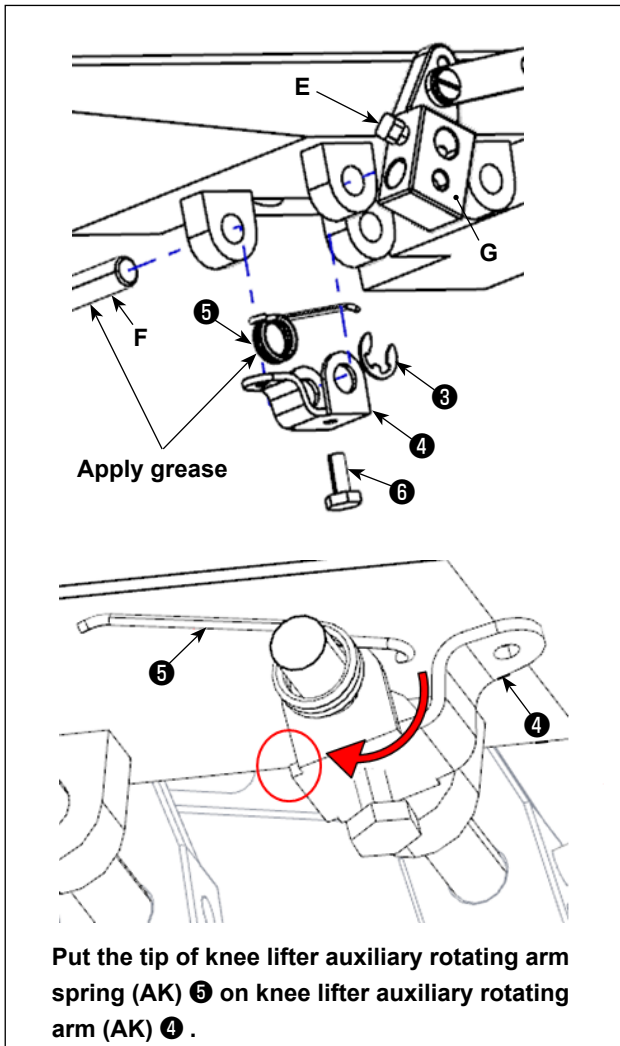
- 1) Detach the knee lifter push bar **B** that is attached to the oil pan **A**.
- 2) Attach knee lifter push bar with rubber (asm.) **1** to the oil pan.  
Securely fit the bellows rubber into the hole in the projecting portion of the oil pan.
- 3) Apply grease to the top end of knee lifter push bar with rubber (asm.) **1**.



- 4) Detach joint lever setscrews **C**. Detach joint lever **D**.
- 5) Apply grease to the holes (at two locations) of joint lever (AK) **2**.
- 6) Attach joint lever (AK) **2** with the joint lever setscrews **C**.



Carefully check the mounting positions of the setscrews.



- 7) Loosen joint setscrew **E**. Detach E ring 3 and take out the knee lifter rotating shaft **F**.
- 8) Attach the knee lifter rotating shaft **F** to the oil pan while adding knee lifter auxiliary rotating arm (AK) 4 and knee lifter auxiliary rotating arm spring (AK) 5 to the shaft.  
At this time, apply grease to the knee lifter rotating shaft **F** and knee lifter auxiliary rotating arm spring (AK) 5 .
- 9) Pass the knee lifter rotating shaft **F** through the joint **G**.
- 10) Fit E ring 3 on the knee lifter rotating shaft **F**.
- 11) Put knee lifter auxiliary rotating arm spring (AK) 5 on knee lifter auxiliary rotating arm (AK) 4 .  
Then, secure knee lifter auxiliary rotating arm (AK) 4 with screw 6 .
- 12) Tighten joint setscrew **E**.

**Caution** When you have removed E ring 3 , change it with a new one.

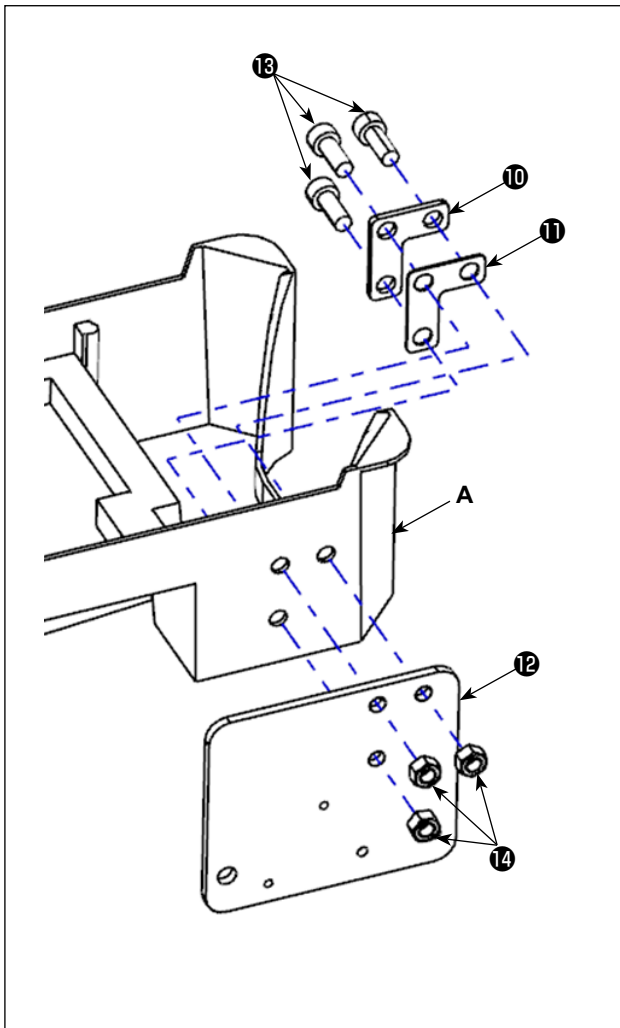
- 13) Raise the machine head. In this state, knee lifter push bar with rubber (asm.) 1 will go up by gradually tightening the screw **I** of the knee lifter rotating arm **H**.
- 14) Stop tightening the screw **I** when knee lifter push bar with rubber (asm.) 1 comes in contact with the knee lifter connecting rod **J** located inside the sewing machine.
- 15) Loosen the screw **I** to provide a clearance of 1 mm or more between the knee lifter connecting rod **J** and knee lifter push bar with rubber (asm.) 1 . Then, secure the screw with the nut **K**.  
Check to be sure that there is an adequate clearance as described above by moving knee lifter push bar with rubber (asm.) 1 up and down from outside.
- 16) Adjust the position of the screw **L** so that it comes in contact with the oil pan **A** when the presser foot goes up by 16 mm. Then, secure the screw **L** with the nut **M**.  
If the presser foot fails to go up by 16 mm, the clearance provided between the knee lifter push bar with rubber (asm.) 1 and the knee lifter connecting rod **J** should be reduced.
- 17) Apply grease to the tips of the screw **I** and screw **L**.

## 2. Installing the air components



### WARNING :

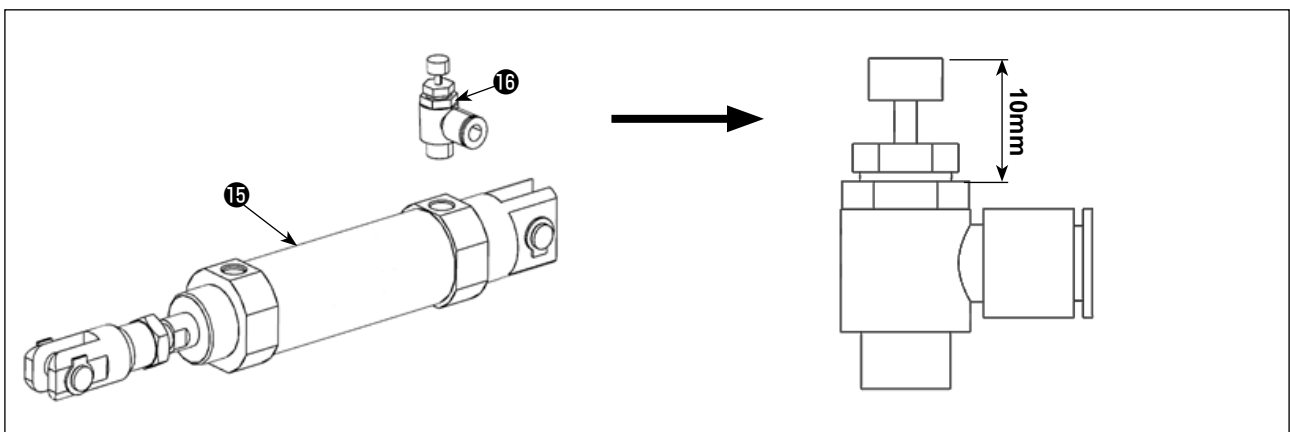
To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



1) Detach the rubber plug of the oil pan.

Place packing **11** between presser cylinder washer **10** and oil pan (**A**). Place cylinder mounting plate **12** to the outside of the oil pan (**A**) and tighten screws M8 **13** .

Then, secure the aforementioned parts with nuts M8 **14** .



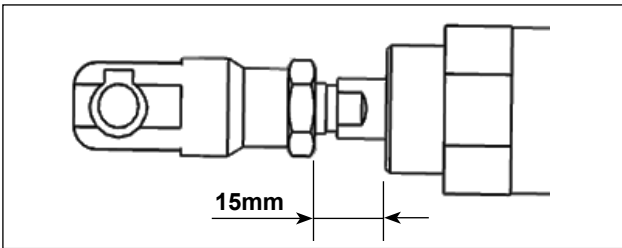
2) Attach speed controller joint **16** to cylinder **15** .



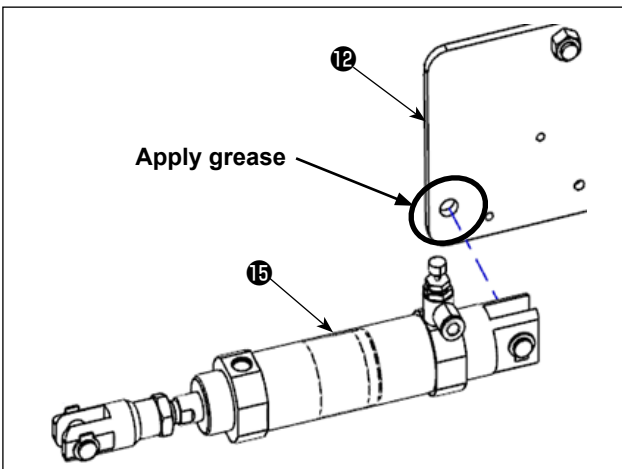
The recommended height of the screw of speed controller joint **16** is 10 mm.

\* The lowering speed of the presser foot is increased by increasing the height of the screw.

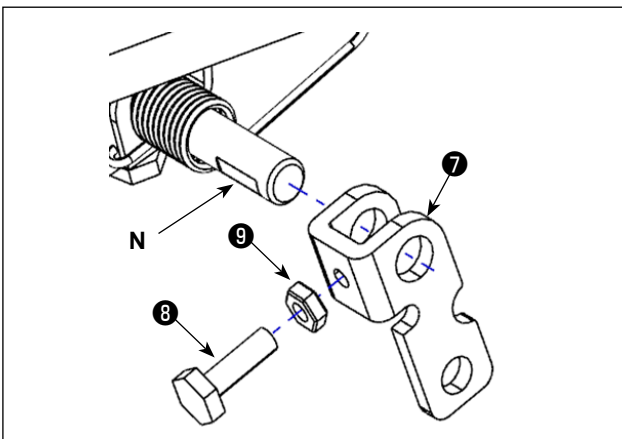
\* The lowering speed of the presser foot is decreased by decreasing the height of the screw.



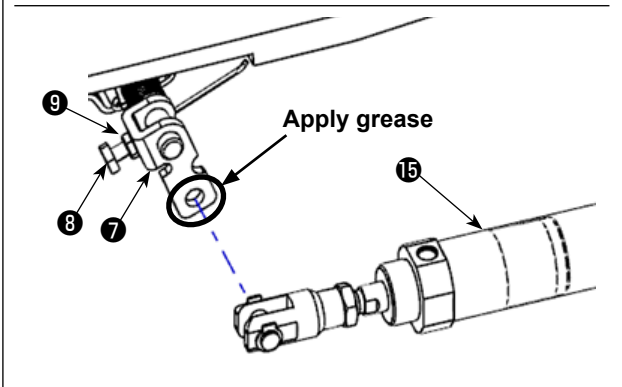
- 3) Holding the cylinder in its initial state position, adjust the clearance provided between the end face of the nut of the cylinder knuckle and the end face of the cylinder to 15 mm.



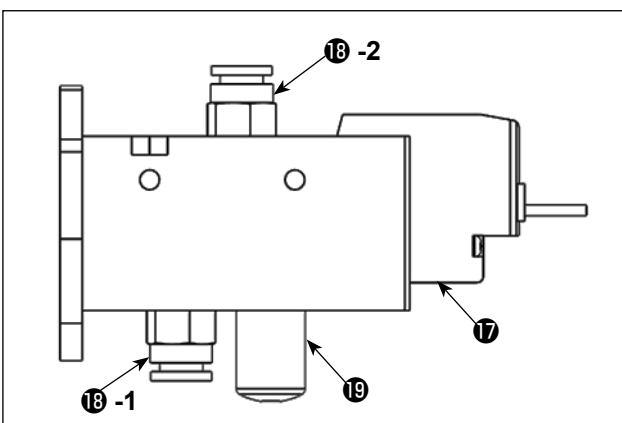
- 4) Connect the rear part of cylinder 15 with cylinder mounting plate 12 using the accessory pin. When you connect them, apply grease to the connecting portion of the cylinder mounting plate.



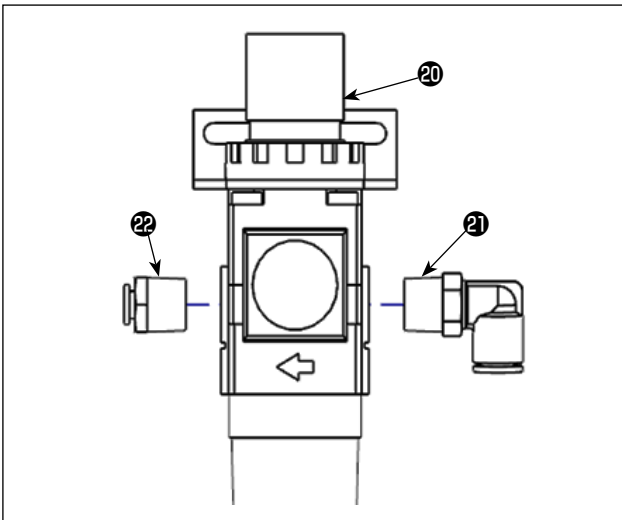
- 5) Attach presser lever 7 to the knee lifter rotating shaft (AK) N. Temporarily tighten presser lever setscrew 8 at the position where the setscrew comes in contact with the flat portion of the knee lifter rotating shaft (AK) N.



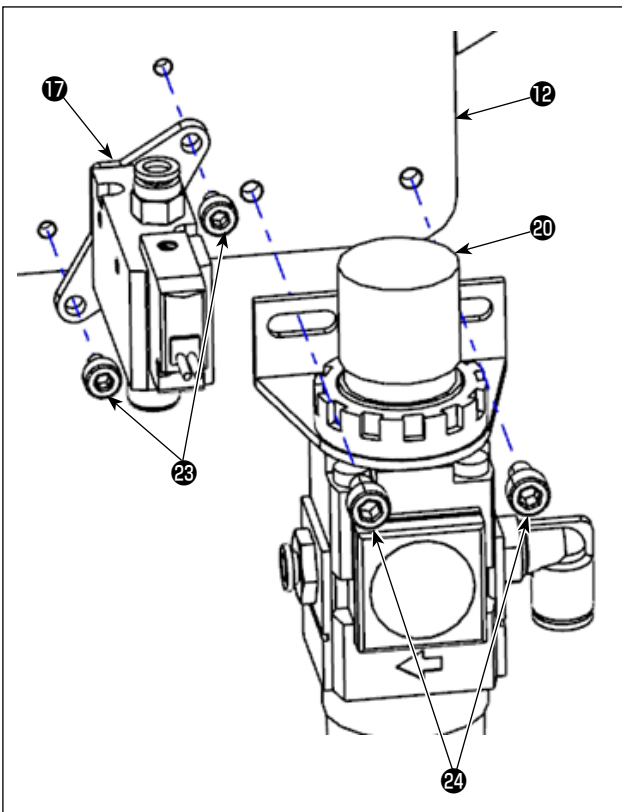
- 6) Connect the front part of cylinder 15 with presser lever 7 with the accessory pin. When you connect them, apply grease to the connecting portion of the presser lever.
- 7) Adjust the positional relationship between presser lever 7 and the cylinder knuckle joint so that they do not come in contact with each other. Then, tighten presser lever setscrew 8 and secure with the presser lever setscrew nut 9 .



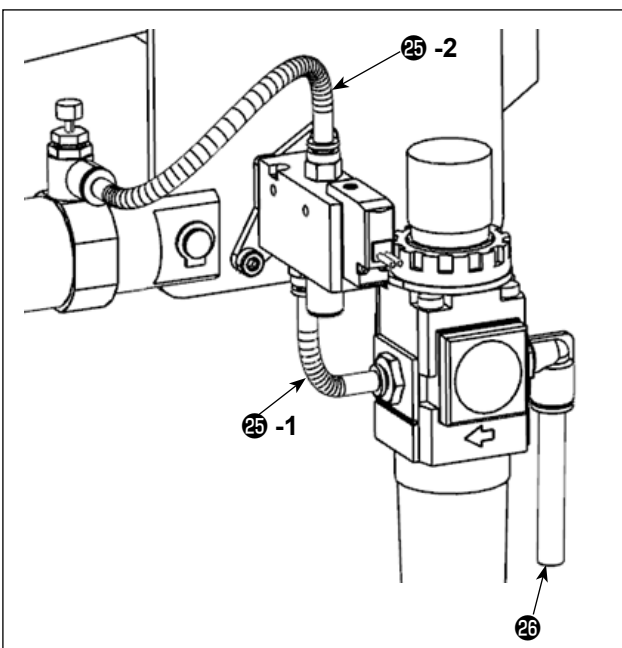
- 8) Attach quick coupling joints (two pieces) 18 and silencer 19 to solenoid valve 17 .



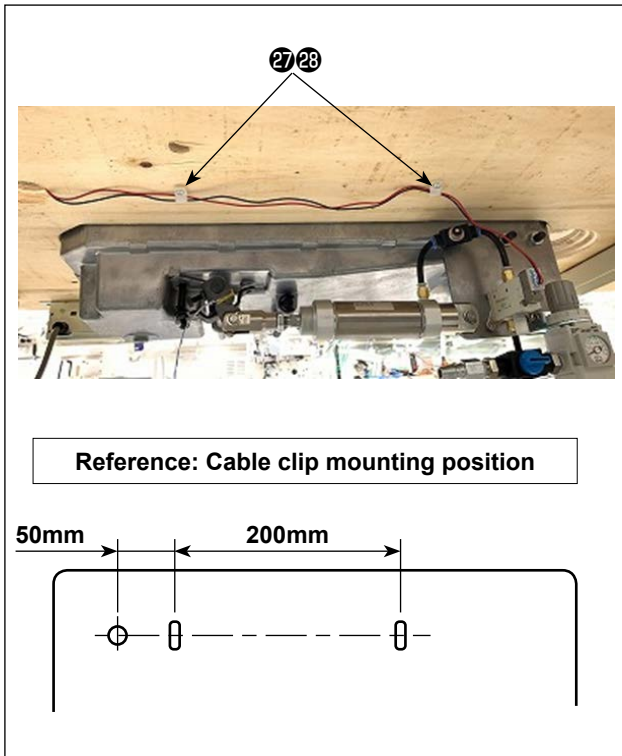
9) Attach quick coupling joint 21 to the air inlet side and quick coupling joint 22 to the air outlet side of regulator 20 .



10) Secure solenoid valve 17 to cylinder mounting plate 12 with screws M4 23 .  
Secure regulator 20 to cylinder mounting plate 12 with screws M5 24 .



11) Connect quick coupling joint 18 -1 with quick coupling joint 22 with PU tube  $\varnothing$  6 mm 25 -1. Connect quick coupling joint 18 -2 with speed controller joint 16 with PU tube  $\varnothing$  6 mm 25 -2. Attach one end of PU tube  $\varnothing$  8 mm 25 to quick coupling joint 21 . Then, connect the other end of the PU tube  $\varnothing$  8 mm to the air supply.

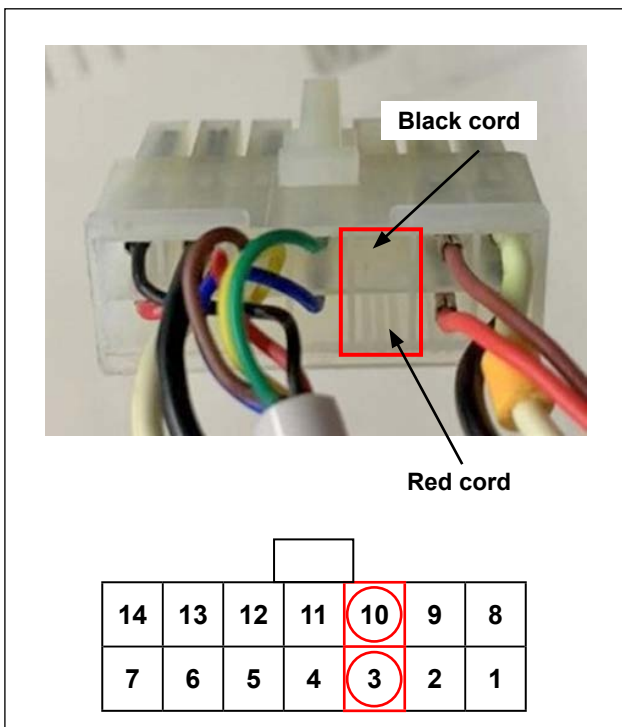


12) Attach cable clips 27 to the table with wood screws 28 to secure the cable of solenoid valve 17.

**Caution** Do not pull the cable hard when securing it to the table.

### 3. Wiring the pneumatic device

**WARNING :** To protect against possible personal injury due to abrupt start of the machine, be sure to start the following work after turning the power off and ascertaining that the motor is at rest.



1) Insert the cable of solenoid valve 17 into the housing. Insert the red cord into slot No. 3 and black cord into slot No. 10.



#### 4. [ Reference ] Adjusting the parameters for the electrical box



In the case you use the sewing machine while setting the stop position of the needle bar to the lower position, it is necessary to adjust the parameter of the needle bar stop position.

Menu No. 76: 165 → 185



If the sewing machine is used while setting the stop position of the needle bar to the lower position, the needle bar will interfere with the presser foot when the latter goes up unless the aforementioned parameter is changed.