ENGLISH

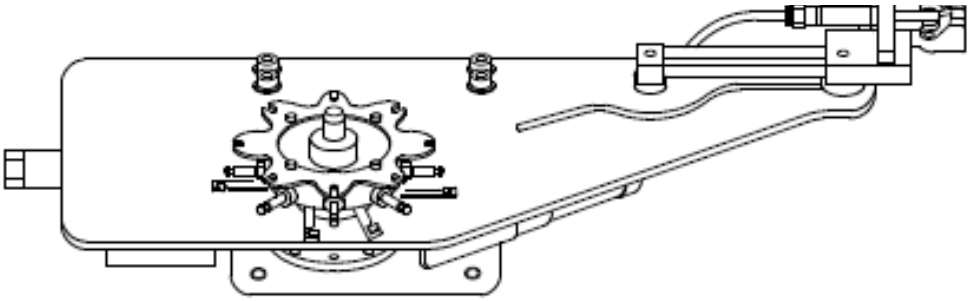
BK-8
INSTRUCTION MANUAL

CONTENTS

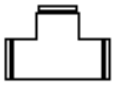
Component parts list

Check the below-stated parts.

Automatic bobbin changer asm., complete set



T union
(ø8 × ø8 × ø8)



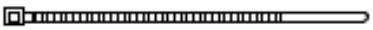
Air hose ø8 × 100 mm

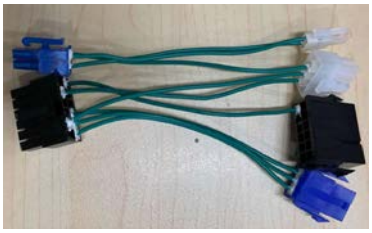
Hexagon socket head cap screw

M5 × 20L	**6 pieces**
Nut M5	**6 pieces**
Washer	
ø10 × 5.5 × 0.8	**12 pieces**
Spring washer	
ø9.2 × 5.1 × t1.0	**6 pieces**

Air hose ø8 × 500 mm

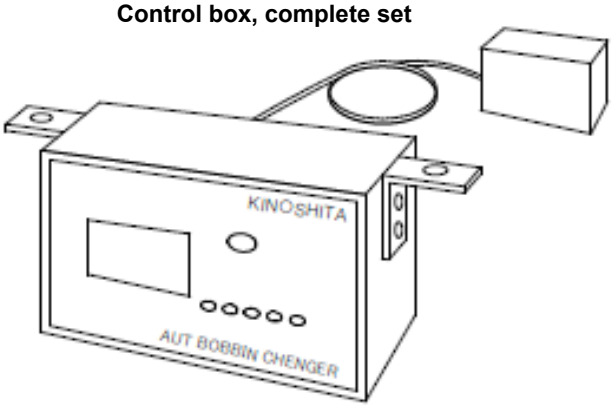
Cable clip band T-18R, 7 pieces

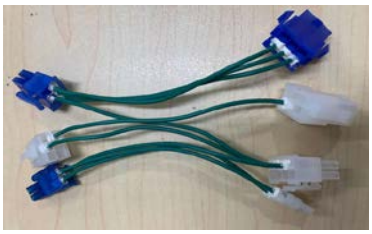




Junction cable A (40243920) **1 piece**

Control box, complete set





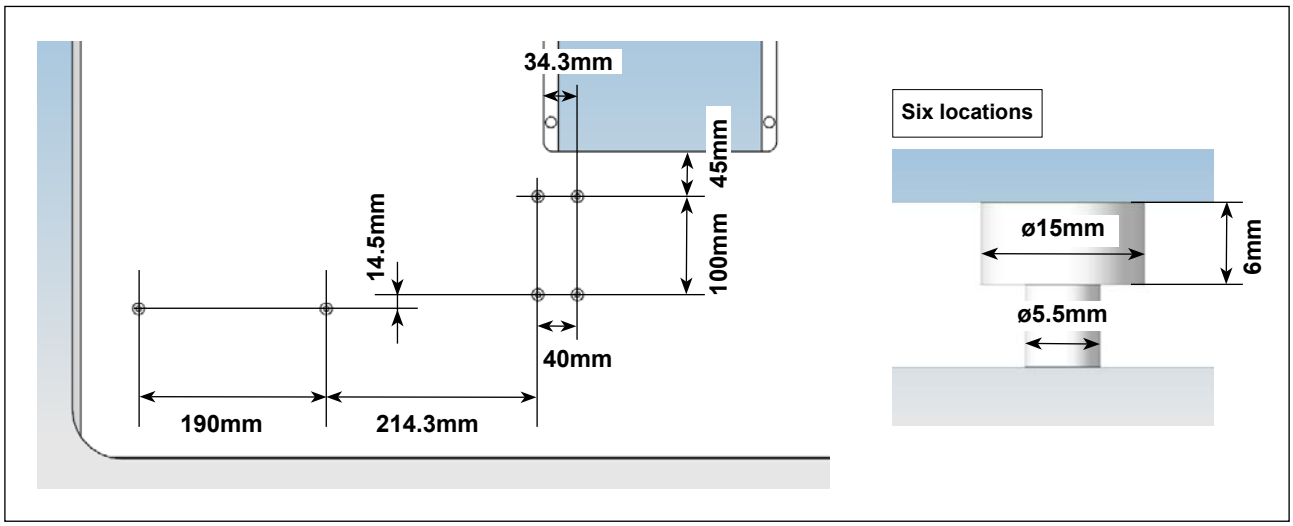
Junction cable C (40243924) **1 piece**

Junction cable E (40243930) **1 piece**

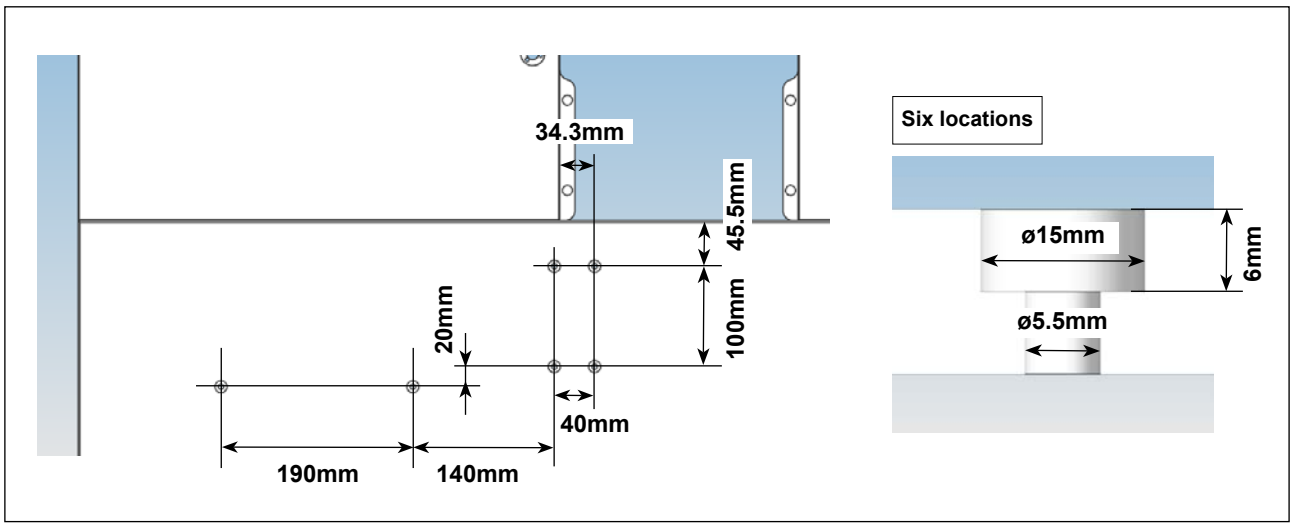
1. Additional machining of the table

Before installing the bobbin changer, bore mounting holes in the table. Processing dimensions for models are as shown below.

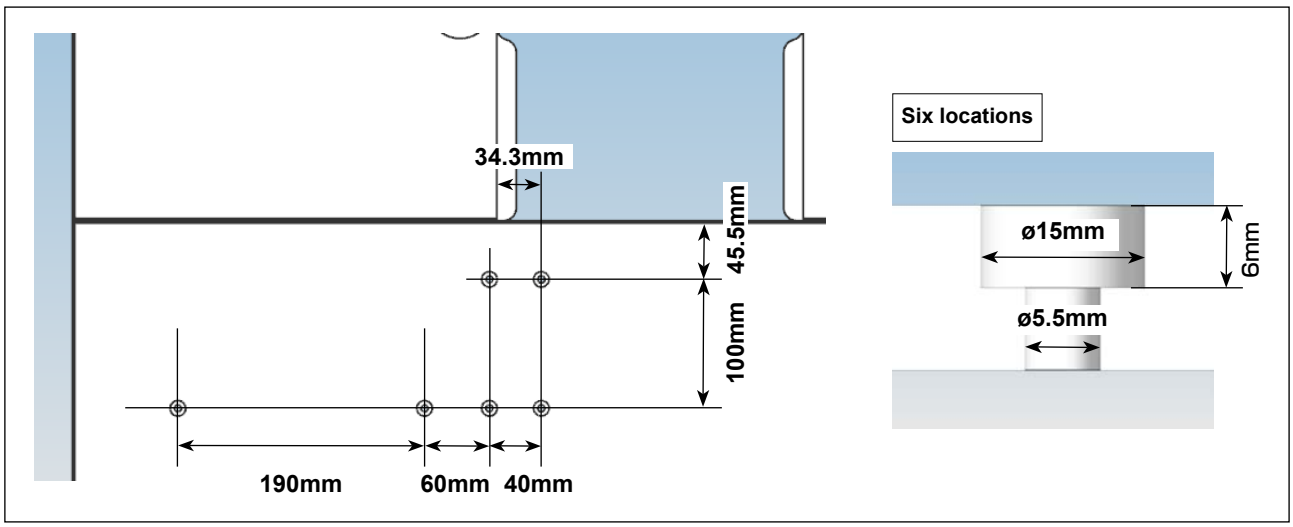
[PS-800-8045]



[PS-800-12080]



[PS-800-13085]



2. Installing the main body of automatic bobbin changer

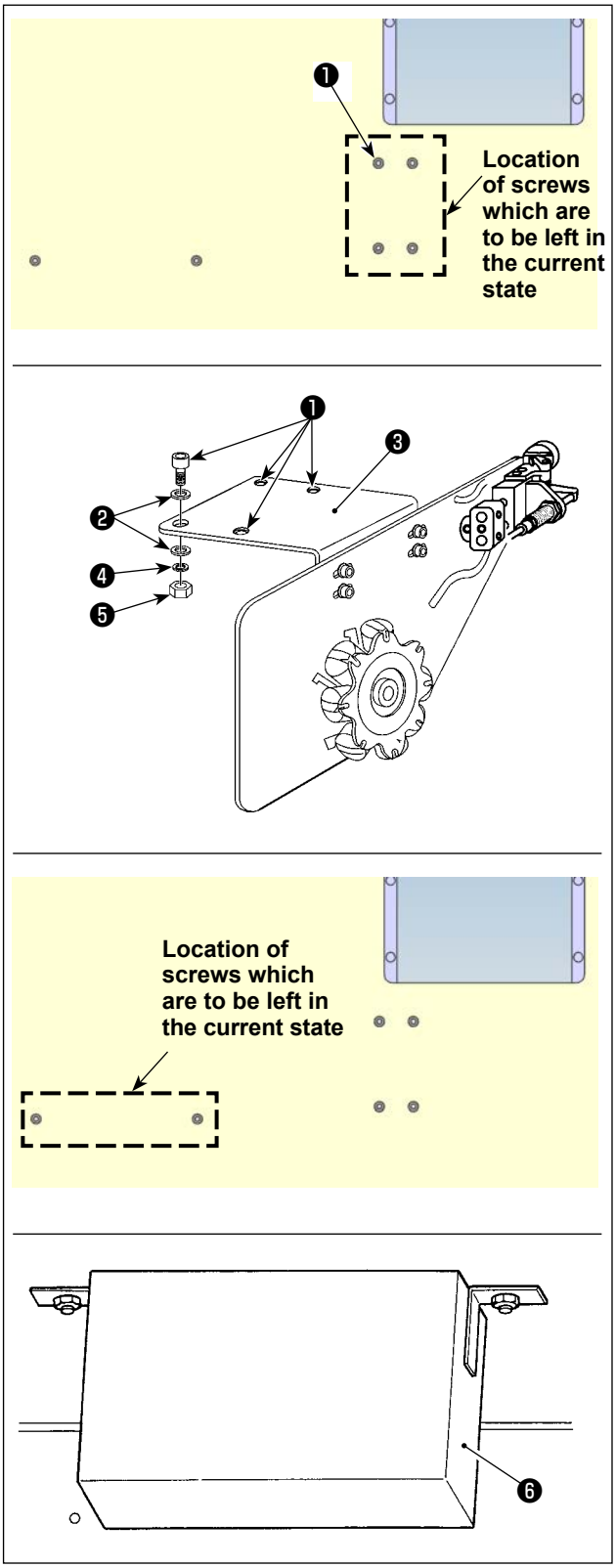
WARNING :

1. Installation procedure of the automatic bobbin changer must be carried out by a trained technical expert.

2. Request your distributor or a specialized electrician to carry out electric wiring.

3. Do not connect the power plug of the sewing machine before completing the installation procedure.
If the start button is pressed during the work by mistake, the sewing machine will actuate, posing a great risk.

4. Be sure to connect the ground wire.
If the ground wire connection is not proper, electric shock can be caused.

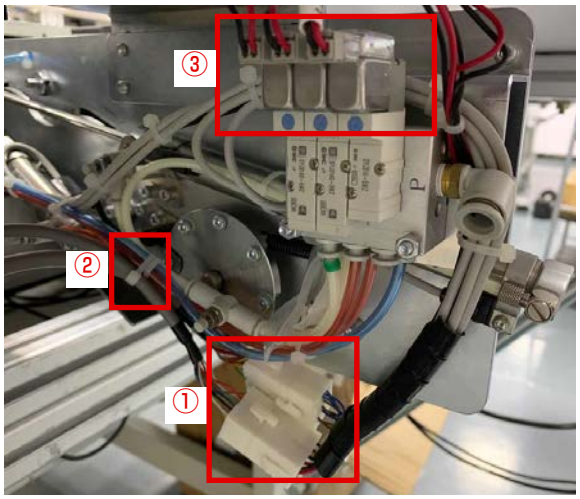


1) Put screws ❶ and washer ❷ (four pieces each) into the top surface of table. Fitting bobbin changer mounting plate ❸ on those screws, put in washer ❷ , spring washer ❹ and nut ❺ (four pieces each), temporarily tighten the screws.
2) Adjust the final position of the bobbin changer following the steps of procedure for adjusting the mounting position of bobbin changer. Then, tighten screws ❶ and nut ❺ (four pieces each).
3) Put screws ❶ and washer ❷ (two pieces each) into the tapped holes from the top surface of table. Hanging control box ❻ of the bobbin changer on the screws, put in washer ❷ and spring washer ❹ , tighten nut ❺ (two pieces each).

Attach the control box in such a way that its operation button faces to the operator side.

3. Wiring procedure

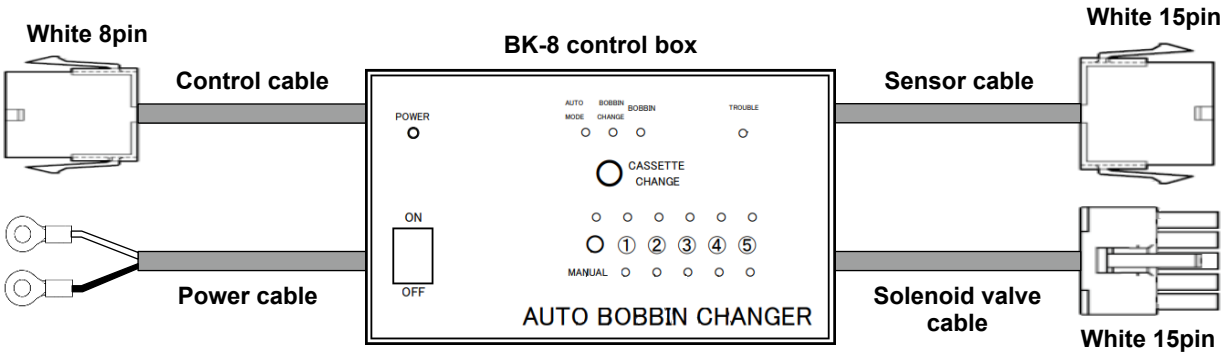
(1) Wiring to the main body of BK-8



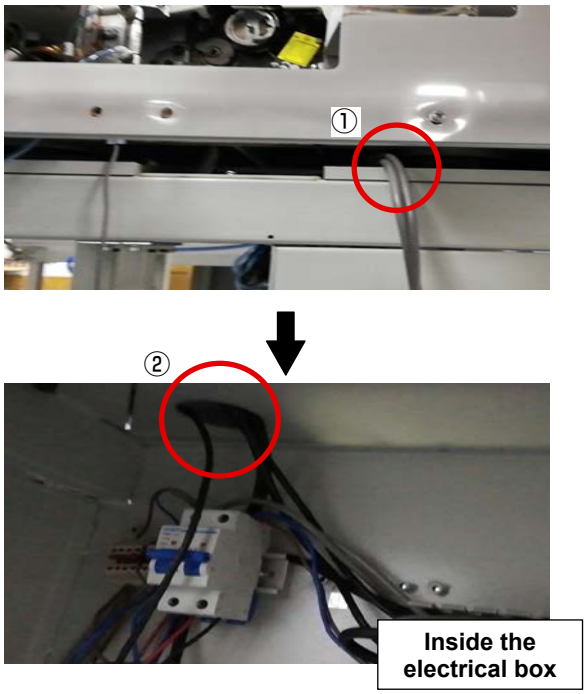
① Connect the two wirings coming from the main body of the BK-8, and the sensor cable and solenoid valve cable of the BK-8 control box while matching their connector numbers.

② Secure cable with a cable clip band as shown in the figure.
At this time, take care not to secure the cable conductor.

③ Connect the cords to the connectors in the order or white one, red one and blue one from the left as illustrated in the figure.



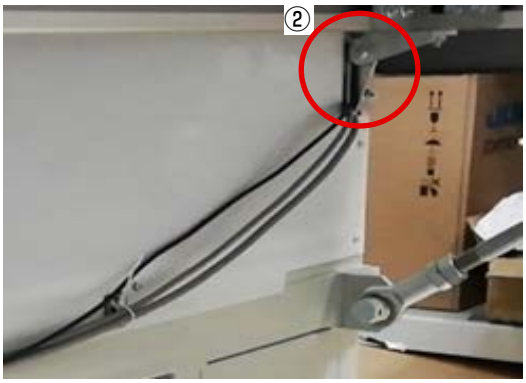
(2) Wiring into the electrical rack (The cable path differs with the size of sewing machine.)

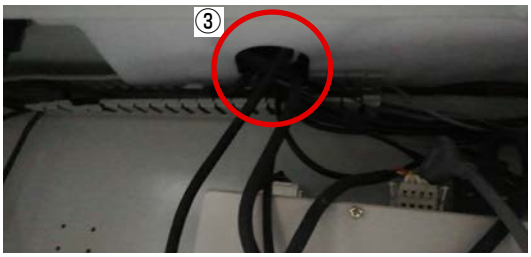


[PS-800-8045]

① Pull the control cable and power cable of the BK-8 control box into the top surface of the electrical rack through the clearance provided between the sewing machine housing and the frame.

② Pull the cables into the inside of the electrical rack through the hole in the top surface of the electrical rack.





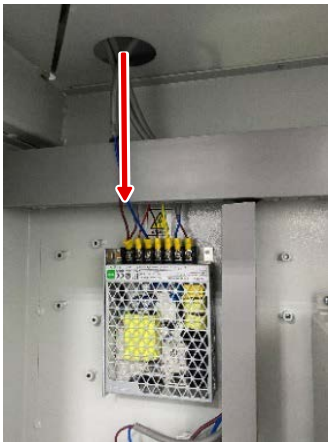
[PS-800-12080&13085]

① Pass the control cable and power cable of the BK-8 control box through the cable duct in the side face of the sewing machine.

② Pull the cables into the inside of the electrical rack through the hole in the top surface of the electrical rack.

③ Pull the cables into the inside of the electrical rack through the hole in the top surface of the electrical rack.

(3) Wiring inside the electrical rack

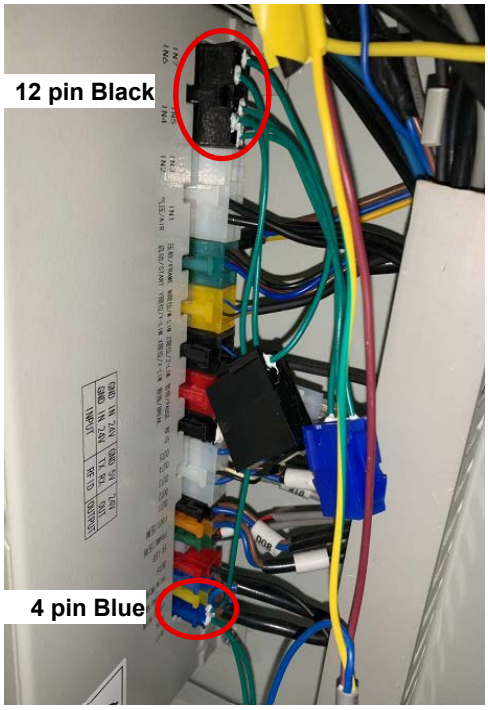


[Common to all models]

Connect the power cable of the BK-8 control box to the 24 VDC power supply.
Connect the white wire of the power cable to the "+V" terminal and the black wire to the "-V" terminal.

Power cable	DC24V power supply
White wire	+V
Black wire	-V

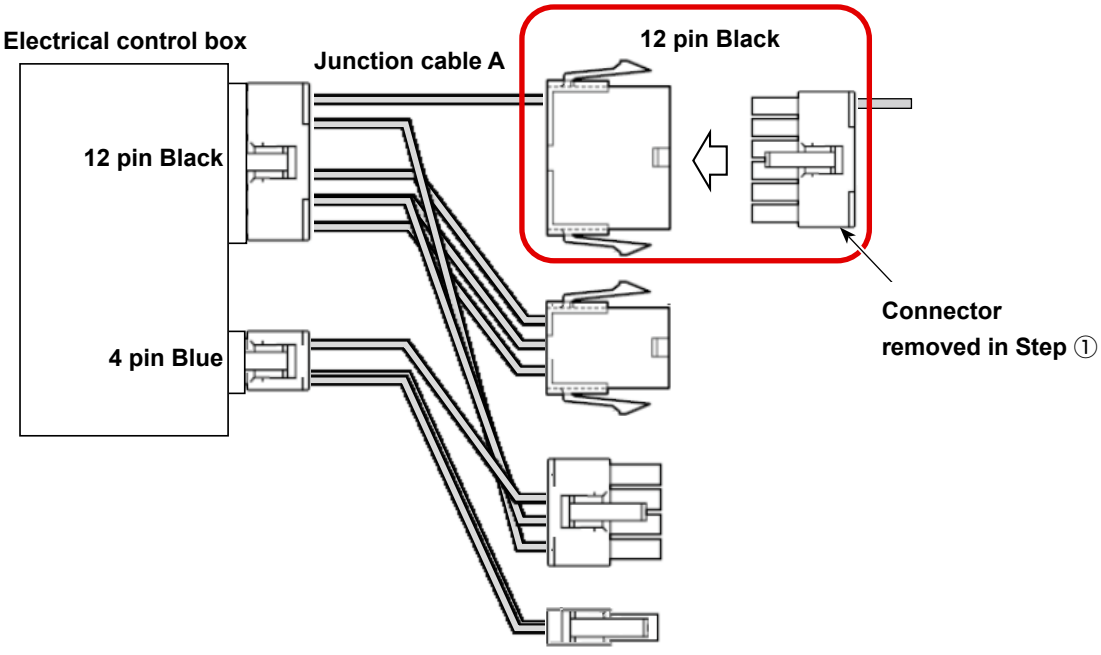
*** The installation position of the 24 VDC power supply varies depending on the specifications.**



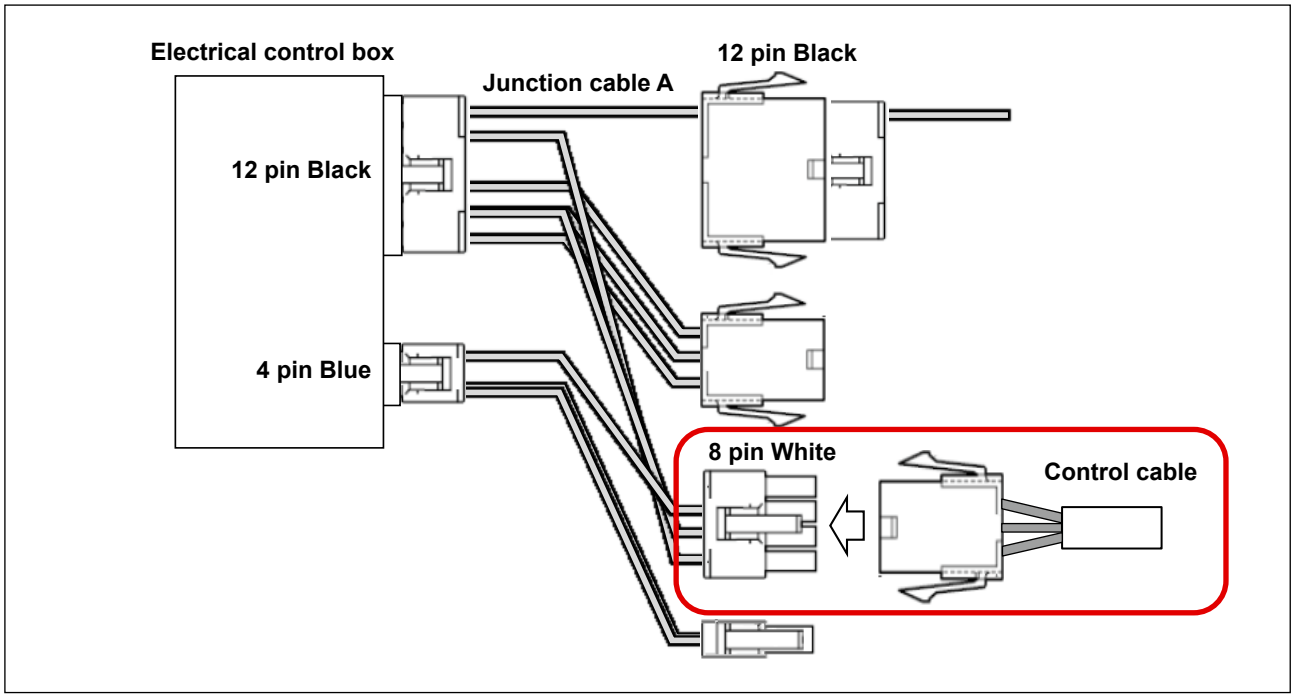
[PS-800-12080 Standard type]

① Remove the 12-pin connector, black that has been factory-connected to the connection port on the side face of the electrical control box. Connect the 12-pin connector, black of junction cable A to the aforementioned connection port.

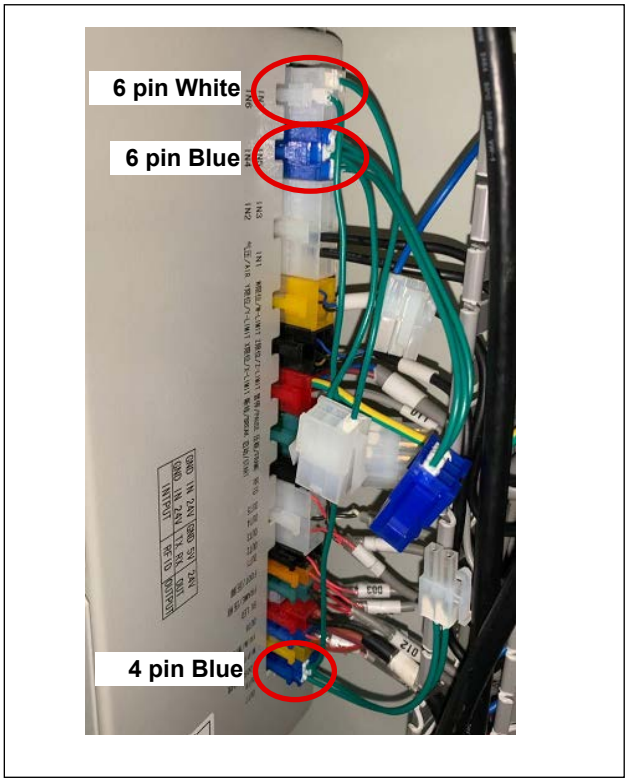
② Connect the 4-pin connector, blue of junction cable A to the 4-pin connector, blue on the side face of the electrical control box.



③ Connect the connector you have removed from the electrical control box in Step ① with the 12-pin connector, black of junction cable A.



④ Connect the control cable of the BK-8 control box to the connector 8-pin White of the junction cable A.

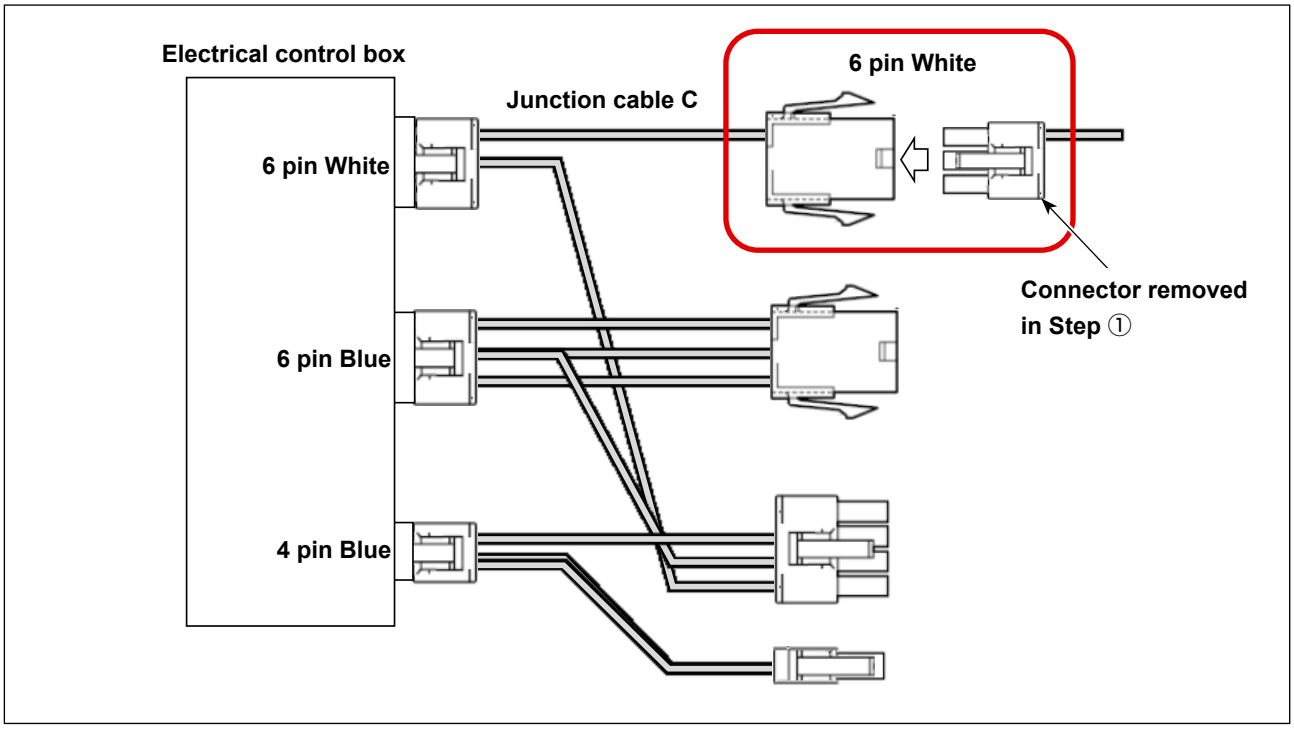


[PS-800-8045, 13085 Standard type]

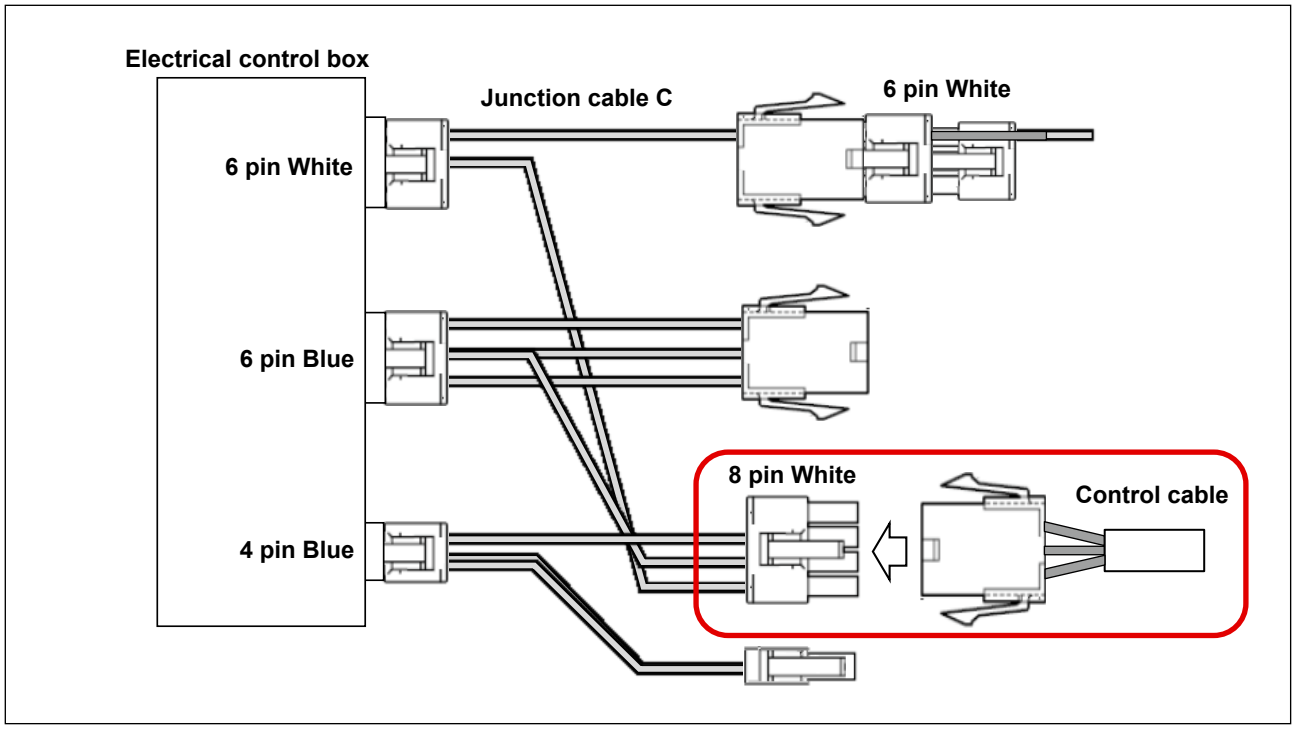
① Remove the 6-pin connector, white that has been factory-connected to the connection port on the side face of the electrical control box. Then, connect 6-pin connector, white of junction cable C ⓬ to the aforementioned connection port.

② Connect 6-pin connector, blue of junction cable C ⓬ to the 6-pin connector, blue on the side face of the electrical control box.

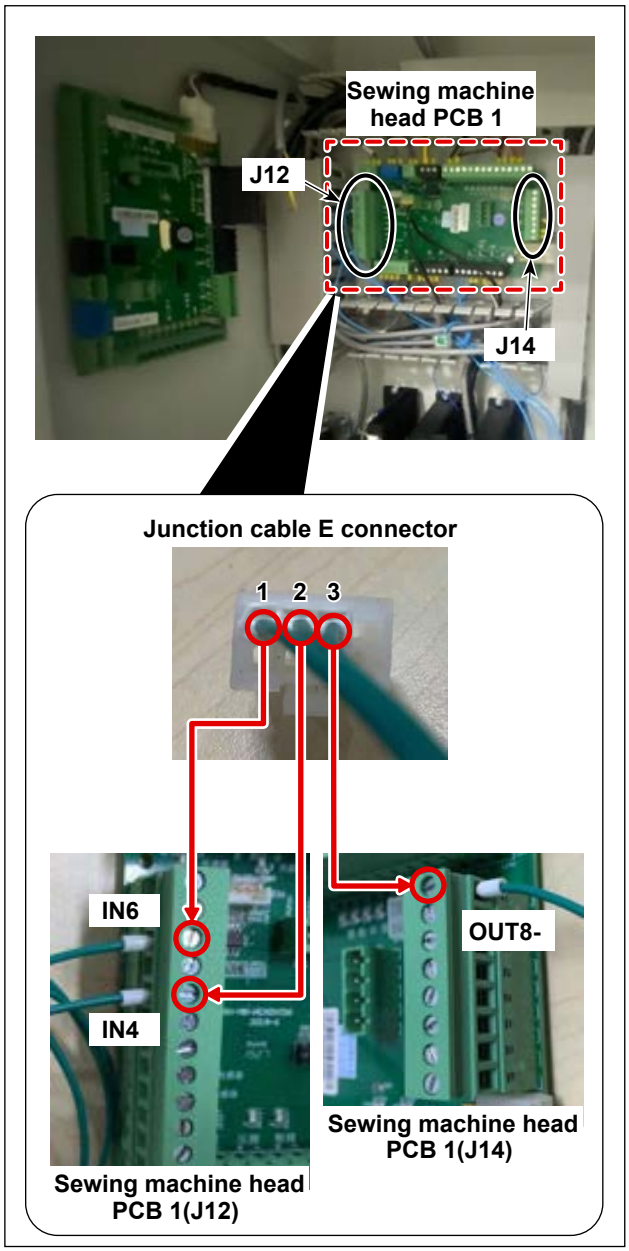
③ Connect 4-pin connector, blue of junction cable C ⓬ to the 4-pin connector, blue on the side face of the electrical control box.



④ Connect the connector you have removed from the electrical control box in Step ① with the 6-pin connector, white of junction cable C.



⑤ Connect the control cable of the BK-8 control box to the connector 8-pin White of the junction cable C.



[Common to rotary knife type]

① Connect the wire of the "Pin1" of the junction cable E to the "IN6" of the connector J12 of the HEAD PCB 1 and the wire of the "Pin2" to the "IN4" of the connector J12 of the HEAD PCB 1.

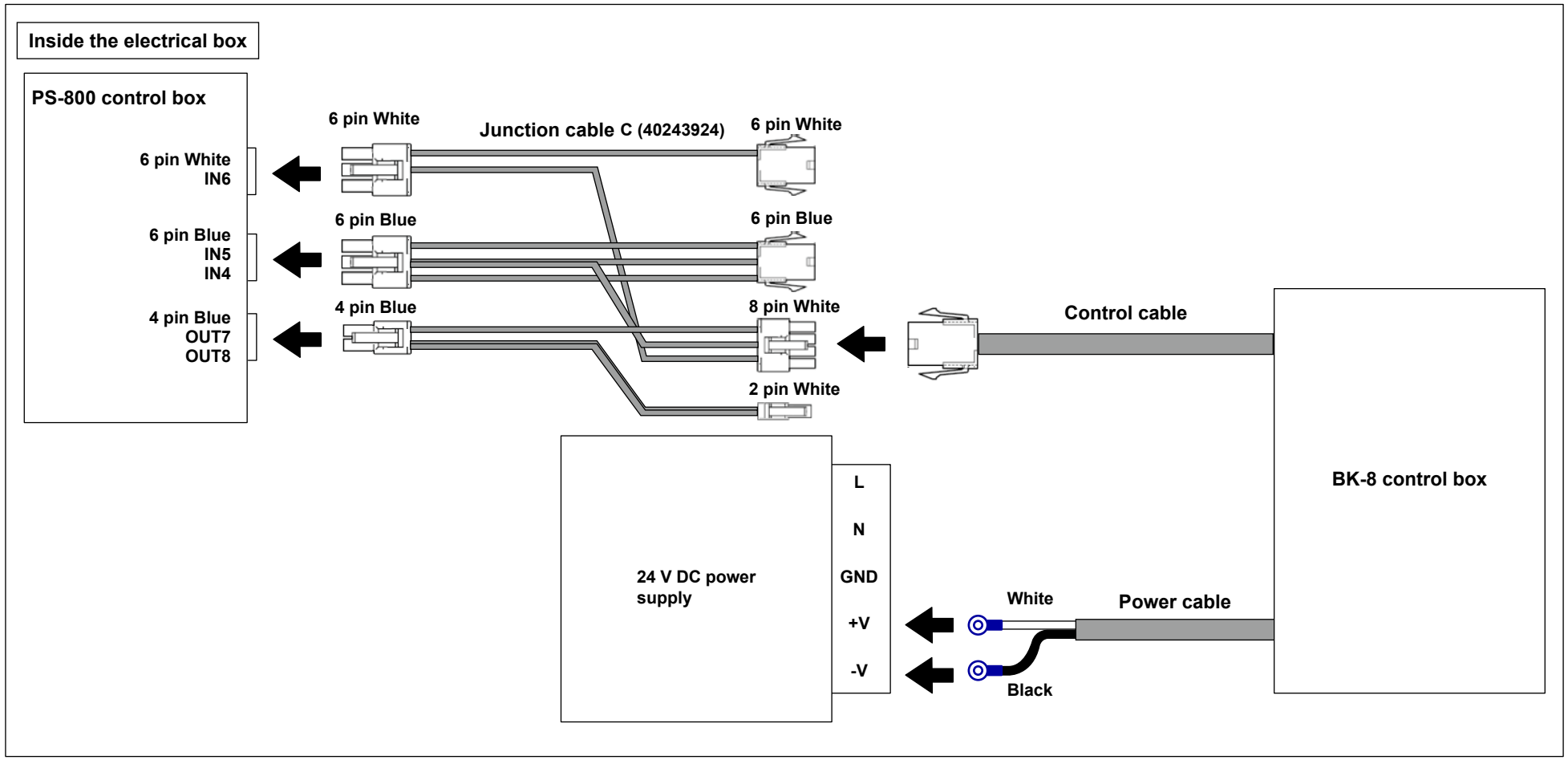
② Connect the wire of the "Pin3" of the junction cable E to the "OUT8-" of the connector J14 of the HEAD PCB 1.

③ Connect the PS800 control box to the junction cable and the bobbin changer control box.

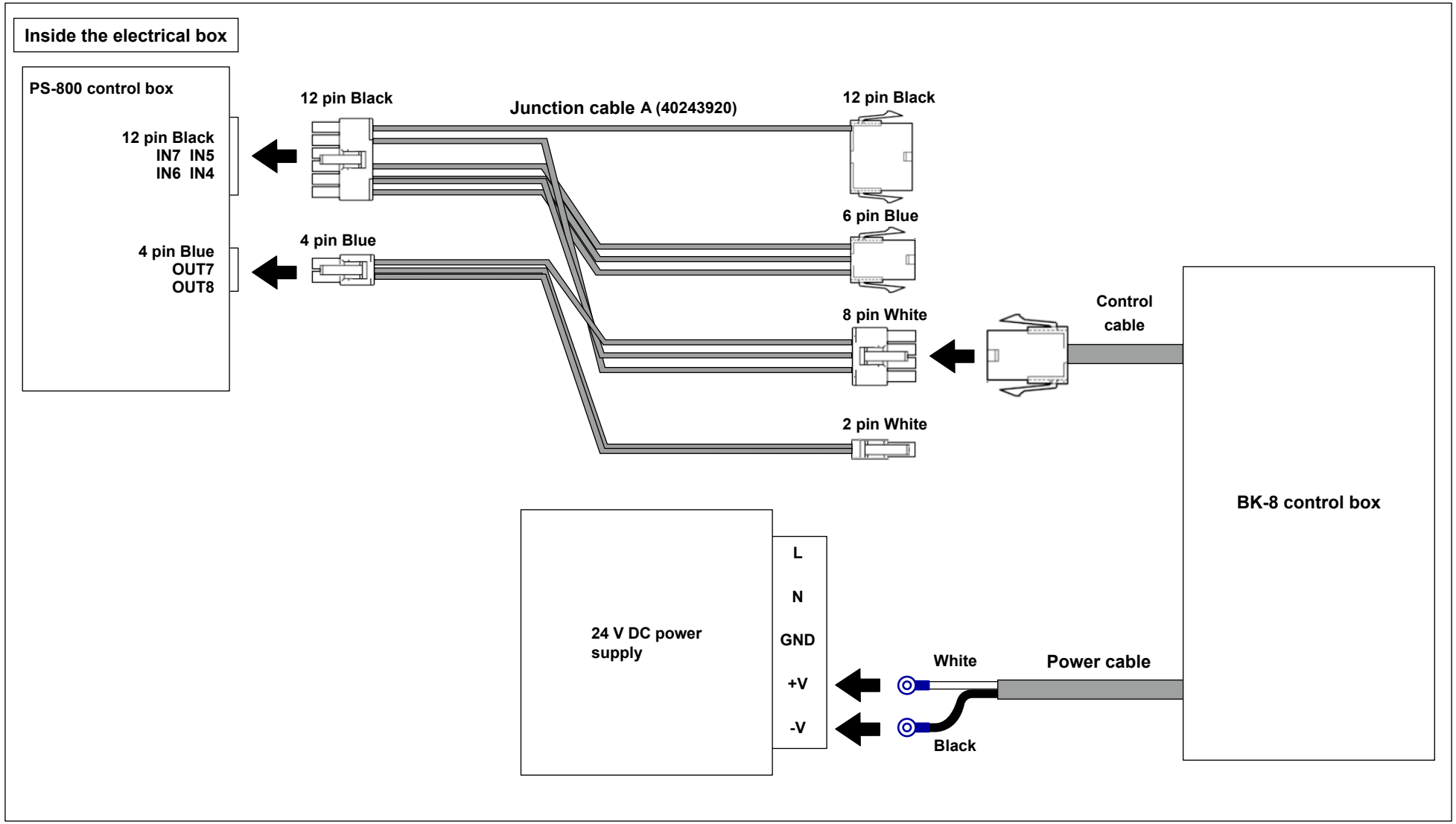
④ Connect the bobbin changer control box to the 24 DC power supply installed in the electrical rack.

*** Connection method differs with the model.**

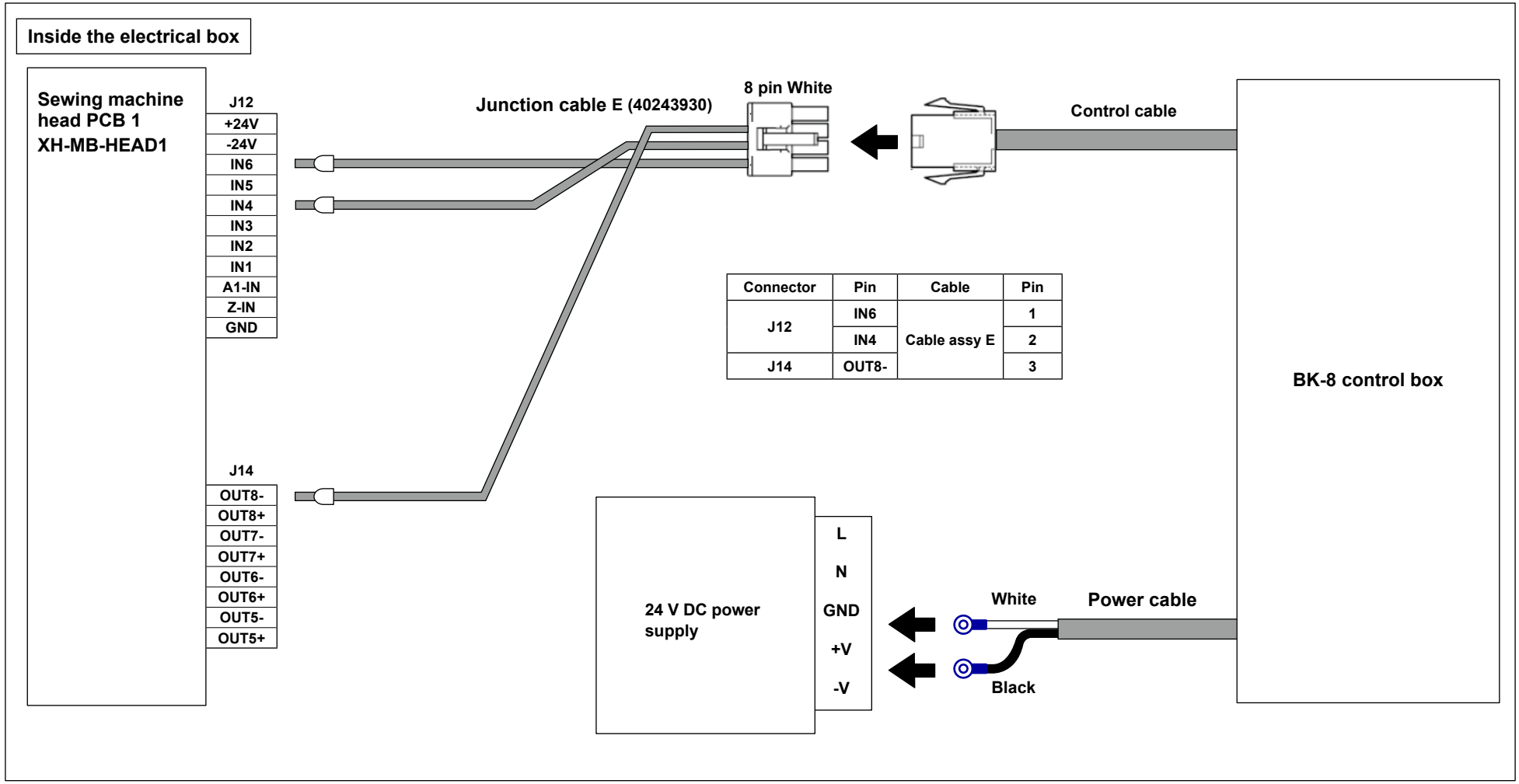
[PS-800-8045 and 13085 standard/laser type models]



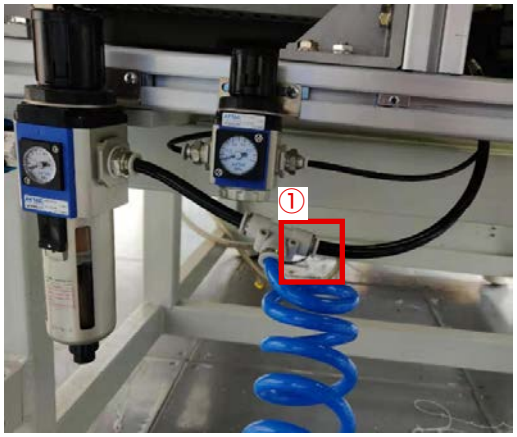
[PS-800-12080 standard/laser type models]



[PS-800 rotary knife type models]

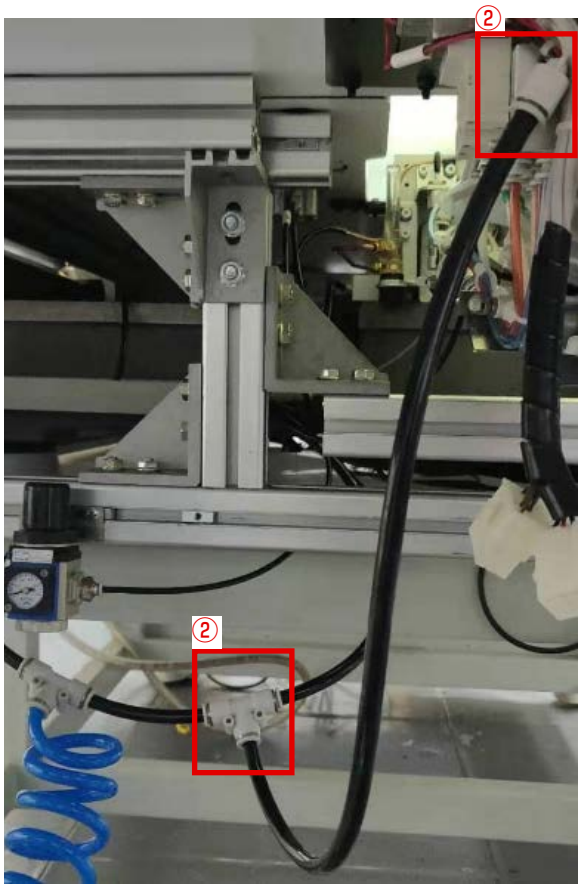


Connector	Pin	Cable	Pin
J12	IN6	Cable assy E	1
	IN4		2
J14	OUT8-		3



[PS-800-8045&12080&13085 Common]

① Also detach the air tube which has been connected to the manual valve.



② Connect the air tubes (100 mm: 1 piece, 500 mm: 1 piece) coming from the BK-8 to the T-union as shown in the figure.

4. Adjusting the installation

4-1. Adjusting the installation of the automatic bobbin changer

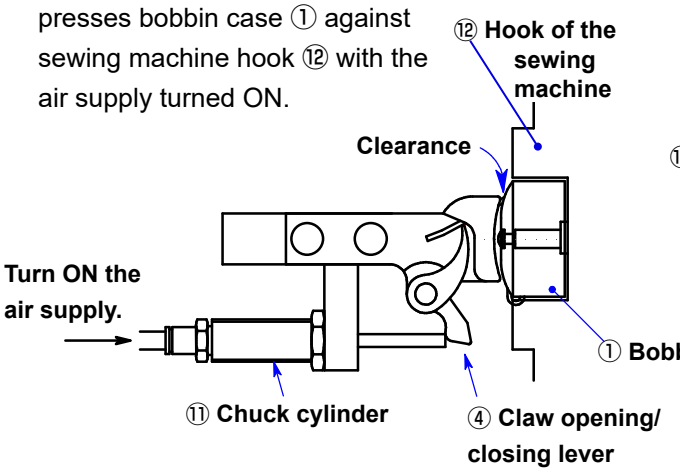
WARNING :

1. Adjustment procedure has to be carried out by a trained technical expert.

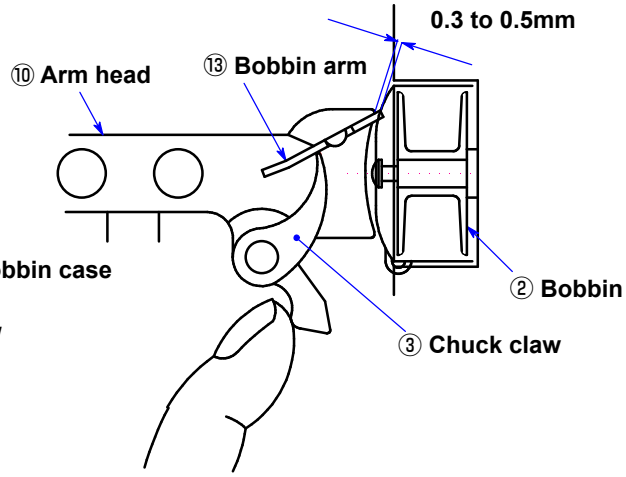
2. Be sure to turn OFF the power to the sewing machine and to the automatic bobbin changer, and unplug them. Turn OFF the air supply to decrease the air pressure to "0 (zero)".
It is quite dangerous to actuate the sewing machine and / or the bobbin changer during the adjustment work.

■ How to check the installation position of the automatic bobbin changer

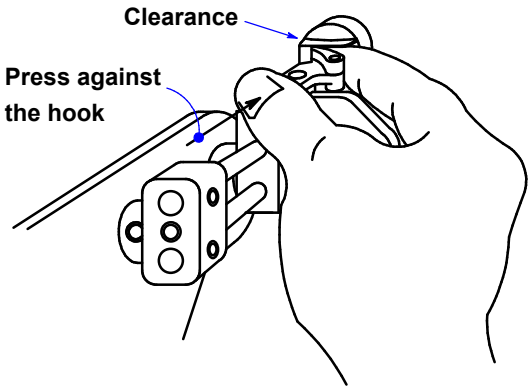
1. The illustration shown below represents the state that the operator grasps the bobbin arm ⑬ and presses bobbin case ① against sewing machine hook ⑫ with the air supply turned ON.



2. Put bobbin ② in the bobbin case. Push claw opening / closing lever ④ until the bobbin case is pressed against the sewing machine hook ⑫ . In this state, measure the clearance.



3. Dimension of clearance provided when chuck claw ③ grasps bobbin case ① and presses it against sewing machine hook ⑫ .

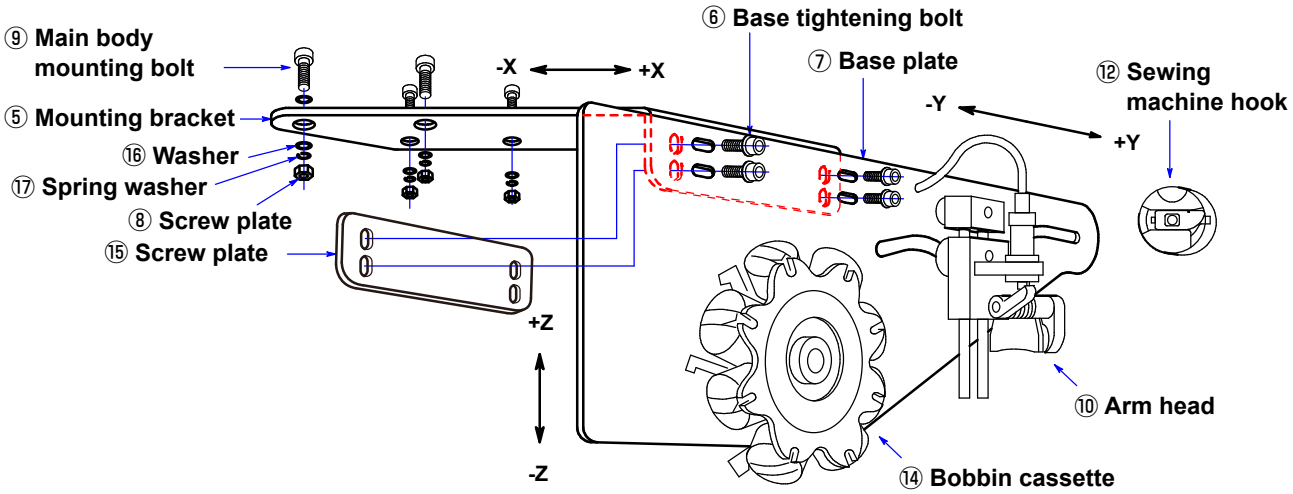


Clearance: 0.3 to 0.5 mm
(in the state the bobbin case is pressed against the hook)

■ How to adjust the installation position

- With respect to the X direction, loosen main body anchor bolts ⑨ (four pieces) of the automatic bobbin changer mounting bracket ⑤ . Move bobbin changer mounting bracket ⑤ to the right and left to adjust the installation position of the bobbin changer.
- With respect to the Y direction, loosen base tightening bolts ⑥ (four pieces) of bobbin changer base plate ⑦ . Move base plate ⑦ back and forth to adjust the installation position of the bobbin changer.
- With respect to the Z direction, loosen base tightening bolts ⑥ (four pieces) of bobbin changer base plate ⑦ . Move base plate ⑦ up and down to adjust the installation position of the bobbin changer.

If the aforementioned clearance is too small, bobbin case ① and sewing machine hook ⑫ can be broken when arm head ⑩ moves toward the hook side. On the other hand, if the aforementioned clearance is too large, chuck claw ③ can fail to grasp the bobbin case, causing a chuck error.



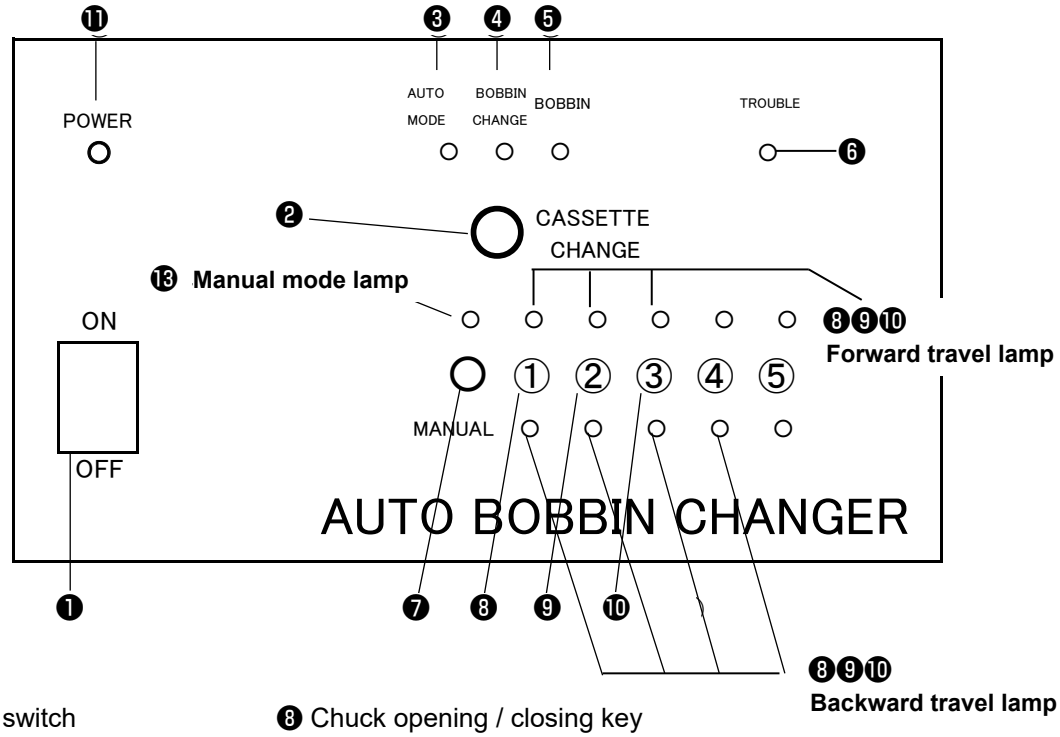
① Bobbin case
② Bobbin
③ Chuck claw
④ Claw opening / closing lever
⑤ Mounting bracket
⑥ Base tightening bolt
⑦ Base plate
⑧ Screw plate
⑨ Main body mounting bolt
⑩ Arm head
⑪ Chuck cylinder
⑫ Sewing machine hook
⑬ Bobbin arm
⑭ Bobbin cassette
⑮ Screw plate
⑯ Washer
⑰ Spring washer

■ Detailed procedure of installation and adjustment

1) Attach the bobbin changer to the sewing machine with screws and nuts (four pieces each).
2) Install the control box to the predefined location.
3) Connect and wire the cables and connect the air hose referring to **"3. Wiring procedure" p.4**.
4) Turn ON the power and air supply. Check to make sure that the lamps mounted on the control box light up as described below.

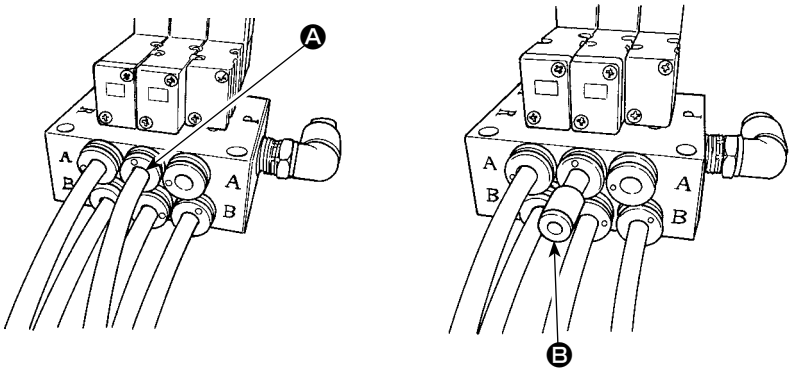
Lamps to be checked whether they light up

⓫ Power lamp; ❸ Automatic mode lamp; ❹ Bobbin replacement lamp; ❺ Bobbin presence lamp



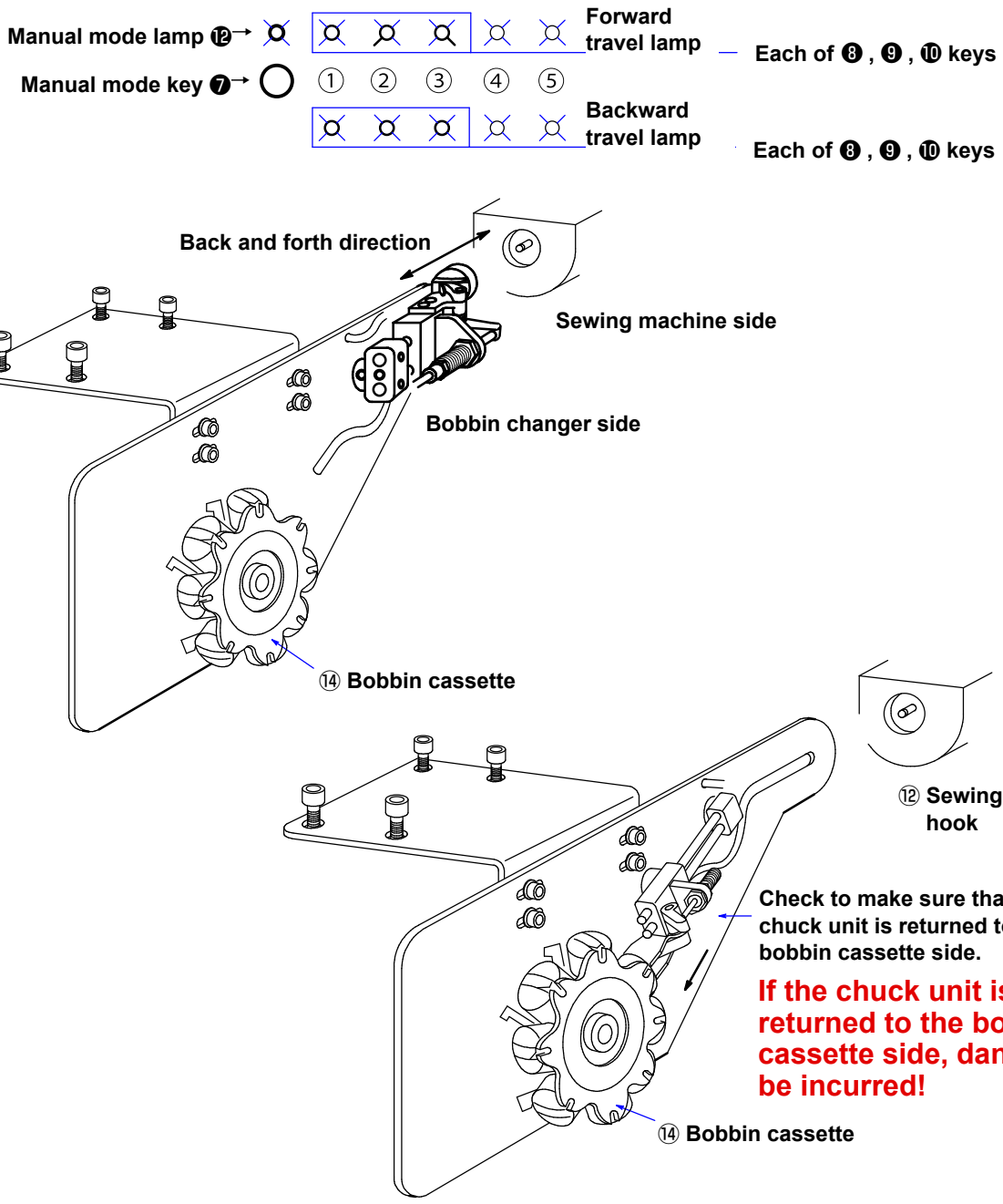
❶ Power switch
❷ Cassette replacement key
❸ Automatic mode lamp
❹ Bobbin replacement lamp
❺ Bobbin presence lamp
❻ Fault lamp
❼ Manual mode key
❽ Chuck opening / closing key
❾ Cassette feed key
❿ Arm head key
⓫ Power lamp
⓬ Manual mode lamp

5) Pull out white tube, A side, Ⓐ located at the center of 3-way solenoid valve. Then, insert plug cap Ⓑ supplied with the unit.



6) Change over the operation method of the control box to the manual operation.

- When manual mode key ❼ is pressed, manual mode lamp ⓬ (orange) lights up, automatic mode lamp ❸ (green) goes out and the operation mode is changed over to the manual mode.
- When arm head key ❿ is pressed once, the chuck unit can be moved back and forth (sewing machine side ⇔ bobbin changer side).



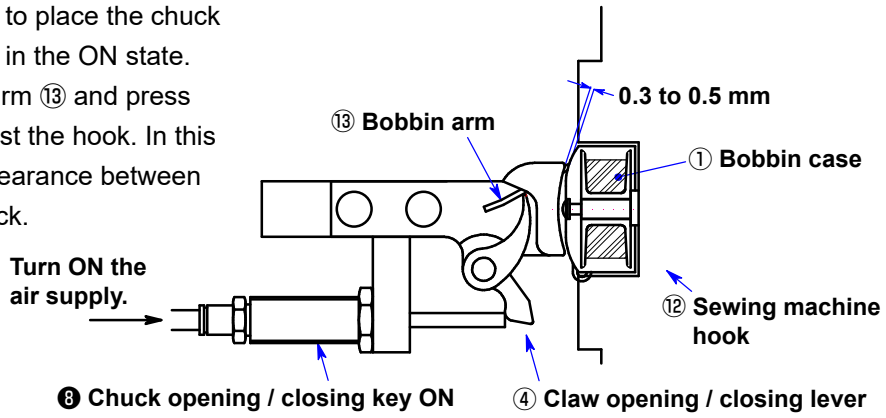
DANGER :

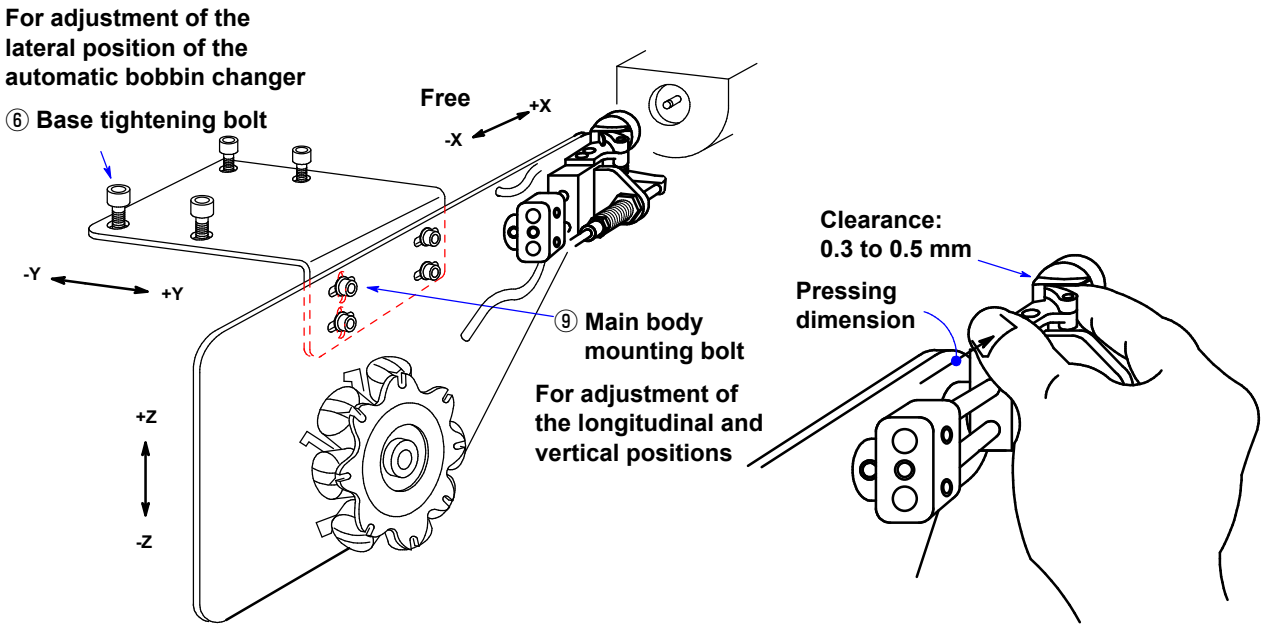
Since the plug cap is fitted over the solenoid valve, the air is not supplied to the cylinder on the head returning side. If arm head key ❿ is pressed again, in this state, the chuck head will abruptly return to the cassette side, inviting great danger.
Be sure not to press arm head key ❿ unless you have confirmed that you have returned the chuck unit to bobbin cassette ⓮ side by hand. If the chuck unit is not returned to the bobbin cassette side, the risk of pinching your fingers in the chuck unit will be invited.

7) Chucking the bobbin case, check the installation clearance between the bobbin case and sewing machine hook ⑫ . Then, fix the automatic bobbin changer.
   - Once the chuck can be moved by hand, put the bobbin case in the bobbin changer cassette. Press chuck opening / closing key ❽ to let the chuck grasp the bobbin case.
   - Moving the chuck head in the aforementioned state, check the operation of putting the bobbin case in and out of the sewing machine hook.
   - Loosen base tightening bolts ⑥ of the bobbin changer. Finely adjust the position of the automatic bobbin changer to the optimum one with respect to X, Y and Z directions to allow the bobbin case to be put in and out of the sewing machine hook. Once the automatic bobbin changer is correctly positioned, tighten the base tightening bolts to secure it.

Adjusting the clamp clearance between bobbin case

Press push button ❽ to place the chuck opening / closing key in the ON state. Then, grasp bobbin arm ⑬ and press bobbin case ① against the hook. In this state, measure the clearance between bobbin case and chuck.





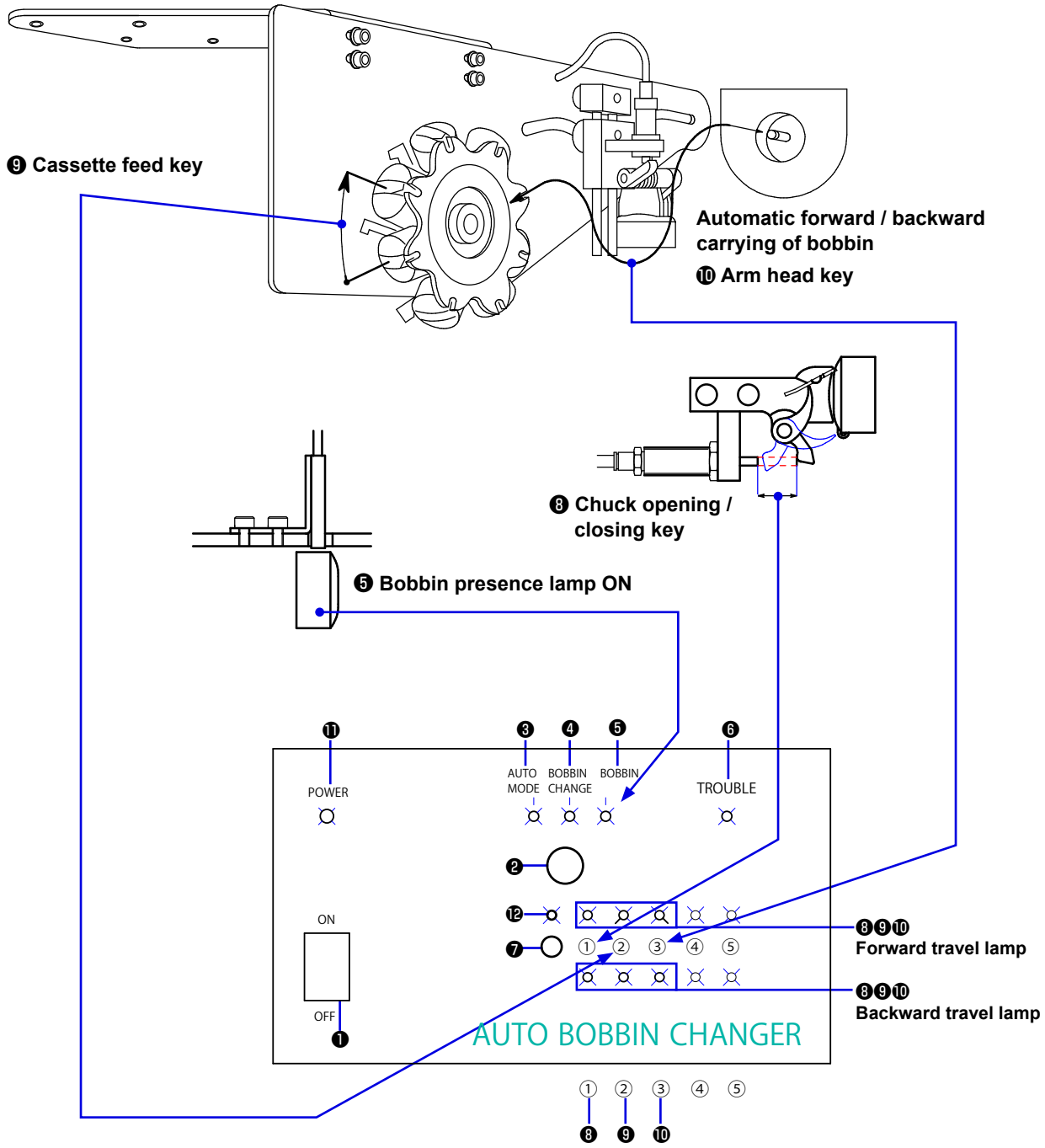
Cautions regarding the setting position of the bobbin changer in the longitudinal direction (Y direction)

- **If the clearance provided between the bobbin case that is placed in the sewing machine hook and the chuck is too small when the chuck rests on the sewing machine side, breakage of the bobbin and hook and mis-chucking can be caused. On the other hand, if the aforementioned clearance is too large, malfunctions such that the chuck fails to grasp the bobbin case arm can occur.**
- **Finely adjust the setting position of the bobbin changer in longitudinal direction so that a clearance of 0.3 to 0.5 mm is provided between the bin case and the chuck when the chuck grasps the bobbin case arm.**

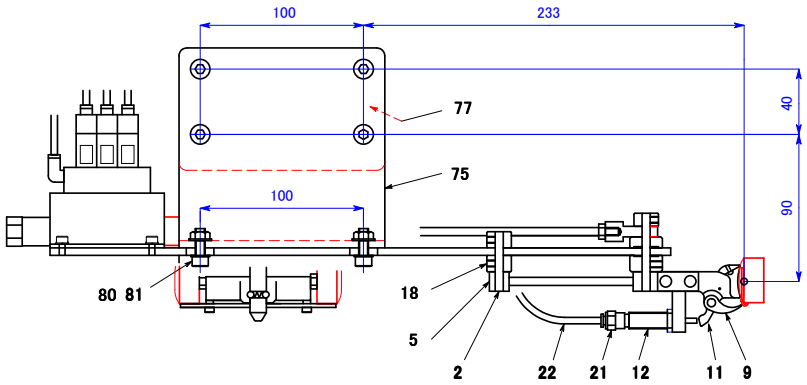
8) Return the chuck unit to the cassette side by hand. Press arm head key ❿ .

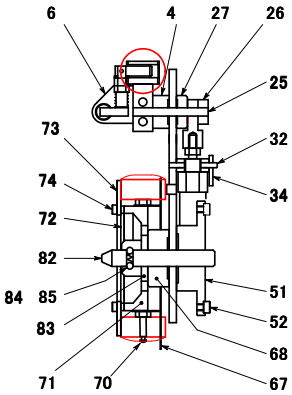
- Turn ON the air supply to the chuck unit so that it cannot be moved by hand. Detach the plug cap fitted to the solenoid valve. Then, reconnect the originally-connected white tube to the solenoid valve.
- <Completion of preparation for piping>
  The installation of the automatic bobbin changer to the sewing machine is completed with the afore-mentioned steps of procedure. Operating the automatic bobbin changer manually, check whether it performs operations normally referring to **"5. Explanation of operation of the control box of automatic bobbin changer" p.21**.

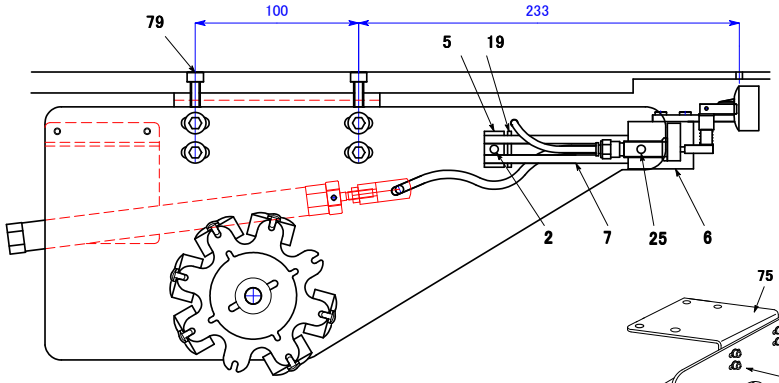
<Check the operation buttons>

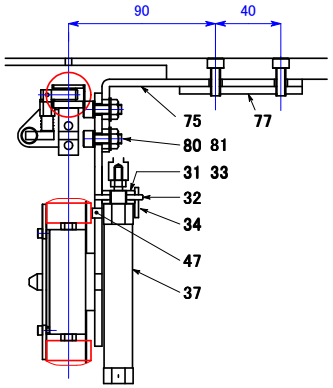


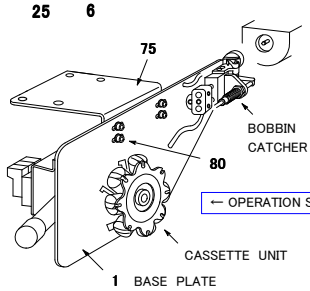
❶ Power switch
❷ Cassette replacement key
❸ Automatic mode lamp
❹ Bobbin replacement lamp
❺ Bobbin presence lamp
❻ Fault lamp
❼ Manual mode key
❽ Chuck opening / closing key
❾ Cassette feed key
❿ Arm head key
⓫ Power lamp
⓬ Manual mode lamp

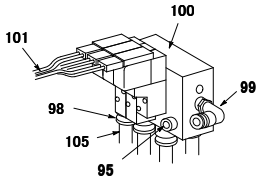


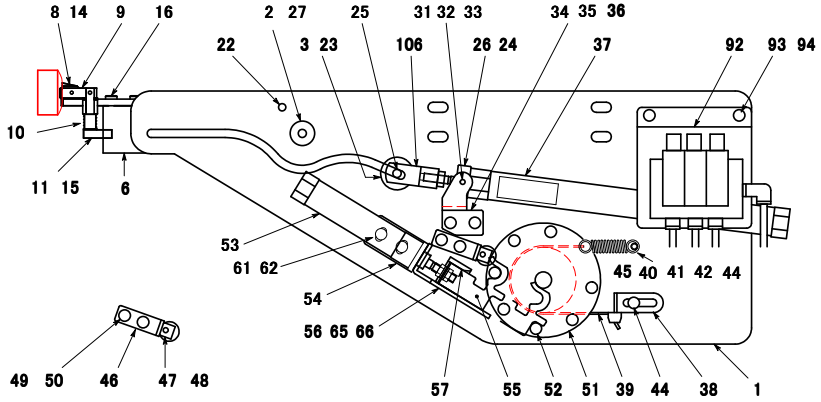


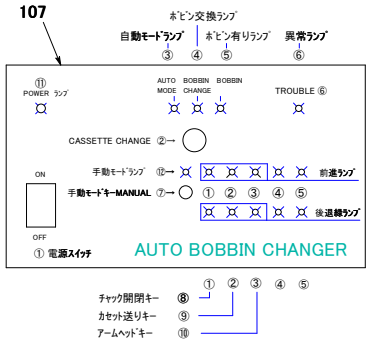










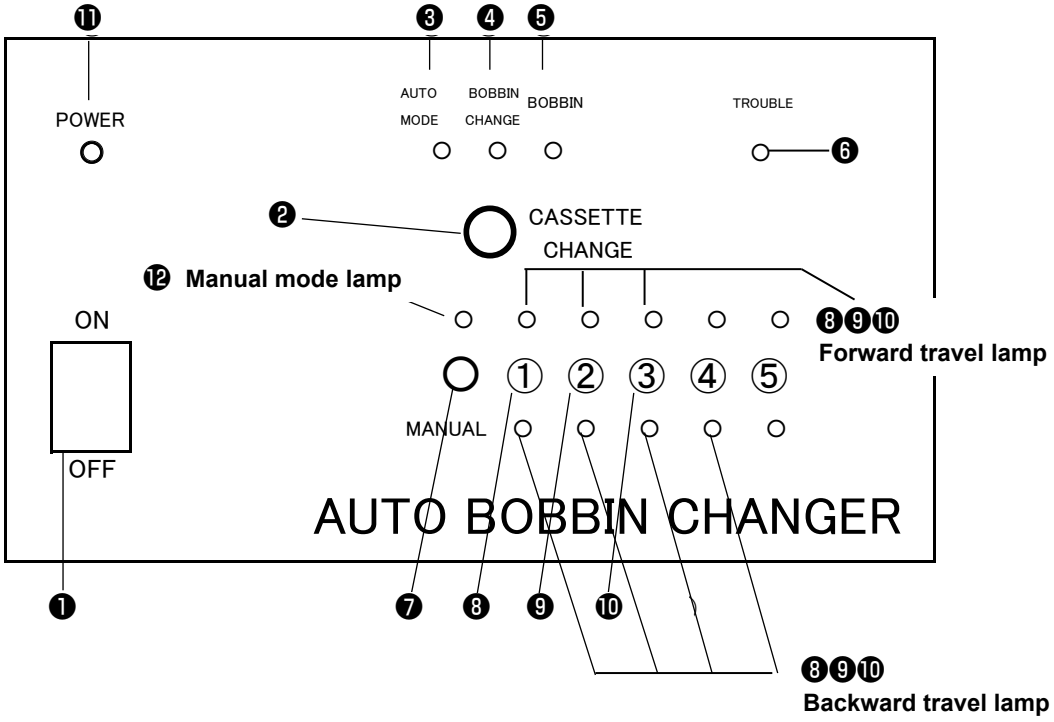


No.	Name of part	Quantity
1	BASE PLATE	1
2	CENTER PIN	1
3	SET_COLLAR	1
4	SET_COLLAR	1
5	CENTER BLOCK	1
6	CHUCK SLIDER	1
7	SLIDER PIN	2
8	CHUCK HEAD	1
9	OPEN FOOT	1
10	OPEN SPRING	1
11	OPEN LEVER	1
12	AIR CYLINDER	1
13	AIR CYLINDER NUT	1
14	BOBBIN LINK SCREW	1
15	SPRING PIN AW12	1
16	SCREW M4×10	2
17	SCREW M4×5	1
18	SCREW M4×5	3
19	OIL FELT	1
20	SCREW M4×5	1
21	ONE TOUCH JOINT	1
22	AIR TUBEø4	1
23	SCREW M4×5	1
24	SCREW M4×5	2
25	CAM SLIDE PIN	1
26	SET_COLLAR	1
27	CAM THRUST_COLLAR A	1
28	CAM THRUST_COLLAR B	1
29	SCREW M4×5	1
30	SCREW M4×12	2
31	AIR CYLINDER NUT	1
32	SCREW PIN	2
33	SCREW M3×3	2
34	AIR CYLINDER BRAKET	1
35	SCREW M4×6	2
36	SPRING_WASHER M4	2
37	AIR CYLINDER ASSYø16×150	1
38	BRAKE BAND HOLDER BRAKET	1
39	BRAKE BAND	1
40	SCREW M4×16	1
41	NUT M4	1
42	SPRING_WASHER M4	1
43	SPRING	1
44	SCREW M4×6	2
45	SPRING_WASHER M4	2
46	SENSOR BRAKET	1
47	SENSOR ASSY	1
48	SCREW	1
49	SCREW M4×6	2
50	SPRING_WASHER M4	2
51	CASSET FEED BOSS	1
52	SCREW M5×5	8
53	AIR CYLINDER ASSYø16×30	1
54	AIR CYLINDER BRAKET	1
55	FEED_PLATE	1
56	FEED_ SHAKE STOP STAY	1
57	FEED_PLATE SHAKE STOP	1
58	AIR CYLINDER NUT	1
59	NUT M5	2
60	SPRING_WASHER M5	2

No.	Name of part	Quantity
61	SCREW M4×8	2
62	SPRING_WASHER M4	2
63	SCREW M4×8	2
64	SPRING_WASHER M4	2
65	SCREW M4×6	2
66	SPRING_WASHER M4	2
67	LOWER THREAD HOLDER	1
68	BOBNIN CASSET ASSY	1
69	NUT M4	8
70	BOBBIN PIN M4	8
71	BOBNIN CASSET	1
72	BOBBIN STOPPER WASHER	1
73	BOBBIN STOPPER PLATE	1
74	SCREW M3×5	4
75	BRAKET	1
76	---	1
78	PLATE	1
80	SCREW M6×20	4
81	SPRING_WASHER M6	4
82	SPRING_WASHER M6	1
83	PIN ø4×30	1
84	BALL ø4	2
85	SPRING	1
86	SCREW M8×12	1
87	SCREW M8×12	1
88	WASHER M6	2
89	NUT M6	4
90	NUT M6	4
91	WASHER M6	4
92	AIR BRAKET	1
93	SCREW M4×6	2
94	SPRING_WASHER M4	2
95	SCREW M4×25	2
96	SILENCER	2
97	JOINT	2
98	STRAIGHT UNION	6
99	ELBOW UNION	1
100	3-PORT SOLENOID VALVE	1
101	POWER CABLE	3
102	CYLINDER SENSOR ASSY	3
103	CYLINDER SENSOR	1
104	SPIRAL TUBE	1
105	AIR TUBE	5
106	KNUCKLE	1
107	OPERATION BOX	1

5. Explanation of operation of the control box of automatic bobbin changer

★ Upper and lower lamps of ❽ , ❾ and ❿ automatically light up in sequence according to the operations carried out by the relevant sections of automatic bobbin changer (even under the automatic mode).



❶ Power switch

- When power switch ❶ is placed in <ON>, the power lamp ⓫ lights up. (If the power lamp does not light up, check the voltage of the 24 VDC connection point.)
  Check the voltage of the connection destination.
- When power switch ❶ is placed in <ON>, automatic mode lamp ❸ and cassette feed key ❾ , arm head key ❿ and chuck opening / closing key ❽ light up respectively. (Automatic mode)
  Caution: If the backward travel lamps (green) of keys ❽ , ❾ and ❿ fail to light up, it is assumed that some fault has occurred. Request the serviceperson for inspection.
- When the bobbin case is loaded in the cassette at the bobbin changing position, bobbin presence lamp ❺ lights up. When no bobbin case is present at the bobbin changing position, the lamp goes out.

❷ Cassette replacement key

- When the manual mode is selected:
  When this switch is pressed under the manual mode, the automatic bobbin changer does not operate. In the case the cassette is manually rotated by four or eight turns, the fault lamp lights up in order to prevent improper operation. In this state, the bobbin changer will no longer operate.
  This switch is used for resetting the fault lamp which flickers (when the preset final counter value is reached).
- When the automatic mode is selected:
  ① Normal operation When replacement of all of the bobbin cases (four or eight pieces) loaded in the automatic bobbin changer is completed, fault lamp ❻ flickers and the bobbin changer stops.
  When this switch is pressed after the replacement of cassette, the automatic bobbin changer takes out a bobbin case from the newly installed cassette and feeds it to the sewing machine.

② Forced replacement of the bobbin cassette

This function is provided to allow the cassette to be changed in the case of changing the thread color, etc. before it is emptied. (Regardless of the number of bobbins already used, the cassette replacement operation is carried out forcibly.)

When this switch is pressed while the sewing machine is at rest and the automatic bobbin changer rests at its origin (in this state, the green lamp of the respective cylinders light up and the bobbin presence (in the sewing machine) lamp and bobbin lamp on the bobbin changer side go out), fault lamp ❻ flickers, bobbin cases are taken out from the sewing machine to the bobbin changer side, and the chuck section retracts toward the sewing machine side. (At this time, fault lamp ❻ keeps flickering. Replace the bobbin cassette with a new one. When this switch is pressed again, the automatic bobbin changer takes out a bobbin from the newly installed cassette and feeds it the sewing machine.

❸ Automatic mode button

· When the automatic mode button ❸ lights up, the automatic bobbin changer is placed in the mode under which it automatically replaces the bobbin (automatic mode).

❹ Bobbin replacement lamp

· This lamp only lights up at the moment when the thread trimming signal and the count-completed signal are received from the sewing machine (bobbin thread remaining amount detector, counter circuit).
· When the thread absence signal and the count complete signal are received, the automatic bobbin changer automatically changes the bobbin.

❺ Bobbin presence lamp

· This lamp lights up when the bobbin case is put in the cassette at its bobbin changing position.

❻ Fault lamp

· Fault lamp ❻ flickers or lights up in the following cases.

<When the fault lamp lights up>

1. In the case the chuck fails to grasp the bobbin case (mis-grasping of the bobbin case on the sewing machine side and on the automatic bobbin changer side)
2. In the case the automatic bobbin changer stops operation halfway and fails to complete operation within the specified time since the cylinder advancing end sensor fails to detect or has broken.
3. In the case the cylinder sensor has failed.

<The fault lamp flickers>

1. In the case all of the bobbins (four or eight pieces) loaded in the cassette have been used.

   <u>When the manual mode is selected</u>

   If the cassette is manually rotated by one turn (four or eight bobbin cases) under the manual mode, the fault lamp will light up and the cassette cannot be rotated further in order to prevent improper operation. To re-start the automatic bobbin changer, press cassette replacement key ❷ . (Cassette replacement key ❷ , under the manual mode, is only used for resetting the flickering fault lamp. If this key is pressed, the bobbin changer will not move.)

   <u>Under the automatic mode (automatic mode is selected)</u>

   When the fault lamp flickers, the automatic bobbin changer returns all of the bobbin cases to the cassette and the arm head enters the standby state on the sewing machine side. When cassette replacement key ❷ is pressed after the replacement of the cassette, the bobbin changer takes out a bobbin case from the newly-installed cassette and feeds it to the sewing machine.

* In the case the bobbin cassette is not fully loaded with bobbin cases (i.e., the number of bobbin cases loaded in the bobbin cassette is smaller than the maximum loadable number of bobbin cases), the bobbin changer operates while skipping the empty portions. However, when the cassette rotates four or eight turns to feed four or eight pieces of cassettes to the sewing machine, the fault lamp flickers and the bobbin changer stops. Then, the cassette changer will be placed in the standby state under which the bobbin changer waits for replacement of the cassette.

Keys used for manual operation

❼ Manual mode key

- When manual mode key ❼ is pressed, the manual mode lamp ⓬ lights up.
- The automatic bobbin changer can be operated manually with below-stated keys ❽ , ❾ and ❿ .
- When manual mode key ❼ is pressed again while all of the lower lamps (green) of the ❽ , ❾ and ❿ light up, automatic mode lamp ❸ lights up to return the operation mode to the < Automatic mode >.

❽ Chuck opening / closing key

- When chuck opening / closing key ❽ is pressed once, the chuck grasps the bobbin case arm (i.e., chuck closes) and forward travel lamp (red) lights up. When the chuck opening / closing key is pressed again, the chuck releases the bobbin case arm (i.e., chuck opens) and backward travel lamp (green) lights up.

* After the completion of operation, light up the backward travel lamp (green).

❾ Cassette feed key

- The cassette feed key is enabled when the arm head is distantly positioned from the cassette. (The forward travel lamp (yellow) of the arm head key ❿ lights up.)
- When cassette feed key ❾ is pressed once, the cassette is fed once and the forward travel lamp (yellow) lights up.
  When the key is pressed again, the cylinder returns to its home position and the backward travel lamp (green) lights up.

❿ Arm head rotating key

- The arm head rotating key is enabled when the arm head is distantly positioned from the cassette.
- When arm head key ❿ is pressed once, the arm head travels forward from the bobbin changer side to the sewing machine side and the forward travel lamp (red) lights up.
  When the key is pressed again, the arm head travels backward to the bobbin changer side and backward travel lamp (green) lights up.

* After the completion of the operation, return the arm head to the bobbin changer side. (The backward travel lamp (green) lights up.)

■ Automatic operation (normal operation)

[Precautions]

1. **Be sure to turn OFF the power switch of the sewing machine in any of the following cases. If not, the sewing machine will run when you press the start button by mistake during the work, inviting great danger.**
   - *** When the bobbin case in the sewing machine hook is replaced**
   - *** When the sewing machine is disused or the operator leaves the sewing machine side**
2. **Be sure to turn OFF the power switch of the automatic bobbin changer when attaching / detaching the cassette. If the bobbin changer is operated by mistake, great danger will be invited.**

- The automatic bobbin changer carries out the following operations when receiving the "bobbin replacement command" from the sewing machine.
- Conditions to be satisfied to allow the automatic bobbin changer to accept the "bobbin replacement command" are as stated below.
  If one of the conditions is not satisfied, the automatic bobbin changer will not start the bobbin replacement operation even if the sewing machine outputs the "bobbin replacement command".
  ① Automatic mode…The select switch is placed in the "automatic" side.
  ② Origin position…The green lamps of all the cylinders light up.
  ③ "Bobbin presence" lamp goes out… No bobbin is present at the position of the bobbin presence / absence check sensor of the automatic bobbin changer.
- In the case all of the four or eight bobbins loaded in the cassette of the bobbin changer are used up (replaced), the bobbin changer stops in the state all of the four or eight empty bobbin are loaded in the cassette, the arm bed retracts to the sewing machine side, and the fault lamp flickers.
  When the "cassette replacement" switch is pressed after the replacement of the cassette with empty bobbins with the cassette loaded with the threaded bobbins, the bobbin changer feeds a new bobbin to the sewing machine and the stops (The flickering fault lamp also goes out.)

■ Connection

1) Connecting the power supply (control box)
   The supply voltage is 24 VDC (white → 24 V; black → 0 V).
   Never apply the AC voltage to the control box. Application of the AC voltage to the control box will break it.

2) Connecting the automatic bobbin changer to the sewing machine

Bobbin changer side			Sewing machine side
Wiring color	Wiring number & name of signal		
White	INPUT GND	←	Not used
Black	Sewing machine is running	←	Not used
Red	Bobbin replacement command	→	Output (output for down counter, etc.)
Yellow	OUTPUT GND	→	Not used
Brown	Prohibition of operation	→	Not used
Green	Bobbin replacement completed	→	Input (used for clearing the counter)
Blue	Automatic bobbin changer is faulty	→	Input (used for the case the fault indication, etc. is necessary)

Explanation of signals

① From the sewing machine: "Bobbin replacement command"
Output this signal at the timing of bobbin replacement such that the counter completes counting. While the "sewing machine is in operation" signal is being output, the automatic bobbin changer will not accept this signal.

② To the sewing machine: "Bobbin replacement completed"
This signal is output for approximately 0.5 s upon the completion of automatic bobbin replacement. It can be used to clear the counter, etc.

③ To the sewing machine: "Automatic bobbin changer is faulty"
This signal is output when the automatic bobbin changer is faulty (the fault lamp lights up).
It is not output when the fault lamp flickers (during the replacement of cassette).

Signals related to the checking sensors

Case AMP 172163-1
Pin AMP 170363-1

CN pin number	Name of signal	Wiring color
1 +5V	Arm forward / backward travel; advancing end	Yellow
2 +5V	Arm forward / backward travel; reversing end	Blue
3 GND	Arm forward / backward travel; common (-)	Brown and grey
4 +5V	Index; advancing end	White / black 1
5 +5V	Index; reversing end	Green / black 1
6 GND	Index; common (-)	Red / black 1 Yellow / black 1
7 +5V	Arm rotating; advancing end	Brown / black 1
8 +5V	Arm rotating; reversing end	Grey / black 1
9 GND	Arm rotating; common (-)	Blue / black 1 White / black 2
10 +24V	Bobbin presence / absence sensor (+)	Black and white
11 GND	Bobbin presence / absence sensor (-)	Green
12 +5V	Bobbin presence / absence sensor signal	Red
13 +5V	Reserved; advancing end	Red / black 2
14 +5V	Reserved; reversing end	Yellow / black 2
15 GND	Reserved; common (-)	Green / black 2 Brown / black 2

Signals related to the valves

Case AMP 172171-1
Pin AMP 170365-1

CN pin number	Name of signal	Wiring color
1 GND	Clamp SOL valve (-)	White
2 +24V	Clamp SOL valve (+)	Black
3 GND	Index SOL valve (-)	Green
4 +24V	Index SOL valve (+)	Red
5 GND	Arm rotating SOL valve (-)	Brown
6 +24V	Arm rotating SOL valve (+)	Yellow
7 GND	Arm forward / backward travel SOL valve (-)	Grey
8 +24V	Arm forward / backward travel SOL valve (+)	Blue
9 *GND	Reserved SOL valve (-)	Red / black 1
10 *+24V	Reserved SOL valve (+)	White / black 1
11		
12		
13		
14		
15		

Signals transmitted / received between the sewing machine and the automatic bobbin changer

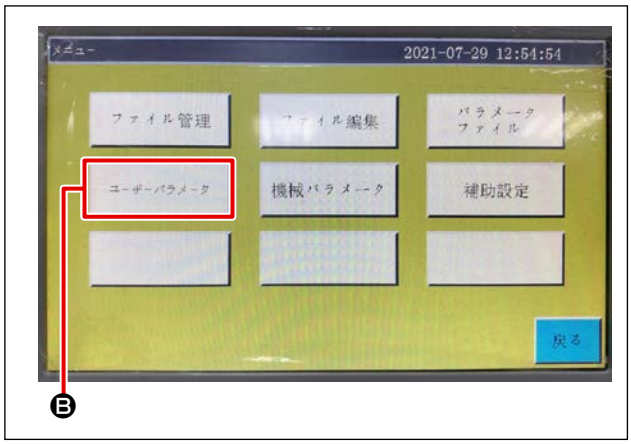
Case Molex 5559-08P
Pin Molex 5558T2L

CN pin number	Name of signal	Wiring color
1	Automatic bobbin changer is faulty	Blue
2	Bobbin replacement completed	Green
3	Bobbin replacement command	Red
4	INPUT GND	White
5	Sewing machine is running	Black
6	OUTPUT GND	Yellow
7	Prohibition of operation	Brown
8	-	-

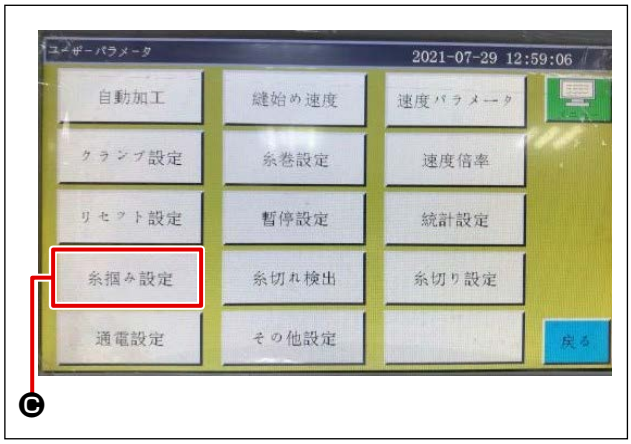
6. Setting the operation panel

[Setting of the automatic bobbin changing]

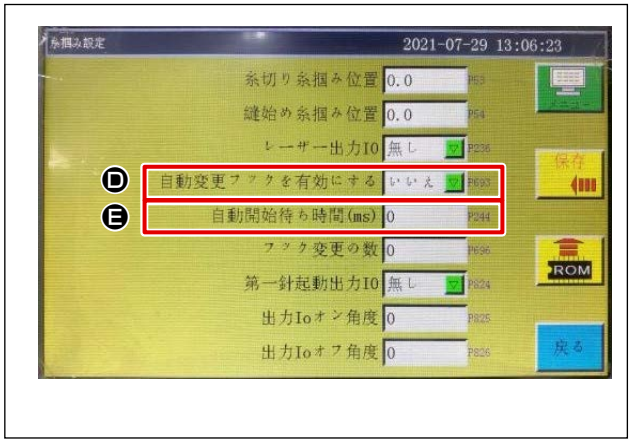
1) Press "Menu" Ⓐ on the initial screen.



2) Press "User Param" Ⓑ on the menu screen.



3) Press "Grab line " Ⓒ on the user parameter screen.



4) Set Ⓓ and Ⓔ on the grab line setting screen.

Ⓓ : Enabling the automatic changing hook
→ "Yes"

Ⓔ : Automatic start waiting time (ms)
→ Arbitrary value

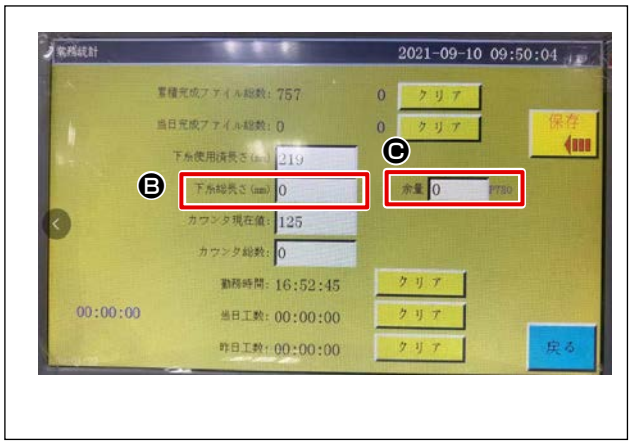
Set to 0 (zero) :
After changing the bobbin, the sewing machine will not restart sewing until the sewing start button is pressed manually.

Set to 1 or more :
After changing the bobbin, the sewing machine will restart sewing automatically after the set value (ms) has elapsed.

This value needs to be adjusted according to the customer's usage conditions.

[Setting the bobbin counter]

1) Press "Work Statistics" Ⓐ on the initial screen.



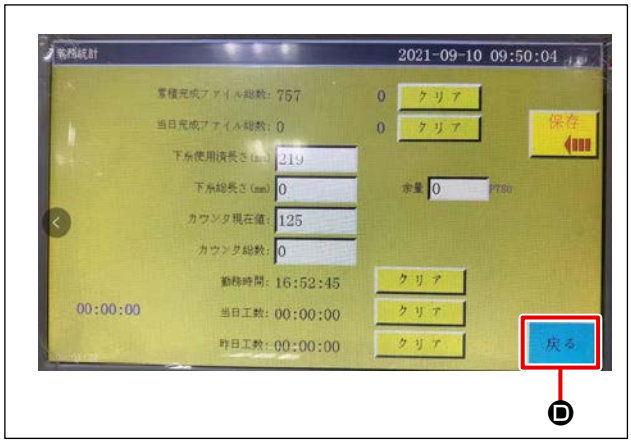
2) Set Ⓑ and Ⓒ on the work statistics screen.
Ⓑ : Total length of the bobbin thread (mm) →
Enter the total length of the bobbin thread wound on the bobbin.
Ⓒ : Surplus length of the bobbin thread (mm) →
Enter the length of the longest seam line in the sewing pattern to be used.

Seam line A : 1000mm

Seam line B : 600mm

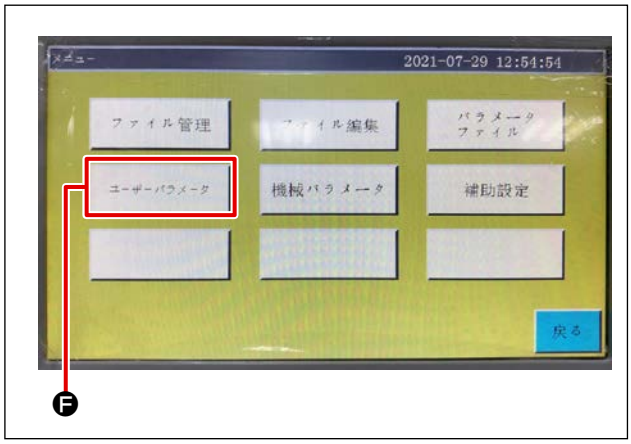
Seam line C : 800mm

Example) In the case of the sewing pattern shown on the left, set "1000" for Ⓒ because the seam line A is the longest.
By setting as described above, the sewing machine will detect runout of the bobbin thread before starting sewing of the seam line A unless the surplus length of the bobbin thread is 1000 mm or more.

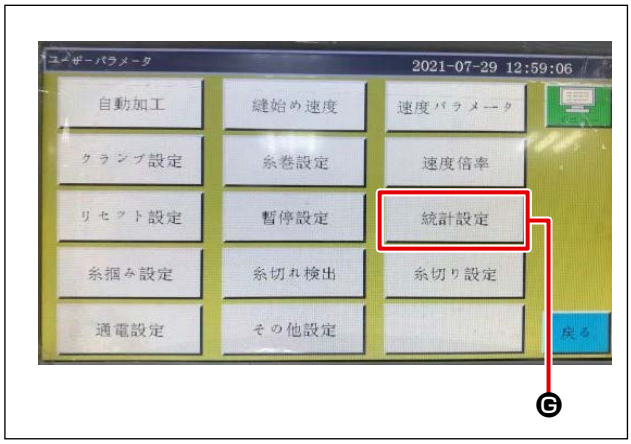


3) Press "Return" Ⓓ.

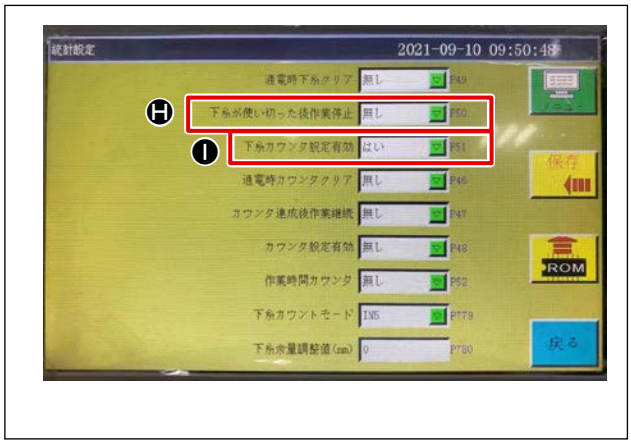
4) Press "Menu" Ⓔ on the initial screen.



5) Press "User Param" Ⓕ on the menu screen.

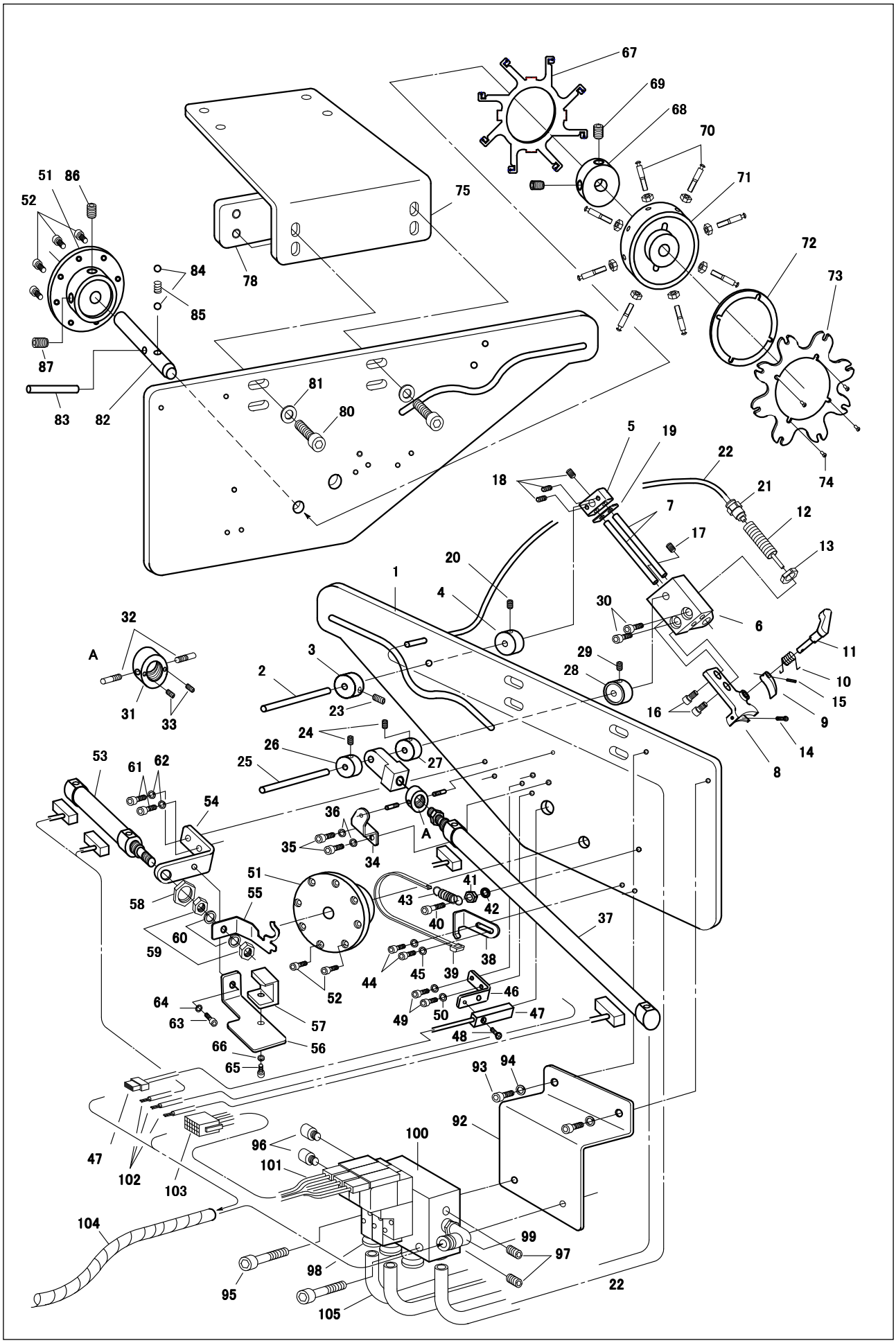


6) Press the "Statistic Setting" Ⓖ on the user parameter screen.



7) Set Ⓗ and Ⓘ on the statistic setting screen.
Ⓗ : Stopping working after the bobbin thread has run out → "Yes"
Ⓘ : Enabling the bobbin thread counter → "Yes"

7. Parts list for the BK-8



No.	Name of part	Quantity	Remarks	No.	Name of part	Quantity	Remarks
1	BASE PLATE	1		61	SCREW M4×8	2	
2	CENTER PIN	1		62	SPRING_WASHER M4	2	
3	SET_COLLAR	1		63	SCREW M4×8	2	
4	SET_COLLAR	1		64	SPRING_WASHER M4	2	
5	CENTER BLOCK	1		65	SCREW M4×6	2	
6	CHUCK SLIDER	1		66	SPRING_WASHER M4	2	
7	SLIDER PIN	2		67	LOWER THREAD HOLDER	1	
8	CHUCK HEAD	1		68	BOBNIN CASSET ASSY	1	
9	OPEN FOOT	1		69	NUT M4	8	
10	OPEN SPRING	1		70	BOBBIN PIN M4	8	
11	OPEN LEVER	1		71	BOBNIN CASSET	1	
12	AIR CYLINDER	1		72	BOBBIN STOPPER WASHER	1	
13	AIR CYLINDER NUT	1		73	BOBBIN STOPPER PLATE	1	
14	BOBBIN LINK SCREW	1		74	SCREW M3×5	4	
15	SPRING PIN AW12	1		75	BRAKET	1	
16	SCREW M4×10	2		76	---	1	
17	SCREW M4×5	1					
18	SCREW M4×5	3		78	PLATE	1	
19	OIL FELT	1					
20	SCREW M4×5	1		80	SCREW M6×20	4	
21	ONE TOUCH JOINT	1		81	SPRING_WASHER M6	4	
22	AIR TUBE ø4	1		82	SPRING_WASHER M6	1	
23	SCREW M4×5	1		83	PIN ø4×30	1	
24	SCREW M4×5	2		84	BALL ø4	2	
25	CAM SLIDE PIN	1		85	SPRING	1	
26	SET_COLLAR	1		86	SCREW M8×12	1	
27	CAM THRUST_COLLAR A	1		87	SCREW M8×12	1	
28	CAM THRUST_COLLAR B	1					
29	SCREW M4×5	1					
30	SCREW M4×12	2					
31	AIR CYLINDER NUT	1					
32	SCREW PIN	2		92	AIR BRAKET	1	
33	SCREW M3×3	2		93	SCREW M4×6	2	
34	AIR CYLINDER BRAKET	1		94	SPRING_WASHER M4	2	
35	SCREW M4×6	2		95	SCREW M4×25	2	
36	SPRING_WASHER M4	2		96	SILENCER	2	
37	AIR CYLINDER ASSY ø16×150	1		97	JOINT	2	
38	BRAKE BAND HOLDER BRAKET	1		98	STRAIGHT UNION	6	
39	BRAKE BAND	1		99	ELBOW UNION	1	
40	SCREW M4×16	1		100	3-PORT SOLENOID VALVE	1	
41	NUT M4	1		101	POWER CABLE	3	
42	SPRING_WASHER M4	1		102	CYLINDER SENSOR ASSY	3	
43	SPRING	1		103	CYLINDER SENSOR	1	
44	SCREW M4×6	2		104	SPIRAL TUBE	1	
45	SPRING_WASHER M4	2		105	AIR TUBE	5	
46	SENSOR BRAKET	1		106	KNUCKLE	1	
47	SENSOR ASSY	1		107	OPERATION BOX	1	
48	SCREW	1					
49	SCREW M4×6	2					
50	SPRING_WASHER M4	2					
51	CASSET FEED BOSS	1					
52	SCREW M5×5	8					
53	AIR CYLINDER ASSY ø16×30	1					
54	AIR CYLINDER BRAKET	1					
55	FEED_PLATE	1					
56	FEED_ SHAKE STOP STAY	1					
57	FEED_PLATE SHAKE STOP	1					
58	AIR CYLINDER NUT	1					
59	NUT M5	2					
60	SPRING_WASHER M5	2					

*** Part number of spare parts to be used for purchase order**
No.55 40190373
No.70 40190374