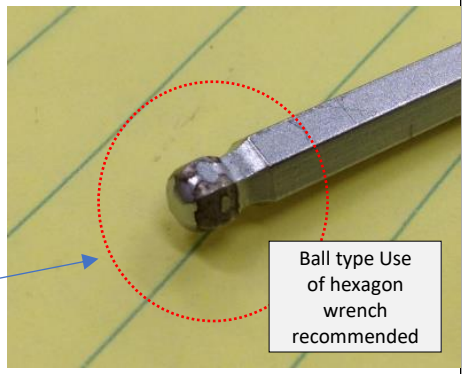
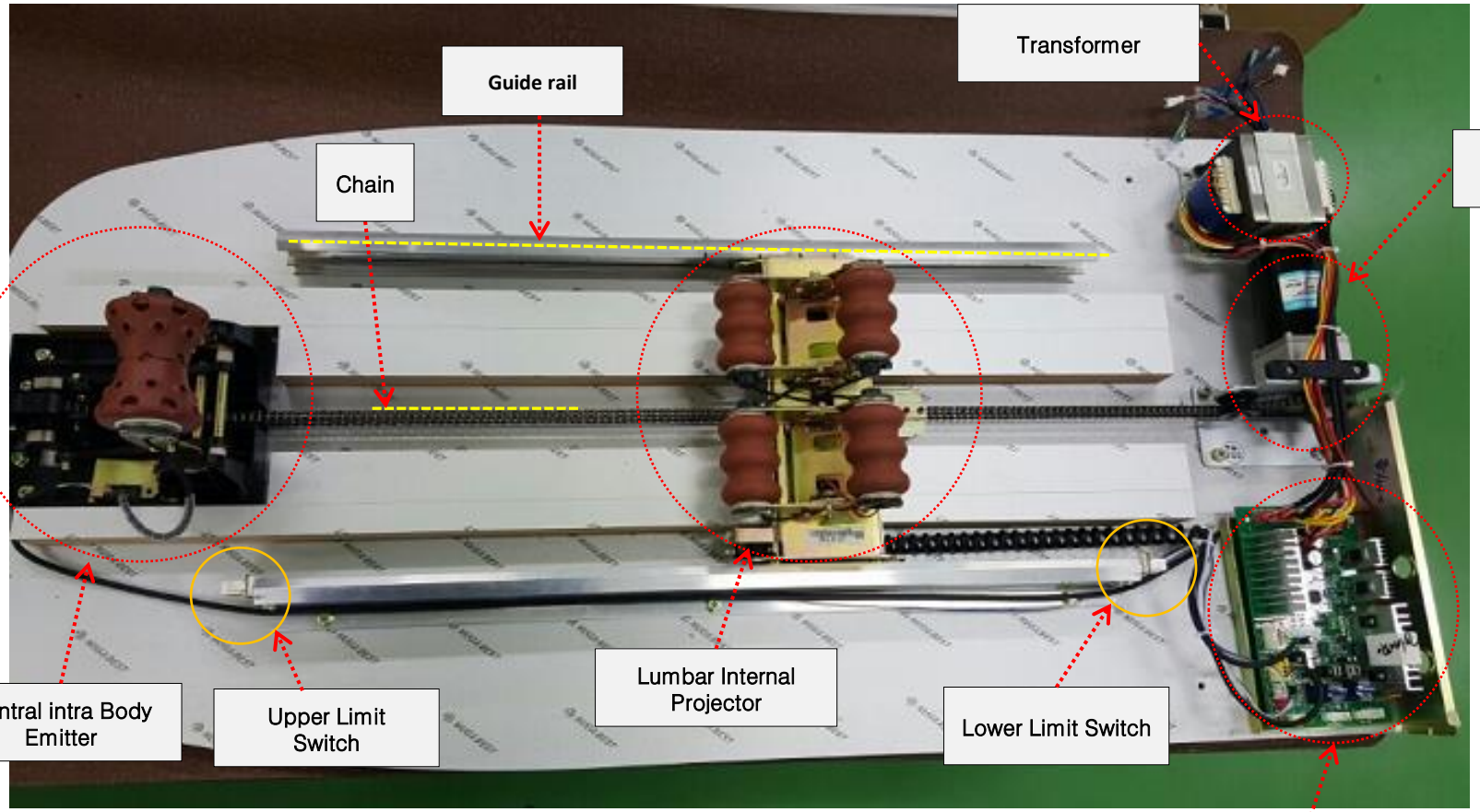
# [N4] AS Manual
## (Halogen/Heater rod Type)

## Tools needed for repairs

| | | | |
|---|---|---|---|
|  |  |  |  |
| 3 sizes ( 8 / 12 /13mm wrench) | Tension gauge (push-pull gauge) | Cross driver | Tester (Digital preffered) |
|  |  |  |  |
| Electric driver (optional) | Viscrip / Flat Fliers | 3 sizes (2.5 / 3 / 4mm Allen wrench) | |
|  |  | | |
| Long Nose Pliers | Cutter Pliers | | |

| BASIC DISASSEMBLY (OPENING MAIN MAT) | |
|---|---|
| 1 | REMOVE THE PANEL / PLATE |
| 2 | REMOVE THE COVER |
| 3 | UNSCREW BOLTS OF INSIDE COVER (UPPER PART) |
| 4 | UNSCREW BOLTS OF METAL COVER OF TRANS,MOTOR,MAIN PCB |

# ■ Component name of the product




NM-5000

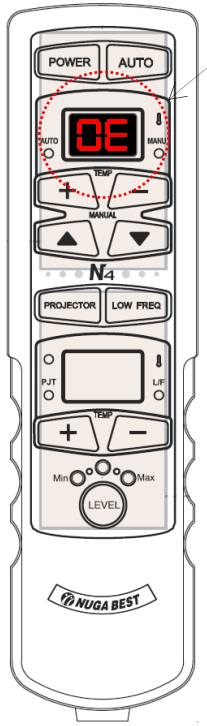
NM-5000plus

GO TO TYPES OF ERROR

# N4 Types of error codes generated by the remote control

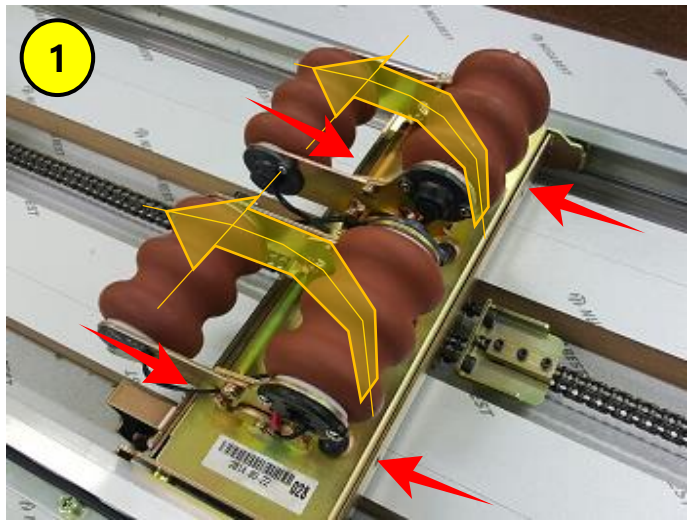
| Error code | Contents | Display position | Pages |
|---|---|---|---|
| 0E | Internal light emitter temperature **sensor short** circuit | Inner emitter temperature display window | 6 Page |
| - - | Internal light emitter temperature **sensor disconnection** | Inner emitter temperature display window | 7 Page |
| 1E | Inner emitter **lamp / Heater Rod** | Inner emitter temperature display window | 8 Page |
| 5E | **Cervical** Roller Temperature **Sensor** Short | Inner emitter temperature display window | 9 Page |
| 4E | **Cervical** Roller Temperature **Sensor Disconnection** | Inner emitter temperature display window | 10 Page |
| 6E | **Cervical** Roller **Lamp** | Inner emitter temperature display window | 11 Page |
| 7E | Delay time of internal emitter driving **(Limit Switch)** | Inner emitter temperature display window | 12, 13 Page |
| - - | 5 ball emitter temperature **sensor disconnection** | External emitter temperature display window | 14 Page |
| 2E | **5 ball** emitter temperature **sensor short circuit** | External emitter temperature display window | 15 Page |
| 3E | 5 bulb emitter lamp | External emitter temperature display window | 16, 17 Page |
| 6E,3E (at the same time) | **Transformer** | Inner emitter temperature display window / replace transformer | 18 Page |
| 8E | **Motor** | Inner emitter temperature display window / replace motor | 19 Page |

# ■ Check and corrective action according to error code ? 0E

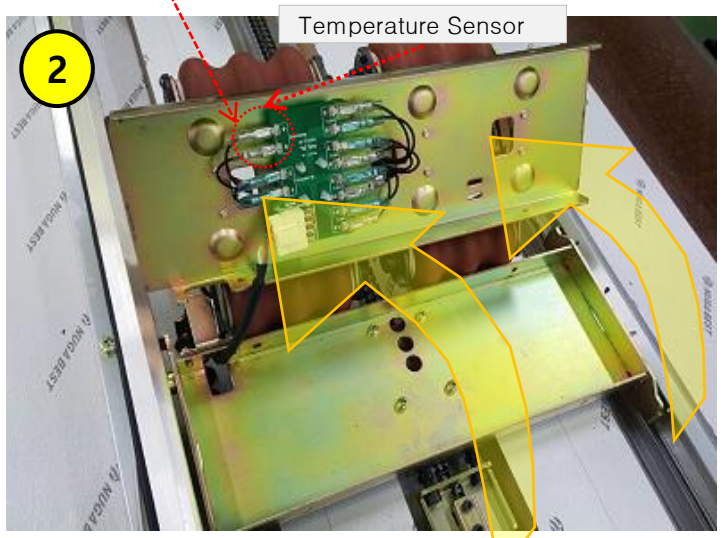



Lumbar internal light emitter temperature sensor Short circuit

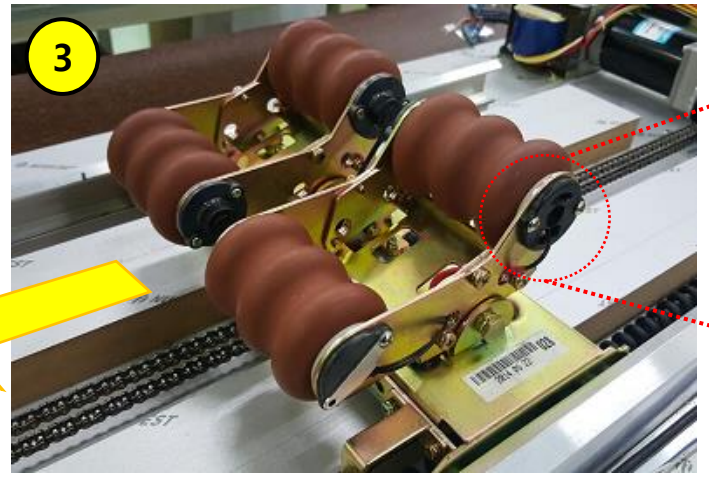
Lumbar temperature sensor replacement




Release the four bolts and detach the inner light emitter.

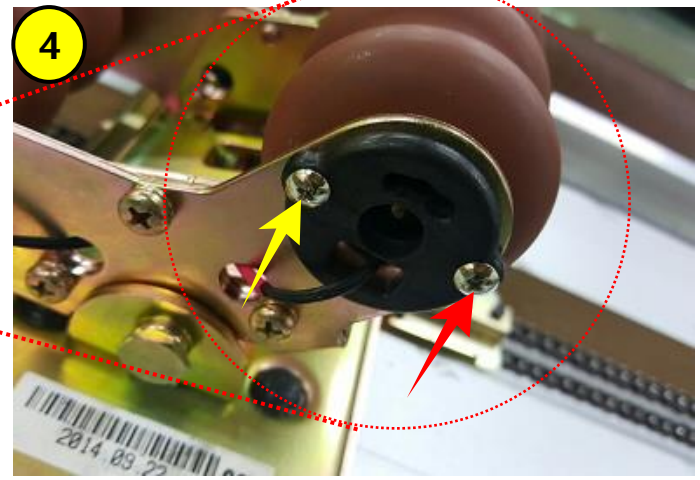



Remove the sensor




Cervical Orientation

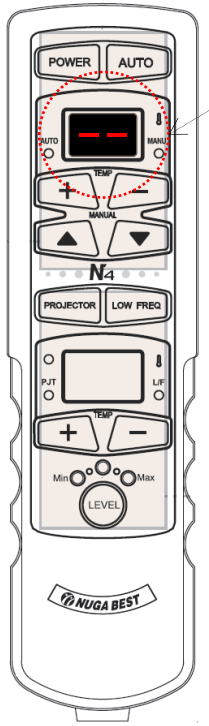
Unscrew the two bolts



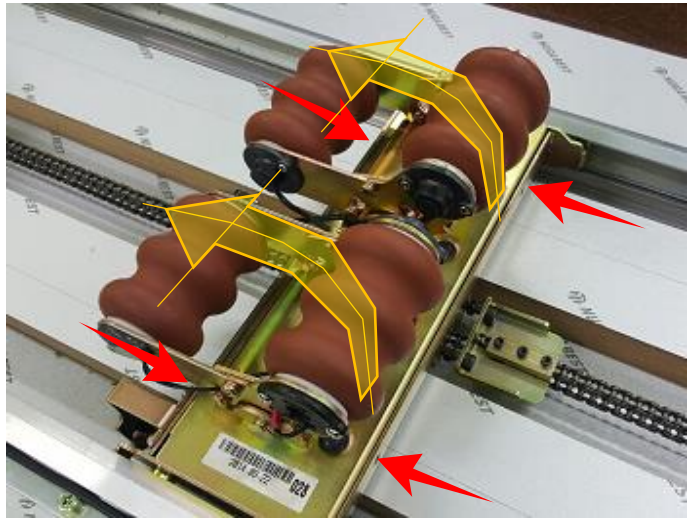

Remove both bolts and replace the temperature sensor

N4 COMPONENT

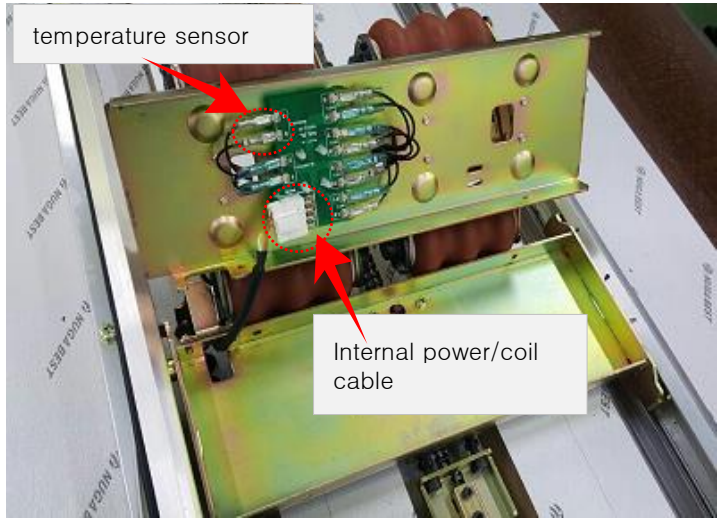
TYPES OF ERROR




Open circuit in the temperature sensor of the internal project for the lumbar vertebrae



Unscrew the four bolts. Detach the internal light emitter

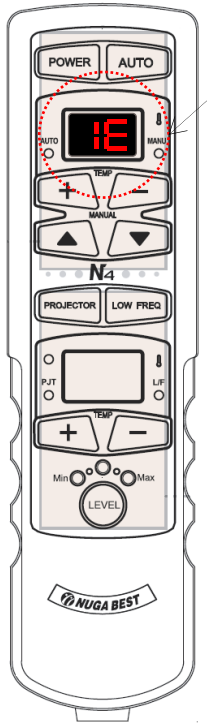



After removing the temperature sensor, use the tester to Check whether it is disconnected.
(About 10KΩ)

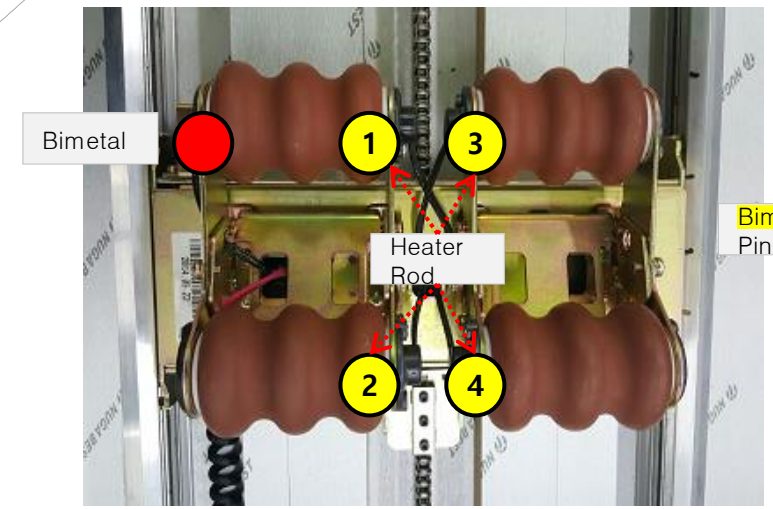
| 에러코드<br>Error code | 원인<br>Cause | 점검방법(원인확인)<br>Inspection method (check cause) | 비고(조치방법)<br>Note (troubleshooting) |
|---|---|---|---|
| – – | 1. Disconnection in the temperature sensor | Measure the resistance value of the temperature sensor using the tester –-> normal if around 10KΩ | – In the case of disconnection, replace the temperature sensor<br>– If the temperature sensor is normal, check the inspection items: 2, 3, 4 |
| | 2. Faulty contact between the lamp PCB and the temperature sensor | Disconnect and re-connect the connector and check for errors. | |
| | 3. Faulty contact between the lamp PCB and the internal power/coil cable | Disconnect and re-connect the connector and check for errors. | |
| | 4. Faulty contact between the main PCB and the internal power/coil cable | Disconnect and re-connect the connector and check for errors. | |

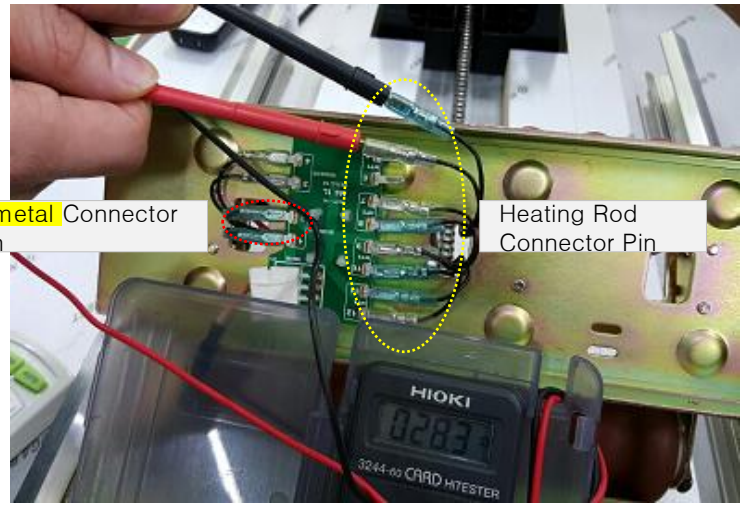
N4 COMPONENT
TYPES OF ERROR

# ■ Check and corrective action according to error code ? 1E




1 E: Lumen inner fume blow bar → Check the heater rod → When disconnection is confirmed Replace heater rod




N4's emitter heater rod consists of individual heat generation. E1 error display even if only one of four heat sinks is disconnected.

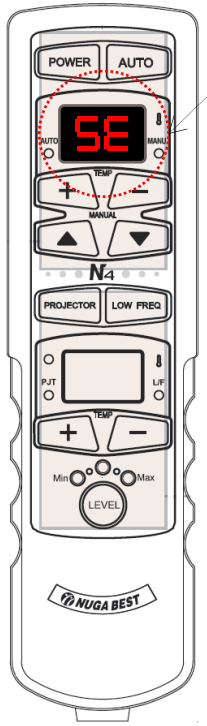
After removing the pin from the heating rod connector, Check the resistance value to check whether it is disconnected (about 28 Ω

| Error code | cause | Check method (check the cause) | Remarks (measures) |
|---|---|---|---|
| 1E | 1. Heater Rod | After disconnecting the pins of the heater rod connector from the lamp PCB, , Resistance value (about 28 Ω) is measured and it is checked whether disconnection occurs | Replace the disconnected heating rod. |
| | 2. Bimetal disconnection | After removing the bimetal connector pin from the lamp PCB Use the tester to check the power supply | Replace the disconnection Bimetal |
| | 3. Lamp PCB-Poor contact with internal coil cable | Lamp PCB - Internal coil cable poor contact | |
| | 4. Main PCB-Poor contact with internal coil cable | Main PCB - Internal drive cable poor contact | |

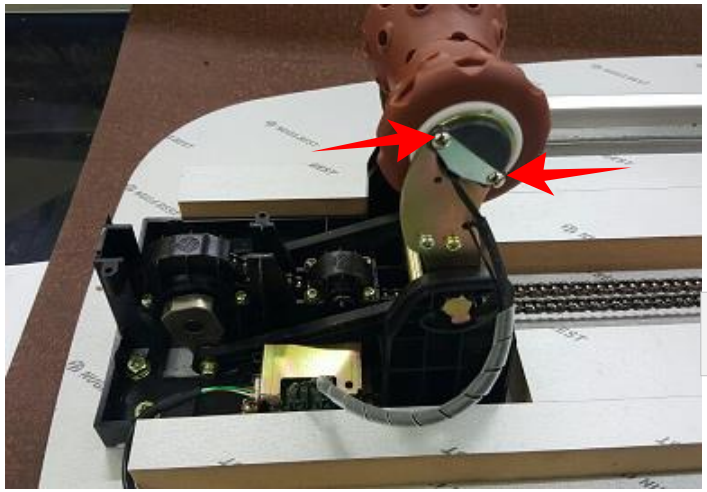
N4 COMPONENT

TYPES OF ERROR

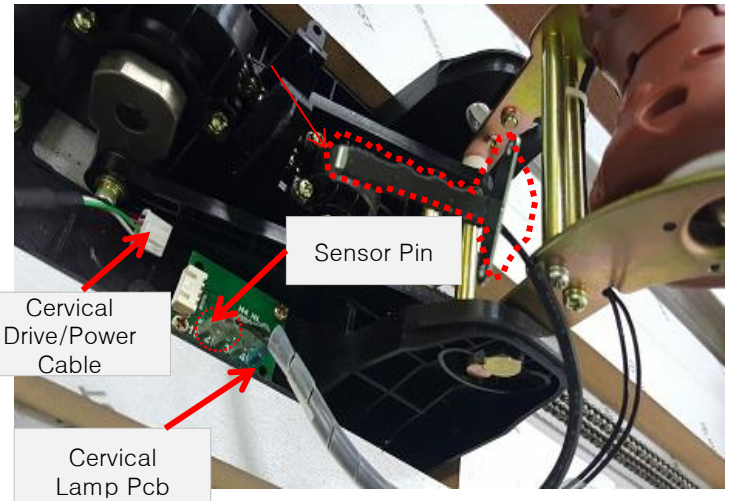
■ Check and corrective action according to error code ? 5E




Cervical Internal Floodlight Temperature Sensor Short → Temperature sensor resistance value measurement (around 10KΩ) → Cervical Temperature Sensor Replacement

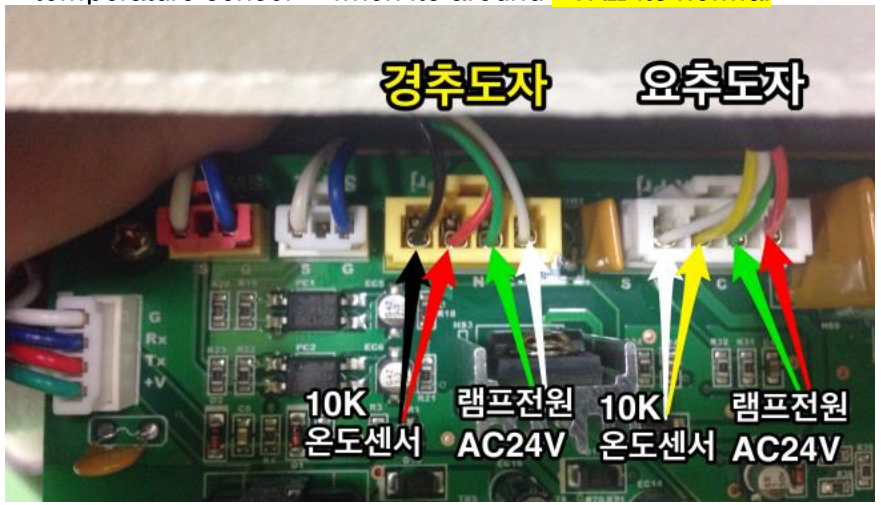


Unscrew the bolts



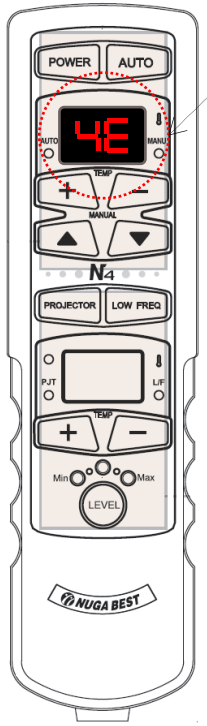

Replace the temperature Sensor

☑ Use the tester to measure the resistance value after removing the connector pin of the temperature sensor > when its around 10KΩ its normal

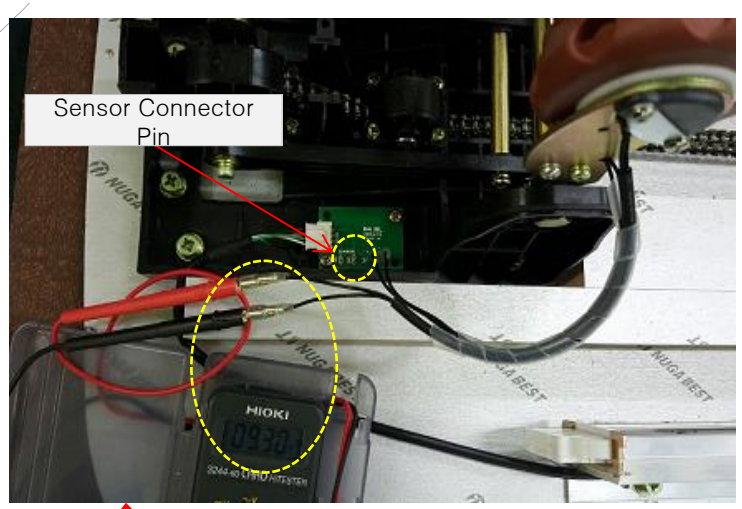


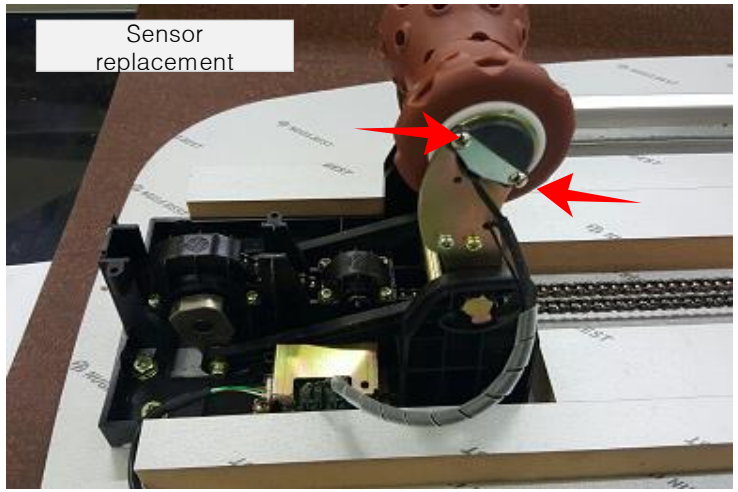

it is normal to measure the resistance value of the temperature sensor 5E When an error occurs ? After removing the cervical vertebral connector from the MAIN PCB The resistance value of the black / red terminal is measured If 10KΩ or less does not come out, Check Cervical drive/power cable or cervical lamp PCB

N4 COMPONENT
TYPES OF ERROR




Cervical Internal Floodlight Temperature Sensor Disconnection → Temperature sensor resistance value measurement (around 10KΩ) → Cervical Sensor Replacement



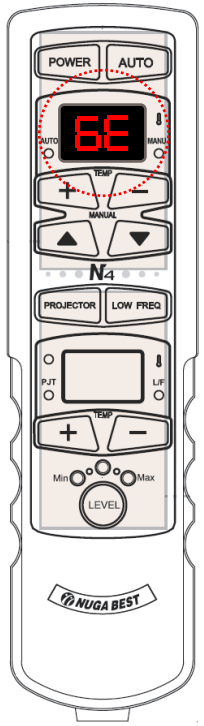




Temperature sensor on cervical lamp PCB After connector pin removal Measure the resistance value of the temperature sensor by using a tester -> In case of around 10KΩ

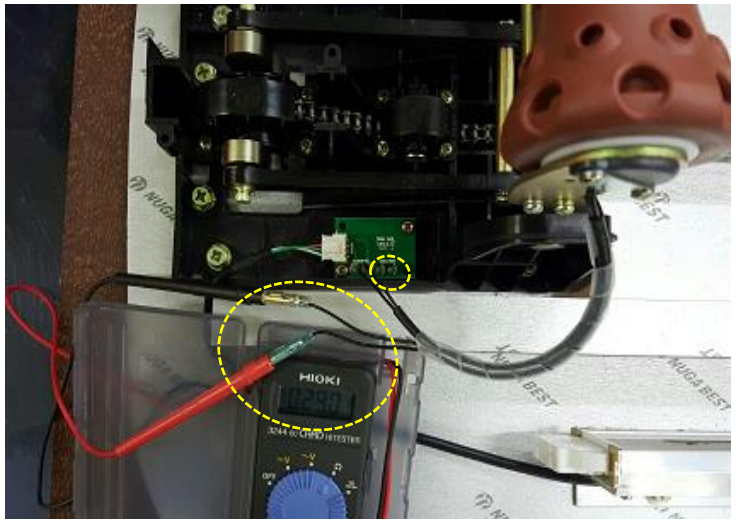
Cervical temperature sensor replacement - Red arrow Remove the two bolts, take out the temperature sensor and replace

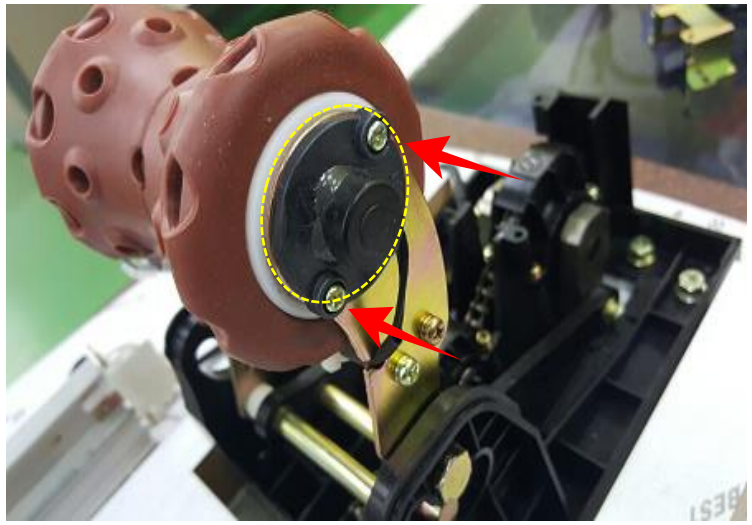
| Error Code | cause | Check method (check the cause) | Remarks (measures) |
|---|---|---|---|
| 4E | 1. Cervical temperature sensor disconnection | Measure the resistance value of temperature sensor by using a tester -> Normal when it is around 10KΩ | - Replace temperature sensor when disconnected When temperature sensor is normal Check items 2, 3 and 4 |
| | 2. Cervical lamp PCB - Temperature sensor Connector Pin poor contact | Remove the connector and tighten it again to check if an error occurs | |
| | 3. Cervical lamp PCB - Cervical drive/power cable poor contact | Remove the connector and tighten it again to check if an error occurs | |
| | 4. Main PCB - Cervical drive/power cable poor contact | Remove the connector and tighten it again to check if an error occurs | |

N4 COMPONENT
TYPES OF ERROR




Cervical Internal Filler Heater Rod Wire → Cervical Heating Rod Resistance measurement (within 28 Ω → Cervical Heater Rod Replacement



After disconnecting heater Rod connector pin from cervical lamp PCB, use a tester to measure the resistance value of the heater rod. Check to see if it is disconnected. (28 Ω normal)

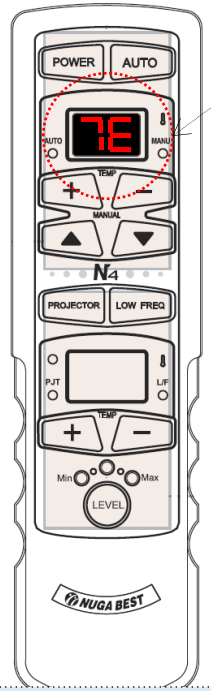
Remove the heating rod bracket - Remove the two bolts (red arrow)
After replacing the heating rod

| Error Code | cause | Check method (check the cause) | Remarks (measures) |
|---|---|---|---|
| 6E | 1. Cervical Heater Wire | In the cervical lamp PCB, the heater connector pin After separation, use the tester to measure the resistance value of the heater rod Check to see if it is disconnected. (28 Ω normal) | Replace the disconnected heater rod. -> If the heating stick is normal, check item 2, 3, 4, 5 |
| | 2. Lamp PCB - Heater connector Pin poor contact | Remove connector pin and tighten again to check if an error occurs | Disconnection due to contact failure The error is the Separation - Rejoining is normal It works. |
| | 3. Lamp PCB – Cervical power cable poor contact | Remove the connector and tighten it again to check if an error occurs | |
| | 4. Main PCB – Cervical power cable poor contact | Remove the connector and tighten it again to check if an error occurs | |

N4 COMPONENT

TYPES OF ERROR

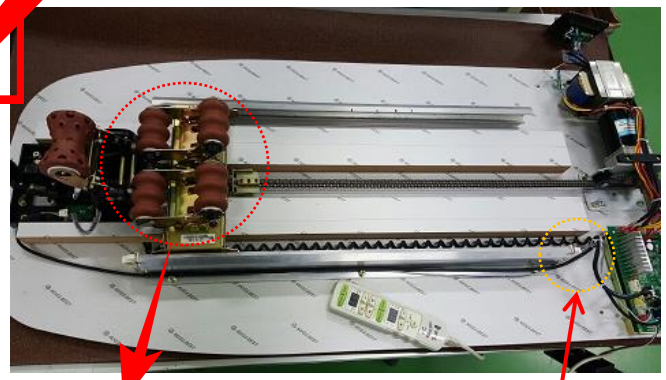
# ■ Check and corrective action according to error code ? 7E




Upper / lower limit switch error and drive time delay -> If there is no signal that the upper / lower limit switch signal is inputted simultaneously or the limit S / W button is pressed for more than 2 minutes during motor operation,Stop the motor and display 7E error. The internal contact of the limit S / W is always attached, but the contact is dropped by pushing the button by the internal light emitter. The main PCB recognizes this and reverses the direction of rotation of the motor to change the orientation of the internal emitter. Therefore, if the state of the other limit switch is not normal, the main PCB stops the motor and displays 7E error.

Upper Limit Swith Replacement

Stop at the bottom 7E error occurred



Stop at the top 7E error occurred

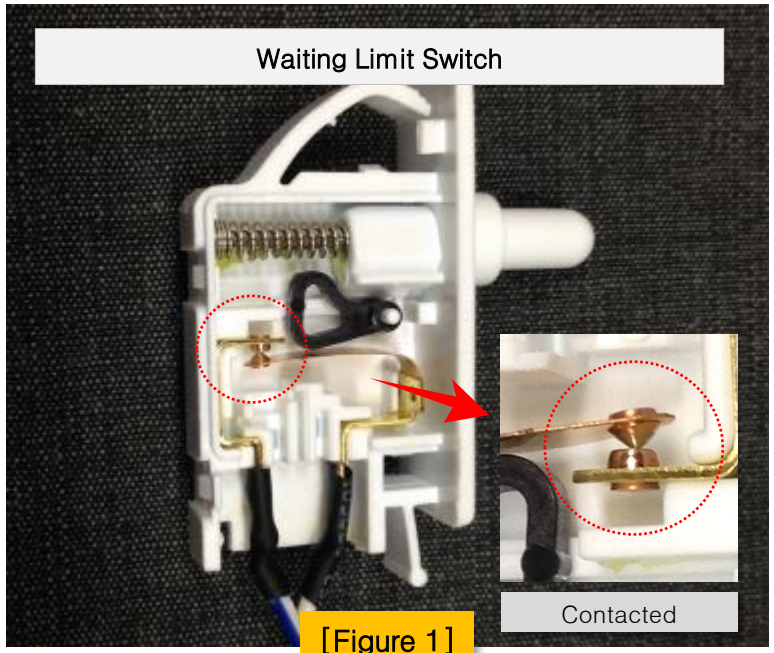
Lower Limit Switch Replacement

| Error Code | cause | Check method (check the cause) | Remarks (measures) |
|---|---|---|---|
| 7E | When the inner light emitter is located on the upper side (head side) Stop at the end and generate 7E | 1. Abnormal lower limit S / W (Does not go down) 2. Main PCB - Lower limit S / W connector Poor contact | 1. Replace the lower limit S / W 2. Check the fastening condition of the lower connector (white) |
| | When the inner light emitter is in the lower (waist) Stop at the end and generate 7E | 1. Abnormal upper limit S / W (Do not go up) 2. Main PCB - Upper limit S / W connector Poor contact | 1. Upper limit S / W replacement 2. Check the upper connector (red) |
| | When a person is in an unstable position during treatment Emitter stops and 7E error occurs | Reduction gear failure -> Gear wheel failure inside the reducer | Reducer replacement |
| | | Main PCB abnormality - Motor output signal abnormality -> (+) DC12V, (-) DC12V signal was not generated | Replace M-PCB |
| | Since the internal light emitter does not move from the beginning 7E occurs after about 2 minutes | Motor abnormal | Motor replacement / Motor Decelerator |
| | | Main PCB abnormality - Motor output signal abnormality -> (+) DC12V, (-) DC12V signal was not generated | Replacement M-PCB |
| | | 1. Abnormal upper limit S / W (Do not go up) 2. Main PCB - Upper limit S / W connector Poor contact | 1. Upper limit S / W replacement 2. Check the upper connector (red) |

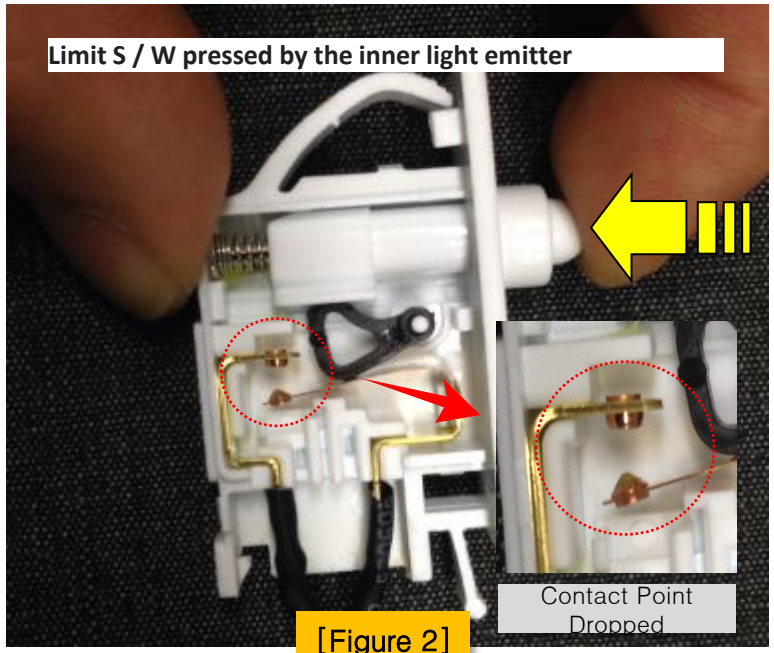
N4 COMPONENT

TYPES OF ERROR

## ■ Check and action according to error code  7E (How the limit switch works)




[Figure 1]



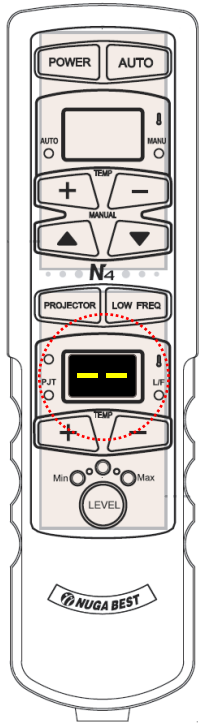

[Figure 2]

The limit S / W is normally attached as shown in [Figure 1], and the inner light emitter is moved to the upper / lower side, as shown in [Figure 2] When pressing the limit S / W button, the main PCB recognizes that the inner light emitter has reached the upper (or lower) side Change the polarity of the current to the motor (+ 12V  -12V) to reverse the direction of the motor and move the emitter in the opposite direction. At this time, if the state of the opposite limit switch is abnormal, the main PCB cut off the current supplied to the motor to stop the motor The 7E error is displayed without moving the inner light emitter in the opposite direction.

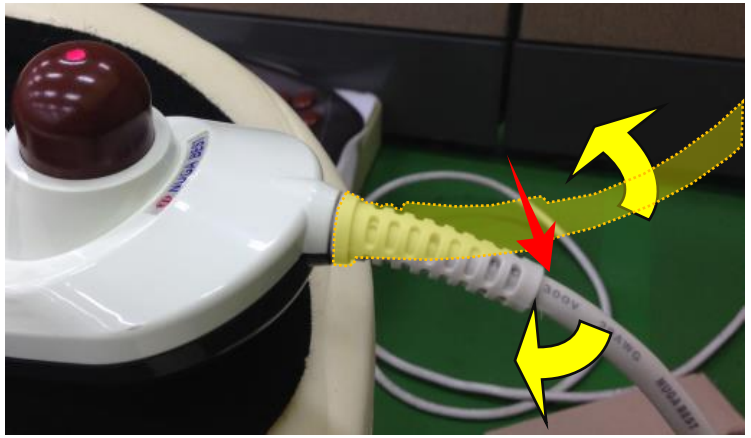
N4 COMPONENT

TYPES OF ERROR

# ■ Checking and correcting according to error code related to 5 emitters □




The temperature sensor of the 5-emitter is connected to the main PCB If you can not detect → Emitter temperature sensor and cable Confirmation of abnormality → Replace the sensor or cable



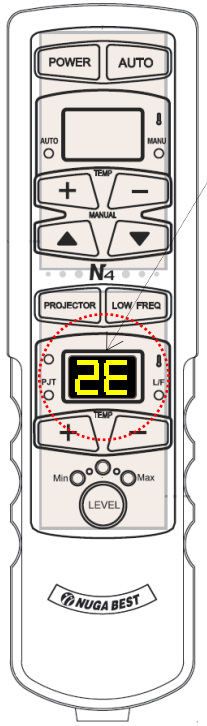
The probability that the temperature sensor is disconnected in the light emitter is not high In most cable sheaths (red arrow) Occurred. □ If black-red cable is broken in 5 strands Temperature sensor disconnection error is displayed. □ As shown in the figure, If an error is displayed and the temperature display is normal There is a recurring phenomenon.

| Error Code | cause | Check method (check the cause) | Remarks (measures) |
|---|---|---|---|
| -- | 1. 5 bulb emitter cable break | 5 bulb The cable at the end of the body of the emitter can be moved up, down, left and right If there is an error occurrence when breaking | Replace the 5 Ball cable |
| | 2. 5 bulb emitter temperature sensor disconnection | Measure the resistance value of the temperature sensor □ Sensor resistance value is around 10K If not (using a tester) | Replace the 5 Ball sensor |
| | 3. 5 bulb poor connection | 5 Check the state of coupling of the emitter. | |

N4 COMPONENT

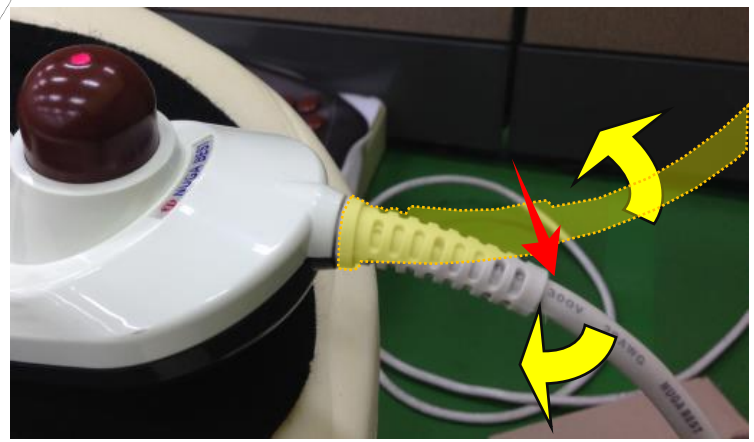
TYPES OF ERROR

## ■ Checking and correcting according to error code related to 5 emitters □ 2 E 항 ➔ 2 E




5 Shown when the short circuit of the temperature sensor of the emitter.

→ Emitter temperature sensor and cable Confirmation of abnormality → Replace the temperature sensor or cable



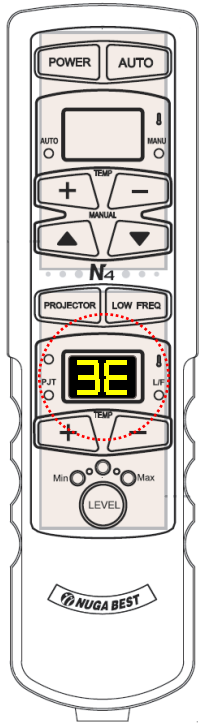
If the temperature sensor in the cable is short-circuited Occurs when a short circuit between black and red occurs in 5 strands of cable. □ As shown in the figure, If an error is displayed and the temperature display is normal, there is a recurring phenomenon.

| Error Code | cause | Check method (check the cause) | Remarks (measures) |
|---|---|---|---|
| -- | 1. Short-circuited 5 Ball cable | 5 bulb The cable at the end of the body of the cable can be moved up, down, left and right If there is an error occurrence when breaking, | Replace the 5 Ball Cable |
| | 2. Short-circuit detector | Measure the resistance value of the temperature sensor □ Sensor resistance value is around 10KΩ If not (using a tester) | Replace the 5 Ball Sensor |

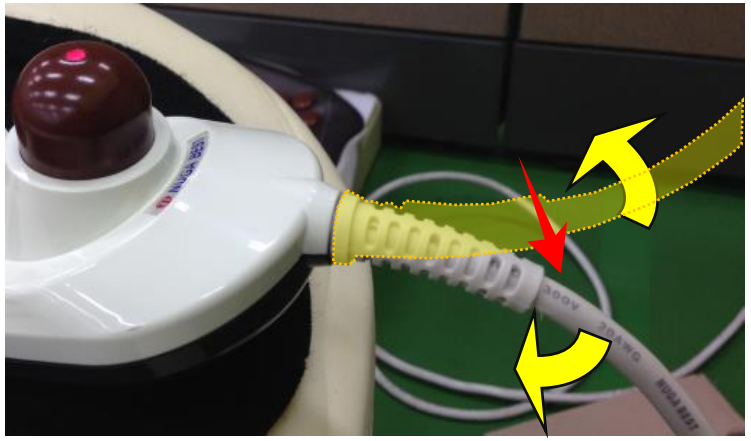
N4 COMPONENT

TYPES OF ERROR

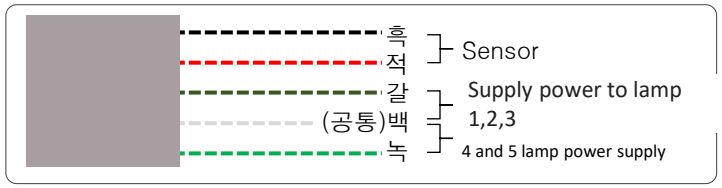
# ■ Checking and correcting according to error code related to 5 emitters ? 3E

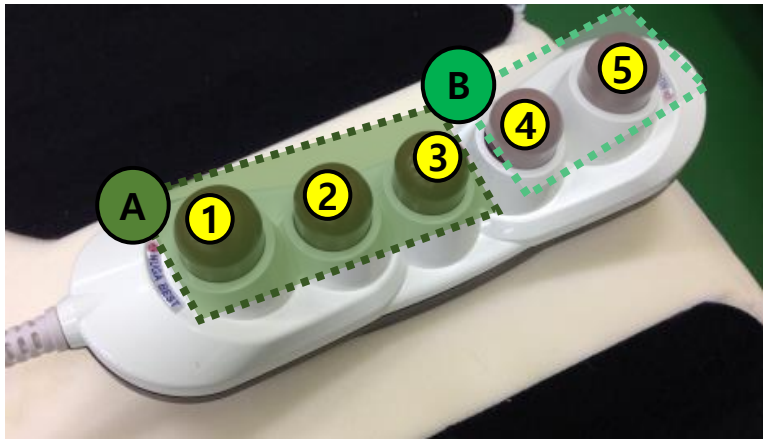



Lamp break of 5 Cable → Check the projector lamp and Check for cable abnormality → Replace lamp or cable



If you tilt the cable vertically and horizontally as shown in the figure When the lamp is repeated from ON to OFF ? If one of the cables in the cable is broken




The bulb of the 5-bulb projector is divided into group A-3 and group B-2. ? (Example) If No. 2 lamp is broken, all 1, 2, 3 lamps It does not turn on.

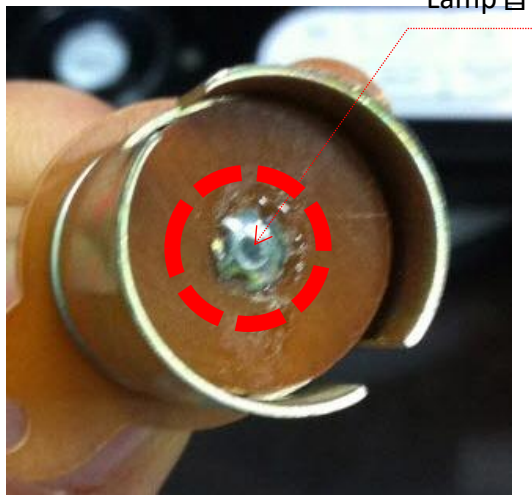
If all lamps are normal, replace the cable. Five strands of cable. . . . . ? white line - all 5 lights ? Brown line - 1, 2, 3 times ? green break - 4 or 5 tie lights

| Error Code | cause | Check method (check the cause) | Remarks (measures) |
|---|---|---|---|
| | 1. 5 bulb Emitter lamp break (Two or three lamps X) | Check the lamp with the naked eye === (ooo ◎◎) -> 3 + 2 | Replacing the lamp -> Check cable if there is no lamp |
| 3E | 2. 5-hole emitter cable break (All 5 lamps X) | 5When the lamp is turned ON / OFF repeatedly when breaking the cable at the end of the bulb body vertically, horizontally, | Cable replacement -> Cable twist |
| | 3. Lamps and cables are all normal | Both the lamp and the cable were checked, but there was no abnormality. -> Check wiring inside the emitter and check the lamp socket. | see next page |

N4 COMPONENT
TYPES OF ERROR

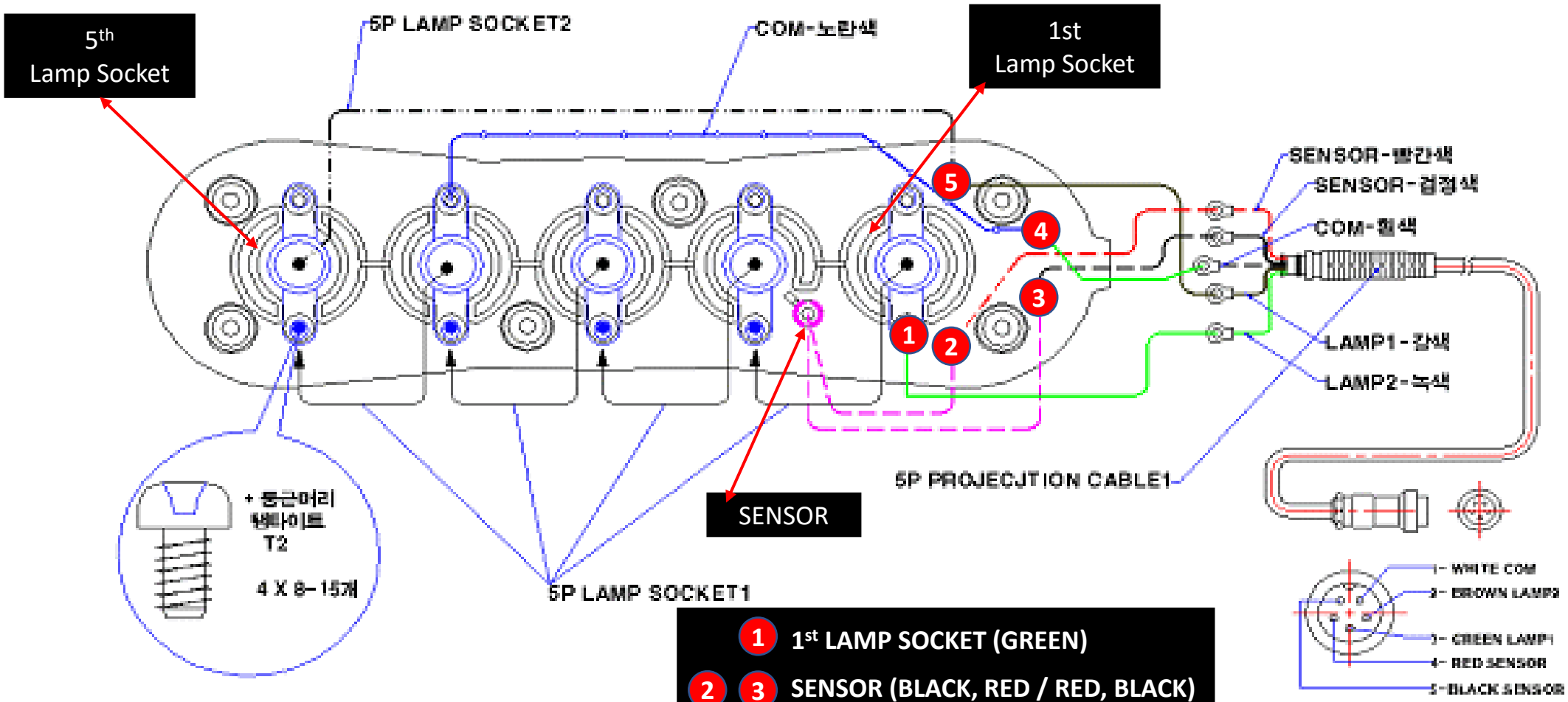
# ■ 5 emitters 3E error correction method

1. Lamp Replacement
2. If the lamp blinks repeatedly when the cable is bent and spanned  Replace or regenerate the external emitter cable ASSY
3. If "E3" occurs even after 1st and 2nd measures ....  If Lamp Socket's contact point is damaged for a long time, lamp will be turned off during operation  Can occur. If you need to replace the lamp socket or if there is no part, please add solder to the contact area.

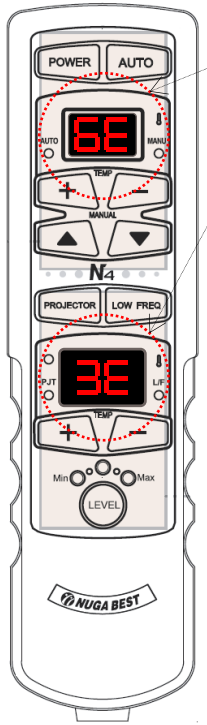

N4 COMPONENT
TYPES OF ERROR

# 5구 투광기 배선도




1. 1st LAMP SOCKET (GREEN)
2. 3. SENSOR (BLACK, RED / RED, BLACK)
4. BI-METAL (WHITE)
5. 5th LAMP SOCKET (BROWN)

## ■ Check and corrective action according to error code ? 6E & 3E coincidence 동시발생

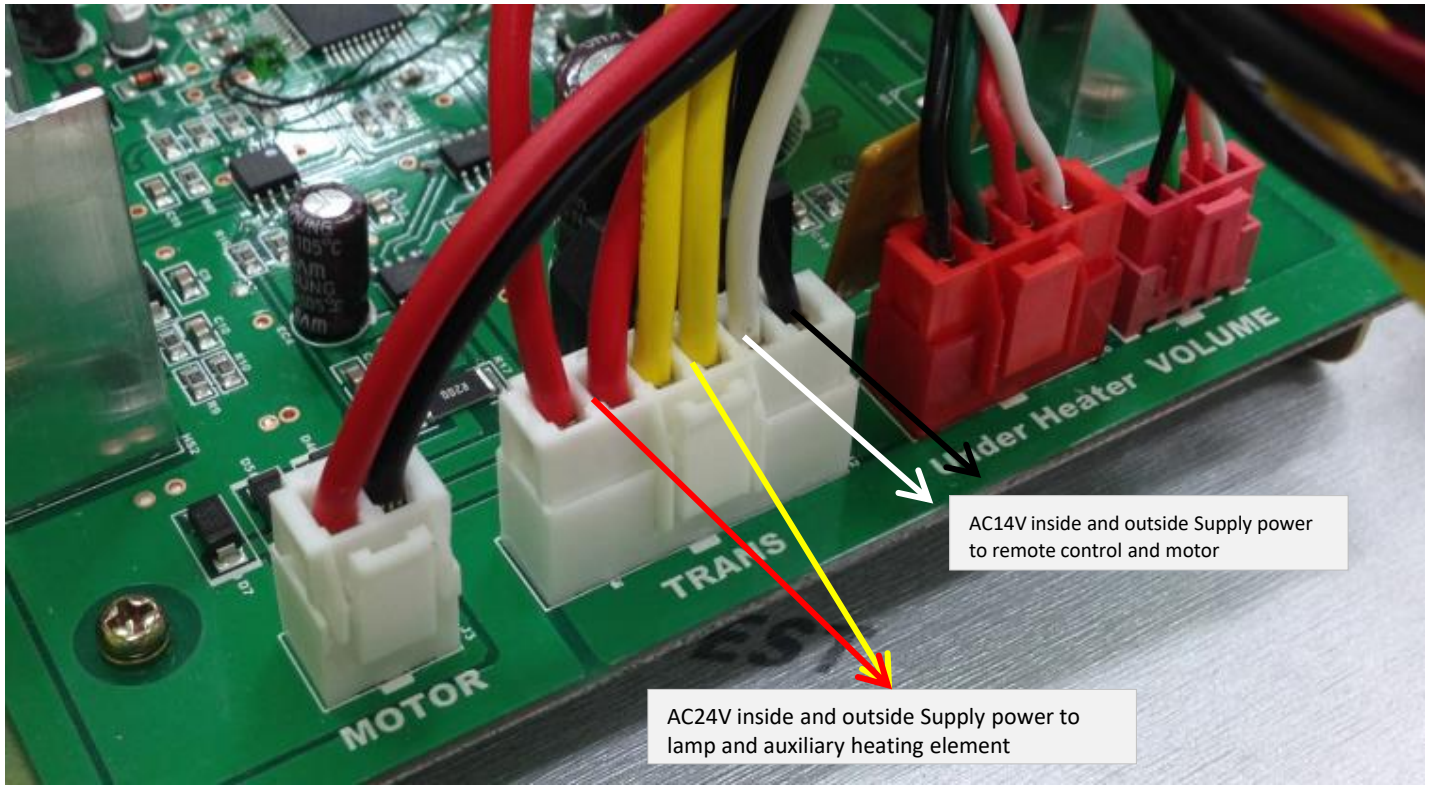



6E: Inside cervical spine Emitter lamp break 3E: 5 bulb emitter lamp break

Check the transformer (Secondary side voltage or higher) → Replace Transformer

★ When 6E and 3E errors occur simultaneously when the internal emitter and 5 emitter are operated When power supply (AC24V) is not supplied to all the lamps due to the secondary voltage of the transformer ? The secondary side (red / yellow) voltage of transformer is AC24V check method (see next page)

■ How to check (check) the power transformer



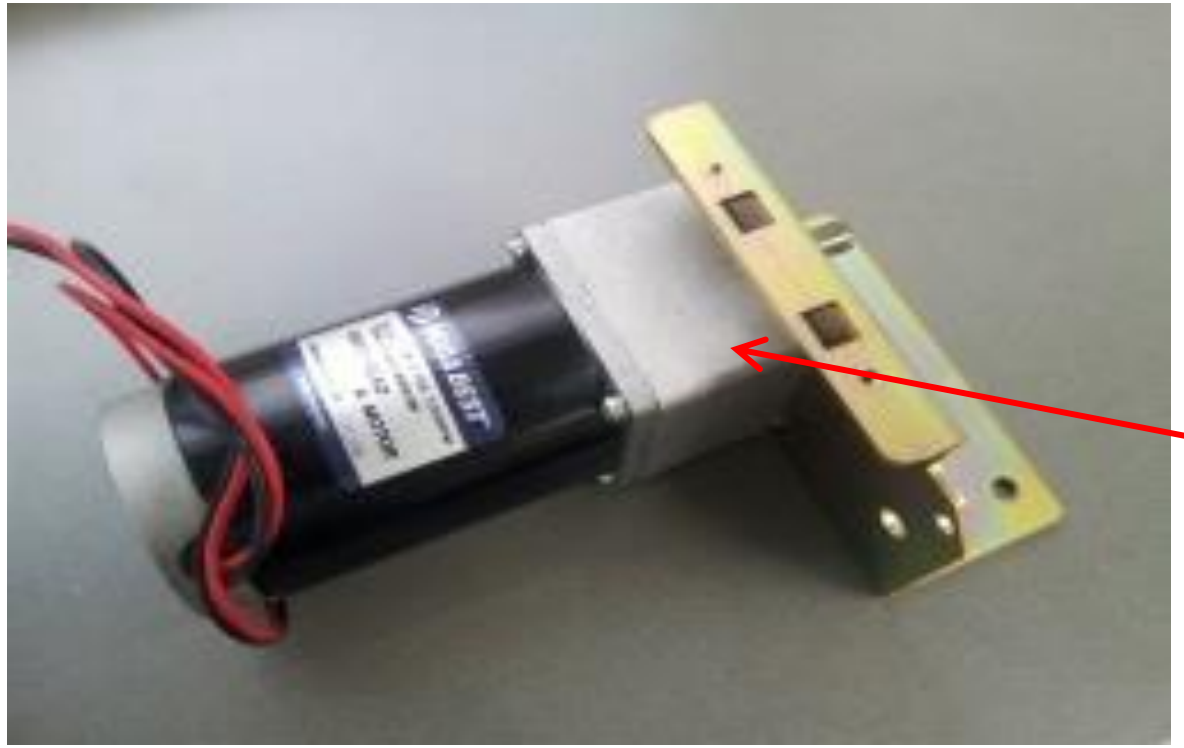

As shown in the figure, the voltage between 1-2 (black / white) is about 14 ~ 15V AC The voltage between 3,4 and 5,6 (sulfur / enemy) is AC24 ~ 25V.

If a voltage abnormality occurs between black and white: The remote control does not turn on. (The lamp is lit on the INlet switch) In case of yellow / red voltage abnormality: All heating elements (lamp, auxiliary mats) are not operated.

N4 COMPONENT
TYPES OF ERROR

# 8E ERROR DISPLAY

REPLACE MOTOR / MOTOR DECELERATOR



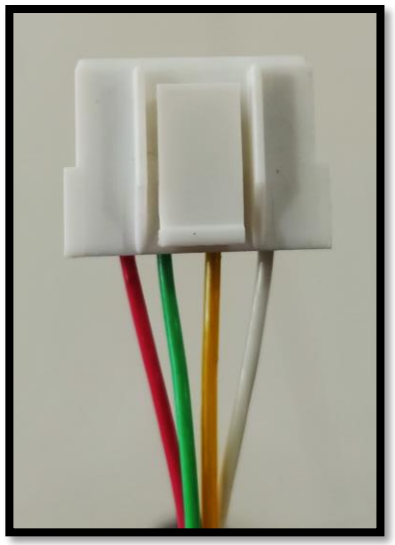
MOTOR DECELERATOR

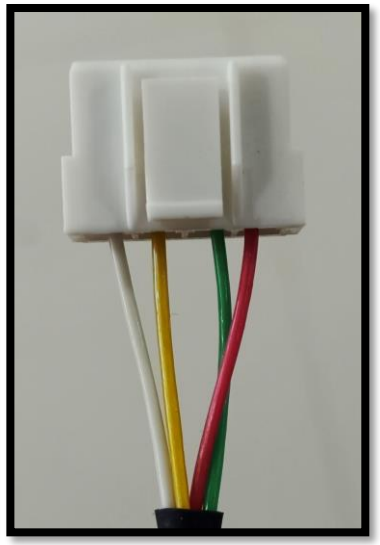
N4 COMPONENT

TYPES OF ERROR

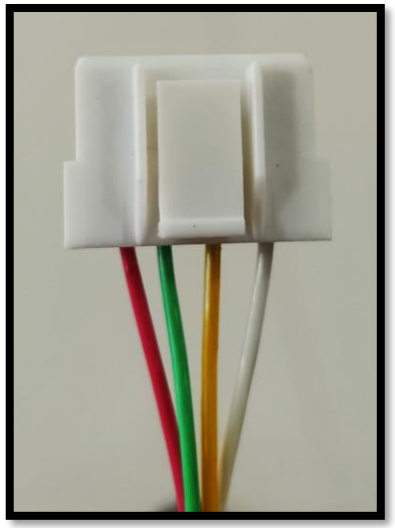
# Coil Cable

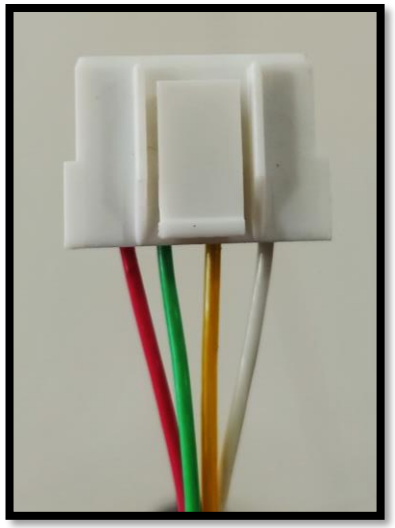
N4





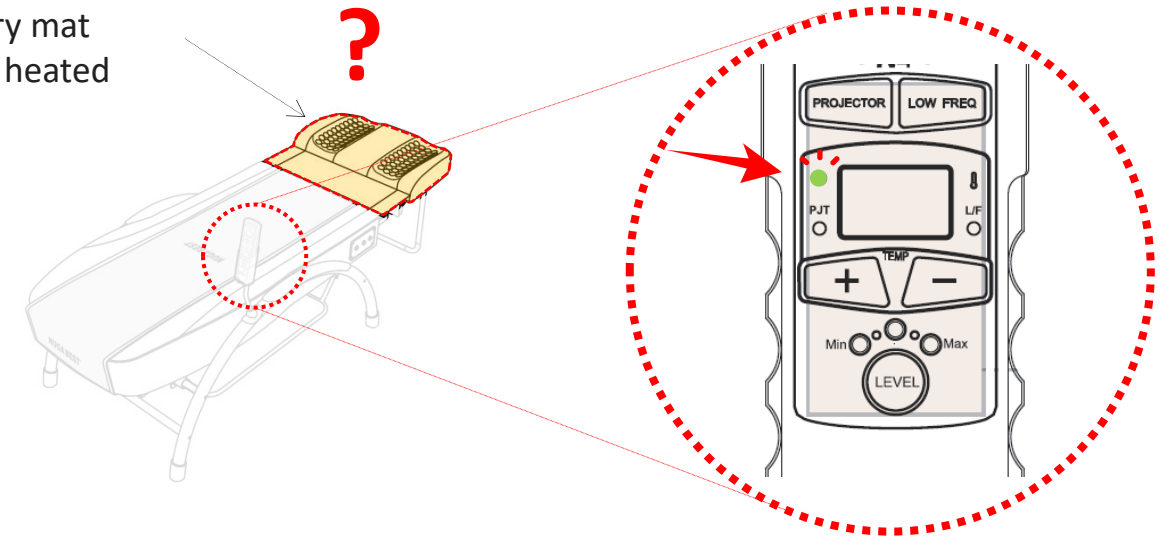
NM-5000



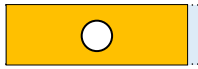
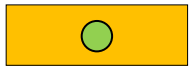
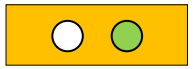


## ■ Measures to be taken according to the symptom - Failure of auxiliary mat heating

An auxiliary mat
When not heated

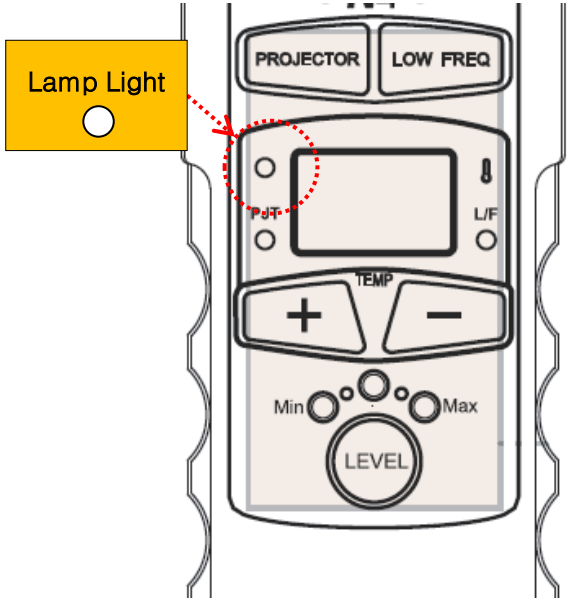


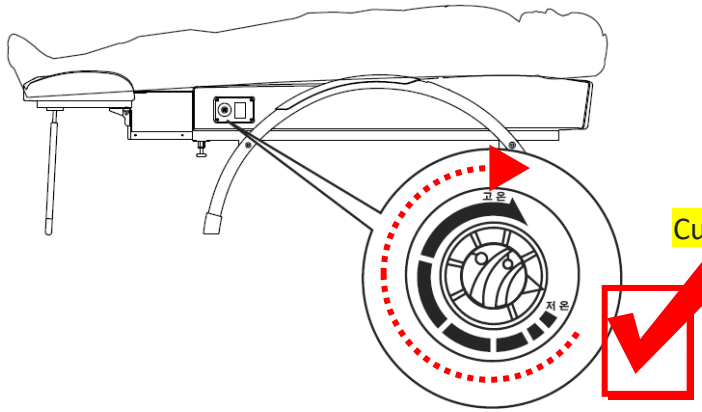

### ■ How to check and take action according to the status of the remote control lamp

| | Remote control status and symptoms | Check method (check the cause) | Remarks (measures) |
|---|---|---|---|
|  | Lamp tinted light - Both left and right are not warm | Check ON-OFF status of auxiliary heater volume switch of AC INNET part of product | Increase the temperature after turning ON the volume for temperature control. |
|  | Lamp lit - both left and right are not warm | Volume switch of AC innet part of product Low temperature setting status | Increase setting temperature |
| | | 1. Check the main-auxiliary/sub coil cable mat cable connection | Connecting auxiliary cable/sub coil cable |
| | | 2. Check wiring inside the auxiliary mat (see figure) Check the disconnection status of the right hot wire system (measure the right hot wire ass'y resistance value) | Connector connection Disconnection site connection or hot line ass'y replacement |
| Auxiliary mats | | 3. Check the status of disconnection of the hot wire system on the left side (measuring the resistance value of the hot wire on the left side) | Disconnection or replacement of hot wire ass'y |
|  | | 4. If the auxiliary mat cable is connected normally -> Check wiring inside the auxiliary mat | 1. Confirmation of coil cable disconnection 2. Check of main body Check the main PCB ~ jack cable connection condition 3. Check the auxiliary mat part Check the wiring between jack cable and hot wire |

## ■ How to check and take action according to the status of the remote control lamp

| | Remote control status and symptoms | Check method (check the cause) | Remarks (measures) |
|---|---|---|---|
| ○ | Lamp tinted light - Both left and right are not warm | Check ON-OFF status of auxiliary heater volume switch of AC INNET part of product | Increase the temperature after turning ON the volume for temperature control. |
| | Lamp lit - both left and right are not warm | Volume switch of AC inet part of product Low temperature setting status | Increase setting temperature |
| | | 1. Check the main-auxiliary mat cable connection | Connecting auxiliary mat cable (coil cable) |
| | | 2. Check the wiring inside the auxiliary mat (see picture) Check the status of the right hot wire system disconnection (measure the right hot wire ass'y resistance value) | Connector connection Disconnection site connection or hot line ass'y replacement |
| | | 3. Check the status of disconnection of the hot wire system on the left side (measuring the resistance value of the hot wire on the left side) | Disconnection or replacement of hot wire ass'y |
| | | 4. If the auxiliary mat cable is connected normally -> Check wiring inside the auxiliary mat | 1. Confirmation of coil cable disconnection<br>2. Check of main body Check the main PCB ~ jack cable connection condition<br>3. Check the auxiliary mat part Check the wiring between jack cable and hot wire |



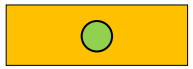


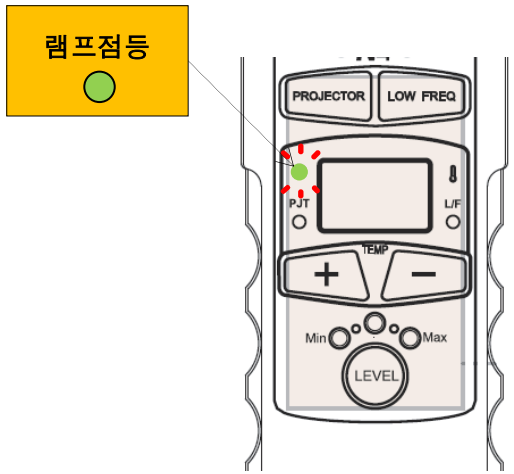
Current off state

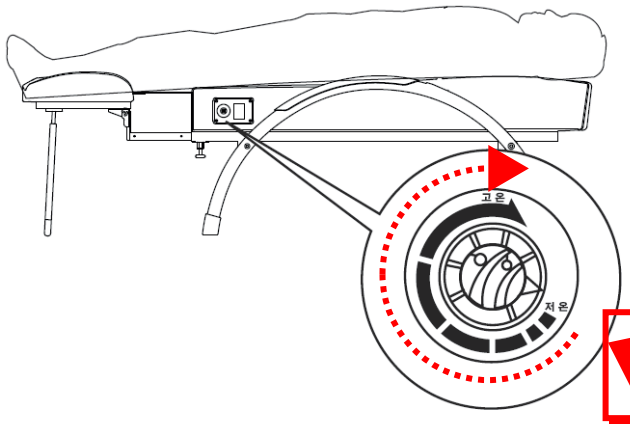
Checking the operation of the auxiliary heating element The auxiliary heating element turns on the main power switch Turn the dial clockwise to temperature Set. ? "just" sounds and turns on.

# ■ Symptomatic measures - Auxiliary mat, right, not warm

## ■ How to check and take action according to the status of the remote control lamp

| Remote control status and symptoms | Check method (check the cause) | Remarks (measures) |
|---|---|---|
| Lamp tinted light - Both left and right are not warm | Check ON-OFF status of auxiliary heater volume switch of AC INNET part of product | Increase the temperature after turning ON the volume for temperature control. |
| **Lamp lit - both left and right are not warm** | **Volume switch of AC inet part of product Low temperature setting status** | **Increase setting temperature** |
| Auxiliary mat  Lamp flashing | 1. Check the cable connection of the main and auxiliary mat | Connection of auxiliary mat cable (coil cable) |
| | 2. Check the wiring status inside the auxiliary mat (refer to the figure) Check the disconnection status of the right heating wire system (measure the ass'y resistance value of the right heating wire) | Connector connection Connect disconnected part or replace hot wire assembly |
| | 3. Check the disconnection status of the left heating wire system (measure the ass'y resistance value of the left heating wire) | Connect the disconnected part or replace the hot wire assembly |
| | 4If the auxiliary mat cable connection is normal --> Check the wiring condition inside the auxiliary mat | 1. Check the disconnection of the coil cable<br>2. Check the main body part Check the connection of the main PCB to the jack cable<br>3. Check the auxiliary mat part Check the wiring status between the jack cable and the hot wire |



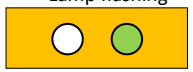



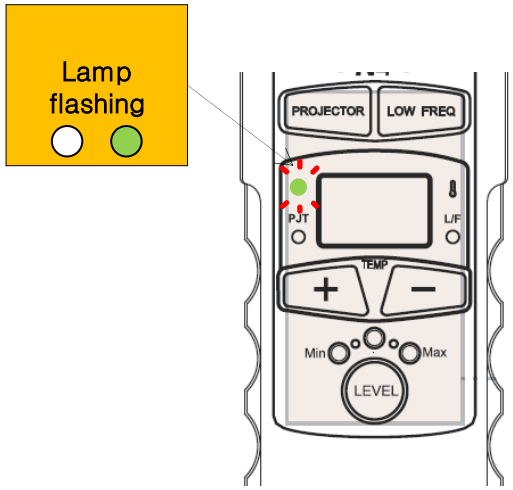


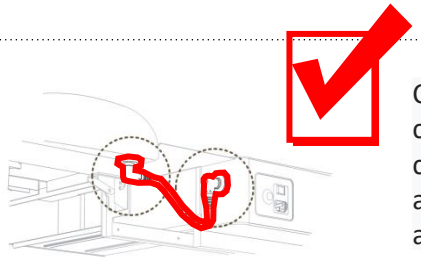
Checking the operation of auxiliary heating elements Turn the temperature control volume clockwise Increase the setting temperature.

# Action according to symptoms-The right side of the auxiliary mat is not warm

■ Inspection and measures according to the condition of the remote control lamp

| | Remote control status and symptoms | Inspection method (check cause) | Remarks (Measures) |
|---|---|---|---|
| Auxiliary mat | Lamp not lit-both sides are not warm | Check the ON-OFF status of the auxiliary heater volume switch in the AC Internet part of the product | After turning on the temperature control volume, increase the temperature. |
| | Lamp lit-both left and right are not warm | Low temperature setting of the volume switch of the AC Internet part of the product | Increase the setting temperature |
| | Lamp flashing  | 1. Check the cable connection of the main and auxiliary mat | Connection of auxiliary mat cable (coil cable) |
| | | 2. Check the wiring status inside the auxiliary mat (refer to the figure) Check the disconnection status of the right heating wire system (measure the ass'y resistance value of the right heating wire) | Connector connection Connect disconnected part or replace hot wire assembly |
| | | 3. Check the disconnection of the left heating wire system (measure the ass'y resistance value of the left heating wire) | Connect the disconnected part or replace the hot wire assembly |
| | | 4. If the auxiliary mat cable connection is normal --> Check the wiring condition inside the auxiliary mat | 1. Check the coil cable disconnection<br>2. Check the main body part Check the connection of the main PCB to the jack cable<br>3. Check the auxiliary mat part Check the wiring state between the jack cable and the hot wire |

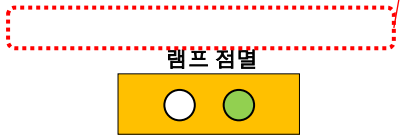


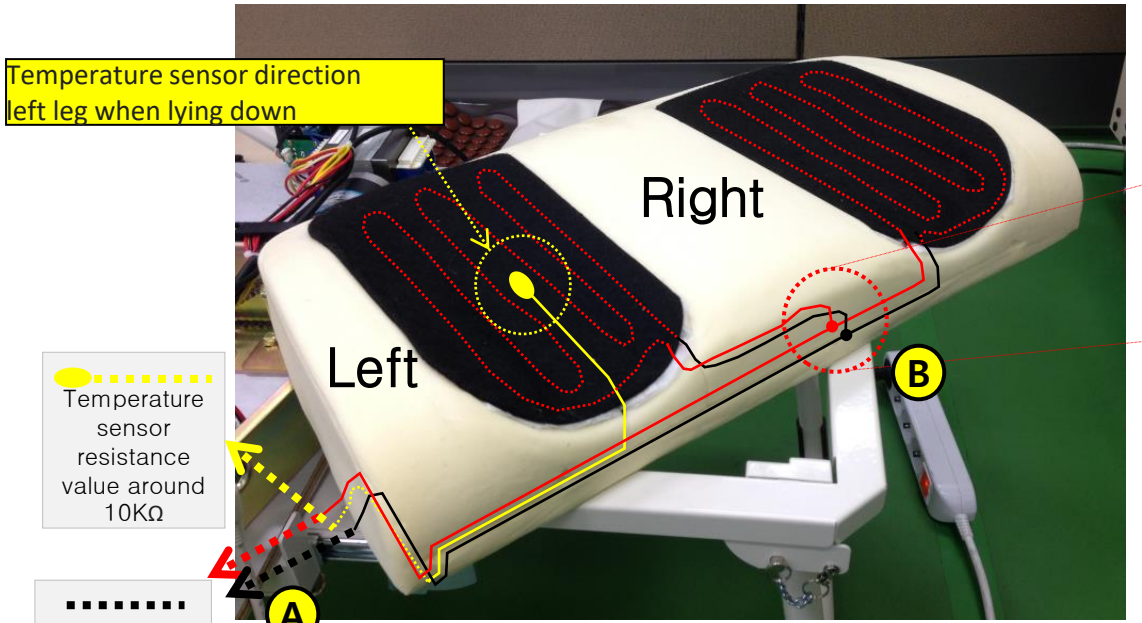



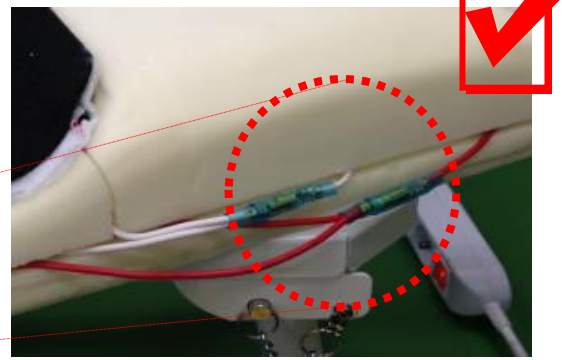
Check the auxiliary heating element cable connection -When the auxiliary heater cable is not connected The temperature sensor of the auxiliary mat in the main PCB It does not detect it and displays an error.

# Heat wire resistance value Around 9Ω ght side of the auxiliary mat is not warm

## Inspection and measures according to the condition of the remote control lamp

| Remote control status and symptoms | Inspection method (check cause) | Remarks (Measures) |
|---|---|---|
| Lamp not lit-both sides are not warm | Check the ON-OFF status of the auxiliary heater volume switch in the AC Internet part of the product | After turning on the temperature control volume, increase the temperature. |
| Lamp lit-both left and right are not warm | Low temperature setting of the volume switch of the AC Internet part of the product | Increase the setting temperature |
| 보조매트   | 1. Check the cable connection of the main and auxiliary mat<br>2. Check the wiring status inside the auxiliary mat (refer to the figure)<br>Check the disconnection status of the right heating wire system (measure the ass'y resistance value of the right heating wire) | Connection of auxiliary mat cable (coil cable)<br>1. Connect connector<br>2. Connect disconnected part or replace hot wire assembly |
| | 3. Check the disconnection of the left heating wire system (measure the ass'y resistance value of the left heating wire) | Connect the disconnected part or replace the hot wire assembly |
| | 4. If the auxiliary mat cable connection is normal --> Check the wiring condition inside the auxiliary mat | 1. Check the coil cable disconnection<br>2. Check the main body part Check the connection of the main PCB to the jack cable<br>3. Check the auxiliary mat part Check the wiring state between the jack cable and the hot wire |



Check connector connection

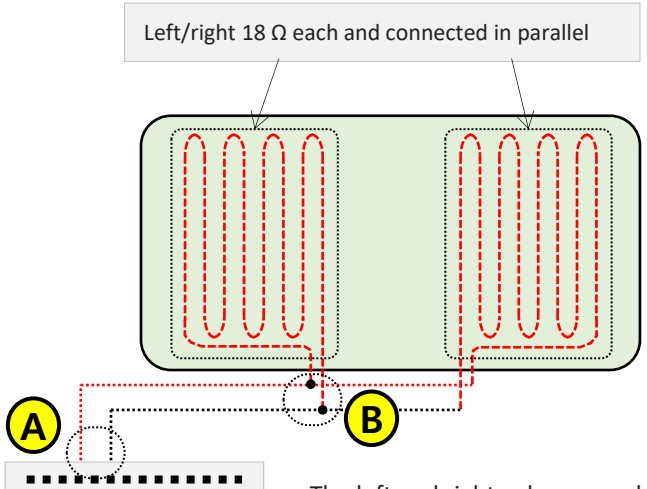
How to measure the resistance value of the right heating wire After disconnecting the connector at point B Measure the resistance value.

The left and right columns each have a resistance value of 18Ω Connected in parallel. → The ratio of the disconnection of the bimetallic soldering part or the junction of the heating wire and cable is higher than that of the heating wire itself.

# Action according to symptoms-The right side of the auxiliary mat is not warm

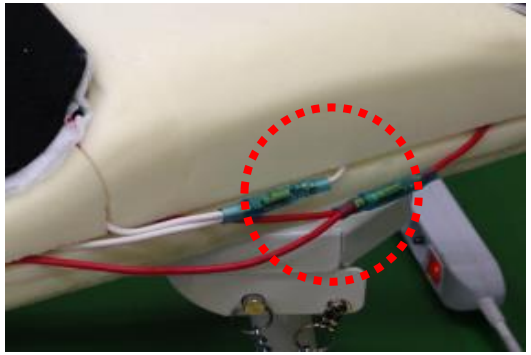
## Inspection and measures according to the condition of the remote control lamp

| Remote control status and symptoms | | Inspection method (check cause) | Remarks (Measures) |
|---|---|---|---|
| Lamp not lit-both sides are not warm | | Check the ON-OFF status of the auxiliary heater volume switch in the AC Internet part of the product | After turning on the temperature control volume, increase the temperature. |
| Lamp lit-both left and right are not warm | | Low temperature setting of the volume switch of the AC Internet part of the product | Increase the setting temperature |
| Auxiliary mat | Lamp flashing | 1. Check the cable connection of the main and auxiliary mat | Connection of auxiliary mat cable (coil cable) |
| | | 2. Check the wiring status inside the auxiliary mat (refer to the figure) Check the disconnection status of the right heating wire system (measure the ass'y resistance value of the right heating wire) | 1. Connect connector 2. Connect disconnected part or replace hot wire assembly |
| | | 3. Check the disconnection of the left heating wire system (measure the ass'y resistance value of the left heating wire) | Connect the disconnected part or replace the hot wire assembly |
| | | 4. If the auxiliary mat cable connection is normal --> Check the wiring condition inside the auxiliary mat | 1. Check the coil cable disconnection 2. Check the main body part Check the connection of the main PCB to the jack cable 3. Check the auxiliary mat part Check the wiring state between the jack cable and the hot wire |




The left and right columns each have a resistance value of 18Ω and are connected in parallel. The ratio of the disconnection of the bimetallic soldering part or the junction of the heating wire and cable is higher than that of the heating wire itself.

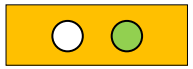
How to measure the resistance value of the left heating wire

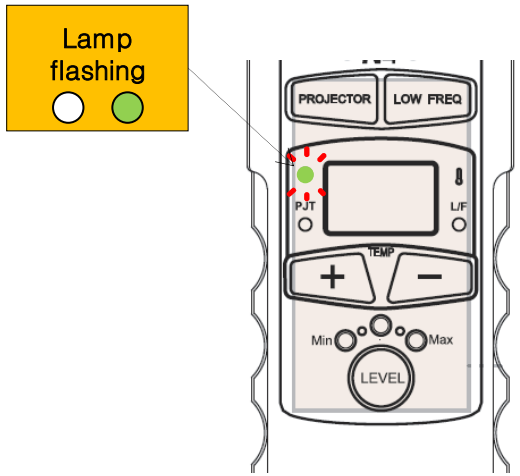


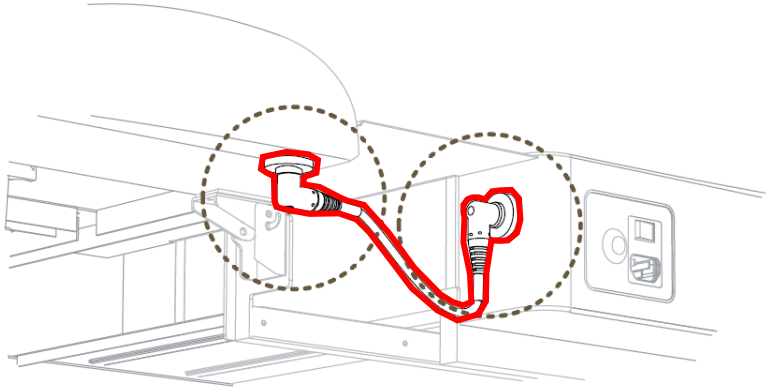
How to measure the resistance value of the left heating wire After disconnecting the connector at point B Measure the resistance value at point A.

# Measures according to symptoms-Both sides of the auxiliary mat are not warm

Inspection and measures according to the condition of the remote control lamp

| Remote control status and symptoms | Inspection method (check cause) | Remarks (Measures) |
|---|---|---|
| Lamp not lit-both sides are not warm | Check the ON-OFF status of the auxiliary heater volume switch in the AC Internet part of the product | After turning on the temperature control volume, increase the temperature. |
| Lamp lit-both left and right are not warm | Low temperature setting of the volume switch of the AC Internet part of the product | Increase the setting temperature |
| Auxiliary mat  | 1. Check the cable connection of the main and auxiliary mat | Connection of auxiliary mat cable (coil cable) |
| | 2. Check the wiring status inside the auxiliary mat (refer to the figure) Check the disconnection status of the right heating wire system (measure the ass'y resistance value of the right heating wire) | 1. Connect connector 2. Connect disconnected part or replace hot wire assembly |
| | 3. Check the disconnection of the left heating wire system (measure the ass'y resistance value of the left heating wire) | Connect the disconnected part or replace the hot wire assembly |
| | 4. If the auxiliary mat cable connection is normal --> Check the wiring condition inside the auxiliary mat | 1. Check the coil cable disconnection 2. Check the main body part Check the connection of the main PCB to the jack cable 3. Check the auxiliary mat part Check the wiring state between the jack cable and the hot wire |



## Check the disconnection of the auxiliary mat heater cable

Even though the auxiliary heater cable is correctly connected If the lamp on the remote control blinks and does not get warm, it may appear if the auxiliary heater cable is disconnected. Perform a disconnection test of the auxiliary mat heater cable or Try changing to a different cable.

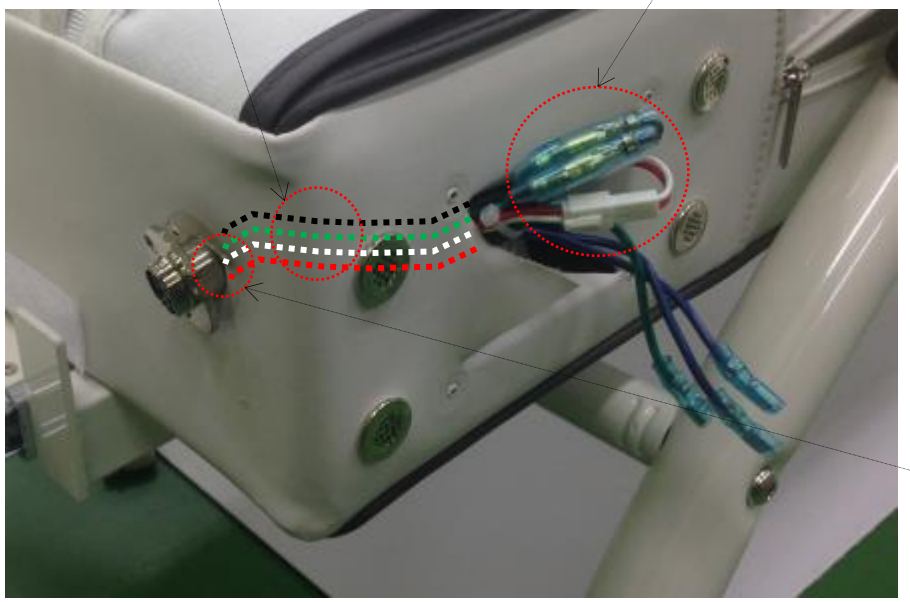
# Measures according to symptoms-Both sides of the auxiliary mat are not warm

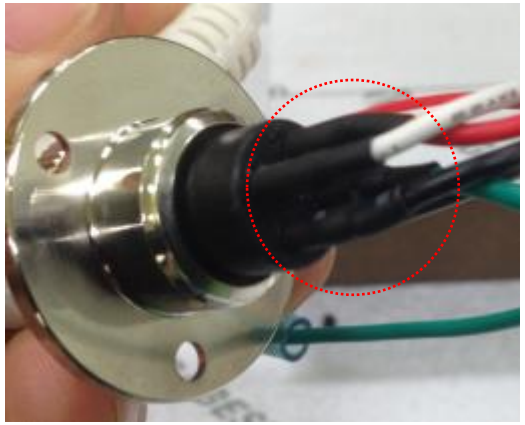
## Inspection and measures according to the condition of the remote control lamp

| Remote control status and symptoms | Inspection method (check cause) | Remarks (Measures) |
|---|---|---|
| Lamp not lit-both sides are not warm | Check the ON-OFF status of the auxiliary heater volume switch in the AC Internet part of the product. | After turning on the temperature control volume, increase the temperature. |
| Lamp lit-both left and right are not warm | Low temperature setting of the volume switch of the AC Internet part of the product | Increase the setting temperature |
| Auxiliary mat<br>Lamp flashing | 1. Check the cable connection of the main and auxiliary mat | Connection of auxiliary mat cable (coil cable) |
| | 2. Check the wiring status inside the auxiliary mat (refer to the figure) Check the disconnection status of the right heating wire system (measure the ass'y resistance value of the right heating wire) | 1. Connect connector 2. Connect disconnected part or replace hot wire assembly |
| | 3. Check the disconnection of the left heating wire system (measure the ass'y resistance value of the left heating wire) | Connect the disconnected part or replace the hot wire assembly |
| | 4. If the auxiliary mat cable connection is normal --> Check the wiring condition inside the auxiliary mat | 1. Check the coil cable disconnection **2. Check the main body part Check the connection of the main PCB to the jack cable** 3. Check the auxiliary mat part Check the wiring state between the jack cable and the hot wire |

Temperature sensor: white, red 2 strands Heater power: black, green 2 strands

Check the cable connection after removing the Internet nameplate



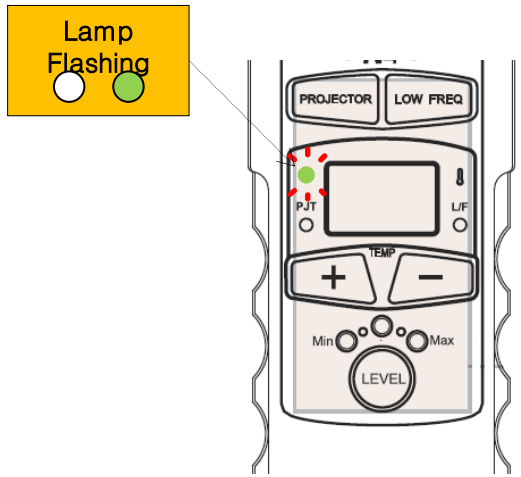


During repair, sometimes disconnection occurs in the soldered part of the cable due to external force.

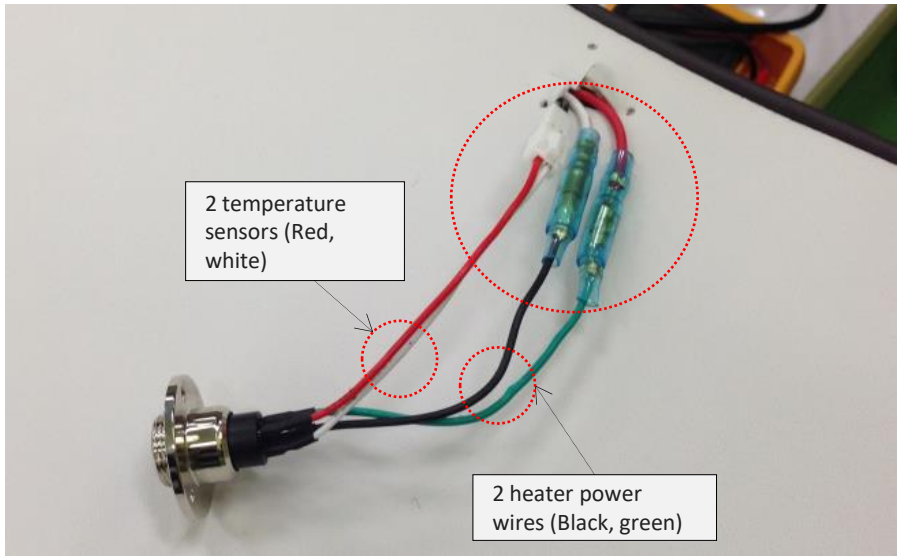
# Measures according to symptoms-Both sides of the auxiliary mat are not warm

## Inspection and measures according to the condition of the remote control lamp

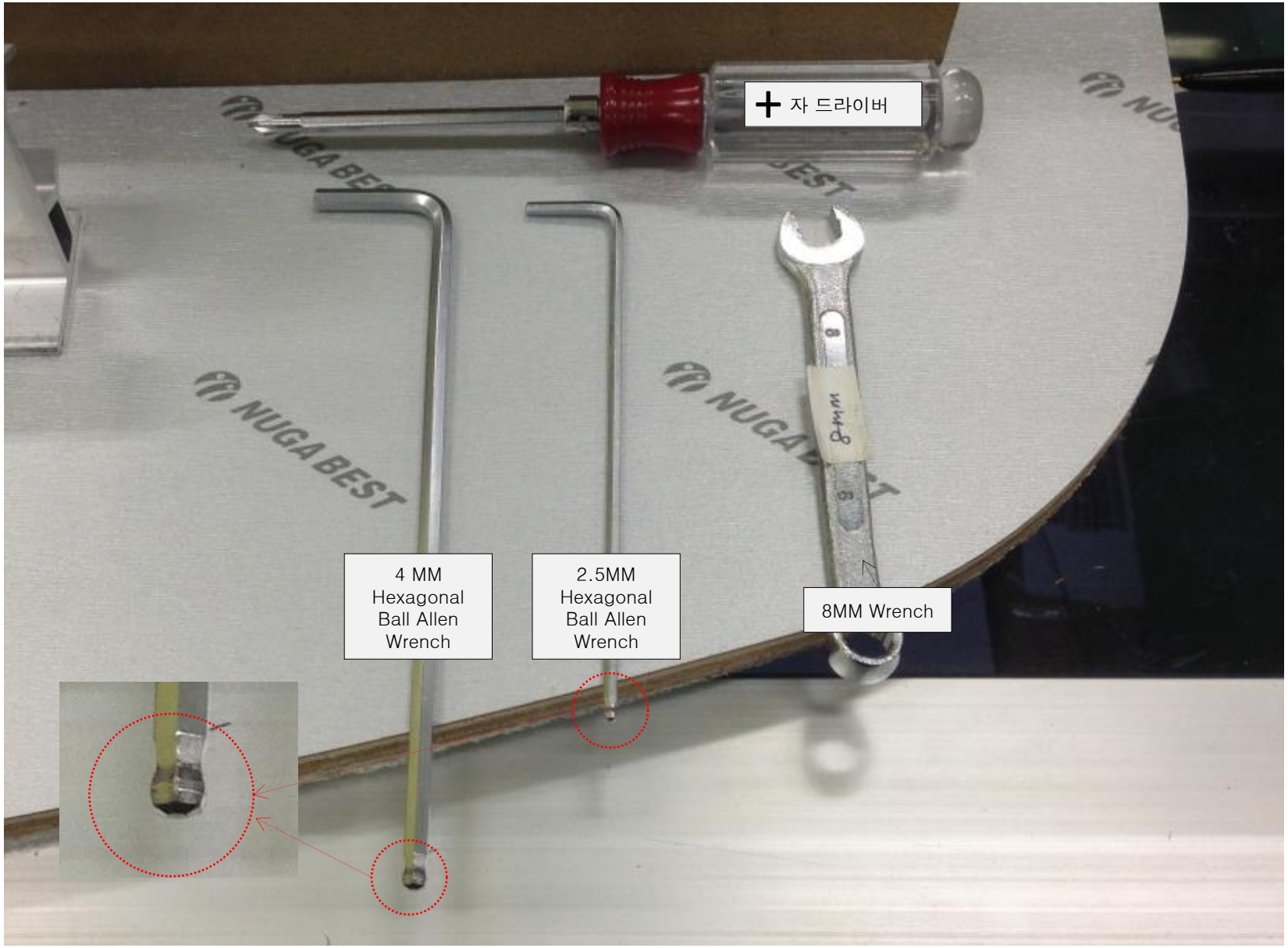
| Remote control status and symptoms | Inspection method (check cause) | Remarks (Measures) |
|---|---|---|
| Lamp not lit-both sides are not warm | Check the ON-OFF status of the auxiliary heater volume switch in the AC Internet part of the product | After turning on the temperature control volume, increase the temperature. |
| Lamp lit-both left and right are not warm | Low temperature setting of the volume switch of the AC Internet part of the product | Increase the setting temperature |
| Auxiliary mat<br>Lamp Flashing | 1. Check the cable connection of the main and auxiliary mat | Connection of auxiliary mat cable (coil cable) |
| | 2. Check the wiring status inside the auxiliary mat (refer to the figure) Check the disconnection status of the right heating wire system (measure the ass'y resistance value of the right heating wire) | 1. Connect connector 2. Connect disconnected part or replace hot wire assembly |
| | 3. Check the disconnection of the left heating wire system (measure the ass'y resistance value of the left heating wire) | Connect the disconnected part or replace the hot wire assembly |
| | **4. If the auxiliary mat cable connection is normal --> Check the wiring condition inside the auxiliary mat** | 1. Check the coil cable disconnection 2. Check the main body part Check the connection of the main PCB to the jack cable **3. Check the auxiliary mat part Check the wiring state between the jack cable and the hot wire** |




Check the cable wiring status in the auxiliary mat

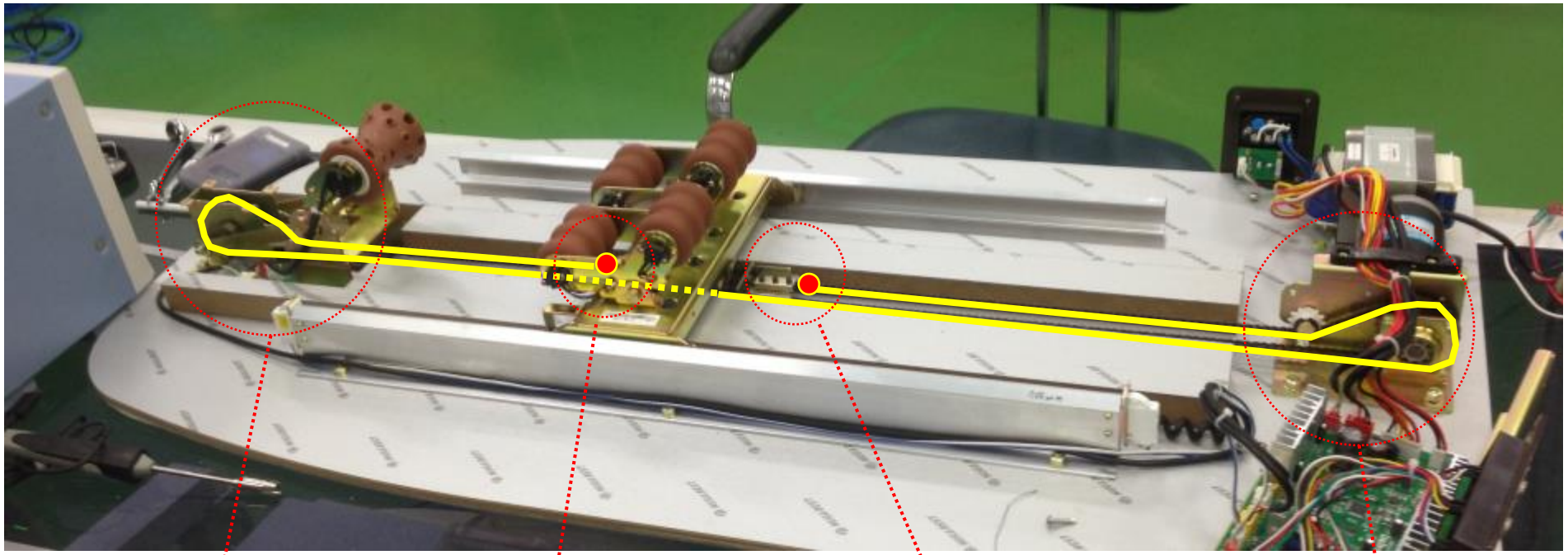


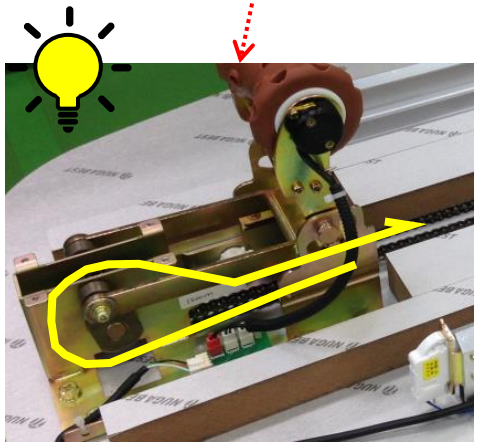
# Chain (replacement) reinstallation method – tools to be prepared

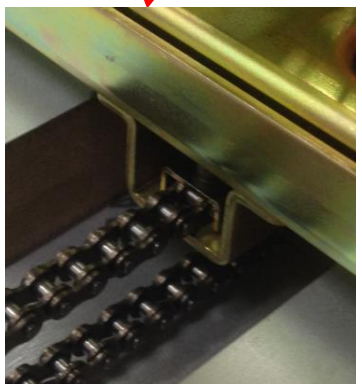


## How to reinstall the chain (replacement)

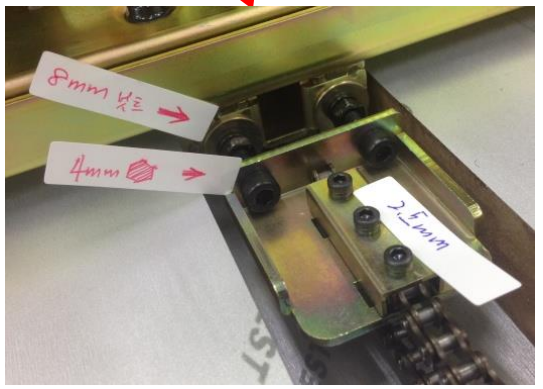
# (REPLACING CHAIN) - HALOGEN LAMP VERSION



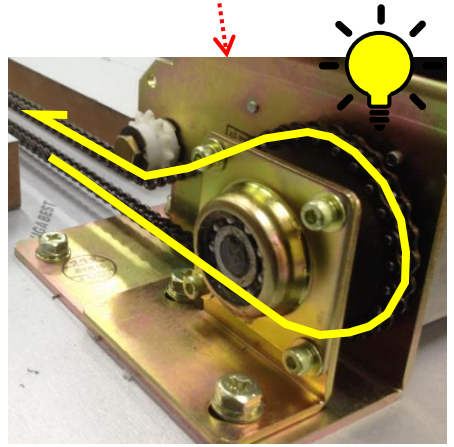




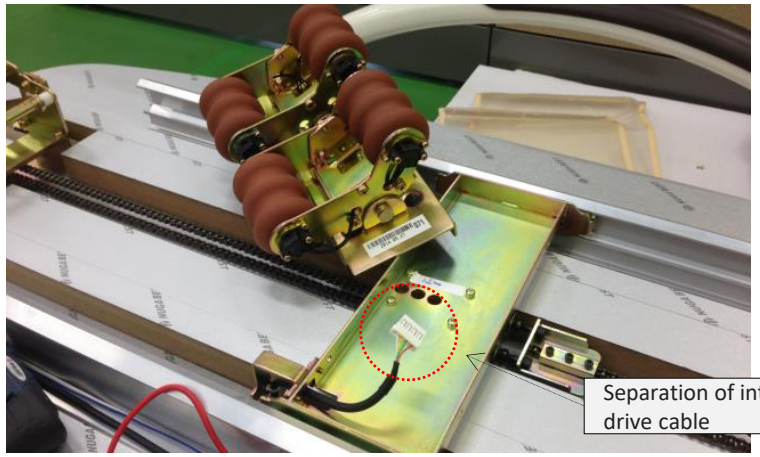
Chain bracket 1



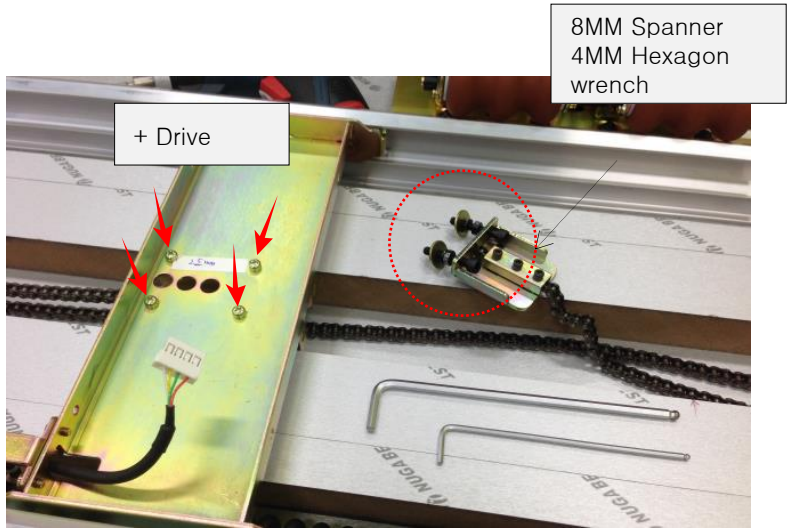

Chain bracket 2



# (REPLACING CHAIN) - HALOGEN LAMP VERSION




1. Separate the inner emitter roller from the inner emitter base.
   > Separate the internal drive cable (coil cable)




2. Separate the chain bracket (1, 2) that the base and the chain are connected to.
> After removing the bracket, separate the bracket-chain. (Use 2.5MM hexagon wrench)

# How to reinstall the chain (replacement)

| | | |
|---|---|---|
| 1 | Place the chain on the base plate (under the inner emitter). | 48 Page |
| 2 | Place it over the teeth on the cervical spine side. (Gear connection X) | 49 Page |
| 3 | Chain-After connecting the chain bracket (1), connect to the internal emitter | 49 Page |
| 4 | Internal emitter (102mm) Cervical roller (bottom dead point) After positioning, connect the chain to the teeth of the cervical spine. | 50, 51 Page |
| 5 | Connect the chain to the teeth on the motor side. ★ At this time, be careful not to move the position of the cervical vertebral roller and the internal emitter. | 52 Page |
| 6 | Connecting the chain and chain bracket (2) | 52 Page |
| 7 | Tension control and final confirmation | 54, 55 Page |

Web address or icon After clicking with the right mouse Select "Run Hyperlink"

**[동영상 보기]**

https://www.dropbox.com/s/cduy645iqgpw3pc/N4%20CHAIN%20INSTALL.avi?dl=0

https://www.dropbox.com/s/o8jwfihkr4b7k9b/N4%20Chain%20Install%28Caption%29%20.avi?dl=0 [ 자막 저용량 ]

**[동영상 다운로드]**

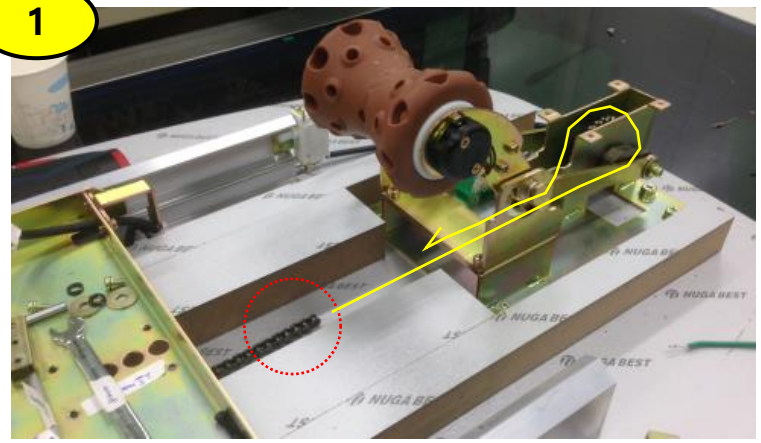
https://onedrive.live.com/redir?resid=C17B44D2FF29083F!2909&authkey=!ABo4BSMPIxWTC9Y&ithint=video%2cavi

https://onedrive.live.com/redir?resid=C17B44D2FF29083F!2911&authkey=!AOvfC-9joqyG3vw&ithint=video%2cavi [자막 저용량]

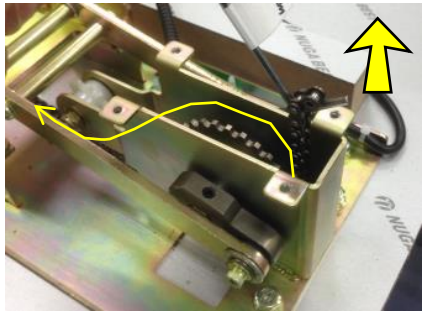
# How to reinstall the chain (replacement)-Replace or reinstall after removing the chain (1)

## (REPLACING CHAIN) - HALOGEN LAMP VERSION

1



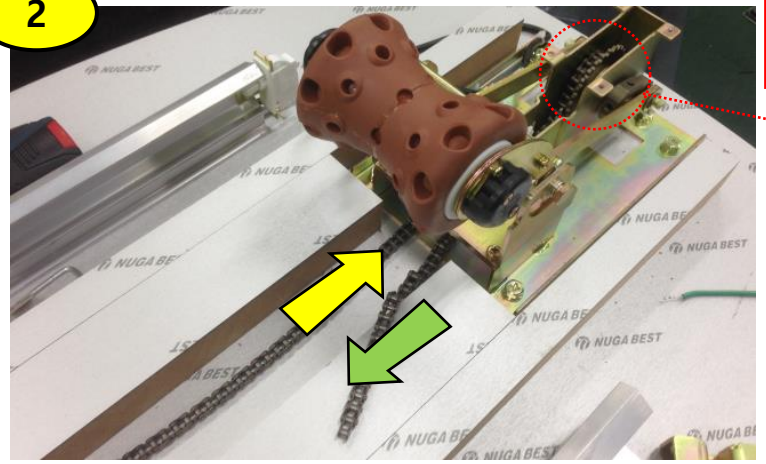
1. Cervical spine chain installation ▯ After passing one end of the chain under the internal emitter Hang it on the gear shaft of the cervical spine and pass it under the white plastic teeth.

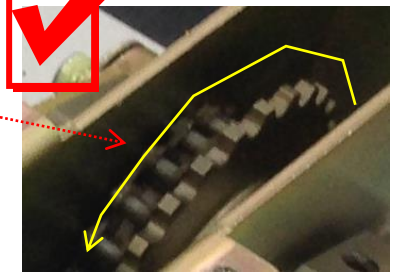


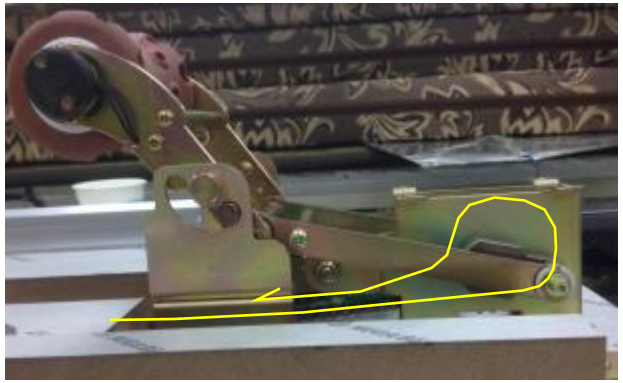
Using a suitable hook Hang the chain on the floor Raise.

Without chains on the teeth Put it across the axis.

2





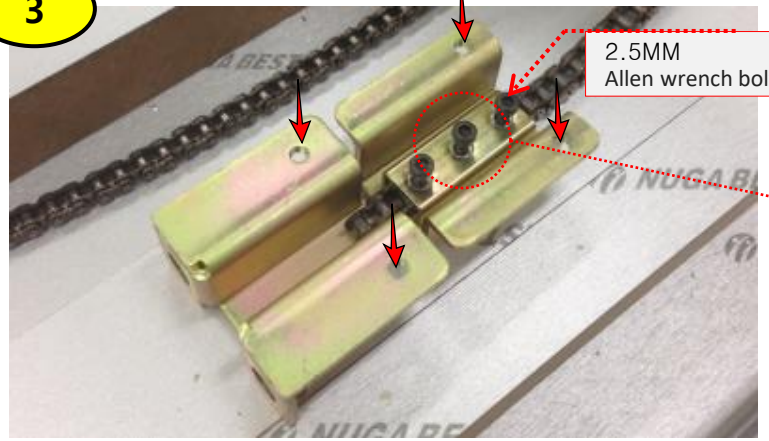


2. Cervical spine chain installation ▯ After putting it on the floor in the direction of the yellow arrow, wind the toothed shaft Pull out in the direction underneath the white plastic teeth (green arrow).

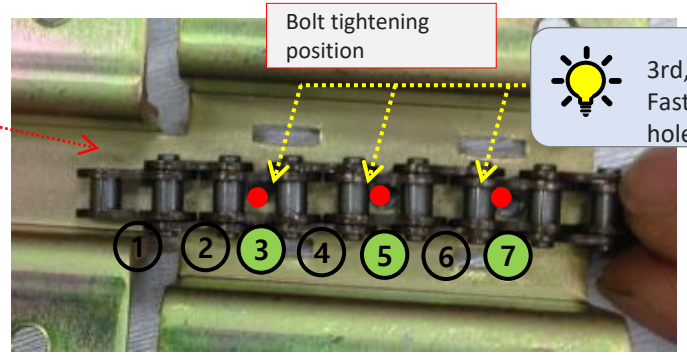
## How to reinstall the chain (replacement)-Replace or reinstall after removing the chain

# (REPLACING CHAIN) - HALOGEN LAMP VERSION

3

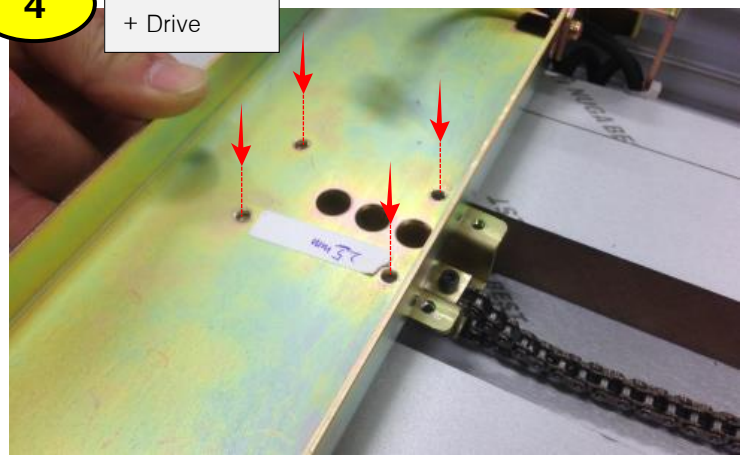



1. Combine the chain bracket and the chain under the internal emitter.




3rd, 5th, 7th in the chain
Fasten the bolt to the hole.

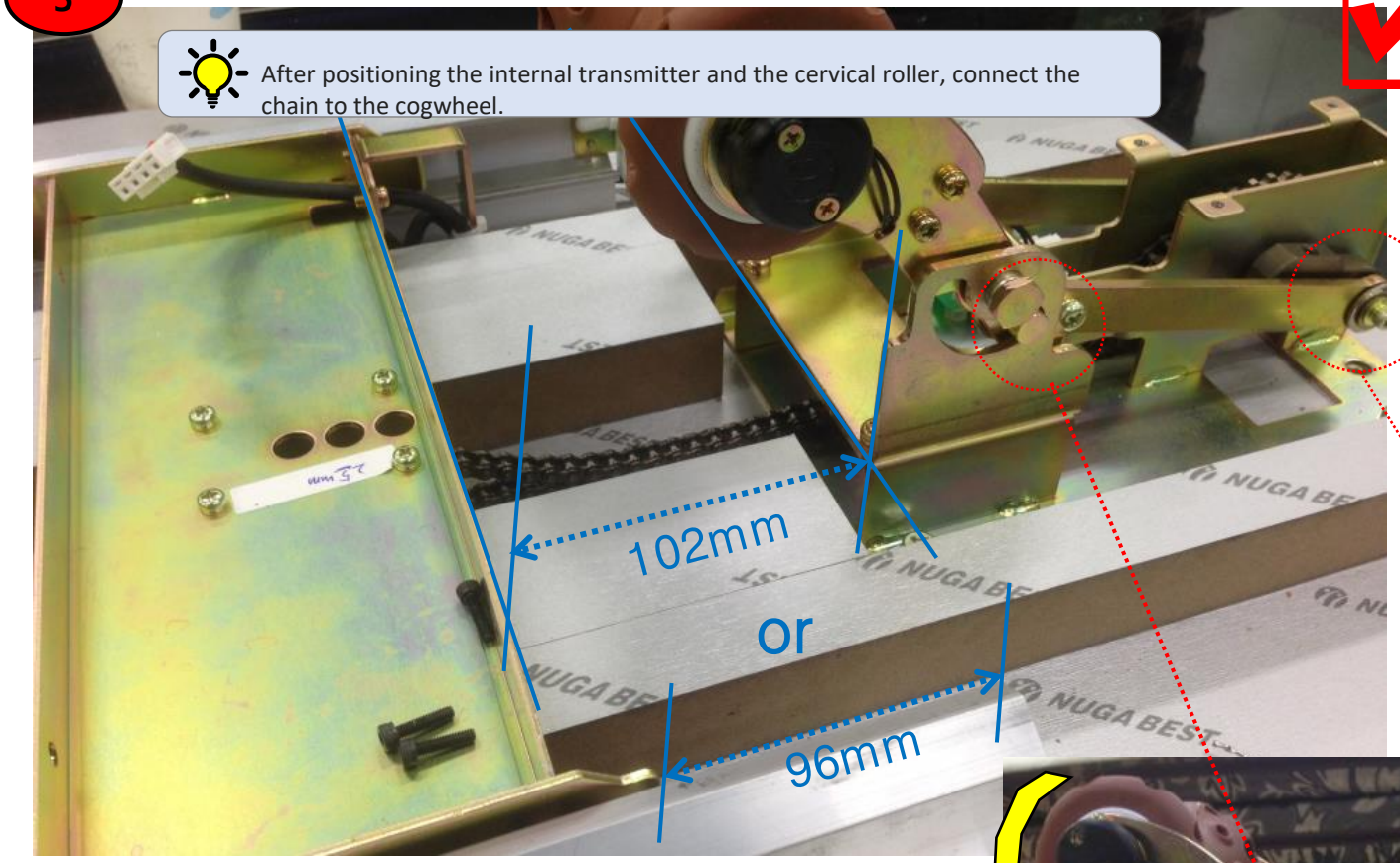
4



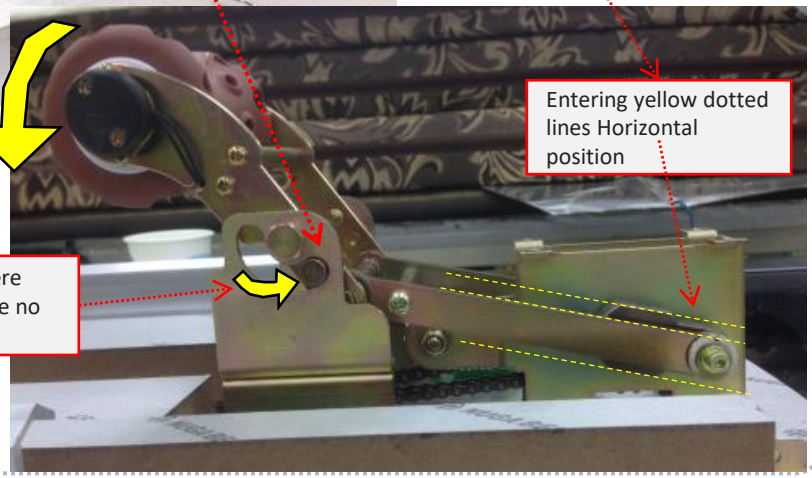

2. Combine the inner emitter base and the chain bracket 1.

# (REPLACING CHAIN) - HALOGEN LAMP VERSION

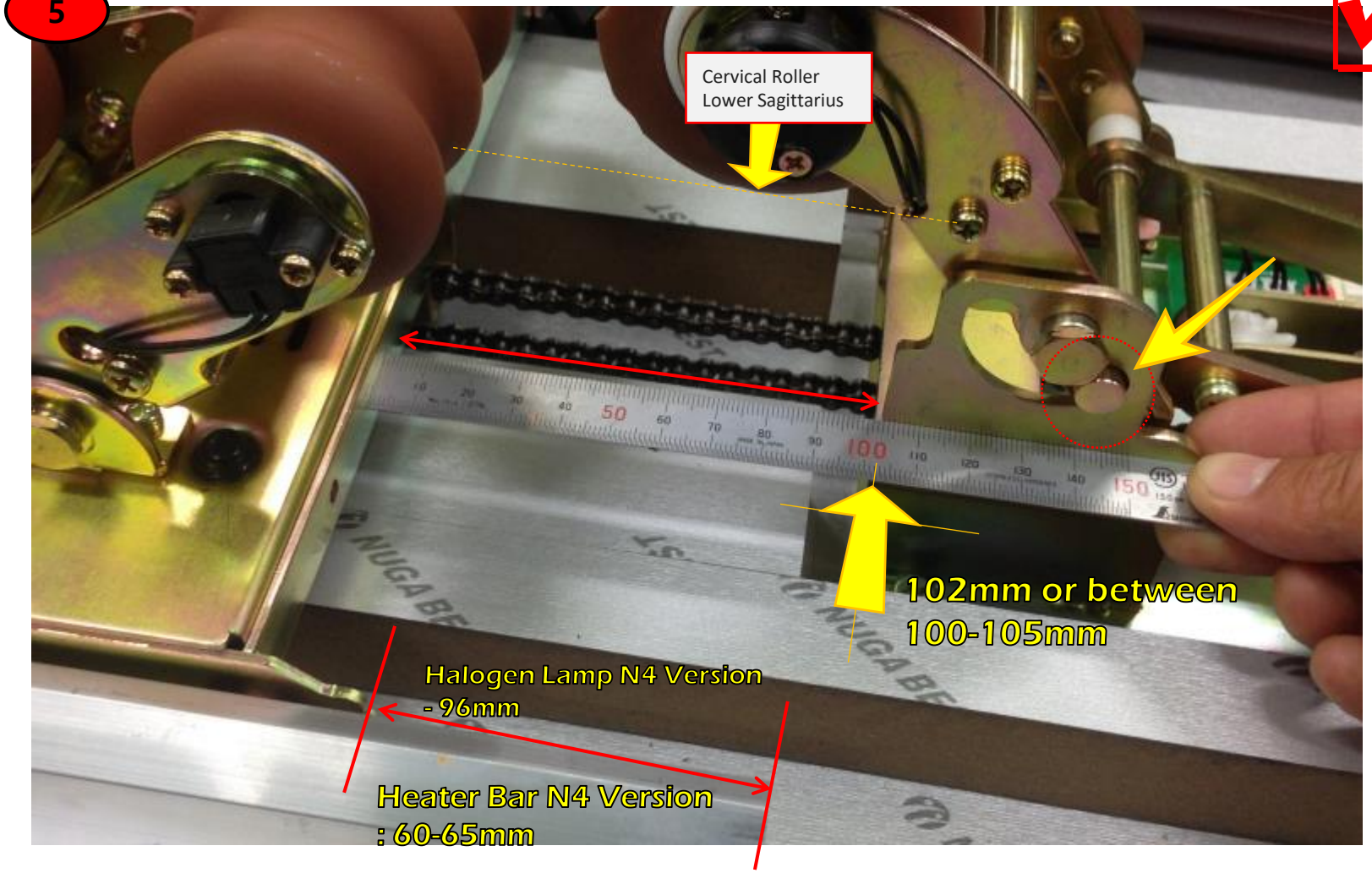
**5**




1. After placing the internal emitter and cervical vertebrae in the position as shown in the picture ⍰ Attach the chain to the teeth of the cervical spine and the teeth of the motor side.



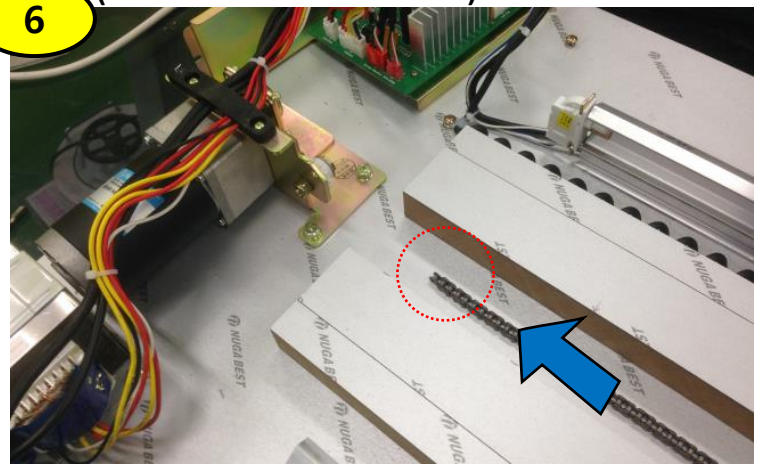
## Chain (replacement) reinstallation method-Replace or reinstall after chain separation (5-1)

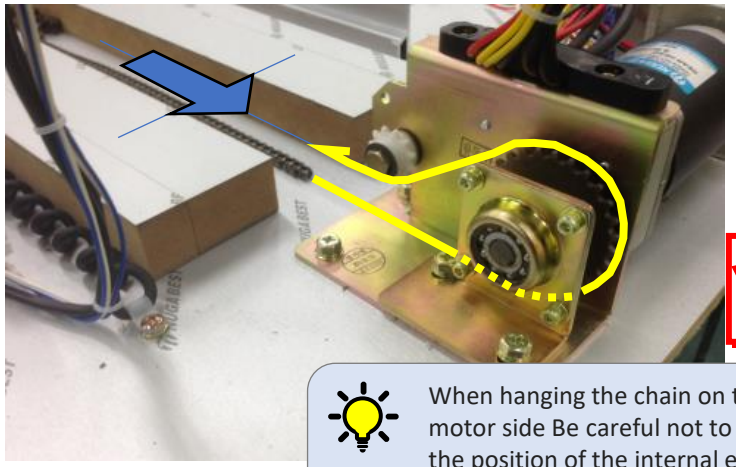



1. After placing the internal emitter and cervical vertebrae in the position as shown in the picture ⍰ Attach the chain to the teeth of the cervical spine and the teeth of the motor side.

# (REPLACING CHAIN) - HALOGEN LAMP VERSION

6

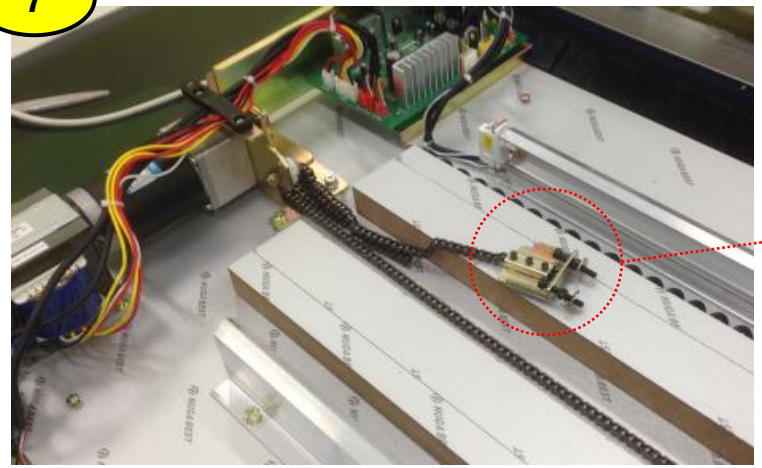


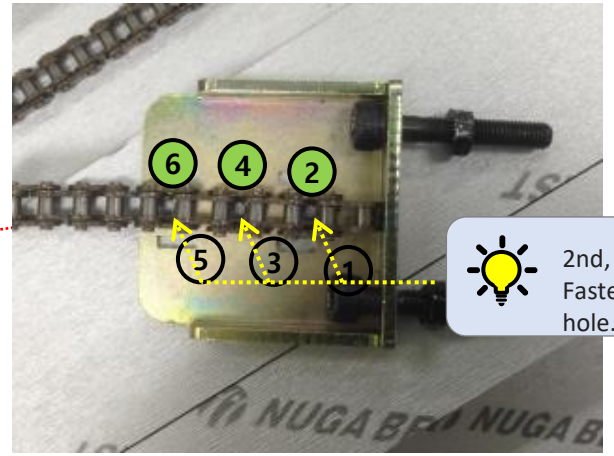


When hanging the chain on the motor side Be careful not to change the position of the internal emitter and cervical roller.

1. Motor side chain installation ? Wind the end of the chain from the bottom of the motor shaft tooth as shown in the picture and pass it under the white plastic tooth wheel on the front.

7





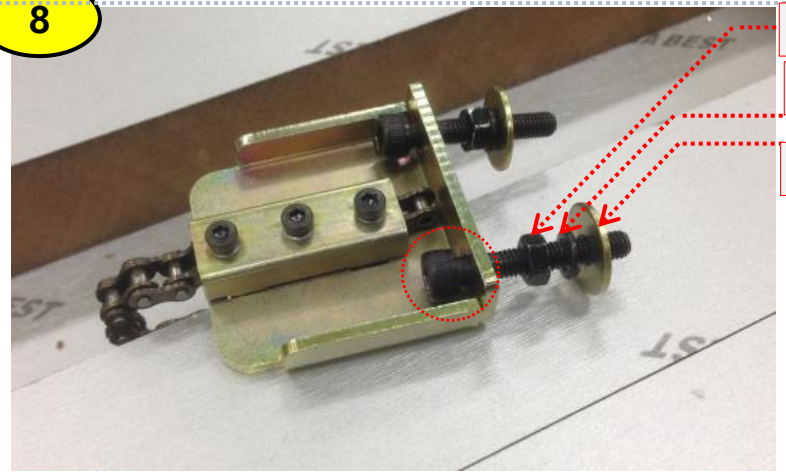

2nd, 4th, 6th in the chain Fasten the bolt to the hole.

1. Connect the chain to the chain bracket 2.

## How to reinstall the chain (replacement)-Replace or reinstall after removing the chain (5)

# (REPLACING CHAIN) - HALOGEN LAMP VERSION

**8**

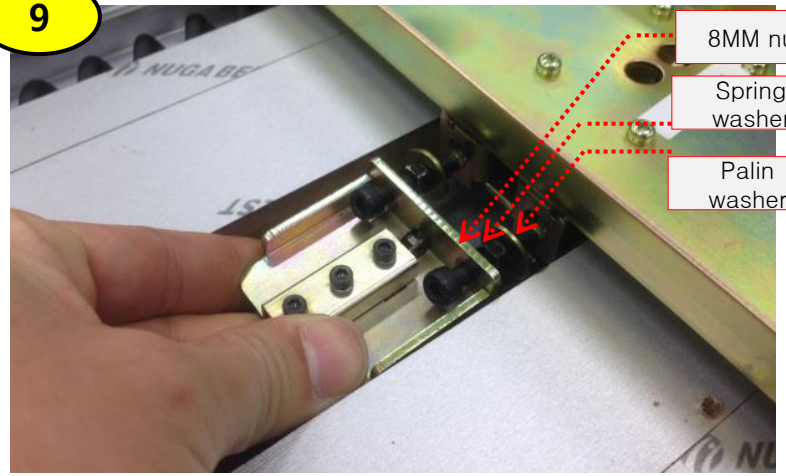



1. Connect chain bracket 2 and chain.
> Before connecting the chain bracket 2 to the internal emitter After fixing the position of the internal emitter and cervical vertebrae Connect the chain bracket 2 to the internal emitter.
> Location of the internal emitter (see next page)

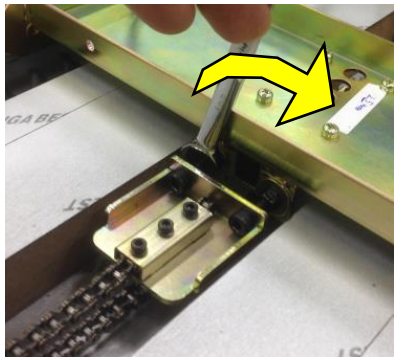
## How to reinstall the chain (replacement)-Replace or reinstall after removing the chain (6)

# (REPLACING CHAIN) - HALOGEN LAMP VERSION

**9**

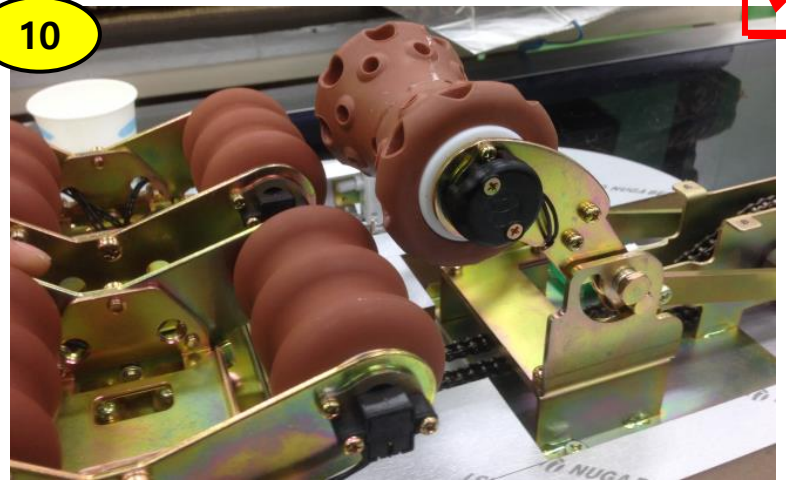



1. After attaching the chain to the teeth of the cervical and motor parts, the internal emitter Connect the chain bracket 2 to the body.



2. After adjusting the proper tension, tighten the 8MM nut. Turn clockwise to finish.

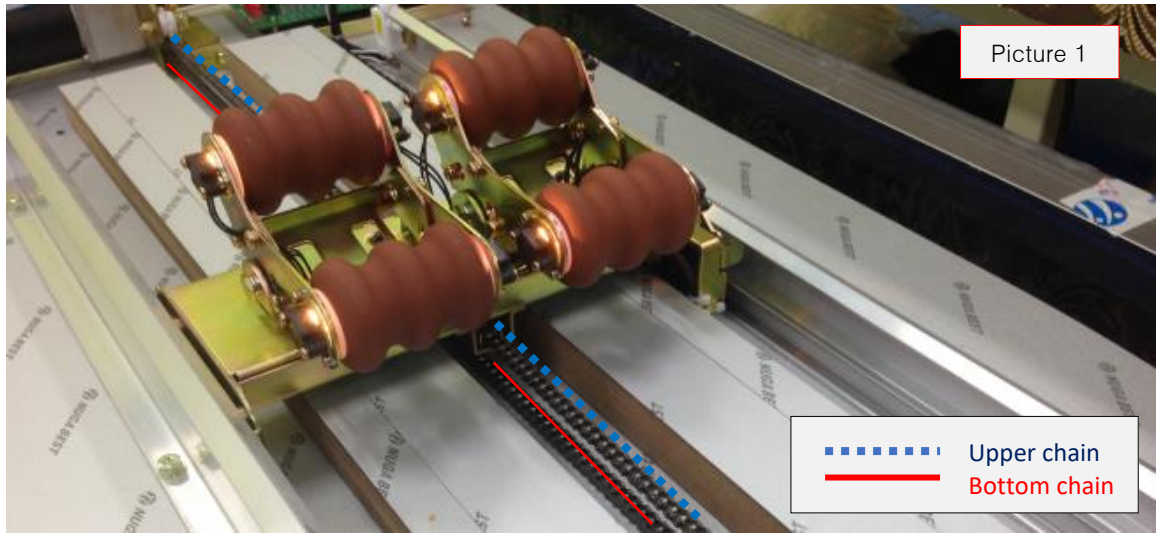
**10**

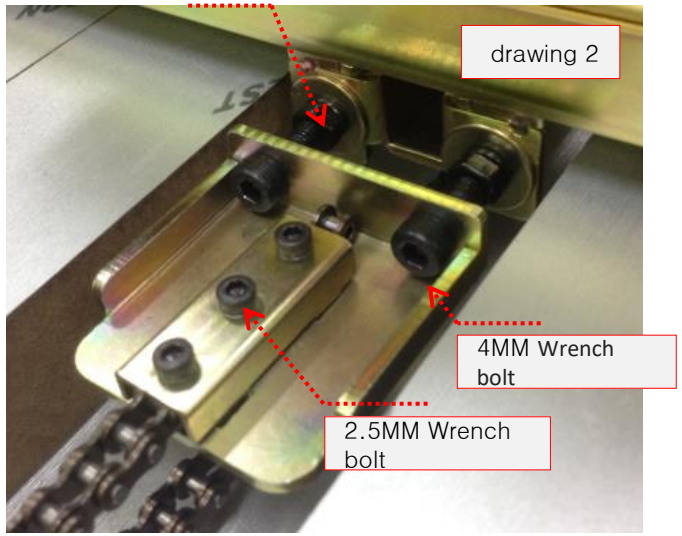


1. Inspection after completion of chain installation
   - Check whether the inner emitter roller and the cervical roller are in contact.
   - After normal chain installation The distance when the inner emitter roller and the cervical roller are closest It is about 4~5mm.
   - Check whether the chain is making noise while driving. If noise (crackling, etc.) is found, adjust the tension of the chain slightly Double check the noise.

## Chain tension control strength and setting method

# (REPLACING CHAIN) - HALOGEN LAMP VERSION




When the chain is stretched during use or due to other causes Adjust the tension by loosening or tightening the tension adjustment bolt at the bottom of the internal emitter.

- To increase the chain tension: Loosen the 8MM nut in Figure 2 and turn the 4MM wrench bolt clockwise. (After adjustment, lock the 8MM nut)
- In case of lowering the chain tension: Loosen the 8MM nut in Figure 2 and turn the 4MM wrench bolt counterclockwise. (After adjustment, lock the 8MM nut)

Maintaining the proper tension If the tension is too low, the lower chain touches the floor and makes noise, and if the tension is too strong, the noise is intermittently generated due to the tolerance between the gearwheel and the chain. Therefore, maintaining proper tension is very important.

- With the emitter stopped in the center, the lower central chain floats about 4~5mm from the floor. If you touch the lower chain, it slumps and does not touch the floor.
- When adjusting the tension, turn the lower chain clockwise about 2 ~ 2.5 turns as the lower chain starts to float on the floor.

# N4 Cervical Acupressure Module

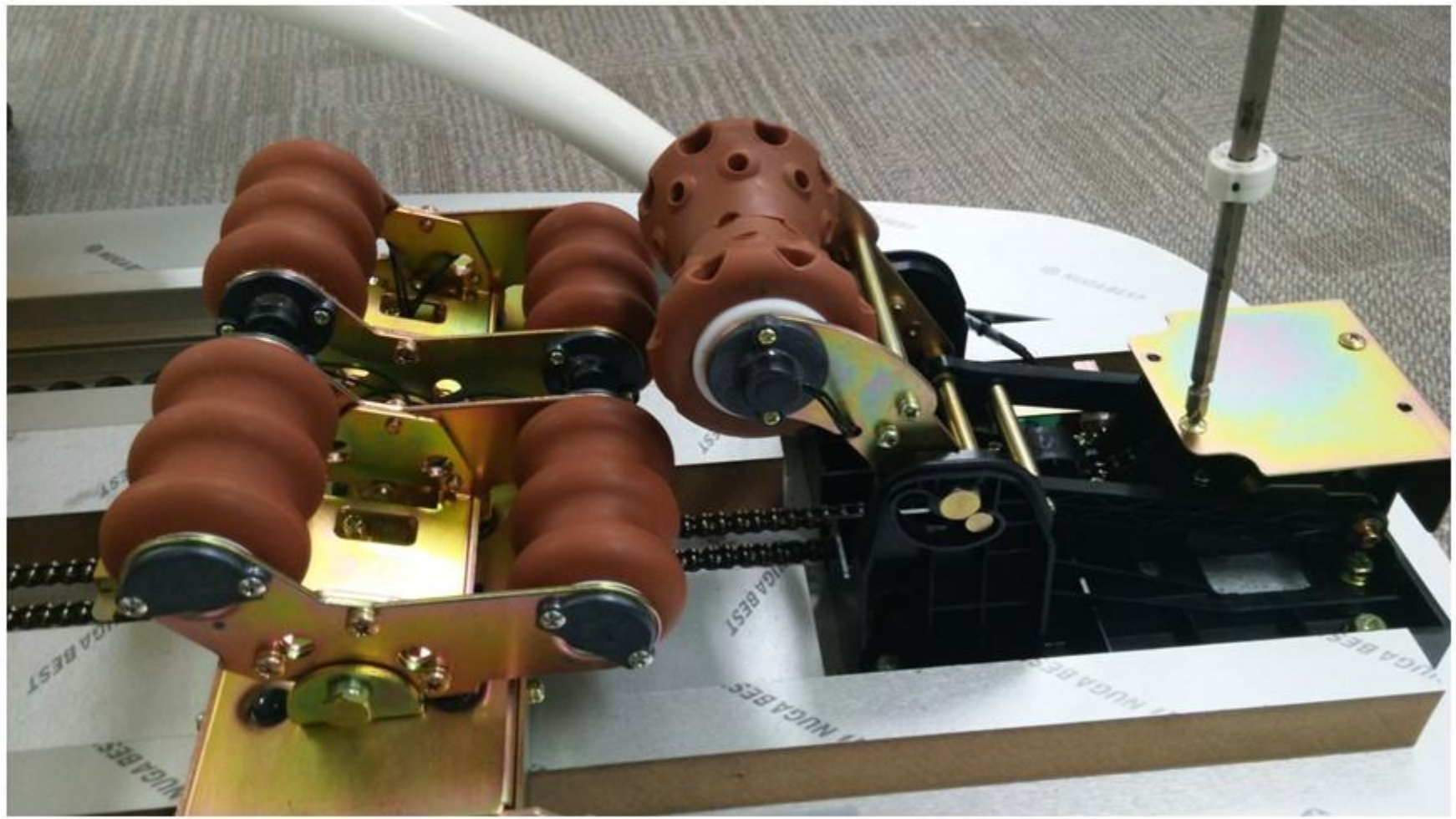
## Basic setting

(REPLACING CHAIN)

- HEATER ROD VERSION -

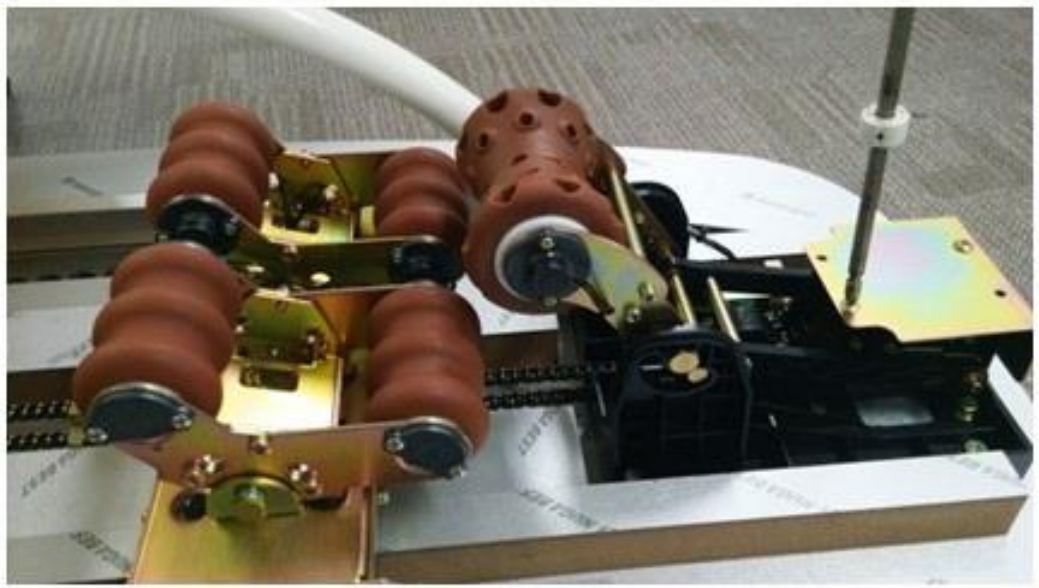
(REPLACING CHAIN)
- HEATER ROD VERSION -

## STEP 1: Before disassembling the cervical module



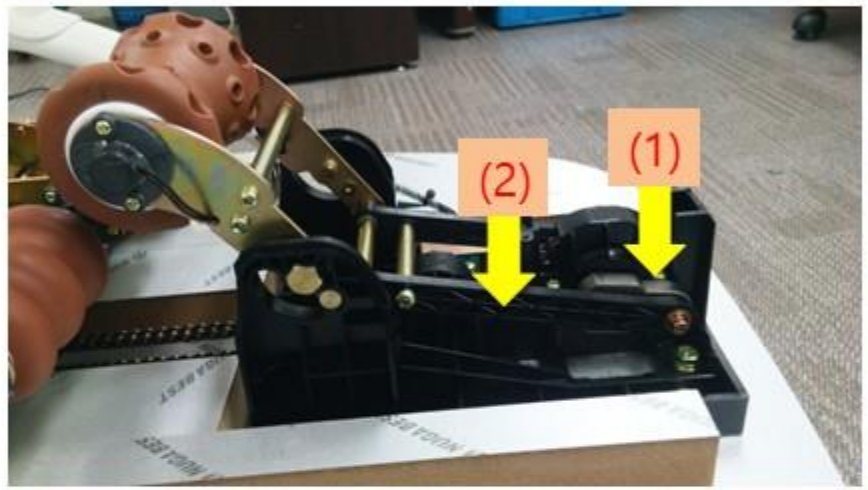
(REPLACING CHAIN)
- HEATER ROD VERSION -

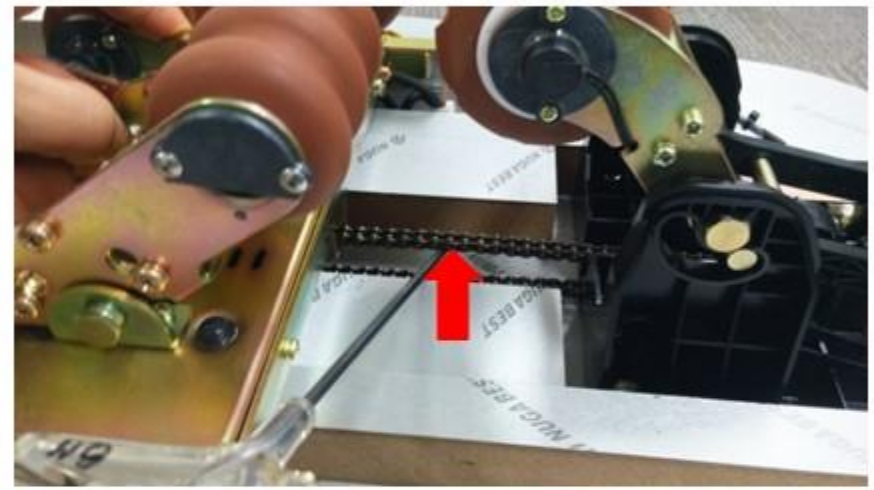
Step 2: Remove the TENSHION B/K COVER.



(REPLACING CHAIN)
- HEATER ROD VERSION -

## Step 3: LINK ARM(2) and rotary ARM(1) position setting

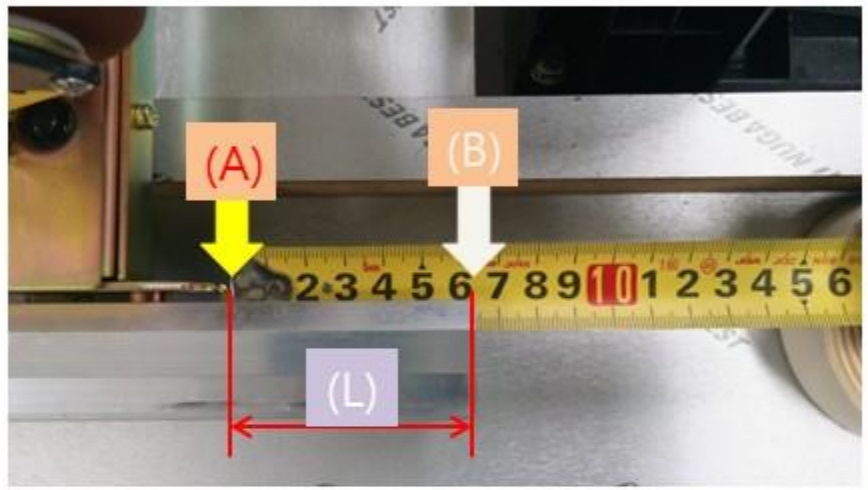


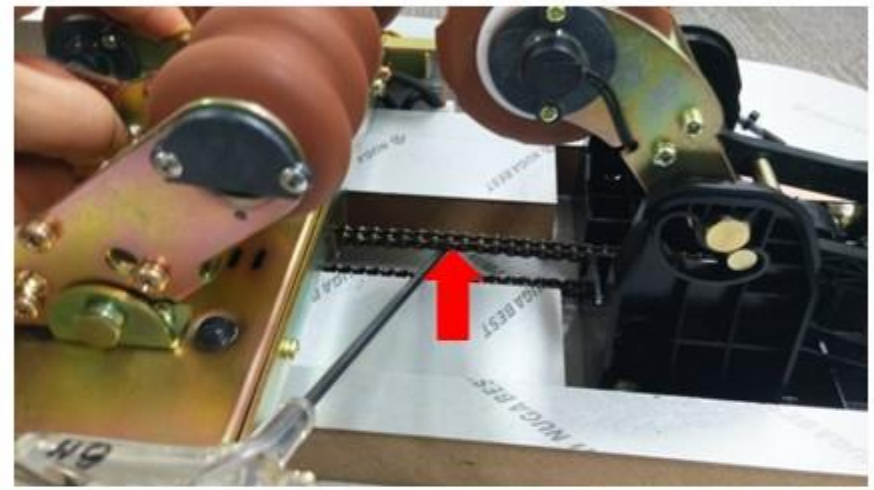



The yellow arrows ((1) and (2)) in the upper left picture are
1 character as shown
Position the chiropractor to overlap.
The chain corresponding to the red arrow ()
in the upper right picture must be pulled tight.

(REPLACING CHAIN)
- HEATER ROD VERSION -

Step 4: Set the distance value of the contact part (A) of the internal transmitter and the end of the rail (B).

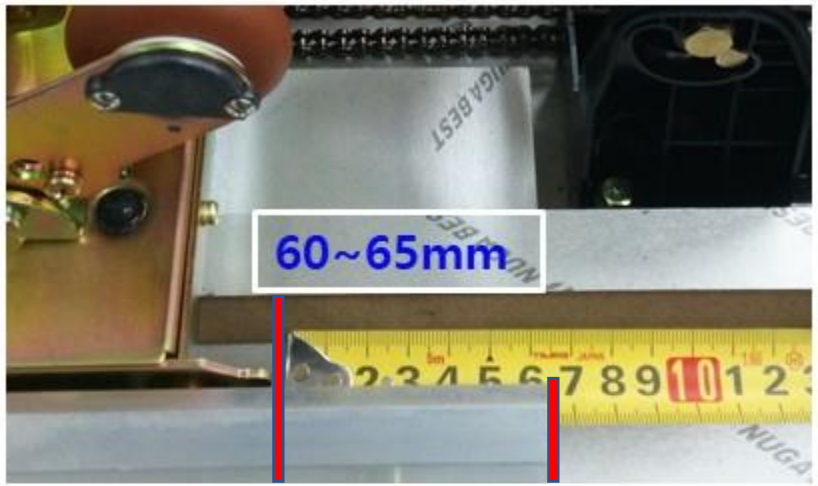


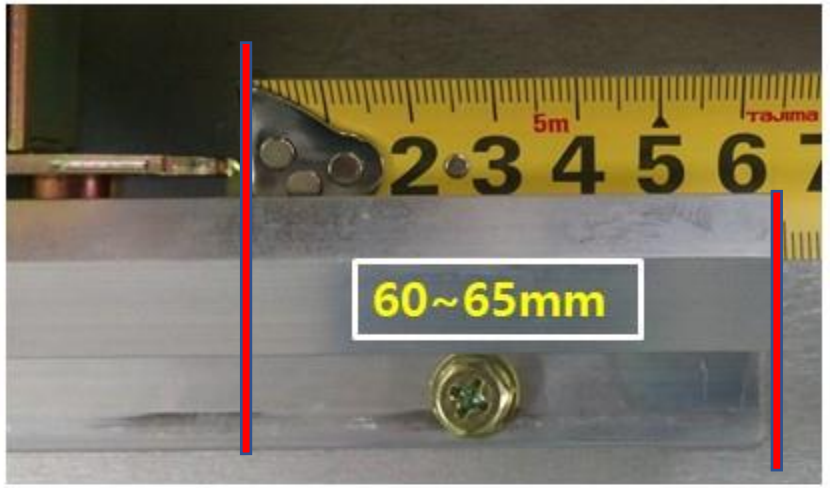



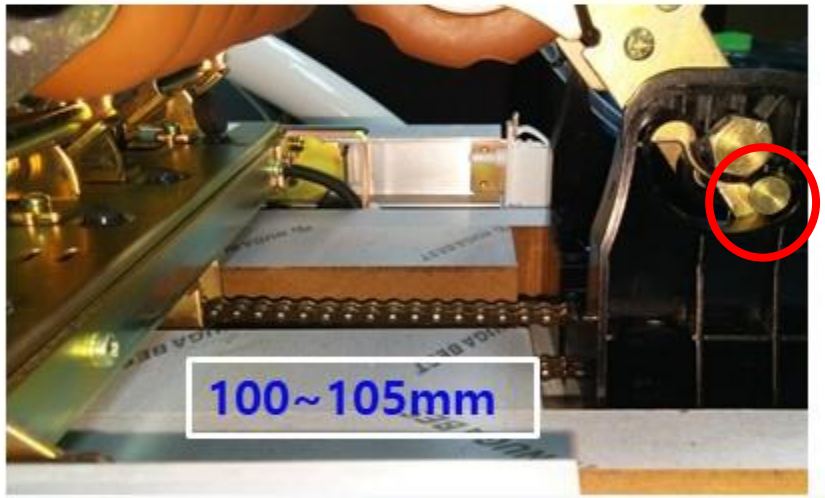
The distance between the inside transmitter contact (A) and the end of the rail (B) Adjust to be 60~65mm.
However, the most important thing to note here Cervical vertebra angle (maintaining overlapping shape of LINK ARM and rotating ARM) and Set 60~65mm while pulling the internal transmitter tightly.

# Conclusion

(REPLACING CHAIN)
- HEATER ROD VERSION -





Distance from 1-RAIL to the touch part of the internal transmitter: 60~65mm (may be up to 68mm in case of deviation) Distance from the end of 2-TENSHION BK to the internal floodlight: 100~105mm (may be up to 108mm in case of deviation) (This dimension must be in the state where the cervical vertebra massage angle is completely tilted (=LINK and ARM overlapped). The chain (upper) must be assembled while pulled up to get the correct setting.----------!!!!! <Very important>

# N4 Operation of the internal emitter

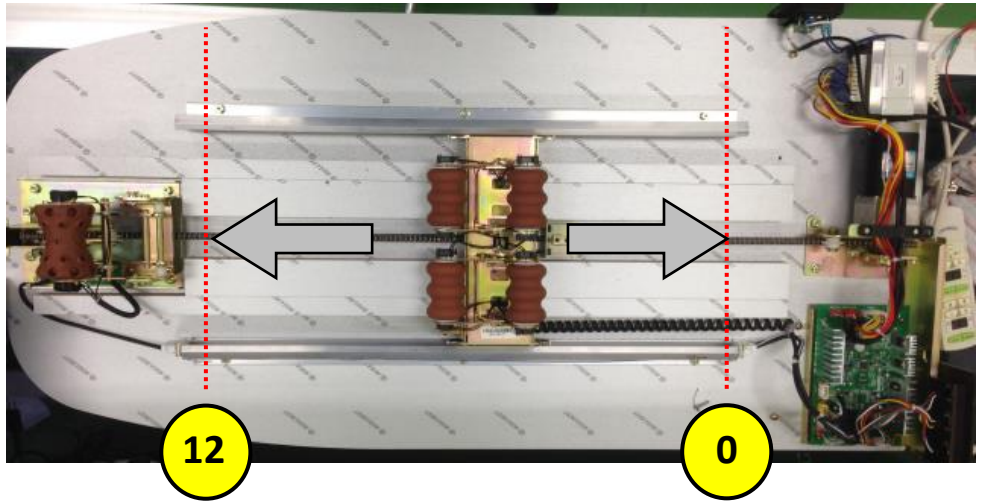
The contents of the list may change due to changes in specifications in the future.

## Operation of the internal emitter-AUTO1 (AUTO lamp is lit)-When the auto button is pressed once

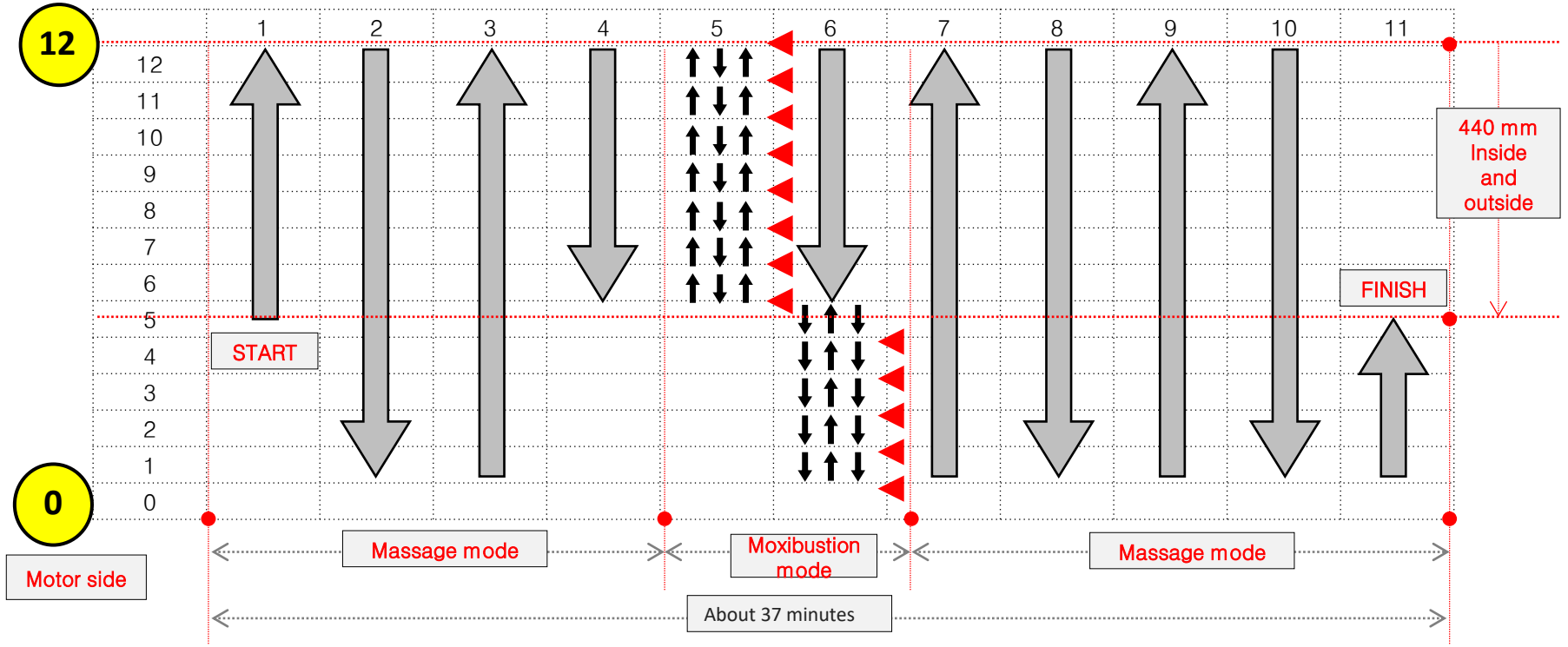

01:23.00

01:23.00

N4 편도 운전 시간




Cervical side

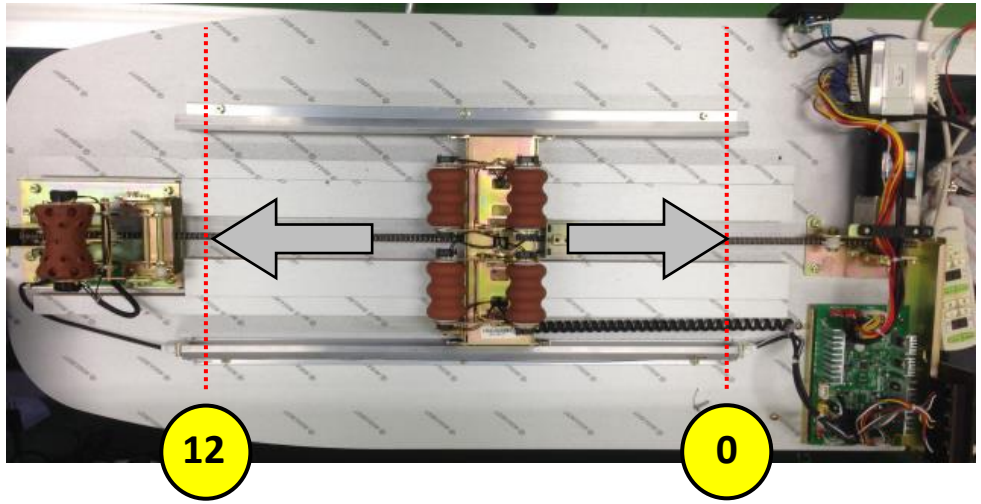


## Internal emitter operation – AUTO2 (AUTO lamp blinks) – When auto button is pressed twice

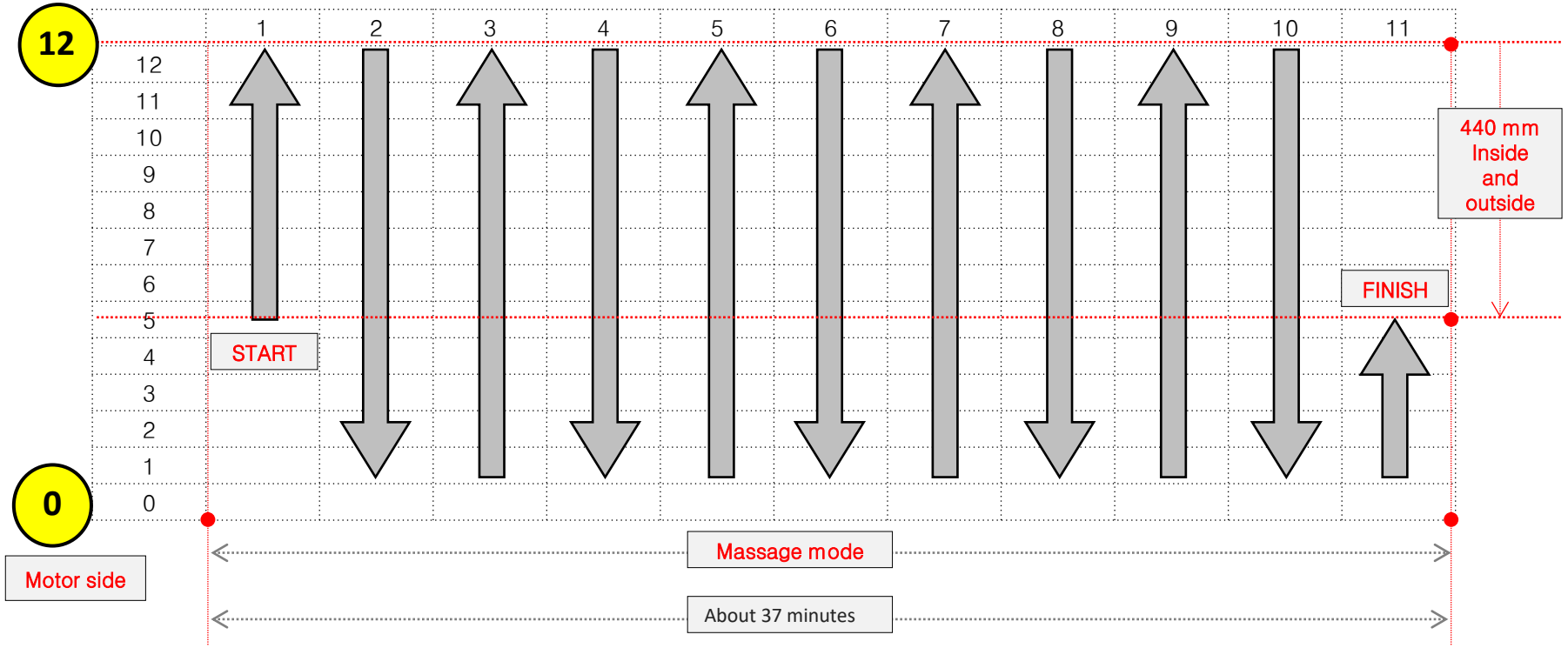

01:23.00

01:23.00

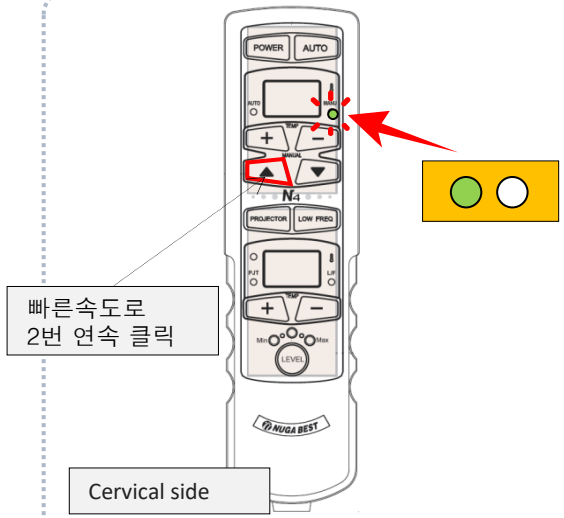
N4 편도 운전 시간

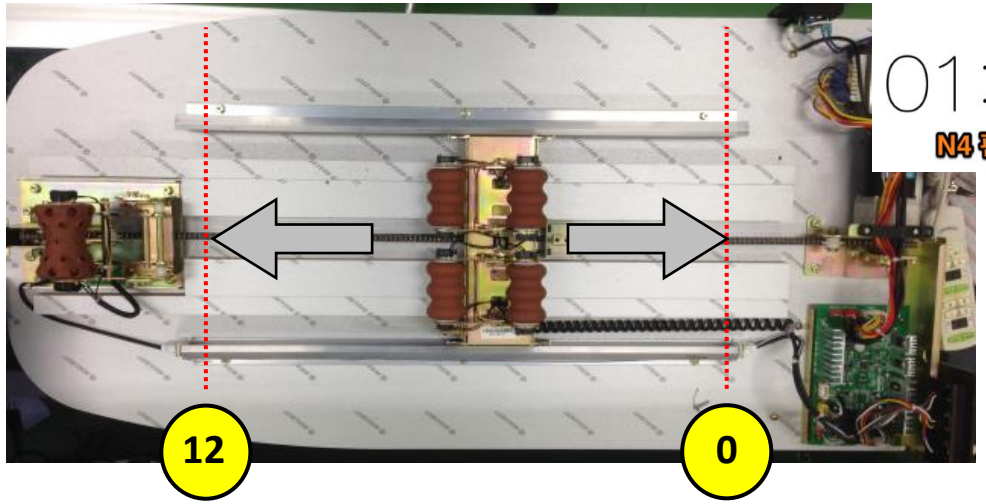


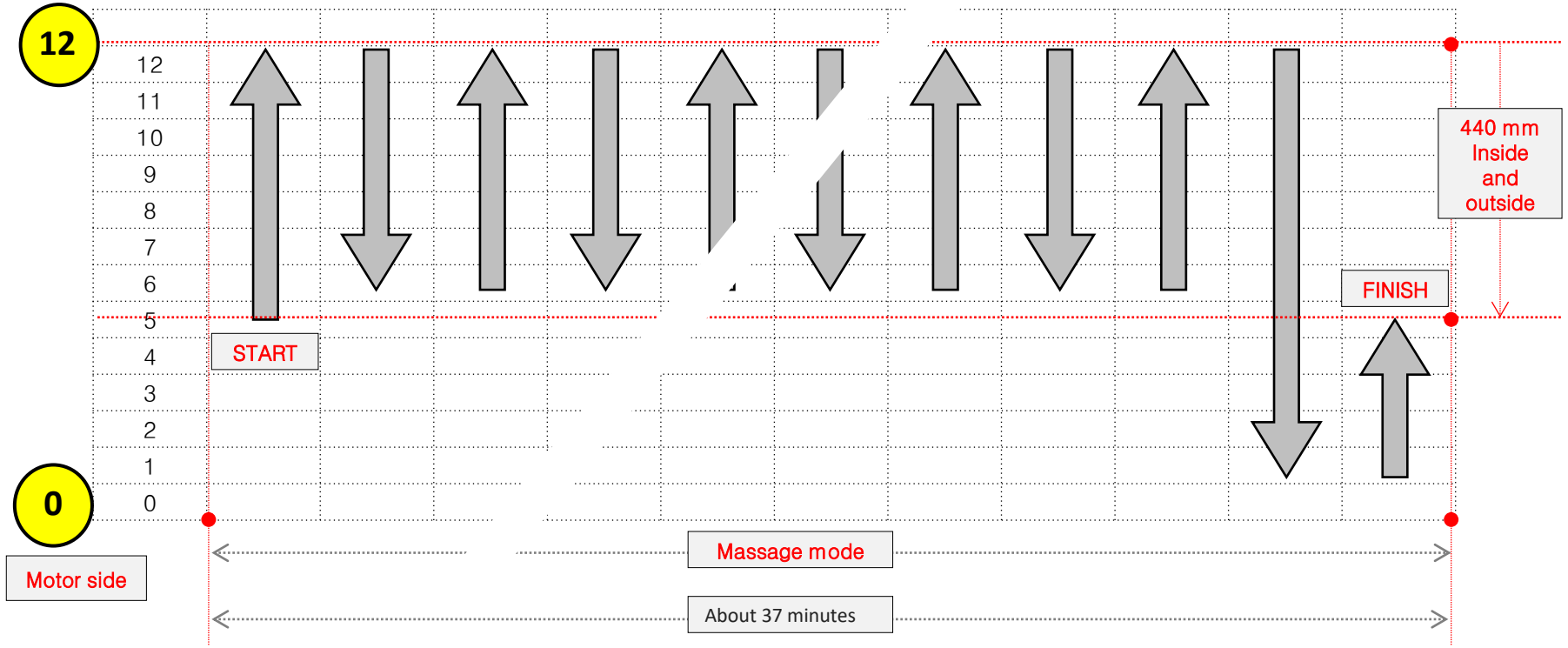

Cervical side



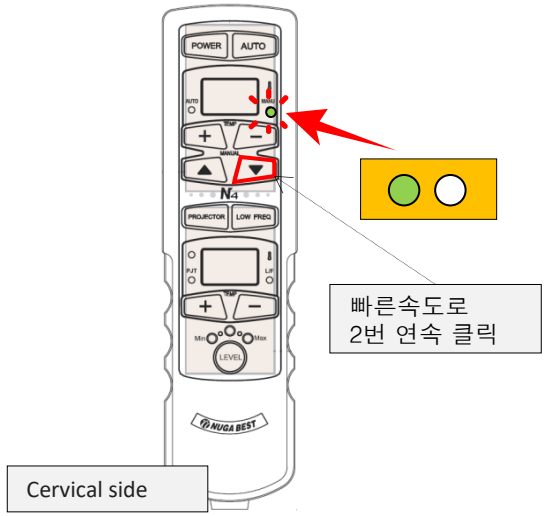
## Operation of the internal emitter – AUTO3 (MANU lamp lights up)-▲ When clicking twice in succession

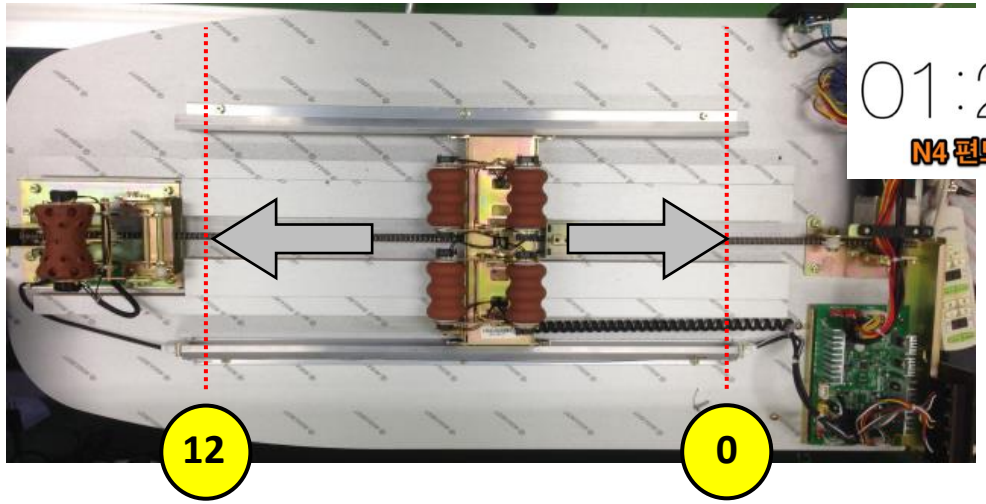


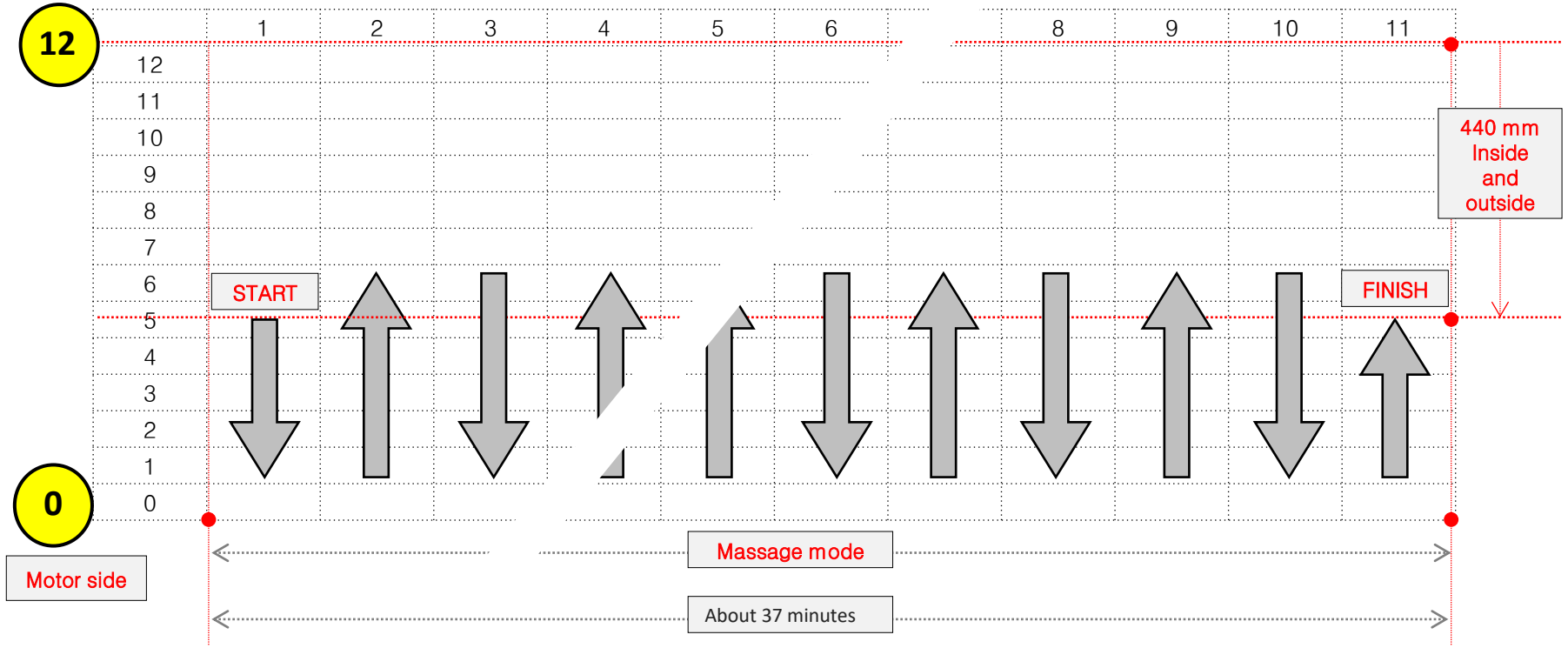



## ■ Operation of the internal emitter – AUTO4 (MANU lamp lights up)-▼ When clicking twice in succession



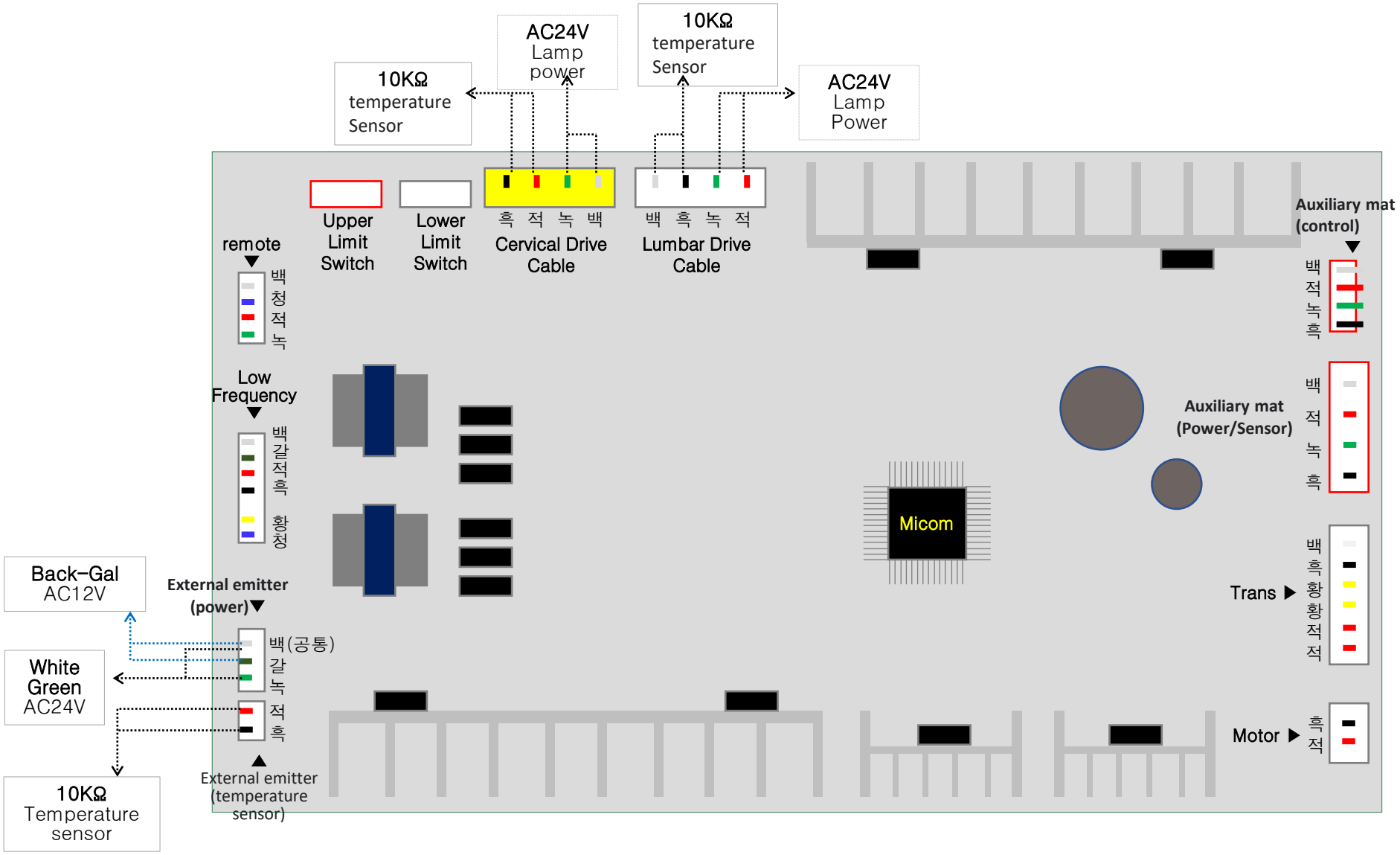



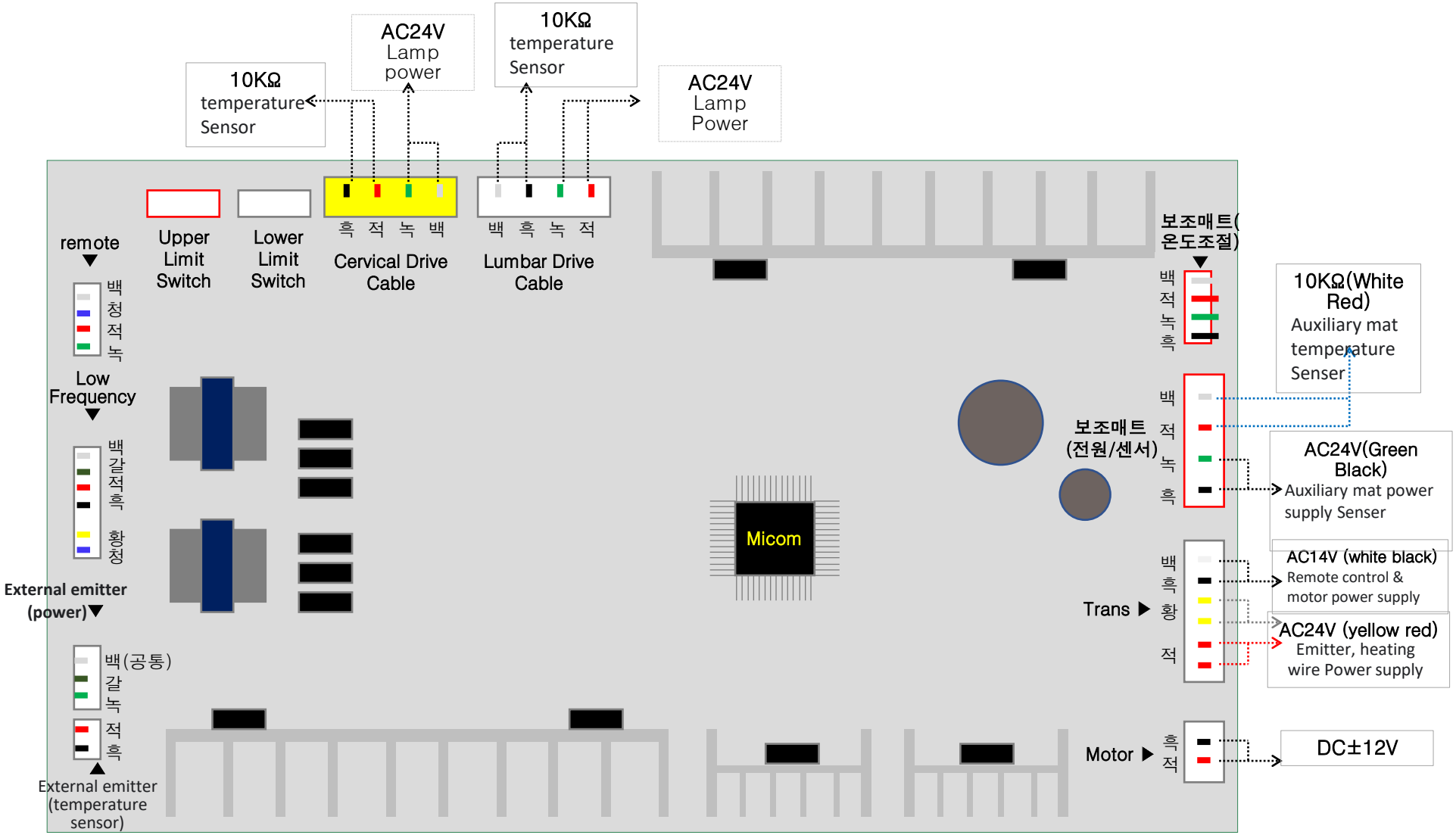
# N4 MAIN PCB Structure

The contents of the list may change due to changes in specifications in the future.

# ■ Main PCB (1/2)


AC24V
Lamp
power
10KΩ
temperature
Sensor
10KΩ
temperature
Sensor
AC24V
Lamp
Power
Upper
Limit
Switch
Lower
Limit
Switch
흑 적 녹 백
Cervical Drive
Cable
백 흑 녹 적
Lumbar Drive
Cable
remote
백
청
적
녹
Low
Frequency
백
갈
적
흑
황
청
Auxiliary mat
(control)
백
적
녹
흑
Auxiliary mat
(Power/Sensor)
백
적
녹
흑
Micom
Trans ▶
백
흑
황
황
적
적
Motor ▶
흑
적
Back-Gal
AC12V
White
Green
AC24V
10KΩ
Temperature
sensor
External emitter
(power)
백(공통)
갈
녹
적
흑
External emitter
(temperature
sensor)

# ■ Main PCB (2/2)


10KΩ temperature Sensor
AC24V Lamp power
10KΩ temperature Sensor
AC24V Lamp Power
remote
백 청 적 녹
Low Frequency
백 갈 적 흑
황 청
External emitter (power)
백(공통) 갈 녹
적 흑
External emitter (temperature sensor)
Upper Limit Switch
Lower Limit Switch
흑 적 녹 백
Cervical Drive Cable
백 흑 녹 적
Lumbar Drive Cable
Micom
보조매트(온도조절)
백 적 녹 흑
10KΩ(White Red)
Auxiliary mat temperature Senser
보조매트 (전원/센서)
백 적 녹 흑
AC24V(Green Black)
Auxiliary mat power supply Senser
Trans ▶
백 흑 황 적
AC14V (white black)
Remote control & motor power supply
AC24V (yellow red)
Emitter, heating wire Power supply
Motor ▶
흑 적
DC±12V

# N4 Types of error codes summary

| Error code | Contents |
|---|---|
| 0E | Internal sensor short circuit |
| - - | Lumbar sensor disconnection / Poor contact from Sensor to Lamp pcb / Poor contact from Lamp pcb to Coil cable / Poor contact from Coil cable to Main pcb. |
| 1E | Internal lamp / Heater Rod / Bi-metal / Poor contact from Lamp pcb to coil cable / Poor contact Coil cable to Main pcb. |
| 5E | Cervical Sensor Short / Poor contact from Sensor to Lamp pcb / Poor contact from Lamp pcb to Cervical power cable / Cervical power cable to main pcb. |
| 4E | Cervical Roller Temperature Sensor Disconnection / Poor contact from Sensor to Lamp pcb / Poor contact from Lamp pcb to Cervical power cable / Cervical power cable to main pcb. |
| 6E | Cervical Lamp/ Heater Rod / Poor contact from Heater Rod to Lamp pcb / Poor contact from Lamp pcb to Cervical power cable. / Cervical power cable to Main pcb. |
| 7E | Limit Switch Upper or lower / Motor / Motor Decelerator / Main PCB. |
| - - (lower display) | 5 ball sensor disconnection |
| 2E | 5 ball sensor short circuit |
| 3E | 5 ball Bulb basted/ Bulb to Lamp socket poor contact / Loose screw. |
| 6E,3E (at the same time) | Transformer |
| 8E | Loose Chain / Motor / Motor Decelerator |

# Sub Mat (No heat)

| THINGS TO CHECK |
| --- |
| 1. VOLUME TEMPERATURE |
| 2. SUB COIL CABLE |
| 3. INLET JACK WIRE |
| 4. SUB MAT JACK WIRE |
| 5. SUB MAT SENSOR |
| 6. SUB MAT COIL |
| 7. VR VOLUME CABLE |
| 8. SUB HEAT CABLE 1 |
| 9. MAIN PCB |