K3 Unit Chair Installation

Osstem Implant
Technical Support Division
K3 Unit Chair Installation
(Mechanical)
Contents

I. K3 installation Checklist
II. Select installation location
III. K3 UNIT CHAIR Installation
IV. Pipeline installation
V. Air / Water Line Diagram
K3 Installation Checklist
I K3 Installation Checklist

**Packing Box Components**

1. CHAIR BOX
2. UNIT BOX
3. TABLE BOX
4. LIGHT ARM BOX
5. LIGHT HEAD BOX
6. SEAT BOX
7. DOCTOR STOOL BOX
I K3 Installation Checklist

**Checklist before Installation**

- Check the product transportation route.
- The product must be transported in a packed state.
  
  If packing materials need to be removed before transportation, soft materials must be used to prevent damage to the product.
- Before installation, confirm that all components are included in the packing box.

**Check components in the box**

<table>
<thead>
<tr>
<th>#</th>
<th>Packing</th>
<th>Component</th>
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<tbody>
<tr>
<td>1</td>
<td>Chair BOX</td>
<td>CHAIR ASS’Y, ARM REST “L”, “R”, HEADREST BOX</td>
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<tr>
<td>2</td>
<td>UNIT BOX</td>
<td>UNIT ASS’Y, FOOT ASS’Y, ASSIST TABLE ASS’Y (Distilled water tank ASS’Y)</td>
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<td>3</td>
<td>TABLE BOX</td>
<td>DOCTOR TABLE ASS’Y, Hanaro Console Box, MONITOR ARM BOX, ASSIST BOX (SCALER, ELECTRIC MOTOR)</td>
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<tr>
<td>4</td>
<td>LIGHT ARM BOX</td>
<td>DENTAL LIGHT ASS’Y, LIGHT POLE</td>
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<tr>
<td>5</td>
<td>LIGHT HEAD BOX</td>
<td>LIGHT HEAD ASS’Y</td>
</tr>
<tr>
<td>5</td>
<td>SEAT BOX</td>
<td>SEAT ASS’Y, BACKREST ASS’Y</td>
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<tr>
<td>7</td>
<td>STOOL BOX</td>
<td>STOOL ASS’Y, MOTOR COVER, BASE FRONT COVER, BASE BACK COVER</td>
</tr>
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</table>
Select installation location
Select installation location

Requirements for Installation Location

- Must be **level**
- A floor to ceiling distance must be secured **2.5m** at least
- Distance from piping to the spittoon must be within **2m**
- Sufficient space must be secured for repair and maintenance
- Support structure must be able to withstand the weight of equipment

- **K3 Unit Chair Size**
K3 UNIT CHAIR Installation


**CHAIR INSTALLATION**

- **Installation procedures #1**

1. **Install the base plate**

   Check the direction to place the main plate (A) on the installation location agreed upon with the user, as shown in <Figure 01>, and place the chair on the floor.

2. **Check the application position for each bolt use**

   Referring to <Figure 02>, identify the use-specific location of bolts to be applied to Base Plate (A).

   - M8mm head wrench bolts for fixing chair - 5EA
   - M10mm headless wrench bolts for levelness - 6EA
   - M8mm head wrench bolts for fixing unit - 5EA
**CHAIR INSTALLATION**

- **Installation procedures #2**

3. **Install the chair assembly**

   As shown in <Figure 03>, place the chair assembly (B) on the main plate (A), align the bolt hole positions and fasten the fixing bolts and level adjustment bolts, referring to <Figure 02>.

   - Use 5mm and 6mm T-wrench

4. **Install Armrest**

   As shown in <Figure 04>, unfasten the armrest fixing bolts on the chair assembly (B) and assemble the armrest (C).

   - Use 5mm T-wrench
**CHAIR INSTALLATION**

- Installation procedures #3

5. Install backrest bracket

As shown in <Figure 05>, assemble the backrest bracket (D) to the backrest support ①.

- Use a Phillips screwdriver

6. Install backrest seat

As shown in <Figure 06>, assemble the backrest seat (E) to the backrest bracket (D).

- Use a Phillips screwdriver
**CHAIR INSTALLATION**

**Installation procedures #4**

7. **Install backrest cover**
   Referring to <Figure 07>, align the heads of 4 bolts for the backrest cover (F) with the holes (b) of the backrest seat (E), and push the bolts down to insert them into the holes.

   ※ Difference in steps between backrest cover and the backrest seat can be adjusted by fastening the bolt.

8. **Install headrest**
   As shown in <Figure 08>, put the headrest assembly into the groove on the sliding rail of the backrest bracket (D) mounted in Step 5.
**CHAIR INSTALLATION**

- **Installation procedures #5**

9. Install seat

As shown in <Figure 09>, push the seat assembly (H) in the backrest direction to set the position to mount the seat assembly.

10. Fasten the bolts fixing the seat

As shown in <Figure 10>, fix the seat assembly (H) to the chair assembly (B) using bolts.

*Use a Phillips screwdriver*
CHAIR INSTALLATION

11. Remove the main power cable

As shown <Figure 11>, remove the main power cable located in the chair assembly.

12. Assemble power switch

As shown in <Figure 12>, plug the main power switch into the base back cover (I) and mount it on the base plate.
**CHAIR INSTALLATION**

**Installation procedures #7**

13. Assemble main power cable

As shown in <Figure 13>, connect the connector.

14. Assemble power switch

As shown in <Figure 14>, place the base front cover (J) on the base plate and fasten with bolts on both sides.

*Use a Phillips screwdriver*
**CHAIR INSTALLATION**

- **Installation procedures #8**

15. **Install motor cover**

As shown in <Figure 15>, mount a hook (C) located on the front side of the motor cover (K) aligning with the groove on the base front cover (J).

16. **Fasten motor cover**

As shown in <Figure 16>, fasten with a bolt on each side of the motor cover (K).

*Use a Phillips screwdriver*
CHAIR INSTALLATION

Installation precautions #1

1. Align the backrest cover with the center of the headrest

   Good Example [Regular gaps]
   Bad Example [Irregular gaps]

2. Perform an armrest operating test to check whether there is any interference with the seat
CHAIR INSTALLATION

Installation precautions #2

3. Chair levelness adjustment

After installing the unit chair, check the levelness using a level gauge, and balance the unit chair using the levelness adjustment bolt shown in <Figure 01>.

Use 5mm T-wrench

4. Chair speed adjustment

Chair speed adjustment valve
UNIT INSTALLATION

Installation procedures #1

1. Remove Unit Base Cover_R

Unfasten 2 bolts as shown in <Figure 01> and remove the Unit Base Cover_R (A).

Use a Phillips screwdriver

2. Remove Back Lower Cover

As shown in <Figure 02>, grab the Back Lower Cover (B) and pull in the direction of the arrow to remove it from the cover.
3 Fasten levelness adjustment bolt

As shown in <Figure 03>, temporarily fasten the levelness adjustment bolt for the unit to the Main Plate (C).

Use 5mm T-wrench

4. Install Unit Assembly

As shown in <Figure 04>, place the Unit Assembly (A) on the Main Plate (C), align the bolt holes of the Chair Assembly (D) and the Unit Assembly (A), insert a bolt and temporarily fasten the bolt.

Use 8mm T-wrench
UNIT INSTALLATION

Installation procedures #3

5. Remove bolt cap

As shown in <Figure 05>, remove the rubber cap mounted on Unit Base Cover_L.

6. Remove fixing bolt

As shown in <Figure 06>, fasten the bolt fixing the Main Plate (C) and the Unit Assembly (A), and put the rubber cap into the original position.

⚠️ Use 6mm T-wrench
UNIT INSTALLATION

Installation procedures #4

7. Fix Unit Assembly

As shown in <Figure 07>, fasten the bolt fixing the Main Plate (C) and the Unit Assembly (A) and tightly fasten the bolt that was temporarily fastened in Step 4.

Use 6mm T-wrench

8. Assemble Assist Table Assembly

As shown in <Figure 08>, put the Assist Table Assembly (F) into the Unit Assembly (E).
UNIT INSTALLATION

Installation procedures #5

9. Fix Assist Table Assembly

As shown in <Figure 09>, fasten Unit Assembly (E) and Assist Table Assembly (F) using bolts.

10. Assemble Foot Control Assembly

As shown in <Figure 10>, insert wiring for Foot Control Assembly (H) into Unit Base Plate (G) and fasten the clamp with bolts to fix the Metal Hose.

Use a Phillips screwdriver
UNIT INSTALLATION

Installation procedures #6

11. Assemble Back Low Cover

As shown in <Figure 11>, align the Back Lower Cover (B) with the Assembly Ball and push it in the arrow direction to put the cover in.

※ Assemble the Back Lower Cover (B) after completing wiring for the Main PCB.
UNIT INSTALLATION

Installation precautions

1. How to move Unit Assembly

When moving Unit Assembly, you must grab the safety point (position #2 and 3).
DOCTOR TABLE INSTALLATION

Installation procedures #1

1. Install Large Arm Assembly

As shown in <Figure 01>, level off the Large Arm Assembly (A) and put it in Unit Assembly ① in the vertical direction.

2. Fix Large Arm Assembly

As shown in <Figure 02>, align the positions of the bolt holes for Unit Assembly ① and Large Arm Assembly (A), and fasten the bolts.

Use a Phillips screwdriver
**DOCTOR TABLE INSTALLATION**

- **Installation procedures #2**

3. **Insert Wire in Doctor Table Assembly**

   As shown in <Figure 03>, hold the Doctor Table Assembly (B) and pass the wire through the inside of Large Arm (C) to insert it inside the unit.

4. **Fix Balance Arm Assembly**

   As shown in <Figure 04>, insert Balance Arm (D) in Large Arm (C) and fasten with bolts.

*Use 4mm T-wrench*
**DOCTOR TABLE INSTALLATION**

### Installation procedures #3

5. **Assemble Sub Table**

As shown in <Figure 05>, fasten Sub Table (E) to Sub Table Bar (F) with bolts.

- **Use a Phillips screwdriver**

6. **Install Sub Table Assembly**

As shown <Figure 06>, fasten Sub Table Bar (F) to Lower Table Block (G) with bolts.

- **Use a Phillips screwdriver**
DOCTOR TABLE INSTALLATION

Installation procedures #4

7. Install Chart Holder

As shown in <Figure 07>, align and insert the Chart Holder (I) in the holes on Upper Table Block (H).

8. Remove Mouse Pad Bolts

As shown in <Figure 08> remove the bolts fastened on the side of Doctor Table.

Use a Phillips screwdriver
DOCTOR TABLE INSTALLATION

Installation procedures #5

9. Assemble Mouse Pad

As shown in <Figure 09>, insert the Mouse Pad (J) into the side of Doctor Table and fasten with bolts.

Use a Phillips screwdriver

10. Mount Protective Pad

As shown in <Figure 10>, mount the Protective Pad (K) on the Mouse Pad (J).
**DOCTOR TABLE INSTALLATION**

- **Installation procedures #6**

**11. Mount Stainless Tray**

As shown in <Figure 11>, mount Stainless Tray (L) on the Sub Table (E).
DOCTOR TABLE INSTALLATION

Installation precautions #1

1. Level off Doctor Table
As shown in the figure, remove the Table Cover. Adjust the wrench bolts shown in Figure "A" and "B" and level off the Doctor Table.

2. Adjust Balance Arm Tension
As shown in the figure, remove the Slide Bar Cover Cap. Using a 5mm T-wrench in the "C" area on the figure, adjust the Balance Arm tension.
DOCTOR TABLE INSTALLATION

- Installation precautions #2

**3. Balance Arm Tension Fixing Device**

Turn the Balance Arm Knob shown in Figure "D" counter-clockwise to lock it, and the load will be applied to the tension adjustment device, which leads to an increase in the fixing force of the Balance Arm.

**4. Adjust Air Pressure for Doctor Table Master Block**

Turn the air pressure adjustment valve of the master block clockwise (lock) and the air pressure decreases. Turning the valve counter-clockwise (release) increases the air pressure.

※ Set pressure: 3Kgf/cm²

Notice) Do not apply too much torque when closing the valve, as it may cause the diaphragm be torn, causing a gas leakage. Do not fasten further when the valve is closed to the stopper.
**DOCTOR TABLE INSTALLATION**

- Installation precautions #3

5. How to Adjust Water Volume for the Balance Arm

Water volume adjustment valve is placed on the bottom right of the Doctor Table. Turn each valve clockwise to decrease the water volume; turn it counter-clockwise to increase the water volume.
Ⅲ K3 UNIT CHAIR Installation

✿ MONITOR ARM INSTALLATION

☐ Installation procedures #1

1. Install Light Pole

As shown in <Figure 01>, level off the Large Arm (A) and insert the Light Pole (B) in the vertical direction.

2. Fasten Large Arm Assembly Bolts

As shown in <Figure 02>, fasten 2 headless bolts in Large Arm (A) to fix the Light Pole (B) and place the Large Arm Cover ①.

⚠️ Use 4mm T-wrench
### MONITOR ARM INSTALLATION

#### Installation procedures #2

3. Install Monitor Arm Support

As shown in <Figure 03>, align Support_Left (C) and Support_Right (D) on Light Pole (B) and fasten with bolts.

![Figure 03](image)

- **Use 5mm T-wrench**

4. Remove Pole Arm Body Cover

As shown in <Figure 04>, remove the Pole Arm Body Cover (E).

![Figure 04](image)
MONITOR ARM INSTALLATION

Installation procedures #3

5. Install Monitor Arm Assembly

As shown in <Figure 05>, align and put the Monitor Arm Assembly (F) in the bolt holes on Support_Left (C) and Support_Right (D).

Use 5mm T-wrench

6. Fasten Monitor Arm Assembly

As shown in <Figure 06>, fasten Support_Left (C) and Support_Right (D) on the Monitor Arm Assembly (F) using bolts.

Use 4mm T-wrench
MONITOR ARM INSTALLATION

Installation procedures #4

7. Insert Monitor Arm Wire

As shown in <Figure 07>, pass the wire of Monitor Arm Assembly (F) through the Light Pole (B) to insert it into the unit.

8. Assemble Pole Arm Body Cover

As shown in <Figure 08>, assemble the Pole Arm Body Cover (E).
**MONITOR ARM INSTALLATION**

**Installation precautions**

1. **Installation direction of monitor arm**

When installing the monitor arm, install it at an angle of 30° (or 5 o'clock) when looking straight at the front surface of the Spittoon.

2. **Check the fixing force of monitor fixing bracket joint**

Before installing the monitor, you must check each joint of the monitor fixing bracket by moving and turning it in arrow direction, and fasten the adjustment bolt if the fixing force is insufficient.
DENTAL LIGHT INSTALLATION

Installation procedures

1. Insert Wire in Light Arm Assembly

As shown in <Figure 10>, pass the wire of Light Arm Assembly through the Light Pole ① to insert it in the unit.

2. Assemble Light Arm Assembly

As shown in <Figure 02>, level off the Light Arm Assembly (A) and put it in the Light Pole ① in the vertical direction.
**HANARO CONSOLE INSTALLATION**

**Installation procedures #1**

1. **Assemble Main Body**
   
   As shown in <Figure 01>, put the Support Insert (B) in the Main Body (A).

2. **Assemble Pole Support**
   
   As shown in <Figure 02>, put the Support Insert (B) in the Pole Support (C).
**HANARO CONSOLE INSTALLATION**

- **Installation procedures #2**

### 3. Install Main Body

As shown in <Figure 03>, fasten Main Body (A) and Pole Support (C) to Light Pole ① using bolts.

*Use a Phillips screwdriver*

### 4. Assemble Main Body Right

As shown in <Figure 04>, align and insert Main Body Right (D) to the holes on Main Body (A), and insert and fasten bolts in Pole Support (C).

*Use a Phillips screwdriver*
HANARO CONSOLE INSTALLATION

 installation procedures #3

5. Assemble Side Table

As shown in <Figure 05>, put the Side Table (E) in the side groove on the Main Body (A) in the direction indicated by the arrow.

6. Assemble Main Top Body

As shown in <Figure 06>, put the Main Top Body (F) over the Main Body (A).
7. Assemble Main Top Body Right

As shown in <Figure 07>, put Main Top Body Right (G) over the Main Body (A).

8. Assemble Cup Dispenser

As shown in <Figure 08>, put the Cup Dispenser Body (H) and the Cup Dispenser Cap (I) in the Main Body (A), in that order.
# Installation precautions

## 1. Support Insert mounting position

- **Good**
  - Mounting support part (main body side)

- **Good**
  - Mounting support part (pole side)

## 2. How to assemble the Cup Ejector

Before Cup Ejector-related disassembly, make sure you fully understand the procedure for assembling the parts.

※ Assembly procedures
  - Spring(A) → Cup Ejector Button(B) → Cup Ejector Wing(C)
IV Pipeline installation
**IV Install pipelines**

**How to Install Pipe**

A: Connect the spittoon drain line to the floor pipe.
B: Connect the suction drain line to the CVS.
   (For air suction system, connect the line to the floor pipe)
C: Connect to the water input line.
D: Connect the air input to the compressor.

**Piping**
Air/Water Line Diagram
V Air / Water Line Diagram

Basic System

Air & Water Line Diagram [ Basic System ]

TUBING - SPEC

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<tr>
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</table>
V Air / Water Line Diagram

Air Suction System

Air & Water Line Diagram with Air Suction System

TUBING - SPEC

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<table>
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<th>Size</th>
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<td>ø2.5 x ø4</td>
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V Air / Water Line Diagram

Water Sanitation System

K3 Air & Water Line Diagram with Sanitation System

TUBING - SPEC

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</tbody>
</table>
Thank you
K3 Unit Chair Installation (Electrical)
*Contents*

I Electrical equipment installation

II Wiring test
Electrical equipment installation
Electrical equipment installation

- **K3 PCB Harness Connection**
  - Base Part, Unit Part (Light Part, Assist Part), Table Part
  - Parts and Components of K3 Unit Chair
K3 PCB Harness Connection

- K3 Base Part
**K3 PCB Harness Connection**

- **Power PCB – Harness Connector Configuration (5 connections)**
  
  - ① MAIN PCB
  - ② Suction device
  - ③ POWER SWITCH
  - ④ Hydraulic motor
  - ⑤ Hydraulic solenoid valve
**K3 PCB Harness Connection**

- Delivers chair operation signals from Main PCB to Channel and from Assist PCB to Power PCB

**Power PCB – Main PCB Power Supply Harness Connection**
**K3 PCB Harness Connection**

- Delivers start signal for the suction device in the dental clinic

**Power PCB – Suction Start Signal Configuration**


**K3 PCB Harness Connection**

- Applies AC 220V to the dental clinic through the Main Switch when the Oil Motor and Oil Solenoid Valve are turned ON

- Configuration between Power PCB – Power Supply (AC220V)
**K3 PCB Harness Connection**

- Converts the signal received from the Main PCB from weak current to strong current, and delivers the operating signal for Oil Solenoid Valve that corresponds to the Chair/Backrest Up/Down Selection value

- Configuration between **Power PCB – Oil Sol. Valve**

- Notice: Take care to avoid electric shock from the AC220V line
**K3 PCB Harness Connection**

- If the value delivered from the signal received from the Main PCB and converted from weak current to strong current is a command to raise the chair/backrest, the signal is delivered to operate the oil motor to push the hydraulic pressure to raise the chair/backrest.

---

Notice: Take care to avoid electric shock from the AC220V line.
I. Electrical equipment installation

- **K3 PCB Harness Connection**
  - **K3 Unit Part**

Position of Unit PCB
**K3 PCB Harness Connection**

- Components of K3 Unit Connection

- M1 SENSOR
- M2 Level VR
- M3 DATA
- M4 Emergency
- M5 Light DATA
- M6 Brest VR
- M7 Chair VR
- M8 Main Power
- M9 Assist_1
- M10 Table Power
- M11 Foot Controller
- M12 Power PCB
- M13 Assist_2
- M14 Water Sol
- M15 Warmer

BASE
Assemble ASSIST Table
Assemble TABLE
Semi-assembly release
Electrical equipment installation

- **K3 PCB Harness Connection**

  - Final assembly photo of K3 Unit Connection

  Front side

  Rear side
**K3 PCB Harness Connection**

- **K3 Unit Connection Wiring**

  - **Main/Light PCB Cover**
  - **Power cover**

  - **A**: M①, M②, M③
  - **B**: M④, M⑤, M⑥, M⑦, M⑧, M⑨
  - **C**: M⑩, M⑪, L①, L②
  - **D**: M⑫, M⑬, M⑭, M⑮
**K3 PCB Harness Connection**

- Sensor position and limit switch harness color

<table>
<thead>
<tr>
<th>SWITCH</th>
<th>Color</th>
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<tbody>
<tr>
<td>Up Limit</td>
<td>Black, Green</td>
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<tr>
<td>Down Limit</td>
<td>Black, Blue</td>
</tr>
<tr>
<td>Position Sensor</td>
<td>Red, White, Black</td>
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</table>
Electrical equipment installation

- **K3 PCB Harness Connection**
  - Connect to Foot Harness → Main PCB

Foot Harness
**K3 PCB Harness Connection**

- Connect to Foot Harness → Main PCB
Electrical equipment installation

**K3 PCB Harness Connection**

- Delivers chair operation control signals via manual position button, rinsing and return buttons

- **Connect to Foot Harness → Main PCB**

- Precautions: For Elec. Low HP, the foot pedal features a 3-pin harness (wire), which is intended to deliver RPM (speed) control signals for the Elec. Low HP, and this harness must be connected to the Motor PCB located at the table.
**K3 PCB Harness Connection**

- **Light PCB** - LIGHT HARNESS Connection

![K3 PCB Harness Connection Diagram]

- **L₁ LED Light**
- **L₂ Light Power**
Electrical equipment installation

- **K3 PCB Harness Connection**

  - Parts and components of K3 Assist PCB Table

  ![Diagram of K3 Assist PCB Table with components highlighted: Suction Large, Syringe, Suction Small, Assist Membrane, Assist PCB]
I Electrical equipment installation

- K3 PCB Harness Connection

  - Main PCB - Assist PCB Connection

Assist PCB

Main PCB

Power PCB

Suction
Electrical equipment installation

- **K3 PCB Harness Connection**
  - **K3 Table Part**
K3 PCB Harness Connection

- Parts and components of K3 Table Electrical equipment Connection
**K3 PCB Harness Connection**

- Check whether the copper plate is properly shielded in the event of an abnormal phenomenon, such as the LCD window turning off or whitening while in use.

**Table – LCD PCB Connection**

[Image of two PCBs connected with a red arrow indicating the connection point.]
**K3 PCB Harness Connection**

- Take out the lock section in the connector and remove the film connection section

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**Table – Dr. Table Membrane Connection**
K3 PCB Harness Connection

Table – Bien-air Signal Connection Diagram
K3 PCB Harness Connection

- If the power supply line and the start signal line are switched with each other, it will cause a critical error in the Scaler PCB.

Table – SCALER Connection
**K3 Suction Connection**

- **Suction Micro S/W**

Suction circuit configuration

① Activated when either of them is lifted - parallel circuit
**K3 Power Connection**

- **AC220V Power LINE**

![Diagram of electrical equipment installation](image)

- Noise Filter
- Main Switch (AC220V)
- Power PCB

- Grounding
- Motor
- Chair UP
- Chair DN
- B.Rest UP
- B.Rest DN

- AC220V
- 300VA
- B. AC24V
- L. AC12V
- AC24V

**Power Connection**
I. Electrical equipment installation

**K3 Power Connection**

**K3 Power Supply Diagram**

- TRANS
  - 300VA

- Main PCB
  - B. AC24V
  - AC24V

- Table PCB
  - DC24V

- Scaler
- Bien Air Low HP

- Light PCB
- Excelitas LED

- Fuse: 1 2 3
K3 Power Connection

K3 Electrical equipment Grounding Configuration

A total of 8 grounds
K3 Power Connection

- K3 Main Switch Replacement

<table>
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<th>OUTPUT</th>
<th>Black</th>
<th>Red</th>
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</thead>
<tbody>
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<td>INPUT</td>
<td>Blue</td>
<td>Brown</td>
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AC 220V input  
AC 220V output
Wiring test
Wiring Test

Light ON/OFF

Light On/Off Key Input Operation

<table>
<thead>
<tr>
<th>Basic operation</th>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light bulb turns on when the operation is completed after pressing Light, M1, M2, M3, and RP keys</td>
<td>1. Light Signal PCB</td>
</tr>
<tr>
<td></td>
<td>2. Check the light brightness change</td>
</tr>
<tr>
<td></td>
<td>3. Check the Membrane UI</td>
</tr>
</tbody>
</table>

Check the brightness adjustment level
Light ON/OFF

Functions of signal harness delivered to the light PCB

- Supplies PCB operating power (DC 12V)
- Delivers ON/OFF signal
- Adjusts the halogen light’s brightness
Light ON/OFF

Light PCB Check and diagnosis

<table>
<thead>
<tr>
<th>Light PCB</th>
<th>How to check Light PCB</th>
</tr>
</thead>
</table>
| ![Light PCB Image] | 1. Check AC_IN, AC12V voltage - tester  
2. Perform 7A current test on the fuse  
3. Perform visual check on D2 LED (D2 LED is turned on/off when the Dr. Table membrane light button is pressed)  
4. Check the light output power voltage (LAMP): AC12V should be read when turning the light button ON |
Wiring Test

Suction operation

Suction Operating Diagram

Machine room

Treatment office

AC110V

Suction

Power PCB

CVS Relay

Suction Switch

Signal
Wiring Test

Suction operation

- Suction signal check

How to check the suction operation LED indicator
- When turning On/Off: Displayed

Assist PCB
Main PCB
Power PCB

Suction
### Chair operation signal check

- **How to check the Power PCB operation LED indicator**

#### Control function

<table>
<thead>
<tr>
<th>Control function</th>
<th>Basic operation</th>
<th>Checking operation</th>
<th>Checklist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydraulic motor</td>
<td>Operates when chair goes up or backrest goes up</td>
<td>Measure the AC 220V voltage when the motor operates</td>
<td>Check the motor LED illumination</td>
</tr>
<tr>
<td>Hydraulic Solenoid Valve</td>
<td>Chair moves up/down Back moves up/ down</td>
<td>Check the operating voltage of each solenoid valve Ex) When the chair goes down, check the 220V voltage at T &amp; CD test point</td>
<td>Each operating solenoid valve Check the signal LED illumination</td>
</tr>
<tr>
<td>Suction(C.V.S)</td>
<td>On/Off</td>
<td>Perform short check on the output section to check whether CVS signal is properly controlled (Suction On : short / Off : open)</td>
<td>Check the CVS LED illumination</td>
</tr>
</tbody>
</table>
## Wiring Test

### Operating status between PCBs (chair operation)

#### AC24V main PCB power check

<table>
<thead>
<tr>
<th>Main PCB</th>
<th>Checklist</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>① Connection of connector from the Trans</td>
</tr>
<tr>
<td></td>
<td>② If LED is not turned on, check the fuse for AC24V (B)</td>
</tr>
<tr>
<td></td>
<td>③ Check the base end</td>
</tr>
<tr>
<td></td>
<td>- Check the fuse in the noise filter</td>
</tr>
<tr>
<td></td>
<td>- Check the trans</td>
</tr>
</tbody>
</table>

- **DC 12V LED (water supply related)**
- **DC 24V LED**
  - Water Solenoid power supply

- **Trans**

- **Normal**
### Operating status between PCBs (chair operation)

**AC24V main PCB power check**

<table>
<thead>
<tr>
<th>Main PCB</th>
<th>Checklist</th>
</tr>
</thead>
</table>
| ![Main PCB Image](image) | 1. Connection of connector from the Trans  
   - DC 5V LED  
   - Power supply to PCB  
   - If LED is not turned on, check the fuse for AC24V (B)  
   - Normal  
   - Check the base end  
   - Check the fuse in the noise filter  
   - Check the trans |

- Trans
### Operating status between PCBs (chair operation)

- **Main PCB CPU activation check**

<table>
<thead>
<tr>
<th>Main PCB</th>
<th>Checklist</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Main PCB Diagram" /></td>
<td><strong>①</strong> Connection of connector from the Trans</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Check Table Power ON/OFF LED" /></td>
</tr>
<tr>
<td></td>
<td><strong>②</strong> If LED is not turned on, check the fuse for AC24V (B)</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Trans" /></td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Normal" /></td>
</tr>
</tbody>
</table>
| | **③** Check the base end  
  - Check the fuse in the noise filter  
  - Check the trans |
### Operating status between PCBs (chair operation)

#### DC5V Table PCB power check

<table>
<thead>
<tr>
<th>Table PCB</th>
<th>Checklist</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fuse for Table PCB</strong></td>
<td>① Check the LED (table PCB power) operation</td>
</tr>
<tr>
<td></td>
<td><strong>DC 5V LED Power supply to table PCB</strong></td>
</tr>
<tr>
<td></td>
<td>IF DC 5V LED is OFF</td>
</tr>
</tbody>
</table>

② Check the fuse for main PCB on the right side

*Spec.: 1.6A*
**Operating status between PCBs (chair operation)**

- **DC24V Table PCB power check**

<table>
<thead>
<tr>
<th>Table PCB</th>
<th>Checklist</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP Air/Water control power fuse</td>
<td>① Check the LED (HP Air/Water power) operation</td>
</tr>
<tr>
<td></td>
<td>DC 24V LED Table HP Air/Water Power supply</td>
</tr>
<tr>
<td></td>
<td>IF DC 5V LED is OFF</td>
</tr>
<tr>
<td></td>
<td>② Check the fuse for main PCB on the right side</td>
</tr>
<tr>
<td></td>
<td>Spec. : 1.6A</td>
</tr>
</tbody>
</table>
### Operating status between PCBs (chair operation)

- **Table PCB CPU activation check**

<table>
<thead>
<tr>
<th>Table PCB</th>
<th>Checklist</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Main PCB Image" /></td>
<td>① Connection of connector from the Trans</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Dr. Table Membrane Mirror: On/Off" /></td>
</tr>
<tr>
<td></td>
<td>② If LED is not turned on, check the table membrane and the communication line</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Normal" /></td>
</tr>
<tr>
<td></td>
<td>③ Check the main PCB fuse</td>
</tr>
<tr>
<td></td>
<td>- Check the fuse in the noise filter</td>
</tr>
<tr>
<td></td>
<td>- Check the trans</td>
</tr>
</tbody>
</table>
Operating status between PCBs (chair operation)

- HP Air/Water control solenoid valve power check

<How to measure>
- Connect the tester to DC voltage.
- Connect the lead wires of the tester to 2 terminals of the solenoid valve
- DC24V is output when removing the HP → Normal

4-by-1 connection solenoid valve
Wiring Test

- **Operating status between PCBs (chair operation)**
  - HandPiece(HP) Optic brightness adjustment check

![Table PCB and Lamp Diagram](image)

**HP Optic voltage**
- LED: Max 3.2V
- Halogen: Max 2.9V

**Precaution:** Please note that the LED lamp has polarity (+,−)
Operating status between PCBs (chair operation)

- HandPiece (HP) detachment recognition Micro SW check

Table PCB

HP-specific Micro SW LED check

M4  M3  M3  M1
Wiring Test

- Operating status between PCBs (chair operation)
  - HandPiece (HP) detachment recognition Slot LED check

Check through HP-specific internal/external LED

Table PCB
Wiring Test

- Operating status between PCBs (chair operation)

  - Operation check between Main PCB and Foot PCB

  - Ex1) When the pedal is pressed, the 3rd LED from the top illuminates
  - Ex2) When rinsing is pressed the 1st LED from the top illuminates

- LED illumination check:
  - Rinsing Position
  - Return Position
  - Pedal
  - Chair Down
  - Chair Up
  - Backrest Down
  - Backrest Up
Operating status between PCBs (chair operation)

Operation check between Main PCB and Sensor PCB

✓ Water operation check

- Water continuously flows to the cup/spittoon
  - Check water penetration status at the manual assist membrane button
  - Remove the manual connector button

- Cup detection LED light in the main PCB is turned on
  - When no cup is placed - ON
  - When a cup is placed – OFF
  - If there is no change between when you place a cup on the cup holder and when you remove the cup, the sensor on the PCB may not work properly due to interference, or the sensor PCB may need to be checked.
Wiring Test

Operating status between PCBs (chair operation)

- Water level check between Main PCB and Sensor PCB

✓ Water level check

  • Checking
    - If the FULL LED is always turned on, check whether the cup level signal connector is flooded

  • Troubleshooting
    - Normal: If the water reaches a set level, FULL LED is temporarily turned on and then turned off again
Operating status between PCBs (chair operation)

- Cup sensor operation

<table>
<thead>
<tr>
<th>Basic instructions</th>
<th>Checklist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cup recognition</td>
<td>1. Water supply is suspended when the cup is removed while water is supplied</td>
</tr>
<tr>
<td></td>
<td>2. Drainage is suspended when the cup is recognized during drainage</td>
</tr>
<tr>
<td>1 sec</td>
<td>3. Check variable water supply resistance level</td>
</tr>
<tr>
<td>10 secs</td>
<td>4. Check variable water supply resistance drainage time</td>
</tr>
<tr>
<td>Water drain</td>
<td>5. Check manual water supply and drainage</td>
</tr>
</tbody>
</table>
**Operating status between PCBs (chair operation)**

- Water Supply/Spittoon

<table>
<thead>
<tr>
<th>Water supply instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>① Place the cup at the cup holder position.</td>
</tr>
<tr>
<td>② Water comes out 1 second after.</td>
</tr>
<tr>
<td>③ Water is automatically filled into the cup at the set position.</td>
</tr>
</tbody>
</table>
  (min : 1 second, max : 10 seconds) |
| ④ Water comes out from the spittoon 10 seconds after. |
  (min : 1 second, max : 10 seconds) |

<table>
<thead>
<tr>
<th>Checklist</th>
</tr>
</thead>
<tbody>
<tr>
<td>① Water supply should be suspended when the cup is removed while water is supplied</td>
</tr>
<tr>
<td>② Drainage should be suspended when the cup is recognized during drainage</td>
</tr>
<tr>
<td>③ Water supply volume value should be changed when the water volume is set to variable water supply resistance</td>
</tr>
<tr>
<td>④ Water drainage volume value should be changed when the water volume is set to variable water drainage resistance</td>
</tr>
</tbody>
</table>
Operating status between PCBs (chair operation)

- Water supply volume adjustment

Water supply volume adjustment voltage (4 to 12V)

Cup

CPU

Potential

Ref Voltage

Volume

Water level recognition
Wiring Test

Operating status between PCBs (chair operation)

- K3 water supply cup recognition function

Light emitting sensor
Light receiving sensor
Sensor signal
level signal
Manual water supply and drainage
Key operation test

Doctor Table Membrane Connection Test

✓ Connection procedures

- Lift the connector, and detach or attach the film connection section
- Perform a check on the operation of each key button
- If any of the membrane keys are pressed
  ➔ All keys do not work ➔ Membrane failure
- Check the error window
Key operation test

Doctor Table Membrane Defect Test

- Perform check on the operation of each of 23 keys
  - Key is not pressed
  - Key is pressed, and does not return to the original position due to a lack of key tension
  - None of the keys work if any of the Dr. Membrane keys are pressed

- How to check
  - How to perform a check on resistance when any abnormality other than those specified above occurs
    : Multi-meter (tester)
  - Place the resistance gauge and check whether infinite resistance value (0MΩ - normal) is read on the power button and the key matrix sections

- Resistance value is read to be MΩ (defective), membrane needs to be replaced
Thank you
K3 Unit Chair Installation (Settings)

Osstem Implant
Check air at the inlet
**Check air at the inlet**

- **Air Regulator Pressure Check #1**
  - Check air pressure
    - Check whether the air pressure of the air regulator is 5 bar.
Check air at the inlet

Air Regulator Pressure Check #2

- Check air spray
  
  • Press the air spray button on the 3-way syringe to confirm that air comes out properly.
Check water injection at the inlet
**Inlet Water Injection Valve Check #1**

- Check water injection valve

  - Open the water injection valve
Inlet Water Injection Valve Check #2

- Check water injection of the 3-way syringe

  • Press the water spray button on the 3-way syringe to check whether water comes out properly.
Check water/air injection at handpiece
Water/Air Injection Check

- Detach the handpiece from the Dr.Table and turn water injection of the handpiece ON.
Water/Air Injection Check

- Press the foot pedal to check the operation and water injection of the handpiece.
IV Limit and option settings
How to Set Limits

- Setting limits enables the chair to recognize the position of limit resistance
- You must perform this function after installing the chair

1. Press the LED LIGHT key and the RPM1 key simultaneously on the membrane of Dr.Table.

2. Press the M1 key on the membrane of Dr.Table to select a limit set.
   - Immediately after entering, setting limits for the chair and backrest begins.

Types of limit setting errors
- BD limit:FAIL - Backrest lowering limit error
- CD limit:FAIL - Chair lowering limit error
- BD limit:FAIL - Backrest lowering limit error
- CU limit:FAIL - Chair raising limit error
- AD Data:B FAIL - Backrest position variable resistance error
- AD Data:C FAIL - Chair position variable resistance error
**Option Settings**

- **How to enter the options menu**

  1. Press the LED LIGHT key and the RPM1 key simultaneously on the membrane of Dr.Table.

  Press simultaneously

  Enter the options mode menu

  2. Enter option 1 menu: Press the M2 key on the membrane of Dr.Table and select Option 1.

  Select Option 1

  3. Enter option 2 menu: Press the M3 key on the membrane of Dr.Table and select Option 2.

  Select Option 2
Option Settings

How to exit options menu

1. After completing option mode settings, follow the steps described below to return to the treatment mode screen.

- Option mode screen
- Exit the option mode menu
- Treatment mode screen opens

Press simultaneously
IV Limit and option settings

Option Settings

How to set option data

1. Move to Select Option

Option mode screen

Select option

Move to Select Option

- Key

Move to Select Option
### Option Settings #1

<table>
<thead>
<tr>
<th>Name</th>
<th>LCD screen</th>
<th>Description</th>
<th>Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Optic Hold</strong></td>
<td>![Optic Hold Image]</td>
<td>When you pick up the handpiece without pressing the pedal • Optic of the handpiece turns on (ON) • Optic of the handpiece turns off (OFF)</td>
<td>OFF: disabled (default)</td>
</tr>
<tr>
<td><strong>Scaler Operation</strong></td>
<td>![Scaler Operation Image]</td>
<td>When you press the pedal while you pick up the scaler • Configured so that the scaler is enabled when you press the pedal once, and is disabled when you press the pedal once again (ONCE) • When you press and hold the pedal, the scaler operates (KEEP)</td>
<td>ONCE: Press once (default) KEEP: Press and hold</td>
</tr>
<tr>
<td><strong>Elec.Mot. Rotate</strong></td>
<td>![Elec.Mot. Rotate Image]</td>
<td>LOW: when the handpiece is an electric motor • Maintains the final rotating direction of the electric motor • Restart in the normal direction (RECOVER)</td>
<td>RECOVER: Resets the rotating direction (default) KEEP: Maintains the rotating direction</td>
</tr>
</tbody>
</table>
## Option Settings

### Option function descriptions #2

<table>
<thead>
<tr>
<th>Name</th>
<th>LCD screen</th>
<th>Description</th>
<th>Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chair Wait Mode</td>
<td><img src="https://via.placeholder.com/150" alt="Image" /></td>
<td>At the time of chair operation (move), it stops the chair operation for 1 second to prevent the patient's hand from being caught by the handle.</td>
<td>OFF: disabled (default)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ON: enabled</td>
</tr>
</tbody>
</table>
| Select Foot Ctrl   | ![Image](https://via.placeholder.com/150) | For changing the pedal type  
- To use a joystick type pedal (JOYSTICK)  
- To use a new lever type pedal (LEVER)  
  - JOYSTICK (FOOT in the older model) is the default type | JOYSTICK: Joystick-type pedal |
|                    |            |                                                                                               | LEVER: Lever-type pedal   |
| Foot Position Key  | ![Image](https://via.placeholder.com/150) | When you use a position change key on the pedal  
- Double-tap the pedal position change key to operate (TWICE)  
- Single-tap the pedal position change key to operate (ONCE) | TWICE: Double tap applied (default) |
|                    |            |                                                                                               | ONCE: Single tap applied  |
## Option Settings

### Option function descriptions #3

<table>
<thead>
<tr>
<th>Name</th>
<th>LCD screen</th>
<th>Description</th>
<th>Settings</th>
</tr>
</thead>
</table>
| **BRest Emergency** | ![Setting Mode](image) | Select whether to use the backrest safety device  
- OFF (disabled) is the default setting | OFF: disabled  
(default)  
ON: enabled |
| **Water Error Check** | ![Setting Mode](image) | When you install new firmware on the old PCB (version before 2015/6/22)  
- Do not use the forced water supply error judgment for the assistant table (old PCB disabled)  
- Use the forced water supply error judgment for the assistant table (new PCB enabled) | ON:  
New PCB used  
(default)  
OFF  
Old PCB used |
## Option Settings

### Option function descriptions #4

<table>
<thead>
<tr>
<th>Name</th>
<th>LCD screen</th>
<th>Description</th>
<th>Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instrument 2</td>
<td><img src="image1" alt="Instrument 2 LCD" /></td>
<td>Configures settings for the instrument to be installed on the 2nd holder of Dr.Table</td>
<td>Elec-High</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Elec-High : High electric motor speed</td>
<td>(default)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Air-High : High Handpiece2</td>
<td>Air-High</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Air-Low : Low air speed for HP</td>
<td>Air-Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Elec-Low : Low electric motor speed</td>
<td>Elec-Low</td>
</tr>
<tr>
<td>Instrument 3</td>
<td><img src="image2" alt="Instrument 3 LCD" /></td>
<td>Configures settings for the instrument to be installed on the 3rd holder of Dr.Table</td>
<td>Elec-Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Elec-Low : Low electric motor speed</td>
<td>(default)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Elec-High : High electric motor speed</td>
<td>Elec-High</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Air-Low : Low air speed for HP</td>
<td>Air-Low</td>
</tr>
</tbody>
</table>
## Option Settings

### Option function descriptions #5

<table>
<thead>
<tr>
<th>Name</th>
<th>LCD screen</th>
<th>Description</th>
<th>Settings</th>
</tr>
</thead>
</table>
| Water Supply       | ![Image](image1.png) | In the water supply settings for water supply to cup or spittoon  
• When water is automatically supplied by the cup sensor (AUTO)  
• When supplying water using the water injection key on the assistant table (MANUAL)  
  - AUTO (automatic water supply) is the default setting | AUTO:  
  Automatic water supply enabled  
MANUAL:  
  Manual water supply enabled |
| W-Line Clean Use   | ![Image](image2.png) | Select whether to use the water sanitation system  
  - OFF (disabled) is the default setting | OFF:  
  Disabled  
ON:  
  Enabled |
| Timer Melody       | ![Image](image3.png) | Function added for overseas sales, which generates a beep sound instead of melody for the timer alarm sound  
• Melody is used for timer alarm sound (SOUND)  
• Beep sound is used for timer alarm sound (BEEP)  
  - SOUND (melody) is the default setting | SOUND:  
  Melody used  
BEEP:  
  Beep sound used |
Check foot pedal operation
Foot Pedal Operation Check #1

- Try moving the position of the foot control using the foot control pedal.
- Try moving the chair and backrest up/down using the foot control joystick.
Foot Pedal Operation Check #2

- Try moving the chair to the rinsing position using the foot control button.
- Try moving the chair to the return position using the foot control button.
Adjust chair/backrest speed
How to Adjust Chair/Backrest Ascending Speed

- Adjust the solenoid valve speed adjustment knob.
- Turn clockwise to slow down.
- Turn counter-clockwise to speed up.
Adjust water volume for cup/spittoon
Adjust water volume for cup/spittoon

**Spittoon Water Volume Adjustment**

- Adjust the water volume using the adjustment knob.

- Turning the adjustment knob clockwise increases the volume of water supplied to the spittoon.
- Turning the adjustment knob counter-clockwise decreases the volume of water supplied to spittoon.
**Auto Cup Water Volume Adjustment #1**

- Adjust the water volume using the adjustment knob on the main PCB to meet the needs of the water supply environment.
Auto Cup Water Volume Adjustment #2

- Adjust the water volume using the adjustment knob.

- Turning the adjustment knob clockwise increases the volume of water supplied to the cup
- Turning the adjustment knob counter-clockwise decreases the volume of water supplied to the cup
How to Adjust Water Volume for 3-Way syringe (Assist Table)

• Adjust the water volume using the adjustment pin.

- Turning the adjustment pin clockwise decreases the water volume.
- Turning the adjustment pin counter-clockwise increases the water volume.
Precautions When Adjusting Air / Water Pressure for 3-way Syringe (Assist Table)

- The steps of the distribution block and the pin must be balanced. Please note that if you turn the distribution block pin counterclockwise, the pin will come off the block and water and air will leak.
Adjust water volume for handpiece
Adjust water volume for handpiece

Water Volume Adjustment for Devices

- How to adjust the water volume for Dr.Table devices

  - Water volume adjustment knob: Turning the knob clockwise increases the water volume, and turning it counter-clockwise decreases the water volume
IX Check water sanitation operation
- **Preset**

  - **Options menu settings**

    - In the options menu, set the 'W-Line-Clean Use' item to ON.
**Water Sanitation**

- **Before leaving the office (chemical cleaning)**

1. **Fill Chemicals**
   - [Image of container with label]

2. **Switch Settings**
   - [Image of control panel with settings changed]

3. **Start System**
   - [Image of hand on button labeled F/V and WET]

4. **HOLDER/HP**
   - [Image of holder with instruments]

5. **Select Chemical**
   - [Image of screen showing options: Water-Line Cleaning, Chemical Cleaning]

6. **Start Chemical Cleaning**
   - [Image of screen showing running process]

7. **Chemical Cleaning Completed**
   - [Image of screen showing completion]

- **Key**
  - [Image of key icon]

Takes about 7 minutes
Water Sanitation

- After arriving at the office (water washing)

1. Switch Settings
2. Start System
3. Select Water
4. Start Water Cleaning
5. Water Cleaning Completed
6. Remove Holder/HP
7. Water Sanitation Completed

Takes about 10 minutes
Pneumatic control
**Handpiece Pneumatic Pressure Control**

- **How to adjust pneumatic pressure**
  - Air pressure of 3.5 bar is recommended for the handpiece.
  - Configure the air regulator settings and then the master block settings.
  - Configure settings considering the drop in pressure that occurs while the air passes through the pipe.
**Pneumatic control**

*Handpiece Pneumatic Pressure Control*

- **How to adjust the air regulator**

  - Using the adjustment knob, set the pressure to 5 bar.
Handpiece Pneumatic Pressure Control

- How to adjust master block
  - Turning clockwise decreases the pressure.
  - Turning counter-clockwise increases the pressure.
  - Perform adjustment while checking the pressure gauge.
  - Set the pressure to 4 bar.
3-Way syringe Pneumatic Pressure Control

- How to adjust 3-way syringe (assist table) air pressure
  - Adjust the air pressure using the adjustment pin.

- Turning the adjustment pin clockwise decreases the air pressure.
- Turning the adjustment pin counter-clockwise increases the air pressure.
Thank you