

PH-48

Dynamic Heart and Lung Phantom

Instruction Manual

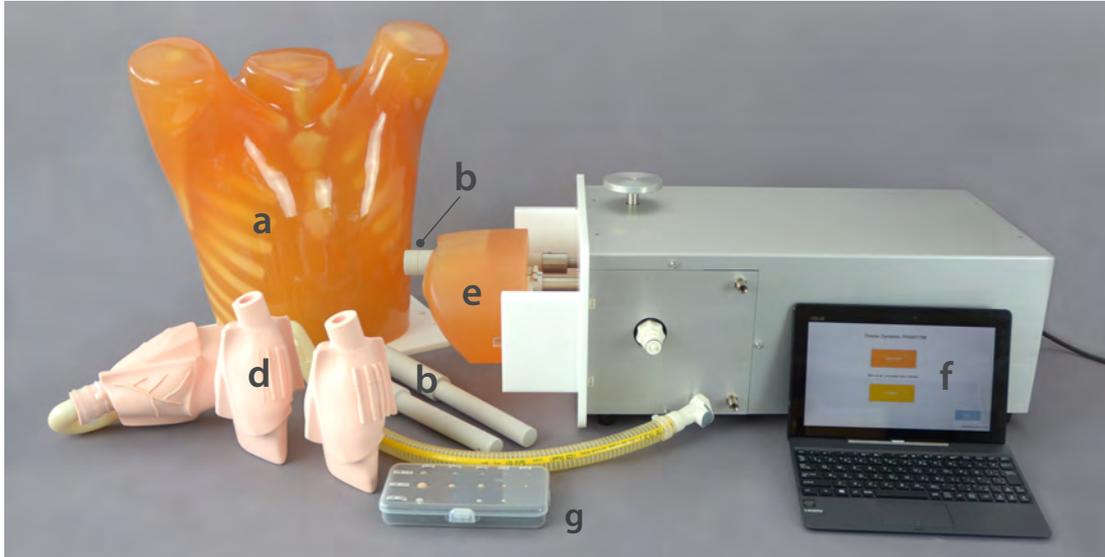
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Components

Before your first use, please ensure that you have all components listed below.



a Chest Phantom	1 unit	e Diaphragm	1 unit
b Rolling Cylinder of Simulated Tumor	3 units	f Control Tablet	1 unit
c Mechanical System	1 unit	g Simulated Tumor	1 set
d Simulated Heart	3 units		

This dynamic phantom consists of chest phantom, rolling cylinder of simulated tumor, diaphragm, simulated heart, and mechanical system.

It is controlled by tablet PC to select the heart beat and respiratory pattern, and start the motion of diaphragm and rolling cylinder of simulated tumor.

● 3 Simulated Heart Models



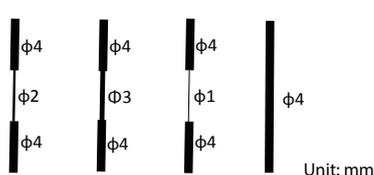
Coronary Arteries

Length: 60mm



Coronary Artery Stenosis

Length: 20+20+20mm

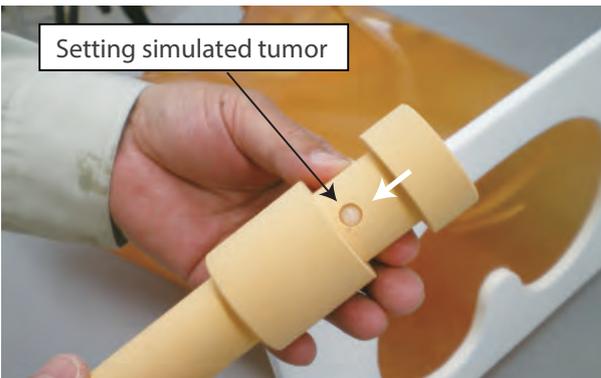
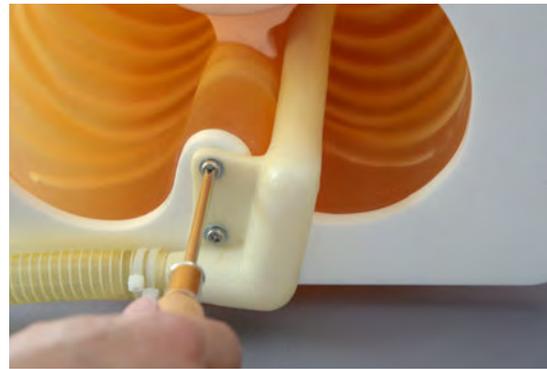
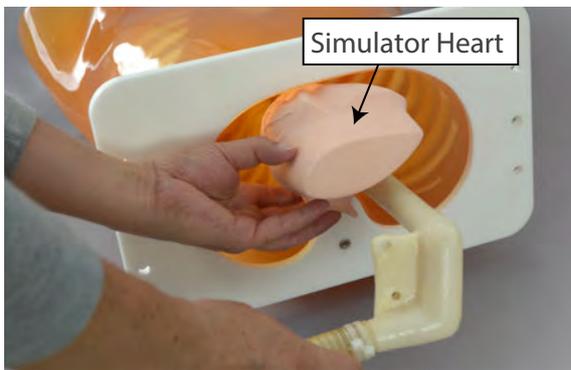


Anatomical Coronary Artery

Unit: mm

Set-up 1

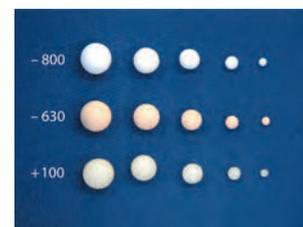
1. Fill the simulated heart with water using assistant tube and set it into the chest phantom. Fit it with screw.



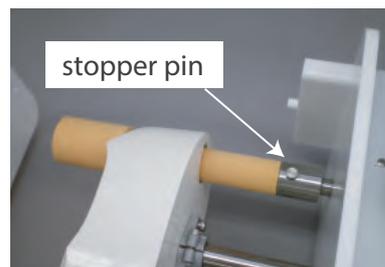
2. Put simulated tumor in the rolling cylinder, and attach it to the mechanical system.

*The rolling cylinder is made from Lung tissue equivalent material. Pull tip of cylinder and, put tumor in the cavity.

*Two types are available, one for $\phi 3 \cdot 5 \cdot 8\text{mm}$, and other for $\phi 10 \cdot 12\text{mm}$.



3. Inserting the stopper pin.



Set-up 2

4. Attach the chest phantom to the mechanical system to insert white pegs to the holes, and fix them by screws.



5. Connect power cable and turn on.

* ○: OFF |: ON.

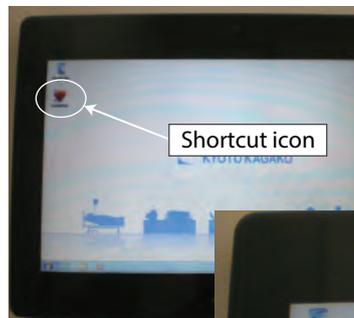
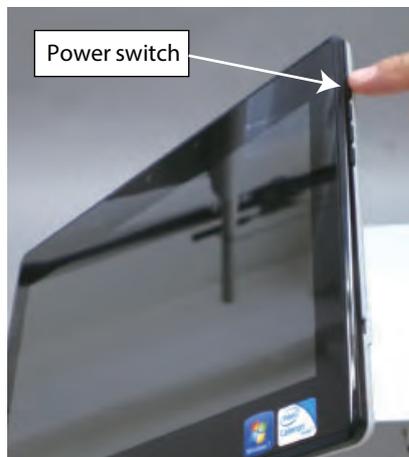
Attention; Turn on the main switch prior to turn on the tablet.



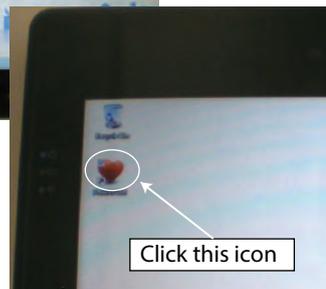
Turn on the tablet power

1. Turn on the tablet power. The switch is located on the side.

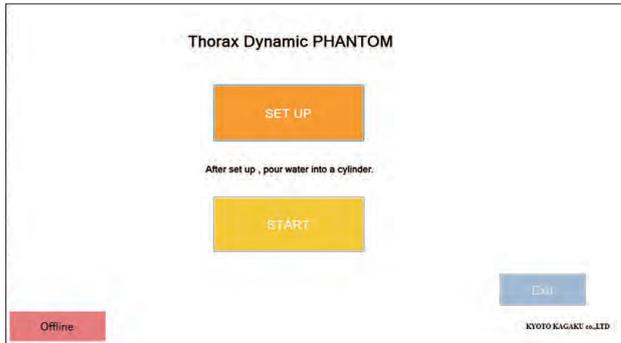
*Keep pressing the button to turn on.



2. Click the shortcut icon to start.
(Check the main power is on)



Set-up 3



1. Touch "SET UP" button to initialize.

2. Pour water in the cylinder in the main body.



Connect the transparent tubes to the connectors and pour water from bottom connector by syringe until water comes out of upper connector. (Drain the water completely after use.)



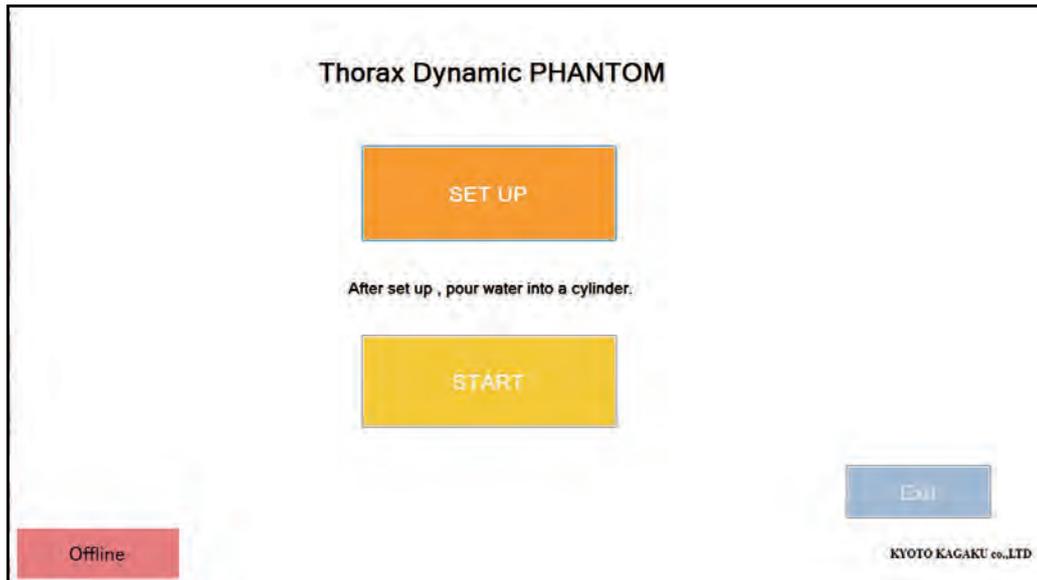
3. Connect the tube to the connector on the side of main body.

*Push the button to disconnect the tube after use.

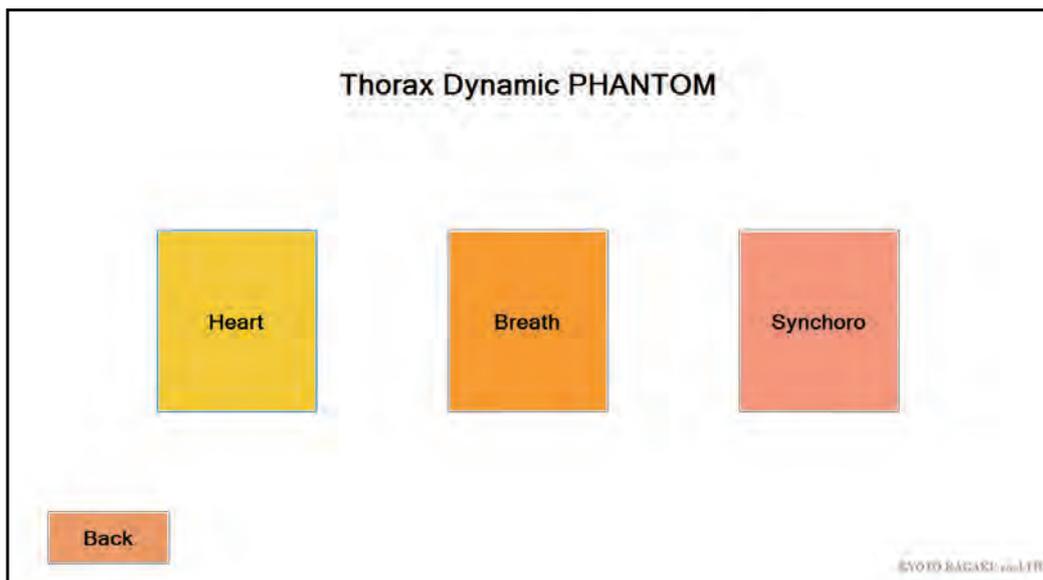


Operation

1. Touch "SET UP" button to initialize.

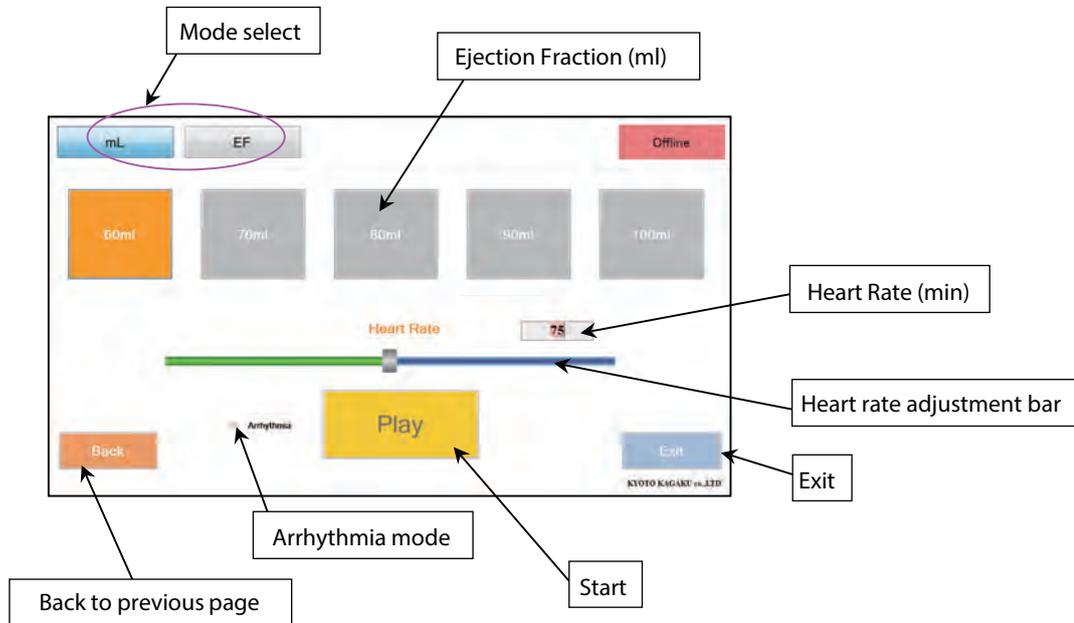


2. Select the Mode. Heart
Breath
Synchoro

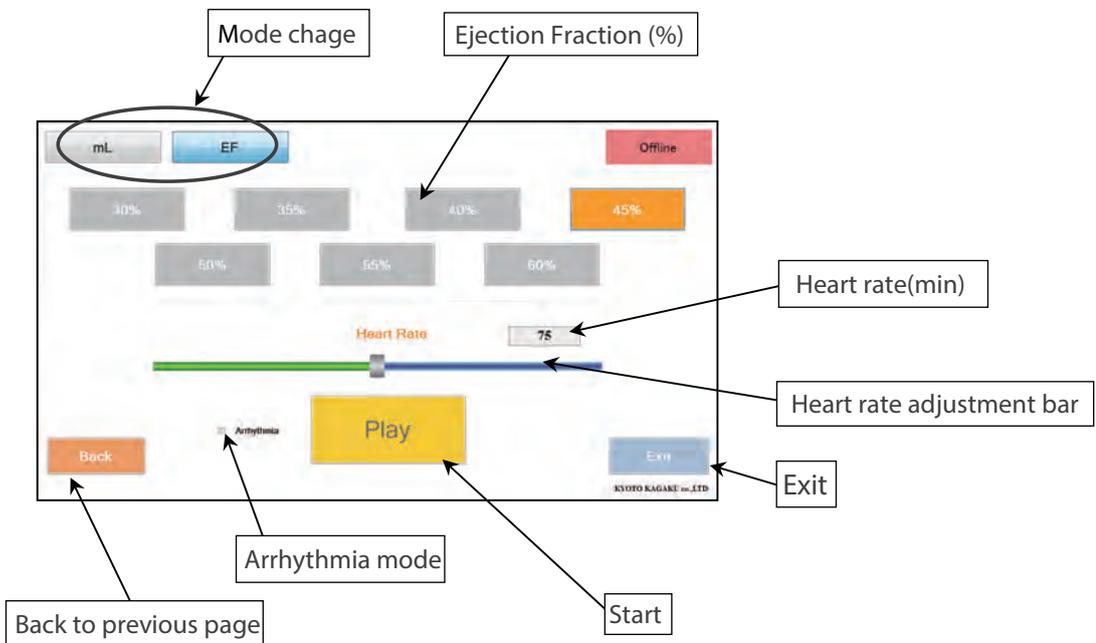


Heart

1. mL mode: Ejection Volume from LV.



2. EF mode: Ejection Fraction from LV.

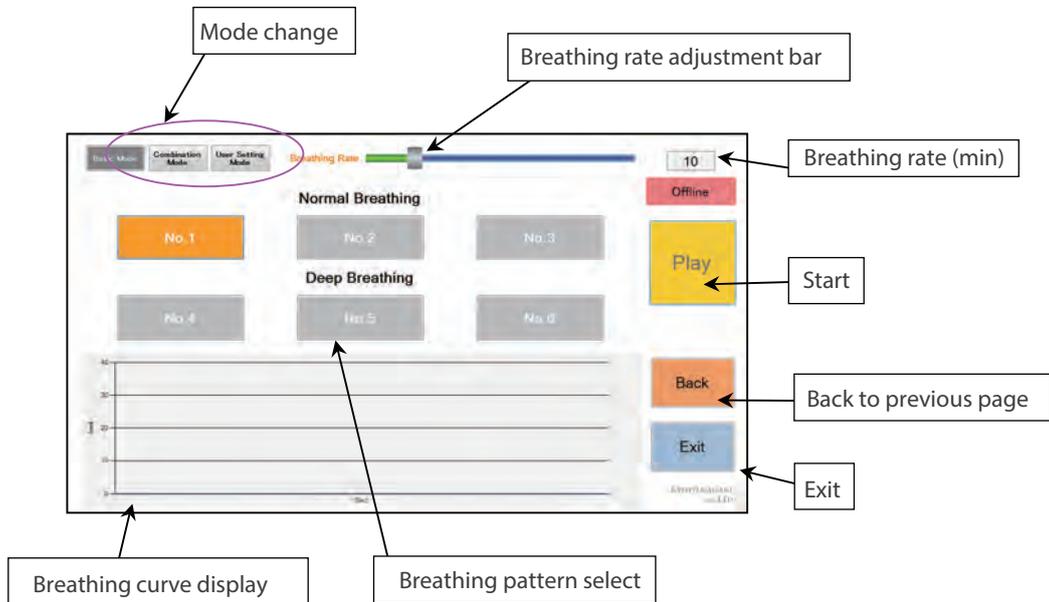


Arrhythmia mode: Adds 0.2 sec of interval time to ECG rhythm randomly with three tenths probability.

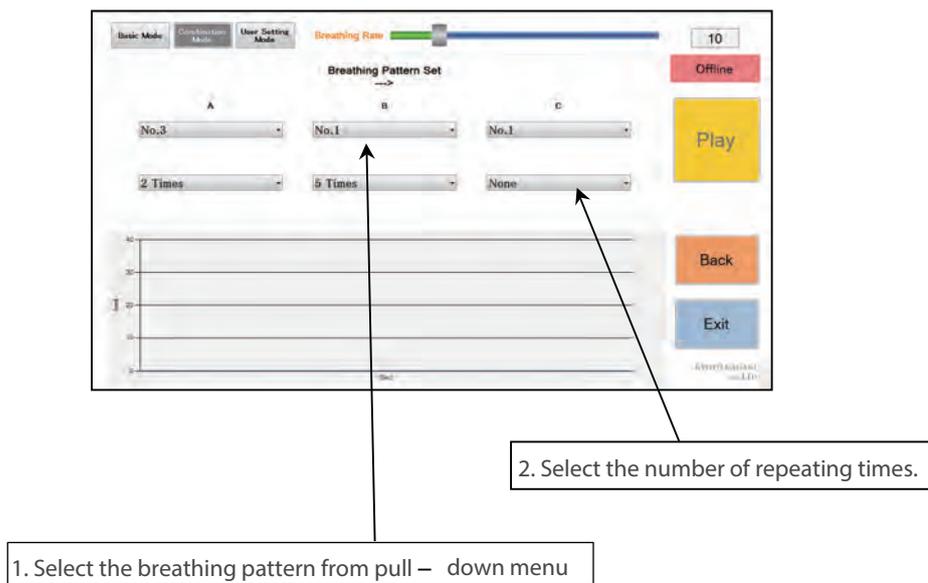
※The mode setting can not be changed while running

Breath

1. Basic Mode



2. Combination Mode



Breath

3. User Setting Mode

Make respiratory pattern based on the saved pattern data

Modify sData from keyboard.

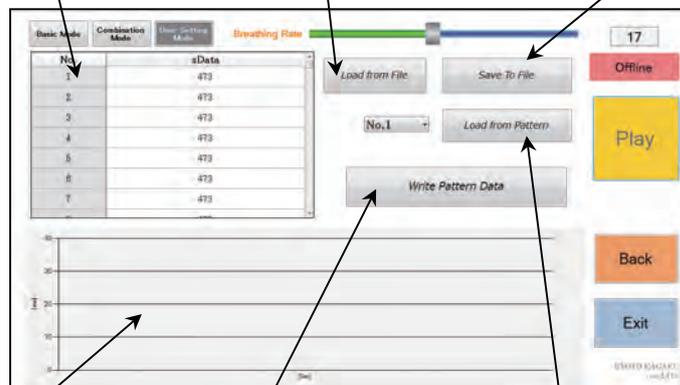
Data file is saved by Excel file and enable to be change directly.

sData represents the stroke (moving distance of the diaphragm) by mm unit.

Adjust the respiratory cycle by 0.02sec

Load the saved file

Save the data

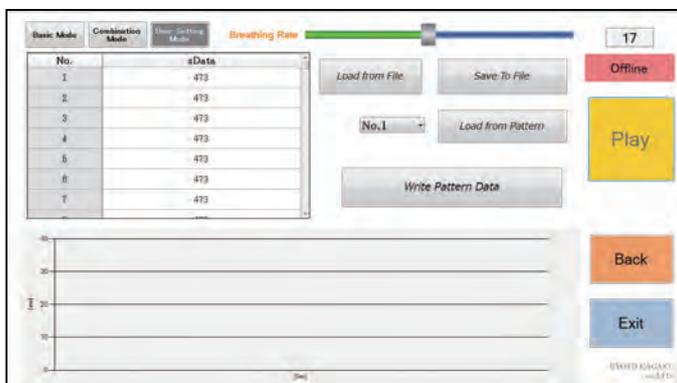


The wave form is displayed here

Send created data to the main unit

※The created data can not be saved without this operation.

Load the saved breathing pattern
 ※The new respiratory pattern can be made from the saved data.



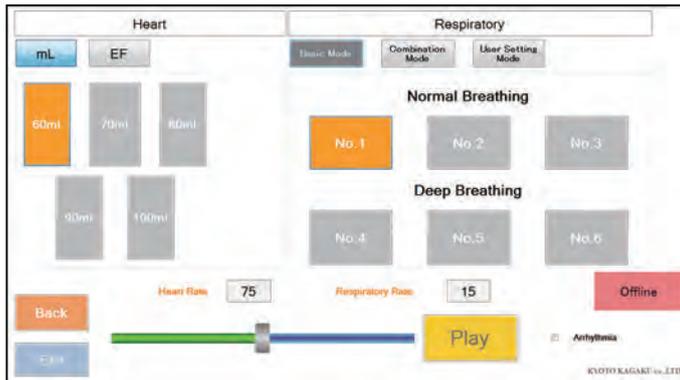
1. Load the saved pattern data
2. Change the value
3. Write Pattern Data and Push "Write Pattern Data" and save the data in the main unit
4. Play
5. Save To File

※The mode setting can not be changed while running

Synchoro

Heart and Breathing motion can be replayed at the same time.
Rate, Pattern and other condition can be set individually.

Please refer to the Heart mode and Breath mode about the operation procedure

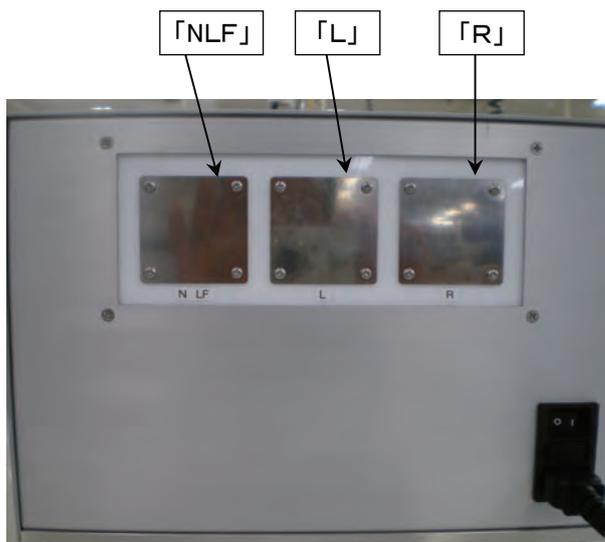


※The mode setting can not be changed while running

Output plates for ECG

Clean up the plates to put each ECG lead pad to the assigned plate.

*Since it is too small to put two ECG lead pads on N/LF plate, cut the pads by proper size to put together.



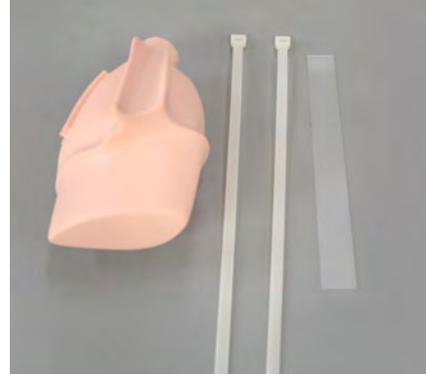
ECG plates for ECG gating

Each plate generates R-wave for ECG gating.
There are 「NLF」 「L」 「R」 ECG plates from the left

Changing of the simulated heart

1. Prepare the simulated heart, 2 pieces of bigger zip tie , and silicone tape.

Aorta tube is inserted as like the photo shows. Two dot marks are put together. Cut 2 pieces of zip tie carefully, and remove aorta tube from heart.



2. Insert aorta tube to simulated heart until putting each two dots together.



3. Wind silicone tape.



4. Wind the insertion port by 2 pieces of zip tie , and fix it firmly.



5. Cut the extra part of zip tie.





Caution

Don't mark on the phantom with pen or leave printed materials contacted on its surface.
Ink marks on the phantom will be irremovable.

■ Main Office and Factory (World Wide)

 **KYOTO KAGAKU co.,LTD**

WEB • www.kyotogagaku.com

E-MAIL • rw-kyoto@kyotokagaku.co.jp

15 kitanechoya-cho Fushimi-ku Kyoto 612-8388, Japan

TEL: +81-75-605-2510

FAX: +81-75-605-2519

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■ North and South American regions:

 **KKAmerica**
Kyoto Kagaku America Inc.

WEB • www.kkamerica-inc.com

E-MAIL • info@kkamerica-inc.com

3109 Lomita Boulevard, Torrance, CA 90505-5108, USA

TEL: +1-310-325-8860

(Toll-free in North America: 877-648-8195)

FAX: +1-310-325-8867