

Lung Sound Auscultation Trainer LSAT

This device is a simulator for medical education, which is designed to facilitate total hands-on training in auscultation skills for pulmonary disorder.

Lung Sound Auscultation Trainer LSAT:

A single-purpose simulator for lung sound auscultation training

The simulator is designed for training in medical diagnosis education.

Do not use it for other purposes.

Please read the instructions carefully before using.

Do not use the system in a way other than hereinafter prescribed by manufacturer. Otherwise it may lead to deterioration in the security function.

Lung Sound Auscultation Trainer LSAT:

Outstanding sound quality: Cases were recorded from actual patients

Accurate location and spread of lung sounds

The torso rotates on the base allowing examination of both front and back as in a real clinical procedure.

Efficient selection of the 35 cases based on classification standards of the American Thoracic Society.

Useful explanation windows - including illustrations, chest radiographs and CT images

DOs and DON'Ts

DOs

Please operate the system under the designated circumstances

Power input: AC 220V-240V 50Hz, 60Hz/ Max220W

Temperature range: 10 degrees C – 40 degrees C

Relative humidity; less than 85 per cent (no condensation)

Safe disposition

To allow safe operation, please locate the units with sufficient space around the switches on each part of the system. **Inappropriate disposition may cause serious accident.**

Follow the instruction on labels



“Warning label” indicates there is a danger of an electric shock when the part is opened up.

Opening up any lids, caps or covers with warning labels is discouraged.

Never run the system while the warning labeled part open.

When you need to open these parts, cut off the power completely well in advance and use abundance of caution all the time.

There will be no compensation considered by the manufacturer for any damage or loss alleged to have been caused by the simulator, if the labeled part(s) have been opened inappropriately.

Handle with care

The models consists of special compositions of soft resin. Please handle them with the utmost care at all times.

Storage

The system is precision equipment.

Store it room temperature, away from shock, heat, moisture and direct sunlight.

Storage under the high temperture over 50 degree C may cause deterioration in the quality of the system.

DON'Ts

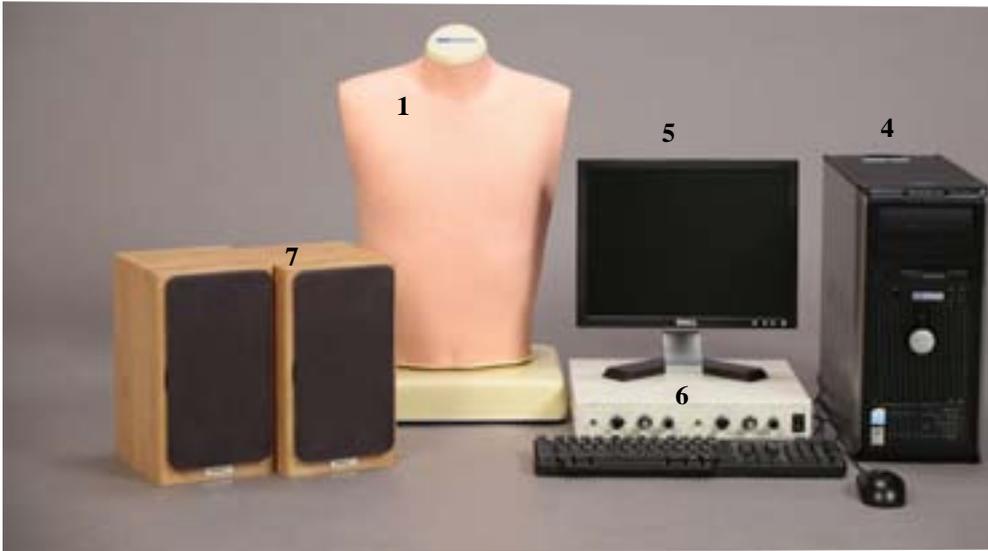
Never wipe the models and pads with thinner or organic solvent.

Don't mark on the models with pen or leave any printed materials in contact with their surface.

Ink marks on the models are not removable.

In the event of the disposal of the simulator, follow the laws and rules by local authorities where it is being disposed.

Name of the Parts



- 1.LSAT model unit
- 2. Audio cable (long cable)
- 3.Power supply cable
- 4.PC (OS.Windows2000Pro)
 - a 12chD/A PCI board (installed)
 - a power supply cable / a mouse
 - a 109 keyboard / Windows2000Pro
- 5.TFT monitor
 - a power supply cable/ manual (Japanese)/
 - monitor cable
- 6. Power amplifier
- 7.Speaker
- 8.Speaker cable

NO STETHOSCOPE IS INCLUDED.

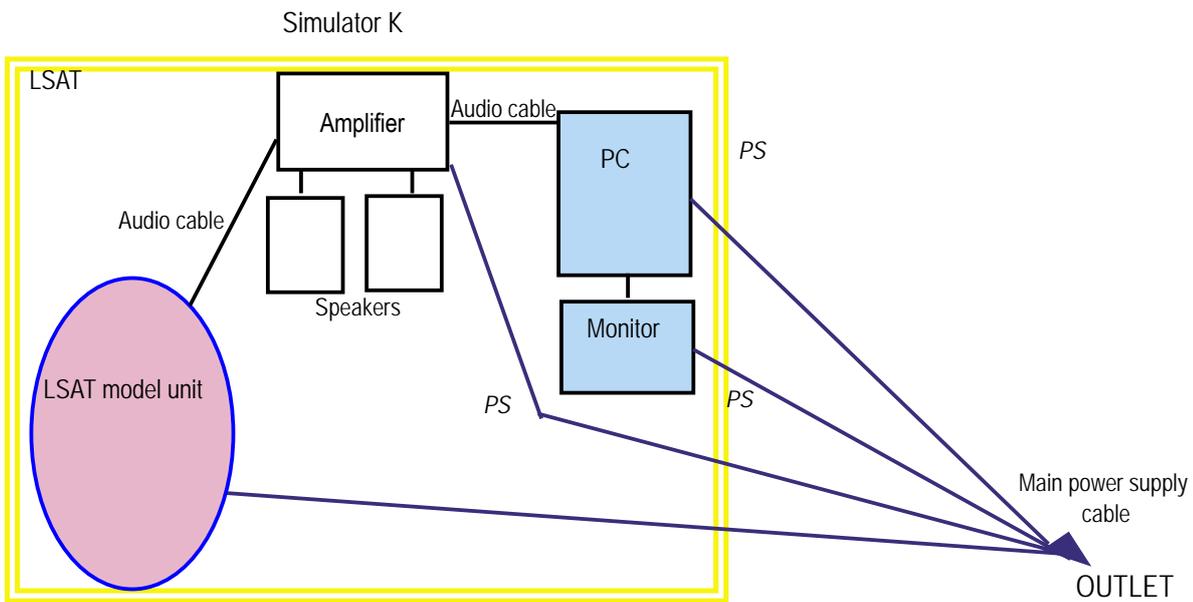


Set includes

1.LSAT Model unit-----	1
2.Audio cable (long cable)-----	1
3. Power supply cable (includes cable for PC/monitors)--	2
4.PC (OS.Windows2000Pro)-----	1
5.TFT monitor -----	1
6.Power amplifier -----	1
7.Speaker-----	2
8.Speaker cable-----	2
9.T shirt-----	1
10. Instruction manual -----	1



Connection of LSAT

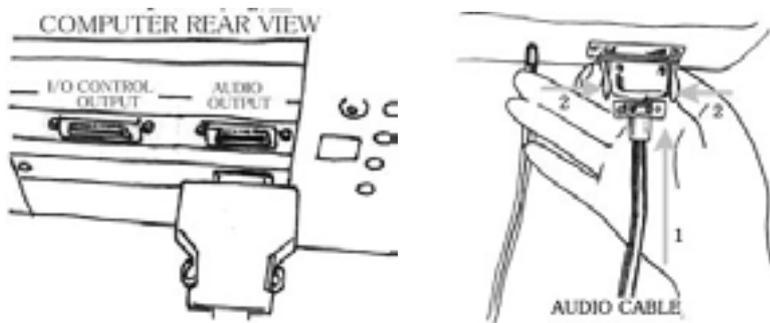


PS: Power supply cable

When the LSAT system is installed separately, the power supply codes are plugged directly into outlet.

When the □
to connect both models simultaneously an audio distributor is required.

- 1) Connect the power amplifier to the computer.
- 2) Connect model unit(s) to the power amplifier with the audio cable(s).



- 3) Plug the power supply cables of the model unit, the PC, the TFT monitor and the power amplifier into the outlets.

LSAT Quick Manual

■ Before the session

Please set-up the system following the procedure below.

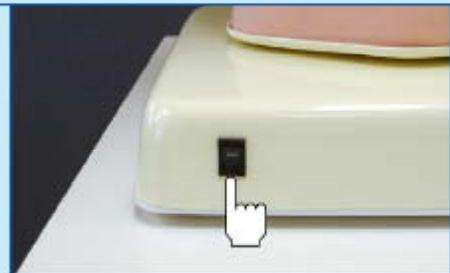
① Turn on the monitor.



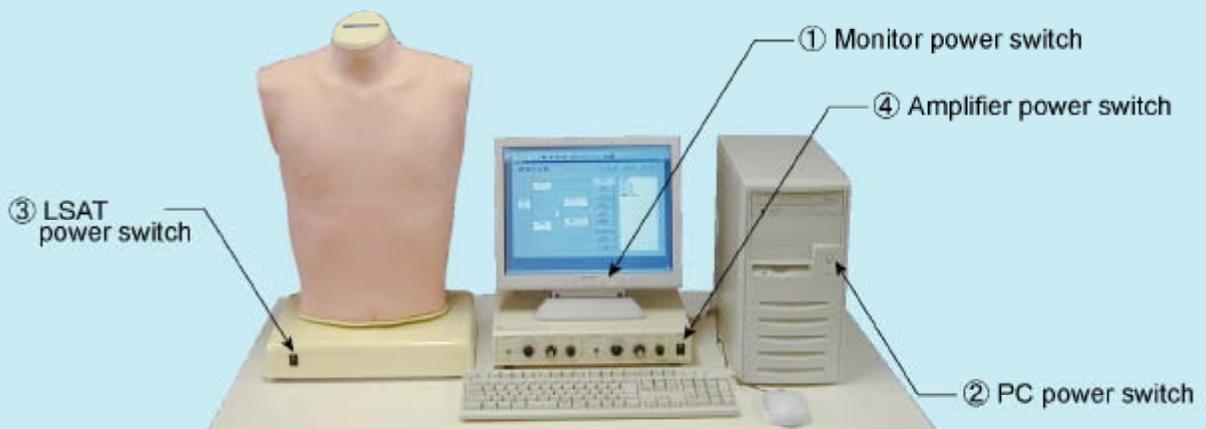
② Turn on the PC.



③ Turn on the power switch on the front of LSAT torso base.



④ Turn on the amplifier.



When you finish a session, please refer the instruction on the opposite side. ➡

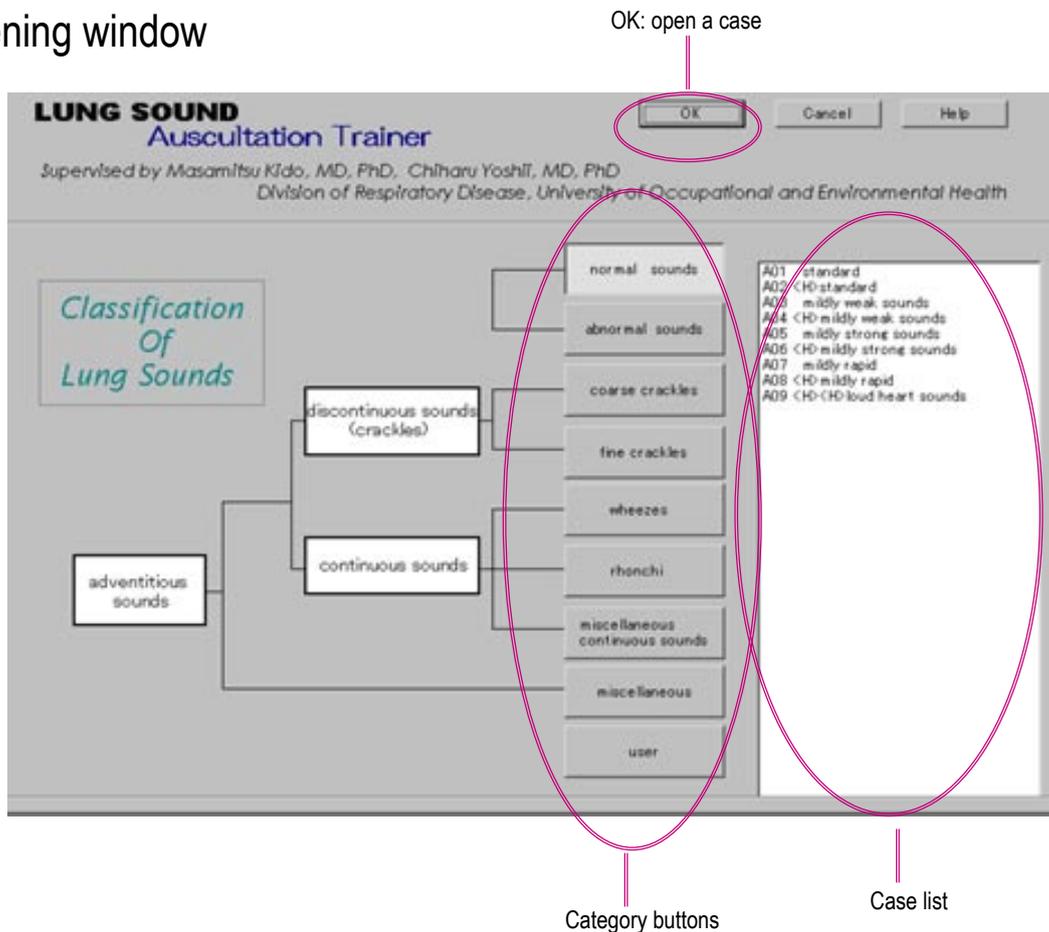
Operation: Simulator LSAT: D1-D3

D1. Open the LSAT system

Going through procedures B1-B5, Microsoft Windows 2000Pro is started up.
Open theLSAT system by double-clicking at the icon.

D2. Chosing a case

Opening window



Choose a group of cases by clicking one of the category buttons.

Then select a case by clicking a name listed in the box on the right side.

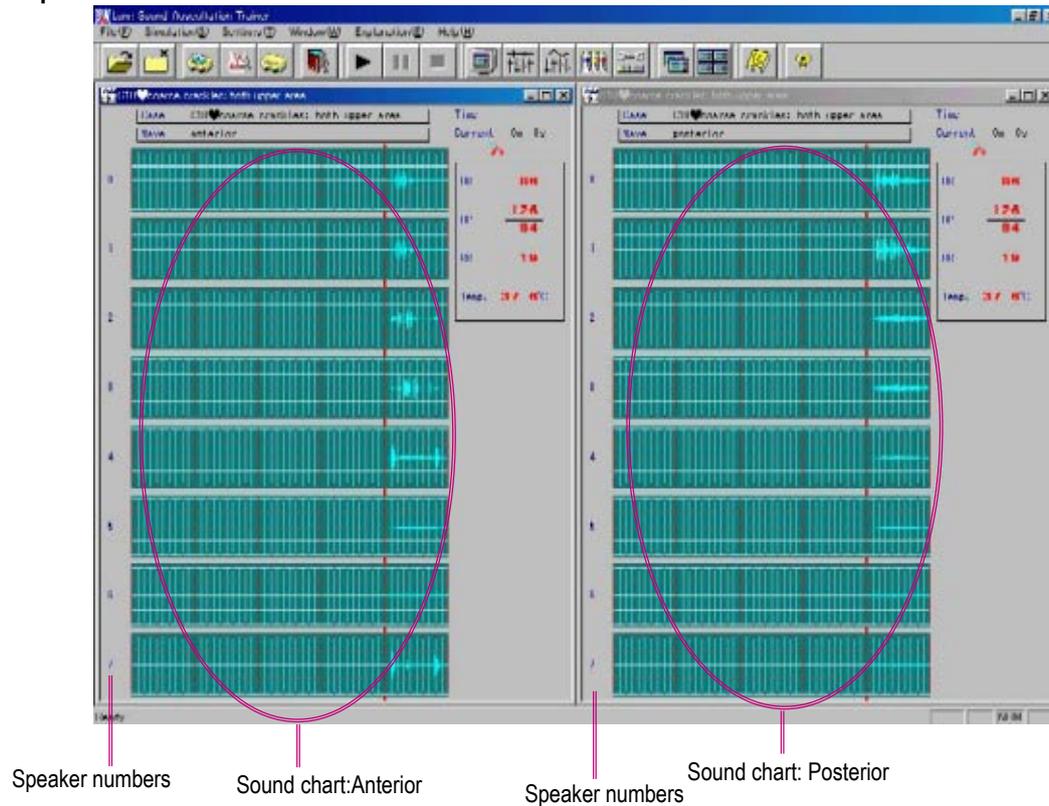
Please note: <H> indicates that the case is replayed with normal heart sounds.

Most cases are provided with 2 options, with and without heart sounds.

By clicking OK button on the top, or double clicking at the case name, the selected case is opened up.

D3. Running the simulation

Operation window



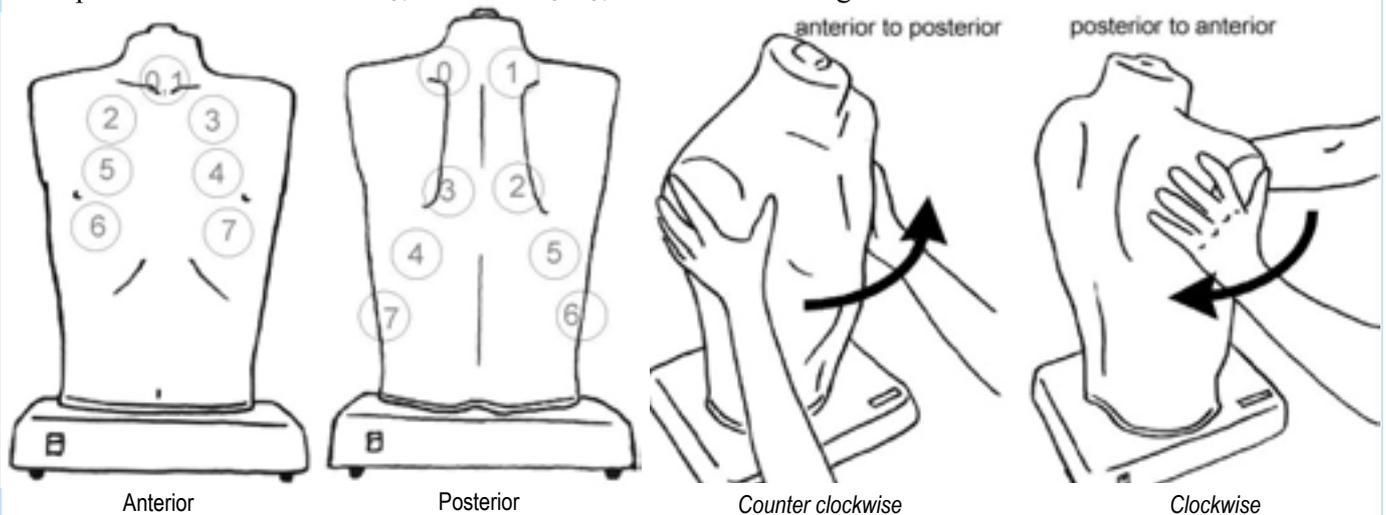
Click  button on the toolbar to start running the simulation.

Default duration of the simulation is 30 min.

Changes and differences in lung sounds on each area can be distinguished using an actual stethoscope.

The numbers at the left side of the sound chart indicates the number of speakers embedded in the torso model.

Both posterior and anterior lung sounds are programmed for training.



The posterior/anterior sounds can be switched over by rotating the torso model.

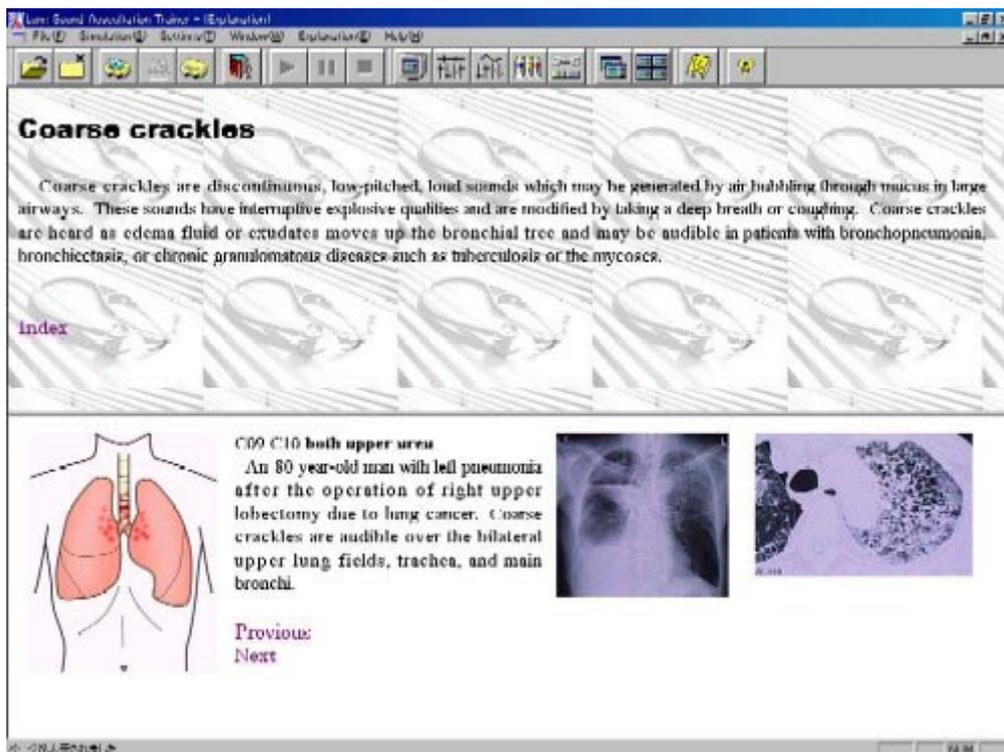
Please note: The sound sets are played on only one side at a time. It is not possible to play both posterior and anterior sound simultaneously.

To open another set of cases, click  button.

To quit the LSAT system, click .

When you finish the session completely, follow the shut-down procedure.

 Explanation button opens useful explanation window for each case.



Coarse crackles

Coarse crackles are discontinuous, low-pitched, loud sounds which may be generated by air bubbling through mucus in large airways. These sounds have interruptive explosive qualities and are modified by taking a deep breath or coughing. Coarse crackles are heard as edema fluid or exudates moves up the bronchial tree and may be audible in patients with bronchopneumonia, bronchiectasis, or chronic granulomatous diseases such as tuberculosis or the mycoses.

[Index](#)

C09 C10 both upper area
An 80 year-old man with left pneumonia after the operation of right upper lobectomy due to lung cancer. Coarse crackles are audible over the bilateral upper lung fields, trachea, and main bronchi.

[Previous](#)
[Next](#)

System configuration E1-E4

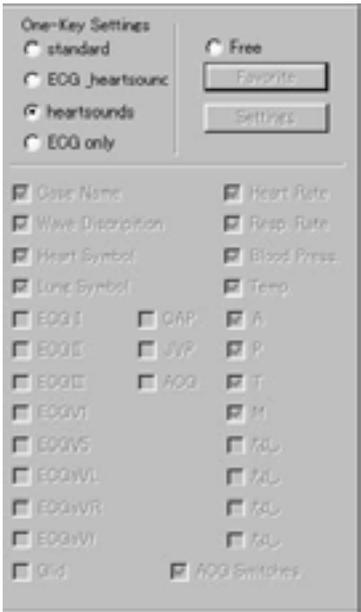
E1 :Display preferences



By clicking monitor button, display configuration window is opened up.

When the 'Free' setting is marked each element can be selected separately to create user's own display.

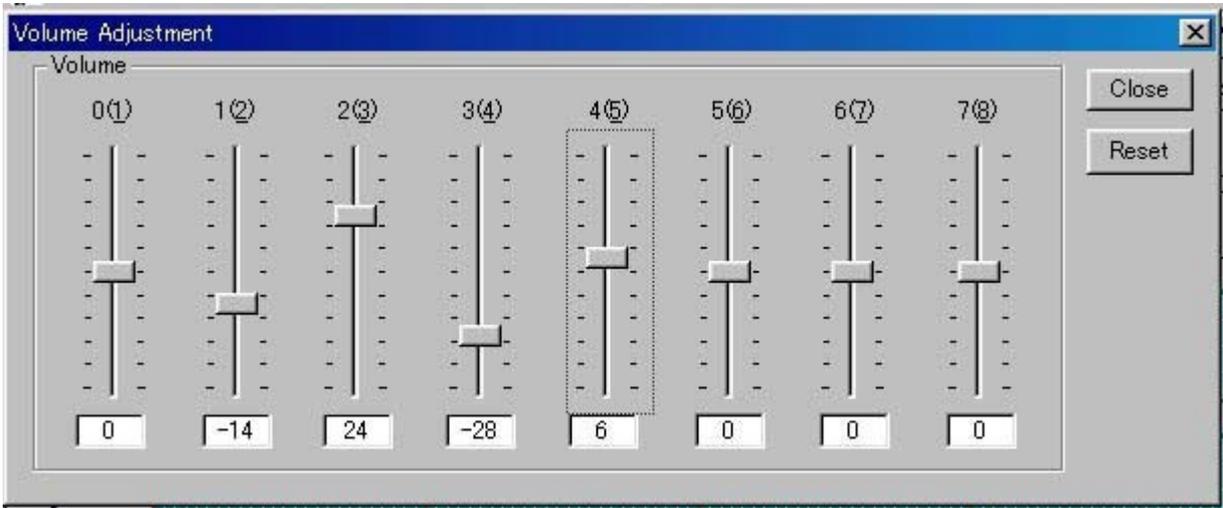
The prepared display settings can also be switched over by using function keys during the simulation.

Simulator K		LSAT	
	<p>F1: Standard F2: ECG and PCG F3: PCG F4: ECG F5:Free</p>		<p>F1: All area F2: Right area F3: Left area F4: None F5:Free</p>

E2 :Sound Volume



By clicking the volume button, volume adjustment window opens to adjust the sound volume of each embedded speaker.



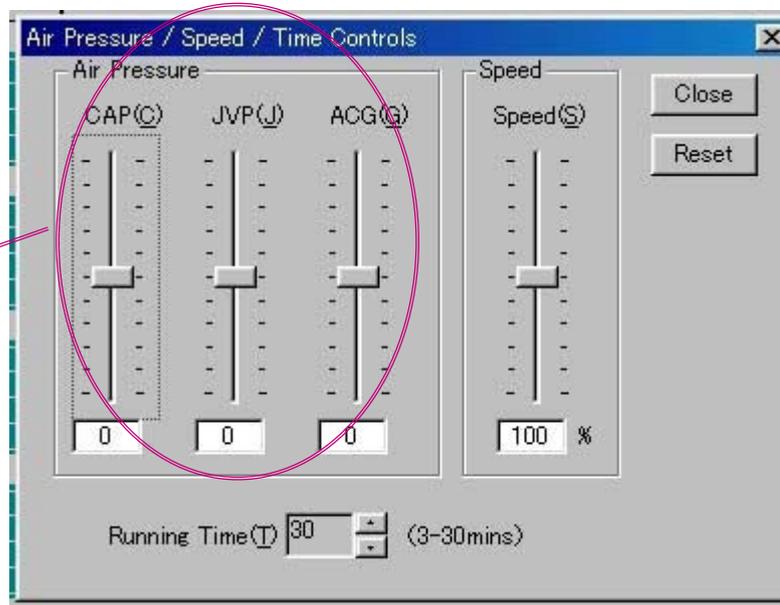
Volume Adjustment window showing 8 sliders for different speakers. The sliders are labeled 0(1) through 7(8). The values shown below each slider are: 0, -14, 24, -28, 6, 0, 0, 0. Slider 4 is highlighted with a dotted box.

E2 :Air pressure, simulation speed and time of duration.



By clicking the volume button, the speed/time control window opens to adjust air pressure for cardiac impulses (Simulator K only), speed of simulation and duration of the running time.

Air pressure control works for Simulator K only

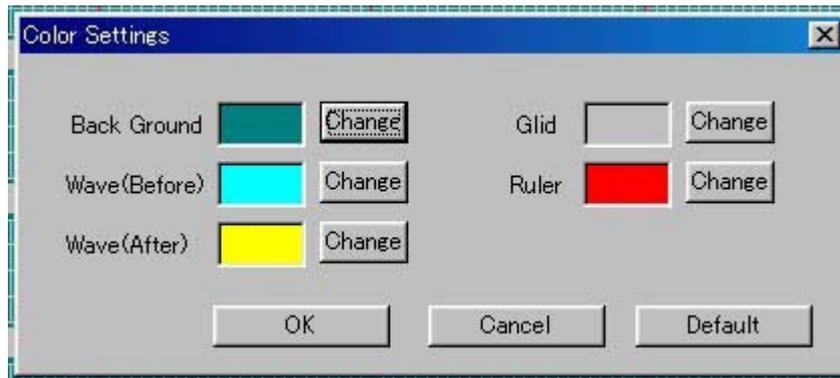


Please note: The running speed affects the sound frequency. When the simulation runs rapidly, the pitch of the sounds becomes higher and makes a higher tone accordingly.

E3 : Display color preference



By the control button, color control window is opened.



E4 : Toolbar

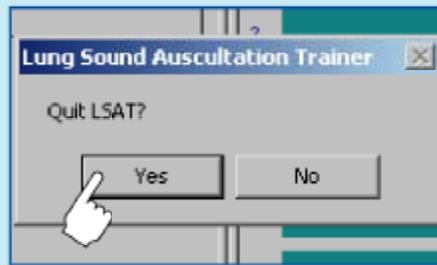


From the toolbar button, elements of toolbar can be selected

■ After the session

Please close the system safely following the procedure below.

- ① Click the mark and quit the simulation system.



- ② Quit the windows.



- ③ Turn off the monitor.



- ④ Turn off the power switch on the LSAT torso base.



- ⑤ Turn off the amplifier.

