Auscultation Trainer and SmartScope™
LF01142U & LF01172U
Instruction Manual
About the Simulator

The Life/form® Auscultation Trainer Simulator features 28 heart and lung conditions selected by the instructor by wireless remote control. The simulator duplicates human conditions as closely as modern plastics and electronic technology allows.

The remote control does not have to be pointed directly at the manikin or SmartScope™ to operate. One remote control will operate multiple sets of SmartScopes™ and manikins simultaneously. Great for group instruction. The range of the remote control is up to 100 feet.

LF01172U includes amplified speaker. LF01142U does not include amplified speaker.

List of Components

- Trainer Torso
- Remote Control
- SmartScope™ with Single- & Dual-Use Headpieces
- Amplifier/Speaker System (LF01189U included in LF01172U only)
- Batteries
- Colored Dots
- Hard Carry Case

Set Up

- Remove product from packaging.
- Install batteries first in the remote and then in the SmartScope™. (See figure 1.)
- Retain packaging for storage.

General Instructions for Use

1. To begin using the Auscultation Trainer, press the red power button. This turns on the remote control and sends a signal to activate the SmartScope™ as well. After the unit is activated, the display will be in the "status" mode, displaying the current menu settings for the heart and lung conditions.

2. To select a new condition, press either the heart or lung button. This will put the display into the menu mode. The user can select a condition by either using the number buttons, or by viewing the conditions in sequence using the scroll button.

3. After the condition is selected, press the enter button to activate.

The remote control can be programmed to these heart conditions:

01 Normal Heart
02 Aortic regurgitation
03 Pulmonary stenosis
04 Mitrval stenosis
05 Holosystolic
06 Mid-systolic
07 S3 Gallop
08 S4 Gallop
09 Systolic click
10 ASD
11 PDA
12 VSD

The remote control can be programmed to these lung conditions:

01 Normal lung
02 Vesicular
03 Wheezes
04 Mono wheeze
05 Fine crackle
06 Coarse crackle
07 Ronchi crackle
08 Stridor
09 Cavernous
10 Bronchovesicular
11 Bronchial
12 Pulmonary edema
13 Infant
14 Friction rub
15 Egophony
16 Pectoriloquy
4. To listen to the selected sounds, place the ear pieces in ears angled in a forward position. Place the diaphragm of the SmartScope™ over one of the appropriate sites on the manikin. (See diagram on pages 4 & 5.)

5. As an alternative, an amplified speaker (LF01189U, included with LF01172U) can be used, allowing an entire classroom to hear at the same time. To connect the speaker, plug the speaker cord into the speaker jack on the top of the SmartScope™ box. **(See figure 2.)** When a speaker is connected to the SmartScope™, the ear pieces will not work. Place the diaphragm of the SmartScope™ over the appropriate sites on the manikin. (See diagram on pages 4 & 5.)

6. Colored dots are included with the torso to aid with teaching.

**Care and Maintenance**

- Clean torso when needed using Nasco Cleaner (LF09919U).
- Store in hard carry case in a temperature controlled environment, avoiding extreme hot or cold temperatures.
- Replace batteries regularly for optimum working condition.
- It is recommended that batteries are removed when not in use.
- Avoid getting ink on torso simulator or practice boards. Ink will transfer indelible stains.

**Troubleshooting**

- When preparing to use your SmartScope™ and remote, use batteries that are fully charged and installed correctly. **(See figure 3.)** The SmartScope™ is not equipped with a power button; this may drain the useful life of your batteries.
- Due to frequency changes, Adult Auscultation Trainer SmartScopes™ with serial numbers 0 to 4999 are only compatible with remotes with serial numbers 0 to 4999. SmartScopes™ with serial numbers 5000 and up will only work with remotes with serial numbers 5000 and up. The serial numbers are located on the back of the device and are handwritten in ink. **(See figure 4.)**
Common Causes of No Sounds

- **Incorrect SmartScope™ placement.** Move the SmartScope™ slowly over the torso to locate sensors. See diagrams on page 4 for placement of sensors. You may apply color-coded dots on the heart and lung sites to assist with training. *(See figure 5.)*

- **Ear tips facing the wrong way.** Verify that the ear tips of the SmartScope™ are facing forward in your ear canal.

- **Battery replacement.** After installing new batteries, make sure to turn the remote off and back on. This allows the remote and SmartScope™ to reset.

  *Note:* SmartScope™ does not turn off.

- **Battery saver mode.** The remote will go into battery saver mode if left on the same setting for 8 minutes. Sounds will not be heard if the remote is off.

- **Using multiple remotes.** One remote will operate all SmartScopes™ within 100 ft. simultaneously as long as the serial numbers are compatible. Using multiple remotes can cause interference. *(See figure 6.)*

- **Interference.** Wireless communication from another transmitter using 433 MHz may cause sound selection issues or existing sounds to stop or restart. Reset the remote by turning it off briefly, then on again and select a different Heart or Lung sound.

- **Connecting an external speaker.** Insert the jack end of the speaker cord into the top of the SmartScope™. *(See figure 2.)*

- **Using an external speaker.** When using an amplifier/speaker, no sounds will be heard through the SmartScope™ ear tips.

- **Check volume.** Make sure the volume on the amplifier/speaker is turned up.

Actual product may vary slightly from photo. Nasco reserves the right to change product color, materials, supplies, or function as needed.

**Available Supplies**

- LF01144U Additional SmartScope™
- LF01148U Replacement Remote Control
- LF09919U Nasco Cleaner
- SB20146U Amplified Speaker
**Anterior Heart and Lung Sites**

- First right intercostal space
- Second right intercostal space (aortic)
- (lower left sternum)
- Second left intercostal space (pulmonic)
- Third left intercostal space (Erb's point)
- Fourth left intercostal space
- Apex
- Tracheal Site

**Posterior Lung Sites**

- Midaxillary
## Anterior Heart Sites

<table>
<thead>
<tr>
<th></th>
<th>Aortic Second Right Intercostal Space</th>
<th>Pulmonic Second Left Intercostal Space</th>
<th>Erbs Point Third Left Intercostal Space</th>
<th>Fourth Left Intercostal Space</th>
<th>Lower Left Sternum</th>
<th>Apex</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Normal</td>
<td>Normal, S2 Accentuated</td>
<td>Normal, S2 Accentuated</td>
<td>Normal, S2 Accentuated</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
</tr>
<tr>
<td>2. Aortic Regurgitation</td>
<td>Ejection Sound, Loud Mid systolic &amp; soft early diastolic murmur</td>
<td>Ejection sound, mild systolic murmur, early diastolic blowing murmur</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
</tr>
<tr>
<td>3. Pulmonary Stenosis</td>
<td>Normal</td>
<td>Moderate 4th sound, harsh late peaking systolic murmur, soft late pulmonic 2nd sound</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
</tr>
<tr>
<td>4. Mitral Stenosis</td>
<td>Normal</td>
<td>Normal</td>
<td>Severe held expiration, tachycardia: opening snap .03 seconds after loud 2nd sound</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
</tr>
<tr>
<td>5. Holosystolic Murmur</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
<td>Patient has mitral regurgitation &amp; frequent premature ventricular contractions. Murmur is crescendo-decrescendo with late peaking. Soft S3 in mid diastole.</td>
</tr>
<tr>
<td>6. Midsystolic Murmur</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
<td>Patient with hypertrophic cardiomyopathy has a murmur that begins after S1 and ends before S2</td>
</tr>
<tr>
<td>7. S3 Gallop</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
<td>Patient has a readily heard third heart sound. S3 occurs later in diastole than the opening snap.</td>
</tr>
<tr>
<td>8. S4 Gallop</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
<td>Patient with left ventricular hypertrophy has a fourth sound (S4) that is not heard on every cycle. The sound is presystolic about .1 second before S1.</td>
</tr>
<tr>
<td>9. Midsystolic Click</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
<td>Patient has mitral prolapse which produces a mid systolic click heard during inspiration.</td>
</tr>
<tr>
<td>10. Atrial Septal Defect</td>
<td>Normal</td>
<td>Respiration: mid systolic murmur, fixed split 2nd, soft 3rd, breath sounds with inspiration</td>
<td>Normal</td>
<td>Respiration: mid systolic murmur, fixed split 2nd, mid diastolic murmur</td>
<td>Normal</td>
<td>Normal</td>
</tr>
<tr>
<td>11. Patent Ductus Arteriosus</td>
<td>Normal</td>
<td>Continuous murmur</td>
<td>Normal</td>
<td>Continuous murmur</td>
<td>Normal</td>
<td>Normal</td>
</tr>
<tr>
<td>12. Ventricular Septal Defect</td>
<td>Normal</td>
<td>Normal</td>
<td>Holosystolic murmur with late crescendo</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
</tr>
</tbody>
</table>
### Anterior/Posterior Lung Sites

- **First right intercostal space**
- **First left intercostal space**
- **Upper posterior**
- **Lower posterior**
- **Midaxillary**
- **Lower anterior**

<table>
<thead>
<tr>
<th>Lungs &amp; Sounds</th>
<th>Tracheal Site</th>
<th>First Left &amp; Right Intercostal Sites</th>
<th>Upper Posterior Lung Sites</th>
<th>Lower Posterior Lung Sites Two Midaxillary Sites 2 Lower Anterior Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Normal Lung</td>
<td>Tracheal</td>
<td>Bronchovesicular</td>
<td>Normal Vesicular</td>
<td>Normal Vesicular</td>
</tr>
<tr>
<td>2. Normal Vesicular</td>
<td>Tracheal</td>
<td>Bronchovesicular</td>
<td>Normal Vesicular</td>
<td>Normal Vesicular</td>
</tr>
<tr>
<td>3. Wheezes</td>
<td>Wheeze</td>
<td>Wheeze</td>
<td>Wheeze</td>
<td>Wheeze Lower Volume</td>
</tr>
<tr>
<td>4. Mono Wheeze</td>
<td>Mono Wheeze</td>
<td>Mono Wheeze</td>
<td>Mono Wheeze</td>
<td>Mono Wheeze Lower Volume</td>
</tr>
<tr>
<td>5. Fine Crackle</td>
<td>Fine Crackle</td>
<td>Fine Crackle</td>
<td>Fine Crackle</td>
<td>Fine Crackle</td>
</tr>
<tr>
<td>6. Coarse Crackle</td>
<td>Coarse Crackle</td>
<td>Coarse Crackle</td>
<td>Coarse Crackle</td>
<td>Coarse Crackle</td>
</tr>
<tr>
<td>7. Ronchi</td>
<td>Ronchi</td>
<td>Ronchi</td>
<td>Ronchi</td>
<td>Ronchi</td>
</tr>
<tr>
<td>8. Stridor</td>
<td>Stridor</td>
<td>Stridor</td>
<td>Stridor Lower Volume</td>
<td>Stridor Lower Volume</td>
</tr>
<tr>
<td>9. Cavernous</td>
<td>Cavernous</td>
<td>Cavernous</td>
<td>Cavernous</td>
<td>Cavernous</td>
</tr>
<tr>
<td>10. Bronchovesicular</td>
<td>Tracheal</td>
<td>Bronchovesicular</td>
<td>Normal Vesicular</td>
<td>Normal Vesicular</td>
</tr>
<tr>
<td>11. Bronchial</td>
<td>Bronchial</td>
<td>Bronchial</td>
<td>Normal Vesicular</td>
<td>Normal Vesicular</td>
</tr>
<tr>
<td>12. Pulmonary Edema</td>
<td>Pulmonary Edema</td>
<td>Pulmonary Edema</td>
<td>Pulmonary Edema</td>
<td>Pulmonary Edema</td>
</tr>
<tr>
<td>13. Infant</td>
<td>Infant</td>
<td>Infant</td>
<td>Infant</td>
<td>Infant</td>
</tr>
<tr>
<td>14. Friction Rub</td>
<td>Tracheal</td>
<td>Bronchovesicular</td>
<td>Friction Rub</td>
<td>Friction Rub</td>
</tr>
<tr>
<td>15. Egophony</td>
<td>Egophony</td>
<td>Egophony</td>
<td>Egophony</td>
<td>Egophony</td>
</tr>
<tr>
<td>16. Pectoriloquy</td>
<td>Pectoriloquy</td>
<td>Pectoriloquy</td>
<td>Pectoriloquy</td>
<td>Pectoriloquy</td>
</tr>
</tbody>
</table>
Other Available **Life/form. Simulators**

**LF01192U** Anterior Auscultation Practice Board with Case and SmartScope™
**LF01200U** Deluxe Auscultation Training Station
**LF01220U** Adult & Infant Auscultation Training Set
**LF03968U** Deluxe Plus CRiSiS™ Auscultation Manikin