

A Adam, Rouilly

AR502 - AR502/50

Enhanced Digital Ear

Examination Trainer

Instruction Manual



Thank you for purchasing this **AR502 Enhanced Digital Ear Examination Trainer**.

Please read this instruction manual carefully and retain it for future reference.

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Let us walk you through it
Watch the video now

Visit our YouTube Channel:
<https://www.youtube.com/AdamRouilly>



Safety and Precautions



The digital images of ear conditions are the copyright of Professor Tony Wright, Emeritus Professor of Otolaryngology. They are for sole use with the AR502 Enhanced Digital Ear Examination Trainer.

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The trainer contains sensitive electronic parts. Do not store near heat or where it may experience extremes in temperature, humidity or magnetic fields.



Use either the power adaptor supplied or other suitable low volt USB-C type adaptors.



Use only 4x AA batteries (not included) in the battery compartment as indicated. Do not attempt to use any other type or size of battery. Other battery sizes may damage the simulator, and invalidate your guarantee.



During use, the head must be inserted into the shoulder base.



Use only fingers or suitable stylus (not supplied) on the touchscreen. Other objects could scratch or damage the touchscreen and invalidate your guarantee.



Treat the ear with the same care you would a patient. Excess force may cause damage to the model.



Do not use the adaptor if the low voltage cable is damaged. The cable cannot be repaired, the adaptor must be replaced.



Do not power down and leave or store the trainer with batteries still installed for prolonged periods. Always remove batteries before storage.



The trainer contains no user serviceable parts. Do not attempt to open or disassemble the trainer. Doing so could cause damage and will invalidate your guarantee.



Do not exert excessive force on the buttons or place the trainer upside down. Doing so could cause damage and will invalidate your guarantee.



For best clarity of display of the conditions, we recommend setting the otoscope light to "off".



Re-chargeable batteries may be used to power the trainer. Please note however that the mains adaptor will not re-charge batteries.



Please treat the simulator with the same care you would a patient.

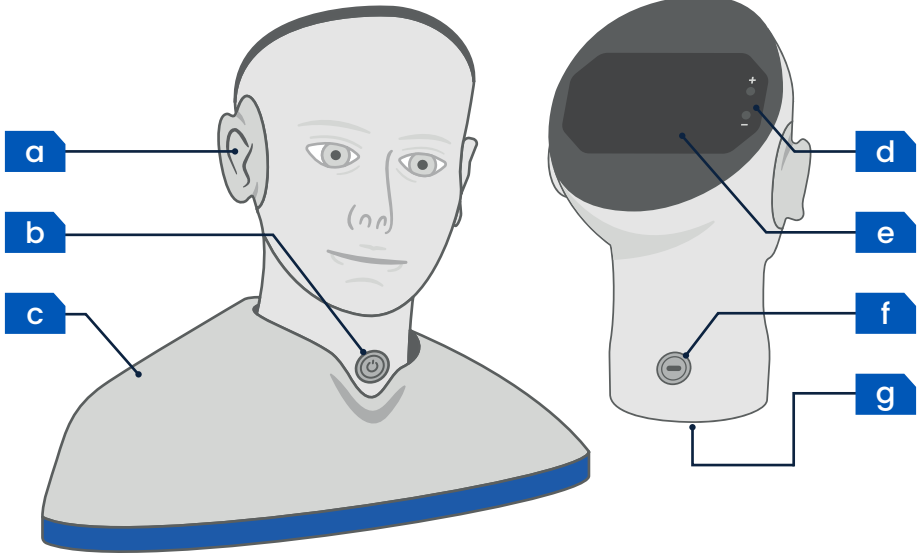
Parts

Front

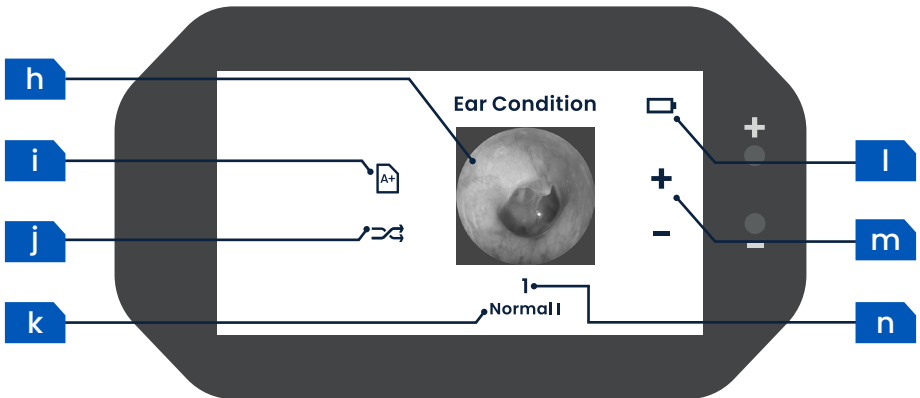
(Shown inserted into shoulder base)





Rear

(Shown removed from shoulder base)



Touchscreen Interface



- a** Flexible right patient ear for examination
- b** Power switch (with blue indicator light)
- c** Removable shoulder base
- d** Ear condition Up (+) and Down (-) buttons
- e** Touchscreen user interface
- f** USB-C low voltage power jack
- g** Battery compartment (on base) for 4x AA batteries (not included)
- h** Ear condition preview / Condition Library
- i** Exam mode
- j** Random mode
- k** Ear condition name
- l** Power Indicator - Mains () or Batteries (  )
- m** Ear condition Up (+) and Down (-)
- n** Ear condition number / Numerical Entry

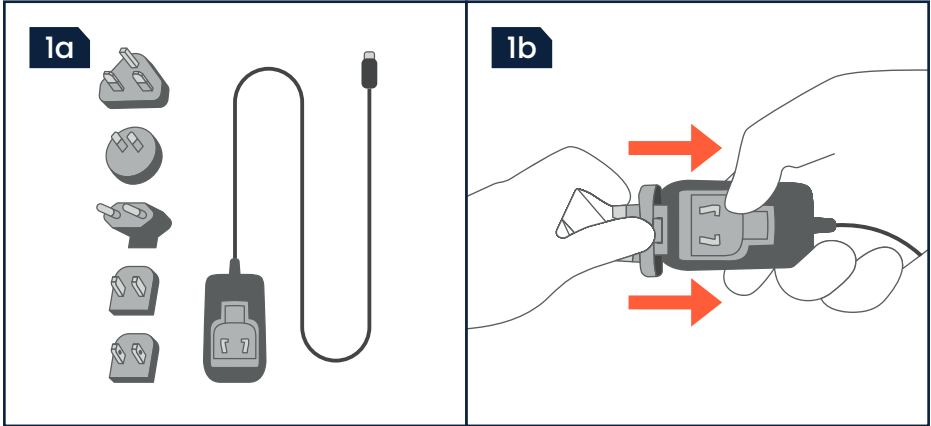
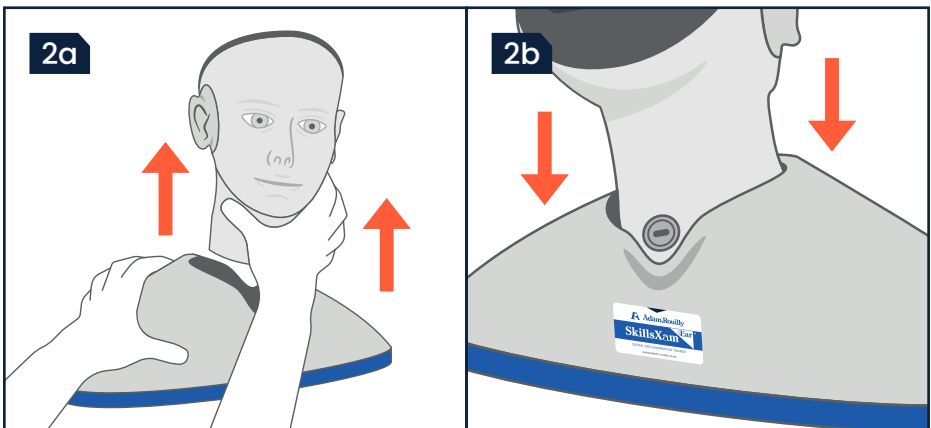
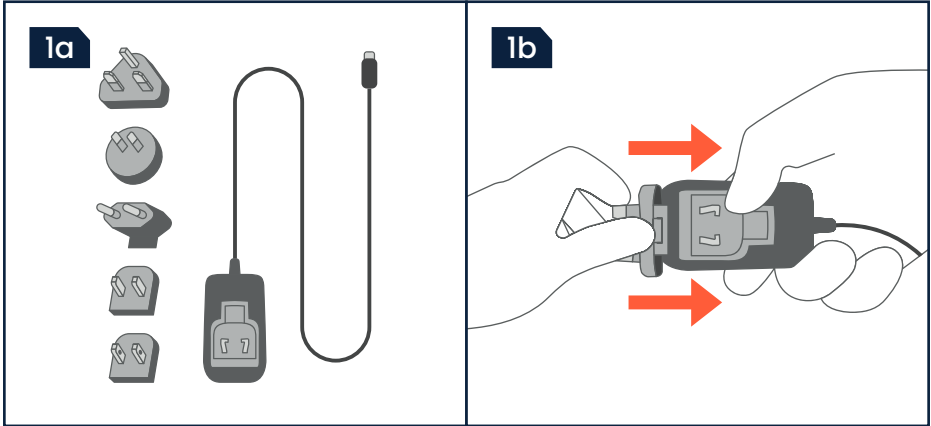
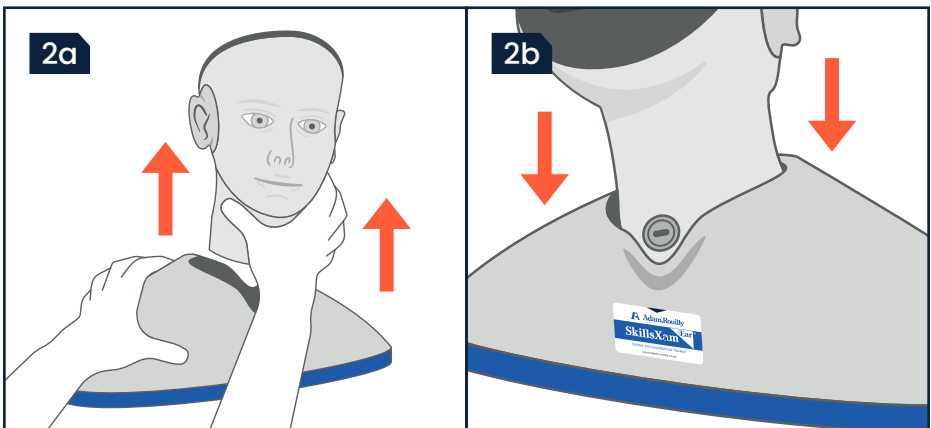
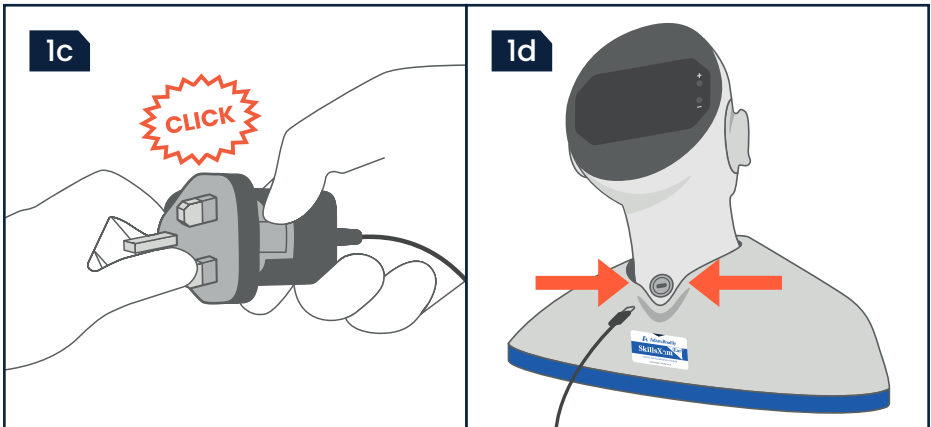
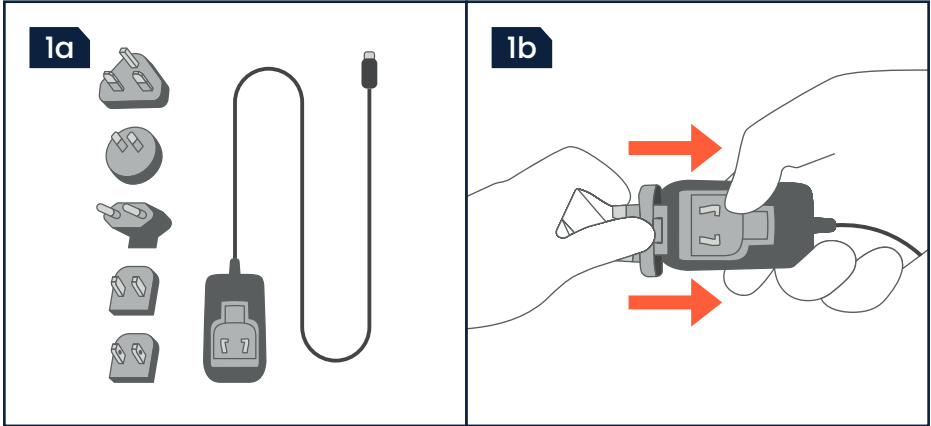
Includes

- S402/9 Rigid Carrying Case
- S403/7 Blue Battery Compartment Opening Tool
- USB-C Mains Adaptor with Worldwide Plug Fixings



If you require replacement parts please contact our Sales Department, use product codes where applicable.

Before Use



Using the Included Power Adaptor


Ensure the work area is clean and dry. Place the trainer on a stable, flat surface.

- 1a** Before first use select the appropriate plug fixing for your local mains supply from those included.
- 1b** Insert the plug fixing into the adaptor with the large catch at the base of the adaptor.
- 1c** Align the small rectangular groove on the top of the fixing and press this into the adaptor so that it clicks into the spring lug.
- 1d** Plug the low voltage cable from the adaptor into the power jack at the rear of the simulator.

The simulator is now ready for use.

Removing the Shoulder Base

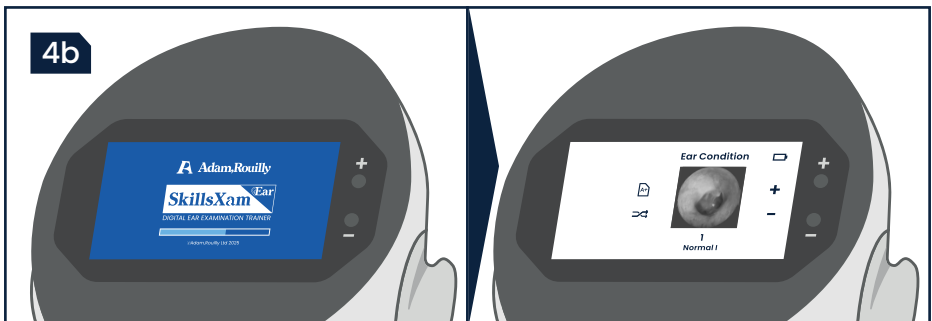
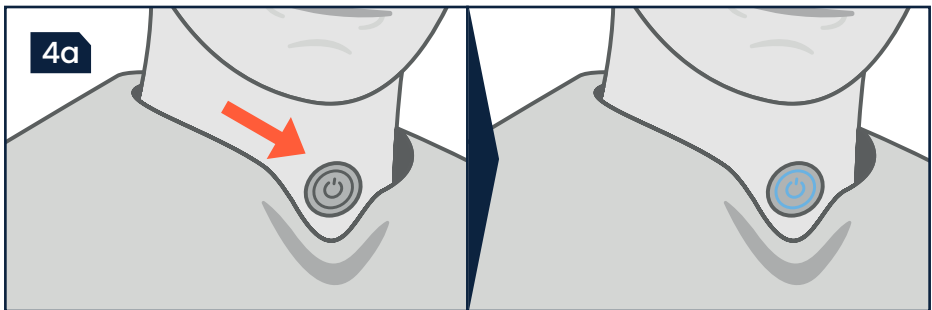
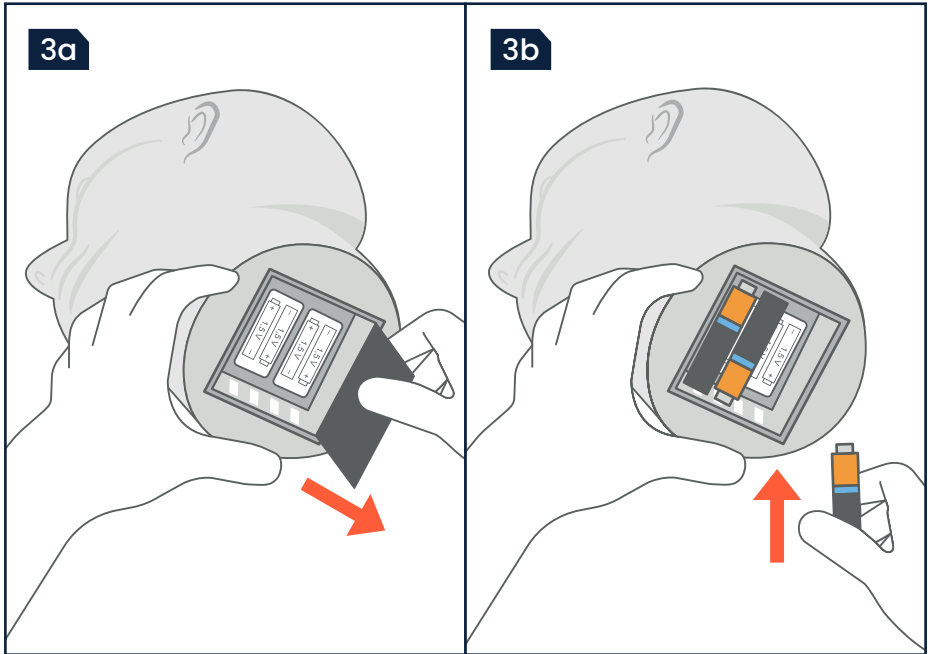
The shoulder base angles the head correctly during the examination procedure. The head may be removed from the base to access the battery compartment.

- 2a** To remove the base, place one hand firmly on the shoulder base. Place the other hand firmly under the chin to grasp the head, and pull up.
- 2b** To reinstall the head, reverse the procedure. Ensure that the power jack aligns with the black arrow  on the label at the rear of the shoulder base.



During use, the head must be inserted into the shoulder base.

Before Use



Using Battery Power

Alternatively, the trainer may be powered by 4x AA batteries (not included).



Use only 4x AA batteries (not included) in the battery compartment as indicated. Do not attempt to use any other type or size of battery. Other battery sizes may damage the simulator, and invalidate your guarantee.



Do not power down and leave or store the trainer with batteries still installed for prolonged periods. Always remove batteries before storage.



Re-chargeable batteries may be used to power the trainer. Please note however that the mains adaptor will not re-charge batteries.

3a

Open the battery compartment at the base of the simulator using the tab on the compartment door.

3b

Install 4x AA batteries (not included) as indicated in the battery compartment. Refit the compartment door.

The simulator is now ready for use.

Powering On

4a

Power on the model using the power button. The blue LED indicator light will illuminate.



If the model fails to power on, check the batteries are fitted correctly and have sufficient power, or check the low voltage cable is attached correctly and the mains supply is turned on.

4b

After a short delay the blue welcome screen will display, followed by the home condition display screen.



Whenever the model is powered off and then on again, the ear condition will automatically default to Condition 1.

Before Use

5a

5b

5c

Ear Condition ☐

1
Normal I

Enter Condition:

1	2	3
4	5	6
7	8	9
0	⌫	

8

OK

6a

Ear Condition ☐

1
Normal I

6b Conditions and Diseases of the Ear

Normal	3. Ear Wax (Cerumen)	▽+
Outer Ear	4. Swimmer's Osteoma	>
Outer/Middle Ear	5. Fungal Ear I	
Middle Ear	6. Fungal Ear II	Q
Skull Base		
All Conditions		

Conditions and Diseases of the Ear

Normal	12. Furunculosis	▽+
Outer Ear	13. Skull Base Fracture	>
Outer/Middle Ear	14. Pseudomonas Otitis Externa	
Middle Ear	15. Keratosis Obturans	
Skull Base		
All Conditions		

15. Keratosis Obturans


OK

Ear Condition ☐

15
Keratosi Obturans

Selecting a Condition

Conditions are easily navigable and selected using any of the following methods:

- 5a** Use the physical ear condition Up (+) and Down (-) buttons.
- 5b** Tapping the condition Up (+) and Down (-) buttons on screen.
- 5c** Tap the number under the condition. The numerical entry screen will display. Use the numerical keypad to enter the number of the desired condition, from 1 to 59. Tap the  button.



Using the Condition Library

The Condition Library categorises cases and allows for previewing of conditions before they are displayed inside the simulated ear.

Full condition information and their respective categories are listed on **Page 24** of this manual.

- 6a** To access the Condition Library, from the Home Condition Display screen tap on the image of the condition.
- 6b** The Condition Library lists categories on the left as Normal, Outer Ear, Outer/Middle Ear, Middle Ear and Skull Base. "All Conditions" lists all conditions in numerical order, 1 to 59. Tap a classification to view the conditions contained within, e.g. Outer Ear.

The selected classification is highlighted light blue. Tap the up ^ and down v arrows to scroll through the list of conditions within this category. When the down arrow disappears, the end of the list has been reached.

To select a condition, simply tap its name. The Condition Screen will display the name of the condition, and the image. Tap  to display this inside the simulated ear canal, or tap the  button to return to the previously viewed classification in the Condition Library.

Once a condition is being displayed, note that all conditions display in numerical order, regardless of category.

Before Use

7a Conditions and Diseases of the Ear

- Normal
- Outer Ear
- Outer/Middle Ear
- Middle Ear
- Skull Base
- All Conditions

1. Normal I

2. Normal II

Search: FORE

Foreign Body I

Q W E R T Y U I O P
A S D F G H J K L
Z X C V B N M

7. Foreign Body I

OK

Ear Condition

7 Foreign Body I

8a

Ear Condition

1 Normal I

Ear Condition

1 Normal I

9a

Ear Condition



1 Normal I


Ear Condition

1 Normal I

Using the Condition Library: Search Function

Within the Condition Library, conditions can also be searched for.

7a Tap the  symbol, the search screen will display. Use the on-screen keyboard to search for a term in a condition name. Best search results will automatically populate. If the down arrow  appears there is more than one search result, tap this to see further results. When the down arrow disappears, the end of the list has been reached.

To select a search result, simply tap on the name which will display the Condition Screen. Tap  to display this inside the simulated ear canal, or tap the back symbol to return to the search results.

Exam Mode

Exam mode hides the name and number of the condition, leaving only the condition image on the home condition display screen during use.

8a To activate, tap the  symbol. The number and name are hidden, and a button shape appears around the  symbol indicating Exam Mode is active.





To deactivate, simply tap the  again.



When Exam Mode is active, Sleep Mode is automatically cancelled and the unit will not power down. For more information, see Sleep Mode on **Page 19**.

Random Mode

Random mode displays conditions in a varied sequence.

9a To activate, tap the  symbol. A button shape appears around the  symbol indicating Random Mode is active. When the Up () or Down () buttons are tapped or pushed, the next condition number is populated randomly.

To deactivate, simply tap the  again.

Before Use

10a Conditions and Diseases of the Ear

- Normal
- Outer Ear
- Outer/Middle Ear
- Middle Ear
- Skull Base
- All Conditions

1. Normal I

2. Normal II

10b Condition Sets

- Set A
- Set B
- Set C
- Set D

EXIT SET

10c

1	Not assigned
2	Not assigned
3	Not assigned
4	Not assigned
5	Not assigned
6	Not assigned
7	Not assigned
8	Not assigned
9	Not assigned
10	Not assigned

SELECT SET

PIN

10d Conditions and Diseases of the Ear

- Normal
- Outer Ear
- Middle Ear
- Skull Base
- All Conditions

1. Normal I

2. Normal II

OK

10e

1	2. Normal II
2	Not assigned
3	Not assigned
4	Not assigned
5	Not assigned
6	Not assigned
7	Not assigned
8	Not assigned
9	Not assigned
10	Not assigned

1	2. Normal II
2	Not assigned
3	Not assigned
4	Not assigned
5	Not assigned
6	Not assigned
7	Not assigned
8	Not assigned
9	Not assigned
10	Not assigned

10f

1	Not assigned
2	Not assigned
3	Not assigned
4	Not assigned
5	Not assigned
6	Not assigned
7	Not assigned
8	Not assigned
9	Not assigned
10	Not assigned

SELECT SET

PIN

10g

1	Not assigned
2	Not assigned
3	Not assigned
4	Not assigned
5	Not assigned
6	Not assigned
7	Not assigned
8	Not assigned
9	Not assigned
10	Not assigned










SELECT SET

PIN

Custom Sets

Custom sets allow the selection of up to 10 specific conditions in any order, for focused teaching or assessments. There are four custom sets available.

When a Custom Set is Active, the Custom Sets are stored even when the unit is in Sleep Mode, or is powered down.

- 10a** At least one and a maximum of 10 conditions can be selected. To assign conditions to a custom set, from the Condition Library tap the  symbol.
- 10b** The Custom Sets screen displays – tap the desired custom set A, B, C or D.
- 10c** The Set Assignment screen displays for the specific set. To assign a condition to a position, tap that position.
- 10d** The Condition Library opens once more, where a specific condition can be browsed for as in **6b Using the Condition Library**. Tap the condition, tap  and the selected condition now displays in the desired position.
- 10e** If you wish to move the position of that condition, use the up  or down  arrows which display to the right of the condition assignment position. To delete the condition, tap the  symbol.
- 10f** To clear the whole set, tap the large  symbol on the left.
- 10g** To make the set active, Tap . The model will now display those conditions in the assigned order as the Ear condition Up () and Down () buttons are used.

Before Use

11a

OK	1	Not assigned	~ ~	🗑️
🗑️	2	Not assigned		
	3	Not assigned		
	4	Not assigned		
	5	Not assigned		
SELECT SET	6	Not assigned		
	7	Not assigned		
PIN	8	Not assigned		
↩️	9	Not assigned		
	10	Not assigned		

11b

Give the PIN code

1	2	3
4	5	6
7	8	9
0	🗑️	

1234

OK

11c

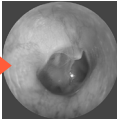
OK	1	Not assigned		
🗑️	2	Not assigned		
	3	Not assigned		
	4	Not assigned		
	5	Not assigned		
SELECT SET	6	Not assigned		
	7	Not assigned		
PIN	8	Not assigned		
↩️	9	Not assigned		
	10	Not assigned		

Set A:

📄

🔗

Ear Condition



1
Normal I

Give the PIN code

1	2	3
4	5	6
7	8	9
0	🗑️	

OK

12a

OK	1	Not assigned	~ ~	🗑️
🗑️	2	Not assigned		
	3	Not assigned		
	4	Not assigned		
	5	Not assigned		
SELECT SET	6	Not assigned		
	7	Not assigned		
PIN	8	Not assigned		
↩️	9	Not assigned		
	10	Not assigned		

12b

Give the PIN code

1	2	3
4	5	6
7	8	9
0	🗑️	

1234

x5

OK

13a

Give the PIN code

1	2	3
4	5	6
7	8	9
0	🗑️	

0000

OK

13b

Give the PIN code

1	2	3
4	5	6
7	8	9
0	🗑️	

0000

OK

Custom Sets: Assigning a Pin

An optional PIN number can be assigned to prevent unwanted exit from a Custom Set, for example during an examination.


11a To use a PIN, ensure then desired Custom Set Assignment screen is being displayed. Tap the blue **PIN** button.

11b Using the numerical entry pad, enter a 4 digit Pin. Tap **OK**. The PIN is now assigned to the Custom Set.

11c Tap **OK** to display the set. To exit the set, tap the image of the condition. The same correct PIN must be entered, then tap **OK** before the Custom Set Assignment Screen will be displayed once more.

Custom Sets: Removing a Pin

12a To remove a PIN number associated to any set, navigate to the Custom Set Assignment Screen. Tap PIN button.

12b Enter the PIN as set before. Then tap the delete  key 5 times then tap **OK**. The PIN is now removed.

Custom Sets: Forgotten Pin

If the Custom Set PIN has been forgotten, the universal reset code can be entered to clear the PIN.

13a Tap the condition image to exit the set. Enter in the universal reset code as follows:

0000760423



Note that the last six digits are not visible on the screen during entry.

13b Tap **OK**. The PIN will have been cleared.

Before Use

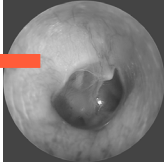
14a

Ear Condition 🔋

t A: 1

A+

↺



+

-

1
Normal I

14b

Enter the PIN code to enter Exam mode:

1	2	3
4	5	6
7	8	9
0	☒	

1234

OK

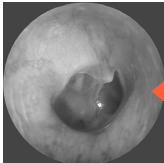
15a

Ear Condition 🔋

t A: 1

A+

↺



+

-

1
Normal I

15b

Enter the PIN code

1	2	3
4	5	6
7	8	9
0	☒	

1234

OK

15b

Set A

1	Not assigned
2	Not assigned
3	Not assigned
4	Not assigned
5	Not assigned
6	Not assigned
7	Not assigned
8	Not assigned
9	Not assigned
10	Not assigned

OK

🗑️

SELECT SET

PIN

15c

Set A

Set B

Set C

Set D

EXIT SET

15c

Conditions and Diseases of the Ear

Normal	1. Normal I
Outer Ear	
Outer/Middle Ear	2. Normal II
Middle Ear	
Skull Base	
All Conditions	

OK

Custom Sets: Exam Mode

When a Custom Set is active, Exam Mode can be utilised as in normal operation to hide the condition name and number.

14a When a Custom Set is Active, Simply tap the  symbol.

14b If a PIN has been set, the same PIN must be entered to active and deactivate Exam Mode. If the PIN is forgotten, see **13a Custom Sets: Forgotten Pin**.





Note that in order to exit a Custom Set when Exam Mode is active, Exam Mode must be deactivated first.

Exiting Custom Sets

15a To exit a custom set, tap the image of the condition. If a PIN has been set, this must be entered when prompted.

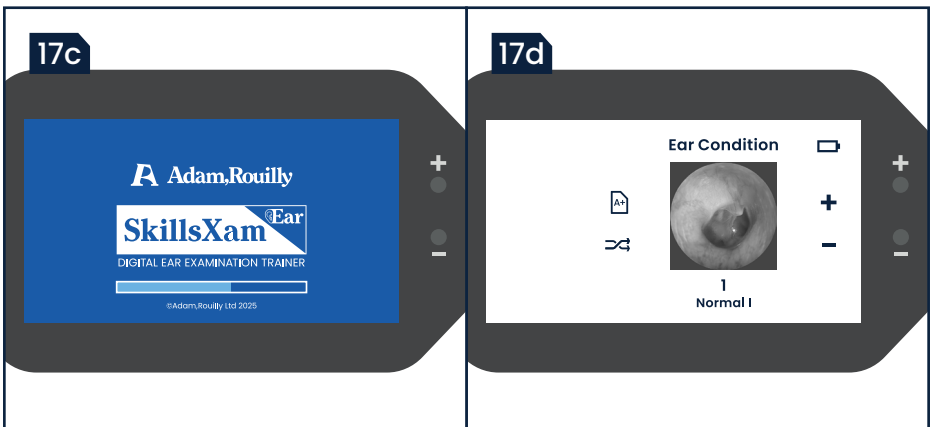
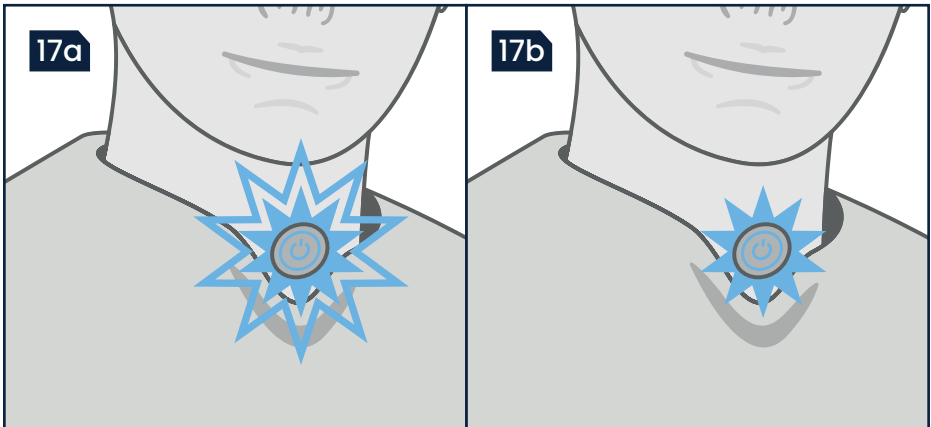
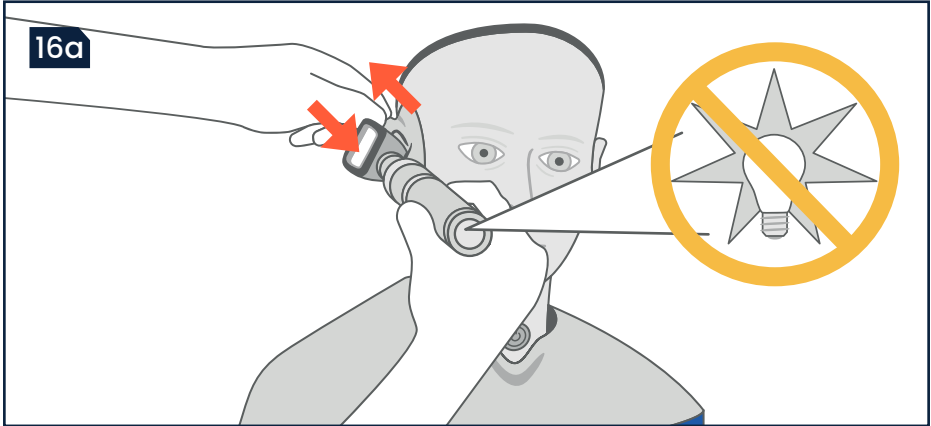
15b Tap the  button.

15c Tap the  button. The Condition Library screen is displayed – conditions can be browsed here once more, or tap the  button and the previously selected conditions will display.



Note that in order to exit a Custom Set when Exam Mode is active, Exam Mode must be deactivated first.

During Use



Otoscope Use and Flexible Pinna

16a An otoscope (not included) may be used to view each condition – insert the speculum into the ear canal with care.

The flexible pinna may be manipulated to straighten the ear canal.



Treat the ear with the same care you would a patient. Excess force may cause damage to the model.





For best clarity of display of the conditions, we recommend setting the otoscope light to “off”.

Sleep Mode

Sleep mode conserves power when the model has not been used for some time.



Note that utilising Exam Mode  (**Page 13**) automatically deactivates the Sleep Mode from functioning e.g. during a test scenario. Energy/battery use will therefore increase when Exam Mode is active.

Sleep Mode operates differently depending on which power source is used and Exam Mode  is not activated. After approximately 10 minutes:

17a

On battery power, the main touch screen and internal ear displays power down. The blue power LED flashes quickly.

17b

On low voltage power USB-C power, the main touchscreen and internal backlights turn off, but the screens remain powered. The blue power LED flashes slowly.

To wake, simply tap the Condition Up (+) or Down (–) buttons.

17c

On battery power there is a slightly longer wake time – the welcome screen will show briefly.

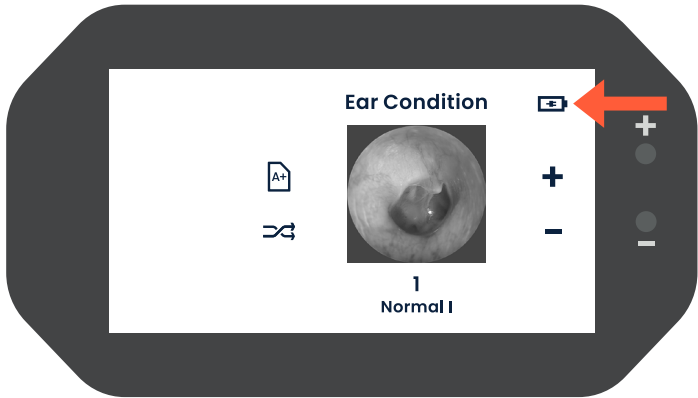
17d

On low voltage power USB-C power, there is a shorter wake time.

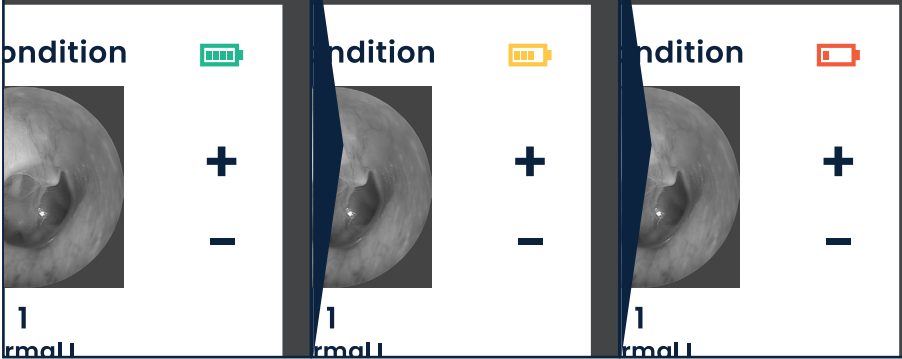


After exiting sleep mode, the device will display the last used Condition or Custom Set.

18a

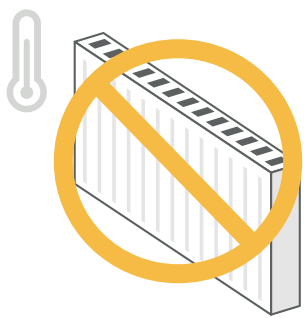
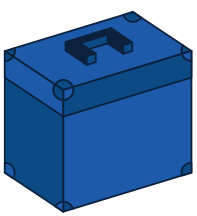


18b



After Use




19a



Power Indication

18a If USB-C power is being used the  symbol is displayed.

18b If battery power is being used, the indicator displays approximate battery capacity:

-  Indicates full battery power
-  Indicates sufficient battery power
-  Indicates low battery power. Replace the batteries as described on **Page 9**.



Do not power down and leave or store the trainer with batteries installed for prolonged periods. Always remove batteries before storage.

Using the Supplied Rigid Carrying Case

19a After use, or before transportation, the model should be placed with the head installed in the shoulder base and **upright** in the supplied **Rigid Carrying Case**.



The trainer contains sensitive electronic parts. Do not store near heat or where it may experience extremes in temperature, humidity or magnetic fields.

Safety in Training, Safety in Practice

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Should you require further information, please contact our Sales Department, who will be pleased to assist you with your enquiry.

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