

Apex Locator

Be Smart, Be Compact!

Dr's Finder

S m a r t A p e x L o c a t o r

Model : AL-DF10

User manual

Eng Kor

CE
0120

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1 Introduction

Thank you for purchasing the device. The instructions described below have been designed to provide the necessary information for the successful operation, daily maintenance and safety for the use of this device.

Features

- Color OLED screen
- Compact size
- Chargeable battery
- W.L.S (Working Length Select) function
- Linkable with smart device (Android OS / Bluetooth support only)

Description

This unit can be used to detect the apex of root canal.

2 Safety information

It is important to understand the following information to use this product safely.

Symbols



Indicates a potentially hazardous situation which, if not avoided, may result in serious injury or death.



Indicates a potentially hazardous situation which, if not avoided, may result in minor/moderate injury or in damage of property

Notes and References

Notes and References used in this manual are shown below.



Indicates that potential malfunctions may occur if the description is ignored.



Supplementary information to facilitate better operation.

2 Safety information

Installation and Connection



Warning

- The adapter should be disconnected from the device before connecting the power cable to prevent an electric shock.
- Keep away from source of ignition to avoid fire or explosion.
- Protect the device from any liquid to avoid electric shock or functional error.
- Place the device on a flat and stable surface. Do not drop device to avoid internal defect that may cause overheating or fire.
- Do not place the electric cord near a gas burner or sources of heat. Should the cord catch on fire, replace with the new one to avoid short-circuit.



Caution

- Do not use or leave the unit in areas of high temperature or exposed to direct sunlight, internal circuit defect may cause overheat or fire.
- Securely connect the dust-free power plug to the outlet.
- Use this device ventilated areas. Overheating may cause fire.
- Do not touch the terminal areas of device with finger or conductive objects, such as metal wire or safety-pin. It may electric shock or fire.
- Do not use any accessories other then supplied. It may cause fire or device malfunction.
- Make sure the cable, file hook, lip hook, and etc are securely plugged for each and device. A poor connection can prevent measurement.

2 Safety information

Operation



Warning

- Do not plug the power cord with wet hands. This may result in an electric shock.
- In case of fluid leak from battery or partial discoloration/deformation of the device, immediately discontinue use.
- Connect the cord to device when charging. Wrong directed placing may cause malfunction, explosion, or fire.
- In case of partial discoloration of device, immediately turn off the device and repair it.
- In case battery fluid contacts the eye, immediately flush with copious amount of clean water and seek medical attention.
- Do not use this product on a person with a pacemaker as it may cause malfunction of the pacemaker.
- Accurate canal measurement is not always possible depending on the shape and condition of the tooth as well as a decline in the equipment's performance.
- Do not use damaged accessories (file hook, probe cord, or etc.).
An accurate measurement can not be made with damaged accessories.
- A rubber dam should be used when performing endodontic treatment.
- Check the device operation before each patient. If the indicators in the display do not all appear normally, the device may not be able to make an accurate measurement. In this case, stop using the instrument and have it repaired.
- The measured figure on the display does not correspond to any actual distance and should only be used as estimates.
- Never connect this device to any device not approved by manufacturer.
- Never use the device if the battery power indicator is flashing on and off. The device may not function properly if the battery power is low.
- In some case such as a blocked canal, a measurement cannot be made.
- Always check the measurement with an x-ray. In some cases, an accurate measurement cannot be made because of the canal shape, unusual cases, or poor performance of the device.

2 Safety information

Operation



Warning

- Stop using the instrument immediately if you sense something odd or abnormal while taking a measurement.
- Do not use the device ultrasonic scaler with the lip hook attached to the patient. Electric noise from the scaler could interfere with canal measurements.
- Autoclave file hook and lip hook after each patient.
- On charging, it cannot make accurate measurement. Do not use the device on charging.
- Do not use or leave the unit in areas of high temperature or exposed to direct sunlight.



Caution

- Disconnect the power cord by grasping the power plug to avoid injuries or burns.
- Avoid damage or use of unnecessary force on the power cord and device. This may cause an electric shock, fire, or malfunction.
- Should battery fluid contact the skin or clothes, immediately wash it off with copious amount water to avoid skin damage.
- Turn off the device, when don't use it.
- Do not use this product for any purpose other than dental use.
- This device is not water prove. Be careful the device from the wet or liquid. In case of malfunction due to this case, it is not covered by warranty.
- Federal law restricts this device to sale by or on the order of a dentist (for U.S.A.).
- Blocked canals cannot be accurately measured.
- This device must not be connected to or used in combination with any other apparatus or system. It must be used as an integral component of any other apparatus or system. Manufacturer will not be responsible for accident, equipment damage, bodily injury or any other trouble which results from ignoring this caution.

- Illumination devices such as fluorescent lights and the Film viewer which use an inverter can cause the device to operate erratically. Do not use the device near devices such as these.
- Electromagnetic wave interference could cause this device to operate in an abnormal, random and possibly dangerous manner. Cellular phone, transceivers, remote controls and all other devices which transmit electromagnetic waves located inside the building should be turned off.
- Do not let the file touch the gums. This will cause the meter to jump to Apex.
- If the canal is extremely dry, the meter may not move until it is quite close to the apex. If the meter does not move, try moistening the canal with oxydol or saline.
- Occasionally the meter will make a sudden and large movement as soon as the file is inserted into the root canal, but it will return to normal as the file is advanced down towards the apex.
- The lip hook could cause an adverse reaction if the patient has an allergy to metals. Ask the patient about this before using the lip hook.
- Take care that medicinal solutions such as formalin cresol or sodium hypochlorite do not get on the file hook or the lip hook. These could cause an adverse reaction such as inflammation.
- Always clip the file hook to the upper part of file shaft, near the handle. The metal and plastic part of the file hook can be damaged if they are attached to the file's cutting part or the transition to the cutting part.
- Use files and reamers with plastic handles only. If the file has a metal handle, electrical leakage will occur when the handle is touched by fingers and it will prevent an accurate root canal measurement. Even if the file handle is made of plastic, make sure not to touch the metal part of the file with finger.
- Do not drop the device to avoid malfunction

2 Safety information

Maintenance



Warning

- Use only accessories supplied from manufacturer to avoid fluid leak, explosion, or malfunction.
- Do not disassemble or overhaul the device.
Unusual performance may cause injuries, electric shock, fire, or malfunction.
- Be careful from any liquid when cleaning.

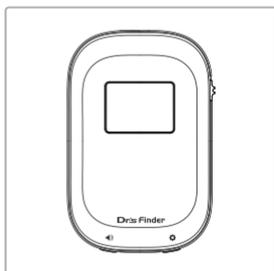


Caution

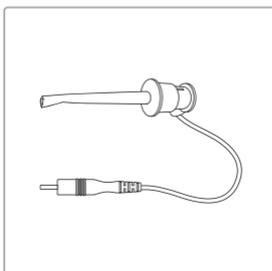
- Do not use solvent (containing orange oil, ethanol or acetone) when clean the device.
- User must be in charge of operation, maintenance and check.
- Do not autoclave the probe cord.

3 List of components

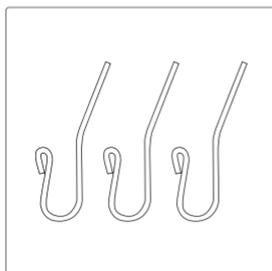
Please check the contents described below when removing the contents from the original packaging.



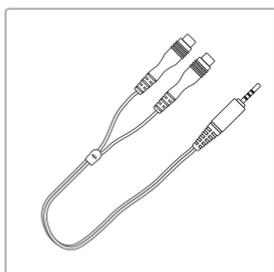
Main body



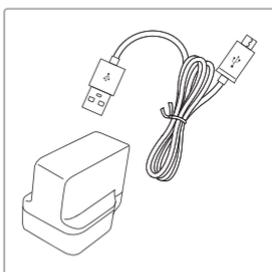
File hook



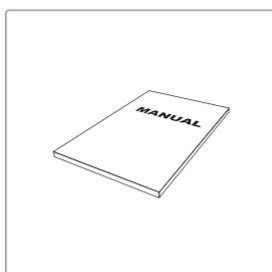
Lip hook



Probe cord

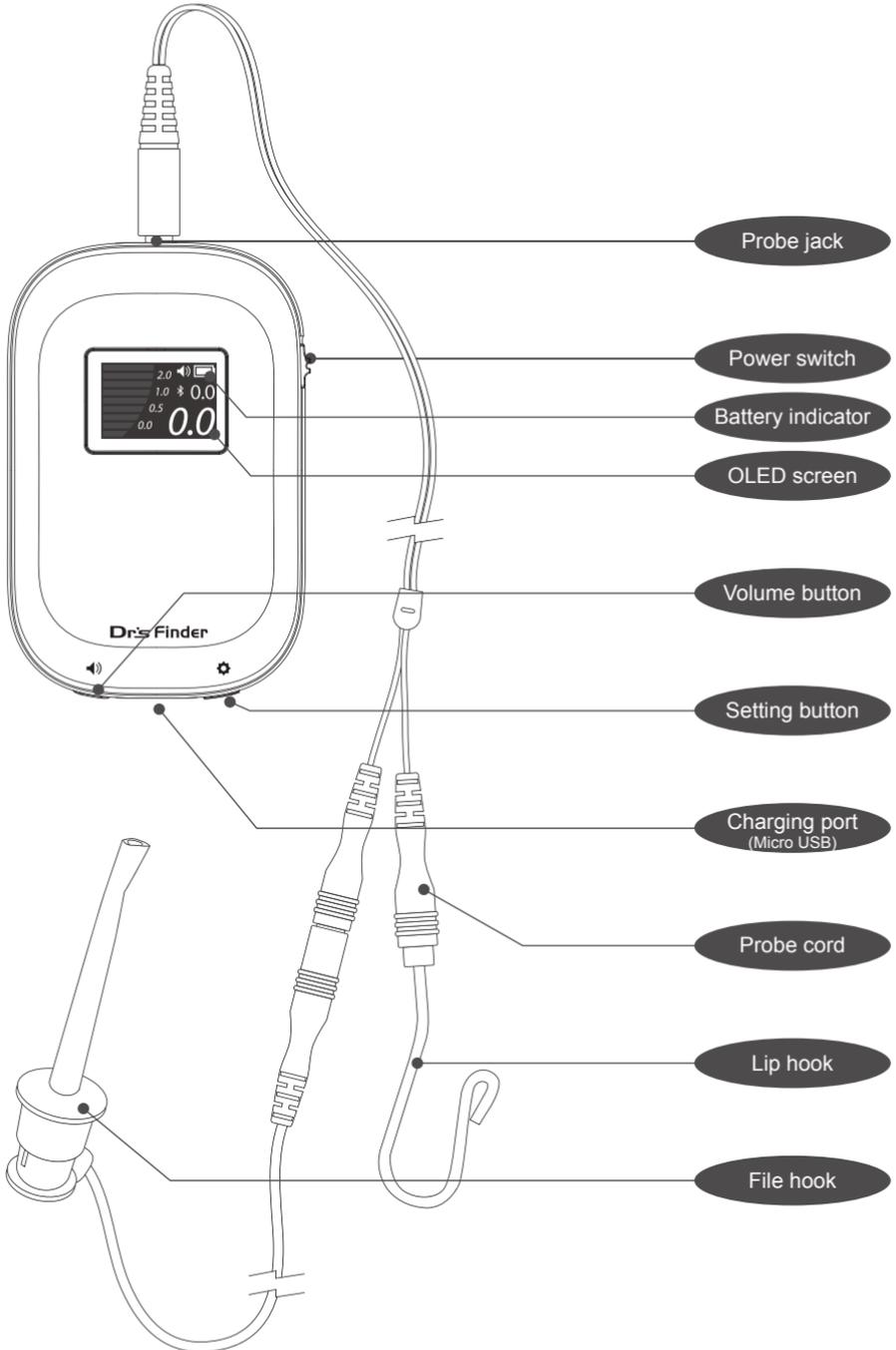


Adapter & cable



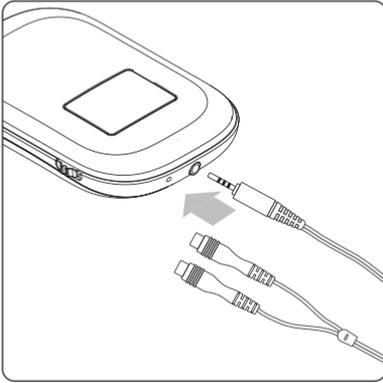
User Manual

4 Parts identification



5 Installation

1. Connecting the probe cord



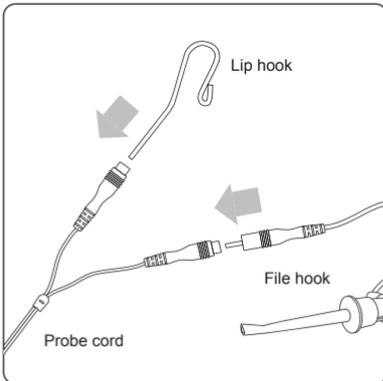
Insert the probe cord completely into the probe jack on the upper side of device carefully.



Note

- Make sure the probe cord plug is securely plugged into the probe jack. A poor connection can prevent measurement.

- Do not drop anything on or bang the probe cord plug after it has been inserted into the probe jack.



Insert file hook and lip hook into the probe cord.



Reference

- It doesn't matter connect the file hook and lip hook any female connector.

5 Installation

2. Checking the function

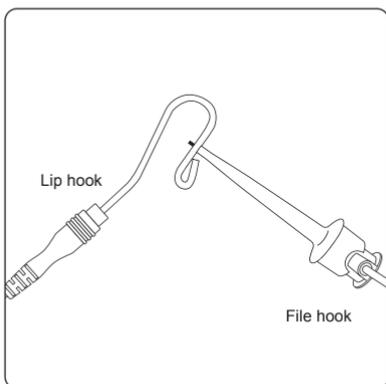


Turn on the power switch. The display will appear on OLED screen with beep sound.



Note

- To save battery, turn off the device when don't use it



Check that the probe cord is properly plugged in the jack. And check that the file hook and lip hook are properly connected to the probe cord. Then Touch metal part of the file hook with the lip hook. Check that all the meter bars on the display light up.

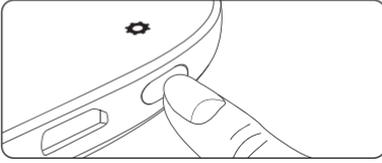


Warning

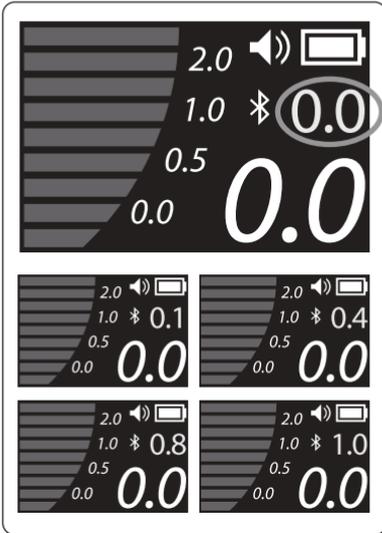
Check the device operation before each patient. If the indicators in the display do not all appear normally, the device may not be able to make an accurate measurement. In this case, stop using the instrument and have it repaired.

5 Installation

3. W.L.S. setting



Set the W.L.S. by pushing the setting button shortly.



The W.L.S. is shown little number. W.L.S. setting is not changeable even device is turned off.



Reference

- Can adjust the number from 0.0 ~ 1.0.
- The W.L.S. is can not be set beyond the Apex.
- The W.L.S. is memorized even the device is turn off.



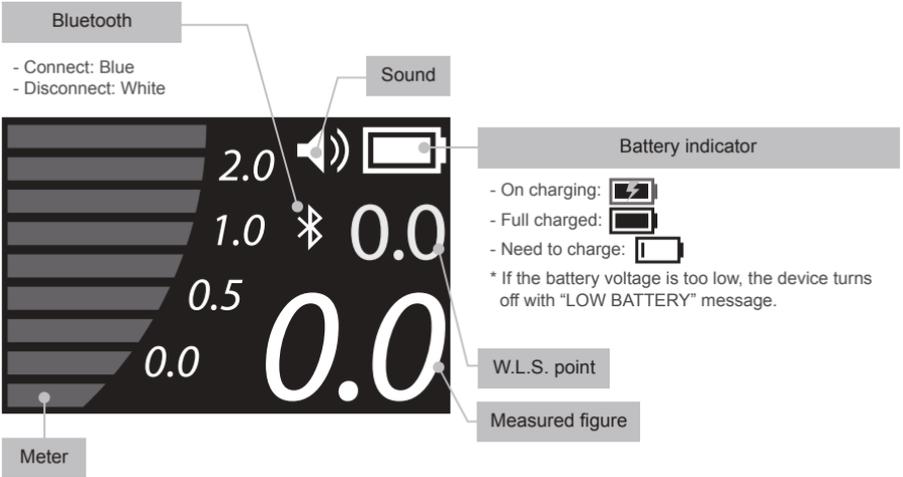
- The beep cycle is shorter as the file is closed for W.L.S.
- Initial W.L.S. is 0.0 (Apex)
- * The measured figure is on W.L.S. the beep sound cycle is every 0.2 sec. If it is beyond of W.L.S. make Bee~~ sound.

6 How to use



Never connect the device to any device not approved by manufacturer.

1. Operation display and buttons



The meter reading does not correspond to any actual distance and should only be used as estimates.



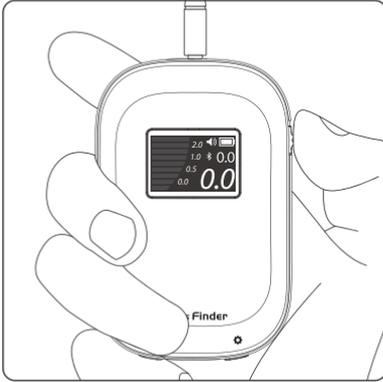
Sound button

Setting button

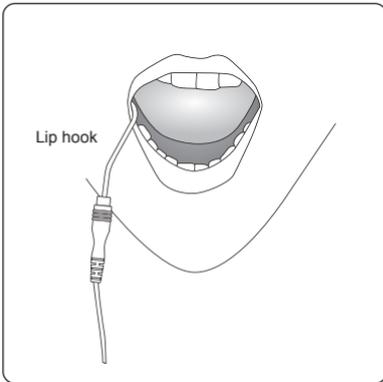
Short click : W.L.S. point change from 0.1 to 1.0.
Long click : Bluetooth On / off

6 How to use

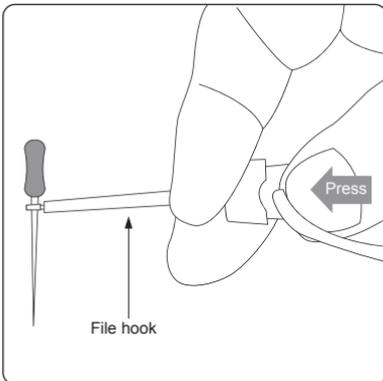
2. Operation



1) Turn the device on.



2) Hook the lip hook in the corner of the patient's mouth.

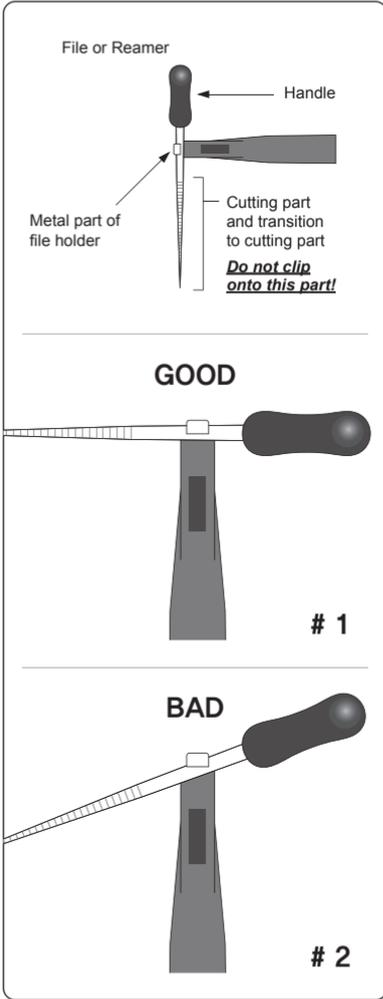


3) Clip the file hook to the metal shaft of the file.

- Press in direction of arrow with the thumb.
- Clip file.
- Release thumb.

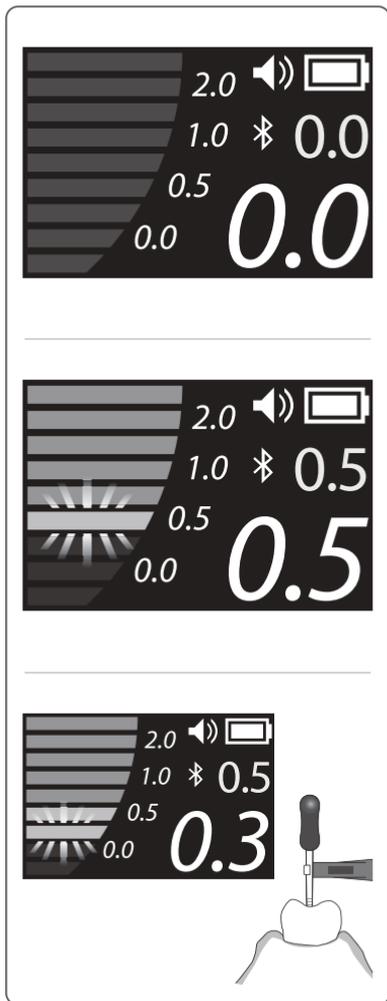
6 How to use

2. Operation



- Always clip the file hook to the upper part of file shaft, near the handle. The metal and plastic part of the file hook can be damaged if they are attached to the file's cutting part or the transition to the cutting part.
- Use files and reamers with plastic handles only. If the file has a metal handle, electrical leakage will occur when the handle is touched by fingers and it will prevent an accurate root canal measurement. Even if the file handle is made of plastic, make sure not to touch the metal part of the file with finger.
- Do not use damaged file hook. An accurate measurement can not be made with a damaged file hook.
- Clip the file as shown in illustration #1 to the left, if the file is in the position shown in illustration #2, it may not make a correct measurement and the file hook could be damaged.

6 How to use



4) Determine the working length.

- The beep sound is changed as measured figure.
- * The working length will differ somewhat depending on each individual tooth. This discrepancy must be judged by the dentist as he works on the tooth.



Note

Make sure to take x-ray to check the results.



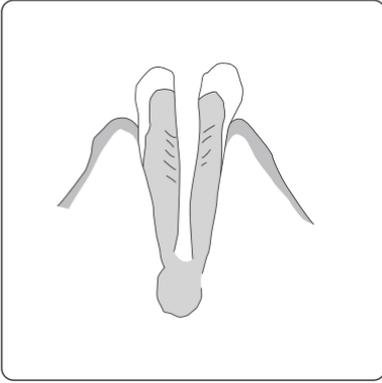
Reference

The beep sound is changed as measured figure.

6 How to use

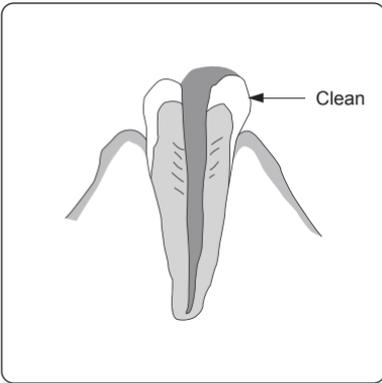
3. Root canals not suitable for electronic measurement

Accurate measurement cannot be obtained with the root canal conditions shown below. There may be cases other than these where an accurate measurement cannot be made.



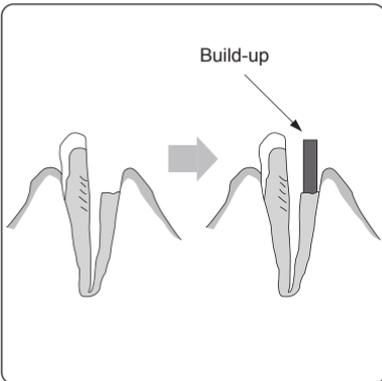
Root canal with a large apical foramen

Root canal that has an exceptionally large apical foramen due to a lesion or incomplete development cannot be accurately measured; the results will show shorter measurement than the actual length.



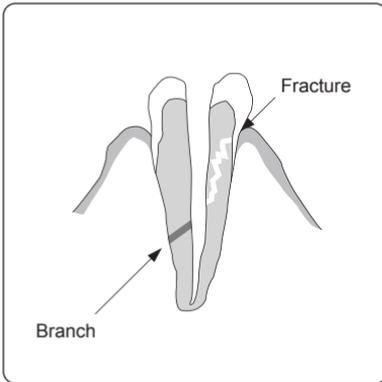
Root canal with blood, saliva or a chemical solution overflowing from the opening

If blood, saliva, or a chemical solution overflows from the opening of the root canal and contacts the gums, this will result in electrical leakage and an accurate measurement cannot be obtained. Wait for bleeding to stop completely. Clean the inside and opening of the canal thoroughly to get rid of all blood, saliva and chemical solutions and then make a measurement.



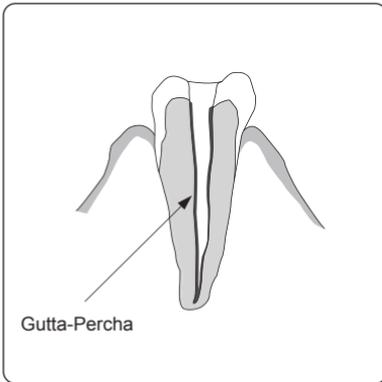
Broken crown

If the crown is broken and a section of the gingival tissue intrudes into the cavity surrounding the canal opening, contact between the gingival tissue and the file will result in electrical leakage and an accurate measurement cannot be obtained. In this case, build up the tooth with a suitable material to insulate the gingival tissue.



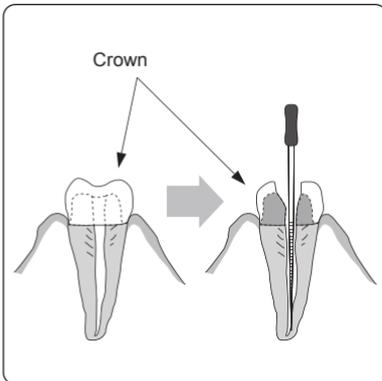
Fractured tooth
Leakage through a branch canal

Fractured tooth will cause electrical leakage and an accurate measurement cannot be obtained. A branch canal will also cause electrical leakage.



Re-treatment of a root filled with gutta-percha

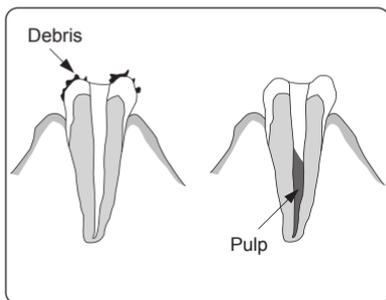
The gutta-percha must be completely removed to eliminate its insulating effect. After removing the gutta-percha, pass a small file all the way through the apical foramen and then put a little saline in the canal, but do not let it overflow the canal opening.



Crown or metal prosthesis touching gingival tissue

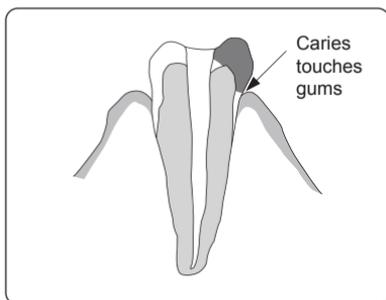
Accurate measurement cannot be obtained if the file touches a metal prosthesis that is touching gingival tissue. In this case, widen the opening at the top of the crown so that the file will not touch the metal prosthesis before taking a measurement.

6 How to use



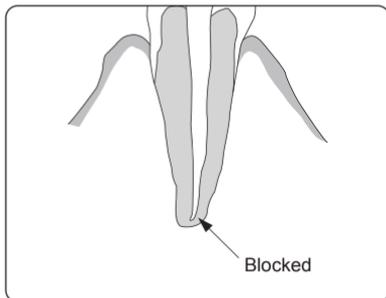
Cutting debris on tooth Pulp inside canal

Thoroughly remove all cutting debris on the tooth.
Thoroughly remove all the pulp inside the canal;
otherwise an accurate measurement cannot be made.



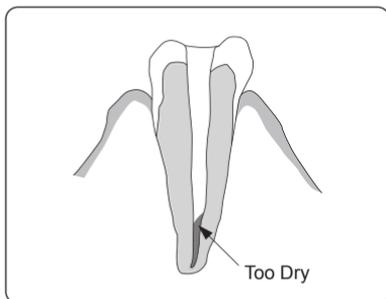
Caries touching the gums

In this case, electrical leakage through the caries infected area to the gums will make it impossible to obtain an accurate measurement.



Blocked canal

The meter will not move if the canal is blocked.
Open the canal all the way to the apical constriction
to measure it.



Extremely dry canal

If the canal is extremely dry, the meter may not move
until it is quite close to the apex. In this case, try
moistening the canal with oxydol or saline.

6 How to use

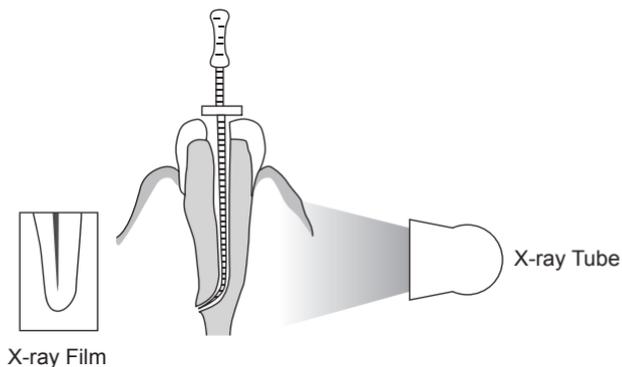
4. Reading and radiography

Sometimes the device meter reading and the x-ray image will not correspond.

This does not mean that device is not working properly or that the x-ray exposure is failure.

* Occasionally, the actual apical foramen does not correspond exactly.

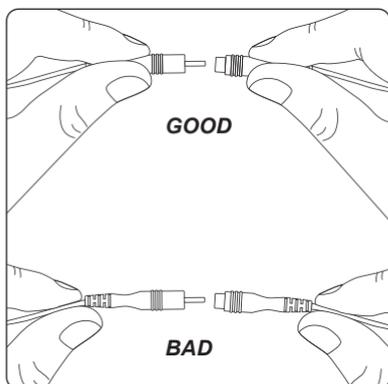
The actual apical foramen may be located up towards the crown. In these case, the x-ray image will seem to indicate that the file has not reached the apex.



Apical foramen is located up towards the crown.

* Depending on the angle of penetration of the x-ray beam, the apex may not appear correctly, and the position of the apical foramen may appear to be located differently than it actually is.

5. After using the device



1) Turn the device off

2) Disconnect the probe cord and other cords or cables.



Note

- Do not pull directly on the cords when connecting or disconnecting the probe and file hook. Always grip the connectors to connect and disconnect cords.

- Do not wrap the probe cord around the body of the main unit.

6 How to use

6. Charging

Connect the AC adapter cable to charging port (Micro USB)



Reference

- Charging time is around 0.5 ~ 1 hour with AC adapter.
- Charging is possible with USB power from the PC.
At this case, the charging time is around 1 ~ 2 hours.



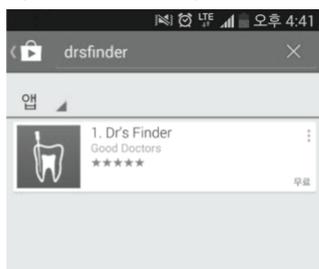
Warning

- On charging, it cannot make accurate measurement. Do not use the device on charging.

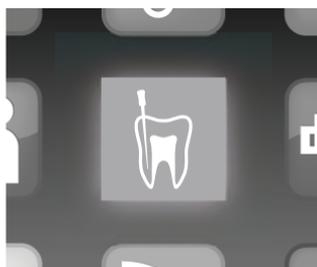
7. Connect android device

* If user has android device (mobile or tablet), can use the device to see bigger screen by bluetooth connection.

1) Download "Dr's Finder" app from App store.
(Fine with "drsfinder")



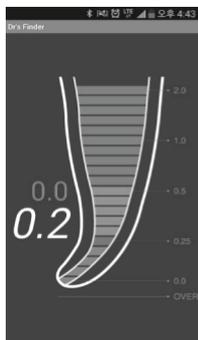
2) Launch the "Dr's Finder" app.



3) Select the device. And it will be linked.



Select device.



Standby to use.



Note

The reaction measure figure would be delayed as the android device environment.

Sterilization

1. Autoclaveable components

- File hook
- Lip hook

Recommended temperature and time: 135C (275F), 6 minutes minimum with a sterilization pouch.

Minimum drying time after sterilization: 10 minutes



Warning

Autoclave file hook and lip hook after each patient.



Note

- Do not sterilize in any way other than autoclave.
- Autoclave and dry at 135°C, but do not exceed that temperature.
- The file hook and lip hook must be thoroughly washed and cleaned before autoclaving.
- Any chemical or foreign debris left on instruments could cause them to malfunction or could cause discoloration.
- It is highly recommended that instruments be autoclaved in a sterilization pouch (wrapped) or similar device.
- Do not autoclave probe cord.
- Follow the manufacturer's recommendations to disinfect files.

2. Disinfect surface of main unit and probe cord

- Clean the device gently with a clean, soft, lint-free cloth.
- Do not use solvents or any liquid when clean the device. The device is not waterproof.
- Do not use sharp or pointed tool to clean, as they may damage or scratch the device.
- Remove restorative material gently with plastic spatula. Avoid using sharp tools to clean the main unit.



Warning

- In case change battery, please contact local dealer or Good Doctors.

8 Troubleshooting

If the device not works normally, please refer to the following points.

Problem	Check points	Response
No power	Check the battery power	Charge the battery
Cannot make a measurement.	Check cord connection. Check probe cord, file hook for broken wire.	Check that all connections are properly secured. Touch the lip hook to the file hook to check probe cord conductivity.
No sound.	Check if sound is turned off	Turn the sound on.
Cannot W.L.S.	Does the button work?	Switch may be broken.
Display does not appear.	Check the battery power.	If it is not battery power problem, the OLED may be malfunctioning.
Measured figure is unstable.	Is lip hook making good contact with oral mucosa? Is the file hook dirty?	Make sure the lip hook makes good contact with the oral mucosa. Clean the file hook.
Measured figure overreacts or is too sensitive. (Measurements are too short. Poor accuracy. Erratic results.)	Is blood or saliva overflowing from the opening of the crown? Is the canal filled with blood, saliva or chemical solutions? Is the tooth surface covered with cutting debris or chemical solutions? Is the file touching the gingival tissue? Is there pulp tissue left inside the root canal?	If blood or other fluids overflow the canal, the current will leak to the gums and the meter will jump to apex. Clean the canal, canal opening and tooth crown thoroughly. The meter bar may suddenly swing when it breaks the surface of fluids inside the canal, but it will return to normal as the file is advanced down toward the apex. Clean entire tooth surface. This will cause the meter bar to suddenly jump all the way to the "APEX". Accurate measurements cannot be obtained if a large amount of pulp tissue is left inside the root canal.

8 Trouble shooting

	<p>Is the file touching a metal prosthesis?</p> <p>Are proximal surfaces infected with caries?</p> <p>Are there lateral canals or is the tooth fractured?</p> <p>Does a broken crown allow leakage of electric current?</p> <p>Is there lesion at the apex?</p> <p>Is the file hook broken or dirty?</p>	<p>Touching a metal prosthesis with the file allows a flow of current to gingival tissue or periodontal pocket and will cause the meter to jump to the "APEX".</p> <p>Current can flow through the caries infected area to the gums and prevent and accurate measurement from being made.</p> <p>The meter bar may jump to "APEX" when it reaches the opening of a lateral canal of the opening of a fractured tooth that allows the current to flow to the gingival tissue.</p> <p>Build up an insulating barrier to stop the leakage.</p> <p>A lesion can destroy the apical foramen through absorption and an accurate measurement cannot be obtained.</p> <p>Replace or clean the file hook.</p>
<p>Measured figure does not move at all or only when the file tip is close to the apical foramen</p>	<p>Is the canal blocked?</p> <p>Is the apical foramen very large and open?</p> <p>Is the canal extremely dry?</p>	<p>Open the passage all the way through the apical constriction first and then take the measurement.</p> <p>If the apical foramen is large or wide open and not completely formed, the measured figure will suddenly jump when the file tip gets close to the apex.</p> <p>Moisten the canal with oxydol or a saline solution.</p>

* If the user is unable to inspect the device himself or if the device fails to work properly after being adjusted or after parts are replaced, contact local dealer or manufacturer.



Reference

- How to check the serial number.



S/N : AF 08140211

9 Specification

Equipment Class

Model:	AL-DF10
Trade name:	Dr's Finder
Power supply:	3.7V Lithium-polymer
Safety:	IEC60601-1
EMC (Electro-Magnetic Compliance):	IEC60601-2
Protection from electric shock:	Type BF 
Protection from ingress of liquids:	IXPO (ordinary equipment)

Operation, transport, and storage condition for the main unit

Operation conditions

Ambient temperature range:	+10C ~ +40C / 50F ~ 104F
Relative humidity:	30 ~ 80 RH % without condensation
Atmospheric pressure range:	800 ~ 1060 hPa

Transport and storage conditions

Ambient temperature range:	-10C ~ +70C / 14F ~ 158F
Relative humidity:	8~80 RH% without condensation
Atmospheric pressure range:	700 ~ 1060 hPa

Additional Information

Main unit	Length / Weight	Approx. 55 x 85 x 21 mm / Approx. 56 g
File hook	Length	Approx. 200 mm (included hook tip)
Lip hook	Length	Approx. 65 mm
Probe cord	Length	Approx. 1.3 M
AC adapter		5V 1A

Symbol



This device conforms with the European Directive, 93 / 42 / EEC which includes the requirements for electromagnetic compatibility



This symbol is applied to fulfill the requirements of EU Directive 2002/92/ED Article 11. This equipment cannot be disposed of as unsorted municipal waste within the European Union. Follow local regulations for disposal.

SN

Serial number
SN OO OO OOOO
Month / Year / Lot No.



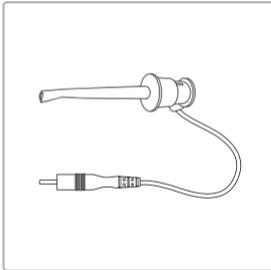
Attention,
consult accompanying documents.

9 Specification

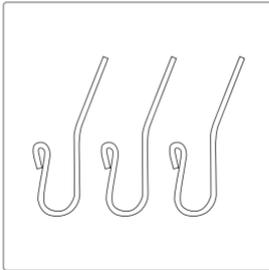
	Type BF applied part (File hook, Lip hook)		Manufacturer
	Prevent by wet.		This box is paper recyclable.
	Do not device on place where get direct sunshine.		Fragile item
	Transport and storage temperature.		No hooks

EC REP Authorized representative in the European Community

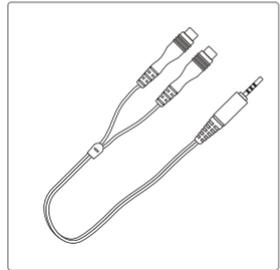
10 Accessories



File hook



Lip hook



Probe cord

11 Warranty

This product is only shipped after strict inspection. Should the product incur any problems under normal use conditions within on year form the date of purchase, the repair will be free of charge. However, repair of accessories (File hook, Lip hook, Probe cord, batteries, or transportation costs) are not covered by the warranty. For more information refer to the 12. Warranty card.

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E-mail : info@gooddrs.com Website : www.gooddrs.com



We guarantee the quality of the product as follows

Name of product :

Name of model :

Customer information

- Office name :
- Office phone :

Distributor

- Dealer name :

Assurance period

- Date of purchase : from _____ , 20____
- Product is for 1 year except accessories.

< Assurance details >

1. If there is any defect of manufacturer or product has any fault itself within the assurance period, it will be replaced with the same product.
 - Malfunction and damage according to user's carelessness.
 - Malfunction and damage according to natural disaster such as fire, earthquake and flood etc.
 - Malfunction and damage according to user's intention or accident.
 - Malfunction and damage according to using incompatible product.
3. The manufacturer does not accept any liability resulting misuse.



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