

# Root ZX3 [HF Module] – Quick Guide

## Precautions

2023-12-21 Pub. No.: K337-80009-501 (en)



**⚠ WARNING** This device is a dental electrosurgical unit (electric scalpel). Be sure to read the Instructions for Use carefully before use.

**Do not use this device on patients with a pacemaker or artificial cochlea.**

Do not use this device on patients who have a pacemaker, ICD (Implantable Cardiac Defibrillator), or cochlear implant. Be sure to ask the patients about this before starting treatment.

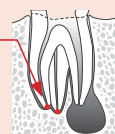
**Do not conduct high-frequency repeatedly to the same position.**

(Limited to 3 times. If you wish to conduct high-frequency more than 3 times, wait a couple of minutes to allow the vicinity of the conduction target to cool down.)

Avoid performing high-frequency conduction repeatedly, taking particular care near the apex.

• To prevent damage to bones or the periodontal membrane.

• If there is no bony defect, do not conduct high-frequency at the apex. (For example, conduct high-frequency at least 1 mm above the apex.)



\* Before conducting high-frequency, make sure that the mandibular canal or the mental foramen is not located in the vicinity of the electrode with X-ray or CT images. Otherwise, nerves or blood vessels may be damaged.

**Prevention of temperature rise at the contact area of the contrary electrode.**

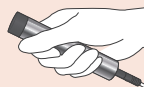
• Wide Contrary Electrode:

If the corner of the patient's mouth is dry, try moistening it with a piece of gauze dampened with water. (Do not use ethanol [70 vol% to 80 vol%]; it will dehydrate.)



• Grip:

Guide the patient to hold the grip securely with their palm. Partially holding the grip is not enough area for proper conduction and it could result in burns to the patient.



## ⚠ CAUTION

**Do not conduct high-frequency if the root canal has a chemical solution overflowing from the opening.**

There is a risk of electrical leakage through the chemical solution to the gums.

**Protect coated HF files and tips.**

Do not use HF files/tips for apical patency or canal shaping. This will result in peeling off the file coating. The high-frequency conduction can be made even though the file coating has been peeled off, but depending on where it is applied, this may result in the current not being focused efficiently on the contaminants.



Wide Contrary Electrode  
Never use with M5.

Grip

\* Be sure to read the accompanying Instructions for Use before using the Root ZX3.

\* Always wear personal protective equipment (PPE), such as safety glasses, gloves, a mask, etc. when using this device.



## Memory \* Use M3 or M4 during treatment under anesthesia.

Memory	Display	Conducting Time	Example	
M1	EMR			1. Apex location 2. Working length determination
M2	LOW	0.2 sec. × 5 times		1. Caulterization of contaminants or infected tissues inside the canal for patients who cannot be anesthetized. 2. Caulterization of contaminants or infected tissues for patients at levels not high enough to require anesthesia. 3. Without anesthetizing the patient, cauterization of remaining contaminants or infected tissues prior to root canal filling.
M3	MID	1 sec.	Retreatment	1. After the irrigation protocol, cauterization of contaminants and infected tissues. 2. Before root canal filling, cauterization of contaminants and infected tissues. 3. Caulterization of contaminants and infected tissue within the pathological lesion.
M4	HIGH	1 sec.	Initial Treatment	1. Caulterization of dental pulp and residual pulp, and hemostasis. 2. Caulterization of infected granuloma, and hemostasis. 3. Caulterization of contaminants and infected tissues when unable to achieve apical patency.
M5	CUT.x	Max. 10 sec.		1. Gingivectomy for gingival retraction 2. Gingivectomy for gingival polyp 3. Common gingivectomy

## High-Frequency Conduction Result Screen

After a high-frequency conduction, a message may be displayed in the message indicator for 5 seconds. When the message turns off, you can conduct high-frequency again.

**UNDER** High-frequency conduction has been completed, but the electric current was small; conduct high-frequency again.

\* Clean the HF file before conducting high-frequency.

The **UNDER** message may come up again after re-conduction.

• **The conducted current was below the predetermined value.**

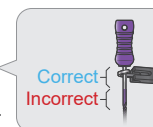
► Perform high-frequency conduction again.

• **The battery pack is under-charged.**

► Perform high-frequency conduction again. After that, if the battery indicator shows only one bar, charge the battery pack.

• **The HF file holder is clipping the coated part of the HF file.**

► Clip the HF file holder onto the metal upper part of the HF file (close to the handle), and then perform high-frequency conduction again.



• **Protein substances adhering to the surface of the HF file.**

► Clean the HF file or replace it with a new one, and then perform high-frequency conduction again.

• **The wiring inside the HF probe cord is damaged.**

► Check the following points:

1. Set the memory to M1.

2. Touch the wide contrary electrode with the HF file holder's contact or HF endo tip.

3. Check if all the apex location indicator bars are lit up.

\* If all the apex location indicator bars do not light up, have the device professionally inspected and repaired.

**OVER** The conducted current was above the predetermined value.

► Overcurrent has been detected and conduction is stopped.

• M2/M3/M4:

Move the conduction position towards the crown side and try again. Vacuum up any blood and chemical solution inside the canal.

• M5:

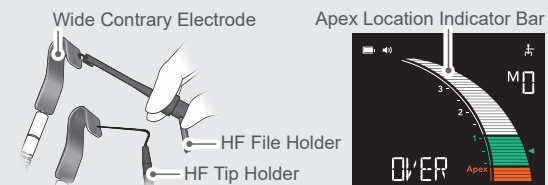
Adjust the conduction position and try again.

**FAIL** Stepping on the foot switch too briefly.

► Keep stepping on the foot switch until the beep stops. Perform high-frequency conduction again.

**LOB** The battery pack is under-charged or worn out.

► Charge the battery pack or replace it with a new one.



Wide Contrary Electrode

Apex Location Indicator Bar

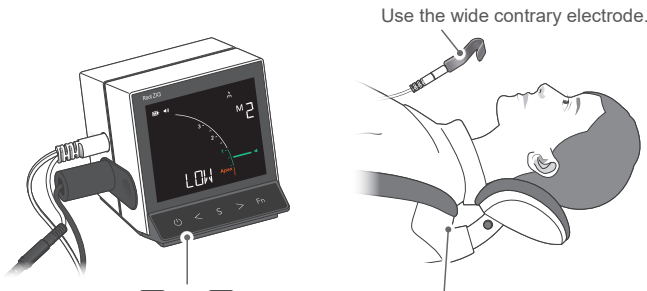
HF File Holder  
HF Tip Holder

# Operation

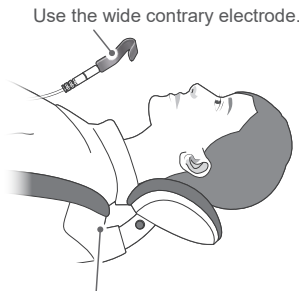
As an example, procedures for dental pulp cauterization (from the apex to 3 mm crown side) and cauterization of contaminants or infected tissues will be shown. Since the effective range of cauterization is limited, move the treatment position appropriately. Treatment procedures and orders may need to change depending on each case.



For more information, scan the QR code. ▶



Press either ◀ or ▶ to select the memory number.

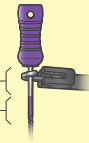


Use the wide contrary electrode.  
Turn the chair lock switch on if available. (This is to prevent unintended movement during the procedure.)

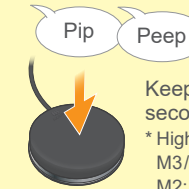
## • High-Frequency Conduction

### HF File

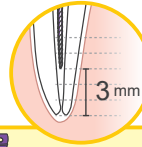
**Correct:** Metal Part (just below the handle)  
**Incorrect:** Coated Area (The coated area is insulated.)



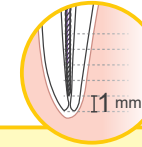
Have the patient securely hold the grip, and tell the patient to prepare before high-frequency conduction.



Keep stepping on the foot switch (for 1 second or more) until the beep stops.  
\* High-Frequency Conduction Time  
M3/M4: 1 sec.  
M2: 0.2 seconds x 5 times



Use X-ray images as a reference, conduct high-frequency for 1 second at approx. 3 mm above the apex.



Conduct high-frequency for 1 second at least 1 mm above the apex.  
\* For symptoms without a bony defect, never conduct high-frequency at the apex. (For example, conduct high-frequency at least 1 mm towards the crown side.)

## Initial Treatment

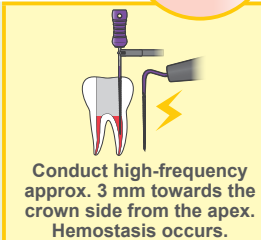
Dental pulp cauterization

Memory: **M4**

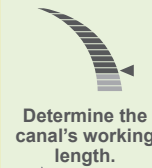
Anesthesia



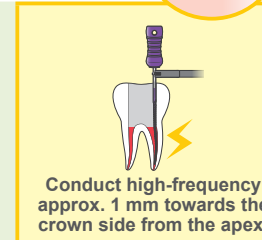
Open the pulp chamber, and perform coronal flaring.



Conduct high-frequency approx. 3 mm towards the crown side from the apex. Hemostasis occurs.



Determine the canal's working length.



Conduct high-frequency approx. 1 mm towards the crown side from the apex.



Remove pulp, Perform canal shaping ▶ Irrigate the canal



Apply pastes and perform canal filling.

## Retreatment

Cauterization of contaminants or infected tissues at the apex.

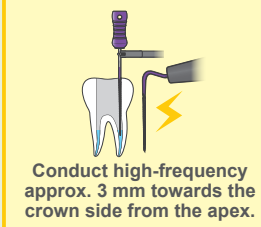
Without a bony defect  
Memory: **M3**



Anesthesia (If necessary.)

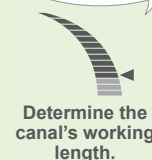


Remove fillings (ex., gutta-percha, calcium hydroxide paste) ▶ Irrigate the canal

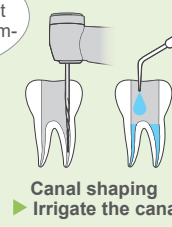


Conduct high-frequency approx. 3 mm towards the crown side from the apex.

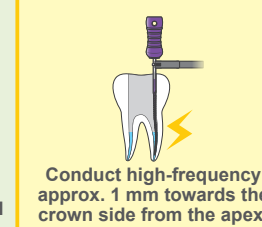
Apex location can be performed without changing memory numbers.



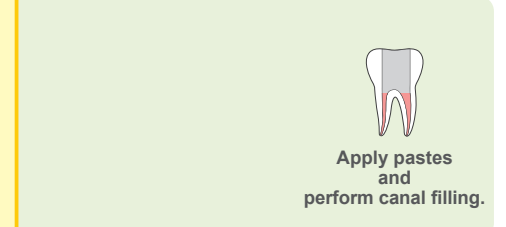
Determine the canal's working length.



Canal shaping ▶ Irrigate the canal



Conduct high-frequency approx. 1 mm towards the crown side from the apex.



Apply pastes and perform canal filling.

## Retreatment

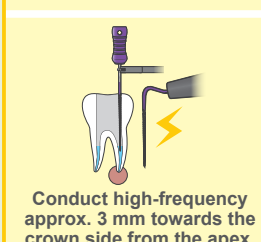
Cauterization of contaminants or infected tissues at the apex.

With a bony defect  
Memory: **M3**

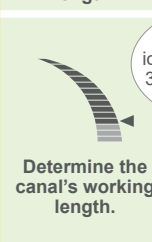


Anesthesia (If necessary.)

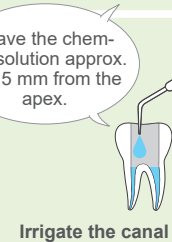
Leave the chemical solution up to the conduction position (approx. 3 to 5 mm from the apex).



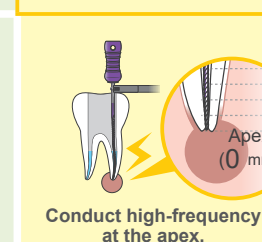
Conduct high-frequency approx. 3 mm towards the crown side from the apex.



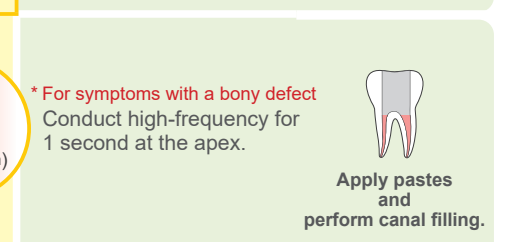
Determine the canal's working length.



Irrigate the canal



Conduct high-frequency at the apex.



\* For symptoms with a bony defect  
Conduct high-frequency for 1 second at the apex.

Apply pastes and perform canal filling.

## Incision and Excision

Memory: **M5**

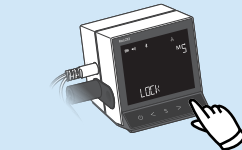
Anesthesia



Never use the wide contrary electrode.



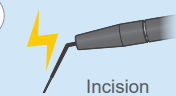
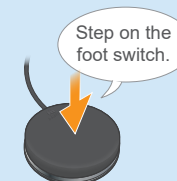
Never use M5 inside the canal.



Press **Fn** to unlock the function.



Have the patient securely hold the grip.



Incision or Excision (Max. 10 sec.)

PDF documents ▶

