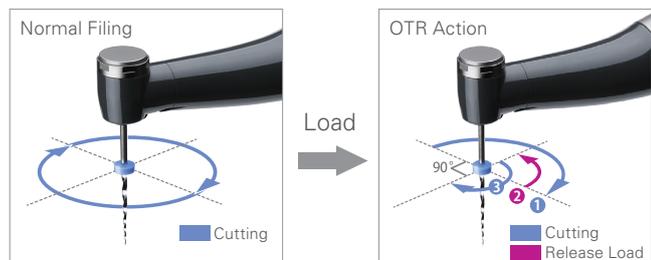


### What is OTR (Optimum Torque Reverse)?

The ROOT ZX II OTR Module prepares root canals while helping to prevent file jamming inside the canal.

#### OTR Function Illustrations



Load is less than torque setting  
Filing is performed normally.

Load exceeds torque setting  
File reverses for 90° then moves forward 180°, and repeats as necessary.

OTR offers a safer and more efficient method for canal preparation. OTR reduces the possibility of:

1. File breakage
2. Ledge formation in curved canals
3. Canal transportation

Also, when the handpiece is linked to the apical reverse or stop function, the working length of the canal can be properly prepared without damaging the apex.

Since the ROOT ZX II OTR system automatically switches from regular filing to OTR action depending on the shape and condition of the file, filing efficiency is not greatly reduced. Also, the instrument can be used in regular mode for pre-flaring.

**Files that cut during forward rotation must be used.**

### Usage

#### 1. Power

Press the **POWER** button to turn on the unit.

#### 2. Memory Selection - OTR Mode

Press the **MODE** button to set the memory to the OTR mode. You may select either M1 or M2 for the file's appropriate rotation speed.

#### Factory Setting for Memories

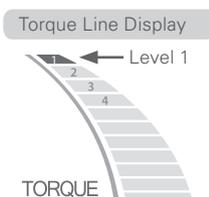
Setting	Memory		
	M1	M2	M3
Rotation Mode	OTR	OTR	Normal
Speed (rpm)	300	500	250
Torque Line (Level) *	1	1	3

- If the OTR release action is triggered before inserting the file in the canal, raise the torque line by one level.
- To change the memory parameters, refer to the Operation Instructions (Settings and Changing Memory).

\* Set value to trigger the OTR action.

#### 3. Check Torque Bar Reading

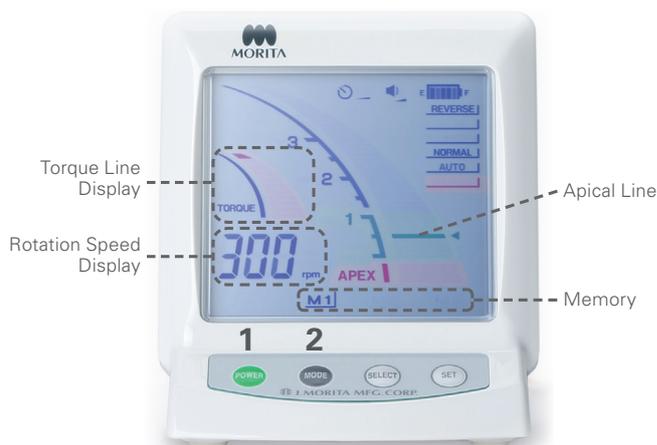
The torque line should be set at 1 and the file used with a vertical motion (pecking motion).



#### 4. Start Filing

Step on the foot switch to start the motor handpiece.

- In OTR mode, "300" appears in the rotation speed window when the motor is running.



- ⚠ For the OTR mode, the torque line setting represents the torque level when the handpiece starts rotating. It is easier to switch over to the OTR mode when this is set at a low level. A low torque setting will not have much influence on the actual torque applied. In the OTR mode, filing can reach the ROOT ZX II's maximum torque of 3.5 N/cm so filing efficiency will be the same.

- ⚠ If the OTR function is triggered before the file is inserted in the canal, increase the torque line setting.

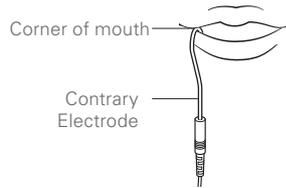
## Linkage with Canal Measurement Function (No Foot Switch)

When the contrary electrode is hooked in the corner of the patient's mouth, the location of the file tip can be monitored while shaping the canal.

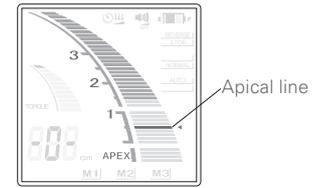
Also, the motor can be set to stop or reverse when the file reaches the point designated by the apical line.

Refer to the Operation Instructions for how to set the apical line (Settings and Changing Memory).

### Contrary Electrode Placement



### Monitor Display



## Effective OTR Procedure - Pecking Motion

### 1. Pre-Flaring

Perform pre-flaring if necessary. For pre-flaring select M3 with the **MODE** button for standard file rotation.

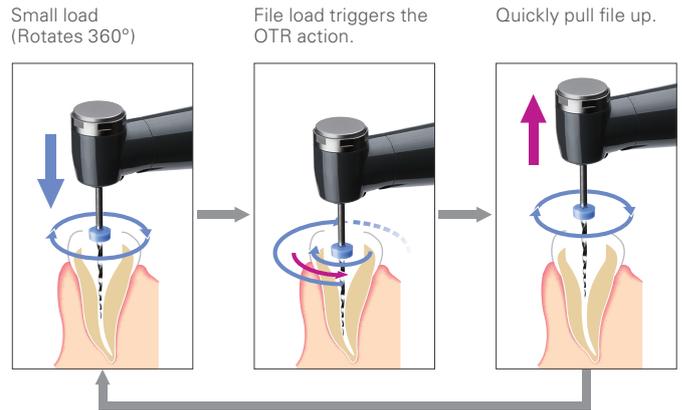
### 2. Glide Path

To make a glide path, use the OTR function or hand files manually. Use a pecking motion with the OTR function.

### 3. Most Effective Use

For the most effective use of the OTR function, move it delicately up and down in a pecking motion as you advance down the canal without letting the file rotate in a stationary position. (See illustration to the right.) Wipe the file from time to time to keep the teeth from getting clogged with filing debris.

### OTR Mode Pecking Motion Illustrations



## Possible Order of File Usage (After Making Glide Path)

The OTR function can be used with files that cut in a clockwise (CW) direction.

Recommended OTR Start Torque line: "1" For speed, follow the file manufacturer's recommendation.

EndoWave		
Step	File	Setting
1. To end of working length	#25 t04	OTR Start Torque line: 1 Speed: 300 rpm
2. To end of working length	#30 t04	
3. To end of working length - 1 mm.	#35 t06	

Pro Taper NEXT		
Step	File	Setting
1. To end of working length	X1 (#17 t04)	OTR Start Torque line: 1 Speed: 300 rpm
2. To end of working length	X2 (#25 t06)	
(3. If necessary)	X3 (#30 t07)	

BioRaCe		
Step	File	Setting
1. To end of working length	BR1 (#15 t05)	OTR Start Torque line: 1 Speed: 500 rpm
2. To end of working length	BR3 (#25 t06)	
3. To end of working length	BR4 (#35 t04)	
(4. If necessary)	BR5 (#40 t04)	

TF Adaptive		
Step	File	Setting
1. To end of working length	SM1 (#20 t04)	OTR Start Torque line: 1 Speed: 500 rpm
2. To end of working length	SM2 (#25 t06)	
(3. If necessary)	SM3 (#35 t06)	

These procedures are for use with the OTR mode; they differ from the file manufacturer's recommendations. Adapt usage depending on the condition of the root canal. The product names used in this manual are the brand names or registered trademarks of each manufacturer.

**\* This Quick Guide is a simplified explanation of how the OTR function works. Do not fail to read the Operation Instructions before using this instrument.**

\* Specifications may be changed without prior notice due to improvements.

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