

EQ-M



Sales message

EQ-M is a **High-performance Cordless Endodontic Motor**
with *Patented ART MOTION* that increases file fracture resistance by 25% or more

1. Patented unique movement: *ART MOTION*

2. High-performance with *Swiss-made motor*

3. *No more waiting* during treatment for charging

- *Extra battery* provided

4. User friendly design for reducing user's fatigue

- *Ergonomic design, light weight (130g, including battery & contra angle)*

5. Optimized contra angle

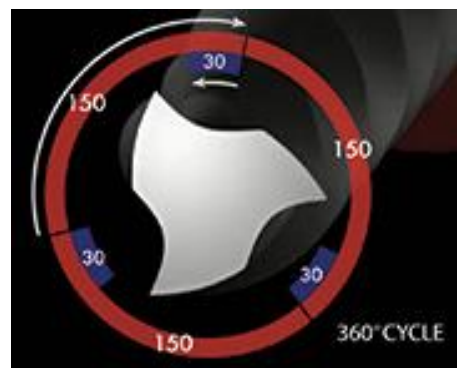
- *Developed by Meta Biomed*

6. *'Light Guide' function* when connected with EQ-Pex

Feature & Benefit

#	Feature	Benefit	Customer Value	
1	Patented unique movement (ART Motion)	- Reduce fractures of the NiTi files	- Reduce the anxiety about the treatment	
2	High-performance (Swiss-made motor, Meta-developed contra angle)	- Increase longevity of the device - Ensure consistent performance	- Increase customer satisfaction	- Increase the quality of the treatment - Cost-effective
3	User-friendly Design	- Reduce the fatigue of the user		
4	Additional high-quality battery included	- No more waiting during the treatment for charging	- Increase the quality of the treatment	- Reduce treatment time
5	“Light Guide” with EQ-Pex	- Accurate diagnosis available		- Increase treatment success

Motor control method



Adaptive Motion Technology



Rotary: 600° clockwise and 0° counterclockwise file motion when no load is applied.



Reciprocation: 370° clockwise and up to 50° counterclockwise file motion when load is applied.

— Cutting Direction
— Non-Cutting Direction



- If the torque applied exceeds the set torque, the risk of file breaking increases.

To avoid this issue, competitors control the motor by 'decreasing/stopping' or by changing 'direction of the rotation'.

→ This method is prone to motor and battery damage due to excessive load on the device.

→ It requires a special file designed for the specific motor.

→ Root canal and file damage may occur if the rotation is reversed over the set torque.

<Competitors' motor control method>

■ Patented unique movement: **ART Motion**

(Patent name: Endodontic motor control method of dental handpiece, No. 10-2021-0040579)

Alternative Rotation Technique (ART) MOTION by Meta Biomed



- 50% provided for additional cutting force

- ART Motion is a new concept of motor control that reduces the load on the file and the root canal by dividing it into multiple procedures, like refining jewelry.
 - Rather than changing the rotation direction of the motor, it **increases the rotation speed by 30%**.
 - This reduces the density of the debris and **reduces the possibility of root canal and file damage** by controlling it to operate in certain forms of reverse rotation in case of excessive torque.
 - Comparing the continuous rotation, the rate of file fracture resistance **increases by 25% and more**.

High-performance: Swiss-made motor



maxon

maxon DC motor Technology – short and to the point

- The maximum permissible winding temperature
→ 125°C In high temperature
(155°C in special cases)
→ Otherwise 100°C or 85°C
- Life of the Motor
→ 20,000 hours under favorable conditions
→ 1,000 to 3,000 hours with average requirements
(500hours for general Chinese motor)

Ref: Maxon DC Motor Technology Report

- The most important factor in Endo Motor is how the device can maintain the quality until the time to replace.
- Unlike most other competitors', EQ-M uses the **Swiss-made motor** with **excellent performance**, ensuring torque **safety** and **up to 3,000 hours of performance**.

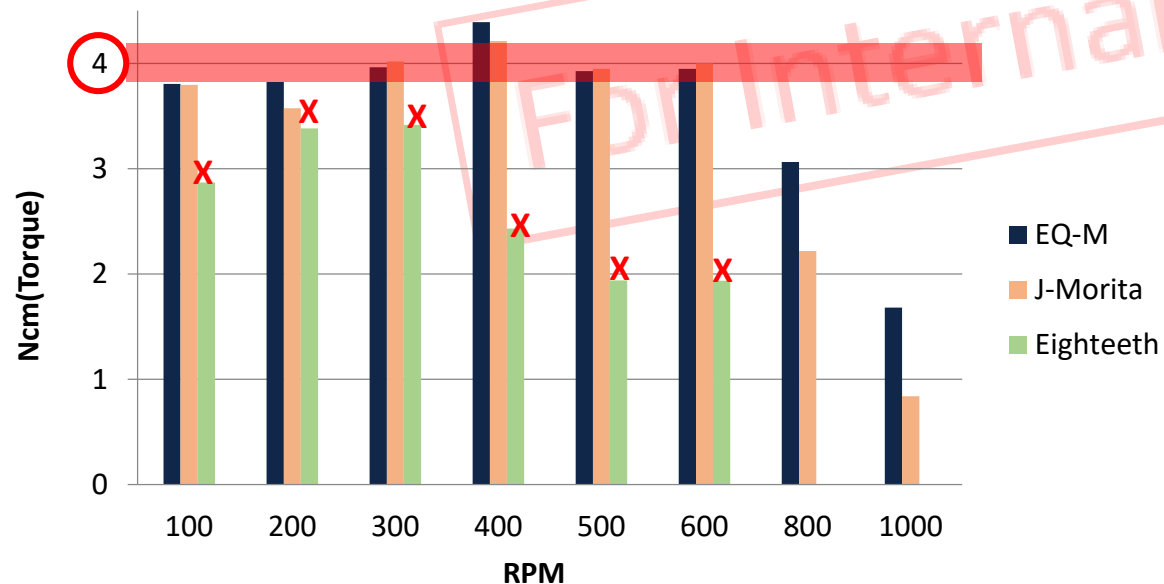
(Guaranteed up to 6x of the motor's life compared to Chinese motor)

- There is no magnetic detent and very minimal electromagnetic interference in the motor (The Maxon Winding)
- Up to 90% more efficient than other motor systems.
- EQ-M is capable of implementing a steady speed, without the degradation of the torque set, and is safe even if it's overheating.
- No wonder there is **much less noise and vibration**.

High-performance: Swiss-made motor

[Actual torque output per RPM at 4Ncm setup]

	RPM	100	200	300	400	500	600	800	1000
Device	EQ-M	3.9	3.9	4.1	4.1	4.1	4.1	3.1	1.7
	J-Morita	3.8	3.6	4.0	4.2	3.9	4.0	2.2	0.8
	Eighteenth	2.9	3.4	3.4	2.4	1.9	1.9		



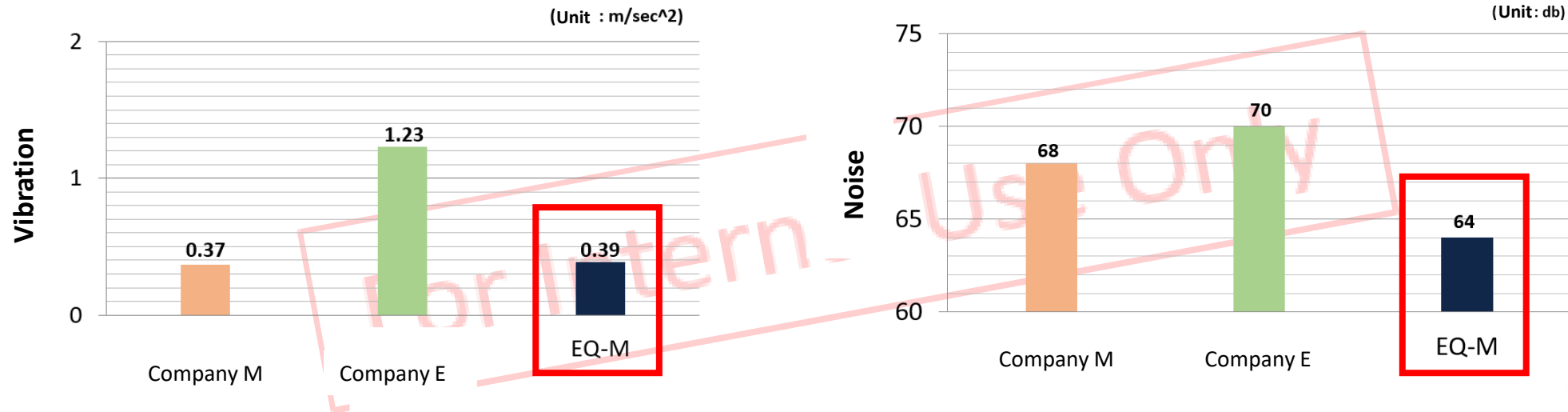
- The competitors' devices used in the experiment can set higher torque, but it can't actually output as much as the torque is set.
- EQ-M is designed to implement speeds of up to 600 RPM when setting 4Ncm to ensure accuracy of the output set by the user.

[EQ-M RPM and torque settable range]

	Torque Settable Range (Ncm)			
RPM	1.0 Ncm	2.0 Ncm	3.0 Ncm	4.0 Ncm
100 – 600 RPM	○	○	○	○
650 – 800 RPM	○	○	○	
850 – 1000 RPM	○	○		

High-performance: Swiss-made motor

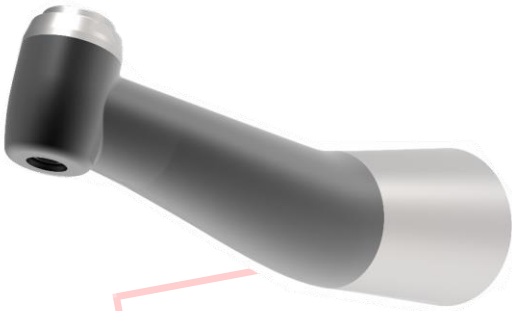
[Vibration, noise test result]



- Vibration: Set to 600RPM, 2Ncm
 Measurement result of button part vibration
 comparison of each unit
 → EQ-M vibration is 0.39 m/sec²,
 1/3 of Chinese products

- Noise: Set to 600RPM, 2Ncm
 In each unit's Angle to Unit connection,
 Side 5 mm noise measurement results
 → EQ-M is the quietest

High-performance: Contra angle



- Meta Biomed own-developed contra angle provides best performance when combined with EQ-M.
- 360 degree rotation angle can respond freely to movements during the treatment.
- Special plastic with PBT+PC+Glass Fiber used is highly chemical and heat resistant and avoid discoloration/deformation of appearance even with more than 250 sterilizations.
- Also, It is highly insulating, providing accurate measurements when connecting with our new Apex locator, **EQ-Pex**.

User-friendly design



Weight: 130g

- 20% lighter than iPhone 12 (162 g)
- 7% lighter than Tri Auto ZX2 (140 g)

- EQ-M is **ergonomically designed** to improve the performance of the user.
- The main (power) button, located directly where the fingers are located when the instrument is held, **further enhances the performance.**
- Anyone can easily set up the device as the Mode (function) button is simplified.
- **130g of ultralight** also significantly reduces user's fatigue during treatment.

■ High-quality extra batteries (2EA)



- 2 high-quality batteries are provided to avoid wasted time during treatment.
- Additional batteries can be plugged into the back of the included cradle and charged.
- 1 hour of continuous use guaranteed. (500 RPM, 2Ncm conditions)
- Ensures maximum performance of the instrument for a year
(one charge per day, 3-400 charge assumptions in total)

“Light Guide” with EQ-Pex



When connecting with EQ-Pex, Apex locating is also available on EQ-M.

- Light from the **main button of EQ-M** and **File Holder B of EQ-Pex**.

The "Light Guide" function allows intuitive **verification of measurements (status)** and **accurate diagnosis in real time during the treatment**.

→ **Provided with a total of three color guides: blue, yellow, and red**
(order by closest to the Apex)



EQ-Pex (2021 4Q)

Specification

General Specification

Item	Description
Protection from Electric shock	Internal power supply type device and Class 1 Equipment / Type BF Applied Part (Contra Angle)
Waterproof rating	IPX0
Battery	Lithium-ion battery

Environmental Information

Item		Description
Operation	Temperature	10 – 35°C (50 - 95°F)
	Humidity	30 – 75%
	Atmosphere pressure	700 – 1060hPa
Storage and transportation	Temperature	-20 – 60°C (-4 - 140°F)
	Humidity	5 – 90%
	Atmosphere pressure	700 – 1060hPa

Components List

Motor handpiece, Contra angle, Charger, Battery, Protective sleeve, Power cord, AC/DC Adapter

Device Specification

Item		Description
Motor handpiece	Speed Range	100 – 1,000 RPM
	Torque Range	1.0 – 4.0 Ncm
	Rated Input	3.7Vdc / 800mAh (Lithium-ion-battery)
	Dimensions	202 X 28 X 28mm (including battery, contra angle)
	Weight	130g (including battery, contra angle)
	Operation Mode	Continuous operation
AC/DC Adapter	Input voltage	100 – 240V, 50 – 60Hz
	Output voltage	9.0Vdc
	Output current	2.0A

Recommended root canal instrument according to ISO 1797-1:
Nickel-titanium files, suitable for 360° rotation,
shaft diameter 2.35mm (type 1)