ApexPilot® G3

Endo Motor

Instruction for Use

Beyes
CANADA

Table of Contents

1. Product Introduction 2
2. Warning and Safety 4
3. Installation 5
4. Operation 8
5. Parameter Setting 11
6. Screen Display 16
7. Automatic Reverse Function 20
8. Canal Measurement Operation 21
9. Troubleshooting 23
10. Cleaning, Disinfection and Sterilization 23
11. Storage, Maintenance and Transportation 25
12. Environmental Protection 27
13. Signs 27
14. Statement 28
15. Beyes Limited Warranty Statement 28
16. Technical Specification 30
17. EMC-Declaration of Conformity 31

1. Product Introduction

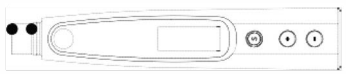
1.1 Features:
- Cordless portable endo motor with built-in apex locator
- 300 degrees rotation of contra angle
- Adopt real-time feedback technology and dynamic torque control
- Compatible with most major brands rotary files
- Auto apical reverse/stop

1.2 Intended use
ApexPilot G3 is a cordless endo motor with a built-in apex locator. It can be used for preparation and enlargement of root canals, or measuring canal length.

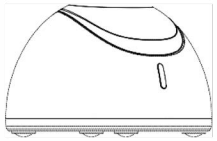
1.3 Scope of application
1.3.1 The device can be used for preparation and enlargement of root canals, or measuring canal length.
1.3.2 The device must be operated by licensed dental professionals

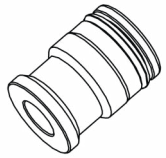
1.4 Contraindication
- Patient or doctor with a pacemaker
- Patient with hemophilia
- Patient with heart disease

1.5 Package includes

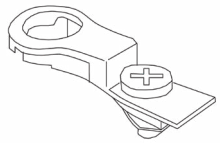

Motor handpiece

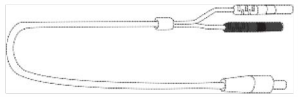

Contra-angle

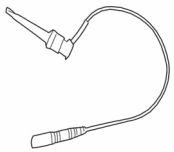

Charging base

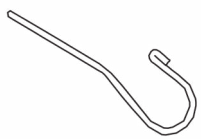

Spray nozzle


Power adapter


Built-in Electrode

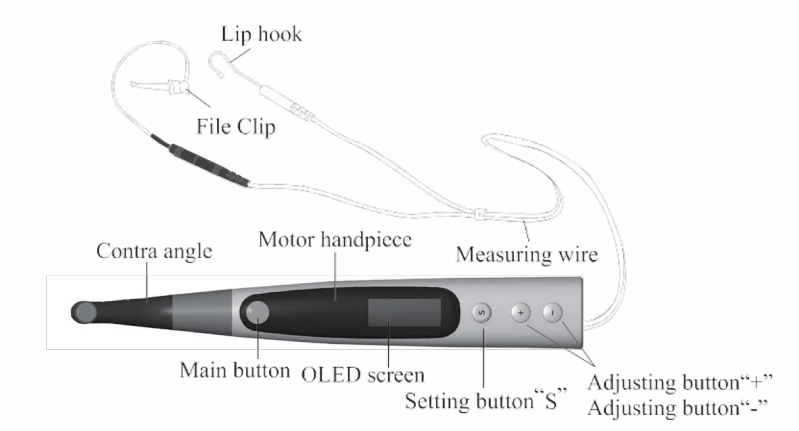

Measuring wire


File clip


Lip hook


Touch probe

Diagram of components and control buttons



2. Warning and Safety

Warning

- Please read instruction manual before operating this device
- This device should be operated only by licensed dental professionals.
- Do not directly or indirectly place this device near heat source.
- This device requires special precautions regarding electromagnetic compatibility (EMC) and must be in strict accordance with the EMC information for installation and use. Do not use this equipment especially in the vicinity of fluorescent lamps, radio transmitting devices, remote control devices, handheld and mobile high-frequency communication devices.
- Extended use of Reciprocating Mode may result in motor overheat
- Use the original contra angle
- Do not make any changes to this device. Any changes may violate safety regulations, causing harm to the patient
- Use original power adapter. Other power adapters will result in damage to lithium battery and control circuit.
- This motor handpiece cannot be autoclaved. Use disinfectant of neutral pH value or ethyl alcohol to wipe down surface.
- Do not remove contra angle before motor stops. This may cause damage to handpiece and contra angle.
- Secure the file before starting.
- Set torque and speed as per the recommended specifications of file manufacturer.

- Follow instructions in this manual to replace battery and only replace with original lithium battery.
- Remove battery from the handpiece for long-term storage
- Heat builds up while charging. Do not touch the handpiece or charging base for more than 10 sec during charging.
- Make sure screw on file electrode is secured. Loose screw can pose choking hazard for children.
- Use caution when inserting and removing files to avoid injury to fingers

Safety

- Do not use device in the presence of a flammable anesthetic mixture with air, oxygen, or nitrous oxide.
- Do not continuously use contra angle with patient for longer than 10 minutes. The temperature of contra angle may reach 46.6°C. Allow time to cool down before further use.

3. Installation

3.1 Battery

Handpiece has built-in lithium battery. It charges wirelessly through the base.

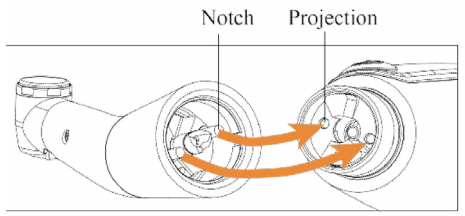
- Plug in power adapter and connect it to the charging base
- Seat handpiece on the charging base
- Blue light flashing indicates device is charging
- When fully charged, green light will stay on.

3.2 Contra angle

- The contra angle adopts precision gear transmission, and the transmission ratio is 1.8:1.
- Clean and disinfect with disinfectant of neutral PH value before the first use.
- Clean and disinfect after each patient use
- Sterilize under 134°C, 2.0~2.3bar (0.20~0.23MPa).
- Contra angle in package only fits ApexPilot G3. It does not fit other handpiece

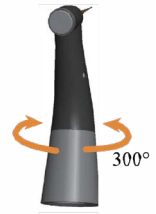
3.2.1 Installation of contra angle

- Align the notch of the contra angle with the projection holes of the motor
- Push the contra angle into the motor until there is an audible "click"



Warning

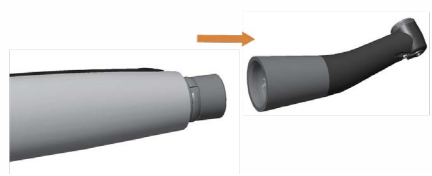
The contra angle does not rotate freely.
The max angle of rotation is 300°.
Do not rotate pass the stopper.



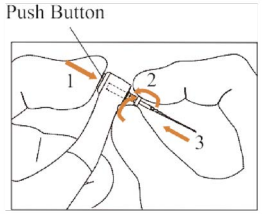
Warning

After installation, give the contra angle a light tug to make sure that it is securely attached before starting motor.
Stop the motor before plugging in the contra angle.

3.2.2 Removal of contra angle
Pull out the contra angle horizontally when the motor handpiece is off.



3.3 File
Installation of file
1. Insert file into the chuck
2. Push button
3. Rotate file to fit the latch groove and slip in
4. Release push button to lock file
5. Pull file to ensure filed is locked

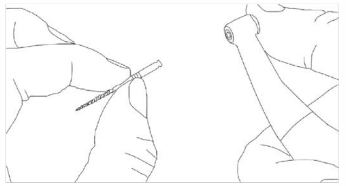


Note:
Use files with shanks that meet the ISO standard. (ISO standard: Ø2.334 – 2.350 mm)

Warning

Insert and remove file without holding the push button may damage the chuck of contra angle.

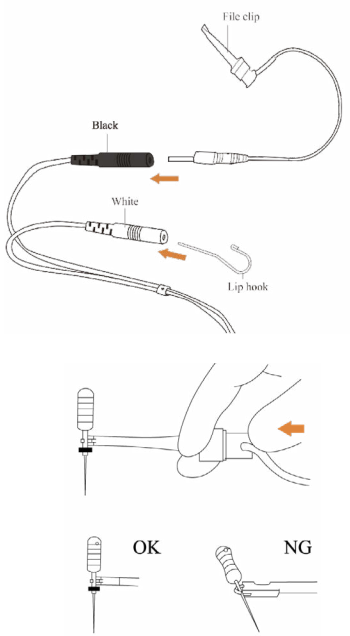
Removal of file
1. Press the push button
2. Pull out the file



Warning

Stop motor before plugging and pulling out the file.
Removing files without holding the push button will damage the chuck of contra angle.

3.4 Apex Locator – measuring wire
Install only if canal measurement function is used.
Connect measuring wire



Motor combines apex locator
Connect lip hook to white jack

Plug the measuring cable (USB) to G3 motor

Standalone apex locator
Connect lip hook to white jack and file clip to black jack

Clip on the metal part of file

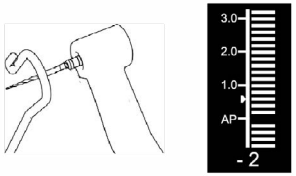
Plug the measuring cable (USB) to G3 motor

Test connection

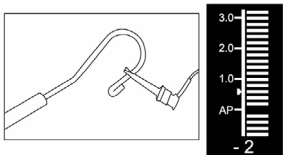
Make sure the screw is tight
Otherwise, canal measurements might not be accurate.

Warning:

Loosened screw may pose choking hazard for children



Motor connected with apex locator
a. Turn on the device
b. Touch the hook to the file
- Canal length indicator should show full bar
- Set mode to CW mode and apical action to reverse
- Motor should reverse when touching

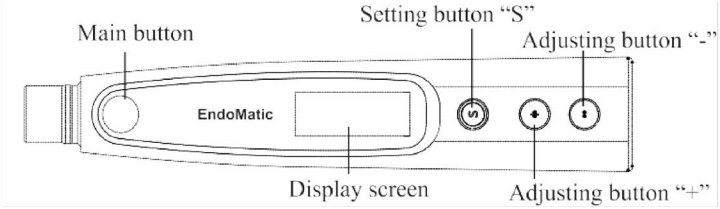


Standalone apex locator
a. Turn on the device
b. Touch the hook to the clip
Canal length indicator shows full bar

Warning:

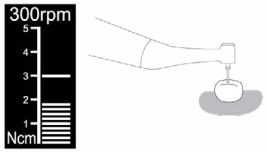
Connection testing should be done before each use.

4. Operation

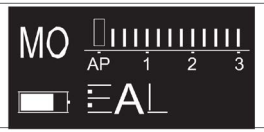
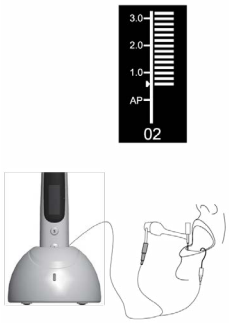
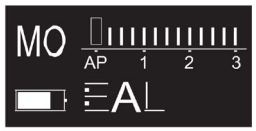


ApexPilot G3 has built-in apex locator. It can operate as a standalone endo motor, a standalone apex locator or motor with built-in apex locator.
When endo motor is connected to apex locator, as file reaches canal nerve, apex locator alarm will go off and G3 end motor will stop or reverse motor according to defined setting.

4.1 Endo motor
Operation for CW, CCW, REC and ATR

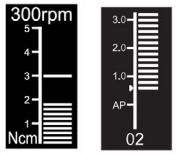
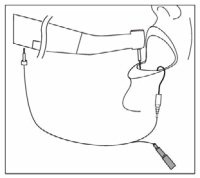
	Press Main to turn on device
	Standby screen **Warning:** In custom setting, all parameters should follow the file requirement for proper operation. Press Main to start motor
	**Operating screen – motor alone** Motor runs with set speed and torque Moving bars from bottom up shows the file torque Press Main to stop motor
	Standby screen Hold "S" and press Main to turn off device

4.2 Apex locator (as standalone device)
In Electronic Apex Locator (EAL), G3 motor does not rotate nor respond to apex.

	Press Main to turn on device
	Standby screen G3 motor does not rotate in EAL mode
	Operating screen – apex approaching the screen turns to a scale showing canal measurement state when approaching apex.
	Standby screen Screen turns back to standby

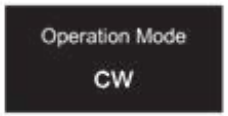
4.3 Endo motor and apex locator
Install lip hook for apex locator (see Installation),

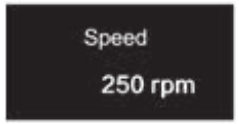
	Press Main to turn on device
	Standby screen Warning: All parameters should follow the file requirement for proper operation. Press Main to start motor

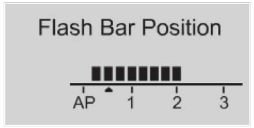
 	Operating Screen – motor combine canal measurement When the motor is running, the screen shows speed and torque. When apex is approaching, the screen turns to a scale showing canal measurement. Motor response according to the apex setting. Press Main to stop motor
	Standby screen Hold “S” and press Main to turn off device

5. Parameter Setting

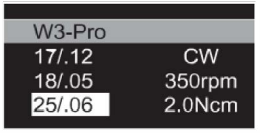
5.1 Custom setting on M0-9
M0-M9 is a memory program to store operation mode (CW, CCW, REC, ATR, EAL) and the available parameters.
Note:
Example shows M0 with CW mode.
(See Screen Display for available options)

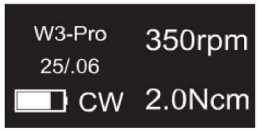
	Standby screen Press “+”/”-“ to change screen among M0-9 Press “S” to show operating mode and available parameter.
	Operating Mode Blinking is the current mode and ready to change Press “+”/”-“ to change among CW, CCW, REC, ATR, EAL Press “S” to accept and show available parameters for selected mode Or press Main to accept and exit without changing the parameters

	Parameter 1 – speed of motor Blinking is the current setting Press “+”/”-“ to change number (Press and hold to speed up) Number reaching highest goes back to lowest. Vice versa. Press “S” to accept and go to the next available parameter Or press Main to accept and exit without going next parameter
	Parameter 2 – torque limit of motor Press “+”/”-“ to change number (Press and hold to speed up) Press “S” to accept and go to the next available parameter Or press Main to accept and exit without going next parameter
	Parameter 3 – apical action options Press “+”/”-“ to select option Off, Reverse, Stop Press “S” to accept and go to the next available parameter Or press Main to accept and exit without going next parameter
	Parameter 4 – apical auto start action Press “+”/”-“ to select option ON, OFF Press “S” to accept and go to the next available parameter Or press Main to accept and exit without going next parameter
	Parameter 5 – apical auto stop action Press “+”/”-“ to select option ON, OFF Press “S” to accept and go to the next available parameter Or press Main to accept and exit without going next parameter

	Parameter 6 This is the reference point where various apical actions are triggered. Press “+”/”-“ to change the flash bar position between AP and 2 Moving the pointer closer to AP set the trigger point closer to apical foramen Press “S” to accept and go to the next available parameter Or press Main to accept and exit without going next parameter
	Parameter 7 – apical slow down action Press “+”/”-“ to select option ON, OFF Press “S” to accept and go to the next available parameter Or press Main to accept and exit without going next parameter If there is no more available parameter as in this example, the screen will go back to selecting mode. And steps can be repeated.

5.2 File system pre-set parameters

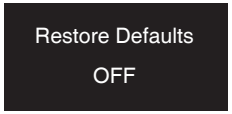
	Standby screen Select location Press “+”/”-“ to change screen passing M0 or M9 The screen shows file name and size instead of M0-9 Keep pressing “+”/”-“ to show 5 storage locations. Select the location to make change Press and hold “S” to enter file list
	File list Press “+”/”-“ to scroll and select the file Press “S” to show list of pre-set parameters Or press Main to accept and exit without selecting parameters
	Pre-set parameters Press “+” / “-“ to scroll and select file size Press “S” to accept and back to File list Or press Main to accept and back to standby

	Standby screen Parameters is set to file default parameter To customize the parameters, press “S” and follow the steps Note: only certain modes and parameters are allowed to change Warning: Change the default parameter for selected file is not recommended. To restore the pre-set parameter, press and hold “S” and repeat the steps

5.3 Handpiece Setting

Turn off device
Hold “S” and press Main to enter function setting

	Software version (unchangeable) Screen show Auto Power Off in 2 sec
	Auto Power Off Press “+”/”-“ to change between 3 to 30 min Press “S” to accept and go to next setting or Press Main to accept and exit
	Auto Standby Scr Press “+”/”-“ to change between 3 to 30 min Press “S” to accept and go to next setting or Press Main to accept and exit
	Dominant Hand Press “+”/”-“ to switch between Left and Right Press “S” to accept and go to next setting or Press Main to accept and exit

	Calibration Note: Calibration should be performed when replacing contra angle Press “+”/”-“ to switch between ON and OFF Plug in original contra angle without file. Warning: Use original contra angle only. Do not apply any load to contra angle during calibration. Press “S” to accept and go to next setting or Press Main to accept and exit If set ON, calibration will be performed when exiting. And setting will then switch back to OFF.
	Beeper Volume Press “+”/”-“ to change volume between 0 (mute) and 3 (loudest) Press “S” to accept and go to next setting or Press Main to accept and exit
	Restore Defaults Press “+”/”-“ to switch between ON and OFF Press “S” to accept and go to next setting or Press Main to accept and exit If set ON, screen show OK and device reset to factory setting This setting will then switch back to OFF.

6. Screen Display

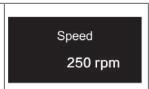
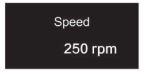
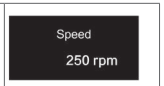
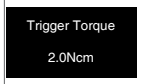
CW	Clockwise (forward) rotation – rotary file
CCW	Counterclockwise (reverse) rotation – special file, inject calcium hydroxide and other solutions
REC	Reciprocating motion – reciprocating file, path file and rotary file protection by setting some special angle.
ATR	Adaptive torque reverse – CW turns REC when triggered by defined torque, resume CW when no trigger.
EAL	Electronic apex locator – standalone mode
Speed	CW, CCW – motor speed
Torque Limit	ATR – threshold triggering REC action
Forward Angle	REC and ATR – clockwise rotation angle
Reverse Angle	REC – counterclockwise rotation angle
AP	Apical foramen
Apical Action	Action when file tip reaches the flash bar point
Flash Bar Position	EAL – triggering point where apical action starts
Auto Start	Motor initially stop. It starts when the file is inserted in the canal.
Apical Slow Down	Motor slows down in apical action – CW and CCW mode

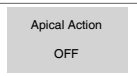
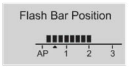
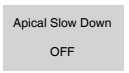
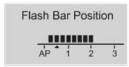
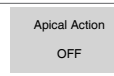
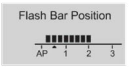
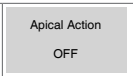
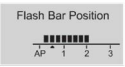
6.2 Standby
There are a total of 15 storage screens.
Press “S” to select different standby screen: M0-9 and another 5 with no designation.
Standby screen M0-9, setting can be changed based on operating mode and parameters.
Standby screen after M9, additional 5 standby screens shows settings based on file system.

	Location M0-9 CW, CCW, REC, ATR	 battery level operating mode displayed setting displayed setting
	Location with file name and size	
	Location M0-9 EAL	battery level AP scale Flash bar position

6.3 Parameter setting
There are 4 operation modes for endo motor and apex locator. The apex locator function can only be set if the measuring wire is connected to the motor.

	CW	CCW	REC	ATR
				
Mode	Clockwise	Counterclockwise	Reciprocating	Adaptive Torque Reverse
Motor direction	Clockwise only	Counterclockwise only	Clockwise and counterclockwise with set angle	Clockwise If torque exceed set limit, reciprocating
Applied file	Rotary	Special inject calcium hydroxide and other solutions	Reciprocating path rotary	Reciprocating

Displayed setting	 Speed: rpm 100 – 1000 @step 50  Torque: Ncm 0.4 – 5.0 @step 0.2	 Speed: rpm 100 – 1000 @step 50	 Forward angle: Fº 30 – 340 @step10  Reverse angle: Rº 30 – 340 @step10	 Speed: rpm 150 300 500  Trigger Torque: Ncm 0.4 – 1.0 @step 0.2
Endo motor setting				 Forward angle: F º 60 – 400 @step10

Apex setting	 Apical Action ON OFF  Auto Start ON OFF  Auto Stop ON OFF  Flash Bar Position  Apical Slow Down ON OFF	 Auto Start ON OFF  Auto Stop ON OFF  Flash Bar Position  Down ON OFF	 Apical Action ON OFF  Auto Start ON OFF  Auto Stop ON OFF  Flash Bar Position	 Apical Action ON OFF  Auto Start ON OFF  Auto Stop ON OFF  Flash Bar Position
Note		For injecting calcium hydroxide and other medicant Continuous double beeping during motor running	Recommend the Difference between Fº and Rº at least 120 º If Fº > Rº, effective cutting angle on Forward angle. Vice versa	Reverse angle is not settable.

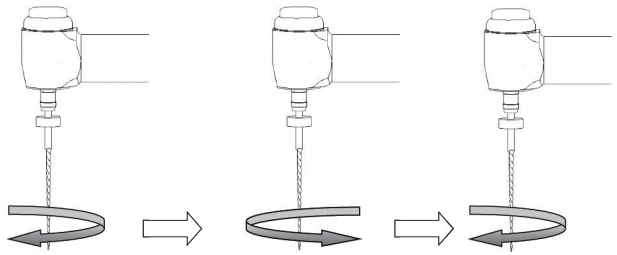
6.3 File setting screen

Standby screen	File list	Default file size
		
	List of available file for selection	List of file size for selected file. Parameters are pre-set

Note:
Available files and parameters are not listed in this manual.

7. Automatic Reverse Function

Automatic reverse function is only available in CW mode.
During operation, the motor is in clockwise rotation.
If the load at file exceeds the preset torque, motor will automatically reverse to counterclockwise.
Motor will resume clockwise rotation when torque is below preset torque.



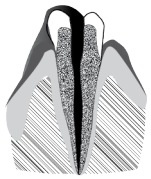
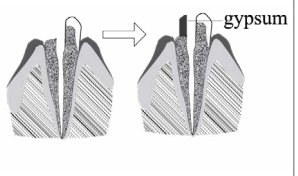
Load < preset torque Clockwise | Load > preset torque Counterclockwise | Load < preset torque Clockwise resume

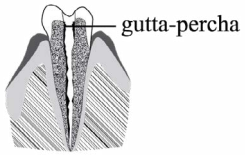
Warning

In low battery, motor cannot execute automatic reverse. It is advised that the handpiece should always be charged.
If automatic reverse is triggered frequently in the same operation, motor will overload and stop. If this occurs, please turn off device and allow motor to cool down.

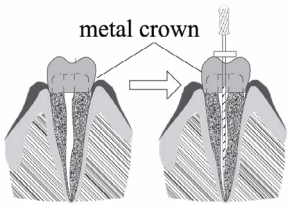
8. Canal Measurement Operation

Root Canals not suitable for canal measurement
Accurate measurement cannot be obtained if the root canal conditions shown below.

	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 may show shorter measurement than the actual length.
	Root canal with blood overflowing from the opening. If blood 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 throughly to get rid of all blood, and then make a measurement. Root canal with a chemical solution overflowing from the opening. An accurate measurement cannot be obtained if some chemical solution is overflowing from the canal opening. In this case, clean the canal and its opening. It is important to get rid of any solution overflowing the opening.
	**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.



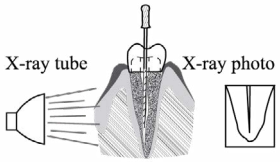
Re-treatment of a root filled with gutta-percha
The gutta-percha must be completely removed to eliminate its insulating effect. After removing the gutta-percha, pass a small file all the way through the apical foramen and then put a little saline in the canal, but do not let it overflow the canal opening.



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.

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 saline.

Discrepancy of results between apex locator reading and radiographic measure
Sometimes the reading of apex locator and the X-ray image will not correspond. This does not mean that the apex locator is not working properly or that the X-ray exposure is a failure. An X-ray image might not show the apex correctly depending on the angle of the X-ray beam, and the location of the apex might seem to be other than it really is.



The apical to the side of the root canal crown

The actual apex for the canal is not the same as that for the anatomical apex. There are frequently cases where the apical foramen is located up towards the crown. In these cases, an X-ray might indicate that the file has not reached the apex even though it has actually reached the apical foramen.

9.Troubleshooting

Failure	Possible cause	Solutions
The motor handpiece does not rotate.	Chose EAL mode, EAL mode is only for canal measurement.	Changing to CW, CCW, REC or ATR mode.
Continuous beeping after starting the motor handpiece	The continuous beeping indicates that the motor handpiece is under CCW mode	Stop the motor hand-piece and change the operating mode to CW Mode.
Contra angle calibration failure	Calibration failure caused by strong resistance of contra angle	Clean the contra angle, and recalibrate after lubricating
Motor handpiece heating	Extended usage of Re-ciprocating Motion Mode	Stop usage and wait until temperature of hand-piece cools down
The time of endurance becomes shorter after charging.	Battery capacity is reduced	Please contact local distributor or manufacturer.
No sound	Beeper Volume set to 0. Vol.0: Mute.	Set Beeper Volume to 1,2,3.
The continuously rotating file is stuck at the root canal.	Incorrect specification setting. Too high load torque of file.	Choose CCW Mode, start the motor handpiece, and take the file out.

10. Cleaning, Disinfection and Sterilization

10.1 Foreword
For hygiene and sanitary safety purposes, the contra angle, the lip hook, the file clip and the touch probe must be cleaned, disinfected and sterilized before each usage to prevent any contamination. This concerns the first use, as well as all subsequent uses.

10.2 General recommendations
10.2.1 Use only a disinfecting solution which is approved for its efficacy (VAH/ DGHM-listing, CE marking, FDA and Health Canada approval) and in accordance with the DFU of the disinfecting solution manufacturer.
10.2.3 Do not place the contra angle in a disinfectant solution or in an ultrasonic bath.
10.2.4 Do not use chloride detergent materials.
10.2.5 Do not use bleach or chloride disinfectant materials.

10.2.6 For your own safety, please wear personal protective equipment (gloves, glasses, mask).
10.2.7 The user is responsible for the sterility of the product for the first cycle and each further usage as well as for the usage of damaged or dirty instruments where applicable after sterility.
10.2.8 The water quality has to be convenient to the local regulations especially for the last rinsing step or with a washer-disinfector.
10.2.9 Do not sterilize the motor handpiece, the AC adapter or the base. After each use, all the objects that were in contact with infectious agents should be cleaned using towels impregnated with a disinfecting and detergent solution (a bactericidal, fungicidal and aldehyde free solution) approved by VAH/DGHM-listing, CE marking, FDA and Health Canada.
10.2.10 To sterilize the endodontic files, refer to the manufacturer's instructions for use.
10.2.11 The contra angle needs to be lubricated after cleaning and disinfection, but before sterilization.

10.3 Step-by-Step Procedure

#	Operation	Operating Mode	Warning
1	Preparation	Remove accessories (contra angle, lip hook, file clip, touch probe) from handpiece and base.	
2	Automated Cleaning with washer-disinfector	Put the accessories (contra angle, lip hook, file clip, touch probe) into the washer disinfector (Ao value >3000 or, at least 5 min at 90°C/194°F)	- Avoid any contact between the contra angle and any instruments, kits, supports or container. - Follow instructions and observe concentrations given by the manufacturer (see also general recommendations). - Use only approved washer-disinfector according to EN ISO 15883, maintain and calibrate it regularly. - Make sure accessories (contra angle, lip hook, file clip and touch probe) are dry before moving to the next step.
3	Inspection	Inspect the accessories (contra angle, lip hook, file clip, touch probe) and sort out those with defects.	- Dirty accessories (contra angle, lip hook, file clip and touch probe) must be cleaned and disinfected again. - Lubricate the contra angle with an adequate spray before packaging.
4	Packaging	Pack the accessories (contra angle, lip hook, file clip, touch probe) in "Sterilization pouches".	- Check the validity period of the pouch given by the manufacturer to determine the shelf life. - Use packaging which is resistant to a temperature up to 141°C (286°F) and in accordance with EN ISO 11607.
5	Sterilization	Steam sterilization at 134°C, 2.0bar-2.3bar(0.20Mpa-0.23MPa), for 4 minutes.	- Use only autoclaves that are matching the requirements of EN 13060, EN 285. - Use a validated sterilization procedure according to ISO 17665. - Respect the maintenance procedure of the autoclave device given by the manufacturer. - Use only this recommended sterilization procedure. - Control the efficiency (packaging integrity, no humidity, color change of sterilization indicators, physico-chemical integrators, digital records of cycles parameters). - Maintain traceability of procedure records.
6	Storage	Keep the accessories (contra angle, lip hook, file clip, touch probe) in sterilization packaging in a dry and clean environment.	- Sterility cannot be guaranteed if packaging is open, damaged or wet. - Check the packaging and the contra angle before using it (packaging integrity, no humidity and validity period).

11. Storage, Maintenance and Transportation

11.1 Maintenance

- This device do not include accessories for repair usage, the repair should be carried out by authorized person or authorized after service center.
- Keep the equipment in a dry storage condition.
- Do not throw, beat or shock the equipment.
- Do not smear the equipment with pigments.
- Calibration is recommended when using a new/other contra angle or after an extend period of operation, as the running properties can change with usage, cleaning and sterilization.

- Replace the battery if it seems to be running out of power sooner than it should.

11.2 Replacing Battery
Please use the original lithium battery.
1. Turn the motor handpiece power off
2. Use tweezers to remove soft cover
3. Unscrew and remove the battery cover
4. Disconnect battery
5. Replace with new battery
6. Put cover back and screw in

Note:
It is recommended for you to contact your local distributor or manufacturer to replace the battery.

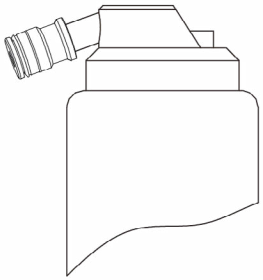
11.3 Lubrication of contra angle
Use the oil injection nozzle in the package
The contra angle needs to be lubricated after cleaning and disinfection, but before sterilization.
1. Screw injecting nozzle into jet of oil bottle. (Around 1 to 3 circles)
2. Plug nozzle into the end part of contra angle
3. Spray oil into the contra angle for 2-3 secs until the oil flows out of contra angle head
4. Purge excess oil from the end part of contra angle using air or keep contra angle in a vertical position for gravity draining.

Warning

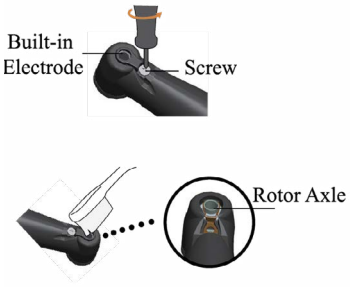
Motor handpiece cannot be filled with oil.

Caution

To avoid the contra angle from flying out from the pressure, use hand to safely hold the contra angle in place while greasing.
Do not use a swirling nozzle. Swing nozzle can only be used for injection of gas, not for oiling.



11.4 Replacing built-in electrode



If the canal length indicator bars flicker or does not light up when the file and the hook touch, replace the electrode.

1. Loosen the screw and remove the electrode
2. Brush and clean the rotor axle with 70~80% ethanol
3. Let it dry
4. Replace with new electrode
5. Screw tight the electrode

12. Environmental Protection

Please dispose according to the local laws.

13. Signs

Follow Instructions for Use	Date of manufacture	Type BF applied part
IPXO Ordinary equipment	Used indoor only	Handle with care
93 % 10 % Humidity limitation	106kPa 70kPa Atmospheric pressure for storage	55°C max -20°C min Temperature limitation
Manufacturer	Class II equipment	Recovery
Keep dry	Appliance compliance WEEE directive	SN Serial number

14. Statement

All rights of modifying the product are reserved to the manufacturer without further notice. The pictures are only for reference. The final interpretation rights belong to Beyes Dental Canada Inc. The industrial design, inner structure, etc, have claimed for several patents by Beyes, any copy or fake product must undertake legal responsibilities.

15. Beyes Limited Warranty Statement

From purchase date, based on warranty registration, we will repair this equipment free of charge if there are any quality issues experienced. Please refer to the warranty card for the warranty period.

15.1 SCOPE OF WARRANTY
BEYES Dental Canada Inc. warrants to the original retail purchaser that it will be at BEYES option to repair or replace components of the dental products manufactured by BEYES (except for components not warranted under 'Exclusions') that are defective in material or workmanship under normal use and service. BEYES' obligation under this limited warranty is limited to the repair or replacement of the applicable components. This limited warranty shall only apply to defects that are reported to BEYES within the applicable warranty period and which, upon examination by Beyes, prove to be defective. This warranty extends only to the first retail purchaser of a product and is not transferable or assignable. Replacement components or products may be used and/or refurbished components or products, provided they are of like quality and specifications as new components or products.

15.2 APPLICABLE WARRANTY PERIOD
The applicable warranty period, measured from the date of invoice to the original user, shall be as follows
ApexPilot G3 Endo Motor are warranted for a period of 12 months

15.3 EXCLUSIONS
This limited warranty does not cover and BEYES shall not be liable for the following;
1. Defects, damage or other conditions caused, in whole or in part, by misuse, abuse, negligence, alteration, accident, freight damage, negligent storage, tampering or failure to seek and obtain repair or replacement in a timely manner;
2. Products which are not installed, used, and properly cleaned and maintained as required or recommended in the BEYES 'Installation' and/or 'Installation/Operation Manual' for the applicable product, including the specified structural and operational environment conditions and electrical power requirements;
3. Products considered to be of a consumable or sterile nature;
4. Accessories or parts not manufactured by BEYES;
5. Charges by anyone for adjustments, repairs, replacement parts, installation or other work performed upon or in connection with such products which are not expressly authorized in writing in advance by BEYES;
6. Costs and expenses of routine maintenance and cleaning;
7. Representations and warranties made by any person or entity other than BEYES;
8. Matching of color, grain or texture except to commercially acceptable standards;
9. Changes in color caused by natural or artificial light;
10. Custom manufactured products;
11. Alterations or modifications to the product by any person or entity other than BEYES;
12. Products that would otherwise by covered under Sections 1 and 2 of this limited warranty, but are acquired: (i) from a person or entity that is not BEYES or one of its authorized dealers; or (ii) from a BEYES dealer that is not authorized to sell the product at issue in the geographic territory where the purchaser is located, or is not authorized to sell the product at issue within the medical, animal health or dental market, as the case may be, in which purchaser intends to use the product.

15.4 EXCLUSIVE REMEDY; CONSEQUENTIAL DAMAGES DISCLAIMER
Beyes' obligation under this limited warranty is the repair or replacement of defective parts. Beyes shall not be liable for and hereby disclaims any direct, special, indirect, incidental, exemplary or consequential damages or delays, including, but not limited to, damages for loss of profits or income, loss of use, downtime, cover and employee or independent contractor wages, payments and benefits.

15.5 WARRANTY DISCLAIMER
This limited warranty is beyes only warranty and is in lieu of all other warranties, express or implied. Beyes makes no implied warranties of any kind including any implied warranties of merchantability or fitness for a particular purpose. This warranty is limited to the repair or replacement of defective parts.

15.6 STATUE OF LIMITATIONS
No actions may be brought against beyes for breach of this limited warranty, or implied warranty, if any, or for any other claims arising out of or relating to the products, more than ninety (90) days following expiration of the limited warranty period.

16. Technical Specification

Technical parameters

Device Classification	Class II Type B IPX0	
Applied part	Contra angle, lip hook, file clip, touch probe	
Power supply	Class II	
	Input	100V-240V 50Hz/60Hz
	Output	DC5V/1A
Battery capacity	3.7V 2000mAh	
Wireless charging	Freq 112 – 205kHz max RF output power 9.46dBuA/m@3m	
Torque	0.4 – 5 Ncm	
Speed	100 – 1000 rpm	

Environmental parameters

	Working	Storage
Temperature	+5°C~+40°C	-20°C~ +55°C
Humidity	30%~75%	10% ~ 93%
Air pressure	70kPa~106kPa	70kPa ~ 106kP

Warning

Do not store device in extreme temperature and humidity.

17. EMC-Declaration of Conformity

The device has been tested and homologated in accordance with EN 60601-1-2 for EMC. This does not guarantee in any way that this device will not be effected by electromagnetic interference Avoid using the device in high electromagnetic environment.

Technical Description Concerning Electromagnetic Emission
Table 1: Declaration - electromagnetic emissions

Guidance and manufacturer's declaration - electromagnetic emissions		
The model ApexPilot G3 is intended for use in the electromagnetic environment specified below. The customer or the user of the model EndoMatic should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11	Group 1	The model EndoMatic uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR11 Harmonic emissions IEC 61000-3-2	Class B Class A	The model EndoMatic is suitable for used in all establishments, including domestic establishments and those directly connected to the public low-voltage power

Technical Description Concerning Electromagnetic Immunity
Table 2: Guidance & Declaration - electromagnetic immunity

Guidance & Declaration — electromagnetic immunity			
The model ApexPilot G3 is intended for use in the electromagnetic environment specified below. The customer or the user of the model EndoMatic should assure that It is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance

Electrostatic discharge (ESD) IEC 61000-4-2	±8kV contact ±2, ±4, ±8, ±15kV air	±8kV contact ±2, ±4, ±8, ±15kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
Electrical fast transient/burst IEC 61000-4-4	±2kV for power supply lines ±1kV for Input/ output lines	±2kV for power supply lines	Voltage should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±0.5, ±1kV line to line ±0.5, ±1, ±2kV line to earth	±0.5, ±1kV line to line ±0.5, ±1, ±2kV line to earth	Voltage should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5 % UT (>95% dip in UT.) for 0.5 cycle <5 % UT (>95% dip in UT.) for 1 cycle 70% UT (30% dip in UT) for 25 cycles <5% UT (>95 % dip in UT) for 250 cycles	<5 % UT (>95% dip in UT.) for 0.5 cycle <5 % UT (>95% dip in UT.) for 1 cycle 70% UT (30% dip in UT) for 25 cycles <5% UT (>95 % dip in UT) for 250 cycles	Voltage should be that of a typical commercial or hospital environment. If the user of the models EndoMatic requires continued operation during power mains interruptions, it is recommended that the models EndoMatic be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	30A/m	30A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE UT is the a.c. main voltage prior to application of the test level.			

Table 3: Guidance & Declaration - electromagnetic immunity concerning Conducted RF & Radiated RF

Guidance & Declaration - Electromagnetic immunity			
The model ApexPilot G3 is intended for use in.the electromagnetic environment specified below. The customer or the user of the models EndoMatic should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Conducted RF IEC 61000-4-6 Conducted RF IEC 61000-4-6 Radiated RF IEC 61000-4-3	3 Vrms 150 kHz to 80 MHz 6 Vrms ISM frequency band 3 V/m 80 MHz to 2.7 GHz	3V 6V 3V/m	Portable and mobile RF communications equipment should be used no closer to any part of the models EndoMatic, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance d=1.2×P1/2 d=2×P1/2 d=1.2×P1/2 80 MHz to 800 MHz d=2.3×P1/2 800 MHz to 2.7 GHz where P is the maximum output power rating of the transmitter In watts (W) according to the transmitter manufacturer and d Is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, a should be less than the compliance level in each frequency range.b Interference may occur In the vicinity of equipment marked with the following symbol:

NOTE I At 80 MHz end 800 MHz. the higher frequency range applies.
NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.
a Field strengths from fixed transmitters, such as base stations for radio (cellular/ cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the model EndoMatic is used exceeds the applicable RF compliance level above, the model EndoMatic should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the model EndoMatic.
b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3V/m.

Table 4: Recommended separation distances between portable and mobile RF communications equipment and the model EndoMatic

Recommended separation distances between portable and mobile RF communications equipment and the model EndoMatic			
The model EndoMatic is intended for use in electromagnetic environment in which radiated RF disturbances is controlled. The customer or the user of the model EndoMatic can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the model EndoMatic as recommended below, according to the maximum output power of the communications equipment.			
Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150kHz to 80MHz d=1.2×P1/2	80MHz to 800MHz d=1.2×P1/2	800MHz to 2,7GHz d=2.3×P1/2
0,01	0.12	0.12	0.23
0,1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) accordable to the transmitter manufacturer.

NOTE I At 80 MHz and 800 MHz. the separation distance for the higher frequency range applies.
NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

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Federal law restricts this device to sale by or on the order of a dentist, physician, or any other practitioner licensed by the law of the states in which he or she practices to use or order the use of this device.

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