



## 1. Product Description



EVO 500 Design

- Omni-directional lighting system
- Stainless steel body and head
- Quadruple spray
- Push button
- Easy grip coating

## 2. Specifications

Model	500 T/TL/M/ML	500K T/TL/M/ML	500N T/TL/M/ML	500S T/TL/M/ML	500ST T/TL/M/ML	500W T/TL/TLED/M/ML/MLED	500B T/TL/TLED/M/ML/MLED
Connection	TTBIO® EZclick	TTBIO® EZclick KL/KaVo® MULTIflex®	TTBIO® EZclick NL/NSK® PLT-CL®	Sirona® Quick Coupling	Star® Quick Coupling	W&H® RotoQuick®	Bien-Air® Unifix®
Rotation Speed (rpm)	T>300,000; M>350,000						
Bur size (mm) (diameter / length)	Ø1.59~1.60 / T(19~25); M(16~21)						
Driving Air Pressure (bar)	2.6~3.0						
Recommended Driving Air Pressure (bar)	2.8						
Spray Volume (ml/min)	>50						
Water Pressure (bar)	0.8~2.0						
Chip Air Pressure (bar)	1.0~3.0						
Light system	Glass Rod					Glass Rod & Bulb (L: Xenon bulb; LED: LED bulb)	
Xenon Bulb ideal voltage range (V DC)	-					3.4~3.6	
Xenon Bulb recommended voltage (V DC)	-					3.5	
LED Bulb ideal voltage range (V DC)	-					2.8~3.6	
LED Bulb recommended voltage (V DC)	-					3.2	

\*T: torque head; M: mini head; L: light support

\*\*Chip air pressure must be greater than chip water pressure and both values need to be set at the same time

## 3. Safety Notes

1. △ Once handpiece is damaged (ie deformed caused by hit) or improperly used (ie sterilized above suggested temperature), be sure not to continue using it.
2. Before operation, always make sure the product and its accessories meet the specified requirements (ie drive air pressure, lubrication...etc).
3. Please contact our dealer or us with proof of purchase, whenever you have problems such as abnormal vibration, exceeding temperature or unusual noise...etc.
4. Avoid contact between the instrument head and soft tissue (risk of burning due to the press button heating up).

## 4. Installation



Fig. 1 Install EZclick connector



Fig. 2 Rotate the connector to install

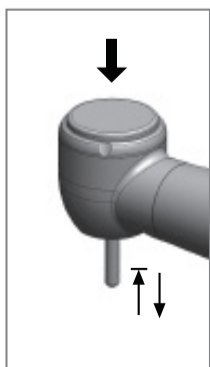


Fig. 3 Strip EZclick connector

To install or strip handpiece, please follow the steps illustrated from Fig. 1 to Fig. 3 (Please refer to the coupling manufacturers' instructions.)

## 5. Changing Bur

1. Follow the arrowhead direction shown in Fig. to take off or install the bur.
2. Put on protective gloves to reduce the risk of interactive infection, especially not to touch the used burs without proper protection.
3. Make sure bur is tightly secured before operation, otherwise risks of injury to doctors, patients or the third party could occur.
4. Bur must be complied with ISO requirement. Burs not in good conditions such as being bent and damaged, or are deviated from ISO standards and in improper length may decrease the lifetime of the handpiece or even cause severe consequences such as injury to people.
5. Do not press the button while bur is rotating, otherwise it could harm internal parts.



## 6. Replacement of Rotor

1. Please contact local dealers and let the technicians replace the rotor.
2. Do not use unsuitable rotors or spare parts, otherwise could damage the handpiece and result in severe consequences during treatment.

## 7. Replacement of Bulb (500W/B L/LED series)

1. Loose and remove the female part (Fig. 4). Pull out the adapter and holder (Fig. 5). Then pull the bulb out of the holder, and insert a new one. Place the holder into the adapter and then return it to the female part. Finally, tighten the female part.
2. △ If LED does not light up, remove and rotate 180°. And re-insert the LED.

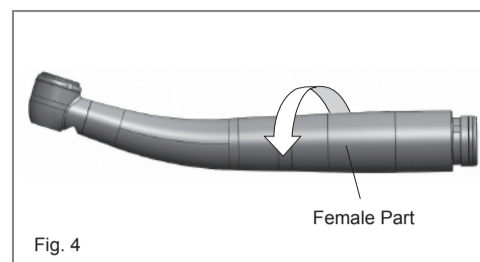


Fig. 4

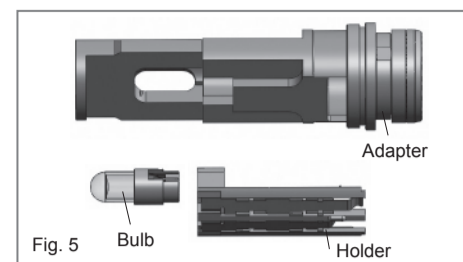


Fig. 5

## 8. Cleaning

1. Put on protective gloves to detach the handpiece from the coupling.
2. Use clean cloth with mild cleaning solution to clean the handpiece surface carefully, especially handpiece groove, and remove the residues.
3. △ Do not immerse handpiece or cartridges/rotor in disinfectant solution or water, not to be cleaned by ultrasonic process.
4. △ Cleaning solution must be non-erosive and harmless to human. Solution with 80% ethyl alcohol is recommended. Please also follow recommendation of the cleaning solution manufacturer for suggested usage.
5. Clean the spray nozzle with the nozzle cleaner needle when it is blocked (see above figure)



## 9. Lubrication and Maintenance

1. △ Use dental handpiece lubrication oil for maintenance, any unspecified oil not intended for lubricating handpieces could shorten the lifetime and harm human body.
2. To lubricate 500 series handpiece, put Spray Nozzle into nozzle of the lubrication oil can (Fig. 6). Connect handpiece with the nozzle (Fig. 7) and inject lubrication oil for 2~3 seconds.
3. Be sure to lubricate the handpieces prior to sterilization and run the handpieces for 20~30 seconds to emit residual oil and dirt.
4. To lubricate handpiece chucks, put Shaft Spray Nozzle into nozzle of the lubrication oil can and inject lubrication oil into the chuck (Fig. 8) for 1 second. It's recommended to lubricate chuck at least once a week and then proceed step 2.
5. After unpacking and prior to first use, be sure to lubricate with oil and run the handpieces in low rotation speed for 30 seconds and in full speed for 20~30 seconds to emit residual oil.

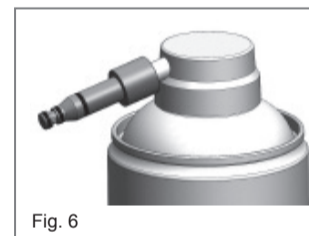


Fig. 6

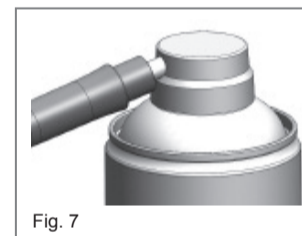


Fig. 7



Fig. 8

## 10. Sterilization

TTBIO suggested sterilization in accordance with EN13060

1. △ Place handpiece in single-use sterile bag and proceed steam prevacuum sterilization. Do not open the sterile bag before use in order to avoid contact infection.
2. △ Use qualified sterilization equipment specified by the authority/government for sterilization procedures.
3. △ Do not use chemical steam nor immerse handpiece or cartridge/rotor in disinfectant solution, otherwise could damage the handpiece and cause severe consequences.
4. △ Sterilization holding time is a minimum of 4 minutes at 134°C. (drying time is 15 minutes)

## 11. Disclaimer

1. Information in this operation manual were carefully reviewed. We cannot assume any liability for any damage arising from improper use of the handpiece or from use of this manual.
2. Products are subject to change without notice.
3. Indications for Use: EVO 500 Series High Speed Handpieces are intended for removing carious parts of tooth, proceeding cavity and crown preparations.
4. Please refer to the bar code on the packing box for manufacturing and expiration date.

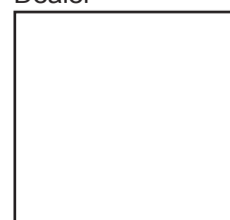
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CAUTION: U.S. Federal law restricts the use of this device to licensed professionals. (Rx Only)

## 12. Quality and Service

All of our products have passed strict QC procedures before delivery. Please note that improper use or not using the recommended parts and accessories or modifying our products without our approval may shorten the lifetime of the product or cause damage. Please contact us or dealers with proof of purchase for consultation whenever you have any questions.

### Dealer



Manufactured by

TTBIO CORP.  
2F., NO.7, 6TH ROAD INDUSTRY PARK  
TAICHUNG, TAIWAN 40755  
TEL: 886-4-23595958  
FAX: 886-4-23596893  
E-mail: medical@ttbio.com  
Website: www.ttbio.com

ECREP

Thunder Tiger Europe GmbH  
Rudolf-Diesel-Str. 1,  
D-86453 Dasing  
Germany



## 一. 產品描述



- 光纖照明
- 全機不鏽鋼
- 四孔噴水
- 按壓夾持
- 防滑握柄

## 二. 規格

型號	500 T/TL/M/ML	500K T/TL/M/ML	500N T/TL/M/ML	500S T/TL/M/ML	500ST T/TL/M/ML	500W T/TL/TLED/M/ML/MLED	500B T/TL/TLED/M/ML/MLED
接頭型式	TTBIO® EZclick	TTBIO® EZclick K/L/KaVo® MULTIflex®	TTBIO® EZclick N/L/NSK® PLT-CL®	Sirona® Quick Coupling	Star® Quick Coupling	W&H® RotoQuick®	Bien-Air® Unifix®
轉速 (rpm)	T>300,000; M>350,000						
鑽針尺寸(mm) (外徑 / 長度)	Ø1.59~1.60 / T( 19~25); M(16~21)						
驅動空氣壓力(bar)	2.6~3.0						
建議驅動空氣壓力 (bar)	2.8						
冷卻水流量 (ml/min)	>50						
冷卻水壓 (bar)	0.8~2.0						
冷卻氣壓 (bar)	1.0~3.0						
光源系統	玻纖棒					玻纖棒 & 燈泡 (L: 鹵素燈泡; LED: LED燈泡)	
氬氣燈泡理想電壓範圍 (V DC)	-					3.4~3.6	
氬氣燈泡建議電壓 (V DC)	-					3.5	
LED燈泡理想電壓範圍 (V DC)	-					2.8~3.6	
LED燈泡建議電壓 (V DC)	-					3.2	

\* T: 扭力頭; M: 迷你頭; L: 帶光 (建議使用照度達25000 Lux的光源)

\*\* 冷卻氣壓需大於水壓且兩者需同時設定

## 三. 安全事項

1. 本產品一旦發生結構上的破壞或不正常使用過後 (如受到撞擊產生變形或超過建議溫度、壓力消毒...等) 切勿繼續使用本產品, 否則有發生危險的可能性。
2. 使用本產品前, 必須檢查所有主、配件及功能是否符合正常條件規範 (如進氣壓力、冷卻水霧、潤滑...等), 確認正常後才可使用。
3. 例如震動過大、溫度過高、異常聲音等, 應該立即停止使用, 並與本公司或本公司經銷商或維修中心連絡。
4. 避免讓手機頭及軟組織接觸 (燙傷風險由於按鈕升溫發熱)。

## 四. 安裝操作



圖 1 安裝



圖 2 旋轉確認無脫落之虞-安裝完成

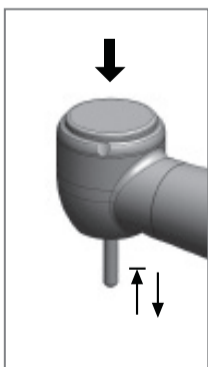


圖 3 拆卸

手機安裝及拆卸 請如圖1至圖3順序進行

## 五. 更換鑽針

1. 請依(右圖)的箭頭方向施作, 取下鑽針或安裝鑽針, 並確認無脫落之虞安裝完成。
2. 請戴上保護手套進行, 應避免直接接觸使用過之鑽針, 預防交叉感染病毒之可能。
3. 更換鑽針, 使用前請確認鑽針是否夾緊, 否則有脫落而傷害醫師、患者或第三者風險。
4. 鑽針請使用ISO標準規格 (如規格表中所述)。當鑽針未處於良好狀況時, 如受損、彎曲、直徑過小或長度不適合等情況時不可使用, 否則有脫落而傷害人體的風險及縮短轉子壽命的後果。
5. 鑽針未停止前, 請勿按壓按鈕, 否則將造成內部機件損壞。



## 六. 更換轉子

1. 請洽當地經銷商並由專業維修工程師進行更換轉子及測試。
2. 使用不合適之轉子或零配件, 會造成手機損壞或導致使用時發生危險之可能。

## 七. 更換燈泡 (500W/B L/LED series)

1. 鬆開後段套管 (圖4), 取出分流栓及燈座組 (圖5), 然後將燈泡從燈座組取出, 並且裝入新的燈泡。燈座組與分流栓組合後放入後段套管, 將後段套管鎖緊。
2. 如果LED燈泡無發光, 請將LED燈泡旋轉180度後再重新裝入。

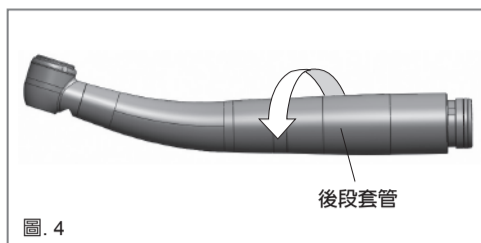


圖 4

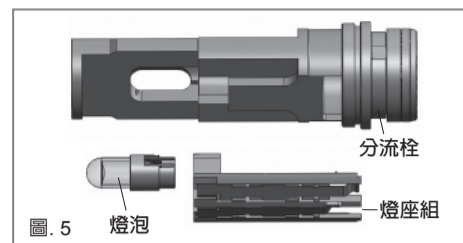


圖 5

## 八. 手機清潔

1. 請戴上保護手套將手機自快速接頭上移除。
2. 清洗必須使用酸鹼值中性清潔劑。使用清潔的布浸入清潔劑, 仔細擦拭手機的外部表面, 最重要為連接面及縫隙, 務必去除殘留物。
3. 不可將手機及轉子浸泡在消毒劑或水中, 亦不可進行超音波清洗。
4. 清潔劑必須不含腐蝕性及傷害人體的成份, 建議使用酒精含量80%的藥用酒精。
5. 當噴孔阻塞時, 請使用清潔針來進行冷卻水/氣孔暢通工作, 以避免因工作溫度過高發生牙齒傷害之危險(如右圖)



## 九. 潤滑及保養

1. 下述保養油請使用醫療級牙科手機專用保養油, 任何非牙科手機專用保養油皆有減短轉子壽命及危害人體之可能。
2. 500系列手機潤滑轉子, 請將保養油罐的噴嘴套入牙科手機噴油栓(圖6), 插入手機銜接快速接頭位置(如圖7), 注入保養油約2~3秒。
3. 請在每一次滅菌前進行潤滑保養, 並將手機裝回快速接頭, 啟動手機運轉20~30秒將多餘保養油及污穢物排出手機本體。
4. 各型手機潤滑夾持機構保養, 請將保養油罐的噴嘴套入轉軸噴油栓, 插入夾持鑽針處(如圖8), 注入保養油約1秒 (每週至少一次) 後, 再進行步驟2。
5. 第一次使用前, 請於上油後輕踩開關以低轉速運轉約30秒, 再以全轉速運轉約20~30秒, 將多餘的保養油排出。

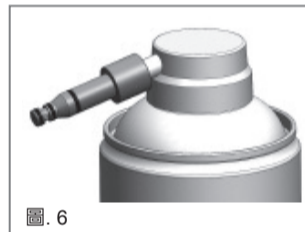


圖 6



圖 7



圖 8

## 十. 滅菌方法

TTBIO建議滅菌方法根據EN13060

1. 將手機置放於單次使用的消毒袋中進行高溫高壓消毒程序, 並全程密封消毒袋, 直到使用前才能拆封, 避免中途不必要的接觸感染風險。
2. 請使用符合您當地政府法規標準之滅菌設備及程序進行高溫高壓消毒作業。
3. 滅菌程序請勿使用化學蒸汽或手機浸泡滅菌消毒液中, 否則有發生危險及損壞的可能性。
4. 本手機建議滅菌條件為134°C持續4分鐘, 乾燥時間為15分鐘。

## 十一. 聲明

1. 此說明書的內容已經過嚴謹的核對, 然而我們無法保證錯誤絕對不會產生; 因此對任何直接或間接因本說明書引起的損失與傷害, 我們無法承擔任何的責任。
2. 製造商保有尺寸、規格更改權利, 不另做說明。
3. 本產品必須由合格牙醫師來操作使用, 並且只有適用在牙科口腔治療用, 不可轉用其他用途, 否則有發生危險的可能性。
4. 本產品請依本說明書正常操作, 使用期限請參照外盒上條碼貼紙。
5. 適用範圍: 本產品供口腔科夾持高速牙科車針進行鑽、磨牙等手術用。

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Star® 為Star Dental EZ, United States of America. 註明之商標。

## 十二. 品質政策與售後服務

雷虎公司的產品在出廠前皆經過嚴謹的品質確認程序, 但請留意: 不正確的使用方法或未使用本公司建議的零配件或未經過認可的改裝本產品, 皆可能造成產品的壽命縮短與危險, 因此我們建議您: 對我們的產品有疑問時, 請攜帶產品及您的購買證明文件, 向本公司授權的經銷商洽詢。

經銷商



Manufactured by

雷虎生技股份有限公司  
40755台中市西屯區工業區六路7號2樓  
TEL: 886-4-23595958  
FAX: 886-4-23596893  
E-mail: medical@ttbio.com  
Website: www.ttbio.com  
許可證字號: 衛署醫器製壹字第004431號