Introduction

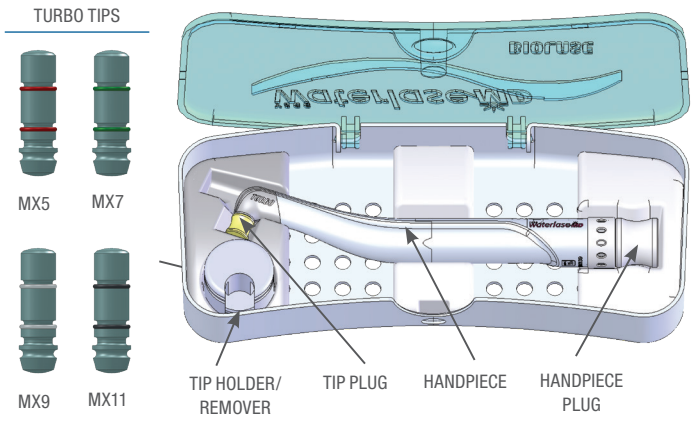
The WaterLase™ Turbo Handpiece is designed to operate exclusively with a WaterLase all-tissue laser system. When used with the appropriate technique, the Turbo Handpiece delivers cutting speed comparable to a high-speed drill, with all the benefits of WaterLase Dentistry. One of four types of special Turbo Tips must be attached to the Turbo Handpiece in order for the YSGG laser energy to be properly delivered to the intended area for ablation or cutting. When properly used and maintained, your Turbo Handpiece will help provide a more comfortable and convenient experience for your patients.

Section 1: Description

TURBO HANDPIECE, TIPS AND TIP REMOVER

One WaterLase Turbo Package includes: The contra-angle Turbo Handpiece; one WaterLase Turbo Tip removal tool; one MX5 tip (500 micron beam diameter); one MX7 tip (700 micron beam diameter); one set of extra o-rings for each tip; instructions for use; and one storage case *[Figure 1]*.

[Figure 1.1] **WaterLase Turbo Package.**



DIFFERENCE TO OTHER TIPS

Turbo Tips are unique for this handpiece. They are not interchangeable with other tips and not compatible with other WaterLase Handpieces. The colors of the sealing o-rings on the tips are as follows: The MX5 tip uses red o-rings; the MX7 uses green o-rings; the MX9 uses white o-rings; and the MX11 uses black o-rings.

Section 2: Safety & Warnings

GENERAL

Contraindications, Warnings, and Precautions for the WaterLase all-tissue laser system are provided in the user manual. To start, always use the WaterLase all-tissue laser system at low-power settings until you become proficient with the Turbo Handpiece, due to its very efficient removal of hard-tissue.

PROPER CARE AND HANDLING OF TIPS

The Turbo Tip is designed to provide at least 100 uses before it must be replaced so long as the user exercises proper care and handling.

- Do not drop the tip or hit the tip against a hard surface as this may crack or damage the tip, making the tip not useable.
- Make sure that the tip is properly cleaned and sterilized prior to use. Use of a dirty tip will reduce cutting efficiency and may damage the laser.
- Remove the tip prior to sterilization, and sterilize the tip in the tip holder.
- Inspect the end of the tip prior to each use for any visible damage.
  Do Not Use a damaged tip, as this will damage the laser mirror or trunk fiber.

Section 3: Set-up & Operation

SELECTING TURBO HANDPIECE MODE

WaterLase MD/MDX

1. Press Tip Type button on the Main screen.
2. Press Turbo on the Tip Selection menu. TURBO will be displayed in the power area.
3. Select required pre-set parameters from Preset Group 1 or 2 modified per Table 1 of this Instructions *[Refer to your laser user manual for details.]*.

WaterLase iPlus

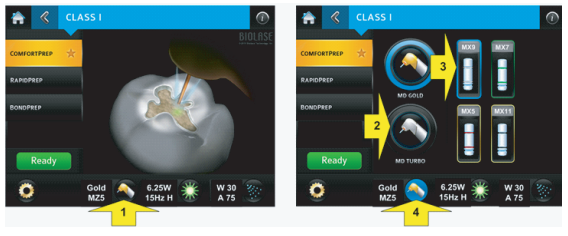
1. Press Handpiece button on procedure screen.
2. Select Turbo Handpiece.
3. Select Tip Type.
4. Press Handpiece button again, all parameters will be preset *[Refer to your laser user manual for details.]*.

INSERTING AND REMOVING THE TIP FROM THE TIP HOLDER

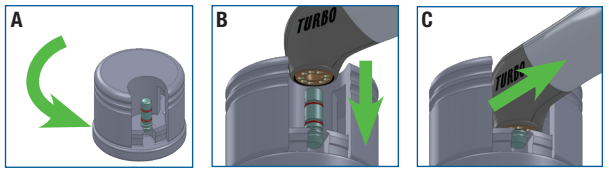
- Remove tip holder from the handpiece box.
- Turn the top part of the tip holder to the left or to the right until it clicks, so that selected tip is in the middle of the slot [Figure 3.3-A].
- Align handpiece head over the tip and slide it carefully all the way down [Figure 3.3-B].
- Remove tip from tip holder by sliding the handpiece away from the slot [Figure 3.3-C].
- To insert the tip back into the tip holder, repeat the steps in reverse order.

[Figure 3.1] **WL MD: Main Home Menu and Tip Type Selection Screens.**

[Figure 3.2] **WL iPlus: Main Home Menu and Tip Type Selection screens.**



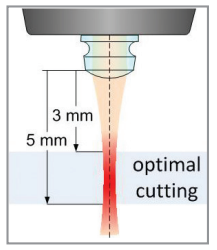
[Figure 3.3] **Inserting and Removing the Tip from the Tip Holder.**



Section 4: Clinical Applications

The WaterLase all-tissue laser system is an advanced hard- and soft-tissue system with capabilities to cut at speeds comparable to conventional dental instruments, such as the high-speed drill.

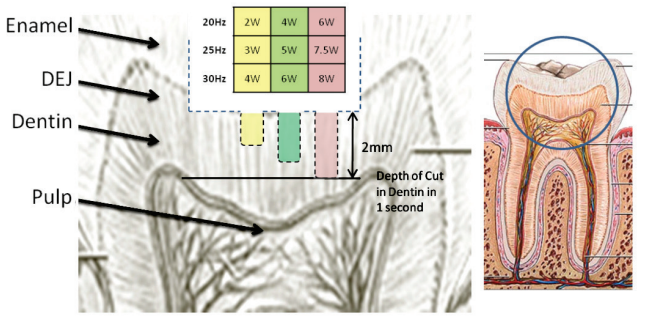
[Figure 4.1] **Turbo optimum cutting distance.**



The WaterLase Turbo Handpiece operates in a non-contact mode at an optimum distance between 3 to 5 mm from the tissue [Figure 4.1]. The Turbo optical tip creates an energy concentration within a volume extending from 3 mm to 5 mm from the tip's end, at a spot diameter of 500, 700, 900, or 1100 um, depending upon the selected tip type, MX5, MX7, MX9 or MX11. This cylindrical volume defines the optimum cutting region of the laser beam.

All hard-tissue procedures require use of air and water spray to cut without heat and collateral tissue damage. Start at the lowest power and frequency settings recommended for the procedure and increase as necessary to compensate for various tissue types. Do not bring the Turbo Tip into contact with the target tissue structure. Instead, maintain the tip at a distance of 3 to 5 mm from the tissue while moving the handpiece quickly in a side-to-side movement. If the tip is positioned more than 5 mm from the tissue surface, cutting speed, depth, and efficiency will decrease. At a distance closer than 2 mm, the visibility is greatly reduced and tip damage is more likely to occur.

[Figure 4.2] **Depth of cut in dentin after 1 second of laser emission at various power and frequency settings.**



Use high-speed suction, safety glasses with magnification loupes, and illumination to properly view treatment site and to maintain correct tip-to-tissue distance. Magnification is critical, exercise caution related to the depth of preparation. The WaterLase Turbo Handpiece delivers a red aiming beam that is critical to maintaining correct handpiece position, orientation and tracking of the treatment location. Make sure the aiming beam intensity is adequate by adjusting the brightness on the touchscreen. The aiming beam changes diameter along with the cutting beam as tip-to-tissue distance changes. By monitoring the aiming beam diameter size, the user can monitor tip-to-tissue spacing. The suggested setting for the aiming beam brightness is the middle level.

Training and practice on extracted teeth is recommended to develop and perfect preferred technique and settings prior to clinical use. Cutting through dentin is most rapid and in only one second the beam may cut as far as 1 to 2 mm through such tissues [Figure 4.2].

Working in a non-contact mode requires more care and constant tracking of the distance to tissue being cut. For cavity preparation it is recommended to start with the tip at 7 – 10 mm away from the tissue surface and slowly advance closer to where the cutting is most efficient between 3-5 mm. Deep cutting and pulpal chamber perforation are risks with users who have limited experience with controlling cutting depth at high power and frequency settings (e.g. P = 8 W and f = 30 Hz). To avoid any such incidents, use the lower settings for power and frequency, move the tip further away from tissue and constantly stop and check the cutting depth. For inter-proximal surface preparation, a metal matrix band is recommended to help guide the beam and protect the adjacent tooth. DO NOT aim the laser energy directly at the metal matrix band. The recommended clinical settings for General Operative Procedures are presented in Figure 4.3.

[Figure 4.3] **Recommended clinical settings for General Operative Procedures.**

Procedure	Beginner				Advanced			
	Power [W]	Frequency [Hz]	Air [%]	Water [%]	Power [W]	Frequency [Hz]	Air [%]	Water [%]
Class I	4-5	15	70	60	5-7	20	70	60
Class II - Enamel	4-5	15	70	60	5-7	20	70	60
Class II - Dentin	3	15	70	60	5	20	70	60
Class V	2.25	15	70	60	3.5	15	70	60
Pits & Fissures	3.5	20	70	60	5	20	70	60
Refinement- Enamel & Dentin	3	50	70	60	4	50	70	60

Section 5: Maintenance

- Refer to your WaterLase all-tissue laser system user manual, for Cleaning and Sterilization of the Handpiece and Tips.
- Before using the tip, inspect tip surfaces for any damage or debris using loupes or magnifier. Clean or replace as required.
- To change or clean the handpiece mirror refer to the user manual.
- Inspecting/replacing the o-rings. Prior to insertion of the tip, inspect the tip o-rings for any damage or debris. Replace damaged o-rings and re-order if required. If you suspect that part of the o-ring still remains inside the handpiece, blow dry clean air through the handpiece.

[Figure 5.1] **Tip Sterilization Parameters**

Sterilization	Temperature	Minimum Time	Drying Time
Gravity displacement	132°C (270°F)	15 minutes	15 - 30 minutes
Dynamic-Air-Removal (Pre-Vacuum)	132°C (270°F)	4 minutes	20 - 30 minutes
	134°C (273°F)	3 minutes	20 minutes

Section 6: Replenishment Item Numbers

- 7200103 MX5 Turbo Tip (pack of 2)
- 7200108 MX7 Turbo Tip (pack of 2)
- 7200111 MX9 Turbo Tip (pack of 2)
- 7200110 MX11 Turbo Tip (pack of 2)
- 7200406 Turbo Combo Pack (MX5 &MX7)
- 7200112 Turbo Combo Pack (MX9 & MX11)
- 7200407 Turbo Tip Holder/Remover
- 6201129 Turbo Tip O-Rings (MX5) -pack of 4
- 6201128 Turbo Tip O-Rings (MX7) -pack of 4
- 6200503 Turbo Tip O-Rings (MX9) -pack of 4
- 6200502 Turbo Tip O-Rings (MX11) - pack of 4

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P/N 5201592 Rev. D

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Introduction

The WaterLase™ Gold Handpiece is designed to operate exclusively with a WaterLase all-tissue laser system. The Gold Handpiece is intended to be used for soft-tissue procedures and most of your hard-tissue procedures that do not require bulk removal of tissue. When properly used and maintained, your Gold Handpiece will help provide a more comfortable and convenient experience for your patients.

[Figure 1.1] **WaterLase Gold Package.**

Section 1: Description

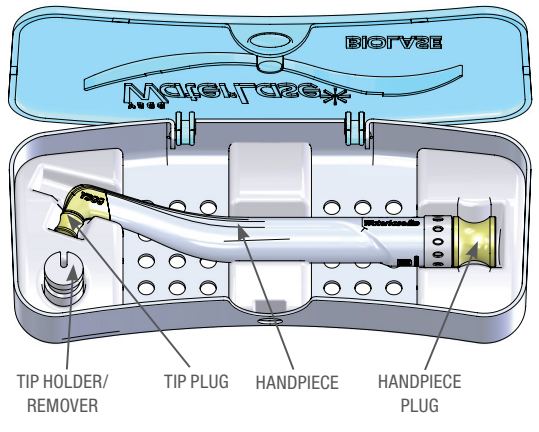
GOLD HANDPIECE, TIPS AND TIP REMOVER

One WaterLase Gold Package includes: The contra-angle Gold Handpiece and one WaterLase Gold Tip removal tool. *[Figure 1.1]*.

Section 2: Safety & Warnings

GENERAL

Contraindications, Warnings, and Precautions for the WaterLase all-tissue laser system are provided in the appropriate WaterLase all-tissue laser system user manual. To start, always use the WaterLase all-tissue laser system at low-power settings until you become proficient with the Gold Handpiece, due to its very efficient removal of hard-tissue.



PROPER CARE AND HANDLING OF TIPS

- Do not drop the tip or hit the tip against a hard surface as this may crack or damage the tip, making the tip not useable.
- Make sure that the tip is properly cleaned and sterilized prior to use. Use of a dirty tip will reduce cutting efficiency and may damage the laser.
- Remove the tip prior to sterilization, and sterilize the tip in the tip holder.
- Inspect the end of the tip prior to each use for any visible damage.
  Do Not Use a damaged tip, as this will damage the laser mirror or trunk fiber.

Section 3: Set-up & Operation

SELECTING GOLD HANDPIECE MODE

WaterLase MD/MDX

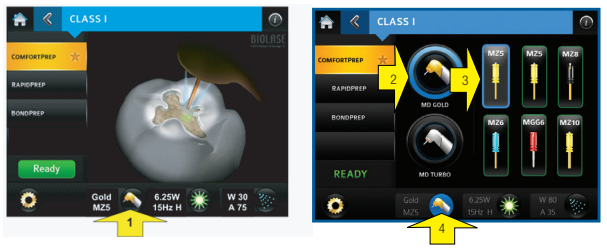
1. Press Tip Type button on the Main screen.
2. Press Gold on the Tip Selection menu.
3. Select required pre-set parameters from Preset Group 1 or 2 modified per Table 1 of this Instructions *[Refer to your laser user manual for details.]*.

WaterLase iPlus

1. Press Handpiece button on procedure screen.
2. Select Gold Handpiece.
3. Select Tip Type.
4. Press Handpiece button again, all parameters will be preset *[Refer to your laser user manual for details.]*.

[Figure 3.1] **WL MD: Main Home Menu and Tip Type Selection Screens.**

[Figure 3.2] **WL iPlus: Main Home Menu and Tip Type Selection screens.**

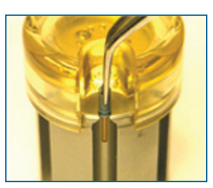


INSTALLING AND CHANGING THE TIP IN THE HANDPIECE

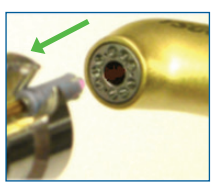
A fiber tip is installed in the Handpiece to direct the electromagnetic energy generated by the laser; based on its shape and length, it will focus that energy differently onto the target tissue.

Always inspect the tip prior to use as described in Tip Inspection of the laser user manual. DO NOT use if damaged.

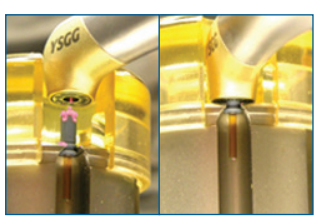
1. Place the system into **Standby**.
2. Remove the tip plug from the Handpiece head.
3. The tip must be sterilized before initial use and between patients as described in Cleaning and Sterilization of the laser user manual. If not sterilized in the tip holder, remove the tip from its sterilization pouch and insert it into the tip remover or the revolving tip holder by aligning the first groove of the tip ferrule against the receiving edges of the holder, then sliding the tip in; using tweezers facilitates this process. *[Figure 3.3]*
4. Align the tip orifice of the Handpiece over the input end of the tip placed in the tip remover or revolving tip holder. *[Figure 3.4]*
5. Carefully lower the Handpiece and insert a clean/inspected tip all the way until the shoulder of the tip ferrule sits against the Handpiece head *[Figure 3.5]*
6. Slide the Handpiece laterally away from the tip remover or tip holder *[Figure 3.6]*



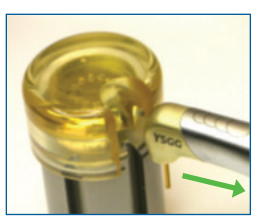
[Figure 3.3]



[Figure 3.4]



[Figure 3.5]



[Figure 3.6]

WARNING: Never touch the proximal (input) or distal (output) end of the tip. If the proximal surface is contaminated, it may damage the Tip, Handpiece, and Fiber Delivery System. Hold the tip only by the plastic ferrule.

WARNING: Be careful not to hit the proximal (input) end of the tip against the Handpiece head and not to break the retaining fingers of the plastic ferrule.

Section 4: Clinical Applications

The WaterLase all-tissue laser system is designed to cut and remove hard-and soft-tissues. Cutting is achieved in a contact or non-contact mode by application of direct laser energy either with or without water cooling and hydration spray. To efficiently remove tissues it helps to understand the unique nature of the WaterLase all-tissue laser system. The WaterLase all-tissue laser system operates unlike traditional medical instruments or devices and technique must be practiced and perfected to ensure efficient operation.

BIOLASE recommends anyone using a WaterLase all-tissue laser system to review the owner's manual provided with your system, practice on tissue models, and attend a company-sponsored training seminar before using this laser in a clinical situation.

Section 5: Maintenance

- Refer to your WaterLase all-tissue laser system user manual, for Cleaning and Sterilization of the Handpiece and Tips.
- Before using the tip, inspect tip surfaces for any damage or debris using loupes or magnifier. Clean or replace as required.
- To change or clean the Handpiece mirror refer to the user manual.

Please visit www.biolasestore.com to purchase tips and accessories for your WaterLase Gold Handpiece.

[Figure 5.1] **Tip Sterilization Parameters**

Sterilization	Temperature	Minimum Time	Drying Time
Gravity displacement	132°C (270°F)	15 minutes	15 - 30 minutes
Dynamic-Air-Removal (Pre-Vacuum)	132°C (270°F)	4 minutes	20 - 30 minutes
	134°C (273°F)	3 minutes	20 minutes

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