

## 9 Clinical Application

### Removal of Porcelain and Ceramic Crowns and Veneers

The Er,Cr:YSGG laser wavelength has been shown to be effective in removing prosthetic materials that are at least partially transparent to the wavelength, including porcelain and ceramic restorations. Laser energy is transmitted through the crown or veneer, ablating the cement between the restoration and tooth, reducing the bond strength of the interface between the two.



**NOTE:** Laser energy may not be effective on some restoration materials; if the crown or veneer cannot be removed after the maximum recommended time, revert to conventional removal method.



**CAUTION:** NEVER use on metal or metal-backed surfaces. Do not use on crowns that are made from porcelain fused to high noble metals (PFM).

The recommended settings noted in Figure 9.1 have been optimized for maximized results but are not pre-set in the laser system and have to be manually entered for this procedure. Once set up, they can be saved to Favorites for future use as outlined in Section 8. **Only use the tips noted in the table below; tips that are not listed are not applicable for this procedure.**

1. From the Home Menu, select Settings.
2. Press the Purge/Prime icon on the Settings screen, then select Prime; press and hold Prime until the Fiber Optic Cable and Handpiece are primed with water (water will spray from the end of the Handpiece).
3. Once the Prime function has completed, press the back arrow and then proceed to the Advanced screen by pressing the Advanced icon (crown) at the bottom left of the screen.
4. Adjust the settings to those noted in Figure 9.1, place the laser in Ready mode, and begin the procedure,
5. When finished, to save the current settings into one of the Favorites, return to the Settings screen by pressing the Settings icon, then press and hold one of the nine "Custom" buttons for 2 seconds. The procedure parameters will appear inside the button.

Procedure	Procedure Step	Handpiece	Tips	Power	Hz	Mode	Water	Air
Veneer Removal	Advanced (Crown icon)	Gold	MZ8 MZ10 MC12	3.5W	20Hz	H	50%	50%
Crown Removal		Turbo	MX7 MX9 MX11	5W	20Hz			

Figure 9.1 Recommended Settings

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Settings may be adjusted up or down as per Figure 9.2 based on clinician's judgment.

Power	Hz	Mode	Water	Air
2.5 – 4.5W	15Hz	H	50 – 100%	40 – 100%
3 – 6.5W	20Hz			
3.5 – 8W	25Hz			

Figure 9.2 Adjustments Range

- The maximum recommended treatment time to remove veneers is 1 minute.
- The maximum recommended **total** treatment time to remove crowns is 5 minutes.



**CAUTION: DO NOT** exceed the recommended total treatment time as this may cause the tooth pulp to overheat.

1. For both crowns and veneers, first treat the margins of the prosthetic surface (Figure 9.3), and then treat the center in a scanning motion (Figure 9.4).
2. For crowns, option to treat in 1 minute cycles; attempt to remove the restoration with a mechanical instrument after each cycle; if the crown is still bonded to the underlying tooth, repeat up to no more than a cumulative total of 5 minutes.



Figure 9.3



Figure 9.4