

10 Clinical Application

10.3 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 10.1 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 9. **Only use the tips noted in the table above; tips that are not listed are not effective for this procedure.**

1. Make sure you are in Advanced mode (see Section 9).
2. From the Procedures screen, select Restorative.
3. Select either Class 1 or Class 2 and then Comfort Prep.
4. The Tip Selection screen will appear; choose either of the tips presented.
5. Insert any one of the tips recommended for this procedure **as listed in Figure 10.1** into the Handpiece; **DO NOT** install the tip chosen from the Tip Selection screen;.
6. Touch the pull down icon at the top of the screen to open the advanced settings display (see Section 9).
7. Adjust the settings (Energy, PPS, Air, H₂O) for the procedure to those noted in Figure 10.1, then touch the pull up icon at the bottom of the screen to return to the procedure (see Section 9); the modified settings will appear in the center of the screen.

Application	Procedure (GUI)	Tip Types	Handpiece	Energy per Pulse	Hz	Power*	Mode	Water	Air
Veneer Removal	Restorative	MZ8 MZ10 MC12	Express	175mJ	20Hz	3.5W	H	50%	50%
Crown Removal	Comfort Prep			250mJ	15Hz	3.75W			

*Adjusts automatically as the Energy per Pulse and Hz are increased or decreased.

Figure 10.1 Recommended Settings

Appendix A Recommended Settings

Settings may be adjusted up or down based on clinician's judgement as per Figure 10.2.

Energy per Pulse	Hz	Power*	Mode	Water	Air
140 – 250mJ	15Hz	2.5 – 4W	H	50 – 100%	40 – 100%
	20Hz	3 – 4W			
	25Hz	3.5 – 4W			

*Adjusts automatically as the Energy per Pulse and Hz are increased or decreased.

Figure 10.2 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 10.3), and then treat the center in a scanning motion (Figure 10.4).
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 of 5 minutes.



Figure 10.3



Figure 10.4