



## **A Simplified Approach Using Great White Z Diamonds for Crown Removal and Endodontic Access through Zirconia Substructures**

The use of zirconia coping in the creation of crown and bridge restorations has seen a marked increase in its use over the past five years. Patient demand for more natural esthetics along with clinical demands for stronger, more durable restorations has been the driving force behind the increased use of zirconia. Difficulty arises when restoration copings are manufactured from zirconia, aluminous oxide and other advanced dental materials. Zirconia copings are most difficult to prepare or cut through due to their exceptional strength characteristics.

Zirconia crowns and bridges utilize an innovative CAD/CAM technology to produce all-ceramic crowns and bridges on a zirconium-oxide base that result in high-strength/high resistant, durable restorations with excellent esthetics and an outstanding marginal fit. The zirconia core allows a much more vital result by eliminating the opacity of a metal substructure. The core is thin, translucent, and very strong. It can be covered with a layer of opaque for more versatility and control in shade matching.

The factors which make the use of zirconia such an appealing material to use for crown and bridge restorations also makes it one of the most difficult and frustrating materials for technicians and clinicians to work with as well. Extreme difficulty arises when restoration copings are manufactured from zirconia, aluminous oxide and other advanced dental materials. Zirconia copings are most difficult to prepare or cut through due to their exceptional strength characteristics. Because of the inherent strength of zirconia, carbide burs often break or chip when used to cut zirconia and standard diamond instruments dull very quickly. Clinicians will often compensate due to the poor cutting ability of regular diamonds on zirconia and use a more coarse diamond instrument. This also proves futile because zirconia has been shown to pluck coarse and supercoarse diamond particles from their matrix eliminating the effectiveness of the instrument. Valuable chairtime is spent using carbide burs and coarse/supercoarse diamonds that break or dull quickly, create excessive heat that is transferred to the underlying tooth, and generally frustrate the clinician and patient.

SS White has developed the Great White Z Diamond to combat the extremely resistant nature of cutting zirconia, both in the lab and in the mouth. Three layers of fine grit diamond particles, each individually embedded in a unique differential binding agent give the Great White Z Diamond very smooth operational control and feel. Great White Z's diamond layering technique creates an instrument that cuts significantly faster and more efficiently than competitor's supercoarse diamonds when used on zirconia.

### **The challenges of working with zirconia in the dental office:**

#### **Problem:**

- **Fracturing:** Excessive heat buildup using coarse or supercoarse diamonds can lead to fractures
- **Surface Finish:** Coarse and supercoarse diamonds leave an unwanted rough surface
- **Excessive Wear on Diamonds:** Expensive standard diamonds wear out prematurely when used on zirconia substructures causing added expense for the dental lab

#### **Solution:**

- **Quality and Selection:** SS White offers four Great White Z Diamonds, ideal for shaping, contouring and finishing the margins of zirconia substructures with accurately and efficiently
- **Heat Reduction:** Because Great White Z Diamonds are fine grit; heat buildup is kept to a minimum. Reducing the heat generated when working on zirconia substructures is important to minimize the occurrence of fracturing that can take place when coarse and supercoarse diamonds are used
- **Fast, Smooth Cutting:** Great White Z's unique layering of fine grit diamond particles creates a very smooth, fast cutting instrument. Great White Z outperforms coarse and supercoarse diamonds, while leaving a smoother surface texture

# Crown Removal

With all restorations, there is a small percent that fail. The removal of failed restorations is always difficult to manage, whether it is porcelain fused to metal or all ceramic crowns. Now, with the increased use of new dental materials, clinicians are seeing an increase in the number of crowns that use zirconia copings that need removal. SS White has been at the forefront of crown removal for the past two decades. The development of the metal cutting Great White Gold Series of carbide burs in the 1980's was seen as a solution to a real problem. Porcelain fused to metal crowns were very challenging for clinicians to remove with standard instrumentation, Great White burs offered sharpened dentates which made metal cutting more efficient with less discomfort to the patient.

Great White Z Diamonds are the next generation of restoration removal instruments brought to market by SS White. Great White Z allows for easy slotting through ceramic veneering and zirconia substructures when crown removal is necessary,

## Crown removal through zirconia completed in three steps:

### Step 1: Facial Slotting

The GW Z Diamond #856-018 slots the crown from the facial gingival margin to the incisal edge exposing the zirconia substructures

### Step 2: Buccal Slotting

The #856-018 GW Z Diamond slots the crown from the lingual gingival margin to the incisal until it meets the facial cut at the incisal edge.

### Step 3: Separation

After the zirconia substructure has been successfully sectioned from the buccal margin to the lingual margin, a crown spreader is used to remove the crown from the tooth.

## 3 Steps to Crown Removal Using the Great White Z Diamond



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## **Endodontic Access**

The need for creating endodontic access through porcelain veneering and zirconia copings calls for the use of a specialty diamond instrument such as Great White Z. When creating endodontic access through zirconia copings, Great White Z Diamonds guard against micro-fractures. Creating micro fractures can often necessitate the need for a new crown to be placed after successful endodontic treatment has taken place, costing the clinician time and the patient extra money.

Great White Z Diamonds will penetrate easily through the occlusal surface of both ceramic and zirconia to create and enlarge endodontic access.

### **Endodontic access created through zirconia in three steps:**

#### **Step 1: Penetration through porcelain veneering**

GW Z Diamond #801-016 creates the Initial preparation through the veneering porcelain with a slightly wider access opening

#### **Step 2: Penetration through zirconia substructure**

Great White Z Diamond #801-016 cuts a preparation through the zirconia substructure

#### **Step 3: Access expansion and finishing**

Great White Z #856-018 is used to blend the entire access opening to allow for excellent visualization for treatment

### 3 Steps to Creating Endodontic Access through Zirconia Coping



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