Crown and Bridge Removers

1. CORONAflex 2005
   KaVo

2. Kline Crown Remover
   Brasseler

3. ATD Automatic Crown and Bridge Remover
   J. Morita USA

4a. Crown Spreader 134
    Brasseler

4b. Zena Spreader/Elevator
    Brasseler

5. Easy Pneumatic Crown and Bridge Remover II (Slim Line)
   Dent Corp
Removing a definitively cemented restoration has always been an unpleasant, anxiety-ridden, risky task. Even with the more efficient burs designed to cut through metal, sectioning a crown or bridge retainer is still time-consuming and, of course, destroys the restoration. However, it still remains the safest way in terms of preserving the natural tooth on which the restoration is placed. But there are also instances when you and the patient want to try to save the restoration from having to be remade.

The instruments in this category are quite varied, from hand-powered simplicity to precision-made (and expensive) air-activated units. This makes apples-to-apples comparisons more difficult. However, since they are all being marketed for the same purpose, we have taken into consideration their value compared to their price.
Description
Air-activated device. Main component is a gun-like, relatively heavy (1.9lb/0.9kg), satin finish, stainless steel instrument with a high quality fit and finish appearance. This device looks and feels expensive. The air line attaches to the base of the handle quickly and easily due to KaVo’s Multiflex coupler. The end of the barrel contains a small extension, which delivers the impact for removing the restoration. This end rotates 360˚ with the barrel. On the top of the barrel, slightly forward of the handle, is a small hole. This hole needs to be covered and uncovered to activate the instrument (see Use). Finally, the impact control knob is at the back of the barrel. A simple rotation increases or decreases the force applied to the restoration.

Tips
Does not have the same type of tips that other instruments typically include.

Forceps  Looks like a needle holder, which, instead of holding a suture needle, is holding what looks like a small vise clamp. This clamp goes over a restoration to be removed and is tightened apical to the height of contour.

Clamps  Shaped like a U, with the ends flattened and perforated with retentive holes. The ends are designed to be adhesively attached to the facial and lingual surfaces of a crown.

Loop and Loop Holder  The Loop is a U-shaped wire with small retentive balls on each end. These ends fit into slots in the Loop Holder.

Use
Regardless of which tip you use, the activation steps are the same. Step on your unit’s foot control to get air to the instrument, place your finger over the air hole on the top of the barrel, and then remove your finger. The change in air pressure activates the instrument.

Cleaning and Sterilizing
Wipe off any debris as usual and autoclave. Does not require any lubrication.

Packaging
Hard, black plastic case with foam securing the contents. Due to the many small parts and costs of the system, we would have preferred that this container was autoclavable to prevent the many parts from being fragmented.

Directions
Small coated paper foldout with color illustrations and clinical photos. Very well done and easy to follow. But it uses the term equator instead of height of contour, when describing how to use the forceps. There is also a video (supplied on request) showing the assembly and operation. Clinical parts of the video are adequate, but very brief and one restoration was removed without any throat drape. There are also plain paper instructions on maintenance and assembly.
Description
Stainless steel, pliers-like instrument with one end having a pin, 6mm long and 1.6mm in diameter, while the other end is flat and pointed. The base of the pin rotates 360°. Designed for premolars and molars.

Use
Penetrate the crown over the most accessible cusp. Be sure this access is larger than the 1.6mm diameter of the pin. If there is not a purchase point on the margin, cut a notch in the margin. For porcelain butt joints, a metal lingual collar would be preferred, but access to this area may be difficult. Rotate the pin so it can engage the tooth through the prepared channel, engage the margin or the prepared notch with the pointed flat end, and squeeze the handles together to produce pressure on the crown to break the cement seal. This should allow you to remove the crown without damaging the tooth.

Cleaning and Sterilizing
Wipe off any debris as usual and dry heat or autoclave.

Packaging
White cardboard box with bubblewrap.

Directions
Single sheet of glossy paper with easy to follow instructions. However, its contention that you can use this instrument “leaving the crown or bridge intact” does not reflect the fact that you have to at least prepare the channel through a cusp area. By definition, once you penetrate the crown, it is no longer “intact”, especially if you also have to prepare the notch at the margin.
Air-activated device that removes restorations through vibrations rather than the more typical jack hammer effect. Mounts onto an E-type, Star Titan or Midwest Shorty air motor or an electric handpiece motor. Measuring about 10.5in/26.7cm long with tip, 0.7in/1.9cm in diameter and weighing 7.9oz/224.0g when mounted on a Midwest Shorty, its satin-finished stainless steel body has a sinewy, curvaceous silhouette that feels comfortable to hold. There is a rotary control knob close to the front end that turns the head of the instrument to the left to increase the intensity or right to decrease. The instrument is not only conveniently imprinted with a “–” and “+” to remind you which way to lower or raise the intensity, but there are even icons to guide you. By increasing the motor speed, you also can increase its frequency.

Tips
The main tips are actually wire loops, which are secured easily into the end with an opening to accommodate the locking mechanism. In addition, there are four more conventional hook tips.

Use
For removing bridges, select one or more of the wire-loop tips. Remove one end of the wire loop, insert it through the gingival embrasure between bridge units, and reinsert the end of the wire loop into the tip. Then insert the opposite end of the wire loop tip into the device and twist to lock it in place. Finally, activate the instrument along the long axis of the teeth to loosen and remove the bridge. However, the end of the wire is larger than the wire itself. When the bridge is tight against the tissue, this end is difficult to pass through the embrasure. You can usually get it through the embrasure, but you may end up traumatizing the soft tissue. It’s also a little tricky reattaching the wire to the tip to re-create the loop.

Regardless of whether you choose to use one of the conventional tips or a loop, merely screw one of them into the head of the instrument. Engage the restoration and place dislodging pressure on it using a pulling motion. This pulling motion will move the instrument into the active mode. Maintaining this dislodging pressure, activate the instrument by stepping onto the foot control of the dental unit. This will send vibrations through the restoration to break the cement seal.

Cleaning and Sterilizing
Wipe off any debris as usual and autoclave. Lubricate as you would a handpiece.

Packaging
Clear plastic box with blue plastic insert securing contents. Well-organized, but not designed for sterilization. Due to the many small parts and costs of the system, we would have preferred that this container was autoclavable to prevent the many parts from being fragmented.

Directions
Coated paper booklet. The booklet is well-done with numerous photos and drawings.
**Crown Spreader 134**

*Brasseler*

Cost: $41.50  
Warranty: 1 year

**RAVES & RANTS**

- More refined than a screwdriver
- Two ends fit just about all situations
- Not very sturdy
- Lack of bulk can cause it to slip out of your hands even with thick handles

**Description**

Double-ended stainless steel instruments with flat-angled ends designed to spread a crown after it has been grooved with a diamond and/or carbide.

**Handles**

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Handle Diameter (mm)</th>
<th>Handle Design</th>
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</thead>
<tbody>
<tr>
<td>B134/4</td>
<td>7.8</td>
<td>Round with herringbone serrations</td>
</tr>
<tr>
<td>B134/6</td>
<td>9.5</td>
<td>Round with herringbone serrations</td>
</tr>
<tr>
<td>EB134</td>
<td>9.6</td>
<td>Hexagonal with finger depressions</td>
</tr>
</tbody>
</table>

**Use**

Merely insert one of the ends of the instrument into the prepared groove and torque the handle to spread about the restoration.

**Cleaning and Sterilizing**

Wipe off any debris as usual and dry heat or autoclave.

**Packaging**

The B134/4 and EB134 come in plastic tubes, while the B134/6 comes in a sealed plastic pouch with a cardboard insert identifying the product.

**Directions**

None.

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**Zena Spreader/Elevator**

*Brasseler*

NEW

Cost: $44.99  
Warranty: 1 year

**RAVES & RANTS**

- You want heavy duty—this is it!
- No learning curve
- End is not angled
- Access in posterior is limited

**Description**

Stainless steel instrument with octagonal tapered handle that resembles a straight surgical elevator, but with a flat end without the serrations on the tip.

**Use**

Merely insert the end of the instrument into the prepared groove and torque the handle to spread about the restoration.

**Cleaning and Sterilizing**

Wipe off any debris as usual and dry heat or autoclave.

**Packaging**

Plastic bag.

**Directions**

None.
Description
Air-activated crown and bridge remover that breaks cement seal using short, repeated, and low impact force. The new design is slightly smaller and lighter than the previous version (about 9.1in/23.2cm long with tip, 0.67in/1.7cm in diameter, 6.2oz/175.8g), but it still resembles a big sonic scaler. Having a smooth, satin finish, it attaches to any two-hole air line, just as you would with a straight handpiece. There is a rotary control knob directly above the air connection. At the extreme clockwise position, the air pressure is lowest, while the highest pressure is produced when the knob is turned all the way counterclockwise. The instrument is conveniently imprinted with a “−” and “+” to remind you which way to lower or raise the pressure. The round activation knob is at the opposite end of the instrument, close to the tip. There is also a wrench to tighten and loosen the tips.

Tips
Three basic tips: two for removing crowns (one is straight and one is contra-angled) and one has a right-angled end for engaging the connector area of bridges. These tips screw into the main instrument. A fourth tip is a hook that is designed to work in tandem with the Teflon wire loops, which are wrapped around the connector areas of a bridge.

Use
After selecting and inserting your tip and attaching the instrument to your air line, move the pressure knob to its lowest position, engage the restoration, apply pressure on your dental unit’s foot control, and push the activation button. Be sure to warn the patient that he or she will feel a slight “jolt” or you will startle the patient when the instrument is activated. For most restorations, several activations will accomplish your goal. And the relatively loud whooshing sound of air escaping from the back of the instru-

Cleaning and Sterilizing
Remove rubber gasket from end that attaches to the air line, wipe the instrument to remove debris, and sterilize by autoclave, Chemicleave, or dry heat. There is no other maintenance or lubrication required.

Packaging
Blue plastic “tackle box”, with contents secured in polyurethane niches. Nice, organized, secure ensemble, but you will probably not use the box due to the need to keep instruments and tips in a sterile bag until ready to use.

Directions
Plain paper booklet with several photos of the kit contents, one clinical photo and several line drawings. Logical instructions, easy to understand, but the quality of this booklet is poor—it looks like it was produced on a copier that was out of toner. However, it suggests that, when a crown fits a tooth precisely, you may have to cut a groove parallel to the lingual margin to get a purchase point for the instrument. If you are going to that trouble, you may as well play it safe and cut the crown off. There is also a CD with a slide show demonstrating the proper use of the instrument plus a video.
The **CORONAflex 2005** is the top-of-the-line in both precision and cost. It gives you the most options and the force applied is most refined. If a restoration can be removed, this instrument will be able to do it. But the premium you pay needs to be justified by the frequency of use. If you only remove a few restorations per year, this is probably not the instrument to buy. On the other hand, if you are called upon to save old crowns and bridges for whatever reason on a regular basis, you will want to give this instrument serious consideration.

The **Kline Crown Remover** approaches crown removal from the perspective that you may want to use the crown again, which would negate using one of the spreaders. Even then, this instrument doesn’t exactly leave the crown perfectly intact, but with its careful utilization, you could repair the access preparations and recement it if necessary. There is a learning curve with this instrument, but it is a reasonably safe alternative over the automated equipment in this category.

The **ATD Automatic Crown and Bridge Remover** is, perhaps, the safest and kindest in this group. Using vibrations instead of jolts, it not only has the least potential for fracturing a tooth or restoration, but patients seem to have less complaints about it compared to the other powered products. It also has an excellent selection of tips. However, you must have a solid purchase point, which you might not always have with a crown. You also need to mount it on a motor, rather than connecting it directly to an air line. If you don’t have a Midwest or electric motor, you’re out of luck. Finally, while vibrations sound good in theory, they don’t always provide rapid removal of definitively cemented crowns and bridges.

The **Crown Spreaders** are well-made, dedicated instruments designed to accomplish separating the two halves of a crown after a groove is made. Their ends are angled to allow easy insertion and are rigid enough to provide sufficient force to break the cement seal. You have your choice of three different handles, two of which have the same exact design, but one is slightly thicker than the other, while the third is thick, smooth, and hexagonal. The one you choose is personal preference, but due to the pressure that needs to be applied to break the cement seal, the thicker handled instruments would be favored over the thinner one.

The **Zena Spreader/Elevator** is a heavy duty spreader designed to provide maximum force with no pretensions of finesse. It’s a dead ringer for a straight surgical elevator, with the same type of bulky handle. As such, its lack of angles limits its access posteriorly.

The **Easy Pneumatic Crown and Bridge Remover II**, aka **Slim Line**, has been further refined, with this new model having a much less imposing profile (although it is still quite long) compared to the previous version. It is also much quieter. Although not exactly atraumatic, it does not seem to bother patients as much as the typical “reverse hammers.” It is almost always successful in removing restorations, as long as you find a point of purchase.