



# Restorative Manual



“Cast-To” Gold Abutment System

“Cast-To” Gold Abutments are used to fabricate implant-level, custom cast restorations that provide subgingival margins for esthetics, reduced height for vertical occlusal clearance and/or custom angles. These abutment assemblies consist of a hex-engaging gold base, an abutment screw and a castable press-fit Plastic Sheath.

The press-fit Plastic Sheath is modified and incorporated into the wax framework pattern. After investing, the wax and Plastic Sheath are burned out of the pattern following the lost wax process. When molten alloy is cast into the investment mold, the base component is incorporated into the casting and provides a machined interface that mates directly with the implant. The finished casting can be used as a custom abutment that receives a cemented single- or multiple-unit restoration, or it can be veneered and used as a single-unit, screw-retained, combined abutment-and-crown. Caution: Multi-unit, screw-retained restorations cannot be fabricated with these abutments; use non-engaging abutments for these types of restorations.

The gold base is fabricated from a non-oxidizing alloy that promotes chemical adhesion of the cast alloy, but does not permit the adhesion of porcelain. Therefore, a porcelain bonding alloy must be added to all areas of the gold base where porcelain veneering is desired.

### Screw-Retained Crown



### Custom Angled Abutment



### Custom Abutments



#### Abutment for the Internal Hex Implant, 3.5mmD platform



“Cast-To”  
Gold Abutment  
[HLA3G]

#### Abutment for the Internal Hex Implant, 5.7mmD platform



“Cast-To”  
Gold Abutment  
[HLA5G]

#### Abutment for the Internal Hex Implant, 4.5mmD platform



“Cast-To”  
Gold Abutment  
[HLA4G]

#### Abutment for the AdVent Implant, 4.5mmD platform



“Cast-To”  
Gold Abutment  
[AVGA]

#### Abutment for the Wide Platform AdVent, 5.7mmD platform



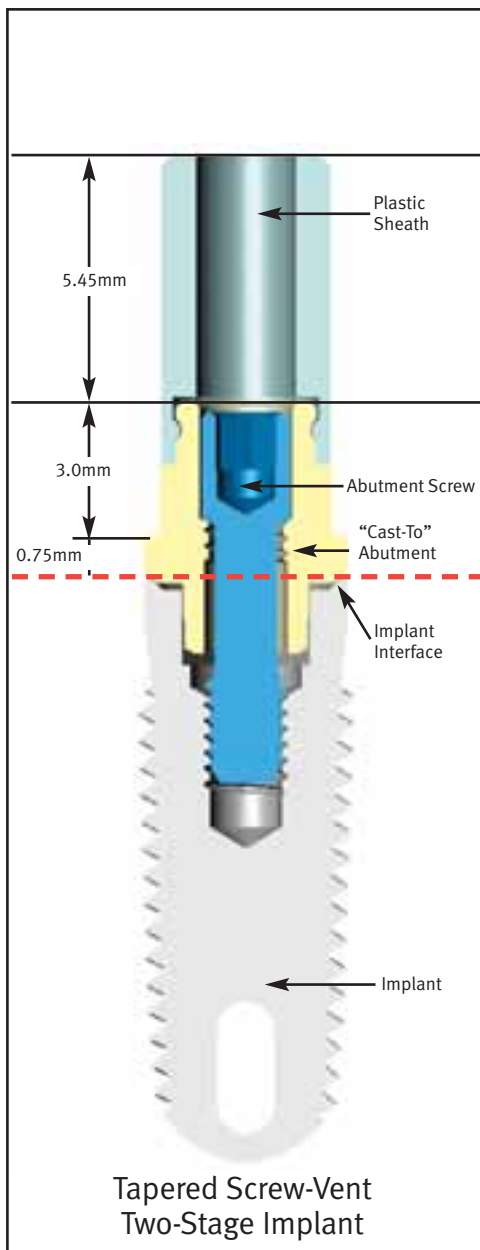
“Cast-To”  
Gold Abutment  
[HLA5G]

**“Cast-To” Gold Abutment for Tapered Screw-Vent, Screw-Vent and AdVent Implant Systems**

“Cast-To” Gold Abutments [HLA3G, HLA4G, HLA5G AND AVGA] for internal hex implants have a low profile collar that allows for an esthetic, subgingival connection above the friction-fit abutment/implant interface.

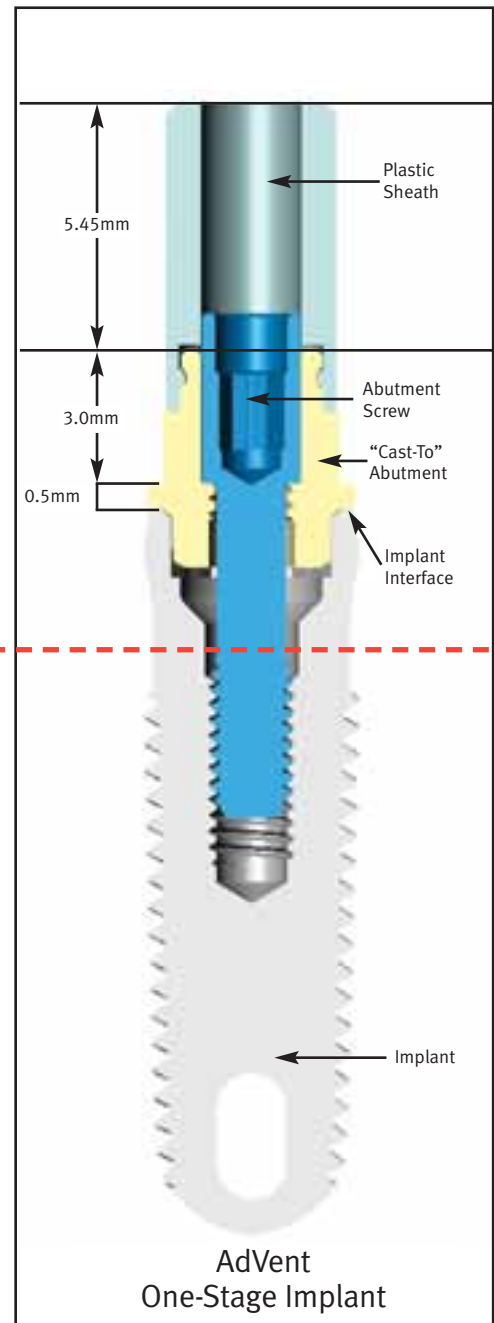
The abutments are packaged with a gold base, a 3.8mmD Plastic Castable Sheath [OPS] and an Abutment Screw [MHLAS] for [HLA3G, HLA4G, HLA5G] and [AVHLS] for the standard platform (4.5mmD) AdVent Abutment [AVGA]. Once all the restorative components are in place, the minimum vertical clearance between the implant interface and the opposing dentition is 3.75mmL and 3.5mmL, respectively (as shown below).

These abutments require a Removal Tool [TLRT2] to disengage their friction-fit once the abutments are fully seated on the implants or implant analogs.



Maximum Reduction

Bone Height



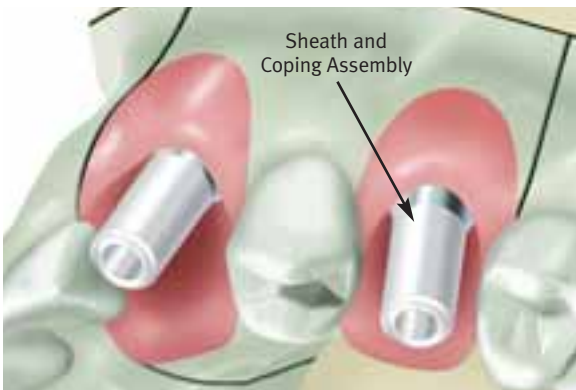
Maximum Reduction

AdVent One-Stage Implant



### Selecting the "Cast-To" Gold Abutment

Fabricate the working cast utilizing one of the transfer procedures mentioned in the previous section. "Cast-To" Gold Abutments for internal hex [HLA3G, HLA4G, HLA5G and AVGA] implants consist of a hexed, gold "Cast-To" Abutment body, abutment screw and 3.8mmD press-fit Plastic Sheath [OPS].



### Attaching the abutments and Plastic Sheaths

Carefully seat the assemblies onto the Implant Analogs in the working cast. Thread the abutment screws through the abutment assemblies and into the Implant Analogs with the 1.25mmD Hex Tool. To fully seat the friction-fit abutments, tighten the abutment screws to 30 Ncm with a calibrated torque wrench. Once seated, utilize the Removal Tool [TLRT2] to retrieve the abutments from the Implant Analogs, as required.



### Trimming the Plastic Sheaths

Visually determine the modifications needed to provide adequate clearance for adjacent and opposing dentition. Consult with the clinician to determine any additional modifications needed for the case design. The case illustrated here involves the fabrication of a cast abutment on the canine and a screw-retained, combination abutment-and-crown on the second premolar. Section the Plastic Sheaths with a cutting disk to obtain the correct vertical and interproximal clearance.



### Fabricating the framework pattern

Use wax and/or acrylic burnout resin to incorporate the modified gold base and Plastic Sheaths into the pattern. Build up the final contours of the pattern with crown and bridge wax.

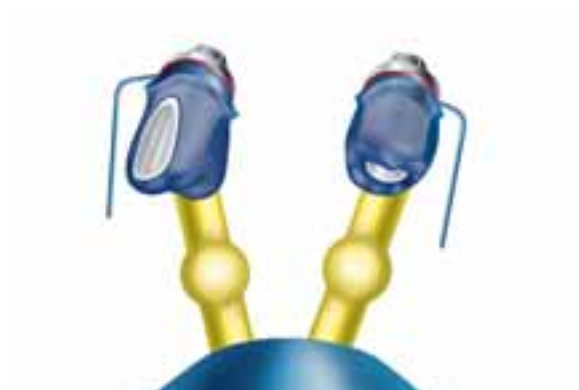
As an option to using the Plastic Sheaths and abutment screws:

- Secure the abutments to the Implant Analogs with the Waxing Screws [MTWSD for internal hex implants].
- Lightly lubricate the Waxing Screw.
- Use wax and or acrylic burnout resin and fabricate the framework pattern around the screw and directly to the abutments.



### Removing the framework pattern

Remove the abutment screw with the 1.25mmD Hex Tool. Thread the Removal Tool [TLRT2] through the abutment pattern and into the implant to remove the pattern from the Implant Analog.



### Spruing, casting and divesting of the metal framework

Attach 10-gauge sprue wax with reservoirs to the thickest part of each unit. Carefully apply a thin layer of wax or burnout resin at the junction of the abutment and the Plastic Sheath to ensure a smooth casting. Add auxiliary sprues and vents to prevent porosity in the casting as needed. Do not use a debubbler when investing the gold or plastic components.

When casting to gold components, the casting alloy must not exceed a casting temperature of 2350°F/1288°C. Cast the framework pattern according to conventional techniques utilizing a two-stage burnout, which is standard practice with patterns containing plastic or resin. The burnout temperature should not exceed 1500°F/815°C, with a hold time of no longer than 1 hour. Utilize high noble or noble alloy with a compatible investment material, as described in the manufacturer’s guidelines.



Divest the casting; chemical investment removers may also be used with gold components. To ensure that the fitting surface of the incorporated copings are not damaged, protect the abutment interface while blasting the abutment with glass bead. Clean the casting in an ultrasonic unit. Refine the screw access holes within the casting by hand-rotating the Reamer for “Cast-To” Abutments [MRI for HLA3G, HLA4G and HLA5G; PR for AVGA].



### Finishing the metal framework

Confirm that a passive fit has been achieved on the corresponding Implant Analog in the working cast. The soft tissue replica can be removed from the working cast to provide visual access to the cast abutment/implant analog connection, if desired. Use the abutment screws to secure the finished cast metal abutments to the Implant Analogs in the working cast and return it to the clinician for try-in. Make sure the clinician has the appropriate Removal Tool [TLRT2] to disengage the incorporated “Cast-To” Gold Abutments from the working cast.



### Removing the healing components

Unthread the abutment screws with the 1.25mmD Hex Tool. Remove the abutments from the working cast with the appropriate removal tool. Sterilize the components according to standard clinical procedures. Remove the provisional restoration from the patient's mouth. Unthread the Healing Collars or Surgical Cover Screws with the 1.25mmD Hex Tool. Clean and sterilize the components for placement after the cast abutment try-in.



### Placing the cast abutments

Interdigitate the hex of each cast post with its corresponding implant, then use the 1.25mmD Hex Tool to thread the abutment screw through the cast post body and into the implant. Tighten the abutment screw to 30 Ncm with a calibrated torque wrench. Wait ten minutes, then retighten the cast posts to 30 Ncm. Take a radiograph to verify that the cast posts are completely seated.



### Making the adjustments to the cast abutments

The premolar will be a screw-retained, combination post-and-porcelain-fused-to-metal crown. The canine will be a cast abutment with a porcelain-fused-to-metal crown cemented onto it. To make allowance for the different restorative procedures, make the required modifications to the gingival, occlusal and interproximal contours of the cast abutments with a round-end diamond or 12-fluted carbide bur in a high-speed handpiece, and under copious irrigation.

Follow appropriate procedures for each type of restoration listed below. Note that two options are available for restoring the cast abutment in the canine position.



### Canine: cemented crown — option 1

Make a crown and bridge impression of the seated cast post. Place the provisional fabricated by the laboratory or chairside on the cast abutment. Return the impression to the laboratory for the fabrication of a porcelain-fused-to-metal prosthesis according to routine laboratory procedures for crown and bridge.



**Canine: cemented crown — option 2**

Unthread the abutment screw with the Hex Tool. Remove the abutment post from the mouth with the appropriate Removal Tool [TLRT2]. Sterilize the cast post assembly according to standard clinical procedures and reseat it on the working cast. Select a tooth shade for the restoration, reseat the healing components with the 1.25mmD Hex Tool and replace the provisional restoration in the patient’s mouth. Send the working cast with the cast post to the laboratory for fabrication of the final porcelain-fused-to-metal restoration. The laboratory can use the cast post as a die to fabricate the coping.



**Canine: cemented crown — option 2**

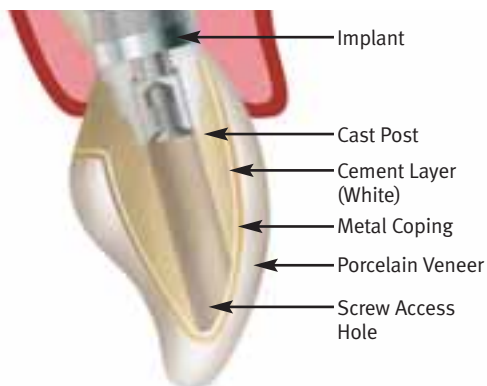
Prepare the abutment for fabrication of a porcelain-fused-to-metal restoration. Seal the abutment screw access hole of the cast post with a resilient material. Lubricate the cast post and flow autopolymerizing burnout resin over the contour of the cast post above the proposed restoration finish line. Do not use crown and bridge wax directly on the cast post, as it can pull away from the metal and cause inaccuracies in the final metal coping.



**Canine: cemented crown — options 1 & 2**

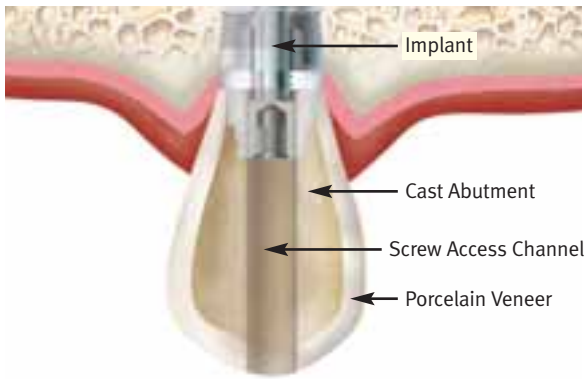
Build up the final contour of the coping with crown and bridge wax. Attach 10-gauge sprue wax to the thickest part of the coping. Invest the coping:

- Option 1: Follow standard setting expansion of the investment material when using a stone die.
- Option 2: Allow for a greater setting expansion of the investment material when using a metal die (abutment). This will compensate for the lack of die spacer used on the abutment when the coping pattern was fabricated.



**Canine: cemented crown — options 1 & 2**

Fabricate the porcelain-fused-to-metal crown according to routine laboratory procedures. The result will be a three-piece prosthesis consisting of a screw-retained post (two-piece) for the implant, and a porcelain-fused-to-metal crown that will be cemented onto the post.



### Premolar: combination abutment and crown

Unthread the abutment screw with the Hex Tool. Remove the abutment from the mouth with the appropriate Removal Tool [TLRT2]. Sterilize the cast abutment assembly according to standard clinical procedures and reseat it on the working cast. Select a tooth shade for the restoration, reseat the healing component with the Hex Tool and replace the provisional restoration in the patient's mouth. Prepare the abutment removed from the premolar position for porcelain application. Follow routine laboratory procedures for a screw-retained, combination abutment-and-crown prosthesis. Do not allow porcelain to enter the screw access channel of the prosthesis.



### Canine and premolar

Carefully polish the finished prostheses without damaging the machined interfaces or crown margins. Attach additional Implant Analogs to the prostheses prior to polishing.

Reseat the prostheses on the working cast and return them to the clinician for final delivery.



### Delivering the final prosthesis

Remove the prostheses and abutment from the working cast and sterilize them. Remove the provisional restorations and use the Hex Tool to remove the healing components.

Interdigitate the hexes of the abutments and the hexes of their corresponding implants. Thread the abutment screws through the abutment bodies and into the implants with the Hex Tool. Tighten the abutment screws to 30 Ncm with a calibrated torque wrench. Wait ten minutes, then retighten the screws. Take a radiograph to verify complete seating of the cast abutment and combined abutment-and-crown.

Premolar: Confirm the fit, contour and occlusion of the restoration, and make any needed final adjustments. Insert small cotton pellets or other resilient material into the screw access channel to ensure access to the screw head, then fill the channel with composite resin material to complete the contour and esthetics of the restoration.

Canine: Fill the screw access channel of the custom abutment post with cotton pellets to ensure access to the screw head, then fill the channel with a light-curing resilient material or gutta-percha. Confirm the fit, contour and occlusion of the restoration, and make any needed final adjustments. Cement the final prosthesis with a cement of choice. To facilitate future retrievability, a soft-access cement may be used.

Provide the patient with oral hygiene instructions prior to release.

