

Laboratory guide for fabricating a stainless steel crown/cantilever for the

HANKS TELESCOPING®

HERBST™ (threaded screw)

THE MAXILLARY APPLIANCE

1. Fit, trim, and festoon the stainless steel crowns
2. The maxillary nut is identical to the mandibular nut. Inspect the nut and observe that there is an arch wire hole drilled through the wide dimension oriented 90° to and just above the threaded hole. This arch wire hole will accommodate full size .022" wires. Notice also that the threaded nut hole is open on both sides. It is made this way to allow the best machining of the thread. Since the nut is open on both ends, great care must be taken when soldering to keep solder from filling the threads. Ideally, the threads should be treated with "anti-flux" to keep the solder or braze away.
3. Tack weld the nut onto the buccal surface of the crown according to the following:
 - a. First, notice that the nut has two different surfaces, front and back. The front surface is the one with a chamfer leading into the threads to help guide a screw into the hole; the back surface is beveled at an angle to adapt to the buccal crown curvature (See Figs. 1 and 2). Position the nut so that it centers over the buccal groove antero-posteriorly. Also, center the nut occluso-lingually so that the arch wire hole is located to the occlusal of the nut hole and so that it will align properly with arch wire slots on the bicuspid.
 - Do not place the nut on the distobuccal line angle which is usually where it is soldered because that will ruin part of the Hanks Telescoping Herbst's great advantage. Refer to the pictures.**
 - b. Since a buccal tube is incorporated into the nut, it is no longer necessary to add a buccal tube assembly. It is advisable to solder a hook – see picture – on the gingival aspect of the nut for the possible attachment of elastics.
4. Flux and oxides produced by the soldering process are most easily removed by the following steps:
 - a. Rinse in hot water
 - b. Electro-polish for **no more than 10 seconds** (be careful! Electro-polishing will remove solder while it polishes the stainless steel and you don't want to weaken the solder joint by removing solder.)
 - c. Ultra-sonic for 5 to 10 minutes and then polish.

THE MANDIBULAR APPLIANCE

1. The mandibular nut for crown-type appliances is identical to the maxillary nut. Inspect the nut and observe that it is open on both ends. It is made this way to allow the best machining of the thread.



FIG 1



FIG 2

Since the nut is open on both ends, great care must be taken when soldering to keep solder from filling the threads. The mandibular nut for cantilever designs has two cross holes:

- a. Upper .022" cross hole is for the arch wire, and
- b. Lower .060" crosshole is for the round cantilever rod depicted in the photos.

2. For bicuspid crown appliances, tack weld the nut onto the crown according to the following:
 - a. First, notice that nut has two different surfaces, front and back. The front surface is the one with a chamfer leading into the threads to help guide a screw into the hole; the back surface does not have a thread chamfer and is concave.
 - b. Next, but before tacking, note the arch wire hole and orient it occlusally or gingivally as desired (See Fig. 3). Tack weld.
3. For cantilever appliances, the nut comes already joined to the .060" rod. Do the following to position the nut:
 - a. Locate the nut deep into the embrasure between the cuspid and first bicuspid or first deciduous molar (See Fig. 4), then
 - b. Adjust the tail of the rod to the molar crown by employing a bayonet bend and contouring bends as necessary to adapt to the buccal surface of the crown (See Fig. 5), then
 - c. Braze.
 - d. Polish

CHOOSING THE CORRECT TELESCOPING ROD/TUBE LENGTH

The telescopes can be pre-measured by simply hand articulating the work models with appliances in place. Articulate so that the incisors are in an edge-to-edge position or the activated position prescribed by the doctor and then measure from the center of the upper nut to the center of the lower nut. That dimension will be such that either a 20mm, 24mm, 27mm, or 31 mm length telescope should fit. If the dimension is between those lengths, choose the closest shorter length and then adjust by adding a shim if necessary.

This same procedure can be done by the clinician chair-side with the



FIG 3



FIG 4



FIG 5

appliances in the patient's mouth. Communicate with the prescribing doctor to determine whether the telescopes will be fit chair-side or in the laboratory. The following instructions are provided to the doctor for chair-side fitting:

1. Use a panoramic x-ray incisor guide to help the patient posture the mandible forward. This will bring the incisors into the desired edge-to-edge position and keep the mandible from wandering as measurements are made.
2. Use a 4 to 6 inch length of retainer wire (.036", etc.). Make a 2mm long 90° bend at one end,
3. Insert the 2mm bent end into the upper nut hole and against the mesial edge,
4. Now make a mark on the wire where it crosses the mesial edge of the lower nut hole (doing it this way will give you an accurate center-of-hole to center-of-hole measurement),
5. Now measure on the wire from the bend to the mark and you have the length of telescope for that side.
6. Repeat the preceding steps for the opposite side and select the appropriate length.
7. Install the mechanisms

UNDERSTANDING THE UNIQUENESS OF THE TELESCOPING BALL AND SOCKET SCREW.

The telescoping screw has been designed with what is referred to as an "interference thread". What this means is that for the last ½ to ¼ turn the opposing threads of nut and screw bind thus locking them together so that a strong force is required to undo the screw. No more Cekabond! Also keep in mind that there are only 3 ½ full (360°) turns until the screw is completely seated. Usually, when the screw is turned into place the operator will make a partial turn which ranges from about a ¼ turn to a ½ turn; therefore, it will take at least 7 or more partial turns to completely seat the screw. Furthermore, you will notice that the screw gets progressively harder to turn. That is normal because the interference threads are beginning to engage. Keep turning until the screw stops. It is a good idea to experience this phenomenon outside the mouth where one has good visibility and can actually see the screw seat in the nut. **If the screw is hard to turn right from the start, remove and start over again because you may be cross threading and this will ruin the nut.**

The Herbst Appliance is a trademark of Dentaaurum

* Hanks Telescoping Herbst Patents #6,244,862 #6,361,315

INSTRUCTION/WARNING

FOR SINGLE USE ONLY

American Orthodontics Corporation and its agents will not be responsible for any and all claims resulting from multiple use of this appliance. Use of this dental device is restricted to duly licensed dental professionals. Do not use this product on patients allergic to nickel and/or chromium metals.

PATIENT INSTRUCTIONS

This appliance is designed to withstand normal forces generated in the mouth but if subjected to abnormal conditions, it may break and become dangerous to you. If the appliance should break or feel or look different than when your doctor installed it, immediately contact the doctor and follow his instructions.

Clinical guide for delivering and adjusting
the
HANKS TELESCOPING®
HERBST™ (threaded screw)

**FIT AND CEMENT MAXILLARY
MOLAR CROWNS**

BEFORE CEMENTING

Disconnect telescopes from the crowns.

1. Because the crown nuts have been located either in the middle of the buccal surface or toward the mesial, you will be able to install the telescopes without patient discomfort and with relative ease and excellent visibility after the crowns have been cemented and excess cement removed. **Again, it is no longer necessary to cement crowns with rods and tubes attached.**
2. In the event that the nuts are located on the distobuccal line angle of the crowns, it may be necessary to connect the telescopes during cementation because access is restricted and visibility diminished. One of the great advantages afforded by the telescopes is that they can be attached forward on the molar crowns. With the traditional rod and single tube design, the distal location on the molar is necessary to keep the tube and rod long enough to avoid disengagement. The telescope solves the problem of disengagement, so locating the attachment forward on the molar is ideal in terms of patient comfort and operator access. **This is an important concept to understand and you should specifically define where the upper molar nut is to be located on your laboratory instructions, otherwise the laboratory technician may locate the nut in its traditional position on the disto-buccal line angle.**

**CEMENT LOWER FIRST BICUSPID CROWNS,
OR MOLAR CROWNS** (for cantilevered designs)

Proceed with this step as you normally do.

AFTER CEMENTING CROWNS

It is not necessary to attach the telescopes immediately. Due to the low profile of the nut there will be minimal irritation to the buccal mucosa if the operator wishes to proceed with lateral arch development (expansion) prior to initiating Herbst therapy.

1. Arch development prior to Herbst therapy is advisable with severe maxillary constriction and especially where there are lingual cross bites involving either one or both of the upper first molars.
2. In previous Herbst rod and single tube designs, it was not uncommon for the tube to interfere with the buccal attachment of the opposing lower molar. With the telescoping design, and due to the pivot range afforded by the ball-and-socket joint, such interference does not occur.

3. Some practitioners prefer to let the patient “ease” into treatment by delaying Herbst onset (installation of rods and tubes) until the patient has had the opportunity to adjust to expansion, etc. That is OK because it will be easy to install the telescoping rods and tubes at a later date. Other operators feel comfortable combining all treatment protocols at the same time and the telescoping assembly lends itself equally well to this approach.

**UNDERSTANDING THE UNIQUENESS OF
THE TELESCOPING SCREW**

The telescoping screw has been designed with what is referred to as an “interference thread”. What this means is that for the last ½ to ¼ turn the opposing threads of nut and screw bind thus locking them together so that a strong force is required to undo the screw. No more Cekabond! Also keep in mind that there are only 3 ½ turns (360°) until the screw is completely seated. Usually, when the screw is turned into place the operator will make a partial turn which ranges from about a ¼ turn to a ½ turn; therefore, it will take at least 7 or more partial turns to completely seat the screw. **Furthermore, you will notice that the screw gets progressively harder to turn. This is normal because the interference threads are beginning to engage. Keep turning until the screw stops.** It is a good idea to experience this phenomenon outside the mouth where one has good visibility and can actually see the screw seat in the nut. **If the screw is hard to turn right from the start, remove and start over again because you may be cross threading and this will ruin the nut.**

**DELIVERING THE TELESCOPING
ROD/TUBE MECHANISMS**

1. The telescopes can be pre-measured by simply hand articulating the work models with appliances in place. Articulate so that the incisors are in an edge-to-edge position or the activated position prescribed by the doctor and then measure from the center of the upper nut to the center of the lower nut. That dimension will be such that either a 20 mm, 24mm, 27mm, or 31 mm length telescope should fit. If the dimension is between those lengths, choose the closest shorter length and then adjust by adding a shim if necessary. Note: The 20 mm ultra short lengths may be necessary for extraction cases or very early mixed dentition cases.
2. Telescoping mechanisms may also be fitted directly by the clinician chair-side with the appliances in the patient's mouth. Follow these steps:
 - a. Use a panoramic incisor guide to help the patient to posture the mandible forward. This will bring the incisors into the desired edge-to-edge position and keep the mandible from wandering as measurements are made.
 - b. Use a 4 to 6 inch length of retainer wire (.036", etc.). Make a 2mm long 90° bend at one end,

- c. Insert the 2mm bent end into the upper nut hole against the mesial edge,
- d. Now make a mark on the wire where it crosses over the mesial edge of the lower nut hole (doing it this way will give you an accurate center-of-hole to center-of-hole measurement),
- e. Now measure on the wire from the bend to the mark and you have the length of telescope for that side.
- f. Repeat the preceding steps for the opposite side and select the appropriate length.
- g. Install the mechanisms.

PERIODIC ACTIVATION TO ADVANCE THE MANDIBLE

Find and examine the 2 mm split-crimpable shims that are used to activate the appliance. **Note: Do not remove screws or telescoping mechanisms directly.** The split shim is placed onto the rod portion of the telescope. Since the shims are split, the activation procedure should proceed as follows:

1. Have the patient open enough to slide the rod slightly out of the tube,
2. Place shim over rod near the socket joint,
3. **With the shim opening facing out toward the operator (split toward cheek)**, squeeze the shim onto the rod with a ligature or side cutter. It is very important that the opening of the shim face out otherwise the shim surface will be the same diameter as the outer tube surface and when the patient closes the cheek mucosa gets pinched between tube and shim. With the shim opening facing out toward the cheek, the tube and shim are not the same diameter and the height difference protects the cheek from being pinched.
4. Apply a small amount of bonding cement to the shim to keep it from traveling up and down the rod and thus annoying the patient. Condition the rod and shim with regular etchant and bond just like doing a tooth.
5. Continue adding successive shims until the desired amount of forward posturing has occurred.

REMOVING THE TELESCOPING APPLIANCE

1. When the desired treatment objective is achieved, the appliance is removed by simply unscrewing the ball screws. This should be the only time during the course of therapy that the telescoping mechanisms are removed.
2. Remove the remaining appliance as you normally do.

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