

3D Lingual Arch



The Wilson 3D lingual Arch is a popular versatile modular appliance. In addition to gaining mandibular anchorage the 3D lingual arch is superb for molar tip, torque and rotation. It may also be used to increase Anterior-Posterior arch length, buccal expansion, and distal molar movement.

The Wilson line of Transpalatal (TPA) and lingual holding arches (HA) provide the security and anchorage of fixed TPA's and HA's but in removable form. While TPA's and HA's are primarily used to maintain expansion and distalization and prevent relapse, the Wilson line offers Diamond loops which allow for continued arch expansion or contraction, unilaterally or bilaterally; expansion or contraction of bicuspids advancement of incisors, and rotation, tip and torque of all molars.

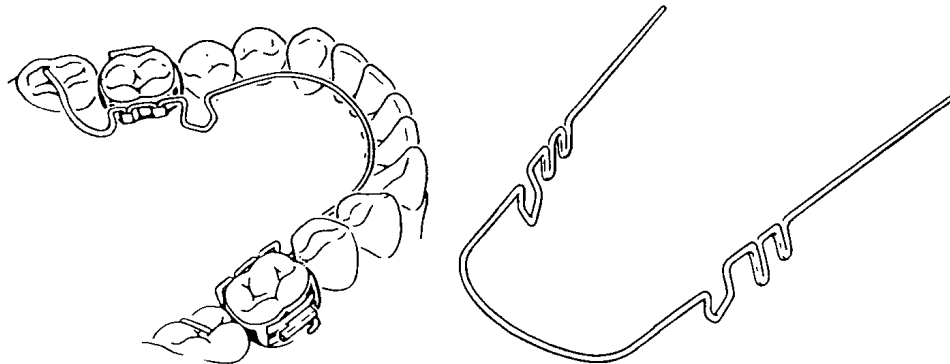
The Wilson 3D lingual arch fits into vertical slots on the lingual of the first molars. The vertical slots allow for quick and easy adjustments throughout treatment. The adjustments are well described and illustrated in the "Enhanced Orthodontics Mechanotherapy Manual" available from RMO.



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3D® LINGUAL ARCH



- Mandibular Anchorage for Rapidly Distalizing Molars
- Holding Arch for Extraction Cases
- Holding Arch for Non-extraction Cases
- Incisor Advancement
- Bilateral Expansion
- Lower Molar Distal Uprighting
- Lower Second Molar Distal Uprighting
- Lower Third Molar Distal Uprighting
- Intrusion Anti-tipback Control
- First Molar Rotations
- First Molar Expansion
- First Molar Contraction
- First Molar Buccal Crown Tip
- First Molar Lingual Crown Tip
- First Molar Buccal Root Torque
- Lingual Arch Retainer
- Nance Holding Arch
- Anterior Root Torque Assister
- Arch Length Modifier
- Impacted Bicuspid Corrector Unilateral
- Impacted Bicuspid Corrector Bilateral

The 3D® Lingual Arch is the key to First Phase rapid molar distalizing with the 3D® Maxillary Bimetric Distalizing Arch without headgear. It is effective both in the mixed dentition and with adults. Utilizing the 3D® modules in the First Phase of multibanded treatment permits broad spectrum mixed dentition treatment.

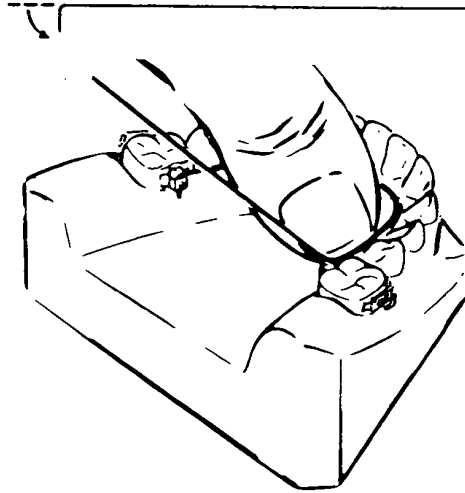
Certain cases require waiting for full eruption. However, many deteriorate into much worse malocclusions during the mixed dentition, particularly in the late mixed dentition when the E spaces are lost. Teeth drift into uncontrolled spaces producing aberrant eruptions. Premature loss of deciduous cuspids permits the lower laterals to drift into cuspid spaces, and lingual tipping and excessive extrusion of these teeth cause a deepening of bite and loss of arch length. Interceptive treatment with lower 3D® holding appliances, upper 3D® Nance Holding Arches and 3D® Space Maintainers and retainers can reduce these problems without interfering with full appliances later.



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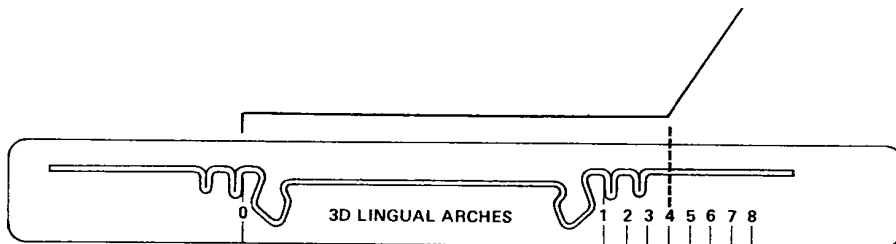
STEP 1



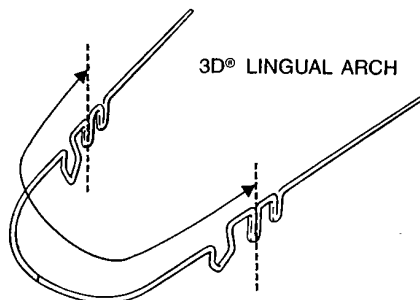
Size selection is simplified by using an .020" brass wire inserted in the mesial tube on one side and formed around the arch with thumb pressure at the gingival borders of the teeth, to the mesial tube on the opposite side, and bent to measure.

STEP 2

You find the proper size by laying the brass wire over the 3D® Lingual Arch Selector.



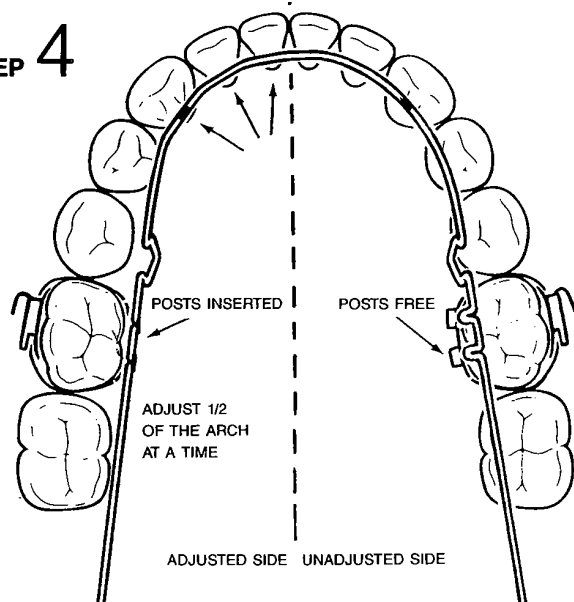
STEP 3



Select the correct size 3D® Lingual Arch from your dispensing system.

Note: If prefabricated arches are in between patient size, always select a smaller size lingual arch. It is easier to enlarge an arch than to reduce dimension.

STEP 4



ADAPTING THE ARCH TO THE ANTERIOR SECTION FOR CONTACT WITH THE CUSPID, LATERAL AND CENTRAL

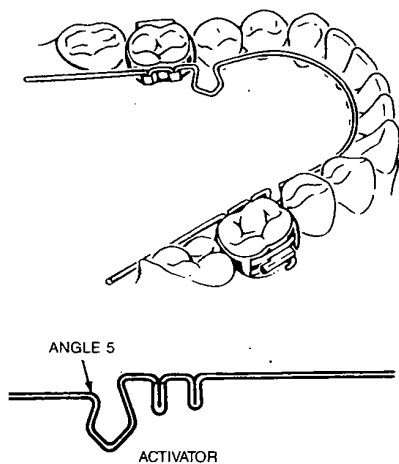
NOTICE:

You will find that in each step of fabrication, if you make your adjustment on only one side of the arch at a time, it will save you time and speed up fabrication. Form one side, then the other side — then check both sides for accuracy.

Continue to position the arch wire to the cingulum on the cuspid, lateral and central. Once this is accomplished, that side is fully positioned.

Now, remove the twin posts. Insert the other twin posts in the other lingual tube and repeat the adaptation of the other side of the arch.

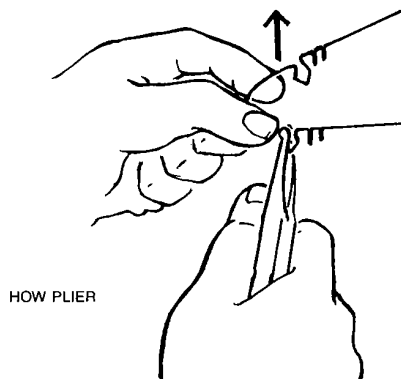
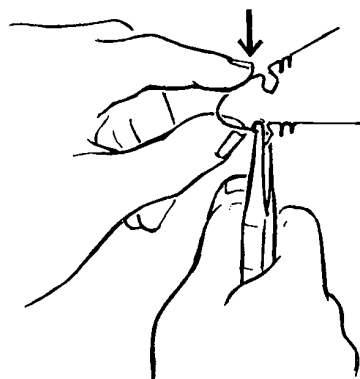
STEP 5



LEVELING THE ARCH

Testing for any tip or torque in the vertical posts is a simple procedure. The posts are inserted on the left side only and the height of the right side is tested. It can be raised or lowered. Remove the arch wire; then, holding the left activator at angle 5 with the How plier, make a simple finger bend of the arch wire to elevate or lower the right side.

Repeat this procedure on the right side until the arch is level and passive in the tubes on both sides.

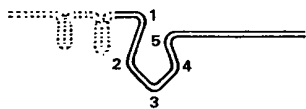


HOW PLIER

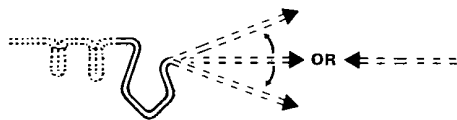
LOWERING THE RIGHT POSTS

RAISING THE RIGHT POSTS

STEP 6 3D® ACTIVATOR

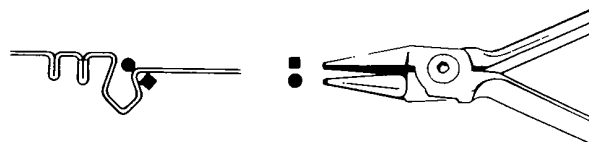


The activator is designed in a diamond-loop shape, .028" in size. Its three-dimensional force mechanics have multiple directional movement possibilities with predictable forces. There are five angles in the Activator that can be adjusted slightly to produce geometrically predictable force vectors.



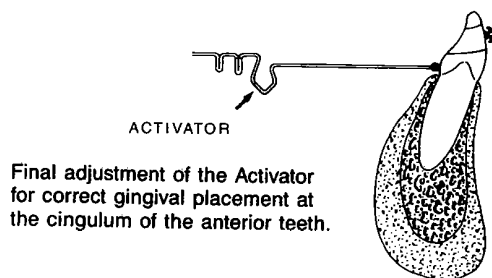
PLIER TIP POSITIONING	SLIGHT ADJUSTMENTS → ACTIVATE → 1.0mm OR LESS

Avoid overbending, which may require unbending. Rather, increase minimal bending to degree needed.

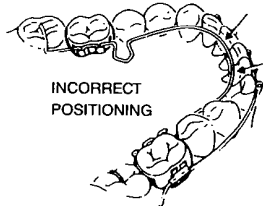


ACTIVATE WITH AN I-1140 LIGHT WIRE PLIER

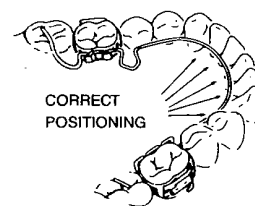
ADJUSTMENT OF THE ACTIVATOR FOR CORRECT GINGIVAL PLACEMENT AT THE CINGULUM OF THE ANTERIOR TEETH



Final adjustment of the Activator for correct gingival placement at the cingulum of the anterior teeth.



Arch is riding too high... The tongue will play with the wire. This may cause breakage mesial to the posts.



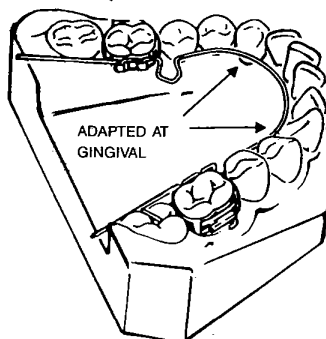
Arch is directly placed at the cingulum of the anteriors.

- Test for cingulum adaptation for anchorage.
- The 3D® Multi-Purpose Adapter is a .028" round wire that is usually conformed to the gingival placement at each cingulum, avoiding undue gingival compression. This is to avoid loss of control or tipping in anchorage.
- Once adapted, the arch is not altered during Class II traction.

IRREGULAR TEETH

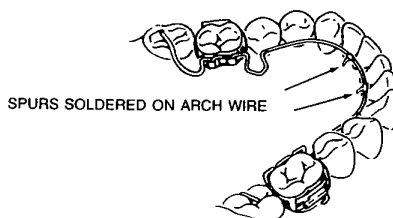
With irregular lower anterior teeth, the 3D® Lingual Arch should be adapted at the gingival border of the lingually instanding anterior teeth only. This provides a buttress of maximum anchorage. After Class II treatment, the incisors are unraveled by simply opening the Activator bilaterally or unilaterally as indicated in the chart.

Rectangular brackets are now placed for 2nd Phase alignment for reducing treatment time.

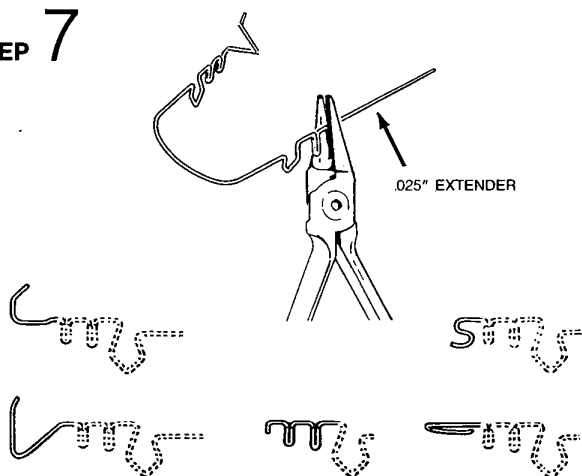


CONTROLLING THE TONGUE MOVEMENT UNDER THE ARCH WIRE

When there is evidence of tongue movements under the wire, solder .018" spurs behind the incisors, lying slightly over the lingual tissues. The tongue will be "reminded" only when there is a deliberate attempt to displace the wire.



STEP 7



FABRICATING THE EXTENDER

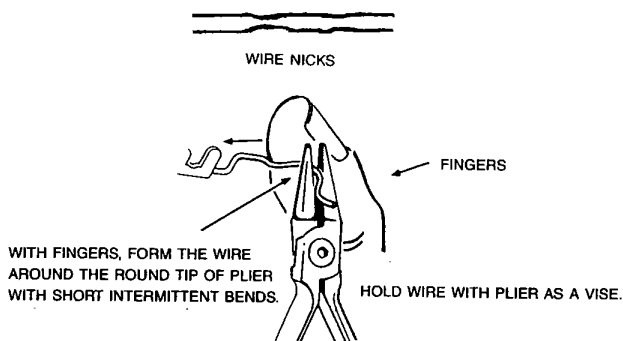
Fabricate the Extender according to your treatment objectives. The Extender is .025" round. It forms easily into many configurations for multiple treatment functions, unlike any other lingual arch.

Light Wire Plier... i-1140 used for .025" extender adjustments.

Adjustment of appliances with wire-formed posts requires a How plier to hold the post nearest any bending. This assures that there will be no opening of the post with breakage and no distortion of the parallel relationship. At the same time, this assures positive insertion without difficulty.

HELPFUL HINTS IN WIRE BENDING 3D® APPLIANCES

Wires should always be bent or formed with the fingers, using pliers to hold the wire as a vise. Hold wire firmly but not too tightly, applying only enough pressure to hold wire securely without slipping. Avoid nicking the wire, by using the round tip of the plier. Nicking will occur if the wire is bent against the sharp edge of the plier beak. All bending should be done gradually, or the wire may become work-hardened and brittle. With 3D® wire adjustments, minimal adjustments produce the best action. Excessive adjustments, requiring unbending and rebending, can be abusive to any wire and breakage can result. The 3D® components will work-harden with use, just as any other wire appliances.



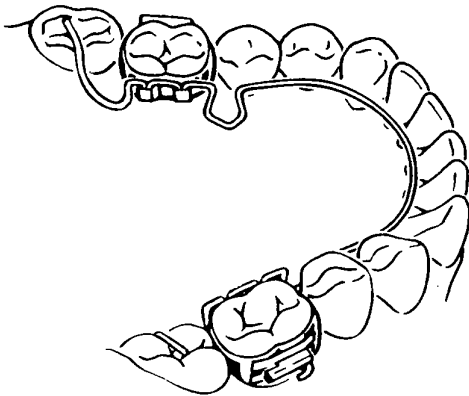
UNILATERAL MOLAR EXPANSION

Buccal crown-tip of posts on the action side and root torque on the resistance side, will produce rapid unilateral correction, supported by cross elastic hooks on molar 6 with elastics.

3D® Lingual Tubes with cross elastic hooks produce rapid cross-bite correction. After the function is completed, tip and torque are removed and appliance is inserted in a passive state.

Note: This adjustment for unilateral correction is identical in all bilateral appliances.

STEP 8



TRIAL TEST

You are now ready for the trial test.

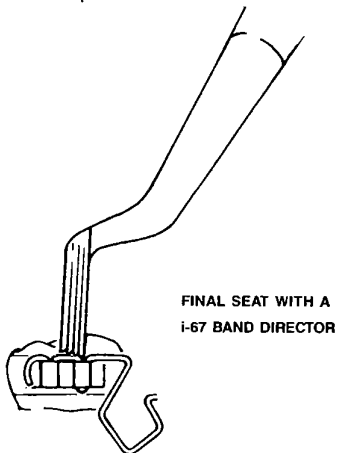
A. Replace arch on the model.

B. Check for the need for further adjustments and mark with pencil.

C. Remove the arch and make adjustments.

D. Replace completed arch.

Note: Unlike other lingual arches, the 3D® Lingual Arch is uniquely designed to function as a 3D® Mandibular Class II Anchor.

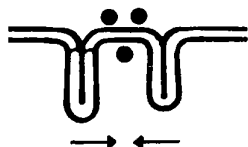


FRICTION LOCK

Once both posts are in position, they are further seated by an i-67 Band Director. The insertion of the twin posts produces a spring-loaded friction lock that is anchored and does not dislodge. Note: Avoid any distorting bending to the posts of the friction lock. Distortion will cause unwanted torque on the tooth.

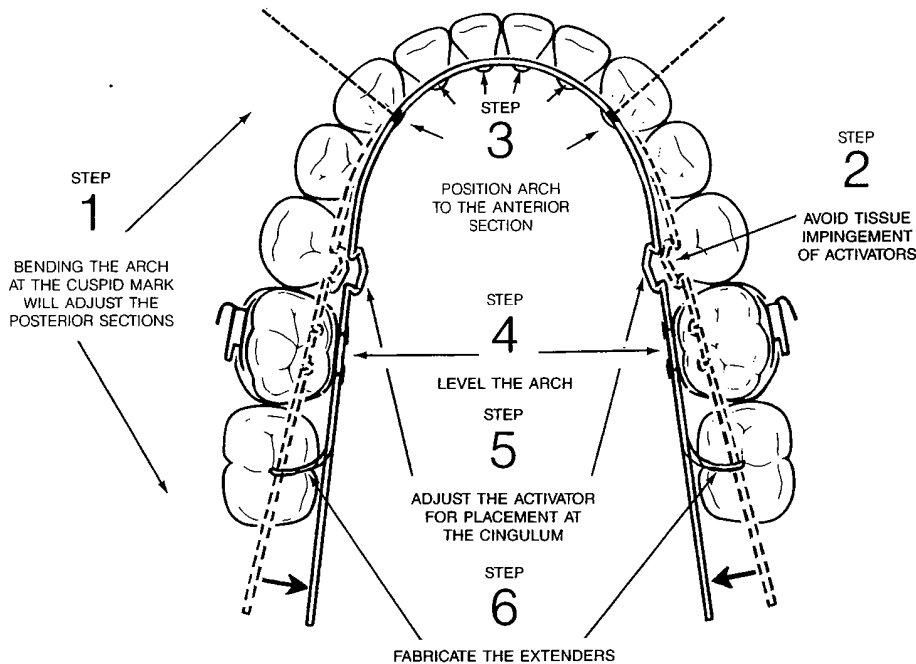
The friction lock consists of twin posts engineered for precision fit within the 3D® Lingual Tube to provide greater stability and anchorage to the molars, for better functional control.

As with all chairside orthodontic treatment, care should be exercised to eliminate the possibility of a patient aspirating a 3D® Appliance. At each patient visit, check to assure that the friction lock-fit of the 3D® posts into the 3D® Lingual Tubes is secure. Loss of friction is very rare, but, if detected, is quickly restored with a slight mesial/distal tipping adjustment to the posts. Use a 3 Jaw Plier as shown.



Note: If it is ever necessary to adjust the friction lock, use a 3 Jaw Plier to adjust the posts. Place the plier above the area between the posts and gently squeeze to very slightly compress the posts to tighten the friction lock.

SUMMARY OF ARCH FABRICATION STEPS FOR 3D® LINGUAL ARCH



AFTER THE FIRST APPOINTMENT

When used as an invisible anchorage unit for molar distalization, there should be no activation of Class II elastic traction. Both the 3D® Maxillary Bimetric Distalizing Arch and the 3D® Lingual Arch should lie passive.

SECOND APPOINTMENT

If the instructions are followed, there will be absolutely no tooth mobility...and there will be complete patient comfort and a positive attitude for the active treatment to be initiated at this point.

INDIRECT WORKING MODEL AND DIRECT CHAIRSIDE LINGUAL ARCH FABRICATION

Use the practice models to gain confidence in fitting the components, following the step-by-step instructions presented in the workshop guides. After you have gained skill and confidence by practicing, begin applying Modular Orthodontics™ in actual treatment. It is best to begin by pouring work models for 3D® Lingual Arch fabrication as explained on pages 123-132 in the Auxiliary Aids Section.

After you have gained proficiency in making your treatment arches with working models, proceed to a direct technique. Use a study model to estimate sizes and the necessary minor bending adjustments. With repeated chairside experience, component adjustment to individual patient needs will become a satisfying, creative part of your appliance fabricating procedure.

SUMMARY OF KEY INVISIBLE 3D® LINGUAL ARCH APPLICATIONS

MANDIBULAR ARCH MANAGEMENT

The 3D® Lingual Arch is used most often in the mandibular arch for the following:

1. For positive, multi-point mandibular anchorage.
2. As an adjustable mandibular holding arch for both extraction and non-extraction cases.
3. As a post-treatment mandibular retainer.
4. As a first, second or third mandibular molar distalizer and impaction corrector.
5. As a mandibular anterior advancer and primary alignment controller.
6. For molar control... Expansion - bilateral or unilateral, contraction - bilateral or unilateral, all rotations, buccal and lingual crown tip and root torque.

MAXILLARY ARCH MANAGEMENT

1. It is used as a Nance button for the maxillary arch, for space maintaining and to prevent mesial molar drag. It is adjustable, irritation-free, removable and hygienic, unlike earlier Nance buttons.