



# TECHNICAL GUIDE

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## The Pendulum/Pendex Appliance



### Description:

The design of the Pendulum appliance is credited to Dr. Jim Hilger. The appliance is designed to achieve molar rotation, molar distalization and when needed, lateral expansion simultaneously. The appliance is built on bands placed on the first permanent molars. On the lingual of the bands are special horizontal lingual tubes (Pendex tubes) into which are inserted the TMA springs. For anchorage two pair of rests are placed on the occlusal of the bicuspid and/or deciduous molars and are bonded in place. A large Nance button provides additional palatal anchorage. The TMA springs, which are imbedded in the Nance acrylic and inserted into lingual sheaths on the molar bands, provide the continuous light forces used for distalization. Rotation occurs as a function of the open helicals that are incorporated into the springs.

Normally the appliance is designed for bilateral distalization of the molars. It can however be designed for unilateral distalization only if needed. In this case an anchor wire is soldered to the lingual of the band on the non-active side and embedded in the Nance acrylic.

If lateral expansion is needed a screw will be added to the Nance button. This version of the appliance is called the Pendex.

### Indications:

- Rotated and/or mesially positioned molars.
- To regain lost 'e' space.
- Narrow arch combined with the above factors.
- Class I or II case combined with all or some of the above factors.

### Contraindications:

- Class III malocclusion.

**Alternate Appliances:**

Cetlin Retainer.

Distal drive 3 Way Sagittal.

3D Quadhelix.

**Advantages of this appliance are:**

1. It is fixed so patient compliance is not an issue.
2. It works fast. Distalization gains of 4 to 5 mm can be achieved in 3 to 4 months.
3. It is multi-functional (rotates molars, distalizes molars, expands laterally).

**Clinical Procedures:**

1. One week prior to taking impressions place separators for the 6-year molars. Separators need not always be placed before impressions and this step can be eliminated if the bands are going to be sized at the laboratory.
2. One week later size bands for the 6-year molars, or, indicate on the lab slip if you want us to do it for you. Remove the bands and place them in a bag or envelope to be stapled to the lab slip later.
3. Complete a maxillary impression.
4. Pour impression with lab stone. Do not pour bands up in impression.
5. Staple the bag/envelope with the bands in it to the lab slip. Send the case to the laboratory with a completed *Orthodontic Technologies* prescription form. Indicate on the lab slip if you want buccal attachments added to the bands. We will provide the lingual attachments.

**Delivery Suggestions:**

1. Placement should begin with an initial trial fitting of the appliance to insure correct fitting and placement.
2. Although the Pendulum springs can be activated intraorally, it is more efficient to preactivate them before the appliance is seated. To preactivate the distalizing springs simply release them from the lingual sheaths and apply equal finger pressure as to bend them parallel to the midline of the palate or perpendicular to the body of the appliance.
3. The appliance is cemented as two separate parts. Placement begins with banding of the first molars, taking caution that they are placed in the exact position as to allow clear access of the springs to the lingual sheaths. Once the cement is cured, replace the abutment of the activated springs into the lingual sheaths.
4. Next, press the acrylic button into place in the palate cementing or bonding the anterior bands or rests in position. The distal force should be all that is needed to hold the abutment in the sheath, however, if desired an elastomeric tie may be placed to insure stability.

**Adjustment Suggestions:**

The appliance should be checked every three weeks for reactivation and for treatment progression. If intraoral reactivation is necessary the spring is removed from the lingual sheath and appliance is removed from the mouth while the bands on the first molars are left in place. Stabilize the spring by grasping the helix with a bird-beak plier as the spring is being pushed

distally with finger pressure. It is recommended to open the adjustment loop slightly to increase the expansion and molar rotation, as this appliance has a natural tendency to move the molars on an arc toward the midline of the palate, tending toward a posterior crossbite. In addition to the above distalizing instructions, the patient should activate the screw of the Pendex appliance one turn every three days to produce slow lateral expansion (each turn is  $\frac{1}{4}$  mm).

**Length of Treatment Time and Results Expected:**

Distalization of 4 to 5 mm will occur within 3 to 4 months. Lateral expansion will occur at a rate of approximately  $\frac{1}{2}$  mm per week.

**Stabilization of the Teeth and Bone following of the appliance:**

After the desired distalization is achieved, remove the body of the appliance excluding the molar bands. A smaller Nance Button, Trans Palatal Arch or FRLA must be fabricated and inserted immediately to hold the molars in their new position. If no appliance is used to hold the molars in their new position, they will drift forward rapidly.