

HYCON[®] TUBE PLACEMENT INFORMATION



01 The HYCON[®] TUBE



Fig. 1: View of the HYCON[®] TUBE

The HYCON[®] TUBE consists of a bolt and nut combination in which the nut is mounted on a support wire. A friction brake is installed to prevent the bolt from uncontrolled turning.

Rate of advancement per turn .014" (Fig. 1)

The HYCON[®] TUBE is available with two support wire dimensions: for .018" slot technique a .018" x .025" support wire and for .022" slot technique a .021" x .025" support wire.

Please note that on some .022" molar attachments the dimension of the auxiliary tube may be .018" x .025".

Characteristics and Concept

The threaded (screw type) mechanism permits exact activation in small steps at intervals. Thus it allows to apply intermitting forces. The device's high potential force rules out friction as a factor, thus permitting the use of a strong straight arch wire (Recommended arch wire dimension: .021" x .025" with .022" slot technique.)

Consequently the tooth movement very closely approaches the bodily type providing maximum torque control.

02 Preconditions for the HYCON[®] TUBE

- Straight arch technique, i.e. no bends that could prevent the arch from sliding into the molar tube.
- Straight wire appliance with auxiliary tube on the molar bands.
- Leveling and aligning must be completed with a heavy, straight, rectangular steel wire installed. The teeth should be grouped into blocks, normally two lateral and one front, with the defined spaces each distally from the front

block. The teeth of the front block should be laced with a figure 8 ligature wire. In addition, (elastic) ligatures should be used to hold the archwire to the front block teeth.

03 Preparing the HYCON[®] TUBE

The tension wire (minimum .012" ligature wire) is bent into a "U" shape (Fig. 2a), inserted from the outer side into the two holes of the wire linking attachment (Fig. 2b), then pulled through and bent sharply in the direction of the tension. (Fig. 2c)



Fig. 2a



Fig. 2b



Fig. 2c

Fig. 2a-c: application of the tension wire on the HYCONS

04 Inserting the HYCON[®] TUBE

The support wire is inserted into the auxiliary tube on the molar band from the mesial side, so that the nut points to the buccal side. (Fig. 3)

The HYCON[®] is then fixed by bending the support wire back. Recommended instrument: Weingart type pliers or ligature director.



Fig. 3: insertion of the HYCON[®] TUBE into the auxiliary tube of double buccal tube.



05 Connecting the HYCON® DEVICE

The tension wire connects the screw with the tooth or group of teeth on the other side of the space.

Connecting Option 1: The tension wire is fastened to the eye of a Kobayashi ligature (Fig. 4). This can, if necessary, simultaneously be used to stabilize the front group of teeth by means of a figure 8 ligature.



Fig. 4: Connecting the tension wire by means of a Kobayashi ligature.

Connecting Option 2: Preferably in the case of individual tooth movement, e.g. in the event of distalisation of the canine tooth, the tension wire can be ligated directly onto the bracket or on the power hook. (Fig. 5)



Fig. 5: Distalisation of a single tooth (canine)

Connecting Option 3: The tension wire may also be connected directly to the arch, e.g. posted arch wires (Fig 6), Gurin Hook. In this respect, care is to be taken that the arch, in the course of activation, remains centered in the medial line. (Fig 7)



Fig. 6: Ligature wire attached to power hook of posted arch



Fig. 7: A drop of self-curing resin applied to the midline mark is an easy way to prevent midline shift of the arch wire.

06 Activation of the HYCON DEVICE

Using the small safety screwdriver which comes with the set (see page 10 for more details regarding the use of the Safety Screwdriver), the patient usually activates the HYCON® about every three to four days by turning it clockwise.

The HYCON® has to be activated in 2 steps.

First step: To reduce the slack of the connection wire the patient should turn the screw clockwise until they feel a slight tension.



Second step: The patient **then** has to turn the screw for a given amount, please refer to page 11 for details on activation guidelines.

A practical hint for the patient. When tightening the device with the safety screw driver, the patient should simultaneously stabilize the tension wire with a finger nail to prevent it from twisting.

07 Reactivation

If there is still a space left after working the complete range of the screw, it is necessary to unscrew the device and to re-tighten the tension wire accordingly.

08 Anchorage Control

An inherent advantage of the method of space closure involving the HYCON® is that there is less strain upon anchorage units. Activating the HYCON® has an effect on both sides of the space. The additional use of means of anchorage (intermax. elastics, headgear, palatal bar) enables the orthodontist to control anchorage, in order to reduce or neutralize the effect of the HYCON® on the side of the space where little or no tooth movement at all is required.



09 Use of the Safety Screwdriver

In order to prevent lateral slippage the HYCON® safety screw driver has a protective sheath around the blade.

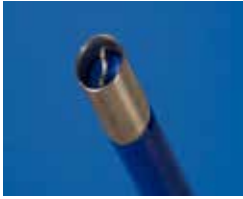


Fig. 8: Frontal view of the HYCON® safety screwdriver

In order to activate the HYCON® the safety screwdriver first has to be placed over the head of the screw.



Fig. 9: Placement of the HYCON® safety screwdriver

The safety screw driver is turned until its blade clicks into the groove on the screw head of the HYCON®



Fig. 10: To lock into place turn the safety screwdriver clockwise.

Finally the activation of the HYCON® can take place.

The direction of rotation is indicated by an arrow on the screwdriver grip.

10 Practical Hints - Hycon Device

Retraction and Intrusion of the Maxillary Front Block

In case a combined retraction and simultaneous gentle intrusion of the upper front teeth is desired, it is recommended to bend an intrusion step right distally of the brackets from the lateral incisors. One should start with a slight intrusion step in an .016 x .022 wire (.022 slot system) then increase archwire dimension and

intrusion steps subsequently. Thus, with an .019x.025 or 21x25 intrusion archwire inserted one will reach the desired closure of the spaces simultaneously with a gentle working intrusion.

Space Closure and Midline Correction

In case of a dentoalveolar shift of the midline and resulting asymmetrical spaces, it is recommended to lace a front block with a figure 8 Kobayashi ligature, with the eye pointing to the wider space, that is, the side to which the midline should be corrected. First, the HYCON® is applied to this one side only, until the midline shift is roughly corrected. Then, the HYCON® is applied on the other side as well.

Minor corrections in the mid-line can be completed by asymmetrical activation.

Maximum Anchorage

In situations in which a maximum of anchorage is required (mostly in the upper jaw), it is recommended to distalize the canines first. In this case the incisors should be laced with a figure 8 ligature wire (e.g.) while the connecting wire of the HYCON® is ligated to the canine only.

In a second step, the incisor block can be retracted as explained above.

Stabilization after Space Closure


With space closure completed as desired, it is recommended to keep the result stable and passive for some time, depending on the amount of completed tooth movement and the related adaptation of soft tissue.

Activation by the patient

When tightening the device with the screwdriver, the patient should simultaneously stabilize the connecting wire with a fingernail to prevent it from twisting.

HYCON ACTIVATION GUIDELINES

ANCHORAGE SITUATION OF CASE PRESENTED

	<ul style="list-style-type: none"> • RECIPROCAL SPACE CLOSURE • ANCHORAGE DEMAND: NONE (EQUAL BLOCKS ADJACENT TO SPACE) 	<ul style="list-style-type: none"> • RECIPROCAL SPACE CLOSURE • ANCHORAGE DEMAND: LITTLE * (DIFFERENT BLOCKS ADJACENT TO SPACE) 	<ul style="list-style-type: none"> • SPACE CLOSURE: ONE SIDE STATIONARY • ANCHORAGE DEMAND: MAXIMUM * (ANCHOR UNIT: WEAK)
<ul style="list-style-type: none"> • ADOLESCENT PATIENT • OPTIMAL TISSUE RESPONSE • NO PERIODONTOSIS 	<p>2 full turns per week [3 full turns per week]</p>	<p>2 full turns per week</p>	<p>2 x 1/2 turn per week [3 x 1/2 turn per week]</p>
<ul style="list-style-type: none"> • VITAL ADULT PATIENT • NORMAL TISSUE RESPONSE • NO/LITTLE PERIODONTAL ISSUE 	<p>2 full turns per week [3 x 1/2 turn per week]</p>	<p>2 full turns per week [3 x 1/2 turn per week]</p>	<p>2 x 1/2 turn per week [1 full turn per week]</p>
<ul style="list-style-type: none"> • ADULT PATIENT • REDUCED TISSUE RESPONSE ** • REDUCED MARGINAL BONE RIDGE 	<p>2 x 1/2 turn per week</p>	<p>2 x 1/2 turn per week</p>	<p>1 x 1/2 turn per week [2 x 1/2 turn per week]</p>

CLINICAL CRITERIA

Important instruction to be given to the patient.

Note: Generally two step activation is required.

Preactivation: To reduce the slack of the connection wire the patient should turn the screw clockwise until they feel a slight tension.

Actual activation: Only turn the screw in accordance with the instructions given by the orthodontist. (According to the above directions)

IMPORTANT - THE HYCON FUNCTIONS PAINLESSLY

Disclaimer: Please be advised this activation guideline can not take the place of the orthodontist expertise and visual inspection.

[] indicates an alternative possibility of activation - based on individual findings
 * additional measures of anchorage are necessary (intermaxillary elastics, HG) see back page
 ** additional prolonged interval between activation should be given occasionally (due to tissue response)

Patients Beginning Records

This 22.8 year old male presented with a Class I dental and skeletal pattern. He showed a satisfactory profile and had previously been treated orthodontally with extraction of his lower second bicuspid. His upper lateral incisors were congenitally missing, however, upper space closure had not been completed during past orthodontic treatment. These spaces were closed during treatment with the Hycon (Note-This case was treated at the University of Southern California by Dr. Mark Fagin, under the supervision of Dr. McLaughlin.)



Photos showing space closure with the Hycon Device - .019 x .025 stainless steel wire.



Photos showing completed case. Space closure was at the rate of 1 mm per month.



Patients Beginning Records

This 17.0 year old female presented with a Class I dental and skeletal pattern. She showed a satisfactory profile with moderate crowding in her upper and lower arches. Her lower first molars were restored with large restorations and her lower right first molar had developed a peri-apical abscess. Upper first bicusps and lower first molars were extracted. The upper spaces were closed with normal sliding mechanics. Lower space closure was completed with the Hycon device. A .021 x .025 stainless steel wire was used in the lower arch to avoid any deepening of the curve of Spee during space closure. (Note-This case was treated at the University of Southern California by Dr. Steven Olsburgh, under the supervision of Dr. McLaughlin.)



Hycon Device placed on mandibular arch. Please note size of extraction spaces.



Photos showing completed case. Space closure was at the rate of 1mm per month.

