

# MALU

# INSTRUCTION FOR USE



MALU



# CONTENT

1. Legal
2. Introduction
3. MALU hard ware and instruments
4. Installing MALU



# Legal

Thank you for buying a MALU device

- The MALU device is for professional use only by dental personnel.
- The content of the packaging is found on the label and it is delivered non-sterile. The content may be sterilized at either 121 deg. Celsius or at 134 deg. Celsius
- The device is for single use only.
- No special storage conditions are required in addition to clinical best practice
- The device is made of medical grade stainless steel and contains nickel. The device should not be used on patients with nickel allergy.
- Year of manufacture is found in the LOT#



Indications

Description

# INTRODUCTION



# Introduction

## Indications

- Indications for application of the method to treat
- Malocclusions Class II / 1, Class II / 2
- Molar distalization in the upper jaw
- Crowded cases with or without the need for extraction;
- Closing stronghold spaces after extraction or in agenesis of teeth
- Midline correction
- Finishing phases

## Description

- MALU is a modified Herbst appliance, which is attached to the fixed appliance with specially designed hinges to give maximum play, thus reducing stress and breakage of the bands and wire during treatment.
- MALU gives three-dimensional control, both in vertical, transversal and sagittal planes. Biomechanical analysis show that almost 10 forces are acting simultaneously to bring teeth in Class I relation, and with no proclination.
- Taken into account the amount, and the magnitude, of all these forces at play there are no other treatment approach which delivers such speed, precision and control.
- This mode of treatment approach frees treatment time. Freeing up time will of course have many implications for treatment quality and the clinical administration. One is that time can be spent clinically to evaluate what should be retained after treatment. Being more selective in the use of retainers will consequently reduce the amount of retainer induce complications.

# Full kit content



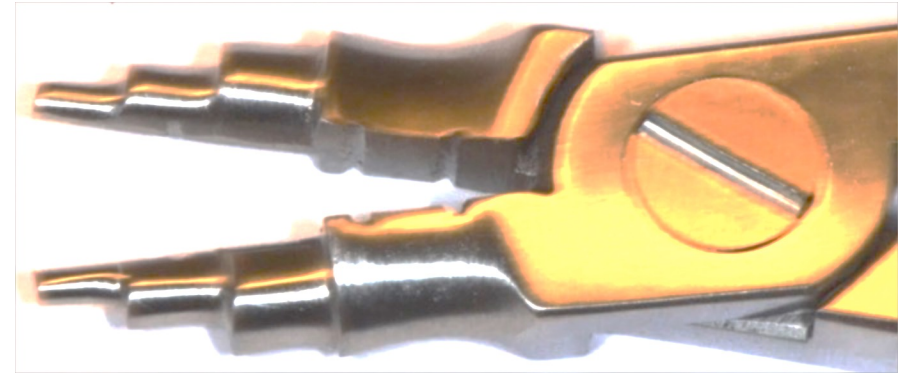
- Instruments
- MALU Components

# MALU INSTRUMENTS AND HARDWARE



# Instruments needed

1. Needle holder – for inserting ball pins and
2. Bird beak round – to make step and tip-back
3. Distal end cutter – to cut wire
4. How plier – bend ss ballpin in the lower arch
5. Ligature cutter – for cutting bras pins
6. Hard wire cutter – for cutting ss ball pin and MALU plungers
7. Diamond disc – for cutting custom MALU tube lengths
8. Three prong plier – to bend ss ball pin in upper arch
9. Ligator





# MALU Bands & Brackets



1. MALU upper molar band w/triple tube (.036x.036, .022x .028 and .051 round) and lingual sheath.
2. MALU lower molar band with double tubes (.030 x .028 and .051 round)



1. MALU single brackets for lower incisors and laterals with .022 slot
2. MALU single brackets with large base for cuspid with .022 slot

# MALU Components

Stainless steel plunger



Spacers for activation –  
open and closed

Mobee - hinger



MALU tube



K-hinger

MALU Rod



Brass pin



# MALU Tube & Plunger

- Right and left MALU tube (26 and 29mm)
- Standard MALU plunger/rod (26,5mm, 28,5mm, 32mm, +/-5mm)
- Telescopic unit plunger/rod (22-26mm)



# Mobee- and K-hinges



MALU Hinges

# Spacers

- Closed in sizes 1mm to 5mm for activation of appliance.
- Open in sizes 1mm to 5mm for activation of appliance.



# Ball Pins

- Stainless steel (ss) ball pins 1.1mm or 1.2mm to attach Mobee Hinge, along with MALU tube, to the upper molar band
- Brass or stainless steel for securing the “K” hinge, along with plunger, to the arch wire in the lower jaw.



# MALU Arch Wire

1. Levelling phase A, before MALU installation aprox 4-8 w: Saga Sitanol arch wire Rx
2. Levelling phase B, before MALU installation aprox 3 w: Saga Sitanol arch wire .021 x .025
3. During treatment: Saga Kobra arch wire .021 x .025 or .022 x .028

# Ligator and ligatures

- Steel ligatures .009 & .010
- Elastic ligatures





# Bonding material



# Permanent marker



# Hard ware summary

- **Bands w/attachments:**
  - MALU upper molar band w/triple tube (.036x.036, .022x .028 and .051 round) and lingual sheath.
  - MALU lower molar band with double tubes (.030 x .028 and .051 round)
- **Brackets:**
  - MALU single brackets for lower incisors and laterals with .022 slot
  - MALU single brackets with large base for cuspid with .022 slot
- **Wires:**
  - Levelling phase A, before MALU installation aprox 4-8 w: Saga Sitanol arch wire Rx
  - Levelling phase B, before MALU installation aprox 3 w: Saga Sitanol arch wire .021 x .025
  - During treatment: Saga Kobra arch wire .021 x .025 or .022 x .028
- **Ball pins:**
  - Stainless steel (ss) ball pins 1.1mm or 1.2mm to attach Mobee Hinge, along with MALU tube, to the upper molar band
  - Brass or stainless steel for securing the “K” hinge, along with plunger, to the arch wire in the lower jaw.
- **Tube & Plungers:**
  - Right and left MALU tube (26 and 29mm)
  - Standard MALU plunger/rod (26,5mm, 28,5mm, 32mm, +/- 5mm)
  - Telescopic unit plunger/rod (22-26mm)
- **Hinges:**
  - Mobee hinge for attachment in upper molar band.
  - “K” hinge with slot for round and hole for lower arch.
- **Spacers:**
  - Closed in sizes 1mm to 5mm for activation of appliance.
  - Open in sizes 1mm to 5mm for activation of appliance.
- **Bonding material, e.g.:**
  - Saga Estik Semi Liquid
  - Saga Sealant
  - Saga Bond Light Cure or Chemical Cure
- **Ligatures**
  - Steel ligatures .009 or.010 dimension
  - Elastic ligatures
- **Maker**
  - Phenol red

1. Before Installing MALU
2. Bonding Procedure
3. Fitting the wire
4. Make the step
5. Installing Kobra wire
6. Making the tip-back
7. Adjusting tube length
8. Determine which tube is which
9. Assemble Mobee hinge and tube
10. Installing tube and hinge in upper jaw
11. Installing rod and hinge in lower jaw
12. Activation and adjustments

# INSTALLING MALU



# Before Installing MALU

- Observe the TMJ anatomy on the OPG for erosion & joint noises.
- Always (on each visit) measure and record:
  - max mouth opening, usually between 42- 50 mm
  - lateral movements, usually in the range of 12- 15 mm

This will give indication about the plunger length. Plunger length adjusted to less than maximum mouth opening

*NOTE: Perform levelling phase with NiTi wire before starting MALU treatment*

# Bonding Procedure

## Preparation

Use 3 % H<sub>2</sub>O<sub>2</sub> to remove plaque

## Etching

- Dispense etching agent on the mixing pad or mixing well.
- Apply thin layer of EA with brush tip, micro bush applicator or sponge on the enamel surface. In case material drips down on the soft tissues, rinse thoroughly with water immediately under suction.
- Ask patient to close the eyes or use protection glasses.
- Rinse each tooth surface with water under suction.
- Let patient rinse the mouth to remove any remaining EA.
- Rinse with water and air dry.
- Etching time is 45- 60 seconds

## Sealing

The high surface energy of the etched tooth surface will attract humidity from the oral cavity. Apply sealant. This has a reducing effect on the bonding energy of the composite material. Saga Sealant reduces the surface energy thus avoiding attraction of the humidity on the tooth surface.

## Bonding

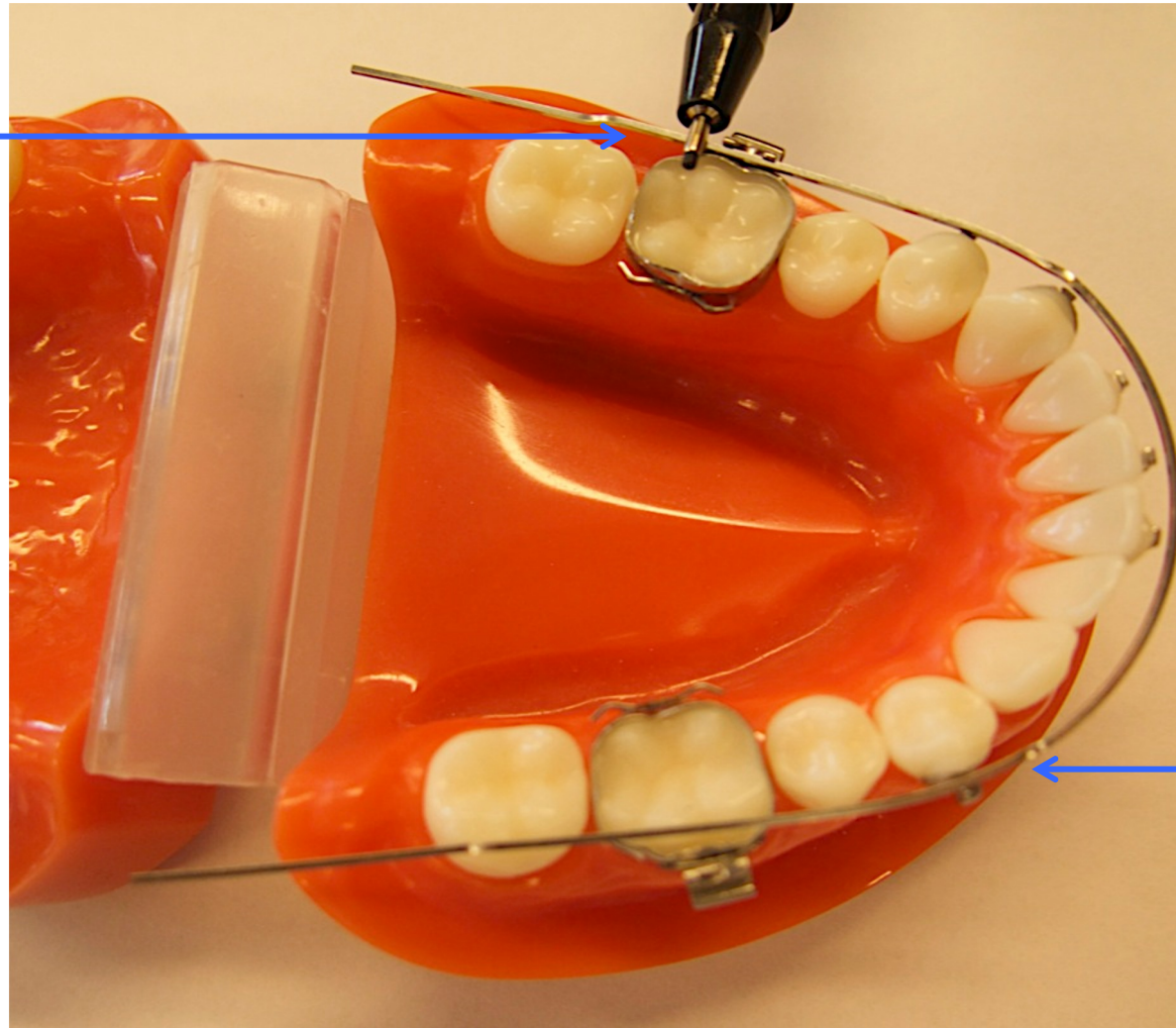
In general a segmented bonding is recommend for the maximum success rate, regardless of type off type appliance (here: MALU). Divide the oral cavity in six segments:

Right Lower: from 1st molar to 1st bicuspid, then left Lower: from 1st molar to 1st bicuspid. Followed by lower anterior: From cuspid to cuspid and right Upper: from 1st molar to 1st bicuspid . Left Upper: from 1st molar to 1st bicuspid an lastly upper anterior: From cuspid to cuspid

- Use saliva ejector for suction
- Use bonding retractor for easy approach
- Clean the teeth with H<sub>2</sub>O<sub>2</sub> (or with cup pumice)
- Etch the tooth surface
- Wash and dry thoroughly
- Use ISO shield on the buccal side
- Use cotton roll at 90°to the occlusal plane at last lower molar
- Let patient bite on the cotton roll this will reduce saliva secretion

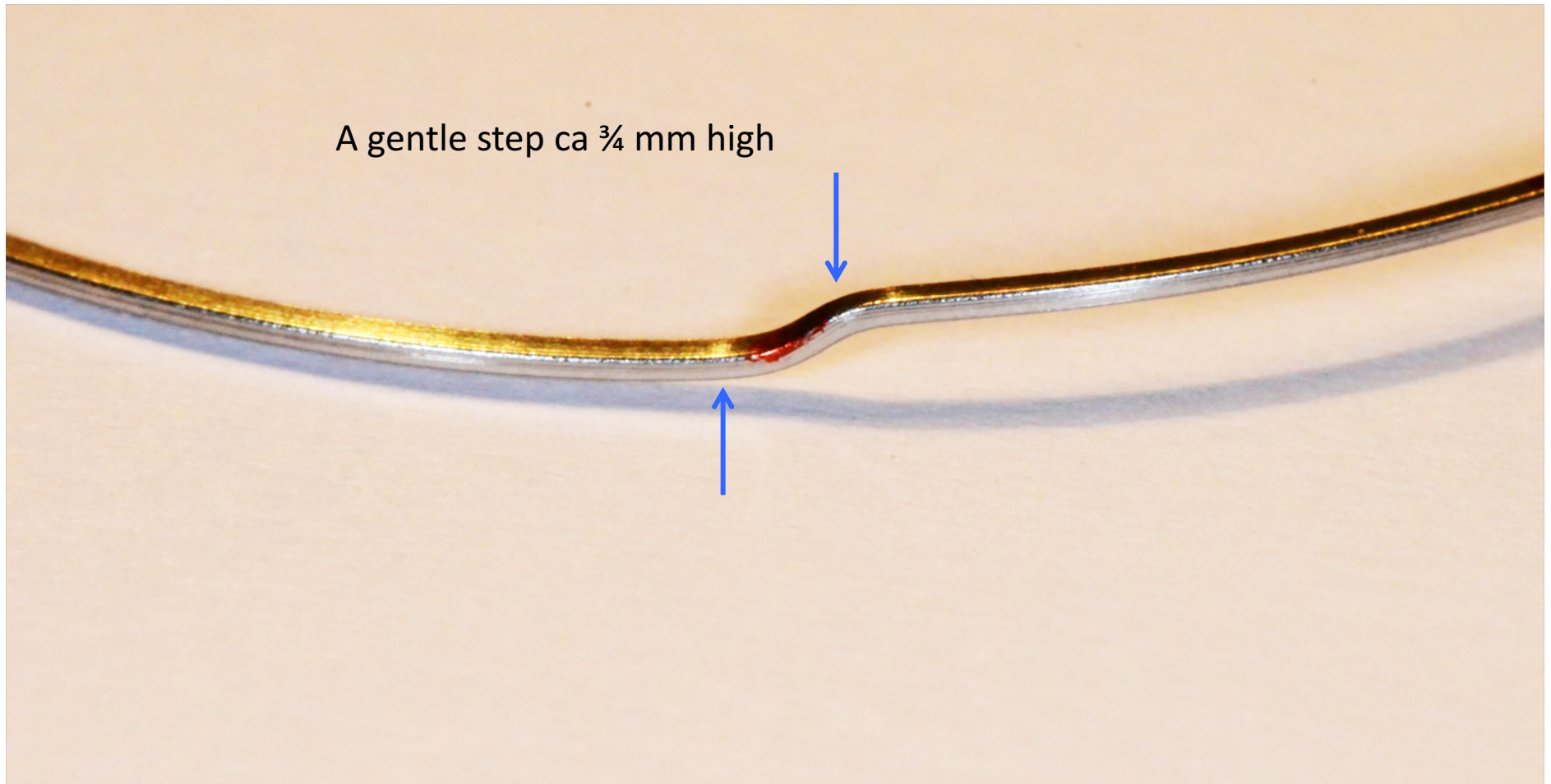
# Fitting the wire

Determine the arch length, it should be 5 mm from the distal end of the tube



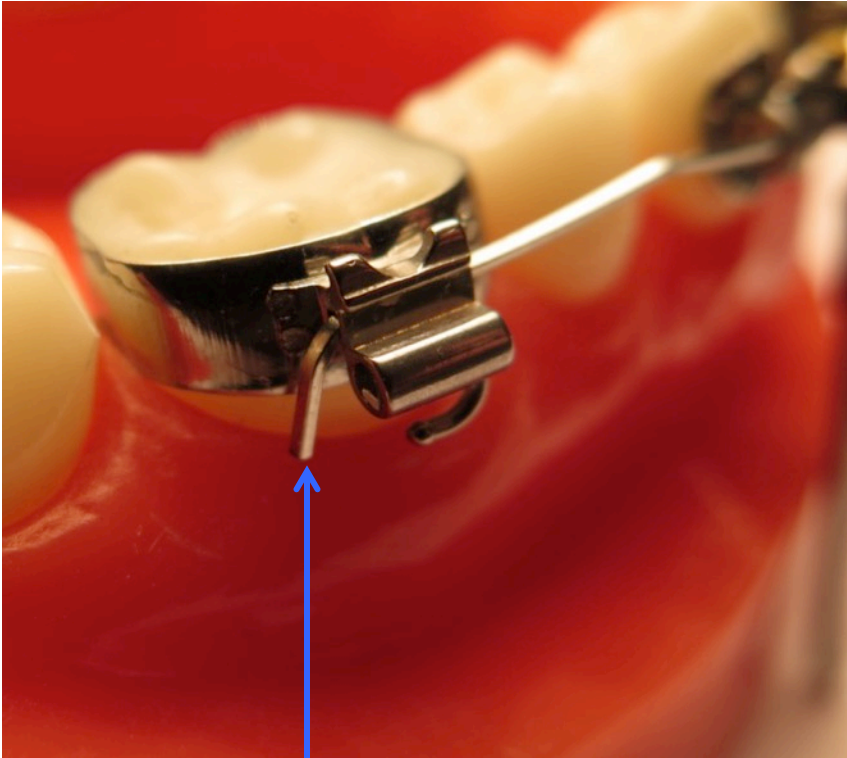
Determine where to put the step. It should be distal of the 1st cuspid

# Make the step

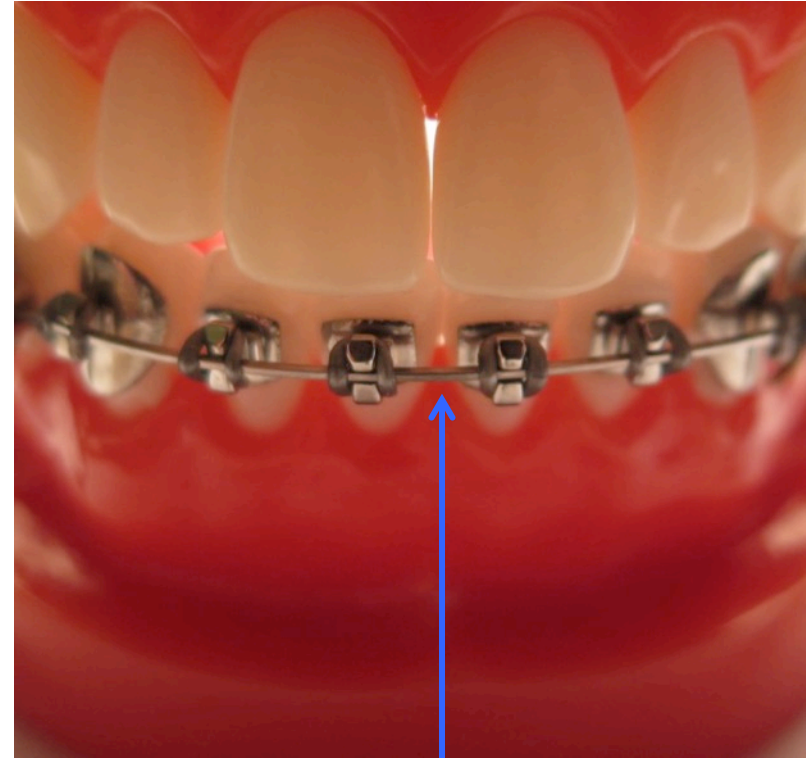




# Installing Kobra wire

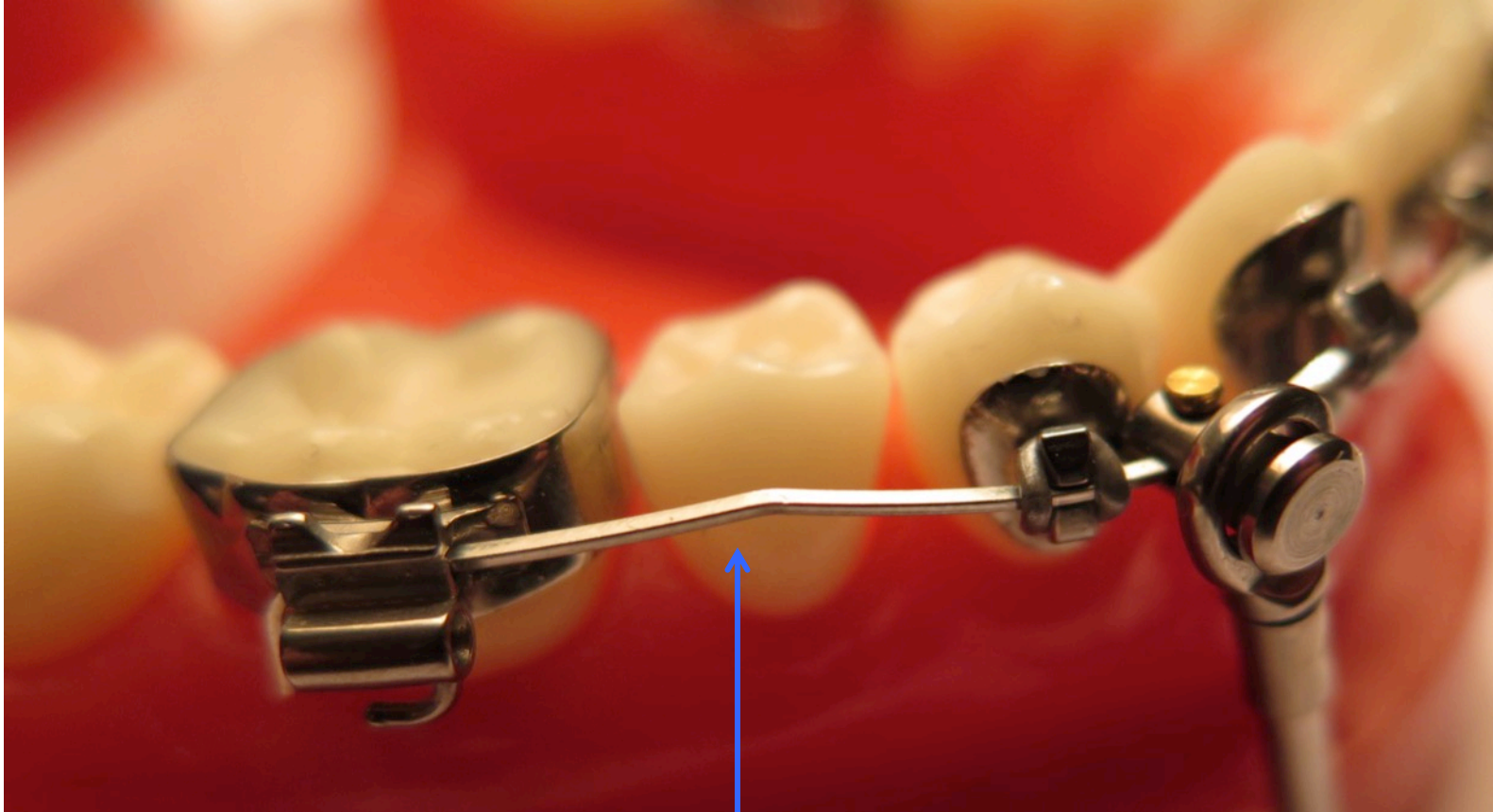


Standard signeback



Attach the Kobra wire using only elastic ties on the centrals, elastics and steel ligatures on laterals and bicusbides, and double steel ligatures and elastics on cuspids

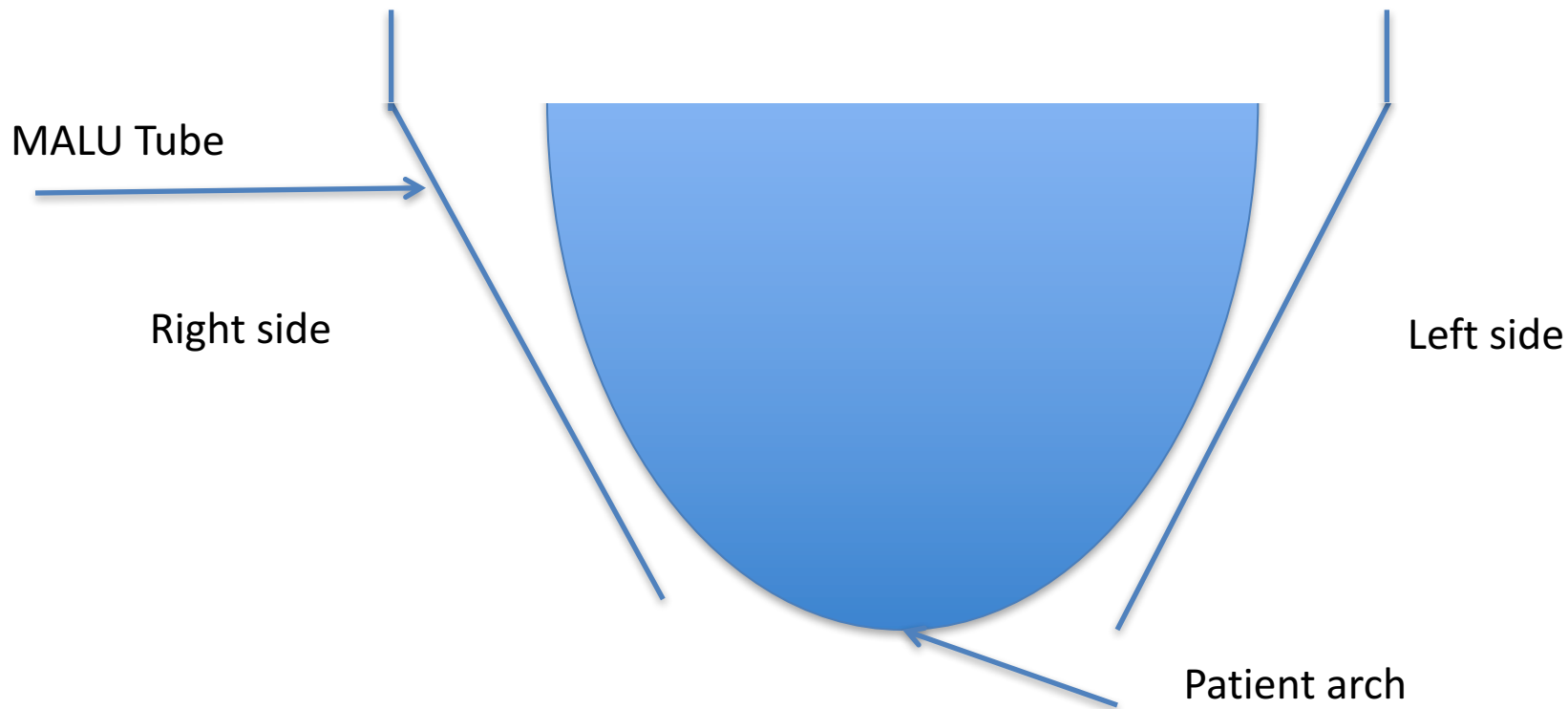
# Making the tip-back



Place tip- back in middle of 1<sup>st</sup> molar and 1<sup>st</sup> bicuspid

# Determine which tube is which

- The arch and the MALU tubes seen from above



# Determine the MALU tube & plunger length

## Standard MALU

- Measure bite opening
- Chose the appropriate plunger and tube length
- Measure tube and plunger length

## MALU telescopic unit

- Predetermined / Finished sizes



# Determine the length of the MALU Tube

Tube length is measured on the plaster model when the incisal edge of the lower incisors are touching the lingual surface of the upper incisors.

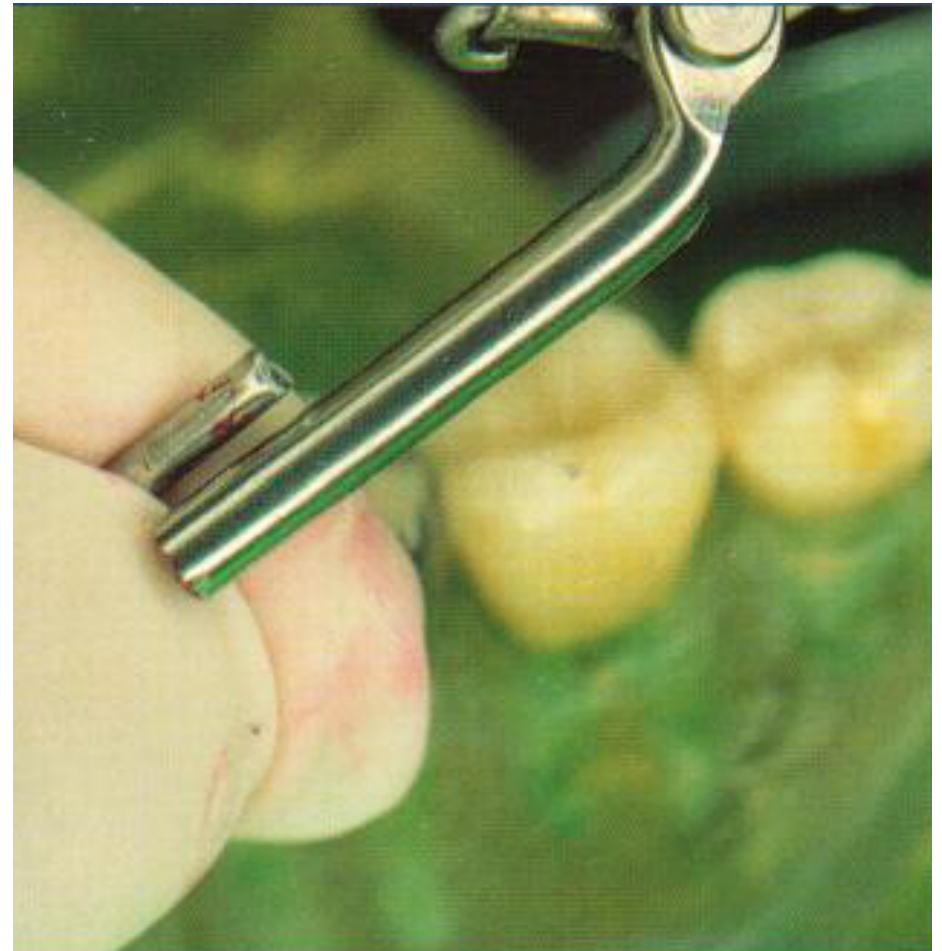
The distance from the distal end of the HG tube to the middle of the lower 1<sup>st</sup> bicuspid represents the length of the tube



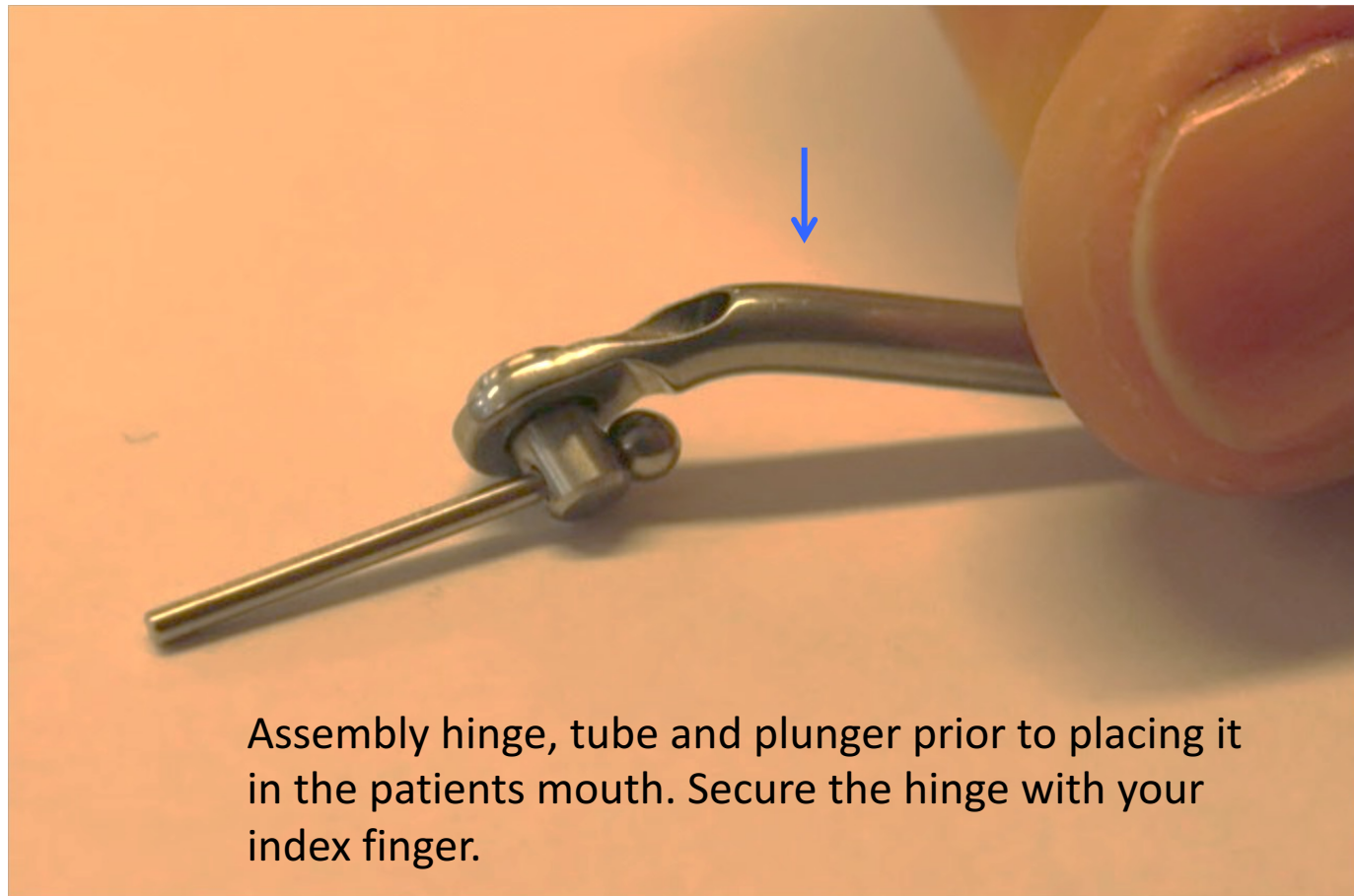
# Determine the length of the MALU Plunger

Ask for maximum mouth opening. Keep the plunger on the outside of the upper tube, and mark the plunger corresponding to the mesial end of the MALU tube.

Add 2-3 mm as the patient will be able to open the mouth more than the maximum mouth opening at the first visit



# Assemble Mobee hinge and tube



Left side shown

# Installing tube and hinge in upper jaw



Make sure you get a nice and good u-bend on the plunger. This is accomplished applying the plier to the mesial end of the ball pin.



# Installing rod and hinge in lower jaw

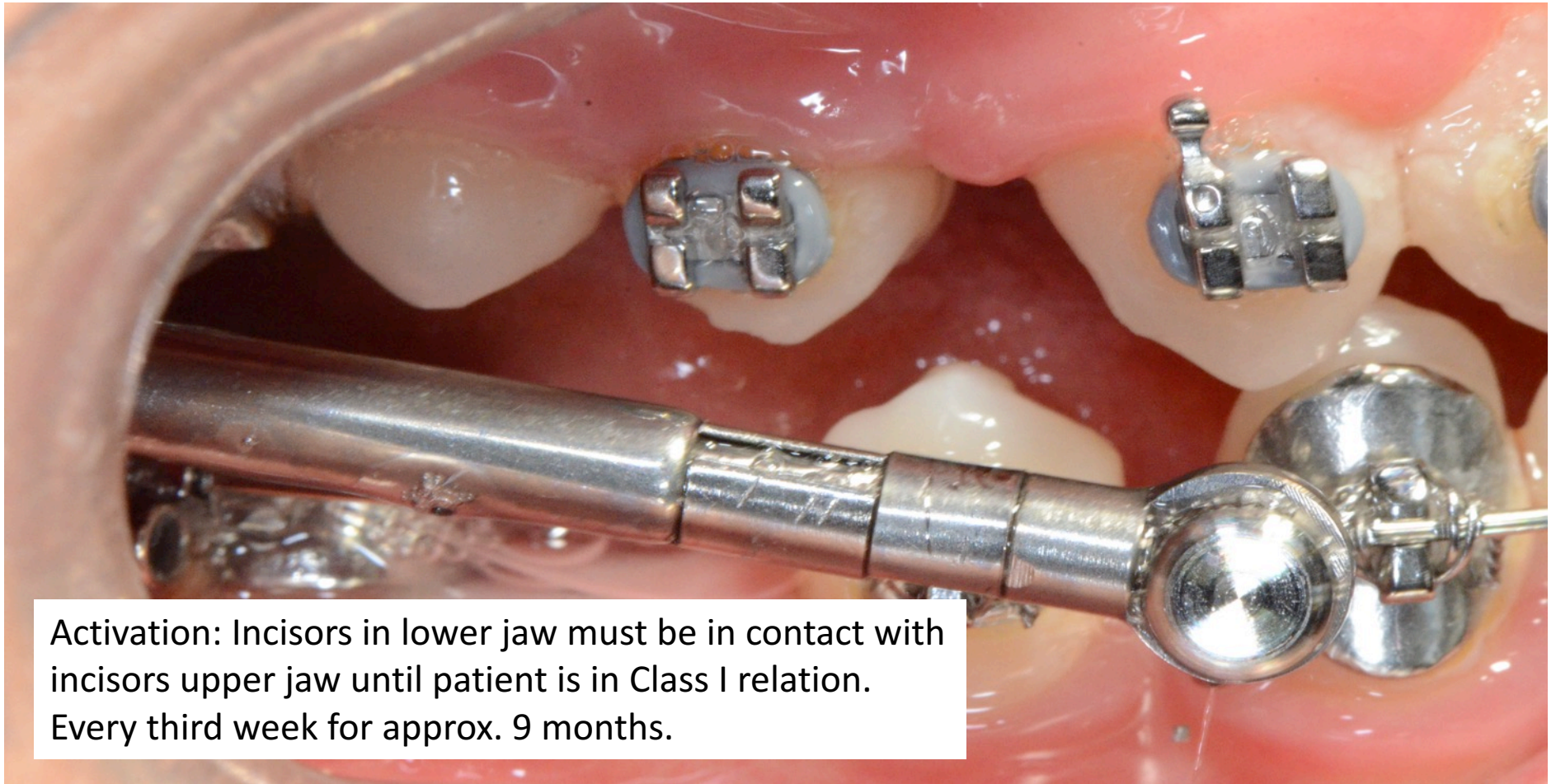


Make sure you bend the  
brass pin properly

# Almost finished...



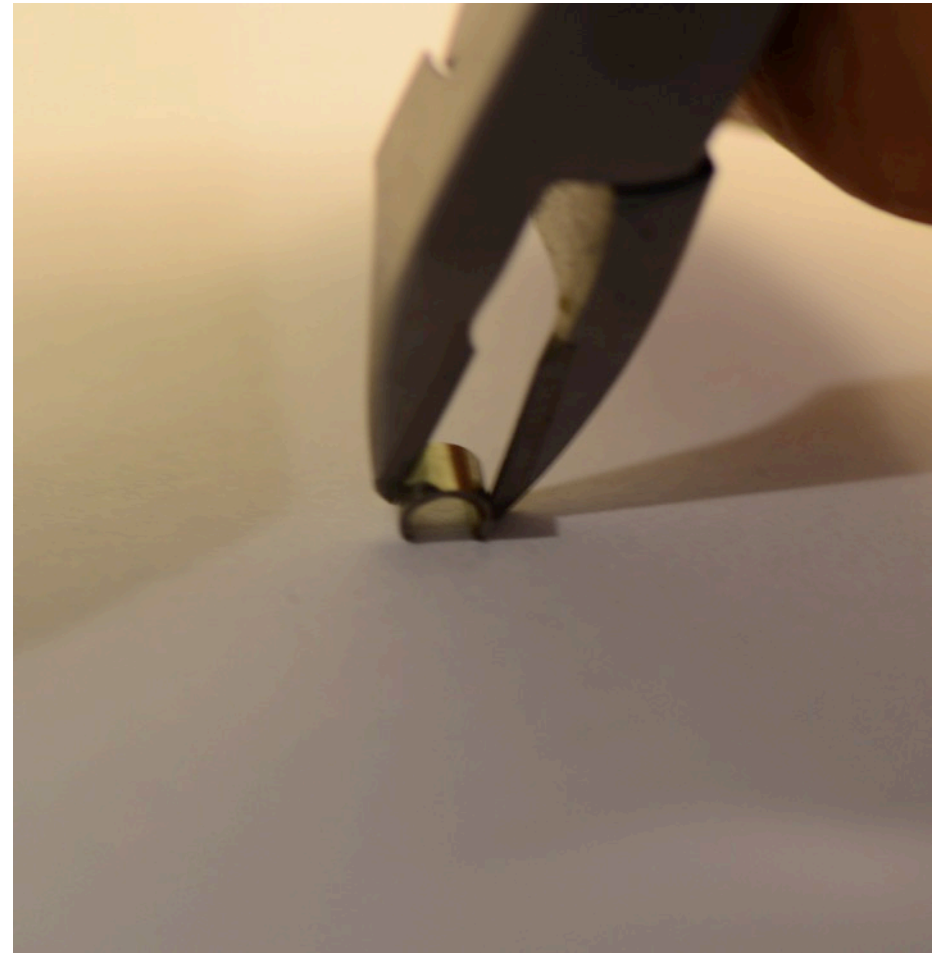
# Use spacers to activate and adjust midline



Activation: Incisors in lower jaw must be in contact with incisors upper jaw until patient is in Class I relation. Every third week for approx. 9 months.

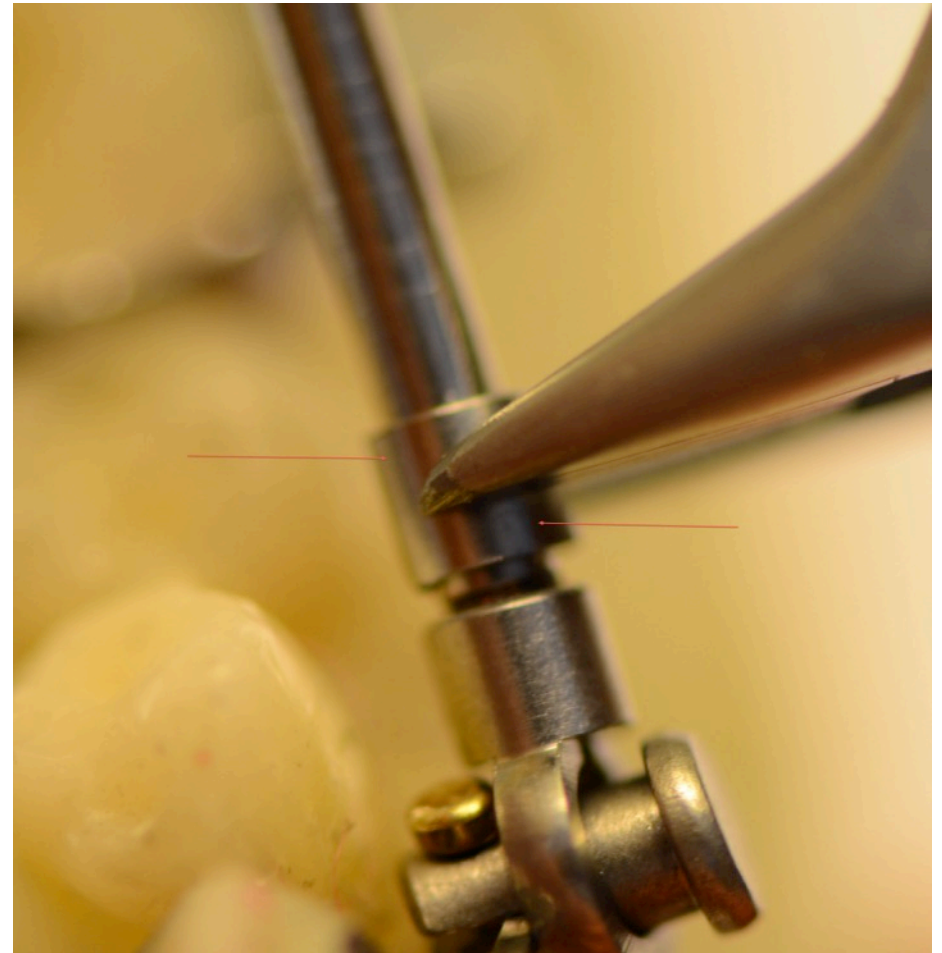
# Installing MALU open spacer

- Place the open spacer with the opening facing down
- Pick up using a ligature cutter



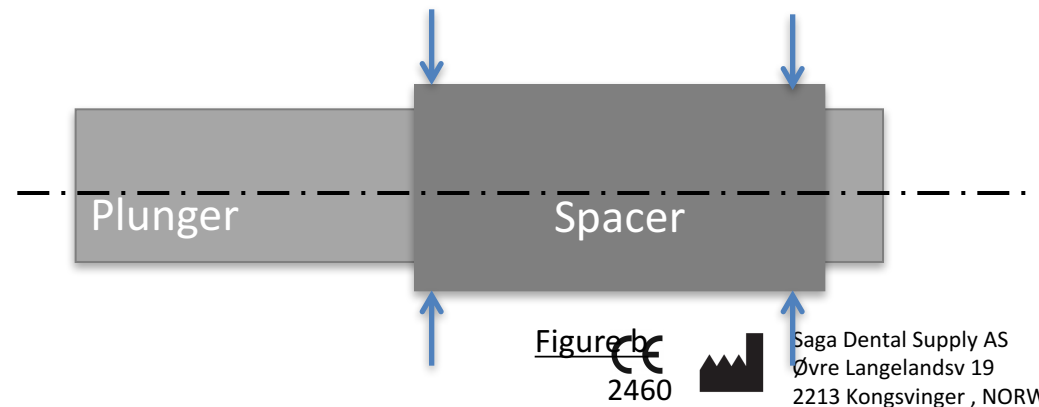
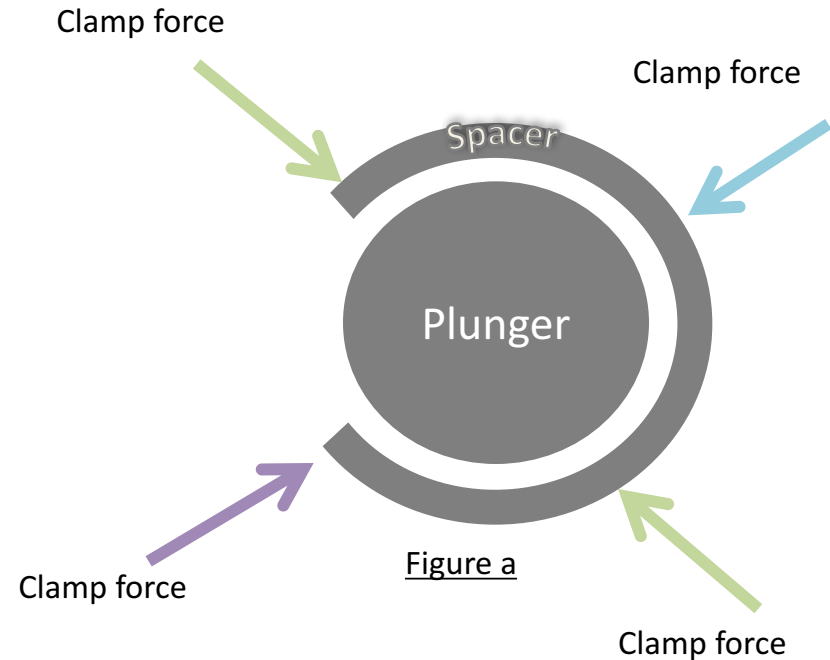
# Installing MALU open spacer

- Place spacer on, while plunger is attached to the wire with the K-hinge
- Apply clamping forces close to the opening/slot of the spacer in both ends of the spacer (see figure next page)



# Application of plier force

- The aim is to crimp the spacer in the four areas indicated by the purple and blue arrows. This way the opening/slot will wrap around the plunger, see figure a.
- To secure proper retention it's important to crimp the spacer in both ends, see figure b.



# Removing MALU

- Remove appliance
- Keep brackets and schedule a control 3 weeks to observe if there is any relapse/crowding in the lower anterior



# Addidtional Info

- Next year it will be 25 years ago the basic model of MALU was introduced. Over the past years many modifications have been done in its application, still very few orthodontists are in position to use this appliance.
- The present version with:
  - 1. Shallow step with a spacer in the lower arch along
  - 2. Bonded bracket on the 1<sup>st</sup> bicuspid
  - 3. 022x025 Kobra wire in the lower arch
  - 4. Hands on support with the patients
- Has reduced the breakage in the lower arch. Still majority of the doctors fail to realize that they are dealing with many kg. of forces at time particularly when the patients are playing ice hockey , football and volleyballs . This is different group will require further modification.
- To cover this group new approach is being devised along seeking patent for the new technique





# MALU BRACKETS FOR BONDING

- LOWER ANTERIOR 022 SLOT
- LOWER CUSPID 022 SLOT LARGE BASE
- LOWER CUSPID 022 SLOT MEDIUM BASE
- LOWER CUSPID 022 SLOT SMALL BASE
- LOWER BICUSPID 022 SLOT SMALL BASE
- CUSPID BANDS FROM SIZE 1 – 15
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- “BIG MAMA” : Large base for the cuspid almost covers labial surface of the normal size cuspid.
- MEDIUM SIZE : For small size cuspid and bicuspid.
- SMALL SIZE : Use only on very small lower bicuspid.
- MICRO Size : Use only on the lower anterior.

On the bicuspid we recommend medium size base where ever we can. In case breakage of the lower arch , 1<sup>st</sup> bicuspid will hold the broken wire lower “K Hinge”.

## Lower arch:

- Bands on the lower 1<sup>st</sup> Molar sand blasted/etched inside of the band.
- Bond from 1<sup>st</sup> Bicupsid to 1<sup>st</sup> Bicuspid.
- Do not bond 2<sup>nd</sup> bicuspid.
- 

## Upper arch:

- Bands on the upper 1<sup>st</sup> Molar usually .051 HG tube, sand blasted/etched inside of the band.
- In case upper arch is aligned do not bond upper arch.
- In case of anterior spacing – bond from cuspid to cuspid and close all spaces.

