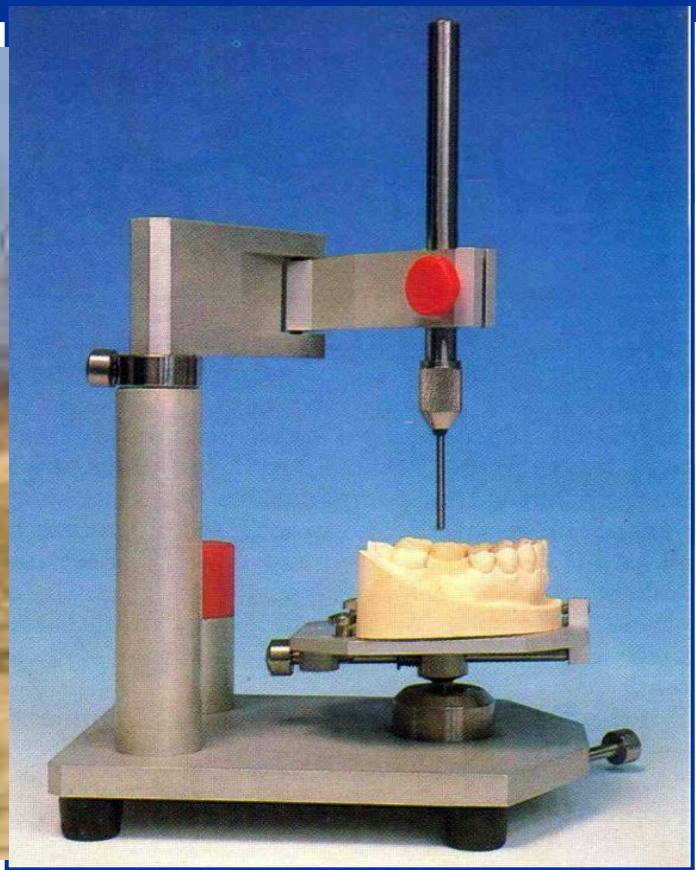
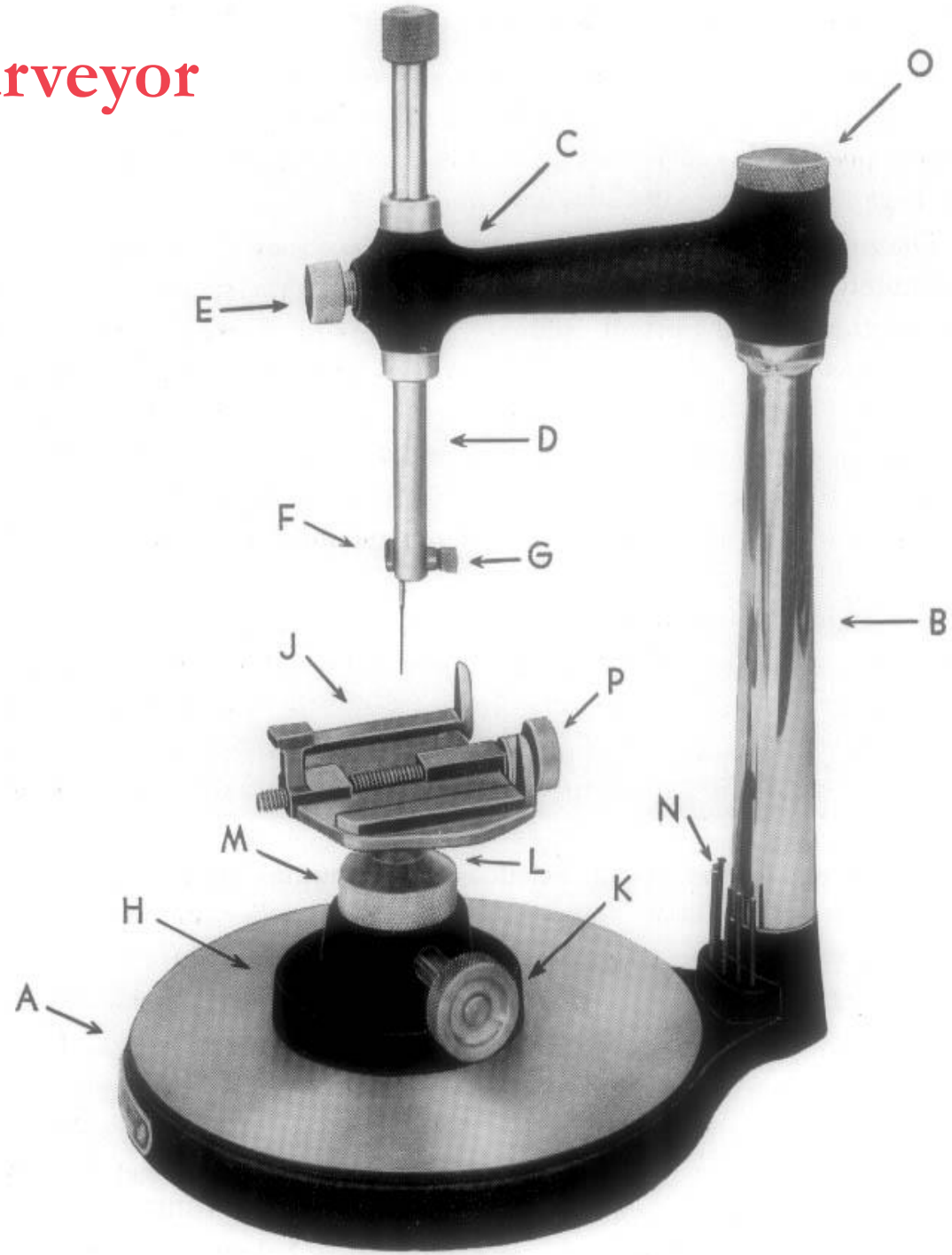
DENTAL SURVEYOR

An instrument used to determine the relative directions of two or more surfaces of the teeth or other parts of the cast of a dental arch.



Parts of a Dental Surveyor

B-Vertical Upright Column
C-Cross Arm with Spindle Housing
D-The Vertical Spindle With Tool Holder
E- Screw To Lock The Spindle
F- Tool adaptor Holder
G- Surveying tool holder
J- Model Clamp
K- Model table lock nut
L- Model rotating ball & socket
M- Ball rotating ring
N- Tool Rack
O- Storage Compartment
P- Model lock nut



Surveying Tools

1- Analyzing Rods

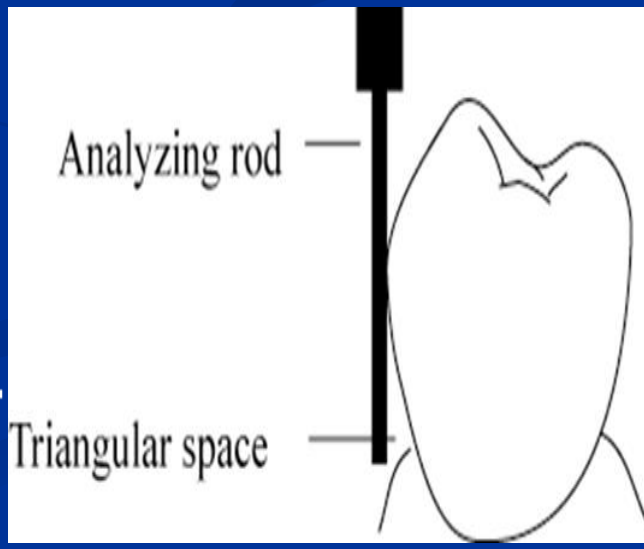
2- Carbon Marker

3- Undercut Gauge

4- Wax Trimmer

Surveying Tools

Analyzing Rod - A thin straight metal rod used to analyze contours and undercuts. This is the principal tool used in surveying. The side of analyzing rod is brought into contact with surfaces of the proposed abutment teeth to analyze their axial inclinations. This rod is easily bent and once bent is difficult to straighten. Use it carefully.

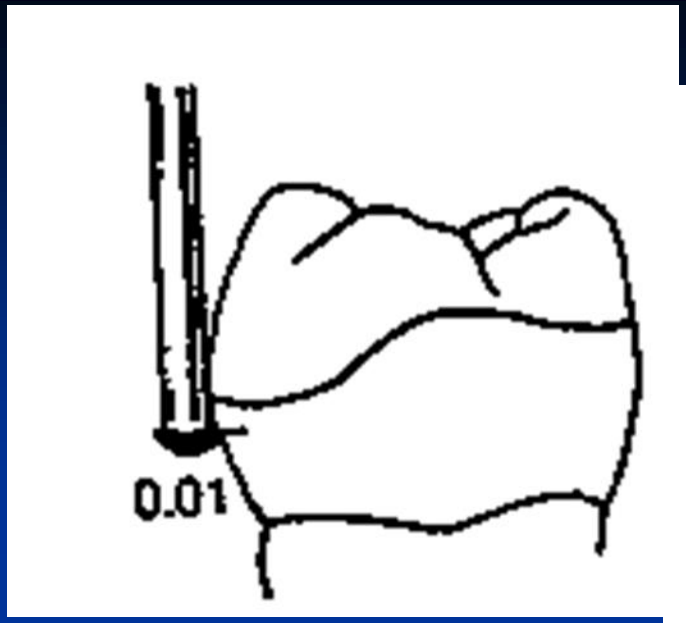


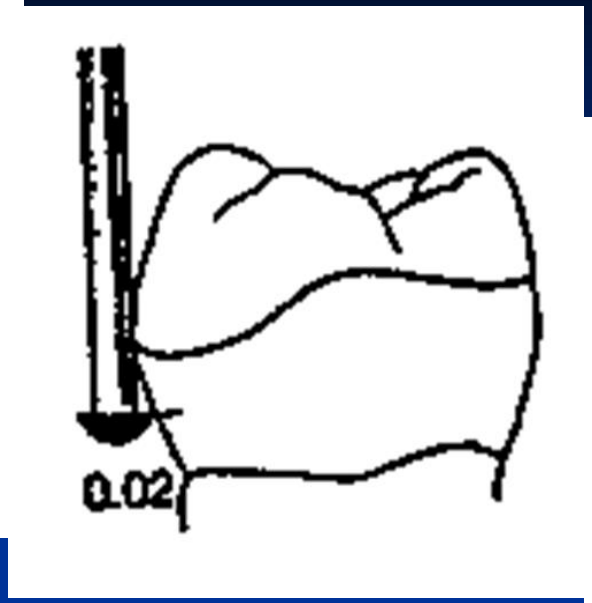
Carbon Markers

Carbon Marker - Rods similar to pencil leads which can be used to mark the location of the height of contour on a dental cast. Some surveyors use a protective sheath to prevent or reduce breakage of the carbon markers

Undercut Gauges

Metal rods with terminal ledges or lips of various widths (the most commonly used are 0.01" and 0.02"). Undercut dimensions can be measured on teeth by bringing the vertical shaft of the gauge in contact with a tooth and then moving the surveying arm up or down until there is also contact with the terminal lip.


0.01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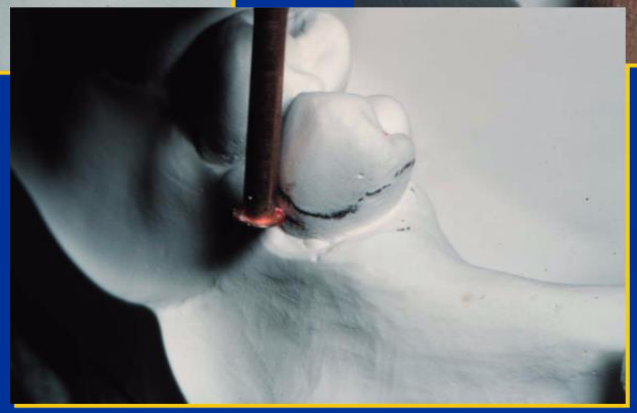
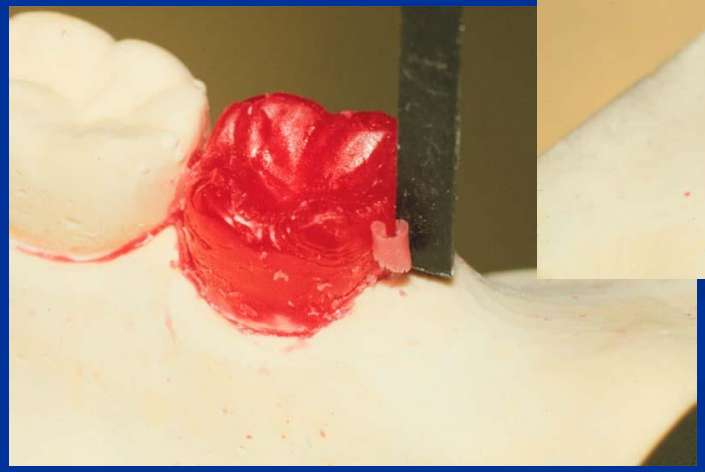
0.03



Wax Trimmer

Wax Trimmer - A tool with a straight sharp edge, which parallels the surveying arm. It is used to contour waxed crowns for partial denture abutments, or to place blockout for a partial denture framework. It is used with a dragging or shaving motion to



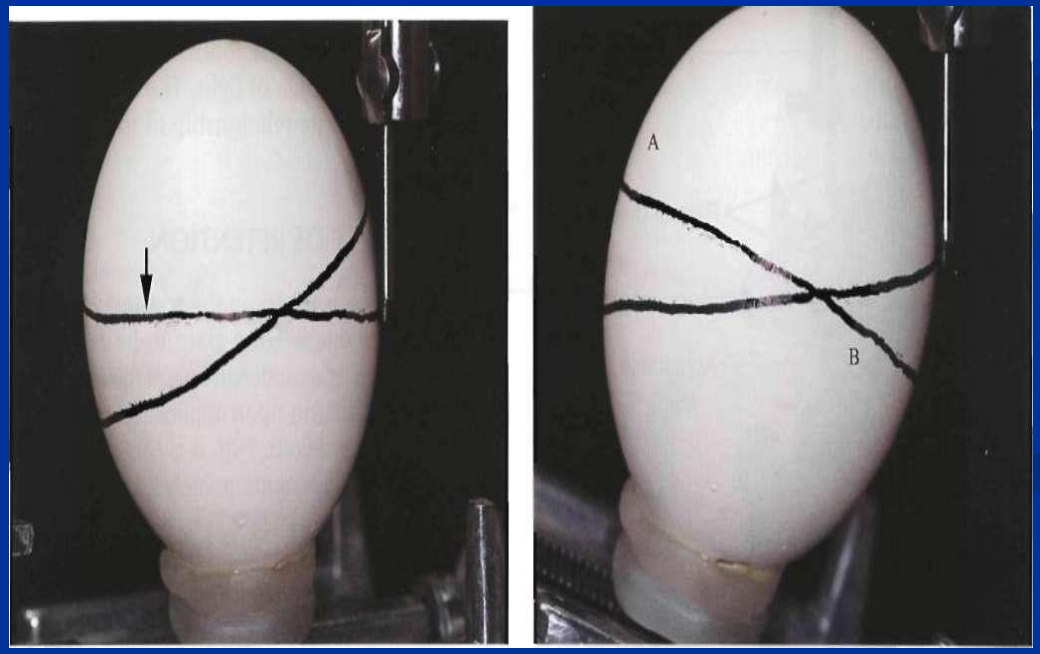
Purposes of Surveying the Diagnostic Cast

1. To determine the most desirable path of placement that will eliminate or minimize interference to placement and removal
2. To identify proximal tooth surfaces that are, or need to be, made parallel so that they act as guiding planes during placement and removal.
3. To locate and measure areas of the teeth that may be used for retention.
4. To determine whether tooth and bony areas of interference will need to be eliminated surgically or by selecting a different path of placement.

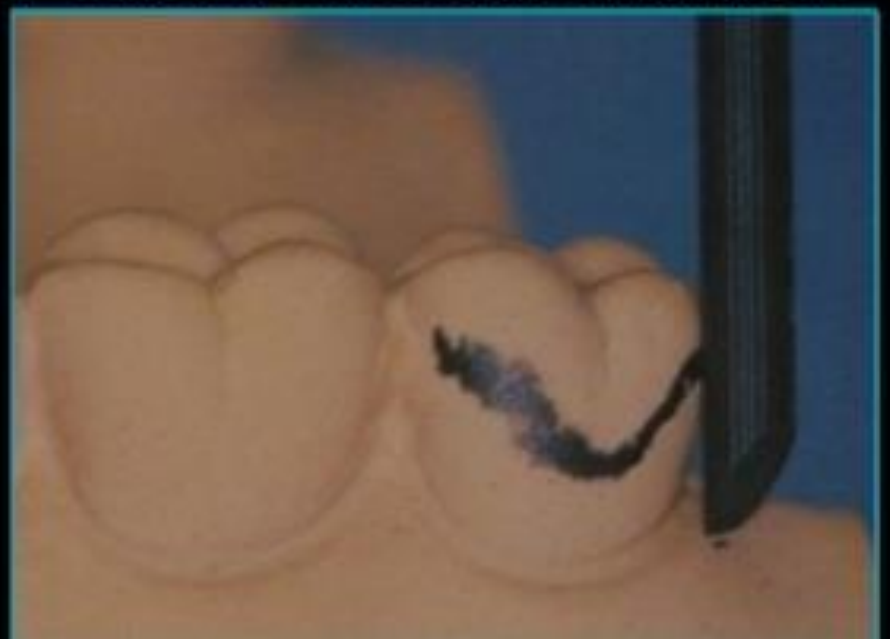
Some Important Terms

Height of Contour (HOC)

Survey line :a line encircling a tooth, designating its greatest circumference at a selected position determined by a **dental surveyor**.



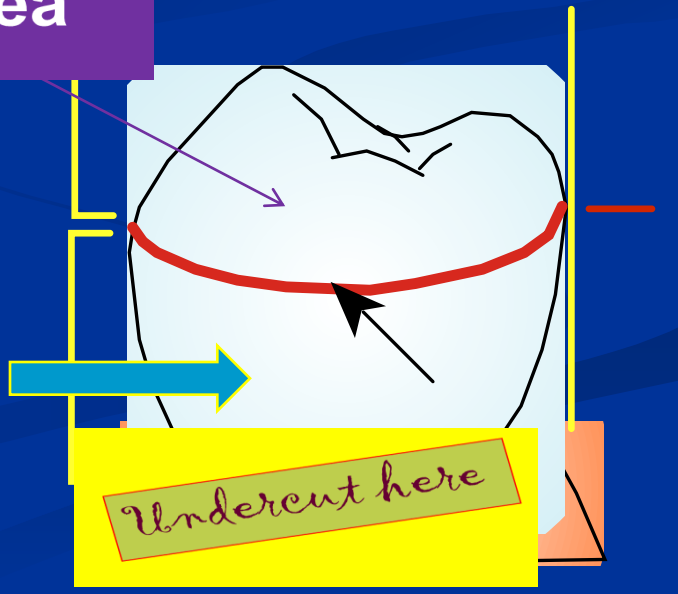
- Survey line
  - A line drawn on a tooth to indicate the greatest circumference in a given horizontal plane. The survey line divides parts of teeth or other tissues into undercut and non - undercut areas.



Any areas occlusal to survey line used for placement of non retentive, stabilizing, or reciprocating elements

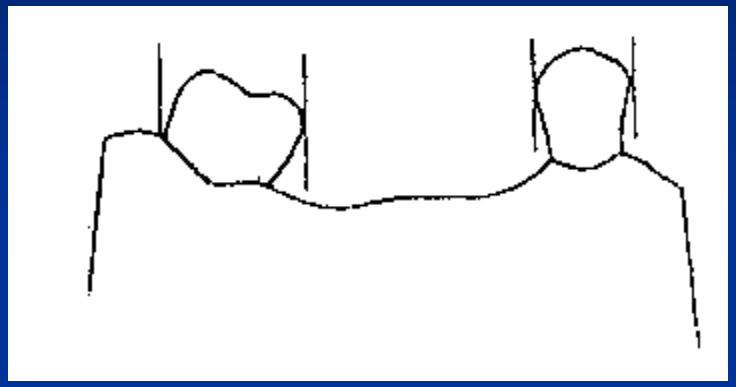
Non-undercut Area

Any areas cervical to survey line used for placement of retentive clasp components

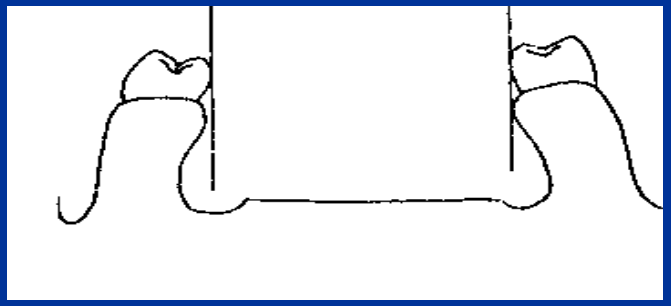


Rule: Retentive tip should usually be designed to be placed in the gingival 1/3

Types of undercuts



Tooth Undercuts



Soft Tissues or bony Undercuts(on lingual side of ridge)

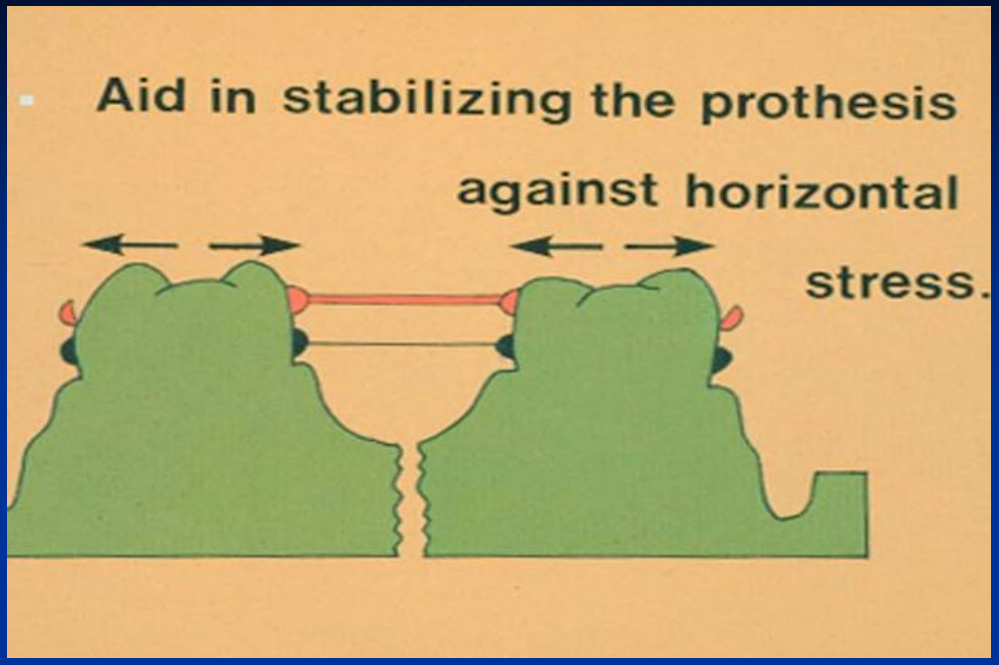
that portion of abutment tooth that lies between the HOC and the gingiva #when used in reference to other oral structures, undercut means the contour or cross section of a residual ridge or dental arch that would prevent the placement of a denture.

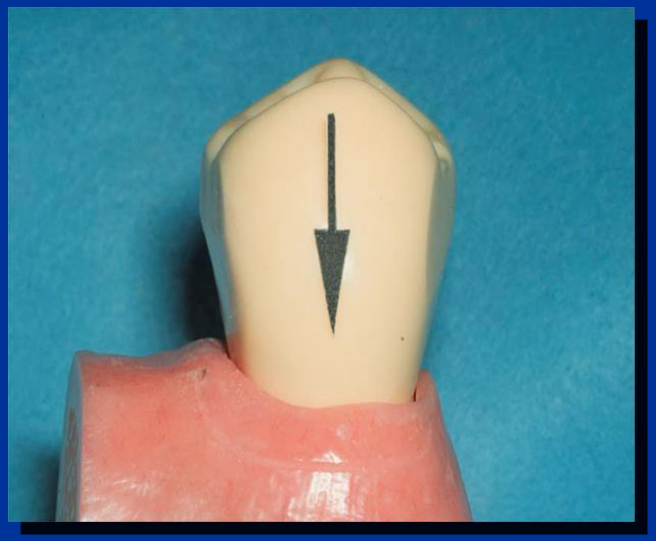
A path of insertion (or removal) is the path along which a prosthesis is placed (or removed)intraorally.

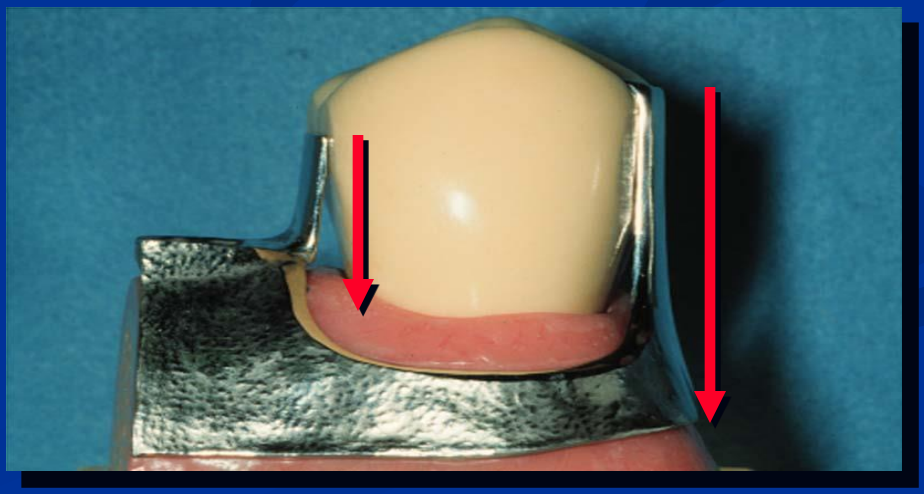
A removable partial denture is usually fabricated to have a **single path of insertion or removal from the mouth**. A single path of insertion is advantageous because it:

1. equalizes retention on all abutments
2. provides bracing and cross-arch stabilization of teeth
3. minimizes torquing forces of the partial denture
4. allows the partial denture to be removed without encountering interferences
5. directs forces along the long axes of the teeth
6. provides frictional retention from contact of parallel surfaces on the teeth

- Aid in stabilizing the prothesis against horizontal stress.

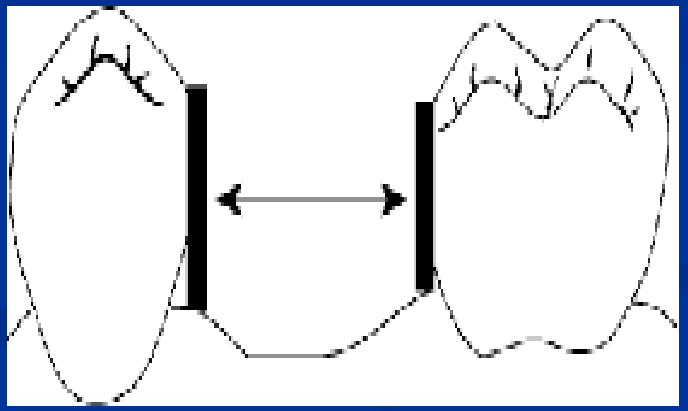






Guiding Planes

- Two or more vertically parallel flat surfaces of abutment teeth shaped to direct a prosthesis during placement and removal where rigid components contact abutments
- *

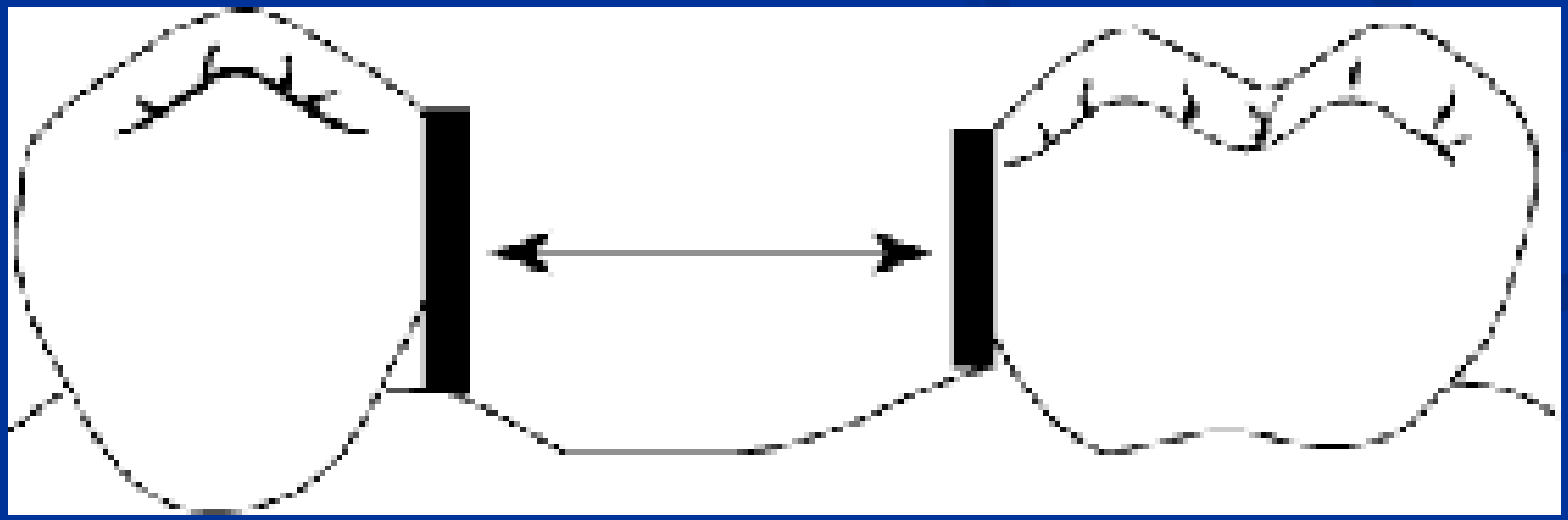


Guiding plane surfaces are parallel to the path of the placement and parallel to each other; preferably these surfaces are made parallel to the long axes of abutment teeth.

- Proximal Plates
- Bracing Arms
- Rigid portions of Retentive Arms *

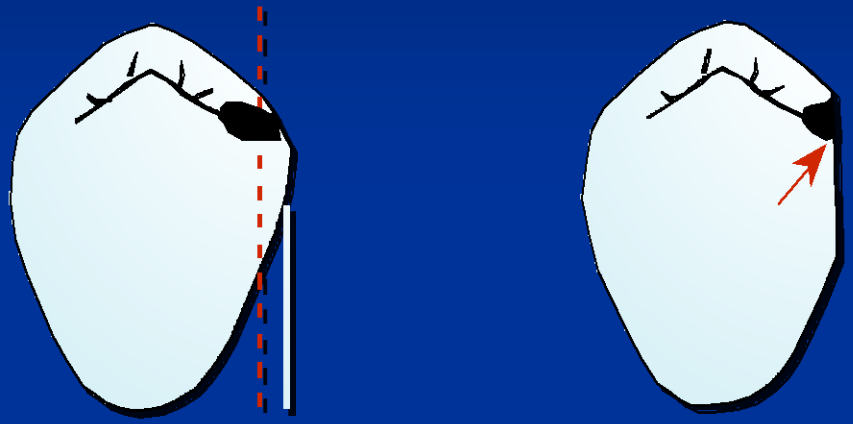
Guiding Planes Functions

- 1- ensure passage of the rigid parts of prosthesis past existing areas of interference. #
- 2- to control & limit directions of movement of RPD as it is being inserted, removed or while in function.
- 3- to ensure predictable clasp assembly function, including retention and stabilization *

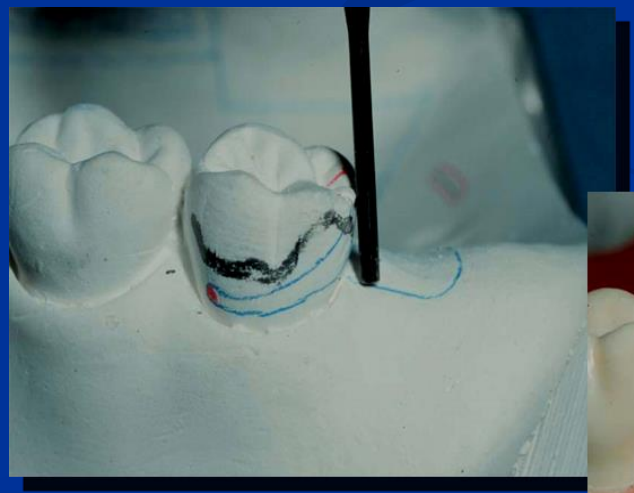


Preperation Of Guiding Planes

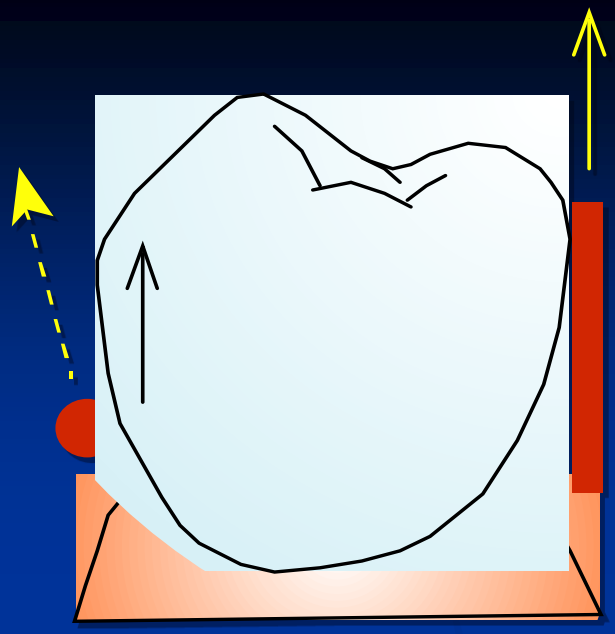
- Long Cylindrical Carbide or Diamond)



If occlusal rest seats are prepared initially, placement of a proximal guiding plane will remove some of the rest seat preparation, and result in a narrowed rest with a sharp occluso-proximal angle.



Retentive Areas



Retentive arm should have a different path of escapement than guiding plane (path of removal), so retentive arm must be forced to flex over a convex surface during placement and removal (retention)

For a clasp to be retentive, its path of escapement must be other than parallel to the path of removal of the denture itself.

Retentive undercuts equalized

Ideally, retentive arms should oppose each other on opposite sides of the arch with fairly even retention *