

CLINICAL AID

A Precise Bracket Gauge for Indirect Bonding

Accurate bracket placement on stone working casts for indirect bonding requires precise indication of bracket heights.¹⁻³ The K²M Bracket Position Measure Marker (K²M-BPMM),⁴ a modified Mitutoyo Absolute 500* digital vernier caliper (A), has been designed to perform the tasks of both bracket-height measurement and marking.

In our modification of the caliper, the upper external-measurement jaw is shortened by

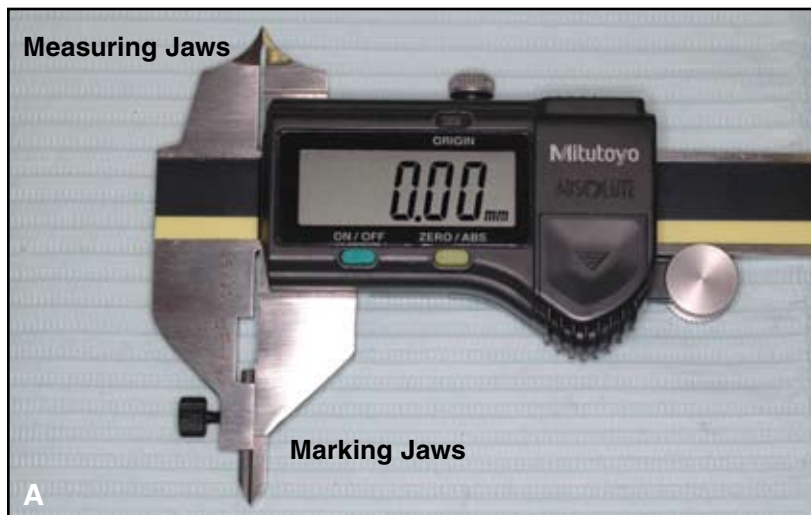
*Mitutoyo Corporation, 20-1, Sakado 1-Chome, Takatsu-ku, Kawasaki-shi, Kanagawa 213-8533, Japan; www.mitutoyo.co.jp.

about 8mm, and a 2.1mm-diameter hole is drilled into the jaw to accommodate a 2mm-diameter drawing lead (2H hardness). This allows the lead to be positioned flush against the lower jaw of the caliper and fixed in place by a screw inserted into the upper jaw. The tip of the lead is sharpened on the diagonal to create a thinner edge for precise marking.

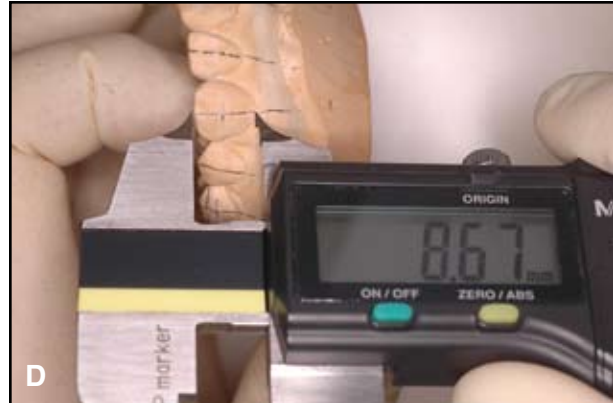
The modified caliper can be used to mark bracket positions in two ways, simply by adjusting the position of the drawing lead in the upper jaw. Figure B shows the operator marking a line on a tooth

at 3.7mm from the incisal edge. Here, the lead is adjusted to be shorter than the tip of the lower jaw. Figure C shows the operator marking a given distance from a fixed point—in this case, the Kalange line.³ For this application, the lead should be the same length as the lower jaw.

Our measuring jaws are made by modifying the internal-measurement jaws of the vernier caliper, but are similar in function to the external-measurement jaws. The tips are narrowed and point-



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ed to facilitate precise measurement of tooth heights and widths (D), as well as intercanine and intermolar distances.

The modification of a standard digital vernier caliper to a K²M-BPMM is a somewhat difficult and sensitive process, but can be done with appropriate tools. My office will be manufacturing and distributing the K²M-BPMM in the future. Although the base caliper's usual accuracy ($\pm 0.02\text{mm}$), resolution (.1mm), and repeatability (.1mm) may be slightly affected by the modification, the K²M-BPMM has been more than adequate for clinical use in my experience.

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MASATADA KOGA, DDS, PHD
Contributing Editor
Journal of Clinical Orthodontics
Koga Orthodontics
8-15-24 Kitami
Setagaya-Ku, Tokyo 157-0067
Japan
kcompas@coral.ocn.ne.jp