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TECHNICAL NOTES

A NEW MEASURING DEVICE

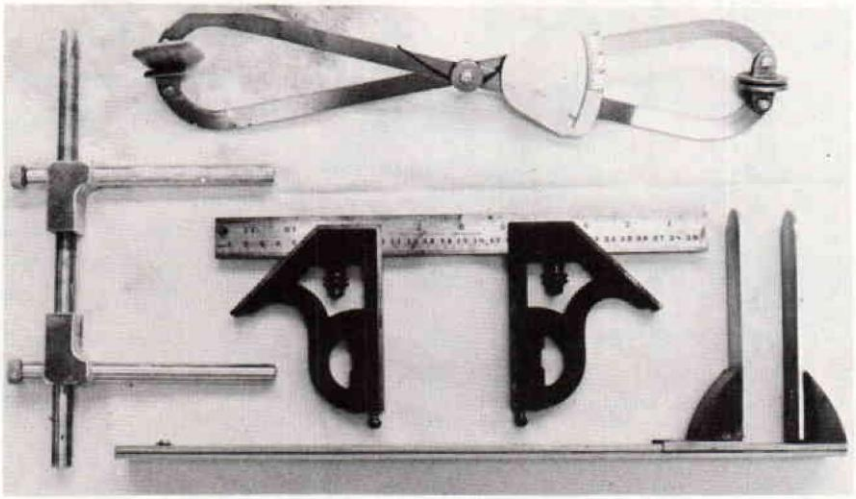

Fig. 1. Various tools for measuring the below-knee stump.

Central to the process of fitting a below-knee prosthesis is the matter of measuring the stump. Over the years, a number of different devices for this specific purpose have been developed, such as the VAPC spring-loaded caliper and the special square of Nitschke and Marschall (Fig. 1). The double-headed combination square is in common use in the teaching programs. The device described in this article is an outgrowth of our experience and dissatisfaction with all of these devices.

The new tool consists of a modified combination square with a fixed post at one end, and a rivet at the other end to prevent loss of the movable head (Fig. 2). The head is stripped of unnecessary parts and modified to permit attachment of a transparent vane of Plexiglas or Lucite (Figs. 3 and 4).

The transparency of the vane allows the prosthetist to determine easily the amount of soft tissues being compressed at the end of the stump. All edges are rounded and smoothed to prevent possible injury to the patient. However, the portion of the movable head directly on the rule is not touched so as to avoid any possible loss of accuracy.

An inexpensive combination square is usually more desirable than the more expensive ones, not just for reasons of economy, but because the finer graduations found on the more expensive devices are not only unnecessary but a hindrance in prosthetics and orthotics work. The fixed post should be mounted on the end of the rule that has a scale starting from zero on each side. Once the fixed post is welded to the rule the two should be checked to make certain they are square. The transparent vane is held onto the head by four sheet metal screws set on each side of the central slot. Two notches are cut into the body of the head to allow passage of the screws. Of course, care should be exercised in the fabrication process so that the finished product will present a neat and professional appearance.

This device has been in general use here by various members of the staff for over a year, and has proven itself to be quite satisfactory. Obviously, its utility is not confined to the below-knee stump since it can be used to obtain many of the various measurements necessary in prosthetics and orthotics. Quite unexpectedly, it was found that if the set screw on the movable head is left just loose enough to allow the head to move, the tension exerted on the square by the patient's flesh when the device is firmly applied will automatically lock the movable head in position. The head can then be released by pressing the outermost portion of it towards the fixed post.

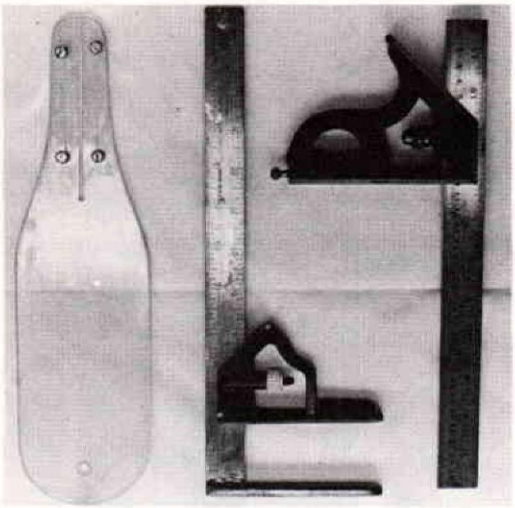

Fig. 2. Unmodified combination square and end result with detachable transparent vane.

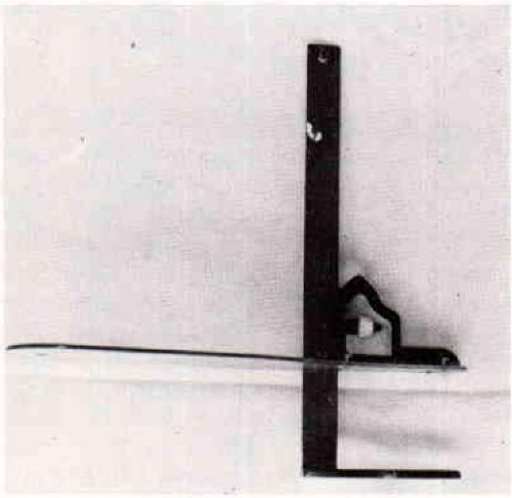

Fig. 3. Modified square with vane attached.

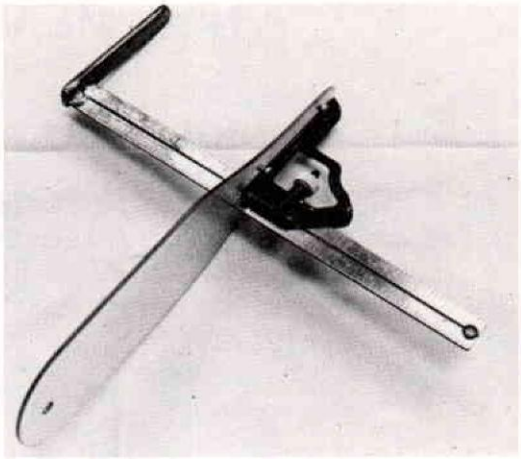

Fig. 4. Close-up showing method of attaching vane.

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