

SPECIMEN HOLDERS FOR HITACHI SEMs

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Although the specimen holders that are supplied with the current models of Hitachi scanning electron microscopes (S-520, S-570, etc.) are quite versatile, we have found them generally inconvenient for holding metallurgical and ceramic specimens that are mounted in the commonly-used 1" and 1.25" diameter plastic blocks. To overcome this difficulty we have developed specimen holders of the type shown in Figure 1. For standard metallurgical mounts of 1" and 1.25" diameter we use holders having internal diameters (I.D.) of 1.03" and 1.28", respectively, fabricated of aluminum.

With these specimen holders available, we often find it convenient to use simple cylindrical specimen stubs for mounting other types of specimens. Such stubs can be cut easily and inexpensively from round bar stock using a metallurgical cutoff wheel. We use 0.5" and 1.0" diameter aluminum stubs (about 0.4" long) for general purposes, and similar size carbon stubs for EDS work. To hold the 0.5" diameter stubs we use either a single stub holder with an I.D. of 0.53" or a multi-stub holder of the type shown in Figure 2.

We have found that these holders can often be employed to hold odd sized and shaped specimens by using long screws and auxiliary supporting blocks. Figure 3 shows a fracture specimen mounted in this way. We have also mounted geological and ceramic thin section slides by using two round headed screws with washers in the 5-40 threaded holes in the top of the multi-stub holder, as also shown in Figure 3.

The drawings in Figures 1 and 2 give all the dimensions necessary for fabricating the holders. The only dimension with close tolerance is the outer diameter of the bottom post, which should not exceed 0.625", and whose lower edge should be smooth and rounded to facilitate insertion into the stage socket. When specimens are mounted level with the tops of these holders they should be in approximately the correct height for normal stage operation; however, normal precautions should always be taken to ensure that contact is not made with the pole piece or the backscattered electron or x-ray detectors.

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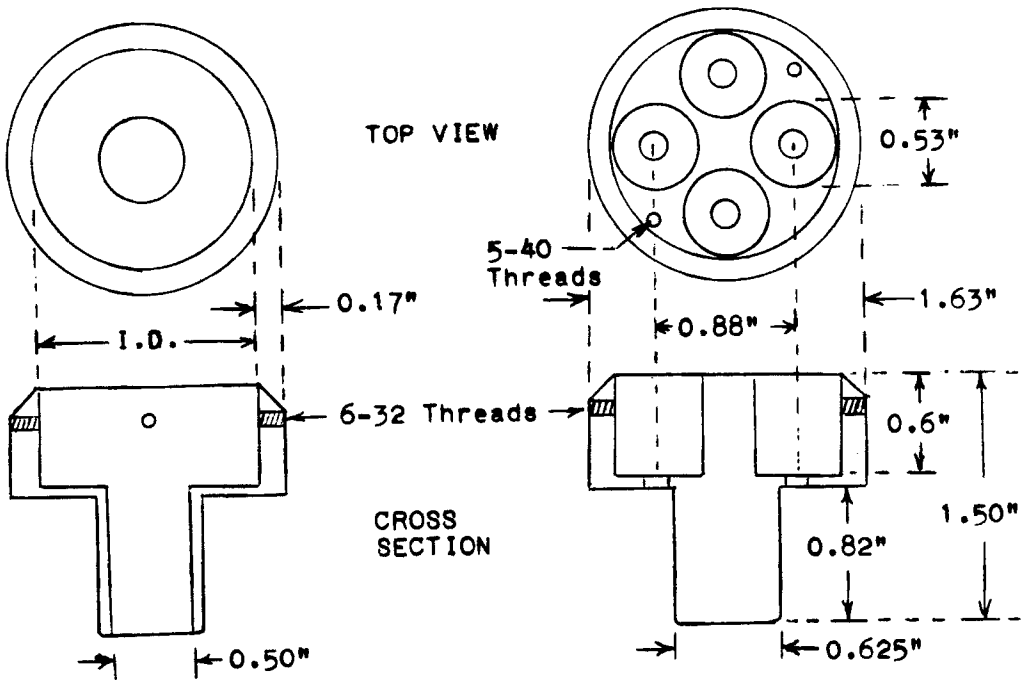


Fig. 1. Single Stub Holder

Fig. 2. Multi-Stub Holder

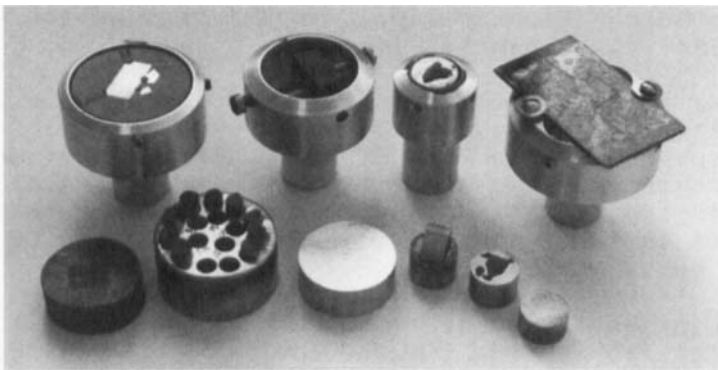


Fig. 3. Specimen Holders and Stubs in Use