



# PRODUCT NOTE

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## SUBJECT: Exradin Parallel Plate Chamber Phantom Block Explanation

The following information is provided as a service to our users and customers:

Exradin Phantoms are available to perform various depth measurements.

Exradin Phantom specifications stipulate that all Exradin Parallel Plate Phantoms be made the same thickness as the chamber body. This is done for a number of reasons.

If the phantom were 2.0 cm thick, a “filler” piece would be needed to fill the gap caused by the offset of the top surface of the chamber and its stem (see Figure 1). The filler piece would be small and easily lost or broken. Using a 2.0 cm thick phantom also requires machining from the topside, and there is no easy way to remove the chamber from the phantom, other than turning the phantom upside down and allowing the chamber to fall out.

Here is a specific example using an Exradin Model 11 chamber (thickness of 1.7 cm). Placing this chamber into a 2.0 cm thick phantom block leaves an extra 0.3 cm of phantom material. Does this extra material belong on the backside of the chamber? If so, then every time you stack your material to measure any backscatter, you will need to account for the extra 0.3 cm of phantom material. You would need to purchase an additional 0.7 cm slab to “round up” the additional rear material total to a whole number so you can stack other (unmachined) phantom blocks to achieve exact 1.0 cm depth increments. You will encounter this same issue if the extra 0.3 cm material is on the phantom’s topside.

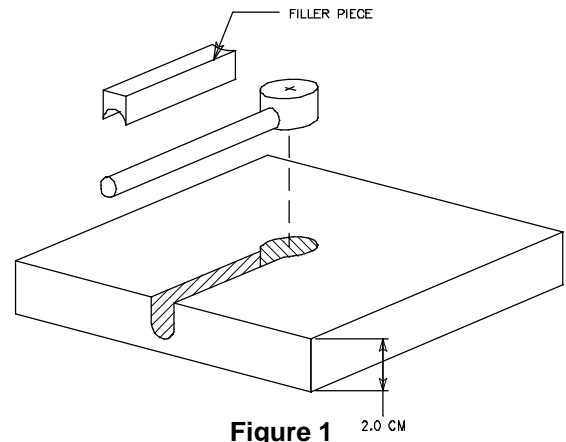


Figure 1 2.0 CM

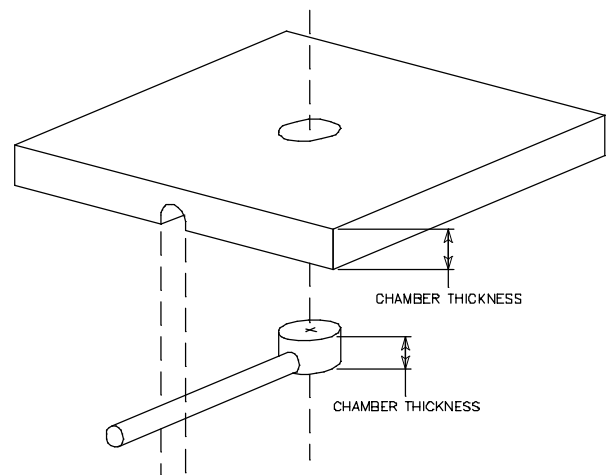


Figure 2

These considerations led us to the current design (see Figure 2). With the phantom and chamber thickness equal, you simply stack various thicknesses of phantom material on top of, and below, the phantom block machined to accept the chamber. These chamber phantom blocks are more modular and simpler to use, and cost-effective as well. Only one 2.0 cm slab needs to be machined and cut down to chamber thickness. There is no need to machine a filler piece or an additional block to “round up” the additional material thickness on the backside of the chamber to 1.0 cm.