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Explosive Vessel for Dynamic Experiments at Advanced Light Sources CHARLES OWENS, Los Alamos National Laboratory, CHRISTIAN SORENSEN, CHRISTOPHER ARMSTRONG, New Mexico Institute of Mining and Technology, NATHANIEL SANCHEZ, BRIAN JENSEN, Los Alamos National Laboratory — There has been significant effort in coupling dynamic loading platforms to advanced light sources such as the Advanced Photon Source (APS) to take advantage of X-ray diagnostics for examining material physics at extremes. Although the focus of these efforts has been on using gun systems for dynamic compression experiments, there are many experiments that require explosive loading capabilities including studies related to detonator dynamics, small angle X-ray scattering on explosives, and ejecta formation, for example. To this end, an explosive vessel and positioning stage was designed specifically for use at a synchrotron with requirements to confine up to 15 grams of explosives, couple the vessel to the X-ray beam line, and reliably position samples in the X-ray beam remotely with micrometer spatial accuracy. In this work, a description of the system will be provided along with explosive testing results for the robust, reusable positioning system.

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