

MONTANA INSTRUMENTS
APPLICATION NOTES

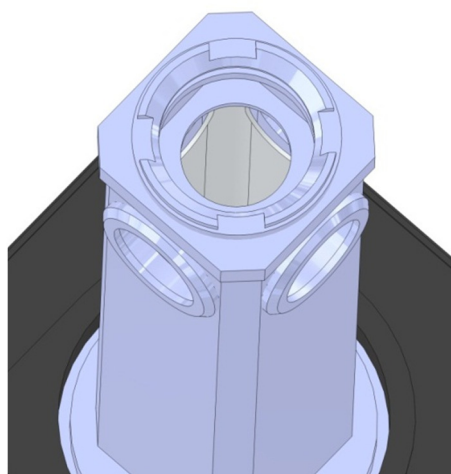
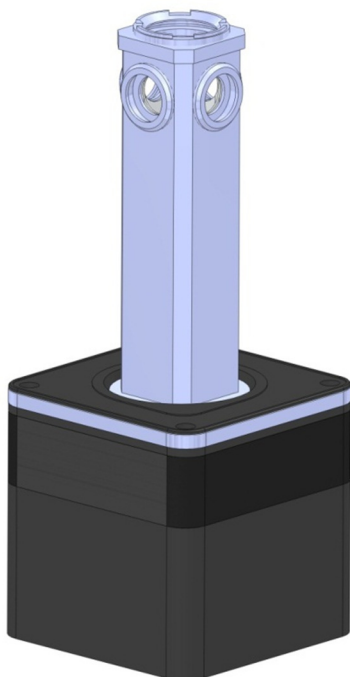
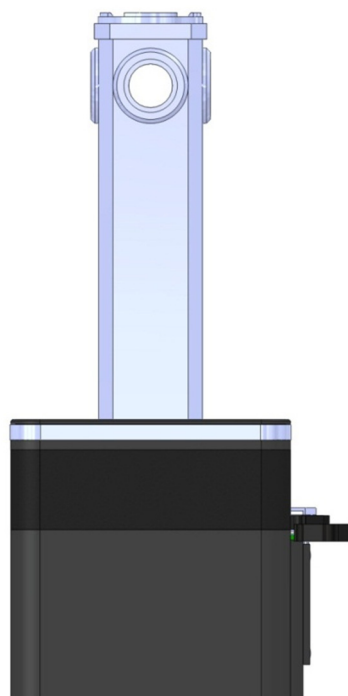
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Castle Design Window Assembly	App-009
B. Smithgall	October 1, 2011

The window assembly layers above the base may take on many forms. For users who need very close proximity to the sample from both sides with large numerical aperture, the narrow castle design is appropriate. This is also good for applications where the sample must be inserted into the core of a large electromagnet.

The window assembly is based on a low profile interface layer, onto which specialized housings may be mounted. The interface layer is like the horizontal window assembly, but shorter and without windows. In the case shown, a tall narrow window assembly is used with 20mm diameter windows. This is designed to fit into an electromagnet.

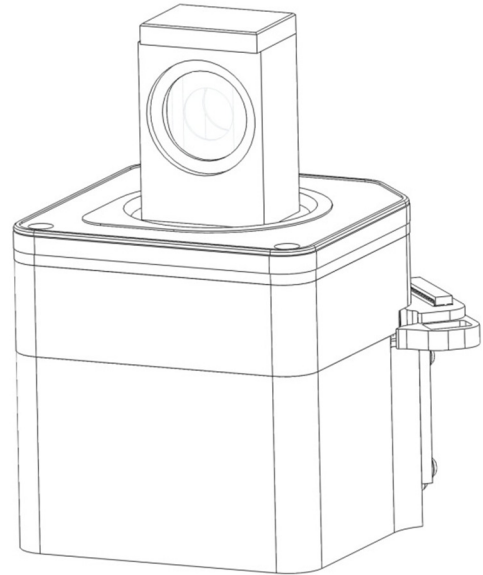
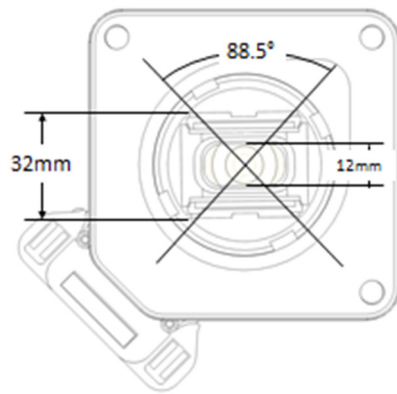


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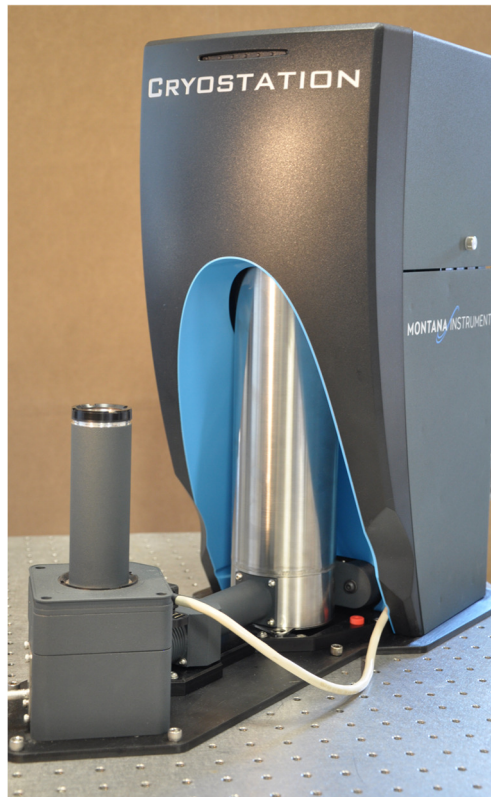
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As another example, a thin housing is available that allows close proximity with larger window and a lower profile. This still allows 12mm sample sizes.



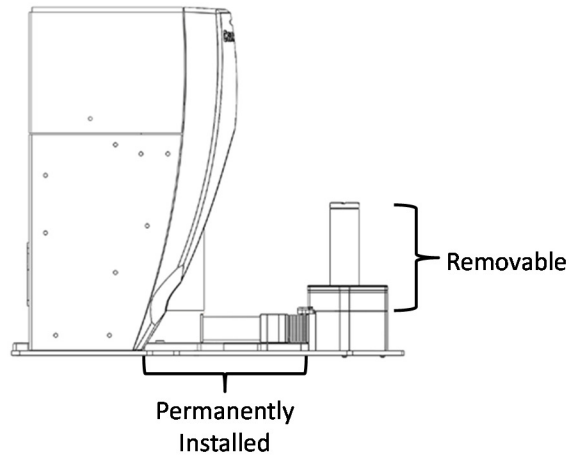
Using the round castle for a center bore magnet

The round castle option may be used with the extended sample chamber option may be used with the CRYOSTATION™ to enable users to incorporate a super conducting center bore magnet to the basic CRYOSTATION™ platform. These options, shown in **Error! Reference source not found.**, include an extension to the sample space, as well as a uniquely designed sample chamber which enables users to integrate an external superconducting magnet. The unique chamber also retains vertical, top down, optical access with a working distance of less than 3mm from the cooled sample to a room temperature objective.



The Round Castle and Extended options on the Cryostation™

The castle option has two major component sections. An additional section is added to extend the sample space out away from the main body of the CRYOSTATION™. This section is not removable. A second section of components are mounted on top of the standard sample housing base. These components are removable and interchangeable with other CRYOSTATION™ sample housings. These two sections of components can be seen below.

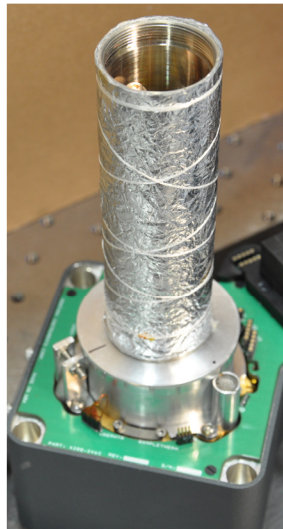


The castle shown with both the permanent and removable sections indicated

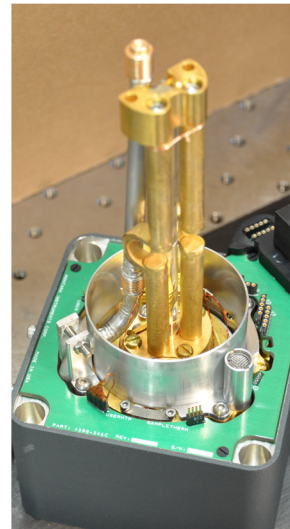
The major components of the castle option can be seen below. The figure shows the vacuum shroud components the radiation shield components, as well as, the sample mounting platform. When your system arrives, these components will be installed and can be removed in the order presented in the figure.



A)



B)



C)

The major sample space components of the castle option consist of A) the vacuum shroud components, B) the radiation shield components, and C) the sample support structure shown with the optional gas feedthrough module installed