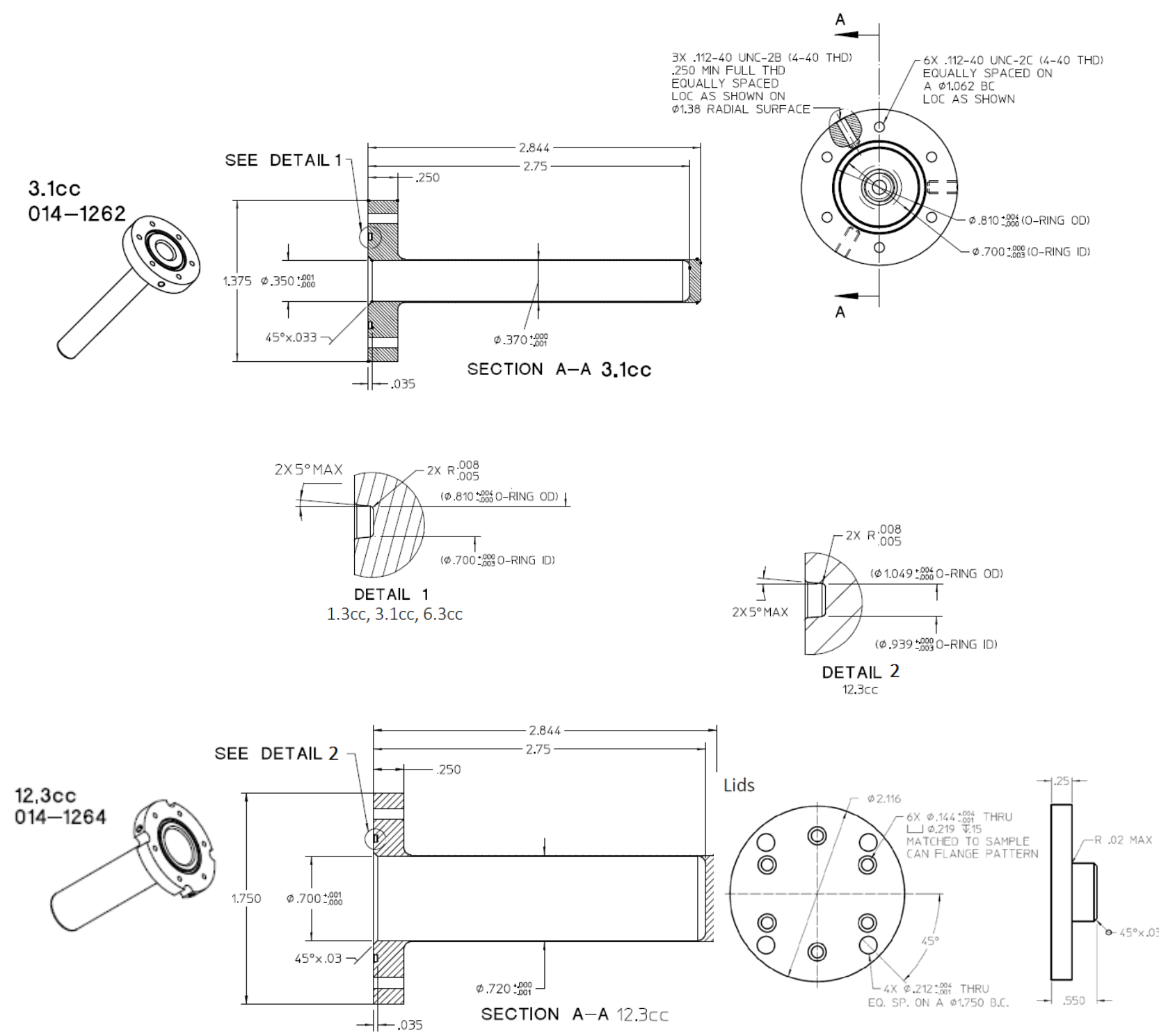


Aluminum -Powder

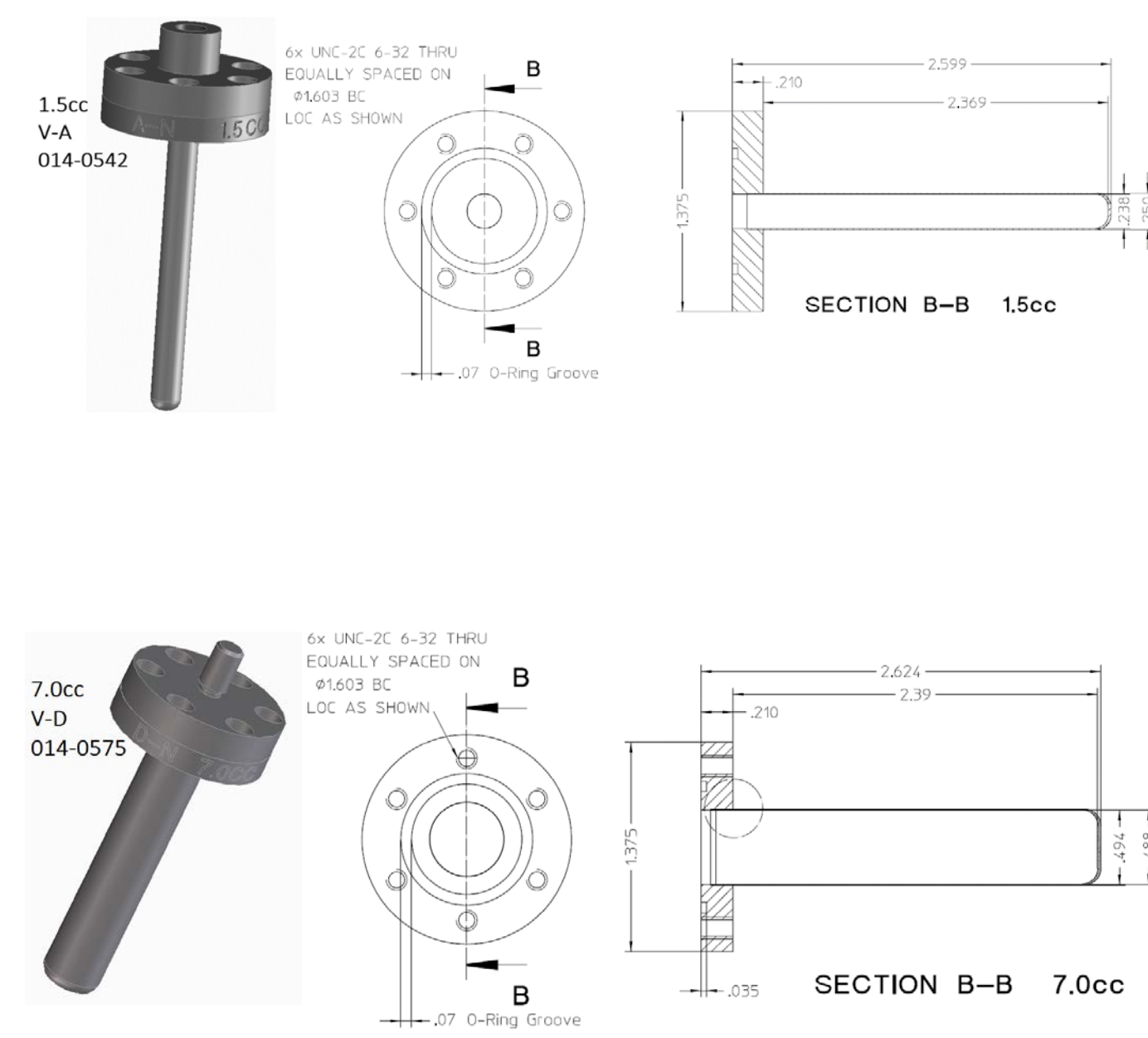
- ▶ The 3 smaller sizes differ only in the cylinder diameters; flanges are otherwise identical
- ▶ 12.3cc flange pattern accommodates the larger diameter O-ring groove
- ▶ Standard lids follow the bottom-loading CCR attachment pattern: lids have a plug and flange pattern to match the appropriate can inner diameter
- ▶ Alternate lids are available for #5/16-18 threaded post attachment
- ▶ Aluminum 6061-T6



Part #	Volume	Cylinder ID	Cylinder OD
014-1261	1.6cc	0.250"	0.270"
014-1262	3.1cc	0.350"	0.370"
014-1263	6.3cc	0.500"	0.520"
014-1264	12.3cc	0.700"	0.720"

Vanadium -Powder

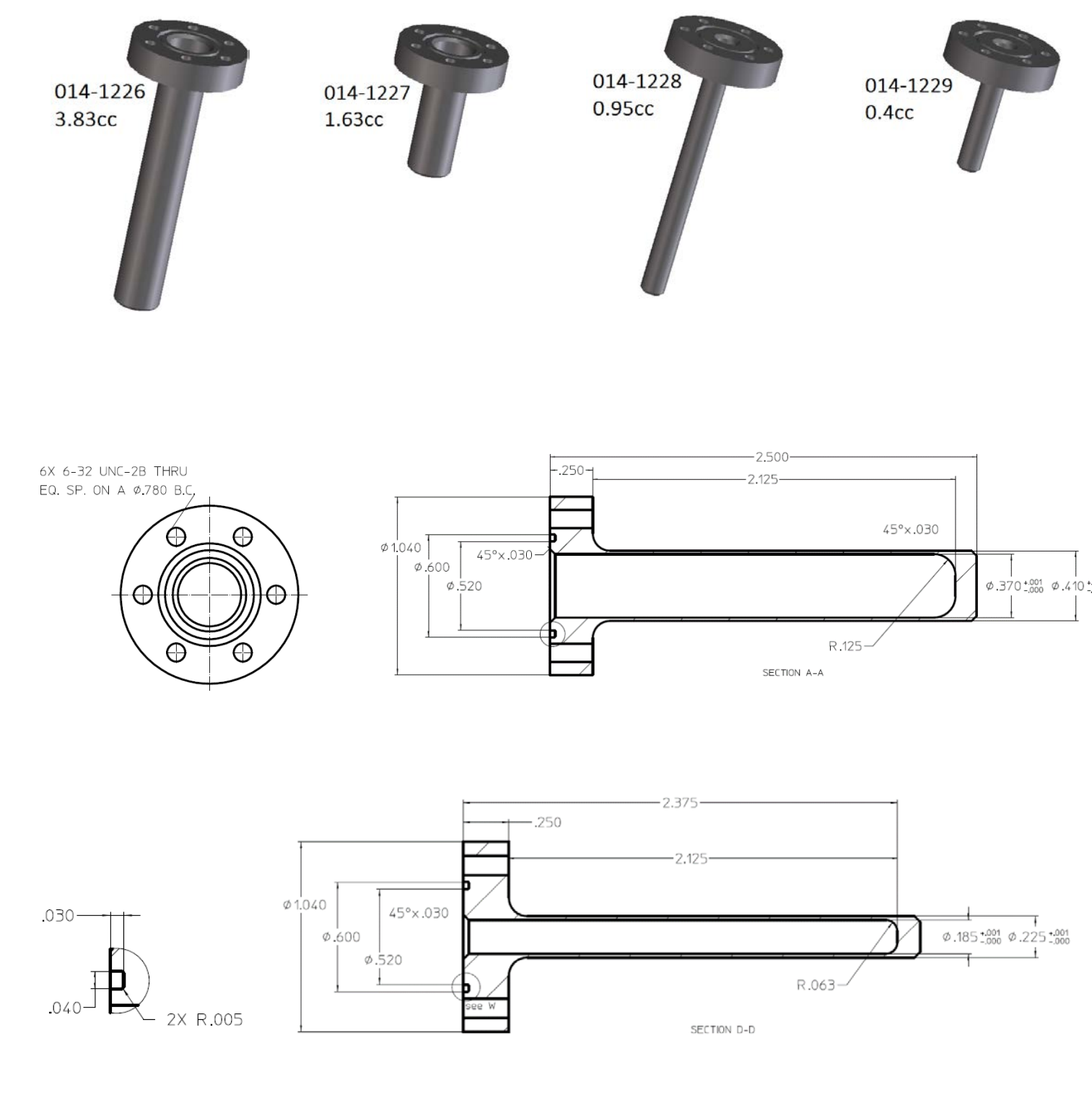
- ▶ Flange is Titanium, electron welded to the cylinder
- ▶ All sizes differ only in the cylinder diameters; flanges are otherwise identical
- ▶ Dimensions vary slightly from Aluminum, but the bottom-load lids for Aluminum cans fit
- ▶ Original lids have #5/16-18 externally or internally threaded post, and appropriate diameter plug for the size cylinder
- ▶ Cans are sequentially numbered, barcoded, and tracked by Craig Brown



Part #	Volume	Cylinder ID	Cylinder OD
(A) 014-0542	1.5cc	0.238"	0.250"
(B) 014-0574	4.0cc	0.363"	0.375"
(C) 014-0177	5.5cc	0.426"	0.438"
(D) 014-0575	7.0cc	0.488"	0.500"
(E) 014-0540	11.5cc	0.613"	0.625"

Copper -Powder

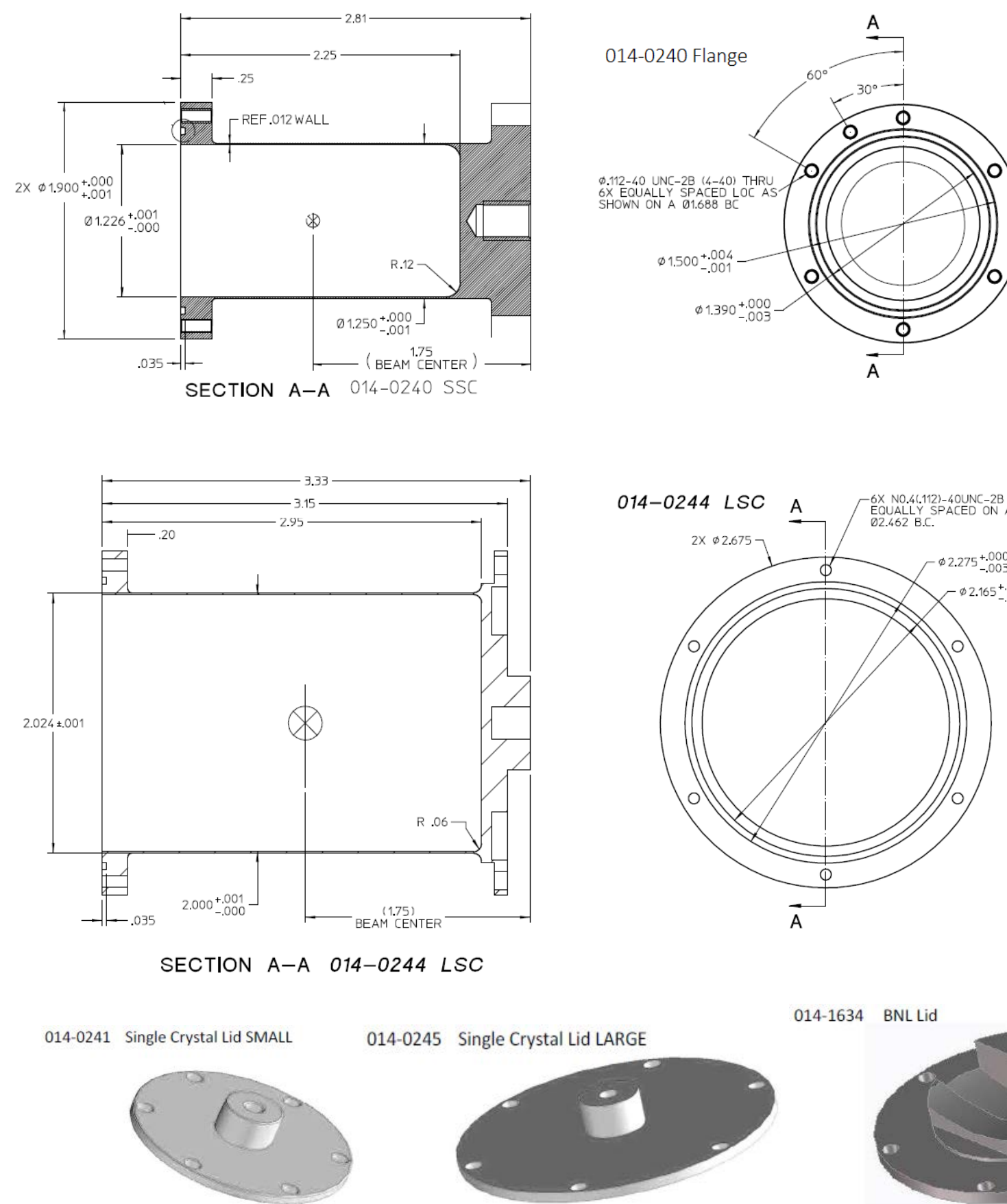
- ▶ Oxygen-free Copper for ultra-low temperature
- ▶ Limited quantities of each size
- ▶ Lids are NOT compatible with any other type
- ▶ Lids are #5/16-18 externally threaded post
- ▶ Copper thread adapters are also available



Part #	Volume	Cylinder ID	Cylinder OD	Length
014-1226	3.83cc	0.370"	0.410"	2.50
014-1227	1.63cc	0.370"	0.410"	1.25
014-1228	0.95cc	0.185"	0.225"	2.38
014-1229	0.40cc	0.185"	0.225"	1.25

Crystal Sample Cans

- ▶ Same O-ring groove design as the powder cans
- ▶ Small Single Crystal: can is designed to attach to a #5/16-18 threaded post and the bottom-loading CCR, and samples mount to a #10-32 threaded hole in the lid
- ▶ Large Single Crystal: can is only designed to attach to a #5/16-18 threaded post, samples mount to a #10-32 threaded hole in the lid
- ▶ Brookhaven (BNL): can follows the bottom-loading CCR attachment pattern, and can also adapt to a #5/16-18 threaded post; Samples mount to the rocker accessories below
- ▶ Aluminum 6061-T6



Neutron Shielding Materials

- ▶ Borated Aluminum
 - Acceptable for high temperature environments (and low); Metal sheet is brittle unless annealed, wear Kevlar gloves; Difficult to shape, but can be machined from 0.5" plate
- ▶ Cadmium
 - Easily cut and flexible to shield mounting hardware; Heavy metal; wear gloves, don't make dust or machine; Health and safety hazard above 400 Kelvin, do not heat
- ▶ Boroflex
 - Rubber-like flexible sheet which contains boron; Easily cut, but not does not hold shapes, difficult to attach
- ▶ Boron Nitride
 - Brittle, but machinable solid; Porous, tends to absorb skin oils and humidity
- ▶ Gadolinium Oxide
 - Powder, when mixed with GE Varnish, makes a paste; When mixed with a solvent, makes a thin paint that dries to a flaky layer; Use caution
- ▶ Gadolinium Foil
 - Flexible metal foil, somewhat easy to shape and attach; Releases flammable gas when in contact with water

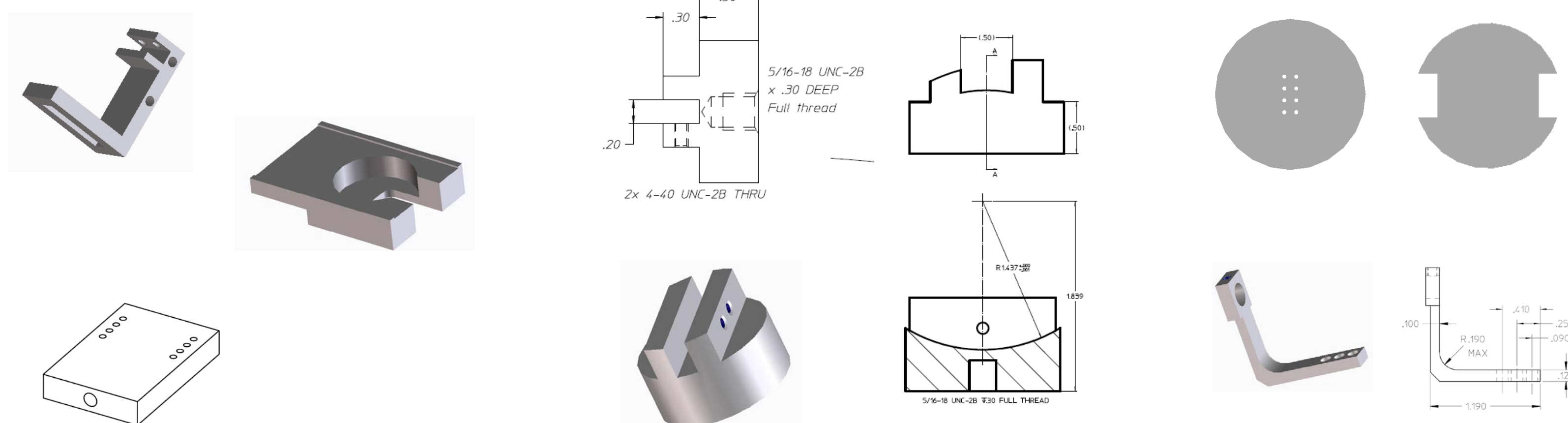
Specialized Options, kept in other locations

- ▶ Annular
 - DCS Long, in a variety of annulus sizes
 - HFBS/NSE Short
- ▶ Flat Plate
 - SANS Titanium and Aluminum cells
 - NSE Titanium flat cells
- ▶ Ultra-Low Temperature
 - More Oxygen-free copper hardware
 - Contact any Sample Environment member
- ▶ High Pressure Cells
 - Contact Juscelino Leao
- ▶ Gas Loading Lids and Rings
 - Contact Juscelino Leao or Craig Brown

As-Needed Designs

can be made from a variety of materials: Aluminum, Copper, Titanium, Vanadium, Boron Nitride, Sapphire ...How soon? How Many? What level of detail?

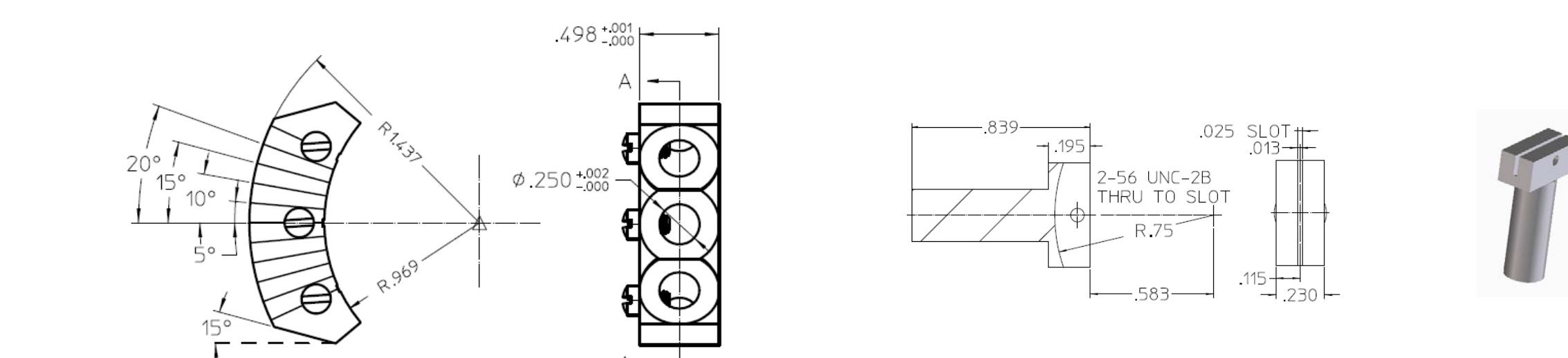
The film and rocker holders mount directly to the sample stick on a #5/16-18 thread post. A film holder can secure silicon wafers or aluminum disks. The sample is not enclosed in a can.



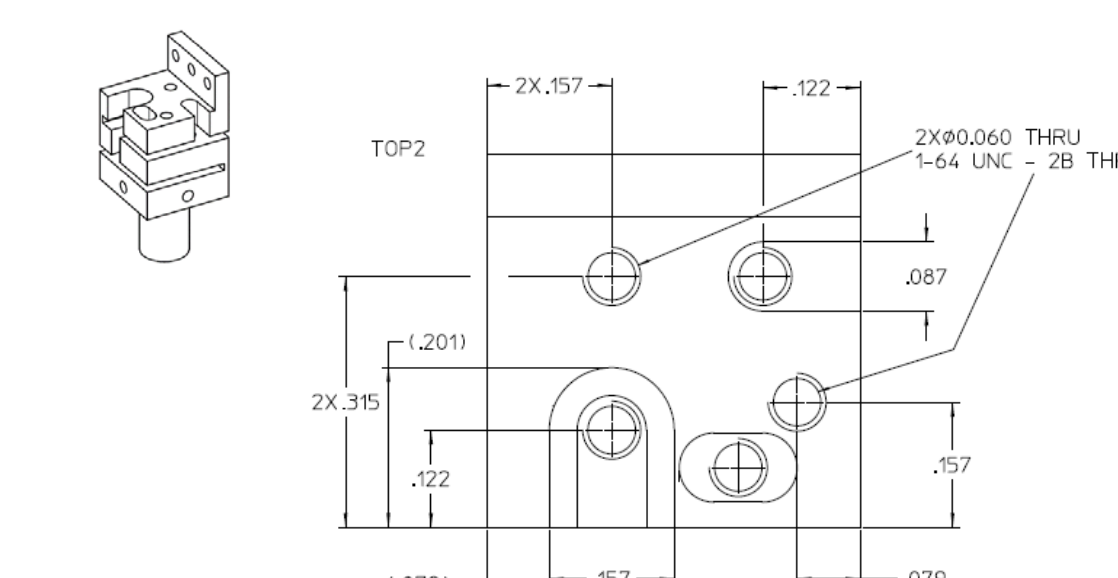
Crystal Mounting Accessories

The saw is a versatile piece. Secure the sample using foil or wire, and bend the saw along the notches until the sample is in position.

The rocker and tee are often used together to hold a saw or disk at a specified angle. Use the rocker in a Brookhaven crystal can lid or a rocker holder.



Super Sample PIN: Use for very fine adjustment of a crystal along multiple axes. This is achieved by compressing or pushing apart different sections of the PIN, with small turns of several #1-64 brass screws. (4:1 detail)



Acknowledgements

This poster summarizes decades of work for our facility users by engineers at the NCNR. Thanks for original design and drafting by John Bailey, Mercedes Castelo, Allen Heald, Edward Kunkel, Jim Larock, Colin Wrenn, and Lawrence Wroten.

The BNL cans and rockers were originally designed by M.C. Taylor, Brookhaven National Laboratory.

This work utilized facilities supported in part by the National Science Foundation under Agreement No. DMR-1508249.