



mSSDAC-80 Diamond Anvil Cells (DAC) with symmetric 80° x-ray diffraction openings

Model mSSDAC-80

The mSSDAC-80 (Spherical Seat DACs with 80 degrees symmetric X-ray opening) is a metric version of our popular single crystal diffraction large symmetric opening SSDAC-80. By size (50 mm OD) and screw pattern (M4 screws on 33 mm diameter) it is compatible with popular BX-90 DAC. It was specifically designed for single crystal x-ray diffraction, in particular on laboratory-based diffractometers and for use with Boehler-Almax type conical seats where diamond tilt alignment can be critical. The design allows the cell to be used with two membranes (compression and decompression) and still keep up to 80 degrees symmetric x-ray opening.

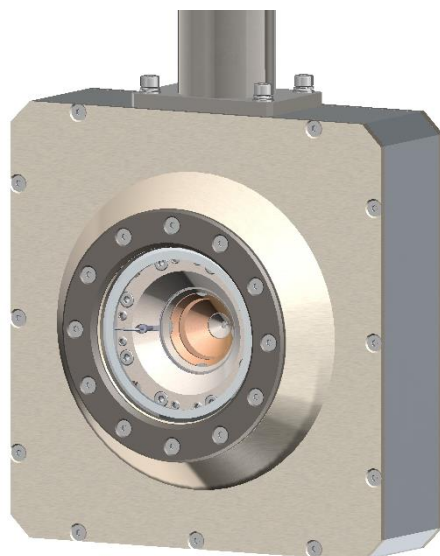
mSSDAC-80 is a megabar-class single crystal diffraction DAC, but it can be used with a variety of experimental techniques where large symmetric opening is required such as X-ray total scattering measurements, Brillouin and other optical spectroscopies as well as powder x-ray diffraction.

mSSDAC-80 has the same diameter (although slightly different height) and hole pattern as “classic” BX-90 and upgraded mBX-60/70-/80 DACs and is compatible with equipment designed for those DACs (DAC holders, membrane cans, gearboxes for gas-loading systems, etc.)

The DAC can be used with several diamond / seat combinations, but to make full use of the large symmetric opening the Boehler-type diamond / seats with conical support are preferred. Because the diamond tilt in this DAC can be adjusted with a spherical seat base, the mSSDAC is especially useful for cases where the diamond culets are not perfectly parallel to the bases of the diamond seats. The minimum 2x diamond + seat height for SSDAC-80 is ~10.1 mm.

Currently we are offering mSSDAC-80 DACs made from either hardener Stainless Steel 440c (or Vascomax on demand) for room / high temperature applications and from Be Bronze C172 for cryogenic applications below 10K. Other exotic materials are possible.

The DACs allows for multiple ways of pressure control – either with screws, mechanical gearboxes, or with membranes (see e.g. Sinogeikin et al., *Rev. Sci. Instruments* 86, 072209, 2015). The DAC can be preloaded to starting pressure with four M4 screws and then engaged with remote pressure control device. The DAC can be supplied as stand-alone version, with one membrane enclosure, or in double-membrane (compression + decompression) symmetric configuration which provides up to 80 degrees symmetric X-ray and optical opening with proper choice of membranes, diamonds and seats.



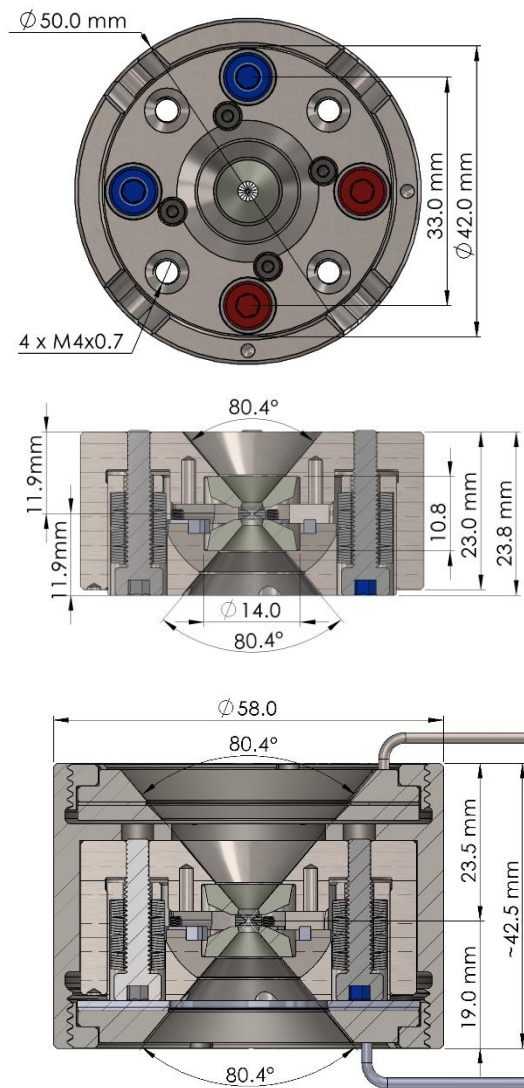


Specifications of mSSDAC-80 Diamond Anvil Cell

Main DAC Specifications

- Height: ~23.5-24.0 mm
- Diameter: 50.0 mm
- Working distance: ~11.8-12.0 mm
- Mass: ~280 g Stainless Steel
~350 g BeCu
- Optical / top angle: 80° max.
- X-ray angle (max): 80° symmetric
- DAC material: *Stainless Steel 440C or Vascomax C300/C350 Be Bronze C17200*
- Seats: *Tungsten carbide (typ.), Vascomax, cBN (optional)*
- Screws: *M4x0.7, 2RH+2LH (all RH optional) 19-20 mm (23-24 mm TL)*
- Screw position: *4x 90° apart on 33.0 mm BCD*
- Spring washers: *7.6-8.0 mm OD, 4.2 mm ID, 0.4 mm thick (typ.)*
- Diamond seat diameter: *12.5 – 13.0 mm (~13.5 mm max)*
- Minimum height of two seats+diamonds: 10.1 mm

DAC Dimensions



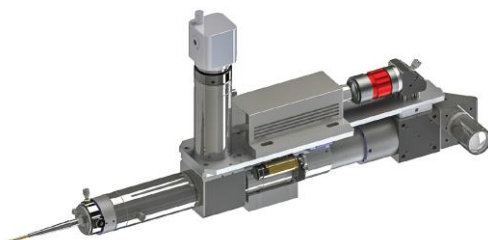
mSSDAC-80 in double-membrane canister

Related equipment

Pressure controllers



Ruby pressure systems



DAC Accessories



For more information please visit <http://dactools.com/diamond-cells>

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