



## SSDAC-70 Diamond Anvil Cells (DAC) with symmetric 70° x-ray diffraction openings

### Model SSDAC-70

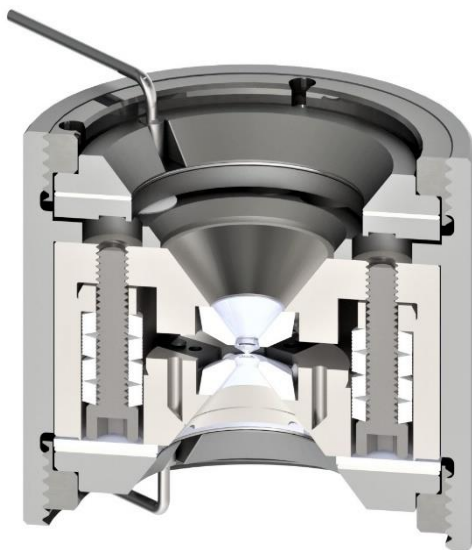
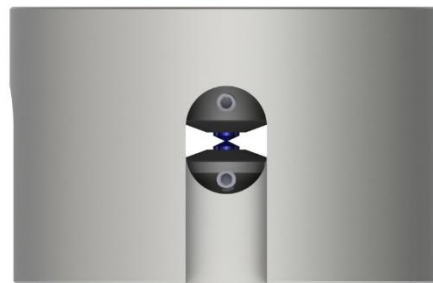
The **S**pherical **S**eat DAC (SSDAC-70) can be viewed as upgraded version of a popular large symmetric opening BX-90 DAC but equipped with a spherical rocker to simplify the alignment of diamond parallelness and optimized for effective use with double membrane pressure control systems. SS-DACs were specifically designed for single crystal X-ray diffraction and total scattering measurements, but can also be used for other techniques (such as Brillouin scattering) where large symmetric opening is required. Split pistons and cylinder designs make wiring of the internal part of the DAC very easy, and thus it is a DAC of choice for high temperature experiments with small resistive heaters as well as electrical resistivity measurements which require multiple wires inside the DAC close to the sample. Regular DACs are made of Stainless Steel 440C or Vascomax C300/350 while high temperature versions can be made from Inconel 718.

The DAC can be used with many diamond / seat combinations, but to make the full use of the large symmetric opening the Boehler-type diamonds and seats with 60 or 30 degrees conical support are preferred. Such diamonds and seats can be purchased either through DACTools, or from other suppliers. Because the diamond tilt in this DAC can be easily adjusted with a spherical seat base, the SSDAC is especially useful for cases where the diamond culets are not perfectly parallel to the bases of the diamond seats such as “classic” Boehler-Almax diamonds with 60° conical support and Tungsten Carbide seats.

SSDAC-70 has the same diameter (although slightly different height) and hole pattern as iBX70 / iBX80 and SSDAC-80 DACs and is generally compatible with equipment designed for those DACs (DAC holders, some membrane cans, gearboxes for gas-loading systems, etc.)

All SSDAC cells are Megabar-class DACs and with proper diamond culet size ( $<250\ \mu\text{m}$ ), diamond alignment, and sample preparation the DAC can be routinely used in sub-Megabar and Megabar pressure range.

The SSDAC-70 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 #8-32 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 symmetric configuration which provides up to 70 degrees symmetric X-ray and optical opening with proper choice of diamonds, seats, and membranes.



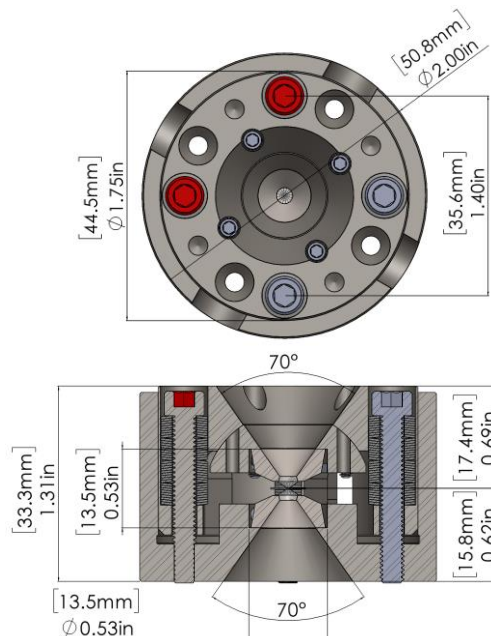


## Specifications of SSDAC-70 Diamond Anvil Cell (DAC)

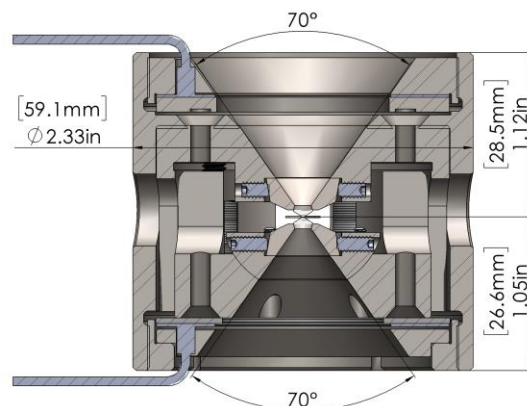
### Main DAC Specifications

- Height: ~ 32-35 mm (Typ.)
- Diameter: 2.00" = 50.8 mm
- Working distance: ~16.0 / 18.0 mm
- Mass: ~ 330 g
- Optical / top angle: 70° max.
- X-ray angle (max): 70° symmetric
- DAC material: *Stainless Steel 440C or Vascomax C300/C350 Tempered to HRc ~55 Inconel 718 (Opt.)*
- Seats: *Tungsten carbide (typ.), Vascomax (opt.), cBN (opt.)*
- Screws: #8-32, 2RH+2LH (all RH optional) 1.0" - 1.125" long
- Screw position: 4x 90° apart on 1.40" / 44.45mm 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 (13.4 mm max)
- Minimum height of two seats+diamonds: 12.0-12.5 mm

### DAC Dimensions



### SSDAC-70 in double membrane can



## Related equipment

### Pressure controllers



### Ruby pressure systems



### DAC Accessories



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



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