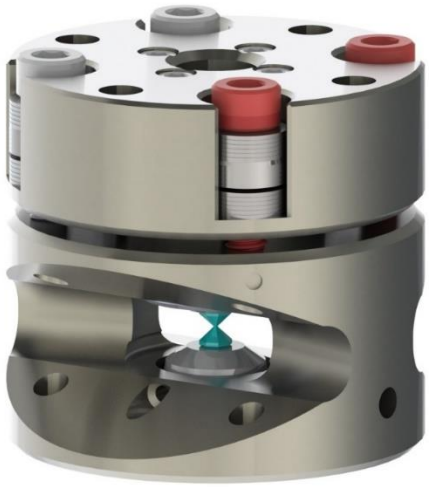
Compact Panoramic 2-fold Diamond Anvil Cell for x-ray tomography with 150 degrees side view

Model TOMO150-1875-(SS440C)-DAC

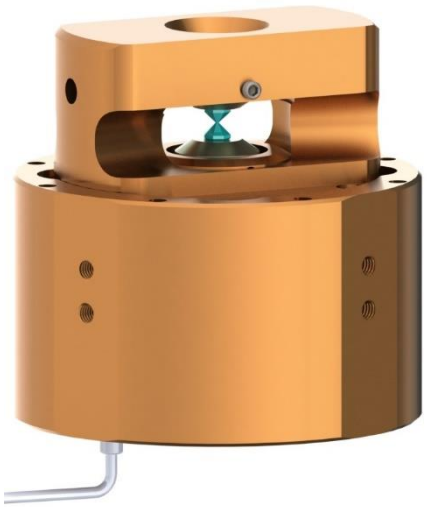


DACTools offers a variety of static and dynamic Panoramic Diamond Anvil Cells (DACs) for radial x-ray diffraction measurements, X-ray tomography, inelastic X-ray scattering measurements with or without polycapillary optics, NRIXS measurement with large APD detectors, and other techniques requiring large angle panoramic view in radial geometry and easy access to the sample.

TOMO150 compact panoramic 2-fold Diamond Anvil Cell was primarily designed for x-ray tomography – it provides 150 degrees of unobstructed symmetric radial opening in horizontal direction and up to 50 degrees in vertical direction (depending on the diamond + seat configuration).

The TOMO150 DAC is based on the same frame as the GL-CIW type Imperial Standard Symmetric DAC: 1.875 inch Outside diameter and two left handed (LH) and two right handed (RH) #10-32 pressurizing screws on 1.5 inch (38.1 mm) Bolt Circle Diameter. This makes integration of this DAC into experimental infrastructure (DAC holders, gearboxes, membrane systems, etc.) developed for Symmetric DACs relatively easy and straightforward. The DAC is suitable for variety of experimental techniques such as X-ray diffraction in radial and axial scattering geometry, inelastic X-ray scattering, X-ray tomography, various time-resolved experiments, as well as optical measurements such as Raman spectroscopy among others. With proper diamond culet size (<250 µm), diamond parallelness and alignment, and proper sample preparation, the DAC can readily reach and exceed megabar pressures. If hydrostatic conditions are required – the DAC can be loaded with inert gases as pressure medium in GSECARS / APS type and compatible gas loading systems.

The panoramic DAC is typically made of Stainless Steel 440C or Vascomax C-300/350 superalloy hardened and tempered to HRc 56-58 for optimal properties. The piston can be coated with a layer of chrome on demand, or the whole DAC can be coated with MoS_2 for better lubricity and protection from elements. Cryogenic BeCu versions with integrated but removable membrane canister and radiation shields are available.



The DAC allows for multiple ways of pressure control. Typically the pressure in the DAC controlled by four #10-32 screws. The DAC can be easily integrated with single or double membrane drive or piezo-electric pressure control systems for remote pressure control and time-resolved experiments. A slightly modified version of the DAC for easier single-membrane canister integration can be provided on special request. Some examples of application of a similar DAC are described in *Sinogeikin et al., Rev. Sci. Instruments **86**, 072209, 2015*.

DAC Tools
Custom Equipment for High-Pressure Research

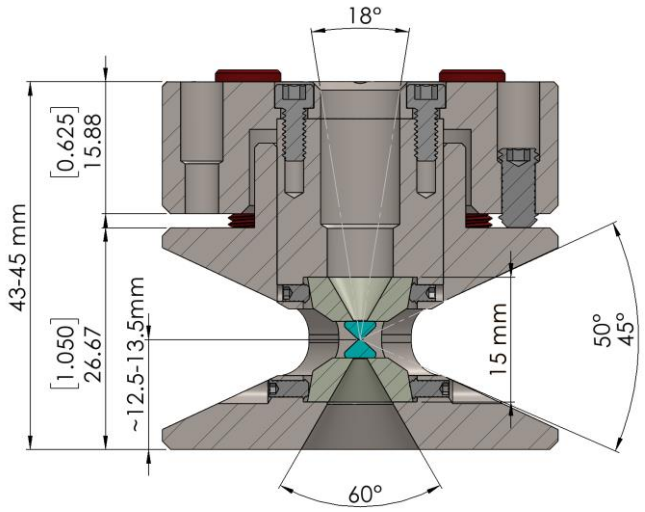
Specifications of Compact Panoramic 2-fold Diamond Anvil Cell with 150 degrees side view

Main DAC Specifications

Height:	~1.7-1.8 inch (43-45 mm)
Diameter @ base:	1.875” (47.63 mm)
Working distance:	~13 mm
Mass:	~ 410 g
Optical angles (N.A.):	60 degrees (0.5)
Axial X-ray opening:	~18-60 degrees
Hor. Side openings:	~150 degrees
Ver. Side openings:	~45-50 degrees
Seats:	Tungsten carbide (typ.), cBN optional
Screws:	10-32 x ~1.0” (vary), 2 LEFT + 2 RIGH on 1.50” BCD
Spring washers:	0.375” OD, 0.190” ID, 0.015-0.020” thick
Diamond seat diameter:	~0.5” (12.5-13.0 mm) Max 0.52” (13.4 mm)
Minimum height of two seat + diamonds:	0.53” (13.4 mm)
Maximum pressure:	> 100 GPa with proper diamonds and alignment

DAC Material Properties

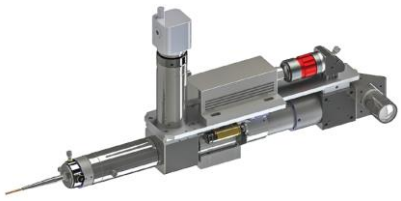
Type:	Stainless 440C or Vascomax C300/350
Magnetic?:	Yes



Related equipment

Pressure controllers

Ruby pressure systems



DAC Accessories

For more information please visit www.DACTools.com

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