

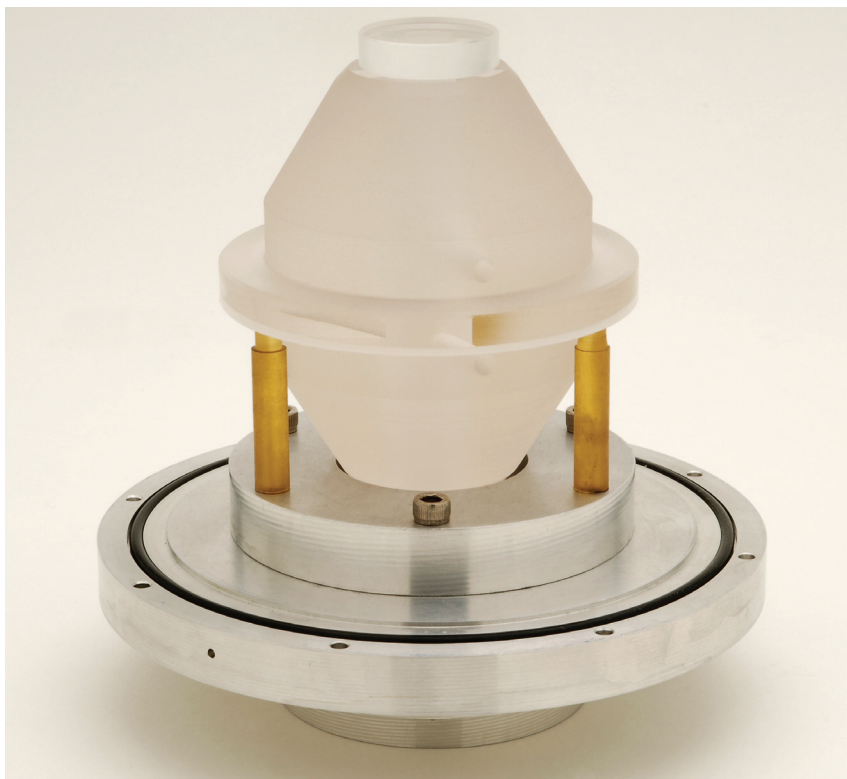
A HIGH-FINESSE FABRY-PEROT CAVITY

is nothing without the right vacuum housing to isolate, mount, and control it. This housing is a well-matched cradle for the ATF 6030 midplane cavity, offering temperature control of $<5\text{mK}/^\circ\text{C}$ for low frequency drift over a $17 - 30^\circ\text{C}$ range. Thermally insulated and radiation-shielded, the aluminum housing mounts to an optical table using standard clamping forks. A Peltier cooler or heater provides temperature control, and thermistors are used for sensing. The mounting structure is optimized for rigidity and low thermal expansion, makes use of common-mode techniques to reduce deformation, and provides some degree of vibration isolation. We start with our field-proven design and then build each vacuum housing to order, taking into account your specific application and needs.

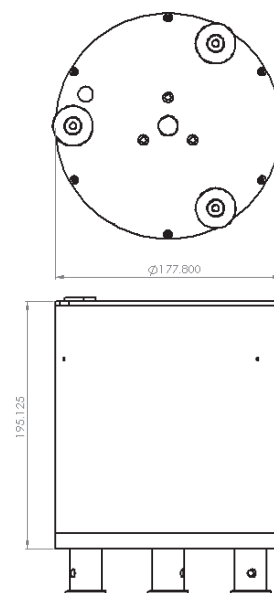
We design our vacuum housings with the user in mind, combining superior temperature performance with ease of use — right out of the box. Let our expertise speed your research, from concept to alignment to data. **Call us today!**

INSIDER TIP

Frequency drift depends on how close to the zero-crossing temperature the cavity is operated. To achieve an expansion coefficient of less than 2ppb, one would typically want to work within 1 degree of the zero-crossing temperature.



ENGINEERING DIAGRAM



MECHANICS

Vacuum can material	Aluminum
Fittings	Stainless steel tee has two 1.33" ConFlat fittings for attachment to ion pump & valve
Viewports/windows	Windows angled at 2° with respect to can axis AR coated, usually with mirror order from ATF
Seals	Front flange: Viton O-ring or Indium wire Back flange, windows & ConFlat tee: Indium wire (optional all Indium seals or all Viton seals)
Attachment to table	Forks to match Thorlabs 1" post assembly
Weight	6 kg

ATFILMS CAVITY COMPATIBILITY

Midplane cavity
[ATF 6030]

PERFORMANCE

Temperature drift	< 5 mK/°C
Temperature control range	17 – 30 °C
Thermal insulation leakage	< 2 W/°C
Thermal time constants	> Aluminum block: 4 hours > Zerodur block: 7 hours
Cavity mounting accuracy	Within 1 mm of can axis
Leak rate (tested with Helium)	< 10 ⁻⁹ std cc/sec
Achievable pressure (tested with 2 l/s ion pump after 3 day bakeout @85°C)	< 10 ⁻⁶ Torr

ELECTRONICS

Thermoelectric coolers	One: 60 W
Heater option (in place of coolers)	Available upon request
Thermistors	Two: 10 kΩ @ 25°C
Electronic feedthroughs	None

WE ALSO OFFER OPTIONAL MODE MATCHING FROM FIBER TO CAVITY

Mode matching fraction greater than 90%.