Vacuum Housing 6300

Stable Laser Systems

A HIGH-FINESSE FABRY-PEROT CAVITY

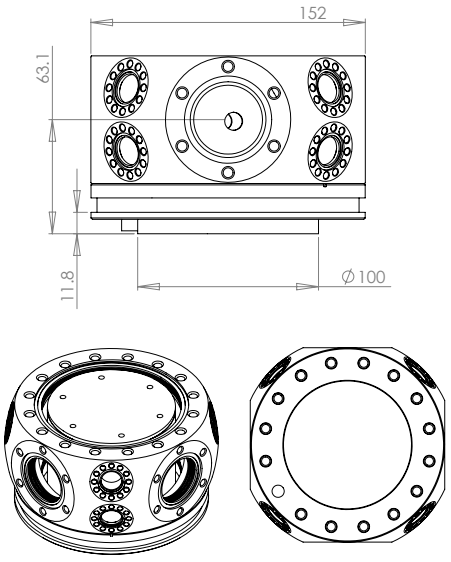
is nothing without the right vacuum housing to isolate, mount, and control it. This housing is a well-matched cradle for the ATF 6300 spherical cavity, offering temperature control of <5mK/°C for low frequency drift over a -5 through 50°C range. Thermally insulated and radiation-shielded, the stainless steel housing mounts to an optical table using standard adjustable-height base clamps. A Peltier cooler provides temperature control, and thermistors are used for sensing. The mounting structure within 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

A spherical cavity offers several advantages. Clamped into the vacuum housing using a yoke, its geometry offers low vibration sensitivity, which may improve even further as mounting techniques improve. Temperature control can sometimes be better for smaller vacuum housings, and our method of implementation within the housing gives this unit the best thermal insulation leakage and widest operating range of all our vacuum housings. The cavity is firmly held, and can be moved while mounted.

ENGINEERING DIAGRAM



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SPECIFICATIONS

MECHANICS

Vacuum can material	316L Stainless Steel (Kimball Physics MCF600-SphSq-F2C4A8)
Fittings	Stainless steel tee has two 1.33" ConFlat fittings for attachment to ion pump & valve
Viewports/windows	Windows angled at 2.5° with respect to can axis AR coated viewports (2.75" CF); R<0.1%.
Seals	Standard ConFlat seals on all flanges (copper gaskets)
Attachment to table	3 adjustable-height base clamps (Newport BC-6, M-BC-6)
Weight	6 kg

ATFILMS CAVITY COMPATIBILITY

Spherical cavity
[ATF 6300]

PERFORMANCE

Temperature drift	< 5 mK/°C
Temperature control range	-5 – 50 °C
Thermal insulation leakage	< 0.25 W/°C
Thermal time constants	Stainless steel block: To be measured No Zerodur block
Cavity mounting accuracy	Not applicable
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 Typically 1 A required to cool to 10°C
Heater option (in place of coolers)	Not available
Thermistors	Two: 10 kΩ @ 25°C
Electronic feedthroughs	9-pin D-sub connector (2.75" CF)

WE ALSO OFFER OPTIONAL MODE MATCHING FROM FIBER TO CAVITY

Mode matching fraction greater than 90%.