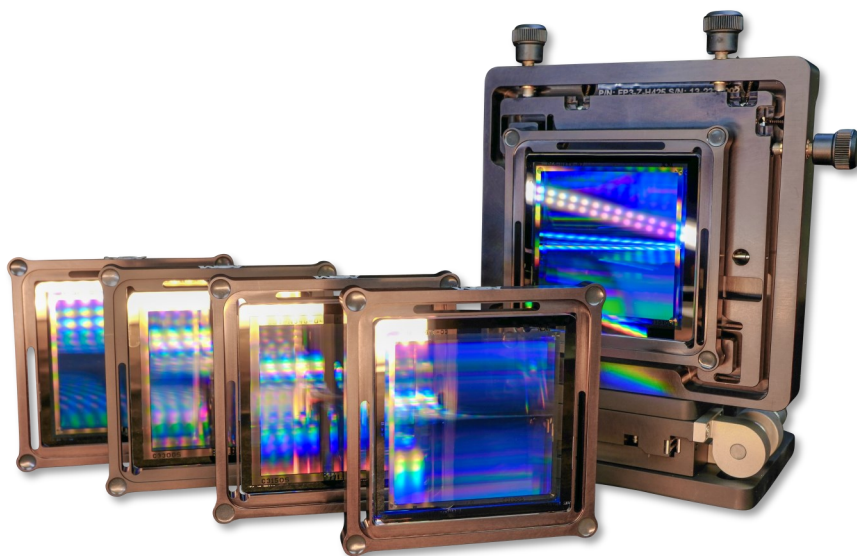


3-inch Cylinder CGH

Form measurement of cylinder optics

AOM cylinder computer-generated holograms (CGH) enable interferometric measurement of cylindrical optics. Surface figure error of convex and concave cylinder optics can be measured **over the full aperture** using a CGH. Cylindrical radius of curvature can also be measured with a radius-enabled interferometer bench.

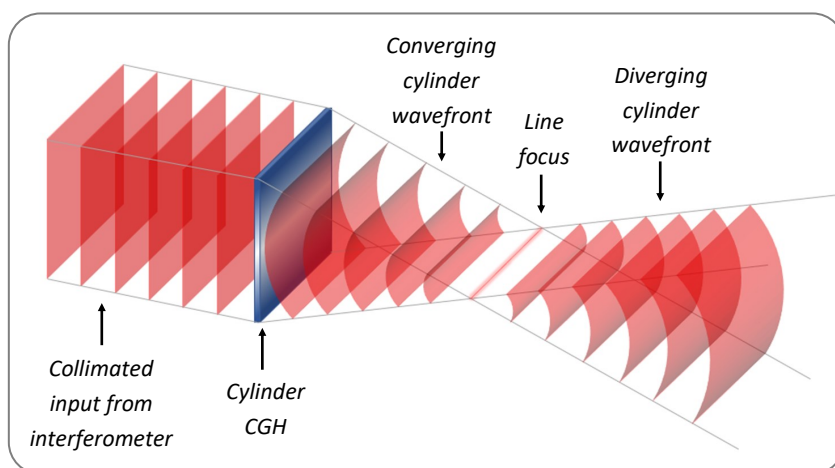
AOM standard cylinder CGHs include a fused silica substrate with cylinder null pattern, retro alignment pattern, antireflection coated back surface, and a mechanical cell with stainless steel mounting balls to interface to an AOM FP3 alignment stage.



C3XXXS 3-inch cylinder CGHs mounted in C3 mechanical cell with 1/4" magnetic mounting balls (left). CGH mounted in FP3-Z-H425 6 degree of freedom alignment stage with linear Z -axis (right).

Cylinder Null Testing

A cylinder CGH is a diffractive optical element which converts a collimated interferometer wavefront into a converging cylindrical wavefront. Concave and convex cylinder optics can both be measured in a confocal null test with the same CGH. Position convex cylinder optics in the converging wavefront and concave cylinder optics in the diverging wavefront.

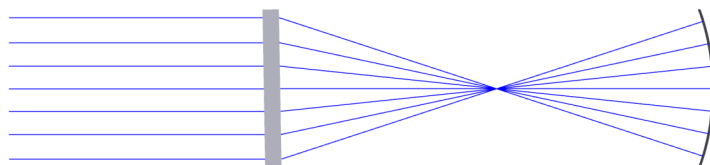


Interferometer Compatibility

AOM 3-inch cylinder CGHs are well suited for Fizeau interferometers with HeNe laser source. Compatible models include:

- **Zygo** - Qualifire, Verifire, Dynafiz, GPI, Mark series
- **4D Technologies** - Accufiz
- **Xonox** - X-fiz
- **Apre Instruments** - S-Series
- **ADE Phase Shift** - MiniFIZ

Concave test optic configuration



Convex test optic configuration



Cylinder CGH Specifications - 3-inch

Part Number	C3XXXS (XXX indicates f/#)
Standard f/#s	0.7, 0.9, 1.0, 1.5, 2.0, 3.0, 4.0,
Back focal distance (BFD)	29.4 - 358.7 mm*
Null pattern size	60 mm (square)
Retro pattern size	67.2 mm (square)
Input beam	Collimated
Intf. reference optic	Transmission Flat (TF)
Operating wavelength	632.8 nm
CGH type	Binary phase (etched glass)
Substrate size	3" x 3" x 0.25"
Measurement error contribution	< 15 nm RMS (uncalibrated) < 6 nm RMS (calibrated)
CGH tilt wrt. intf.	-1° about X (+Y toward intf.)
Test optic tilt wrt. CGH	1° about Y (+X toward intf.)
Cell format	C3 with 1/4" mounting balls*
Alignment stage compatibility**	AOM FP3 stages

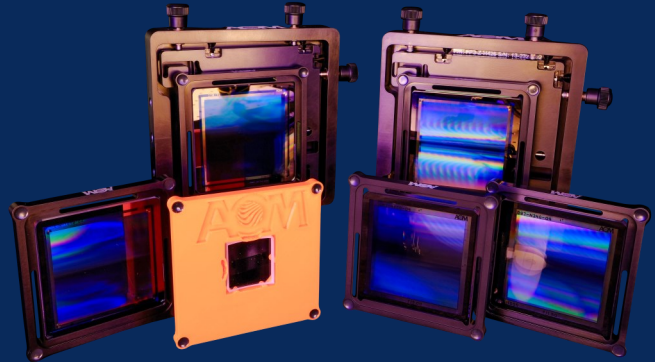
*For detailed dimensional and interface information, see customer drawing C3XXXS.PDF and C3XXXS.STEP at: aom.us/resources

**AOM C6AC3 adapter enables use of AOM FP6 stages and DI-6025.

See the AOM interactive Cylinder CGH Calculator for coverage of specific cylinder test optic parameters.

Cylinder CGH Kit

A complete set of test hardware to cover a range of cylindrical optics surface metrology.



Kit includes: 5 cylinder CGHs, 2 mounting and alignment stages, part fixture blank CAD model, and 20 part fixture mounting balls.

Cylinder Test Coverage

The size and radius of curvature of the cylinder optic to be tested determines the best f/# cylinder CGH to apply. The CGH f/# should be chosen to optimize coverage of the surface and test beam. The coverage chart below indicates each 3-inch CGH coverage over the range of test optic radii and heights in the curved direction.

