




Asphere Metrology

Multiple Ways to Test an Asphere

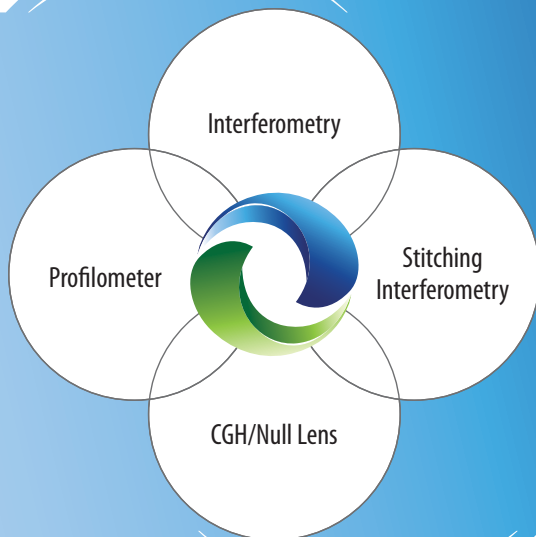
If we can measure it, we can make it. This is why Optimax offers four different metrology methods, which can be used separately or in combination to meet your testing and inspection needs.

Our metrology must match the sophistication of our manufacturing technology. Optimax offers state-of-the-art metrology, including surface profilers and interferometers to verify that parts meet the form error specification. Testing options are form specific; lenses with mild departure from a best fit sphere have the highest potential for fractional wave precision.

Optimax can manufacture and test a wide range of aspheres to best fit your needs.

Type of Asphere	Pros/Cons
 Convex	Easy to manufacture Hard to measure
 Concave	Hard to manufacture Easy to measure
 Gullwing	Hard to manufacture Hard to measure Does more optically

Complexity



Fine Finishing, Overlapping Accuracy

Profiler Most flexibility

Interferometry Highest precision

Stitching Interferometry Expanded range of precision

Computer Generated Holograms (CGH)/Null Lens Custom characterization



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Asphere Decision Tree

Guidelines for crossing manufacturing characteristics with metrology options.*

If we can measure it, we can make it.

			Cost of Measurement				
			**Achievable Measurement Limit				
			\$	\$\$	\$\$\$	\$\$\$\$	
			1 μ m	$\lambda/10$	$\lambda/20$	$\lambda/40$	
			Profilometry	Interferometry	Stitching	CGH/Null Lens	
ASPHERE	Concave	Small departure <10 μ m	<200	X	X	X	X
			>200	X	X	X	X
		Medium departure <600 μ m	<200	X		X	X
			>200	X		X	X
		Large departure >600 μ m	<200	X			X
			>200	X			X
	Convex	Small departure <10 μ m	<150	X	X	X	X
			>150-200	X		X	
			>200	X		X	
		Medium departure <600 μ m	<150	X		X	X
			>150-200	X		X	
			>200	X		X	
Large departure >600 μ m	<150	X			X		
	>150-200	X			X		
Gullwing	Small departure <10 μ m	<200	X			X	
		>200	X			X	
	Medium & Large departure >10 μ m	<200	X			X	
		>200	X			X	
	Types	Departure from best fit sphere	Diameter (mm)	Metrology options			

*These are overall guidelines and not applicable in all cases. **50th wave possible for some forms.