

OPTICS

High Quality Precision For Research & Industry



EMPOWERING FUTURE
THROUGH RESEARCH & INNOVATION

INTRODUCTION

Welcome to our 2020 - 2021 edition of Product Catalog. We would like to thank you for your continue support and encouragement. Throughout this challenging time, we have grown and transform our business to be more efficient and effective. This will enable us to offer better service and more competitive pricing to our customers.

Our new edition of catalog comes with a easy reference features where we categorized the products into different usage categories, i.e. Advanced Material, Renewable Energy, Bio-Process, Gauge Calibration, Membrane Technology, 3D scanner and others. This will facilitate the users to quickly access to the equipment specification required, and options available to them in term of measuring range or equipment complexity.

In our new catalog, we have also added the equipment to do research in renewable energy like solar cell, fuel cell, flow cell, lithium ion batteries, and membrane technologies. In synergy with our advanced material equipment, we have also added the equipment for material characterization especially in the area of rare earth research and magnetic properties. In line with the manufacturing industry footsteps, the equipment on 3D scanning and 3D printing also have been added in to expand the tools in the research and development for industry 4.0.

To our current customers, we believed our partnership will be strengthen for the years to come. The new catalog will also create new opportunities to build new relationship with new customers.

Lastly, I would like to thanks our staffs for their dedication and sacrifice in supporting the management for a brighter future.

Patrick Tan
Director
KGC (Group of Companies)

Contents

LENSES

Spherical Lenses	119
Plano-Convex Lenses	119
Bi-Convex Lenses	120
Plano-Concave Lenses	120
Bi-CONcave Lenses	121
Meniscus Lenses	122
Cylindrical Lenses	123
Plano Convex Cylindrical Lens	124
Plano Concave Cylindrical Lens	124
Positive Achromatic Lens	125
Negative Achromatic Lens	126
Cylindrical Achromatic Lens	126
Axicons	127

PRISMS

Right Angle Prisms	128
Dove Prisms & Penta Prisms	129
Equilateral Prisms & Wedge Prisms	130
Pellin Broca Prisms	131
Littrow Prisms	132
Corner Cube Retroreflectors	132
Rhomboid Prisms & Amici Roof Prisms	133
Schmidt Prisms	134

WINDOWS

Rectangular and Aquare Windows	134
Circular Windows	135

BEAMSPLITTERS

Plate Beamsplitters	137
Metalic Plate Beamsplitters	137
Metallic Cube BeamSplitters	137
Low-Polarizing Beamsplitters	138
Variable Beamsplitters (Mounted)	139
Beam Samplers	139

FIILTERS

Absorptive Neutral Density Filters	140
Reflective Neutral Density Filters	141
Variable Neutral Density Filters	142

MIRRORS

Plano Aluminium Mirrors	143
Plano Silver Mirrors	143
Concave Mirrors	144
Broadband Metallic Mirrors	144
Cone Mirrors	145
45 degree Rod Mirrors	146

DIFFUSERS

147

POLARIZING OPTICS

Linear Film Polarizers	148
Wave Plates/Retarders	148
Multiple-order Wave Plates	148
Zero-order Wave Plates	148
Cemented True Zero-Order Wave Plates	151
Fresnel Rhomb Retarders	152
Soleil-Babinet Compensator	153

OPTICAL SYSTEMS

Beam Expanders	154
Custom Beam Expanders	154
Variable Beam Expanders	155
Condensers	155
Fiber Collimators/Focusers	156
Microscope Objectives	157

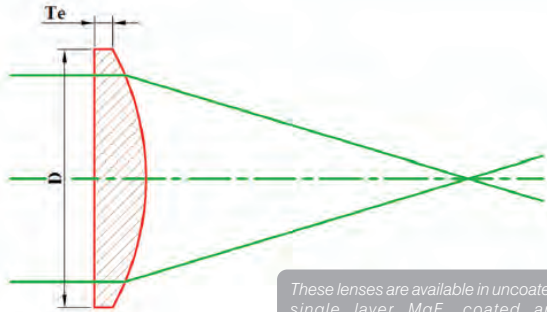
LENSES



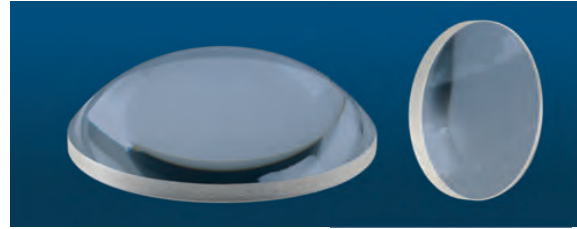
Spherical Lenses

Plano-Convex Lenses

Plano-convex lenses are positive spherical lenses having convex surface on one side and flat surface on the other. These lenses find applications in collecting, focusing and collimating light.



These lenses are available in uncoated, single layer MgF₂ coated and Broadband AR coated options.



Specifications & Tolerances:

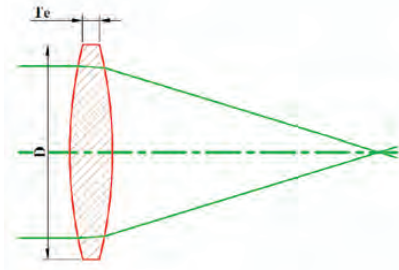
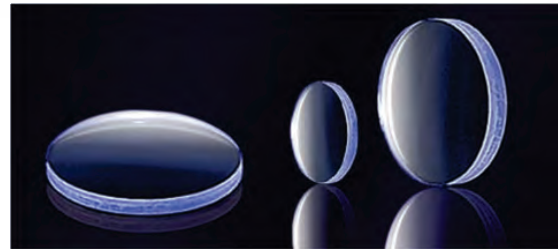
Material	BK7 or equivalent
Effective focal length tolerance	± 1%
Diameter tolerance	+0.0, -0.2mm
Centering tolerance	≤ 3 arc min.
Surface quality	40-20 (scratch-dig)
Clear aperture	>90% of diameter
Design wavelength	587.6 nm
Coating	Uncoated / single layer MgF ₂ / broadband AR

Model No.			Diameter D (mm)	Focal Length F (mm)	Edge Thickness Te (mm)
Uncoated	Single Layer MgF ₂	Broadband AR			
HO-PXL12.5-1.2	HO-PXL12.5-1.2C	HO-PXL12.5-1.2B	12.5	15	2
HO-PXL12.5-1.6	HO-PXL12.5-1.6C	HO-PXL12.5-1.6B	12.5	20	2
HO-PXL12.5-02	HO-PXL12.5-02C	HO-PXL12.5-02B	12.5	25	2
HO-PXL12.5-2.4	HO-PXL12.5-2.4C	HO-PXL12.5-2.4B	12.5	30	2
HO-PXL12.5-3.2	HO-PXL12.5-3.2C	HO-PXL12.5-3.2B	12.5	40	2
HO-PXL12.5-04	HO-PXL12.5-04C	HO-PXL12.5-4B	12.5	50	2
HO-PXL12.5-08	HO-PXL12.5-08C	HO-PXL12.5-8B	12.5	100	2
HO-PXL25-01	HO-PXL25-01C	HO-PXL25-01B	25	25	2
HO-PXL25-1.6	HO-PXL25-1.6C	HO-PXL25-1.6B	25	40	2
HO-PXL25-02	HO-PXL25-02C	HO-PXL25-02B	25	50	2
HO-PXL25-3.2	HO-PXL25-3.2C	HO-PXL25-3.2B	25	80	2
HO-PXL25-04	HO-PXL25-04C	HO-PXL25-04B	25	100	2
HO-PXL25-06	HO-PXL25-06C	HO-PXL25-06B	25	150	2
HO-PXL25-08	HO-PXL25-08C	HO-PXL25-08B	25	200	2
HO-PXL25-12	HO-PXL25-12C	HO-PXL25-12B	25	300	2
HO-PXL25-20	HO-PXL25-20C	HO-PXL25-20B	25	500	2
HO-PXL25-40	HO-PXL25-40C	HO-PXL25-40B	25	1000	2
HO-PXL30-1.3	HO-PXL30-1.3C	HO-PXL30-1.3B	30	40	2.5
HO-PXL30-1.6	HO-PXL30-1.6C	HO-PXL30-1.6B	30	50	2.5
HO-PXL30-2.5	HO-PXL30-2.5C	HO-PXL30-2.5B	30	75	2.5
HO-PXL30-3.3	HO-PXL30-3.3C	HO-PXL30-3.3B	30	100	2.5
HO-PXL30-05	HO-PXL30-05C	HO-PXL30-05B	30	150	2
HO-PXL30-6.6	HO-PXL30-6.6C	HO-PXL30-6.6B	30	200	2
HO-PXL30-8.3	HO-PXL30-8.3C	HO-PXL30-8.3B	30	250	2
HO-PXL30-10	HO-PXL30-10C	HO-PXL30-10B	30	300	2
HO-PXL30-16.6	HO-PXL30-16.6C	HO-PXL30-16.6B	30	500	2
HO-PXL50-1.6	HO-PXL50-1.6C	HO-PXL50-1.6B	50	80	3
HO-PXL50-02	HO-PXL50-02C	HO-PXL50-02B	50	100	3
HO-PXL50-03	HO-PXL50-03C	HO-PXL50-03B	50	150	3
HO-PXL50-04	HO-PXL50-04C	HO-PXL50-04B	50	200	3
HO-PXL50-06	HO-PXL50-06C	HO-PXL50-06B	50	300	3
HO-PXL50-08	HO-PXL50-08C	HO-PXL50-08B	50	400	3
HO-PXL50-10	HO-PXL50-10C	HO-PXL50-10B	50	500	3
HO-PXL50-20	HO-PXL50-20C	HO-PXL50-20B	50	1000	3

Bi-Convex Lenses



Bi-convex lenses are positive spherical lenses having convex surfaces on both sides. Holmarc manufactures bi-convex lenses with equal radii on both sides as standard stock optics. Our bi-convex lenses are available in three options; uncoated, single layer MgF₂ and broadband AR coated.



Specifications & Tolerances:

Material	BK7 or equivalent
Effective focal length tolerance	± 1%
Diameter tolerance	+0.0, -0.2mm
Centering tolerance	≤ 3 arc min.
Surface quality	40-20 (scratch-dig)
Clear aperture	>90% of diameter
Design wavelength	587.6 nm
Coating	Uncoated / single layer MgF ₂ / broadband AR

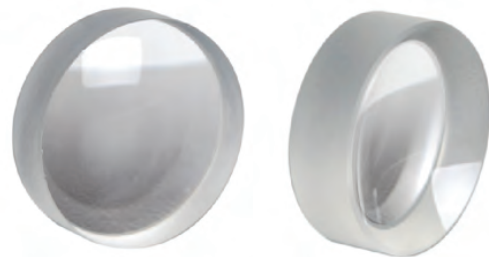
Model No.			Diameter D (mm)	Focal Length F (mm)	Edge Thickness Te (mm)
Uncoated	Single Layer MgF ₂	Broadband AR			
HO-BXL12.5-1.2	HO-BXL12.5-1.2C	HO-BXL12.5-1.2B	12.5	15	2
HO-BXL12.5-1.6	HO-BXL12.5-1.6C	HO-BXL12.5-1.6B	12.5	20	2
HO-BXL12.5-2	HO-BXL12.5-02C	HO-BXL12.5-02B	12.5	25	2
HO-BXL12.5-2.4	HO-BXL12.5-2.4C	HO-BXL12.5-2.4B	12.5	30	2
HO-BXL12.5-3.2	HO-BXL12.5-3.2C	HO-BXL12.5-3.2B	12.5	40	2
HO-BXL12.5-4	HO-BXL12.5-04C	HO-BXL12.5-04B	12.5	50	2
HO-BXL12.5-8	HO-BXL12.5-08C	HO-BXL12.5-08B	12.5	100	2
HO-BXL25-01	HO-BXL25-01C	HO-BXL25-01B	25	25	2
HO-BXL25-1.6	HO-BXL25-1.6C	HO-BXL25-1.6B	25	40	2
HO-BXL25-02	HO-BXL25-02C	HO-BXL25-02B	25	50	2
HO-BXL25-3.2	HO-BXL25-3.2C	HO-BXL25-3.2B	25	80	2
HO-BXL25-04	HO-BXL25-04C	HO-BXL25-04B	25	100	2
HO-BXL25-06	HO-BXL25-06C	HO-BXL25-06B	25	150	2
HO-BXL25-08	HO-BXL25-08C	HO-BXL25-08B	25	200	2
HO-BXL25-12	HO-BXL25-12C	HO-BXL25-12B	25	300	2
HO-BXL25-20	HO-BXL25-20C	HO-BXL25-20B	25	500	2
HO-BXL25-40	HO-BXL25-40C	HO-BXL25-40B	25	1000	2
HO-BXL50-1.6	HO-BXL50-1.6C	HO-BXL50-1.6B	50	80	3
HO-BXL50-02	HO-BXL50-02C	HO-BXL50-02B	50	100	3
HO-BXL50-03	HO-BXL50-03C	HO-BXL50-03B	50	150	3
HO-BXL50-04	HO-BXL50-04C	HO-BXL50-04B	50	200	3
HO-BXL50-06	HO-BXL50-06C	HO-BXL50-06B	50	300	3
HO-BXL50-10	HO-BXL50-10C	HO-BXL50-10B	50	500	3
HO-BXL50-20	HO-BXL50-20C	HO-BXL50-20B	50	1000	3

Plano-Concave Lenses

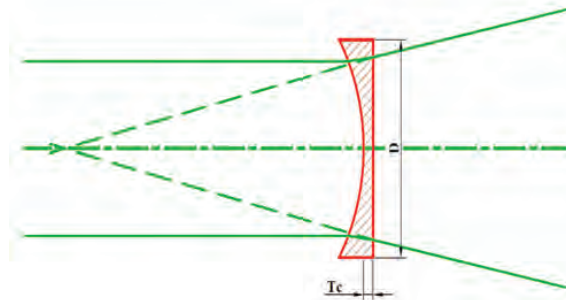


Plano - concave lenses are negative spherical lenses with one concave surface and one flat surface. These lenses can be used to diverge light or to increase the focal length of an optical system.

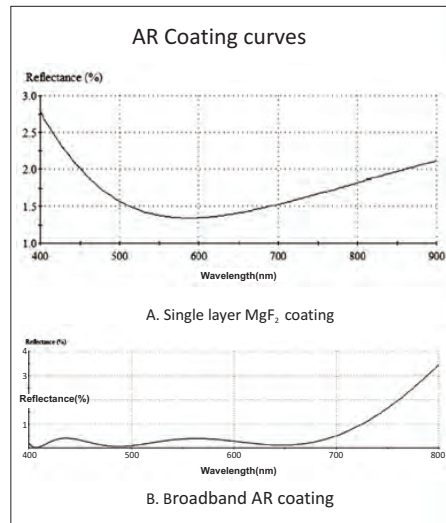
Plano-concave lenses are available as uncoated, single layer MgF₂ coated and broadband AR coated.



Specifications & Tolerances:		
Material	.....	BK7 or equivalent
Effective focal length tolerance	..	± 1%
Diameter tolerance	.....	+0.0, -0.2mm
Centering tolerance	.....	≤ 3 arc min.
Surface quality	.....	40-20 (scratch-dig)
Clear aperture	.....	>90% of diameter
Design wavelength	.....	587.6 nm
Coating	.....	Uncoated / single layer MgF ₂ / broadband AR
Center thickness, Tc	.....	2.5 mm



Model No.			Diameter D (mm)	Focal Length F (mm)
Uncoated	Single Layer MgF ₂	Broadband AR		
HO-PVL12.5-02	HO-PVL12.5-02C	HO-PVL12.5-02B	12.5	-25
HO-PVL12.5-2.4	HO-PVL12.5-2.4C	HO-PVL12.5-2.4B	12.5	-30
HO-PVL12.5-04	HO-PVL12.5-04C	HO-PVL12.5-04B	12.5	-50
HO-PVL25-1.2	HO-PVL25-1.2C	HO-PVL25-1.2B	25	-30
HO-PVL25-1.6	HO-PVL25-1.6C	HO-PVL25-1.6B	25	-40
HO-PVL25-02	HO-PVL25-02C	HO-PVL25-02B	25	-50
HO-PVL25-3.2	HO-PVL25-3.2C	HO-PVL25-3.2B	25	-80
HO-PVL25-04	HO-PVL25-04C	HO-PVL25-04B	25	-100
HO-PVL25-06	HO-PVL25-06C	HO-PVL25-06B	25	-150
HO-PVL25-08	HO-PVL25-08C	HO-PVL25-08B	25	-200
HO-PVL25-12	HO-PVL25-12C	HO-PVL25-12B	25	-300
HO-PVL25-20	HO-PVL25-20C	HO-PVL25-20B	25	-500
HO-PVL25-40	HO-PVL25-40C	HO-PVL25-40B	25	-1000
HO-PVL50-1.6	HO-PVL50-1.6C	HO-PVL50-1.6B	50	-80
HO-PVL50-02	HO-PVL50-02C	HO-PVL50-02B	50	-100
HO-PVL50-03	HO-PVL50-03C	HO-PVL50-03B	50	-150
HO-PVL50-04	HO-PVL50-04C	HO-PVL50-04B	50	-200
HO-PVL50-06	HO-PVL50-06C	HO-PVL50-06B	50	-300
HO-PVL50-10	HO-PVL50-10C	HO-PVL50-10B	50	-500
HO-PVL50-20	HO-PVL50-20C	HO-PVL50-20B	50	-1000



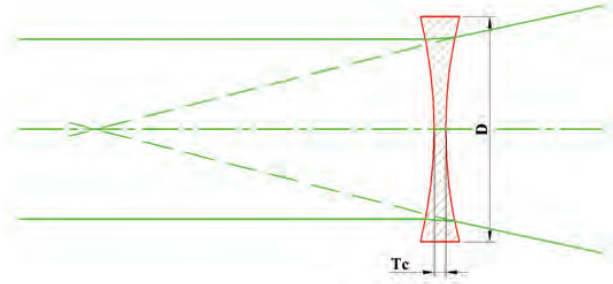
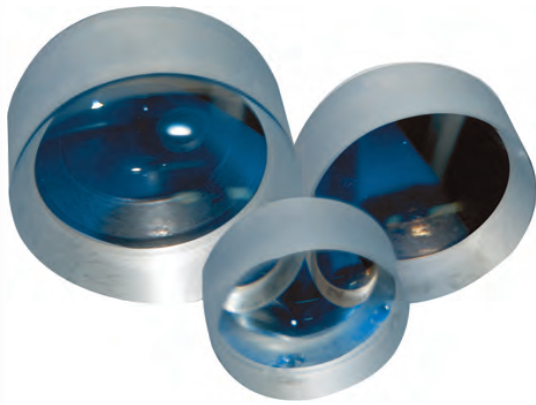
Bi-Concave Lenses



These lenses have spherical concave surfaces on both sides. Holmarc manufactures many of these lenses as standard products. These lenses find applications in diverging light or in increasing focal length of an optical system. Our bi-concave lenses are available in three options; uncoated, single layer MgF₂ and broadband AR coated.

Specifications & Tolerances:		
Material	.....	BK7 or equivalent
Effective focal length tolerance	..	± 1%
Diameter tolerance	.....	+0.0, -0.2mm
Centering tolerance	.....	≤ 3 arc min.
Surface quality	.....	40-20 (scratch-dig)
Clear aperture	.....	>90% of diameter
Design wavelength	.....	587.6 nm
Coating	.....	Uncoated / single layer MgF ₂ / broadband AR
Center thickness, Tc	.....	2.5 mm





Model No.			Diameter D (mm)	Focal Length F (mm)
Uncoated	Single Layer MgF ₂	Broadband AR		
HO-BVL25-1.2	HO-BVL25-1.2C	HO-BVL25-1.2B	25	-30
HO-BVL25-1.6	HO-BVL25-1.6C	HO-BVL25-1.6B	25	-40
HO-BVL25-02	HO-BVL25-02C	HO-BVL25-02B	25	-50
HO-BVL25-3.2	HO-BVL25-3.2C	HO-BVL25-3.2B	25	-80
HO-BVL25-04	HO-BVL25-04C	HO-BVL25-04B	25	-100
HO-BVL25-06	HO-BVL25-06C	HO-BVL25-06B	25	-150
HO-BVL25-08	HO-BVL25-08C	HO-BVL25-08B	25	-200
HO-BVL25-12	HO-BVL25-12C	HO-BVL25-12B	25	-300
HO-BVL25-20	HO-BVL25-20C	HO-BVL25-20B	25	-500
HO-BVL25-40	HO-BVL25-40C	HO-BVL25-40B	25	-1000
HO-BVL50-1.6	HO-BVL50-1.6C	HO-BVL50-1.6B	50	-80
HO-BVL50-02	HO-BVL50-02C	HO-BVL50-02B	50	-100
HO-BVL50-03	HO-BVL50-03C	HO-BVL50-03B	50	-150
HO-BVL50-04	HO-BVL50-04C	HO-BVL50-04B	50	-200
HO-BVL50-06	HO-BVL50-06C	HO-BVL50-06B	50	-300
HO-BVL50-10	HO-BVL50-10C	HO-BVL50-10B	50	-500
HO-BVL50-20	HO-BVL50-20C	HO-BVL50-20B	50	-1000

Meniscus Lenses



Positive meniscus lens is a convex-concave lens thicker at the center than at the edges. It is used to minimize spherical aberration. When used in combination with another lens, it will shorten the focal length, and increase the NA of system.

Negative meniscus lens is a convex-concave lens thinner at the center than edges. It increases the divergence of the beam without introducing any significant spherical aberration. When used in combination with another lens, it will increase the focal length and decrease the NA of the system.

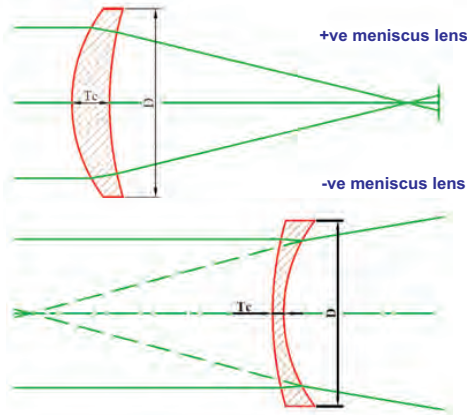
Specifications & Tolerances:

Material	BK7 or equivalent
Effective focal length tolerance	± 1%
Diameter tolerance	+0.0, -0.2mm
Centering tolerance	≤ 3 arc min.
Surface quality	40-20(scratch-dig)
Clear aperture	>90% of diameter
Design wavelength	587.6 nm
Coating	Uncoated / single layer MgF ₂ / broadband AR
Center Thickness, Tc	3mm for negative & 4mm for Positive

Custom Fabricated glass rods...

Rods are available in SF10, SF57 specially for Faraday rotator applications. We can also work with substrates furnished by the customer.





Model No.			Type	Diameter D (mm)	Focal Length F (mm)
Uncoated	Single Layer MgF ₂	Broadband AR			
HO-PML25-04	HO-PML25-04C	HO-PML25-04B	positive	25	100
HO-PML25-05	HO-PML25-05C	HO-PML25-05B	positive	25	125
HO-PML25-06	HO-PML25-06C	HO-PML25-06B	positive	25	150
HO-PML25-08	HO-PML25-08C	HO-PML25-08B	positive	25	200
HO-PML25-10	HO-PML25-10C	HO-PML25-10B	positive	25	250
HO-PML25-12	HO-PML25-12C	HO-PML25-12B	positive	25	300
HO-PML25-20	HO-PML25-20C	HO-PML25-20B	positive	25	500
HO-NML25-04	HO-NML25-04C	HO-NML25-04B	negative	25	-100
HO-NML25-05	HO-NML25-05C	HO-NML25-05B	negative	25	-125
HO-NML25-06	HO-NML25-06C	HO-NML25-06B	negative	25	-150
HO-NML25-08	HO-NML25-08C	HO-NML25-08B	negative	25	-200
HO-NML25-10	HO-NML25-10C	HO-NML25-10B	negative	25	-250
HO-NML25-12	HO-NML25-12C	HO-NML25-12B	negative	25	-300
HO-NML25-20	HO-NML25-20C	HO-NML25-20B	negative	25	-500

Cylindrical Lenses

Cylindrical Lenses are well suited for applications which require magnification in one dimension only. Cylindrical lenses are available in either plano-concave or plano-convex configurations. Plano-concave lenses have a negative focal length and are used for image reduction or to spread light. Plano-convex lenses have a positive focal length, which makes them ideal for collecting and focusing light for many imaging applications

Specifications & Tolerances:

Material	BK7 or equivalent
Effective focal length tolerance	± 2%
Length tolerance	+0.0, -0.2mm
Height tolerance	+0.0, -0.2mm
Centering tolerance	≤ 3 arc min.
Surface quality	40-20 (scratch-dig)
Clear aperture	>90% of surface dimensions
Design wavelength	587.6 nm
Coating	Uncoated / single layer MgF ₂ / broadband AR

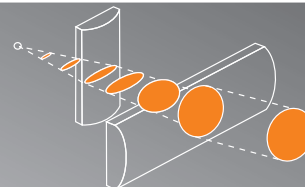


http://www.holmarc.com/plano_convex_plano_concave_cylindrical_lenses.php



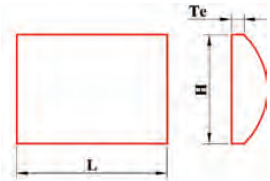
Beam Shaping with Cylindrical Lenses

Cylindrical lenses focus or expand light in one axis only. They can be used to focus light into a thin line in optical metrology, laser scanning, spectroscopic, acousto-optic and optical processor applications. They can also be used to expand the output of a laser diode into a symmetrical beam.

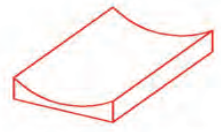


Plano Convex Cylindrical Lens

Model No.			Focal Length F (mm)	Length L (mm)	Height H (mm)	Edge Thickness Te (mm)
Uncoated	Single Layer MgF ₂	Broadband AR				
HO-PXCL10-10	HO-PXCL10-10C	HO-PXCL10-10B	10	10	10	2
HO-PXCL12-10	HO-PXCL12-10C	HO-PXCL12-10B	10	12	10	2
HO-PXCL12-15	HO-PXCL12-15C	HO-PXCL12-15B	15	12	10	2
HO-PXCL20-15	HO-PXCL20-15C	HO-PXCL20-15B	15	20	10	2
HO-PXCL10-20	HO-PXCL10-20C	HO-PXCL10-20B	20	10	10	2
HO-PXCL20-20	HO-PXCL20-20C	HO-PXCL20-20B	20	20	10	2
HO-PXCL10-25	HO-PXCL10-25C	HO-PXCL10-25B	25	10	10	2
HO-PXCL20-25	HO-PXCL20-25C	HO-PXCL20-25B	25	20	10	2
HO-PXCL10-30	HO-PXCL10-30C	HO-PXCL10-30B	30	10	10	2
HO-PXCL20-30	HO-PXCL20-30C	HO-PXCL20-30B	30	20	10	2
HO-PXCL25-30	HO-PXCL25-30C	HO-PXCL25-30B	30	25	15	2
HO-PXCL15-40	HO-PXCL15-40C	HO-PXCL15-40B	40	15	10	2
HO-PXCL20-40	HO-PXCL20-40C	HO-PXCL20-40B	40	20	15	2
HO-PXCL30-40	HO-PXCL30-40C	HO-PXCL30-40B	40	30	20	2
HO-PXCL20-50	HO-PXCL20-50C	HO-PXCL20-50B	50	20	20	2
HO-PXCL30-50	HO-PXCL30-50C	HO-PXCL30-50B	50	30	20	2
HO-PXCL30-60	HO-PXCL30-60C	HO-PXCL30-60B	60	30	25	3
HO-PXCL40-75	HO-PXCL40-75C	HO-PXCL40-75B	75	40	25	3
HO-PXCL50-100	HO-PXCL50-100C	HO-PXCL50-100B	100	50	20	3
HO-PXCL70-100	HO-PXCL70-100C	HO-PXCL70-100B	100	70	30	3
HO-PXCL50-150	HO-PXCL50-150C	HO-PXCL50-150B	150	50	30	3
HO-PXCL75-150	HO-PXCL75-150C	HO-PXCL75-150B	150	75	30	3
HO-PXCL50-250	HO-PXCL50-250C	HO-PXCL50-250B	250	50	30	3
HO-PXCL75-250	HO-PXCL75-250C	HO-PXCL75-250B	250	75	30	3
HO-PXCL50-500	HO-PXCL50-500C	HO-PXCL50-500B	500	50	30	3
HO-PXCL75-500	HO-PXCL75-500C	HO-PXCL75-500B	500	75	30	3



Plano Convex Cylindrical Lens



Plano Concave Cylindrical Lens

Plano Concave Cylindrical Lens

Model No.			Focal Length F (mm)	Length L (mm)	Height H (mm)	Center Thickness Tc (mm)
Uncoated	Single Layer MgF ₂	Broadband AR				
HO-PVCL10-20	HO-PVCL10-20C	HO-PVCL10-20B	-20	10	10	2
HO-PVCL20-20	HO-PVCL20-20C	HO-PVCL20-20B	-20	20	10	2
HO-PVCL10-30	HO-PVCL10-30C	HO-PVCL10-30B	-30	10	10	2
HO-PVCL20-30	HO-PVCL20-30C	HO-PVCL20-30B	-30	20	10	2
HO-PVCL20-50	HO-PVCL20-50C	HO-PVCL20-50B	-50	20	20	2
HO-PVCL40-50	HO-PVCL40-50C	HO-PVCL40-50B	-50	40	20	3
HO-PVCL50-100	HO-PVCL50-100C	HO-PVCL50-100B	-100	50	20	3
HO-PVCL50-100-01	HO-PVCL50-100-01C	HO-PVCL50-100-01B	-100	50	30	3
HO-PVCL50-150	HO-PVCL50-150C	HO-PVCL50-150B	-150	50	20	3
HO-PVCL50-150-01	HO-PVCL50-150-01C	HO-PVCL50-150-01B	-150	50	30	3

Cylindrical Lens Mounts

This CLM series lens mounts are suitable for rectangular or square cylindrical lenses. These can be used to mount lenses up to 50 mm.

- ▶ Suitable for rectangular/square cylindrical lenses
- ▶ Rubber pad is affixed to the holding surface for protecting optics
- ▶ M6 mounting holes
- ▶ Post mountable



For more products and information, please log on to
www.holmarc.com
or contact us at sales@holmarc.com



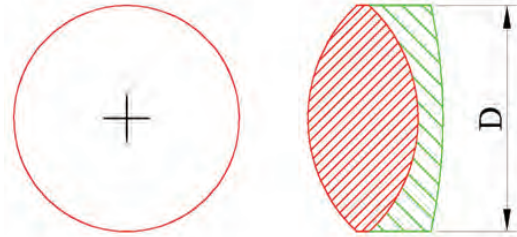
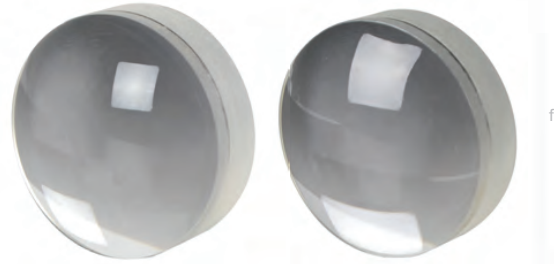
Refer page 090

Achromatic Lenses



Achromatic lenses can be used as collimators, focusing lenses or light collectors. They are designed to eliminate chromatic and spherical aberrations and perform well for all paraxial imaging tasks. These lenses are available as uncoated, single Layer MgF₂ coated and broadband AR coated types.

Applications of achromatic lenses includes uses in achromatic telescopes, microscopes and photographic lens.

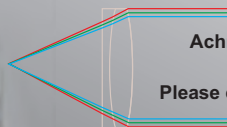


Specifications & Tolerances:

Materials	BK7, N-SF1, F2 (or equivalent)
Effective focal length tolerance	± 1%
Diameter tolerance	+0.0, -0.2mm
Centering tolerance	≤ 3 arc min.
Surface quality	40-20 (scratch-dig)
Clear aperture	>90% of diameter
Design wavelengths	486.1nm, 587.6 nm, & 656.3nm
Coating	1. Uncoated 2. Single layer MgF ₂ 3. Broadband AR (R _{avg} = <0.5% @ 400-700nm)

Positive Achromatic Lens

Model No.			Diameter D (mm)	Focal Length F (mm)
Uncoated	Single Layer MgF ₂	Broadband AR		
HO-PAL12.5-02	HO-PAL12.5-02C	HO-PAL12.5-02B	12.5	25
HO-PAL12.5-04	HO-PAL12.5-04C	HO-PAL12.5-04B	12.5	50
HO-PAL12.5-06	HO-PAL12.5-06C	HO-PAL12.5-06B	12.5	75
HO-PAL25-1.6	HO-PAL25-1.6C	HO-PAL25-1.6B	25	40
HO-PAL25-02	HO-PAL25-02C	HO-PAL25-02B	25	50
HO-PAL25-03	HO-PAL25-03C	HO-PAL25-03B	25	75
HO-PAL25-04	HO-PAL25-04C	HO-PAL25-04B	25	100
HO-PAL25-06	HO-PAL25-06C	HO-PAL25-06B	25	150
HO-PAL25-08	HO-PAL25-08C	HO-PAL25-08B	25	200
HO-PAL25-10	HO-PAL25-10C	HO-PAL25-10B	25	250
HO-PAL25-12	HO-PAL25-12C	HO-PAL25-12B	25	300
HO-PAL25-16	HO-PAL25-16C	HO-PAL25-16B	25	400
HO-PAL25-20	HO-PAL25-20C	HO-PAL25-20B	25	500
HO-PAL50-02	HO-PAL50-02C	HO-PAL50-02B	50	100
HO-PAL50-03	HO-PAL50-03C	HO-PAL50-03B	50	150
HO-PAL50-04	HO-PAL50-04C	HO-PAL50-04B	50	200
HO-PAL50-05	HO-PAL50-05C	HO-PAL50-05B	50	250
HO-PAL50-06	HO-PAL50-06C	HO-PAL50-06B	50	300
HO-PAL50-08	HO-PAL50-08C	HO-PAL50-08B	50	400
HO-PAL50-10	HO-PAL50-10C	HO-PAL50-10B	50	500
HO-PAL50-15	HO-PAL50-15C	HO-PAL50-15B	50	750
HO-PAL50-20	HO-PAL50-20C	HO-PAL50-20B	50	1000



Achromatic lenses are available in custom diameter, focal length and colour correction. Please contact us for the details at sales@holmarc.com

Negative Achromatic Lens

Uncoated	Model No.		Diameter D (mm)	Focal Length F (mm)
	Single Layer MgF ₂	Broadband AR		
HO-NAL12.5-02	HO-NAL12.5-02C	HO-NAL12.5-02B	12.5	-25
HO-NAL12.5-04	HO-NAL12.5-04C	HO-NAL12.5-04B	12.5	-50
HO-NAL25-02	HO-NAL25-02C	HO-NAL25-02B	25	-50
HO-NAL25-2.8	HO-NAL25-2.8C	HO-NAL25-2.8B	25	-70
HO-NAL25-04	HO-NAL25-04C	HO-NAL25-04B	25	-100
HO-NAL25-06	HO-NAL25-06C	HO-NAL25-06B	25	-150
HO-NAL50-03	HO-NAL50-03C	HO-NAL50-03B	50	-150

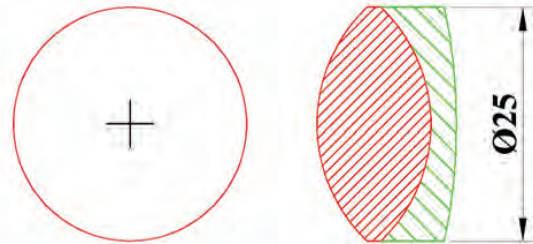
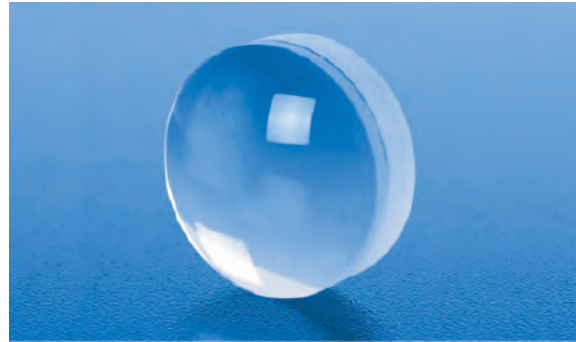
Cylindrical Achromatic Lens



Holmarc's cylindrical achromatic lenses are used to focus polychromatic light in one dimension with reduced spherical and chromatic aberrations. Holmarc's cylindrical achromatic lenses are available either as uncoated or coated (single layer MgF₂ or broadband AR). When used with monochromatic light source, these lenses produce smaller spot size than standard cylindrical lenses.

Specifications & Tolerances:

Materials	BK7, SF1 & F2(or equivalent)
Effective focal length tolerance	± 1%
Diameter tolerance	+0.0, -0.2mm
Centering tolerance	≤ 5 arc min.
Surface quality	40-20 (scratch-dig)
Clear aperture	>90% of diameter
Design wavelengths	486.1nm, 587.6 nm, & 656.3nm
Coating	1. Uncoated 2. Single layer MgF ₂ 3. Broadband AR (R _{avg} = <0.5% @ 400-700nm)



Uncoated	Model No.		Diameter D (mm)	Focal Length F (mm)
	Single Layer MgF ₂	Broadband AR		
HO-CAL25-02	HO-CAL25-02C	HO-CAL25-02B	25	50
HO-CAL25-03	HO-CAL25-03C	HO-CAL25-03B	25	75
HO-CAL25-04	HO-CAL25-04C	HO-CAL25-04B	25	100
HO-CAL25-06	HO-CAL25-06C	HO-CAL25-06B	25	150
HO-CAL25-08	HO-CAL25-08C	HO-CAL25-08B	25	200
HO-CAL25-10	HO-CAL25-10C	HO-CAL25-10B	25	250

HOLMARC

We manufacture both catalog and custom optical components, to meet every customer's needs and order specifications.

For more information, and to receive a quote for your order, call +91 0484 2540075, email : sales@holmarc.com

HOLMARC Optics

A Division of Holmarc Opto-Mechatronics Pvt. Ltd

Follow us on



For more products and information, please log on to

www.holmarc.com

or contact us at sales@holmarc.com

Made in India

Axicons

Axicons are optical components which can be used to convert a collimated laser beam into a ring shaped non-diffractive Bessel beam. Holmarc's axicons are made from UV grade fused silica substrate and are available as uncoated and broadband AR coated.

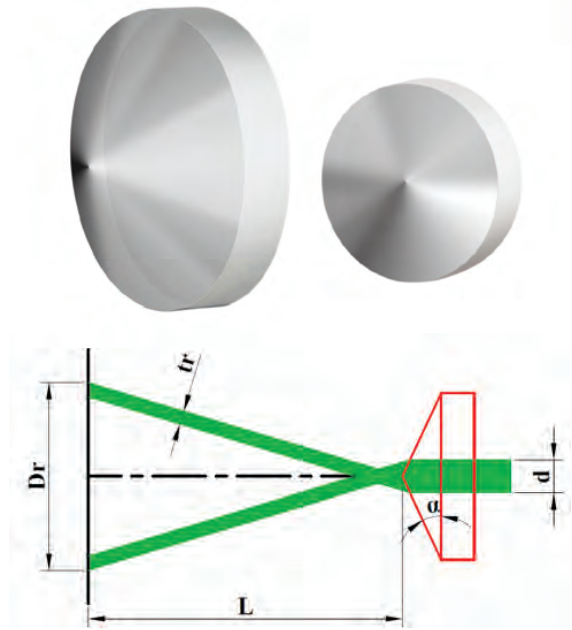
The ring thickness of the Bessel beam can be calculated from the following formula;

$$t_r = 0.5 \cdot d \cdot \dots \dots \dots \text{ where } d \text{ is the diameter of the input collimated beam.}$$

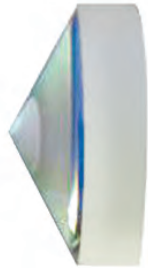
The diameter of the ring at a particular distance can be calculated from the following equation;

$$D_r = 2L \tan[(n-1)\alpha]$$

where D_r is the diameter of the ring at a distance L from the lens, n is the refractive index of the lens material and α is the axicon angle.



<http://www.holmarc.com/axicons.php>



Model No.		Axicon angle, α	Center Thickness t_c (mm)
Uncoated	Broadband AR		
HO-AX-25-0.5	HO-AX-25B-0.5	0.5°	5.1
HO-AX-25-1.0	HO-AX-25B-1.0	1.0°	5.2
HO-AX-25-2.0	HO-AX-25B-2.0	2.0°	5.4
HO-AX-25-5.0	HO-AX-25B-5.0	5.0°	6.1
HO-AX-25-10.0	HO-AX-25B-10.0	10.0°	7.2
HO-AX-25-20.0	HO-AX-25B-20.0	20.0°	9.5
HO-AX-25-25.0	HO-AX-25B-25.0	25.0°	10.8

Specifications & Tolerances:	
Material	UV fused silica
Diameter	25mm
Diameter tolerance	+0.0, -0.2mm
Edge thickness, t_e	5mm
Center thickness tolerance	0.1mm
Angular tolerance	$\pm 0.01\%$
Surface quality	40-20 (scratch-dig)
Clear aperture	>90% of diameter
Surface flatness	$\lambda/4$ @ 632.8nm
Design wavelength	632.8nm
Coating	1. Uncoated (200 - 2000nm) 2. Broadband AR coated
	($R_{avg} = < 0.5\%$ @ 400 - 700nm)

SPECTROMETER – GONIOMETER

Model: HO-SP-RE-01

- Modern and user friendly design
- Mercury lamp is used as light source
- Symmetrical precision slit
- Height of prism table is adjustable
- High-quality optics
- Comprehensive manual Included

HOLMARC OPTO-MECHATRONICS PVT. LTD

For more products and information, please log on to

www.holmarc.com

or contact us at sales@holmarc.com

PRISMS

Right Angle Prisms

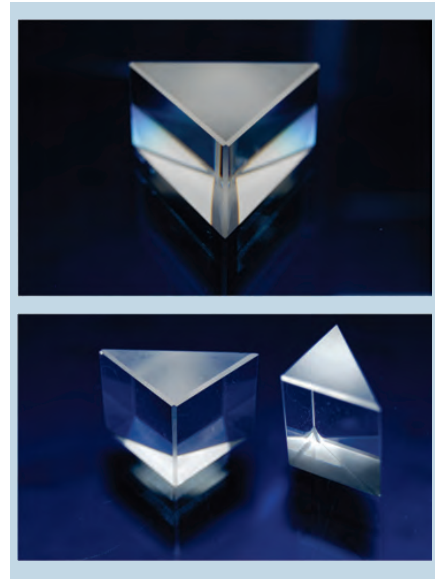
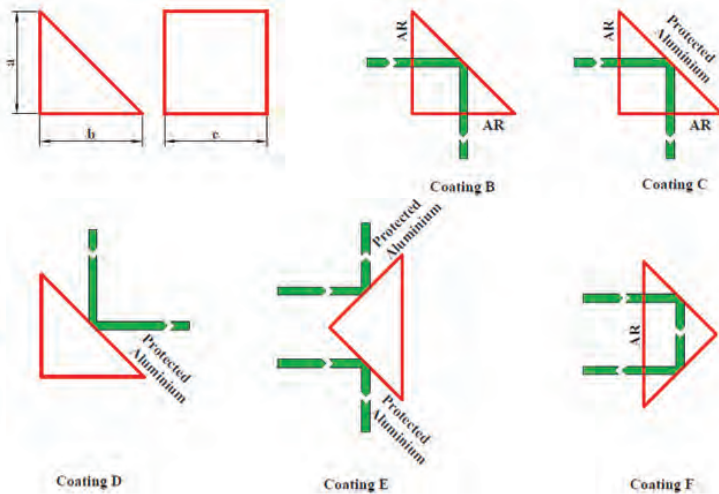


Right Angle Prisms are used to re-direct a beam of light at 90 degrees from the incident direction or used as 180° beam retro-reflector. We offer these prisms uncoated or with five different coating options, namely;

- ▶ Single layer anti-reflection coating on legs.
- ▶ Protected aluminium on hypotenuse and single layer anti-reflection on legs.
- ▶ Protected aluminium on hypotenuse.
- ▶ Protected aluminium on legs
- ▶ Single layer anti-reflection coating on hypotenuse.

Specifications & Tolerances:

Materials	BK7 or equivalent, F2 & fused silica
Effective aperture	90%
Surface quality	40-20(scratch- dig)
Dimensional tolerance	+0.0, -0.2mm
Angle tolerance	+/- 3 arc min
Surface flatness	λ/4 @632.8nm
Perpendicularity	+/- 3 arc min
Protective chamfer	0.2mm x 45°
Coating	Optional



Model No.						a=b=c (mm)	Material
A*	B*	C*	D*	E*	F*		
HO-RPB-A-5	HO-RPB-B-5	HO-RPB-C-5	HO-RPB-D-5	HO-RPB-E-5	HO-RPB-F-5	5	BK7 or equivalent
HO-RPB-A-10	HO-RPB-B-10	HO-RPB-C-10	HO-RPB-D-10	HO-RPB-E-10	HO-RPB-F-10	10	
HO-RPB-A-20	HO-RPB-B-20	HO-RPB-C-20	HO-RPB-D-20	HO-RPB-E-20	HO-RPB-F-20	20	
HO-RPB-A-25	HO-RPB-B-25	HO-RPB-C-25	HO-RPB-D-25	HO-RPB-E-25	HO-RPB-F-25	25	
HO-RPB-A-38	HO-RPB-B-38	HO-RPB-C-38	HO-RPB-D-38	HO-RPB-E-38	HO-RPB-F-38	38	
HO-RPB-A-50	HO-RPB-B-50	HO-RPB-C-50	HO-RPB-D-50	HO-RPB-E-50	HO-RPB-F-50	50	Fused Silica
HO-RPS-A-5	HO-RPS-B-5	HO-RPS-C-5	HO-RPS-D-5	HO-RPS-E-5	HO-RPS-F-5	5	
HO-RPS-A-10	HO-RPS-B-10	HO-RPS-C-10	HO-RPS-D-10	HO-RPS-E-10	HO-RPS-F-10	10	
HO-RPS-A-20	HO-RPS-B-20	HO-RPS-C-20	HO-RPS-D-20	HO-RPS-E-20	HO-RPS-F-20	20	
HO-RPS-A-25	HO-RPS-B-25	HO-RPS-C-25	HO-RPS-D-25	HO-RPS-E-25	HO-RPS-F-25	25	
HO-RPS-A-38	HO-RPS-B-38	HO-RPS-C-38	HO-RPS-D-38	HO-RPS-E-38	HO-RPS-F-38	38	F2
HO-RPS-A-50	HO-RPS-B-50	HO-RPS-C-50	HO-RPS-D-50	HO-RPS-E-50	HO-RPS-F-50	50	
HO-RPF-A-5	HO-RPF-B-5	HO-RPF-C-5	HO-RPF-D-5	HO-RPF-E-5	HO-RPF-F-5	5	
HO-RPF-A-10	HO-RPF-B-10	HO-RPF-C-10	HO-RPF-D-10	HO-RPF-E-10	HO-RPF-F-10	10	
HO-RPF-A-20	HO-RPF-B-20	HO-RPF-C-20	HO-RPF-D-20	HO-RPF-E-20	HO-RPF-F-20	20	
HO-RPF-A-25	HO-RPF-B-25	HO-RPF-C-25	HO-RPF-D-25	HO-RPF-E-25	HO-RPF-F-25	25	F2
HO-RPF-A-38	HO-RPF-B-38	HO-RPF-C-38	HO-RPF-D-38	HO-RPF-E-38	HO-RPF-F-38	38	
HO-RPF-A-50	HO-RPF-B-50	HO-RPF-C-50	HO-RPF-D-50	HO-RPF-E-50	HO-RPF-F-50	50	

* A = Uncoated, B = Single layer anti-reflection coating on legs, C = Protected aluminium on hypotenuse and single layer antireflection on legs, D = Protected aluminium on hypotenuse, E = Protected aluminium on legs, F = Single layer anti-reflection coating on hypotenuse.



Dove Prisms



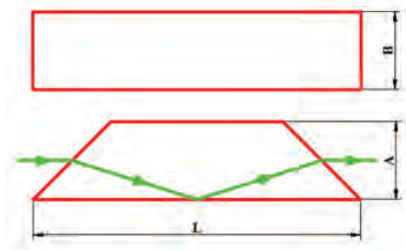
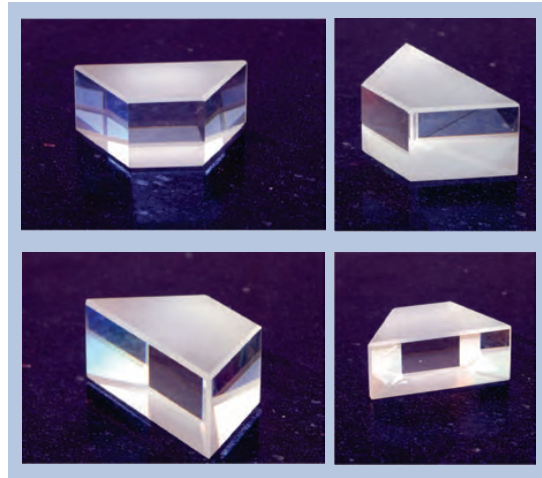
Dove Prisms rotate an image without deviating the beam in such a way that the image rotates at twice the angular rate of the prism. Holmarc offers Dove prisms with single layer anti-reflection coating on end faces. The hypotenuse face has total internal reflection, hence does not require AR coating.

Uncoated prisms are also available. Broadband multi-layer AR coating on faces can be done on custom basis.

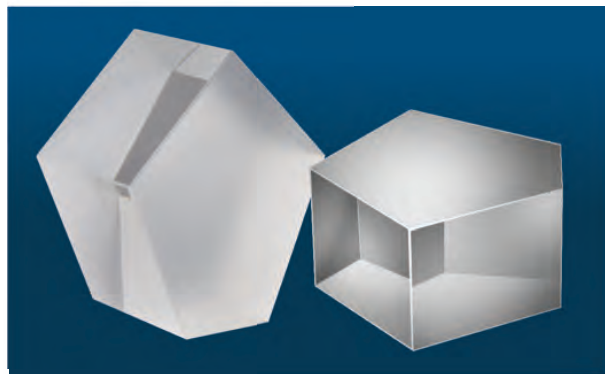
Specifications & Tolerances:

Material	.....	BK7 or equivalent
Effective aperture	.....	90%
Surface quality	.....	40-20(scratch - dig)
Dimensional tolerance	.....	+0.0, -0.2mm
Angle tolerance	.....	+/- 3 arc min
Surface flatness	.....	$\lambda/4$ @632.8nm
Perpendicularity	.....	+/- 3 arc min
Protective chamfer	.....	0.2mm x 45°
Coating	.....	Optional

Model No.		A = B (mm)	L (mm)
Uncoated	Single Layer MgF ₂		
HO-DP-5	HO-DPC-5	5	21.1
HO-DP-10	HO-DPC-10	10	42.2
HO-DP-15	HO-DPC-15	15	63.3
HO-DP-20	HO-DPC-20	20	84.4
HO-DP-25	HO-DPC-25	25	105.5



Penta Prisms



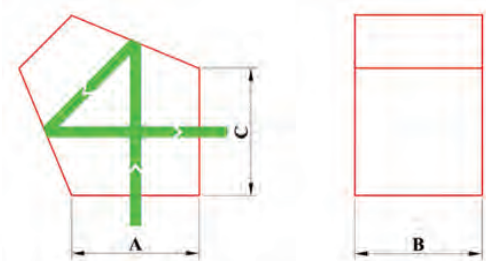
Penta Prisms deviate an input beam by precisely 90°. In imaging applications Penta Prism will neither invert nor reverse the image. These prisms deviate a beam through same angle regardless of its orientation to the beam.

The reflecting surfaces of our Penta Prisms are coated with protective aluminium. The entrance and exit surfaces are single layer anti-reflection coated in HO-PPC series.

Specifications & Tolerance:

Material	.....	BK7 or equivalent
Effective aperture	.....	85%
Surface quality	.....	40-20 (scratch - dig)
Dimensional tolerance	.....	+0.0, -0.2mm
Angle tolerance	.....	+/- 3 arc min
Surface flatness	.....	$\lambda/4$ @632.8 nm
Protective chamfer	.....	0.2mm x 45°

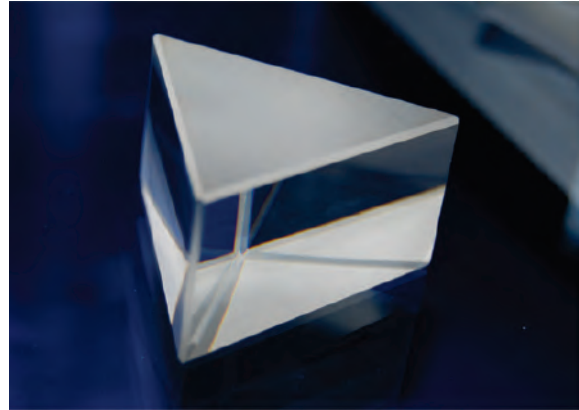
Model No.		A = B = C (mm)
Uncoated	Single Layer MgF ₂	
HO-PP-5	HO-PPC-5	5
HO-PP-10	HO-PPC-10	10
HO-PP-20	HO-PPC-20	20
HO-PP-25	HO-PPC-25	25
HO-PP-38	HO-PPC-38	40
HO-PP-50	HO-PPC-50	50



Equilateral Prisms



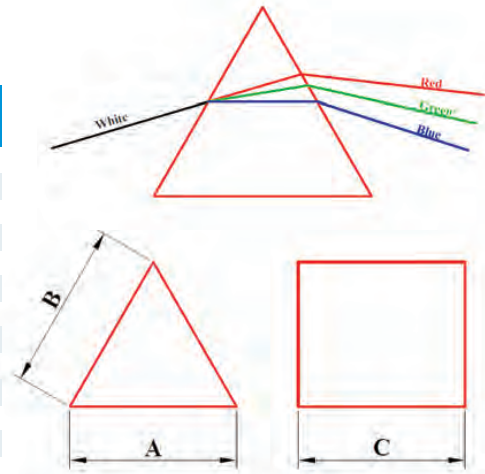
Applications of equilateral prisms are to disperse or break light into its spectral components. These prisms are available from Holmarc either uncoated or with single layer anti-reflection coating on the faces. AR coating helps to reduce polarization at the surface by increasing total transmittance. Broadband multi-layer anti-reflection coated prisms can be provided on special requests.



Specifications & Tolerances:

Material	BK7 or equivalent & F2
Effective aperture	85%
Surface quality	40-20(scratch - dig)
Dimensional tolerance	+0.0, -0.2mm
Angle tolerance	+/- 3 arc min
Surface flatness	$\lambda/4$ @632.8nm
Protective chamfer	0.2mm x 45°
AR coating	Optional, on faces

Model No.		A = B = C (mm)	Material
Uncoated	Single Layer MgF ₂		
HO-EPB-5	HO-EPBC-5	5	BK7 or equivalent
HO-EPB-10	HO-EPBC-10	10	BK7 or equivalent
HO-EPB-20	HO-EPBC-20	20	BK7 or equivalent
HO-EPB-25	HO-EPBC-25	25	BK7 or equivalent
HO-EPB-38	HO-EPBC-38	38	BK7 or equivalent
HO-EPB-50	HO-EPBC-50	50	BK7 or equivalent
HO-EPF-5	HO-EPFC-5	5	F2
HO-EPF-10	HO-EPFC-10	10	F2
HO-EPF-20	HO-EPFC-20	20	F2
HO-EPF-25	HO-EPFC-25	25	F2
HO-EPF-38	HO-EPFC-38	38	F2
HO-EPF-50	HO-EPFC-50	50	F2

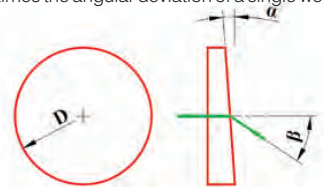
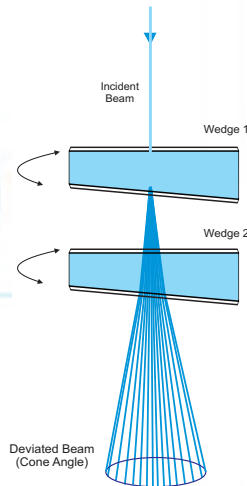
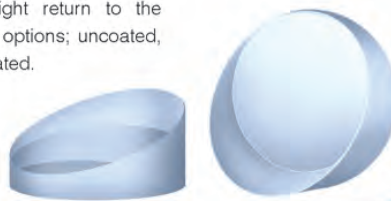


Wedge Prisms



Wedge prisms find applications in steering light beams. Two wedge prisms of equal power, used together can steer input light beams within a narrow cone. Wedge prism produces a small deviation to the light beam which doesn't allow the light return to the source. Holmarc offers wedge prisms in three options; uncoated, single layer MgF₂ coated, and broadband AR coated.

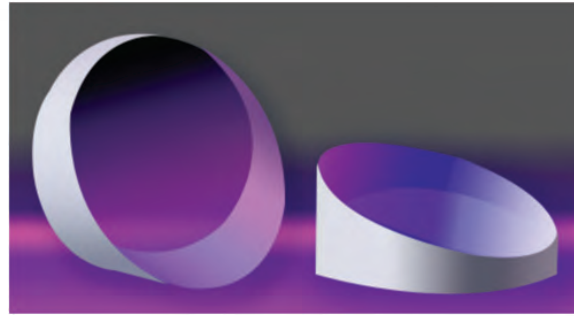
Wedge prisms can be used as isolating components. Wedge prism may also be used to produce a small deviation which doesn't allow light returning to source. Two wedge prisms can be combined to steer a beam anywhere within a circle defined by 4 times the angular deviation of a single wedge.



By combining two wedge prisms each of which can be rotated independently, it is possible to direct the beam anywhere within the cone angle defined by 4x the specified angular deviation of one wedge.

Specifications & Tolerances:

Materials	BK7 or equivalent & UV fused silica
Effective aperture	85%
Surface quality	40-20 (scratch - dig)
Dimensional tolerance	+0.0, -0.2mm
Angle tolerance	+/- 3 arc min
Surface flatness	$\lambda/4$ @632.8nm
Thin edge thickness	3mm
Bevel	0.2mm x 45°
AR coating	Optional



Model No.			Diameter D (mm)	Beam Deviation (β)	Wedge Angle (α)	Material
Uncoated	Single Layer MgF ₂	Broadband AR				
HO-WPB-1	HO-WPBC-1	HO-WPBB-1	25	1°	1° 57'	BK7 or equivalent
HO-WPB-2	HO-WPBC-2	HO-WPBB-2	25	2°	3° 53'	BK7 or equivalent
HO-WPB-4	HO-WPBC-4	HO-WPBB-4	25	4°	7° 41'	BK7 or equivalent
HO-WPB-6	HO-WPBC-6	HO-WPBB-6	25	6°	11° 22'	BK7 or equivalent
HO-WPB-8	HO-WPBC-8	HO-WPBB-8	25	8°	14° 52'	BK7 or equivalent
HO-WPB-10	HO-WPBC-10	HO-WPBB-10	25	10°	18° 09'	BK7 or equivalent
HO-WPS-1	HO-WPSC-1	HO-WPSB-1	25	1°	2° 40'	Fused Silica
HO-WPS-2	HO-WPSC-2	HO-WPSB-2	25	2°	4° 70'	Fused Silica
HO-WPS-4	HO-WPSC-4	HO-WPSB-4	25	4°	8° 14'	Fused Silica
HO-WPS-6	HO-WPSC-6	HO-WPSB-6	25	6°	12° 21'	Fused Silica

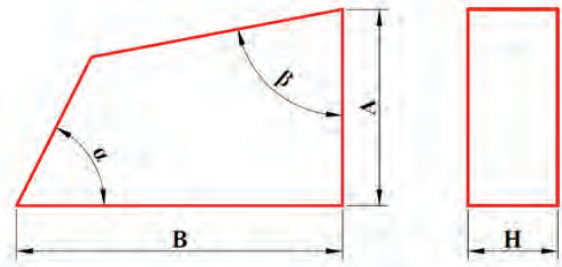
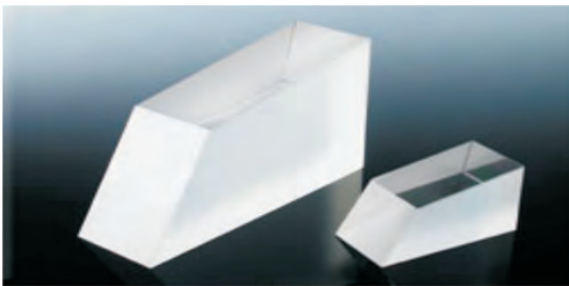
Pellin Broca Prisms



Pellin Broca prism is a constant (90°) deviation dispersive prism. These prisms separate light beam of multiple wavelengths to single wavelength. Pellin Broca prism's incidence angle is Brewster's angle, which minimizes the reflection losses in P-polarized light. Hence, these are known as Brewster's angle prisms as well. Holmarc offers Pellin Broca Prisms in three different substrate materials.

Specifications & Tolerances:

Materials	BK7 or equivalent, N-SF1 & fused silica
Surface quality	40-20 (scratch - dig)
Dimensional tolerance	+0.0, -0.2mm
Surface flatness	$\lambda/4$ @632.8nm
Clear aperture	80%
Angle tolerance	$\alpha = 79.5^\circ \pm 0.5^\circ, \beta = 60^\circ \pm 1^\circ$



Model No:	Clear Aperture (mm)	A (mm)	B (mm)	H (mm)	Material
HO - PBB - 5	5	11	20	6.4	BK7 or equivalent
HO - PBB - 10	10	23.5	40	12.7	BK7 or equivalent
HO - PBS - 5	5	11	20	6.4	Fused Silica
HO - PBS - 10	10	23.5	40	12.7	Fused Silica
HO - PBF - 5	5	11	20	6.4	N - SF1
HO - PBF - 10	10	23.5	40	12.7	N - SF1

Material other than BK7 or equivalent, NSF1 and Fused silica are available on special request.

Littrow Prisms

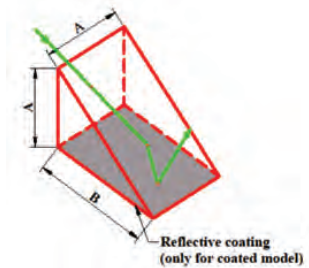
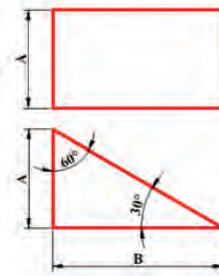
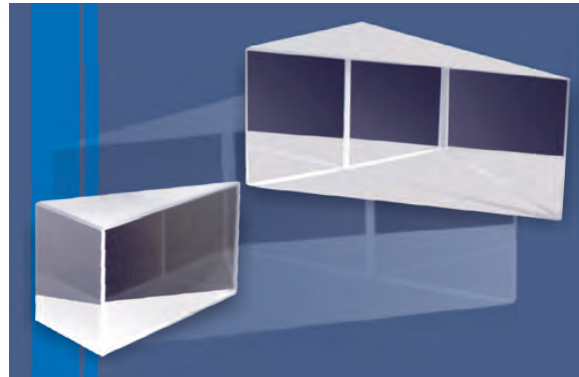


Holmarc's Littrow prisms are 30°- 60°- 90° prisms made from N-BK7 material. The uncoated littrow prisms are used to disperse white light into its spectrum. Coated littrow prisms are used to divert the incident beam at 60°.

Specifications & Tolerances:

Material	BK7 or equivalent
Angle tolerance	± 3 arc min
Surface quality	40-20 (scratch- dig)
Dimension tolerance	+0.00, -0.2mm
Surface flatness	λ/4 @ 632.8nm
Coating	Al+SiO @ face opposite to 60° angle(optional)

Model No.		A (mm)	B (mm)
Uncoated	Coated		
HO-LP-12.5	HO-LPC-12.5	12.5	21.65
HO-LP-25	HO-LPC-25	25	43.30



Corner Cube Retroreflectors

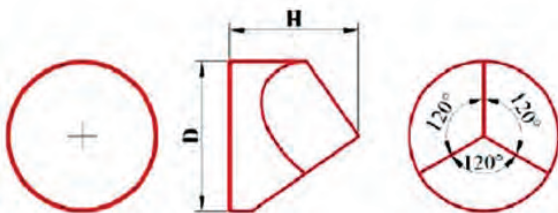
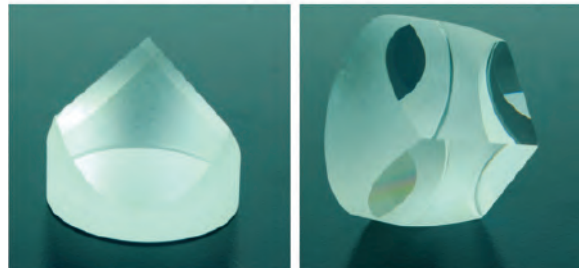
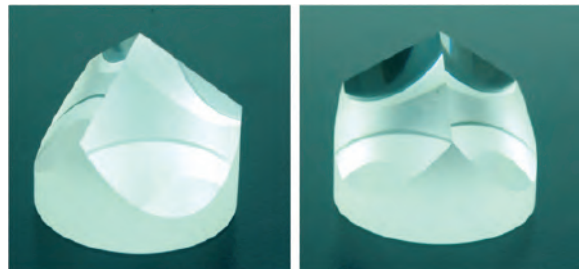


Holmarc's Corner cube retroreflectors are made from N-BK7 and are designed to deviate incident beam by 180 degrees independent of the incident angle (orientation of the retroreflector). Corner cube retroreflectors work by total internal reflection.

These are valuable where precision alignment is difficult or time consuming. Holmarc's corner cube retroreflectors are available either uncoated or Broadband AR coated.

Specifications & Tolerances:

Material	BK7 or equivalent
Surface quality	40 - 20 (scratch- dig)
Dimension tolerance	+0.00, -0.2mm
Surface flatness	λ/4 @632.8nm
Design wavelength	632.8nm
Beam deviation	>3 arc min
Coating	Uncoated / broadband AR, R _{avg} <0.5% @ 400 - 700nm



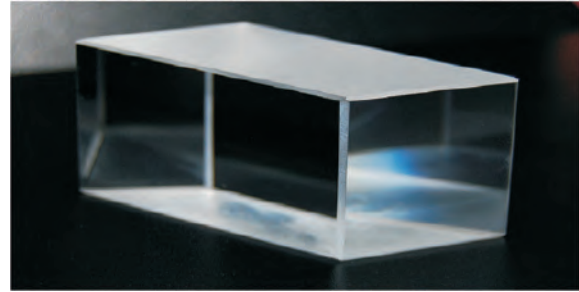
Model No.		Diameter D (mm)	Height H (mm)
Uncoated	Broadband AR		
HO-CCR-10	HO-CCRB-10	10	9
HO-CCR-25.4	HO-CCRB-25.4	25.4	22
HO-CCR-50	HO-CCRB-50	50	42



Rhomboid Prisms



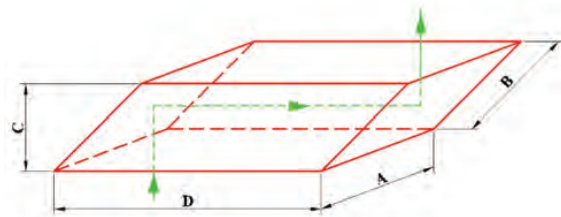
Rhomboid prism is used to displace the incident beam without affecting the image orientation. This prism can be used to displace the optical center line and the displacement is equal to the length of the prism. Rhomboid prisms are available uncoated.



Uncoated	A (mm)	B (mm)	C (mm)	D (mm)
HO-RHB-10	10	10	7.1	14.1
HO-RHB-20	20	20	14.2	28.3
HO-RHB-25	25	25	17.7	35.4
HO-RHB-50	50	50	35.4	70.7

Specifications & Tolerances:

Material	BK7 or equivalent
Surface quality	40-20 (scratch - dig)
Dimensional tolerance	+0.0, -0.2mm
Angular tolerances	± 5 arc sec
Beam deviation	± 30 arc sec
Surface flatness	$\lambda/4$ @632.8nm

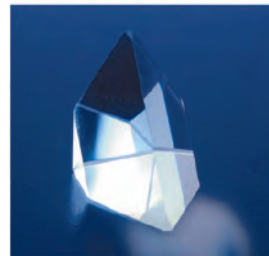


Amici Roof Prisms

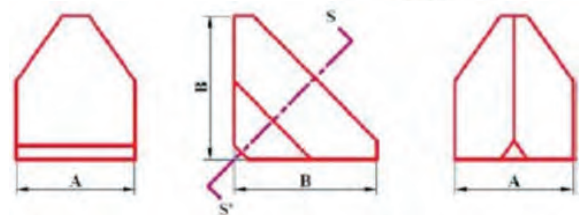


Amici roof prisms are also known as roof prisms. It consists of a right angle prism whose hypotenuse has been replaced by a 90° TIR roof. The Amici roof prism will revert and invert the image and at the same time, will deviate the line of sight through an angle of 90°.

Holmarc's amici roof prisms are available either uncoated or single layer AR coated on entrance and exit faces. Broadband AR coating ($R_{avg} < 0.5\%$ @ 400-700nm) can be done on custom basis.



Section S - S'



Specifications & Tolerances:

Material	BK7 or equivalent
Angle tolerance	± 3 arc min
Roof angle tolerance	± 5 arc sec
Surface quality	40-20 (scratch- dig)
Dimension tolerance	+0.00, -0.2mm
Surface flatness	$\lambda/4$ @632.8nm
Coating	Single layer MgF_2
	on entrance & exit faces

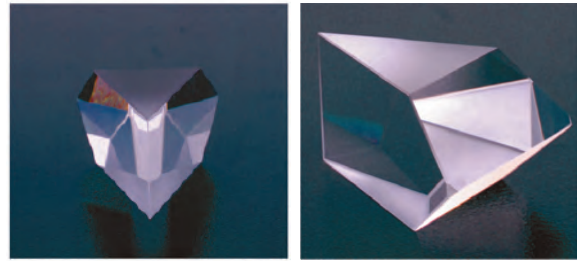
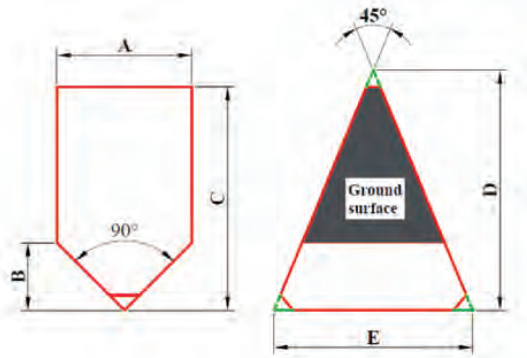
Model No.		Clear Aperture (mm)	A (mm)	B (mm)
Uncoated	Single Layer MgF_2			
HO-ARP-10	HO-ARPC-10	10	13	18
HO-ARP-15	HO-ARPC-15	15	18	23
HO-ARP-20	HO-ARPC-20	20	25	30
HO-ARP-25	HO-ARPC-25	25	32	37



Schmidt Prisms



Holmarc's Schmidt prisms are used to invert and revert the image while deviating the line of sight by 45 degrees. The aluminized roof surfaces enhance the overall efficiency of the prism and the high accuracy roof angle tolerance increases the prism resolution.



Specifications & Tolerances:

Material	BK7 or equivalent
Surface quality	40 - 20 (scratch- dig)
Dimension tolerance	± 0.1mm
Surface flatness	λ/4 @ 632.8nm
Angle tolerance	5 arc seconds
Coating	Entrance & exit faces = uncoated Roof = protected aluminium overcoated with Inconel

Model No.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
HO-SP-10	10	5	16.5	17.74	14.7
HO-SP-25	25	12.5	41.3	44.4	36.78

WINDOWS

Rectangular and Square Windows

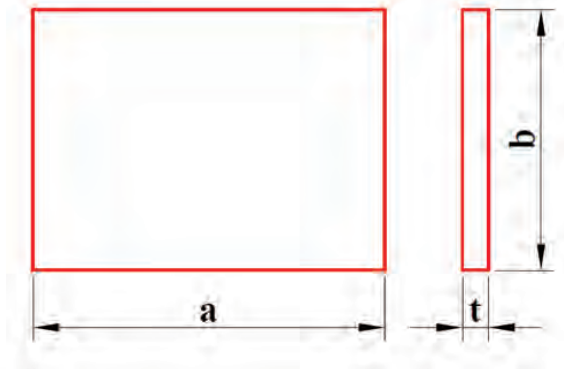
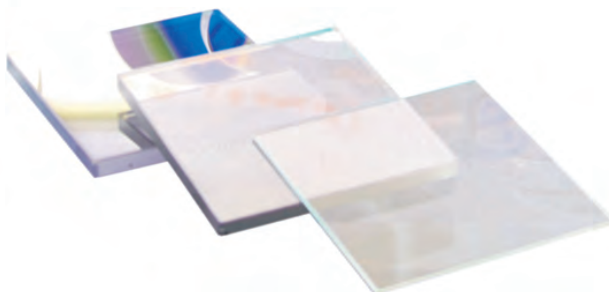


Optical Windows allow light beam to pass from one medium to another without changing the wavelength distribution or the transmitted wave front of the beam. Ideally, optical windows do not scatter light out of the beam.

Holmarc offers windows in two different materials; N-BK7 & Fused Silica. Holmarc's windows are available in uncoated, single layer MgF₂ coated, and broadband AR coated options

Specifications & Tolerances:

Material	BK7 or equivalent & fused silica
Surface quality	40-20 (scratch - dig)
Dimensional tolerance	+0.0, -0.2mm
Thickness tolerance	+0.0, -0.2mm
Surface flatness	λ/4 @632.8nm
Bevel	0.2mm x 45°
Parallelism	≤ 1arcmin or 3 arcmin
Coating	(Optional)
	1. Uncoated
	2. Single layer MgF ₂
	3. Broadband AR (Ravg <0.5% @ 400-700nm)



Model No.			Dimensions a x b (mm)	Thickness t (mm)	Parallelism (arc min)	Material
Uncoated	Single Layer MgF ₂	Broadband AR				
HO-WRB-10-1	HO-WRBC-10-1	HO-WRBB-10-1	10 x 20	5	1	BK7 or equivalent
HO-WRB-10-3	HO-WRBC-10-3	HO-WRBB-10-3	10 x 20	5	3	BK7 or equivalent
HO-WRB-15-1	HO-WRBC-15-1	HO-WRBB-15-1	15 x 30	5	1	BK7 or equivalent
HO-WRB-15-3	HO-WRBC-15-3	HO-WRBB-15-3	15 x 30	5	3	BK7 or equivalent
HO-WRB-20-1	HO-WRBC-20-1	HO-WRBB-20-1	20 x 35	5	1	BK7 or equivalent
HO-WRB-20-3	HO-WRBC-20-3	HO-WRBB-20-3	20 x 35	5	3	BK7 or equivalent
HO-WSB-25-1	HO-WSBC-25-1	HO-WSBB-25-1	25 x 25	6	1	BK7 or equivalent
HO-WSB-25-3	HO-WSBC-25-3	HO-WSBB-25-3	25 x 25	6	3	BK7 or equivalent
HO-WRB-30-1	HO-WRBC-30-1	HO-WRBB-30-1	30 x 50	8	1	BK7 or equivalent
HO-WRB-30-3	HO-WRBC-30-3	HO-WRBB-30-3	30 x 50	8	3	BK7 or equivalent
HO-WSB-50-1	HO-WSBC-50-1	HO-WSBB-50-1	50 x 50	8	1	BK7 or equivalent
HO-WSB-50-3	HO-WSBC-50-3	HO-WSBB-50-3	50 x 50	8	3	BK7 or equivalent

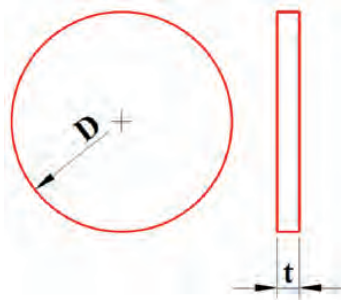
Model No.			Dimensions a x b (mm)	Thickness t (mm)	Parallelism (arc min)	Material
Uncoated	Single Layer MgF ₂	Broadband AR				
HO-WRS-10-1	HO-WRSC-10-1	HO-WRSB-10-1	10 x 20	5	1	Fused Silica
HO-WRS-10-3	HO-WRSC-10-3	HO-WRSB-10-3	10 x 20	5	3	Fused Silica
HO-WRS-15-1	HO-WRSC-15-1	HO-WRSB-15-1	15 x 30	5	1	Fused Silica
HO-WRS-15-3	HO-WRSC-15-3	HO-WRSB-15-3	15 x 30	5	3	Fused Silica
HO-WRS-20-1	HO-WRSC-20-1	HO-WRSB-20-1	20 x 35	5	1	Fused Silica
HO-WRS-20-3	HO-WRSC-20-3	HO-WRSB-20-3	20 x 35	5	3	Fused Silica
HO-WSS-25-1	HO-WSSC-25-1	HO-WSSB-25-1	25 x 25	6	1	Fused Silica
HO-WSS-25-3	HO-WSSC-25-3	HO-WSSB-25-3	25 x 25	6	3	Fused Silica
HO-WRS-30-1	HO-WRSC-30-1	HO-WRSB-30-1	30 x 50	8	1	Fused Silica
HO-WRS-30-3	HO-WRSC-30-3	HO-WRSB-30-3	30 x 50	8	3	Fused Silica
HO-WSS-50-1	HO-WSSC-50-1	HO-WSSB-50-1	50 x 50	8	1	Fused Silica
HO-WSS-50-3	HO-WSSC-50-3	HO-WSSB-50-3	50 x 50	8	3	Fused Silica

Circular Windows



These optical windows are precision manufactured using BK7 or equivalent and Fused silica. We can also work with substrates furnished by the customer.

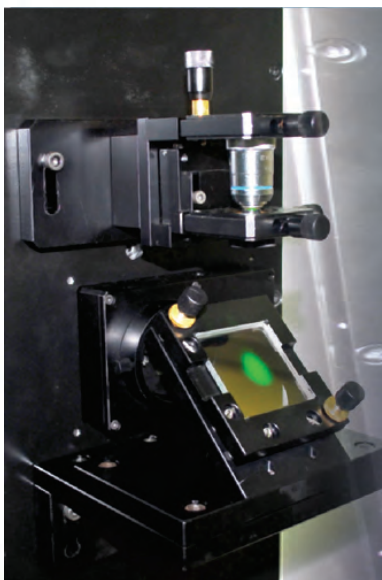
Windows are designed to be used in optical systems to separate two environments while passing a particular spectral range between them. Applications include laser set-ups, emitter/detector protection devices, and imaging systems involving ultraviolet wavelengths.



Model No.			Diameter D (mm)	Thickness t (mm)	Parallelism (arc min)	Material
Uncoated	Single Layer MgF ₂	Broadband AR				
HO-WCB-10-1	HO-WCBC-10-1	HO-WCBB-10-1	10	5	1	BK7 or equivalent
HO-WCB-10-3	HO-WCBC-10-3	HO-WCBB-10-3	10	5	3	BK7 or equivalent
HO-WCB-15-1	HO-WCBC-15-1	HO-WCBB-15-1	15	5	1	BK7 or equivalent
HO-WCB-15-3	HO-WCBC-15-3	HO-WCBB-15-3	15	5	3	BK7 or equivalent
HO-WCB-20-1	HO-WCBC-20-1	HO-WCBB-20-1	20	5	1	BK7 or equivalent
HO-WCB-20-3	HO-WCBC-20-3	HO-WCBB-20-3	20	5	3	BK7 or equivalent
HO-WCB-25-1	HO-WCBC-25-1	HO-WCBB-25-1	25	6	1	BK7 or equivalent
HO-WCB-25-3	HO-WCBC-25-3	HO-WCBB-25-3	25	6	3	BK7 or equivalent
HO-WCB-30-1	HO-WCBC-30-1	HO-WCBB-30-1	30	8	1	BK7 or equivalent
HO-WCB-30-3	HO-WCBC-30-3	HO-WCBB-30-3	30	8	3	BK7 or equivalent
HO-WCB-40-1	HO-WCBC-40-1	HO-WCBB-40-1	40	8	1	BK7 or equivalent
HO-WCB-40-3	HO-WCBC-40-3	HO-WCBB-40-3	40	8	3	BK7 or equivalent
HO-WCB-50-1	HO-WCBC-50-1	HO-WCBB-50-1	50	8	1	BK7 or equivalent
HO-WCB-50-3	HO-WCBC-50-3	HO-WCBB-50-3	50	8	3	BK7 or equivalent

Model No.			Diameter D (mm)	Thickness t (mm)	Parallelism (arc min)	Material
Uncoated	Single Layer MgF ₂	Broadband AR				
HO-WCS-10-1	HO-WCSC-10-1	HO-WCSB-10-1	10	5	1	Fused Silica
HO-WCS-10-3	HO-WCSC-10-3	HO-WCSB-10-3	10	5	3	Fused Silica
HO-WCS-15-1	HO-WCSC-15-1	HO-WCSB-15-1	15	5	1	Fused Silica
HO-WCS-15-3	HO-WCSC-15-3	HO-WCSB-15-3	15	5	3	Fused Silica
HO-WCS-20-1	HO-WCSC-20-1	HO-WCSB-20-1	20	5	1	Fused Silica
HO-WCS-20-3	HO-WCSC-20-3	HO-WCSB-20-3	20	5	3	Fused Silica
HO-WCS-25-1	HO-WCSC-25-1	HO-WCSB-25-1	25	6	1	Fused Silica
HO-WCS-25-3	HO-WCSC-25-3	HO-WCSB-25-3	25	6	3	Fused Silica
HO-WCS-30-1	HO-WCSC-30-1	HO-WCSB-30-1	30	8	1	Fused Silica
HO-WCS-30-3	HO-WCSC-30-3	HO-WCSB-30-3	30	8	3	Fused Silica
HO-WCS-40-1	HO-WCSC-40-1	HO-WCSB-40-1	40	8	1	Fused Silica
HO-WCS-40-3	HO-WCSC-40-3	HO-WCSB-40-3	40	8	3	Fused Silica
HO-WCS-50-1	HO-WCSC-50-1	HO-WCSB-50-1	50	8	1	Fused Silica
HO-WCS-50-3	HO-WCSC-50-3	HO-WCSB-50-3	50	8	3	Fused Silica

We can produce custom optical windows on request. Please contact us at sales@holmarc.com



Fizeau Interferometer

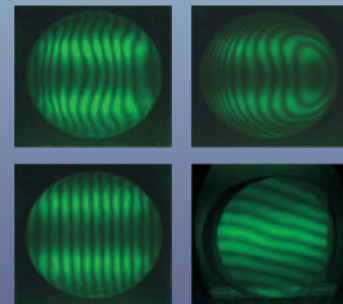
The Holmarc Fizeau interferometer comes with high optical quality ($\lambda/20$) reference flat. The reflection from the test surface interferes with the reflection from reference flat, producing fringes. The shape and quality of the fringes depends on surface quality of the test flat. The fringes are digitalized using a high resolution CCD camera. By analyzing the fringes, we can obtain the P-V flatness, RMS flatness, 3D surface plot etc.

The instrument is built upright to fix the test sample easily. The tip /tilt test base allows the test sample to align with the reference surface. High quality aberration corrected optical design enhances performance.



http://www.holmarc.com/fizeau_interferometer1.php

For more details please refer Page 158 or log in to www.holmarc.com Contact us for sales enquiries sales@holmarc.com



BEAMSPLITTERS



Plate Beamsplitters

Plate beamsplitters find applications in splitting or re-combining a light beam. The front surface of our beamsplitter is coated with metallic or dielectric thin film and the back surface is AR coated. The anti-reflection coating on the back surface minimizes unwanted secondary reflection. Holmarc offers beamsplitters in three R/ T ratios; 30/70, 50/50 and 70/30. Custom R/T ratios and sizes are also available. Though our standard plate beamsplitters are designed for visible region between 400nm and 700nm, we can also provide these optics for ultraviolet and Infra-red spectral regions.

Specifications & Tolerances:

Material	BK7 or equivalent
Clear aperture	90%
Surface quality	40-20(scratch- dig)
Dimensional tolerance	+0.0, -0.2mm
Thickness tolerance	±0.2mm
Surface flatness	$\lambda/4$ @632.8nm
Parallelism	≤ 1 arc min
Coating (45° both side)	Front - metallic or dielectric Back - anti-reflection
Transmittance tolerance	± 5%
Reflectance tolerance	± 5%

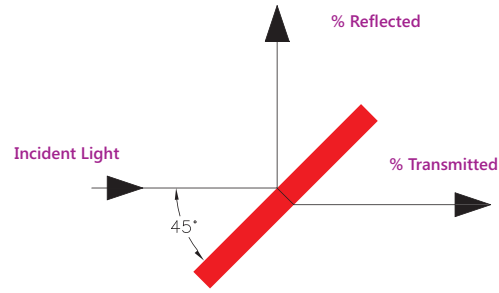
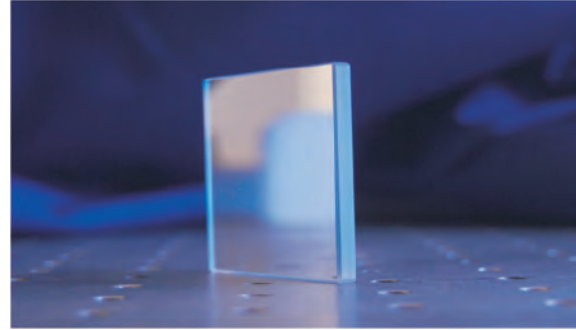
Metallic Plate Beamsplitters

SQUARE APERTURE

Model No:	Size (mm)	Thickness (mm)	R% / T%
HO-MPSBS-25A	25	6	30 / 70
HO-MPSBS-25B	25	6	50 / 50
HO-MPSBS-25C	25	6	70 / 30
HO-MPSBS-50A	50	6	30 / 70
HO-MPSBS-50B	50	6	50 / 50
HO-MPSBS-50C	55	6	70 / 30

CIRCULAR APERTURE

Model No:	Diameter (mm)	Thickness (mm)	R% / T%
HO-MPCBS-25A	25	6	30 / 70
HO-MPCBS-25B	25	6	50 / 50
HO-MPCBS-25C	25	6	70 / 30
HO-MPCBS-50A	50	6	30 / 70
HO-MPCBS-50B	50	6	50 / 50
HO-MPCBS-50C	55	6	70 / 30

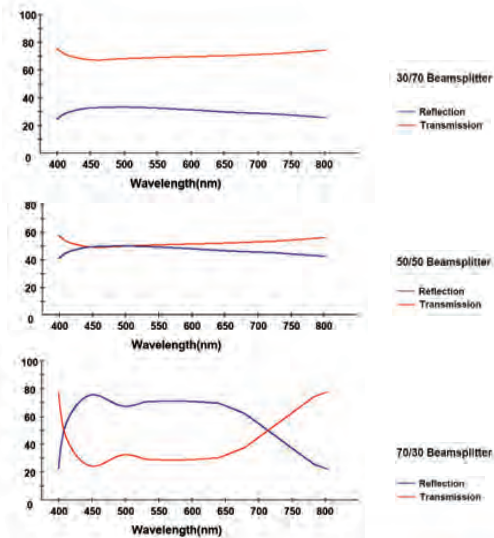


Beamsplitter mounts

KMR series

Vertical & horizontal mounting orientation
M6 Mounting hole provided

Page No: 055



Metallic Cube Beamsplitters

Low-Polarizing Beamsplitters

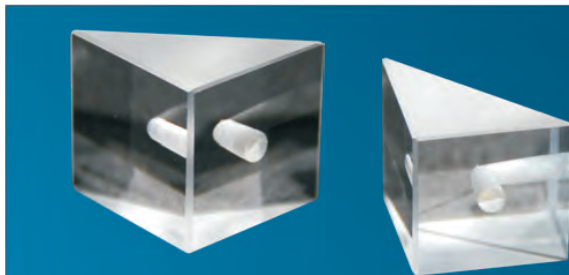
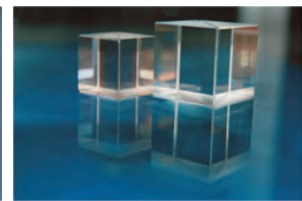
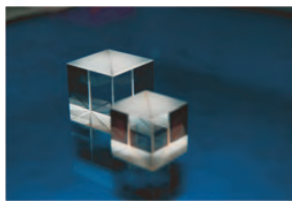


Holmarc's Metallic cube beamsplitters consists of two right angle prisms cemented together. The hypotenuse of the one prism has a combination of metallic-dielectric thin film coating. These are Low-polarizing beamsplitters; the transmission and reflection for S- & P- polarization components are within $\pm 10\%$. The cube faces of our beamsplitters have anti-reflection coatings for getting maximum transmittance. Beamsplitters with uncoated cube faces are also available. Custom sizes, coatings & split ratios are available as well.

Specifications & Tolerances:

Material	BK7 or equivalent
Surface quality	40 - 20 (scratch - dig)
Clear aperture	90 %
Dimensional tolerance	+0.00, -0.2mm
Surface flatness	$\lambda/4$ @ 632.8nm
Angle tolerance	± 5 arc min
Coating	Hypotenuse :- metallic + dielectric cube faces :
	1. Uncoated
	2. Single layer MgF_2
	3. Broadband AR, $R_{avg} < 0.5\%$ (400 - 700 nm)
Split ratio (R% / T%)	50/50 $\pm 10\%$
Absorption	< 10%
Polarization	< 10%

Model No.			Cube Size (mm)	Wavelength (nm)
Uncoated	Single Layer MgF_2	Broadband AR		
HO-MCBS-10	HO-MCBS-C-10	HO-MCBS-B-10	10	400 - 700
HO-MCBS-15	HO-MCBS-C-15	HO-MCBS-B-15	15	400 - 700
HO-MCBS-20	HO-MCBS-C-20	HO-MCBS-B-20	20	400 - 700
HO-MCBS-25	HO-MCBS-C-25	HO-MCBS-B-25	25	400 - 700
HO-MCBS-50	HO-MCBS-C-50	HO-MCBS-B-50	50	400 - 700



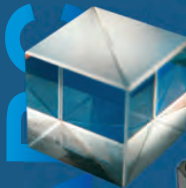
Custom Fabricated Optical components

A custom designed right angle prism with 2mm through hole at the center manufactured by Holmarc is shown in the figure. We have well-developed optic fabrication facilities and thin film coating unit managed by experienced technicians. Contact us for assistance with your custom manufacturing needs.

☎ 91-484 2540075 ☎ 91-484 2540882

mail@holmarc.com, sales@holmarc.com

CUBE MOUNTS



PMNP-R series



KPM-B-Series



KPMD-B-Series



KPM-S-Series

Note: Low-polarizing beamsplitters for custom wavelength regions are available.

Variable Beamsplitters (Mounted)

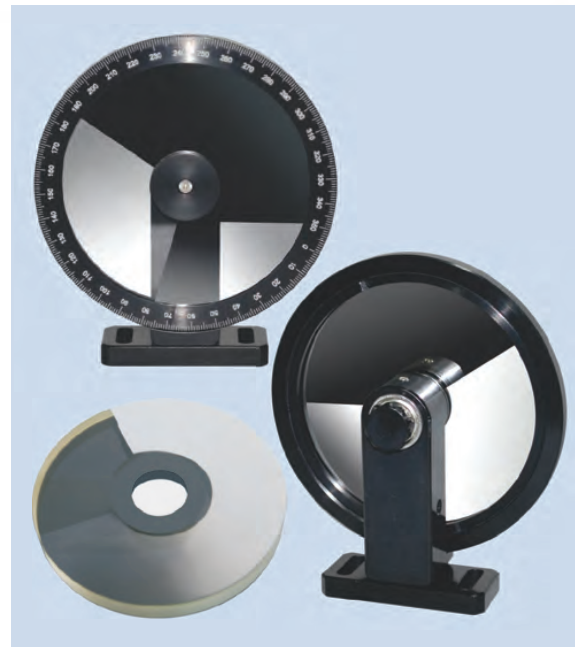
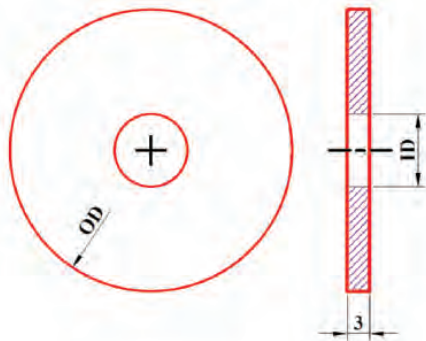


Our Circular Variable Beamsplitters (Mounted) find applications in splitting an incident beam into a transmitted and a reflected beam. The intensity ratio of transmitted and reflected beams can be controlled over a wide range. The front surface of

the variable beamsplitter has protected aluminium coating and the back surface has an anti-reflection coating to reduce secondary images.

Specifications & Tolerances:

Material	BK7 or equivalent & Fused Silica
Surface quality	40 - 20 (scratch - dig)
Dimensional tolerance	+0.00, -0.2mm
Thickness	3 ± 0.2mm
Surface flatness	λ/4 @ 632.8nm
Parallelism	≤ 1 arc min
Coating	Front surface= protective aluminium Back surface = anti-reflection coating



Model No.	OD(mm)	ID(mm)	Material
HO-VBS-N50	50	13	BK7 or equivalent
HO-VBS-F50	50	13	Fused Silica
HO-VBS-N75	75	25	BK7 or equivalent
HO-VBS-F75	75	25	Fused Silica
HO-VBS-N100	100	25	BK7 or equivalent
HO-VBS-F100	100	25	Fused Silica

Beam samplers



Beam Samplers are used to pick off the sample of a light beam by using the Fresnel reflection from uncoated surfaces. Beam samplers are used for monitoring applications where disturbance of the transmitted beam must be kept minimum. The back surface is wedged to avoid internal fringes and is anti-reflection coated to remove ghost images. Custom Sizes and anti-reflection coatings are available on special request.

Specifications & Tolerances:

Materials	BK7 or equivalent, Fused Silica
Surface quality	40 - 20 (scratch - dig)
Dimensional tolerance	+0.00, - 0.2mm
Thickness	± 0.2mm
Clear aperture	90 %
Surface flatness	λ/4 @632.8nm
Reflectance, R _{avg}	5% @ 45°
Wedge	30 ± 10 arc min
Coating	Front surface:- uncoated Back surface:- anti-reflection @ 400-700nm



Model No.	Diameter (mm)	Thickness (mm)	Material
HO-BS-N-12.5	12.5	3	BK7 or equivalent
HO-BS-F-12.5	12.5	3	Fused Silica
HO-BS-N-25	25	5	BK7 or equivalent
HO-BS-F-25	25	5	Fused Silica
HO-BS-N-50	50	8	BK7 or equivalent
HO-BS-F-50	50	8	Fused Silica

FILTERS

Absorptive Neutral Density Filters

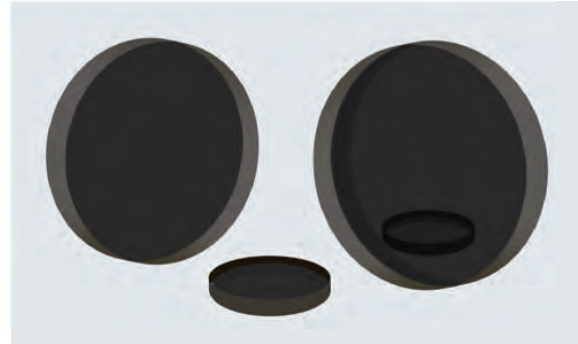


Absorptive Neutral Density Filters attain functions by absorbing light with minimal reflection. Holmarc's absorptive neutral density filters are made by four special filter glass materials from Schott. Each schott filter glass material has a spectrally flat absorption coefficient in the visible region. Since optical density is a function of the type of glass material and thickness, by varying these we are able to produce the entire line of absorptive ND filters. Holmarc offers Absorptive ND filters in unmounted and mounted options. Optical density of the absorptive ND filter is related to the transmission by the following equation;

$$OD = \log_{10} (1/T), \text{ or } T = 10^{-OD}$$

Specifications & Tolerances:

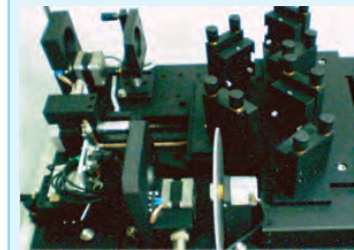
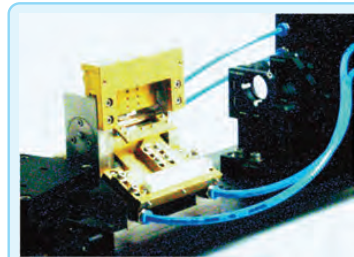
Materials	NG1, NG4, NG9 & NG11
Surface quality	40 - 20 (scratch - dig)
Diameter tolerance	+0.00, - 0.2mm
Clear aperture	90 %
Surface flatness	$\lambda/4$ @ 632.8nm
Parallelism	≤ 10 arc sec
Damage threshold	<500 mJ/cm ² @ 532nm CW laser



Absorptive Neutral Density Filters of custom sizes are available.

Variety of cells and holders are available from Holmarc. Please refer page no. 050. For custom designs, contact at mail@holmarc.com

Model No.		Diameter, D (mm)	Optical Density (OD)	Material
Unmounted	Mounted			
HO-NDA-12.5-0.1	HO-NDA-12.5M-0.1	12.5	0.1	NG11
HO-NDA-12.5-0.2	HO-NDA-12.5M-0.2	12.5	0.2	NG11
HO-NDA-12.5-0.3	HO-NDA-12.5M-0.3	12.5	0.3	NG11
HO-NDA-12.5-0.4	HO-NDA-12.5M-0.4	12.5	0.4	NG4
HO-NDA-12.5-0.5	HO-NDA-12.5M-0.5	12.5	0.5	NG4
HO-NDA-12.5-0.6	HO-NDA-12.5M-0.6	12.5	0.6	NG4
HO-NDA-12.5-1.0	HO-NDA-12.5M-1.0	12.5	1.0	NG4
HO-NDA-12.5-1.3	HO-NDA-12.5M-1.3	12.5	1.3	NG4
HO-NDA-12.5-2.0	HO-NDA-12.5M-2.0	12.5	2.0	NG9
HO-NDA-12.5-3.0	HO-NDA-12.5M-3.0	12.5	3.0	NG9
HO-NDA-12.5-4.0	HO-NDA-12.5M-4.0	12.5	4.0	NG9
HO-NDA-12.5-5.0	HO-NDA-12.5M-5.0	12.5	5.0	NG9
HO-NDA-12.5-6.0	HO-NDA-12.5M-6.0	12.5	6.0	NG1
HO-NDA-25-0.1	HO-NDA-25M-0.1	25	0.1	NG11
HO-NDA-25-0.2	HO-NDA-25M-0.2	25	0.2	NG11
HO-NDA-25-0.3	HO-NDA-25M-0.3	25	0.3	NG11
HO-NDA-25-0.4	HO-NDA-25M-0.4	25	0.4	NG4
HO-NDA-25-0.5	HO-NDA-25M-0.5	25	0.5	NG4
HO-NDA-25-0.6	HO-NDA-25M-0.6	25	0.6	NG4
HO-NDA-25-1.0	HO-NDA-25M-1.0	25	1.0	NG4
HO-NDA-25-1.3	HO-NDA-25M-1.3	25	1.3	NG4
HO-NDA-25-2.0	HO-NDA-25M-2.0	25	2.0	NG9
HO-NDA-25-3.0	HO-NDA-25M-3.0	25	3.0	NG9
HO-NDA-25-4.0	HO-NDA-25M-4.0	25	4.0	NG9
HO-NDA-25-5.0	HO-NDA-25M-5.0	25	5.0	NG9
HO-NDA-25-6.0	HO-NDA-25M-6.0	25	6.0	NG1



Holmarc specializes in the design & fabrication of precision optical and opto-mechanical assemblies. Beyond standard components, we customize our components for specific applications.

We engineer complex opto-mechanical subassemblies for customer specific requirements by leveraging our capabilities in design, manufacturing and testing of optical sub-assemblies.



Reflective Neutral Density Filters



Reflective Neutral Density Filters attenuate the light beam by a combination of reflection and absorption. Holmarc's reflective neutral density filters are made from BK7 or equivalent glass substrate with hard Inconel coating and are used to attenuate the intensity over a broad spectral region (350-1100nm). Holmarc

offers reflective neutral density filters in unmounted and mounted options. Optical density of the reflective neutral density filter is related to transmission by the following equation;

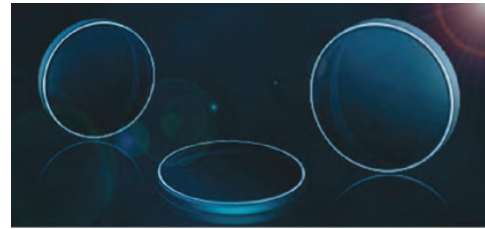
$$OD = \log_{10} (1/T), \text{ or } T = 10^{-OD}$$

Specifications & Tolerances:

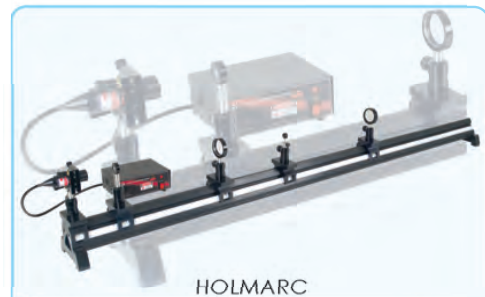
Material	BK7 or equivalent
Surface quality	40 - 20 (scratch - dig)
Diameter tolerance	+0.00, - 0.2mm
Thickness	2.0 ± 0.2mm
Clear aperture	90 %
Surface flatness	λ/4 @ 632.8nm
Parallelism	≤ 3 arc min
Damage threshold	≤ 200 mJ / cm ² (@532nm CW laser)

Model No.		Diameter, D (mm)	Optical Density (OD)
Unmounted	Mounted		
HO-NDR-12.5-0.1	HO-NDR-12.5M-0.1	12.5	0.1
HO-NDR-12.5-0.2	HO-NDR-12.5M-0.2	12.5	0.2
HO-NDR-12.5-0.3	HO-NDR-12.5M-0.3	12.5	0.3
HO-NDR-12.5-0.4	HO-NDR-12.5M-0.4	12.5	0.4
HO-NDR-12.5-0.5	HO-NDR-12.5M-0.5	12.5	0.5
HO-NDR-12.5-0.6	HO-NDR-12.5M-0.6	12.5	0.6
HO-NDR-12.5-1.0	HO-NDR-12.5M-1.0	12.5	1.0
HO-NDR-12.5-1.3	HO-NDR-12.5M-1.3	12.5	1.3
HO-NDR-12.5-2.0	HO-NDR-12.5M-2.0	12.5	2.0
HO-NDR-12.5-3.0	HO-NDR-12.5M-3.0	12.5	3.0
HO-NDR-12.5-4.0	HO-NDR-12.5M-4.0	12.5	4.0
HO-NDR-12.5-5.0	HO-NDR-12.5M-5.0	12.5	5.0
HO-NDR-12.5-6.0	HO-NDR-12.5M-6.0	12.5	6.0
HO-NDR-25-0.1	HO-NDR-25M-0.1	25	0.1
HO-NDR-25-0.2	HO-NDR-25M-0.2	25	0.2
HO-NDR-25-0.3	HO-NDR-25M-0.3	25	0.3
HO-NDR-25-0.4	HO-NDR-25M-0.4	25	0.4
HO-NDR-25-0.5	HO-NDR-25M-0.5	25	0.5
HO-NDR-25-0.6	HO-NDR-25M-0.6	25	0.6
HO-NDR-25-1.0	HO-NDR-25M-1.0	25	1.0
HO-NDR-25-1.3	HO-NDR-25M-1.3	25	1.3
HO-NDR-25-2.0	HO-NDR-25M-2.0	25	2.0
HO-NDR-25-3.0	HO-NDR-25M-3.0	25	3.0
HO-NDR-25-4.0	HO-NDR-25M-4.0	25	4.0
HO-NDR-25-5.0	HO-NDR-25M-5.0	25	5.0
HO-NDR-25-6.0	HO-NDR-25M-6.0	25	6.0

Neutral density filters of custom sizes are available. Variety of cells and mounts are available from Holmarc. For custom designs, contact at mail@holmarc.com



Reflective Neutral Density Filters of custom sizes are available. Variety of cells and holders are available from Holmarc. For custom designs, contact at mail@holmarc.com

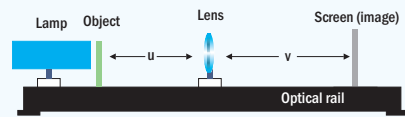


Geometrical Optics Comprehensive Kit

Model : HO-ED-GO-02

Geometrical optics-comprehensive kit contains everything students need to perform variety of precise optical experiments. 150cm-long graduated rail and carriage system securely holds optical devices such as light sources (laser & high bright LED), lenses, and other accessories. It allows user to conduct experiments in geometric principles and optics.

Students can easily adjust the positions of optical devices using the rail carriers. All the accessories can be easily mounted and adjusted.



Variable Neutral Density Filters (Mounted)

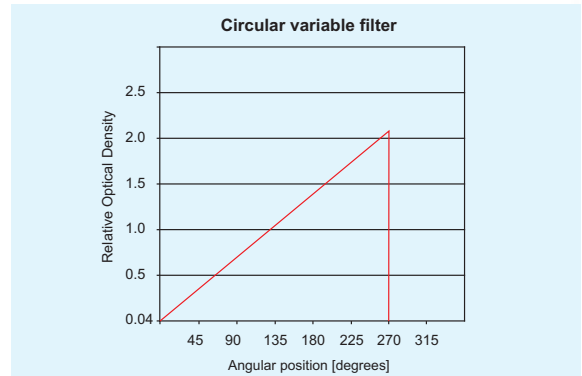
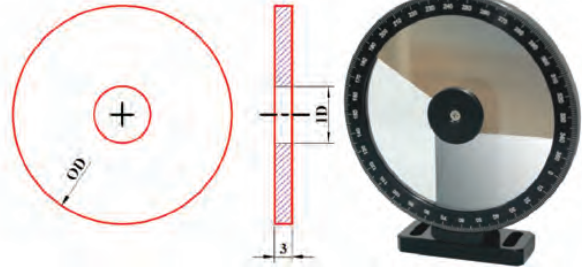


Our Circular Variable ND filters (Mounted) are designed to provide continuous variable attenuation by rotating the filter. Front side of our variable filter is coated with Inconel thin film and back side is anti-reflection coated to reduce unwanted reflection losses. Holmarc offers variable neutral density filters in two substrates; BK7 or equivalent & Fused Silica.

Specifications & Tolerances:

Substrate materials	.....	BK7 or equivalent & UV fused silica
Surface quality	.....	40 - 20 (scratch - dig)
Dimensional tolerance	.....	+0.00, -0.2mm
Thickness	.....	3 ± 0.2mm
Surface flatness	.....	λ/4 @ 632.8nm
Parallelism	.....	≤1arc min
Coating	.....	Front surface= Inconel Back surface = anti-reflection

Model No.	OD(mm)	ID(mm)	Material
HO-VND-N50	50	13	BK7 or equivalent
HO-VND-F50	50	13	UV Fused Silica
HO-VND-N75	75	25	BK7 or equivalent
HO-VND-F75	75	25	UV Fused Silica
HO-VND-N100	100	25	BK7 or equivalent
HO-VND-F100	100	25	UV Fused Silica



Filter wheels

REMOTE | MANUAL | PROGRAMMABLE

Filter wheel can be used in a number of applications requiring spectral selection or light intensity control.

This motorized filter wheel can be used in automated applications. The filter wheel can be controlled manually or by RS-232 interface.

Refer Page: 097 for details

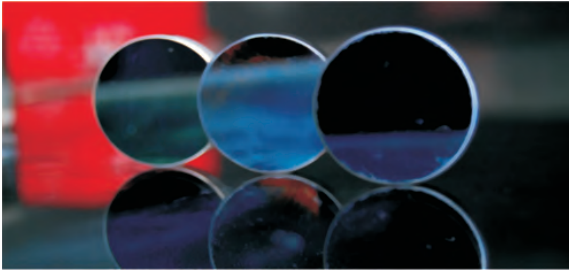


MIRRORS

Plano Aluminium Mirrors



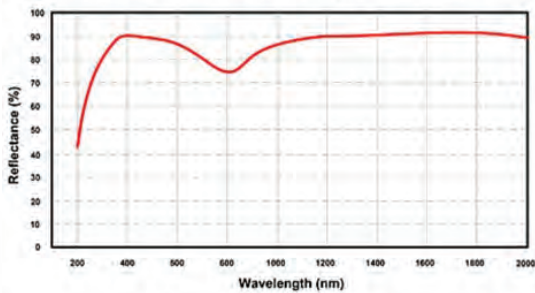
Aluminium Mirrors offer high reflection throughout ultraviolet, visible and NIR region. The mirror coating consists of an Aluminium layer and a very thin protective coating. Custom sizes and flatness are available other than standard models.



Specifications & Tolerances:

Material	Borofloat (schott)
Thickness tolerance	± 0.2mm
Dimensional tolerance	+0.0, -0.2mm
Clear aperture	90 % of diameter
Surface quality	40-20(scratch - dig)
Surface flatness	$\lambda/4@ 632.8\text{nm}$
Parallelism	≤ 3arc min
Coating	Protected aluminium
Reflectivity R_{avg}	> 88% @ 450nm-2 μm , > 93% @2 μm - 20 μm
Damage threshold	< 200 mJ/cm ² (@532nm CW laser)
Bevel	0.2 mm x 45°

Protected Aluminium : Wavelength vs Reflectance



Model No.	Size (mm)	Thickness (mm)
HO-PCMA-10	Φ10	4
HO-PSMA-10	10 x 10	4
HO-PCMA-12.5	Φ12.5	6
HO-PSMA-12.5	12.5 x 12.5	6
HO-PCMA-25	Φ25	6
HO-PSMA-25	25 x 25	6
HO-PCMA-50	Φ50	6
HO-PSMA-50	50 x 50	6
HO-PCMA-75	Φ75	10
HO-PCMA-100	Φ100	10

Plano Silver Mirrors



Holmarc's silver coated mirror exhibits high reflectance compared to aluminium coated mirrors. Custom sizes and flatness are available other than standard models.

Specifications & Tolerances:

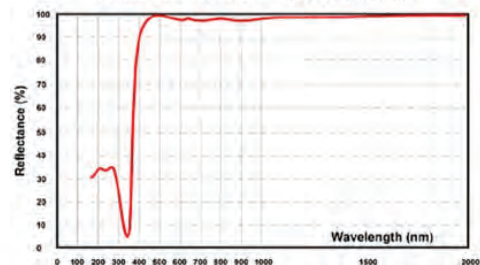
Material	Borofloat (schott)
Thickness tolerance	± 0.2mm
Dimensional tolerance	+0.0, -0.2mm
Clear aperture	90 % of diameter
Surface quality	40-20(scratch - dig)
Surface flatness	$\lambda/4@ 632.8\text{nm}$
Parallelism	≤ 3 arc min
Coating	Protected silver
Reflectivity R_{avg}	> 96% @ 450nm-2 μm , > 95% @2 μm - 20 μm
Damage threshold	< 200 mJ/cm ² (@532nm CW laser)
Bevel	0.2 mm x 45°



Custom sizes are available. Variety of cells and mounts are available from Holmarc. For custom designs, contact at mail@holmarc.com

Model No.	Size (mm)	Thickness (mm)
HO-PCMS-10	Φ10	4
HO-PSMS-10	10x10	4
HO-PCMS-12.5	Φ12.5	6
HO-PSMS-12.5	12.5x12.5	6
HO-PCMS-25	Φ25	6
HO-PSMS-25	25 x 25	6
HO-PCMS-50	Φ50	6
HO-PSMS-50	50 x 50	6
HO-PCMS-75	Φ75	10
HO-PCMS-100	Φ100	10

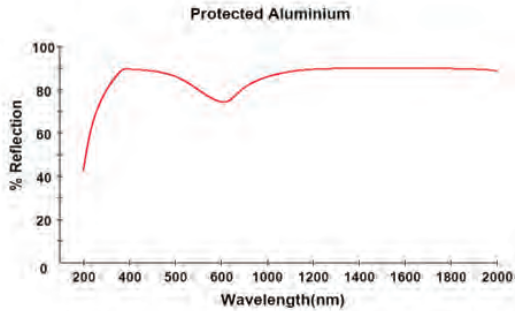
Protected Silver : Wavelength vs Reflectance



Concave Mirrors



A concave mirror is a spherical mirror with reflective surface curved inwards. Concave mirrors produce real and virtual images. These mirrors find applications in laser beam concentration and quality imaging. Holmarc's concave mirrors have protected aluminium coating and offer high reflection throughout UV, visible and NIR region. Custom sizes and focal lengths are available as well.



Specifications & Tolerances:

Material	Borofloat (schott)
Thickness tolerance	± 0.2mm
Dimensional tolerance	+0.0, -0.2mm
Clear aperture	90 % of diameter
Surface quality	40-20(scratch - dig)
Surface flatness	$\lambda/4$ @ 632.8nm
Parallelism	≤ 3 arc min
Coating	Protected aluminium
Reflectivity R_{avg}	> 88% @ 450nm-2 μ m, > 93% @ 2 μ m - 20 μ m
Damage threshold	< 200 mJ/cm ² (@532nm CW laser)
Bevel	0.2 mm x 45°



"Concave mirrors with protected silver and protected gold coating are available on special requests."

Model No.	Diameter (mm)	Focal Length (mm)
HO-CCMA-12.5-02	12.5	25
HO-CCMA-12.5-04	12.5	50
HO-CCMA-25-01	25	25
HO-CCMA-25-02	25	50
HO-CCMA-25-03	25	75
HO-CCMA-50-01	50	50
HO-CCMA-50-02	50	100
HO-CCMA-50-03	50	150
HO-CCMA-50-04	50	200
HO-CCMA-75-01	75	75
HO-CCMA-75-02	75	150
HO-CCMA-75-2.6	75	200
HO-CCMA-100-05	100	500
HO-CCMA-100-10	100	1000
HO-CCMA-100-15	100	1500
HO-CCMA-150-6.6	150	1000
HO-CCMA-150-10	150	1500

Broadband Metallic Mirrors

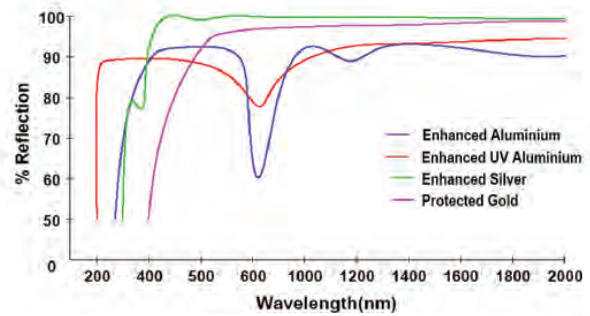


Broadband metallic mirrors provide high reflectance for a particular wavelength region. Holmarc's broadband metallic mirrors make use of dielectric layers along with metallic coating to increase the reflectance for the required wavelength range.

We provide mirrors with enhanced aluminium, enhanced silver and protected gold coatings. Custom sizes and flatness are available as well.



Specifications & Tolerances:	
Material	Borofloat (schott)
Thickness tolerance	± 0.2mm
Dimensional tolerance	+0.0, -0.2mm
Clear aperture	90 % of diameter
Surface quality	40-20(scratch - dig)
Surface flatness	λ/4@ 632.8nm
Coating	UV enhanced aluminium/ Enhanced aluminium/ Enhanced silver / protected gold
Damage threshold	< 200 mJ/cm ² (@532nm CW laser)
Bevel	0.2 mm x 45°

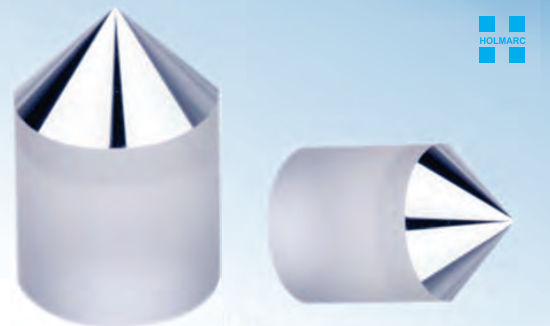


Model No.	Diameter D(mm)	Thickness T (mm)	Type	Reflectance	Wavelength Range(nm)
HO-BMM-UEA12.5	12.5	6	UV Enhanced Aluminium	>85%	250 - 400
HO-BMM-UEA25	25	6	UV Enhanced Aluminium	>85%	250 - 400
HO-BMM-UEA50	50	6	UV Enhanced Aluminium	>85%	250 - 400
HO-BMM-EA12.5	12.5	6	Enhanced Aluminium	>94%	400 - 700
HO-BMM-EA25	25	6	Enhanced Aluminium	>94%	400 - 700
HO-BMM-EA50	50	6	Enhanced Aluminium	>94%	400 - 700
HO-BMM-ES12.5	12.5	6	Enhanced Silver	>96%	400 - 2000
HO-BMM-ES25	25	6	Enhanced Silver	>96%	400 - 2000
HO-BMM-ES50	50	6	Enhanced Silver	>96%	400 - 2000
HO-BMM-PG12.5	12.5	6	Protected Gold	>96%	650 - IR
HO-BMM-PG25	25	6	Protected Gold	>96%	650 - IR
HO-BMM-PG50	50	6	Protected Gold	>96%	650 - IR

Cone Mirrors

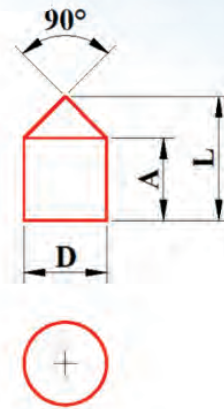


Holmarc's Cone Mirrors are made from BK7 or equivalent optical glass and are used for 360 degree illumination applications. The cone surface is coated with protective aluminium.



Specifications & Tolerance:	
Material	BK7 or equivalent
Clear aperture	90%
Diameter tolerance	+0.0, -0.2mm
Thickness tolerance	± 0.2mm
Length tolerance	± 0.1mm
Angle tolerance	± 6 arcmin
Surface quality	40-20(Scratch - dig)
Coating	Protected aluminium
Bevel	0.2 mm x 45°

Model No.	Diameter (mm)	A (mm)	L (mm)
HO-CM-2	2	2	3
HO-CM-3	3	3	4.5
HO-CM-5	5	5	7.5
HO-CM-10	10	10	15



45° Rod Mirrors

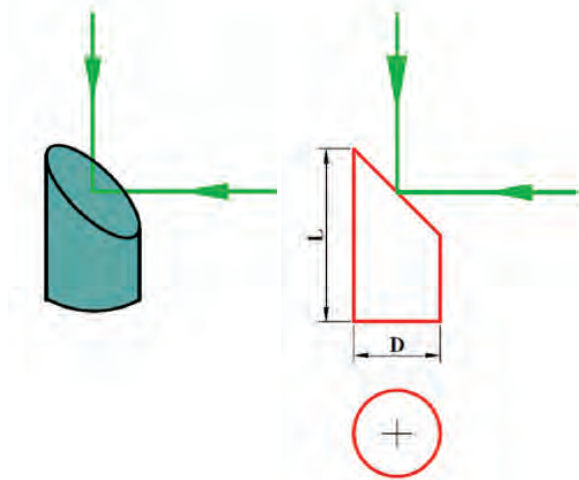
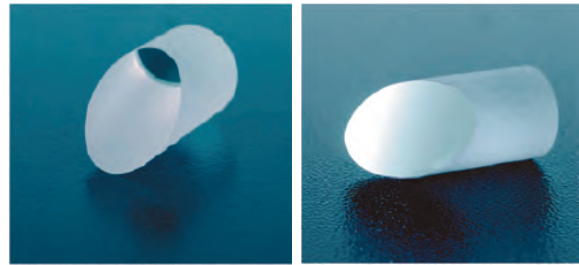


Holmarc's 45° Rod mirrors are made from BK7 or equivalent material and are used to bend laser or image path by 90°. Custom mirrors are available on special request. The elliptical surface of the rod mirrors are coated with protected aluminium.

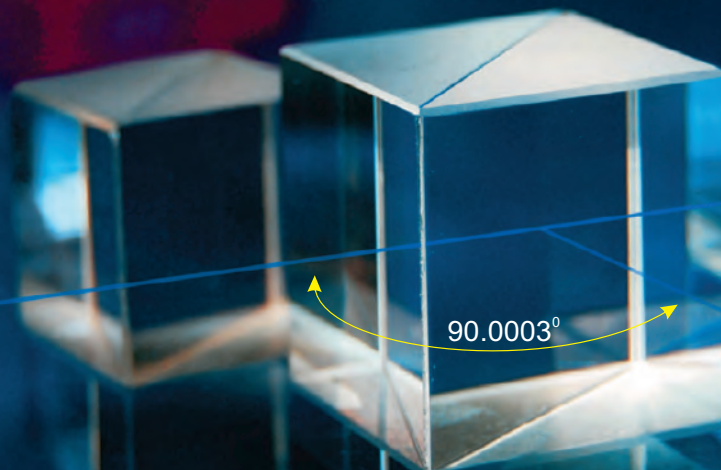
Specifications & Tolerances:

Material	BK7 or equivalent
Clear aperture	90 %
Diameter tolerance	+0.0, -0.2mm
Length tolerance	± 0.1mm
Angle tolerance	± 10 arc min
Surface quality	40 - 20(Scratch - dig)
Coating	Protected aluminium on elliptical surface
Bevel	0.2 mm x 45°

Model No.	Diameter, D (mm)	Length, L (mm)
HO-RM45-03	3	6
HO-RM45-04	4	8
HO-RM45-05	5	10
HO-RM45-06	6	12
HO-RM45-08	8	16
HO-RM45-10	10	20
HO-RM45-12	12	24
HO-RM45-15	15	30



Precision Engineered Optics from Holmarc



Contact us for custom optical fabrication
sales@holmarc.com, optics@holmarc.com



DIFFUSERS



Our diffuser spreads out or scatters light to give soft light. Holmarc's ground glass diffusers are available in fine, medium and coarse grade. Typical applications are in screens and illumination.

Specifications & Tolerances:

Material	Float glass
Dimensional tolerance	$\pm 0.20\text{mm}$ (dia.)
Thickness	$2 \pm 0.20\text{mm}$
Parallelism	≤ 3 arc min

Fused silica ground glass diffusers are also available, size up to 50mm in diameter, ideal for UV illuminated diffusion.

Ground glass diffusers are available in custom size.

Call or email for a quote.

sales@holmarc.com, optics@holmarc.com

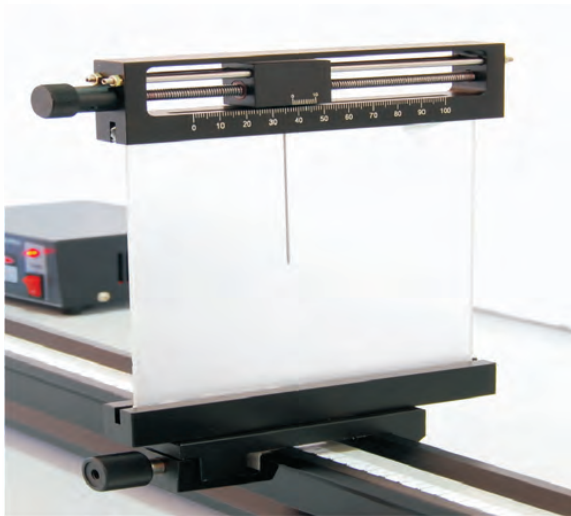


Fig. : Diffuser Screen with Measuring unit



Model No.	Diameter (mm)	Grade (μm)
HO-DF-25-32	25	32
HO-DF-25-22	25	22
HO-DF-25-15	25	15
HO-DF-50-32	50	32
HO-DF-50-22	50	22
HO-DF-50-15	50	15
HO-DF-100-32	100	32
HO-DF-100-22	100	22
HO-DF-100-15	100	15

Model No.	Size (mm)	Grade (μm)
HO - DF - 50S - 32	50 x 50	32
HO - DF - 50S - 22	50 x 50	22
HO - DF - 50S - 15	50 x 50	15
HO - DF - 100S - 32	100 x 100	32
HO - DF - 100S - 22	100 x 100	22
HO - DF - 100S - 15	100 x 100	15
HO - DF - 150S - 32	150 x 150	32
HO - DF - 150S - 22	150 x 150	22
HO - DF - 150S - 15	150 x 150	15
HO - DF - 200S - 32	200 x 200	32
HO - DF - 200S - 22	200 x 200	22
HO - DF - 200S - 15	200 x 200	15

DIFFUSER CELL & CELL HOLDERS



Variety of cells and holders are available from Holmarc. Please refer page no. 096. For custom designs, contact at sales@holmarc.com

Diffuser Plate with Rotator

This device consists of a circular glass diffuser fixed to the shaft of a DC motor. The controller for this device provide speed adjustments from 300 - 1500 rpm.

Visit us at www.holmarc.com

E-mail: Sales@holmarc.com
PH : +91 484 2540075

Refer page 099



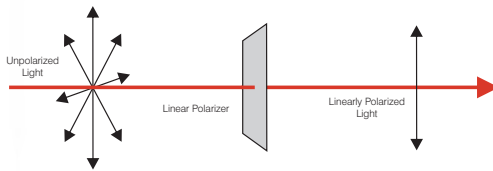
POLARIZING OPTICS

Linear Film Polarizers



Commercial-quality film polarizers are available. These linear polarizers have 25% transmittance for unpolarized light. Two crossed sheets have an average transmission of 0.04%. The sheets are neutral gray in color. It can be used as a variable attenuator.

Linear film polarizers are available in custom sizes. Sandwiched type linear film polarizers are also available. In this model, a linear film polarizer is sandwiched between two polished BK7 glass discs and mounted on a black anodized aluminium threaded mount. The mounts are made with standard threads so that it can be mounted to any opto- mechanical mount which has similar thread.



Specifications & Tolerances:

Optical type	Transmissive
Color	Neutral gray
Polarization	Linear
Polarization efficiency	99%
Polarizer sheet Thickness	0.18mm
Spectral range	380-700nm
Extinction ratio	≥ 1000:1

Model No.	Type	Diameter (mm)	Clear aperture (mm)	Mount
HO-LFP-12.5	sheet	12.5	-	Unmounted
HO-LFP-25	sheet	25	-	Unmounted
HO-LFP-50	sheet	50	-	Unmounted
HO-LFPS-12.5	Sandwiched	12.5	10	SM05
HO-LFPS-25	Sandwiched	25	22	SM1
HO-LFPS-50	Sandwiched	50	46	SM2

Wave Plates / Retarders

Multiple-order Wave Plates



Holmarc's Multiple-Order Wave Plates are made from laser grade quartz crystal. These are designed to give retardance of several full waves, plus the required fraction. These wave plates are available as mounted or unmounted and provide

either half-wave or quarter-wave retardation at chosen wavelengths. All wave plates are AR coated to increase transmission at design wavelength. The retardance of multiple-order wave plate depends on temperature, wavelength, angle of incidence and degree of collimation.

Specifications & Tolerances:

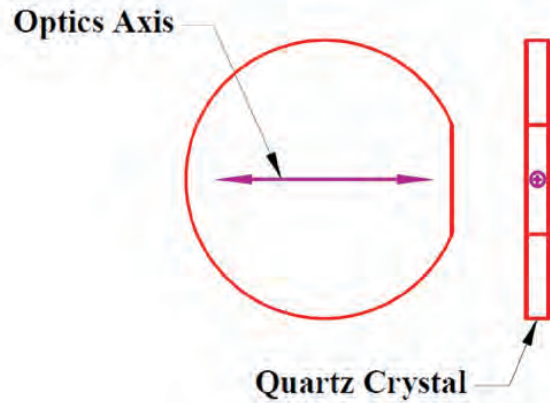
Material	Quartz crystal
Diameter tolerance	± 0.2mm
Surface quality	20 - 10 (scratch-dig)
Surface flatness	$\lambda / 4$ @ 632.8nm
AR coating	Multilayer, R < 0.5% @ design wavelength
Beam deviation	< 10 arc sec
Retardance accuracy	< $\lambda / 200$



Half-wave plates are used to rotate plane of polarization of linearly polarized light through any angle, while quarter - wave plates are used to convert linearly polarized light into circularly polarized light and vice-versa

Unmounted Model No.	Diameter	Retardation
HO-WMH-12.5	12.5 mm	$\lambda/2$
HO-WMH-25	25 mm	
HO-WMQ-12.5	12.5 mm	$\lambda/4$
HO-WMQ-25	25 mm	

Mounted Model No.	Mount Diameter	Clear Aperture	Retardation
HO-WMH-12.5M	25 mm	10 mm	$\lambda/2$
HO-WMH-25M	30 mm	22 mm	
HO-WMQ-12.5M	25 mm	10 mm	$\lambda/4$
HO-WMQ-25M	30 mm	22 mm	



MULTIPLE-ORDER HALF-WAVE PLATES

Model No.				Wavelength (nm)
Unmounted		Mounted		
HO-WMH-12.5-405	HO-WMH-25-405	HO-WMH-12.5M-405	HO-WMH-25M-405	405
HO-WMH-12.5-488	HO-WMH-25-488	HO-WMH-12.5M-488	HO-WMH-25M-488	488
HO-WMH-12.5-514	HO-WMH-25-514	HO-WMH-12.5M-514	HO-WMH-25M-514	514
HO-WMH-12.5-532	HO-WMH-25-532	HO-WMH-12.5M-532	HO-WMH-25M-532	532
HO-WMH-12.5-633	HO-WMH-25-633	HO-WMH-12.5M-633	HO-WMH-25M-633	633
HO-WMH-12.5-670	HO-WMH-25-670	HO-WMH-12.5M-670	HO-WMH-25M-670	670
HO-WMH-12.5-780	HO-WMH-25-780	HO-WMH-12.5M-780	HO-WMH-25M-780	780
HO-WMH-12.5-808	HO-WMH-25-808	HO-WMH-12.5M-808	HO-WMH-25M-808	808

MULTIPLE-ORDER QUARTER-WAVE PLATES

Model No.				Wavelength (nm)
Unmounted		Mounted		
HO-WMQ-12.5-405	HO-WMQ-25-405	HO-WMQ-12.5M-405	HO-WMQ-25M-405	405
HO-WMQ-12.5-488	HO-WMQ-25-488	HO-WMQ-12.5M-488	HO-WMQ-25M-488	488
HO-WMQ-12.5-514	HO-WMQ-25-514	HO-WMQ-12.5M-514	HO-WMQ-25M-514	514
HO-WMQ-12.5-532	HO-WMQ-25-532	HO-WMQ-12.5M-532	HO-WMQ-25M-532	532
HO-WMQ-12.5-633	HO-WMQ-25-633	HO-WMQ-12.5M-633	HO-WMQ-25M-633	633
HO-WMQ-12.5-670	HO-WMQ-25-670	HO-WMQ-12.5M-670	HO-WMQ-25M-670	670
HO-WMQ-12.5-780	HO-WMQ-25-780	HO-WMQ-12.5M-780	HO-WMQ-25M-780	780
HO-WMQ-12.5-808	HO-WMQ-25-808	HO-WMQ-12.5M-808	HO-WMQ-25M-808	808



Apparatus for the Study of Polarisation by Waveplates

Model : HO-ED-P-07

A wave plate or retarder is an optical device that alters the polarization state of a light beam travelling through it. A typical wave plate is simply a birefringent crystal like quartz, calcite etc. with a particular thickness.

Experiment Examples:

- Intensity measurement as a function of analyzer angle
- Polarization study by quarter wave plate - elliptical & circular polarization.
- Polarization study by half wave plate - change of polarization axis.
- Verification of Malus' law



Visit us at
www.holmarc.com
E-mail: Sales@holmarc.com
PH : +91 484 2540075

Zero-order Wave Plates



Zero order wave plates are made by combining two multiple-order wave plates with their optical axis aligned perpendicular to each other. The effect of the first plate is cancelled by the second, except for the residual difference between them. Holmarc's mounted zero-order wave plates provide either half-wave or quarter-wave retardation at their design wavelengths and are made by air-spaced design for high damage threshold. Zero order wave plates are much less sensitive to wavelength and temperature changes. All plates are AR coated to increase transmission at their design wavelength.

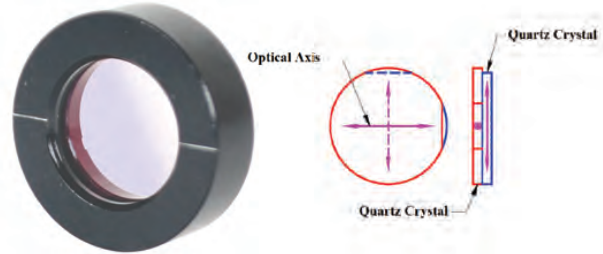
Model No.	Mount Diameter	Clear Aperture	Retardation
HO-WZH-10M	25 mm	10 mm	$\lambda/2$
HO-WZH-22M	30 mm	22 mm	
HO-WZQ-10	25 mm	10 mm	$\lambda/4$
HO-WLQ-22M	30 mm	22 mm	

ZERO-ORDER HALF-WAVE PLATES

Model No.	Wavelength (nm)
HO-WZH-10M-405	405
HO-WZH-10M-488	488
HO-WZH-10M-514	514
HO-WZH-10M-532	532
HO-WZH-10M-633	633
HO-WZH-10M-670	670
HO-WZH-10M-780	780
HO-WZH-10M-808	808

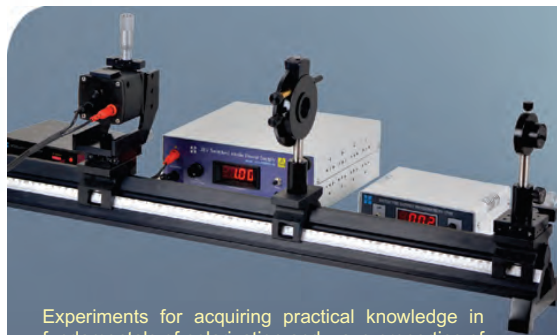
Specifications & Tolerances:

Material	Quartz crystal
Diameter tolerance	$\pm 0.2\text{mm}$
Surface quality	20 - 10 (scratch-dig)
Wavefront distortion	$\lambda / 4 @ 632.8\text{nm}$
AR coating	Multilayer, $R < 0.5\%$ @ design wavelength
Retardance accuracy	$< \lambda / 300$



ZERO-ORDER QUARTER-WAVE PLATES

Model No.	Wavelength (nm)
HO-WZQ-10M-405	405
HO-WZQ-10M-488	488
HO-WZQ-10M-514	514
HO-WZQ-10M-532	532
HO-WZQ-10M-633	633
HO-WZQ-10M-670	670
HO-WZQ-10M-780	780
HO-WZQ-10M-808	808



Experiments for acquiring practical knowledge in fundamentals of polarization and wave properties of light are available from Holmarc.



The following topics are covered

- Polarization by **Transmission**
- Polarization by **Reflection**
- Polarization by **Refraction**
- Polarization by **Scattering**



Educational Apparatus For
General & Engineering
PHYSICS

All products are manufactured and marketed by Holmarc Opto-Mechatronics Pvt. Ltd

EDUCATIONAL APPARATUS FOR

Polarization



EXPERIMENTS



Brewster's Angle Apparatus
Model No: HO-ED-P-01



Faraday Effect Apparatus
Model No: HO-ED-P-04



Malus Law Apparatus
Model No: HO-ED-P-02



Kerr Effect Apparatus
Model No: HO-ED-P-05A



Polarisation Demo Kit
Model No: HO-ED-P-03



Ellipsometer
Model No: HO-TCE-01

Contact Us :

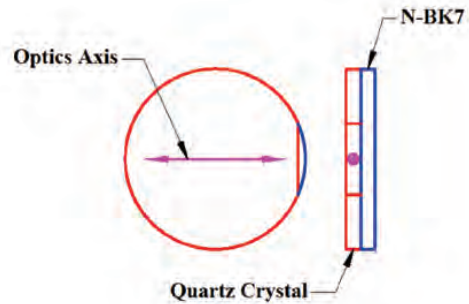
B.7., H.M.T. Industrial Estate
H.M.T. P.O. Kalamassery
Kochi - 683 503, Kerala, India.

Ph : 91-484-2540075 (Off)
E-mail : sales@holmarc.com
optics@holmarc.com

Cemented True Zero-order Wave Plates



Holmarc's Cemented True Zero-Order wave plates are made of BK7 or equivalent substrate and a true zero-order wave plate. Since true zero-order wave plate is very thin and easily damaged, the BK7 or equivalent substrate is used to strengthen the wave plate. Cemented true zero-order wave plates provide accurate retardance and are less sensitive to temperature changes. Holmarc's cemented true zero-order plates provide either half-wave or quarter wave retardation and are ideal for low and medium laser power applications. All plates are multi-layer AR coated to decrease reflection losses at their design wavelength.



Specifications & Tolerances:

Material	Quartz crystal & BK7 or equivalent
Diameter tolerance	± 0.2mm
Surface quality	20 - 10 (scratch-dig)
Wavefront distortion	$\lambda / 4$ @ 632.8nm
AR coating	Multilayer, R < 0.5% @ design wavelength
Retardance accuracy	< $\lambda / 300$

Unmounted Model No.	Diameter	Retardation	Unmounted Model No.	Mount Diameter	Clear Aperture	Retardation
HO-WCZH-12.5	12.5 mm	$\lambda/2$	HO-WCZH-12.5M	25 mm	10 mm	$\lambda/2$
HO-WCZH-25	25 mm		HO-WCZH-25M	30 mm	22 mm	
HO-WCZQ-12.5	12.5 mm	$\lambda/4$	HO-WCZQ-12.5M	25 mm	10 mm	$\lambda/4$
HO-WCZQ-25	25 mm		HO-WCZQ-25M	30 mm	22 mm	

CEMENTED TRUE ZERO-ORDER HALF-WAVE PLATES

Model No.				Wavelength (nm)
Unmounted		Mounted		
HO-WCZH-12.5-405	HO-WCZH-25-405	HO-WCZH-12.5M-405	HO-WCZH-25M-405	405
HO-WCZH-12.5-488	HO-WCZH-25-488	HO-WCZH-12.5M-488	HO-WCZH-25M-488	488
HO-WCZH-12.5-514	HO-WCZH-25-514	HO-WCZH-12.5M-514	HO-WCZH-25M-514	514
HO-WCZH-12.5-532	HO-WCZH-25-532	HO-WCZH-12.5M-532	HO-WCZH-25M-532	532
HO-WCZH-12.5-633	HO-WCZH-25-633	HO-WCZH-12.5M-633	HO-WCZH-25M-633	633
HO-WCZH-12.5-670	HO-WCZH-25-670	HO-WCZH-12.5M-670	HO-WCZH-25M-670	670
HO-WCZH-12.5-780	HO-WCZH-25-780	HO-WCZH-12.5M-780	HO-WCZH-25M-780	780
HO-WCZH-12.5-808	HO-WCZH-25-808	HO-WCZH-12.5M-808	HO-WCZH-25M-808	808

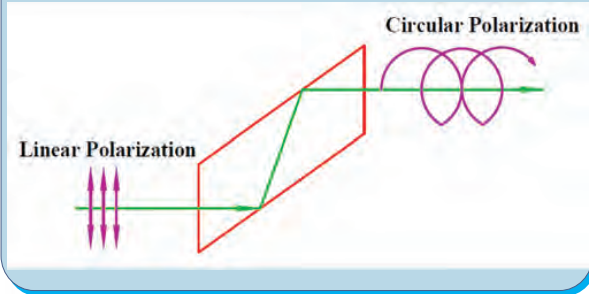
CEMENTED TRUE ZERO-ORDER QUARTER-WAVE PLATES

Model No.				Wavelength (nm)
Unmounted		Mounted		
HO-WCZQ-12.5-405	HO-WCZQ-25-405	HO-WCZQ-12.5M-405	HO-WCZQ-25M-405	405
HO-WCZQ-12.5-488	HO-WCZQ-25-488	HO-WCZQ-12.5M-488	HO-WCZQ-25M-488	488
HO-WCZQ-12.5-514	HO-WCZQ-25-514	HO-WCZQ-12.5M-514	HO-WCZQ-25M-514	514
HO-WCZQ-12.5-532	HO-WCZQ-25-532	HO-WCZQ-12.5M-532	HO-WCZQ-25M-532	532
HO-WCZQ-12.5-633	HO-WCZQ-25-633	HO-WCZQ-12.5M-633	HO-WCZQ-25M-633	633
HO-WCZQ-12.5-670	HO-WCZQ-25-670	HO-WCZQ-12.5M-670	HO-WCZQ-25M-670	670
HO-WCZQ-12.5-780	HO-WCZQ-25-780	HO-WCZQ-12.5M-780	HO-WCZQ-25M-780	780
HO-WCZQ-12.5-808	HO-WCZQ-25-808	HO-WCZQ-12.5M-808	HO-WCZQ-25M-808	808

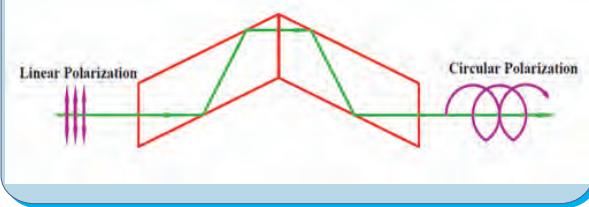


Fresnel Rhomb Retarders

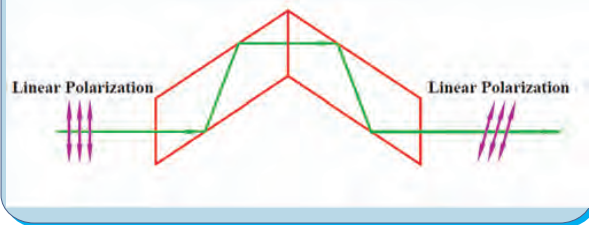
a. Single Fresnel Rhomb Quarter-wave retarder: - A single Fresnel rhomb quarter wave retarder produces a phase shift of 90° ($\lambda/4$) due to internal reflections at two surfaces. This rhomb gives an output parallel to the input, but laterally displaced



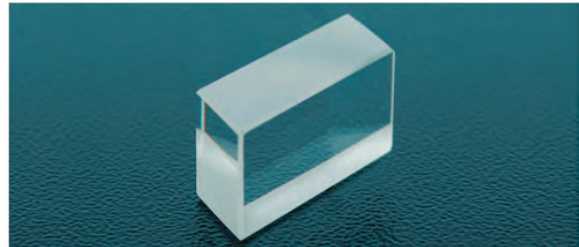
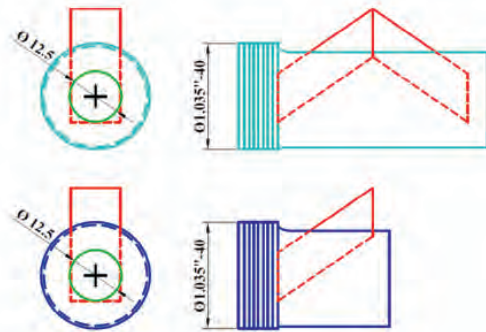
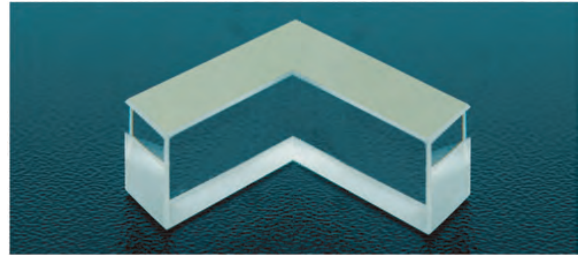
b. Double Fresnel Rhomb Quarter-Wave Retarder: - A Double Fresnel rhomb quarter wave retarder produces a phase shift of 90° ($\lambda/4$) by the internal reflections at four surfaces. This rhomb has co-axial input and output.



c. Double Fresnel Rhomb Half-wave retarder: - A Double Fresnel rhomb Half-wave retarder produces a phase shift of 180° ($\lambda/2$) by the internal reflections at four surfaces. This rhomb has co-axial input and output.



Fresnel Rhomb retarders give half-wave or quarter-wave retardation nearly independent of wavelengths. Holmarc's Fresnel rhombs are designed in such a way that a 22.5° or 45° phase shift occurs at each internal reflection creating a total half-wave or quarter-wave retardance. Holmarc's mounted Fresnel rhombs are manufactured in BK7 or equivalent substrate and are available in 3 different types.



Specifications & Tolerances:

Material	BK7 or equivalent
Surface quality	20 - 10 (scratch-dig)
Clear aperture	10mm, +0.00, -0.2mm
Retardance variation	2 %
Wavelength range	400 - 900nm

Model No.	Type	Retardation	Mount Diameter (mm)
HO-SFRQ-10	Single Fresnel Rhomb Quarter-wave Retarder	$\lambda/4$	25
HO-DFRQ-10	Double Fresnel Rhomb Quarter-wave Retarder	$\lambda/4$	25
HO-DFRH-10	Double Fresnel Rhomb Half-wave Retarder	$\lambda/2$	25



Soleil-Babinet Compensator

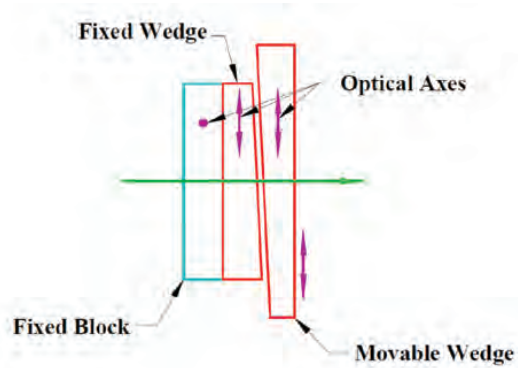


Soleil - Babinet Compensators are zero order wave plates with variable retardation over a wide range of wavelengths. These are used to measure state of polarization or to produce certain retardation for different wavelengths. It consists of a birefringent wedge which is movable and another birefringent wedge which is fixed to a compensator plate. The retardance is adjusted by moving the position of the movable wedge relative to the fixed wedge. Holmarc's Soleil - Babinet compensators are equipped with precision digital micrometer and are made by laser grade quartz crystals. The wedges are AR coated to reduce reflection losses.

Specifications & Tolerances:

Material	Quartz crystal
Surface quality	40 -20 (scratch-dig)
Retardance adjustment	0 - 2π (full wave)
Rotation	360° continuous
Detent Index stops	Every 45 degree
Digital readout resolution	1 microns
Transmitted wavefront error	$\lambda/4$
AR coating	Uncoated Broadband AR ($R_{mp} \leq 0.5\%$)

Model No.		Clear Aperture (mm)	Wavelength Range (nm)
Uncoated	Broadband AR		
HO-SBC-10	HO-SBC-10B	10	400 - 700



HOLMARC OPTICS

Optical Design Fundamentals

Lens elements, Lens aberrations and Optical systems

HOLMARC OPTO-MECHANICS PVT. LTD.

LENS ELEMENTS

LENS ABERRATIONS

OPTICAL SYSTEMS

Order Now !!!

Optical Design Fundamental chart

Visit us at : www.holmarc.com

HOLMARC Optics

Bio LABS

Optomechanics

www.holmarc.com

SPECTRUM

OPTICAL SYSTEMS

Beam Expanders



Holmarc beam expanders provide accurate, unobstructed and achromatic expansion of any collimated input source and are easy to use. The most common type of beam expander is derived from the Galilean telescope which usually has one negative input lens and one positive output lens. The main advantage of Galilean design is that its overall length is smaller compared to a similar power Keplerian design. Following Beam expanders are of the Galilean type and comes with M6 mounting hole. These are easy to mount and align using our standard posts and mounts.

Model No.	Magnification(M)	Aperture (A)
HO-BE2X-A3	2 x	3 mm
HO-BE2X-A5	2 x	5 mm
HO-BE2X-A10	2 x	10 mm
HO-BE2X-A15	2 x	15 mm
HO-BE5X-A2	5 x	2 mm
HO-BE5X-A3	5 x	3 mm
HO-BE5X-A5	5 x	5 mm
HO-BE5X-A10	5 x	10 mm
HO-BE10X-A2	10 x	2 mm
HO-BE10X-A3	10 x	3 mm
HO-BE10X-A4	10 x	4 mm
HO-BE10X-A5	10 x	5 mm
HO-BE15X-A2	15 x	2 mm
HO-BE15X-A3	15 x	3 mm

Adjustable focus for collimation at various wavelengths

Custom Beam Expanders

For automated applications, motorized beam expanders are available. With motorized systems, both expansion ratio and focus can be controlled independently from a remote location using control electronics and software. We also offer custom designed beam expanders for specific requirements. For further information on custom laser beam expanders, please contact us at sales@holmarc.com.

- ▶ Galilean type
- ▶ Ideal for laser processing application
- ▶ Custom beam expansion ratios available
- ▶ Black anodized aluminium as housing material
- ▶ User specified AR coating
- ▶ Various type of mounting options

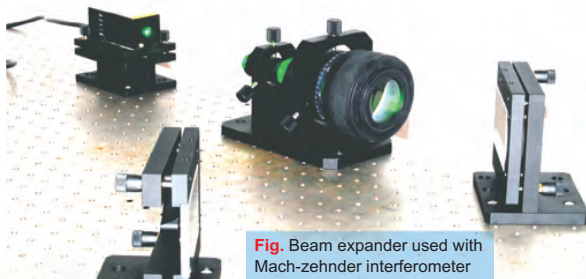
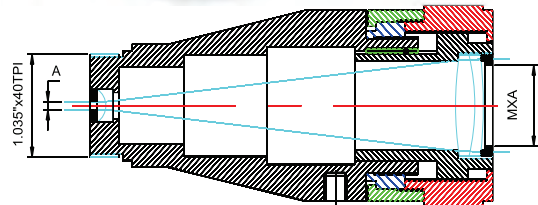
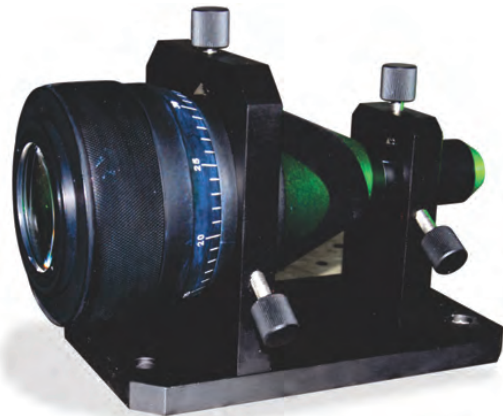


Fig. Beam expander used with Mach-zehnder interferometer



Galilean type consists of a positive and a negative focal length lens.

Variable Beam Expanders



Holmarc's variable beam expanders are based on Galilean design. This 5-element diffraction limited design allows continuous beam expansion within the specified range. The expansion ratio can be adjusted by rotating the zoom control. Holmarc's variable beam expanders are equipped with broadband AR coated lenses and aluminium casings.

Specifications & Tolerances:

Wavefront distortion	$\lambda / 4$
Transmission	> 96%
Wavelength range	400-700nm
Damage threshold	> 500 mW / cm ²
Surface quality	40 - 20 (Scratch-dig)
AR coating, ravg	<math><0.5\%</math> @ 400-700nm

Model No.	Expansion Range	Max. Input Beam Diameter (1/e ²)
HO-VBE-01	1x - 3x	5mm
HO-VBE-02	1x - 6x	5mm
HO-VBE-03	2x - 5x	4mm
HO-VBE-04	5x - 10x	4mm

“ Variable beam expanders with custom expansion ranges are available upon special requests.”



Condensers



Fig. Condenser lens system

- ▶ Two element air spaced design
- ▶ Ideal for projection illuminator
- ▶ Black anodized aluminium as housing material
- ▶ User specified AR coating
- ▶ Various type of mounting options

Model No.	Diameter (mm)	Focal Length(mm)
HO-CS25-0.8	25	20
HO-CS25-1.6	25	40
HO-CS25-2.4	25	60
HO-CS50-0.6	50	30
HO-CS50-0.8	50	40
HO-CS50-1.2	50	60



Condenser is a combination of lenses with short focal lengths used for concentrating a light source onto a small area. The lenses are mounted in a black anodized aluminium casing. Condensers with custom sizes and focal lengths are available.

Condenser Lenses concentrate light into a projected beam. They are usually mounted in pairs in projectors, enlargers, spotlights and photo cell systems. We make condenser systems of different focal lengths and apertures.

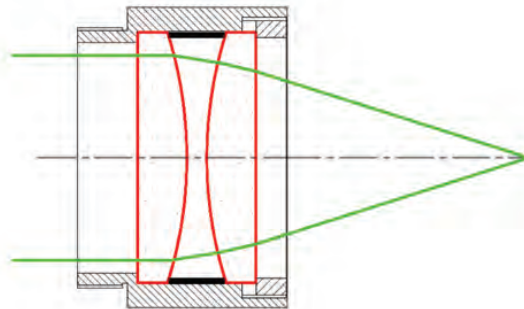


Fig. Optical layout of condenser

Fiber Collimators / Focusers



Our Fiber collimators/focusers are designed for laser applications which require pure Gaussian beam. Holmarc Fiber Collimators are available from 5mm to 40mm aperture size. The output is very clean with no diffraction patterns or beam distortions. Output stays as Gaussian at any distance. Collimators are provided with FC/SMA connectors. Output is adjustable so that it can be tuned for best collimation at the wavelength and then can be locked down. Broadband anti-reflection coating is provided for visible region.



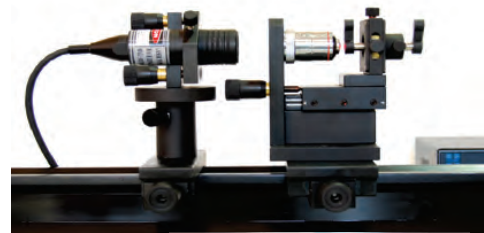
- For single mode fibers
- Gaussian beam at any distance
- 5mm, 10mm, 20mm, and 40mm apertures
- Adjustable focus/collimation

Model No:	HO-FO-FC5	HO-FO-FC10	HO-FO-FC20	HO-FO-FC40	HO-FO-SMA5	HO-FO-SMA10	HO-FO-SMA20	HO-FO-SMA40
Clear Aperture	5 mm	10 mm	20 mm	40 mm	5 mm	10 mm	20 mm	40 mm
Beam Divergence	< 0.5 mrad	< 0.25 mrad	< 0.1 mrad	< 0.05 mrad	< 0.5 mrad	< 0.25 mrad	< 0.1 mrad	< 0.25 mrad
Collimation	Adjustable and lockable							
Wavefront Error	< $\lambda/4$ @ 632.8 nm							
Connector	FC				SMA			
Optical Path	Epoxy free							
AR Coating	Broadband AR for visible region							
Housing	Aluminium							

Microscope Objectives



Holmarc offers Semi-Plan Achromatic Microscope Objectives for imaging or focusing applications. These objectives can also be used in fiber coupling, spatial filtering, and microscopy applications. Our Semi-Plan Infinity corrected achromatic objectives are designed for 200mm focal length Tube Lens and a cover glass thickness of 0.17mm. All the lens elements in the objectives are coated with broadband multilayer AR for visible regions.



Model No.	HO-SPA-MO5X	HO-SPA-MO10X	HO-SPA-MO20X	HO-SPA-MO40X
Magnification	5X	10X	20X	40X
Numerical Aperture (NA)	0.10	0.25	0.40	0.65
Field Number (FN)	20mm	20mm	20mm	20mm
Effective Focal Length (EFL)	40mm	20mm	10mm	5mm
Working Distance(WD)	19.5mm	7.9mm	2.5mm	0.5mm
Cover Glass	0.17	0.17	0.17	0.17
Outside Diameter	25mm	25mm	25mm	25mm
Parfocal Distance	45mm	45mm	45mm	45mm
Wavelength Range	Visible	Visible	Visible	Visible
Threading	0.8"x36 TPI	0.8"x36 TPI	0.8"x36 TPI	0.8"x36 TPI



KGC

EMPOWERING FUTURE
THROUGH RESEARCH & INNOVATION

**DESIGN YOUR PERFECT
LABORATORY WITH OUR**

PRODUCT CATALOG

For South East Asia Inquiries:

KGC RESOURCES SDN BHD (223165-D)
No. 2-2-3, Jalan Setia Prima E
U13/E Setia Alam, Seksyen U13
40170, Shah Alam, Selangor
Malaysia

WhatsApp Us at: +6014 964 9880
Call Us at: +603 3341 2880
Search Us at: www.kgcscientific.com
Email Us at: sales@kgcscientific.com
or info.kgc00@gmail.com

For Indonesia Inquiries:

PT KGC SAINTIFIK
Jalan Kamal Raya (Kompleks Ruko CBD)
Blok A2-07, Cengkareng Timur
Jakarta Barat 11730
Indonesia

WhatsApp Us at: +62 899 7255 675
Call Us at: +62 212 2522 110/+62 212 2522 114
Search Us at: www.kgcscientific.com
Email Us at: sales@kgcscientific.com
or info.kgc09@gmail.com