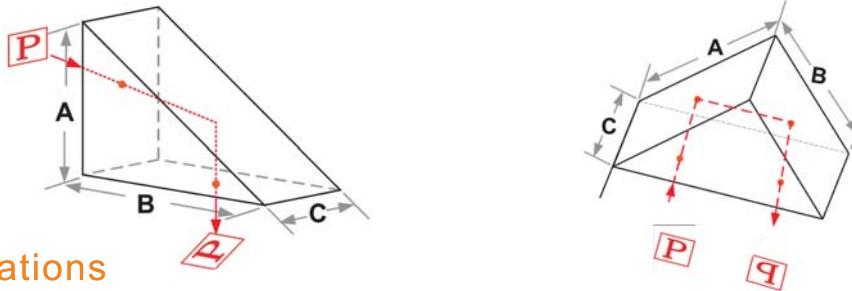




Prism

Right Angle Prism

Right Angle Prism can be used to bend a beam by 90deg or 180deg, depending on which face is entrance face. Please refer to following image to see how it works. Now Union Optic can provide right angle prisms from 0.5mm to 50.8mm size. Special size can also be offered upon request.



Specifications

Material	BK7, UV grade Fused Silica
Dimension Tolerance	±0.2mm
Angle Tolerance	Refer to below list
Flatness	$\lambda/4@632.8\text{nm}$ per 25mm range
Pyramidal Error	<3 arc minutes
Perpendicularity	<15 arc minutes
Surface Quality	60/40 scratch and dig
Clear Aperture	>90%
Chamfer	Protective
Coating	No coating, available



Standard Product

A(mm)	Part No.-BK7		Part No.-Fused Silica	
	<3 arc min	<30 arc sec	<3 arc min	<30 arc sec
A=B=C				
2.0	RAP0102	RAP0002	RAP1102	RAP1002
3.2	RAP0103	RAP0003	RAP1103	RAP1003
5.0	RAP0105	RAP0005	RAP1105	RAP1005
10.0	RAP0110	RAP0010	RAP1115	RAP1010
12.7	RAP0112	RAP0012	RAP1112	RAP1012
15.0	RAP0115	RAP0015	RAP1115	RAP1015
20.0	RAP0120	RAP0020	RAP1120	RAP1020
25.4	RAP0125	RAP0025	RAP1125	RAP1025
30.0	RAP0130	RAP0030	RAP1130	RAP1030
38.1	RAP0138	RAP0038	RAP1138	RAP1038
50.8	RAP0150	RAP0050	RAP1150	RAP1050

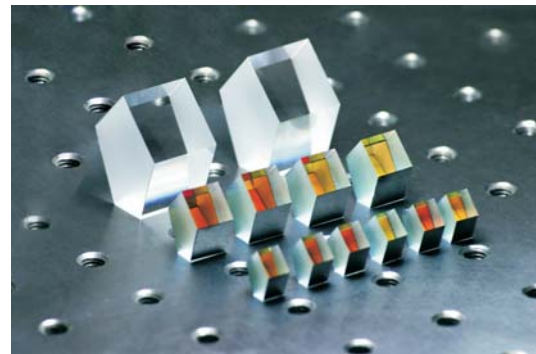
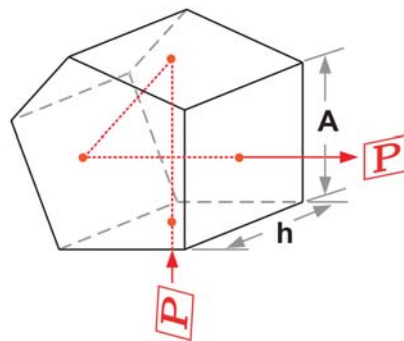
Note: If you want to put mirror coatings on right angle prism, please refer to right angle prism mirror.



Penta Prism

An incident beam can be deviated by 90 degree without inverting or reversing through a Penta prism. Penta prism has five sides, four of them polished. Two reflective sides are coated with metal or dielectric HR coating and these two sides can be blackened. The deviation angle of 90deg will not be changed if the penta prism is slightly adjusted, this will be convenient to install it. It is widely used in laser level, alignment and optical tooling. The reflecting surfaces of this prism must be coated with a metallic or dielectric reflective coating.

- High Precision
- Competitive Price
- Quick Delivery
- Custom Size Available
- RoHS Compliant



Specifications

Material	BK7 Grade A optical glass
Dimension Tolerance	±0.2mm
90° Deviation Tolerance	<30 arc seconds
Flatness	<λ/4 @632.8nm
Surface Quality	60/40 scratch and dig
Coating	Protected Aluminum reflective coating Single Layer MgF ₂ AR coating at visible
Clear Aperture	>90%
Chamfer	Protective

Standard Product

Part No.	Material	A*h(mm)	Deviation
PTP0007	BK7	7.0*6.0	<30 arc sec
PTP0010	BK7	10.0*10.0	<30 arc sec
PTP0020	BK7	20.0*20.0	<30 arc sec
PTP0025	BK7	25.4*25.4	<30 arc sec

Optical Material

Lens

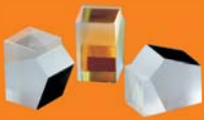
Window

Mirror

Beamsplitter

Prism

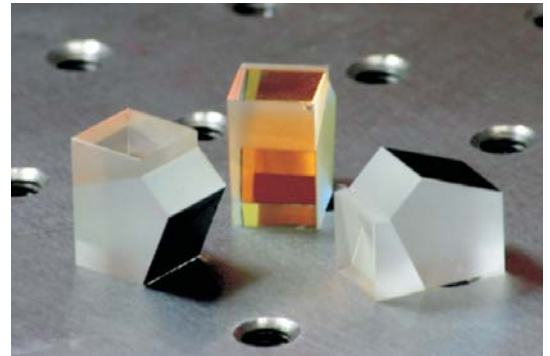
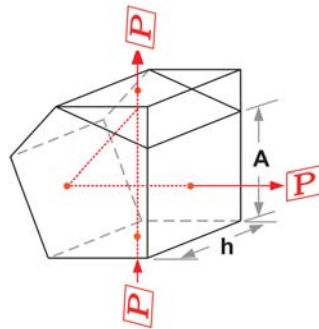
Filter



Beamsplitter Penta Prism

Beamsplitter penta is combined with a penta prism and a wedge cemented on one reflective surface, a beamsplitter coating on the cemented interface to form a beamsplitter. Now the transmission/reflection (T/R) ratio of beamsplitter penta prism we provided include 20/80, 30/70, 40/60 and etc. Other T/R ratio is available upon request.

- High Precision
- Competitive Price
- Quick Delivery
- Custom Size Available
- RoHS Compliant



Specifications

Material	BK7 Grade A optical glass
Dimension Tolerance	±0.2mm
90° Deviation Tolerance	<30 arc seconds
180° Deviation Tolerance	<30 arc seconds
Flatness	<λ/4@632.8nm
Surface Quality	60/40 scratch and dig
Coating	Protected Aluminum reflective coating Partial reflective coating on cemented surface Single Layer MgF ₂ AR coating at visible
T/R Tolerance	±5%
Clear Aperture	>90%
Chamfer	Protective

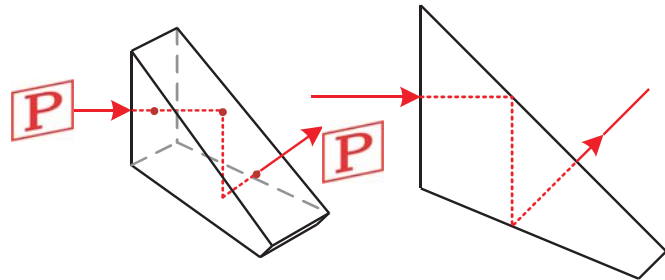
Standard Product

Part No.	Material	A*h(mm)	Deviation	T/R
SPP0007	BK7	7.0*6.0	<30 arc sec	20:80±5%
SPP0010	BK7	10.0*10.0	<30 arc sec	20:80±5%
SPP0020	BK7	20.0*20.0	<30 arc sec	20:80±5%
SPP0025	BK7	25.4*25.4	<30 arc sec	20:80±5%



Half Penta Prism

Half Penta prism is exactly an half cut from penta prism, it is widely used in telescope.



Specifications

Material	BK7 Grade A optical glass
Dimension Tolerance	±0.2mm
Angle Tolerance	<3 arc minutes
Flatness	< $\lambda/4@632.8\text{nm}$
Surface Quality	60/40 scratch and dig
Clear Aperture	>90%

Roof Half Penta Prism

Roof Half Penta prism is combined by half a penta prism and a totally internally reflecting roof which is attached to one of reflective face of the penta.

Specifications

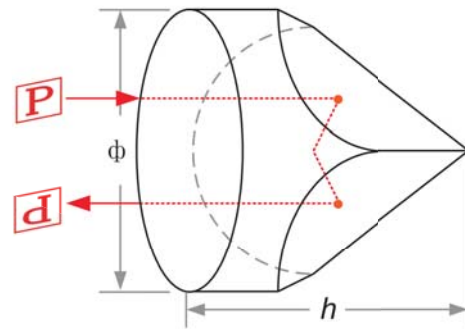
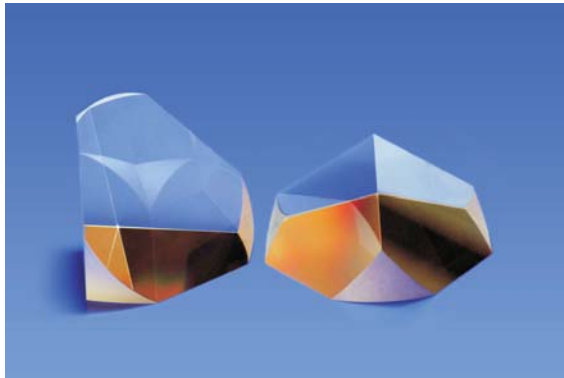
Material	BK7 Grade A optical glass
Dimension Tolerance	±0.2mm
Roof Angle Tolerance	<10 arc seconds
Other Angle Tolerance	<3 arc minutes
Flatness	< $\lambda/4@632.8\text{nm}$
Surface Quality	60/40 scratch and dig
Clear Aperture	>90%





Corner Cube Reflector

Corner Cube Retro Reflector operates on the principle of Total Internal Reflection (TIR). An incident beam will be reflected parallel to itself by the three roof surfaces. The reflection is insensitive to the incident angle, even when the incident beam enters the prism off normal axis, there will still be a strict 180deg reflection.



Specifications

Material	BK7 Grade A optical glass
Dimension Tolerance	+0.0/-0.2mm
Clear Aperture	>80%
Deviation	Up to 180°±5 arc seconds
Flatness	$\lambda/4@632.8\text{nm}$ for big surface, $\lambda/10@632.8\text{nm}$ for small surfaces
Wavefront Distortion	$<\lambda/2@632.8\text{nm}$
Surface Quality	60/40 scratch and dig
Coating	None, available

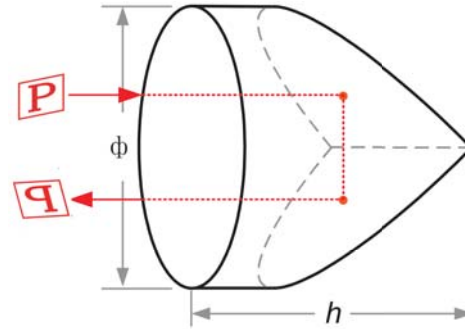
Standard Product

Part No.	Material	Dia*h(mm)	Deviation
CNP0012	BK7	12.7*10.0	<30 arc sec
CNP0015	BK7	15.0*11.0	<30 arc sec
CNP0025	BK7	25.4*19.0	<10 arc sec
CNP0050	BK7	50.8*38.0	<10 arc sec



Porro Prism

Porro prism is a type of reflection prism which can be used to alter the orientation of an image. Light enters the large face of the prism, then hits on the roof, by total internal reflection twice from the roof, the beam exits again through the large face. An image traveling through a Porro prism is rotated by 180deg but not inverted.



Specifications

Material	BK7 or UV Fused Silica
Dimension Tolerance	+0.0/-0.2mm
Clear Aperture	>80%
Deviation	Up to $180^{\circ} \pm 10$ arc seconds
Roof Angle Tolerance	<5 arc seconds
Flatness	$< \lambda / 10 @ 632.8\text{nm}$
Wavefront Distortion	$< \lambda / 4 @ 632.8\text{nm}$
Surface Quality	60/40 scratch and dig
Chamfer	Sharp roof, other protective chamfered
AR Coating	Available

Standard Product

Part No.	Material	Dia*h(mm)	Deviation	AR Coating(nm)
POP0012-0	BK7	12.7*12.7	<10 arc sec	None
POP0012-4	BK7	12.7*12.7	<10 arc sec	450-650
POP0012-5	BK7	12.7*12.7	<10 arc sec	532
POP0012-1	BK7	12.7*12.7	<10 arc sec	1064
POP1012-0	UVFS	12.7*12.7	<10 arc sec	None
POP1012-4	UVFS	12.7*12.7	<10 arc sec	450-650
POP1012-5	UVFS	12.7*12.7	<10 arc sec	532
POP1012-1	UVFS	12.7*12.7	<10 arc sec	1064

Optical Material

Lens

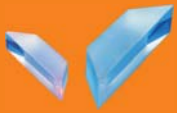
Window

Mirror

Beamsplitter

Prism

Filter



Optical Material

Lens

Window

Mirror

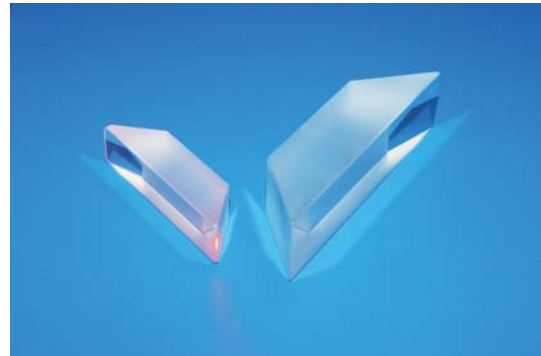
Beamsplitter

Prism

Filter

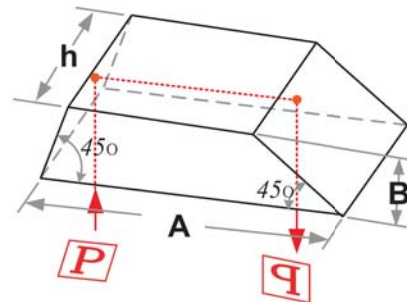
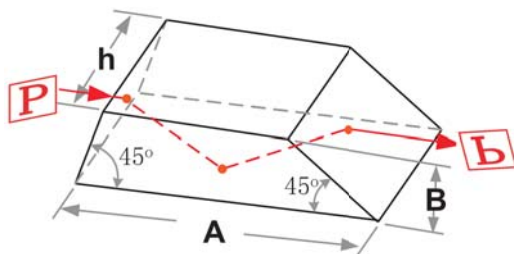
Dove Prism

Dove prism is always used to rotate image. If you rotate the prism around a longitudinal axis, the image rotates through twice the angle the prism rotates through. Sometimes, dove prism is also used for 180deg reflection.



Specifications

Material	BK7 Grade A optical glass
Dimension Tolerance	±0.2mm
Surface Quality	60/40 scratch and dig
Flatness	$\lambda/4@632.8\text{nm}$
Clear Aperture	>90%
Angle Tolerance	<3 arc minutes
Chamfer	Protective chamfer
AR Coating	No, Available



Standard Product

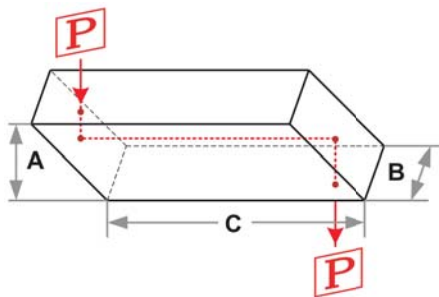
Part No.	Material	A(mm)	B(mm)	h(mm)
DVP0105	BK7	21.1	5.0	5.0
DVP0110	BK7	42.3	10.0	10.0
DVP0115	BK7	63.4	15.0	15.0
DVP0120	BK7	80.0	20.0	20.0



Rhomboid Prism

Rhomboid prism can displace a laser beam without change the image orientation, the input beam is totally internal reflected by two 45degree faces and goes out from the output face. Then, a lateral displacement is produced. Higher transmission rate can be achieved by anti-reflective coating on the input and output faces. Rhomboid prism is always used in stereoscopic system and periscope system.

Currently we can make angle tolerance <5 arc seconds, total beam deviation <30 arc seconds. Large size is also available.

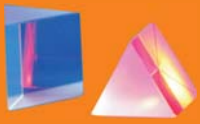


Specifications

Material	BK7 Grade A optical glass
Dimension Tolerance	±0.2mm
Beam Deviation	Up to 30 arc seconds
Angle Tolerance	Up to 5 arc seconds
Flatness	$\lambda/4@632.8\text{nm}$
Surface Quality	60/40 scratch and dig
Clear Aperture	>90%
Coating	AR coating available

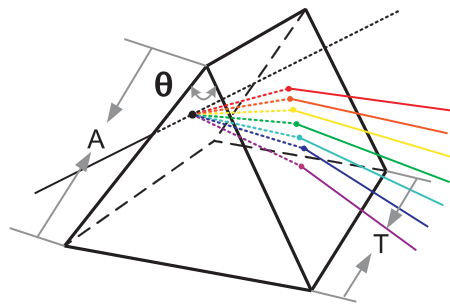
Standard Product

Part No.	Material	A(mm)	B(mm)	C(mm)	Deviation
RBP0005	BK7	5.0	5.0	7.1	<30 arc sec
RBP0010	BK7	10.0	10.0	14.1	<30 arc sec
RBP0012	BK7	12.7	12.7	18.0	<30 arc sec
RBP0020	BK7	20.0	20.0	28.3	<30 arc sec
RBP0025	BK7	25.4	25.4	35.9	<30 arc sec



Brewster Prism

Brewster prism is one kind of dispersion prism, it is normally used to separate two wavelengths following the same beam path. Brewster prism is designed specifically for intra-cavity laser application, the beam enters and exits the prism at Brewster's angle, minimizing intra-cavity losses.



Specifications

Material	BK7, UV Fused Silica, SF11
Dimension Tolerance	+0/-0.2mm
Clear Aperture	>90%
Angle Tolerance	<5 arc minutes
Surface Quality	60/40 scratch and dig
Flatness	<λ/4@632.8nm
Chamfer	Protective
Polished Surface	Two side surfaces polished, base is fine ground
Coating	None

Standard Product

Part No.	Material	Side Length A (mm)	Thickness T (mm)	Apex Angle (Deg)	Design Wavelength (nm)
BRP0112	BK7	12.7	12.7	67.0	800
BRP0125	BK7	25.4	25.4	67.0	800
BRP1112	UVFS	12.7	12.7	69.1	800
BRP1125	UVFS	25.4	25.4	69.1	800
BRP9112	SF11	12.7	12.7	59.0	800
BRP9125	SF11	25.4	25.4	59.0	800

Optical Material

Lens

Window

Mirror

Beamsplitter

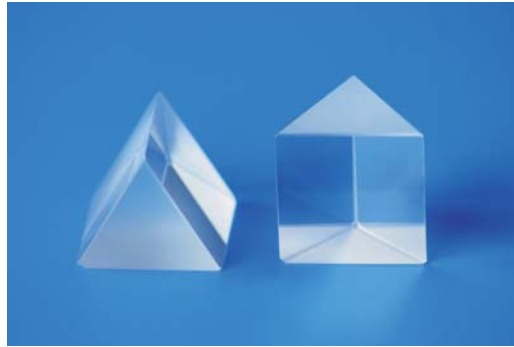
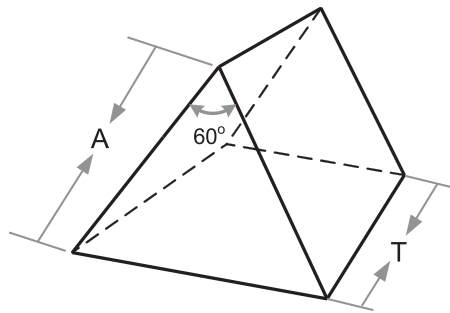
Prism

Filter



Equilateral Prism

Equilateral prism is one kind of dispersion prism. It has three equal 60deg angles and it can separate a beam of white light into its component colors. Equilateral prism is always used for wavelength separating applications and spectrum analysis.



Specifications

Material	BK7, UV Fused Silica, SF11
Dimension Tolerance	+0/-0.2mm
Clear Aperture	>90%
Angle Tolerance	60deg±3 arc minutes
Surface Quality	60/40 scratch and dig
Flatness	$< \lambda/4 @ 632.8\text{nm}$
Polished Surface	Three side surfaces polished
Chamfer	Protective
Coating	None

Standard Product

Part No.	Material	Side Length A(mm)	Thickness T(mm)
ELP0112	BK7	12.7	12.7
ELP0125	BK7	25.4	25.4
ELP1112	UVFS	12.7	12.7
ELP1125	UVFS	25.4	25.4
ELP9112	SF11	12.7	12.7
ELP9125	SF11	25.4	25.4



Roof Prism

With the roof surface, these prisms are used to invert and reverse the image. Union Optic can provide roof right angle prisms, roof penta or half penta prisms, Schmidt prisms, or other roof prism specified by customers.

Optical Material

Lens

Window

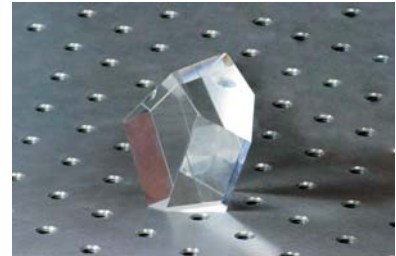
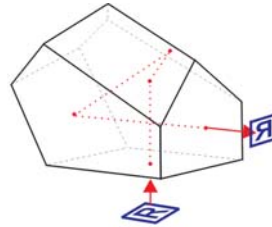
Mirror

Beamsplitter

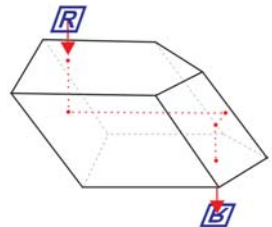
Prism

Filter

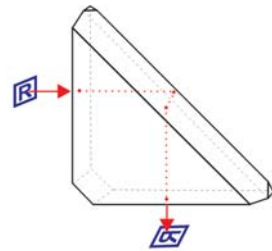
Roof Penta Prism



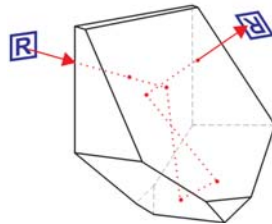
Roof Rhomboid Prism



Roof Right Angle Prism



Schmidt Prism



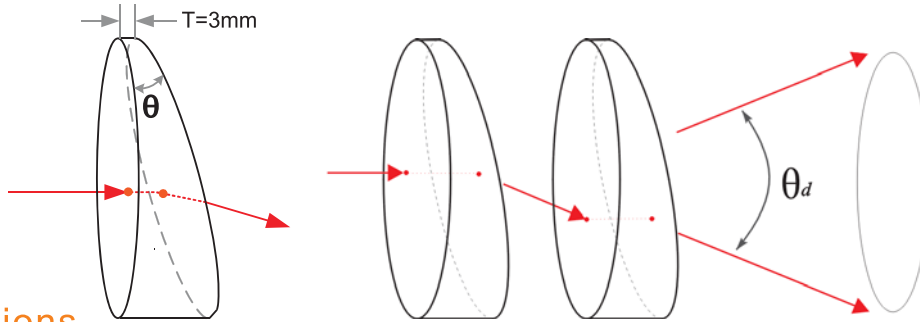
Capabilities

Material	BK7, Fused Silica, other optical glass
Dimension Tolerance	+0/-0.2 mm
Clear Aperture	>90%
Angle Tolerance	Up to 10 arc seconds
Roof Angle Tolerance	Up to 5 arc seconds
Flatness	Up to $\lambda/10@632.8\text{nm}$
Surface Quality	Up to 20/10 scratch and dig



Wedge Prism

Wedge prism has plane inclined surfaces. It deflects light toward its thicker portion. It can be used individually to deflect a beam to a special angle. Two wedge prisms work together can assembly an anamorphic prism to correct the elliptical shape of laser beam. The wedge prism is ideal for laser beam steering applications. By combining two wedge prisms which can be rotate individually, we can direct the input beam to anywhere within the cone angle θ_d , where θ_d is 4x the specified angular deviation of one wedge. We can make deviation angle from 1deg to 10deg. Other angle can be realized upon request.



Specifications

Material	BK7 or UV Fused Silica
Design Wavelength	BK7: 632.8nm, n=1.515@632.8nm UVFS: 355nm, n=1.476@355nm
Dimension Tolerance	+0/-0.2mm
Thickness	3mm on the thinnest edge
Wedge Angle Tolerance	<3 arc minutes
Flatness	< $\lambda/4$ @632.8nm
Surface Quality	60/40 scratch and dig
Clear Aperture	>90%
Deviation Angle	From 1° to 10°
Coating	None, Available



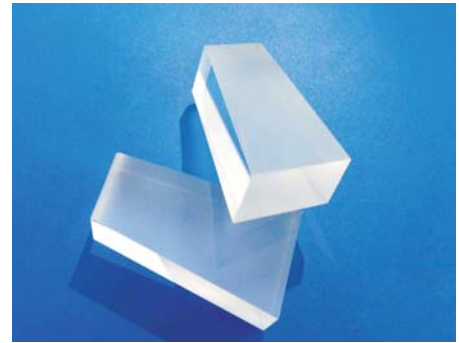
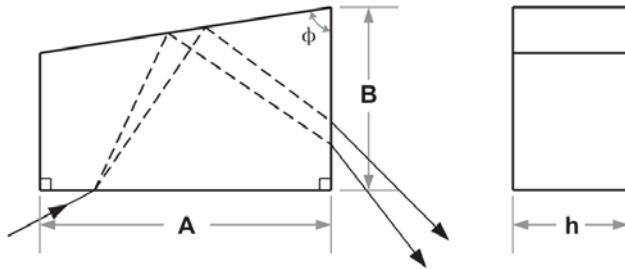
Standard Product

Part No.	Material	Diameter(mm)	Wedge Angle	Deviation Angle	Design Wavelength (nm)
WED0125-1	BK7	25.4	1°57'	1°	632.8
WED0125-2	BK7	25.4	3°53'	2°	632.8
WED0125-4	BK7	25.4	7°41'	4°	632.8
WED0125-6	BK7	25.4	11°21'	6°	632.8
WED1125-1	UVFS	25.4	2°6'	1°	355
WED1125-2	UVFS	25.4	4°11'	2°	355
WED1125-4	UVFS	25.4	8°17'	4°	355
WED1125-6	UVFS	25.4	12°25'	6°	355



Pellin Broca Prism

Pellin Broca Prism is always used to separate the harmonics of laser beam, it can be also used to compensate for group velocity dispersion. Due to the beam enters and exits the prism at Brewster's angle, the power loss is extremely low for P-polarized beam. The angle between input and output beam is close to 90deg.



Specifications

Material	Bk7, UV Fused Silica
Dimension Tolerance	±0.2mm
Clear Aperture	>90%
Angle Tolerance	<3 arc minutes
Surface Quality	40/20 scratch and dig
Flatness	<λ/8@632.8nm
Chamfer	Protective
Coating	None

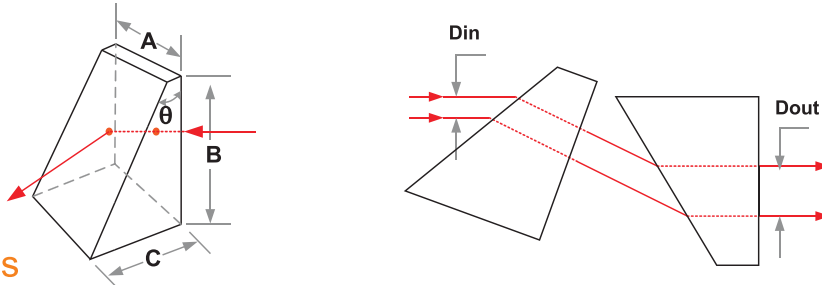
Standard Product

Part No.	Material	A(mm)	B(mm)	h(mm)	Φ(deg)	Design Wavelength(nm)
PPB0111	BK7	33	19	11	78.43	380-2100
PPB0122	BK7	66	38	22	78.43	380-2100
PPB1111	UVFS	33	19	11	78.43	190-2200
PPB1122	UVFS	66	38	22	78.43	190-2200



Anamorphic Prism

Diode lasers usually feature an elliptical beam profile. While, mostly a circular beam shape is required, like mode-matching to an external resonator, adapting beam size to pass a small aperture of an isolator, and etc. Anamorphic Prism Pairs are used to transform elliptical laser diode beams into nearly circular beams by magnifying the elliptical beam in one dimension.



Specifications

Material	SF11
Dimension Tolerance	±0.2mm
Surface Quality	60/40 scratch and dig
Flatness	$\lambda/4@632.8\text{nm}$
Clear Aperture	>90%
Wedge Angle	29°26'
Chamfer	Protective chamfer
AR Coating	No, Available



Standard Product

Part No.	Material	A(mm)	B(mm)	C(mm)	Wedge Angle
ANP9112	SF11	12.0	12.0	8.5	29°26'

Custom Prism

Union Optic not only provides common used prisms, we can also provide custom prism and prism assembly. We can provide prototypes quickly in good quality and reasonable price, volume production can also be done by Union Optic. The most used material for prism includes BK7, UV grade fused silica, SF11 glass. While, other materials can also be provided upon request. Following is our manufacturing limits.



Capabilities

Parameter	Manufacturing Limit
Dimension Tolerance	±0.05mm
Parallelism	<5 arc seconds
Angle Tolerance	<10 arc seconds
Roof Angle Tolerance	<5 arc seconds
Surface Quality	20/10 scratch and dig
Flatness	$\lambda/20@632.8\text{nm}$

Optical Material

Lens

Window

Mirror

Beamsplitter

Prism

Filter