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М	R fre	
1	V. 1.W	4)

	Opto-Mechanics Gu	ide	C004	Mirrors	T E	Beam Steering Holders Precision Beam Steering Assembly BSR/BSRU	C034
Mirrors	Mirror Holders A	C008	Lenses	Lens Holders Se	lection Guide	C036	
1	Mirror Holders S	election Guide	C010		00	Fixed Lens Holders LHF/LHF-S/LHG	C037
1	DaQ.	Kinematic Center Mirror Mount MHI	C012		Ö	Two Axis Lens Holders LHCM	C040
ı	papa	Kinematic Mirror Mount MHGT	C013			Retaining Rings/Resin Washers Retaining Ring Spanners Wrench RR/DR/NRS	C041
ı	A A	NOMI LOCK™ Model Kinematic Mirror Holder MHG-MP-NL/MHG-HS-NL	C014			Three-axis/Five-axis Lens Holders ALHN-3RO/ALHN-5RO/ALHN-3/ALHN-5	C042
ı	00	Options for Kinematic Mirror Holders MHG-BPRO/KAD/MAD/PAD/20LDU/FMB	C 016			Mini Lens Holders TLH	C 044
ı		Vertical Control Small Mirror Holders LMMH-R	C019			V-Groove Lens Holders LHA	C044
ı	ROT	Small Kinematic Mirror Holders MMHN/MKAD	C020		00	Caliper Variable Lens Holders SLH	C045
ı	00	Vertical Control Gimbal Beamsplitter Holders BSHL-2/BSHL-TF/BSHL-BP	C022		Contract of the contract of th	Small Lens Claws MLH	C046
ı	B Q	Gimballed Mirror Mounts MHAN-S/MHA/MHAN-DM	C024			Micro Lens Claws MLH	C047
ı	Q .	Gimbal Beamsplitter Holders BHAN-S/BHAN-DM	C026			Adjustable Cylindrical Lens Holders CHA	C048
ı	30	High Rigidity Mirror Holders MHL	C028		00	Fixed Multi-element Lens Holders LHF-UDL/LHF-M	C049
	日数	Topmike Vertical Control Mirror Holders LMHB/LMHBP	C030		000	Objective Lens Holders LHO	C050
	00	Large Precision Gimbal Mirror Holders MHD/MHD-P	C032				

Prisms		Prism Holders	C051	Shutters	80	Aut
ns		KKD/PLH/PAD		tters	79	SSF
Polarizers	90	Polarizer Holders MPH/PH/SPH	C053			1 ax
	0 0	Polarizing Prism Holders GTPC-PH/GTPC-SPH/GTPC-ADP	C055			Shu SSI
Lasers		Rod Form Laser Mounts Adjustable Laser Holders (with a stand) LAH/LAHU/LAHU-A	C 056	Others		Squ KM
		Kinematic Laser Holders LAH-4	C057			Can CM
Beam Forming		Holders for Laser Beam Expanders KLH-BE	C058			Ligl BBI
iing	Technical Note		C 059			Tes: TGI
ı		Spatial Filter Holders SFB	C 060		8-1	Bea BD
ı	00	Precision Pinhole/Air Slits PA/FSL	C061	Fiber		Fibo FOI
ı	10 D	Two-axis Pinholes Objective Holders TAT	C062			Mir MF
ı	9	Iris Diaphragm Holders IH	C063		P	Fibo OFI
ı	00	Iris Diaphragms IDC/IH-30N	C064		-	FC [*]
		Adjustable Slits PSL/SLX	C065		中中中	SM/ FOI
Filters		Filter Wheels NDWH	C 066			Adj FOI
		Filter Holders FHS/FH	C 067			

Shutters	40	Automatic Shutters SSH	C068
		1 axis / 4 axis Shutter Controller SSH-CRA	C068
		Shutter Controller SSH-C	C069
Others		Square Plate Holders KMH	C 070
	Ja Barrella	Camara Holders CMH	C 070
		Light Shade plate BBP	C071
		Test Target Holders TGH	C072
	5 4	Beam Dumps BD	C072
Fiber		Fiber Optics Mounts FOM	C073
		Mini-Fiber Optics Holders MFH	C074
		Fiber Optics Holders OFH/OFH-DM	C075
		FC Type Fiber Optics Holders FOP/FOP-DM	C076
	中中中	SMA Type Fiber Optics Holders FOP-SMA/FOP-DM-SMA	C077
		Adjustable Fiber Collimator FOPT	C078



Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors Lenses

Prisms

Polarizers Lasers

D - - - - Ob - - - !--

Beam Shaping Diffusers

Filters

Shutter

Others

Fiber

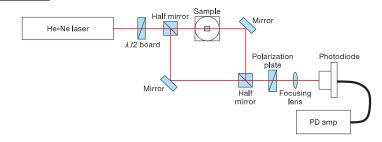
Holders Guide

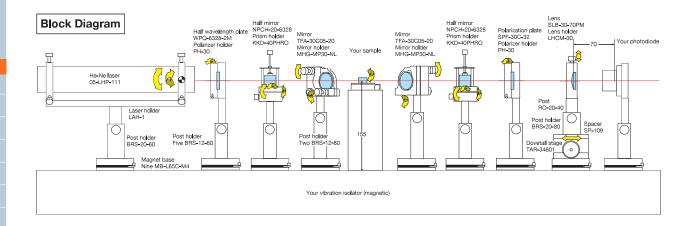
There are many parameters that must be taken into account when choosing optics holders. The optics holders need the correct dimensions and have the required adjustments for the optical system.

Below are some examples of optical systems to give an idea of OptoSigma's selection.

First, prepare an optical path diagram for the optical system. Usually, only optics and devices are drawn, The holders are left out. The optical path diagram should look similar to the following diagram.

Optical Path Diagram





Mounted optics must be placed in relation to the laser beam source to set up the optical system. Note the adjustment axes of the mounts on your block diagram according to each element's application. During final review of the optical system, ensure that the holders do not physically interfere with each other. Also, make sure each element has the correct adjustments along the correct axes.

Optical Axis Height

Generally, optical systems are set up on a horizontal plane and secured to a baseplate as most laser sources emit beams horizontally. OptoSigma has a wide variety of post holders, and spacers to align optic heights with laser heights. If there is a fixed optical axis height in the system, use the fixed height as the standard height for all other components. When there are no fixed optical axis heights, set the optical height no lower than the lowest optical height of the holders.

Alignment

Typically, the path that light takes through an optical system cannot be seen directly

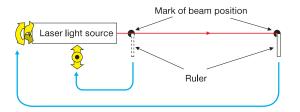
The process of directing the light along the desired path using the optical elements is referred to as optical alignment. Here, we present a few alignment techniques that may be useful.

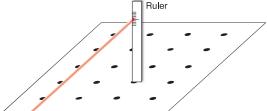
Laser beam adjustment

Mark the intended beam path on the top of the base plate.

Having the path go through the centers of the tapped holes in the base plate makes aligning the holders easier in most cases.

Position the laser and turn on the beam. Place a ruler onto the breadboard as shown below. Adjust the beam to the desired z-height and x-y location. Move the ruler along the beam path to the edge of the breadboard. Adjust the laser source so that the height and location are the same as the first measurement. To get a nice parallel beam, perform the same measurement at intermediate locations between first measurement and the edge of the breadboard. After beam adjustment, the laser source can be secured.



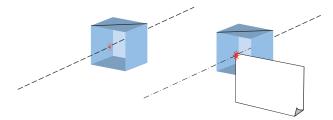


Passing light through the center of the optic

When a laser beam irradiates the surface of an optic, faint scattered light can be seen.

Adjust the position of the optic so that the scattered light passes through the center of the optic.

Sometimes scattered light cannot be seen if the laser beam is dim and the surface of the optic is very clean. In such cases, check the position of the laser and align it with the center of the optic using the corner of a piece of paper to scatter light.

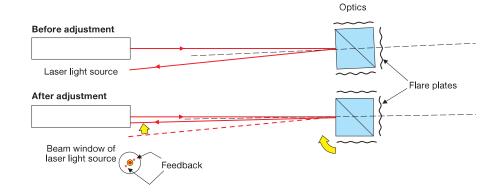


Placing optics perpendicular to the beam

When flat optics are irradiated with a laser beam perpindicular to the surface, the beam reflected off the optic returns to the light source. Note the position of the reflected beam. If there are multiple reflected beams from other optics, block all but the adjusted beam of interest with flare plates.

Adjust the angle of the optic so that the reflected beam is close to the laser beam window. When multiple reflected beams return from the optic, adjust the optic angle so that the middle of each beam is in the laser beam window. [Note] If the reflected beam enters to laser, the oscillations of the laser may become unstable.

Adjust the reflected beam so that the beam spots are just outside of the laser port.



Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses Prisms

Polarizers

Lasers

Beam Shaping

Filters

Shutter

Others



Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors Lenses

Prisms

Polarizers Lasers

Beam Shaping Diffusers

Diffusers

Filters Shutter

Others

Fiber

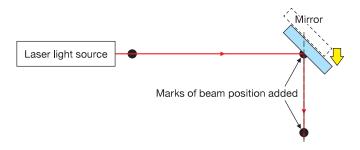
Holders Guide

Placing optics at 45 degrees incidence

On the baseplate, mark locations of the beam source, mirror, and the angle where the beam will be reflected as shown in the following figure.

Set up a holder with mirror at 45 degrees so that the center of the reflected surface can form a right angle beam when a laser is incident.

Rotate and tilt the mirror so that the laser beam reflected beam is parallel to the breadboard.



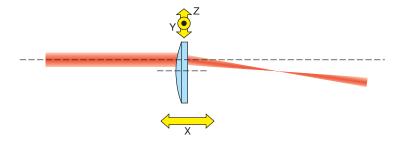
Adjustment of lens optical axis

If the irradiation point of the laser beam is not along the center of the lens, the transmitted beam will deviate away from the optical axis. A YZ lens adjustment needs to be used to center the lens properly with the laser.

Also, some lenses require an X-axis adjustment mechanism to set the point where the laser beam focuses. Adjustment mechanisms such as dovetail stages that allow large and quick travel are suitable for this.

([Attention] Lenses with short focal length such as objective lens require a precise fine-tuning mechanism for the X-axis.) In a general optical system, lens tilt adjustment is not required.

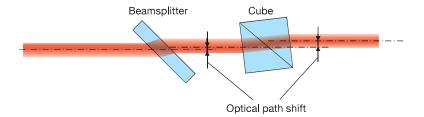
The direction of beam that passes the optical axis does not change even when a lens is tilted. However, aberration caused by lens tilt can be problem in a precise optical system such as interferometers or laser processing. In these cases, the lens tilt needs to be adjusted while observing the intensity distribution of wavefront and focus spot to optimize the optical system.



Transmitted light path of beamsplitter

When an incident laser beam is perpendicular so the surface of a plane parallel optic, the transmitted light does not deviate. If the plane parallel optic is tilted, the output path is shifted parallel to the incident light path. The shift distance depends on the refractive index, angle of incidence, and the thickness of the optic.

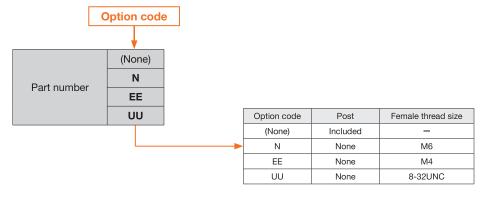
A tilted beam splitter can alter beam paths significantly. When designing optical systems with beam splitters, use a base-plate on a breadboard that has multiple mounting hole patterns which will allow for less constraints in the system.



Choosing threads on Stands and Post Holders

Most holders in the catalog are mounted with a M6 male thread post.

To call out a different male thread post, the female internal thread must be changed according to the post type. Specifying an option code to the suffix of the part number allows to change the female thread for post mounting to 8-32UNC female or M4 female. The following charts show the different suffixes.

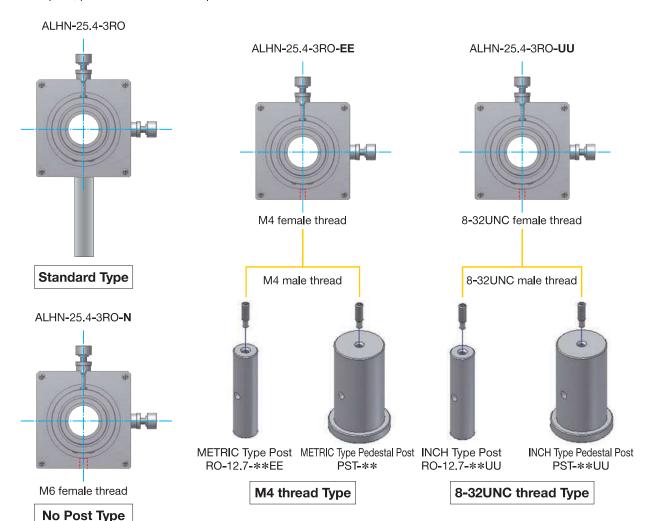


OSpecify the necessary female thread by adding the option code as the suffix of the catalog part number.

Example of connection of various holder options

A holder part number with an option code does not come with a post.

To use the holder or post with an inch-based baseplate select the UU specification for 8-32UNC. For metric M4 thread post or baseplate, please select EE as the specification.



Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter Others



Mirror Holders Application Note

Mirror holders are divided into six categories by function.

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors Lenses

Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others Fiber

Classification of Mirror Holder Functions

Part Number	Mounting Center	Rotational Mechanism	Fine Adjustment Center	Optics Fixation	Control Direction	Control
MHG	Offset	None	Offset	Lateral side set screw	Back	Screw
MMHN	Offset	None	Offset	Mirror case	Back	Screw
MHAN/MHA	Mirror center	Mirror center	Mirror center	Retaining ring	Front/Back	Screw/Micro
BHAN	Mirror center	Mirror center	Mirror center	Retaining ring	Front/Back	Screw/Micro
BSHL	Offset	None	Mirror center	Retaining ring	Vertical	Screw

(1) Center of Mounting

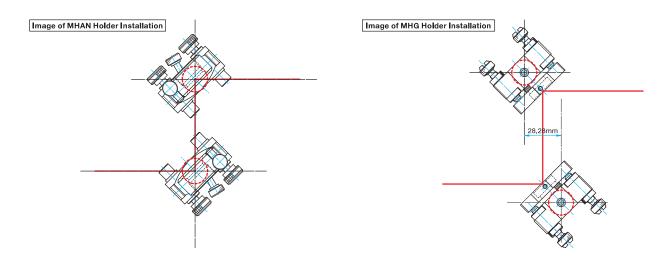
Mirror holders fitted with a post (such as MHAN) are designed so that the reflective surface of the mirror is along the center of the post.

MMHN-25RO and MMH-50M6 are excluded. By having the reflective optical axis and center post coaxial, the position of the laser beam irradiated on mirrors will not change even when the mounting direction of the holder is changed. In such cases where the center of mounting has offset, attention is required to the positional relationship between the laser beam and the mirror holder. Mirror holders that do not come standard with posts must be aligned when mounted to a post. The holder will come with an offset to position the mirror and laser beam correctly. (The following figure on the right shows this.)

To install a mirror holder that has an offset at the center of mounting, roughly position the angle of the mirror before fixing the holder.

Find the position of the mirror where the laser beam irradiates at the center of the mirror at the specified incidence angle, and fix the mirror holder at that position. The mounting screws for the baseplate may not match the hole position of the breadboard. If such a case arises, use a magnetic baseplate or a different baseplate designed for offset positions.

Special plates for mounting posts (MHG-BPRO) are available for the MHG holders to match the center of the post to the center of the reflective surface of the mirror.

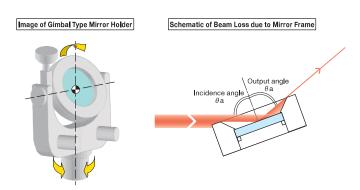


(2) Rotational Mechanism

With their two-axis gimbal structure, the MHAN and BHAN holders can be positioned to face any laser beam source in any direction.

The rotational center of the gimbal mechanism is at the center of the of the reflective surface; therefore, a laser beam irradiated at the center of the mirror will stay at the center of the mirror regardless of mirror direction. There are no constraints on mirror rotation, thus the reflected beam can be directed at angles vertically, diagonally, or horizontally.

The reflected beam may become partially blocked by the mirror holder frame depending on the beam diameter or angle of incidence.





Mirror holders are capable of fine angle adjustments using one of two mechanisms.

The first type of fine adjustment mechanism is the gimbal type which allows for rotation of the reflective surface of the mirror. The second type, kinematic type, allows for rotating around the outside of reflective surface.

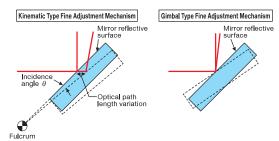
The only differences in stability between the two adjustment mechanisms arise when dealing with interferometers and laser resonators.

Optical path length variations caused by angle adjustment are shown in the table to the right for kinematic mirror holders. Using the gimbal fine adjustment is advantageous for small optical path length variations.

Conversely, the kinematic adjustment has issues with small optical path variations. The physical and temperature stability of the kinematic adjustment make them excellent for laser resonators applications.

Variation in optical path length by angle adjustment of kinematic mirror holder

Part Number	Adjustment Path Range [ncidence		Optical Path Length Variation when Turned by 0.5° (mm)		
	[]	[mm]	Incidence Angle 0°	Incidence Angle 45°	
MHG-12.7	±3	0.5	0.17	0.12	
MHG-30	±3	1.0	0.33	0.24	
MHG-50	±2	1.0	0.51	0.36	
MHG-80	±2	1.5	0.77	0.55	
MHG-100	±2	2.1	1.03	0.73	



(4) Mounting Method of Optics

Mirrors with high surface accuracy are used in optical experiments with interferometers or laser concentration. Beam deviation may not be seen due to the thickness or hardness of the material, but a slight bump to the holder can cause deviations in the shape of the beam. The deviation can be observed in the more precise optical experiments. It is imperative to choose the correct mounting method for mirrors, and to mount the mirrors securely.

Retaining Ring Mount

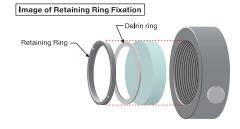
With retaining rings, the mirror is pressed against a resin ring secured by an aluminum threaded ring.

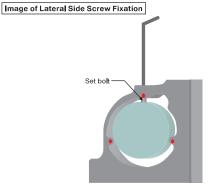
The position of the reflective surface of the mirror does not change because it is pressed against the face of the mirror frame. Optics will rarely fall out of their holders due to vibration or impact with these mounting method. The retaining rings must not be over tightened or the mirrors will be in stress.

● Lateral Side Screw Mount

The mirror is held on its edge with two points and one resin set screw as shown in the figure to the right. Changes in thickness of the mirrors shifts the position of the reflective surface because the mirror is mounted by its edges and not by its face. The mirror can be tilted relative to the frame with this mounting method.

Stressed is induced with the torque of the set screw, and can be changed after lens installation. The mirror can fall out of the holder in situations with high vibrations or potential impact.





(5) Control Directions

When holders are used in complex crowded optical systems or narrow spaces, operating the mechanisms becomes difficult. Mirror holders with vertical or horizontal adjustment control directions can be used to make adjustments easier.

(6) Types of Adjustment Mechanisms

There are two types of adjustment mechanisms for holders. The graduated micrometer has a long knurled rotating knob that allows for frequent and easy manipulations. The other type of adjustment is a 0.25 mm pitched screw. These screws are shorter than micrometers allow for fine adjustments in confined spaces.

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses

Polarizers

Lasers

Beam Shaping Diffusers

Filters Shutter

Others

Mirror Holders Selection Guide

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors Lenses

Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others

Fiber

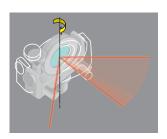
Emphasis on workability



These holders are easily manipulated and have simple alignment

Advantages:

- ○The mirror can be mounted 45 degrees
- Casily mounted to an optical bench
- Ocan change the reflected beam path easily



OHolders have enough adjustments to be in 3-D optical systems



Emphasis on stability



The MHG series holders have high stability due to less moving parts.

Advantages:

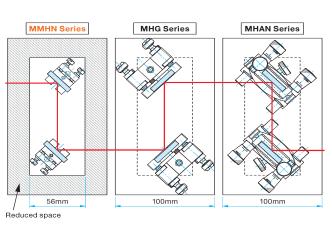
- OHolders work well in optical systems with low optical height axis.
- OHolders provide stability in environments with vibration, or temperature fluctuations.

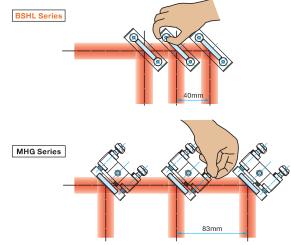
Interferometer configured with MHG mirror holder



Downsizing

MHG and MHAN mirror holders require working areas of about two diameter sizes of the mirrors. MMHN and BSHL mirror holders are good for applications that do not require high operability or resolution. The BSHL series adjustment is vertical allowing for the holders to be arranged close to each other.



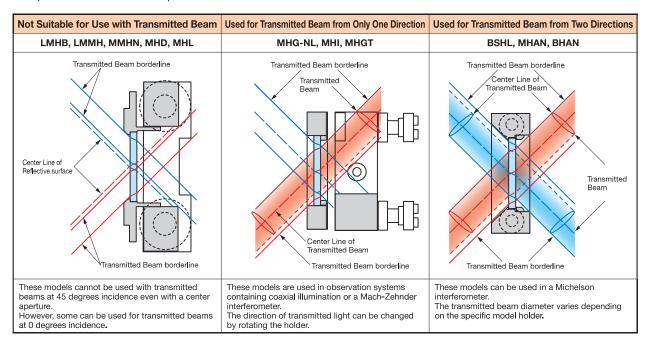




Some mirror holders can be used only for mirrors, while other mirror holders can hold a beamsplitter and handle transmitted light.

Furthermore, among the holders which can handle transmitted light, some holders like the BHAN series can handle beams from both left and right directions, while other holders like the MHG and MHI series can handle transmitted beam from only one side.

When using a holder with transmitted light, please check the transmitted beam diameter at 45 degrees incidence listed in the specification table of each product.



Post type and Mounting type

The two types of mirror holders are the post type that come with a post, and the mounting type that can be mounted onto a base plate or adapter plate. The post type of mirror holders is useful when adjusting optical axis height frequently. The mounting type is useful when space is limited in the optical system, or used in an OEM device application. The optical axis height must be set in the design because the mounting type has a fixed height.

Some of the mounting type holders can be mounted onto a post directly, or converted to fit a post using an adapter plate.









Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses

Prisms
Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others



Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual

Stages

Actuators &

Adjusters

Motoeized

Light Sources & Laser Safety

Stages

Index

Kinematic Center Mirror Mount



The Kinematic Center Mount is designed to allow the mirror to be loaded from the rear, keeping the reflective front surface centered above the mounting hole.

- When this mount is rotated 45 degrees on an optical bench, the center of mirror will stay at the optical axis.
- Cutouts and bevels allow these to be used as beamsplitter holders and not interfere with the transmitted beam.
- Building the mirror frame into the support of the holder keeps the mount thin with a small footprint.
- The small footprint allows more room to access the adjusters compared to regular kinematic mirror holders.
- Includes alighnment pin holes to accurately place mount in OEM instruments(φ3H7 except MHI-12.7, which is φ2H7).



Guide

- Vertical control aimbal mirror and beamsplitter holders (BSHL) where the rotation of the fine adjustment matches the mirror center are also available. Reference C022
- Can be mounted using an M4 low head screw to secure them from the top or an M6 threaded post from the bottom. (MHI-12.7 can be mounted with an M3 low head screw from the top and M4 threaded post from the bottom.)

Attention

- MHI-12.7 limits the tilt and rotation to be $\pm 1^{\circ}$ and $\pm 2^{\circ}$ respectively. even when a low and small head hexagon socket head cap screw is used.
- ▶When securing a mirror with a low head hexagon socket head cap screw, a hex wrench may interfere with the mirror. Please retract the mirror by turning the rotation and tilt adjustment screws before tightening the low head hexagon socket head cap screw.
- ▶When securing a mirror on a baseplate with a M4 low head hexagon socket head cap screw, there will be ±1mm clearance.





Guide Mirrors

Lenses

Prisms

Polarizers Lasers

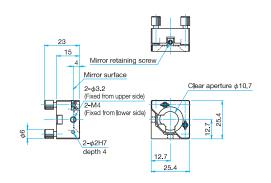
Beam Shaping Diffusers

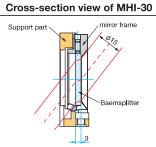
Filters Shutter

Others

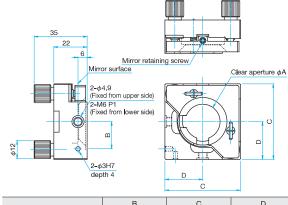
Fiber

Outline Drawing





Low head hexagon socket head cap screw M4×8...1 screw



Part Number	B (mm)	C (mm)	D (mm)
MHI-25.4	18	50	25
MHI-30	20	55	27.5

Specificatio	ns									Brass only for I	
Part Number	Options specified*1	Compatible Optics Diameter [mm]	Compatible Optics Thickness [mm]	Clear aperture ϕ A [mm]	Reflected Beam Clear Aperture (45°incidence) [mm]	Transmitted Beam Clear Aperture (45°incidence)*2 [mm]	Adjustm Tilt [°]	ent Range Rotation [°]	Tilt	lution Rotation [°/rotation]	Weight [kg]
MHI-12.7	_	φ12.7	2 – 9	φ10 . 7	φ6.8	φ5	±3	±3	about 0.74	about 0.74	0.05
MHI-25.4	UU	φ25, φ25.4	3 – 10	φ23	φ15.5	φ13	±1.5	±1.5	about 0.4	about 0.4	0.12
MHI-30	UU	φ30	3 – 10	φ27	φ18.3	φ15	±1.5	±1.5	about 0.35	about 0.35	0.13

For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". Reference) C007

*2 When light is transmitted through a BK7 plane parallel substrate of 3mm thickness.





A new design based on the Kinematic mirror holders (MHG) resulting in reduced prices. These holders are best for experiments using many simple mirror holders or for use in production devices.

- a small footprint offers more adjustment space compared to the MHG series.
- Mirrors are held are at three points along the side to distribute the stress on the mirror evenly.
- The thin frame and setscrew mounting method insure that large clear apertures can be obtained with reflected or transmitted light.



Guide

- ▶ Threaded and counterbored mounting holes allow MHGT to be mounted on female threaded M4 posts or on male threaded M6 posts.
- ▶ If lockable adjusters are required, see MHG-NL mirror holders. nce C014

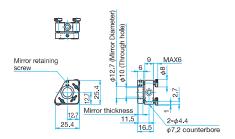
Attention

- ▶ The installation center of the post is offset from the mirror reflective surface. These holders cannot be used for installation on an optical bench at 45 degrees incidence. Please use the mirror holders without offset (MHI). Reference C012
- ▶ The rotation center of fine adjustment does not match the mirror reflective surface. For fine measurement, Please use gimbal mirror holders (MHAN) of which rotation center of fine adjustment matches the mirror reflective surface. Re C024

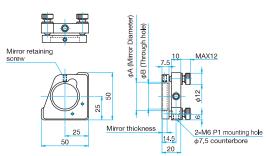




Outline Drawing

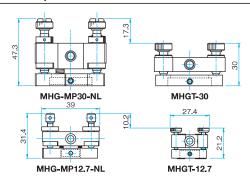


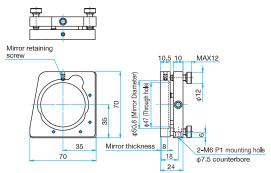
Hexagon socket head cap screw M4×10...1 screw



Part Number	φA (mm)	φB (mm)
MHGT-25.4	φ25, φ25.4	φ22
MHGT-30	φ30	φ27

Compare the size of the MHG-NL and MHGT





Specifications Primary material: Alumin Finish: Black Anodized										
	Options	Compatible Optics		Through hole	Number of	Adjustm	nent Range	Reso	lution	Weight
Part Number	specified*	Diameter φA [mm]	Thickness [mm]	ϕ B [mm]	Adjustment Axes	Tilt [°]	Rotation [°]	Tilt [°/rotation]	Rotation [°/rotation]	[kg]
MHGT-12.7	_	φ12.7	3 – 5	φ10	2	±3	±3	0.74	0.74	0.013
MHGT-25.4	UU	φ25, φ25.4	3 – 5	φ22	2	±3	±3	0.39	0.39	0.067
MHGT-30	UU	φ30	3 – 5	φ27	2	±3	±3	0.39	0.39	0.067
MHGT-50.8	UU	φ50 . 8	5 – 9	φ47	2	±3	±3	0.25	0.25	0.12

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". Reference 2007

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter Others



NOMI LOCK™ Model Kinematic Mirror Holder

MHG-MP-NL/MHG-HS-NL

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual **Stages**

Actuators & Adjusters

Motoeized **Stages**

Light Sources & Laser Safety

Index

Guide

Mirrors Lenses

Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others

Fiber

NOMI LOCK™ is the new locking mechanism from OptoSigma. It can adjust the torque of the adjustment screws and lock down the screws with neglible shift. It is best suited for use in interferometers

or laser processing devices where beam displacement can cause issues.

NOMI LOCK™ is a registered trademark of SIGMA KOKI CO., Ltd.

- Kinematic mirror holders have excellent rigidity and stability. These qualities make them perfect for use in interferometers and laser resonators.
- There are two types of mirror holders, a high stability model (MHG-HS) and a production model (MHG-MP).
- The MHG-HS high stability model is fitted with large adjustment knobs. These knobs allow for movement in the vertical direction as well making it a 3 axis mount.
- NOMI LOCK™ will have a single fringe displaced in the optical axis when used in interferometers. (There are individual differences in the operation of the lock.)
- Three point fixation of the mirrors reduce the stress caused by mounting grealty.
- These holders have a large aperture for reflective or transmitted light. The retaining rings to not reduce the clear aper-



Guide

- This product can be mounted on pedestal stands (PST: optional) or posts with an M6 external thread (RO: optional).
- ▶ Production model (MHG-MP) can be fixed directly on plates or stages with M4 screws
- Production model (MHG-MP) comes with a special wrench for NOMI LOCK™.

Attention

- ▶The rotation center of the production model (MHG-MP) is outside the mirror (fulcrum of holder).
- To mount the high stability model (MHG-HS) on a flat surface, use the plates for mounting posts (MHG-**BPRO). Ref D C016
- ▶When the plates for mounting posts (MHG-**BPRO) are used, the optical axis will move 10mm upward.
- The back surface of the mirror is the reference surface when the mirror is mounted in the holder. Due to this condition, the location of the front surface will vary with the thickness of the mirror.

NOMI LOCK™ Adjustment Method

Control Method djustment screv (1) Free

Interference Fringe Image (Image)



Loosening the know allows for easy movement of the adjustment screw.



(3) Lock



Tightening the locking knob about 30 degrees to make fine adjustments where this is just a little resistance in the adjustment screw. (When changing from free to half-lock, the interference fringe changes greatly.)



Tightening the locking knob all the way so that it will not move. When changing from half-lock to lock, the interference fringe only changes by about 1 fringe.

Specifications							ım (Brass only for l uper Black Chrom		
Part Number	Options specified*	Compatible Optics Diameter [mm]	Compatible Optics Thickness [mm]	Number of Adjustment Axes [mm]	Adjustm Tilt [°]	ent Range Rotation [°]	Resolution Rotation [°/rotation]	Resolution Tilt [°/rotation]	Weight [kg]
MHG-MP12.7-NL	_	φ12.7	3 – 5	3	±3	±3	about 0.74	about 0.74	0.04
MHG-MP20-NL	UU	φ20	3 – 5	2	±3	±3	about 0.39	about 0.39	0.12
MHG-HS20-NL	UU	φ20	3 – 5	3	±3	±3	about 0.39	about 0.39	0.12
MHG-MP25-NL	UU	φ25, φ25.4	3 – 5	2	±3	±3	about 0.39	about 0.39	0.12
MHG-HS25-NL	UU	φ25, φ25.4	3 – 5	3	±3	±3	about 0.39	about 0.39	0.12
MHG-MP30-NL	UU	φ30	3 – 5	2	±3	±3	about 0.39	about 0.39	0.12
MHG-HS30-NL	UU	φ30	3 – 5	3	±3	±3	about 0.39	about 0.39	0.12
MHG-MP50-NL	UU	φ50	5 – 8	2	±2	±2	about 0.26	about 0.26	0.24
MHG-MP50.8-NL	UU	φ50 . 8	5 – 8	2	±2	±2	about 0.26	about 0.26	0.24
MHG-MP80-NL	UU	φ80	7 – 12	2	±2	±2	about 0.18	about 0.18	0.38
MHG-MP100-NL	UU	φ100, φ101.6	10 – 15	2	±2	±2	about 0.13	about 0.13	0.56

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". [Reference] C007





Through

hole φB (mm)

φ17

Outline Drawing

MHG-MP12.7-NL

Mirror retaining screw

Hexagonal socket head cap screw M4×8...1 screw Spanner for lock knob...1 screw

Part Number	Mirror Diameter (mm)
MHG-MP12.7-NL	φ12.7

Mirror diameter ϕ 12.7 Through hole \$10

Mirror thickness 5



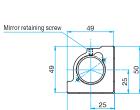
MAX14

φ7.2 counterbore

10

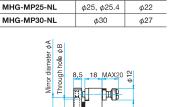
18.7





MHG-MP20-NL/25-NL/30-NL

Hexagonal socket head cap screw M4x10...1 screw Spanner for lock knob...1 screw



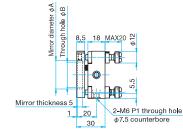
Mirror Diameter

 $\phi A (mm)$

φ20

Part Number

MHG-MP20-NL



MHG-HS20-NL/25-NL/30-NL

20

Hexagonal socket head cap screw M4×10...1 screw Spanner for lock knob...1 screw



Part Number	Mirror Diameter φA (mm)	Through hole \$\phi\$B (mm)	
MHG-HS20-NL	φ20	φ17	
MHG-HS25-NL	φ25, φ25.4	φ22	
MHG-HS30-NI	430	427	

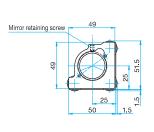
MHG-MP50-NL/50.8-NL

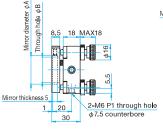
50

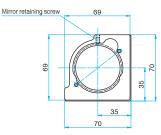
Hexagonal socket head cap screw M4×10...1 screw Spanner for lock knob...1 screw

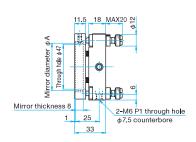


Part Number	Mirror Diameter φA (mm)	
MHG-MP50-NL	φ50	
MHG-MP50.8-NL	φ50.8	









MHG-MP80-NL

Hexagonal socket head cap screw M4×10...1 screw Spanner for lock knob...1 screw



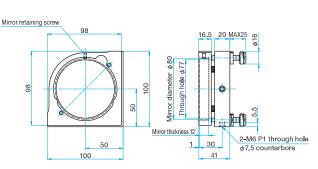
Part Number	Mirror Diameter (mm)
MHG-MP80-NL	φ80

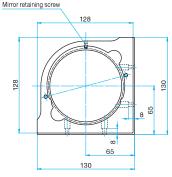
MHG-MP100-NL

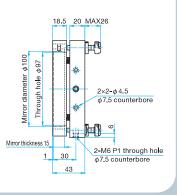
Hexagonal socket head cap screw M4×12...3 screws Spanner for lock knob...1 screw



Part Number	Mirror Diameter (mm)	
MHG-MP100-NL	φ100, φ101.6	







Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others



Options for Kinematic Mirror Holders

MHG-BPRO/MHG-KAD

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual **Stages**

Actuators & Adjusters

Motoeized **Stages**

Light Sources & Laser Safety

Index

Guide Mirrors

Lenses

Prisms Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others

Fiber

Post Adapter Plates | MHG-BPRO

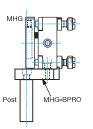
RoHS Catalog W4002

These plates correct the distance offset between the center of the mirror and the mounting hole.

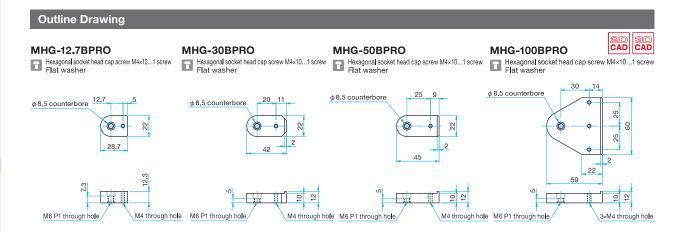
- When post adapter plates are used, the optical axis will move 10mm upward. (12.3mm only for MHG-12 and 7BPRO.)
- Post adapter plates can be fixed not only on posts but also on stages or baseplates using M4 screws.
- The adapters are designed for use with a mirror of 5mm thickness. Offset remains if a mirror of thickness other than 5mm is used.







Specifications		Primary material: Aluminum Finish: Black Anodized
Part Number	Compatible Holders	Weight [kg]
MHG-12.7BPRO	MHG-MP12.7	0.02
MHG-30BPRO	MHG-MP20-NL/MHG-HS MHG-MP25/-HS25 MHG-MP30/-HS30	20-NL 0.025
MHG-50BPRO	MHG-MP50/-MP50.8	0.025
MHG-100BPRO	MHG-100	0.075



45° Optics Adapters MHG-KAD



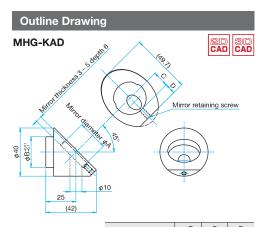
Used in a MHG kinematic mirror holder to direct a beam upwards or downwards on optical benches.

- The adustment range and resolution or mirror holders are changed using this adapters.
- Mirrors are mounted at three points on the side.
- Since adapters are fitted in the mirror frame of the mirror holder, the orientation of the tilted surface of the mirror can be rotated about the central axis of the adapter cylinder.





Specificatio	Primary material: Aluminum Finish: Black Anodized			
Part Number Compatible Holders		Compatible Optics Diameter ϕ A [mm]	Compatible Optics Weight Thickness [kg] [mm]	
MHG-25.4KAD	MHG-MP25.4/-HS25.4	φ25.4	3 – 5	0.07
MHG-30KAD	MHG-MP30/-HS30	ϕ 30	3 – 5	0.07



Part Number	φB (mm)	(mm)	D (mm)
MHG-25.4KAD	25.4	13.5	9
MHG-30KAD	30	15.5	7

Mirror Mount Adapters | MHG-MAD





Adapters for mounting smaller diameter mirrors.



- Adapters are designed so that the end faces of mirror frames are aligned with the end faces of adapters when adapters are attached to kinematic mirror holders (MHG). However, the reflective surface of a mirror is positioned 1mm inside the end face of adapter.
- Mirrors are fixed at three points on the lateral side.
- Before mounting adapters to mirror holders, fix mirrors to the adapters. Mirrors cannot mounted once the adapter is mounted in a mirror holder.
- The reflective surface position is dependant on the mirror thickness.

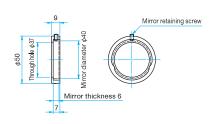
Example of Use



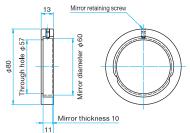
Specifications				iterial: Aluminum ck Anodized
Part Number	Compatible Holders	Compatible Optics Compatible Opti rs Diameter Thickness [mm] [mm]		Weight [kg]
MHG-40MAD	MHG-40MAD MHG-MP50		4 – 6	0.015
MHG-60MAD	MHG-80	φ60	6 – 10	0.06
MHG-25.4SMAD	MHG-MP25/-HS25	□25, □25.4	3 – 5	0.018

Outline Drawing

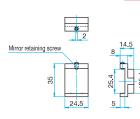
MHG-40MAD



MHG-60MAD



MHG-25.4SMAD



CAD CAD

Prism Adapters **MHG-PAD**



Adapters for holding cube optics such as beamsplitters or prisms. Provide extended stability with NOMI LOCK™.

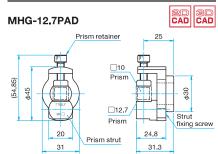
- \bullet Rotation (θ or yaw) and tilt (α or pitch) of prisms and cube optics can be fine adjusted with this adapter.
- To adjust yaw tilt (β) , fit the prism adapters in kinematic mirror holders after adjusting the orientation.
- There is a through hole on the moun so that prisms can be used on all four faces.
- There is an offset of 40mm from the baseplate mounting hole of the kinematic mirror holder to the center of cube.
- The clamp allows for different sized cubes to be mounted.



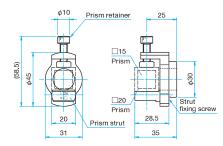


Specifications		Primary material: Aluminum Finish: Black Anodized		
Part Number	Compatible Holders	Compatible Optics Diameter [mm]	Weight [kg]	
MHG-12.7PAD	MHG-MP30/-HS30	□10•□12.7	0.06	
MHG-20PAD	MHG-MP30/-HS30	□15•□20	0.055	

Outline Drawing



MHG-20PAD





Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses

Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters Shutter

Others

Application Systems

Optics & Optical Coatings

Mechanics

Opto-

Bases

Manual **Stages**

Actuators & Adjusters

Motoeized

Stages

Index

Guide

Mirrors

Lenses **Prisms**

Polarizers Lasers Beam Shaping Diffusers

Filters Shutter Others Fiber

Options for Kinematic Mirror Holders

FMB / MHG-20LDU

Optical Path Flip Mounts | FMB



Flip mounts remove and insert mirrors/lenses from an optical paths.



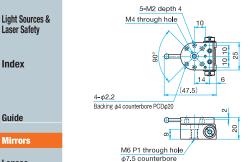
- A 3 mm thick mirror and MHG-MP20-NL can be used to for a mirror at the center with 45 degrees incident light. FMB-25 can be used in combination with a mirror mount (MHI or BSHL).
- These flip mounts have 5" repeatability. NOMI LOCK™ mounts used with these flip mounts will have excellent repeatability
- To mount the high precision mirror holder (MHG-HS**-NL), use the accessory spacer for adjusting height in order to avoid interference with adjustment screws.

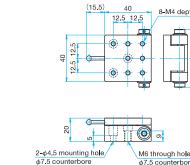
Outline Drawing

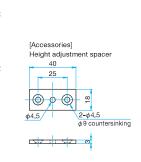
FMB-25 Hexagonal socket head cap screw M4×12...1 screw Hexagonal socket head cap screw M4×12...1 screw Countersunk head screw M4×8...2 screws











Specifications		Primary material: Aluminum Finish: Black Anodized
Part Number	Repeatability ["]	Weight [kg]
FMB-25	5 (25µrad)	0,04
FMB-40	5 (25µrad)	0.1

2-φ2.4 mounting hole

Example of Use

Laser Mounts | MHG-20LDU

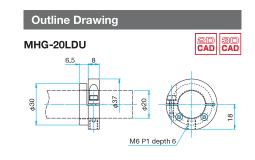


Adapter for mounting laser diodes (LDU33) or other ϕ 20 mm laser diodes with kinematic mirror holders.



- Split clamp structure of the laser mounts fix laser diodes securely. Caution: excessive clamping might damage laser diodes.
- Mounts can be used as fixed LD holders when a post is attached to the bottom of the
- Laser diodes (LDU33) are sold seperately. Refer to the light sources section for details of the specifications. WEB Reference Catalog Code W5001

Specifications				Primary material: Aluminum Finish: Black Anodized	
Part Number	Compatible Holders	Compatible Laser	Compatible Diameter [mm]	Weight [kg]	
MHG-20LDU	MHG-HS30/-MP30	LDU33 series	φ20	0.02	



For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". B **0007**

Vertical Control Small Mirror Holders | LMMH-R







Top adjust mirror holders can be used in small areas reducing the footprint of systems.

- Mirrors are held on their edge with a resin screw.
- These holders can be positioned and operated close to each other.



Guide

▶ Vertical control gimbal mirror and beamsplitter holders (BSHL) where the adjustment is along the reflective surface of the mirror are available too. Reference C022

Attention

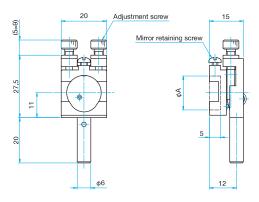
- ▶ Mirror thickness will change the position of the reflective surfacerface of the mirror.
- ▶ The front surface of the mount is 12 mm from the center axis of the post/mounting hole.





Outline Drawing

LMMH-R M4 P0.7



Specifications Resolution Compatible Optics Compatible Optics Adjustment Range Options Weight Part Number Diameter φA Thickness Rotation Tilt Rotation specified' [kg] [mm] [°/rotation] [°/rotation] φ10 LMMH-10R ±2.5 0.03 N ±2.5 about 0.28 about 0.3 ϕ 12.7 ±2.5 0.03 LMMH-12.7R N ±2.5 5 about 0.28 about 0.3 LMMH-15R φ15 5 ±2.5 0.03 ±2.5 about 0.28 about 0.3

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual **Stages**

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses

Polarizers

Lasers

Beam Shaping Diffusers

Filters Shutter

Others

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". 🔤

with the mirror adapters (MKAD).



Small Kinematic Mirror Holders

MMHN



Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors Lenses

Prisms

Polarizers Lasers

Beam Shaping Diffusers

Filters

Shutter

Others

Fiber

Rectangular mirrors can be bonded to the front plate and circular mirrors can be bonded or held

• MKAD adapters allow for easy removal and mounting of circular mirrors.

- Two baseplate versiosn are available. MMHN-25L type has the mounting holes on the mirror side, and MMHN-25R type has mounting on the adjustment screw side.
- To align the reflective surface of the mirror to the mounting post axis use MMHN-25LRO mirror holders.



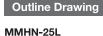
Guide

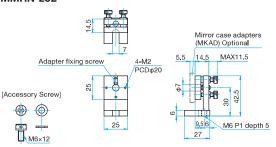
>25mm square aluminum flat mirrors (TFA-25S05-10) are available.

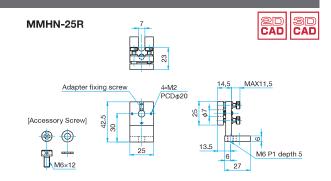
Attention

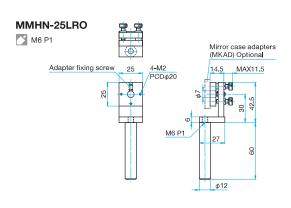
► The adjustment is not along the reflective surface of the mirror. Gimbal mirror holders (MHAN) have the adjustment along the reflective surface the mirrors.

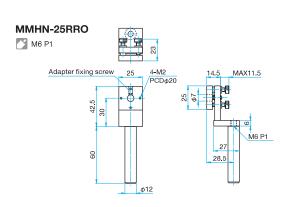
Reference CO24

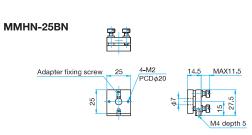














Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual

Stages

Actuators &

Adjusters

Motoeized

Light Sources & Laser Safety

Stages

							material: Aluminum lack Anodized
	Options		Adjustment Range		Resolution		Weight
Part Number	Part Number specified*		Tilt [°]	Rotation [$^{\circ}$]	Tilt [°/rotation]	Rotation [°/rotation]	[kg]
MMHN-25L	EE/UU		±5	±5	about 0.9	about 0.9	0.04
MMHN-25R	EE/UU		±5	±5	about 0.9	about 0.9	0.04
MMHN-25LRO	_	□25 or less □	±5	±5	about 0.9	about 0.9	0.09
MMHN-25RRO	_	φ20 Of less -	±5	±5	about 0.9	about 0.9	0.09
MMHN-25BN	_		±5	±5	about 0.9	about 0.9	0.03

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". Reference 2007

Mirror Adapters | MMHN-MAD

RoHS Catalog W4133



Can be used to change the mounting position of mirrors relative to the mirror holder.

- Round and rectangular reflective optics can be fixed.
- With nine fixed screw holes with 10mm interval, can easily achieve 10mm offset adjustment.
- The optics can be held at three points on the side.

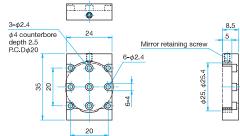
 $3-\phi 2.4$

φ4 counterbore P.C.Dφ20

Outline Drawing

MMHN-25CMAD

Hexagonal socket head cap screw M2×3...3 screw



MMHN-25SMAD

Hexagonal socket head cap screw M2×3...3 screw

Mirror retaining screv





Index

Guide

Mirrors

Lenses **Prisms**

Polarizers

Lasers

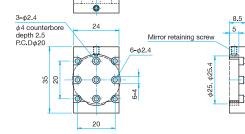
Beam Shaping Diffusers

Filters

Shutter

Others

Fiber



Specifications Compatible Optics Dimensions Weight Part Number [mm] [kg] MMHN-25CMAD ϕ 25, ϕ 25.4 0.01 MMHN-25SMAD □25, □25.4 0.01

Option Mirror Cells | MKAD

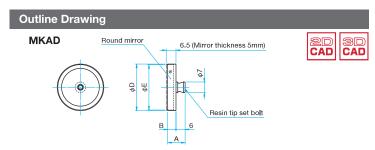
Mirror cells provide a method of mounting mirrors in compact mirror holders (MMHN-25) without adhesive.



- A split from provides a spring force to maintain a secure grip on mirrors inserted into these cells.
- To remove the mirror, push the mirror out by turning the M4 resin tipped setscrew clockwise.







Specifications	Primary mate Finish: Black	erial: Aluminum : Anodized					
Part Number	Compatible Optics Diameter [mm]	A [mm]	B [mm]	Min Mirror Thickness [mm]	φD [mm]	φE [mm]	Weight [kg]
MKAD-12.7	φ12.7	10.5	4.5	3	φ13.4	ϕ 12.7 $^{+0.15}_{+0.1}$	0.002
MKAD-19.05	φ19.1	12	6	4.5	φ19.9	ϕ 19.1 $^{+0.15}_{+0.1}$	0.003
MKAD-25.4	φ25.4	11.5	5.5	4	φ26.1	φ25.4 ^{+0.15}	0.005
MKAD-30	φ30	11.5	5.5	4	φ30.8	φ30 ^{+0.15}	0.006



Vertical Control Gimbal Beamsplitter Holders

BSHL-2/BSHL-TF

RoHS

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide Mirrors

Lenses

Prisms
Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others

Fiber

These vertical holders are ideal for small spacers due to their thin design and vertical adjustment. Holders can be positioned close to each other reducing optical system size.



- There are two types, one is fitted with knobs on top (BSHL-2), and the other is without knobs and adjusted by hex wrench (BSHL-TF).
- This product provides large clear aperture of transmitted beam even if beamsplitter is placed at 45 degrees.
- The gimbal design maintains the center position of mirror even when fine adjusted.
- Adjustment screws can be fixed with the clamp screws on the back of the mounts.
- Two M4 mounting holes are also provided on both sides to mount the holder horizontally.

Attention

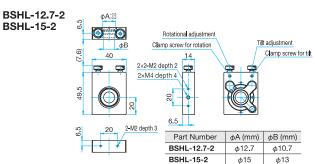
- ▶The locking clamps prevent the adjustment screws from rotating.
- To adjust the BSHL-TF mounts, a hex wrench is required. A ball end wrench set (SKB-JBX6) is available.

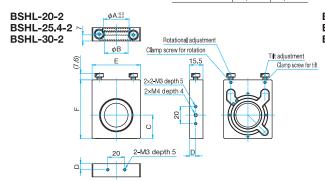
WEB Reference Catalog Code W6077

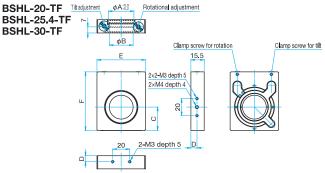
► M6 mounting plates are availabe for purchase. Refer

- Can be mounted on post stands (PST-*) using the M4 tapped holes of holders.
- ▶ Custom baseplates can be made to order.

Outline Drawing







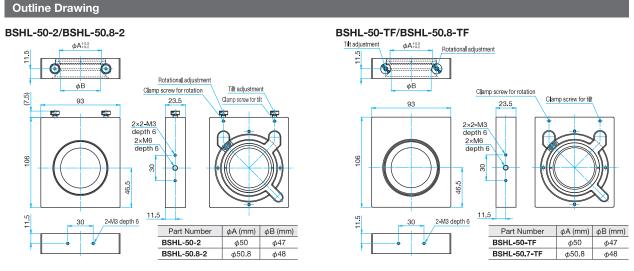
BSHL-15-TF

 ϕ 13

With Knobs Part Number	Without Knobs Part Number	φA (mm)	φB (mm)	C (mm)	D (mm)	E (mm)	F (mm)
BSHL-20-2	BSHL-20-TF	φ20	φ18	25.2	7	50.4	64
BSHL-25.4-2	BSHL-25.4-TF	φ25.4	φ23.4	25.2	7	50.4	64
BSHI -30-2	BSHI -30-TE	430	428	27.5	7	57	69

Specifications Primary material: Aluminu Finish: Black Anodized												
With Knobs Without Knobs	Compatible Optics		45° Incidence 45° Incidence Reflected Beam, Central Transmission		Fine Adjustment Range		Fine Adjustment Resolution		Weight			
Part Number	Part Number	Diameter [mm]	Thickness [mm]	Diameter [mm]	Beam Diameter [mm]	Tilt [°]	Rotation [°]	Tilt [°/rotation]	Rotation [°/rotation]	[kg]		
BSHL-12.7-2	BSHL-12.7-TF	φ12.7	1 – 3	φ6.8	φ2.51	±1.5	±1.2	0.6	0.6	0.06		
BSHL-15-2	BSHL-15-TF	φ15	1 – 3	φ8.4	φ4.13	±1.5	±1.2	0.6	0.6	0.06		
BSHL-20-2	BSHL-20-TF	φ20	3 – 5	φ12	φ7.67	±1.2	±1.2	0.35	0.45	0.11		
BSHL-25.4-2	BSHL-25.4-TF	φ25, φ25.4	3 – 5	φ15.8	φ11.49	±1.2	±1.2	0.35	0.45	0.11		
BSHL-30-2	BSHL-30-TF	φ30	3 – 5	φ19	φ14.74	±1.2	±1.2	0.34	0.4	0.13		
BSHL-50-2	BSHL-50-TF	φ50	5 – 8	φ31	φ27.39	±1.5	±1.5	0.23	0.27	0.48		
BSHI -50 8-2	BSHL-50.8-TF	<i>φ</i> 50.8	5 – 8	<i>α</i> 31	ტ28-10	+1.5	+1.5	0.23	0.27	0.48		





Option Options for Vertical Control Gimbal Beamsplitter Holders | BSHL-BP

RoHS Catalog W4510

Base plates for mounting BSHL mirror holders on optical breadboards or optical baseplates. Base plates are available to mount the BSHL at 0 degrees and 45 degrees incidence positions.

• BSHL-BPRO adapter plates for mounting posts (RO-12/20) on the bottom of the BSHL.

2-ø3.5

BSHL Holder

- BSHL-12.7BP mounts BSHL-12.7/15 holders on base plates with M2 threads on 10mm spacing at 0 degrees and 45 degrees incidence positions.
- When securing with an M4 thread, use the M6-M4 conversion adapter (AD-M6-M4). ▶ WES Reference Catalog Code W6030

2**-**φ7

50.4

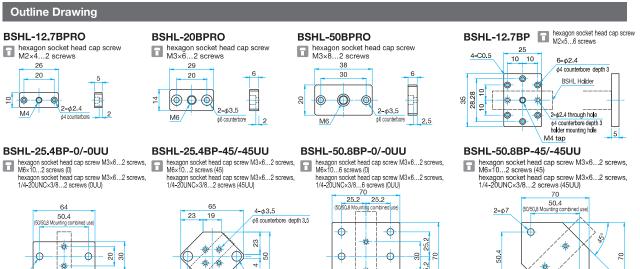
BSHL Holder



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φ6 counterbore depth 3.5

BSHL Holder



0

φ6 counterbore depth 3.5

ф

 $2-\phi 7$

BSHL Holder

Specifications				Primary material: Aluminun Finish: Black Anodized
Part	Number	Type	Compatible Holders	Weight
METRIC	INCH	Туре	Compatible Holders	[kg]
BSHL-12.7BPRO	_	M4-Rod	BSHL-12.7, BSHL-15	0.01
BSHL-20BPRO	_	M6-Rod	BSHL-20, BSHL-25.4, BSHL-30	0.01
BSHL-50BPRO	_	M6-Rod	BSHL-50, BSHL-50.8	0,02
BSHL-12.7BP	_	Combined use 0° and 45° Incidence	BSHL-12.7, BSHL-15	0.01
BSHL-25.4BP-0	BSHL-25.4BP-0UU	0° Incidence	BSHL-20, BSHL-25.4, BSHL-30	0.03
BSHL-25.4BP-45	BSHL-25.4BP-45UU	45° Incidence	BSHL-20, BSHL-25.4, BSHL-30	0.03
BSHL-50.8BP-0	BSHL-50.8BP-0UU	0° Incidence	BSHL-50, BSHL-50.8	0.08
BSHL-50.8BP-45	BSHL-50.8BP-45UU	45° Incidence	BSHL-50, BSHL-50.8	0.06

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses

Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others

Gimbal Mirror Holders

MHAN-S/MHA/MHAN-DM

RoHS

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized **Stages**

Light Sources & Laser Safety

Index

Guide Mirrors

Lenses

Prisms **Polarizers**

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others

Fiber

Mirrors can rotate 360 degrees in the pitch direction. Ideal for applications where the incident light has multiple angles of incidence.

- The angle of the mirror can be fine tuned with the coarse/fine switching clamp.
- The mount is designed to have the reflective surface at the center of rotation of the mount. Mirror thickness does not
- 0.25 mm fine pitch screw adjusters or differential micrometers can be used to save space and provide finer adjustment for MHAN mounts ϕ 50.8 mm and under



Guide

- ▶The RO-20-60 post (diameter ϕ 20mm, length 60mm) is included but it can be replaced with other sizes. Special tools are required to remove the post. Different sized post can be specified at the time of purchase.
- Kinematic mirror holders, MHG-NL, should be used for low optical axes applications. Reference C014

Attention

- ▶ Beam splitters mounted at 45 degrees will have the beam blocked by the aluminum frame. The BHAN gimbal beamsplitter holders are recommended and have a larger transmitted clear aperture. Reference C026
- ▶Use the coarse/fine switching clamp to lock down the mount after the desired adjustment.
- ▶The post should be well secured before adjusting the mount.

Mirror Mounting Methods

When mounting a mirror in a mirror holder, use gloves or finger cots so that finger prints do not get on the

When securing a mirror to the gimbal mirror holder, place the reflective surface downward so that the mirror will be tight against the bottom (face side) of the mirror frame. Place a Delrin ring on the mirror from the top, so that it does not scratch the mirror. Secure the retaining ring into the mirror frame using a spanner wrench or similar tool.

First, tighten the retaining ring until it just contacts the mirror.

Second, firmly tighten the retaining ring once, until mirror frame and mirror, Delrin ring, and retaining ring are all in tight contact.

Third, loosen the retaining ring until the mirror can move.

Finally, slowly tighten the retaining ring, stopping at the position where the retaining ring is held lightly. So as not to put stress on the mirror.

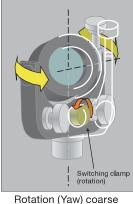
When shipping or when used in locations with a lot of vibration, it is possible that the retaining ring will come loose, and the mirror will fall off. In this case, either firmly tighten the retaining ring so that it does not come loose, or secure the retaining ring with thread locking adhesive.



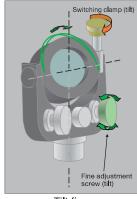
How to Use the Coarse / Fine Switching Clamp and Fine Adjustment Screws



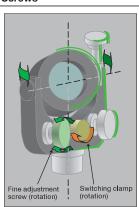
Tilt (pitch) coarse movement control



Rotation (Yaw) coarse movement control



Tilt fine movement control



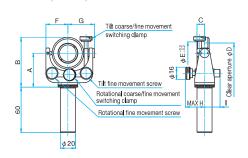
Rotational fine movement control



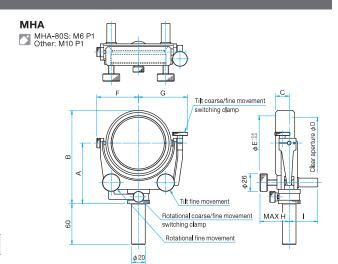
Outline Drawing



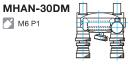


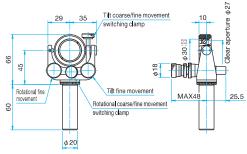


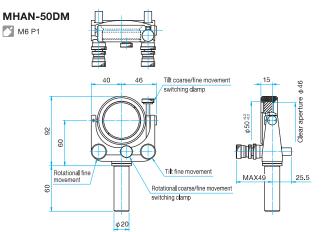
Part Number	A (mm)	B (mm)	C (mm)	φD (mm)	φE (mm)	G (mm)	F+G (mm)	MAX H (mm)	I (mm)
MHAN-20S	40	56	10	φ17	φ20	30	54	26.5	20.5
MHAN-25.4S	45	66	10	φ22	φ25.4	35	64	27	20.5
MHAN-30S	45	66	10	φ27	φ30	35	64	27	20.5
MHAN-40S	52.5	79.5	12	φ37	φ40	41	76	27.5	20.5
MHAN-50S	60	92	15	φ46	φ50	46	86	29	20.5
MHAN-50.8S	60	92	15	φ47	φ50.8	46	86	29	20.5
MHAN-60S	65	102	15	φ56	φ60	51	96	28.5	20.5



Part Number	A (mm)	B (mm)	C (mm)	φD (mm)	φE (mm)	G (mm)	F+G (mm)	MAX H (mm)	l (mm)
MHA-80S	89	137	20	φ75	φ80	72	133	48	42.5
MHA-100SA	115	177	21	φ95	φ100	101	184	48	45
MHA-130SA	128	205	24	φ124	φ130	116	214	48	45
MHA-150S	140	227	26	φ144	φ150	126	234	48	45







Screw Type								Primary material: Finish: Black And	
	Options	Compatible Optics		Reflected Beam Clear Aperture	Fine Adjus	stment Range	Fine Adjustme	ent Resolution	Weight
Part Number	specified*	Diameter [mm]	Thickness [mm]	(45° incidence) [mm]	Tilt [°]	Rotation [°]	Tilt [°/rotation]	Rotation [°/rotation]	[kg]
MHAN-20S	N/UU	φ20	2 – 6	φ9.2	±4	±4	about 0.54	about 0.68	0.3
MHAN-25.4S	N/UU	φ25, φ25.4	2 – 6	φ12 . 7	±4	±4	about 0.54	about 0.68	0.4
MHAN-30S	N/UU	φ30	2 – 6	φ16.3	±4	±4	about 0.54	about 0.68	0.4
MHAN-40S	N/UU	φ40	2 – 8	φ23.3	±4	±4	about 0.45	about 0.55	0.6
MHAN-50S	N/UU	φ50	3 – 11	φ30.4	±4	±4	about 0.35	about 0.48	0.7
MHAN-50.8S	N/UU	φ50.8	3 – 11	φ30.4	±4	±4	about 0.35	about 0.48	0.7
MHAN-60S	N/UU	ϕ 60	3 – 11	φ37 . 5	±3	±4	about 0.31	about 0.41	0.9
MHA-80S	_	φ80	4 – 15	φ50 . 9	±3.5	±5	about 0.49	about 0.72	1.6
MHA-100SA	_	φ100	4 – 15	φ65.1	±3.4	±5	about 0.35	about 0.52	1.9
MHA-130SA	_	φ130	7 – 18	φ86.3	±2.9	±4	about 0.30	about 0.42	2.3
MHA-150S	_	φ150	4 – 20	φ100.4	±2.5	±4	about 0.26	about 0.38	2.5

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". Reference C007

Precision Type Primary material: Aluminum Finish: Black Anodized Options Options Options Options Options Part Number Options Opti												70d
	Ontions	Compatib	ole Optics	Fine Adjust	ment Range	Fine Adjustme	ent Resolution	Ultra Fine Adjust	ment Resolution	Ultra Fine Adjustmen	t Indicator Conversion	Moight
Part Number	Options specified*	Diameter [mm]	Thickness [mm]	Tilt [°]	Rotation [°]	Tilt [°/rotation]	Rotation [°/rotation]	Tilt [°/rotation]	Rotation [°/rotation]	Tilt [°/DIV]	Rotation [°/DIV]	[kg]
MHAN-30DM	N/UU	φ30	2 – 6	±4	±4	about 1.08	about 1.35	about 0.11	about 0.14	about 0.002	about 0.002	0.47
MHAN-50DM	N/UU	φ50	3 – 11	±3	±4	about 0.71	about 0.95	about 0.07	about 0.10	about 0.001	about 0.002	0.58

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". Reference) C007

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses

Prisms

Polarizers Lasers

Beam Shaping Diffusers

Filters Shutter

Others



BHAN-S/BHAN-DM | RoHS |

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual **Stages**

Actuators & Adjusters

Motoeized **Stages**

Light Sources & Laser Safety

Index

Guide

Mirrors Lenses

Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others

Fiber

Gimbal Beamsplitter Holders

The frame of these mounts are narrow to accommodate a greater clear aperture at 45 degrees incident. The transmitted beam diameter is just about he same as the reflected beam diameter. Appropriate for beam branching optical systems or Michelson interferometers.

• BHAN-S functions the same as MHAN.



Guide

▶ The RO-20-60 post (diameter ϕ 20mm, length 60mm) is included but it can be replaced with other sizes. Special tools are required to remove the post. Different sized post can be specified at the time of purchase.

Attention

- ▶ Resin rings are sold separately and are recommended.
- ▶BHAN uses retaining rings unique to this mount. Contact the Sales Division for replacements.
- The mount will have some backlash if a large wedged beamsplitter is used. Wedges work better when they are secured on their edges. Kinematic mirror holders (MHG-NL) are recommended for circular wedges. Reference C014

Screw Type							Primary material: A Finish: B l ack Anod	
Part Number	Options specified*	Compatible Optics Diameter [mm]	Compatible Optics Thickness [mm]	Fine Adjustment Range Tilt [°]	Fine Adjustment Range Rotation [°]	Fine Adjustment Resolution Tilt [°/rotation]	Fine Adjustment Resolution Rotation [°/rotation]	Weight [kg]
BHAN-30S	UU	φ30	3 – 5	±4	±4	about 0.54	about 0.68	0.4
BHAN-50S	UU	φ50, φ50.8	5 – 8	±4	±4	about 0.31	about 0.48	0.5

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". Reference) C007

Precision Type Primary material: Aluminum Fine Adjustment Range Options Optio												zed
Dort Number Options		Compatible Optics		Fine Adjustment Range		Fine Adjustment Resolution		Ultra Fine Adjustment Resolution		Ultra Fine Adjustmen	Indicator Conversion	Moight
Part Number Op	specified*	Diameter [mm]	Thickness [mm]	Tilt [°]	Rotation [°]	Tilt [°/rotation]	Rotation [°/rotation]	Tilt [°/rotation]	Rotation [°/rotation]	Tilt [°/DIV]	Rotation [°/DIV]	[kg]
BHAN-30DM	UU	ϕ 30	3 – 5	±4	±4	about 1.08	about 1.35	about 0.11	about 0.14	about 0.002	about 0.002	0.45
BHAN-50DM	UU	φ50, φ50.8	5 – 8	±3	±4	about 0.71	about 0.95	about 0.07	about 0.10	about 0.001	about 0.002	0.55

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". Reference CO07

Reflection and Transmission Clear Aperture at 45° Incidence MHAN-30 Tilt Clear Aperture BHAN-30 Tilt Clear Aperture Reflected light Reflected light

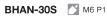
Clear Aperture of Beamsplitter Holder

Part Number	Beamsplitter Thickness		d/Reflected ar Aperture
Part Number	[mm]	45° incidence [mm]	0° incidence [mm]
BHAN-30S	3	15.4	28
MHAN-30S	3	9.9	27
BHAN-50S	5	31.1	48
MHAN-50S	5	18.3	47
MHAN-20S	2	2.2	17
MHAN-25.4S	3	6.7	22
MHAN-40S	4	14.7	37
MHAN-60S	6	26.1	57
MHA-80S	8	34.5	76
MHA-100S	10	50.0	96
MHA-130S	13	69.3	126
MHA-150S	15	80.2	146

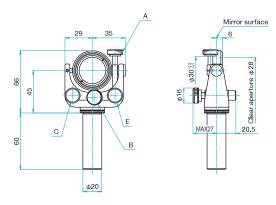




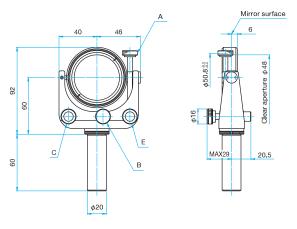
Outline Drawing



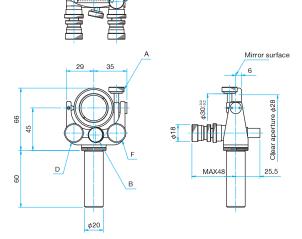


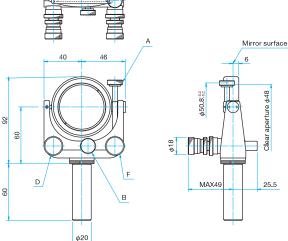












- A: Tilt coarse/fine movement switching clamp
 B: Rotational coarse/fine movement switching clamp
 C: Rotational fine movement screw

- D: Rotational fine movement Differential micrometer head
- E: Tilt fine movement screw
 F: Tilt fine movement Differential micrometer head

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses

Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others



Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual

Stages

Actuators & Adjusters

Motoeized

Light Sources & Laser Safety

Stages

Index

Guide

Mirrors

Lenses **Prisms**

Polarizers Lasers Beam Shaping Diffusers

Filters Shutter Others

Fiber

High Rigidity Mirror Holders



The MHL kinematic mirror holder incorporates a steel flexure spring for high rigidity and suppresion of positional shifts due to shocks or vibrations.

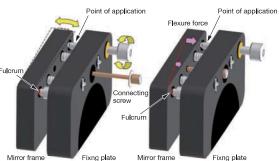
- Includes provisions for post mounting (M6 tapped hole with counterbore for M4 or 8-32 thread inserts).
- Baseplates (MHL-BP) available for mounting directly to breadboards.
- Mirror holder cell is removable and can be replaced by custom cells or adapters.
- Setscrew locking mechanism for preventing accidental changes after adjusting mirror angle.



Mirror frame with locking mechanism

1) By loosing the connecting screw, angle can be adjusted.

2By tightening the connecting screw, flexure force will act on point of application . Then mirror frame and fixing plate can be fixed. *Lock will be released when adjusting screw is moved.

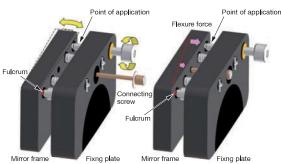


Guide

- ▶ Manual adjustment screws can be replaced by motorized actuators. Please contact Sales Division for more information.
- Remove mirror cell using four Philips head screws on front of mount.
- Unscrew retaining ring and remove Resin washer.
- Insert mirror with reflective surface facing the flange.
- · Tight against Resin washer.
- Insert mirror cell into body and reattach using four Philips head screws.

Attention

- MHL has different design from MHB. Please confirm the dimension by CAD drawings.
- Posts and base plates are not included. Please purchase separately. Depending on the angle of incidence, the beam will be shaded by the frame of mirror mount. For the usage of 45 degrees transmittance, Kinematic Mirror Holder (MHG) or Gimbal Beamsplitter Holders
- (BHAN) is available. Reference C014, Reference C026 ► Rotation center of MHL doesn't match the center of mirror surface. If the rotation center is needed to match the center of mirror surface, Virtical Control Gimbal Beamsplitter Holders (BSHL-2) or Gimballed Mirror Mounts (MHAN) are available. Reference C022, Reference C024



Specifications							Primary mate Finish: Black	erial: Aluminum Anodized
	Compatible Optics		Number of	Adjustment Range		Resolution		Weight
Part Number	Diameter [mm]	Thickness [mm]	Adjustment Axis	Tilt [°]	Rotation [°]	Tilt [°/Rotation]	Rotation [°/Rotation]	[kg]
MHL-25.4S	φ25, φ25.4	3 – 9	2	±2	±2	±0.3	±0.3	0.28
MHL-30S	φ30	3 – 9	2	±2	±2	±0.3	±0.3	0.29
MHL-50S	φ50	4 – 16	2	±3	±3	±0 . 2	±0.2	0.56
MHL-50.8S	φ50 . 8	4 – 16	2	±3	±3	±0.2	±0.2	0.56





2×2-M4

Outline Drawing MHL-25.4S **MHL-30S** MHL-50S/50.8S Lock Lock Lock 16 MAX mirror thickness φ30 Mirro Tilt fine adjustment \$\times \text{outlefth 6} \\ \phi 8 \text{ counterbore depth 1} \\ \text{0.5} \quad \text{21.5} \end{array} 2×3-M3 depth 6 2×3-M3 depth 6

Option **Base Plate for MHL MHL-BP**

RoHS Catalog W4146

Base plates for MHL series mirror holders to mount holder directly to baseplate or breadboards.



Example of use

2-M6 depth 6

By reversing the base plates and also changing the mounting surface, it is possible to mount MHL in a symmetric orientation.



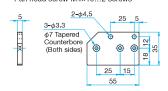




Outline Drawing

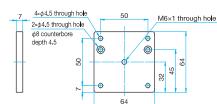
MHL-30BP

Countersunk head screw M3×10...3 screws Pan head screw M4×10...2 screws



MHL-50BP

Pan head screw M4×8...2 screws Pan head screw M4×12...4 screws



Specifications		Primary material: Aluminum Finish: Black Anodized
Part Number	Compatible Holders	Weight [kg]
MHL-30BP	MHL-25.4S, MHL-30S, KLH-BE-M22H	0.03
MHL-50BP	MHL-50S, MHL-50.8S, KLH-BE-M34H LAH-4TS-32, LAH-4TS-35, LAH-4TS-45	0.08

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses

Prisms **Polarizers**

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others



Topmike Vertical Control Mirror Holders





Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual **Stages**

Actuators & Adjusters

Motoeized **Stages**

Light Sources & Laser Safety

Index

Guide

Mirrors Lenses

Prisms

Polarizers Lasers

Beam Shaping Diffusers

Filters Shutter

Others

Fiber

Top adjustment of these mirror mounts allow for devices to be placed in close proximity with each other.

The moutn can be mounted so that the micrometers are facing upwards or horizontally with the correct baseplate.

- The optical axis of the mount does not change with vertical or horizontal mounting.
- Each baseeplate will work with the mount vertically or horizontally.



Guide

▶ Vertical control gimbal mirror and beamsplitter holders (BSHL) of which rotation center of fine adjustment matches the center of the mirror reflective surface are also available. Reference CO22

Attention

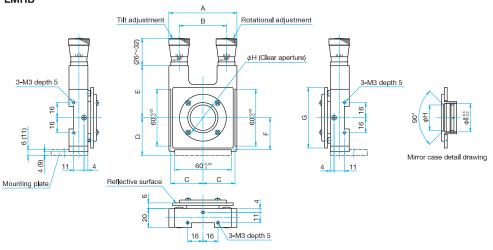
- ▶LMHBP plates are required to install the mount onto an optical table.
- ▶ Beamsplitters will have the transmitted beam partially blocked at 45 degrees incident. MHG or MHAN mouths are commended for beamsplitters. Reference C014, C024





Outline Drawing

LMHB



Part Number	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	φH (mm)	φ l (mm)
LMHB-25.4M	72	50	34	40	55	34	64	φ22	φ25.4
LMHB-30M	72	50	24	40	55	34	64	φ27	φ30
LMHB-50M	102	80	49	55	69	49	94	φ47	φ50
LMHB-50.8M	102	80	49	55	69	49	94	φ47	φ50.8
LMHB-60M	102	80	49	55	69	49	94	φ57	φ60

Specifications							terial: Aluminum k Anodized
	Compatil	ole Optics	Adjustm	ent Range	Reso	lution	Weight
Part Number	Diameter [mm]	Thickness [mm]	Tilt [°]	Rotation [°]	Tilt [°/rotation]	Rotation [°/rotation]	[kg]
LMHB-25.4M	φ25.4	3 – 9	±2.8	±2.8	about 0.006	about 0.006	0.44
LMHB-30M	φ30	3 – 9	±2.8	±2.8	about 0.006	about 0.006	0.44
LMHB-50M	φ50	2 – 16	±1.8	±1.8	about 0.004	about 0.004	0.75
LMHB-50.8M	φ50.8	2 – 16	±1.8	±1.8	about 0.004	about 0.004	0.75
LMHB-60M	φ60	4 – 17	±1.8	±1.8	about 0.004	about 0 . 004	0.75



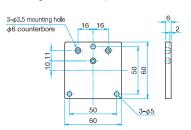
RoHS Catalog W4503

These plates are for mounting vertical control mirror holders (LMHB) on an optical breadboard, optical baseplates, or post.



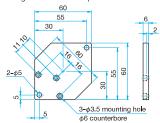
Outline Drawing

LMHBP-0 Pan head screw M3×6...3screws, Hexagon socket head cap screw M4×10...3 screws



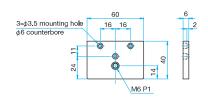
LMHBP-45

Pan head screw M3×6...3screws, Hexagon socket head cap screw M4×10...2 screws 60



LMHBP-M6

Pan head screw M3×6...3 screws

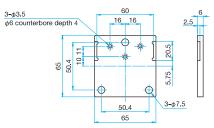


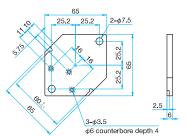
LMHBP-0EE/0UU

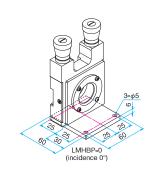
Pan head screw M3x6...3 screws, Hexagon socket head cap screw M6x12...3 screws (EE)
Pan head screw M3x6...3 screws, Hexagon socket head cap screw 1/4-20UNCx1/2...3 screws (UU)

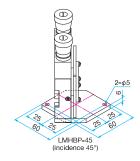


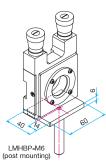
Pan head screw M3x6...3 screws, Hexagon socket head cap screw M6x12...2 screws (EE)
Pan head screw M3x6...3 screws, Hexagon socket head cap screw 1/4-20UNCx1/2...2 screws (UU)







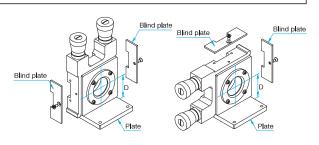




Specifications			Primary material: Aluminum Finish: Black Anodized
Pa	art Number	Type	Weight
METRIC	INCH	туре	[kg]
LMHBP-0	_	0°Incidence, M4 Screw	0.06
LMHBP-0EE	LMHBP-0UU	0°Incidence, M6 or Inch Screw	0.06
LMHBP-45	-	45°Incidence, M4 Screw	0.05
LMHBP-45EE	LMHBP-45UU	45°Incidence, M6 or Inch Screw	0.05
LMHBP-M6	_	Post of M6 threaded	0.04

Method to Change the Control Direction

To change the control direction for adjusting a mirror to left or right, please change the direction of the LMHB and mount it on a plate. Change in the control direction does not change the optical axis height (D). Please remove the blindfold boards attached on the sides of the holder, and mount the plate on one side of the holder.



Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses

Polarizers

Lasers

Beam Shaping Diffusers **Filters**

Shutter

Others



Large Precision Gimbal Mirror Holders





Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized **Stages**

Light Sources & Laser Safety

Index

Guide Mirrors

Lenses

Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others

Fiber

Gimbal mirror holders designed for mirrors φ100mm to φ300mm. These mirror holders can minimize optical path length difference, a problem in large mirrors, caused by mirror tilt adjustment.

- It is structured to fix the mirror with the three resin tip screws from the back, and it is designed to fix the mirror of various thickness.
- Differential micrometer heads with large knobs are used for fine angular adjustment.



Guide

▶ Custom style MHD mounts can be made to order. Contact our Sales Division for more information.

Attention

- ▶ Remove the retaining screw brackets to insert a mirror. Then screw the brackets back on.
- Pressing an optics hard with the resin tip screw of the mirror retainer may distort the mirror and worsen the surface accuracy.





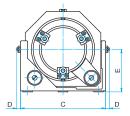
Outline Drawing

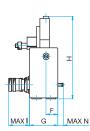
MHD-100: Hexagon socket head cap screw M6x10...3 screws MHD-150/200: Hexagon socket head cap screw M6x12...3 screws MHD-254: Hexagon socket head cap screw M6x14...3 screws MHD-300: Hexagon socket head cap screw M6x18...3 screws MHD-101.6/152.4/203.2: Hexagon socket head cap screw 1/4-20UNCx1/2...3 screws

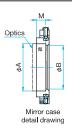
MHD-254-UU:

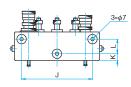
Hexagon socket head cap screw 1/4-20UNC×1/2...3 screws Common Accessories
Washer for M6...3 Pieces

Special tool, long hexagon wrench...1 Piece









Part Number	φA (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	J (mm)	K (mm)	L (mm)	M (mm)	N (mm)
MHD-100	φ100 ^{+0.7} _{+0.4}	92	180	8	90	25	60	175	65	150	14	31	20	30
MHD-101.6	φ101.6 ^{+0.7} _{+0.4}	92	180	8	90	25	60	175	65	150	14	31	20	30
MHD-150	φ150 ^{+0.7} _{+0.4}	138	240	8	120	25	65	234	70	190	15	34	30	30
MHD-152.4	φ152.4 ^{+0.7} _{+0.4}	138	240	8	120	25	65	234	70	190	15	34	30	30
MHD-200	φ200 ^{+0.8} _{+0.4}	188	295	10	150	30	84	293	70	250	17	50	35	25
MHD-203.2	φ203.2 ^{+0.8} _{+0.4}	188	295	10	150	30	84	293	70	250	17	50	35	25
MHD-254	φ254 ^{+0.8} _{+0.4}	242	347	10	180	33	90	350	70	300	18	50	45	25
MHD-300	φ300 ⁺¹ _{*0.8}	288	405	10	211	33	90	407	70	350	18	50	45	25

Specifications								rimary material: Al inish: Black (main	uminum unit) Black Anodiz	zed (Ho l der)
	Options	Compatil	ble Optics	Adjustm	ent Range	Coarse Adjustr	nent Resolution	Fine Adjustment In	dicator Conversion	Weight
Part Number	specified*	Diameter [mm]	Thickness [mm]	Tilt [°]	Rotation [°]	Tilt [°/rotation]	Rotation [°/rotation]	Tilt [°/DIV]	Rotation [°/DIV]	[kg]
MHD-100	_	ϕ 100	5 – 28	±5.7	±5.7	about 0.57	about 0.57	about 0.0008	about 0.0008	2.1
MHD-101.6	_	φ101 . 6	5 – 28	±5.7	±5.7	about 0.57	about 0.57	about 0.0008	about 0.0008	2.1
MHD-150	_	φ150	5 – 38	±4.3	±4.3	about 0.43	about 0.43	about 0.0006	about 0.0006	3.3
MHD-152.4	_	φ152.4	5 – 38	±4.3	±4.3	about 0.43	about 0.43	about 0.0006	about 0.0006	3.3
MHD-200	_	φ200	20 – 44	±3.4	±3.4	about 0.34	about 0.34	about 0.0005	about 0.0005	4.9
MHD-203.2	_	φ203.2	20 - 44	±3.4	±3.4	about 0.34	about 0.34	about 0.0005	about 0.0005	4.9
MHD-254	UU	φ254	40 – 54	±2.8	±2.8	about 0.28	about 0.28	about 0,0004	about 0.0004	6.2
MHD-300	_	φ300	40 – 54	±2.3	±2.3	about 0.23	about 0.23	about 0.0003	about 0.0003	11.0

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". [ROO7]

Option Plates for MHD Large Precision Gimbal Mirror Holders | MHD-P

RoHS Catalog W4507

Base plates for mounting large precision gimbal mirror holders (MHD) on optical breadboards or optical baseplates.

• Available in both inch and metric hole patterns.



Specification	ıs	Primary material: Aluminum Finish: Black Anodized		
Part N	Number	Compatible Holders		
METRIC	INCH	Compatible Holders		
MHD-100PEE	MHD-100PUU	MHD-100, MHD-101.6		
MHD-150PEE	MHD-150PUU	MHD-150, MHD-152.4		
MHD-200PEE	MHD-200PUU	MHD-200, MHD-203.2		
MHD-254PEE	MHD-254PUU	MHD-254		

MHD-100P/150P/200P/254P Hexagon socket head cap screw M6x18...3 screws (EE) Hexagon socket head cap screw 1/4-20UNCx3/4...3 screws (UU)

Part Number	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	Н
MHD-100PEE	180	100	25	90	75	31	150	M6 P1
MHD-150PEE	240	150	25	120	100	34	190	M6 P1
MHD-200PEE	295	200	25	120	100	50	250	M6 P1
MHD-254PEE	348	250	25	140	125	50	300	M6 P1
MHD-100PUU	180	101.6	25.4	90	76.2	31	150	1/4 - 20UNC
MHD-150PUU	240	152.4	25.4	90	76.2	34	190	1/4 - 20UNC
MHD-200PUU	295	203.2	25.4	120	101.6	50	250	1/4 - 20UNC
MHD-254PUU	348	254	25.4	140	127	50	300	1/4 - 20UNC

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others



Beam Steering Holders Precision Beam Steering Assembly

BSRU

BSR

Optics & Optical Coatings

Application Systems

Opto-Mechanics

Bases

Manual **Stages**

Actuators & Adjusters

Motoeized **Stages**

Light Sources & Laser Safety

Index

Guide

Mirrors Lenses

Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

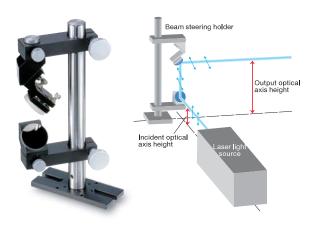
Others

Fiber

RoHS Catalog W4013

Beam steering mounts are designed to easily change the height and direction of laser beams.

- Length of the optional post (PO-20-***) can be specified at the time of purchase. ▶>>▼€3 Reference Catalog Code W6053
- Mirrors ϕ 25mm or less with a thickness of 5mm can be bonded to the holder.
- The clamps can be coarsely adjusted when rotated 50 mmabout the center post.
- Adjustment screws are provided on the output side of the mirror to fine tune the direction of the output beam.



Guide

- ▶The photograph shows a typical configuration combining baseplate (BSP-40100), post (PO-20-200) and two mirrors (TFA-30C05-10).
- Adjustable mirror mounts in both locations are also available.

Attention

- Depending on the direction reflected with the two mirrors, the polarization direction of the laser may change 90°. (See the illustra-
- ▶RTV silicone adhesvies are recommended to bond the optics.
- ►When you select this item, please note below points; Incident optical axis height: higher than 58mm Output optical axis height: higher than 20mm from the incident optical axis height
- Length of posts: higher than 70mm from the output optical axis height

Outline Drawing	
BSR-25 6.5 83.5	ST S
\$20 \$\tag{2}\$	28 28 28 28 28 28 28 28 28 28 28 28 28 2

Specifications		Primary mater Finish: B l ack	rial: Aluminum Anodized
Part Number	Compatible Optics Diameter [mm]	Compatible Optics Thickness [mm]	Weight* [kg]
BSR-25	□25 or less	3 – 5	0.4

^{*} Weight does not include the weight of posts and baseplates.

BSRU



Beam steering mounts are designed to easily and precisely change the height and direction of laser beams.

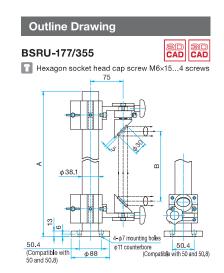
- The ϕ 38.1mm dampened pole, and two holders are sold as a set.
- High stability is obtained from the damping properties of the poles and the rigidity of the holders.
- Use the optional mirror (ϕ 30mm, thickness 5mm) by bonding it to the holder.
- The mirror holders can be coarsely adjusted 75 mm about the pole.
- Adjustment screws are provided on the output side of the holders to tilt the mirror, and angle adjustment of the output beam can be performed.



Attention

For best results, use on a laboratory or vibration isolating table.

Specifications		Strut material: Stainle Control part primary i			k Anodized
Part Number	Compatible Optics Diameter [mm]	Compatible Optics Thickness [mm]	A [mm]	B [mm]	Weight [kg]
BSRU-177	φ30	5	177.8	33 – 40	3
BSRU-355	φ30	5	355.6	33 – 220	4.6



Introducing Other Mirror Holders

You will find more detail in the WEB Related Products and mirror holder that was not available in the catalog.

Horizontal Prism Adapter MHG-HPA

Catalog W4008



Base Plates for Kinematic Mirror Holders | MHG-BP



Adaptor Mounts | MAD-30/MAD-50

Catalog W4109



One-touch Kinematic Mirror Holder | MHF

Catalog W4502



Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses

Polarizers

Lasers

Beam Shaping Diffusers

Filters Shutter

Others



Lens Holders Selection Guide

Lens holders are available for a wide variety of lens sizes and shapes.

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

wirrors

Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others

Fiber



Lens holders that can hold a range of different size lenses are also available.





Lightweight and compact fixed lens mount specialized for lenses with thin edge.

- These holders are best for single convex lenses and a new design resulting in reduced prices.
- Available for lens diameters from 12.7mm to 50.8mm, with either inch or metric threaded mounting hole.
- Since the metal retaining ring is used, powder of the resin does not occur.



Guide

- ▶ Post is not included. Purchase posts (RO) and post holders (PST) seperately.
- WEB Reference Catalog Code W6052, WEB Reference Catalog Code W6039
- Spacers are available (PS-SP) for use with a post stand (PST) to align the optical axis to inch height. WEB Reference Catalog Code W6042
- ▶ By using an adapter nut (AND-M6), LHG-30/ LHG-50 / LHG-50.8 can convert its mounting hole pattern into M4 or 8-32UNC.

 ▼WEB Reference Catalog Code W6078

Attention

- LHG-12.7, LHG-20, and LHG-25.4 can not be mounted on M6posts. Please use post holders (PST) or M4 posts (ROC).

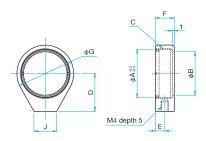
WEB Reference Catalog Code W6039, WEB Reference Catalog Code W6052



Gu

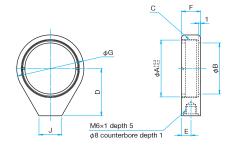
Outline Drawing

LHG-12.7/20/25.4



Part Number	φA (mm)	φB (mm)	C (mm)	D (mm)	E (mm)	F (mm)	φG (mm)	J (mm)
LHG-12.7	φ12.7	φ11.5	M13.55×0.75	12.7	3.5	7.5	φ17.5	7
LHG-20	φ20	φ17.5	M20.85×0.75	20	5	10	φ25	12
LHG-25.4	φ25.4	φ23	M26.25×0.75	20	5	10	φ30	12

LHG-30/50/50.8



Part Number	φA (mm)	φB (mm)	C (mm)	D (mm)	E (mm)	F (mm)	φG (mm)	J (mm)
LHG-30	φ30	φ27	M30.85×0.75	25	5	10	φ35.5	12
LHG-50	φ50	φ46	M50.85×0.75	35	6.5	12.5	φ55.8	20
LHG-50.8	φ50.8	φ47	M51.65×0.75	35	6.5	12.5	φ55.8	20

Application Systems Optics &

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter Others



Fixed Lens Holders (Metric / Inch dual use)





Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual **Stages**

Actuators & Adjusters

Motoeized **Stages**

Light Sources & Laser Safety

Index

Guide

Mirrors

Prisms

Polarizers Lasers

Beam Shaping Diffusers

Filters Shutter

Others

Fiber

A lens holder that can be used in two ways, Metric (M6) and Inch (1/4-20 UNC). It is convenient to use in an experiment where metrics and inch parts are mixed.

- To set the optical axis height from the baseplate to round figures such as 55mm or 60mm, replace posts with post stands (PST-**). (W6039)
- This item can firmly hold thin single lenses as well as thick lenses such as achromatic lenses.
- Best suited when the holders are in close proximity and when setting up a optical system such as folded beam go through the right next to the lens holder because the outer diameter of the holder is small.
- Resin retaining ring fix lenses securely without scratching them. (Resin ring is not attached.)



Guide

- \blacktriangleright Post length can be changed by specifying the post length when you place an order. Replacement of the post is free of charge, but we may charge the difference in price depending on the length. Contact our Sales Division for more information.
- Adapter nuts (AND) are available to convert M6 female threads to M4 or 8-32UNC female threads.

ce Catalog Code W6078

Attention

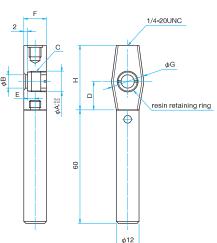
▶ Aluminum retaining rings are suitable for clean rooms or highpower laser applications (RR-**). Refere nce C041

Outline Drawing

LHF-10S/12.7S/15S/20S

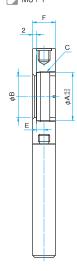


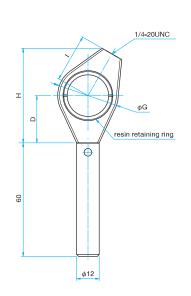




LHF-25S/25.4S/30S/30AS/40S/40AS/50S/50AS/50.8S/60AS







Specifications											y material: Black Ano	
Part Number	Options specified*	'	ole Optics . Thickness t [mm]	Clear Aperture φB [mm]	С	Optical Axis Height D [mm]	E [mm]	F [mm]	φG [mm]	H [mm]	l [mm]	Weight [kg]
LHF-10S	N	φ10	2 – 7	φ7	M10.85 P0.75	15	4	12	φ17	34.05	-	0.06
LHF-12.7S	N	φ12 . 7	2 – 7	φ10	M13.55 P0.75	15	4	12	φ17	34.05	_	0.06
LHF-15S	N	φ15	2 – 10	φ12	M15.85 P0.75	20	5	15	φ20	39.05	-	0.07
LHF-20S	N	φ20	2 – 13	φ17	M20.85 P0.75	20	7	18	φ27	39.05	_	0.08
LHF-25S	N	φ25	2 – 11	φ22	M25.85 P0.75	25	6	16	φ32	50	25.4	0.09
LHF-25.4S	N	φ25.4	2 - 7	φ22	M26.25 P0.75	25	4	12	φ32	50	25.4	0.08
LHF-30S	N	φ30	2 – 7	φ26	M30.85 P0.75	25	4	12	φ36	50	25.4	0.09
LHF-30AS	N	φ30	3 – 12	φ26	M30.85 P0.75	25	7	18	φ36	50	25.4	0.11
LHF-40S	N	φ40	2 – 13	φ37	M40.85 P0.75	30	7	18	φ46	66	38.1	0.11
LHF-40AS	N	φ40	3 – 15	φ37	M40.85 P0.75	30	8	20	φ46	66	38.1	0.12
LHF-50S	N	φ50	3 – 13	φ46	M50.85 P0.75	35	7	18	φ57	71	38.1	0.11
LHF-50AS	N	φ50	3 – 19	φ46	M50.85 P0.75	35	10	24	φ57	71	38.1	0.13
LHF-50.8S	N	φ50 . 8	2 – 13	φ47	M51.65 P0.75	35	7	18	φ58	71	38.1	0.11
LHF-60AS	N	φ60	3 – 16	φ56	M60.85 P0.75	40	13.5	27	φ67	76	38.1	0.13



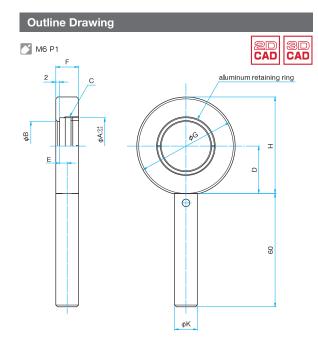
It can firmly fix from a thin single lens to a thick acromatic lens. Since the outer diameter of the holder is large, it has an effect on blocking stray light.

• For large diameter lenses over 80mm, "A type" holders are available for thick lenses .



Guide

- ▶ Post length can be changed by specifying the post length when you place an order. Replacement of the post is free of charge, but we may charge the difference in price depending on the length. Contact our Sales Division for more information.
- ▶ Thin frame lens holders (LHF-S). Reference C038
- Lens holder with rotation center adjustment (LHCM) is also available. Reference CO40



Standards										ry material: / : Black Anod	
Part Number	Options specified*	Compatib Diameter ϕ A [mm]	le Optics Thickness [mm]	Clear Aperture ϕ B [mm]	С	Optical Axis Height D [mm]	E [mm]	F [mm]	φG [mm]	φK [mm]	Weight [kg]
LHF-10	EE/UU	φ10	3 – 6	φ7	M10.85 P0.75	15	4	12	φ32	φ12	0.07
LHF-15	EE/UU	φ15	3 – 10	φ12	M15.85 P0.75	20	5	16	φ42	ϕ 12	0.07
LHF-20	EE/UU	φ20	3 – 12	φ17	M20.85 P0.75	20	7	18	φ42	φ12	0.09
LHF-25	EE/UU	φ25	3 – 10	φ21	M26.25 P0.75	25	6	16	φ52	φ12	0.1
LHF-25.4	EE/UU	φ25.4	3 – 6	φ22	M26.25 P0.75	25	4	12	φ52	φ12	0.09
LHF-30	EE/UU	φ30	3 – 6	φ26	M30.85 P0.75	25	4	12	φ52	φ12	0.09
LHF-30A	EE/UU	φ30	3 – 12	φ26	M30.85 P0.75	25	7	18	φ52	φ12	0.11
LHF-38.1	EE/UU	φ38.1	3 – 12	φ34	M38.95 P0.75	30	7	18	ϕ 62	φ12	0.13
LHF-40	EE/UU	φ40	3 – 12	φ36	M40.85 P0.75	30	7	18	φ62	φ12	0.13
LHF-40A	EE/UU	φ40	4 – 14	φ36	M40.85 P0.75	30	8	20	φ62	φ12	0.14
LHF-50	EE/UU	φ50	3 – 12	φ45	M50.85 P0.75	35	7	18	φ72	φ12	0.14
LHF-50A	EE/UU	φ50	4 – 18	φ45	M50.85 P0.75	35	10	24	φ72	φ12	0.17
LHF-50.8	EE/UU	φ50.8	3 – 12	φ46	M51.65 P0.75	35	7	18	φ72	φ12	0.14
LHF-52	EE/UU	φ52	3 – 15	φ47	M52.85 P0.75	40	8.5	21	φ82	φ12	0.18
LHF-60	EE/UU	φ60	3 – 15	φ55	M60.85 P0.75	40	8.5	21	φ82	φ12	0.18
LHF-60A	EE/UU	φ60	4 – 21	φ55	M60.85 P0.75	40	11.5	27	φ82	φ12	0.21

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". Reference CO07

Large Lens										y material: / Black Anoc	
Part Number	Options specified*	Compatib Diameter ϕ A [mm]	le Optics Thickness [mm]	Clear Aperture ϕ B [mm]	С	Optical Axis Height D [mm]	E [mm]	F [mm]	φG [mm]	φK [mm]	Weight [kg]
LHF-80	EE/UU	φ80	3 – 15	φ73	M81.1 P1	50	8.5	21	φ102	φ20	0.31
LHF-80A	N	φ80.4	4 – 23	φ73	M81.1 P1	50	12.5	29	φ102	φ20	0.37
LHF-100	EE/UU	φ100	4 – 18	φ93	M101.1 P1	60	11	26	φ122	φ20	0.39
LHF-100A	N	φ100	4 – 22	φ93	M101.1 P1	60	13	30	φ122	φ20	0.42
LHF-130	N	φ130	4 – 18	φ122	M131.1 P1	75	11	26	φ152	φ20	0.45
LHF-150	N	φ150	5 – 20	φ142	M151.1 P1	85	12	28	φ171	φ20	0.62

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". [automoto.] C007

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual **Stages**

Actuators & Adjusters

Motoeized **Stages**

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters Shutter

Others



Two Axis Lens Holders | LHCM

RoHS

Catalog W4512

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others

Fiber

Two-axis lens holders with compact centering mechanism.

The compact centering adjustment mechanism makes a low optical axis easy to accomodate. Can be used for adjusting the focus point of a laser beam or the direction of a collimated beam.

- For Lens diameters from 10mm to 50.8mm.
- Deep enough to hold thick achromatic lenses.
- The thin frame allows optics to be placed close to the front and back of the lens.



Guide

- Can be mounted on a dovetail stage or a micrometer adjustment stage to allow focus adjustment. Contact our Sales Division for recomendations regarding appropriate stages.
- ▶ Three-axis lens holders (ALHN-3RO) with high resolution lens centering adjustment and lockable adjusters are also available.

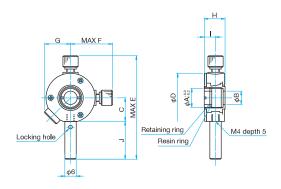
 Reference 2 C042
- Five-axis lens holders (ALHN-5RO) with additional tip and tilt adjustments are also available. Reference C042
- ▶ Post length can be changed by specifying the post length when you place an order. Replacement of the post is free of charge, but we may charge the difference in price depending on the length. Contact our Sales Division for more information.

Attention

▶ The adjustment mechanism may not work properly when something heavy other than a lens is mounted.

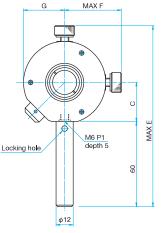
Outline Drawing

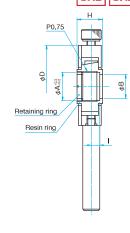
LHCM-10/12.7/15 M4 P0.7



Part Number	φD (mm)	MAX E (mm)	MAX F (mm)	G (mm)	H (mm)	l (mm)	J (mm)
LHCM-10	φ26	57	24	14	11	6	20
LHCM-12.7	φ41	83	32	22	13	7	30
LHCM-15	4/1	83	3.2	22	12	7	30

LHCM-20/25/25.4/30/40/50/50.8 G MAX F





M6 P1

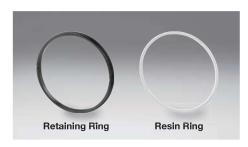
Part Number	φD (mm)	MAX E (mm)	MAX F (mm)	G (mm)	H (mm)	l (mm)
LHCM-20	φ58	130	42	29	18	6
LHCM-25	φ64	137	46	32	18	6
LHCM-25.4	φ64	137	46	32	18	6
LHCM-30	φ64	137	46	32	18	6
LHCM-40	φ78	150	52	39	20	7
LHCM-50	φ88	160	57	44	20	7
LHCM-50.8	φ88	160	57	44	20	7

Specifications							Primary material: Aluminum Finish: Black Anodized	
Part Number	Options specified*	Compatible Optics Diameter φA [mm]	Compatible Optics Thickness t [mm]	Clear Aperture φB [mm]	Optical Axis Height C [mm]	Centering Adjustment Range [mm]	Weight [kg]	
LHCM-10	N	φ10	1 – 6	φ7	12.5	φ1	0.03	
LHCM-12.7	N	φ12 . 7	1 – 8	φ10	20	φ2	0.05	
LHCM-15	N	φ15	1 – 8	φ12	20	φ2	0.05	
LHCM-20	N/EE/UU	φ20	2 – 12	φ17	27.5	φ3	0.27	
LHCM-25	N/EE/UU	φ25	2 – 12	φ22	30	φ3	0.28	
LHCM-25.4	N/EE/UU	φ25.4	2 – 12	φ22	30	φ3	0.28	
LHCM-30	N/EE/UU	φ30	2 – 12	φ27	30	φ3	0.28	
LHCM-40	N/EE/UU	φ40	2 – 14	φ36	37.5	φ3	0.31	
LHCM-50	N/EE/UU	φ50	2 – 14	φ46	42.5	φ3	0.36	
LHCM-50.8	N/EE/UU	φ50 . 8	2 – 14	φ46	42.5	φ3	0.36	

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". [GOO7]



Accessories for mirror holders and lens holders.



Guide

RR/DR

▶ Please contact our Sales Division regarding tapered retaining rings for beamsplitter holders.

Attention

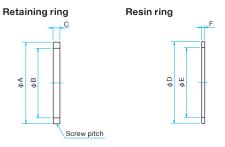
▶ We cannot guarantee our retaining rings will fit into non Opto-Sigma threaded holes.

Retaining F	Ring			rimary materi inish: B l ack A	
Part Number	Quantity [Pieces]	Outer Diameter ϕ A [mm]	Inner Diameter ϕ B [mm]	Thickness C [mm]	Screw Pitch [mm]
RR-10-5	5	ϕ 10.85	φ7	3	0.75
RR-12.7-5	5	φ13.55	φ9.7	3	0.75
RR-15-5	5	φ15.85	φ12	3	0.75
RR-20-5	5	φ20.85	φ17	3	0.75
RR-25-5	5	φ25.85	φ22	3	0.75
RR-25.4-5	5	ϕ 26.25	φ22	3	0.75
RR-30-5	5	ϕ 30.85	φ27	3	0.75
RR-38.1-5	5	ϕ 38.95	φ35	3	0.75
RR-40-5	5	ϕ 40.85	φ37	3	0.75
RR-50-5	5	$\phi 50.85$	φ46	3	0.75
RR-50.8-5	5	φ51.65	φ47	3	0.75
RR-52-5	5	ϕ 52.85	φ48	3	0.75
RR-60-5	5	ϕ 60.85	ϕ 56	3	0.75
RR-80-5	5	φ81.1	φ75	3.5	1
RR-100-5	5	ϕ 101.1	φ95	4	1
RR-130-5	5	φ131.1	φ124	4	1
RR-150-5	5	φ151.1	φ144	4	1

• Retaining rings and Resin rings are sold seperately in sets of five.

• The retaining ring spanner wrench (NRS) is used to tighten the retaining rings.

Outline Drawing



Part Number Quantity [Pieces] Outer φD [mm] Inner φE [mm] Thickness F φE [mm] DR-10-5 5 φ10 φ7 1 DR-12.7-5 5 φ12.7 φ9.7 1 DR-15-5 5 φ15 φ12 1 DR-20-5 5 φ20 φ17 1 DR-25-5 5 φ25 φ22 1 DR-25.4-5 5 φ25.4 φ22 1 DR-30-5 5 φ30 φ27 1 DR-38.1-5 5 φ38.1 φ35 1 DR-40-5 5 φ40 φ37 1 DR-50-5 5 φ50.8 φ47 1 DR-50-8-5 5 φ50.8 φ47 1 DR-60-5 5 φ60 φ56 1 DR-80-5 5 φ80 φ75 1.5 DR-100-5 5 φ100 φ95 1.5 DR-130-5 5 φ130 φ124	Resin King			Finish: N	one
DR-12.7-5 5 φ12.7 φ9.7 1 DR-15-5 5 φ15 φ12 1 DR-20-5 5 φ20 φ17 1 DR-25-5 5 φ25 φ22 1 DR-25.4-5 5 φ25.4 φ22 1 DR-30-5 5 φ30 φ27 1 DR-38.1-5 5 φ38.1 φ35 1 DR-40-5 5 φ40 φ37 1 DR-50-5 5 φ50 φ46 1 DR-50.8-5 5 φ50.8 φ47 1 DR-52-5 5 φ50 φ48 1 DR-60-5 5 φ60 φ56 1 DR-80-5 5 φ80 φ75 1.5 DR-100-5 5 φ100 φ95 1.5 DR-130-5 5 φ130 φ124 2	Part Number		Diameter φD	Diameter φE	F
DR-15-5 5 φ15 φ12 1 DR-20-5 5 φ20 φ17 1 DR-25-5 5 φ25 φ22 1 DR-25.4-5 5 φ25.4 φ22 1 DR-30-5 5 φ30 φ27 1 DR-38.1-5 5 φ38.1 φ35 1 DR-40-5 5 φ40 φ37 1 DR-50-5 5 φ50 φ46 1 DR-50.8-5 5 φ50.8 φ47 1 DR-52-5 5 φ50 φ48 1 DR-60-5 5 φ60 φ56 1 DR-80-5 5 φ80 φ75 1.5 DR-100-5 5 φ100 φ95 1.5 DR-130-5 5 φ130 φ124 2	DR-10-5	5	φ10	φ7	1
DR-20-5 5 φ20 φ17 1 DR-25-5 5 φ25 φ22 1 DR-25.4-5 5 φ25.4 φ22 1 DR-30-5 5 φ30 φ27 1 DR-38.1-5 5 φ38.1 φ35 1 DR-40-5 5 φ40 φ37 1 DR-50-5 5 φ50 φ46 1 DR-50.8-5 5 φ50.8 φ47 1 DR-52-5 5 φ52 φ48 1 DR-60-5 5 φ60 φ56 1 DR-80-5 5 φ80 φ75 1.5 DR-100-5 5 φ100 φ95 1.5 DR-130-5 5 φ130 φ124 2	DR-12.7-5	5	φ12.7	φ9.7	1
DR-25-5 5 φ25 φ22 1 DR-25.4-5 5 φ25.4 φ22 1 DR-30-5 5 φ30 φ27 1 DR-38.1-5 5 φ38.1 φ35 1 DR-40-5 5 φ40 φ37 1 DR-50-5 5 φ50 φ46 1 DR-50.8-5 5 φ50.8 φ47 1 DR-52-5 5 φ52 φ48 1 DR-60-5 5 φ60 φ56 1 DR-80-5 5 φ80 φ75 1.5 DR-100-5 5 φ100 φ95 1.5 DR-130-5 5 φ130 φ124 2	DR-15-5	5	φ15	φ12	1
DR-25.4-5 5 φ25.4 φ22 1 DR-30-5 5 φ30 φ27 1 DR-38.1-5 5 φ38.1 φ35 1 DR-40-5 5 φ40 φ37 1 DR-50-5 5 φ50 φ46 1 DR-50.8-5 5 φ50.8 φ47 1 DR-52-5 5 φ52 φ48 1 DR-60-5 5 φ60 φ56 1 DR-80-5 5 φ80 φ75 1.5 DR-100-5 5 φ100 φ95 1.5 DR-130-5 5 φ130 φ124 2	DR-20-5	5	φ20	φ17	1
DR-30-5 5 φ30 φ27 1 DR-38.1-5 5 φ38.1 φ35 1 DR-40-5 5 φ40 φ37 1 DR-50-5 5 φ50 φ46 1 DR-50.8-5 5 φ50.8 φ47 1 DR-52-5 5 φ52 φ48 1 DR-60-5 5 φ60 φ56 1 DR-80-5 5 φ80 φ75 1.5 DR-100-5 5 φ100 φ95 1.5 DR-130-5 5 φ130 φ124 2	DR-25-5	5	φ25	φ22	1
DR-38.1-5 5 φ38.1 φ35 1 DR-40-5 5 φ40 φ37 1 DR-50-5 5 φ50 φ46 1 DR-50.8-5 5 φ50.8 φ47 1 DR-52-5 5 φ52 φ48 1 DR-60-5 5 φ60 φ56 1 DR-80-5 5 φ80 φ75 1.5 DR-100-5 5 φ100 φ95 1.5 DR-130-5 5 φ130 φ124 2	DR-25.4-5	5	φ25.4	φ22	1
DR-40-5 5 φ40 φ37 1 DR-50-5 5 φ50 φ46 1 DR-50.8-5 5 φ50.8 φ47 1 DR-52-5 5 φ52 φ48 1 DR-60-5 5 φ60 φ56 1 DR-80-5 5 φ80 φ75 1.5 DR-100-5 5 φ100 φ95 1.5 DR-130-5 5 φ130 φ124 2	DR-30-5	5	φ30	φ27	1
DR-50-5 5 φ50 φ46 1 DR-50.8-5 5 φ50.8 φ47 1 DR-52-5 5 φ52 φ48 1 DR-60-5 5 φ60 φ56 1 DR-80-5 5 φ80 φ75 1.5 DR-100-5 5 φ100 φ95 1.5 DR-130-5 5 φ130 φ124 2	DR-38.1-5	5	φ38.1	φ35	1
DR-50.8-5 5 φ50.8 φ47 1 DR-52-5 5 φ52 φ48 1 DR-60-5 5 φ60 φ56 1 DR-80-5 5 φ80 φ75 1.5 DR-100-5 5 φ100 φ95 1.5 DR-130-5 5 φ130 φ124 2	DR-40-5	5	φ40	φ37	1
DR-52-5 5 φ52 φ48 1 DR-60-5 5 φ60 φ56 1 DR-80-5 5 φ80 φ75 1.5 DR-100-5 5 φ100 φ95 1.5 DR-130-5 5 φ130 φ124 2	DR-50-5	5	φ50	φ46	1
DR-60-5 5 φ60 φ56 1 DR-80-5 5 φ80 φ75 1.5 DR-100-5 5 φ100 φ95 1.5 DR-130-5 5 φ130 φ124 2	DR-50.8-5	5	φ50 . 8	φ47	1
DR-80-5 5 φ80 φ75 1.5 DR-100-5 5 φ100 φ95 1.5 DR-130-5 5 φ130 φ124 2	DR-52-5	5	φ52	φ48	1
DR-100-5 5 φ100 φ95 1.5 DR-130-5 5 φ130 φ124 2	DR-60-5	5	ϕ 60	φ56	1
DR-130-5 5 φ130 φ124 2	DR-80-5	5	ϕ 80	φ75	1.5
·	DR-100-5	5	φ100	φ95	1.5
DR-150-5 5 φ150 φ144 2	DR-130-5	5	φ130	φ124	2
	DR-150-5	5	φ150	φ144	2

NRS



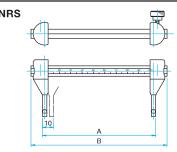
Spanner wrenches can be used on retaining rings of various diameters. Optics can be securely fixed in holders without scratching the optics or retaining rings.

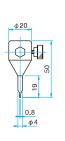


Specification		Primary material Shaft: Stainless, Claw: Steel Finish Shaft: None, Claw: Chrome plating					
Part Number	Size Used [mm]	A [mm]	B [mm]				
NRS-50	For φ10 – φ50	50	70				
NRS-100	For φ10 – φ100	100	120				
NRS-150	For φ10 – φ150	150	170				

• The scale on the wrench correlates to the outer diameteter of the lens to be fixed.

Outline Drawing





Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized **Stages**

Light Sources & Laser Safety

Index

Guide

Mirrors

Lasers

Polarizers

Beam Shaping Diffusers

Filters

Shutter

Others



Three-axis/Five-axis Lens Holders (Post Type)

ALHN-3RO/ALHN-5RO





Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual **Stages**

Actuators & Adjusters

Motoeized **Stages**

Light Sources & Laser Safety

Index

Guide

Mirrors

Prisms

Polarizers Lasers

Beam Shaping Diffusers

Filters Shutter

Others

Fiber

ing the collimating lens for laser applications.

Multi-axis lens holders are a convenient way to align a lens an optical axis. Can be used in adjust-

- Five-axis adjustment holder (ALHN-5RO) can adjust lenses for wavefront and intensity distribution.
- To focus a lens, rotate the lens tube with the lever while moving the tube forwards or backwards.
- The centering mechanism is fitted with a nut clamp, and the focus adjustment is fitted with a screw clamp.
- Singlet/doublets up to 28 mm thick can be used.



Guide

- ▶ Multi-axis lens hodlers (ALHN-3/ALHN-5) on a basepalte are available. Refe
- ▶X-Y lens holders (LHCM) without a focus adjustment function are also available. Reference C040
- Post length can be changed by specifying the post length when you place an order. We may charge the difference in price depending on the length. Contact our Sales Division for more information.

Attention

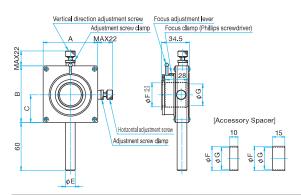
- Two spacers are included with these mounts to allow positioning of the lens within the lens tube.
- When the focal length of lens is long, adjustment does not work effectively because the focus adjustment range is too narrow. In such a case, please use the dovetail stages or optical benches.



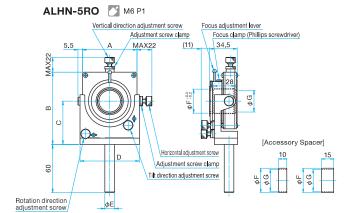


Outline Drawing

ALHN-3RO M6 P1



Part Number	A (mm)	B (mm)	C (mm)	φE (mm)	φF (mm)	φG (mm)
ALHN-25-3RO	68	70.5	34.5	φ12	φ25	φ22
ALHN-25.4-3RO	68	70.5	34.5	φ12	φ25.4	φ22
ALHN-30-3RO	68	70.5	34.5	φ12	φ30	φ27
ALHN-50-3RO	88	91	45	φ20	φ50	φ46
ALHN-50.8-3RO	88	91	45	φ20	φ50.8	φ46



Part Number	A (mm)	B (mm)	C (mm)	D (mm)	φE (mm)	φF (mm)	φG (mm)
ALHN-25-5RO	68	90	54	74	φ12	φ25	φ22
ALHN-25.4-5RO	68	90	54	74	φ12	φ25.4	φ22
ALHN-30-5RO	68	90	54	74	φ12	φ30	φ27
ALHN-50-5RO	88	112.7	66.7	94	φ20	φ50	φ46
ALHN-50.8-5RO	88	112.7	66.7	94	φ20	φ50.8	φ46

Three-axis Post Type Primary material: Aluminum Finish: Black Anodized										
Part Number	Options specified*	Compatible Optics Diameter [mm]	Compatible Optics Thickness [mm]	Centering Adjustmen Range [mm]	t Centering Adjustment Resolution [mm/rotation]	Focus Adjustment Range [mm]	Weight [kg]			
ALHN-25-3RO	N/EE/UU	φ25	0 – 28	φ6	0.25	±3	0.31			
ALHN-25.4-3RO	N/EE/UU	φ25.4	0 – 28	φ6	0.25	±3	0.31			
ALHN-30-3RO	N/EE/UU	φ30	0 – 28	ϕ 6	0.25	±3	0.31			
ALHN-50-3RO	N/EE/UU	φ50	0 – 28	φ6	0.25	±3	0.5			
ALHN-50.8-3RO	N/EE/UU	φ50.8	0 – 28	φ6	0.25	+3	0.5			

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". Reference C007

Five-axis Post Type Prime Finish											luminum zed
	Options	Compatil	ole Optics	Centering	Adjustment	Tilt I	Range	Tilt Res	solution	Focus	Maiabt
Part Number	specified*	Diameter [mm]	Thickness [mm]	Range [mm]	Resolution [mm/rotation]	Tilt [°]	Rotation [°]	Tilt [°/rotation]	Rotation [°/rotation]	Adjustment Range [mm]	Weight [kg]
ALHN-25-5RO	N/EE/UU	φ25	0 – 28	φ6	0.25	±4	±4	about 0.5	about 0.5	±3	0.46
ALHN-25.4-5RO	N/EE/UU	φ25.4	0 – 28	φ6	0.25	±4	±4	about 0.5	about 0.5	±3	0.46
ALHN-30-5RO	N/EE/UU	φ30	0 – 28	φ6	0.25	±4	±4	about 0.5	about 0.5	±3	0.46
ALHN-50-5RO	N/EE/UU	φ50	0 – 28	ϕ 6	0.25	±3	±3	about 0.36	about 0.36	±3	0.72
ALHN-50.8-5RO	N/EE/UU	σ50.8	0 - 28	φ6	0.25	+3	+3	about 0.36	about 0.36	+3	0.72

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". [Reference] C007







Multi-axis lens holders are a convenient way to align a lens to the optical axis. These plate-type holders mount securely and provide a stable low optical axis.

- Five-axis adjustment type (ALHN-5) allows lens tilt adjustment for applications where acheiving the best possible focusing is required.
- Lens focus adjustment is done by rotating the lens tube with the lever, moving the position of the lens forward or backward.
- The XY centering adjustments include locking nuts and the focus adjustment includes a locking screw.
- In addition to single lenses, thick lenses or combined lens tubes up to thickness 28mm can be mounted directly in the



Guide

▶ Two axis lens holders (LHCM) without focus adjustment function are also available. Reference CO40

Two Axis lens holders (LHCM) for lenses φ20mm or less are also available.

▶ Please contact our Sales Division if you require a specific optical axis height.

Attention

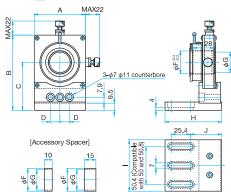
- Two spacers are included with these mounts to allow positioning of the lens within the lens tube.
- ▶ When the focal length of lens is long, adjustment does not work effectively because the focus adjustment range is too narrow. In such a case, please use the dovetail stages or optical benches.





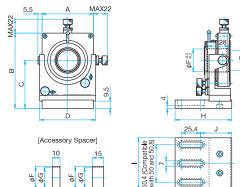
Outline Drawing

ALHN-3 Hexagonal socket head cap screw M6×10...3 screws MAX22



Part Number	A (mm)	B (mm)	C (mm)	D (mm)	φF (mm)	φG (mm)	H (mm)	I (mm)	J (mm)
ALHN-25-3	68	99.5	63.5	12.5	φ25	φ22	75	68	41.3
ALHN-25.4-3	68	99.5	63.5	12.5	φ25.4	φ22	75	68	41.3
ALHN-30-3	68	99.5	63.5	12.5	φ30	φ27	75	68	41.3
ALHN-50-3	88	122.2	76.2	25	φ50	φ46	95	75	59.8
ALHN-50.8-3	88	122.2	76.2	25	φ50.8	φ46	95	75	59.8

ALHN-5 Hexagonal socket head cap screw M6×10...3 screws



Part Number	A (mm)	B (mm)	C (mm)	D (mm)	φF (mm)	φG (mm)	H (mm)	l (mm)	J (mm)
ALHN-25-5	68	99.5	63.5	74	φ25	φ22	75	68	41.3
ALHN-25.4-5	68	99.5	63.5	74	φ25.4	φ22	75	68	41.3
ALHN-30-5	68	99.5	63.5	74	φ30	φ27	75	68	41.3
ALHN-50-5	88	122.2	76.2	94	φ50	φ46	95	75	59.8
ALHN-50.8-5	88	122.2	76.2	94	φ50.8	φ46	95	75	59.8

Three-axis Pl	Three-axis Plate Type Primary material: Aluminum Finish: Black Anodized										
Part Number	Compatible Optics Diameter [mm]	Compatible Optics Thickness [mm]	Centering Adjustment Range [mm]	Centering Adjustment Resolution [mm/rotation]	Focus Adjustment Range [mm]	Weight [kg]					
ALHN-25-3	φ25	0 – 28	φ6	0.25	±3	0.49					
ALHN-25.4-3	φ25.4	0 – 28	φ6	0.25	±3	0.49					
ALHN-30-3	φ30	0 – 28	φ6	0.25	±3	0.49					
ALHN-50-3	φ50	0 – 28	φ6	0,25	±3	0.78					
ALHN-50.8-3	φ50.8	0 – 28	φ6	0.25	±3	0.78					

Five-axis Plat	Five-axis Plate Type									
	Compatible Optics		Centering Adjustment		Tilt Range		Tilt Resolution		Focus	Weight
Part Number	Diameter [mm]	Thickness [mm]	Range [mm]	Resolution [mm/rotation]	Tilt [°]	Rotation [°]	Tilt [°/rotation]	Rotation [°/rotation]	Adjustment Range [mm]	[kg]
ALHN-25-5	φ25	0 – 28	φ6	0.25	±4	±4	about 0.5	about 0.5	±3	0.5
ALHN-25.4-5	φ25.4	0 – 28	φ6	0.25	±4	±4	about 0.5	about 0.5	±3	0.5
ALHN-30-5	φ30	0 – 28	φ6	0.25	±4	±4	about 0.5	about 0.5	±3	0.5
ALHN-50-5	φ50	0 – 28	φ6	0.25	±3	±3	about 0.36	about 0.36	±3	0.75
ALHN-50.8-5	φ50.8	0 – 28	φ6	0.25	±3	±3	about 0.36	about 0.36	±3	0.75

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual **Stages**

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others



Mini Lens Holders V-Groove Lens Holders

LHA

RoHS Catalog W4101

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual **Stages**

Actuators & Adjusters

Motoeized **Stages**

Light Sources & Laser Safety

Index

Guide

Mirrors

Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others

Fiber

These fixed lens holders are designed to be narrower than the

diameter of lenses they hold. • Intended for compact optical layouts where the lenses need to be placed close

- to each other in parallel. • Place the plano side of a lens against the holder.
- The simple setscrew mounting method makes replacement of lenses easy.
- Can secure plano concave lenses with edge thickness of 1mm.



Outline Drawing TLH-25.4-DRi TLH-30-DRi TLH-5-DRi TLH-10-DRi TLH-12.7-DRi M6 P1 M4 P0.7 🐞 Lens retaining screw M6 P1 depth 5 M4 depth 5 Locking hole 9

Guide

▶ Post length can be changed by specifying the post length when you place an order. We may charge the difference in price depending on the length. Contact our Sales Division for more information

Attention

- Over tightening the lens retaining screws can bend these
- Tighten screw lightly only until the lens does not move.
- Lenses may come loose when these holders are used in environments subject to vibration or transported while lenses are
- Cannot hold biconvex lenses which have short focal length.

Specifications							Primary materi Finish: Black A	
Part Number	Options specified*	Compatible Optics Diameter φC [mm]	Clear Aperture φD [mm]	Height optical axis [mm]	Compatible Optics Thickness [mm]	A [mm]	B [mm]	Weight [kg]
TLH-5-DRi	N	φ5	φ3	15	1 – 3	4.5	4	0.013
TLH-10-DRi	N	φ10	φ7	15	1 – 4	8.5	7	0.013
TLH-12.7-DRi	N	φ12.7	φ10	15	1 – 4	11.5	8	0.014
TLH-25.4-DRi	N	φ25.4	φ22.4	25	1 – 4	24	12	0.065
TLH-30-DRi	N	φ30	φ27	25	1 – 4	28.5	15	0.065

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". Reference) C007

φ12

LHA



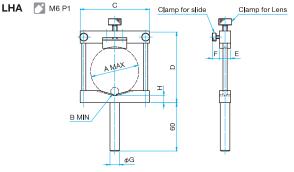


Designed to hold lenses of various sizes. Appropriate When non standard diameter lenses are used.

- The v-groove can hold other cylindrical components like light sources.
- The clamp and v-groove secure the lenses.



Specifications



Part Number	φA (mm)	φB (mm)	C (mm)	D (mm)	E (mm)	F (mm)	φG (mm)	H (mm)
LHA-25	φ25.4	φ5	40	45	12	(8)	φ12	7.5
LHA-60	φ60	φ10	86	88	14	(9)	φ12	9
LHA-100	φ101.6	φ20	134	135	19	(13)	φ20	8
LHA-150	φ150	ტ30	200	195	19	(14)	φ20	14

Guide

▶ Post length can be changed by specifying the post length when you place an order. We may charge the difference in price depending on the length. Contact our Sales Division for more information.

Attention

Make sure to tighten the slide clamps along the two poles before tightening the lens clamp.

Specifica	tions		Primary material: Aluminum Finish: Black Anodized		
Part Number	Options specified*	Compatible Optics Diameter [mm]	Compatible Optics Thickness [mm]	Weight [kg]	
LHA-25	N/EE/UU	φ5 – φ25.4	1 – 2.5	0.1	
LHA-60	N/EE/UU	ϕ 10 – ϕ 60	1 – 4.7	0.2	
LHA-100	N/EE/UU	ϕ 20 – ϕ 101.6	1 – 7	0.5	
LHA-150	N	$\phi 30 - \phi 150$	1 – 7	0.8	

For specifying options, please refer to "Conversion of Posts Post Holders and Pedestal Bases of Holders". Reference C007



Designed to hold lenses with a range of diameters at a consistent center height. Best used in applications where different diameter lenses are swapped out often.

- The three jaws of the holder will clamp edge of the lenses with spring pressure.
- Squeezing the levers towards each other will open the three jaws. Releasing the levers will close the jaws.
- The position of the three jaws is locked by tightening the clamp.



Guide

- ▶ Post length can be changed. If the length of post is specified at the time of purchase, this product will be delivered after replacing posts.
- ▶ Post length can be changed by specifying the post length when you place an order. We may charge the difference in price depending on the length. Contact our Sales Division for more information.

Attention

- ▶ Thin lenses may tilt and fall out from the holders when they are held with excessive spring pressure.
- ▶ ALHN lens holders are recommended when precise lens manipulation is required. Reference C042

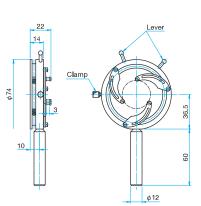


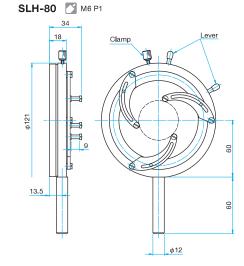
Outline Drawing

SLH-25 M4 P0.7 with taper

11

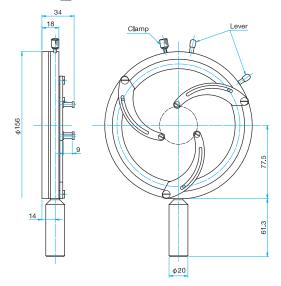
SLH-50 M4 P0.7 with taper





SLH-120 M6 P1 with taper

8-32UNC



Specificat	ions		Primary material: Finish: Black Ano	
Part Number	Options specified*	Compatible Optics Diameter [mm]	Compatible Optics Thickness [mm]	Weight [kg]
SLH-25	EE/UU	φ5 – φ25	1 – 3	0.10
SLH-50	_	φ30 – φ50	1 – 3	0.15
SLH-80	EE/UU	φ25 – φ80	1 – 9	0.35
SLH-120	_	φ40 – φ110	1 – 9	0.70

For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". Refe

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Prisms

Polarizers Lasers

Beam Shaping Diffusers

Filters

Shutter

Others



Small Lens Claws



Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual **Stages**

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others

Fiber

Mounts designed to hold small diameter lenses of \$\phi\$15mm or less.

- The spring-loaded arm holds the lenses.
- MLH-10 allows small lenses to be held close to each other.



Guide

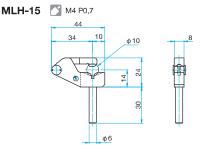
- ▶ Micro Lens Claws (MLH-SF) are available for micro lenses with diameter of ϕ 5mm or less. ence C047
- Post length can be changed by specifying the post length when you place an order. We may charge the difference in price depending on the length. Contact our Sales Division for more information.

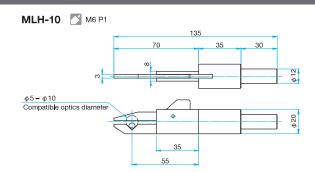
Attention

- ▶ Different diameters affect the center point of the lens in relation to the optical axis..
- ▶To mount a lens in MLH-10: place the lens on a flat surface and gently release the clamp to secure the lens.



Outline Drawing





Specifications			Primary material: Aluminum Finish: Black Anodized
Part Number	Compatible Optics Diameter [mm]	Compatible Optics Thickness [mm]	Weight [kg]
MLH-15	φ5 – φ15	1 – 6	0.02

Specifications		Primary material: Aluminum Finish: Black Anodized
Part Number	Compatible Optics Diameter [mm]	Weight [kg]
MLH-10	φ5 – φ10	0.15



Holders for micro lenses of φ3mm or less.

Designed to hold small optics at the end of a long and thin arm to allow other optical elements to be placed close to the element being held. Typical uses include collimator lenses for fiber or laser diodes.

- A light spring force holds the optic securely in place.
- Optics can be mounted easily and securely by clamping an optic in the groove at the end of the arm.
- The MLH-10ADP-2 is an adapter to mount the MLH-SF on a fiber holder (FOP), enabling adjustment of position and tilt. Reference C076
- The MLH-10ADP-2 can also mount on a □40mm XYZ stage (TSD-405L), enabling precision position adjustment of optics. WEB Reference Catalog Code W7078



Guide

- ▶ A tapped M6 screw hole on the end of the MLH-SF allows the holder to be directly mounted on a post.

 Because there is no step on the arm, lens of thickness 2mm or higher
- can be fixed.

Attention

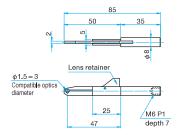
- ▶ Because the tip of the arm has a V groove, rectangular optics can be mounted tilted. Either fix at a position away from the V groove, or fix
- with the optic glued to the flat plane on the top of the arm.

 The MLH-10ADP-2 cannot be mounted on two-axis pinholes/objective holders (TAT) other than the FOP.
- ▶ When the MLH-10ADP-2 is mounted on an FOP, it is necessary to remove the FOP adapter. Delivery of MLH-10ADP-2 and MLH-SF assembled on the FOP is available. Contact our International Sales Division for more information.

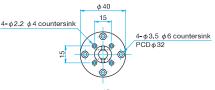
Specifications Primary material: Al Finish: Black Anodi:					
Part Number	Compatible Optics Diameter [mm]	Weight [kg]			
MLH-SF	φ1 . 5 – φ3	0.02			
MLH-10ADP-1	_	0.06			
MLH-10ADP-2	_	0.01			

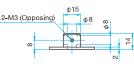
Outline Drawing

MLH-SF



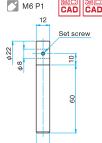
MLH-10ADP-2 Countersunk head screw M2×4...4 screws, M3×6...4 screws





MLH-10ADP-1





φ12

Example of Use

Fixed Micro Lens Claws

Assembled with the MLH-SF and MLH-10ADP-1 When fixing microscopic lenses simply

Micro Lens Claws with four-axis adjustment mechanism

Example of mounting the MLH-SF and MLH-10ADP-2 assembly on a fiber holder (FOP-2DM)

Configured for up/down left/right position adjustment of devices such as microscopic prisms, and tilt adjustment of device surfaces

Micro Lens Claws with two-axis adjustment mechanism

Example of mounting the MLH-SF and MLH-10ADP-2 assembly on a fiber holder (FOP-1)

Configuration enables optical axis adjustment of microscopic lenses

Micro Lens Claws with three-axis adjustment mechanism

Example of mounting the MLH-SF and MLH-10APD-2 assembly on a XYZ Axis Translation Stages (TSD-405SL)





Refer to the fiber holder (FOP). D C076



Refer to the fiber holder (FOP).

№ C076



Refer to the XYZ Axis Translation Stages (TSD-405SL). WEB Reference Catalog Code W7078

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Prisms **Polarizers**

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others



Adjustable Cylindrical Lens Holders





Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized **Stages**

Light Sources & Laser Safety

Index

Guide

Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others

Fiber

Mounts for rectangular optics.

• The space saving sliding clamp allows optics to be placed in close proximity. The top and bottom of the lens mounting area is made of cork to prevent lenses from slipping. .



Guide

 \blacktriangleright Post length can be changed by specifying the post length when you place an order. We may charge the difference in price depending on the length. Contact our Sales Division for more information.

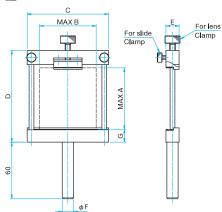
Attention

- ▶ Make sure to tighten the slide clamps along the two poles before tightening the lens clamp.
- Not recommended for round lenses, Use LHA Reference C044

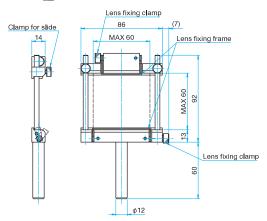


Outline Drawing





CHA-60F M6 P1



Normal Type Primary material: Alumin Finish: Black Anodized										
Part Number	Options specified*	Compatible Optics Thickness [mm]	Compatible Opt MAX A [mm]	tics Dimensions MAX B [mm]	C [mm]	D [mm]	E [mm]	φF [mm]	G [mm]	Weight [kg]
CHA-25	N/EE/UU	MAX6.5	30	25	40	45	12	φ12	9	0.1
CHA-60	N/EE/UU	MAX7.5	65	60	86	93	14	φ12	13.5	0.2
CHA-130	-	MAX7.5	55	130	160	82	14	φ20	12.5	0.5

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". [Telerones] C007

Flexible Typ	е				Primary material: Aluminum Finish: Black Anodized
Part Number	Options specified*	Compatible Optics Thickness [mm]	Compatible Op MAX (vertical) [mm]	tics Dimensions MAX (horizontal) [mm]	Weight [kg]
CHA-60F	N/UU	MAX9.5	60	60	0.19

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". Reference) C007

Fixed Multi-element Lens Holders | LHF-UDL/LHF-M RoHS







Used to mount multi-element focusing lenses in optical experiments.

• Female threads fit a wide range of OptoSigma threads. See the compatibility table for appropriate combinations.

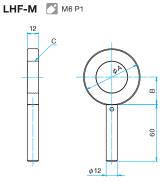


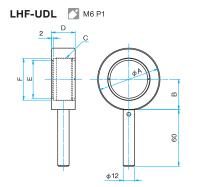
Guide

- ▶ The focusing lenses family is ATL/NADL, etc. WEB Reference Catalog Code W3078
- ▶ For cover glass and cover glass holders, refer to Protective Windows / Protective Window Holders. > WEB Reference Catalog Code W3081
- ▶ Post length can be changed by specifying the post length when you place an order. We may charge the difference in price depending on the length. Contact our Sales Division for more information.



Outline Drawing





Example of Use					

Specifications Prim Finish								
Part Number	Options specified*	φA [mm]	B [mm]	С	D [mm]	E [mm]	F [mm]	Weight [kg]
LHF-M29-25	N/UU	φ56	27	M29 P0.75	_	_	_	0.11
LHF-M34-30	N/UU	φ60	29	M34 P0.75	-	-	-	0.11
LHF-M50.9-50	N/UU	φ70	34	M50.9 P0.75	-	_	_	0.11
LHF-UDL-30	N/UU	φ56	27	M34.85 P0.75	23	30	34	0.15
LHF-UDL-40	N/UU	φ66	32	M44.85 P0.75	25	40	44	0.18
LHF-UDL-50	N/UU	φ76	37	M54.85 P0.75	28	50	54	0.22

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". Reference CO07

Compatibility Table for Focusing Lenses

Focusing Lens	Catalog	Cover	Cover Glass	
Part Number	Code	Glass	Holder	Compatible Holders
Visible Spectrum Ach				
ATL-30-40PY2				
ATL-30-50PY2	1			
ATL-30-60PY2	WEB Reference			
NADL-30-80PY2	Catalog Code	PG-33	PGH-36	LHF-M34-30
NADL-30-100PY2	W3078			
NADL-30-150PY2]			
NADL-30-200PY2				
YAG Laser Focusing L	enses			
NYTL-25-20PY1]	PG-21	PGH-24	LHF-M29-25
NYTL-30-30PY1				
NYTL-30-40PY1	WEB Reference	, PG-27 I	PGH-30	
NYTL-30-50PY1	Catalog Code			
NYDL-30-60PY1	W3079			LHF-M34-30
NYDL-30-80PY1	W3079	PG-33	PGH-36	
NYDL-30-100PY1]	1 G-55	1 011-30	
NYDL-30-150PY1				
Focusing Lenses for F	iber Laser			
HFTLSQ-15-20PF1		PG-21	PGH-24	Special adapter + LHF-M29-25
HFTLSQ-20-30PF1				Special adapter + LHF-M34-30
HFTLSQ-30-40PF1]	PG-27	PGH-30	
HFTLSQ-30-50PF1				
HFTLSQ-30-60PF1	WEB Reference			LHF-M34-30
HFTLSQ-30-80PF1	Catalog Code	PG-33	PGH-36	E111 -1004-00
HFTLSQ-30-100PF1	W3080		1 311 00	
HFDLSQ-30-150PF1	ļ			
HFTLSQ-50-100PF1				
HFDLSQ-50-200PF1		\sim		LHF-M50.9-50
HFDLSQ-50-300PF1				

Focusing Lens Part Number	Catalog Code	Cover Glass	Cover Glass Holder	Compatible Holders
Excimer Laser Focusion	na Lenses			
ETL-30-40P				
ETL-30-50P				
ETL-30-60P				
ETL-30-80P		PG-33	PGH-36	LHF-M34-30
NEDL-30-100P	WEB Reference			
NEDL-30-150P				
NEDL-30-200P	Catalog Code			
EDL-50-100P	W3082			
EDL-50-150P				
EDL-50-200P)	\times	LHF-M50,9-50
EDL-50-250P				
EDL-50-300P				
Ultraviolet Achromats				
UDL-30-50P		\	/	
UDL-30-80P			/	
UDL-30-100P			/	LHF-UDL-30
NUDL-30-150P			/	
NUDL-30-200P			/	
UDL-40-80P		\	/	
NUDL-40-100P	WEB Reference	`	\ /	
NUDL-40-150P	Catalog Code		Χ	LHF-UDL-40
NUDL-40-200P	W3083	,	/ \	
NUDL-40-250P		/		
UDL-50-100P		/		
NUDL-50-150P		/		
NUDL-50-200P		/		LHF-UDL-50
NUDL-50-250P		/	\	
NUDL-50-300P		V	\	

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual **Stages**

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others



Objective Lens Holders





Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized **Stages**

Light Sources & Laser Safety

Index

Guide

Mirrors

Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others

Fiber

Used to objective lenses in optical experiments.

• Female threads fit a wide range of OptoSigma threads. See the compatibility table for appropriate combinations.

• There are two styles of objective holder mounts. Both have M20.32 threads. Ane is the standard type (LHO-20.32) that allows placement of targets in close proximity to lenses, and the other is the hooded type (LHO-20.32A) that blocks stray

The images from the objectives will be stable due to the rigidity of the mount.



Guide

- ▶ Post length can be changed by specifying the post length when you place an order. We may charge the difference in price depending on the length. Contact our Sales Division for more information.
- Adapters ,TAT-18OA, adjust the center of objective lenses. A twoaxis pinhole/objective holder (TAT) is also available. Reference C062

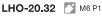
Attention

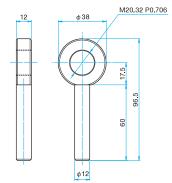
- $\blacktriangleright \mbox{Thread compatibility with non OptoSigma threads is not guaranteed}.$
- A translation stage can be used under the objective holder for fine focus adjustment.

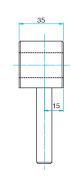


Outline Drawing

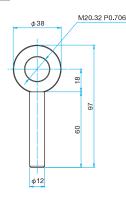


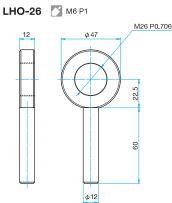






LHO-20.32A M6 P1





Specifications	Primary material: Aluminum Finish: Black Anodized						
Part Number	Options specified*	Weight [kg]					
LHO-20.32	N/EE/UU	0.08					
LHO-20.32A	N/UU	0.13					
LHO-26	N/UU	0.09					

For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders".

Example of Use





Designed to hole cubed optics or right angle prismms.

All four polished surfaces of a cubed prism can be used with these mounts.

- The KKD series has tip, tilt and yaw rotation for fine adjustment of reflected beams.
- The clamp screw will not rotate the prism when clamping.



Guide

- ► θαβ axis stages without prism retainer and strut (KKD-C) are also available. ► WEE Reference Catalog Code W7111
- ▶ Post length can be changed by specifying the post length when you place an order. We may charge the difference in price depending on the length. Contact our Sales Division for more information.

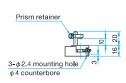
Attention

- ▶ KKD-25PH and PLH-25 might not exert sufficient pressure to retain a prism, and there is a risk that optics might fall out. Use after making sure that the prism is fixed.
- After adjusting the KKD series, if the prism retainer is lifted, the prism table sometimes moves, throwing off adjustment of tilt and rotation. Use without touching the prism retainer after adjustment.

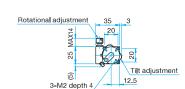


Rotational adjustment 35 3 Rotational adjustment 35 3 Tilt adjustment 12.5 P.C.D.20

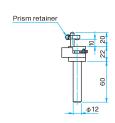
Outline Drawing

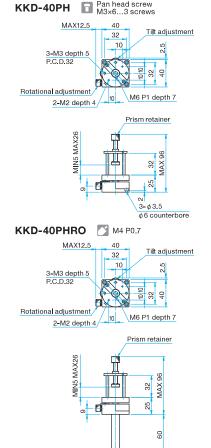


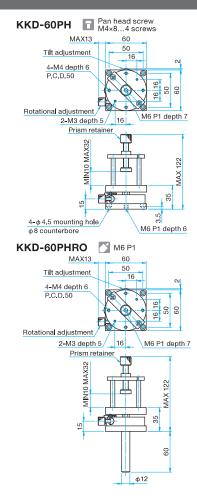
M6 P1



KKD-25PHRO







With Tilt and Rotational Adjustment Primary material: Aluminum Finish: Black Anodized									
Part Number	Compatible Optics Dimensions [mm]	Adjustment Range Rotation [°]	Adjustment Range Tilt [°]	Resolution Rotation Tilt [°/rotation] (°/rotation)		Weight [kg]			
KKD-25PH	- □10	±3	±3	about 0.9	about 2.2	0.05			
KKD-25PHRO	– □10	±3	±3	about 0.9	about 2.2	0.11			
KKD-40PH	□5 – □26	±3	±3	about 2.0	about 1.5	0.20			
KKD-40PHRO	□5 – □26	±3	±3	about 2.0	about 1.5	0.25			
KKD-60PH	□10 – □32	±3	±3	about 1.7	about 1.0	0.40			
KKD-60PHRO	□10 – □32	±3	±3	about 1.7	about 1.0	0.45			

φ12

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others



Prism Holders

KKD/PLH/PAD



Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual **Stages**

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses **Prisms**

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others

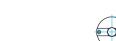
Fiber

Outline Drawing

Prism retainer

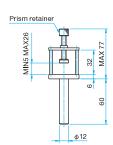
PLH-25 M4 P0.7





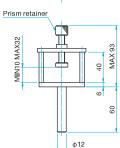
PLH-40 M6 P1











Specifications	Primary material: Aluminum Finish: Black Anodized		
Part Number	Options specified*	Compatible Optics Dimensions [mm]	Weight [kg]
PLH-25	N	- □10	0.08
PLH-40	N	□5 – □26	0.14
PLH-60	N	□10 – □32	0.29

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". Reference) C007

Prism Holder



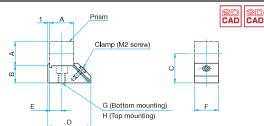




Compact Mount for cube beamsplitters. By clamping on the lower edges of the cube more of the prism faces are available for use.

• It is possible to put close to other optical elements because the holder shapes match to the width of the prism.

Outline Drawing



Part Number	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G	Н
PAD-10	10	10	15	20	5	10	M4	МЗ
PAD-12.7	12.7	8.65	15	22.7	6.35	12.7	M4	МЗ
PAD-15	15	12.5	20	25	7.5	15	M4	М3
PAD-20	20	15	25	35	10	20	M6	M4
PAD-25.4	25.4	12.3	25	39	12.5	25.4	M6	M4

Guide

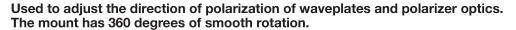
Can be mounted on posts, pillars or directly on a baseplate or stage with an M4 thread.

Attention

- Over tightening the clamp may break glass. Please tighten with the minimum necessary force to insure the cube does not move.
- Recommended for use with prisms with outer dimension tolerance of ±0.2mm.

	Primary material: Aluminur Finish: Black Anodized						
Part Number	Compatible Optics Dimensions [mm]	Weight [kg]					
PAD-10	□10	0.005					
PAD-12.7	□12.7	0.006					
PAD-15	□15	0.01					
PAD-20	□20	0.022					
PAD-25.4	□25.4	0.026					





- The SPH series uses a microemter for fine adjustment.
- The scale plate on the PH and SPH series can be positioned to provide a convenient reference to the polarizer or crystal axis.
- The SPH can be post mounted with the micrometer at the top or at the side for convenient operation in a variety of environments.
- The SPH includes a locking mechanism to prevent accidental adjustments.
- Optics are held in place with retaining rings and resin rings.
- The MPH series is designed for use in small systems and narrow spaces.



Guide

- ▶ Holders for optics sizes not listed in the catalog can be made to order.
- ▶ Adapters for polarizing prisms are available for both the PH and SPH holders. ☐ Reference C055
- ▶ Post length can be changed by specifying the post length when you place an order. We may charge the difference in price depending on the length. Contact our Sales Division for more information.



Attention

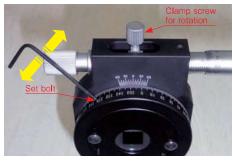
► M6 screws should not go deeper than 5 mm into the mounts. Longer screws will prevent the mount from rotating.

Variable Scale Plate

The angle scale position of PH-ARS, SPH-ARS, GTPC-PH and GTPC-SPH can be freely adjusted.

The scale is easily adjusted to the polarizing axis or the crystal axis of a waveplate by changing the position of this scale plate.

This scale plate enables customers to change the scale position during an experiment, or to adjust the scale to the polarizing axis or the crystal axis precisely. (The default direction is aligned to the vertical axis, within ±1 degree.)







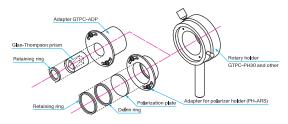
[How to adjust scale plate]

- (1) Mount a polarizing optic in the polarizer holder, and set the direction of the polarizing axis and crystal axis to the polarization reference coordinate.
- (2) Tighten the clamp screw for rotation, loosen the set bolt that secures the scale plate, and rotate the scale plate.
- (3) Set the scale mark to the required scale position, and tighten the scale plate with the set bolt.

Mounting Compatibility of Polarizer Holders and Polarizing Prism Holders

Polarizer holders (PH-ARS, SPH-ARS) can be used as polarizing prism holders by purchasing an adapter (GTPC-ADP) additionally. Also, by purchasing the adapter (GTPC-ADP), a polarizing prism holder for either of the three diameter sizes, ϕ 15, ϕ 25.4 or ϕ 30mm, can be used for the other two sizes. However, the adapter is not compatible with the old type prism holders of custom orders (GTPC-PH-**, GTPC-SPH-**).

Adapters (for optic diameter of ϕ 30 and ϕ 50mm) for polarizer holders (PH-ARS) are also available as a single item. Contact our International Sales Division for more information.



Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors Lenses

Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter Others

Polarizer Holders

MPHN/MPH/PH/SPH





Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors Lenses

Prisms

Polarizers

Lasers

Beam Shaping
Diffusers

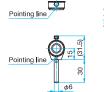
Filters

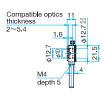
Shutter Others

Fiber

Outline Drawing

MPHN-12.7R M4 P0.7



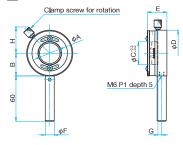


MPHN-25.4R/30R M4 P0.7

Compatible optics 14.5 thickness 2~8.5 2

Pointing line Pointing line M4 depth 5 6.

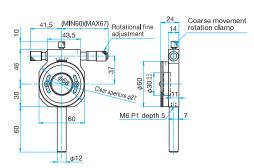
PH-ARS M6 P1 (Only PH-100 with taper)



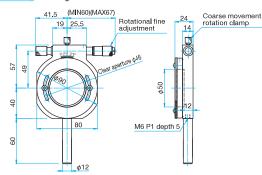
Part Number	φA (mm)	B (mm)	φC (mm)	φD (mm)	E (mm)	φF (mm)	G (mm)	H (mm)
PH-20-ARS	φ17	25	φ20	φ51	23	φ12	3.5	29
PH-25.4-ARS	φ22	30	φ25.4	φ61	26	φ12	4	35
PH-30-ARS	φ27	30	φ30	φ61	26	φ12	4	35
PH-50-ARS	φ46	40	φ50	φ81	26	φ12	5	42
PH-50.8-ARS	φ47	40	φ50.8	φ81	26	φ12	5	42
PH-100-ARS	φ95	73	φ100	φ148	30	φ20	4	66

φ12









Thin Type Primary materia Finish: Black Ar									
Part Number	Options specified*	Compatible Optics Diameter φD [mm]	Compatible Optics Thickness [mm]	Scale MIN Reading [°]	Clear Aperture \$\phi E \text{[mm]}	Optical Axis Height B [mm]	A (MAX) [mm]	φC [mm]	Weight [kg]
MPHN-12.7R	N	φ12.7	2 – 5.4	2.5	φ10	15	32	φ22	0.07
MPHN-25.4R	N	φ25.4	2 - 8.5	2	φ22	25	51	φ40	0.083
MPHN-30R	N	φ30	2 – 8.5	2	φ27	27 . 5	56	φ45	0.09

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". Reference C007

Simple Type		Primary material: Aluminum Finish: Black Anodized				
Part Number	Options specified*	Compatible Optics Diameter [mm]	Compatible Optics Thickness [mm]	Clear Aperture φA [mm]	Scale MIN Reading [°]	Weight [kg]
PH-20-ARS	N/UU	φ20	2 – 10	φ17	1	0.14
PH-25.4-ARS	N/UU	φ25.4	2 – 10	φ22	1	0.19
PH-30-ARS	N/UU	φ30	2 – 10	φ27	1	0.19
PH-50-ARS	N/UU	φ50	2 – 10	φ46	1	0.25
PH-50.8-ARS	N/UU	φ50.8	2 – 10	φ47	1	0.25
PH-100-ARS	N/UU	φ100	2 – 10	φ95	1	0.81

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". [Interestal Post Holders and Pedestal Bases of Holders and Pedestal Bases of

Precision Type Primary material: Aluminum Finish: Black Anodized									
Part Number	Options specified*	Compatible Optics Diameter [mm]	Compatible Optics Thickness [mm]	Clear Aperture [mm]	Fine Adjustment Range [°]	Vernier MIN Reading [']	Micro Indicator Conversion [°/DIV]	Weight [kg]	
SPH-30-ARS	N/UU	φ30	2 – 10	φ27	±5	5	about 0.014	0.32	
SPH-50-ARS	N/UU	φ50	2 – 10	ϕ 46	±3	5	about 0.012	0.46	

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". [Editorials 2007]

Polarizing Prism Holders

GTPC-PH/GTPC-SPH/GTPC-ADP







Used to adjust polarizing prisms such as Glan-Thompson prisms. Best used for precision alignment of Glan-Thompson prisms or for polarimetery devices.

- The fine adjustment mechanism in the SPH can be used to detect an extinction ratio of 10⁻⁵ or less.
- The scale plate on the PH and SPH series can be positioned to provide a convenient reference to the polarizing axis.

 Reference C053
- The SPH can be post mounted with the micrometer at the top or at the side for convenient operation in a variety or environments.
- The SPH includes a locking mechanism to prevent accidental adjustments.
- Polarizing prisms are held in place with retaining rings.



Guide

- ▶ Post length can be changed by specifying the post length when you place an order. We may charge the difference in price depending on the length. Contact our Sales Division for more information.
- ▶ Holders for polarizing prisms of diameters or thickness not in the specifications listed in the catalog can be made to order.

Attention

- ► These holders are sold seperately from the corresponding optics.

 ▶ WEB Reference Catalog Code W3450
- ▶ Rotary holders and adapters (GTPC-ADP) are also sold separately. Purchase the combination of three items, a Glan-Thompson prism, adapter and rotary holder, by checking the combinations listed in the following specification table.

GTPC-ADP

Truss screw M3×6...2 screws

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses

CAD CAD

Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

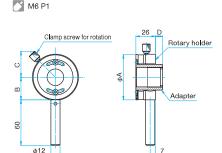
Shutter

Others

Fiber

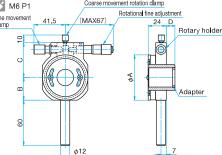
Outline Drawing

GTPC-PH30/GTPC-PH50 & GTPC-ADP



Holder	Adapter	φА	В	С	D
Part Number	Part Number	(mm)	(mm)	(mm)	(mm)
GTPC-PH30	GTPC-ADP15-29	ϕ 60	30	34.3	7.5
GTPC-PH30	GTPC-ADP25.4-38	φ60	30	34.3	16.5
GTPC-PH30	GTPC-ADP30-39	ϕ 60	30	34.3	17.5
GTPC-PH30	GTPC-ADP30-53	φ60	30	34.3	31.5
GTPC-PH50	GTPC-ADP38-49	φ80	40	41.3	27.5

GTPC-SPH30/GTPC-SPH50 & GTPC-ADP Coarse movement rotation clamp Coarse movement rotation clamp



Holder Part Number	Adapter Part Number	φA (mm)	B (mm)	C (mm)	D (mm)
GTPC-SPH30	GTPC-ADP15-29	ϕ 60	30	46	9.5
GTPC-SPH30	GTPC-ADP25.4-38	φ60	30	46	18.5
GTPC-SPH30	GTPC-ADP30-39	ϕ 60	30	46	19.5
GTPC-SPH30	GTPC-ADP30-53	ϕ 60	30	46	33.5
GTPC-SPH50	GTPC-ADP38-49	φ80	40	57	29.5

Adapter Part Number	φF (mm)	φG (mm)	φH (mm)	φ I (mm)	φJ (mm)	K (mm)	L (mm)
GTPC-ADP15-29	φ15	φ34	φ12	φ39	φ47	33.5	19
GTPC-ADP25.4-38	φ25.4	φ34	φ22	φ39	φ47	42.5	20
GTPC-ADP30-39	φ30	φ34	φ27	φ39	φ47	43.5	21
GTPC-ADP30-53	φ30	φ34	φ27	φ39	φ47	57.5	19
GTPC-ADP38-49	φ38.1	φ54	φ35	φ60	φ67	53.5	26

Simple Type Primary material: Aluminut Finish: Black Anodized									
Holder Part Number	Adapter Part Number	Compatible Optics Diameter [mm]	Compatible Optics Thickness [mm]	Scale MIN Reading [°]	Total Weight [kg]				
GTPC-PH30	GTPC-ADP15-29	φ15	15 – 29	1	0.25				
GTPC-PH30	GTPC-ADP25.4-38	φ25.4	16 – 38	1	0.22				
GTPC-PH30	GTPC-ADP30-39	φ30	23 – 39	1	0.21				
GTPC-PH30	GTPC-ADP30-53	φ30	39 – 53	1	0.22				
GTPC-PH50	GTPC-ADP38-49	φ38	28 – 48.9	1	0.41				

Precision Type Primary material: Aluminum Finish: Black Anodized										
Holder Part Number	Adapter Part Number	Compatible Optics Diameter [mm]	Compatible Optics Thickness [mm]	Fine Adjustment Range [°]	Vernier MIN Reading [']	Micro Indicator Conversion [°/DIV]	Total Weight [kg]			
GTPC-SPH30	GTPC-ADP15-29	φ15	15 – 29	±5	5	about 0.014	0.33			
GTPC-SPH30	GTPC-ADP25.4-38	φ25.4	16 – 38	±5	5	about 0.014	0.30			
GTPC-SPH30	GTPC-ADP30-39	φ30	23 – 39	±5	5	about 0.014	0.29			
GTPC-SPH30	GTPC-ADP30-53	φ30	39 – 53	±5	5	about 0.014	0.30			
GTPC-SPH50	GTPC-ADP38-49	φ38	28 - 48.9	±3	5	about 0.012	0.62			



Rod Form Laser Mounts Adjustable Laser Holders (with a stand)

LAHU/LAHU-A

LAH



Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized **Stages**

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses **Prisms**

Polarizers

Beam Shaping Diffusers

Filters

Shutter

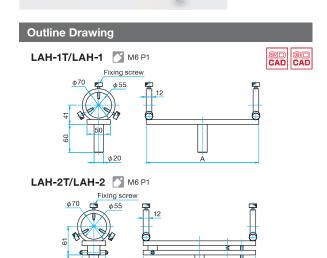
Others

Fiber

Holders for He-Ne lasers.

The six screws can be used to adjust the height and angle of the mounted laser tube.

- Laser tube diameters from ϕ 18 to ϕ 54mm can fit in this holder by adjusting the three screws on both sides.
- The angle of beam tilt can also be changed by adjusting the six screws.
- The LAH-2 also includes an adjustment mechanism for changing the beam



Guide

▶ Post length can be changed by specifying the post length when you place an order. We may charge the difference in price depending on the length. Contact our Sales Division for more information.

Attention

▶ After beam adjustment, make sure that the laser is fixed securely with the six fixing screws. Looseness in one screw will cause displacement in the optical axis or vibration.

Three-F	Point Suppo	ort Type	Primary material: Aluminum Finish: Black Anodized			
Part Number	Compatible Laser Diameter [mm]	Length A [mm]	Adjustment Range Tilt [°]	Resolution Tilt [°/rotation]	Weight [kg]	
LAH-1T	φ18 – φ54	140	_	_	0.31	
LAH-1	φ18 – φ54	240	_	-	0.51	
LAH-2T	φ18 – φ54	140	±4	about 0.5	0.45	
LAH-2	φ18 – φ54	240	±2.4	about 0.3	0.91	

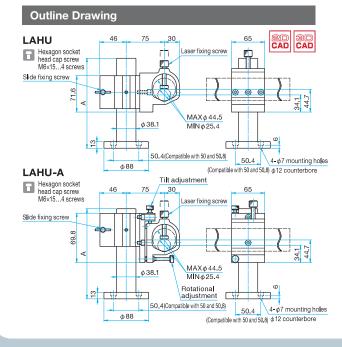






Cylindrical Laser mounts for use with vibration isolated Rod Mount system. The dampened structure makes the holders ideal or use in holograms or interferometry.

- Cylindrical lasers of ϕ 25.4 to ϕ 44.5mm diameter fit in the V-grooved section and are held in place by a single clamping screw.
- Holders can be mounted at any position by sliding along the damped rod.
- Can be directly mounted on a vibration isolator or optical breadboard with 50×50mm matrix M6 screw holes or 1/4-20 UNC holes on 2" spacing.
- LAHU-A mounts can adjust beam tilt and rotation.



Guide

▶ Consult our Sales Division if holders with an optical axis height of 300mm or higher is necessary.

Attention

- ▶ The holder may slide due to its weight when changing the height. Be careful not to drop the holder when adjusting.
- Lasers are very delicate instruments. Pushing in a fixing screw with excessive force sometimes deteriorates the laser performance.

Stand Type		Strut: Stainless steel Finish: None Holder material: Aluminum Finish: Black Anodized					
Part Number	Strut Length A [mm]	Compatible Laser Diameter [mm]	Adjustm Tilt [°]	nent Range Rotation [°]	Weight [kg]		
LAHU-45-POS177	177.8	φ25 . 4 - φ44.5	_	_	2.6		
LAHU-45-POS355	355.6	φ25.4 – φ44.5	-	_	3.9		
LAHU-45A-POS177	177.8	φ25.4 – φ44.5	±2	±2	2.7		
LAHU-45A-POS355	355.6	ϕ 25.4 – ϕ 44.5	±2	±2	4.0		



LAH-4 is a high stability laser holder for He-Ne laser. Easy to use, two axis thumbscrews with locks.

- High stability kinematic mechanism suitable even for large He-Ne lasers. As it is easy to adjust angle of output beam, this holder can also be used for alignment of a guide laser for an invisible laser.
- Compatible with a variety of laser diameters: 31.8 mm, 35.1 mm, 44.5 mm, and 45mm.



Guide

▶ Can be mounted on a post or baseplate. Posts (RO) and Post Holders (PST).

bread board. Reference C029

ce Catalog Code W6052, WEB Refer Baseplate, MHL-50BP, for directly mounting on the optical table/

▶ Replacement for discontinued item LAH-3T.

Attention

- ▶ Overtightening setscrews that hold the laser tube may cause the degradation of laser quality.
- For best performance, center the tube in the holder.

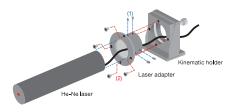
Example of use



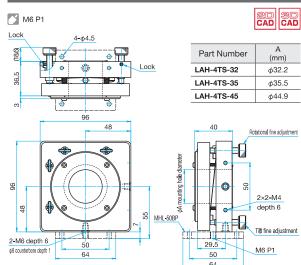
How to Mount He-Ne Lasers

Remove the laser adapter from the kinematic (tilt adjustment) holder first by removing the four pan head screws. If the cable of a He-Ne laser cannot be pulled out, put the He-Ne laser through the hole of the kinematic holder first. (1) Insert the He-Ne laser in the laser adapter half way, and fix with four set

(2) Mount the adapter in which the laser is mounted in the kinematic holder with four pan head screws.



Outline Drawing



Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual **Stages**

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses **Prisms**

Polarizers

Beam Shaping Diffusers

Filters

Shutter

Others

Specifications						Primary mate Finish: Black	ria l : Aluminum Anodized
Part Number Compatible Laser Diameter ϕA [mm]	Compatible Laser	Optical Axis Haight	Adjustment Range		Resolution		Moight
	Optical Axis Height [mm]	Tilt [°]	Rotation [°]	Tilt [°/rotation]	Rotation [°/rotation]	Weight [kg]	
LAH-4TS-32	φ31.8	48*	±2	±2	0.2	0.2	0.63
LAH-4TS-35	φ35.1	48*	±2	±2	0.2	0.2	0.63
LAH-4TS-45	φ44.5	48*	±2	±2	0.2	0.2	0.63

^{*}With MHL-50BP, 7mm thick baseplate, the height of optical path would be 55mm, the same height as LAH-3T Series.



Holders for Laser Beam Expanders | KLH-BE





Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual **Stages**

Actuators & Adjusters

Motoeized **Stages**

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses **Prisms**

Polarizers

Beam Shaping Diffusers

Filters

Shutter Others

Fiber

Four axis adjustable mount for Laser Beam Expanders BE and LBED. Tip, Tilt and centering can be adjusted.

- Stable design for large size laser beam expanders .
- KLH-BE is equipped with lock mechanism for angle and centering. These locking mechanism enable to keep the orientation after adjustment.
- Mountable on posts or posts holders.

WEB Reference Catalog Code W6052. WEB Reference Catalog Code W6039



Attention

▶ Baseplate for mounting on the optical table or bread board is available (MHL-BP). Reference C029

Guide

- ▶If the centering mechanism clamp is not sufficiently loosened, the range of movement of the centering mechanism will be narrow.
- ▶ Changing focus after the adjustment of tilt, rotation and centering may cause the deviation of output beam angle and centering.

Example of Use

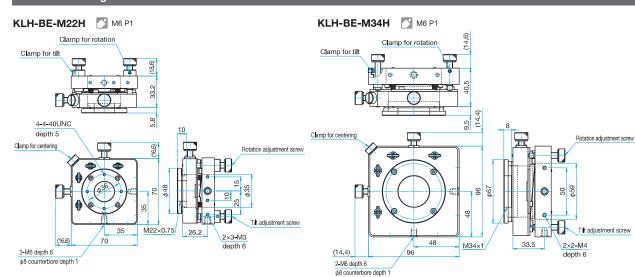


Assembled with the KLH-BE-M22H and LBED10





Outline Drawing



Specifications							Primary materia Finish: Black An	
Part Number	Compatible Mounting Screw Size [mm]	Centering adjustment range [mm]	Centering Adjustment Resolution [mm/rotation]	Angle Adjus Tilt [°]	tment Range Rotation [°]	Angle Adjustm Tilt [°/rotation]	nent Resolution Rotation [°/rotation]	Weight [kg]
KLH-BE-M22H	M22 P0.75	φ2	0.25	±2	±2	0.3	0.3	0.38
KLH-BE-M34H	M34 P1	φ2	0.25	±3	±3	0.2	0.2	0.68

Technical Note

Spacial Filters

The wavefront of a laser beam can be distorted as it goes through an optical system. Fine dust particles can create disturbing diffraction patterns. Spacial filters provide a method to remove many of these disturbances, leaving a clean spherical wavefront.

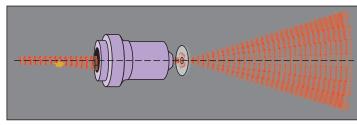
Principles

Focusing plane waves with an ideal lens concentrates light at a small spot. In the case of a typical laser beam, where the beam diameter is less than the diameter of the lens, the intensity distribution at the focus spot will have the same gaussian distribution that the incoming laser beam had. If the planar wavefront is disturbed, the intensity distribution at the focus spot will not be the same as the incoming beam anymore.

Instead, the disturbances will alter the intensity distribution such that it has additional spots and rings separate from the central spot. By placing a pinhole at the central spot, the extra spots and rings can be blocked, allowing only the undisturbed wavefront to continue. To use a spatial filter, you need to match the hole size to the size of focus point (focus spot) of the objective lens.

A hole diameter much larger than the focus spot diameter may not block all of the distortion and noise.

On the other hand, a hole diameter much smaller than the focus spot diameter may produce diffraction rings of concentric circles around a dispersed beam and reduce the total amount of light passed by an unacceptable amount.







Diffraction rings produced when the focus spot is smaller than the pinhole diameter

Intensity distribution when the pinhole diameter matches the focus spot

Configuration

A spatial filter consists of a microscope objective lens and a pinhole. The objective lens is fitted with a linear motion stage for changing the distance to the pinhole and a two-axis pinhole holder that positions the pinhole in a plane perpendicular to the optical axis.

To align the spatial filter holder, refer to the chapter on interferometers. Dues note that Interferometers Guide

Pinhole Selection

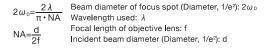
To use a spatial filter, the pinhole diameter needs to match the focus spot diameter.

Calculate the focus spot diameter from the diameter of incident beam and the focal length of the objective lens.

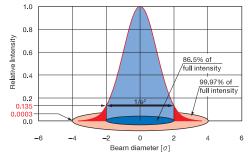
Since the beam spot diameter $(2\omega_0)$ is defined to be where the intensity falls to $1/e^2=0.135$ times the peak value, 15% of incident light intensity will be lost if the pinhole is the same diameter. Moreover, diffraction rings will be generated when the laser beam irradiates the edge of the pinhole. For this reason, select a pinhole twice as large as the spot diameter $(1/e^2)$.

If the pinhole is twice the diameter of the spot, the loss of incident light intensity will be 0.03%, and there will be no need to worry about laser light irradiating on the edge of the pinhole.

Pinhole diameter $A=4\omega_0$



Intensity Distribution of Beam Spot



Example of Use

Case (A) He-Ne laser 05-LHP-111 Beam diameter (1/e²) 0.59mm Objective lens OBL-20 focal length 9mm

⇒ Pinhole of choice is PA-25 (25µm) Appropriate product: SFB-16RO-OBL20-25 DWES Reference Catalog Code W3085

Case (B) He-Ne laser 05-LHP-171 Beam diameter (1/e²) 1.02mm Objective lens OBL-10 focal length 16.56mm

⇒ Pinhole of choice is PA-25 (25µm) Appropriate product: SFB-16RO-OBL10-25 > ™EB Recorded | Catalog Code W3085

Results

	Laser Incident	Objective Lens	Calculation Results	Pinhole
	Beam Diameter d	Focal Length f	A	Diameter (selected)
	[mm]	[mm]	[µm]	[µm]
Case (A)	0.6	9.00	24.2	25
Case (B)	1,0	16.56	26.7	25

Wavelength used 632.8nm

Notes

The above calculation results are for when the distance between the laser and the objective lens is short. The longer the distance between the laser and the objective lens, the larger the incident beam diameter becomes due to divergence of the laser beam.

The focus spot diameter decreases in inverse proportion to the increase in the incident beam diameter.

Thus a pinhole of smaller size needs to be selected. Incident beam diameter can be calculated with the formula shown on the right.

$d=d_h+\alpha \times L$

Laser output beam diameter (Diameter, $1/e^2$): d_h Laser beam divergence (full angle): α Distance from laser to objective lens: L

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors Lenses

Prisms

Polarizers

Lasers

Diffusers

Filters

Shutter

Others



Spatial Filter Holders

SFB



Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Prisms

Polarizers

Lasers

Beam Shapin Diffusers

Filters

Shutter

Others Fiber Spatial filters eliminate distorted laser wavefronts and noise to emit clean spherical waves for beams. Used in optical systems such as interferometers and holograms where wavefront quality is critical.



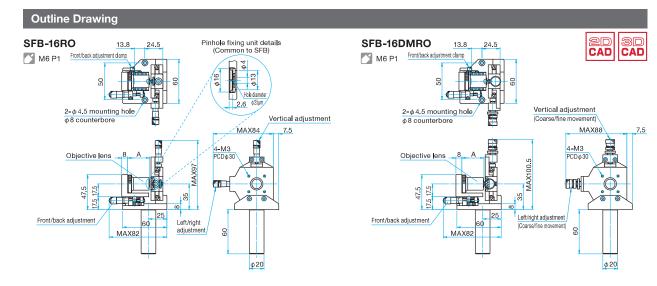
- A well corrected achromat in the output beam of the spatial filter can be used to collimate the filtered beam.
- The translation stage and two-axis pinhole allows the light through the objective lens to have good reproducibility..
- Designed with an emphasis on stability, beam movement during adjustment is minimal.
- A PA-25 (hole diameter 25µm) pinhole is included. Pinholes can be changed to match the diameter of the laser spot.
- A Coarse/fine pinhole adjustment (SFB-16DMRO) is also available.
- To meet a variety of requirements, the mounting position of the objective lens can be changed, allowing objective lenses with different magnifications to be used.

Guide

- SFB-16RO-N and SFB-16DMRO-N, which are postless spatial filters are also available.
- ▶ Pinholes can be replaced with different diameter pinholes.Pinhole diameters can be specified at the time of purchase. When changing pinhole diameter, change the number "-25" at the end of the part number to the desired pinhole size in microns.
- ▶ Post length can be changed by specifying the post length when you place an order. We may charge the difference in price depending on the length. Contact our Sales Division for more information.

Attention

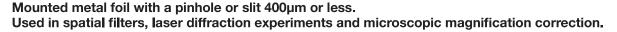
- ► The type of objective lens and pin hole diameter depends on laser wavelength and incident beam diameter. Reference C059
- Our Sales Division will glady help you choose the correct combina-
- ▶The unstamped side of the pinhole should touch the retaining ring side. The pinhole wmaybe not work correctly if mounted incorrectly.
- We do not recommend using spatial filters for high-power lasers, pulsed lasers, or ultraviolet lasers.Lasers in the near infrared region will have poor transmittance.
- ▶ Objectives should be unscrewed before swapping out pinholes.



Micrometer Primary material: Steel, Aluminum Finish: Super Black Chrome, Black Anc									
Part Number	Objective Lens		s Compatible Incidence Beam diameter (1/e²) [mm]	Pinhole Diameter [µm]	Pinho l e XY Adjustment Range [mm]	Objective Lens Front and Back Adjustment Range [mm]	Pinhole XY Scale MIN Reading [mm/DIV]	Objective Lens Front and Back Scale MIN Reading [mm/DIV]	Weight [kg]
SFB-16RO-OBL10-25	OBL-10	30.5	φ1.0	φ25	±2	±3	0.01	0.01	0.56
SFB-16RO-OBL20-25	OBL-20	35.2	ϕ 0.6	φ25	±2	±3	0.01	0.01	0.56
SFB-16RO-OBL40-25	OBL-40	36.4	φ0 . 3	φ25	±2	±3	0.01	0.01	0.56

Coarse/Fine Movement Primary material: Steel, Aluminum Finish: Super Black Chrome, Black Ai								: Anodized		
Part Number	Objective Lens		s Compatible Incidence Beam Diameter (1/e²) [mm]	Pinhole Diameter [µm]	Pinhole XY Adjustment Range [mm]	Objective Lens Front and Back Adjustment Range [mm]	Pinhole XY Coarse Resolution [mm/rotation]	Pinhole XY Scale MIN Reading [mm/DIV]	Objective Lens Front and Back Scale MIN Reading [mm/DIV]	Weight [kg]
SFB-16DMRO-OBL10-25	OBL-10	30.5	φ1.0	φ25	±2	±3	0.5	0,0025	0.01	0.6
SFB-16DMRO-OBL20-25	OBL-20	35.2	φ0.6	φ25	±2	±3	0.5	0.0025	0.01	0.6
SFB-16DMRO-OBL40-25	OBL-40	36.4	φ0.3	φ25	±2	±3	0.5	0.0025	0.01	0.6





- A precision etching process creates holes with high circularity and slits with high parallelism.
- For YAG lasers (1064nm) and CO₂ lasers (10.6µm), pinholes made of high copper coated with gold should be used.
- Pinholes and slits are pre-mounted in aluminum frames for ease of handling and mounting.



Guid	Е
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- Contact our Sales Division to purchase unmounted pinholes or slits.
- \blacktriangleright When an aperture ϕ 1mm or above is required, use an iris diaphragm (IH). Reference C063
- ▶ Custom pinholes can be made to order.

Common Specifications						
Part Number	PA	PA-HEL	FSL			
Hole Geometry	Perfect circle	Perfect circle	Slit			
Pinhole Material	Nickel	Copper	Nickel			
Foil Thickness [µm]	20±5	20±5	20±5			
Pinhole Finish	None	Gold coat (both faces)	None			
Damage Threshold (reference)	_	50MW/cm ² (@700nm)	_			
Wavelength Used	Any	700nm – 10 . 6μm	Any			
Frame Material	Aluminum					
Frame Finish	Black Anodized					

Attention

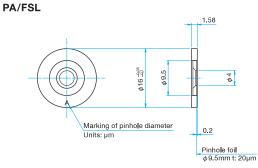
- ▶ Dust can obstruct the light through a pinhole. Use and optic bulb blower to remove the dust. Canned air may break tear the foil.
- ▶ Take care when handling unmounted pinholes. The foil is thin and fragile.
- The holes and slits are only visible under high magnification.
- For fixed slits, when the number that represents the width of the slit is at the bottom, the long side of the slit is oriented in the horizontal direction.
- ▶ Pinholes can be damaged if the laser power is higher than the laser damage threshold.



Perfect circle		
Part Number	Pinhole Diameter [µm]	Weight [kg]
PA-1	φ1 ⁺¹ ₋₀	0.001
PA-2	φ2±1	0.001
PA-5	φ5±2	0.001
PA-10	φ10±2	0.001
PA-15	φ15±2	0.001
PA-20	φ20±2	0.001
PA-25	φ25±3	0.001
PA-30	φ30±3	0.001
PA-40	φ40±3	0.001
PA-50	φ50±4	0.001
PA-100	φ100±5	0.001
PA-200	φ200±6	0.001
PA-400	φ400±8	0.001

Perfect Circle for High Energy Laser							
Part Number	Pinhole Diameter [µm]	Weight [kg]					
PA-5HEL	φ5±2	0.001					
PA-10HEL	φ10±2	0.001					
PA-15HEL	φ15±2	0.001					
PA-25HEL	φ25±3	0.001					
PA-50HEL	φ50±4	0.001					
PA-100HEL	φ100±4	0.001					
PA-200HEL	φ200±6	0.001					

Outline	Drawing



Slit			
Part Number	Slit Width [µm]	Length [mm]	Weight [kg]
FSL-5	5±2	3	0.001
FSL-10	10±2	3	0.001
FSL-25	25±3	3	0.001
FSL-50	50±4	3	0.001
FSL-100	100±5	3	0.001
FSL-150	150±5	3	0.001
FSL-200	200±6	3	0.001

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized **Stages**

Light Sources & Laser Safety

Index

Guide

Mirrors Lenses

Polarizers

Lasers

Filters

Shutter Others



Two-axis Pinhole/Objective Holders

TAT



Two-axis mounts for precision pinholes (PA) or precision air slits (FSL). Microscope objectives can be mounted when the TAT-18OA adapters are used.

- The ball guide design allows for fine adjustment and travel.
- Two types of adjusters are available. The standard micrometer (TAT-16, TAT-16RO) allows smooth adjustment down to a few microns. The differential micrometer (TAT-16DM, TAT-16DMRO) has submicron resolution.
- A unique two-axis integrated guide makes the body only 16mm thick. Lenses can be placed close to the front and back for the pinholes.
- Two-axis pinhole/objective holders have φ9mm transmission diameter. Contact our Sales Division if you need custom pinhole mounts.



Guide

- ▶ Fiber optics holders (FOP) with integrated optical fiber receptacles (FC connector, SMA connector) are also available.

 Reference CO76
- ► TAT-30 has a large transmission diameter. Simplified pinhole holders (AH-1) are also available. ► WEB Reference Catalog Code W4514

Attention

- ▶ Pinholes (PA) are sold seperately from TAT holders. Reference C061
- ▶ Retaining rings are included with TAT holders .Adapters for pinholes are not required.
- ▶ If you need a post, purchase a part that ends in -RO.

Application Systems Optics &

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses Prisms

Polarizers

Lasers

Beam Shapin Diffusers

Filters

Shutter

Others

Fiber

Outline Drawing TAT-16 Hexagon socket head cap screw M6x12...1 screw Hexagonal socket head cap screw M4x10...2 screws, Accessory: Retaining ring TAT-16DM Hexagon socket head cap screw M6x12...1 screw Hexagonal socket head cap screw M4x10...2 screws, Accessory: Retaining ring CAD Pinhole mount enlarged view (Common to TAT) 4 Pinhole φ13 PCDa 30 4-M3 depth ■TAT-16 Series Objective Lens Adapters TAT-18OA Hexagon socket head cap screw M3×8...4 screws TAT-16RO M6 P1, Accessory: Retaining ring TAT-16DMRO M6 P1, Accessory: Retaining ring 4-φ3.5 φ6 counterb PCDφ30 P0 706

Specifications					y material: Iron Super Black Chrome
Part Number	Pinhole XY Adjustment Range [mm]	Coarse Resolution [mm/Rotation]	Fine Resolution [mm/Rotation]	Scale MIN Reading [mm/DIV]	Weight [kg]
TAT-16	±2	0.5	_	0.01	0.26
TAT-16RO	±2	0.5	–	0.01	0.32
TAT-16DM	±2	0.5	0.05	0.0025	0.30
TAT-16DMRO	±2	0.5	0.05	0.0025	0.36

Objective Lens Adapt	ers		Primary material: Aluminum Finish: Black Anodized
Part Number	Compatible Holders	Compatible Objective Lenses	Weight [kg]
TAT-18OA	TAT-16 series	OBL, EPL, EPLE	0.02

Catalog W4039

Iris diaphragm holders that can change the aperture size without changing the center of the aperture. Can be used to change the depth of field in imaging systems.

And passing necessary laser beam while blocking optical feedback or stray light in laser experiments.

- You can change the aperture diameter by loosening the adjustment lever and moving it from side to side.
- The scale provides an estimate on the aperture diameter.



Guide

- ▶Unmounted iris diaphragms (IDC/IH) can be purchased. C064
- Post length can be changed by specifying the post length when you place an order. We may charge the difference in price depending on the length. Contact our Sales Division for more information.

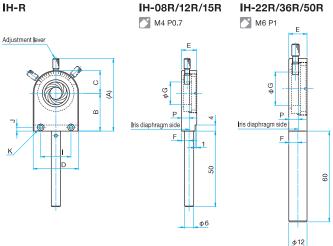
Attention

- ▶ Take care when adjusting the lever and handling the iris diaph-
- These parts are not recommended for high power lasers. The heat from the lasers may cause the blades to seize. (recommended max power: CW 500mW or less, pulse 30mJ or less).
- ▶ The scale is only a rough guide. There is considerable backlash due to the structure of the iris diaphragm. There may be a difference between the hole diameter of iris diaphragm and the scale.
- ▶The iris diaphragm is a very delicate mechanism.Do not push or pull





Outline Drawing

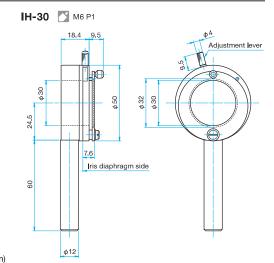


Part Number	А	В	С	D	Е	F	MAX Aperture Diameter φG	1	J	К	Р
IH-08R	38.5	20	10	20	10	4.7	φ8	15	2.5	2-φ2.4 mounting hole, φ4.2 counterbore	4.9
IH-12R	41	20	12.5	25	10	5.3	φ12	20	2.5	2-φ2.4 mounting hole, φ4.2 counterbore	5.2
IH-15R	48	25	15	30	10	5	φ15	20	2.5	2-φ2.4 mounting hole, φ4.2 counterbore	5.2
IH-22R	57.5	30	19	38	12	6	φ22	28	10	2-φ4.5 mounting hole, φ8 counterbore	6.2
IH-36R	75	35	30	60	12	6.4	φ36	44	10	10 2-φ4.5 mounting hole, φ8 counterbore	
IH-50R	95	45	40	80	14	7.4	φ50	60	10	2-φ4.5 mounting hole, φ8 counterbore	7.9

							-	φ6			
										ϕ 12 (Units:	mm)
Part Number	А	В	С	D	Е	F	MAX Aperture Diameter φG	1	J	К	Р
IH-08R	38.5	20	10	20	10	4.7	φ8	15	2.5	2-φ2.4 mounting hole, φ4.2 counterbore	4.9
IH-12R	41	20	12.5	25	10	5.3	φ12	20	2.5	2-φ2.4 mounting hole, φ4.2 counterbore	5.2
IH-15R	48	25	15	30	10	5	φ15	20	2.5	2-φ2.4 mounting hole, φ4.2 counterbore	5.2
IH-22R	57.5	30	19	38	12	6	φ22	28	10	2-φ4.5 mounting hole, φ8 counterbore	6.2
IH-36R	75	35	30	60	12	6.4	φ36	44	10	2-φ4.5 mounting hole, φ8 counterbore	6.9
IH-50R	95	45	40	80	14	7.4	φ50	60	10	2-φ4.5 mounting hole, φ8 counterbore	7.9

φ8 – φ50		Primary materi Finish: B l ack A		
Part Number	Options specified*	Aperture MAX [mm]	Diameter MIN [mm]	Weight [kg]
IH-08R	N	φ8	ϕ 0.7	0.03
IH-12R	N	φ12	ϕ 0.8	0.03
IH-15R	N	φ15	ϕ 0.9	0.09
IH-22R	N/EE/UU	φ22	ϕ 0.9	0.10
IH-36R	N/EE/UU	φ36	φ1.3	0.15
IH-50R	N/EE/UU	φ50	φ1.5	0.20

For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". Reference C007



φ30		Primary material: Aluminum Finish: Black Anodized		
	Aperture	Diameter	Weight	
Part Number	MAX [mm]	MIN [mm]	[kg]	
IH-30	φ30	φ1	0.12	

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors Lenses

Polarizers

Lasers

Filters Shutter

Others



Iris Diaphragm

IDC/IH-30N



Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses Prisms

Polarizers

Lasers

Beam Shapin

Filters

Shutter

Others

Fiber

Iris diaphragm holders that can change the aperture size without changing the center of the aperture. Primarily used in the limited spaces of optical instruments to set an aperture size.

- Unmounted iris diaphgrams are ideal for OEM applications or for use when space is a premium.
- The IDC series's thinness allows optics to be placed closed to each other..
- The adjustment lever also functions as a lock to fix the aperture diameter.



Guide

- ▶ Iris diaphragm holders (IH-30/IH-R) which can be fixed to the post holder are also available. Reference 2 C063
- Fixed pinholes (PA) with hole diameter 400µm or less are also available.

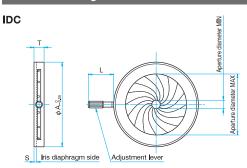
Attention

- ▶ Take care when adjusting the lever and handling the iris diaphgragms.
- ▶ The iris diaphragm is a very delicate mechanism. Do not push or pull on the blades.
- ▶ These parts are not recommended for high power lasers. The heat from the lasers may cause the blades to seize. (recommended max power: CW 500mW or less, pulse 30mJ or less).
- The iris diaphragm does not have a scale. Use the iris diaphragm holder when a scale is needed.



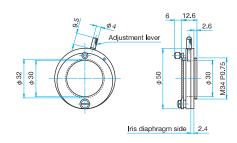


Outline Drawing



Part Number	φA [mm]	T [mm]	L [mm]	S [mm]
IDC-000	φ14.8	4.5	11	1.30
IDC-001	φ19.8	5	11	1.25
IDC-003	φ24	5	11	1.45
IDC-009	φ33	5.5	11	1.43
IDC-017	φ50	6	15	1.60
IDC-025	φ70	7.5	15	2.05

IH-30N



φ8 – φ50			Primary mate Finish: B l ack	erial: Aluminum : Anodized
Part Number	Aperture MAX [mm]	Diameter MIN [mm]	Number of Blades [blades]	Weight [kg]
IDC-000	φ8	ϕ 0.7	9	0.003
IDC-001	φ12	φ0 . 8	11	0.005
IDC-003	φ15	φ0 . 9	12	0.007
IDC-009	φ22	φ0.9	14	0.012
IDC-017	φ36	φ1.3	16	0.024
IDC-025	φ50	φ1.5	16	0.062

φ30		Primary mate Finish: B l ack	erial: Aluminum Anodized	
Part Number	Aperture MAX [mm]	Diameter MIN [mm]	Number of Blades [blades]	Weight [kg]
IH-30N	φ30	φ1	10	0.03



Typical uses include spectrophotometers, Schlieren optical systems and diffraction experiments.

- A precision positioning mechanism keeps the blades straight and parallel with minimum incremental motion on the order of tens of microns.
- Two types are available. The PSL-0 is intended for ultraviolet, visible and infrared radiation. The SLX-1 is intended for use with X-rays and has tantalum blades to efficiently block X-rays.
- The PSL-0 moves the blades left and right simultaneously, enabling adjustment of slit width without changing the center position of the slit.
- The SLX-1 moves the blades independently, left and right, or up and down, thus enabling change of slit position and rectangular shape.

The slit length on the PSL-0 is adjusted by sliding the adjustment plate.



Guide

- A micrometer version (PSL-2) that allows adjustment of slit width in increments of less than 10 microns is also available. WEB Reference Catalog Code W4515
- ▶ Post length can be changed by specifying the post length when you place an order. We may charge the difference in price depending on the length. Contact our Sales Division for more information.

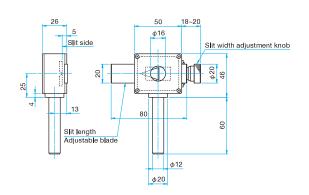
Attention

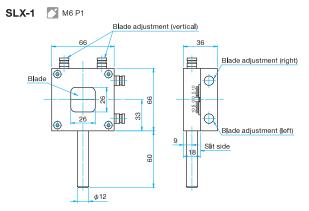
▶ High power lasers may damage the blades. Contact our sales team for custom applications.



Outline Drawing

PSL-0 M6 P1





For UV/Visible	For UV/Visible/IR					
Part Number	Options specified*	Blade Material	Slit Width Variable Range [mm]	Slit Width Scale MIN Reading [µm/DIV]	Slit Length Variable Range [mm]	Weight [kg]
PSL-0	EE/UU	Stainless steel (No Finish)	0 – 4	20	0 – 12	0.24

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". Reference C007

For X-ray						materia : A uminum Vhite A umite
Part Number	Options specified*	Blade Material	X-ray Resistance [keV/cm²]	Blade Variable Range [mm]	Blade Position Scale MIN Reading [µm/DIV]	Weight [kg]
SLX-1	UU	Tantalum (No Finish)	300	0 – 10	10	0.52

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". Reference 2007

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses Prisms

Polarizers

Lasers

Filters

Shutter Others

Filter Wheels

ing color filters.



Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual **Stages**

Actuators & Adjusters

Motoeized **Stages**

Light Sources & Laser Safety

Index

Guide

Mirrors Lenses

Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others Fiber

This holder mounts several filters in a turret allowing different filters to be placed into the optical path by rotating the turret. It can also be used for adjusting the transmitted light intensity by switching ND filters of different transmittance, or for switching transmitted wavelength by mount-

- Two types are available. The NDWH-15S has a single turret that holds six filters. The NDWH-15W has two turrets that hold six filters each.
- ◆ Each type is also available with either a fixed base (NDWH-15S/NDWH-15W) or mounted on a post (NDWH-15SRO/ NDWH-15WRO).
- The turret has an index every 30 degrees (point where rotation stops). Using this index, the filter can be located at the positions 0 degrees, 30 degrees, 60 degrees, and 90 degrees.



Guide

- ▶ The filter wheels do not include ND filters. Select from among the ND filters (AND-15C/FND-15C02).
- WEB Reference Catalog Code W3093, WEB Ref rence Catalog Code W3098
- Rotating Variable Reflective ND Filter Holders (NDHN) to continuously change transmitted light intensity are also available. ence Catalog Code W3101
- Post length can be changed for NDWH-15SRO and NDWH-15WRO. If the length of post is specified at the time of purchase, this product will be delivered with the specified length post.
- We may charge the difference in price depending on the length. Contact our Sales Division for more information
- Filter wheels for 25.4mm diameter filters are also available. WEB Reference Catalog Code W4042

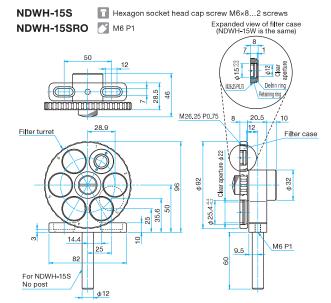
Attention

- ▶In the case of the lowest filter of the lens turret, the strut of the holder interferes and light cannot pass through. Except for this position, all the indexes let light pass through.
- Special tools are required when removing the filter case. When using a ϕ 25.4mm filter after removing the filter case, a retaining ring (NR-25.4) is required. Please contact our International Sales Division for more information.
- It is necessary to mount post types with offset for the optical axis. The amount of offset will vary depending on the position of lens turret

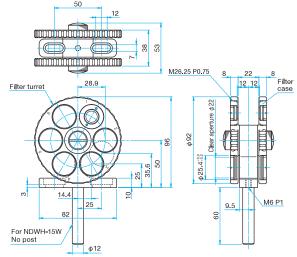




Outline Drawing



NDWH-15W Hexagon socket head cap screw M6×8...2 screws NDWH-15WRO M6 P1



Specifications				Primary material: Aluminum Finish: Black Anodized
Part Number	Compatible Optics Diameter [mm]	Compatible Optics Max Thickness [mm]	Max Number of Mounts [Units]	Weight [kg]
NDWH-15S	φ15	3	6	0.2
NDWH-15SRO	φ15	3	6	0,26
NDWH-15W	φ15	3	12	0.34
NDWH-15WRO	φ15	3	12	0.4





Holders for transmissive optics that do not require optical alignment such as ND filters and color filters. Designed to accommodate different thicknesses and make it easy to change filters.

- Available in a variety of sizes and clamping methods.
- Filter holders can be used with both round filters and rectangular filters. (Note, the FH-10 can only be used with round filters.)
- FH-25 and FH-50 are ideally suited for fine intensity adjustment and transmitted wavelength adjustment because these can hold several filters simultaneously.



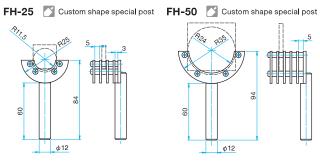
Guide

- ▶ The FH-10 utilizes two spring loaded knobs to hold the filter. This maximizes the clear aperture available while providing a secure clamping force.
- ▶ The FHS-25 and FHS-50 have spring clips to make changing the filter easy while still holding the filter securely.
- ▶ The FH-25 and FH-50 have no clamping mechanism, but provide a rack to hold multiple filters, making it easy to combine multiple filters and quickly change them. Contact our sales team regarding increasing the capacity of these filter racks.
- ▶ The supplied post length can be changed. If the length of post is specified at the time of purchase, this product will be delivered after replacing posts.
- ▶ To insure that the filters remain square to the optical axis in the FH-25 and FH-50 mounts, we recommend framed ND filters (MAN, MFND) which are ND filters of various transmittances fitted with filter adapters (FAD) are also available.

WEB Reference Catalog Code W3094, WEB Reference Catalog Code W3098

Attention

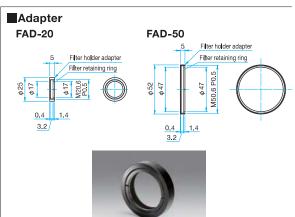
▶ Because the posts for FH-25 and FH-50 have a special shape, they cannot be replaced with standard posts (RO-**-**). Contact our International Sales Division regarding different length posts.



Filter H	Filter Holders									
Part	Part Options Specified*	Compat Dimensions	ible Optics Thickness	MAX Number of filter	Weight [kg]					
Number		[mm]	[mm]	[Units]	[1/9]					
FHS-25	N/EE/UU	φ25, <u>□</u> 25	0 – 5	1	0.06					
FHS-50	N/EE/UU	φ50, <u>□</u> 50	0 – 5	1	0.08					
FH-10	N	ϕ 10 – ϕ 20	0 – 3	2	0.02					
FH-25	_	φ25, □25	0 - 3 (MAX three units) 0- 5	4	0.10					
FH-50	_	φ50 – φ52 □50	0 – 5	5	0.11					

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders".

Golderons CO07



Adapter			Primary material: Aluminum Finish: Black Anodized		
	Compatil	Weight			
Part Number	Diameter [mm]	Thickness [mm]	[kg]		
FAD-20	φ20	0 – 3	0.01		
FAD-50	φ50	0 – 3	0.01		

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others

Automatic Shutters 1 axis / 4 axis Shutter Controller

SSH-CRA



Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized **Stages**

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others

Fiber

SSH RoHS Catalog W4045



These electromagnetic shutters are intended for applications including remote on/off of laser light and for timed exposures.

Requires dedicated shutter controller (SSH-C2B) and cable (SSH-CA2-LOAA) for operation.

- ullet SSH-S is intended for small diameter laser beams (ϕ 4mm or less) while SSH-25RA is intended for use with large diameter imaging lens systems (ϕ 24mm or less).
- Typical applications include holography, exposure of photosensitive materials and as safety measures of laser optical systems.
- By removing the post, the shutters can be installed directly on a baseplate with M3 threads.
- Shutters can be operated with a PC via the two-axis shutter controller (SSH-C2B).

Guide

▶ Post length can be changed by specifying the post length when you place an order. We may charge the difference in price depending on the length. Contact our Sales Division for more information.

Attention

- Automatic shutters cannot be used with high power lasers or high power pulse lasers. Please use high power laser shutters (SHPS).
- ▶ Please always use these automatic shutters with the dedicated controller. Otherwise, these shutters may not operate properly.
- ▶SSH-25RA cannot operate with the old type shutter controllers (SSH-C4B, SSH-C1R). SSH-S can operate with SSH-C4B.
- ▶ These shutters and controllers do not come with cables.
- ▶ Please order the dedicated cables along with them.

Outline Drawing	
41 SSH-S M6 P1 70 42-\$3.5 Mounting hole insertion slot 41 SSH-S M6 P1	SSH-25RA 40 4-03.5 hold mounting hold mount
Cable	\slot

Specifications			Primary material: Alu Finish: Black anodize	minum ed (Finish of blades of SSH-25l	RA-W Shutter : None)
Part Number	Shutter Type	Aperture Diameter [mm]	Compatible Controller	Shutter Speed [s]	Weight [kg]
SSH-S	Solenoid	φ8	SSH-C2B	about 0.7 -	0.28
SSH-25RA	Blades type (Black)	105	SSH-C2B	0.1 –	0.5
SSH-25RA-W	Blades type (Black)	φ25	SSH-C1RA, SSH-C4RA	0.1 -	0.5

SSH-CRA

RoHS Catalog W4120



Controller for driving the SSH-RA series electromagnetic shutters.

- Shutters can be manually opened and closed using the shutter buttons on the controller body.
- Shutters can also be opened and closed using a TTL signal from an external controller.
- 4-axis shutter controller (SSH-C4RA) can independently control up to four shutters.

2D CAD

Guide

- Controller does not include a shutter. Compatible only with SSH-RA series auto-blade shutters.
- ▶ Cable to connect the controller and the shutter is not included. Use the dedicated cable (SSH-CA2-LORA). Reference C069
- ▶ If timer functions are required, we recommend using the SSH-C2B shutter controller. Reference C069
- controllers come with AC adapter(DC5V) and 3.5mm Stereo mini plug (for TTL)

Attention

- ▶ This shutter controller is only compatible with the SSH-RA series.
- ▶ Please do not connect to any electromagnetic shutter other than SSH-RA series.
 - Due to differences in the electrical driving characteristics, other shutters can be damaged.
- ▶ Please contact our sales team for TTL cable to be connected to an external device.
- In SSH-C1RA and SSH-C1RA-H, the logic of TTL connecting to external equipment is inverted. If you need the shutter controller SSH-C4RA with TTL logic inverted, please contact our Sales Division.

Outline Drawing 149 54 ⊚ • **⊚** (3) 80 40 170 Ō

Specification		materia l : Al Black anodi				
Part Number	Controllable Number of Units [unit]	Compatible Shutters	External input Signal (TTL)	Power Source [V]	Power consumption [VA]	Weight [kg]
SSH-C4RA	4	SSH-RA	Open/Close:0/5V	DC5	1	0.45
SSH-C1RA	1	SSH-RA	Open/Close:0/5V	DC5	0.25	0.07
SSH-C1RA-H	1	BSH2	Open/Close:5/0V	DC5	0.25	0.07







Controllers for driving SSH electromagnetic shutters. Can operate two electromagnetic shutters of different types concurrently.

- Controller can control the SSH-R (old blade type), SHPS (for high-power laser), and BSH2 (for bio) shutters in addition to SSH-25RA and SSH-S.
- Shutter speed, delay time, and repeat count is set using the front panel control knob.
- Sample software is available for shutter control and changing various settings using a PC.
- Controller allows registration of control signals (up to three types) for unknown mechanical electromagnetic shutters (only those for which control signal formats are released), and can close and open the shutters according to their performance. (Please check the instruction manual and make sure that setting of control signals is possible before use.)



Guide

▶USB cables (USB-2) and RS232C cables (RS232C/STR-3) are available to connect to a PC. WEB Reference Catalog Code W9053

Attention

- ▶ This shutter controller does not come with cables. Check the shutter specification and select the appropriate cable.
- If the shutter connected to the controller is different from the shutter type selected on the controller, shutter will not operate
- To use a shutter other than Opto Sigma shutters, please set the appropriate voltage and pulse time. Incorrect settings may damage



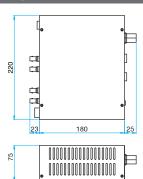


Shutter Controller	
Part Number	SSH-C2B
Controllable Number of Units	2ch
Power Source	DC24V
Power consumption	120VA
Operating temperature	5 – 40°C
Functions	Shutter type switching TIMER/BULB mode switching External signal polarity switching Timer setting Number of times of opening and closing integration
Shutter Control Voltage *1	5V – 24V
Shutter control current *2	each CH 0.5A (current limit 1A)
Shutter Speed	0.2ms - 99990s
Delay Time	0.1ms - 999.9ms
External input	0 - 5V Input 2ch, Interlock contact input
External output	0 - 5V Output 2ch
Interface	RS232C (D-sub 9 pin female), USB, (TTL)
Display	LCD (with white backlight)
Accessories	AC Adapter (DC24V), Interlock connector

¹ The voltage range of control signals that can be set when an unknown shutter is used.

Outline Drawing







Lasers

Others

Fiber

Shutter Cable					
Product Name	Shutter Cable for SSH-25RA	Shutter Cable for SSH-S	Extension cable for shutter		
Part Number	SSH-CA2-LORA	SSH-CA2-LOAA	SSH-CA2-LOAB		
Cable Length [m]	2	2	2		
Connector (controller side)	One-touch lock type plug (4-pin male)	One-touch lock type plug (4-pin male)	One-touch lock type plug (4-pin male)		
Connector (shutter side)	One-touch lock type Round plug (4-pin male)	One-touch lock type plug (4-pin male)	One-touch lock type Cable with socket (4-pin female)		

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Polarizers

Beam Shaping Diffusers

Filters

Shutter

^{*2} The current is determined depending on the resistance value of the electromagnetic shutter to be connected.



Square Plate Holders Camera Holders

KMH CMH

Optics & Optical Coatings

Application Systems

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Prisms

Polarizers

Lasers

Beam Shaping Diffusers **CMH**

Filters Shutter

Others

Fiber

KMH

RoHS Catalog W4047

Holders for square plates such as flare plates (BBP), test targets and square filters.

• Designed to gently hold glass plates, the holder include a soft cork lined back plate and resin tipped clamping screws.



Specifications Primary material: Aluminu Finish: Black Anodized				
Part Number	Options specified*	Compatible Optics Dimensions [mm]	Compatible Optics Thickness [mm]	Weight [kg]
KMH-30	N/EE/UU	□10 – □45	3 – 5	0.08
KMH-80	N/EE/UU	□45 – □100	1 – 7	0.11
KMH-150	N	□100 – □180	6 – 17	0.38

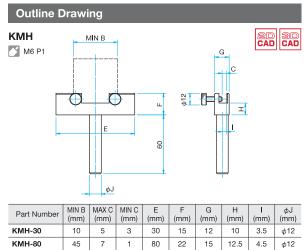
^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders".
Reference C007**

Guide

- ► Use the sliding cylindrical lens holder (CHA) to hold rectangular lenses. Reference CO48
- ▶ Post length can be changed by specifying the post length when you place an order. We may charge the difference in price depending on the length. Contact our Sales Division for more information.

Attention

Glass can break if screws are over tightened.



KMH-150	100	17	6	150	30	30	15	10.5	φ20

RoHS Catalog W4104

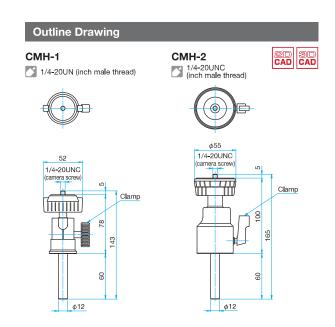
Post mounted ball head camera mount. Allows cameras with standard 1/4-20 mounting holes to be used on an optical breadboard.

- Loosen the clamp to freely position the camera, and tighten the clamp to lock in place.
- These platforms can mount any camera because they use the mounting screw standard commonly used for cameras.



Specifications Primary material: Alumin Finish: Black Anodized			
Part Number	Options specified*	MAX Load Capacity [N]	Weight [kg]
CMH-1	N	29.5 (about 3kgf)	0.17
CMH-2	N	40 (about 4kgf)	0.34

^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". Reference C007





Light shields can be used to block stray light in laser experiments and can also be used as viewing screens for interferometers or other setups requiring a projection screen.

- BBP-2505B includes a measurment scale to allow easy adjustment of the height of the optical axis of laser beam.
- BBP-3130B can block light in a wide area.
- BBP-2505B and BBP-3130B include magnet bases.
- BBP-200 has a white matte finish for use as a viewing screen.





Guide

▶ The Square Optics Holder (KMH-80) can be used to hold the BBP-200.

Attention

BBP-200

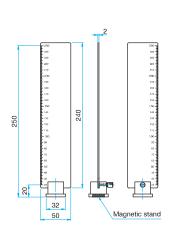
▶ Be sure to wear laser safety goggles. When high-power laser or high energy pulsed laser strike these surfaces, there is a potential for scattered light to be directed to the



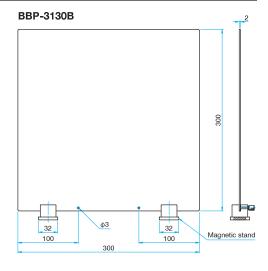
Outline Drawing

200

200



BBP-2505B



Specifications Primary material: Aluminum Finish: Clear anodize (BBP-2			ninum (BBP-200 only), Black anodize
Part Number	Accessory	Scale	Weight [kg]
BBP-200	_	_	0.32
BBP-2505B	Magnetic stand (1pc)	Both sides	0.18
BBP-3130B	Magnetic stand (2pcs)	_	0.70

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses

Prisms

Polarizers

Lasers Beam Shaping Diffusers

Filters

Shutter

Others

TGH



Test Target Holders Beam Dumps

BD

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual **Stages**

Actuators & Adjusters

Motoeized **Stages**

Light Sources & Laser Safety

Index

Guide

Mirrors

Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters Shutter

Others

Fiber

RoHS Catalog W4049

Fixtures used for optical axis adjustment of non-visible lasers. Insert IR sensor cards or van paper in the path using the spring clips, rotate cross wires into the laser light to confirm the positional relationship of the shadow of beam and cross wire.

- The cross wires are retractable and are placed in the center of posts to enable good repeatability.
- If two target holders are placed leaving an interval, they can be used as a laser beam tilt adjustment jig.



Specifica	ations	Primary materia Finish: B l ack A		
Part Number	Options specified*	Clear Aperture [mm]	MAX Holding Thickness [mm]	Weight [kg]
TGH-30	N/UU	φ30	3	0.09

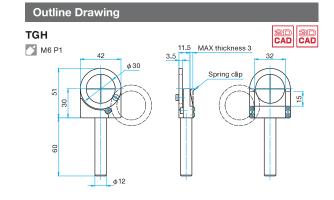
^{*} For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders". [Glaceroto] C007

Guide

▶ Iris diaphragm (IH) convenient for visible light lasers is also available. rence C063

Attention

▶ Use IR sensor cards with large light receiving surface. Card type IR/UV sensors (SIRC-1 or SUVC-1) cannot be used.



BD

RoHS Catalog W4050

Beam Dumps safely terminate the beam of high-power lasers and high energy pulse lasers. The laser light is scattered and absorbed in the beam dump and converted into heat.

- Because the incident laser beam is scattered onto a conical surface, the light scatter back to the incident side can be greatly attenuated.
- BD-40 for small beam diameter (φ5mm or less) and BD-80 for large diameter beams (φ30mm or less) are available.

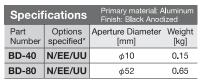


Guide

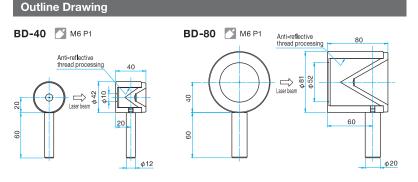
▶ High-power laser shutters (SHPS) combining optical path switching shutter and beam diffuser are available. Catalog Code W4110

Attention

- ▶When used with a high-power laser, the beam diffuser might become quite warm. Be careful not to touch the beam diffuser directly.
- ▶ When used with a high energy pulse laser, the finish of the conical surface may be lost. The volume of scattering will increase somewhat, but as long as the conical shape is not changed, the beam diffuser will maintain performance.
- ▶ When a repeatedly oscillating high energy pulse laser irradiates the beam diffuser, the beam diffuser sometimes makes a sound like it is striking metal. This is due to the shock wave produced when the laser changes to heat on a metallic surface, not damage on the beam diffuser.



For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases C007



Fiber Optics Mounts | FOM



Fiber holders equipped with an adjustment mechanism for three axes including vertical, horizontal and focus direction. These holders can handle fibers with various connectors by replacing adapters.

- The large slit on the adapter cylinder enables connection of various fiber connectors inside the adapter cylinder.
- It is capable of rotating the polarizing axis of a polarization-preserving fiber for 360 degrees. (See Attention)
- The focus adjustment lever of the 3-axis holder can move the tip of a fiber in the optical axis direction.
- Each adjustment mechanism of the 3-axis holder has a clamp mechanism to fix adjustment positions.
- Adapters compatible with the FC, SMA, and ST connectors of various fibers are available.



Guide

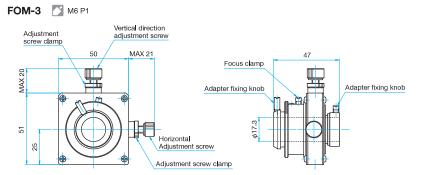
Fiber holders equipped with tilt and rotational adjustment mechanisms (FOP-2, FOP-2-SMA) are also available.

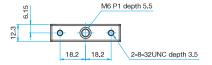
Attention

- ▶ Rotating the fiber chuck can cause displacement of the fiber core in the \boldsymbol{X} and \boldsymbol{Y} directions. When turning the chuck, fine adjustment of the XY axes of the holder may be required.
- ▶ Pulling a fiber cord hard may cause misalignment of the holder.
- ▶ Readjustment is necessary when the chuck is removed and reinstalled
- ▶ For post mounting please purchase a post (PO) separately.



Outline Drawing





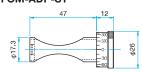
FOM-ADP-SMA



FOM-ADP-FC



FOM-ADP-ST

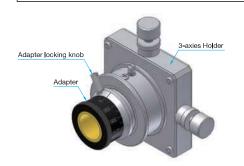


	3-axis Holder	Primary material: Aluminum Finish: Black Anodized									
		Options specified*	Centering	Adjustment	Focus Adjustment	Weight					
	Part Number		Range [mm]	Resolution [mm/rotation]	Range [mm]	[kg]					
FOM-3		UU	□2	0.25	±3	0.14					
	*										

For specifying options, please refer to "Conversion of Posts, Post Holders and Pedestal Bases of Holders" Reference C007

Adapter	Primary material: Brass Finish: None		
Part Number	Compatible Fiber Connecter	Weight [kg]	
FOM-ADP-FC	FC	0.05	
FOM-ADP-SMA	SMA	0.05	
FOM-ADP-ST	ST	0.044	

Attaching the adapter



- ①Please connect a fiber connector into the adapter cylinder.
- 2Please insert the adapter into the 3-axis holder, and secure it by using the adapter locking knobs located on both ends of the 3-axis holder.

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others

Fiber



Mini-Fiber Optics Holders Adapter for Mini-Fiber Optic

MFH-ADP



Optics & Optical Coatings

Application Systems

Opto-Mechanics

Bases

Manual **Stages**

Actuators & Adjusters

Motoeized **Stages**

Light Sources & Laser Safety

Index

Guide

Mirrors Lenses

Prisms

Polarizers Lasers

Beam Shaping Diffusers

Filters

Shutter Others

Fiber

Holders used for holding optical fiber strands of various jacket diameters (coating diameters). By replacing the mounting adapters (MFH-ADP), these holders can mount on various stages in addition to two-axis pinholes/objective holders.

- Using the V groove and the resin clamps, these holders hold the tip of an optical fiber where the coating is removed for approximately 15mm. The V groove and the resin clamps also fix the 900µm jacket right next to the portion to immobilize the optical fiber.
- The resin clamps have built-in magnetizable set bolts, and gently fasten an optical fiber by the magnetic force of the magnets of these fiber holders.
- There is a keyway on the bottom of these holders. The keyway can be installed on the keys of various mounting adapters (MFH-ADP) to slide back and forth. The holders are securely fastened on the mounting adapters with set bolts.



Attention

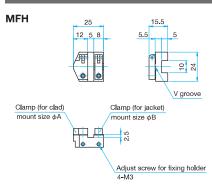
▶ These holders cannot be installed in the fiber alignment systems (DAU). Please contact our International Sales Division for holders for the fiber alignment systems.

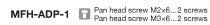


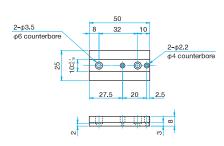




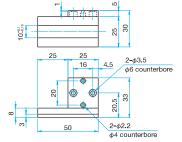
Outline Drawing



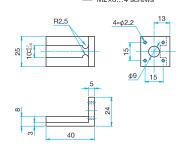








MFH-ADP-3



Holder		Primary material: Aluminum Finish: Black Anodized			
Part Number	Jacket diameter φB [μm]	Cladding diameter φA [μm]	Weight [kg]		
MFH-250	φ150 – φ250	φ60 – φ130	0.03		
MFH-500	φ500	φ125 – φ250	0.03		
MFH-900	φ900	ϕ 125 – ϕ 250	0.03		

Adapter		Primary material: Aluminum Finish: Black Anodized		
Part Number	Overview	Weight [kg]		
MFH-ADP-1	For fixing flat surface (M2, M3 counterbored)	0.02		
MFH-ADP-2	For fixing perpendicular (M2, M3 counterbored) to convert the 90 ° orientation	0.03		
MFH-ADP-3	For fixing perpendicular (M2 counterbored)	0.03		



Holders used for securing and adjusting optical fibers with ferrules (fibers before connectors are attached). When used in combination with the adapter for fiber optics holders (OFH-ADP), these holders can hold ϕ 0.3mm to ϕ 4mm ferrules.



Guide

- ▶ Fiber optics holders for FC connectors (FOP) and for SMA connectors (FOP-SMA) are also available. Refere ce C076
- ▶ Post length can be modified for an additional charge. Contact our Sales Division for more information.

- Focus adjustment knob enables collimation adjustment in combination with the lens.
- The OFH-1 two-axis holder allows positioning of optical fibers.
- The OFH-2 four-axis holder adds tip and tilt capability.
- Both OFH-1 and OFH-2 are available with high precision differntial adjusters for more demanding applications.
- Custom sleeves (OFH-ADP) are available to hold ferrules from 0.3mm to 4.0mm diameters.

Two setscrews in the body of the holder clamp the sleeve tight and hold the fiber and sleeve in place.

Attention

- ▶ For information regarding use with single mode fibers, contact our Sales Division.
- ▶ OFH-ADP sleeves are made to order. Contact our Sales Division for delivery times
- ▶ To hold bare fibers without a ferrule, we recommend using the mini-fiber optics holders (MFH). Reference C074

Outline Drawing OFH-1 OFH-2 M4 P0.7 Tapered M4 P0.7 Tapered Horizontal direction adjustment Longitudinal direction adjustment Longitudinal direction $4-\phi 3.5$ Tilt direction adjustment φ12 φ12 Vertical direction OFH-2DM OFH-1DM Vertical directionadjustment M4 P0.7 Tapered Adjustment Rotation direction M4 P0.7 Tapered Horizontal directionadjustment 100 HUT Longitudinal direction Longitudinal direction adjustment 2-M3 Fixing set screw 4-φ3.5 Tilt direction adjustment 19.7 - 22.2 φ12 φ12

Specifications								Primary materi Finish: B l ack A	
Part Number	Centering Adjustment Range [mm]	Adjustm Tilt [°]	nent Range Rotation [°]	Focus Adjustment Range [mm]	Centering Adjustment Resolution [mm/rotation]	Centering Fine Adjustment Resolution [mm/rotation]	Adjustment Tilt [°/rotation]	Resolution Rotation [°/rotation]	Weight [kg]
OFH-1	±1.25			±1.25	0.5	_	_		0.12
OFH-2	±1.25	±2	±2	±1.25	0.5	_	about 0.7	about 0.7	0.15
OFH-1DM	±1.25	_	_	±1.25	0.5	0.05	_	_	0.14
OFH-2DM	±1.25	±2	±2	±1.25	0.5	0.05	about 0.7	about 0.7	0.17

Adapter Sleeve for Fiber Optics Holders | OFH-ADP





Made to order according to the ferrule diameter of your optical fiber. Available with inner diameter between ϕ 0.3 and ϕ 4.0 by 0.1mm increments.

Attention

These adapters are not standard ceramic split sleeve alignment sleeves for ferrules. They are a custom design for this application.

Specification	ns	Filmary material. Delim Finish: None			
Part Number	Outer Diameter [mm]	Inner Diameter [mm]	Inner Diameter MIN unit [mm]		
OFH-ADP	φ5	ϕ 0.3 – ϕ 4.0	0.1		

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors Lenses

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others

Fiber

FC Type Fiber Optics Holders | FOP/FOP-DM





Optics & Optical Coatings

Opto-Mechanics

Bases

Manual **Stages**

Actuators & Adjusters

Motoeized **Stages**

Light Sources & Laser Safety

Index

Guide

Mirrors Lenses

Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others

Fiber

Two-axis pinhole style holders for optical fibers with FC connector.

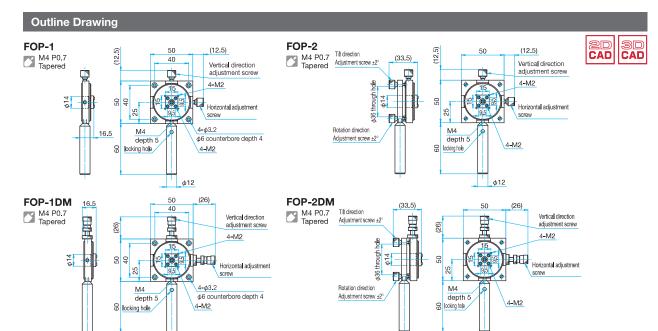
- Two types of actuators are available; the screw type (FOP) provides simple adjustment suitable to multimode fibers, and the coarse/fine screw type (FOP-DM) which is capable of fine adjustment required for single mode fibers.
- The FOP-1 has a two-axis adjustment mechanism.
- The FOP-2 has four axes of adjustment providing tip and tilt as well as Xand Y adjustments.
- The FC receptacles of FC type fiber optics holders can be replaced with the receptacles for SMA type fiber holders (FOP-ADP-SMA) or mini-fiber optics holders (MFH-ADP-3). Reference C074

Guide

- ▶ Two-axis pinholes/objective holders for SMA connectors (FOP-SMA) are also available.
- ▶ We can change the post length. Please specify the post length when you place an order, then we will deliver the product after replacing the post with one with your specified length. Because those fiber optics holders use a special post, replacement of the post is at your expense.
- ▶ These holders will be delivered attached with dummy FC connector. This connector cannot be used for an optical fiber.

Attention

- ▶ The design of the standard FC receptacle includes a stop that the end of the fiber ferrule rests against. This positions the tip of the fiber 1.5mm from the end face of the receptacle. If it is necessary to align the end of the FC ferrule with the end face of the holder, use the connectors for FC type fiber optics (FLAD).
- Detaching and reattaching the fiber will likely result in the fiber needing realignment.



Specifications						Primary material: A Finish: Black Anoc	
Part Number	Centering Adjustment Range [mm]	Adjustment Range Tilt•Rotation [°]	Centering Adjustment Resolution [mm/rotation]	Centering Fine Adjustment Resolution [mm/rotation]	Micro Indicator Conversion [mm/DIV]	Adjustment Resolution Tilt•Rotation [°/rotation]	Weight [kg]
FOP-1	±1	_	0.5	_	_	_	0.14
FOP-2	±1	±2	0.5	_	_	about 0.7	0.22
FOP-1DM	±1	_	0.5	0.05	0.0025	_	0.15
FOP-2DM	±1	±2	0.5	0.05	0.0025	about 0.7	0.24

Adapters for Ferrule | FOP-ADP/FLAD



FOP-ADP includes a standard FC receptacle and FC connector. FOP-ADP comes with an FC connector. Be aware that attaching the FC connector to a fiber requires special tools and skills to achieve a quality termination



FLAD is designed to hold a bare ferrule or the tip of a connectorized ferrule

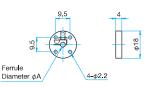
- Tightening the set screw located on the top of the adapter clamps the ferrule from the side.
- When using this adapter for a nonstandard ferrule or for something other than a ferrule, insure that the diameter of the part matches the diameter marked on the FLAD adapter.

Specification	Primary material: Alui Finish: Black Anodize	
Part Number	Ferrule Diameter ϕ A [mm]	Weight [kg]
FOP-ADP	_	_
FLAD-2.5	φ2.5	0.003
FLAD-3.05	φ3.05	0.003



Outline Drawing

hexagon socket head cap screw M2×6...4 screws











Two-axis pinhole style holders for optical fibers with SMA connector.

- Two types of actuators are available; the screw type (FOP-SMA) provides simple adjustment suitable to multimode fibers, and the coarse/fine screw type (FOP-DM-SMA) which is capable of fine adjustment required for single mode fibers.
- The FOP-1-SMA has a two-axis adjustment mechanism.
- The FOP-2-SMA has four axes of adjustment providing tip and tilt as well as Xand Y adjustments.
- The SMA receptacles can be replaced with mini-fiber optics holders (MFH-ADP-3). Reference C074

Guide

- Two-axis pinholes/objective holders for FC connectors (FOP)are also available.
- ▶ We can change the post length. Please specify the post length when you place an order, then we will deliver the product after replacing the post with one with your specified length. Because those fiber optics holders use a special post, replacement of the post is at your expense.

Attention

- Detaching and reattaching the fiber will likely result in the fiber needing realignment.
- Due to SMA connectors having short nuts, it is hard to tighten them completely by hand.

To tighten them securely or to remove them, needle nose pliers are suggested.

Outline Drawing Vertical direction FOP-1-SMA FOP-2-SMA M4 P0.7 Tapered 1/4**-**36UNS 1/4-36UNS Horizontal adjustment screv Horizontal adjustment screw $4-\phi 3.2$ φ6 counterbore depth 4 4-M2 16 4-M2 90 φ12 φ12 FOP-1DM-SMA FOP-2DM-SMA M4 P0.7 Tapered M4 P0.7 Tapered Vertical direction Vertical direction adjustment screv 4-M2 4-M2 1/4**-**36UNS φ3.2 1/4-36UNS Horizontal adjustment screv Horizontal adjustment screw $4-\phi 3.2$ 10 φ6 counterbore depth 4 4-M2 90 16 4-M2 φ12 φ12

Specifications Primary material: Alur Finish: Black Anodize											
Part Number	Centering Adjustment Range [mm]	Adjustment Range Tilt•Rotation [°]		Centering Fine Adjustment Resolution [mm/rotation]	Micro Indicator Conversion [mm/DIV]	Adjustment Resolution Tilt•Rotation [°/rotation]	Weight [kg]				
FOP-1-SMA	±1	_	0.5	_		_	0.14				
FOP-2-SMA	±1	±2	0.5	_	_	about 0.7	0.22				
FOP-1DM-SMA	±1	_	0.5	0.05	0.0025	-	0.15				
FOP-2DM-SMA	±1	±2	0.5	0.05	0.0025	about 0.7	0.24				

Receptacle for SMA Type Fiber Holder | FOP-ADP-SMA



Adapter designed to mount to FOP style holders allow SMA fiber connectors to be used with existing FOP holders.



Attention

▶ The position of the tip of an optical fiber differs depending on the type of SMA connector. Please check the specifications of SMA connectors.

Specifications	Primary material: Aluminum Finish: Black Anodized
Part Number	Weight [kg]
FOP-ADP-SMA	<0.003

Outline Drawing Pan head screw M2×6...4 screws FOP-ADP-SMA 1/4-36UNS

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Mirrors

Lenses Prisms

Polarizers Lasers

Beam Shaping Diffusers

Filters

Shutter

Others

Fiber



Adjustable Fiber Collimator | FOPT



Application Systems

Optics & Optical Coatings

Opto-Mechanics



Manual **Stages**

Actuators & Adjusters

Motoeized **Stages**

Light Sources & Laser Safety

Index

Guide

Mirrors Lenses

Prisms

Polarizers

Lasers

Beam Shaping Diffusers

Filters

Shutter

Others Fiber

The adjustable collimator holder can be used to collimate the output of an optical fiber of FC or SMA type connector.

- These holders can adjust the divergence, outgoing direction, and center position of the luminance distribution (fiber rotation and tilt) of a beam.
- The objective lens included with this holder has a short focal length (OBL-10) so that collimated light with small beam diameter can be obtained.
- The objective lenses used in these holders are standard microscope objectives so that high transmittance and high performance (spherical aberration) can be obtained in the visible light range.
- When used with a single-mode fiber, the output beam will have a Gaussian distribution.



Guide

- Post length can be changed by specifying the post length when you place an order. We may charge the difference in price depending on the length. Contact our Sales Division for more information.
- A dummy FC connector is included, but should not be used for an optical fiber.

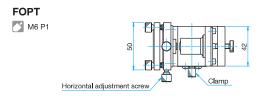
Attention

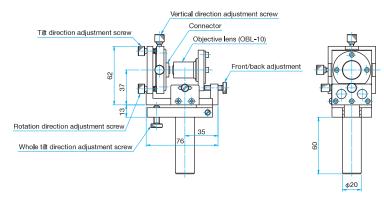
- ▶ To launch light into a single-mode fiber, a more precise adjustment mechanism is required. Contact our Sales Division for more information.
- Some types of connectors may be difficult to mount on the receptacles of two-axis pinholes/objective holders.
- The collimated beam diameter changes depending on the NA of the fiber. Generally, beam diameter D is found with the following formula.
 - f: Focal length of objective lens, NA: Numerical aperture of fiber





Outline Drawing





Specifications Primary material: Al Finish: Black Anodi											
Part Number	Compatible Connector	Focal length Objectives Lens [mm]	Centering Adjustment Range [mm]	Focus Adjustment Range [mm]	Fiber Adjustment Range Tilt•Rotation [°]	Holder Adjustment Range Tilt [°]	Centering Adjustment Resolution [mm/rotation]	Fiber Adjustment Resolution Tilt [°/rotation]	Fiber Adjustment Resolution Rotation [°/rotation]	Holder Adjustment Resolution Tilt [°/rotation]	Weight [kg]
FOPT-FC	FC	16.6	±1	±5	±2	±2.5	0.5	about 0.7	about 0.7	about 0.53	0.55
FOPT-SMA	SMA	16.6	±1	±5	±2	±2.5	0.5	about 0.7	about 0.7	about 0.53	0.55

	Vibration Isolati	on Concepts	D004
Vibration		Active Vibration Isolation Systems OSDVIA	D006
Vibration Isolation Systems	P	High-performance Vibration Isolation Systems with Steel Honeycomb Top OSDVIO	D007
ems	H	Steel Hneycomb Optical Tables OSDVIO-R	D009
ı		Desk Style Vibration Isolation Systems OSDVID	D010
	G man	Desktop Vibration Isolation Systems OSDVIT	D011
Optical Tables	1	Tabletop Optical Breadbord OSDVIO-B	D012
ables		Overhead Table Shelf System OSDOTS	D013
ı	Accessories		D014
ı	0 0	Air Compressor OSDAC-30	D014
ı	Carry-In Route and	Installation Environment Question Sheet —	D016
ı	44	Rubber Isolators PR	D017
Darkroom		Darkroom Kits Clean Darkroom Kits DRU/DRUC	D018
Darkrooms/Dark Boxes		Fluorescent Light (White) DRU	D019
5		Ventilation Fans DRU	D019
		White LED Light LU-101	D019
		Spirit Levels LMC/LMT	D019

	T T	Dark Boxes DB	D020
	Guidance of \	Vacuum Products	D021
		Large Optical Rails / Large Low-Profile Optical Rails Medium Optical Rails / Medium Low-Profile Optical Rails OBA-LH/OBT-LH/LUU/OBA-SH/OBT-SH/SUU	D024 D026
		Carriers for Large Optical Rails Carriers for Medium Optical Rails CAA-L/CAA-LS/MB	D025 D027
ı		Feet for Large Optical Rails OBT-LS/LW/WL	D027
ı		Magnet Base MB	D028
ı	*	Flexible Post Holder MB-MX/MX-AM	D029
,		Base Plate BSP/FBP	D030
		Base Clamps BSC	D032
	90	M6 Conversion Adapters AD-M6	D032
ı		Kinematic Bases / Kinematic Base Plate REP	D033
k	()	Optical Baseplates OBC/OBB	D034
I	40	Aluminum Spacers 25 × 25 mm MSP-25	D037
I	50	Aluminum Spacers 40 × 40 mm MSP-40	D038
*//	200	Aluminum Spacers 60 × 60 mm MSP-60	D039
1		Adjustable Adapter Kits SP/UP	D040

Ac	Adapter Plat	e Selection Guide	
Adapters	Adapter Flat	e selection durac	D041
		Adapters SP/BSP	D042
Brackets	**	L Angle Brackets LBR	D049
		Z Angle Brackets ZBR	D051
Posts	38.5 Sec. 200	Post Stand Guide	D053
]]na	Pedestal Bases PST	D054
		Pedestal Clamps PSC/PSCA/PSCS/PSTM	D054
		Adapter Plates for Pedestal SP-T	D055
		Pedestal Spacers PS-SP	D055
	J. J.	Small Pedestal Bases SPS	D055
)	Small Pedestal Adapters SPS-SP	D056
		Dog Point Set Screws	D056
		Thread Adapters CHS	D056
		Posts RO/ROC/ROU	D057
		Posts RO-EE/UU	D058
		Poles PO	D059
	11	High Stability Ball Plunger Post Holders BRS	D060

Posts	1,1	Post Holders RS	D061
	3	C Shape Post Collars TRC	D061
	900	Stand Base/Stand Clamp RCA/RC	D062
		Helicoidal Jacks HCS-H	D062
		Helicoidal Post Holders RSN	D063
		Clamp Screws (For Post Holders) RS-CB	D063
		Rotary Cross Clamps CRHN	D064
		Cross Clamps CCHN	D064
		Rod Mount Module POSB	D065
		Z Angle Brackets BLZ	D065
Tools	Mg	Screw Set SCR	D067
		Ball Wrench Set SKB-JBX6	D067
	100	Phillip's Screw Driver with Grip	D067
		Chronometer Driver Set DK-20	D067
	₩ ₽	Adapter Nuts AND	D067

Vibration Isolation Concepts

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Vibration Isolation Systems

Optical Tables

Darkrooms/ Dark Boxes

Optical Bases

Posts

Brackets

Adapters

Tools

Source of Vibration

Bases

There are three primary sources of vibration which can disturb a payload, such as ground vibrations, acoustic noises, and direct force disturbances.

At one extreme, the ground vibration environment may consist of low level seismic disturbances present everywhere on earth and the disturbances, imperceptible under ordinary circumstances, present operating problems for highly sensitive equipment. When cultural vibration effects are added, even wider range of sensitive equipment is affected.

For example, even low-amplitude vibration can affect the performance and yield of lithography equipment such as stepper, the resolution of electron microscopes, the accuracy of measuring machines, and the performance of many types of precision equipments and instruments for electro-optical research. The cultural disturbances affecting the sensitive equipments are man-made and caused by phenomena such as vehicle and foot traffic, human activity, air handling systems, elevators, machinery and numerous other sources.

3 Factors In Dynamic System

In discussing vibration isolation, it is useful to identify three elements of a dynamic system.

- 1. The equipment need to be isolated.
- 2. The support structure (floor).
- 3. The isolation system between the equipment and the support structure.

Vibration Isolation

In a passive isolation system, two factors affecting isolation efficiency are the natural frequency and damping of the isolator.

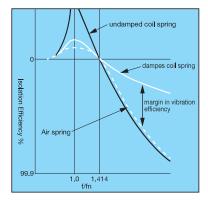
The natural frequency is the rate of free oscillation per unit time and damping is the characteristic which dissipates energy in a dynamic system.

The ratio of forcing frequency (the disturbing frequency) to natural frequency (f/fn) is used to determine the isolation efficiency of any isolation systems.

Transmissibility Tr =
$$|1 - (f/fn)^2/1| \times 100\%$$
 where

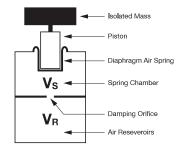
f/fn = the ratio of forcing frequency to natural frequency

Graph shows typical plots of isolation efficiency Notice that when f/fn is less than f2=1.414, the curves show that the vibration is magnified, when the forcing frequency is equal to the natural frequency (f/fn=1), maximum magnification occurs. At ratios above 1.414, the curves are in the isolation range. Typically isolators which exhibit the greatest magnification at resonance have the best isolation efficiency (undamped coil spring).



Generally speaking, low amplification at resonance as shown for the plot of a damped coil spring is desirable; however, notice that this is accomplished at the expense of isolation efficiency. Pnumatic isolators with an air spring and damping chamber on the other hand, combines the desirable characteristics of low magnification at resonance and high isolation efficiency as shown the graph.

The equation for determining the natural frequency of a pneumatic isolators is



$$fn = \frac{1}{2\pi} \sqrt{\frac{YAG}{V}}$$

Where

Y = Ratio of spectific heat, 1/4 for air

A = Effective area of air piston, cm²

G = Gravity acceleration

V = Volume of air chamber, cm³

As seen from equation, the natural frequency of the pneumatic isolator depends on the ratio of the piston area to the volume of the air isolator

Types of Vibration Isolation Systems Optical Tables OSDVID Series OSDVID Series Desk Top Isolators OSDVIT Series OSDVIT Series



- Optical Tops consist of ferro-magnetic stainless steel (SUS430) top skin plates, carbon steel bottom skin plates (SPHC), plated steel honeycomb (0.25mm foil, 3.2cm² cell size) sandwiched between two plates and side steel panels, all bonded with high strength adhesive.
- High-damping optical tops apply Broadband Damping technologies and have excellent dynamic stiffness.
- Honeycomb cores (cell size 3.2cm²) made of 0.25mm thick plated steels give maximized stiffness, extensive contact surface with two plates for high rigidity.
- Top skins are precisely grinded to minimize surface curves, pressure bonded to achieve excellent top flatness, lightly sanded with a circular pattern to remove burrs and non-reflecting & non-glare finished.
- Since all mounting holes on top plates are lead-screw tapped instead of using inserts, deformation or looseness of holes does not occur. The M6(1/4-20) tapped holes are for mounting optical components, arranged in a regular interval 25mm (1").
- Honeycomb cores, top/bottom plates and side walls are rigidly bonded with specially formulated high strength adhesive which allows no elastic bending and hysteresis. Since all parts are made of structural steels having the same coefficient of expansion, deformation such as overall distortion does not occur even in the repeatable temperature changes.
- Cylindrical cups are attached on the bottom of top skins for sealing tapped holes to prevent the inflow of any chemical substances into inside honeycomb cores.
- Upon customers' requests, special mounting holes and various configurations of optical tops are available.

Side Wall (Steel) Top Skin (Stainless Steel) Frame materials (plywood) Adhesive Bottom Skin The structure of honeycomb tops Steel Honeycomb Cores

Bases

Manual Stages

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Vibration Isolation Systems

Optical Tables

Darkrooms/ Dark Boxes

Optical Bases

Posts

Brackets

Adapters

Tools

Table Frame



Vertical Transmissibility

Horizontal Transmissibility

- Pneumatic Vibration Isolator
- Pneumatic vibration isolation supports provide an effective vibration isolation performance both in vertical and horizontal direction in regular laboratories of 10Hz 60Hz. Compressed air supply systems are required.
- Damping
- Pneumatic vibration isolation supports have damping orifices quickly decreasing and settling the movement of optical tops affected by external force or weight transfer.
- Auto Leveling System
 - Pneumatic vibration isolation supports are equipped with three auto leveling valves adjusting the inside pressure of the air spring chambers automatically. This is to maintain the height and level of table tops even under eccentric load.
- Pneumatic vibration isolation supports come with casters and levelers for easy movement and installation.
- Pneumatic vibration isolation supports consisting of 4 isolators can support from 500kg to 2,000kg load. For higher load, long optical tops or joined tables, quantity of isolators can be increased.





Delivery Cost

Because the vibration isolator and laboratory bench are heavy, extra shipping costs are required in addition to the price of those products. Also, to carry in those products, transport, personnel and equipment appropriate to the delivery site are required. At the time of a quotation, please provide our International Sales Division with the Carry-In Route and Installation Environment Question Sheet on [Environment Question Sheet on



Active Vibration Isolation Systems

OSDVIA





Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Vibration Isolation Systen

Optical Tables

Darkrooms/
Dark Boxes

Optical Bases

Posts

Brackets

Adapters

Tools

The OSDVIA-T series is a a high-performane active vibration isolation system. Its auto leveling/locking systems and LCD display make it very user friendly.

When used in conjunction with the Acoustic Enclosure, the OSDVIA-T series reduces environmental noise and vibration for highly sensitive experiments.





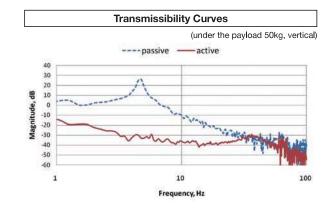
Features

- ◆ Easy to Installation & Operation :
 ⇒ Auto Locking & Leveling Systems
 ⇒ LCD Display
- Robust Control by High-Performance Digital Controller
- Excellent Isolation Performance for the Micro-Vibration in the range of low-frequency
- No compressed air supply required
- Option : Acoustic Enclosures

Applications

- Atomic Force Microscopes
- Scanning Probe Microscopes
- Interferometers
- Other Ultra-Precision Measurement Systems

Specifications				
Part Number	OSDVIA-T45	OSDVIA-T56	OSDVIA-T67	
Dimensions [mm]	(W)420 × (D)500 × (H)93	(W)500 × (D)600 × (H)93	(W)600 × (D)700 × (H)93	
Max. Load Capacity [kg]	10 – 100	10 – 100	10 – 100	
Weight [kg]	25	32	40	
Actuator		Using Electro-Magnetic Force		
Controlled degrees of Freedom		6		
Isolation Performance		-35dB40dB/10Hz		
Settling Time	<0.5sec			
Control Force	Vertical >7N, Horizontal >3N			
Input Voltage [V]	AC85 - 264 / 50 - 60Hz			
Power Consumption [W]	< 36			
Temperature [°C]	5 – 50			
Humidity [%]		20 – 90		
Top plate		Solid Aluminum / M6 mounting holes		
System Configuration	Cor	troller and vibration isolator unit integrated	l type	
Active Control Range		about 0.5Hz - 100Hz		
Initial Horizontal Adjustment		Automatic adjustment		
Lock when moving	Automatic locking mechanism			
Confirmation of Vibration Isolation Status		Displayed on the front monitor		



High-performance Vibration Isolation Systems with Steel Honeycomb Top

OSDVIO



Our highest performance vibration isolation system utilizes independent isolation mechanisms for the horizontal and vertical axes.

This system achieves the highest performance and efficiency for the most demanding applications.

- This vibration isolator rapidly attenuates vibrations transmitted to mounted equipment and instruments, and is essential for equipment and instruments that are affected by vibration.
- The bench is lightweight and has excellent stiffness due to the steel honeycomb core.
- The top surface of the bench is made from a magnetic stainless steel with tapped holes (M6 25×25mm matrix).
- The manual leveling system does not require a continuous air supply. The isolators can be pressurized with just a hand air pump.

OSDVIO	

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Natural Frequency	Vertical Direction	about 1,2 – 1,5Hz		
Natural Frequency	Horizontal Direction	about 1.5 – 1.7Hz		
Vibration Isolation		Air Spring Isolations		
Damping		Air Damping by Orifice		
Honeycomb Materia	l inside Bench	Plated steel honeycomb (0,25m foil, 3,2cm2 cell size)		
	Upper Plate	4.0mm thickness 430 series ferro magnetic stainless steel plate,smooth sanded finish		
Bench Material	Lateral Side	2.0mm thickness carbon steel plate with damped wood composite, vinyl convert finish		
	Lower Plate	4.0mm thickness carbon steel plate epoxy painted finish		
Bench Top Surface		M6 tapped holes on 25×25mm matrix over the entire surface (leaving 37,5mm around the edges)		
Bench Top Surface Finish		Unpainted (smooth sanded finish)		
Surface Flatness		±0.1mm over 600mm square		
Hole/Core Sealing		Easy clean cylindrical cup (25mm deep)		
		·		

Guide

Exterior

- ▶ We can produce sizes not listed in the catalog. Contact our Sales Division for more information.
- ▶ When installed in locations with no air source, use the silent air compressor (OSDAC-30) which can be used indoors.

 Reference ▶ D014

Attention

- ▶ The vibration isolator will perform the best when the load on the table is evenly distributed.
- ➤ Freight is calculated seperately. Use the carry-in route and installation environment question sheet.

 Reference D016 Catalog Code W6001

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Vibration Isolation Systems

Optical Tables

Darkrooms/ Dark Boxes

Optical Bases

Posts

Brackets

Adapters

Tools

High-performance Vibration Isolation Systems with Steel Honeycomb Top



Outline Drawing

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Optical Tables

Darkrooms/ Dark Boxes **Optical Bases**

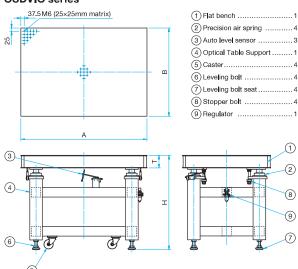
Posts

Brackets

Adapters

Tools

OSDVIO series



CSDVIO-I-0909M-100t(800H) 900x 900 800 100 300 154	Specifications					
OSDVIO-I-1007M-100t(800H) 1,000x 700 800 100 310 140 OSDVIO-I-1206M-100t(800H) 1,200x 600 800 100 310 141 OSDVIO-I-1207M-100t(800H) 1,200x 700 800 100 290 159 OSDVIO-I-1509M-100t(800H) 1,200x 900 800 100 260 190 OSDVIO-I-1509M-100t(800H) 1,500x 600 800 100 390 187 OSDVIO-I-1509M-200t(800H) 1,500x 700 800 100 370 207 OSDVIO-I-1519M-200t(800H) 1,500x 700 800 200 310 269 OSDVIO-I-1519M-200t(800H) 1,500x 1,000 800 200 290 284 OSDVIO-I-1516M-200t(800H) 1,500x 1,000 800 200 200 240 329 OSDVIO-I-1616M-200t(800H) 1,500x 1,500 800 200 240 329 OSDVIO-I-180FM-200t(800H) 1,800x 600 800 200 340 234 OSDVIO-I-1816M-200t(800H) 1,800x 600 800	Part Number		* *	· ·		
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OSDVIO-I-1207M-100t(800H) 1,200x 700 800 100 290 159 OSDVIO-I-1209M-100t(800H) 1,200x 900 800 100 260 190 OSDVIO-I-1506M-100t(800H) 1,500x 600 800 100 390 187 OSDVIO-I-1507M-100t(800H) 1,500x 700 800 100 370 207 OSDVIO-I-1507M-200t(800H) 1,500x 700 800 200 310 269 OSDVIO-I-1510M-200t(800H) 1,500x 1,000 800 200 290 284 OSDVIO-I-1512M-200t(800H) 1,500x 1,000 800 200 240 329 OSDVIO-I-1515M-200t(800H) 1,500x 1,500 800 200 240 329 OSDVIO-I-1806M-200t(800H) 1,800x 600 800 200 340 234 OSDVIO-I-1807M-200t(800H) 1,800x 700 800 200 320 254 OSDVIO-I-1809M-200t(800H) 1,800x 700 800 200 270 306 OSDVIO-I-1809M-200t(800H) 1,800x 1,500 800 200	OSDVIO-I-1007M-100t(800H)	1,000× 700	800	100	310	140
OSDVIO-I-1209M-100t(800H) 1,200× 900 800 100 260 190 OSDVIO-I-1506M-100t(800H) 1,500× 600 800 100 390 187 OSDVIO-I-1507M-100t(800H) 1,500× 700 800 100 370 207 OSDVIO-I-1519M-200t(800H) 1,500× 900 800 200 231 269 OSDVIO-I-1519M-200t(800H) 1,500×1,000 800 200 290 284 OSDVIO-I-1515M-200t(800H) 1,500×1,000 800 200 20 240 329 OSDVIO-I-1515M-200t(800H) 1,500×1,000 800 200 20 240 329 OSDVIO-I-1806M-200t(800H) 1,800×1,500 800 200 340 234 OSDVIO-I-1807M-200t(800H) 1,800× 700 800 200 320 254 OSDVIO-I-1819M-200t(800H) 1,800× 700 800 200 270 306 OSDVIO-I-1819M-200t(800H) 1,800×1,200 800 200 270 366 OSDVIO-I-2019M-200t(800H) 1,800×1,200	OSDVIO-I-1206M-100t(800H)	1,200× 600	800	100	310	141
OSDVIO-I-1506M-100t(800H) 1,500× 600 800 100 390 187 OSDVIO-I-1507M-100t(800H) 1,500× 700 800 100 370 207 OSDVIO-I-1509M-200t(800H) 1,500× 900 800 200 310 269 OSDVIO-I-1510M-200t(800H) 1,500×1,000 800 200 290 284 OSDVIO-I-1512M-200t(800H) 1,500×1,000 800 200 240 329 OSDVIO-I-1515M-200t(800H) 1,500×1,500 800 200 240 329 OSDVIO-I-1515M-200t(800H) 1,500×1,500 800 200 180 396 OSDVIO-I-1807M-200t(800H) 1,800× 600 800 200 340 234 OSDVIO-I-1809M-200t(800H) 1,800× 700 800 200 270 306 OSDVIO-I-1812M-200t(800H) 1,800×1,200 800 200 270 306 OSDVIO-I-1815M-200t(800H) 1,800×1,500 800 200 420 488 OSDVIO-I-2014M-200t(800H) 2,000×1,500 800 200	OSDVIO-I-1207M-100t(800H)	1,200× 700	800	100	290	159
OSDVIO-I-1507M-100t(800H) 1,500x 700 800 100 370 207 OSDVIO-I-1509M-200t(800H) 1,500x 900 800 200 310 269 OSDVIO-I-1510M-200t(800H) 1,500x1,000 800 200 290 284 OSDVIO-I-1512M-200t(800H) 1,500x1,200 800 200 240 329 OSDVIO-I-1515M-200t(800H) 1,500x1,500 800 200 180 396 OSDVIO-I-1806M-200t(800H) 1,800x 600 800 200 340 234 OSDVIO-I-1807M-200t(800H) 1,800x 700 800 200 320 254 OSDVIO-I-1809M-200t(800H) 1,800x 700 800 200 320 254 OSDVIO-I-1809M-200t(800H) 1,800x1,200 800 200 270 306 OSDVIO-I-1815M-200t(800H) 1,800x1,500 800 200 20 420 468 OSDVIO-I-201M-200t(800H) 1,800x1,500 800 20 420 468 OSDVIO-I-201SM-200t(800H) 2,000x1,500 800	OSDVIO-I-1209M-100t(800H)	1,200× 900	800	100	260	190
OSDVIO-I-1509M-200t(800H) 1,500x 900 800 200 310 269 OSDVIO-I-1510M-200t(800H) 1,500x1,000 800 200 290 284 OSDVIO-I-1512M-200t(800H) 1,500x1,200 800 200 240 329 OSDVIO-I-1515M-200t(800H) 1,500x1,500 800 200 180 396 OSDVIO-I-1806M-200t(800H) 1,800x 600 800 200 340 234 OSDVIO-I-1807M-200t(800H) 1,800x 700 800 200 320 254 OSDVIO-I-1809M-200t(800H) 1,800x 700 800 200 270 306 OSDVIO-I-1815M-200t(800H) 1,800x 1,200 800 200 270 306 OSDVIO-I-1815M-200t(800H) 1,800x 1,500 800 200 420 468 OSDVIO-I-2010M-200t(800H) 1,800x 1,500 800 200 420 468 OSDVIO-I-2015M-200t(800H) 2,000x 1,500 800 200 380 510 OSDVIO-I-2015M-200t(800H) 2,400x 900 800 200 <th>OSDVIO-I-1506M-100t(800H)</th> <th>1,500× 600</th> <th>800</th> <th>100</th> <th>390</th> <th>187</th>	OSDVIO-I-1506M-100t(800H)	1,500× 600	800	100	390	187
OSDVIO-I-1510M-200t(800H) 1,500×1,000 800 200 290 284 OSDVIO-I-1512M-200t(800H) 1,500×1,200 800 200 240 329 OSDVIO-I-1515M-200t(800H) 1,500×1,500 800 200 180 396 OSDVIO-I-1806M-200t(800H) 1,800×600 800 200 340 234 OSDVIO-I-1807M-200t(800H) 1,800×700 800 200 320 254 OSDVIO-I-1809M-200t(800H) 1,800×700 800 200 270 306 OSDVIO-I-1812PM-200t(800H) 1,800×1,200 800 200 270 306 OSDVIO-I-1815M-200t(800H) 1,800×1,500 800 200 420 468 OSDVIO-I-2010M-200t(800H) 2,000×1,200 800 200 420 468 OSDVIO-I-2012M-200t(800H) 2,000×1,200 800 200 460 421 OSDVIO-I-2015M-200t(800H) 2,000×1,500 800 200 380 510 OSDVIO-I-2409M-300t(800H) 2,400×1,500 800 300	OSDVIO-I-1507M-100t(800H)	1,500× 700	800	100	370	207
OSDVIO-I-1512M-200t(800H) 1,500×1,200 800 200 240 329 OSDVIO-I-1515M-200t(800H) 1,500×1,500 800 200 180 396 OSDVIO-I-1806M-200t(800H) 1,800×600 800 200 340 234 OSDVIO-I-1807M-200t(800H) 1,800×700 800 200 320 254 OSDVIO-I-1809M-200t(800H) 1,800×1,200 800 200 270 306 OSDVIO-I-1812M-200t(800H) 1,800×1,200 800 200 190 387 OSDVIO-I-1815M-200t(800H) 1,800×1,500 800 200 420 468 OSDVIO-I-2010M-200t(800H) 2,000×1,000 800 200 520 362 OSDVIO-I-2012M-200t(800H) 2,000×1,500 800 200 460 421 OSDVIO-I-2015M-200t(800H) 2,400×1,500 800 300 300 440 453 OSDVIO-I-2412M-300t(800H) 2,400×1,500 800 300 300 320 578 OSDVIO-I-2415M-300t(800H) 2,400×1,500	OSDVIO-I-1509M-200t(800H)	1,500× 900	800	200	310	269
OSDVIO-I-1515M-200t(800H) 1,500×1,500 800 200 180 396 OSDVIO-I-1806M-200t(800H) 1,800× 600 800 200 340 234 OSDVIO-I-1807M-200t(800H) 1,800× 700 800 200 320 254 OSDVIO-I-1809M-200t(800H) 1,800× 900 800 200 270 306 OSDVIO-I-1812M-200t(800H) 1,800×1,200 800 200 190 387 OSDVIO-I-1815M-200t(800H) 1,800×1,200 800 200 420 468 OSDVIO-I-2010M-200t(800H) 2,000×1,200 800 200 520 362 OSDVIO-I-2012M-200t(800H) 2,000×1,200 800 200 460 421 OSDVIO-I-2015M-200t(800H) 2,000×1,500 800 200 380 510 OSDVIO-I-2412M-300t(800H) 2,400× 900 800 300 300 440 453 OSDVIO-I-2415M-300t(800H) 2,400× 1,200 800 300 300 320 578 OSDVIO-I-3010M-300t(800H) 3,000× 1,200 <th>OSDVIO-I-1510M-200t(800H)</th> <th>1,500×1,000</th> <th>800</th> <th>200</th> <th>290</th> <th>284</th>	OSDVIO-I-1510M-200t(800H)	1,500×1,000	800	200	290	284
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OSDVIO-I-1807M-200t(800H) 1,800x 700 800 200 320 254 OSDVIO-I-1809M-200t(800H) 1,800x 900 800 200 270 306 OSDVIO-I-1812M-200t(800H) 1,800x1,200 800 200 190 387 OSDVIO-I-1815M-200t(800H) 1,800x1,500 800 200 420 468 OSDVIO-I-2010M-200t(800H) 2,000x1,000 800 200 520 362 OSDVIO-I-2012M-200t(800H) 2,000x1,200 800 200 460 421 OSDVIO-I-2015M-200t(800H) 2,000x1,500 800 200 380 510 OSDVIO-I-2409M-300t(800H) 2,400x 900 800 300 300 440 453 OSDVIO-I-2412M-300t(800H) 2,400x1,200 800 300 320 578 OSDVIO-I-3009M-300t(800H) 3,000x1,500 800 300 350 585 OSDVIO-I-3010M-300t(800H) 3,000x1,000 800 300 300 350 585 OSDVIO-I-3010M-300t(800H) 3,000x1,200	OSDVIO-I-1515M-200t(800H)	1,500×1,500	800	200	180	396
OSDVIO-I-1809M-200t(800H) 1,800× 900 800 200 270 306 OSDVIO-I-1812M-200t(800H) 1,800×1,200 800 200 190 387 OSDVIO-I-1815M-200t(800H) 1,800×1,500 800 200 420 468 OSDVIO-I-2010M-200t(800H) 2,000×1,000 800 200 520 362 OSDVIO-I-2012M-200t(800H) 2,000×1,200 800 200 460 421 OSDVIO-I-2015M-200t(800H) 2,000×1,500 800 200 380 510 OSDVIO-I-2409M-300t(800H) 2,400× 900 800 300 300 440 453 OSDVIO-I-2412M-300t(800H) 2,400×1,200 800 300 300 320 578 OSDVIO-I-3009M-300t(800H) 2,400×1,500 800 300 300 350 585 OSDVIO-I-3010M-300t(800H) 3,000×1,200 800 300 300 300 634 OSDVIO-I-3012M-300t(800H) 3,000×1,200 800 300 300 450 896	OSDVIO-I-1806M-200t(800H)	1,800× 600	800	200	340	234
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OSDVIO-I-1815M-200t(800H) 1,800×1,500 800 200 420 468 OSDVIO-I-2010M-200t(800H) 2,000×1,000 800 200 520 362 OSDVIO-I-2012M-200t(800H) 2,000×1,200 800 200 460 421 OSDVIO-I-2015M-200t(800H) 2,000×1,500 800 200 380 510 OSDVIO-I-2409M-300t(800H) 2,400×900 800 300 440 453 OSDVIO-I-2412M-300t(800H) 2,400×1,200 800 300 320 578 OSDVIO-I-2415M-300t(800H) 2,400×1,500 800 300 300 200 701 OSDVIO-I-3009M-300t(800H) 3,000×1,500 800 300 350 585 OSDVIO-I-3010M-300t(800H) 3,000×1,200 800 300 300 200 739 OSDVIO-I-3015M-300t(800H) 3,000×1,200 800 300 300 450 896 OSDVIO-I-3612M-300t(800H) 3,600×1,200 800 300 300 480 864	OSDVIO-I-1809M-200t(800H)	1,800× 900	800	200	270	306
OSDVIO-I-2010M-200t(800H) 2,000×1,000 800 200 520 362 OSDVIO-I-2012M-200t(800H) 2,000×1,200 800 200 460 421 OSDVIO-I-2015M-200t(800H) 2,000×1,500 800 200 380 510 OSDVIO-I-2409M-300t(800H) 2,400× 900 800 300 440 453 OSDVIO-I-2412M-300t(800H) 2,400×1,200 800 300 320 578 OSDVIO-I-2415M-300t(800H) 2,400×1,500 800 300 200 701 OSDVIO-I-3009M-300t(800H) 3,000× 900 800 300 350 585 OSDVIO-I-3010M-300t(800H) 3,000×1,000 800 300 300 300 634 OSDVIO-I-3012M-300t(800H) 3,000×1,200 800 300 300 450 896 OSDVIO-I-3015M-300t(800H) 3,600×1,200 800 300 480 864	OSDVIO-I-1812M-200t(800H)	1,800×1,200	800	200	190	387
OSDVIO-I-2012M-200t(800H) 2,000×1,200 800 200 460 421 OSDVIO-I-2015M-200t(800H) 2,000×1,500 800 200 380 510 OSDVIO-I-2409M-300t(800H) 2,400× 900 800 300 440 453 OSDVIO-I-2412M-300t(800H) 2,400×1,200 800 300 320 578 OSDVIO-I-2415M-300t(800H) 2,400×1,500 800 300 200 701 OSDVIO-I-3009M-300t(800H) 3,000× 900 800 300 350 585 OSDVIO-I-3010M-300t(800H) 3,000×1,000 800 300 300 300 634 OSDVIO-I-3012M-300t(800H) 3,000×1,200 800 300 300 200 739 OSDVIO-I-3015M-300t(800H) 3,000×1,200 800 300 450 896 OSDVIO-I-3612M-300t(800H) 3,600×1,200 800 300 480 864	OSDVIO-I-1815M-200t(800H)	1,800×1,500	800	200	420	468
OSDVIO-I-2015M-200t(800H) 2,000×1,500 800 200 380 510 OSDVIO-I-2409M-300t(800H) 2,400× 900 800 300 440 453 OSDVIO-I-2412M-300t(800H) 2,400×1,200 800 300 320 578 OSDVIO-I-2415M-300t(800H) 2,400×1,500 800 300 200 701 OSDVIO-I-3009M-300t(800H) 3,000× 900 800 300 350 585 OSDVIO-I-3010M-300t(800H) 3,000×1,000 800 300 300 300 634 OSDVIO-I-3012M-300t(800H) 3,000×1,200 800 300 300 450 896 OSDVIO-I-3015M-300t(800H) 3,600×1,200 800 300 480 864	OSDVIO-I-2010M-200t(800H)	2,000×1,000	800	200	520	362
OSDVIO-I-2409M-300t(800H) 2,400× 900 800 300 440 453 OSDVIO-I-2412M-300t(800H) 2,400×1,200 800 300 320 578 OSDVIO-I-2415M-300t(800H) 2,400×1,500 800 300 200 701 OSDVIO-I-3009M-300t(800H) 3,000× 900 800 300 350 585 OSDVIO-I-3010M-300t(800H) 3,000×1,000 800 300 300 300 634 OSDVIO-I-3012M-300t(800H) 3,000×1,200 800 300 200 739 OSDVIO-I-3015M-300t(800H) 3,000×1,500 800 300 450 896 OSDVIO-I-3612M-300t(800H) 3,600×1,200 800 300 480 864	OSDVIO-I-2012M-200t(800H)	2,000×1,200	800	200	460	421
OSDVIO-I-2412M-300t(800H) 2,400×1,200 800 300 320 578 OSDVIO-I-2415M-300t(800H) 2,400×1,500 800 300 200 701 OSDVIO-I-3009M-300t(800H) 3,000×900 800 300 350 585 OSDVIO-I-3010M-300t(800H) 3,000×1,000 800 300 300 300 634 OSDVIO-I-3012M-300t(800H) 3,000×1,200 800 300 200 739 OSDVIO-I-3015M-300t(800H) 3,000×1,500 800 300 450 896 OSDVIO-I-3612M-300t(800H) 3,600×1,200 800 300 480 864	OSDVIO-I-2015M-200t(800H)	2,000×1,500	800	200	380	510
OSDVIO-I-2415M-300t(800H) 2,400×1,500 800 300 200 701 OSDVIO-I-3009M-300t(800H) 3,000× 900 800 300 350 585 OSDVIO-I-3010M-300t(800H) 3,000×1,000 800 300 300 300 634 OSDVIO-I-3012M-300t(800H) 3,000×1,200 800 300 200 739 OSDVIO-I-3015M-300t(800H) 3,000×1,500 800 300 450 896 OSDVIO-I-3612M-300t(800H) 3,600×1,200 800 300 480 864	OSDVIO-I-2409M-300t(800H)	2,400× 900	800	300	440	453
OSDVIO-I-3009M-300t(800H) 3,000× 900 800 300 350 585 OSDVIO-I-3010M-300t(800H) 3,000×1,000 800 300 300 300 634 OSDVIO-I-3012M-300t(800H) 3,000×1,200 800 300 200 739 OSDVIO-I-3015M-300t(800H) 3,000×1,500 800 300 450 896 OSDVIO-I-3612M-300t(800H) 3,600×1,200 800 300 480 864	OSDVIO-I-2412M-300t(800H)	2,400×1,200	800	300	320	578
OSDVIO-I-3010M-300t(800H) 3,000×1,000 800 300 300 634 OSDVIO-I-3012M-300t(800H) 3,000×1,200 800 300 200 739 OSDVIO-I-3015M-300t(800H) 3,000×1,500 800 300 450 896 OSDVIO-I-3612M-300t(800H) 3,600×1,200 800 300 480 864	OSDVIO-I-2415M-300t(800H)	2,400×1,500	800	300	200	701
OSDVIO-I-3012M-300t(800H) 3,000×1,200 800 300 200 739 OSDVIO-I-3015M-300t(800H) 3,000×1,500 800 300 450 896 OSDVIO-I-3612M-300t(800H) 3,600×1,200 800 300 480 864	OSDVIO-I-3009M-300t(800H)	3,000× 900	800	300	350	585
OSDVIO-I-3015M-300t(800H) 3,000×1,500 800 300 450 896 OSDVIO-I-3612M-300t(800H) 3,600×1,200 800 300 480 864	OSDVIO-I-3010M-300t(800H)	3,000×1,000	800	300	300	634
OSDVIO-I-3612M-300t(800H) 3,600×1,200 800 300 480 864	OSDVIO-I-3012M-300t(800H)	3,000×1,200	800	300	200	739
33 33 33 33 33 33 33 33 33 33 33 33 33	OSDVIO-I-3015M-300t(800H)	3,000×1,500	800	300	450	896
OSDVIO-I-3615M-300t(800H) 3,600×1,500 800 300 309 1051	OSDVIO-I-3612M-300t(800H)	3,600×1,200	800	300	480	864
	OSDVIO-I-3615M-300t(800H)	3,600×1,500	800	300	309	1051





Entry level optical bench provides a basic level of vibration isolation for non critical experiments.



- The internal aluminum honeycomb structure provides a lightweight and stiff structure.
- The vibration isolating legs have high stiffness and
- The top surface of the bench is magnetic stainless steel plate, with tapped holes (M6 25×25mm matrix) over the entire surface.

Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual Stages

Actuators & Adjusters

Motoeized Stages

Light Sources & Laser Safety

Index

Guide

Vibration Isolation Syste

Optical Tables Darkrooms/ Dark Boxes

Optical Bases

Posts

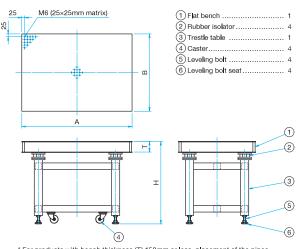
Brackets

Adapters

Tools

Outline Drawing

OSDVIO-R series



^{*} For products with bench thickness (T) 150mm or less, placement of the pipes connecting the table legs is different.

Attention

▶ Freight is calculated seperately. Use the carry-in route and installation environment question sheet. nce D016 Catalog Code W6001

Common Specifi	cations
Vibration Isolation Method	Rigid supports with elastomer mounts
Honeycomb Material inside Bench	Steel
Bench Material	Upper plate: 4.0mm thickness 430 series ferro magnetic stainless steel plate,smooth sanded finish Lateral surface: 2.0mm thickness carbon steel plate with damped wood composite, vinyl convert finish Lower plate: 4.0mm thickness carbon steel plate epoxy painted finish
Bench Top Surface	M6 tapped holes on 25×25mm matrix over the entire surface (Leaving 37.5mm around the edges)
Bench Top Surface Finish	Unpainted (smooth sanded finish)
Surface Flatness	±0.1mm over 600mm square
Hole/Core Sealing	Easy clean cylindrical cup (25mm deep)

Specifications					
Part Number	A × B [mm]	H [mm]	T [mm]	Load capacity [kg]	Weight [kg]
OSDVIO-R-0909M-100t(800H)	900× 900	800	100	300	149
OSDVIO-R-1007M-100t(800H)	1,000× 700	800	100	310	135
OSDVIO-R-1206M-100t(800H)	1,200× 600	800	100	310	136
OSDVIO-R-1207M-100t(800H)	1,200× 700	800	100	290	154
OSDVIO-R-1209M-100t(800H)	1,200× 900	800	100	260	185
OSDVIO-R-1506M-100t(800H)	1,500× 600	800	100	390	182
OSDVIO-R-1507M-100t(800H)	1,500× 700	800	100	370	202
OSDVIO-R-1509M-200t(800H)	1,500× 900	800	200	310	264
OSDVIO-R-1510M-200t(800H)	1,500×1,000	800	200	290	279
OSDVIO-R-1512M-200t(800H)	1,500×1,200	800	200	240	324
OSDVIO-R-1515M-200t(800H)	1,500×1,500	800	200	180	391
OSDVIO-R-1806M-200t(800H)	1,800× 600	800	200	340	229
OSDVIO-R-1807M-200t(800H)	1,800× 700	800	200	320	249
OSDVIO-R-1809M-200t(800H)	1,800× 900	800	200	270	301
OSDVIO-R-1812M-200t(800H)	1,800×1,200	800	200	190	382
OSDVIO-R-1815M-200t(800H)	1,800×1,500	800	200	420	463
OSDVIO-R-2010M-200t(800H)	2,000×1,000	800	200	520	357
OSDVIO-R-2012M-200t(800H)	2,000×1,200	800	200	460	416
OSDVIO-R-2015M-200t(800H)	2,000×1,500	800	200	380	505
OSDVIO-R-2409M-300t(800H)	2,400× 900	800	300	440	448
OSDVIO-R-2412M-300t(800H)	2,400×1,200	800	300	320	573
OSDVIO-R-2415M-300t(800H)	2,400×1,500	800	300	200	696
OSDVIO-R-3009M-300t(800H)	3,000× 900	800	300	350	580
OSDVIO-R-3010M-300t(800H)	3,000×1,000	800	300	300	629
OSDVIO-R-3012M-300t(800H)	3,000×1,200	800	300	200	734
OSDVIO-R-3015M-300t(800H)	3,000×1,500	800	300	450	891
OSDVIO-R-3612M-300t(800H)	3,600×1,200	800	300	480	859
OSDVIO-R-3615M-300t(800H)	3,600×1,500	800	300	309	1046



Application Systems

Optics & Optical Coatings

Opto-Mechanics

Bases

Manual **Stages**

Actuators & Adjusters

Motoeized **Stages**

Light Sources & Laser Safety

Desk Style Vibration Isolation Systems

OSDVID





OSDVID series are available in two versions: C type for cleans rooms and L type for laboratory settings.

OSDVID-C series



- Highly damped stainless steel laminate top.
- Suitable for a class one cleanrooms cleanroom.
- Designed to be easily cleaned with no dust collecting grooves or ledges.
- No outgassing components. All air to support the table is properly
- Perforated top cover to reduce air turbulence in clean rooms.

OSDVID-L series



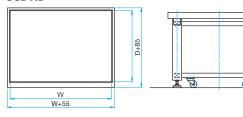
- The top cover is made of a melamine resin.
- The swivel casters allow for easy movement. Optional drawers, and monitor stands are available.

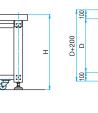
C series

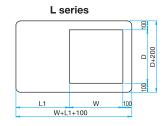
W+R1+100

Outline Drawing

OSDVID







General Specific	aton
Natural Frequency	1.2Hz - 2.0Hz
Isolation Efficiency	at 10Hz: 75% – 95% at 20Hz: 85% – 98%
Levelling Repeatability	±1.0mm / ±0.05mm
Net Load Capacity	500kg
Shipping Weight	150 – 250kg
Material	Frame & Top: All Stainless Steel ("C" Type) Steel tube, Powder Painted ("L" Type) Top Cover: Stainless Steel ("C" Type) Melamine H.P.Boards ("L" Type)
Operation	3 – 5kg/cm ² Compressed Air or Bottled Nitrogen

Specifications				
Part Number	W × D [mm]	H [mm]	Load capacity [kg]	Weight [kg]
OSDVID-C-45-L-600	400×500	800	500	103
OSDVID-C-56-L-600	500×600	800	500	126
OSDVID-C-77-L-600	700×700	800	500	183
OSDVID-C-86-L-600	800×600	800	500	178
OSDVID-C-88-L-600	800×800	800	500	203
OSDVID-C-96-L-600	900×600	800	500	192
OSDVID-C-97-L-600	900×700	800	500	207
OSDVID-C-99-L-600	900×900	800	500	235
OSDVID-C-107-L-600	1,000×700	800	500	219
OSDVID-C-127-L-600	1,200×700	800	500	245
OSDVID-C-128-L-600	1,200×800	800	500	266
OSDVID-C-158-L-600	1,500×800	800	500	313
OSDVID-L-45-L-600	400×500	800	500	103
OSDVID-L-56-L-600	500×600	800	500	126
OSDVID-L-77-L-600	700×700	800	500	183
OSDVID-L-86-L-600	800×600	800	500	178
OSDVID-L-88-L-600	800×800	800	500	203
OSDVID-L-96-L-600	900×600	800	500	192
OSDVID-L-97-L-600	900×700	800	500	207
OSDVID-L-99-L-600	900×900	800	500	235
OSDVID-L-107-L-600	1,000×700	800	500	219
OSDVID-L-127-L-600	1,200×700	800	500	245
OSDVID-L-128-L-600	1,200×800	800	500	266
OSDVID-L-158-L-600	1,500×800	800	500	313

Guide

Index

Vibration Isolation Sy

Optical Tables

Darkrooms/ Dark Boxes

Optical Bases

Posts

Brackets

Adapters

Tools